



SAR EVALUATION REPORT

Applicant Name:

Samsung Electronics Co., Ltd.
416 Maetan 3-Dong, Yeongtong-gu
Suwon-si, Gyeonggi-do
443-742, Republic of Korea

Date of Testing:

07/24/12 - 08/16/12

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

0Y1207241018-R2.A3L

FCC ID:**A3LSCHI915****APPLICANT:****SAMSUNG ELECTRONICS CO., LTD.****DUT Type:**

Portable Tablet Computer

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model(s):

SCH-I915

Band & Mode	Tx Frequency	Conducted Power [dBm]	SAR
			1 gm Body (W/kg)
Cell. CDMA/EVDO	824.70 - 848.31 MHz	24.79	0.94
PCS CDMA/EVDO	1851.25 - 1908.75 MHz	24.76	0.79
LTE Band 13	782.00 MHz	23.12	0.79
LTE Band 4 (AWS)	1712.50 - 1752.50 MHz	23.01	0.65
2.4 GHz WLAN	2412 - 2462 MHz	16.87	0.45
Bluetooth	2402 - 2480 MHz	10.64	N/A
Simultaneous SAR per KDB 690783 D01:			1.39

Note: Powers in the above table represent output powers for the SAR test configurations and may not represent the highest output powers for all configurations for each mode.

Note: This revised test report (S/N: 0Y1207241018-R2.A3L) supersedes and replaces the previously issued test report on the same subject DUT for the same type of testing as indicate. Please discard or destroy the previously issued test report(s) and dispose of accordingly.

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in FCC/OET Bulletin 65 Supplement C (2001), IEEE 1528-2003 and in applicable Industry Canada Radio Standards Specifications (RSS); for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.

PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.


Randy Ortanez
President

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Tx Frequency
Cell. CDMA/EVDO	824.70 - 848.31 MHz
PCS CDMA/EVDO	1851.25 - 1908.75 MHz
LTE Band 13	782.00 MHz
LTE Band 4 (AWS)	1712.50 - 1752.50 MHz
2.4 GHz WLAN	2412 - 2462 MHz
Bluetooth	2402 - 2480 MHz

1.2 DUT Antenna Locations

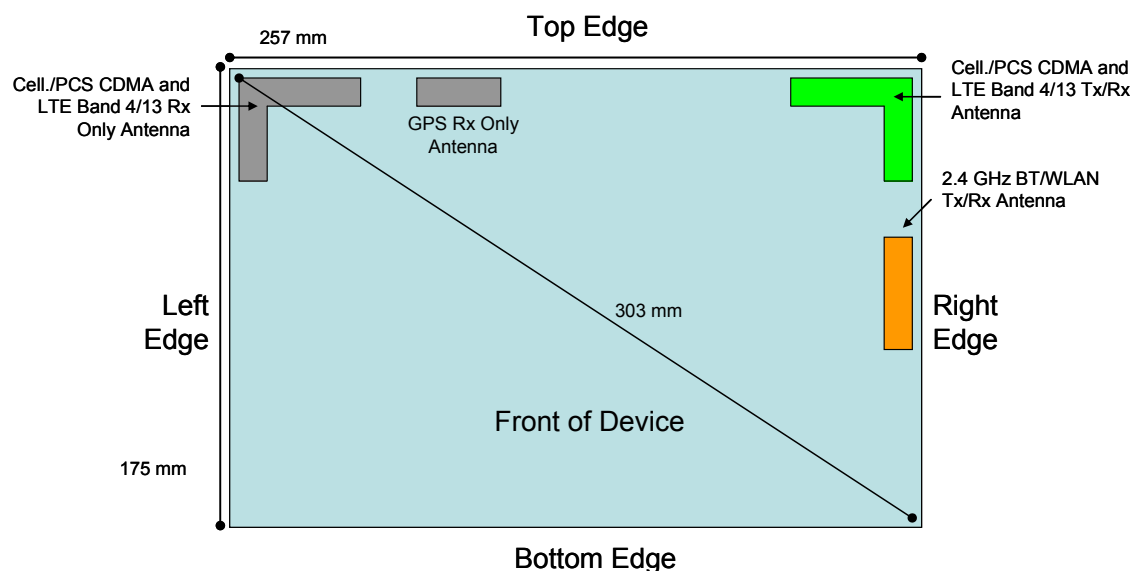


Figure 1-1
DUT Antenna Locations

Note: Based on the positioning of the Cell./PCS CDMA and LTE Band 4/13 Tx/Rx Antenna, Vertex SAR was evaluated for the top-right corner of the DUT for the CDMA and LTE modes with the max power samples using a spacing of 0.0 cm from the phantom.

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1.3 Simultaneous Transmission Capabilities

According to KDB 648474, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the DUT are shown in Figure 1-2 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.



Figure 1-2
Simultaneous Transmission Paths

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to KDB 447498 3) procedures.

Table 1-1
Possible Simultaneous Transmission Scenarios Transmission Supported by DUT

No.	Simultaneous Transmit Scenarios	Body	Note	Scenario Possible?
		FCC KDB 447498		
1	800/1900 MHz CDMA/PCS 1x data + WiFi 2.4GHz	Yes	2G Hotspot	Yes
2	800/1900MHz CDMA/PCS EVDO data + WiFi 2.4GHz	Yes	3G Hotspot	Yes
3	700 MHz LTE B13 Data + WiFi 2.4 GHz	Yes	4G Hotspot	Yes
4	1700 MHz LTE B4 Data + WiFi 2.4GHz	Yes	4G Hotspot	Yes
5	700/1700 MHz LTE B13/4 Data + 800/1900 MHz CDMA/PCS 1x data	N/A	Not Supported by H/W	No
6	700/1700 MHz LTE B13/4 Data + 800/1900 MHz CDMA/PCS EVDO data	N/A	Not Supported by H/W	No
7	700/1700 MHz LTE B13/4 Data + 800/1900 MHz CDMA/PCS 1x data + WiFi 2.4GHz	N/A	Not Supported by H/W	No
8	700/1700 MHz LTE B13/4 Data + 800/1900 MHz CDMA/PCS EVDO data + WiFi 2.4GHz	N/A	Not Supported by H/W	No

1.4 SAR Test Exclusions Applied

(A) WIFI/BT

The separation between the main antenna and the Bluetooth and WLAN antennas is 49 mm. RF Conducted Power of Bluetooth Tx is 11.582 mW (Please refer to the EMC DSS Report for a full set of Bluetooth conducted powers).

2.4 GHz WIFI and Bluetooth share the same antenna path and cannot transmit simultaneously.

Per KDB Publication 648474, **Bluetooth SAR was not required** based on the maximum conducted power, the Bluetooth/WLAN to main antenna separation distance and Body-SAR of the main antenna.

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(B) Licensed Transmitter(s)

This model does not support Network-Based Voice services for licensed transmitter in any modes.

LTE SAR for the lower BWs was not tested since the maximum average output power of all channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and LTE SAR for the highest BW was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05.

1.5 Power Reduction for SAR

Proximity Sensors were utilized in the device for SAR purposes. April/October 2011 TCB Workshop Notes regarding Power reduction using proximity sensors were used for guidance for SAR Testing. See Appendix E for more information.

1.6 Samples Used for SAR Testing

Five samples with identical hardware were used to facilitate SAR testing. For maximum power devices S/N: 0891-1004 and S/N: 0891-1006, power reduction was disabled via software (only available to the manufacturer - end user cannot disable power reduction) to ensure the device was always transmitting at maximum power when testing at a conservative distance. The reduced power devices S/N: 0891-1002 and S/N: 0891-1005 were tuned to the reduced power levels. There is no power reduction for 2.4 GHz WLAN.

	Cell./PCS CDMA	LTE	2.4 GHz WLAN
Max Power Device S/N	0891-1004	0891-1006	0891-1001
Reduced Power Device S/N	0891-1002	0891-1005	N/A

1.7 Guidance Applied

- FCC KDB 941225 (3G/4G)
- FCC KDB 248227 (802.11)
- FCC KDB 648474 (Simultaneous)
- FCC KDB 447498 Section 4 (Tablet SAR Considerations)
- April/Oct 2011 TCB Workshop Notes for RF Exposure and Sensors with Power Reduction
- FCC KDB draft 616217 from 4/23/2012

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LTE CHECKLIST PER KDB 941225 D05

KDB 941225 Pub LTE Information				
KDB 941225 Section	FCC ID	A3LSCHI915		
	Form Factor	Portable Tablet		
1)	Frequency Range of each LTE transmission band	BAND13 : Tx (782MHz) Band 4 : Tx (1712.5 ~1752.5MHz)		
2)	Channel Bandwidths	BAND13 : 10MHz BAND4 : 5, 10, 15, 20MHz		
3)	Channel Numbers and Frequencies (MHz)	Low	Mid	High
	LTE Band 13 and BW 10MHz		782MHz(23230)	
	LTE Band 4 and BW 5MHz	1712.5MHz(19975)	1732.5MHz(20175)	1752.5MHz(20375)
	LTE Band 4 and BW 10MHz	1715MHz(20000)	1732.5MHz(20175)	1750MHz(20350)
	LTE Band 4 and BW 15MHz	1717.5MHz(20025)	1732.5MHz(20175)	1747.5MHz(20325)
	LTE Band 4 and BW 20MHz	1720MHz(20050)	1732.5MHz(20175)	1745MHz(20300)
4)(a)	UE Category	3		
(b)	Modulations Supported in UL	QPSK, 16QAM		
	LTE Transmitter and Antenna Implementation	CDMA and LTE have the same transmission path		
5)	Description of LTE Tx and Ant. Implementation	1 Main TX/RX Ant and 1 Diversity RX Ant		
6)	LTE Voice available?	No		
	Hotspot with LTE+WIFI	Yes		
	Hotspot with LTE+WIFI active with 1XVoice sessions?	No		
7)	LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	See Section 7.3		
	A-MPR (Additional MPR) disabled for SAR Testing?	Yes		
8)	Conducted power Table provided for 1RB (low and high offset), 50% RB (centered), 100% RB	Yes		
9-10)	Non-LTE US Wireless Operation Modes/Bands	RF Output Power	RF Exposure Configurations	
	850 MHz CDMA	See Page 1		
	1900 MHz CDMA			
	2.4GHz Bluetooth			
	2.4GHz WI-FI			
11)	Simultaneous Tx Conditions (Voice and Data Configurations)	See Section 1.3		
12)	Power Reduction used for SAR Compliance?	Yes		
13)	Describe Power Reduction (LTE Modes)	Proximity Sensors		
14)	SAR Test Plan	N/A		
15)	SAR test data	N/A		

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3 INTRODUCTION

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [24]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1
SAR Mathematical Equation

$$SAR = \frac{d}{dt} \left(\frac{dU}{dm} \right) = \frac{d}{dt} \left(\frac{dU}{\rho dV} \right)$$

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

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

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/m³)
- E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

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4 SAR MEASUREMENT SETUP

4.1 Automated SAR Measurement System

Measurements are performed using the DASY automated dosimetric SAR assessment system. The DASY is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland and consists of a high precision robotics system (Staubli), robot controller, desktop computer, near-field probe, probe alignment sensor, and the SAM phantom containing the head or body equivalent material. The robot is a six-axis industrial robot, performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). See www.speag.com for more information about the specification of the SAR assessment system.



Figure 4-1
SAR Measurement System



Figure 4-2
Near-Field Probe

Table 4-1
Composition of the Tissue Equivalent Matter

Frequency (MHz)	750	835	1750	1900	2450
Tissue	Body	Body	Body	Body	Body
Ingredients (% by weight)					
Bactericide	See Next Page	0.1			
DGBE			31	29.44	26.7
HEC		1			
NaCl		0.94	0.2	0.39	0.1
Sucrose		44.9			
Water		53.06	68.8	70.17	73.2

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Table 4-2
Composition of 750 MHz Body Tissue Equivalent Matter

2 Composition / Information on ingredients	
The Item is composed of the following ingredients:	
H ₂ O	Water, 35 – 58%
Sucrose	Sugar, white, refined, 40 – 60%
NaCl	Sodium Chloride, 0 – 6%
Hydroxyethyl-cellulose	Medium Viscosity (CAS# 9004-82-0), <0.3%
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone, 0.1 – 0.7%
Relevant for safety: Refer to the respective Safety Data Sheet*.	

Note: 750MHz liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

Measurement Certificate / Material Test

Item Name	Body Tissue Simulating Liquid (MSL 750)
Product No.	SL AAM 075 AA (Charge: 110606-1)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated OCP probe (type DAK).

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

Ambient Condition 22°C ; 30% humidity
TSL Temperature 22°C
Test Date 8-Jun-11

Additional Information

TSL Density 1.212 g/cm³
TSL Heat-capacity 3.006 kJ/(kg*K)

Results

f (MHz)	Measured			Target		Diff. to Target [%]	
	HP-ε'	HP-ε''	sigma	eps	sigma	Δ-eps	Δ-sigma
600	57.4	24.88	0.83	56.1	0.95	2.4	-12.7
625	57.2	24.53	0.85	56.0	0.95	2.1	-10.6
650	57.0	24.18	0.87	55.9	0.96	1.8	-8.5
675	56.7	23.90	0.90	55.8	0.96	1.5	-6.3
700	56.4	23.61	0.92	55.7	0.96	1.2	-4.2
725	56.2	23.37	0.94	55.6	0.96	0.9	-2.0
750	55.9	23.12	0.96	55.5	0.96	0.7	0.1
775	55.7	22.95	0.99	55.4	0.97	0.4	2.5
800	55.4	22.78	1.01	55.3	0.97	0.1	4.8
825	55.2	22.61	1.04	55.2	0.98	-0.2	6.1
838	55.0	22.52	1.05	55.2	0.98	-0.3	6.7
850	54.9	22.44	1.06	55.2	0.99	-0.4	7.3
875	54.7	22.30	1.09	55.1	1.02	-0.7	6.5
900	54.5	22.17	1.11	55.0	1.05	-1.0	5.7
925	54.2	22.05	1.13	55.0	1.06	-1.3	6.8
950	54.0	21.94	1.16	54.9	1.08	-1.7	7.8
975	53.8	21.85	1.18	54.9	1.09	-2.0	9.0
1000	53.6	21.75	1.21	54.8	1.10	-2.3	10.2

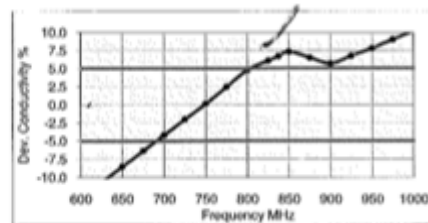
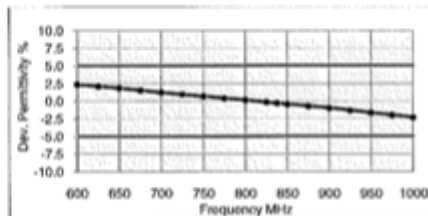


Figure 4-3
750MHz Body Tissue Equivalent Matter

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5 DOSIMETRIC ASSESSMENT

5.1 Measurement Procedure

The evaluation was performed using the following procedure:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head interface and the horizontal grid resolution was 15mm and 15mm for frequencies < 3 GHz in the x and y directions respectively.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1 gram cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak area of the maximum absorption was determined by spline interpolation. Around this point, a volume of 32mm x 32mm x 30mm (fine resolution volume scan, zoom scan) was assessed by measuring at least 5 x 5 x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. The data was extrapolated to the surface of the outer-shell of the phantom. The combined distance extrapolated was the combined distance from the center of the dipoles 2.7mm away from the tip of the probe housing plus the 1.2 mm distance between the surface and the lowest measuring point. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

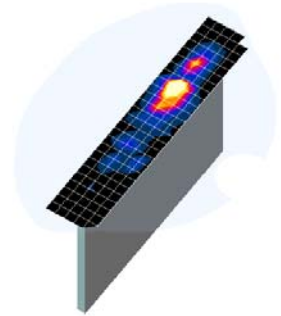


Figure 5-1
Sample SAR Area Scan

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6 FCC RF EXPOSURE LIMITS

6.1 Uncontrolled Environment

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

6.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 6-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT <i>General Population</i> (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT <i>Occupational</i> (W/kg) or (mW/g)
SPATIAL PEAK SAR Brain	1.6	8.0
SPATIAL AVERAGE SAR Whole Body	0.08	0.4
SPATIAL PEAK SAR Hands, Feet, Ankles, Wrists	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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Power measurements were performed using a base station simulator under digital average power.

7.1 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01 "SAR Measurement Procedures for 3G Devices" v02, October 2007.

The device was placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test were evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device was tested throughout the SAR test at maximum output power, the SAR measurement system measures a "point SAR" at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviated by more than 5%, the SAR test and drift measurements were repeated.

7.2 SAR Measurement Conditions for CDMA2000

The following procedures were performed according to FCC KDB Publication 941225 D01 "SAR Measurement Procedures for 3G Devices" v02, October 2007.

7.2.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by "SAR Measurement Procedures for 3G Devices" v02, October 2007. Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. TDSO tests were measured with power control bits in the "All Up" condition.

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 7-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH₀ and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH₀ data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 7-2 was applied.
5. FCHs were configured at full rate for maximum SAR with "All Up" power control bits.

Table 7-1
Parameters for Max. Power for RC1

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-104
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

Table 7-2
Parameters for Max. Power for RC3

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-86
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

7.2.2 Body SAR Measurements for EVDO Data Devices

Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. SAR for Subtype 2 Physical layer configurations is not required for Rev. A when the maximum average output of each RF channels is less than that measured in Subtype 0/1 Physical layer configurations. Otherwise, SAR is measured on the maximum output channel for Rev. A using the exposure configuration that results in the highest SAR for the RF channels in Rev. 0. The AT is

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tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations. Both FTAP and FETAP are configured with a Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots. AT power control should be in "All Bits Up" conditions for TAP/ETAP. For Ev-Do devices that also support 1x RTT data operations, SAR is not required for 1x RTT when the maximum average output of each channel is less than ¼ dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev.0. Otherwise, the body SAR measurements procedures for CDMA Handsets should be applied (See Sections 7.2.3).

7.2.3 Body SAR Measurements for CDMA2000 1x

SAR for body exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCHn) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only. Otherwise, SAR is measured on the maximum output channel (FCH + SCHn) with FCH at full rate and SCH0 enabled at 9600 bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels are enabled, the DUT output may shift by more than 0.5 dB and lead to higher SAR drifts and SCH dropouts. Body SAR was measured using TDSO / SO32 with power control bits in the "All Up." Body SAR in RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3.

7.3 SAR Measurement Conditions for LTE

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes following SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing.

7.3.1 MPR

MPR is implemented for this device by the manufacturer when the proximity sensor is not active (maximum power scenarios). The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1. See Section 9.2 for MPR targets.

7.3.2 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

7.3.3 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05:

- a. Per Page 4, 3) A), QPSK with 50% RB is required for the highest bandwidth.
- b. Per Page 4, footnote 2, when the maximum output power across high, mid., and low channels is < 0.5 dB, mid channel is tested. Low and high channel SAR tests are not required for QPSK, 50% RB allocation when the SAR is < 0.8 W/kg. When there are less than 3 channels required based on the size of the band and bandwidth of the signal, the channel with the maximum output power was tested.
- c. Per Page 4, 3) B), QPSK with 1 RB for both channel edges are required for the highest bandwidth.

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- d. Per Page 4, footnote 6, QPSK 1 RB allocation SAR tests were performed on the highest output power channel for the RB allocation when the average output power of the 1 RB allocation was > 0.5 dB higher than the 50% RB allocation for QPSK. Otherwise, SAR tests are performed on the channel that produced the highest SAR for QPSK with 50% RB. 1 RB configurations are considered together for a single channel selection.
- e. Per Page 4, 3) B), I), when the SAR for QPSK 1 RB allocation tests is <1.45 W/kg, testing on the other channels is not required.
- f. Per Page 4, 4) A), 16QAM with 50% RB is required for the highest bandwidth on the channel with the highest measured SAR for QPSK with 50% RB allocation.
- g. Per Page 4, 4) A), I), when the SAR for 16 QAM, 50 % allocation tests is <1.45 W/kg, testing on the other channels is not required.
- h. Per Page 4, 4) B) and Page 5 footnote 9, 16QAM with 1RB for both channel edges are required for the highest bandwidth on the highest output power channel for the 1 RB allocation when the average output power of the 1 RB allocation is >0.5 dB higher than the 50% allocation for 16 QAM. Otherwise, SAR tests are performed on the channel that produced the highest SAR for 16 QAM with 50% RB. 1 RB configurations are considered together for a single channel selection.
- i. Per Page 5, 4) B), I), when the SAR for 16 QAM 1 RB allocation tests is <1.45 W/kg, testing on the other channels is not required.
- j. Per Page 4, 4), A) I) and Page 5, 4), A)I, 100% RB Allocation is not required to be tested when the SAR is not > 1.45 W/kg for the highest bandwidth.
- k. Per Page 5, 5) B) I), smaller bandwidths are not required to be tested when SAR is not > 1.45 W/kg for the highest bandwidth and the maximum average output power of the smaller bandwidths across all channels and configurations is not more than 0.5 dB higher than the higher bandwidths.

7.4 SAR Testing with 802.11 Transmitters

Normal network operating configurations are not suitable for measuring the SAR of 802.11 b/g/n transmitters. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 for more details.

7.4.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

7.4.2 Frequency Channel Configurations [27]

For 2.4 GHz, the highest average RF output power channel between the low, mid and high channel at the lowest data rate was selected for SAR evaluation in 802.11b mode. 802.11g/n modes and higher data rates for 802.11b were additionally evaluated for SAR if the output power of the respective mode was 0.25 dB or higher than the powers of the SAR configurations tested in the 802.11b mode.

If the maximum extrapolated peak SAR of the zoom scan for the highest output channel was less than 1.6 W/kg or if the 1g averaged SAR was less than 0.8 W/kg, SAR testing was not required for the other test channels in the band.

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SAR TABLET TESTING

8.1 SAR Testing for Tablet per KDB Publication 447498 Section 4

Lap-touching devices that have transmitting antennas located less than 20 cm from the body of the user require routine SAR evaluation. Such devices are considered portable, and are capable of being held to the body. Devices are to be setup according to KDB publication 447498 requirements and are configured with maximum output power during SAR assessment for a worst-case SAR evaluation.

Per KDB 447498 4) b) i), the bottom face (back of the device) is required to be tested touching the flat phantom.

Per KDB Publication 447498 4) b) ii) (2), SAR testing applies for the tablet edges with antennas located within 5 cm of each tablet edge closest to the user. According to KDB Publication 447498 4) b) ii) (2), for each antenna, SAR is only required for the edge with the most conservative exposure condition. Since the diagonal dimension of the device is more than 20 cm (30.3 cm), this device is a tablet.

8.2 Proximity Sensor Information

The technical description contains information about sensor size and locations. Power reduction levels are provided in Appendix E.

KDB draft 616217 Section V from 4/23/2012 was used as a guideline for selecting SAR test distances for this device. Since the back-off sensor activation distance for back is 12 mm, a conservative distance of 11 mm was tested for the back side at maximum power. Since the back-off sensor activation distance was 9 mm for the top edge, a conservative distance of 8 mm was tested at maximum power. Details about sensing mechanism and sensor pad location are included in the technical description.

The sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the sensor entirely covers the antenna.

8.3 Display Orientation Capabilities

This device is capable of multiple display orientations supporting both portrait and landscape positions. Therefore per KDB 447498 4) b) ii) (2), SAR testing applies for the tablet edges with antennas located within 5 cm of each tablet edge closest to the user. According to KDB 447498 4) b) ii) (2), for each antenna, SAR is only required for the edge with the most conservative exposure condition.

8.4 Method of SAR Measurement with Power Reduction

This tablet was tested in accordance with April/Oct 2011 TCB workshop notes and KDB draft 616217 from 4/23/2012 for proximity sensor and power reduction.

Based on the power-reduction activation vs. distance results for the sensors, the samples representative of the device with the sensors activated (reduced power S/N: 0891-1002 and S/N: 0891-1005) were tested for SAR at 0 mm. For the additional SAR measurements with the sensors de-activated (max power, no power reduction S/N: 0891-1004, S/N: 0891-1006 and S/N: 0891-1001) when the device is positioned away from the user, SAR evaluation is required at 11 mm (from the back), 8 mm (from the top edge), and 0 mm (from the right edge) distances from the phantom. Since the device sensor detection mechanism is active at these distances, the power reduction was disabled via manufacturer test software, and the device was placed in maximum power transmit mode with a base station simulator under the tissue equivalent liquid- filled flat phantom at the required distances for testing.

