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FCC SAR Test Report

Report No. : SA121213C18
Applicant : TCT Mobile Limited
Address : 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area
Shanghai, P.R. China. 201203
Product : LTE USB Modem
FCC ID : RAD341
Brand : Alcatel
Model No. : One Touch L100G
Standards : FCC 47 CFR Part 2 (2.1093) / IEEE C95.1:1991 / IEEE 1528:2003
FCC OET Bulletin 65 Supplement C (Edition 01-01)
KDB 447498 D01 v04 / KDB 447498 D02 v02 / KDB 941225 D05 v01
Date of Testing : Dec. 26, 2012 ~ Dec. 27, 2012

CERTIFICATION: The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., China Branch - Dongguan Lab**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by A2LA or any government agencies.

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No: 2951.01

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Release Control Record

Issue No.	Reason for Change	Date Issued
R01	Original release	Dec. 28, 2012



1. Summary of Maximum SAR Value

Mode / Band	Test Position	SAR-1g (W/kg)
LTE Band 4	Body Worn (0.5 cm Gap)	0.946
LTE Band 17	Body Worn (0.5 cm Gap)	0.244

Note:

1. The SAR limit (**1.6 W/kg**) for general population/uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1991.



2. Description of Equipment Under Test

EUT Type	LTE USB Modem
FCC ID	RAD341
Brand Name	Alcatel
Model Name	One Touch L100G
HW Version	V3.0
SW Version	S1_B15001S_1110000_B10001S
Tx Frequency Bands (Unit: MHz)	LTE Band 4 : 1710 ~ 1755 LTE Band 17 : 704 ~ 716
Uplink Modulations	QPSK, 16QAM
Maximum AVG Conducted Power (Unit: dBm)	LTE Band 4 : 23.24 LTE Band 17 : 22.38
Antenna Type	Fixed Internal Antenna
EUT Stage	Production Unit

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\text{SAR} = \frac{d}{dt} \left(\frac{dW}{dm} \right) = \frac{d}{dt} \left(\frac{dW}{\rho dv} \right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

3.2 SPEAG DASY System

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY5 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC.

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Fig-3.1 DASY System Setup

3.2.1 Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ± 0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)





Fig-3.2 DASY5

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3.2.2 Probes

The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

Model	EX3DV4	
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 μ W/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	


Model	ES3DV3	
Construction	Symmetrical design with triangular core. Interleaved sensors. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	10 MHz to 4 GHz Linearity: ± 0.2 dB	
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	5 μ W/g to 100 mW/g Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm	

3.2.3 Data Acquisition Electronics (DAE)


Model	DAE3, DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)	
Input Offset Voltage	< 5 μ V (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

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3.2.4 Phantoms

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. 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 evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	approx. 25 liters	

3.2.5 Device Holder

Model	Mounting Device	
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).	
Material	POM	

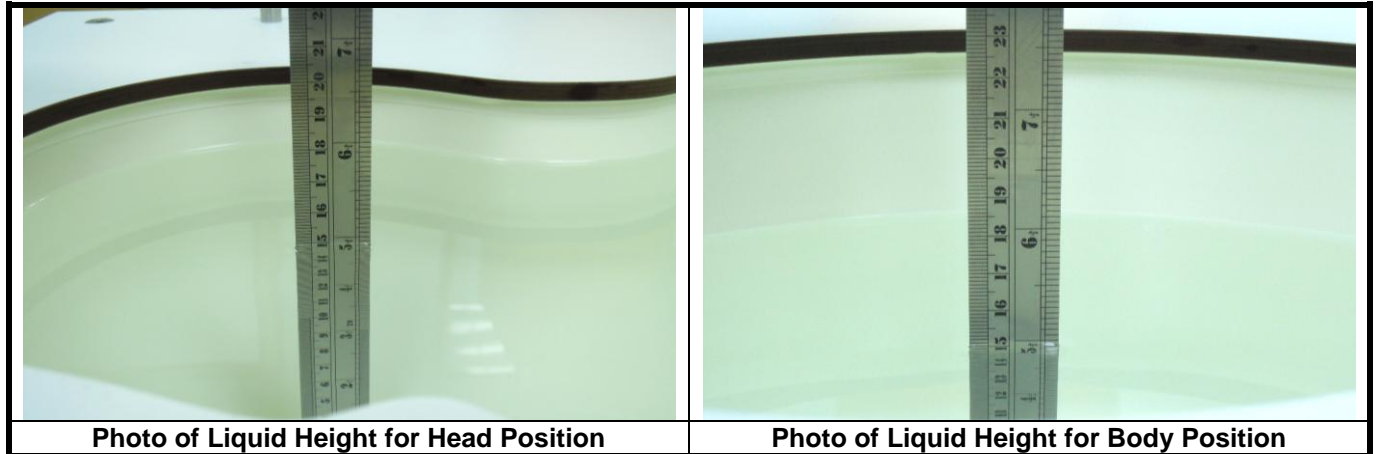
3.2.6 System Validation Dipoles

Model	D-Serial	
Construction	Symmetrical dipole with 1/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.	
Frequency	750 MHz to 5800 MHz	
Return Loss	> 20 dB	
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)	

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3.2.7 Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in Table-3.1.



The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528 and FCC OET 65 Supplement C Appendix C. For the body tissue simulating liquids, the dielectric properties are defined in FCC OET 65 Supplement C Appendix C. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using an SPEAG DAK-3.5 Dielectric Probe Kit and an Agilent Network Analyzer.



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Table-3.1 Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of $\pm 5\%$	Target Conductivity	Range of $\pm 5\%$
For Head				
750	41.9	39.8 ~ 44.0	0.89	0.85 ~ 0.93
835	41.5	39.4 ~ 43.6	0.90	0.86 ~ 0.95
900	41.5	39.4 ~ 43.6	0.97	0.92 ~ 1.02
1450	40.5	38.5 ~ 42.5	1.20	1.14 ~ 1.26
1640	40.3	38.3 ~ 42.3	1.29	1.23 ~ 1.35
1750	40.1	38.1 ~ 42.1	1.37	1.30 ~ 1.44
1800	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
1900	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2000	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2300	39.5	37.5 ~ 41.5	1.67	1.59 ~ 1.75
2450	39.2	37.2 ~ 41.2	1.80	1.71 ~ 1.89
2600	39.0	37.1 ~ 41.0	1.96	1.86 ~ 2.06
3500	37.9	36.0 ~ 39.8	2.91	2.76 ~ 3.06
5200	36.0	34.2 ~ 37.8	4.66	4.43 ~ 4.89
5300	35.9	34.1 ~ 37.7	4.76	4.52 ~ 5.00
5500	35.6	33.8 ~ 37.4	4.96	4.71 ~ 5.21
5600	35.5	33.7 ~ 37.3	5.07	4.82 ~ 5.32
5800	35.3	33.5 ~ 37.1	5.27	5.01 ~ 5.53
For Body				
750	55.5	52.7 ~ 58.3	0.96	0.91 ~ 1.01
835	55.2	52.4 ~ 58.0	0.97	0.92 ~ 1.02
900	55.0	52.3 ~ 57.8	1.05	1.00 ~ 1.10
1450	54.0	51.3 ~ 56.7	1.30	1.24 ~ 1.37
1640	53.8	51.1 ~ 56.5	1.40	1.33 ~ 1.47
1750	53.4	50.7 ~ 56.1	1.49	1.42 ~ 1.56
1800	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60
1900	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60
2000	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60
2300	52.9	50.3 ~ 55.5	1.81	1.72 ~ 1.90
2450	52.7	50.1 ~ 55.3	1.95	1.85 ~ 2.05
2600	52.5	49.9 ~ 55.1	2.16	2.05 ~ 2.27
3500	51.3	48.7 ~ 53.9	3.31	3.14 ~ 3.48
5200	49.0	46.6 ~ 51.5	5.30	5.04 ~ 5.57
5300	48.9	46.5 ~ 51.3	5.42	5.15 ~ 5.69
5500	48.6	46.2 ~ 51.0	5.65	5.37 ~ 5.93
5600	48.5	46.1 ~ 50.9	5.77	5.48 ~ 6.06
5800	48.2	45.8 ~ 50.6	6.00	5.70 ~ 6.30



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The following table gives the recipes for tissue simulating liquids.

Table-3.2 Recipes of Tissue Simulating Liquid

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	0.2	-	0.2	1.5	56.0	-	42.1	-
H835	0.2	-	0.2	1.5	57.0	-	41.1	-
H900	0.2	-	0.2	1.4	58.0	-	40.2	-
H1450	-	43.3	-	0.6	-	-	56.1	-
H1640	-	45.8	-	0.5	-	-	53.7	-
H1750	-	47.0	-	0.4	-	-	52.6	-
H1800	-	44.5	-	0.3	-	-	55.2	-
H1900	-	44.5	-	0.2	-	-	55.3	-
H2000	-	44.5	-	0.1	-	-	55.4	-
H2300	-	44.9	-	0.1	-	-	55.0	-
H2450	-	45.0	-	0.1	-	-	54.9	-
H2600	-	45.1	-	0.1	-	-	54.8	-
H3500	-	8.0	-	0.2	-	20.0	71.8	-
H5G	-	-	-	-	-	17.2	65.5	17.3
B750	0.2	-	0.2	0.8	48.8	-	50.0	-
B835	0.2	-	0.2	0.9	48.5	-	50.2	-
B900	0.2	-	0.2	0.9	48.2	-	50.5	-
B1450	-	34.0	-	0.3	-	-	65.7	-
B1640	-	32.5	-	0.3	-	-	67.2	-
B1750	-	31.0	-	0.2	-	-	68.8	-
B1800	-	29.5	-	0.4	-	-	70.1	-
B1900	-	29.5	-	0.3	-	-	70.2	-
B2000	-	30.0	-	0.2	-	-	69.8	-
B2300	-	31.0	-	0.1	-	-	68.9	-
B2450	-	31.4	-	0.1	-	-	68.5	-
B2600	-	31.8	-	0.1	-	-	68.1	-
B3500	-	28.8	-	0.1	-	-	71.1	-
B5G	-	-	-	-	-	10.7	78.6	10.7

3.3 SAR System Verification

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.

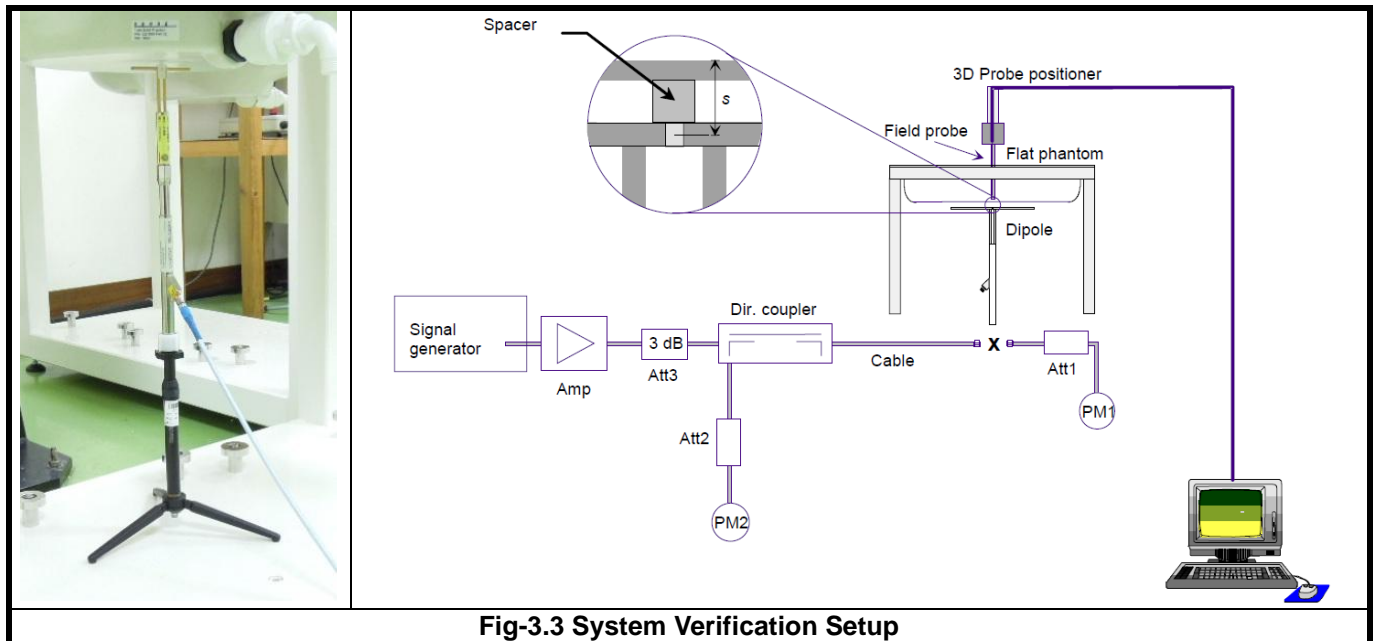


Fig-3.3 System Verification Setup

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The power meter PM1 measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter PM2 is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2.

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

3.4 SAR Measurement Procedure

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:

- (a) Make EUT to transmit maximum output power
- (b) Measure conducted output power through RF cable
- (c) Place the EUT in the specific position of phantom
- (d) Perform SAR testing steps on the DASYS system
- (e) Record the SAR value

3.4.1 Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures 5x5x7 points with step size 8, 8 and 5 mm for below 3 GHz, and 7x7x9 points with step size 4, 4 and 2.5 mm for above 5 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

3.4.2 Volume Scan Procedure

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

3.4.3 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASYS measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

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3.4.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

3.4.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

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. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

4. SAR Measurement Evaluation

4.1 EUT Configuration and Setting

The EUT is a data transmitter device. Confirming the LTE transmitter follows 3GPP standards, is category 3, BW 1.4/3/5/10/15/20 MHz, band 4/17, supports QPSK / 16QAM modulations, and supports data transmission only. Tested per 3GPP 36.521 maximum transmit procedures for both QPSK / 16QAM.

LTE Maximum Power Reduction in accordance with 3GPP 36.101: Power Reduction in accordance to 3GPP is active all times during LTE operation.

Modulation	Channel Bandwidth / RB Configurations						LTE MPR Setting (dB)
	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16QAM	<= 5	<= 4	<= 8	<= 12	<= 16	<= 18	1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2

Note: MPR is according to the standard and implemented in the circuit (mandatory).

In addition, the device is compliant with A-MPR requirements defined in 36.101 section 6.2.4 that may be required to meet 3GPP Adjacent Channel Leakage Ratio (“ACLR”) requirements. A-MPR was disabled for all FCC compliance testing.

For LTE, set the related parameters of operating band, channel bandwidth, uplink channel number, modulation type, and RB in base station simulator. When the EUT has registered and communicated to base station simulator, set the simulator to make EUT transmitting the maximum radiated power. The steps for system simulator (Anritsu MT8820C) setup are as below.

1. Press the “Std” button to select “LTE 22.20S” function
2. Choose the “Screen Select” item to “Fundamental Measurement”
3. Enter the “Common” item
4. Set the Operating Band
5. Set the Channel Bandwidth
6. Set the UL Channel & Frequency
7. Set the Modulation
8. Set the RB number and RB shift
9. Press “Start Call” button when EUT register to the system simulator
10. Set the TX-1 Max. Power to make the EUT transmit maximum output power

4.2 EUT Testing Position

This EUT was tested in four different USB configurations. They are “direct laptop plug-in for configuration 2 and 4”, “USB cable plug-in for configuration 1 and 3”, and “direct laptop plug-in for EUT Tip Mode” shown as below. Both direct laptop plug-in and USB cable plug-in test configurations are tested with 5 mm separation between the particular dongle orientation and the flat phantom.





			
Configuration 1 (Horizontal Up)	Configuration 2 (Horizontal Down)	Configuration 3 (Vertical Front)	Configuration 4 (Vertical Back)

Fig-4.1 Illustration for USB Connector Orientations

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4.3 Tissue Verification

The measuring results for tissue simulating liquid are shown as below.

Tissue Type	Frequency (MHz)	Liquid Temp. (°C)	Measured Conductivity (σ)	Measured Permittivity (ϵ_r)	Target Conductivity (σ)	Target Permittivity (ϵ_r)	Conductivity Deviation (%)	Permittivity Deviation (%)	Test Date
B750	750	20.6	0.963	53.779	0.96	55.5	0.31	-3.10	Dec. 27, 2012
B1750	1750	20.6	1.496	54.302	1.49	53.4	0.40	1.69	Dec. 26, 2012

Note:

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within $\pm 5\%$ of the target values. Liquid temperature during the SAR testing must be within $\pm 2^\circ\text{C}$.

4.4 System Verification

The measuring results for system check are shown as below.

Test Date	Mode	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
Dec. 27, 2012	Body	750	8.75	2.24	8.96	2.40	1067	3873	1341
Dec. 26, 2012	Body	1750	37.20	9.37	37.48	0.75	1071	3873	1341

Note:

Comparing to the reference SAR value provided by SPEAG, the validation data should be within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots can be referred to Appendix A of this report.



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4.5 Conducted Power Results

The measuring conducted power (Unit: dBm) are shown as below.

LTE Band 4								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
1.4 MHz	QPSK	19957	1710.7	1	0	0	23.24	22.86
		20175	1732.5	1	0	0	23.24	23.05
		20393	1754.3	1	0	0	23.24	22.76
		19957	1710.7	1	5	0	23.24	22.91
		20175	1732.5	1	5	0	23.24	22.91
		20393	1754.3	1	5	0	23.24	22.77
		19957	1710.7	3	2	0	23.24	22.07
		20175	1732.5	3	2	0	23.24	23.01
		20393	1754.3	3	2	0	23.24	22.85
		19957	1710.7	6	0	1	23.24	21.95
		20175	1732.5	6	0	1	23.24	22.18
		20393	1754.3	6	0	1	23.24	21.79
	16QAM	19957	1710.7	1	0	1	23.24	22.19
		20175	1732.5	1	0	1	23.24	22.36
		20393	1754.3	1	0	1	23.24	22.37
		19957	1710.7	1	5	1	23.24	22.21
		20175	1732.5	1	5	1	23.24	21.23
		20393	1754.3	1	5	1	23.24	22.49
		19957	1710.7	3	2	1	23.24	22.23
		20175	1732.5	3	2	1	23.24	22.13
		20393	1754.3	3	2	1	23.24	22.21
		19957	1710.7	6	0	2	23.24	21.19
20175	1732.5	6	0	2	23.24	21.37		
20393	1754.3	6	0	2	23.24	20.85		



FCC SAR Test Report

A D T

LTE Band 4								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
3 MHz	QPSK	19965	1711.5	1	0	0	23.24	22.98
		20175	1732.5	1	0	0	23.24	23.01
		20385	1753.5	1	0	0	23.24	22.83
		19965	1711.5	1	14	0	23.24	23.05
		20175	1732.5	1	14	0	23.24	22.9
		20385	1753.5	1	14	0	23.24	22.77
		19965	1711.5	8	4	1	23.24	21.93
		20175	1732.5	8	4	1	23.24	22.07
		20385	1753.5	8	4	1	23.24	21.69
		19965	1711.5	15	0	1	23.24	21.95
		20175	1732.5	15	0	1	23.24	22.03
	20385	1753.5	15	0	1	23.24	21.66	
	16QAM	19965	1711.5	1	0	1	23.24	21.81
		20175	1732.5	1	0	1	23.24	22.26
		20385	1753.5	1	0	1	23.24	21.6
		19965	1711.5	1	14	1	23.24	21.95
		20175	1732.5	1	14	1	23.24	22.18
		20385	1753.5	1	14	1	23.24	21.58
		19965	1711.5	8	4	2	23.24	21.03
		20175	1732.5	8	4	2	23.24	21.13
		20385	1753.5	8	4	2	23.24	20.44
		19965	1711.5	15	0	2	23.24	21
20175		1732.5	15	0	2	23.24	21.3	
20385	1753.5	15	0	2	23.24	20.54		



FCC SAR Test Report

A D T

LTE Band 4								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
5 MHz	QPSK	19975	1712.5	1	0	0	23.24	23.01
		20175	1732.5	1	0	0	23.24	23.1
		20375	1752.5	1	0	0	23.24	22.72
		19975	1712.5	1	24	0	23.24	22.94
		20175	1732.5	1	24	0	23.24	22.96
		20375	1752.5	1	24	0	23.24	22.77
		19975	1712.5	12	6	1	23.24	21.99
		20175	1732.5	12	6	1	23.24	22.07
		20375	1752.5	12	6	1	23.24	21.75
		19975	1712.5	25	0	1	23.24	22.01
		20175	1732.5	25	0	1	23.24	22.06
		20375	1752.5	25	0	1	23.24	21.76
	16QAM	19975	1712.5	1	0	1	23.24	21.65
		20175	1732.5	1	0	1	23.24	22.33
		20375	1752.5	1	0	1	23.24	22.03
		19975	1712.5	1	24	1	23.24	21.66
		20175	1732.5	1	24	1	23.24	22.37
		20375	1752.5	1	24	1	23.24	22.14
		19975	1712.5	12	6	2	23.24	20.94
		20175	1732.5	12	6	2	23.24	21.11
		20375	1752.5	12	6	2	23.24	20.91
		19975	1712.5	25	0	2	23.24	20.92
20175	1732.5	25	0	2	23.24	21.18		
20375	1752.5	25	0	2	23.24	20.85		



FCC SAR Test Report

A D T

LTE Band 4								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
10 MHz	QPSK	20000	1715	1	0	0	23.24	23
		20175	1732.5	1	0	0	23.24	23.09
		20350	1750	1	0	0	23.24	22.79
		20000	1715	1	49	0	23.24	22.97
		20175	1732.5	1	49	0	23.24	23.21
		20350	1750	1	49	0	23.24	22.78
		20000	1715	25	13	1	23.24	22.11
		20175	1732.5	25	13	1	23.24	22.15
		20350	1750	25	13	1	23.24	21.84
		20000	1715	50	0	1	23.24	22.14
		20175	1732.5	50	0	1	23.24	22.11
		20350	1750	50	0	1	23.24	21.78
	16QAM	20000	1715	1	0	1	23.24	21.8
		20175	1732.5	1	0	1	23.24	21.86
		20350	1750	1	0	1	23.24	22.05
		20000	1715	1	49	1	23.24	21.71
		20175	1732.5	1	49	1	23.24	21.9
		20350	1750	1	49	1	23.24	22.02
		20000	1715	25	13	2	23.24	20.99
		20175	1732.5	25	13	2	23.24	21.07
		20350	1750	25	13	2	23.24	20.88
		20000	1715	50	0	2	23.24	21.16
20175	1732.5	50	0	2	23.24	21.16		
20350	1750	50	0	2	23.24	20.91		



FCC SAR Test Report

LTE Band 4								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
15 MHz	QPSK	20025	1717.5	1	0	0	23.24	22.89
		20175	1732.5	1	0	0	23.24	23.01
		20325	1747.5	1	0	0	23.24	22.9
		20025	1717.5	1	74	0	23.24	23.1
		20175	1732.5	1	74	0	23.24	23.04
		20325	1747.5	1	74	0	23.24	22.73
		20025	1717.5	36	18	1	23.24	22.05
		20175	1732.5	36	18	1	23.24	22.1
		20325	1747.5	36	18	1	23.24	21.92
		20025	1717.5	75	0	1	23.24	22.01
		20175	1732.5	75	0	1	23.24	22.06
	20325	1747.5	75	0	1	23.24	21.84	
	16QAM	20025	1717.5	1	0	1	23.24	22.86
		20175	1732.5	1	0	1	23.24	21.73
		20325	1747.5	1	0	1	23.24	22.16
		20025	1717.5	1	74	1	23.24	23.03
		20175	1732.5	1	74	1	23.24	21.69
		20325	1747.5	1	74	1	23.24	22.68
		20025	1717.5	36	18	2	23.24	22.01
		20175	1732.5	36	18	2	23.24	21.07
		20325	1747.5	36	18	2	23.24	21.03
		20025	1717.5	75	0	2	23.24	21.06
20175		1732.5	75	0	2	23.24	21.13	
20325	1747.5	75	0	2	23.24	20.98		



FCC SAR Test Report

A D T

LTE Band 4								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
20 MHz	QPSK	20050	1720	1	0	0	23.24	22.89
		20175	1732.5	1	0	0	23.24	23.24
		20300	1745	1	0	0	23.24	23.18
		20050	1720	1	99	0	23.24	23.19
		20175	1732.5	1	99	0	23.24	22.89
		20300	1745	1	99	0	23.24	22.91
		20050	1720	50	25	1	23.24	22.06
		20175	1732.5	50	25	1	23.24	22.24
		20300	1745	50	25	1	23.24	22.02
		20050	1720	100	0	1	23.24	22.13
		20175	1732.5	100	0	1	23.24	22.12
		20300	1745	100	0	1	23.24	21.89
	16QAM	20050	1720	1	0	1	23.24	23.07
		20175	1732.5	1	0	1	23.24	22.41
		20300	1745	1	0	1	23.24	22.14
		20050	1720	1	99	1	23.24	23.16
		20175	1732.5	1	99	1	23.24	22.16
		20300	1745	1	99	1	23.24	22.41
		20050	1720	50	25	2	23.24	22.04
		20175	1732.5	50	25	2	23.24	21.19
		20300	1745	50	25	2	23.24	20.89
20050	1720	100	0	2	23.24	21.01		
20175	1732.5	100	0	2	23.24	21.15		
20300	1745	100	0	2	23.24	21.13		



FCC SAR Test Report

LTE Band 17								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
5 MHz	QPSK	23755	706.5	1	0	0	22.38	22.04
		23790	710	1	0	0	22.38	21.88
		23825	713.5	1	0	0	22.38	22.21
		23755	706.5	1	24	0	22.38	22.08
		23790	710	1	24	0	22.38	22.06
		23825	713.5	1	24	0	22.38	21.39
		23755	706.5	12	6	1	22.38	20.79
		23790	710	12	6	1	22.38	21.08
		23825	713.5	12	6	1	22.38	21.16
		23755	706.5	25	0	1	22.38	20.85
		23790	710	25	0	1	22.38	21.03
		23825	713.5	25	0	1	22.38	20.89
	16QAM	23755	706.5	1	0	1	22.38	20.52
		23790	710	1	0	1	22.38	21.13
		23825	713.5	1	0	1	22.38	21.63
		23755	706.5	1	24	1	22.38	20.45
		23790	710	1	24	1	22.38	21.28
		23825	713.5	1	24	1	22.38	20.94
		23755	706.5	12	6	2	22.38	19.73
		23790	710	12	6	2	22.38	20.33
		23825	713.5	12	6	2	22.38	19.86
		23755	706.5	25	0	2	22.38	19.65
23790	710	25	0	2	22.38	20.27		
23825	713.5	25	0	2	22.38	19.77		



FCC SAR Test Report

LTE Band 17								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
10 MHz	QPSK	23780	709	1	0	0	22.38	22.38
		23790	710	1	0	0	22.38	21.71
		23800	711	1	0	0	22.38	22.1
		23780	709	1	49	0	22.38	22.11
		23790	710	1	49	0	22.38	21.99
		23800	711	1	49	0	22.38	21.54
		23780	709	25	13	1	22.38	20.87
		23790	710	25	13	1	22.38	20.97
		23800	711	25	13	1	22.38	21.01
		23780	709	50	0	1	22.38	21.09
		23790	710	50	0	1	22.38	20.98
		23800	711	50	0	1	22.38	20.93
	16QAM	23780	709	1	0	1	22.38	20.73
		23790	710	1	0	1	22.38	21.01
		23800	711	1	0	1	22.38	20.53
		23780	709	1	49	1	22.38	20.59
		23790	710	1	49	1	22.38	21.12
		23800	711	1	49	1	22.38	19.91
		23780	709	25	13	2	22.38	20.11
		23790	710	25	13	2	22.38	20.07
		23800	711	25	13	2	22.38	19.96
		23780	709	50	0	2	22.38	20.04
23790	710	50	0	2	22.38	20.04		
23800	711	50	0	2	22.38	19.88		

NOTE: The power table was provided by client.



4.6 SAR Testing Results

4.6.1 SAR Results for Body

<Body Worn Mode>

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Channel	RB	Offset	SAR-1g (W/kg)
201	LTE 4	QPSK_20M	Horizontal Up	0.5	20175	50	25	0.682
202	LTE 4	QPSK_20M	Horizontal Down	0.5	20175	50	25	0.637
203	LTE 4	QPSK_20M	Vertical Front	0.5	20175	50	25	0.373
204	LTE 4	QPSK_20M	Vertical Back	0.5	20175	50	25	0.538
205	LTE 4	QPSK_20M	Tip Mode	0.5	20175	50	25	0.083
206	LTE 4	QPSK_20M	Horizontal Up	0.5	20175	1	0	0.804
207	LTE 4	QPSK_20M	Horizontal Down	0.5	20175	1	0	0.932
208	LTE 4	QPSK_20M	Vertical Front	0.5	20175	1	0	0.481
209	LTE 4	QPSK_20M	Vertical Back	0.5	20175	1	0	0.717
210	LTE 4	QPSK_20M	Tip Mode	0.5	20175	1	0	0.111
211	LTE 4	QPSK_20M	Horizontal Up	0.5	20050	1	99	0.946
212	LTE 4	QPSK_20M	Horizontal Down	0.5	20050	1	99	0.913
213	LTE 4	QPSK_20M	Vertical Front	0.5	20050	1	99	0.511
214	LTE 4	QPSK_20M	Vertical Back	0.5	20050	1	99	0.635
215	LTE 4	QPSK_20M	Tip Mode	0.5	20050	1	99	0.11
218	LTE 4	16QAM_20M	Horizontal Up	0.5	20050	50	25	0.609
219	LTE 4	16QAM_20M	Horizontal Down	0.5	20050	50	25	0.565
220	LTE 4	16QAM_20M	Vertical Front	0.5	20050	50	25	0.289
221	LTE 4	16QAM_20M	Vertical Back	0.5	20050	50	25	0.519
222	LTE 4	16QAM_20M	Tip Mode	0.5	20050	50	25	0.067
223	LTE 4	16QAM_20M	Horizontal Up	0.5	20050	1	0	0.553
224	LTE 4	16QAM_20M	Horizontal Down	0.5	20050	1	0	0.57
225	LTE 4	16QAM_20M	Vertical Front	0.5	20050	1	0	0.282
226	LTE 4	16QAM_20M	Vertical Back	0.5	20050	1	0	0.611
227	LTE 4	16QAM_20M	Tip Mode	0.5	20050	1	0	0.077
228	LTE 4	16QAM_20M	Horizontal Up	0.5	20050	1	99	0.87
229	LTE 4	16QAM_20M	Horizontal Down	0.5	20050	1	99	0.857
230	LTE 4	16QAM_20M	Vertical Front	0.5	20050	1	99	0.41
231	LTE 4	16QAM_20M	Vertical Back	0.5	20050	1	99	0.633
232	LTE 4	16QAM_20M	Tip Mode	0.5	20050	1	99	0.101



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Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Channel	RB	Offset	SAR-1g (W/kg)
233	LTE 17	QPSK_10M	Horizontal Up	0.5	23800	25	13	0.171
234	LTE 17	QPSK_10M	Horizontal Down	0.5	23800	25	13	0.151
235	LTE 17	QPSK_10M	Vertical Front	0.5	23800	25	13	0.076
236	LTE 17	QPSK_10M	Vertical Back	0.5	23800	25	13	0.063
237	LTE 17	QPSK_10M	Tip Mode	0.5	23800	25	13	0.036
238	LTE 17	QPSK_10M	Horizontal Up	0.5	23780	1	0	0.244
239	LTE 17	QPSK_10M	Horizontal Down	0.5	23780	1	0	0.187
240	LTE 17	QPSK_10M	Vertical Front	0.5	23780	1	0	0.101
241	LTE 17	QPSK_10M	Vertical Back	0.5	23780	1	0	0.089
242	LTE 17	QPSK_10M	Tip Mode	0.5	23780	1	0	0.049
243	LTE 17	QPSK_10M	Horizontal Up	0.5	23780	1	49	0.236
244	LTE 17	QPSK_10M	Horizontal Down	0.5	23780	1	49	0.197
245	LTE 17	QPSK_10M	Vertical Front	0.5	23780	1	49	0.102
246	LTE 17	QPSK_10M	Vertical Back	0.5	23780	1	49	0.086
247	LTE 17	QPSK_10M	Tip Mode	0.5	23780	1	49	0.048
250	LTE 17	16QAM_10M	Horizontal Up	0.5	23780	25	13	0.145
251	LTE 17	16QAM_10M	Horizontal Down	0.5	23780	25	13	0.115
252	LTE 17	16QAM_10M	Vertical Front	0.5	23780	25	13	0.059
253	LTE 17	16QAM_10M	Vertical Back	0.5	23780	25	13	0.049
254	LTE 17	16QAM_10M	Tip Mode	0.5	23780	25	13	0.028
255	LTE 17	16QAM_10M	Horizontal Up	0.5	23790	1	0	0.19
256	LTE 17	16QAM_10M	Horizontal Down	0.5	23790	1	0	0.165
257	LTE 17	16QAM_10M	Vertical Front	0.5	23790	1	0	0.076
258	LTE 17	16QAM_10M	Vertical Back	0.5	23790	1	0	0.066
259	LTE 17	16QAM_10M	Tip Mode	0.5	23790	1	0	0.037
260	LTE 17	16QAM_10M	Horizontal Up	0.5	23790	1	49	0.191
261	LTE 17	16QAM_10M	Horizontal Down	0.5	23790	1	49	0.171
262	LTE 17	16QAM_10M	Vertical Front	0.5	23790	1	49	0.076
263	LTE 17	16QAM_10M	Vertical Back	0.5	23790	1	49	0.063
264	LTE 17	16QAM_10M	Tip Mode	0.5	23790	1	49	0.036

Note:

1. SAR is performed on the highest power channel. When the SAR value of highest power channel is less than 0.8 W/kg, SAR testing for optional channel is not required.
2. According to KDB 941225, the LTE SAR testing for 100% RB is not required since the maximum SAR of 50% RB is less than 1.45 W/kg.
3. According to KDB 941225, the LTE SAR testing was performed on largest channel bandwidth, and SAR for other channel bandwidths is not required since the maximum power of smaller channel bandwidth is within 1/2 dB higher or lower of measured for the largest channel bandwidth and maximum SAR of largest channel bandwidth is less than 1.45 W/kg.
4. According to KDB 941225, LTE SAR testing of the remaining RB offset configurations and required test channels is not required when the reported SAR of highest power 50% RB configuration is less than 0.8 W/kg.

