TESTING
No. L2264

SAR TEST REPORT

Product Name	TV BOX
Model Name	TB 01
FCC ID	QISTB-01
Client	Huawei Technologies Co., Ltd.
Manufacturer	Huawei Technologies Co., Ltd.
Date of issue	April 17, 2014

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Reference Standard(s)	**FCC 47CFR §2.1093** Radiofrequency Radiation Exposure Evaluation: Portable Devices **ANSI C95.1, 1992:** Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.(IEEE Std C95.1-1991) **IEEE Std 1528™-2003:** IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques. **RSS-102 Issue 4 March 2010:** Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) **KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03:** SAR Measurement Requirements for 100 MHz to 6 GHz **KDB 447498 D01 Mobile Portable RF Exposure v05r02:** Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies **KDB 941225 D01 SAR test for 3G devices v02:** SAR Measurement Procedures CDMA 20001x RTT, 1x Ev-Do, WCDMA, HSDPA/HSPA **KDB 941225 D06 Hotspot Mode SAR v01r01:** SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities **KDB 248227 D01 SAR meas for 802 11 a b g v01r02:** SAR Measurement Procedures for 802.11a/b/g Transmitters.
Conclusion	This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 7 of this test report are below limits specified in the relevant standards for the tested bands only. General Judgment: **Pass**
Comment	The test result only responds to the measured sample.

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1. General Information

1.1. Notes of the Test Report

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

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

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

1.2. Testing Laboratory

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1.4. Manufacturer Information

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1.5. Information of EUT

General Information

Device Type:	Portable Device		
Exposure Category:	Uncontrolled Environment / General Population		
State of Sample:	Prototype Unit		
IMEI:	863721020014228		
Hardware Version:	DB1M620M VER.B		
Software Version:	V100R001C107B109		
Antenna Type:	Internal Antenna(MIMO)		
Device Operating Configurations:			
Test Mode(s):	UMTS Band V; 802.11a/b/g/n HT20/HT40;		
Test Modulation:	(UMTS)QPSK; (WIFI)BPSK		
HSDPA UE Category:	10		
HSUPA UE Category:	6		
Power Class:	UMTS Band V: 3		
Power Level:	UMTS Band V: tested with power control all up bits		
Test Channel:	4132 - 4183 - 4233 (UMTS Band V) 36 -40-44-48-52-64-100-116-140 (802.11a) 1 - 6 - 11 (802.11b/g/n HT20) 3 - 6 - 9 (802.11n HT40)		
Test Frequency Range(s):	Mode	Tx (MHz)	Rx (MHz)
	UMTS Band V	826.4 ~ 846.6	871.4 ~ 891.6
	802.11a	5180 ~ 5240	5180 ~ 5240
		5260 ~ 5320	5260 ~ 5320
		5500 ~ 5700	5500 ~ 5700
	802.11b/g/n HT20	2412 ~ 2462	2412 ~ 2462
	802.11n HT40	2422 ~ 2452	2422 ~ 2452

Auxiliary Equipment Details

AE:Battery

Model:	AAH29055
Manufacturer:	SCUD (FUJIAN) Electronics Co., Ltd. Sunwoda Electronic CO.,LTD.
S/N:	/

Equipment Under Test (EUT) a WCDMA antenna that can be used for Tx/Rx;
two WIFI antennas that can be used for Tx/Rx;

The sample undergoing test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. The Maximum Reported SAR_{1g}

Body SAR Configuration

Mode	Test Position	Channel /Frequency(MHz)	Limit SAR_{1g} 1.6 W/kg	
			Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
UMTS Band V	Test Position 2/ front side	4233/846.6	0.879	1.239
WIFI(2.4G)	Test Position 6/ bottom edge	6/2437	0.170	0.209
WIFI(5G)	Test Position 5/ top edge	140/5700	0.262	0.388

1.7. Maximum Conducted Power of Each Tested Mode

Mode	Maximum Conducted Power (dBm)
UMTS Band V	23.11
WIFI 2.4G	14.30
WIFI 5G	10.40

Note: The detail Power refers to Table 11 (Conducted Power Measurement Results).

1.8. Test Date

The test performed from March 28, 2014 to March 31, 2014.

2. SAR Measurements System Configuration

2.1. SAR Measurement Set-up

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

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

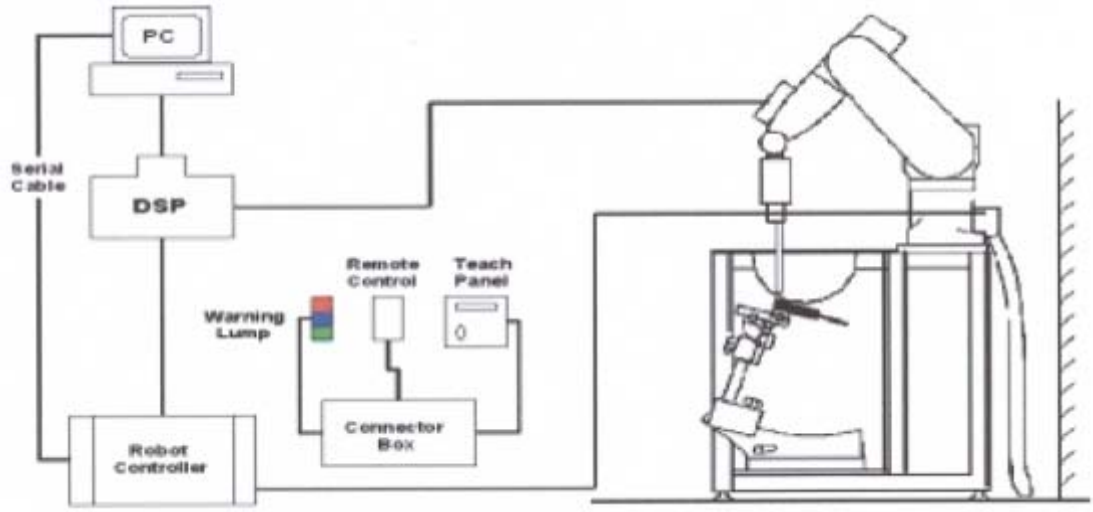


Figure 1. SAR Lab Test Measurement Set-up

2.2. DASY5 E-field Probe System

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

2.2.1. EX3DV4 Probe Specification

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

Figure 2.EX3DV4 E-field Probe

Figure 3. EX3DV4 E-field probe

2.2.2. E-field Probe Calibration

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

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

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

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

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

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

2.3. Other Test Equipment

2.3.1. Device Holder for Transmitters

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

Material: POM, Acrylic glass, Foam

2.3.2. Phantom

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

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

Figure 4 Generic Twin Phantom

2.4. Scanning Procedure

The DASY5 installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

- The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. ± 5 %.

- The “surface check” measurement tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

- Area Scan

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

spacing is set according to FCC KDB Publication 865664. During scan the distance of the probe to the phantom remains unchanged.

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

- Zoom Scan

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

- Spatial Peak Detection

The procedure for spatial peak SAR evaluation has been implemented and can determine values of masses of 1g and 10g, as well as for user-specific masses.The DASY5 system allows evaluations that combine measured data and robot positions, such as:

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

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

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation. Extrapolation routines require at least 10 measurement points in 3-D space.

They are used in the Zoom Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard's method for extrapolation.

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

Table 1: Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01

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

2.5. Data Storage and Evaluation

2.5.1. Data Storage

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DAE4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

2.5.2. Data Evaluation by SEMCAD

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

Probe parameters:	- Sensitivity	Normi, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	Dcp_i
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	
	- Density	

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

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

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

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

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

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

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

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

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

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

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

$ConvF$ = sensitivity enhancement in solution

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

f = carrier frequency [GHz]

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

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

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

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

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

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

with SAR = local specific absorption rate in mW/g

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

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

ρ = equivalent tissue density in g/cm^3

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

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

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

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

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

3. Laboratory Environment

Table 2: The Requirements of the Ambient Conditions

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

4. Tissue-equivalent Liquid

4.1. Tissue-equivalent Liquid Ingredients

The liquid is consisted of water, salt, Glycol, Sugar, Preventol and Cellulose, Triton X-100, Diethylenglycol monohexylether. 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 KDB 865664 D01.

Table 3: Composition of the Body Tissue Equivalent Matter

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

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

MIXTURE%	FREQUENCY(Body) 5200MHz
Water	67.64
Triton X-100	16.18
Diethylenglycol monohexylether	16.18
Dielectric Parameters Target Value	f=5200MHz ε=49.00 σ=5.30

MIXTURE%	FREQUENCY(Body) 5800MHz
Water	67.64
Triton X-100	16.18
Diethylenglycol monohexylether	16.18
Dielectric Parameters Target Value	f=5800MHz ε=48.20 σ=6.00

4.2. Tissue-equivalent Liquid Properties

Table 4: Dielectric Performance of Tissue Simulating Liquid

Frequency	Test Date	Temp ℃	Measured Dielectric Parameters		Target Dielectric Parameters		Limit (Within ±5%)	
			ε_r	σ(s/m)	ε_r	σ(s/m)	Dev ε_r(%)	Dev σ(%)
835MHz (body)	2014-3-28	21.5	55.9	0.98	55.2	0.97	1.27	1.03
2450MHz (body)	2014-3-30	21.5	52.1	1.99	52.7	1.95	-1.14	2.05
5200MHz (body)	2014-3-31	21.5	48.7	5.18	49.0	5.30	-0.61	-2.26
5800MHz (body)	2014-3-30	21.5	47.6	6.09	48.2	6.00	-1.24	1.50

5. System Check

5.1. Description of System Check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyzer. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW/100 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system check results (dielectric parameters and SAR values) are given in the table 5.

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

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

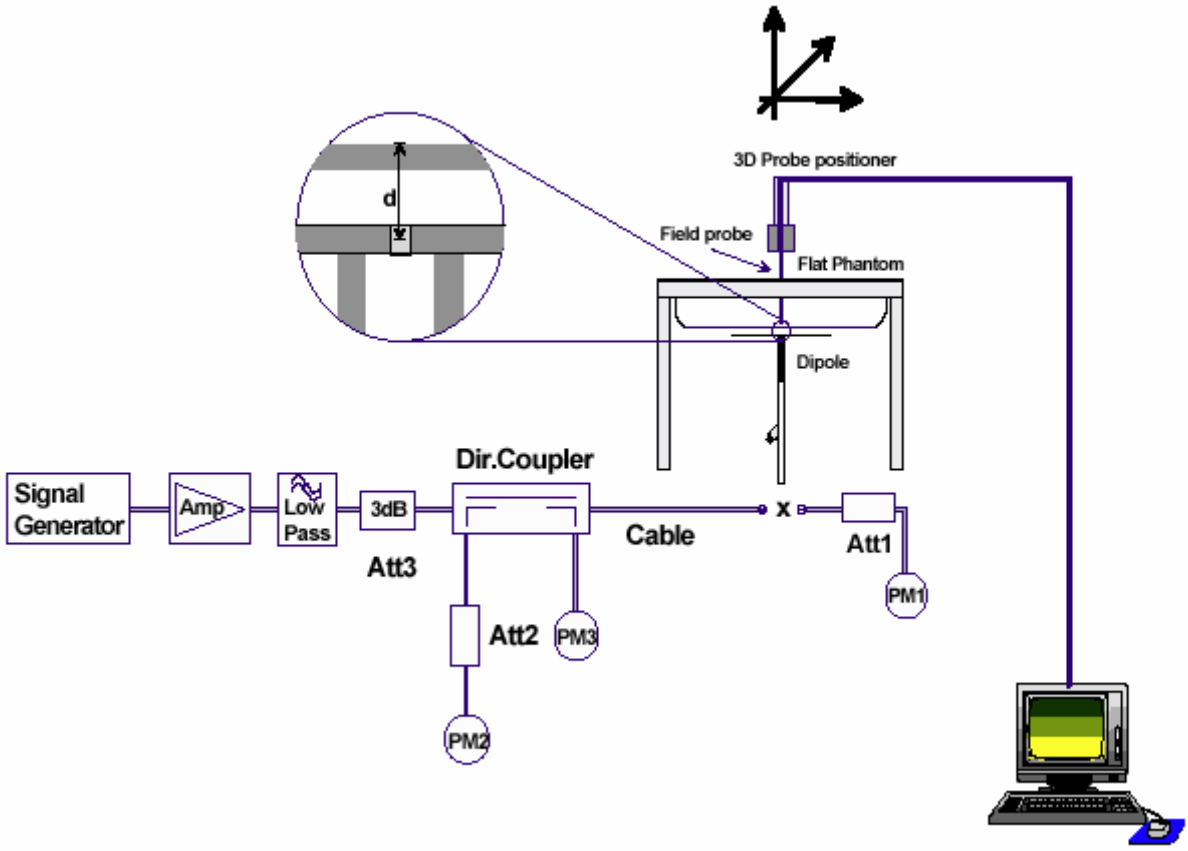


Figure 5. System Check Set-up

Justification for Extended SAR Dipole Calibrations

Usage of SAR dipoles calibrated less than 3 years ago but more than 1 year ago were confirmed in maintaining return loss (< - 20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB 865664 D01:

Dipole D1900V2 SN: 5d060				
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
8/31/2011	-21.3	/	47.3	/
8/30/2012	-20.9	1.9%	45.9	1.4Ω
8/29/2013	-20.4	4.4%	44.8	2.5Ω

Dipole D2450V2 SN: 786				
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
8/29/2011	-29.0	/	50.4	/
8/28/2012	-29.9	3.1%	52.1	1.7Ω
8/27/2013	-28.2	2.8%	52.7	2.3Ω

Dipole D5200V2 SN: 1040				
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
6/20/2011	-25.2	/	49.6	/
6/19/2012	-26.0	3.1%	51.2	1.6Ω
6/18/2013	-26.3	4.4%	51.8	2.2Ω

Dipole D5800V2 SN: 1040				
Body Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
6/20/2011	-24.0	/	56.6	/
6/19/2012	-24.7	2.8%	58.3	1.7Ω
6/18/2013	-24.6	2.5%	58.8	2.2Ω

5.2. System Check Results

Table 5: System Check in Body Tissue Simulating Liquid

Frequency	Test Date	Dielectric Parameters		Temp	100mW/250mW Measured SAR_{1g}	1W Normalized SAR_{1g}	1W Target SAR_{1g}	Limit (±10% Deviation)
		ε_r	σ(s/m)	(℃)	(W/kg)			
835MHz	2014-3-28	55.9	0.98	21.5	2.52(250mW)	10.08	9.46	6.55
2450MHz	2014-3-30	52.1	1.99	21.5	12.50(250mW)	50.00	51.70	-3.29
5200MHz	2014-3-31	48.7	5.18	21.5	6.90(100mW)	69.00	73.10	-5.61
5800MHz	2014-3-30	47.6	6.09	21.5	7.10(100mW)	71.00	73.80	-3.79

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

6. Operational Conditions during Test

6.1. General Description of Test Procedures

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

6.2. Test Configuration

6.2.1. UMTS Test Configuration

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

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

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

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

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

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

SAR for body exposure configurations is measured according to the “Body SAR Measurements” procedures of 3G device. In addition, body SAR is also measured for HSDPA when the maximum average output of each RF channel with HSDPA active is at least 1/4 dB higher than that measured without HSDPA using 12.2kbps RMC or the maximum SAR 12.2kbps RMC is above 75% of the SAR limit. Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a

12.2kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA.

6.2.2. HSDPA Test Configuration

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

Table 7: Subtests for UMTS Release 5 HSDPA

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

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

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

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

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

Table 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

6.2.3. HSUPA Test Configuration

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

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

Table 9: Sub-Test 5 Setup for Release 6 HSUPA

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

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

Table 10: 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)

6.2.4. WIFI Test Configuration

For WLAN SAR testing, WLAN engineering testing software installed on the DUT can provide continuous transmitting RF signal. The Tx power is set to -1 for 802.11 a/b/g/n(2.4G)/(5G) mode by software, This RF signal utilized in SAR measurement has almost 100% duty cycle and its crest factor is 1.

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

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

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

For the 802.11a/n SAR tests, a communication link is set up with the test mode software for WIFI mode test. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode.

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

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

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

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

6.3. Measurement Variability

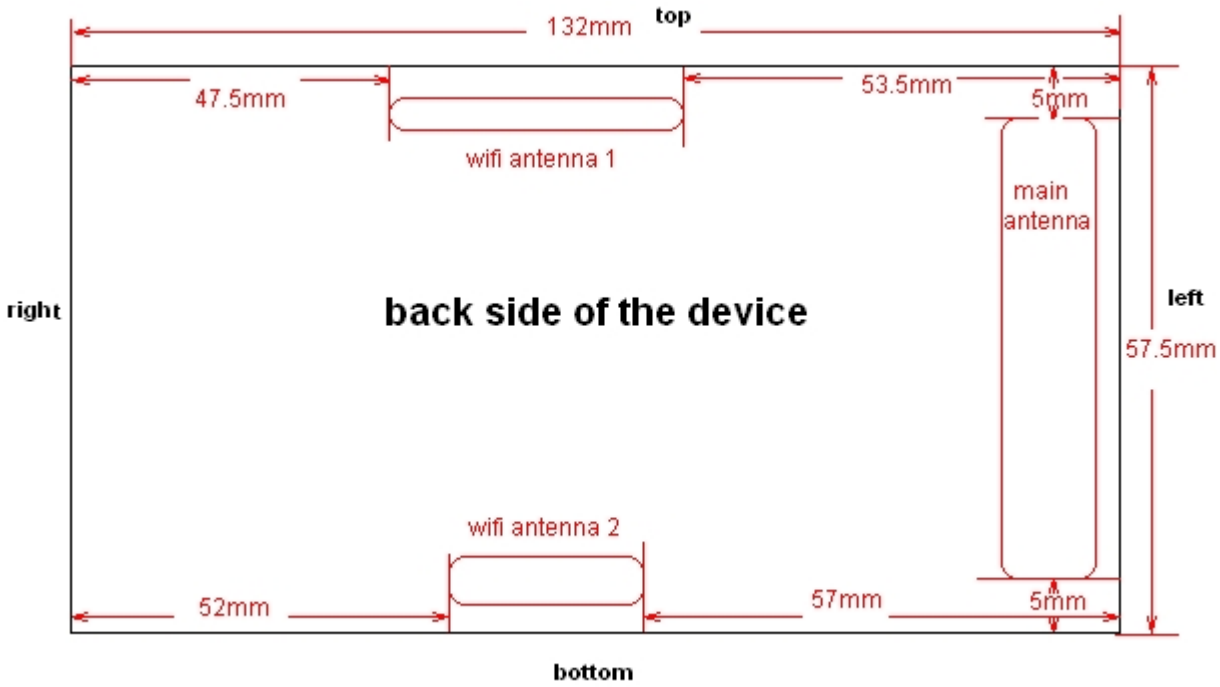
Per FCC KDB Publication 865664 D01, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

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

6.4. Test Positions of Portable Devices

Based upon KDB941225 D06 with a form factor 13.2 cm x 5.75 cm > 9 cm x 5 cm, a test separation distance of 10 mm is required for all sides (edges) and surfaces with a transmitting antenna located at ≤ 25 mm from that surface or edge.
When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

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



The EUT is tested at the following 6 test positions:

- Test Position 1: The back side of the EUT towards the bottom of the flat phantom. The distance between the back side of the EUT and the bottom of the flat phantom is 10mm. (ANNEX I Picture 7)

- Test Position 2: The front side of the EUT towards the bottom of the flat phantom. The distance between the front side of the EUT and the bottom of the flat phantom is 10mm. (ANNEX I Picture 8)

- Test Position 3: The left edge of the EUT towards the bottom of the flat phantom. The distance between the left edge of the EUT and the bottom of the flat phantom is 10mm. (ANNEX I Picture 9）

  $SAR_{WIFI(antenna\ 1)}$ is not required for this position.
  $SAR_{WIFI(antenna\ 2)}$ is not required for this position.

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

SAR_{UMTS} is not required for this position.
$SAR_{WIFI(antenna\ 1)}$ is not required for this position.
$SAR_{WIFI(antenna\ 2)}$ is not required for this position.

- Test Position 5: The top edge of the EUT towards the bottom of the flat phantom. The distance between the top edge of the EUT and the bottom of the flat phantom is 10mm. (ANNEX I Picture 11）
  $SAR_{WIFI(antenna\ 2)}$ is not required for this position

- Test Position 6: The bottom edge of the EUT towards the bottom of the flat phantom. The distance between the top edge of the EUT and the bottom of the flat phantom is 10mm. (ANNEX I Picture 12）
  $SAR_{WIFI(antenna\ 1)}$ is not required for this position.

7. Test Results

7.1. Conducted Power Results

Table 11: Conducted Power Measurement Results

UMTS Band V		Conducted Power (dBm)		
		Channel 4132	Channel 4183	Channel 4233
RMC	12.2kbps RMC	23.04	22.94	23.01
	64kbps RMC	23	22.91	23.11
	144kbps RMC	23.01	22.74	22.74
	384kbps RMC	22.91	22.71	23.01
HSDPA	Sub - Test 1	22.91	22.91	23.04
	Sub - Test 2	22.95	22.85	22.91
	Sub - Test 3	21.14	21.04	21.51
	Sub - Test 4	21.95	21.97	21.64
HSUPA	Sub - Test 1	21.64	21.74	21.91
	Sub - Test 2	20.57	20.6	21.64
	Sub - Test 3	20.6	20.52	20.54
	Sub - Test 4	20.58	20.54	20.57
	Sub - Test 5	21.81	21.64	21.91

WiFi 2.4G

Antenna 1

Mode	Channel	Data rate (Mbps)	AV Power (dBm)
11b	1	1	13.9
		2	14.3
		5.5	14.3
		11	14.3
	6	1	14.1
		2	14
		5.5	14.2
		11	14.2
	11	1	13.8
		2	13.9
		5.5	14.1
		11	14.1
11g	1	6	8.4
		9	8
		12	8
		18	8.1
		24	8.2
		36	8.2
		48	8.1
		54	8.3
	6	6	11.1
		9	11
		12	11.2
		18	11
		24	11.1
		36	11.2
		48	11
		54	11.1
	11	6	8.2
		9	8.3
		12	8.1
		18	8
		24	8.1

		36	8
		48	8.2
		54	8.1
11n HT20（2.4GHz）	1	MCS0	8.4
		MCS1	8
		MCS2	8
		MCS3	8.1
		MCS4	8.2
		MCS5	8.2
		MCS6	8.1
		MCS7	8.3
		MCS8	4.6
		MCS9	4.8
		MCS10	4.6
		MCS11	4.8
		MCS12	4.7
		MCS13	4.9
		MCS14	4.9
		MCS15	4.8
	6	MCS0	11.6
		MCS1	11.4
		MCS2	11.2
		MCS3	11.5
		MCS4	11.3
		MCS5	11.4
		MCS6	11
		MCS7	11
		MCS8	8.5
		MCS9	8.3
		MCS10	8.6
		MCS11	8.4
		MCS12	8.2
		MCS13	8.5
		MCS14	8.3
		MCS15	8.4
	11	MCS0	8.1
		MCS1	8.2
		MCS2	8

		MCS3	8.1
		MCS4	8.3
		MCS5	8.3
		MCS6	8.3
		MCS7	8.4
		MCS8	4.6
		MCS9	4.8
		MCS10	4.7
		MCS11	4.9
		MCS12	4.8
		MCS13	4.9
		MCS14	4.8
		MCS15	4.9
11n HT40 （2.4GHz）	3	MCS0	8.1
		MCS1	8.2
		MCS2	8
		MCS3	8.1
		MCS4	8.3
		MCS5	8.3
		MCS6	8.3
		MCS7	8.4
		MCS8	4.8
		MCS9	4.7
		MCS10	4.9
		MCS11	4.8
		MCS12	4.6
		MCS13	4.8
		MCS14	4.6
		MCS15	4.8
	6	MCS0	11.3
		MCS1	11.4
		MCS2	11
		MCS3	11
		MCS4	11.6
		MCS5	11.4
		MCS6	11.2
		MCS7	11.5
		MCS8	8.4

		MCS9	8.2
		MCS10	8.5
		MCS11	8.3
		MCS12	8.6
		MCS13	8.4
		MCS14	8.5
		MCS15	8.3
	9	MCS0	8.3
		MCS1	8.3
		MCS2	8.3
		MCS3	8.4
		MCS4	8.1
		MCS5	8.2
		MCS6	8
		MCS7	8.1
		MCS8	4.9
		MCS9	4.8
		MCS10	4.9
		MCS11	4.8
		MCS12	4.7
		MCS13	4.9
		MCS14	4.6
		MCS15	4.8

Antenna 2

Mode	Channel	Data rate (Mbps)	AV Power (dBm)
11b	1	1	13.8
		2	13.8
		5.5	14.1
		11	13.9
	6	1	14
		2	14.1
		5.5	14.1
		11	14
	11	1	13.7
		2	13.8
		5.5	14
		11	14
11g	1	6	8.2
		9	8
		12	8.2
		18	8
		24	8
		36	8.1
		48	8.2
		54	8.1
	6	6	10.9
		9	11
		12	10.8
		18	11
		24	10.9
		36	11
		48	11.2
		54	11.1
	11	6	8
		9	8.1
		12	8.2
		18	8.3
		24	8
		36	8.2

		48	8.1
		54	8
11n HT20（2.4GHz）	1	MCS0	8.2
		MCS1	8.1
		MCS2	8
		MCS3	8.1
		MCS4	8.2
		MCS5	8
		MCS6	8.1
		MCS7	8.1
		MCS8	4.6
		MCS9	4.6
		MCS10	4.8
		MCS11	4.8
		MCS12	5
		MCS13	4.9
		MCS14	4.8
		MCS15	5
	6	MCS0	10.7
		MCS1	10.5
		MCS2	10.6
		MCS3	10.7
		MCS4	10.4
		MCS5	10.5
		MCS6	10.6
		MCS7	10.8
		MCS8	7.8
		MCS9	8
		MCS10	7.8
		MCS11	7.8
		MCS12	7.9
		MCS13	8
		MCS14	7.9
		MCS15	8
	11	MCS0	8.3
		MCS1	8
		MCS2	8.1
		MCS3	8.2

		MCS4	8
		MCS5	8.1
		MCS6	8.3
		MCS7	8.3
		MCS8	4.6
		MCS9	4.6
		MCS10	4.8
		MCS11	5
		MCS12	4.7
		MCS13	5
		MCS14	4.9
		MCS15	5.1
11n HT40 （2.4GHz）	3	MCS0	8.3
		MCS1	8.3
		MCS2	8.3
		MCS3	8.4
		MCS4	8.1
		MCS5	8.2
		MCS6	8
		MCS7	8.1
		MCS8	4.8
		MCS9	5
		MCS10	4.9
		MCS11	4.6
		MCS12	4.8
		MCS13	4.8
		MCS14	4.6
		MCS15	4.6
	6	MCS0	10.4
		MCS1	10.5
		MCS2	10.6
		MCS3	10.8
		MCS4	10.7
		MCS5	10.5
		MCS6	10.6
		MCS7	10.7
		MCS8	7.8
		MCS9	7.9

		MCS10	8
		MCS11	8
		MCS12	7.8
		MCS13	7.8
		MCS14	7.8
		MCS15	8
	9	MCS0	8
		MCS1	8.1
		MCS2	8.3
		MCS3	8.3
		MCS4	8.2
		MCS5	8
		MCS6	8.3
		MCS7	8.2
		MCS8	5
		MCS9	4.7
		MCS10	5
		MCS11	4.6
		MCS12	4.8
		MCS13	5
		MCS14	4.6
		MCS15	4.6

MIMO

Mode	Channel	Data rate (Mbps)	AV Power (dBm)
11n HT20 （2.4GHz）	1	MCS8	7.6
		MCS9	7.7
		MCS10	7.7
		MCS11	7.8
		MCS12	7.8
		MCS13	7.9
		MCS14	7.8
		MCS15	7.9
	6	MCS8	11.2
		MCS9	11.1
		MCS10	11.2
		MCS11	11.1
		MCS12	11
		MCS13	11.2
		MCS14	11.1
		MCS15	11.2
	11	MCS8	7.6
		MCS9	7.7
		MCS10	7.7
		MCS11	7.9
		MCS12	7.7
		MCS13	8
		MCS14	7.8
		MCS15	8
11n HT40 （2.4GHz）	3	MCS8	7.8
		MCS9	7.8
		MCS10	7.9
		MCS11	7.7
		MCS12	7.7
		MCS13	7.8
		MCS14	7.6
		MCS15	7.7

	6	MCS8	11.1
		MCS9	11
		MCS10	11.2
		MCS11	11.1
		MCS12	11.2
		MCS13	11.1
		MCS14	11.2
		MCS15	11.1
	9	MCS8	7.9
		MCS9	7.7
		MCS10	8
		MCS11	7.7
		MCS12	7.7
		MCS13	7.9
		MCS14	7.6
		MCS15	7.7

WiFi 5G

Antenna 1

Mode	Channel	Frequency (MHz)	Average Power (dBm)							
			Data Rate (bps)							
			6M	9M	12M	18M	24M	36M	48M	54M
802.11a	CH 36	5180	10.1	9.7	9.9	9.8	9.7	9.5	9.8	9.5
	CH 40	5200	10	9.8	9.8	9.5	9.5	9.7	9.8	9.7
	CH 44	5220	10.2	9.7	9.9	10	9.9	9.6	10	10.1
	CH 48	5240	10.2	9.7	9.9	9.8	9.7	9.5	9.8	9.5
	CH 52	5260	10.2	9.8	9.8	9.5	9.5	9.7	9.8	9.7
	CH 64	5320	10.1	9.7	9.9	10	9.9	9.6	10	10.1
	CH 100	5500	10	9.5	9.8	9.5	9.5	9.7	9.9	9.8
	CH 116	5580	10.3	9.7	9.8	9.7	10	9.8	9.8	9.5
	CH 140	5700	10.4	9.6	10	10.1	9.8	9.7	9.9	10
Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**							
			Data Rate (bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n-HT20 (5GHz)	CH 36	5180	9.3	9.1	8.9	9	8.8	8.9	8.5	9
	CH 40	5200	8.4	8.8	9	9.3	8.9	9	8.8	8.6
	CH 44	5220	9	8.5	8.7	8.8	8.5	8.8	8.5	8.6
	CH 48	5240	9.3	9.1	8.9	9	8.8	8.9	8.5	9
	CH 52	5260	8.4	8.8	9	9.3	8.9	9	8.8	8.6
	CH 64	5320	9	8.5	8.7	8.8	8.5	8.8	8.5	8.6
	CH 100	5500	9.4	9.5	9.8	9.5	9.5	9.7	10.1	9.8
	CH 116	5580	9.8	9.7	9.8	9.7	10	9.8	9.7	10.2
	CH 140	5700	9.7	9.6	9.7	9.8	9.7	10	9.8	9.7
Mode	**Channel**	**Frequency**	**Average Power (dBm)**							
		(MHz)	**Data Rate (bps)**							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n-HT40 (5GHz)	CH 38	5190	9.3	9.1	9.3	9.1	9.3	9.1	8.9	9
	CH 46	5230	8.4	8.8	8.4	8.8	8.4	8.8	9	9.3
	CH 54	5270	9	8.5	9	8.5	9	8.5	8.7	8.8
	CH 62	5310	8.8	8.5	8.6	9.1	8.9	9	8.5	8.7
	CH 102	5510	8.8	8.9	8.5	9	9.3	9.1	8.9	9
	CH 110	5550	8.9	9	8.8	8.6	8.4	8.8	9	9.3
	CH 134	5670	8.5	8.8	8.5	8.6	9	8.5	8.7	8.8

Antenna 2

Mode	Channel	Frequency (MHz)	Average Power (dBm)							
			Data Rate (bps)							
			6M	9M	12M	18M	24M	36M	48M	54M
802.11a	CH 36	5180	10.3	9.5	9.5	9.7	9.5	9.7	9.9	9.8
	CH 40	5200	10.2	9.7	10	9.8	10	9.8	9.8	9.5
	CH 44	5220	10.2	9.8	9.7	10	9.8	9.7	9.9	10
	CH 48	5240	10.1	9.5	9.5	9.7	9.5	9.7	9.9	9.8
	CH 52	5260	10.4	9.7	10	9.8	10	9.8	9.8	9.5
	CH 64	5320	10	9.8	9.7	10	9.8	9.7	9.9	10
	CH 100	5500	10.20	9.70	9.40	9.9	9.8	9.50	9.9	9.8
	CH 116	5580	10.10	9.70	9.60	9.8	9.5	9.40	9.8	9.5
	CH 140	5700	10.30	9.50	9.70	9.9	10	9.70	9.9	10
Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**							
			Data Rate (bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n-HT20 (5GHz)	CH 36	5180	9.8	9.50	9.9	9.8	9.50	9.70	9.40	9.9
	CH 40	5200	9.5	9.40	9.8	9.5	9.60	9.70	9.60	9.8
	CH 44	5220	10	9.70	9.9	10	9.80	9.50	9.70	9.9
	CH 48	5240	9.8	9.50	9.9	9.8	9.50	9.70	9.40	9.9
	CH 52	5260	9.5	9.40	9.8	9.5	9.60	9.70	9.60	9.8
	CH 64	5320	10	9.70	9.9	10	9.80	9.50	9.70	9.9
	CH 100	5500	9.5	9.7	9.9	9.8	9.8	9.5	9.5	9.7
	CH 116	5580	10	9.8	9.8	9.5	9.8	9.7	10	9.8
	CH 140	5700	9.8	9.7	9.9	10	9.7	9.8	9.7	10
Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**							
			Data Rate (bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n-HT40 (5GHz)	CH 38	5190	8.9	8.5	9	8.5	9.3	9.1	8.9	9
	CH 46	5230	9	8.8	8.6	8.8	8.4	8.8	9	9.3
	CH 54	5270	8.8	8.5	8.6	8.5	9	8.5	8.7	8.8
	CH 62	5310	8.8	8.5	8.6	8.5	9	8.5	8.7	8.8
	CH 102	5510	9.3	9.1	8.9	9	8.9	8.5	9	8.5
	CH 110	5550	8.4	8.8	9	9.3	9	8.8	8.6	8.8
	CH 134	5670	9	8.5	8.7	8.8	8.8	8.5	8.6	8.5

