TESTING
No. L2264

OET 65

TEST REPORT

Product Name	Vodafone Mobile Wi-Fi
Model Name	R215
FCC ID	QISR215
Client	Huawei Technologies Co., Ltd.
Manufacturer	Huawei Technologies Co., Ltd.
Date of issue	July 8, 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) **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 Radio frequency Electromagnetic Fields Additional Information for Evaluation Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radio frequency 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 v01r01:** SAR Measurement Requirements for 100 MHz to 6 GHz **KDB 447498 D01 General RF Exposure Guidance v05r01:** Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies **KDB 941225 D01 SAR test for 3G devices v02:** SAR Measurement Procedures CDMA 20001x RTT, 1x Ev-Do, WCDMA, HSDPA/HSPA **KDB 941225 D02 HSPA and 1x Advanced v02r02** SAR Guidance for HSPA, HSPA+, DC-HSDPA and 1x-Advanced **KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE v01:** Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE **KDB 941225 D06 Hot Spot SAR v01r01** SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities **KDB 941225 D05 SAR for LTE Devices v02r02** SAR Test Considerations for LTE Handsets and Data Modems **KDB 248227 D01 SAR meas for 802 11 a b g v01r02:** SAR Measurement Procedures for 802.11a/b/g Transmitters.
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 杨伟中 **Revised by** 逯敬宝 **Performed by** 许红梅

Director SAR Manager SAR Engineer

TABLE OF CONTENT

1. General Information 5
1.1. Notes of the Test Report 5
1.2. Testing Laboratory 5
1.3. Applicant Information 6
1.4. Manufacturer Information 6
1.5. Information of EUT 7
1.6. The Maximum Reported SAR_{1g} 10
1.7. Maximum Conducted Power of Each Tested Mode 11
1.8. Test Date 11
2. SAR Measurements System Configuration 12
2.1. SAR Measurement Set-up 12
2.2. DASY5 E-field Probe System 13
2.2.1. EX3DV4 Probe Specification 13
2.2.2. E-field Probe Calibration 14
2.3. Other Test Equipment 14
2.3.1. Device Holder for Transmitters 14
2.3.2. Phantom 15
2.4. Scanning Procedure 15
2.5. Data Storage and Evaluation 17
2.5.1. Data Storage 17
2.5.2. Data Evaluation by SEMCAD 17
3. Laboratory Environment 19
4. Tissue-equivalent Liquid 20
4.1. Tissue-equivalent Liquid Ingredients 20
4.2. Tissue-equivalent Liquid Properties 22
5. System Check 23
5.1. Description of System Check 23
5.2. System Check Results 25
6. Operational Conditions during Test 26
6.1. General Description of Test Procedures 26
6.2. Test Configuration 26
6.2.1. GSM Test Configuration 26
6.3. UMTS Test Configuration 28
6.3.1. WCDMA Test Configuration 28
6.3.2. DC-HSDPA Test Configuration 30
6.3.3. HSUPA Test Configuration 31
6.3.4. LTE Test Configuration 33
6.3.5. WIFI Test Configuration 34
6.4. Measurement Variability 36
6.5. Test Positions of Portable Devices 37
7. Test Results 39
7.1. Conducted Power Results 39
7.2. SAR Test Results 50

7.2.1. GSM 850 (GPRS/EGPRS) 50
7.2.2. GSM 1900 (GPRS/EGPRS) 52
7.2.3. UMTS Band V (WCDMA/HSDPA/HSUPA) 53
7.2.4. LTE Band 7 55
7.2.5. 802.11b/n 57
7.2.6. 802.11a 58
7.3. Simultaneous Transmission Conditions 60
8. Measurement Uncertainty 62
9. Main Test Instruments 64
ANNEX A: Test Layout 65
ANNEX B: System Check Results 69
ANNEX C: Graph Results 75
ANNEX D: Probe Calibration Certificate 182
ANNEX E: D835V2 Dipole Calibration Certificate 193
ANNEX F: D1900V2 Dipole Calibration Certificate 201
ANNEX G: D2450V2 Dipole Calibration Certificate 209
ANNEX H: D2600V2 Dipole Calibration Certificate 217
ANNEX I: D5GHzV2 Dipole Calibration Certificate 225
ANNEX J: DAE4 Calibration Certificate 238
ANNEX K: The EUT Appearances and Test Configuration 243

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

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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		
SN:	N7G01A9341200606		
Hardware Version:	CL1E5372SM		
Software Version:	21.221.15.00.11		
Antenna Type:	Internal Antenna		
Device Operating Configurations:			
Test Mode(s):	GSM 850/ GSM 1900; (tested) UMTS Band V; (tested) LTE Band 7; (tested) 802.11a/b/n(tested) 802.11g(untested)		
Test Modulation:	(GSM)GMSK; (UMTS)QPSK; (LTE) QPSK		
Device Class:	B		
HSDPA UE Category:	10		
HSUPA UE Category:	6		
DC-HSDPA UE Category:	24		
GPRS Multislot Class(12):	Max Number of Timeslots in Uplink	4	
	Max Number of Timeslots in Downlink	4	
	Max Total Timeslot	5	
EGPRS Multislot Class(12):	Max Number of Timeslots in Uplink	4	
	Max Number of Timeslots in Downlink	4	
	Max Total Timeslot	5	
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) 40 - 157 (802.11a) (tested) 1 - 5 - 9 (802.11b) (tested)		
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
	802.11a	5180 ~ 5240	5180 ~ 5240
		5745 ~ 5825	5745 ~ 5825
	802.11b	2412 ~ 2452	2412 ~ 2452

Auxiliary Equipment Details

AE1:Battery1

Model:	HB5F2H
Manufacturer:	Huawei Technologies Co., Ltd.
S/N:	YAID320X20100117

AE2:Battery2

Model:	HB5F2H
Manufacturer:	Huawei Technologies Co., Ltd.
S/N:	YRCD222920100116

AE3:Battery3

Model:	HB554666RAW
Manufacturer:	Huawei Technologies Co., Ltd.
S/N:	SID428

AE4:Battery4

Model:	HB554666RAW
Manufacturer:	Huawei Technologies Co., Ltd.
S/N:	0000SCD412

Equipment Under Test (EUT) has a GSM/UMTS/LTE antenna, two WIFI(2.4G) antennas and two WIFI(5G) antennas that are used for Tx/Rx and a diversity antenna that are used for Rx.

The sample undergoing test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. The Maximum Reported SAR_{1g}

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)
GSM 850	Test Position 1/back side	251/848.8	1.020	1.182
GSM 1900	Test Position 2/front side	661/1880	0.442	0.517
UMTS Band V	Test Position 1/back side	4132/826.4	0.875	1.067
LTE Band 7	Test Position 2/front side	21350/2560	1.340	1.365
WIFI(2.4G)	Test Position 1/back side	5/2432	0.086	0.107
WIFI(5G)	Test Position 1/back side	157/5785	0.066	0.078

1.7. Maximum Conducted Power of Each Tested Mode

Mode		Maximum Burst Conducted Power (dBm)	Maximum Average Power (dBm)
GSM 850	GPRS(GMSK), 2 Txslots	30.86	24.84
	EGPRS(GMSK), 2 Txslots	30.82	24.80
GSM 1900	GPRS(GMSK), 2 Txslots	27.28	21.26
	EGPRS(GMSK), 2 Txslots	27.21	21.19

Mode	Maximum Conducted Power (dBm)
UMTS Band V	22.82
LTE Band 7	22.86
802.11b	10.28
802.11g	9.22
802.11a	8.23
802.11n(2.4G)SISO	9.06
802.11n(2.4G)MIMO	11.89
802.11n(5G) SISO	8.19
802.11n(5G)MIMO	8.39

Note: The detail Power refers to Table 12 (Conducted Power Measurement Results).

1.8. Test Date

The test performed from June 7, 2013 to July 3, 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.

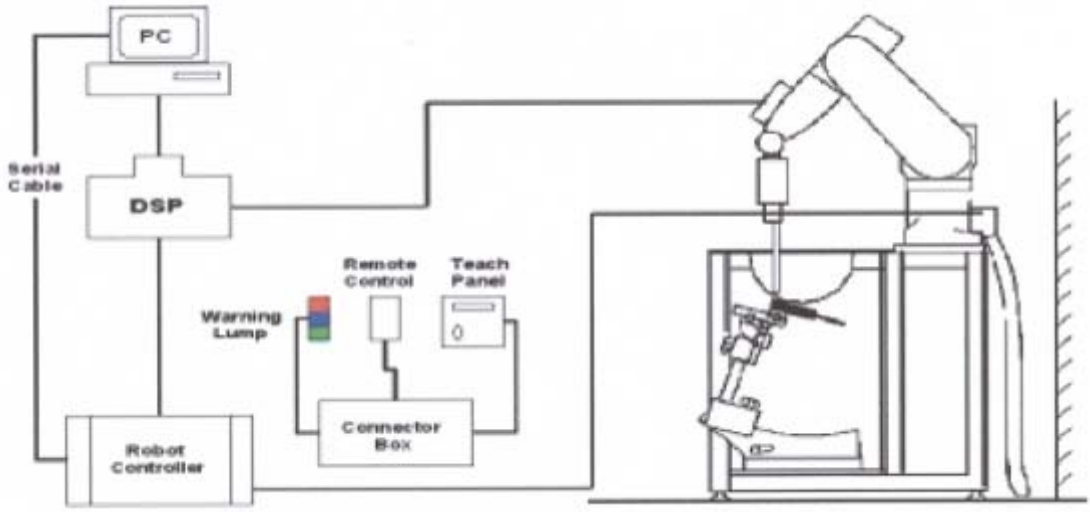


Figure 1. SAR Lab Test Measurement Set-up

2.2. DASY5 E-field Probe System

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

2.2.1. EX3DV4 Probe Specification

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

Figure 2.EX3DV4 E-field Probe

Figure 3. EX3DV4 E-field probe

2.2.2. E-field Probe Calibration

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

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

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

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

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

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

2.3. Other Test Equipment

2.3.1. Device Holder for Transmitters

Construction: Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.) It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin SAM, ELI4 and SAM v6.0 Phantoms.

Material: POM, Acrylic glass, Foam

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 4 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 SAR = local specific absorption rate in mW/g

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. Table 3 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the OET 65.

Table 3: 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

MIXTURE%	FREQUENCY(Body) 5200MHz
Water	72.6
Glycol	27.3
Salt	0.1
Dielectric Parameters Target Value	f=5200MHz ε=49.00 σ=5.30

MIXTURE%	FREQUENCY(Body) 5800MHz
Water	72.6
Glycol	27.3
Salt	0.1
Dielectric Parameters Target Value	f=5800MHz ε=48.20 σ=6.00

4.2. Tissue-equivalent Liquid Properties

Table 4: 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 (body)	2013-6-7	21.5	55.89	0.98	55.20	0.97	1.25	1.03
1900MHz (body)	2013-6-8	21.5	52.56	1.52	53.30	1.52	-1.39	0
2450MHz (body)	2013-6-22	21.5	51.69	1.90	52.70	1.95	-1.92	-2.56
2600MHz (body)	2013-6-13	21.5	51.99	2.15	52.50	2.16	-0.92	-0.46
5200MHz (body)	2013-7-2	21.5	48.06	5.32	49.00	5.30	-1.92	0.38
5800MHz (body)	2013-7-3	21.5	47.59	6.13	48.20	6.00	-1.27	2.17

5. System Check

5.1. Description of System Check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants 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 simulant, using the dipole validation kit. A power level of 250 mW/100 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 5.

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.

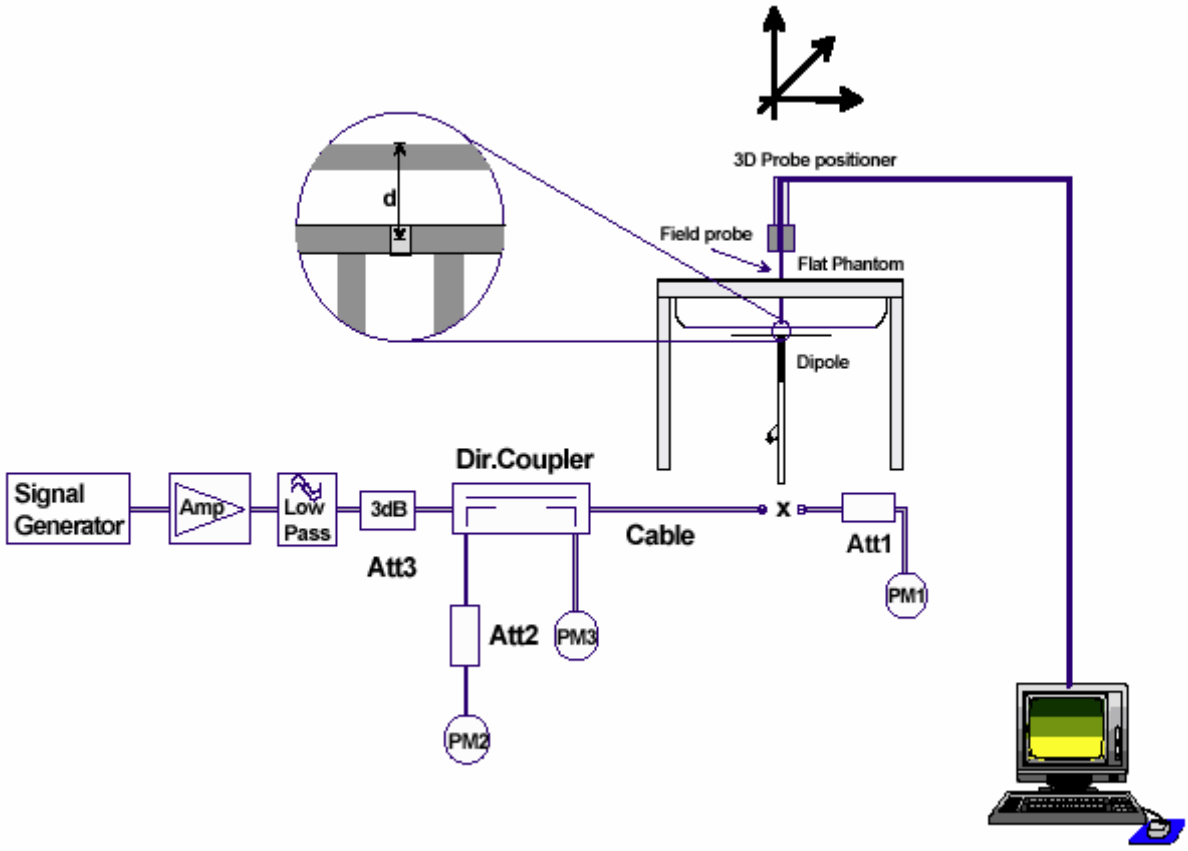


Figure 5. System Check Set-up

Justification for Extended SAR Dipole Calibrations

Usage of SAR dipoles calibrated less than 2 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 865664 D01:

Dipole D835V2 SN: 4d020				
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				
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: 786				
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				
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
5/3/2011	-23.6	/	45.0	/
5/2/2012	-24.3	2.9%	46.1	1.1Ω

Dipole D5200V2 SN: 1040				
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
6/20/2011	-25.2	/	49.6	/
6/19/2012	-26.0	3.1%	51.2	1.6Ω

Dipole D5800V2 SN: 1040				
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
6/20/2011	-24.0	/	56.6	/
6/19/2012	-24.7	2.8%	58.3	1.7Ω

5.2. System Check Results

Table 5: System Check in Body Tissue Simulating Liquid

Frequency	Test Date	Dielectric Parameters		Temp	100mW/250mW Measured SAR_{1g}	1W Normalized SAR_{1g}	1W Target SAR_{1g}	Limit (±10% Deviation)
		ε_r	σ(s/m)	(℃)	(W/kg)			
835MHz	2013-6-7	55.89	0.98	21.5	2.52(250mW)	10.08	9.46	6.55
1900MHz	2013-6-8	52.56	1.52	21.5	9.82(250mW)	39.28	41.70	-5.80
2450MHz	2013-6-22	51.69	1.90	21.5	12.50(250mW)	50.00	51.70	-3.29
2600MHz	2013-6-13	51.99	2.15	21.5	13.50(250mW)	54.00	54.30	-0.55
5200MHz	2013-7-2	48.06	5.32	21.5	6.90(100mW)	69.00	73.10	-5.61
5800MHz	2013-7-3	47.59	6.13	21.5	7.10(100mW)	71.00	73.80	-3.79

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

Connection to the EUT is established via air interface with CMW 500, and the EUT is set to maximum output power by CMW 500. Using CMW 500 the power lever is set to “5” in SAR of GSM 850, set to “0” in SAR of GSM 1900, power control is set “All Up Bits” of UMTS. Power control is set “All Up Bits” of LTE. 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 Configuration

6.2.1. GSM Test Configuration

For the body SAR tests for GSM 850 and GSM 1900, a communication link is set up with a System Simulator (SS) by air link. The EUT is commanded to operate at maximum transmitting power.
Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. Since the EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5.

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

According to specification 3GPP TS 51.010, the maximum power of the GSM can do the power reduction for the multi-slot. The allowed power reduction in the multi-slot configuration is as following:

GSM 850

GPRS（GMSK）:

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2
3	3.9
4	6

EGPRS(8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.2
3	4.4
4	6.7

EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2
3	3.9
4	6

GSM 1900

GPRS（GMSK）:

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.1
3	4
4	6.2

EGPRS(8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.2
3	4.1
4	6.7

EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.1
3	4
4	6.2

6.3. UMTS Test Configuration

6.3.1. WCDMA Test Configuration

As the SAR body tests for WCDMA Band V, we established the radio link through call processing. The maximum output power were verified on high, middle and low channels for each test band according to 3GPP TS 34.121 with the following configuration:

1) 12.2kbps RMC, 64,144,384 kbps RMC with TPC set to all up bits
2) Test loop Mode 1

For the output power, the configurations for the DPCCH and $DPDCH_1$ are as followed (EUT do not support the $DPDCH_{2-n}$)

Table 6: The configurations for the DPCCH and $DPDCH_1$

	Channel Bit Rate(kbps)	Channel Symbol Rate(ksps)	Spreading Factor	Spreading Code Number	Bits/Slot
DPCCH	15	15	256	0	10
$DPDCH_1$	15	15	256	64	10
	30	30	128	32	20
	60	60	64	16	40
	120	120	32	8	80
	240	240	16	4	160
	480	480	8	2	320
	960	960	4	1	640

SAR is tested with 12.2kps RMC and not required for other spreading codes (64,144, and 384 kbps RMC) and multiple $DPDCH_n$, because the maximum output power for each of these other configurations<0.25dB higher than 12.2kbps RMC and the multiple $DPDCH_n$ is not applicable for the EUT.

SAR for body exposure configurations is measured according to the “Body SAR Measurements” procedures of 3G device. In addition, body SAR is also measured for HSDPA when the maximum average output of each RF channel with HSDPA active is at least 1/4 dB higher than that measured without HSDPA using 12.2kbps RMC or the maximum SAR 12.2kbps 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 12.2kbps 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 HS-DSCH/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 condition, 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(△ACK, △NACK, △CQI)should be set according to values indicated in the Table below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Table 7: 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=}$30/15) with β_{hs}=30/15*$\beta_{c,}$and $\triangle_{CQI}$= 7 ($A_{hs=}$24/15) with β_{hs}=24/15*$\beta_{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 8: 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

6.3.2. DC-HSDPA Test Configuration

body SAR is also measured for DC-HSDPA when the maximum average output of each RF channel with DC-HSDPA active is at least 1/4 dB higher than that measured without HSDPA using 12.2kbps RMC or the maximum SAR 12.2kbps RMC is above 75% of the SAR limit. Body SAR for DC-HSDPA is measured using the highest body SAR configuration in 12.2 kbps RMC without HSDPA.

Configure DC-HSDPA parameters for base station

a) Set up the HSDPA RB Test Mode Parameters

RB Test HS-DSCH Configuration Type = User Defined
RB Test User Defined HS-DSCH MAC entity = MAC-ehs (Note 1)
RB Test User Defined HARQ Processes = 6 (Note 2)
RB Test User Defined UE IR Buffer Allocation = Implicit
RB Test User Defined DC-HSDPA State = On
RB Test Mode DC-HSDPA DPCH Loopback State = On

b) Set up the Serving Cell Parameters

RB Test User Defined 64QAM State =On
RB Test User Defined Active HS-PDSCHs =15
RB Test User Def Transport Block Size Index =62
RB Test User Defined Modulation Type =64QAM
RB Test User Defined Inter-TTI Interval =1

c) Set up the Secondary Serving Cell Parameters

RB Test User Def Secondary Cell 64QAM State =On
RBTM User Def Sec Cell Active HS-PDSCHs = 15
RBTM User Def Sec Cell TB Size Index = 62
RBTM User Def Sec Cell Modulation Type =64QAM
RBTM User Def Sec Cell Inter-TTI Interval = 1

d) Set the HSDPA Conn DL Channel Levels

HSDPA Cell 1 Connected CPICH Level = -8
HSDPA Cell 1 Connected P-CCPCH/SCH Level = -20
HSDPA Cell 1 Connected PICH Level = off
HSDPA Cell 1 Connected DPCH Level = -30
HSDPA Cell 1 Connected HS-PDSCH Level (Sum) = -1 dBm
HSDPA Cell 1 Connected HS-SCCH 1 to 4 Level = -20,-20,off,off
Secondary Cell HSDPA Conn CPICH Level = -8
Secondary Cell HSDPA Conn PCCPCH/SCH Level = -20
Secondary Cell HSDPA Conn PICH Level = off
Secondary Cell HSDPA Conn HS-PDSCHs Lvl (Sum) = -1 dBm
Secondary Cell HSDPA Conn HS-SCCH 1 to 4 Level = -20,-20,off,off

Table 9: HS-DSCH UE category

Table 5.1a: FDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes received	Minimum inter-TTI interval	Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI NOTE 1	Total number of soft channel bits	Supported modulations without MIMO operation or dual cell operation	Supported modulations with MIMO operation and without dual cell operation	Supported modulations with dual cell operation
Category 1	5	3	7298	19200	QPSK, 16QAM	Not applicable (MIMO not supported)	Not applicable (dual cell operation not supported)
Category 2	5	3	7298	28800			
Category 3	5	2	7298	28800			
Category 4	5	2	7298	38400			
Category 5	5	1	7298	57600			
Category 6	5	1	7298	67200			
Category 7	10	1	14411	115200			
Category 8	10	1	14411	134400			
Category 9	15	1	20251	172800			
Category 10	15	1	27952	172800			
Category 11	5	2	3630	14400	QPSK		
Category 12	5	1	3630	28800			
Category 13	15	1	35280	259200	QPSK, 16QAM, 64QAM		
Category 14	15	1	42192	259200			
Category 15	15	1	23370	345600	QPSK, 16QAM		
Category 16	15	1	27952	345600			
Category 17 NOTE 2	15	1	35280	259200	QPSK, 16QAM, 64QAM	–	
			23370	345600	–	QPSK, 16QAM	
Category 18 NOTE 3	15	1	42192	259200	QPSK, 16QAM, 64QAM	–	
			27952	345600	–	QPSK, 16QAM	
Category 19	15	1	35280	518400	QPSK, 16QAM, 64QAM		
Category 20	15	1	42192	518400			
Category 21	15	1	23370	345600	-	-	QPSK, 16QAM
Category 22	15	1	27952	345600			
Category 23	15	1	35280	518400			QPSK, 16QAM, 64QAM
Category 24	15	1	42192	518400			

6.3.3. 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.

Due to inner loop power control requirements in HSPA, a commercial communication test set should be used for the output power and SAR tests. 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 10: 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 $\Leftrightarrow$ $A_{hs} = \beta_{hs}/\beta_c$ = 30/15 $\Leftrightarrow$ 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 11: 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)

6.3.4. 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.

6.3.5. WIFI Test Configuration

For WLAN SAR testing, WLAN engineering testing software installed on the DUT can provide continuous transmitting RF signal. The Tx power is set to 11 for 802.11 b mode, set to 10 for 802.11 g/n(2.4G) mode, set to 8 for 802.11 a/n(5G) mode by software, 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.

For the 802.11a/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.

The average output power for 802.11a should be measured on all channels in each frequency band. When the maximum average output channel in each frequency band is not included in the “default test channels”, the maximum channel should be tested instead of an adjacent “default test channel”. These are referred to as the “required test channels”

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

When the estrapolated maximum peak SAR for the maximum output channel is<=1.6w/kg and the 1g averaged SAR is <=0.8w/kg testing of other channels in the”default the channels” configuration is optional.

Mode		GHz	Channel	Turbo Channel	"Default Test Channels"			
					§15.247		UNII	
					802.11b	802.11g		
802.11 b/g		2.412	1#		√	∇		
		2.437	6	6	√	∇		
		2.462	11#		√	∇		
802.11a	UNII	5.18	36				√	
		5.20	40	42 (5.21 GHz)				*
		5.22	44					*
		5.24	48	50 (5.25 GHz)			√	
		5.26	52				√	
		5.28	56	58 (5.29 GHz)				*
		5.30	60					*
		5.32	64				√	
		5.500	100	Unknown				*
		5.520	104				√	
		5.540	108					*
		5.560	112					*
		5.580	116				√	
		5.600	120					*
		5.620	124				√	
		5.640	128					*
		5.660	132					*
		5.680	136				√	
		5.700	140					*
	UNII or §15.247	5.745	149		√		√	
		5.765	153	152 (5.76 GHz)		*		*
		5.785	157		√			*
		5.805	161	160 (5.80 GHz)		*	√	
	§15.247	5.825	165		√			

6.4. Measurement Variability

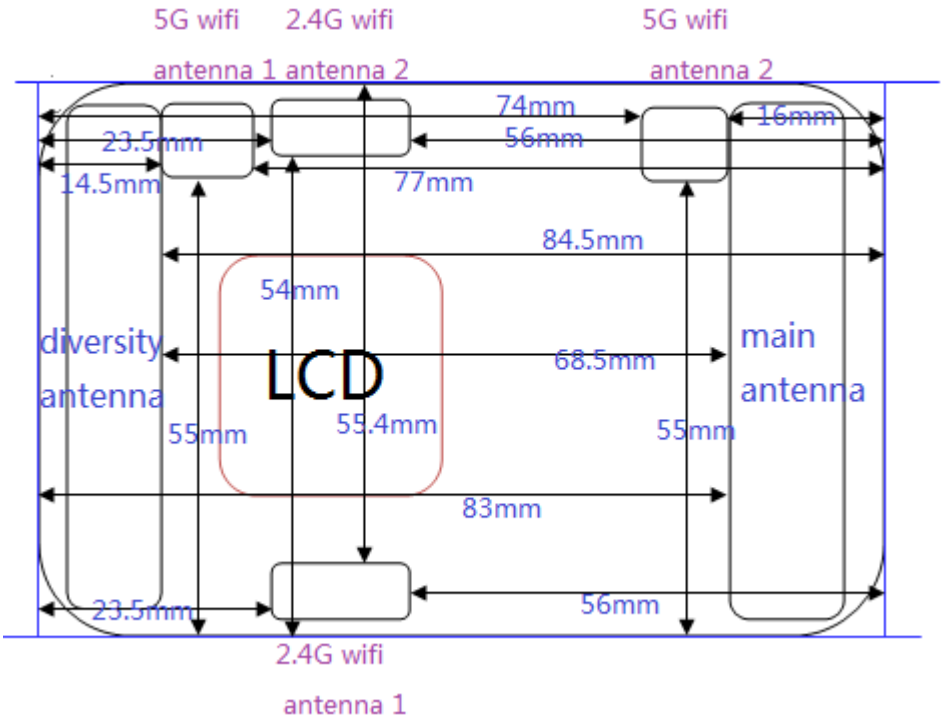
Per FCC KDB Publication 865664 D01v01, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements 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 $\geqslant$ 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 $\geqslant$ 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 $\geqslant$ 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

6.5. Test Positions of Portable Devices

Based upon KDB941225 D06 V01 with a form factor 9.9 cm x 6.3 cm > 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 location of the antennas inside EUT is shown in ANNEX k:



The EUT is tested at the following 6 test positions:

- Test Position 1: The back side of the EUT towards the bottom of the flat phantom. The distance between the back side of the EUT and the bottom of the flat phantom is 10mm. (ANNEX K Picture 9)

- Test Position 2: The front side of the EUT towards the bottom of the flat phantom. The distance between the front side of the EUT and the bottom of the flat phantom is 10mm. (ANNEX K Picture 10)

- Test Position 3: The left edge of the EUT towards the bottom of the flat phantom. The distance between the left edge of the EUT and the bottom of the flat phantom is 10mm. (ANNEX K Picture 11）

  $SAR_{GSM/UMTS/LTE}$ is not required for this position.

  $SAR_{wifi5G.antenna\ 2}$ is not required for this position.

- Test Position 4: The right edge of the EUT towards the bottom of the flat phantom. The distance between the right edge of the EUT and the bottom of the flat phantom is 10mm. (ANNEX K Picture 12）

  $SAR_{WIFI(2.4G)}$ is not required for this position.

  $SAR_{WIFI(5G).Antenna\ 1}$ is not required for this position.

- Test Position 5: The top edge of the EUT towards the bottom of the flat phantom. The distance between the top edge of the EUT and the bottom of the flat phantom is 10mm. (ANNEX K Picture 13）

  $SAR_{WIFI(2.4G).Antenna\ 1}$ is not required for this position.

- Test Position 6: The bottom edge of the EUT towards the bottom of the flat phantom. The distance between the top edge of the EUT and the bottom of the flat phantom is 10mm. (ANNEX K Picture 14）

  $SAR_{WIFI(2.4G).\ Antenna\ 2}$ is not required for this position.

  $SAR_{WIFI(5G)}$ is not required for this position.

7. Test Results

7.1. Conducted Power Results

Table 12: Conducted Power Measurement Results

GSM 850		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 128	Channel 190	Channel 251		Channel 128	Channel 190	Channel 251
GPRS (GMSK)	1Txslot	32.79	32.81	32.84	-9.03dB	23.76	23.78	23.81
	2Txslots	30.64	30.77	30.86	-6.02dB	**24.62**	**24.75**	**24.84**
	3Txslots	28.61	28.74	28.83	-4.26dB	24.35	24.48	24.57
	4Txslots	26.57	26.73	26.82	-3.01dB	23.56	23.72	23.81
EGPRS (GMSK)	1Txslot	32.75	32.83	32.81	-9.03dB	23.72	23.80	23.78
	2Txslots	30.63	30.76	30.82	-6.02dB	**24.61**	**24.74**	**24.80**
	3Txslots	28.64	28.71	28.84	-4.26dB	24.38	24.45	24.58
	4Txslots	26.52	26.70	26.80	-3.01dB	23.51	23.69	23.79
EGPRS (8PSK)	1Txslot	27.24	27.22	27.12	-9.03dB	18.21	18.19	18.09
	2Txslots	24.97	24.91	24.83	-6.02dB	18.95	18.89	18.81
	3Txslots	22.91	22.75	22.58	-4.26dB	18.65	18.49	18.32
	4Txslots	20.70	20.67	20.34	-3.01dB	17.69	17.66	17.33
GSM 1900		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GPRS (GMSK)	1Txslot	29.09	29.22	29.28	-9.03dB	20.06	20.19	20.25
	2Txslots	27.12	27.22	27.28	-6.02dB	**21.10**	**21.20**	**21.26**
	3Txslots	25.13	25.21	25.25	-4.26dB	20.87	20.95	20.99
	4Txslots	23.19	23.21	23.17	-3.01dB	20.18	20.20	20.16
EGPRS (GMSK)	1Txslot	29.06	29.24	29.24	-9.03dB	20.03	20.21	20.21
	2Txslots	27.11	27.21	27.2	-6.02dB	**21.09**	**21.19**	**21.18**
	3Txslots	25.14	25.18	25.22	-4.26dB	20.88	20.92	20.96
	4Txslots	23.13	23.22	23.11	-3.01dB	20.12	20.21	20.10
EGPRS (8PSK)	1Txslot	26.24	26.19	26.14	-9.03dB	17.21	17.16	17.11
	2Txslots	24.07	24.04	23.81	-6.02dB	18.05	18.02	17.79
	3Txslots	22.06	21.92	21.52	-4.26dB	17.80	17.66	17.26
	4Txslots	19.52	19.47	19.42	-3.01dB	16.51	16.46	16.41

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
3Txslots = 3 transmit time slots out of 8 time slots
=> conducted power divided by (8/3) => -4.26 dB
4Txslots = 4 transmit time slots out of 8 time slots
=> conducted power divided by (8/4) => -3.01 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	22.64	22.65	22.75
	64kbps RMC	22.6	22.64	22.72
	144kbps RMC	22.62	22.67	22.74
	384kbps RMC	22.61	22.62	22.71
HSDPA	Sub - Test 1	22.72	22.73	22.82
	Sub - Test 2	22.07	21.95	21.98
	Sub - Test 3	21.43	21.29	21.23
	Sub - Test 4	20.84	20.74	20.76
HSUPA	Sub - Test 1	21.59	21.62	21.82
	Sub - Test 2	20.72	20.68	19.89
	Sub - Test 3	20.77	20.38	20.48
	Sub - Test 4	19.66	19.72	19.92
	Sub - Test 5	21.88	21.96	22.07
DC-HSDPA	Sub - Test 1	22.71	22.72	22.81
	Sub - Test 2	22.06	21.94	21.97
	Sub - Test 3	21.44	21.28	21.24
	Sub - Test 4	20.85	20.75	20.77

LTE Band 7

Bandwidth(MHz)	RB	ULstartRB	Mod	Channel	Test Data(dBm)
5	1	0	QPSK	20775	22.63
5	1	13	QPSK	20775	22.50
5	1	24	QPSK	20775	22.82
5	12	0	QPSK	20775	21.25
5	12	6	QPSK	20775	21.45
5	12	13	QPSK	20775	21.33
5	25	0	QPSK	20775	21.32
5	1	0	QPSK	21100	22.86
5	1	13	QPSK	21100	22.51
5	1	24	QPSK	21100	22.78
5	12	0	QPSK	21100	21.30
5	12	6	QPSK	21100	21.37
5	12	13	QPSK	21100	21.46
5	25	0	QPSK	21100	21.49
5	1	0	QPSK	21425	22.82
5	1	13	QPSK	21425	22.62
5	1	24	QPSK	21425	22.85
5	12	0	QPSK	21425	21.57
5	12	6	QPSK	21425	21.62
5	12	13	QPSK	21425	21.55
5	25	0	QPSK	21425	21.6
10	1	0	QPSK	20800	22.18
10	1	25	QPSK	20800	22.36
10	1	49	QPSK	20800	22.17
10	25	0	QPSK	20800	20.98
10	25	13	QPSK	20800	21.23
10	25	25	QPSK	20800	21.08
10	50	0	QPSK	20800	21.20
10	1	0	QPSK	21100	22.51
10	1	25	QPSK	21100	22.58
10	1	49	QPSK	21100	22.35
10	25	0	QPSK	21100	21.21
10	25	13	QPSK	21100	21.48
10	25	25	QPSK	21100	21.15
10	50	0	QPSK	21100	21.22
10	1	0	QPSK	21400	22.58
10	1	25	QPSK	21400	22.65
10	1	49	QPSK	21400	22.51
10	25	0	QPSK	21400	21.26
10	25	13	QPSK	21400	21.53
10	25	25	QPSK	21400	21.42

10	50	0	QPSK	21400	21.39
15	1	0	QPSK	20825	22.44
15	1	38	QPSK	20825	22.45
15	1	74	QPSK	20825	22.84
15	36	0	QPSK	20825	21.22
15	36	18	QPSK	20825	21.15
15	36	39	QPSK	20825	21.14
15	75	0	QPSK	20825	21.15
15	1	0	QPSK	21100	22.67
15	1	38	QPSK	21100	22.51
15	1	74	QPSK	21100	22.81
15	36	0	QPSK	21100	21.32
15	36	18	QPSK	21100	21.30
15	36	39	QPSK	21100	21.26
15	75	0	QPSK	21100	21.26
15	1	0	QPSK	21375	22.60
15	1	38	QPSK	21375	22.51
15	1	74	QPSK	21375	22.86
15	36	0	QPSK	21375	21.31
15	36	18	QPSK	21375	21.42
15	36	39	QPSK	21375	21.42
15	75	0	QPSK	21375	21.34
20	1	0	QPSK	20850	22.45
20	1	50	QPSK	20850	22.35
20	1	99	QPSK	20850	22.86
20	50	0	QPSK	20850	21.04
20	50	25	QPSK	20850	21.17
20	50	50	QPSK	20850	21.22
20	100	0	QPSK	20850	21.19
20	1	0	QPSK	21100	22.73
20	1	50	QPSK	21100	22.55
20	1	99	QPSK	21100	22.83
20	50	0	QPSK	21100	21.44
20	50	25	QPSK	21100	21.38
20	50	50	QPSK	21100	21.17
20	100	0	QPSK	21100	21.24
20	1	0	QPSK	21350	22.56
20	1	50	QPSK	21350	22.55
20	1	99	QPSK	21350	22.82
20	50	0	QPSK	21350	21.17
20	50	25	QPSK	21350	21.39
20	50	50	QPSK	21350	21.32
20	100	0	QPSK	21350	21.31
5	1	0	16QAM	20775	21.50

5	1	13	16QAM	20775	21.37
5	1	24	16QAM	20775	21.73
5	12	0	16QAM	20775	20.04
5	12	6	16QAM	20775	20.26
5	12	13	16QAM	20775	20.10
5	25	0	16QAM	20775	20.09
5	1	0	16QAM	21100	21.74
5	1	13	16QAM	21100	21.41
5	1	24	16QAM	21100	21.67
5	12	0	16QAM	21100	20.22
5	12	6	16QAM	21100	20.29
5	12	13	16QAM	21100	20.24
5	25	0	16QAM	21100	20.27
5	1	0	16QAM	21425	21.82
5	1	13	16QAM	21425	21.55
5	1	24	16QAM	21425	21.85
5	12	0	16QAM	21425	20.36
5	12	6	16QAM	21425	20.40
5	12	13	16QAM	21425	20.32
5	25	0	16QAM	21425	20.34
10	1	0	16QAM	20800	21.46
10	1	25	16QAM	20800	21.67
10	1	49	16QAM	20800	21.47
10	25	0	16QAM	20800	19.86
10	25	13	16QAM	20800	20.12
10	25	25	16QAM	20800	19.86
10	50	0	16QAM	20800	19.95
10	1	0	16QAM	21100	21.59
10	1	25	16QAM	21100	21.72
10	1	49	16QAM	21100	21.43
10	25	0	16QAM	21100	20.05
10	25	13	16QAM	21100	20.32
10	25	25	16QAM	21100	19.96
10	50	0	16QAM	21100	20.04
10	1	0	16QAM	21400	21.58
10	1	25	16QAM	21400	21.67
10	1	49	16QAM	21400	21.51
10	25	0	16QAM	21400	19.98
10	25	13	16QAM	21400	20.38
10	25	25	16QAM	21400	20.14
10	50	0	16QAM	21400	20.08
15	1	0	16QAM	20825	21.48
15	1	38	16QAM	20825	21.52
15	1	74	16QAM	20825	21.92

15	36	0	16QAM	20825	19.99
15	36	18	16QAM	20825	19.93
15	36	39	16QAM	20825	19.89
15	75	0	16QAM	20825	19.93
15	1	0	16QAM	21100	21.72
15	1	38	16QAM	21100	21.59
15	1	74	16QAM	21100	21.88
15	36	0	16QAM	21100	20.01
15	36	18	16QAM	21100	20.12
15	36	39	16QAM	21100	19.94
15	75	0	16QAM	21100	20.08
15	1	0	16QAM	21375	21.66
15	1	38	16QAM	21375	21.54
15	1	74	16QAM	21375	21.92
15	36	0	16QAM	21375	20.01
15	36	18	16QAM	21375	20.23
15	36	39	16QAM	21375	20.09
15	75	0	16QAM	21375	20.16
20	1	0	16QAM	20850	21.33
20	1	50	16QAM	20850	21.23
20	1	99	16QAM	20850	21.72
20	50	0	16QAM	20850	19.65
20	50	25	16QAM	20850	19.76
20	50	50	16QAM	20850	19.80
20	100	0	16QAM	20850	19.83
20	1	0	16QAM	21100	21.58
20	1	50	16QAM	21100	21.42
20	1	99	16QAM	21100	21.67
20	50	0	16QAM	21100	19.95
20	50	25	16QAM	21100	20.01
20	50	50	16QAM	21100	19.69
20	100	0	16QAM	21100	19.89
20	1	0	16QAM	21350	21.29
20	1	50	16QAM	21350	21.25
20	1	99	16QAM	21350	21.41
20	50	0	16QAM	21350	19.61
20	50	25	16QAM	21350	19.90
20	50	50	16QAM	21350	19.77
20	100	0	16QAM	21350	19.76

WIFI

Wi-Fi 2.4G	Anetnna	Data Rates(Mbps) / Channel	Average Power (dBm)							
			1	**2**	**5.5**	**11**	/	/	/	/
802.11b	Ant 1	1	8.97	9.03	8.85	8.79	/	/	/	/
		5	9.24	9.34	9.14	9.06	/	/	/	/
		9	8.85	8.89	8.97	8.89	/	/	/	/
	Ant 2	1	9.01	9.26	8.97	8.83	/	/	/	/
		5	9.56	9.87	9.71	9.59	/	/	/	/
		9	10.05	10.28	10.01	9.78	/	/	/	/
/	/	**Data Rates(Mbps) / Channel**	**6.00**	**9.00**	**12.00**	**18.00**	**24.00**	**36.00**	**48.00**	**54.00**
802.11g	Ant 1	1	8.86	8.75	8.79	8.69	8.71	8.76	8.82	8.78
		5	8.48	8.41	8.46	8.51	8.59	8.64	8.54	8.49
		9	8.61	8.52	8.43	8.51	8.56	8.53	8.55	8.58
	Ant 2	1	8.89	8.85	8.81	8.83	8.79	8.78	8.82	8.84
		5	8.73	8.64	8.67	8.69	8.72	8.67	8.70	8.65
		9	9.22	9.05	8.96	8.91	8.92	8.97	8.88	8.78
/	/	**Data Rates(Mbps) / Channel**	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
802.11n 20M: (SISO)	Ant 1	1	8.38	8.29	8.34	8.27	8.19	8.24	8.22	8.34
		5	8.48	8.32	8.34	8.26	8.19	8.24	8.36	8.17
		9	8.41	8.37	8.29	8.34	8.27	8.34	8.38	8.25
	Ant 2	1	8.27	8.24	8.21	8.17	8.19	8.34	8.31	8.19
		5	8.68	8.64	8.59	8.64	8.68	8.57	8.48	8.44
		9	8.96	9.02	9.06	8.97	8.88	8.82	8.94	8.96
/	/	**Data Rates(Mbps) / Channel**	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
802.11n 40M (SISO)	Ant 1	3	8.48	8.67	8.54	8.39	8.37	8.31	8.47	8.28
		5	8.98	8.79	8.67	8.58	8.77	8.69	8.71	8.95
		7	8.71	8.59	8.64	8.61	8.59	8.67	8.75	8.66
	Ant 2	3	8.43	8.37	8.39	8.31	8.34	8.29	8.37	8.44
		5	8.89	8.91	8.79	8.82	8.87	8.76	8.71	8.82
		7	9.03	8.98	8.88	8.91	8.79	8.85	8.76	8.81
/	/	**Data Rates(Mbps)**	**MCS 8**	**MCS 9**	**MCS 10**	**MCS 11**	**MCS 12**	**MCS 13**	**MCS 14**	**MCS 15**

		Channel								
802.11n 20M: (MIMO)	Ant 1	1	8.64	8.59	8.61	8.59	8.62	8.55	8.57	8.52
		5	8.96	8.89	8.81	8.86	8.92	8.87	8.82	8.86
		9	8.37	8.28	8.34	8.36	8.29	8.27	8.34	8.35
	Ant 2	1	8.81	8.75	8.79	8.71	8.76	8.74	8.78	8.71
		5	8.79	8.75	8.72	8.68	8.78	8.75	8.67	8.76
		9	9.14	9.12	9.08	9.06	9.01	9.07	9.02	8.99
	Sum	1	11.74	11.68	11.71	11.66	11.70	11.66	11.69	11.63
		5	11.89	11.83	11.78	11.78	11.86	11.82	11.76	11.82
		9	11.78	11.73	11.74	11.73	11.68	11.70	11.70	11.69
/	/	**Data Rates(Mbps) / Channel**	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
802.11n 40M: (MIMO)	Ant 1	3	8.56	8.53	8.49	8.51	8.54	8.56	8.48	8.46
		5	8.68	8.61	8.67	8.63	8.59	8.54	8.58	8.55
		7	8.48	8.46	8.42	8.41	8.38	8.37	8.34	8.39
	Ant 2	3	8.47	8.42	8.38	8.41	8.35	8.44	8.46	8.37
		5	8.61	8.59	8.53	8.60	8.49	8.55	8.56	8.53
		7	8.78	8.71	8.75	8.69	8.72	8.66	8.73	8.68
	Sum	3	11.53	11.49	11.45	11.47	11.46	11.51	11.48	11.43
		5	11.66	11.61	11.61	11.63	11.55	11.56	11.58	11.55
		7	11.64	11.60	11.60	11.56	11.56	11.53	11.55	11.55

Wi-Fi 5G	Antenna	Channel	Data Rate (bps) Frequency	Average Power (dBm)							
				6M	9M	12M	18M	24M	36M	48M	54M
802.11a	Ant 1	CH 36	5180	8.19	8.16	8.13	8.11	8.06	8.04	8.03	8
		CH40	5200	8.23	8.19	8.16	8.14	8.12	8.11	8.08	8.06
		CH44	5220	8.16	8.14	8.12	8.08	8.06	8.05	8.01	7.97
		CH48	5240	7.94	7.91	7.87	7.86	7.83	7.81	7.79	7.75
		CH149	5745	7.81	7.79	7.77	7.74	7.72	7.7	7.69	7.66
		CH153	5765	7.9	7.86	7.82	7.8	7.76	7.73	7.71	7.69
		CH157	5785	8.06	8.03	8	7.97	7.95	7.93	7.91	7.88
		CH161	5805	7.86	7.83	7.81	7.79	7.76	7.75	7.71	7.69
		CH165	5825	7.78	7.75	7.72	7.7	7.67	7.63	7.61	7.59
	Ant 2	CH 36	5180	8.05	8.03	8	7.96	7.93	7.91	7.88	7.86
		CH40	5200	8.12	8.09	8.07	8.05	8.03	8.01	7.98	7.96
		CH44	5220	8.02	8	7.98	7.95	7.91	7.88	7.86	7.83
		CH48	5240	7.96	7.93	7.9	7.87	7.85	7.83	7.8	7.76
		CH149	5745	7.92	7.89	7.87	7.84	7.81	7.79	7.76	7.75
		CH153	5765	7.85	7.83	7.81	7.76	7.73	7.71	7.68	7.65
		CH157	5785	8.03	8	7.98	7.96	7.93	7.89	7.86	7.83
		CH161	5805	7.76	7.73	7.7	7.68	7.65	7.64	7.62	7.6
		CH165	5825	7.86	7.83	7.81	7.79	7.76	7.75	7.73	7.71
Mode	**/**	**Channel**	**Data Rate (bps) Frequency**	**Average Power (dBm)**							
				MCS0	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
802.11n-HT20 (SISO)	Ant 1	CH 36	5180	8.15	8.12	8.1	8.08	8.05	8.01	7.99	7.96
		CH40	5200	8.19	8.16	8.15	8.13	8.11	8.08	8.06	8.02
		CH44	5220	8.08	8.05	8.03	8	7.96	7.92	7.9	7.88
		CH48	5240	7.86	7.82	7.79	7.76	7.75	7.73	7.72	7.7
		CH149	5745	7.92	7.89	7.87	7.85	7.81	7.79	7.76	7.74
		CH153	5765	7.84	7.81	7.79	7.76	7.74	7.73	7.7	7.67
		CH157	5785	8.02	8	7.97	7.95	7.93	7.9	7.86	7.83
		CH161	5805	7.79	7.76	7.75	7.73	7.7	7.68	7.65	7.62
		CH165	5825	7.85	7.82	7.79	7.75	7.72	7.69	7.65	7.63
	Ant 2	CH 36	5180	8.09	8.06	8.05	8.02	8	7.96	7.95	7.93
		CH40	5200	7.89	7.86	7.84	7.82	7.8	7.76	7.72	7.7

		CH44	5220	7.95	7.91	7.9	7.88	7.85	7.83	7.8	7.78
		CH48	5240	7.98	7.96	7.93	7.9	7.88	7.85	7.81	7.79
		CH149	5745	7.75	7.73	7.7	7.68	7.63	7.62	7.6	7.58
		CH153	5765	7.85	7.83	7.81	7.78	7.76	7.72	7.69	7.66
		CH157	5785	8.05	8.03	8	7.96	7.93	7.9	7.88	7.85
		CH161	5805	7.87	7.86	7.83	7.8	7.76	7.73	7.7	7.68
		CH165	5825	7.96	7.93	7.91	7.89	7.86	7.82	7.8	7.77
Mode		**Channel**	**Data Rate (bps) Frequency**	**Average Power (dBm)**							
				MCS0	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
802.11n-HT40 (SISO)	Ant 1	CH 38	5190	8.05	8.02	8	7.96	7.93	7.9	7.88	7.85
		CH46	5230	7.96	7.95	7.93	7.91	7.88	7.86	7.84	7.8
		CH151	5755	7.89	7.86	7.82	7.8	7.78	7.75	7.72	7.69
		CH159	5795	8.12	8.09	8.06	8.04	8.02	7.98	7.96	7.94
	Ant 2	CH 38	5190	8.15	8.12	8.1	8.06	8.05	8.03	8.00	7.97
		CH46	5230	7.85	7.82	7.79	7.75	7.74	7.71	7.68	7.65
		CH151	5755	7.93	7.89	7.86	7.84	7.82	7.79	7.76	7.73
		CH159	5795	8.04	8.02	8	7.96	7.95	7.93	7.9	7.86
Mode	**/**	**Channel**	**Data Rate (bps) Frequency**	**Average Power (dBm)**							
				MCS0	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
802.11n-HT20 (MIMO)	Ant 1	CH 36	5180	5.19	5.16	5.15	5.13	5.11	5.08	5.06	5.02
		CH40	5200	5.29	5.26	5.23	5.21	5.18	5.15	5.11	5.08
		CH44	5220	5.15	5.1	5.09	5.08	5.05	5.02	5	4.96
		CH48	5240	5.1	5.05	5.03	5.02	4.99	4.96	4.95	4.91
		CH149	5745	4.87	4.85	4.83	4.78	4.77	4.75	4.72	4.7
		CH153	5765	4.78	4.75	4.73	4.71	4.69	4.66	4.62	4.6
		CH157	5785	4.65	4.61	4.59	4.56	4.54	4.53	4.51	4.48
		CH161	5805	4.82	4.79	4.76	4.74	4.71	4.69	4.65	4.63
		CH165	5825	4.97	4.96	4.93	4.91	4.88	4.87	4.85	4.81
	Ant 2	CH 36	5180	5.57	5.55	5.51	5.48	5.46	5.43	5.41	5.38
		CH40	5200	5.32	5.3	5.28	5.27	5.25	5.23	5.19	5.16
		CH44	5220	5.23	5.2	5.16	5.15	5.12	5.09	5.06	5.05
		CH48	5240	5.04	5.03	5	4.97	4.96	4.93	4.9	4.87
		CH149	5745	4.56	4.52	4.5	4.46	4.42	4.4	4.38	4.35
		CH153	5765	4.42	4.39	4.36	4.34	4.32	4.28	4.25	4.23

		CH157	5785	4.24	4.21	4.19	4.16	4.13	4.11	4.09	4.06
		CH161	5805	5.1	5.06	5.04	5.02	5	4.96	4.95	4.91
		CH165	5825	5.22	5.2	5.18	5.16	5.13	5.1	5.06	5.03
Sum	/	CH 36	5180	8.39	8.37	8.34	8.32	8.3	8.27	8.25	8.21
		CH40	5200	8.32	8.29	8.27	8.25	8.23	8.2	8.16	8.13
		CH44	5220	8.2	8.16	8.14	8.13	8.1	8.07	8.04	8.02
		CH48	5240	8.08	8.05	8.03	8.01	7.99	7.96	7.94	7.9
		CH149	5745	7.73	7.7	7.68	7.63	7.61	7.59	7.56	7.54
		CH153	5765	7.61	7.58	7.56	7.54	7.52	7.48	7.45	7.43
		CH157	5785	7.46	7.42	7.4	7.37	7.35	7.34	7.32	7.29
		CH161	5805	7.97	7.94	7.91	7.89	7.87	7.84	7.81	7.78
		CH165	5825	8.11	8.09	8.07	8.05	8.02	8	7.97	7.93
Mode	**/**	**Channel**	**Data Rate (bps) Frequency**	**Average Power (dBm)**							
				MCS0	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
802.11n-HT40 (MIMO)	Ant 1	CH 38	5190	4.63	4.6	4.58	4.56	4.53	4.5	4.46	4.42
		CH46	5230	4.8	4.78	4.76	4.72	4.71	4.69	4.65	4.63
		CH151	5755	5.42	5.39	5.36	5.35	5.32	5.3	5.28	5.25
		CH159	5795	4.95	4.92	4.89	4.86	4.83	4.81	4.76	4.72
	Ant 2	CH 38	5190	5.09	5.06	5.04	5.01	4.99	4.96	4.94	4.93
		CH46	5230	4.87	4.86	4.82	4.8	4.76	4.73	4.71	4.69
		CH151	5755	5.3	5.26	5.23	5.21	5.18	5.16	5.13	5.11
		CH159	5795	4.91	4.88	4.86	4.83	4.81	4.79	4.76	4.73
Sum	/	CH 38	5190	7.88	7.85	7.83	7.8	7.78	7.75	7.72	7.69
		CH46	5230	7.85	7.83	7.8	7.77	7.75	7.72	7.69	7.67
		CH151	5755	8.37	8.34	8.31	8.29	8.26	8.24	8.22	8.19
		CH159	5795	7.94	7.91	7.89	7.86	7.83	7.81	7.77	7.74

7.2. SAR Test Results

7.2.1. GSM 850 (GPRS/EGPRS)

Table 13: 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 1	251/848.8	2 Txslots	1:4.15	31.5	30.86	0.001	0.985	1.16	1.141	Figure 12
	190/836.6	2 Txslots	1:4.15	31.5	30.77	-0.133	0.918	1.18	1.086	Figure 13
	128/824.2	2 Txslots	1:4.15	31.5	30.64	-0.093	0.769	1.22	0.937	Figure 14
Test Position 2	251/848.8	2 Txslots	1:4.15	31.5	30.86	-0.085	0.899	1.16	1.042	Figure 15
	190/836.6	2 Txslots	1:4.15	31.5	30.77	-0.057	0.869	1.18	1.028	Figure 16
	128/824.2	2 Txslots	1:4.15	31.5	30.64	-0.119	0.794	1.22	0.968	Figure 17
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	190/836.6	2 Txslots	1:4.15	31.5	30.77	0.050	0.056	1.18	0.066	Figure 18
Test Position 5	190/836.6	2 Txslots	1:4.15	31.5	30.77	-0.079	0.268	1.18	0.317	Figure 19
Test Position 6	190/836.6	2 Txslots	1:4.15	31.5	30.77	-0.007	0.406	1.18	0.480	Figure 20
Worst Case Position of GPRS with EGPRS (Battery 1,GMSK, Distance 10mm)										
Test Position 1	251/848.8	2 Txslots	1:4.15	31.5	30.82	-0.054	0.967	1.17	1.131	Figure 21
Worst Case Position of Body with Battery 2(Distance 10mm)										
Test Position 1	251/848.8	2 Txslots	1:4.15	31.5	30.86	-0.037	0.975	1.16	1.130	Figure 22
Worst Case Position of Body with Battery 3 (Distance 10mm)										
Test Position 1	251/848.8	2 Txslots	1:4.15	31.5	30.86	-0.058	0.972	1.16	1.126	Figure 23
Worst Case Position of Body with Battery 4 (Distance 10mm)										
Test Position 1	251/848.8	2 Txslots	1:4.15	31.5	30.86	-0.019	0.972	1.16	1.126	Figure 24
Worst Case Position of Body for 1st Repeated SAR (Distance 10mm)										
Test Position 1	251/848.8	2 Txslots	1:4.15	31.5	30.86	-0.098	1.020	1.16	1.182	Figure 25

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

2. Per FCC KDB Publication 447498 D01, 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. 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.
4. When multiple slots are used, SAR should be tested to account for the maximum source-based time-averaged output power.
5. WWAN antenna is located at right edge; antenna-to- left 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.

Table 14: SAR Measurement Variability Results [GSM 850 (GPRS/EGPRS)]

Test Position	Timeslots	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Test Position 1	2 Txslots	251/848.8	0.985	1.020	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

7.2.2. GSM 1900 (GPRS/EGPRS)

Table 15: 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 1	661/1880	2 Txslots	1:4.15	27.9	27.22	0.081	0.385	1.17	0.450	Figure 26
Test Position 2	661/1880	2 Txslots	1:4.15	27.9	27.22	0.054	0.442	1.17	0.517	Figure 27
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	661/1880	2 Txslots	1:4.15	27.9	27.22	-0.030	0.186	1.17	0.218	Figure 28
Test Position 5	661/1880	2 Txslots	1:4.15	27.9	27.22	0.117	0.091	1.17	0.107	Figure 29
Test Position 6	661/1880	2 Txslots	1:4.15	27.9	27.22	-0.007	0.252	1.17	0.295	Figure 30
Worst Case Position of GPRS with EGPRS (Battery 1,GMSK, Distance 10mm)										
Test Position 2	661/1880	2 Txslots	1:4.15	27.9	27.22	0.033	0.422	1.17	0.494	Figure 31
Worst Case Position of Body with Battery 2 (Distance 10mm)										
Test Position 2	661/1880	2 Txslots	1:4.15	27.9	27.22	0.057	0.421	1.17	0.492	Figure 32
Worst Case Position of Body with Battery 3 (Distance 10mm)										
Test Position 2	661/1880	2 Txslots	1:4.15	27.9	27.22	0.122	0.424	1.17	0.496	Figure 33
Worst Case Position of Body with Battery 4 (Distance 10mm)										
Test Position 2	661/1880	2 Txslots	1:4.15	27.9	27.22	0.135	0.424	1.17	0.496	Figure 34

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. 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.
4. When multiple slots are used, SAR should be tested to account for the maximum source-based time-averaged output power.
5. WWAN antenna is located at right edge; antenna-to- left 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.

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

Table 16: SAR Values [UMTS Band V (WCDMA/HSDPA/HSUPA)]

Test Position	Channel/ Frequency (MHz)	Service	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 1	4233/846.6	RMC 12.2k	1:1	23.5	22.75	-0.121	0.859	1.19	1.021	Figure 35
	4182/836.4	RMC 12.2k	1:1	23.5	22.65	0.023	0.828	1.22	1.007	Figure 36
	4132/826.4	RMC 12.2k	1:1	23.5	22.64	0.022	0.875	1.22	1.067	Figure 37
Test Position 2	4233/846.6	RMC 12.2k	1:1	23.5	22.75	-0.080	0.837	1.19	0.995	Figure 38
	4182/836.4	RMC 12.2k	1:1	23.5	22.65	-0.095	0.806	1.22	0.980	Figure 39
	4132/826.4	RMC 12.2k	1:1	23.5	22.64	-0.061	0.847	1.22	1.032	Figure 40
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	4182/836.4	RMC 12.2k	1:1	23.5	22.65	-0.044	0.049	1.22	0.060	Figure 41
Test Position 5	4182/836.4	RMC 12.2k	1:1	23.5	22.65	-0.052	0.237	1.22	0.288	Figure 42
Test Position 6	4182/836.4	RMC 12.2k	1:1	23.5	22.65	-0.024	0.350	1.22	0.426	Figure 43
Worst Case Position of Body with Battery 2 (Distance 10mm)										
Test Position 1	4132/826.4	RMC 12.2k	1:1	23.5	22.64	-0.120	0.824	1.22	1.004	Figure 44
Worst Case Position of Body with Battery 3 (Distance 10mm)										
Test Position 1	4132/826.4	RMC 12.2k	1:1	23.5	22.64	-0.003	0.839	1.22	1.023	Figure 45
Worst Case Position of Body with Battery 4 (Distance 10mm)										
Test Position 1	4132/826.4	RMC 12.2k	1:1	23.5	22.64	0.021	0.828	1.22	1.009	Figure 46
Worst Case Position of Body for 1st Repeated SAR (Distance 10mm)										
Test Position 1	4132/826.4	RMC 12.2k	1:1	23.5	22.64	-0. 002	0.835	1.22	1.018	Figure 47

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

2.Per FCC KDB Publication 447498 D01, 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. WCDMA mode was tested under RMC 12.2kbps without 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.

4.When the maximum average output power of each RF channel with (uplink) HSPA+ or DC-HSDPA active is ≤ ¼ dB higher than that measured without HSPA+ or DC-HSDPA using 12.2 kbps RMC, or the maximum SAR for 12.2 kbps RMC without HSPA+ or DC-HSDPA is ≤ 75% of the SAR limit, SAR evaluation for HSPA+ or DC-HSDPA is not required.

5. WWAN antenna is located at right edge; antenna-to- left 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.

Table 17: SAR Measurement Variability Results [UMTS Band V (WCDMA/HSDPA/HSUPA)]

Test Position	Service	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Test Position 1	RMC12.2k	4132/826.4	0.875	0.835	1.05	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

7.2.4. LTE Band 7

Table 18: 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, QPSK, Distance 10mm)										
Test Position 1	21350/2560	99Offset	1:1	22.9	22.82	-0.031	0.776	1.02	0.790	Figure 48
	21100/2535	99Offset	1:1	22.9	22.83	-0.056	0.662	1.02	0.673	Figure 49
	20850/2510	99Offset	1:1	22.9	22.86	-0.011	0.748	1.01	0.755	Figure 50
Test Position 2	21350/2560	99Offset	1:1	22.9	22.82	-0.024	1.290	1.02	1.314	Figure 51
	21100/2535	99Offset	1:1	22.9	22.83	-0.028	1.230	1.02	1.250	Figure 52
	20850/2510	99Offset	1:1	22.9	22.86	0.046	0.984	1.01	0.993	Figure 53
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	20850/2510	99Offset	1:1	22.9	22.86	0.029	0.123	1.01	0.124	Figure 54
Test Position 5	20850/2510	99Offset	1:1	22.9	22.86	0.072	0.161	1.01	0.162	Figure 55
Test Position 6	20850/2510	99Offset	1:1	22.9	22.86	0.029	0.601	1.01	0.607	Figure 56
Test position of Body with Battery 1 (50% RB, QPSK, Distance 10mm)										
Test Position 1	21100/2535	0 Offset	1:1	21.7	21.44	-0.057	0.515	1.06	0.547	Figure 57
Test Position 2	21350/2560	0 Offset	1:1	21.7	21.17	-0.008	1.010	1.13	1.141	Figure 58
	21100/2535	0 Offset	1:1	21.7	21.44	-0.134	1.060	1.06	1.125	Figure 59
	20850/2510	0 Offset	1:1	21.7	21.04	-0.164	0.735	1.16	0.856	Figure 60
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	21100/2535	0 Offset	1:1	21.7	21.44	0.054	0.186	1.06	0.197	Figure 61
Test Position 5	21100/2535	0 Offset	1:1	21.7	21.44	0.022	0.176	1.06	0.187	Figure 62
Test Position 6	21100/2535	0 Offset	1:1	21.7	21.44	0.029	0.618	1.06	0.656	Figure 63
Test position of Body with Battery 1 (100% RB, QPSK, Distance 10mm)										
Test Position 1	21350/2560	0 Offset	1:1	21.7	21.31	0.103	0.732	1.09	0.801	Figure 64
Test Position 2	21350/2560	0 Offset	1:1	21.7	21.31	-0.088	1.080	1.09	1.181	Figure 65
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	21350/2560	0 Offset	1:1	21.7	21.31	0.040	0.296	1.09	0.324	Figure 66
Test Position 5	21350/2560	0 Offset	1:1	21.7	21.31	0.181	0.227	1.09	0.248	Figure 67
Test Position 6	21350/2560	0 Offset	1:1	21.7	21.31	0.013	0.392	1.09	0.429	Figure 68
Worst Case Position of Body with Battery 2 (QPSK, Distance 10mm)										

Test Position 2	21350/2560	0 Offset	1:1	22.9	22.82	-0.026	1.340	1.02	1.365	Figure 69
Worst Case Position of Body with Battery 3 (QPSK, Distance 10mm)										
Test Position 2	21350/2560	0 Offset	1:1	22.9	22.82	-0.104	1.330	1.02	1.355	Figure 70
Worst Case Position of Body with Battery 4 (QPSK, Distance 10mm)										
Test Position 2	21350/2560	0 Offset	1:1	22.9	22.82	-0.168	1.110	1.02	1.131	Figure 71
Repeate Worst Case Position of Body with Battery 2 (QPSK, Distance 10mm)										
Test Position 2	21350/2560	0 Offset	1:1	22.9	22.82	-0.051	1.340	1.02	1.365	Figure 72

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

2. Per FCC KDB Publication 447498 D01, 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 right edge; antenna-to- left 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.

Table 19: SAR Measurement Variability Results [LTE Band 7/20M]

Test Position	Service	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Test Position 2	0 Offset	21350/2560	1.340	1.340	1.00	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

7.2.5. 802.11b/n

Table 20: SAR Values

Test Position	Channel/ Frequency (MHz)	Service	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 (Distance 10mm, Antenna 1)										
Test Position 1	5/2432	DSSS	1:1	10.5	9.24	0.033	0.038	1.34	0.050	Figure 73
Test Position 2	5/2432	DSSS	1:1	10.5	9.24	-0.003	0.038	1.34	0.051	Figure 74
Test Position 3	5/2432	DSSS	1:1	10.5	9.24	0.090	0.040	1.34	0.054	Figure 75
Test Position 4	5/2432	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Test Position 5	5/2432	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Test Position 6	5/2432	DSSS	1:1	10.5	9.24	0.048	0.040	1.34	0.054	Figure 76
Test Position of Body with Battery 1 (Distance 10mm, Antenna 2)										
Test Position 1	9/2452	DSSS	1:1	10.5	10.05	-0.076	0.080	1.11	0.089	Figure 77
Test Position 2	9/2452	DSSS	1:1	10.5	10.05	-0.021	0.063	1.11	0.070	Figure 78
Test Position 3	9/2452	DSSS	1:1	10.5	10.05	0.032	0.043	1.11	0.048	Figure 79
Test Position 4	9/2452	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Test Position 5	9/2452	DSSS	1:1	10.5	10.05	0.195	0.072	1.11	0.080	Figure 80
Test Position 6	9/2452	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Worst Case Position of Body with Battery 2 (Distance 10mm, Antenna 2)										
Test Position 1	9/2452	DSSS	1:1	10.5	10.05	0.086	0.073	1.11	0.080	Figure 81
Worst Case Position of Body with Battery 3 (Distance 10mm, Antenna 2)										
Test Position 1	9/2452	DSSS	1:1	10.5	10.05	0.047	0.071	1.11	0.079	Figure 82
Worst Case Position of Body with Battery 4 (Distance 10mm, Antenna 2)										
Test Position 1	9/2452	DSSS	1:1	10.5	10.05	0.060	0.067	1.11	0.074	Figure 83
Worst Case Position of Body with 802.11n HT20 (MIMO, Distance 10mm)										
Test Position 1	5/2432	DSSS	1:1	12.6	11.89	0.024	0.089	1.18	0.105	Figure 84
Worst Case Position of Body with 802.11n HT40 (MIMO, Distance 10mm)										
Test Position 1	5/2432	DSSS	1:1	12.6	11.66	0.094	0.086	1.24	0.107	Figure 85

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

2. Per FCC KDB Publication 447498 D01, 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. KDB 248227-SAR is not required for 802.11g channels when the maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11b channels.

