



OET 65

TEST REPORT

Product Name	LTE USB Stick
Model Name	K5150
FCC ID	QISK5150
Client	Huawei Technologies Co., Ltd.
Manufacturer	Huawei Technologies Co., Ltd.
Date of issue	March 14, 2013

TA Technology (Shanghai) Co., Ltd.

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GENERAL SUMMARY

Reference Standard(s)	<p>FCC 47CFR §2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices</p> <p>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)</p> <p>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.</p> <p>RSS-102 Issue 4 March 2010: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands).</p> <p>KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01 SAR Measurement Requirements for 100 MHz to 6 GHz</p> <p>KDB 447498 D01 Mobile Portable RF Exposure v05: Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies</p> <p>KDB 941225 D01 SAR test for 3G devices v02: SAR Measurement Procedures CDMA 20001x RTT, 1x Ev-Do, WCDMA, HSDPA/HSPA</p> <p>KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE v01: Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE</p> <p>KDB 941225 D05 SAR for LTE Devices v02r01 SAR Test Considerations for LTE Handsets and Data Modems</p> <p>KDB 447498 D02 SAR Procedures for Dongle Xmtr v02: SAR Measurement Procedures for USB Dongle Transmitters.</p>
Conclusion	<p>This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 7 of this test report are below limits specified in the relevant standards for the tested bands only.</p> <p>General Judgment: Pass</p>
Comment	<p>The test result only responds to the measured sample.</p>

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1. General Information

1.1. Notes of the Test Report

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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.

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

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1.3. Applicant Information

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1.5. Information of EUT

General Information

Device Type:	Portable Device	
Exposure Category:	Uncontrolled Environment / General Population	
State of Sample:	Prototype Unit	
IMEI:	860112020000651	
Hardware Version:	CH1K5150M	
Software Version:	22.260.03.04.5011	
Antenna Type:	Internal Antenna	
Device Operating Configurations:		
Operating Mode(s):	GSM 850/ GSM 1900; (tested) UMTS Band II/V; (tested) LTE Band 7; (tested) GSM 900/ GSM 1800; (untested) UMTS Band I/VIII; (untested) LTE Band 1/3/8/20; (untested)	
Test Modulation:	(GSM)GMSK; (UMTS)QPSK; (LTE) QPSK	
Device Class:	B	
HSDPA UE Category:	14	
DC-HSDPA UE Category:	24	
HSUPA UE Category:	6	
LTE UE Category:	4	
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 II: 3	
	UMTS Band V: 3	
Power Level:	LTE Band 7: 3	
	GSM 850: tested with power level 5	
	GSM 1900: tested with power level 0	
	UMTS Band II: tested with power control all up bits	
Test Channel: (Low - Middle - High)	128 -192 - 251	(GSM 850) (tested)
	512 - 661 - 810	(GSM 1900) (tested)

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	9262 - 9400 - 9538 (UMTS Band II) (tested)		
	4132 - 4183 - 4233 (UMTS Band V) (tested)		
	20775 - 21100 - 20425 (LTE Band 7, 5M)	(tested)	
	20800 - 21100 - 20400 (LTE Band 7, 10M)	(tested)	
	20825 - 21100 - 20375 (LTE Band 7, 15M)	(tested)	
	20850 - 21100 - 20350 (LTE Band 7, 20M)	(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 II	1852.4 ~ 1907.6	1932.4 ~ 1987.6
	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
Used Host Products:	IBM T61		

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Equipment Under Test (EUT) has a GSM/UMTS/LTE antenna that is used for Tx/Rx. Another antenna that is used for Rx only. During SAR test of the EUT, it was connected to a portable computer.

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	Back Side	251/848.8	0.916	1.014
GSM 1900	Back Side	661/1880	0.748	0.910
UMTS Band II	Back Side	9262/1852.4	0.887	1.112
UMTS Band V	Back Side	4183/836.6	0.910	1.140
LTE Band 7	Back Side	20850/2510	0.895	1.132

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	31.26	25.24
	EGPRS(GMSK), 2 Txslots	31.26	25.24
GSM 1900	GPRS(GMSK), 2 Txslots	27.85	21.83
	EGPRS(GMSK), 2 Txslots	27.85	21.83

Mode	Maximum Conducted Power (dBm)
UMTS Band II	21.91
UMTS Band V	21.89
LTE Band 7	21.85

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

1.8. Test Date

The test performed from February 19, 2013 to February 21, 2013.

2. SAR Measurements System Configuration

2.1. SAR Measurement Set-up

The DASY5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- A unit to operate the optical surface detector which is connected to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
- The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 2003
- DASY5 software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- System validation dipoles allowing to validate the proper functioning of the system.

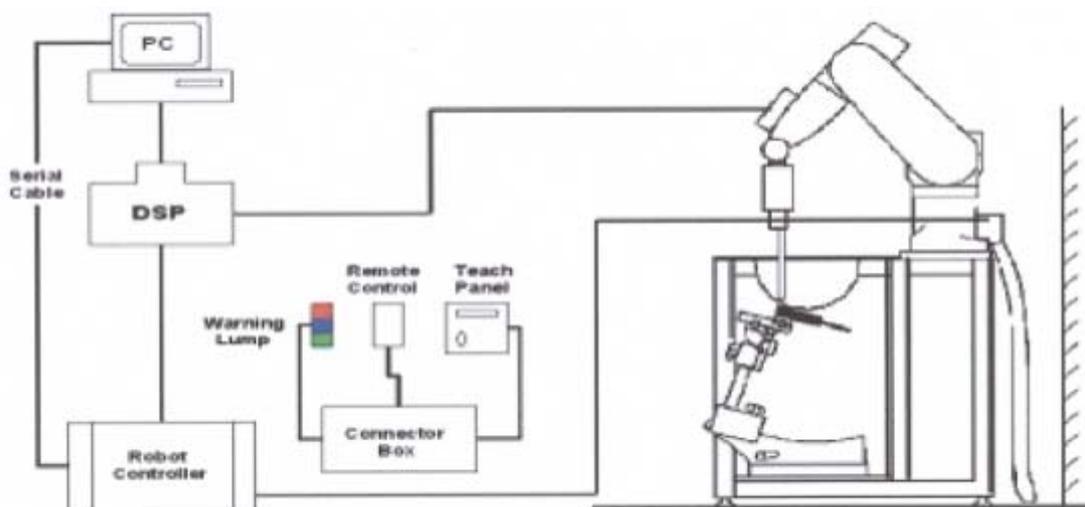


Figure 1. SAR Lab Test Measurement Set-up

2.2. DASY5 E-field Probe System

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

2.2.1. ES3DV3 Probe Specification

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



Figure 2. ES3DV3 E-field Probe



Figure 3. ES3DV3 E-field probe

2.2.2. EX3DV4 Probe Specification

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



Figure 4. EX3DV4 E-field Probe



Figure 5. EX3DV4 E-field probe

2.2.3. E-field Probe Calibration

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

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

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

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

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

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

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) Available Special



Figure 6 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 $\pm 0.1\text{mm}$). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within $\pm 30^\circ$.)

- Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values before running a detailed measurement around the hot spot. Before starting the area scan a grid spacing 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.

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

Frequency	Maximum Area Scan Resolution (mm) ($\Delta x_{\text{area}}, \Delta y_{\text{area}}$)	Maximum Zoom Scan Resolution (mm) ($\Delta x_{\text{zoom}}, \Delta y_{\text{zoom}}$)	Maximum Zoom Scan Spatial Resolution (mm) $\Delta z_{\text{zoom}}(n)$	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.

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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/cm³

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

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

with P_{pwe} = equivalent power density of a plane wave in mW/cm²

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

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	$\epsilon=55.2$	$\sigma=0.97$

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

MIXTURE%	FREQUENCY (Body) 2600MHz		
Water	72.6		
Glycol monobutyl	27.3		
Salt	0.1		
Dielectric Parameters Target Value	f=2600MHz	$\epsilon=52.5$	$\sigma=2.16$

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4.2. Tissue-equivalent Liquid Properties

Table 4: Dielectric Performance of Tissue Simulating Liquid

Frequency	Test Date	Temp °C	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)	2013-2-19	21.5	55.89	0.99	55.20	0.97	1.25%	2.06%
1900MHz (body)	2013-2-20	21.5	52.56	1.52	53.30	1.52	-1.39%	0%
2600MHz (body)	2013-2-21	21.5	51.89	2.17	52.50	2.16	-1.16%	0.46%

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 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 ($\pm 10\%$).

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

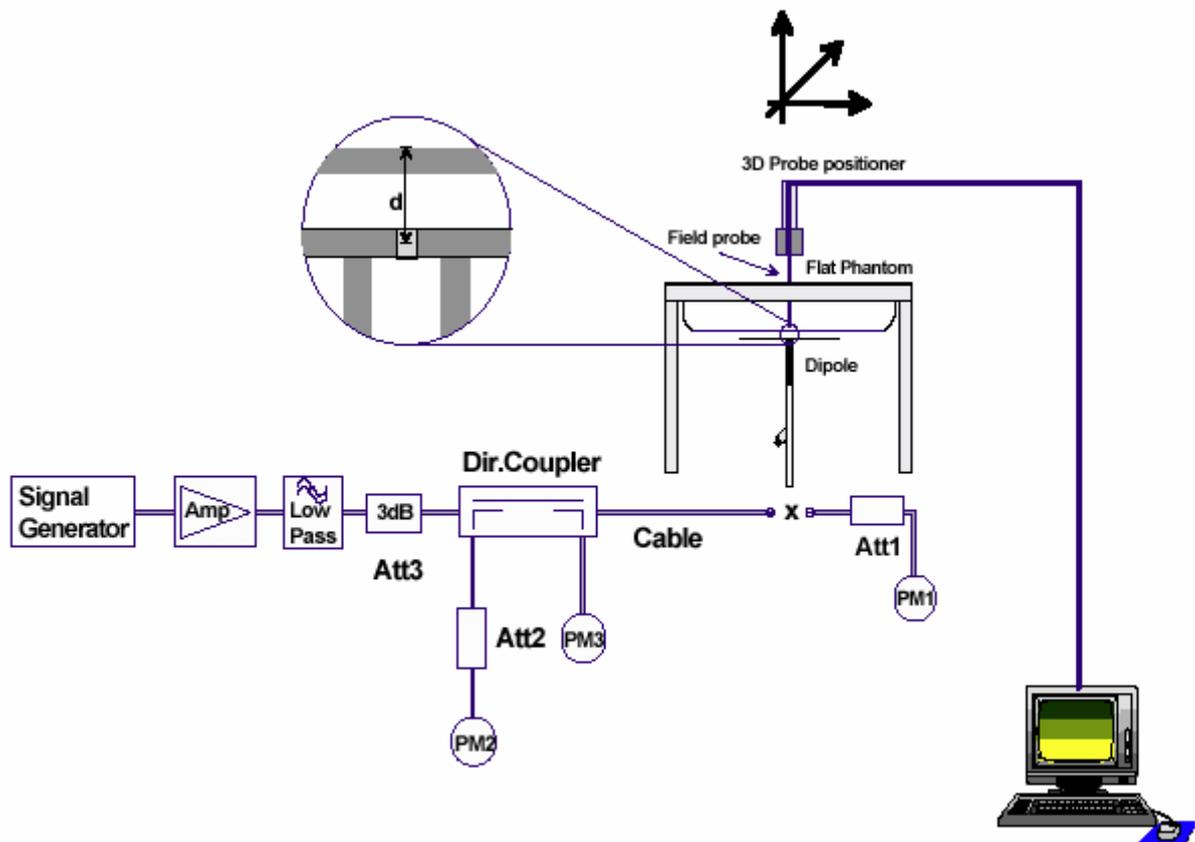


Figure 7. System Check Set-up

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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 Publication 450824:

Dipole D835V2 SN: 4d020				
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	$\Delta\Omega$
8/26/2011	-25.1	/	48.7	/
8/25/2012	-24.3	3.2%	50.6	1.9 Ω

Dipole D1900V2 SN: 5d060				
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	$\Delta\Omega$
8/31/2011	-21.3	/	47.3	/
8/30/2012	-20.9	1.9%	45.9	1.4 Ω

5.2. System Check Results

Table 5: System Check in Body Tissue Simulating Liquid

Frequency	Test Date	Dielectric Parameters		Temp ($^{\circ}$ C)	250mW Measured SAR _{1g}	1W Normalized SAR _{1g}	1W Target SAR _{1g}	Limit (\pm 10% Deviation)
		ϵ_r	σ (s/m)		(W/kg)			
835MHz	2013-2-19	55.89	0.99	21.5	2.50	10.00	9.46	5.71%
1900MHz	2013-2-20	52.56	1.52	21.5	10.50	42.00	41.70	0.72%
2600MHz	2013-2-21	51.89	2.17	21.5	13.50	54.00	54.30	-0.55%

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

6. Operational Conditions during Test

6.1. General Description of Test Procedures

Connection to the EUT is established via air interface with CMW 500, and the EUT is set to maximum output power by CMW500. 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.

The measurements were performed in combination with a host product (IBM T61). IBM T61 laptop has horizontal USB slot and vertical USB slot.

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	1
3	3
4	5

EGPRS (8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	0.5
3	2.5
4	4.5

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EGPRS (GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	1
3	3
4	5

GSM 1900

GPRS (GMSK) :

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	1
3	3
4	5

EGPRS (8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	0.5
3	2.5
4	4.5

EGPRS (GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	1
3	3
4	5

6.2.2. UMTS Test Configuration

6.2.2.1. WCDMA Test Configuration

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 DPDCH₁ are as followed (EUT do not support the DPDCH_{2-n})

Table 6: The configurations for the DPCCH and DPDCH₁

	Channel Bit Rate(kbps)	Channel Symbol Rate(kps)	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.

6.2.3. HSDPA Test Configuration

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

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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(β_c, β_d), and HS-DPCCH power offset parameters($\Delta_{ACK}, \Delta_{NACK}, \Delta_{CQI}$) 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: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$

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, Δ_{ACK} and $\Delta_{NACK} = 8$ ($A_{hs} = 30/15$) with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta_{CQI} = 7$ ($A_{hs} = 24/15$) with $\beta_{hs} = 24/15 * \beta_c$.

Note3: CM=1 for $\beta_c/\beta_d = 12/15, \beta_{hs}/\beta_c = 24/15$. 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 β_c/β_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 $\beta_c = 11/15$ and $\beta_d = 15/15$.

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

6.2.4. 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

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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	QPSK, 16QAM, 64QAM		
Category 13	15	1	35280	259200			
Category 14	15	1	42192	259200	QPSK, 16QAM		
Category 15	15	1	23370	345600	QPSK, 16QAM		
Category 16	15	1	27952	345600	QPSK, 16QAM		
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	QPSK, 16QAM, 64QAM		
Category 21	15	1	23370	345600	-	-	QPSK, 16QAM
Category 22	15	1	27952	345600			
Category 23	15	1	35280	518400			
Category 24	15	1	42192	518400			

6.2.5. 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.

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Table 10: Sub-Test 5 Setup for Release 6 HSUPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	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} , Δ_{NACK} and $\Delta_{CQI} = 8$ □ $A_{hs} = \beta_{hs}/\beta_c = 30/15$ □ $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. 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 β_c/β_d 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 $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: For subtest 5 the β_c/β_d 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 $\beta_c = 14/15$ and $\beta_d = 15/15$.

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: β_{ed} 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)

6.2.6. 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 $> \frac{1}{2}$ 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 $> \frac{1}{2}$ 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. Measurement Variability

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

SAR Measurement Variability was assessed using the following procedures for each frequency band:

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

6.4. Test Positions

The measurements were performed in combination with a host product (IBM T61). IBM T61 laptop has horizontal and vertical USB slot.

A test distance of 5mm or less, according to KDB 447498 D02, should be considered for the orientation that can satisfy such requirements.

For each channel, the EUT is tested at the following 5 test positions:

- Test Position 1: The EUT is connected to the portable computer with horizontal USB slot. The back side of the EUT towards to the bottom of the flat phantom. The distance from back side of the EUT to the bottom of the flat phantom is 5mm. (ANNEX I Picture 6)
- Test Position 2: The EUT is connected to the portable computer through a 19 cm USB cable. The front side of the EUT towards the bottom of the flat phantom. The distance from front side of the EUT to the bottom of the flat phantom is 5mm. (ANNEX I Picture 7)
- Test Position 3: The EUT is connected to the portable computer through a 19 cm USB cable. The left side of the EUT towards the bottom of the flat phantom. The distance from left side of the EUT to the bottom of the flat phantom is 5mm. (ANNEX I Picture 8)
- Test Position 4: The EUT is connected to the portable computer with vertical USB slot. The right side of the EUT towards the bottom of the flat phantom. The distance from right side of the EUT to the bottom of the flat phantom is 5mm. (ANNEX I Picture 9)
- Test Position 5: The EUT is connected to the portable computer with vertical USB slot. The Top side of the EUT towards the bottom of the flat phantom. The distance from right side of the EUT to the bottom of the flat phantom is 5mm. (ANNEX I Picture 10)

6.5. Picture of Host Product

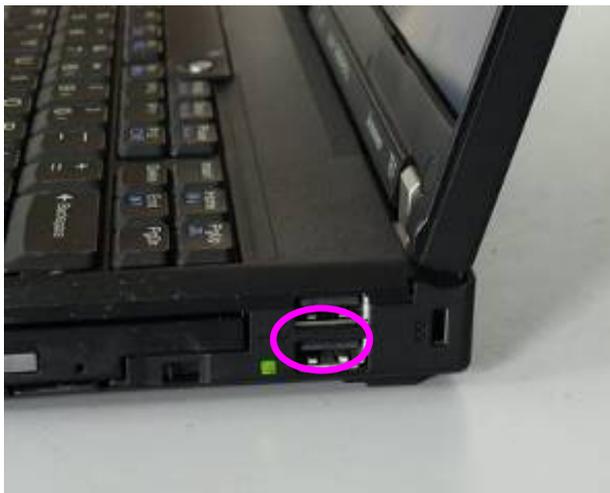
During the test, IBM T61 laptop were used as an assistant to help to setup communication. (See Picture 1)



Picture 1-a: IBM T61 Close



Picture 1-b: IBM T61 Open



Picture 1-c: IBM T61 with horizontal USB slot



Picture 1-e: a 19 cm USB cable

Picture 1: Computer as a test assistant

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7. Test Results

7.1. Conducted Power Results

Table 12: GSM850/1900 Conducted Power Measurement Results

GSM 850		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 128	Channel 192	Channel 251		Channel 128	Channel 192	Channel 251
GPRS (GMSK)	1Txslot	32.13	32.24	32.25	-9.03dB	23.1	23.21	23.22
	2Txslots	31.25	31.25	31.26	-6.02dB	25.23	25.23	25.24
	3Txslots	29.24	29.27	29.28	-4.26dB	24.98	25.01	25.02
	4Txslots	27.17	27.15	27.14	-3.01dB	24.16	24.14	24.13
EGPRS (GMSK)	1Txslot	32.13	32.24	32.25	-9.03dB	23.1	23.21	23.22
	2Txslots	31.25	31.25	31.26	-6.02dB	25.23	25.23	25.24
	3Txslots	29.24	29.27	29.28	-4.26dB	24.98	25.01	25.02
	4Txslots	27.17	27.15	27.14	-3.01dB	24.16	24.14	24.13
EGPRS (8PSK)	1Txslot	25.54	25.38	25.17	-9.03dB	16.51	16.35	16.14
	2Txslots	24.92	24.77	24.53	-6.02dB	18.9	18.75	18.51
	3Txslots	23.06	22.86	22.65	-4.26dB	18.8	18.6	18.39
	4Txslots	21.12	20.94	20.75	-3.01dB	18.11	17.93	17.74
GSM 1900		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GPRS (GMSK)	1Txslot	28.81	28.88	28.73	-9.03dB	19.78	19.85	19.7
	2Txslots	27.75	27.85	27.65	-6.02dB	21.73	21.83	21.63
	3Txslots	25.64	25.81	25.59	-4.26dB	21.38	21.55	21.33
	4Txslots	23.62	23.74	23.62	-3.01dB	20.61	20.73	20.61
EGPRS (GMSK)	1Txslot	28.81	28.88	28.73	-9.03dB	19.78	19.85	19.7
	2Txslots	27.75	27.85	27.65	-6.02dB	21.73	21.83	21.63
	3Txslots	25.64	25.81	25.59	-4.26dB	21.38	21.55	21.33
	4Txslots	23.62	23.74	23.62	-3.01dB	20.61	20.73	20.61
EGPRS (8PSK)	1Txslot	24.42	24.58	24.78	-9.03dB	15.39	15.55	15.75
	2Txslots	23.72	23.92	24.19	-6.02dB	17.7	17.9	18.17
	3Txslots	21.47	21.72	21.82	-4.26dB	17.21	17.46	17.56
	4Txslots	19.34	19.45	19.65	-3.01dB	16.33	16.44	16.64

Note:

1) Division Factors

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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.

Table 13: UMTS Band II/V Conducted Power Measurement Results

UMTS Band II		Conducted Power (dBm)		
		Channel 9262	Channel 9400	Channel 9538
RMC	12.2kbps RMC	21.72	21.74	21.65
	64kbps RMC	21.66	21.69	21.74
	144kbps RMC	21.66	21.68	21.59
	384kbps RMC	21.69	21.71	21.69
HSDPA	Sub - Test 1	21.36	21.44	21.29
	Sub - Test 2	21.28	21.35	21.4
	Sub - Test 3	21.31	21.55	21.32
	Sub - Test 4	21.19	21.84	21.49
DC-HSDPA	Sub - Test 1	21.48	21.66	21.41
	Sub - Test 2	21.39	21.24	21.31
	Sub - Test 3	21.47	21.64	21.44
	Sub - Test 4	21.28	21.91	21.69
HSUPA	Sub - Test 1	20.77	20.68	20.66
	Sub - Test 2	19.87	19.81	19.87
	Sub - Test 3	19.66	19.56	20.34
	Sub - Test 4	20.19	20.05	20.04
	Sub - Test 5	21.38	21.15	21.05
UMTS Band V		Conducted Power (dBm)		
		Channel 4132	Channel 4183	Channel 4233
RMC	12.2kbps RMC	21.63	21.72	21.74
	64kbps RMC	21.63	21.68	21.75
	144kbps RMC	21.59	21.70	21.78

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	384kbps RMC	21.61	21.67	21.73
HSDPA	Sub - Test 1	21.61	21.63	21.71
	Sub - Test 2	21.45	21.49	21.76
	Sub - Test 3	21.31	21.39	21.68
	Sub - Test 4	21.39	21.43	21.69
DC-HSDPA	Sub - Test 1	21.82	21.83	21.89
	Sub - Test 2	21.68	21.57	21.68
	Sub - Test 3	21.49	21.48	21.84
	Sub - Test 4	21.56	21.52	21.81
HSUPA	Sub - Test 1	20.80	20.87	20.91
	Sub - Test 2	19.83	19.85	20.01
	Sub - Test 3	19.84	19.83	20.01
	Sub - Test 4	20.09	20.02	20.4
	Sub - Test 5	21.37	21.31	21.44

Table 14: LTE Band 7 Conducted Power Measurement Results

Bandwidth(MHz)	RB	ULstartRB	Mod	Channel	Test Data(dBm)
5	1	0	QPSK	20775	21.25
5	1	12	QPSK	20775	21.28
5	1	24	QPSK	20775	21.53
5	12	0	QPSK	20775	21.35
5	12	6	QPSK	20775	21.43
5	12	13	QPSK	20775	21.35
5	25	0	QPSK	20775	21.3
5	1	0	QPSK	21100	21.41
5	1	12	QPSK	21100	21.58
5	1	24	QPSK	21100	21.72
5	12	0	QPSK	21100	21.67
5	12	6	QPSK	21100	21.77
5	12	13	QPSK	21100	21.55
5	25	0	QPSK	21100	21.54
5	1	0	QPSK	21425	21.48
5	1	12	QPSK	21425	21.53

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5	1	24	QPSK	21425	21.82
5	12	0	QPSK	21425	21.69
5	12	6	QPSK	21425	21.76
5	12	13	QPSK	21425	21.64
5	25	0	QPSK	21425	21.64
10	1	0	QPSK	20800	21.2
10	1	25	QPSK	20800	21.25
10	1	49	QPSK	20800	21.37
10	25	0	QPSK	20800	21.01
10	25	13	QPSK	20800	21.49
10	25	25	QPSK	20800	21.27
10	50	0	QPSK	20800	21.24
10	1	0	QPSK	21100	21.47
10	1	25	QPSK	21100	21.53
10	1	49	QPSK	21100	21.67
10	25	0	QPSK	21100	21.42
10	25	13	QPSK	21100	21.62
10	25	25	QPSK	21100	21.37
10	50	0	QPSK	21100	21.37
10	1	0	QPSK	21400	21.24
10	1	25	QPSK	21400	21.28
10	1	49	QPSK	21400	21.68
10	25	0	QPSK	21400	21.28
10	25	13	QPSK	21400	21.6
10	25	25	QPSK	21400	21.52
10	50	0	QPSK	21400	21.42
15	1	0	QPSK	20825	21.29
15	1	39	QPSK	20825	21.34
15	1	74	QPSK	20825	21.51
15	38	0	QPSK	20825	21.32
15	38	19	QPSK	20825	21.43

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15	38	39	QPSK	20825	21.59
15	75	0	QPSK	20825	21.4
15	1	0	QPSK	21100	21.75
15	1	39	QPSK	21100	21.79
15	1	74	QPSK	21100	21.65
15	38	0	QPSK	21100	21.73
15	38	19	QPSK	21100	21.83
15	38	39	QPSK	21100	21.36
15	75	0	QPSK	21100	21.37
15	1	0	QPSK	21375	21.38
15	1	39	QPSK	21375	21.55
15	1	74	QPSK	21375	21.66
15	38	0	QPSK	21375	21.47
15	38	19	QPSK	21375	21.57
15	38	39	QPSK	21375	21.49
15	75	0	QPSK	21375	21.55
20	1	0	QPSK	20850	21.24
20	1	50	QPSK	20850	21.26
20	1	99	QPSK	20850	21.68
20	50	0	QPSK	20850	21.25
20	50	25	QPSK	20850	21.52
20	50	50	QPSK	20850	21.5
20	100	0	QPSK	20850	21.52
20	1	0	QPSK	21100	21.81
20	1	50	QPSK	21100	21.85
20	1	99	QPSK	21100	21.82
20	50	0	QPSK	21100	21.59
20	50	25	QPSK	21100	21.64
20	50	50	QPSK	21100	21.46
20	100	0	QPSK	21100	21.51
20	1	0	QPSK	21350	21.26

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20	1	50	QPSK	21350	21.3
20	1	99	QPSK	21350	21.77
20	50	0	QPSK	21350	21.57
20	50	25	QPSK	21350	21.64
20	50	50	QPSK	21350	21.45
20	100	0	QPSK	21350	21.52
5	1	0	16QAM	20775	21.42
5	1	12	16QAM	20775	21.48
5	1	24	16QAM	20775	21.73
5	12	0	16QAM	20775	20.65
5	12	6	16QAM	20775	20.75
5	12	13	16QAM	20775	20.67
5	25	0	16QAM	20775	20.64
5	1	0	16QAM	21100	21.71
5	1	12	16QAM	21100	21.76
5	1	24	16QAM	21100	21.85
5	12	0	16QAM	21100	20.78
5	12	6	16QAM	21100	20.88
5	12	13	16QAM	21100	20.63
5	25	0	16QAM	21100	20.68
5	1	0	16QAM	21425	21.43
5	1	12	16QAM	21425	21.47
5	1	24	16QAM	21425	21.75
5	12	0	16QAM	21425	20.78
5	12	6	16QAM	21425	20.86
5	12	13	16QAM	21425	20.73
5	25	0	16QAM	21425	20.86
10	1	0	16QAM	20800	21.14
10	1	25	16QAM	20800	21.17
10	1	49	16QAM	20800	21.58
10	25	0	16QAM	20800	20.21

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10	25	13	16QAM	20800	20.44
10	25	25	16QAM	20800	20.24
10	50	0	16QAM	20800	20.21
10	1	0	16QAM	21100	21.45
10	1	25	16QAM	21100	21.52
10	1	49	16QAM	21100	21.76
10	25	0	16QAM	21100	20.59
10	25	13	16QAM	21100	20.68
10	25	25	16QAM	21100	20.4
10	50	0	16QAM	21100	20.44
10	1	0	16QAM	21400	21.07
10	1	25	16QAM	21400	21.11
10	1	49	16QAM	21400	21.53
10	25	0	16QAM	21400	20.52
10	25	13	16QAM	21400	20.8
10	25	25	16QAM	21400	20.66
10	50	0	16QAM	21400	20.61
15	1	0	16QAM	20825	21.32
15	1	39	16QAM	20825	21.37
15	1	74	16QAM	20825	21.57
15	38	0	16QAM	20825	20.4
15	38	19	16QAM	20825	20.7
15	38	39	16QAM	20825	20.77
15	75	0	16QAM	20825	20.57
15	1	0	16QAM	21100	21.81
15	1	39	16QAM	21100	21.83
15	1	74	16QAM	21100	21.82
15	38	0	16QAM	21100	20.74
15	38	19	16QAM	21100	20.82
15	38	39	16QAM	21100	20.53
15	75	0	16QAM	21100	20.56

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15	1	0	16QAM	21375	21.41
15	1	39	16QAM	21375	21.51
15	1	74	16QAM	21375	21.61
15	38	0	16QAM	21375	20.7
15	38	19	16QAM	21375	20.82
15	38	39	16QAM	21375	20.75
15	75	0	16QAM	21375	20.8
20	1	0	16QAM	20850	21.18
20	1	50	16QAM	20850	21.25
20	1	99	16QAM	20850	21.76
20	50	0	16QAM	20850	20.33
20	50	25	16QAM	20850	20.78
20	50	50	16QAM	20850	20.76
20	100	0	16QAM	20850	20.66
20	1	0	16QAM	21100	21.78
20	1	50	16QAM	21100	21.85
20	1	99	16QAM	21100	21.84
20	50	0	16QAM	21100	20.64
20	50	25	16QAM	21100	20.68
20	50	50	16QAM	21100	20.51
20	100	0	16QAM	21100	20.56
20	1	0	16QAM	21350	21.39
20	1	50	16QAM	21350	21.42
20	1	99	16QAM	21350	21.67
20	50	0	16QAM	21350	20.78
20	50	25	16QAM	21350	20.86
20	50	50	16QAM	21350	20.76
20	100	0	16QAM	21350	20.74

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7.2. SAR Test Results

7.2.1. GSM 850 (GPRS/EGPRS)

Table 15: SAR Values [GSM 850 (GPRS/EGPRS)]

Test Position	Channel/ Frequency (MHz)	Time slot	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift	Limit SAR _{1g} 1.6 W/kg			
						± 0.21dB	Measured SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)	Graph Results
IBM T61(Distance 5mm)										
Test Position 1	251/848.8	2Txslot	1:4.15	31.7	31.26	-0.190	0.916	1.11	1.014	Figure11
	192/837	2Txslot	1:4.15	31.7	31.25	-0.052	0.799	1.11	0.886	Figure12
	128/824.2	2Txslot	1:4.15	31.7	31.25	-0.158	0.685	1.11	0.760	Figure13
Test Position 2	192/837	2Txslot	1:4.15	31.7	31.25	-0.128	0.664	1.11	0.736	Figure14
Test Position 3	192/837	2Txslot	1:4.15	31.7	31.25	0.005	0.378	1.11	0.419	Figure15
Test Position 4	192/837	2Txslot	1:4.15	31.7	31.25	0.085	0.205	1.11	0.227	Figure16
Test Position 5	192/837	2Txslot	1:4.15	31.7	31.25	0.009	0.029	1.11	0.033	Figure17
Worst Case Position of GPRS with EGPRS (GMSK, Distance 5mm)										
Test Position 1	251/848.8	2Txslot	1:4.15	31.7	31.26	-0.026	0.914	1.11	1.011	Figure18
SAR Measurement Variability(1st Repeated SAR) (GMSK, Distance 5mm)										
Test Position 1	251/848.8	2Txslot	1:4.15	31.7	31.26	-0.168	0.915	1.11	1.013	Figure19

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.