MIMO

Mode	Channel	Frequency (MHz)	Average Power (dBm)							
			Data Rate (bps)							
			MCS8	MCS9	MCS10	MCS11	MC12	MCS513	MCS14	MCS15
802.11n-HT20 (5GHz) Ant1	CH 36	5180	7	7.2	6.7	6.7	7.1	7.2	7.1	7
	CH 40	5200	6.7	6.8	6.9	6.7	7.1	6.8	7.1	6.7
	CH 44	5220	7.1	6.8	6.6	7.2	6.7	6.8	6.7	7.1
	CH 48	5240	7	7.2	6.7	6.7	7.1	7.2	7.1	7
	CH 52	5270	6.7	6.8	6.9	6.7	7.1	6.8	7.1	6.7
	CH 64	5320	7.1	6.8	6.6	7.2	6.7	6.8	6.7	7.1
	CH 100	5500	6.7	7	7.2	7	7.2	7.1	6.8	6.7
	CH 116	5580	6.9	7.1	6.8	6.7	6.8	7.1	6.8	6.7
	CH 140	5700	6.6	7	6.8	7.1	6.8	6.7	7	7.2
802.11n-HT20 (5GHz) Ant2	CH 36	5180	6.7	6.8	7.2	7.2	7	6.7	7	6.7
	CH 40	5200	6.7	6.8	6.8	6.8	7.1	6.9	7.1	6.7
	CH 44	5220	7.2	7	6.8	6.8	7	6.6	7	7.2
	CH 48	5240	6.7	6.8	7.2	7.2	7	6.7	7	6.7
	CH 52	5260	6.7	6.8	6.8	6.8	7.1	6.9	7.1	6.7
	CH 64	5320	7.2	7	6.8	6.8	7	6.6	7	7.2
	CH 100	5500	7.2	7	6.8	6.7	6.7	7	7	7.2
	CH 116	5580	6.8	6.7	6.8	6.7	6.9	7.1	6.7	6.8
	CH 140	5700	6.8	7.1	7	7.2	6.6	7	7.1	6.8
MIMO	CH 36	5180	9.80	10.00	9.90	9.90	10.00	9.90	10.00	9.80
	CH 40	5200	9.70	9.80	9.80	9.70	10.10	9.80	10.10	9.70
	CH 44	5220	10.10	9.90	9.70	10.00	9.80	9.70	9.80	10.10
	CH 48	5240	9.80	10.00	9.90	9.90	10.00	9.90	10.00	9.80
	CH 52	5260	9.70	9.80	9.80	9.70	10.10	9.80	10.10	9.70
	CH 64	5320	10.10	9.90	9.70	10.00	9.80	9.70	9.80	10.10
	CH 100	5500	9.90	10.00	10.00	9.80	9.90	10.00	9.90	9.90
	CH 116	5580	9.80	9.90	9.80	9.70	9.80	10.10	9.70	9.70
	CH 140	5700	9.70	10.00	9.90	10.10	9.70	9.80	10.00	10.00
Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**							
			Data Rate (bps)							
			MCS8	MCS9	MCS10	MCS11	MC12	MCS513	MCS14	MCS15
802.11n-HT40 (5GHz) Ant1	CH 38	5190	6.2	6.1	5.7	6	5.7	5.6	6.2	6.1
	CH 46	5230	6.2	6.2	6	6.2	6.3	6.2	5.8	6.1
	CH 54	5270	5.9	5.8	5.9	5.7	5.9	5.8	6	6.2
	CH 62	5310	5.9	5.8	6.2	5.9	6.2	6.3	5.9	5.8
	CH 102	5510	6	5.7	5.6	5.8	6.2	6.1	6	6.2
	CH 110	5550	5.7	5.9	5.8	6.1	6	6.2	6.3	6.2
	CH 134	5670	5.9	6.2	6.3	5.8	5.9	5.8	5.8	5.9
802.11n-HT40 (5GHz) Ant2	CH 38	5190	5.7	5.8	6.1	6.2	6.1	6	5.6	5.8
	CH 46	5230	5.9	6.1	5.8	5.8	5.8	5.9	5.8	5.9
	CH 54	5270	6.2	5.8	6.2	6	6.2	6.3	5.8	6.1

	CH 62	5310	6.2	6.1	5.8	5.9	5.8	5.8	6.3	5.8
	CH 102	5510	6.2	6.1	6	6.2	5.6	5.8	6.2	5.7
	CH 110	5550	6	6.2	6.3	6.2	5.8	6.1	6	5.9
	CH 134	5670	5.9	5.8	5.8	5.9	6.3	5.8	5.9	6.2
MIMO	CH 38	5190	8.90	8.80	8.80	9.10	8.90	8.80	8.90	8.90
	CH 46	5230	9.00	9.00	8.90	8.90	9.10	8.90	9.10	9.00
	CH 54	5270	9.00	9.00	9.00	8.90	9.00	9.00	8.90	9.10
	CH 62	5310	9.00	9.00	9.00	8.90	9.00	9.00	9.10	8.80
	CH 102	5510	9.10	8.90	8.80	9.00	8.90	8.90	9.10	8.90
	CH 110	5550	8.90	9.00	9.00	9.10	8.90	9.10	9.10	9.00
	CH 134	5670	8.90	9.00	9.00	8.80	9.10	8.80	8.80	9.00

7.2. SAR Test Results

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

Table 12: SAR Values [UMTS Band V (WCDMA/HSDPA/HSUPA)]

Test Position	Channel/ Frequency (MHz)	Service	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit SAR_{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test Position 1	4183/836.6	RMC 12.2K	1:1	24.5	22.94	0.050	0.548	1.43	0.785	Figure 10
Test Position 2	4233/846.6	RMC 12.2K	1:1	24.5	23.01	-0.022	0.855	1.41	1.205	Figure 11
	4183/836.6	RMC 12.2K	1:1	24.5	22.94	-0.020	0.649	1.43	0.929	Figure 12
	4132/826.4	RMC 12.2K	1:1	24.5	23.04	-0.090	0.588	1.40	0.823	Figure 13
Test Position 3	4183/836.6	RMC 12.2K	1:1	24.5	22.94	0.050	0.186	1.43	0.266	Figure 14
Test Position 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 5	4183/836.6	RMC 12.2K	1:1	24.5	22.94	-0.120	0.254	1.43	0.364	Figure 15
Test Position 6	4183/836.6	RMC 12.2K	1:1	24.5	22.94	-0.010	0.439	1.43	0.629	Figure 16
Worst Case Position of Body for 1st Repeated SAR (Distance 10mm)										
Test Position 2	4233/846.6	RMC 12.2K	1:1	24.5	23.01	0.010	0.879	1.41	1.239	Figure 17

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

2.Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3. WCDMA mode was tested under RMC 12.2kbps without HSPA (HSDPA/HSUPA) inactive per KDB Publication 941225 D01. HSPA (HSDPA/HSUPA) SAR for body was not required since the average output power of the HSPA (HSDPA/HSUPA) subtests was not more than 0.25 dB higher than the RMC level or the maximum SAR for 12.2kbps RMC was less than 75% SAR limit.

4. WWAN antenna is located at left edge; antenna-to- right edge distance is more than 2.5 cm (see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

Table 13: SAR Measurement Variability Results [UMTS Band V (WCDMA/HSDPA/HSUPA)]

Test Position	Service	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Test Position 2	RMC12.2k	4233/846.6	0.855	0.879	1.03	NA	NA

Note: 1) When the original highest measured SAR is ⩾ 0.80 W/kg, the measurement was repeated once.

2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ⩾ 1.45 W/kg (~ 10% from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was ⩾ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

7.2.2. 802.11b

Table 14: SAR Values

Test Position	Channel/ Frequency (MHz)	Service	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit SAR_{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test Position of Body (Distance 10mm, Antenna 1)										
Test Position 1	6/2437	DSSS	1:1	15	14	-0.120	0.072	1.26	0.091	Figure 18
Test Position 2	6/2437	DSSS	1:1	15	14	0.031	0.078	1.26	0.098	Figure 19
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 5	6/2437	DSSS	1:1	15	14	0.190	0.098	1.26	0.124	Figure 20
Test Position 6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position of Body (Distance 10mm, Antenna 2)										
Test Position 1	6/2437	DSSS	1:1	15	14.1	-0.037	0.107	1.23	0.132	Figure 21
Test Position 2	6/2437	DSSS	1:1	15	14.1	0.067	0.113	1.23	0.139	Figure 22
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 6	6/2437	DSSS	1:1	15	14.1	0.024	0.170	1.23	0.209	Figure 23

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

2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).
3. SAR is not required for 802.11g/n(SISO) channels when the maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11b channels.
4. SAR is not required for 802.11n(MIMO) channels when the total maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11b channels.
5. WiFi antenna1 is located at top edge; antenna-to- bottom/left/right edge distance is more than 2.5 cm (see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
6. WiFi antenna 2 is located at bottom edge; antenna-to- top/left/right edge distance is more than 2.5 cm (see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
7. Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg.

7.2.3. 802.11a

Table 15: SAR Values [802.11a (CH 36)]

Test Position	Channel/ Frequency (MHz)	Service	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit SAR_{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test Position of Body(Distance 10mm, Antenna 1)										
Test Position 1	36/5180	DSSS	1:1	12	10.3	-0.140	0.071	1.48	0.106	Figure 24
Test Position 2	36/5180	DSSS	1:1	12	10.3	-0.028	0.043	1.48	0.064	Figure 25
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 5	36/5180	DSSS	1:1	12	10.3	0.145	0.169	1.48	0.250	Figure 26
Test Position 6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position of Body(Distance 10mm, Antenna 2)										
Test Position 1	36/5180	DSSS	1:1	12	10.1	0.192	0.056	1.55	0.086	Figure 27
Test Position 2	36/5180	DSSS	1:1	12	10.1	0.091	0.067	1.55	0.105	Figure 28
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 6	36/5180	DSSS	1:1	12	10.1	0.142	0.094	1.55	0.145	Figure 29

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

2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).
3. Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg.
4. SAR is not required for 802.11n(MIMO) channels when the total maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11a channels.
5. WiFi antenna1 is located at top edge; antenna-to- bottom/left/right edge distance is more than 2.5 cm (see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
6. WiFi antenna 2 is located at bottom edge; antenna-to- top/left/right edge distance is more than 2.5 cm (see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

Table 16: SAR Values [802.11a/n (CH 52)]

Test Position	Channel/ Frequency (MHz)	Service	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit SAR_{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test Position of Body(Distance 10mm, Antenna 1)										
Test Position 1	52/5260	DSSS	1:1	12	10.4	0.017	0.086	1.45	0.124	Figure 30
Test Position 2	52/5260	DSSS	1:1	12	10.4	0.082	0.030	1.45	0.043	Figure 31
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 5	52/5260	DSSS	1:1	12	10.4	0.063	0.196	1.45	0.283	Figure 32
Test Position 6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position of Body(Distance 10mm, Antenna 2)										
Test Position 1	52/5260	DSSS	1:1	12	10.2	-0.034	0.051	1.51	0.077	Figure 33
Test Position 2	52/5260	DSSS	1:1	12	10.2	-0.021	0.063	1.51	0.095	Figure 34
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 6	52/5260	DSSS	1:1	12	10.2	0.055	0.098	1.51	0.148	Figure 35

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

2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).
3. Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg.
4. SAR is not required for 802.11n(MIMO) channels when the total maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11a channels.
5. WiFi antenna1 is located at top edge; antenna-to- bottom/left/right edge distance is more than 2.5 cm (see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
6. WiFi antenna 2 is located at bottom edge; antenna-to- top/left/right edge distance is more than 2.5 cm (see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

Table 17: SAR Values [802.11a/n (CH 140)]

Test Position	Channel/ Frequency (MHz)	Service	Duty Cycle	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Drift ± 0.21dB	Limit SAR_{1g} 1.6 W/kg			
						Drift (dB)	Measured SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)	Graph Results
Test Position of Body(Distance 10mm, Antenna 1)										
Test Position 1	140/5700	DSSS	1:1	12	10.3	-0.060	0.158	1.48	0.234	Figure 36
Test Position 2	140/5700	DSSS	1:1	12	10.3	0.054	0.058	1.48	0.086	Figure 37
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 5	140/5700	DSSS	1:1	12	10.3	0.024	0.262	1.48	0.388	Figure 38
Test Position 6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position of Body(Distance 10mm, Antenna 2)										
Test Position 1	140/5700	DSSS	1:1	12	10.4	0.083	0.100	1.45	0.145	Figure 39
Test Position 2	140/5700	DSSS	1:1	12	10.4	0.060	0.072	1.45	0.105	Figure 40
Test Position 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test Position 6	140/5700	DSSS	1:1	12	10.4	0.041	0.183	1.45	0.265	Figure 41

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

2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).
3. Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg.
4. SAR is not required for 802.11n(MIMO) channels when the total maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11a channels.
5. WiFi antenna1 is located at top edge; antenna-to- bottom/left/right edge distance is more than 2.5 cm (see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
6. WiFi antenna 2 is located at bottom edge; antenna-to- top/left/right edge distance is more than 2.5 cm (see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

7.3. Simultaneous Transmission Conditions

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

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

Estimated SAR

(1) for test separation distances ≤ 50 mm

When standalone SAR is not required to be measured per FCC KDB 447498 D01, the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter for test separation distances ≤ 50 mm.

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

(2) for test separation distances >50 mm

0.4 W/kg for 1-g SAR

Per FCC KDB 447498 D01, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤1.6 W/kg. When the sum is greater than the SAR limit, SAR test exclusion is determined by the SAR to peak location separation ratio.

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

Simultaneous transimisionSAR for WIFI SISO

UMTS &WIFI antenna 1 (2.4G) Mode

Reported SAR_{1g}(W/kg) / Test Position	UMTS Band V	WIFI antenna 1 (2.4G)	MAX. Σ SAR_{1g}
Test Position 1	0.785	0.091	0.876
Test Position 2	1.239	0.098	1.337
Test Position 3	0.266	/	0.266
Test Position 4	/	/	/
Test Position 5	0.364	0.124	0.488
Test Position 6	0.629	/	0.629
Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value. 2. MAX. ΣSAR_{1g} = Reported $SAR_{Max.WIFI(2.4G)}$ + Reported $SAR_{Max.UMTS}$			

MAX. ΣSAR_{1g} = 1.337W/kg <1.6 W/kg, so the Simultaneous transimision SAR with volume scan are not required for WIFI antenna 1 (2.4G)and UMTS antenna.

UMTS &WIFI antenna 2 (2.4GHz) Mode

Reported SAR_{1g}(W/kg) / Test Position	UMTS Band V	WIFI antenna 2 (2.4GHz)	MAX. Σ SAR_{1g}
Test Position 1	0.785	0.132	0.917
Test Position 2	1.239	0.139	1.378
Test Position 3	0.266	/	0.266
Test Position 4	/	/	/
Test Position 5	0.364	/	0.364
Test Position 6	0.629	0.209	0.838
Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value. 2. MAX. ΣSAR_{1g} = Reported $SAR_{Max.WIFI(2.4GHz)}$ + Reported $SAR_{Max.UMTS}$			
MAX. ΣSAR_{1g} = 1.378W/kg <1.6 W/kg, so the Simultaneous transimision SAR with volume scan are not required for WIFI antenna 2 (2.4GHz)and UMTS antenna			

UMTS &WIFI antenna 1 (5GHz) Mode

Reported SAR_{1g}(W/kg) / Test Position	UMTS Band V	WIFI antenna 1 (5GHz)	MAX. Σ SAR_{1g}
Test Position 1	0.785	0.234	1.019
Test Position 2	1.239	0.086	1.325
Test Position 3	0.266	/	0.266
Test Position 4	/	/	/
Test Position 5	0.364	0.388	0.752
Test Position 6	0.629	/	0.629
Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value. 2. MAX. ΣSAR_{1g} = Reported $SAR_{Max.WIFI(5GHz)}$ + Reported $SAR_{Max.UMTS}$.			
MAX. ΣSAR_{1g} = 1.325W/kg <1.6 W/kg, so the Simultaneous transimision SAR with volume scan are not required for WIFI antenna 1 (5GHz)and UMTS antenna.			

UMTS &WIFI antenna 2 (5GHz) Mode

Reported SAR_{1g}(W/kg) / Test Position	UMTS Band V	WIFI antenna 2 (5GHz)	MAX. Σ SAR_{1g}
Test Position 1	0.785	0.145	0.930
Test Position 2	1.239	0.105	1.344
Test Position 3	0.266	/	0.266
Test Position 4	/	/	/
Test Position 5	0.364	/	0.364
Test Position 6	0.629	0.265	0.894
Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value. 2. MAX. ΣSAR_{1g} = Reported $SAR_{Max.WIFI(5GHz)}$ + Reported $SAR_{Max.UMTS}$			
MAX. ΣSAR_{1g} = 1.344W/kg <1.6 W/kg, so the Simultaneous transimision SAR with volume scan are not required for WIFI antenna 2 (5GHz)and UMTS antenna.			

Simultaneous transimisionSAR with WIFI MIMO

Reported SAR_{1g}(W/kg) / Test Position	UMTS Band V	WIFI antenna 1 (2.4GHz)	WIFI antenna 2 (2.4GHz)	MAX. Σ SAR_{1g}
Test Position 1	0.785	<0.091	<0.132	<1.008
Test Position 2	1.239	<0.098	<0.139	<1.476
Test Position 3	0.266	/	/	<0.266
Test Position 4	/	/	/	/
Test Position 5	0.364	<0.124	/	<0.488
Test Position 6	0.629	/	<0.209	<0.838
Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value. 2. MAX. ΣSAR_{1g} = Reported $SAR_{Max.WIFI(2.4GHz)}$ + Reported $SAR_{Max.UMTS}$ 3. For 802.11n(MIMO) channels, because the total maximum average output power is less than measured on the corresponding 802.11b channels, the MIMO SAR value are covered by 802.11b.				
MAX. ΣSAR_{1g} = 1.476W/kg <1.6 W/kg, so the Simultaneous transimision SAR with volume scan are not required for WIFI (2.4 GHz MIMO) and UMTS antenna.				

Reported SAR_{1g}(W/kg) / Test Position	UMTS Band V	WIFI antenna 1 (5GHz)	WIFI antenna 2 (5GHz)	MAX. Σ SAR_{1g}
Test Position 1	0.785	<0.234	<0.145	<1.164
Test Position 2	1.239	<0.086	<0.105	<1.43
Test Position 3	0.266	/	/	<0.266
Test Position 4	/	/	/	/
Test Position 5	0.364	<0.388	/	<0.752
Test Position 6	0.629	/	<0.265	<0.894
Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value. 2. MAX. ΣSAR_{1g} = Reported $SAR_{Max.WIFI(2.4GHz)}$ + Reported $SAR_{Max.UMTS}$ 3. For 802.11n(MIMO) channels, because the total maximum average output power is less than measured on the corresponding 802.11b channels, the MIMO SAR value are covered by 802.11a.				
MAX. ΣSAR_{1g} = 1.43W/kg <1.6 W/kg, so the Simultaneous transimision SAR with volume scan are not required for WIFI (5GHz MIMO) and UMTS antenna.				

8. Measurement Uncertainty

The measured SAR were <1.5 W/kg for all frequency bands, therefore per KDB Publication 865664 D01v01r03, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2003 is not required in SAR reports.

9. Main Test Instruments

Table 18: List of Main Instruments

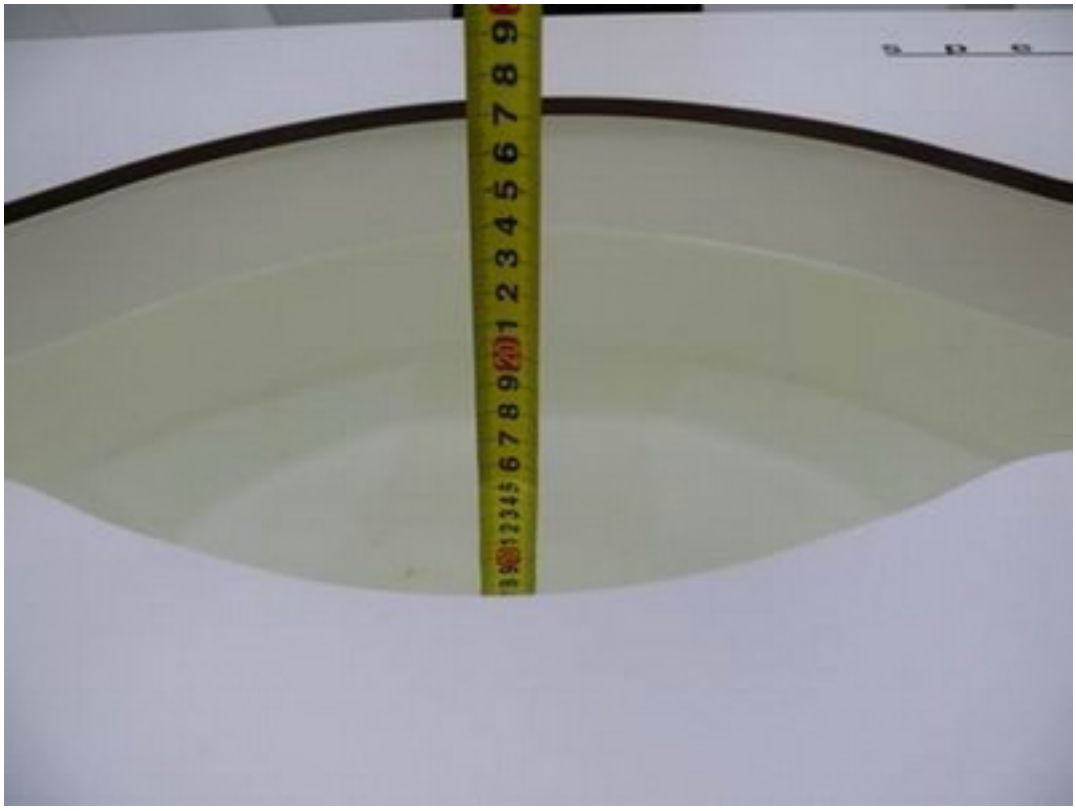
No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent 8753E	US37390326	September 10, 2013	One year
02	Dielectric Probe Kit	Agilent 85070E	US44020115	No Calibration Requested	
03	Power meter	Agilent E4417A	GB41291714	March 9, 2014	One year
04	Power sensor	Agilent N8481H	MY50350004	September 23, 2013	One year
05	Power sensor	E9327A	US40441622	January 1, 2014	One year
06	Signal Generator	HP 8341B	2730A00804	September 9, 2013	One year
07	Dual directional coupler	778D-012	50519	March 24, 2014	One year
08	Dual directional coupler	777D	50146	March 24, 2014	One year
09	BTS	E5515C	MY48360988	September 30, 2013	One year
10	E-field Probe	EX3DV4	3677	November 28, 2013	One year
11	DAE	DAE4	1317	January 16, 2014	One year
12	Validation Kit 835MHz	D835V2	4d020	August 26, 2011	Three years
13	Validation Kit 2450MHz	D2450V2	786	August 29, 2011	Three years
14	Validation Kit 5GHz	D5GHzV2	1040	June 19, 2012	Three years
15	Temperature Probe	JM222	AA1009129	March 13, 2014	One year
16	Hygrothermograph	WS-1	64591	September 26, 2013	One year

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

ANNEX A: Test Layout

Picture 1: Specific Absorption Rate Test Layout

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



Picture 3: Liquid depth in the flat Phantom (2450 MHz, 15.3cm depth)

Picture 4: Liquid depth in the flat Phantom (5200 MHz, 10.3cm depth)

Picture 5: Liquid depth in the flat Phantom (5800 MHz, 10.3cm depth)

ANNEX B: System Check Results

System Performance Check at 835 MHz

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

Date/Time: 3/28/2014 4:45:27 PM

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

Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 55.9; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.51, 9.51, 9.51); Calibrated: 11/28/2013

Electronics: DAE4 Sn1317; Calibrated: 1/16/2014

Phantom: ELI 4.0; Type: QDOVA001BA;

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

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

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

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

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

Peak SAR (extrapolated) = 3.63 W/kg

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

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

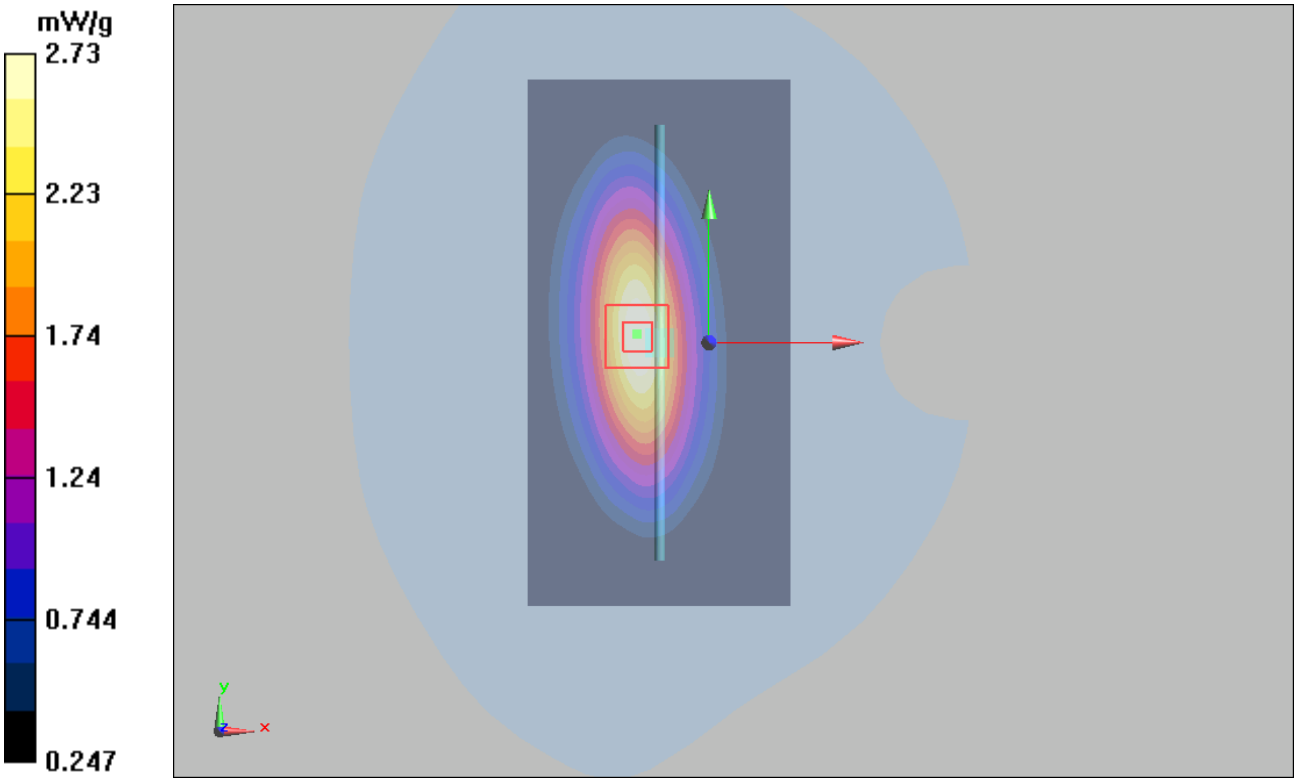


Figure 6 System Performance Check 835MHz 250mW

System Performance Check at 2450 MHz Body TSL

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

Date/Time: 3/30/2014 1:04:21 PM

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

Medium parameters used: f = 2450 MHz; σ = 1.99 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.61, 7.61, 7.61); Calibrated: 11/28/2013

Electronics: DAE4 Sn1317; Calibrated: 1/16/2014

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

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

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

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

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

Peak SAR (extrapolated) = 25.4 W/kg

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

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

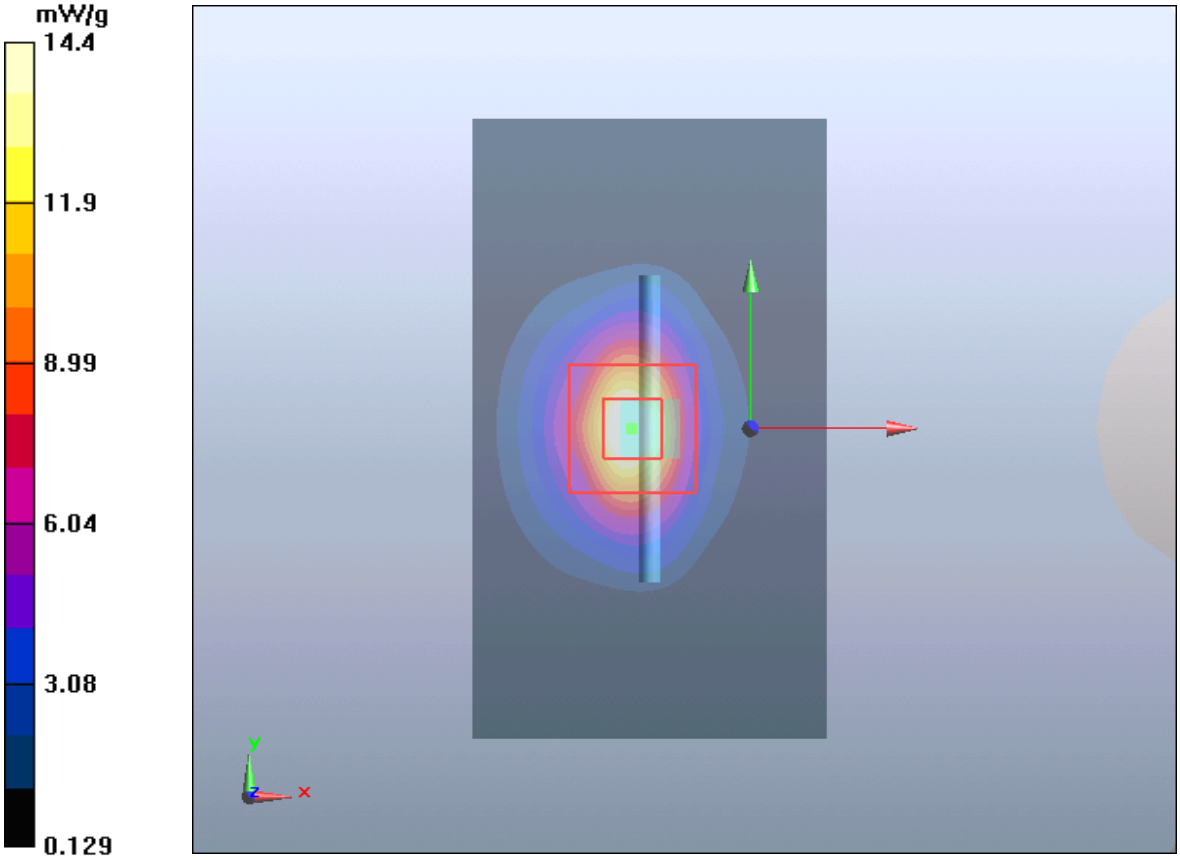


Figure 7 System Performance Check 2450MHz 250mW

System Performance Check at 5200 MHz Body TSL

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

Date/Time: 3/31/2014 9:52:23 AM

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

Medium parameters used: f = 5200 MHz; σ =5.18 mho/m; ε_r = 48.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013

Electronics: DAE4 Sn1317; Calibrated: 1/16/2014

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

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

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

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

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

Peak SAR (extrapolated) = 22.6 W/kg

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

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

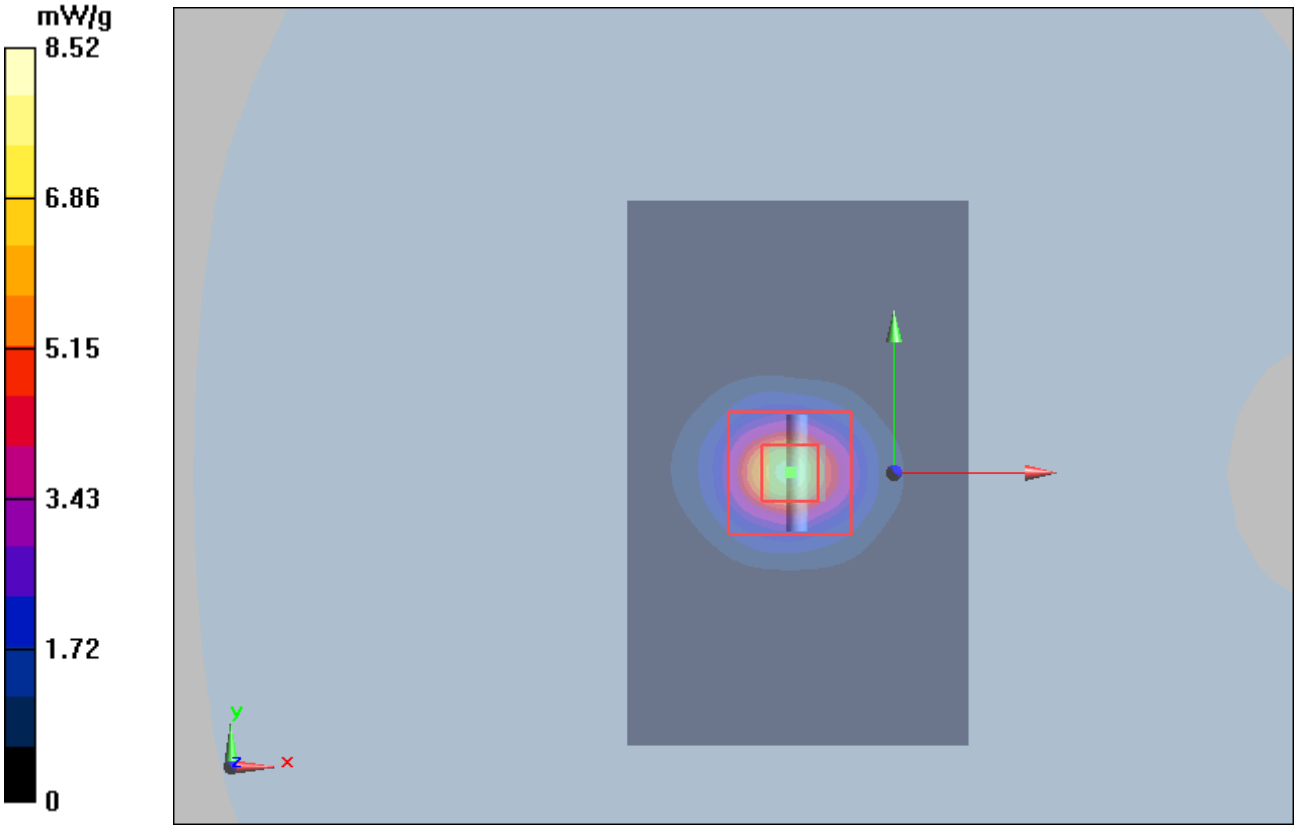


Figure 8 System Performance Check 5200MHz 100mW

System Performance Check at 5800 MHz Body TSL

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

Date/Time: 3/30/2014 7:12:15 PM

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

Medium parameters used: f = 5800 MHz; σ =6.09 mho/m; ε_r = 47.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.46, 4.46, 4.46); Calibrated: 11/28/2013