7.2.6. 802.11a

Table 21: SAR Values [802.11a/n (CH157)]

Test Position	Channel/ Frequency (MHz)	Service	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 (Distance 10mm, Antenna 1)										
Test Position 1	157/5785	DSSS	1:1	8.8	8.06	0.100	0.00019	1.19	0.00022	Figure 86
Test Position 2	157/5785	DSSS	1:1	8.8	8.06	-0.100	0.00006	1.19	0.00007	Figure 87
Test Position 3	157/5785	DSSS	1:1	8.8	8.06	0.010	0.00009	1.19	0.0001	Figure 88
Test Position 4	157/5785	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Test Position 5	157/5785	DSSS	1:1	8.8	8.06	-0.070	0.036	1.19	0.043	Figure 89
Test Position 6	157/5785	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Test Position of Body with Battery 1 (Distance 10mm, Antenna 2)										
Test Position 1	157/5785	DSSS	1:1	8.8	8.03	-0.100	0.00039	1.19	0.0004	Figure 90
Test Position 2	157/5785	DSSS	1:1	8.8	8.03	0.020	0.050	1.19	0.060	Figure 91
Test Position 3	157/5785	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Test Position 4	157/5785	DSSS	1:1	8.8	8.03	-0.030	0.00067	1.19	0.001	Figure 92
Test Position 5	157/5785	DSSS	1:1	8.8	8.03	-0.070	0.018	1.19	0.021	Figure 93
Test Position 6	157/5785	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Worst Case Position of Body with Battery 2 (Distance 10mm)										
Test Position 2	157/5785	DSSS	1:1	8.8	8.03	0.100	0.005	1.19	0.006	Figure 94
Worst Case Position of Body with Battery 3 (Distance 10mm)										
Test Position 2	157/5785	DSSS	1:1	8.8	8.03	-0.040	0.066	1.19	0.078	Figure 95
Worst Case Position of Body with Battery 4 (Distance 10mm)										
Test Position 2	157/5785	DSSS	1:1	8.8	8.03	-0.020	0.024	1.19	0.029	Figure 96
Worst Case Position of Body with 802.11n HT20 (MIMO, Distance 10mm)										
Test Position 2	165/5825	DSSS	1:1	8.8	8.11	0.032	0.000656	1.17	0.001	Figure 97
Worst Case Position of Body with 802.11n HT40 (MIMO, Distance 10mm)										
Test Position 2	151/5755	DSSS	1:1	8.8	8.37	0.100	0.00508	1.10	0.006	Figure 98

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

2. Per FCC KDB Publication 447498 D01, 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. Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg.

Table 22: SAR Values [802.11a/n (CH40)]

Test Position	Channel/ Frequency (MHz)	Service	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 (Distance 10mm, Antenna 1)										
Test Position 1	40/5200	DSSS	1:1	8.8	8.23	0.096	0.0077	1.14	0.0088	Figure 99
Test Position 2	40/5200	DSSS	1:1	8.8	8.23	0.122	0.00023	1.14	0.00027	Figure 100
Test Position 3	40/5200	DSSS	1:1	8.8	8.23	-0.099	0.00006	1.14	0.00007	Figure 101
Test Position 4	40/5200	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Test Position 5	40/5200	DSSS	1:1	8.8	8.23	-0.044	0.011	1.14	0.013	Figure 102
Test Position 6	40/5200	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Test Position of Body with Battery 1 (Distance 10mm, Antenna 2)										
Test Position 1	40/5200	DSSS	1:1	8.8	8.12	-0.097	0.00029	1.17	0.00034	Figure 103
Test Position 2	40/5200	DSSS	1:1	8.8	8.12	0.196	0.038	1.17	0.044	Figure 104
Test Position 3	40/5200	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Test Position 4	40/5200	DSSS	1:1	8.8	8.12	-0.03	0.0005	1.17	0.001	Figure 105
Test Position 5	40/5200	DSSS	1:1	8.8	8.12	-0.081	0.013	1.17	0.015	Figure 106
Test Position 6	40/5200	DSSS	1:1	NA	NA	NA	NA	NA	NA	NA
Worst Case Position of Body with Battery 2 (Distance 10mm)										
Test Position 2	40/5200	DSSS	1:1	8.8	8.12	-0.036	0.045	1.17	0.053	Figure 107
Worst Case Position of Body with Battery 3 (Distance 10mm)										
Test Position 2	40/5200	DSSS	1:1	8.8	8.12	-0.027	0.018	1.17	0.021	Figure 108
Worst Case Position of Body with Battery 4 (Distance 10mm)										
Test Position 2	40/5200	DSSS	1:1	8.8	8.12	0.010	0.004	1.17	0.005	Figure 109
Worst Case Position of Body with 802.11n HT20 (MIMO, Distance 10mm)										
Test Position 2	36/5180	DSSS	1:1	8.8	8.39	0.099	0.00047	1.10	0.0005	Figure 110
Worst Case Position of Body with 802.11n HT40 (MIMO, Distance 10mm)										
Test Position 2	38/5190	DSSS	1:1	8.8	8.37	0.032	0.0005	1.10	0.001	Figure 111

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

2. Per FCC KDB Publication 447498 D01, 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. Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg.

7.3. Simultaneous Transmission Conditions

Air-Interface	Band (MHz)	Type	SimultaneousTransmissions	Voice Over Digital Transport (Data)
GSM	850	DT	Yes WIFI	NA
	1900	DT	Yes WIFI	NA
UMTS	850	DT	Yes WIFI	NA
LTE	2600	DT	Yes WIFI	NA
WIFI	2.4G	DT	Yes GSM/UMTS/LTE	NA
WIFI	5G	DT	Yes GSM/UMTS/LTE	NA
Note: DT Digital Transport				

The location of the antennas inside EUT is shown in ANNEX K:

Estimated SAR

(1) for test separation distances ≤ 50 mm

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 for test separation distances ≤ 50 mm.

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

(2) for test separation distances >50 mm

0.4 W/kg for 1-g SAR

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.

$$\textbf{Ratio} = \frac{(\textbf{SAR}_1 + \textbf{SAR}_2)^{\textbf{1.5}}}{\textbf{(min. test separation distance, mm)}} < \textbf{0.04}$$

GSM/UMTS /LTE &WIFI (2.4G) Mode

Reported SAR_{1g}(W/kg) / Test Position	GSM 850	GSM 1900	UMTS Band V	LTE Band 7	WIFI(2.4G)	MAX. Σ SAR_{1g}
Test Position 1	**1.182**	0.450	1.067	0.790	**0.107**	1.289
Test Position 2	1.042	0.517	1.032	**1.365**	**0.070**	1.435
Test Position 3	NA	NA	NA	NA	**0.054**	NA
Test Position 4	0.066	0.218	0.060	**0.324**	**NA**	NA
Test Position 5	**0.317**	0.107	0.288	0.248	**0.080**	0.397
Test Position 6	0.480	0.295	0.426	**0.656**	**0.054**	0.710

Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value.
2. MAX. ΣSAR_{1g} = Reported $SAR_{Max.WIFI(2.4G)}$ + Reported $SAR_{Max.GSM/UMTS/LTE}$

MAX. ΣSAR_{1g} = 1.435W/kg <1.6 W/kg, so the Simultaneous SAR are not required for WIFI(2.4G)and GSM/UMTS /LTE antenna.

GSM/UMTS /LTE &WIFI (5G) Mode

Reported SAR_{1g}(W/kg) / Test Position	GSM 850	GSM 1900	UMTS Band V	LTE Band 7	WIFI(5G)	MAX. Σ SAR_{1g}
Test Position 1	**1.182**	0.450	1.067	0.790	**0.078**	1.260
Test Position 2	1.042	0.517	1.032	**1.365**	**0.060**	1.425
Test Position 3	NA	NA	NA	NA	**0.0001**	NA
Test Position 4	0.066	0.218	0.060	**0.324**	**0.001**	0.325
Test Position 5	**0.317**	0.107	0.288	0.248	**0.043**	0.360
Test Position 6	0.480	0.295	0.426	**0.656**	**NA**	NA

Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value.
2. MAX. ΣSAR_{1g} = Reported $SAR_{Max.WIFI(5G)}$ + Reported $SAR_{Max.GSM/UMTS/LTE}$

MAX. ΣSAR_{1g} = 1.425W/kg <1.6 W/kg, so the Simultaneous SAR are not required for WIFI (5G)and GSM/UMTS /LTE antenna.

8. Measurement Uncertainty

No.	source	Type	Uncertainty Value (%)	Probability Distribution	k	c_i	Standard ncertainty $u_i^{'}$ (%)	Degree of freedom V_{eff} or v_i
1	System repetivity	A	0.5	N	1	1	0.5	9
Measurement system								
2	-probe calibration	B	6	N	1	1	6.6	∞
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	∞
5	-boundary effect	B	1.9	R	$\sqrt{3}$	1	1.1	∞
6	-probe linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
7	- System detection limits	B	1.0	R	$\sqrt{3}$	1	0.6	∞
8	-readout Electronics	B	1.0	N	1	1	1.0	∞
9	-response time	B	0	R	$\sqrt{3}$	1	0	∞
10	-integration time	B	4.3	R	$\sqrt{3}$	1	2.5	∞
11	-noise	B	0	R	$\sqrt{3}$	1	0	∞
12	-RF Ambient Conditions	B	3	R	$\sqrt{3}$	1	1.7	∞
13	-Probe Positioner Mechanical Tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	∞
14	-Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
15	-Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
Test sample Related								
16	-Test Sample Positioning	A	2.9	N	1	1	2.9	71
17	-Device Holder Uncertainty	A	4.1	N	1	1	4.1	5
18	-Output Power Variation - SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.9	∞
Physical parameter								
19	-phantom	B	4.0	R	$\sqrt{3}$	1	2.3	∞
20	Algorithm for correcting SAR for deviations in permittivity and conductivity	B	1.9	N	1	0.84	0.9	∞

21	-Liquid conductivity (measurement uncertainty)	B	2.5	N	1	0.71	1.8	9
22	-Liquid permittivity (measurement uncertainty)	B	2.5	N	1	0.26	0.7	9
23	-Liquid conductivity -temperature uncertainty	B	1.7	R	$\sqrt{3}$	0.71	0.7	∞
24	-Liquid permittivity -temperature uncertainty	B	0.3	R	$\sqrt{3}$	0.26	0.05	∞
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{24} c_i^2 u_i^2}$					11.57	
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N		k=2	23.14	

9. Main Test Instruments

Table 23: List of Main Instruments

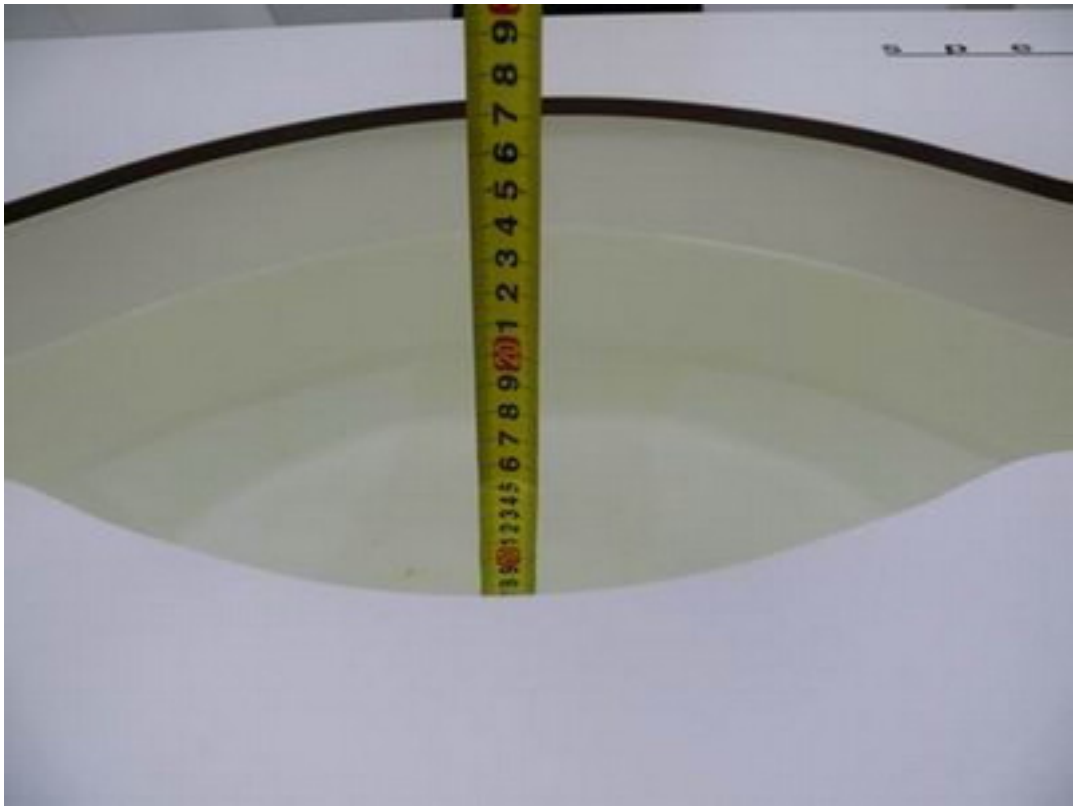
No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent 8753E	US37390326	September 11, 2012	One year
02	Dielectric Probe Kit	Agilent 85070E	US44020115	No Calibration Requested	
03	Power meter	Agilent E4417A	GB41291714	March 10, 2013	One year
04	Power sensor	Agilent N8481H	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	EX3DV4	3753	January 17, 2013	One year
12	DAE	DAE4	1317	January 25, 2013	One year
13	Validation Kit 835MHz	D835V2	4d020	August 26, 2011	Two years
14	Validation Kit 1900MHz	D1900V2	5d060	August 31, 2011	Two years
15	Validation Kit 2450MHz	D2450V2	786	August 29, 2011	Two years
16	Validation Kit 2600MHz	D2600V2	1012	May 02, 2012	Two years
17	Validation Kit 5GHz	D5GHzV2	1040	June 19, 2012	Two years
18	Temperature Probe	JM222	AA1009129	March 14, 2013	One year
19	Hygrothermograph	WS-1	64591	September 27, 2012	One year

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

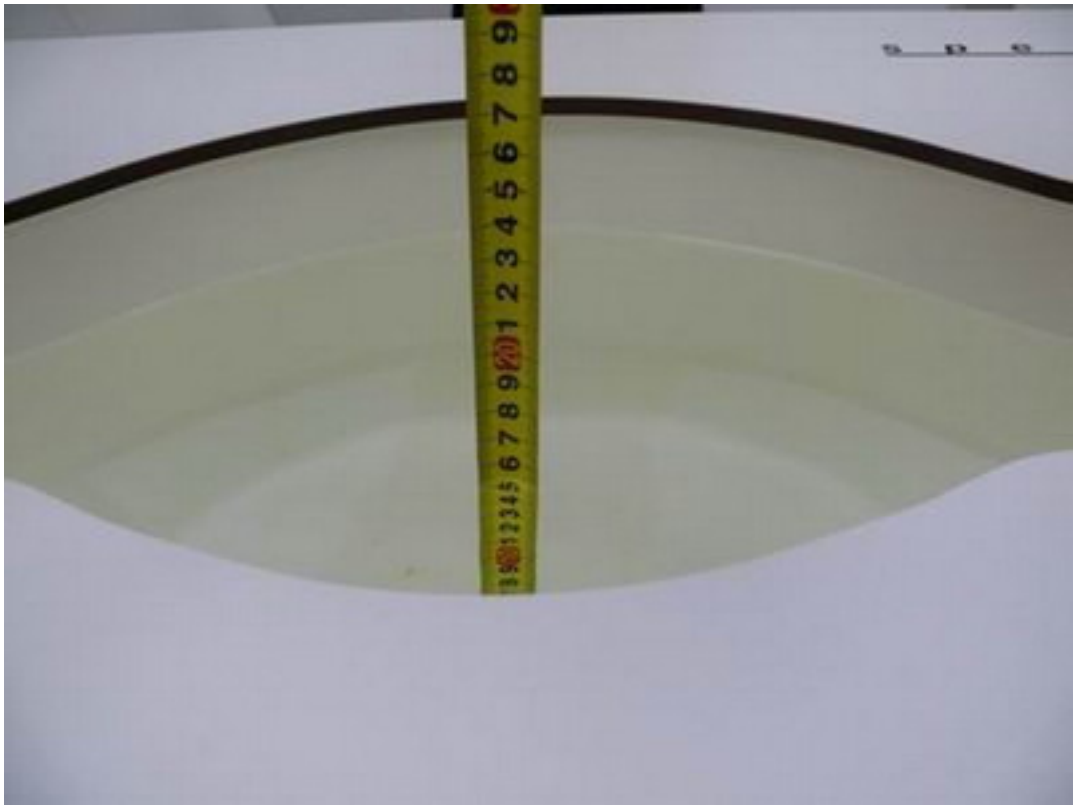
ANNEX A: Test Layout

Picture 1: Specific Absorption Rate Test Layout

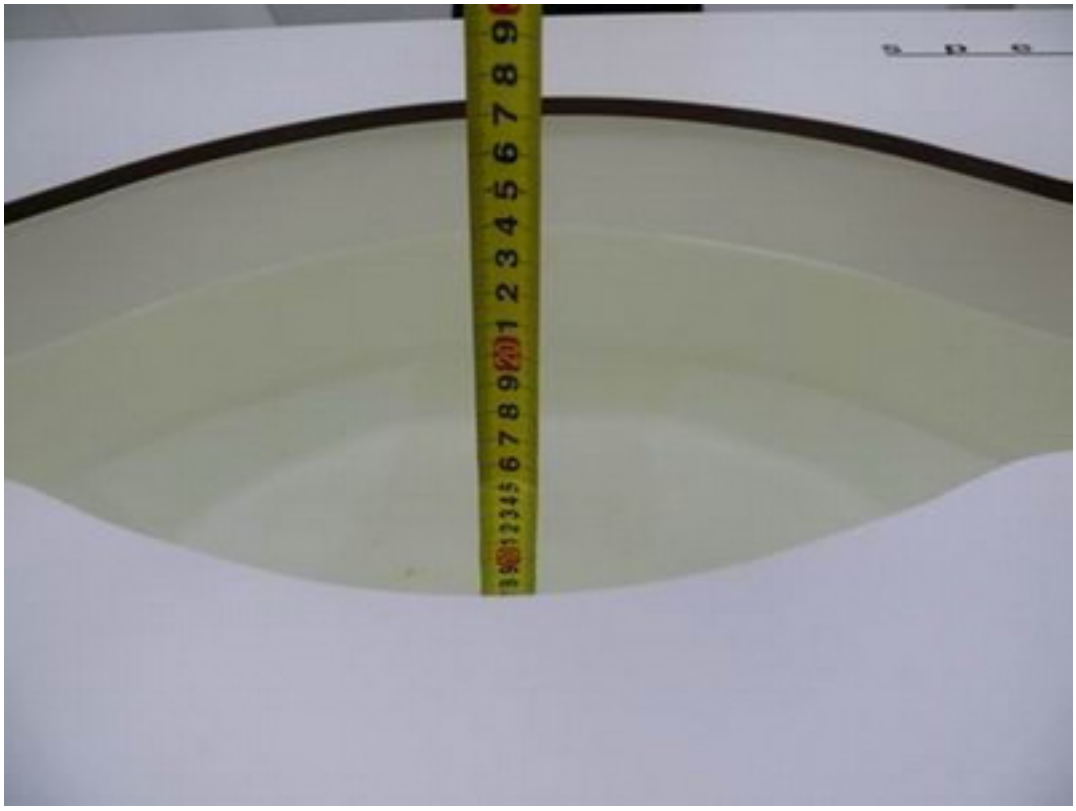
Picture 2: Liquid depth in the Flat Phantom (835 MHz, 15.4cm depth)



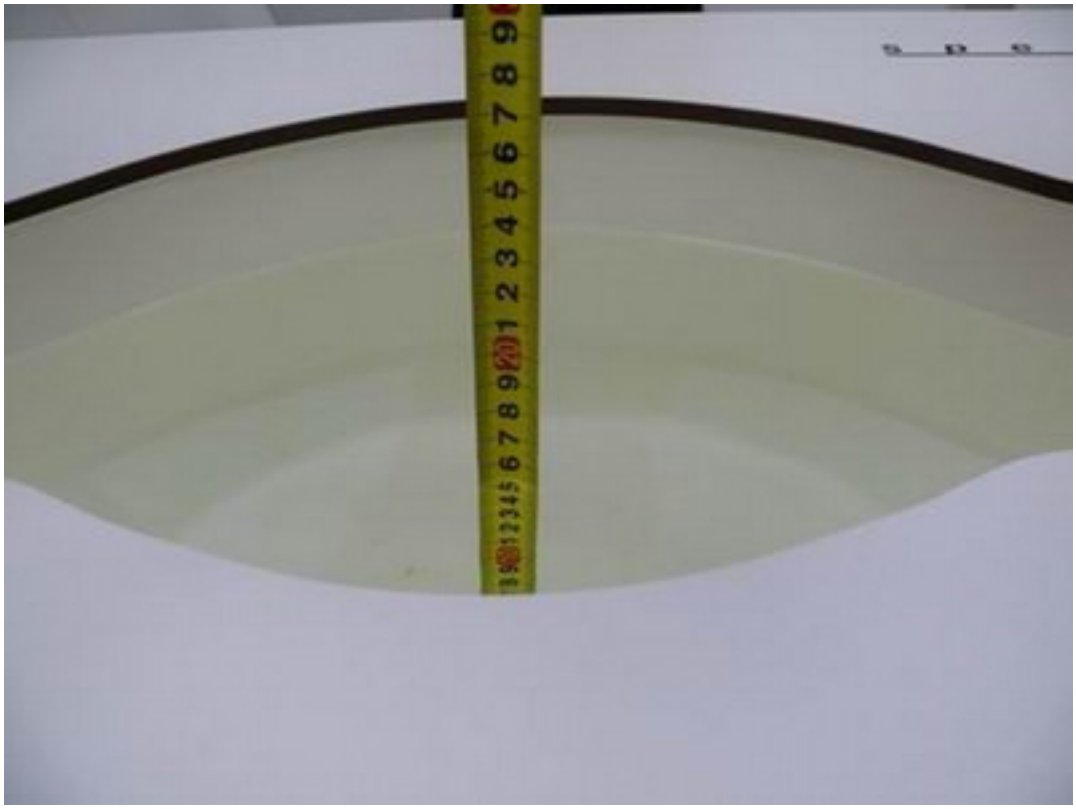
Picture 3: Liquid depth in the flat Phantom (1900 MHz, 15.2cm depth)



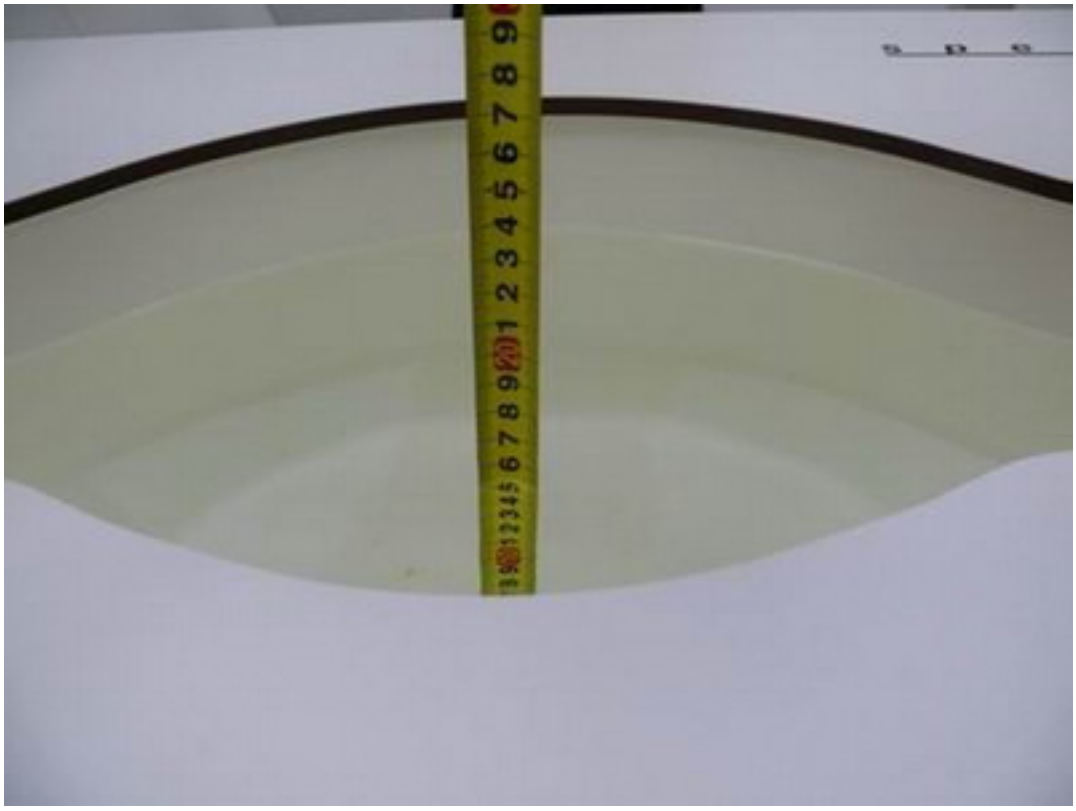
Picture 4: Liquid depth in the flat Phantom (2450 MHz, 15.3cm depth)



Picture 5: Liquid depth in the flat Phantom (2600 MHz, 15.3cm depth)



Picture 6: Liquid depth in the flat Phantom (5200 MHz, 15.4cm depth)



Picture 7: Liquid depth in the flat Phantom (5800 MHz, 15.1cm depth)

ANNEX B: System Check Results

System Performance Check at 835 MHz

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

Date/Time: 6/7/2013 7:25:37 AM

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

Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 55.89; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

d=15mm, Pin=250mW/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.72 mW/g

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

Reference Value = 50.9 V/m; Power Drift = 0.023 dB

Peak SAR (extrapolated) = 3.63 W/kg

SAR(1 g) = 2.52 mW/g; SAR(10 g) = 1.65 mW/g

Maximum value of SAR (measured) = 2.73 mW/g

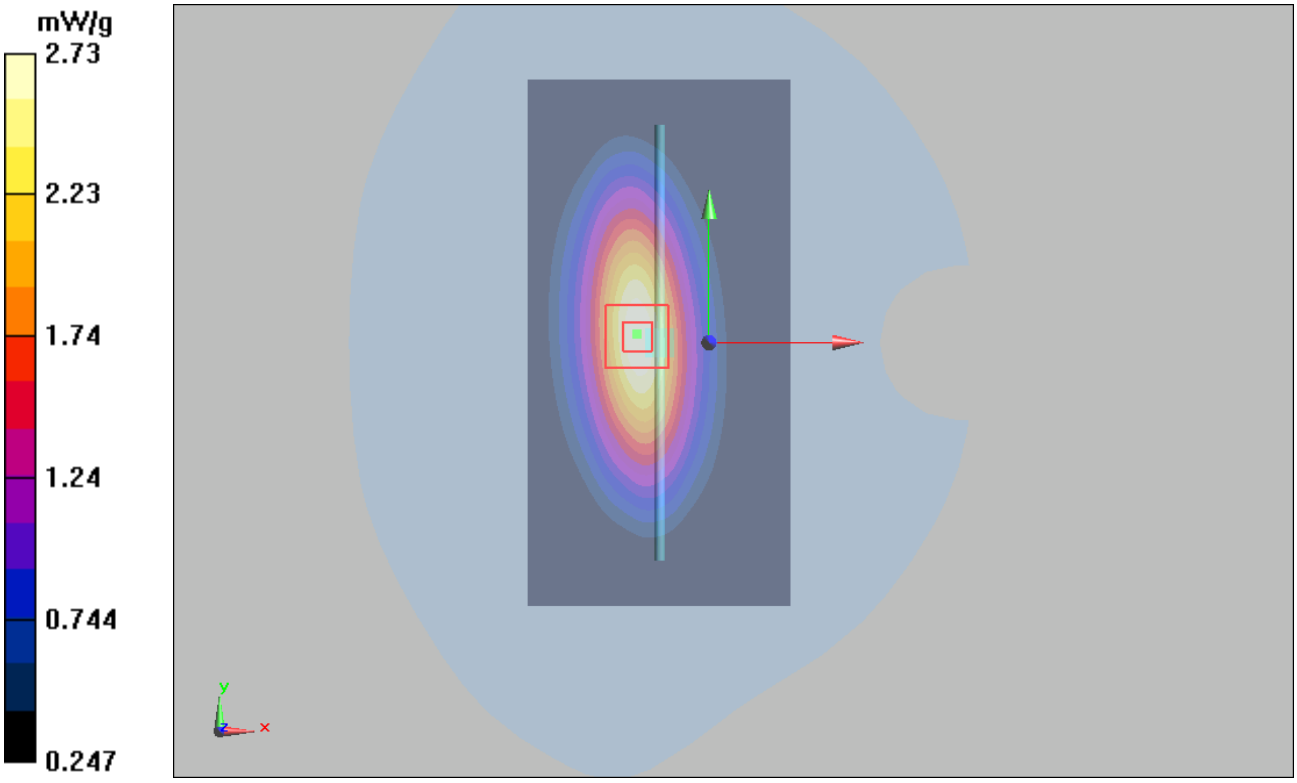


Figure 6 System Performance Check 835MHz 250mW

System Performance Check at 1900 MHz

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

Date/Time: 6/8/2013 5:51:01 AM

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

Medium parameters used: f = 1900 MHz; σ = 1.52 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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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) = 11.9 mW/g

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

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

Peak SAR (extrapolated) = 17.6 W/kg

SAR(1 g) = 9.82 mW/g; SAR(10 g) = 5.2 mW/g

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

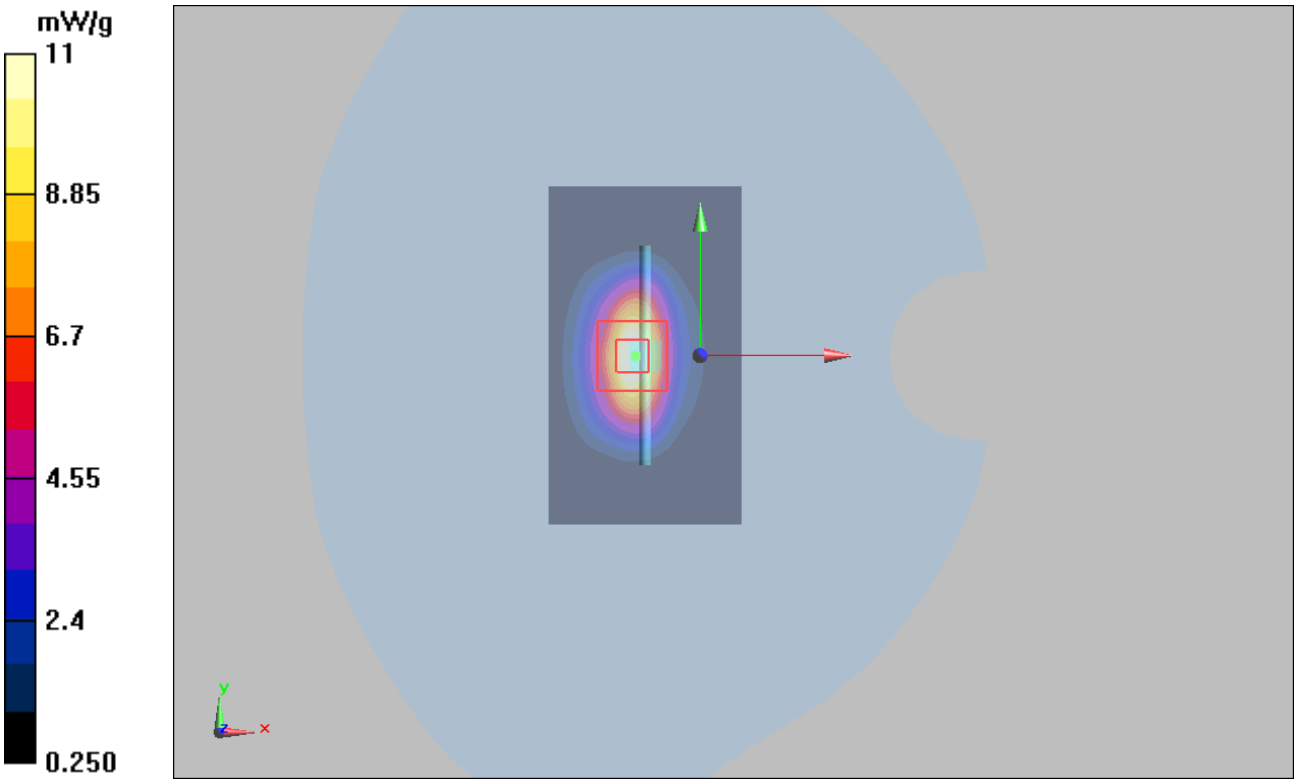


Figure 7 System Performance Check 1900MHz 250mW

System Performance Check at 2450 MHz Body TSL

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

Date/Time: 6/22/2013 7:05:59 AM

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

Medium parameters used: f = 2450 MHz; σ = 1.90 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013

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

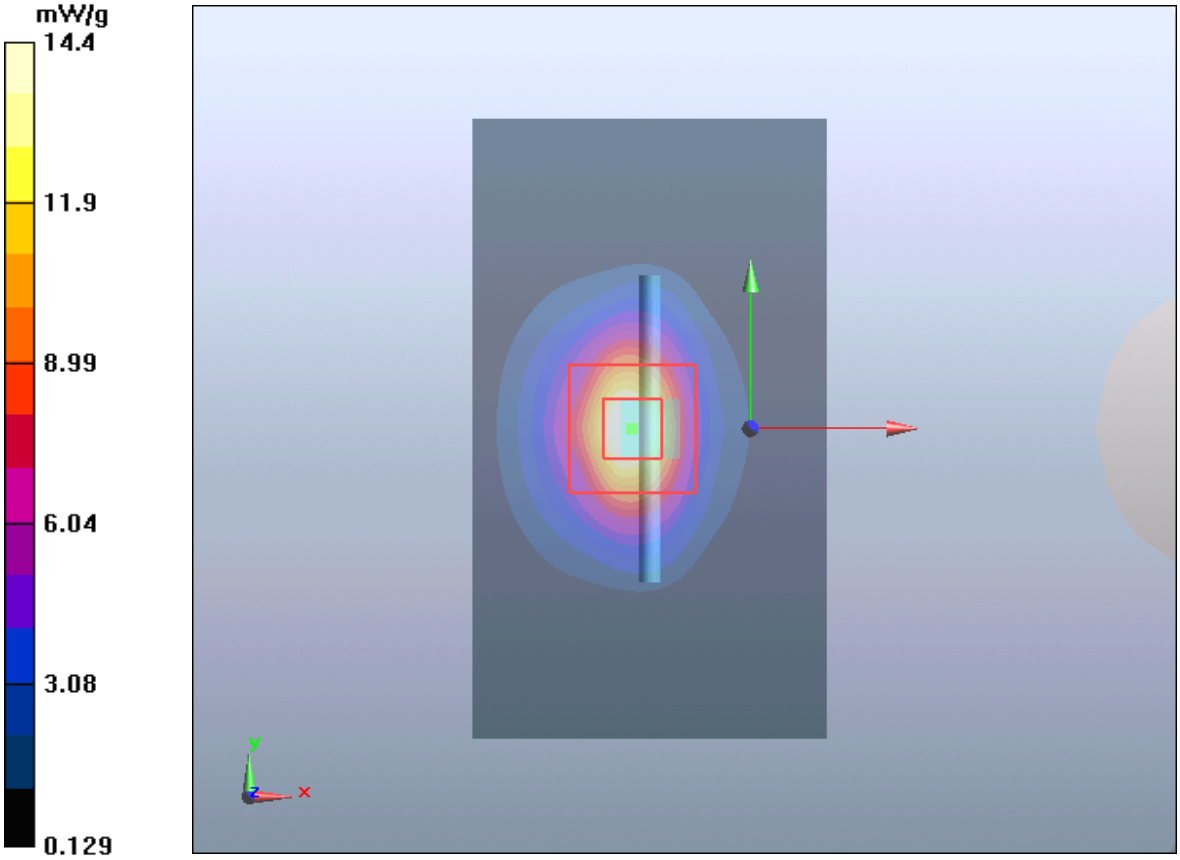


Figure 8 System Performance Check 2450MHz 250mW

System Performance Check at 2600 MHz Body TSL

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

Date/Time: 6/13/2013 9:03:51 AM

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

Medium parameters used: f = 2600 MHz; σ =2.15 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013

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

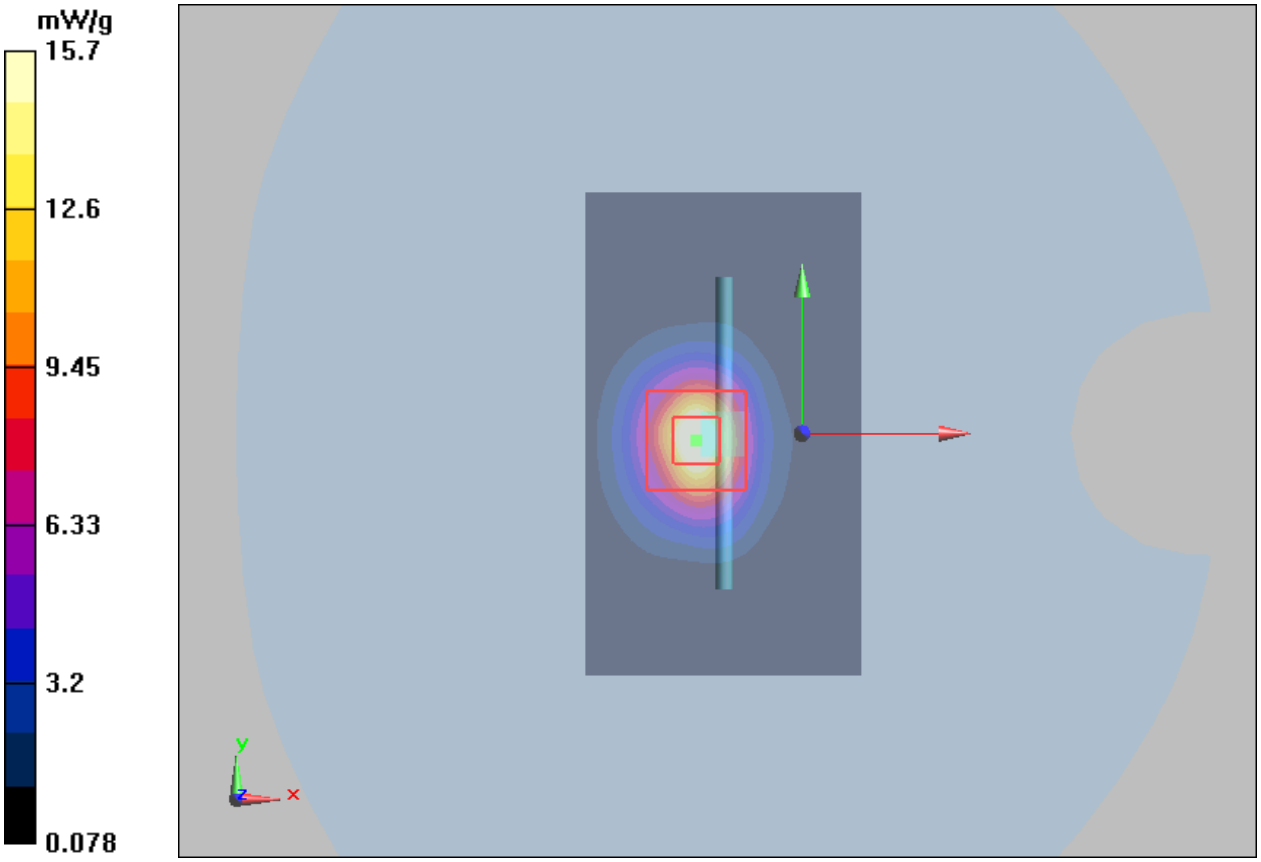


Figure 9 System Performance Check 2600MHz 250mW

System Performance Check at 5200 MHz Body TSL

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1040

Date/Time: 7/2/2013 7:22:17 AM

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5200 MHz; σ =5.32 mho/m; ε_r = 48.06; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013

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=100mW/Area Scan (41x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 7.8 mW/g

d=10mm, Pin=100mW/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 38 V/m; Power Drift = -0.015 dB

Peak SAR (extrapolated) = 22.6 W/kg

SAR(1 g) =6.9 mW/g; SAR(10 g) = 1.96 mW/g

Maximum value of SAR (measured) = 8.52 mW/g

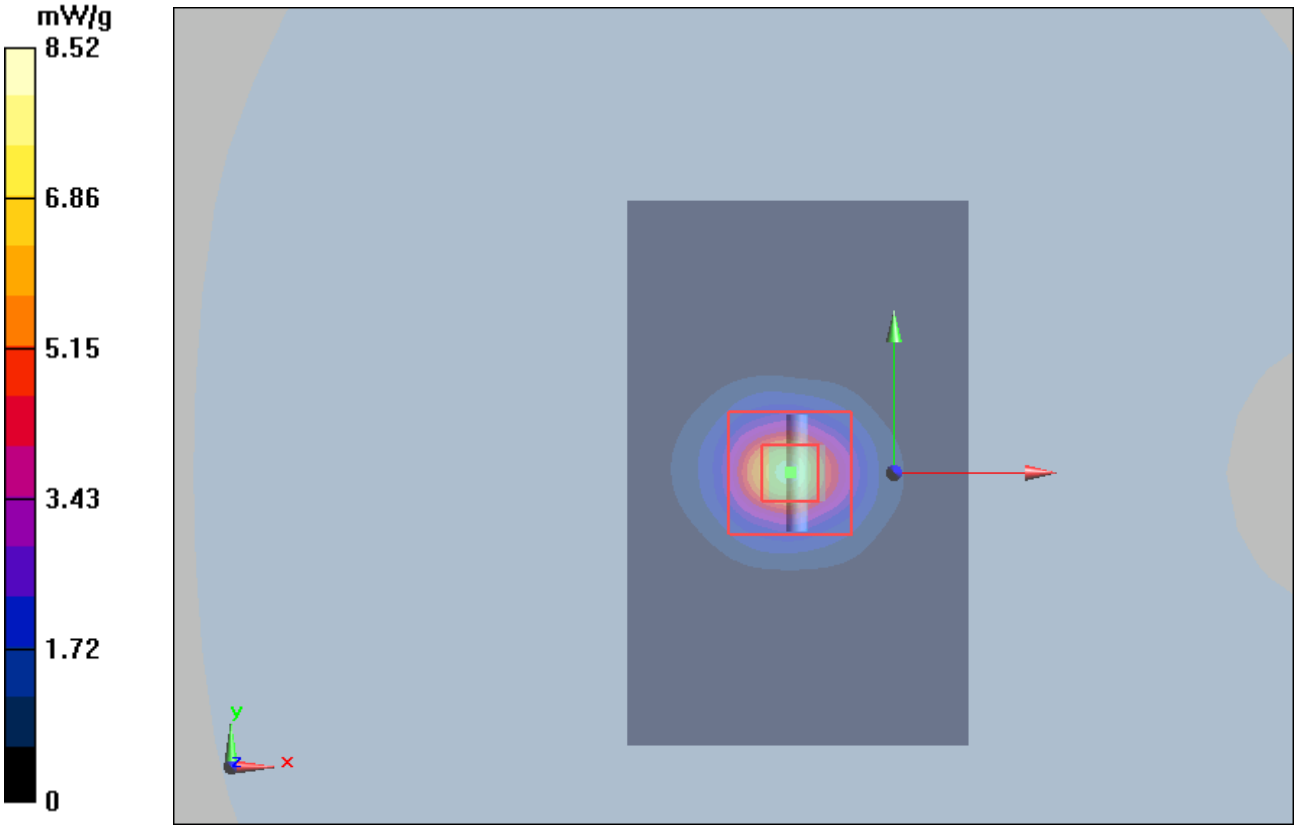


Figure 10 System Performance Check 5200MHz 100mW

System Performance Check at 5800 MHz Body TSL

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1040

Date/Time: 7/3/2013 7:12:14 AM

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5800 MHz; σ =6.13 mho/m; ε_r = 47.59; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013

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=100mW/Area Scan (41x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 7.84 mW/g

d=10mm, Pin=100mW/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 38 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 22.6 W/kg

SAR(1 g) = 7.1 mW/g; SAR(10 g) = 1.99 mW/g

Maximum value of SAR (measured) = 8.58 mW/g

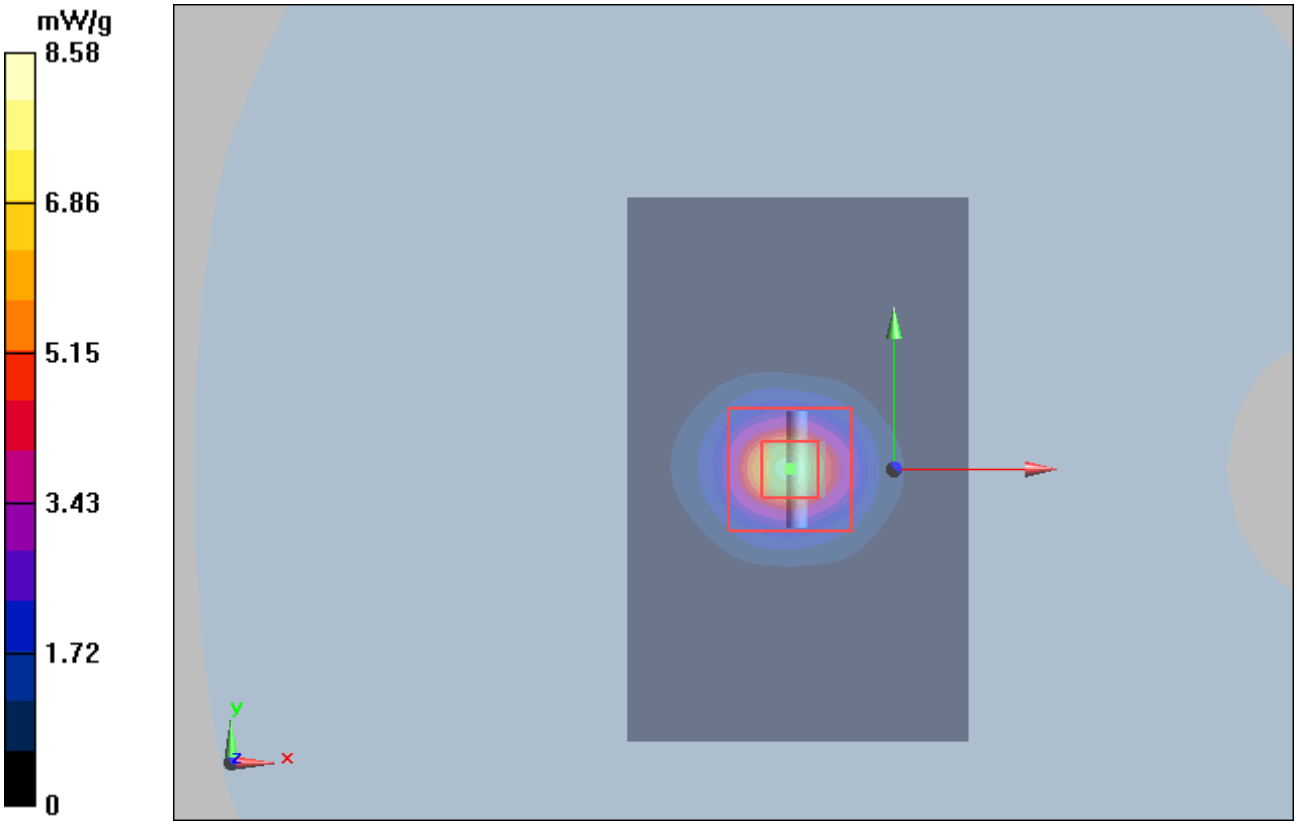


Figure 11 System Performance Check 5800MHz 100Mw

ANNEX C: Graph Results

GSM 850 GPRS (2TXslots) with Test Position 1 High

Date/Time: 6/7/2013 5:23:28 PM
Communication System: GPRS 2TX ; Frequency: 848.8 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 55.7; 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: EX3DV4 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.06 mW/g

Test Position 1 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.8 V/m; Power Drift = 0.001 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.985 mW/g; SAR(10 g) = 0.700 mW/g
Maximum value of SAR (measured) = 1.04 mW/g

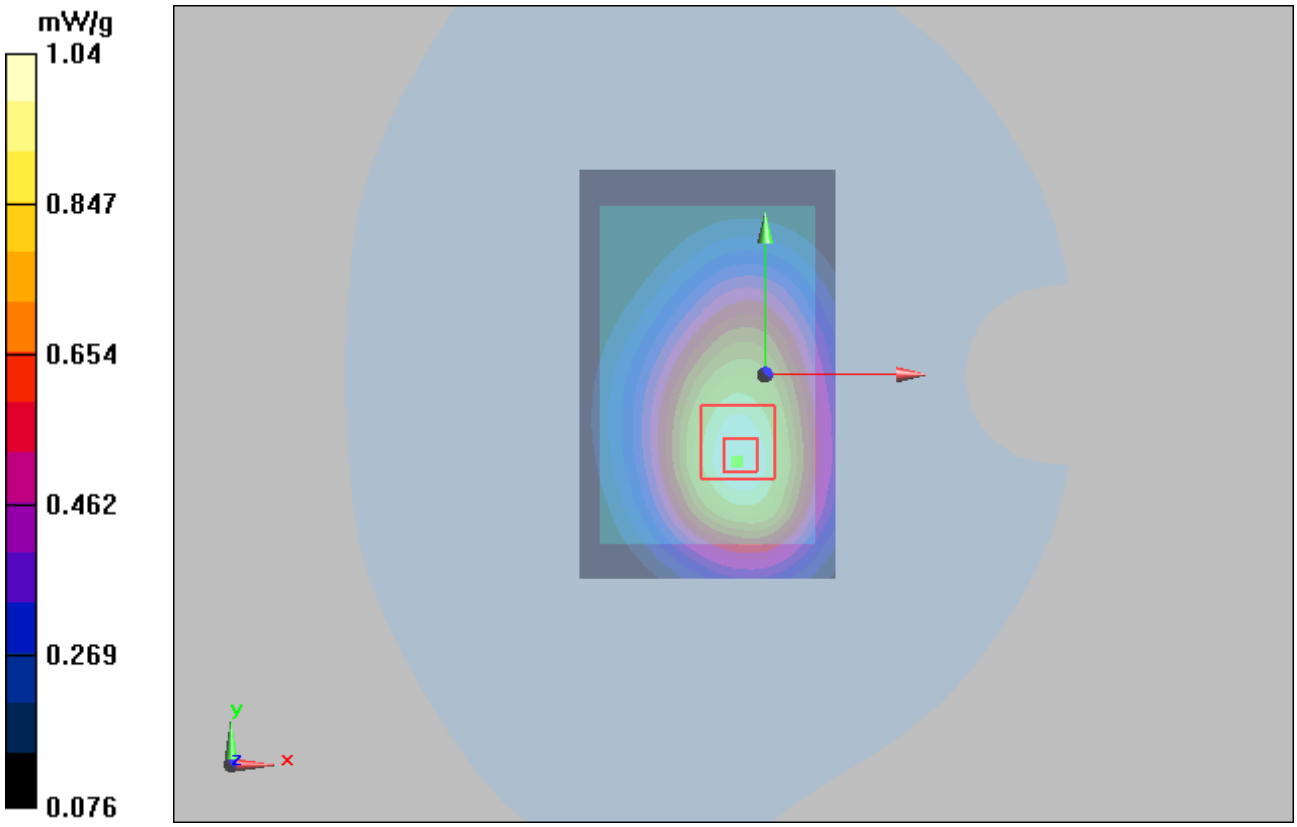


Figure 12 GSM 850 GPRS (2TXslots) with Test Position 1 Channel 251

GSM 850 GPRS (2TXslots) with Test Position 1 Middle

Date/Time: 6/7/2013 5:13:00 PM
Communication System: GPRS 2TX ; Frequency: 836.6 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 837 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.991 mW/g

Test Position 1 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.8 V/m; Power Drift = -0.133 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.918 mW/g; SAR(10 g) = 0.650 mW/g
Maximum value of SAR (measured) = 0.978 mW/g

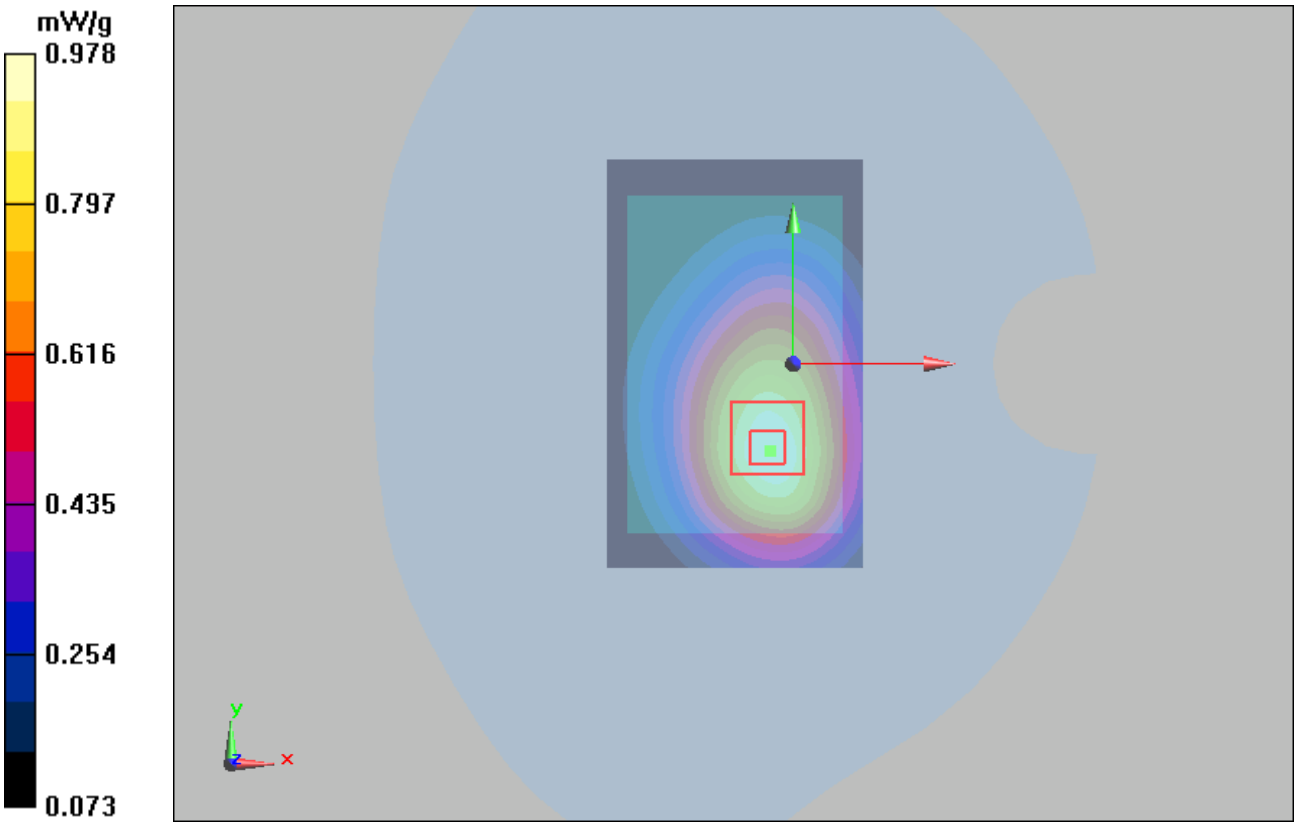


Figure 13 GSM 850 GPRS (2TXslots) with Test Position 1 Channel 190

GSM 850 GPRS (2TXslots) with Test Position 1 Low

Date/Time: 6/7/2013 9:42:10 AM
Communication System: GPRS 2TX ; Frequency: 824.2 MHz;Duty Cycle: 1:4.14954
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.978 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 Low/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.826 mW/g

Test Position 1 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.7 V/m; Power Drift = -0.093 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.769 mW/g; SAR(10 g) = 0.545 mW/g
Maximum value of SAR (measured) = 0.814 mW/g

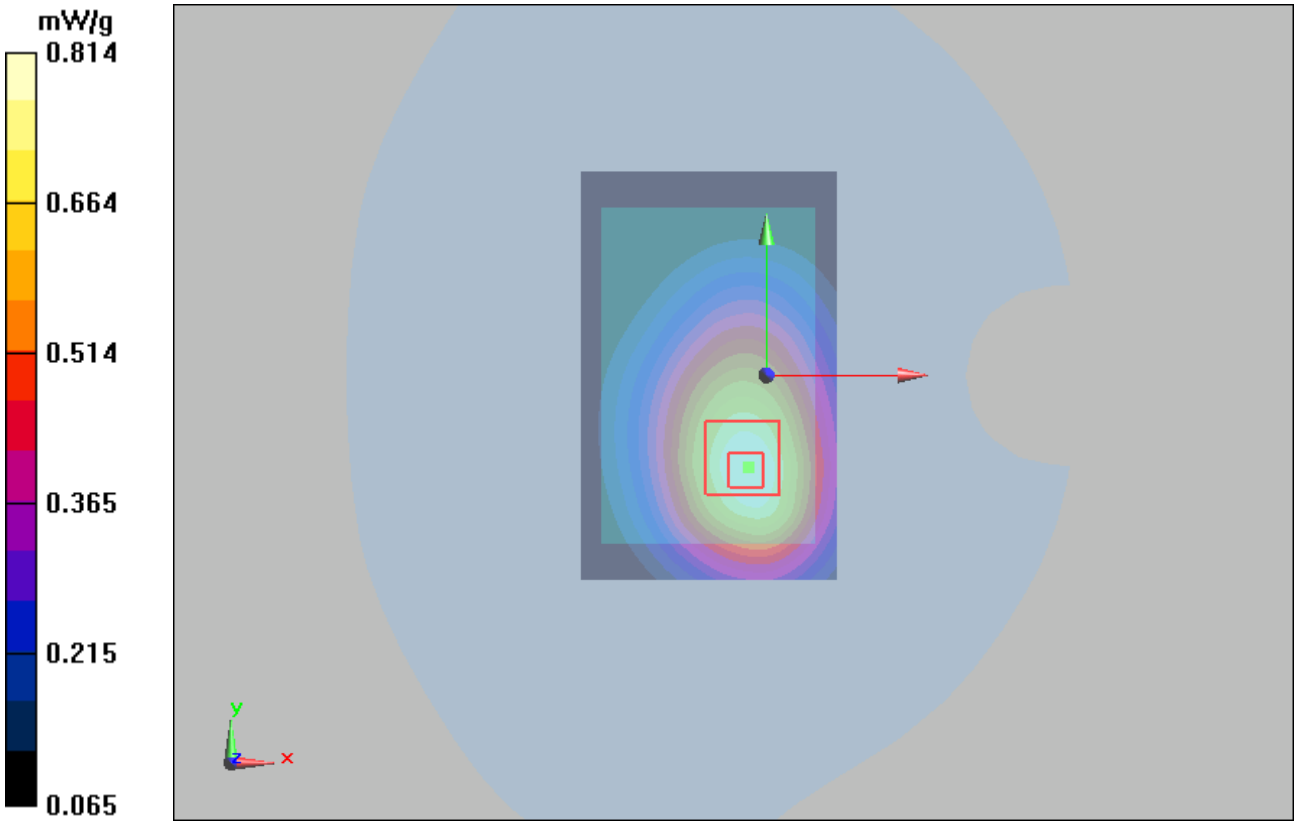


Figure 14 GSM 850 GPRS (2TXslots) with Test Position 1 Channel 128

GSM 850 GPRS (2TXslots) with Test Position 2 High

Date/Time: 6/7/2013 10:13:22 AM
Communication System: GPRS 2TX ; Frequency: 848.8 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 55.7; 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: EX3DV4 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 2 High/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.949 mW/g

Test Position 2 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.2 V/m; Power Drift = -0.085 dB
Peak SAR (extrapolated) = 1.2 W/kg
SAR(1 g) = 0.899 mW/g; SAR(10 g) = 0.641 mW/g
Maximum value of SAR (measured) = 0.958 mW/g

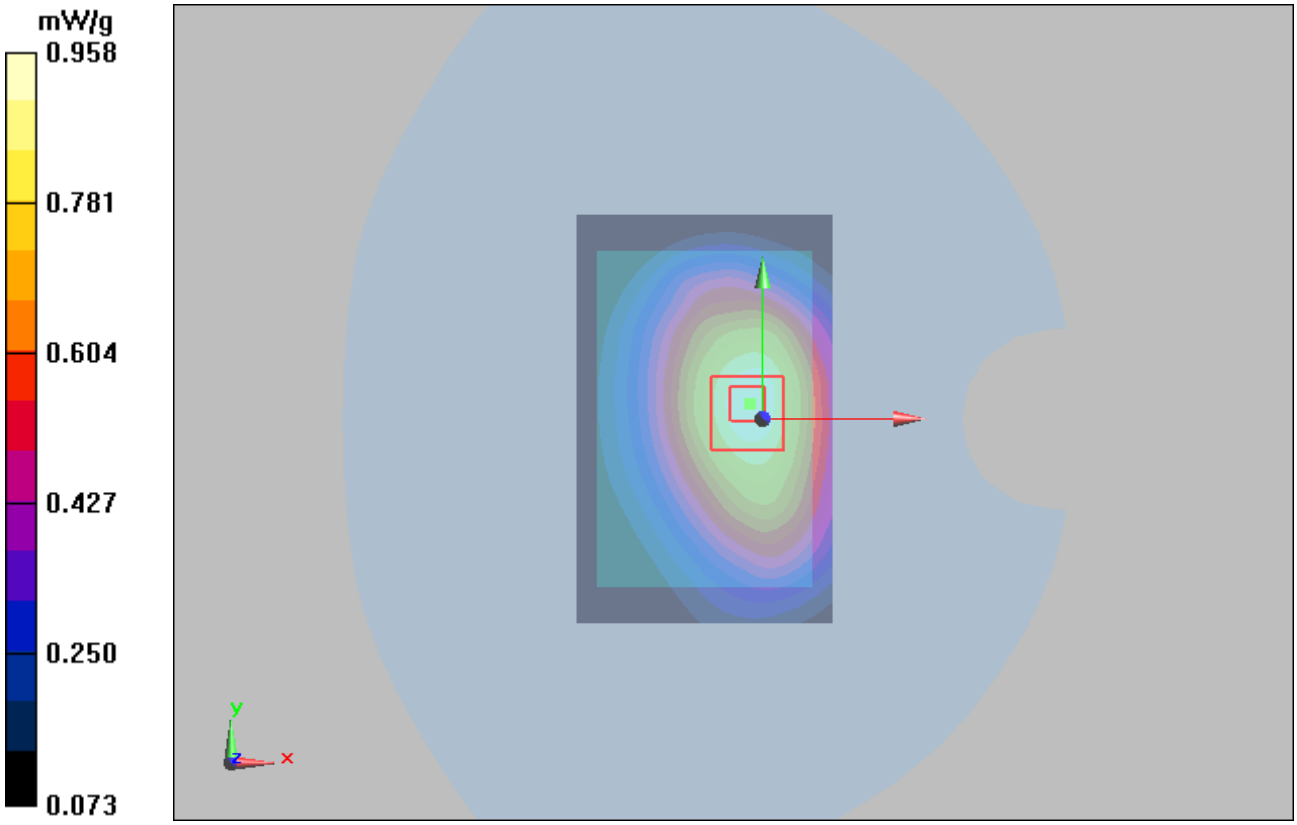


Figure 15 GSM 850 GPRS (2TXslots) with Test Position 2 Channel 251

GSM 850 GPRS (2TXslots) with Test Position 2 Middle

Date/Time: 6/7/2013 9:59:10 AM
Communication System: GPRS 2TX ; Frequency: 836.6 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 837 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.921 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.7 V/m; Power Drift = -0.057 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.869 mW/g; SAR(10 g) = 0.616 mW/g
Maximum value of SAR (measured) = 0.927 mW/g

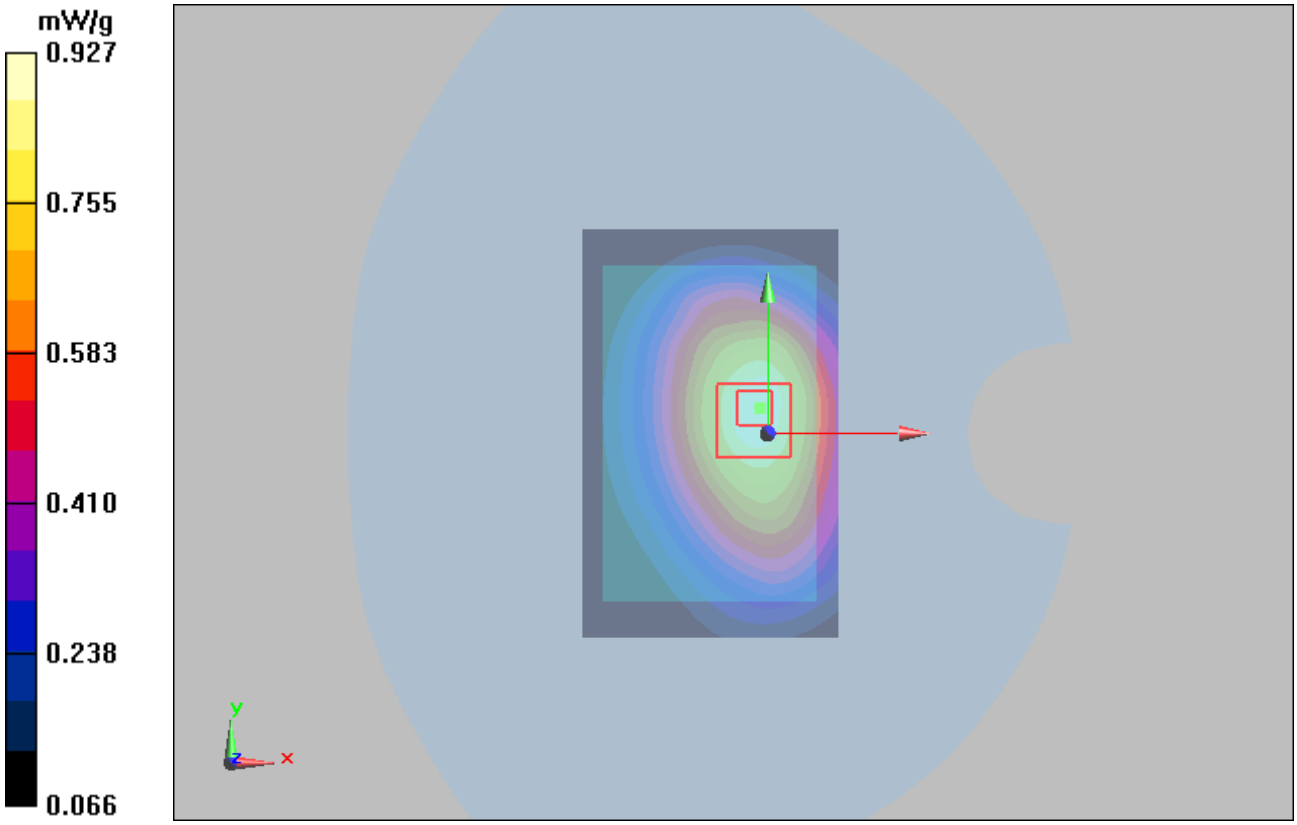


Figure 16 GSM 850 GPRS (2TXslots) with Test Position 2 Channel 190

GSM 850 GPRS (2TXslots) with Test Position 2 Low

Date/Time: 6/7/2013 10:27:37 AM
Communication System: GPRS 2TX ; Frequency: 824.2 MHz;Duty Cycle: 1:4.14954
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.978 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 2 Low/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.841 mW/g