Table 16: SAR Measurement Variability Results (GSM 850)

Test Position	Timeslots	Channel/ Frequency (MHz)	Measured SAR (1g)	1 st Repeated SAR (1g)	Ratio	2 nd Repeated SAR (1g)	3 rd Repeated SAR (1g)
Test Position 1	2Txslot	251/848.8	0.916	0.915	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

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7.2.2. GSM 1900 (GPRS/EGPRS)

Table 17: 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
IBM T61(Distance 5mm)										
Test Position 1	810/1909.8	2Txslot	1:4.15	28.7	27.65	0.022	0.690	1.27	0.879	Figure 20
	661/1880	2Txslot	1:4.15	28.7	27.85	0.039	0.748	1.22	0.910	Figure 21
	512/1850.2	2Txslot	1:4.15	28.7	27.75	-0.050	0.622	1.24	0.774	Figure 22
Test Position 2	661/1880	2Txslot	1:4.15	28.7	27.85	-0.073	0.618	1.22	0.752	Figure 23
Test Position 3	661/1880	2Txslot	1:4.15	28.7	27.85	-0.113	0.432	1.22	0.525	Figure 24
Test Position 4	661/1880	2Txslot	1:4.15	28.7	27.85	-0.031	0.114	1.22	0.139	Figure 25
Test Position 5	661/1880	2Txslot	1:4.15	28.7	27.85	0.010	0.031	1.22	0.038	Figure 26
Worst Case Position of GPRS with EGPRS (GMSK, Distance 5mm)										
Back Side	661/1880	2Txslot	1:4.15	28.7	27.85	0.028	0.732	1.22	0.890	Figure 27

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.

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

Table 18: SAR Values [UMTS Band II (WCDMA/HSDPA/HSUPA)]

Test Position	Channel/ Frequency (MHz)	Channel Type	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift $\pm 0.21\text{dB}$		Limit SAR _{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)	Graph Results	
IBM T61(Distance 5mm)											
Test Position 1	9538/1907.6	RMC 12.2k	1:1	22.7	21.65	0.013	0.712	1.27	0.907	Figure 28	
	9400/1880	RMC 12.2k	1:1	22.7	21.74	0.060	0.807	1.25	1.007	Figure 29	
	9262/1852.4	RMC 12.2k	1:1	22.7	21.72	-0.009	0.845	1.25	1.059	Figure 30	
Test Position 2	9538/1907.6	RMC 12.2k	1:1	22.7	21.65	-0.116	0.618	1.27	0.787	Figure 31	
	9400/1880	RMC 12.2k	1:1	22.7	21.74	0.077	0.748	1.25	0.933	Figure 32	
	9262/1852.4	RMC 12.2k	1:1	22.7	21.72	-0.062	0.782	1.25	0.980	Figure 33	
Test Position 3	9400/1880	RMC 12.2k	1:1	22.7	21.74	-0.020	0.503	1.25	0.627	Figure 34	
Test Position 4	9400/1880	RMC 12.2k	1:1	22.7	21.74	0.095	0.138	1.25	0.172	Figure 35	
Test Position 5	9400/1880	RMC 12.2k	1:1	22.7	21.74	0.023	0.032	1.25	0.038	Figure 36	
SAR Measurement Variability(1st Repeated SAR) (Distance 5mm)											
Test Position 1	9262/1852.4	RMC 12.2k	1:1	22.7	21.72	0.016	0.887	1.25	1.112	Figure 37	

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. WCDMA mode was tested under RMC 12.2kbps with HSPA (HSDPA/HSUPA) inactive per KDB Publication 941225 D01. HSPA (HSDPA/HSUPA) SAR for body was not required since the average output power of the HSPA (HSDPA/HSUPA) subtests was not more than 0.25 dB higher than the RMC level or the maximum SAR for 12.2kbps RMC was less than 75% SAR limit.

Table 19: SAR Measurement Variability Results (UMTS Band II)

Test Position	Channel Type	Channel/ Frequency (MHz)	Measured SAR (1g)	1 st Repeated SAR (1g)	Ratio	2 nd Repeated SAR (1g)	3 rd Repeated SAR (1g)
Test Position 1	RMC 12.2k	9262/1852.4	0.845	0.887	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 ($\sim 10\%$ 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

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

Table 20: SAR Values [UMTS Band V (WCDMA/HSDPA/HSUPA)]

Test Position	Channel/Frequency (MHz)	Channel Type	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift	Limit SAR _{1g} 1.6 W/kg			
						± 0.21dB	Measured SAR _{1g} (W/kg)	Scaling Factor	Reported SAR _{1g} (W/kg)	Graph Results
IBM T61(Distance 5mm)										
Test Position 1	4232/846.6	RMC 12.2k	1:1	22.7	21.74	-0.036	0.869	1.25	1.084	Figure 38
	4183/836.6	RMC 12.2k	1:1	22.7	21.72	-0.077	0.910	1.25	1.140	Figure 39
	4133/826.6	RMC 12.2k	1:1	22.7	21.63	-0.051	0.844	1.28	1.080	Figure 40
Test Position 2	4232/846.6	RMC 12.2k	1:1	22.7	21.74	-0.117	0.752	1.25	0.938	Figure 41
	4183/836.6	RMC 12.2k	1:1	22.7	21.72	-0.078	0.754	1.25	0.945	Figure 42
	4133/826.6	RMC 12.2k	1:1	22.7	21.63	-0.112	0.749	1.28	0.958	Figure 43
Test Position 3	4183/836.6	RMC 12.2k	1:1	22.7	21.72	-0.031	0.472	1.25	0.591	Figure 44
Test Position 4	4183/836.6	RMC 12.2k	1:1	22.7	21.72	0.012	0.183	1.25	0.229	Figure 45
Test Position 5	4183/836.6	RMC 12.2k	1:1	22.7	21.72	-0.116	0.041	1.25	0.052	Figure 46
SAR Measurement Variability(1st Repeated SAR) (Distance 5mm)										
Test Position 1	4183/836.6	RMC 12.2k	1:1	22.7	21.72	-0.074	0.890	1.25	1.115	Figure 47

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. WCDMA mode was tested under RMC 12.2kbps with HSPA (HSDPA/HSUPA) inactive per KDB Publication 941225 D01. HSPA (HSDPA/HSUPA) SAR for body was not required since the average output power of the HSPA (HSDPA/HSUPA) subtests was not more than 0.25 dB higher than the RMC level or the maximum SAR for 12.2kbps RMC was less than 75% SAR limit.

Table 21: SAR Measurement Variability Results (UMTS Band V)

Test Position	Channel Type	Channel/ Frequency (MHz)	Measured SAR (1g)	1 st Repeated SAR (1g)	Ratio	2 nd Repeated SAR (1g)	3 rd Repeated SAR (1g)
Test Position 1	RMC 12.2k	4183/836.6	0.910	0.890	1.02	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

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7.2.5. LTE Band 7

Table 22: SAR Values (LTE Band 7/20MHz)

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
IBM T61(1RB)(Distance 5mm)										
Test Position 1	21350/2560 (High end)	QPSK	1:1	22.7	21.77	-0.153	0.644	1.24	0.798	Figure 48
	21100/2535 (Middle end)	QPSK	1:1	22.7	21.85	0.095	0.779	1.22	0.947	Figure 49
	20850/2510 (High end)	QPSK	1:1	22.7	21.68	-0.031	0.855	1.26	1.081	Figure 50
Test Position 2	21350/2560 (High end)	QPSK	1:1	22.7	21.77	0.047	0.587	1.24	0.727	Figure 51
	21100/2535 (Middle end)	QPSK	1:1	22.7	21.85	0.051	0.766	1.22	0.932	Figure 52
	20850/2510 (High end)	QPSK	1:1	22.7	21.68	0.109	0.826	1.26	1.045	Figure 53
Test Position 3	21100/2535 (Middle end)	QPSK	1:1	22.7	21.85	0.048	0.462	1.22	0.562	Figure 54
Test Position 4	21100/2535 (Middle end)	QPSK	1:1	22.7	21.85	0.094	0.144	1.22	0.175	Figure 55
Test Position 5	21100/2535 (Middle end)	QPSK	1:1	22.7	21.85	0.050	0.037	1.22	0.045	Figure 56
IBM T61(50%RB)(Distance 5mm)										
Test Position 1	21350/2560 (High end)	QPSK	1:1	22.7	21.64	0.018	0.729	1.28	0.931	Figure 57
	21100/2535 (Middle end)	QPSK	1:1	22.7	21.64	0.009	0.732	1.28	0.934	Figure 58
	20850/2510 (High end)	QPSK	1:1	22.7	21.52	-0.007	0.837	1.31	1.098	Figure 59
Test Position 2	21350/2560 (High end)	QPSK	1:1	22.7	21.64	0.098	0.607	1.28	0.775	Figure 60
	21100/2535 (Middle end)	QPSK	1:1	22.7	21.64	0.050	0.695	1.28	0.887	Figure 61
	20850/2510 (High end)	QPSK	1:1	22.7	21.52	0.057	0.819	1.31	1.075	Figure 62
Test Position 3	21100/2535 (Middle end)	QPSK	1:1	22.7	21.64	0.081	0.402	1.28	0.513	Figure 63
Test Position 4	21100/2535 (Middle end)	QPSK	1:1	22.7	21.64	0.022	0.131	1.28	0.167	Figure 64

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Test Position 5	21100/2535 (Middle end)	QPSK	1:1	22.7	21.64	0.189	0.032	1.28	0.041	Figure 65
IBM T61(100%RB)(Distance 5mm)										
Test Position 1	21350/2560 (High end)	QPSK	1:1	22.7	21.52	-0.024	0.716	1.31	0.940	Figure 66
Test Position 2	21350/2560 (High end)	QPSK	1:1	22.7	21.52	-0.021	0.663	1.31	0.870	Figure 67
Test Position 3	21350/2560 (High end)	QPSK	1:1	22.7	21.52	0.047	0.394	1.31	0.517	Figure 68
Test Position 4	21350/2560 (High end)	QPSK	1:1	22.7	21.52	0.188	0.142	1.31	0.186	Figure 69
Test Position 5	21350/2560 (High end)	QPSK	1:1	22.7	21.52	0.066	0.034	1.31	0.045	Figure 70
SAR Measurement Variability(1st Repeated SAR) (Distance 5mm)										
Test Position 1	20850/2510 (High end)	QPSK	1:1	22.7	21.68	-0.175	0.895	1.26	1.132	Figure 71

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).

Table 23: SAR Measurement Variability Results (LTE Band 7)

Test Position	modulation Type	Channel/ Frequency (MHz)	Measured SAR (1g)	1 st Repeated SAR (1g)	Ratio	2 nd Repeated SAR (1g)	3 rd Repeated SAR (1g)
Test Position 1	QPSK	20850/2510(High)	0.855	0.895	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

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8. 700MHz to 3GHz Measurement Uncertainty

No.	source	Type	Uncertainty Value (%)	Probability Distribution	k	c _i	Standard uncertainty u _i (%)	Degree of freedom V _{eff} or v _i
1	System repetivity	A	0.5	N	1	1	0.5	9
Measurement system								
2	-probe calibration	B	6.0	N	1	1	6.0	∞
3	-axial isotropy of the probe	B	4.7	R	$\sqrt{3}$	$\sqrt{0.5}$	1.9	∞
4	- Hemispherical isotropy of the probe	B	9.4	R	$\sqrt{3}$	$\sqrt{0.5}$	3.9	∞
6	-boundary effect	B	1.9	R	$\sqrt{3}$	1	1.1	∞
7	-probe linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
8	- System detection limits	B	1.0	R	$\sqrt{3}$	1	0.6	∞
9	-readout Electronics	B	1.0	N	1	1	1.0	∞
10	-response time	B	0	R	$\sqrt{3}$	1	0	∞
11	-integration time	B	4.32	R	$\sqrt{3}$	1	2.5	∞
12	-noise	B	0	R	$\sqrt{3}$	1	0	∞
13	-RF Ambient Conditions	B	3	R	$\sqrt{3}$	1	1.73	∞
14	-Probe Positioner Mechanical Tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	∞
15	-Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
16	-Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
Test sample Related								
17	-Test Sample Positioning	A	2.9	N	1	1	2.9	71
18	-Device Holder Uncertainty	A	4.1	N	1	1	4.1	5
19	-Output Power Variation - SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.9	∞
Physical parameter								
20	-phantom	B	4.0	R	$\sqrt{3}$	1	2.3	∞
21	-liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.64	1.8	∞

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

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9. Main Test Instruments

Table 24: 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 11, 2012	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 26, 2012	One year
08	Dual directional coupler	777D	50146	March 26, 2012	One year
09	Amplifier	IXA-020	0401	No Calibration Requested	
10	Wideband radio communication tester	CMW 500	113645	August 30, 2012	One year
11	E-field Probe	ES3DV3	3189	June 22, 2012	One year
12	E-field Probe	EX3DV4	3617	May 16, 2012	One year
13	DAE	DAE4	905	June 21, 2012	One year
14	Validation Kit 835MHz	D835V2	4d020	August 26, 2011	Two years
15	Validation Kit 1900MHz	D1900V2	5d060	August 31, 2011	Two years
16	Validation Kit 2600MHz	D2600V2	1012	May 02, 2012	Two years
17	Temperature Probe	JM222	AA1009129	March 15, 2012	One year
18	Hygrothermograph	WS-1	64591	September 27, 2012	One year

***END OF REPORT ***

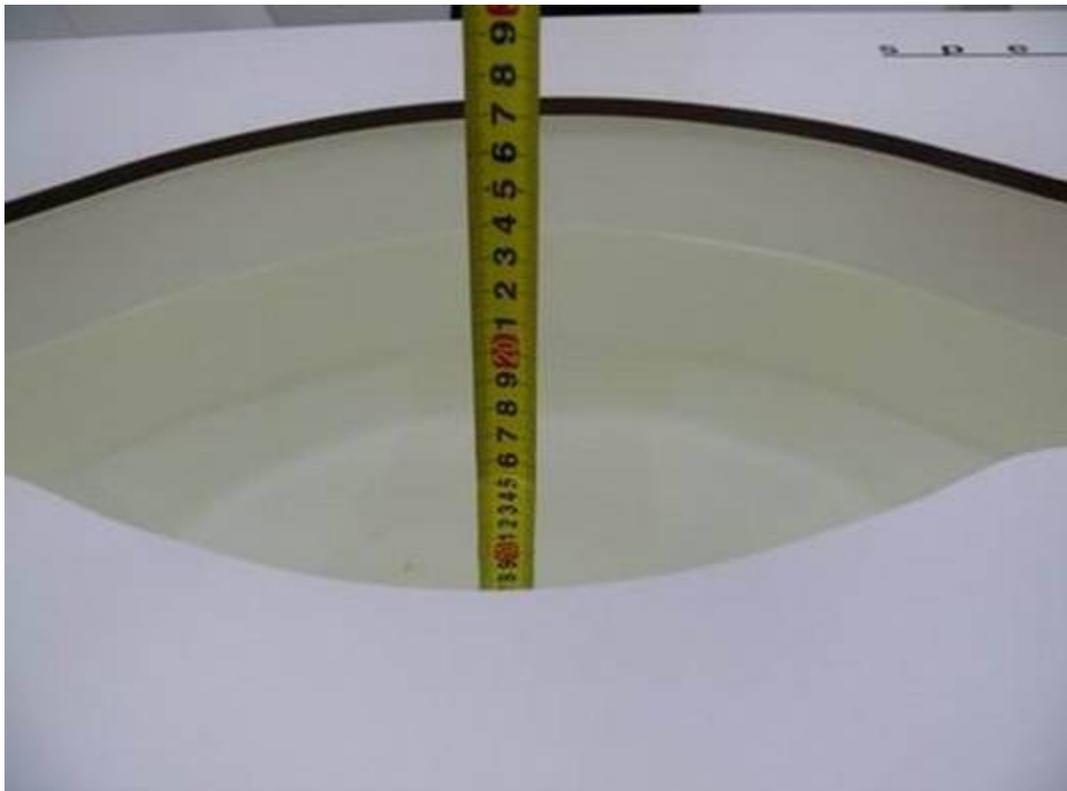
ANNEX A: Test Layout



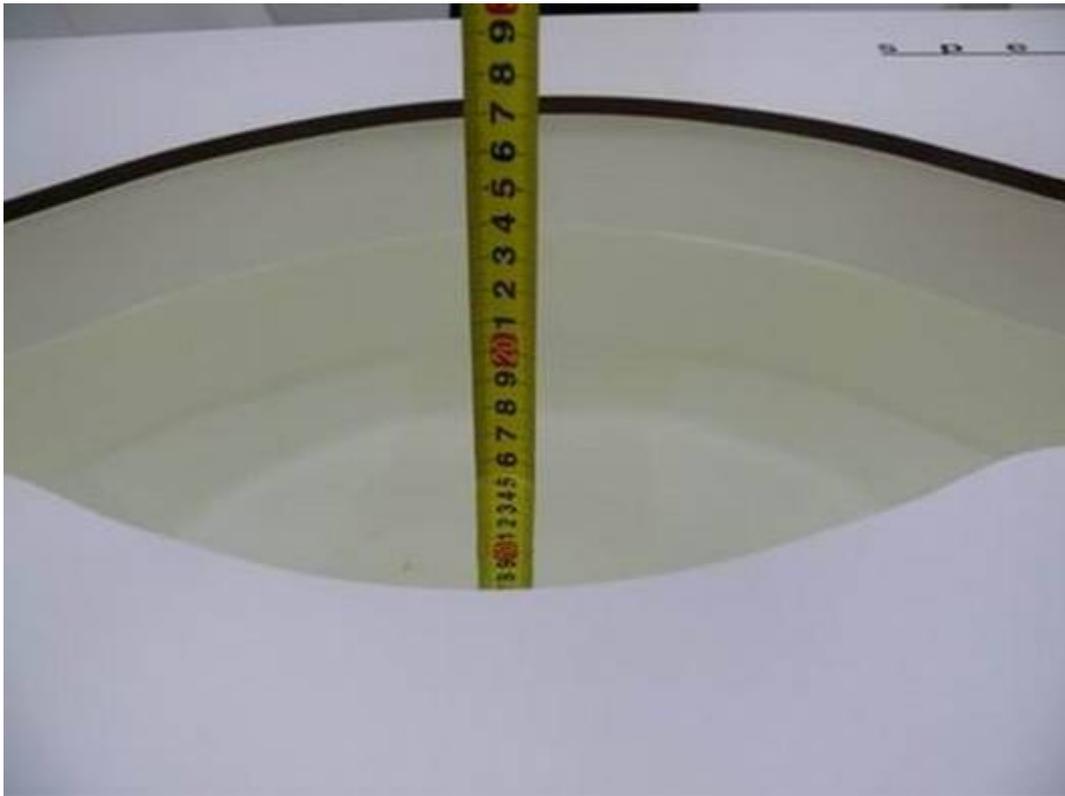
Picture 2: Specific Absorption Rate Test Layout



Picture 3: Liquid depth in the Flat Phantom (835 MHz, 15.4cm depth)



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



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

ANNEX B: System Check Results

System Performance Check at 835 MHz

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

Date/Time: 2/19/2013 9:25:37 AM

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

Medium parameters used: $f = 835$ MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 55.89$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

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

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

Maximum value of SAR (interpolated) = 2.61 mW/g

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

Reference Value = 52.09 V/m; Power Drift = -0.032 dB

Peak SAR (extrapolated) = 3.48 W/kg

SAR(1 g) = 2.5 mW/g; SAR(10 g) = 1.65 mW/g

Maximum value of SAR (measured) = 2.69 mW/g

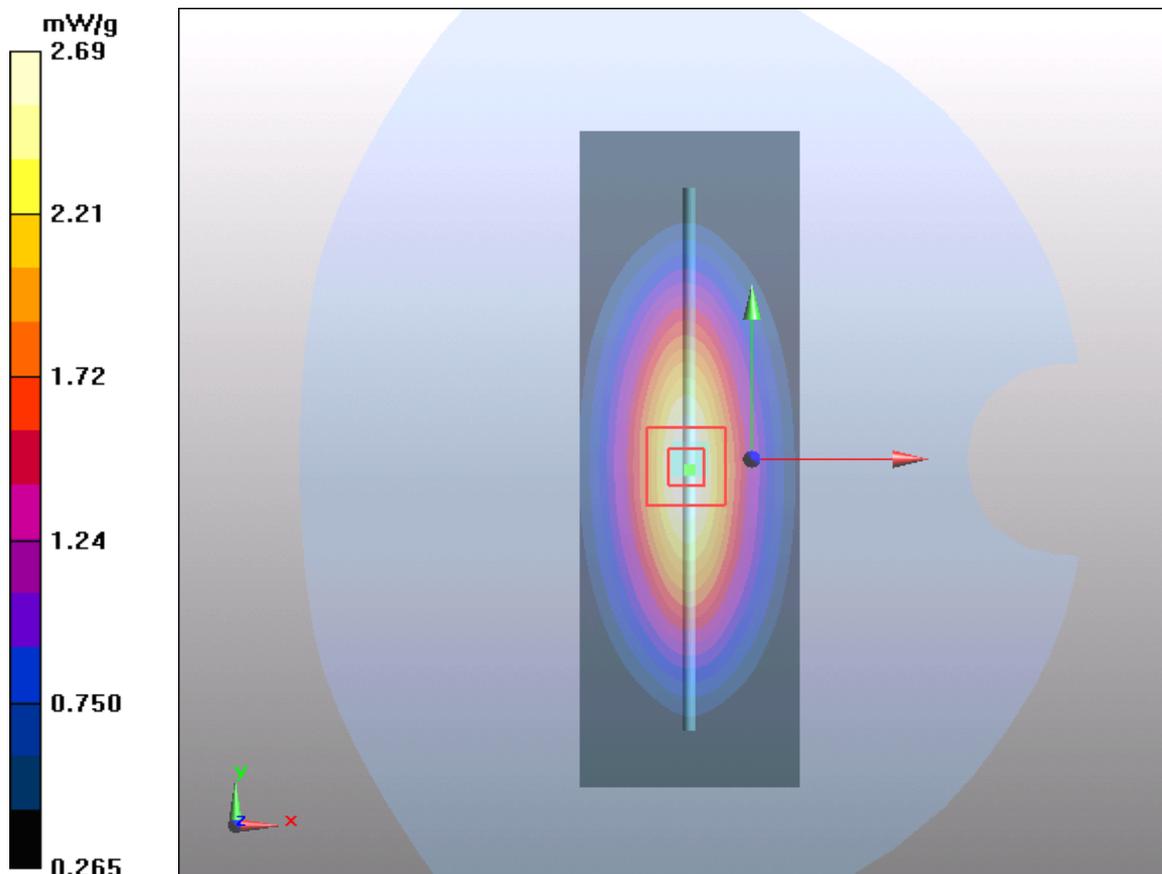


Figure 8 System Performance Check 835MHz 250mW

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System Performance Check at 1900 MHz

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

Date/Time: 2/20/2013 8:45:01 AM

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 52.56$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

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

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

Maximum value of SAR (interpolated) = 11.8 mW/g

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

Reference Value = 83.1 V/m; Power Drift = 0.056 dB

Peak SAR (extrapolated) = 18.1 W/kg

SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.48 mW/g

Maximum value of SAR (measured) = 11.8 mW/g

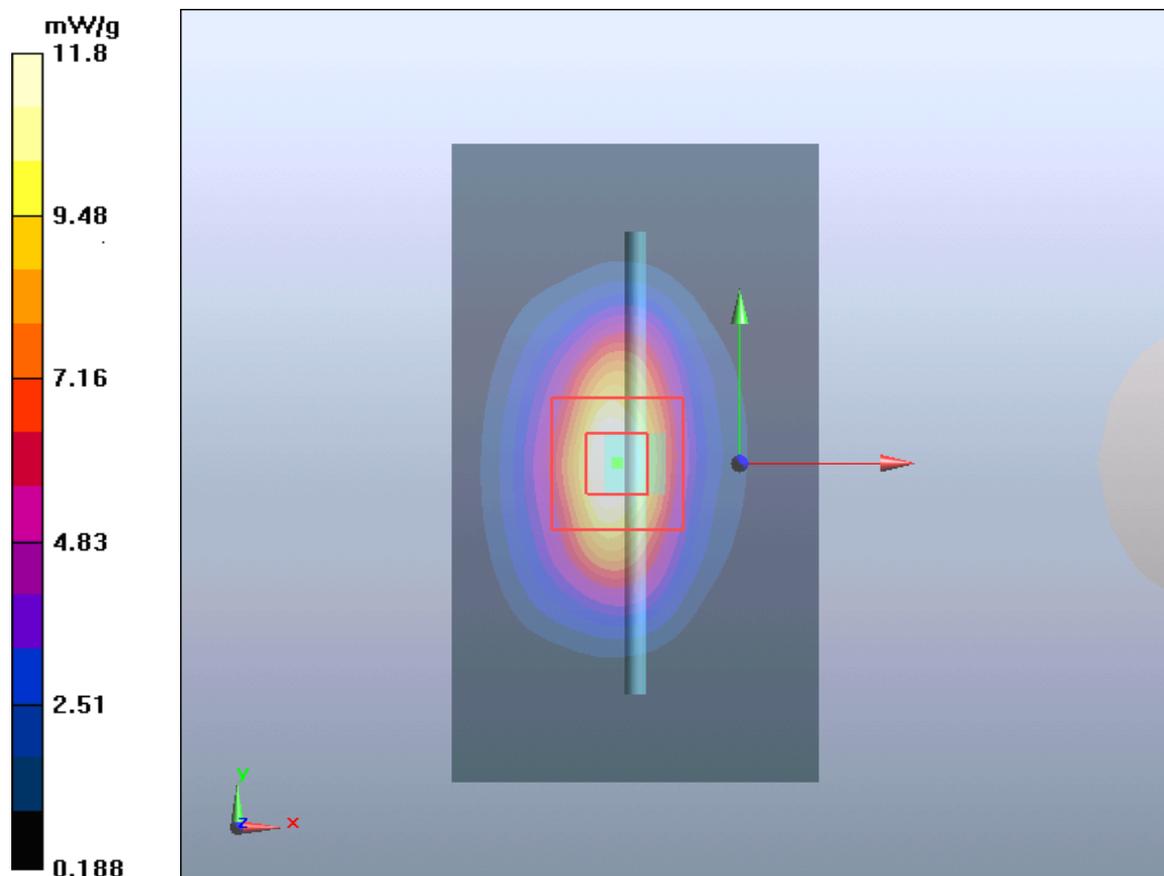


Figure 9 System Performance Check 1900MHz 250mW

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System Performance Check at 2600 MHz

DUT: Dipole 1900 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1012

Date/Time: 2/21/2013 8:07:51 AM

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

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.17$ mho/m; $\epsilon_r = 51.89$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY4 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