Test Engineer : Luke Lu, and Becon Wu



5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Kit	SPEAG	D750V3	1067	Jul. 18, 2012	Annual
System Validation Kit	SPEAG	D1750V2	1071	Jul. 19, 2012	Annual
Dosimetric E-Field Probe	SPEAG	EX3DV4	3873	Aug. 06, 2012	Annual
Data Acquisition Electronics	SPEAG	DAE4	1341	Aug. 07, 2012	Annual
SAM Phantom	SPEAG	QD000P40CD	TP-1695	N/A	N/A
SAM Phantom	SPEAG	QD000P40CD	TP-1722	N/A	N/A
Radio Communication Analyzer	Anritsu	MT8820C	6201010284	Aug. 01, 2011	Biennial
ENA Series Network Analyzer	Agilent	E5071C	MY46214638	Jun. 30, 2012	Annual
MXG Analog Signal Generator	Agilent	N5183A	MY50140980	Nov. 05, 2012	Annual
Power Meter	Agilent	N1914A	MY52180044	Aug. 24, 2012	Annual
Power Sensor	Agilent	E9304A	MY52050011	Aug. 23, 2012	Annual
EXA Spectrum Analyzer	Agilent	E7405A	MY45118807	May 14, 2012	Annual
Dielectric Assessment Kit	SPEAG	DAK-3.5	1076	Jul. 30, 2012	Annual
Thermometer	YFE	YF-160A	120100323	Sep. 03, 2012	Annual
Power Amplifier	TESEQ	CBA 1G-150	T44029	Dec. 28, 2011	Annual
Power Amplifier	TESEQ	CBA 3G-100	T44030	Dec. 28, 2011	Annual
Power Amplifier	TESEQ	CBA 6G-50	1041204	Dec. 28, 2011	Annual
Attenuator	Woken	00800A1G01L-03	N/A	Sep. 03, 2012	Annual

6. Measurement Uncertainty

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Standard Uncertainty (1g)	Vi
Measurement System						
Probe Calibration	6.0	Normal	1	1	± 6.0 %	∞
Axial Isotropy	4.7	Rectangular	√3	0.7	± 1.9 %	∞
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	± 3.9 %	∞
Boundary Effects	1.0	Rectangular	√3	1	± 0.6 %	∞
Linearity	4.7	Rectangular	√3	1	± 2.7 %	∞
System Detection Limits	1.0	Rectangular	√3	1	± 0.6 %	∞
Readout Electronics	0.6	Normal	1	1	± 0.6 %	∞
Response Time	0.0	Rectangular	√3	1	± 0.0 %	∞
Integration Time	1.7	Rectangular	√3	1	± 1.0 %	∞
RF Ambient Noise	3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Reflections	3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	0.5	Rectangular	√3	1	± 0.3 %	∞
Probe Positioning	2.9	Rectangular	√3	1	± 1.7 %	∞
Max. SAR Eval.	2.3	Rectangular	√3	1	± 1.3 %	∞
Test Sample Related						
Device Positioning	3.9	Normal	1	1	± 3.9 %	31
Device Holder	2.7	Normal	1	1	± 2.7 %	19
Power Drift	5.0	Rectangular	√3	1	± 2.9 %	∞
Phantom and Setup						
Phantom Uncertainty	4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	± 1.8 %	∞
Liquid Conductivity (Meas.)	5.0	Normal	1	0.64	± 3.2 %	29
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	± 1.7 %	∞
Liquid Permittivity (Meas.)	5.0	Normal	1	0.6	± 3.0 %	29
Combined Standard Uncertainty					± 11.7 %	
Expanded Uncertainty (K=2)					± 23.4 %	

Uncertainty budget for frequency range 300 MHz to 3 GHz



7. Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., China Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The road map of all our labs can be found in our web site also.

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Appendix A. SAR Plots of System Verification

The plots for system verification are shown as follows.

System Check_B750_121227

DUT: Dipole 750 MHz; Type:D750V3; SN:1067

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 750$ MHz; $\sigma = 0.963$ mho/m; $\epsilon_r = 53.779$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C ; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

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

Maximum value of SAR (interpolated) = 2.70 W/kg

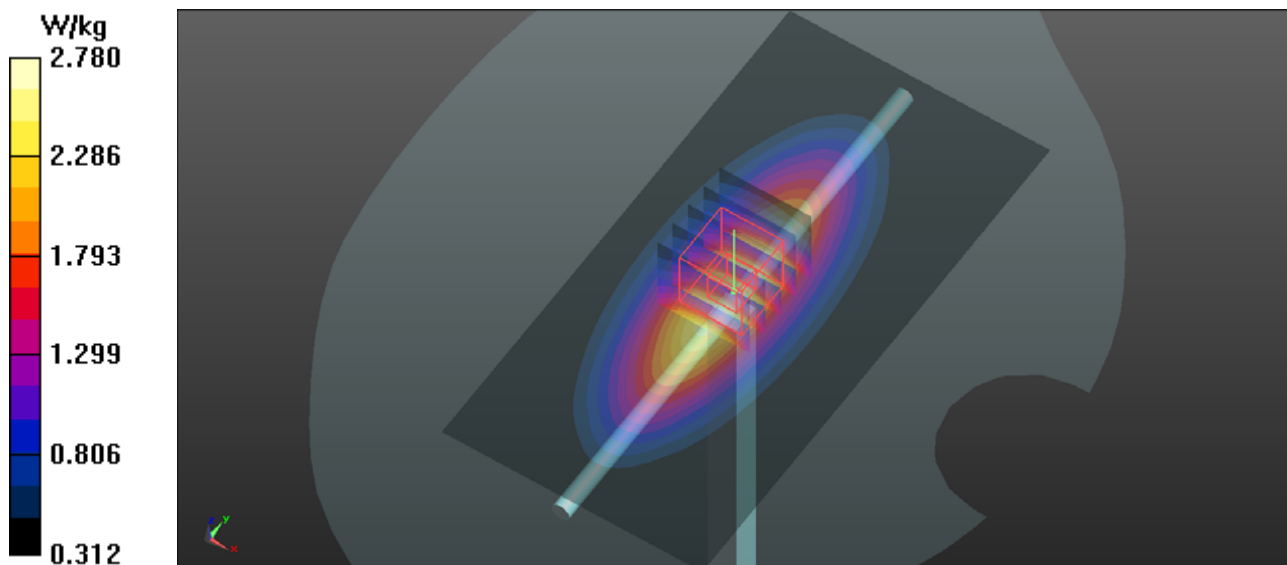
Pin=250mW/Zoom Scan(5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 54.761 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 3.20 W/kg

SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.52 W/kg

Maximum value of SAR (measured) = 2.78 W/kg



System Check_B1750_121226

DUT: Dipole 1750 MHz ;Type:D1750V2; SN:1071

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.496$ mho/m; $\epsilon_r = 54.302$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C ; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.6 W/kg

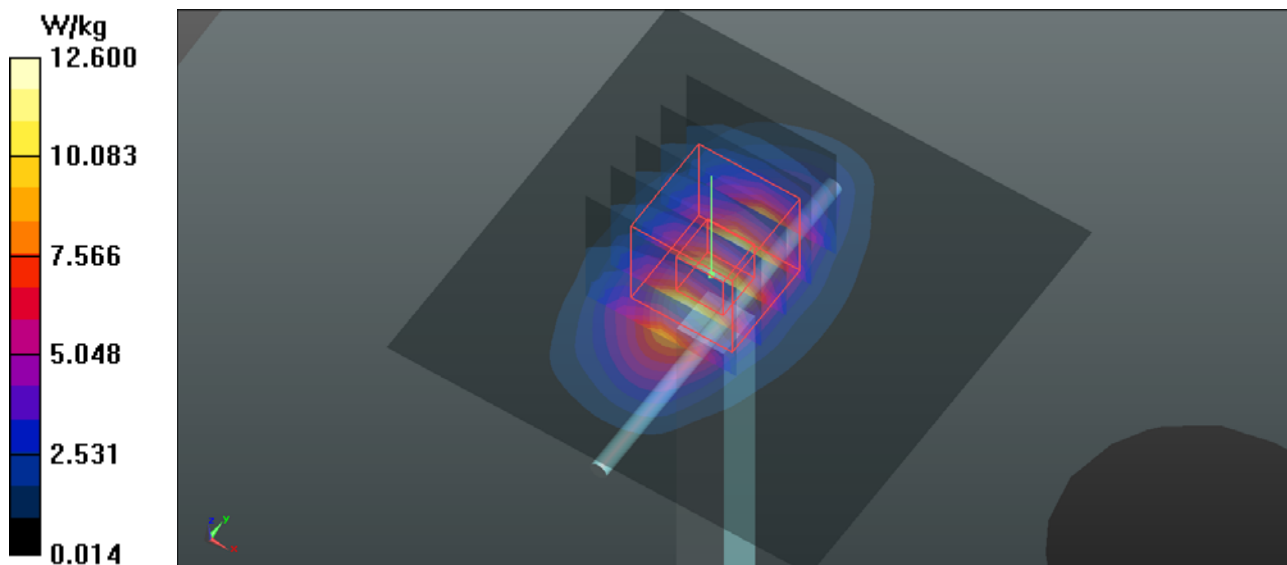
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 95.216 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 16.4 W/kg

SAR(1 g) = 9.37 W/kg; SAR(10 g) = 4.96 W/kg

Maximum value of SAR (measured) = 13.2 W/kg





Appendix B. SAR Plots of SAR Measurement

The plots for SAR measurement are shown as follows.

P233 LTE 17_QPSK_10M_Horizontal Up_0.5cm_25RB_13offset_Ch23800

DUT: ONETOUCH

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 711$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 54.233$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23800/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.223 W/kg

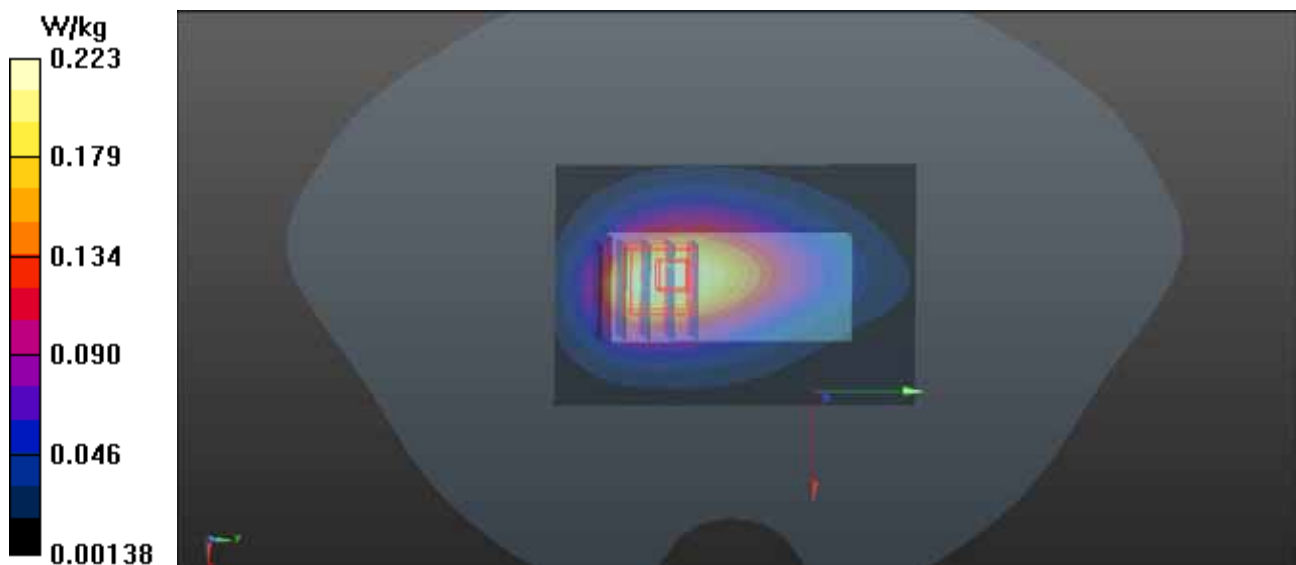
Ch23800/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.367 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.270 W/kg

SAR(1 g) = 0.171 W/kg; SAR(10 g) = 0.104 W/kg

Maximum value of SAR (measured) = 0.209 W/kg



P234 LTE 17_QPSK_10M_Horizontal_Down_0.5cm_25RB_13offset_Ch23800

DUT: ONETOUCH

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 711$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 54.233$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23800/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.198 W/kg

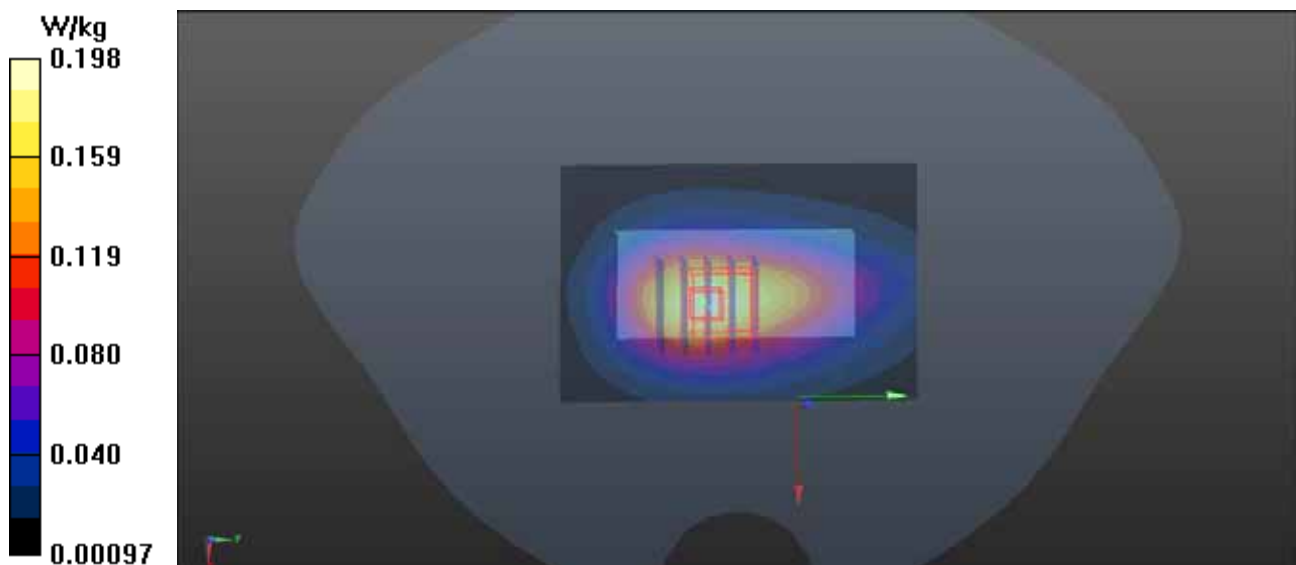
Ch23800/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.021 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.214 W/kg

SAR(1 g) = 0.151 W/kg; SAR(10 g) = 0.104 W/kg

Maximum value of SAR (measured) = 0.185 W/kg



P235 LTE 17_QPSK_10M_Vertical Front_0.5cm_25RB_13offset_Ch23800

DUT: ONETOUCH

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 711$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 54.233$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23800/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.100 W/kg

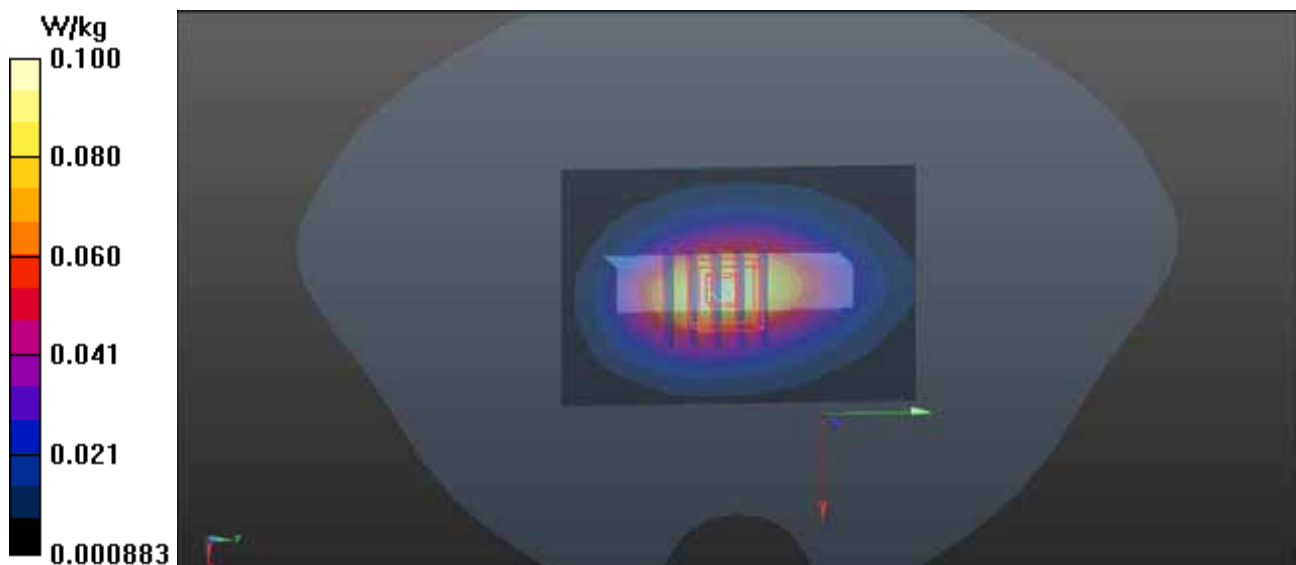
Ch23800/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.333 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.112 W/kg

SAR(1 g) = 0.076 W/kg; SAR(10 g) = 0.050 W/kg

Maximum value of SAR (measured) = 0.0952 W/kg



P236 LTE 17_QPSK_10M_Vertical Back_0.5cm_25RB_13offset_Ch23800

DUT: ONETOUCH

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 711$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 54.233$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23800/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0920 W/kg

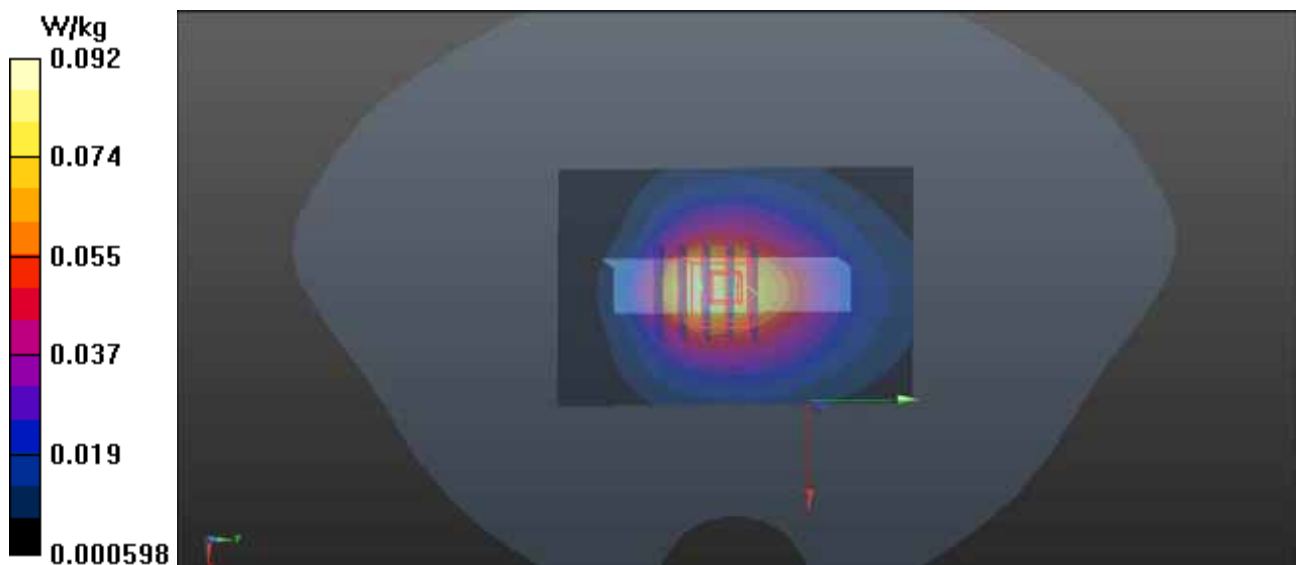
Ch23800/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.582 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.0870 W/kg

SAR(1 g) = 0.063 W/kg; SAR(10 g) = 0.045 W/kg

Maximum value of SAR (measured) = 0.0752 W/kg



P237 LTE 17_QPSK_10M_Tip Mode_0.5cm_25RB_13offset_Ch23800

DUT: ONETOUCH

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 711$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 54.233$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23800/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0505 W/kg

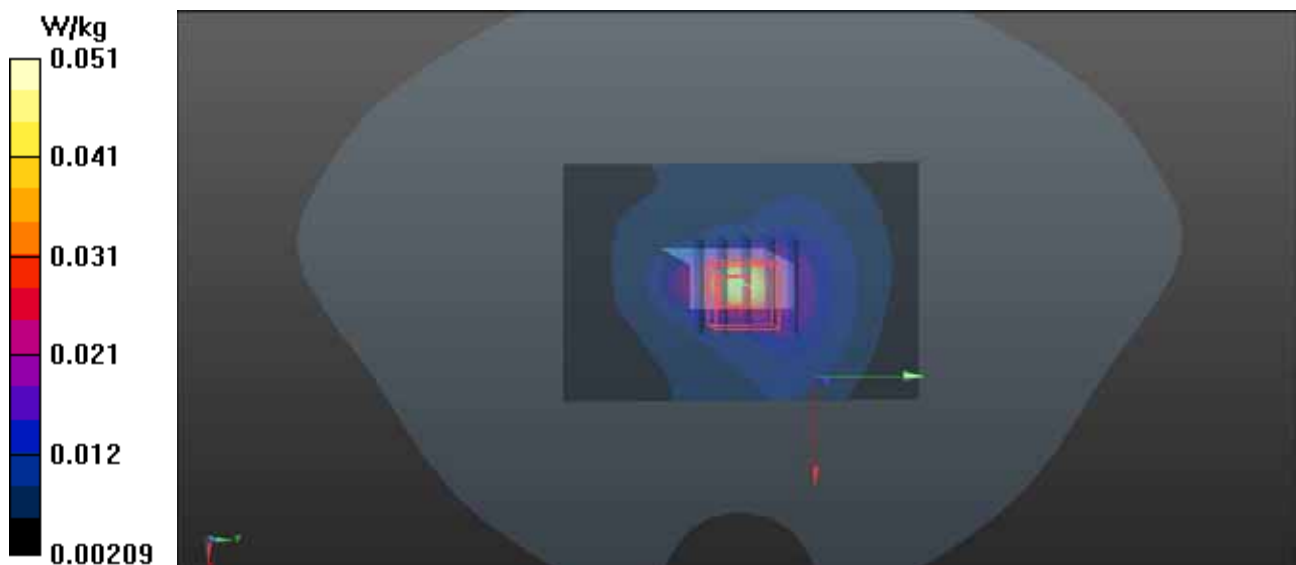
Ch23800/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.625 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.0740 W/kg

SAR(1 g) = 0.036 W/kg; SAR(10 g) = 0.018 W/kg

Maximum value of SAR (measured) = 0.0495 W/kg



P238 LTE 17_QPSK_10M_Horizontal Up_0.5cm_1RB_0offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho =$

1000 kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.315 W/kg

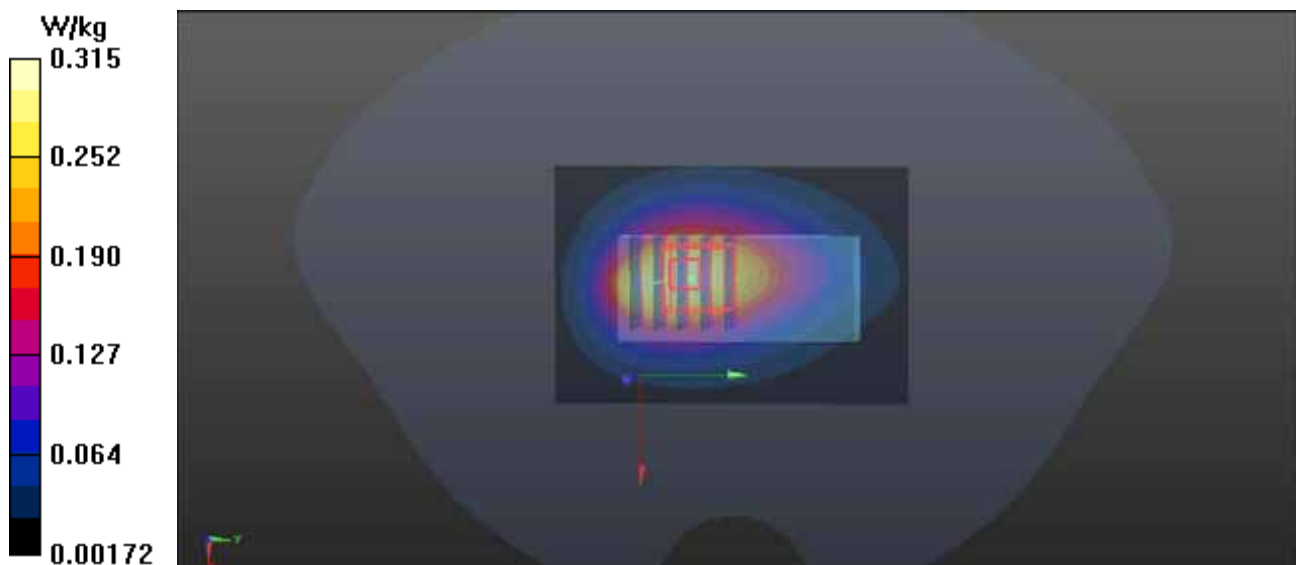
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.667 V/m; Power Drift = -0.03 dB

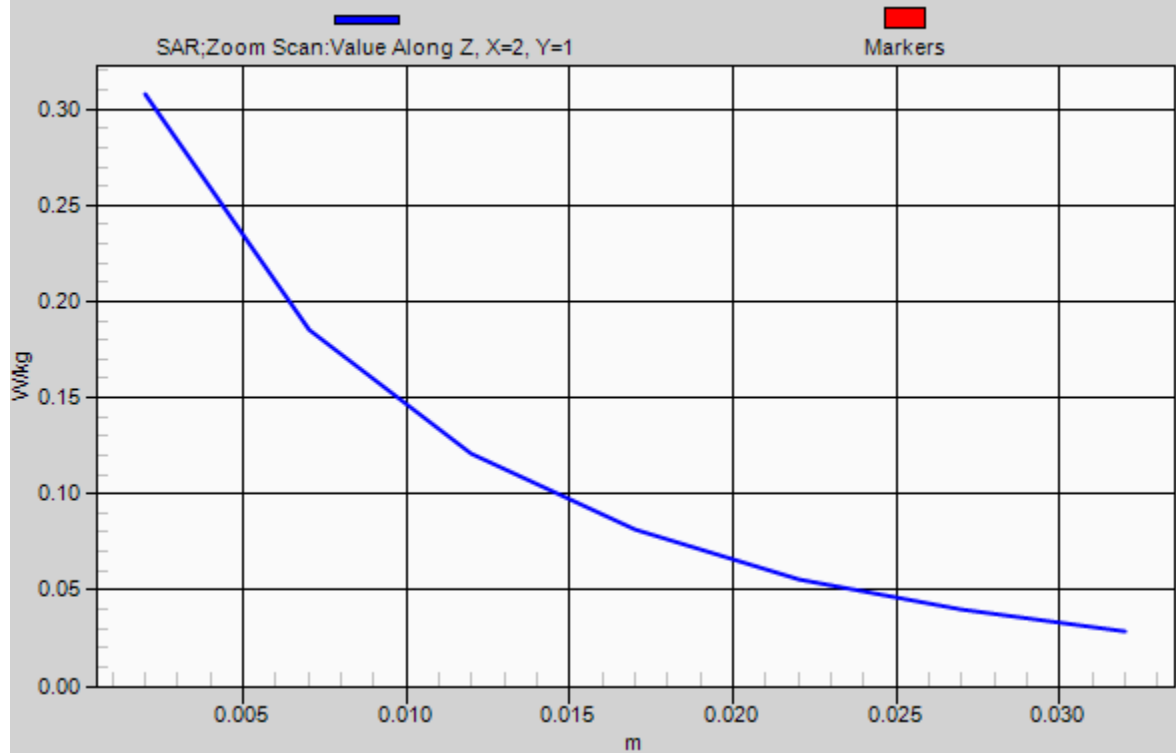
Peak SAR (extrapolated) = 0.390 W/kg

SAR(1 g) = 0.244 W/kg; SAR(10 g) = 0.160 W/kg

Maximum value of SAR (measured) = 0.308 W/kg



1g/10g Averaged SAR



P239 LTE 17_QPSK_10M_Horizontal_Down_0.5cm_1RB_0offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.240 W/kg

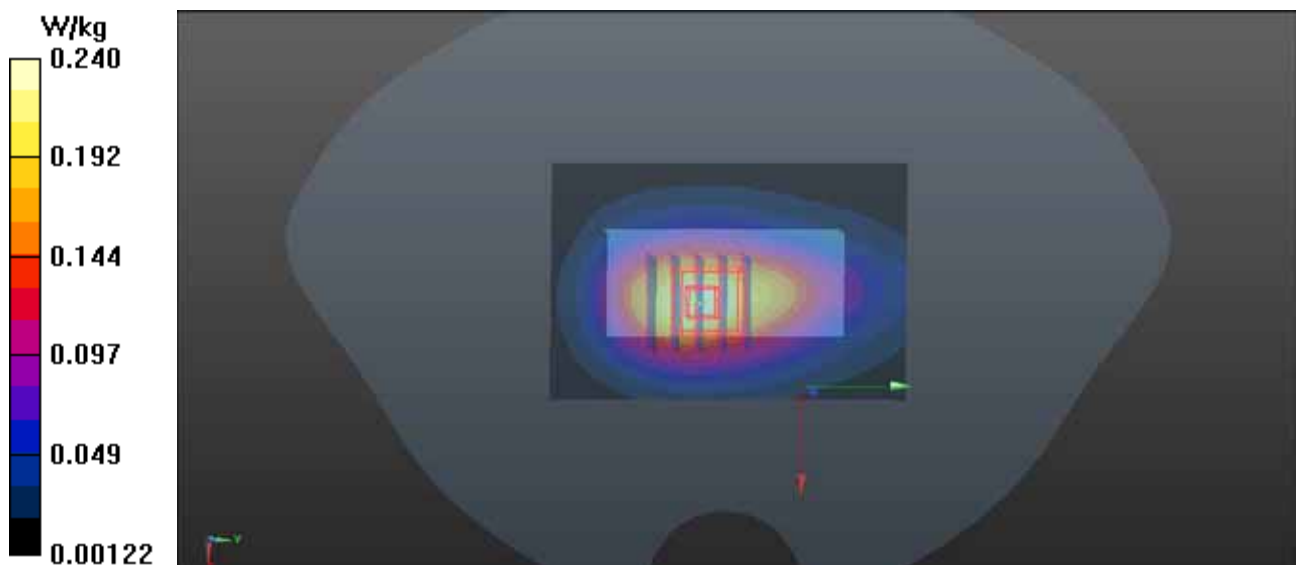
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.258 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.267 W/kg