Test Position 2 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.4 V/m; Power Drift = -0.119 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.794 mW/g; SAR(10 g) = 0.561 mW/g
Maximum value of SAR (measured) = 0.845 mW/g

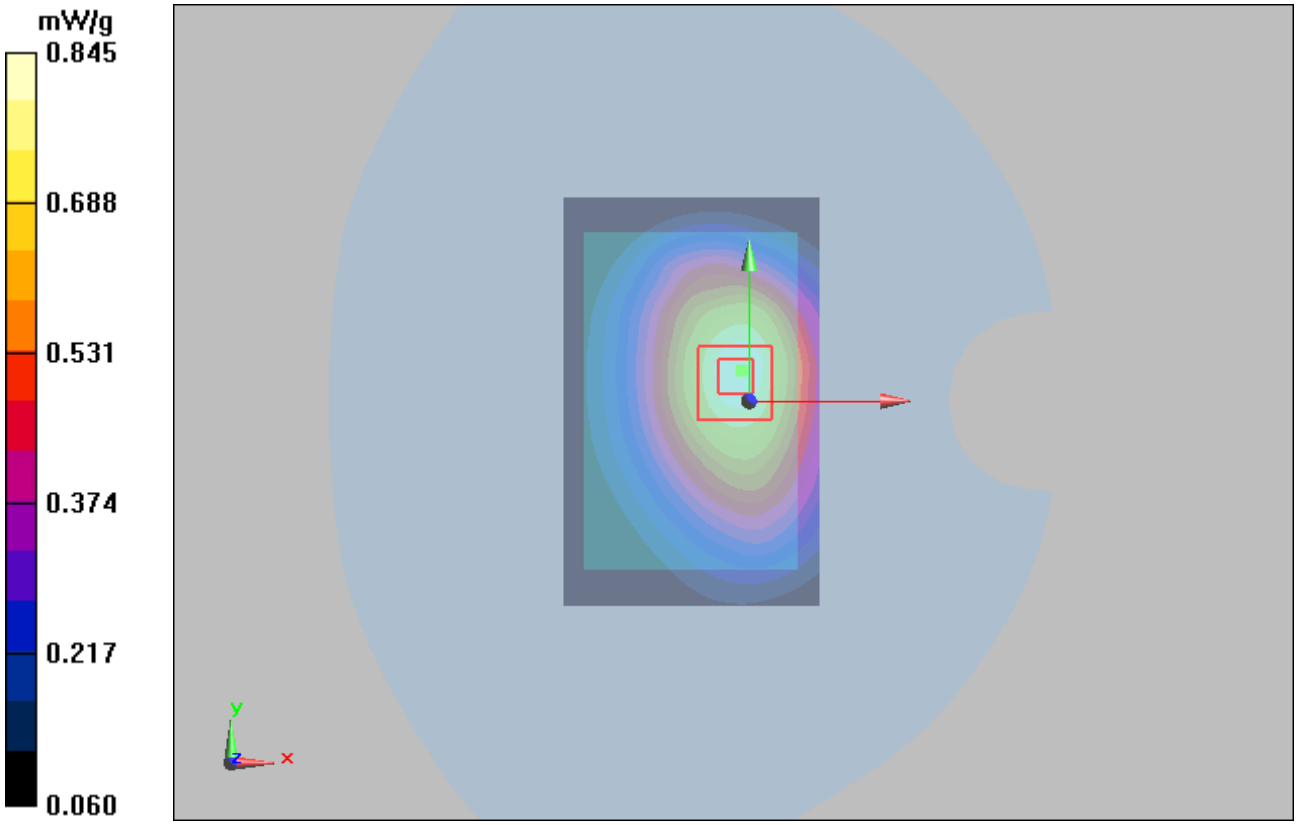


Figure 17 GSM 850 GPRS (2TXslots) with Test Position 2 Channel 128

GSM 850 GPRS (2TXslots) with Test Position 4 Middle

Date/Time: 6/7/2013 11:29:47 AM
Communication System: GPRS 2TX ; Frequency: 836.6 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 837 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 4 Middle/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.057 mW/g

Test Position 4 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.33 V/m; Power Drift = 0.050 dB
Peak SAR (extrapolated) = 0.098 W/kg
SAR(1 g) = 0.056 mW/g; SAR(10 g) = 0.033 mW/g
Maximum value of SAR (measured) = 0.060 mW/g

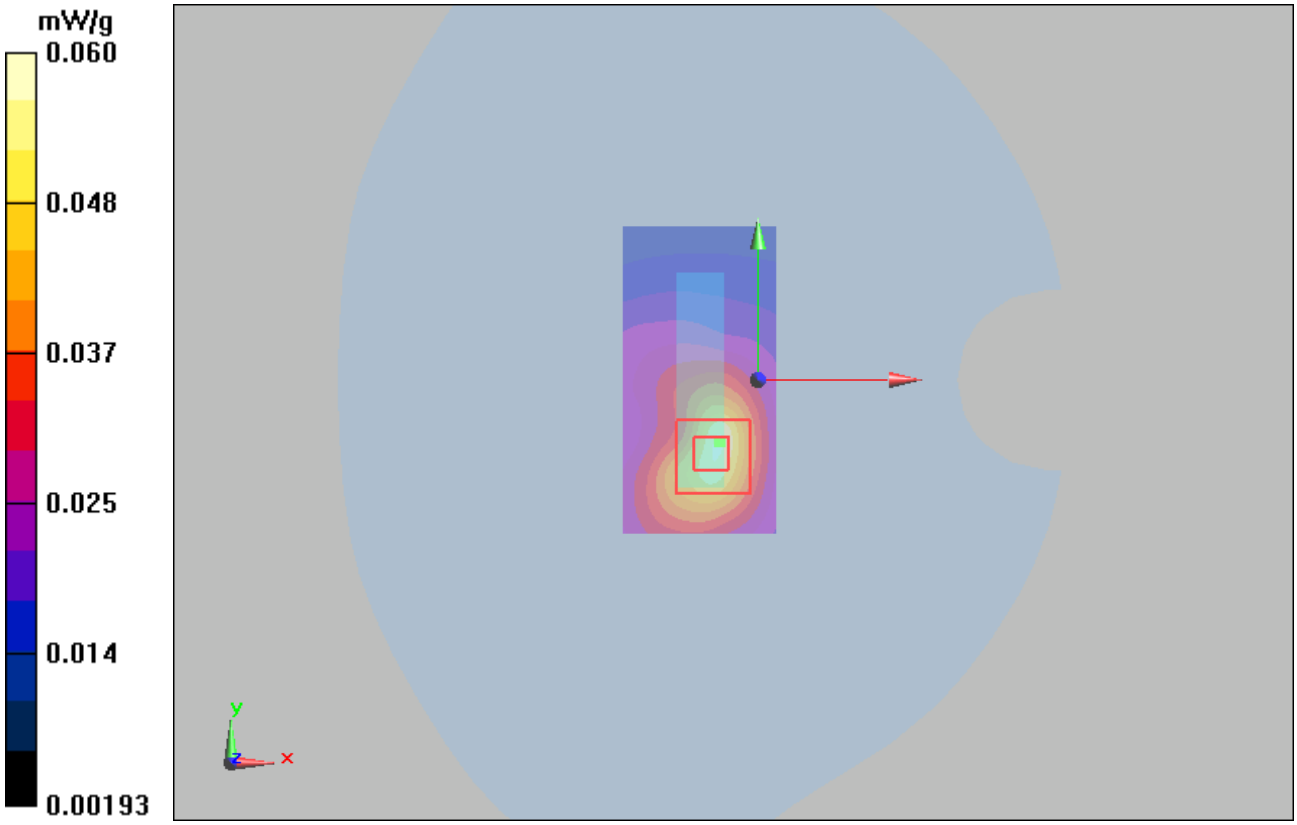


Figure 18 GSM 850 GPRS (2TXslots) with Test Position 4 Channel 190

GSM 850 GPRS (2TXslots) with Test Position 5 Middle

Date/Time: 6/7/2013 10:58:57 AM
Communication System: GPRS 2TX ; Frequency: 836.6 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 837 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 5 Middle/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.285 mW/g

Test Position 5 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.8 V/m; Power Drift = -0.079 dB
Peak SAR (extrapolated) = 0.365 W/kg
SAR(1 g) = 0.268 mW/g; SAR(10 g) = 0.189 mW/g
Maximum value of SAR (measured) = 0.284 mW/g

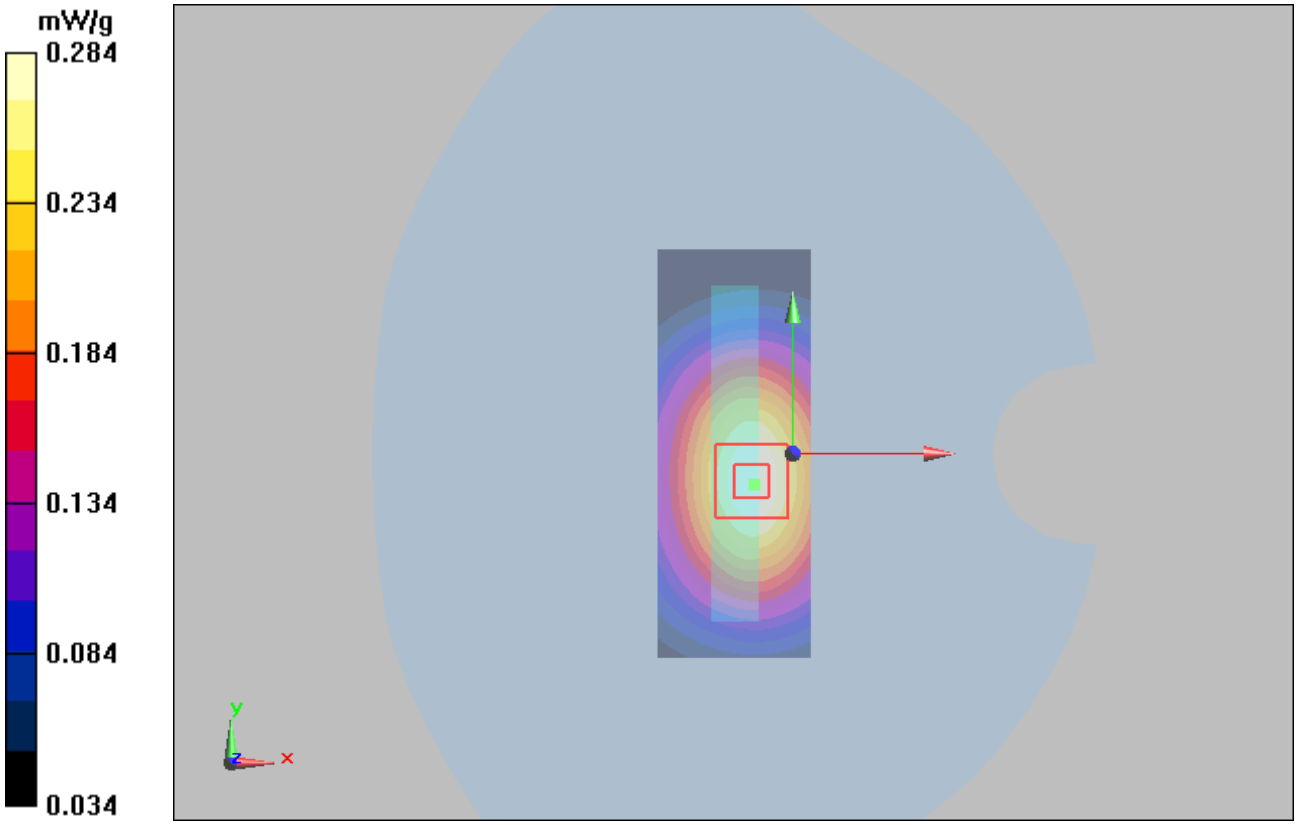


Figure 19 GSM 850 GPRS (2TXslots) with Test Position 5 Channel 190

GSM 850 GPRS (2TXslots) with Test Position 6 Middle

Date/Time: 6/7/2013 11:11:58 AM
Communication System: GPRS 2TX ; Frequency: 836.6 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 837 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 6 Middle/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.439 mW/g

Test Position 6 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.7 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 0.564 W/kg
SAR(1 g) = 0.406 mW/g; SAR(10 g) = 0.279 mW/g
Maximum value of SAR (measured) = 0.432 mW/g

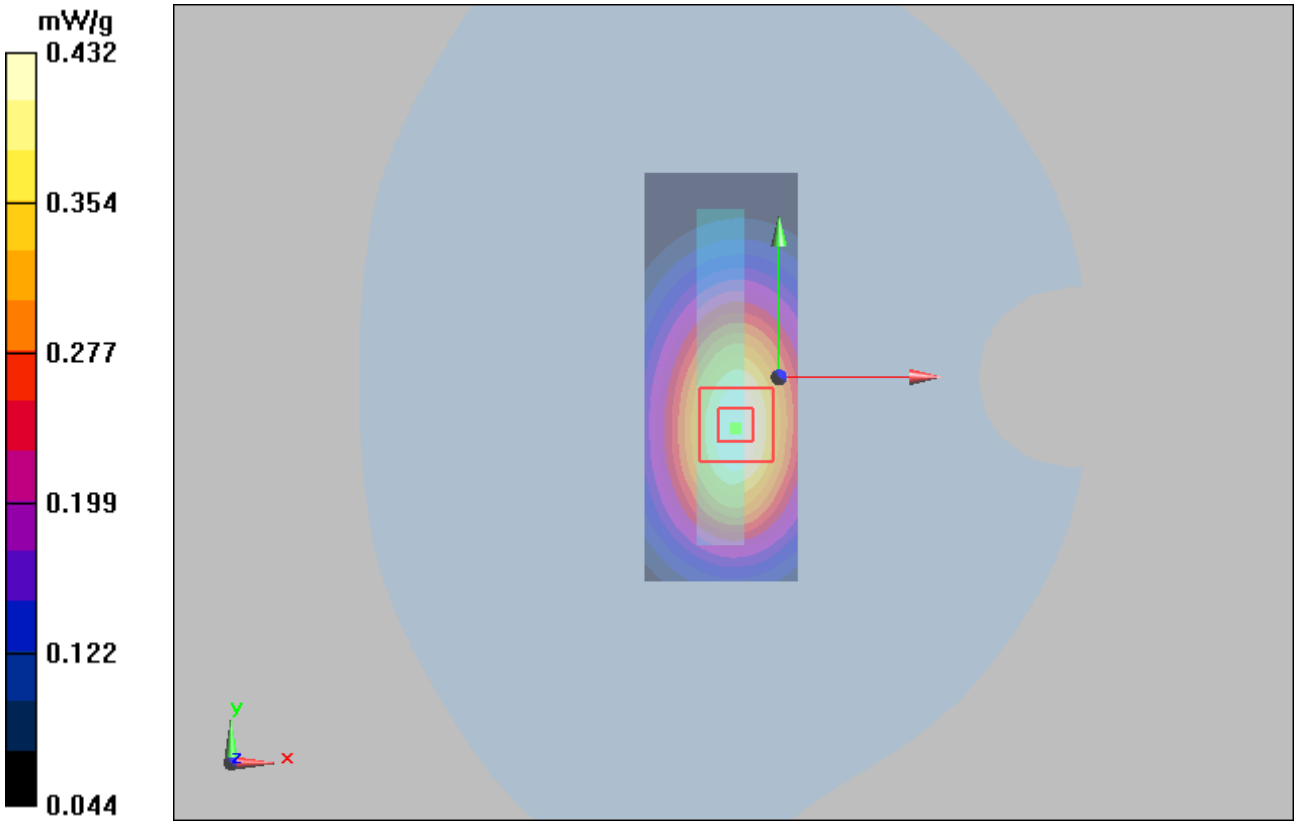


Figure 20 GSM 850 GPRS (2TXslots) with Test Position 6 Channel 190

GSM 850 EGPRS (2TXslots) with Test Position 1 High

Date/Time: 6/7/2013 12:54:48 PM
Communication System: EGPRS 2TX; Frequency: 848.8 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 55.7; 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: EX3DV4 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.04 mW/g

Test Position 1 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.7 V/m; Power Drift = -0.054 dB
Peak SAR (extrapolated) = 1.3 W/kg
SAR(1 g) = 0.967 mW/g; SAR(10 g) = 0.689 mW/g
Maximum value of SAR (measured) = 1.02 mW/g

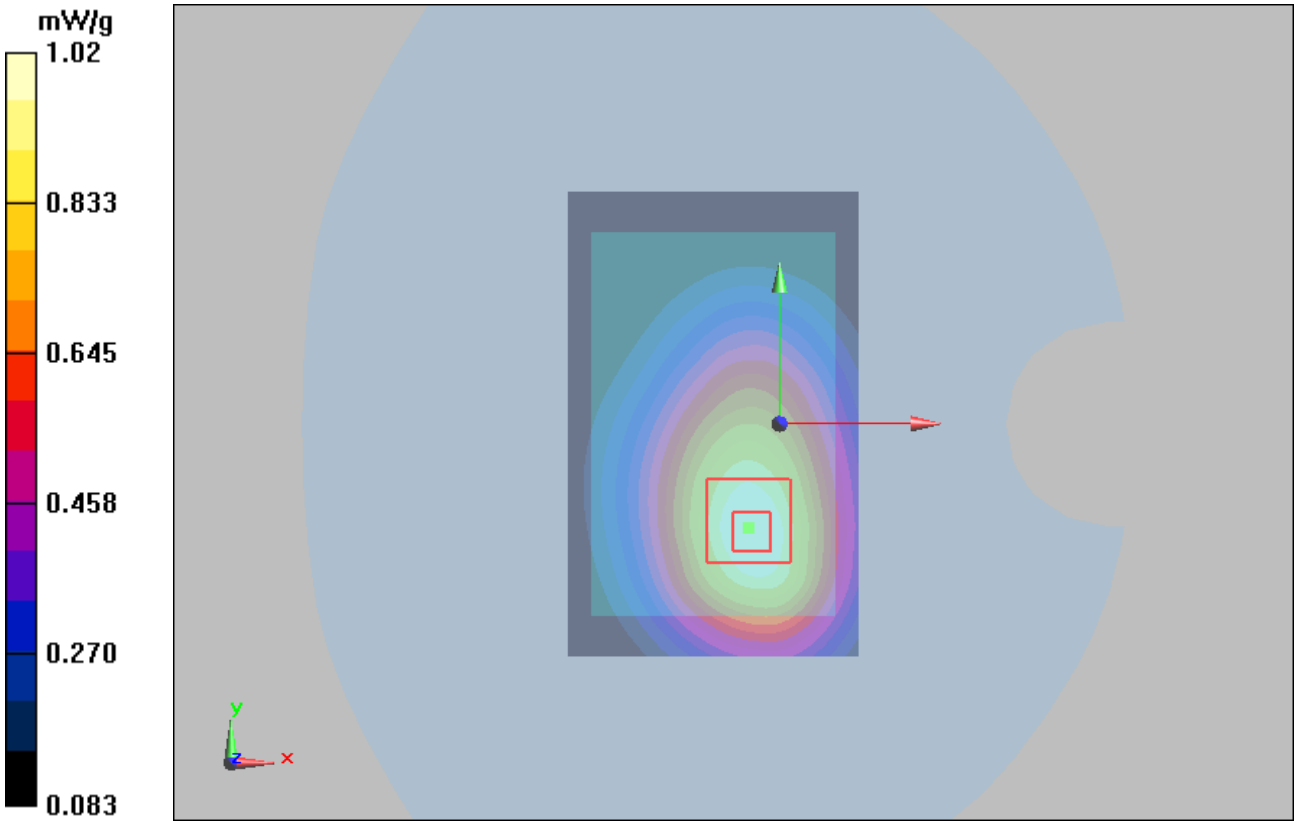


Figure 21 GSM 850 EGPRS (2TXslots) with Test Position 1 Channel 251

GSM 850 GPRS (2TXslots) with Test Position 1 High(Battery 2)

Date/Time: 6/7/2013 12:12:37 PM
Communication System: GPRS 2TX ; Frequency: 848.8 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 55.7; 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: EX3DV4 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.05 mW/g

Test Position 1 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.8 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.975 mW/g; SAR(10 g) = 0.693 mW/g
Maximum value of SAR (measured) = 1.03 mW/g

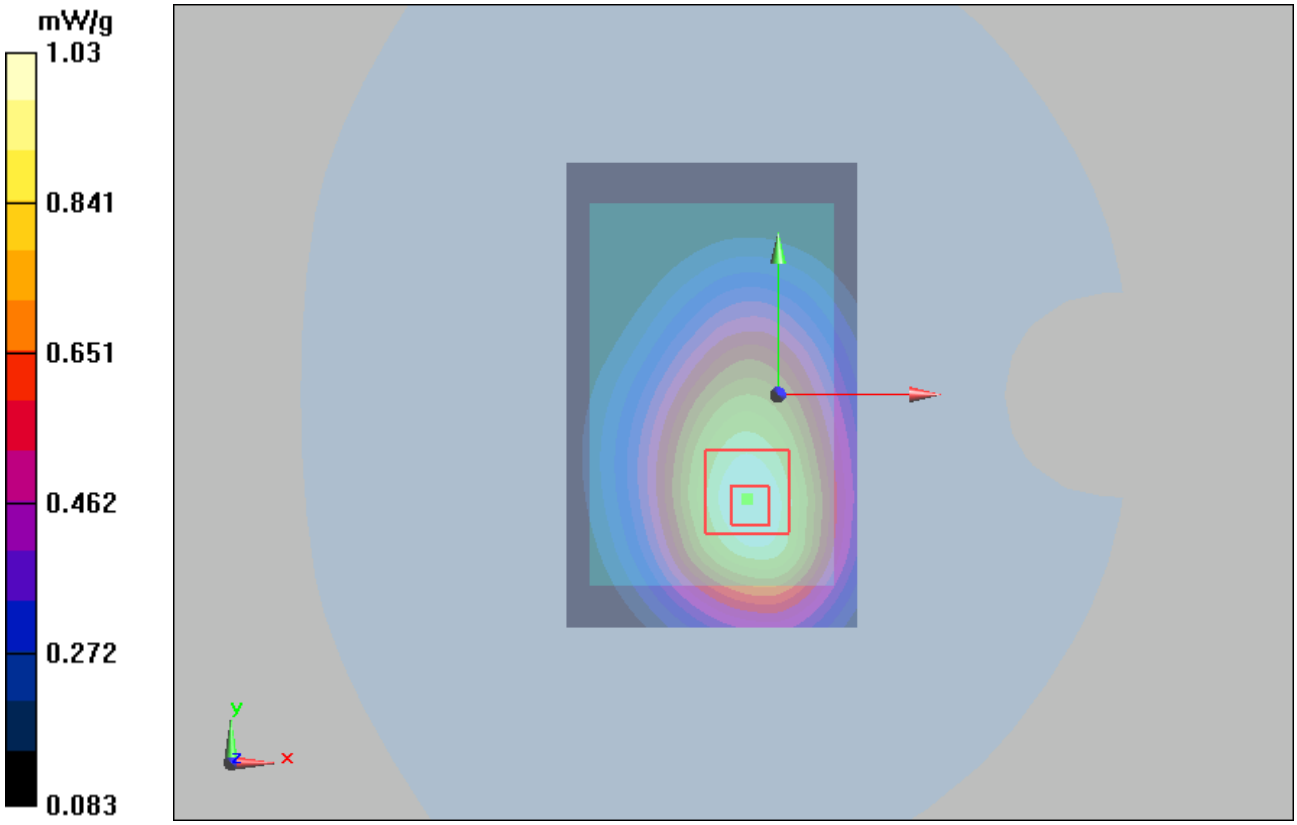


Figure 22 GSM 850 GPRS (2TXslots) with Test Position 1 Channel 251

GSM 850 GPRS (2TXslots) with Test Position 1 High(battery 3)

Date/Time: 6/7/2013 12:40:47 PM

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

Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 55.7; 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: EX3DV4 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013

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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

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

Test Position 1 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 26.8 V/m; Power Drift = -0.058 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 0.972 mW/g; SAR(10 g) = 0.690 mW/g

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

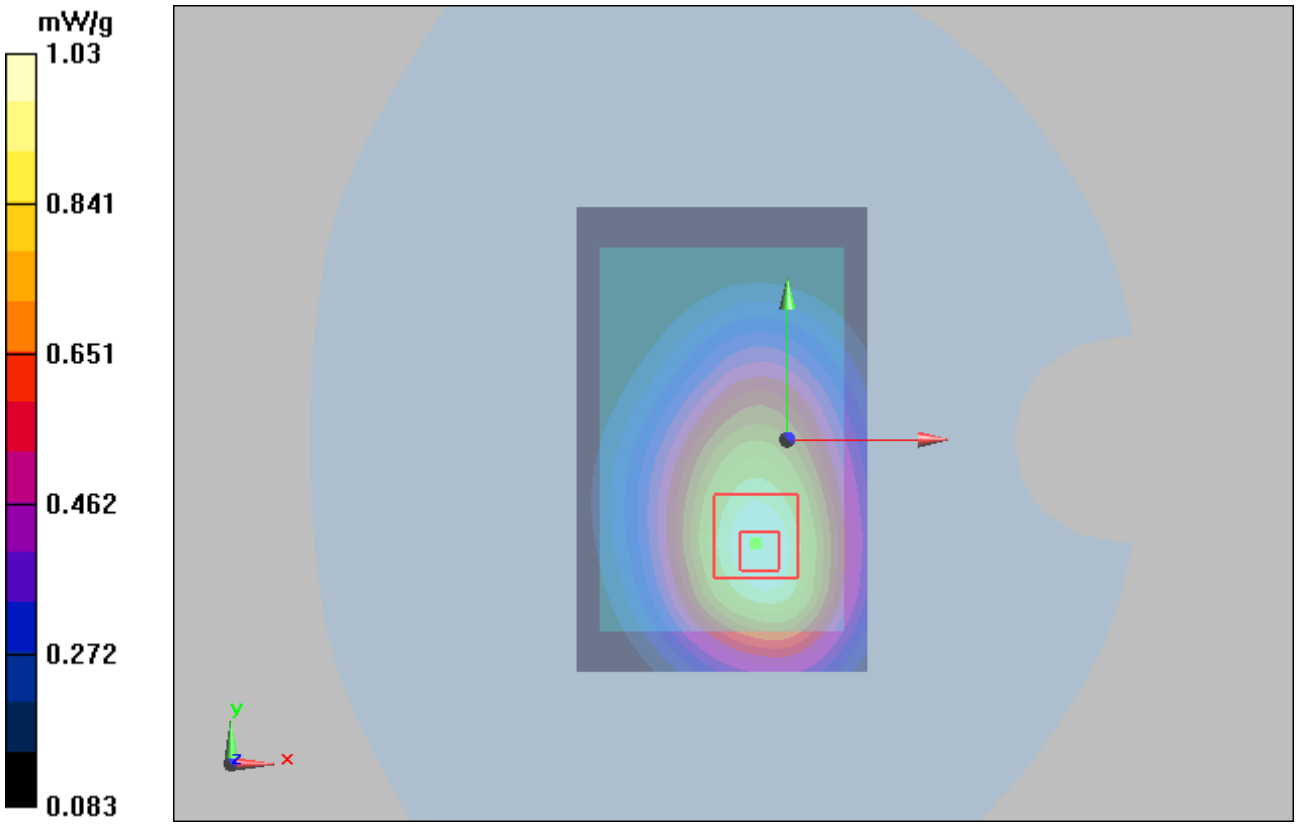


Figure 23 GSM 850 GPRS (2TXslots) with Test Position 1 Channel 251

GSM 850 GPRS (2TXslots) with Test Position 1 High(battery 4)

Date/Time: 6/7/2013 12:26:47 PM
Communication System: GPRS 2TX ; Frequency: 848.8 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 55.7; 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: EX3DV4 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.05 mW/g

Test Position 1 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.7 V/m; Power Drift = -0.019 dB
Peak SAR (extrapolated) = 1.3 W/kg
SAR(1 g) = 0.972 mW/g; SAR(10 g) = 0.690 mW/g
Maximum value of SAR (measured) = 1.03 mW/g

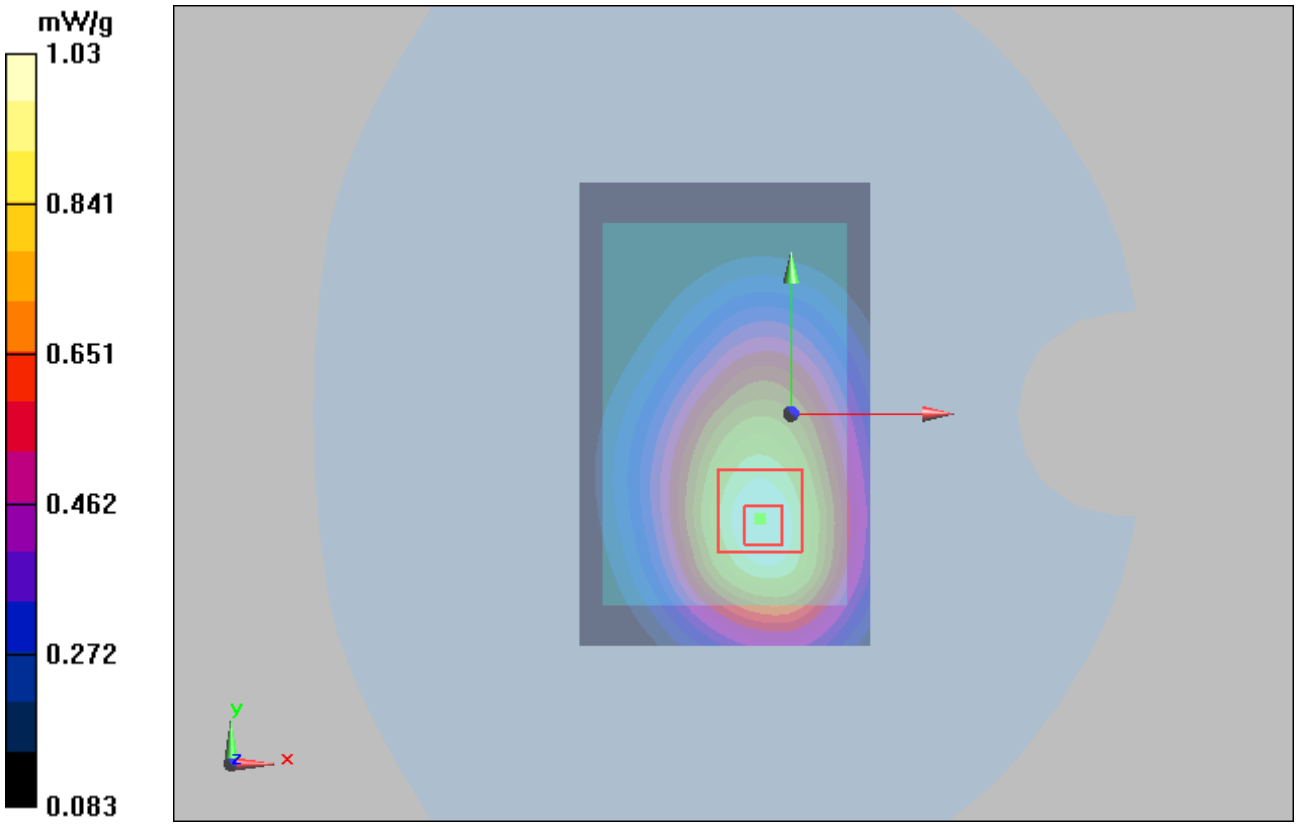


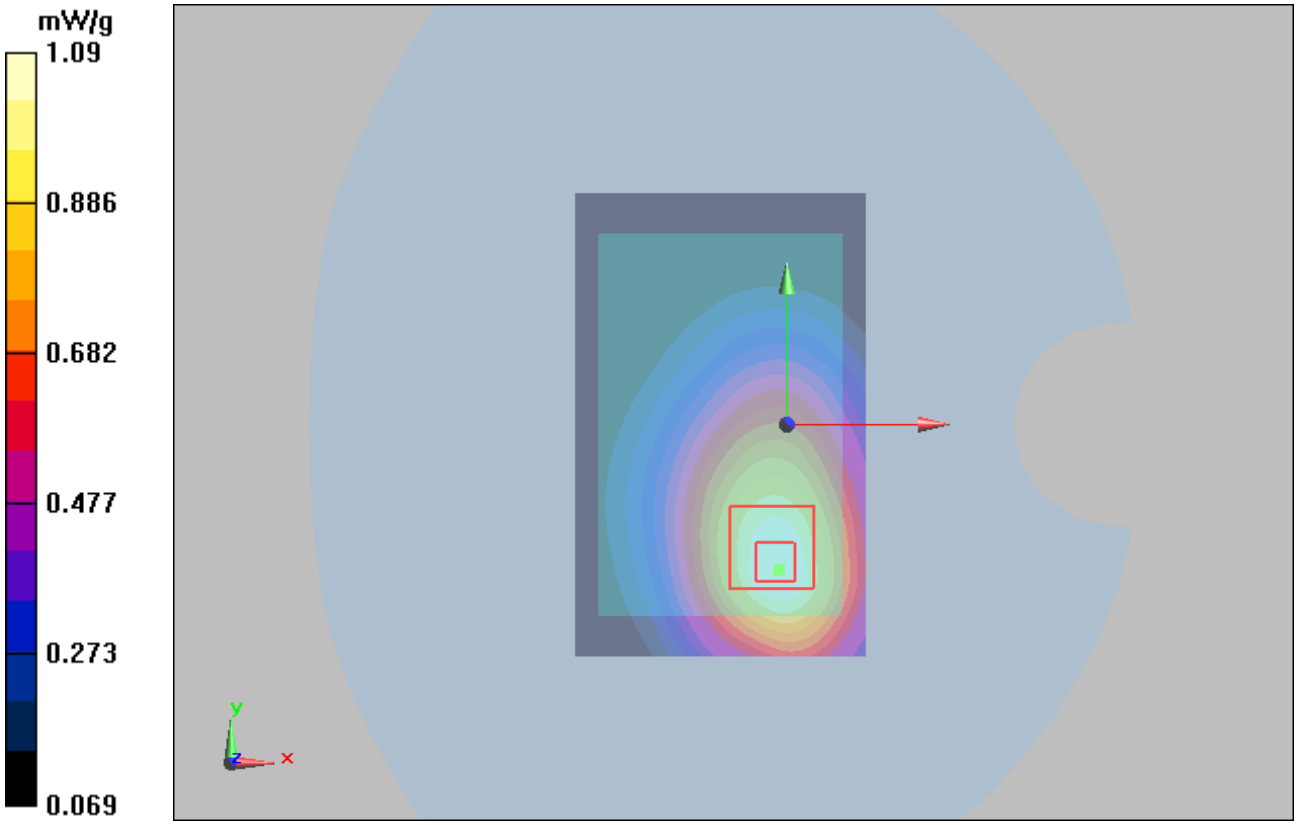
Figure 24 GSM 850 GPRS (2TXslots) with Test Position 1 Channel 251

GSM 850 GPRS (2TXslots) with Repeateded SAR Test Position 1 High

Date/Time: 6/7/2013 11:48:05 AM
Communication System: GPRS 2TX ; Frequency: 848.8 MHz;Duty Cycle: 1:4.14954
Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 55.7; 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: EX3DV4 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 Repeated SAR High/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.11 mW/g

Test Position 1 Repeated SAR High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.8 V/m; Power Drift = -0.098 dB
Peak SAR (extrapolated) = 1.4 W/kg
SAR(1 g) = 1.020 mW/g; SAR(10 g) = 0.724 mW/g
Maximum value of SAR (measured) = 1.09 mW/g



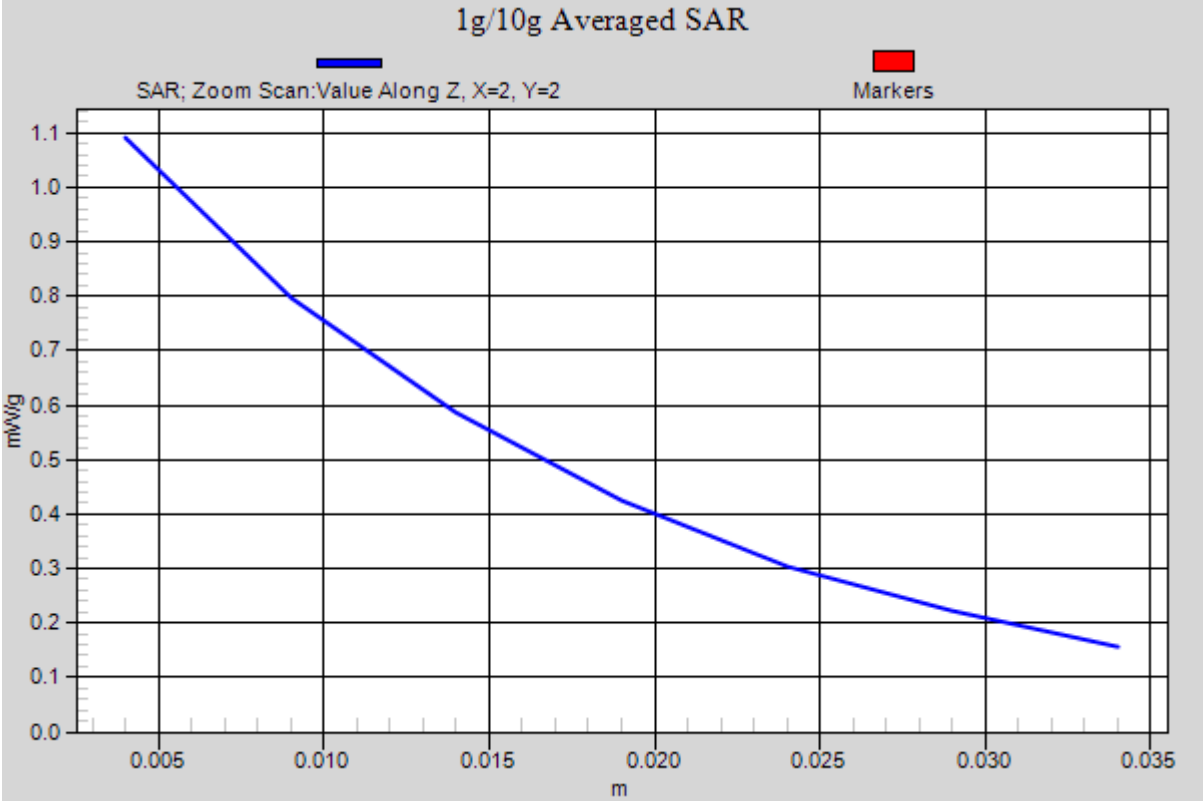


Figure 25 GSM 850 GPRS (2TXslots) with Test Position 1 Channel 251

GSM 1900 GPRS (2TXslots) with Test Position 1 Middle

Date/Time: 6/8/2013 9:21:31 AM
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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013
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

Test Position 1 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.432 mW/g

Test Position 1 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.8 V/m; Power Drift = 0.081 dB
Peak SAR (extrapolated) = 0.682 W/kg
SAR(1 g) = 0.385 mW/g; SAR(10 g) = 0.208 mW/g
Maximum value of SAR (measured) = 0.428 mW/g

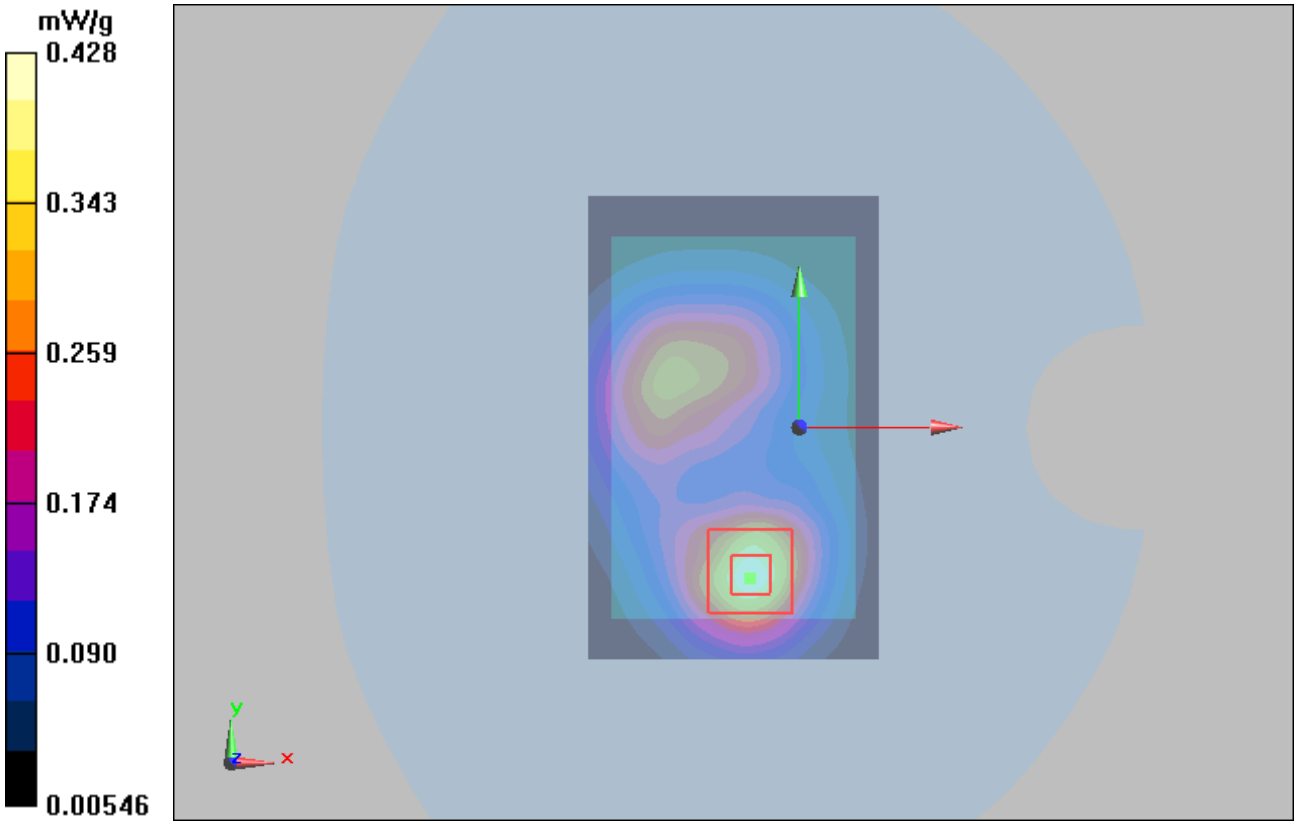


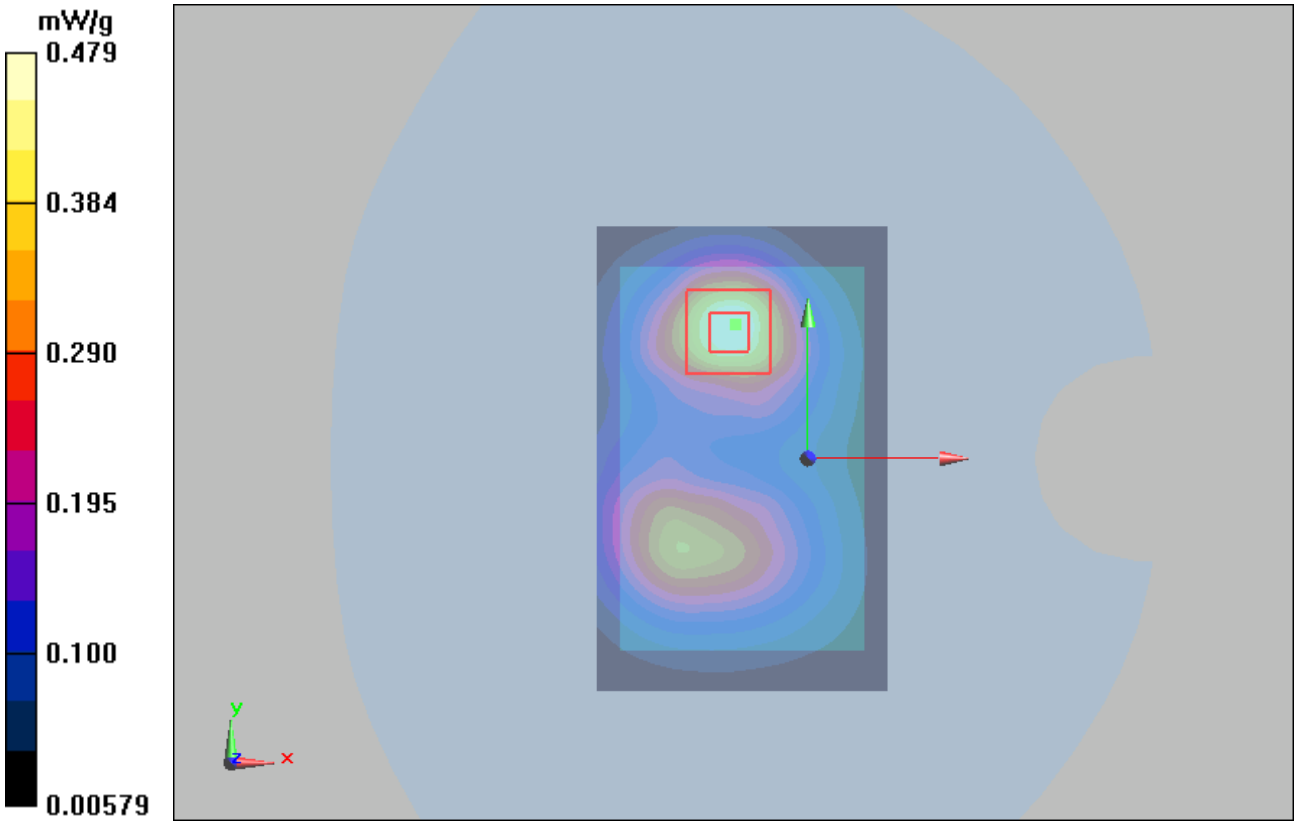
Figure 26 GSM 1900 GPRS (2TXslots) with Test Position 1 Channel 661

GSM 1900 GPRS (2TXslots) with Test Position 2 Middle

Date/Time: 6/8/2013 9:37:28 AM
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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.499 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.2 V/m; Power Drift = 0.054 dB
Peak SAR (extrapolated) = 0.753 W/kg
SAR(1 g) = 0.442 mW/g; SAR(10 g) = 0.247 mW/g
Maximum value of SAR (measured) = 0.479 mW/g



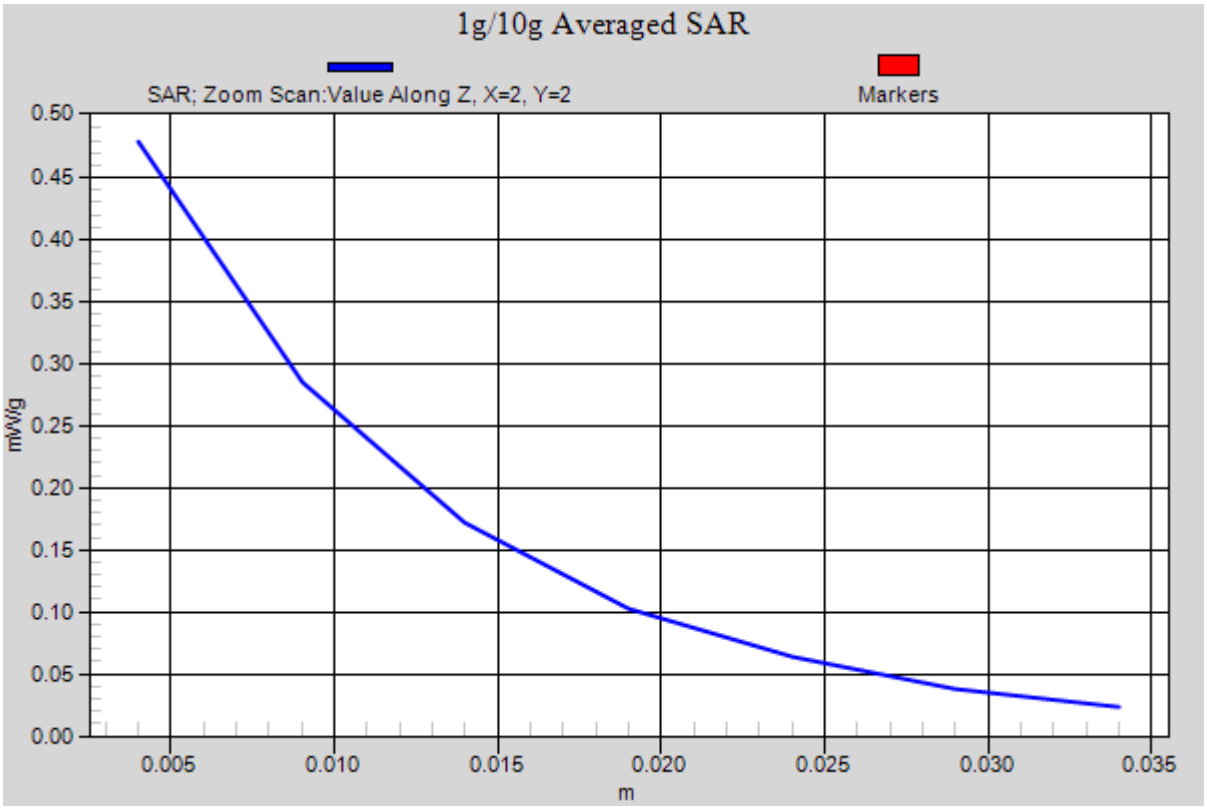


Figure 27 GSM 1900 GPRS (2TXslots) with Test Position 2 Channel 661

GSM 1900 GPRS (2TXslots) with Test Position 4 Middle

Date/Time: 6/8/2013 10:04:17 AM
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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013
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

Test Position 4 Middle/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.246 mW/g

Test Position 4 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.7 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 0.311 W/kg
SAR(1 g) = 0.186 mW/g; SAR(10 g) = 0.111 mW/g
Maximum value of SAR (measured) = 0.200 mW/g

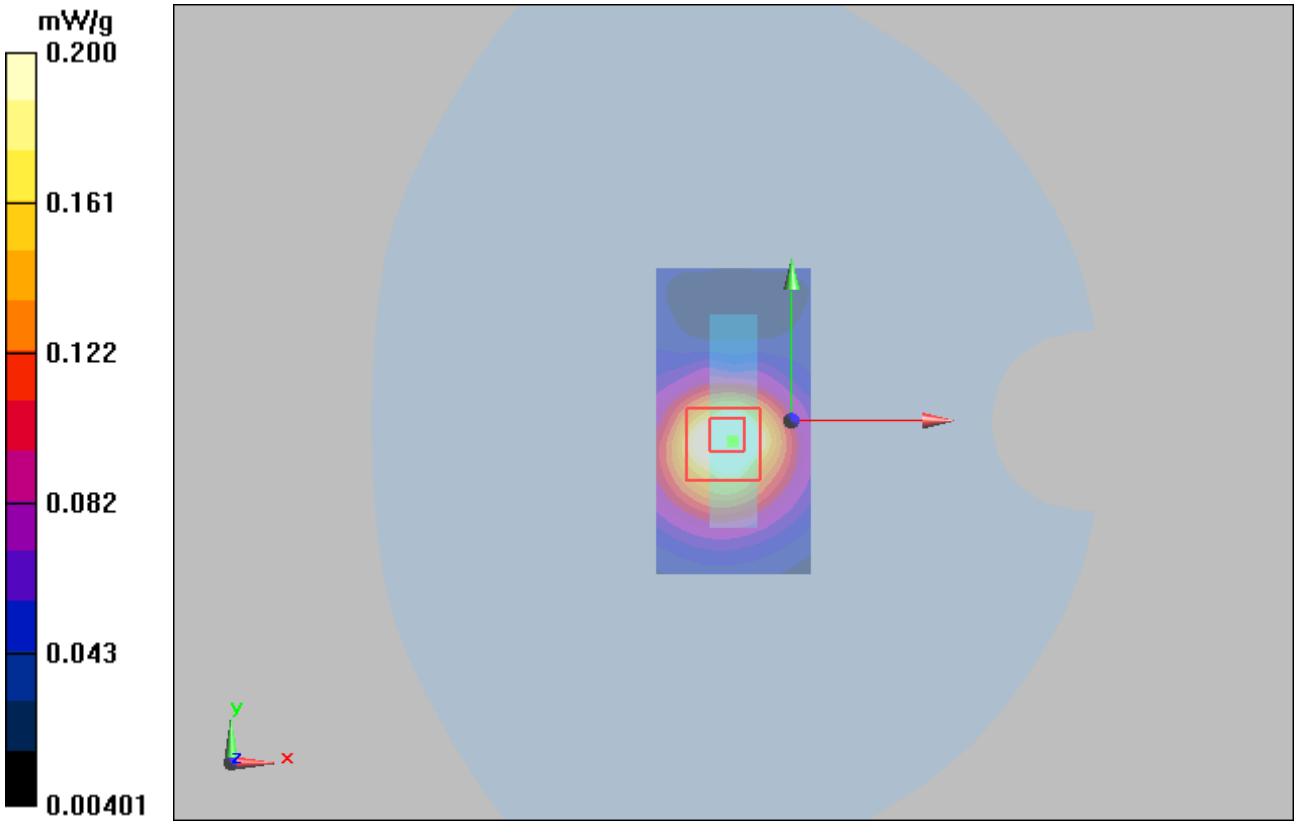


Figure 28 GSM 1900 GPRS (2TXslots) with Test Position 4 Channel 661

GSM 1900 GPRS (2TXslots) with Test Position 5 Middle

Date/Time: 6/8/2013 8:01:44 AM
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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013
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

Test Position 5 Middle/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.105 mW/g

Test Position 5 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.03 V/m; Power Drift = 0.117 dB
Peak SAR (extrapolated) = 0.146 W/kg
SAR(1 g) = 0.091 mW/g; SAR(10 g) = 0.055 mW/g
Maximum value of SAR (measured) = 0.097 mW/g

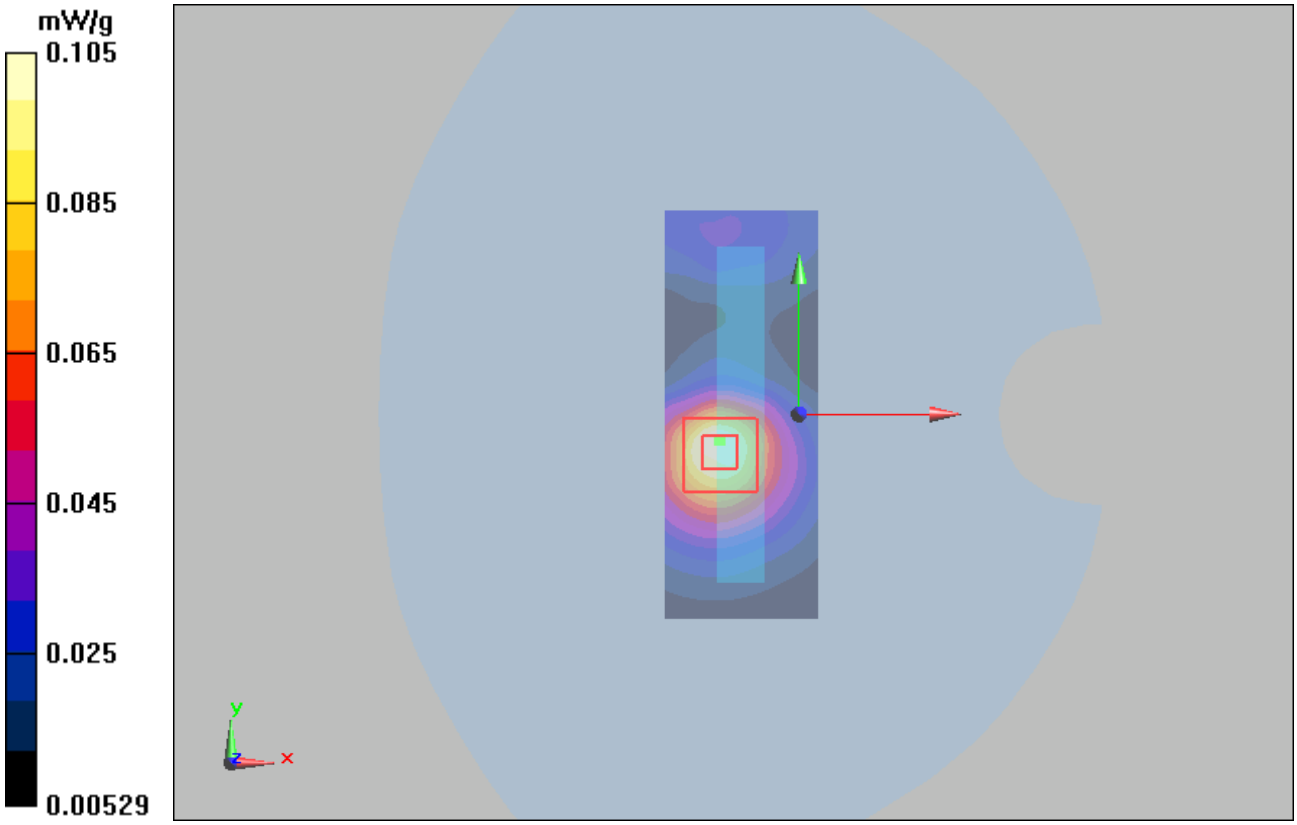


Figure 29 GSM 1900 GPRS (2TXslots) with Test Position 5 Channel 661

GSM 1900 GPRS (2TXslots) with Test Position 6 Middle

Date/Time: 6/8/2013 9:51:00 AM
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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013
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

Test Position 6 Middle/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.291 mW/g

Test Position 6 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.2 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 0.408 W/kg
SAR(1 g) = 0.252 mW/g; SAR(10 g) = 0.148 mW/g
Maximum value of SAR (measured) = 0.275 mW/g

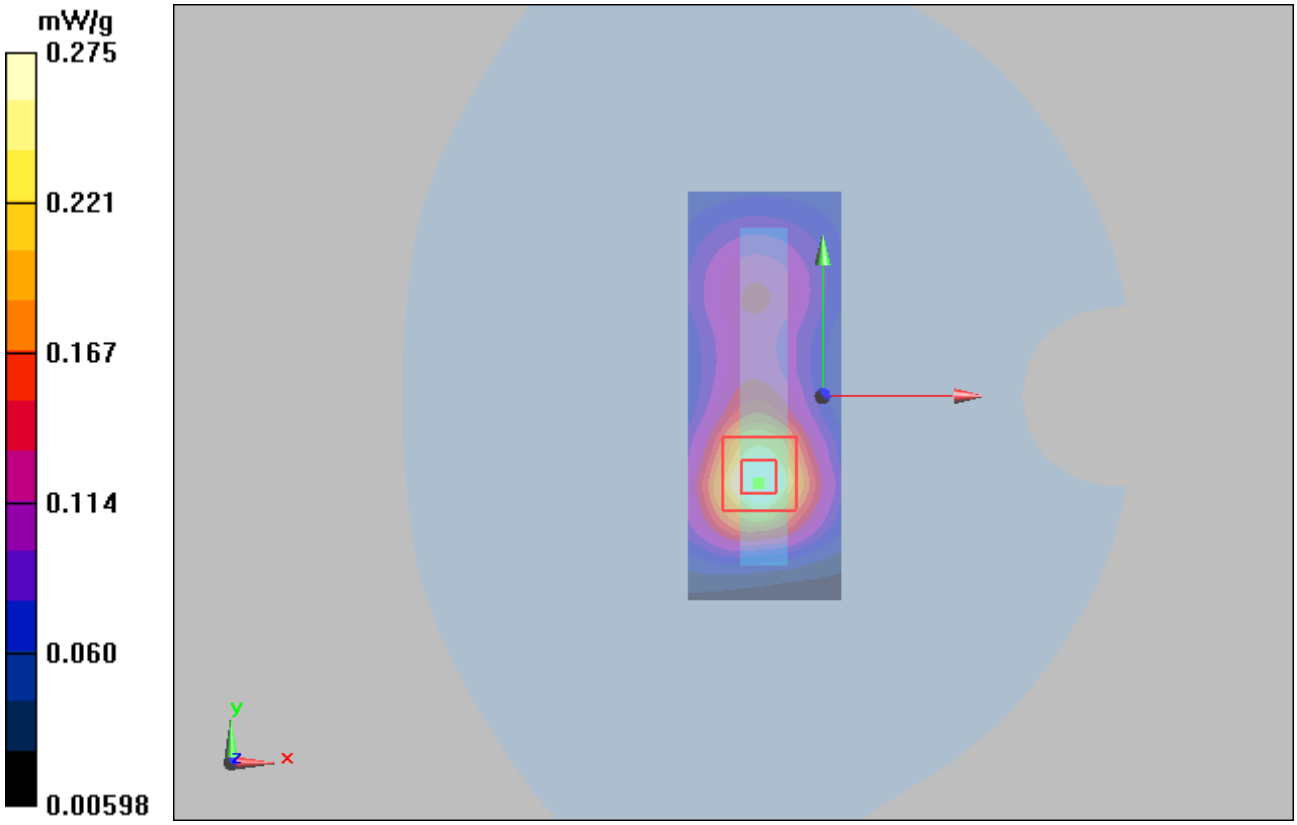


Figure 30 GSM 1900 GPRS (2TXslots) with Test Position 6 Channel 661

GSM 1900 EGPRS (2TXslots) with Test Position 2 Low

Date/Time: 6/8/2013 10:20:32 AM
Communication System: EGPRS 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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.478 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.5 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 0.718 W/kg
SAR(1 g) = 0.422 mW/g; SAR(10 g) = 0.237 mW/g
Maximum value of SAR (measured) = 0.460 mW/g

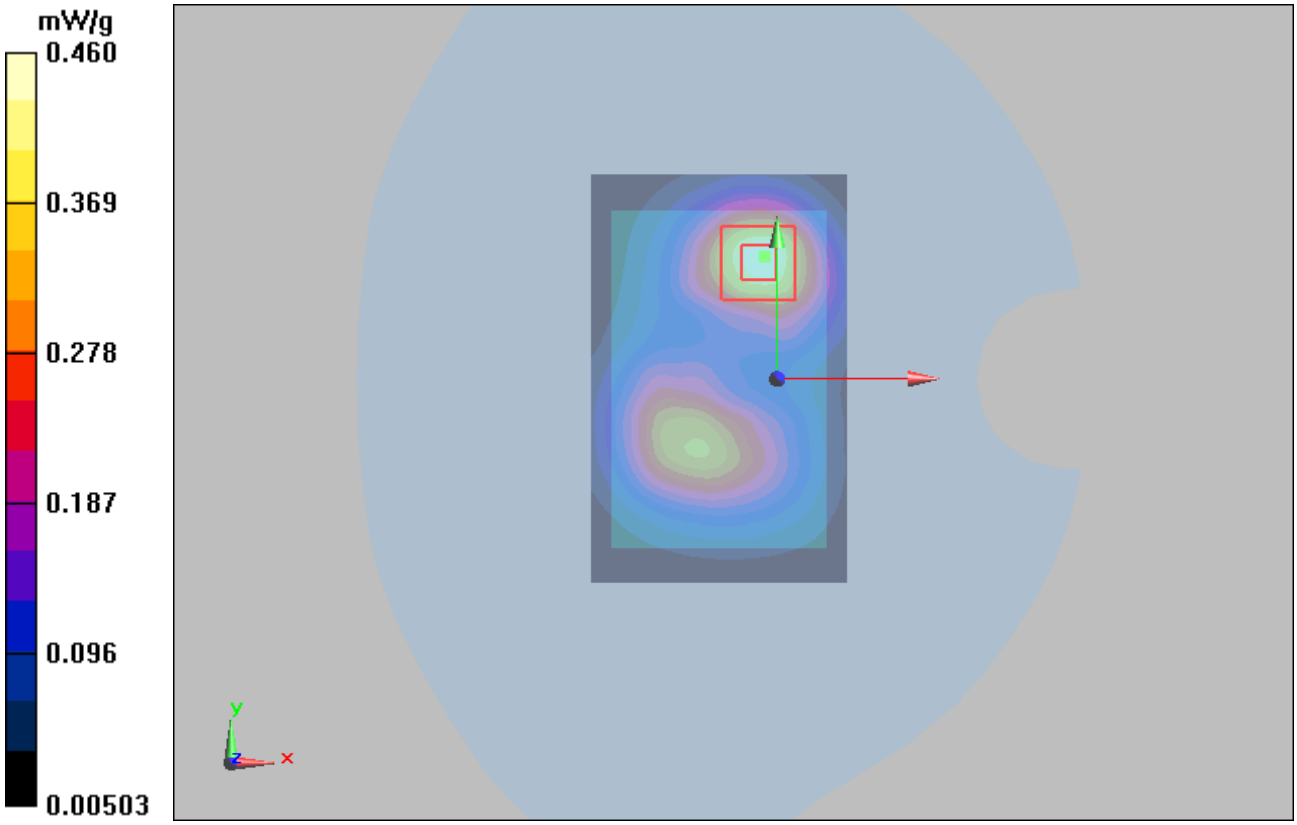


Figure 31 GSM 1900 EGPRS (2TXslots) with Test Position 2 Channel 661

GSM 1900 GPRS (2TXslots) with Test Position 2 Middle(battery 2)

Date/Time: 6/8/2013 10:38:49 AM
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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.478 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = 0.057 dB
Peak SAR (extrapolated) = 0.714 W/kg
SAR(1 g) = 0.421 mW/g; SAR(10 g) = 0.236 mW/g
Maximum value of SAR (measured) = 0.459 mW/g