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

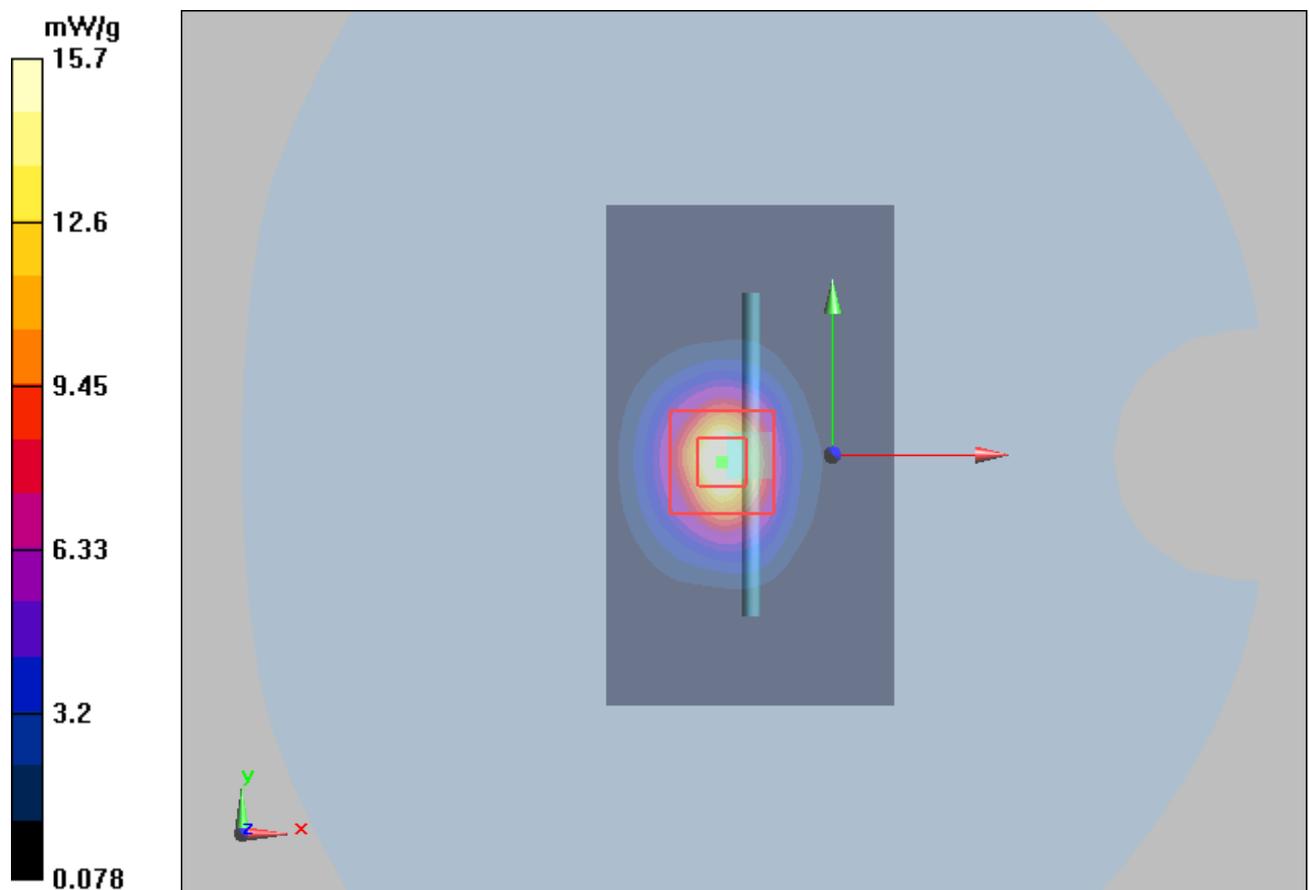


Figure 10 System Performance Check 1900MHz 250mW

ANNEX C: Graph Results

GSM 850 GPRS (2TXslots) with IBM T61 Test Position 1 High

Date/Time: 2/19/2013 2:37:13 PM

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

Medium parameters used: $f = 849$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.01 mW/g

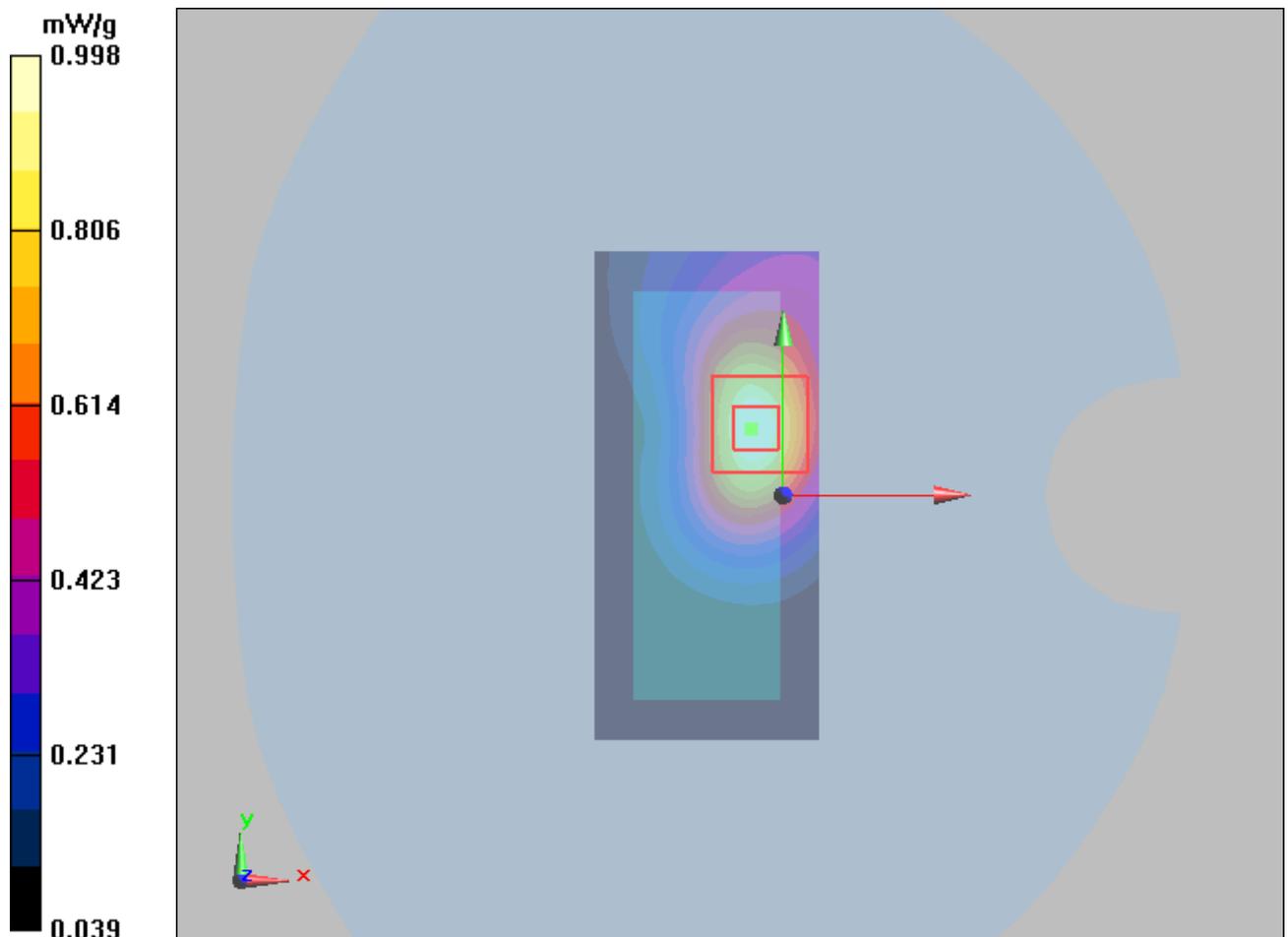
Test Position 1 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.5 V/m; Power Drift = -0.190 dB

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.916 mW/g; SAR(10 g) = 0.551 mW/g

Maximum value of SAR (measured) = 0.998 mW/g



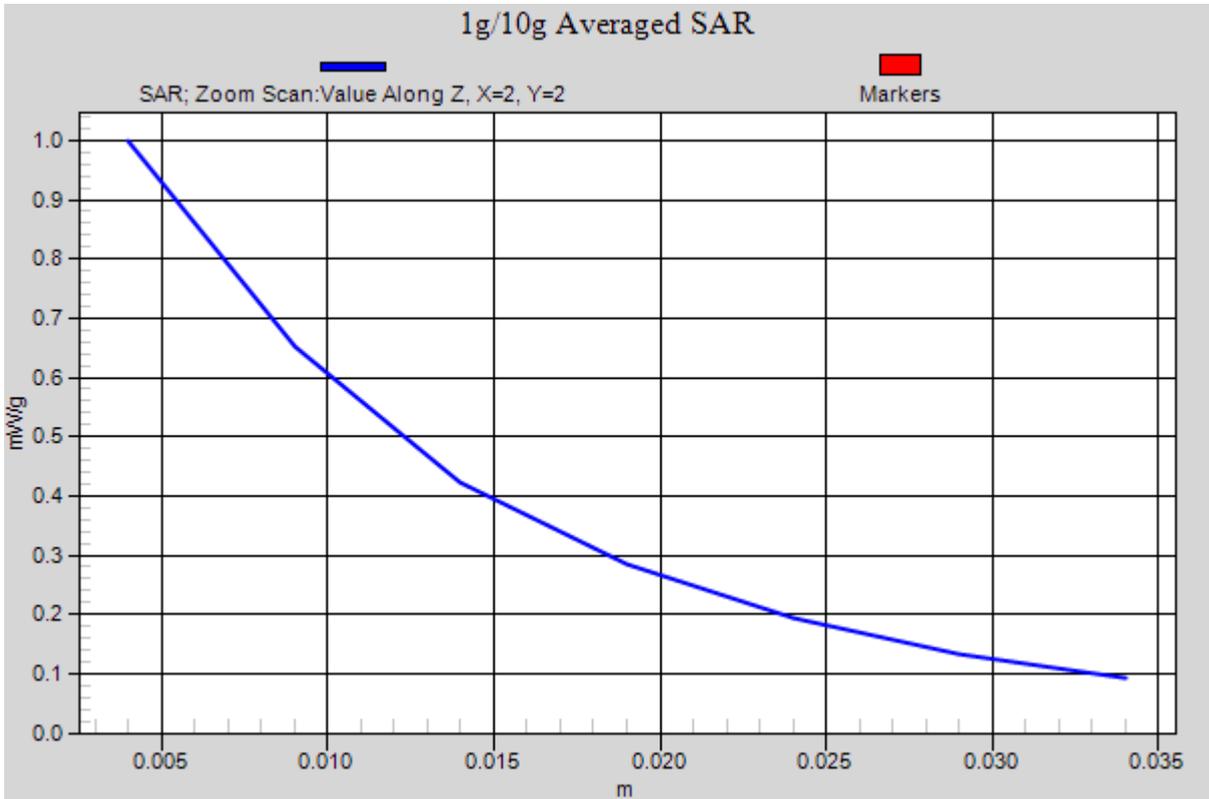


Figure 11 GSM 850 GPRS (2TXslots) with IBM T61 Test Position 1 Channel 251

GSM 850 GPRS (2TXslots) with IBM T61 Test Position 1 Middle

Date/Time: 2/19/2013 10:31:56 AM

Communication System: GPRS 2TX ; Frequency: 837 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.892 mW/g

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

Reference Value = 17.2 V/m; Power Drift = -0.052 dB

Peak SAR (extrapolated) = 1.24 W/kg

SAR(1 g) = 0.799 mW/g; SAR(10 g) = 0.486 mW/g

Maximum value of SAR (measured) = 0.874 mW/g

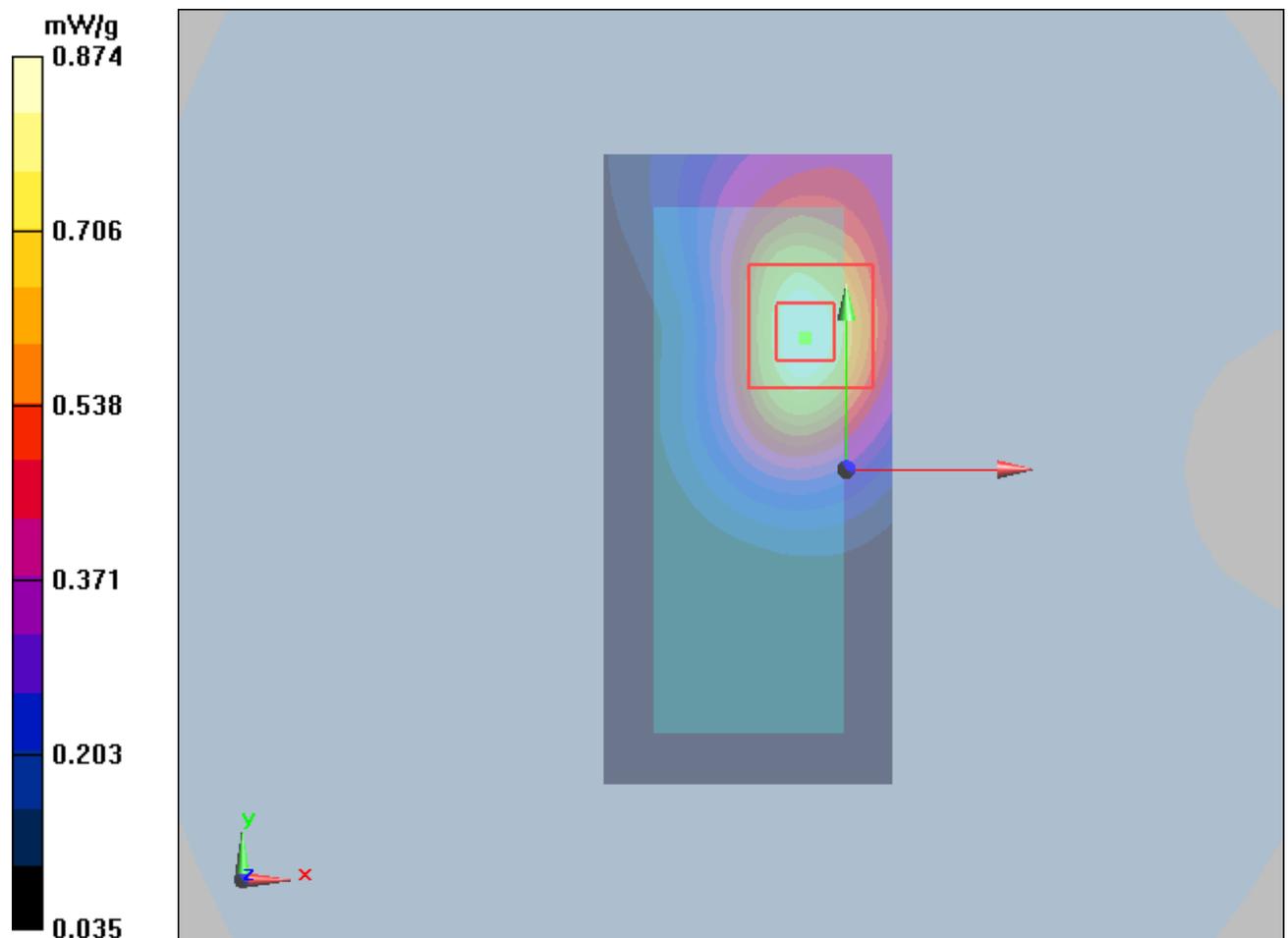


Figure 12 GSM 850 GPRS (2TXslots) with IBM T61 Test Position 1 Channel 192

GSM 850 GPRS (2TXslots) with IBM T61 Test Position 1 Low

Date/Time: 2/19/2013 11:05:09 AM

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

Medium parameters used (interpolated): $f = 824.2$ MHz; $\sigma = 0.978$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.758 mW/g

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

Reference Value = 15.9 V/m; Power Drift = -0.158 dB

Peak SAR (extrapolated) = 1.05 W/kg

SAR(1 g) = 0.685 mW/g; SAR(10 g) = 0.421 mW/g

Maximum value of SAR (measured) = 0.746 mW/g

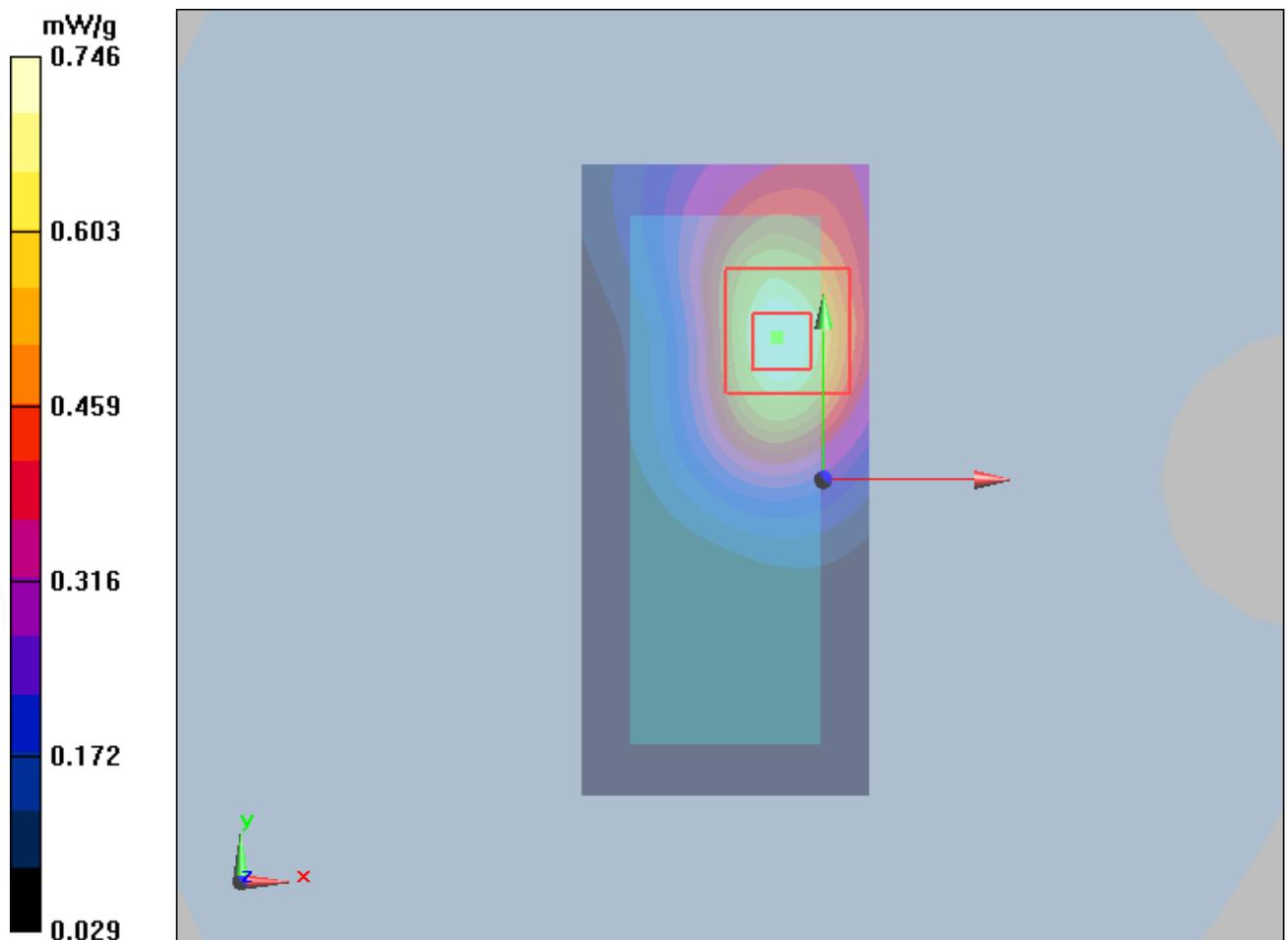


Figure 13 GSM 850 GPRS (2TXslots) with IBM T61 Test Position 1 Channel 128

GSM 850 GPRS (2TXslots) with IBM T61 Test Position 2 Middle

Date/Time: 2/19/2013 12:39:13 PM

Communication System: GPRS 2TX ; Frequency: 837 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.724 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.5 V/m; Power Drift = -0.128 dB

Peak SAR (extrapolated) = 0.991 W/kg

SAR(1 g) = 0.664 mW/g; SAR(10 g) = 0.423 mW/g

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

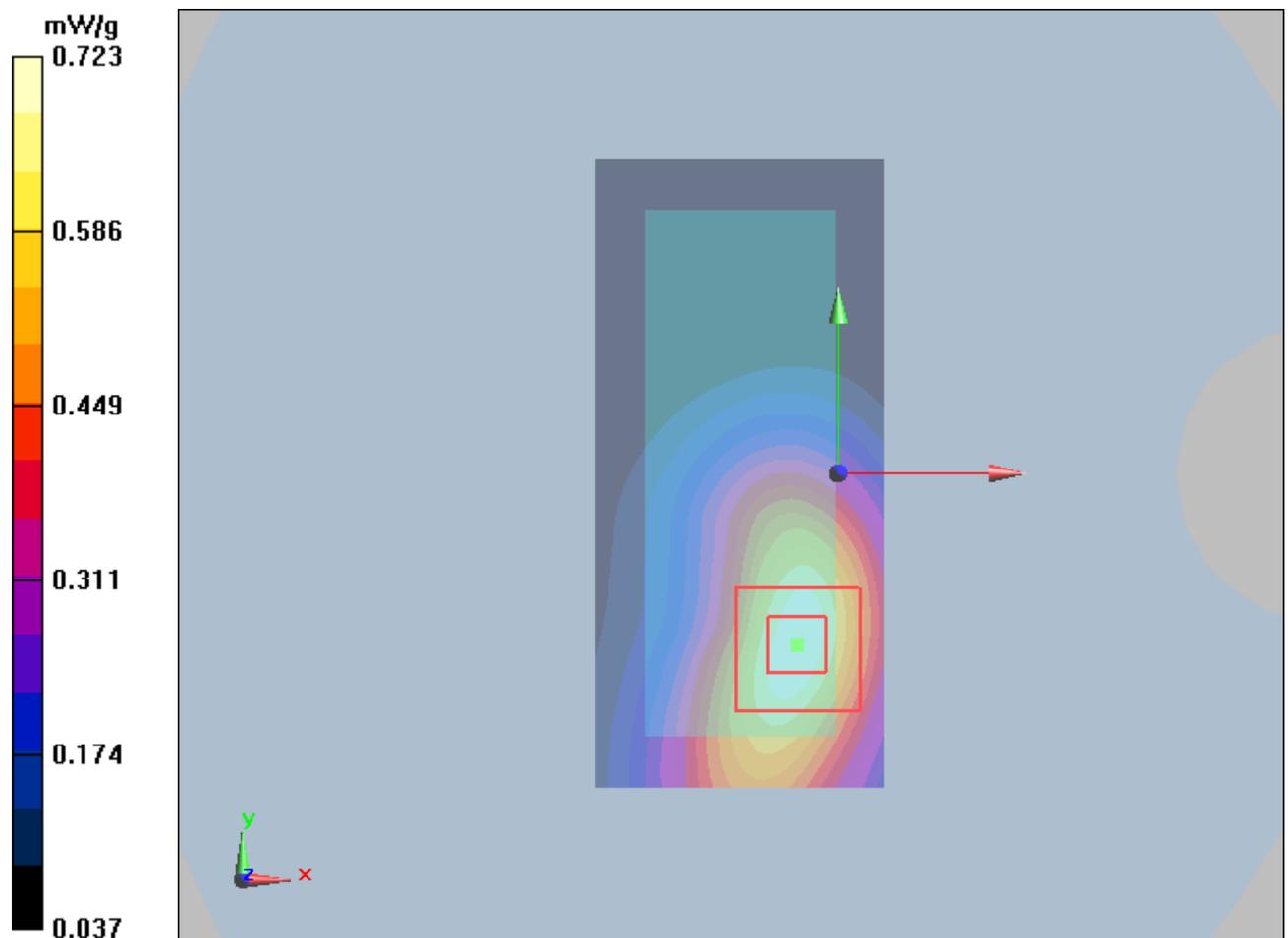


Figure 14 GSM 850 GPRS (2TXslots) with IBM T61 Test Position 2 Channel 192

GSM 850 GPRS (2TXslots) with IBM T61 Test Position 3 Middle

Date/Time: 2/19/2013 1:04:59 PM

Communication System: GPRS 2TX ; Frequency: 837 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

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

Test Position 3 Middle /Area Scan (41x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.406 mW/g

Test Position 3 Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.5 V/m; Power Drift = 0.005 dB

Peak SAR (extrapolated) = 0.565 W/kg

SAR(1 g) = 0.378 mW/g; SAR(10 g) = 0.245 mW/g

Maximum value of SAR (measured) = 0.409 mW/g

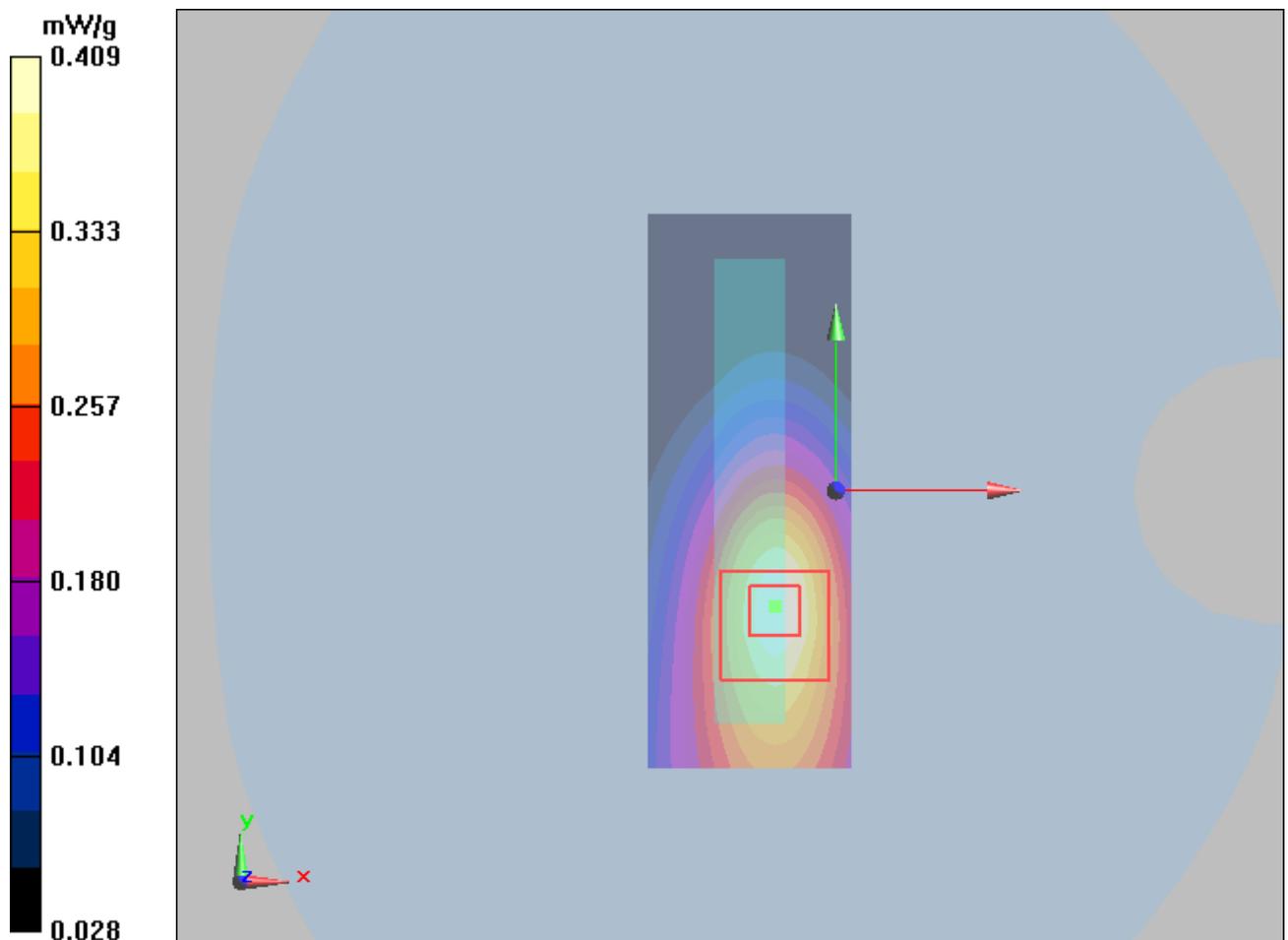


Figure 15 GSM 850 GPRS (2TXslots) with IBM T61 Test Position 3 Channel 192

GSM 850 GPRS (2TXslots) with IBM T61 Test Position 4 Middle

Date/Time: 2/19/2013 12:07:21 PM

Communication System: GPRS 2TX ; Frequency: 837 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.220 mW/g

Test Position 4 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.7 V/m; Power Drift = 0.085 dB

Peak SAR (extrapolated) = 0.296 W/kg

SAR(1 g) = 0.205 mW/g; SAR(10 g) = 0.140 mW/g

Maximum value of SAR (measured) = 0.220 mW/g

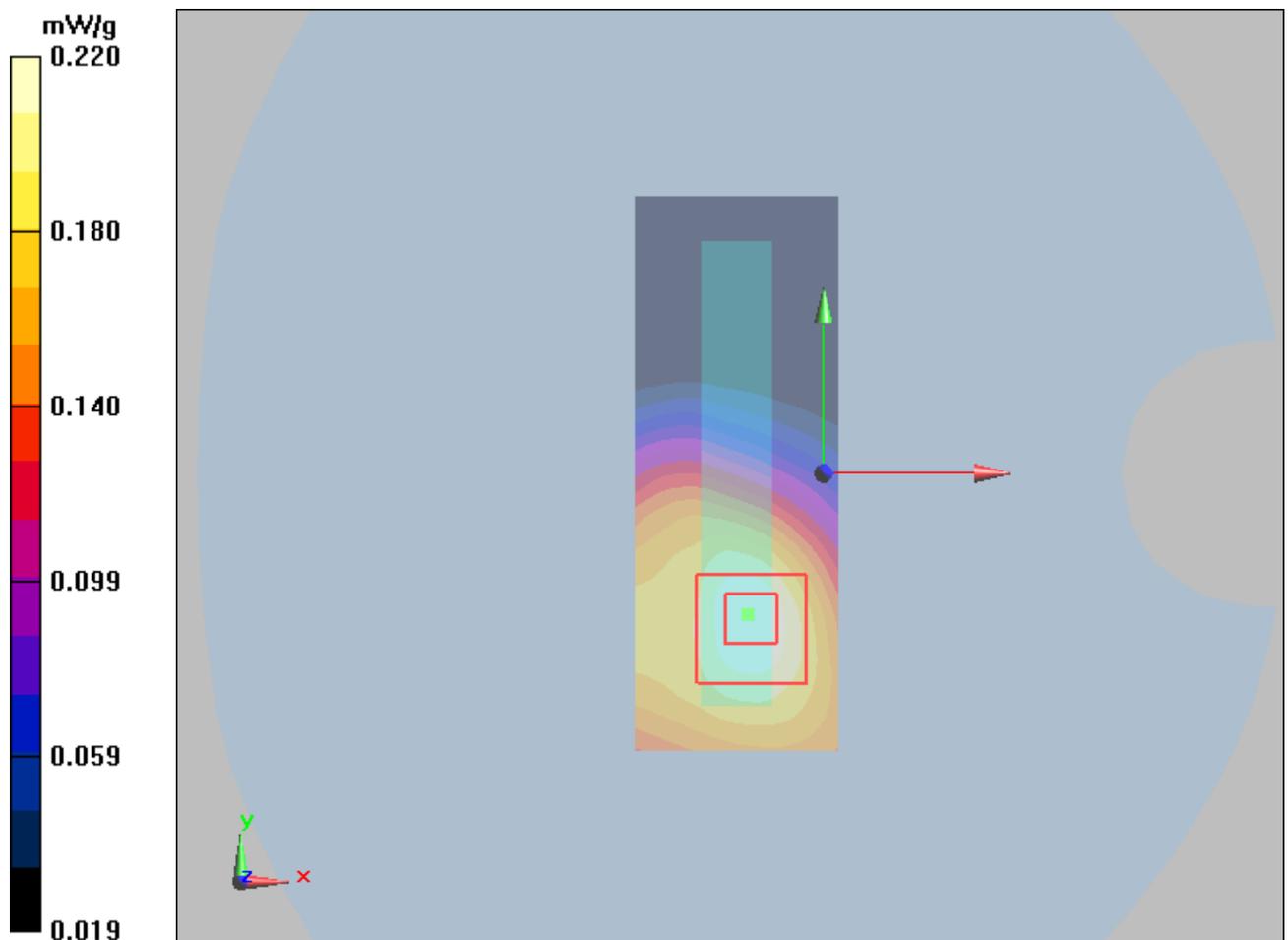


Figure 16 GSM 850 GPRS (2TXslots) with IBM T61 Test Position 4 Channel 192

GSM 850 GPRS (2TXslots) with IBM T61 Test Position 5 Middle

Date/Time: 2/19/2013 1:27:39 PM

Communication System: GPRS 2TX ; Frequency: 837 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x51x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.037 mW/g