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9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Table 9-1
Maximum CDMA Average RF Power
(Representing Proximity Sensor Inactive)

Band	Channel	Frequency	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	824.7	24.61	24.51	24.65	24.64
	384	836.52	24.74	24.65	24.79	24.78
	777	848.31	24.63	24.54	24.69	24.66
PCS	25	1851.25	24.50	24.50	24.56	24.42
	600	1880	24.68	24.69	24.76	24.63
	1175	1908.75	24.76	24.75	24.77	24.68

Table 9-2
Reduced CDMA Average RF Power
(Representing Proximity Sensor Active)

Band	Channel	Frequency	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	824.7	19.78	19.93	19.82	19.70
	384	836.52	20.12	20.16	20.13	20.11
	777	848.31	20.13	29.15	20.09	20.04
PCS	25	1851.25	15.28	15.24	15.23	15.20
	600	1880	15.11	15.12	15.10	15.08
	1175	1908.75	15.49	15.48	15.47	15.46

Per KDB Publication 941225 D01:

1. CDMA Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01 procedures for data devices. If the average output power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, then Rev. A SAR is not required. Otherwise, SAR is measured on the maximum output channel for Rev. A using the exposure configuration that results in the highest SAR for that RF channel in Rev. 0. SAR is not required for 1x RTT for Ev-Do hotspot devices when the maximum average output of each channel is less than 1/4 dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0



Figure 9-1
Power Measurement Setup

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9.2 LTE Conducted Powers

9.2.1 LTE Band 13

Table 9-3

LTE Band 13 Conducted Powers - 10 MHz Bandwidth - Representing proximity sensor inactive

Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
782.0	23230	10	QPSK	1	0	23.10	0	0
782.0	23230	10	QPSK	1	49	23.12	0	0
782.0	23230	10	QPSK	25	12	21.91	1	0-1
782.0	23230	10	QPSK	50	0	21.87	1	0-1
782.0	23230	10	16QAM	1	0	21.74	1	0-1
782.0	23230	10	16QAM	1	49	21.76	1	0-1
782.0	23230	10	16QAM	25	12	21.06	2	0-2
782.0	23230	10	16QAM	50	0	20.79	2	0-2

Table 9-4

LTE Band 13 Conducted Powers - 10 MHz Bandwidth - Representing proximity sensor active

Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
782.0	23230	10	QPSK	1	0	19.30	0	0
782.0	23230	10	QPSK	1	49	19.09	0	0
782.0	23230	10	QPSK	25	12	18.98	0	0-1
782.0	23230	10	QPSK	50	0	18.93	0	0-1
782.0	23230	10	16QAM	1	0	18.86	0	0-1
782.0	23230	10	16QAM	1	49	18.62	0	0-1
782.0	23230	10	16QAM	25	12	18.98	0	0-2
782.0	23230	10	16QAM	50	0	18.79	0	0-2

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9.2.2

LTE Band 4 (AWS)

Table 9-5
LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth - Representing proximity sensor inactive

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1712.5	19975	5	QPSK	1	0	22.50	0	0
	1712.5	19975	5	QPSK	1	24	22.87	0	0
	1712.5	19975	5	QPSK	12	6	21.55	1	0-1
	1712.5	19975	5	QPSK	25	0	21.53	1	0-1
	1712.5	19975	5	16-QAM	1	0	21.51	1	0-1
	1712.5	19975	5	16-QAM	1	24	22.04	1	0-1
	1712.5	19975	5	16-QAM	12	6	20.54	2	0-2
Mid	1712.5	19975	5	16-QAM	25	0	20.53	2	0-2
	1732.5	20175	5	QPSK	1	0	23.02	0	0
	1732.5	20175	5	QPSK	1	24	22.81	0	0
	1732.5	20175	5	QPSK	12	6	21.83	1	0-1
	1732.5	20175	5	QPSK	25	0	21.64	1	0-1
	1732.5	20175	5	16-QAM	1	0	21.71	1	0-1
	1732.5	20175	5	16-QAM	1	24	21.70	1	0-1
High	1732.5	20175	5	16-QAM	12	6	20.98	2	0-2
	1732.5	20175	5	16-QAM	25	0	20.66	2	0-2
	1752.5	20375	5	QPSK	1	0	22.93	0	0
	1752.5	20375	5	QPSK	1	24	23.09	0	0
	1752.5	20375	5	QPSK	12	6	21.86	1	0-1
	1752.5	20375	5	QPSK	25	0	21.84	1	0-1
	1752.5	20375	5	16-QAM	1	0	21.83	1	0-1
	1752.5	20375	5	16-QAM	1	24	21.99	1	0-1
	1752.5	20375	5	16-QAM	12	6	20.85	2	0-2
	1752.5	20375	5	16-QAM	12	6	20.85	2	0-2
	1752.5	20375	5	16-QAM	25	0	20.77	2	0-2

Table 9-6
LTE Band 4 (AWS) Conducted Powers - 10 MHz Bandwidth - Representing proximity sensor inactive

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1715	20000	10	QPSK	1	0	22.54	0	0
	1715	20000	10	QPSK	1	49	23.01	0	0
	1715	20000	10	QPSK	25	12	21.64	1	0-1
	1715	20000	10	QPSK	50	0	21.54	1	0-1
	1715	20000	10	16QAM	1	0	21.50	1	0-1
	1715	20000	10	16QAM	1	49	22.44	1	0-1
	1715	20000	10	16QAM	25	12	20.51	2	0-2
Mid	1715	20000	10	16QAM	50	0	20.56	2	0-2
	1732.5	20175	10	QPSK	1	0	22.76	0	0
	1732.5	20175	10	QPSK	1	49	22.68	0	0
	1732.5	20175	10	QPSK	25	12	21.55	1	0-1
	1732.5	20175	10	QPSK	50	0	21.57	1	0-1
	1732.5	20175	10	16QAM	1	0	21.66	1	0-1
	1732.5	20175	10	16QAM	1	49	21.63	1	0-1
High	1732.5	20175	10	16QAM	25	12	20.56	2	0-2
	1732.5	20175	10	16QAM	50	0	20.50	2	0-2
	1750	20350	10	QPSK	1	0	23.00	0	0
	1750	20350	10	QPSK	1	49	23.05	0	0
	1750	20350	10	QPSK	25	12	21.76	1	0-1
	1750	20350	10	QPSK	50	0	21.73	1	0-1
	1750	20350	10	16QAM	1	0	21.52	1	0-1
	1750	20350	10	16QAM	1	49	21.60	1	0-1
	1750	20350	10	16QAM	25	12	20.76	2	0-2
	1750	20350	10	16QAM	50	0	21.24	2	0-2

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Table 9-7
LTE Band 4 (AWS) Conducted Powers - 15 MHz Bandwidth - Representing proximity sensor inactive

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1717.5	20025	15	QPSK	1	0	22.51	0	0
	1717.5	20025	15	QPSK	1	74	23.05	0	0
	1717.5	20025	15	QPSK	36	18	21.72	1	0-1
	1717.5	20025	15	QPSK	75	0	21.54	1	0-1
	1717.5	20025	15	16QAM	1	0	21.72	1	0-1
	1717.5	20025	15	16QAM	1	74	21.98	1	0-1
	1717.5	20025	15	16QAM	36	18	20.81	2	0-2
Mid	1717.5	20025	15	16QAM	75	0	20.63	2	0-2
	1732.5	20175	15	QPSK	1	0	22.77	0	0
	1732.5	20175	15	QPSK	1	74	22.74	0	0
	1732.5	20175	15	QPSK	36	18	21.63	1	0-1
	1732.5	20175	15	QPSK	75	0	21.60	1	0-1
	1732.5	20175	15	16QAM	1	0	21.75	1	0-1
	1732.5	20175	15	16QAM	1	74	21.75	1	0-1
High	1732.5	20175	15	16QAM	36	18	20.69	2	0-2
	1732.5	20175	15	16QAM	75	0	20.61	2	0-2
	1747.5	20325	15	QPSK	1	0	22.91	0	0
	1747.5	20325	15	QPSK	1	74	23.02	0	0
	1747.5	20325	15	QPSK	36	18	21.58	1	0-1
	1747.5	20325	15	QPSK	75	0	21.52	1	0-1
	1747.5	20325	15	16QAM	1	0	21.85	1	0-1
	1747.5	20325	15	16QAM	1	74	21.86	1	0-1
	1747.5	20325	15	16QAM	36	18	20.73	2	0-2
	1747.5	20325	15	16QAM	75	0	20.60	2	0-2

Table 9-8
LTE Band 4 (AWS) Conducted Powers - 20 MHz Bandwidth - Representing proximity sensor inactive

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1720	20050	20	QPSK	1	0	22.54	0	0
	1720	20050	20	QPSK	1	99	22.90	0	0
	1720	20050	20	QPSK	50	25	21.84	1	0-1
	1720	20050	20	QPSK	100	0	21.64	1	0-1
	1720	20050	20	16QAM	1	0	21.56	1	0-1
	1720	20050	20	16QAM	1	99	22.12	1	0-1
	1720	20050	20	16QAM	50	25	20.85	2	0-2
Mid	1720	20050	20	16QAM	100	0	20.63	2	0-2
	1732.5	20175	20	QPSK	1	0	23.01	0	0
	1732.5	20175	20	QPSK	1	99	22.77	0	0
	1732.5	20175	20	QPSK	50	25	21.50	1	0-1
	1732.5	20175	20	QPSK	100	0	21.64	1	0-1
	1732.5	20175	20	16QAM	1	0	22.24	1	0-1
	1732.5	20175	20	16QAM	1	99	22.02	1	0-1
High	1732.5	20175	20	16QAM	50	25	20.53	2	0-2
	1732.5	20175	20	16QAM	100	0	20.65	2	0-2
	1745	20300	20	QPSK	1	0	22.79	0	0
	1745	20300	20	QPSK	1	99	22.91	0	0
	1745	20300	20	QPSK	50	25	21.83	1	0-1
	1745	20300	20	QPSK	100	0	21.69	1	0-1
	1745	20300	20	16QAM	1	0	21.92	1	0-1
	1745	20300	20	16QAM	1	99	22.13	1	0-1
	1745	20300	20	16QAM	50	25	20.70	2	0-2
	1745	20300	20	16QAM	100	0	20.61	2	0-2

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Table 9-9
LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth - Representing proximity sensor active

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1712.5	19975	5	QPSK	1	0	11.65	0	0
	1712.5	19975	5	QPSK	1	24	11.58	0	0
	1712.5	19975	5	QPSK	12	6	12.07	0	0-1
	1712.5	19975	5	QPSK	25	0	11.87	0	0-1
	1712.5	19975	5	16-QAM	1	0	11.82	0	0-1
	1712.5	19975	5	16-QAM	1	24	11.52	0	0-1
	1712.5	19975	5	16-QAM	12	6	11.86	0	0-2
Mid	1712.5	19975	5	16-QAM	25	0	11.72	0	0-2
	1732.5	20175	5	QPSK	1	0	11.88	0	0
	1732.5	20175	5	QPSK	1	24	12.00	0	0
	1732.5	20175	5	QPSK	12	6	12.33	0	0-1
	1732.5	20175	5	QPSK	25	0	12.18	0	0-1
	1732.5	20175	5	16-QAM	1	0	11.95	0	0-1
	1732.5	20175	5	16-QAM	1	24	12.07	0	0-1
High	1732.5	20175	5	16-QAM	12	6	12.14	0	0-2
	1732.5	20175	5	16-QAM	25	0	11.90	0	0-2
	1752.5	20375	5	QPSK	1	0	11.75	0	0
	1752.5	20375	5	QPSK	1	24	11.80	0	0
	1752.5	20375	5	QPSK	12	6	12.16	0	0-1
	1752.5	20375	5	QPSK	25	0	11.90	0	0-1
	1752.5	20375	5	16-QAM	1	0	12.16	0	0-1
	1752.5	20375	5	16-QAM	1	24	12.21	0	0-1
	1752.5	20375	5	16-QAM	12	6	12.06	0	0-2
	1752.5	20375	5	16-QAM	25	0	11.64	0	0-2

Table 9-10
LTE Band 4 (AWS) Conducted Powers - 10 MHz Bandwidth - Representing proximity sensor active

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1715	20000	10	QPSK	1	0	11.90	0	0
	1715	20000	10	QPSK	1	49	11.61	0	0
	1715	20000	10	QPSK	25	12	11.98	0	0-1
	1715	20000	10	QPSK	50	0	11.87	0	0-1
	1715	20000	10	16QAM	1	0	12.34	0	0-1
	1715	20000	10	16QAM	1	49	12.04	0	0-1
	1715	20000	10	16QAM	25	12	11.77	0	0-2
Mid	1715	20000	10	16QAM	50	0	11.64	0	0-2
	1732.5	20175	10	QPSK	1	0	11.82	0	0
	1732.5	20175	10	QPSK	1	49	11.85	0	0
	1732.5	20175	10	QPSK	25	12	12.26	0	0-1
	1732.5	20175	10	QPSK	50	0	12.14	0	0-1
	1732.5	20175	10	16QAM	1	0	11.84	0	0-1
	1732.5	20175	10	16QAM	1	49	12.23	0	0-1
High	1732.5	20175	10	16QAM	25	12	12.06	0	0-2
	1732.5	20175	10	16QAM	50	0	11.91	0	0-2
	1750	20350	10	QPSK	1	0	11.78	0	0
	1750	20350	10	QPSK	1	49	11.86	0	0
	1750	20350	10	QPSK	25	12	12.01	0	0-1
	1750	20350	10	QPSK	50	0	12.00	0	0-1
	1750	20350	10	16QAM	1	0	12.11	0	0-1
	1750	20350	10	16QAM	1	49	11.87	0	0-1
	1750	20350	10	16QAM	25	12	11.73	0	0-2
	1750	20350	10	16QAM	50	0	11.76	0	0-2

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Table 9-11
LTE Band 4 (AWS) Conducted Powers - 15 MHz Bandwidth - Representing proximity sensor active

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1717.5	20025	15	QPSK	1	0	11.84	0	0
	1717.5	20025	15	QPSK	1	74	11.80	0	0
	1717.5	20025	15	QPSK	36	18	12.34	0	0-1
	1717.5	20025	15	QPSK	75	0	11.99	0	0-1
	1717.5	20025	15	16QAM	1	0	11.72	0	0-1
	1717.5	20025	15	16QAM	1	74	11.69	0	0-1
	1717.5	20025	15	16QAM	36	18	11.93	0	0-2
Mid	1717.5	20025	15	16QAM	75	0	11.86	0	0-2
	1732.5	20175	15	QPSK	1	0	11.85	0	0
	1732.5	20175	15	QPSK	1	74	11.63	0	0
	1732.5	20175	15	QPSK	36	18	12.41	0	0-1
	1732.5	20175	15	QPSK	75	0	12.18	0	0-1
	1732.5	20175	15	16QAM	1	0	11.71	0	0-1
	1732.5	20175	15	16QAM	1	74	11.62	0	0-1
High	1732.5	20175	15	16QAM	36	18	12.13	0	0-2
	1732.5	20175	15	16QAM	75	0	12.06	0	0-2
	1747.5	20325	15	QPSK	1	0	11.56	0	0
	1747.5	20325	15	QPSK	1	74	11.88	0	0
	1747.5	20325	15	QPSK	36	18	12.43	0	0-1
	1747.5	20325	15	QPSK	75	0	12.33	0	0-1
	1747.5	20325	15	16QAM	1	0	11.85	0	0-1
	1747.5	20325	15	16QAM	1	74	12.21	0	0-1
	1747.5	20325	15	16QAM	36	18	12.41	0	0-2
	1747.5	20325	15	16QAM	75	0	12.25	0	0-2

Table 9-12
LTE Band 4 (AWS) Conducted Powers - 20 MHz Bandwidth – Representing proximity sensor active

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1720	20050	20	QPSK	1	0	11.54	0	0
	1720	20050	20	QPSK	1	99	11.53	0	0
	1720	20050	20	QPSK	50	25	11.99	0	0-1
	1720	20050	20	QPSK	100	0	11.82	0	0-1
	1720	20050	20	16QAM	1	0	11.65	0	0-1
	1720	20050	20	16QAM	1	99	11.67	0	0-1
	1720	20050	20	16QAM	50	25	11.75	0	0-2
Mid	1720	20050	20	16QAM	100	0	11.60	0	0-2
	1732.5	20175	20	QPSK	1	0	11.54	0	0
	1732.5	20175	20	QPSK	1	99	11.51	0	0
	1732.5	20175	20	QPSK	50	25	12.26	0	0-1
	1732.5	20175	20	QPSK	100	0	12.11	0	0-1
	1732.5	20175	20	16QAM	1	0	11.68	0	0-1
	1732.5	20175	20	16QAM	1	99	11.57	0	0-1
High	1732.5	20175	20	16QAM	50	25	12.01	0	0-2
	1732.5	20175	20	16QAM	100	0	11.84	0	0-2
	1745	20300	20	QPSK	1	0	11.54	0	0
	1745	20300	20	QPSK	1	99	11.53	0	0
	1745	20300	20	QPSK	50	25	12.15	0	0-1
	1745	20300	20	QPSK	100	0	11.97	0	0-1
	1745	20300	20	16QAM	1	0	11.62	0	0-1
	1745	20300	20	16QAM	1	99	11.64	0	0-1
	1745	20300	20	16QAM	50	25	11.92	0	0-2
	1745	20300	20	16QAM	100	0	11.74	0	0-2

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9.2.3 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05:

- 1) Per Page 4, 3) A), QPSK with 50% RB is required for the highest bandwidth.
- 2) Per Page 4, footnote 2, since the maximum output powers across high, mid., and low channels is < 0.5 dB, mid channel was tested for QPSK, 50% RB allocation. Low and high channel SAR tests were not required for QPSK, 50% RB allocation since the SAR was < 0.8 W/kg. When there are less than 3 channels required based on the size of the band and bandwidth of the signal, the channel with the maximum output power was tested.
- 3) Per Page 4, 3) B), QPSK with 1 RB for both channel edges are required for the highest bandwidth.
- 4) Per Page 4, footnote 6, QPSK 1 RB allocation SAR tests were performed on the highest output power channel for the RB allocation since the average output power of the 1 RB allocations were > 0.5 dB higher than the 50% RB allocation for QPSK. 1 RB configurations are considered together for a single channel selection.
- 5) Per Page 4, 3) B), I), since the SAR for QPSK 1 RB allocation tests was <1.45 W/kg, testing on the other channels was not required.
- 6) Per Page 4, 4) A), 16QAM with 50% RB was required for the highest bandwidth on the channel with the highest measured SAR for QPSK with 50% RB allocation.
- 7) Per Page 4, 4) A), I), since the SAR for 16 QAM, 50 % allocation tests was <1.45 W/kg, testing on the other channels was not required.
- 8) Per Page 4, 4) B) and Page 5 footnote 9, 16QAM with 1RB for both channel edges was required for the highest bandwidth on the highest output power channel for the 1 RB allocation since the average output power of the 1 RB allocation was >0.5 dB higher than the 50% allocation for 16 QAM. 1 RB configurations are considered together for a single channel selection.
- 9) Per Page 5, 4) B), I), since the SAR for 16 QAM 1 RB allocation tests was <1.45 W/kg, testing on the other channels was not required.
- 10) Per Page 4, 4), A) I) and Page 5, 4), A), I), 100% RB Allocation was not required to be tested since the SAR was not > 1.45 W/kg for the highest bandwidth.
- 11) Per Page 5, 5) B) I), smaller bandwidths were not required to be tested since the SAR was not > 1.45 W/kg for the highest bandwidth and the maximum average output power of the smaller bandwidths across all channels and configurations was not more than 0.5 dB higher than the higher bandwidths.
- 12) The Bolded powers were tested for SAR.



Figure 9-2
Power Measurement Setup

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9.3 WLAN Conducted Powers

Table 9-13
IEEE 802.11b Average RF Power

Mode	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
802.11b	2412	1	15.15	14.50	14.09	14.00
802.11b	2437	6	16.75	15.81	15.95	15.82
802.11b	2462	11	16.87	15.20	15.30	15.21

Table 9-14
IEEE 802.11g Average RF Power

Mode	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11g	2412	1	12.81	12.83	12.58	12.70	12.60	12.75	12.70	12.80
802.11g	2437	6	12.80	12.53	12.50	12.70	12.50	12.70	12.51	12.52
802.11g	2462	11	13.10	13.22	13.10	13.00	12.92	12.85	12.90	13.20

Table 9-15
IEEE 802.11n Average RF Power

Mode	Freq [MHz]	Channel	802.11n Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5/7.2	13/14.4	19.5/21.7	26/28.9	39/43.4	52/57.8	58.5/65	65/72.2
802.11n	2412	1	11.40	11.30	11.35	11.75	11.20	11.60	11.80	11.30
802.11n	2437	6	11.00	11.50	11.15	11.16	11.06	10.90	11.20	10.70
802.11n	2462	11	11.60	11.50	11.60	11.70	11.90	11.40	11.80	11.60

Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes:

- For 2.4 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other IEEE 802.11 modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The bolded data rate and channel above were tested for SAR.

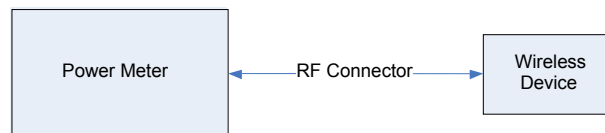


Figure 9-3
Power Measurement Setup

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C°)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
8/2/2012	740B	23.2	740	0.973	53.55	0.961	55.733	1.25%	-3.92%
			755	0.991	53.52	0.963	55.649	2.91%	-3.83%
			770	1.008	53.22	0.964	55.564	4.56%	-4.22%
			785	1.011	53.08	0.965	55.480	4.77%	-4.33%
8/3/2012	740B	23.6	740	0.965	53.71	0.961	55.733	0.42%	-3.63%
			755	0.979	53.35	0.963	55.649	1.66%	-4.13%
			770	0.986	53.30	0.964	55.564	2.28%	-4.07%
			785	1.007	53.23	0.965	55.480	4.35%	-4.06%
8/16/2012	740B	23.3	740	0.967	53.34	0.961	55.733	0.62%	-4.29%
			755	0.981	53.19	0.963	55.649	1.87%	-4.42%
			770	0.995	53.00	0.964	55.564	3.22%	-4.61%
			785	1.011	52.82	0.965	55.480	4.77%	-4.79%
7/24/2012	835B	23.1	820	0.972	54.91	0.969	55.284	0.31%	-0.68%
			835	0.987	54.79	0.970	55.200	1.75%	-0.74%
			850	1.001	54.70	0.988	55.154	1.32%	-0.82%
7/27/2012	835B	24.9	820	0.961	55.42	0.969	55.284	-0.83%	0.25%
			835	0.978	55.34	0.970	55.200	0.82%	0.25%
			850	0.992	55.18	0.988	55.154	0.40%	0.05%
8/14/2012	835B	24.5	820	0.985	54.32	0.969	55.284	1.65%	-1.74%
			835	1.004	54.38	0.970	55.200	3.51%	-1.49%
			850	1.021	53.07	0.988	55.154	3.34%	-3.78%
7/30/2012	1750B	21.7	1710	1.414	53.48	1.460	53.540	-3.15%	-0.11%
			1750	1.453	53.02	1.490	53.430	-2.48%	-0.77%
			1790	1.515	53.08	1.510	53.330	0.33%	-0.47%
8/4/2012	1750B	21.9	1710	1.409	53.11	1.460	53.540	-3.49%	-0.80%
			1750	1.436	53.10	1.490	53.430	-3.62%	-0.62%
			1790	1.501	52.81	1.510	53.330	-0.60%	-0.98%
8/14/2012	1750B	21.1	1710	1.429	52.39	1.460	53.540	-2.12%	-2.15%
			1750	1.463	52.38	1.490	53.430	-1.81%	-1.97%
			1790	1.515	52.22	1.510	53.330	0.33%	-2.08%
7/31/2012	1900B	21.1	1850	1.491	51.81	1.520	53.300	-1.91%	-2.80%
			1880	1.558	51.88	1.520	53.300	2.50%	-2.66%
			1910	1.571	51.74	1.520	53.300	3.36%	-2.93%
8/15/2012	1900B	23.3	1850	1.455	52.68	1.520	53.300	-4.28%	-1.16%
			1880	1.467	52.59	1.520	53.300	-3.49%	-1.33%
			1910	1.529	52.44	1.520	53.300	0.59%	-1.61%
7/25/2012	2450B	22.2	2401	1.877	50.38	1.903	52.765	-1.37%	-4.52%
			2450	1.957	50.28	1.950	52.700	0.36%	-4.59%
			2499	2.001	50.30	2.019	52.638	-0.89%	-4.44%

The above measured tissue parameters were used in the DASY software to perform interpolation via the DASY software to determine actual dielectric parameters at the test frequencies (per IEEE 1528 6.6.1.2). The SAR test plots may slightly differ from the table above since the DASY software rounds to three significant digits.

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10.2 Measurement Procedure for Tissue verification

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the sample which was placed in a nonmetallic container.
Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity ϵ can be calculated from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r(\mu_0\epsilon_r'\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho' \cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

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10.3 Test System Verification

Prior to assessment, the system is verified to $\pm 10\%$ of the manufacturer SAR measurement on the reference dipole at the time of calibration.