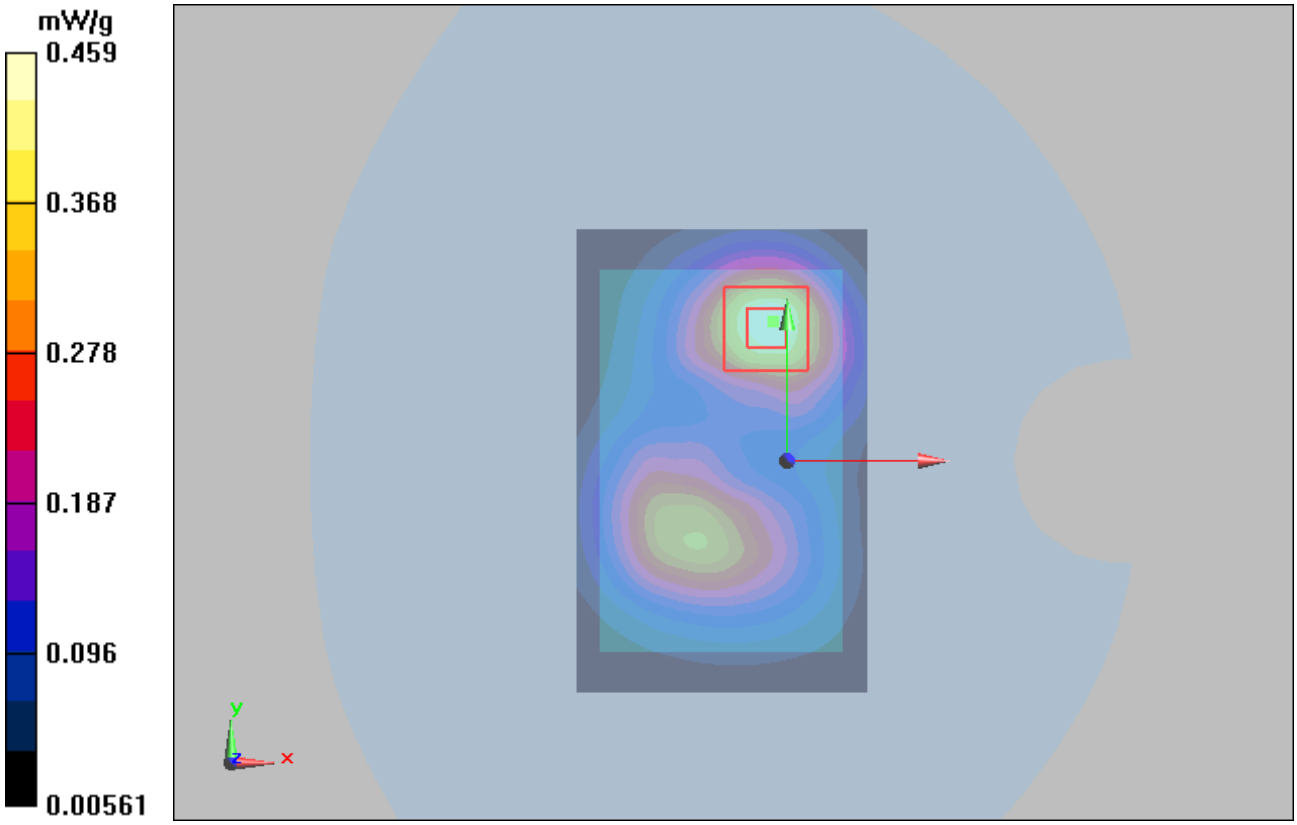


Figure 32 GSM 1900 GPRS (2TXslots) with Test Position 2 Channel 661

GSM 1900 GPRS (2TXslots) with Test Position 2 Middle(battery 3)

Date/Time: 6/8/2013 10:54:07 AM
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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.480 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.17 V/m; Power Drift = 0.122 dB
Peak SAR (extrapolated) = 0.719 W/kg
SAR(1 g) = 0.424 mW/g; SAR(10 g) = 0.237 mW/g
Maximum value of SAR (measured) = 0.461 mW/g

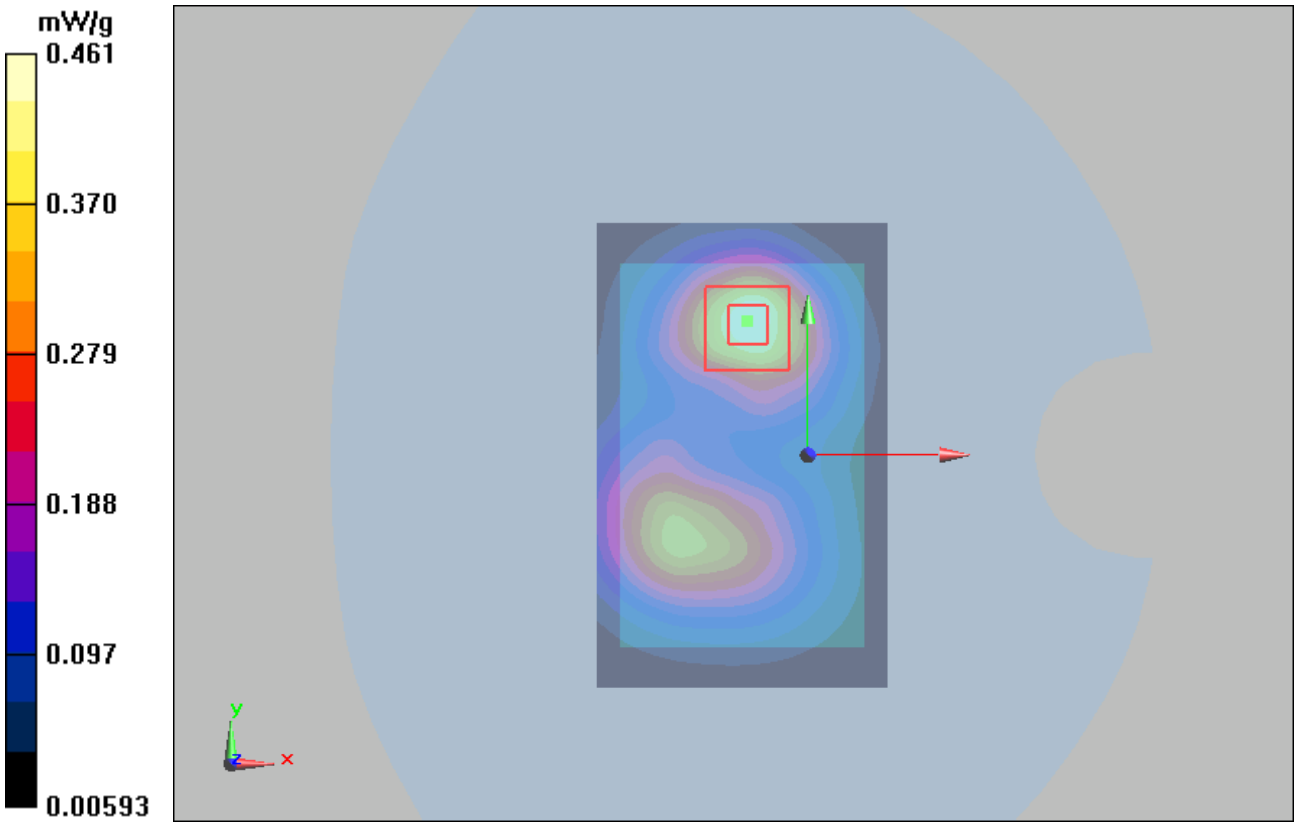


Figure 33 GSM 1900 GPRS (2TXslots) with Test Position 2 Channel 661

GSM 1900 GPRS (2TXslots) with Test Position 2 Middle(battery 4)

Date/Time: 6/8/2013 11:08:51 AM
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: EX3DV4 - SN3753; ConvF(7.33, 7.33, 7.33); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.477 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.14 V/m; Power Drift = 0.135 dB
Peak SAR (extrapolated) = 0.722 W/kg
SAR(1 g) = 0.424 mW/g; SAR(10 g) = 0.237 mW/g
Maximum value of SAR (measured) = 0.465 mW/g

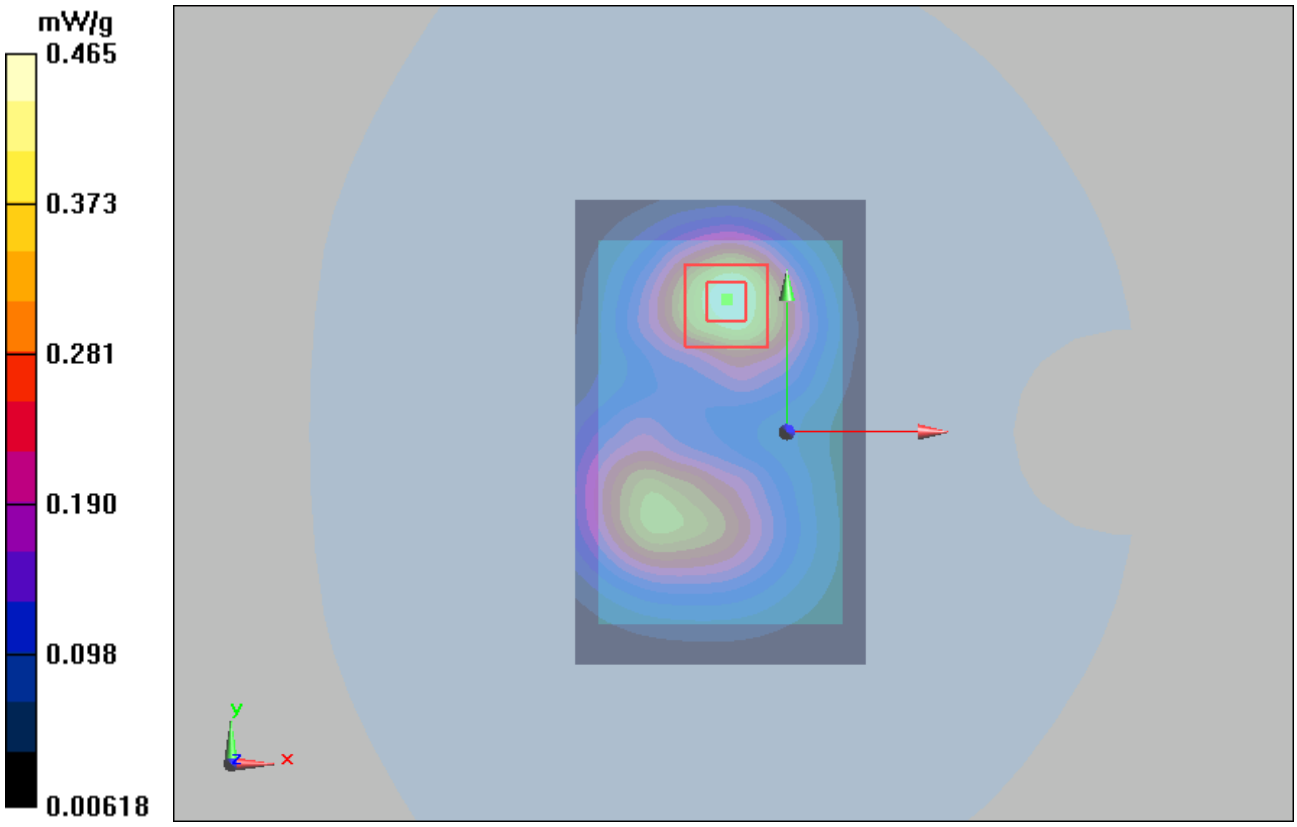


Figure 34 GSM 1900 GPRS (2TXslots) with Test Position 2 Channel 661

UMTS Band V with Test Position 1 High

Date/Time: 6/7/2013 1:53:27 PM
Communication System: WCDMA ; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; σ = 1 mho/m; ε_r = 55.8; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.946 mW/g

Test Position 1 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.2 V/m; Power Drift = -0.121 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.859 mW/g; SAR(10 g) = 0.617 mW/g
Maximum value of SAR (measured) = 0.906 mW/g

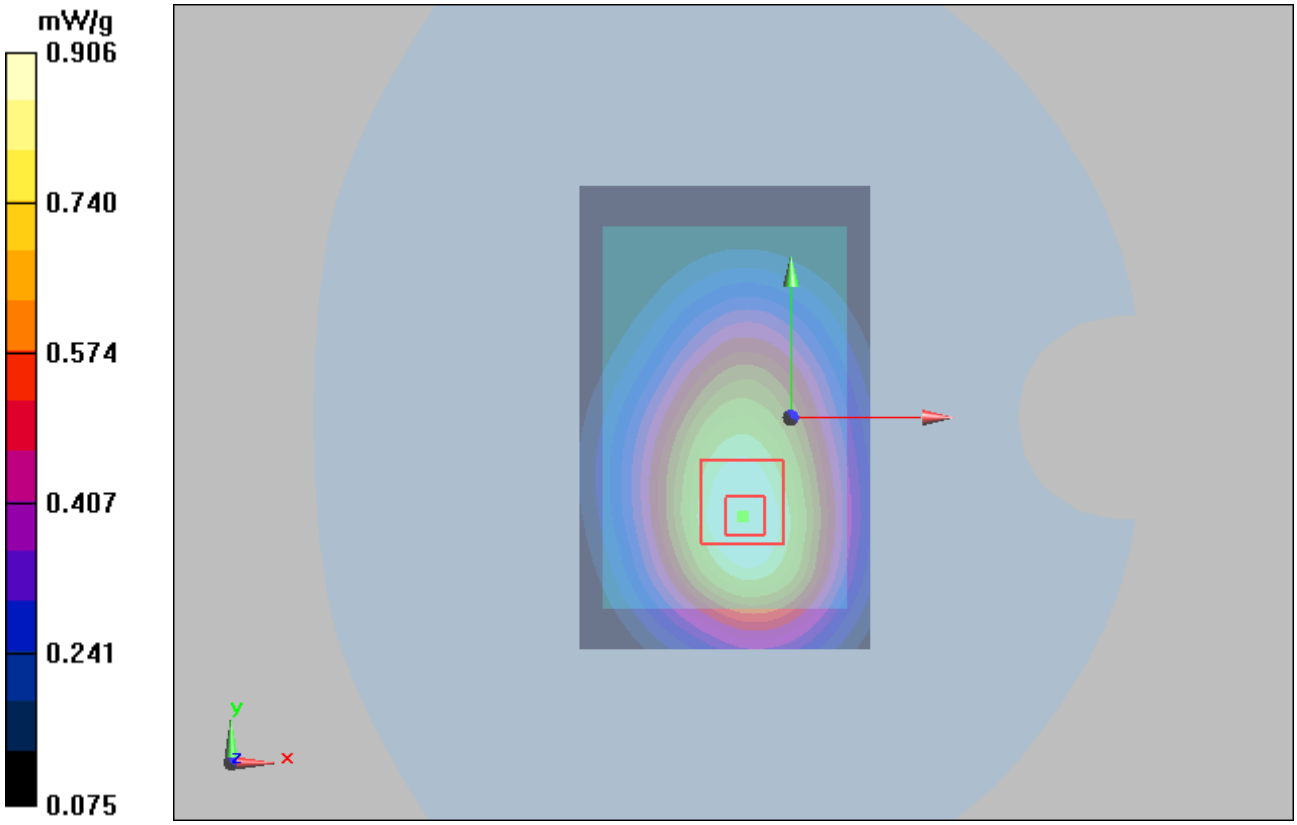


Figure 35 UMTS Band V with Test Position 1 Channel 4233

UMTS Band V with Test Position 1 Middle

Date/Time: 6/7/2013 1:18:35 PM
Communication System: WCDMA ; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.880 mW/g

Test Position 1 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.2 V/m; Power Drift = 0.023 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.828 mW/g; SAR(10 g) = 0.585 mW/g
Maximum value of SAR (measured) = 0.875 mW/g

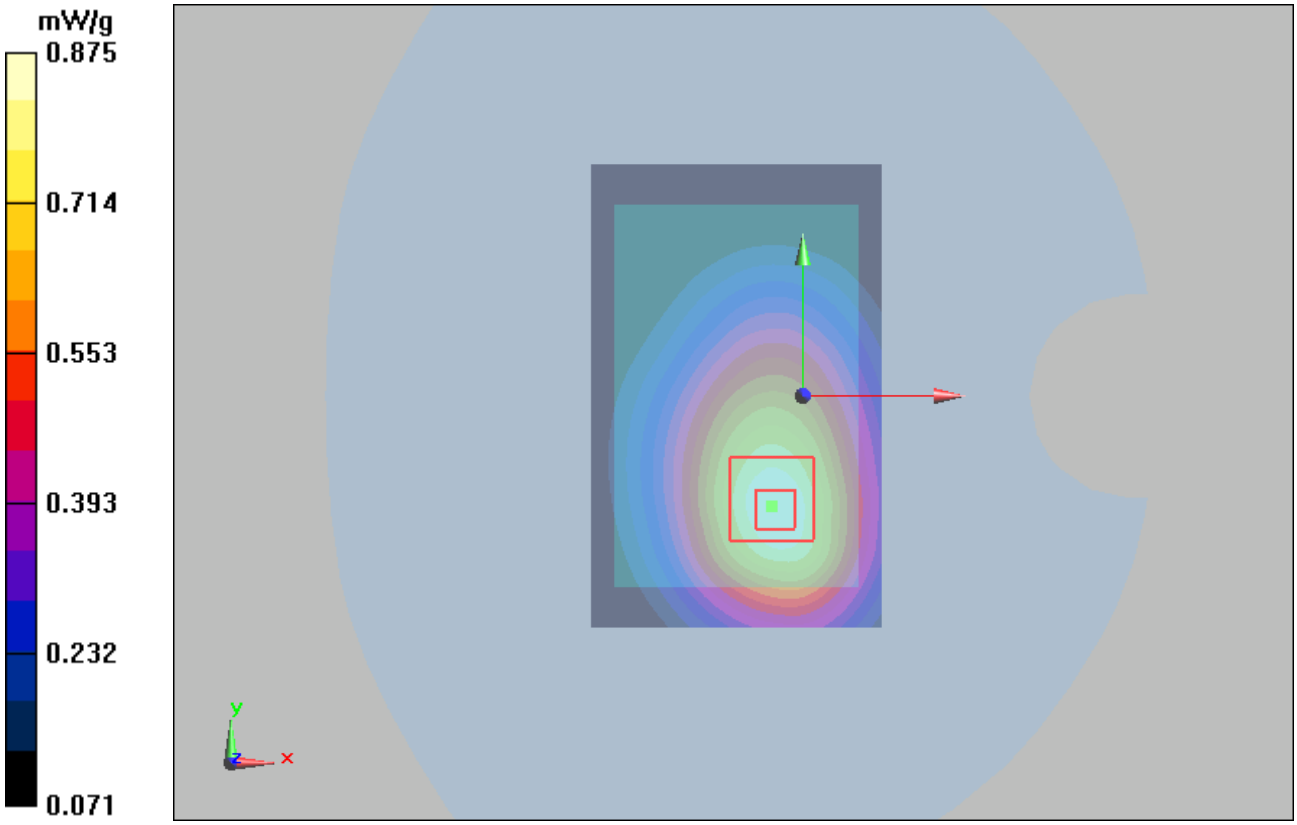


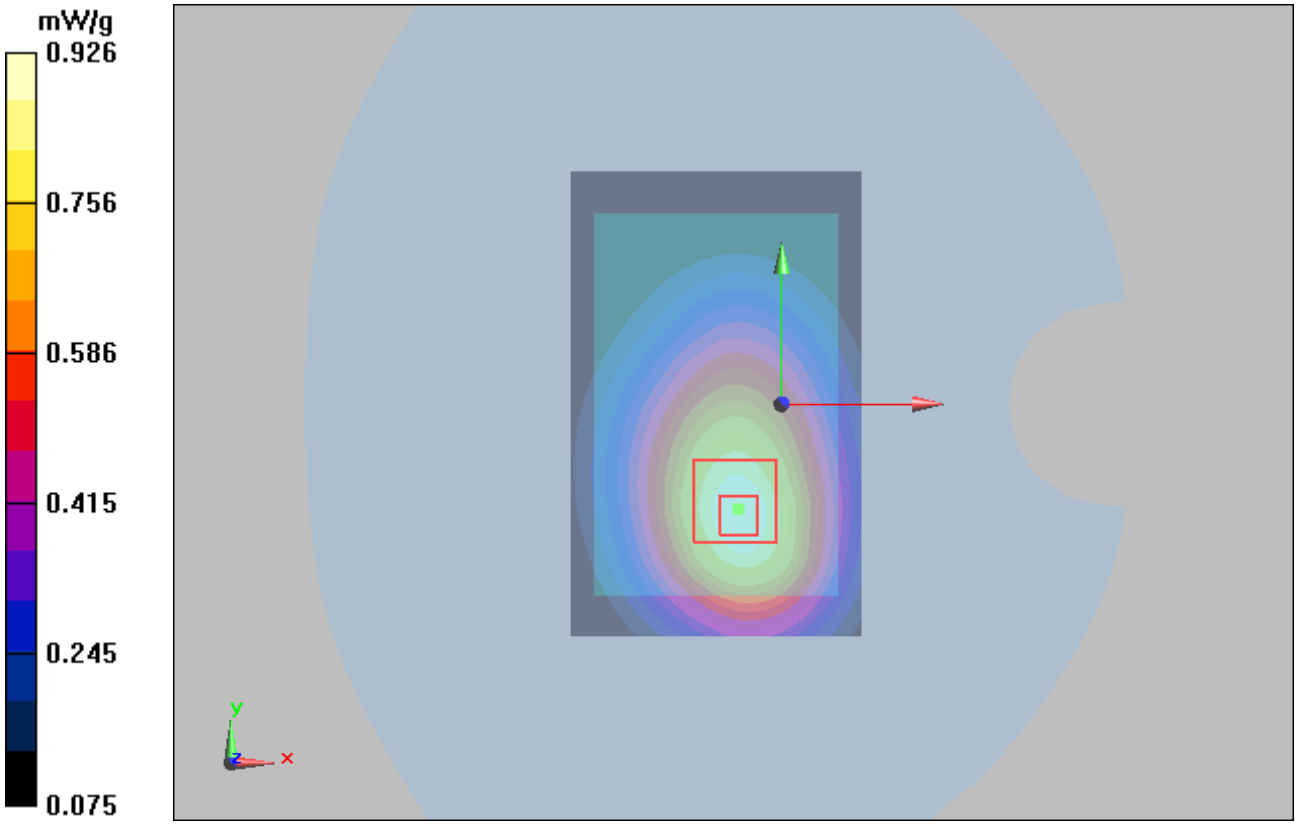
Figure 36 UMTS Band V with Test Position 1 Channel 4183

UMTS Band V with Test Position 1 Low

Date/Time: 6/7/2013 2:07:38 PM
Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.98 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 Low/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.931 mW/g

Test Position 1 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.8 V/m; Power Drift = 0.022 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.875 mW/g; SAR(10 g) = 0.618 mW/g
Maximum value of SAR (measured) = 0.926 mW/g



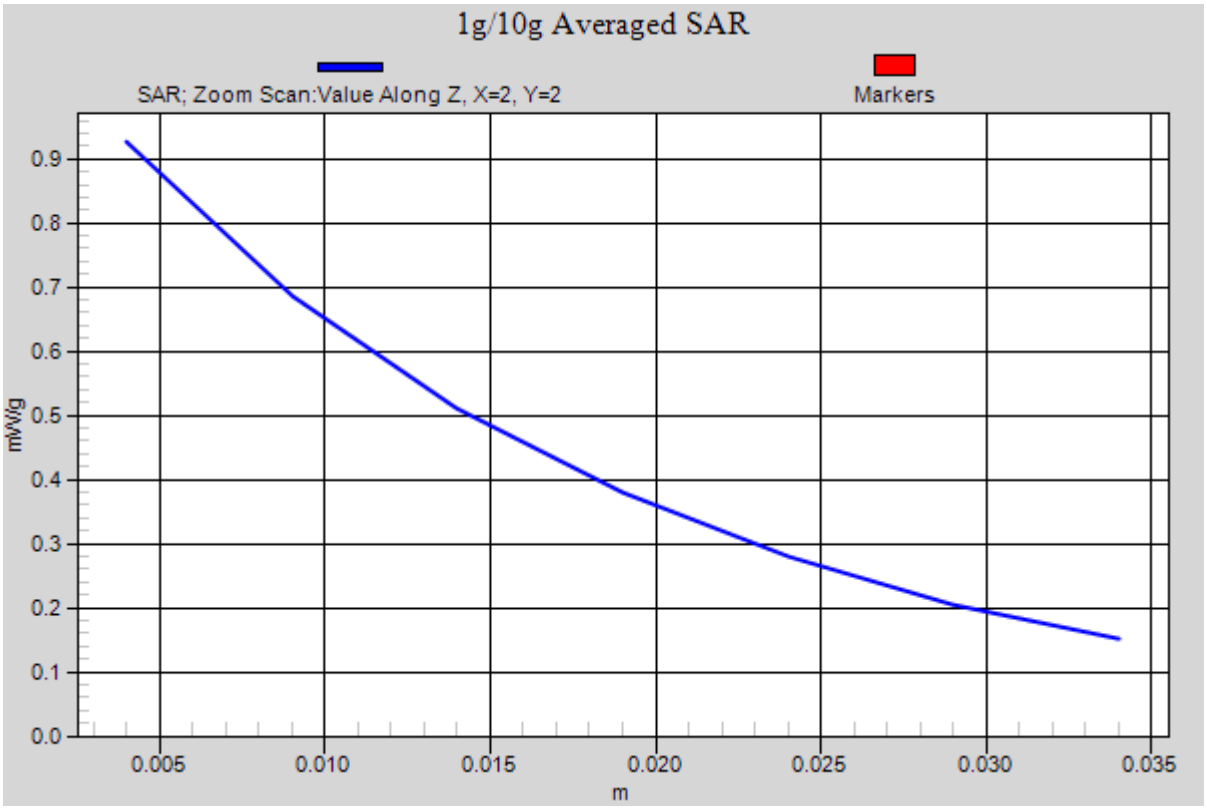


Figure 37 UMTS Band V with Test Position 1 Channel 4132

UMTS Band V with Test Position 2 High

Date/Time: 6/7/2013 2:37:33 PM
Communication System: WCDMA ; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; σ = 1 mho/m; ε_r = 55.8; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 2 High/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.884 mW/g

Test Position 2 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.6 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.837 mW/g; SAR(10 g) = 0.597 mW/g
Maximum value of SAR (measured) = 0.890 mW/g

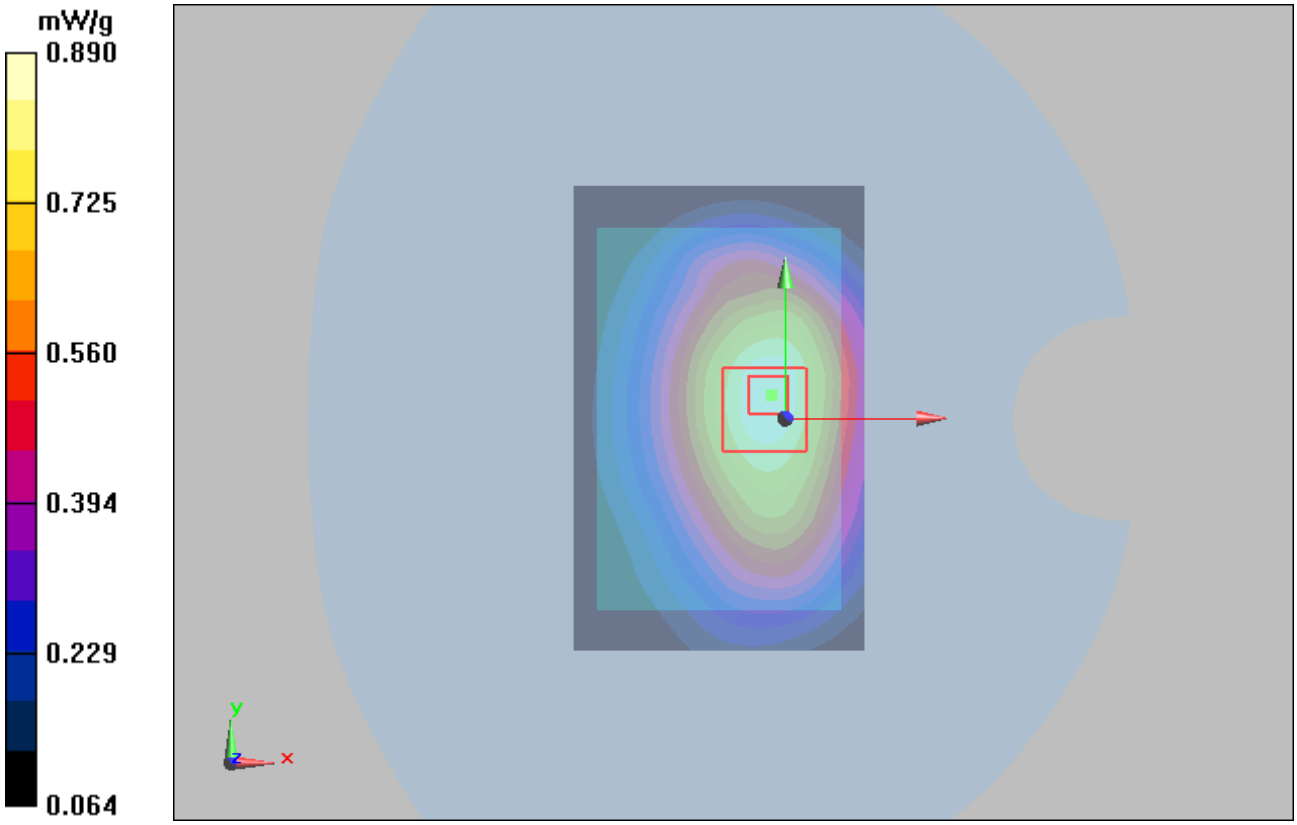


Figure 38 UMTS Band V with Test Position 2 Channel 4233

UMTS Band V with Test Position 2 Middle

Date/Time: 6/7/2013 2:23:28 PM
Communication System: WCDMA ; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.863 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.8 V/m; Power Drift = -0.095 dB
Peak SAR (extrapolated) = 1.1 W/kg
SAR(1 g) = 0.806 mW/g; SAR(10 g) = 0.571 mW/g
Maximum value of SAR (measured) = 0.856 mW/g

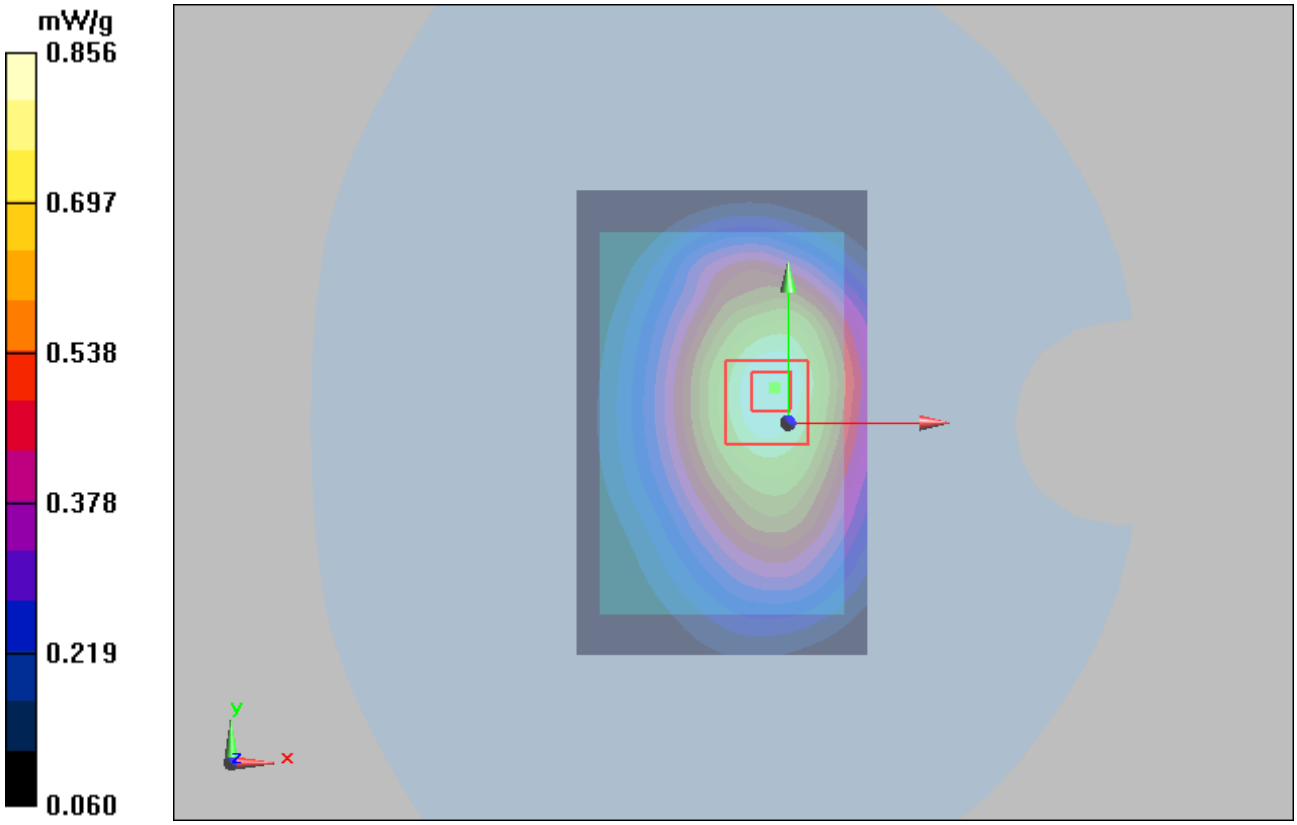


Figure 39 UMTS Band V with Test Position 2 Channel 4183

UMTS Band V with Test Position 2 Low

Date/Time: 6/7/2013 2:51:55 PM
Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.98 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 2 Low/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.897 mW/g

Test Position 2 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.4 V/m; Power Drift = -0.061 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.847 mW/g; SAR(10 g) = 0.597 mW/g
Maximum value of SAR (measured) = 0.901 mW/g

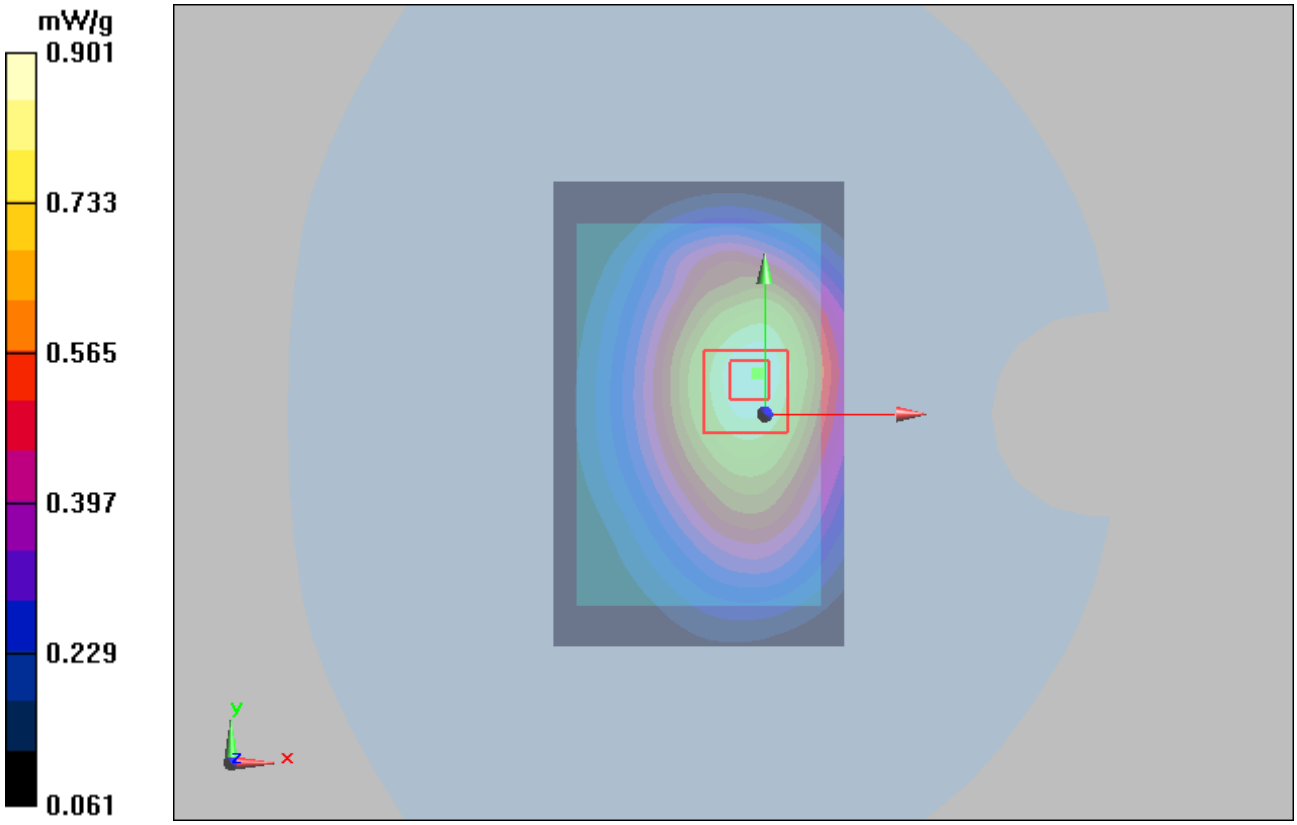


Figure 40 UMTS Band V with Test Position 2 Channel 4132

UMTS Band V with Test Position 4 Middle

Date/Time: 6/7/2013 3:41:16 PM
Communication System: WCDMA ; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 4 Middle/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.051 mW/g

Test Position 4 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.57 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 0.088 W/kg
SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.028 mW/g
Maximum value of SAR (measured) = 0.054 mW/g

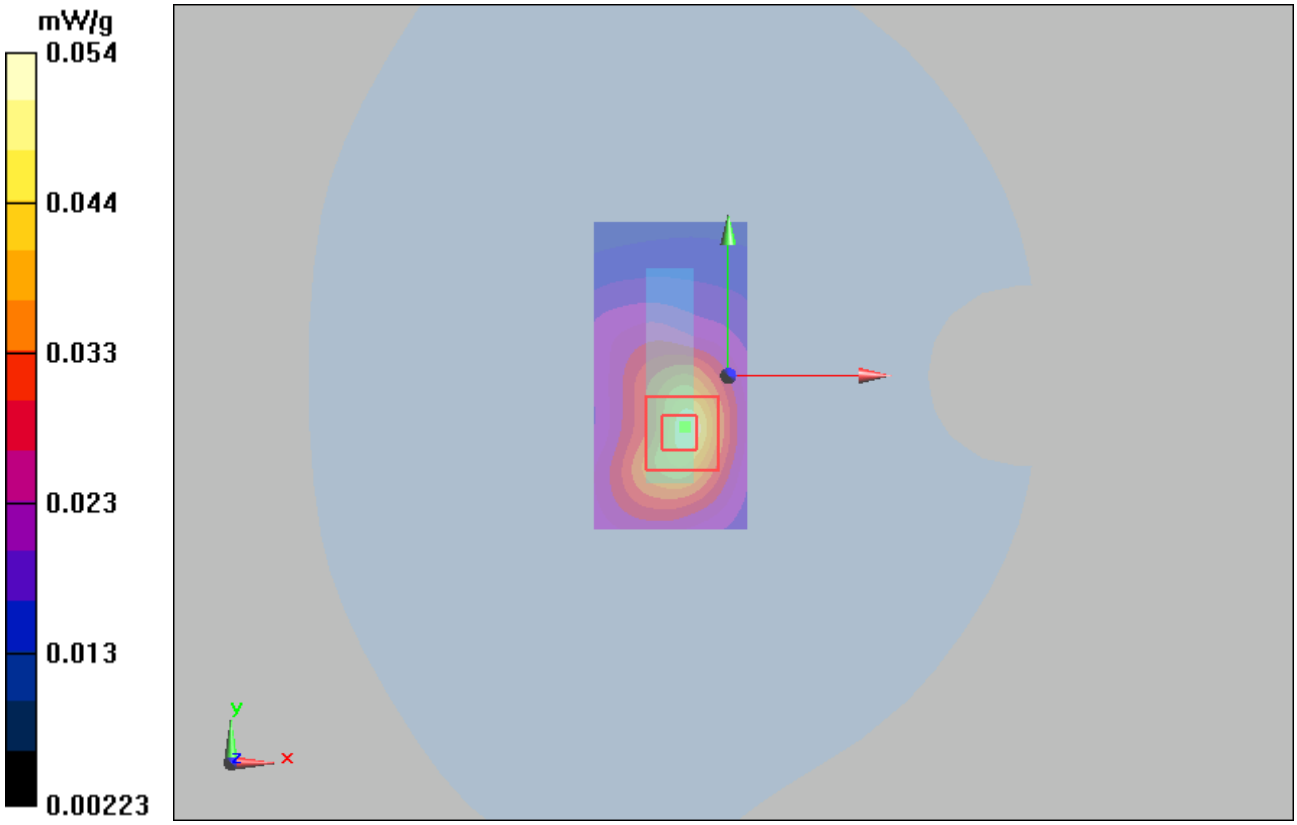


Figure 41 UMTS Band V with Test Position 4 Channel 4183

UMTS Band V with Test Position 5 Middle

Date/Time: 6/7/2013 3:08:15 PM
Communication System: WCDMA ; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 5 Middle/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.253 mW/g

Test Position 5 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.7 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 0.322 W/kg
SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.167 mW/g
Maximum value of SAR (measured) = 0.253 mW/g

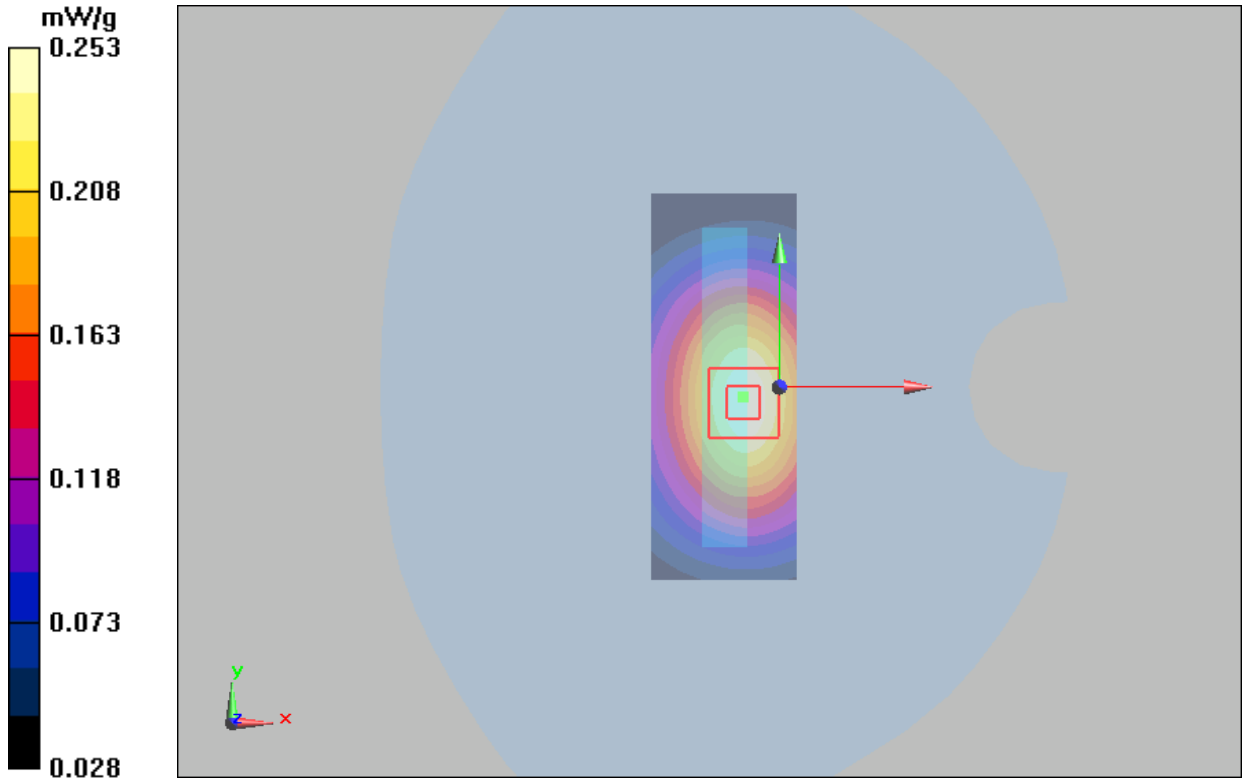


Figure 42 UMTS Band V with Test Position 5 Channel 4183

UMTS Band V with Test Position 6 Middle

Date/Time: 6/7/2013 3:21:47 PM
Communication System: WCDMA ; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.992 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 6 Middle/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.374 mW/g

Test Position 6 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.7 V/m; Power Drift = -0.024 dB
Peak SAR (extrapolated) = 0.490 W/kg
SAR(1 g) = 0.350 mW/g; SAR(10 g) = 0.241 mW/g
Maximum value of SAR (measured) = 0.374 mW/g

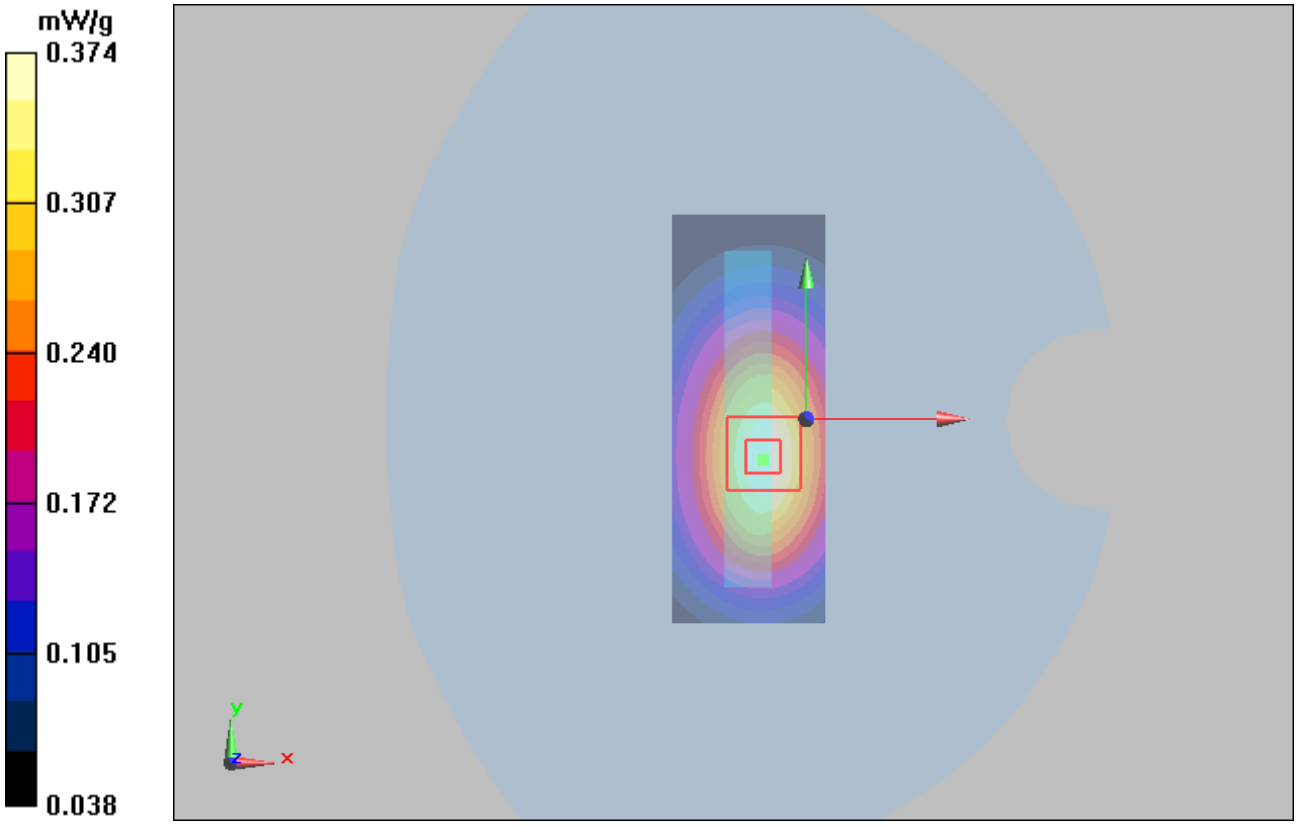


Figure 43 UMTS Band V with Test Position 6 Channel 4183

UMTS Band V with Test Position 1 Low(battery 2)

Date/Time: 6/7/2013 3:57:27 PM
Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.98 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 Low/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.878 mW/g

Test Position 1 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.1 V/m; Power Drift = -0.120 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.824 mW/g; SAR(10 g) = 0.584 mW/g
Maximum value of SAR (measured) = 0.864 mW/g

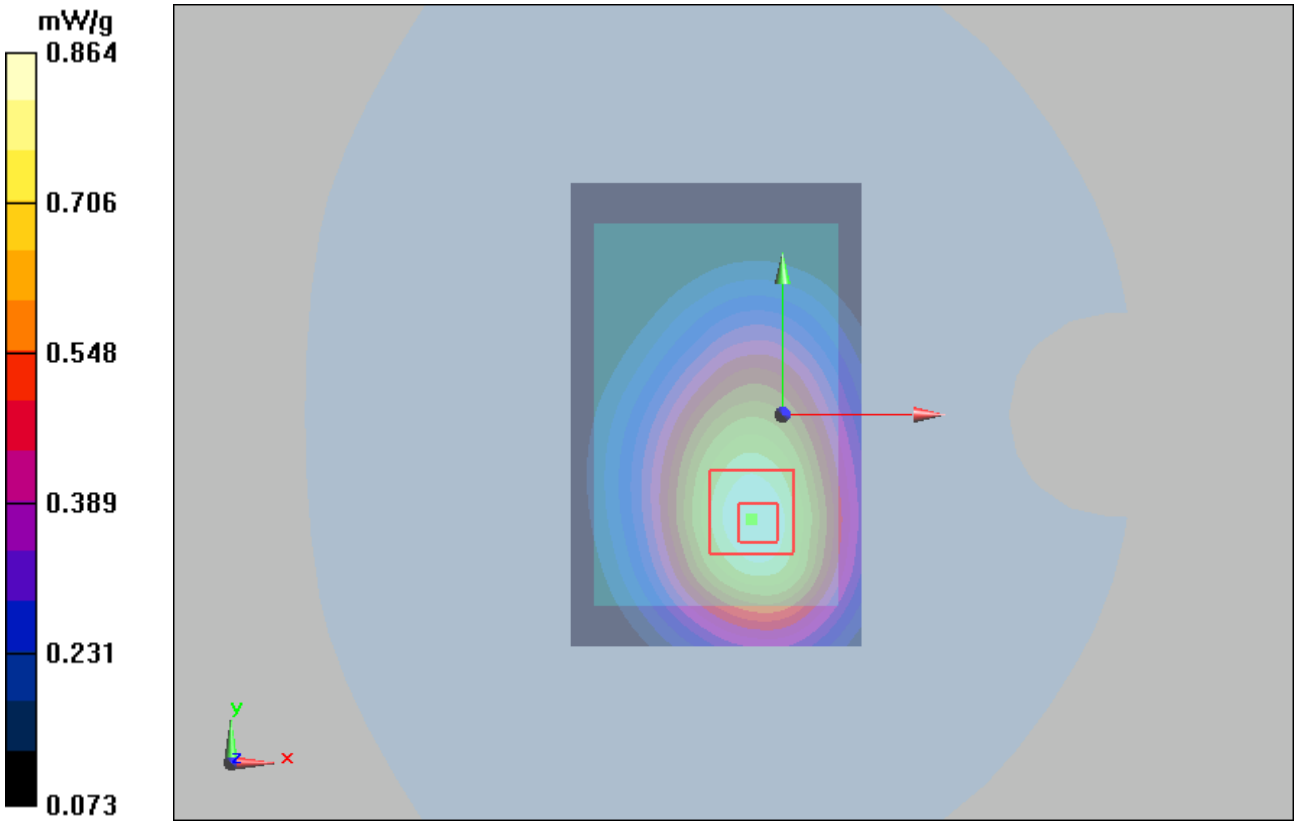


Figure 44 UMTS Band V with Test Position 1 Channel 4132

UMTS Band V with Test Position 1 Low(battery 3)

Date/Time: 6/7/2013 4:28:59 PM
Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.98 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 Low/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.909 mW/g

Test Position 1 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.1 V/m; Power Drift = -0.003 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.839 mW/g; SAR(10 g) = 0.597 mW/g
Maximum value of SAR (measured) = 0.891 mW/g

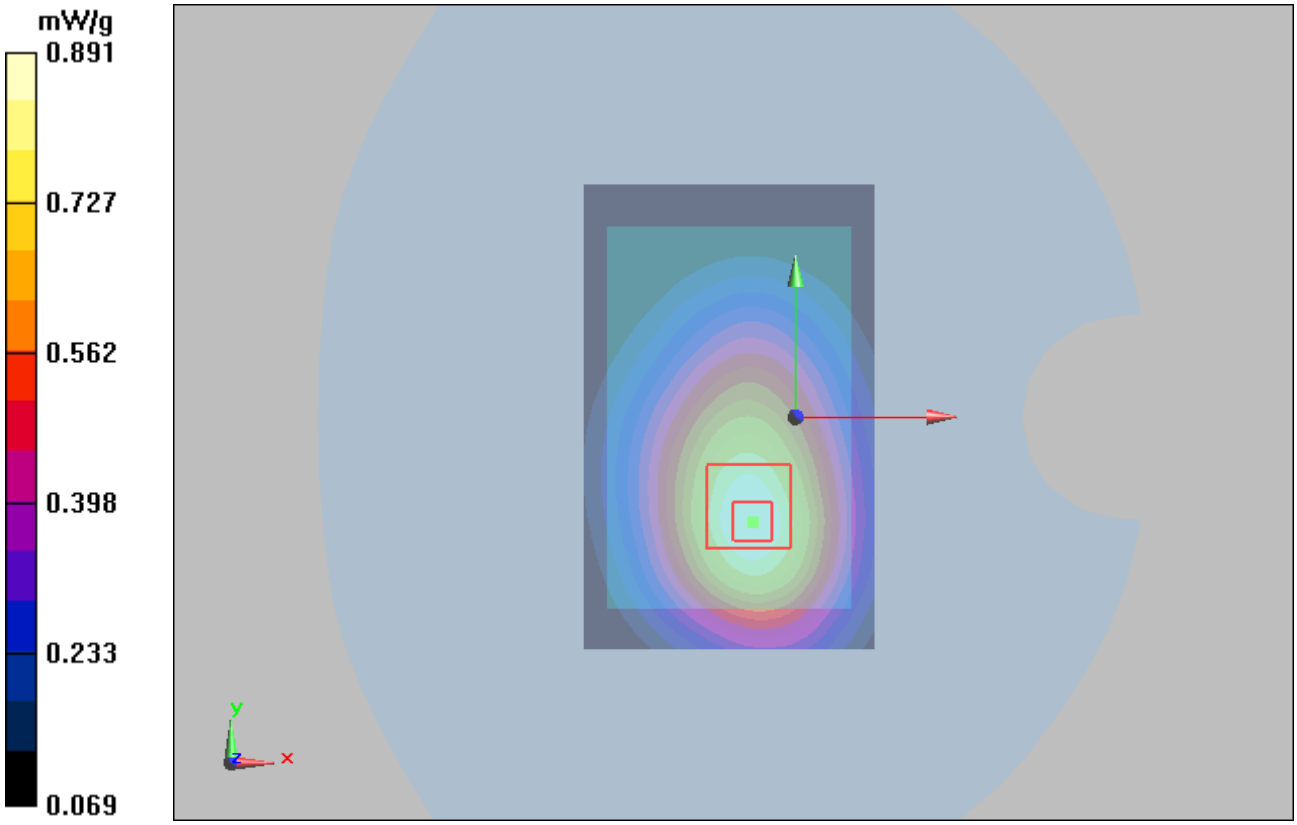


Figure 45 UMTS Band V with Battery SID Test Position 1 Channel 4132

UMTS Band V with Test Position 1 Low(battery 4)

Date/Time: 6/7/2013 4:14:34 PM
Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.98 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 Low/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.894 mW/g

Test Position 1 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26 V/m; Power Drift = 0.021 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.828 mW/g; SAR(10 g) = 0.590 mW/g
Maximum value of SAR (measured) = 0.879 mW/g

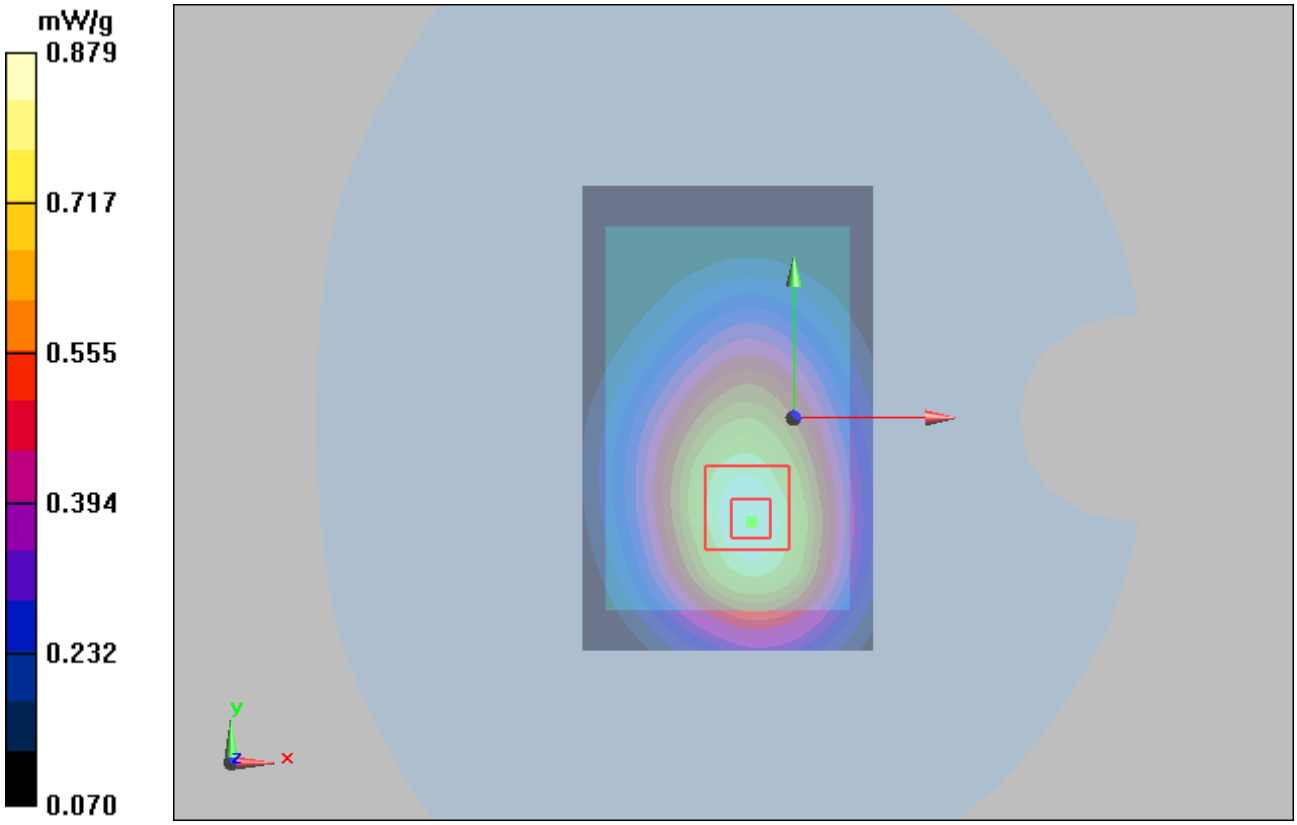


Figure 46 UMTS Band V with Test Position 1 Channel 4132

UMTS Band V with Repeateded SAR Test Position 1 Low

Date/Time: 6/7/2013 4:55:48 PM
Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.98 mho/m; ε_r = 55.9; 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 - SN3753; ConvF(9.05, 9.05, 9.05); Calibrated: 1/17/2013
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

Test Position 1 Repeated SAR Low/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.908 mW/g

Test Position 1 Repeated SAR Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.2 V/m; Power Drift = -0.002 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.835 mW/g; SAR(10 g) = 0.592 mW/g
Maximum value of SAR (measured) = 0.879 mW/g

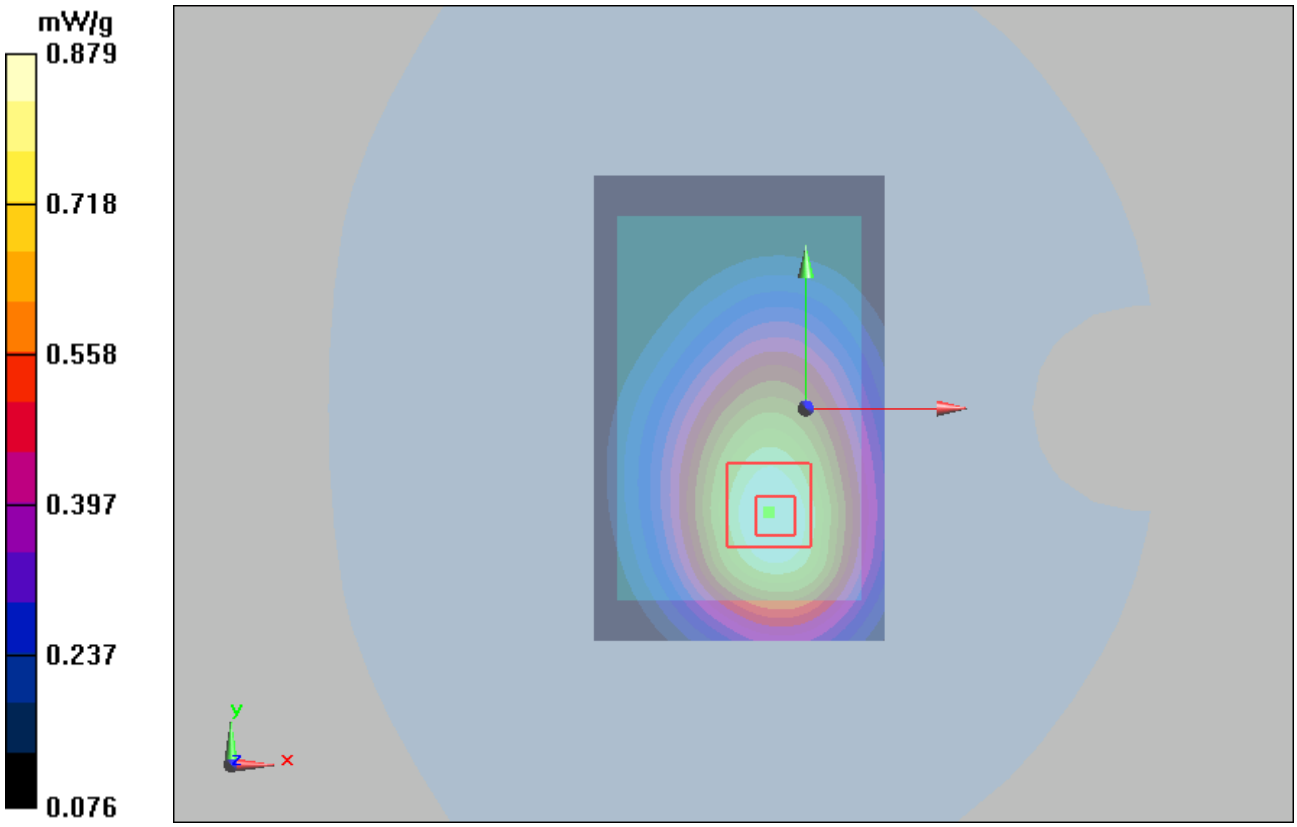


Figure 47 UMTS Band V with Repeateded SAR Test Position 1 Channel 4132

LTE Band 7 with Test Position 1 High (1RB)

Date/Time: 6/13/2013 8:41:19 PM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.134; 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 1 High/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.728 W/kg

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.018 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 1.522 mW/g
SAR(1 g) = 0.776 mW/g; SAR(10 g) = 0.420 mW/g
Maximum value of SAR (measured) = 0.829 W/kg

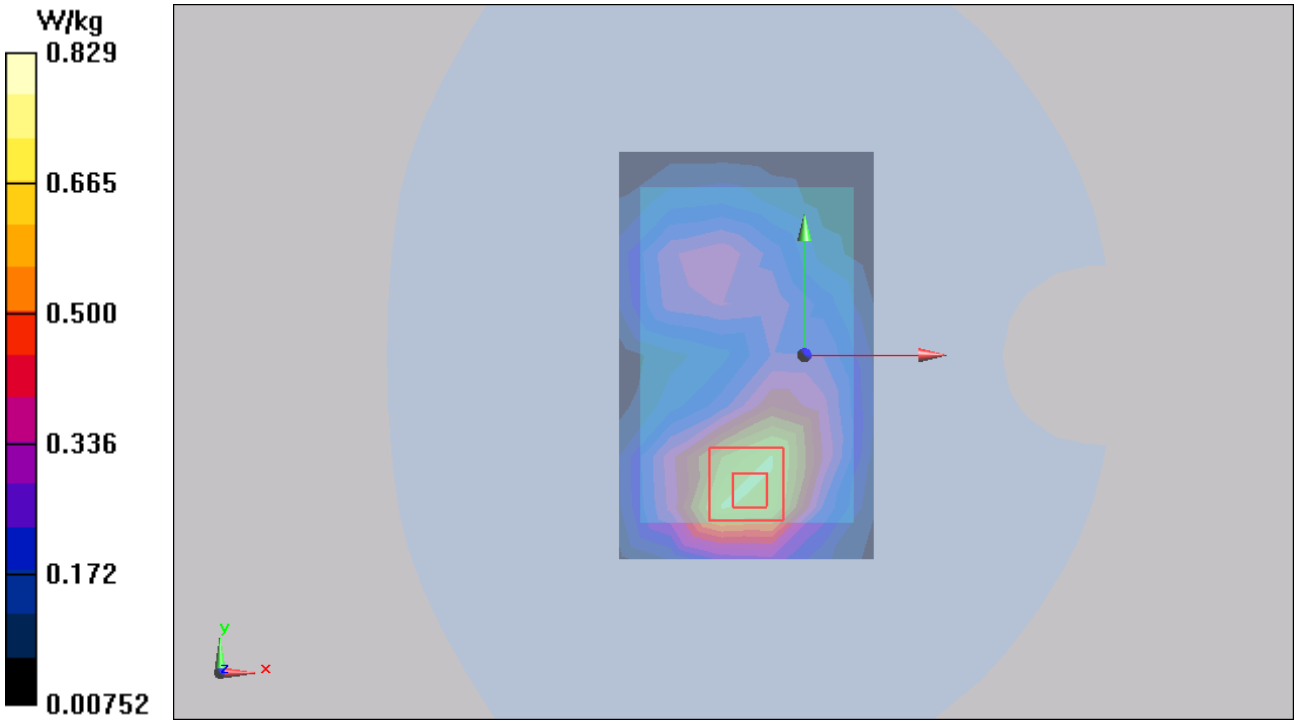


Figure 48 LTE Band 7 with Test Position 1 Channel 21350

LTE Band 7 with Test Position 1 Middle (1RB)

