TESTING
No. L2264

OET 65

TEST REPORT

Product Name	LTE/UMTS Smart Phone; Ascend G526
Model Name	HUAWEI G526-L22, G526-L22
FCC ID	QISG526-L22
Client	Huawei Technologies Co., Ltd.
Manufacturer	Huawei Technologies Co., Ltd.
Date of issue	May 27, 2013

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Reference Standard(s)	**FCC 47CFR §2.1093** Radiofrequency Radiation Exposure Evaluation: Portable Devices **ANSI C95.1, 1992:** Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.(IEEE Std C95.1-1991) **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) **KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01:** SAR Measurement Requirements for 100 MHz to 6 GHz **KDB 447498 D01 Mobile Portable RF Exposure v05:** Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies **KDB 648474 D04 SAR Handsets Multi Xmiter and Ant v01:** SAR Evaluation Considerations for Wireless Handsets. **KDB 941225 D01 SAR test for 3G devices v02:** SAR Measurement Procedures CDMA 20001x RTT, 1x Ev-Do, WCDMA, HSDPA/HSPA **KDB 941225 D03 Test Reduction GSM_GPRS_EDGE v01:**Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE **KDB 941225 D05 SAR for LTE Devices v02r01** SAR Evaluation Considerations for LTE Devices **KDB 941225 D06 Hot Spot SAR v01:**SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities **KDB 248227 D01 SAR meas for 802 11abg v01r02** SAR measurement Procedures for 802 11a/b/g transmitters **Tracking number:** 842893
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 for the tested bands only. General Judgment: **Pass**
Comment	The test result only responds to the measured sample.

Approved by 韩伟中 Director **Revised by** 凌敏宝 SAR Manager **Performed by** 许红梅 SAR Engineer

TABLE OF CONTENT

1. General Information

1.1. Notes of the Test Report

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L2264.

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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Postal Code:	518129
Country:	P.R. China

1.4. Manufacturer Information

Company:	Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Techologies Co., Ltd., Bantian, Longgang District
City:	Shenzhen
Postal Code:	518129
Country:	P.R. China

1.5. Information of EUT

General Information

Device Type:	Portable Device		
Exposure Category:	Uncontrolled Environment / General Population		
State of Sample:	Prototype Unit		
Product IMEI:	860287020003176		
Hardware Version:	HL1G526LM01		
Software Version:	G526-L22V100R001C00B175		
Antenna Type:	Internal Antenna		
Device Operating Configurations :			
Supporting Mode(s):	GSM 850/GSM 1900; (tested) UMTS Band V; (tested) LTE Band 7: (tested) WiFi (802.11b); (tested) GSM 900/GSM 1800/UMTS Band I/VIII; (untested) LTE Band 3: (untested) Bluetooth; (untested) WiFi (802.11g/n HT20); (untested)		
Test Modulation:	(GSM)GMSK; (UMTS)QPSK; (LTE) QPSK,16QAM		
Support Hotspot	Yes, when hotspot opened, GSM/WCDMA/LTE power will be reduced.		
Device Class:	B		
HSDPA UE Category:	14		
HSUPA UE Category:	6		
LTE UE Category:	3		
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 850	824.2 ~ 848.8	869.2 ~ 893.8
	GSM 1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8
	UMTS Band V	826.4 ~ 846.6	871.4 ~ 891.6
	LTE Band 7(5MHz)	2502.5 ~2567.5	2622.5~2687.5

	LTE Band 7(10MHz)	2505~2565	2625~2685
	LTE Band 7(15MHz)	2507.5~2562.5	2627.5~2682.5
	LTE Band 7(20MHz)	2510~2560	2630~2680
	WiFi	2412 ~2462	2412 ~2462
Power Class:	GSM 850: 4		
	GSM 1900: 1		
	UMTS Band V: 3		
	LTE Band 7: 3		
Power Level	GSM 850: tested with power level 5		
	GSM 1900: tested with power level 0		
	UMTS Band V: tested with power control all up bits		
	LTE Band 7: tested with power control all up bits		
Test Channel: (Low - Middle - High)	128 - 190 - 251 (GSM 850) (tested) 512 - 661 - 810 (GSM 1900) (tested) 4132 - 4183 - 4233 (UMTS Band V) (tested) 20850 – 21100 - 21350 (LTE Band 7, 20MHz) (tested) 1 - 6 - 11 (802.11b) (tested)		

Auxiliary Equipment Details

AE1: Battery 1

Model:	HB5V1HV
Manufacturer:	Huawei Technologies Co., Ltd.
S/N:	UQCD228900012598

AE2: Battery 2

Model:	HB5V1HV
Manufacturer:	Huawei Technologies Co., Ltd.
S/N:	YAID130X16904154

AE3: Battery 3

Model:	HB5V1HV
Manufacturer:	Huawei Technologies Co., Ltd.
S/N:	YQCD104916909249

The device has three antennas.
Antenna 1: GSM/UMTS/LTE antenna for Tx/Rx
Antenna 2: BT/WIFI antenna for Tx/Rx
Antenna 3: Diversity antenna of LTE for Rx

Equipment Under Test (EUT) has Personal Wireless Routers (hot spots) function. The detail about EUT and Lithium Battery is in chapter 1.5 in this report.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. The Maximum Reported SAR_{1g}

Head SAR Configuration

Mode	Test Position	Channel /Frequency(MHz)	Limit SAR_{1g} 1.6 W/kg	
			Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
GSM 850	Right,Cheek	190/836.6	0.536	0.647
GSM 1900	Right,Cheek	661/1880	0.220	0.304
UMTS Band V	Right,Cheek	4183/836.6	0.550	0.636
WiFi(802.11b)	Left Cheek	6/2437	0.378	0.567

Body Worn Configuration

Mode	Test Position	Channel /Frequency(MHz)	Limit SAR_{1g} 1.6 W/kg	
			Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
2Txslot GPRS 850	Back Side	128/824.2	0.734	0.884
2Txslot GPRS 1900	Front Side	661/1880	0.250	0.347
UMTS Band V	Back Side	4233/846.6	0.820	1.004
LTE Band 7	Back Side	21100/2535	0.660	0.672
WiFi(802.11b)	Back Side	6/2437	0.157	0.235

Hotspot SAR Configuration

Mode	Test Position	Channel /Frequency(MHz)	Limit SAR_{1g} 1.6 W/kg	
			Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
1 Txslot GPRS 850	Back Side	190/836.6	0.441	0.463
1 Txslot GPRS 1900	Front Side	661/1880	0.346	0.430
UMTS Band V	Back Side	4233/846.6	0.946	1.094
LTE Band 7	Bottom Edge	21100/2535	0.670	0.778
WiFi(802.11b)	Back Side	6/2437	0.157	0.235

1.7. Maximum Conducted Power of each tested Mode

Mode		Max Burst Conducted Power (dBm)	Max Average Power (dBm)
GSM 850	GSM	33.23	**24.2**
	GPRS, 2Txslots	30.19	**24.17**
	EGPRS, 2Txslots	30.19	**24.17**
GSM 1900	GSM	29.14	**20.11**
	GPRS, 2Txslots	26.6	**20.58**
	EGPRS, 2Txslots	26.63	**20.61**

Mode	Maximum Conducted Power (dBm)
UMTS Band V	**23.92**
LTE Band 7	**22.93**
WiFi(802.11b)	**14.34**

Note: The detail Power refer to Table 13 (Power Measurement Results).

1.8. Test Date

The test performed from April 26, 2013 to May 7, 2013.

2. SAR Measurements System Configuration

2.1. 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.

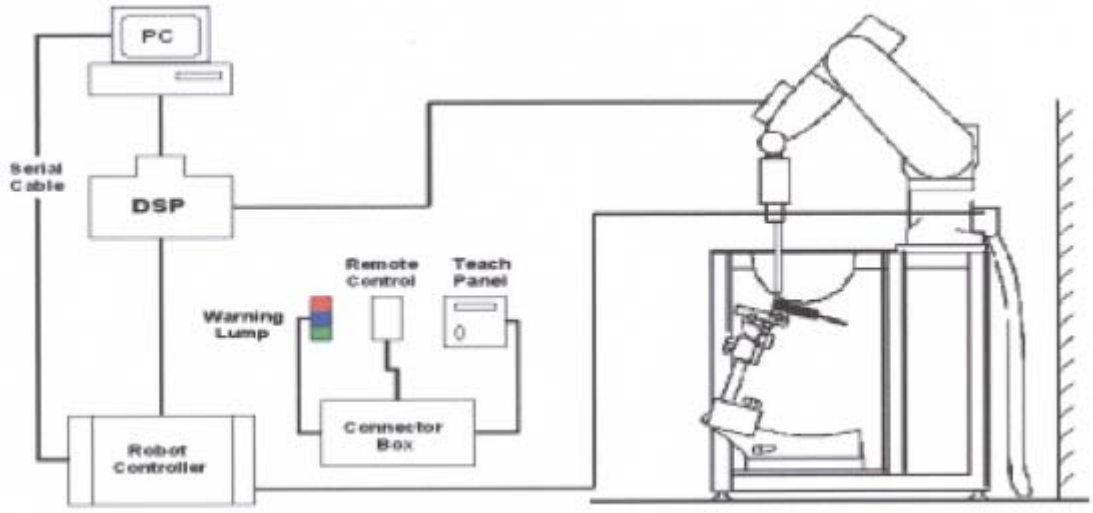

Figure 1 SAR Lab Test Measurement Set-up

2.2. DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe ES3DV3/ EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

2.2.1. ES3DV3 Probe Specification

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to 4 GHz Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g Linearity: ± 0.2dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones

Figure 2.ES3DV3 E-field Probe

Figure 3. ES3DV3 E-field probe

2.2.2. 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 4.EX3DV4 E-field Probe

Figure 5. EX3DV4 E-field probe

2.2.3. 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).

2.3. Other Test Equipment

2.3.1. 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 6 Device Holder

2.3.2. 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 7 Generic Twin Phantom

2.4. 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 is set according to FCC KDB Publication 865664. During 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

  After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm.

- 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.

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

Table 1: Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01

Frequency	Maximum Area Scan Resolution (mm) (Δx_{area}, Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom}, Δy_{zoom})	Maximum Zoom Scan Spatial Resolution (mm) $\Delta z_{zoom}(n)$	Minimum Zoom Scan Volume (mm) (x,y,z)
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≥ 22

2.5. Data Storage and Evaluation

2.5.1. 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 ".DAE4". 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.

2.5.2. 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.

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

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. Laboratory Environment

Table 2: The Requirements of the Ambient Conditions

Temperature	Min. = 18°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.	

4. Tissue-equivalent Liquid

4.1. Tissue-equivalent Liquid Ingredients

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 3 and table 4 show the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the OET 65.

Table 3: 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 ε=41.5 σ=0.9

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

MIXTURE%	FREQUENCY(Brain) 2450MHz
Water	62.7
Glycol	36.8
Salt	0.5
Dielectric Parameters Target Value	f=2450MHz ε=39.20 σ=1.80

Table 4: 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 ε=55.2 σ=0.97

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

MIXTURE%	FREQUENCY(Body) 2450MHz
Water	73.2
Glycol	26.7
Salt	0.1
Dielectric Parameters Target Value	f=2450MHz ε=52.70 σ=1.95

MIXTURE%	FREQUENCY (Body) 2600MHz
Water	72.6
Glycol monobutyl	27.3
Salt	0.1
Dielectric Parameters Target Value	f=2600MHz ε=52.5 σ=2.16

4.2. Tissue-equivalent Liquid Properties

Table 5: Dielectric Performance of Tissue Simulating Liquid

Frequency	Test Date	Temp ℃	Measured Dielectric Parameters		Target Dielectric Parameters		Limit (Within ±5%)	
			ε_r	σ(s/m)	ε_r	σ(s/m)	Dev ε_r(%)	Dev σ(%)
835MHz (head)	2013-4-26	21.5	41.25	0.916	41.50	0.90	-0.60	1.78
1900MHz (head)	2013-5-4	21.5	38.33	1.451	40.00	1.40	-4.18	3.64
2450MHz (head)	2013-5-7	21.5	38.53	1.860	39.20	1.80	-1.71	3.33
835MHz (body)	2013-4-27	21.5	54.35	1.012	55.20	0.97	-1.54	4.33
1900MHz (body)	2013-5-4	21.5	52.56	1.524	53.30	1.52	-1.39	0.26
2450MHz (body)	2013-5-7	21.5	51.69	1.903	52.70	1.95	-1.92	-2.41
2600MHz (body)	2013-5-6	21.5	51.99	2.159	52.50	2.16	-0.97	-0.05

5. System Check

5.1. Description of 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 6 and table 7.

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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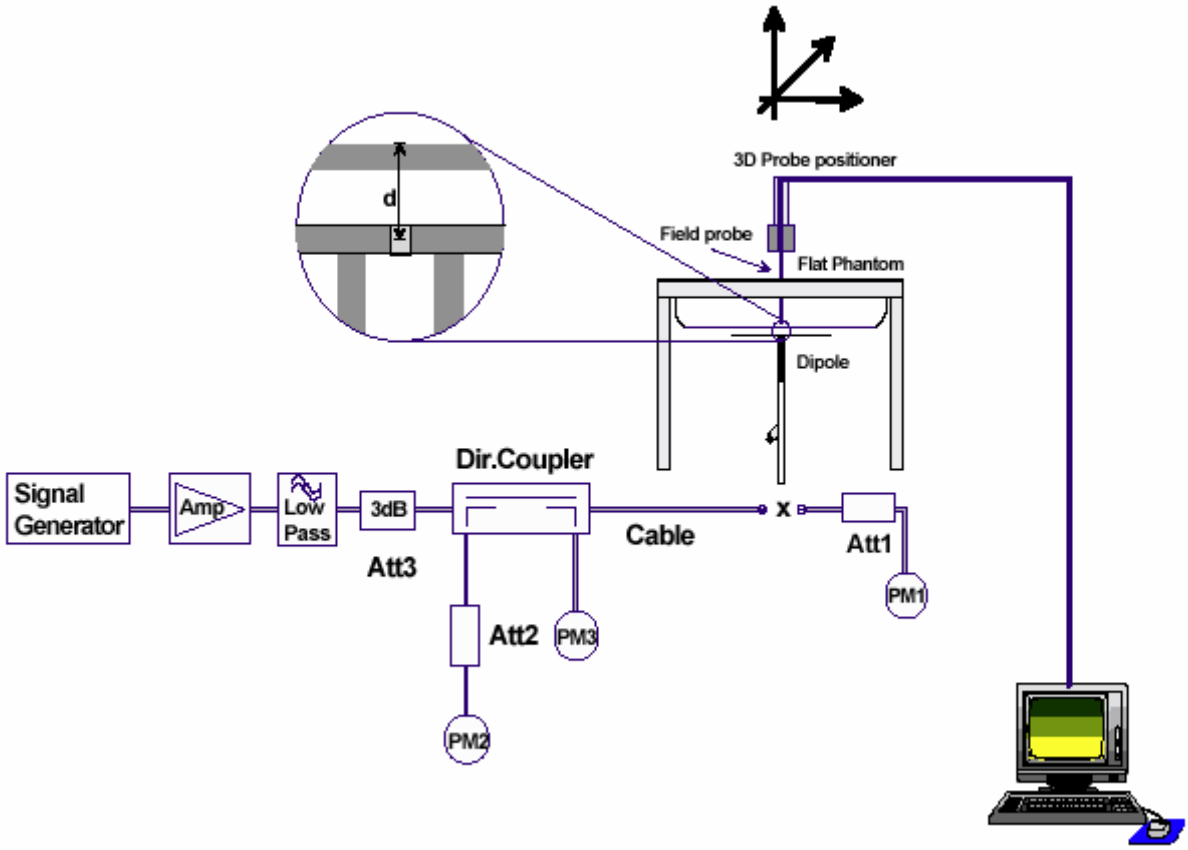


Figure 8 System Check Set-up

Justification for Extended SAR Dipole Calibrations

Usage of SAR dipoles calibrated less than 3 years ago but more than 1 year ago were confirmed in maintaining return loss (< - 20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 450824:

Dipole D835V2 SN: 4d020				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
8/26/2011	-27.7	/	52.9	/
8/25/2012	-29.1	5.0%	55.0	2.1Ω
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
8/26/2011	-25.1	/	48.7	/
8/25/2012	-24.3	3.2 %	50.6	1.9Ω

Dipole D1900V2 SN: 5d060				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
8/31/2011	-22.3	/	52.6	/
8/30/2012	-21.7	2.7%	51.4	1.2Ω
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
8/31/2011	-21.3	/	47.3	/
8/30/2012	-20.9	1.9%	45.9	1.4Ω

Dipole D2450V2 SN: 712				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
8/29/2011	-25.5	/	55.0	/
8/28/2012	-26.8	5.1%	56.5	1.5Ω
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
8/29/2011	-29.0	/	50.4	/
8/28/2012	-29.9	3.1%	52.1	1.7Ω

Dipole D2600V2 SN: 1012				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
5/02/2012	-25	/	48	/
5/01/2013	-23.5	6%	46	2Ω
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
5/02/2012	-23.6	/	45	/
5/01/2013	-24.9	5.5%	47	2Ω

5.2. System Check Results

Table 6: System Check in Head Tissue Simulating Liquid

Frequency	Test Date	Dielectric Parameters		Temp	250mW Measured SAR_{1g}	1W Normalized SAR_{1g}	1W Target SAR_{1g}	Limit (±10% Deviation)
		ε_r	σ(s/m)	(℃)	(W/kg)			
835MHz	2013-4-26	41.25	0.916	21.5	2.44	9.76	9.34	4.50%
1900MHz	2013-5-4	38.33	1.451	21.5	9.48	37.92	40.30	-5.91%
2450MHz	2013-5-7	38.53	1.860	21.5	13.7	54.8	53.80	1.86%

Note：1. The graph results see ANNEX B.
2. Target Values used derive from the calibration certificate

Table 7: System Check in Body Tissue Simulating Liquid

Frequency	Test Date	Dielectric Parameters		Temp	250mW Measured SAR_{1g}	1W Normalized SAR_{1g}	1W Target SAR_{1g}	Limit (±10% Deviation)
		ε_r	σ(s/m)	(℃)	(W/kg)			
835MHz	2013-4-27	54.35	1.012	21.5	2.41	9.64	9.46	1.90%
1900MHz	2013-5-4	52.56	1.524	21.5	9.93	39.72	41.70	-4.75%
2450MHz	2013-5-7	51.69	1.903	21.5	12.5	50	51.70	-3.29%
2600MHz	2013-5-6	51.99	2.159	21.5	13.5	54	54.3	-0.55%

Note：1. The graph results see ANNEX B.
2. Target Values used derive from the calibration certificate

6. Operational Conditions during Test

6.1. 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 EUT is commanded to operate at maximum transmitting power.

Connection to the EUT is established via air interface with CMW500, and the EUT is set to maximum output power by CMW500. 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.

6.2. Test Positions

6.2.1. 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".

6.2.2. 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.

Based upon KDB941225 D06 V01 with a form factor > 9 cm x 5 cm, 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.

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. Per FCC KDB Publication 648474 D04_v01, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01_v05 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented. Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.3. Measurement Variability

Per FCC KDB Publication 865664 D01v01, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:
1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

6.4. Test Configuration

6.4.1. 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 CMU 500 the power lever is set to “5” for GSM 850, set to “0” for 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 timeslots 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. The allowed power reduction in the multi-slot configuration is as following:

Output power of reductions:

GSM 850

GPRS（GMSK）:

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	3

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	3

GSM 1900

GPRS（GMSK）:

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.5

EGPRS(8PSK):

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

EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.5

6.4.2. UMTS Test Configuration

6.4.2.1. Output power Verification

Maximum output power is verified on the High, Middle and Low channel according to the procedures described in section 5.2 of 3GPP TS 34. 121, using the appropriate RMC or AMR with TPC(transmit power control) set to all up bits for WCDMA/HSDPA or applying the required inner loop power control procedures to the maximum output power while HSUPA is active. Results for all applicable physical channel configuration (DPCCH, $DPDCH_n$ and spreading codes, HSDPA, HSPA) should be tabulated in the SAR report. All configuration that are not supported by the DUT or can not be measured due to technical or equipment limitations should be clearly identified

6.4.2.2. Head SAR Measurements

SAR for head exposure configurations in voice mode is measured using a 12.2kbps RMC with TPC bits configured to all up bits. SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2kbps AMR is less than 1/4 dB higher than that measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2kbps AMR with a 3.4 kbps SRB(Signaling radio bearer) using the exposure configuration that results in the highest SAR in 12.2kbps RMC for that RF channel.

6.4.2.3. Body SAR Measurements

SAR for body exposure configurations in voice and data modes is measured using 12.2kbps RMC with TPC bits configured to all up bits. SAR for other spreading codes and multiple $DPDCH_n$, when supported by the DUT, are not required when the maximum average output of each RF channel, for each spreading code and $DPDCH_n$ configuration, are less than 1/4 dB higher than those measured in 12.2kbps RMC. Otherwise, SAR is measured on the maximum output channel with an applicable RMC configuration for the corresponding spreading code or $DPDCH_n$ using the exposure configuration that results in the highest SAR with 12.2 kbps RMC. When more than 2 $DPDCH_n$ are supported by the DUT, it may be necessary to configure additional $DPDCH_n$ for a DUT using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

6.4.3. HSDPA Test Configuration

SAR for body exposure configurations is measured according to the 'Body SAR Measurements' procedures of that section. In addition,body SAR is also measured for HSDPA when the maximum average output of each RF channel with HSDPA active is at least ¼ dB higher than that measured without HSDPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is above 75% of the SAR limit. Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA.

HSDPA should be configured according to the UE category of a test device.The number of HSDSCH/ HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(βc, βd), and HS-DPCCH power offset parameters (ΔACK, ΔNACK, ΔCQI) should be set according to values indicated in the Table below.32 The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Table 8: Subtests for UMTS Release 5 HSDPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (note 1, note 2)	CM(dB) (note 3)	MPR(dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (note 4)	15/15 (note 4)	64	12/15 (note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note1: $\triangle_{ACK}$, $\triangle_{NACK}$ and $\triangle_{CQI}$= 8 ⇔ $A_{hs} = \beta_{hs}/\beta_c$=30/15 ⇔ β_{hs}=30/15*β_c

Note2:For the HS-DPCCH power mask requirement test in clause 5.2C,5.7A,and the Error Vector Magnitude(EVM) with HS-DPCCH test in clause 5.13.1.A,and HSDPA EVM with phase discontinuity in clause 5.13.1AA, $\triangle_{ACK}$ and $\triangle_{NACK}$= 8 (A_{hs}=30/15) with β_{hs}=30/15*β_c,and $\triangle_{CQI}$= 7 (A_{hs}=24/15) with β_{hs}=24/15*β_c.

Note3: CM=1 forβ_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4:For subtest 2 the $\beta_c\beta_d$ ratio of 12/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC (TFC1,TF1) to β_c=11/15 and β_d=15/15.

Table 9: Settings of required H-Set 1 QPSK in HSDPA mode

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	534
Inter-TTI Distance	TTI's	3
Number of HARQ Processes	Processes	2
Information Bit Payload (N_{INF})	Bits	3202
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	4800
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	9600
Coding Rate	/	0.67
Number of Physical Channel Codes	Codes	5
Modulation	/	QPSK

Table 10: HSDPA UE category

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	Maximum Transport Bits/HS-DSCH	Total Channel
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

6.4.4. HSUPA Test Configuration

Body SAR is also measured for HSPA when the maximum average output of each RF channel with HSPA active is at least ¼ dB higher than that measured without HSPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is above 75% of the SAR limit. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 with power control algorithm 2, according to the highest body SAR configuration in 12.2 kbps RMC without HSPA.[40]

Due to inner loop power control requirements in HSPA, a commercial communication test set should be used for the output power and SAR tests.[41] The 12.2 kbps RMC, FRC H-set 1 and E- DCH configurations for HSPA should be configured according to the β values indicated below as well as other applicable procedures described in the 'WCDMA Handset' and 'Release 5 HSDPA Data Devices' sections of 3 G device.

Table 11：Sub-Test 5 Setup for Release 6 HSUPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM (2) (dB)	MPR (dB)	AG (4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, ΔNACK and Δ_{CQI} = 8 ⇔ $A_{hs} = \beta_{hs}/\beta_c$ = 30/15 ⇔ β_{hs}= 30/15 *β_c.
Note 2: CM = 1 for βc/βd =12/15, β_{hs}/β_c =24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-
DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the βc/βd ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the
signaled gain factors for the reference TFC (TF1, TF1) to βc = 10/15 and βd = 15/15.
Note 4: For subtest 5 the βc/βd ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the
signaled gain factors for the reference TFC (TF1, TF1) to βc = 14/15 and βd = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Figure 5.1g.
Note 6: βed can not be set directly; it is set by Absolute Grant Value.

Table 12: HSUPA UE category

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI (ms)	Minimum Spreading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	11484	5.76
	4	4	10		20000	2.00
7 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	22996	?
	4	4	10		20000	?
NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4. UE Categories 1 to 6 supports QPSK only. UE Category 7 supports QPSK and 16QAM. (TS25.306-7.3.0)						

6.4.5. LTE Test Configuration

A) Largest channel bandwidth standalone SAR test requirements

1) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

2) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.

3) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

4) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

B) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the *reported* SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

6.4.6. WIFI Test Configuration

For WLAN SAR testing, WLAN engineering testing software installed on the DUT can provide continuous transmitting RF signal. This RF signal utilized in SAR measurement has almost 100% duty cycle and its crest factor is 1.

For the 802.11b/g/n SAR tests, a communication link is set up with the test mode software for WIFI mode test. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode. Each channel should be tested at the lowest data rate. Testing at higher data rates is not required when the maximum average output power is less than 0.25dB higher than those measured at the lowest data rate.

802.11b/g/n operating modes are tested independently according to the service requirements in each frequency band. 802.11b/g/n modes are tested on the maximum average output channel;

SAR is not required for 802.11g/n channels when the maximum average output power is less than 0.25dB higher than that measured on the corresponding 802.11b channels.

6.5. Power Reduction operation

Power Reduction operation table

LTE&WIFI hotspot	Power Reduction
GSM850	2.5dBm
GSM1900	2.5dBm
WCDMA Band V	2.5dBm
LTE Band 7	4dBm

7. Test Results

7.1. Conducted Power Results

Table 13: Conducted Power Measurement Results(hotspot close)

GSM 850		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 128	Channel 190	Channel 251		Channel 128	Channel 190	Channel 251
GSM		32.78	32.68	33.23	-9.03dB	23.75	23.65	24.2
GPRS (GMSK)	1Txslot	32.66	32.63	33.15	-9.03dB	23.63	23.6	24.12
	2Txslots	30.19	30.17	30.08	-6.02dB	**24.17**	**24.15**	**24.06**
EGPRS (GMSK)	1Txslot	32.63	32.67	33.11	-9.03dB	23.6	23.64	24.08
	2Txslots	30.17	30.19	30.02	-6.02dB	**24.15**	**24.17**	**24**
EGPRS (8PSK)	1Txslot	26.84	26.79	26.82	-9.03dB	17.81	17.76	17.79
	2Txslots	26.73	26.73	26.71	-6.02dB	20.71	20.71	20.69
GSM 1900		**Burst Conducted Power(dBm)**				**Average power(dBm)**		
		Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GSM		29.02	29.09	29.14	-9.03dB	19.99	20.06	20.11
GPRS (GMSK)	1Txslot	29.09	29.14	29.17	-9.03dB	20.06	20.11	20.14
	2Txslots	26.6	26.58	26.55	-6.02dB	**20.58**	**20.56**	**20.53**
EGPRS (GMSK)	1Txslot	29.35	29.35	29.39	-9.03dB	20.32	20.32	20.36
	2Txslots	26.63	26.55	26.57	-6.02dB	**20.61**	**20.53**	**20.55**
EGPRS (8PSK)	1Txslot	25.23	25.2	25.2	-9.03dB	16.2	16.17	16.17
	2Txslots	25.14	25.16	25.15	-6.02dB	19.12	19.14	19.13

Note:

1) Division Factors

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

1Txslot = 1 transmit time slot out of 8 time slots

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

2Txslots = 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.

UMTS Band V		Conducted Power (dBm)		
		Channel 4132	Channel 4183	Channel 4233
RMC	12.2kbps RMC	23.85	23.87	23.62
	64kbps RMC	23.85	23.92	23.63
	144kbps RMC	23.81	23.89	23.64
	384kbps RMC	23.83	23.88	23.62
HSDPA	Sub - Test 1	22.72	22.84	22.59
	Sub - Test 2	22.54	22.55	22.29
	Sub - Test 3	21.99	22.06	21.73
	Sub - Test 4	21.95	22.04	21.72
HSUPA	Sub - Test 1	22.69	22.68	22.14
	Sub - Test 2	21.6	21.47	21.35
	Sub - Test 3	21.55	21.68	21.33
	Sub - Test 4	21.86	21.87	21.57
	Sub - Test 5	22.13	22.48	21.97

Table 14: LTE Band 7 Conducted Power Measurement Results(Hotspot Close)

Bandwidth(MHz)	RB	ULstartRB	Mod	Channel	Test Data(dBm)
5	1	0	QPSK	20775	22.74
5	1	13	QPSK	20775	22.5
5	1	24	QPSK	20775	22.35
5	12	0	QPSK	20775	21.57
5	12	6	QPSK	20775	21.41
5	12	13	QPSK	20775	21.37
5	25	0	QPSK	20775	21.33
5	1	0	QPSK	21100	22.75
5	1	13	QPSK	21100	22.54
5	1	24	QPSK	21100	22.49
5	12	0	QPSK	21100	21.7
5	12	6	QPSK	21100	21.57
5	12	13	QPSK	21100	21.51
5	25	0	QPSK	21100	21.4
5	1	0	QPSK	21425	22.68
5	1	13	QPSK	21425	22.61
5	1	24	QPSK	21425	22.53
5	12	0	QPSK	21425	21.76
5	12	6	QPSK	21425	21.68
5	12	13	QPSK	21425	21.65
5	25	0	QPSK	21425	21.6
10	1	0	QPSK	20800	22.73
10	1	25	QPSK	20800	22.43
10	1	49	QPSK	20800	22.43
10	25	0	QPSK	20800	21.28
10	25	13	QPSK	20800	21.13
10	25	25	QPSK	20800	21.23
10	50	0	QPSK	20800	21.05
10	1	0	QPSK	21100	22.87
10	1	25	QPSK	21100	22.7
10	1	49	QPSK	21100	22.5
10	25	0	QPSK	21100	21.67
10	25	13	QPSK	21100	21.52
10	25	25	QPSK	21100	21.36
10	50	0	QPSK	21100	21.33
10	1	0	QPSK	21400	22.41
10	1	25	QPSK	21400	22.69
10	1	49	QPSK	21400	22.42
10	25	0	QPSK	21400	21.56
10	25	13	QPSK	21400	21.4
10	25	25	QPSK	21400	21.45

10	50	0	QPSK	21400	21.42
15	1	0	QPSK	20825	22.71
15	1	38	QPSK	20825	22.39
15	1	74	QPSK	20825	22.51
15	36	0	QPSK	20825	21.02
15	36	18	QPSK	20825	21
15	36	39	QPSK	20825	21.22
15	75	0	QPSK	20825	21.05
15	1	0	QPSK	21100	22.93
15	1	38	QPSK	21100	22.65
15	1	74	QPSK	21100	22.27
15	36	0	QPSK	21100	21.52
15	36	18	QPSK	21100	21.25
15	36	39	QPSK	21100	21.08
15	75	0	QPSK	21100	21.24
15	1	0	QPSK	21375	22.14
15	1	38	QPSK	21375	22.59
15	1	74	QPSK	21375	22.55
15	36	0	QPSK	21375	21.12
15	36	18	QPSK	21375	21.29
15	36	39	QPSK	21375	21.29
15	75	0	QPSK	21375	21.29
20	1	0	QPSK	20850	22.63
20	1	50	QPSK	20850	22.41
20	1	99	QPSK	20850	22.7
20	50	0	QPSK	20850	20.93
20	50	25	QPSK	20850	21.1
20	50	50	QPSK	20850	21.19
20	100	0	QPSK	20850	21.18
20	1	0	QPSK	21100	22.92
20	1	50	QPSK	21100	22.61
20	1	99	QPSK	21100	22.23
20	50	0	QPSK	21100	21.46
20	50	25	QPSK	21100	21.24
20	50	50	QPSK	21100	21.11
20	100	0	QPSK	21100	21.35
20	1	0	QPSK	21350	22.11
20	1	50	QPSK	21350	22.41
20	1	99	QPSK	21350	22.55
20	50	0	QPSK	21350	20.88
20	50	25	QPSK	21350	21.13
20	50	50	QPSK	21350	21.3
20	100	0	QPSK	21350	21.17

5	1	0	16QAM	20775	21.79
5	1	13	16QAM	20775	21.56
5	1	24	16QAM	20775	21.33
5	12	0	16QAM	20775	20.69
5	12	6	16QAM	20775	20.57
5	12	13	16QAM	20775	20.47
5	25	0	16QAM	20775	20.36
5	1	0	16QAM	21100	21.96
5	1	13	16QAM	21100	21.8
5	1	24	16QAM	21100	21.63
5	12	0	16QAM	21100	20.78
5	12	6	16QAM	21100	20.66
5	12	13	16QAM	21100	20.59
5	25	0	16QAM	21100	20.5
5	1	0	16QAM	21425	21.87
5	1	13	16QAM	21425	21.78
5	1	24	16QAM	21425	21.57
5	12	0	16QAM	21425	20.76
5	12	6	16QAM	21425	20.69
5	12	13	16QAM	21425	20.62
5	25	0	16QAM	21425	20.45
10	1	0	16QAM	20800	21.76
10	1	25	16QAM	20800	21.39
10	1	49	16QAM	20800	21.52
10	25	0	16QAM	20800	20.36
10	25	13	16QAM	20800	20.1
10	25	25	16QAM	20800	20.24
10	50	0	16QAM	20800	19.97
10	1	0	16QAM	21100	22
10	1	25	16QAM	21100	21.84
10	1	49	16QAM	21100	21.65
10	25	0	16QAM	21100	20.62
10	25	13	16QAM	21100	20.42
10	25	25	16QAM	21100	20.32
10	50	0	16QAM	21100	20.27
10	1	0	16QAM	21400	21.81
10	1	25	16QAM	21400	21.98
10	1	49	16QAM	21400	21.81
10	25	0	16QAM	21400	20.45
10	25	13	16QAM	21400	20.4
10	25	25	16QAM	21400	20.47
10	50	0	16QAM	21400	20.3
15	1	0	16QAM	20825	21.78

15	1	38	16QAM	20825	21.47
15	1	74	16QAM	20825	21.7
15	36	0	16QAM	20825	20.15
15	36	18	16QAM	20825	20
15	36	39	16QAM	20825	20.18
15	75	0	16QAM	20825	20.01
15	1	0	16QAM	21100	22.01
15	1	38	16QAM	21100	21.73
15	1	74	16QAM	21100	21.37
15	36	0	16QAM	21100	20.49
15	36	18	16QAM	21100	20.32
15	36	39	16QAM	21100	20.1
15	75	0	16QAM	21100	20.18
15	1	0	16QAM	21375	21.53
15	1	38	16QAM	21375	21.99
15	1	74	16QAM	21375	21.8
15	36	0	16QAM	21375	20.08
15	36	18	16QAM	21375	20.24
15	36	39	16QAM	21375	20.3
15	75	0	16QAM	21375	20.18
20	1	0	16QAM	20850	21.84
20	1	50	16QAM	20850	21.67
20	1	99	16QAM	20850	21.94
20	50	0	16QAM	20850	19.99
20	50	25	16QAM	20850	20
20	50	50	16QAM	20850	20.05
20	100	0	16QAM	20850	20.12
20	1	0	16QAM	21100	21.96
20	1	50	16QAM	21100	21.75
20	1	99	16QAM	21100	21.33
20	50	0	16QAM	21100	20.32
20	50	25	16QAM	21100	20.2
20	50	50	16QAM	21100	20.01
20	100	0	16QAM	21100	20.26
20	1	0	16QAM	21350	21.15
20	1	50	16QAM	21350	21.7
20	1	99	16QAM	21350	21.7
20	50	0	16QAM	21350	19.8
20	50	25	16QAM	21350	20.06
20	50	50	16QAM	21350	20.21
20	100	0	16QAM	21350	20.03

Table 15: Conducted Power Measurement Results(hotspot open)

GSM 850		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 128	Channel 190	Channel 251		Channel 128	Channel 190	Channel 251
GSM		30.94	30.89	30.98	-9.03dB	21.91	21.86	21.95
GPRS (GMSK)	1Txslot	30.84	30.79	30.89	-9.03dB	**21.81**	**21.76**	**21.86**
	2Txslots	27.34	27.27	27.14	-6.02dB	21.32	21.25	21.12
EGPRS (GMSK)	1Txslot	30.76	30.97	30.78	-9.03dB	**21.73**	**21.94**	**21.75**
	2Txslots	27.39	27.42	27.34	-6.02dB	21.37	21.4	21.32
EGPRS (8PSK)	1Txslot	27.64	27.73	27.71	-9.03dB	18.61	18.7	18.68
	2Txslots	27.36	27.42	27.34	-6.02dB	21.34	21.4	21.32
GSM 1900		**Burst Conducted Power(dBm)**				**Average power(dBm)**		
		Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GSM		27.12	27.06	27.17	9.03dB	18.09	18.03	18.14
GPRS (GMSK)	1Txslot	27.14	27.08	27.15	-9.03dB	**18.11**	**18.05**	**18.12**
	2Txslots	23.75	23.74	23.67	-6.02dB	17.73	17.72	17.65
EGPRS (GMSK)	1Txslot	27.16	27.06	27.17	-9.03dB	**18.13**	**18.03**	**18.14**
	2Txslots	23.79	23.69	23.71	-6.02dB	17.77	17.67	17.69
EGPRS (8PSK)	1Txslot	25.45	25.2	25.2	-9.03dB	16.42	16.17	16.17
	2Txslots	25.14	25.16	25.15	-6.02dB	19.12	19.14	19.13

Note:

2) Division Factors

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

1Txslot = 1 transmit time slot out of 8 time slots

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

2Txslots = 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.

UMTS Band V		Conducted Power (dBm)		
		Channel 4132	Channel 4183	Channel 4233
RMC	12.2kbps RMC	21.35	21.37	21.35
	64kbps RMC	21.38	21.43	21.34
	144kbps RMC	21.51	21.41	21.34
	384kbps RMC	21.34	21.35	21.29
HSDPA	Sub - Test 1	19.78	19.75	19.77
	Sub - Test 2	19.69	19.7	19.66
	Sub - Test 3	19.7	19.74	19.72
	Sub - Test 4	19.75	19.69	19.74
HSUPA	Sub - Test 1	18.53	18.49	18.59
	Sub - Test 2	18.4	18.39	18.43
	Sub - Test 3	18.29	18.19	18.2
	Sub - Test 4	17.95	17.9	17.91
	Sub - Test 5	18.29	18.3	18.22

Table 16: LTE Band 7 Conducted Power Measurement Results(Hotspot Open)

Bandwidth(MHz)	RB	ULstartRB	Mod	Channel	Test Data(dBm)
5	1	0	QPSK	20775	18.39
5	1	13	QPSK	20775	18.32
5	1	24	QPSK	20775	18.31
5	12	0	QPSK	20775	17.25
5	12	6	QPSK	20775	17.23
5	12	13	QPSK	20775	17.35
5	25	0	QPSK	20775	17.56
5	1	0	QPSK	21100	18.63
5	1	13	QPSK	21100	18.32
5	1	24	QPSK	21100	18.24
5	12	0	QPSK	21100	17.76
5	12	6	QPSK	21100	17.62
5	12	13	QPSK	21100	17.53
5	25	0	QPSK	21100	17.42
5	1	0	QPSK	21425	18.71
5	1	13	QPSK	21425	17.63
5	1	24	QPSK	21425	18.44
5	12	0	QPSK	21425	17.84
5	12	6	QPSK	21425	17.56
5	12	13	QPSK	21425	17.67
5	25	0	QPSK	21425	17.58
10	1	0	QPSK	20800	18.69
10	1	25	QPSK	20800	18.38
10	1	49	QPSK	20800	18.29
10	25	0	QPSK	20800	17.19
10	25	13	QPSK	20800	17.06
10	25	25	QPSK	20800	17.21
10	50	0	QPSK	20800	17.03
10	1	0	QPSK	21100	18.82
10	1	25	QPSK	21100	18.65
10	1	49	QPSK	21100	18.53
10	25	0	QPSK	21100	17.54
10	25	13	QPSK	21100	17.53
10	25	25	QPSK	21100	17.32
10	50	0	QPSK	21100	17.26
10	1	0	QPSK	21400	18.34
10	1	25	QPSK	21400	18.59
10	1	49	QPSK	21400	18.46
10	25	0	QPSK	21400	17.22
10	25	13	QPSK	21400	17.34
10	25	25	QPSK	21400	17.36

10	50	0	QPSK	21400	17.1
15	1	0	QPSK	20825	18.73
15	1	38	QPSK	20825	18.69
15	1	74	QPSK	20825	18.73
15	36	0	QPSK	20825	17.01
15	36	18	QPSK	20825	17.03
15	36	39	QPSK	20825	17.31
15	75	0	QPSK	20825	17.02
15	1	0	QPSK	21100	18.74
15	1	38	QPSK	21100	18.63
15	1	74	QPSK	21100	18.73
15	36	0	QPSK	21100	17.12
15	36	18	QPSK	21100	17.03
15	36	39	QPSK	21100	17.25
15	75	0	QPSK	21100	17.02
15	1	0	QPSK	21375	18.09
15	1	38	QPSK	21375	18.46
15	1	74	QPSK	21375	18.51
15	36	0	QPSK	21375	17.08
15	36	18	QPSK	21375	17.16
15	36	39	QPSK	21375	17.23
15	75	0	QPSK	21375	17.21
20	1	0	QPSK	20850	18.54
20	1	50	QPSK	20850	18.37
20	1	99	QPSK	20850	18.62
20	50	0	QPSK	20850	17.89
20	50	25	QPSK	20850	17.09
20	50	50	QPSK	20850	17.16
20	100	0	QPSK	20850	17.12
20	1	0	QPSK	21100	18.93
20	1	50	QPSK	21100	18.76
20	1	99	QPSK	21100	18.74
20	50	0	QPSK	21100	17.35
20	50	25	QPSK	21100	17.21
20	50	50	QPSK	21100	17.09
20	100	0	QPSK	21100	17.21
20	1	0	QPSK	21350	18.09
20	1	50	QPSK	21350	18.31
20	1	99	QPSK	21350	18.52
20	50	0	QPSK	21350	17.76
20	50	25	QPSK	21350	17.09
20	50	50	QPSK	21350	17.24
20	100	0	QPSK	21350	17.14

5	1	0	16QAM	20775	17.62
5	1	13	16QAM	20775	17.43
5	1	24	16QAM	20775	17.21
5	12	0	16QAM	20775	17.04
5	12	6	16QAM	20775	17.03
5	12	13	16QAM	20775	17.04
5	25	0	16QAM	20775	17.05
5	1	0	16QAM	21100	17.16
5	1	13	16QAM	21100	17.51
5	1	24	16QAM	21100	17.28
5	12	0	16QAM	21100	17.1
5	12	6	16QAM	21100	17.04
5	12	13	16QAM	21100	17.03
5	25	0	16QAM	21100	17.06
5	1	0	16QAM	21425	17.86
5	1	13	16QAM	21425	17.89
5	1	24	16QAM	21425	17.59
5	12	0	16QAM	21425	17.68
5	12	6	16QAM	21425	17.21
5	12	13	16QAM	21425	17.06
5	25	0	16QAM	21425	17.08
10	1	0	16QAM	20800	17.68
10	1	25	16QAM	20800	17.56
10	1	49	16QAM	20800	17.46
10	25	0	16QAM	20800	17.44
10	25	13	16QAM	20800	17.14
10	25	25	16QAM	20800	17.13
10	50	0	16QAM	20800	17.06
10	1	0	16QAM	21100	17.79
10	1	25	16QAM	21100	17.61
10	1	49	16QAM	21100	17.46
10	25	0	16QAM	21100	17.39
10	25	13	16QAM	21100	17.23
10	25	25	16QAM	21100	17.11
10	50	0	16QAM	21100	17.13
10	1	0	16QAM	21400	17.82
10	1	25	16QAM	21400	17.54
10	1	49	16QAM	21400	17.46
10	25	0	16QAM	21400	17.34
10	25	13	16QAM	21400	17.18
10	25	25	16QAM	21400	17.13
10	50	0	16QAM	21400	17.16
15	1	0	16QAM	20825	17.68

15	1	38	16QAM	20825	17.39
15	1	74	16QAM	20825	17.65
15	36	0	16QAM	20825	17.21
15	36	18	16QAM	20825	17.04
15	36	39	16QAM	20825	17.11
15	75	0	16QAM	20825	17.13
15	1	0	16QAM	21100	17.88
15	1	38	16QAM	21100	17.56
15	1	74	16QAM	21100	17.59
15	36	0	16QAM	21100	17.47
15	36	18	16QAM	21100	17.21
15	36	39	16QAM	21100	17.16
15	75	0	16QAM	21100	17.14
15	1	0	16QAM	21375	17.59
15	1	38	16QAM	21375	17.58
15	1	74	16QAM	21375	17.29
15	36	0	16QAM	21375	17.15
15	36	18	16QAM	21375	17.14
15	36	39	16QAM	21375	17.17
15	75	0	16QAM	21375	17.19
20	1	0	16QAM	20850	17.57
20	1	50	16QAM	20850	17.46
20	1	99	16QAM	20850	17.23
20	50	0	16QAM	20850	17.56
20	50	25	16QAM	20850	17.51
20	50	50	16QAM	20850	17.12
20	100	0	16QAM	20850	17.13
20	1	0	16QAM	21100	17.78
20	1	50	16QAM	21100	17.68
20	1	99	16QAM	21100	17.48
20	50	0	16QAM	21100	17.24
20	50	25	16QAM	21100	17.23
20	50	50	16QAM	21100	17.19
20	100	0	16QAM	21100	17.14
20	1	0	16QAM	21350	17.84
20	1	50	16QAM	21350	17.86
20	1	99	16QAM	21350	17.74
20	50	0	16QAM	21350	17.64
20	50	25	16QAM	21350	17.24
20	50	50	16QAM	21350	17.23
20	100	0	16QAM	21350	17.12

BT Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz
Average Conducted Output Power(dBm)	3.91	4.68	3.92

WIFI Mode	Channel	Data rate (Mbps)	AV Power (dBm)
11b	1	1	14.14
		2	14.18
		5.5	14.17
		11	14.16
	6	1	14.24
		2	14.34
		5.5	14.22
		11	14.31
	11	1	14.23
		2	14.11
		5.5	14.19
		11	14.21
11g	1	6	10.74
		9	10.72
		12	10.71
		18	10.70
		24	10.72
		36	10.70
		48	10.70
		54	10.68
	6	6	10.66
		9	10.77
		12	10.74
		18	10.83
		24	10.81
		36	10.80
		48	10.82
		54	10.76

	11	6	10.55
		9	10.57
		12	10.53
		18	10.55
		24	10.53
		36	10.53
		48	10.51
		54	10.52
11n HT20	1	MCS0	8.27
		MCS1	8.25
		MCS2	8.24
		MCS3	8.24
		MCS4	8.26
		MCS5	8.25
		MCS6	8.23
		MCS7	8.22
	6	MCS0	8.32
		MCS1	8.30
		MCS2	8.29
		MCS3	8.28
		MCS4	8.28
		MCS5	8.26
		MCS6	8.24
		MCS7	8.23
	11	MCS0	8.01
		MCS1	8.02
		MCS2	8.02
		MCS3	8.06
		MCS4	8.03
		MCS5	8.04
		MCS6	8.02
		MCS7	8.02

7.2. Standalone SAR Test Exclusion Considerations

Per FCC KDB 447498 D01v05, the SAR exclusion threshold for distances <50mm is defined by the following equation:

$$\frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} * \sqrt{\text{Frequency (GHz)}} \leqslant 3.0$$

Based on the above equation, Bluetooth SAR was not required;
Head Evaluation = $[10^{(6.5/10)}/5] * (2.441^{1/2}) = 1.4 < 3.0$
Body Evaluation = $[10^{(6.5/10)}/10] * (2.441^{1/2}) = 0.7 < 3.0$

Based on the above equation, WiFi SAR was required;
Head Evaluation = $[10^{(16/10)}/5]* (2.437^{1/2)} = 12.4 > 3.0$
Body Evaluation = $[10^{(16/10)}/10]* (2.437^{1/2)} = 6.2 > 3.0$

7.3. SAR Test Results

7.3.1. GSM 850 (GPRS/EGPRS)

Table 17: SAR Values [GSM 850 (GPRS/EGPRS)]

Test Position	Channel/ Frequency (MHz)	Time slot	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit SAR_{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test Position of Head with Battery 1										
Left/Cheek	190/836.6	GSM	1:8.3	33.5	32.68	-0.122	0.467	1.21	0.564	Figure16
Left/Tilt	190/836.6	GSM	1:8.3	33.5	32.68	0.059	0.27	1.21	0.326	Figure17
Right/Cheek	190/836.6	GSM	1:8.3	33.5	32.68	-0.035	0.536	1.21	0.647	Figure18
Right/Tilt	190/836.6	GSM	1:8.3	33.5	32.68	0.012	0.322	1.21	0.389	Figure19
Worst Case Position of Head with Battery 2										
Right/Cheek	190/836.6	GSM	1:8.3	33.5	32.68	-0.071	0.504	1.21	0.609	Figure20
Worst Case Position of Head with Battery 3										
Right/Cheek	190/836.6	GSM	1:8.3	33.5	32.68	-0.027	0.533	1.21	0.644	Figure21
Test position of Body with Battery 1 (Hotspot Closed,Distance 15mm)										
Back Side	251/848.8	2 Txslots	1:4.15	31	30.08	0.004	0.686	1.24	0.848	Figure22
	190/836.6	2 Txslots	1:4.15	31	30.17	-0.106	0.708	1.21	0.857	Figure23
	128/824.2	2 Txslots	1:4.15	31	30.19	0.066	0.734	1.21	0.884	Figure24
Front Side	190/836.6	2 Txslots	1:4.15	31	30.17	-0.010	0.592	1.21	0.717	Figure25
Test position of Body with Battery 1 (Hotspot Opened,Distance 10mm)										
Back Side	190/836.6	1 Txslot	1:8.3	31	30.79	-0.022	0.441	1.05	0.463	Figure26
Front Side	190/836.6	1 Txslot	1:8.3	31	30.79	0.046	0.367	1.05	0.385	Figure27
Left Edge	190/836.6	1 Txslot	1:8.3	31	30.79	0.045	0.122	1.05	0.128	Figure28
Right Edge	190/836.6	1 Txslot	1:8.3	31	30.79	-0.001	0.205	1.05	0.215	Figure29
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	190/836.6	1 Txslot	1:8.3	31	30.79	-0.063	0.097	1.05	0.102	Figure30
Worst Case Position of Body with EGPRS (Hotspot Closed,Battery 1, GMSK, Distance 15mm)										
Back Side	128/824.2	2 Txslots	1:4.15	31	30.17	-0.083	0.644	1.21	0.780	Figure31
Worst Case Position of Body with Battery 2 (Hotspot Closed,Distance 15mm)										

Back Side	128/824.2	2 Txslots	1:4.15	31	30.19	-0.086	0.64	1.21	0.771	Figure32
Worst Case Position of Body with Battery 3 (Hotspot Closed,Distance 15mm)										
Back Side	128/824.2	2 Txslots	1:4.15	31	30.19	-0.001	0.622	1.21	0.750	Figure33

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

2. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).
3. WWAN antenna is located at bottom edge; antenna-to-top edge distance is more than 2.5 cm (see ANNEX K). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
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.
5. Per FCC KDB Publication 648474 D04v01, SAR was evaluated without a headset connected to the device. Since the reported SAR was ≤ 1.2 W/kg, no additional SAR evaluations using a headset cable were required.

7.3.2. GSM 1900 (GPRS/EGPRS)

Table 18: SAR Values [GSM 1900(GPRS/EGPRS)]

Test Position	Channel/ Frequency (MHz)	Time slot	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit SAR_{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test Position of Head with Battery 1										
Left/Cheek	661/1880	GSM	1:8.3	30.5	29.09	-0.058	0.215	1.38	0.297	Figure34
Left/Tilt	661/1880	GSM	1:8.3	30.5	29.09	0.058	0.117	1.38	0.162	Figure35
Right/Cheek	661/1880	GSM	1:8.3	30.5	29.09	0.040	0.22	1.38	0.304	Figure36
Right/Tilt	661/1880	GSM	1:8.3	30.5	29.09	0.052	0.119	1.38	0.165	Figure37
Worst Case Position of Head with Battery 2										
Right/Cheek	661/1880	GSM	1:8.3	30.5	29.09	0.076	0.219	1.38	0.303	Figure38
Worst Case Position of Head with Battery 3										
Right/Cheek	661/1880	GSM	1:8.3	30.5	29.09	0.167	0.218	1.38	0.302	Figure39
Test position of Body with Battery 1 (Hotspot Closed,Distance 15mm)										
Back Side	661/1880	2 Txslots	1:4.15	28	26.58	-0.004	0.25	1.39	0.347	Figure40
Front Side	661/1880	2 Txslots	1:8.3	28	26.58	0.101	0.247	1.39	0.343	Figure41
Test position of Body with Battery 1 (Hotspot Opened,Distance 10mm)										
Back Side	661/1880	1 Txslot	1:8.30	28	27.08	0.017	0.262	1.24	0.324	Figure42
Front Side	661/1880	1 Txslot	1:8.30	28	27.08	0.055	0.293	1.24	0.362	Figure43
Left Edge	661/1880	1 Txslot	1:8.30	28	27.08	0.085	0.064	1.24	0.079	Figure44
Right Edge	661/1880	1 Txslot	1:8.30	28	27.08	-0.076	0.053	1.24	0.066	Figure45
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	661/1880	1 Txslot	1:8.30	28	27.08	0.029	0.006	1.24	0.008	Figure46
Worst Case Position of Body with EGPRS (Hotspot Opened,Battery 1, GMSK, Distance 10mm)										
Front Side	661/1880	1 Txslot	1:8.30	28	27.06	0.092	0.346	1.24	0.430	Figure47
Worst Case Position of Body with Battery 2 (Hotspot Opened,Distance 10mm)										
Front Side	661/1880	1 Txslot	1:8.30	28	27.06	0.071	0.344	1.24	0.427	Figure48
Worst Case Position of Body with Battery 3 (Hotspot Opened,Distance 10mm)										
Front Side	661/1880	1 Txslot	1:8.30	28	27.06	0.073	0.344	1.24	0.427	Figure49

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

2. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest

output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3. WWAN antenna is located at bottom edge; antenna-to-top edge distance is more than 2.5 cm (see ANNEX K). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
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.
5. Per FCC KDB Publication 648474 D04v01, SAR was evaluated without a headset connected to the device. Since the reported SAR was ≤ 1.2 W/kg, no additional SAR evaluations using a headset cable were required.

7.3.3. UMTS Band V (WCDMA/HSDPA/HSUPA)

Table 19: SAR Values [UMTS Band V (WCDMA/HSDPA/HSUPA)]

Test Position	Channel/ Frequency (MHz)	Channel Type	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit SAR_{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test Position of Head with Battery 1										
Left/Cheek	4183/836.6	RMC 12.2k	1:1	24.5	23.87	-0.010	0.498	1.16	0.576	Figure50
Left/Tilt	4183/836.6	RMC 12.2k	1:1	24.5	23.87	-0.149	0.29	1.16	0.335	Figure51
Right/Cheek	4183/836.6	RMC 12.2k	1:1	24.5	23.87	-0.070	0.55	1.16	0.636	Figure52
Right/Tilt	4183/836.6	RMC 12.2k	1:1	24.5	23.87	-0.036	0.292	1.16	0.338	Figure53
Worst Case Position of Head with Battery 2										
Right/Cheek	4183/836.6	RMC 12.2k	1:1	24.5	23.87	0.165	0.545	1.16	0.630	Figure54
Worst Case Position of Head with Battery 3										
Right/Cheek	4183/836.6	RMC 12.2k	1:1	24.5	23.87	0.020	0.543	1.16	0.628	Figure55
Test position of Body with Battery 1 (Hotspot Closed,Distance 15mm)										
Back Side	4233/846.6	RMC 12.2k	1:1	24.5	23.62	-0.011	0.820	1.22	1.004	Figure56
	4183/836.6	RMC 12.2k	1:1	24.5	23.87	-0.074	0.754	1.16	0.872	Figure57
	4132/826.4	RMC 12.2k	1:1	24.5	23.85	0.030	0.806	1.16	0.936	Figure58
Front Side	4183/836.6	RMC 12.2k	1:1	24.5	23.87	-0.045	0.639	1.16	0.739	Figure59
Test position of Body with Battery 1 (Hotspot Opened,Distance 10mm)										
Back Side	4233/846.6	RMC 12.2k	1:1	22	21.35	-0.111	0.906	1.16	1.052	Figure60
	4183/836.6	RMC 12.2k	1:1	22	21.37	-0.146	0.773	1.16	0.894	Figure61
	4132/826.4	RMC 12.2k	1:1	22	21.35	0.091	0.895	1.16	1.039	Figure62
Front Side	4233/846.6	RMC 12.2k	1:1	22	21.37	-0.024	0.779	1.16	0.901	Figure63
	4183/836.6	RMC 12.2k	1:1	22	21.37	0.052	0.698	1.16	0.807	Figure64
	4132/826.4	RMC 12.2k	1:1	22	21.37	0.002	0.747	1.16	0.864	Figure65
Left Edge	4183/836.6	RMC 12.2k	1:1	22	21.37	0.020	0.364	1.16	0.421	Figure66
Right Edge	4183/836.6	RMC 12.2k	1:1	22	21.37	-0.015	0.353	1.16	0.408	Figure67
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	4183/836.6	RMC 12.2k	1:1	22	21.37	-0.017	0.103	1.16	0.119	Figure68
Worst Case Position of Body with Battery 2 (Hotspot Opened,Distance 10mm)										

Back Side	4233/846.6	RMC 12.2k	1:1	22	21.37	-0.144	0.899	1.16	1.039	Figure69
Worst Case Position of Body with Battery 3 (Hotspot Opened,Distance 10mm)										
Back Side	4233/846.6	RMC 12.2k	1:1	22	21.37	0.021	0.904	1.16	1.045	Figure70
Worst Case Position of Body with Battery 1 (1st repeated SAR, Hotspot Opened,Distance 10mm)										
Back Side	4233/846.6	RMC 12.2k	1:1	22	21.37	-0.027	0.946	1.16	1.094	Figure71

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

2. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).
3. WWAN antenna is located at bottom edge; antenna-to-top edge distance is more than 2.5 cm (see ANNEX K). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
4. WCDMA mode were tested under RMC 12.2kbps with HSPA (HSDPA/HSUPA) inactive per KDB Publication 941225 D01. HSPA (HSDPA/HSUPA) SAR for body was not required since the average output power of the HSPA (HSDPA/HSUPA) subtests was not more than 0.25 dB higher than the RMC level and the maximum SAR for 12.2kbps RMC was less than 75% SAR limit.
5. Per FCC KDB Publication 648474 D04v01, SAR was evaluated without a headset connected to the device. Since the reported SAR was ≤ 1.2 W/kg, no additional SAR evaluations using a headset cable were required.
6. 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 20: SAR Measurement Variability Results [UMTS Band V (WCDMA/HSDPA/HSUPA)]

Test Position	Channel Type	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Back Side	RMC 12.2k	4233/846.6	0.906	0.946	1.04	NA	NA

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

7.3.4. LTE Band 7

Table 21: SAR Values (LTE Band 7/20M)

Test Position	Channel/ Frequency (MHz)	Modulation Type	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit SAR_{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test position of Body with Battery 1 (1RB,Hotspot Closed,Distance 15mm)										
Back Side	21100/2535	QPSK 0 Offset	1:1	23	22.92	-0.023	0.660	1.02	0.672	Figure72
Front Side	21100/2535	QPSK 0 Offset	1:1	23	22.92	0.022	0.318	1.02	0.324	Figure73
Test position of Body with Battery 1 (1RB,Hotspot Opened,Distance 10mm)										
Back Side	21100/2535	QPSK 0 Offset	1:1	19	18.93	-0.022	0.513	1.02	0.521	Figure74
Front Side	21100/2535	QPSK 0 Offset	1:1	19	18.93	0.165	0.258	1.02	0.262	Figure75
Left Edge	21100/2535	QPSK 0 Offset	1:1	19	18.93	-0.133	0.040	1.02	0.041	Figure76
Right Edge	21100/2535	QPSK 0 Offset	1:1	19	18.93	0.040	0.022	1.02	0.023	Figure77
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	21100/2535	QPSK 0 Offset	1:1	19	18.93	-0.062	0.654	1.02	0.665	Figure78
Test position of Body with Battery 1 (50% RB,Hotspot Closed,Distance 15mm)										
Back Side	21100/2535	QPSK 0 Offset	1:1	22	21.46	0.027	0.482	1.13	0.546	Figure79
Front Side	21100/2535	QPSK 0 Offset	1:1	22	21.46	0.026	0.240	1.13	0.272	Figure80
Test position of Body with Battery 1 (50% RB,Hotspot Opened,Distance 10mm)										
Back Side	21100/2535	QPSK 0 Offset	1:1	18	17.350	-0.015	0.587	1.16	0.682	Figure81
Front Side	21100/2535	QPSK 0 Offset	1:1	18	17.350	0.199	0.288	1.16	0.334	Figure82
Left Edge	21100/2535	QPSK 0 Offset	1:1	18	17.350	0.003	0.046	1.16	0.054	Figure83
Right Edge	21100/2535	QPSK 0 Offset	1:1	18	17.350	0.125	0.023	1.16	0.026	Figure84
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	21100/2535	QPSK 0 Offset	1:1	18	17.350	0.067	0.670	1.16	0.778	Figure85
Worst Case Position of Body with Battery 2 (50% RB,Hotspot Opened,Distance 10mm)										
Bottom Edge	21100/2535	QPSK 0 Offset	1:1	18	17.350	-0.029	0.652	1.16	0.757	Figure86
Worst Case Position of Body with Battery 3 (50% RB,Hotspot Opened,Distance 10mm)										
Bottom Edge	21100/2535	QPSK 0 Offset	1:1	18	17.350	0.135	0.621	1.16	0.721	Figure87

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

2. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3. WWAN antenna is located at bottom edge; antenna-to-top edge distance is more than 2.5 cm (see ANNEX K). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
4. Per FCC KDB Publication 648474 D04v01, SAR was evaluated without a headset connected to the device. Since the reported SAR was ≤ 1.2 W/kg, no additional SAR evaluations using a headset cable were required.