Electronics: DAE4 Sn1317; Calibrated: 1/16/2014

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

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

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

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

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

Peak SAR (extrapolated) = 22.6 W/kg

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

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

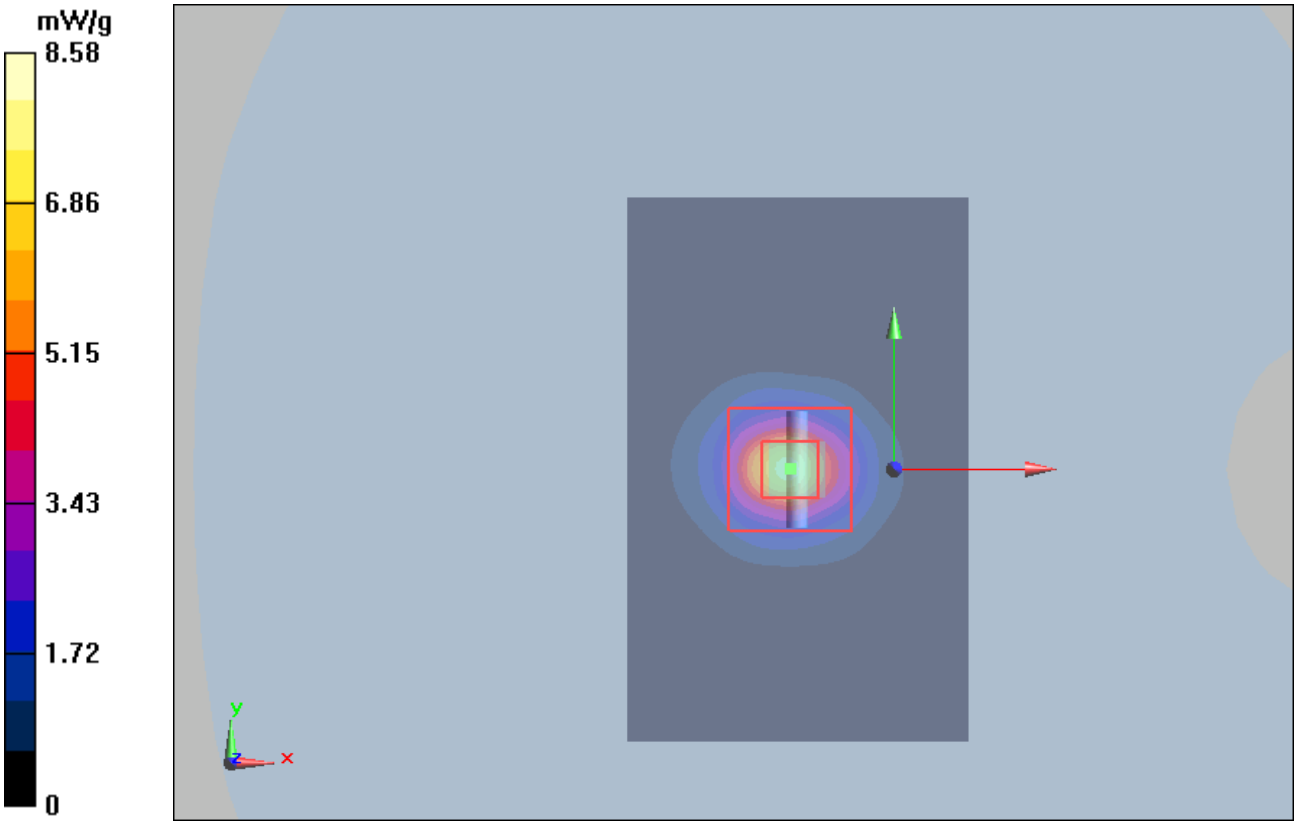


Figure 9 System Performance Check 5800MHz 100Mw

ANNEX C: Graph Results

UMTS Band V with Test Position 1 Middle

Date/Time: 3/28/2014 8:16:04 PM
Communication System:WCDMA (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.992 S/m; ε_r = 55.882; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.51, 9.51, 9.51); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 1 Middle /Area Scan (61x111x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.584 W/kg

Test Position 1 Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.118 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.698 W/kg
SAR(1 g) = 0.548 W/kg; SAR(10 g) = 0.407 W/kg
Maximum value of SAR (measured) = 0.560 W/kg

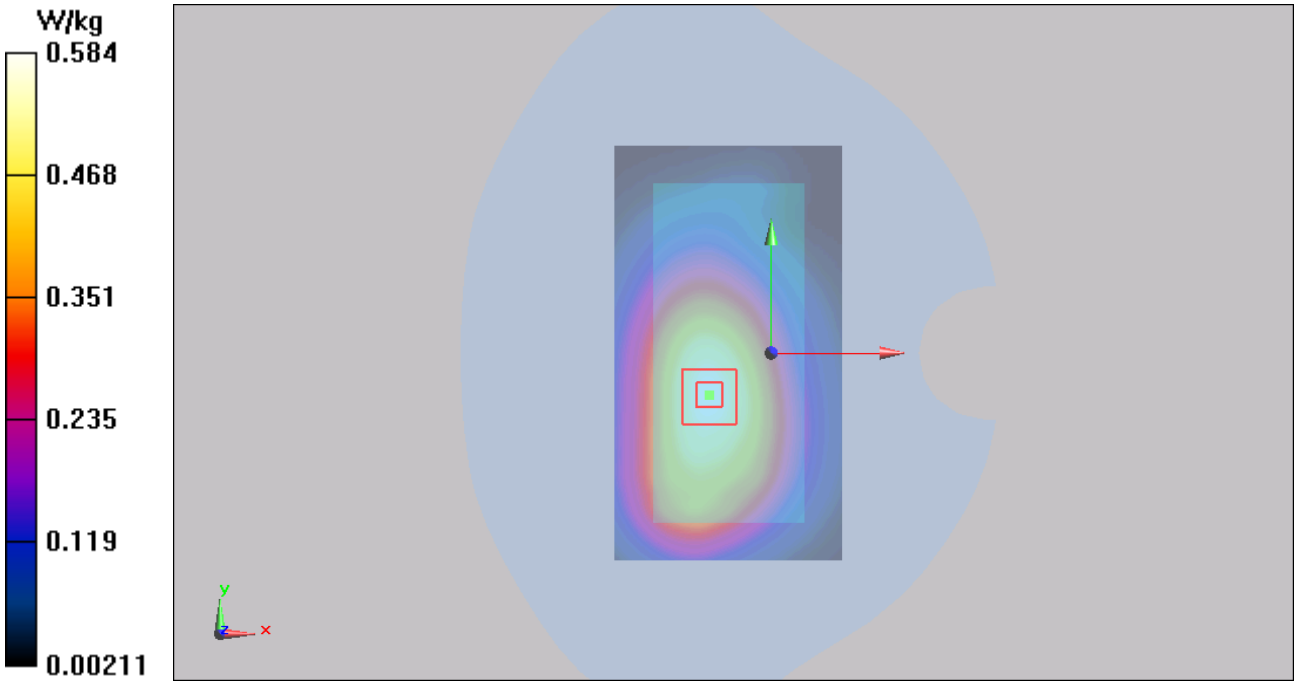


Figure 10 UMTS Band V with Test Position 1 Channel 4183

UMTS Band V with Test Position 2 High

Date/Time: 3/28/2014 6:28:44 PM
Communication System:WCDMA (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; σ = 1.004 S/m; ε_r = 55.772; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.51, 9.51, 9.51); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 High /Area Scan (61x111x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.922 W/kg

Test Position 2 High /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.017 V/m; Power Drift = -0.022 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.855 W/kg; SAR(10 g) = 0.627 W/kg
Maximum value of SAR (measured) = 0.894 W/kg

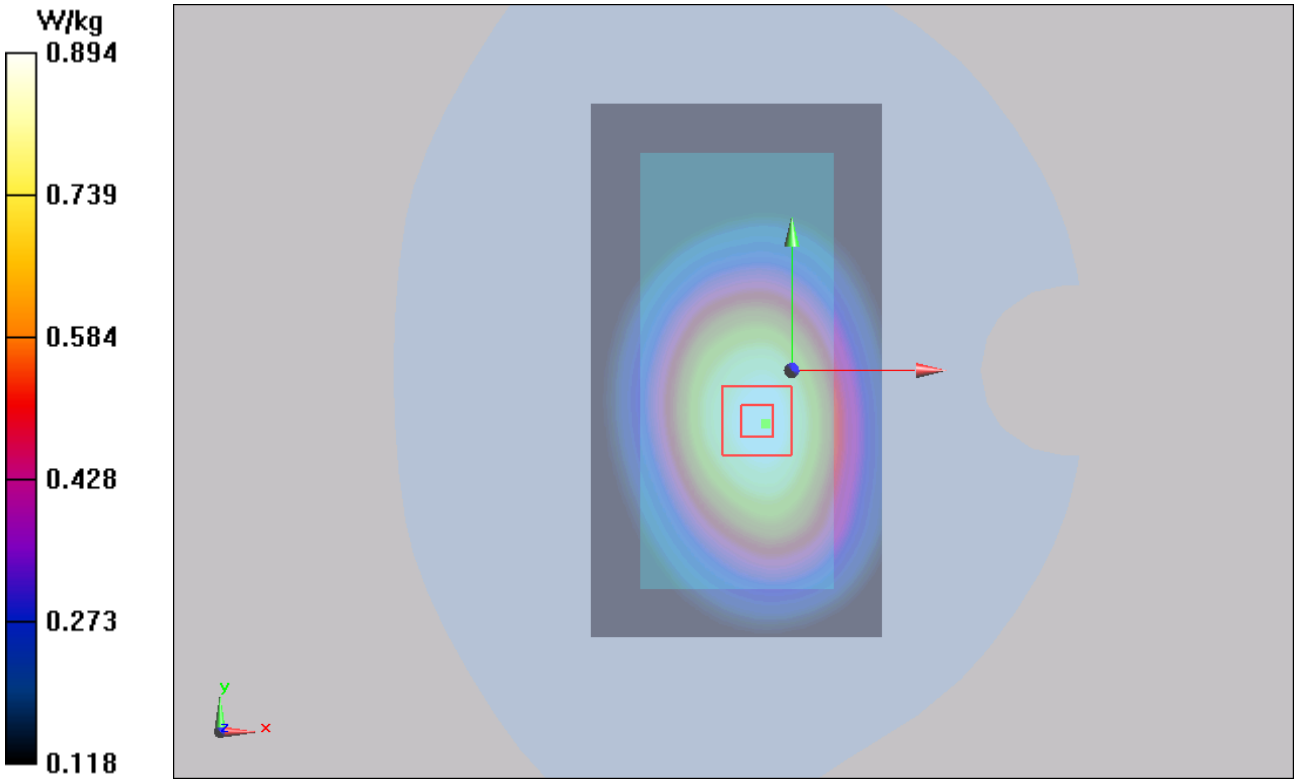


Figure 11 UMTS Band V with Test Position 2 Channel 4233

UMTS Band V with Test Position 2 Middle

Date/Time: 3/28/2014 7:51:43 PM
Communication System:WCDMA (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.992 S/m; ε_r = 55.882; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.51, 9.51, 9.51); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 Middle /Area Scan (61x111x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.673 W/kg

Test Position 2 Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.049 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 0.856 W/kg
SAR(1 g) = 0.649 W/kg; SAR(10 g) = 0.476 W/kg
Maximum value of SAR (measured) = 0.672 W/kg

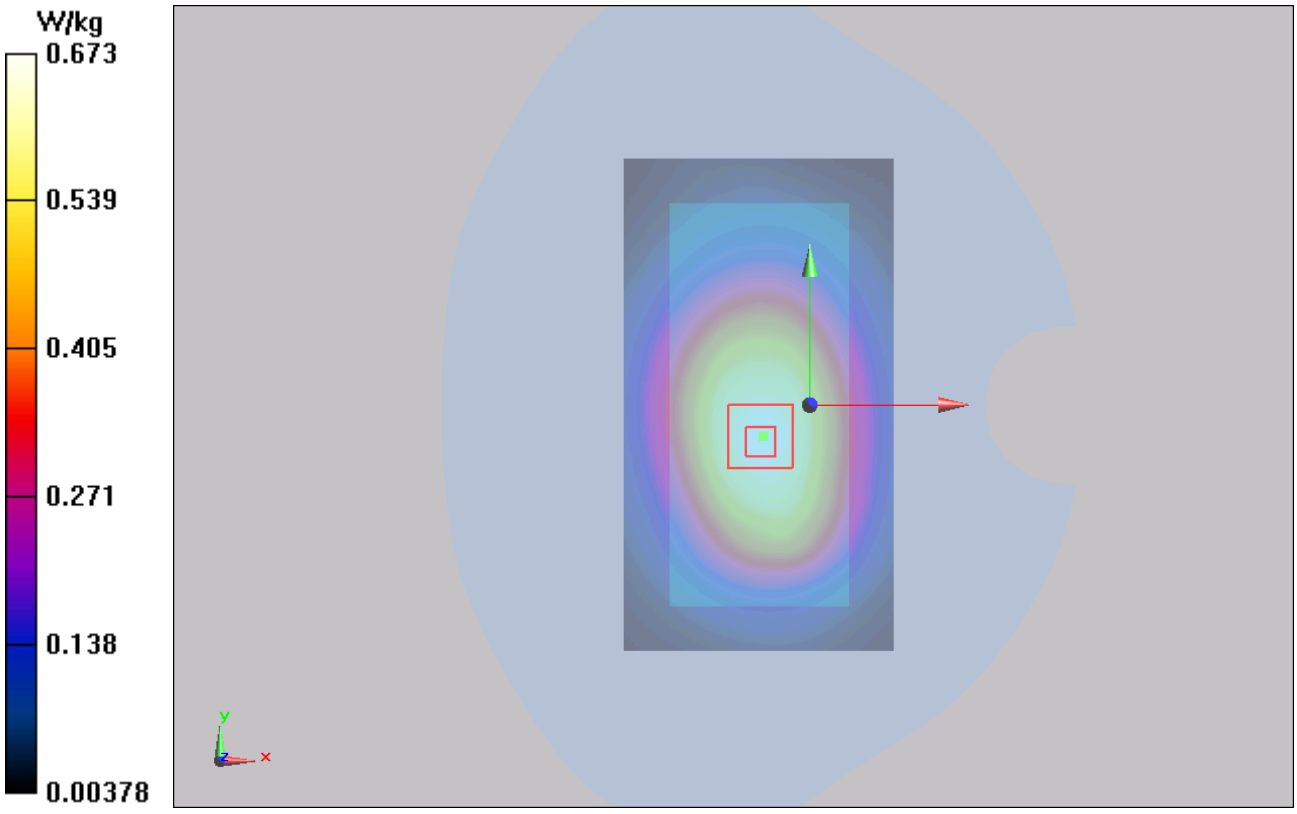


Figure 12 UMTS Band V with Test Position 2 Channel 4183

UMTS Band V with Test Position 2 Low

Date/Time: 3/28/2014 7:08:01 PM
Communication System:WCDMA (0); Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.98 S/m; ε_r = 55.933; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.51, 9.51, 9.51); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 Low /Area Scan (61x111x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.626 W/kg

Test Position 2 Low /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.556 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.766 W/kg
SAR(1 g) = 0.588 W/kg; SAR(10 g) = 0.432 W/kg
Maximum value of SAR (measured) = 0.606 W/kg

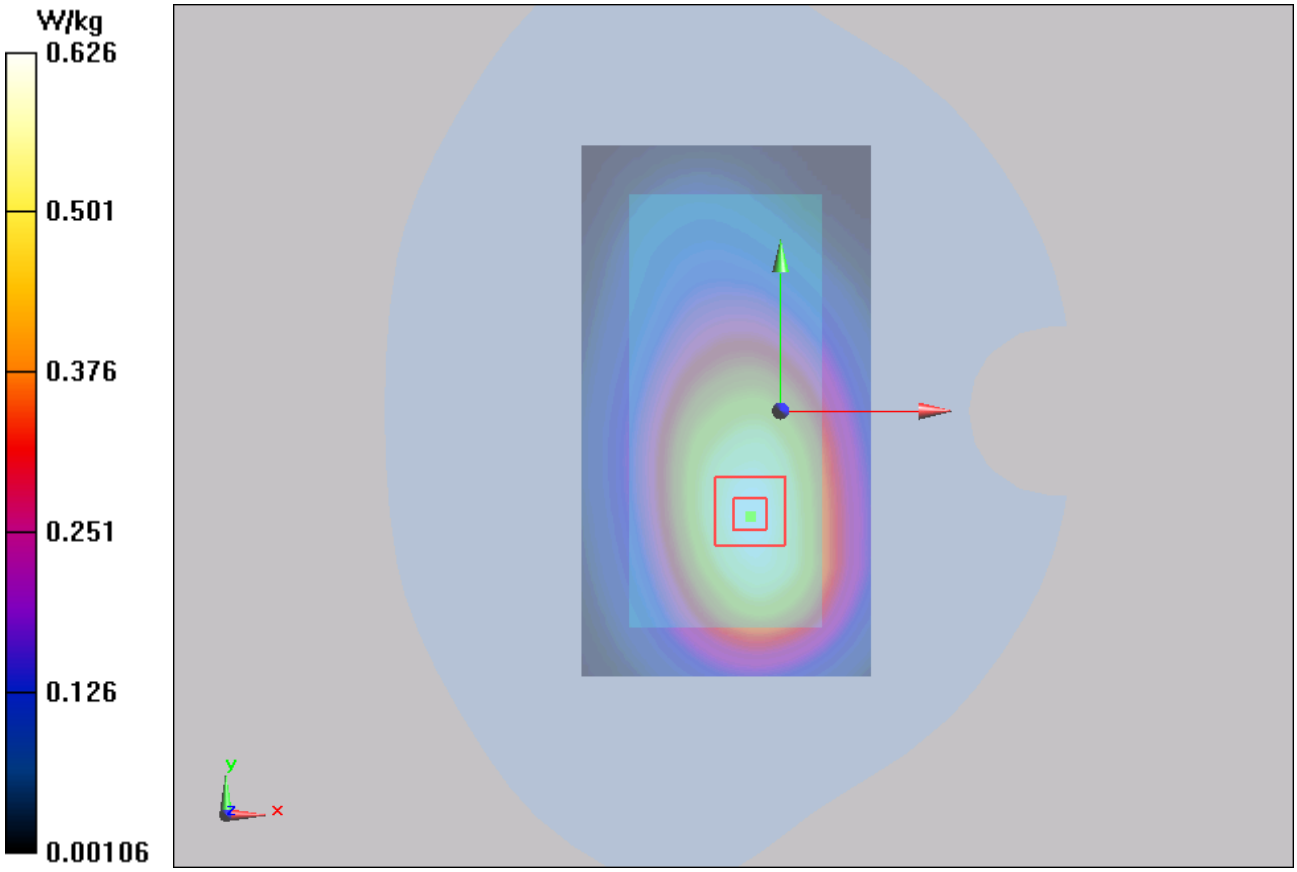


Figure 13 UMTS Band V with Test Position 2 Channel 4132

UMTS Band V with Test Position 3 Middle

Date/Time: 3/28/2014 9:02:57 PM
Communication System:WCDMA (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.992 S/m; ε_r = 55.882; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.51, 9.51, 9.51); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 3 Middle /Area Scan (31x61x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.209 W/kg

Test Position 3 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.883 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.340 W/kg
SAR(1 g) = 0.186 W/kg; SAR(10 g) = 0.106 W/kg
Maximum value of SAR (measured) = 0.197 W/kg

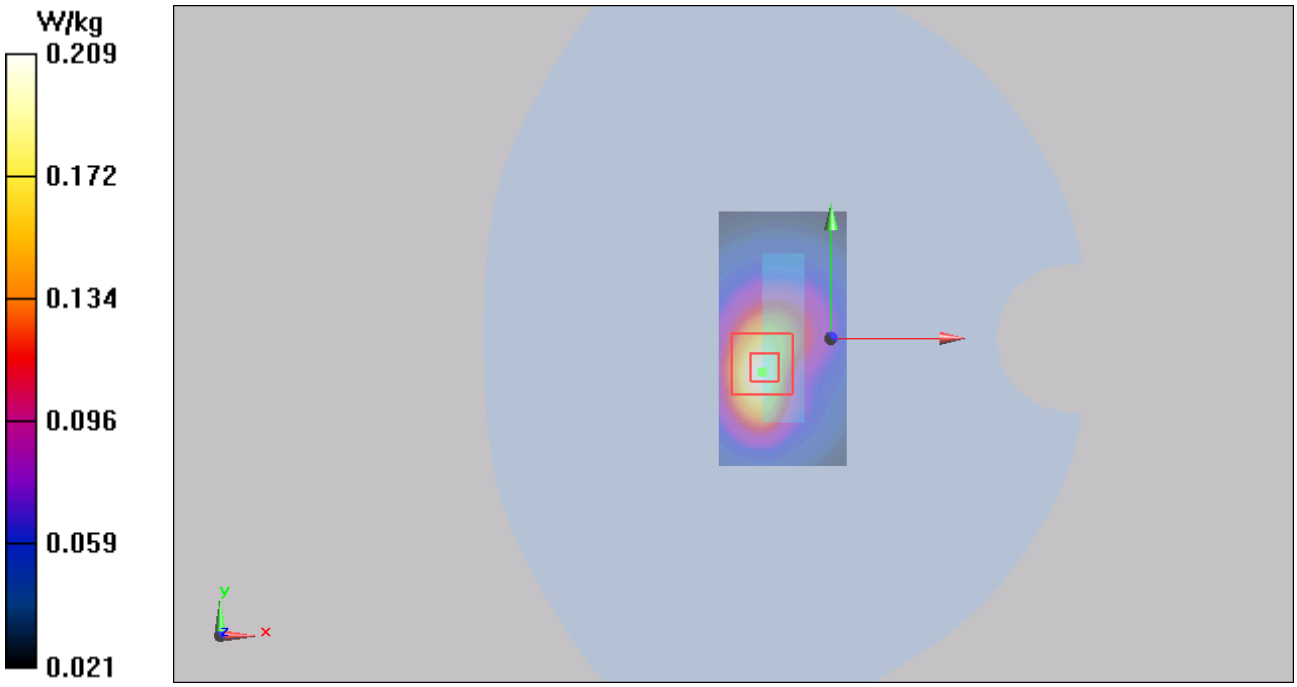


Figure 14 UMTS Band V with Test Position 3 Channel 4183

UMTS Band V with Test Position 5 Middle

Date/Time: 3/28/2014 8:33:35 PM
Communication System:WCDMA (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.992 S/m; ε_r = 55.882; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.51, 9.51, 9.51); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 5 Middle /Area Scan (31x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.273 W/kg

Test Position 5 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.446 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.358 W/kg
SAR(1 g) = 0.254 W/kg; SAR(10 g) = 0.175 W/kg
Maximum value of SAR (measured) = 0.261 W/kg

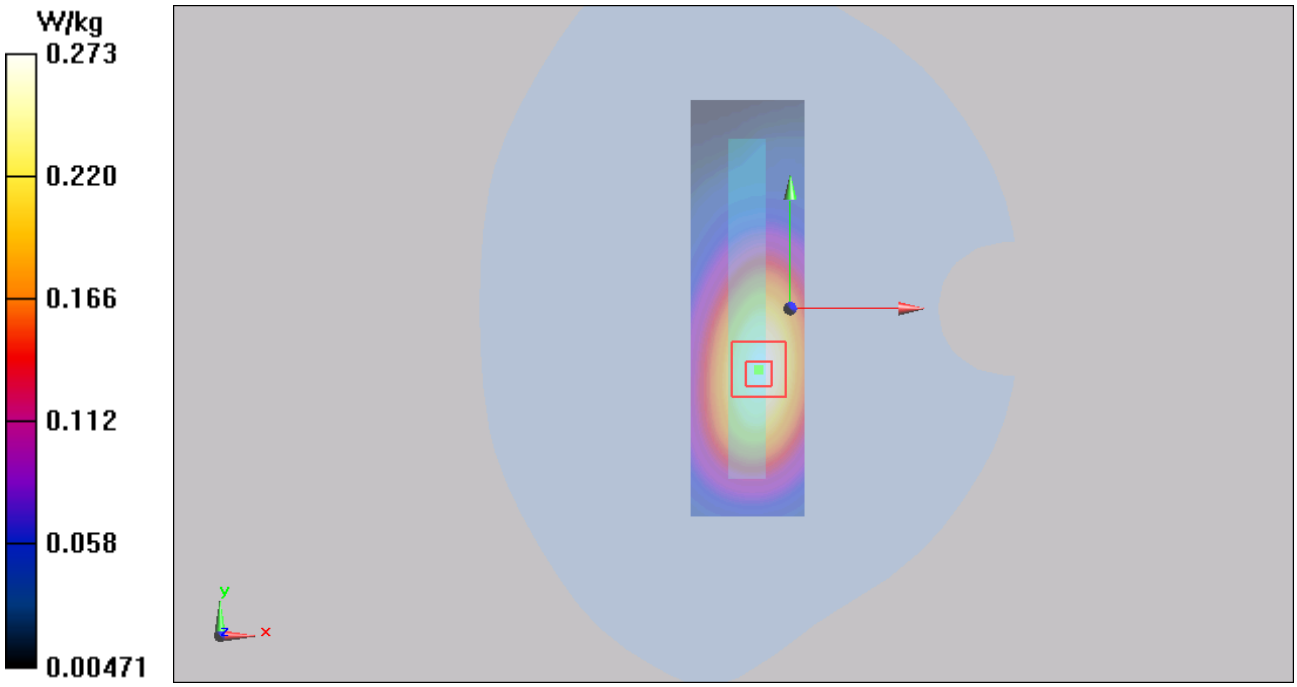


Figure 15 UMTS Band V with Test Position 5 Channel 4183

UMTS Band V with Test Position 6 Middle

Date/Time: 3/28/2014 8:46:56 PM
Communication System:WCDMA (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.992 S/m; ε_r = 55.882; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.51, 9.51, 9.51); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 6 Middle /Area Scan (31x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.464 W/kg

Test Position 6 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.705 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.607 W/kg
SAR(1 g) = 0.439 W/kg; SAR(10 g) = 0.309 W/kg
Maximum value of SAR (measured) = 0.450 W/kg

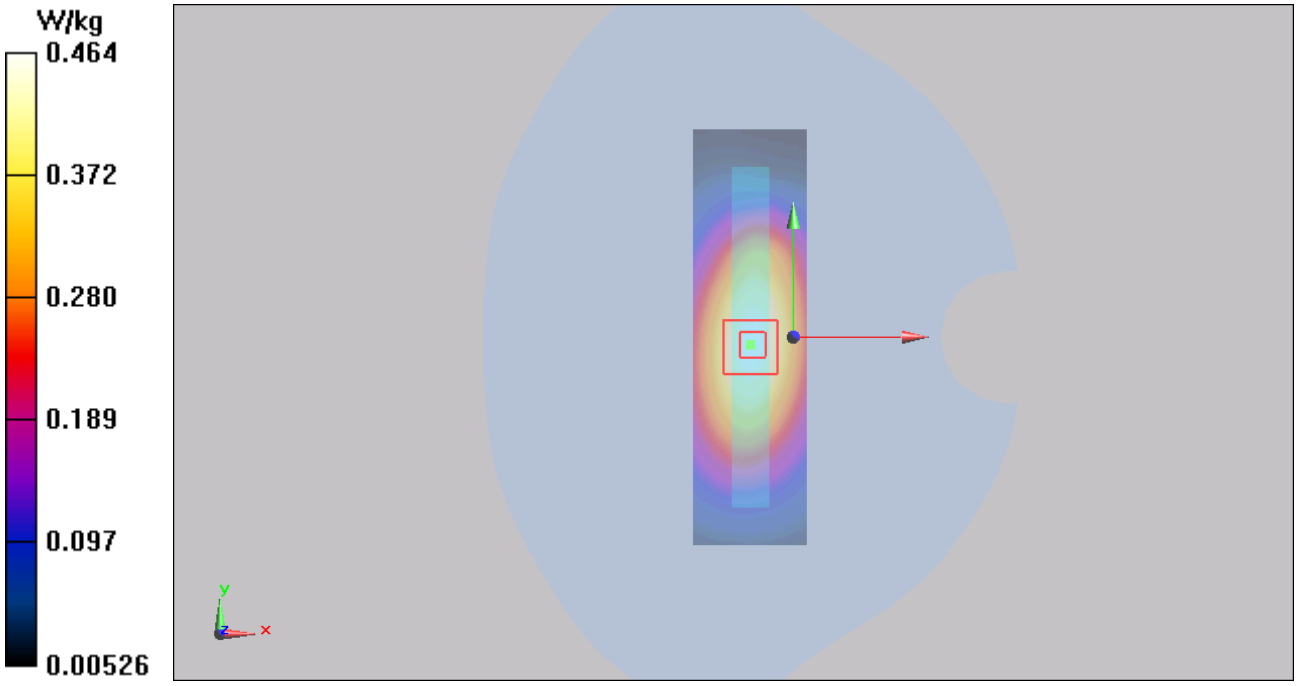


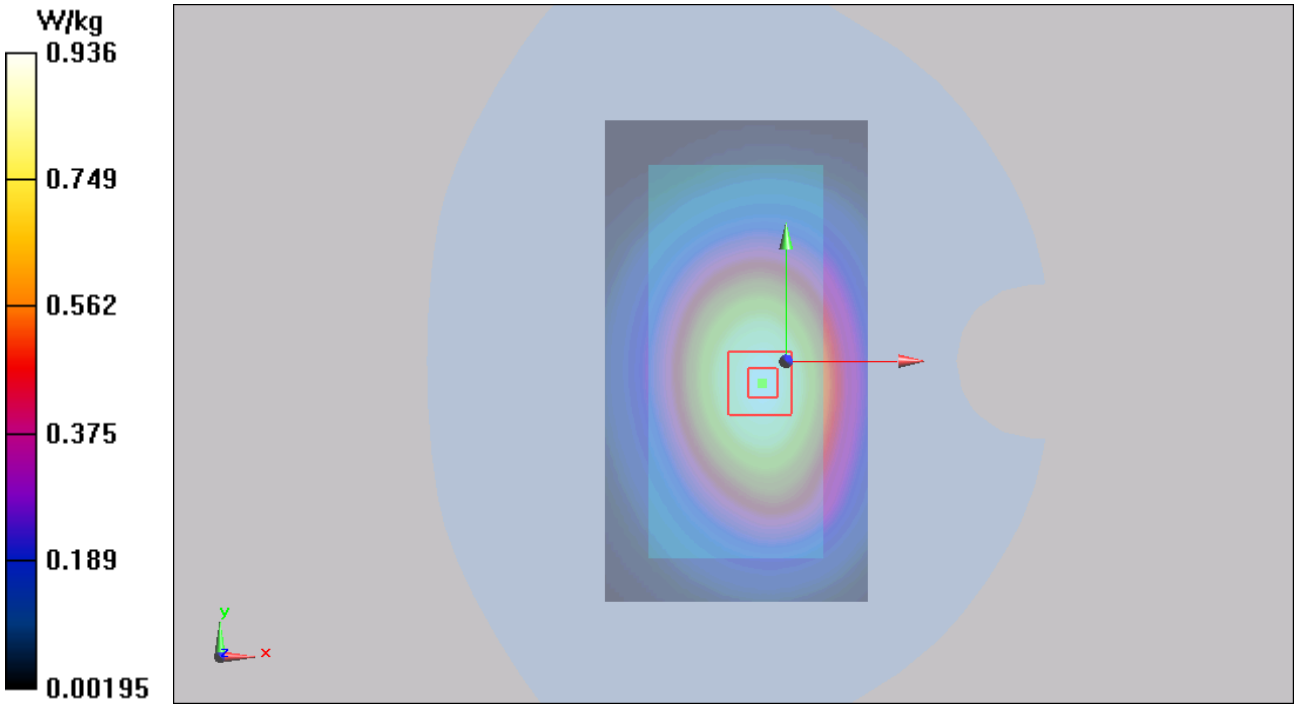
Figure 16 UMTS Band V with Test Position 6 Channel 4183

UMTS Band V with Repeateded SAR Test Position 2 High

Date/Time: 3/28/2014 9:12:53 AM
Communication System:WCDMA (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; σ = 1.004 S/m; ε_r = 55.772; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.51, 9.51, 9.51); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 High /Area Scan (61x111x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.936 W/kg

Test Position 2 High /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.190 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.879 W/kg; SAR(10 g) = 0.639 W/kg
Maximum value of SAR (measured) = 0.905 W/kg



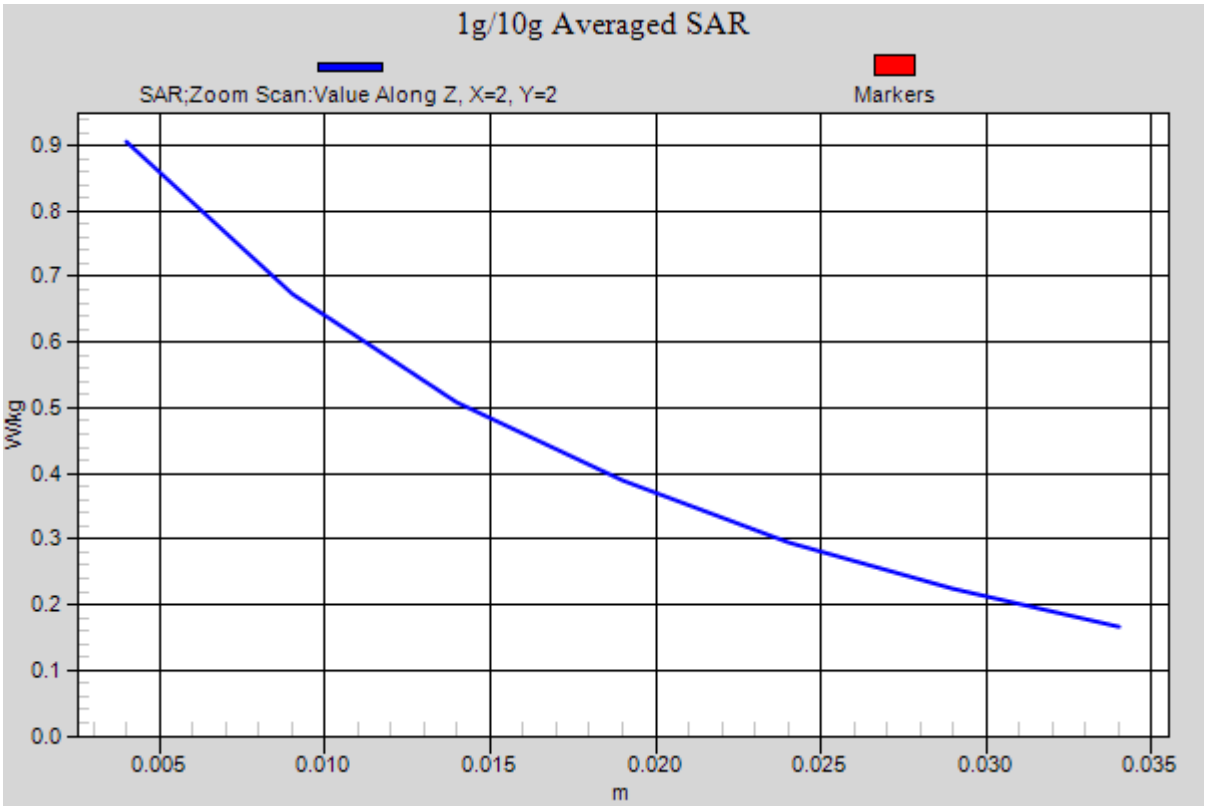


Figure 17 UMTS Band V with Repeateded SAR Test Position 2 Channel 4233

802.11b Test Position 1 Middle(Ant 1)