Table 10-2
System Verification Results

System Verification TARGET & MEASURED											
Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation (%)
750	Body	08/02/2012	24.2	22.5	0.100	1003	3209	0.875	8.720	8.750	0.34%
750	Body	08/03/2012	24.4	22.7	0.100	1003	3209	0.869	8.720	8.690	-0.34%
750	Body	08/16/2012	24.2	22.5	0.100	1003	3561	0.84	8.720	8.400	-3.67%
835	Body	07/24/2012	24.0	22.8	0.100	4d119	3258	0.982	9.560	9.820	2.72%
835	Body	07/27/2012	24.4	23.8	0.100	4d119	3258	0.986	9.560	9.860	3.14%
835	Body	08/14/2012	24.8	24.0	0.100	4d119	3258	1.01	9.560	10.100	5.65%
1750	Body	07/30/2012	21.4	21.1	0.100	1051	3213	3.84	37.600	38.400	2.13%
1750	Body	08/04/2012	23.4	21.2	0.100	1051	3288	3.72	37.600	37.200	-1.06%
1750	Body	08/14/2012	23.3	22.9	0.100	1051	3213	3.89	37.600	38.900	3.46%
1900	Body	07/31/2012	21.9	21.1	0.100	5d149	3287	4.13	39.300	41.300	5.09%
1900	Body	08/15/2012	21.9	22.1	0.100	5d149	3287	3.83	39.300	38.300	-2.54%
2450	Body	07/25/2012	20.6	20.3	0.040	882	3288	2.02	50.300	50.500	0.40%

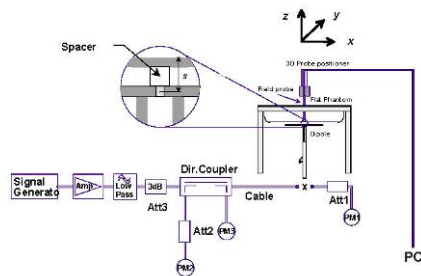


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Body SAR Data

Table 11-1
CDMA Body SAR Data

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Side	SAR (1g)
MHz	Ch.									(W/kg)
824.70	1013	Cell. CDMA	EVDO Rev. 0	24.50	24.65	-0.03	1.1 cm	0891-1004	back	0.940
836.52	384	Cell. CDMA	EVDO Rev. 0	24.50	24.79	0.01	1.1 cm	0891-1004	back	0.881
848.31	777	Cell. CDMA	EVDO Rev. 0	24.50	24.69	-0.19	1.1 cm	0891-1004	back	0.891
836.52	384	Cell. CDMA	EVDO Rev. 0	24.50	24.79	-0.01	0.8 cm	0891-1004	top	0.389
824.70	1013	Cell. CDMA	EVDO Rev. 0	24.50	24.65	0.03	0.0 cm	0891-1004	right	0.861
836.52	384	Cell. CDMA	EVDO Rev. 0	24.50	24.79	-0.05	0.0 cm	0891-1004	right	0.903
848.31	777	Cell. CDMA	EVDO Rev. 0	24.50	24.69	-0.05	0.0 cm	0891-1004	right	0.924
836.52	384	Cell. CDMA	EVDO Rev. 0	24.50	24.79	-0.01	0.0 cm	0891-1004	vertex	0.197
836.52	384	Cell. CDMA	EVDO Rev. 0	20.00	20.13	0.01	0.0 cm	0891-1002	back*	0.745
836.52	384	Cell. CDMA	EVDO Rev. 0	20.00	20.13	-0.02	0.0 cm	0891-1002	top*	0.192
1880.00	600	PCS CDMA	EVDO Rev. 0	24.50	24.76	-0.07	1.1 cm	0891-1004	back	0.579
1880.00	600	PCS CDMA	EVDO Rev. 0	24.50	24.76	0.02	0.8 cm	0891-1004	top	0.432
1880.00	600	PCS CDMA	EVDO Rev. 0	24.50	24.76	0.03	0.0 cm	0891-1004	right	0.345
1880.00	600	PCS CDMA	EVDO Rev. 0	24.50	24.76	-0.02	0.0 cm	0891-1004	vertex	0.442
1880.00	600	PCS CDMA	EVDO Rev. 0	15.00	15.10	-0.03	0.0 cm	0891-1002	back*	0.790
1880.00	600	PCS CDMA	EVDO Rev. 0	15.00	15.10	-0.08	0.0 cm	0891-1002	top*	0.360
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram			

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Table 11-2
LTE Band 13 Body SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Bandwidth [MHz]	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)	
MHz	Ch.													(W/kg)	
782.00	23230	Mid	LTE Band 13	10	22.00	21.91	0.00	1	0891-1006	QPSK	25	12	1.1 cm	back	0.499
782.00	23230	Mid	LTE Band 13	10	23.00	23.10	-0.02	0	0891-1006	QPSK	1	0	1.1 cm	back	0.613
782.00	23230	Mid	LTE Band 13	10	23.00	23.12	-0.02	0	0891-1006	QPSK	1	49	1.1 cm	back	0.637
782.00	23230	Mid	LTE Band 13	10	21.00	21.06	0.09	2	0891-1006	16 QAM	25	12	1.1 cm	back	0.401
782.00	23230	Mid	LTE Band 13	10	22.00	21.74	0.00	1	0891-1006	16 QAM	1	0	1.1 cm	back	0.463
782.00	23230	Mid	LTE Band 13	10	22.00	21.76	-0.01	1	0891-1006	16 QAM	1	49	1.1 cm	back	0.481
782.00	23230	Mid	LTE Band 13	10	22.00	21.91	-0.01	1	0891-1006	QPSK	25	12	0.8 cm	top	0.276
782.00	23230	Mid	LTE Band 13	10	23.00	23.10	-0.04	0	0891-1006	QPSK	1	0	0.8 cm	top	0.332
782.00	23230	Mid	LTE Band 13	10	23.00	23.12	0.00	0	0891-1006	QPSK	1	49	0.8 cm	top	0.356
782.00	23230	Mid	LTE Band 13	10	21.00	21.06	0.03	2	0891-1006	16 QAM	25	12	0.8 cm	top	0.232
782.00	23230	Mid	LTE Band 13	10	22.00	21.74	-0.02	1	0891-1006	16 QAM	1	0	0.8 cm	top	0.246
782.00	23230	Mid	LTE Band 13	10	22.00	21.76	-0.03	1	0891-1006	16 QAM	1	49	0.8 cm	top	0.262
782.00	23230	Mid	LTE Band 13	10	22.00	21.91	-0.15	1	0891-1006	QPSK	25	12	0.0 cm	right	0.460
782.00	23230	Mid	LTE Band 13	10	23.00	23.10	-0.15	0	0891-1006	QPSK	1	0	0.0 cm	right	0.554
782.00	23230	Mid	LTE Band 13	10	23.00	23.12	-0.04	0	0891-1006	QPSK	1	49	0.0 cm	right	0.590
782.00	23230	Mid	LTE Band 13	10	21.00	21.06	-0.14	2	0891-1006	16 QAM	25	12	0.0 cm	right	0.378
782.00	23230	Mid	LTE Band 13	10	22.00	21.74	-0.06	1	0891-1006	16 QAM	1	0	0.0 cm	right	0.419
782.00	23230	Mid	LTE Band 13	10	22.00	21.76	-0.07	1	0891-1006	16 QAM	1	49	0.0 cm	right	0.446
782.00	23230	Mid	LTE Band 13	10	22.00	21.91	0.08	1	0891-1006	QPSK	25	12	0.0 cm	vertex	0.124
782.00	23230	Mid	LTE Band 13	10	23.00	23.10	-0.02	0	0891-1006	QPSK	1	0	0.0 cm	vertex	0.154
782.00	23230	Mid	LTE Band 13	10	23.00	23.12	0.08	0	0891-1006	QPSK	1	49	0.0 cm	vertex	0.167
782.00	23230	Mid	LTE Band 13	10	21.00	21.06	0.10	2	0891-1006	16 QAM	25	12	0.0 cm	vertex	0.101
782.00	23230	Mid	LTE Band 13	10	22.00	21.74	-0.02	1	0891-1006	16 QAM	1	0	0.0 cm	vertex	0.112
782.00	23230	Mid	LTE Band 13	10	22.00	21.76	0.03	1	0891-1006	16 QAM	1	49	0.0 cm	vertex	0.120
782.00	23230	Mid	LTE Band 13	10	19.00	18.98	-0.06	0	0891-1005	QPSK	25	12	0.0 cm	back*	0.650
782.00	23230	Mid	LTE Band 13	10	19.00	19.30	-0.06	0	0891-1005	QPSK	1	0	0.0 cm	back*	0.792
782.00	23230	Mid	LTE Band 13	10	19.00	19.09	-0.05	0	0891-1005	QPSK	1	49	0.0 cm	back*	0.762
782.00	23230	Mid	LTE Band 13	10	19.00	18.98	-0.07	0	0891-1005	16 QAM	25	12	0.0 cm	back*	0.637
782.00	23230	Mid	LTE Band 13	10	19.00	18.86	-0.06	0	0891-1005	16 QAM	1	0	0.0 cm	back*	0.751
782.00	23230	Mid	LTE Band 13	10	19.00	18.62	-0.06	0	0891-1005	16 QAM	1	49	0.0 cm	back*	0.727
782.00	23230	Mid	LTE Band 13	10	19.00	18.98	0.09	0	0891-1005	QPSK	25	12	0.0 cm	top*	0.211
782.00	23230	Mid	LTE Band 13	10	19.00	19.30	0.04	0	0891-1005	QPSK	1	0	0.0 cm	top*	0.237
782.00	23230	Mid	LTE Band 13	10	19.00	19.09	-0.10	0	0891-1005	QPSK	1	49	0.0 cm	top*	0.214
782.00	23230	Mid	LTE Band 13	10	19.00	18.98	0.02	0	0891-1005	16 QAM	25	12	0.0 cm	top*	0.208
782.00	23230	Mid	LTE Band 13	10	19.00	18.86	0.00	0	0891-1005	16 QAM	1	0	0.0 cm	top*	0.223
782.00	23230	Mid	LTE Band 13	10	19.00	18.62	0.07	0	0891-1005	16 QAM	1	49	0.0 cm	top*	0.197
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Body						
Spatial Peak									1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population									averaged over 1 gram						

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Table 11-3
LTE Band 4 (AWS) Body SAR Data

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g) (W/kg)
MHz	Ch.	High													
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	21.50	-0.02	1	0891-1006	QPSK	50	25	1.1 cm	back	0.406
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.00	23.01	0.03	0	0891-1006	QPSK	1	0	1.1 cm	back	0.248
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.00	22.77	0.04	0	0891-1006	QPSK	1	99	1.1 cm	back	0.393
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.00	20.53	-0.10	2	0891-1006	16 QAM	50	25	1.1 cm	back	0.375
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	22.24	-0.02	1	0891-1006	16 QAM	1	0	1.1 cm	back	0.262
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	22.02	-0.10	1	0891-1006	16 QAM	1	99	1.1 cm	back	0.416
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	21.50	0.12	1	0891-1006	QPSK	50	25	0.8 cm	top	0.207
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.00	23.01	0.12	0	0891-1006	QPSK	1	0	0.8 cm	top	0.207
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.00	22.77	0.01	0	0891-1006	QPSK	1	99	0.8 cm	top	0.330
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.00	20.53	-0.02	2	0891-1006	16 QAM	50	25	0.8 cm	top	0.277
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	22.24	0.04	1	0891-1006	16 QAM	1	0	0.8 cm	top	0.195
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	22.02	-0.03	1	0891-1006	16 QAM	1	99	0.8 cm	top	0.303
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	21.50	0.01	1	0891-1006	QPSK	50	25	0.0 cm	right	0.209
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.00	23.01	-0.07	0	0891-1006	QPSK	1	0	0.0 cm	right	0.154
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.00	22.77	-0.01	0	0891-1006	QPSK	1	99	0.0 cm	right	0.213
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.00	20.53	-0.01	2	0891-1006	16 QAM	50	25	0.0 cm	right	0.207
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	22.24	0.02	1	0891-1006	16 QAM	1	0	0.0 cm	right	0.159
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	22.02	0.04	1	0891-1006	16 QAM	1	99	0.0 cm	right	0.213
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	21.50	-0.03	1	0891-1006	QPSK	50	25	0.0 cm	Vertex	0.363
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.00	23.01	0.06	0	0891-1006	QPSK	1	0	0.0 cm	Vertex	0.240
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.00	22.77	0.05	0	0891-1006	QPSK	1	99	0.0 cm	Vertex	0.363
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.00	20.53	-0.03	2	0891-1006	16 QAM	50	25	0.0 cm	Vertex	0.357
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	22.24	0.01	1	0891-1006	16 QAM	1	0	0.0 cm	Vertex	0.245
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.00	22.02	-0.03	1	0891-1006	16 QAM	1	99	0.0 cm	Vertex	0.363
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	12.26	-0.05	0	0891-1005	QPSK	50	25	0.0 cm	back*	0.638
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	11.54	-0.05	0	0891-1005	QPSK	1	0	0.0 cm	back*	0.645
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	11.51	-0.06	0	0891-1005	QPSK	1	99	0.0 cm	back*	0.527
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	12.01	-0.04	0	0891-1005	16 QAM	50	25	0.0 cm	back*	0.600
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	11.68	-0.05	0	0891-1005	16 QAM	1	0	0.0 cm	back*	0.648
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	11.57	-0.06	0	0891-1005	16 QAM	1	99	0.0 cm	back*	0.576
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	12.26	-0.05	0	0891-1005	QPSK	50	25	0.0 cm	top*	0.204
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	11.54	-0.02	0	0891-1005	QPSK	1	0	0.0 cm	top*	0.222
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	11.51	-0.08	0	0891-1005	QPSK	1	99	0.0 cm	top*	0.166
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	12.01	0.00	0	0891-1005	16 QAM	50	25	0.0 cm	top*	0.188
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	11.68	0.02	0	0891-1005	16 QAM	1	0	0.0 cm	top*	0.224
1732.50	20175	Mid	LTE Band 4 (AWS)	20	12.00	11.57	-0.01	0	0891-1005	16 QAM	1	99	0.0 cm	top*	0.179
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram						

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Table 11-4
WLAN Hotspot SAR Data

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	SAR (1g)
MHz	Ch.									(W/kg)
2462	11	IEEE 802.11b	DSSS	16.87	-0.07	0.0 cm	0891-1001	1	back	0.448
2462	11	IEEE 802.11b	DSSS	16.87	-0.11	0.0 cm	0891-1001	1	right	0.282
ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Body				
Spatial Peak						1.6 W/kg (mW/g)				
Uncontrolled Exposure/General Population						averaged over 1 gram				

11.2 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR value with the position of the device configured for SAR testing according to KDB 447498 Section 4.
2. Batteries are fully charged for all readings.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. Liquid tissue depth was at least 15.0 cm. To confirm the proper SAR liquid depth, the z-axis plots from the system verifications were included since the system verifications were performed using the same liquid, probe and DAE as the SAR tests in the same time period.
5. The measured SAR when extrapolated to the maximum tune-up power tolerance levels remains compliant for all operating configurations.
6. Per KDB Publication 447498 4) b) i) the back side is required to be tested touching the flat phantom for large sized tablet devices.
7. This device is capable of multiple display orientations supporting both portrait and landscape positions. Therefore per KDB 447498 4) b) ii) (2), SAR testing applies for the tablet edges with antennas located within 5 cm of each tablet edge closest to the user. According to KDB 447498 4) b) ii) (2), for each antenna, SAR is required for the edge with the most conservative exposure condition.
8. Based on the positioning of the Cell./PCS CDMA and LTE Band 4/13 Tx/Rx Antenna, Vertex SAR was evaluated for the top-right corner of the DUT for the CDMA and LTE modes with the max power samples using a spacing of 0.0 cm from the phantom.
9. (*) denotes power reduction active.

CDMA Notes:

1. Per FCC KDB Publication 447498, if the SAR measured at the middle channel for each test configuration is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
2. CDMA Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01 procedures for data devices. Since the average output power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, Rev. A SAR is not required. SAR is not required for 1x RTT for Ev-Do hotspot devices when the maximum average output of each channel is less than 1/4 dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0.

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LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Test Considerations for LTE handsets and Data Modems KDB 941225 D05 Publication. General test procedures can be found in Section 7.3.3.
2. MPR is implemented for this device by the manufacturer when the proximity sensor is not active (device at maximum power). The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
4. LTE Band 4 (AWS) SAR was measured with a probe calibrated at 1750 MHz and is valid for measuring SAR from ± 50 MHz. The 1750MHz specific liquid was verified with specific probe calibration factors as required per FCC KDB Publication 450824 D01.

WLAN Notes:

1. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes for 2.4 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11b. Other IEEE 802.11 modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
2. WLAN transmission was verified using an uncalibrated spectrum analyzer.
3. Since the maximum extrapolated peak SAR of the zoom scans for the maximum output channel were <1.6 W/kg and the 1g averaged SAR was <0.8 W/kg, SAR testing on other channels was not required.
4. There is no power reduction for WLAN.

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12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Simultaneous Transmission Introduction

Per KDB Publication 447498, standalone Bluetooth SAR tests were not required. Standalone SAR tests for WLAN were required. See Section 1.4(A) for more information.

Possible simultaneous transmissions for this device indicated in Table 1-1 were numerically summed using stand-alone SAR data and are shown in the following tables.

12.2 Body Simultaneous Transmission Analysis

Table 12-1
Simultaneous Transmission Scenario (Body at 0.0 cm)

Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.745	0.448	1.193	Body SAR	Back	0.790	0.448	1.238
	Top	0.192	-	0.192		Top	0.360	-	0.360
	Bottom	-	-	0.000		Bottom	-	-	0.000
	Right	0.924	0.282	1.206		Right	0.345	0.282	0.627
	Left	-	-	0.000		Left	-	-	0.000
	Vertex	0.197	-	0.197		Vertex	0.442	-	0.442

Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.792	0.448	1.240	Body SAR	Back	0.648	0.448	1.096
	Top	0.237	-	0.237		Top	0.224	-	0.224
	Bottom	-	-	0.000		Bottom	-	-	0.000
	Right	0.590	0.282	0.872		Right	0.213	0.282	0.495
	Left	-	-	0.000		Left	-	-	0.000
	Vertex	0.167	-	0.167		Vertex	0.363	-	0.363

Table 12-2
Simultaneous Transmission Scenario (Body at 0.8 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Top Edge	Cell. EVDO	0.389	-	0.389
Top Edge	PCS EVDO	0.432	-	0.432
Top Edge	LTE Band 13	0.356	-	0.356
Top Edge	LTE Band 4 (AWS)	0.330	-	0.330

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Table 12-3
Simultaneous Transmission Scenario (Body at 1.1 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. EVDO	0.940	<0.448	<1.388
Back Side	PCS EVDO	0.579	<0.448	<1.027
Back Side	LTE Band 13	0.637	<0.448	<1.085
Back Side	LTE Band 4 (AWS)	0.416	<0.448	<0.864

Notes:

1. For SAR calculations at 1.1 cm, WLAN SAR values for 0.0 cm were used since the 0.0 cm test distance for WLAN was more conservative.
2. "<" denotes that the 0.0 cm WLAN SAR values were used for summation purposes.
3. "-" indicates configurations that were not required per KDB Publication 447498.

12.3 Simultaneous Transmission Conclusion

The above numerical summed SAR was below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit. No volumetric SAR summation is required per FCC KDB Publication 447498.

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13 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	10/10/2011	Annual	10/10/2012	3613A00315
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/4/2012	Annual	4/4/2013	JP38020182
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/5/2012	Annual	4/5/2013	MY45470194
Agilent	8648D	Signal Generator	4/3/2012	Annual	4/3/2013	3629U00687
Agilent	E5515C	Wireless Communications Test Set	2/12/2012	Annual	2/12/2013	GB45360985
Agilent	E5515C	Wireless Communications Test Set	2/14/2012	Annual	2/14/2013	GB43163447
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/3/2012	Annual	4/3/2013	US37390350
Agilent	85070E	Dielectric Probe Kit	3/8/2012	Annual	3/8/2013	MY44300633
Agilent	85047A	S-Parameter Test Set	N/A	N/A	N/A	2904A00579
Amplifier Research	5S1G4	5W, 800MHz-4.2GHz	CBT	N/A	CBT	21910
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	5318
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	5442
Anritsu	ML2438A	Power Meter	2/14/2012	Annual	2/14/2013	1190013
Anritsu	ML2438A	Power Meter	2/14/2012	Annual	2/14/2013	98150041
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	5821
Anritsu	MT8820C	Radio Communication Tester	11/11/2011	Annual	11/11/2012	6200901190
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
Control Company	61220-416	Long-Stem Thermometer	7/1/2011	Biennial	7/1/2013	111642941
Control Company	36934-158	Wall-Mounted Thermometer	1/4/2012	Biennial	1/4/2014	122014497
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/12/2011	Annual	10/12/2012	1833460
Gigatronics	8651A	Universal Power Meter	10/12/2011	Annual	10/12/2012	8650319
Intelligent Weigh	PD-3000	Electronic Balance	3/27/2012	Annual	3/27/2013	11081534
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	SMI0Q3B	Signal Generator	4/5/2012	Annual	4/5/2013	DE27259
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	11/30/2011	Annual	11/30/2012	101699
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	3/5/2012	Annual	3/5/2013	102060
Seekonk	NC-100	Torque Wrench (8" lb)	11/29/2011	Triennial	11/29/2014	21053
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/20/2012	Annual	2/20/2013	649
SPEAG	D750V3	750 MHz Dipole	1/27/2012	Annual	1/27/2013	1003
SPEAG	ES3DV3	SAR Probe	4/24/2012	Annual	4/24/2013	3213
SPEAG	ES3DV3	SAR Probe	3/16/2012	Annual	3/16/2013	3209
SPEAG	ES3DV3	SAR Probe	2/21/2012	Annual	2/21/2013	3258
SPEAG	D1750V2	1750 MHz SAR Dipole	4/24/2012	Annual	4/24/2013	1051
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/18/2012	Annual	1/18/2013	1272
SPEAG	D835V2	835 MHz SAR Dipole	4/20/2012	Annual	4/20/2013	4d119
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2012	Annual	2/15/2013	1323
SPEAG	ES3DV3	SAR Probe	2/7/2012	Annual	2/7/2013	3288
SPEAG	D2450V2	2450 MHz SAR Dipole	2/7/2012	Annual	2/7/2013	882
SPEAG	D1900V2	1900 MHz SAR Dipole	2/22/2012	Annual	2/22/2013	5d149
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/12/2012	Annual	4/12/2013	1333
SPEAG	ES3DV3	SAR Probe	2/7/2012	Annual	2/7/2013	3287
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/19/2012	Annual	4/19/2013	665
SPEAG	EX3DV4	SAR Probe	6/26/2012	Annual	6/26/2013	3561
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/7/2012	Annual	5/7/2013	1334
SPEAG	DAK-3.5	Dielectric Assessment Kit	6/19/2012	Annual	6/19/2013	1070
Tektronix	RSA-6114A	Real Time Spectrum Analyzer	4/5/2012	Annual	4/5/2013	B010177
VWR	36934-158	Wall-Mounted Thermometer	1/21/2011	Biennial	1/21/2013	111286445
VWR	36934-158	Wall-Mounted Thermometer	1/21/2011	Biennial	1/21/2013	111286460
VWR	62344-925	Mini-Thermometer	10/24/2011	Biennial	10/24/2013	111886430

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, attenuator, amplifier, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

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14 MEASUREMENT UNCERTAINTIES

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c _f 1gm	c _g 10 gms	1gm u _f (± %)	10gms u _g (± %)	v _i
Measurement System									
Probe Calibration	E.2.1	6.0	N	1	1.0	1.0	6.0	6.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)							RSS	12.1	11.7
Expanded Uncertainty (95% CONFIDENCE LEVEL)							k=2	24.2	23.5

The above measurement uncertainties are according to IEEE Std. 1528-2003

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15 CONCLUSION

15.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Industry Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

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16 REFERENCES

- [1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.
- [2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.
- [3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.
- [4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.
- [5] Federal Communications Commission, OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, June 2001.
- [6] IEEE Standards Coordinating Committee 34 – IEEE Std. 1528-2003, Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices.
- [7] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.
- [8] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.
- [9] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 120-124.
- [10] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.
- [11] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.
- [12] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Head Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.
- [13] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.
- [14] G. Hartsgrrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.
- [15] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.
- [16] W. Gander, Computermathematick, Birkhaeuser, Basel, 1992.
- [17] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.

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- [18] Federal Communications Commission, OET Bulletin 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields. Supplement C, Dec. 1997.
- [19] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.
- [20] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.
- [21] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hochschule Zürich, Dosimetric Evaluation of the Cellular Phone.
- [22] IEC 62209-1, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz), Feb. 2005.
- [23] Industry Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 4, March 2010.
- [24] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz – 300 GHz, 2009
- [25] FCC Public Notice DA-02-1438. Office of Engineering and Technology Announces a Transition Period for the Phantom Requirements of Supplement C to OET Bulletin 65, June 19, 2002
- [26] FCC SAR Measurement Procedures for 3G Devices KDB Publication 941225
- [27] SAR Measurement procedures for IEEE 802.11a/b/g KDB Publication 248227
- [28] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publication 648474
- [29] FCC Application Note for SAR Probe Calibration and System Verification Consideration for Measurements at 150 MHz – 3 GHz, KDB Publication 450824
- [30] FCC SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens, KDB Publication 616217
- [31] FCC SAR Measurement Requirements for 3 – 6 GHz, KDB Publication 865664
- [32] FCC Mobile Portable RF Exposure Procedure, KDB Publication 447498
- [33] FCC SAR Procedures for Dongle Transmitters, KDB Publication 447498
- [34] Anexo à Resolução No. 533, de 10 de Setembro de 2009.
- [35] FCC SAR Test Considerations for LTE Handsets and Data Modems, KDB Publication 941225.
- [36] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.
- [37] FCC Hot Spot SAR v01, KDB Publication 941225 D06.