7.3.5. WIFI (802.11b)

Table 22: SAR Values (802.11b)

Test Position	Channel/ Frequency (MHz)	Mode	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit of SAR 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test Position of Head with Battery 1										
Left/Cheek	6/2437	DSSS	1:1	16	14.24	0.020	0.378	1.50	0.567	Figure88
Left/Tilt	6/2437	DSSS	1:1	16	14.24	0.028	0.329	1.50	0.493	Figure89
Right/Cheek	6/2437	DSSS	1:1	16	14.24	0.020	0.259	1.50	0.388	Figure90
Right/Tilt	6/2437	DSSS	1:1	16	14.24	0.039	0.274	1.50	0.411	Figure91
Worst Case Position of Head with Battery 2										
Left/Cheek	6/2437	DSSS	1:1	16	14.24	0.041	0.343	1.50	0.514	Figure92
Worst Case Position of Head with Battery 3										
Left/Cheek	6/2437	DSSS	1:1	16	14.24	0.16	0.344	1.50	0.516	Figure93
Test position of Body with Battery 1 (Distance 10mm)										
Back Side	6/2437	DSSS	1:1	16	14.24	0.025	0.143	1.50	0.214	Figure94
Front Side	6/2437	DSSS	1:1	16	14.24	0.036	0.124	1.50	0.186	Figure95
Left Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Right Edge	6/2437	DSSS	1:1	16	14.24	0.091	0.0632	1.50	0.095	Figure96
Top Edge	6/2437	DSSS	1:1	16	14.24	0.100	0.124	1.50	0.186	Figure97
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Worst Case Position of Body with Battery 2 (Distance 10mm)										
Back Side	6/2437	DSSS	1:1	16	14.24	0.168	0.157	1.50	0.235	Figure98
Worst Case Position of Body with Battery 3 (Distance 10mm)										
Back Side	6/2437	DSSS	1:1	16	14.24	0.041	0.138	1.50	0.207	Figure99

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

2. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3. WLAN antenna is located at Top edge; antenna-to- Bottom edge distance is more than 2.5 cm (see ANNEX K). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

4. KDB 248227-SAR is not required for 802.11g/n channels when the maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11b channels.

5. Per FCC KDB Publication 648474 D04v01, SAR was evaluated without a headset connected to the device. Since the reported SAR was ≤ 1.2 W/kg, no additional SAR evaluations using a headset cable were required.

7.4. Simultaneous Transmission Conditions

Air-Interface	Band (MHz)	Type	SimultaneousTransmissions	Voice Over Digital Transport (Data)
GSM/UMTS/LTE	850	VO	Yes WIFI or BT	NA
	1900	VO		
	850	DT	Yes WIFI or BT	NA
	1900	DT		
	2600	DT	Yes WIFI or BT	NA
WIFI	2450	DT	Yes GSM/WCDMA/LTE GPRS,EGPRS,HSDPA,HSUPA	Yes
Bluetooth (BT)	2400	DT	Yes GSM/WCDMA/LTE, GPRS,EGPRS,HSDPA,HSUPA	NA
Note: VO Voice Service only DT Digital Transport				

When standalone SAR is not required to be measured per FCC KDB 447498 D01v05 4.3.2 2), the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

$$\textbf{Estimated SAR}=\frac{\textbf{(max. power of channel, including tune-up tolerance, mW)}}{\textbf{(min. test separation distance, mm)}}*\frac{\sqrt{\textbf{f (GHz)}}}{\textbf{7.5}}$$

Per FCC KDB 447498 D01v05 IV.C.1.iii, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤1.6 W/kg. When the sum is greater than the SAR limit, SAR test exclusion is determined by the SAR to peak location separation ratio.

$$\textbf{Ratio} = \frac{(\textbf{SAR}_1 + \textbf{SAR}_2)^{1.5}}{\textbf{(peak location separation, mm)}} < 0.04$$

Head Estimated $SAR_{Max.BT}$ = [$10^{(6.5/10)}$/5] * ($2.441^{1/2}$/7.5)= 0.186 W/kg
Body worn Estimated $SAR_{Max.BT}$ = [$10^{(6.5/10)}$/15] * ($2.441^{1/2}$/7.5)= 0.062 W/kg
Body hotspot Estimated $SAR_{Max.BT}$ = [$10^{(6.5/10)}$/10] * ($2.441^{1/2}$/7.5)= 0.093 W/kg

BT & GSM/UMTS/LTE Mode

Reported SAR_{1g}(W/kg) / Test Position		GSM 850	GSM 1900	UMTS Band V	LTE Band 7	BT	MAX. Σ SAR_{1g}
Left hand, Touch cheek		0.564	0.297	**0.576**	/	0.186	0.762
Left hand, Tilt 15 Degree		0.326	0.162	**0.335**	/	0.186	0.521
Right hand, Touch cheek		**0.647**	0.304	0.636	/	0.186	0.833
Right hand, Tilt 15 Degree		**0.389**	0.165	0.338	/	0.186	0.575
Body worn	Back Side	0.884	0.347	**1.004**	0.672	0.062	1.066
	Front Side	0.717	0.343	**0.739**	0.324	0.062	0.801
Body hotspot	Back Side	0.463	0.324	**1.094**	0.682	0.093	1.187
	Front Side	0.385	0.362	**0.901**	0.334	0.093	0.994
	Left Edge	**0.128**	0.079	0.421	0.054	0.093	0.221
	Right Edge	0.215	0.066	**0.408**	0.026	0.093	0.501
	Top Edge	NA	NA	NA	NA	0.093	NA
	Bottom Edge	0.102	0.008	0.119	**0.778**	0.093	0.871

Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value.
2. MAX. ΣSAR_{1g} = Estimated $SAR_{Max.BT}$ + Reported $SAR_{Max.WiFi}$ +Reported $SAR_{Max.GSM/UMTS/LTE}$

MAX. ΣSAR_{1g} = 1.187 W/kg <1.6 W/kg, So the Simultaneous SAR are not required for BT and GSM/UMTS/LTE antenna.

WIFI & GSM/UMTS/LTE Mode

Reported SAR_{1g}(W/kg) / Test Position		GSM 850	GSM 1900	UMTS Band V	LTE Band 7	WiFi	MAX. Σ SAR_{1g}
Left hand, Touch cheek		0.564	0.297	**0.576**	/	0.567	1.143
Left hand, Tilt 15 Degree		0.326	0.162	**0.335**	/	0.493	0.828
Right hand, Touch cheek		**0.647**	0.304	0.636	/	0.388	1.035
Right hand, Tilt 15 Degree		**0.389**	0.165	0.338	/	0.411	0.8
Body worn	Back Side	0.884	0.347	**1.004**	0.672	0.235	1.239
	Front Side	0.717	0.343	**0.739**	0.324	0.186	0.925
Body hotspot	Back Side	0.463	0.324	**1.094**	0.682	0.235	1.329
	Front Side	0.385	0.362	**0.901**	0.334	0.186	1.087
	Left Edge	**0.128**	0.079	0.421	0.054	N/A	N/A
	Right Edge	0.215	0.066	**0.408**	0.026	0.095	0.503
	Top Edge	NA	NA	NA	NA	0.186	N/A
	Bottom Edge	0.102	0.008	0.119	**0.778**	N/A	N/A

Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value.
2. MAX. ΣSAR_{1g} = Estimated $SAR_{Max.BT}$ + Reported $SAR_{Max.WiFi}$ +Reported $SAR_{Max.GSM/UMTS/LTE}$

MAX. ΣSAR_{1g} = 1.329 W/kg <1.6 W/kg, So the Simultaneous SAR are not required for WiFi and GSM/UMTS/LTE antenna.

8. 700MHz to 3GHz 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	6.0	N	1	1	6.0	∞
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	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	2.5	N	1	0.64	1.6	9
23	-liquid permittivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
24	-liquid permittivity (measurement uncertainty)	B	2.5	N	1	0.6	1.5	9
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{24} c_i^2 u_i^2}$					11.50	
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N		k=2	23.00	

9. Main Test Instruments

Table 23: List of Main Instruments

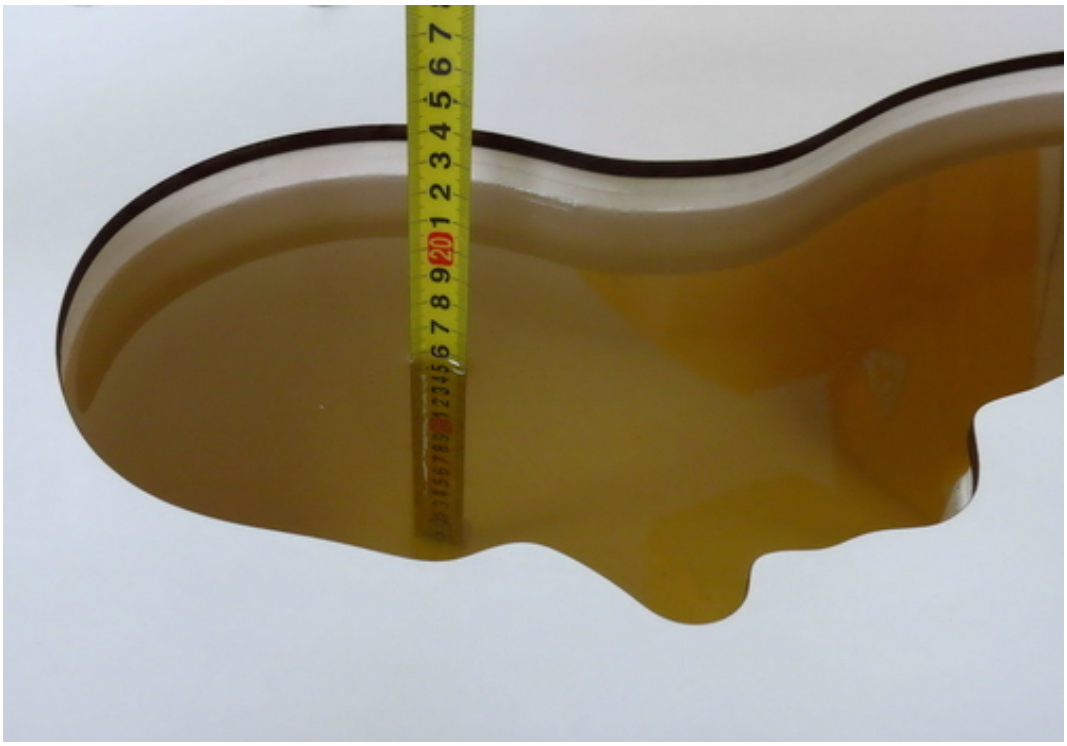
No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent 8753E	US37390326	September 11, 2012	One year
02	Dielectric Probe Kit	Agilent 85070E	US44020115	No Calibration Requested	
03	Power meter	Agilent E4417A	GB41291714	March 10, 2013	One year
04	Power sensor	Agilent N8481H	MY50350004	September 24, 2012	One year
05	Power sensor	E9327A	US40441622	January 2, 2013	One year
06	Signal Generator	HP 8341B	2730A00804	September 10, 2012	One year
07	Dual directional coupler	778D-012	50519	March 25, 2013	One year
08	Dual directional coupler	777D	50146	March 25, 2013	One year
09	Amplifier	IXA-020	0401	No Calibration Requested	
10	Wideband radio communication tester	CMW 500	113645	August 30, 2012	One year
11	E-field Probe	ES3DV3	3189	June 22, 2012	One year
12	E-field Probe	EX3DV4	3617	May 16, 2012	One year
13	DAE	DAE4	1317	January 25, 2013	One year
14	Validation Kit 835MHz	D835V2	4d020	August 26, 2011	Three years
15	Validation Kit 1900MHz	D1900V2	5d060	August 31, 2011	Three years
16	Validation Kit 2450MHz	D2450V2	786	August 29, 2011	Three years
17	Validation Kit 2600MHz	D2600V2	1012	May 02, 2012	Three years
18	Temperature Probe	JM222	AA1009129	March 14, 2013	One year
19	Hygrothermograph	WS-1	64591	September 27, 2012	One year

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

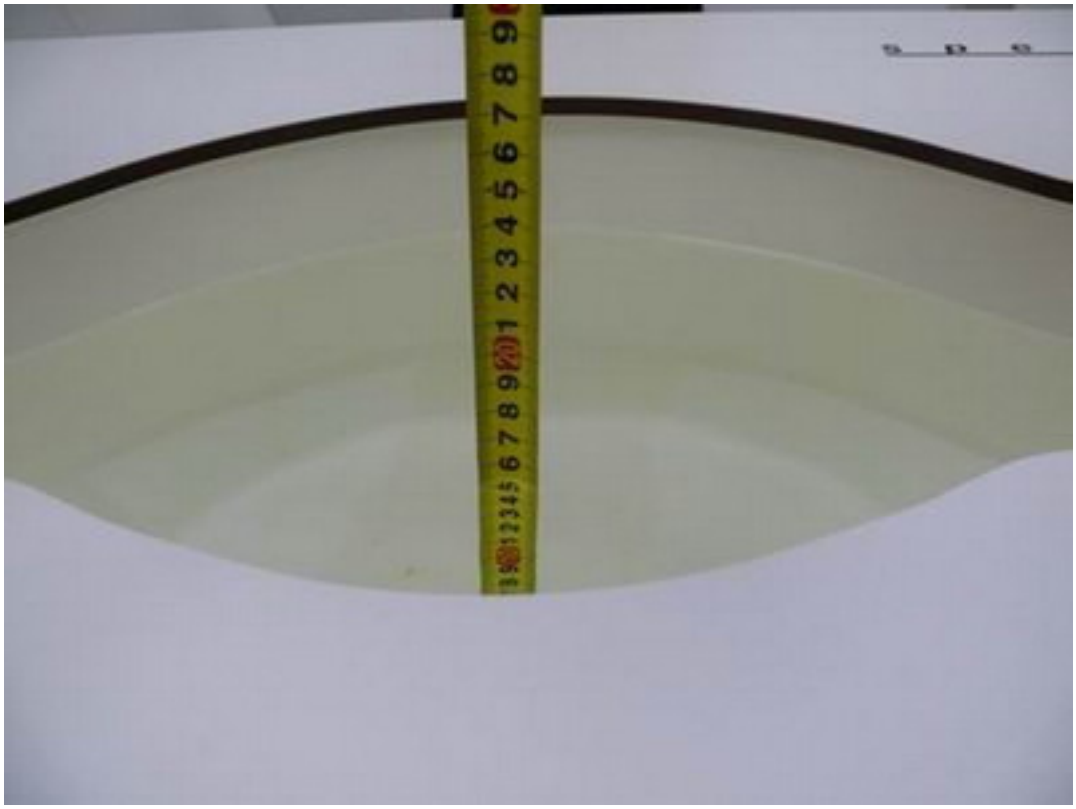
ANNEX A: Test Layout

Picture 1: Specific Absorption Rate Test Layout

Picture 2: Liquid depth in the flat Phantom (835MHz, 15.4cm depth)

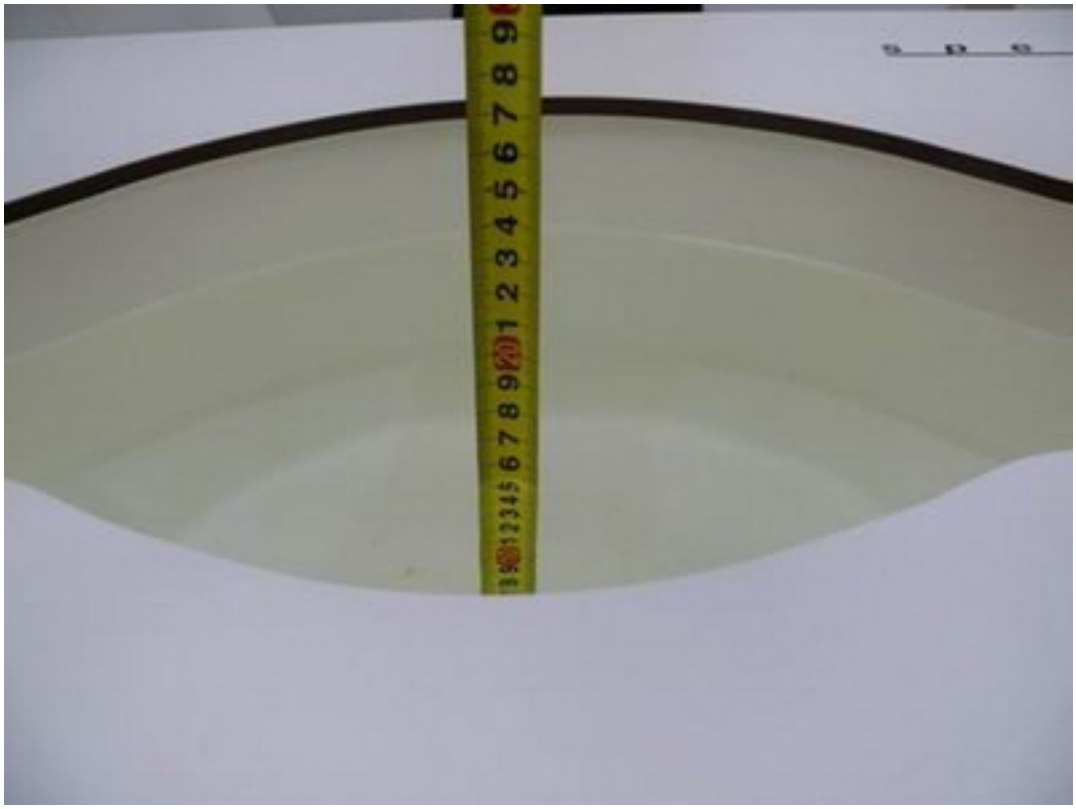


Picture 3: Liquid depth in the head Phantom (835MHz, 15.3cm depth)



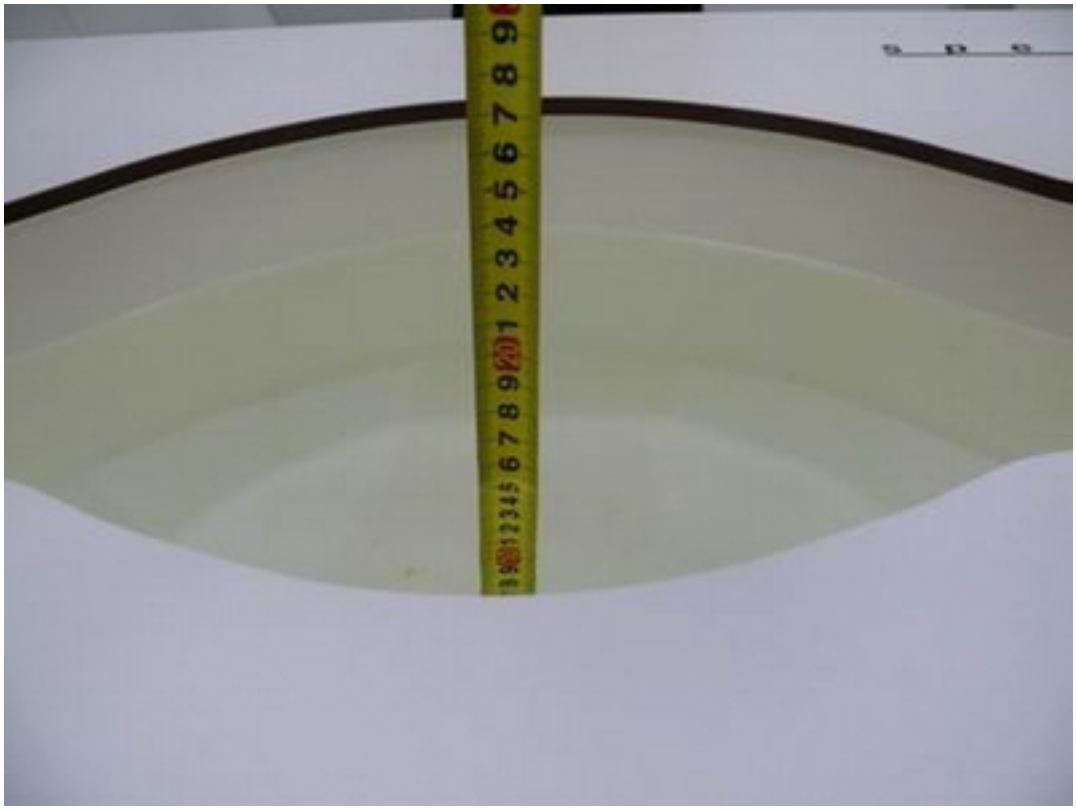
Picture 4: Liquid depth in the flat Phantom (1900 MHz, 15.2cm depth)

Picture 5: liquid depth in the head Phantom (1900 MHz, 15.3cm depth)



Picture 6: Liquid depth in the flat Phantom (2450 MHz, 15.3cm depth)

Picture 7: Liquid depth in the head Phantom (2450 MHz, 15.4cm depth)



Picture 8: Liquid depth in the flat Phantom (2600 MHz, 15.3cm depth)

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: 4/26/2013 4:05:38 AM

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

Medium parameters used: f = 835 MHz; σ = 0.916 mho/m; ε_r = 41.25; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

d=15mm, Pin=250mW/Area Scan (41x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.64 mW/g

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

Reference Value = 54.4 V/m; Power Drift = -0.076 dB

Peak SAR (extrapolated) = 3.67 W/kg

SAR(1 g) = 2.44 mW/g; SAR(10 g) = 1.6 mW/g

Maximum value of SAR (measured) = 2.64 mW/g

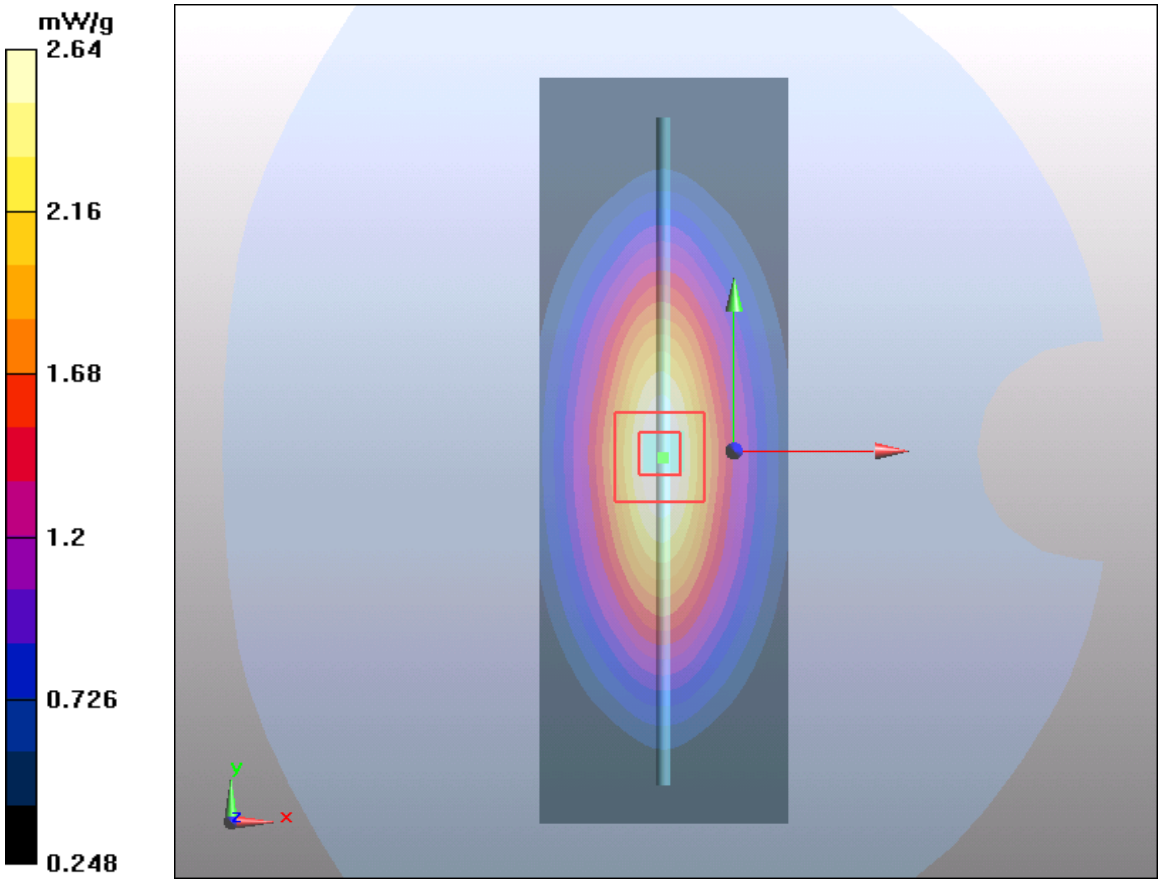


Figure 9 System Performance Check 835MHz 250mW

System Performance Check at 835 MHz Body TSL

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

Date/Time: 4/27/2013 8:11:37 AM

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

Medium parameters used: f = 835 MHz; σ = 1.012 mho/m; ε_r = 54.35; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

d=15mm, Pin=250mW/Area Scan (41x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.58 mW/g

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

Reference Value = 51.9 V/m; Power Drift = -0.058 dB

Peak SAR (extrapolated) = 3.5 W/kg

SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.6 mW/g

Maximum value of SAR (measured) = 2.6 mW/g

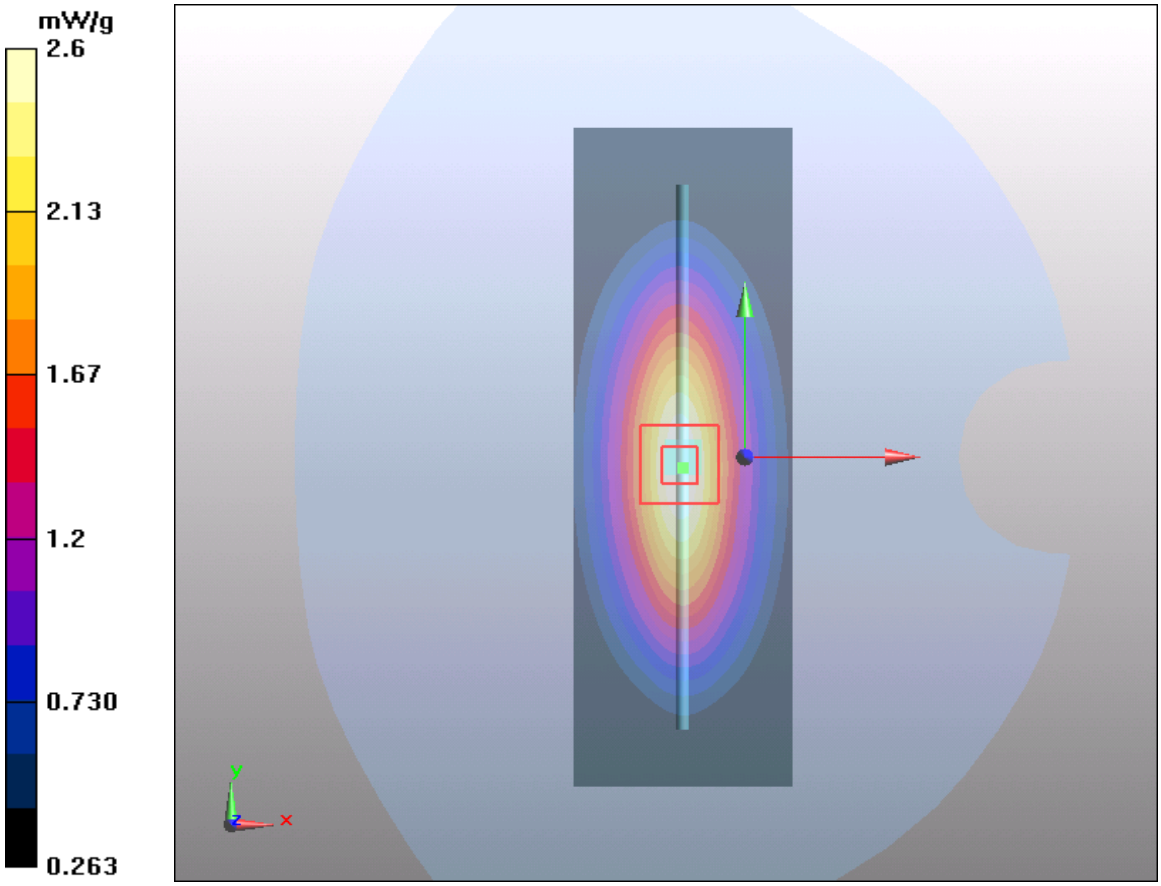


Figure 10 System Performance Check 835MHz 250mW

System Performance Check at 1900 MHz Head TSL

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

Date/Time: 5/4/2013 11:14:55 AM

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

Medium parameters used: f = 1900 MHz; σ = 1.451 mho/m; ε_r = 38.33; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(4.69, 4.69, 4.69); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

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

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

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

Reference Value = 85.5 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 9.48 mW/g; SAR(10 g) = 4.9 mW/g

Maximum value of SAR (measured) = 10.7 mW/g

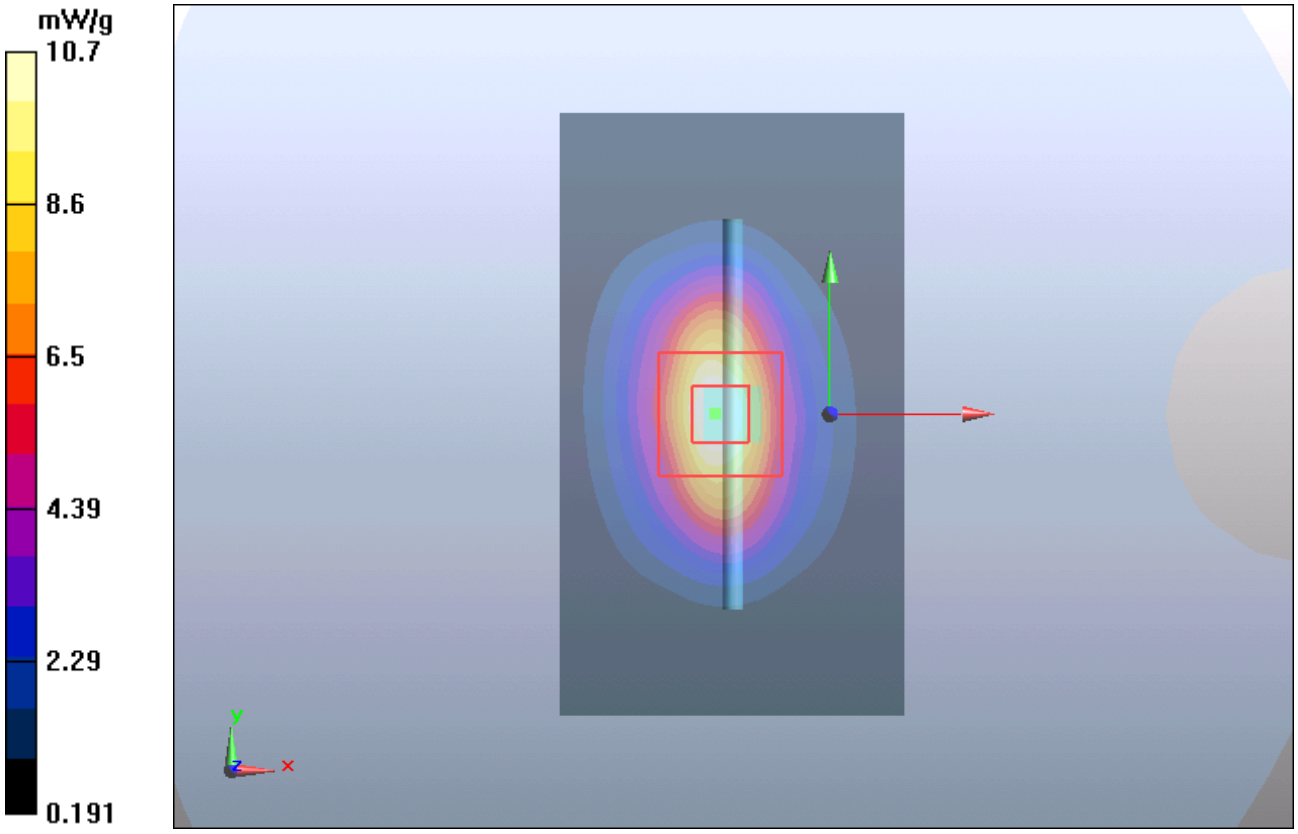


Figure 11 System Performance Check 1900MHz 250mW

System Performance Check at 1900 MHz Body TSL

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

Date/Time: 5/4/2013 1:51:25 PM

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

Medium parameters used: f = 1900 MHz; σ = 1.524 mho/m; ε_r = 52.56; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

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

Maximum value of SAR (interpolated) = 12.2 mW/g

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

Reference Value = 82.3 V/m; Power Drift = 0.068 dB

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 9.93 mW/g; SAR(10 g) = 5.25 mW/g

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

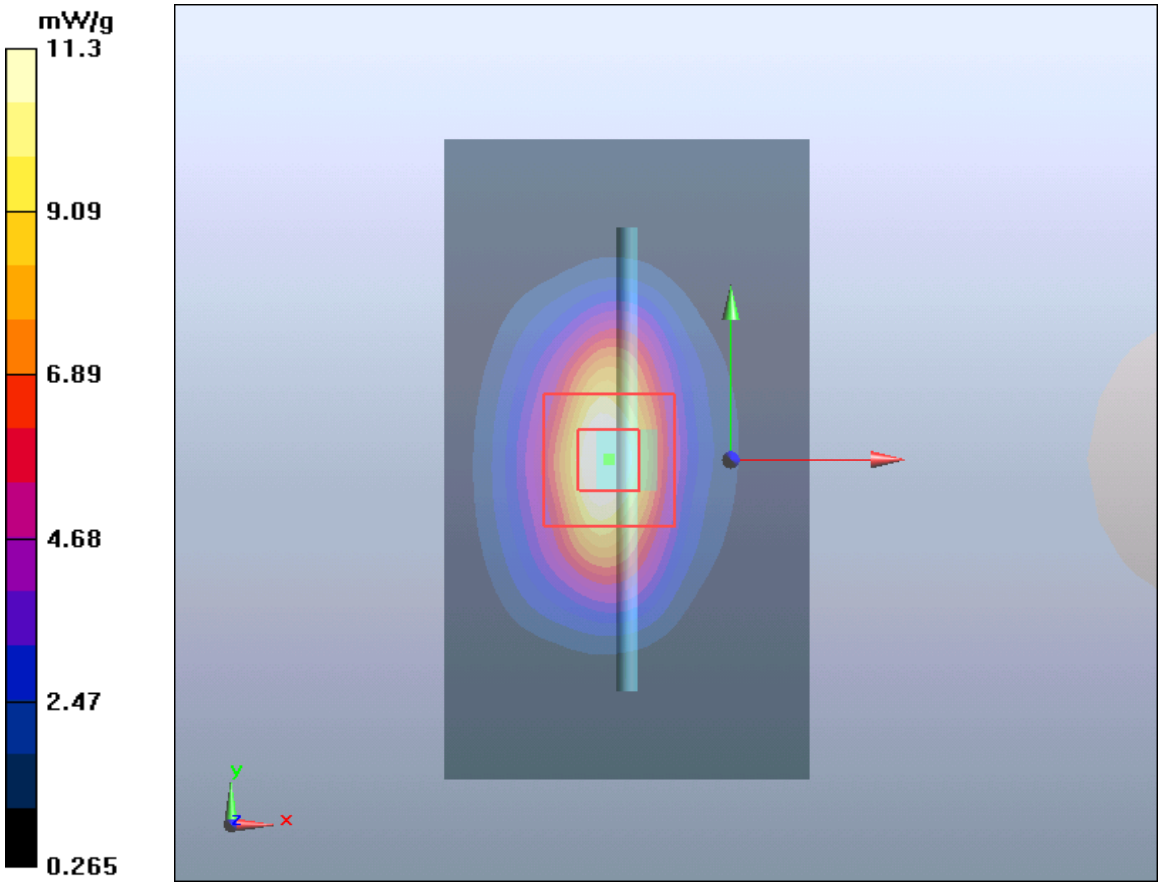


Figure 12 System Performance Check 1900MHz 250mW

System Performance Check at 2450 MHz Head TSL

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 786

Date/Time: 5/7/2013 11:32:12 AM

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 1.86 mho/m; ε_r = 38.53; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(4.14, 4.14, 4.14); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 18.2 mW/g

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

Reference Value = 88.8 V/m; Power Drift = 0.075 dB

Peak SAR (extrapolated) = 30 W/kg

SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.22 mW/g

Maximum value of SAR (measured) = 15.9 mW/g

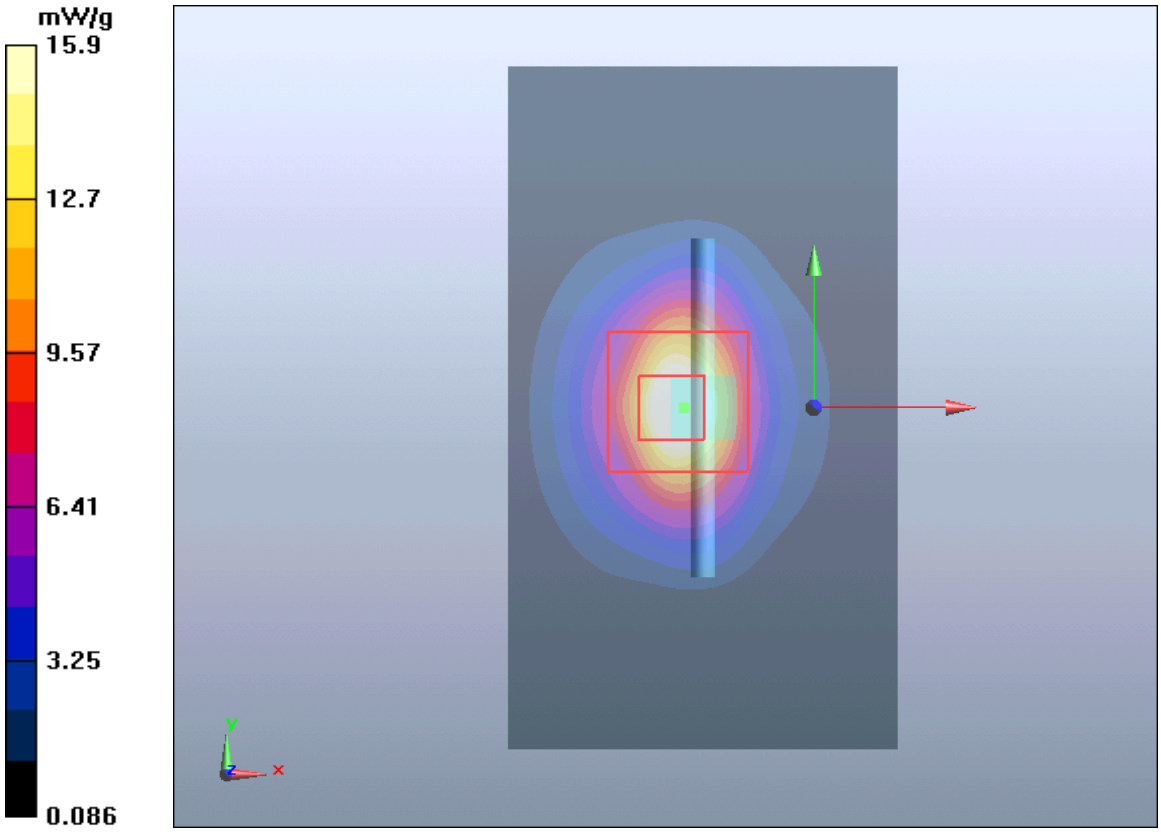


Figure 13 System Performance Check 2450MHz 250mW

System Performance Check at 2450 MHz Body TSL

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 786

Date/Time: 5/7/2013 10:05:59 PM

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 1.903 mho/m; ε_r = 51.69; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(3.96, 3.96, 3.96); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 16 mW/g

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

Reference Value = 81.2 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 25.4 W/kg

SAR(1 g) = 12.5 mW/g; SAR(10 g) = 6.20 mW/g

Maximum value of SAR (measured) = 14.4 mW/g

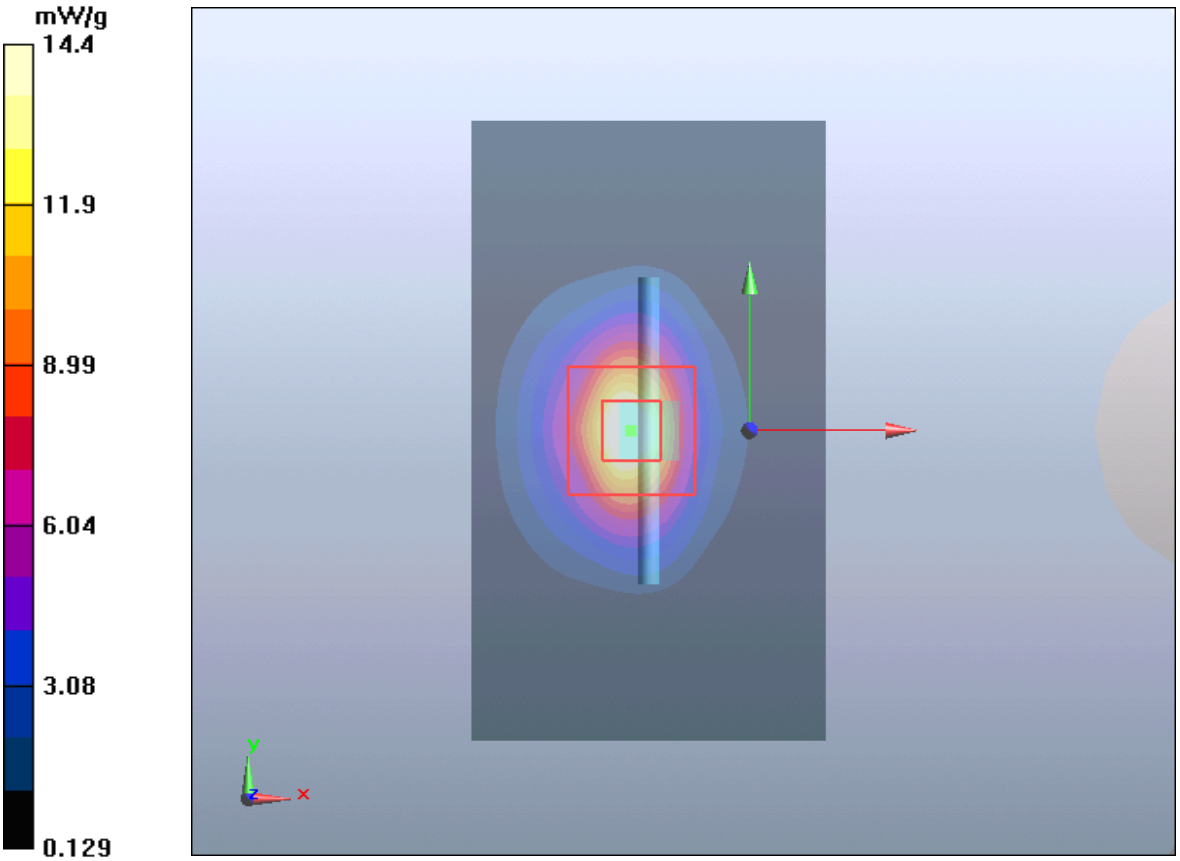


Figure 14 System Performance Check 2450MHz 250mW

System Performance Check at 2600 MHz Body TSL

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1012

Date/Time: 5/6/2013 12:03:51 AM

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2600 MHz; σ =2.159 mho/m; ε_r = 51.99; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3617; ConvF(7.27, 7.27, 7.27); Calibrated: 5/16/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

d=10mm, Pin=250mW /Area Scan (41x71x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 17.7 mW/g

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

Reference Value = 74 V/m; Power Drift = -0.0027 dB

Peak SAR (extrapolated) = 28.5 W/kg

SAR(1 g) = 13.5 mW/g; SAR(10 g) = 5.99 mW/g

Maximum value of SAR (measured) = 15.7 mW/g

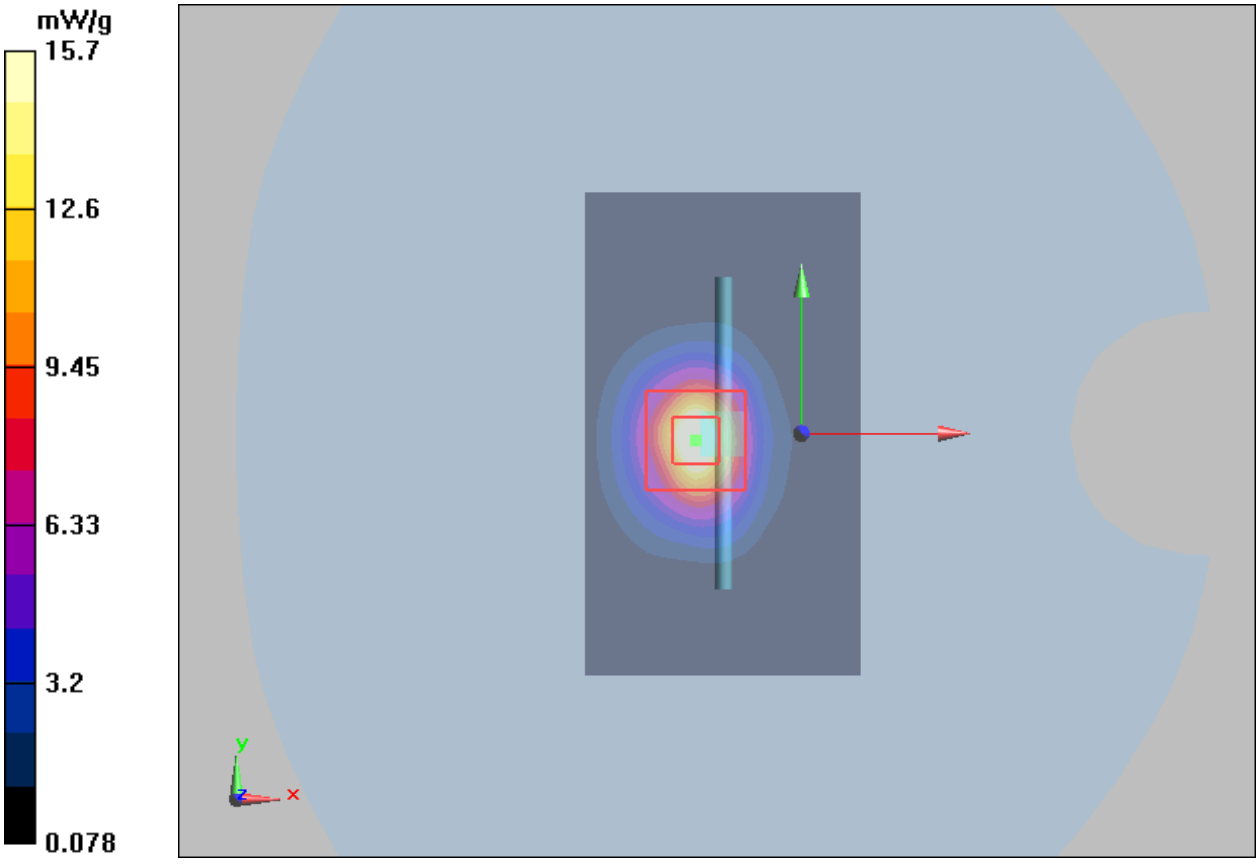


Figure 15 System Performance Check 1900MHz 250mW

ANNEX C: Graph Results

GSM 850 Left Cheek Middle (Battery 1)

Date/Time: 4/26/2013 9:30:48 PM
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.474 mW/g

Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.8 V/m; Power Drift = -0.122 dB
Peak SAR (extrapolated) = 0.585 W/kg
SAR(1 g) = 0.467 mW/g; SAR(10 g) = 0.348 mW/g
Maximum value of SAR (measured) = 0.497 mW/g

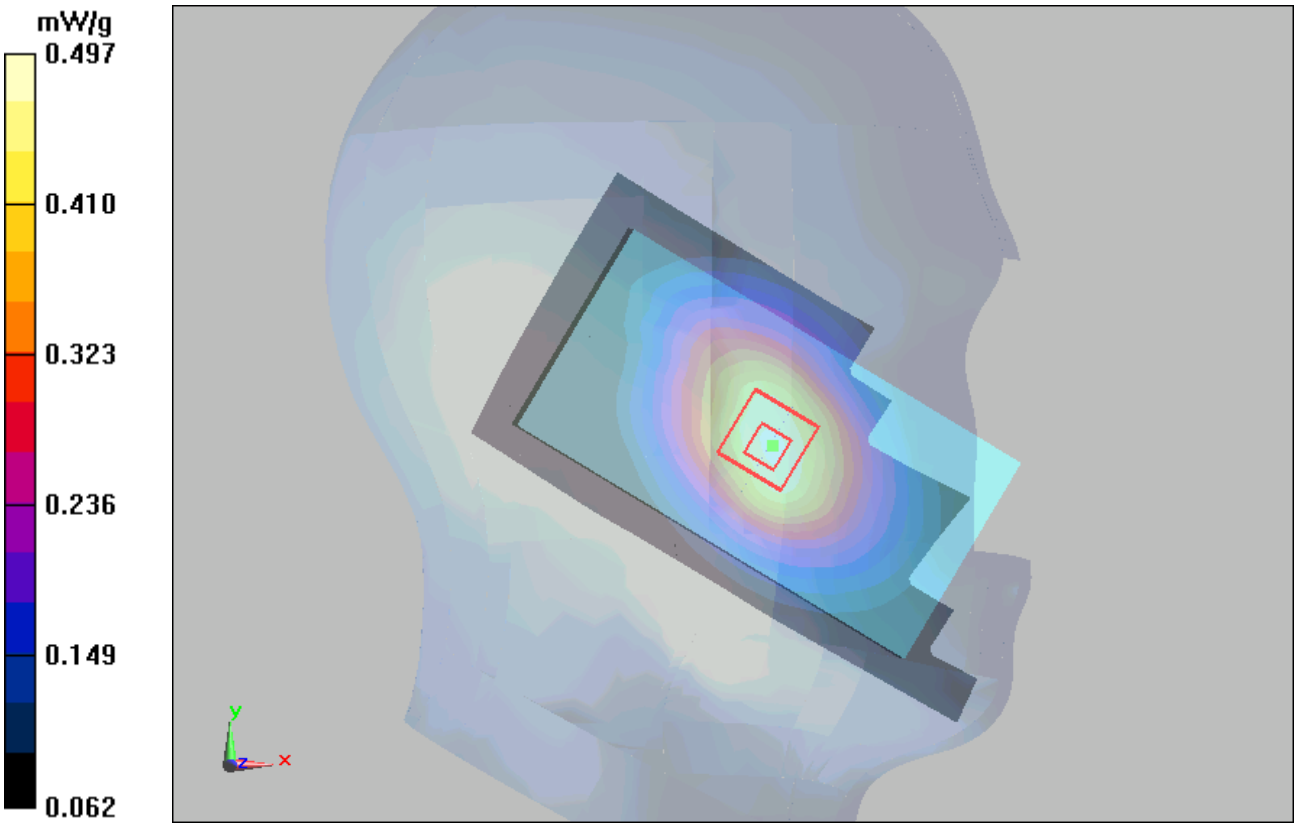


Figure 16 Left Hand Touch Cheek GSM 850 Channel 190

GSM 850 Left Tilt Middle (Battery 1)

Date/Time: 4/26/2013 9:46:48 PM
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Tilt Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.284 mW/g

Left Tilt Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.1 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 0.336 W/kg
SAR(1 g) = 0.270 mW/g; SAR(10 g) = 0.206 mW/g
Maximum value of SAR (measured) = 0.282 mW/g

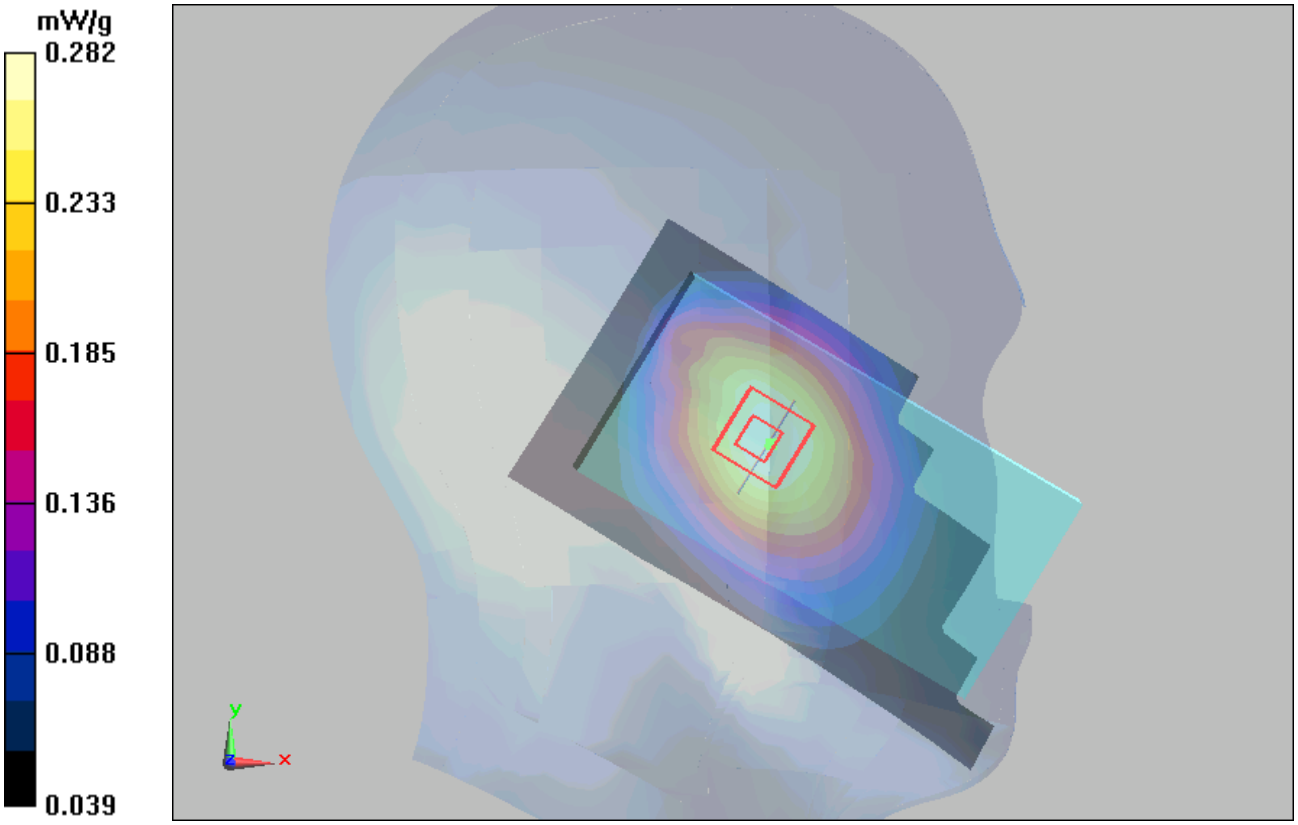


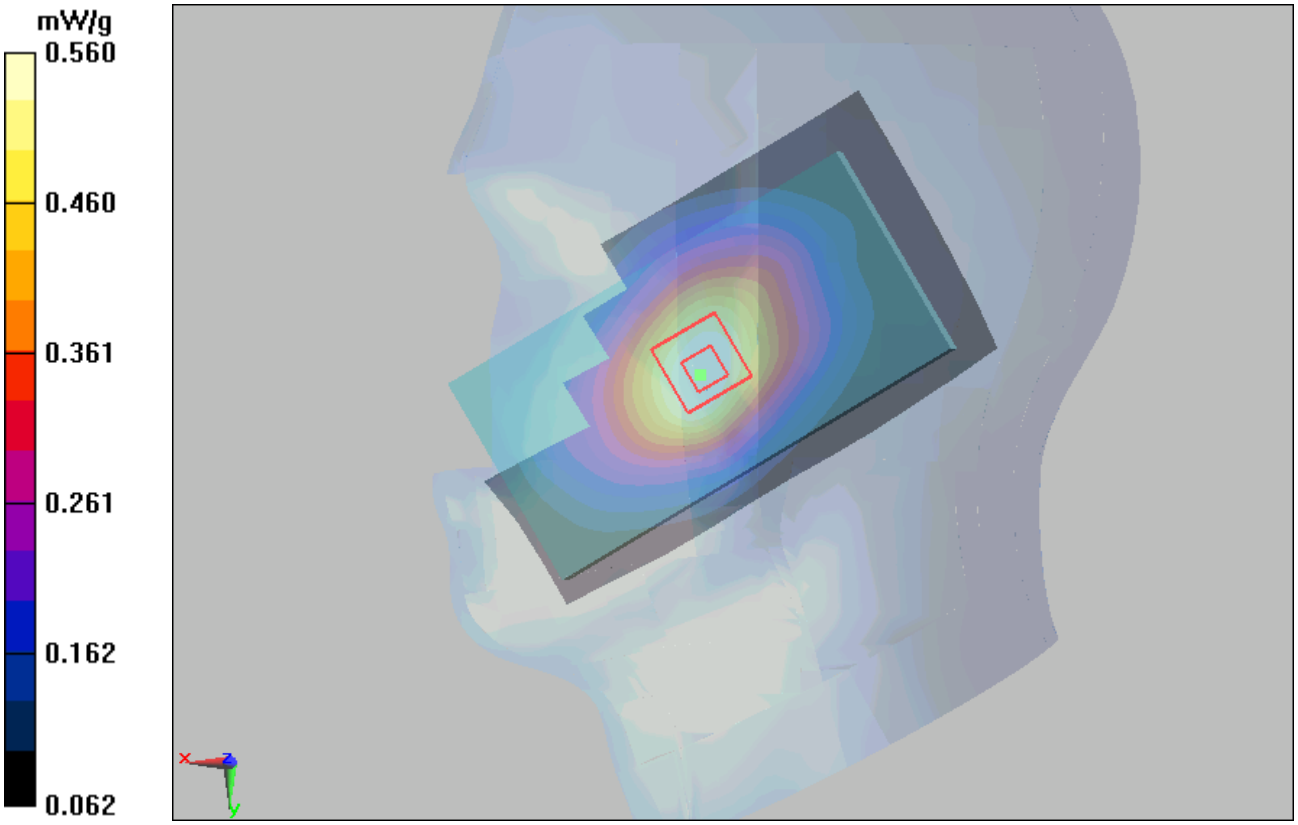
Figure 17 Left Hand Tilt 15° GSM 850 Channel 190

GSM 850 Right Cheek Middle (Battery 1)

Date/Time: 4/26/2013 8:48:24 PM
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.570 mW/g

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.3 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 0.664 W/kg
SAR(1 g) = 0.536 mW/g; SAR(10 g) = 0.402 mW/g
Maximum value of SAR (measured) = 0.560 mW/g