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

Reference Value = 6.04 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 0.055 W/kg

SAR(1 g) = 0.029 mW/g; SAR(10 g) = 0.016 mW/g

Maximum value of SAR (measured) = 0.034 mW/g

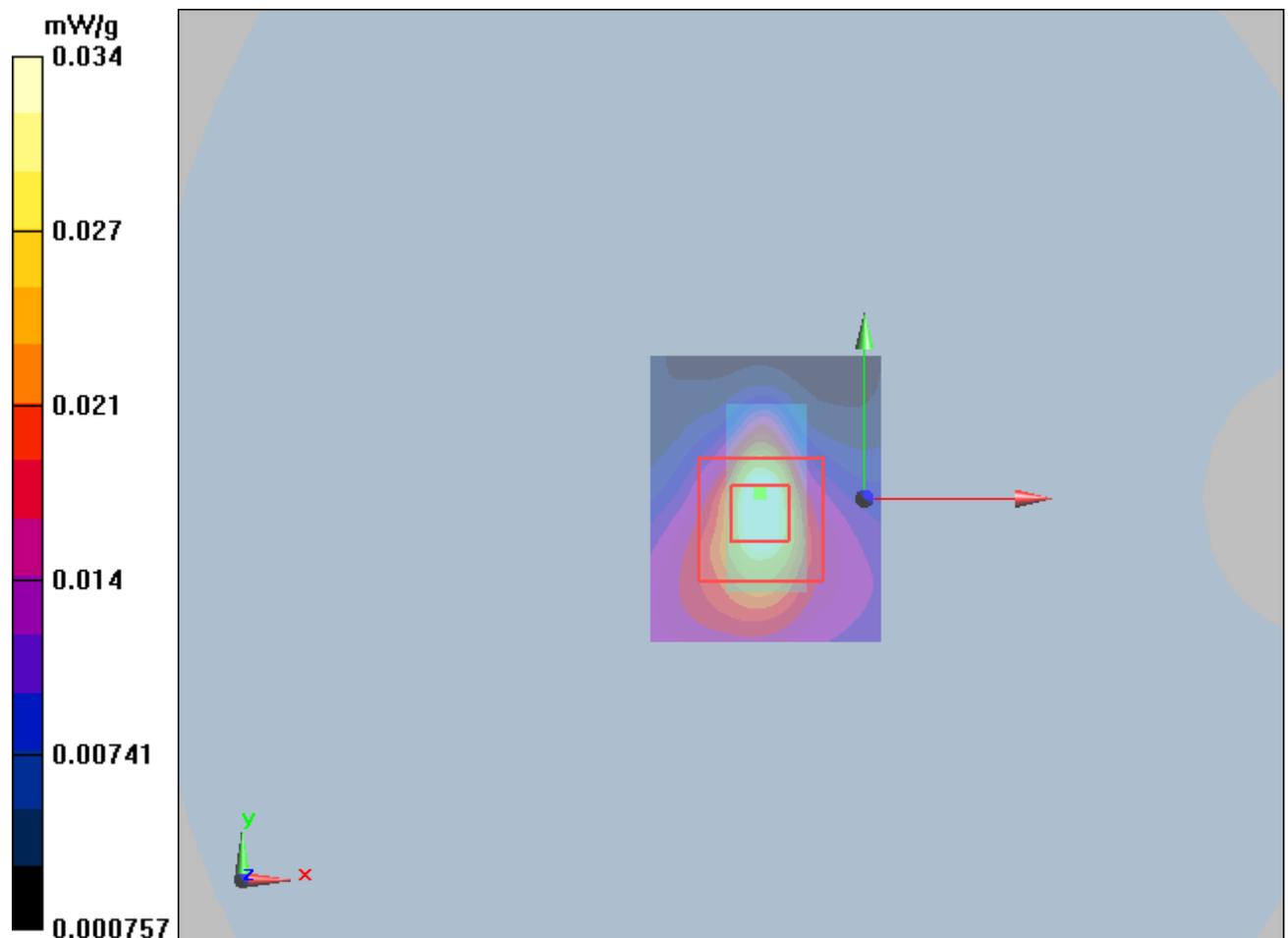


Figure 17 GSM 850 GPRS (2TXslots) with IBM T61 Test Position 5 Channel 192

GSM 850 EGPRS (2TXslots) with IBM T61 Test Position 1 High

Date/Time: 2/19/2013 2:52:39 PM

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

Medium parameters used: $f = 849$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.01 mW/g

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

Reference Value = 22.6 V/m; Power Drift = -0.026 dB

Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.914 mW/g; SAR(10 g) = 0.551 mW/g

Maximum value of SAR (measured) = 1 mW/g

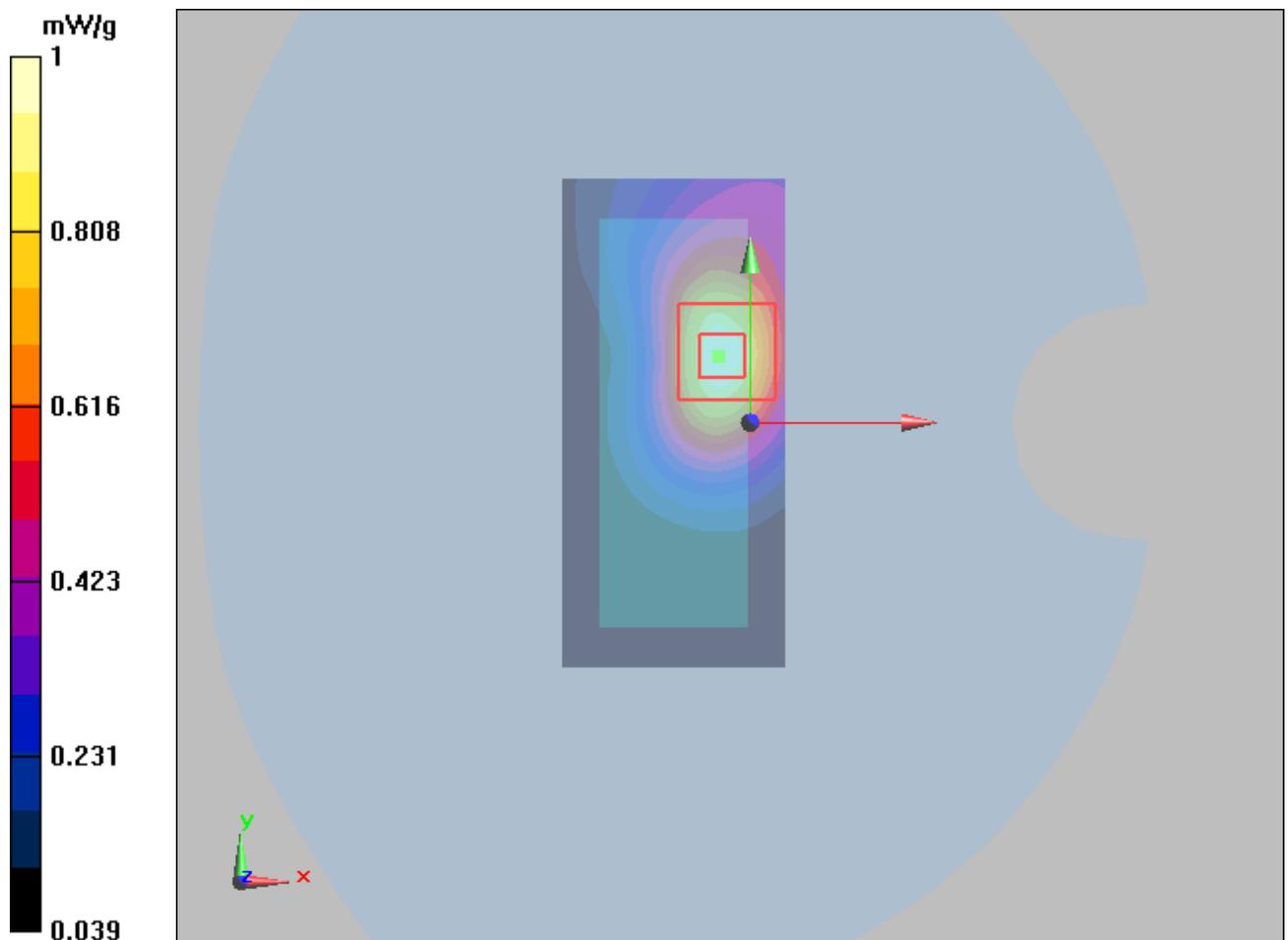


Figure 18 GSM 850 EGPRS (2TXslots) with IBM T61 Test Position 1 Channel 251

GSM 850 GPRS (2TXslots) with IBM T61 Test Position 1 High(Repeated Test)

Date/Time: 2/19/2013 2:21:03 PM

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

Medium parameters used: $f = 849$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.01 mW/g

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

Reference Value = 22.5 V/m; Power Drift = -0.168 dB

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.915 mW/g; SAR(10 g) = 0.552 mW/g

Maximum value of SAR (measured) = 1 mW/g

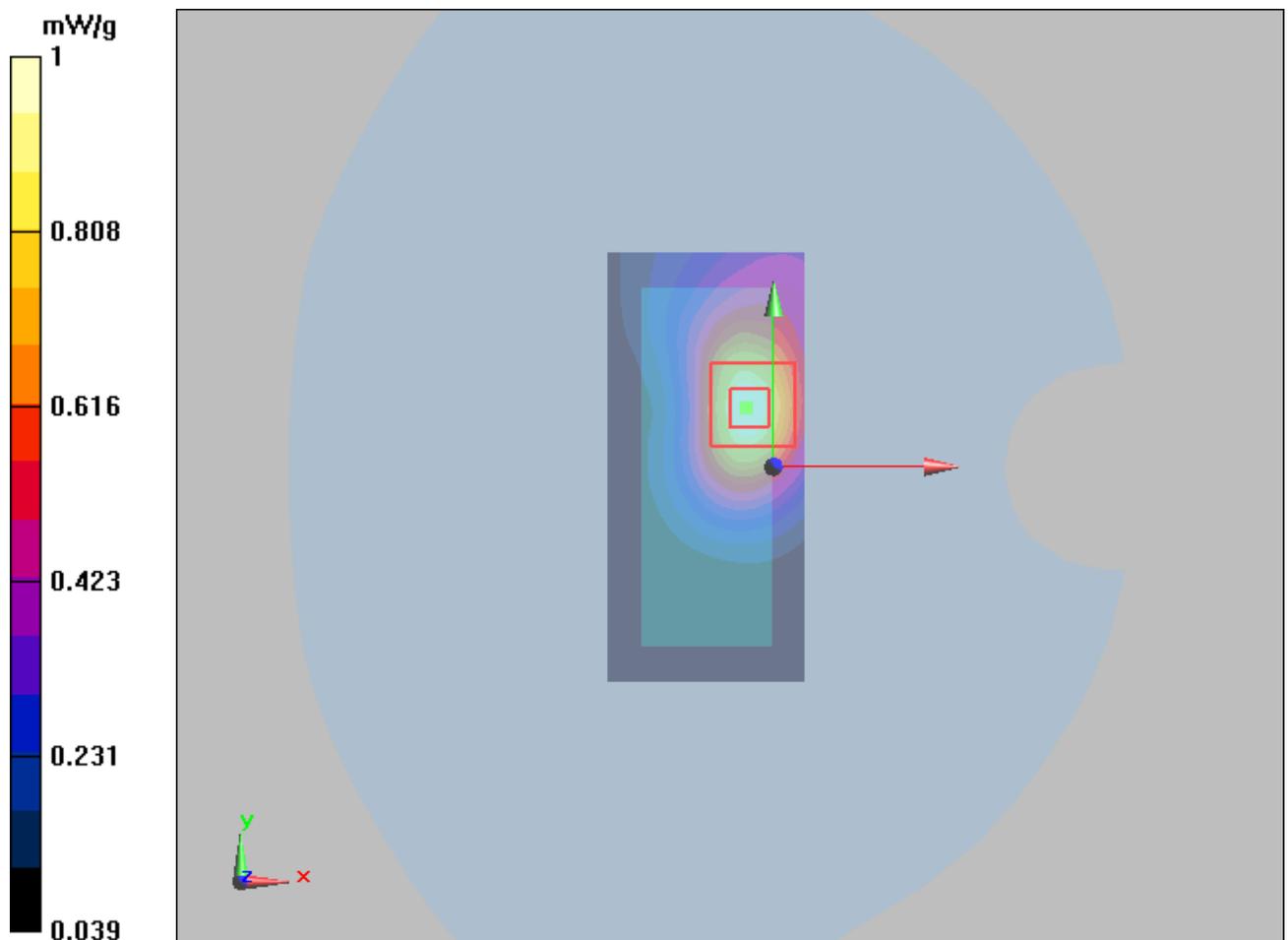


Figure 19 GSM 850 GPRS (2TXslots) with IBM T61 Test Position 1 Channel 251

GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 1 High

Date/Time: 2/20/2013 4:56:50 PM

Communication System: GPRS 2TX ; Frequency: 1909.8 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.5$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.788 mW/g

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

Reference Value = 20.2 V/m; Power Drift = 0.022 dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.690 mW/g; SAR(10 g) = 0.377 mW/g

Maximum value of SAR (measured) = 0.755 mW/g

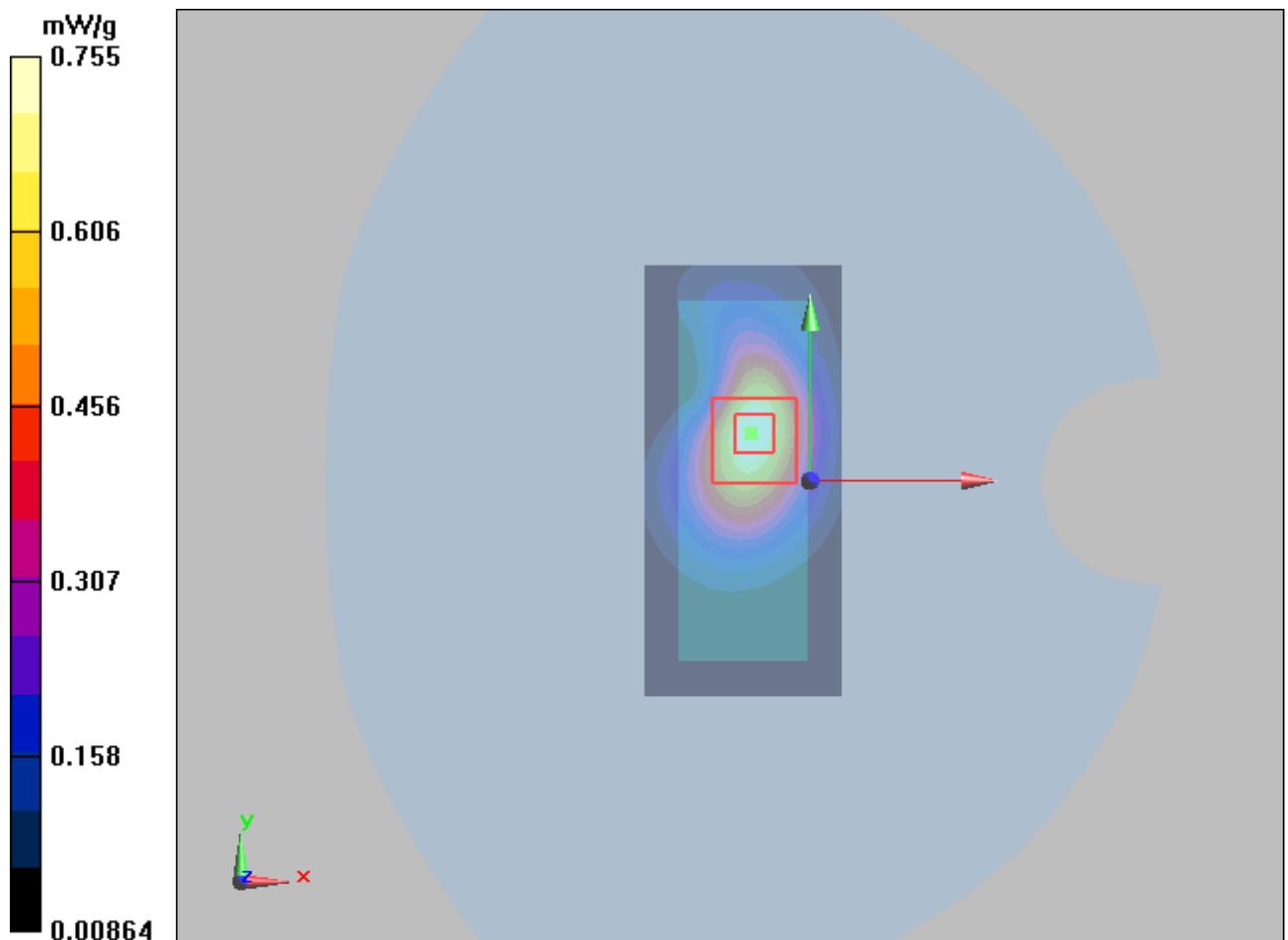


Figure 20 GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 1 Channel 810

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GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 1 Middle

Date/Time: 2/20/2013 4:38:32 PM

Communication System: GPRS 2TX ; Frequency: 1880 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

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

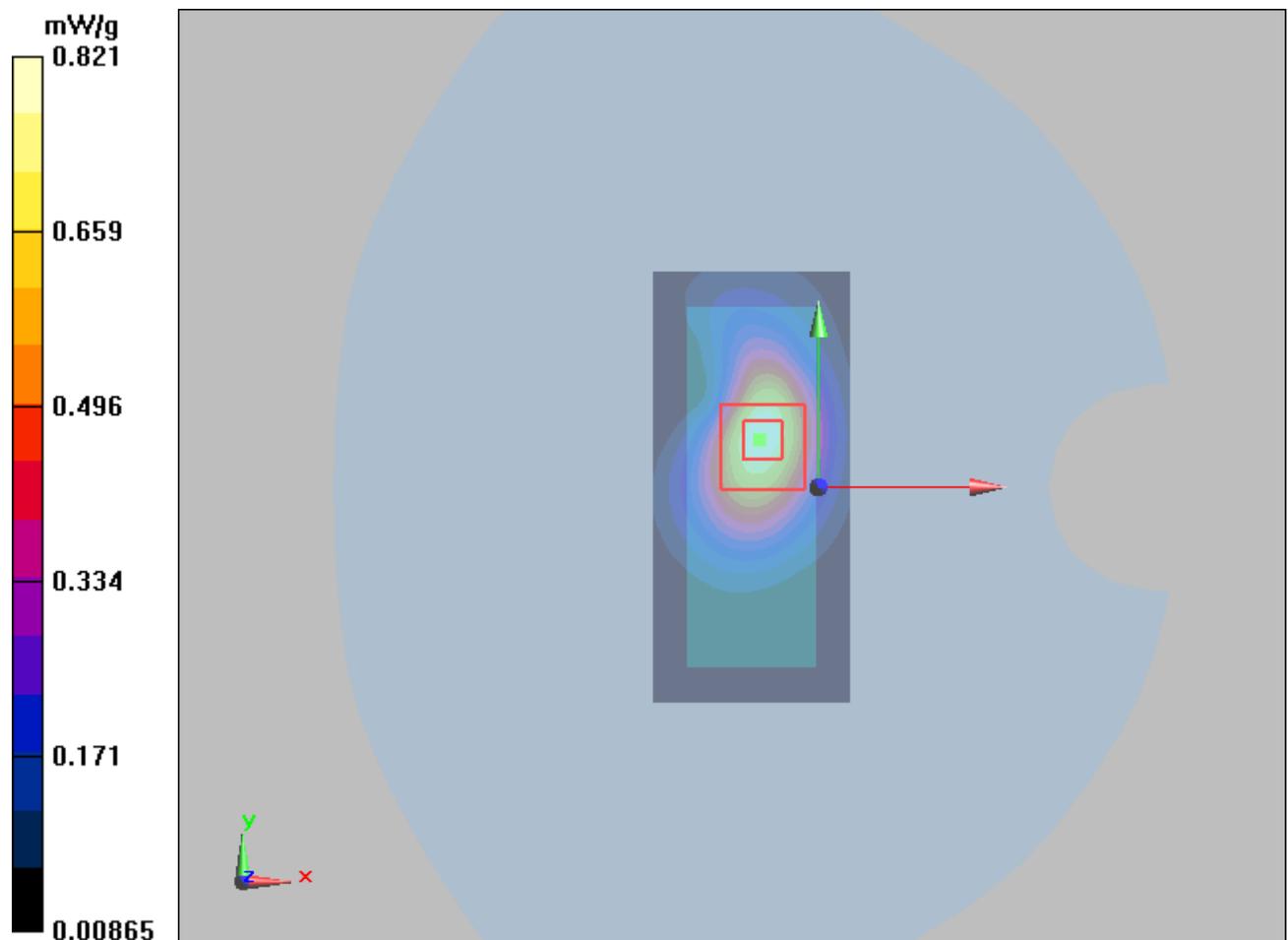
Test Position 1 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.7 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.748 mW/g; SAR(10 g) = 0.407 mW/g

Maximum value of SAR (measured) = 0.821 mW/g



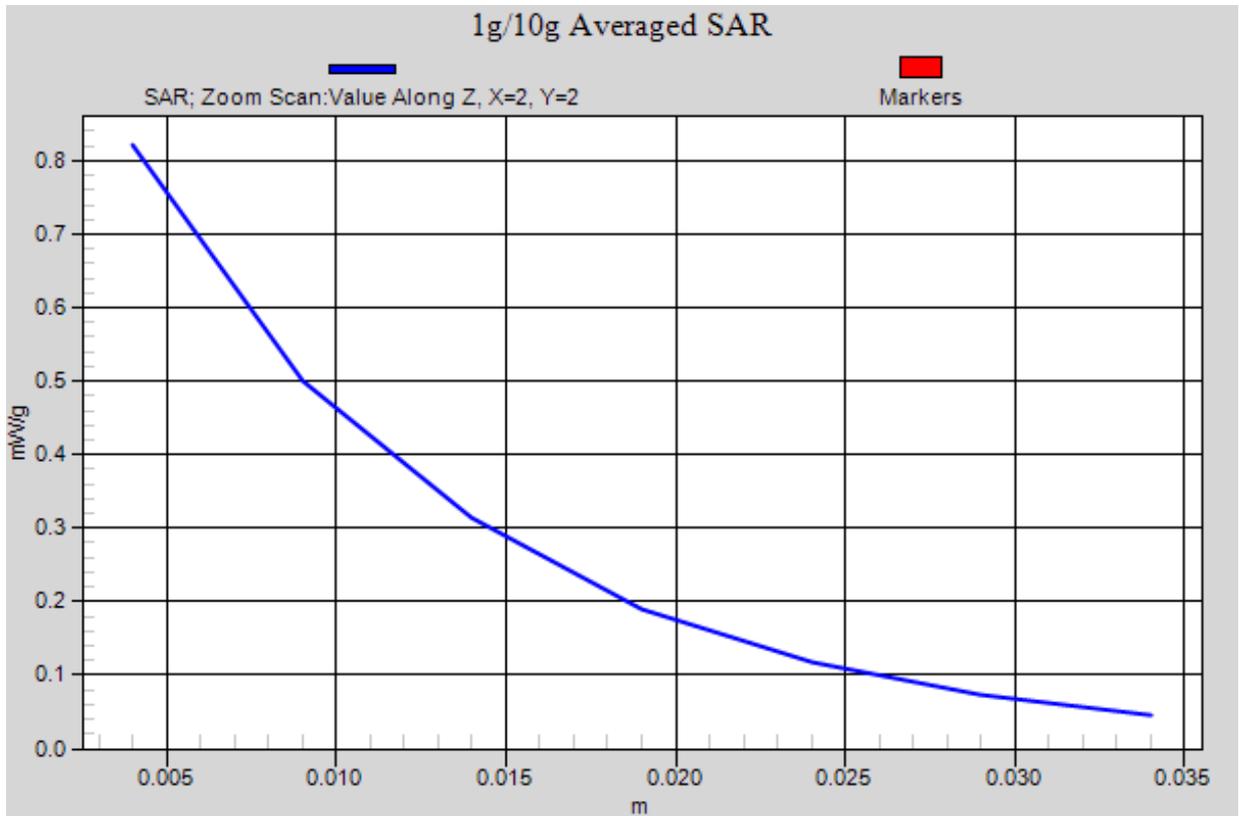


Figure 21 GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 1 Channel 661

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GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 1 Low

Date/Time: 2/20/2013 5:12:29 PM

Communication System: GPRS 2TX ; Frequency: 1850.2 MHz; Duty Cycle: 1:4.14954

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

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

Test Position 1 Low/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.698 mW/g

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

Reference Value = 18.7 V/m; Power Drift = -0.050 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.622 mW/g; SAR(10 g) = 0.338 mW/g

Maximum value of SAR (measured) = 0.694 mW/g

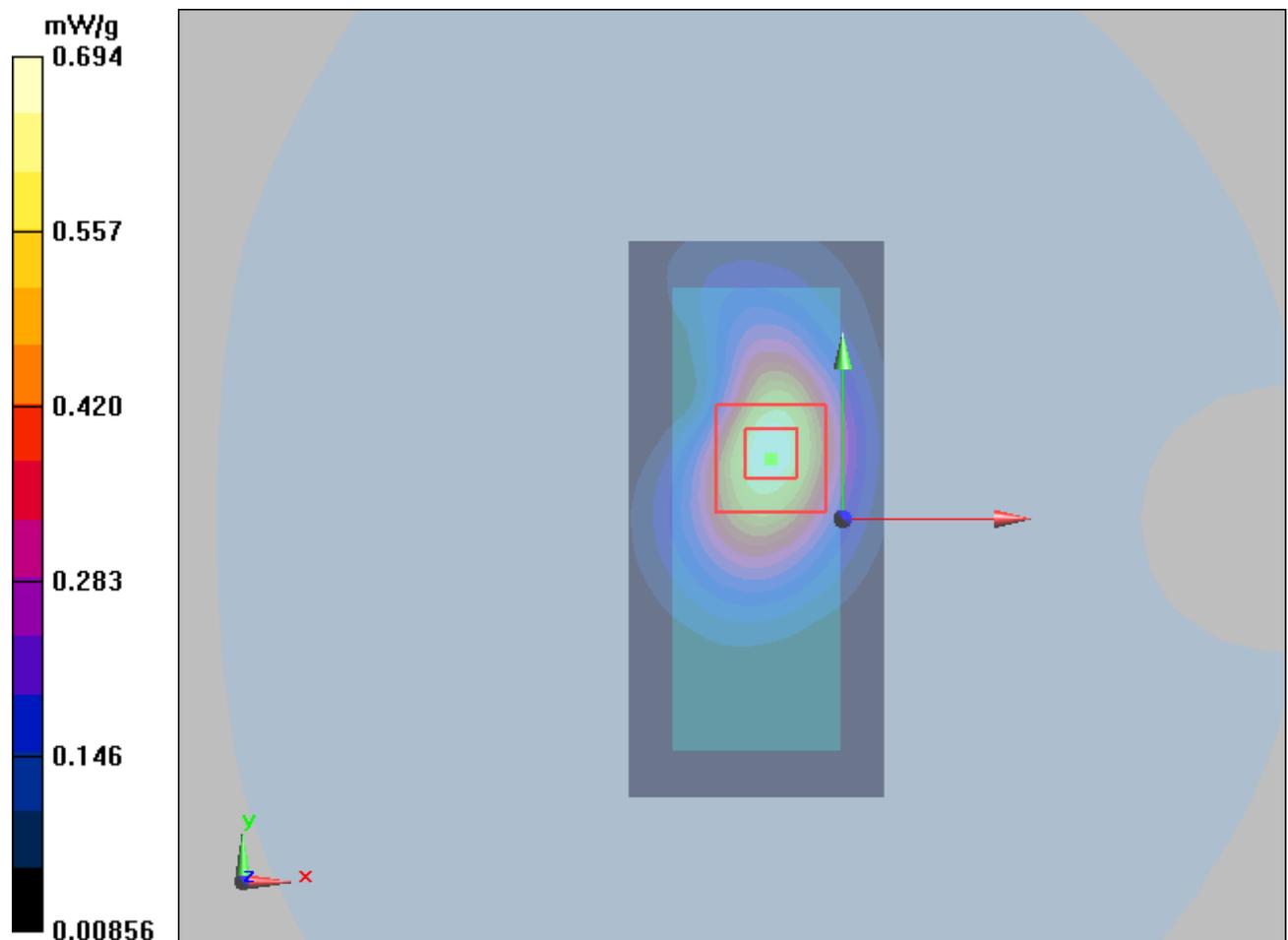


Figure 22 GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 1 Channel 512

GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 2 Middle

Date/Time: 2/20/2013 9:15:09 PM

Communication System: GPRS 2TX ; Frequency: 1880 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.688 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.1 V/m; Power Drift = -0.073 dB

Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.618 mW/g; SAR(10 g) = 0.354 mW/g

Maximum value of SAR (measured) = 0.679 mW/g

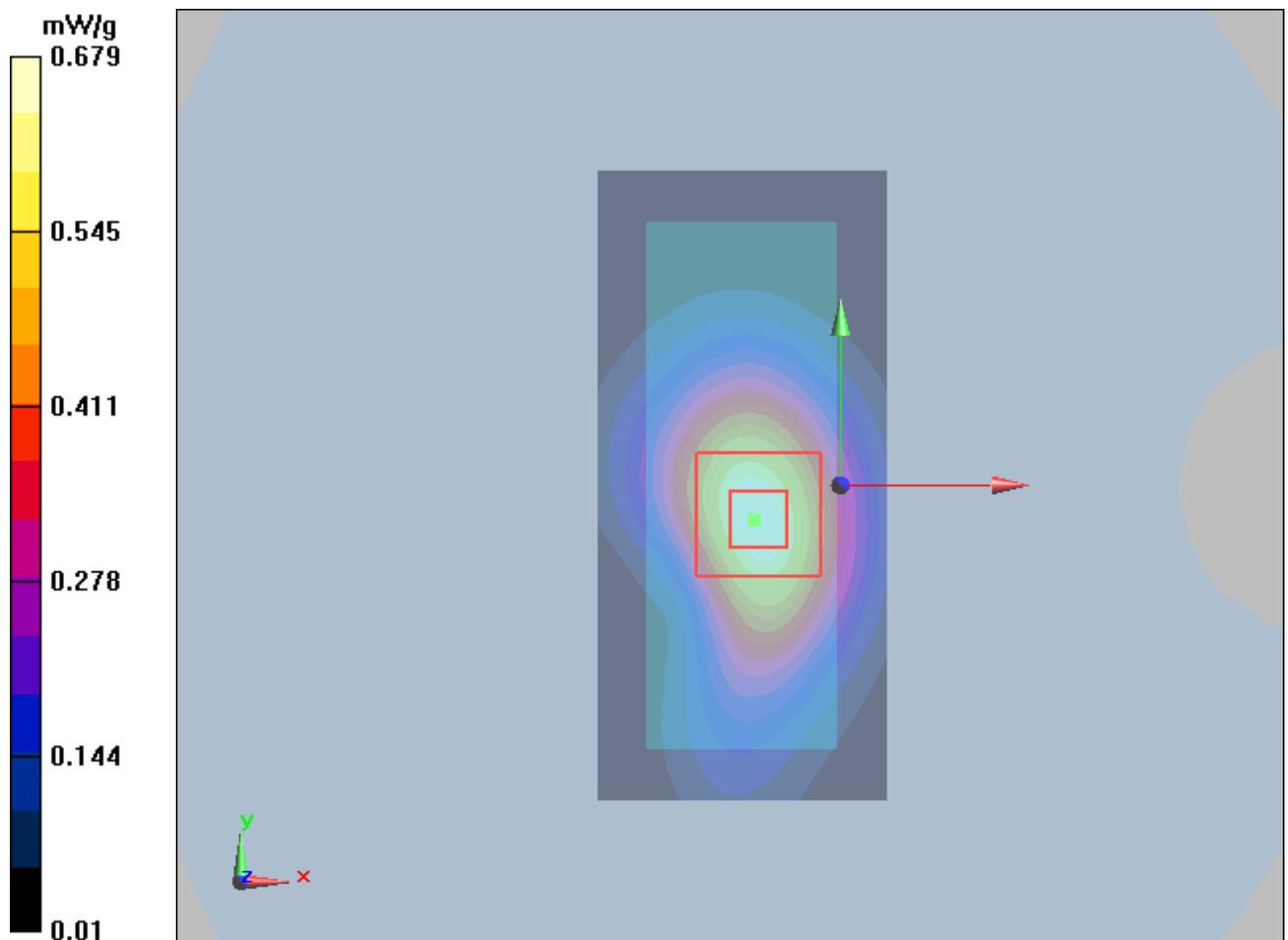


Figure 23 GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 2 Channel 661

GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 3 Middle

Date/Time: 2/20/2013 8:50:43 PM

Communication System: GPRS 2TX ; Frequency: 1880 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.494 mW/g

Test Position 3 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.1 V/m; Power Drift = -0.113 dB

Peak SAR (extrapolated) = 0.736 W/kg

SAR(1 g) = 0.432 mW/g; SAR(10 g) = 0.239 mW/g

Maximum value of SAR (measured) = 0.475 mW/g

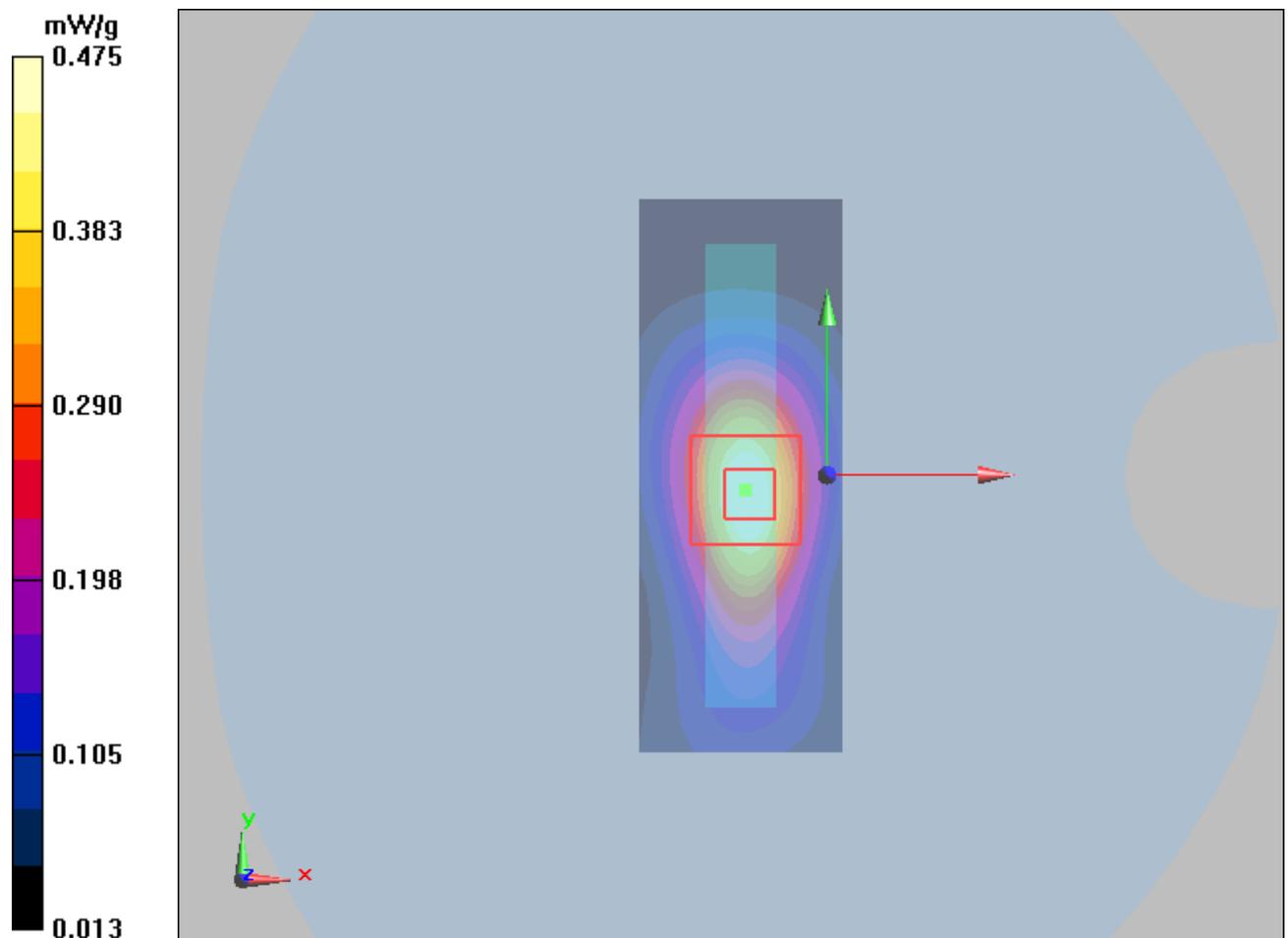


Figure 24 GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 3 Channel 661

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GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 4 Middle

Date/Time: 2/20/2013 8:24:01 PM

Communication System: GPRS 2TX ; Frequency: 1880 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.126 mW/g

Test Position 4 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.15 V/m; Power Drift = -0.031 dB

Peak SAR (extrapolated) = 0.190 W/kg

SAR(1 g) = 0.114 mW/g; SAR(10 g) = 0.066 mW/g

Maximum value of SAR (measured) = 0.124 mW/g

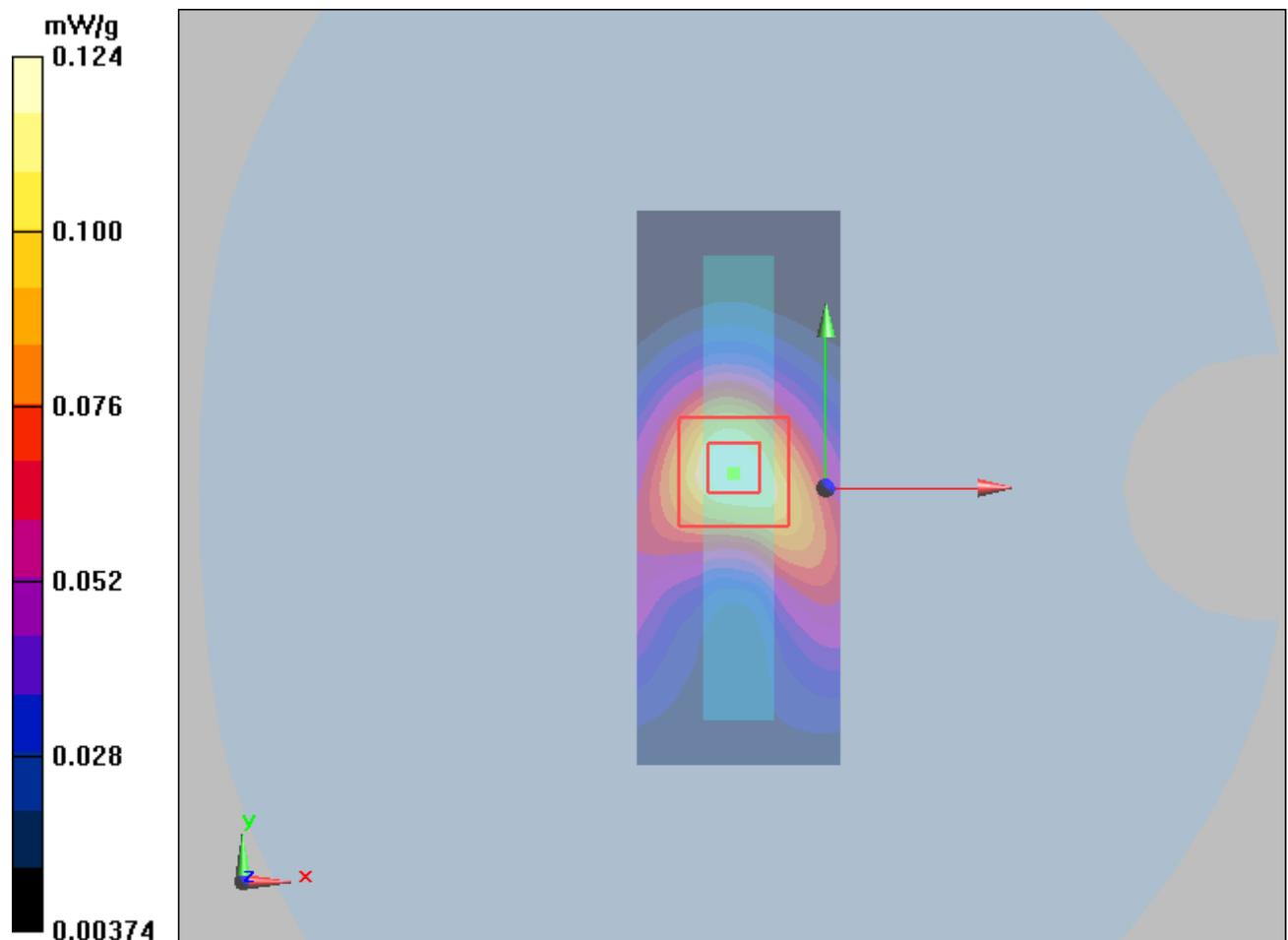


Figure 25 GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 4 Channel 661

GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 5 Middle

Date/Time: 2/20/2013 7:50:16 PM

Communication System: GPRS 2TX ; Frequency: 1880 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x51x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.033 mW/g

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

Reference Value = 4.36 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 0.047 W/kg

SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.020 mW/g

Maximum value of SAR (measured) = 0.033 mW/g

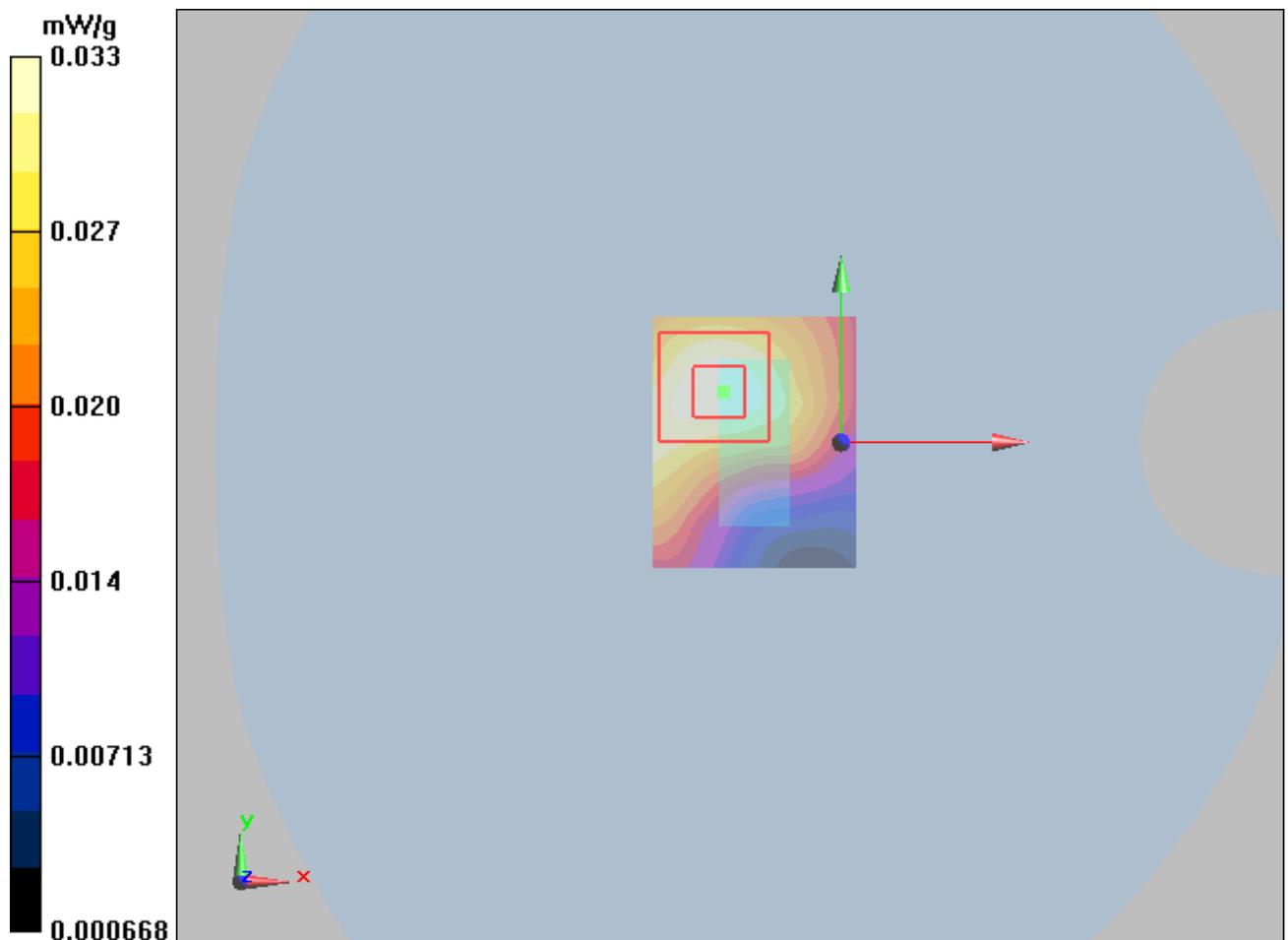


Figure 26 GSM 1900 GPRS (2TXslots) with IBM T61 Test Position 5 Channel 661

GSM 1900 EGPRS (2TXslots) with IBM T61 Test Position 1 Middle

Date/Time: 2/20/2013 5:28:52 PM

Communication System: EGPRS 2TX; Frequency: 1880 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

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

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

Reference Value = 20.6 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 1.26 W/kg

SAR(1 g) = 0.732 mW/g; SAR(10 g) = 0.400 mW/g

Maximum value of SAR (measured) = 0.809 mW/g

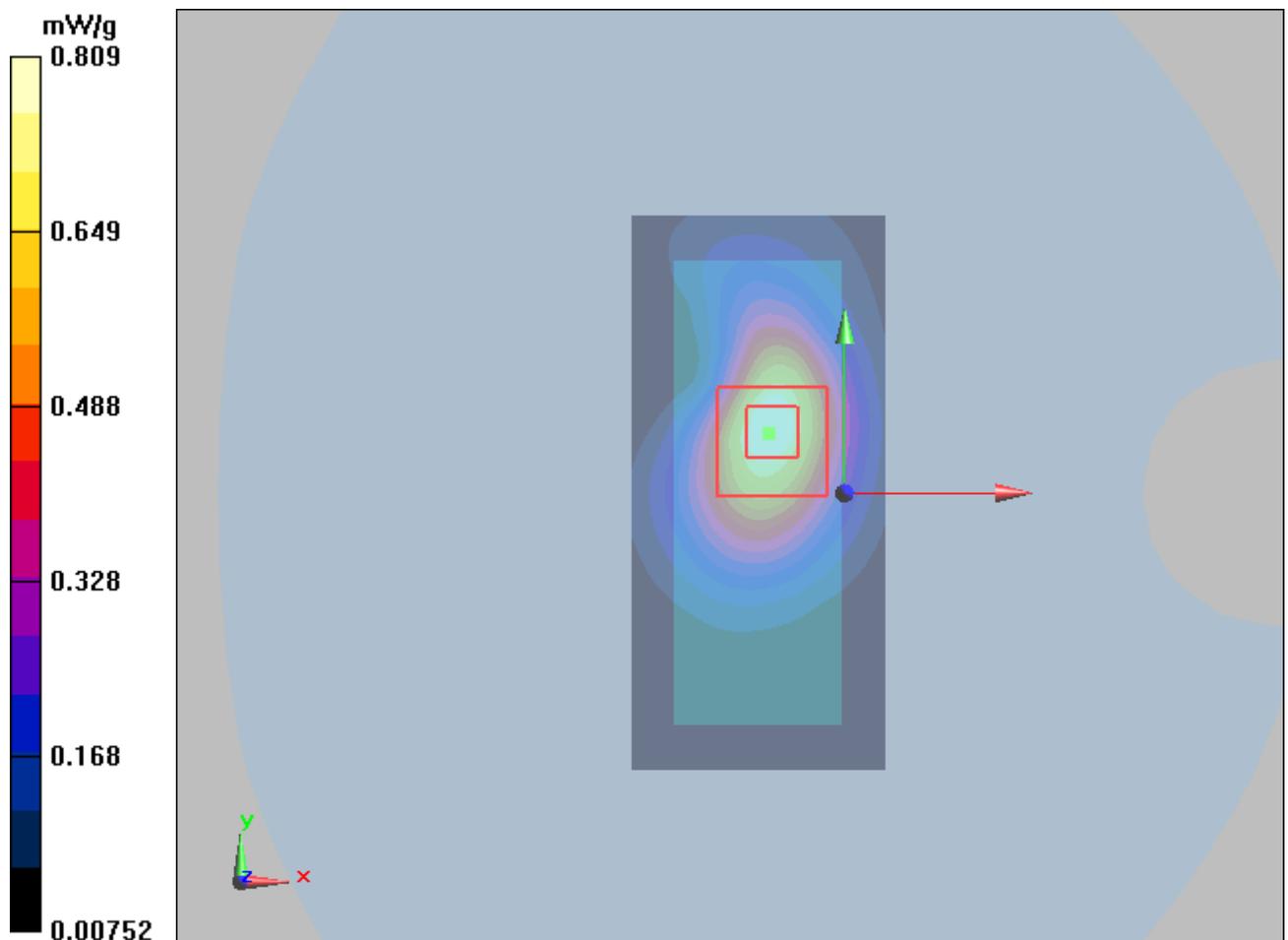


Figure 27 GSM 1900 EGPRS (2TXslots) with IBM T61 Test Position 1 Channel 661

UMTS Band II with IBM T61 Test Position 1 High

Date/Time: 2/20/2013 10:27:32 AM

Communication System: WCDMA ; Frequency: 1907.6 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 1908$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.5$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.795 mW/g

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

Reference Value = 21.8 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.712 mW/g; SAR(10 g) = 0.398 mW/g

Maximum value of SAR (measured) = 0.783 mW/g

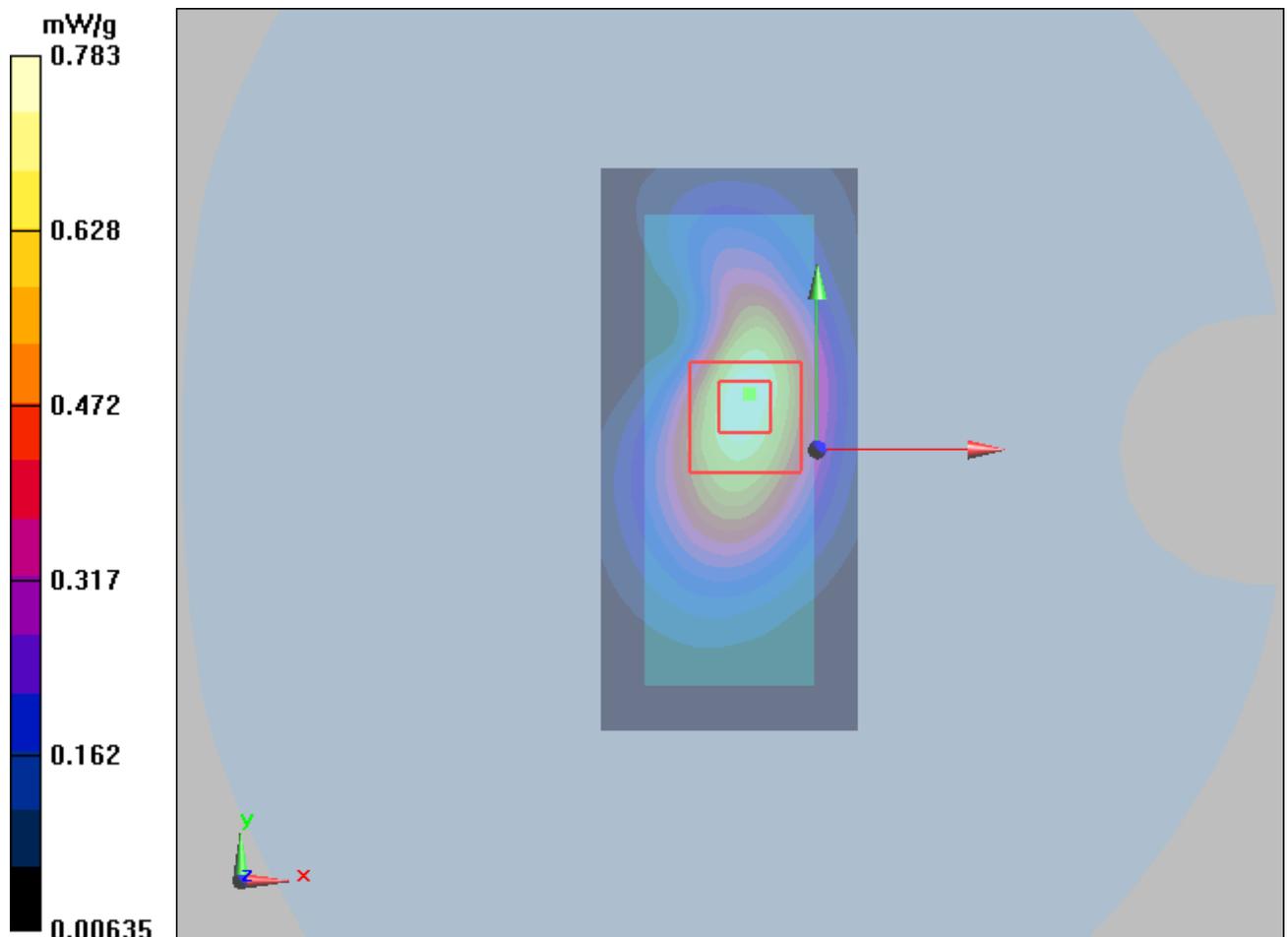


Figure 28 UMTS Band II with IBM T61 Test Position 1 Channel 9538

UMTS Band II with IBM T61 Test Position 1 Middle

Date/Time: 2/20/2013 10:07:51 AM

Communication System: WCDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.914 mW/g

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

Reference Value = 22.1 V/m; Power Drift = 0.060 dB

Peak SAR (extrapolated) = 1.38 W/kg

SAR(1 g) = 0.807 mW/g; SAR(10 g) = 0.447 mW/g

Maximum value of SAR (measured) = 0.893 mW/g

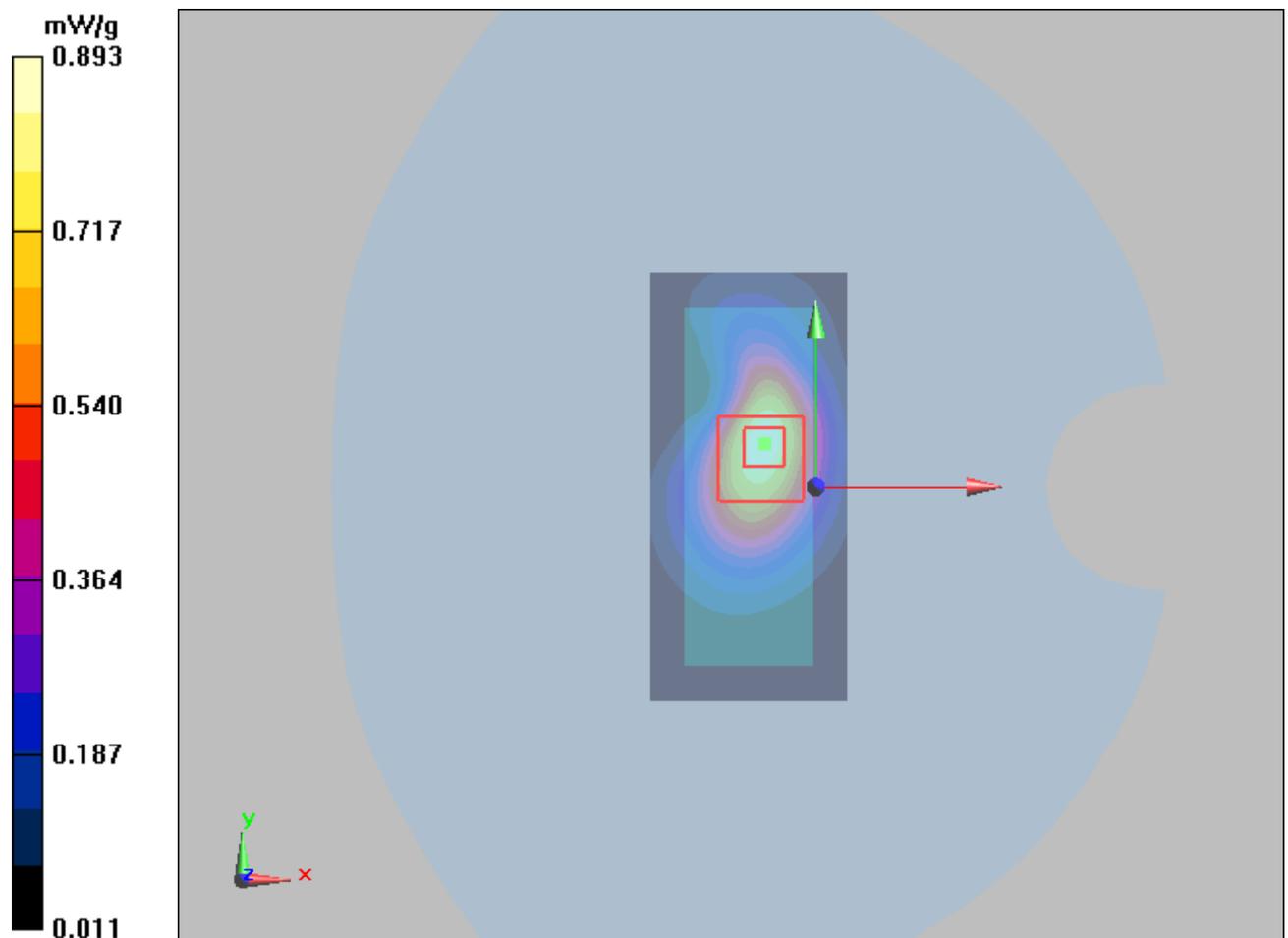


Figure 29 UMTS Band II with IBM T61 Test Position 1 Channel 9400

UMTS Band II with IBM T61 Test Position 1 Low

Date/Time: 2/20/2013 10:46:05 AM

Communication System: WCDMA ; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

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

Test Position 1 Low/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.992 mW/g

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

Reference Value = 23 V/m; Power Drift = -0.009 dB

Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.845 mW/g; SAR(10 g) = 0.463 mW/g