Date/Time: 6/13/2013 4:52:44 PM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.231; 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 1 Middle/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.629 W/kg

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.583 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 1.318 mW/g
SAR(1 g) = 0.662 mW/g; SAR(10 g) = 0.363 mW/g
Maximum value of SAR (measured) = 0.703 W/kg

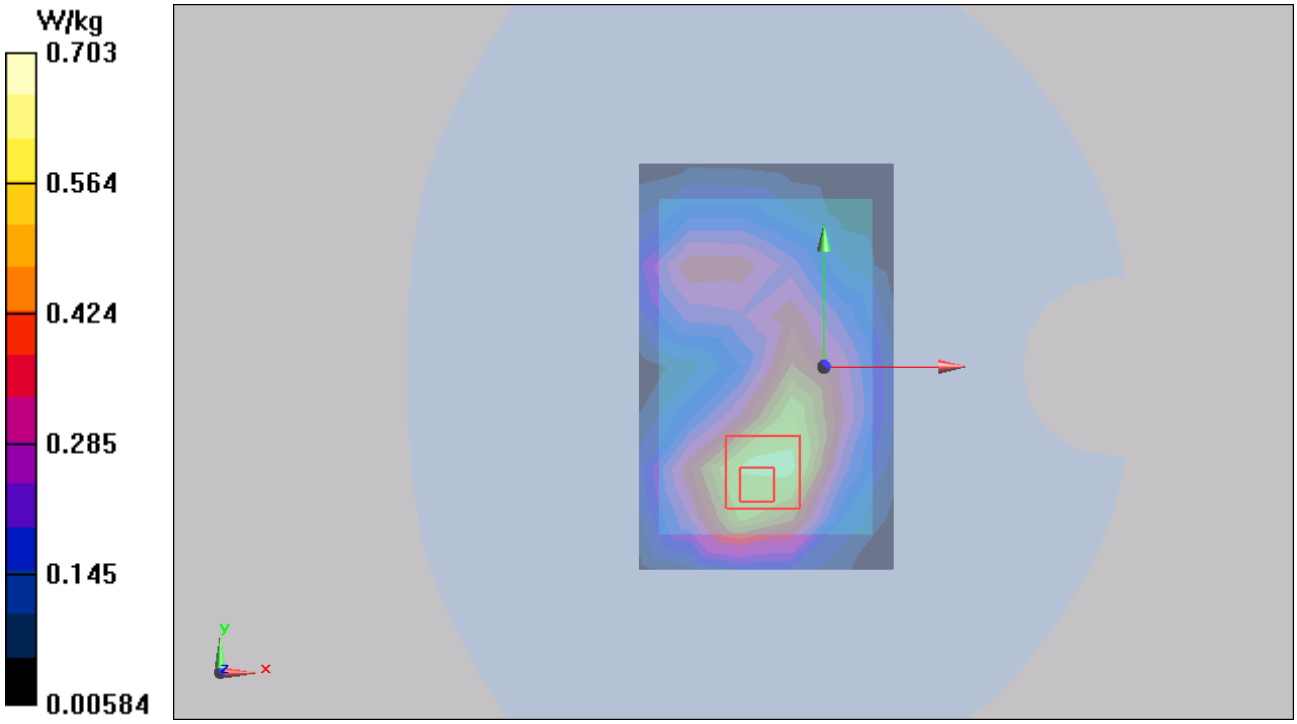


Figure 49 LTE Band 7 with Test Position 1 Channel 21100

LTE Band 7 with Test Position 1 Low (1RB)

Date/Time: 6/13/2013 3:12:00 PM
Communication System: LTE; Frequency: 2510 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2510 MHz; σ = 2.049 mho/m; ε_r = 52.313; 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 1 Low/Area Scan (7x12x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.765 W/kg

Test Position 1 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.993 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 1.417 mW/g
SAR(1 g) = 0.748 mW/g; SAR(10 g) = 0.418 mW/g
Maximum value of SAR (measured) = 0.811 W/kg

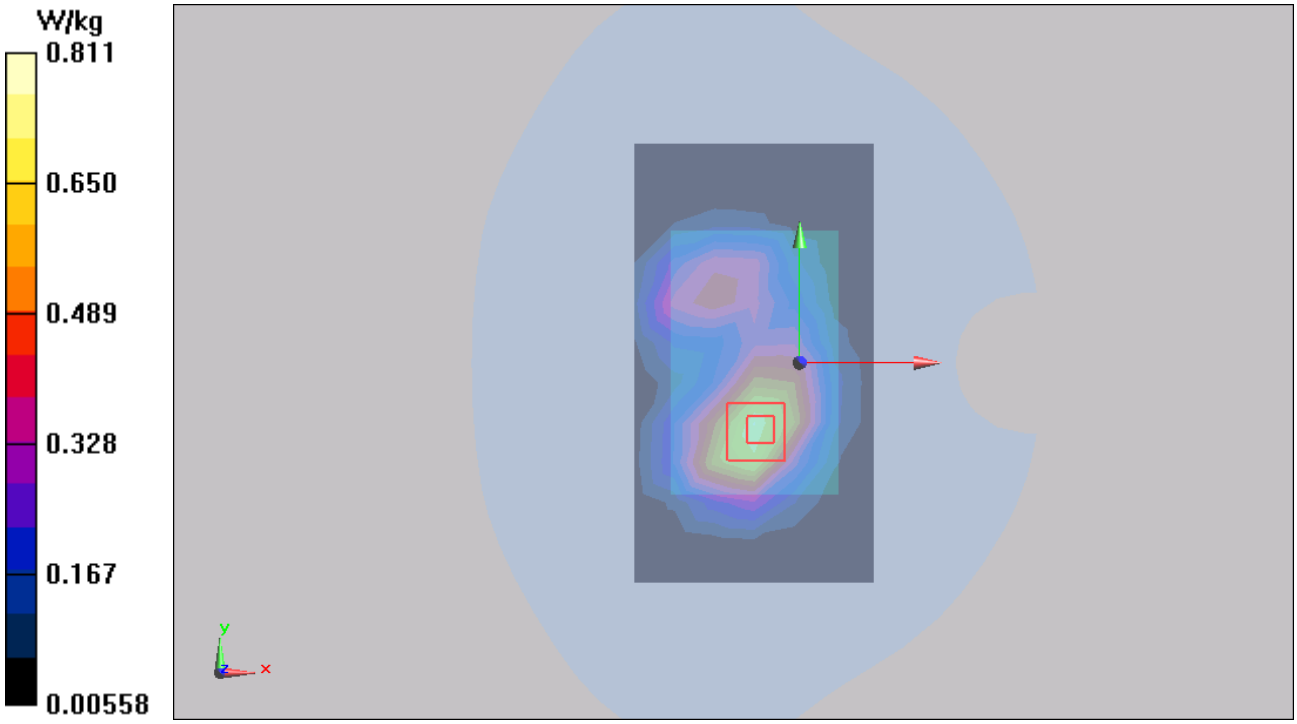


Figure 50 LTE Band 7 with Test Position 1 Channel 20850

LTE Band 7 with Test Position 2 High (1RB)

Date/Time: 6/13/2013 8:20:06 PM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.134; 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 2 High/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 1.19 W/kg

Test Position 2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.337 V/m; Power Drift = -0.024 dB
Peak SAR (extrapolated) = 2.535 mW/g
SAR(1 g) = 1.290 mW/g; SAR(10 g) = 0.692 mW/g
Maximum value of SAR (measured) = 1.39 W/kg

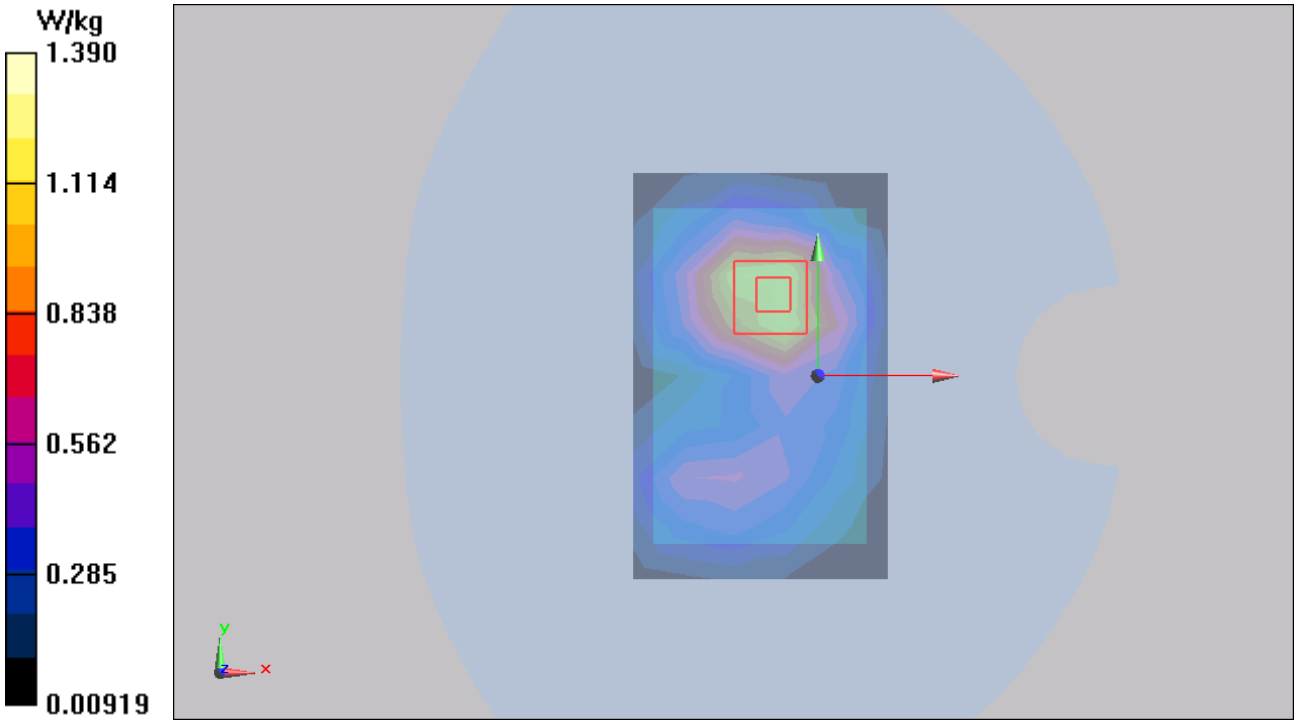


Figure 51 LTE Band 7 with Test Position 2 Channel 21350

LTE Band 7 with Test Position 2 Middle (1RB)

Date/Time: 6/13/2013 5:44:56 PM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.231; 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 2 Middle/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 1.21 W/kg

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.558 V/m; Power Drift = -0.028 dB
Peak SAR (extrapolated) = 2.463 mW/g
SAR(1 g) = 1.230 mW/g; SAR(10 g) = 0.657 mW/g
Maximum value of SAR (measured) = 1.34 W/kg

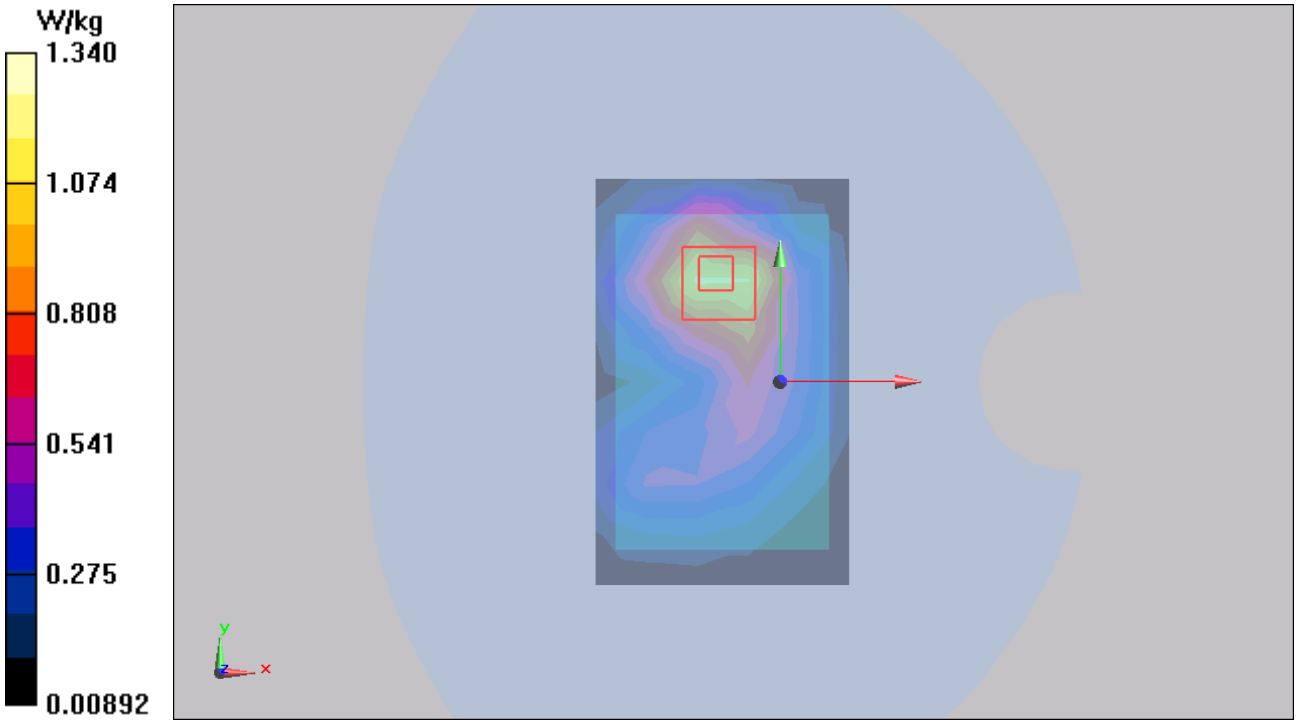


Figure 52 LTE Band 7 with Test Position 2 Channel 21100

LTE Band 7 with Test Position 2 Low (1RB)

Date/Time: 6/13/2013 3:36:14 PM
Communication System: LTE; Frequency: 2510 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2510 MHz; σ = 2.049 mho/m; ε_r = 52.313; 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 2 Low/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.980 W/kg

Test Position 2 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.475 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 1.967 mW/g
SAR(1 g) = 0.984 mW/g; SAR(10 g) = 0.527 mW/g
Maximum value of SAR (measured) = 1.06 W/kg

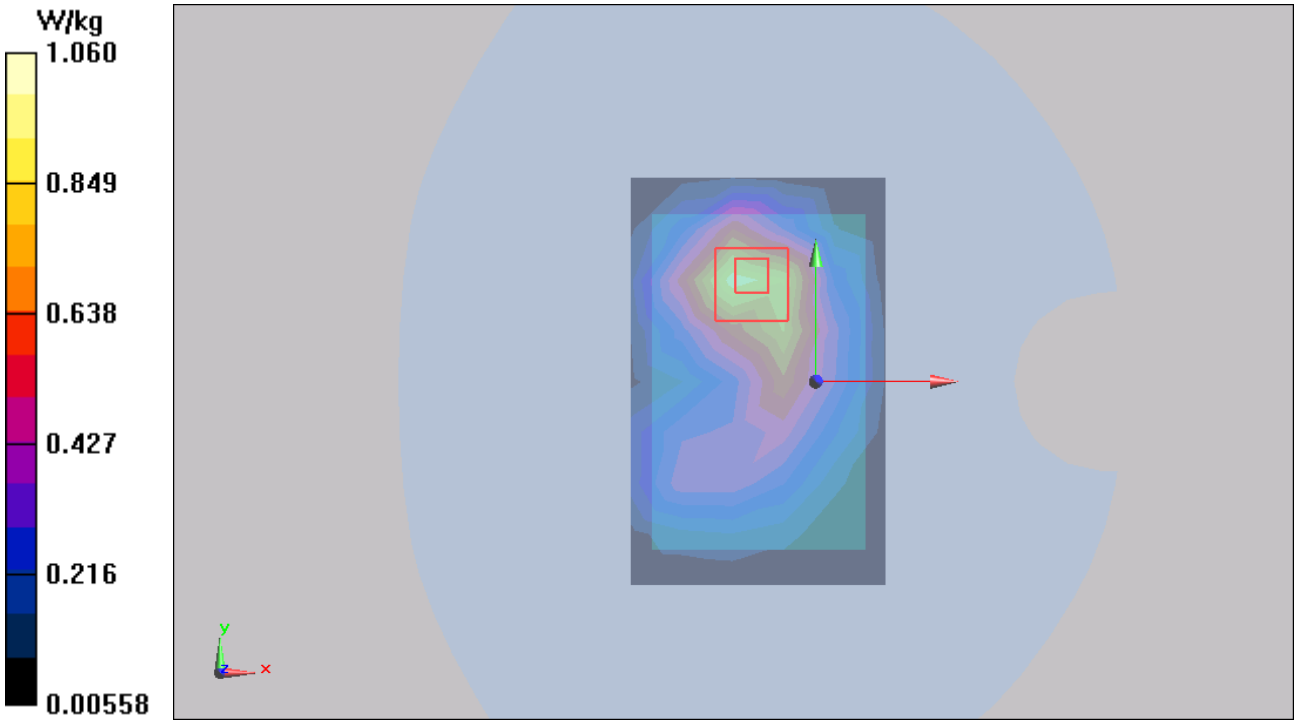


Figure 53 LTE Band 7 with Test Position 2 Channel 20850

LTE Band 7 with Test Position 4 Low (1RB)

Date/Time: 6/13/2013 4:37:33 PM
Communication System: LTE; Frequency: 2510 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2510 MHz; σ = 2.05 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 4 Low/Area Scan (31x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.147 mW/g

Test Position 4 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.46 V/m; Power Drift = 0.029 dB
Peak SAR (extrapolated) = 0.231 W/kg
SAR(1 g) = 0.123 mW/g; SAR(10 g) = 0.066 mW/g
Maximum value of SAR (measured) = 0.137 mW/g

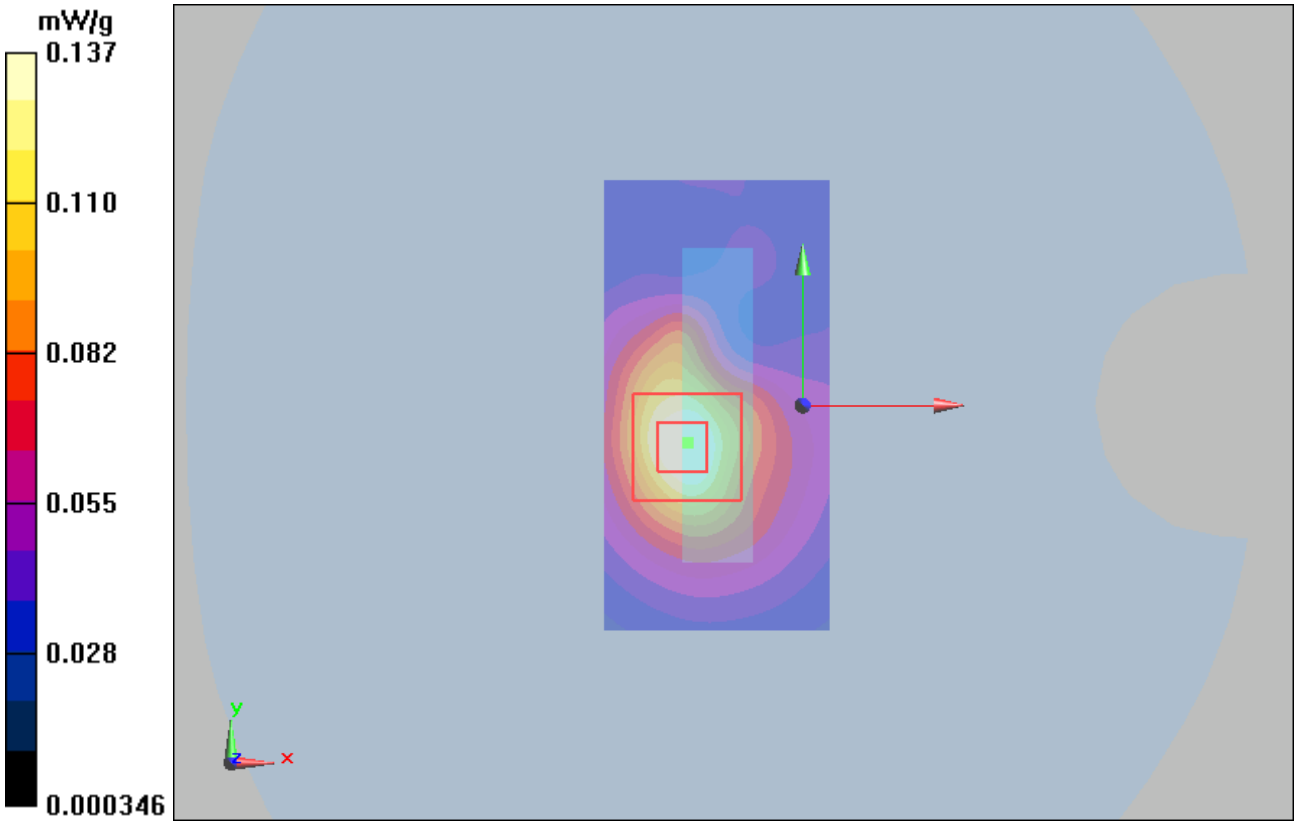


Figure 54 LTE Band 7 with Test Position 4 Channel 20850

LTE Band 7 with Test Position 5 Low (1RB)

Date/Time: 6/13/2013 3:59:37 PM
Communication System: LTE; Frequency: 2510 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2510 MHz; σ = 2.05 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 5 Low/Area Scan (31x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.175 mW/g

Test Position 5 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.47 V/m; Power Drift = 0.072 dB
Peak SAR (extrapolated) = 0.299 W/kg
SAR(1 g) = 0.161 mW/g; SAR(10 g) = 0.095 mW/g
Maximum value of SAR (measured) = 0.170 mW/g

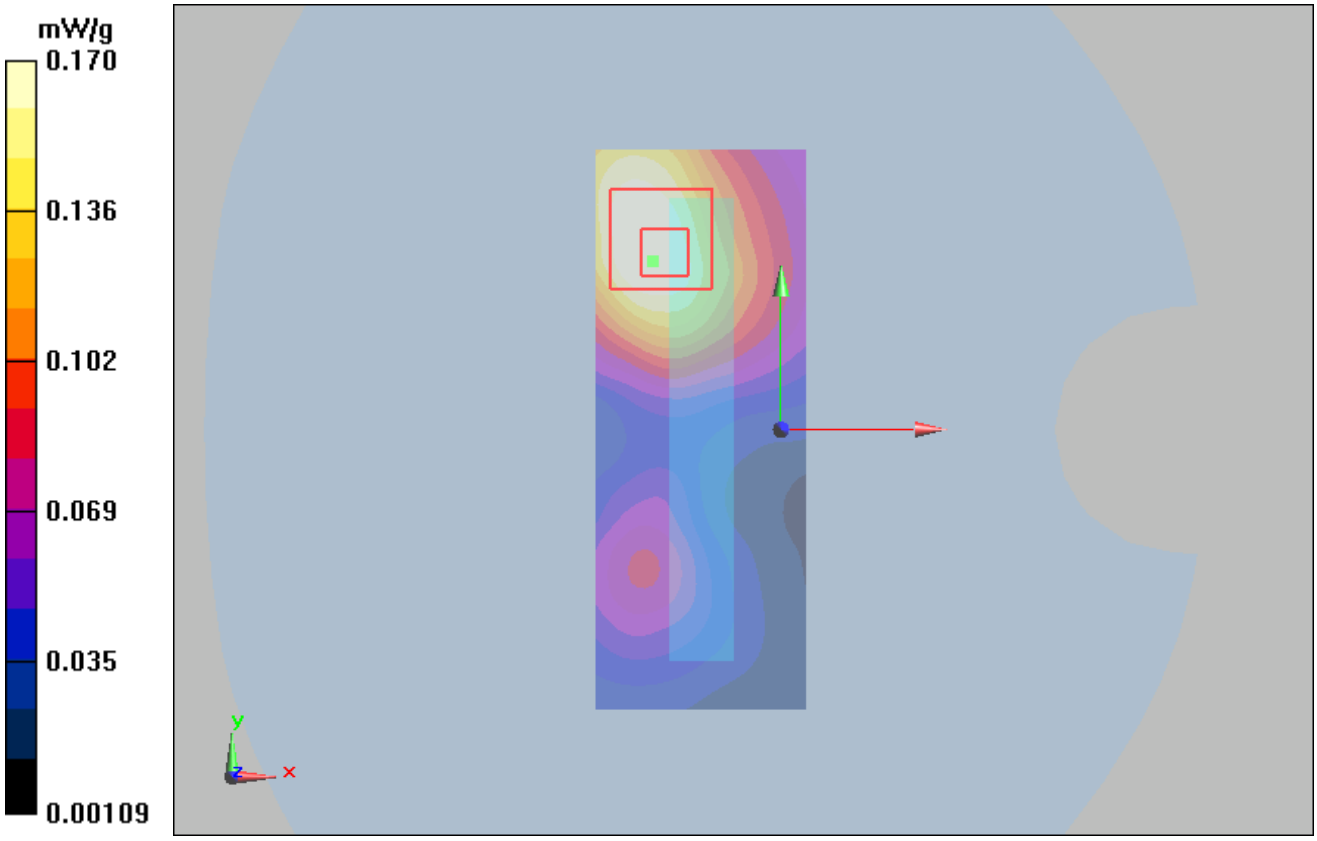


Figure 55 LTE Band 7 with Test Position 5 Channel 20850

LTE Band 7 with Test Position 6 Low (1RB)

Date/Time: 6/13/2013 4:13:49 PM
Communication System: LTE; Frequency: 2510 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2510 MHz; σ = 2.05 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 6 Low/Area Scan (31x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.653 mW/g

Test Position 6 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.3 V/m; Power Drift = 0.029 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.601 mW/g; SAR(10 g) = 0.313 mW/g
Maximum value of SAR (measured) = 0.665 mW/g

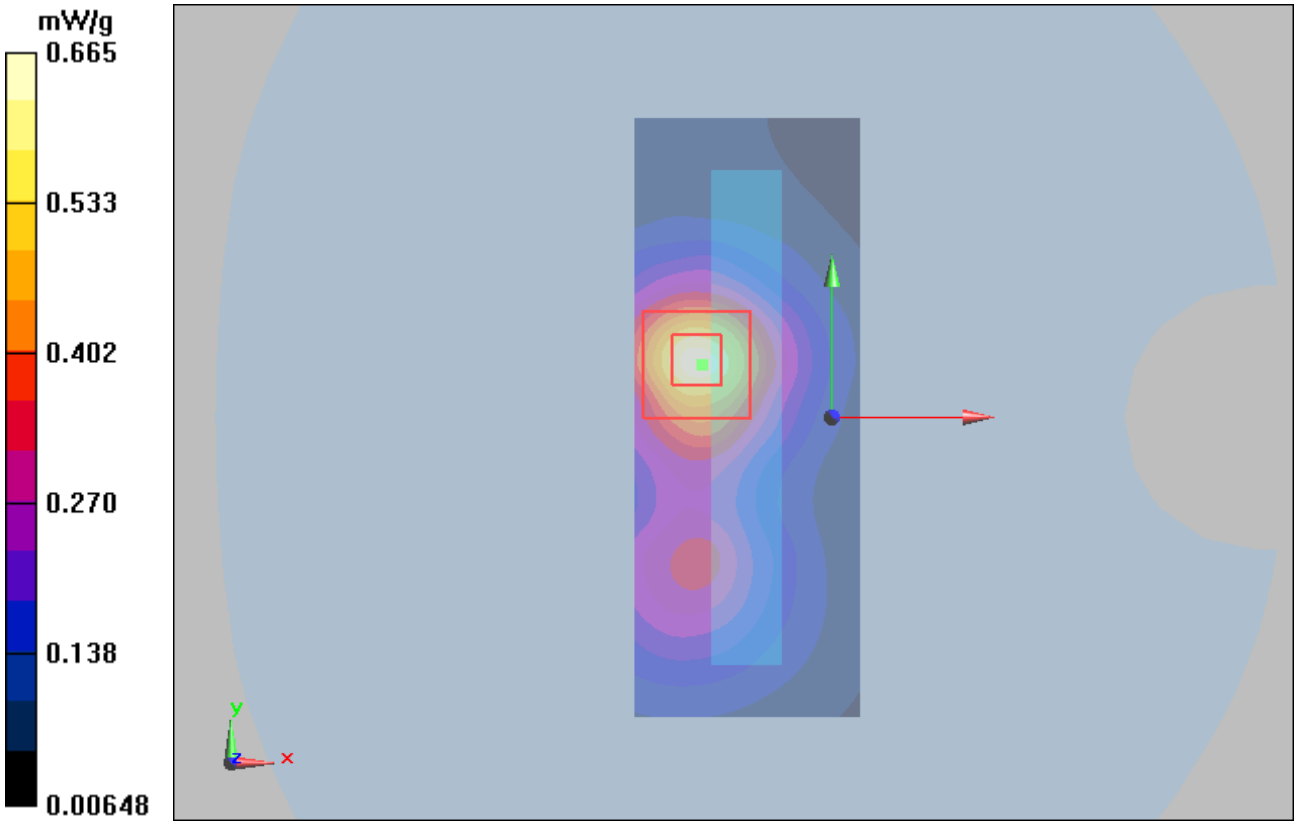


Figure 56 LTE Band 7 with Test Position 6 Channel 20850

LTE Band 7 with Test Position 1 Middle (50%RB)

Date/Time: 6/13/2013 6:28:56 PM
Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2535 MHz; σ = 2.08 mho/m; ε_r = 52.231; 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 1 Middle/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.552 W/kg

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.559 V/m; Power Drift = -0.057 dB
Peak SAR (extrapolated) = 1.020 mW/g
SAR(1 g) = 0.515 mW/g; SAR(10 g) = 0.287 mW/g
Maximum value of SAR (measured) = 0.553 W/kg

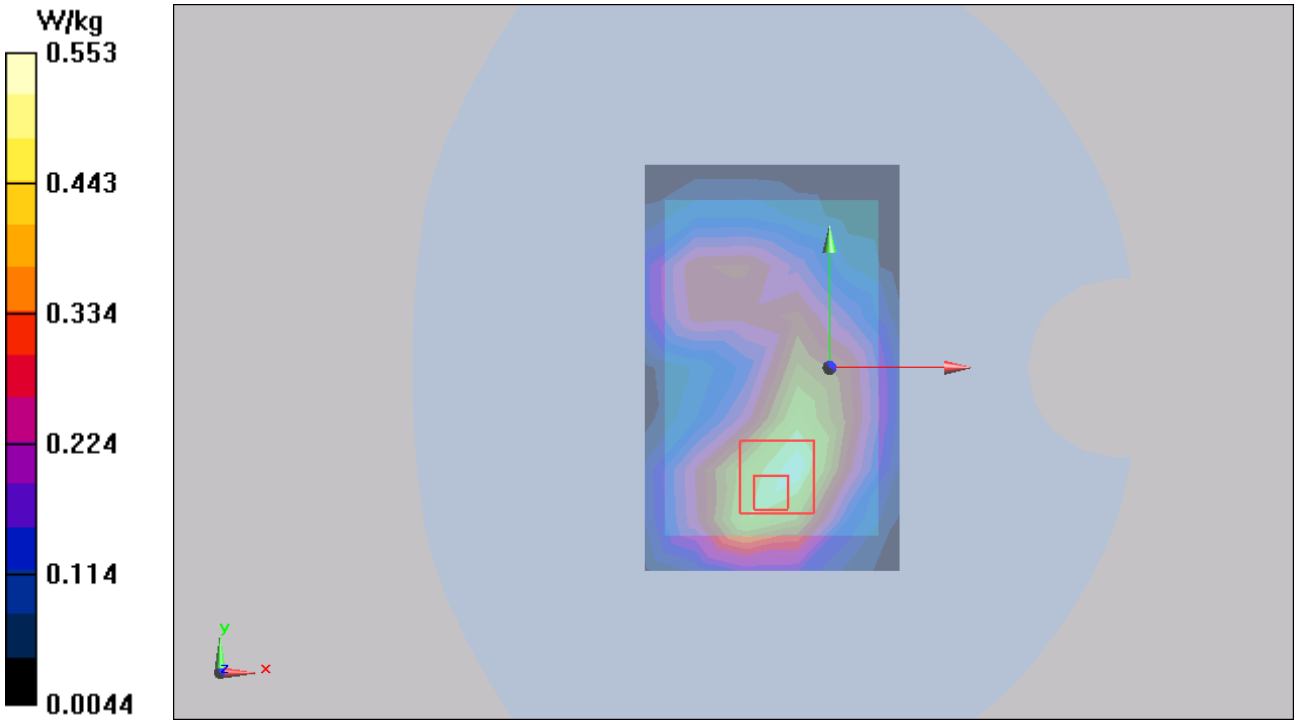


Figure 57 LTE Band 7 with Test Position 1 Channel 21100

LTE Band 7 with Test Position 2 High (50%RB)

Date/Time: 6/13/2013 8:10:56 PM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 2 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.15 mW/g

Test Position 2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = -0.008 dB
Peak SAR (extrapolated) = 1.98 W/kg
SAR(1 g) = 1.010 mW/g; SAR(10 g) = 0.543 mW/g
Maximum value of SAR (measured) = 1.09 mW/g

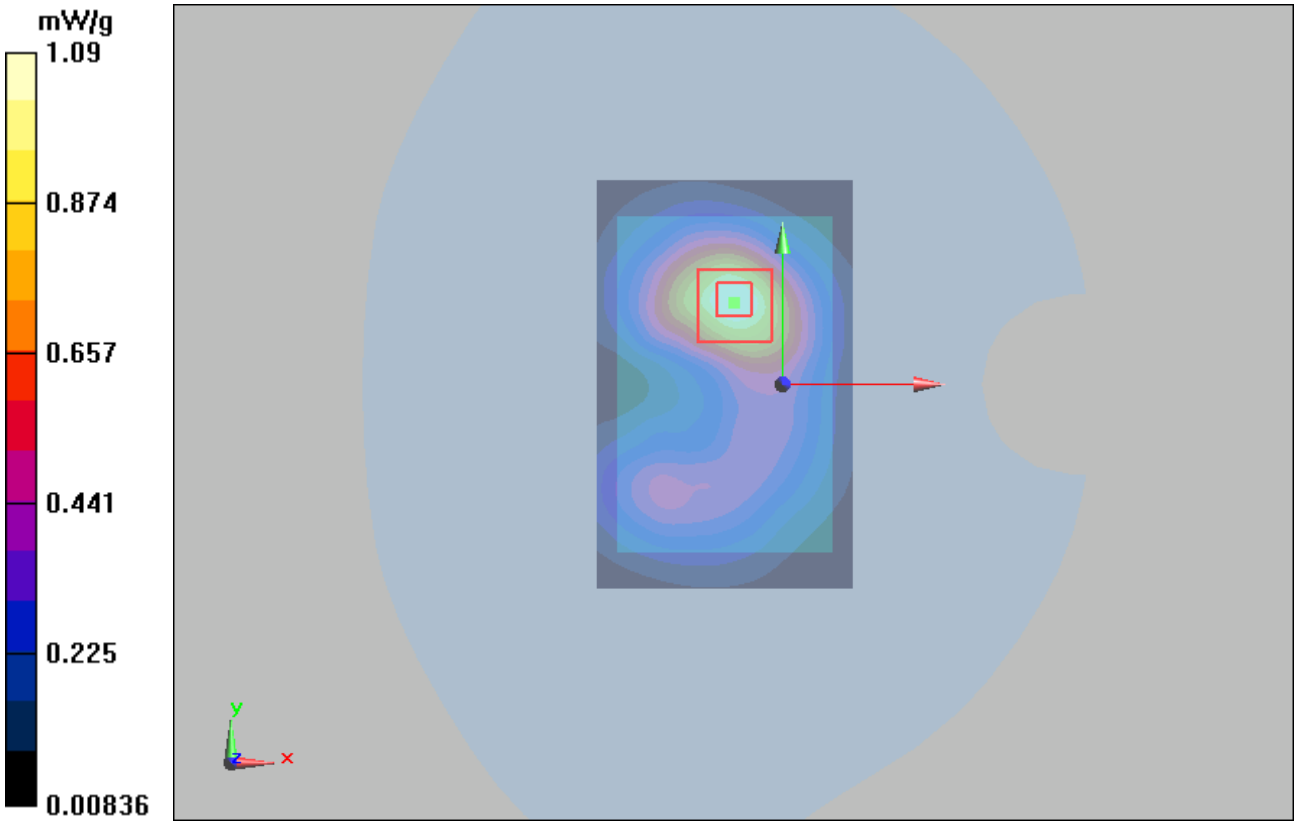


Figure 58 LTE Band 7 with Test Position 2 Channel 21350

LTE Band 7 with Test Position 2 Middle (50%RB)

Date/Time: 6/13/2013 6:06:29 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.17 mW/g

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.7 V/m; Power Drift = -0.134 dB
Peak SAR (extrapolated) = 2.11 W/kg
SAR(1 g) = 1.060 mW/g; SAR(10 g) = 0.563 mW/g
Maximum value of SAR (measured) = 1.15 mW/g

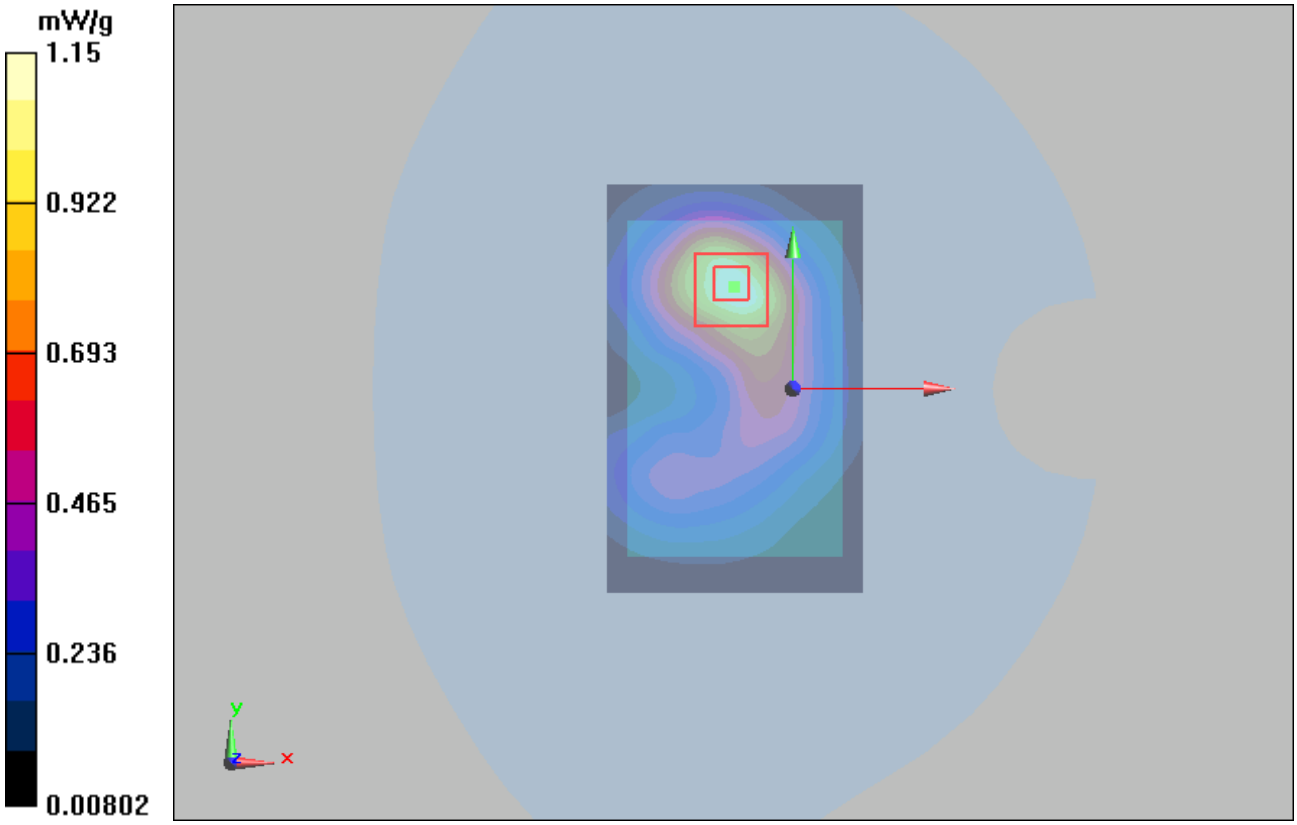


Figure 59 LTE Band 7 with Test Position 2 Channel 21100

LTE Band 7 with Test Position 2 Low (50%RB)

Date/Time: 6/13/2013 11:01:31 AM
Communication System: LTE; Frequency: 2510 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2510 MHz; σ = 2.05 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 2 Low/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.795 mW/g

Test Position 2 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.2 V/m; Power Drift = -0.164 dB
Peak SAR (extrapolated) = 1.5 W/kg
SAR(1 g) = 0.735 mW/g; SAR(10 g) = 0.385 mW/g
Maximum value of SAR (measured) = 0.799 mW/g

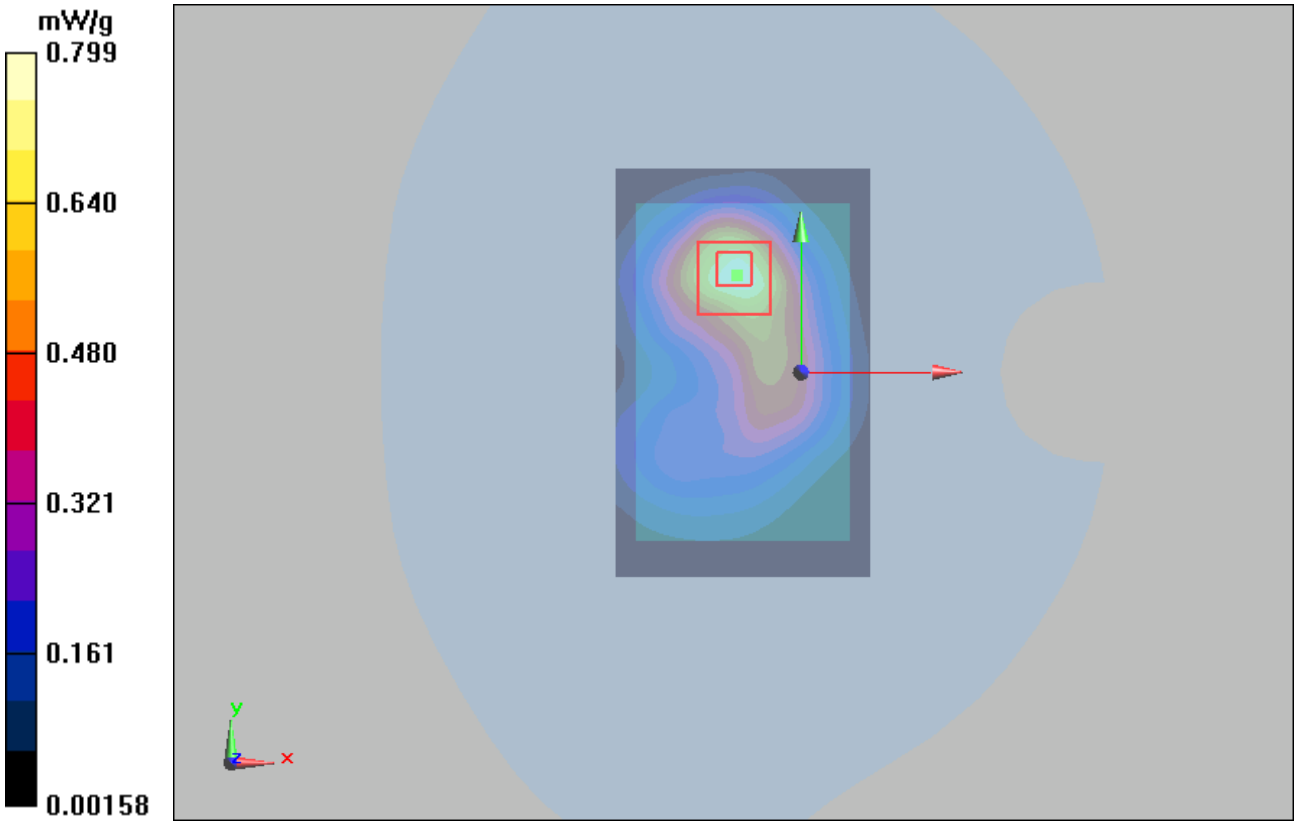


Figure 60 LTE Band 7 with Test Position 2 Channel 20850

LTE Band 7 with Test Position 4 Middle (50%RB)

Date/Time: 6/13/2013 7:48:01 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 4 Middle/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.213 mW/g

Test Position 4 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.38 V/m; Power Drift = 0.054 dB
Peak SAR (extrapolated) = 0.347 W/kg
SAR(1 g) = 0.186 mW/g; SAR(10 g) = 0.101 mW/g
Maximum value of SAR (measured) = 0.206 mW/g

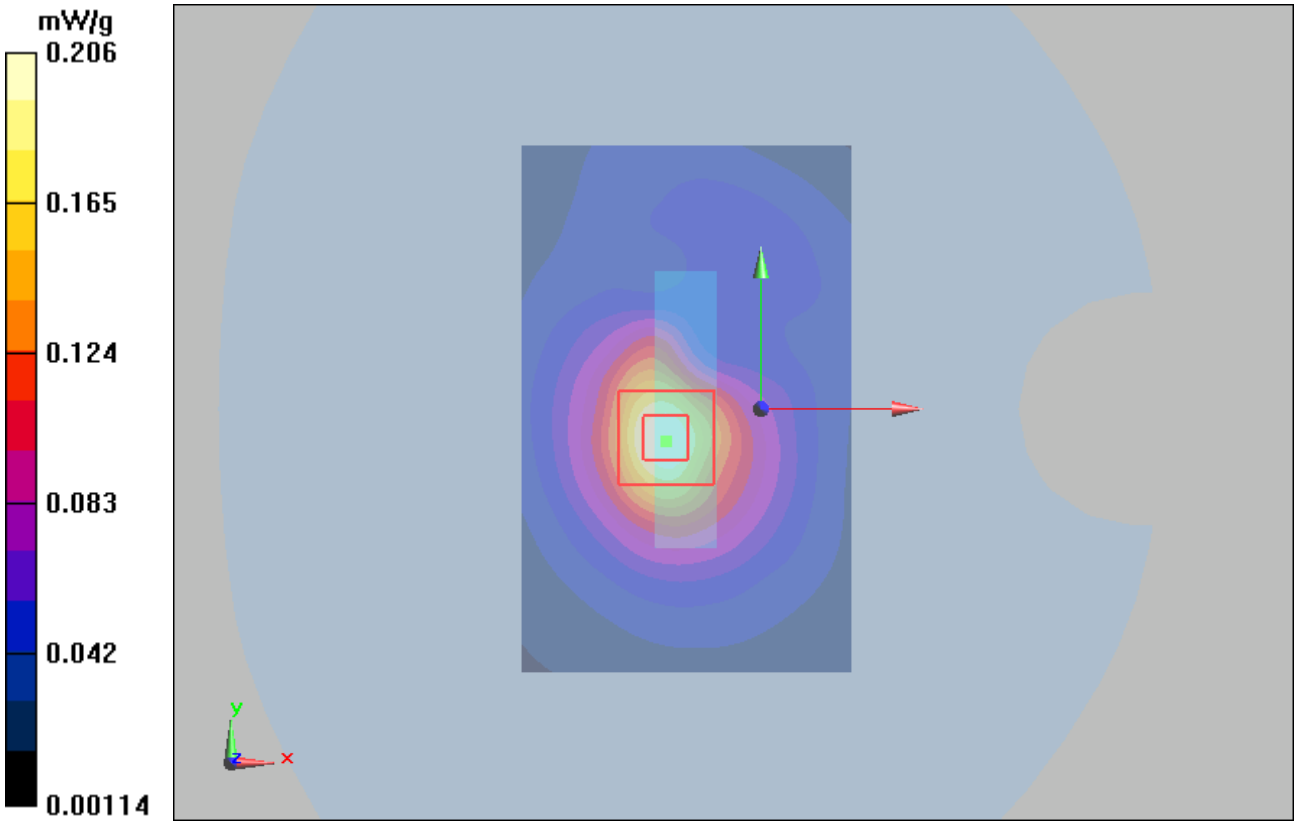


Figure 61 LTE Band 7 with Test Position 4 Channel 21100

LTE Band 7 with Test Position 5 Middle (50%RB)

Date/Time: 6/13/2013 7:00:50 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 5 Middle/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.189 mW/g

Test Position 5 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.75 V/m; Power Drift = 0.022 dB
Peak SAR (extrapolated) = 0.321 W/kg
SAR(1 g) = 0.176 mW/g; SAR(10 g) = 0.103 mW/g
Maximum value of SAR (measured) = 0.188 mW/g

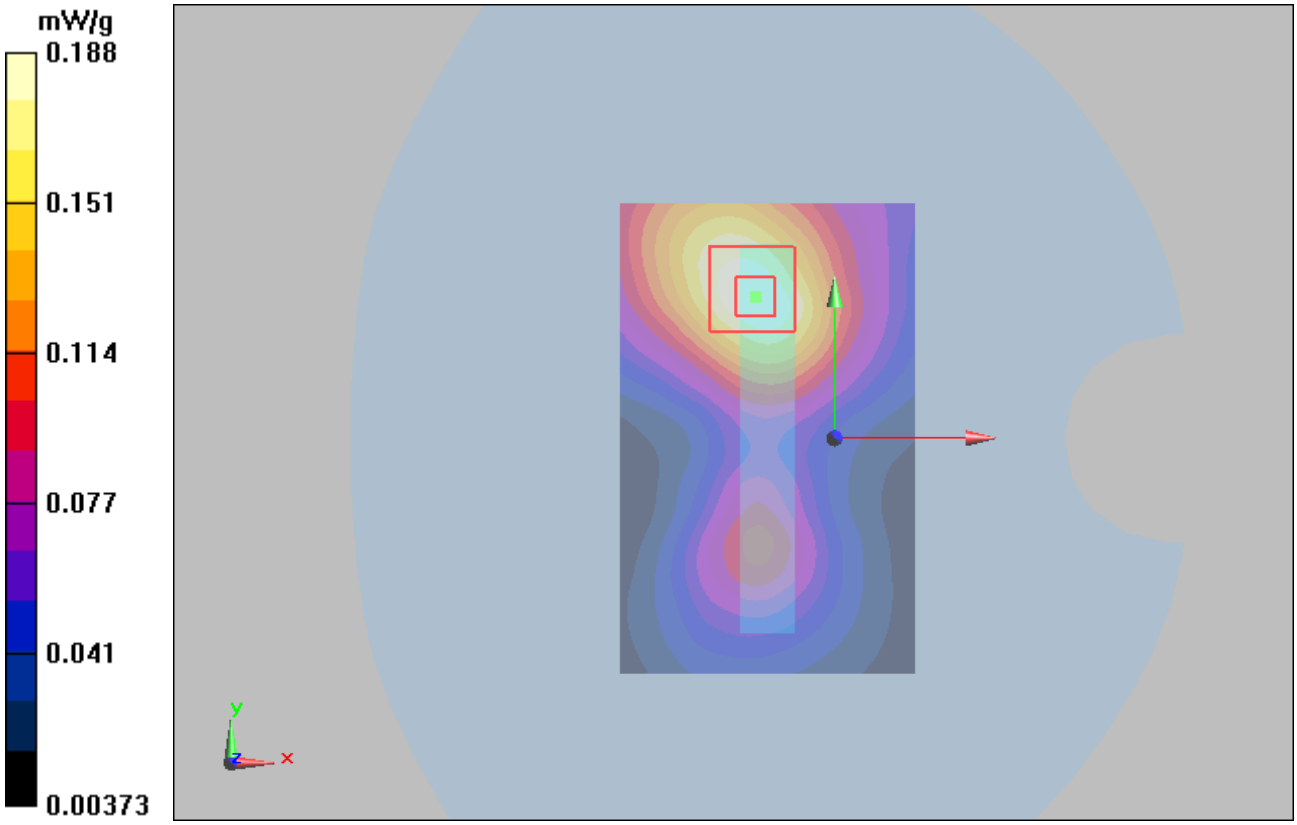


Figure 62 LTE Band 7 with Test Position 5 Channel 21100

LTE Band 7 with Test Position 6 Middle (50%RB)

Date/Time: 6/13/2013 7:23:57 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 6 Middle/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.709 mW/g

Test Position 6 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.9 V/m; Power Drift = 0.029 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.618 mW/g; SAR(10 g) = 0.321 mW/g
Maximum value of SAR (measured) = 0.673 mW/g

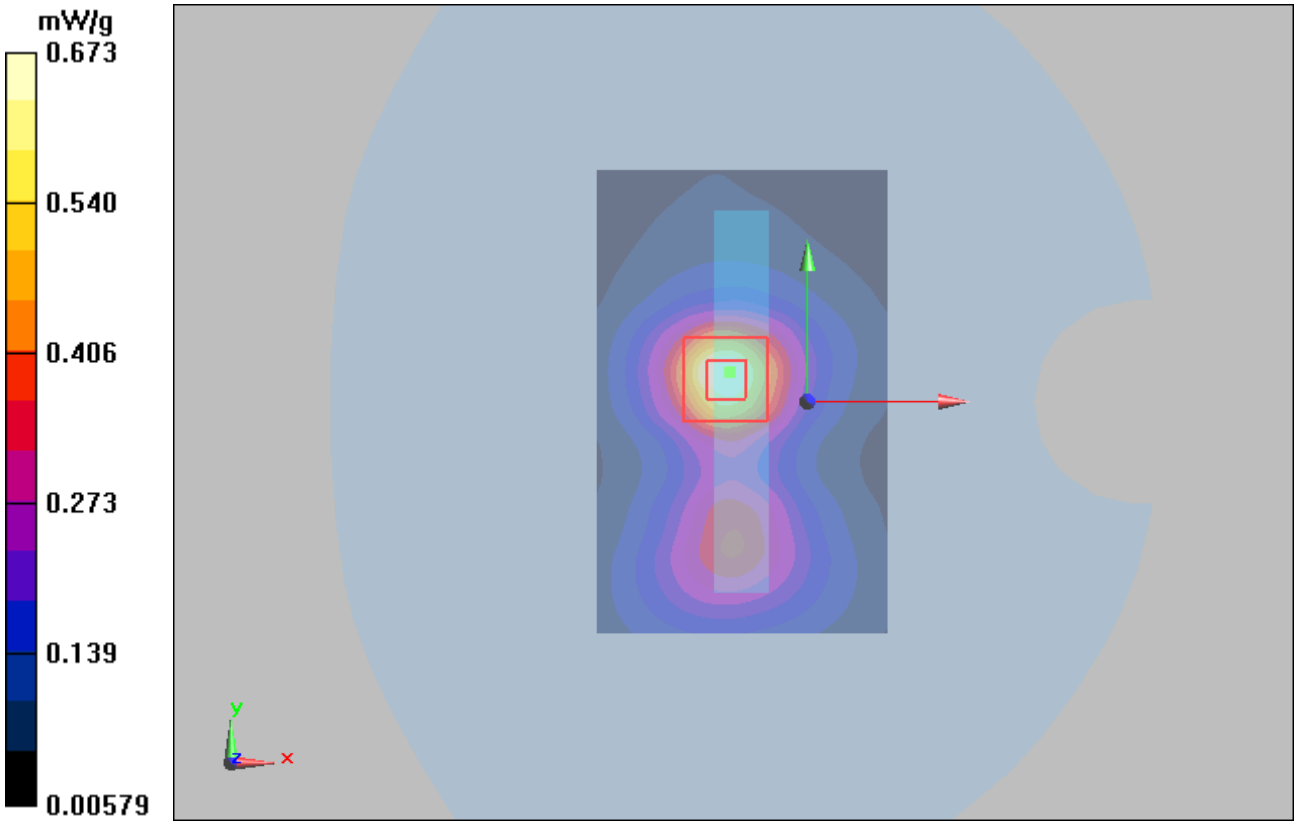


Figure 63 LTE Band 7 with Test Position 6 Channel 21100

LTE Band 7 with Test Position 1 High (100%RB)

Date/Time: 6/13/2013 11:41:24 AM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.802 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.31 V/m; Power Drift = 0.103 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.732 mW/g; SAR(10 g) = 0.373 mW/g
Maximum value of SAR (measured) = 0.796 mW/g

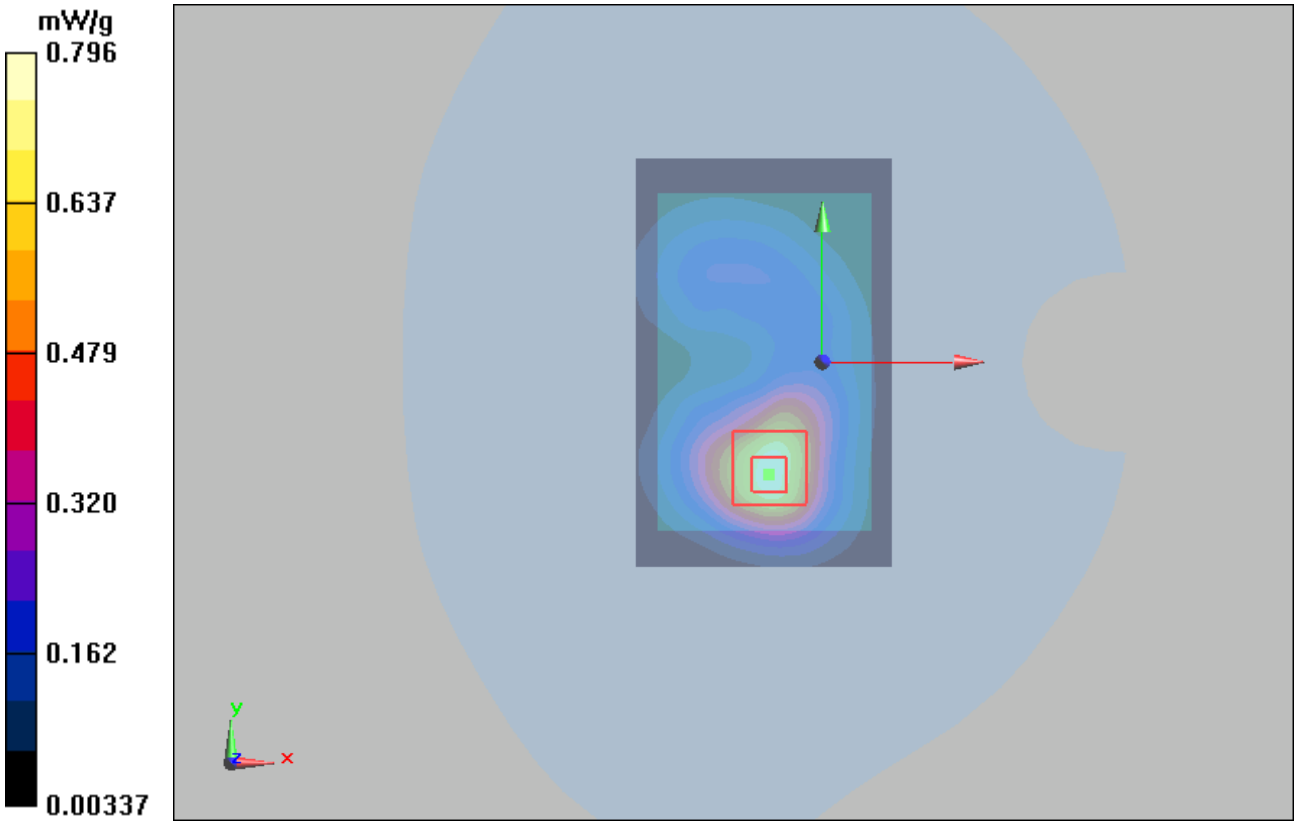


Figure 64 LTE Band 7 with Test Position 1 Channel 21350

LTE Band 7 with Test Position 2 High (100%RB)

Date/Time: 6/13/2013 11:25:13 AM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 2 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.15 mW/g

Test Position 2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = -0.088 dB
Peak SAR (extrapolated) = 2.21 W/kg
SAR(1 g) = 1.080 mW/g; SAR(10 g) = 0.546 mW/g
Maximum value of SAR (measured) = 1.15 mW/g

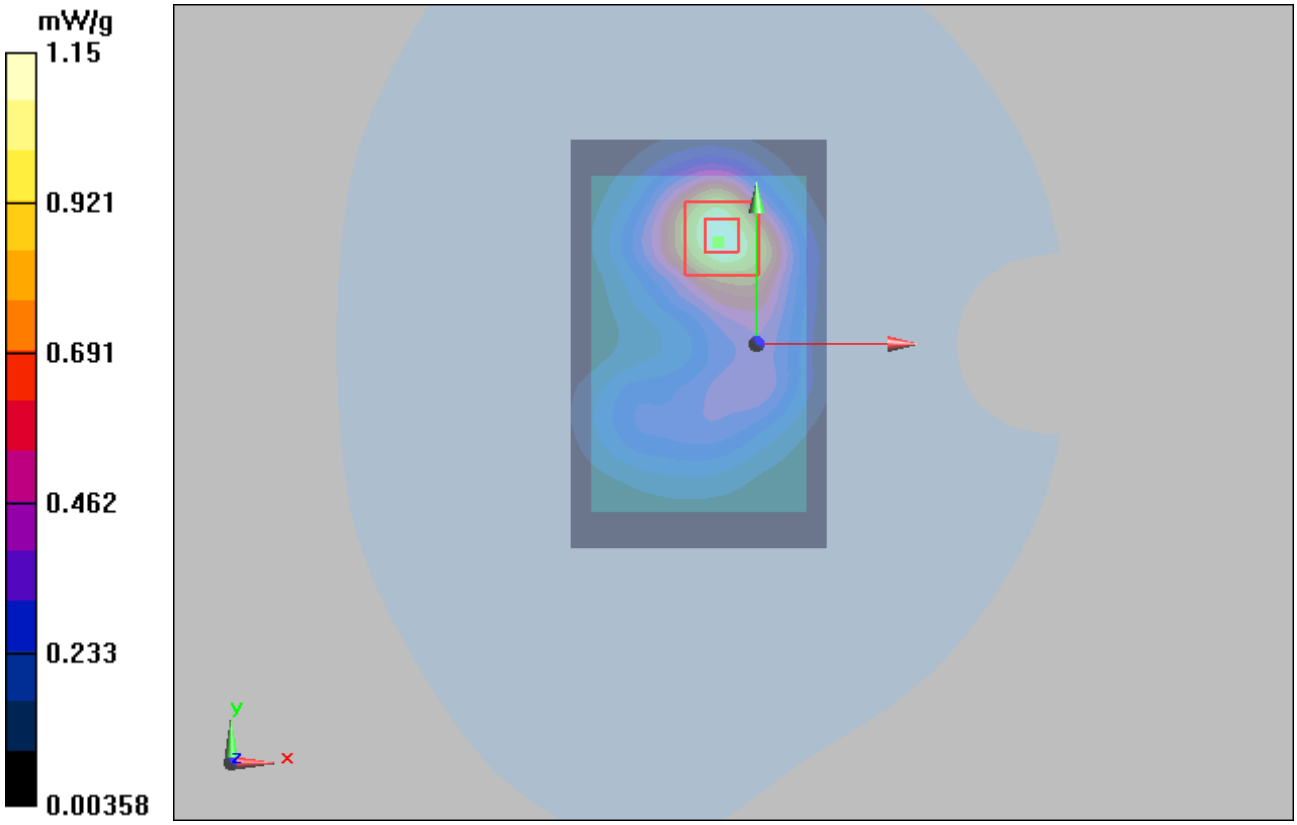


Figure 65 LTE Band 7 with Test Position 2 Channel 21350

LTE Band 7 with Test Position 4 High (100%RB)

Date/Time: 6/13/2013 12:39:46 PM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 4 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.349 mW/g

Test Position 4 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.4 V/m; Power Drift = 0.040 dB
Peak SAR (extrapolated) = 0.574 W/kg
SAR(1 g) = 0.296 mW/g; SAR(10 g) = 0.153 mW/g
Maximum value of SAR (measured) = 0.325 mW/g

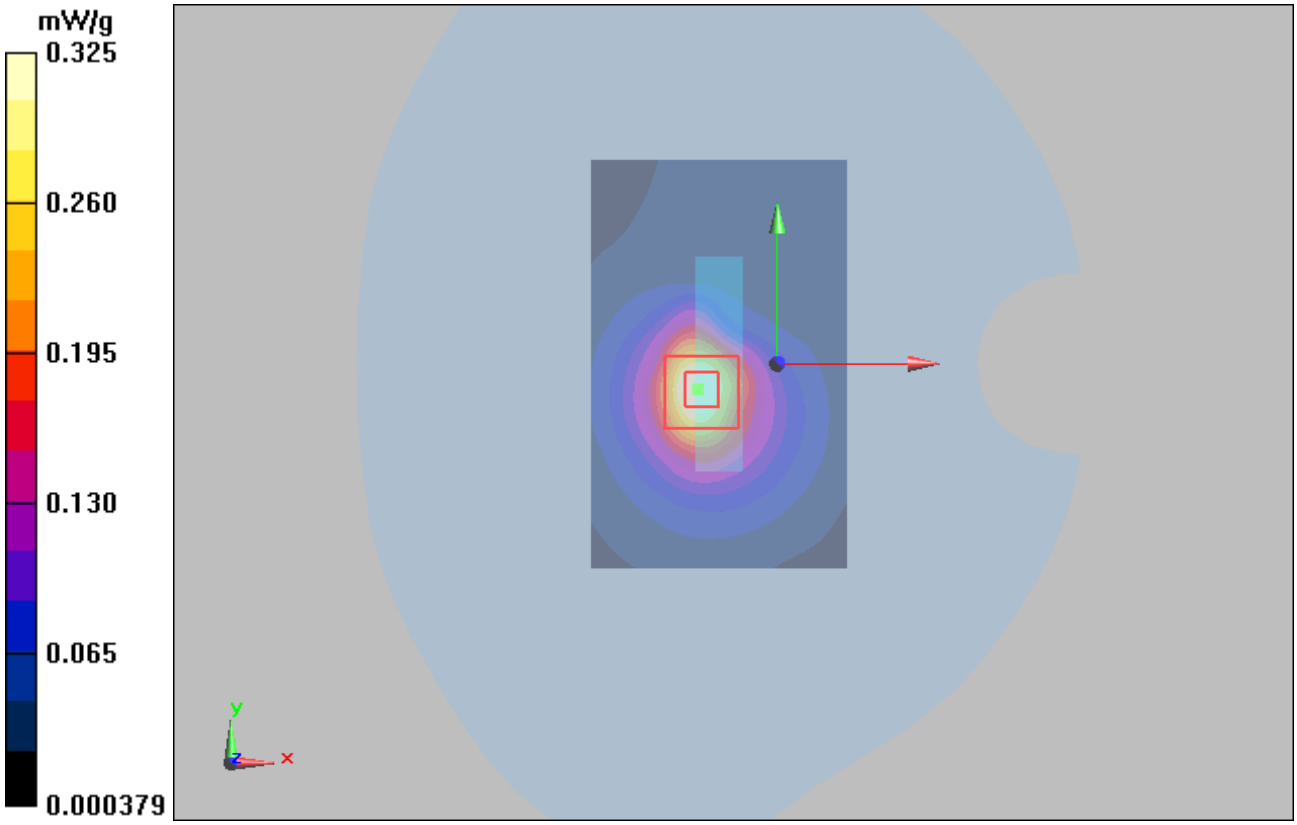


Figure 66 LTE Band 7 with Test Position 4 Channel 21350

LTE Band 7 with Test Position 5 High (100%RB)