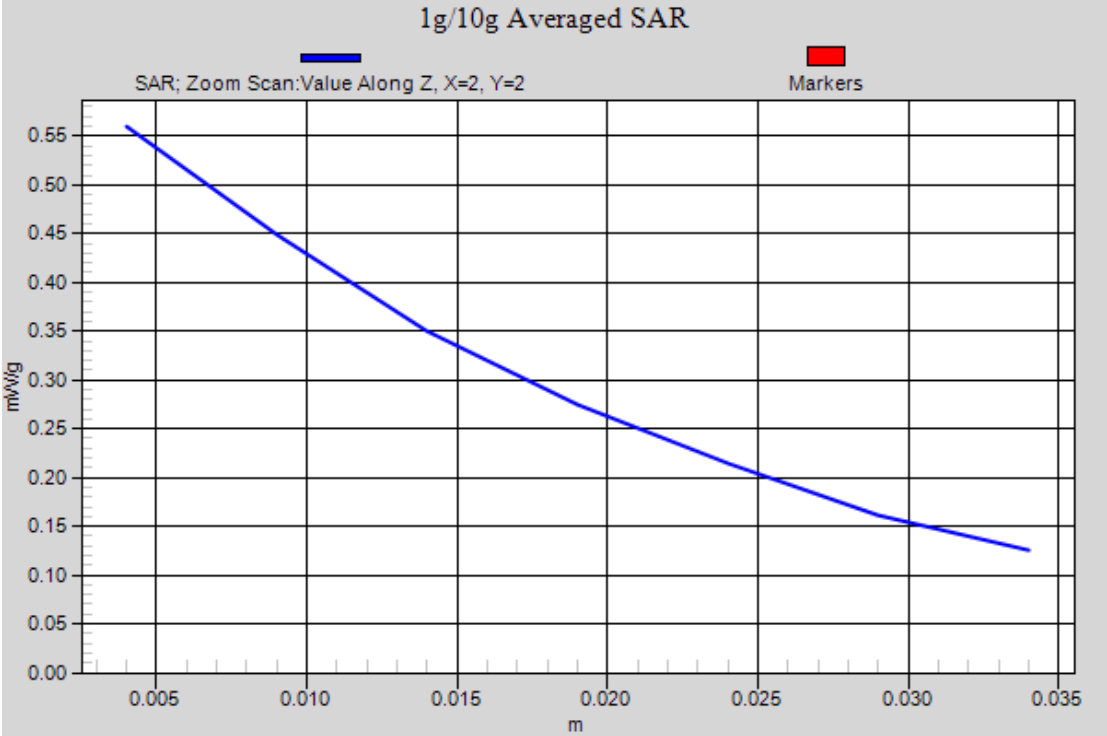


Figure 18 Right Hand Touch Cheek GSM 850 Channel 190

GSM 850 Right Tilt Middle (Battery 1)

Date/Time: 4/26/2013 9:04:38 PM
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Tilt Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.340 mW/g

Right Tilt Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 0.403 W/kg
SAR(1 g) = 0.322 mW/g; SAR(10 g) = 0.244 mW/g
Maximum value of SAR (measured) = 0.338 mW/g

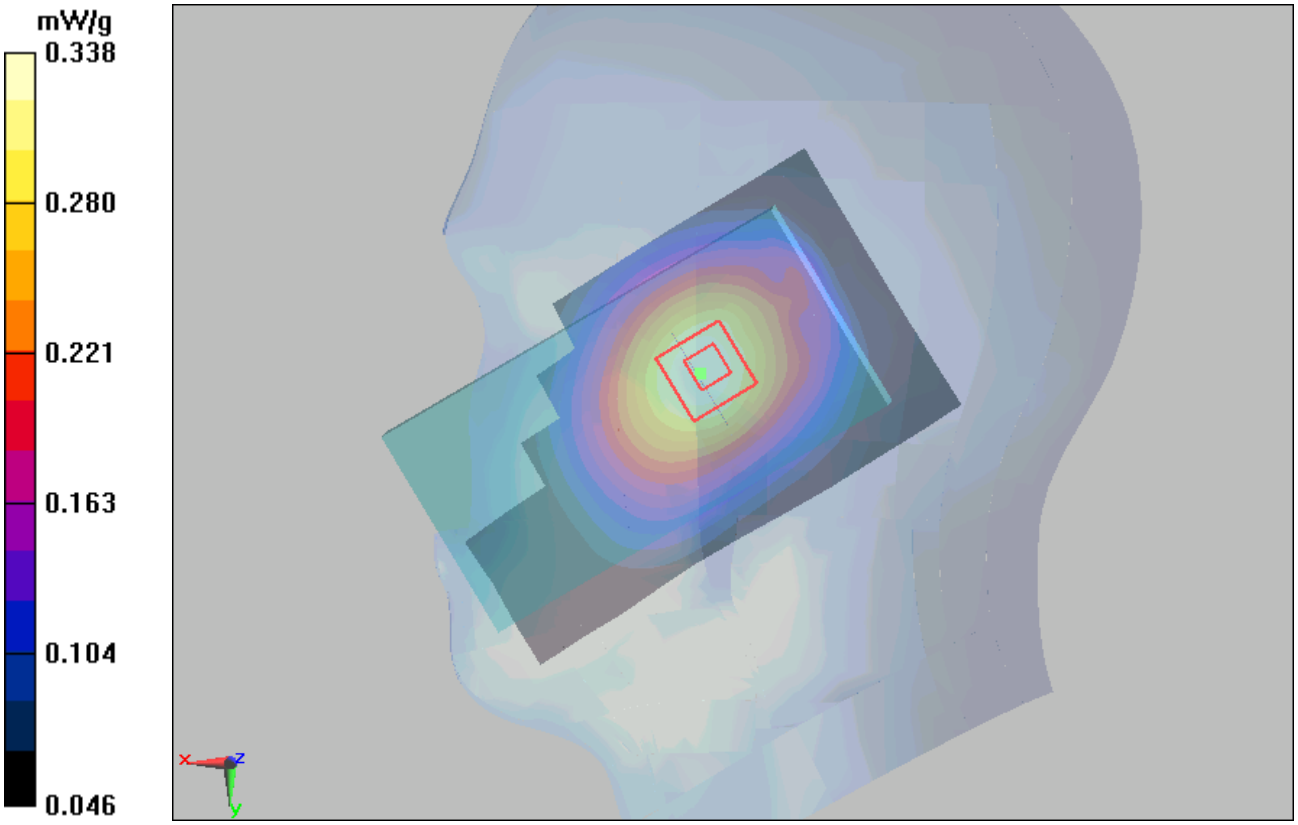


Figure 19 Right Hand Tilt 15° GSM 850 Channel 190

GSM 850 Right Cheek Middle (Battery 2)

Date/Time: 4/26/2013 10:38:21 PM
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.538 mW/g

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.3 V/m; Power Drift = -0.071 dB
Peak SAR (extrapolated) = 0.612 W/kg
SAR(1 g) = 0.504 mW/g; SAR(10 g) = 0.382 mW/g
Maximum value of SAR (measured) = 0.521 mW/g

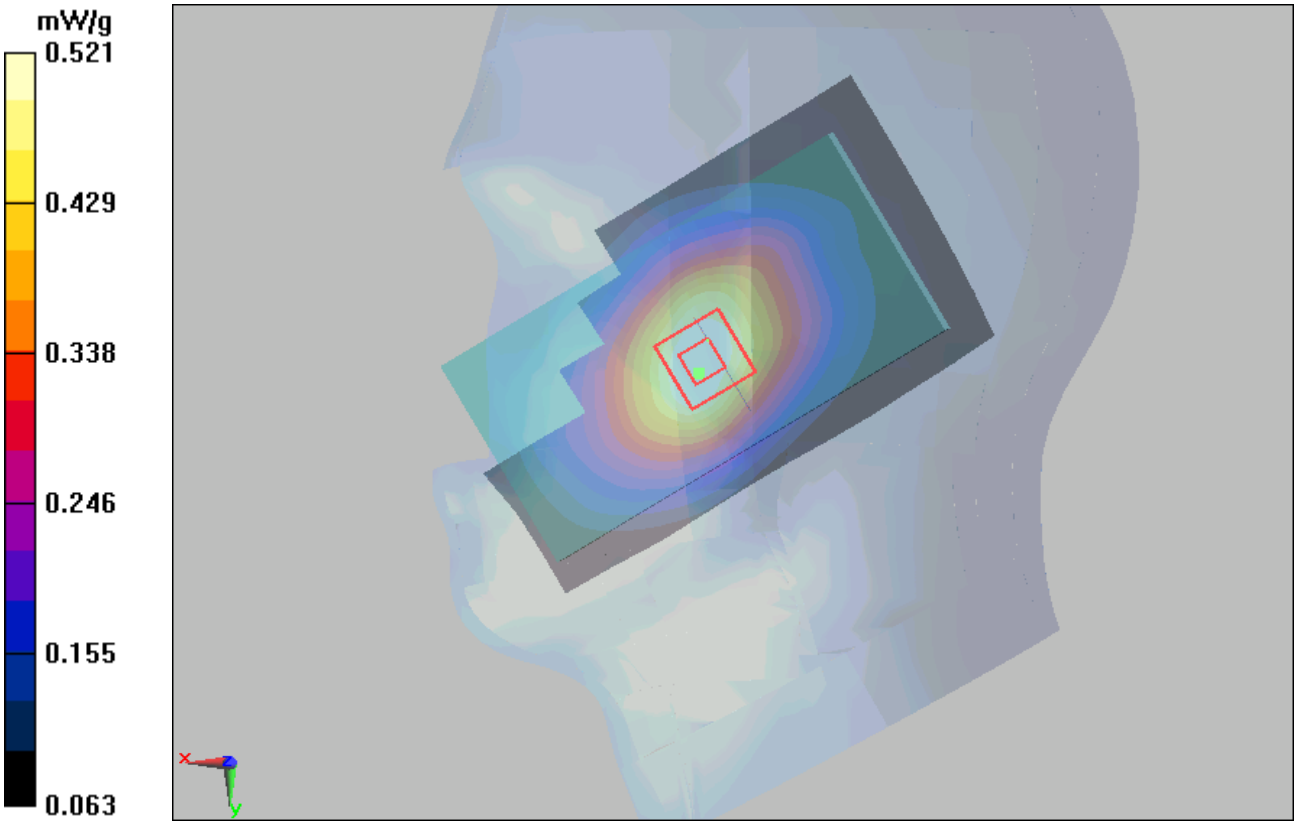


Figure 20 Right Hand Touch Cheek GSM 850 Channel 190

GSM 850 Right Cheek Middle (Battery 3)

Date/Time: 4/26/2013 11:15:24 PM
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle /Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.579 mW/g

Right Cheek Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.7 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.673 W/kg
SAR(1 g) = 0.533 mW/g; SAR(10 g) = 0.397 mW/g
Maximum value of SAR (measured) = 0.557 mW/g

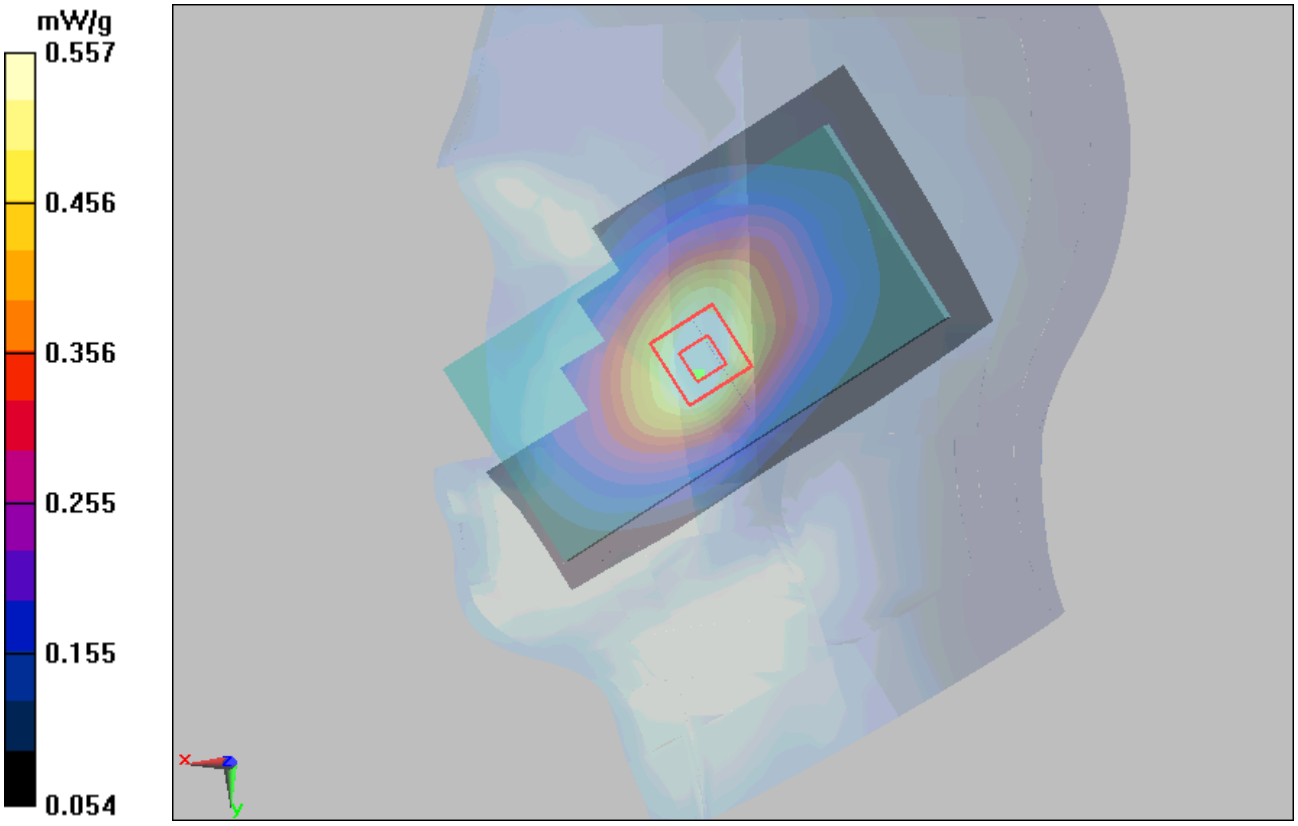


Figure 21 Right Hand Touch Cheek GSM 850 Channel 190

GSM 850 GPRS (2Txslots) Back Side High (Hotspot Closed,Battery 1)

Date/Time: 4/27/2013 12:30:28 PM

Communication System: GPRS 2TX ; Frequency: 848.8 MHz;Duty Cycle: 1:4.14954

Medium parameters used: f = 849 MHz; σ = 1.02 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side High/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.722 mW/g

Back Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 26.7 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 1.17 W/kg

SAR(1 g) = 0.686 mW/g; SAR(10 g) = 0.515 mW/g

Maximum value of SAR (measured) = 0.712 mW/g

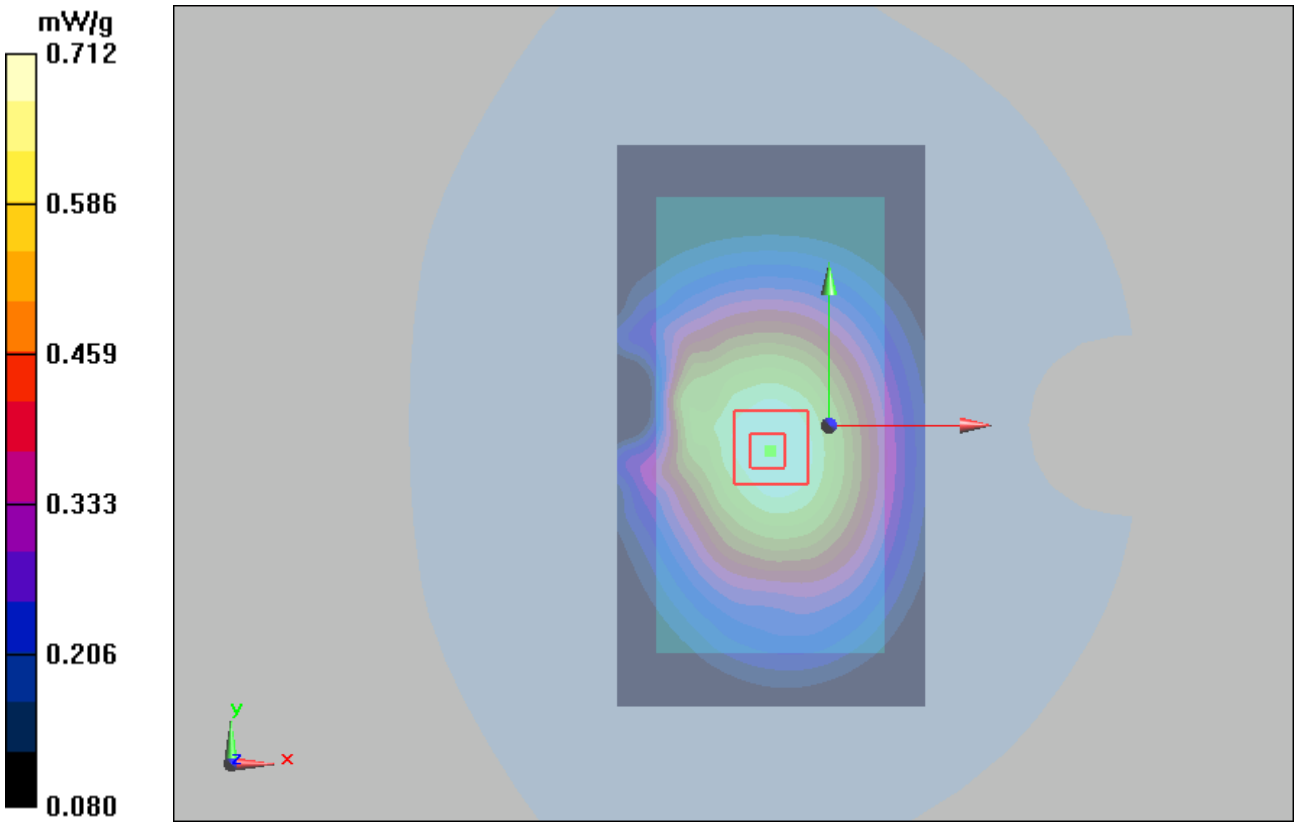


Figure 22 Body, Back Side, GSM 850 GPRS (2Txslots) Channel 251

GSM 850 GPRS (2Txslots) Back Side Middle (Hotspot Closed,Battery 1)

Date/Time: 4/27/2013 12:12:34 PM

Communication System: GPRS 2TX ; Frequency: 836.6 MHz;Duty Cycle: 1:4.14954

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.770 mW/g

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.3 V/m; Power Drift = -0.106 dB

Peak SAR (extrapolated) = 0.890 W/kg

SAR(1 g) = 0.708 mW/g; SAR(10 g) = 0.532 mW/g

Maximum value of SAR (measured) = 0.741 mW/g

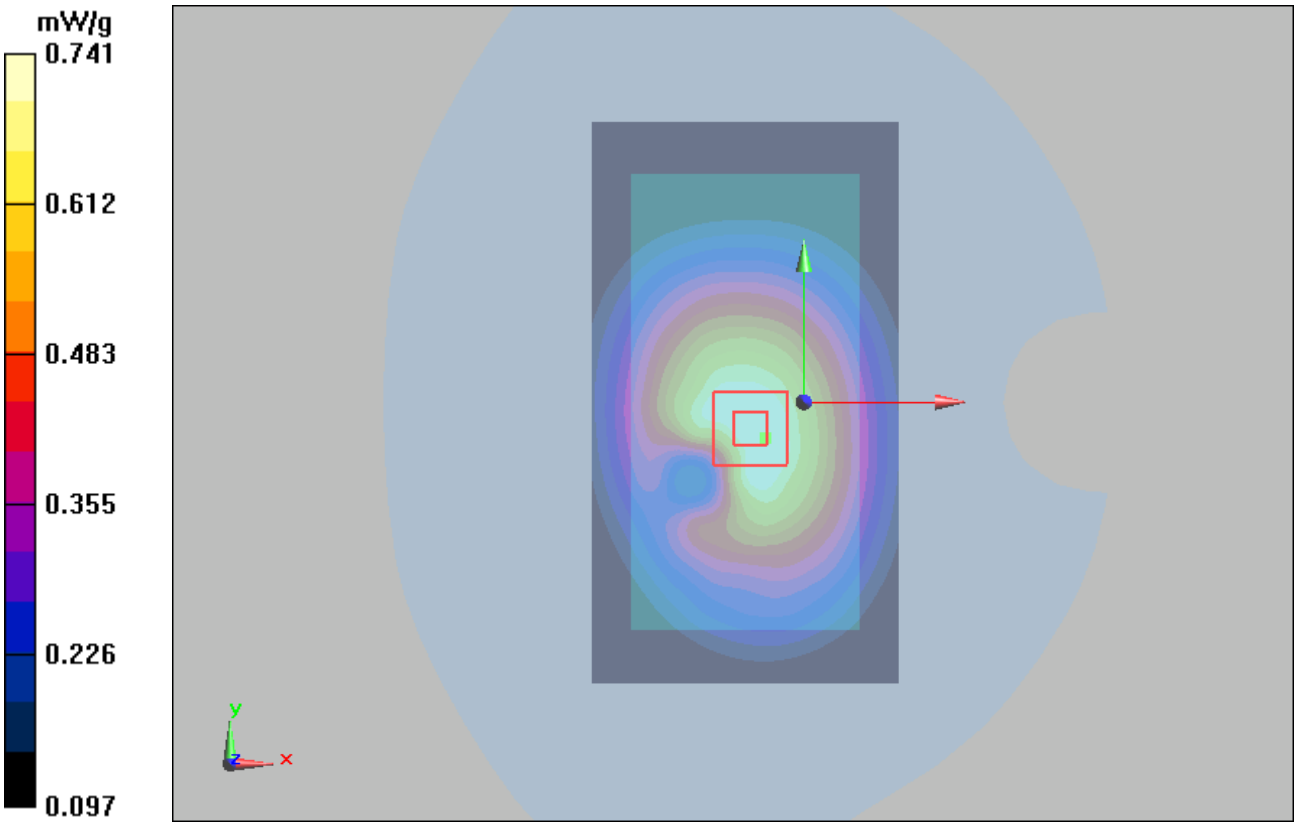


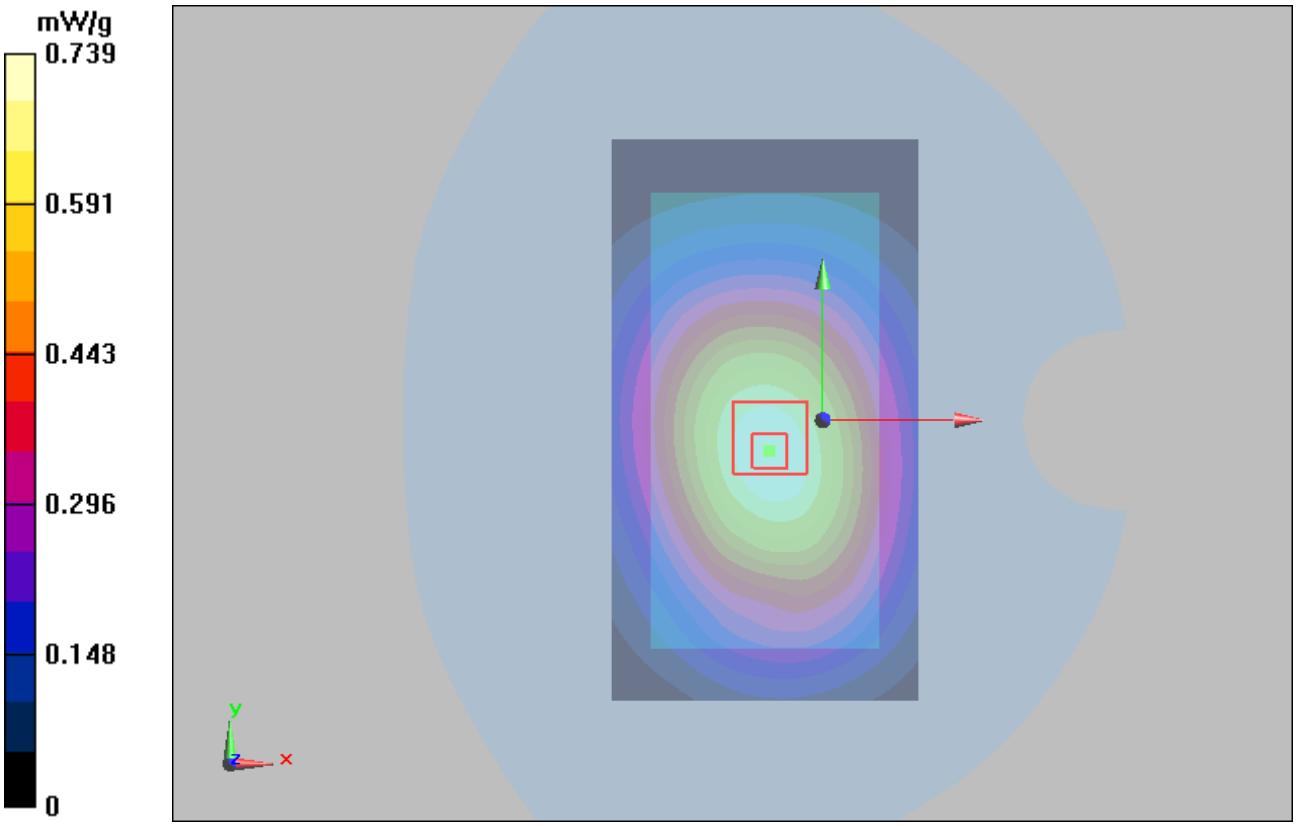
Figure 23 Body, Back Side, GSM 850 GPRS (2Txslots) Channel 190

GSM 850 GPRS (2Txslots) Back Side Low (Hotspot Closed,Battery 1)

Date/Time: 4/27/2013 12:47:25 PM
Communication System: GPRS 2TX ; Frequency: 824.2 MHz;Duty Cycle: 1:4.14954
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.999 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Low/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.739 mW/g

Back Side Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27 V/m; Power Drift = 0.066 dB
Peak SAR (extrapolated) = 0.975 W/kg
SAR(1 g) = 0.734 mW/g; SAR(10 g) = 0.534 mW/g
Maximum value of SAR (measured) = 0.739 mW/g



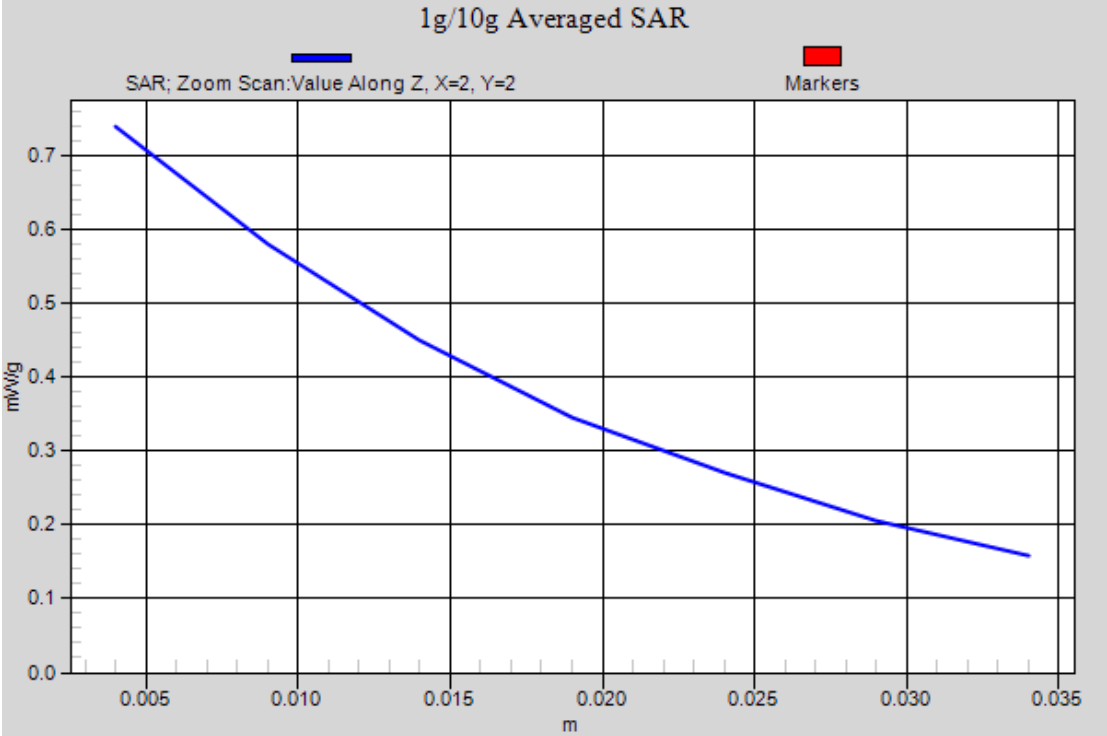


Figure 24 Body, Back Side, GSM 850 GPRS (2Txslots) Channel 128

GSM 850 GPRS (2Txslots) Front Side Middle (Hotspot Closed,Battery 1)

Date/Time: 4/27/2013 11:52:32 AM
Communication System: GPRS 2TX ; Frequency: 836.6 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.634 mW/g

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.6 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 0.737 W/kg
SAR(1 g) = 0.592 mW/g; SAR(10 g) = 0.447 mW/g
Maximum value of SAR (measured) = 0.622 mW/g

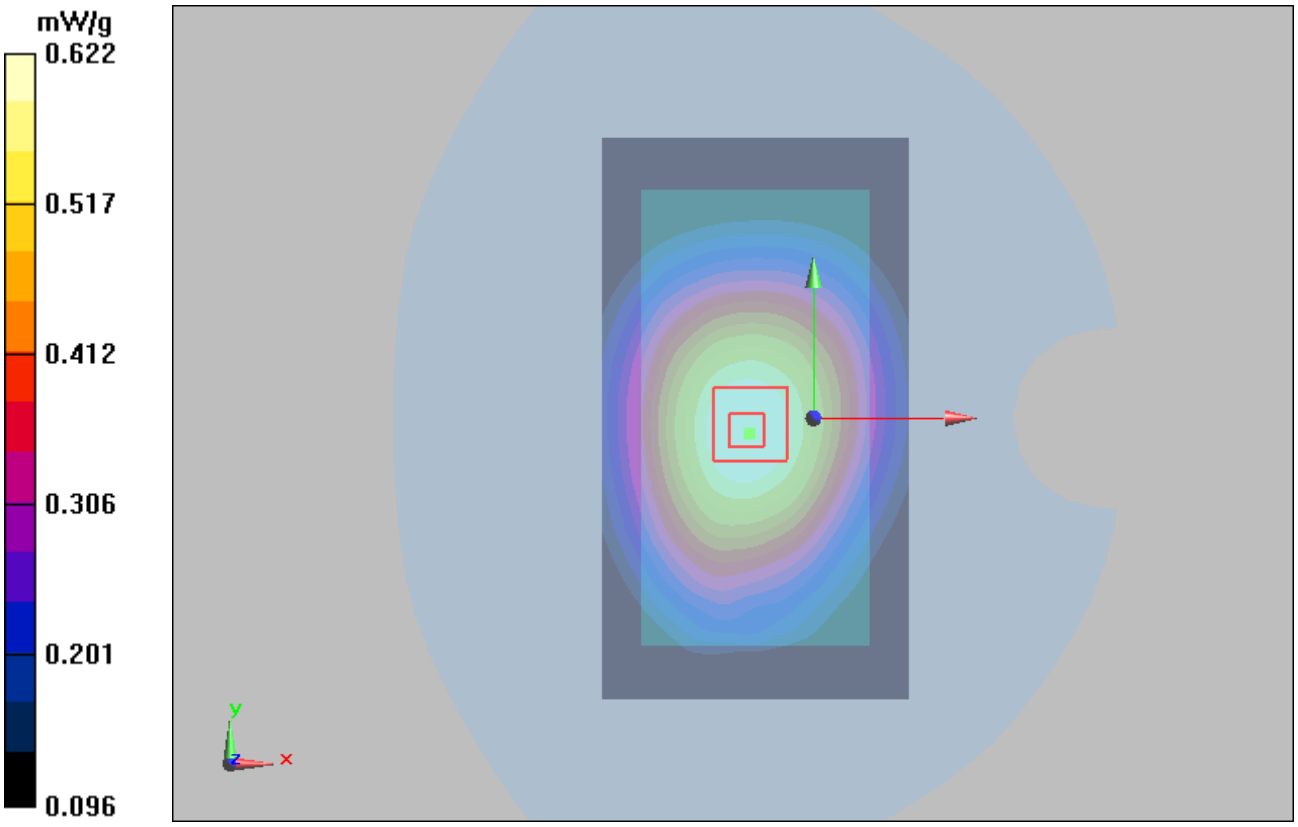


Figure 25 Body, Front Side, GSM 850 GPRS (2Txslots) Channel 190

GSM 850 GPRS (1Txslot) Back Side Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 7:12:34 PM
Communication System: GPRS 1TX; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle /Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.475 mW/g

Back Side Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22 V/m; Power Drift = -0.022dB
Peak SAR (extrapolated) = 0.548 W/kg
SAR(1 g) = 0.441 mW/g; SAR(10 g) = 0.336 mW/g
Maximum value of SAR (measured) = 0.465 mW/g

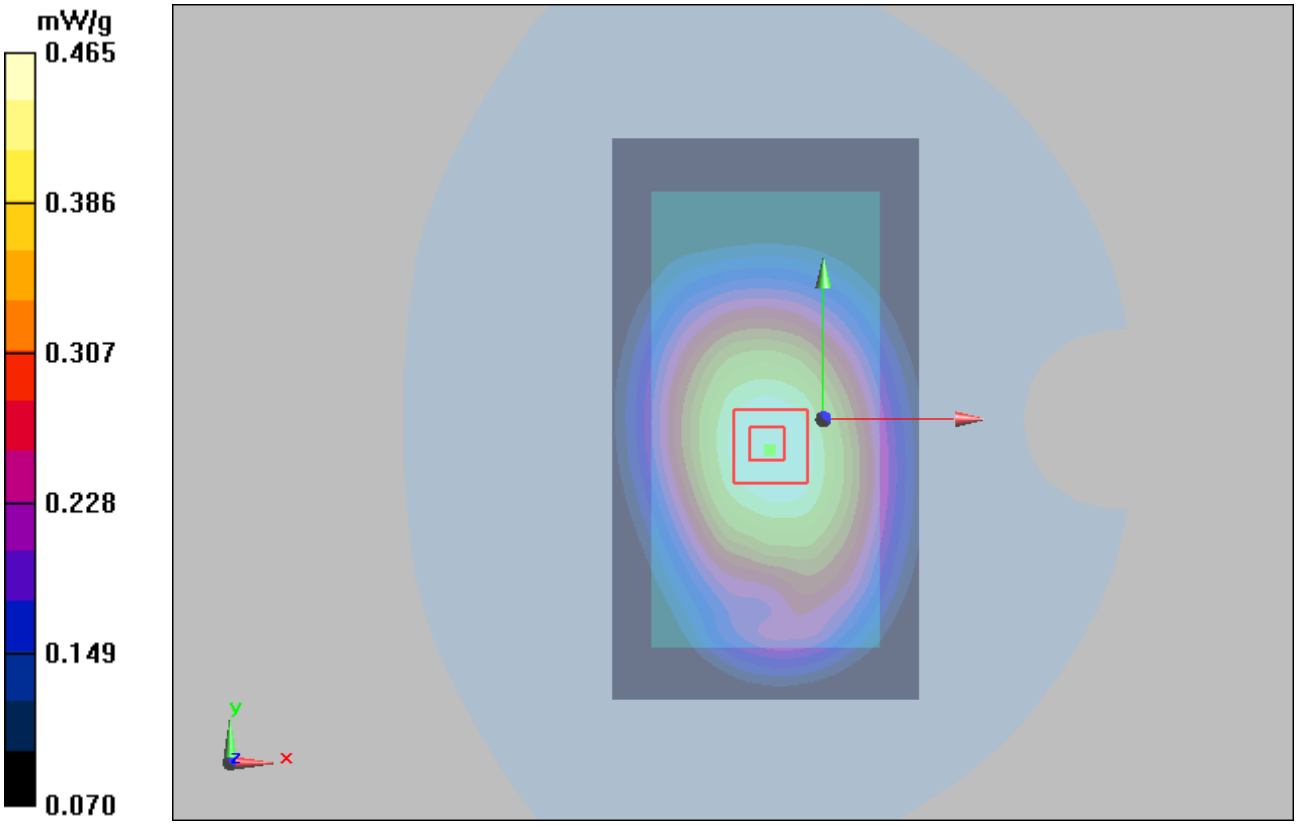


Figure 26 Body, Back Side, GSM 850 GPRS (1Txslot) Channel 190

GSM 850 GPRS (1Txslot) Front Side Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 7:51:29 PM

Communication System: GPRS 1TX; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.382 mW/g

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.8 V/m; Power Drift = 0.048 dB

Peak SAR (extrapolated) = 0.460 W/kg

SAR(1 g) = 0.367 mW/g; SAR(10 g) = 0.277 mW/g

Maximum value of SAR (measured) = 0.385 mW/g

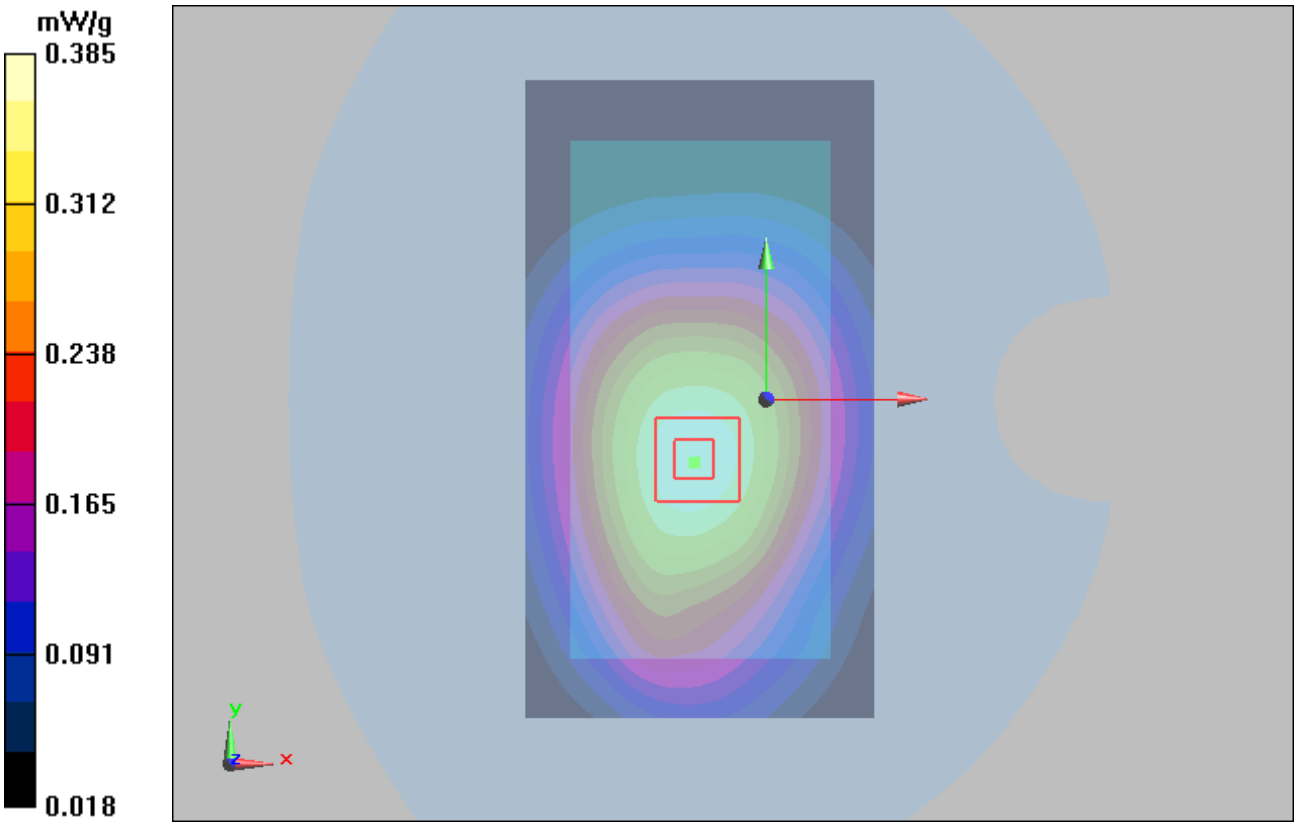


Figure 27 Body, Front Side, GSM 850 GPRS (1 Txslot) Channel 190

GSM 850 GPRS (1Txslot) Left Edge Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 8:11:29 PM

Communication System: GPRS 1TX; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Edge Middle/Area Scan (31x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.129 mW/g

Left Edge Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.2 V/m; Power Drift = 0.045 dB

Peak SAR (extrapolated) = 0.171 W/kg

SAR(1 g) = 0.122 mW/g; SAR(10 g) = 0.083 mW/g

Maximum value of SAR (measured) = 0.130 mW/g

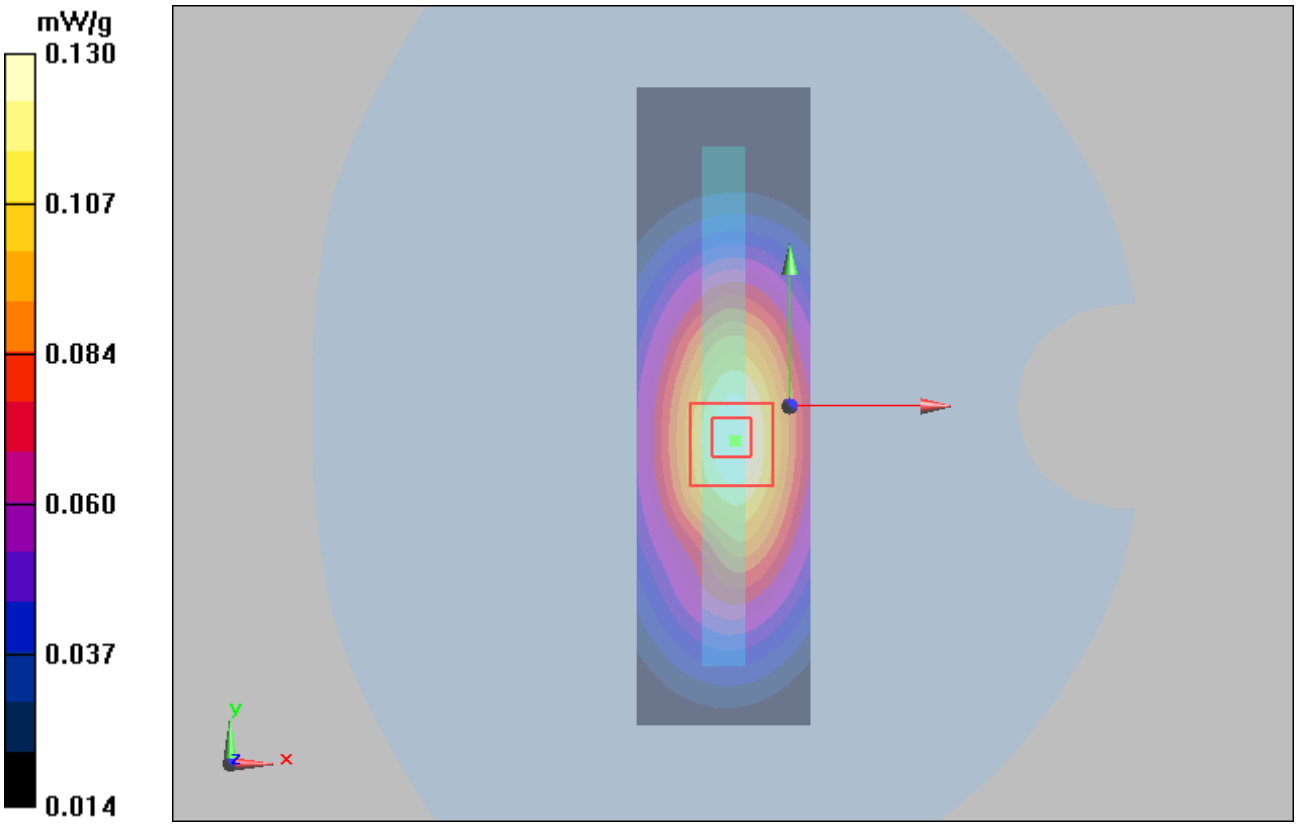


Figure 28 Body, Left Edge, GSM 850 GPRS (1Txslot) Channel 190

GSM 850 GPRS (1 Txslot) Right Edge Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 8:27:28 PM
Communication System: GPRS 1TX; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Edge Middle /Area Scan (31x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.218 mW/g

Right Edge Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.1 V/m; Power Drift = -0.001dB
Peak SAR (extrapolated) = 0.288 W/kg
SAR(1 g) = 0.205 mW/g; SAR(10 g) = 0.141 mW/g
Maximum value of SAR (measured) = 0.219 mW/g

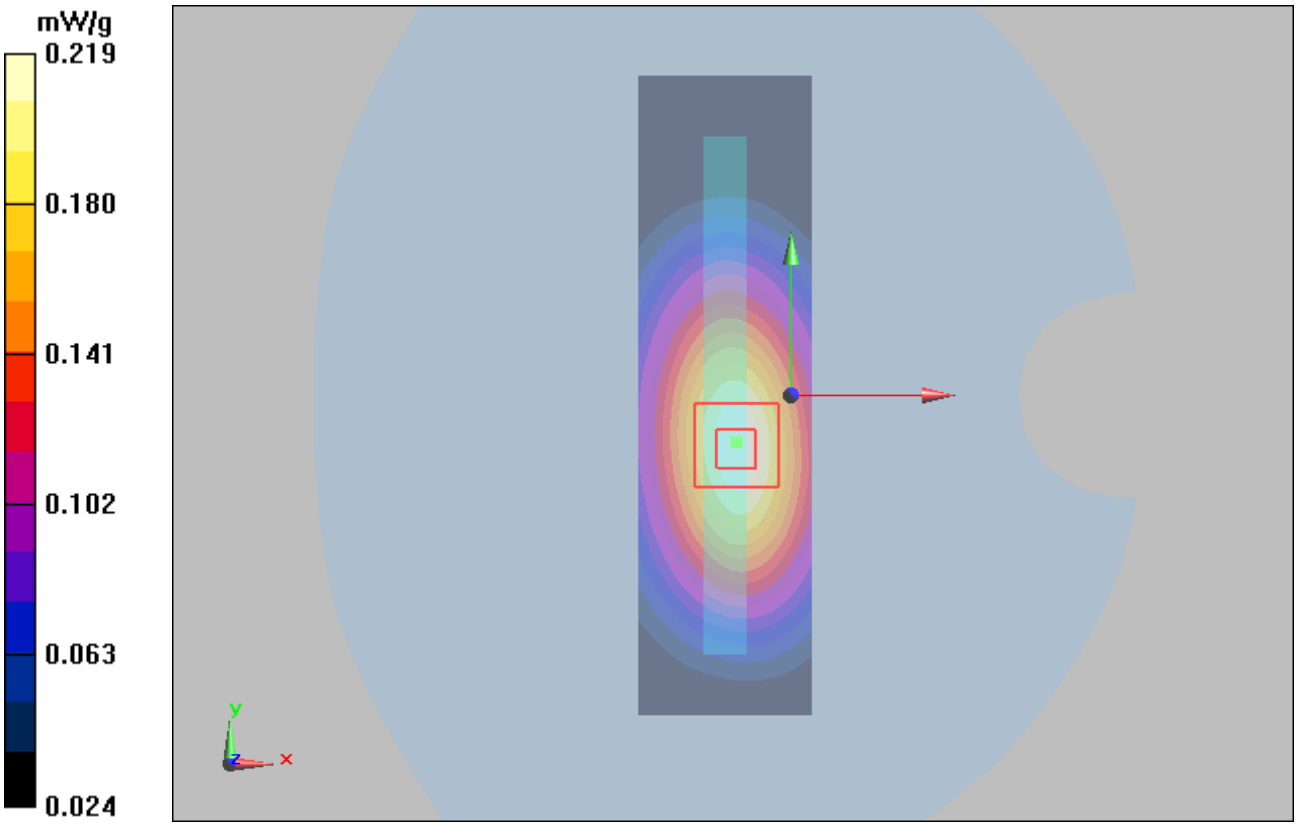


Figure 29 Body, Right Edge, GSM 850 GPRS (1Txslot) Channel 190

GSM 850 GPRS (1Txslot) Bottom Edge Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 9:00:37 PM
Communication System: GPRS 1TX; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Bottom Edge Middle/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.113 mW/g

Bottom Edge Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.5 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 0.172 W/kg
SAR(1 g) = 0.097 mW/g; SAR(10 g) = 0.057 mW/g
Maximum value of SAR (measured) = 0.106 mW/g

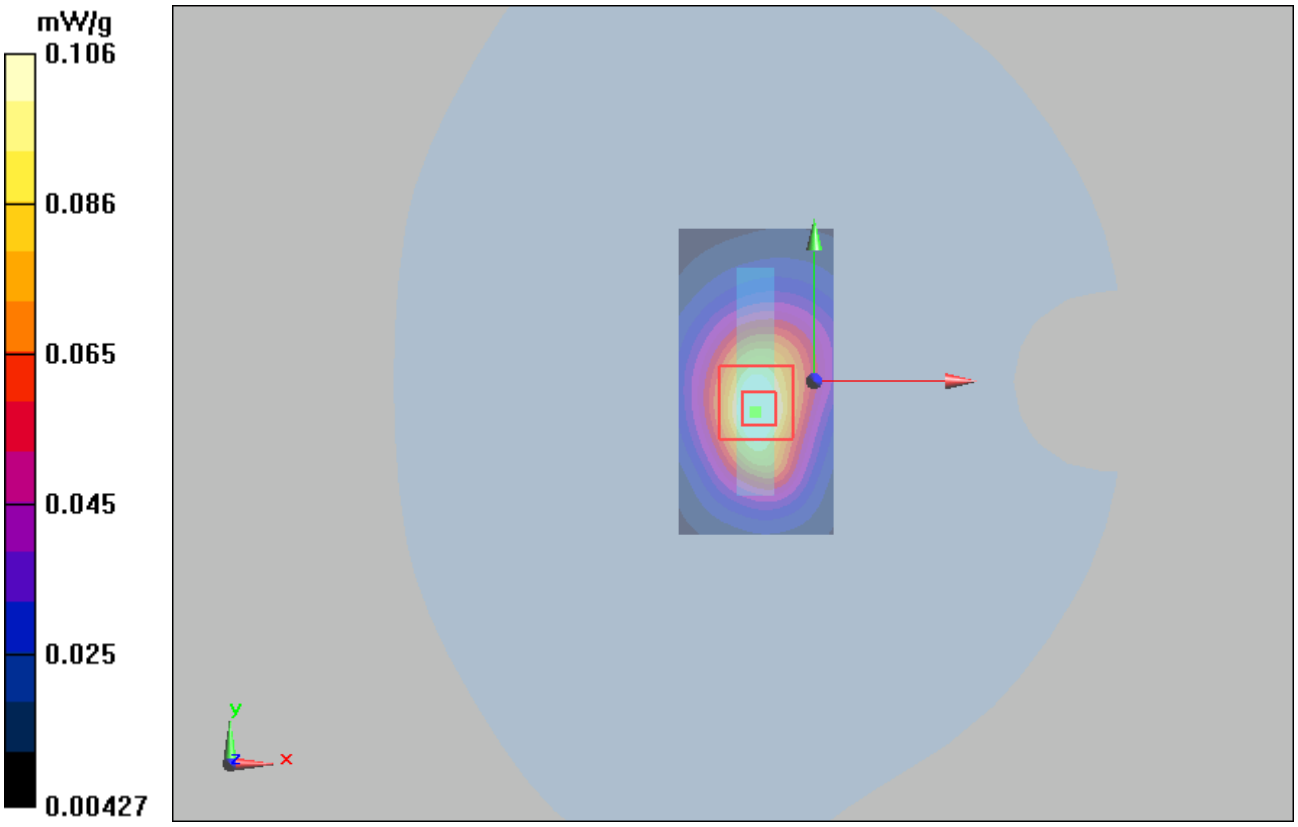


Figure 30 Body, Bottom Edge, GSM 850 GPRS (1Txslot) Channel 190

GSM 850 EGPRS (2Txslots) Back Side Low (Hotspot Closed,Battery 1)

Date/Time: 4/27/2013 9:16:46 PM

Communication System: EGPRS 2TX; Frequency: 824.2 MHz;Duty Cycle: 1:4.14954

Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.999 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Low /Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.723 mW/g

Back Side Low /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.5 V/m; Power Drift = -0.083dB

Peak SAR (extrapolated) = 0.802 W/kg

SAR(1 g) = 0.644 mW/g; SAR(10 g) = 0.486 mW/g

Maximum value of SAR (measured) = 0.680 mW/g

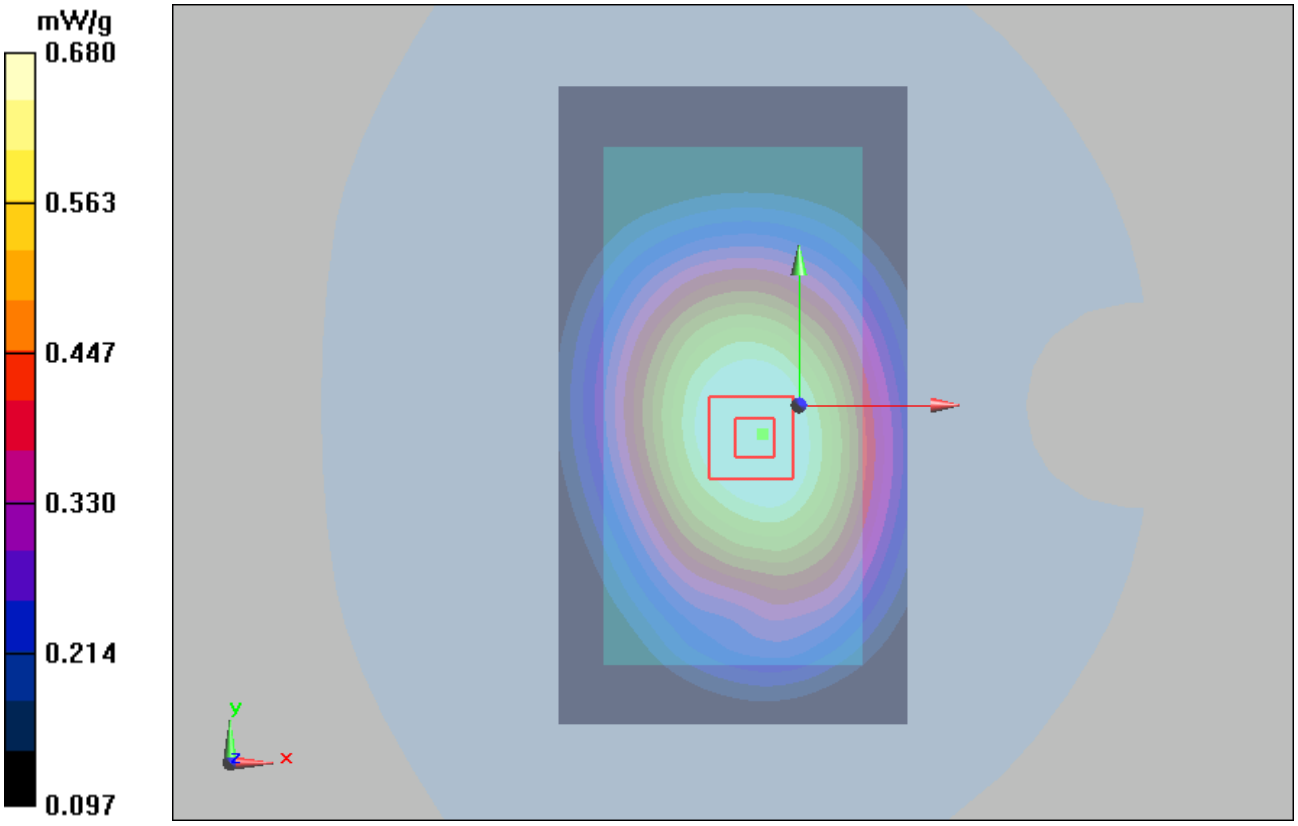


Figure 31 Body, Back Side, GSM 850 EGPRS (2Txslots) Channel 128

GSM 850 GPRS (2Txslots) Back Side Low (Hotspot Closed,Battery 2)

Date/Time: 4/27/2013 9:35:02 PM

Communication System: GPRS 2TX ; Frequency: 836.6 MHz;Duty Cycle: 1:4.14954

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Low /Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.673 mW/g

Back Side Low /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 26 V/m; Power Drift = -0.086 dB

Peak SAR (extrapolated) = 0.806 W/kg

SAR(1 g) = 0.640 mW/g; SAR(10 g) = 0.483 mW/g

Maximum value of SAR (measured) = 0.673 mW/g

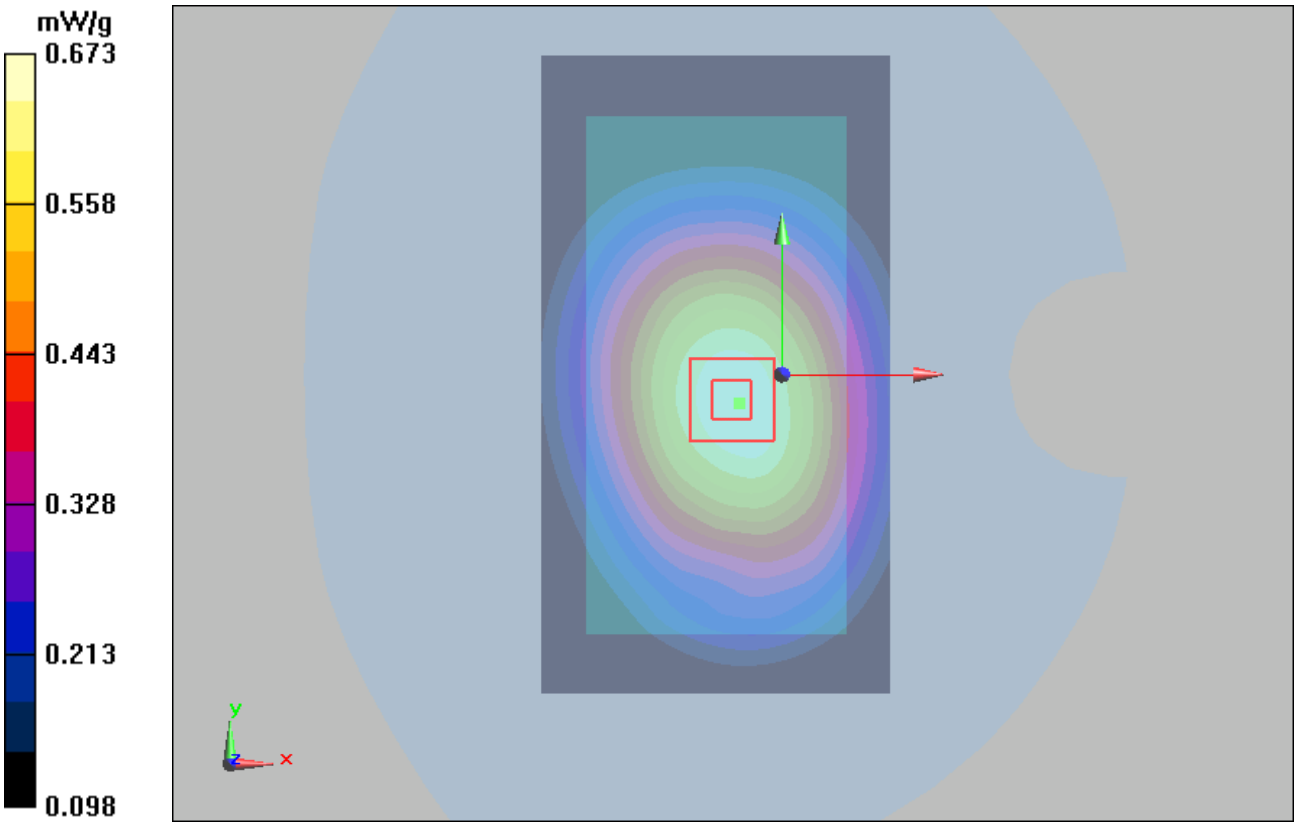


Figure 32 Body, Back Side, GSM 850 GPRS (2Txslots) Channel 128

GSM 850 GPRS (2Txslots) Back Side Low (Hotspot Closed,Battery 3)

Date/Time: 4/27/2013 9:51:22 PM

Communication System: GPRS 2TX ; Frequency: 824.2 MHz;Duty Cycle: 1:4.14954

Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.999 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Low/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.658 mW/g

Back Side Low /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 25.7 V/m; Power Drift = -0.001 dB

Peak SAR (extrapolated) = 0.772 W/kg

SAR(1 g) = 0.622 mW/g; SAR(10 g) = 0.470 mW/g

Maximum value of SAR (measured) = 0.657 mW/g

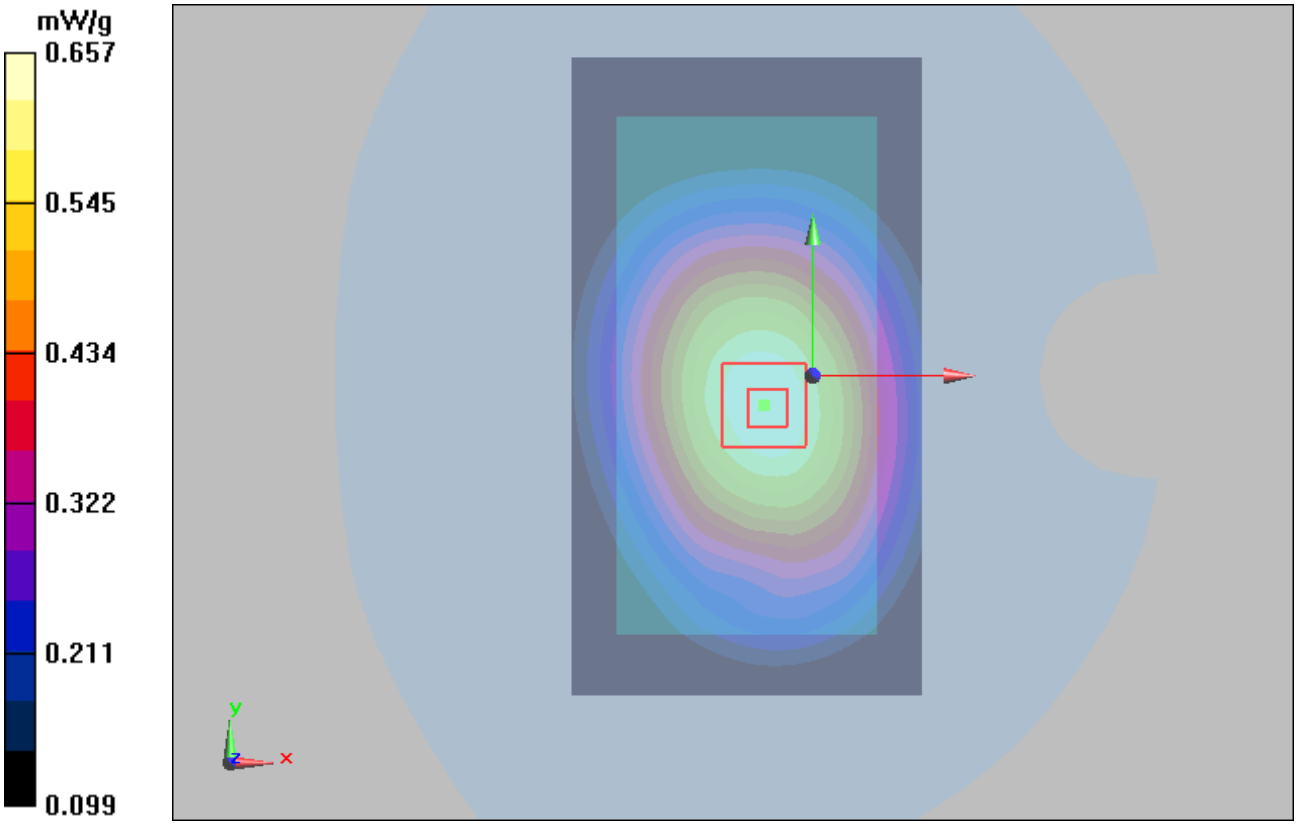


Figure 33 Body, Back Side, GSM 850 GPRS (2Txslots) Channel 128

GSM 1900 Left Cheek Middle (Battery 1)