Date/Time: 3/30/2014 5:05:42 PM
Communication System:802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.977 S/m; ε_r = 52.177; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.61, 7.61, 7.61); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 1 Middle /Area Scan (61x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0813 W/kg

Test Position 1 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.006 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.072 W/kg; SAR(10 g) = 0.039 W/kg
Maximum value of SAR (measured) = 0.0796 W/kg

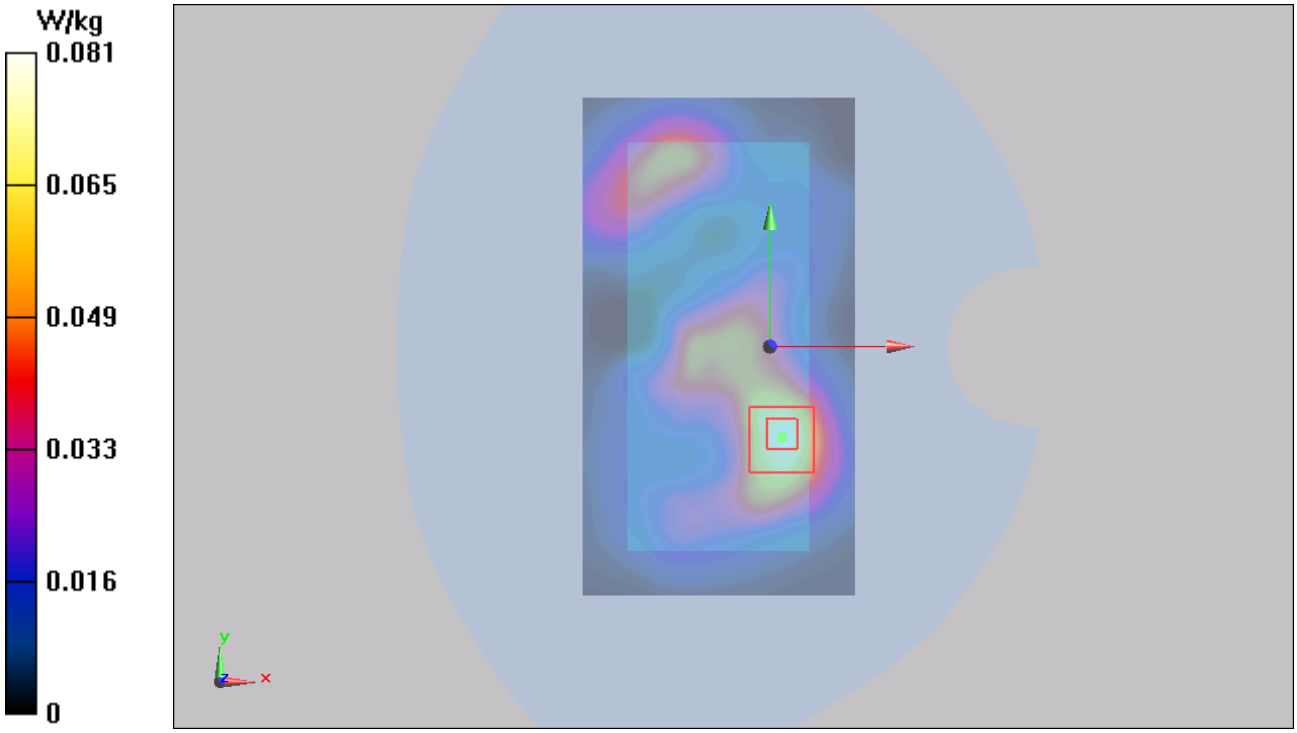


Figure 18 802.11b Test Position 1 Channel 6

802.11b Test Position 2 Middle(Ant 1)

Date/Time: 3/30/2014 5:25:14 PM
Communication System:802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.977 S/m; ε_r = 52.177; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.61, 7.61, 7.61); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 Middle /Area Scan (61x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0945 W/kg

Test Position 2 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.834 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 0.132 W/kg
SAR(1 g) = 0.078 W/kg; SAR(10 g) = 0.043 W/kg
Maximum value of SAR (measured) = 0.0833 W/kg

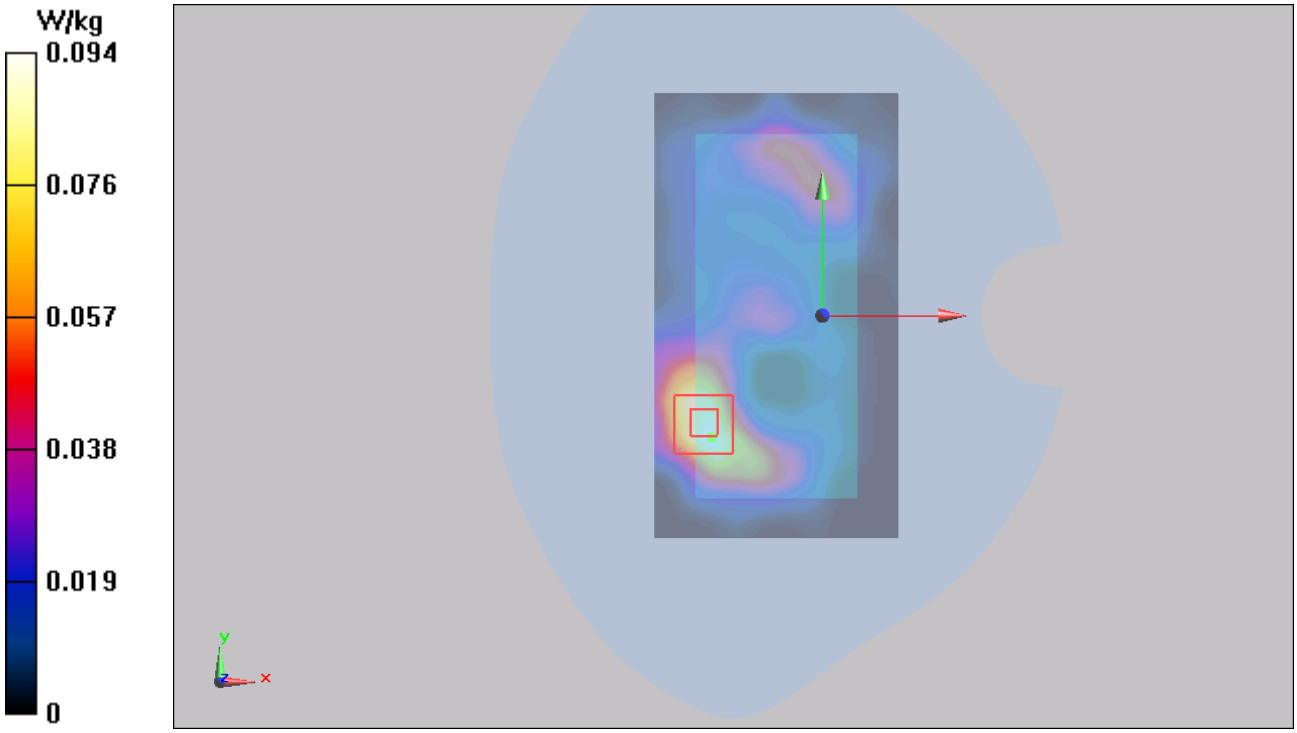


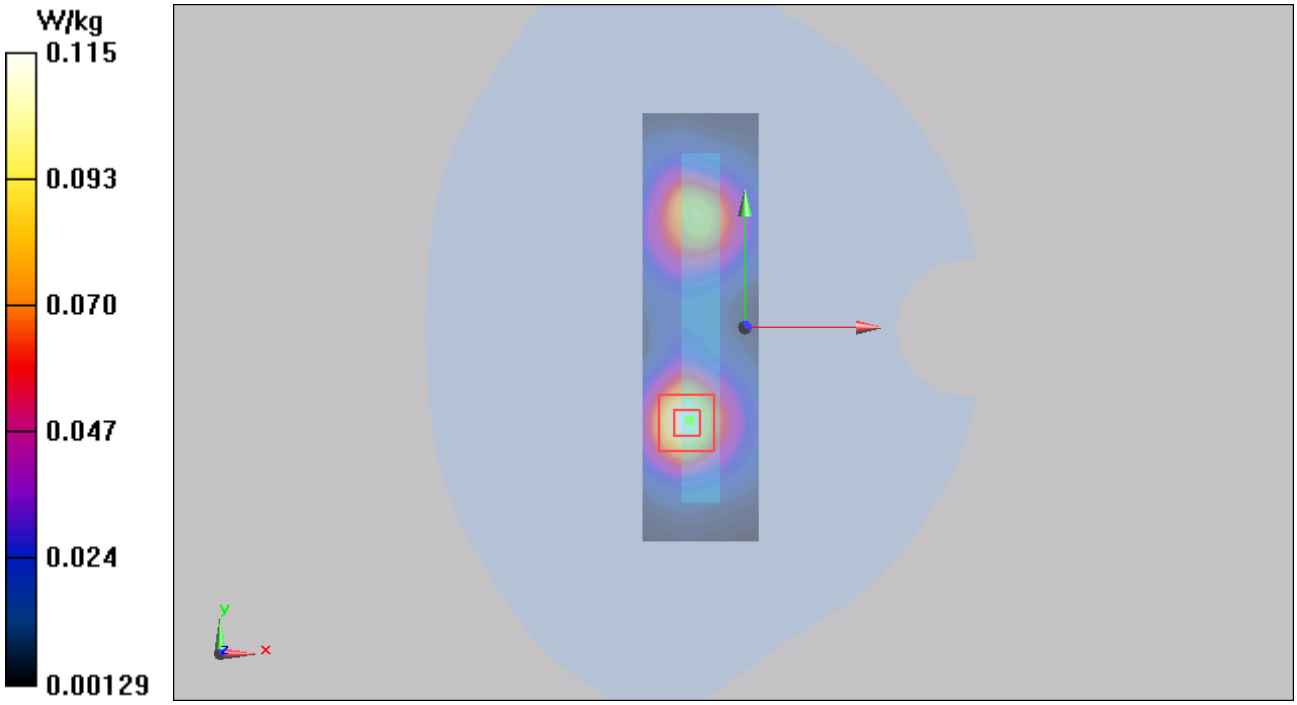
Figure 19 802.11b Test Position 2 Channel 6

802.11b Test Position 5 Middle(Ant 1)

Date/Time: 3/30/2014 4:47:20 PM
Communication System:802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.977 S/m; ε_r = 52.177; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.61, 7.61, 7.61); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 5 Middle /Area Scan (31x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.115 W/kg

Test Position 5 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.482 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.175 W/kg
SAR(1 g) = 0.098 W/kg; SAR(10 g) = 0.052 W/kg
Maximum value of SAR (measured) = 0.108 W/kg



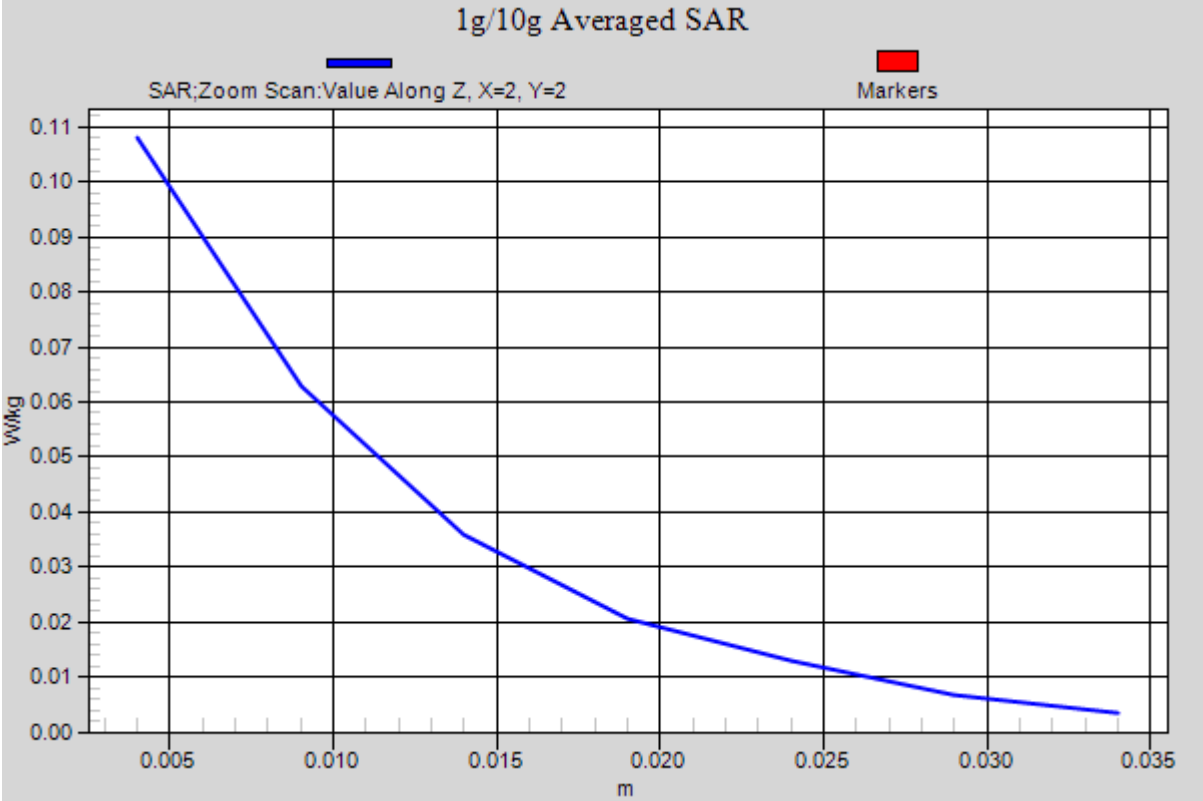


Figure 20 802.11b Test Position 5 Channel 6

802.11b Test Position 1 Middle(Ant 2)

Date/Time: 3/30/2014 2:39:54 PM
Communication System:802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.977 S/m; ε_r = 52.177; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.61, 7.61, 7.61); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 1 Middle /Area Scan (61x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.125 W/kg

Test Position 1 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.586 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 0.190 W/kg
SAR(1 g) = 0.107 W/kg; SAR(10 g) = 0.060 W/kg
Maximum value of SAR (measured) = 0.117 W/kg

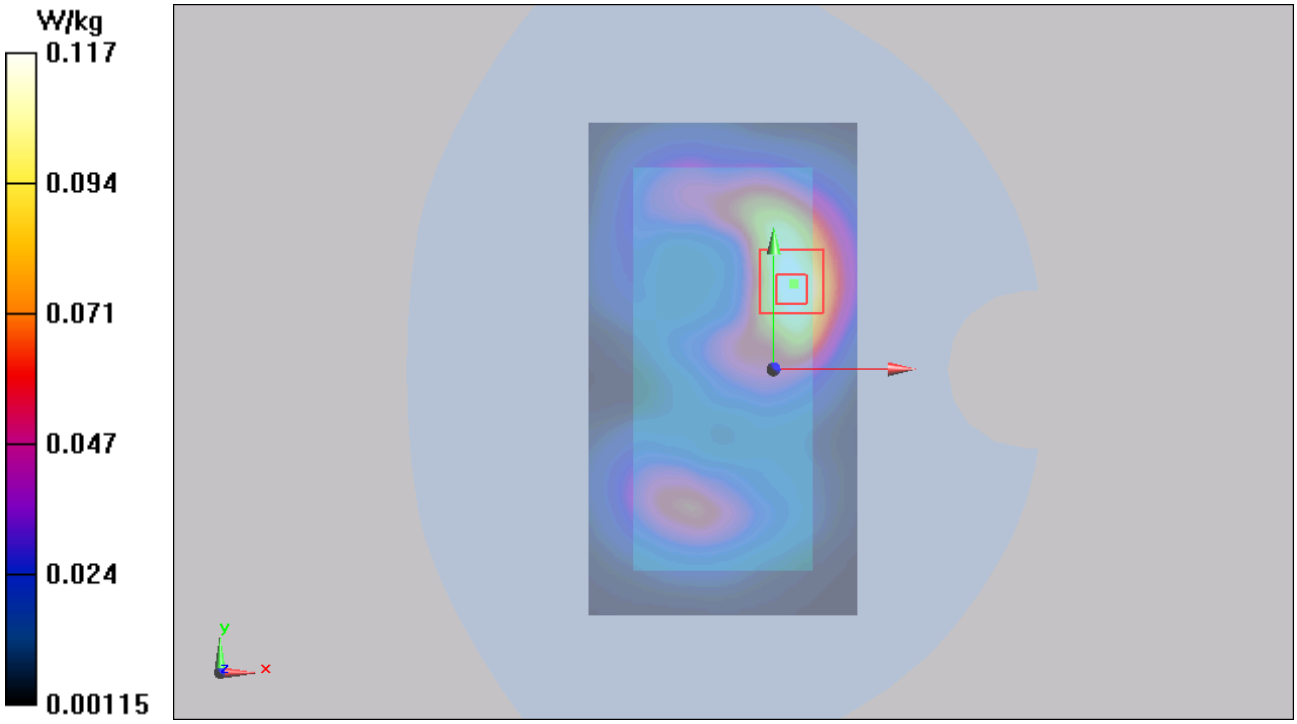


Figure 21 802.11b Test Position 1 Channel 6

802.11b Test Position 2 Middle(Ant 2)

Date/Time: 3/30/2014 4:01:02 PM
Communication System:802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.977 S/m; ε_r = 52.177; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.61, 7.61, 7.61); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 Middle /Area Scan (61x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.130 W/kg

Test Position 2 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.414 V/m; Power Drift = 0.067 dB
Peak SAR (extrapolated) = 0.207 W/kg
SAR(1 g) = 0.113 W/kg; SAR(10 g) = 0.062 W/kg
Maximum value of SAR (measured) = 0.127 W/kg

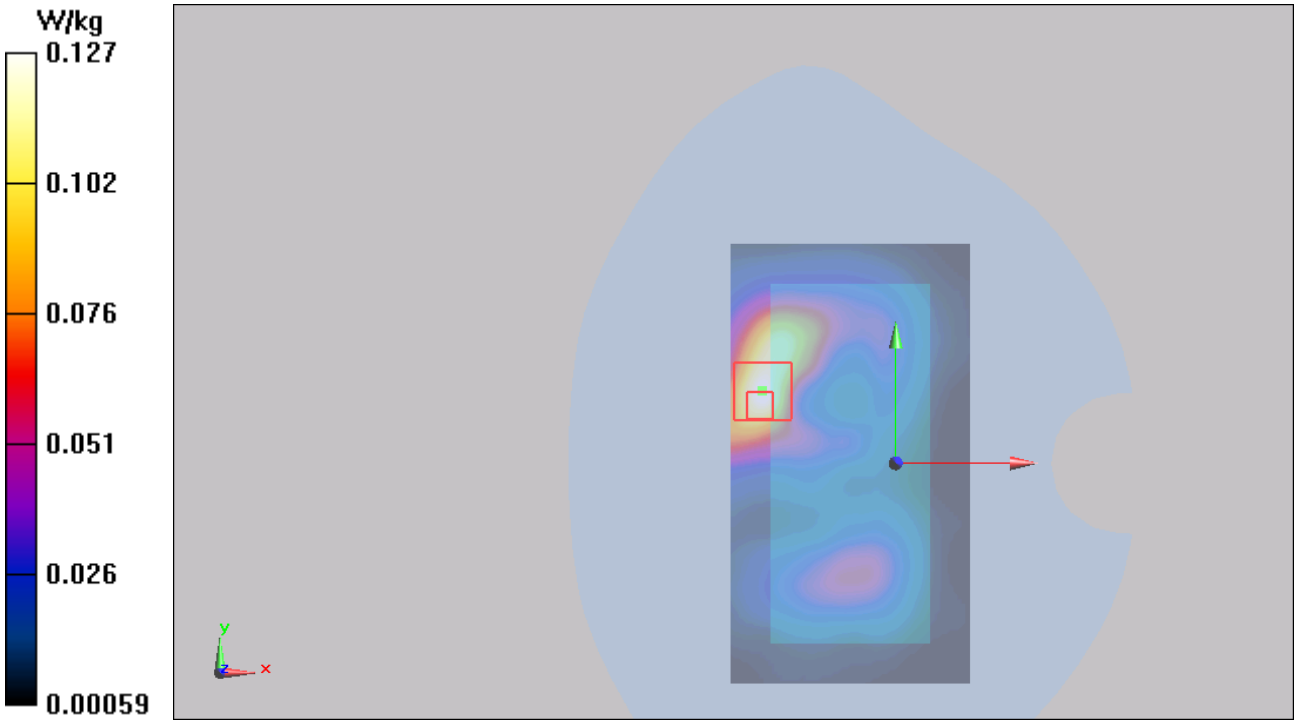


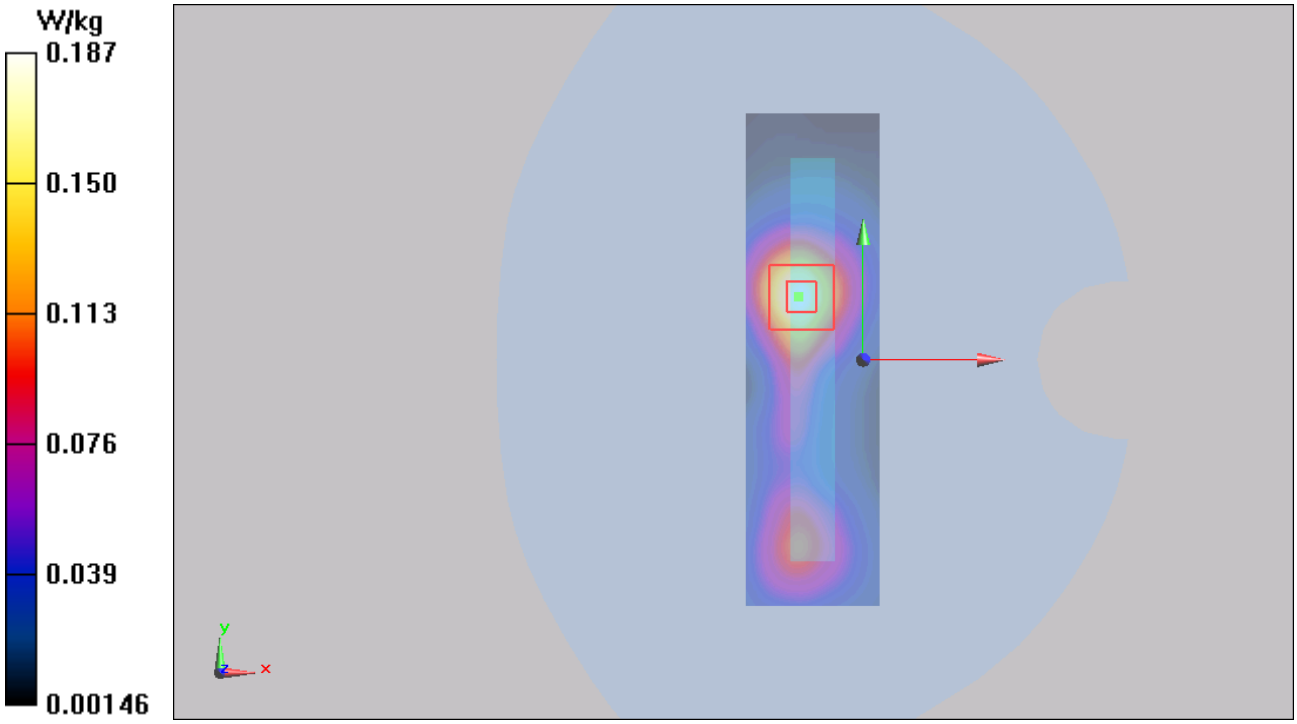
Figure 22 802.11b Test Position 2 Channel 6

802.11b Test Position 6 Middle(Ant 2)

Date/Time: 3/30/2014 4:22:35 PM
Communication System:802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.977 S/m; ε_r = 52.177; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.61, 7.61, 7.61); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 6 Middle /Area Scan (31x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.191 W/kg

Test Position 6 Middle /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.649 V/m; Power Drift = 0.024 dB
Peak SAR (extrapolated) = 0.299 W/kg
SAR(1 g) = 0.170 W/kg; SAR(10 g) = 0.091 W/kg
Maximum value of SAR (measured) = 0.187 W/kg



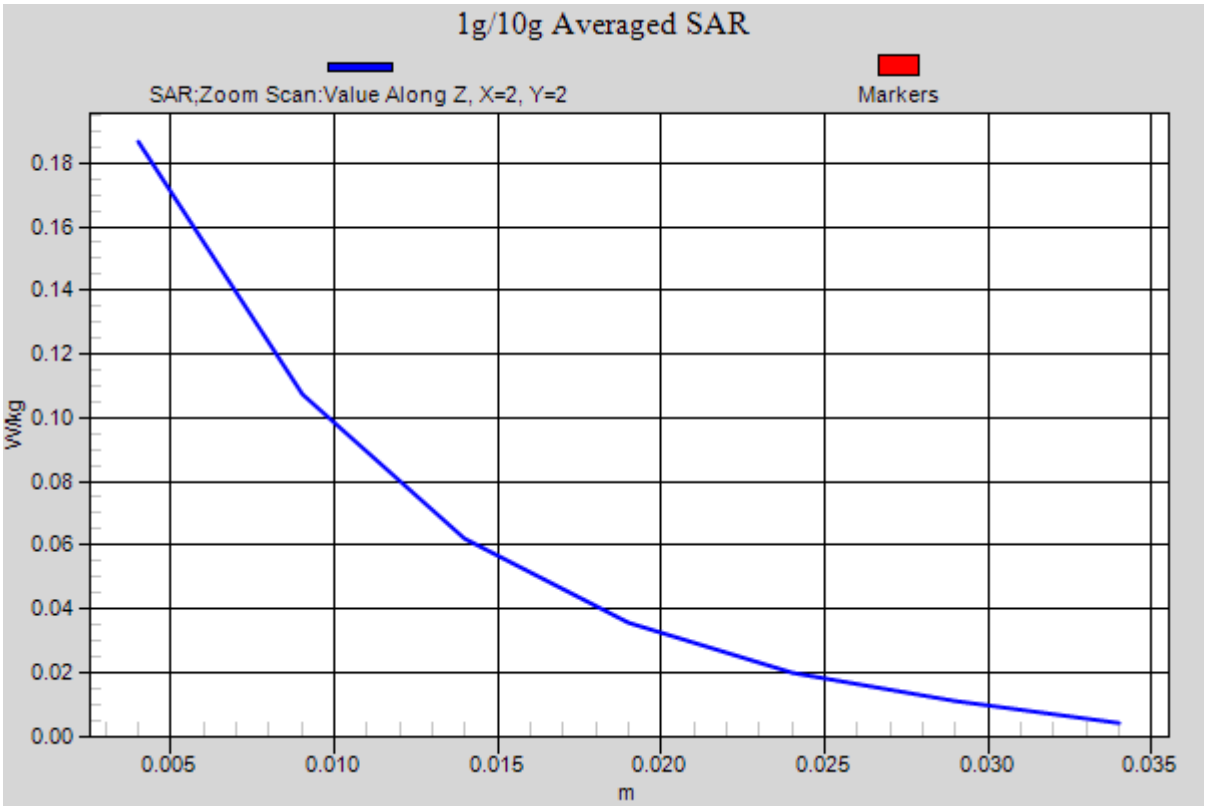


Figure 23 802.11b Test Position 6 Channel 6

802.11a Test Position 1 CH 36 (Ant 1)

Date/Time: 3/31/2014 3:33:46 PM
Communication System:802.11a (0); Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 5.15 S/m; ε_r = 48.696; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 1 CH 36/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0700 W/kg

Test Position 1 CH 36/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.340 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.225 W/kg
SAR(1 g) = 0.071 W/kg; SAR(10 g) = 0.024 W/kg
Maximum value of SAR (measured) = 0.0870 W/kg

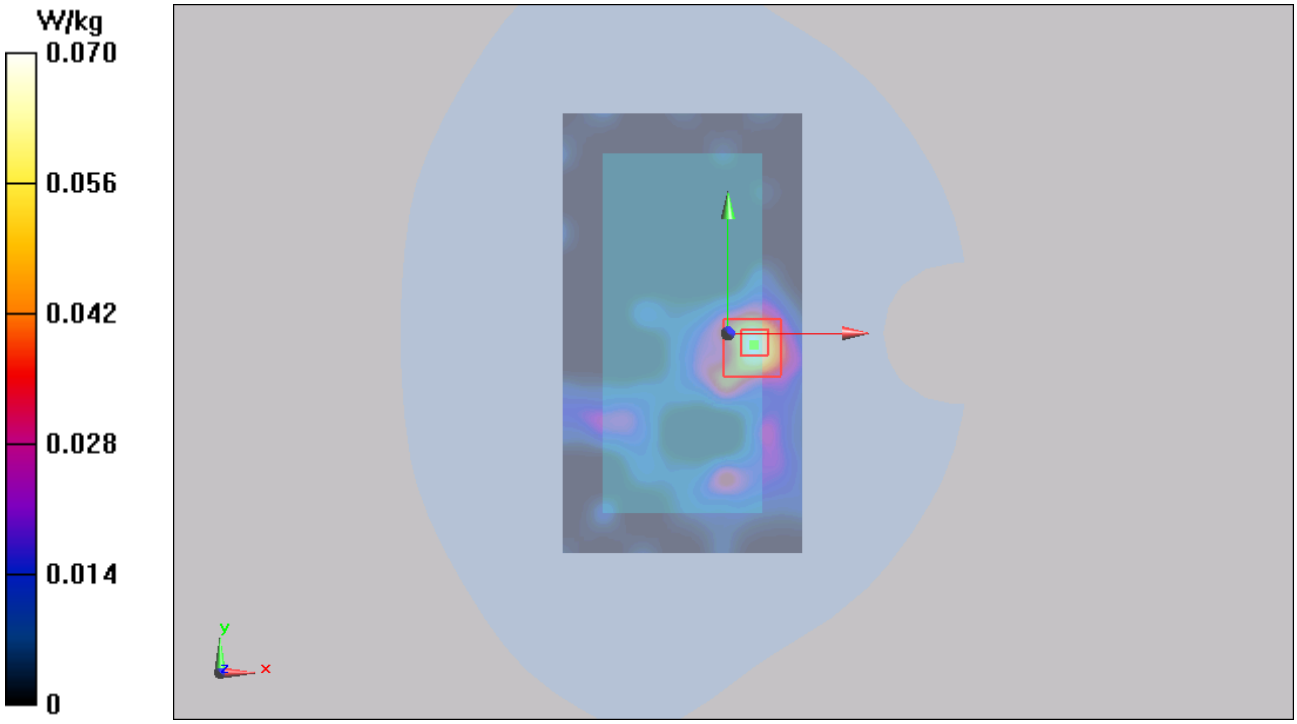


Figure 24 802.11a Test Position 1 Channel 36

802.11a Test Position 2 CH 36 (Ant 1)

Date/Time: 3/31/2014 4:01:12 PM
Communication System:802.11a (0); Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 5.15 S/m; ε_r = 48.696; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 CH 36/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.117 W/kg

Test Position 2 CH 36/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.861 V/m; Power Drift = -0.028 dB
Peak SAR (extrapolated) = 0.180 W/kg
SAR(1 g) = 0.043 W/kg; SAR(10 g) = 0.017 W/kg
Maximum value of SAR (measured) = 0.0413 W/kg