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

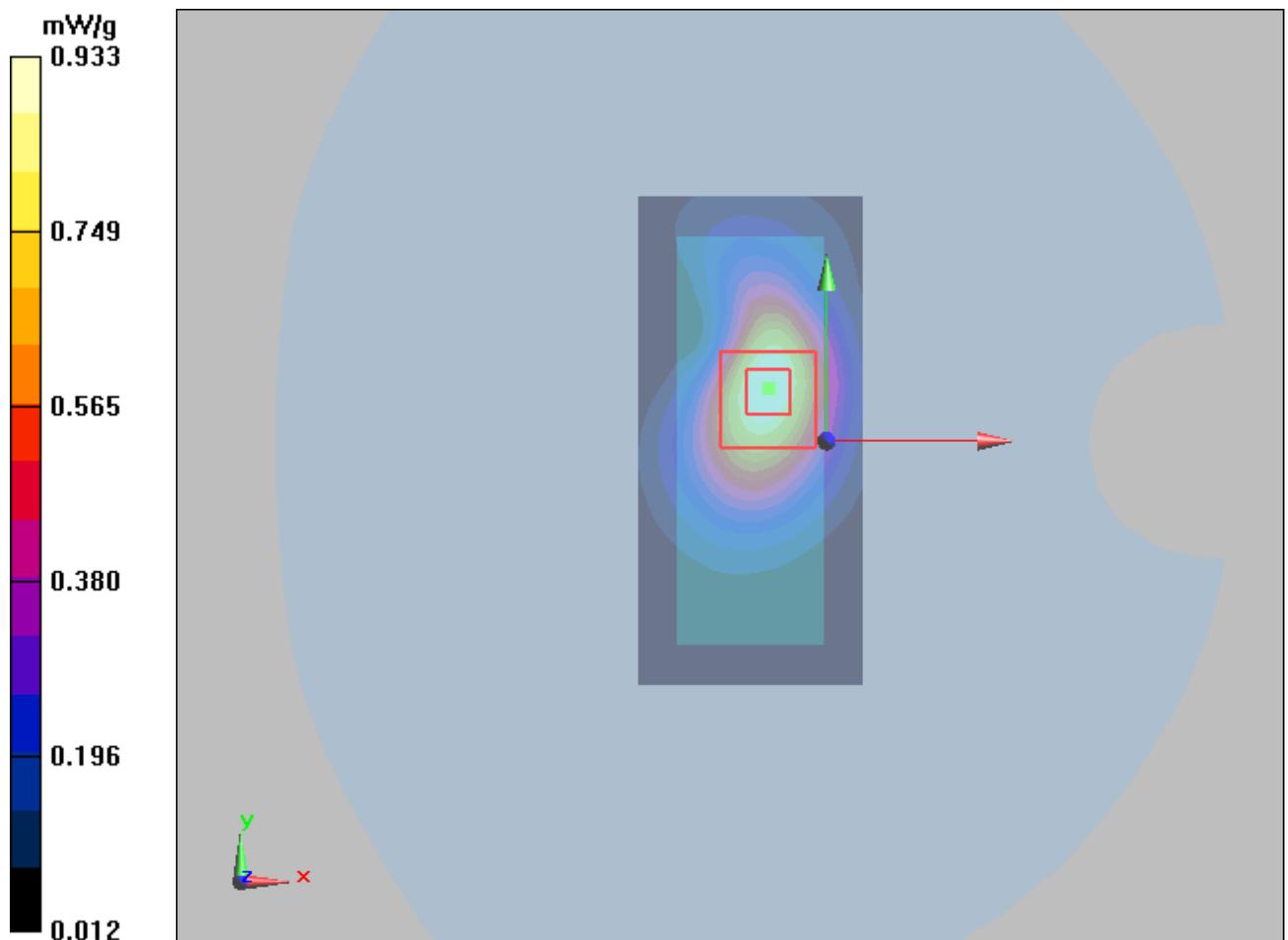


Figure 30 UMTS Band II with IBM T61 Test Position 1 Channel 9262

UMTS Band II with IBM T61 Test Position 2 High

Date/Time: 2/20/2013 11:54:43 AM

Communication System: WCDMA ; Frequency: 1907.6 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 1908$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.5$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.695 mW/g

Test Position 2 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.3 V/m; Power Drift = -0.116 dB

Peak SAR (extrapolated) = 0.965 W/kg

SAR(1 g) = 0.618 mW/g; SAR(10 g) = 0.367 mW/g

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

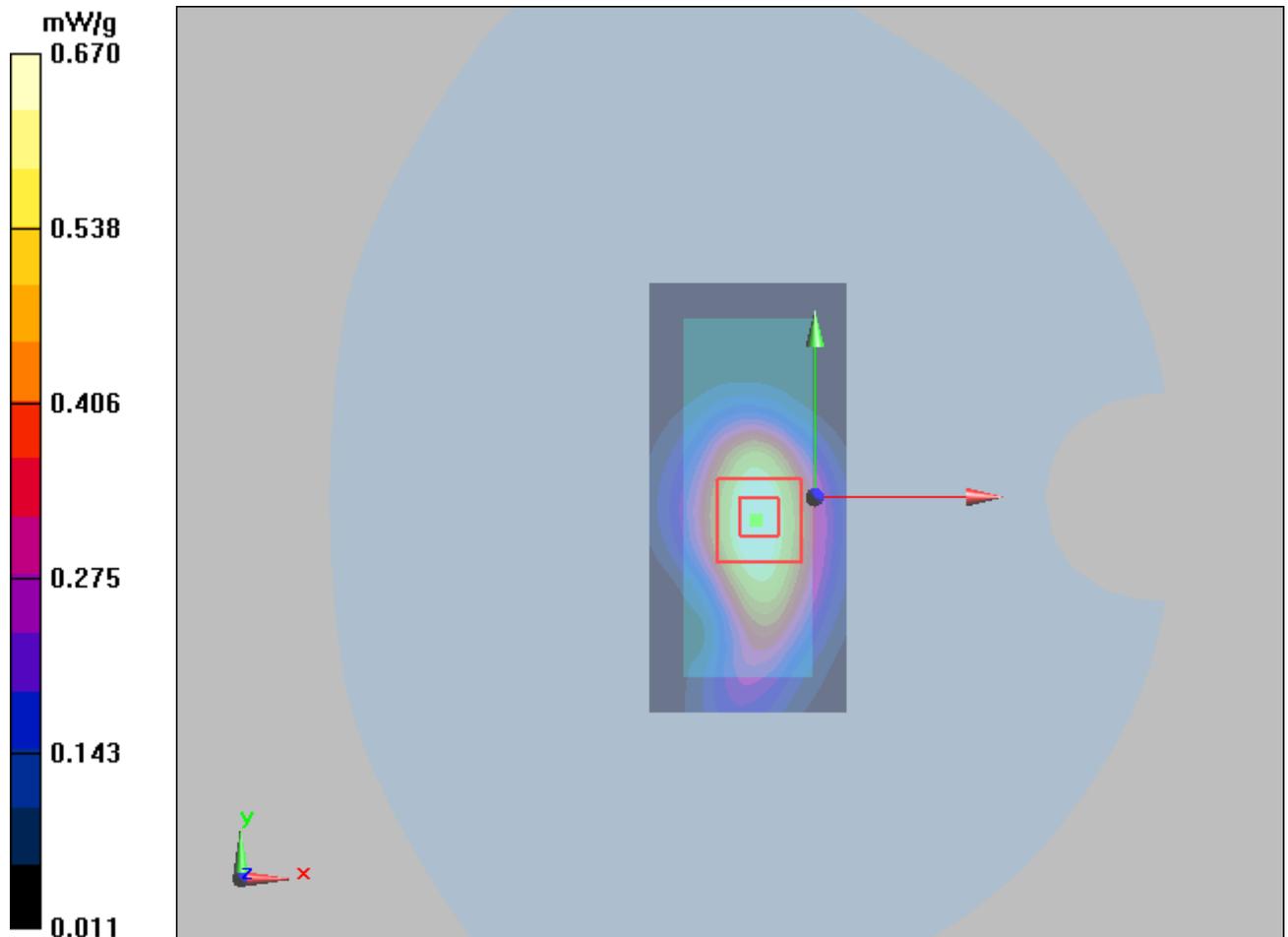


Figure 31 UMTS Band II with IBM T61 Test Position 2 Channel 9538

UMTS Band II with IBM T61 Test Position 2 Middle

Date/Time: 2/20/2013 11:37:57 AM

Communication System: WCDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.778 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.9 V/m; Power Drift = 0.077 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.748 mW/g; SAR(10 g) = 0.431 mW/g

Maximum value of SAR (measured) = 0.816 mW/g

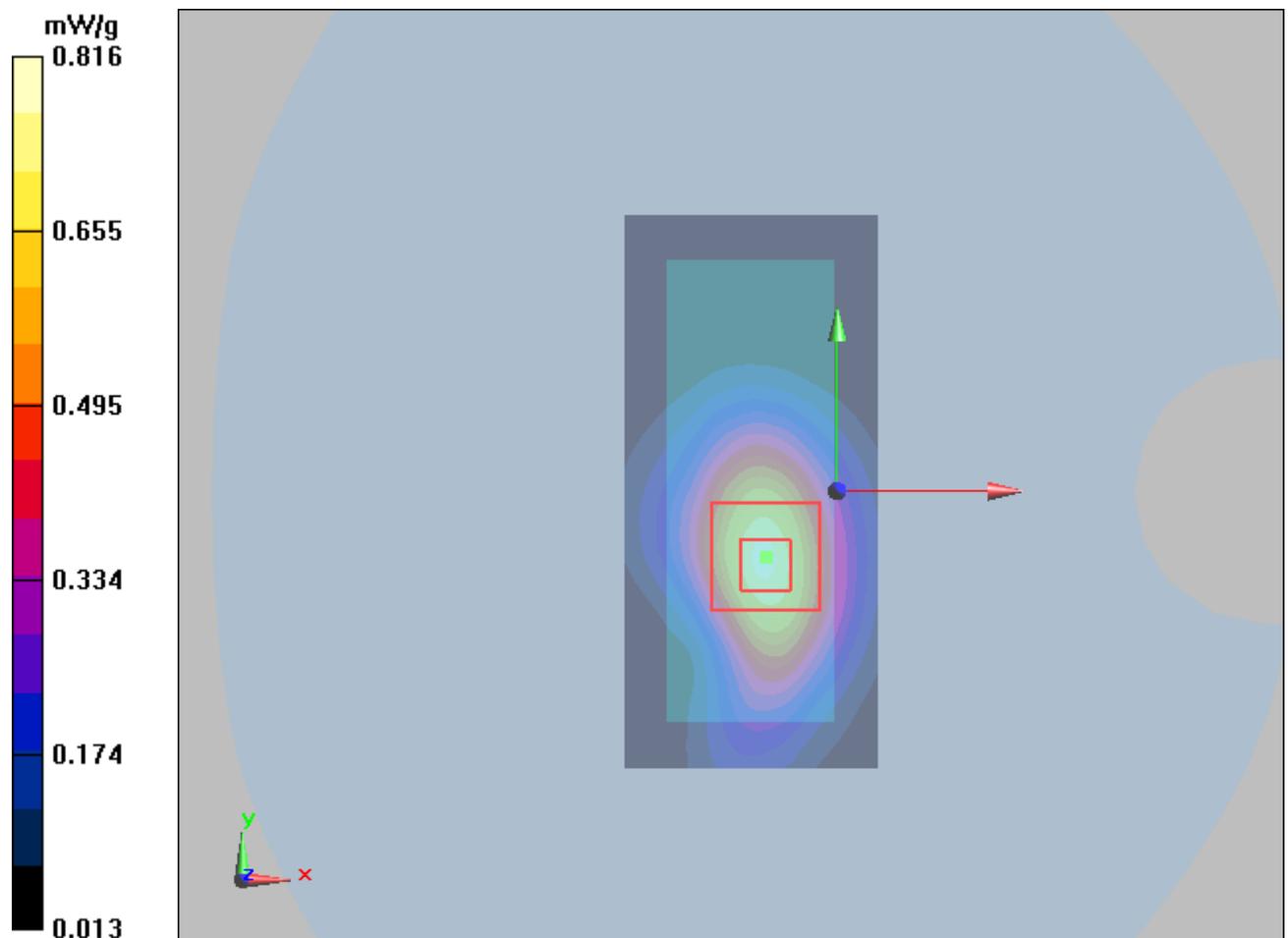


Figure 32 UMTS Band II with IBM T61 Test Position 2 Channel 9400

UMTS Band II with IBM T61 Test Position 2 Low

Date/Time: 2/20/2013 12:11:05 PM

Communication System: WCDMA ; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.863 mW/g

Test Position 2 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.8 V/m; Power Drift = -0.062 dB

Peak SAR (extrapolated) = 1.26 W/kg

SAR(1 g) = 0.782 mW/g; SAR(10 g) = 0.448 mW/g

Maximum value of SAR (measured) = 0.866 mW/g

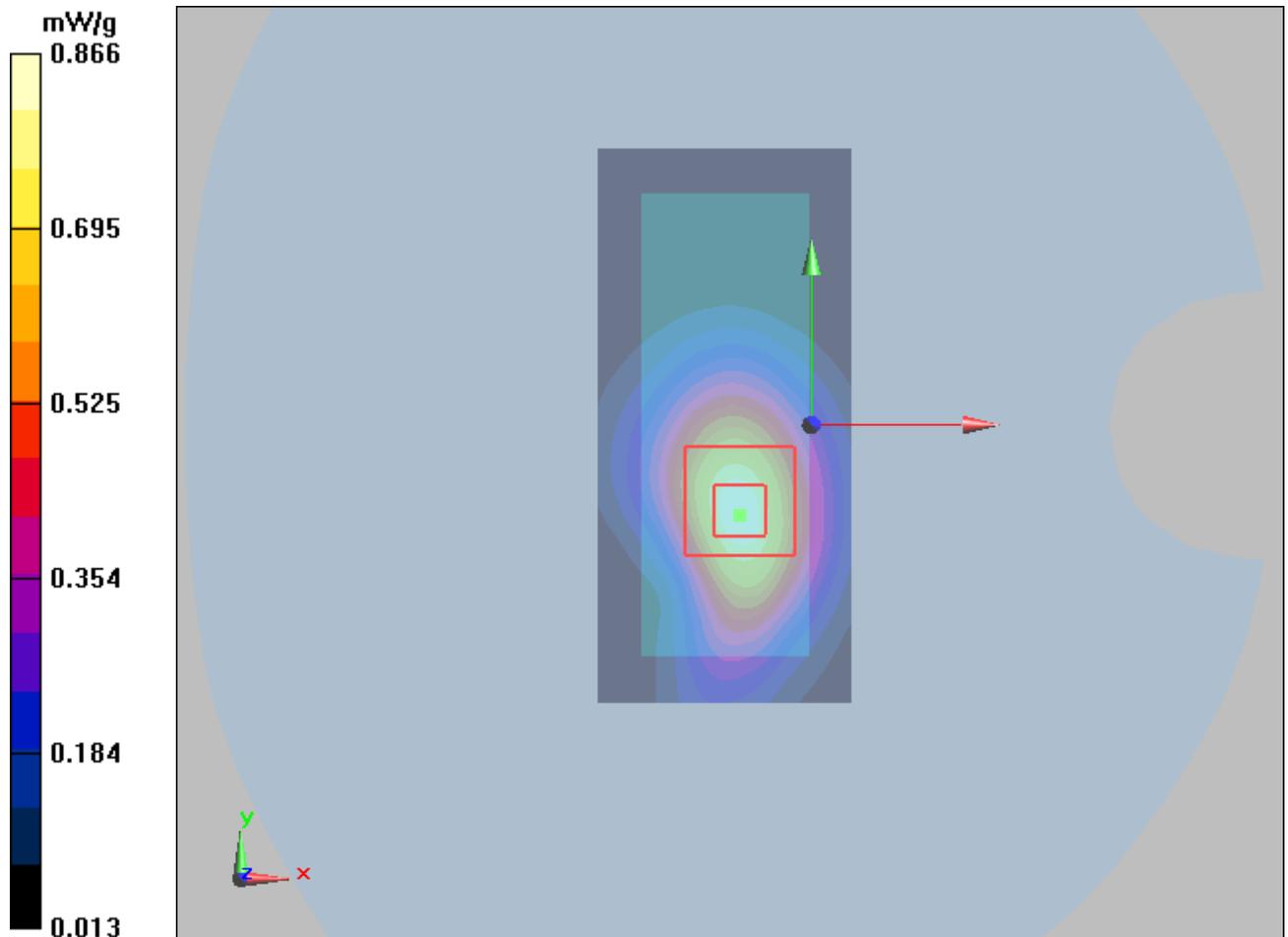


Figure 33 UMTS Band II with IBM T61 Test Position 2 Channel 9262

UMTS Band II with IBM T61 Test Position 3 Middle

Date/Time: 2/20/2013 12:31:44 PM

Communication System: WCDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.559 mW/g

Test Position 3 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.8 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 0.835 W/kg

SAR(1 g) = 0.503 mW/g; SAR(10 g) = 0.281 mW/g

Maximum value of SAR (measured) = 0.558 mW/g

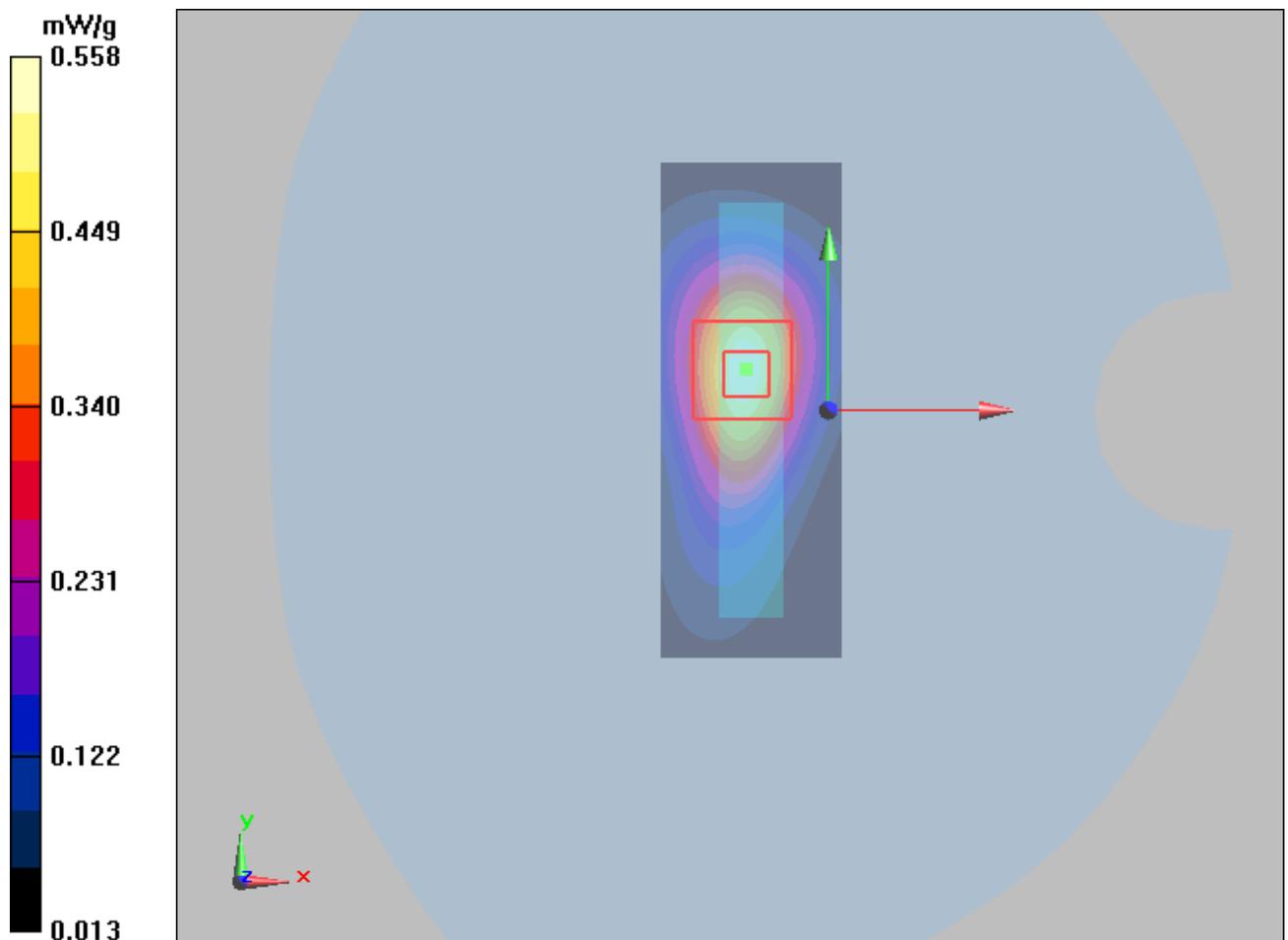


Figure 34 UMTS Band II with IBM T61 Test Position 3 Channel 9400

UMTS Band II with IBM T61 Test Position 4 Middle

Date/Time: 2/20/2013 11:16:17 AM

Communication System: WCDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.150 mW/g

Test Position 4 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10 V/m; Power Drift = 0.095 dB

Peak SAR (extrapolated) = 0.234 W/kg

SAR(1 g) = 0.138 mW/g; SAR(10 g) = 0.078 mW/g

Maximum value of SAR (measured) = 0.151 mW/g

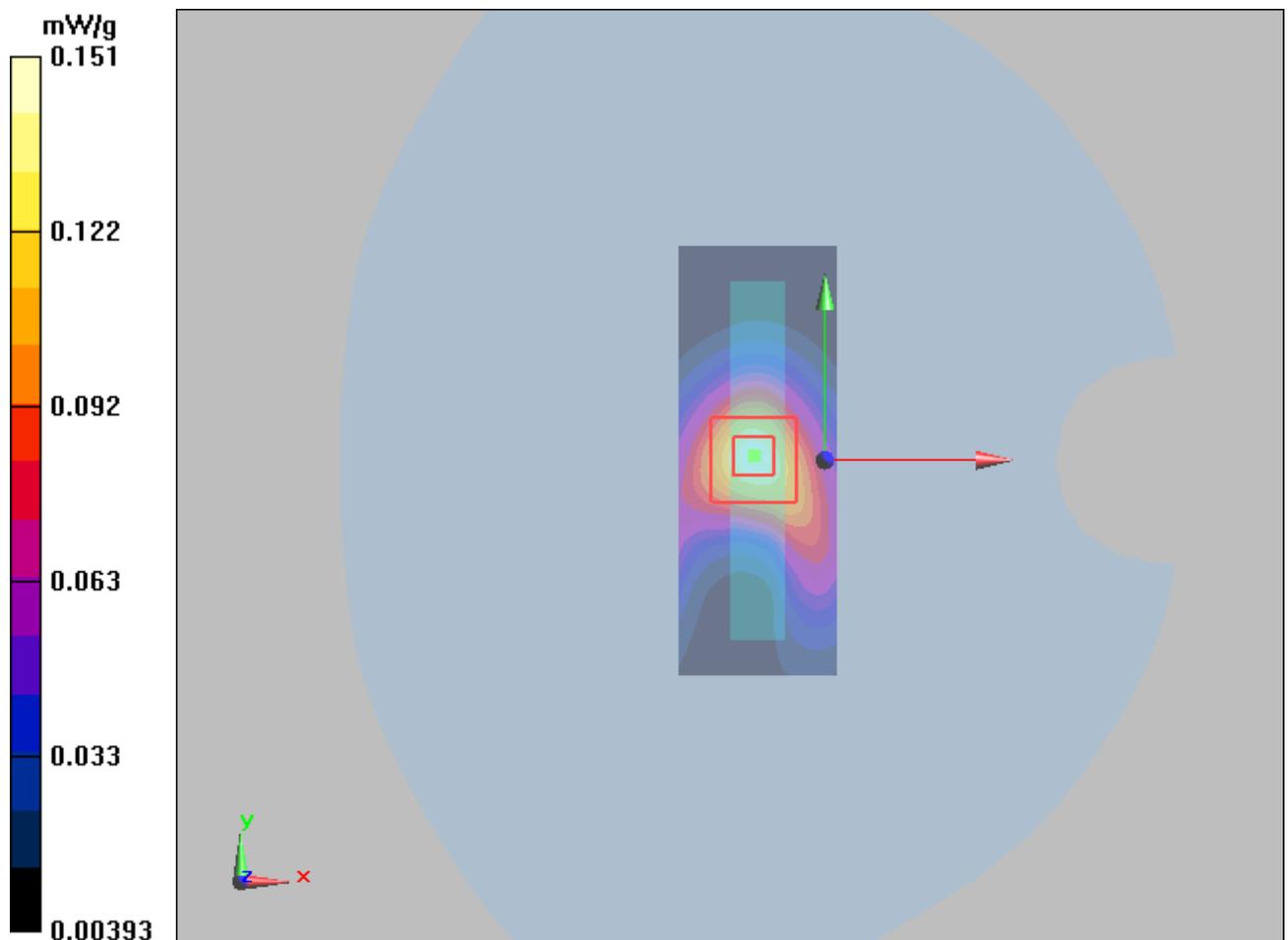


Figure 35 UMTS Band II with IBM T61 Test Position 4 Channel 9400

UMTS Band II with IBM T61 Test Position 5 Middle

Date/Time: 2/20/2013 1:18:13 PM

Communication System: WCDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.032 mW/g

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

Reference Value = 4.61 V/m; Power Drift = 0.023 dB

Peak SAR (extrapolated) = 0.048 W/kg

SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.021 mW/g

Maximum value of SAR (measured) = 0.033 mW/g

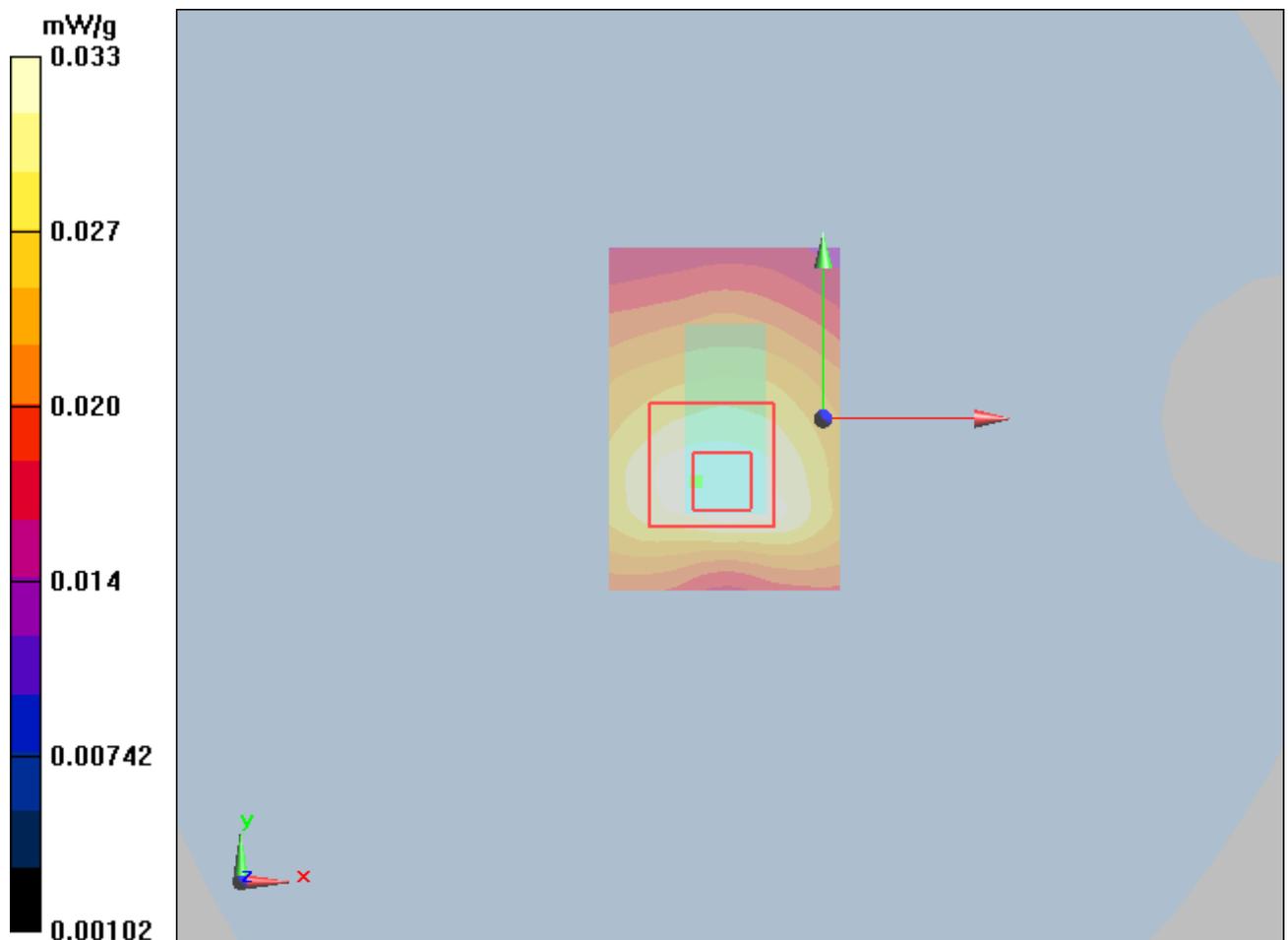


Figure 36 UMTS Band II with IBM T61 Test Position 5 Channel 9400

TA Technology (Shanghai) Co., Ltd. Test Report

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UMTS Band II with IBM T61 Test Position 1 Low(Repeated Test)

Date/Time: 2/20/2013 4:16:21 PM

Communication System: WCDMA ; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

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

Test Position 1 Low/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.997 mW/g