SAR(1 g) = 0.187 W/kg; SAR(10 g) = 0.128 W/kg

Maximum value of SAR (measured) = 0.233 W/kg



P240 LTE 17_QPSK_10M_Vertical Front_0.5cm_1RB_0offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.123 W/kg

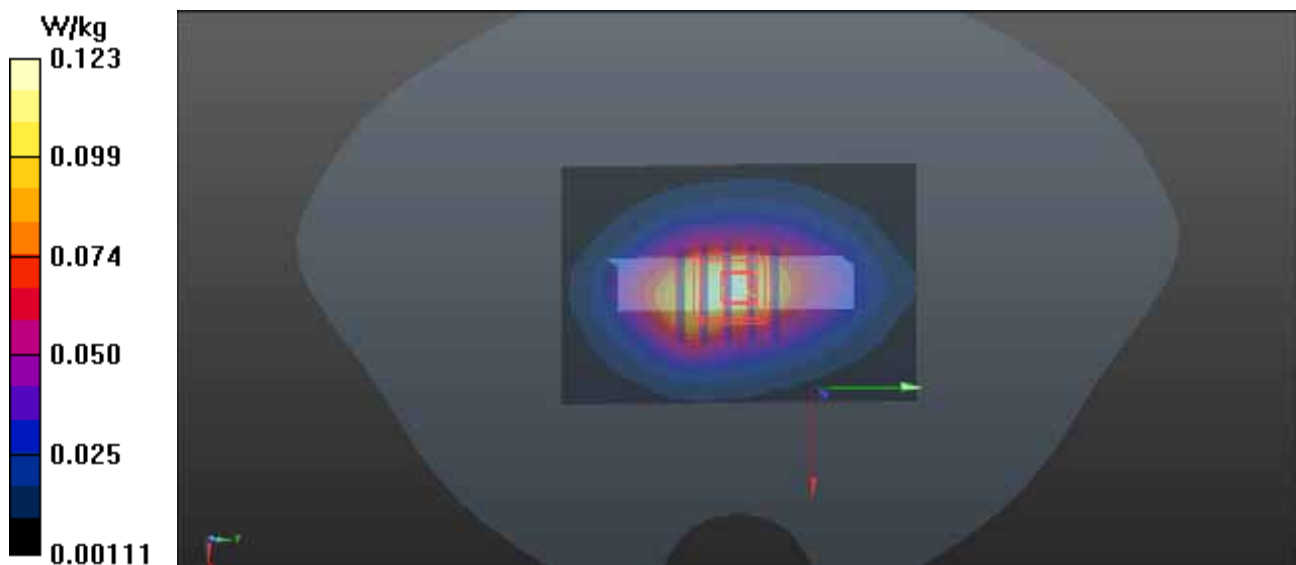
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.804 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.153 W/kg

SAR(1 g) = 0.101 W/kg; SAR(10 g) = 0.065 W/kg

Maximum value of SAR (measured) = 0.134 W/kg



P241 LTE 17_QPSK_10M_Vertical Back_0.5cm_1RB_0offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.124 W/kg

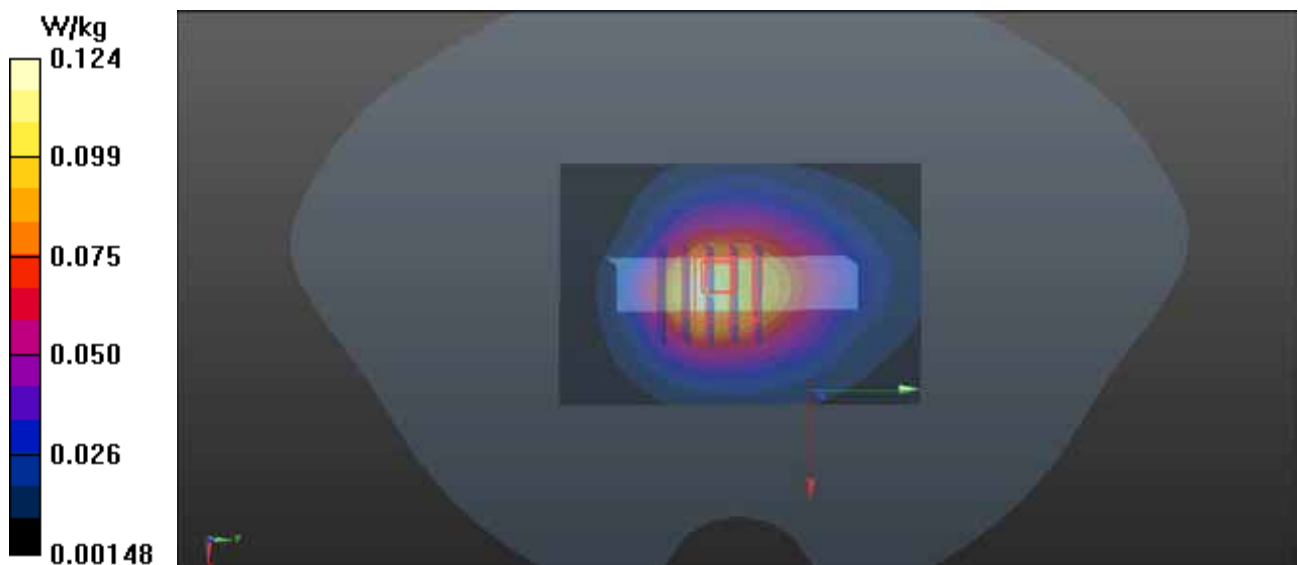
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.154 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.130 W/kg

SAR(1 g) = 0.089 W/kg; SAR(10 g) = 0.063 W/kg

Maximum value of SAR (measured) = 0.106 W/kg



P242 LTE 17_QPSK_10M_Tip Mode_0.5cm_1RB_0offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho =$

1000 kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0661 W/kg

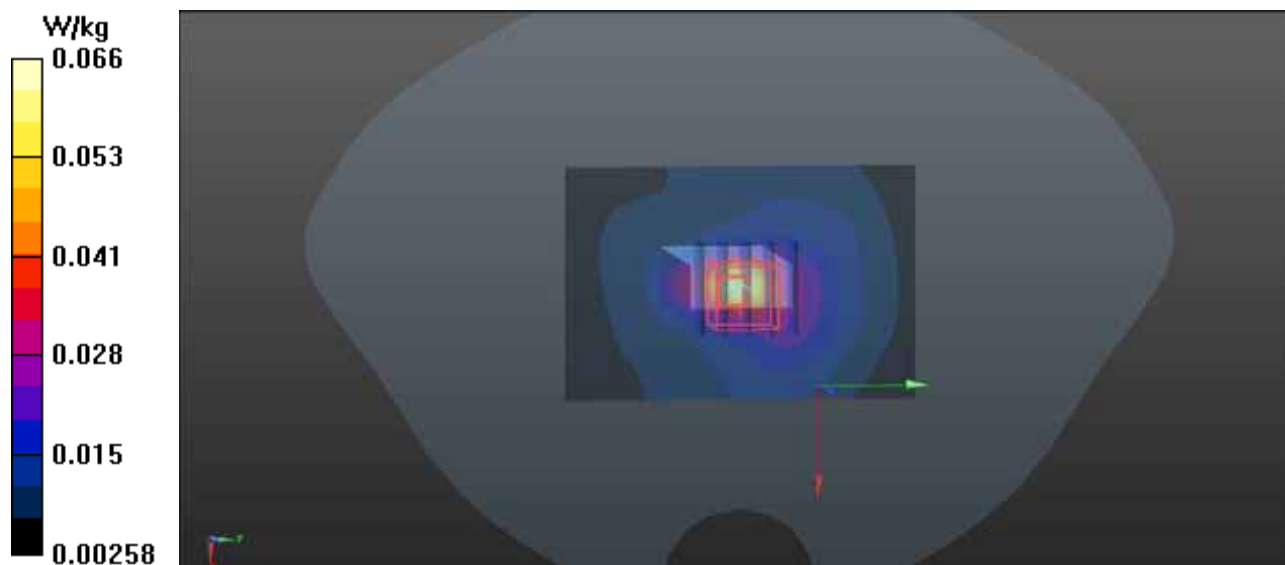
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.934 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.100 W/kg

SAR(1 g) = 0.049 W/kg; SAR(10 g) = 0.025 W/kg

Maximum value of SAR (measured) = 0.0685 W/kg



P243 LTE 17_QPSK_10M_Horizontal Up_0.5cm_1RB_49offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.299 W/kg

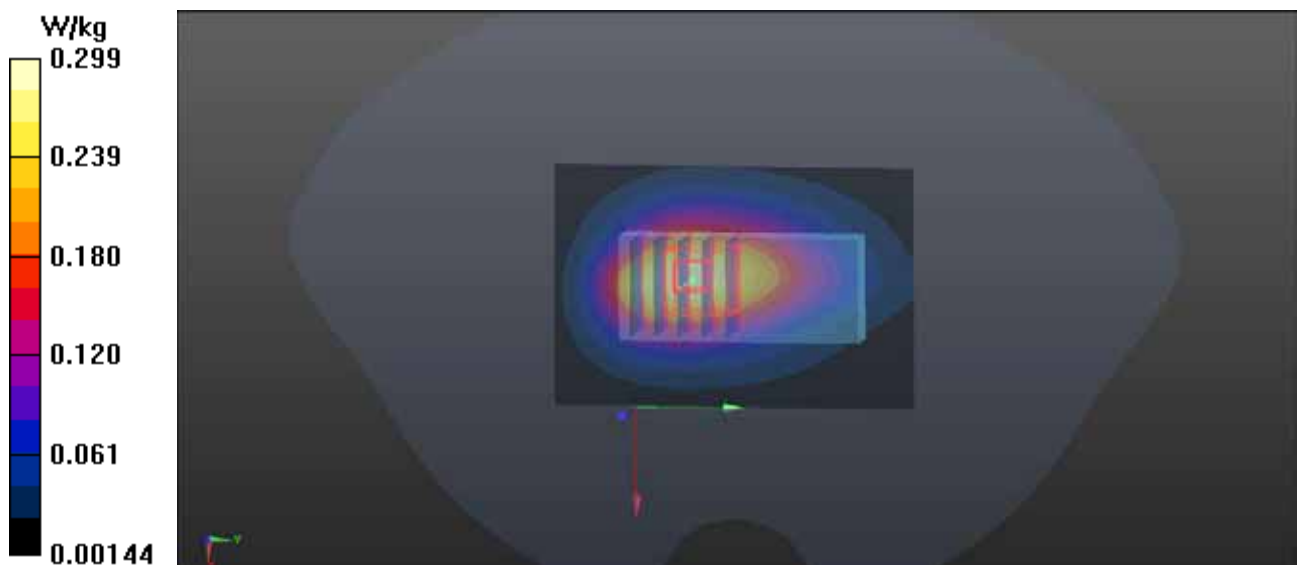
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.218 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.373 W/kg

SAR(1 g) = 0.236 W/kg; SAR(10 g) = 0.155 W/kg

Maximum value of SAR (measured) = 0.298 W/kg



P244 LTE 17_QPSK_10M_Horizontal Down_0.5cm_1RB_49offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709 \text{ MHz}$; $\sigma = 0.92 \text{ mho/m}$; $\epsilon_r = 54.258$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.255 W/kg

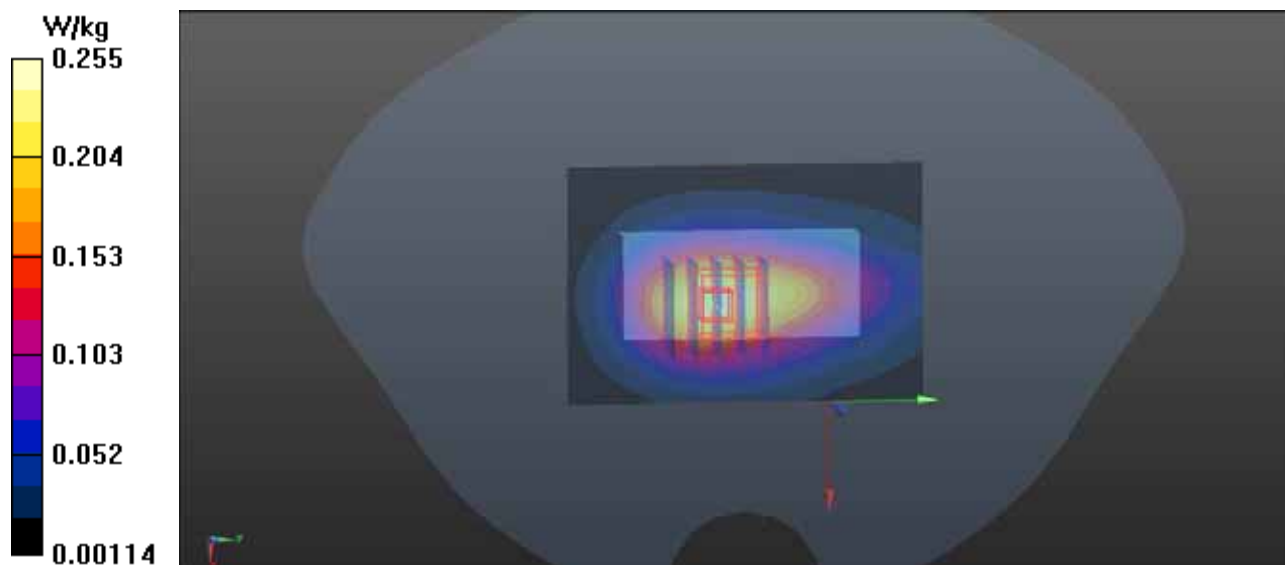
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.435 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.280 W/kg

SAR(1 g) = 0.197 W/kg; SAR(10 g) = 0.134 W/kg

Maximum value of SAR (measured) = 0.243 W/kg



P245 LTE 17_QPSK_10M_Vertical Front_0.5cm_1RB_49offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709 \text{ MHz}$; $\sigma = 0.92 \text{ mho/m}$; $\epsilon_r = 54.258$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.129 W/kg

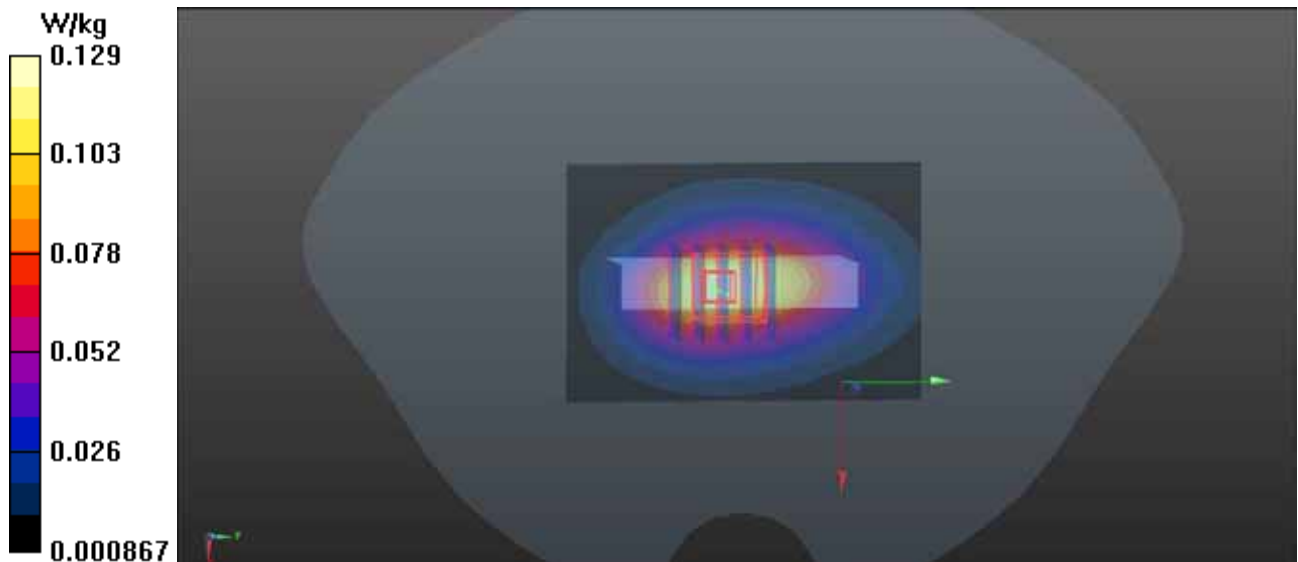
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.819 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.168 W/kg

SAR(1 g) = 0.102 W/kg; SAR(10 g) = 0.065 W/kg

Maximum value of SAR (measured) = 0.138 W/kg



P246 LTE 17_QPSK_10M_Vertical Back_0.5cm_1RB_49offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.122 W/kg

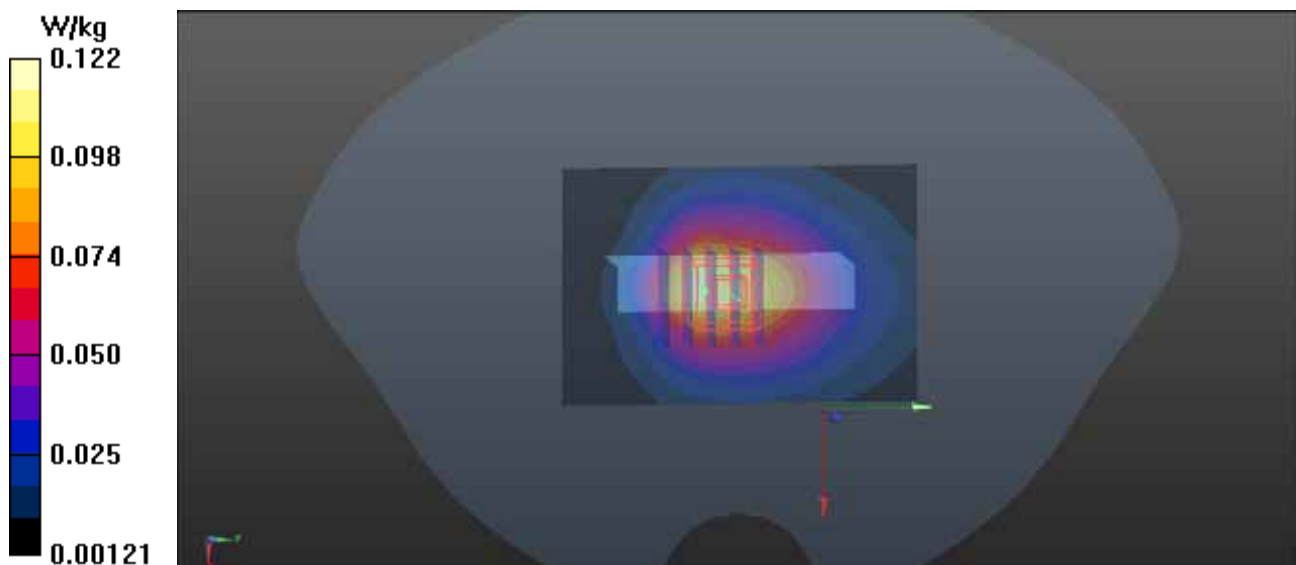
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.950 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.123 W/kg

SAR(1 g) = 0.086 W/kg; SAR(10 g) = 0.060 W/kg

Maximum value of SAR (measured) = 0.108 W/kg



P247 LTE 17_QPSK_10M_Tip Mode_0.5cm_1RB_49offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0705 W/kg

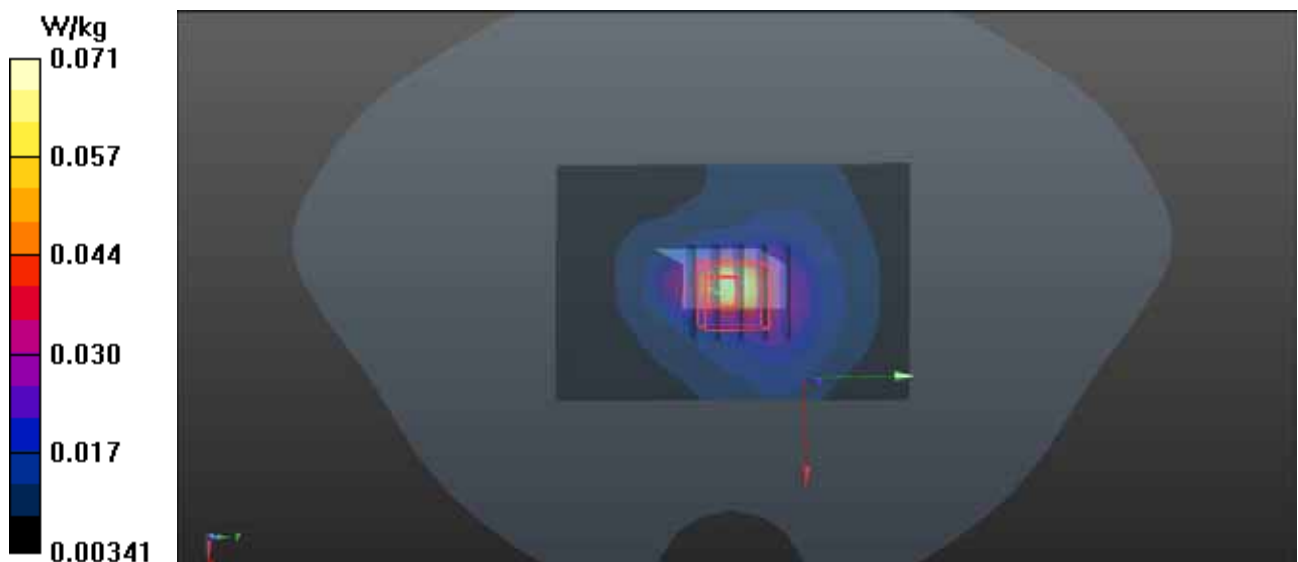
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.688 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.0970 W/kg

SAR(1 g) = 0.048 W/kg; SAR(10 g) = 0.024 W/kg

Maximum value of SAR (measured) = 0.0703 W/kg



P250 LTE 17_16QAM_10M_Horizontal Up_0.5cm_25RB_13offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.186 W/kg

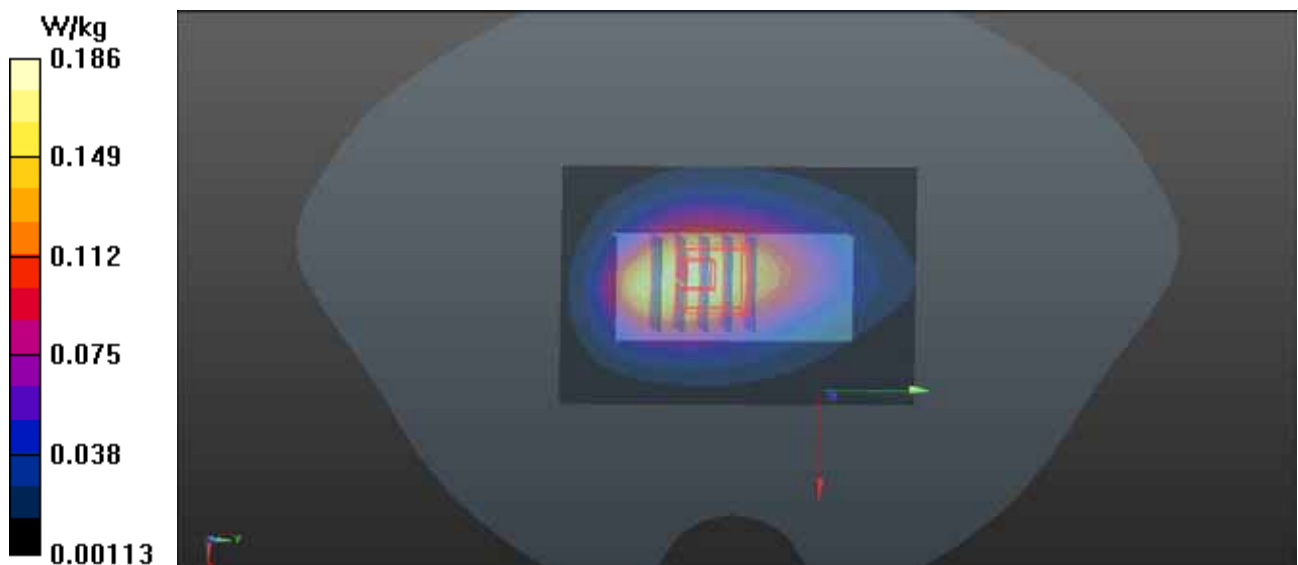
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.950 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.228 W/kg

SAR(1 g) = 0.145 W/kg; SAR(10 g) = 0.095 W/kg

Maximum value of SAR (measured) = 0.181 W/kg



P251 LTE 17_16QAM_10M_Horizontal Down_0.5cm_25RB_13offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.148 W/kg

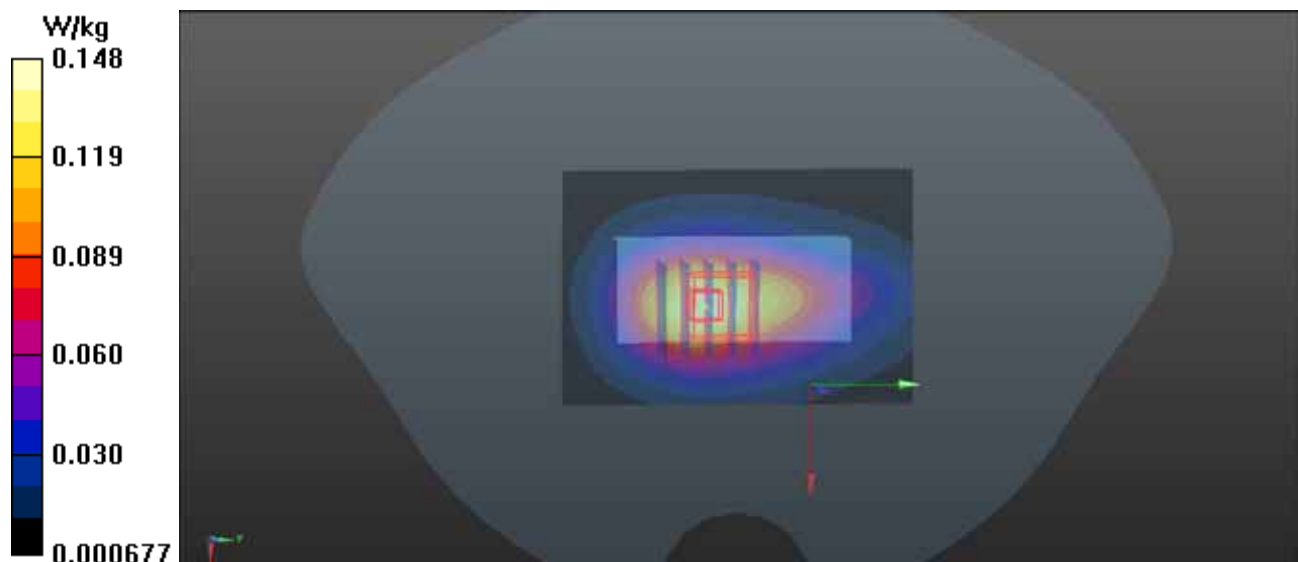
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.174 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.164 W/kg

SAR(1 g) = 0.115 W/kg; SAR(10 g) = 0.078 W/kg

Maximum value of SAR (measured) = 0.142 W/kg



P252 LTE 17_16QAM_10M_Vertical Front_0.5cm_25RB_13offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0786 W/kg

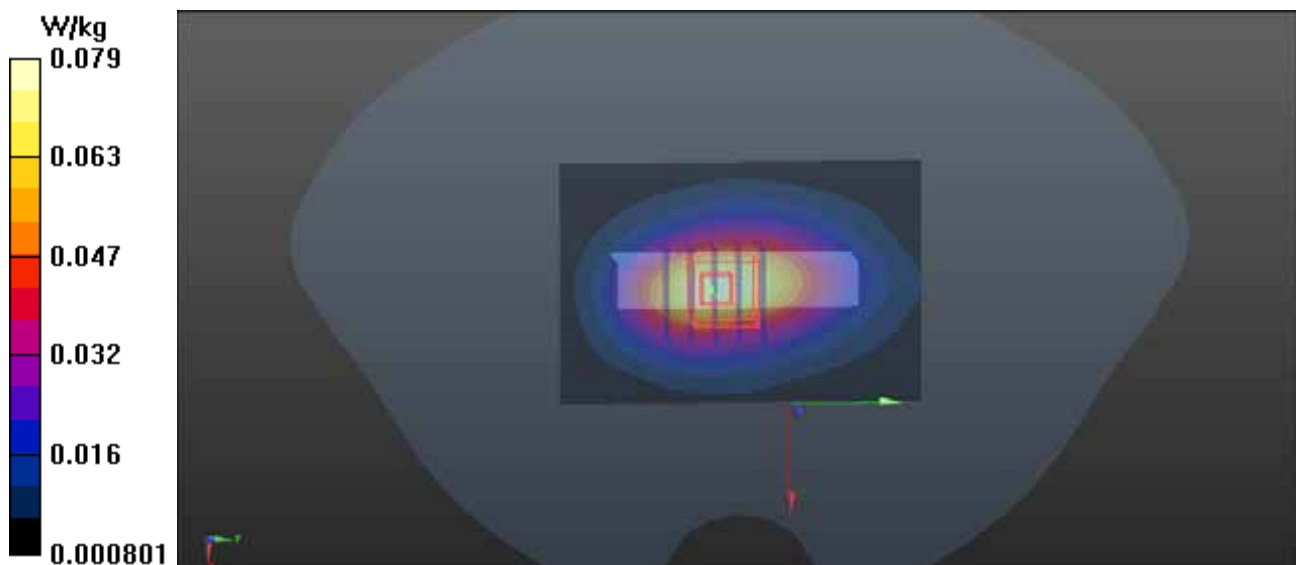
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.341 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.0880 W/kg

SAR(1 g) = 0.059 W/kg; SAR(10 g) = 0.039 W/kg

Maximum value of SAR (measured) = 0.0748 W/kg



P253 LTE 17_16QAM_10M_Vertical Back_0.5cm_25RB_13offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0718 W/kg

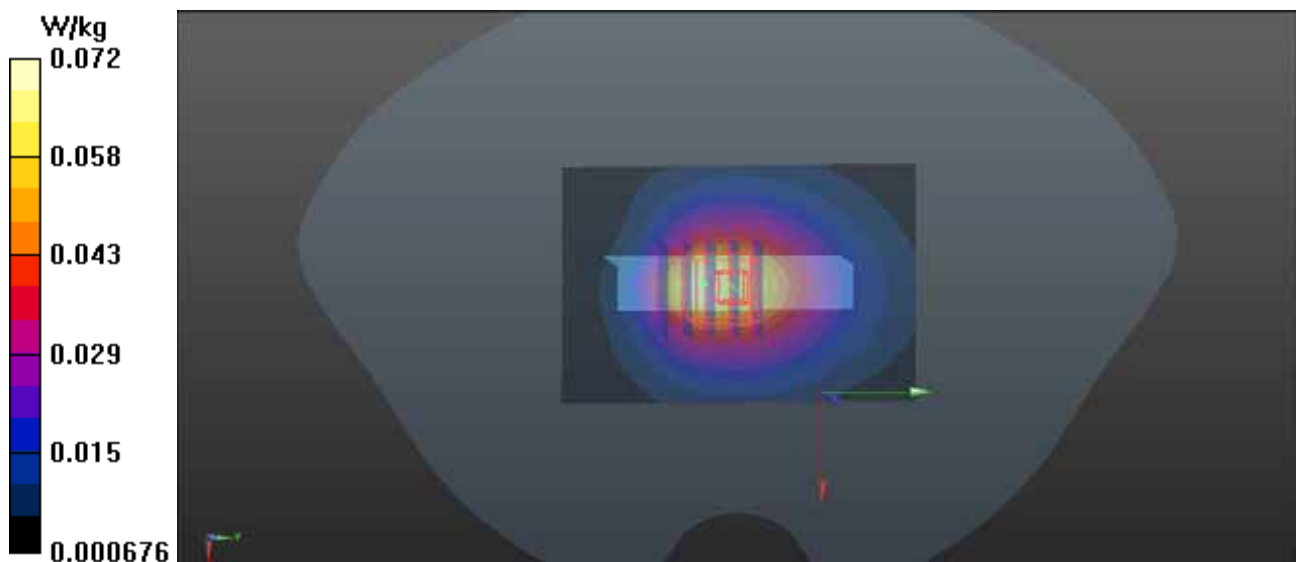
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.553 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.0680 W/kg

SAR(1 g) = 0.049 W/kg; SAR(10 g) = 0.035 W/kg

Maximum value of SAR (measured) = 0.0594 W/kg



P254 LTE 17_16QAM_10M_Tip Mode_0.5cm_25RB_13offset_Ch23780

DUT: ONETOUCH

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 709$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 54.258$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23780/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0398 W/kg