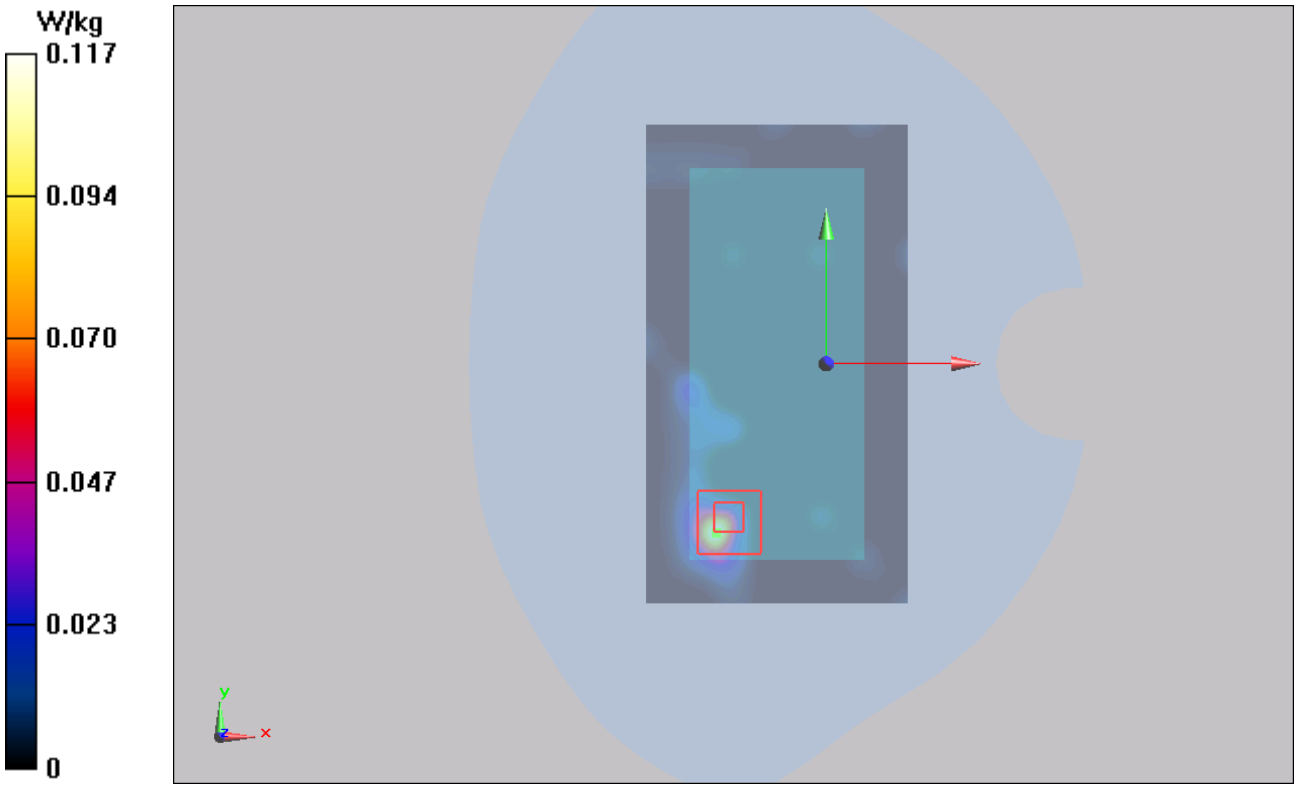


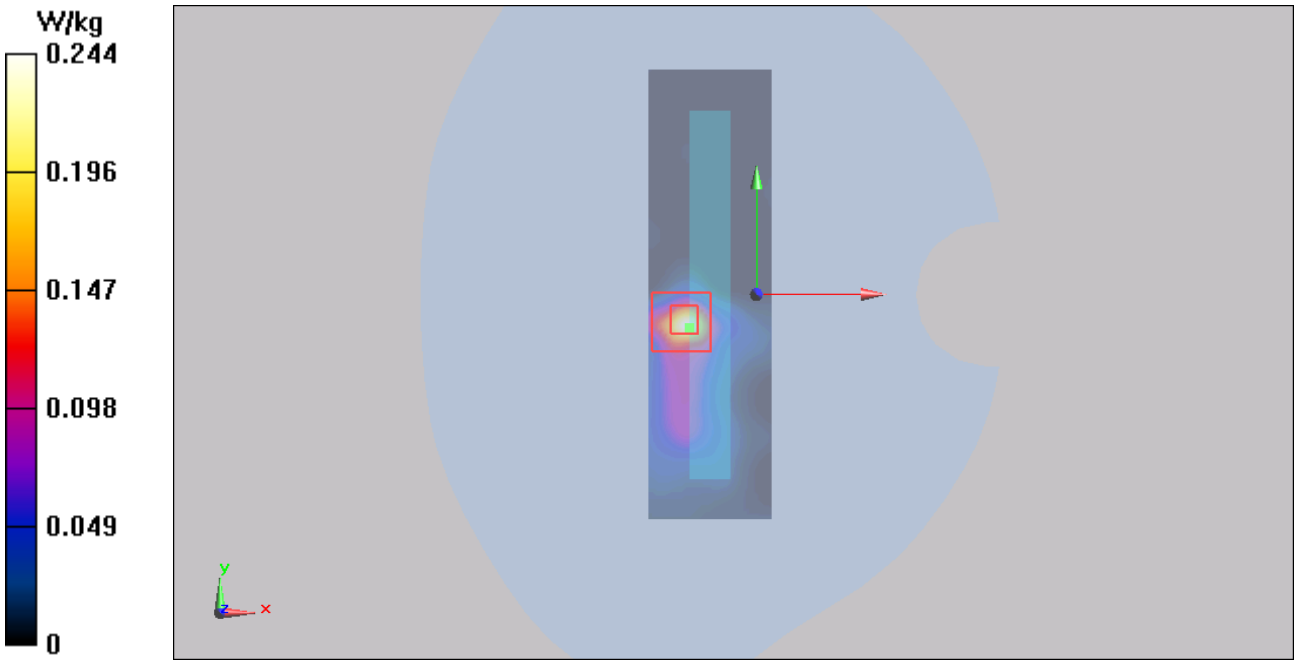
Figure 25 802.11a Test Position 2 Channel 36

802.11a Test Position 5 CH 36 (Ant 1)

Date/Time: 3/31/2014 3:13:33 PM
Communication System:802.11a (0); Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 5.15 S/m; ε_r = 48.696; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 5 CH 36/Area Scan (31x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.244 W/kg

Test Position 5 CH 36/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.023 V/m; Power Drift = 0.145 dB
Peak SAR (extrapolated) = 0.443 W/kg
SAR(1 g) = 0.169 W/kg; SAR(10 g) = 0.061 W/kg
Maximum value of SAR (measured) = 0.201 W/kg



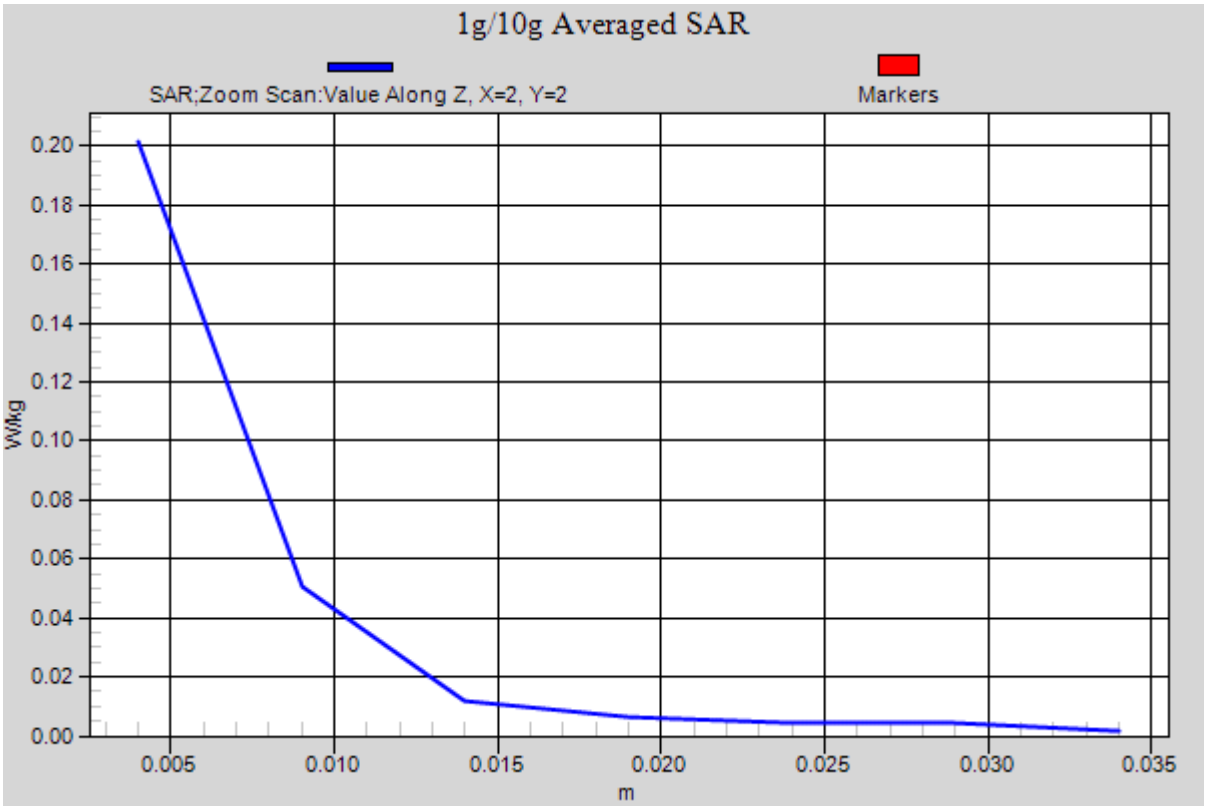


Figure 26 802.11a Test Position 5 Channel 36

802.11a Test Position 1 CH 36 (Ant 2)

Date/Time: 3/31/2014 2:00:59 PM
Communication System:802.11a (0); Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 5.15 S/m; ε_r = 48.696; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 1 CH 36/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0930 W/kg

Test Position 1 CH 36/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.995 V/m; Power Drift = 0.192 dB
Peak SAR (extrapolated) = 0.220 W/kg
SAR(1 g) = 0.056 W/kg; SAR(10 g) = 0.018 W/kg
Maximum value of SAR (measured) = 0.0541 W/kg

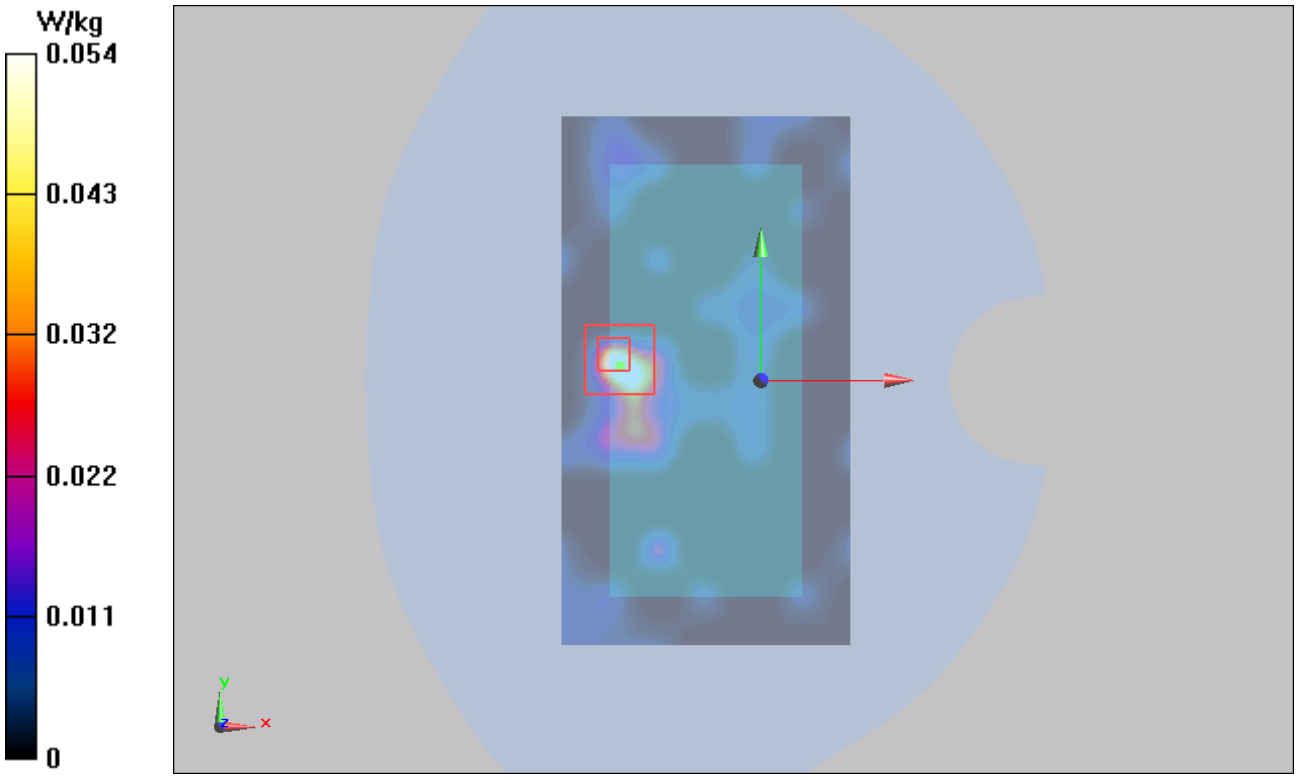


Figure 27 802.11a Test Position 1 Channel 36

802.11a Test Position 2 CH 36 (Ant 2)

Date/Time: 3/31/2014 2:22:46 PM
Communication System:802.11a (0); Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 5.15 S/m; ε_r = 48.696; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 CH 36/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0577 W/kg

Test Position 2 CH 36/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.317 V/m; Power Drift = 0.091 dB
Peak SAR (extrapolated) = 0.269 W/kg
SAR(1 g) = 0.067 W/kg; SAR(10 g) = 0.023 W/kg
Maximum value of SAR (measured) = 0.0702 W/kg

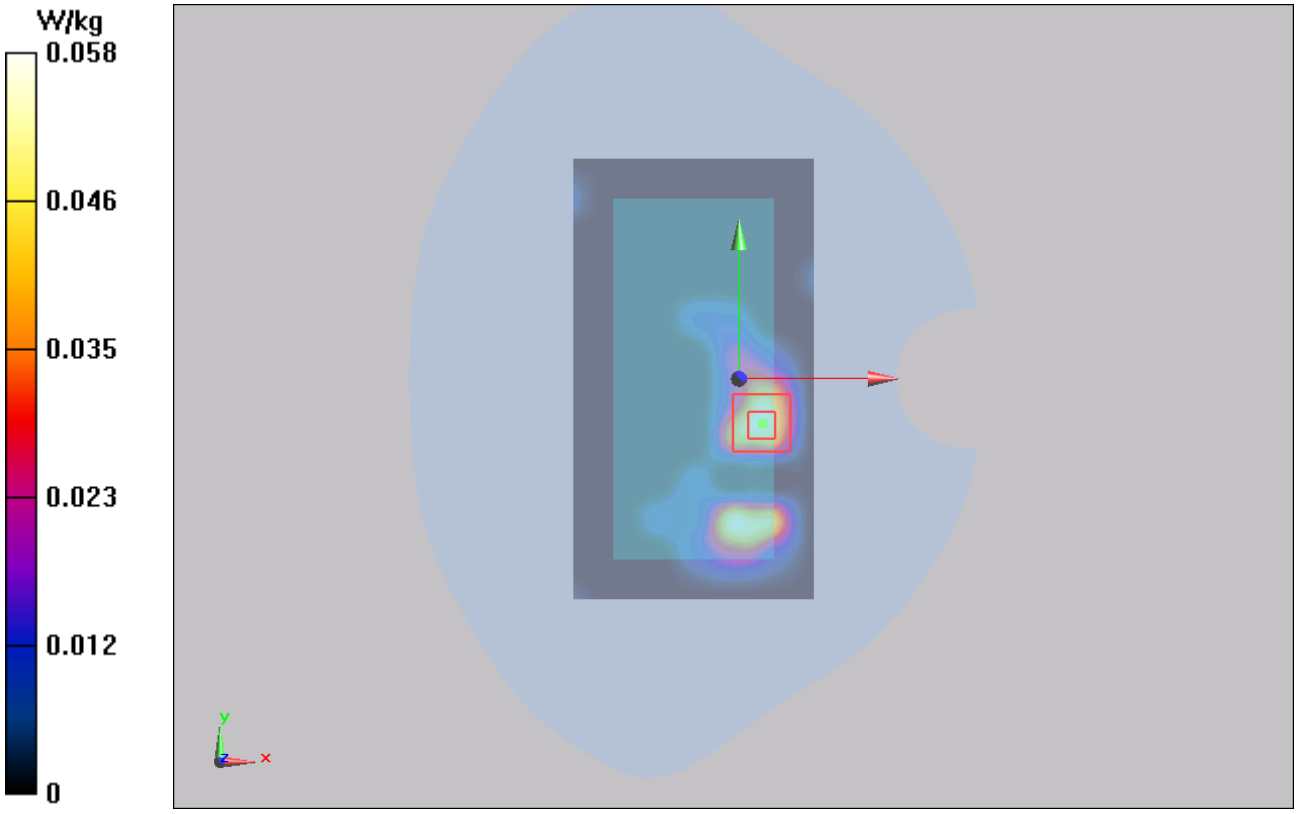


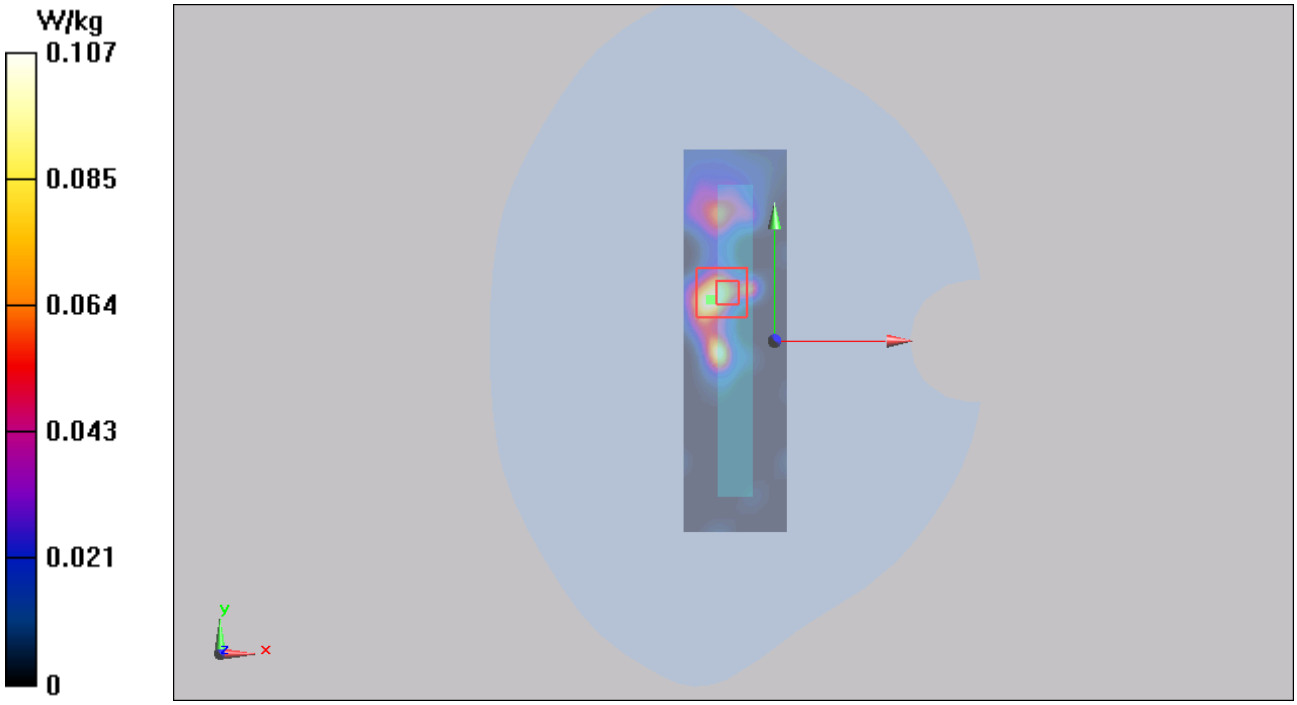
Figure 28 802.11a Test Position 2 Channel 36

802.11a Test Position 6 CH 36 (Ant 2)

Date/Time: 3/31/2014 2:48:42 PM
Communication System:802.11a (0); Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 5.15 S/m; ε_r = 48.696; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 6 CH 36/Area Scan (31x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.107 W/kg

Test Position 6 CH 36/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.143 V/m; Power Drift = 0.142 dB
Peak SAR (extrapolated) = 0.317 W/kg
SAR(1 g) = 0.094 W/kg; SAR(10 g) = 0.031 W/kg
Maximum value of SAR (measured) = 0.107 W/kg



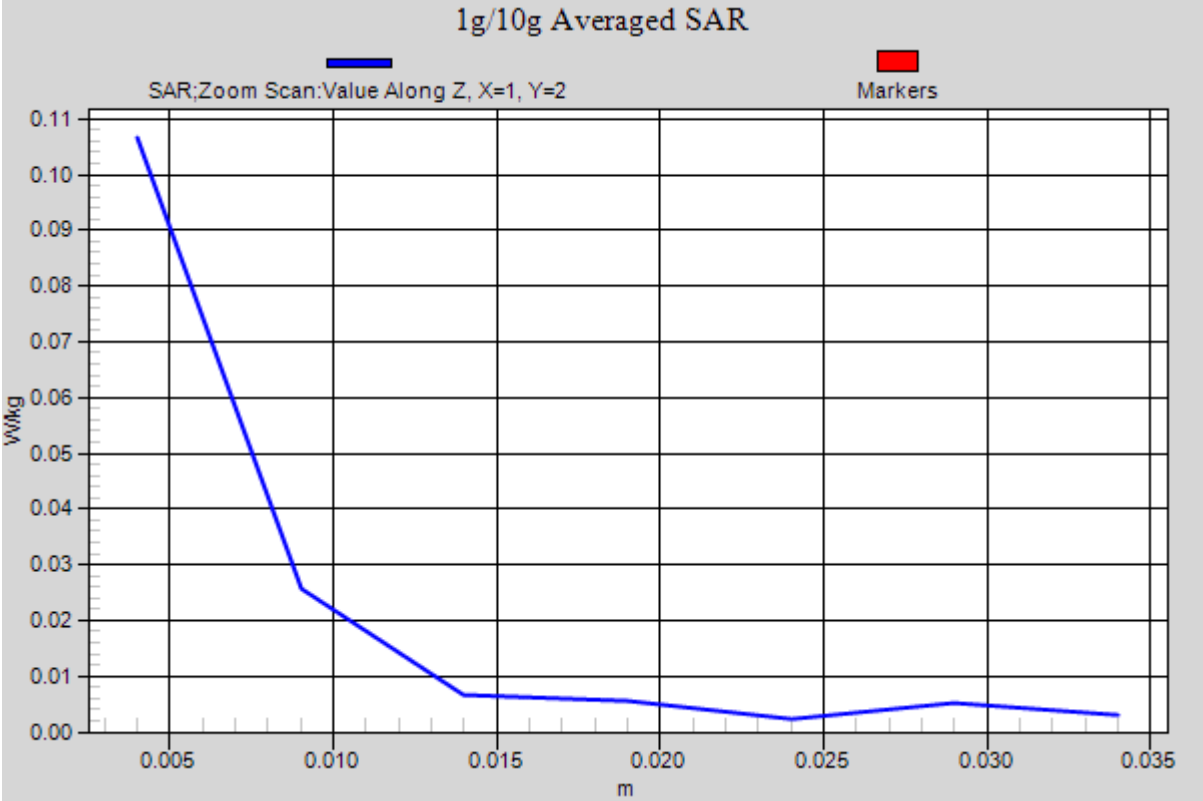


Figure 29 802.11a Test Position 6 Channel 36

802.11a Test Position 1 CH 52 (Ant 1)

Date/Time: 3/31/2014 1:39:29 PM
Communication System:802.11a (0); Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.271 S/m; ε_r = 48.481; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 1 CH 52/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0855 W/kg

Test Position 1 CH 52/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.867 V/m; Power Drift = 0.017 dB
Peak SAR (extrapolated) = 0.322 W/kg
SAR(1 g) = 0.086 W/kg; SAR(10 g) = 0.029 W/kg
Maximum value of SAR (measured) = 0.0898 W/kg

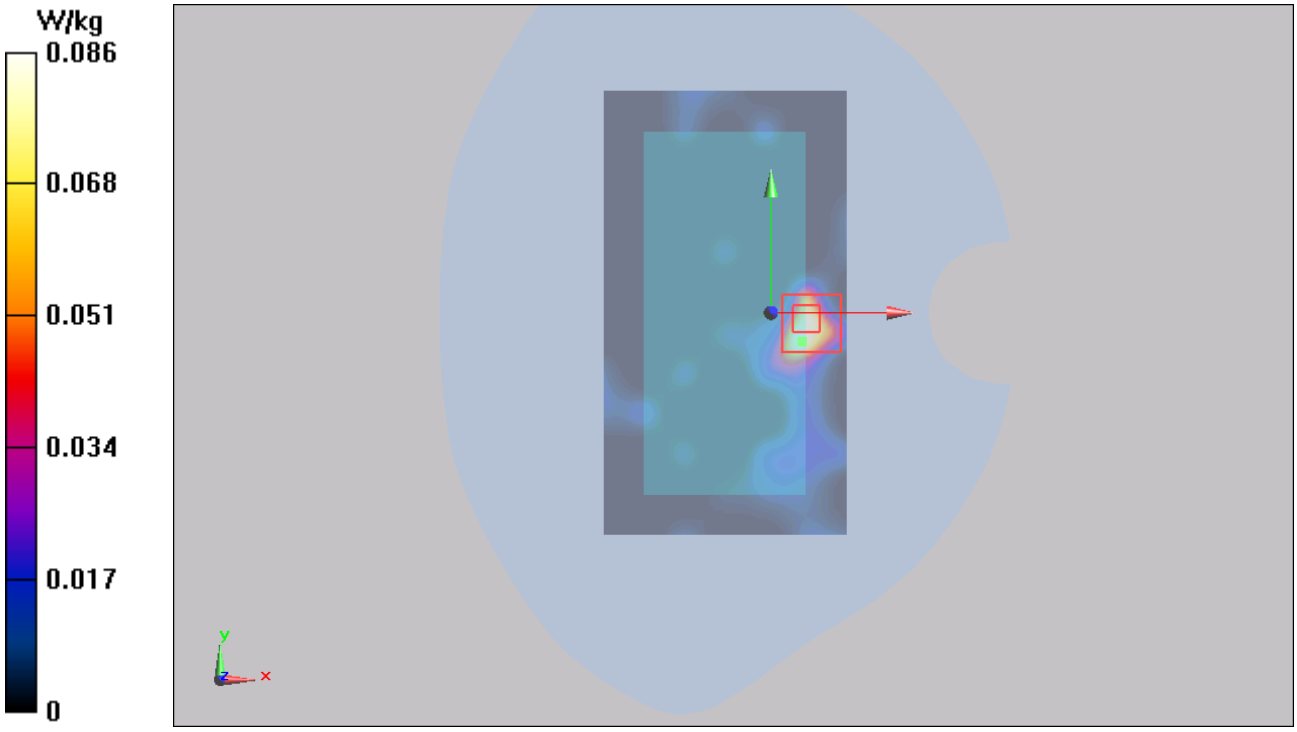


Figure 30 802.11a Test Position 1 Channel 52

802.11a Test Position 2 CH 52 (Ant 1)

Date/Time: 3/31/2014 1:19:53 PM
Communication System:802.11a (0); Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.271 S/m; ε_r = 48.481; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 CH 52/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0397 W/kg

Test Position 2 CH 52/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.821 V/m; Power Drift = 0.082 dB
Peak SAR (extrapolated) = 0.130 W/kg
SAR(1 g) = 0.030 W/kg; SAR(10 g) = 0.010 W/kg
Maximum value of SAR (measured) = 0.0290 W/kg

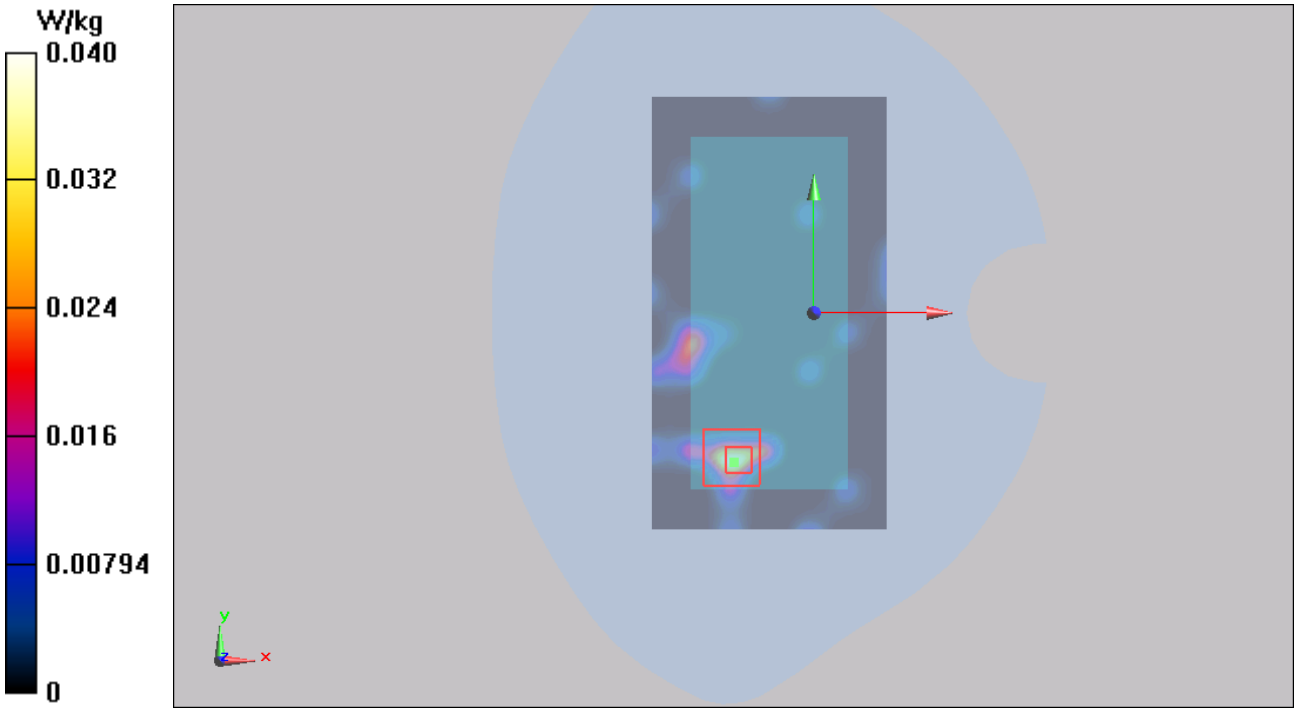


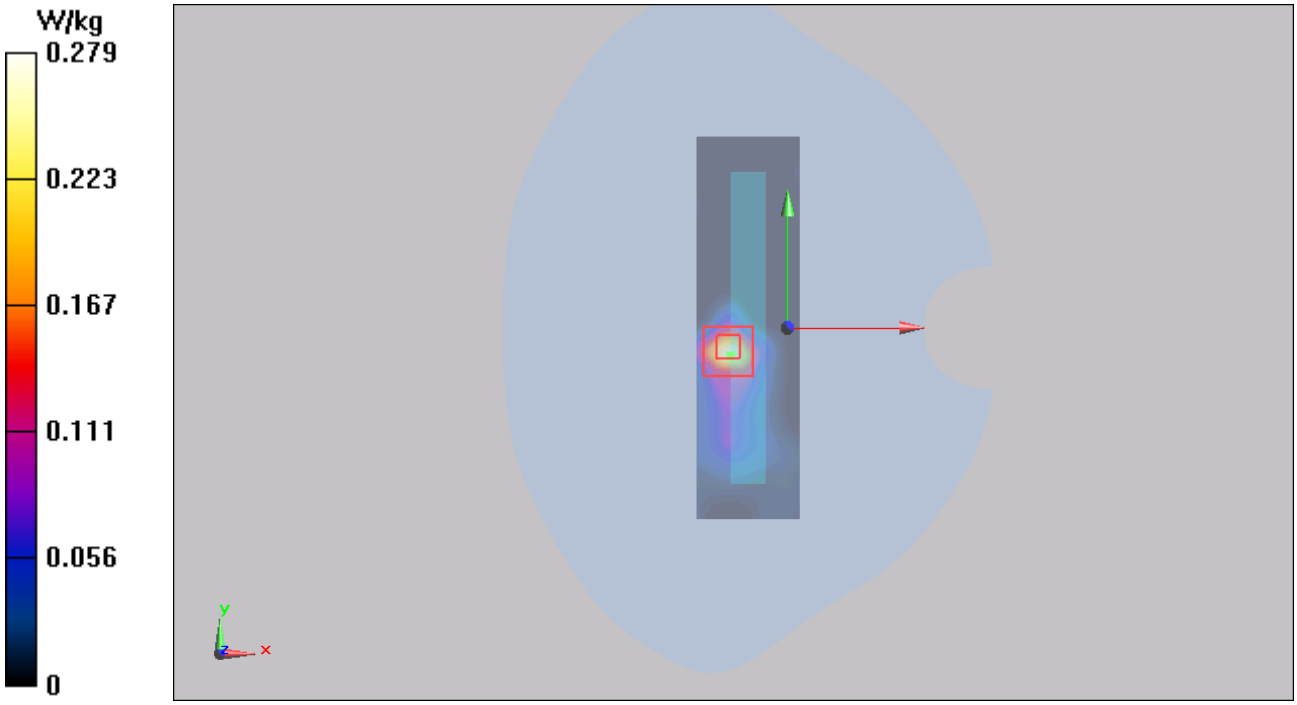
Figure 31 802.11a Test Position 2 Channel 52

802.11a Test Position 5 CH 52 (Ant 1)

Date/Time: 3/31/2014 1:03:28 PM
Communication System:802.11a (0); Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.271 S/m; ε_r = 48.481; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 5 CH 52/Area Scan (31x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.279 W/kg

Test Position 5 CH 52/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.109 V/m; Power Drift = 0.063 dB
Peak SAR (extrapolated) = 0.512 W/kg
SAR(1 g) = 0.196 W/kg; SAR(10 g) = 0.070 W/kg
Maximum value of SAR (measured) = 0.228 W/kg



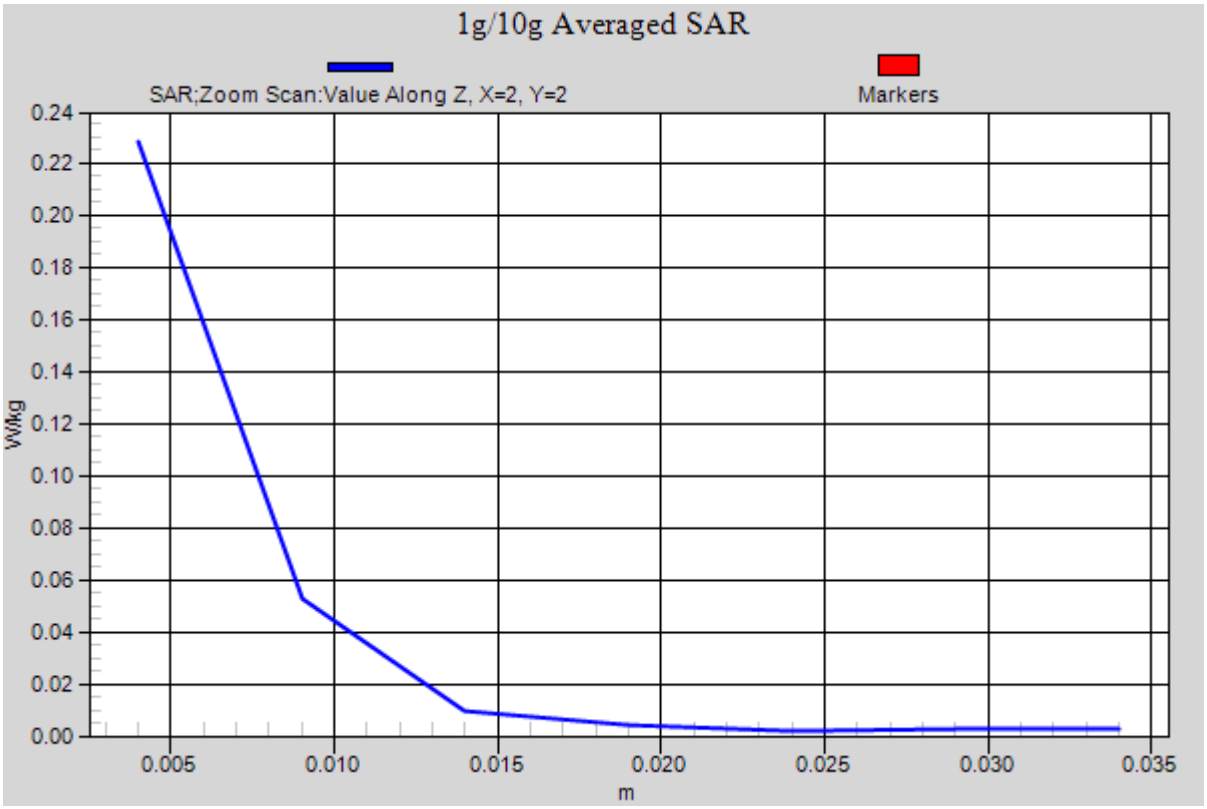


Figure 32 802.11a Test Position 5 Channel 52

802.11a Test Position 1 CH 52 (Ant 2)