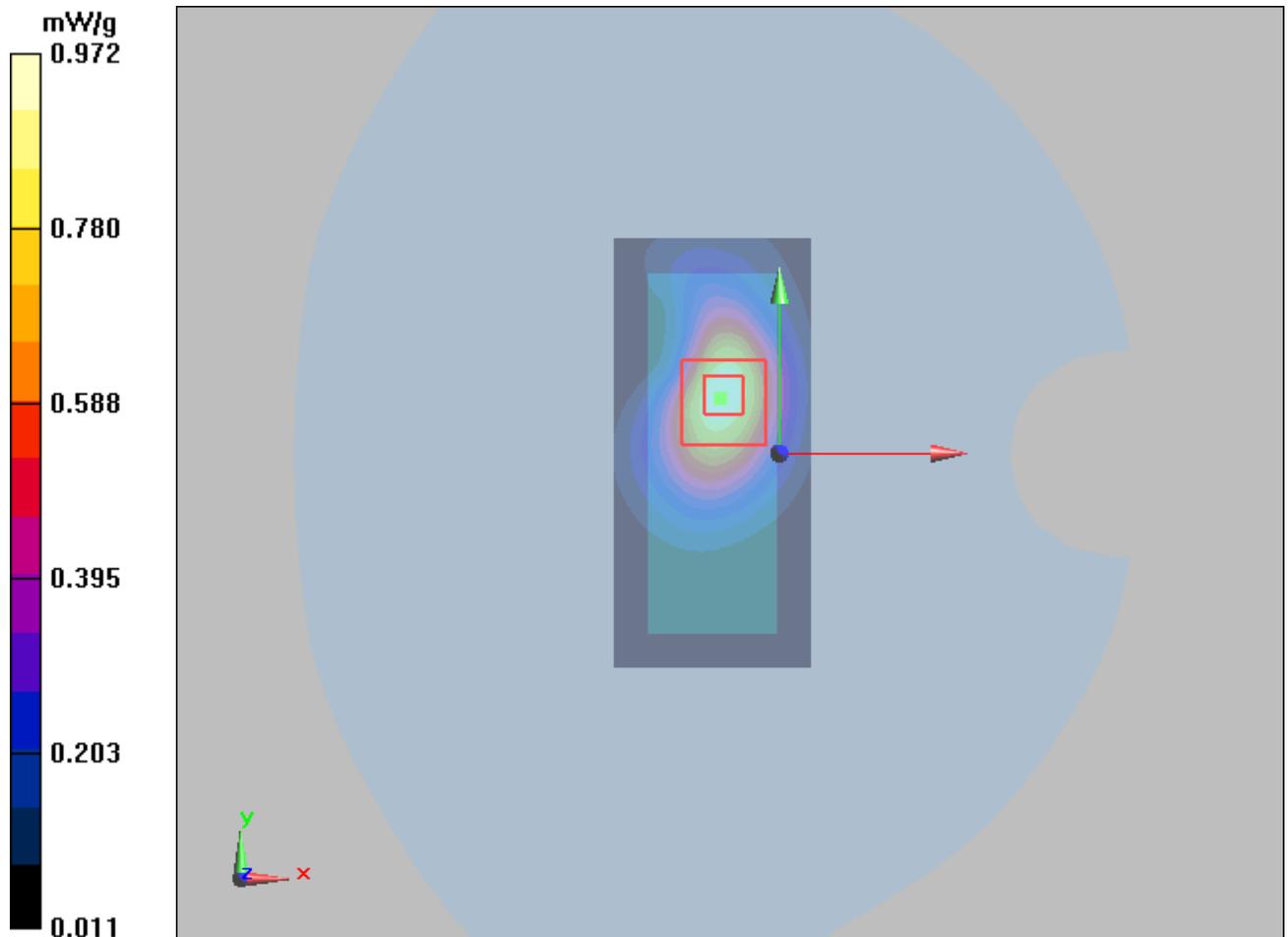
Test Position 1 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.9 V/m; Power Drift = 0.016 dB

Peak SAR (extrapolated) = 1.52 W/kg

SAR(1 g) = 0.887 mW/g; SAR(10 g) = 0.486 mW/g

Maximum value of SAR (measured) = 0.972 mW/g



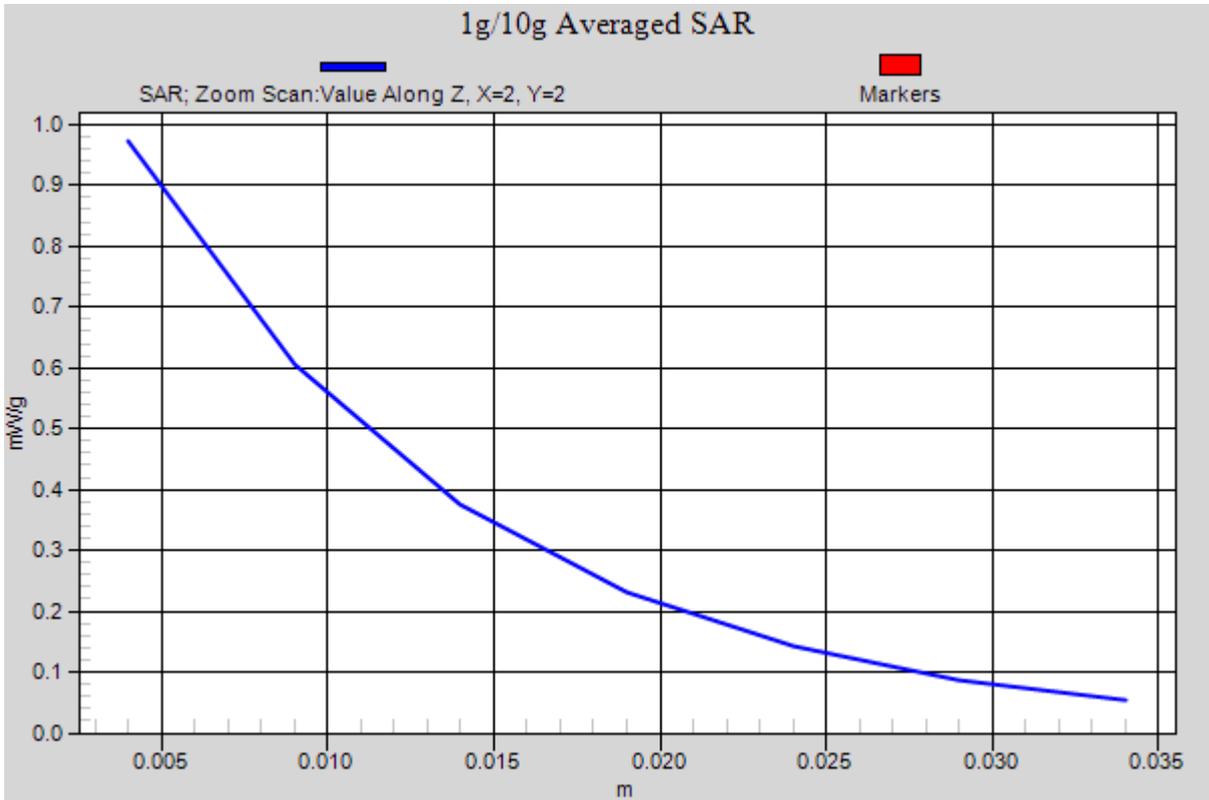


Figure 37 UMTS Band II with IBM T61 Test Position 1 Channel 9262

UMTS Band V with IBM T61 Test Position 1 High

Date/Time: 2/19/2013 3:09:39 PM

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

Medium parameters used: $f = 847$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 55.8$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.961 mW/g

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

Reference Value = 19.8 V/m; Power Drift = -0.036 dB

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.869 mW/g; SAR(10 g) = 0.518 mW/g

Maximum value of SAR (measured) = 0.952 mW/g

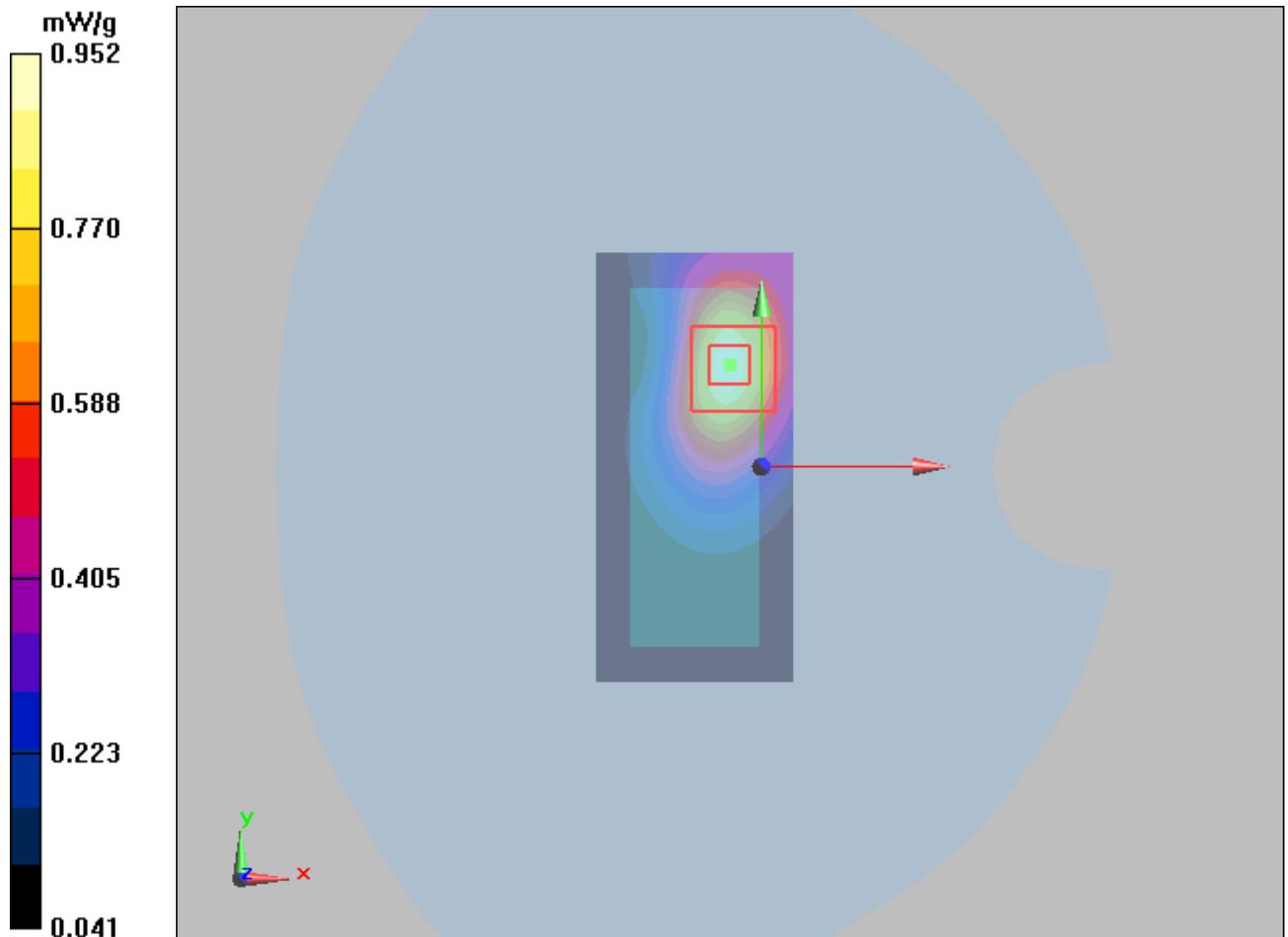


Figure 38 UMTS Band V with IBM T61 Test Position 1 Channel 4233

UMTS Band V with IBM T61 Test Position 1 Middle

Date/Time: 2/19/2013 3:25:35 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.01 mW/g

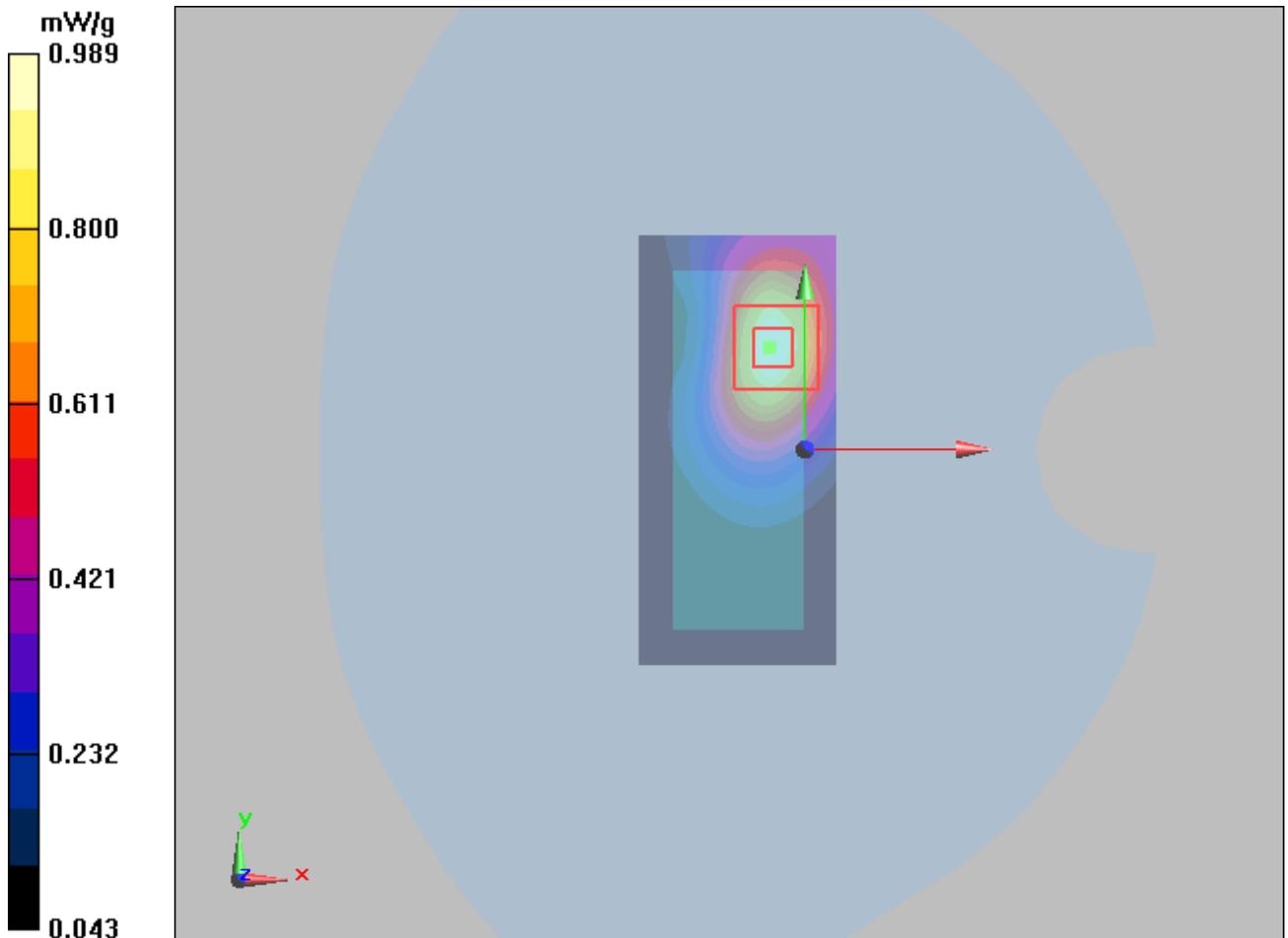
Test Position 1 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.9 V/m; Power Drift = -0.077 dB

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.910 mW/g; SAR(10 g) = 0.547 mW/g

Maximum value of SAR (measured) = 0.989 mW/g



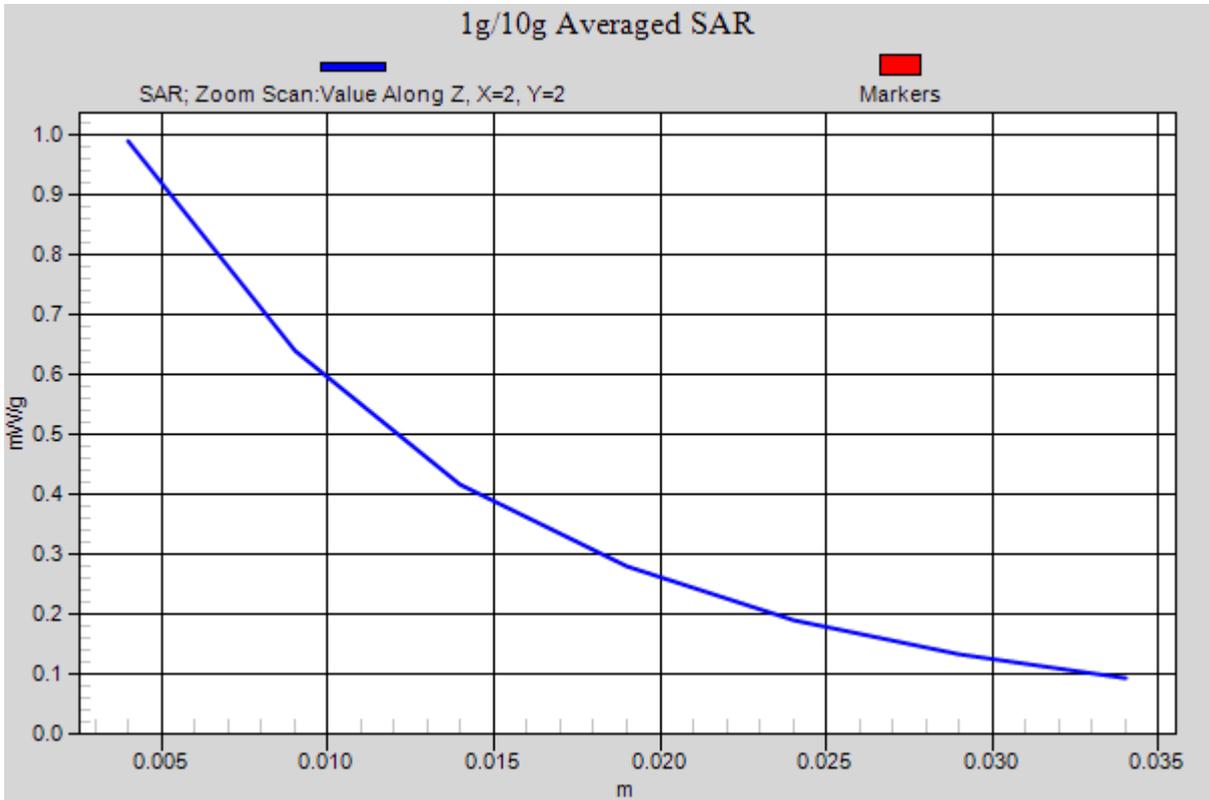


Figure 39 UMTS Band V with IBM T61 Test Position 1 Channel 4183

UMTS Band V with IBM T61 Test Position 1 Low

Date/Time: 2/19/2013 7:53:21 PM

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

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.98$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.938 mW/g

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

Reference Value = 19.2 V/m; Power Drift = -0.051 dB

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.844 mW/g; SAR(10 g) = 0.509 mW/g

Maximum value of SAR (measured) = 0.926 mW/g

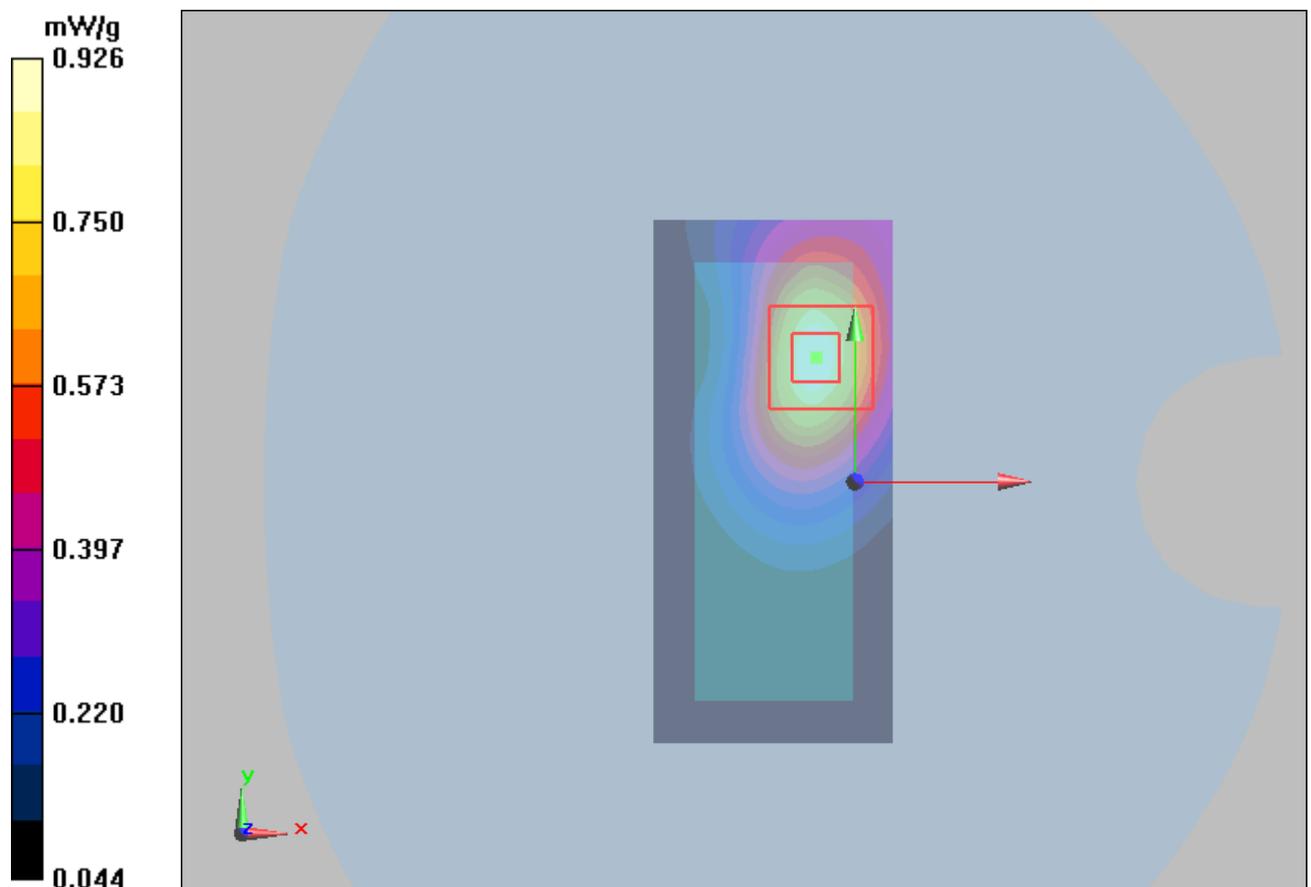


Figure 40 UMTS Band V with IBM T61 Test Position 1 Channel 4132

UMTS Band V with IBM T61 Test Position 2 High

Date/Time: 2/19/2013 5:10:54 PM

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

Medium parameters used: $f = 847$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 55.8$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

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

Test Position 2 High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.1 V/m; Power Drift = -0.117 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.752 mW/g; SAR(10 g) = 0.471 mW/g

Maximum value of SAR (measured) = 0.818 mW/g

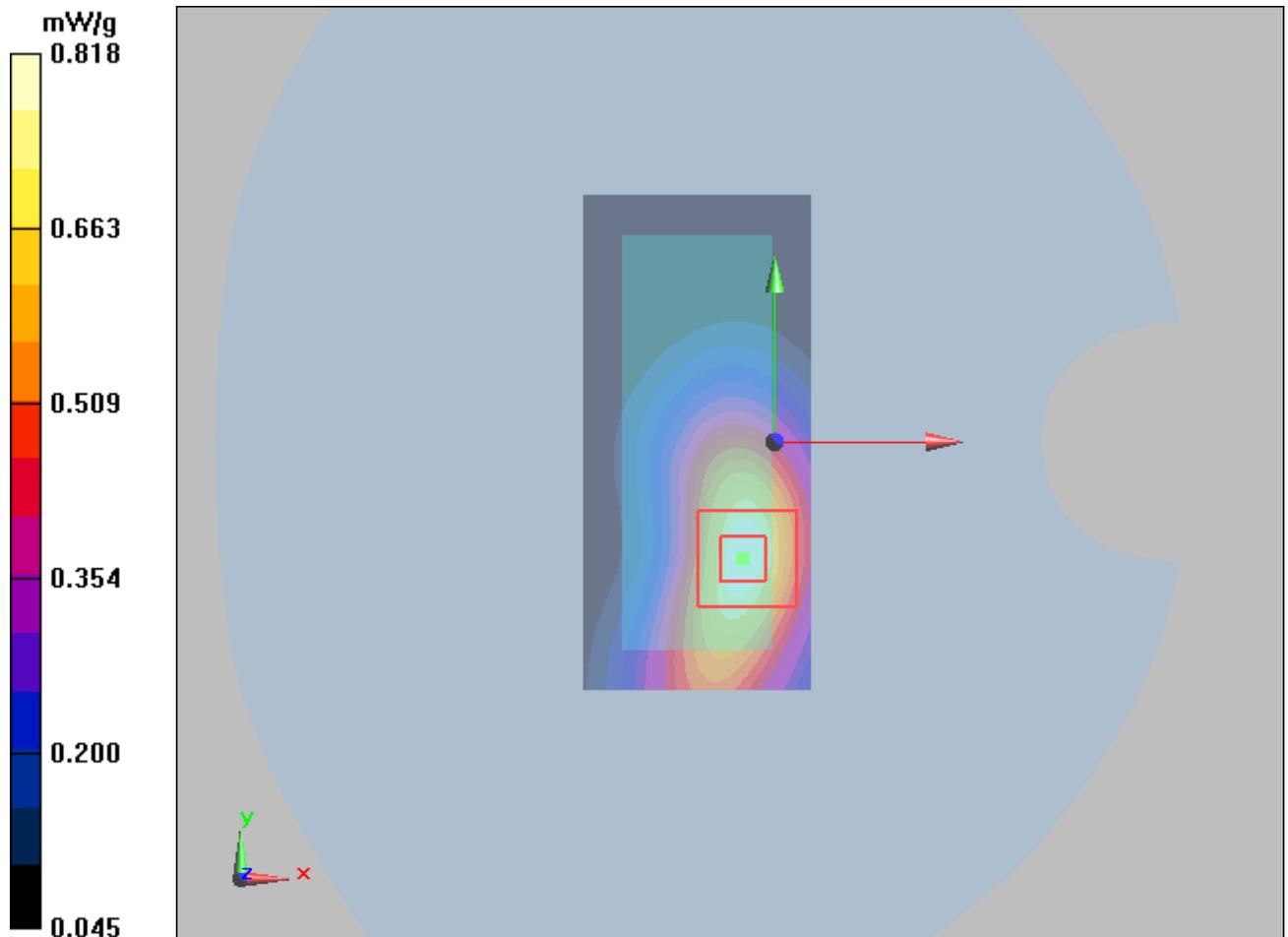


Figure 41 UMTS Band V with IBM T61 Test Position 2 Channel 4233

UMTS Band V with IBM T61 Test Position 2 Middle

Date/Time: 2/19/2013 4:55:12 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.822 mW/g

Test Position 2 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.8 V/m; Power Drift = -0.078 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.754 mW/g; SAR(10 g) = 0.475 mW/g

Maximum value of SAR (measured) = 0.821 mW/g

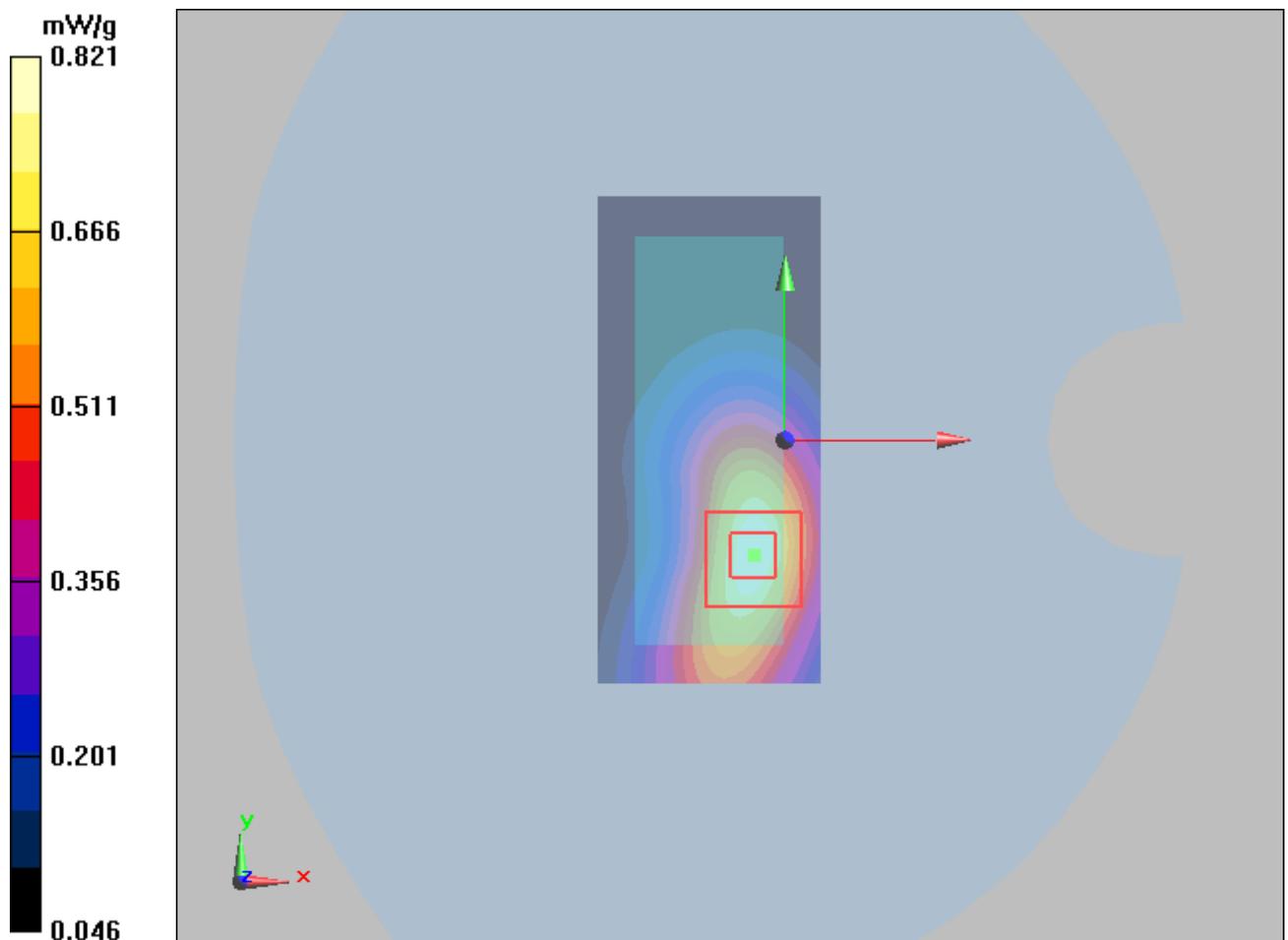


Figure 42 UMTS Band V with IBM T61 Test Position 2 Channel 4183

UMTS Band V with IBM T61 Test Position 2 Low

Date/Time: 2/19/2013 5:30:08 PM

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

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.98$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