Date/Time: 6/13/2013 12:15:31 PM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 5 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.245 mW/g

Test Position 5 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.16 V/m; Power Drift = 0.181 dB
Peak SAR (extrapolated) = 0.433 W/kg
SAR(1 g) = 0.227 mW/g; SAR(10 g) = 0.129 mW/g
Maximum value of SAR (measured) = 0.243 mW/g

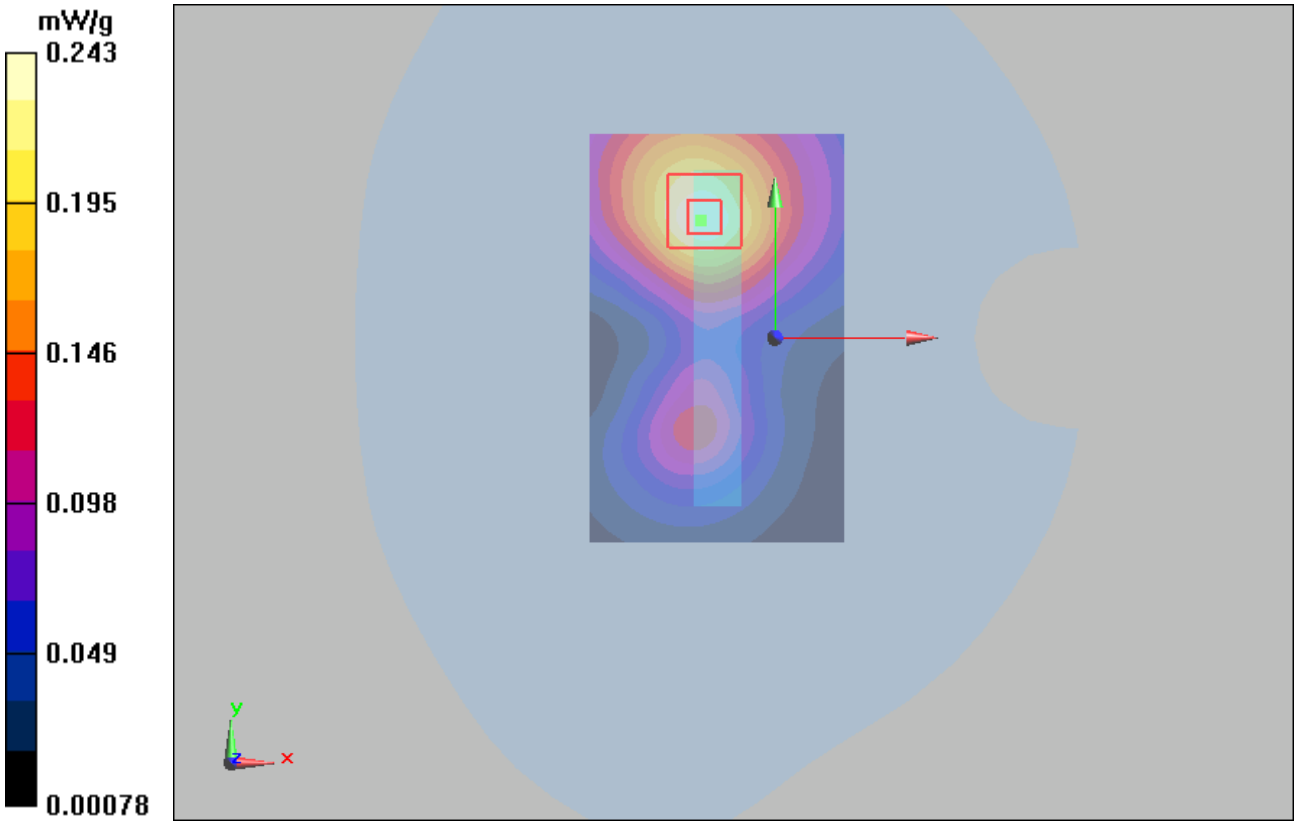


Figure 67 LTE Band 7 with Test Position 5 Channel 21350

LTE Band 7 with Test Position 6 High (100%RB)

Date/Time: 6/13/2013 11:59:56 AM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 6 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.428 mW/g

Test Position 6 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.3 V/m; Power Drift = 0.013 dB
Peak SAR (extrapolated) = 0.780 W/kg
SAR(1 g) = 0.392 mW/g; SAR(10 g) = 0.198 mW/g
Maximum value of SAR (measured) = 0.433 mW/g

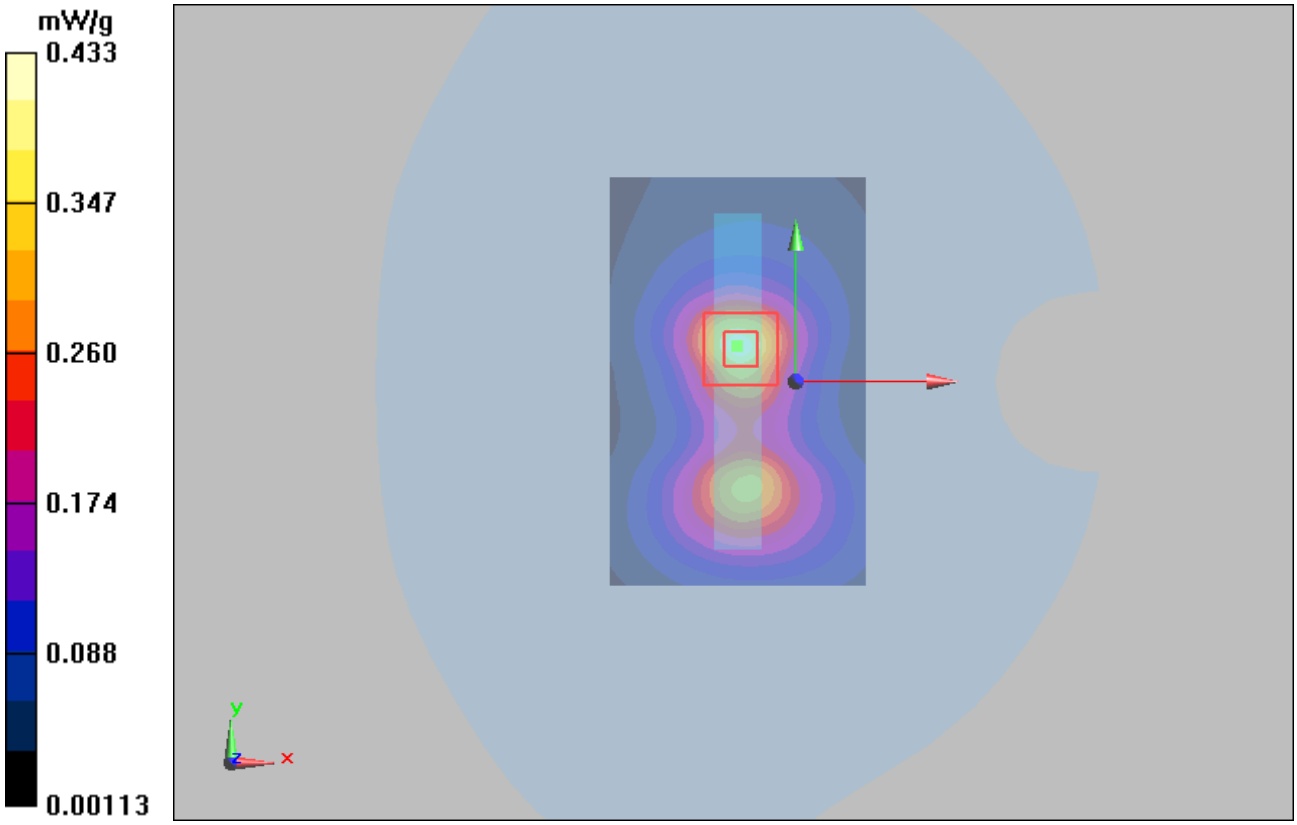


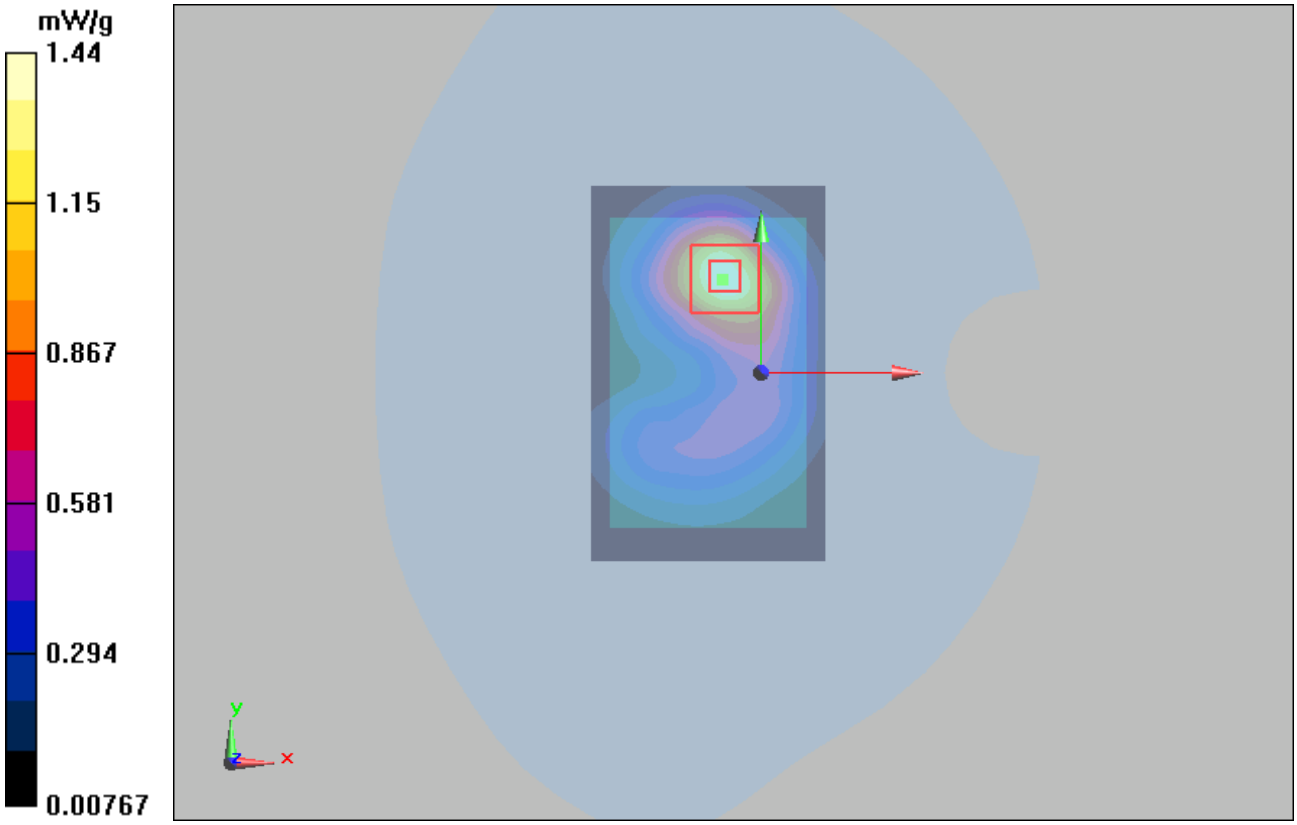
Figure 68 LTE Band 7 with Test Position 6 Channel 21350

LTE Band 7 with Test Position 1 High (1RB) (battery 2)

Date/Time: 6/13/2013 1:23:50 PM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 2 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.48 mW/g

Test Position 2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.8 V/m; Power Drift = -0.026 dB
Peak SAR (extrapolated) = 2.72 W/kg
SAR(1 g) = 1.340 mW/g; SAR(10 g) = 0.695 mW/g
Maximum value of SAR (measured) = 1.44 mW/g



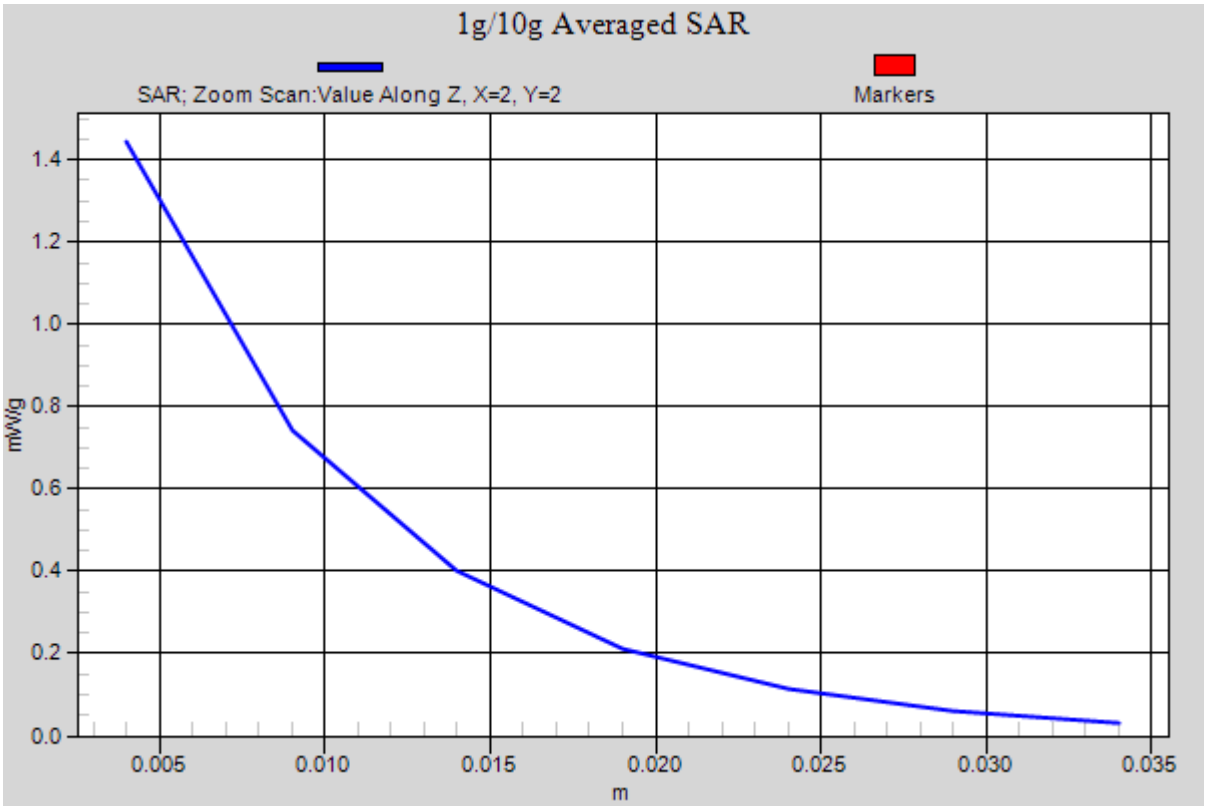


Figure 69 LTE Band 7 with Test Position 6 Channel 21350

LTE Band 7 with Test Position 1 High (1RB) (battery 3)

Date/Time: 6/13/2013 2:20:15 PM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
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

Test Position 2 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.47 mW/g

Test Position 2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = -0.104 dB
Peak SAR (extrapolated) = 2.69 W/kg
SAR(1 g) = 1.330 mW/g; SAR(10 g) = 0.687 mW/g
Maximum value of SAR (measured) = 1.43 mW/g

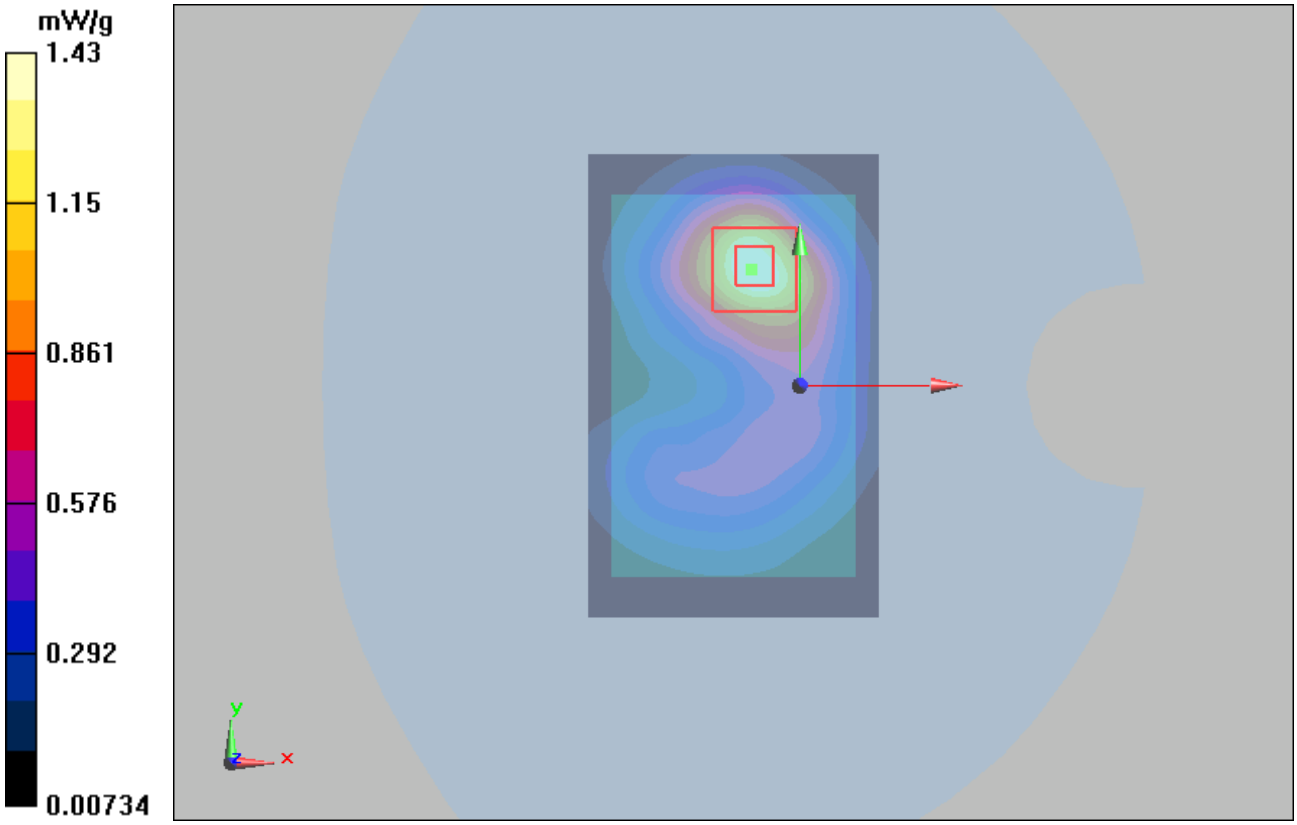


Figure 70 LTE Band 7 with Test Position 6 Channel 21350

LTE Band 7 with Test Position 1 High (1RB) (battery 4)

Date/Time: 6/13/2013 2:32:33 PM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.134; 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 2 High/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 1.21 W/kg

Test Position 2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.441 V/m; Power Drift = -0.168 dB
Peak SAR (extrapolated) = 2.248 mW/g
SAR(1 g) = 1.110 mW/g; SAR(10 g) = 0.575 mW/g
Maximum value of SAR (measured) = 1.20 W/kg

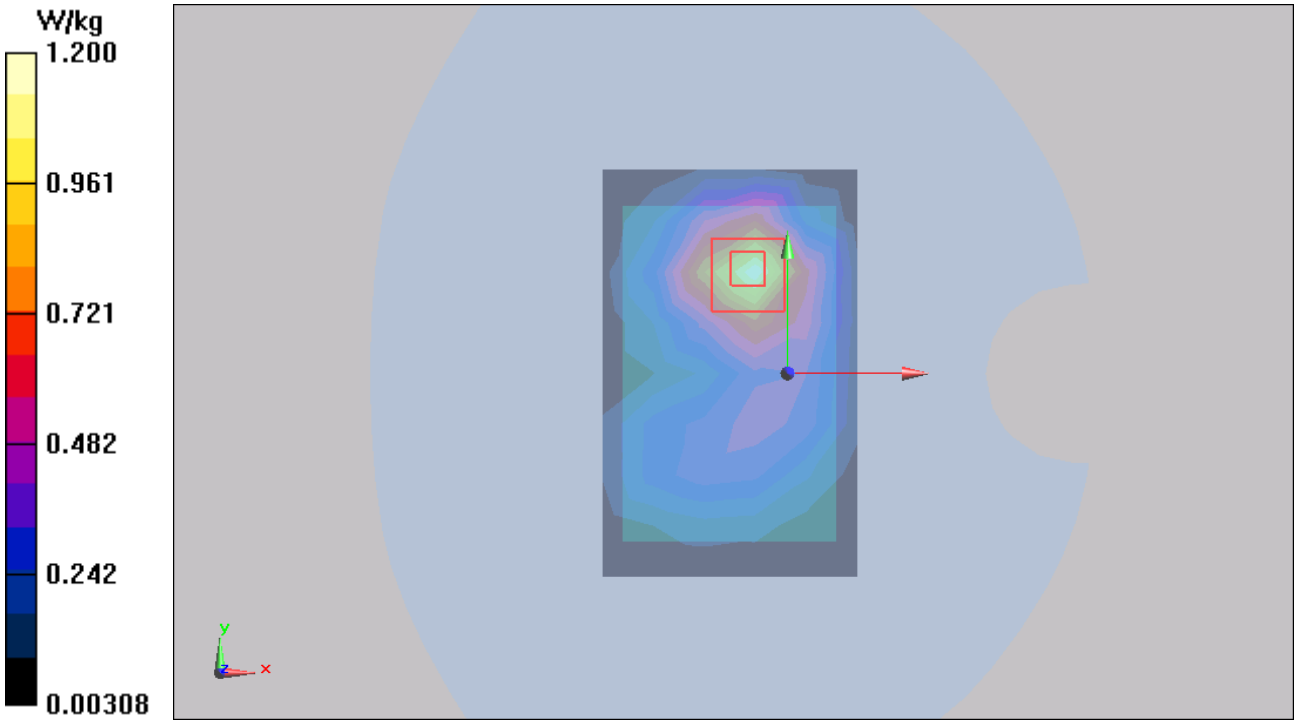


Figure 71 LTE Band 7 with Test Position 6 Channel 21350

LTE Band 7 with Repeateded SAR Test Position 1 High (1RB) (battery 2)

Date/Time: 6/13/2013 1:50:09 PM
Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 2.11 mho/m; ε_r = 52.134; 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 - SN3753; ConvF(6.66, 6.66, 6.66); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 2 Repeated SAR High/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 1.34 W/kg

Test Position 2 Repeated SAR High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.652 V/m; Power Drift = -0.051 dB
Peak SAR (extrapolated) = 2.718 mW/g
SAR(1 g) = 1.340 mW/g; SAR(10 g) = 0.695 mW/g
Maximum value of SAR (measured) = 1.42 W/kg

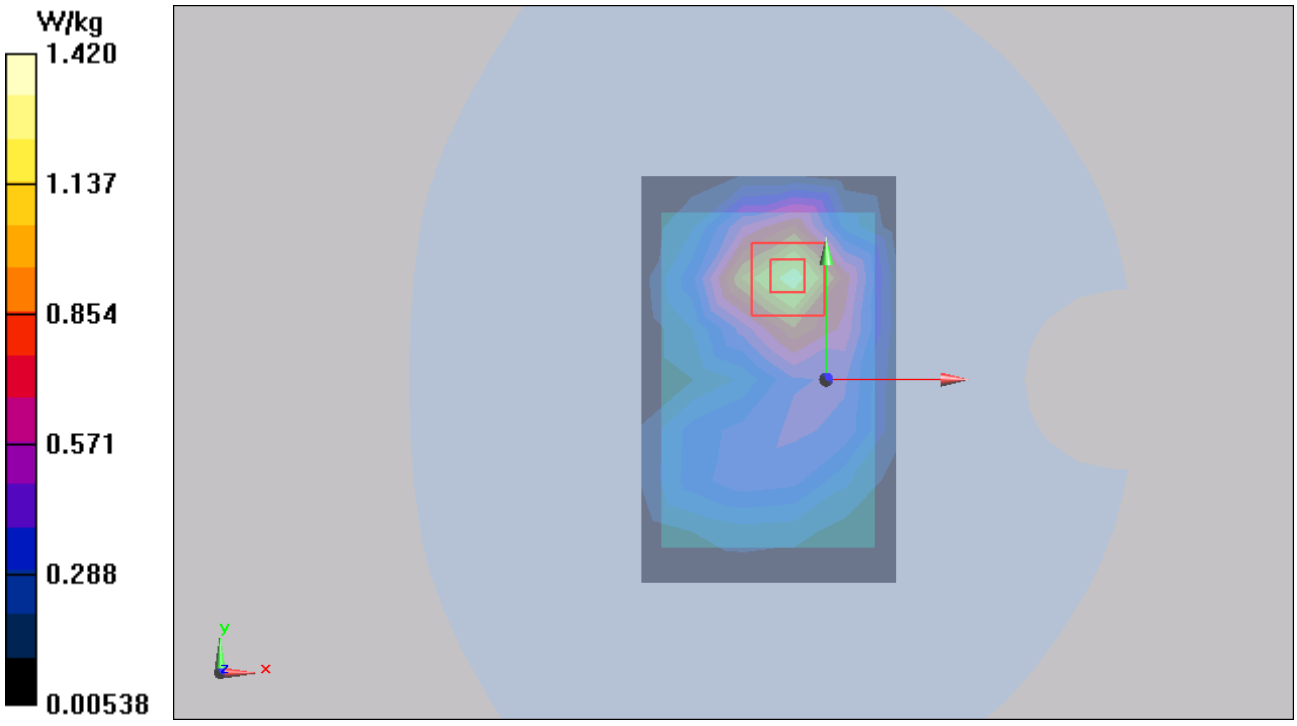


Figure 72 LTE Band 7 with Repeateded SAR Test Position 6 Channel 21350

802.11b Test Position 1 Middle(Ant 1)

Date/Time: 6/22/2013 1:31:03 PM
Communication System: 802.11b; Frequency: 2432 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2432 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 1 Middle/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.041 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.95 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 0.097 W/kg
SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.023 mW/g
Maximum value of SAR (measured) = 0.037 mW/g

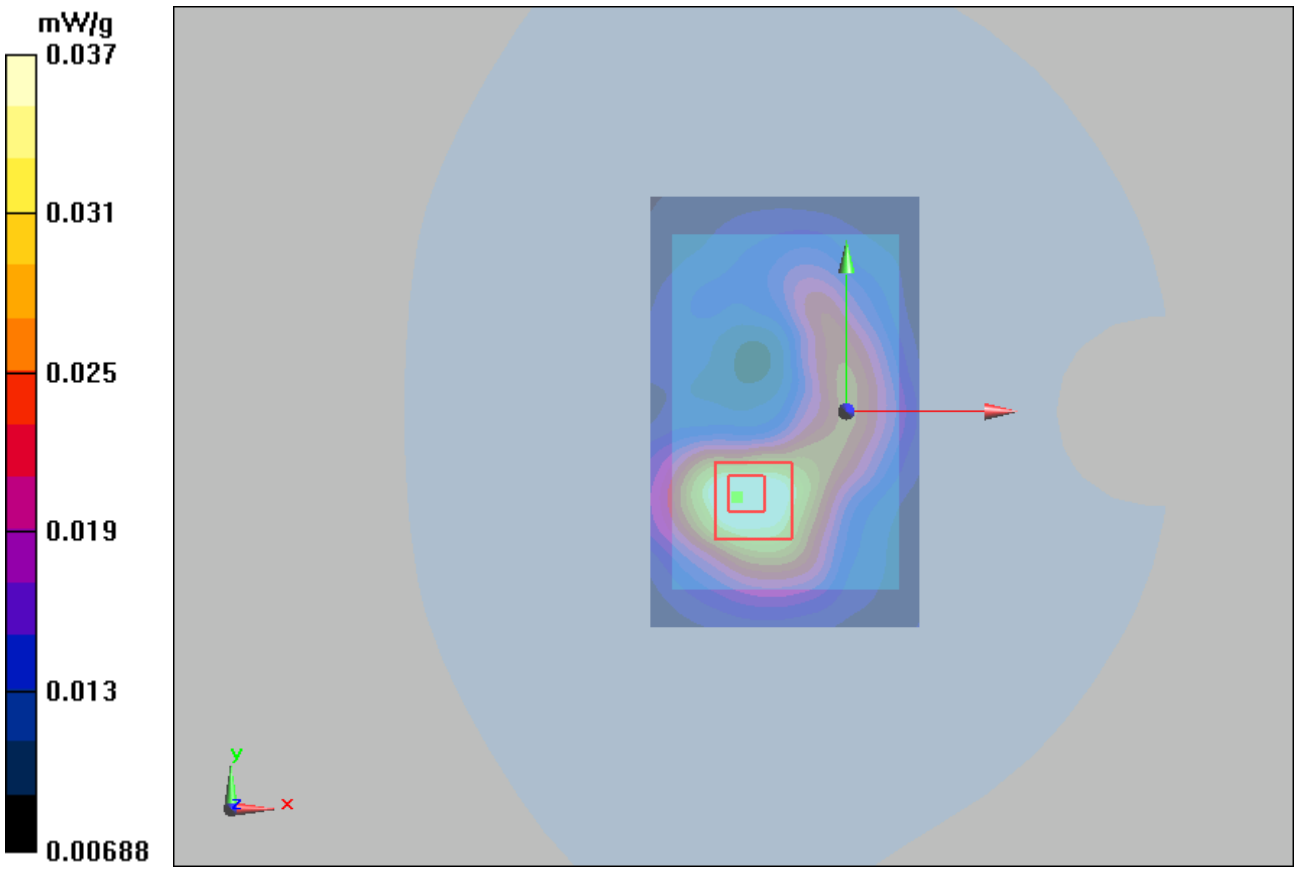


Figure 73 802.11b Test Position 1 Channel 5

802.11b Test Position 2 Middle(Ant 1)

Date/Time: 6/22/2013 12:55:50 PM
Communication System: 802.11b; Frequency: 2432 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2432 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.039 mW/g

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.55 V/m; Power Drift = -0.003 dB
Peak SAR (extrapolated) = 0.074 W/kg
SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.040 mW/g

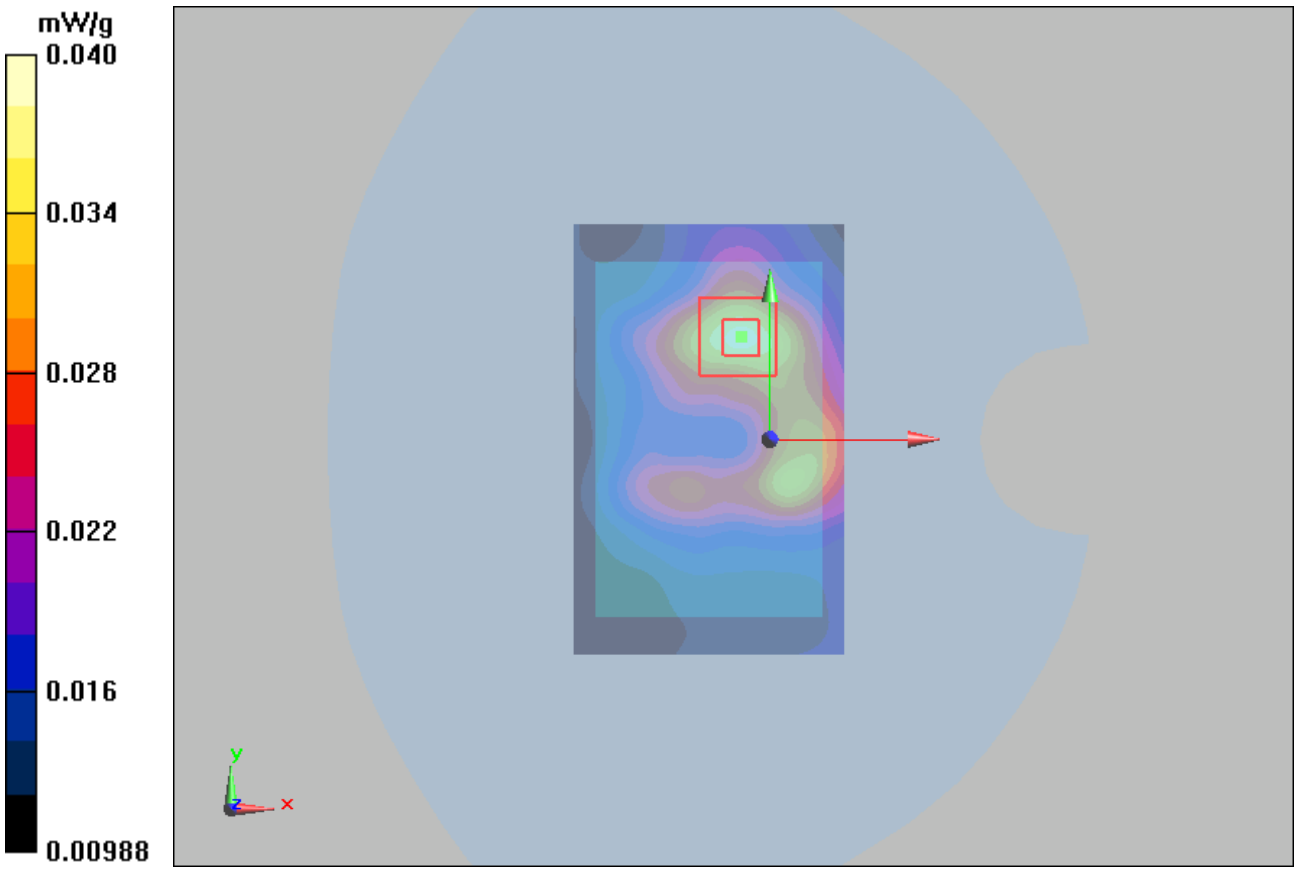


Figure 74 802.11b Test Position 2 Channel 5

802.11b Test Position 3 Middle(Ant 1)

Date/Time: 6/22/2013 1:52:31 PM
Communication System: 802.11b; Frequency: 2432 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2432 MHz; σ = 1.877 mho/m; ε_r = 51.707; 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 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 3 Middle /Area Scan (4x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.0304 W/kg

Test Position 3 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.688 V/m; Power Drift = 0.090 dB
Peak SAR (extrapolated) = 0.103 mW/g
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.041 W/kg

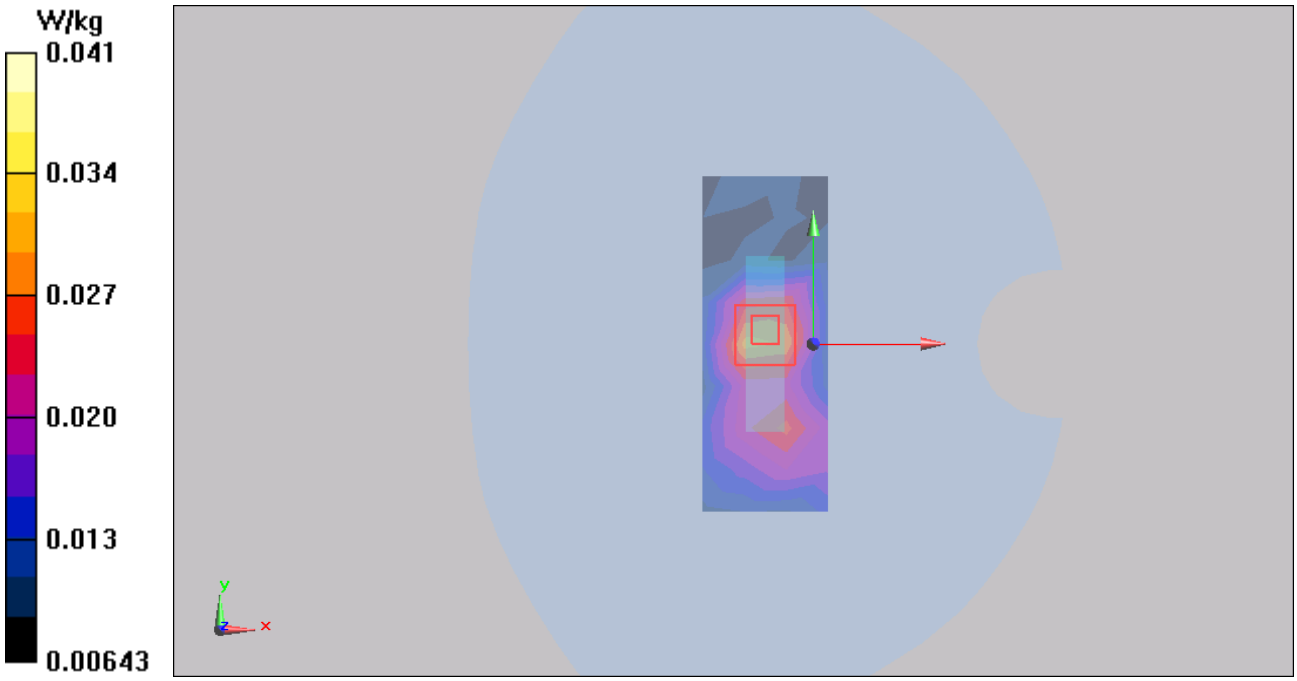


Figure 75 802.11b Test Position 3 Channel 5

802.11b Test Position 6 Middle(Ant 1)

Date/Time: 6/22/2013 1:15:32 PM
Communication System: 802.11b; Frequency: 2432 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2432 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 6 Middle/Area Scan (31x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.044 mW/g

Test Position 6 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.05 V/m; Power Drift = 0.048 dB
Peak SAR (extrapolated) = 0.106 W/kg
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.040 mW/g

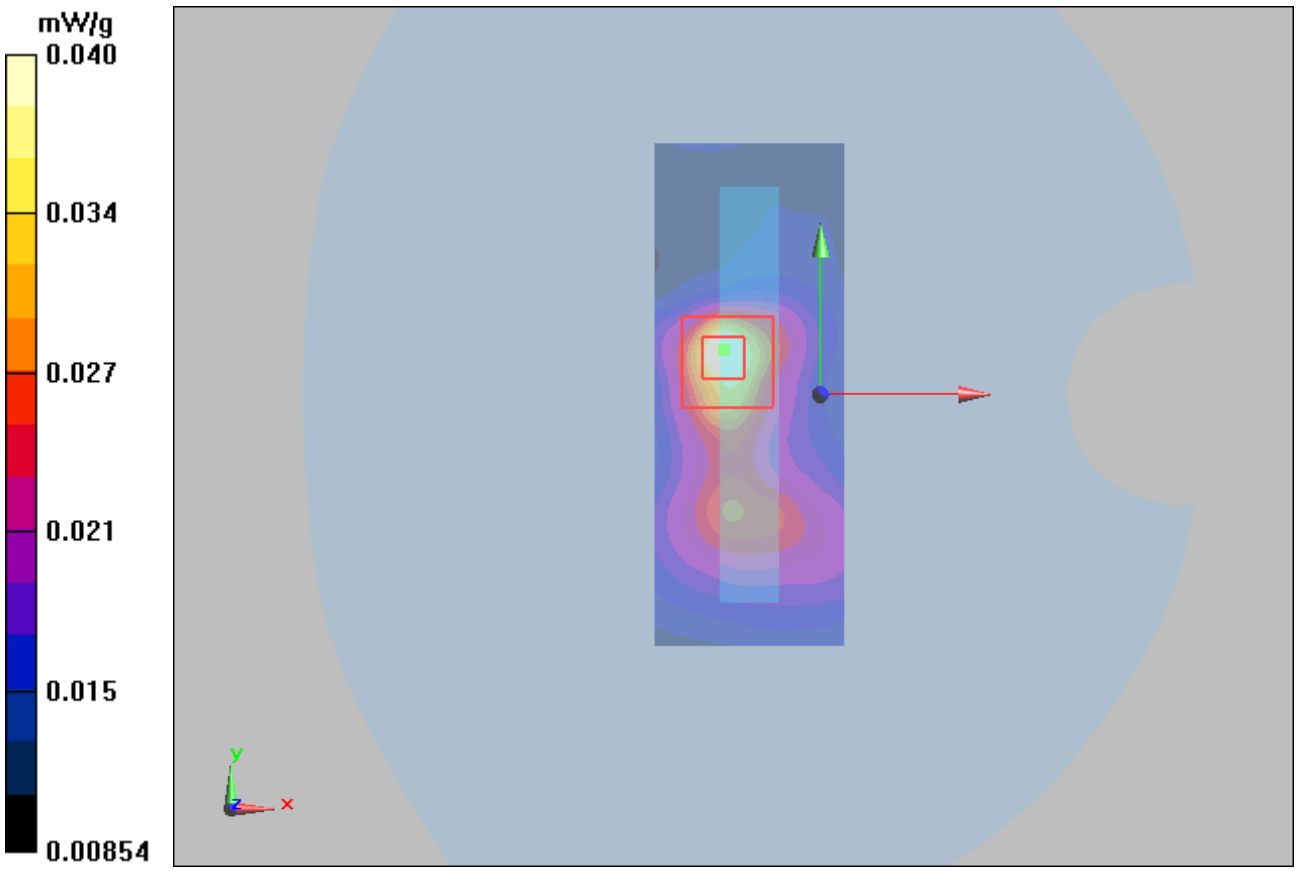


Figure 76 802.11b Test Position 6 Channel 5

802.11b Test Position 1 High(Ant 2)

Date/Time: 6/22/2013 10:50:04 AM
Communication System: 802.11b; Frequency: 2452 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2452 MHz; σ = 1.91 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.084 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.47 V/m; Power Drift = -0.076 dB
Peak SAR (extrapolated) = 0.175 W/kg
SAR(1 g) = 0.080 mW/g; SAR(10 g) = 0.050 mW/g
Maximum value of SAR (measured) = 0.081 mW/g

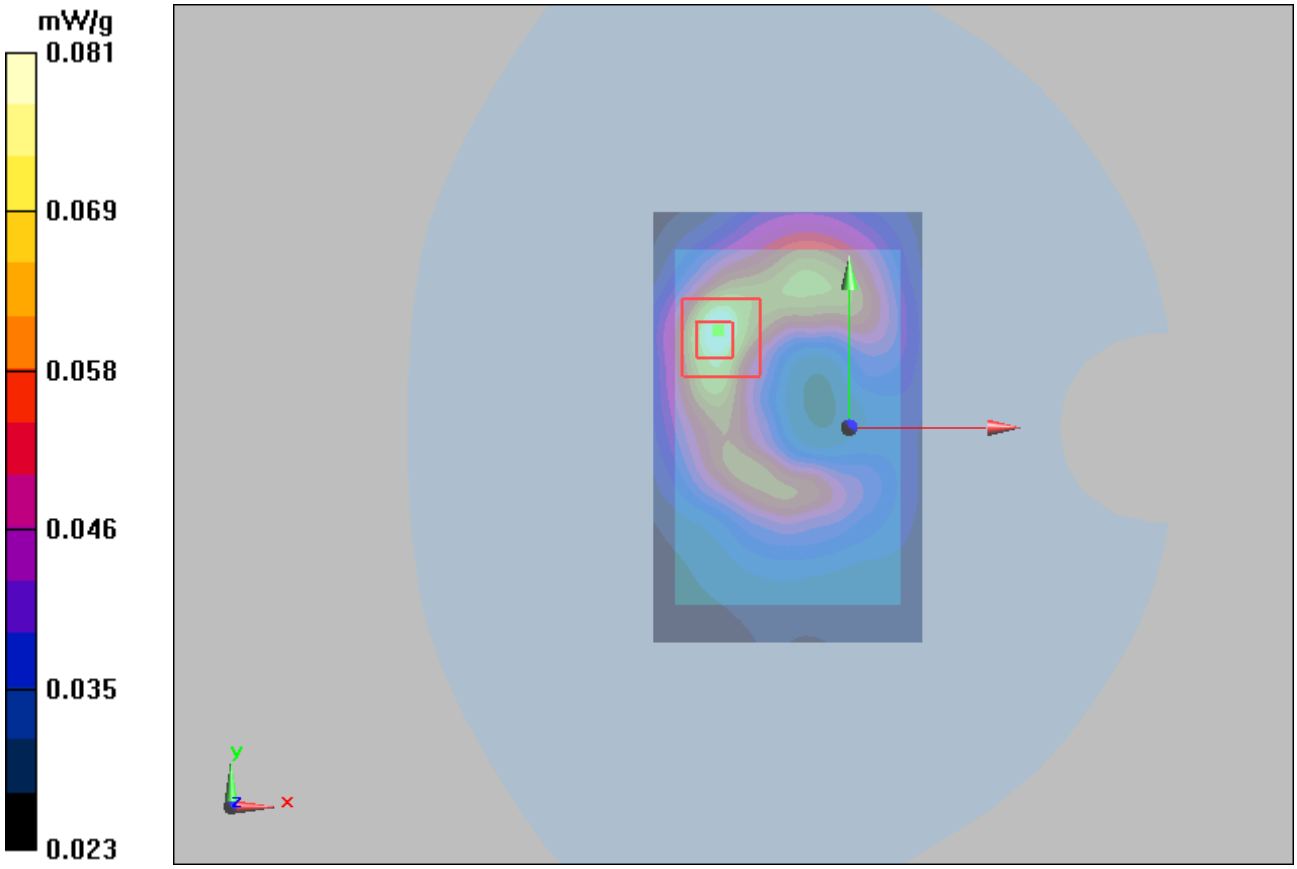


Figure 77 802.11b Test Position 1 Channel 9

802.11b Test Position 2 High(Ant 2)

Date/Time: 6/22/2013 11:06:44 AM
Communication System: 802.11b; Frequency: 2452 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2452 MHz; σ = 1.91 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 2 High /Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.065 mW/g

Test Position 2 High /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.02 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 0.140 W/kg
SAR(1 g) = 0.063 mW/g; SAR(10 g) = 0.039 mW/g
Maximum value of SAR (measured) = 0.063 mW/g

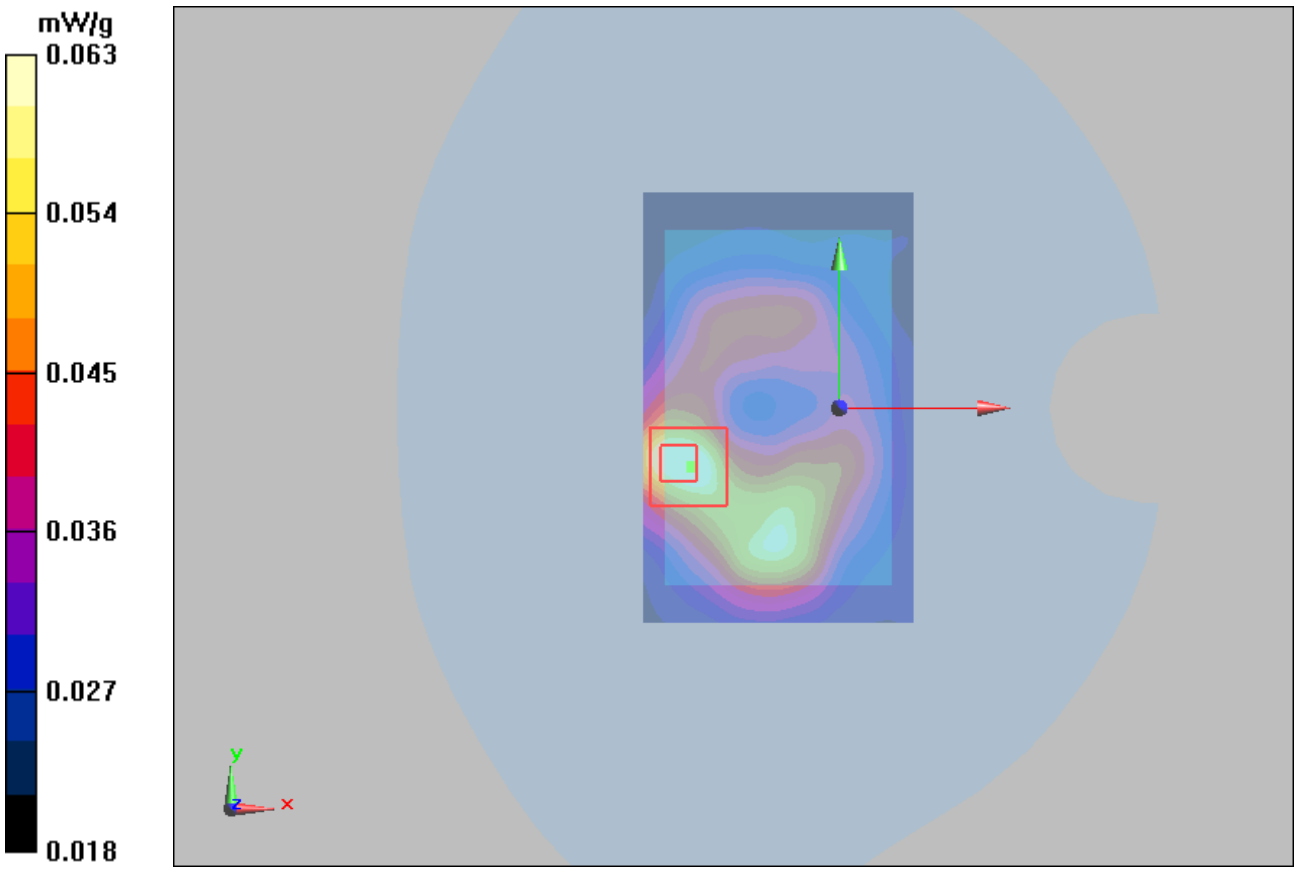


Figure 78 802.11b Test Position 2 Channel 9

802.11b Test Position 3 High(Ant 2)

Date/Time: 6/22/2013 2:04:36 PM
Communication System: 802.11b; Frequency: 2452 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2452 MHz; σ = 1.906 mho/m; ε_r = 51.67; 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 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 3/Area Scan (4x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.0340 W/kg

Test Position 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.544 V/m; Power Drift = 0.032 dB
Peak SAR (extrapolated) = 0.114 mW/g
SAR(1 g) = 0.043 mW/g; SAR(10 g) = 0.023 mW/g
Maximum value of SAR (measured) = 0.044 W/kg

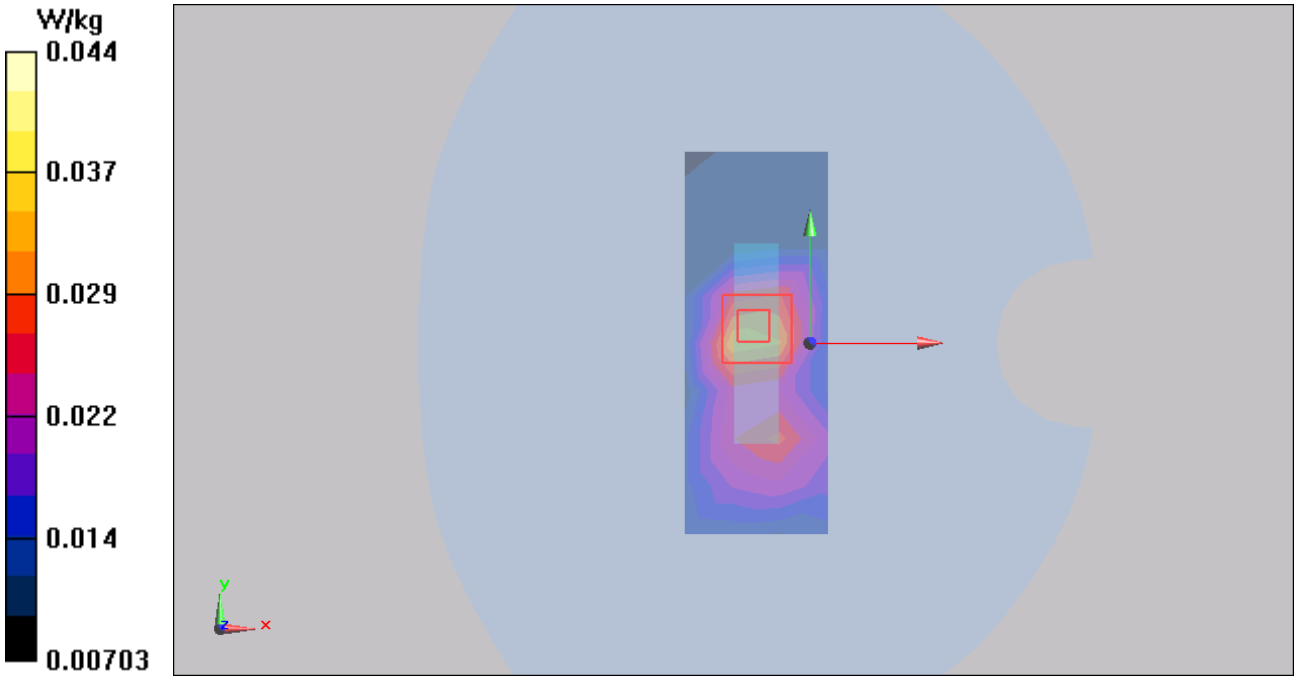


Figure 79 802.11b Test Position 3 Channel 9

802.11b Test Position 5 High(Ant 2)

Date/Time: 6/22/2013 11:24:31 AM
Communication System: 802.11b; Frequency: 2452 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2452 MHz; σ = 1.91 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 5 High/Area Scan (31x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.072 mW/g

Test Position 5 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.11 V/m; Power Drift = 0.195 dB
Peak SAR (extrapolated) = 0.154 W/kg
SAR(1 g) = 0.072 mW/g; SAR(10 g) = 0.043 mW/g
Maximum value of SAR (measured) = 0.074 mW/g

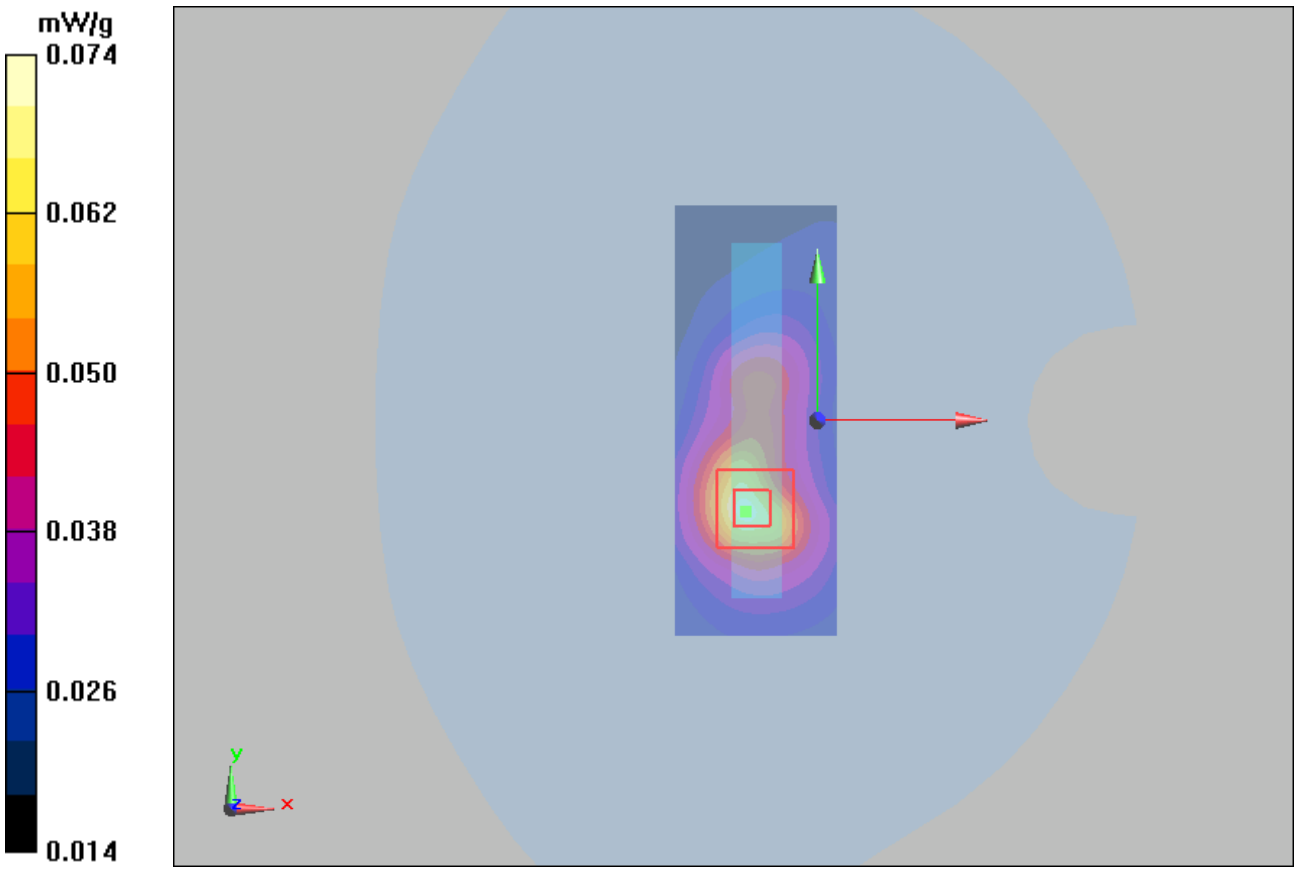


Figure 80 802.11b Test Position 5 Channel 9

802.11b with Test Position 1 High(Ant 2, battery 2)

Date/Time: 6/22/2013 11:55:33 AM
Communication System: 802.11b; Frequency: 2452 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2452 MHz; σ = 1.91 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 1 Middle/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.075 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.86 V/m; Power Drift = 0.086 dB
Peak SAR (extrapolated) = 0.153 W/kg
SAR(1 g) = 0.073 mW/g; SAR(10 g) = 0.043 mW/g
Maximum value of SAR (measured) = 0.077 mW/g

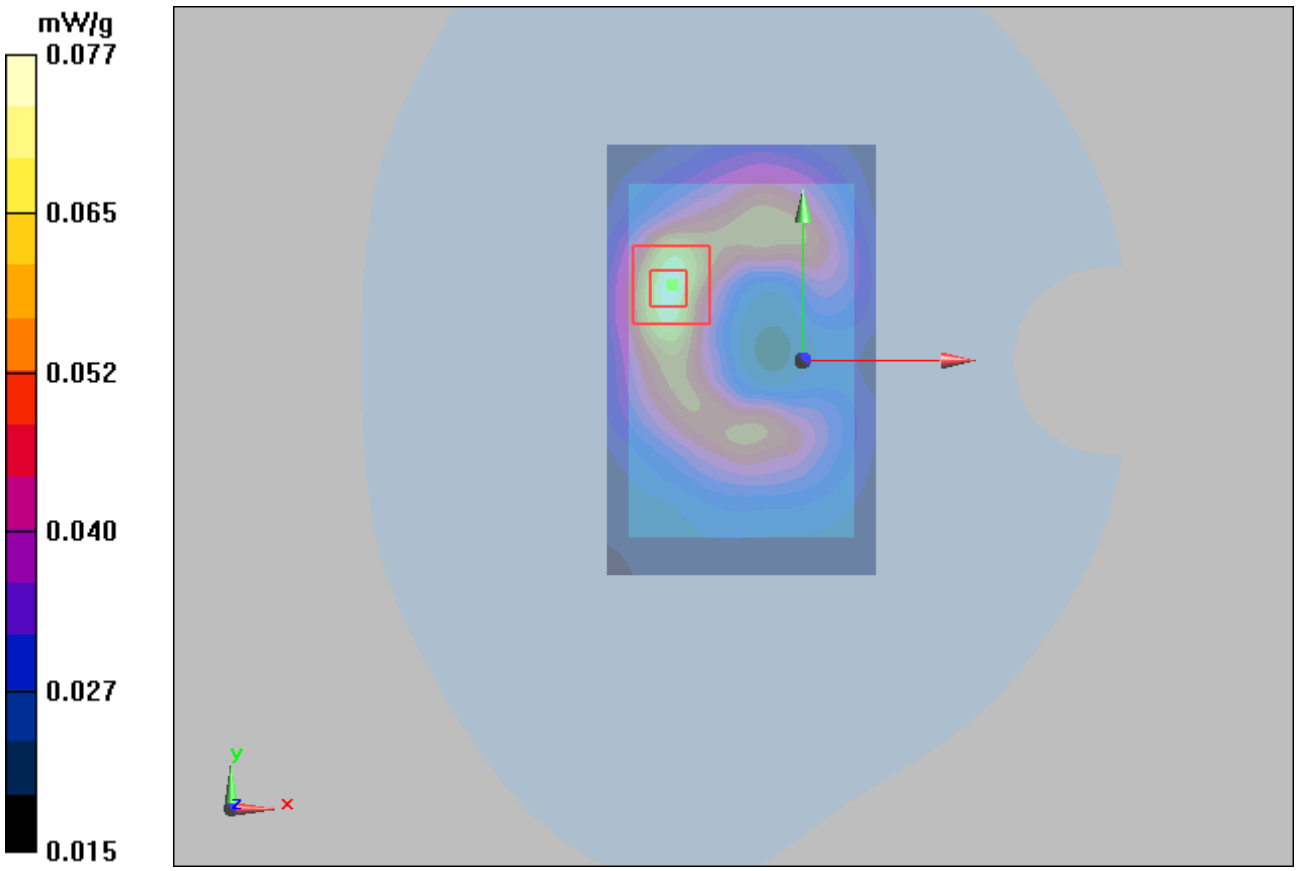


Figure 81 802.11b with Test Position 1 Channel 9

802.11b with Test Position 1 High(Ant 2, battery 3)

Date/Time: 6/22/2013 12:09:49 PM
Communication System: 802.11b; Frequency: 2452 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2452 MHz; σ = 1.91 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.072 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.65 V/m; Power Drift = 0.047 dB
Peak SAR (extrapolated) = 0.164 W/kg
SAR(1 g) = 0.071 mW/g; SAR(10 g) = 0.041 mW/g
Maximum value of SAR (measured) = 0.074 mW/g

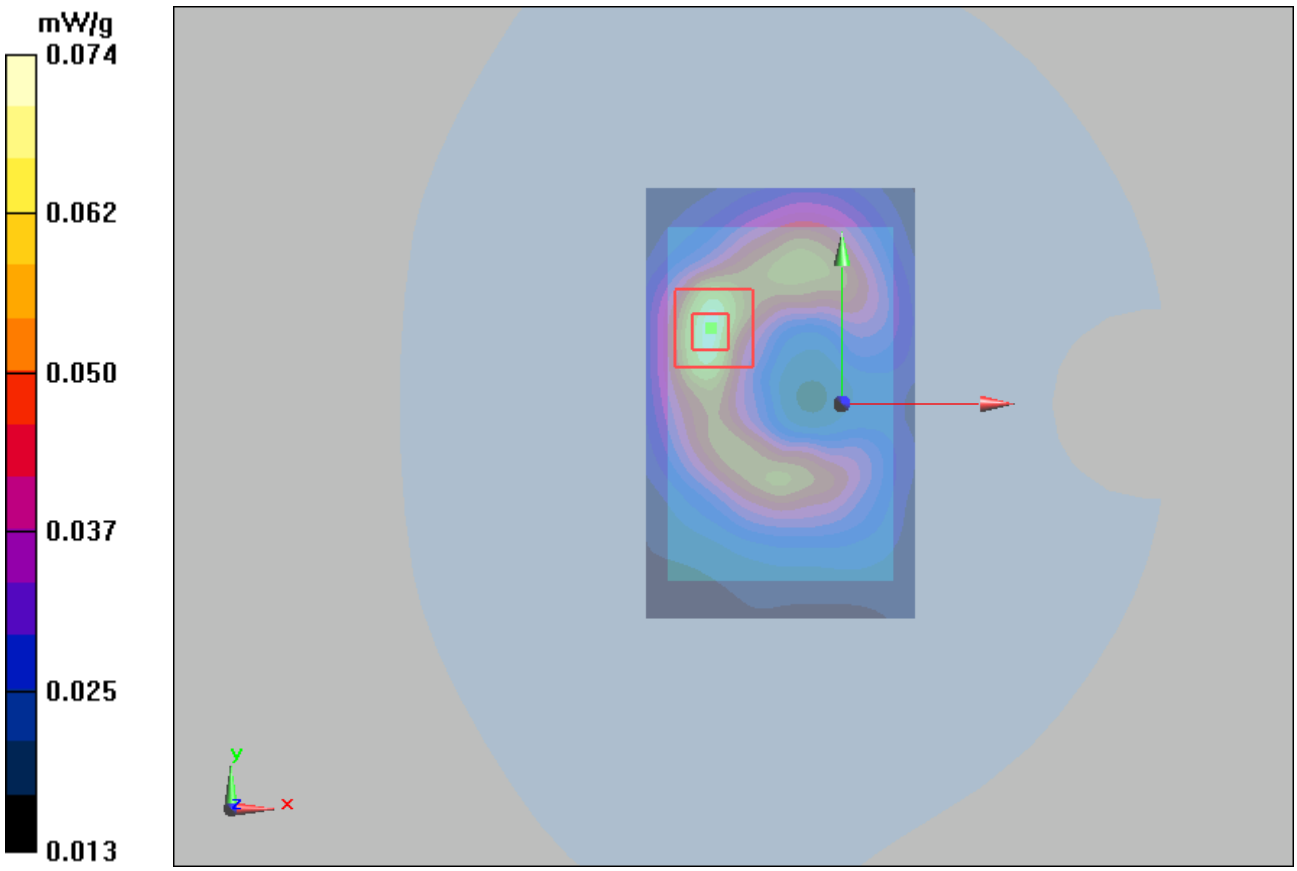


Figure 82 802.11b with Test Position 1 Channel 9

802.11b with Test Position 1 High(Ant 2, battery 4)

Date/Time: 6/22/2013 12:23:47 PM
Communication System: 802.11b; Frequency: 2452 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2452 MHz; σ = 1.91 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 1 High/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.071 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.43 V/m; Power Drift = 0.060 dB
Peak SAR (extrapolated) = 0.149 W/kg
SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.038 mW/g
Maximum value of SAR (measured) = 0.070 mW/g