Date/Time: 3/31/2014 11:37:02 AM
Communication System:802.11a (0); Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.271 S/m; ε_r = 48.481; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 1 CH 52/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0490 W/kg

Test Position 1 CH 52/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.893 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 0.245 W/kg
SAR(1 g) = 0.051 W/kg; SAR(10 g) = 0.014 W/kg
Maximum value of SAR (measured) = 0.0467 W/kg

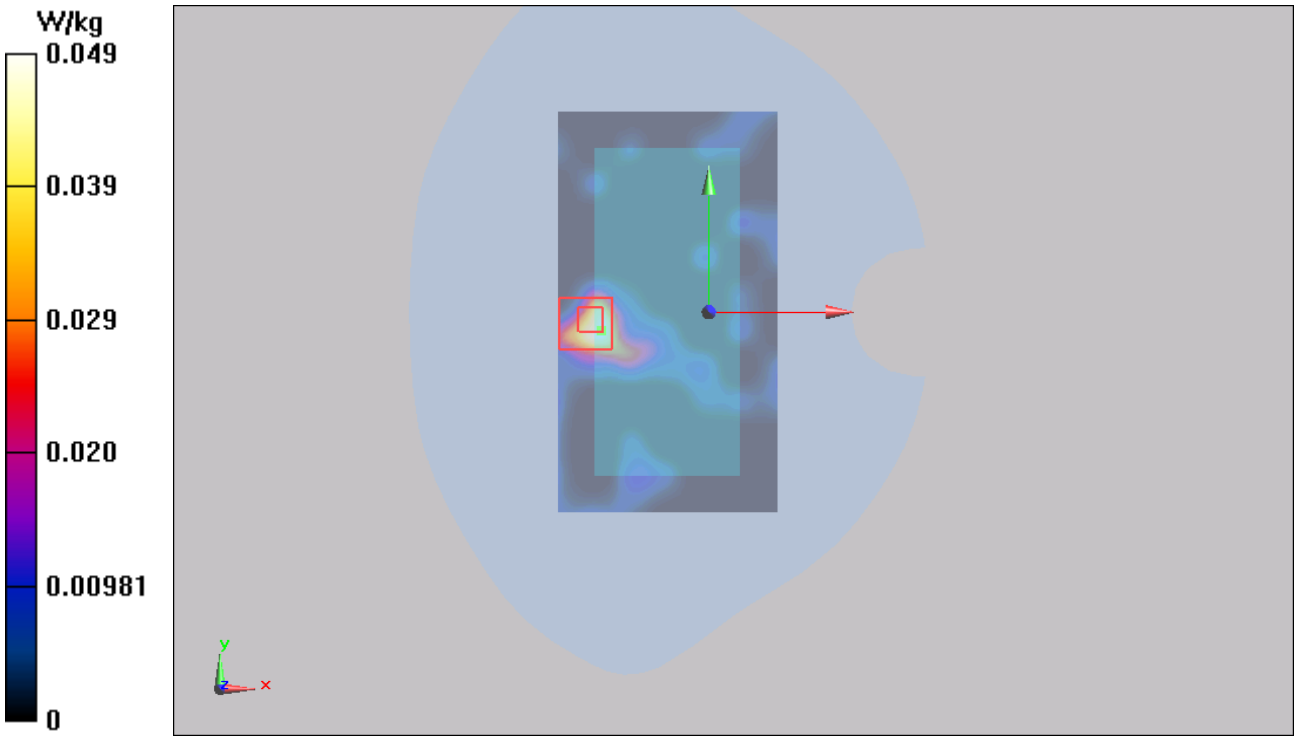


Figure 33 802.11a Test Position 1 Channel 52

802.11a Test Position 2 CH 52 (Ant 2)

Date/Time: 3/31/2014 12:09:35 PM
Communication System:802.11a (0); Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.271 S/m; ε_r = 48.481; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 CH 52/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.118 W/kg

Test Position 2 CH 52/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.481 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 0.266 W/kg
SAR(1 g) = 0.063 W/kg; SAR(10 g) = 0.022 W/kg
Maximum value of SAR (measured) = 0.0607 W/kg

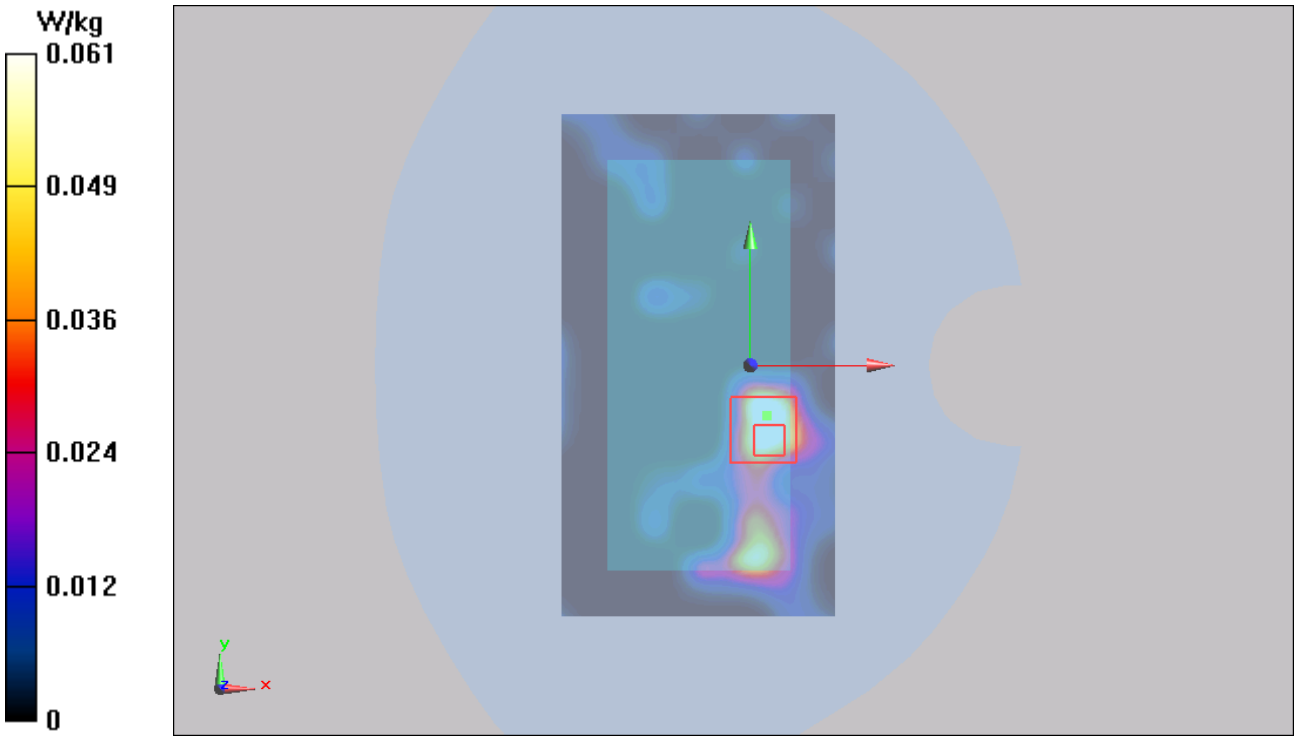


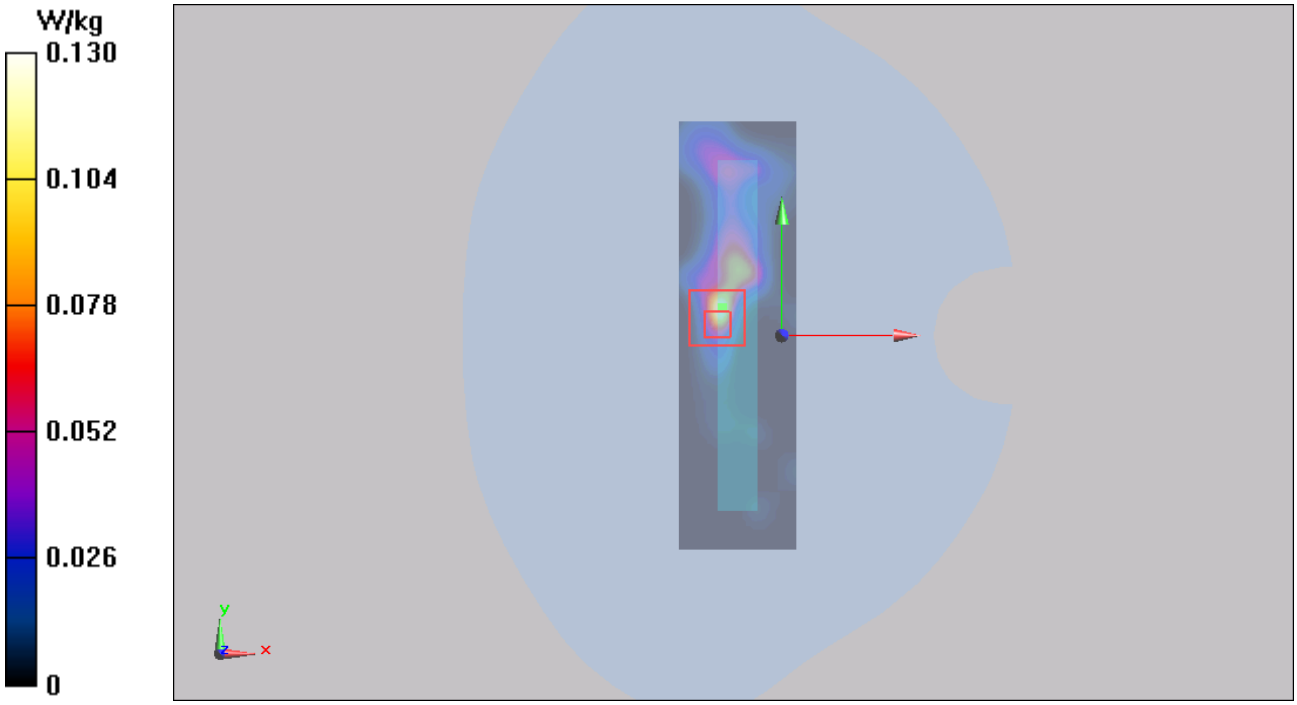
Figure 34 802.11a Test Position 2 Channel 52

802.11a Test Position 6 CH 52 (Ant 2)

Date/Time: 3/31/2014 12:31:01 PM
Communication System:802.11a (0); Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.271 S/m; ε_r = 48.481; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.72, 4.72, 4.72); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 6 CH 52/Area Scan (31x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.130 W/kg

Test Position 6 CH 52/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.133 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 0.327 W/kg
SAR(1 g) = 0.098 W/kg; SAR(10 g) = 0.030 W/kg
Maximum value of SAR (measured) = 0.125 W/kg



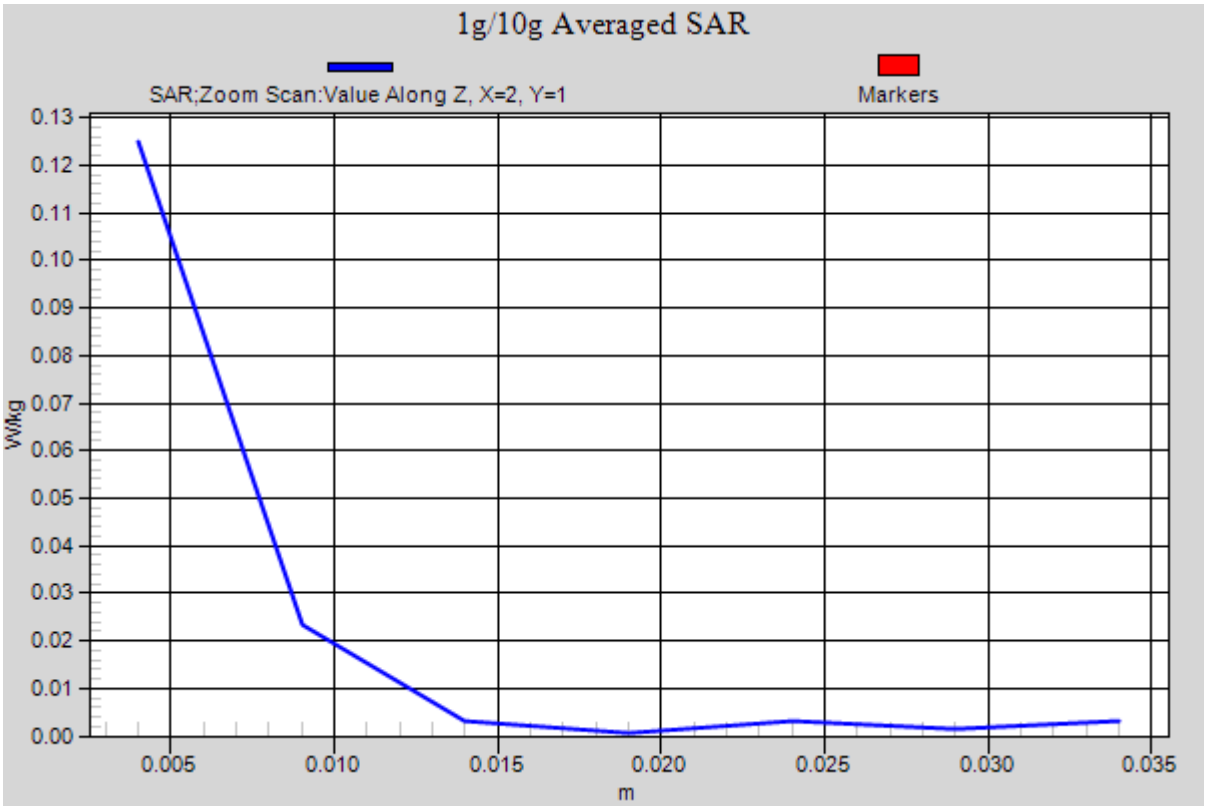


Figure 35 802.11a Test Position 6 Channel 52

802.11a Test Position 1 CH 140 (Ant 1)

Date/Time: 3/30/2014 9:47:29 PM
Communication System:802.11a (0); Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 6.09 S/m; ε_r = 47.632; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.46, 4.46, 4.46); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 1 CH 140/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.285 W/kg

Test Position 1 CH 140/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.839 V/m; Power Drift = -0.060 dB
Peak SAR (extrapolated) = 0.519 W/kg
SAR(1 g) = 0.158 W/kg; SAR(10 g) = 0.059 W/kg
Maximum value of SAR (measured) = 0.166 W/kg

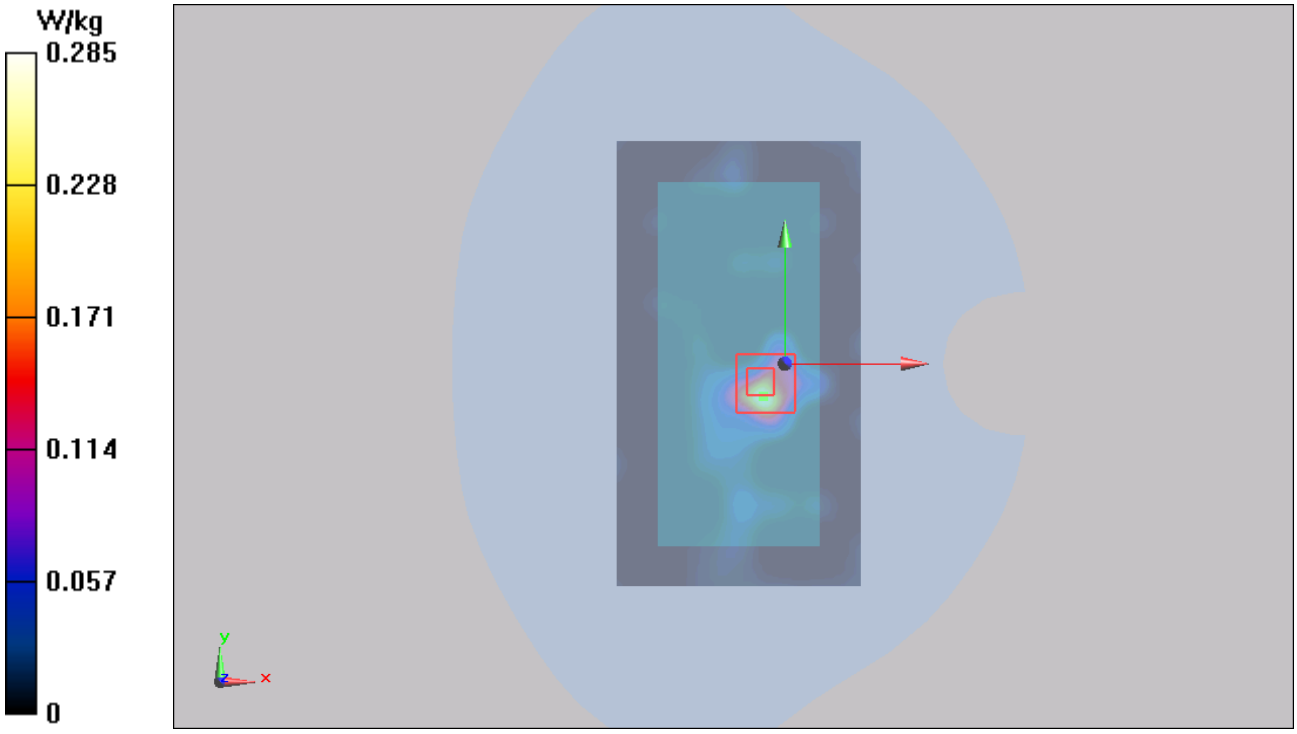


Figure 36 802.11a Test Position 1 Channel 140

802.11a Test Position 2 CH 140 (Ant 1)

Date/Time: 3/30/2014 10:11:38 PM
Communication System:802.11a (0); Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 6.09 S/m; ε_r = 47.632; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.46, 4.46, 4.46); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 CH 140/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0860 W/kg

Test Position 2 CH 140/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.426 V/m; Power Drift = 0.054 dB
Peak SAR (extrapolated) = 0.278 W/kg
SAR(1 g) = 0.058 W/kg; SAR(10 g) = 0.022 W/kg
Maximum value of SAR (measured) = 0.0468 W/kg

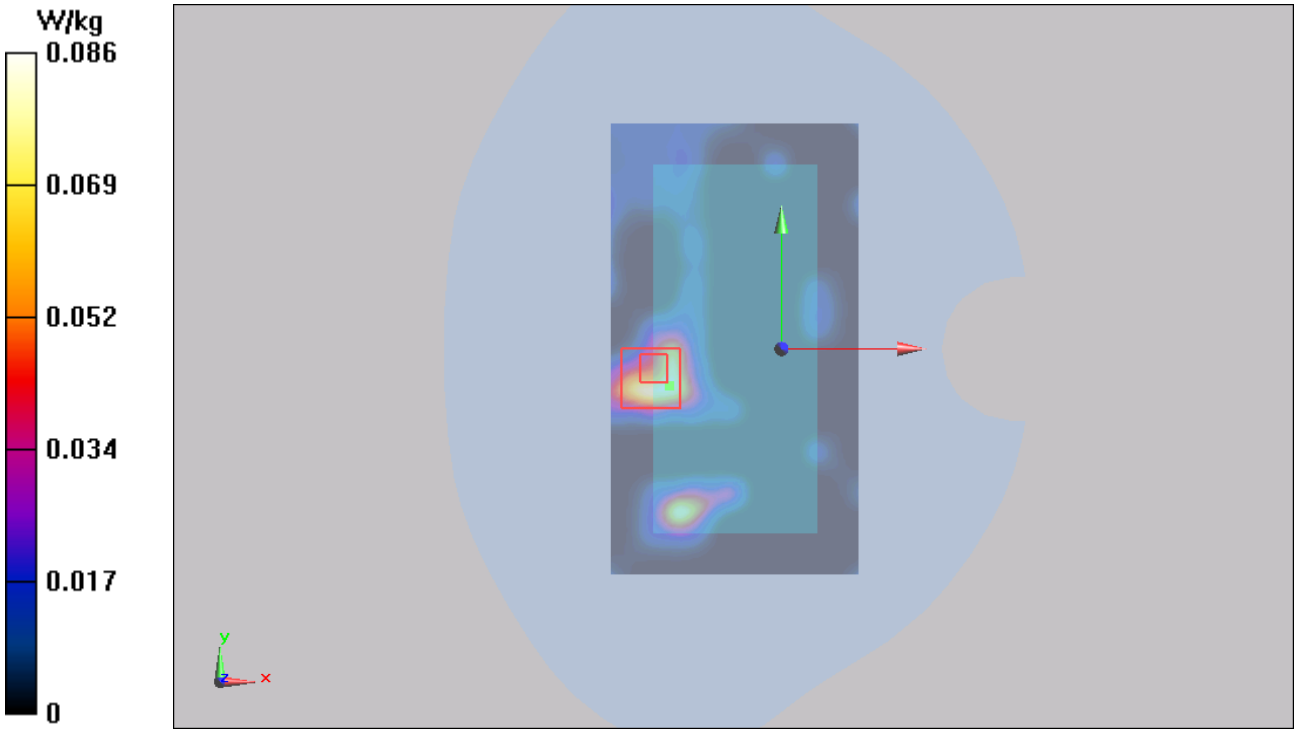


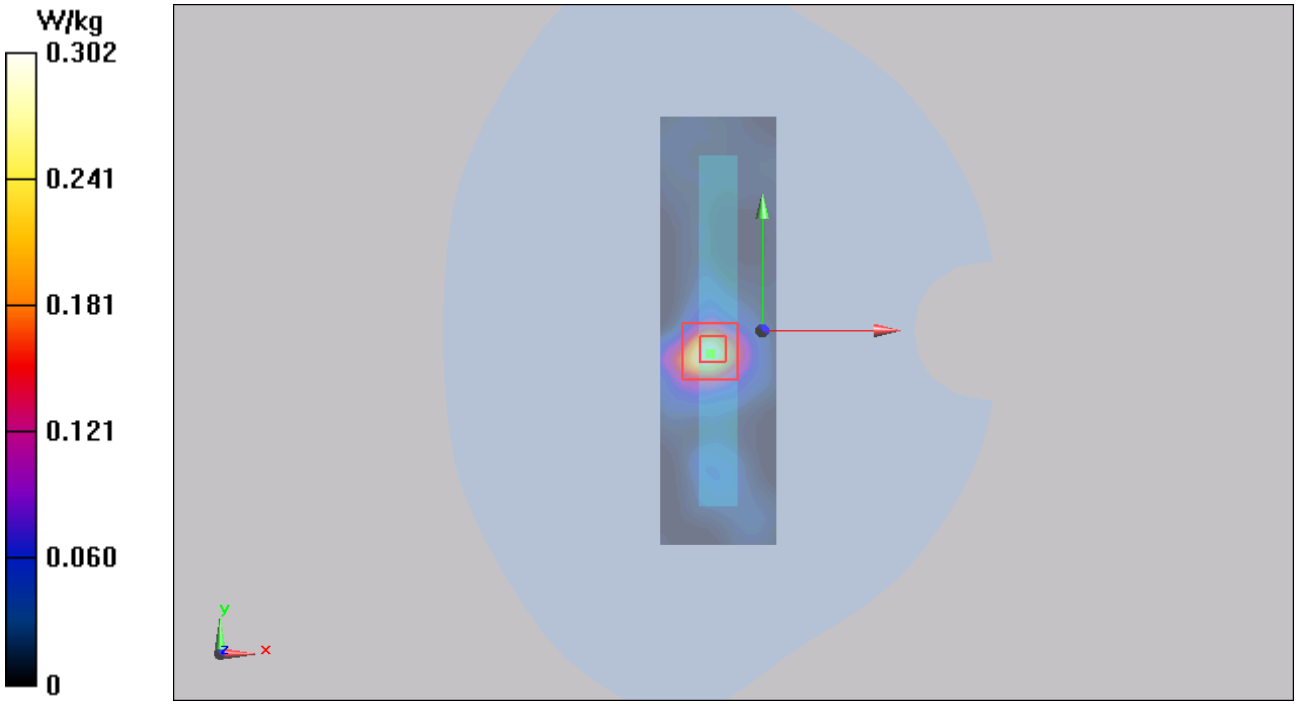
Figure 37 802.11a Test Position 2 Channel 140

802.11a Test Position 5 CH 140 (Ant 1)

Date/Time: 3/30/2014 10:31:27 PM
Communication System:802.11a (0); Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 6.09 S/m; ε_r = 47.632; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.46, 4.46, 4.46); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 5 CH 140/Area Scan (31x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.302 W/kg

Test Position 5 CH 140/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.154 V/m; Power Drift = 0.024 dB
Peak SAR (extrapolated) = 0.726 W/kg
SAR(1 g) = 0.262 W/kg; SAR(10 g) = 0.092 W/kg
Maximum value of SAR (measured) = 0.313 W/kg



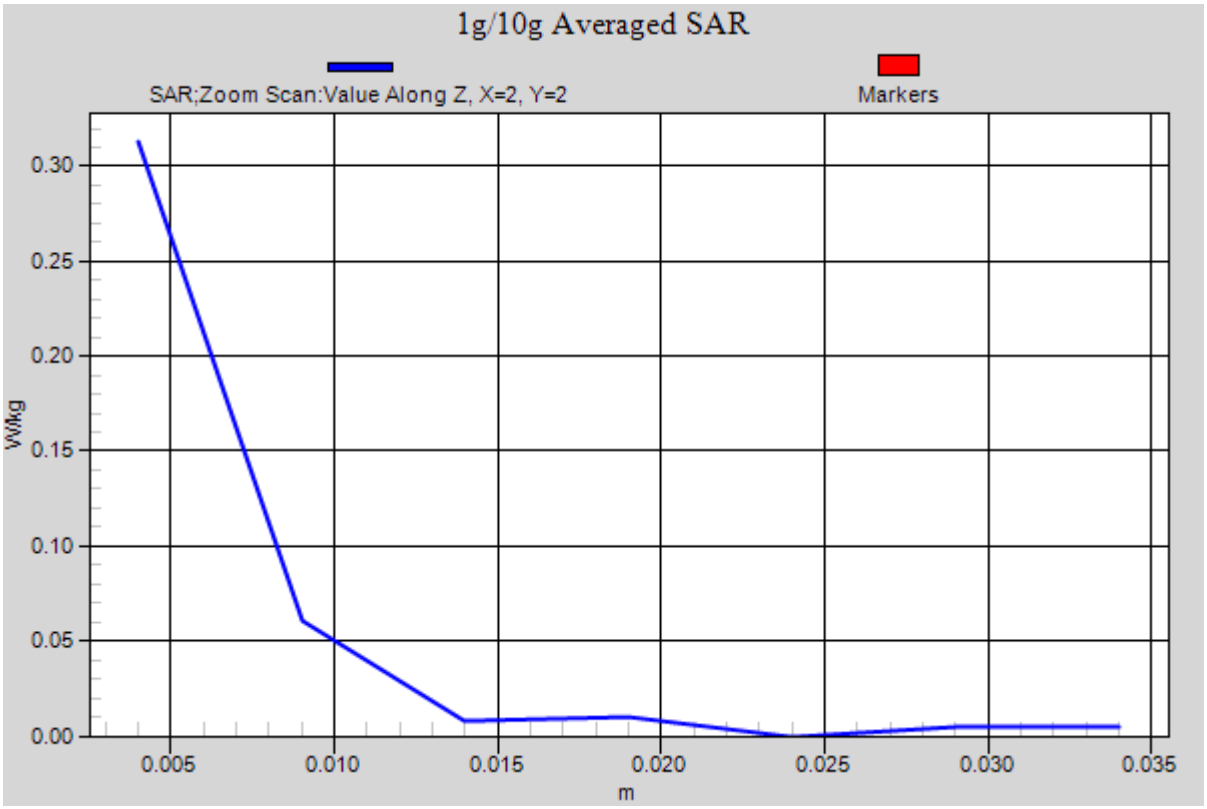


Figure 38 802.11a Test Position 5 Channel 140

802.11a Test Position 1 CH 140 (Ant 2)

Date/Time: 3/30/2014 8:46:01 PM
Communication System:802.11a (0); Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 6.09 S/m; ε_r = 47.632; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.46, 4.46, 4.46); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 1 CH 140/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.114 W/kg

Test Position 1 CH 140/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.825 V/m; Power Drift = 0.083 dB
Peak SAR (extrapolated) = 0.419 W/kg
SAR(1 g) = 0.100 W/kg; SAR(10 g) = 0.033 W/kg
Maximum value of SAR (measured) = 0.0989 W/kg

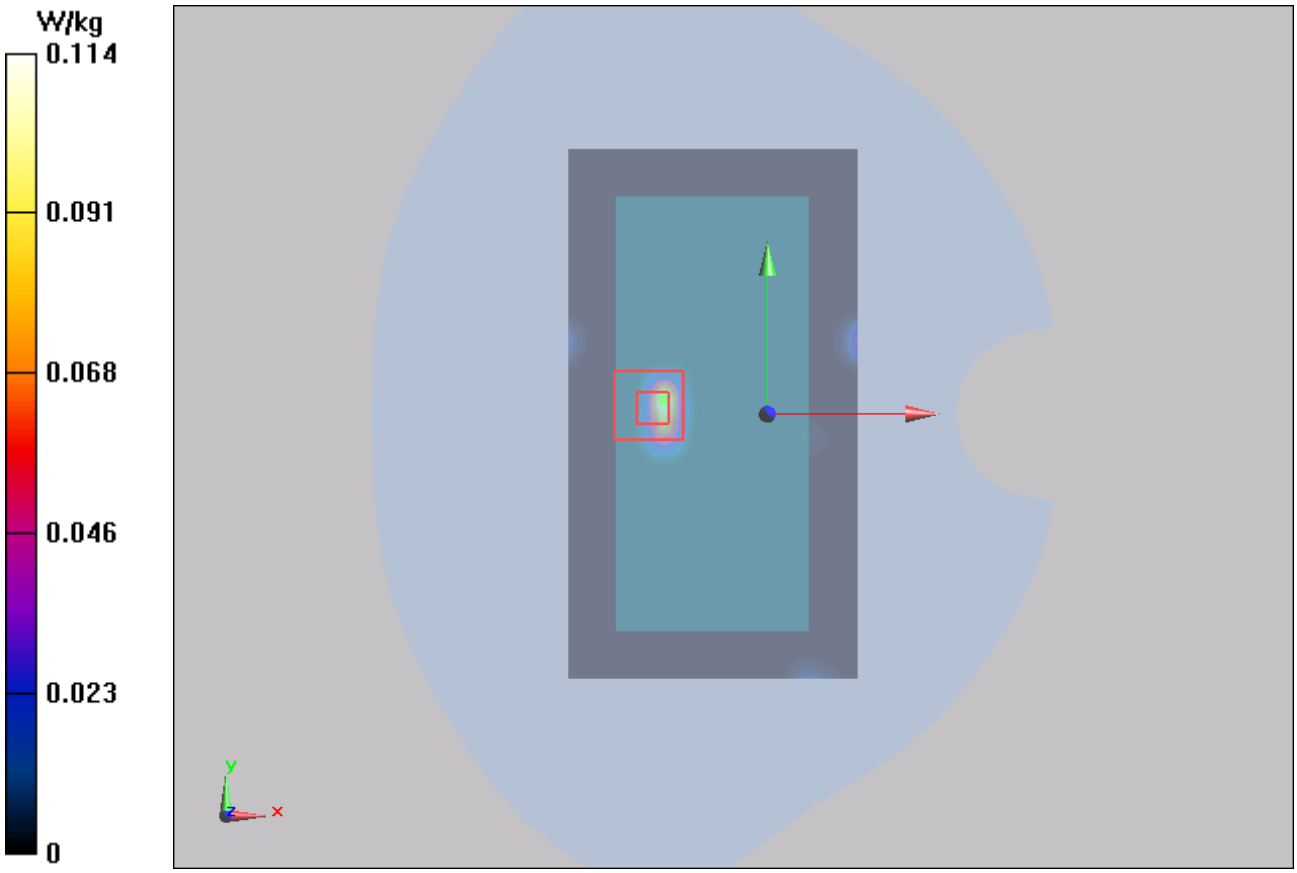


Figure 39 802.11a Test Position 1 Channel 140

802.11a Test Position 2 CH 140 (Ant 2)

Date/Time: 3/30/2014 9:06:18 PM
Communication System:802.11a (0); Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 6.09 S/m; ε_r = 47.632; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.46, 4.46, 4.46); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 2 CH 140/Area Scan (61x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0916 W/kg

Test Position 2 CH 140/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.293 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.330 W/kg
SAR(1 g) = 0.072 W/kg; SAR(10 g) = 0.023 W/kg
Maximum value of SAR (measured) = 0.0737 W/kg