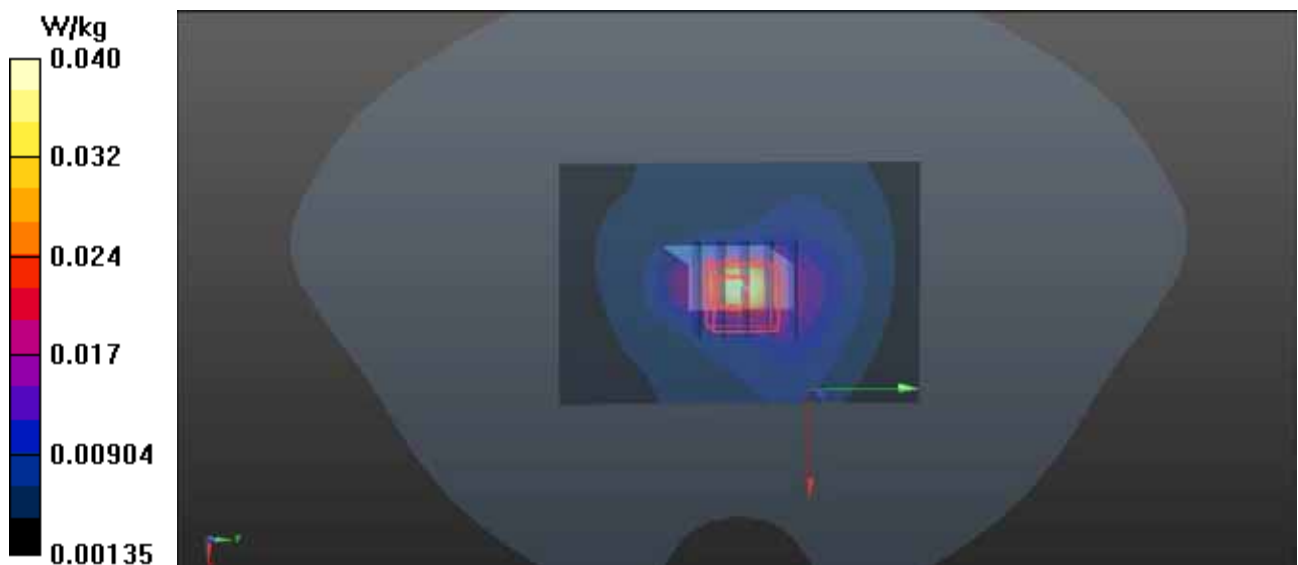
Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.818 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.0580 W/kg

SAR(1 g) = 0.028 W/kg; SAR(10 g) = 0.014 W/kg

Maximum value of SAR (measured) = 0.0389 W/kg



P255 LTE 17_16QAM_10M_Horizontal Up_0.5cm_1RB_0offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.243 W/kg

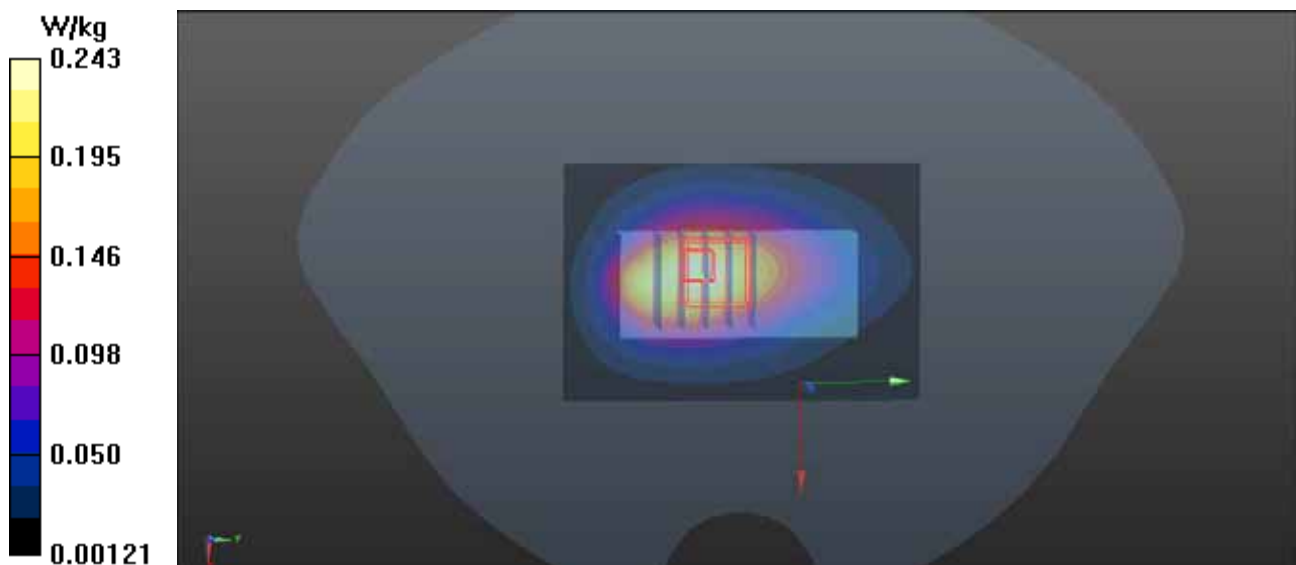
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.865 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.300 W/kg

SAR(1 g) = 0.190 W/kg; SAR(10 g) = 0.125 W/kg

Maximum value of SAR (measured) = 0.230 W/kg



P256 LTE 17_16QAM_10M_Horizontal Down_0.5cm_1RB_0offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.212 W/kg

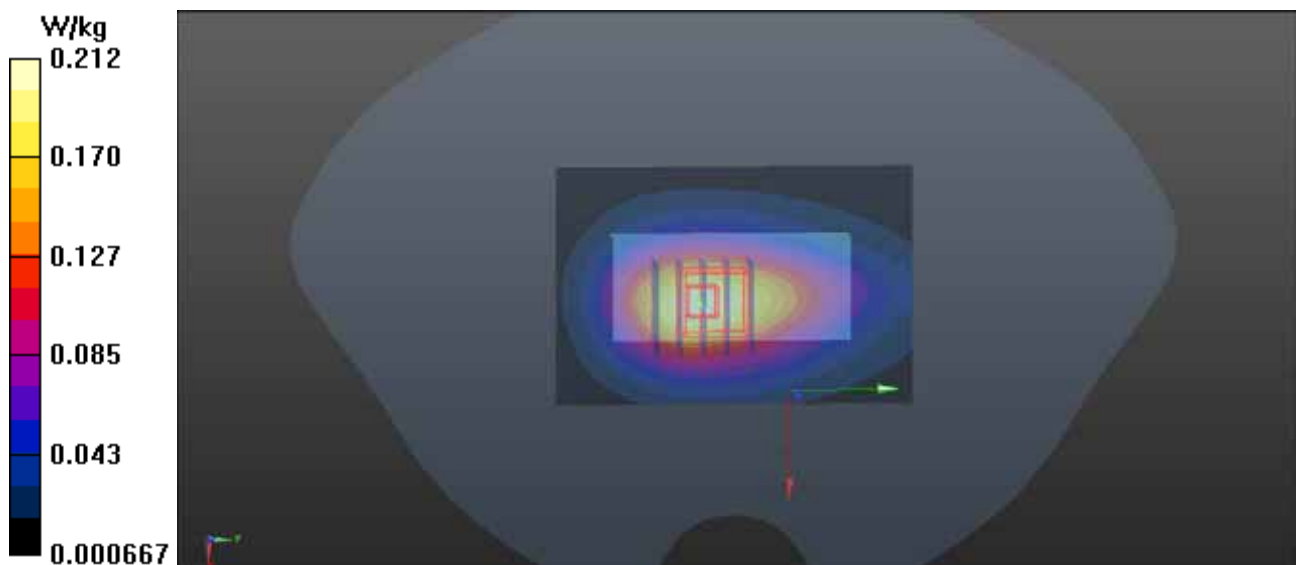
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.352 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.230 W/kg

SAR(1 g) = 0.165 W/kg; SAR(10 g) = 0.112 W/kg

Maximum value of SAR (measured) = 0.200 W/kg



P257 LTE 17_16QAM_10M_Vertical Front_0.5cm_1RB_0offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.102 W/kg

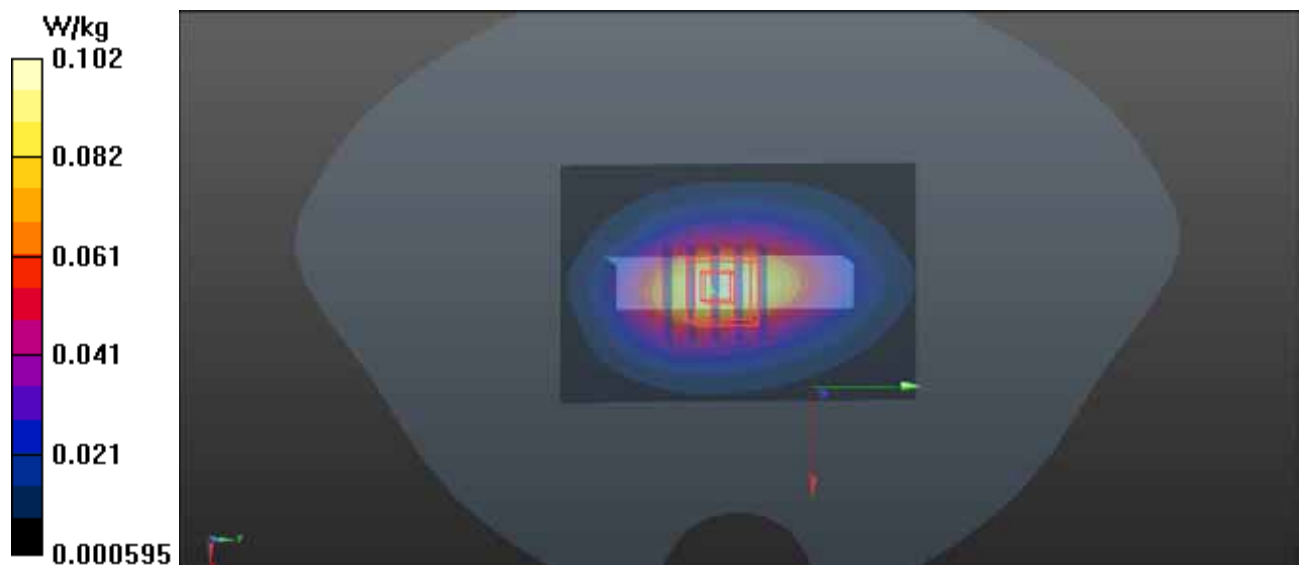
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.127 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.113 W/kg

SAR(1 g) = 0.076 W/kg; SAR(10 g) = 0.051 W/kg

Maximum value of SAR (measured) = 0.0962 W/kg



P258 LTE 17_16QAM_10M_Vertical Back_0.5cm_1RB_0offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0941 W/kg

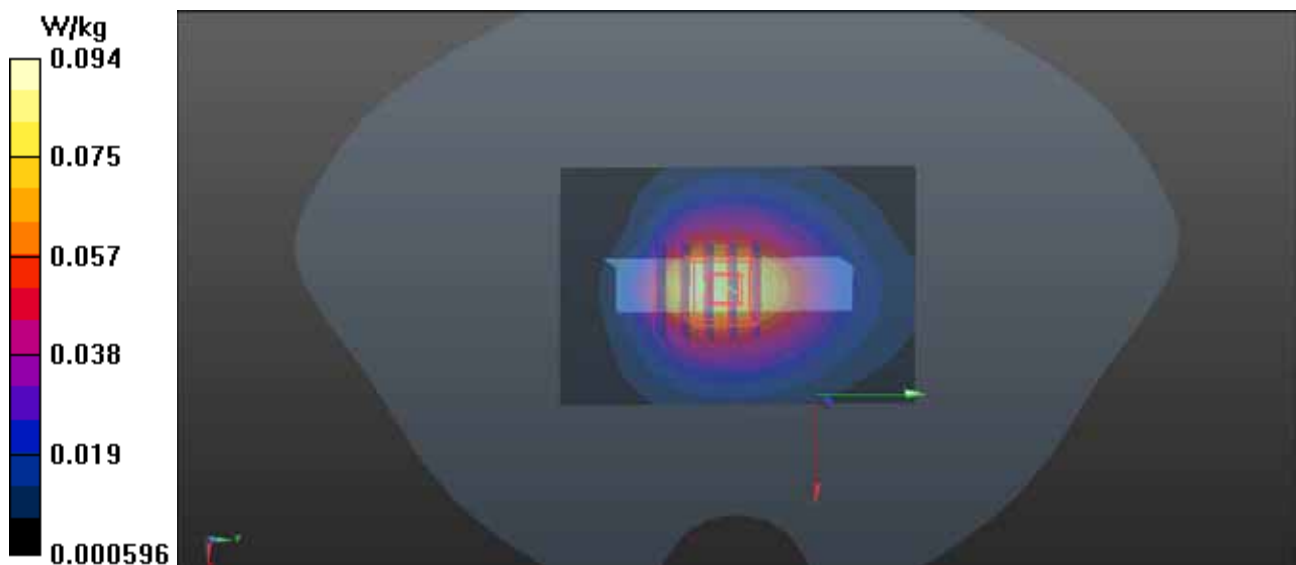
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.669 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.0910 W/kg

SAR(1 g) = 0.066 W/kg; SAR(10 g) = 0.047 W/kg

Maximum value of SAR (measured) = 0.0804 W/kg



P259 LTE 17_16QAM_10M_Tip Mode_0.5cm_1RB_0offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0511 W/kg

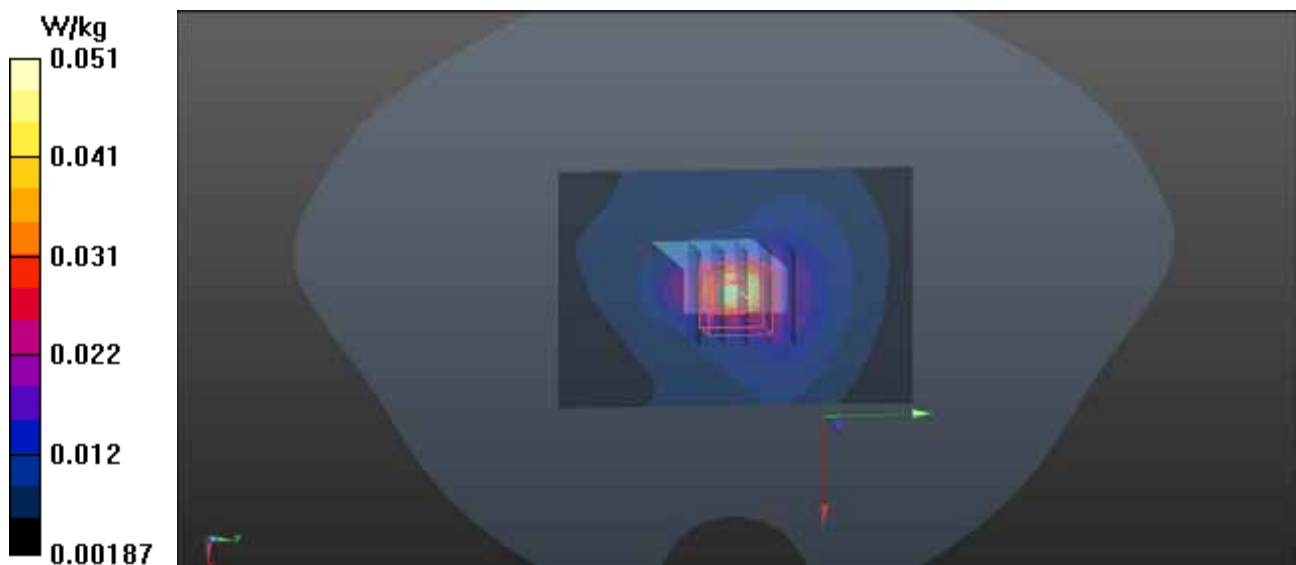
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.646 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.0780 W/kg

SAR(1 g) = 0.037 W/kg; SAR(10 g) = 0.019 W/kg

Maximum value of SAR (measured) = 0.0528 W/kg



P260 LTE 17_16QAM_10M_Horizontal Up_0.5cm_1RB_49offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.244 W/kg

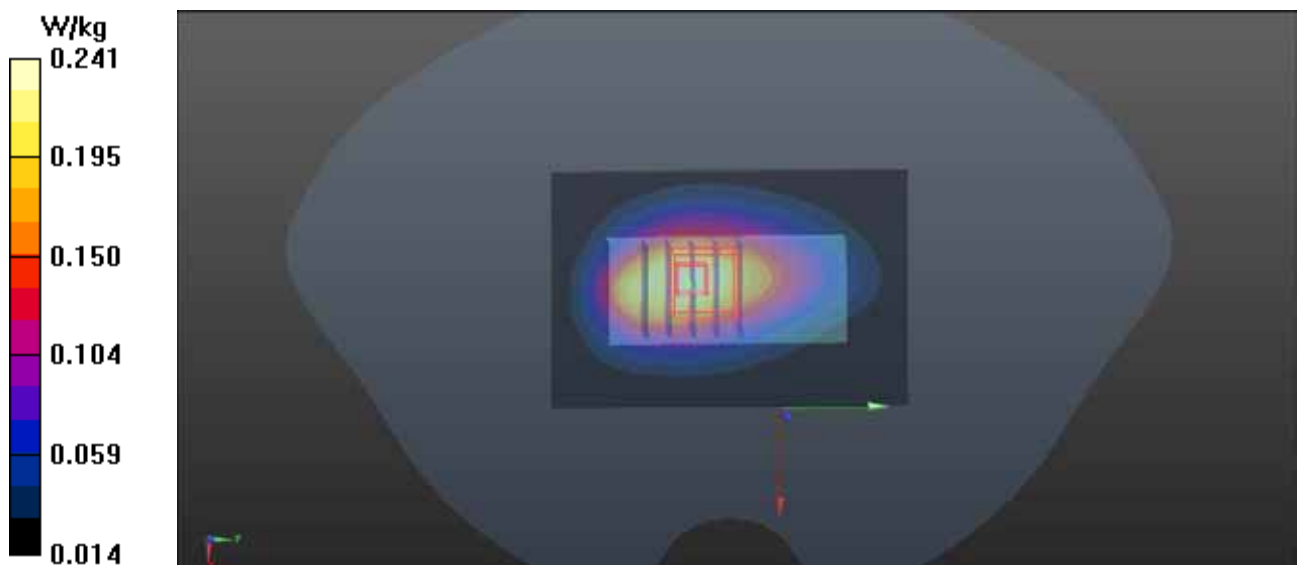
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.770 V/m; Power Drift = 0.07 dB

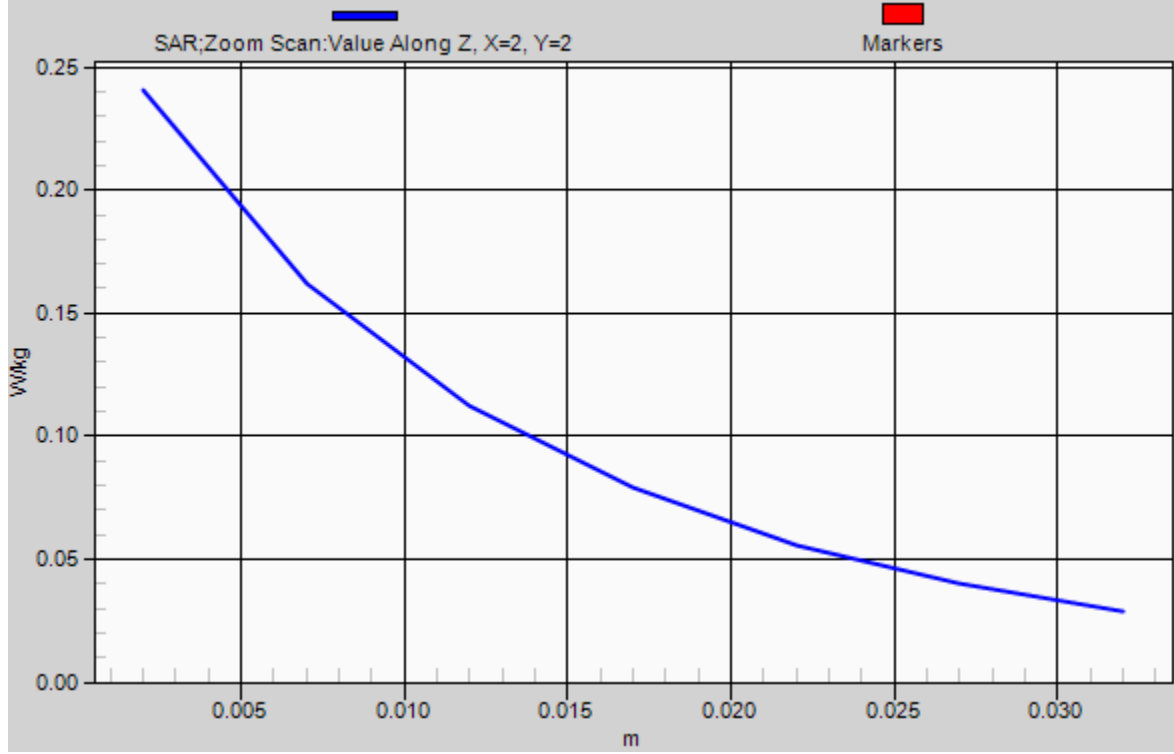
Peak SAR (extrapolated) = 0.302 W/kg

SAR(1 g) = 0.191 W/kg; SAR(10 g) = 0.126 W/kg

Maximum value of SAR (measured) = 0.241 W/kg



1g/10g Averaged SAR



P261 LTE 17_16QAM_10M_Horizontal Down_0.5cm_1RB_49offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.218 W/kg

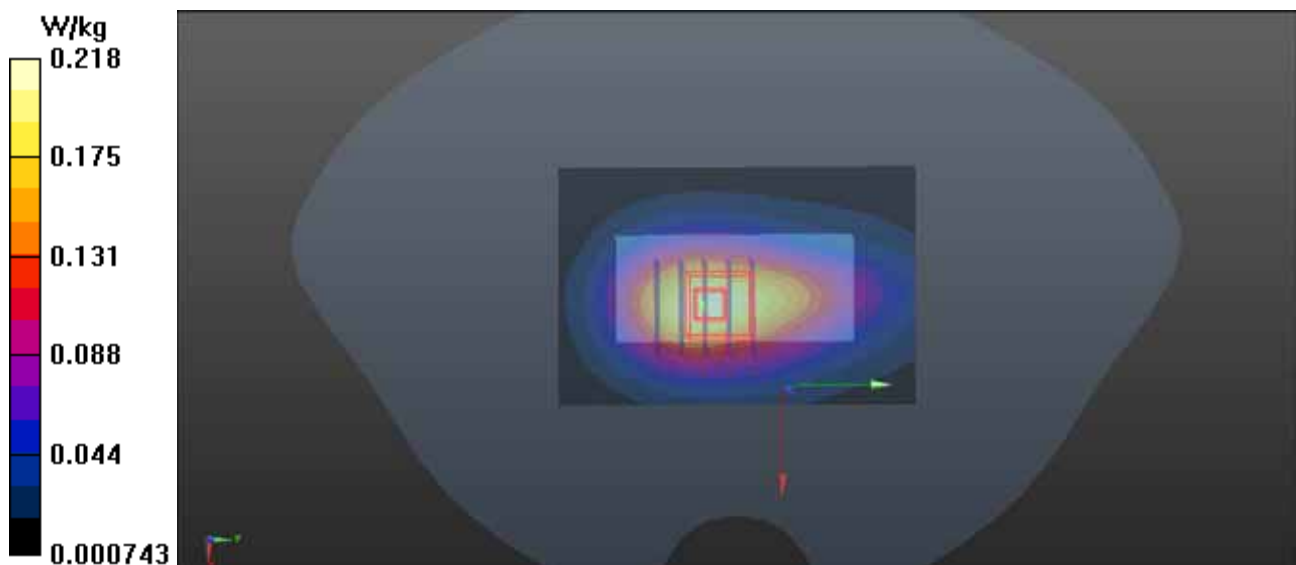
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.644 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.242 W/kg

SAR(1 g) = 0.171 W/kg; SAR(10 g) = 0.118 W/kg

Maximum value of SAR (measured) = 0.209 W/kg



P262 LTE 17_16QAM_10M_Vertical Front_0.5cm_1RB_49offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.110 W/kg

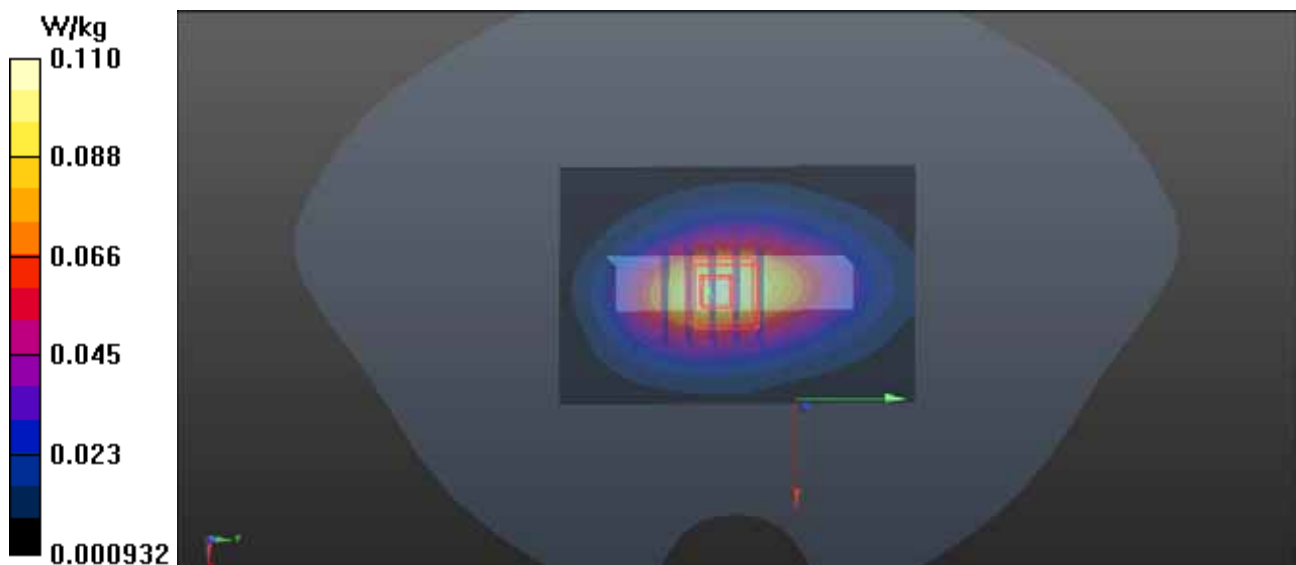
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.790 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.113 W/kg

SAR(1 g) = 0.076 W/kg; SAR(10 g) = 0.050 W/kg

Maximum value of SAR (measured) = 0.0957 W/kg



P263 LTE 17_16QAM_10M_Vertical Back_0.5cm_1RB_49offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0920 W/kg

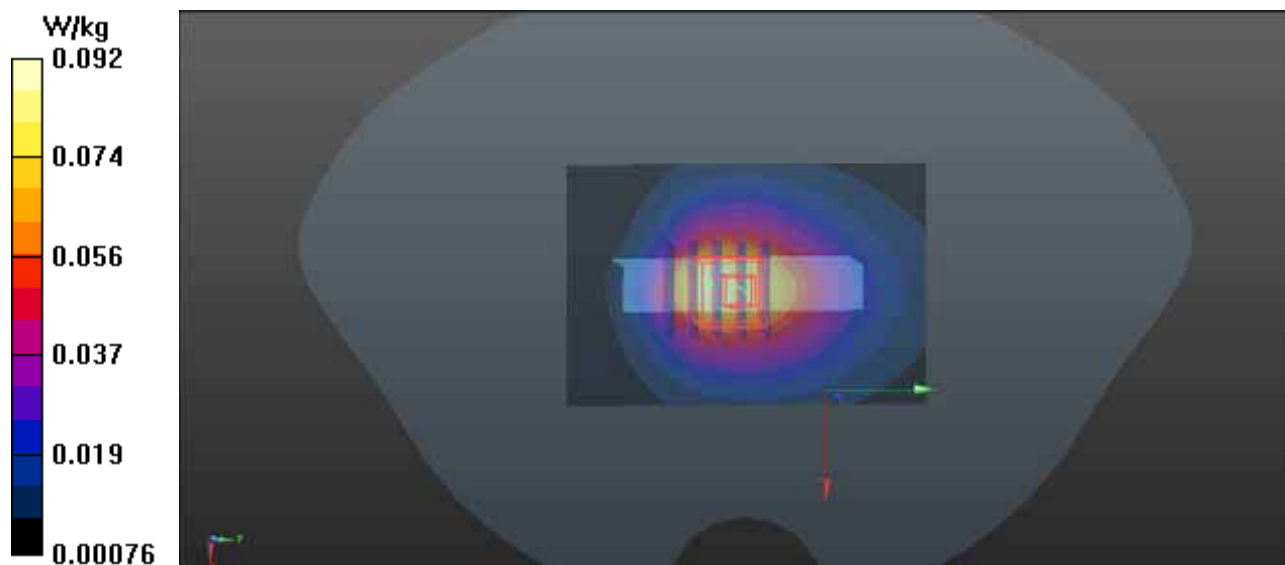
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.483 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.0870 W/kg

SAR(1 g) = 0.063 W/kg; SAR(10 g) = 0.045 W/kg

Maximum value of SAR (measured) = 0.0761 W/kg



P264 LTE 17_16QAM_10M_Tip Mode_0.5cm_1RB_49offset_Ch23790

DUT: ONETOUCH

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: B750_1227 Medium parameters used: $f = 710$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 54.246$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.7 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.43, 9.43, 9.43); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Front Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1695
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch23790/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0486 W/kg

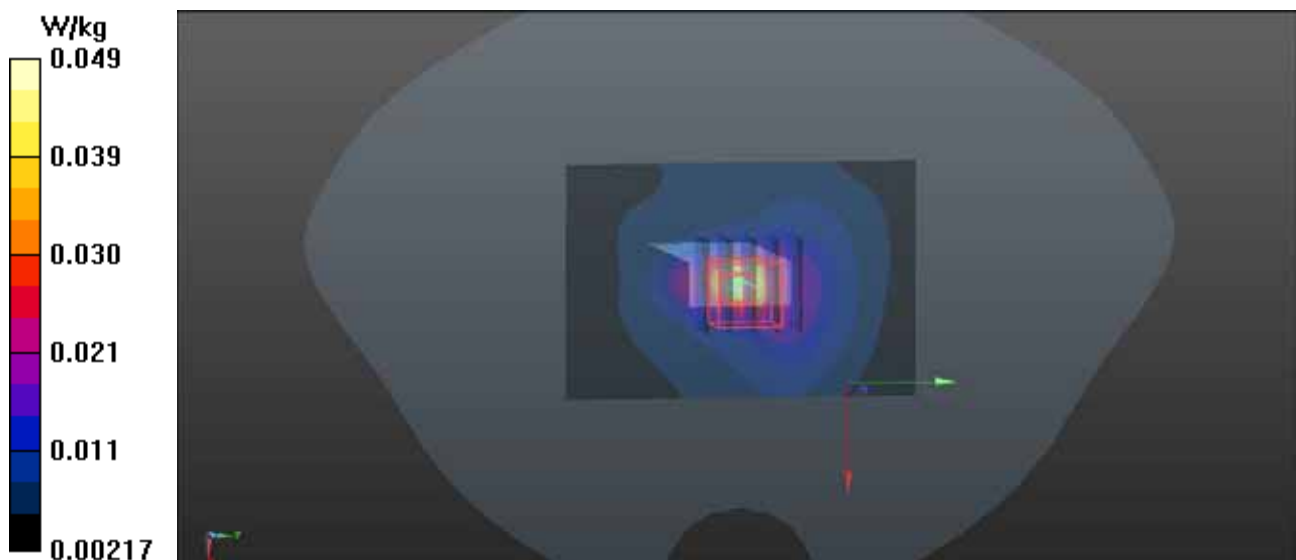
Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.517 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.0740 W/kg

SAR(1 g) = 0.036 W/kg; SAR(10 g) = 0.018 W/kg

Maximum value of SAR (measured) = 0.0500 W/kg



P201 LTE 4_QPSK_20M_Horizontal Up_0.5cm_50RB_25offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.03 W/kg