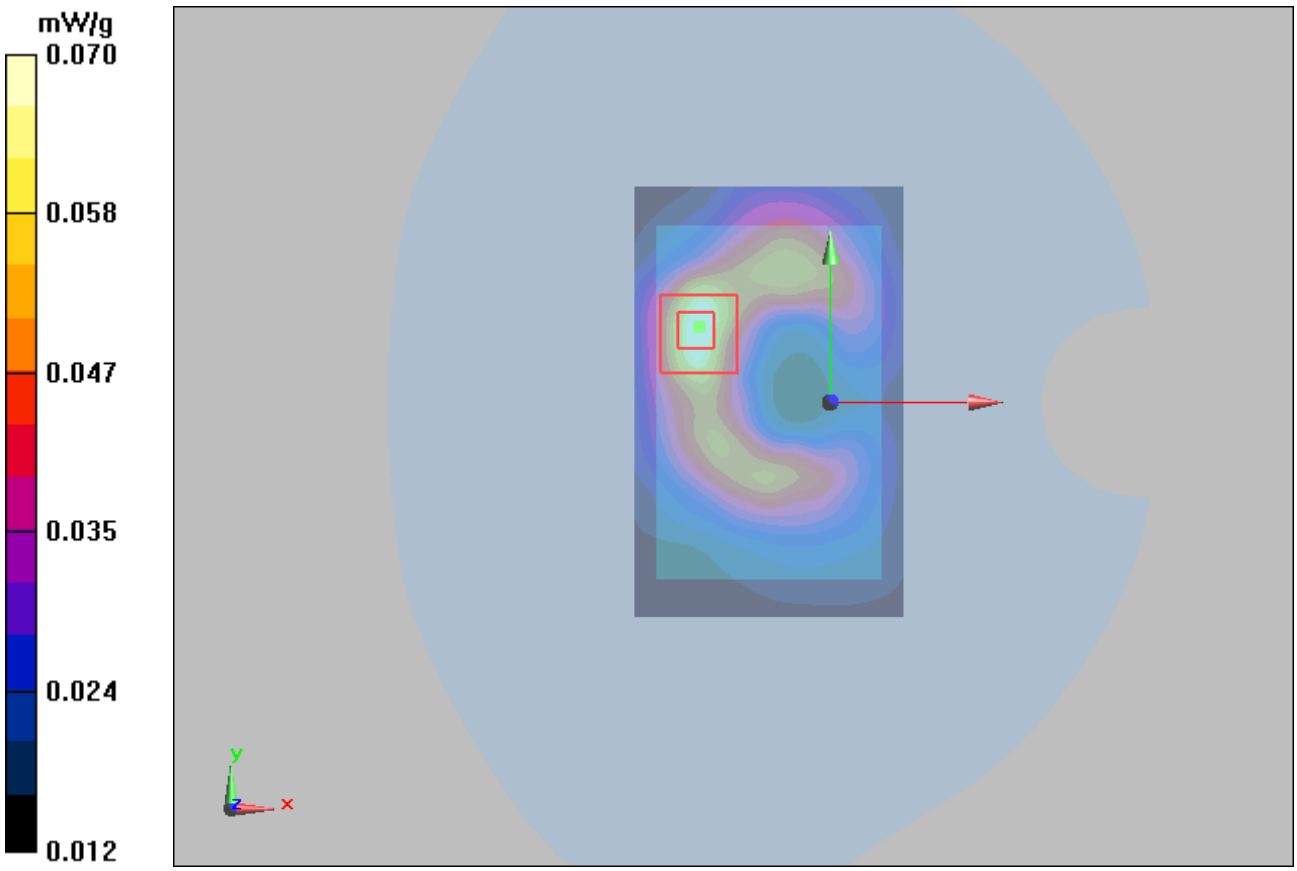


Figure 83 802.11b with Test Position 1 Channel 9

802.11n HT20 Test Position 1 Middle(MIMO)

Date/Time: 6/22/2013 2:31:56 PM
Communication System: 802.11b; Frequency: 2432 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2432 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: EX3DV4 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013
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

Test Position 1 Middle/Area Scan (51x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.100 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.95 V/m; Power Drift = 0.024 dB
Peak SAR (extrapolated) = 0.179 W/kg
SAR(1 g) = 0.089 mW/g; SAR(10 g) = 0.050 mW/g
Maximum value of SAR (measured) = 0.094 mW/g

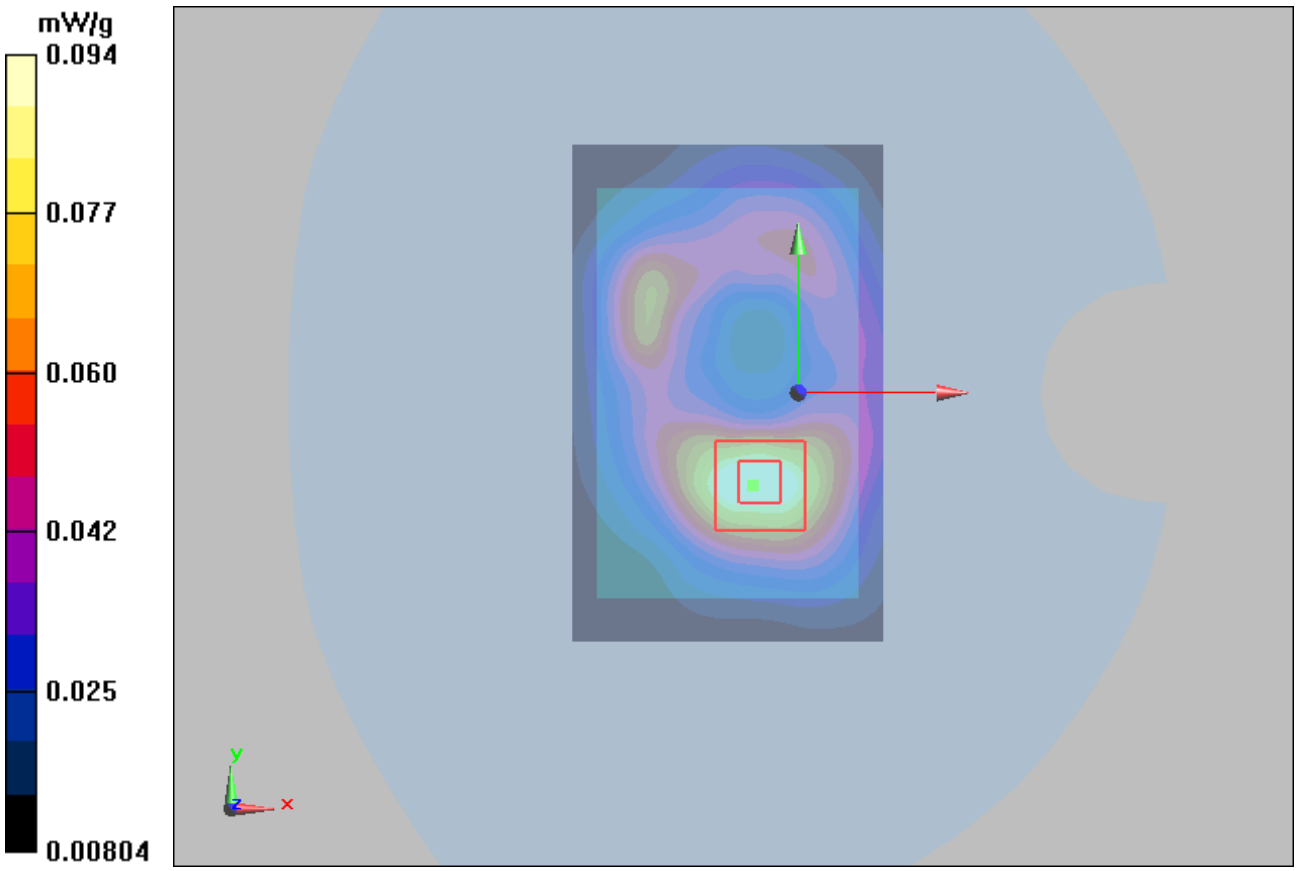


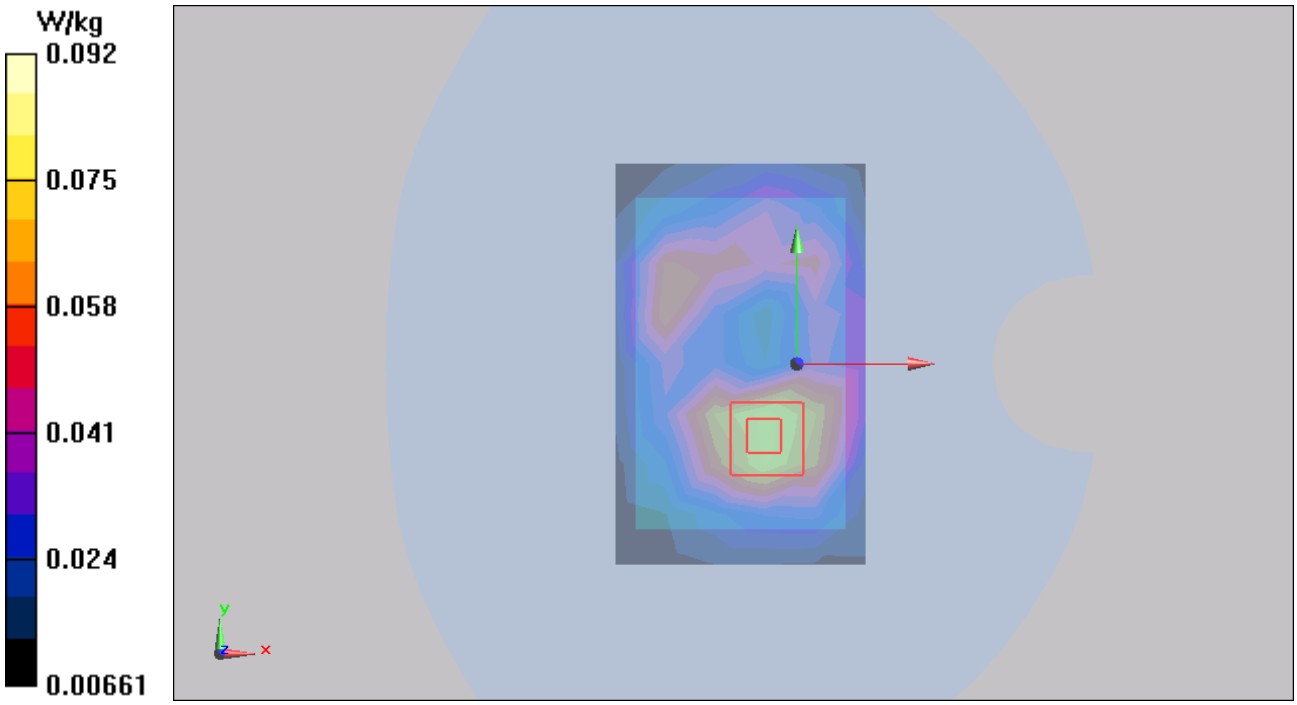
Figure 84 802.11n Test Position 1 Channel 5

802.11n HT40 Test Position 1 Middle(MIMO)

Date/Time: 6/22/2013 2:40:53 PM
Communication System: 802.11b; Frequency: 2432 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2432 MHz; σ = 1.877 mho/m; ε_r = 51.707; 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 - SN3753; ConvF(6.90, 6.90, 6.90); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 1 Middle/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.0783 W/kg

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.537 V/m; Power Drift = 0.094 dB
Peak SAR (extrapolated) = 0.180 mW/g
SAR(1 g) = 0.086 mW/g; SAR(10 g) = 0.048 mW/g
Maximum value of SAR (measured) = 0.0918 W/kg



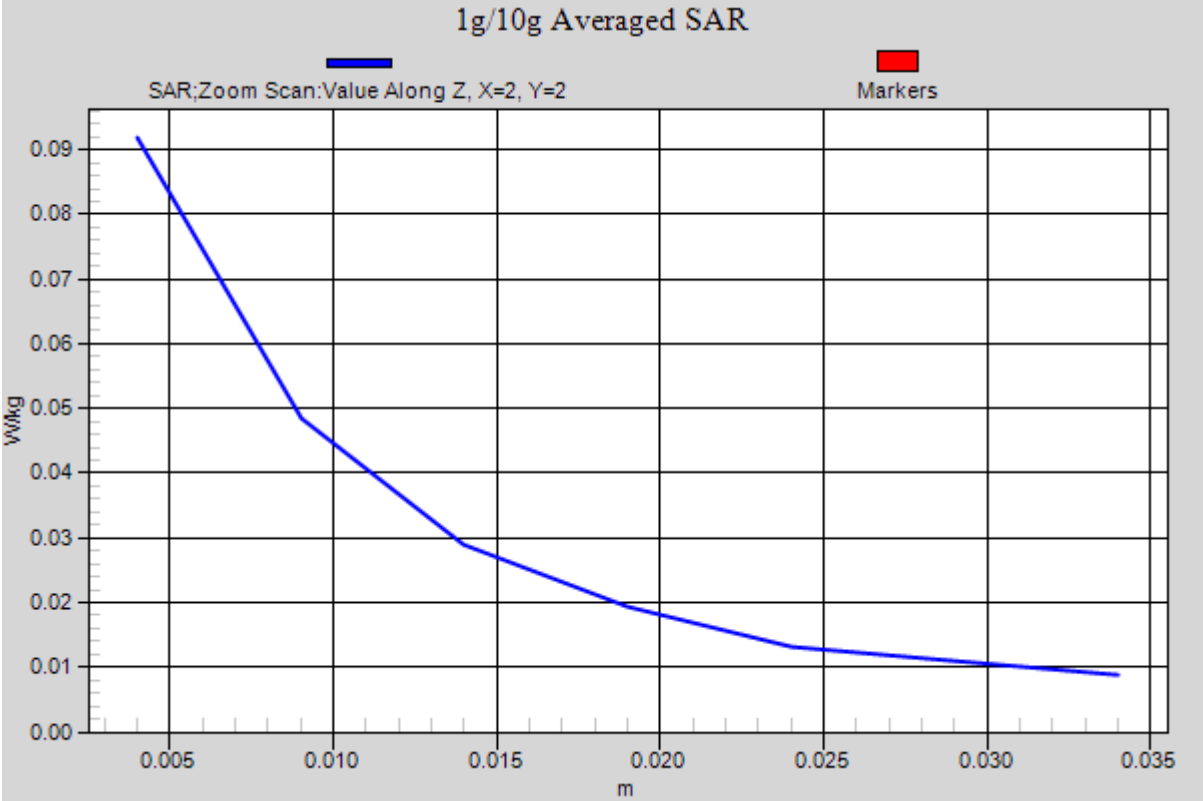


Figure 85 802.11n Test Position 1 Channel 5

802.11a Test Position 1 CH157 (Ant 1)

Date/Time: 7/3/2013 19:52:52 PM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 1 High/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.00728 W/kg

Test Position 1 High/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0 V/m; Power Drift = 0.100 dB
Peak SAR (extrapolated) = 0.00186 mW/g
SAR(1 g) = 0.00019mW/g; SAR(10 g) = 0.0000189 mW/g
Maximum value of SAR (measured) = 0.0118 W/kg

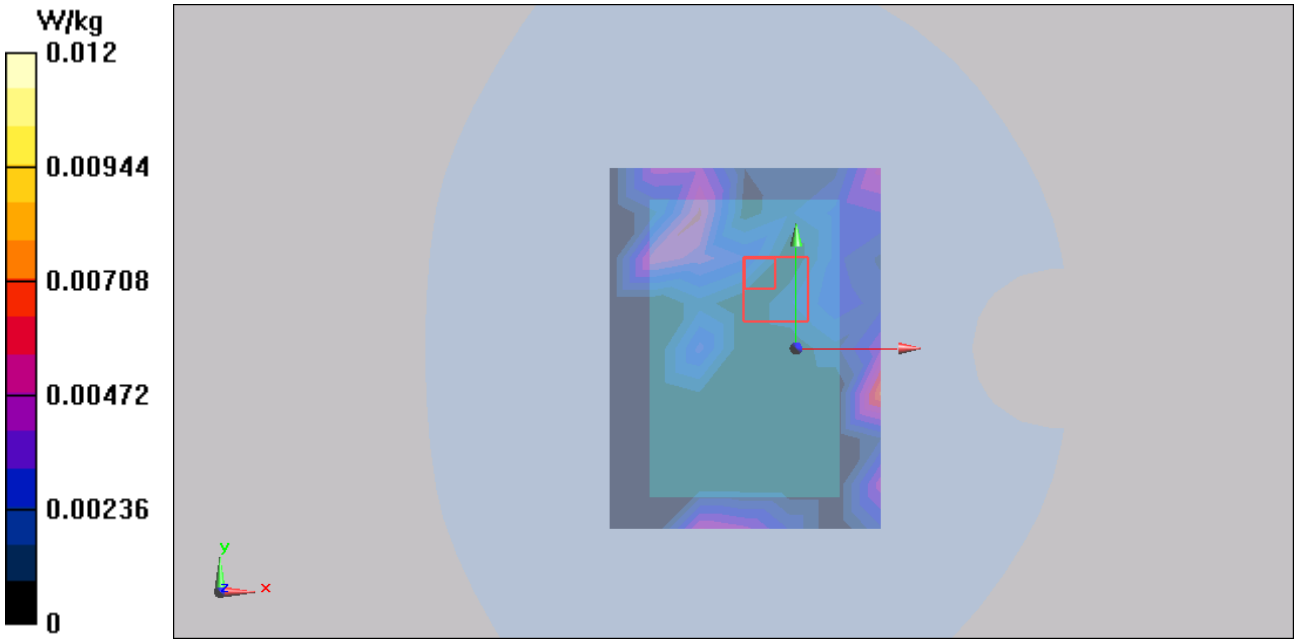


Figure 86 802.11a Test Position 1 Channel 157

802.11a Test Position 2 CH157 (Ant 1)

Date/Time: 7/3/2013 18:59:45 PM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, Version 5.2 (162); SEMCAD X Version 14.6.6 (6824)

Test Position 2 High/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.00765 W/kg

Test Position 2 High/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0 V/m; Power Drift = -0.100 dB
Peak SAR (extrapolated) = 0.00225 mW/g
SAR(1 g) = 0.00006 mW/g; SAR(10 g) = 0.00000824 mW/g
Maximum value of SAR (measured) = 0.0162 W/kg

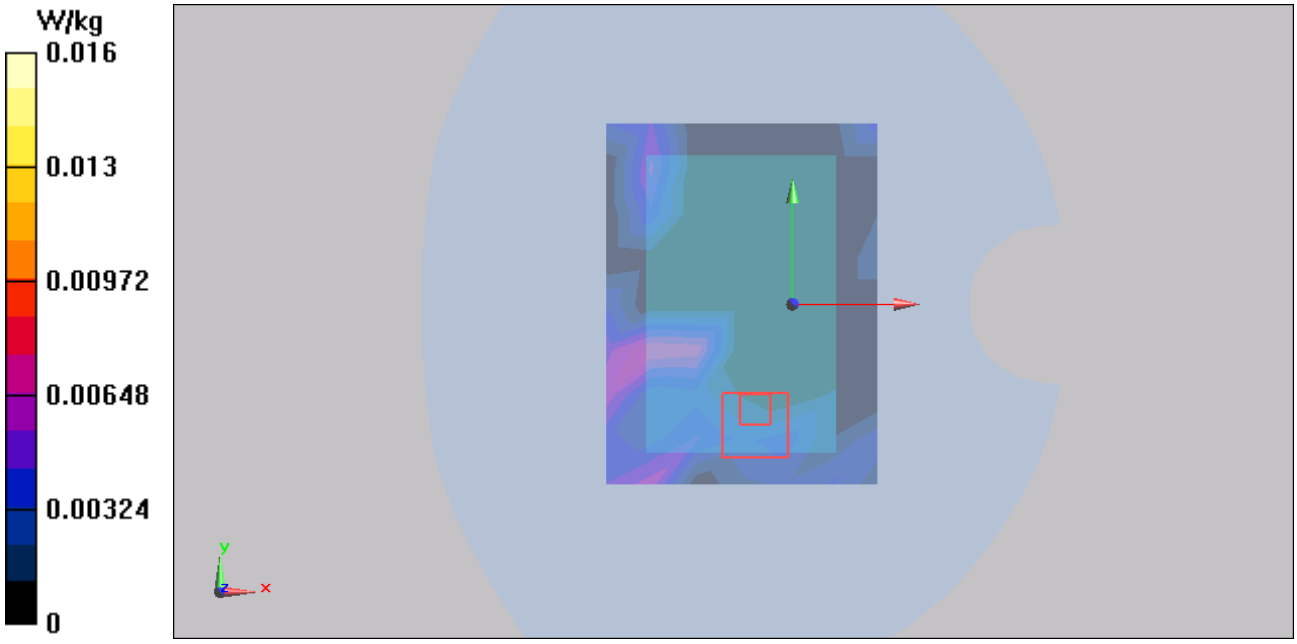


Figure 87 802.11a Test Position 2 Channel 157

802.11a Test Position 3 CH157 (Ant 1)

Date/Time: 7/3/2013 21:01:40 PM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 3 Middle/Area Scan (4x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.00781 W/kg

Test Position 3 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 0.00596 mW/g
SAR(1 g) = 0.00009 mW/g; SAR(10 g) = 0.0000086 mW/g
Maximum value of SAR (measured) = 0.0156 W/kg

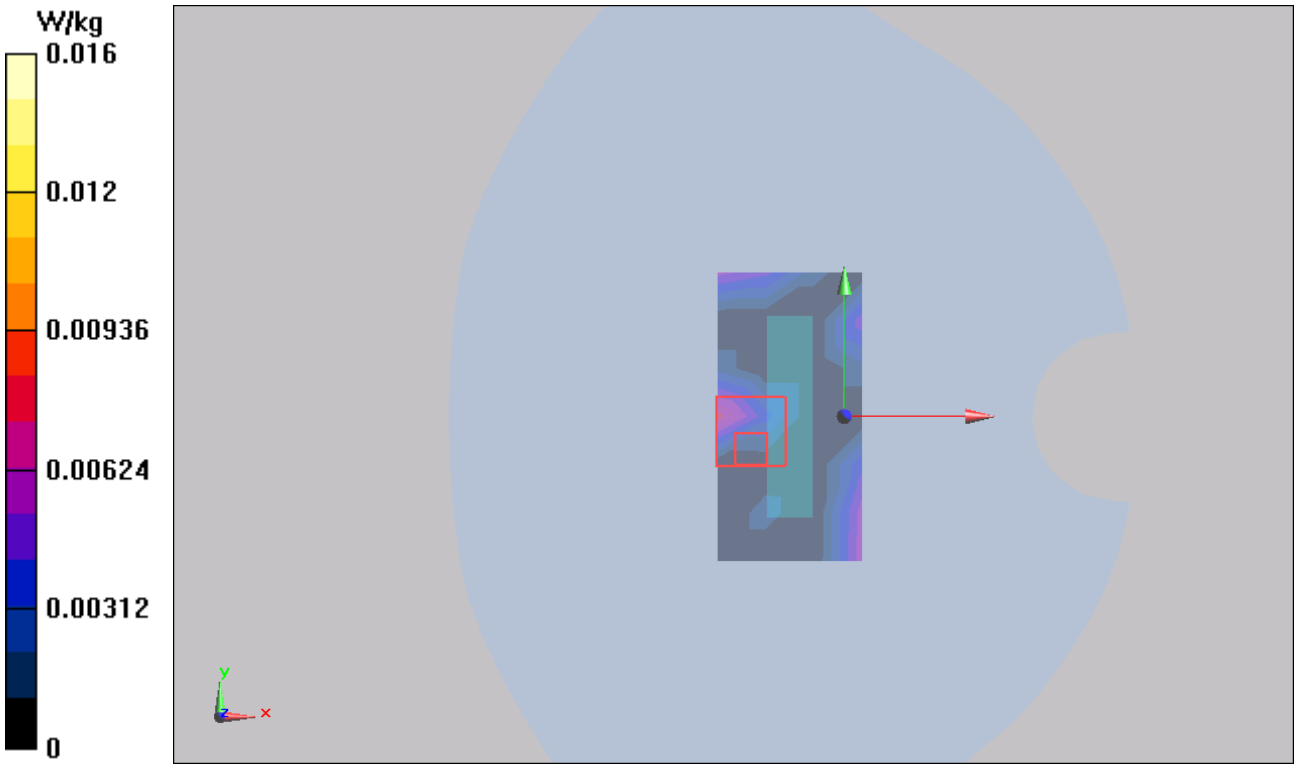


Figure 88 802.11a Test Position 3 Channel 157

802.11a Test Position 5 CH157 (Ant 1)

Date/Time: 7/3/2013 12:05:16 PM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 5 High/Area Scan (5x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0401 W/kg

Test Position 5 High/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.257 V/m; Power Drift = -0.070 dB
Peak SAR (extrapolated) = 0.052 mW/g
SAR(1 g) = 0.036 mW/g; SAR(10 g) = 0.034 mW/g
Maximum value of SAR (measured) = 0.0446 W/kg

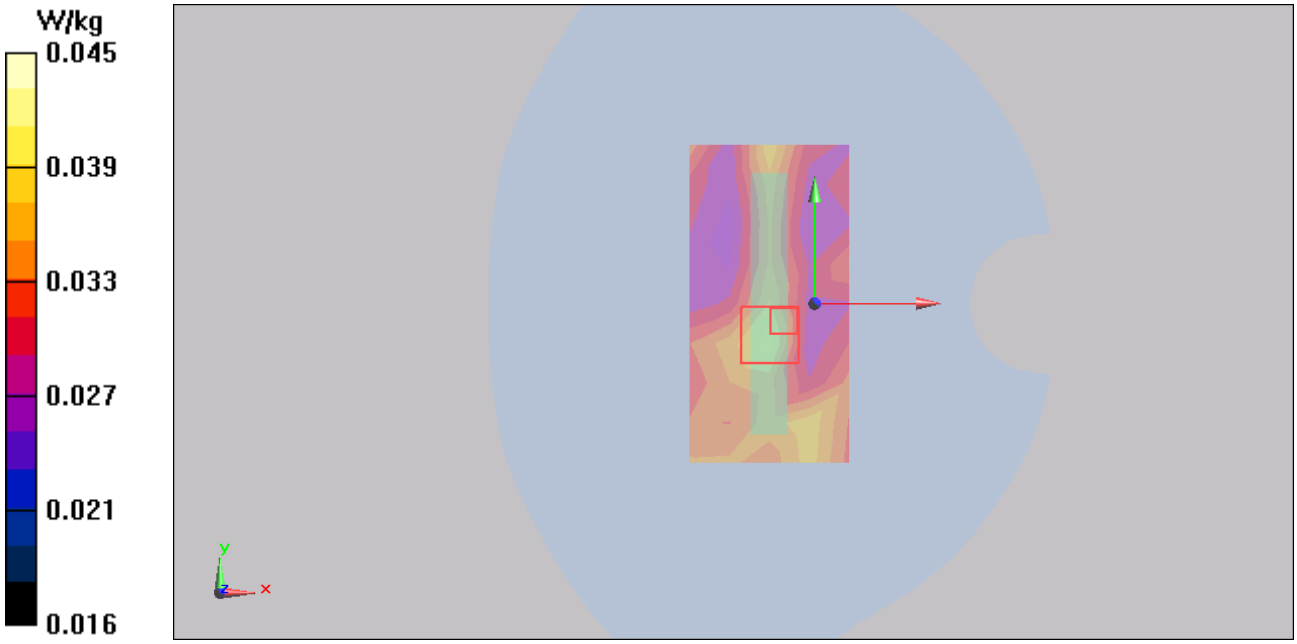


Figure 89 802.11a Test Position 5 Channel 157

802.11a Test Position 1 CH157 (Ant 2)

Date/Time: 7/3/2013 10:05:16 AM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 1 Middle/Area Scan (6x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0413 W/kg

Test Position 1 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.901 V/m; Power Drift = -0.100 dB
Peak SAR (extrapolated) = 0.016 mW/g
SAR(1 g) = 0.00039 mW/g; SAR(10 g) = 3.9e-005 mW/g
Maximum value of SAR (measured) = 0.0284 W/kg

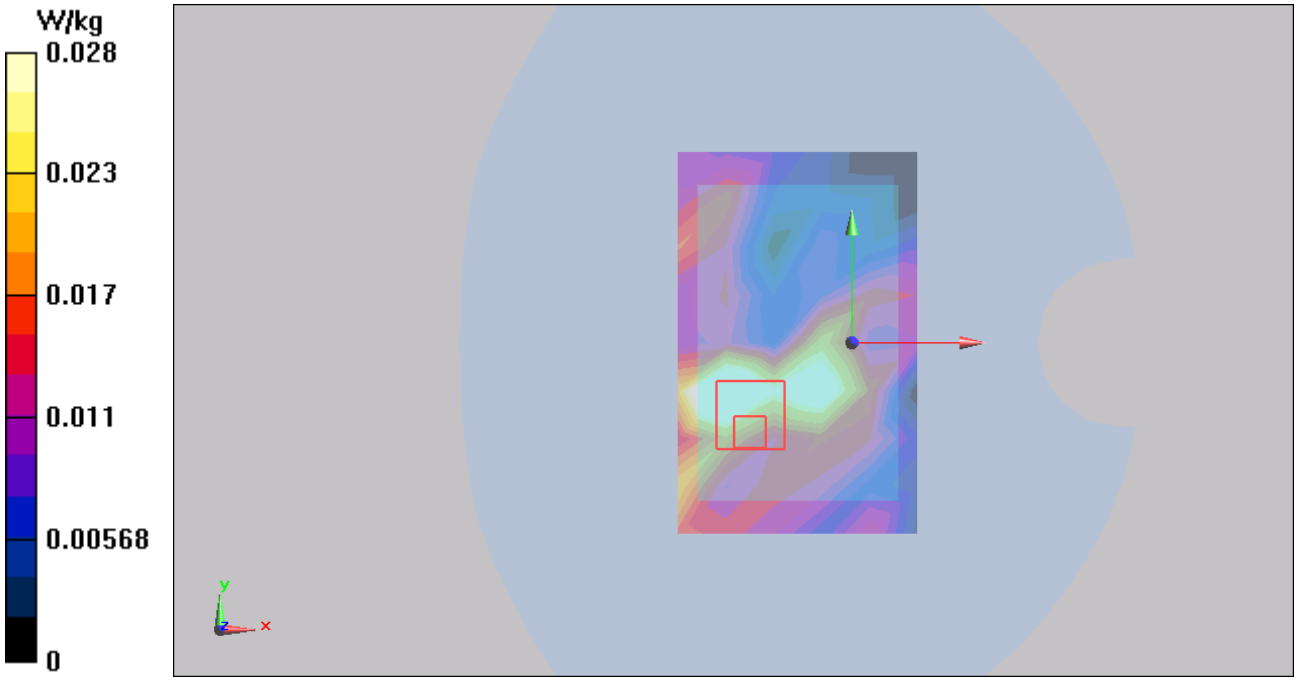


Figure 90 802.11a Test Position 1 Channel 157

802.11a Test Position 2 CH157 (Ant 2)

Date/Time: 7/3/2013 9:16:17 AM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 2 Middle/Area Scan (6x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0362 W/kg

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.179 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 0.149 mW/g
SAR(1 g) = 0.050 mW/g; SAR(10 g) = 0.030 mW/g
Maximum value of SAR (measured) = 0.0594 W/kg

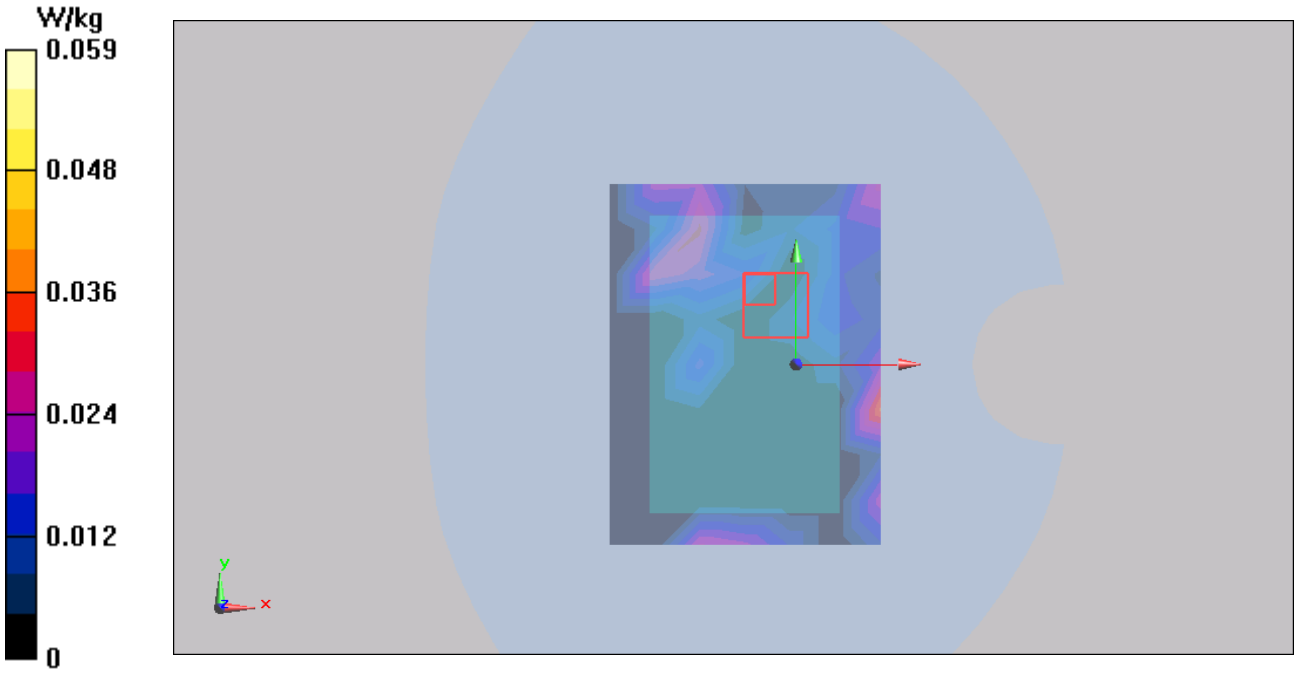


Figure 91 802.11a Test Position 2 Channel 157

802.11a Test Position 4 CH157 (Ant 2)

Date/Time: 7/3/2013 13:11:04 PM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 4 Middle/Area Scan (5x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0277 W/kg

Test Position 4 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.614 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 0.012 mW/g
SAR(1 g) = 0.00067 mW/g; SAR(10 g) = 0.000112 mW/g
Maximum value of SAR (measured) = 0.0282 W/kg

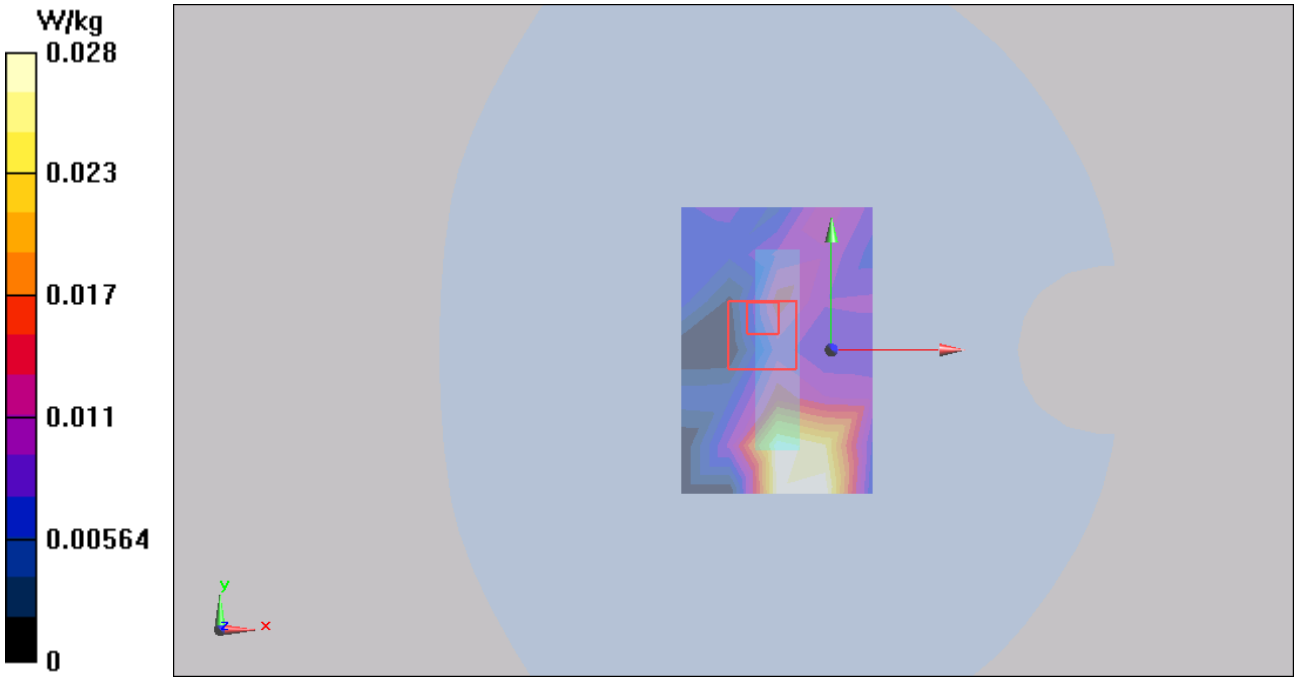


Figure 92 802.11a Test Position 4 Channel 157

802.11a Test Position 5 CH157 (Ant 2)

Date/Time: 7/3/2013 11:13:00 AM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 5 Middle/Area Scan (4x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0224 W/kg

Test Position 5 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.248 V/m; Power Drift = -0.070 dB
Peak SAR (extrapolated) = 0.144 mW/g
SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.00359 mW/g
Maximum value of SAR (measured) = 0.0441 W/kg

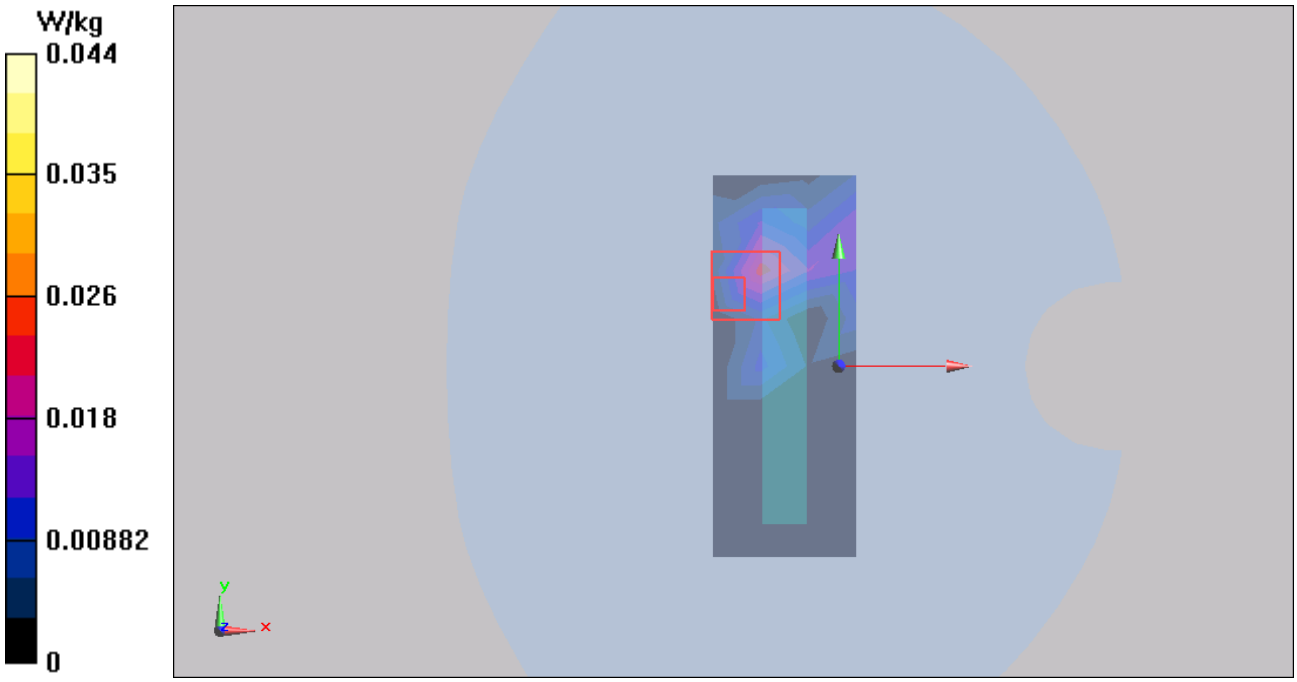


Figure 93 802.11a Test Position 5 Channel 157

802.11a with Test Position 2 CH157 (Ant 2, battery 2)

Date/Time: 7/3/2013 15:20:46 PM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 2 Middle/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0453 W/kg

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0 V/m; Power Drift = 0.100 dB
Peak SAR (extrapolated) = 0.060 mW/g
SAR(1 g) = 0.005 mW/g; SAR(10 g) = 0.000539 mW/g
Maximum value of SAR (measured) = 0.0426 W/kg

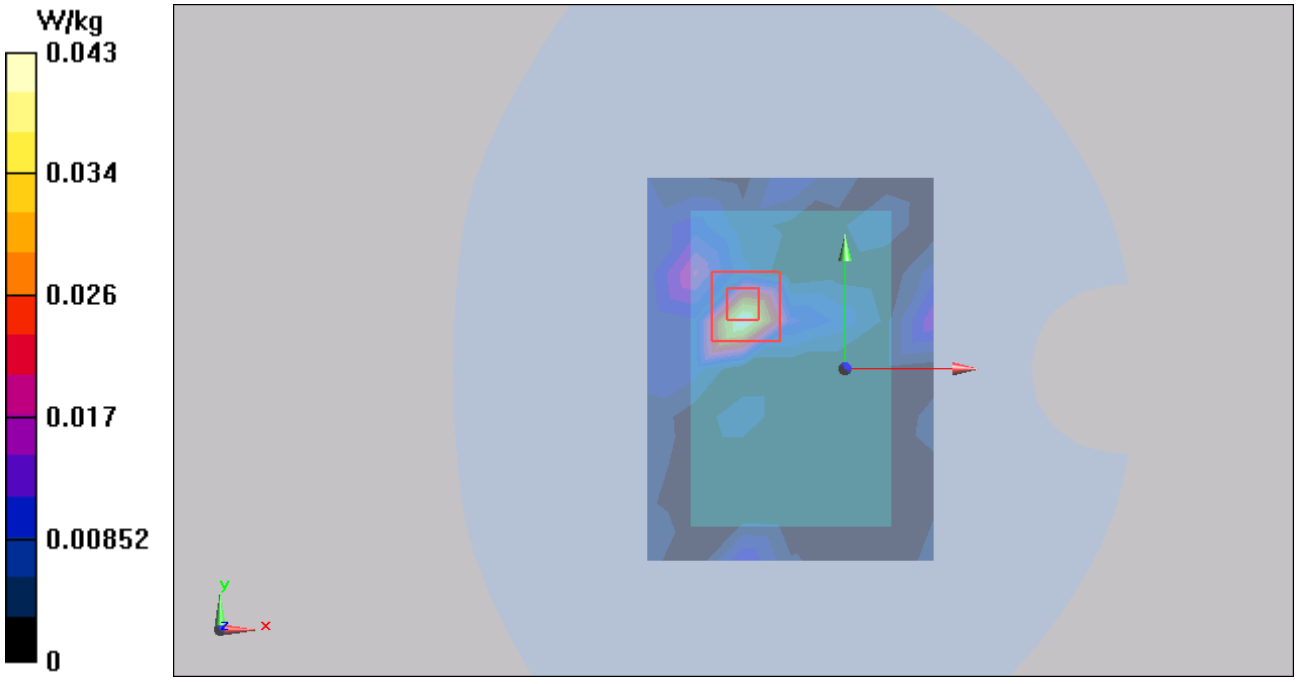


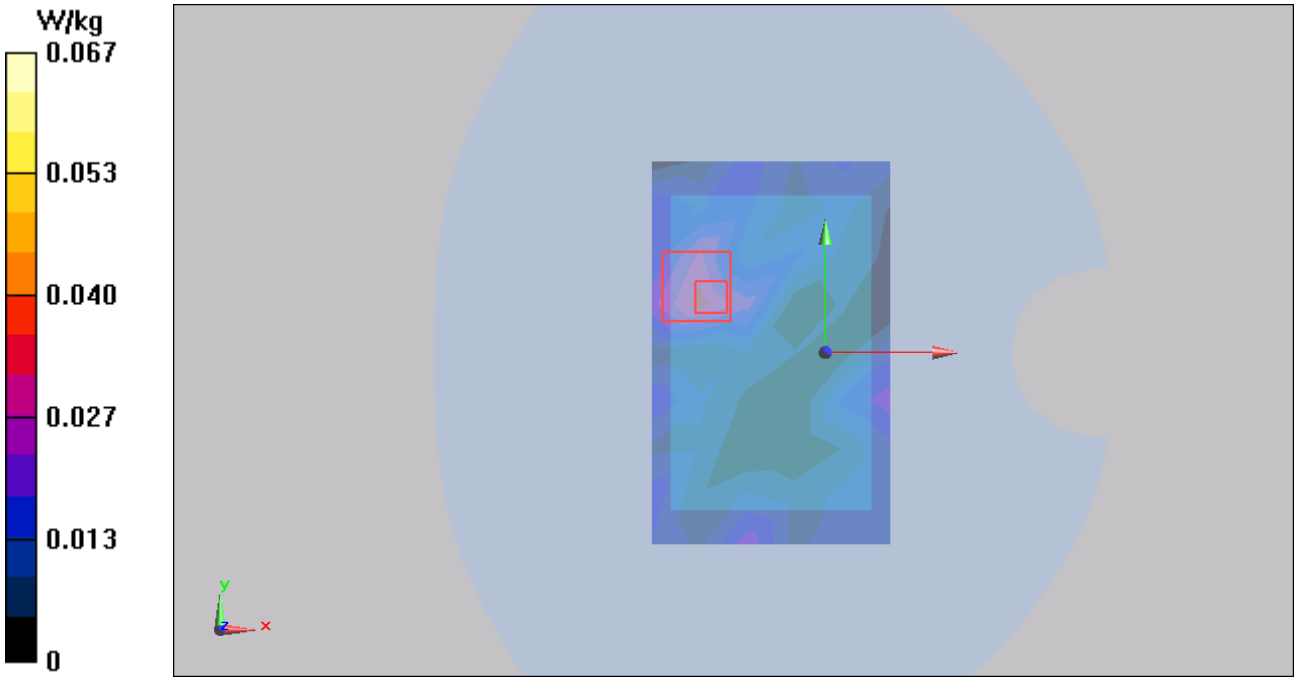
Figure 94 802.11a with Test Position 2 Channel 157

802.11a with Test Position 2 CH157 (Ant 2, battery 3)

Date/Time: 7/3/2013 14:07:54 PM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 2 Middle/Area Scan (6x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0336 W/kg

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.985 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 0.358 mW/g
SAR(1 g) = 0.066 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.0665 W/kg



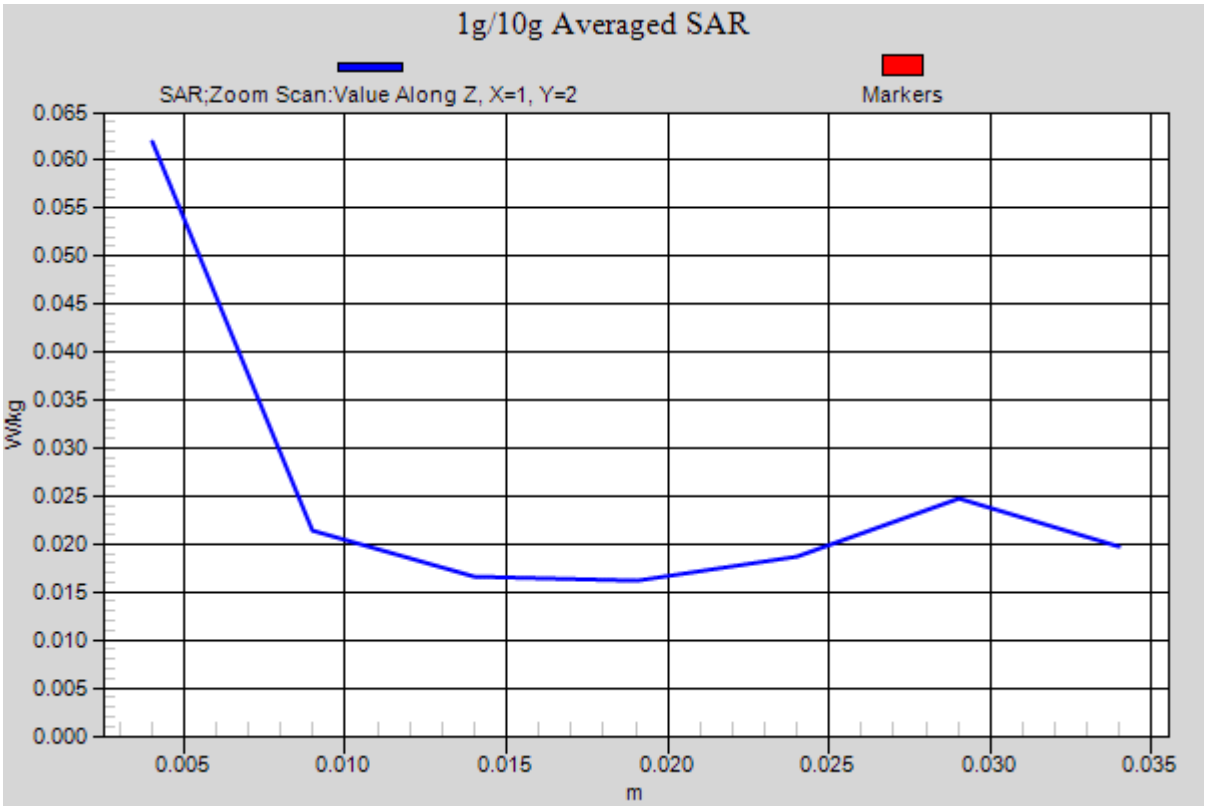


Figure 95 802.11a with Test Position 2 Channel 157

802.11a with Test Position 2 CH157 (Ant 2, battery 4)

Date/Time: 7/3/2013 16:18:57 PM
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5785 MHz; σ = 6.114 mho/m; ε_r = 47.638; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 2 Middle/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0389 W/kg

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.213 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 0.175 mW/g
SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.00303 mW/g
Maximum value of SAR (measured) = 0.0462 W/kg

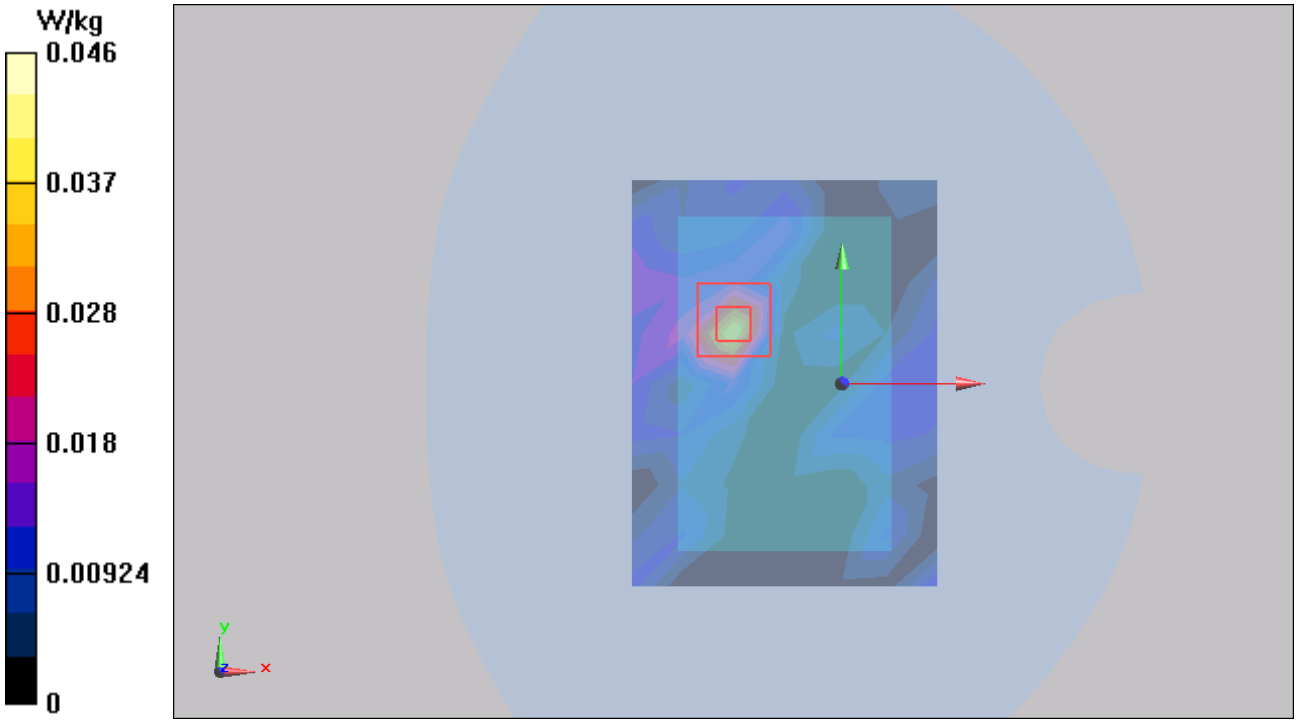


Figure 96 802.11a with Test Position 2 Channel 157

802.11n HT20 Test Position 2 CH165 (Ant 2)

Date/Time: 7/3/2013 18: 01:17 PM
Communication System: 802.11a; Frequency: 5825 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5825 MHz; σ = 6.174 mho/m; ε_r = 47.504; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 2 Middle/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0274 W/kg

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.972 V/m; Power Drift = 0.032 dB
Peak SAR (extrapolated) = 0.00776 mW/g
SAR(1 g) = 0.000656 mW/g; SAR(10 g) = 0.0000664 mW/g
Maximum value of SAR (measured) = 0.0165 W/kg

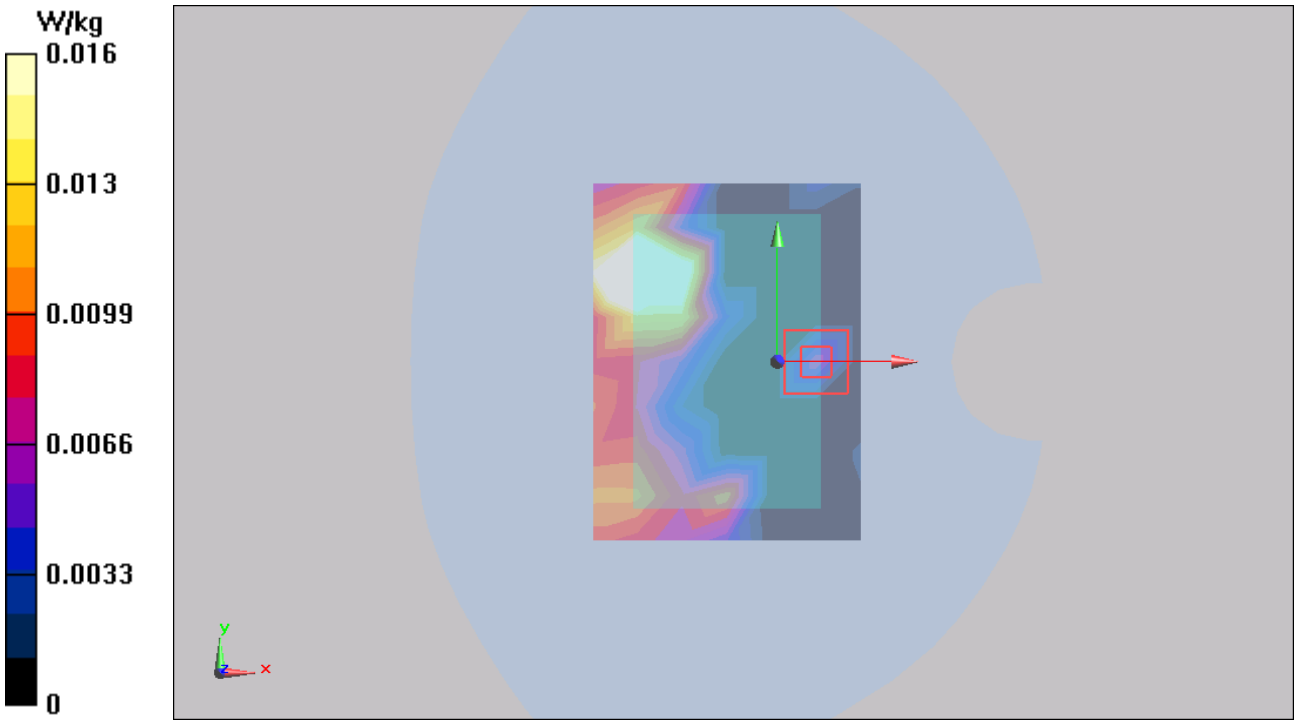


Figure 97 802.11n HT20 Test Position 2 Channel 165

802.11n HT40 Test Position 2 CH151 (Ant 2)

Date/Time: 7/3/2013 17:12:46 PM
Communication System: 802.11a; Frequency: 5755 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5755 MHz; σ = 6.071 mho/m; ε_r = 47.721; 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 - SN3753; ConvF(4.02, 4.02, 4.02); Calibrated: 1/17/2013;
Electronics: DAE4 Sn1317; Calibrated: 1/25/2013
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Test Position 2 Middle/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0445 W/kg

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0 V/m; Power Drift = 0.100 dB
Peak SAR (extrapolated) = 0.059 mW/g
SAR(1 g) = 0.00508 mW/g; SAR(10 g) = 0.00053 mW/g
Maximum value of SAR (measured) = 0.0419 W/kg

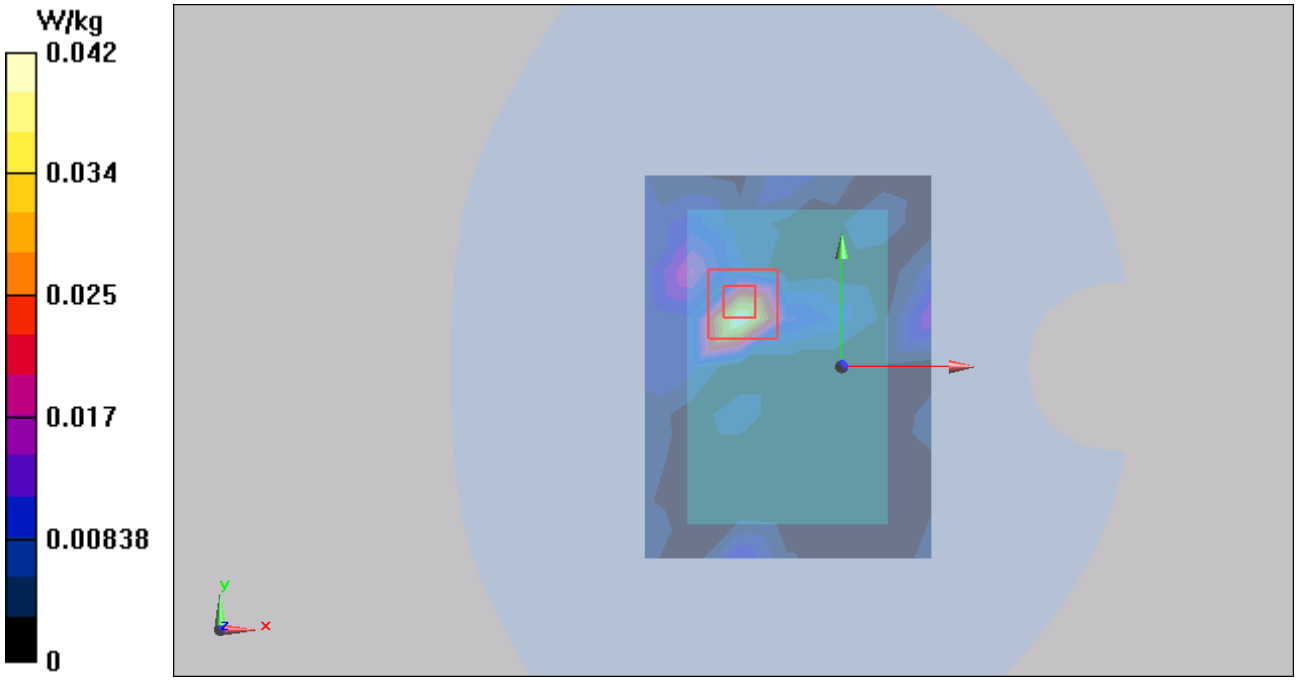


Figure 98 802.11a with HT40 Test Position 2 Channel 151

802.11a Test Position 1 CH40 (Ant 1)

Date/Time: 7/2/2013 17:41:15 PM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 1 Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.021 mW/g

Test Position 1 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.531 V/m; Power Drift = 0.096 dB
Peak SAR (extrapolated) = 0.049 W/kg
SAR(1 g) = 0.0077 mW/g; SAR(10 g) = 0.00427 mW/g
Maximum value of SAR (measured) = 0.020 mW/g

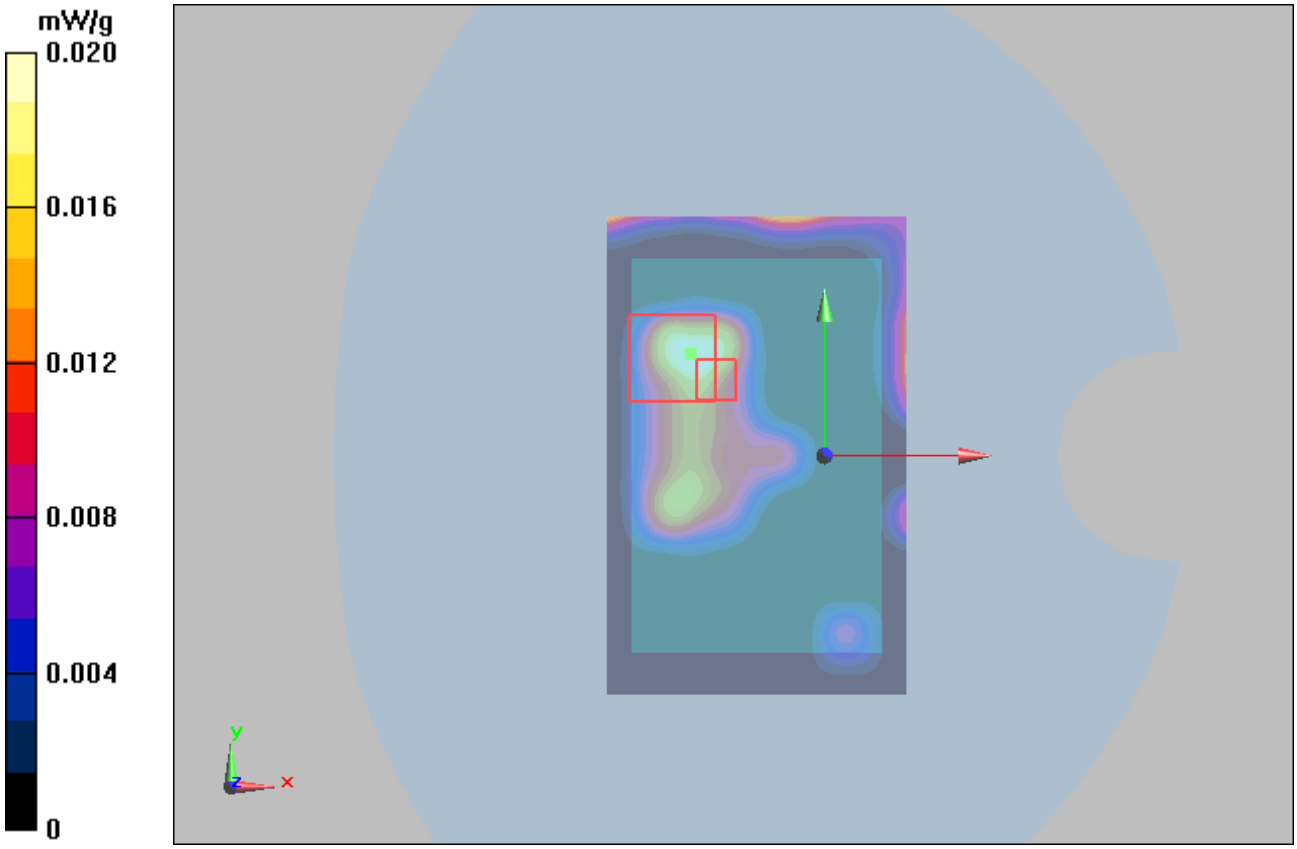


Figure 99 802.11a Test Position 1 Channel 40

802.11a Test Position 2 CH40 (Ant 1)

Date/Time: 7/2/2013 15:52:59 PM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.019 mW/g

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.585 V/m; Power Drift = 0.122 dB
Peak SAR (extrapolated) = 0.016 W/kg
SAR(1 g) = 0.00023 mW/g; SAR(10 g) = 2.7e-005 mW/g
Maximum value of SAR (measured) = 0.016 mW/g

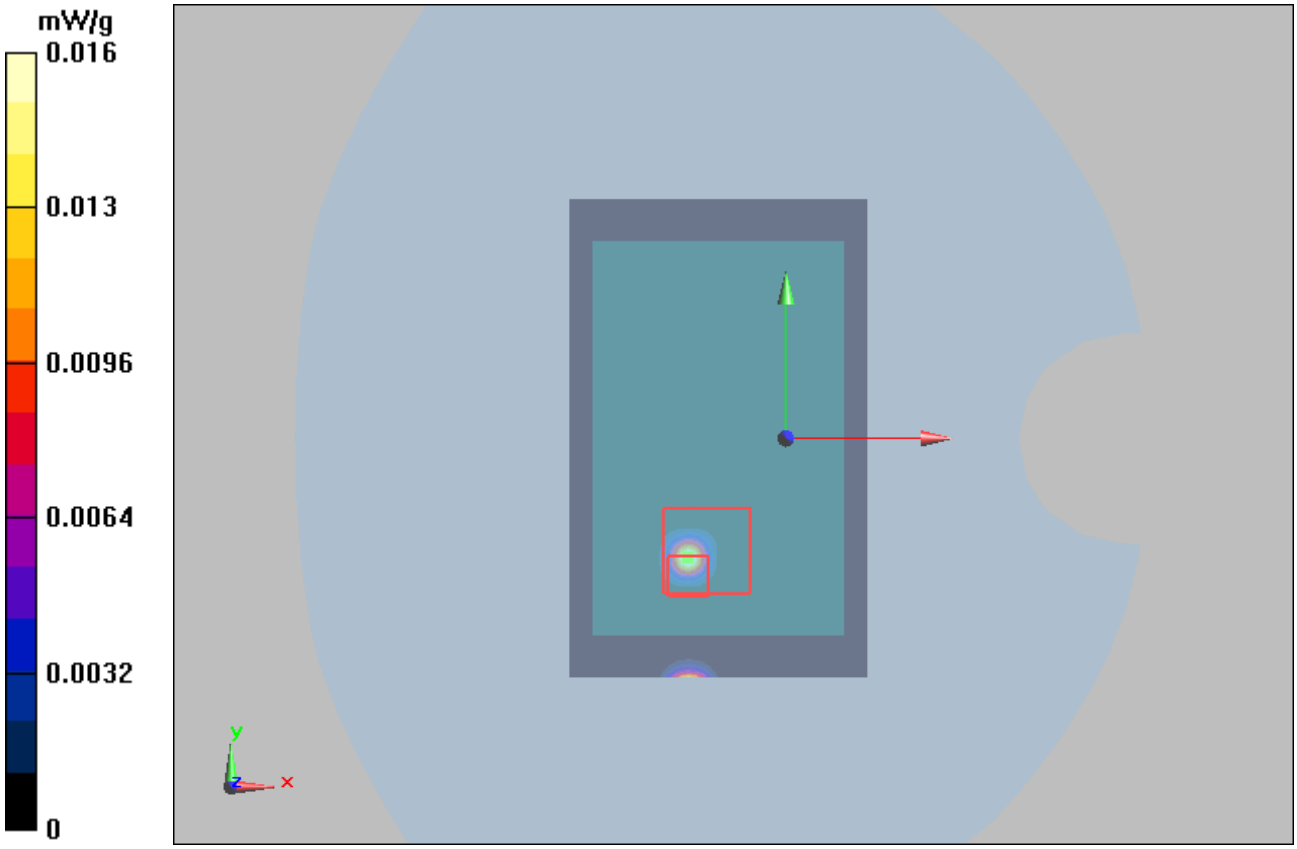


Figure 100 802.11a Test Position 2 Channel 40

802.11a Test Position 3 CH40 (Ant 1)