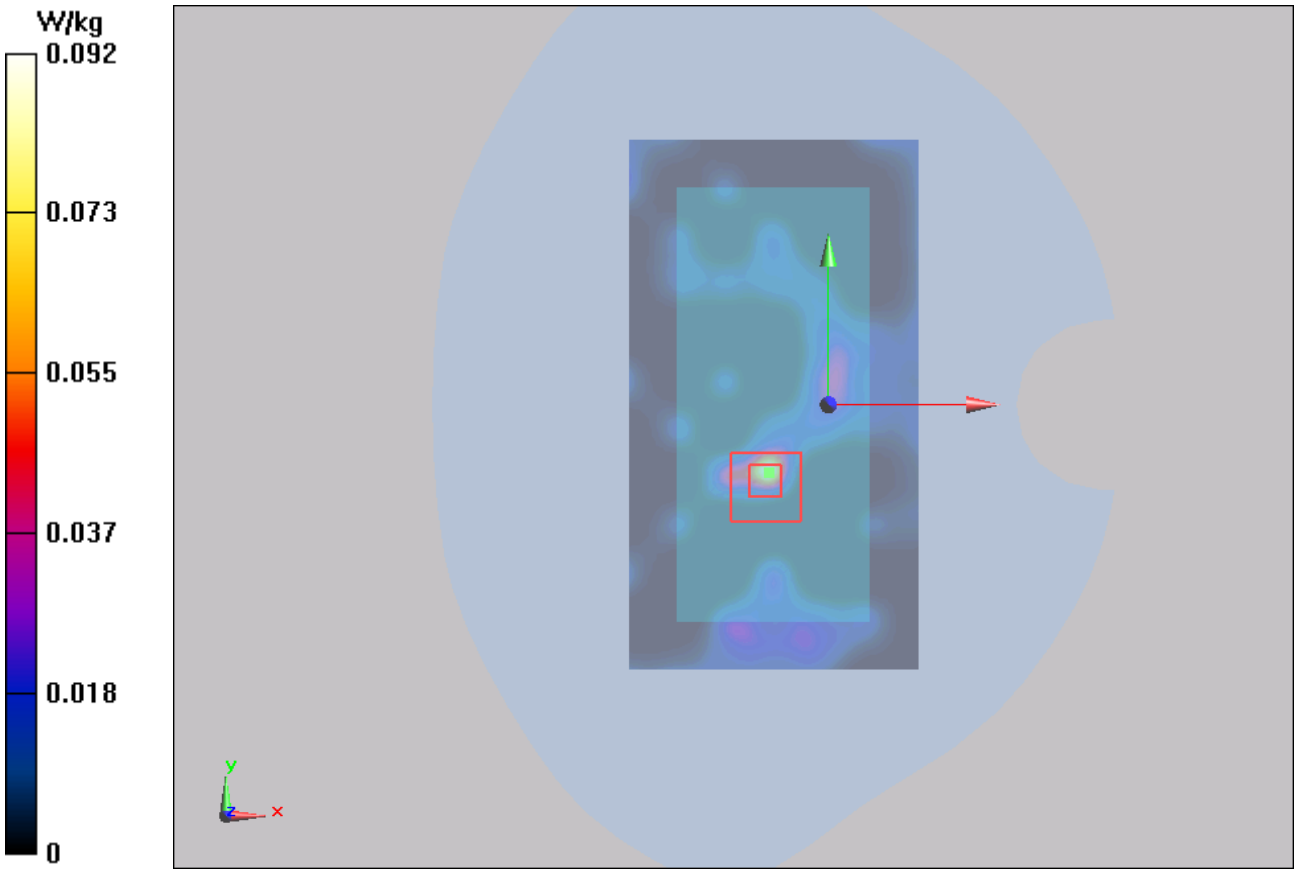


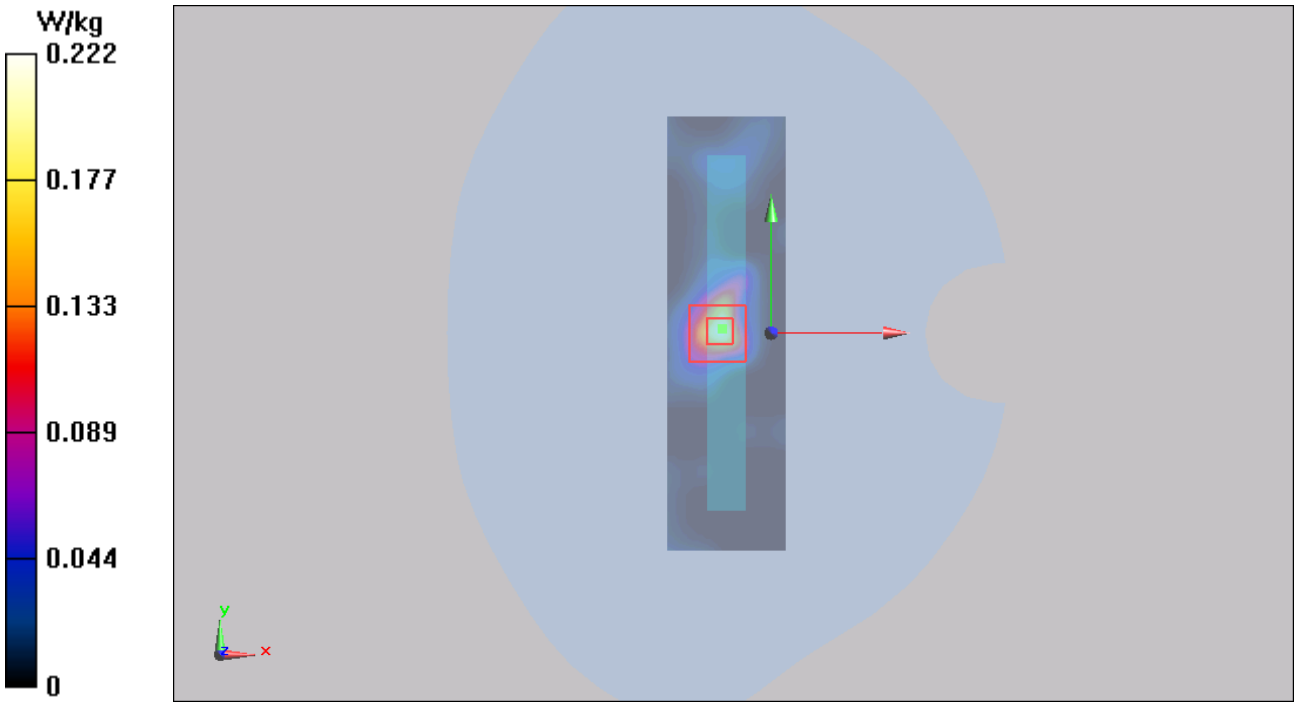
Figure 40 802.11a Test Position 2 Channel 140

802.11a Test Position 6 CH 140 (Ant 2)

Date/Time: 3/30/2014 9:27:30 PM
Communication System:802.11a (0); Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 6.09 S/m; ε_r = 47.632; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.46, 4.46, 4.46); Calibrated: 11/28/2013
Electronics: DAE4 Sn1317; Calibrated: 1/16/2014
Phantom: SAM 2; Type: SAM;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Test Position 6 CH 140/Area Scan (31x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.222 W/kg

Test Position 6 CH 140/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.046 V/m; Power Drift = 0.041 dB
Peak SAR (extrapolated) = 0.599 W/kg
SAR(1 g) = 0.183 W/kg; SAR(10 g) = 0.057 W/kg
Maximum value of SAR (measured) = 0.228 W/kg



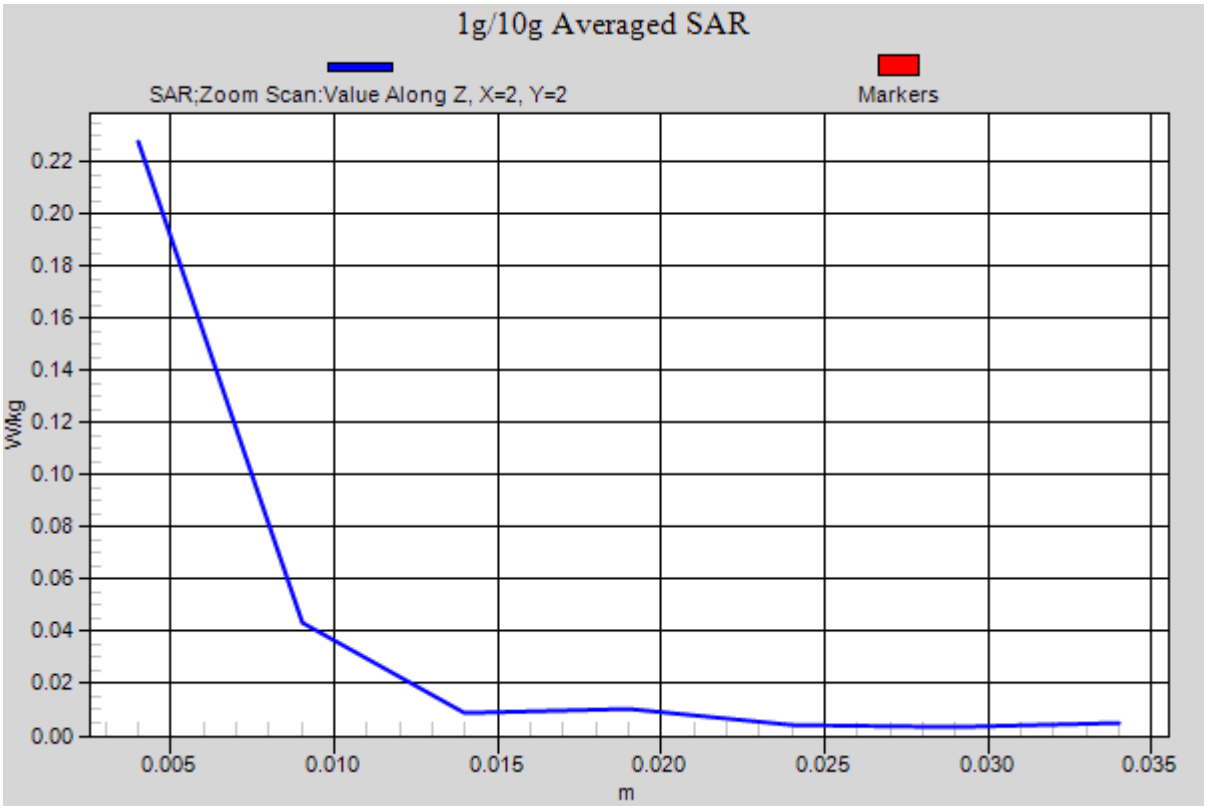


Figure 41 802.11a Test Position 6 Channel 140

ANNEX D: Probe Calibration Certificate

In Colleboration with
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E-mail: Info@emcite.com Http://www.emcite.com
CNAS 校准 CNAS L0442

Client TA-ShangHai Certificate No: J13-2-2971

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3677
Calibration Procedure(s)	TMC-OS-E-02-195 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	November 28, 2013

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	01-Jul-13 (TMC, No.JW13-044)	Jun-14
Power sensor NRP-Z91	101547	01-Jul-13 (TMC, No.JW13-044)	Jun-14
Power sensor NRP-Z91	101548	01-Jul-13 (TMC, No.JW13-044)	Jun-14
Reference10dBAttenuator	BT0520	12-Dec-12(TMC,No.JZ12-867)	Dec-14
Reference20dBAttenuator	BT0267	12-Dec-12(TMC,No.JZ12-866)	Dec-14
Reference Probe EX3DV4	SN 3846	03-Sep-13(SPEAG,No.EX3-3846_Sep13)	Sep-14
DAE4	SN 777	22-Feb-13 (SPEAG, DAE4-777_Feb13)	Feb -14
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
SignalGeneratorMG3700A	6201052605	01-Jul-13 (TMC, No.JW13-045)	Jun-14
Network Analyzer E5071C	MY46110673	15-Feb-13 (TMC, No.JZ13-781)	Feb-14

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Lu Bingsong	Deputy Director of the laboratory	

Issued: November 29, 2013

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i θ=0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003

b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300MHz to 3GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z* frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- *Ax,y,z; Bx,y,z; Cx,y,z; VRx,y,z*:A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from±50MHz to±100MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

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Probe EX3DV4

SN: 3677

Calibrated: November 28, 2013

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

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DASY – Parameters of Probe: EX3DV4 - SN: 3677

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm(μV/(V/m)^2)^A	0.38	0.44	0.38	±10.8%
DCP(mV)^B	99.8	100.9	101.9	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	93.3	±2.6%
		Y	0.0	0.0	1.0		101.7	
		Z	0.0	0.0	1.0		92.1	

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor k=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

^{A} The uncertainties of Norm X, Y, Z do not affect the E^2-field uncertainty inside TSL (see Page 5 and Page 6).
^{B} Numerical linearization parameter: uncertainty not required.
^{E} Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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DASY – Parameters of Probe: EX3DV4 - SN: 3677

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz][C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.94	9.94	9.94	0.16	1.13	±12%
850	41.5	0.92	9.41	9.41	9.41	0.11	1.47	±12%
1750	40.1	1.37	8.22	8.22	8.22	0.14	2.11	±12%
1900	40.0	1.40	8.15	8.15	8.15	0.14	2.34	±12%
2100	39.8	1.49	7.87	7.87	7.87	0.13	3.21	±12%
2450	39.2	1.80	7.64	7.64	7.64	0.39	0.95	±12%
5200	36.0	4.66	5.73	5.73	5.73	0.95	0.62	±13%
5300	35.9	4.76	5.68	5.68	5.68	0.87	0.67	±13%
5500	35.6	4.96	5.62	5.62	5.62	0.97	0.62	±13%
5600	35.5	5.07	5.29	5.29	5.29	0.89	0.63	±13%
5800	35.3	5.27	5.29	5.29	5.29	1.02	0.61	±13%

[C] Frequency validity of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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DASY – Parameters of Probe: EX3DV4 - SN: 3677

Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz][C]	Relative Permittivity[F]	Conductivity (S/m)[F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.72	9.72	9.72	0.11	1.97	±12%
850	55.2	0.99	9.51	9.51	9.51	0.15	1.55	±12%
1750	53.4	1.49	7.77	7.77	7.77	0.14	3.23	±12%
1900	53.3	1.52	7.63	7.63	7.63	0.15	2.81	±12%
2100	53.2	1.62	7.97	7.97	7.97	0.16	4.09	±12%
2450	52.7	1.95	7.61	7.61	7.61	0.45	0.92	±12%
5200	49.0	5.30	4.72	4.72	4.72	0.66	1.10	±13%
5300	48.9	5.42	4.67	4.67	4.67	0.64	1.19	±13%
5500	48.6	5.65	4.34	4.34	4.34	0.73	0.80	±13%
5600	48.5	5.77	4.29	4.29	4.29	0.74	0.81	±13%
5800	48.2	6.00	4.46	4.46	4.46	0.78	0.80	±13%

[C] Frequency validity of ±100MHz only applies for DASY v4 4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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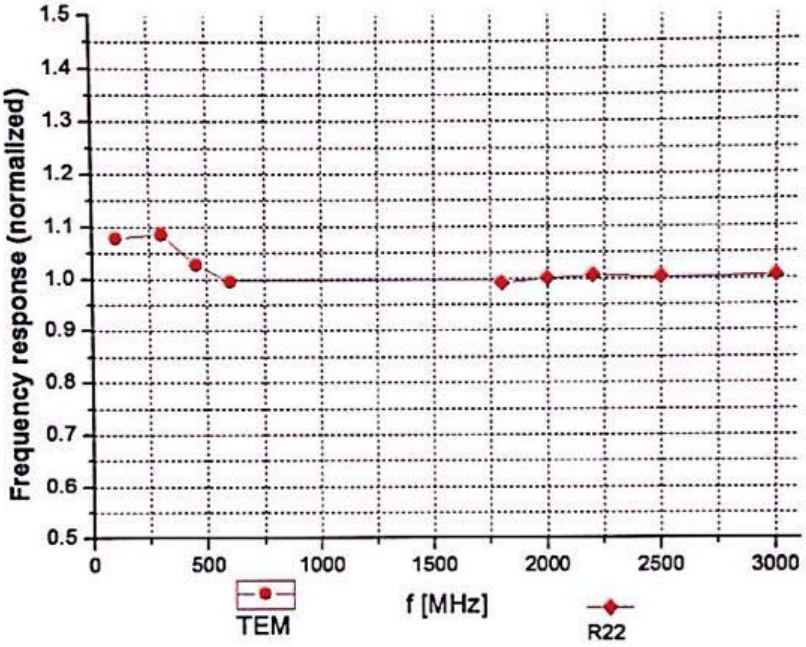
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.5% (k=2)

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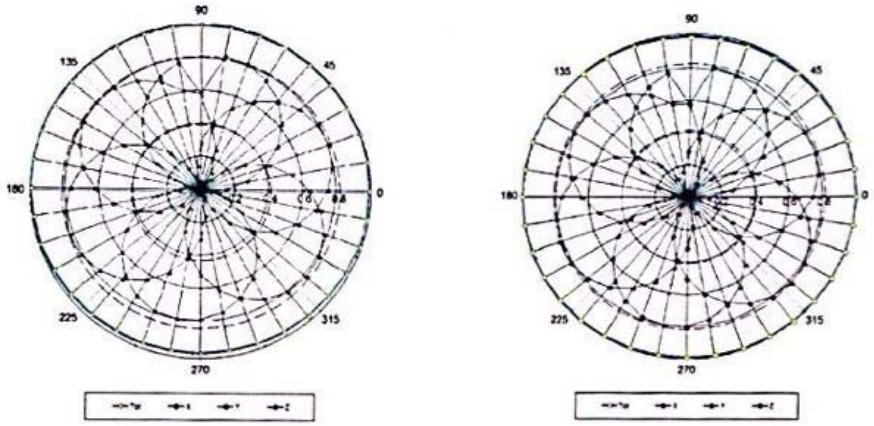
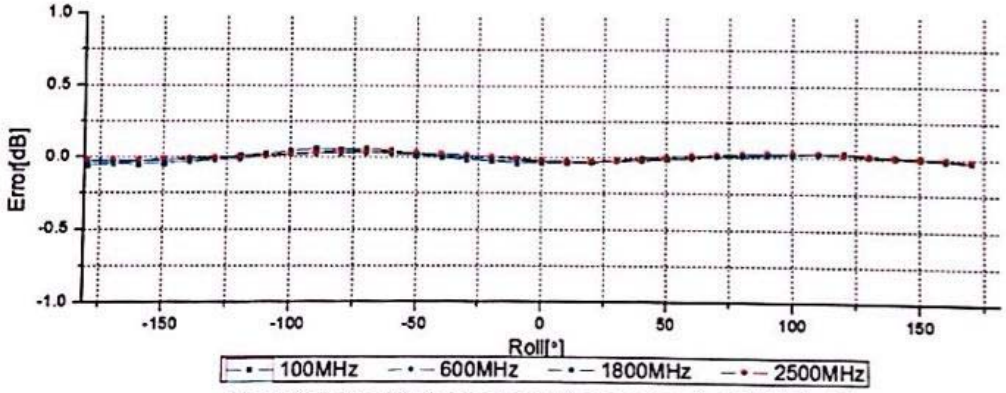
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM **f=1800 MHz, R22**





Uncertainty of Axial Isotropy Assessment: ±0.9% (k=2)

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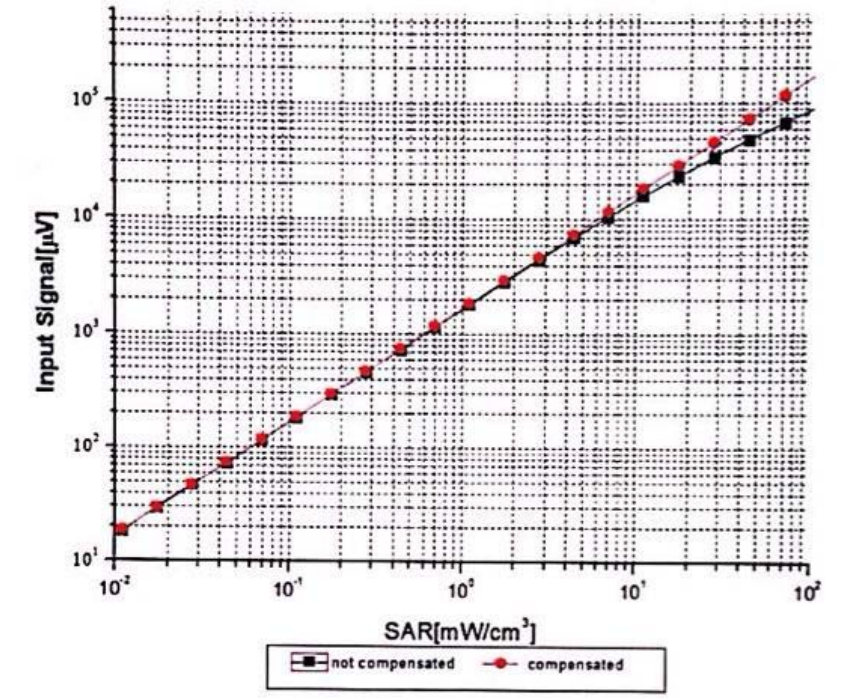
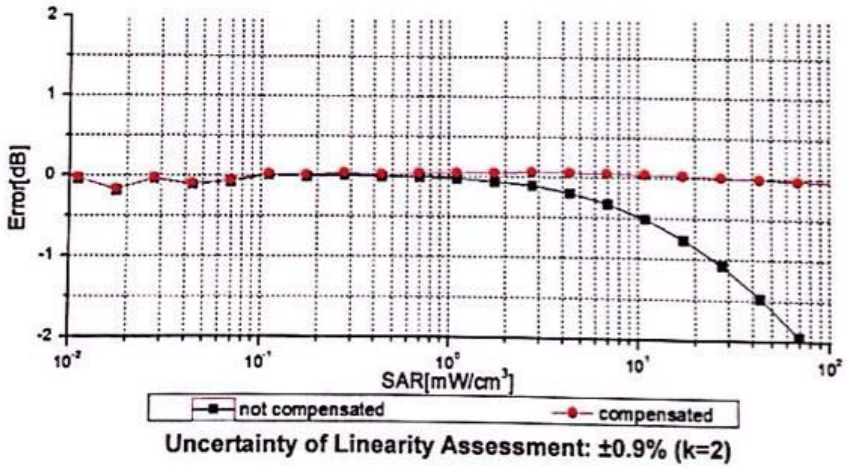
Dynamic Range f(SAR_{head})
(TEM cell, f = 900 MHz)





Uncertainty of Linearity Assessment: ±0.9% (k=2)

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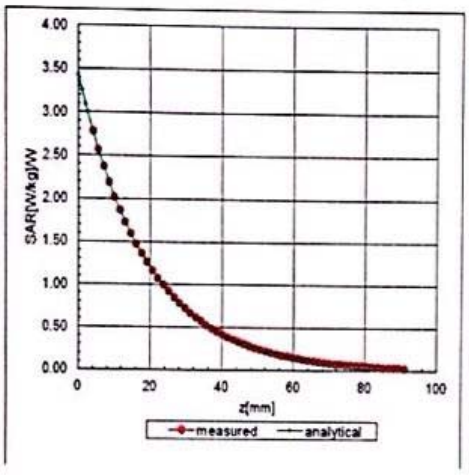
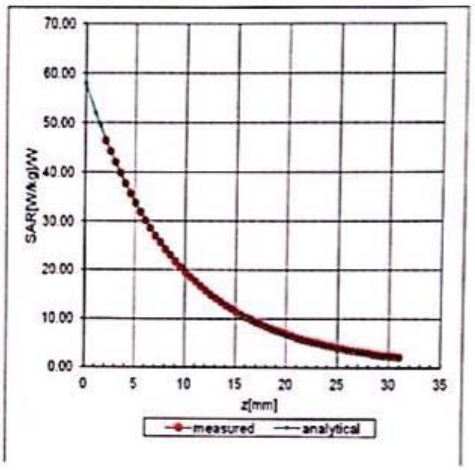
Conversion Factor Assessment

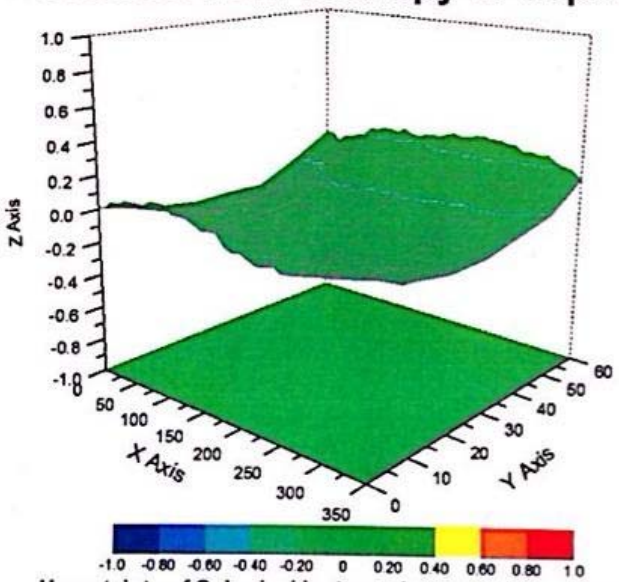
f=850 MHz, WGLS R9(H_convF)



f=2450 MHz, WGLS R26(H_convF)



Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: ±2.8% (K=2)

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DASY - Parameters of Probe: EX3DV4 - SN: 3677

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	117
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	2mm

ANNEX E: D835V2 Dipole Calibration Certificate

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

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

Accreditation No.: SCS 108

Client TA-Shanghai (Auden)

Certificate No: D835V2-4d020_Aug11

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 4d020

Calibration procedure(s): QA CAL-05.v8
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: August 26, 2011

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

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

Issued: August 26, 2011

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

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

Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

Appendix

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.391 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	April 22, 2004

DASY5 Validation Report for Head TSL

Date: 25.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

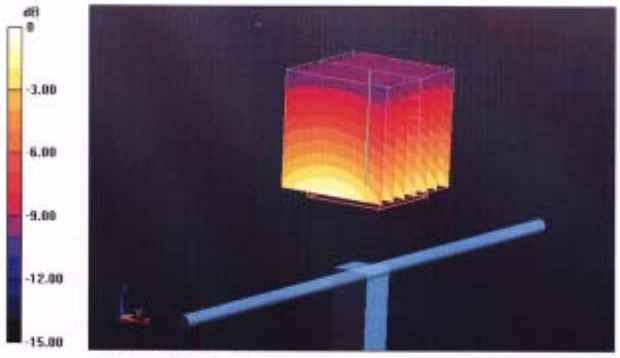
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

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

DASY52 Configuration:

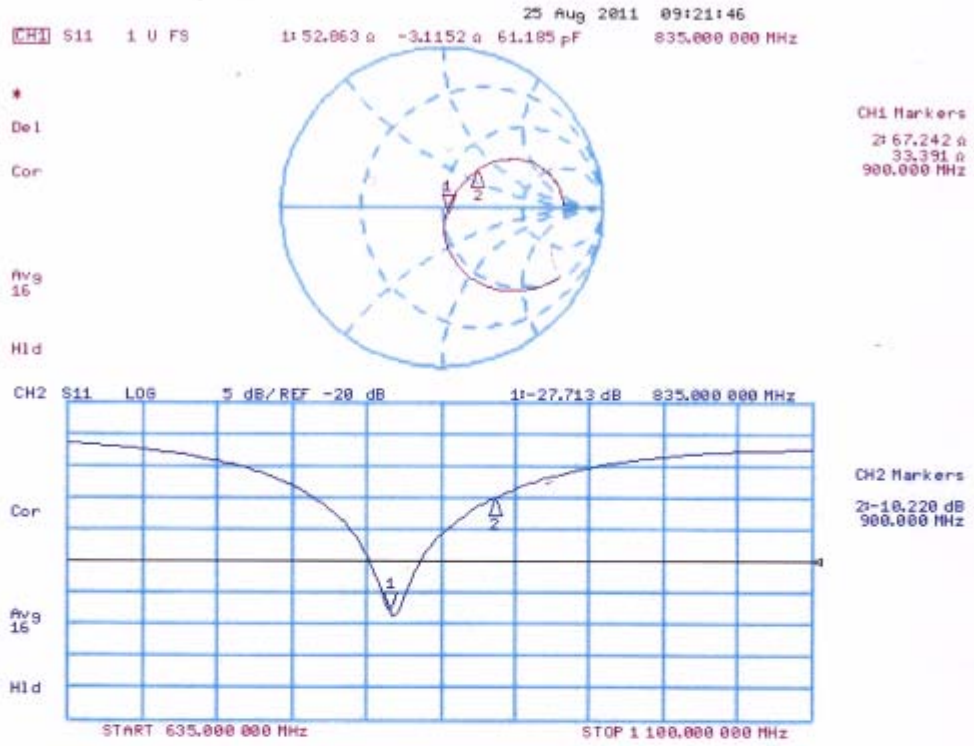
- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

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



0 dB = 2.710mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 26.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

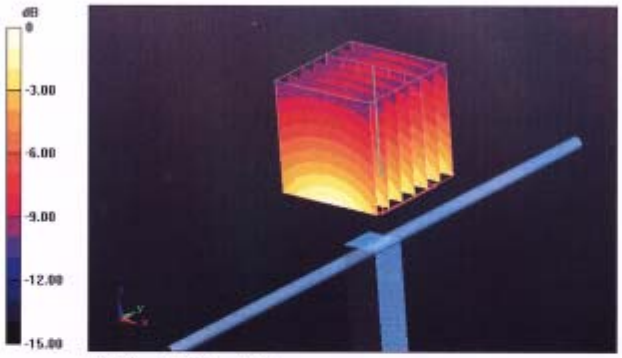
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

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

DASY52 Configuration:

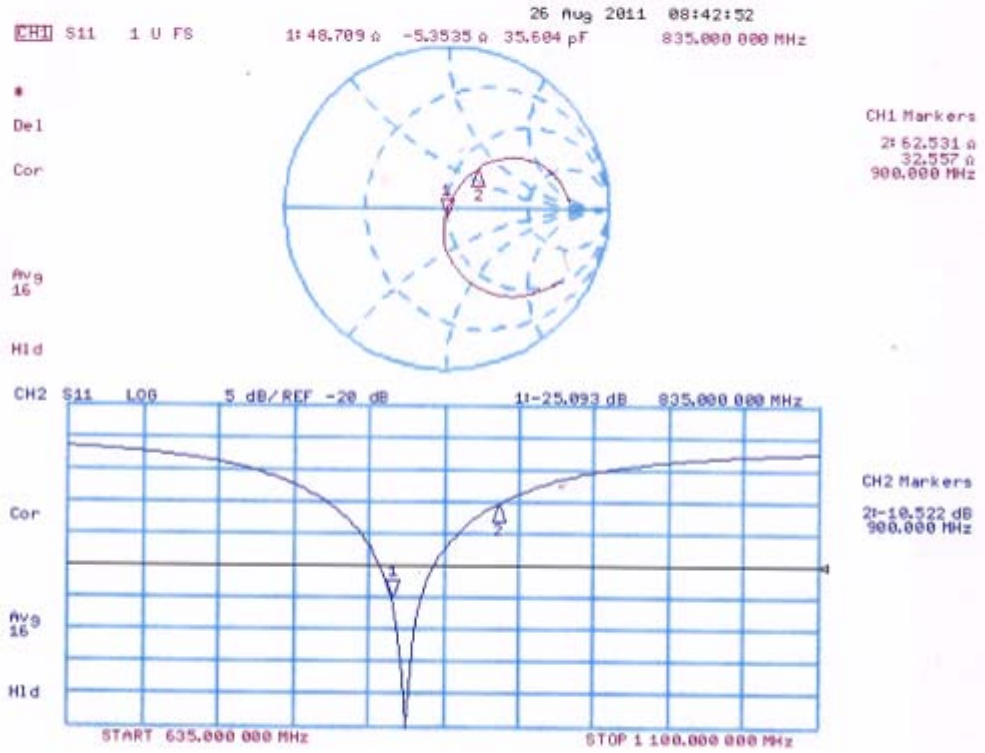
- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

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



0 dB = 2.830mW/g

Impedance Measurement Plot for Body TSL



ANNEX F: D2450V2 Dipole Calibration Certificate

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

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

Accreditation No.: SCS 108

Client TA-Shanghai (Auden) **Certificate No: D2450V2-786_Aug11**

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 786
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 29, 2011

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 29, 2011

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

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

Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.4 ± 6 %	1.85 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.7 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**53.8 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.41 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**25.4 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.8 ± 6 %	2.02 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**51.7 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.10 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**24.2 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.0 Ω + 2.4 jΩ
Return Loss	- 25.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.4 Ω + 3.5 jΩ
Return Loss	- 29.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.154 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	May 06, 2005

DASY5 Validation Report for Head TSL

Date: 29.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

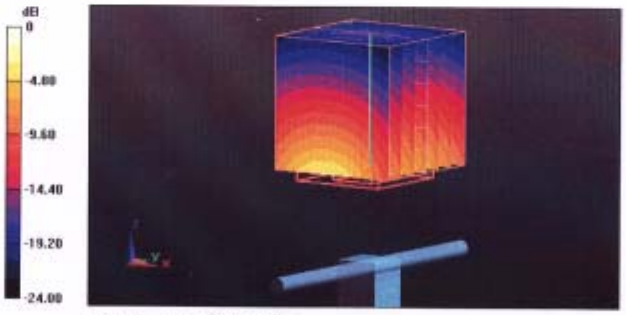
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 786

Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.85 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

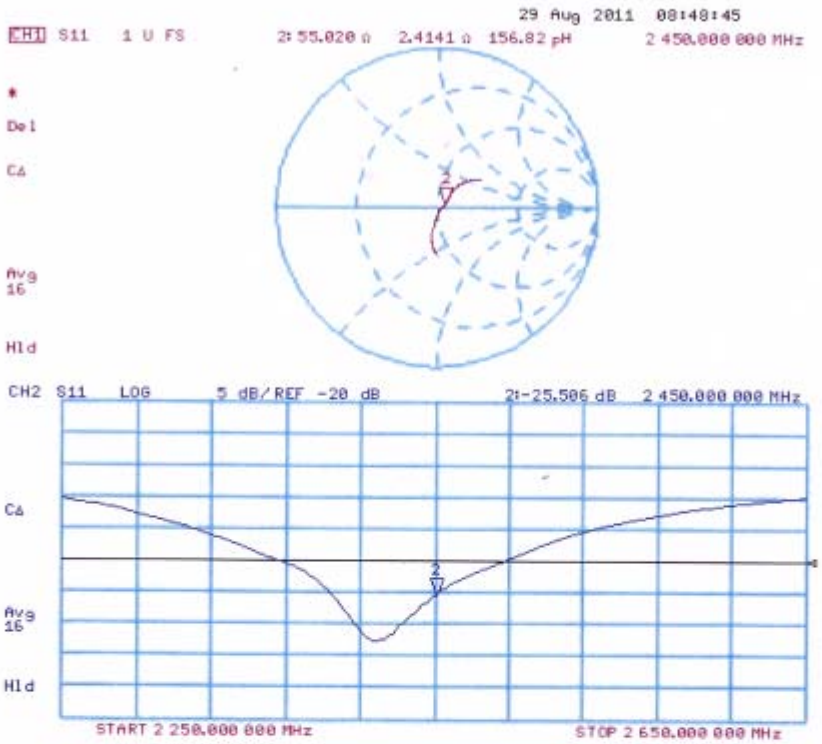
- Probe: ES3DV3 - SN3205; ConvF(4.45, 4.45, 4.45); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.5 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 28.303 W/kg
SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.41 mW/g
Maximum value of SAR (measured) = 17.561 mW/g