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1006

Communication System: LTE RF; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 740 Body; Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 1.008 \text{ mho/m}$; $\epsilon_r = 52.856$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.1 cm

Test Date: 08-16-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 47 (80);SEMCAD X Version 14.6.5 (6469)

**Mode: LTE Band 13, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, RB Offset 49**

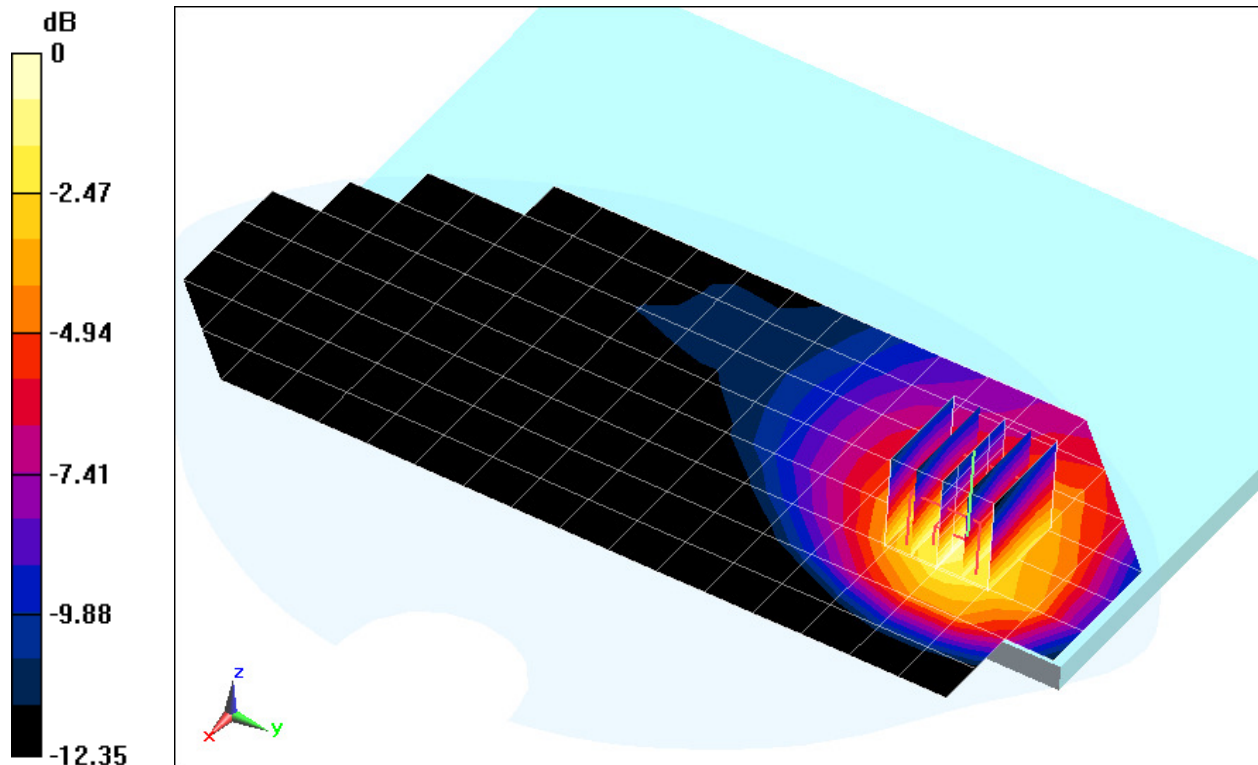
Area Scan (9x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 26.291 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.978 mW/g

SAR(1 g) = 0.637 mW/g; SAR(10 g) = 0.408 mW/g



0 dB = 0.688 mW/g = -3.25 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1006

Communication System: LTE RF; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 740 Body; Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 1.008 \text{ mho/m}$; $\epsilon_r = 52.856$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.8 cm

Test Date: 08-16-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

**Mode: LTE Band 13, Body SAR, Top Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, RB Offset 49**

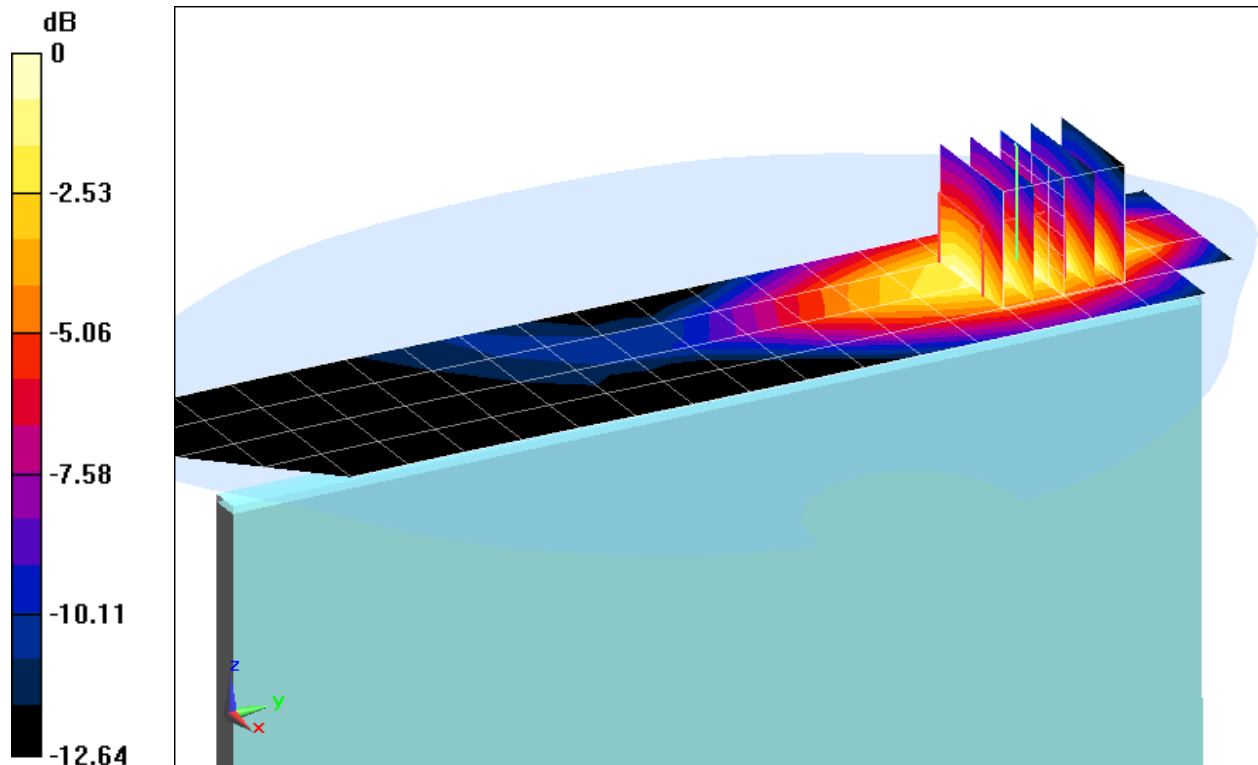
Area Scan (5x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 18.883 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.568 mW/g

SAR(1 g) = 0.356 mW/g; SAR(10 g) = 0.229 mW/g



0 dB = 0.370 mW/g = -8.64 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1005

Communication System: LTE RF; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 770 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 1.003 \text{ mho/m}$; $\epsilon_r = 53.244$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-03-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3209; ConvF(6.23, 6.23, 6.23); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 2/15/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Body SAR, Top Edge, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, RB Offset 0

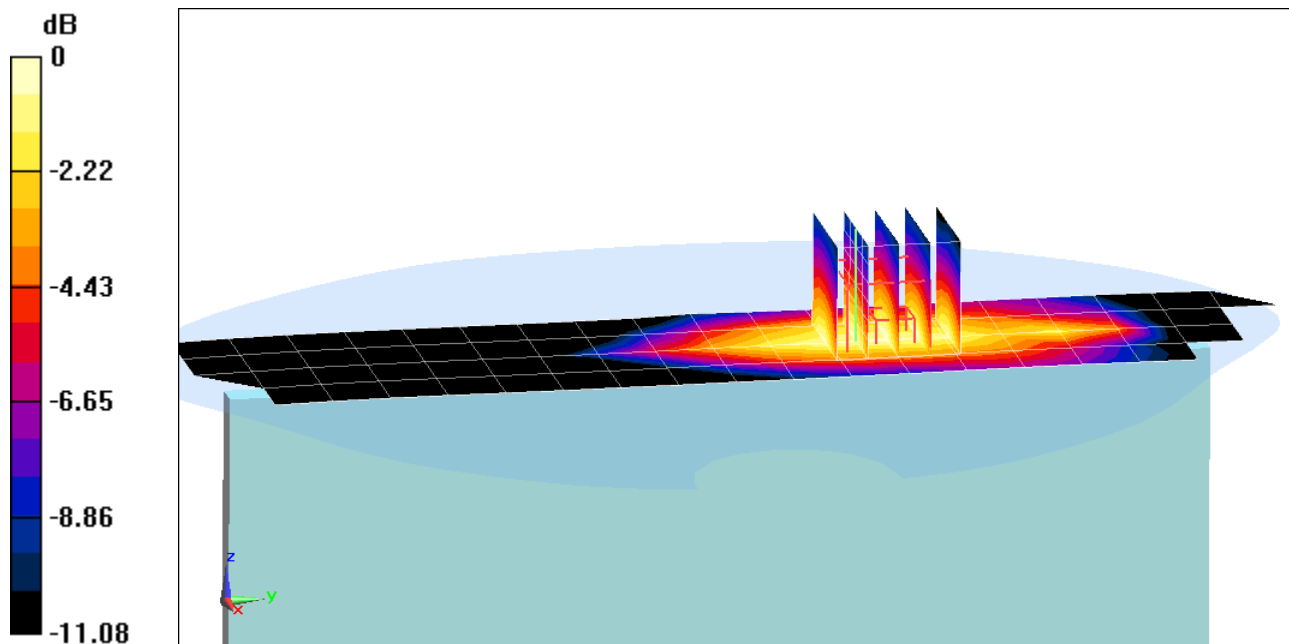
Area Scan (5x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 16.295 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.3500 W/kg

SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.154 mW/g



0 dB = 0.250mW/g = -12.04 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1006

Communication System: LTE RF; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 740 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 53.108$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-02-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(6.23, 6.23, 6.23); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 2/15/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Body SAR, Vertex, Mid.ch

10 MHz Bandwidth, QPSK, 1 RB, RB Offset 49

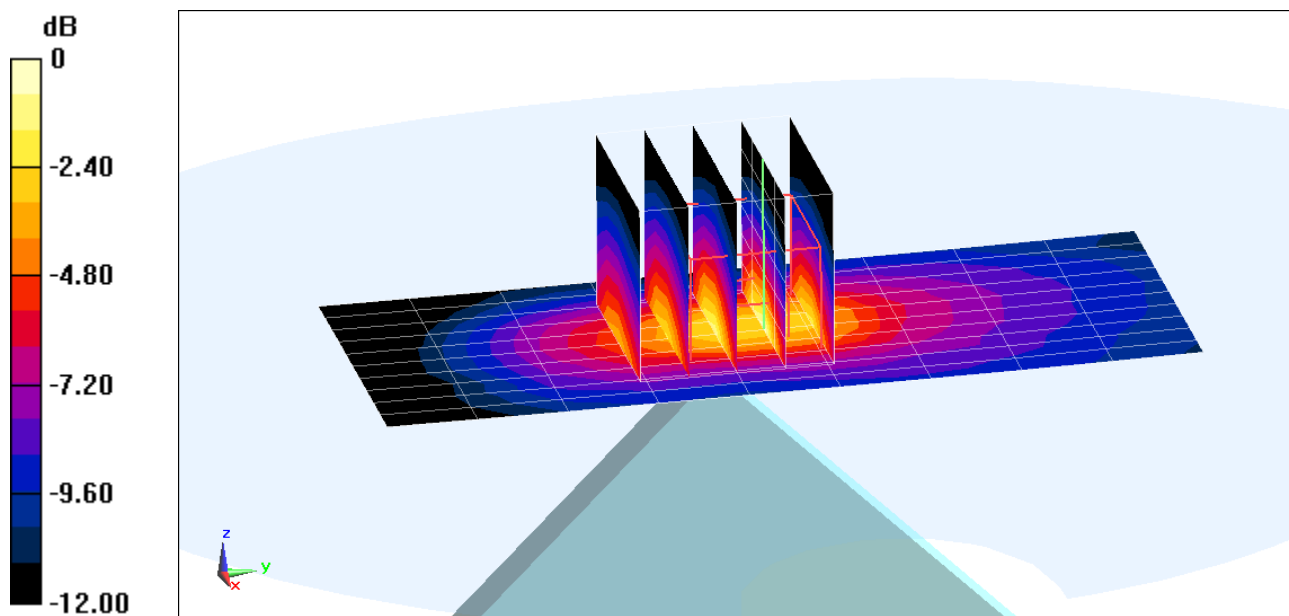
Area Scan (11x10x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 12.813 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.3560 W/kg

SAR(1 g) = 0.167 mW/g; SAR(10 g) = 0.084 mW/g



0 dB = 0.200mW/g = -13.98 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1005

Communication System: LTE RF; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 770 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 1.003 \text{ mho/m}$; $\epsilon_r = 53.244$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-03-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3209; ConvF(6.23, 6.23, 6.23); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 2/15/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Body SAR, Back Side, Mid.ch

10 MHz Bandwidth, QPSK, 1 RB, RB Offset 0

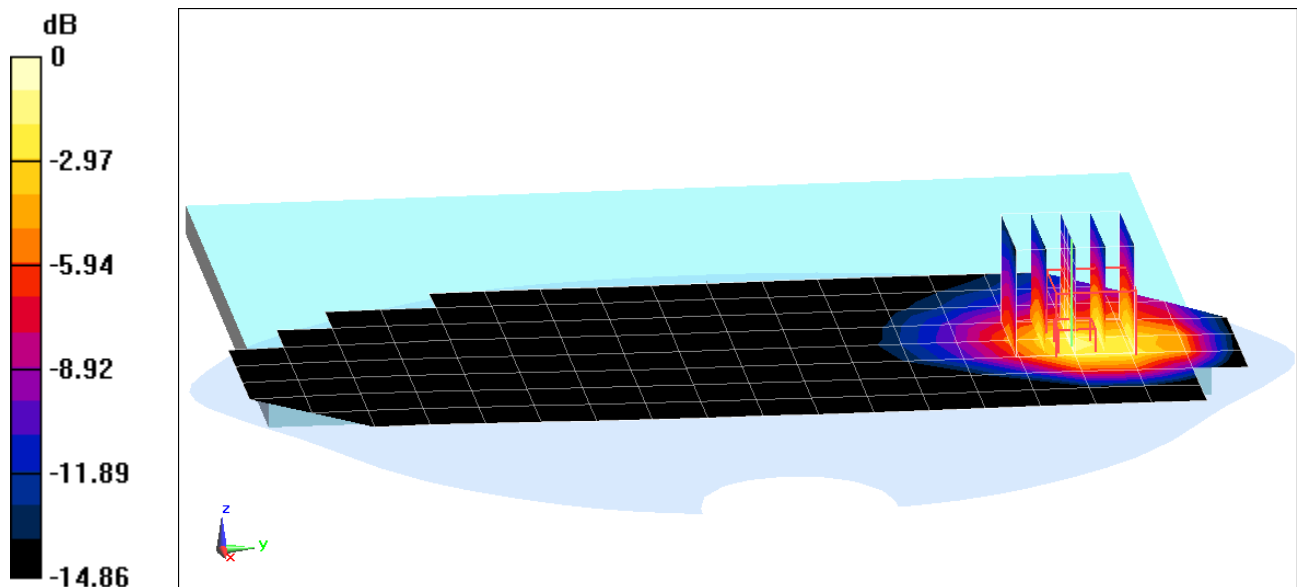
Area Scan (9x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 28.077 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 1.4110 W/kg

SAR(1 g) = 0.792 mW/g; SAR(10 g) = 0.453 mW/g



0 dB = 0.920mW/g = -0.72 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1006

Communication System: LTE RF; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 740 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 53.108$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-02-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(6.23, 6.23, 6.23); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 2/15/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Body SAR, Right Edge, Mid.ch

10 MHz Bandwidth, QPSK, 1 RB, RB Offset 49

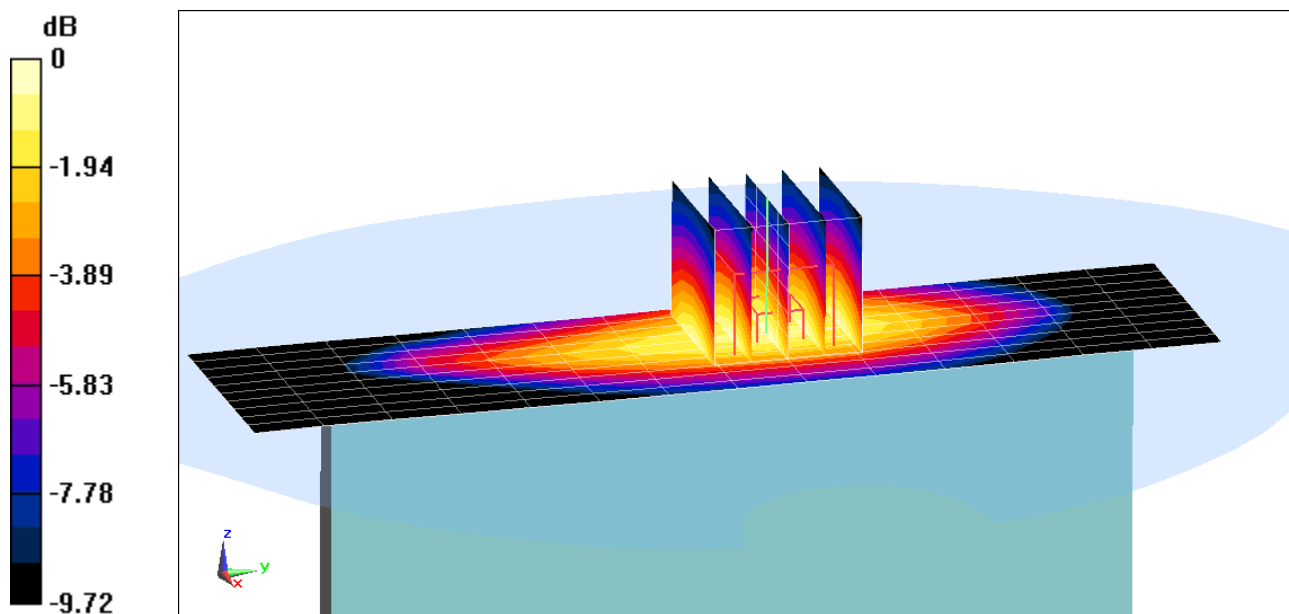
Area Scan (11x15x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 25.086 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.8170 W/kg

SAR(1 g) = 0.590 mW/g; SAR(10 g) = 0.403 mW/g



0 dB = 0.640mW/g = -3.88 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1004

Communication System: Cellular CDMA; Frequency: 824.7 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 824.7 \text{ MHz}$; $\sigma = 0.991 \text{ mho/m}$; $\epsilon_r = 54.339$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.1 cm

Test Date: 08-14-2012; Ambient Temp: 24.8°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: Cellular EVDO, Body SAR, Back side, Low.ch

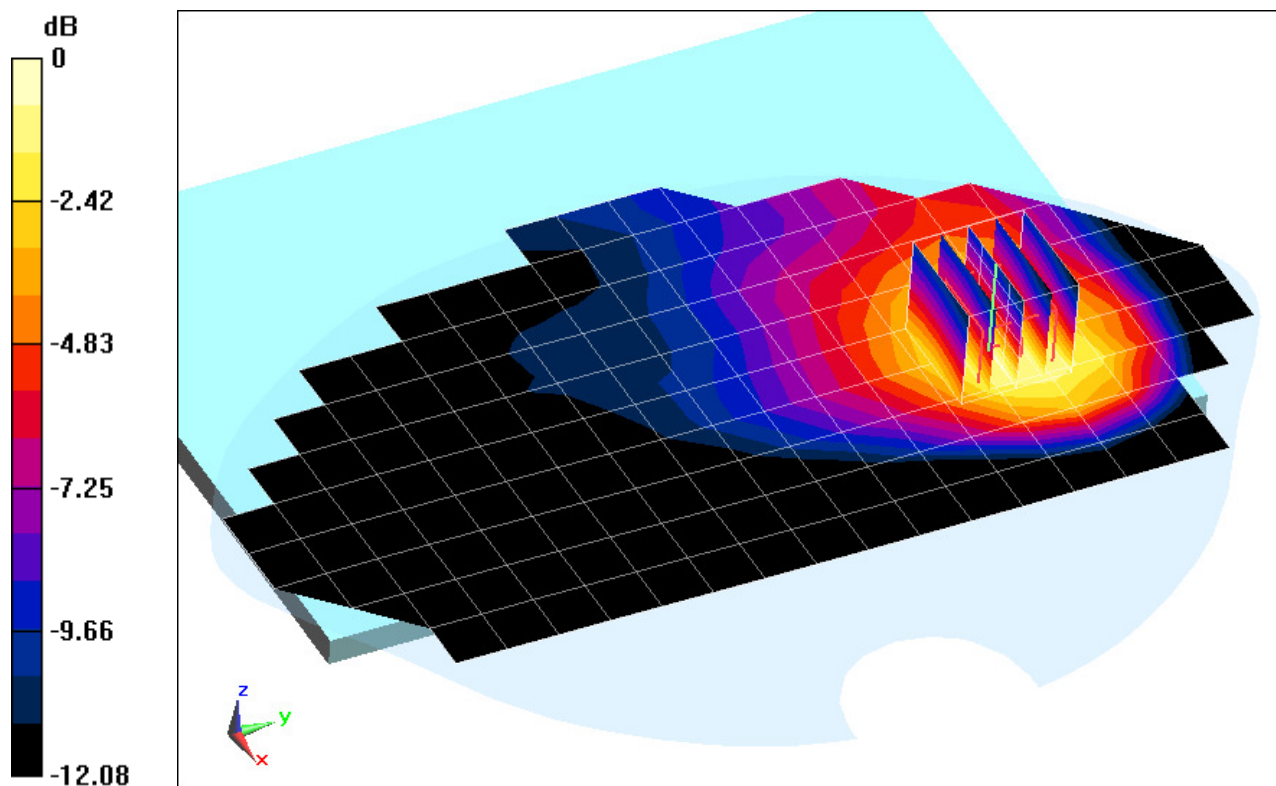
Area Scan (11x20x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 34.832 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.438 mW/g

SAR(1 g) = 0.940 mW/g; SAR(10 g) = 0.601 mW/g



0 dB = 1.02 mW/g = 0.17 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1004

Communication System: Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 1.006 \text{ mho/m}$; $\epsilon_r = 54.349$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.8 cm

Test Date: 08-14-2012; Ambient Temp: 24.8°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: Cellular EVDO, Body SAR, Top Edge, Mid.ch