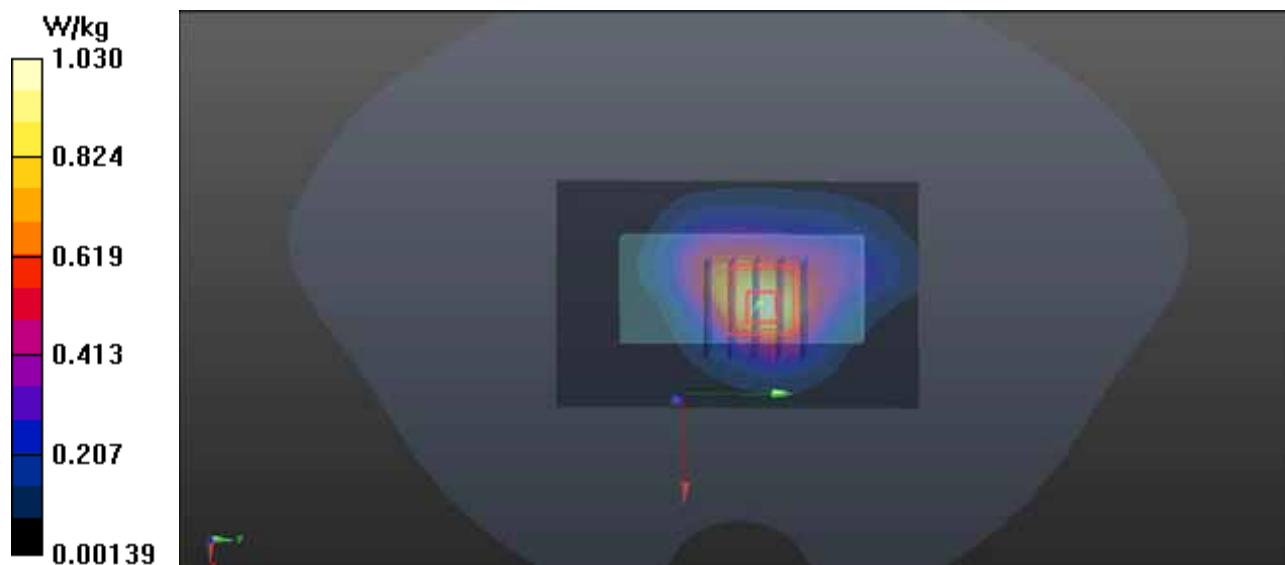
Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.249 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.682 W/kg; SAR(10 g) = 0.403 W/kg

Maximum value of SAR (measured) = 0.908 W/kg



P202 LTE 4_QPSK_20M_Horizontal Down_0.5cm_50RB_25offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.974 W/kg

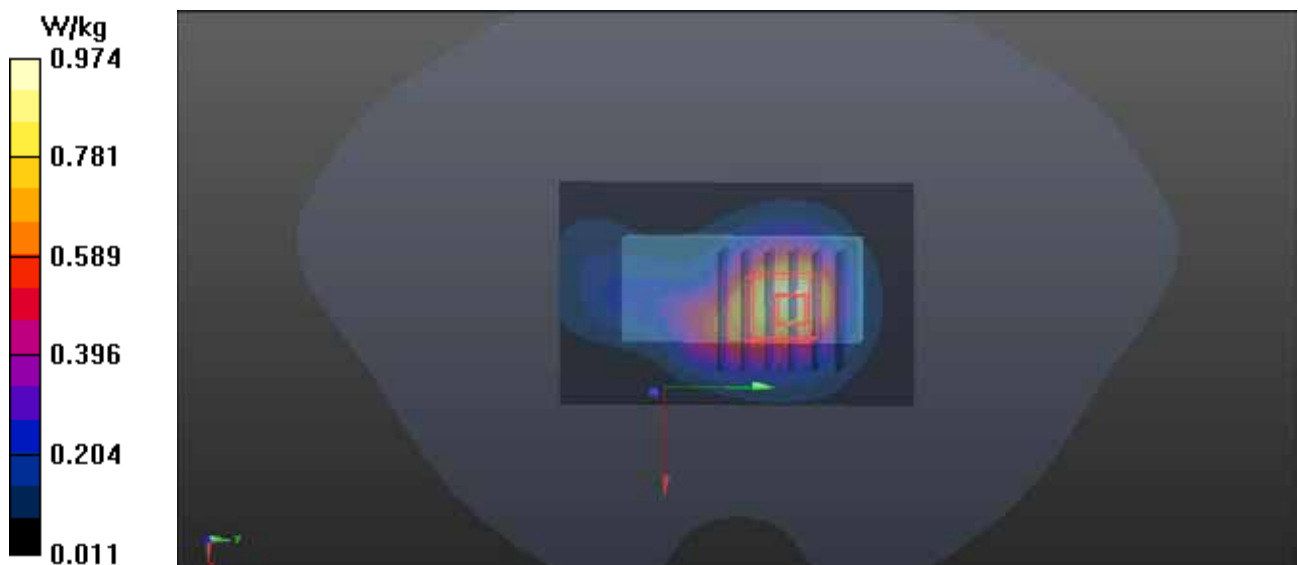
Ch20175/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.411 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.992 W/kg

SAR(1 g) = 0.637 W/kg; SAR(10 g) = 0.399 W/kg

Maximum value of SAR (measured) = 0.803 W/kg



P203 LTE 4_QPSK_20M_Vertical Front_0.5cm_50RB_25offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.500 W/kg

Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.479 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.609 W/kg

SAR(1 g) = 0.373 W/kg; SAR(10 g) = 0.216 W/kg

Maximum value of SAR (measured) = 0.504 W/kg

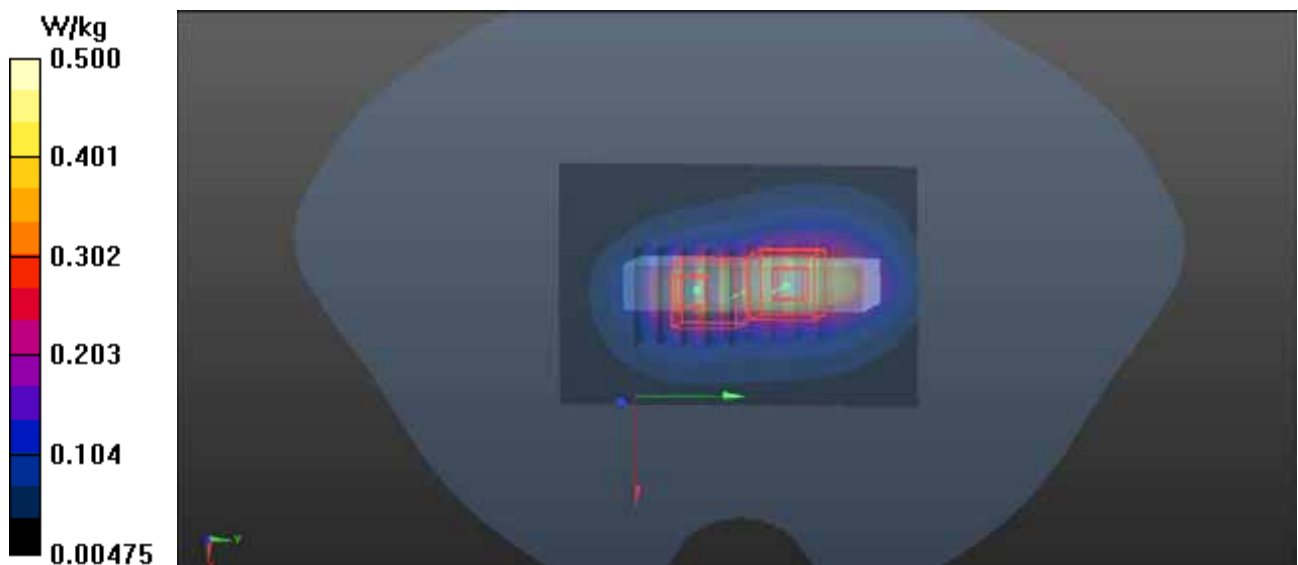
Ch20175/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.479 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.527 W/kg

SAR(1 g) = 0.306 W/kg; SAR(10 g) = 0.177 W/kg

Maximum value of SAR (measured) = 0.429 W/kg



P204 LTE 4_QPSK_20M_Vertical Back_0.5cm_50RB_25offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.751 W/kg

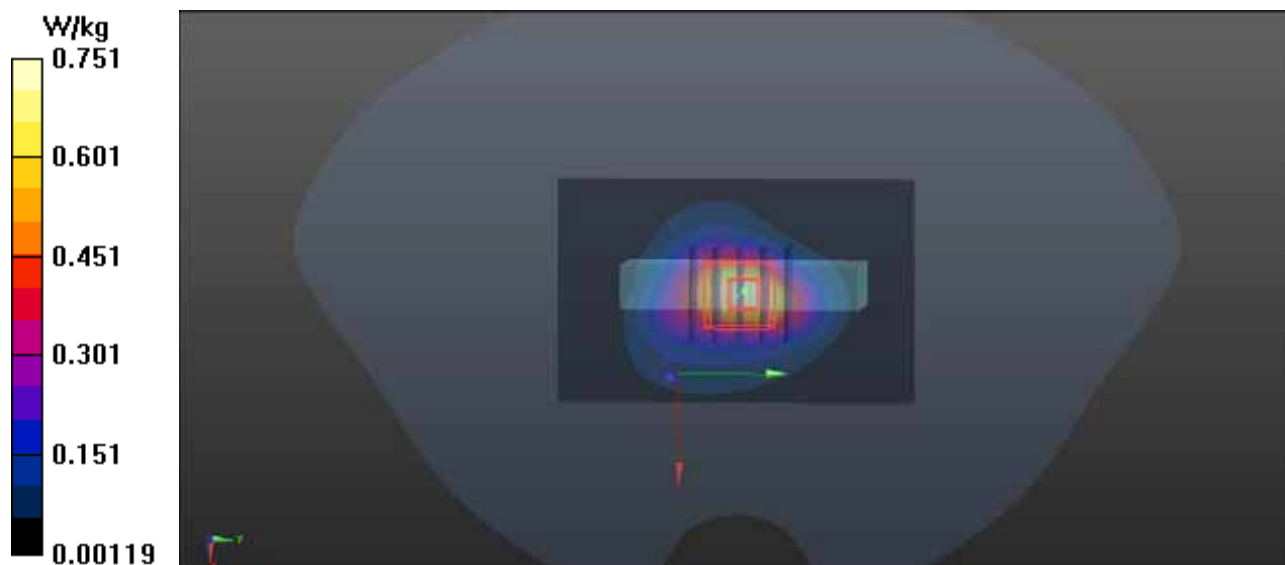
Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.925 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.886 W/kg

SAR(1 g) = 0.538 W/kg; SAR(10 g) = 0.299 W/kg

Maximum value of SAR (measured) = 0.734 W/kg



P205 LTE 4_QPSK_20M_Tip Mode_0.5cm_50RB_25offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0992 W/kg

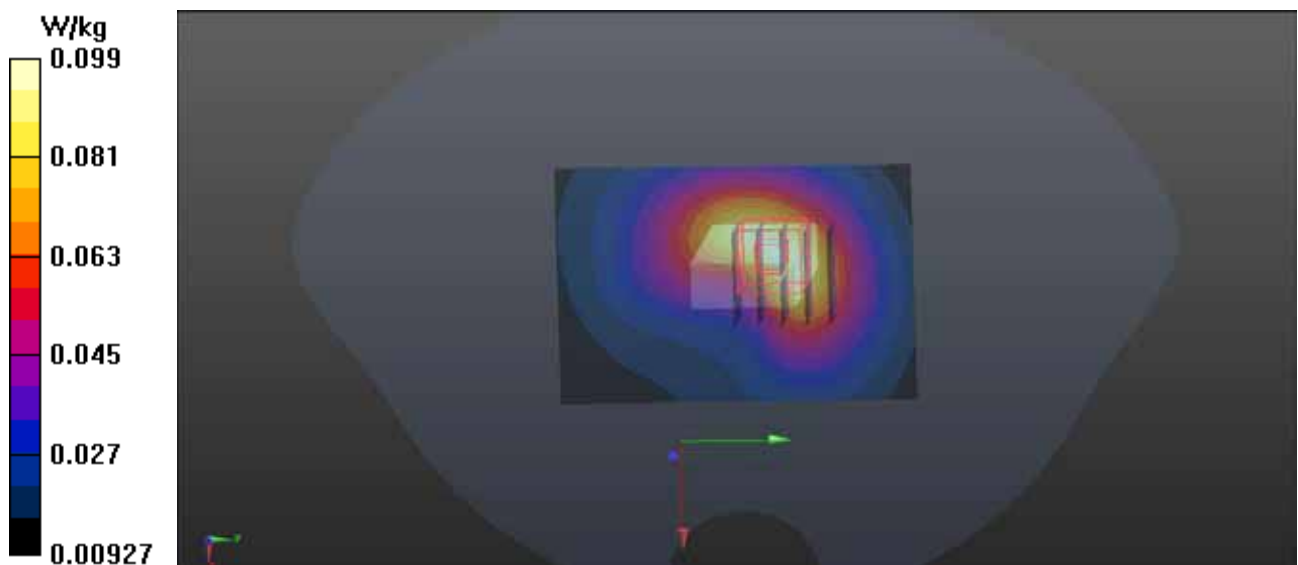
Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.683 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.123 W/kg

SAR(1 g) = 0.083 W/kg; SAR(10 g) = 0.052 W/kg

Maximum value of SAR (measured) = 0.103 W/kg



P206 LTE 4_QPSK_20M_Horizontal Up_0.5cm_1RB_0offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C ; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.32 W/kg

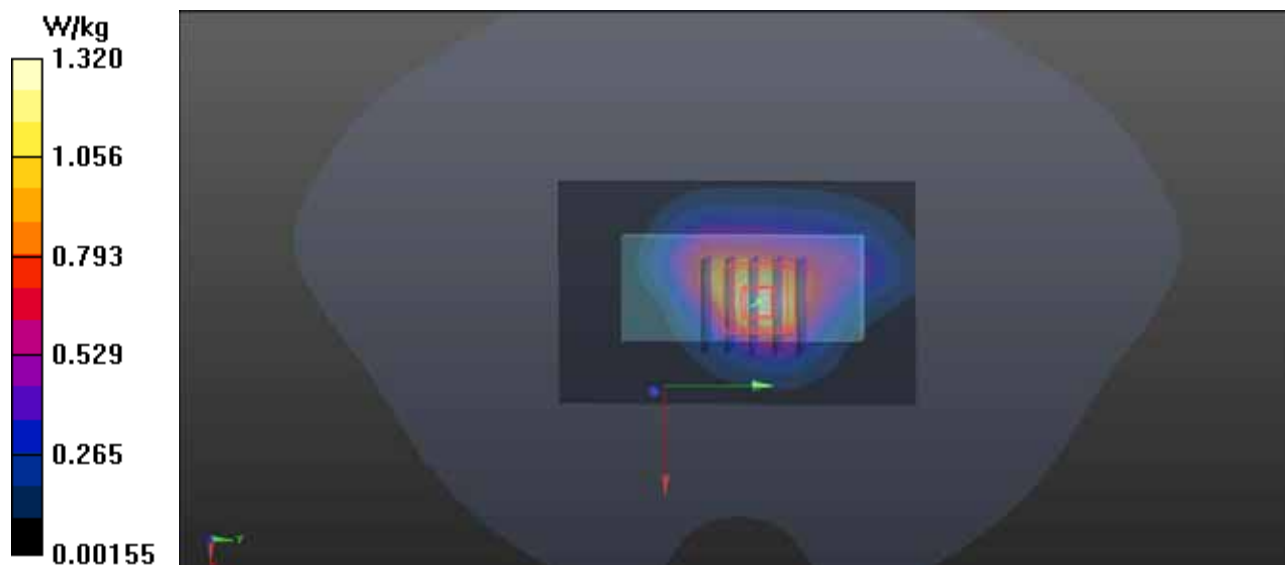
Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 26.213 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 1.25 W/kg

SAR(1 g) = 0.804 W/kg; SAR(10 g) = 0.488 W/kg

Maximum value of SAR (measured) = 1.05 W/kg



P207 LTE 4_QPSK_20M_Horizontal Down_0.5cm_1RB_0offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.41 W/kg

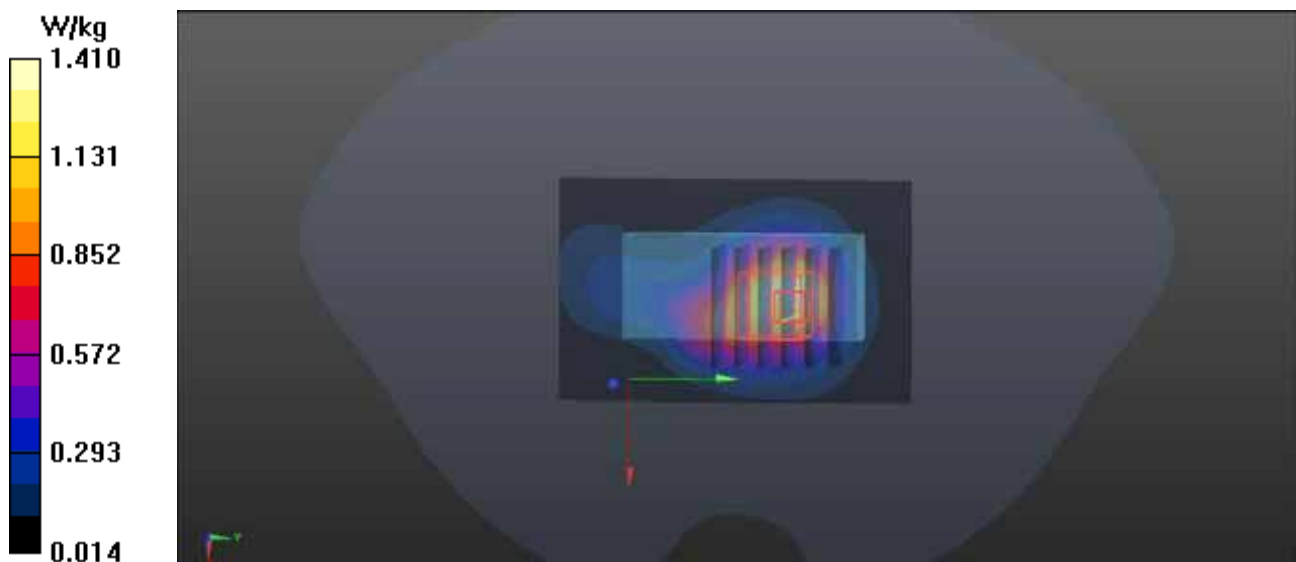
Ch20175/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.084 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.932 W/kg; SAR(10 g) = 0.584 W/kg

Maximum value of SAR (measured) = 1.19 W/kg



P208 LTE 4_QPSK_20M_Vertical Front_0.5cm_1RB_0offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C ; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.729 W/kg

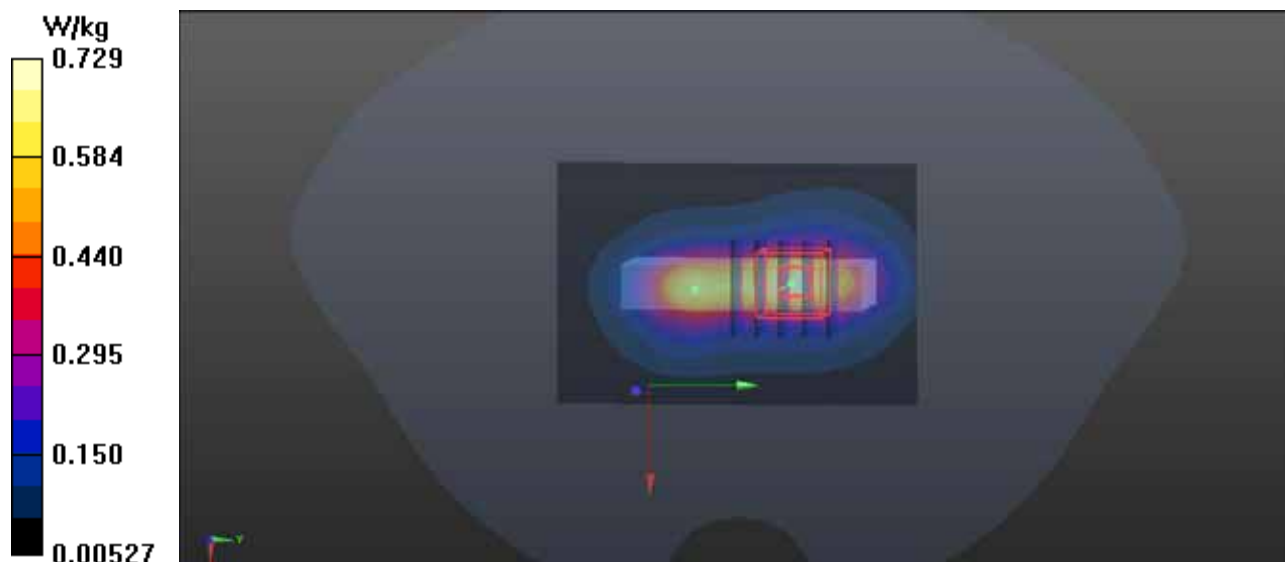
Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.047 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.786 W/kg

SAR(1 g) = 0.481 W/kg; SAR(10 g) = 0.279 W/kg

Maximum value of SAR (measured) = 0.652 W/kg



P209 LTE 4_QPSK_20M_Vertical Back_0.5cm_1RB_0offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.976 W/kg

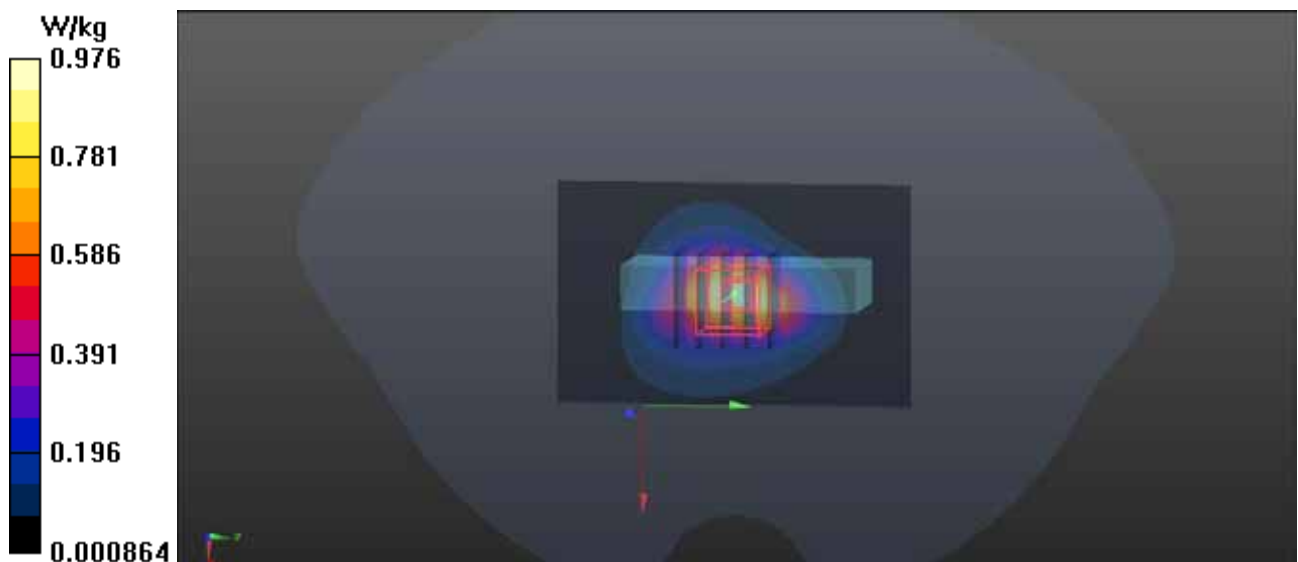
Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.720 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.717 W/kg; SAR(10 g) = 0.403 W/kg

Maximum value of SAR (measured) = 0.962 W/kg



P210 LTE 4_QPSK_20M_Tip Mode_0.5cm_1RB_0offset_Ch20175

DUT: ONETOUCH

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 54.386$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20175/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.130 W/kg

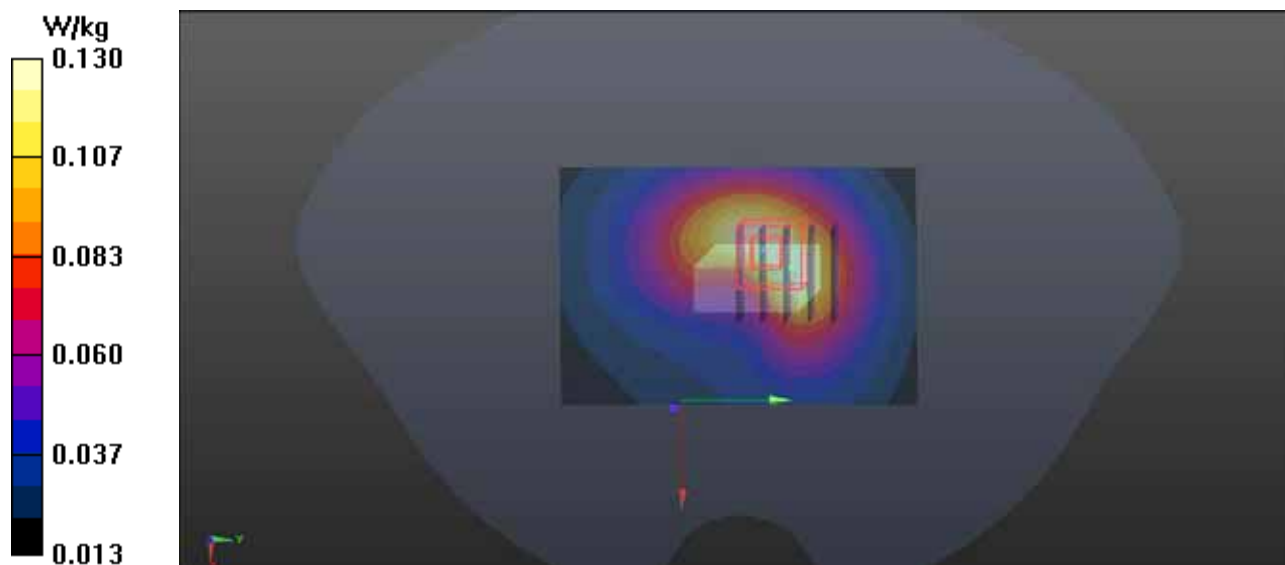
Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.445 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.167 W/kg

SAR(1 g) = 0.111 W/kg; SAR(10 g) = 0.069 W/kg

Maximum value of SAR (measured) = 0.138 W/kg



P211 LTE 4_QPSK_20M_Horizontal Up_0.5cm_1RB_99offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.824 W/kg

Ch20050/Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.546 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.57 W/kg

SAR(1 g) = 0.946 W/kg; SAR(10 g) = 0.531 W/kg

Maximum value of SAR (measured) = 1.31 W/kg

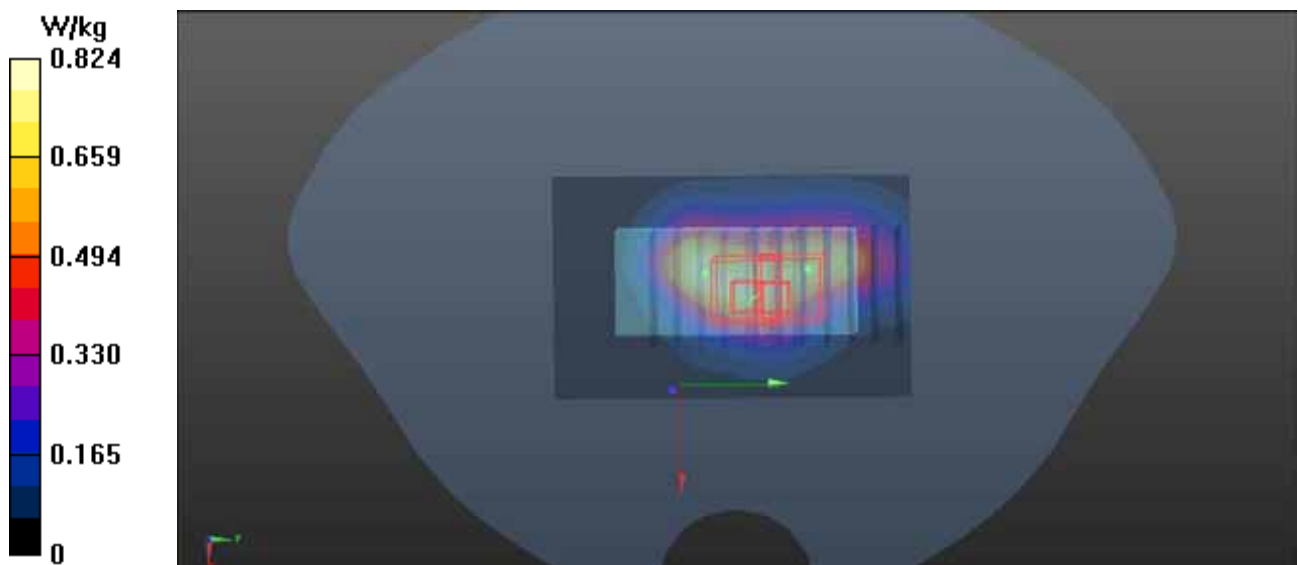
Ch20050/Zoom Scan (6x7x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.546 V/m; Power Drift = 0.08 dB

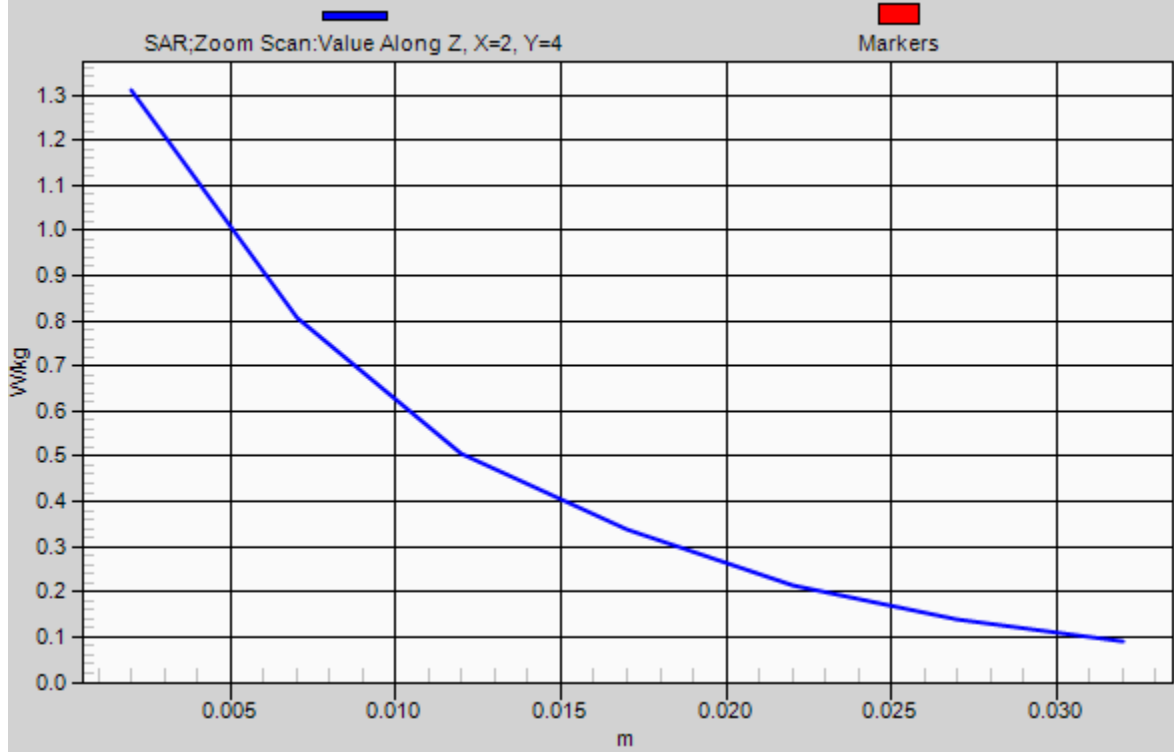
Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.806 W/kg; SAR(10 g) = 0.431 W/kg

Maximum value of SAR (measured) = 1.12 W/kg



1g/10g Averaged SAR



P212 LTE 4_QPSK_20M_Horizontal Down_0.5cm_1RB_99offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.37 W/kg