Date/Time: 7/2/2013 20:41:06 PM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 3 Middle/Area Scan (31x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00274 mW/g

Test Position 3 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0 V/m; Power Drift = -0.099 dB
Peak SAR (extrapolated) = 0.00448 W/kg
SAR(1 g) = 0.00006 mW/g; SAR(10 g) = 0.00000646 mW/g
Maximum value of SAR (measured) = 0.012 mW/g

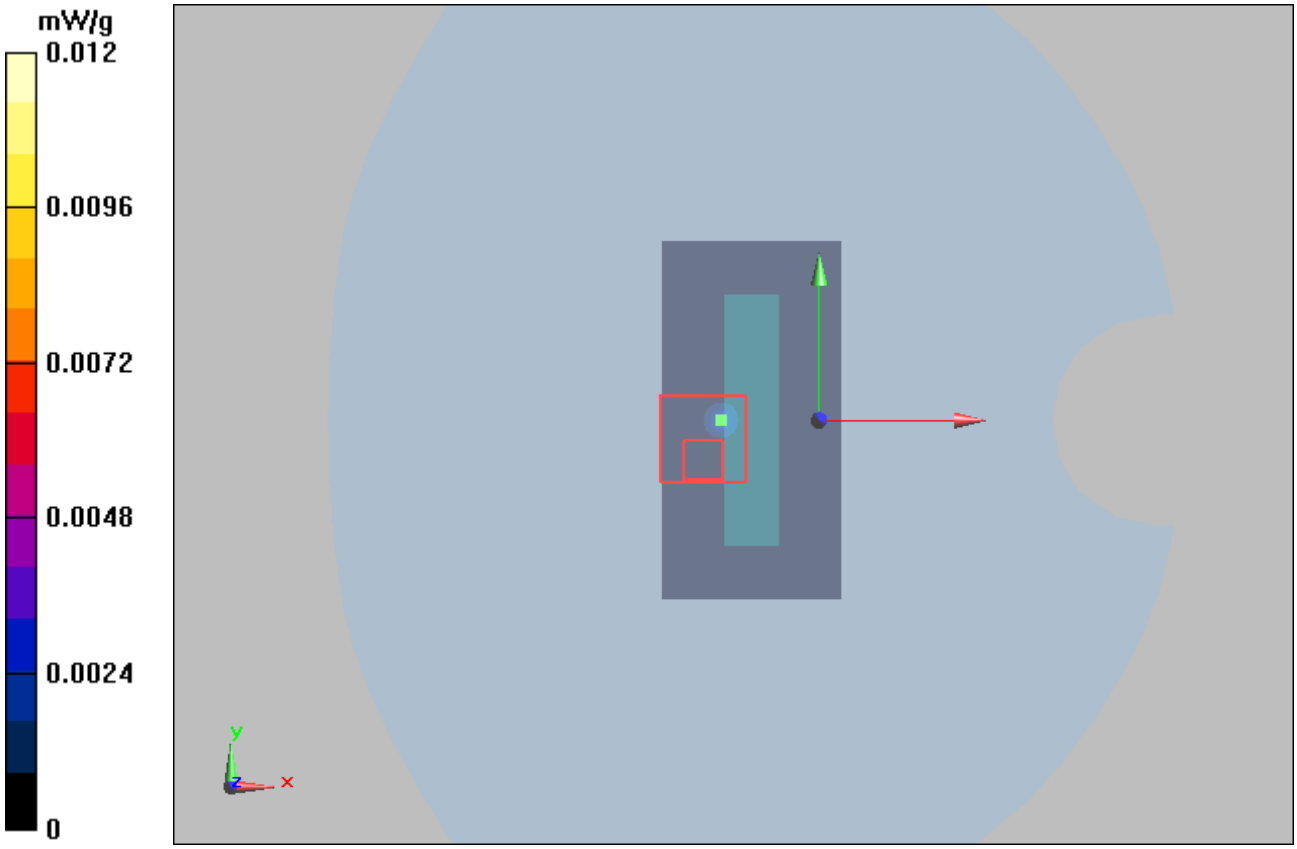


Figure 101 802.11a Test Position 3 Channel 40

802.11a Test Position 5 CH40 (Ant 1)

Date/Time: 7/2/2013 19:40:45 PM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 5 Middle/Area Scan (31x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.016 mW/g

Test Position 5 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.966 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 0.036 W/kg
SAR(1 g) = 0.011 mW/g; SAR(10 g) = 0.00687 mW/g
Maximum value of SAR (measured) = 0.020 mW/g

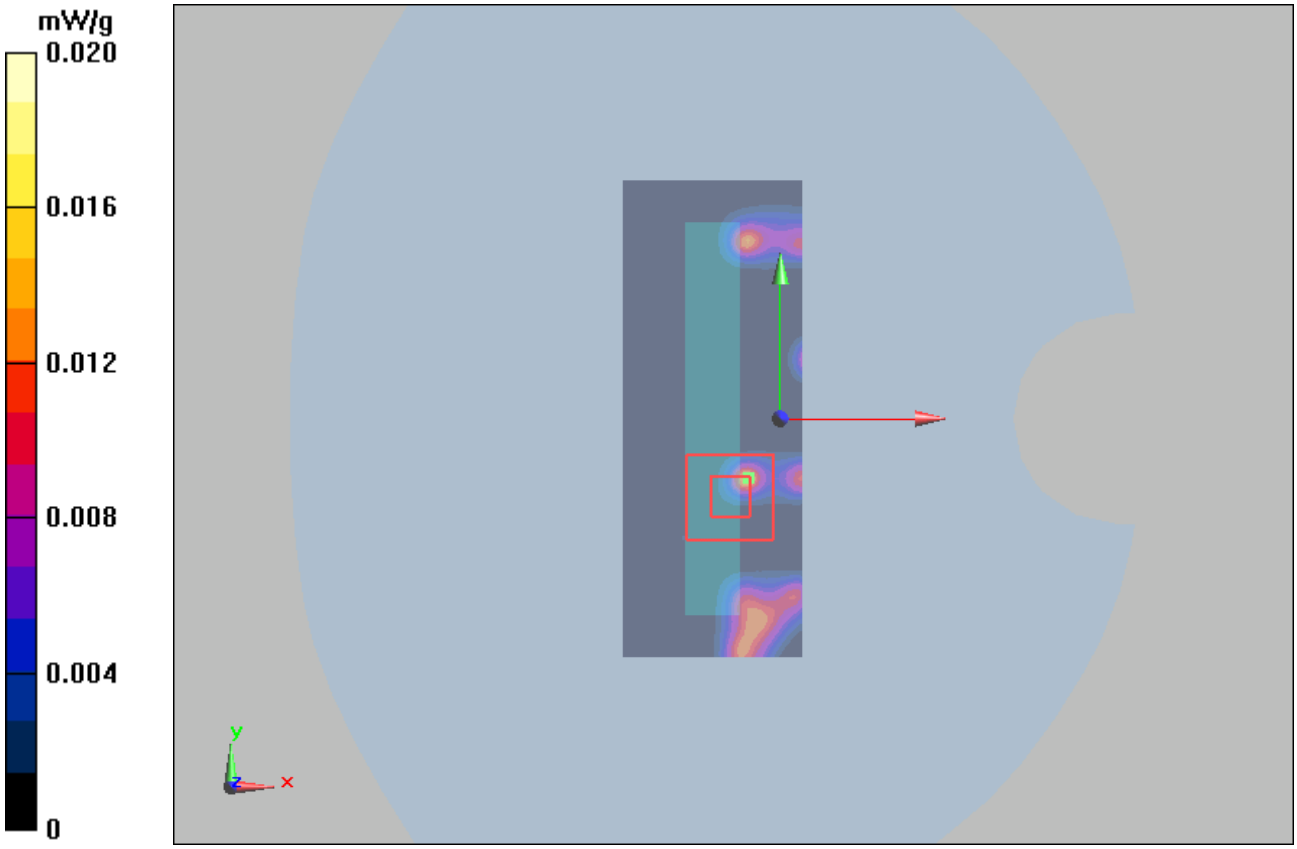


Figure 102 802.11a Test Position 5 Channel 40

802.11a Test Position 1 CH40 (Ant 2)

Date/Time: 7/2/2013 10:22:07 AM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 1 Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.052 mW/g

Test Position 1 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.77 V/m; Power Drift = -0.097 dB
Peak SAR (extrapolated) = 0.012 W/kg
SAR(1 g) = 0.00029 mW/g; SAR(10 g) = 2.95e-005 mW/g
Maximum value of SAR (measured) = 0.021 mW/g

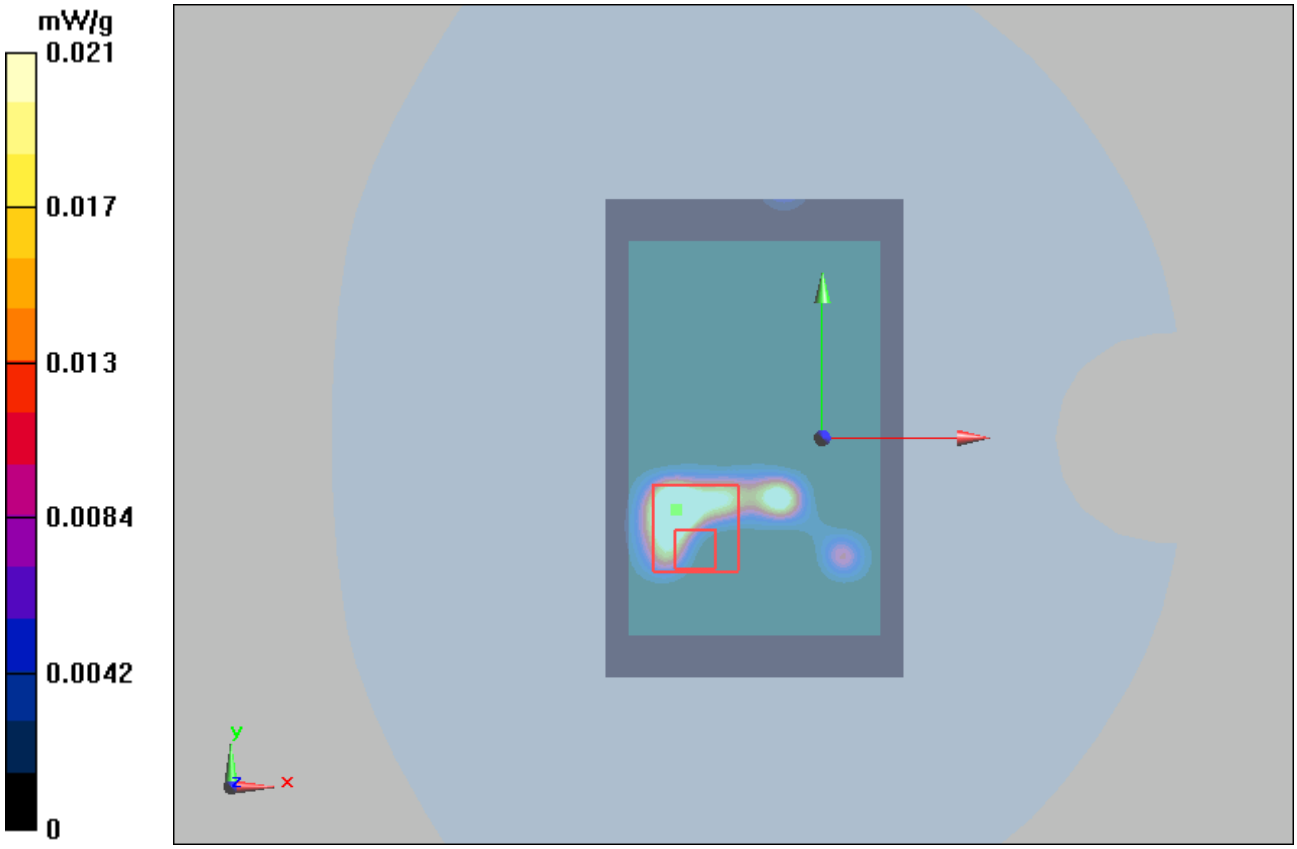


Figure 103 802.11a Test Position 1 Channel 40

802.11a Test Position 2 CH40 (Ant 2)

Date/Time: 7/2/2013 9:32:36 AM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.051 mW/g

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.167 V/m; Power Drift = 0.196 dB
Peak SAR (extrapolated) = 0.113 W/kg
SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.045 mW/g

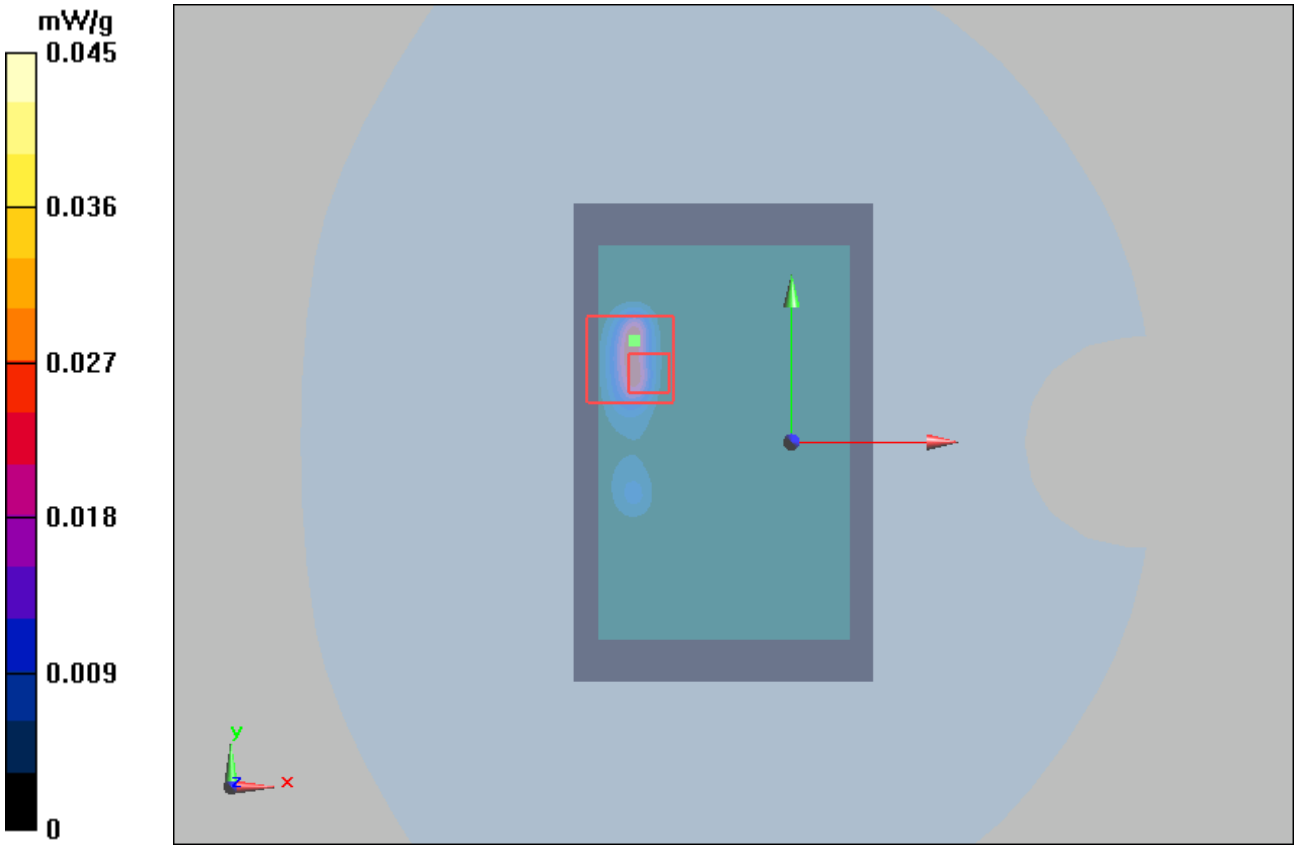


Figure 104 802.11a Test Position 2 Channel 40

802.11a Test Position 4 CH40 (Ant 2)

Date/Time: 7/2/2013 12:13:04 PM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 4 Middle/Area Scan (41x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00792 mW/g

Test Position 4 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.5 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 0.00923 W/kg
SAR(1 g) = 0.0005 mW/g; SAR(10 g) = 0.0000846 mW/g
Maximum value of SAR (measured) = 0.021 mW/g

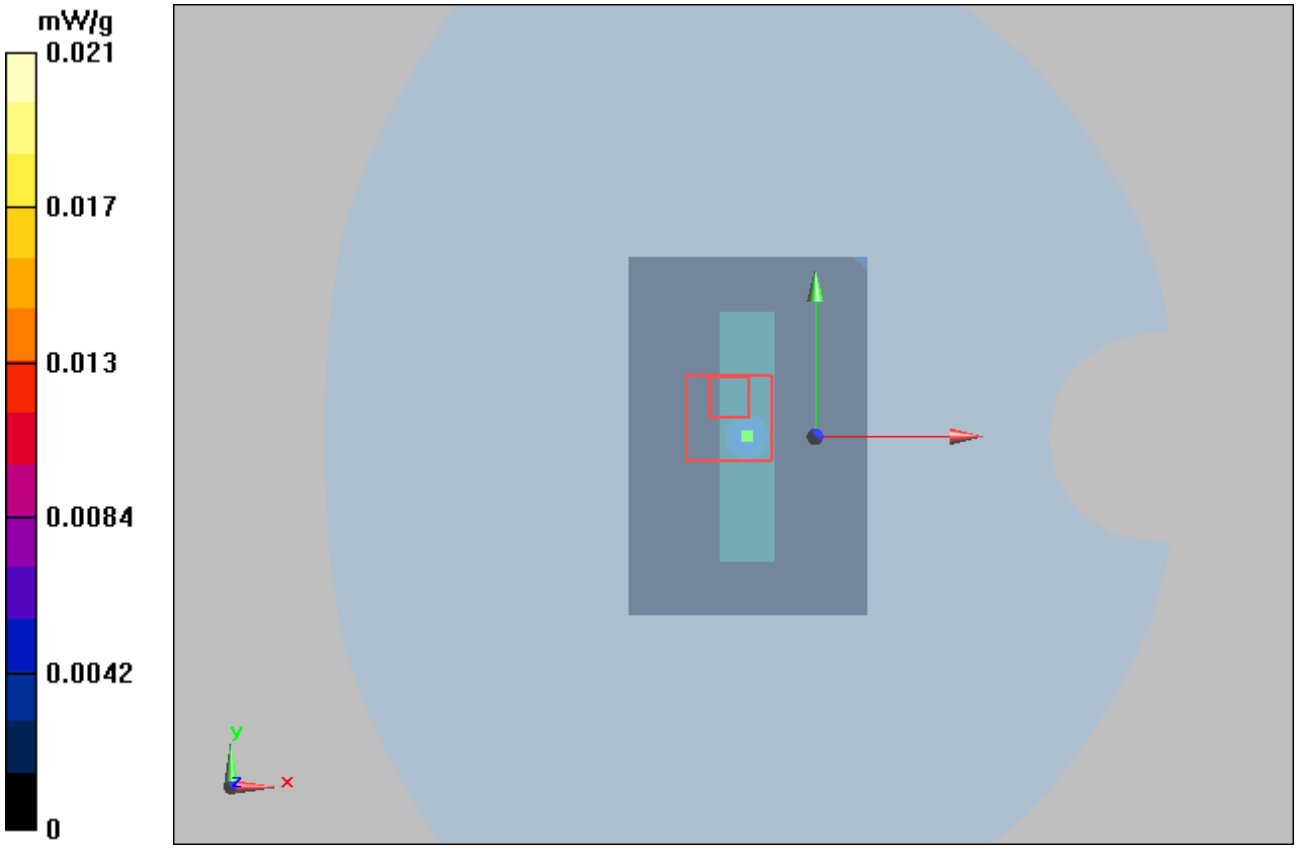


Figure 105 802.11a Test Position 4 Channel 40

802.11a Test Position 5 CH40 (Ant 2)

Date/Time: 7/2/2013 11:21:42 AM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 5 Middle/Area Scan (31x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.017 mW/g

Test Position 5 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.16 V/m; Power Drift = -0.081 dB
Peak SAR (extrapolated) = 0.109 W/kg
SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00271 mW/g
Maximum value of SAR (measured) = 0.033 mW/g

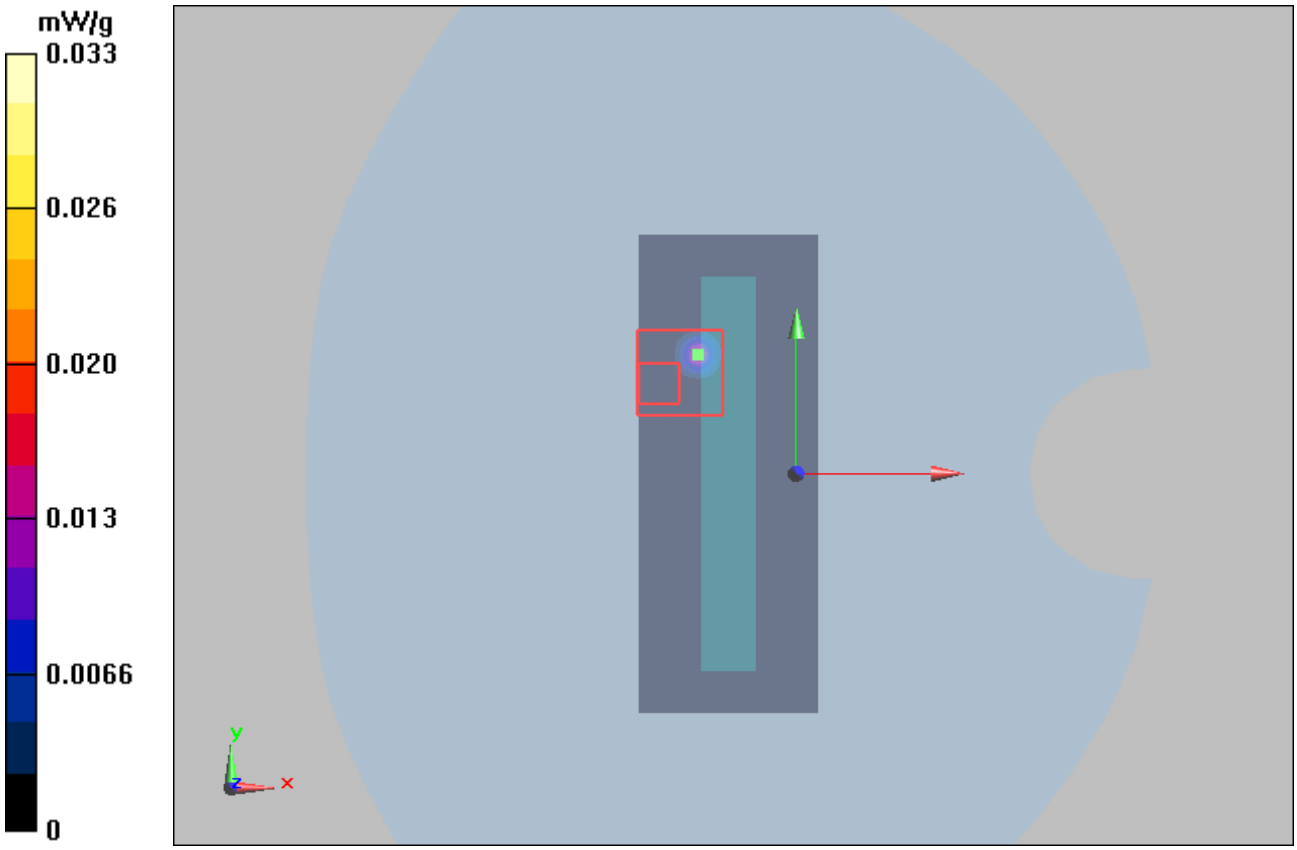


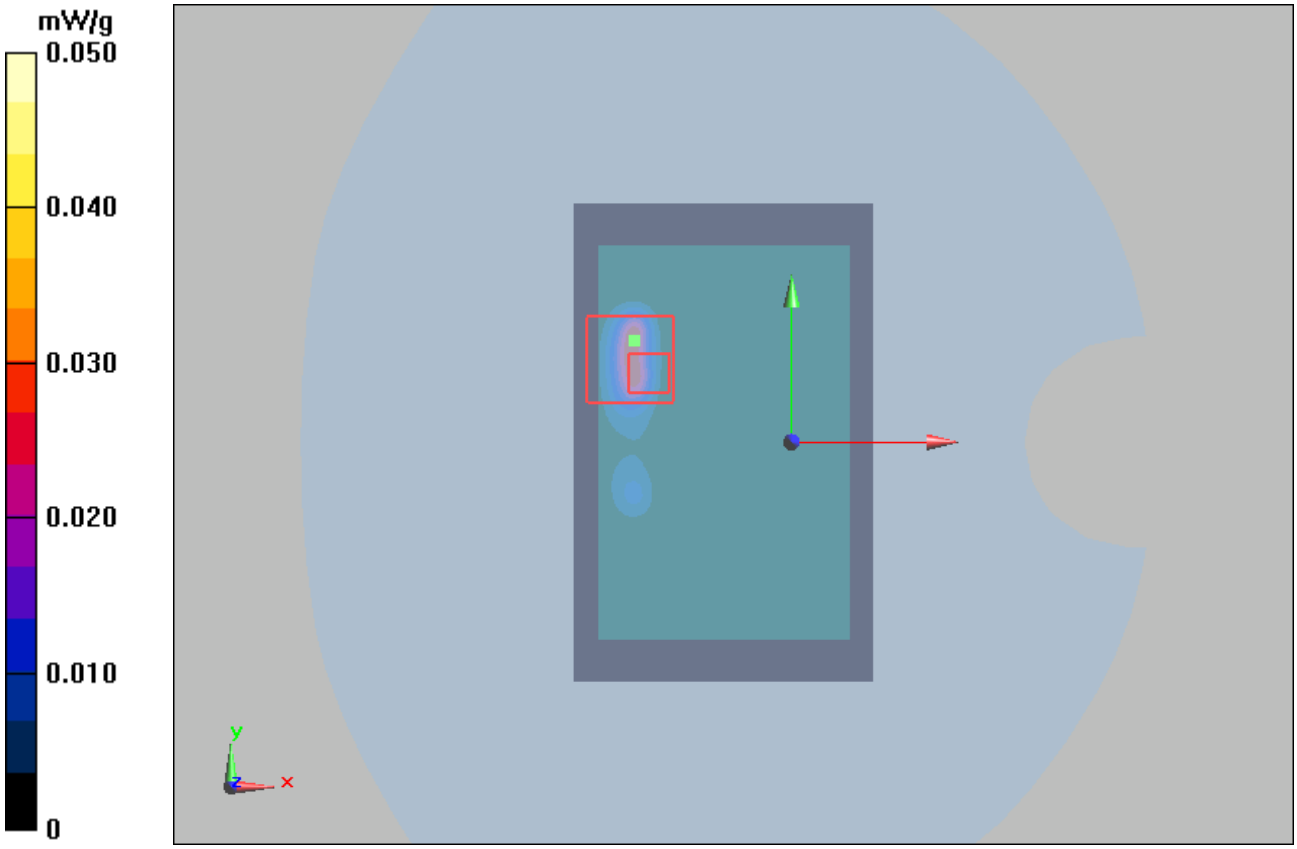
Figure 106 802.11a Test Position 5 Channel 40

802.11a with Test Position 2 CH40 (Ant 2, battery 2)

Date/Time: 7/2/2013 13:08:12 PM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.027 mW/g

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.915 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 0.271 W/kg
SAR(1 g) = 0.045 mW/g; SAR(10 g) = 0.014 mW/g
Maximum value of SAR (measured) = 0.050 mW/g



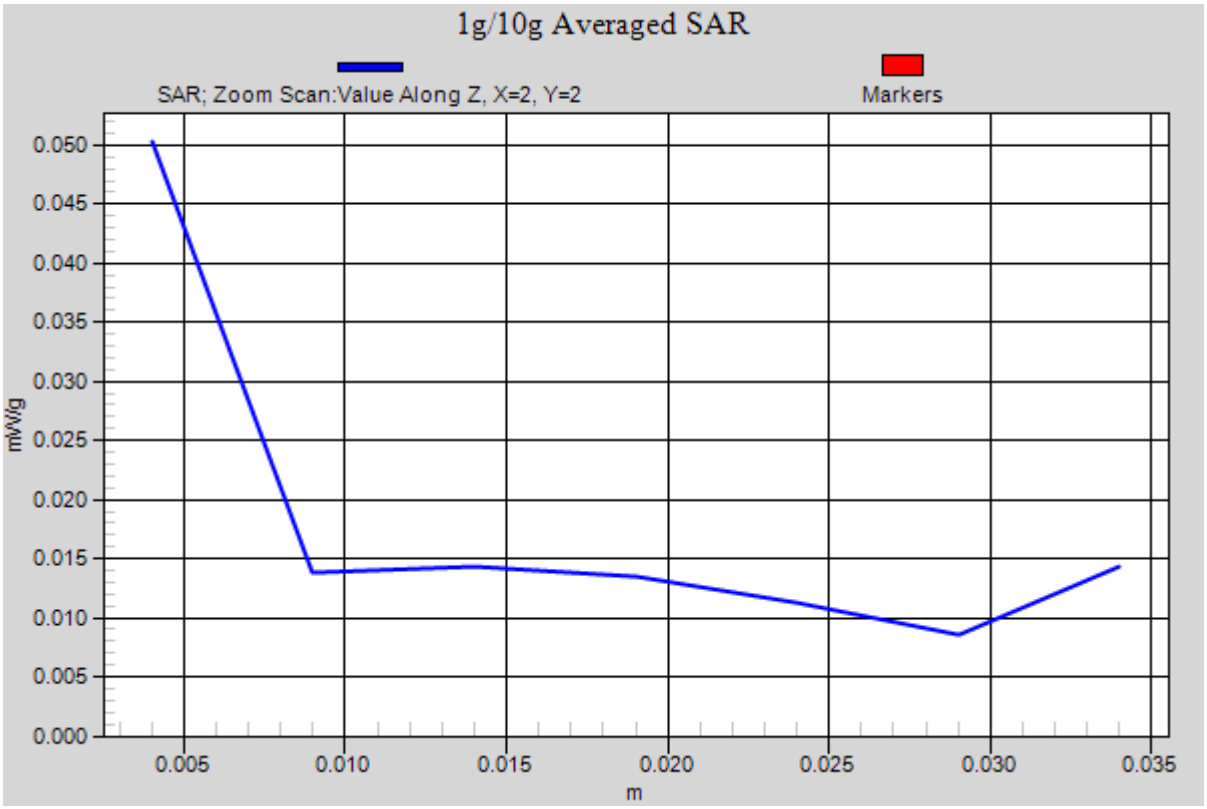


Figure 107 802.11a with Test Position 2 Channel 40

802.11a with Test Position 2 CH40 (Ant 2, battery 3)

Date/Time: 7/2/2013 15:00:35 PM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.029 mW/g

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.13 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.133 W/kg
SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.00229 mW/g
Maximum value of SAR (measured) = 0.035 mW/g

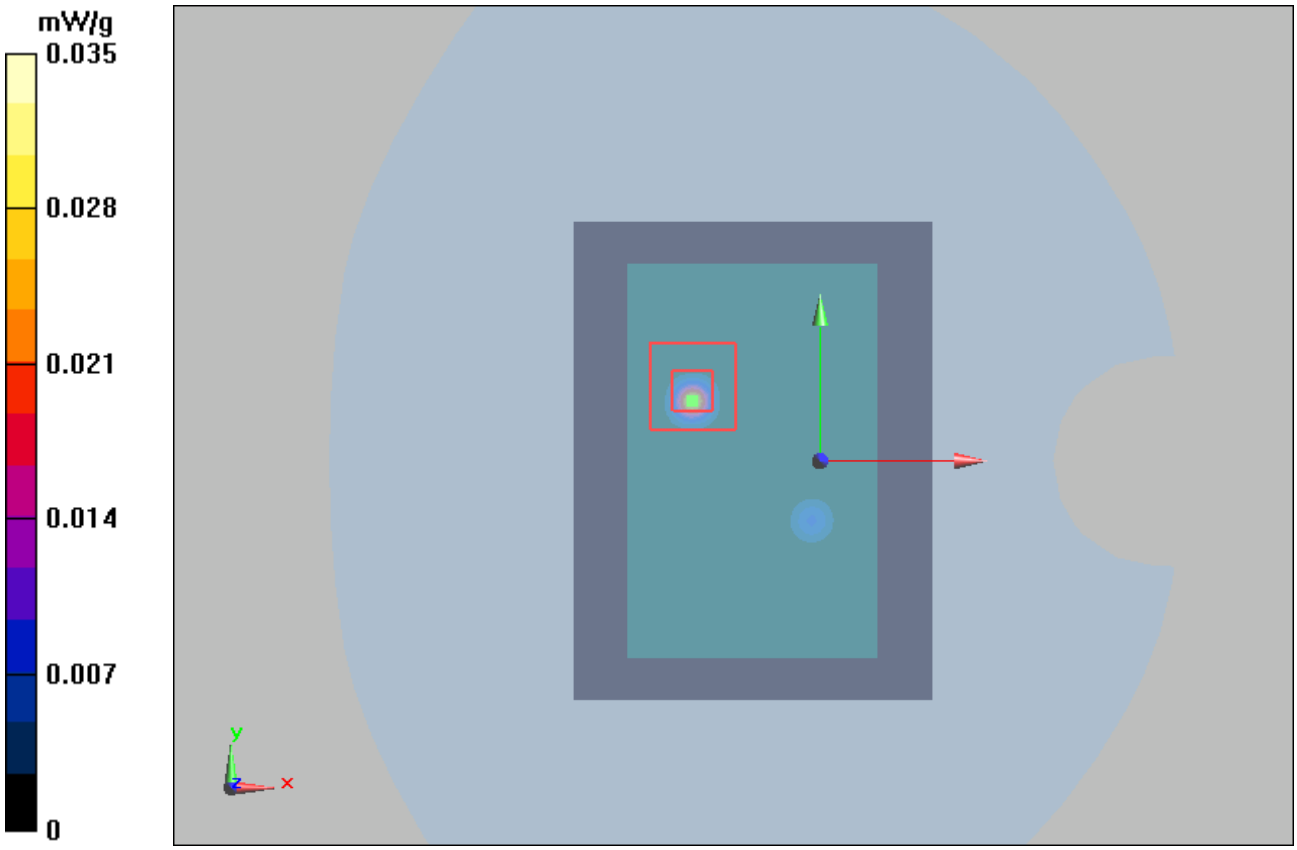


Figure 108 802.11a with Test Position 2 Channel 40

802.11a with Test Position 2 CH40 (Ant 2, battery 4)

Date/Time: 7/2/2013 14:10:24 PM
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.034 mW/g

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 0.045 W/kg
SAR(1 g) = 0.004 mW/g; SAR(10 g) = 0.000407 mW/g
Maximum value of SAR (measured) = 0.032 mW/g

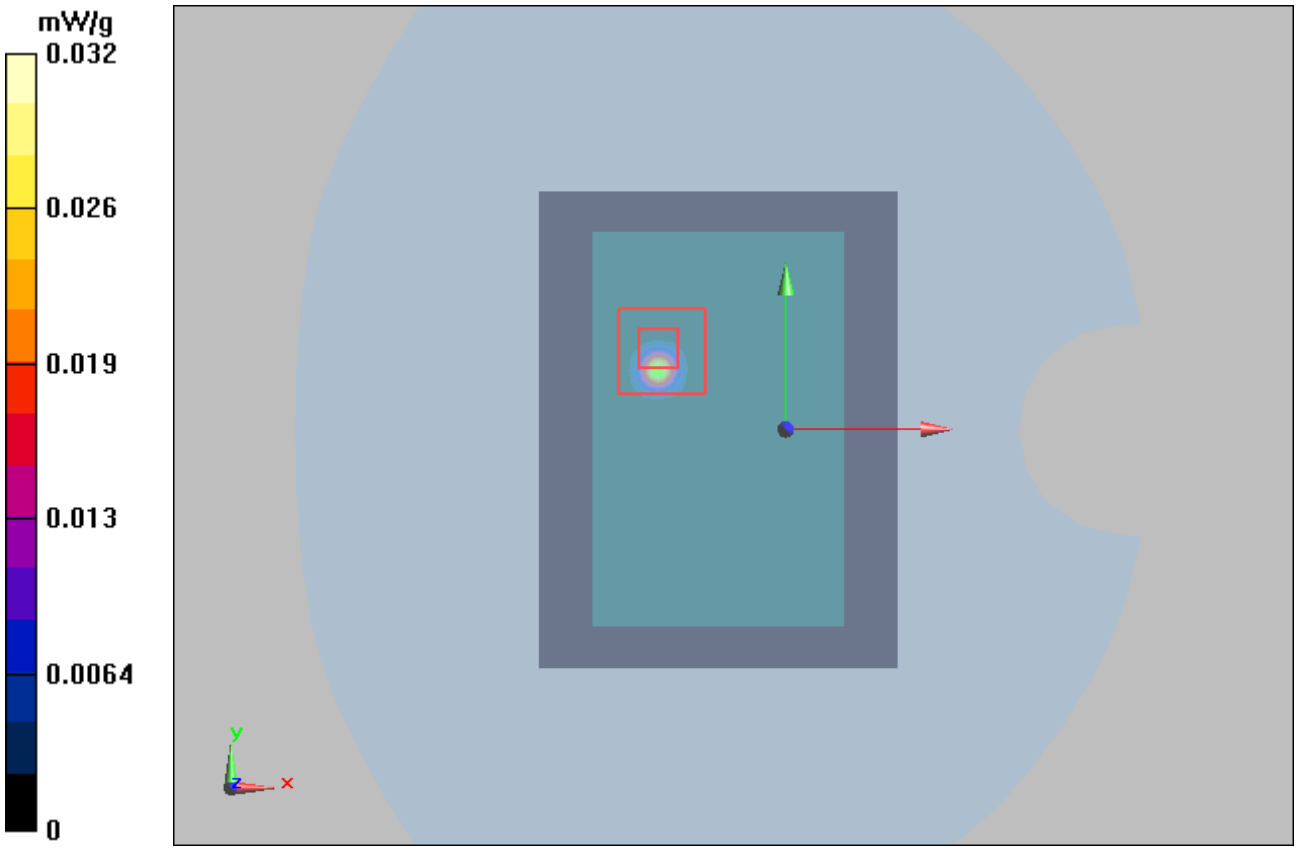


Figure 109 802.11a with Test Position 2 Channel 40

802.11n HT20 Test Position 2 CH36 (Ant 2)

Date/Time: 7/2/2013 18:39:50 PM
Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 5.29 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00393 mW/g

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.892 V/m; Power Drift = 0.099 dB
Peak SAR (extrapolated) = 0.0053 W/kg
SAR(1 g) = 0.00047 mW/g ; SAR(10 g) = 0.0000465 mW/g
Maximum value of SAR (measured) = 0.015 mW/g

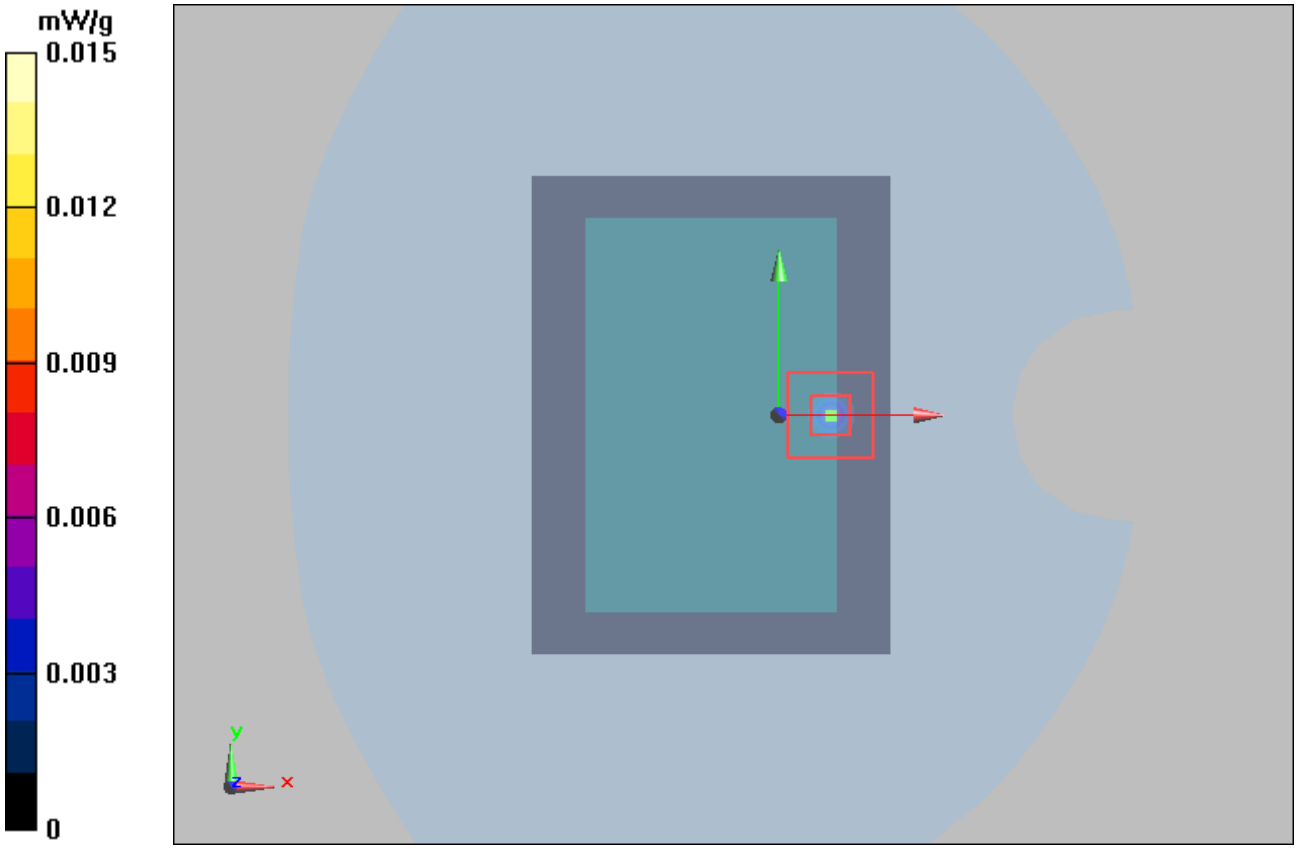


Figure 110 802.11n HT20 Test Position 2 Channel 36

802.11n HT40 Test Position 2 CH38 (Ant 2)

Date/Time: 7/2/2013 16:45:56 PM
Communication System: 802.11a; Frequency: 5190 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5190 MHz; σ = 5.3 mho/m; ε_r = 48.1; 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 - SN3753; ConvF(4.38, 4.38, 4.38); Calibrated: 1/17/2013
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

Test Position 2 Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0048 mW/g

Test Position 2 Middle/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.896 V/m; Power Drift = 0.032 dB
Peak SAR (extrapolated) = 0.0057 W/kg
SAR(1 g) = 0.0005 mW/g; SAR(10 g) = 0.0000482 mW/g
Maximum value of SAR (measured) = 0.012 mW/g

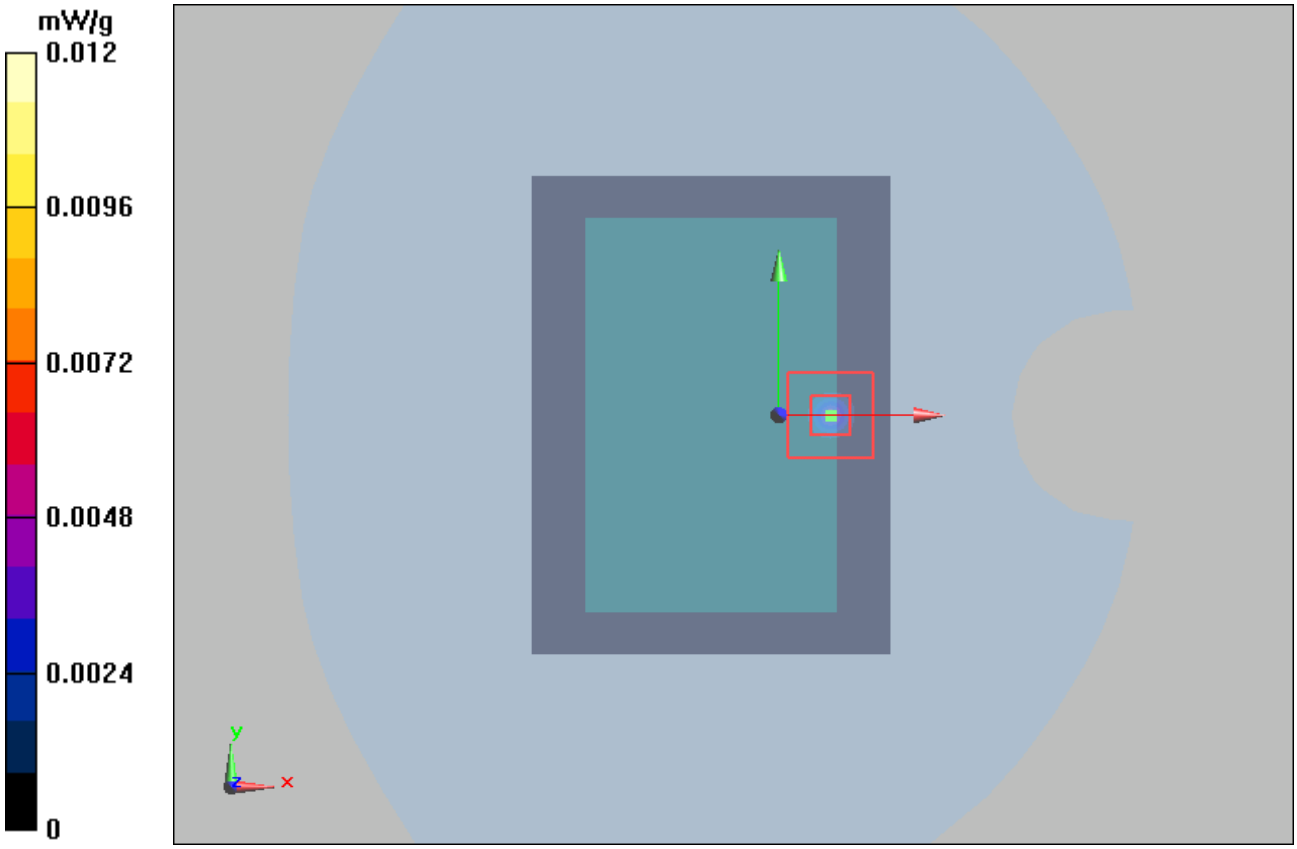


Figure 111 802.11n HT40 Test Position 2 Channel 38

ANNEX D: Probe Calibration Certificate

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S C S Schweizerischer Kalibrierdienst
Service suisse d'étalonnage
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 Auden

Certificate No: EX3-3753_Jan13

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3753

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: January 17, 2013

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	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	20-Jun-12 (No. DAE4-660_Jun12)	Jun-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-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 17, 2013

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)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

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, D	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; Dx,y,z; VRx,y,z: A, B, C, D* 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:3753

Manufactured: March 16, 2010
Calibrated: January 17, 2013

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

EX3DV4– SN:3753 January 17, 2013

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3753

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.47	0.31	0.45	± 10.1 %
DCP (mV)[B]	101.8	102.3	102.3	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	163.7	±3.5 %
		Y	0.0	0.0	1.0		168.5	
		Z	0.0	0.0	1.0		159.9	

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.

EX3DV4– SN:3753 January 17, 2013

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3753

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)
750	41.9	0.89	9.46	9.46	9.46	0.45	0.83	± 12.0 %
835	41.5	0.90	8.95	8.95	8.95	0.26	1.19	± 12.0 %
1750	40.1	1.37	7.86	7.86	7.86	0.52	0.79	± 12.0 %
1900	40.0	1.40	7.63	7.63	7.63	0.54	0.73	± 12.0 %
2000	40.0	1.40	7.50	7.50	7.50	0.53	0.77	± 12.0 %
2450	39.2	1.80	6.86	6.86	6.86	0.44	0.80	± 12.0 %
5200	36.0	4.66	4.65	4.65	4.65	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.48	4.48	4.48	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.46	4.46	4.46	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.51	4.51	4.51	0.35	1.80	± 13.1 %
5800	35.3	5.27	4.36	4.36	4.36	0.45	1.80	± 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:3753 January 17, 2013

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3753

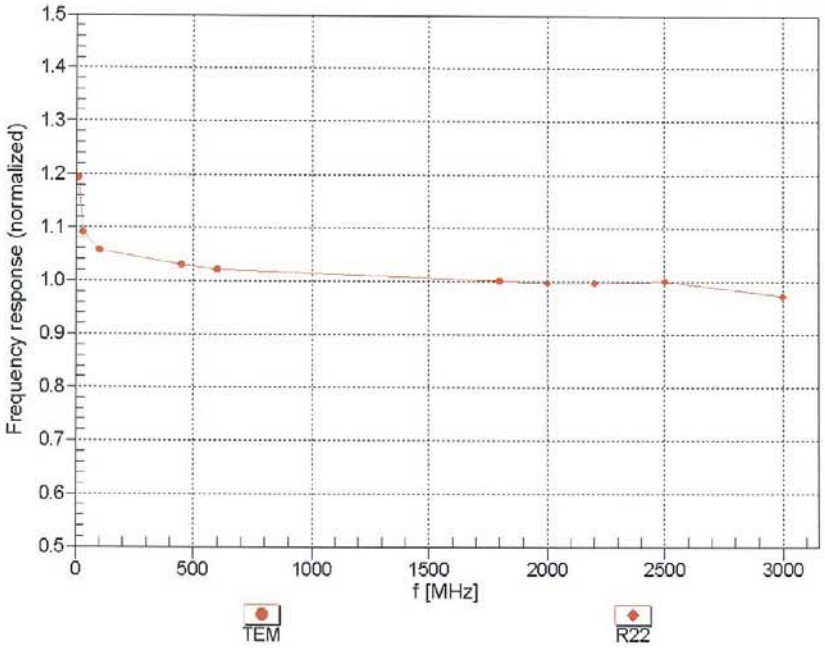
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.25	9.25	9.25	0.54	0.75	± 12.0 %
835	55.2	0.97	9.05	9.05	9.05	0.68	0.68	± 12.0 %
1750	53.4	1.49	7.82	7.82	7.82	0.50	0.84	± 12.0 %
1900	53.3	1.52	7.33	7.33	7.33	0.31	1.01	± 12.0 %
2000	53.3	1.52	7.43	7.43	7.43	0.57	0.73	± 12.0 %
2300	52.9	1.81	7.07	7.07	7.07	0.74	0.64	± 12.0 %
2450	52.7	1.95	6.90	6.90	6.90	0.80	0.50	± 12.0 %
2600	52.5	2.16	6.66	6.66	6.66	0.80	0.50	± 12.0 %
3500	51.3	3.31	6.30	6.30	6.30	0.38	1.11	± 13.1 %
5200	49.0	5.30	4.38	4.38	4.38	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.13	4.13	4.13	0.50	1.90	± 13.1 %
5500	48.6	5.65	4.09	4.09	4.09	0.50	1.90	± 13.1 %
5600	48.5	5.77	4.10	4.10	4.10	0.45	1.90	± 13.1 %
5800	48.2	6.00	4.02	4.02	4.02	0.55	1.90	± 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:3753 January 17, 2013

Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)

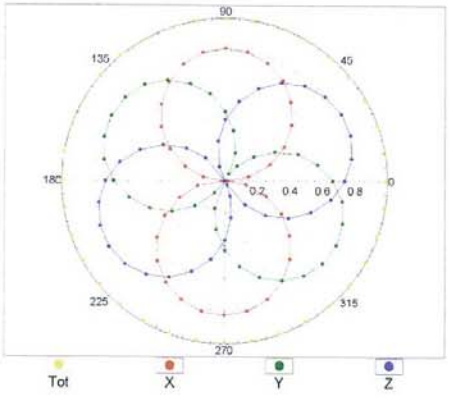


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

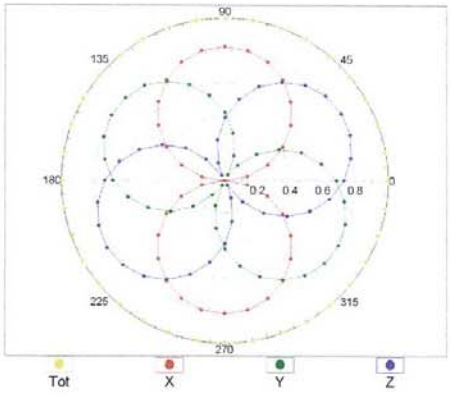
EX3DV4– SN:3753 January 17, 2013

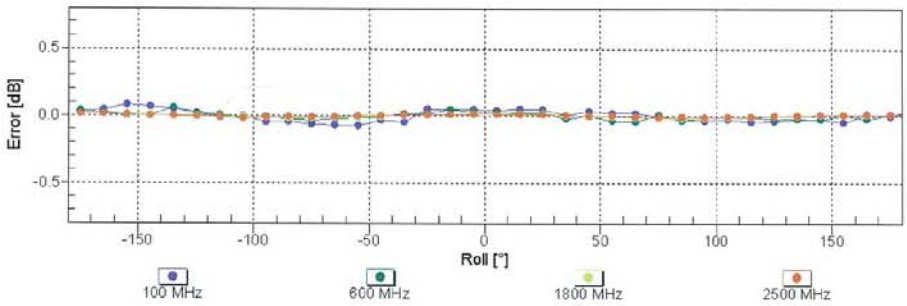
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22

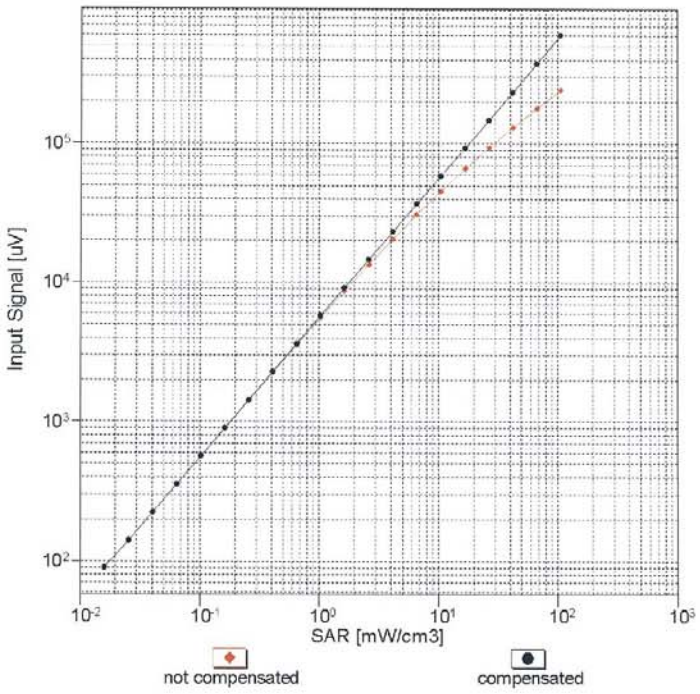


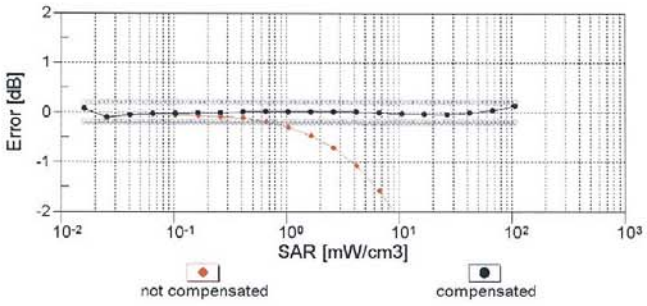


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

EX3DV4– SN:3753 January 17, 2013

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)



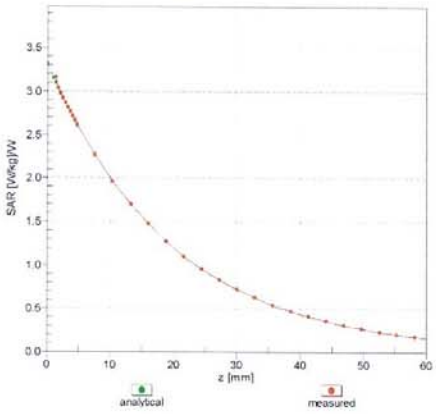


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

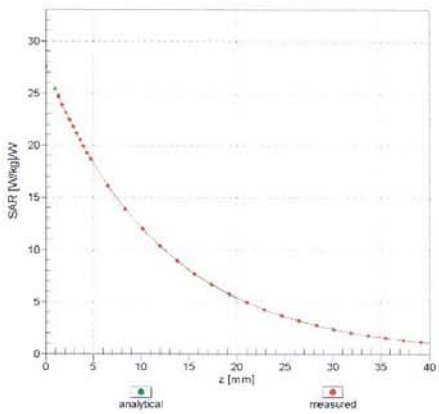
EX3DV4– SN:3753 January 17, 2013

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

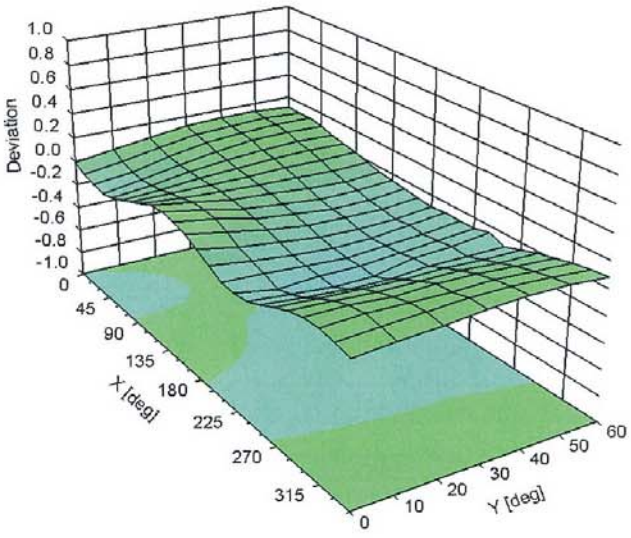


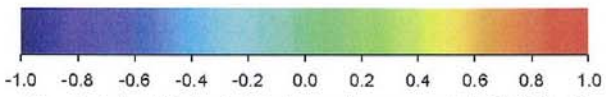
f = 1900 MHz,WGLS R22 (H_convF)



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: EX3DV4 - SN:3753

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	55.2
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 E: 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.

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

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

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
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.1 ± 6 %	0.89 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.32 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.34 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.52 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.11 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.4 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.42 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**9.46 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.59 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.26 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.9 Ω - 3.1 jΩ
Return Loss	- 27.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.7 Ω - 5.4 jΩ
Return Loss	- 25.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.391 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	April 22, 2004

DASY5 Validation Report for Head TSL

Date: 25.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

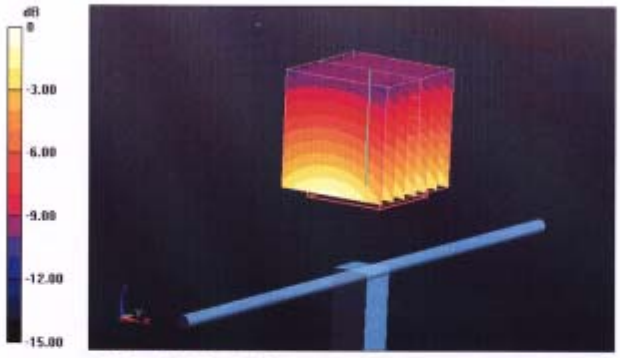
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.89 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

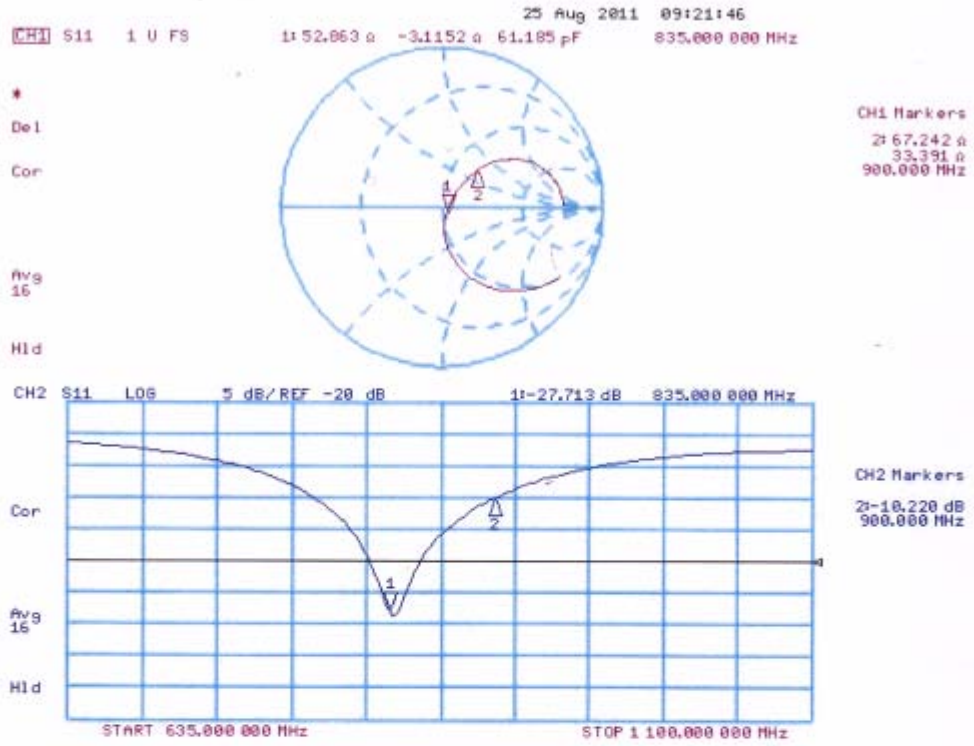
- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.930 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.421 W/kg
SAR(1 g) = 2.32 mW/g; SAR(10 g) = 1.52 mW/g
Maximum value of SAR (measured) = 2.708 mW/g



0 dB = 2.710mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 26.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

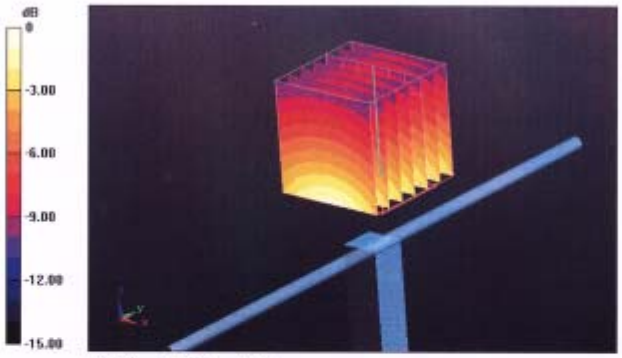
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

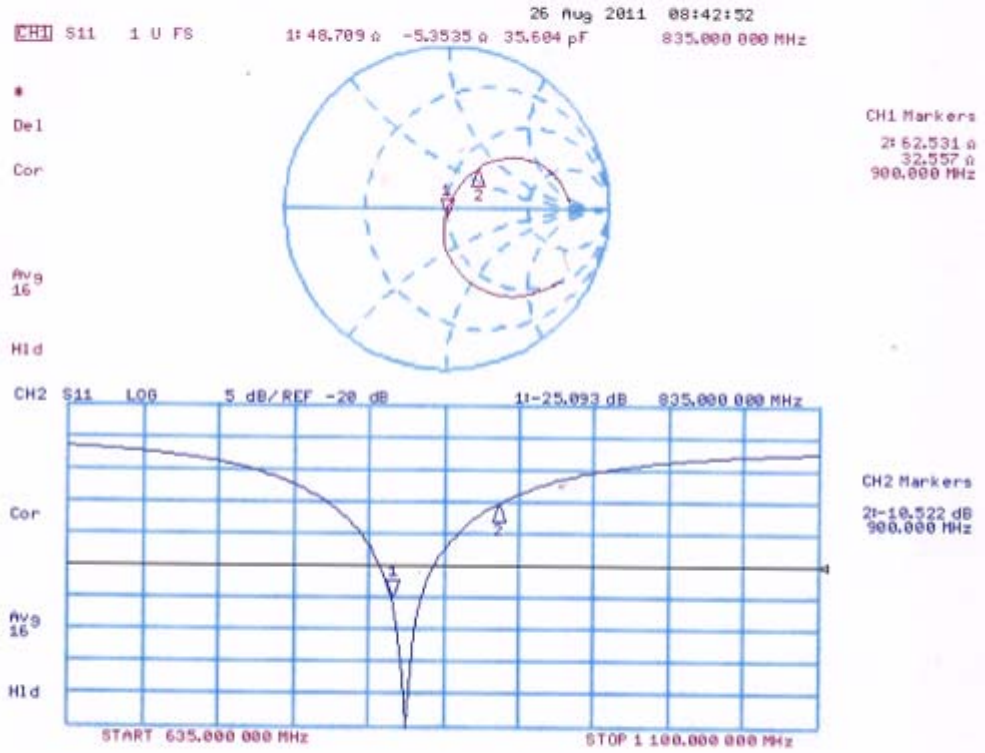
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.99 mho/m; ε_r = 53.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.406 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.509 W/kg
SAR(1 g) = 2.42 mW/g; SAR(10 g) = 1.59 mW/g
Maximum value of SAR (measured) = 2.827 mW/g



0 dB = 2.830mW/g

Impedance Measurement Plot for Body TSL