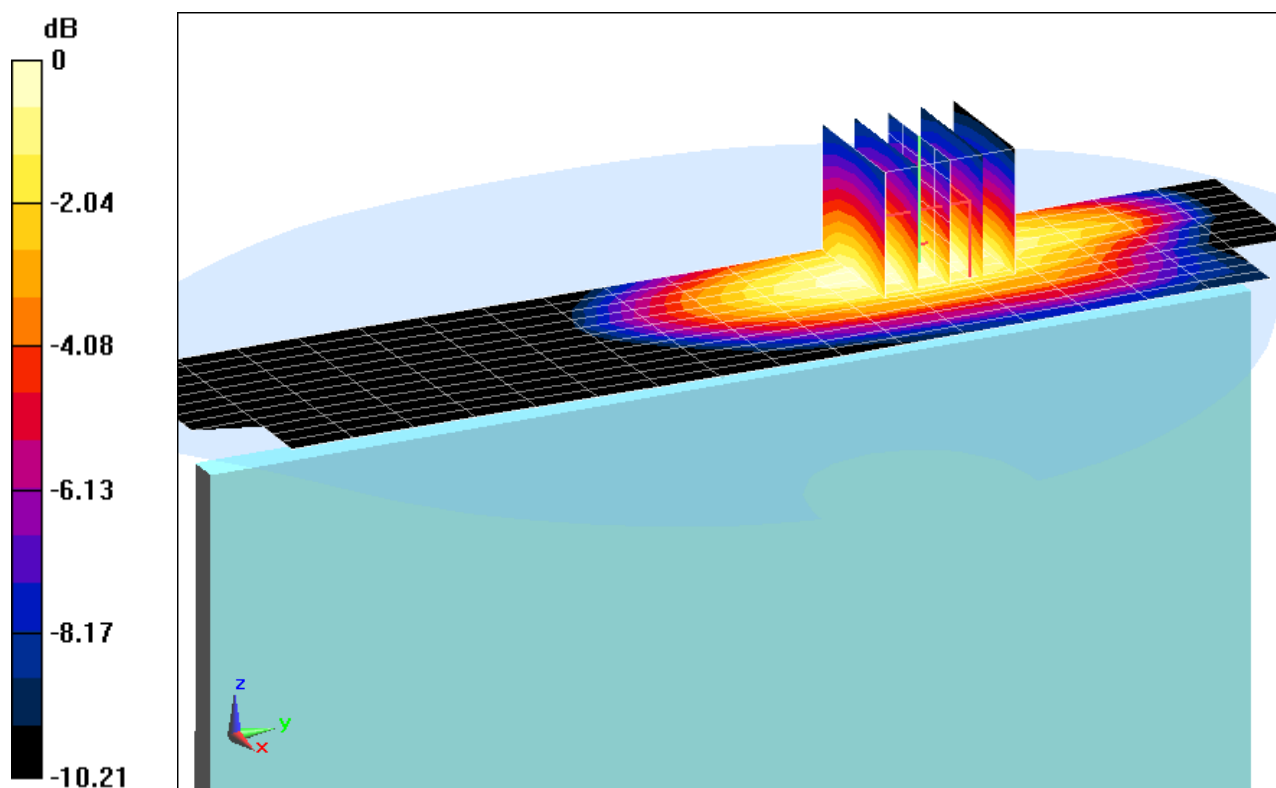
Area Scan (13x21x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 21.583 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.541 mW/g

SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.267 mW/g



0 dB = 0.417 mW/g = -7.60 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1002

Communication System: Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.988 \text{ mho/m}$; $\epsilon_r = 54.781$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-24-2012; Ambient Temp: 24.0°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: Cellular EVDO, Body SAR, Top Edge, Mid.ch

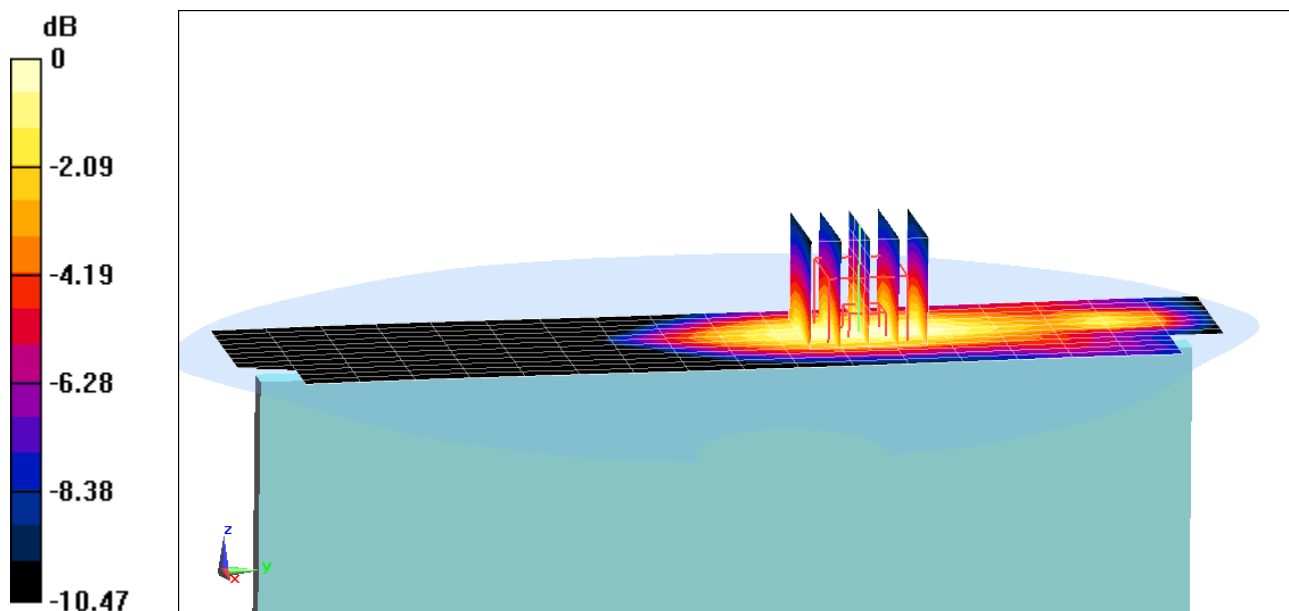
Area Scan (13x21x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 15.729 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.2950 W/kg

SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.124 mW/g



0 dB = 0.210mW/g = -13.56 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1004

Communication System: Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.979 \text{ mho/m}$; $\epsilon_r = 55.324$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-27-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: Cellular EVDO, Body SAR, Vertex, Mid.ch

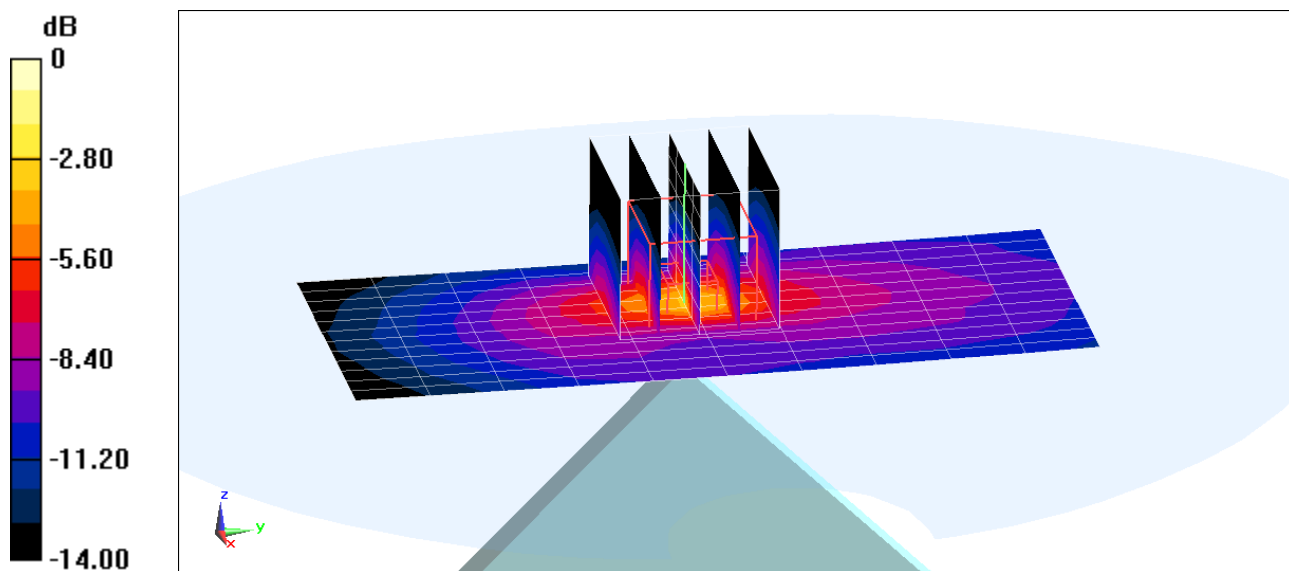
Area Scan (13x11x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 17.624 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.4380 W/kg

SAR(1 g) = 0.197 mW/g; SAR(10 g) = 0.095 mW/g



0 dB = 0.490mW/g = -6.20 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1002

Communication System: Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.988 \text{ mho/m}$; $\epsilon_r = 54.781$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-24-2012; Ambient Temp: 24.0°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: Cellular EVDO, Body SAR, Back side, Mid.ch

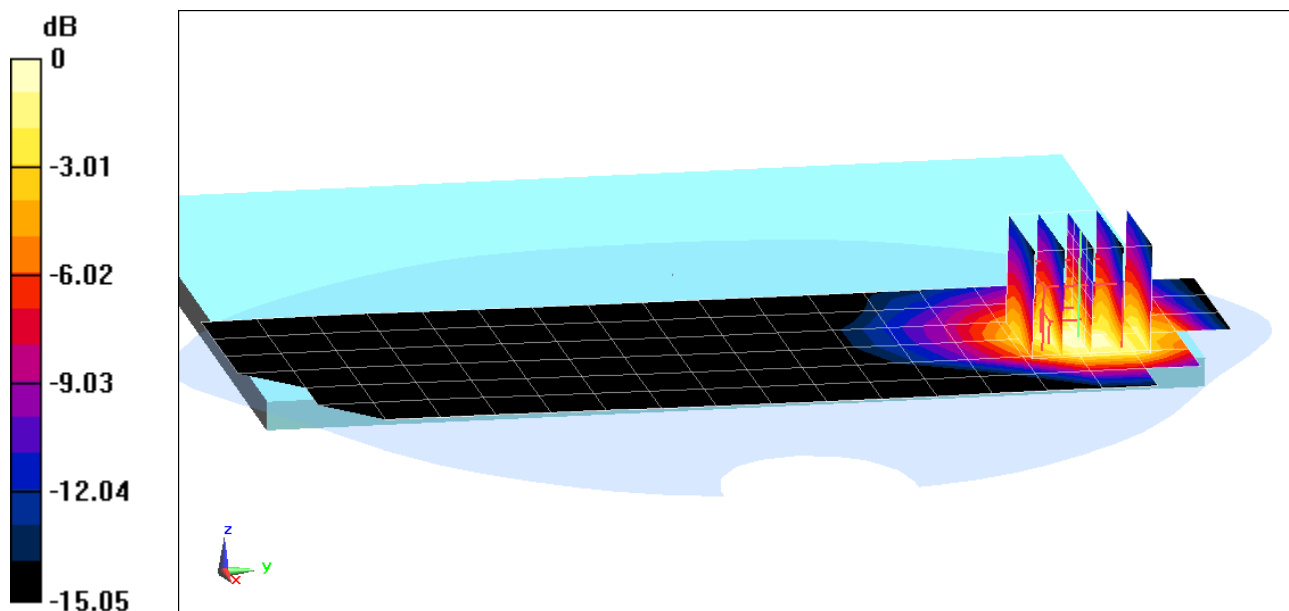
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 32.203 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.3610 W/kg

SAR(1 g) = 0.745 mW/g; SAR(10 g) = 0.402 mW/g



0 dB = 0.800mW/g = -1.94 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1004

Communication System: Cellular CDMA; Frequency: 848.31 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 848.31 \text{ MHz}$; $\sigma = 0.99 \text{ mho/m}$; $\epsilon_r = 55.198$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-27-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: Cellular EVDO, Body SAR, Right Edge, High.ch

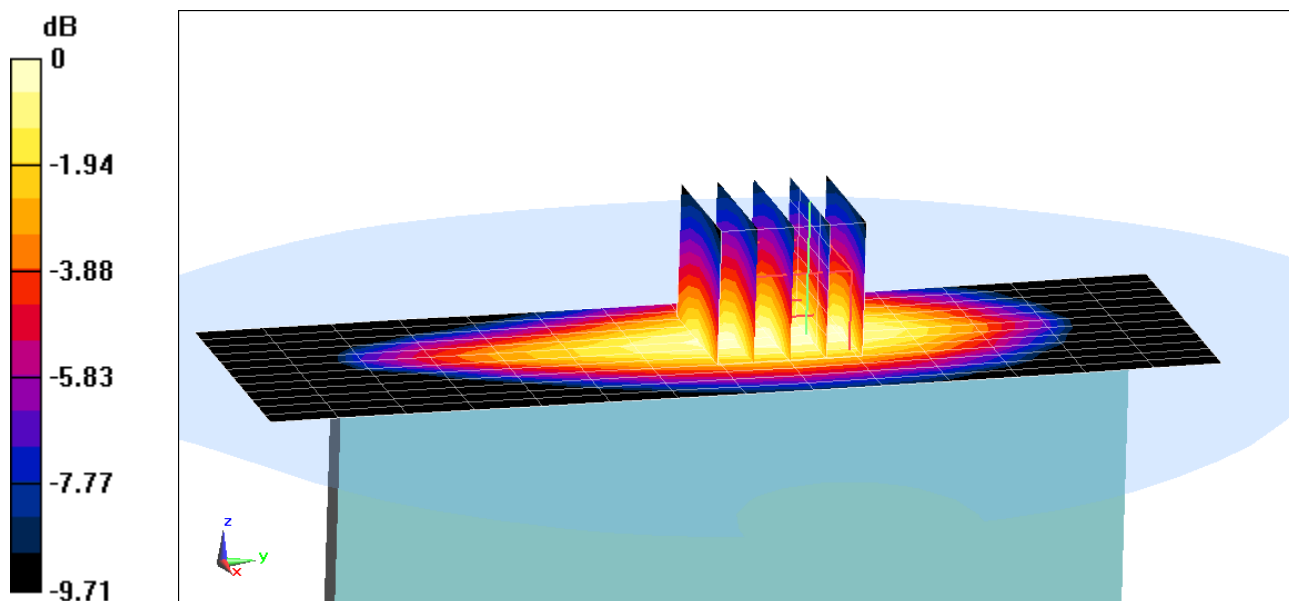
Area Scan (13x15x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 33.472 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.3110 W/kg

SAR(1 g) = 0.924 mW/g; SAR(10 g) = 0.627 mW/g



0 dB = 1.010mW/g = 0.09 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1006

Communication System: LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.448 \text{ mho/m}$; $\epsilon_r = 52.384$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.1 cm

Test Date: 08-14-2012; Ambient Temp: 23.3°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3213; ConvF(4.68, 4.68, 4.68); Calibrated: 4/24/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

**Mode: LTE Band 4 (AWS), Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, 16 QAM, 1 RB, RB Offset 99**

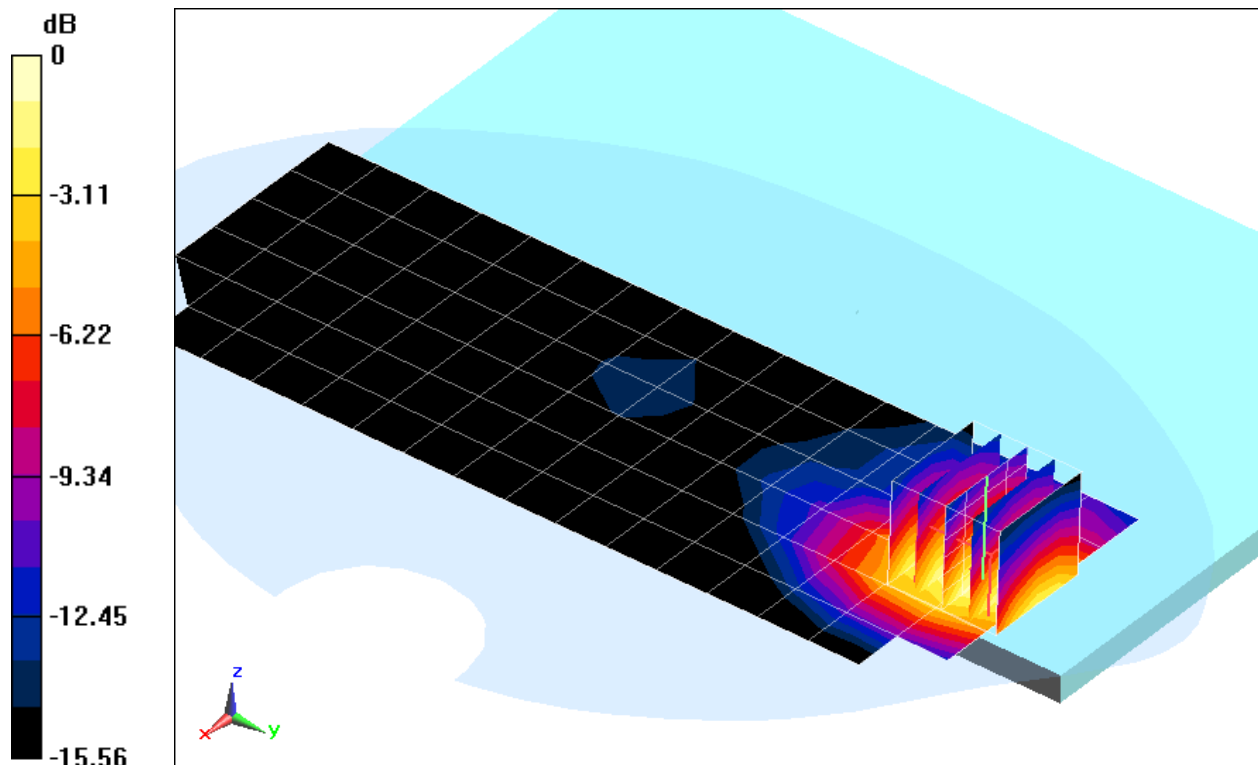
Area Scan (7x17x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.987 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.632 mW/g

SAR(1 g) = 0.416 mW/g; SAR(10 g) = 0.249 mW/g



0 dB = 0.455 mW/g = -6.84 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1006

Communication System: LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.448 \text{ mho/m}$; $\epsilon_r = 52.384$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.8 cm

Test Date: 08-14-2012; Ambient Temp: 23.3°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3213; ConvF(4.68, 4.68, 4.68); Calibrated: 4/24/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

**Mode: LTE Band 4 (AWS), Body SAR, Top Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, RB Offset 99**

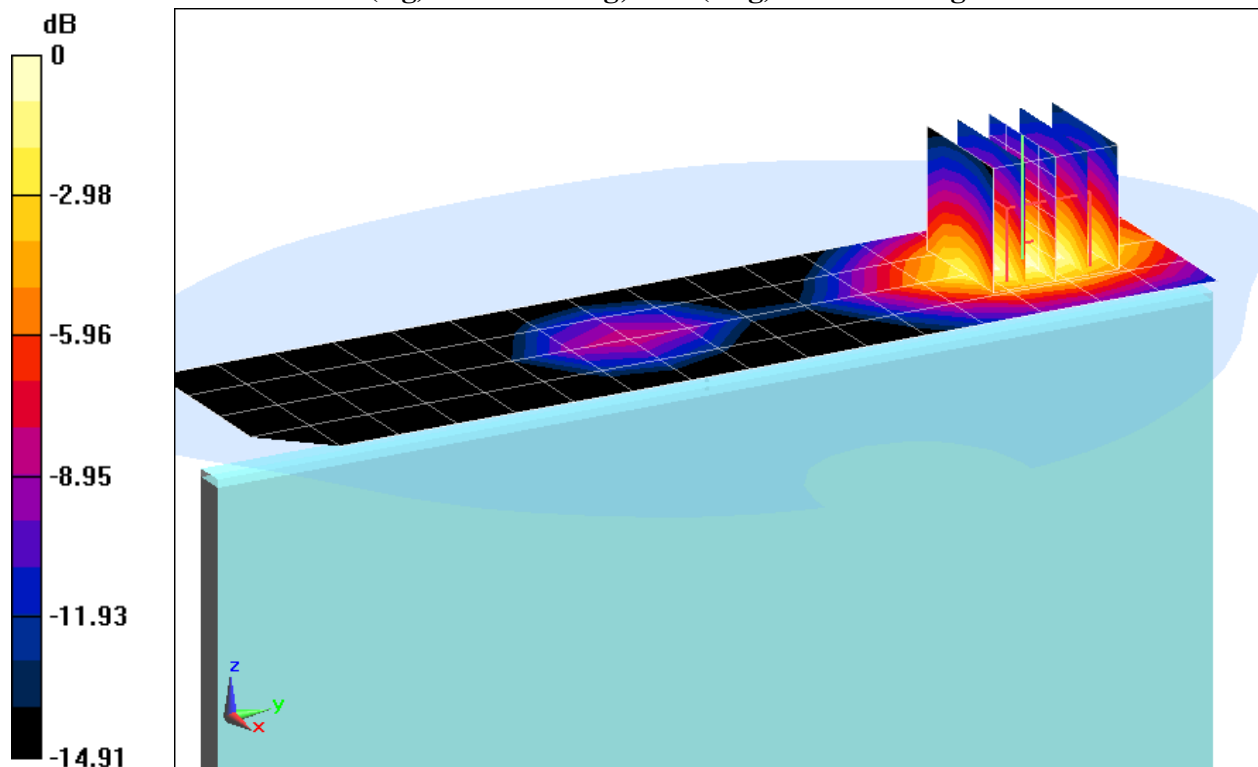
Area Scan (5x17x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.774 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.480 mW/g

SAR(1 g) = 0.330 mW/g; SAR(10 g) = 0.181 mW/g



0 dB = 0.332 mW/g = -9.58 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1005

Communication System: LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.424 \text{ mho/m}$; $\epsilon_r = 53.104$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-04-2012; Ambient Temp: 21.9°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.16, 5.16, 5.16); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 4/12/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 4 (AWS), Body SAR, Top Edge, Mid.ch
10 MHz Bandwidth, 16 QAM, 1 RB, RB Offset 0

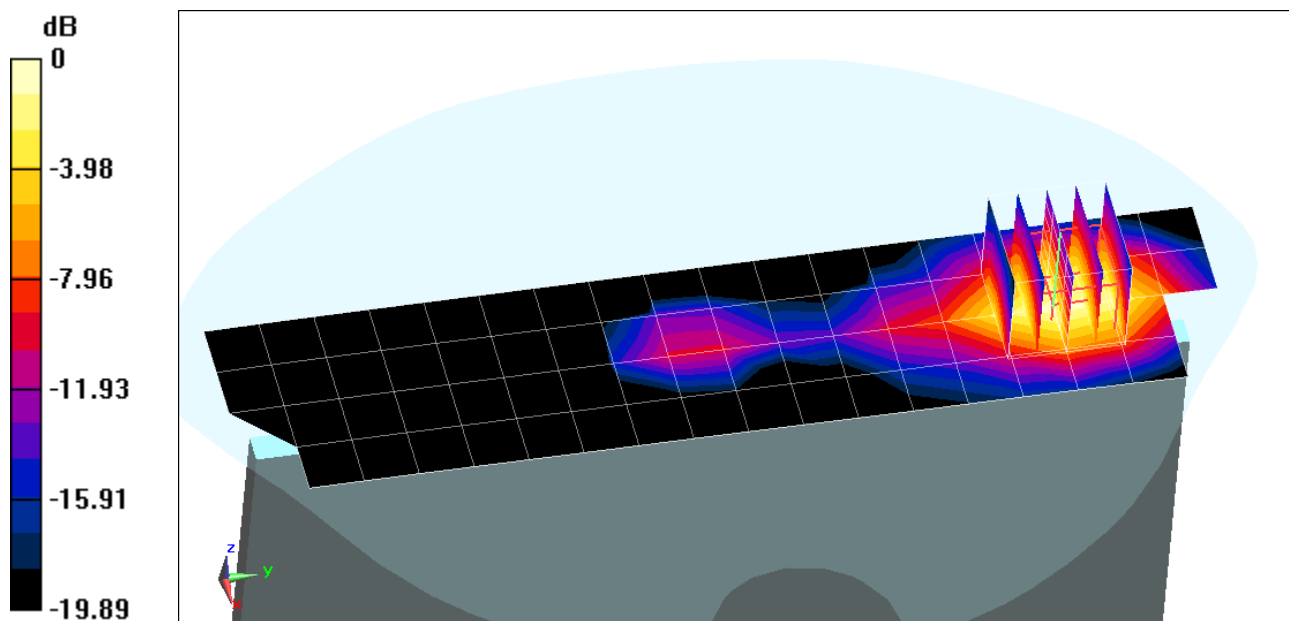
Area Scan (5x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.021 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.4310 W/kg

SAR(1 g) = 0.224 mW/g; SAR(10 g) = 0.116 mW/g



0 dB = 0.240mW/g = -12.40 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1006

Communication System: LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1732.5$ MHz; $\sigma = 1.436$ mho/m; $\epsilon_r = 53.221$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-30-2012; Ambient Temp: 21.4°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(4.68, 4.68, 4.68); Calibrated: 4/24/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