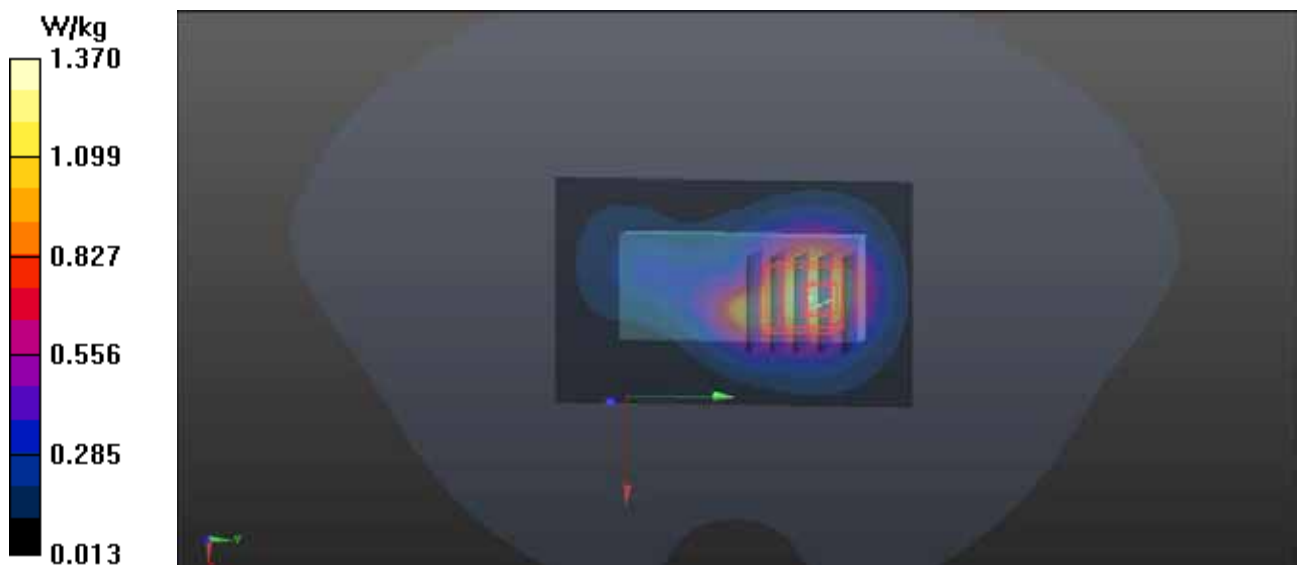
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.771 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.913 W/kg; SAR(10 g) = 0.568 W/kg

Maximum value of SAR (measured) = 1.16 W/kg



P213 LTE 4_QPSK_20M_Veritical Front_0.5cm_1RB_99offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.702 W/kg

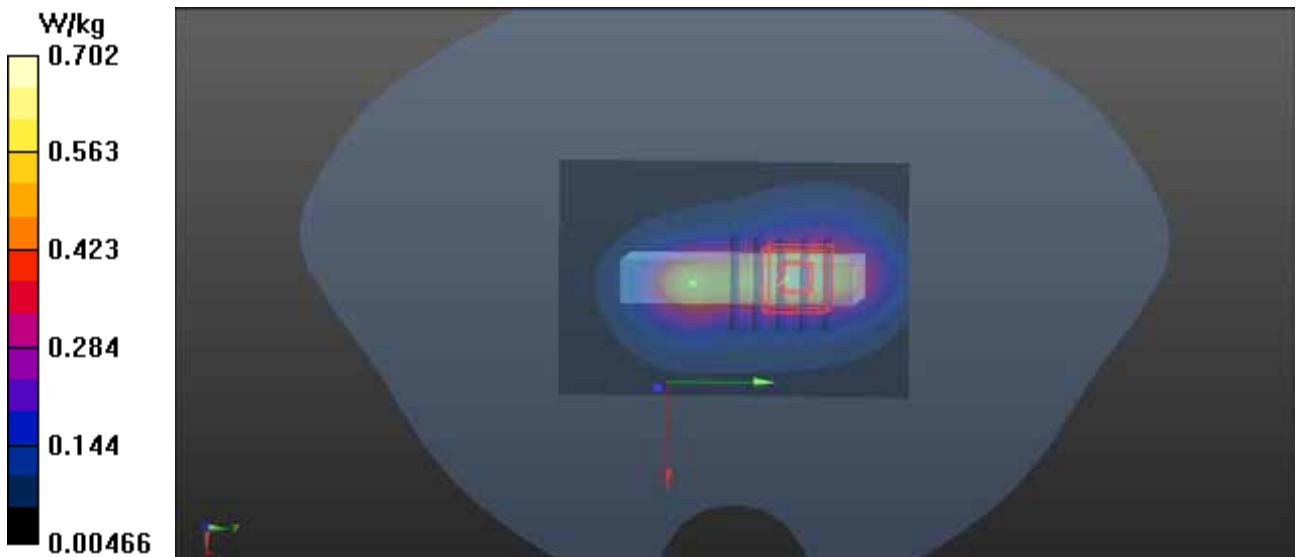
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.955 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.849 W/kg

SAR(1 g) = 0.511 W/kg; SAR(10 g) = 0.298 W/kg

Maximum value of SAR (measured) = 0.688 W/kg



P214 LTE 4_QPSK_20M_Vertical Back_0.5cm_1RB_99offset_Ch20500

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20500/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.875 W/kg

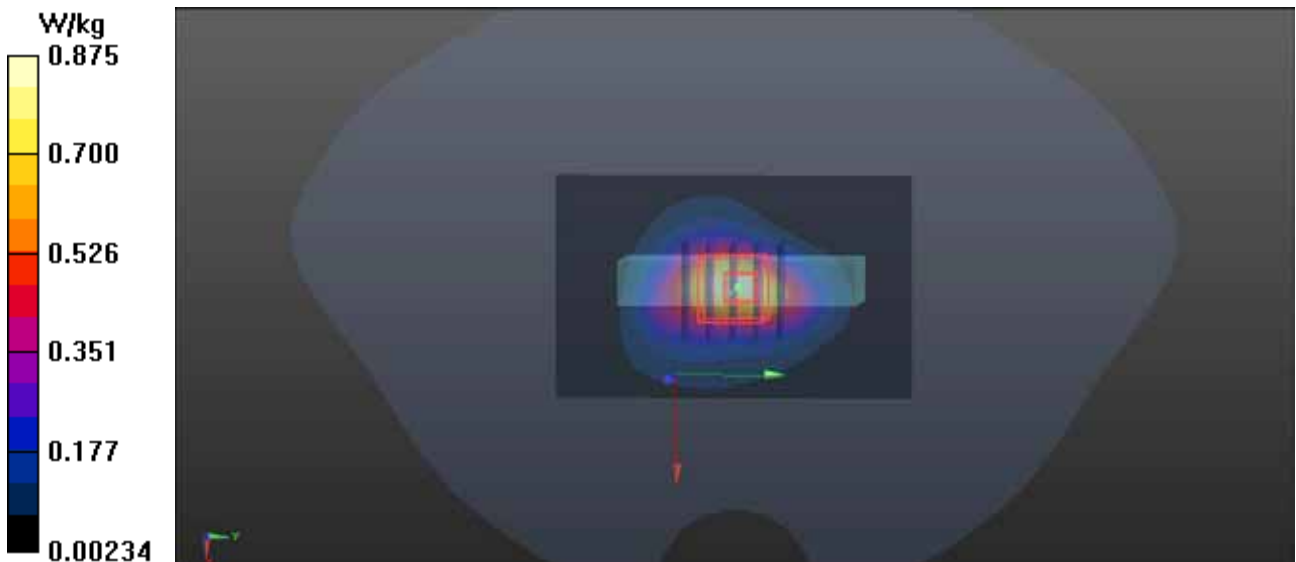
Ch20500/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.361 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.635 W/kg; SAR(10 g) = 0.357 W/kg

Maximum value of SAR (measured) = 0.844 W/kg



P215 LTE 4_QPSK_20M_Tip Mode_0.5cm_1RB_99offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.129 W/kg

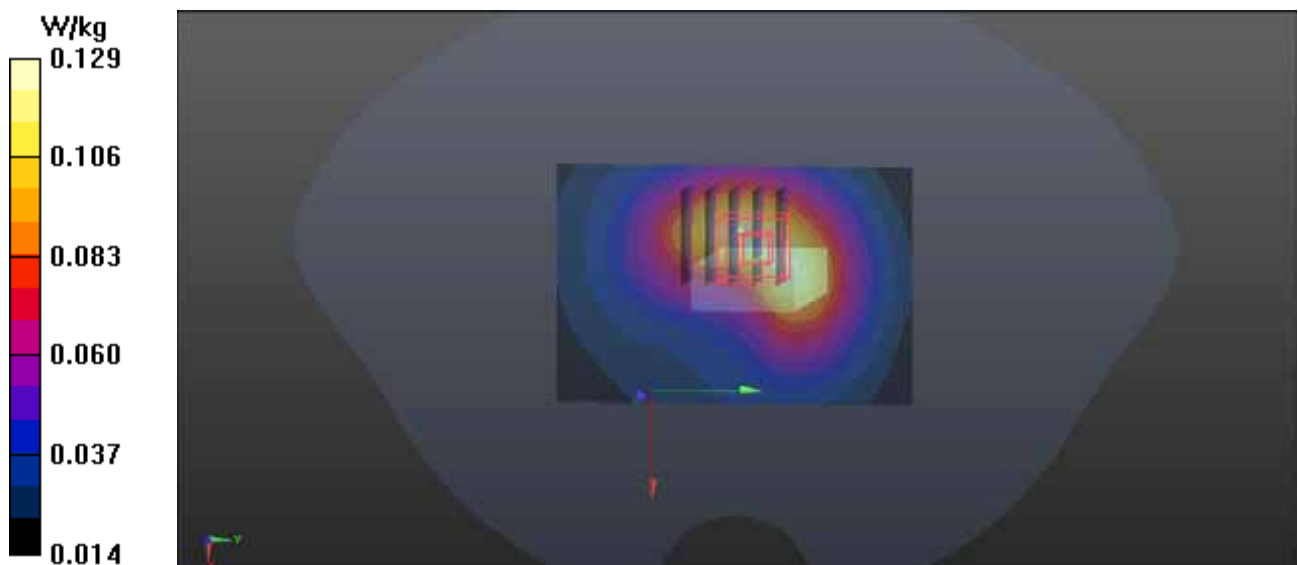
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.560 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.167 W/kg

SAR(1 g) = 0.110 W/kg; SAR(10 g) = 0.069 W/kg

Maximum value of SAR (measured) = 0.139 W/kg



P218 LTE 4_16QAM_20M_Horizontal Up_0.5cm_50RB_25offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.775 W/kg

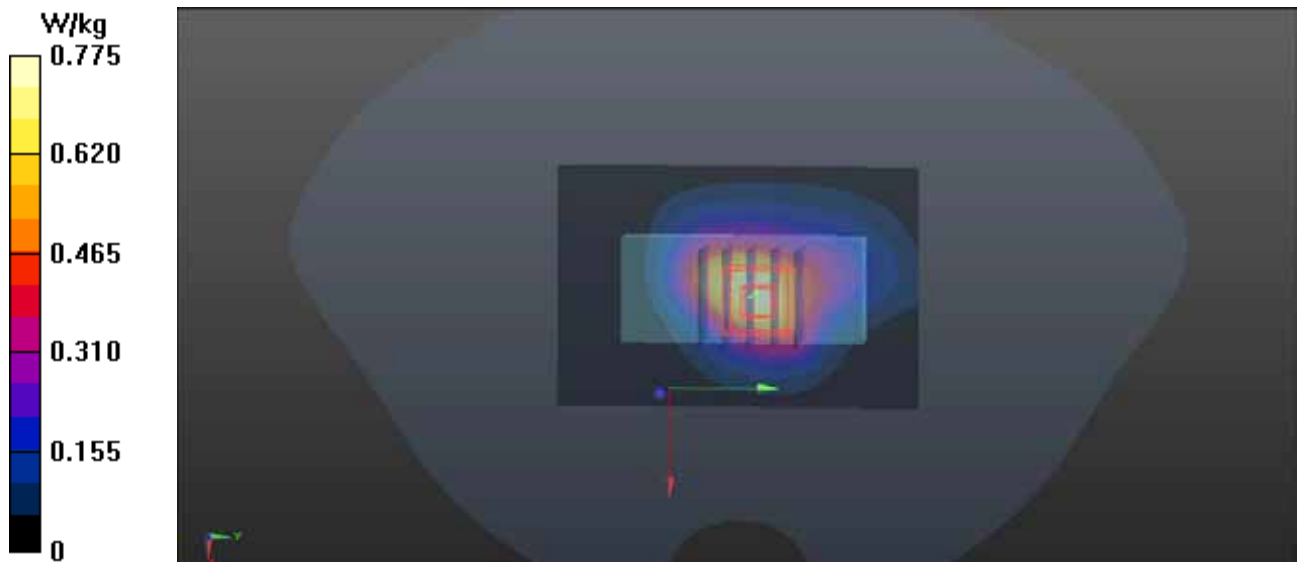
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.100 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.970 W/kg

SAR(1 g) = 0.609 W/kg; SAR(10 g) = 0.359 W/kg

Maximum value of SAR (measured) = 0.763 W/kg



P219 LTE 4_QPSK_20M_Horizontal Down_0.5cm_50RB_25offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.835 W/kg

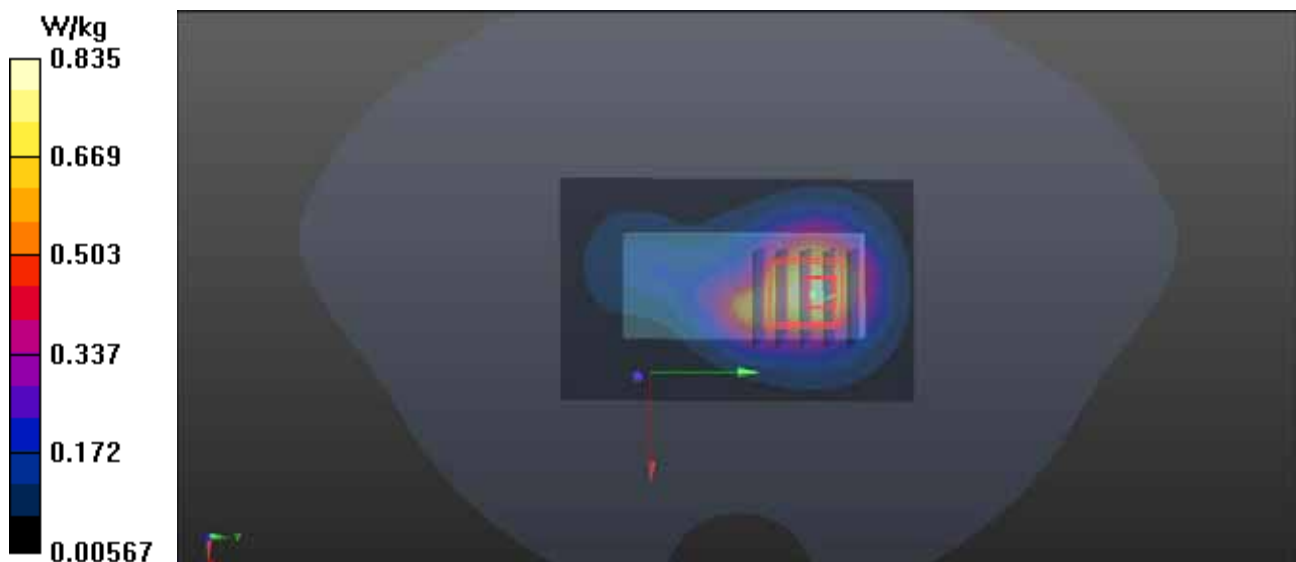
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.587 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.891 W/kg

SAR(1 g) = 0.565 W/kg; SAR(10 g) = 0.354 W/kg

Maximum value of SAR (measured) = 0.718 W/kg



P220 LTE 4_16QAM_20M_Verical Front_0.5cm_50RB_25offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.401 W/kg

Ch20050/Zoom Scan (5x9x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.978 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.464 W/kg

SAR(1 g) = 0.289 W/kg; SAR(10 g) = 0.170 W/kg

Maximum value of SAR (measured) = 0.374 W/kg

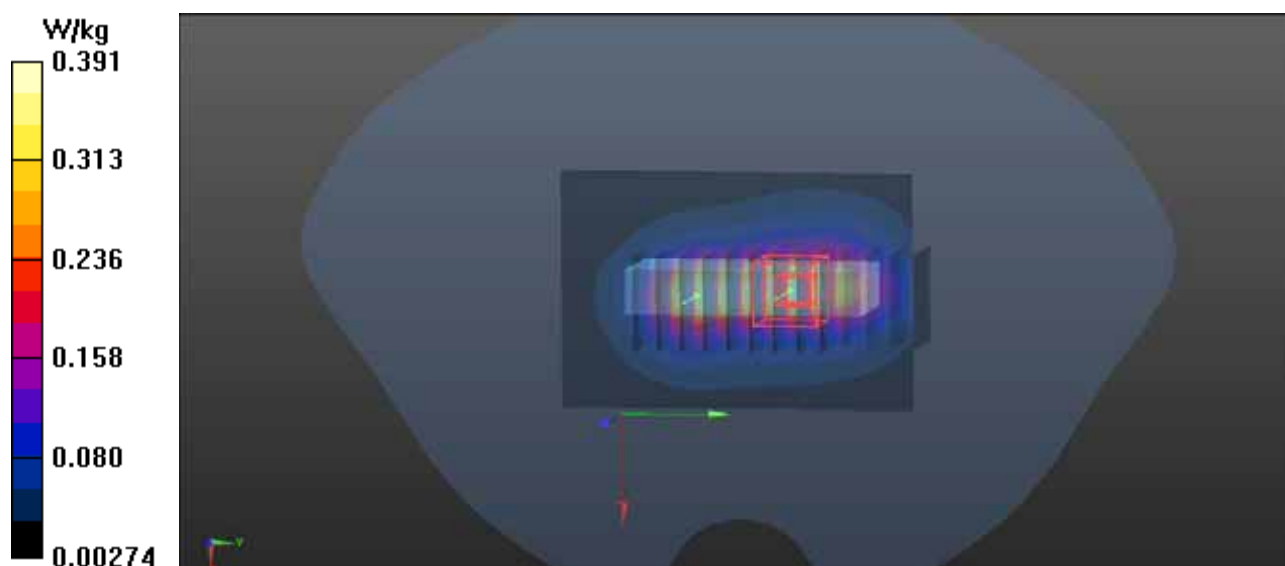
Ch20050/Zoom Scan (5x9x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.978 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.469 W/kg

SAR(1 g) = 0.289 W/kg; SAR(10 g) = 0.169 W/kg

Maximum value of SAR (measured) = 0.391 W/kg



P221 LTE 4_16QAM_20M_Vertical Back_0.5cm_50RB_25offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.709 W/kg

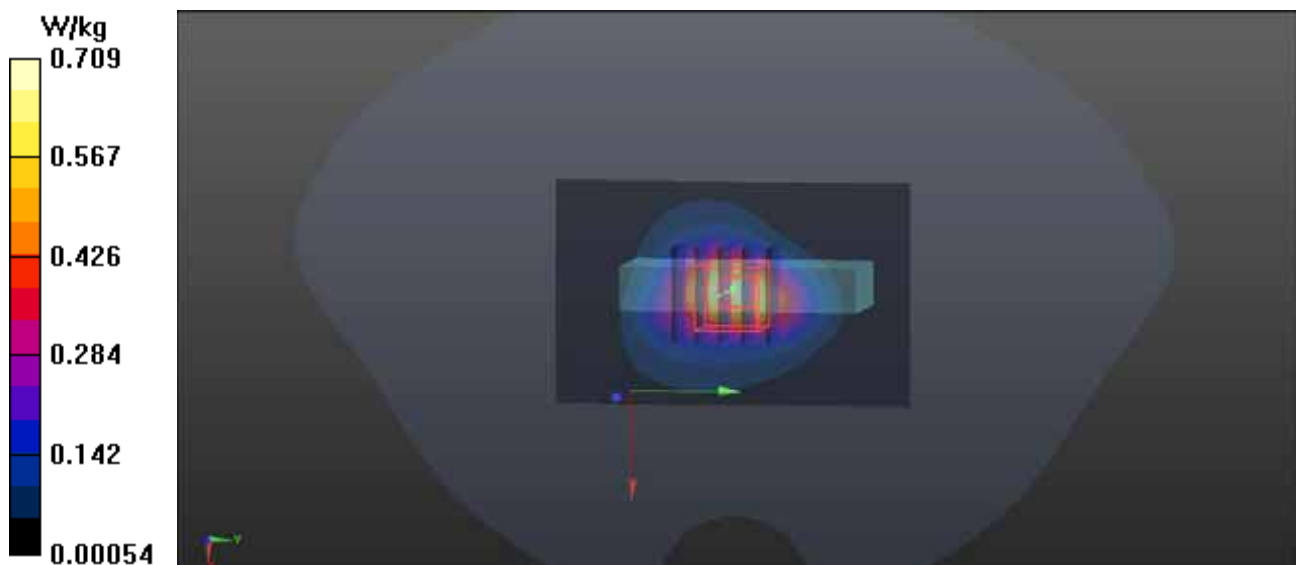
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.177 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.858 W/kg

SAR(1 g) = 0.519 W/kg; SAR(10 g) = 0.289 W/kg

Maximum value of SAR (measured) = 0.696 W/kg



P222 LTE 4_16QAM_20M_Tip Mode_0.5cm_50RB_25offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0795 W/kg

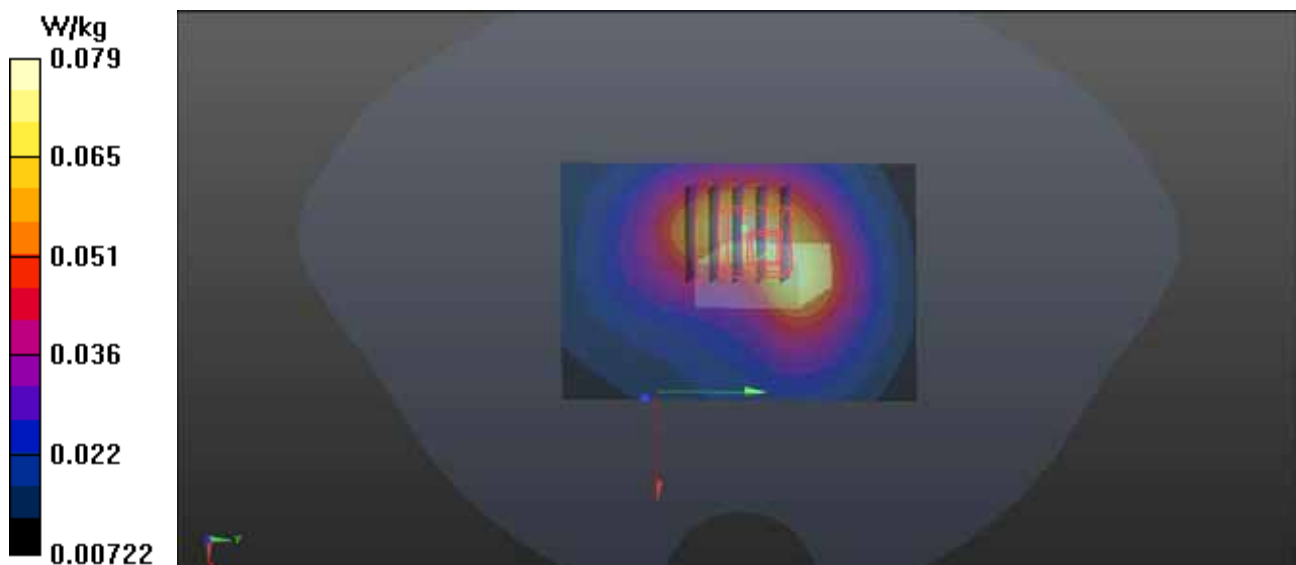
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.313 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.102 W/kg

SAR(1 g) = 0.067 W/kg; SAR(10 g) = 0.042 W/kg

Maximum value of SAR (measured) = 0.0857 W/kg



P223 LTE 4_16QAM_20M_Horizontal Up_0.5cm_1RB_0offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.778 W/kg

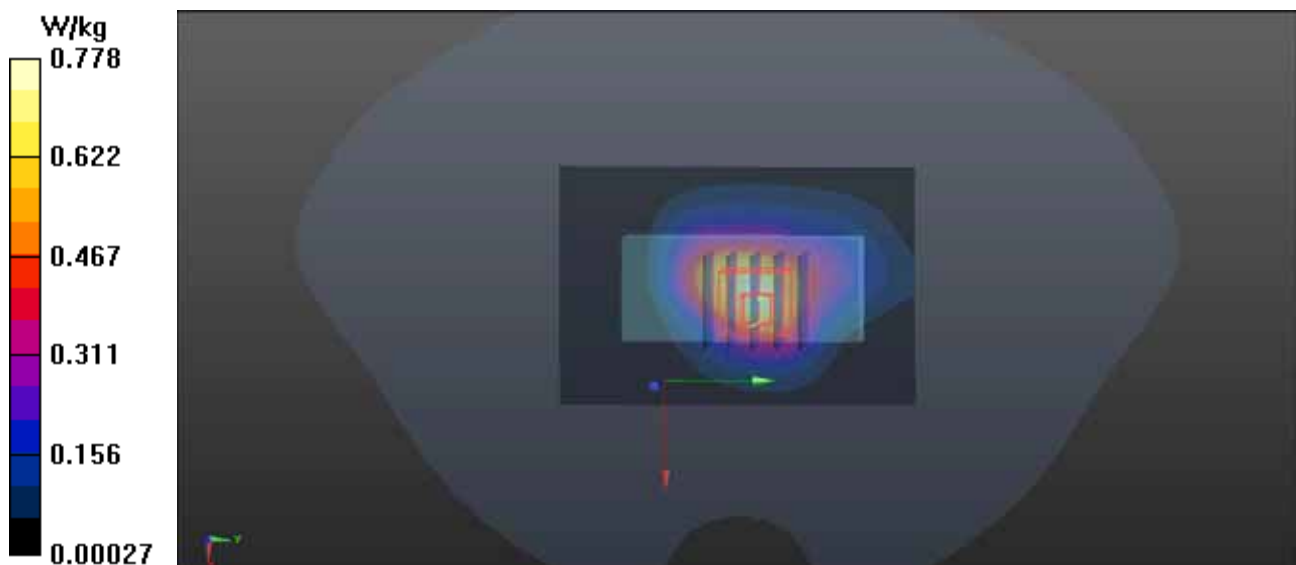
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.425 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.909 W/kg

SAR(1 g) = 0.553 W/kg; SAR(10 g) = 0.325 W/kg

Maximum value of SAR (measured) = 0.710 W/kg



P224 LTE 4_QPSK_20M_Horizontal Down_0.5cm_1RB_0offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.847 W/kg

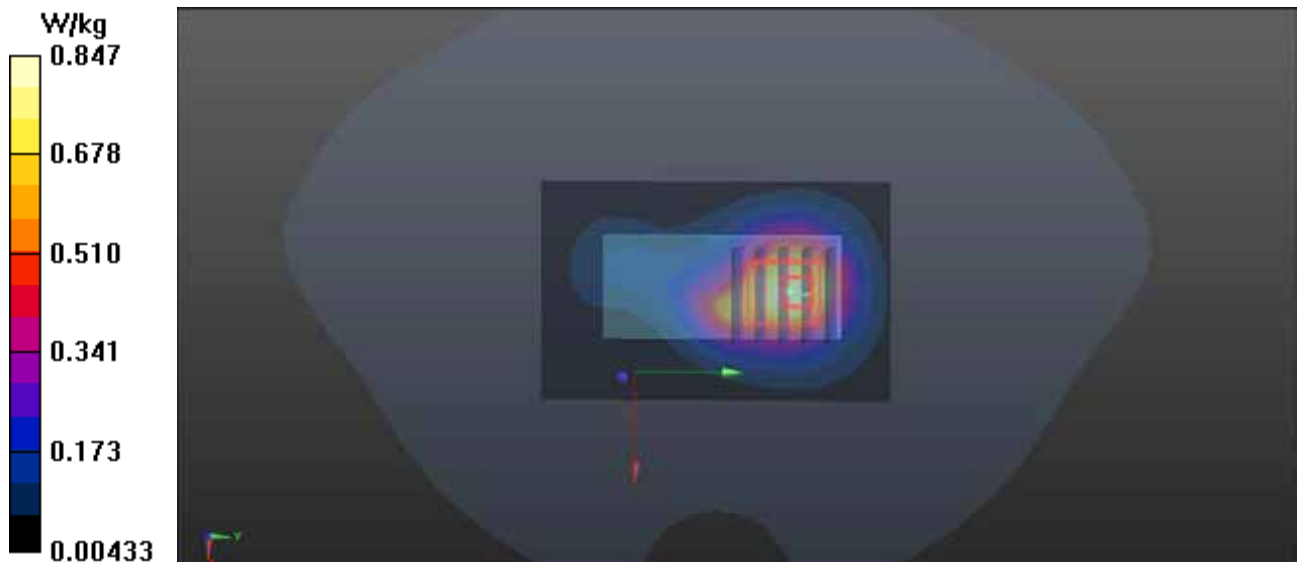
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.205 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.876 W/kg

SAR(1 g) = 0.570 W/kg; SAR(10 g) = 0.358 W/kg

Maximum value of SAR (measured) = 0.707 W/kg



P225 LTE 4_16QAM_20M_Verical Front_0.5cm_1RB_0offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.377 W/kg

Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.752 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.436 W/kg

SAR(1 g) = 0.254 W/kg; SAR(10 g) = 0.145 W/kg

Maximum value of SAR (measured) = 0.353 W/kg

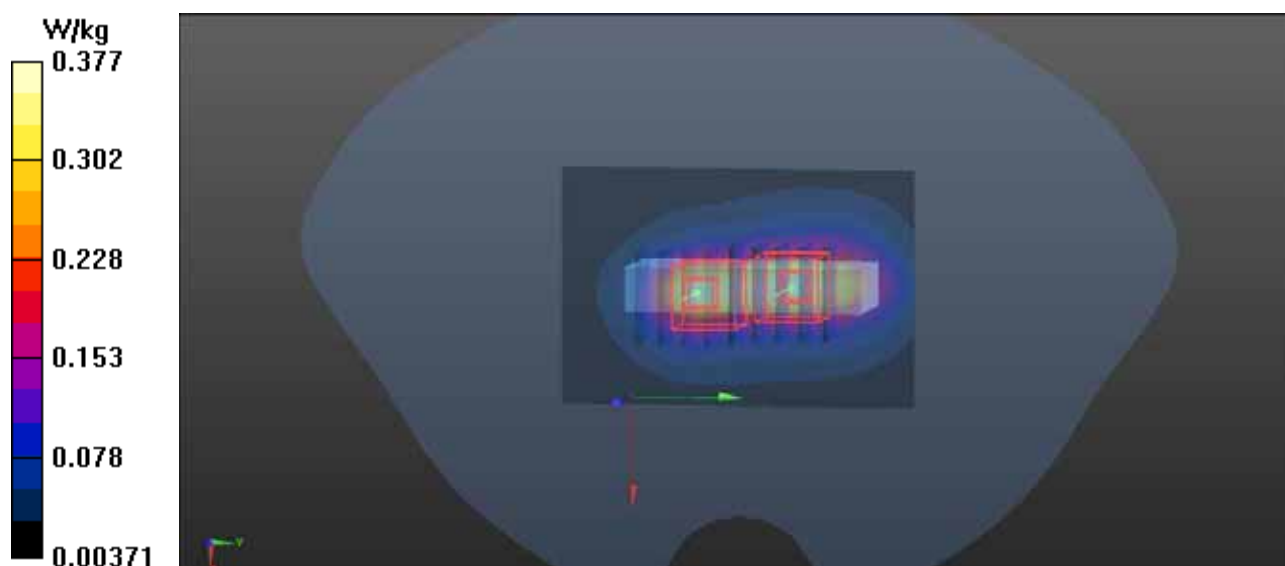
Ch20050/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.752 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.455 W/kg

SAR(1 g) = 0.282 W/kg; SAR(10 g) = 0.166 W/kg

Maximum value of SAR (measured) = 0.379 W/kg



P226 LTE 4_16QAM_20M_Verical Back_0.5cm_1RB_0offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.838 W/kg

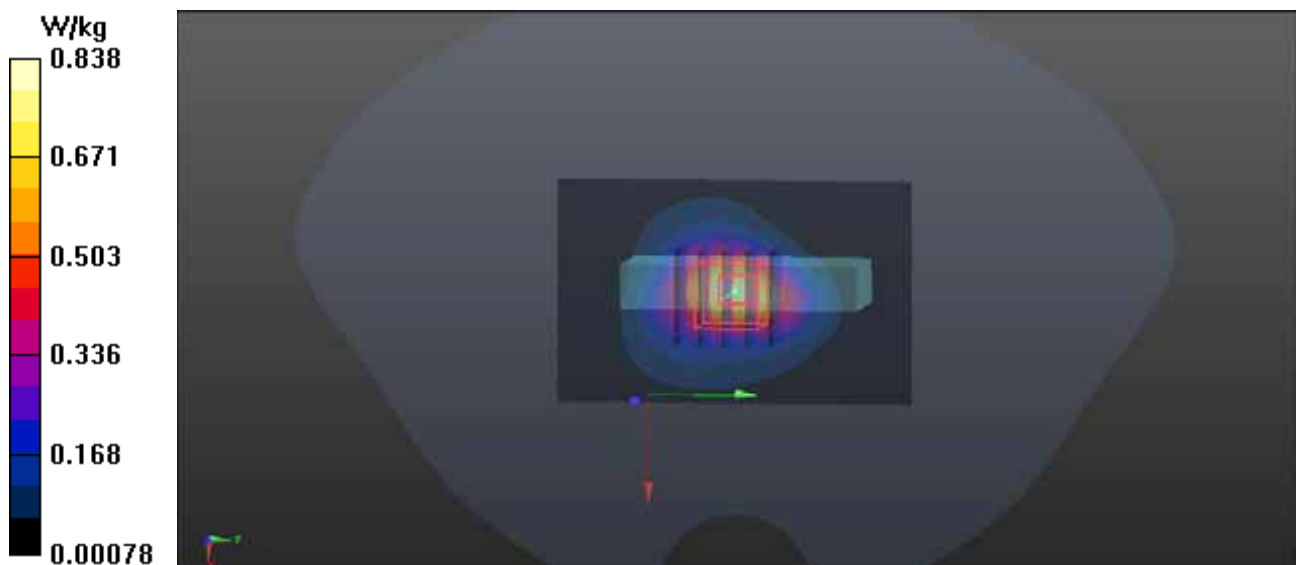
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.999 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.962 W/kg