0 dB = 17.560mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 29.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

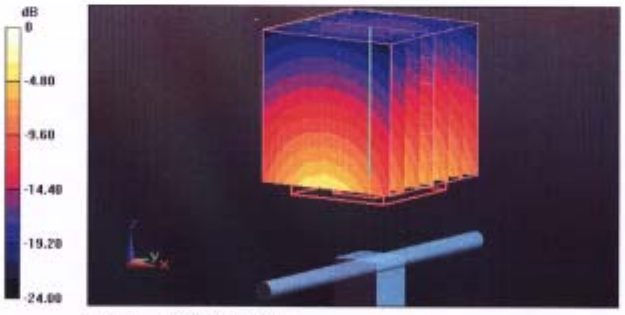
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 786

Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.02 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

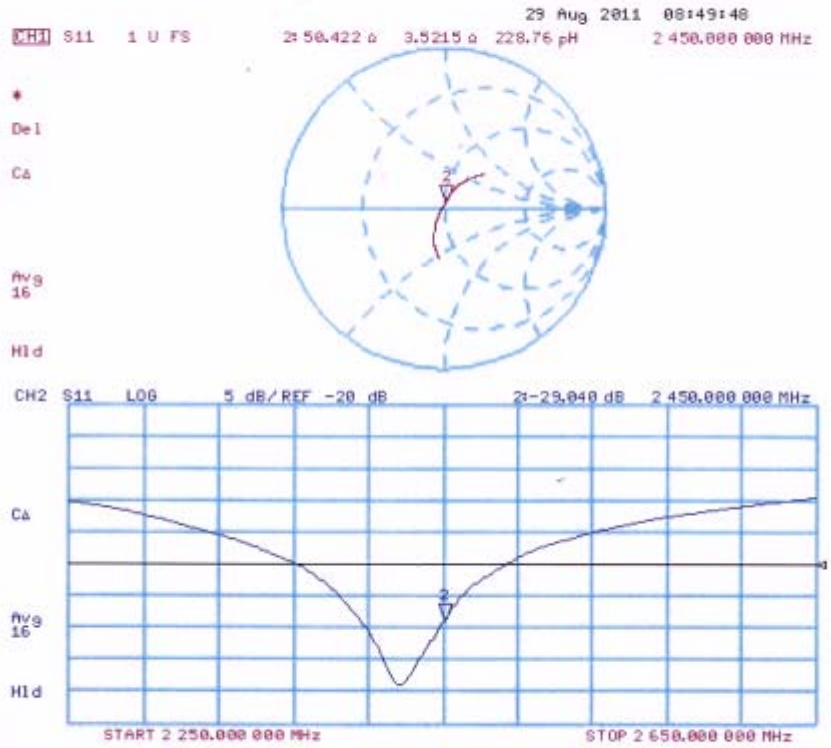
- Probe: ES3DV3 - SN3205; ConvF(4.26, 4.26, 4.26); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.118 V/m; Power Drift = 0.0072 dB
Peak SAR (extrapolated) = 27.129 W/kg
SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.1 mW/g
Maximum value of SAR (measured) = 17.387 mW/g



0 dB = 17.390mW/g

Impedance Measurement Plot for Body TSL



ANNEX G: D5GHzV2 Dipole Calibration Certificate

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

S Schweizerischer Kalibrierdienst
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Accreditation No.: SCS 108

Client Auden

Certificate No: D5GHzV2-1040_Jun12

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN: 1040
Calibration procedure(s)	QA CAL-22.v1 Calibration procedure for dipole validation kits between 3-6 GHz
Calibration date:	June 19, 2012

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe EX3DV4	SN: 3503	30-Dec-11 (No. EX3-3503_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	D. Iliev
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 20, 2012

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

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S Swiss Calibration Service

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

Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEC 62209-2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", March 2010

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

Additional Documentation:

c) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5500 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.0 ± 6 %	4.52 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.20 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**81.5 mW /g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.36 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**23.4 mW /g ± 19.5 % (k=2)**

Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.6 ± 6 %	4.80 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.82 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**87.5 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.52 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**25.0 mW / g ± 19.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.1 ± 6 %	5.11 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.23 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**81.6 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.35 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**23.3 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.0 ± 6 %	5.37 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.37 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**73.1 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.07 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.5 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.5 ± 6 %	5.76 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.87 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**78.1 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.19 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.7 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.0 ± 6 %	6.16 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.44 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**73.8 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.06 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.4 mW / g ± 19.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	49.2 Ω - 7.1 jΩ
Return Loss	- 22.8 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	51.5 Ω - 4.4 jΩ
Return Loss	- 26.8 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.3 Ω - 2.7 jΩ
Return Loss	- 24.9 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	49.6 Ω - 5.5 jΩ
Return Loss	- 25.2 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	52.5 Ω - 3.2 jΩ
Return Loss	- 28.1 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	56.6 Ω - 1.3 jΩ
Return Loss	- 24.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.202 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 30, 2005

DASY5 Validation Report for Head TSL

Date: 19.06.2012

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.52 mho/m; ε_r = 35; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 4.8 mho/m; ε_r = 34.6; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.11 mho/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

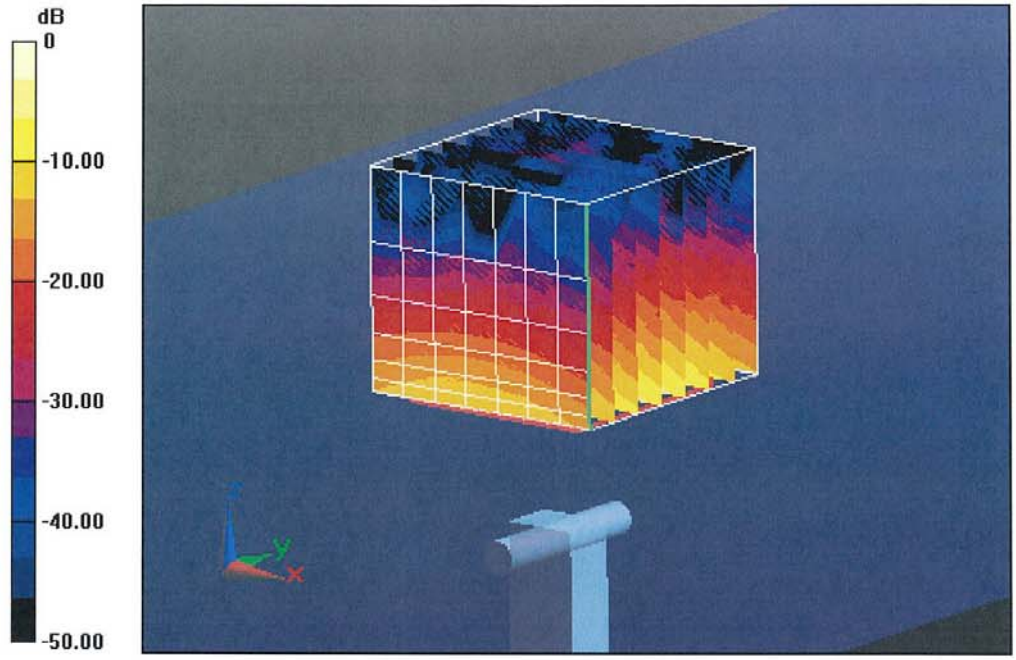
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.41, 5.41, 5.41); Calibrated: 30.12.2011, ConvF(4.91, 4.91, 4.91); Calibrated: 30.12.2011, ConvF(4.81, 4.81, 4.81); Calibrated: 30.12.2011;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.507 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 30.371 mW/g
SAR(1 g) = 8.2 mW/g; SAR(10 g) = 2.36 mW/g
Maximum value of SAR (measured) = 19.0 mW/g

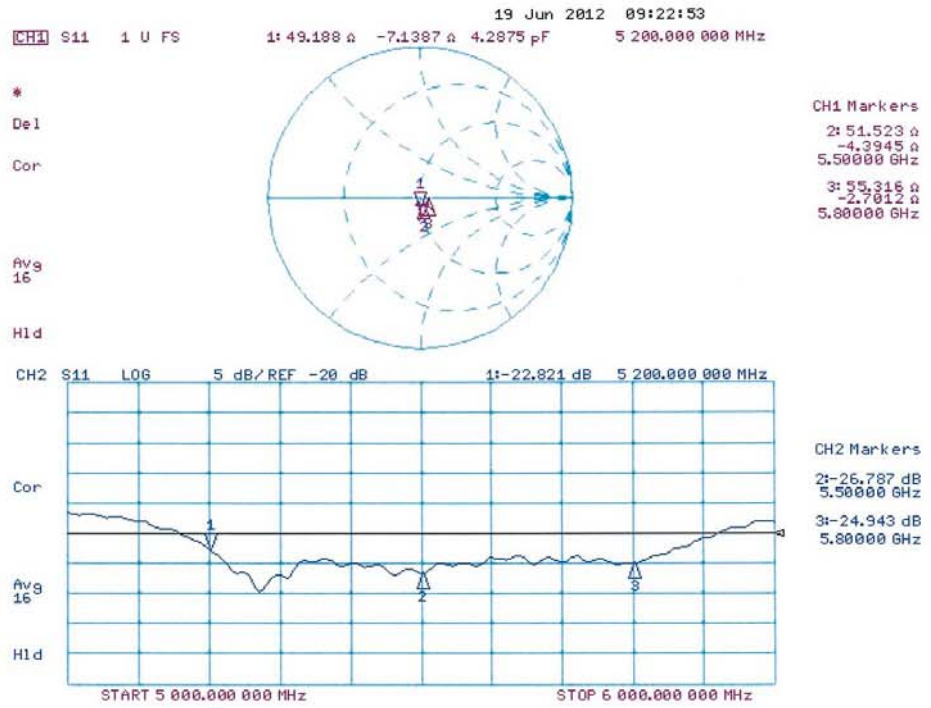
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.096 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 35.013 mW/g
SAR(1 g) = 8.82 mW/g; SAR(10 g) = 2.52 mW/g
Maximum value of SAR (measured) = 21.2 mW/g

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 62.419 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 34.147 mW/g
SAR(1 g) = 8.23 mW/g; SAR(10 g) = 2.35 mW/g
Maximum value of SAR (measured) = 20.0 mW/g



0 dB = 20.0 mW/g = 26.02 dB mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 18.06.2012

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.37 mho/m; ε_r = 47; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 5.76 mho/m; ε_r = 46.5; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.16 mho/m; ε_r = 46; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

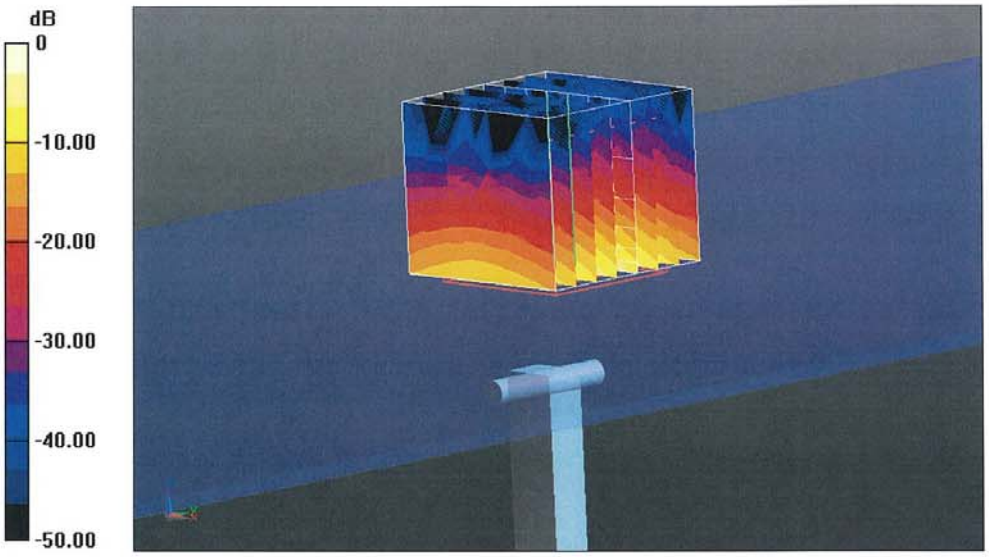
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.91, 4.91, 4.91); Calibrated: 30.12.2011, ConvF(4.43, 4.43, 4.43); Calibrated: 30.12.2011, ConvF(4.38, 4.38, 4.38); Calibrated: 30.12.2011;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.667 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 29.022 mW/g
SAR(1 g) = 7.37 mW/g; SAR(10 g) = 2.07 mW/g
Maximum value of SAR (measured) = 17.2 mW/g

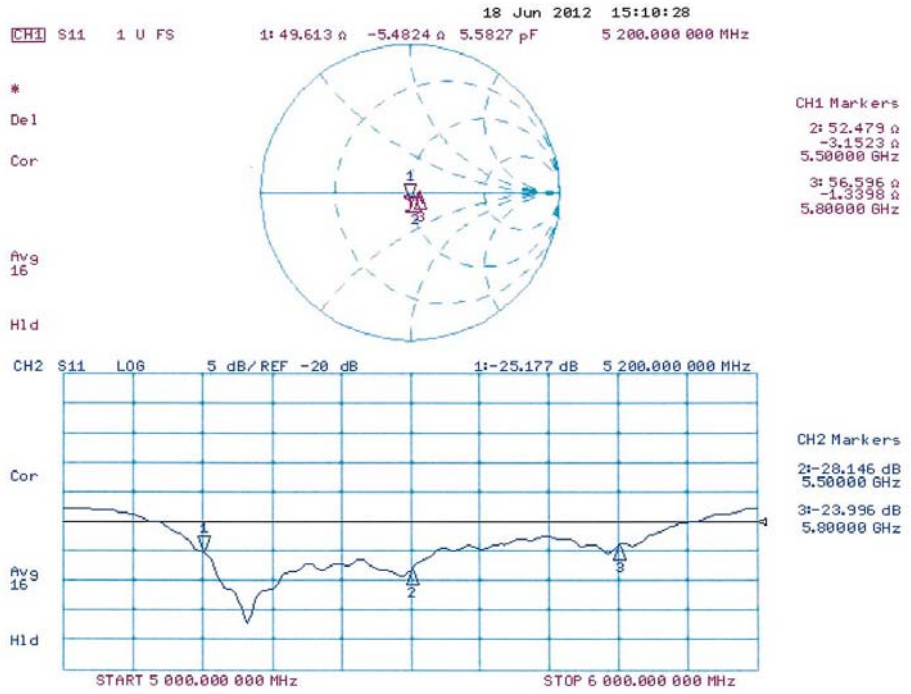
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.708 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 33.769 mW/g
SAR(1 g) = 7.87 mW/g; SAR(10 g) = 2.19 mW/g
Maximum value of SAR (measured) = 19.0 mW/g

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 55.529 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 34.868 mW/g
SAR(1 g) = 7.44 mW/g; SAR(10 g) = 2.06 mW/g
Maximum value of SAR (measured) = 18.1 mW/g



0 dB = 18.1 mW/g = 25.15 dB mW/g

Impedance Measurement Plot for Body TSL



ANNEX H: DAE4 Calibration Certificate

In Collaboration with
speag
CALIBRATION LABORATORY
Add: No.52 Huayuanbei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504
E-mail: Info@emcite.com Http://www.emcite.com

CNAS 校准 L0442

Client : TA(Shanghai) Certificate No: J14-2-0052

CALIBRATION CERTIFICATE

Object	DAE4 - SN: 1317
Calibration Procedure(s)	TMC-OS-E-01-198 Calibration Procedure for the Data Acquisition Electronics (DAEx)
Calibration date:	January 16, 2014

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Documenting Process Calibrator 753	1971018	01-July-13 (TMC, No:JW13-049)	July-14

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Lu Bingsong	Deputy Director of the laboratory	

Issued: January 16, 2014

In Collaboration with
speag
CALIBRATION LABORATORY
Add: No 52 Huayuanbei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504
E-mail: Info@emcite.com Http://www.emcite.com

Glossary:

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters:

- *DC Voltage Measurement*: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.

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E-mail: Info@emcite.com Http://www.emcite.com

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV, full range = -100...+300 mV
Low Range: 1LSB = 61nV, full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.058 ± 0.15% (k=2)	404.060 ± 0.15% (k=2)	403.954 ± 0.15% (k=2)
Low Range	3.99002 ± 0.7% (k=2)	3.99910 ± 0.7% (k=2)	3.98303 ± 0.7% (k=2)

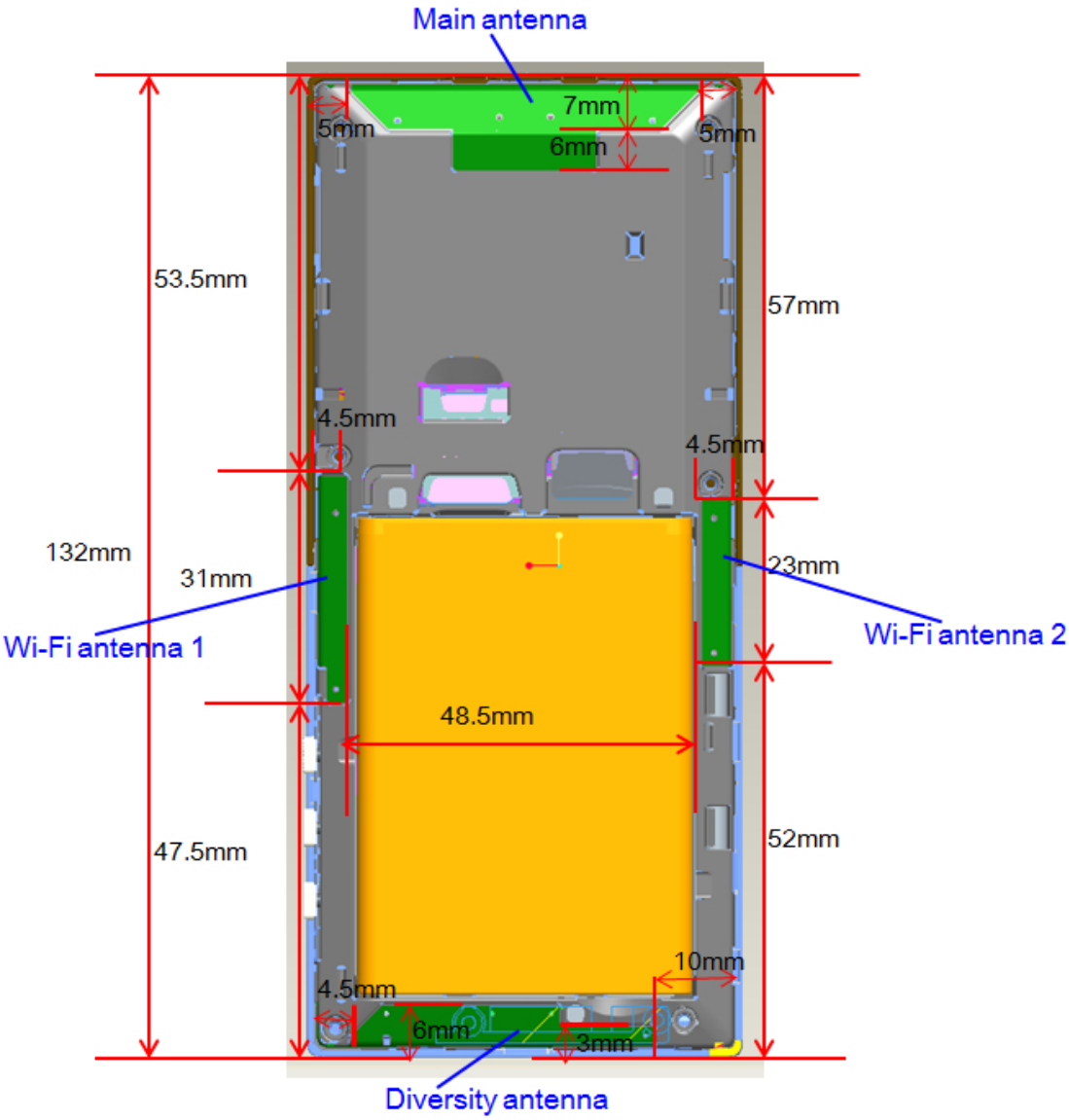
Connector Angle

Connector Angle to be used in DASY system	119° ± 1 °

ANNEX I: The EUT Appearances and Test Configuration

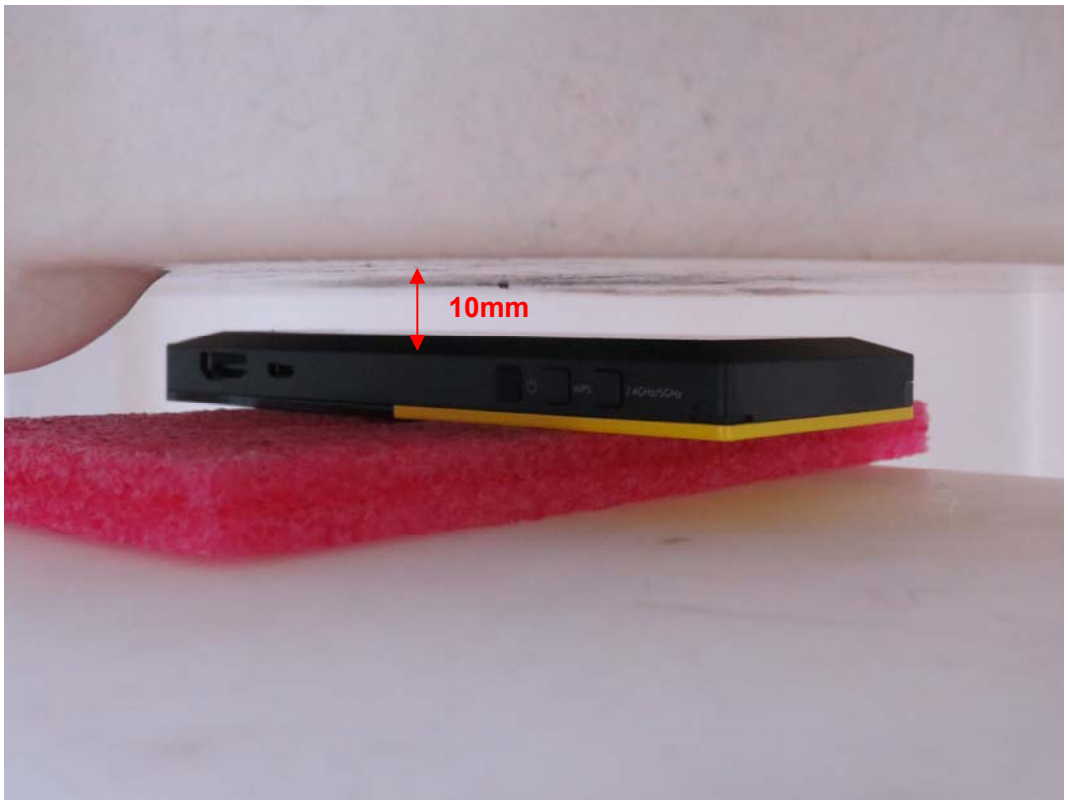
a.EUT

b : Battery



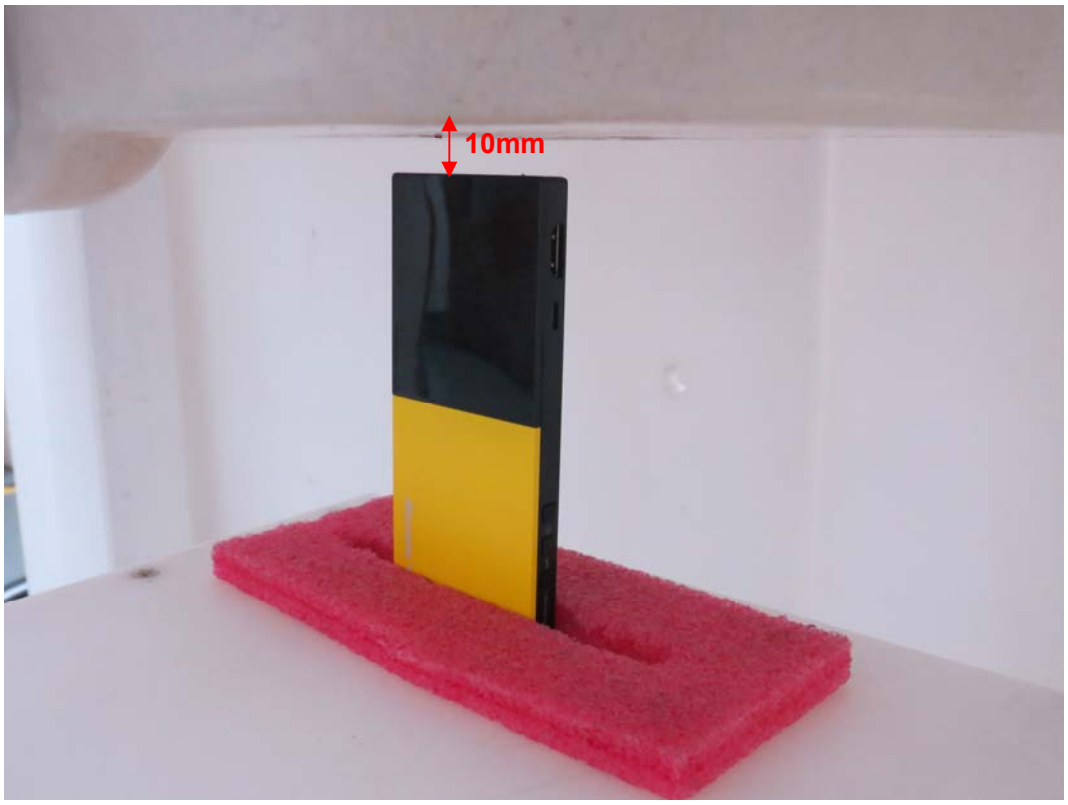
c.Antenna

Picture 6: Constituents of the EUT

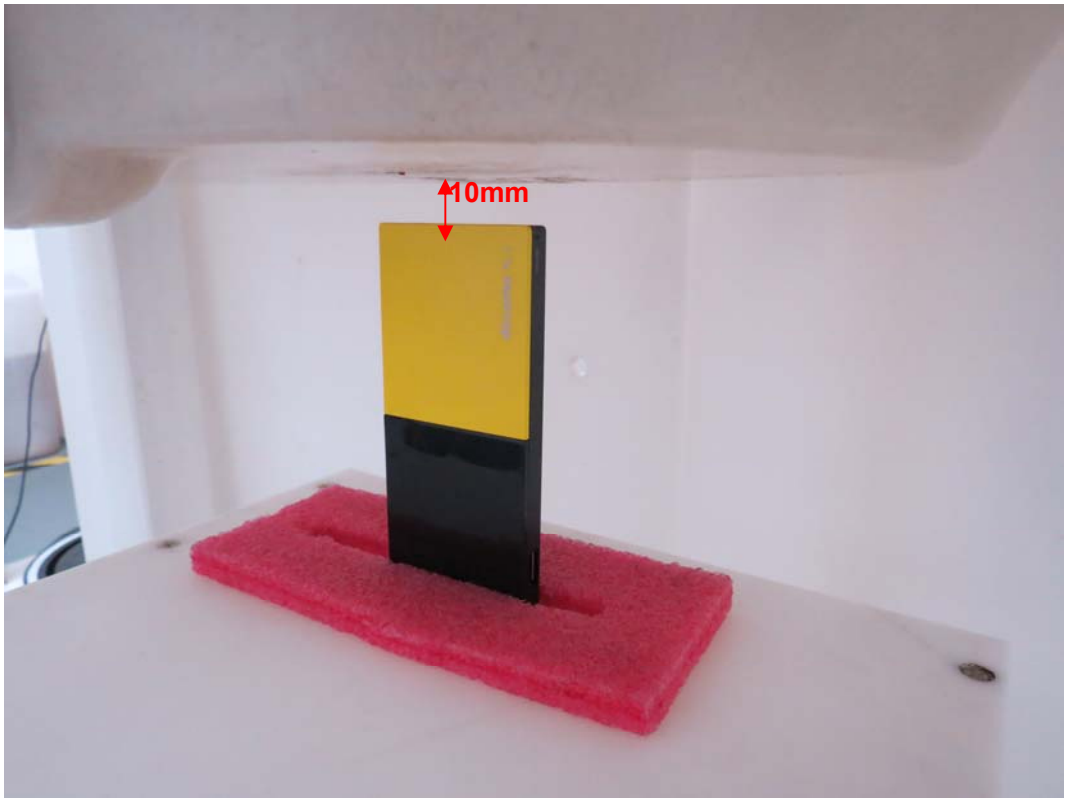


Picture 7: Test position 1

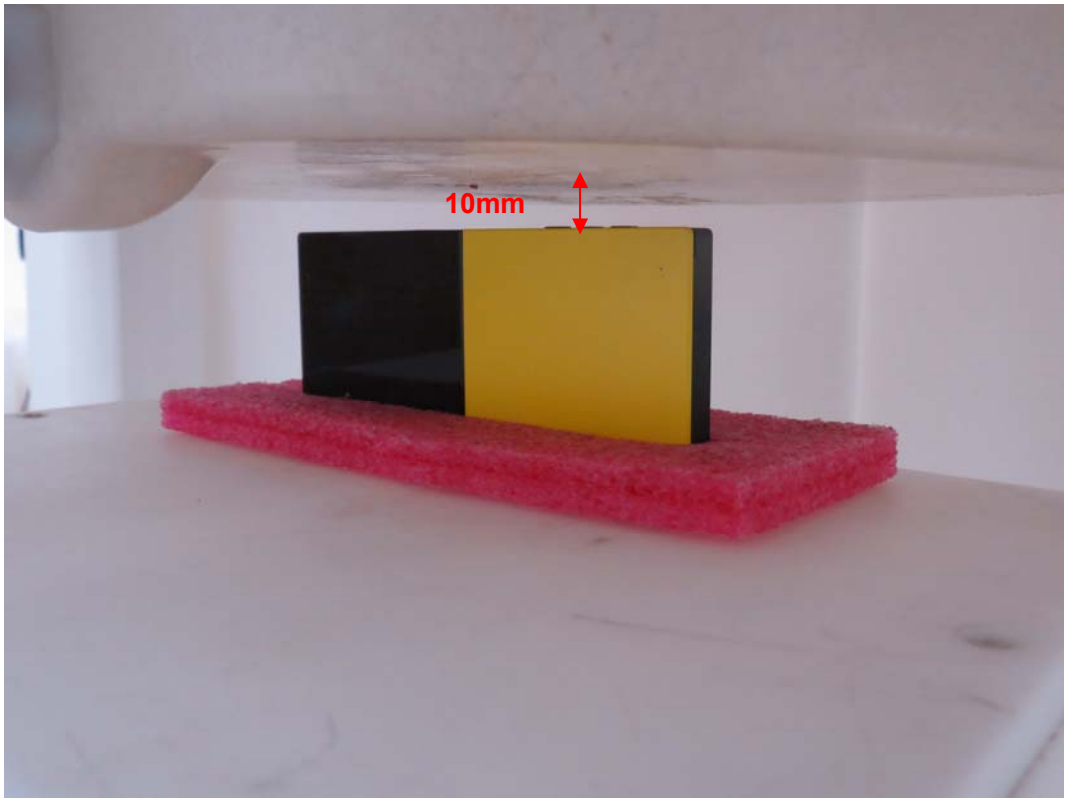
Picture 8: Test position 2



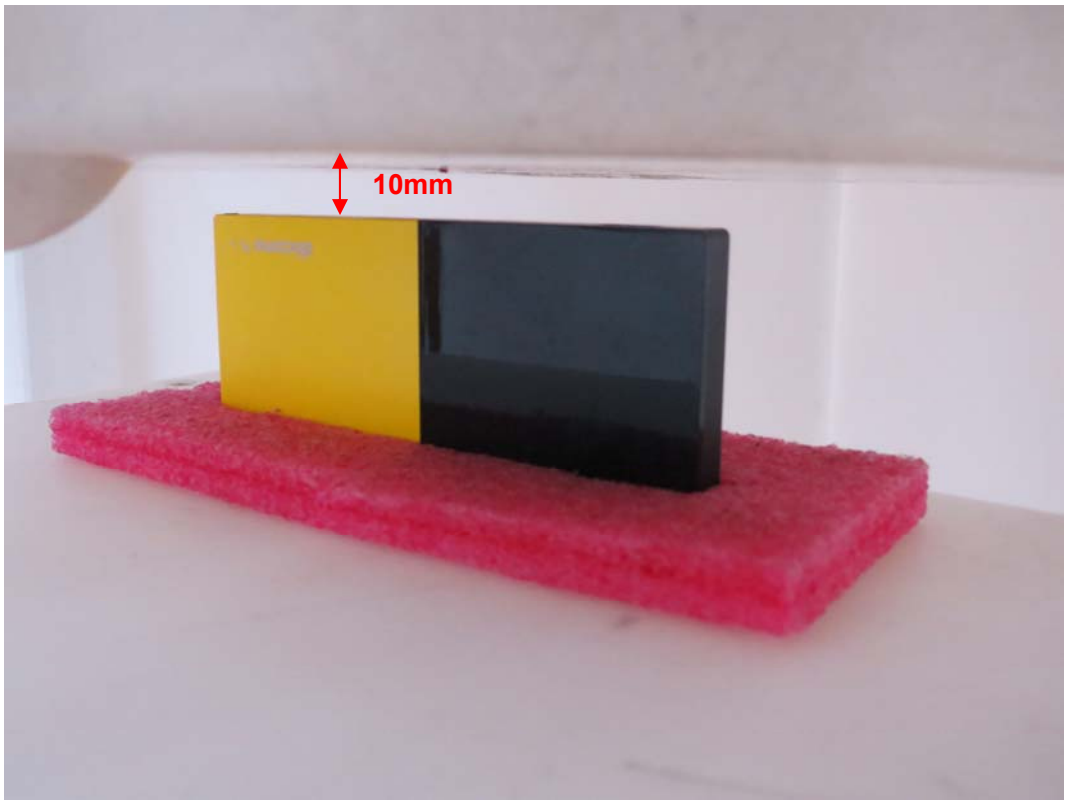
Picture 9: Test Position 3



Picture 10: Test Position 4(this position is not tested)



Picture 11: Test Position 5



Picture 12: Test Position 6