**Mode: LTE Band 4 (AWS), Body SAR, Vertex, Mid.ch,
20 MHz Bandwidth, QPSK, 50 RB, RB Offset 25**

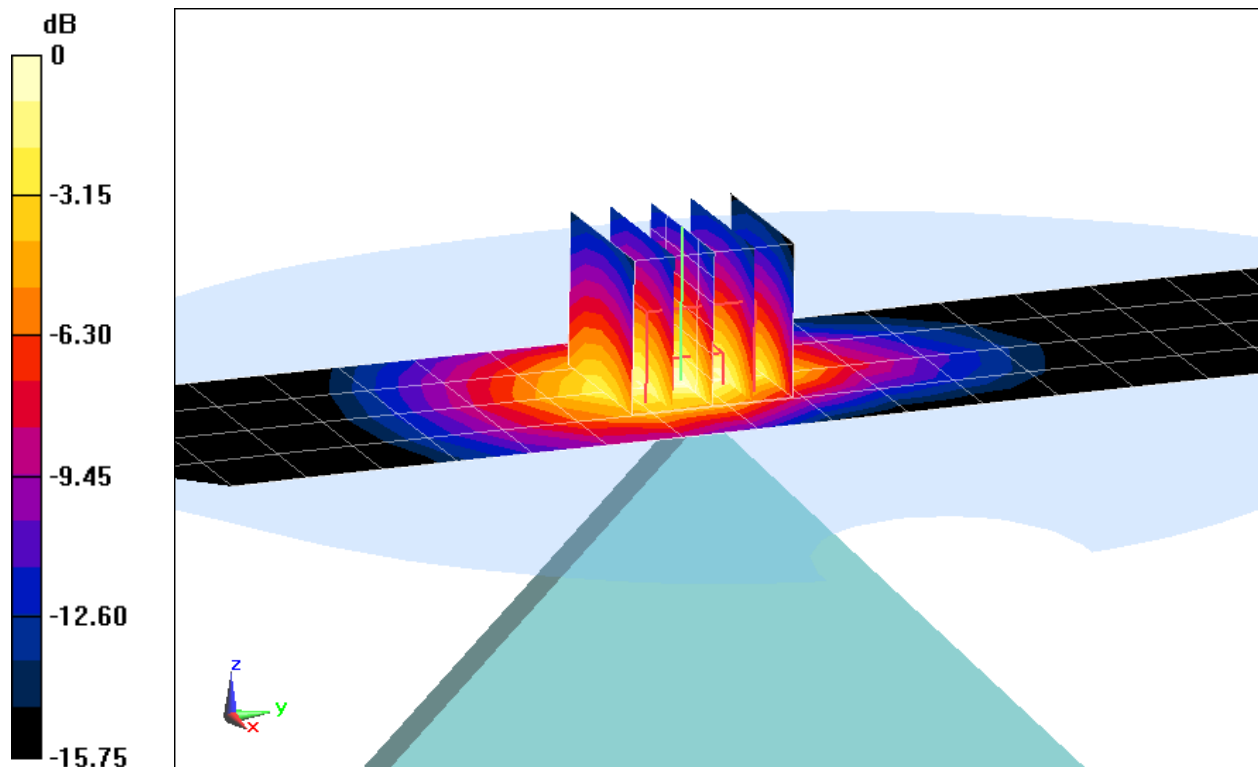
Area Scan (5x18x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 17.038 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.609 mW/g

SAR(1 g) = 0.363 mW/g; SAR(10 g) = 0.206 mW/g



0 dB = 0.400 mW/g = -7.96 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1005

Communication System: LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.424 \text{ mho/m}$; $\epsilon_r = 53.104$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-04-2012; Ambient Temp: 23.4°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.16, 5.16, 5.16); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 4/12/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 4 (AWS), Body SAR, Back side, Mid.ch
10 MHz Bandwidth, 16 QAM, 1 RB, RB Offset 0

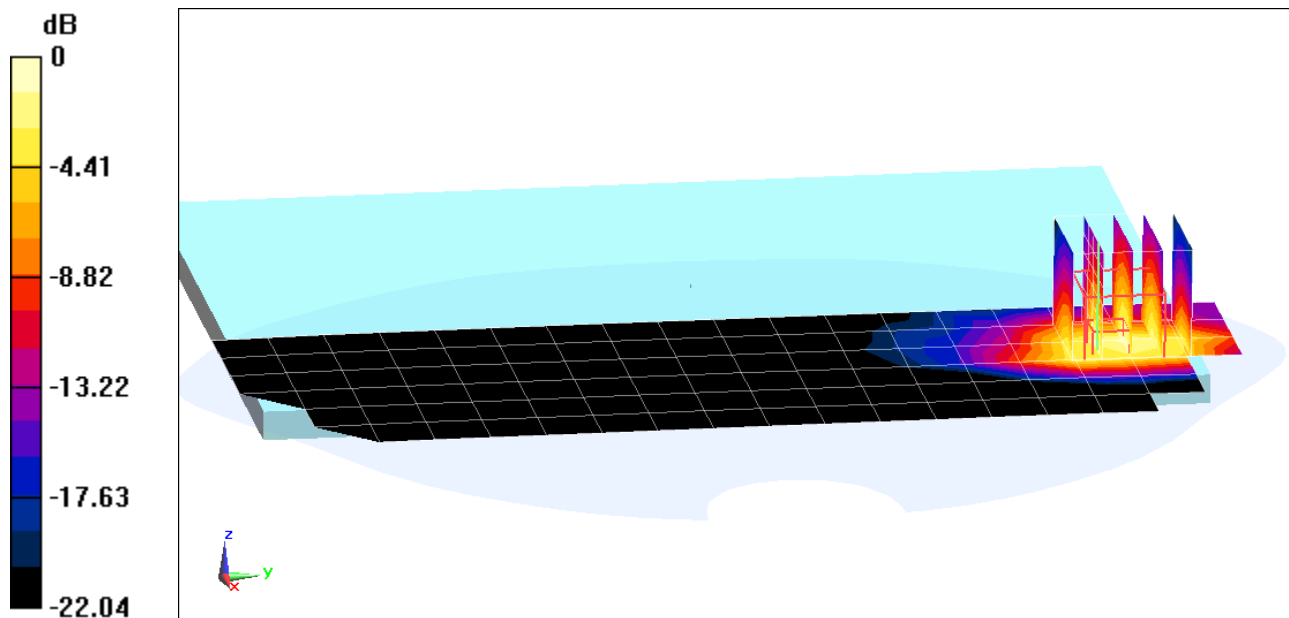
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 20.223 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.2570 W/kg

SAR(1 g) = 0.648 mW/g; SAR(10 g) = 0.329 mW/g



0 dB = 0.720mW/g = -2.85 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1006

Communication System: LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.436 \text{ mho/m}$; $\epsilon_r = 53.221$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-30-2012; Ambient Temp: 21.4°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(4.68, 4.68, 4.68); Calibrated: 4/24/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 4 (AWS), Body SAR, Right Edge, Mid.ch

20 MHz Bandwidth, 16 QAM, 1 RB, RB Offset 99

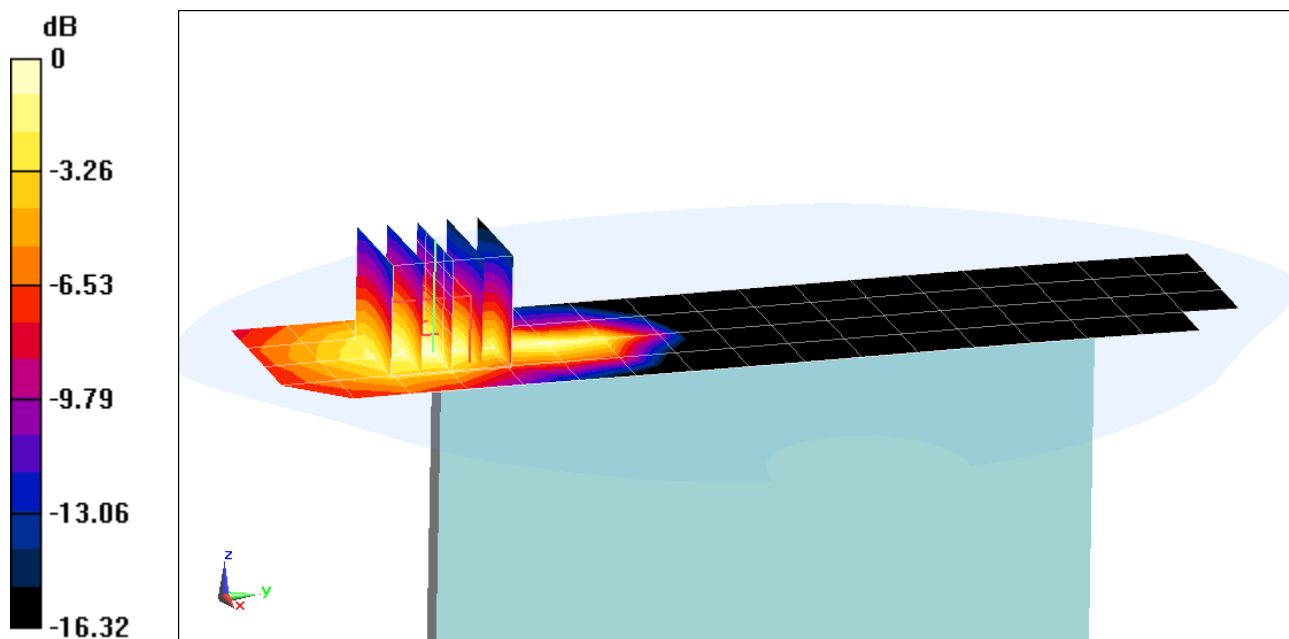
Area Scan (5x18x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.991 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.3660 W/kg

SAR(1 g) = 0.213 mW/g; SAR(10 g) = 0.121 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1004

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

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.467 \text{ mho/m}$; $\epsilon_r = 52.59$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.1 cm

Test Date: 08-15-2012; Ambient Temp: 21.9°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO, Body SAR, Back side, Mid.ch

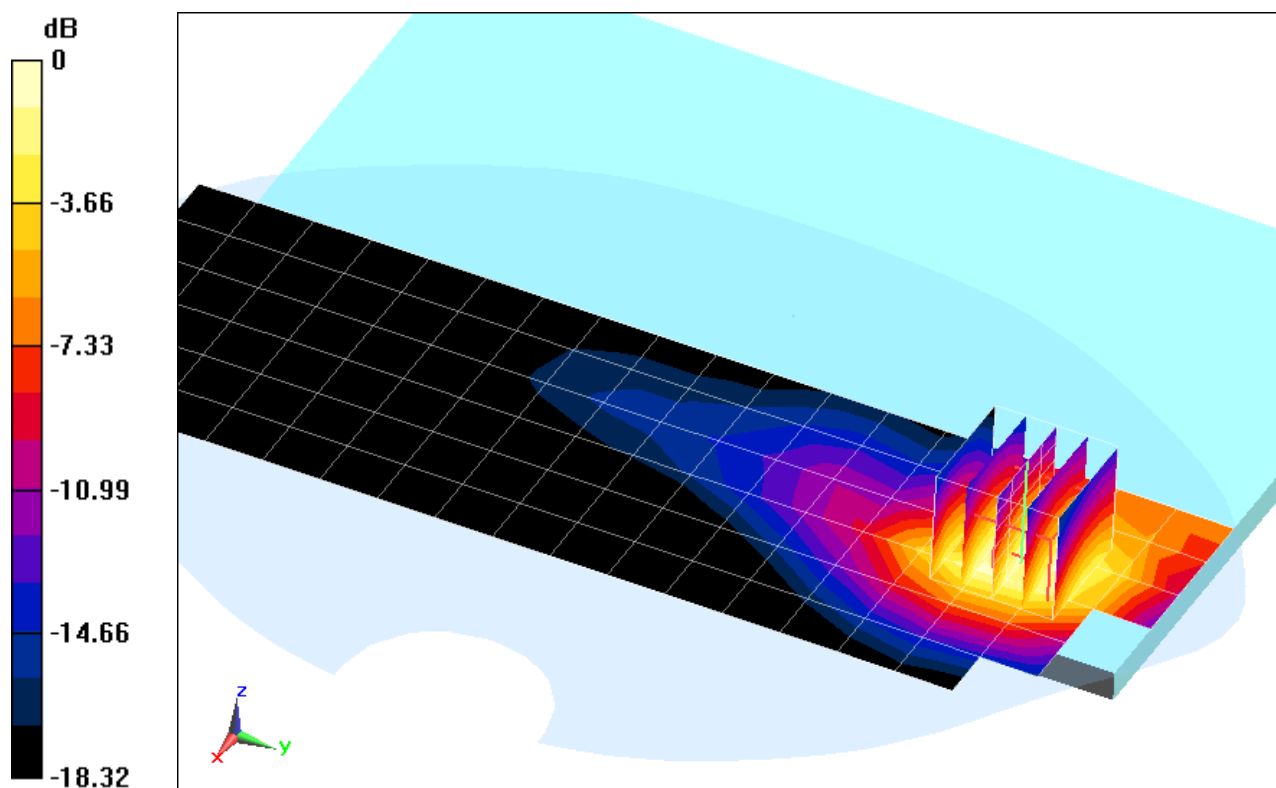
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.272 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.909 mW/g

SAR(1 g) = 0.579 mW/g; SAR(10 g) = 0.336 mW/g



0 dB = 0.642 mW/g = -3.85 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1004

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

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.467 \text{ mho/m}$; $\epsilon_r = 52.59$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.8 cm

Test Date: 08-15-2012; Ambient Temp: 21.9°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO, Body SAR, Top Edge, Mid.ch

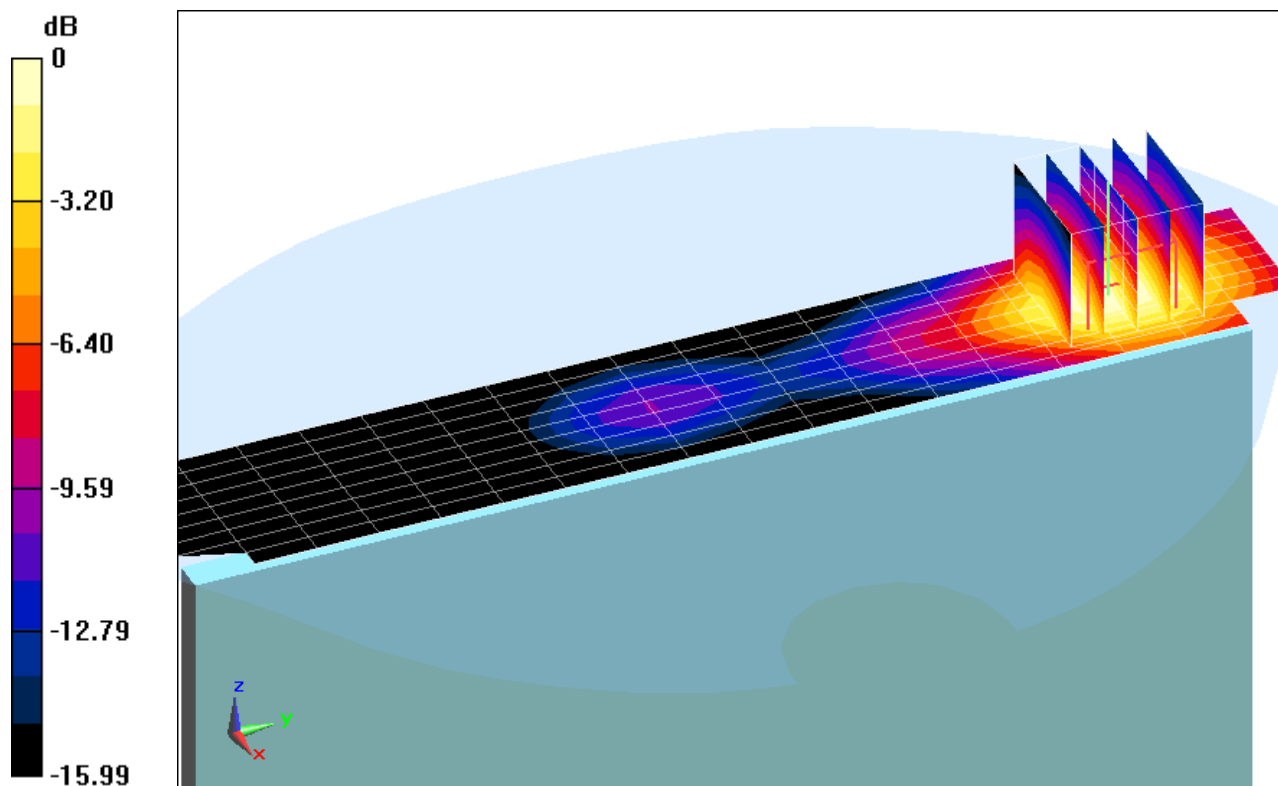
Area Scan (10x21x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.851 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.696 mW/g

SAR(1 g) = 0.432 mW/g; SAR(10 g) = 0.251 mW/g



0 dB = 0.476 mW/g = -6.45 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1002

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.558 \text{ mho/m}$; $\epsilon_r = 51.88$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO, Body SAR, Top Edge, Mid.ch

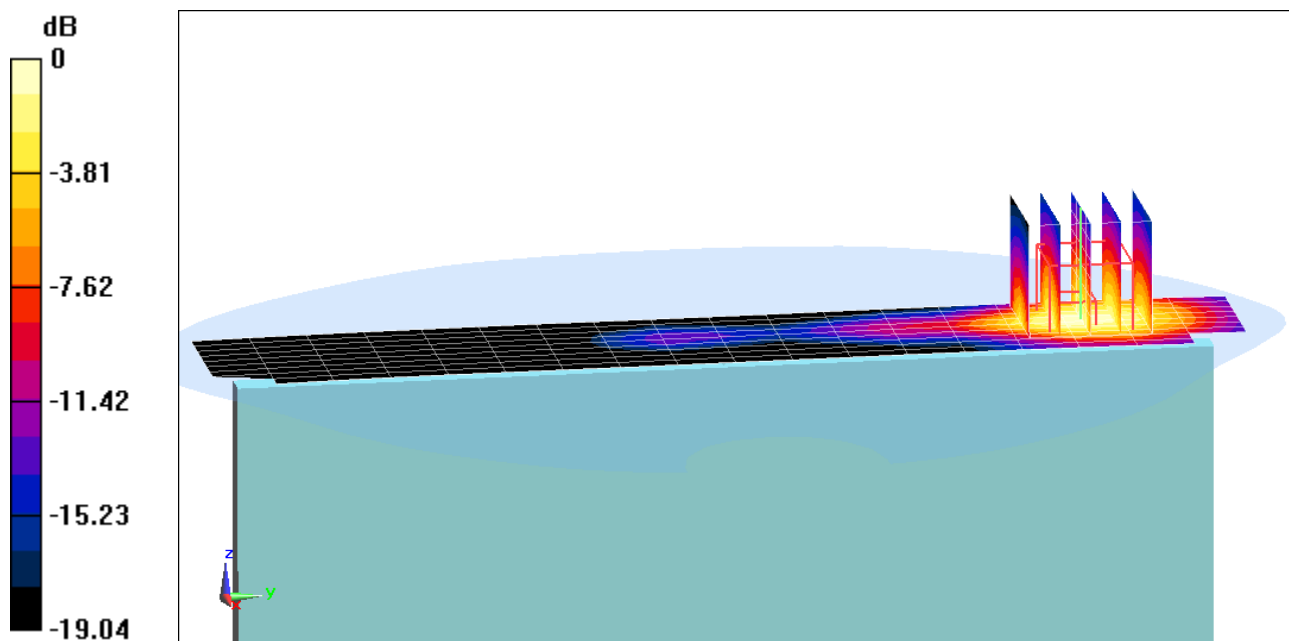
Area Scan (10x21x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.170 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.6650 W/kg

SAR(1 g) = 0.360 mW/g; SAR(10 g) = 0.183 mW/g



0 dB = 0.410mW/g = -7.74 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1004

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.558 \text{ mho/m}$; $\epsilon_r = 51.88$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO, Body SAR, Vertex, Mid.ch

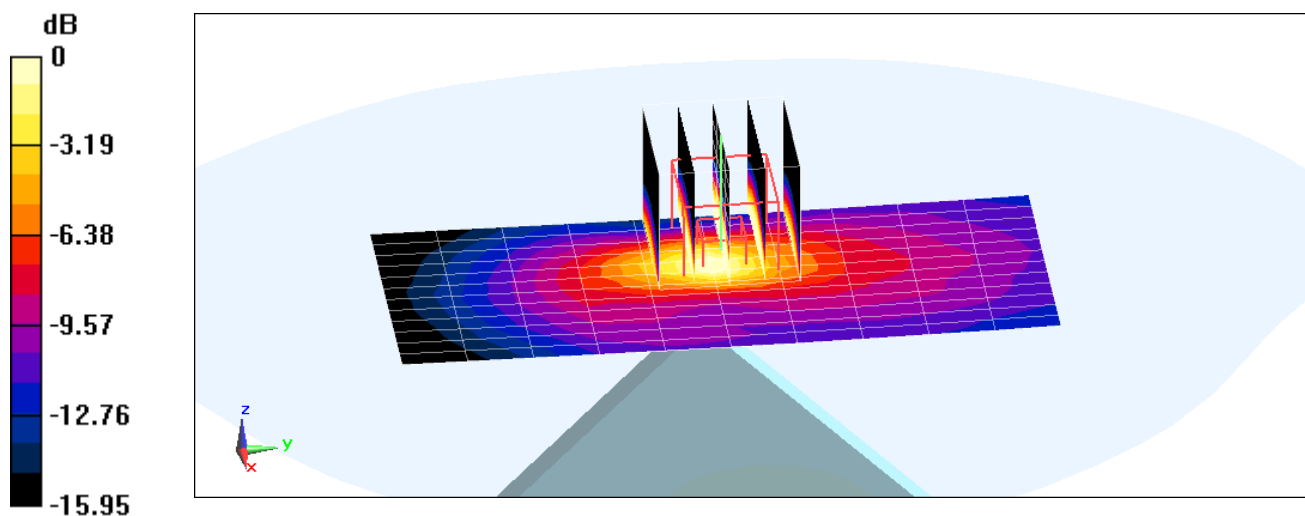
Area Scan (5x18x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 17.933 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.7500 W/kg

SAR(1 g) = 0.442 mW/g; SAR(10 g) = 0.250 mW/g



0 dB = 0.490mW/g = -6.20 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1002

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.558 \text{ mho/m}$; $\epsilon_r = 51.88$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO, Body SAR, Back side, Mid.ch

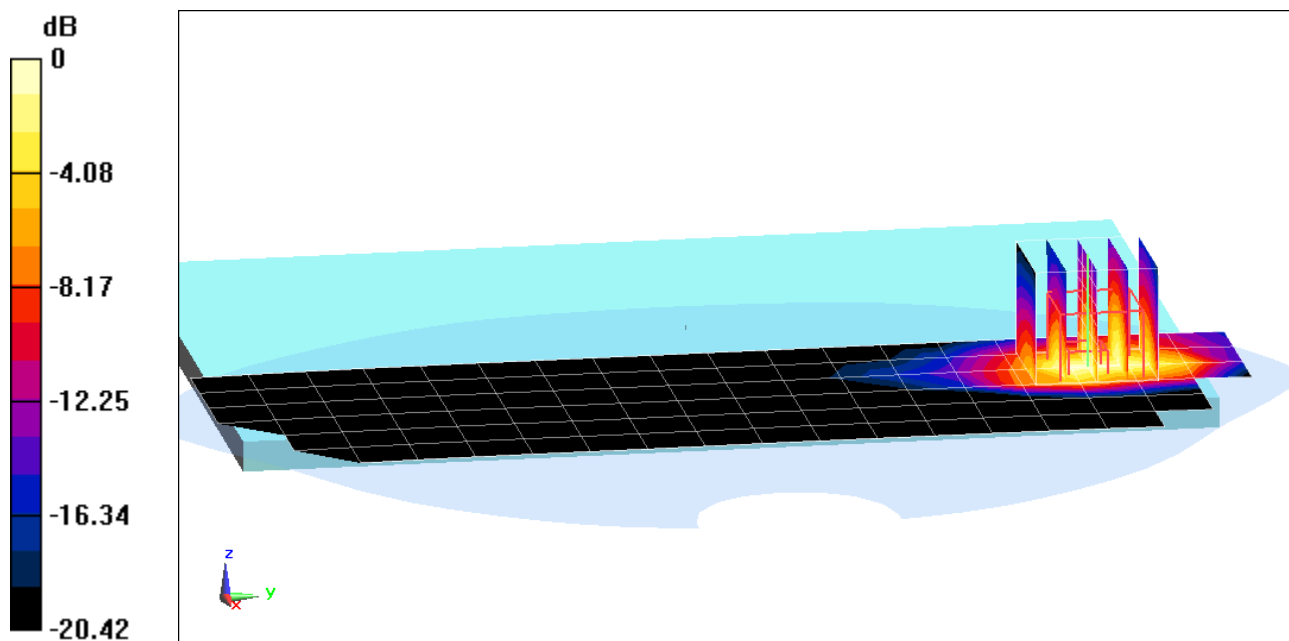
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 24.128 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.5610 W/kg

SAR(1 g) = 0.790 mW/g; SAR(10 g) = 0.396 mW/g



0 dB = 0.900mW/g = -0.92 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1004

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.558 \text{ mho/m}$; $\epsilon_r = 51.88$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO, Body SAR, Right Edge, Mid.ch