SAR(1 g) = 0.611 W/kg; SAR(10 g) = 0.342 W/kg

Maximum value of SAR (measured) = 0.810 W/kg



P227 LTE 4_16QAM_20M_Tip Mode_0.5cm_1RB_0offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0942 W/kg

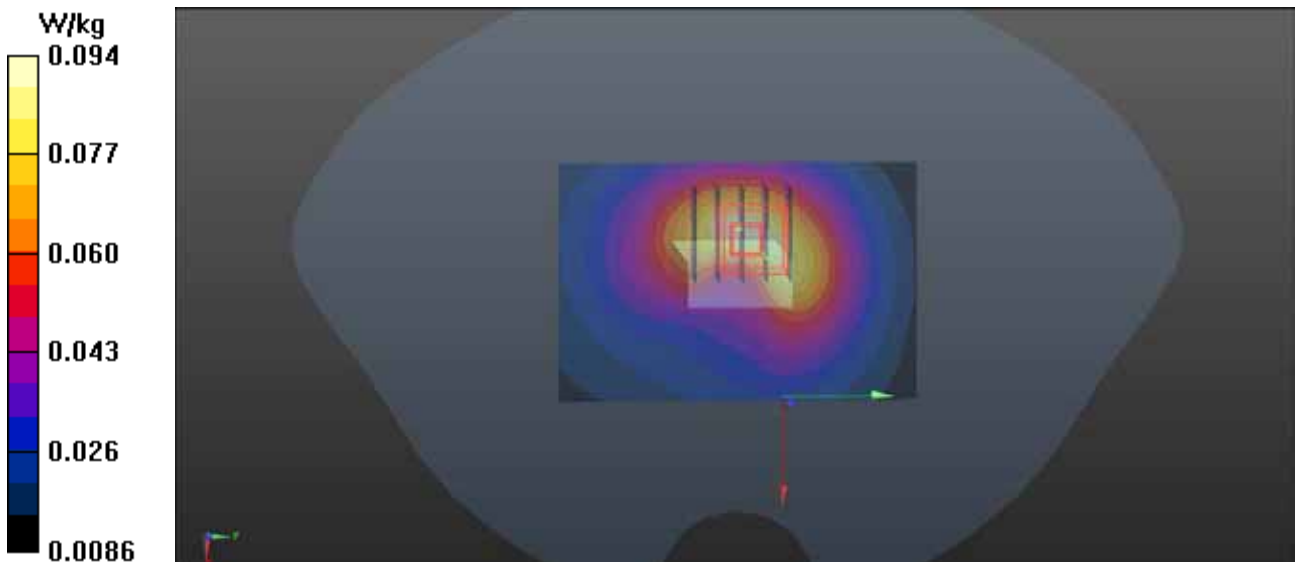
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.615 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.118 W/kg

SAR(1 g) = 0.077 W/kg; SAR(10 g) = 0.048 W/kg

Maximum value of SAR (measured) = 0.0970 W/kg



P228 LTE 4_16QAM_20M_Horizontal Up_0.5cm_1RB_99offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.09 W/kg

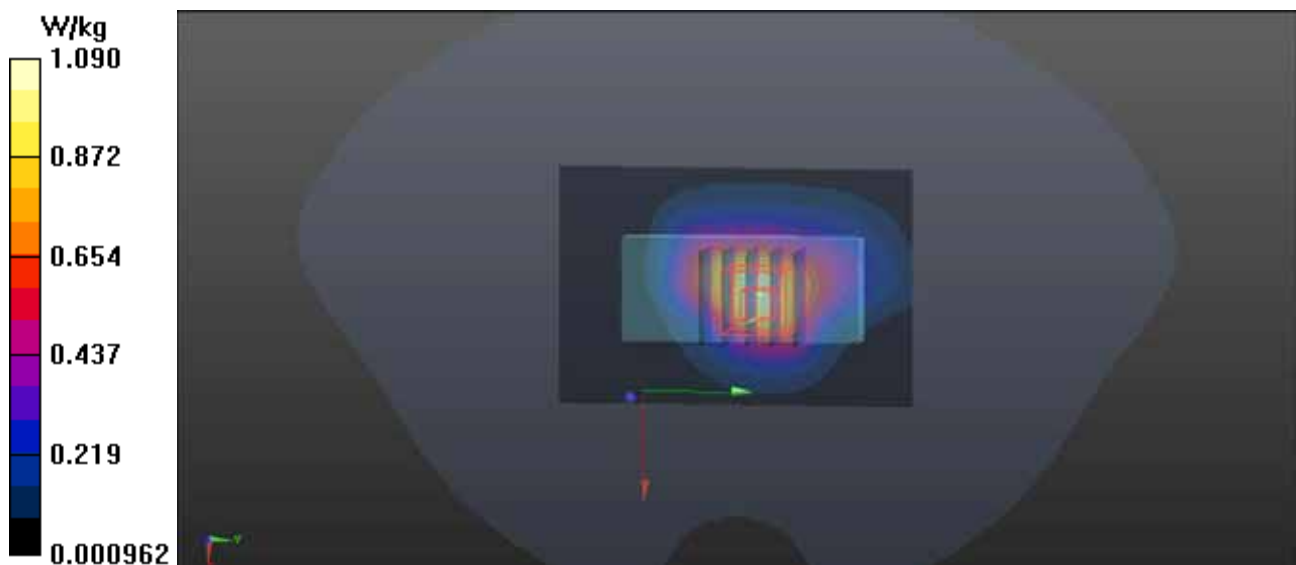
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.262 V/m; Power Drift = 0.06 dB

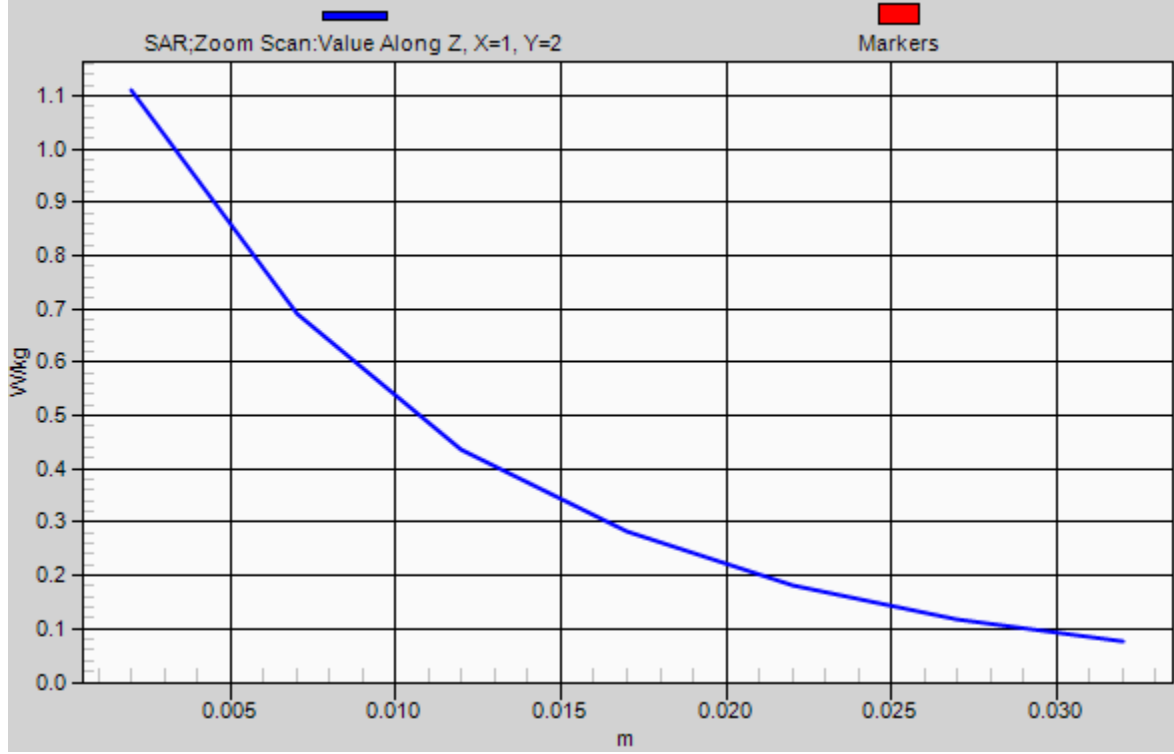
Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.870 W/kg; SAR(10 g) = 0.515 W/kg

Maximum value of SAR (measured) = 1.11 W/kg



1g/10g Averaged SAR



P229 LTE 4_QPSK_20M_Horizontal Down_0.5cm_1RB_99offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.28 W/kg

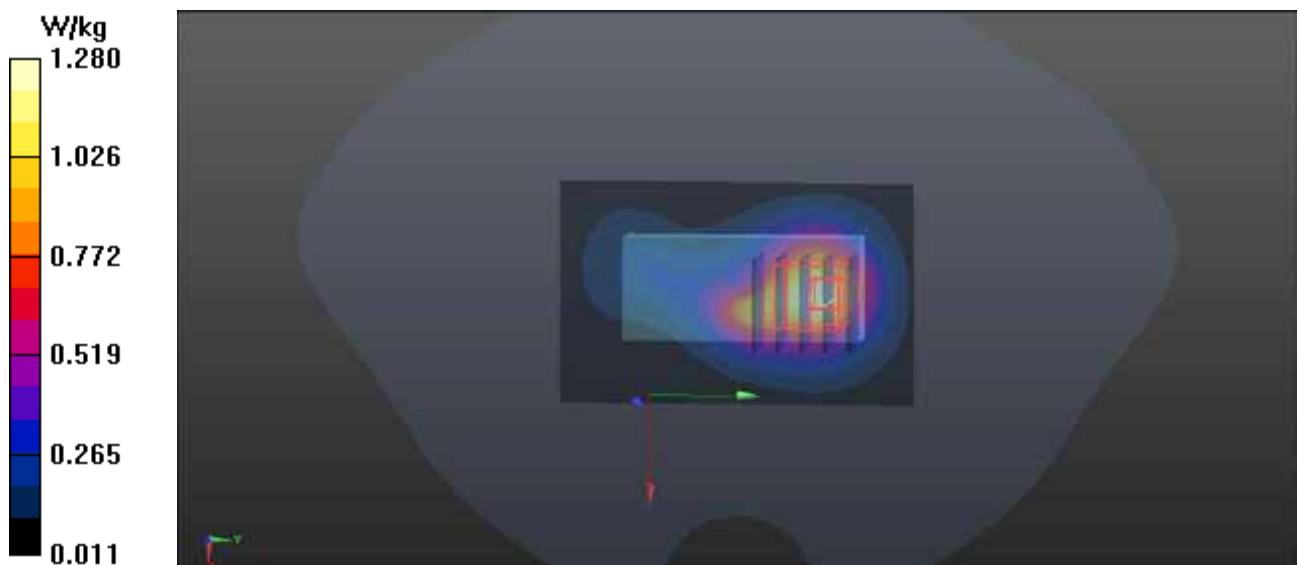
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.324 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.857 W/kg; SAR(10 g) = 0.531 W/kg

Maximum value of SAR (measured) = 1.12 W/kg



P230 LTE 4_16QAM_20M_Verical Front_0.5cm_1RB_99offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.623 W/kg

Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.476 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.692 W/kg

SAR(1 g) = 0.405 W/kg; SAR(10 g) = 0.232 W/kg

Maximum value of SAR (measured) = 0.562 W/kg

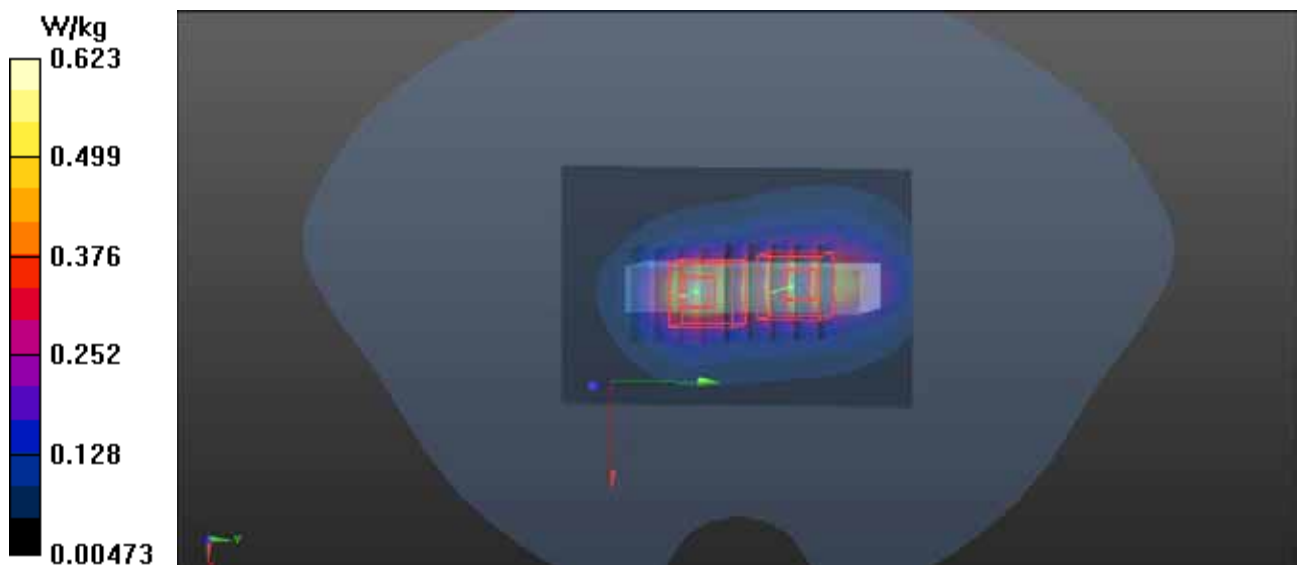
Ch20050/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.476 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.669 W/kg

SAR(1 g) = 0.410 W/kg; SAR(10 g) = 0.239 W/kg

Maximum value of SAR (measured) = 0.551 W/kg



P231 LTE 4_16QAM_20M_Verical Back_0.5cm_1RB_99offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.861 W/kg

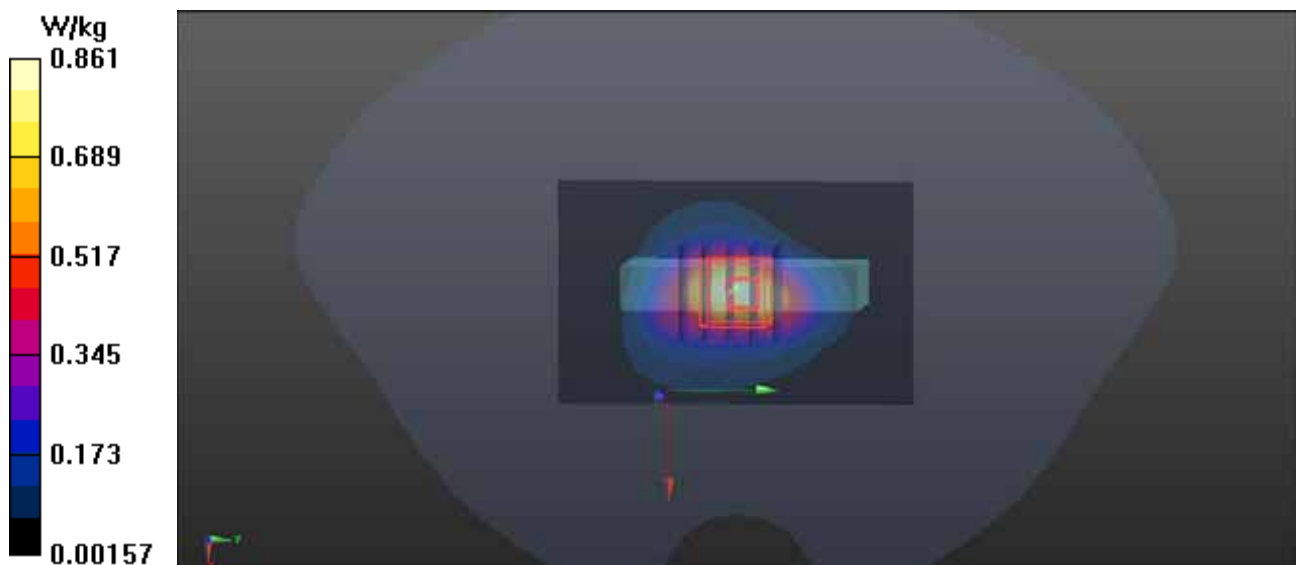
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.279 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.05 W/kg

SAR(1 g) = 0.633 W/kg; SAR(10 g) = 0.354 W/kg

Maximum value of SAR (measured) = 0.844 W/kg



P232 LTE 4_16QAM_20M_Tip Mode_0.5cm_1RB_99offset_Ch20050

DUT: ONETOUCH

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B1750_1226 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 54.441$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.5 °C; Liquid Temperature : 20.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.68, 7.68, 7.68); Calibrated: 2012/08/06;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1341; Calibrated: 2012/08/07
- Phantom: Right Phantom with CRP v5.0; Type: QD000P40CD; Serial: TP:1722
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Ch20050/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.121 W/kg

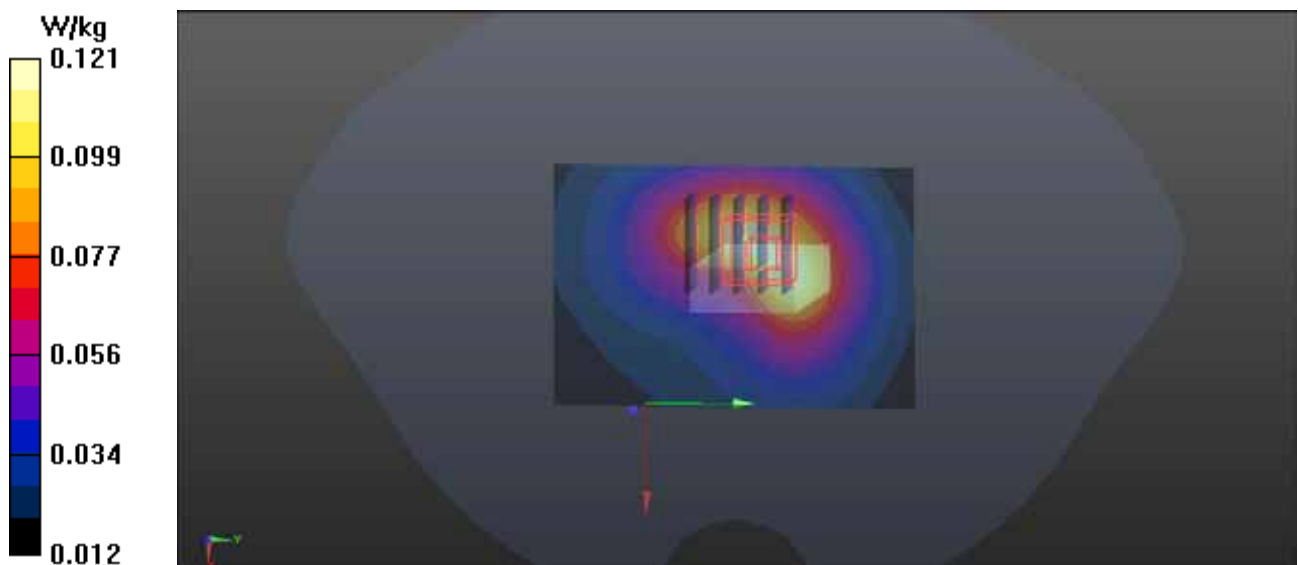
Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.247 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.155 W/kg

SAR(1 g) = 0.101 W/kg; SAR(10 g) = 0.063 W/kg

Maximum value of SAR (measured) = 0.127 W/kg





Appendix C. Calibration Certificate for Probe and Dipole

The SPEAG calibration certificates are shown as follows.



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 **B.V.ADT (Auden)**

Certificate No: **D750V3-1067_Jul12**

CALIBRATION CERTIFICATE

Object **D750V3 - SN: 1067**

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

Calibration date: **July 18, 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 ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13
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

Calibrated by:	Name Israe El-Naouq	Function Laboratory Technician
Approved by:	Katja Pokovic	Technical Manager

Signature

Issued: July 19, 2012

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



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:

- 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
- 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
- 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:

- 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	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.4 ± 6 %	0.89 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	2.12 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	8.41 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.39 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	5.53 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	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.4 ± 6 %	0.95 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	2.18 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	8.75 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.44 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	5.78 mW / g ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	56.1 Ω - 0.5 j Ω
Return Loss	- 24.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.4 Ω - 2.3 j Ω
Return Loss	- 31.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.033 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	May 10, 2012

DASY5 Validation Report for Head TSL

Date: 18.07.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1067

Communication System: CW; Frequency: 750 MHz

Medium parameters used: $f = 750$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.33, 6.33, 6.33); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Head Tissue/Pin=250mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

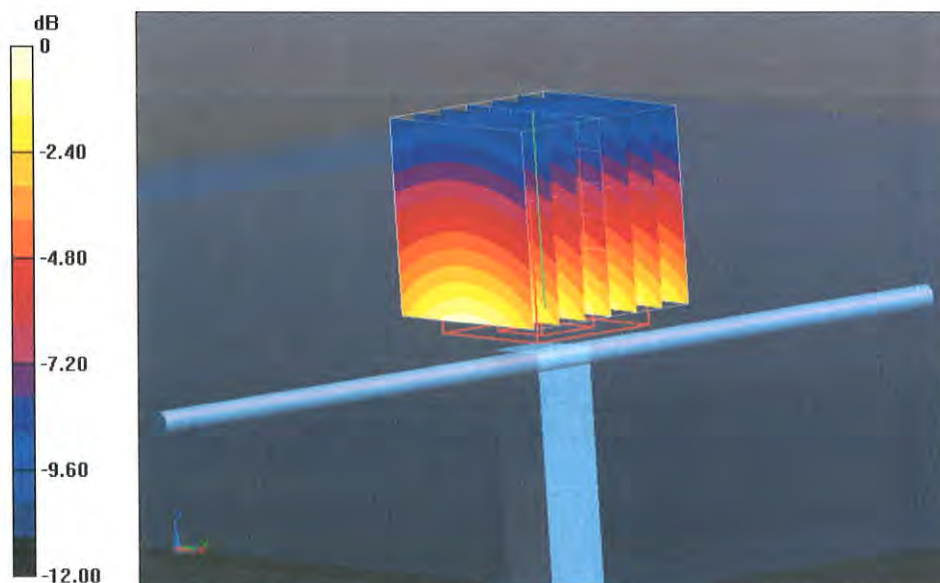
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.154 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 3.231 mW/g

SAR(1 g) = 2.12 mW/g; SAR(10 g) = 1.39 mW/g

Maximum value of SAR (measured) = 2.48 mW/g



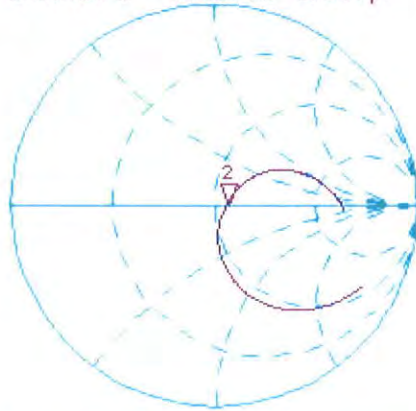
0 dB = 2.48 mW/g = 7.89 dB mW/g

Impedance Measurement Plot for Head TSL

18 Jul 2012 12:16:35

[CHI] S11 1 U FS 2: 56.129 Ω -498.05 m Ω 426.08 pF 750.000 000 MHz

*
De1
Cor



Avg
16

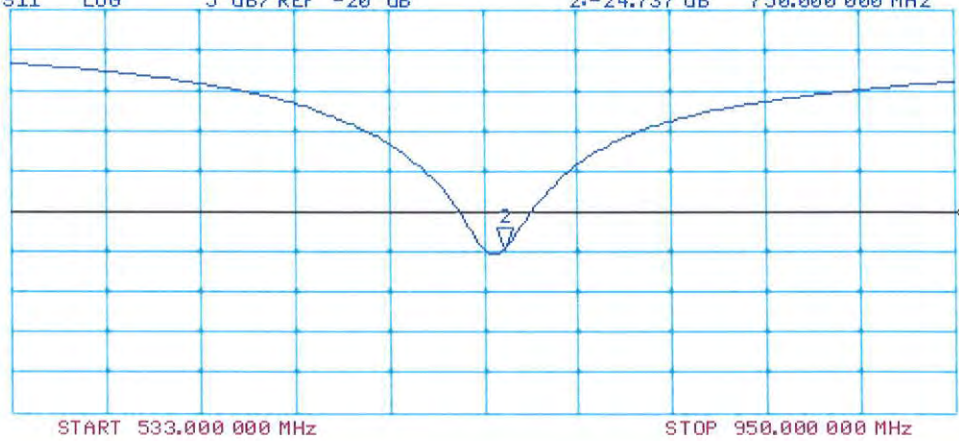
H1d

CH2 S11 LOG 5 dB/REF -20 dB 2: -24.737 dB 750.000 000 MHz

Cor

Avg
16

H1d



DASY5 Validation Report for Body TSL

Date: 18.07.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1067

Communication System: CW; Frequency: 750 MHz

Medium parameters used: $f = 750$ MHz; $\sigma = 0.95$ mho/m; $\epsilon_r = 54.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.12, 6.12, 6.12); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Body Tissue/Pin=250mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

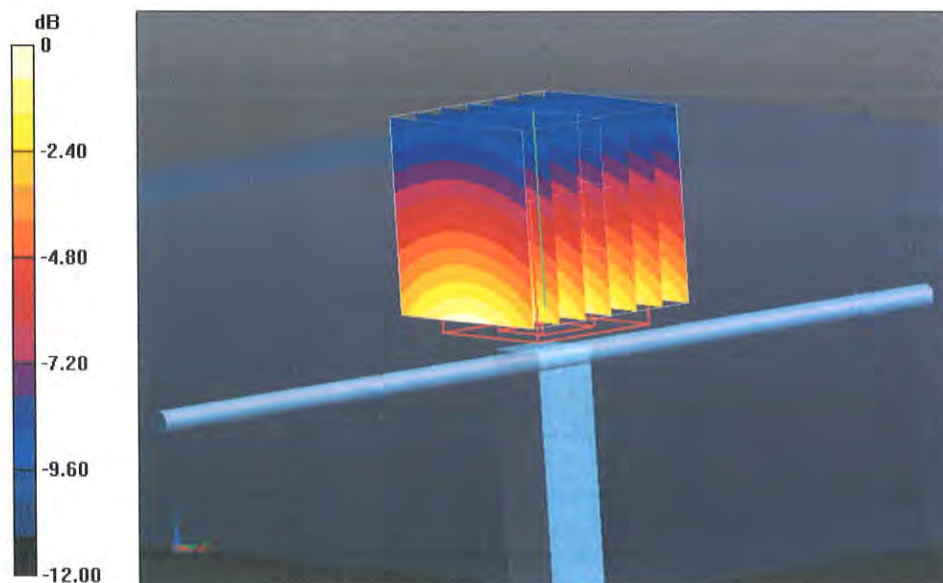
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.983 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.257 mW/g

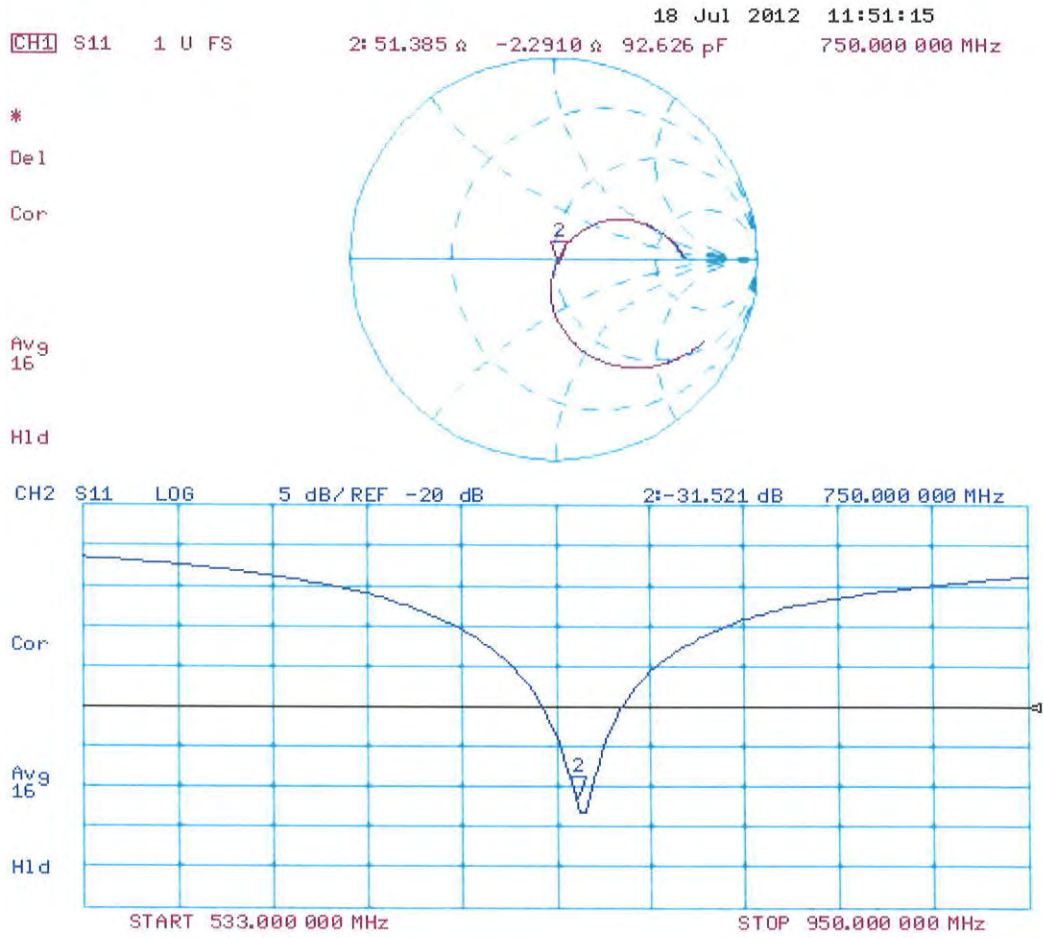
SAR(1 g) = 2.18 mW/g; SAR(10 g) = 1.44 mW/g

Maximum value of SAR (measured) = 2.54 mW/g



0 dB = 2.54 mW/g = 8.10 dB mW/g

Impedance Measurement Plot for Body TSL





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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **B.V.ADT (Auden)**

Certificate No: **D1750V2-1071_Jul12**

CALIBRATION CERTIFICATE

Object **D1750V2 - SN: 1071**

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

Calibration date: **July 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 $(22 \pm 3)^\circ\text{C}$ 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 ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13
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

Calibrated by: **Dimce Iliev** Name: **Dimce Iliev** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Name: **Katja Pokovic** Function: **Technical Manager**

Signature

Issued: July 19, 2012

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



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:

- 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
- 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
- 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:

- 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	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.9 ± 6 %	1.34 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	8.93 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	36.2 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.77 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	19.2 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	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.4 ± 6 %	1.47 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	9.26 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	37.2 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.99 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.0 mW / g ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.1 Ω - 0.2 j Ω
Return Loss	- 56.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.8 Ω + 0.2 j Ω
Return Loss	- 27.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.219 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	January 19, 2011

DASY5 Validation Report for Head TSL

Date: 19.07.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1071

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.34$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.22, 5.22, 5.22); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- 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=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