Date/Time: 5/4/2013 11:42:16 PM
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.69, 4.69, 4.69); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.246 mW/g

Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.54 V/m; Power Drift = -0.058dB
Peak SAR (extrapolated) = 0.347 W/kg
SAR(1 g) = 0.215 mW/g; SAR(10 g) = 0.127 mW/g
Maximum value of SAR (measured) = 0.236 mW/g

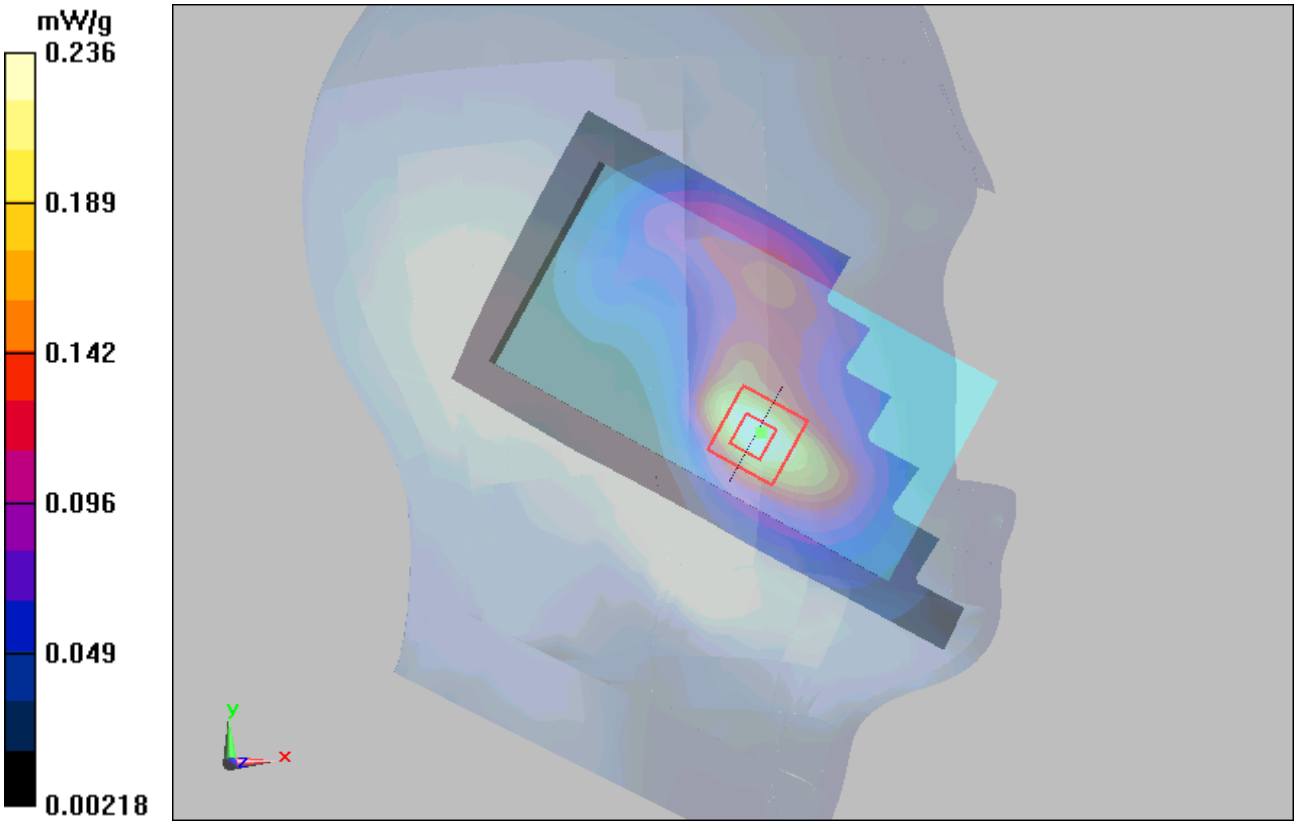


Figure 34 Left Hand Touch Cheek GSM 1900 Channel 661

GSM 1900 Left Tilt Middle (Battery 1)

Date/Time: 5/4/2013 11:58:31 PM
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.69, 4.69, 4.69); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Tilt Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.130 mW/g

Left Tilt Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.4 V/m; Power Drift = 0.058 dB
Peak SAR (extrapolated) = 0.189 W/kg
SAR(1 g) = 0.117 mW/g; SAR(10 g) = 0.070 mW/g
Maximum value of SAR (measured) = 0.121 mW/g

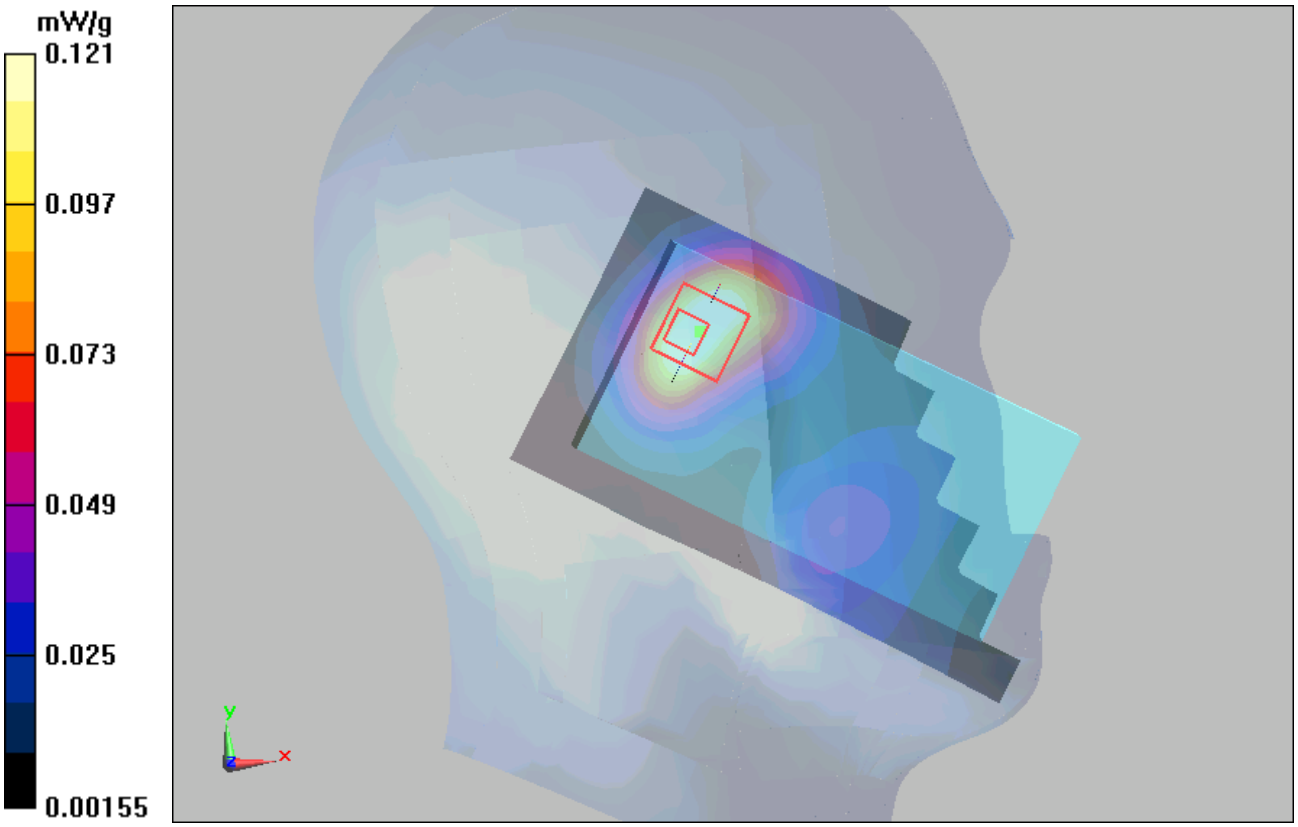


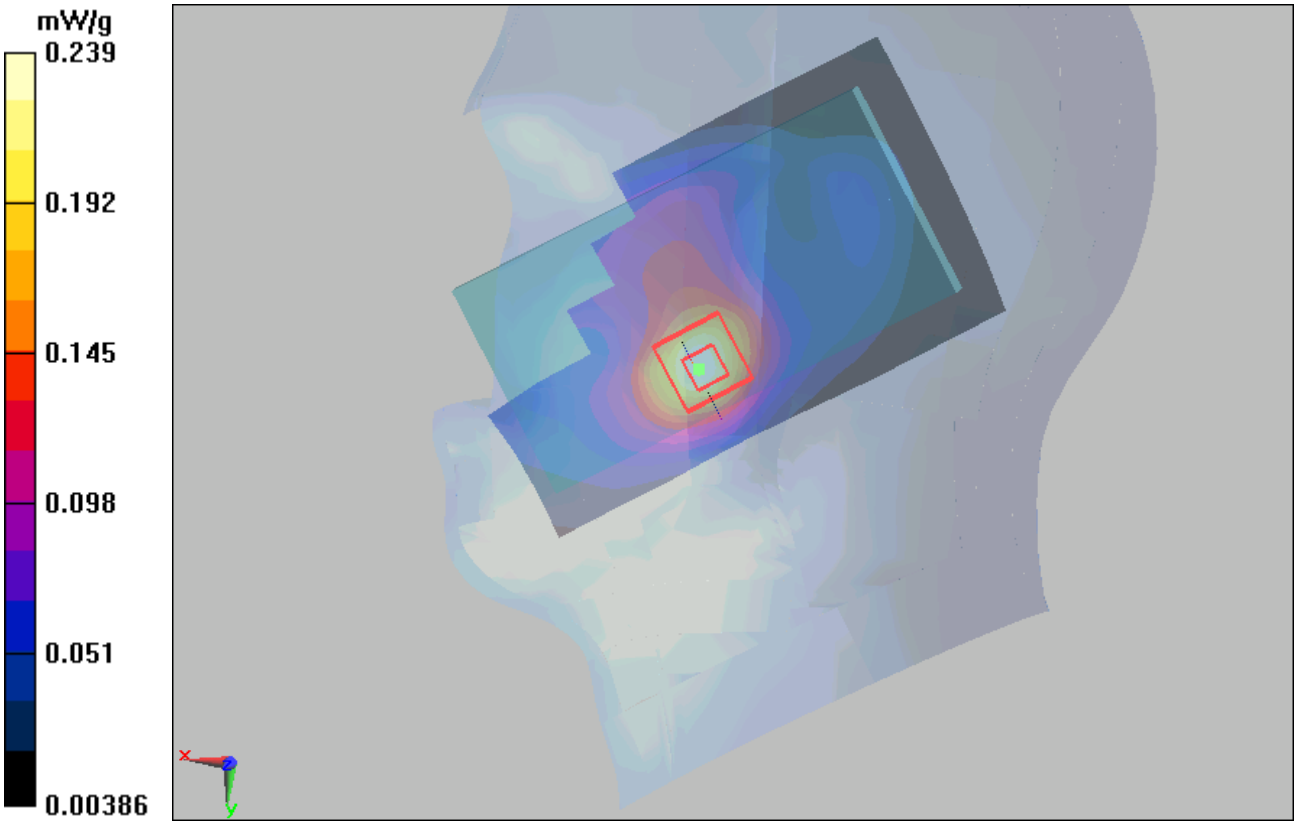
Figure 35 Left Hand Tilt 15° GSM 1900 Channel 661

GSM 1900 Right Cheek Middle (Battery 1)

Date/Time: 5/4/2013 12:19:09 PM
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.69, 4.69, 4.69); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.235 mW/g

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.24 V/m; Power Drift = 0.040 dB
Peak SAR (extrapolated) = 0.0344 W/kg
SAR(1 g) = 0.220 mW/g; SAR(10 g) = 0.132 mW/g
Maximum value of SAR (measured) = 0.239 mW/g



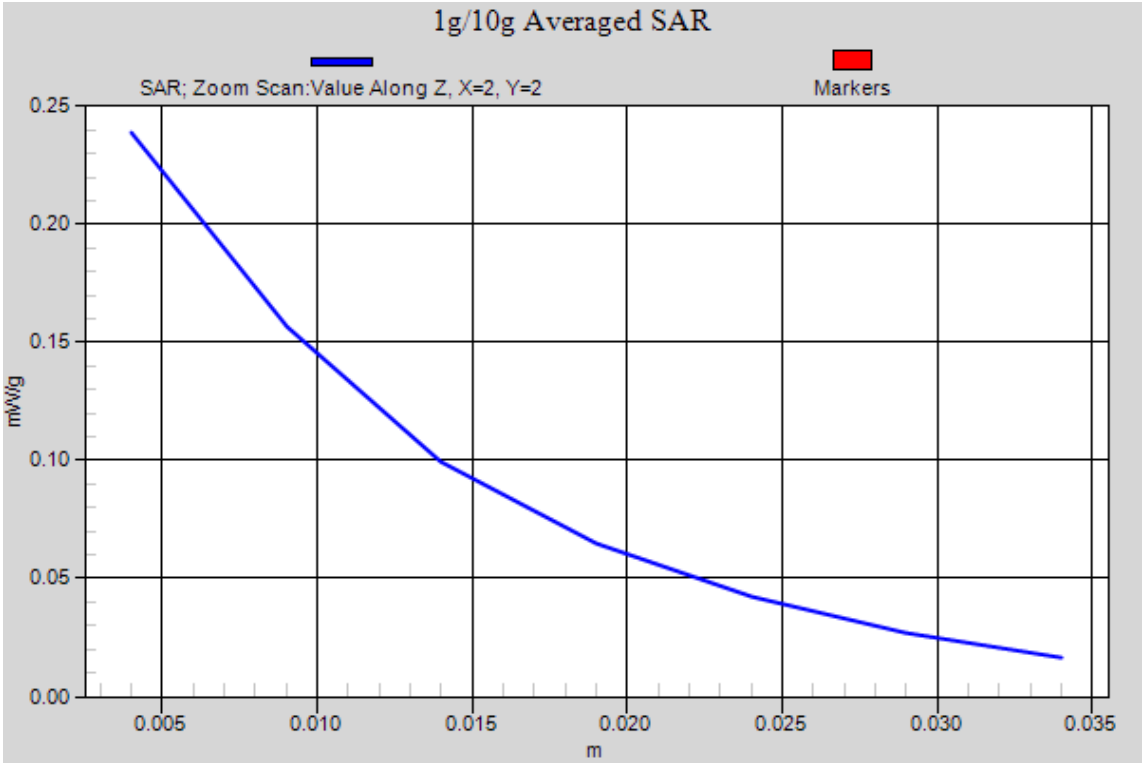


Figure 36 Right Hand Touch Cheek GSM 1900 Channel 661

GSM 1900 Right Tilt Middle (Battery 1)

Date/Time: 5/4/2013 1:08:14 PM
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.69, 4.69, 4.69); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Tilt Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.132 mW/g

Right Tilt Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.13 V/m; Power Drift = 0.052 dB
Peak SAR (extrapolated) = 0.201 W/kg
SAR(1 g) = 0.119 mW/g; SAR(10 g) = 0.067 mW/g
Maximum value of SAR (measured) = 0.125 mW/g

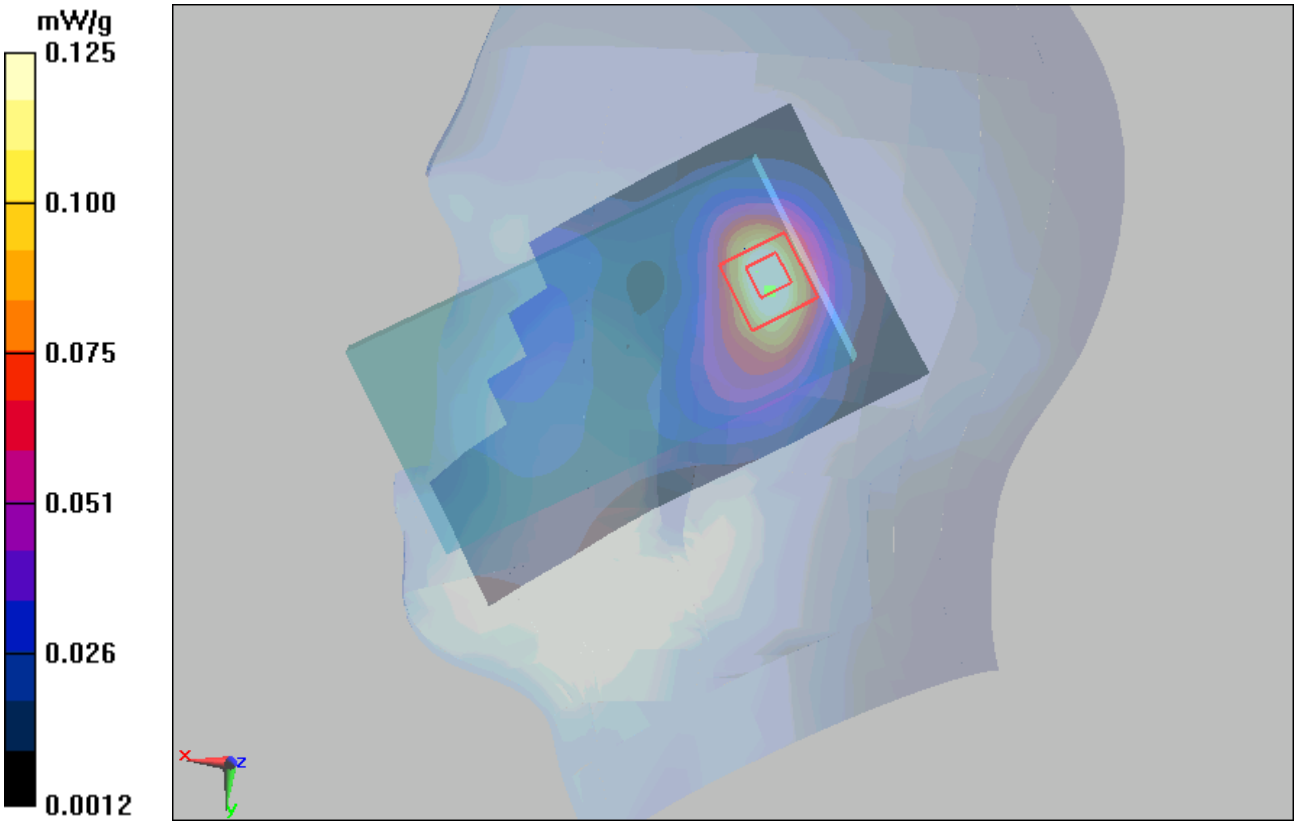


Figure 37 Right Hand Tilt 15° GSM 1900 Channel 661

GSM 1900 Right Cheek Middle (Battery 2)

Date/Time: 5/4/2013 12:35:33 PM
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.69, 4.69, 4.69); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.235 mW/g

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.46 V/m; Power Drift = 0.076 dB
Peak SAR (extrapolated) = 0.344 W/kg
SAR(1 g) = 0.219 mW/g; SAR(10 g) = 0.132 mW/g
Maximum value of SAR (measured) = 0.239 mW/g

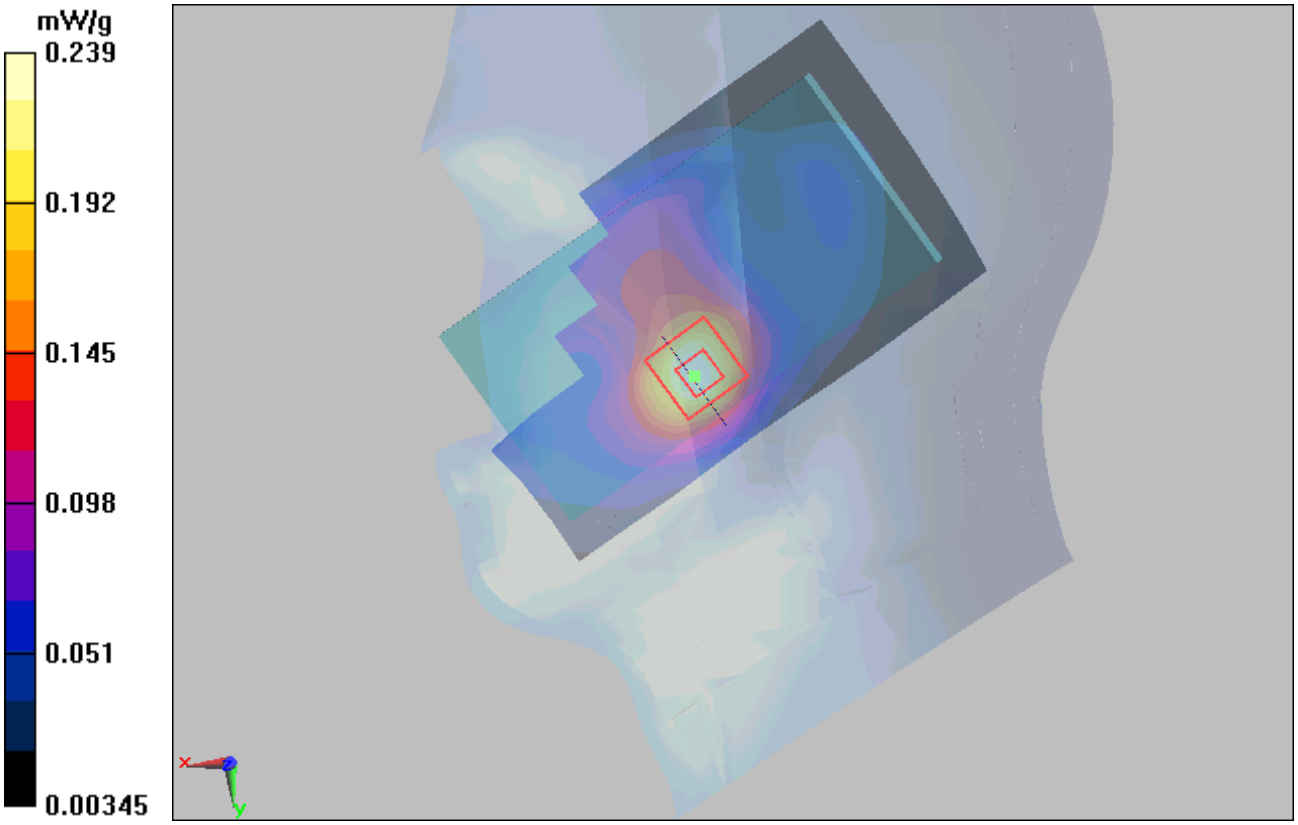


Figure 38 Right Hand Touch Cheek GSM 1900 Channel 661

GSM 1900 Right Cheek Middle (Battery 3)

Date/Time: 5/4/2013 12:51:32 PM
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.69, 4.69, 4.69); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.232 mW/g

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.39 V/m; Power Drift = 0.167 dB
Peak SAR (extrapolated) = 0.0344 W/kg
SAR(1 g) = 0.218 mW/g; SAR(10 g) = 0.131 mW/g
Maximum value of SAR (measured) = 0.238 mW/g

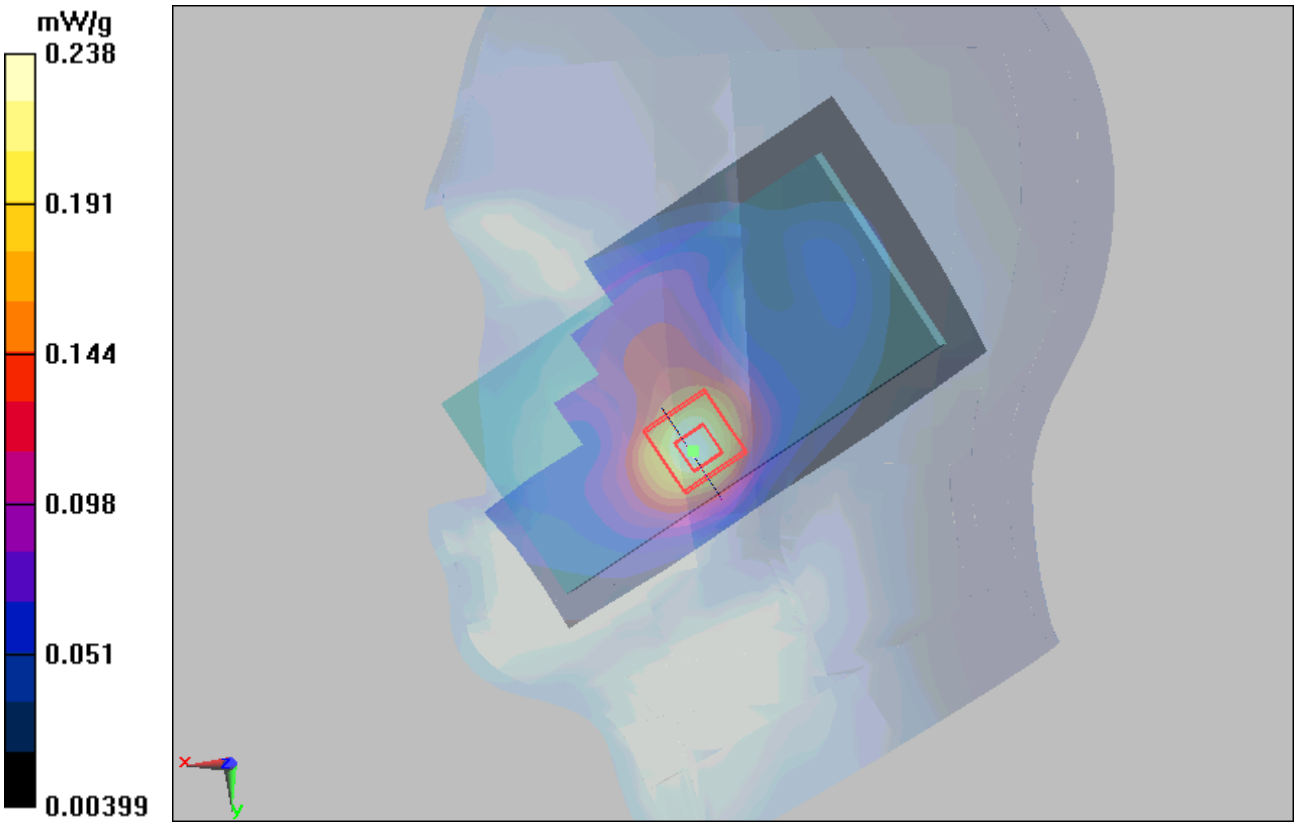


Figure 39 Right Hand Touch Cheek GSM 1900 Channel 661

GSM 1900 GPRS (2Txslots) Back Side Middle (Hotspot Closed,Battery 1)

Date/Time: 5/4/2013 6:51:37 PM
Communication System: GPRS 2TX ; Frequency: 1880 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.271 mW/g

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.12 V/m; Power Drift = -0.004 dB
Peak SAR (extrapolated) = 0.395 W/kg
SAR(1 g) = 0.250 mW/g; SAR(10 g) = 0.149 mW/g
Maximum value of SAR (measured) = 0.275 mW/g

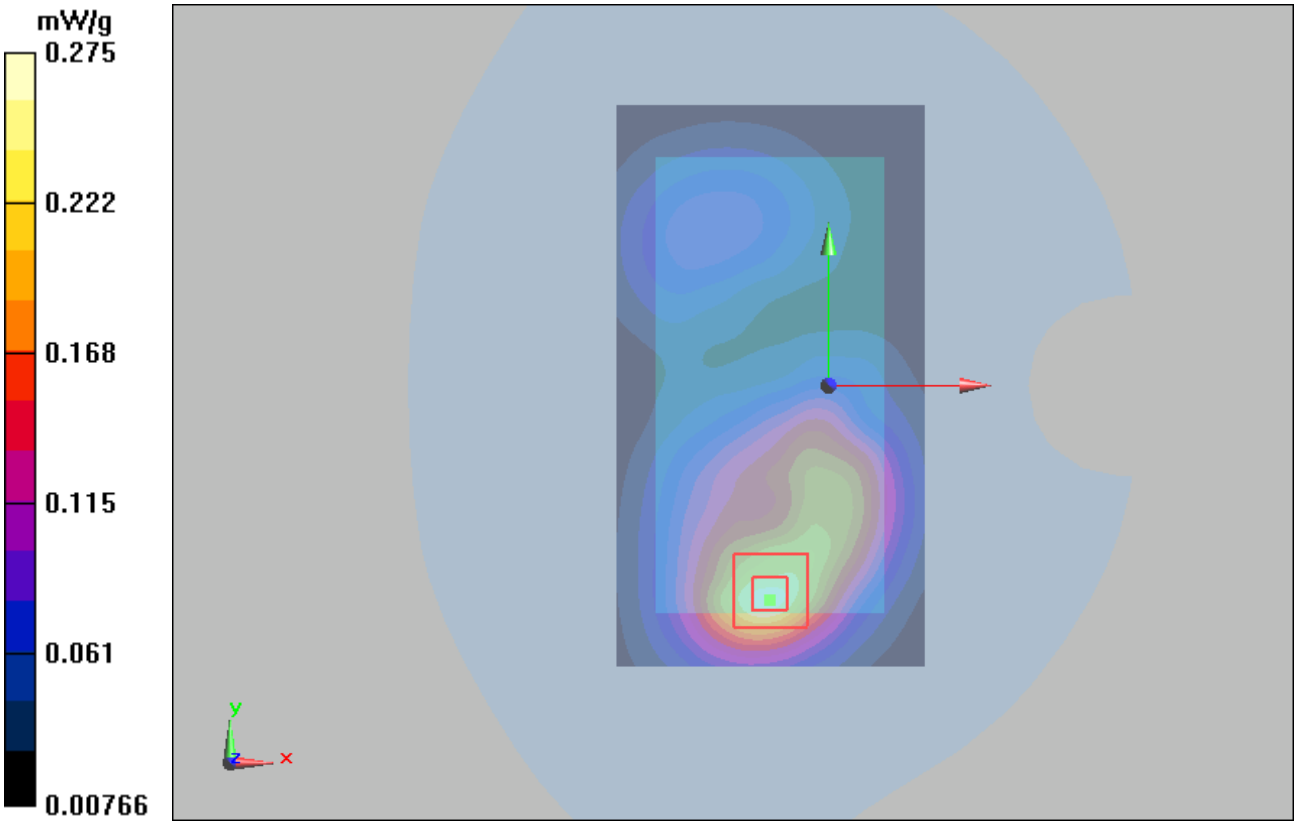


Figure 40 Body, Back Side, GSM 1900 GPRS (2Txslots) Channel 661

GSM 1900 GPRS (2Txslots) Front Side Middle (Hotspot Closed,Battery 1)

Date/Time: 5/4/2013 7:26:34 PM
Communication System: GPRS 2TX ; Frequency: 1880 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.254 mW/g

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.54 V/m; Power Drift = 0.101 dB
Peak SAR (extrapolated) = 0.399 W/kg
SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.146 mW/g
Maximum value of SAR (measured) = 0.269 mW/g

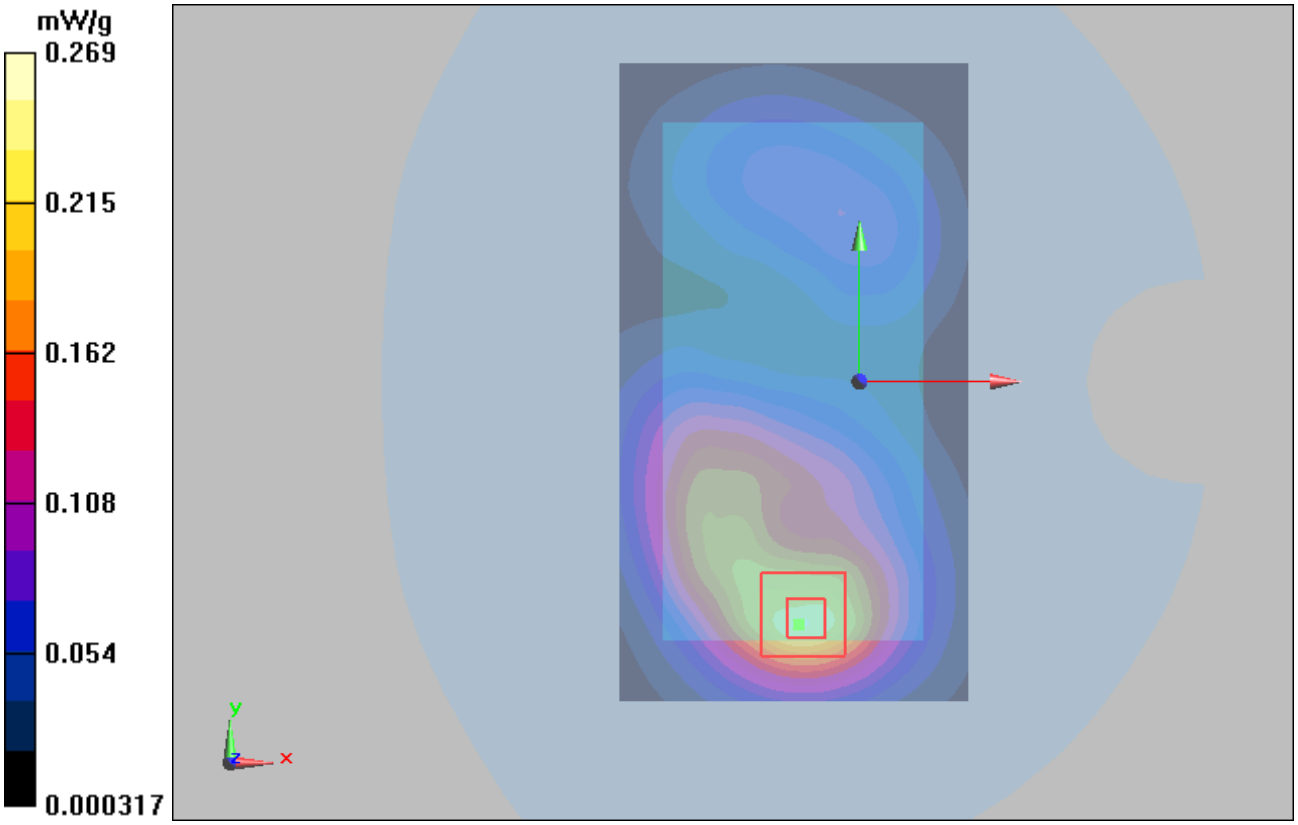


Figure 41 Body, Front Side, GSM 1900 GPRS (2Txslots) Channel 661

GSM 1900 GPRS (1Txslot) Back Side Middle (Hotspot Opened,Battery 1)

Date/Time: 5/4/2013 3:34:09 PM
Communication System: GPRS 1TX; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle /Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.269 mW/g

Back Side Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.76 V/m; Power Drift = 0.017 dB
Peak SAR (extrapolated) = 0.435 W/kg
SAR(1 g) = 0.262 mW/g; SAR(10 g) = 0.149 mW/g
Maximum value of SAR (measured) = 0.292 mW/g

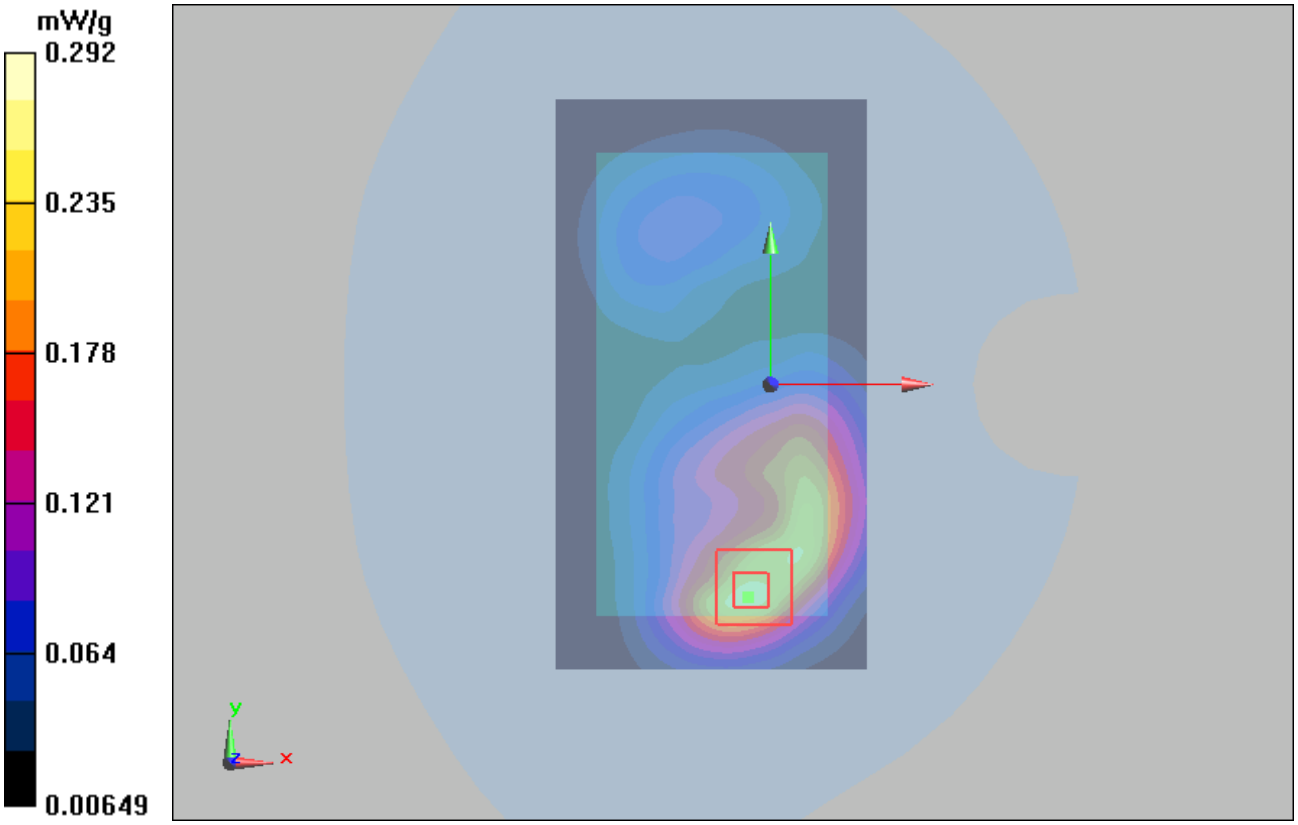


Figure 42 Body, Back Side, GSM 1900 GPRS (1Txslot) Channel 661

GSM 1900 GPRS (1Txslot) Front Side Middle (Hotspot Opened,Battery 1)

Date/Time: 5/4/2013 3:57:00 PM
Communication System: GPRS 1TX; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.321 mW/g

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.63 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 0.707 W/kg
SAR(1 g) = 0.293 mW/g; SAR(10 g) = 0.157 mW/g
Maximum value of SAR (measured) = 0.334 mW/g

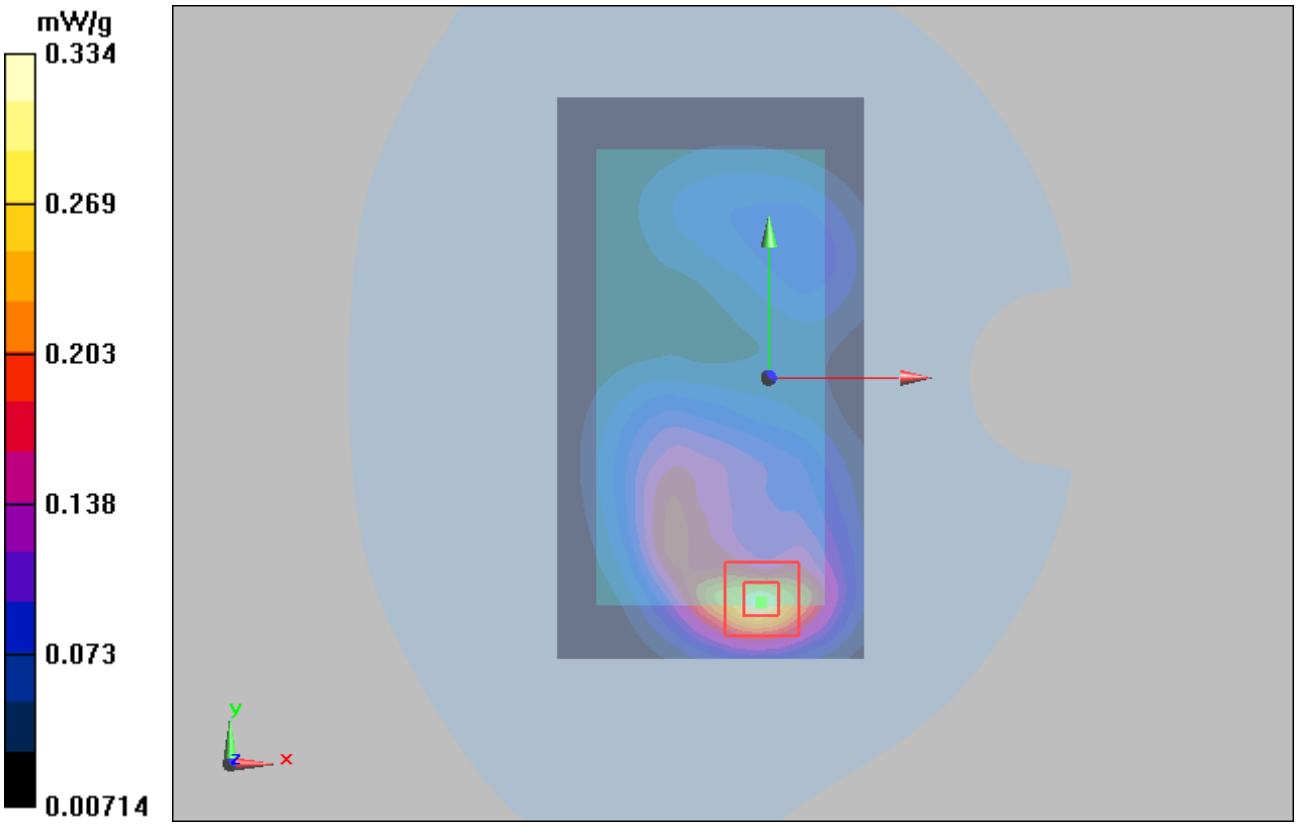


Figure 43 Body, Front Side, GSM 1900 GPRS (1Txslot) Channel 661

GSM 1900 GPRS (1Txslot) Left Edge Middle (Hotspot Opened,Battery 1)

Date/Time: 5/4/2013 4:18:50 PM
Communication System: GPRS 1TX; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Edge Middle/Area Scan (31x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.070 mW/g

Left Edge Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.96 V/m; Power Drift = 0.085 dB
Peak SAR (extrapolated) = 0.110 W/kg
SAR(1 g) = 0.064 mW/g; SAR(10 g) = 0.038 mW/g
Maximum value of SAR (measured) = 0.069 mW/g

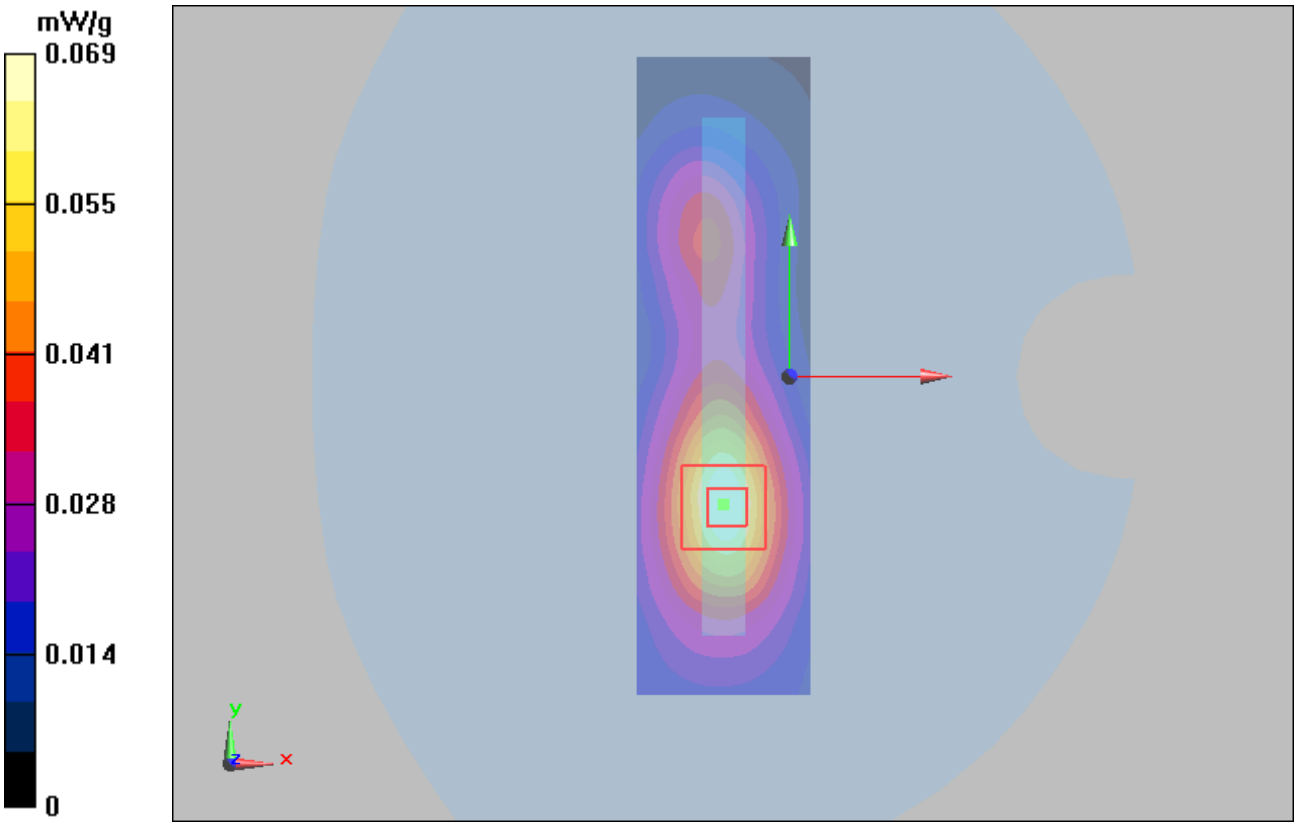


Figure 44 Body, Left Edge, GSM 1900 GPRS (1Txslot) Channel 661

GSM 1900 GPRS (1Txslot) Right Edge Middle (Hotspot Opened,Battery 1)

Date/Time: 5/4/2013 4:33:16 PM
Communication System: GPRS 1TX; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Edge Middle/Area Scan (31x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.058 mW/g

Right Edge Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.31 V/m; Power Drift = -0.076 dB
Peak SAR (extrapolated) = 0.088 W/kg
SAR(1 g) = 0.053 mW/g; SAR(10 g) = 0.031 mW/g
Maximum value of SAR (measured) = 0.059 mW/g

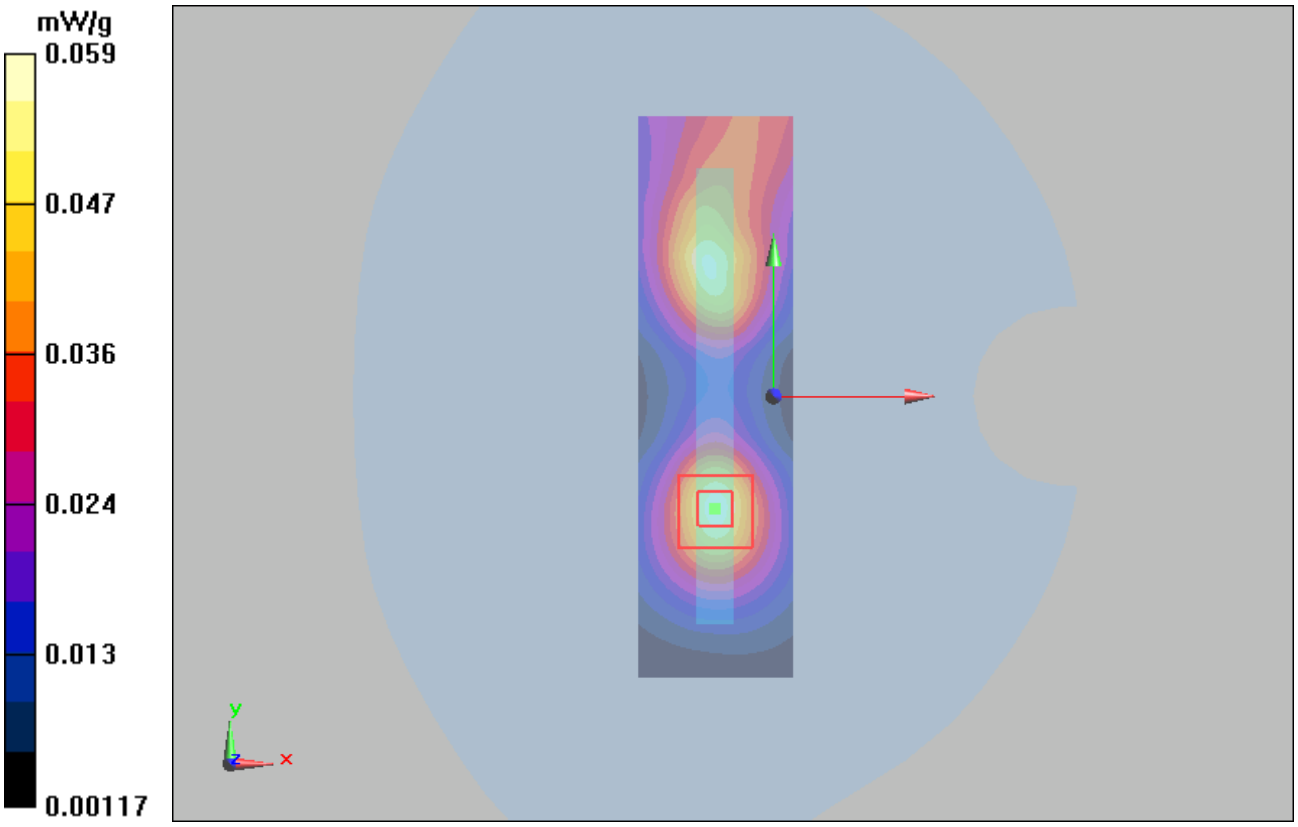


Figure 45 Body, Right Edge, GSM 1900 GPRS (1Txslot) Channel 661

GSM 1900 GPRS (1Txslot) Bottom Edge Middle (Hotspot Opened,Battery 1)

Date/Time: 5/4/2013 4:48:28 PM

Communication System: GPRS 1TX; Frequency: 1880 MHz;Duty Cycle: 1:8.30042

Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Bottom Edge Middle /Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00678 mW/g

Bottom Edge Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.75 V/m; Power Drift = 0.029 dB

Peak SAR (extrapolated) = 0.015 W/kg

SAR(1 g) = 0.006 mW/g; SAR(10 g) = 0.004 mW/g

Maximum value of SAR (measured) = 0.007mW/g

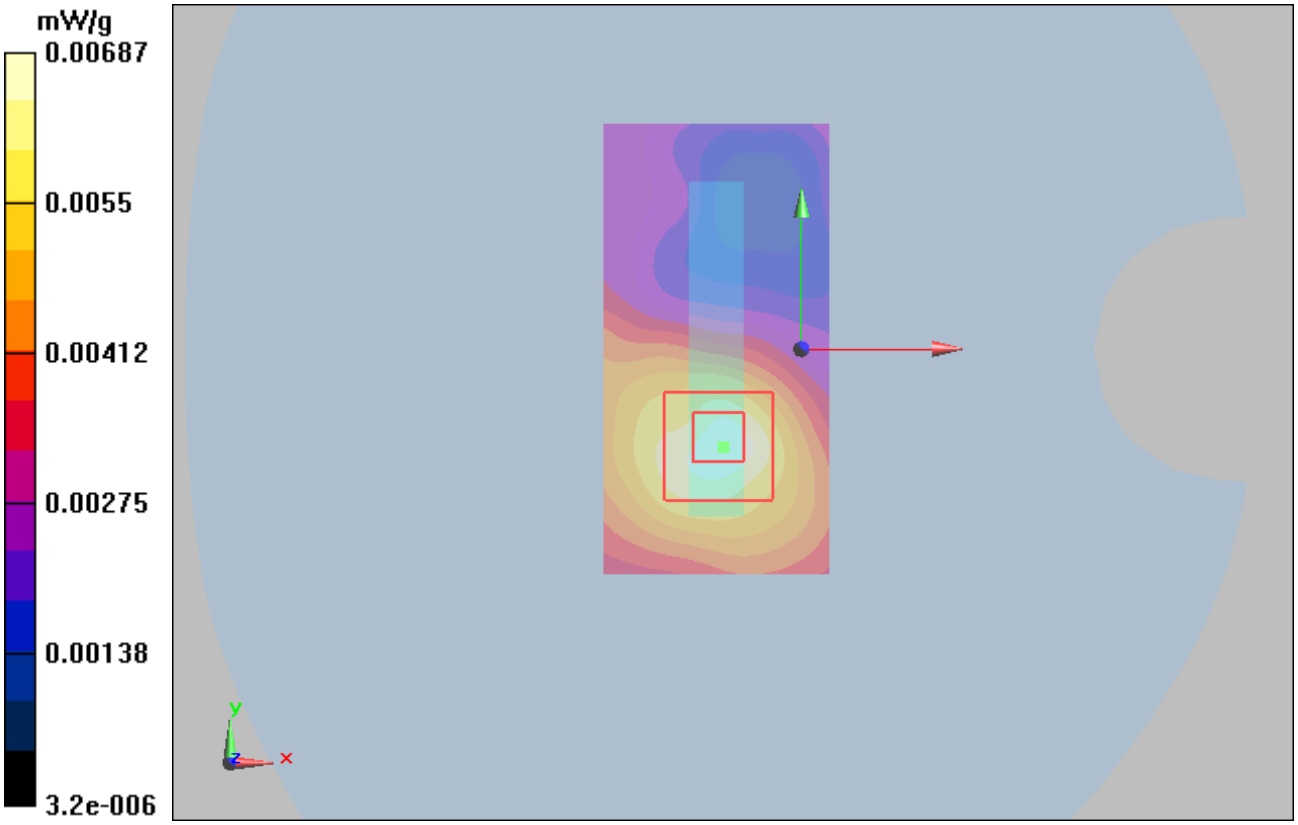


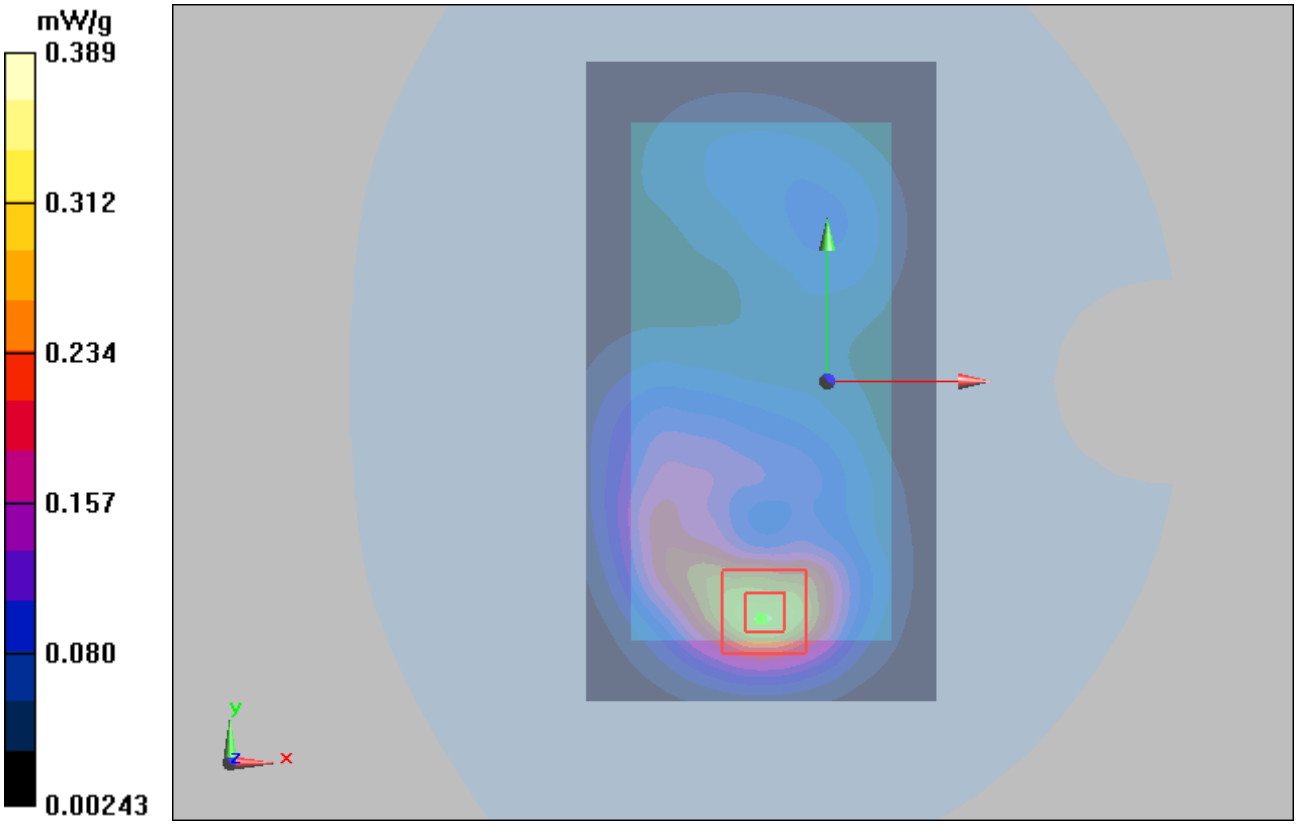
Figure 46 Body, Bottom Edge, GSM 1900 GPRS (1Txslot) Channel 661

GSM 1900 EGPRS (1Txslot) Front Side Middle (Hotspot Opened,Battery 1)

Date/Time: 5/4/2013 5:28:59 PM
Communication System: EGPRS 1TX; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.342 mW/g

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.3 V/m; Power Drift = 0.092 dB
Peak SAR (extrapolated) = 0.601 W/kg
SAR(1 g) = 0.346 mW/g; SAR(10 g) = 0.184 mW/g
Maximum value of SAR (measured) = 0.389 mW/g



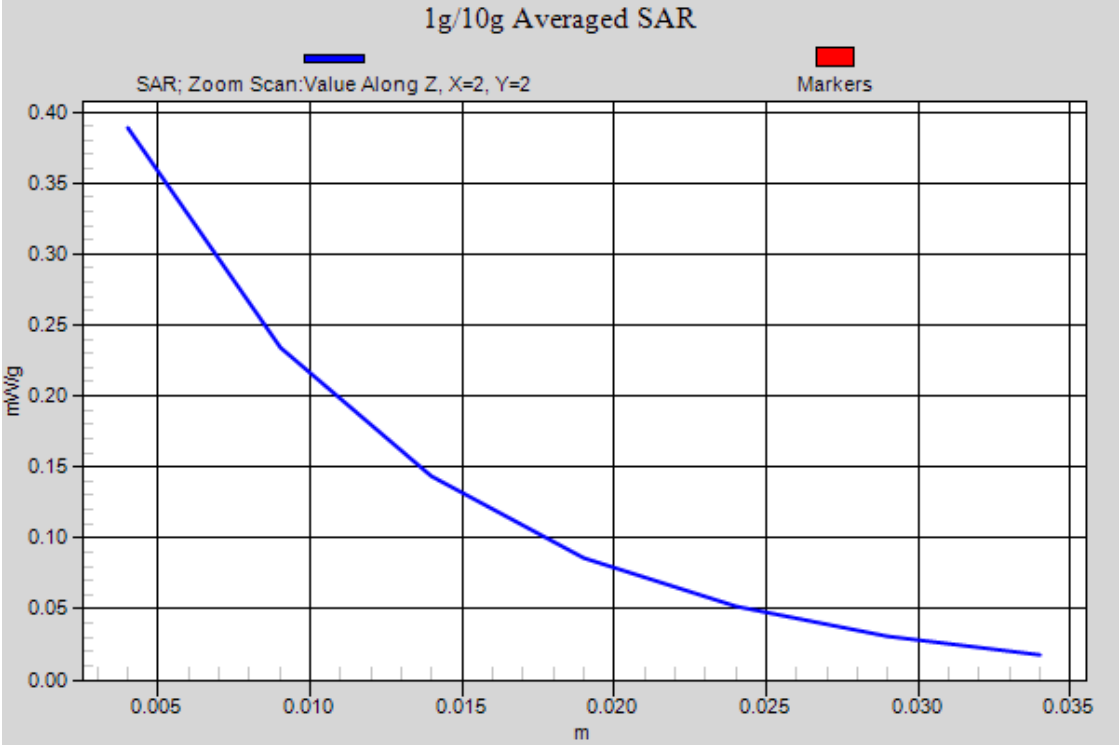


Figure 47 Body, Front Side, GSM 1900 EGPRS (1Txslot) Channel 661

GSM 1900 GPRS (1Txslot) Front Side Middle (Hotspot Opened,Battery 2)