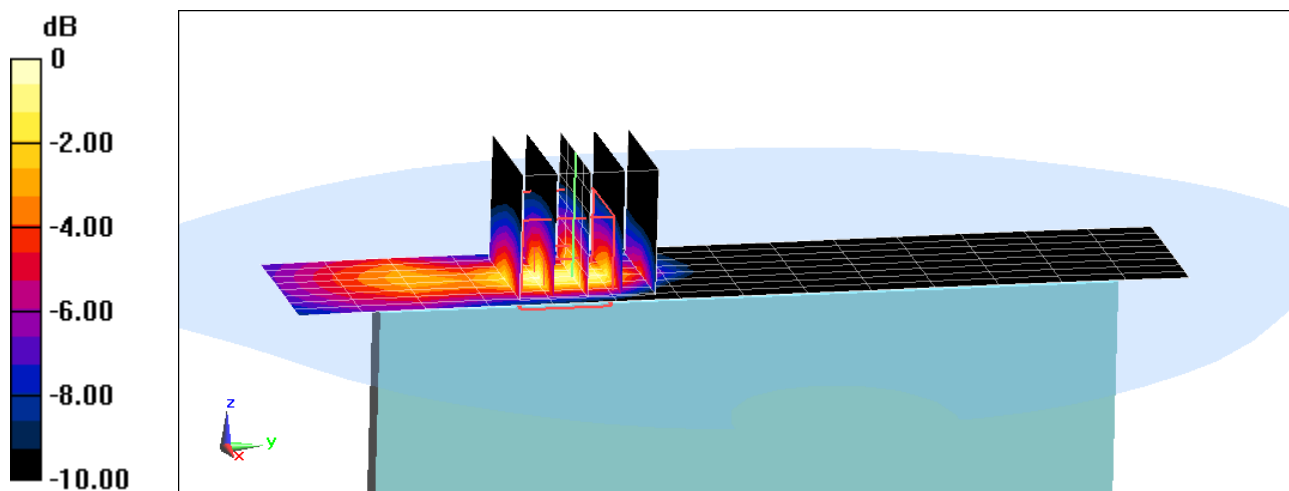
Area Scan (9x15x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 15.771 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.7200 W/kg

SAR(1 g) = 0.345 mW/g; SAR(10 g) = 0.161 mW/g



0 dB = 0.410mW/g = -7.74 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1001

Communication System: IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.968 \text{ mho/m}$; $\epsilon_r = 50.285$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-25-2012; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: ES3DV3 - SN3288; ConvF(4.47, 4.47, 4.47); Calibrated: 2/7/2012

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 4/12/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: IEEE 802.11b, Body SAR, Ch 11, 1 Mbps, Back Side

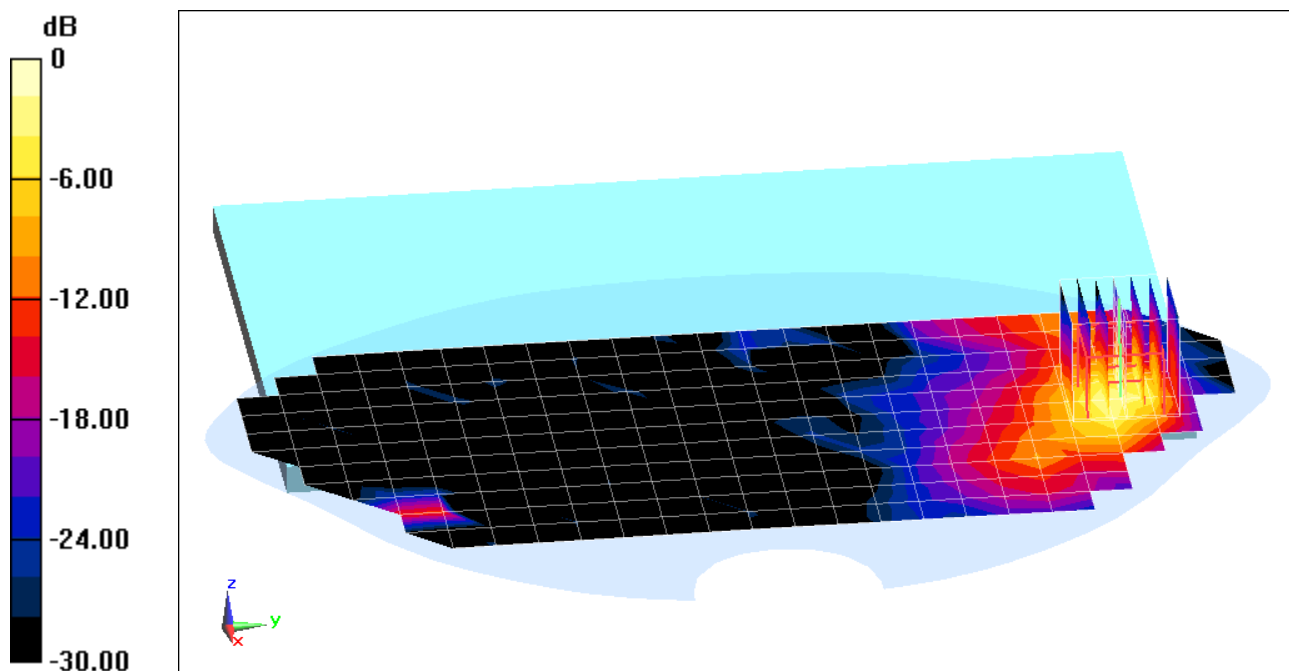
Area Scan (12x26x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.348 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.3520 W/kg

SAR(1 g) = 0.448 mW/g; SAR(10 g) = 0.163 mW/g



0 dB = 0.680mW/g = -3.35 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI915; Type: Portable Tablet Computer; Serial: 0891-1001

Communication System: IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.968 \text{ mho/m}$; $\epsilon_r = 50.285$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-25-2012; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: ES3DV3 - SN3288; ConvF(4.47, 4.47, 4.47); Calibrated: 2/7/2012

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 4/12/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: IEEE 802.11b, Body SAR, Ch 11, 1 Mbps, Right Edge

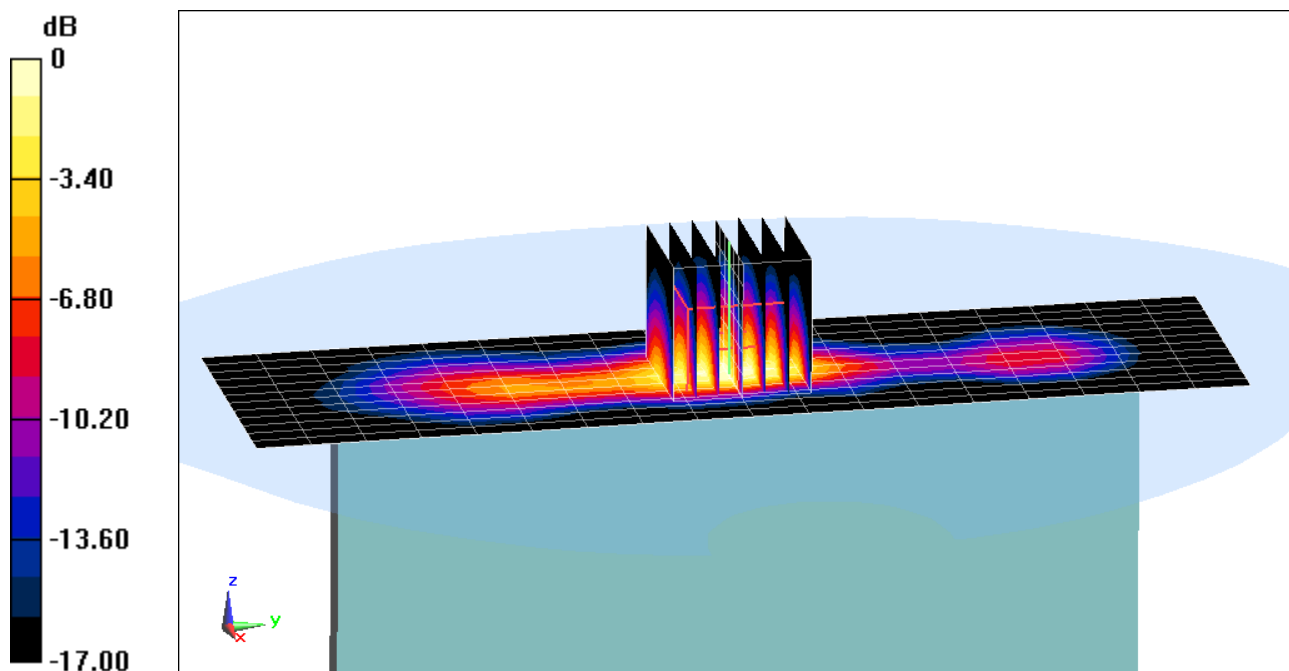
Area Scan (13x19x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.153 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.6790 W/kg

SAR(1 g) = 0.282 mW/g; SAR(10 g) = 0.114 mW/g



0 dB = 0.370mW/g = -8.64 dB mW/g

APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

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

Medium: 740 Body Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.985 \text{ mho/m}$; $\epsilon_r = 53.53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-02-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(6.23, 6.23, 6.23); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 2/15/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

750MHz System Verification

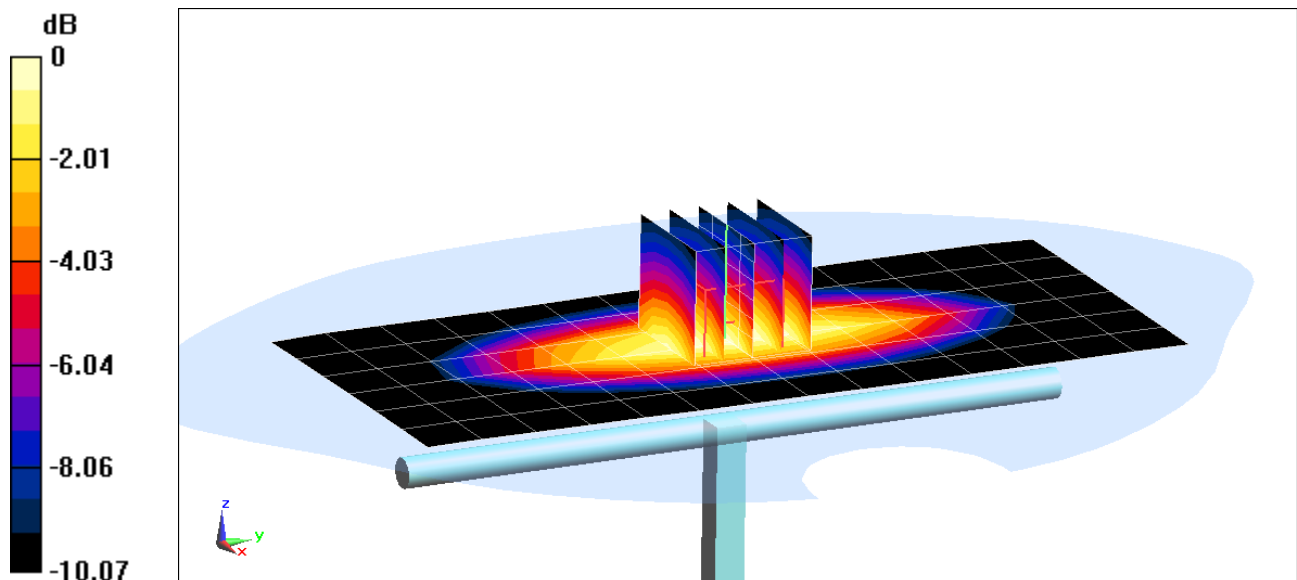
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.875 mW/g; SAR(10 g) = 0.578 mW/g

Deviation = 0.34 %



0 dB = 0.950mW/g = -0.45 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

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

Medium: 740 Body Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.985 \text{ mho/m}$; $\epsilon_r = 53.53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-02-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(6.23, 6.23, 6.23); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 2/15/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

750MHz System Verification

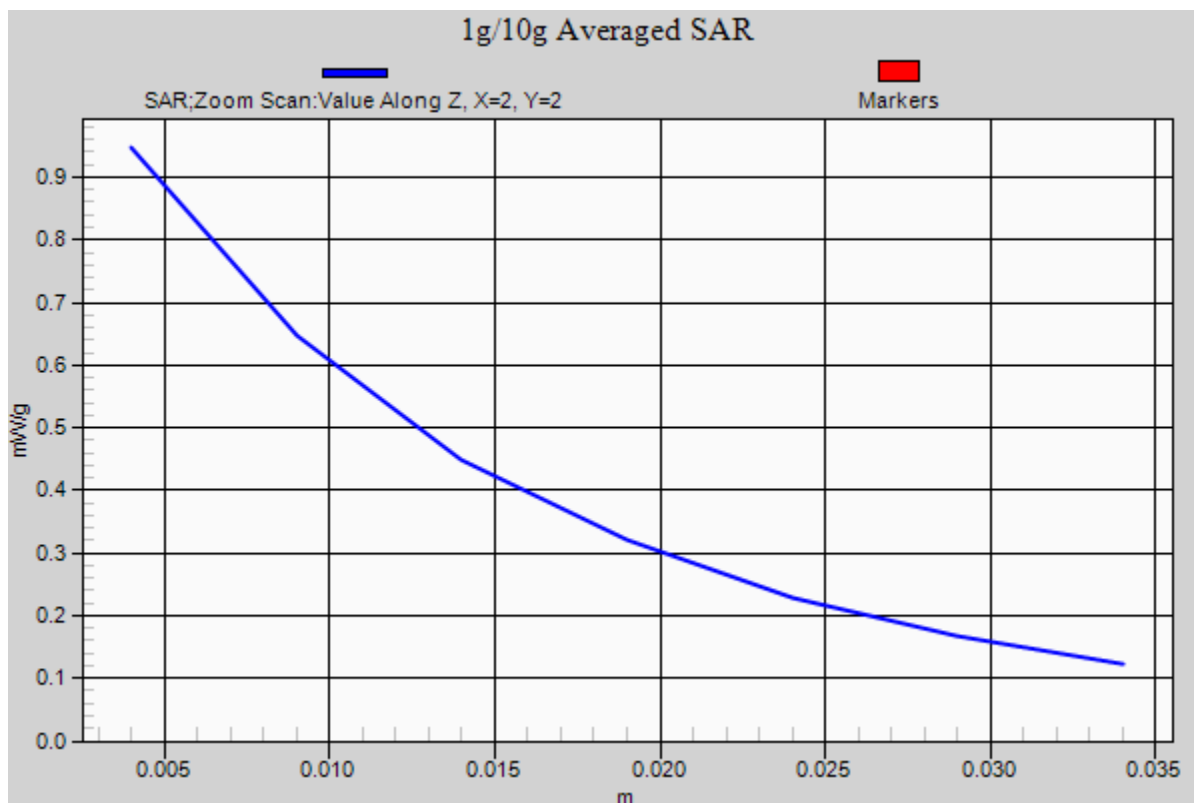
Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.875 mW/g; SAR(10 g) = 0.578 mW/g

Deviation = 0.34 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

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

Medium: 740 Body; Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.974 \text{ mho/m}$; $\epsilon_r = 53.47$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-03-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3209; ConvF(6.23, 6.23, 6.23); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 2/15/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

750MHz System Verification

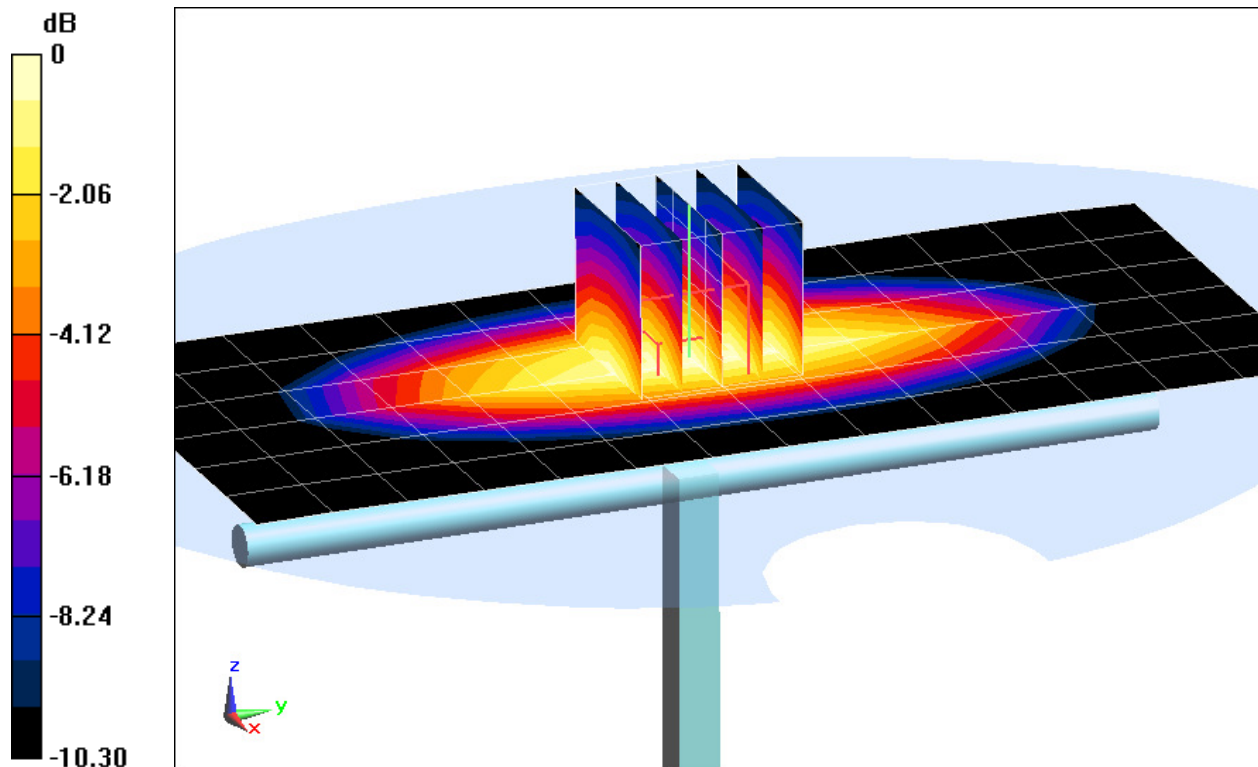
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.869 mW/g; SAR(10 g) = 0.574 mW/g

Deviation = -0.34%



0 dB = 0.934 mW/g = -0.59 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

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

Medium: 740 Body; Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.974 \text{ mho/m}$; $\epsilon_r = 53.47$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-03-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3209; ConvF(6.23, 6.23, 6.23); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 2/15/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

750MHz System Verification

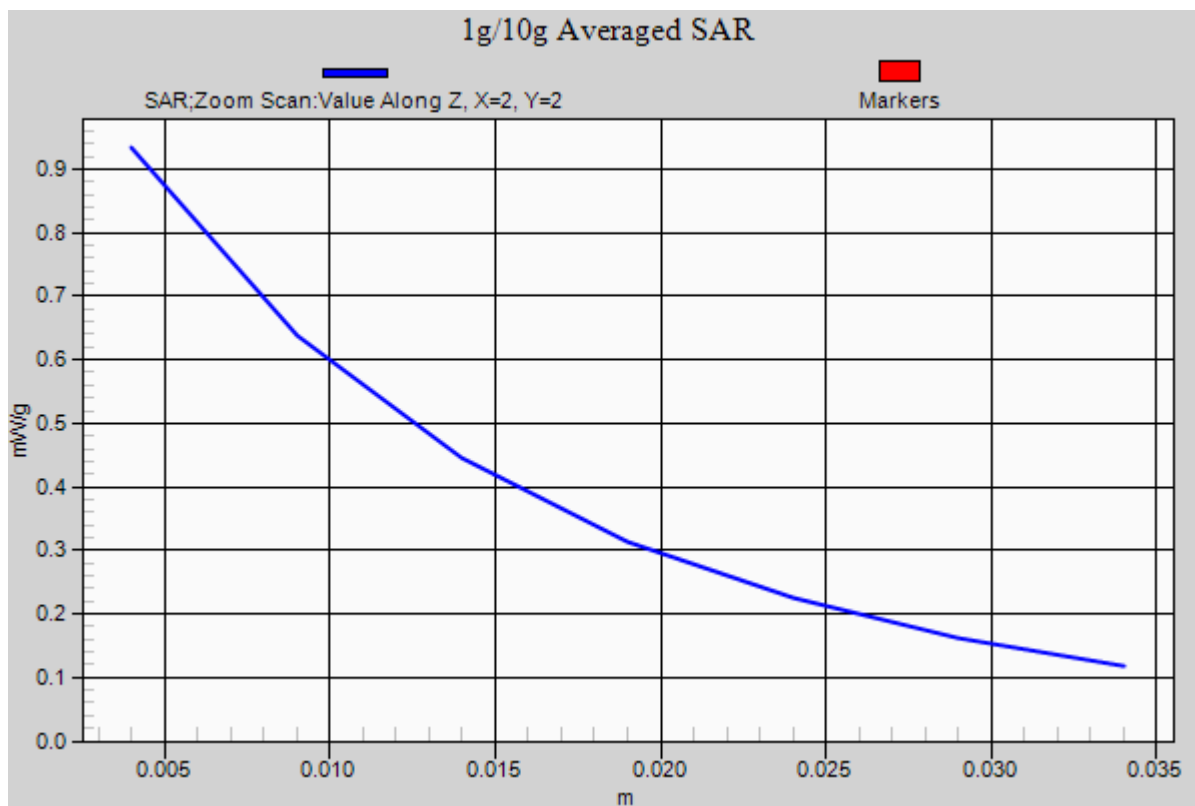
Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.869 mW/g; SAR(10 g) = 0.574 mW/g

Deviation = -0.34%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

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

Medium: 740 Body Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.976 \text{ mho/m}$; $\epsilon_r = 53.24$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-16-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

750MHz System Verification

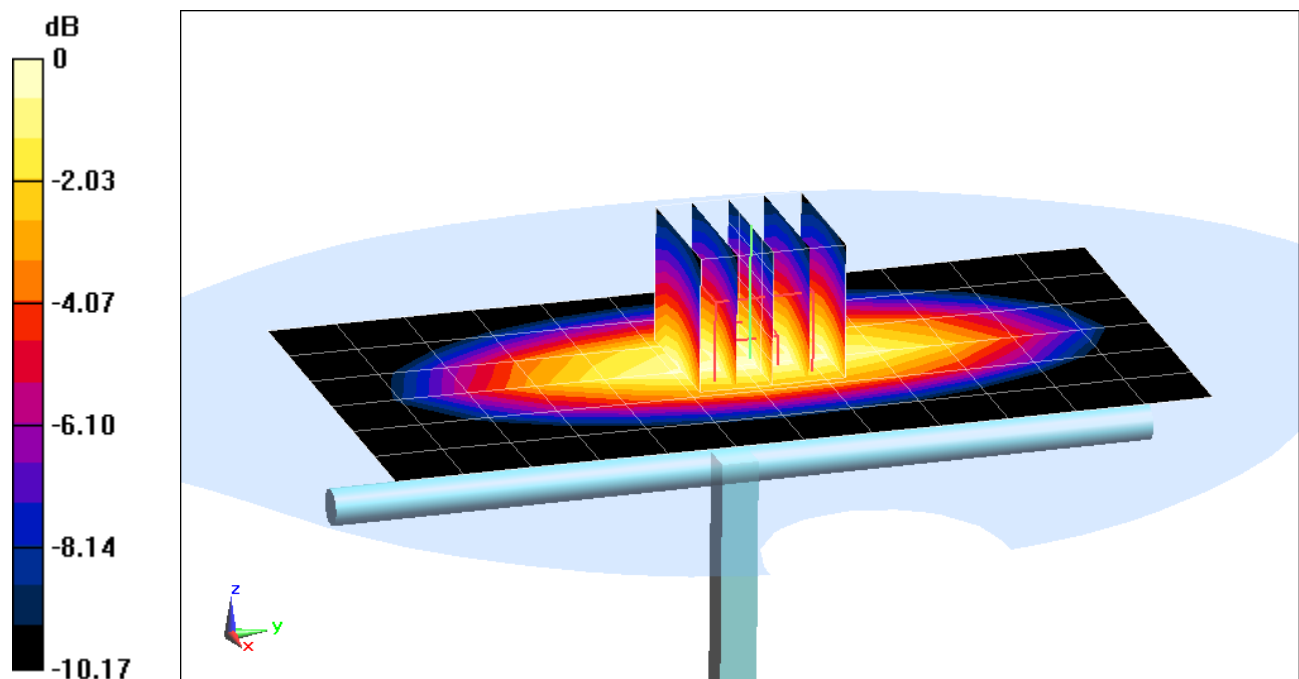
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.840 mW/g; SAR(10 g) = 0.557 mW/g

Deviation = -3.67 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

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

Medium: 740 Body Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.976 \text{ mho/m}$; $\epsilon_r = 53.24$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-16-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