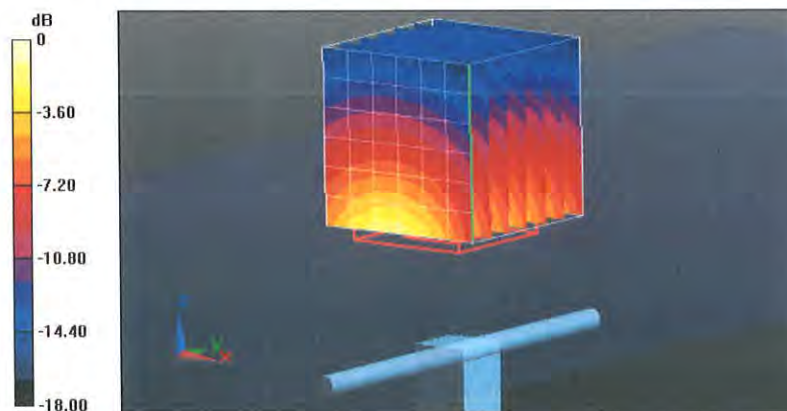
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.910 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 15.923 mW/g

SAR(1 g) = 8.93 mW/g; SAR(10 g) = 4.77 mW/g

Maximum value of SAR (measured) = 11.1 mW/g



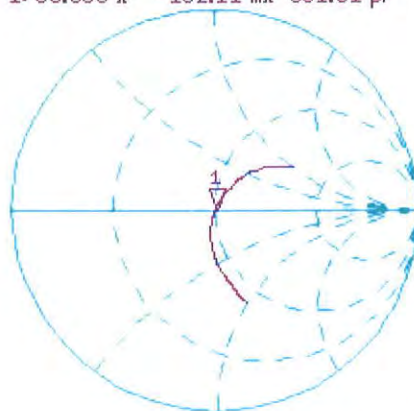
0 dB = 11.1 mW/g = 20.91 dB mW/g

Impedance Measurement Plot for Head TSL

19 Jul 2012 09:39:58

CH1 S11 1 U FS 1: 50.055 Ω -162.11 m Ω 561.01 pF 1 750.000 000 MHz

*
De1
Cor



Avg
16

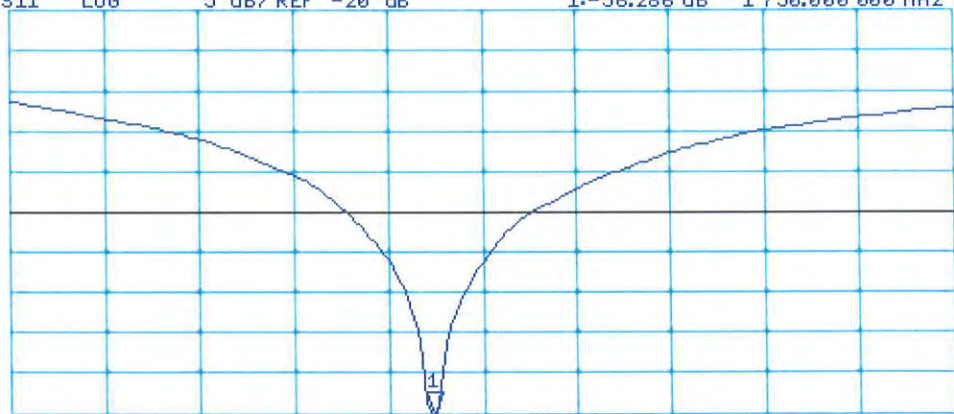
H1d

CH2 S11 L06 5 dB/REF -20 dB 1:-56.286 dB 1 750.000 000 MHz

Cor

Avg
16

H1d



START 1 550.000 000 MHz

STOP 2 000.000 000 MHz

DASY5 Validation Report for Body TSL

Date: 19.07.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1071

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.85, 4.85, 4.85); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- 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=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

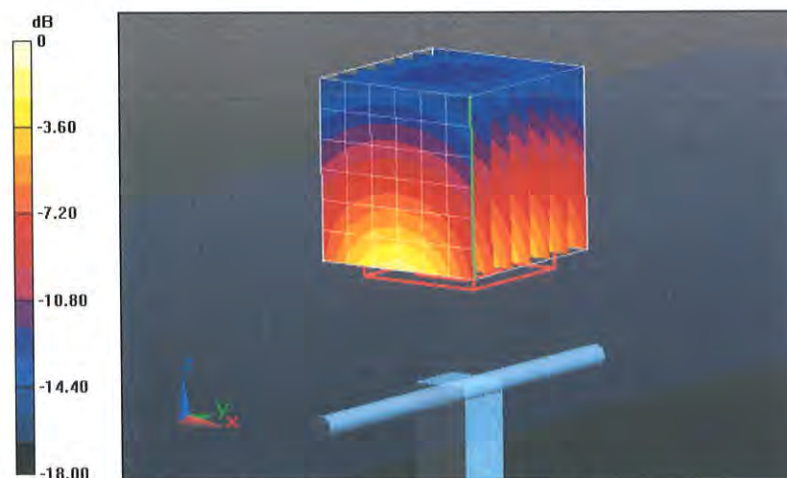
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.918 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 15.868 mW/g

SAR(1 g) = 9.26 mW/g; SAR(10 g) = 4.99 mW/g

Maximum value of SAR (measured) = 11.7 mW/g



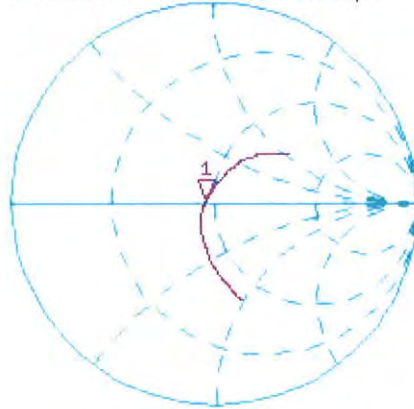
0 dB = 11.7 mW/g = 21.36 dB mW/g

Impedance Measurement Plot for Body TSL

19 Jul 2012 09:39:06

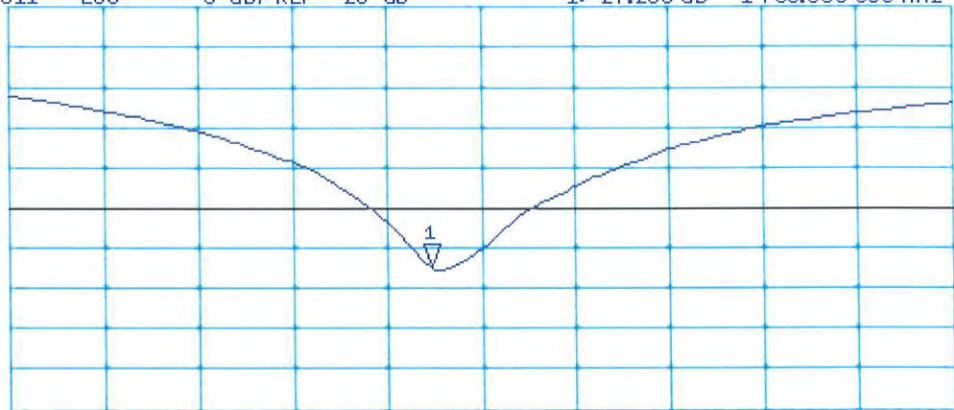
CH1 S11 1 U FS 1: 45.842 Ω 0.2422 Ω 22.026 pF 1 750.000 000 MHz

*
Del
Cor
Avg
16
H1d



CH2 S11 LOG 5 dB/REF -20 dB 1: -27.236 dB 1 750.000 000 MHz

Cor
Avg
16
H1d



START 1 550.000 000 MHz

STOP 2 000.000 000 MHz



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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 **B.V. ADT (Auden)**

Certificate No: **EX3-3873_Aug12**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3873**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes**

Calibration date: **August 6, 2012**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41498087	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: S5054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: S5086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: S5129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 660	20-Jun-12 (No. DAE4-660_Jun12)	Jun-13
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

Calibrated by:	Name Katja Pokovic	Function Technical Manager	Signature
Approved by:	Niels Kuster	Quality Manager	
			Issued: August 6, 2012
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



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Accreditation No.: **SCS 108**

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Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z} = NORM_{x,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.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,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 $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe EX3DV4

SN:3873

Manufactured: March 13, 2012
Calibrated: August 6, 2012

Calibrated for DASYS/EASY Systems
(Note: non-compatible with DASYS2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3873

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.37	0.46	0.49	± 10.1 %
DCP (mV) ^B	101.5	96.8	96.5	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc ^E (k=2)
0	CW	0.00	X	0.00	0.00	1.00	141.3	±4.6 %
			Y	0.00	0.00	1.00	149.4	
			Z	0.00	0.00	1.00	153.9	

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

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter; uncertainty not required.

^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3873

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	9.50	9.50	9.50	0.47	0.77	± 12.0 %
835	41.5	0.90	9.13	9.13	9.13	0.31	0.97	± 12.0 %
900	41.5	0.97	9.01	9.01	9.01	0.39	0.85	± 12.0 %
1750	40.1	1.37	8.04	8.04	8.04	0.65	0.77	± 12.0 %
1900	40.0	1.40	7.74	7.74	7.74	0.34	1.03	± 12.0 %
2450	39.2	1.80	6.91	6.91	6.91	0.28	1.04	± 12.0 %
5200	36.0	4.66	4.92	4.92	4.92	0.30	1.80	± 13.1 %
5300	35.9	4.76	4.59	4.59	4.59	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.64	4.64	4.64	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.23	4.23	4.23	0.45	1.80	± 13.1 %
5800	35.3	5.27	4.38	4.38	4.38	0.40	1.80	± 13.1 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3873

Calibration Parameter Determined in Body Tissue Simulating Media

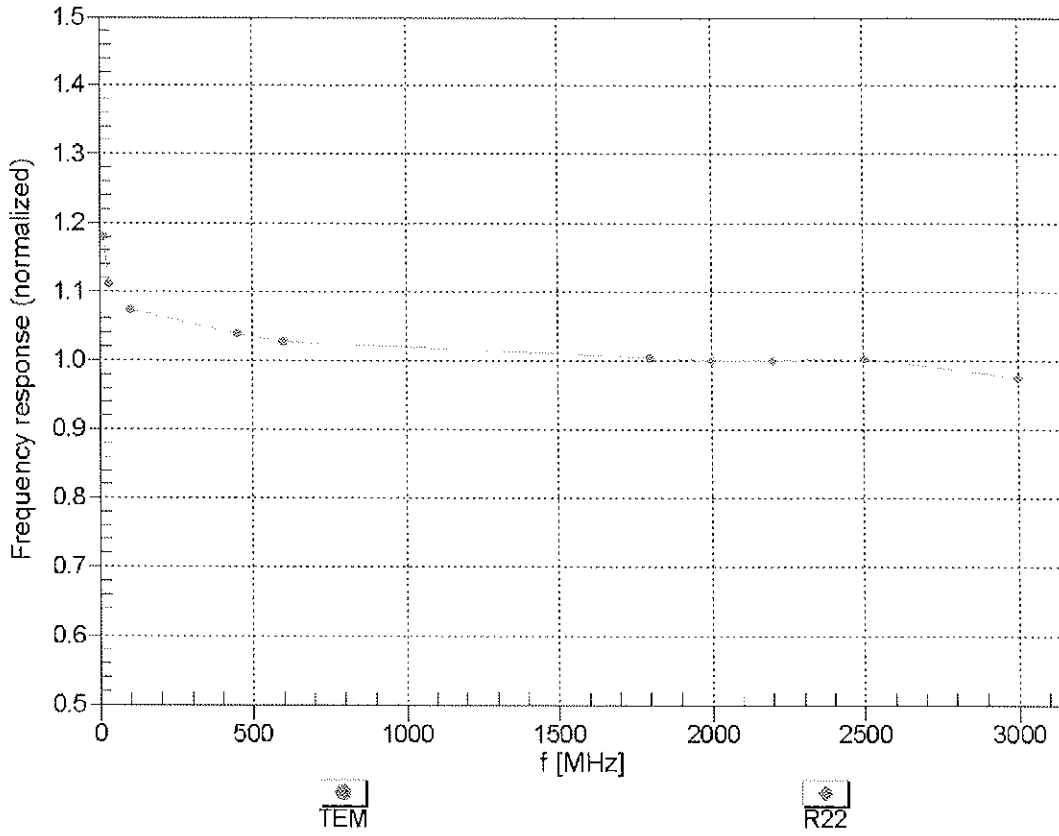
f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.43	9.43	9.43	0.35	0.96	± 12.0 %
835	55.2	0.97	9.23	9.23	9.23	0.22	1.30	± 12.0 %
900	55.0	1.05	9.23	9.23	9.23	0.39	0.86	± 12.0 %
1750	53.4	1.49	7.68	7.68	7.68	0.32	0.96	± 12.0 %
1900	53.3	1.52	7.33	7.33	7.33	0.27	1.07	± 12.0 %
2450	52.7	1.95	6.96	6.96	6.96	0.78	0.58	± 12.0 %
5200	49.0	5.30	4.31	4.31	4.31	0.48	1.90	± 13.1 %
5300	48.9	5.42	4.18	4.18	4.18	0.45	1.90	± 13.1 %
5500	48.6	5.65	3.82	3.82	3.82	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.80	3.80	3.80	0.45	1.90	± 13.1 %
5800	48.2	6.00	3.87	3.87	3.87	0.55	1.90	± 13.1 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)

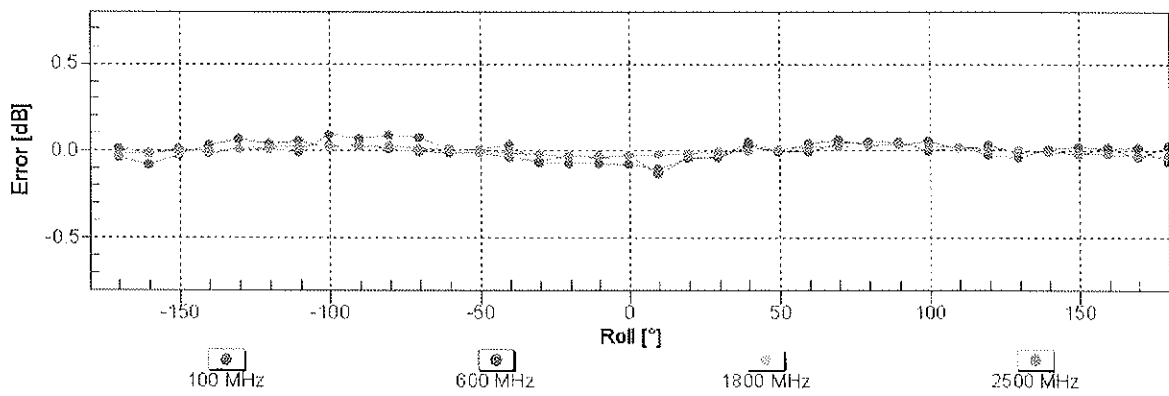
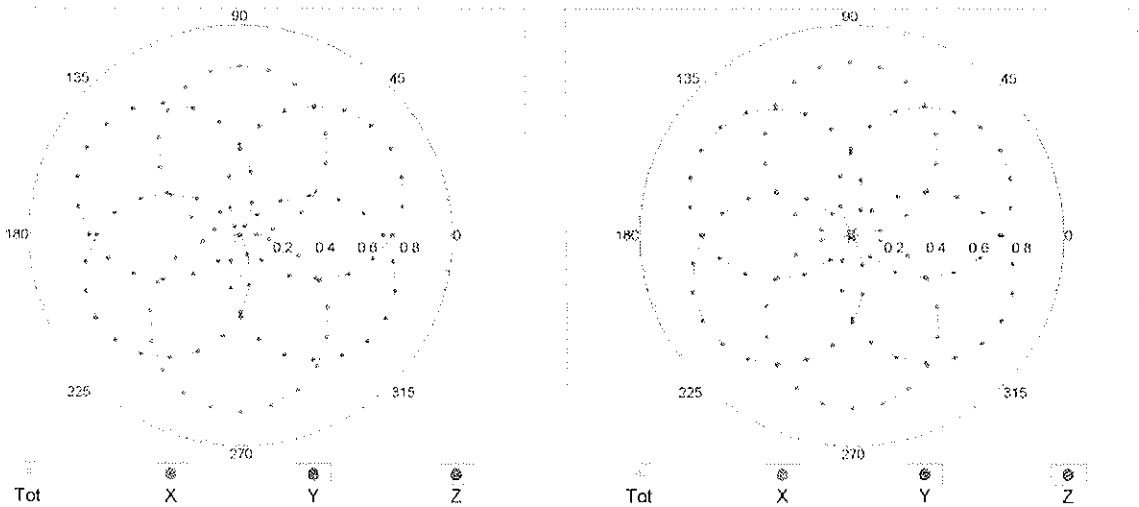


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

Receiving Pattern (ϕ), $\theta = 0^\circ$

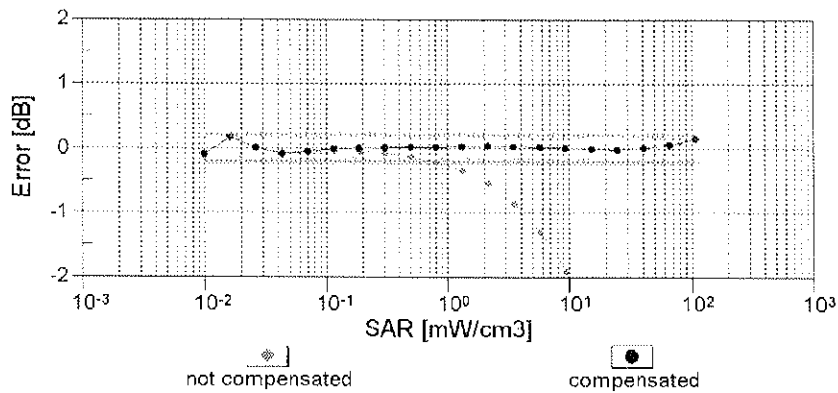
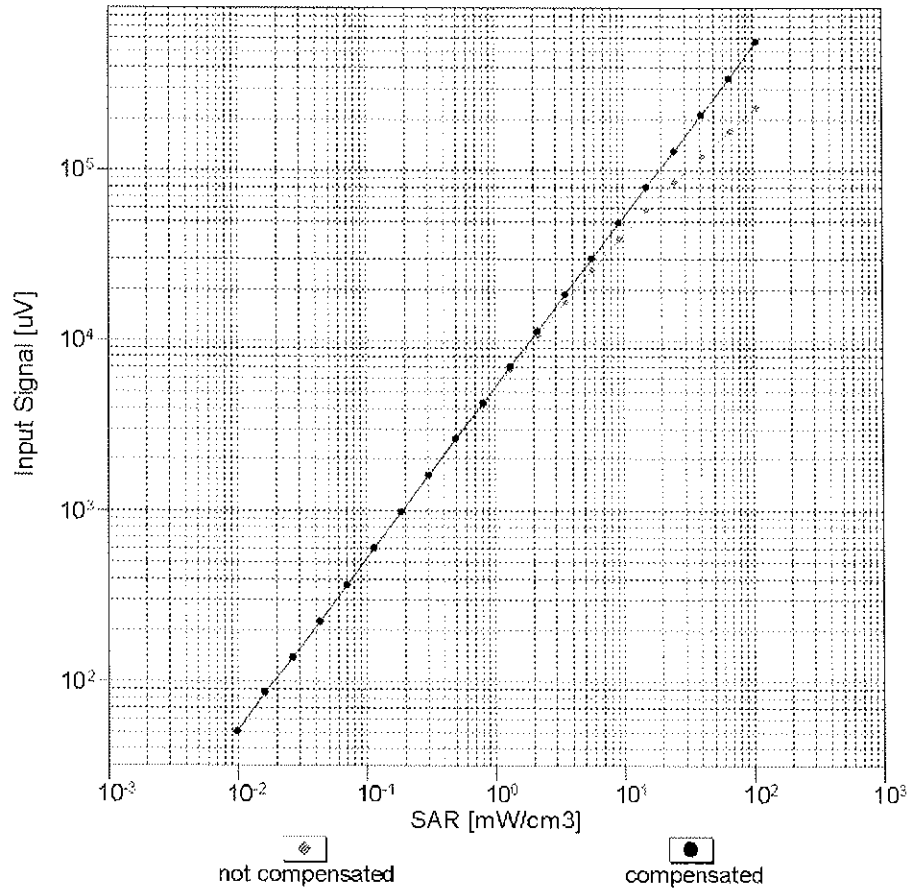
f=600 MHz,TEM

f=1800 MHz,R22



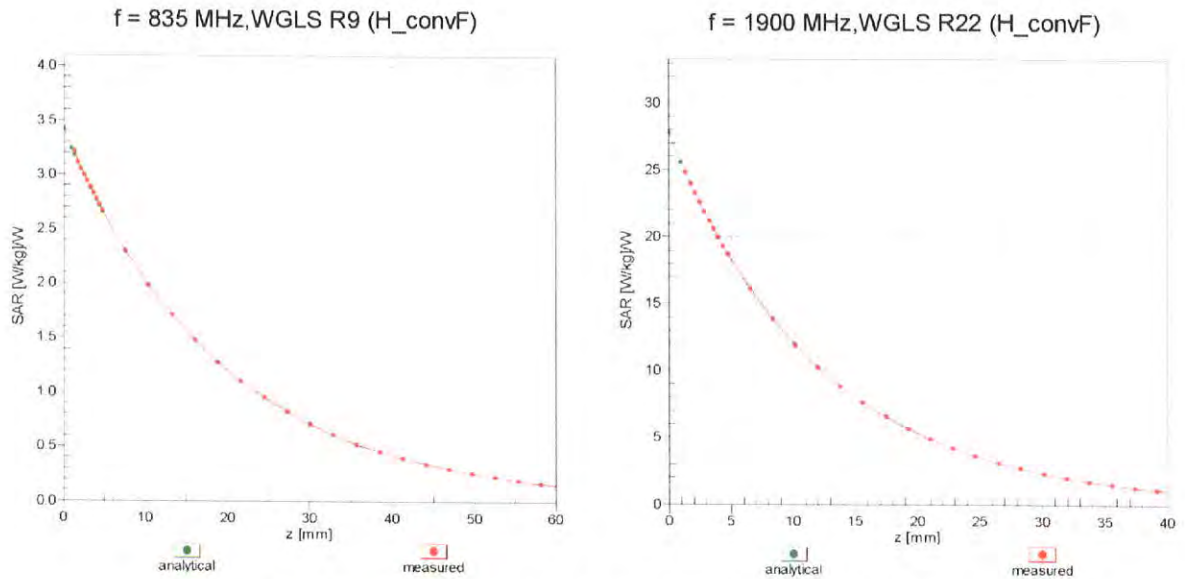
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

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



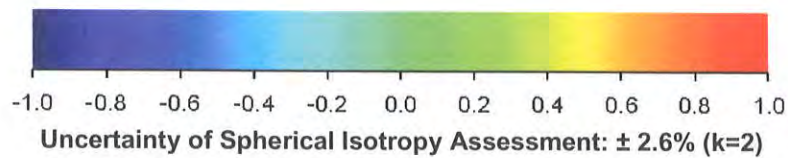
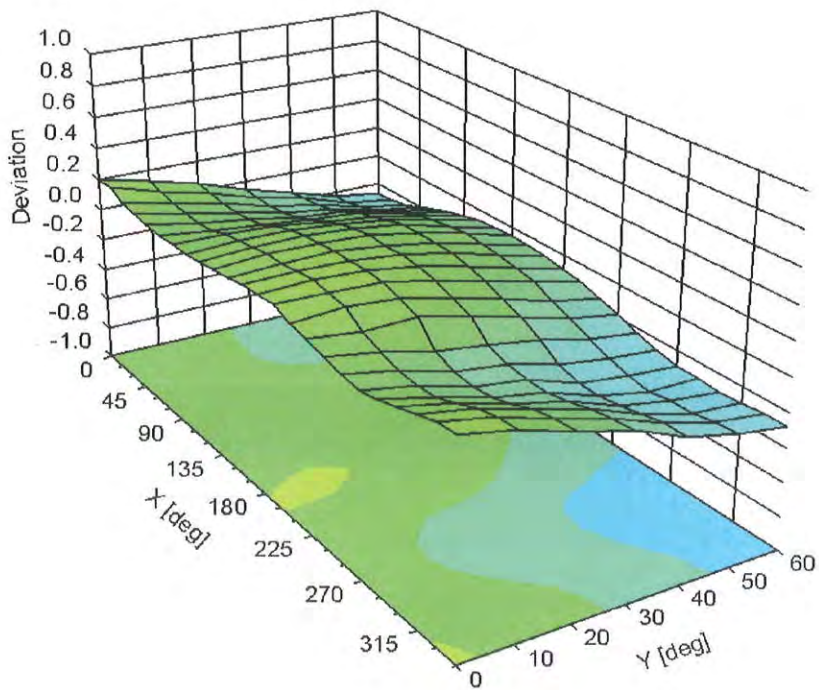
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3873

Other Probe Parameters

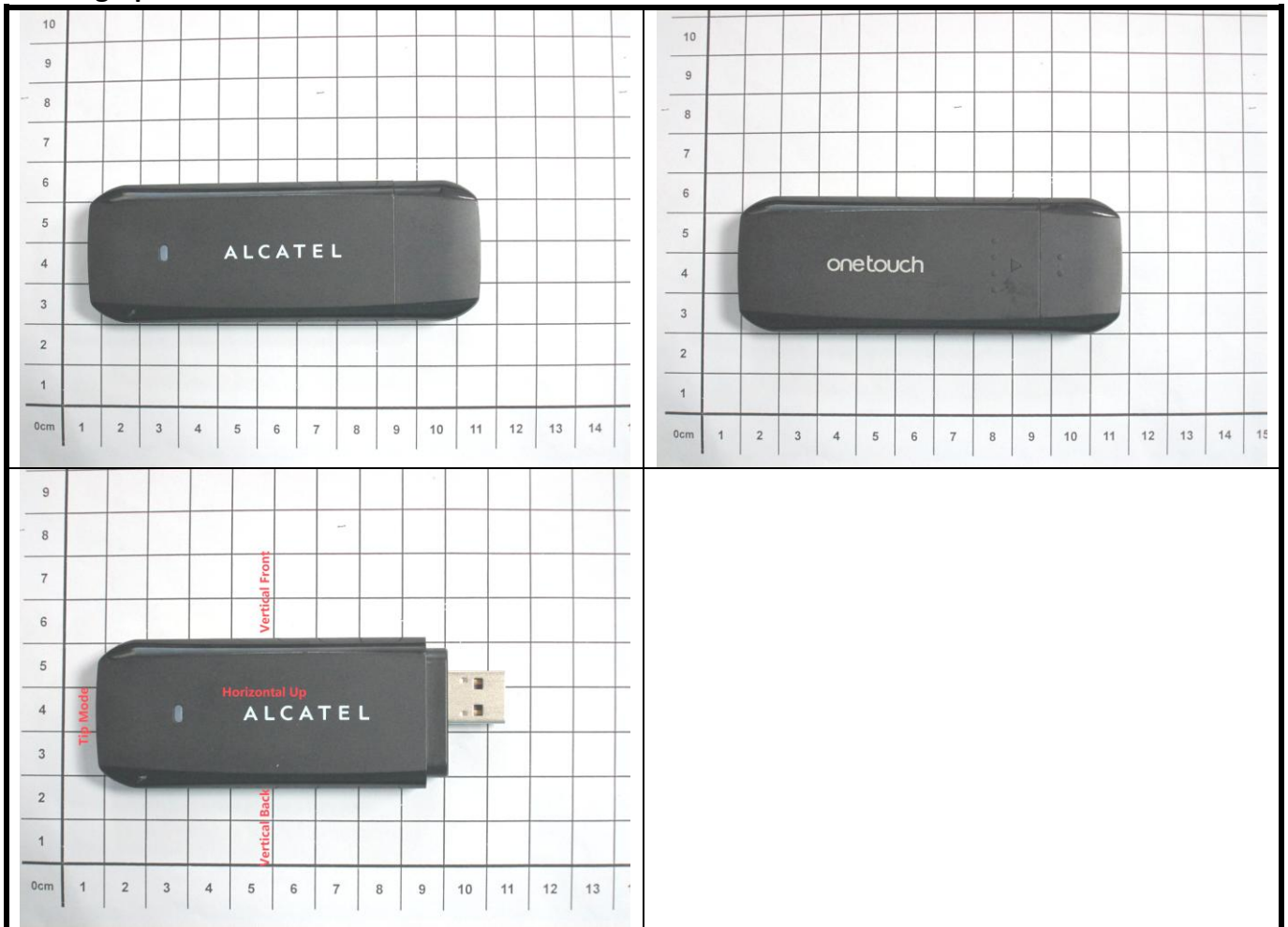
Sensor Arrangement	Triangular
Connector Angle (°)	19.6
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm



Appendix D. Photographs of EUT and Setup

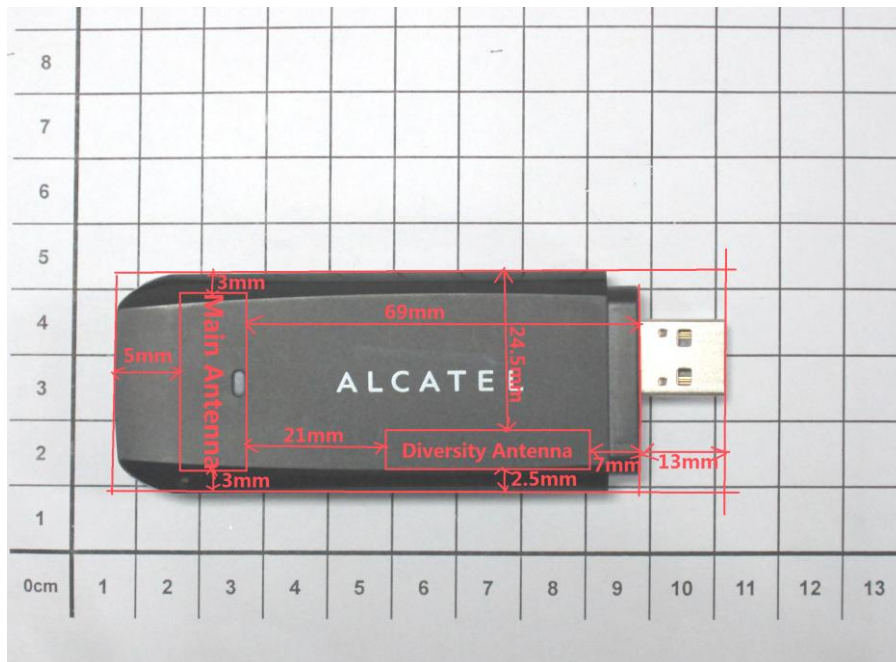
FCC SAR Test Report

<Photographs of EUT>



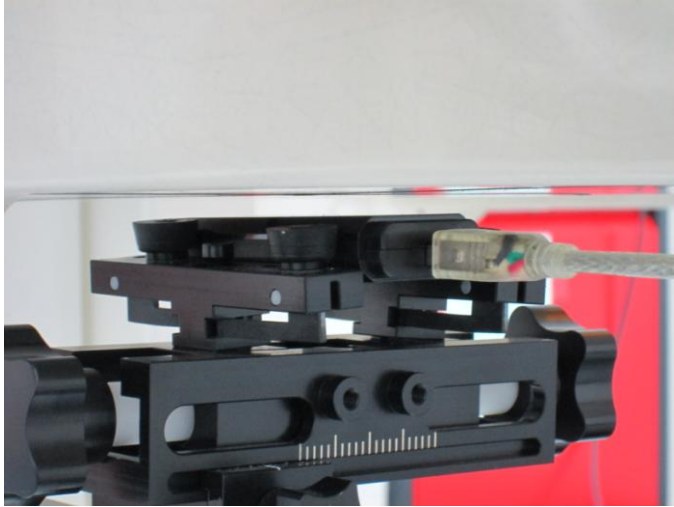
FCC SAR Test Report

<Location of Antennas>



FCC SAR Test Report

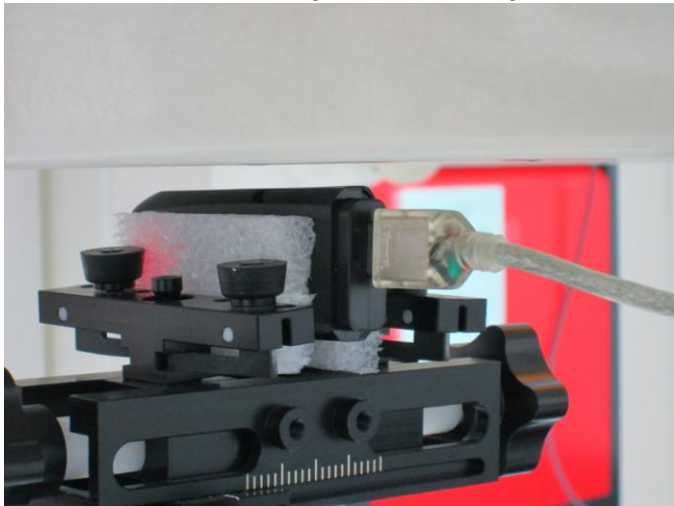
<Photographs of SAR Setup>



Horizontal Up with 5 mm Gap



Horizontal Down with 5 mm Gap



Vertical Front with 5 mm Gap



Vertical Back with 5 mm Gap



Tip Mode with 5 mm Gap