Date/Time: 5/4/2013 5:47:21 PM
Communication System: GPRS 1TX; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.343 mW/g

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.33 V/m; Power Drift = 0.071dB
Peak SAR (extrapolated) = 0.596 W/kg
SAR(1 g) = 0.344 mW/g; SAR(10 g) = 0.184 mW/g
Maximum value of SAR (measured) = 0.386 mW/g

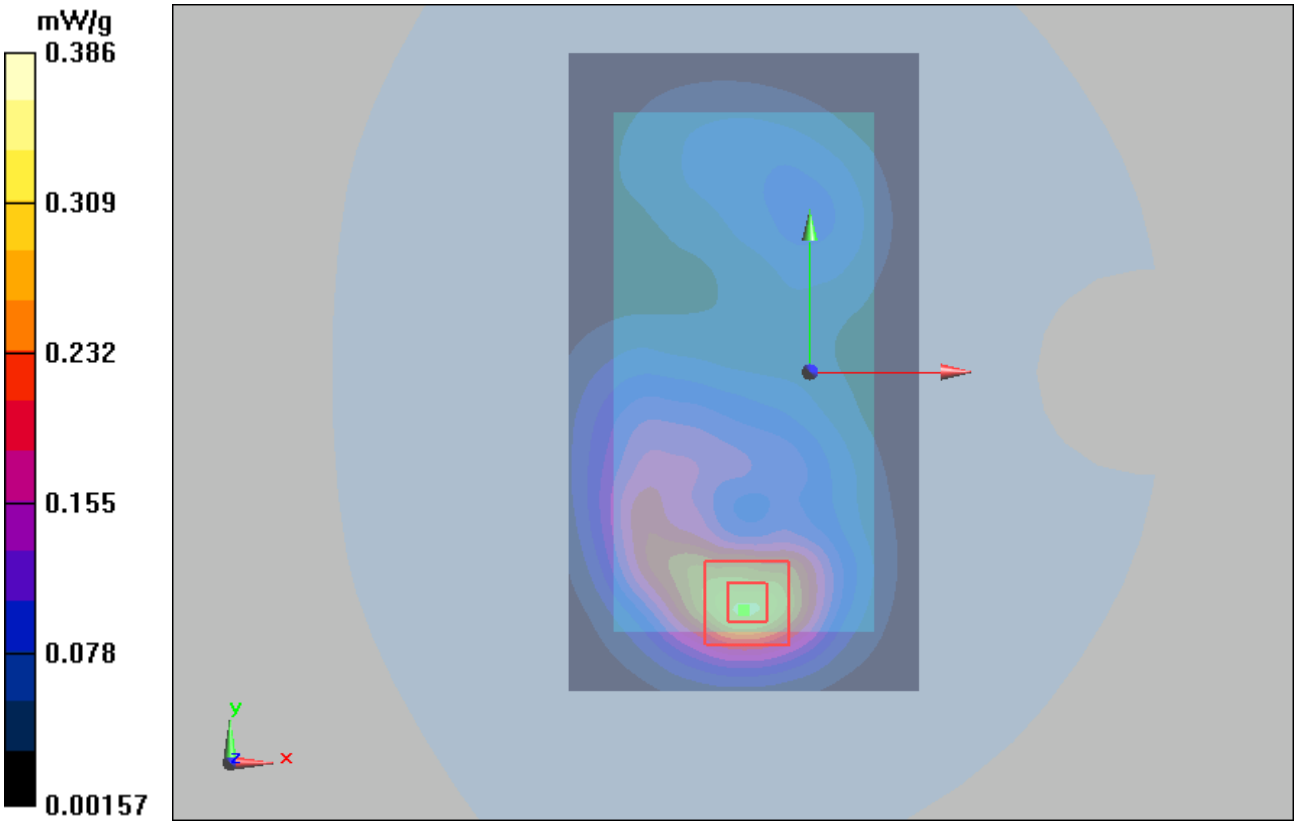


Figure 48 Body, Front Side, GSM 1900 GPRS (1Txslot) Channel 661

GSM 1900 GPRS (1Txslot) Front Side Middle (Hotspot Opened,Battery 3)

Date/Time: 5/4/2013 6:39:53 PM
Communication System: GPRS 1TX; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.341 mW/g

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.3 V/m; Power Drift = 0.073 dB
Peak SAR (extrapolated) = 0.594 W/kg
SAR(1 g) = 0.344 mW/g; SAR(10 g) = 0.184 mW/g
Maximum value of SAR (measured) = 0.384 mW/g

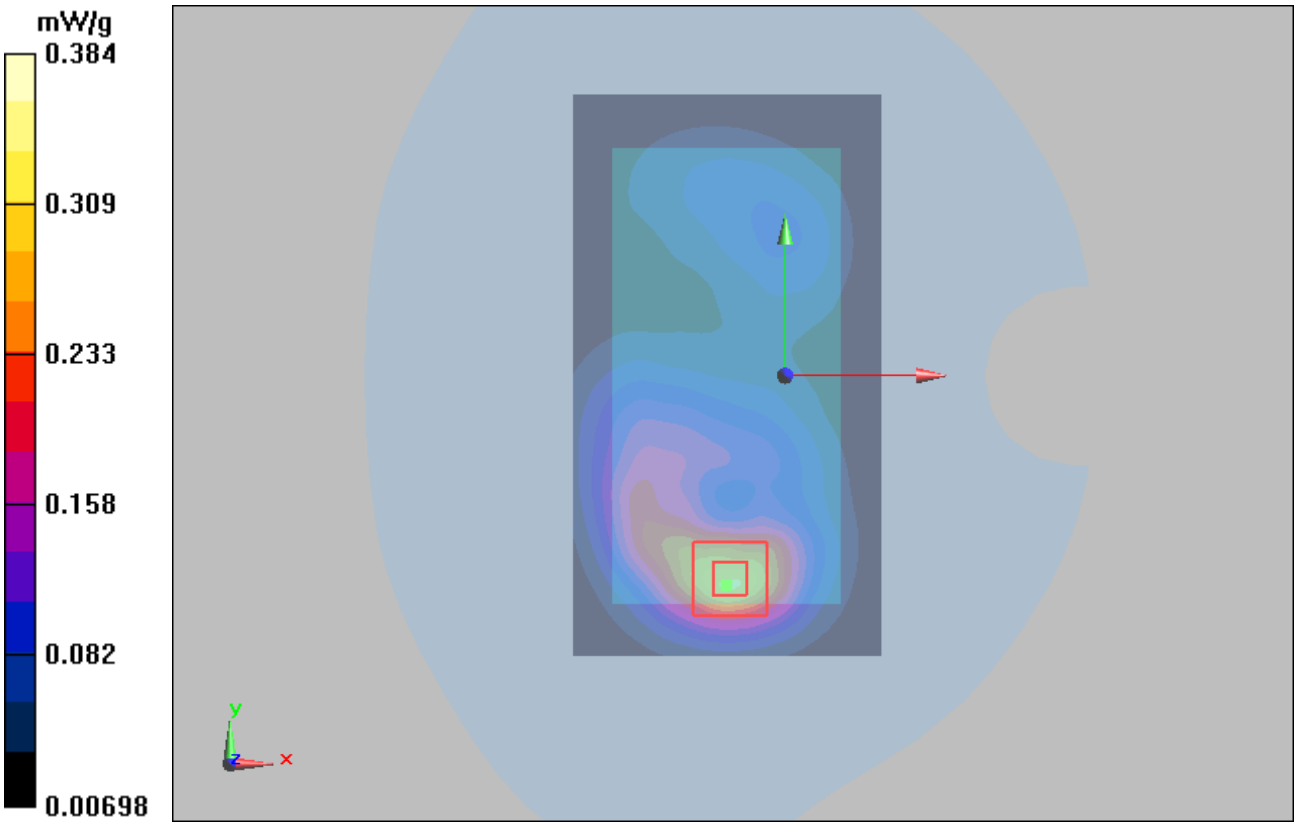


Figure 49 Body, Front Side, GSM 1900 GPRS (1Txslot) Channel 661

WCDMA Band V Left Cheek Middle (Battery 1)

Date/Time: 4/26/2013 5:49:46 AM
Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.516 mW/g

Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.95 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 0.610 W/kg
SAR(1 g) = 0.498 mW/g; SAR(10 g) = 0.374 mW/g
Maximum value of SAR (measured) = 0.521 mW/g

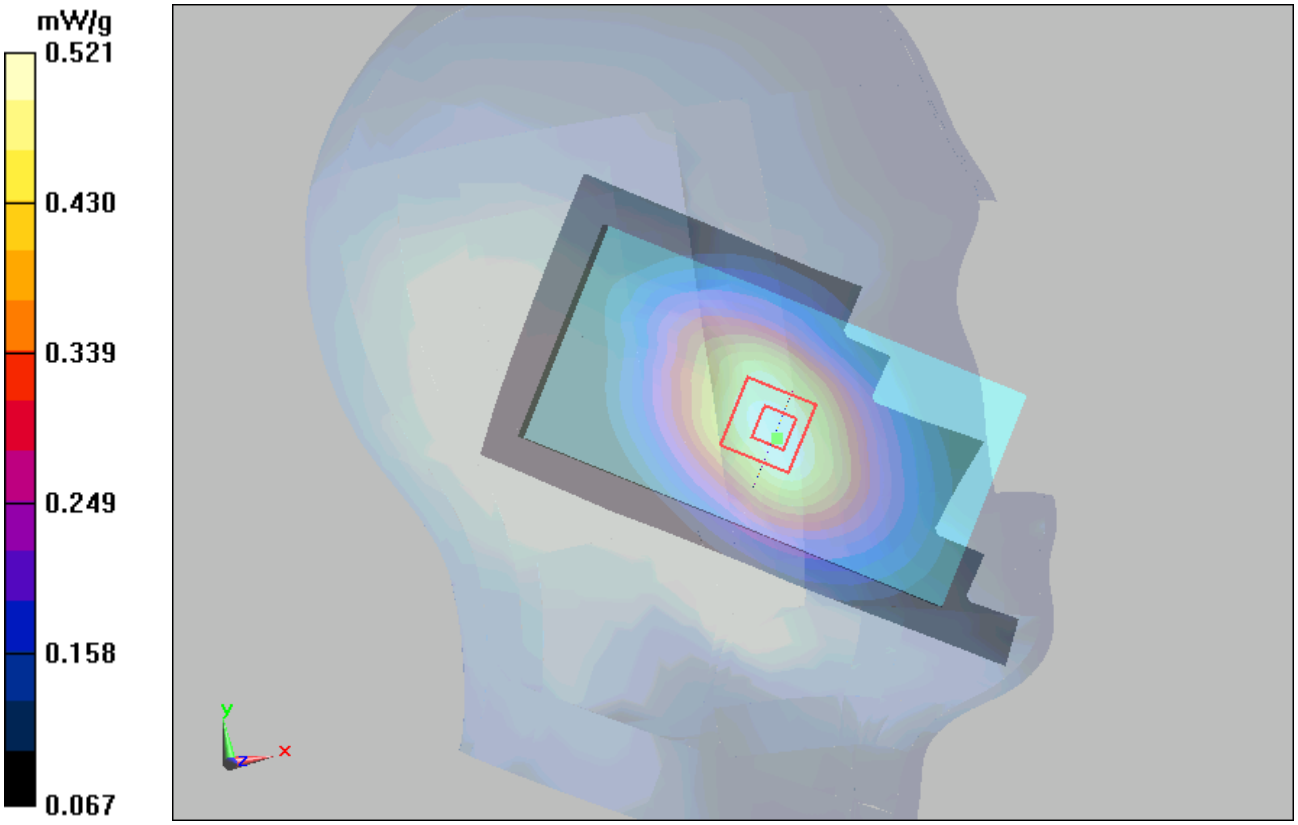


Figure 50 Left Hand Touch Cheek WCDMA Band V Channel 4183

WCDMA Band V Left Tilt Middle (Battery 1)

Date/Time: 4/26/2013 6:05:29 AM
Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Tilt Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.307 mW/g

Left Tilt Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = -0.149 dB
Peak SAR (extrapolated) = 0.368 W/kg
SAR(1 g) = 0.290 mW/g; SAR(10 g) = 0.220 mW/g
Maximum value of SAR (measured) = 0.307 mW/g

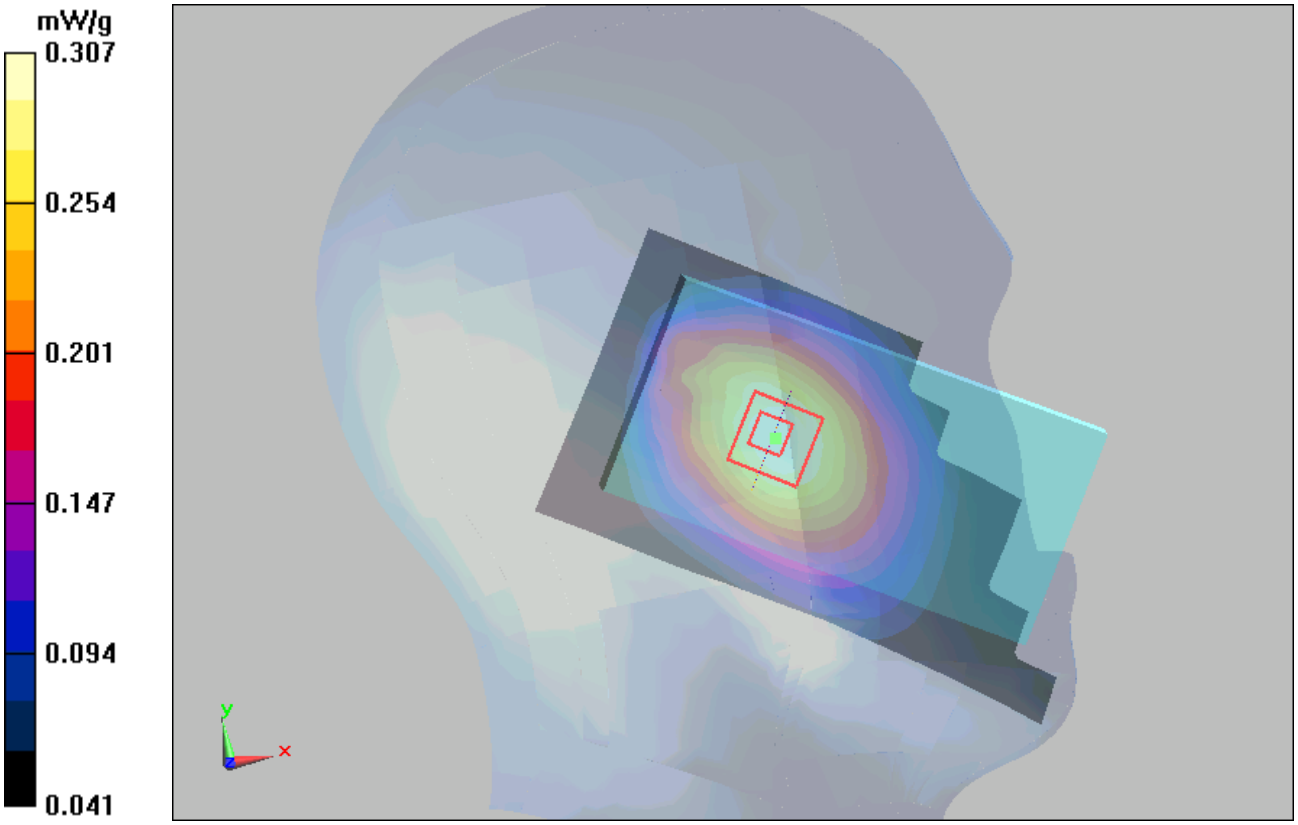


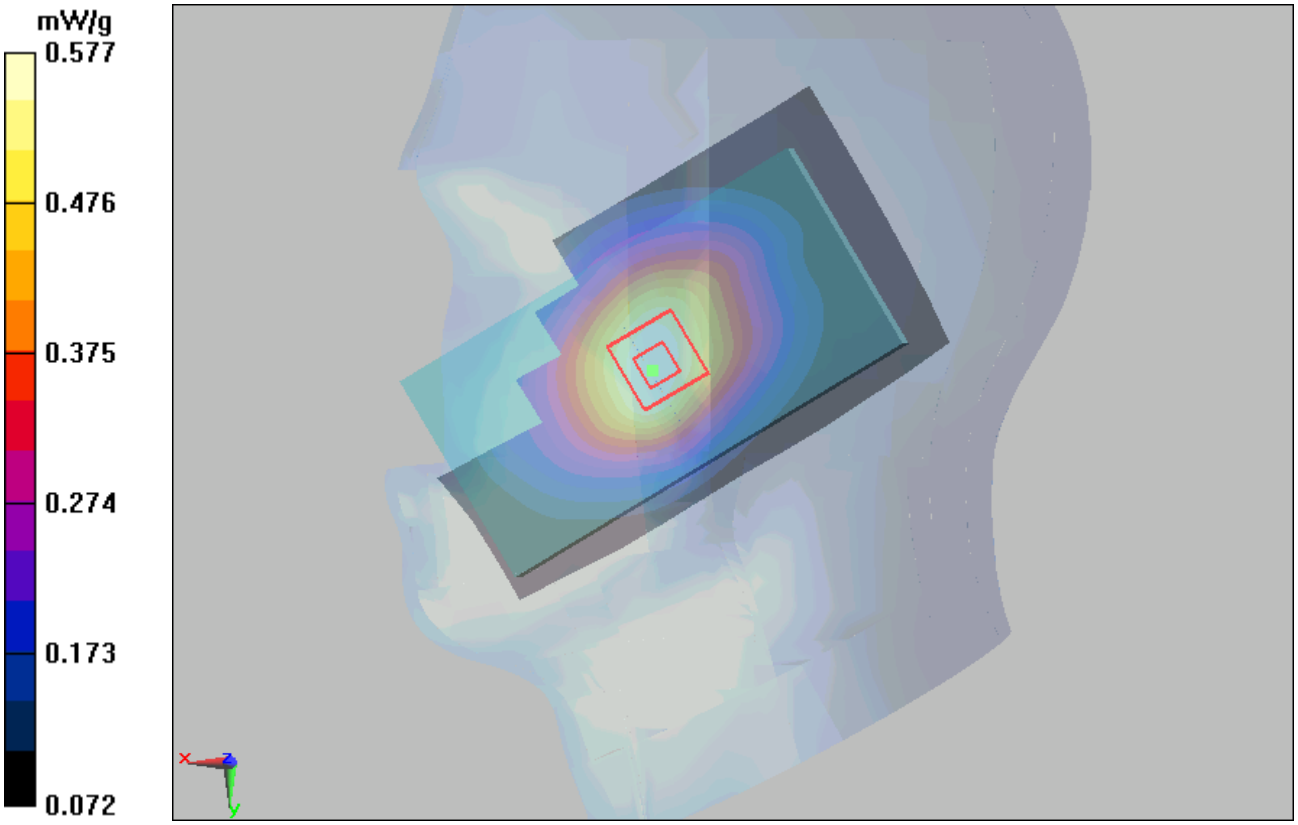
Figure 51 Left Hand Tilt 15° WCDMA Band V Channel 4183

WCDMA Band V Right Cheek Middle (Battery 1)

Date/Time: 4/26/2013 6:27:28 AM
Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.574 mW/g

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.5 V/m; Power Drift = -0.070 dB
Peak SAR (extrapolated) = 0.678 W/kg
SAR(1 g) = 0.550 mW/g; SAR(10 g) = 0.416 mW/g
Maximum value of SAR (measured) = 0.577 mW/g



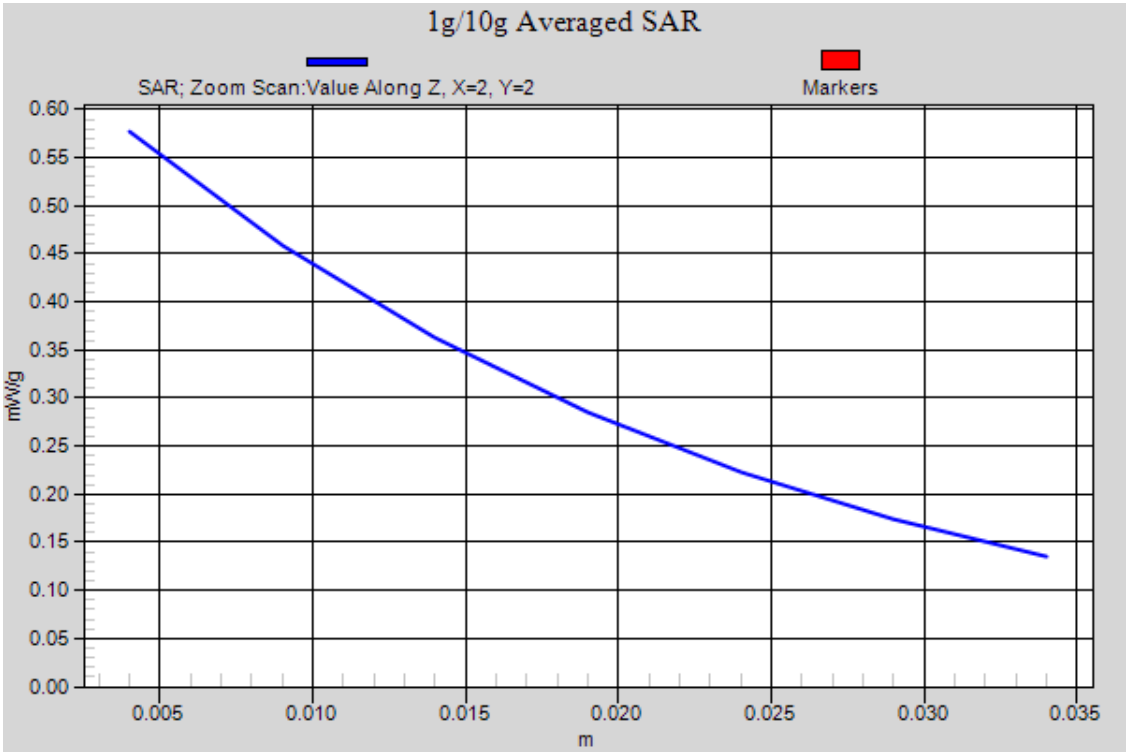


Figure 52 Right Hand Touch Cheek WCDMA Band V Channel 4183

WCDMA Band V Right Tilt Middle (Battery 1)

Date/Time: 4/26/2013 7:23:24 AM
Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Tilt Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.308 mW/g

Right Tilt Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 0.367 W/kg
SAR(1 g) = 0.292 mW/g; SAR(10 g) = 0.221 mW/g
Maximum value of SAR (measured) = 0.305 mW/g

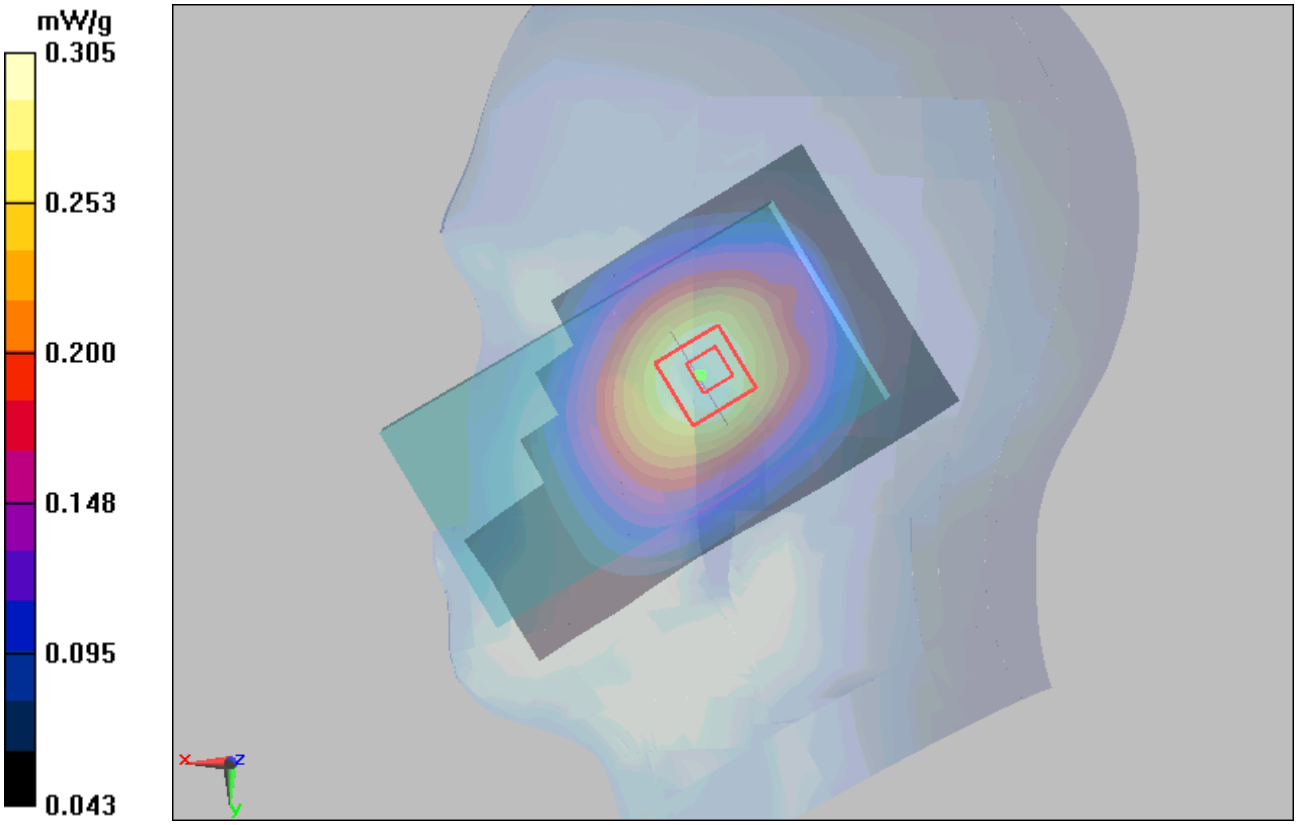


Figure 53 Right Hand Tilt 15° WCDMA Band V Channel 4183

WCDMA Band V Right Cheek Middle (Battery 2)

Date/Time: 4/26/2013 6:48:25 AM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.572 mW/g

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.3 V/m; Power Drift = 0.165 dB

Peak SAR (extrapolated) = 0.667 W/kg

SAR(1 g) = 0.545 mW/g; SAR(10 g) = 0.413 mW/g

Maximum value of SAR (measured) = 0.571 mW/g

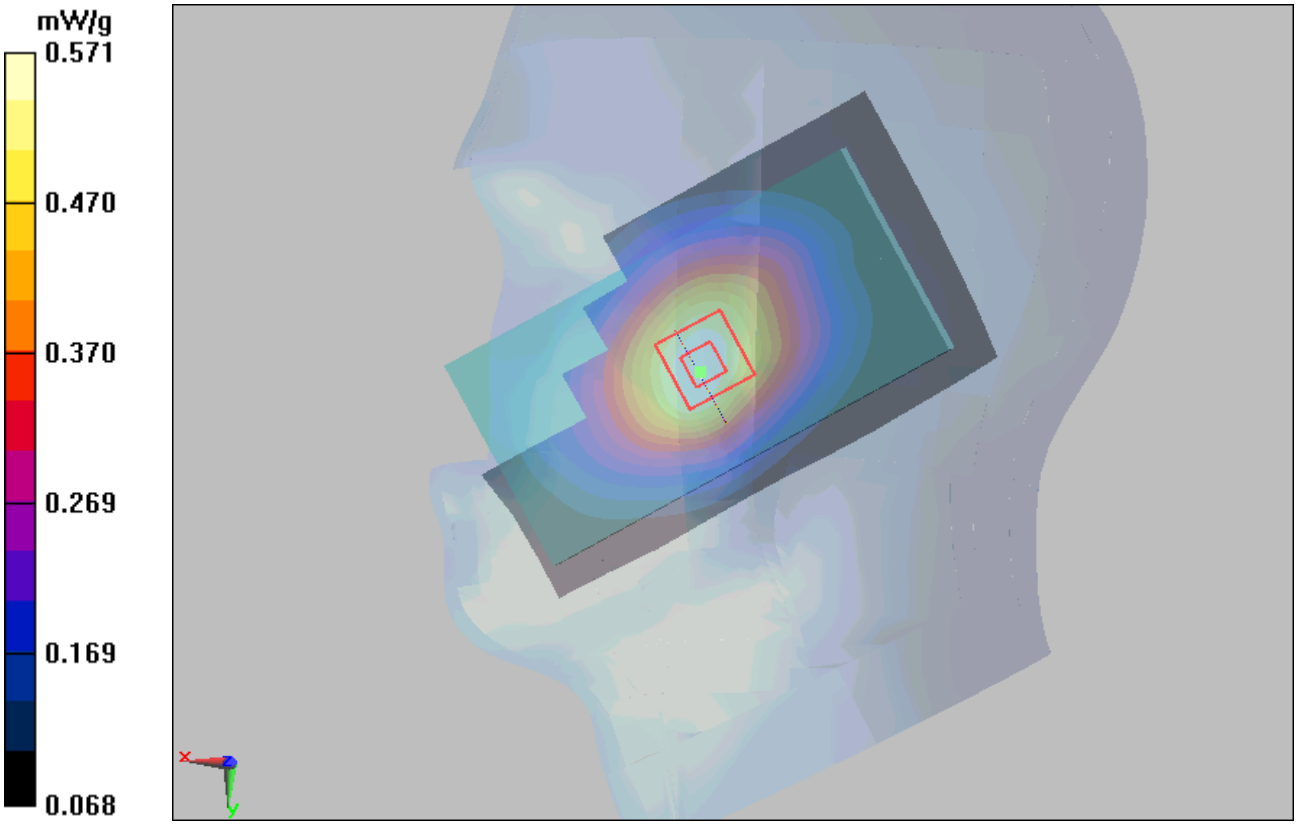


Figure 54 Right Hand Touch Cheek WCDMA Band V Channel 4183

WCDMA Band V Right Cheek Middle (Battery 3)

Date/Time: 4/26/2013 7:04:23 AM
Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.918 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.571 mW/g

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 0.664 W/kg
SAR(1 g) = 0.543 mW/g; SAR(10 g) = 0.411 mW/g
Maximum value of SAR (measured) = 0.568 mW/g

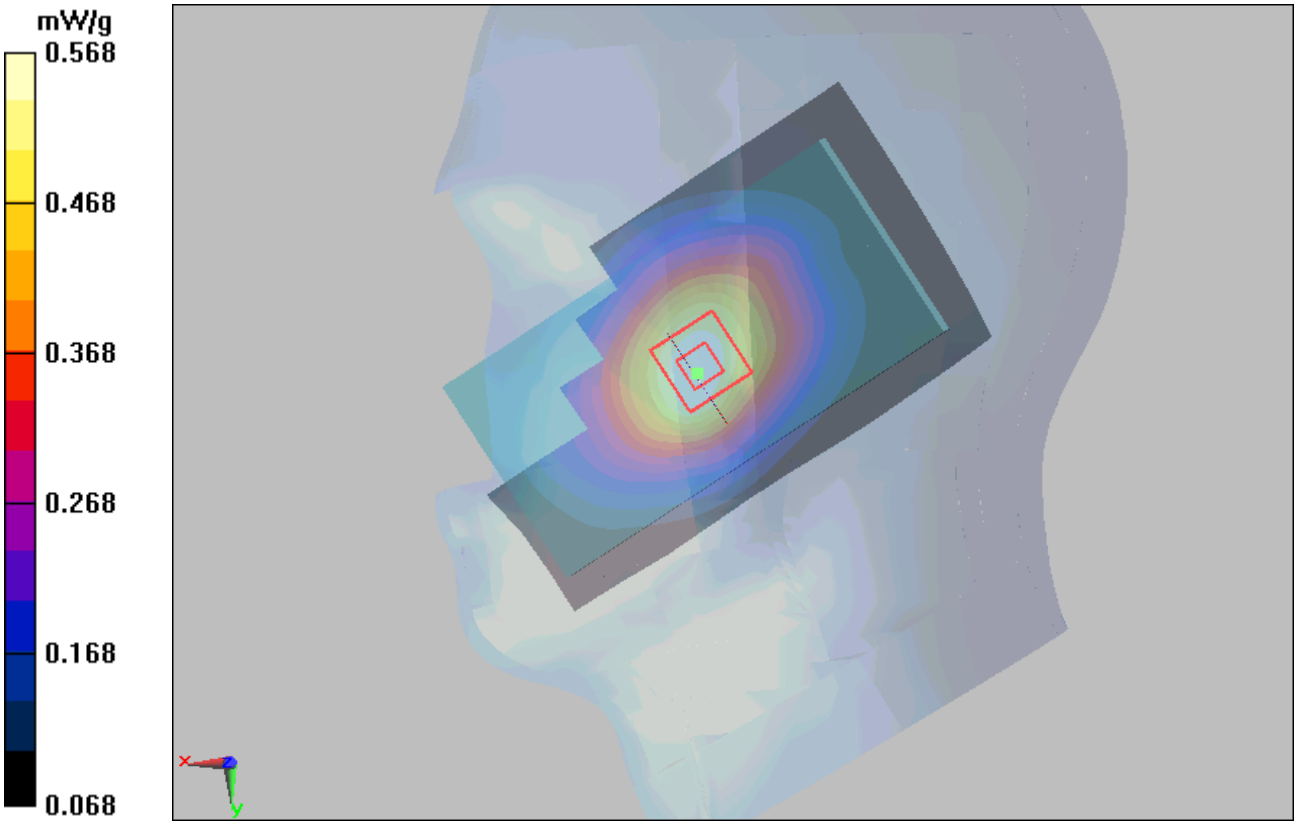


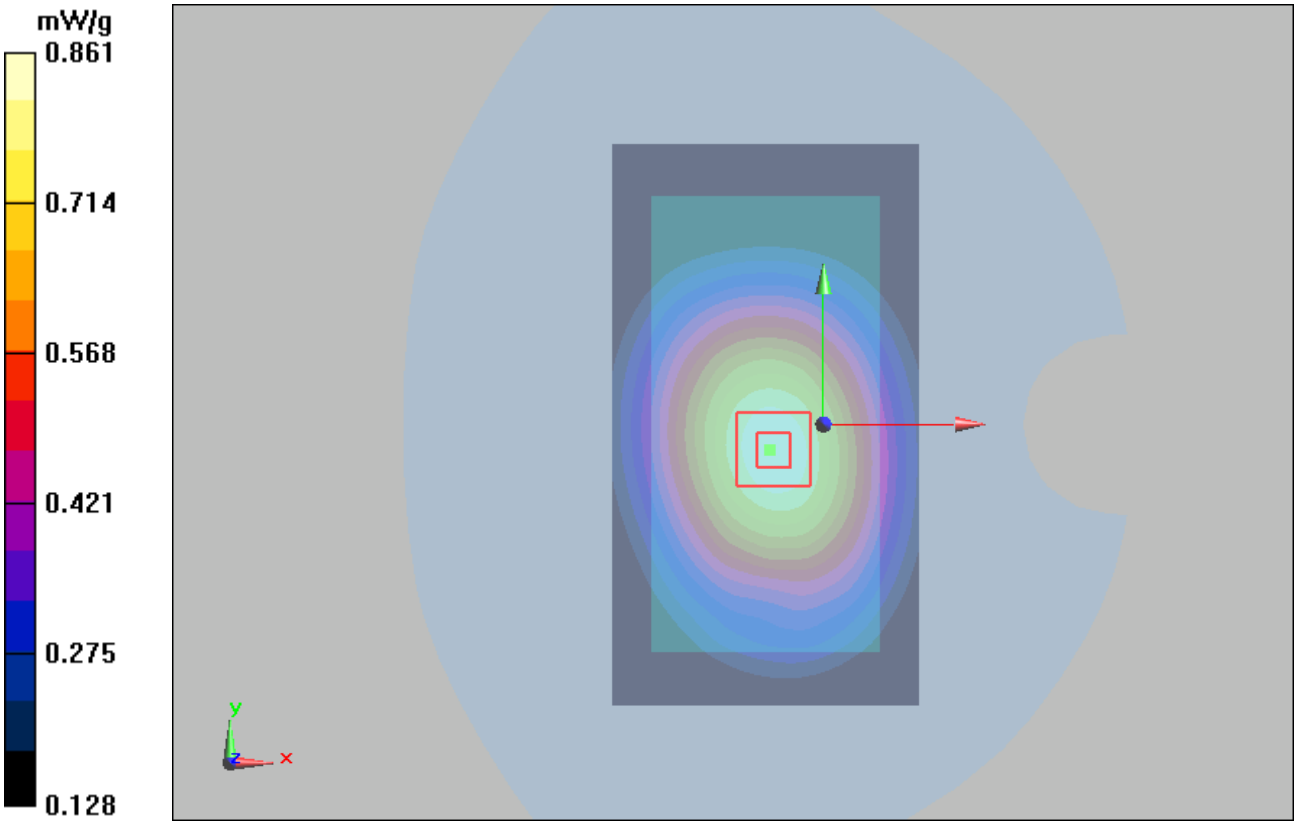
Figure 55 Right Hand Touch Cheek WCDMA Band V Channel 4183

WCDMA Band V Back Side High (Hotspot Closed,Battery 1)

Date/Time: 4/27/2013 10:26:40 AM
Communication System: WCDMA ; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; σ = 1.02 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side High/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.858 mW/g

Back Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.1 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.820 mW/g; SAR(10 g) = 0.615 mW/g
Maximum value of SAR (measured) = 0.861 mW/g



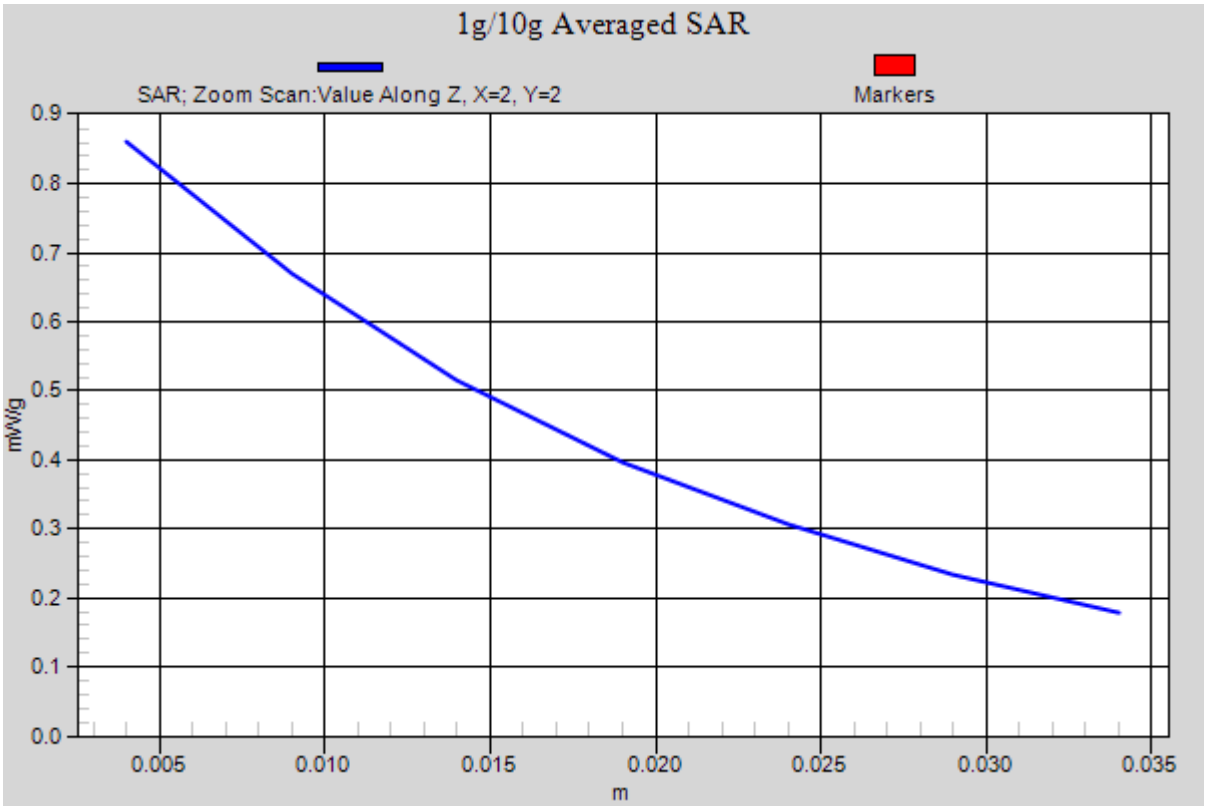


Figure 56 Body, Back Side, WCDMA Band V Channel 4233

WCDMA Band V Back Side Middle (Hotspot Closed,Battery 1)

Date/Time: 4/27/2013 10:09:08 AM
Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.795 mW/g

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.2 V/m; Power Drift = -0.074 dB
Peak SAR (extrapolated) = 0.944 W/kg
SAR(1 g) = 0.754 mW/g; SAR(10 g) = 0.567 mW/g
Maximum value of SAR (measured) = 0.793 mW/g

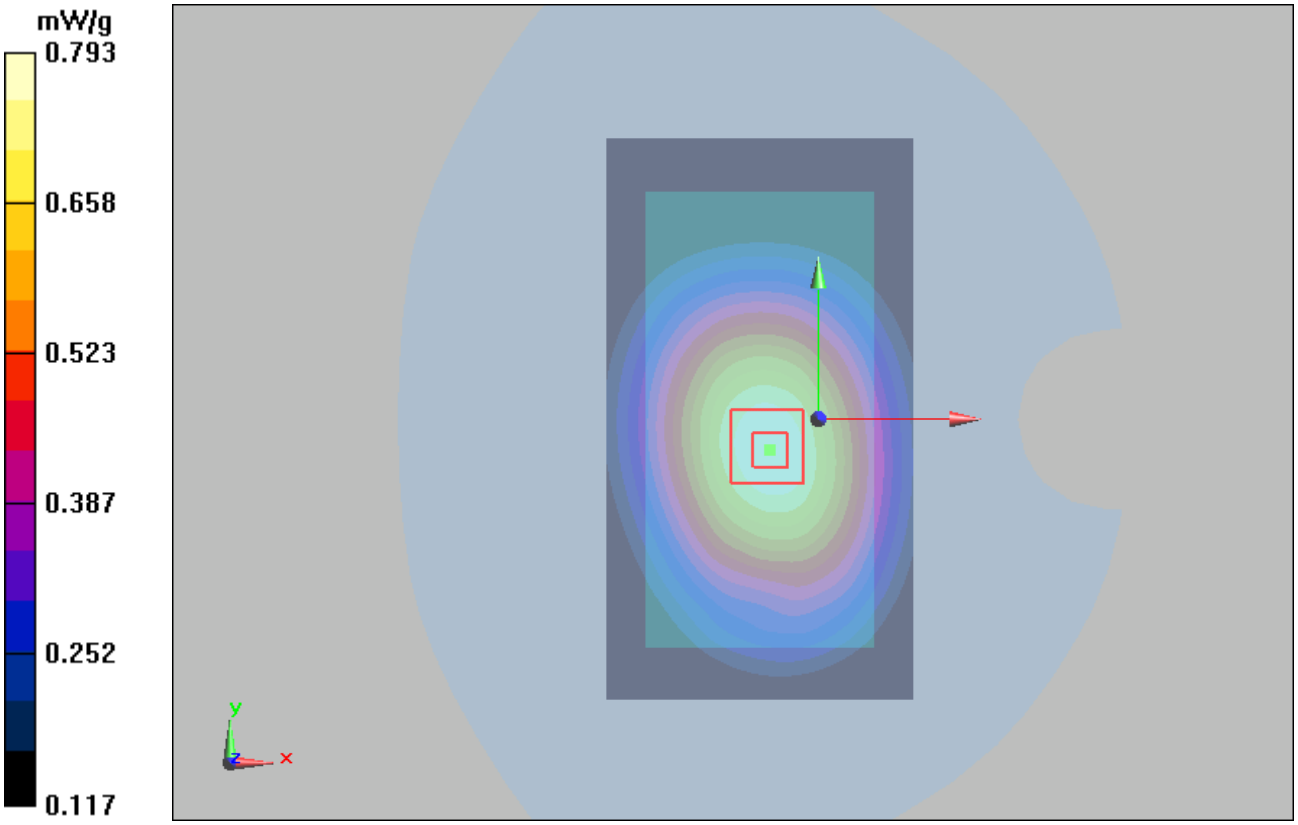


Figure 57 Body, Back Side, WCDMA Band V Channel 4183

WCDMA Band V Back Side Low (Hotspot Closed,Battery 1)

Date/Time: 4/27/2013 10:43:54 AM

Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 1 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Low/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.846 mW/g

Back Side Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.8 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.806 mW/g; SAR(10 g) = 0.607 mW/g

Maximum value of SAR (measured) = 0.848 mW/g

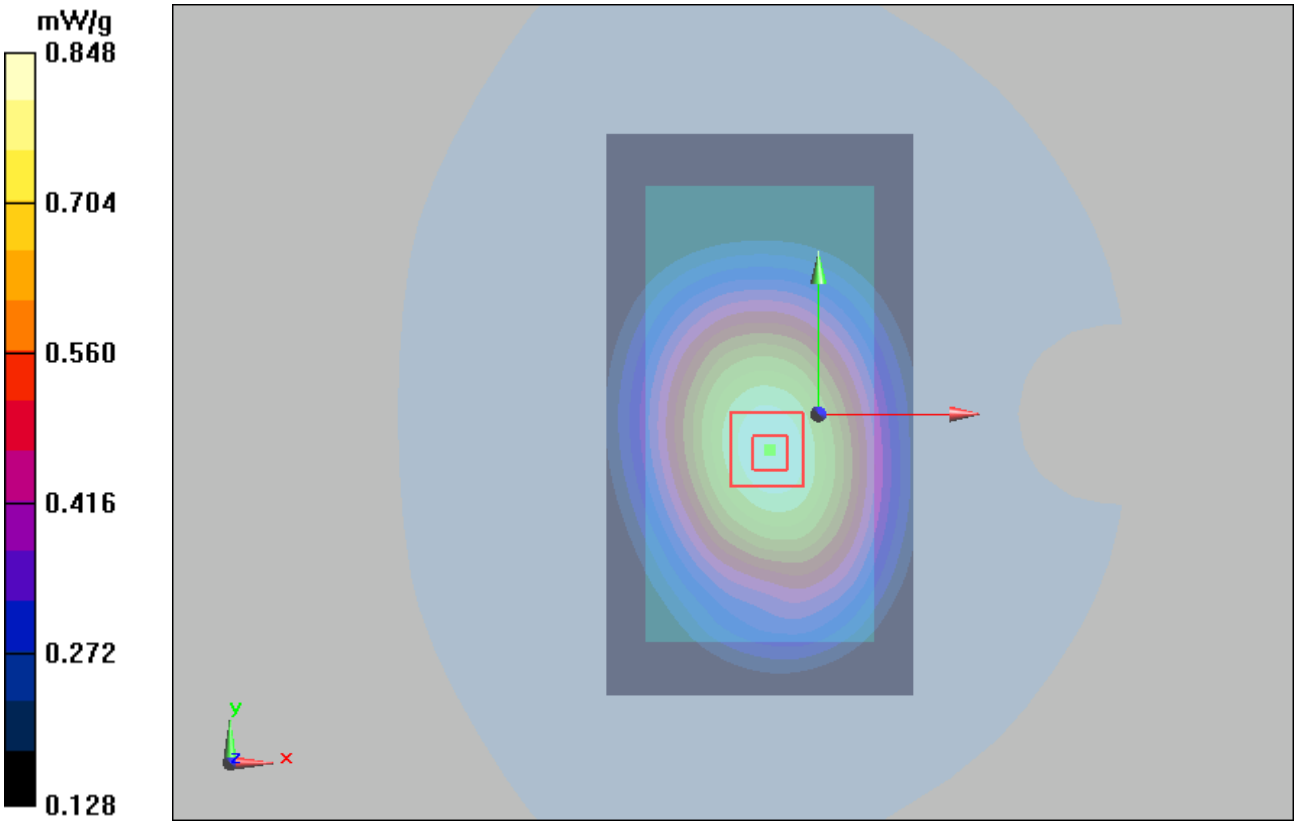


Figure 58 Body, Back Side, WCDMA Band V Channel 4132

WCDMA Band V Front Side Middle (Hotspot Closed,Battery 1)

Date/Time: 4/27/2013 9:51:11 AM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.677 mW/g

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.5 V/m; Power Drift = -0.045 dB

Peak SAR (extrapolated) = 0.798 W/kg

SAR(1 g) = 0.639 mW/g; SAR(10 g) = 0.486 mW/g

Maximum value of SAR (measured) = 0.670 mW/g

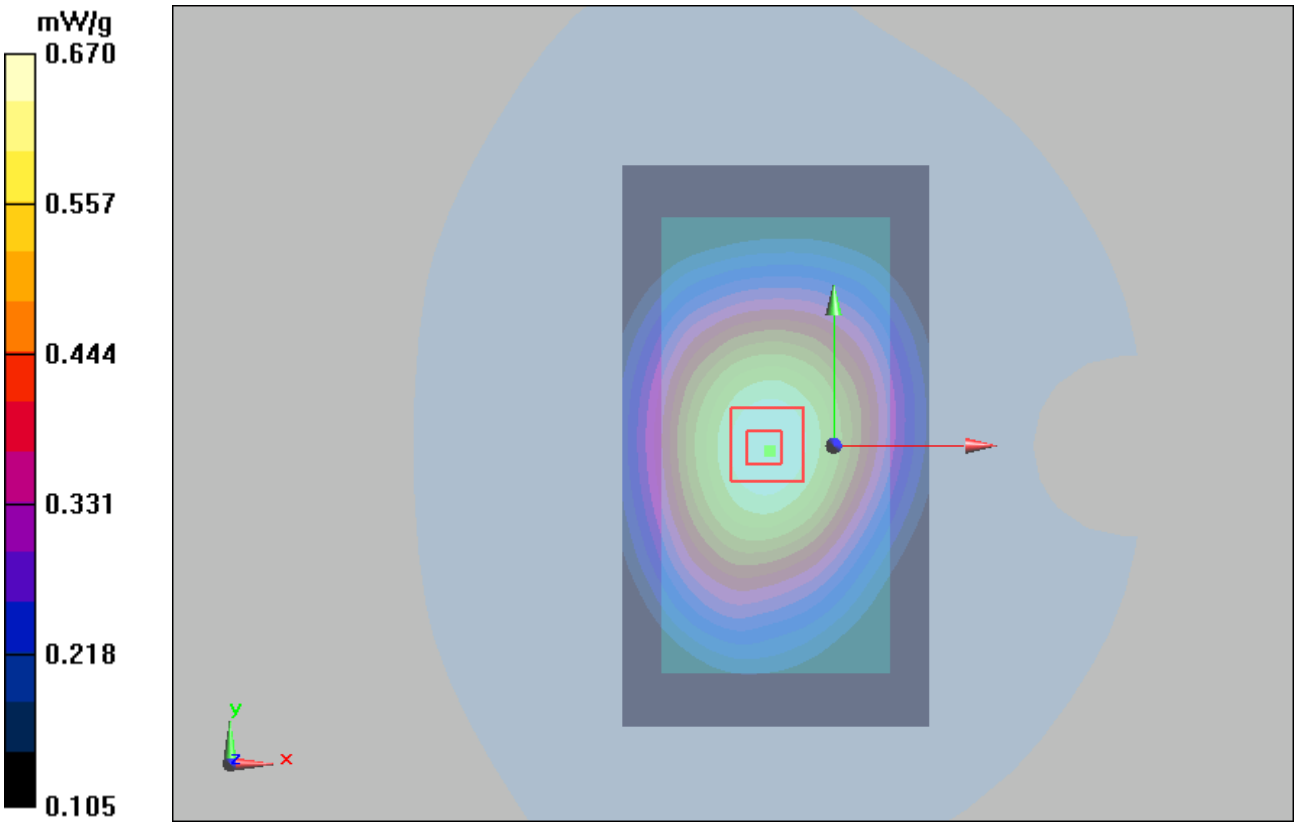


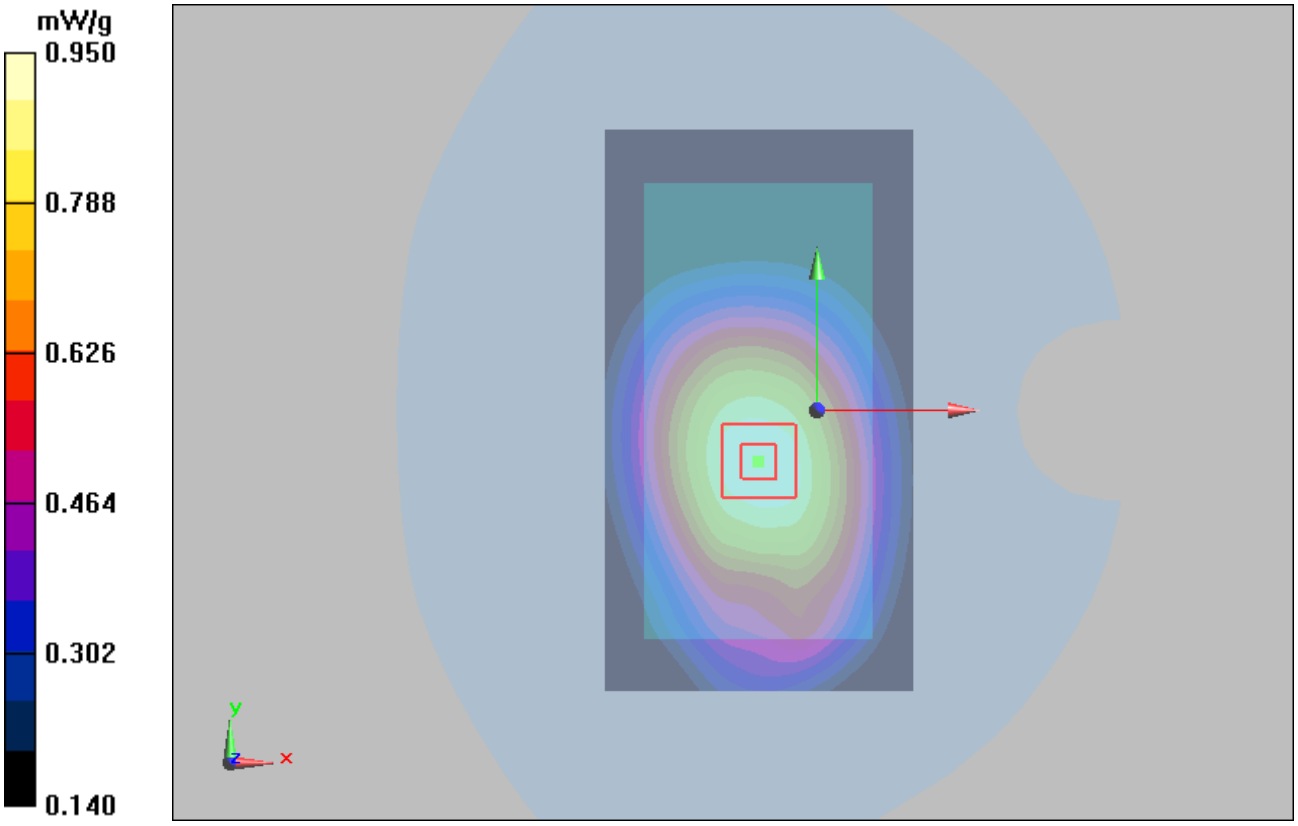
Figure 59 Body, Front Side, WCDMA Band V Channel 4183

WCDMA Band V Back Side High (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 11:08:54 AM
Communication System: WCDMA ; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; σ = 1.02 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side High/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.948 mW/g

Back Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.3 V/m; Power Drift = -0.111 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.906 mW/g; SAR(10 g) = 0.687 mW/g
Maximum value of SAR (measured) = 0.950 mW/g



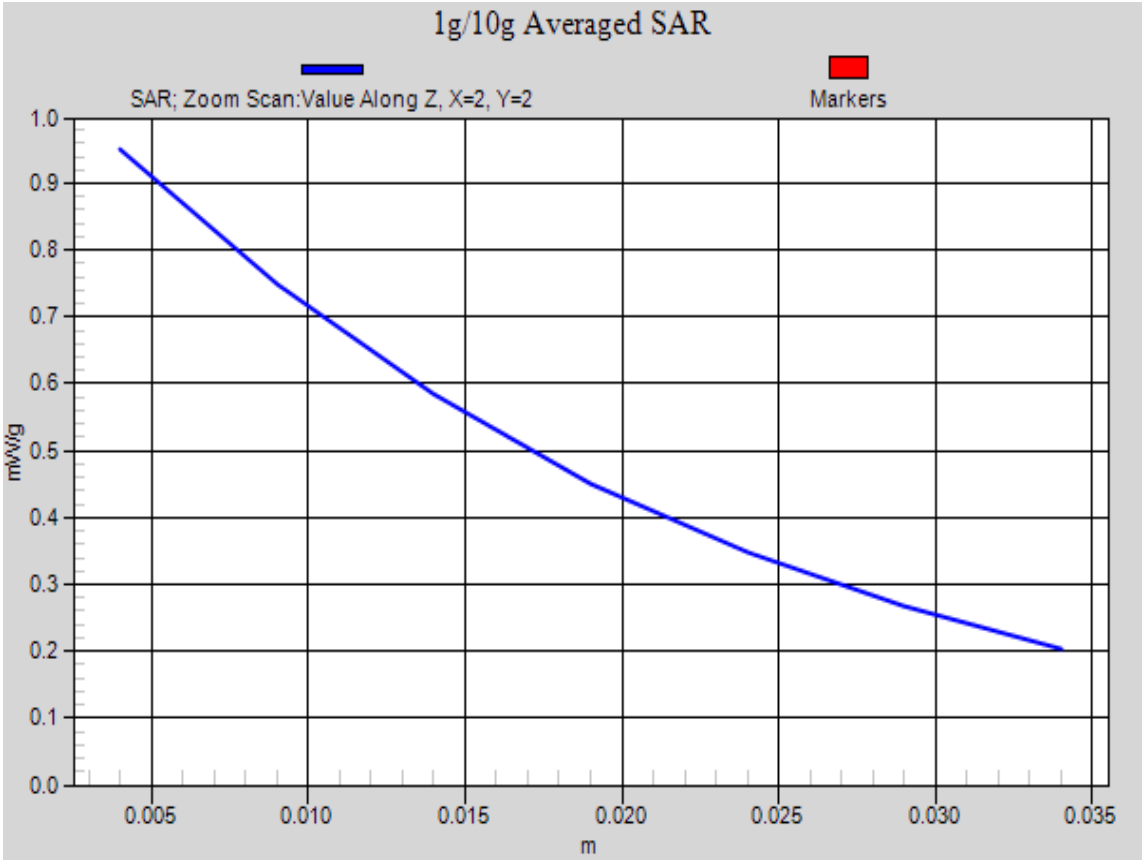


Figure 60 Body, Back Side, WCDMA Band V Channel 4233

WCDMA Band V Back Side Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 10:50:02 AM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.813 mW/g

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.9 V/m; Power Drift = -0.146 dB