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

Test Position 2 Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.2 V/m; Power Drift = -0.112 dB

Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.749 mW/g; SAR(10 g) = 0.474 mW/g

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

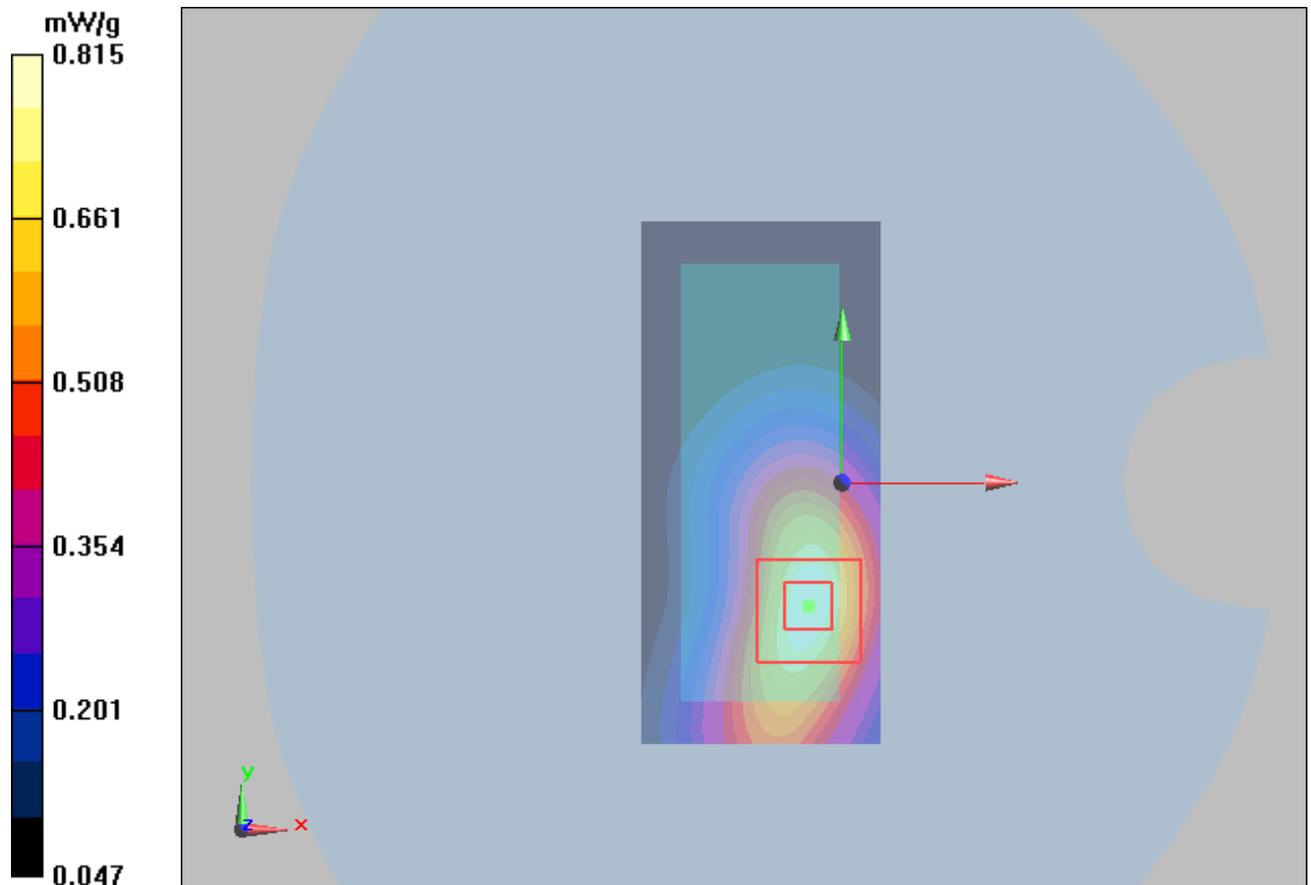


Figure 43 UMTS Band V with IBM T61 Test Position 2 Channel 4132

UMTS Band V with IBM T61 Test Position 3 Middle

Date/Time: 2/19/2013 5:52:51 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

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

Test Position 3 Middle/Area Scan (41x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.512 mW/g

Test Position 3 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.5 V/m; Power Drift = -0.031 dB

Peak SAR (extrapolated) = 0.716 W/kg

SAR(1 g) = 0.472 mW/g; SAR(10 g) = 0.301 mW/g

Maximum value of SAR (measured) = 0.513 mW/g

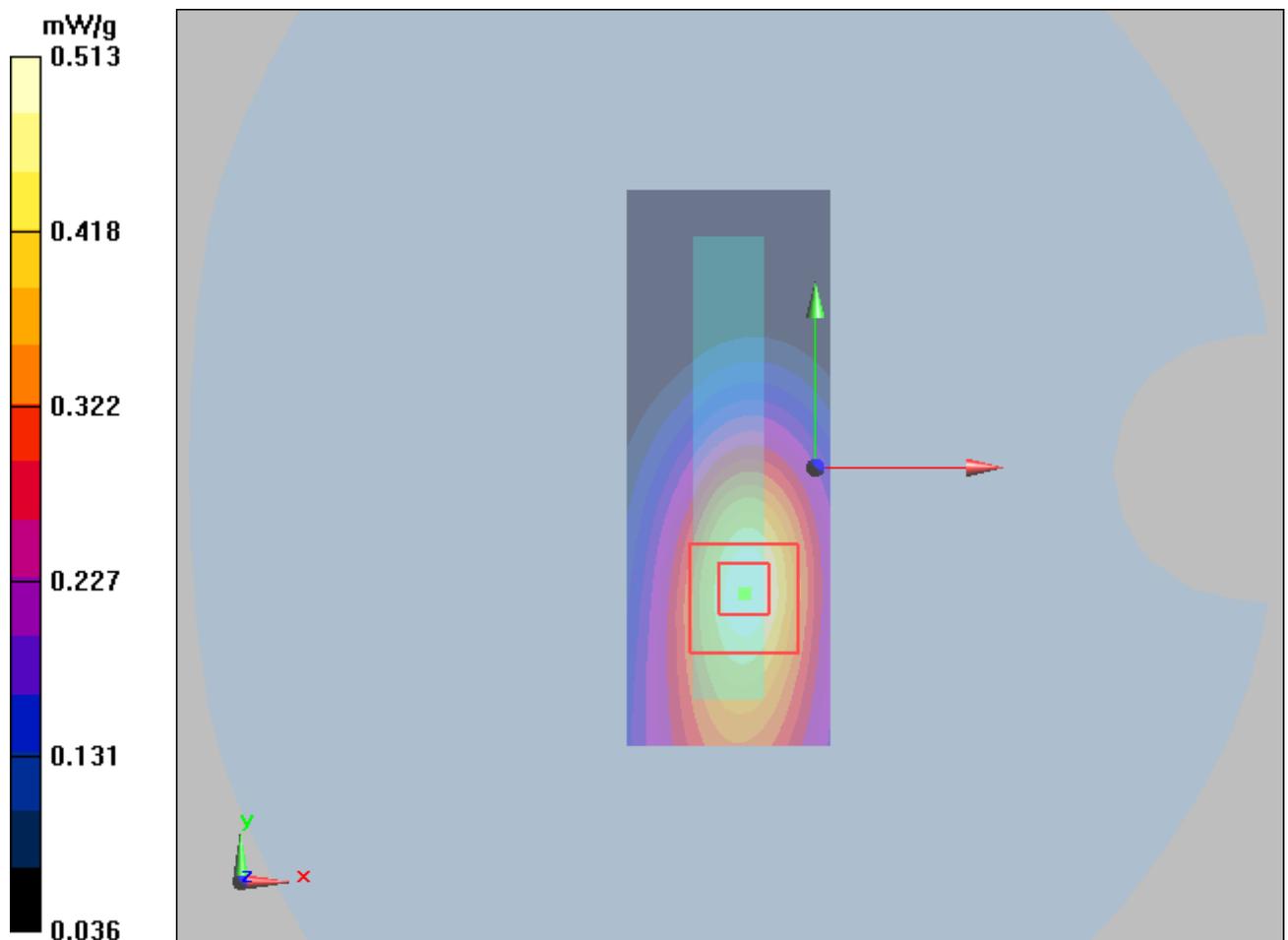


Figure 44 UMTS Band V with IBM T61 Test Position 3 Channel 4183

UMTS Band V with IBM T61 Test Position 4 Middle

Date/Time: 2/19/2013 4:14:29 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.195 mW/g

Test Position 4 Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.4 V/m; Power Drift = 0.012 dB

Peak SAR (extrapolated) = 0.262 W/kg

SAR(1 g) = 0.183 mW/g; SAR(10 g) = 0.124 mW/g

Maximum value of SAR (measured) = 0.197 mW/g

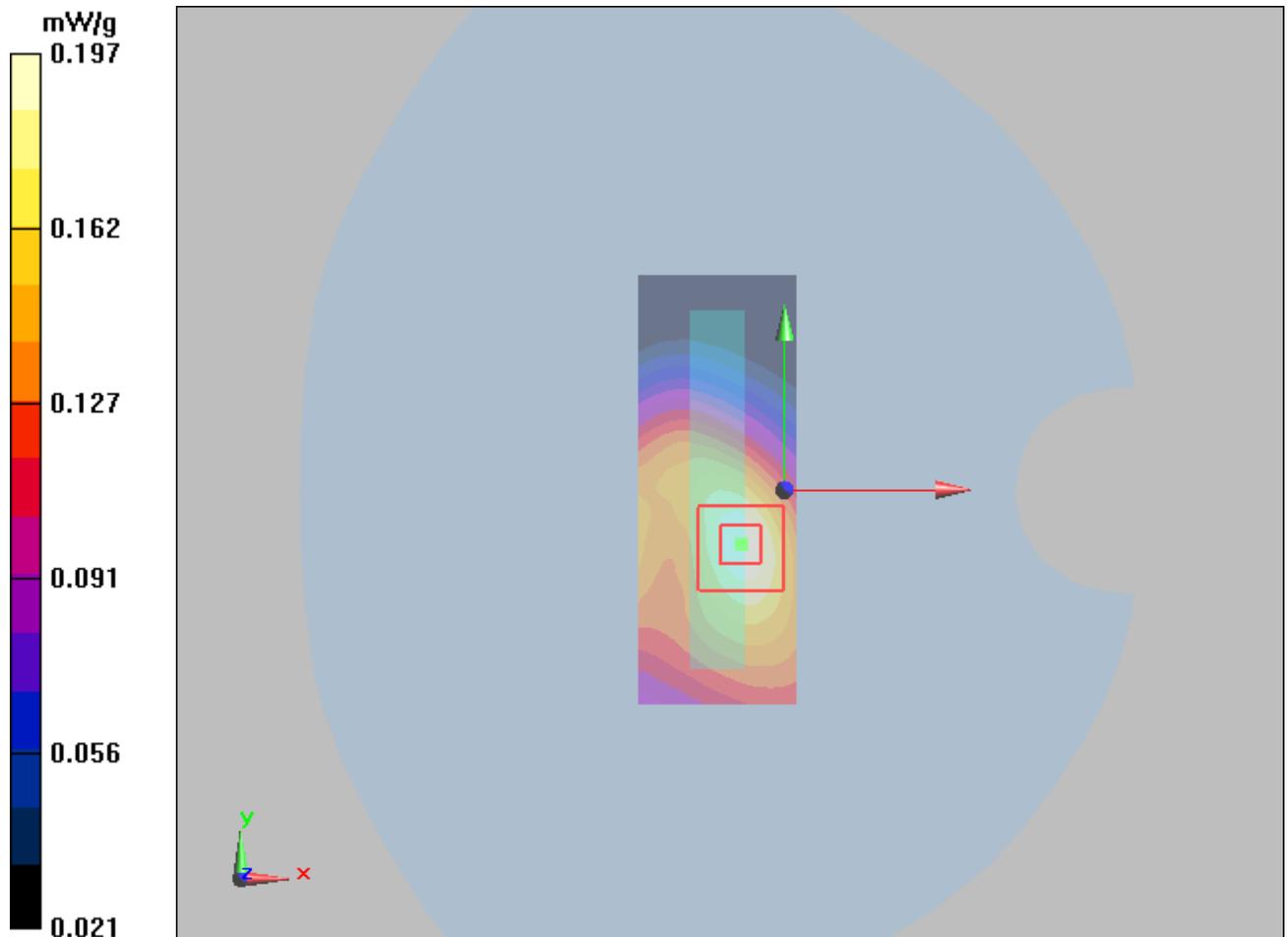


Figure 45 UMTS Band V with IBM T61 Test Position 4 Channel 4183

UMTS Band V with IBM T61 Test Position 5 Middle

Date/Time: 2/19/2013 6:12:45 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (41x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.047 mW/g

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

Reference Value = 6.32 V/m; Power Drift = -0.116 dB

Peak SAR (extrapolated) = 0.087 W/kg

SAR(1 g) = 0.041 mW/g; SAR(10 g) = 0.024 mW/g

Maximum value of SAR (measured) = 0.047 mW/g

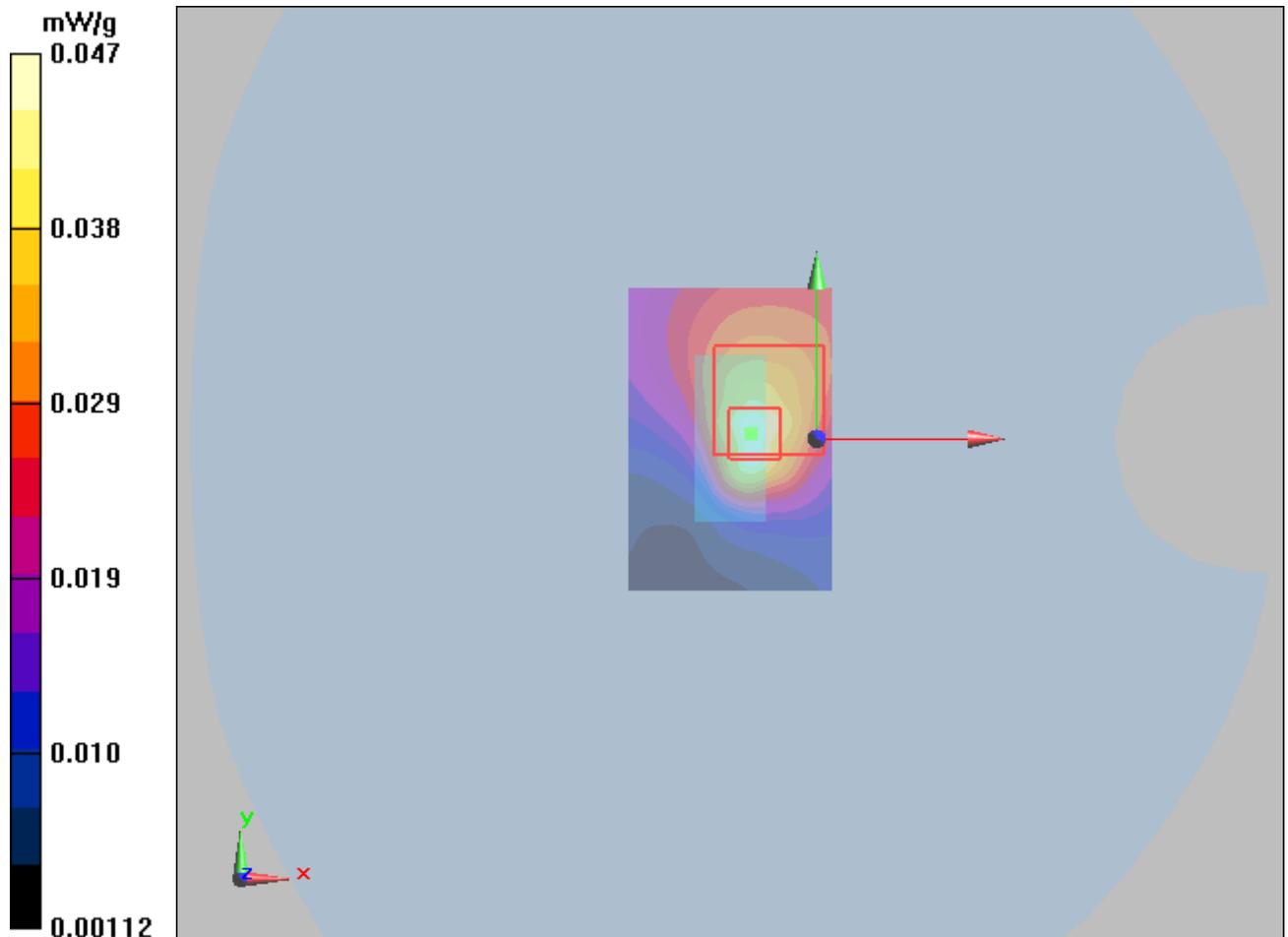


Figure 46 UMTS Band V with IBM T61 Test Position 5 Channel 4183

UMTS Band V with IBM T61 Test Position 1 Middle (Repeated Test)

Date/Time: 2/19/2013 3:39:27 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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 (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.985 mW/g

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

Reference Value = 23.3 V/m; Power Drift = -0.074 dB

Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.890 mW/g; SAR(10 g) = 0.533 mW/g

Maximum value of SAR (measured) = 0.969 mW/g

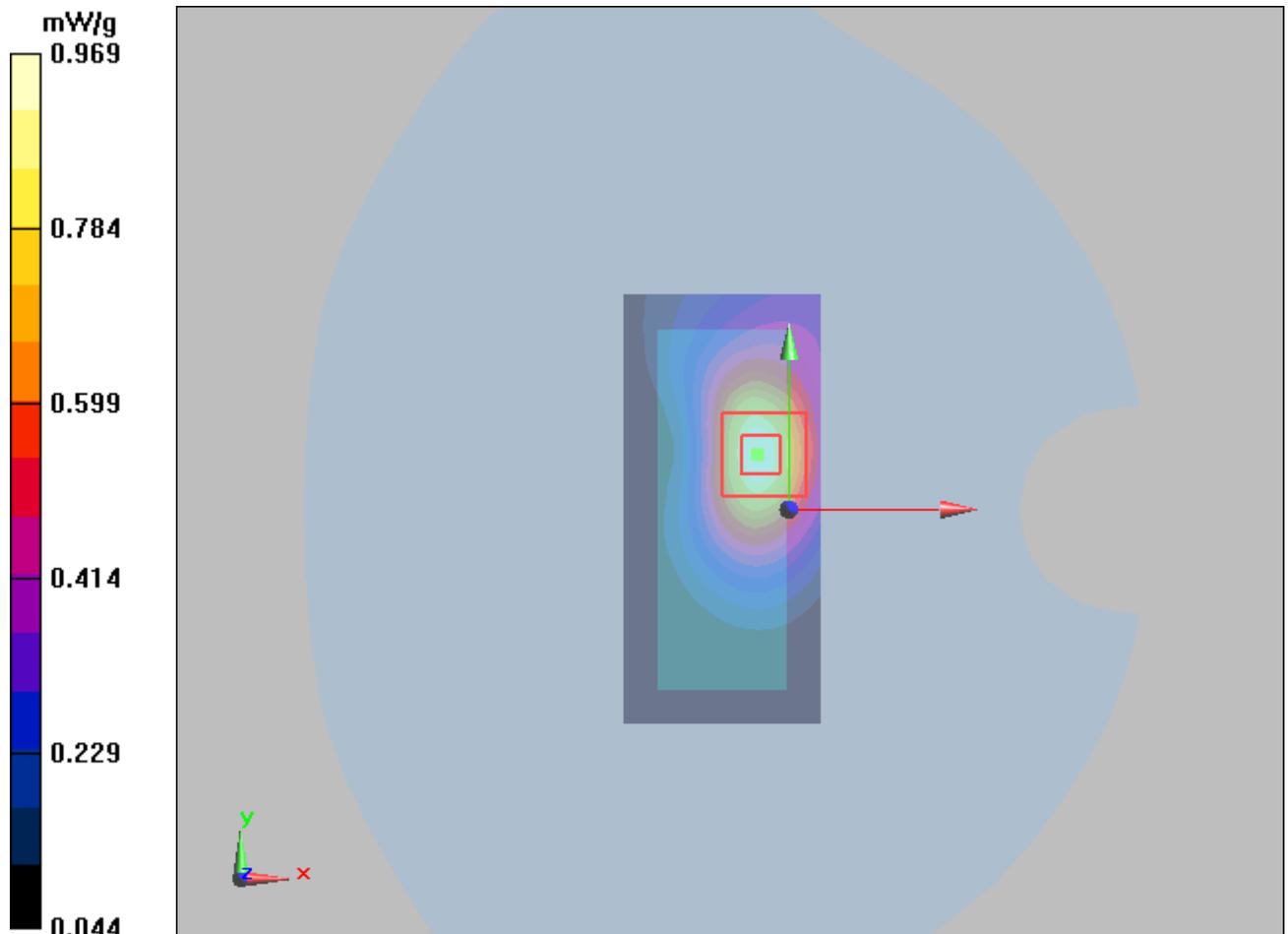


Figure 47 UMTS Band V with IBM T61 Test Position 1 Channel 4183

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LTE Band 7 1RB with IBM T61 Test Position 1 High (High end)

Date/Time: 2/21/2013 3:16:26 PM

Communication System: LTE; Frequency: 2560 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2560$ MHz; $\sigma = 2.1$ mho/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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(High end)/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.738 mW/g

Test Position 1 High(High end)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.1 V/m; Power Drift = -0.153 dB

Peak SAR (extrapolated) = 1.16 W/kg

SAR(1 g) = 0.644 mW/g; SAR(10 g) = 0.339 mW/g

Maximum value of SAR (measured) = 0.704 mW/g

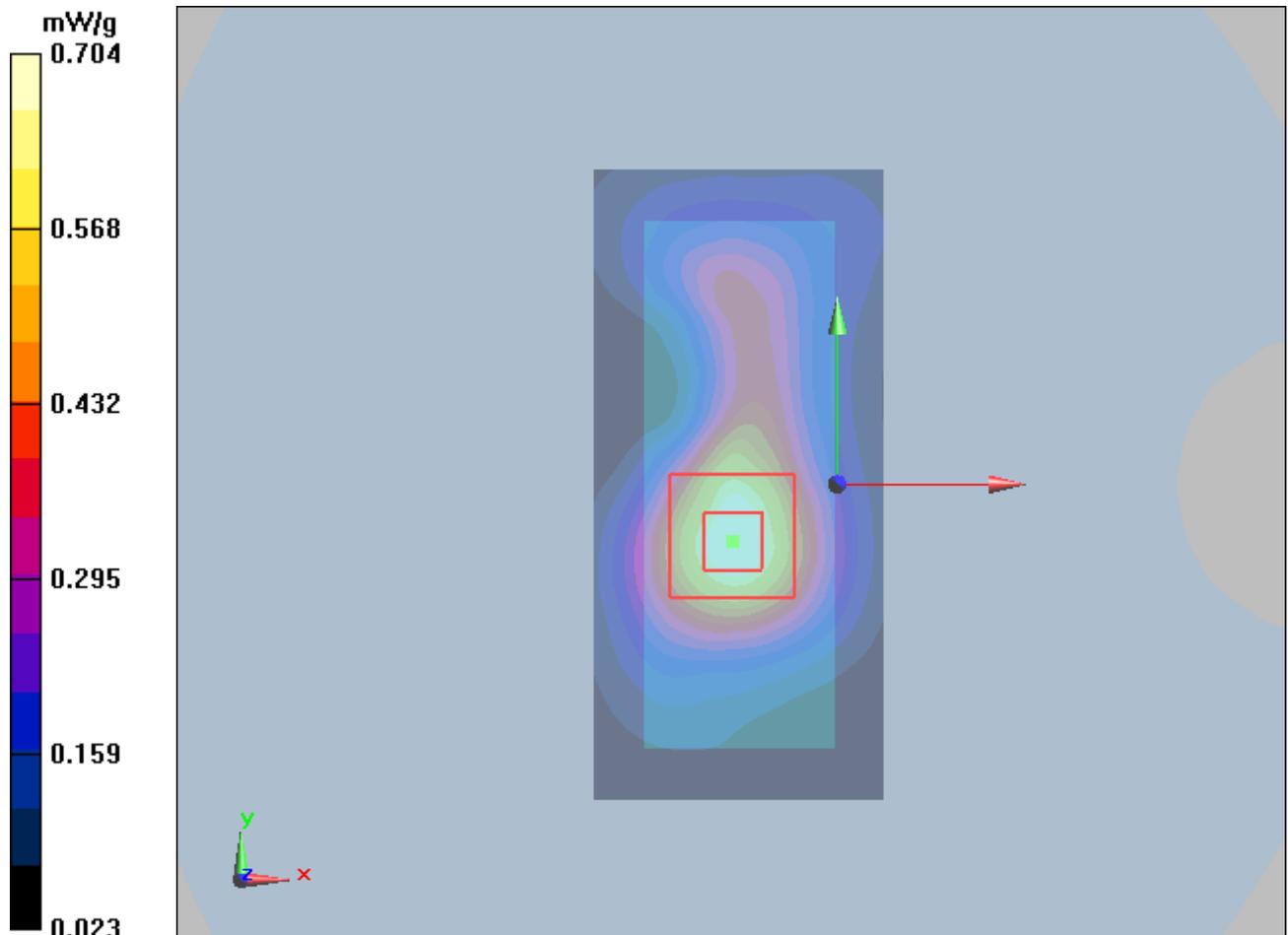


Figure 48 LTE Band 7 1RB with IBM T61 Test Position 1 Channel 21350

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LTE Band 7 1RB with IBM T61 Test Position 1 Middle (Middle end)

Date/Time: 2/21/2013 2:16:55 PM

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

Medium parameters used: $f = 2535$ MHz; $\sigma = 2.08$ mho/m; $\epsilon_r = 52.2$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn905; Calibrated: 6/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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(Middle end)/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.825 mW/g

Test Position 1 Middle(Middle end)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.5 V/m; Power Drift = 0.095 dB

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.779 mW/g; SAR(10 g) = 0.402 mW/g

Maximum value of SAR (measured) = 0.853 mW/g

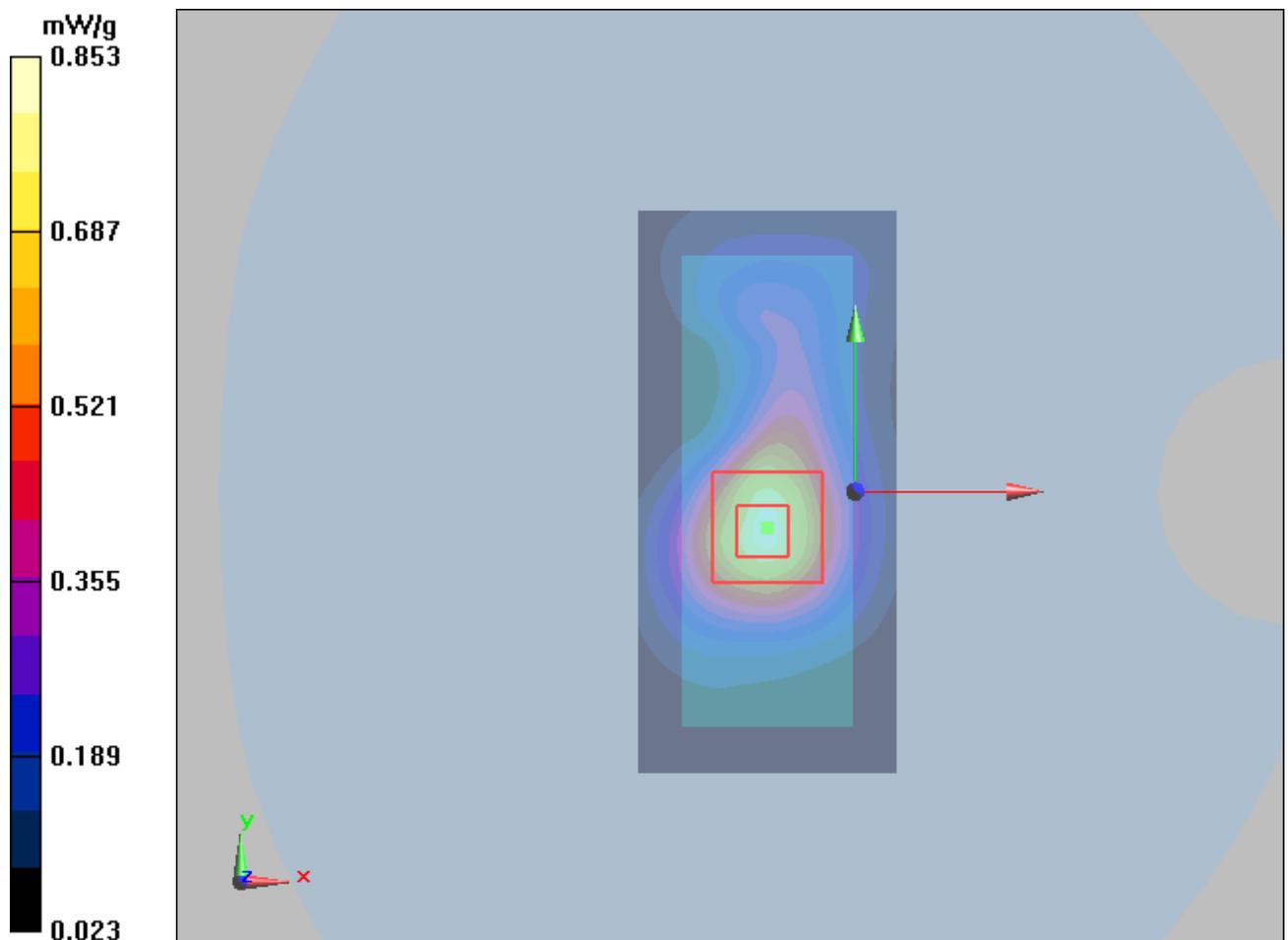


Figure 49 LTE Band 7 1RB with IBM T61 Test Position 1 Channel 21100