Peak SAR (extrapolated) = 0.958 W/kg

SAR(1 g) = 0.773 mW/g; SAR(10 g) = 0.584 mW/g

Maximum value of SAR (measured) = 0.815 mW/g

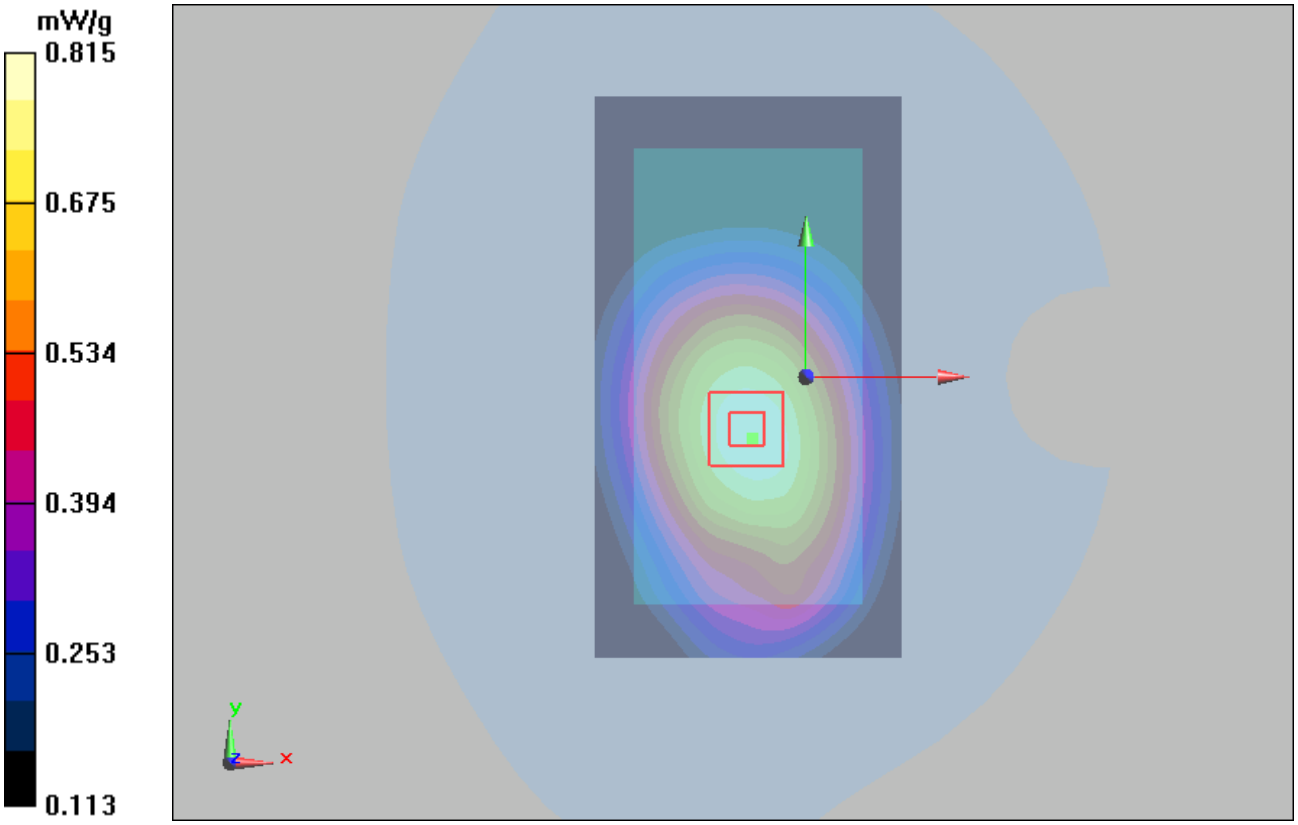


Figure 61 Body, Back Side, WCDMA Band V Channel 4183

WCDMA Band V Back Side Low (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 11:25:28 AM

Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 1 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Low/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.933 mW/g

Back Side Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 29.2 V/m; Power Drift = 0.091 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.895 mW/g; SAR(10 g) = 0.681 mW/g

Maximum value of SAR (measured) = 0.937 mW/g

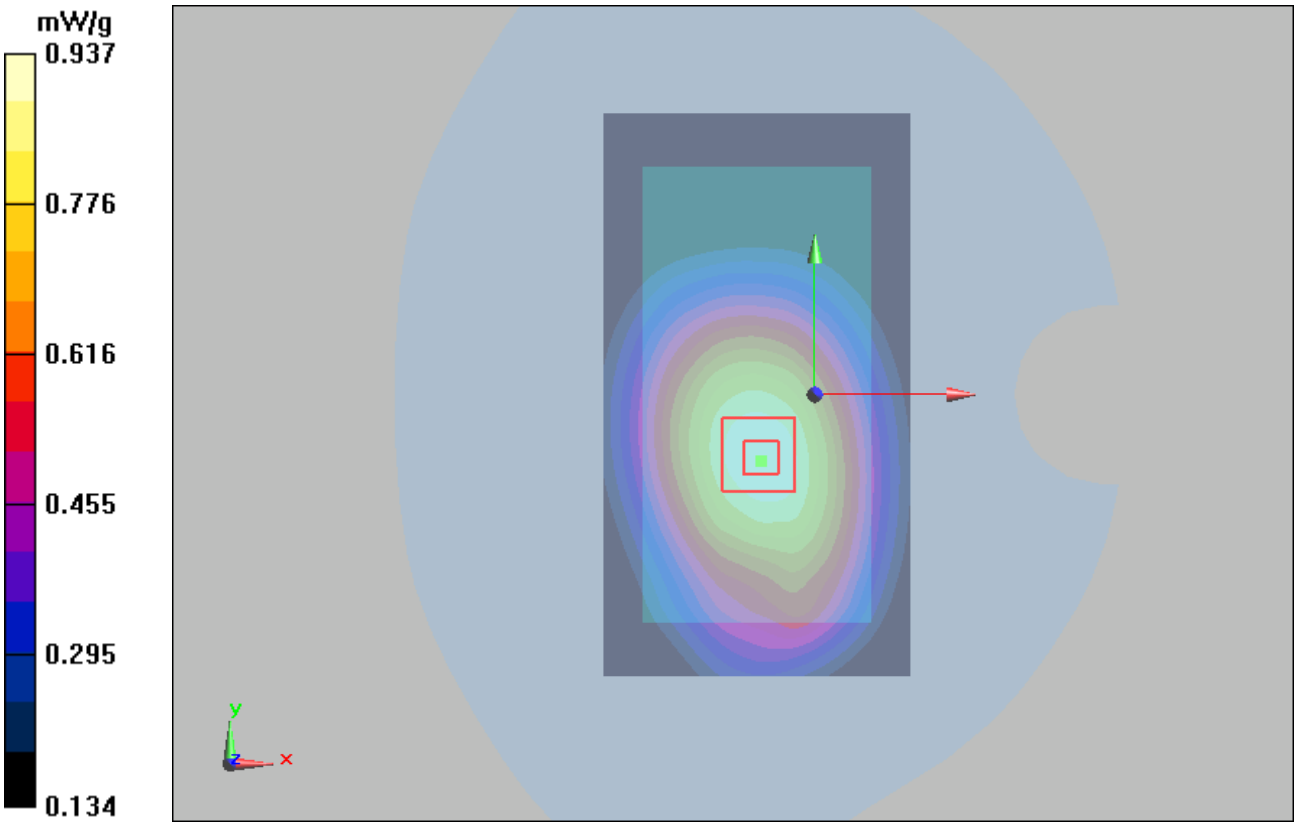


Figure 62 Body, Back Side, WCDMA Band V Channel 4132

WCDMA Band V Front Side High (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 10:14:05 PM

Communication System: WCDMA ; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 1.02 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side High/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.838 mW/g

Front Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 29.4 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 0.961 W/kg

SAR(1 g) = 0.779 mW/g; SAR(10 g) = 0.593 mW/g

Maximum value of SAR (measured) = 0.815 mW/g

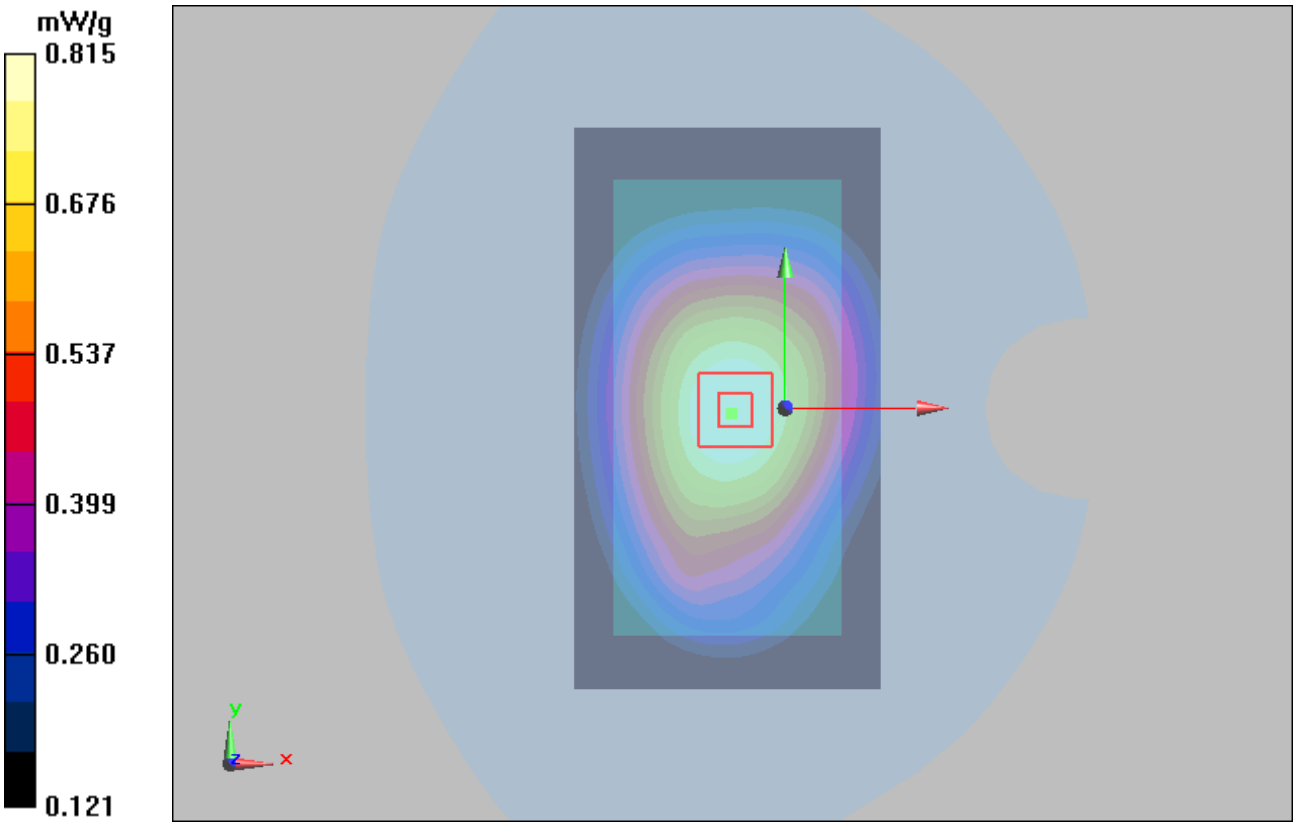


Figure 63 Body, Front Side, WCDMA Band V Channel 4233

WCDMA Band V Front Side Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 11:51:05 AM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

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

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 26.8 V/m; Power Drift = 0.052 dB

Peak SAR (extrapolated) = 0.852 W/kg

SAR(1 g) = 0.698 mW/g; SAR(10 g) = 0.535 mW/g

Maximum value of SAR (measured) = 0.729 mW/g

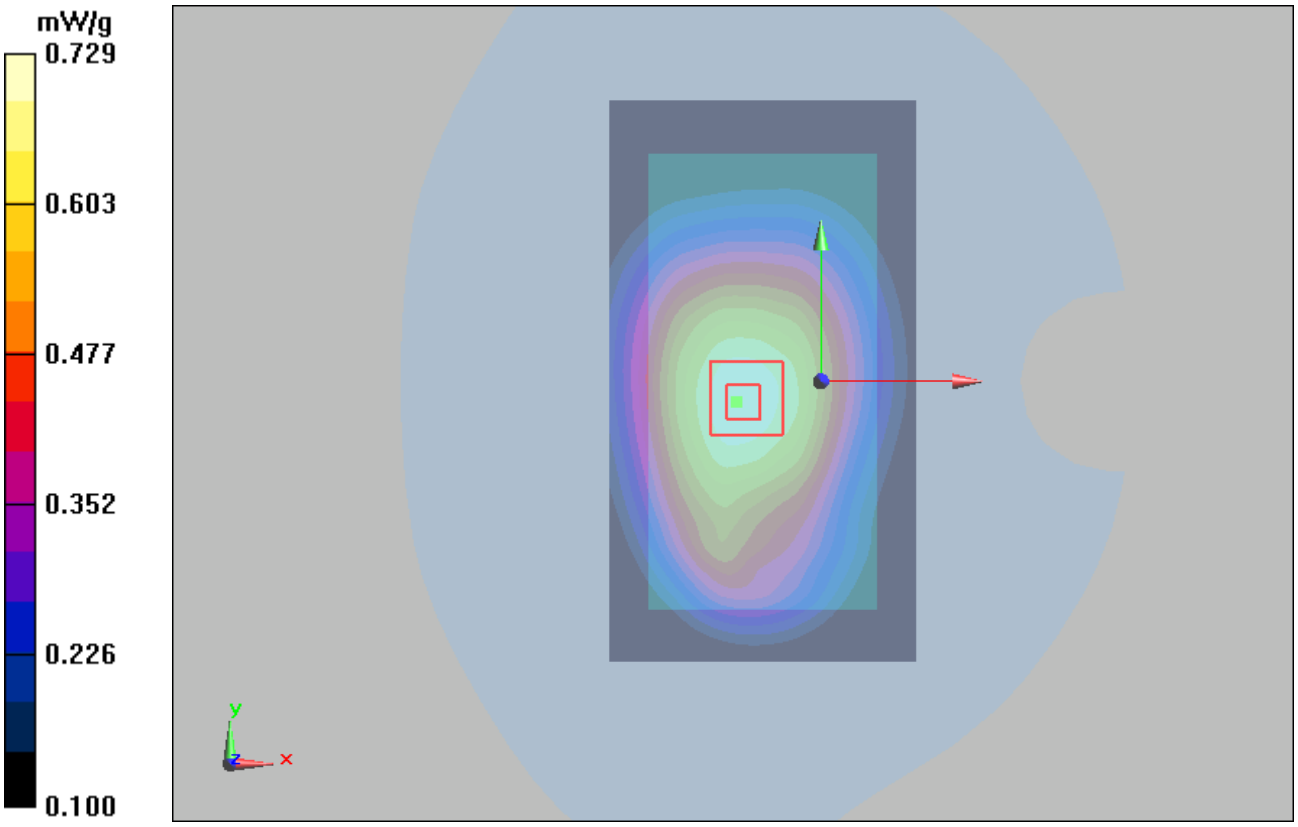


Figure 64 Body, Front Side, WCDMA Band V Channel 4183

WCDMA Band V Front Side Low (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 10:56:48 PM

Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 1 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Low/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

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

Front Side Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.2 V/m; Power Drift = 0.00197 dB

Peak SAR (extrapolated) = 0.918 W/kg

SAR(1 g) = 0.747 mW/g; SAR(10 g) = 0.571 mW/g

Maximum value of SAR (measured) = 0.781 mW/g

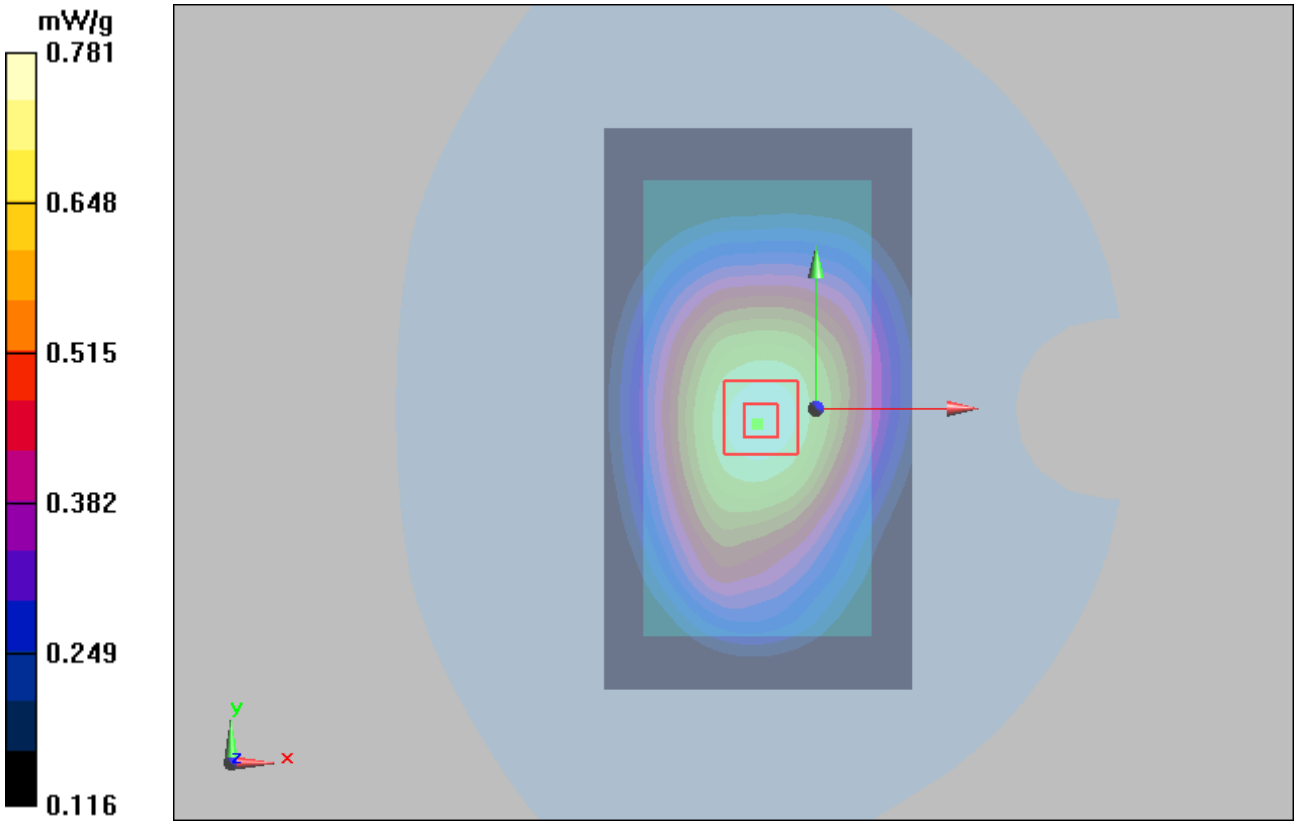


Figure 65 Body, Front Side, WCDMA Band V Channel 4132

WCDMA Band V Left Edge Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 12:12:17 PM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Edge Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.383 mW/g

Left Edge Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.1 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 0.510 W/kg

SAR(1 g) = 0.364 mW/g; SAR(10 g) = 0.250 mW/g

Maximum value of SAR (measured) = 0.391 mW/g

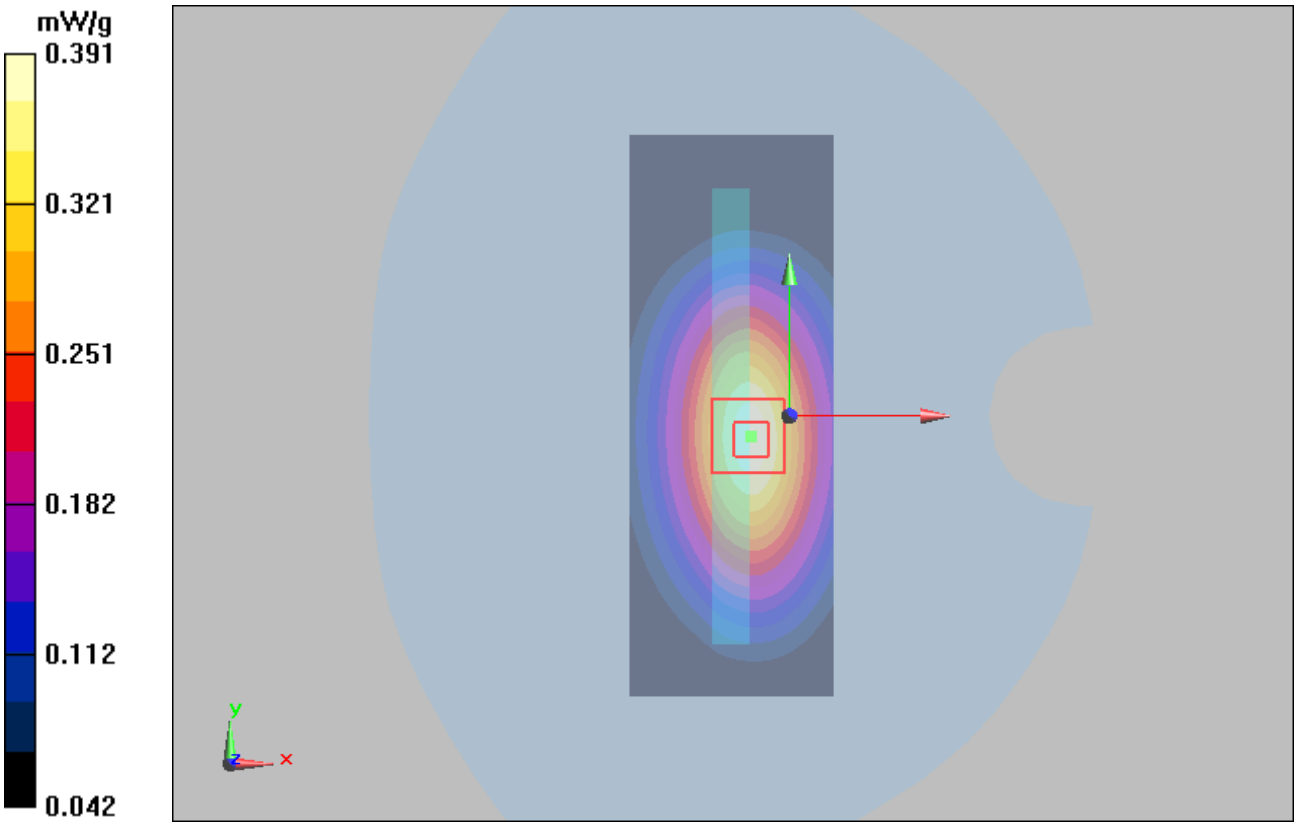


Figure 66 Body, Left Edge, WCDMA Band V Channel 4183

WCDMA Band V Right Edge Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 12:28:30 PM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Edge Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.379 mW/g

Right Edge Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.2 V/m; Power Drift = -0.015 dB

Peak SAR (extrapolated) = 0.495 W/kg

SAR(1 g) = 0.353 mW/g; SAR(10 g) = 0.242 mW/g

Maximum value of SAR (measured) = 0.378 mW/g

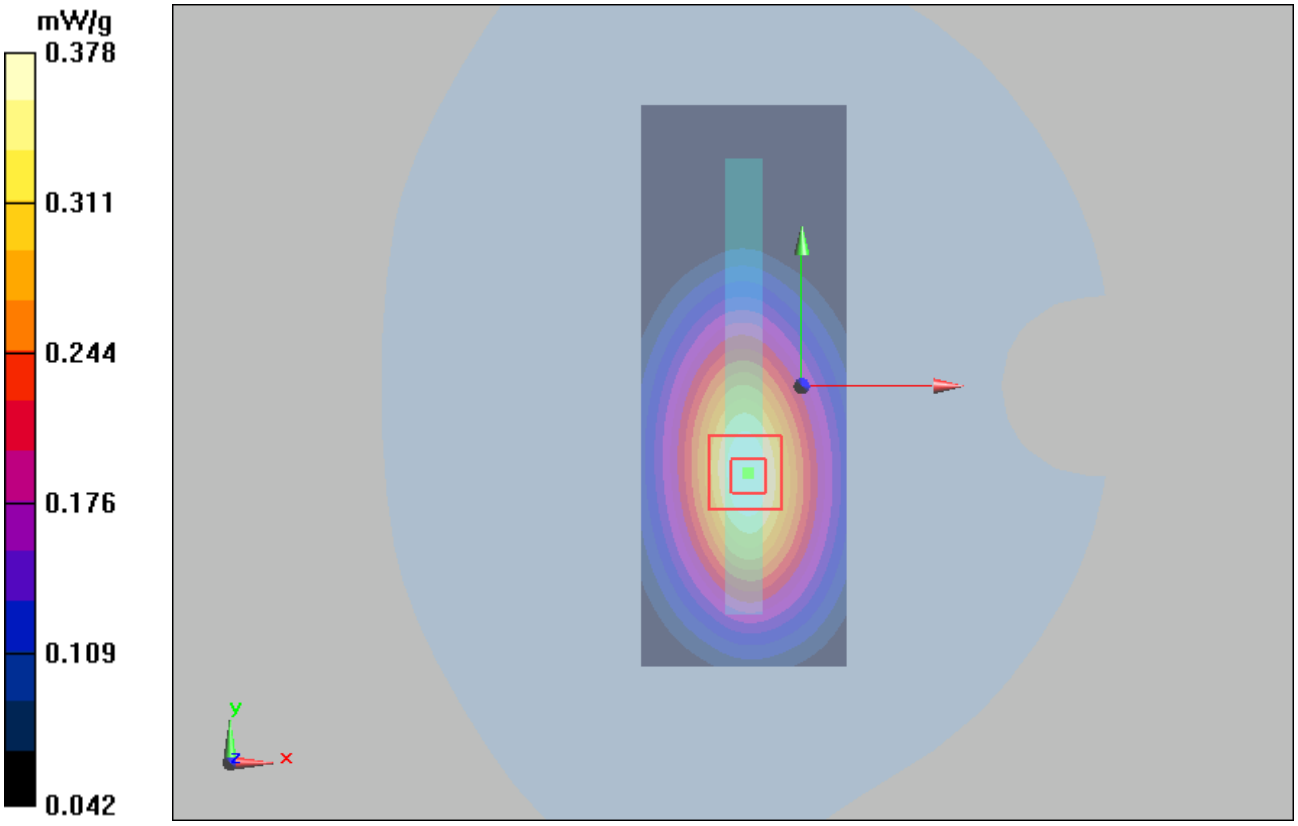


Figure 67 Body, Right Edge, WCDMA Band V Channel 4183

WCDMA Band V Bottom Edge Middle (Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 12:45:59 PM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Bottom Edge Middle/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.116 mW/g

Bottom Edge Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.67 V/m; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 0.182 W/kg

SAR(1 g) = 0.103 mW/g; SAR(10 g) = 0.059 mW/g

Maximum value of SAR (measured) = 0.112 mW/g

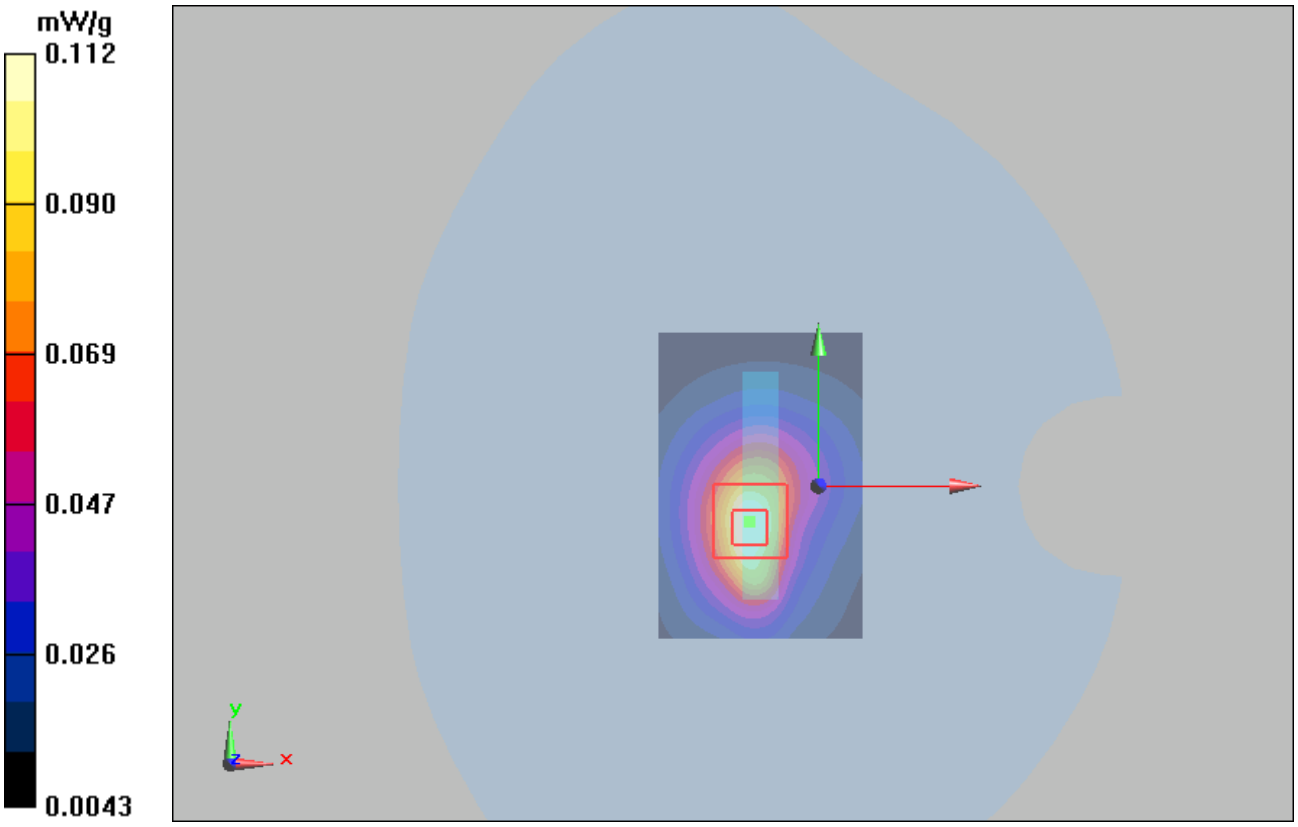


Figure 68 Body, Bottom Edge, WCDMA Band V Channel 4183

WCDMA Band V Back Side High (Hotspot Opened,Battery 2)

Date/Time: 4/27/2013 1:12:34 PM

Communication System: WCDMA ; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 1.02 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side High/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.968 mW/g

Back Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 30.7 V/m; Power Drift = -0.144 dB

Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.899 mW/g; SAR(10 g) = 0.682 mW/g

Maximum value of SAR (measured) = 0.940 mW/g

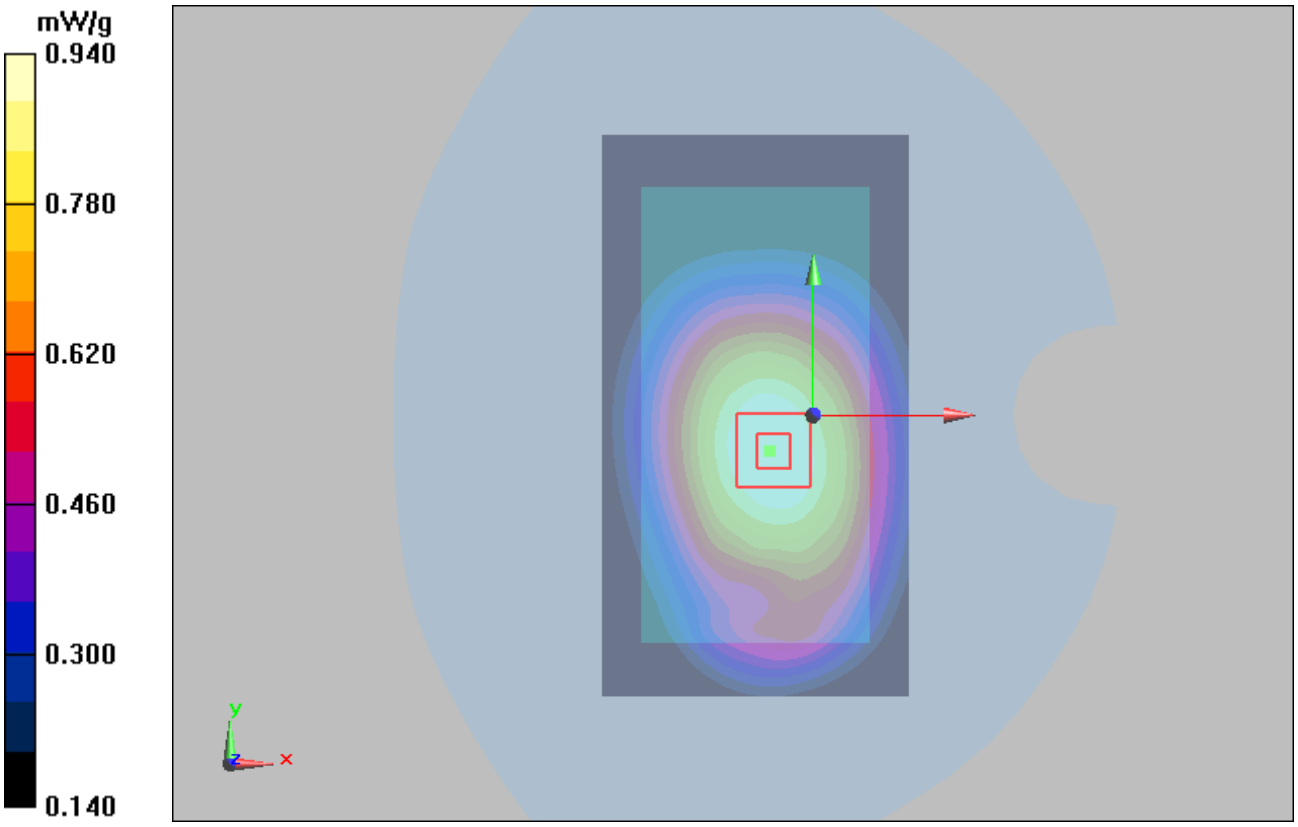


Figure 69 Body, Back Side, WCDMA Band V Channel 4233

WCDMA Band V Back Side High (Hotspot Opened,Battery 3)

Date/Time: 4/27/2013 1:29:54 PM

Communication System: WCDMA ; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 1.02 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side High/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.940 mW/g

Back Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 30.2 V/m; Power Drift = 0.021 dB

Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.904 mW/g; SAR(10 g) = 0.685 mW/g

Maximum value of SAR (measured) = 0.950 mW/g

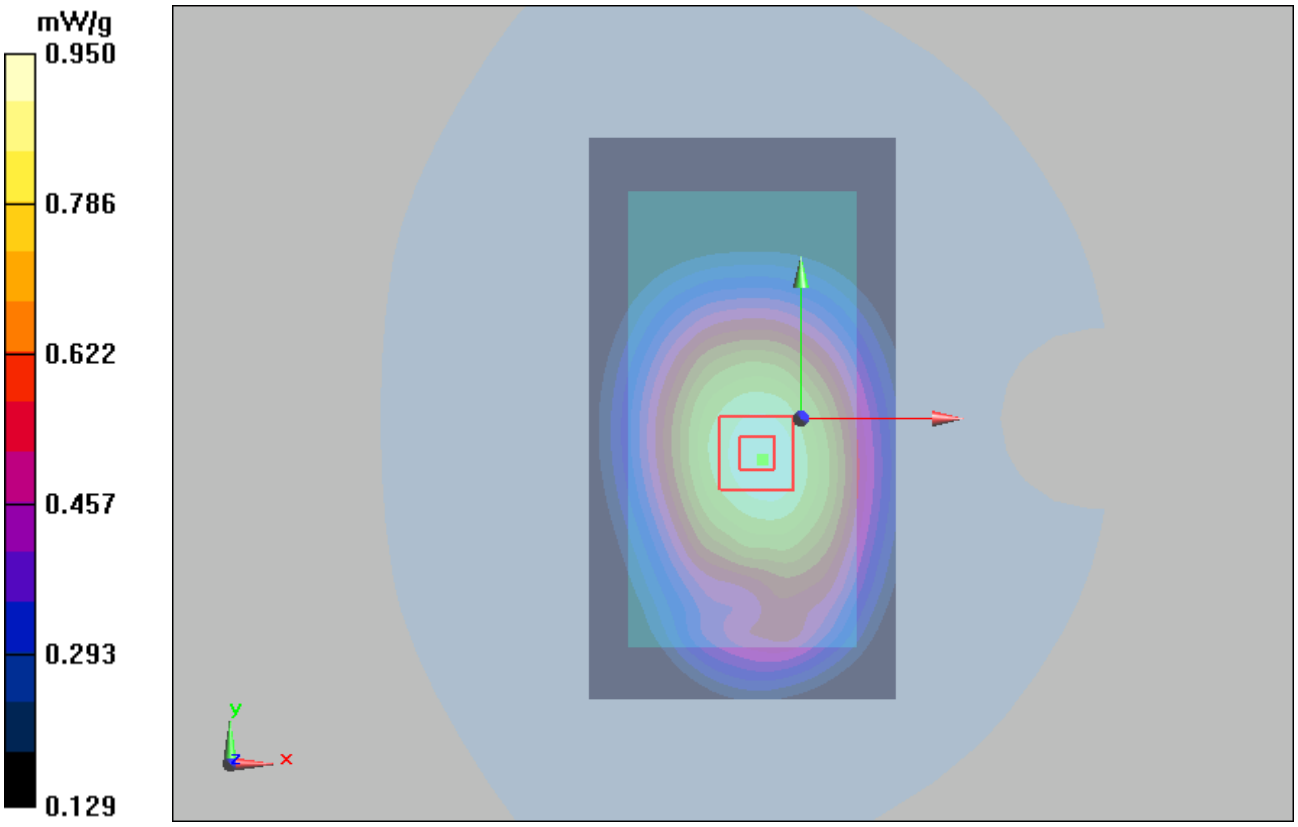


Figure 70 Body, Back Side, WCDMA Band V Channel 4233

WCDMA Band V Back Side High (1st repeated SAR ,Hotspot Opened,Battery 1)

Date/Time: 4/27/2013 1:51:18:25 AM

Communication System: WCDMA ; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 1.02 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(5.81, 5.81, 5.81); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side High/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.03 mW/g

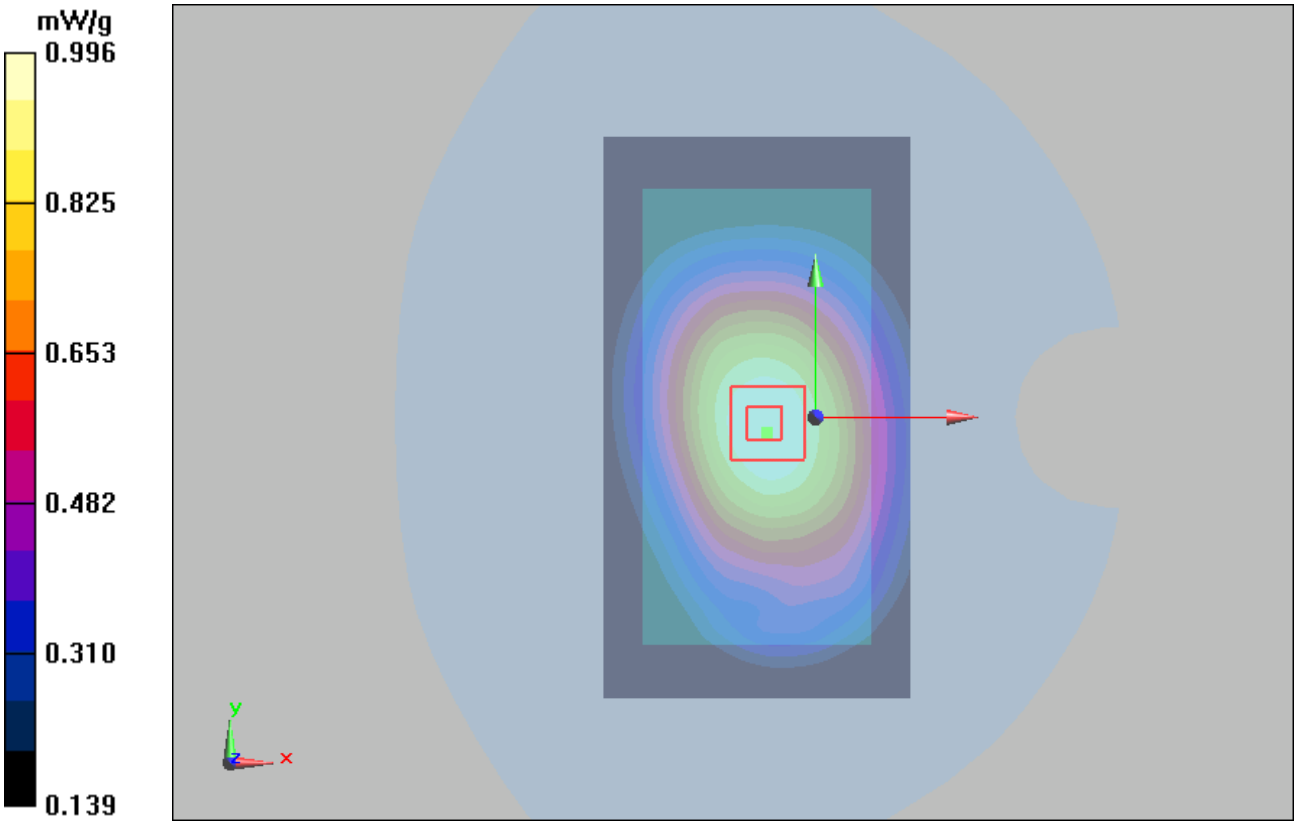
Back Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 32.3 V/m; Power Drift = -0.027dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.946 mW/g; SAR(10 g) = 0.711 mW/g

Maximum value of SAR (measured) = 0.996 mW/g



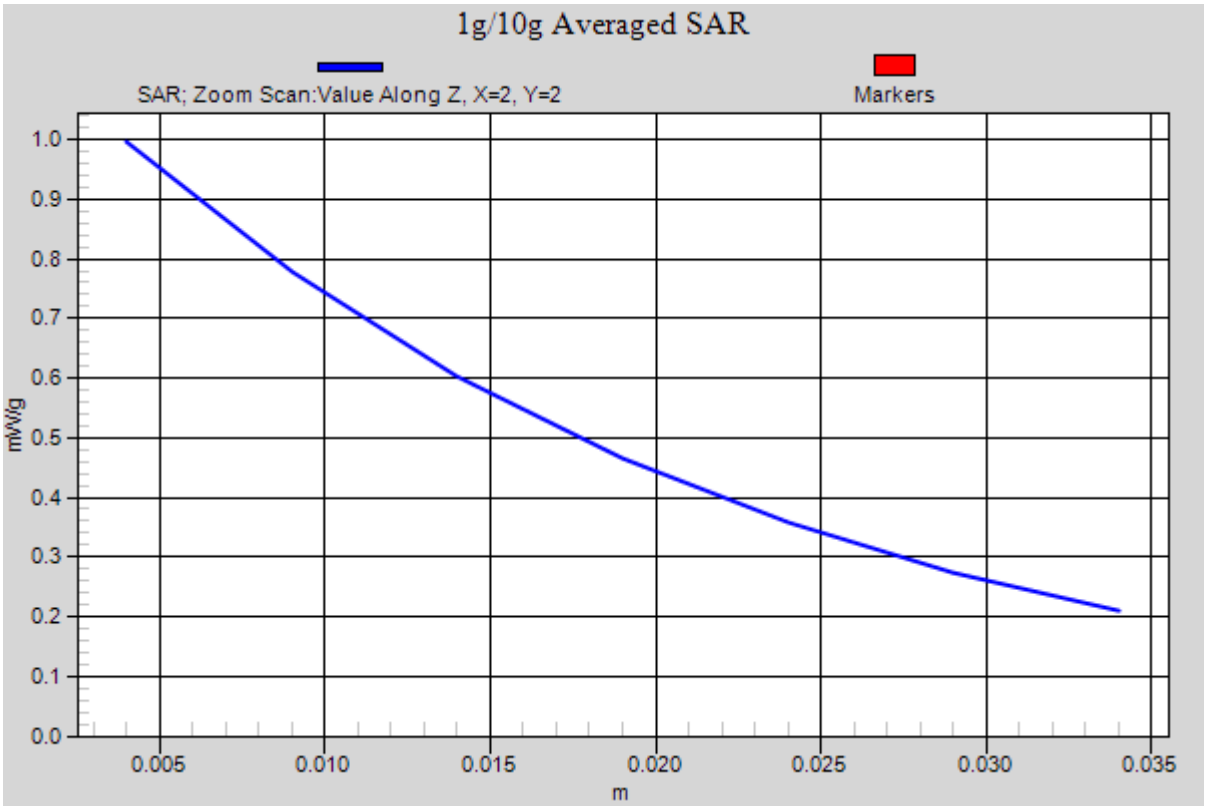


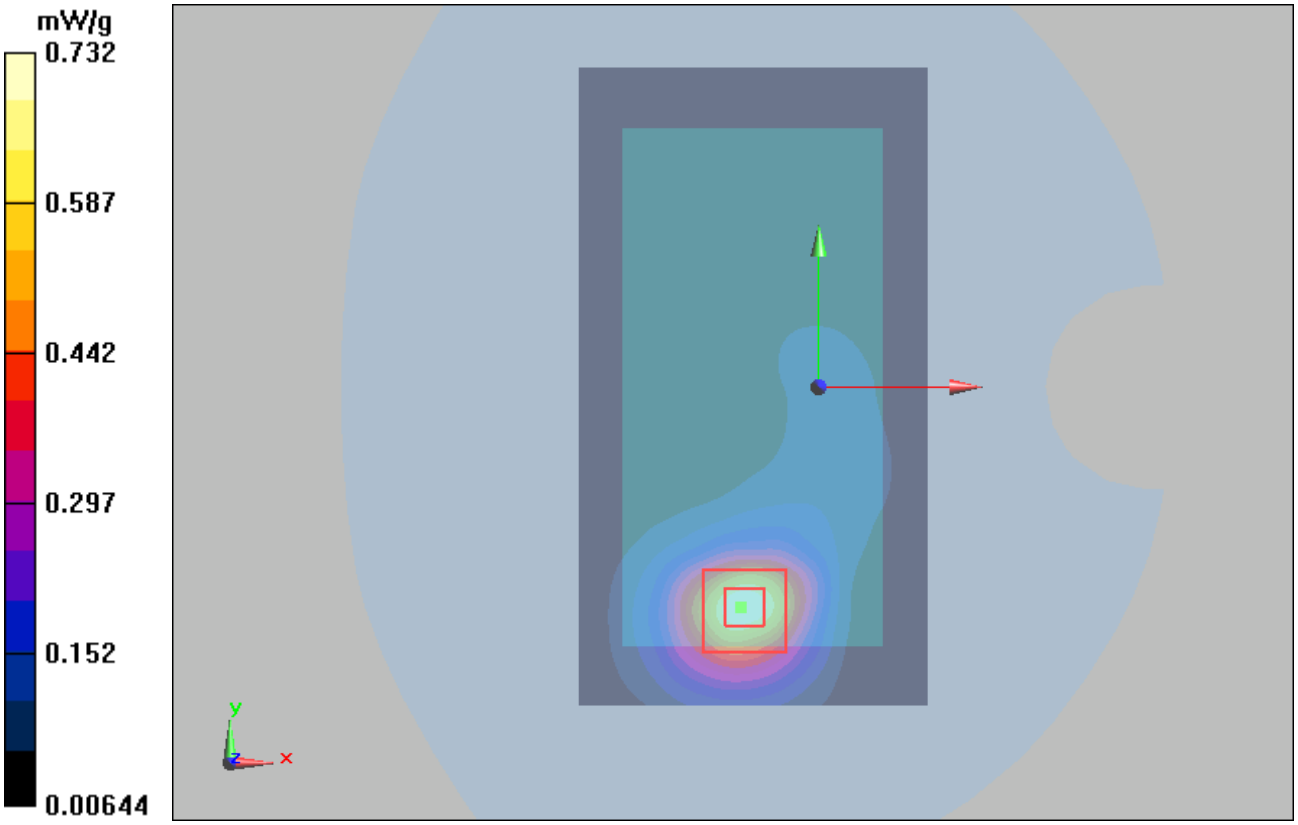
Figure 71 Body, Back Side, WCDMA Band V Channel 4233

LTE Band 7 Back Side Middle (1RB,Hotspot Closed,Battery 1)

Date/Time: 5/6/2013 1:15:38 AM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.762 mW/g

Back Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.58 V/m; Power Drift = -0.023dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.660 mW/g; SAR(10 g) = 0.334 mW/g
Maximum value of SAR (measured) = 0.732 mW/g



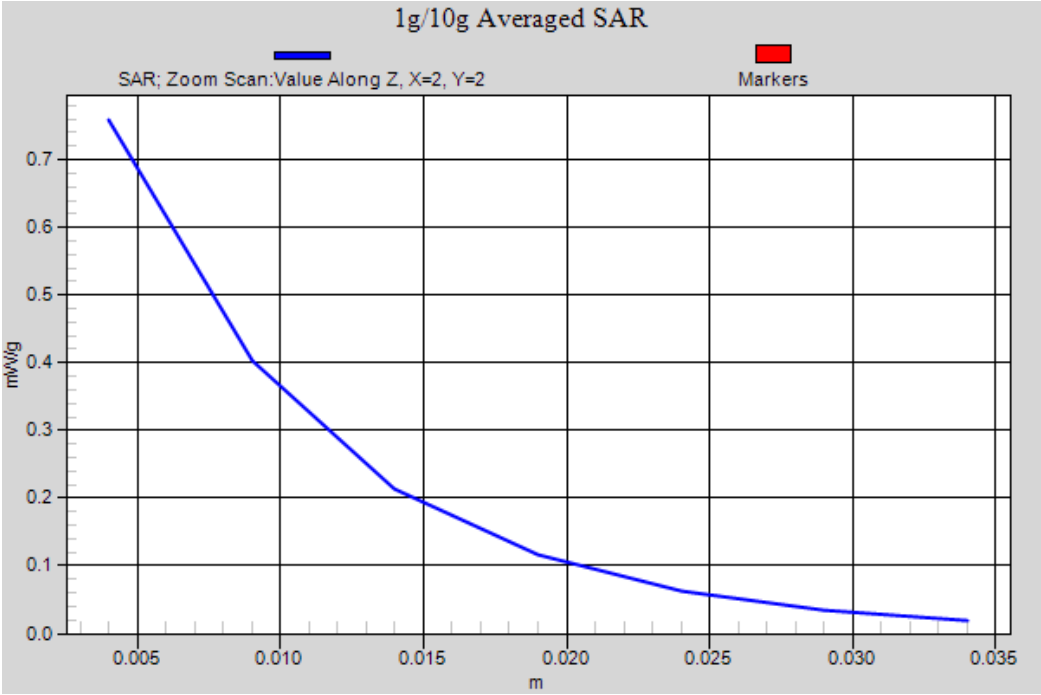


Figure 72 Body, Back Side, LTE Band 7 Channel 21100

LTE Band 7 Front Side Middle (1RB,Hotspot Closed,Battery 1)

Date/Time: 5/7/2013 12:57:15 AM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.347 mW/g

Front Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.22 V/m; Power Drift = 0.022 dB
Peak SAR (extrapolated) = 0.595 W/kg
SAR(1 g) = 0.318 mW/g; SAR(10 g) = 0.163 mW/g
Maximum value of SAR (measured) = 0.350 mW/g

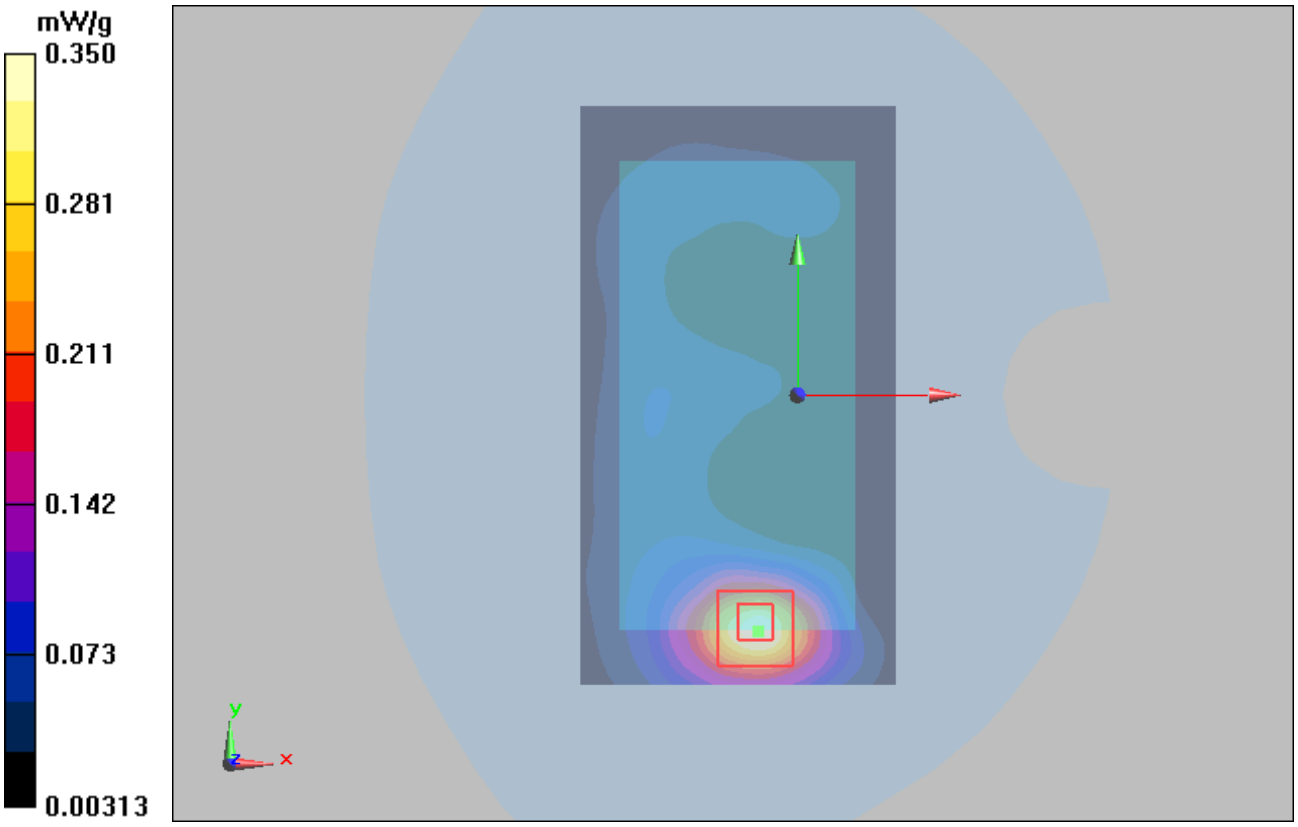


Figure 73 Body, Front Side, LTE Band 7 Channel 21100

LTE Band 7 Back Side Middle (1RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 11:18:47 AM

Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 0.608 mW/g

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

Reference Value = 3.59 V/m; Power Drift = -0.022 dB

Peak SAR (extrapolated) = 1 W/kg

SAR(1 g) = 0.513 mW/g; SAR(10 g) = 0.242 mW/g

Maximum value of SAR (measured) = 0.589 mW/g

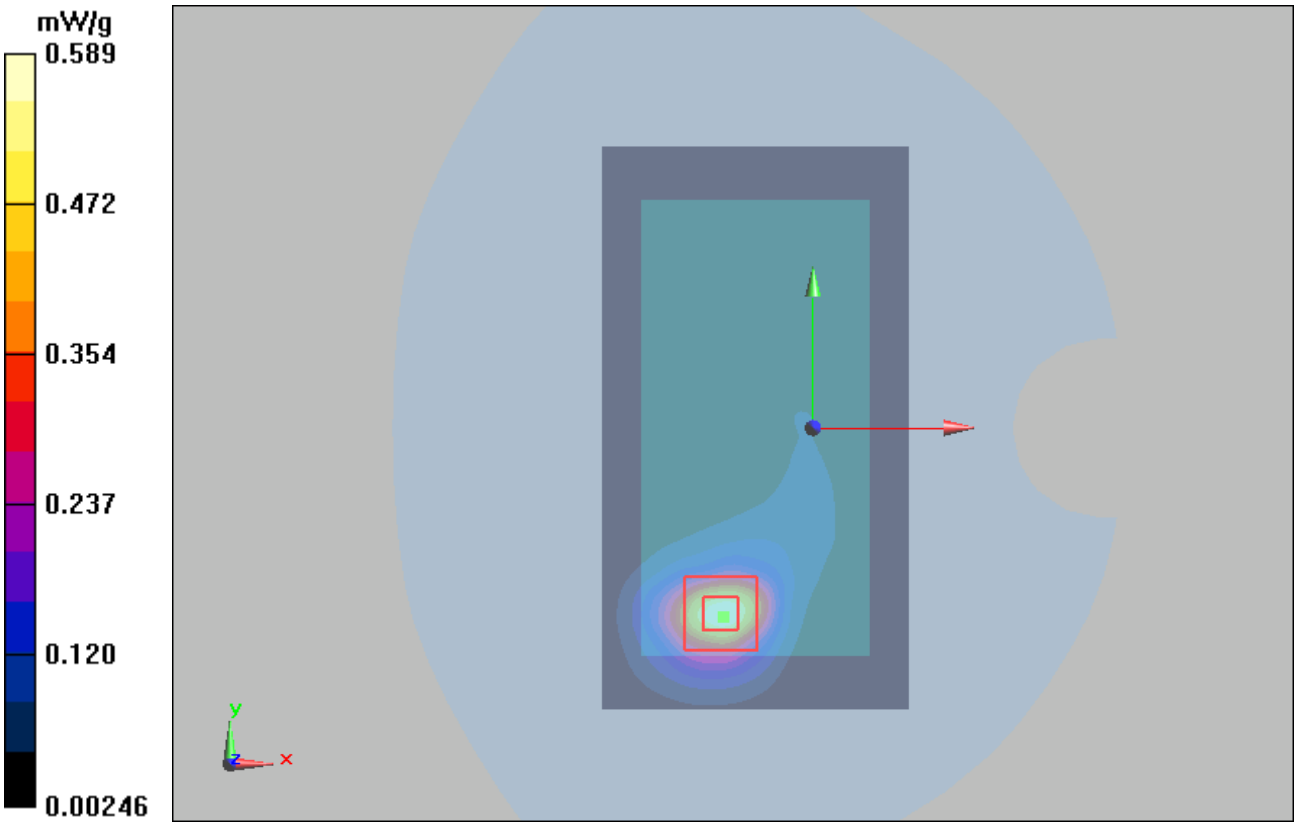


Figure 74 Body, Back Side, LTE Band 7 Channel 21100

LTE Band 7 Front Side Middle (1RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 10:25:05 AM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.277 mW/g

Front Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.89 V/m; Power Drift = 0.165 dB
Peak SAR (extrapolated) = 0.508 W/kg
SAR(1 g) = 0.258 mW/g; SAR(10 g) = 0.122 mW/g
Maximum value of SAR (measured) = 0.294 mW/g

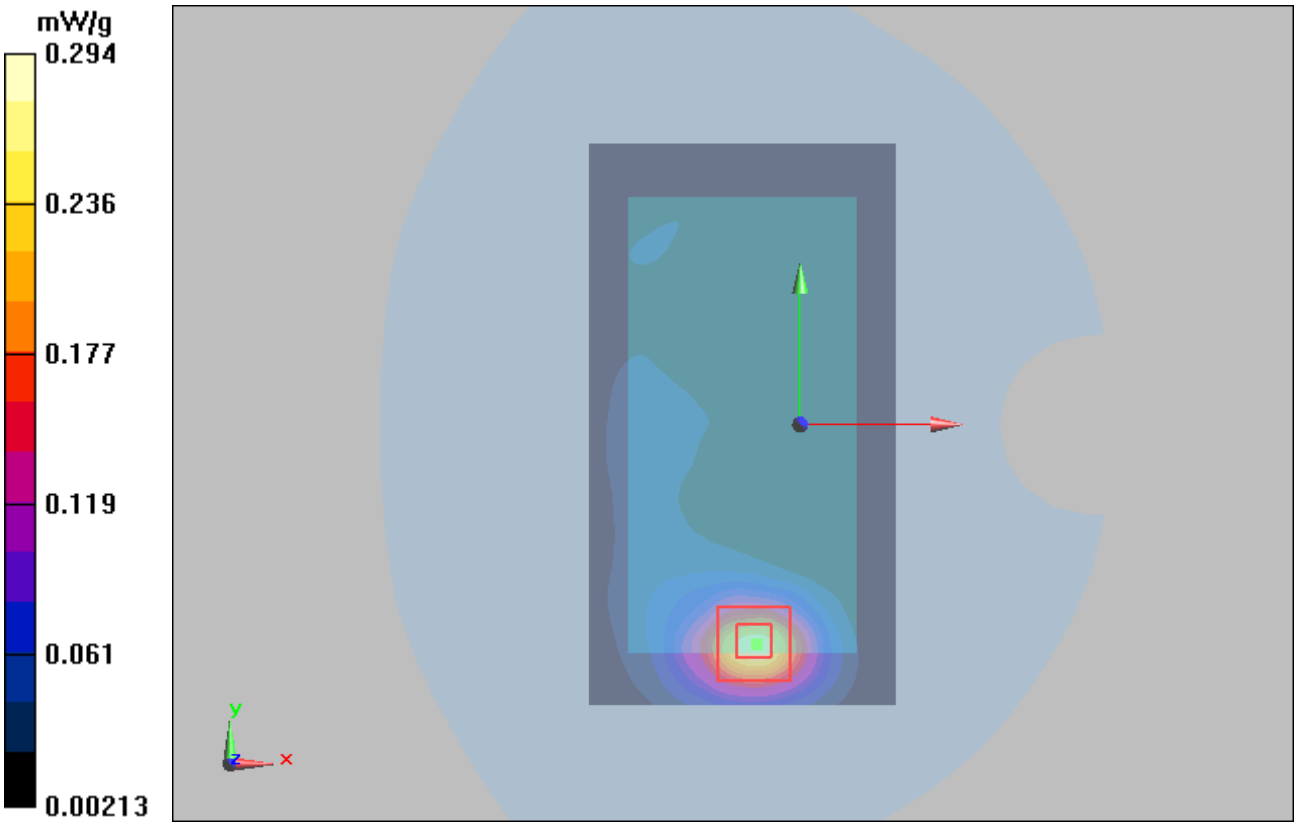


Figure 75 Body, Front Side, LTE Band 7 Channel 21100

LTE Band 7 Left Edge Middle (1RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 11:38:45 AM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Edge Middle/Area Scan (31x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.045 mW/g

Left Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.19 V/m; Power Drift = -0.133 dB
Peak SAR (extrapolated) = 0.068 W/kg
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.044 mW/g

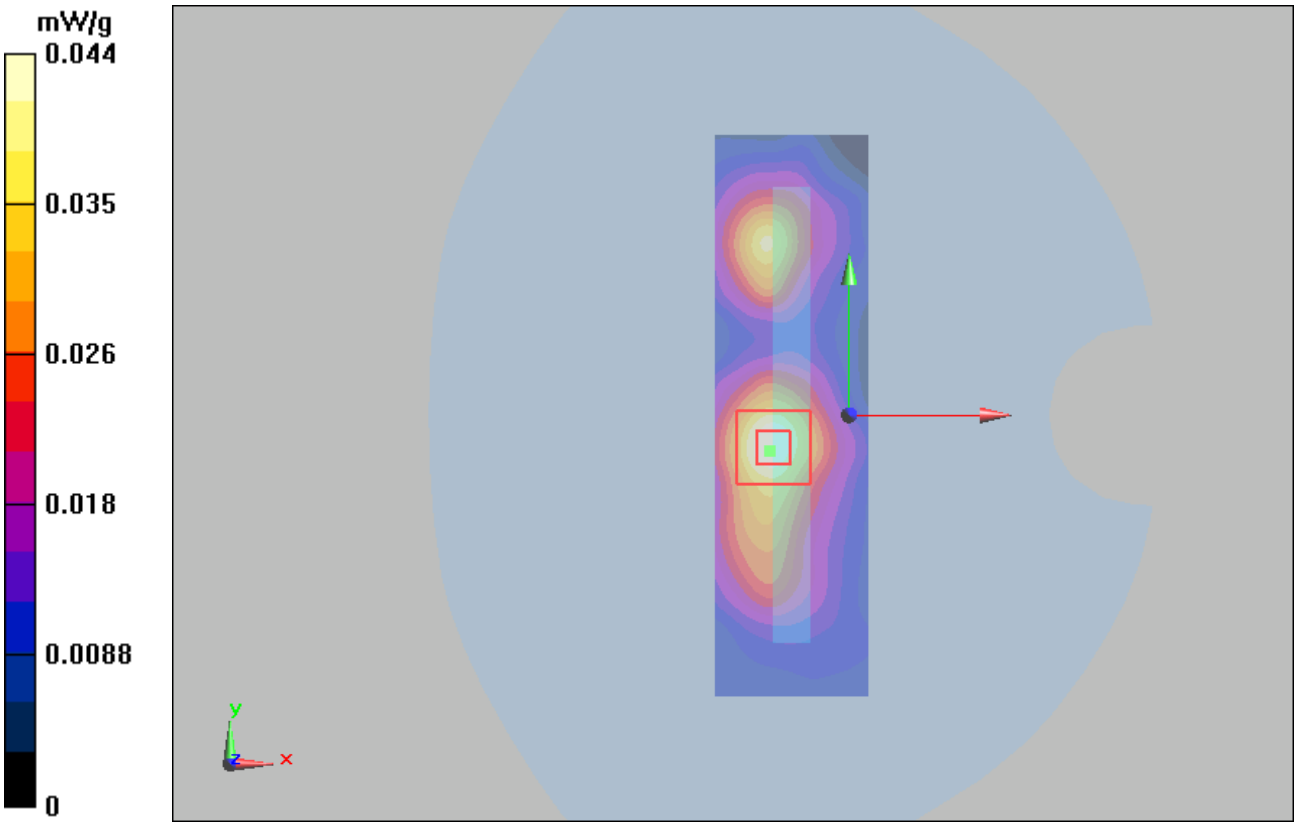


Figure 76 Body, Left Edge, LTE Band 7 Channel 21100

LTE Band 7 Right Edge Middle (1RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 3:13:59 PM

Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Edge Middle/Area Scan (31x111x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 0.040 mW/g

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

Reference Value = 2.98 V/m; Power Drift = 0.040 dB

Peak SAR (extrapolated) = 0.047 W/kg

SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.012 mW/g

Maximum value of SAR (measured) = 0.022 mW/g

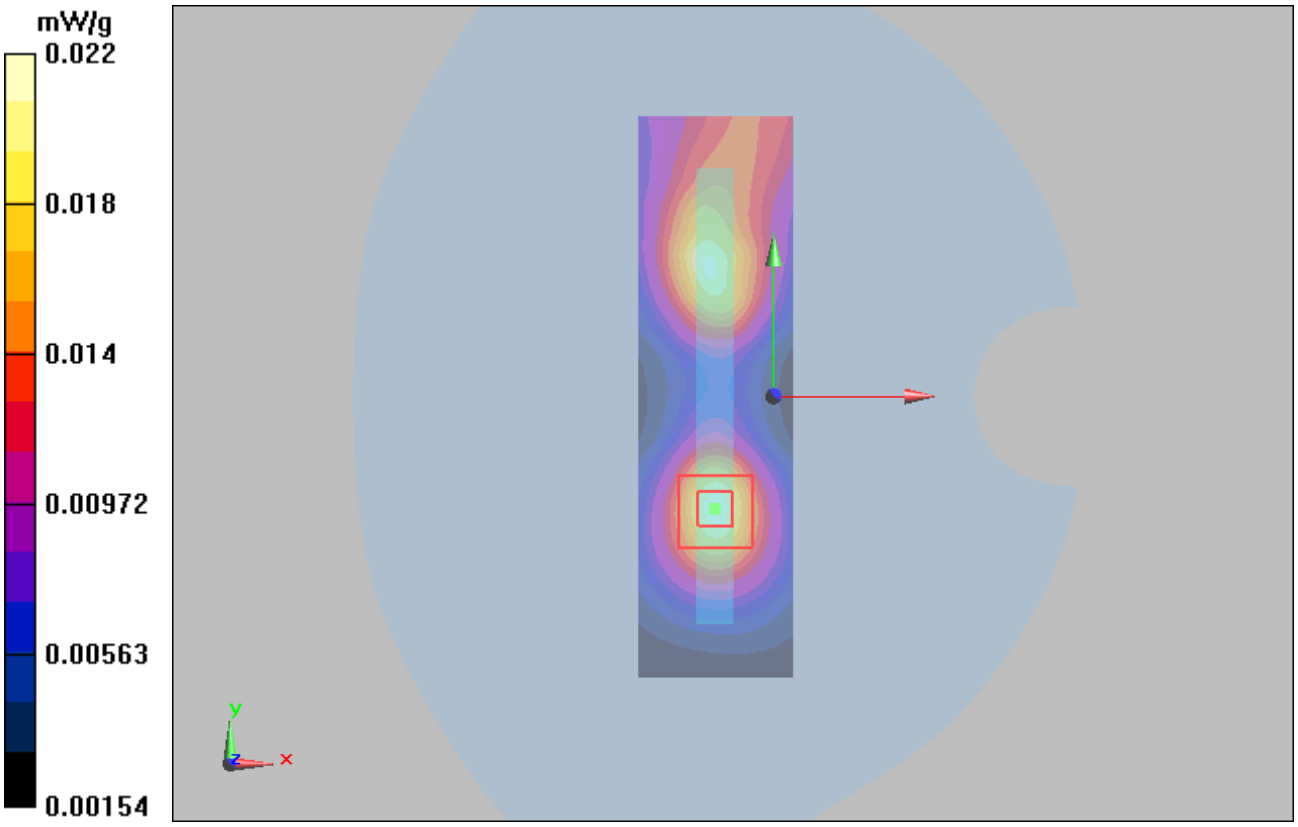


Figure 77 Body, Right Edge, LTE Band 7 Channel 21100

LTE Band 7 Bottom Edge Middle (1RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 2:16:34 PM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Bottom Edge Middle /Area Scan (31x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.773 mW/g

Bottom Edge Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.1 V/m; Power Drift = -0.062 dB
Peak SAR (extrapolated) = 1.3 W/kg
SAR(1 g) = 0.654 mW/g; SAR(10 g) = 0.303 mW/g
Maximum value of SAR (measured) = 0.739 mW/g

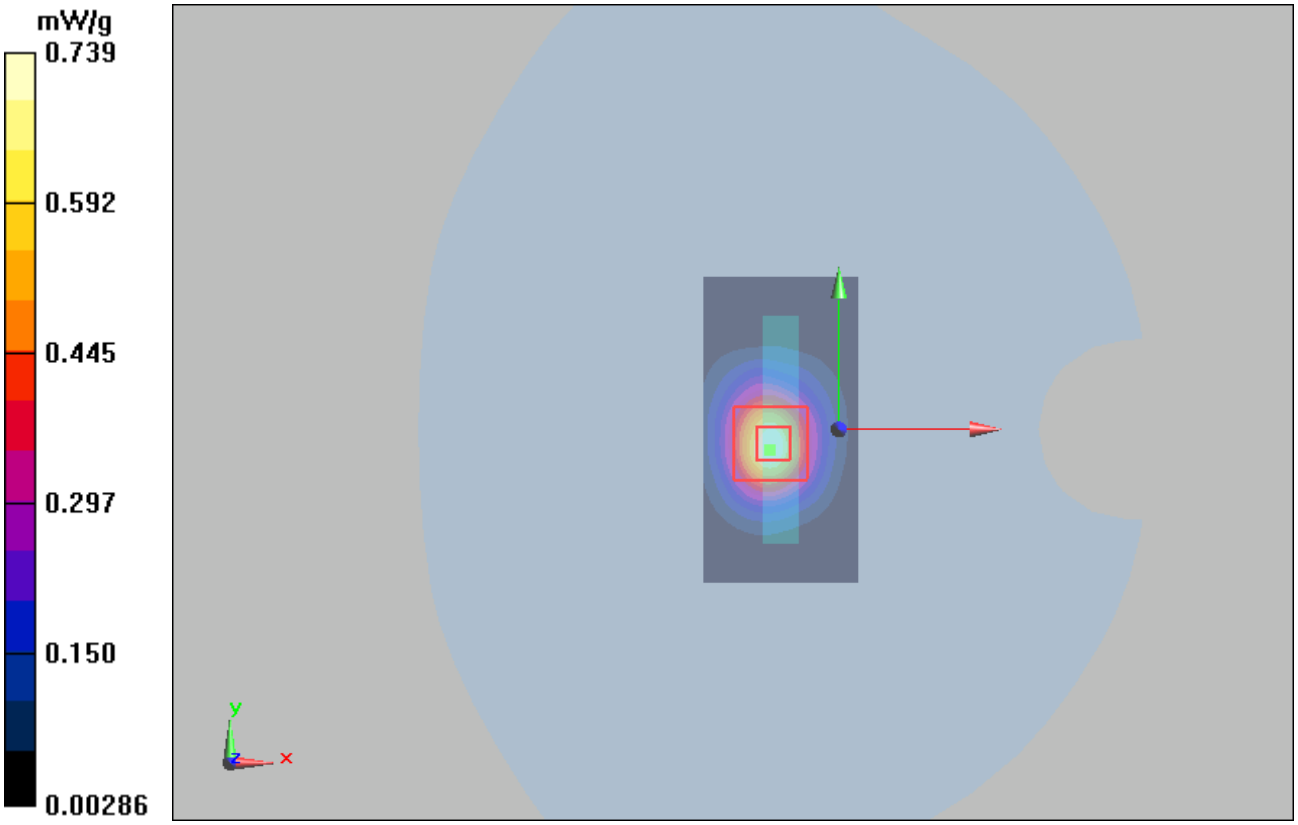


Figure 78 Body, Bottom Edge, LTE Band 7 Channel 21100

LTE Band 7 Back Side Middle (50%RB,Hotspot Closed,Battery 1)

Date/Time: 5/7/2013 2:04:12 AM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.557 mW/g

Back Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.58 V/m; Power Drift = 0.027 dB
Peak SAR (extrapolated) = 0.895 W/kg
SAR(1 g) = 0.482 mW/g; SAR(10 g) = 0.245 mW/g
Maximum value of SAR (measured) = 0.530 mW/g

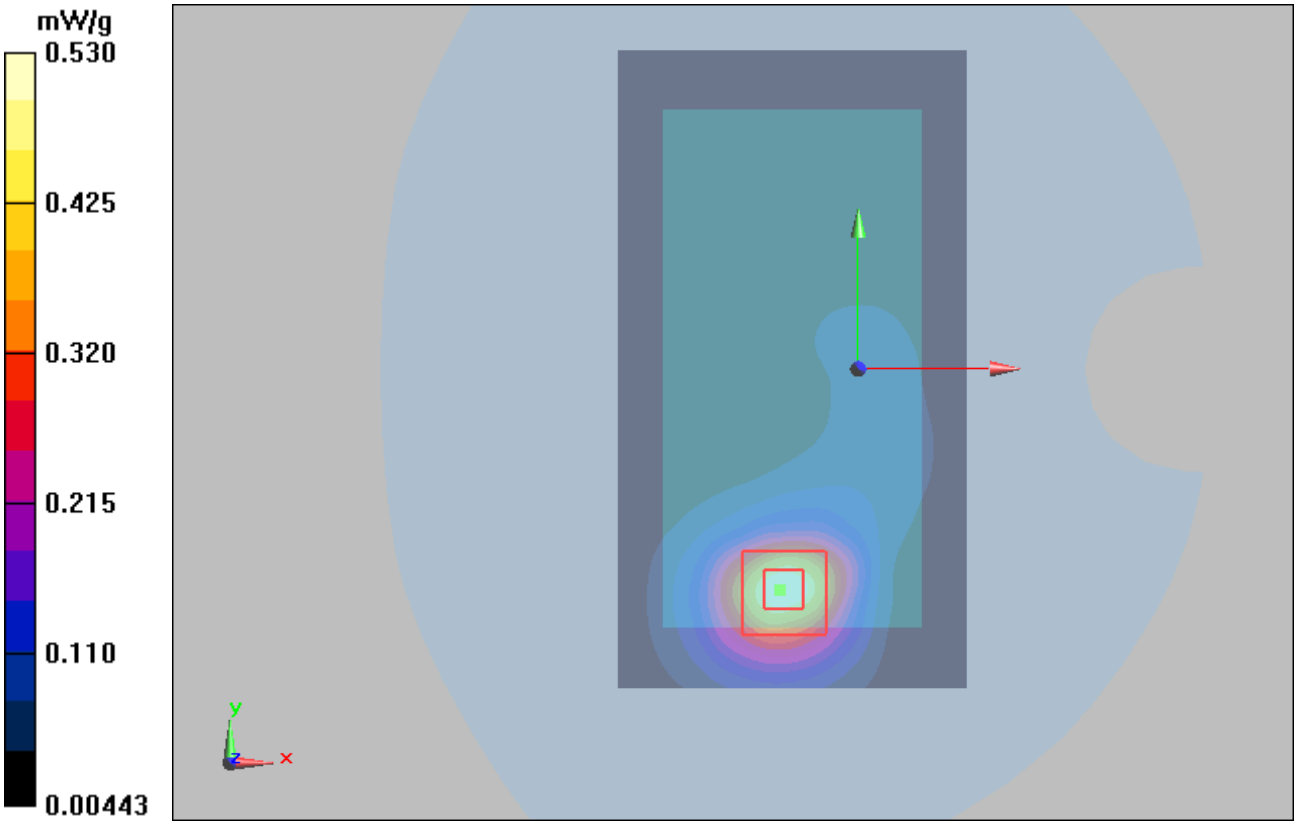


Figure 79 Body, Back Side, LTE Band 7 Channel 21100

LTE Band 7 Front Side Middle (50%RB,Hotspot Closed,Battery 1)

Date/Time: 5/7/2013 3:20:25 AM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.284 mW/g

Front Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.97 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 0.449 W/kg
SAR(1 g) = 0.240 mW/g; SAR(10 g) = 0.122 mW/g
Maximum value of SAR (measured) = 0.267 mW/g

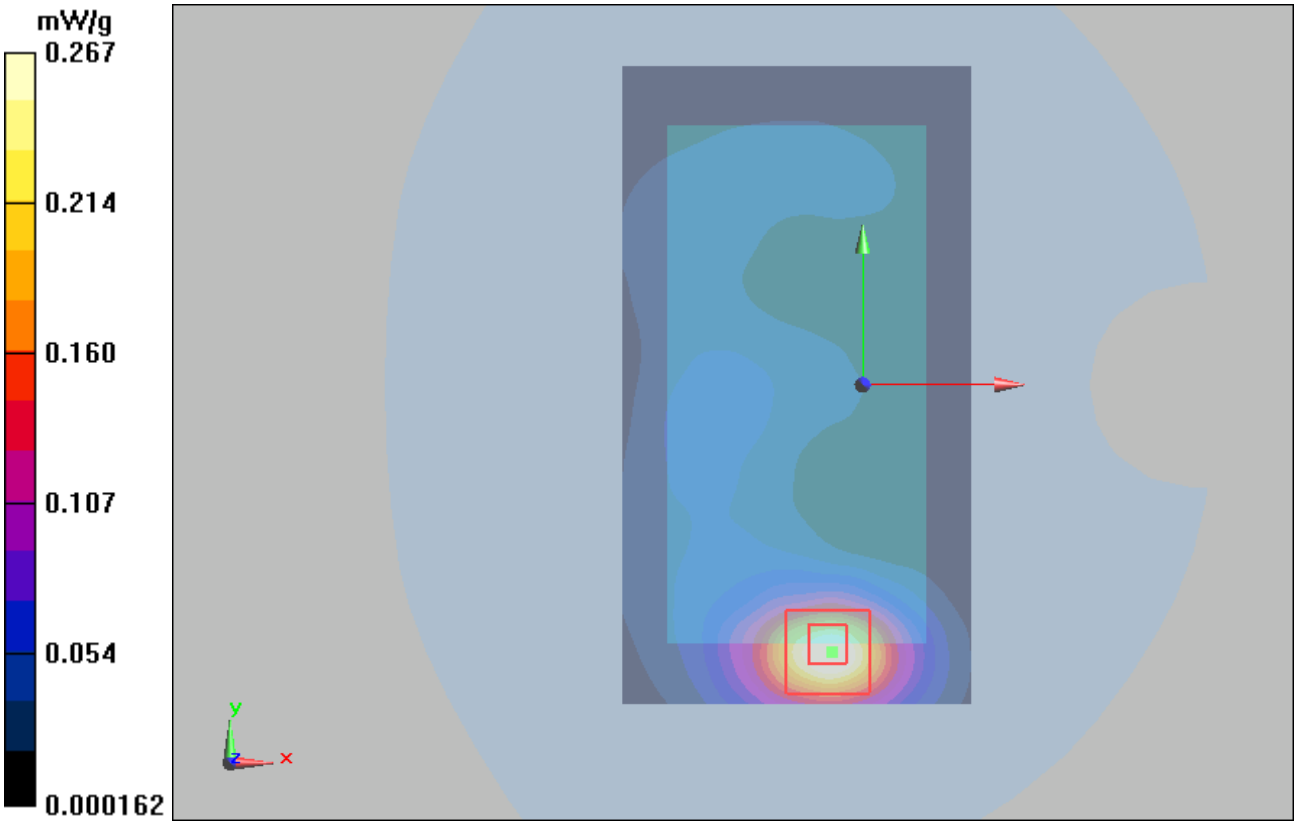


Figure 80 Body, Front Side, LTE Band 7 Channel 21100

LTE Band 7 Back Side Middle (50%RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 11:01:56 AM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.699 mW/g

Back Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.81 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.587 mW/g; SAR(10 g) = 0.276 mW/g
Maximum value of SAR (measured) = 0.672 mW/g

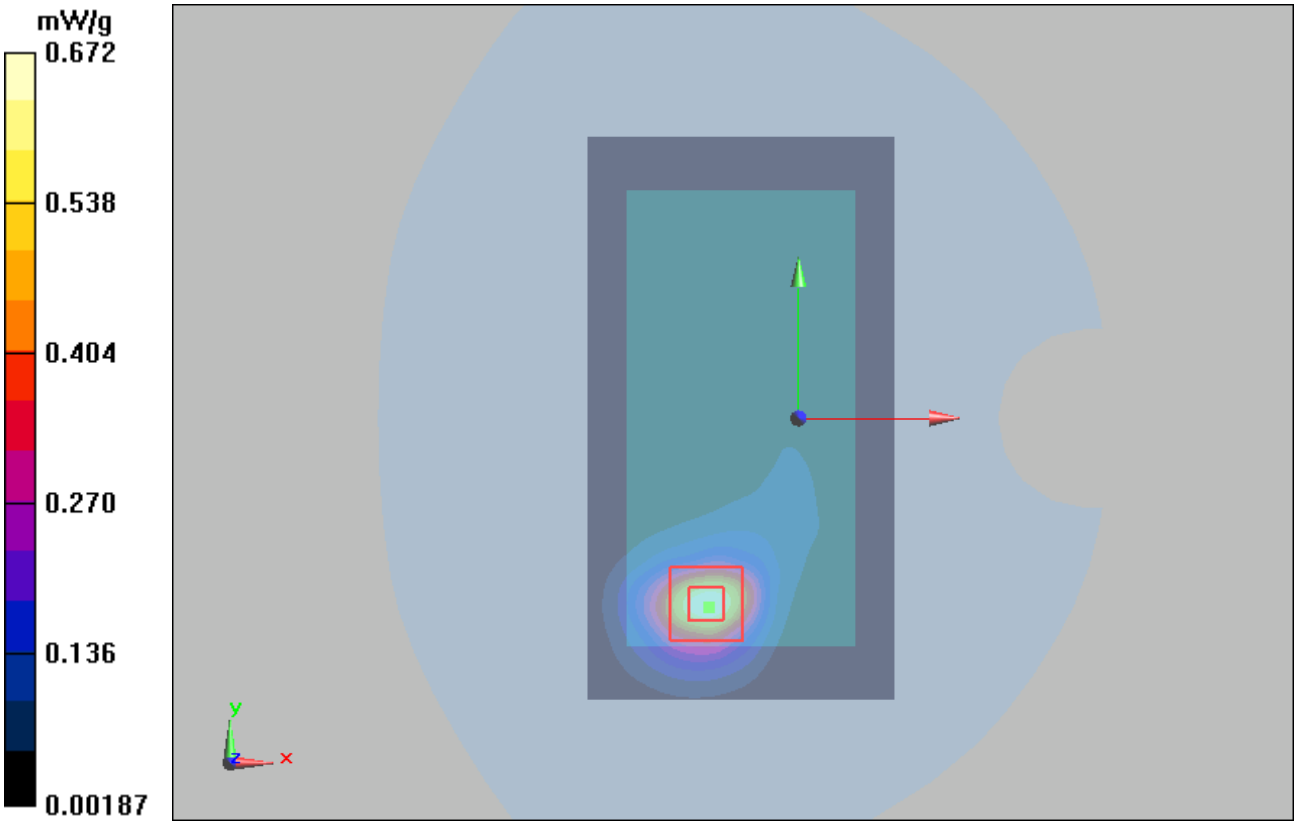


Figure 81 Body, Back Side, LTE Band 7 Channel 21100

LTE Band 7 Front Side Middle (50%RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 10:43:26 AM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.300 mW/g

Front Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.96 V/m; Power Drift = 0.199 dB
Peak SAR (extrapolated) = 0.570 W/kg
SAR(1 g) = 0.288 mW/g; SAR(10 g) = 0.136 mW/g
Maximum value of SAR (measured) = 0.329 mW/g

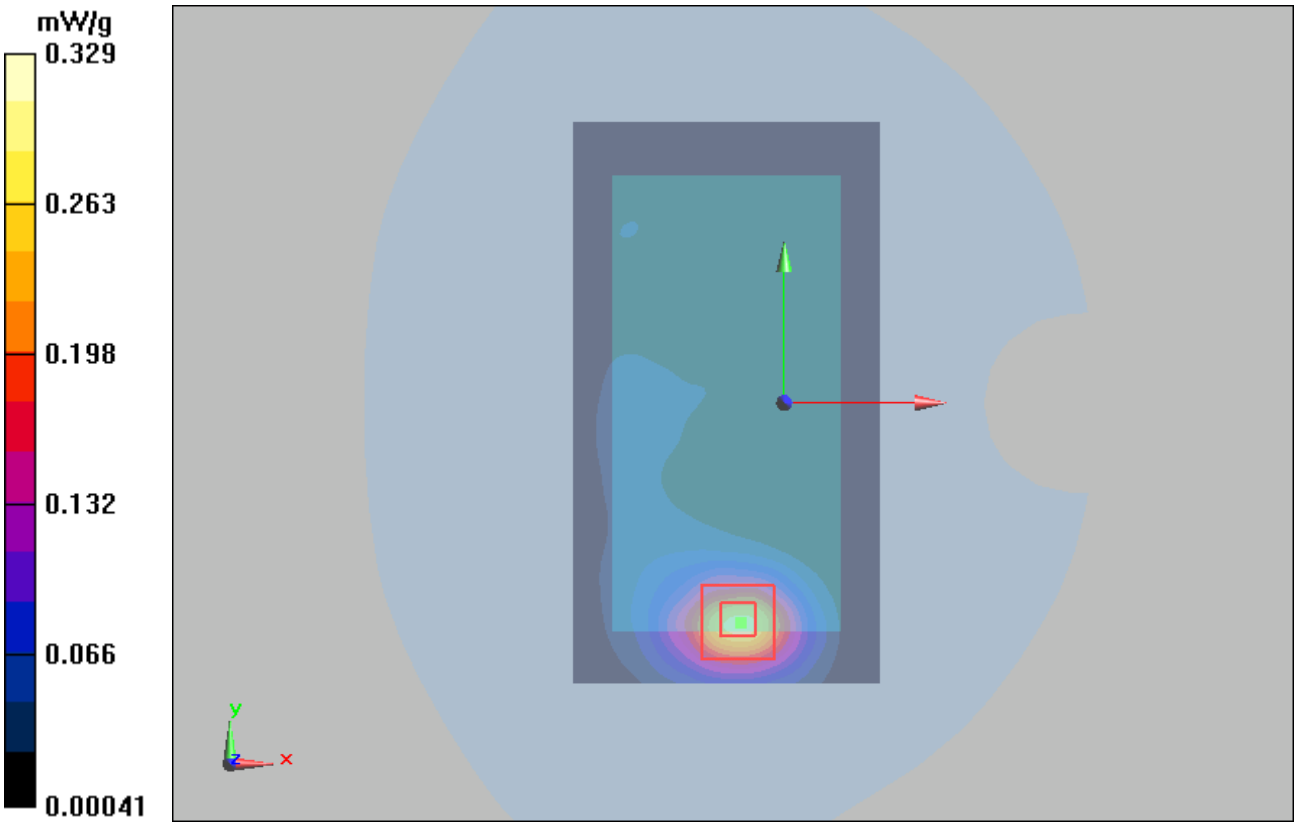


Figure 82 Body, Front Side, LTE Band 7 Channel 21100

LTE Band 7 Left Edge Middle (50%RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 11:52:14 AM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Edge Middle/Area Scan (31x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.050 mW/g

Left Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.53 V/m; Power Drift = 0.003 dB
Peak SAR (extrapolated) = 0.080 W/kg
SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.025 mW/g
Maximum value of SAR (measured) = 0.050 mW/g

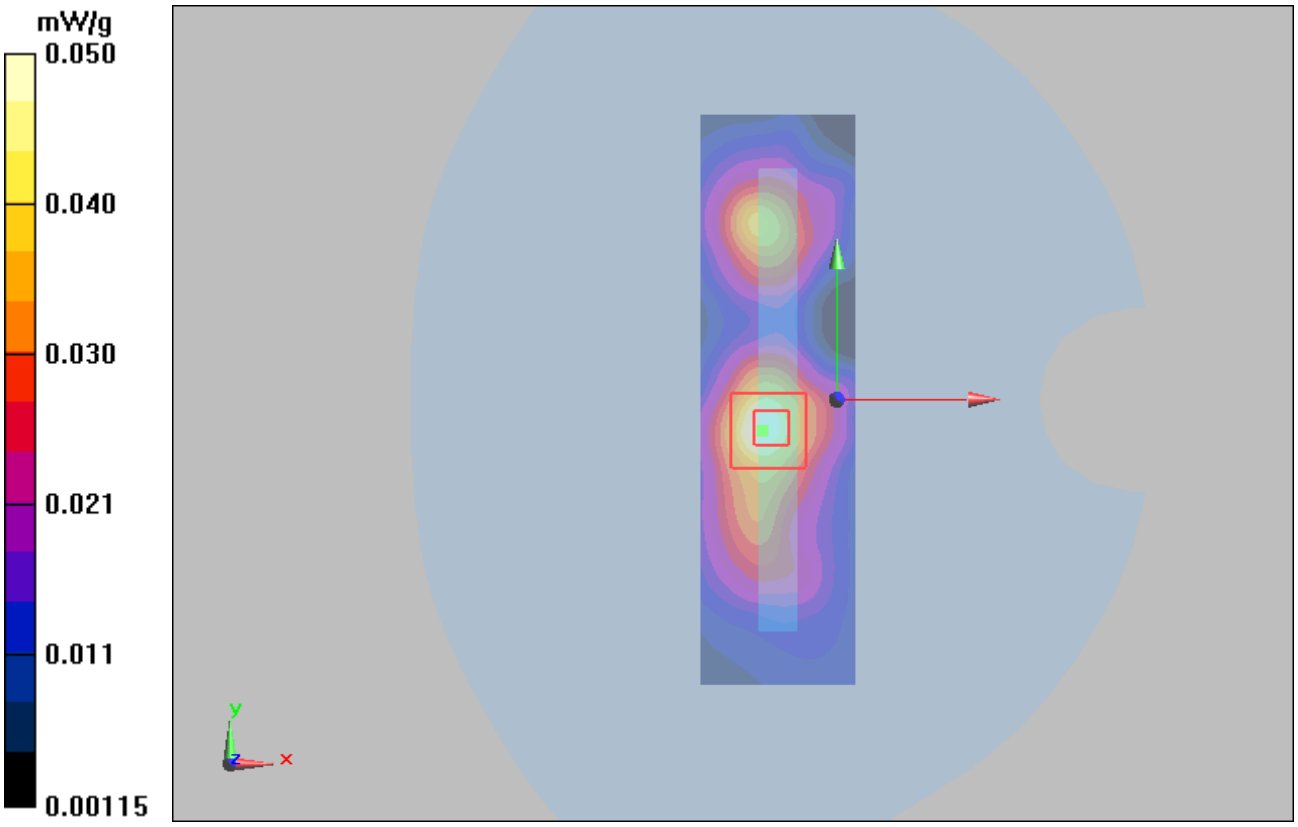


Figure 83 Body, Left Edge, LTE Band 7 Channel 21100

LTE Band 7 Right Edge Middle (50%RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 12:27:16 PM

Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Edge Middle/Area Scan (31x111x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 0.026 mW/g

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

Reference Value = 0.801 V/m; Power Drift = 0.125 dB

Peak SAR (extrapolated) = 0.039 W/kg

SAR(1 g) = 0.023 mW/g; SAR(10 g) = 0.014 mW/g

Maximum value of SAR (measured) = 0.024 mW/g

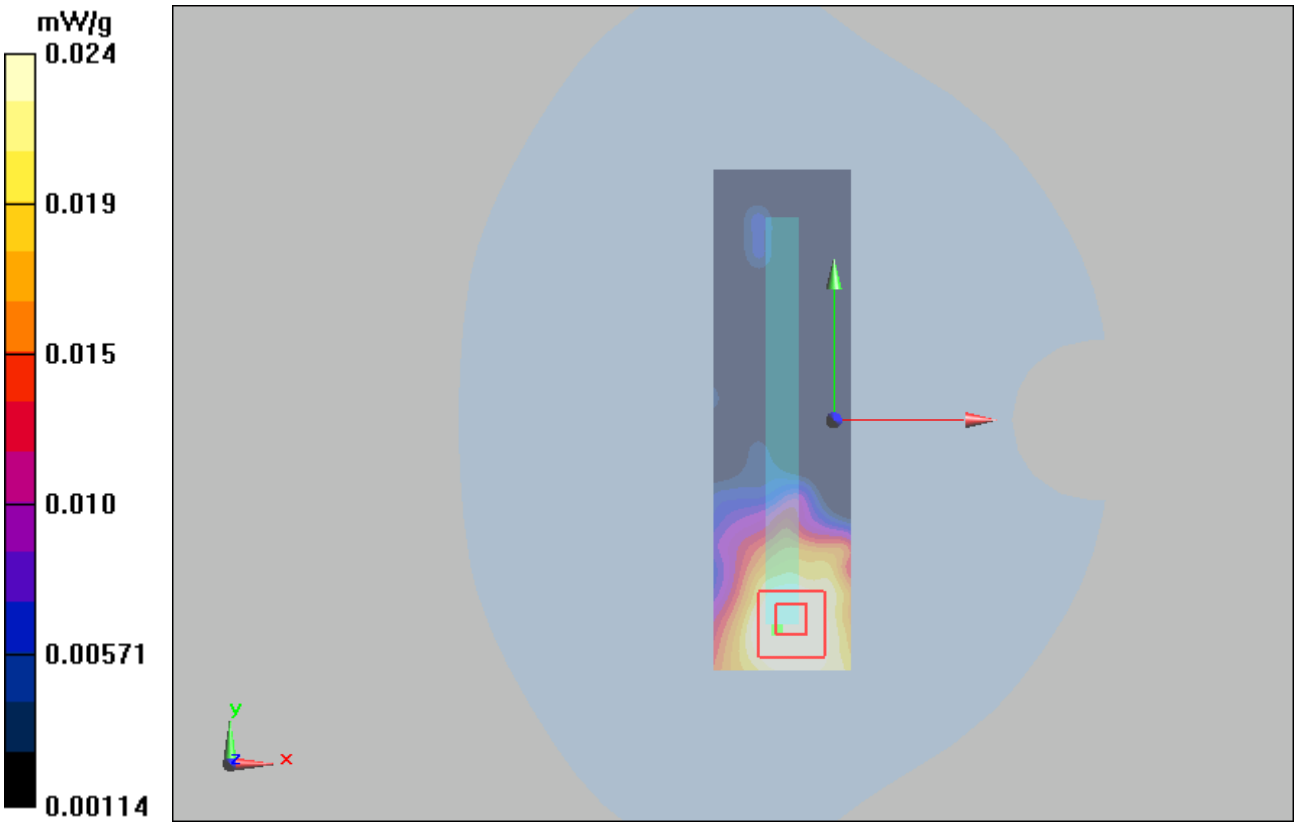


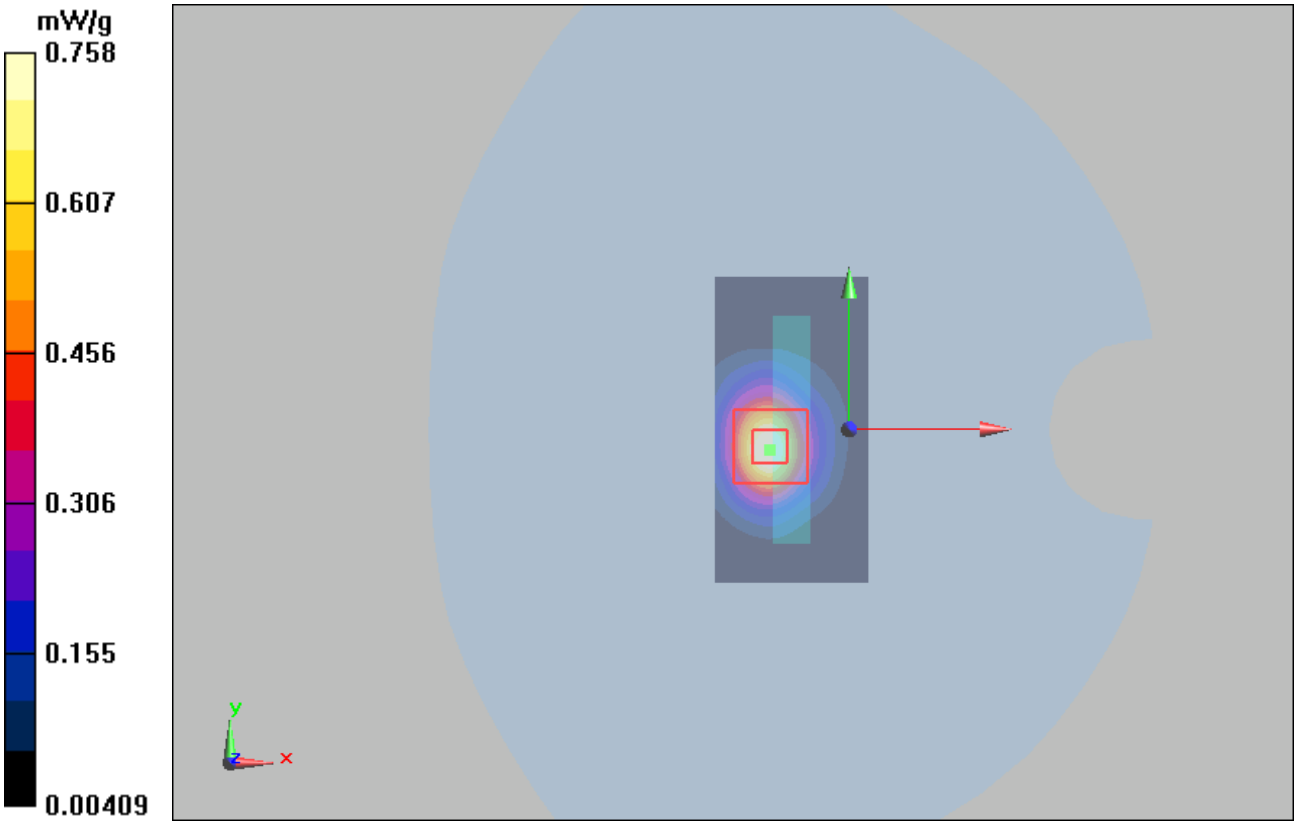
Figure 84 Body, Right Edge, LTE Band 7 Channel 21100

LTE Band 7 Bottom Edge Middle (50%RB,Hotspot Opened,Battery 1)

Date/Time: 5/7/2013 1:36:19 PM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Bottom Edge Middle/Area Scan (31x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.807 mW/g

Bottom Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.4 V/m; Power Drift = 0.067 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 0.670 mW/g; SAR(10 g) = 0.309 mW/g
Maximum value of SAR (measured) = 0.758 mW/g



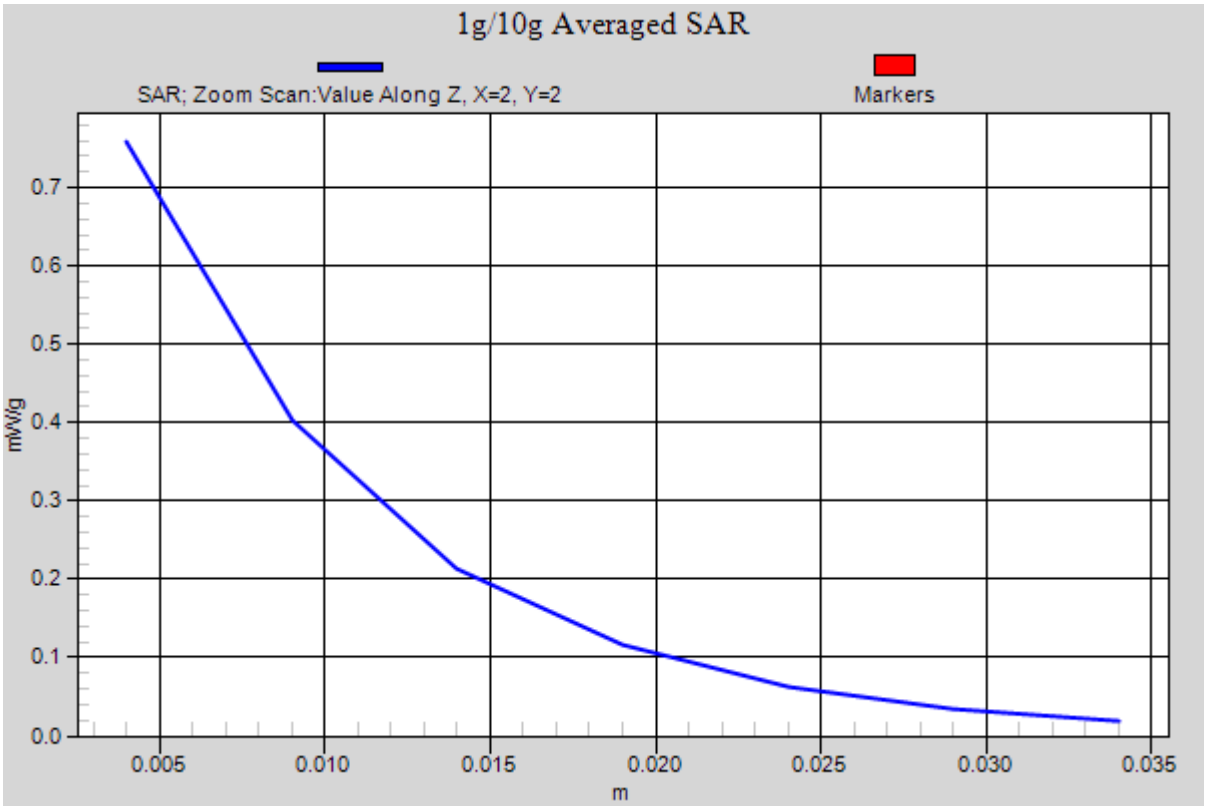


Figure 85 Body, Bottom Edge, LTE Band 7 Channel 21100

LTE Band 7 Bottom Edge Middle (50%RB,Hotspot Opened,Battery 2)

Date/Time: 5/7/2013 3:34:57 PM

Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Bottom Edge Middle/Area Scan (31x61x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 0.826 mW/g

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

Reference Value = 16.5 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.652 mW/g; SAR(10 g) = 0.305 mW/g

Maximum value of SAR (measured) = 0.719 mW/g

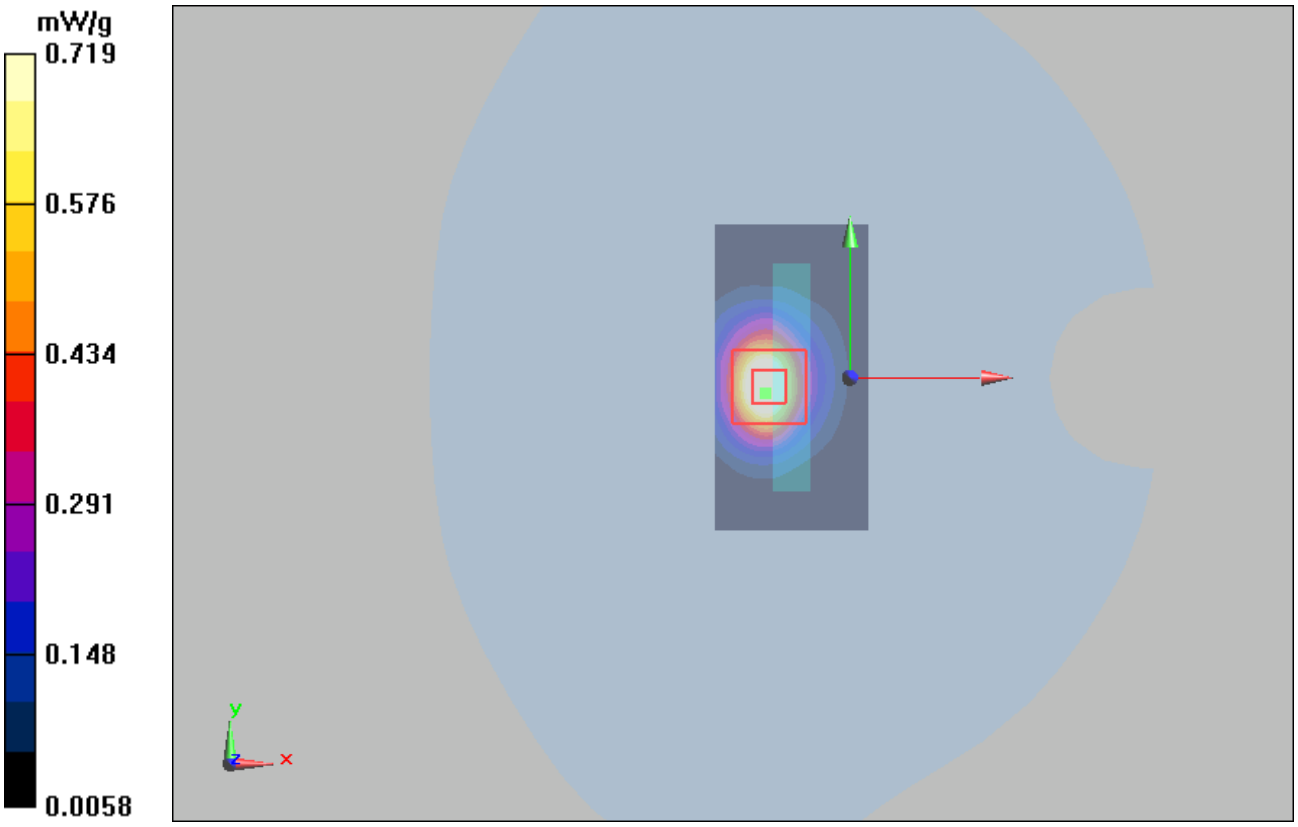


Figure 86 Body, Bottom Edge, LTE Band 7 Channel 21100

LTE Band 7 Bottom Edge Middle (50%RB,Hotspot Opened,Battery 3)

Date/Time: 5/7/2013 3:47:22 PM

Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 – SN3617; ConvF(7.22, 7.22, 7.22); Calibrated: 5/16/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Bottom Edge Middle/Area Scan (31x61x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 0.720 mW/g

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

Reference Value = 15.9 V/m; Power Drift = 0.135 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.621 mW/g; SAR(10 g) = 0.292 mW/g

Maximum value of SAR (measured) = 0.685 mW/g

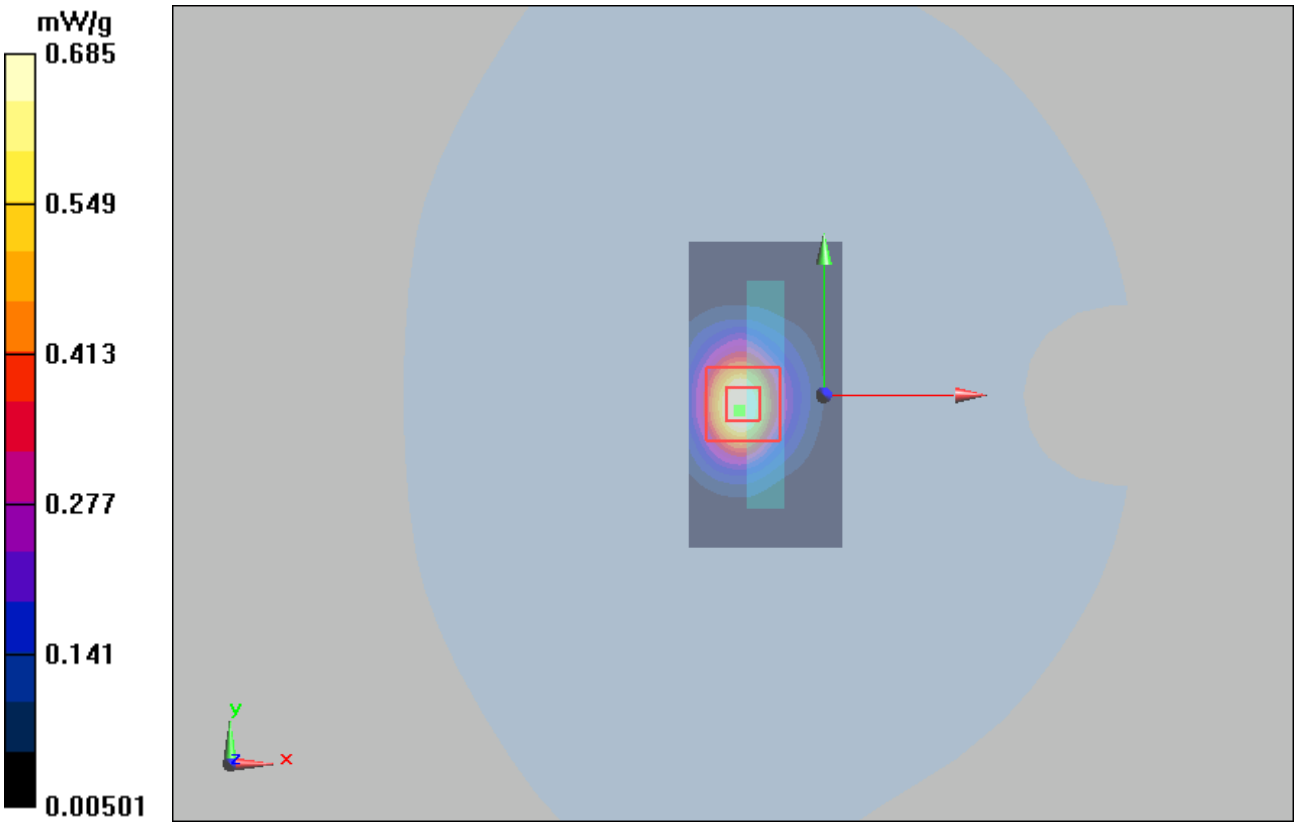


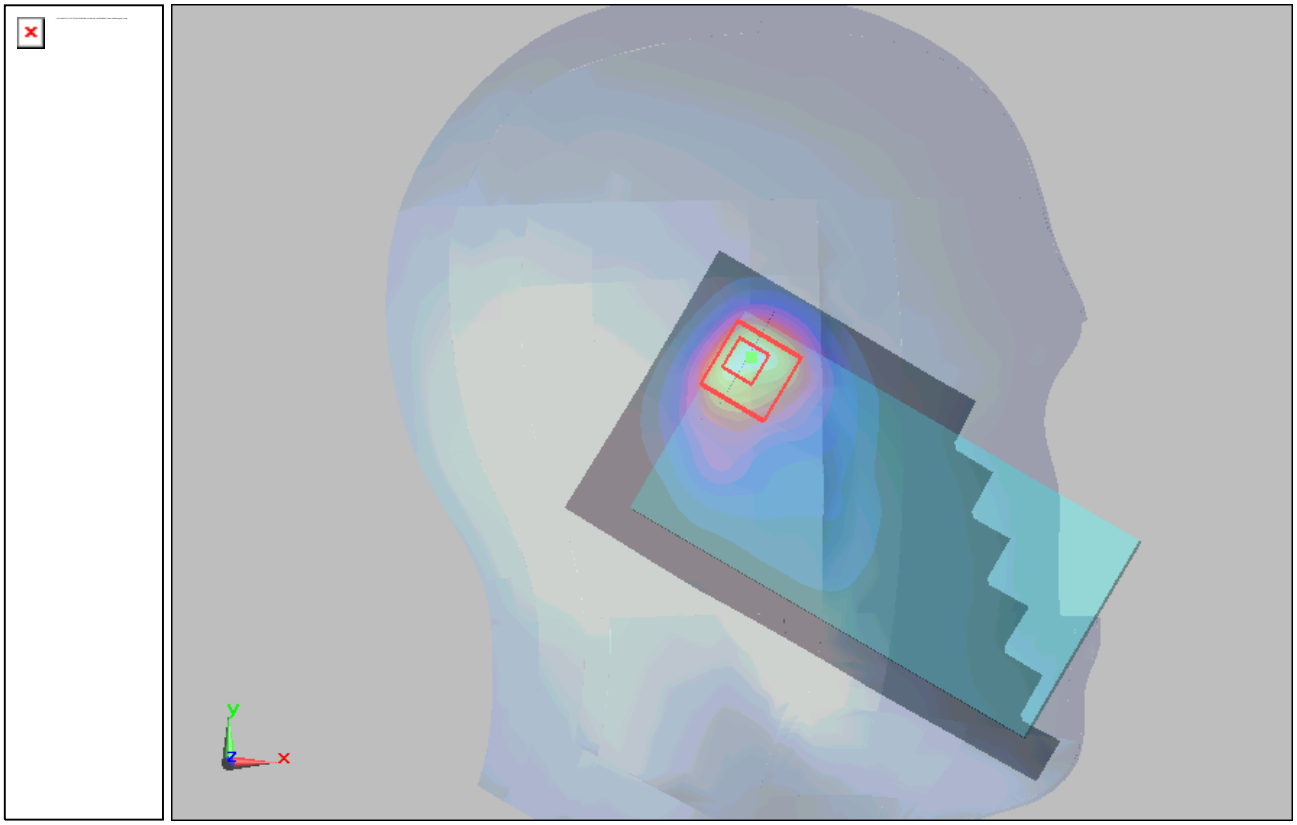
Figure 87 Body, Bottom Edge, LTE Band 7 Channel 21100

802.11b Left Cheek Middle(Battery 1)

Date/Time:5/7/2013 2:45:00 PM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.85 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.14, 4.14, 4.14); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.396 mW/g

Left Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 0.790 W/kg
SAR(1 g) = 0.378 mW/g; SAR(10 g) = 0.174 mW/g
Maximum value of SAR (measured) = 0.423 mW/g



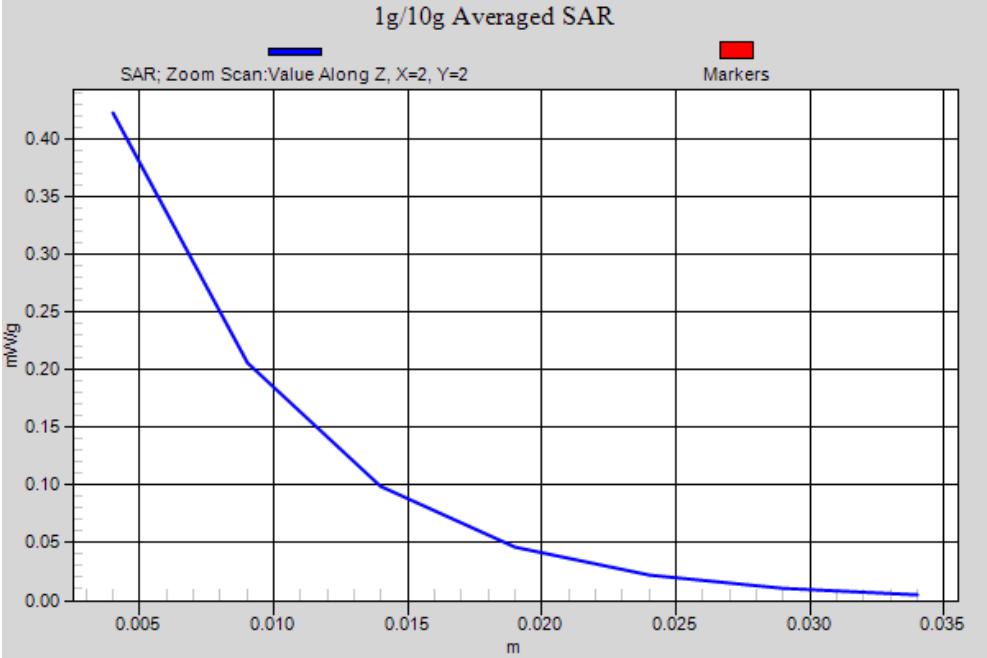


Figure 88 Left Hand Touch Cheek 802.11b Channel 6

802.11b Left Tilt Middle(Battery 1)

Date/Time: 5/7/2013 1:03:01 PM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.85 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.14, 4.14, 4.14); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Tilt Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.372 mW/g

Left Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.2 V/m; Power Drift = 0.028 dB
Peak SAR (extrapolated) = 0.832 W/kg
SAR(1 g) = 0.329 mW/g; SAR(10 g) = 0.156 mW/g
Maximum value of SAR (measured) = 0.362 mW/g

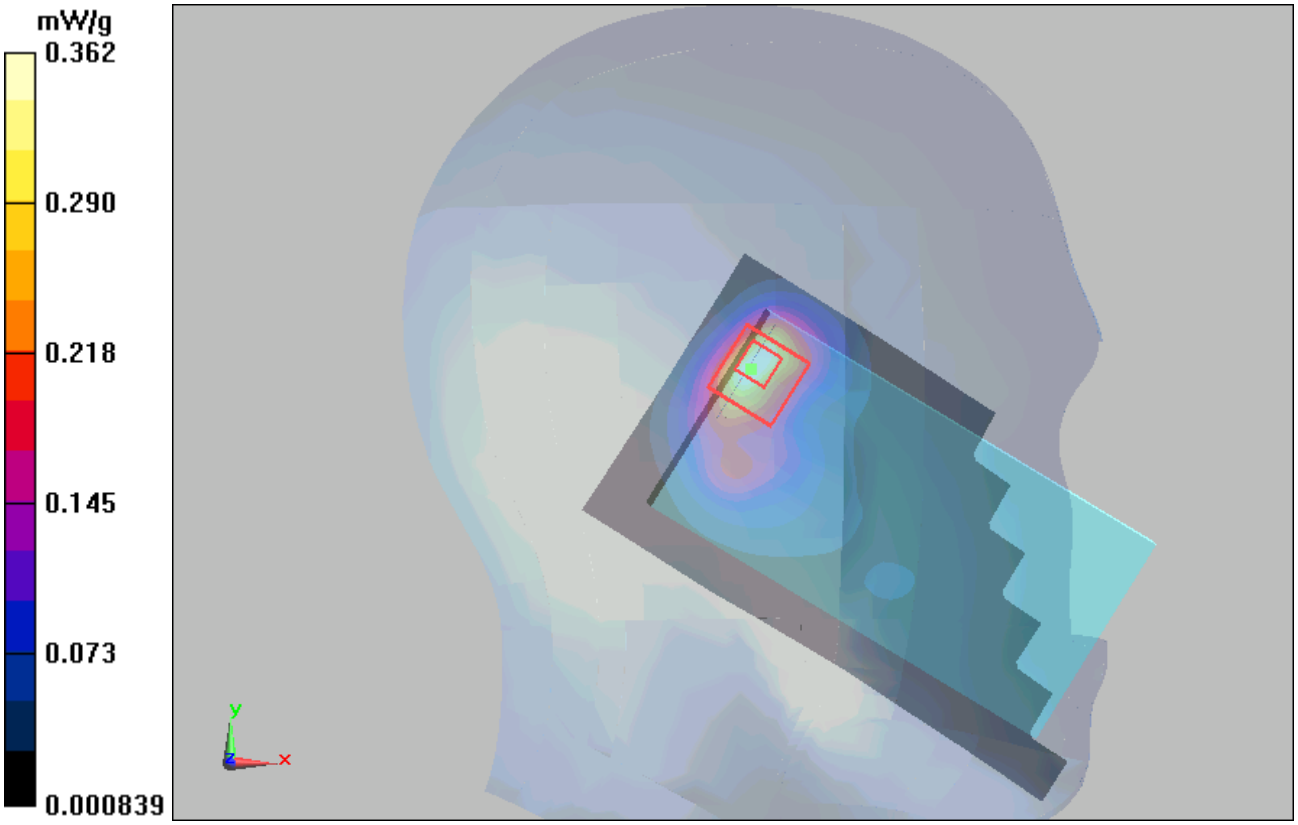


Figure 89 Left Hand Tilt 15° 802.11b Channel 6

802.11b Right Cheek Middle(Battery 1)

Date/Time: 5/7/2013 1:20:17 PM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.85 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.14, 4.14, 4.14); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.291 mW/g

Right Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.6 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 0.442 W/kg
SAR(1 g) = 0.259 mW/g; SAR(10 g) = 0.127 mW/g
Maximum value of SAR (measured) = 0.263 mW/g

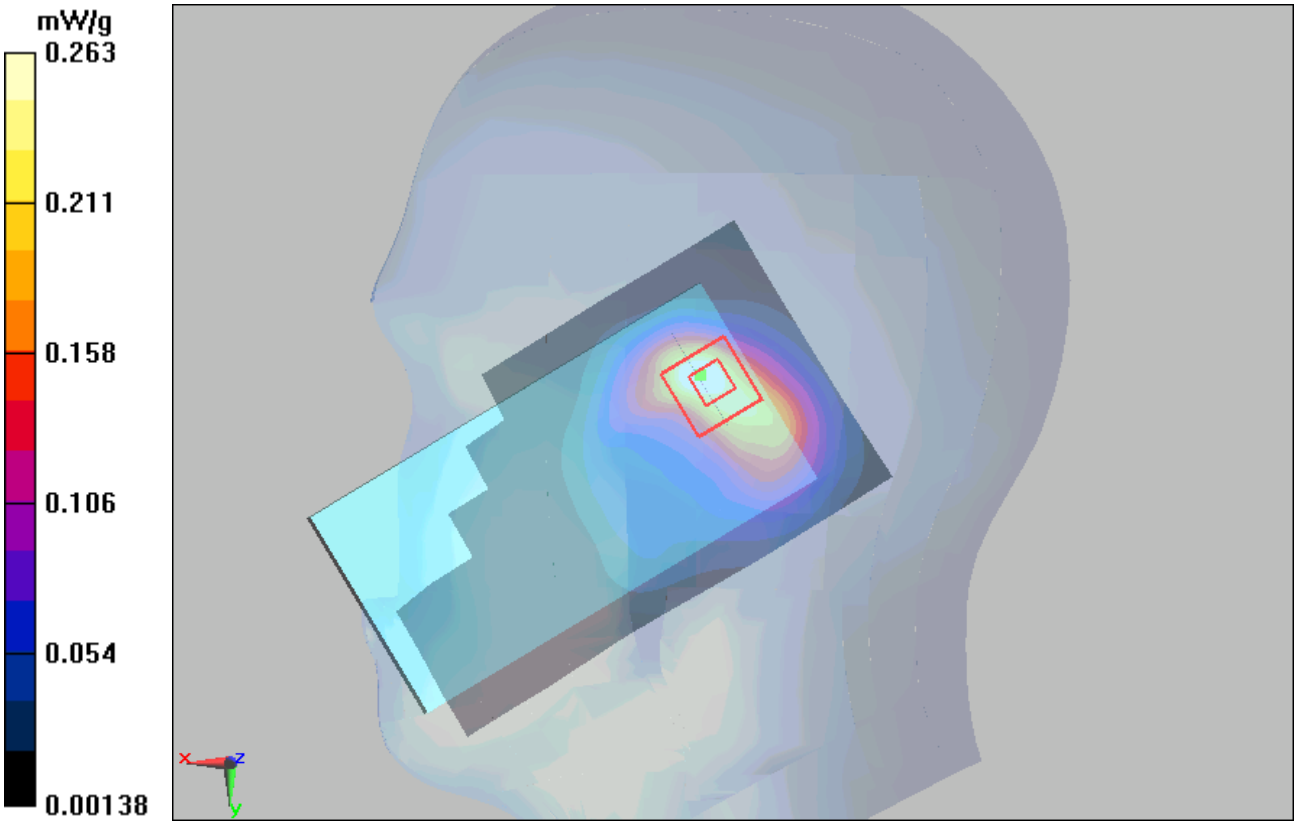


Figure 90 Right Hand Touch Cheek 802.11b Channel 6

802.11b Right Tilt Middle(Battery 1)

Date/Time: 5/7/2013 1:36:14 PM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.85 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.14, 4.14, 4.14); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Tilt Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.300 mW/g

Right Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12 V/m; Power Drift = 0.039dB
Peak SAR (extrapolated) = 0.493 W/kg
SAR(1 g) = 0.274 mW/g; SAR(10 g) = 0.129 mW/g
Maximum value of SAR (measured) = 0.261 mW/g

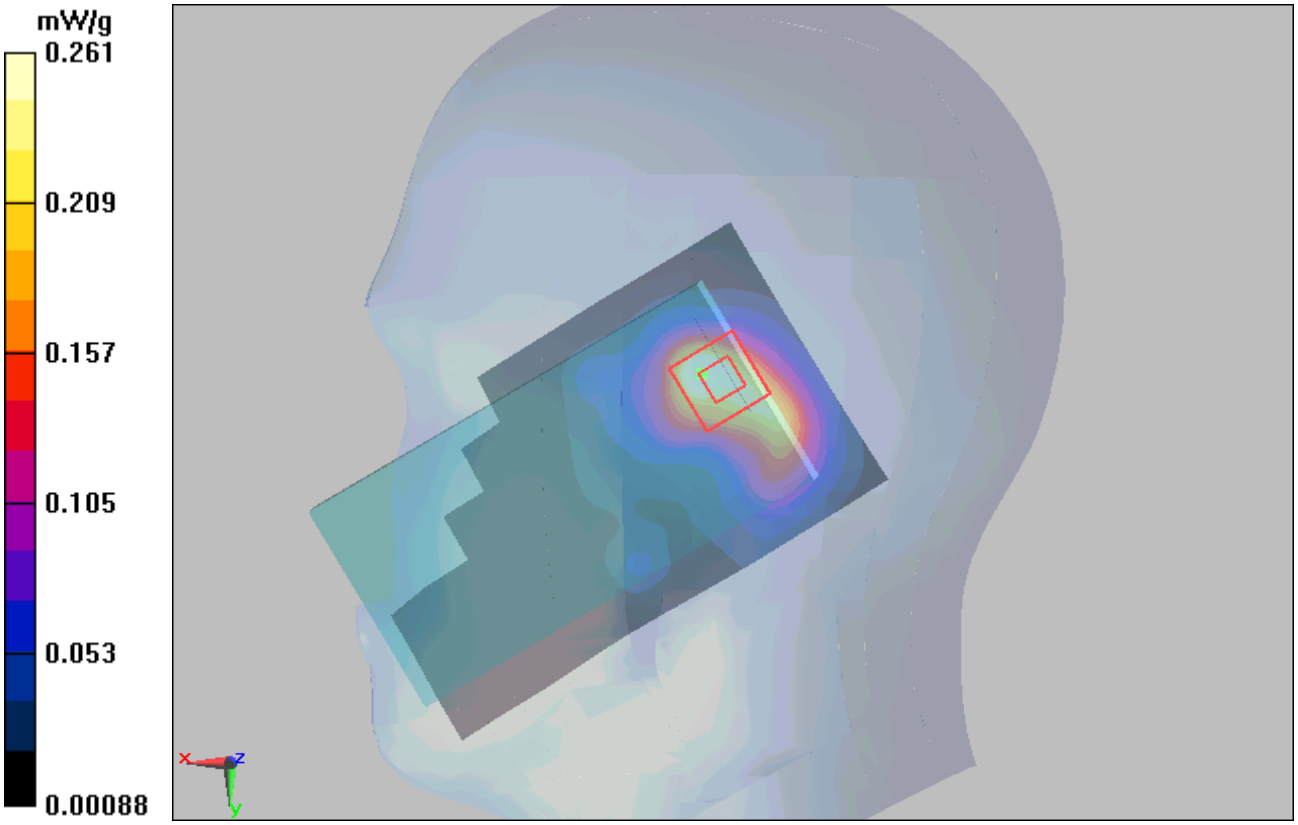


Figure 91 Right Hand Tilt 15° 802.11b Channel 6

802.11b Left Cheek Middle(Battery 2)

Date/Time: 5/7/2013 1:54:02 PM,
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.85 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.14, 4.14, 4.14); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.360 mW/g

Left Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.74 V/m; Power Drift = 0.041dB
Peak SAR (extrapolated) = 0.760 W/kg
SAR(1 g) = 0.343 mW/g; SAR(10 g) = 0.166 mW/g
Maximum value of SAR (measured) = 0.354 mW/g

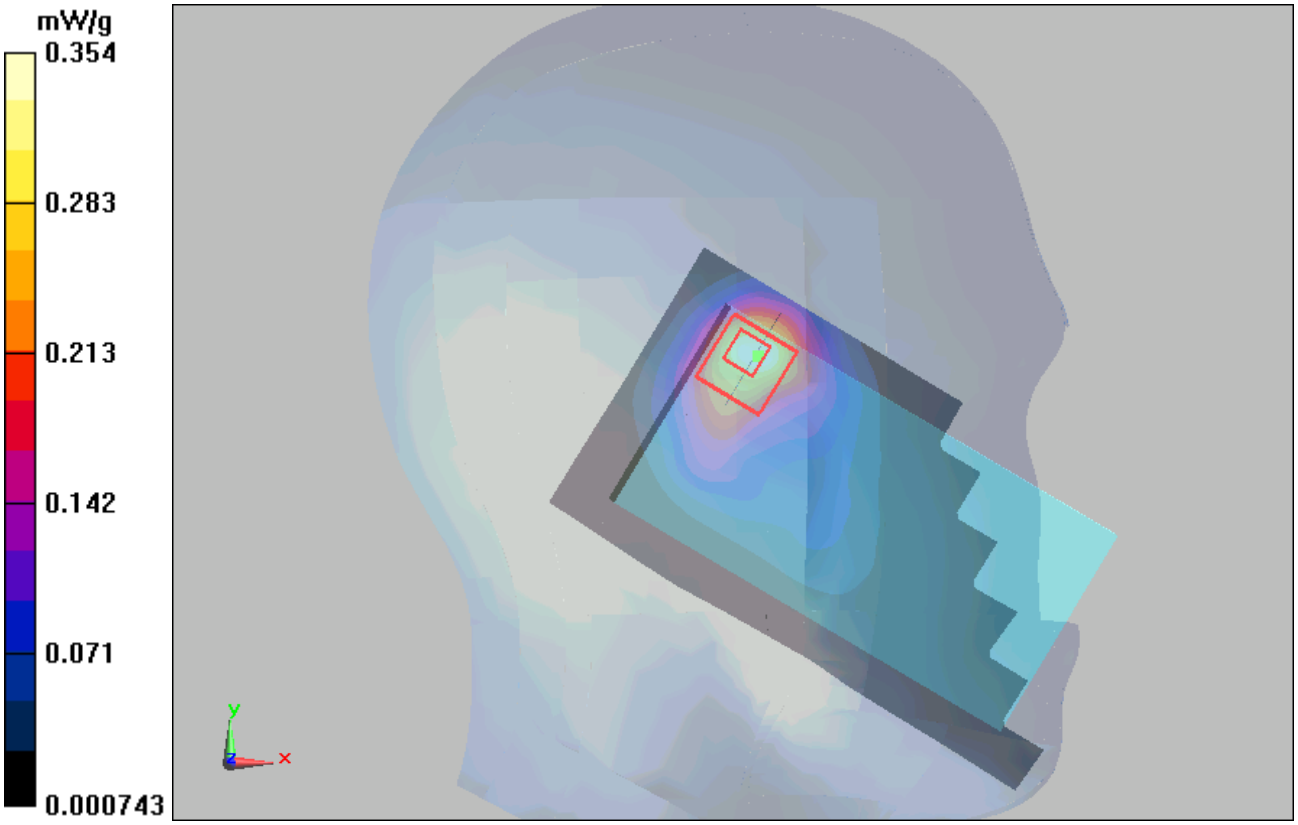


Figure 92 Left Hand Touch Cheek 802.11b Channel 6

802.11b Left Cheek Middle(Battery 3)

Date/Time: 5/7/2013 2:09:55 PM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.85 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(4.14, 4.14, 4.14); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Left Cheek Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.366 mW/g

Left Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.06 V/m; Power Drift = 0.160 dB
Peak SAR (extrapolated) = 0.723 W/kg
SAR(1 g) = 0.344 mW/g; SAR(10 g) = 0.167 mW/g
Maximum value of SAR (measured) = 0.357 mW/g

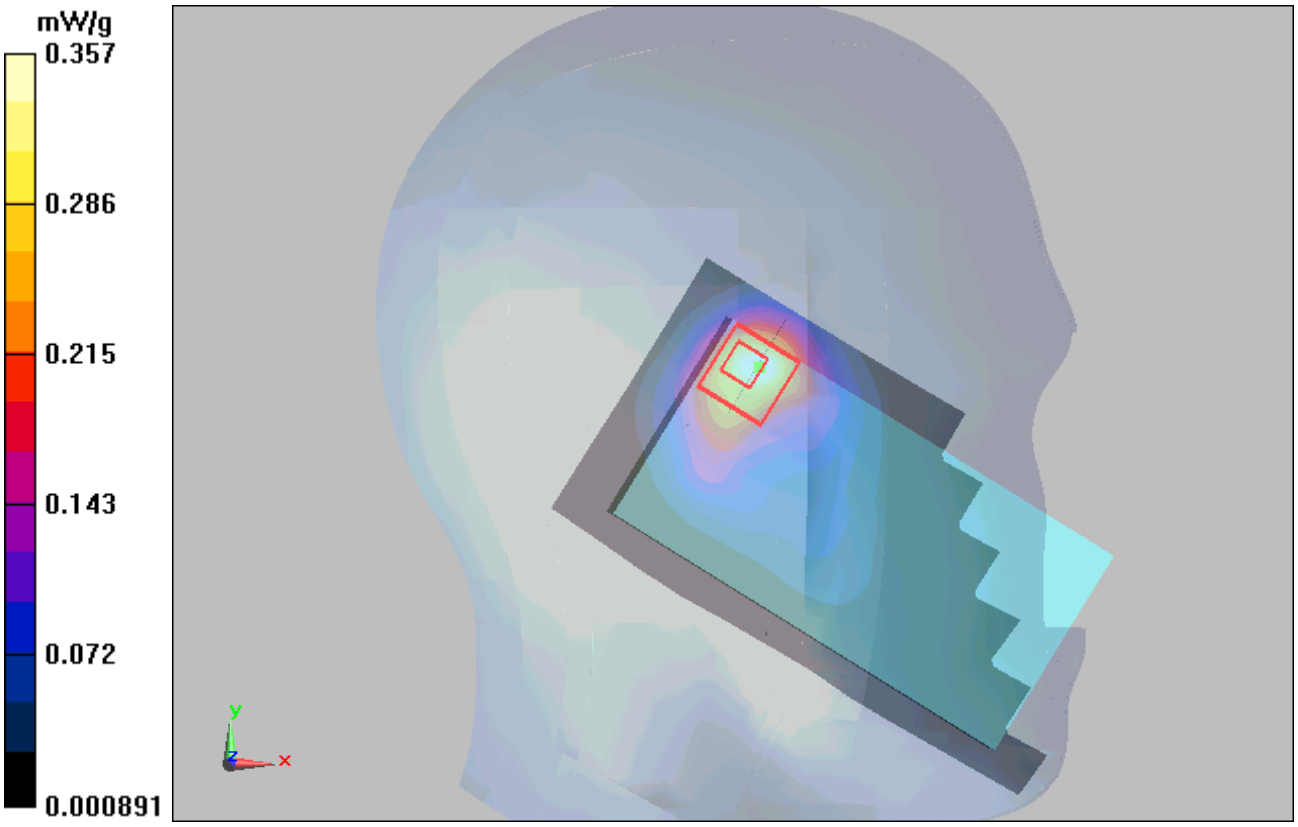


Figure 93 Left Hand Touch Cheek 802.11b Channel 6

802.11b Back Side Middle(Battery 1)

Date/Time: 5/8/2013 12:00:48 AM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.88 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(3.96, 3.96, 3.96); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.159 mW/g

Back Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.97 V/m; Power Drift = 0.025 dB
Peak SAR (extrapolated) = 0.331 W/kg
SAR(1 g) = 0.143 mW/g; SAR(10 g) = 0.069 mW/g
Maximum value of SAR (measured) = 0.152 mW/g

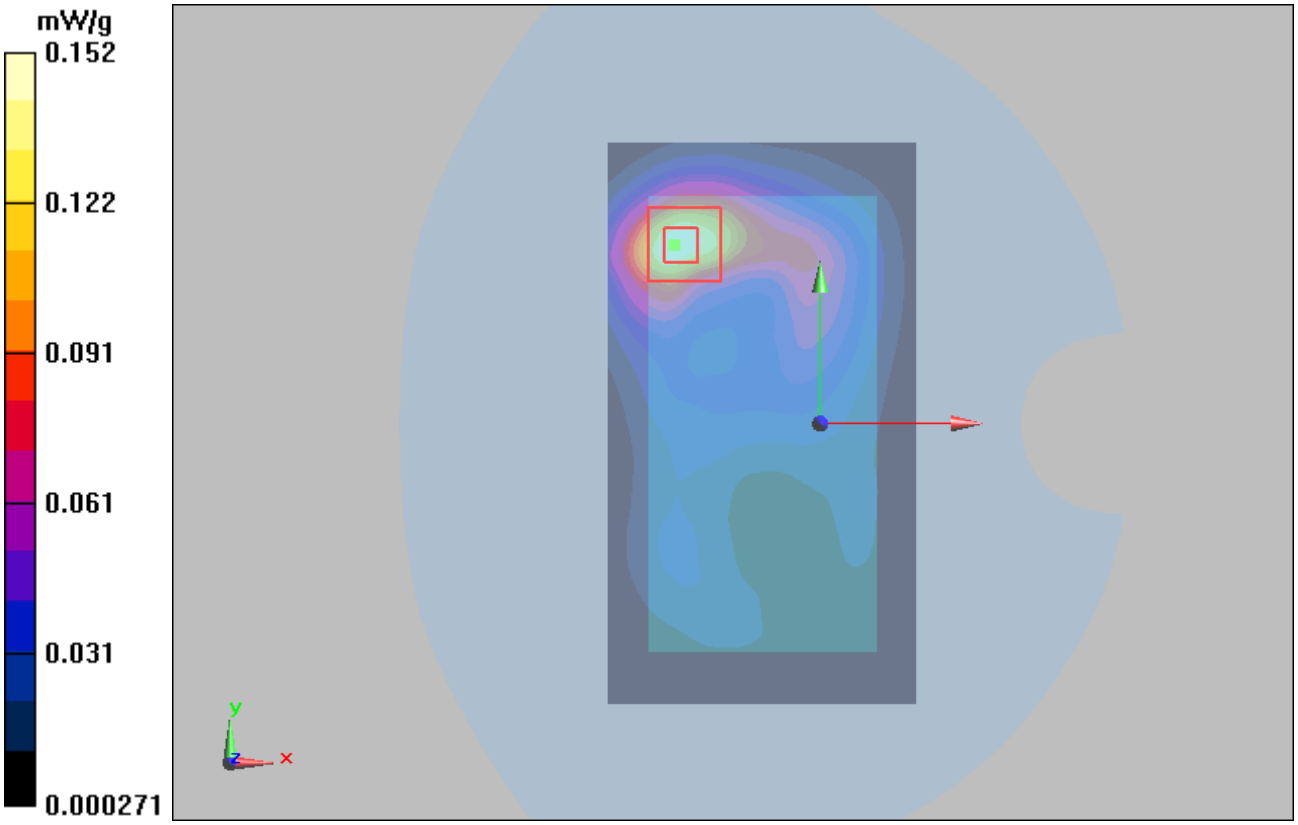


Figure 94 Body, Back Side, 802.11b Channel 6

802.11b Front Side Middle(Battery 1)

Date/Time: 5/7/2013 11:41:06 PM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.88 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(3.96, 3.96, 3.96); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Front Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.137 mW/g

Front Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 0.271 W/kg
SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.063 mW/g
Maximum value of SAR (measured) = 0.130 mW/g

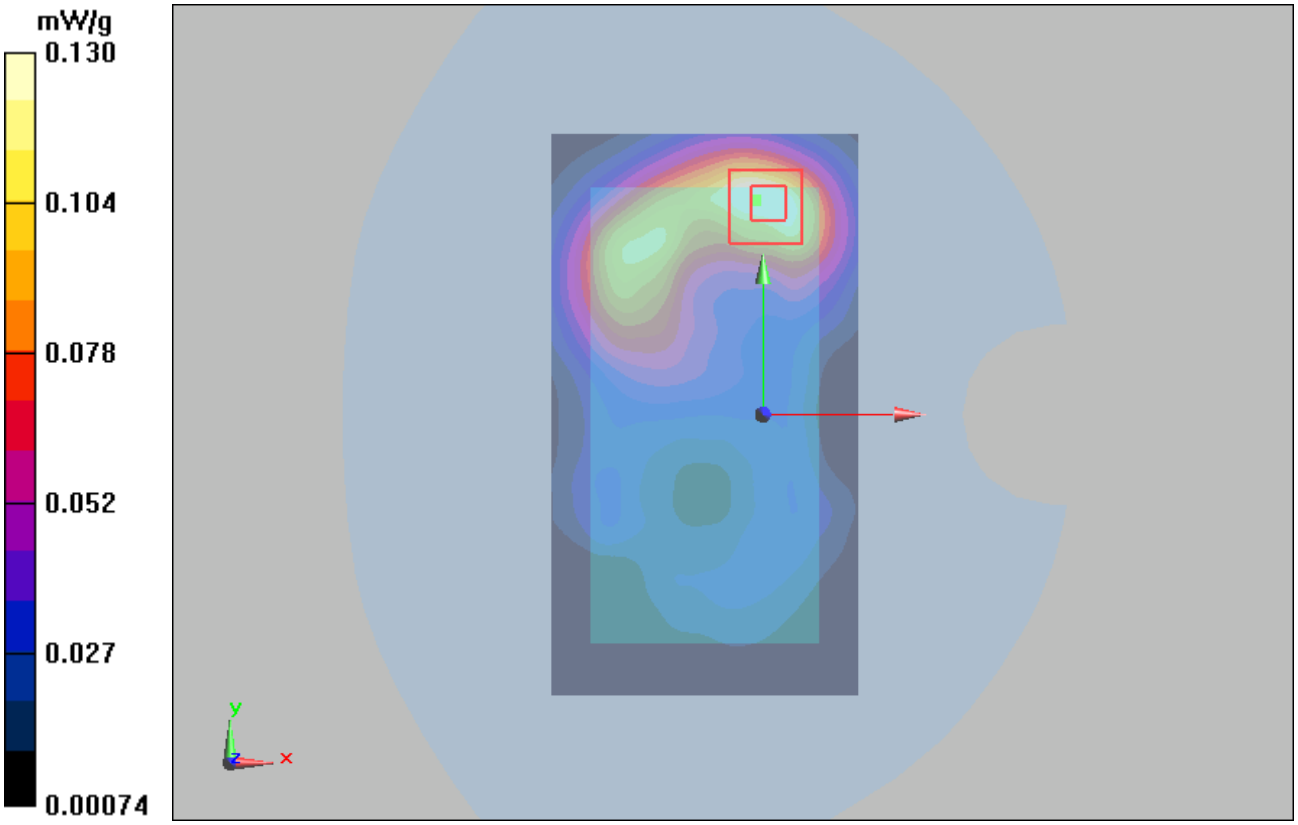


Figure 95 Body, Front Side, 802.11b Channel 6

802.11b Right Edge Middle(Battery 1)

Date/Time: 5/8/2013 12:25:32 AM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.88 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(3.96, 3.96, 3.96); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Right Edge Middle/Area Scan (31x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.076 mW/g

Right Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.44 V/m; Power Drift = 0.091 dB
Peak SAR (extrapolated) = 0.134 W/kg
SAR(1 g) = 0.063 mW/g; SAR(10 g) = 0.032 mW/g
Maximum value of SAR (measured) = 0.069 mW/g

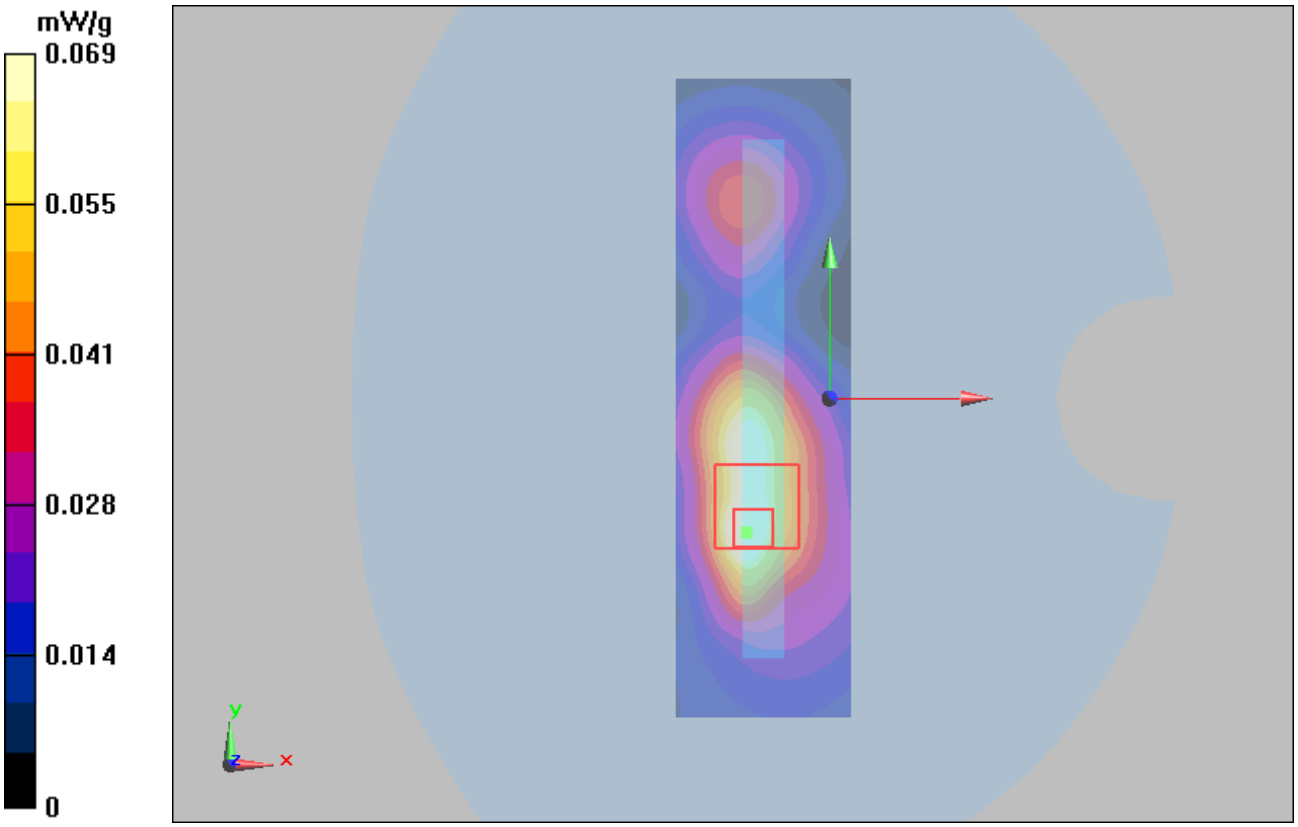


Figure 96 Body, Right Edge, 802.11b Channel 6

802.11b Top Edge Middle(Battery 1)

Date/Time: 5/8/2013 12:44:04 AM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.88 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(3.96, 3.96, 3.96); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Top Edge Middle/Area Scan (31x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.130 mW/g

Top Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.26 V/m; Power Drift = 0.100 dB
Peak SAR (extrapolated) = 0.264 W/kg
SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.066 mW/g
Maximum value of SAR (measured) = 0.135 mW/g

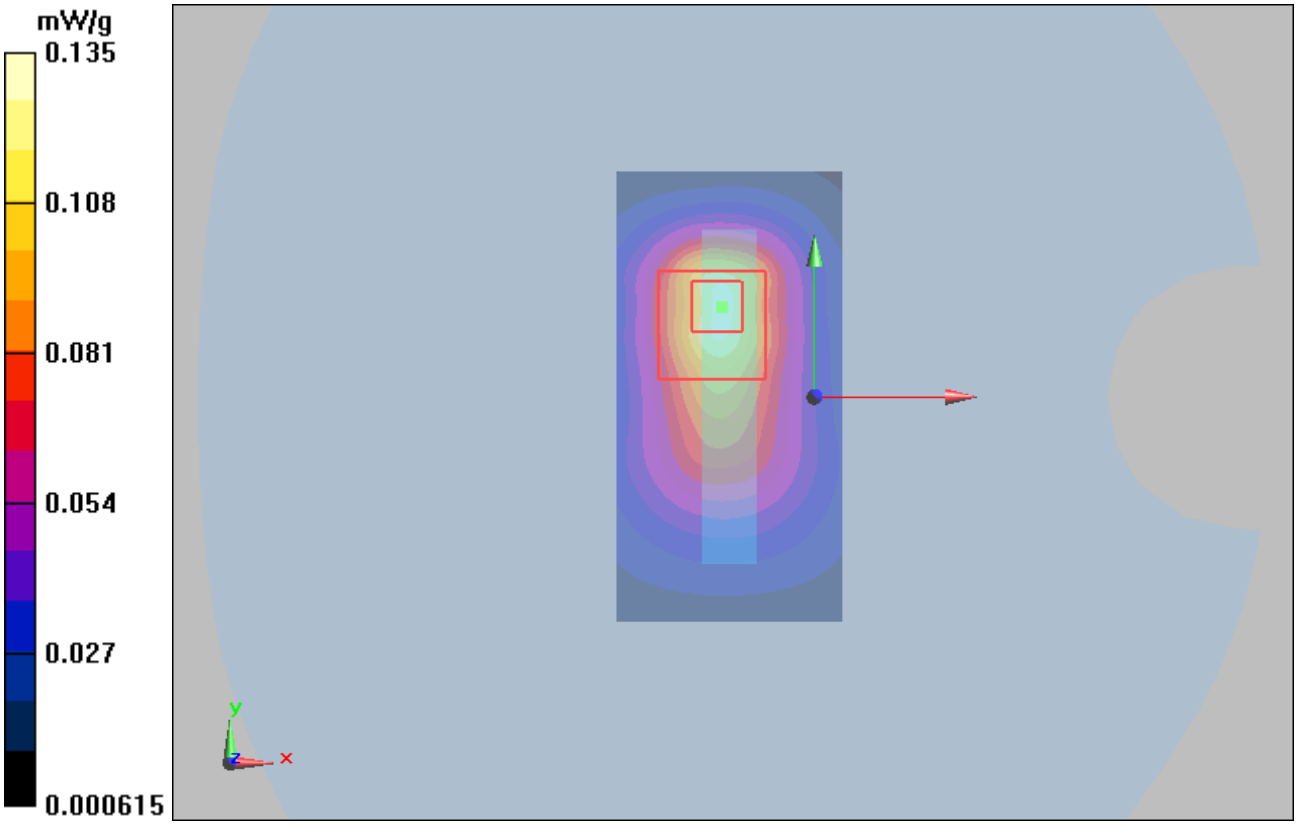


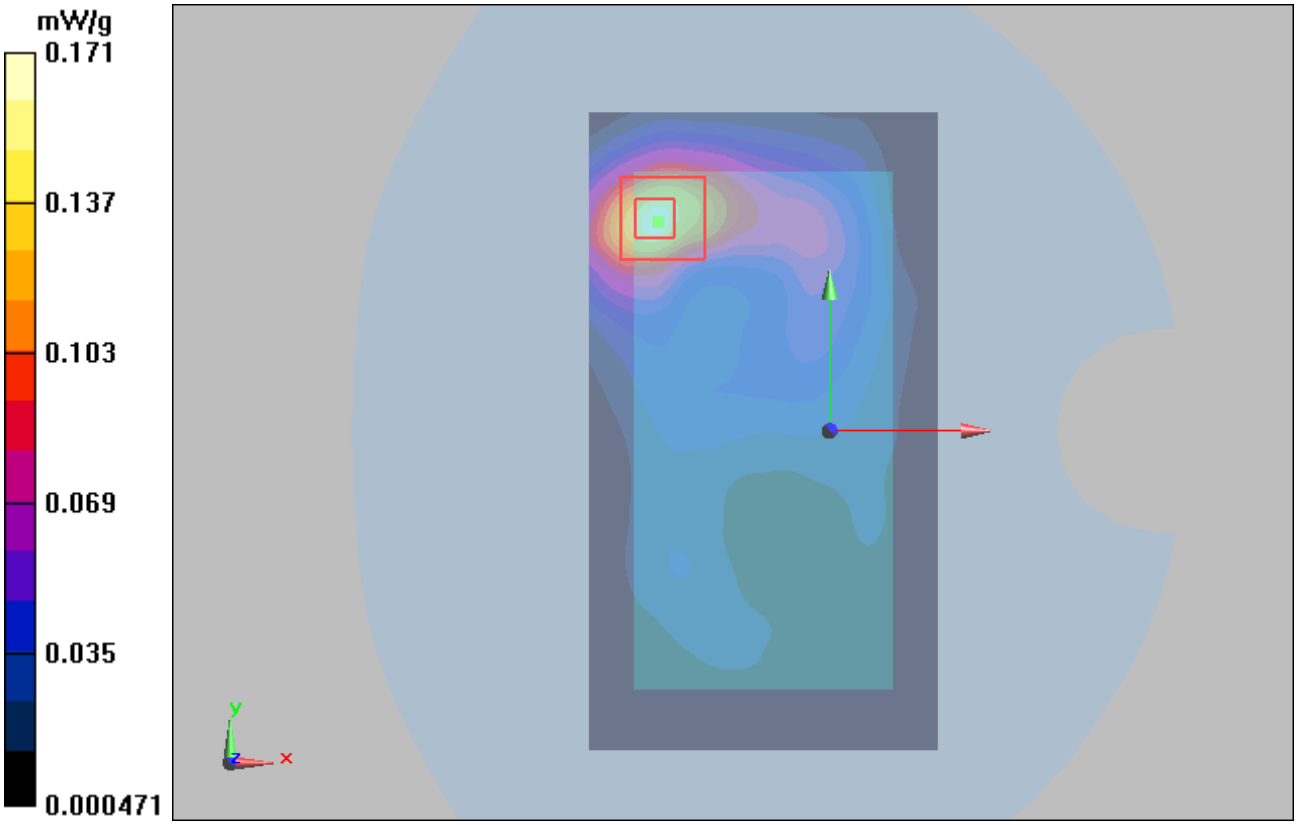
Figure 97 Body, Top Edge, 802.11b Channel 6

802.11b Back Side Middle(Battery 2)

Date/Time: 5/8/2013 1:06:11 AM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.88 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: ES3DV3 - SN3189; ConvF(3.96, 3.96, 3.96); Calibrated: 6/22/2012
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.168 mW/g

Back Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.87 V/m; Power Drift = 0.168 dB
Peak SAR (extrapolated) = 0.365 W/kg
SAR(1 g) = 0.157 mW/g; SAR(10 g) = 0.076 mW/g
Maximum value of SAR (measured) = 0.171 mW/g



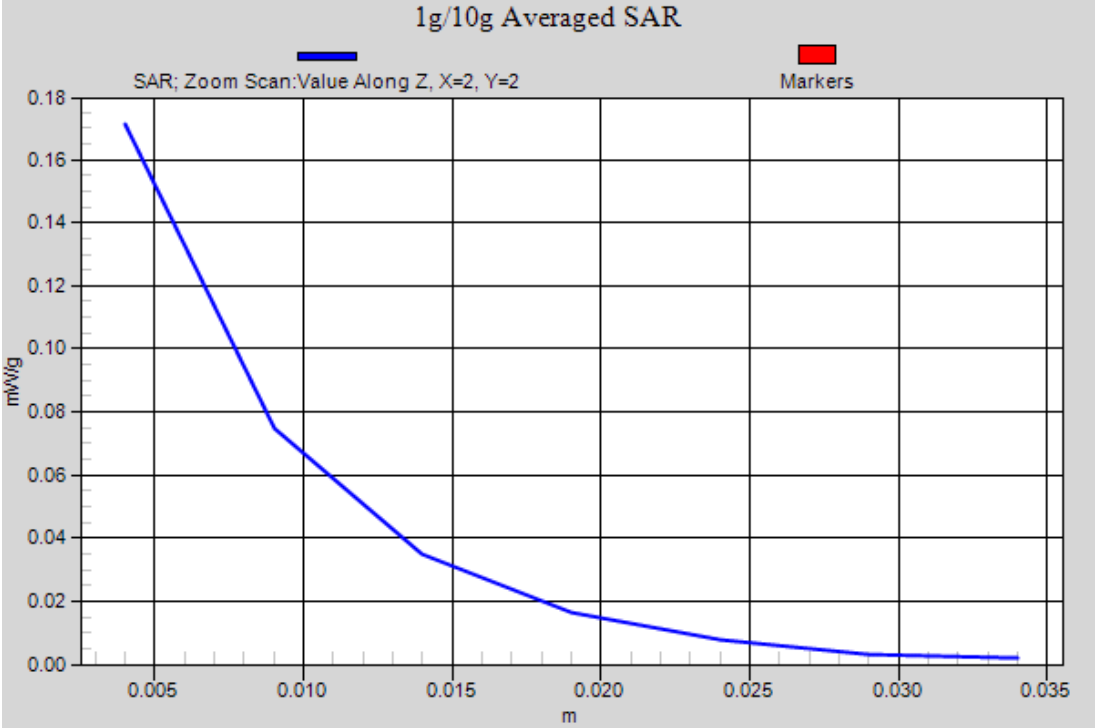


Figure 98 Body, Back Side, 802.11b Channel 6

802.11b Back Side Middle(Battery 3)

Date/Time: 5/8/2013 1:23:24 AM

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2437 MHz; σ = 1.88 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: ES3DV3 - SN3189; ConvF(3.96, 3.96, 3.96); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/25/2013

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

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Back Side Middle/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 0.150 mW/g

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

Reference Value = 3.71 V/m; Power Drift = 0.041 dB

Peak SAR (extrapolated) = 0.318 W/kg

SAR(1 g) = 0.138 mW/g; SAR(10 g) = 0.067 mW/g

Maximum value of SAR (measured) = 0.149 mW/g

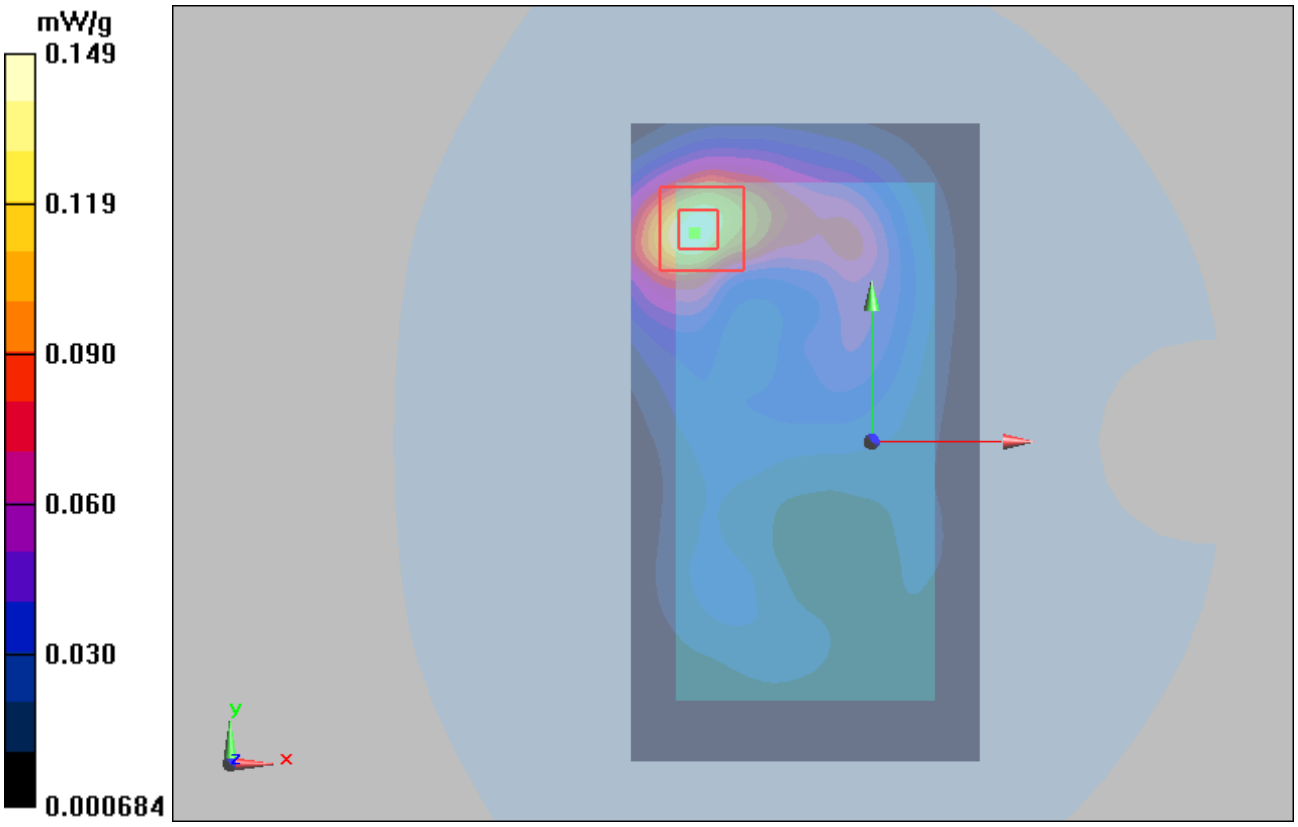


Figure 99 Body, Back Side, 802.11b Channel 6

ANNEX D: Probe Calibration Certificate(SN:3189)

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client TA-Shanghai (Auden)

Certificate No: ES3-3189_Jun12

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3189

Calibration procedure(s): QA CAL-01.v8, QA CAL-12.v7, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: June 22, 2012

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41498087	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: S5054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: S5086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: S5129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 660	10-Jan-12 (No. DAE4-660_Jan12)	Jan-13
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 22, 2012

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS) Accreditation No.: **SCS 108**
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z: A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ES3DV3

SN:3189

Manufactured: March 25, 2008
Calibrated: June 22, 2012

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3189

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.32	1.35	1.05	± 10.1 %
DCP (mV)[B]	99.5	100.6	100.2	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
0	CW	0.00	X	0.00	0.00	1.00	160.3	±3.8 %
			Y	0.00	0.00	1.00	164.9	
			Z	0.00	0.00	1.00	182.0	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3189

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
300	45.3	0.87	6.83	6.83	6.83	0.25	1.06	± 13.4 %
450	43.5	0.87	6.37	6.37	6.37	0.14	1.67	± 13.4 %
835	41.5	0.90	5.81	5.81	5.81	0.63	1.24	± 12.0 %
1750	40.1	1.37	4.90	4.90	4.90	0.80	1.14	± 12.0 %
1900	40.0	1.40	4.69	4.69	4.69	0.62	1.31	± 12.0 %
2450	39.2	1.80	4.14	4.14	4.14	0.65	1.36	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3189

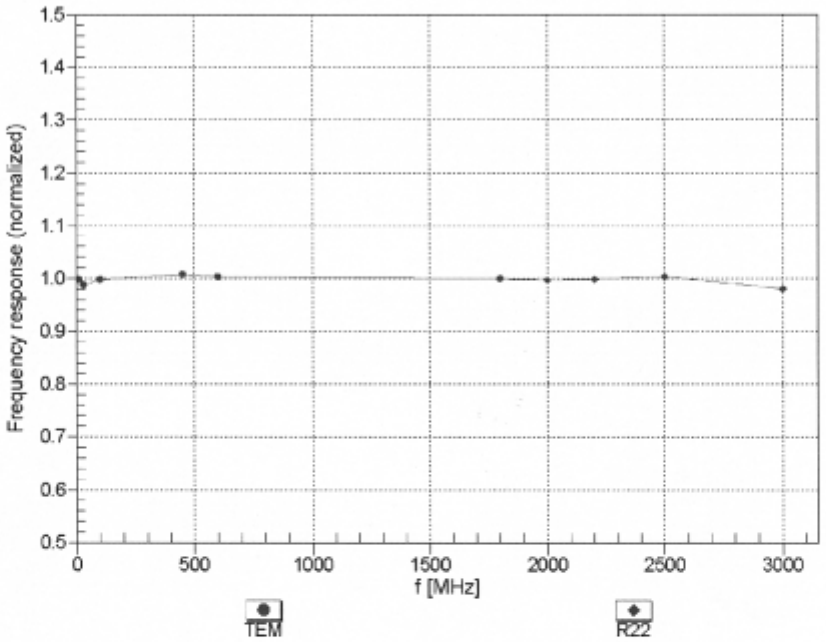
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
300	58.2	0.92	6.53	6.53	6.53	0.23	1.90	± 13.4 %
450	56.7	0.94	6.73	6.73	6.73	0.10	1.00	± 13.4 %
835	55.2	0.97	5.81	5.81	5.81	0.54	1.33	± 12.0 %
1750	53.4	1.49	4.65	4.65	4.65	0.67	1.38	± 12.0 %
1900	53.3	1.52	4.36	4.36	4.36	0.62	1.40	± 12.0 %
2450	52.7	1.95	3.96	3.96	3.96	0.64	0.99	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

ES3DV3– SN:3189 June 22, 2012

Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)

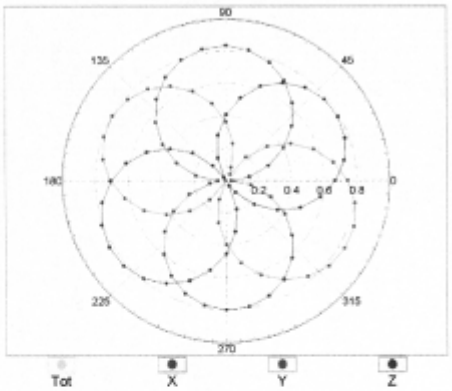


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

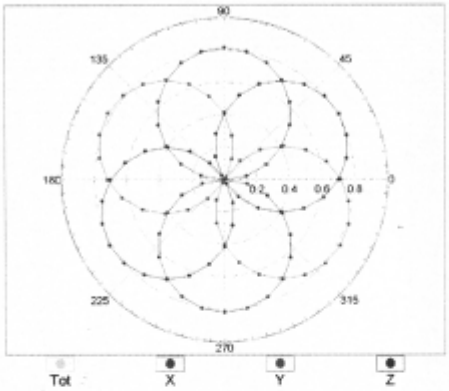
ES3DV3– SN:3189 June 22, 2012

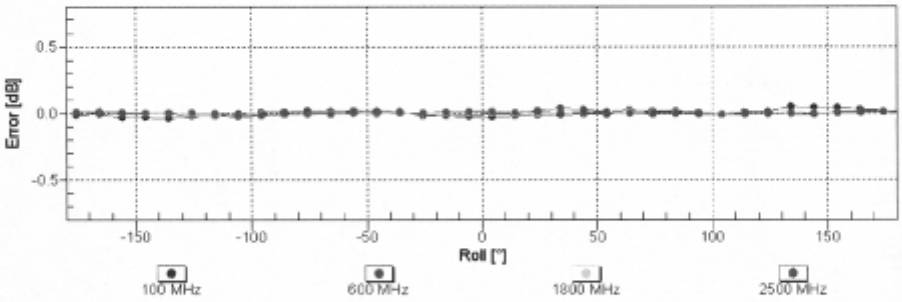
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22

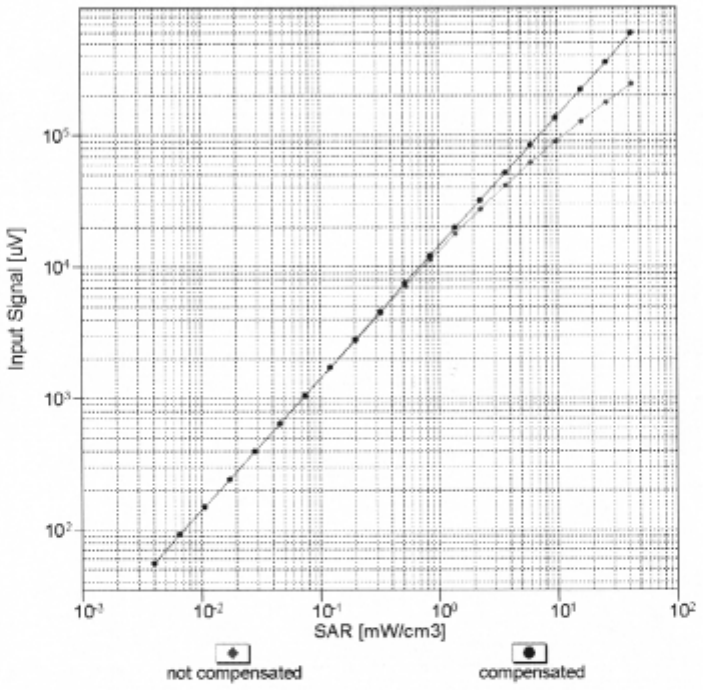


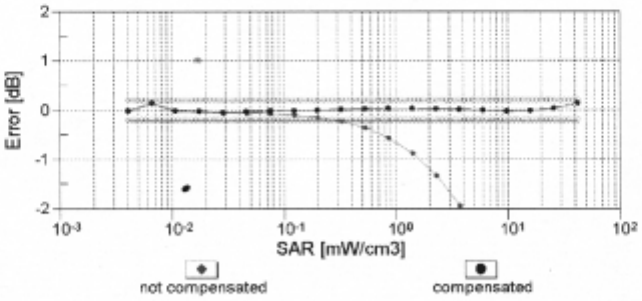


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ES3DV3– SN:3189 June 22, 2012

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)



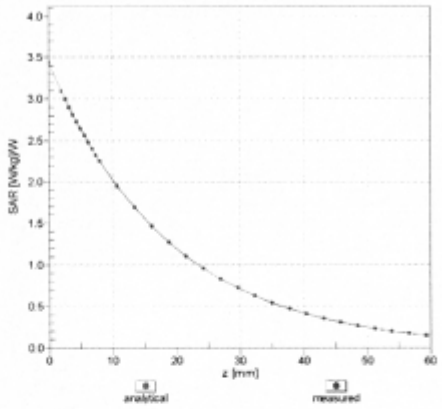


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

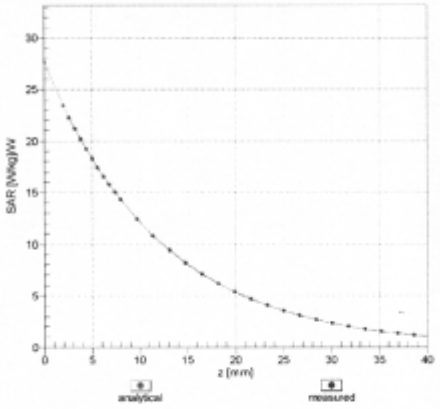
ES3DV3– SN:3189 June 22, 2012

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

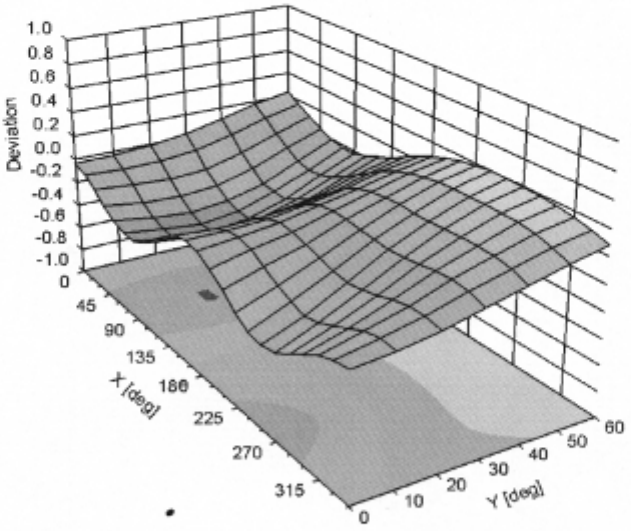


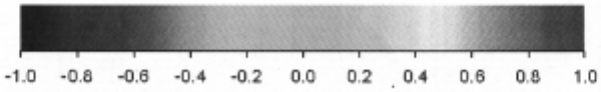
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3189

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	54.1
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

ANNEX E: Probe Calibration Certificate(SN:3617)

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client TMC Beijing

Certificate No: EX3-3617_May12

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3617

Calibration procedure(s) QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: May 16, 2012

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41498087	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: S5054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: S5086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: S5129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 660	10-Jan-12 (No. DAE4-660_Jan12)	Jan-13
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 16, 2012

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS) Accreditation No.: SCS 108
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z: A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe EX3DV4

SN:3617

Manufactured: May 3, 2007
Repaired: May 7, 2012
Calibrated: May 16, 2012

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3617

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.35	0.22	0.32	± 10.1 %
DCP (mV)[B]	106.1	98.9	99.5	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
0	CW	0.00	X	0.00	0.00	1.00	180.7	±4.4 %
			Y	0.00	0.00	1.00	165.5	
			Z	0.00	0.00	1.00	176.7	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3617

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
2450	39.2	1.80	7.37	7.37	7.37	0.39	0.84	± 12.0 %
2550	39.1	1.91	7.19	7.19	7.19	0.35	0.90	± 12.0 %
2600	39.0	1.96	7.21	7.21	7.21	0.34	1.01	± 12.0 %
3500	37.9	2.91	7.32	7.32	7.32	0.35	1.09	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3617

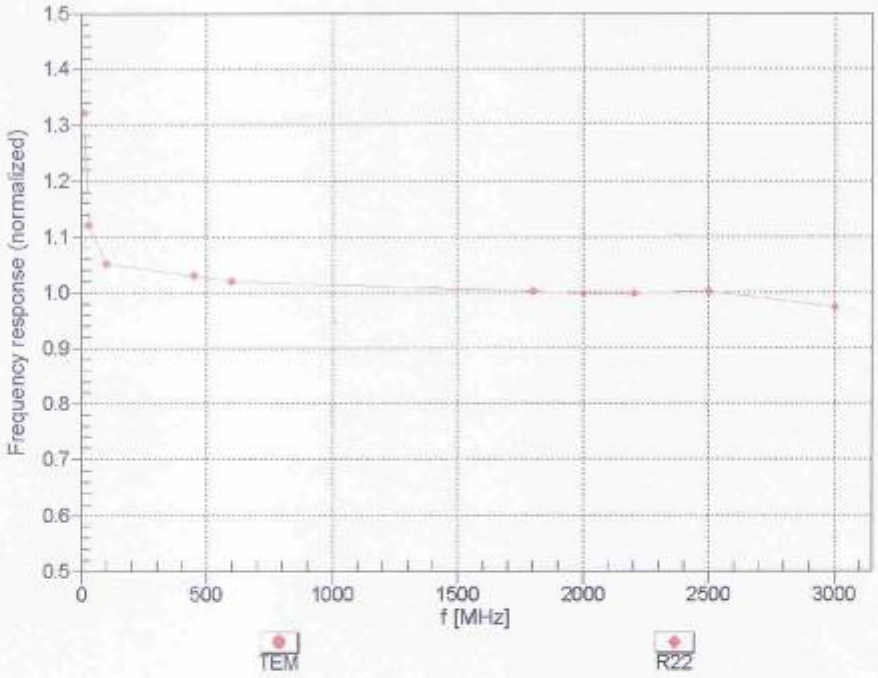
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
2450	52.7	1.95	7.40	7.40	7.40	0.80	0.50	± 12.0 %
2550	52.6	2.09	7.22	7.22	7.22	0.80	0.50	± 12.0 %
2600	52.5	2.16	7.27	7.27	7.27	0.80	0.50	± 12.0 %
3500	51.3	3.31	6.46	6.46	6.46	0.32	1.29	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

EX3DV4– SN:3617 May 16, 2012

Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)

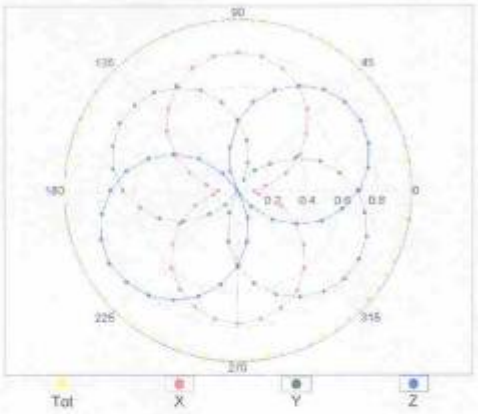


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

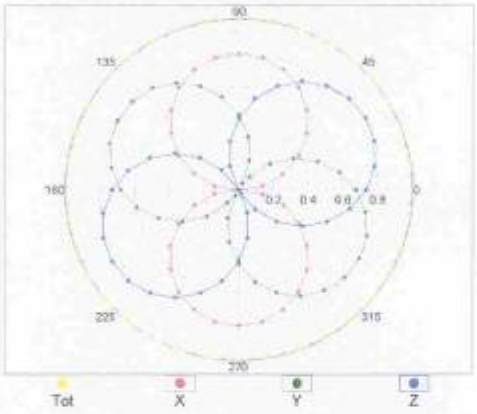
EX3DV4– SN:3617 May 16, 2012

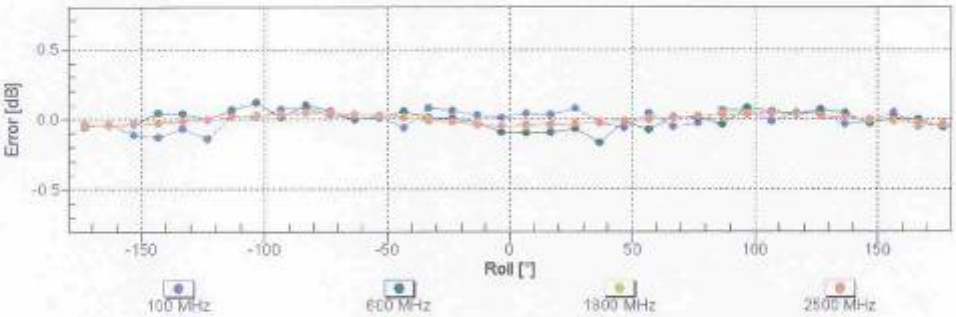
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22

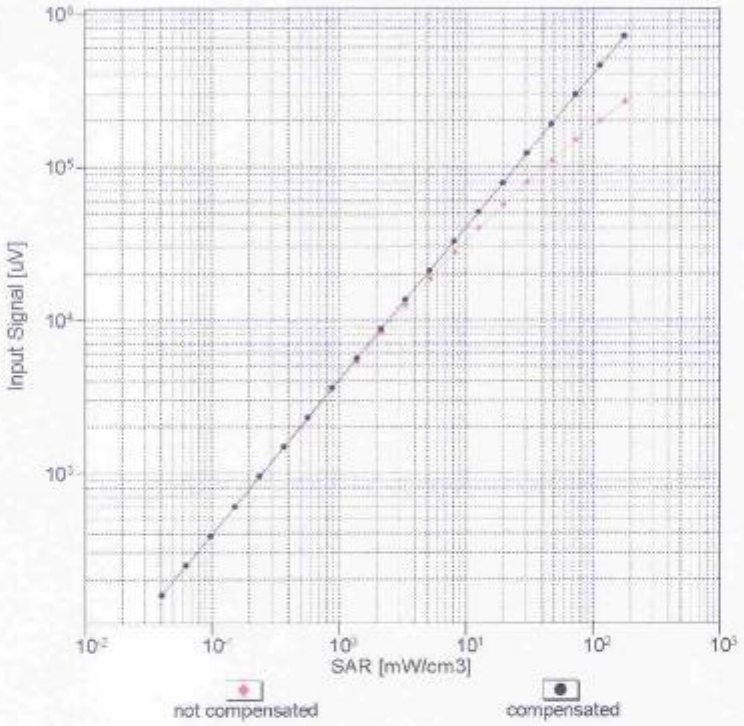


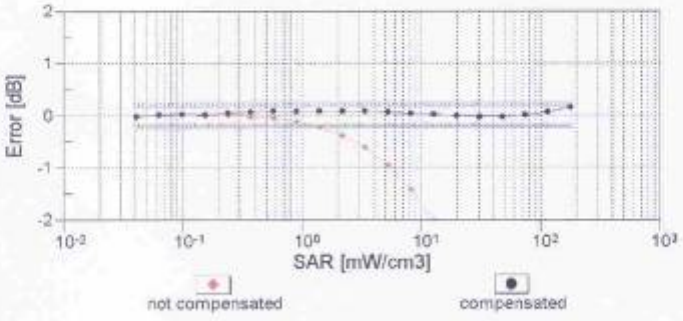


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

EX3DV4– SN:3617 May 16, 2012

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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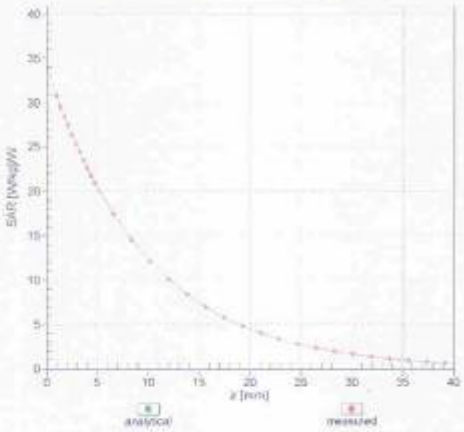
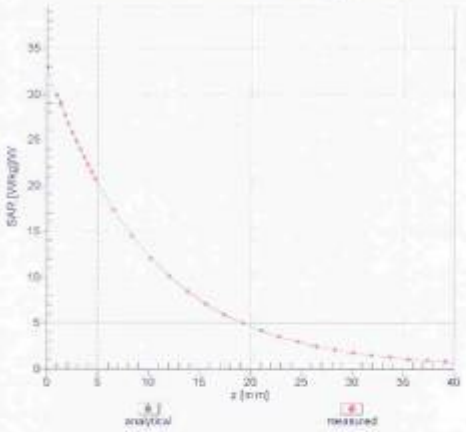
Conversion Factor Assessment

f = 2450 MHz,WGLS R22 (H_convF)

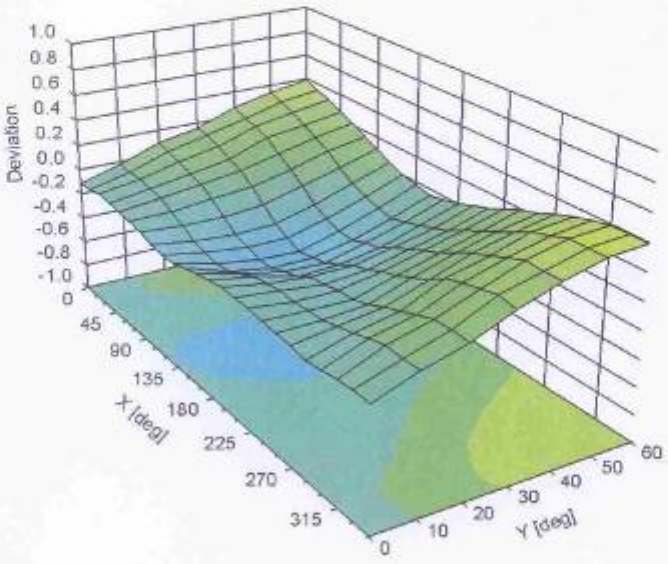


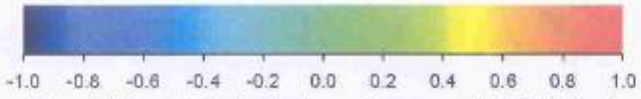
f = 2450 MHz,WGLS R22 (M_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3617

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	46.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

ANNEX F: D835V2 Dipole Calibration Certificate

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client TA-Shanghai (Auden)

Certificate No: D835V2-4d020_Aug11

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 4d020

Calibration procedure(s): QA CAL-05.v8
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: August 26, 2011

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 26, 2011

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.