750MHz System Verification

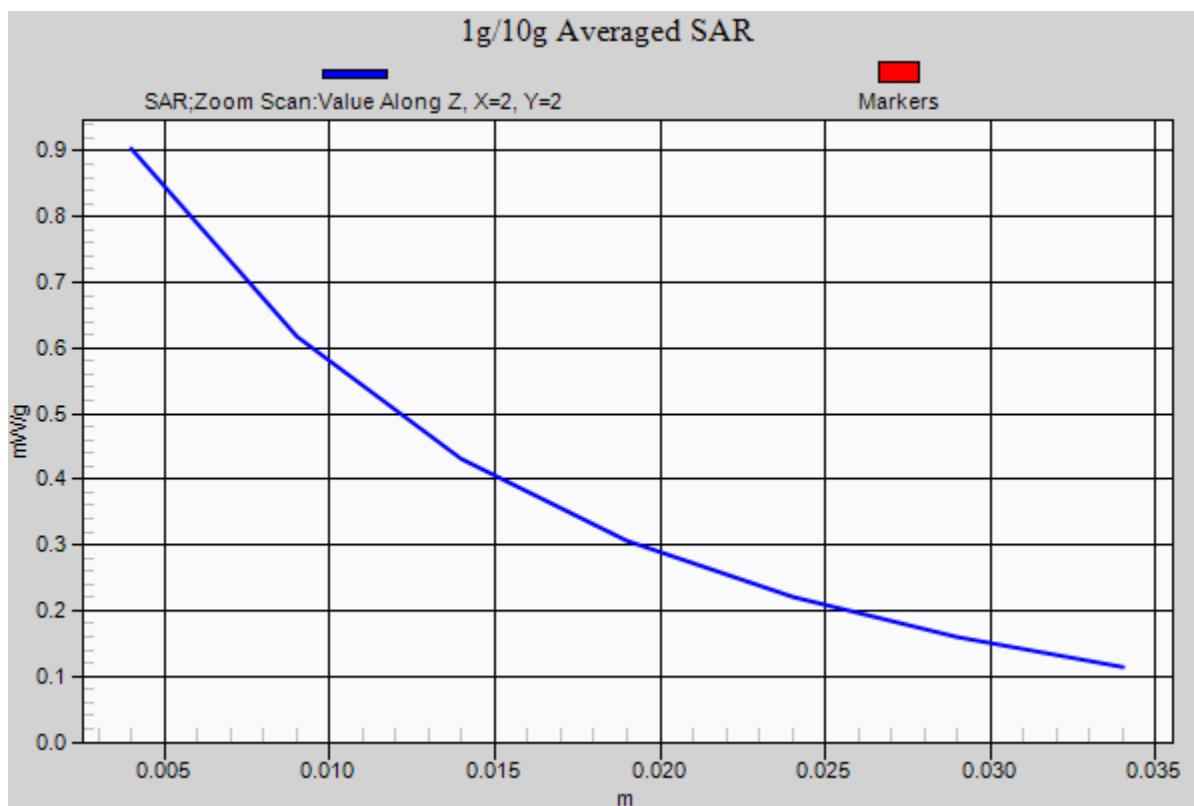
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.840 mW/g; SAR(10 g) = 0.557 mW/g

Deviation = -3.67 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

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

Medium: 835 Body; Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.987 \text{ mho/m}$; $\epsilon_r = 54.79$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-24-2012; Ambient Temp: 24.0°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

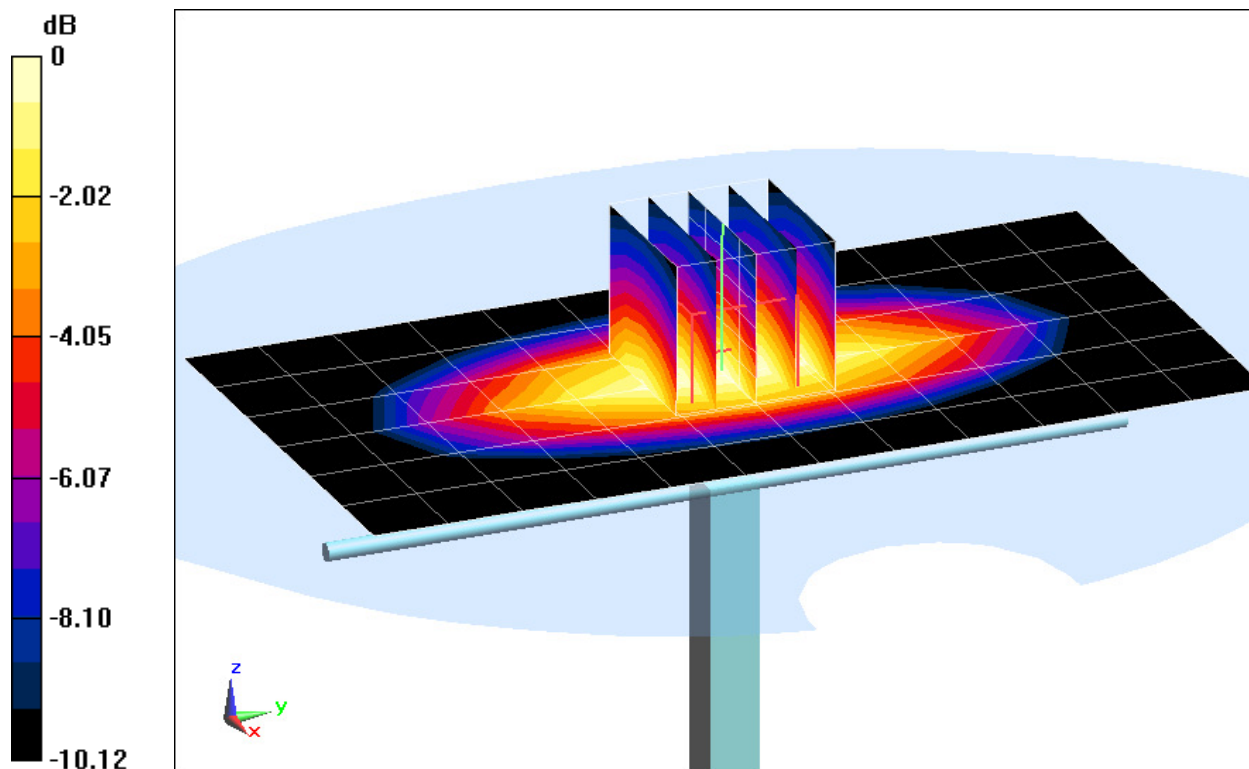
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.982 mW/g; SAR(10 g) = 0.650 mW/g

Deviation = 2.72%



0 dB = 1.06 mW/g = 0.51 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

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

Medium: 835 Body; Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.987 \text{ mho/m}$; $\epsilon_r = 54.79$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-24-2012; Ambient Temp: 24.0°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

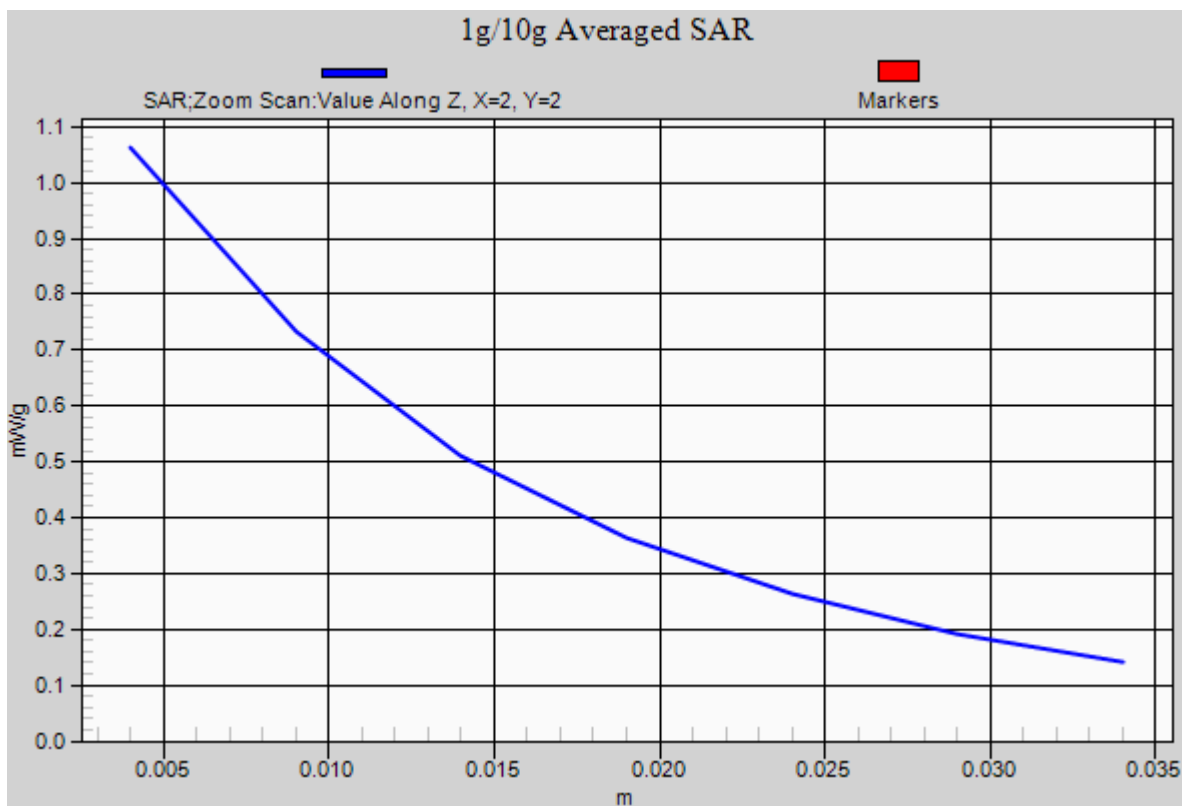
Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.982 mW/g; SAR(10 g) = 0.650 mW/g

Deviation = 2.72%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.978 \text{ mho/m}$; $\epsilon_r = 55.34$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-27-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

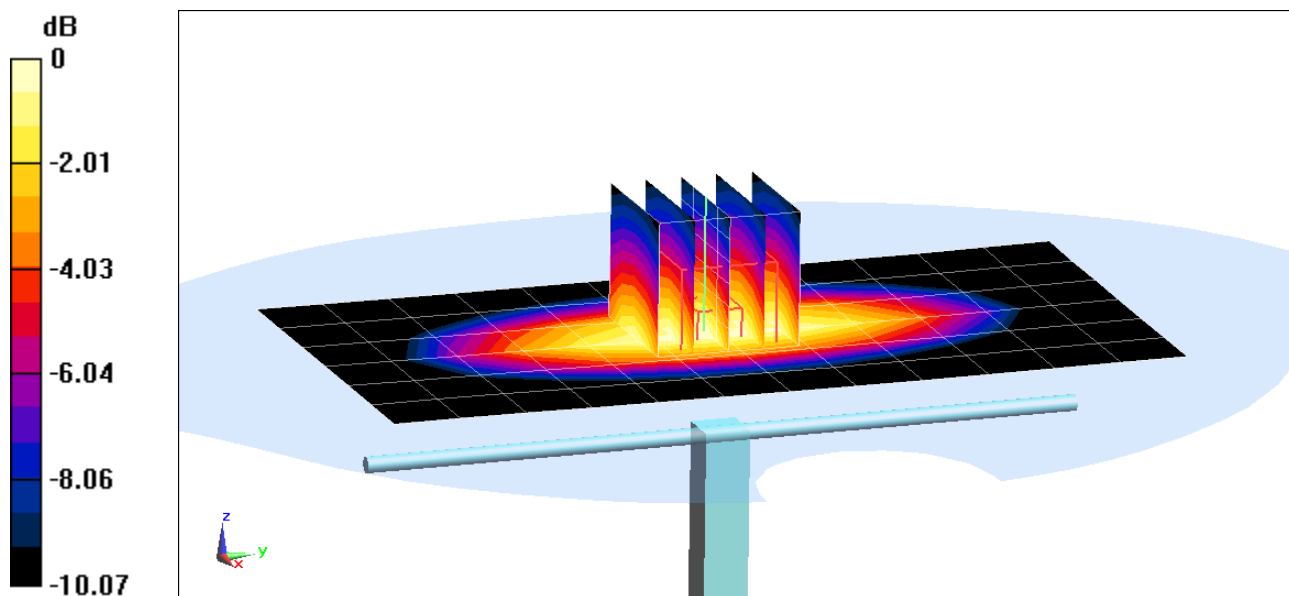
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.986 mW/g; SAR(10 g) = 0.652 mW/g

Deviation = 3.14 %



0 dB = 1.070mW/g = 0.59 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.978 \text{ mho/m}$; $\epsilon_r = 55.34$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-27-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

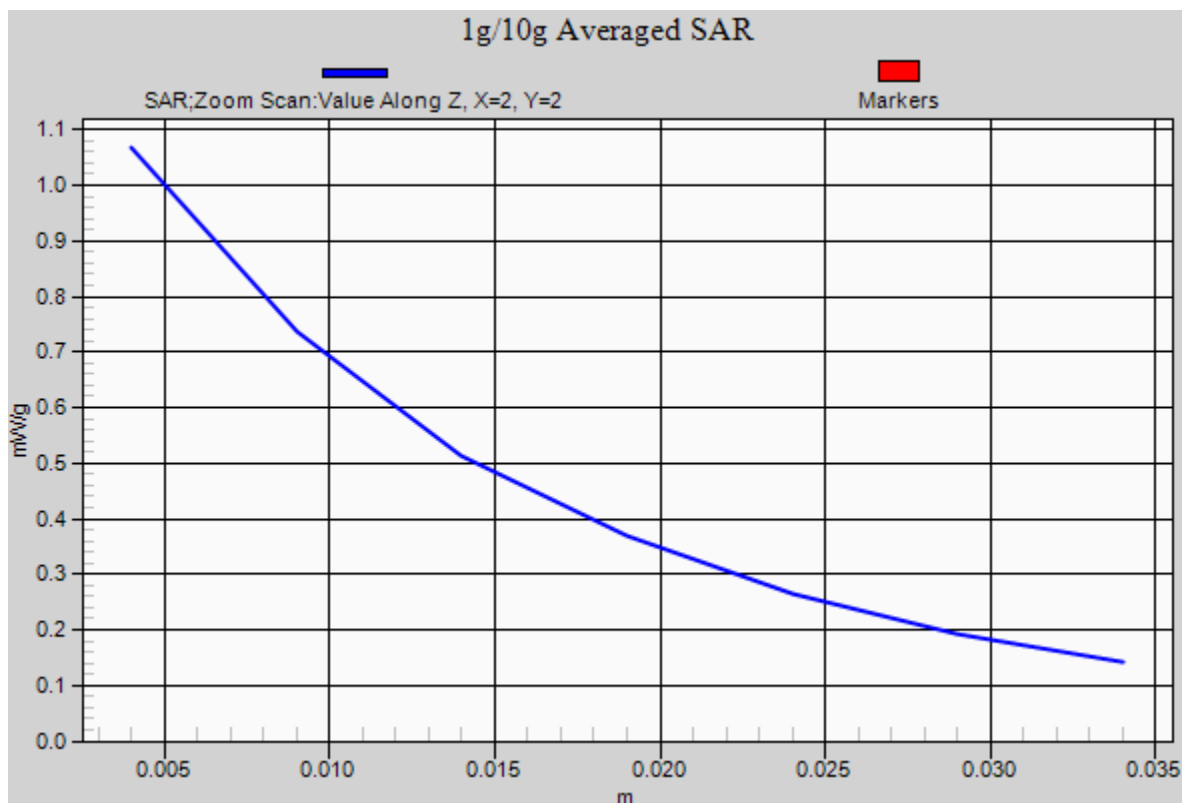
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.986 mW/g; SAR(10 g) = 0.652 mW/g

Deviation = 3.14 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

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

Medium: 835 Body; Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.004 \text{ mho/m}$; $\epsilon_r = 54.38$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-14-2012; Ambient Temp: 24.8°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

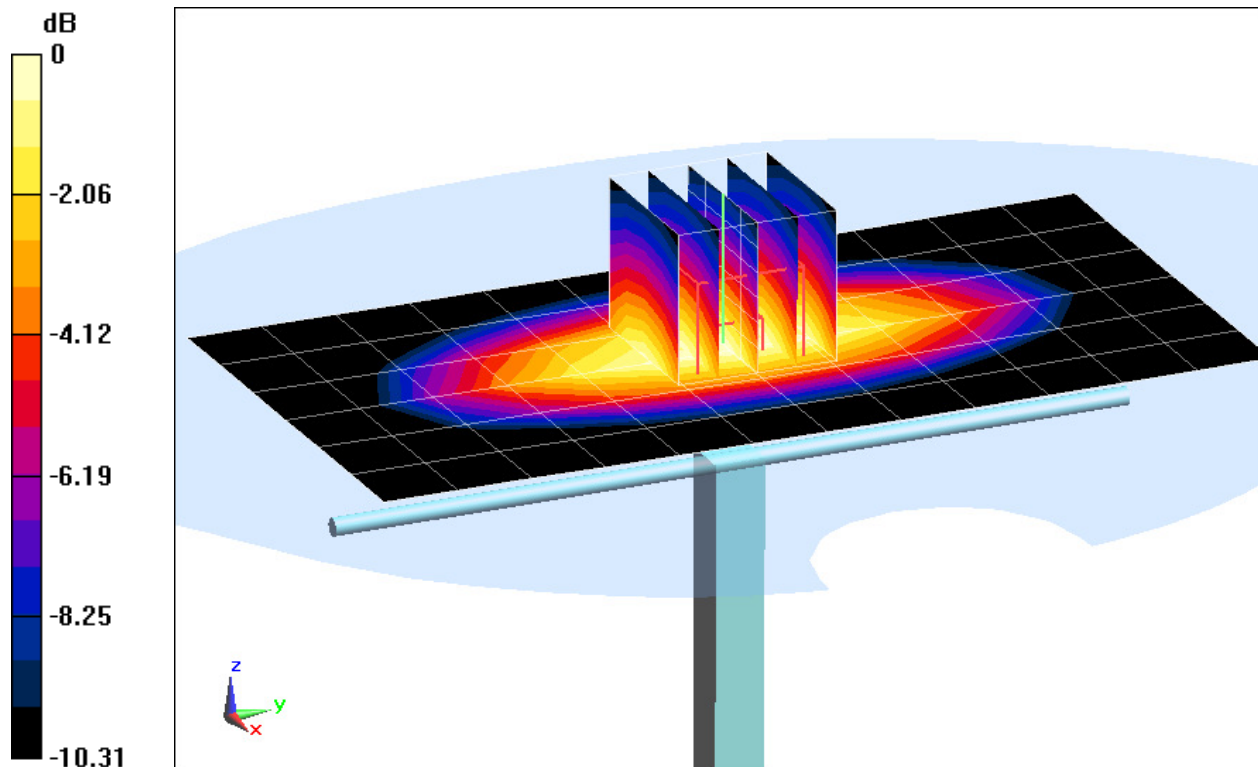
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.665 mW/g

Deviation = 5.65%



0 dB = 1.10 mW/g = 0.83 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

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

Medium: 835 Body; Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.004 \text{ mho/m}$; $\epsilon_r = 54.38$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-14-2012; Ambient Temp: 24.8°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 1/18/2012

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

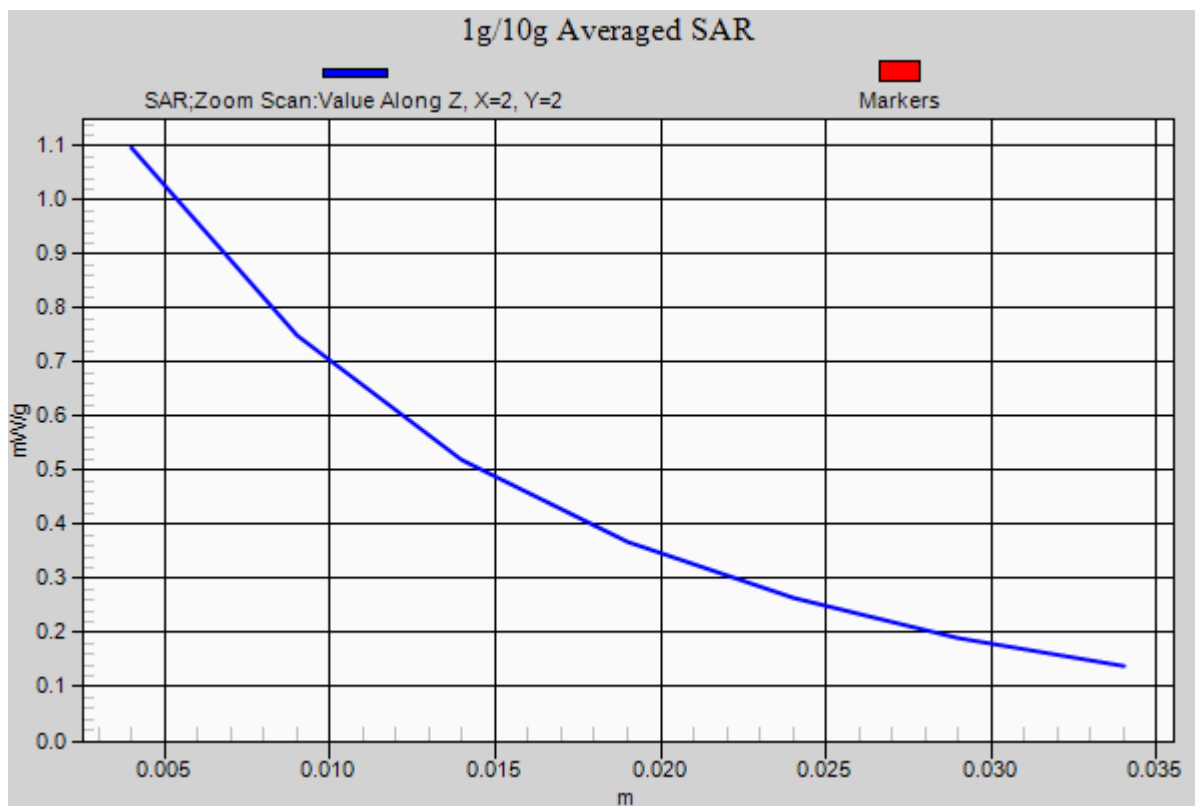
Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.665 mW/g

Deviation = 5.65%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.453 \text{ mho/m}$; $\epsilon_r = 53.02$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2012; Ambient Temp: 21.4°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(4.68, 4.68, 4.68); Calibrated: 4/24/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1750 MHz System Verification

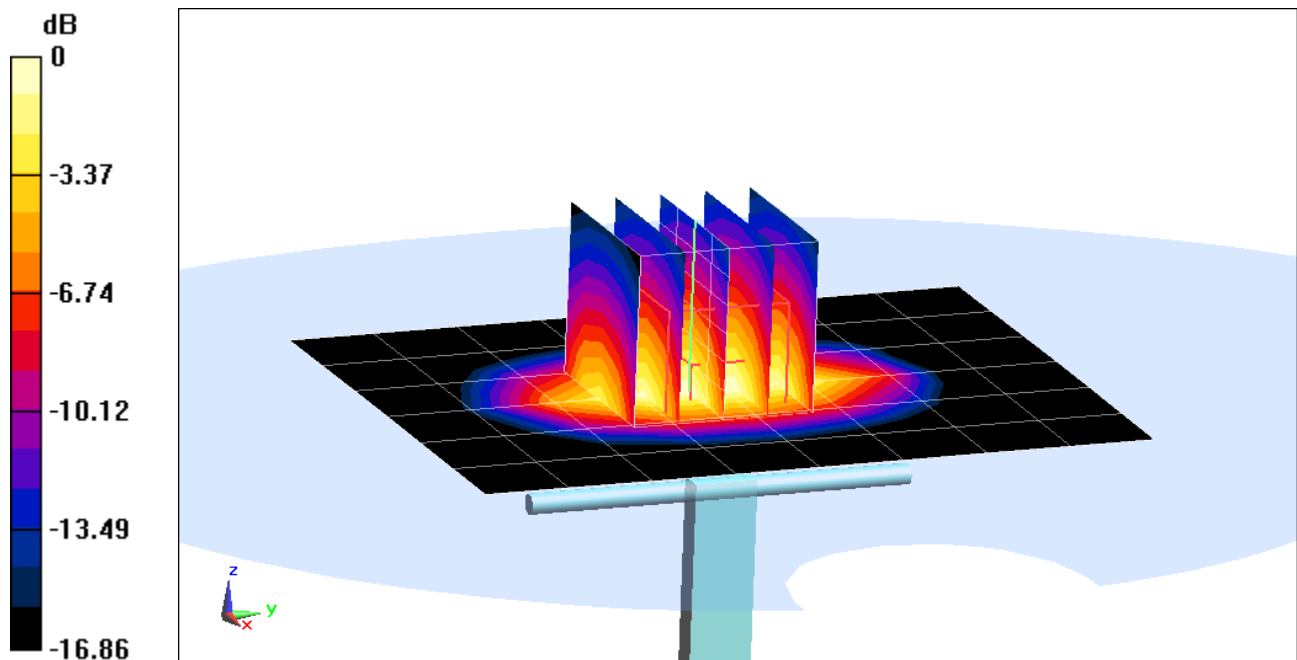
Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.84 mW/g; SAR(10 g) = 2.05 mW/g

Deviation = 2.13 %



0 dB = 4.240mW/g = 12.55 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.453 \text{ mho/m}$; $\epsilon_r = 53.02$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2012; Ambient Temp: 21.4°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(4.68, 4.68, 4.68); Calibrated: 4/24/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1750 MHz System Verification

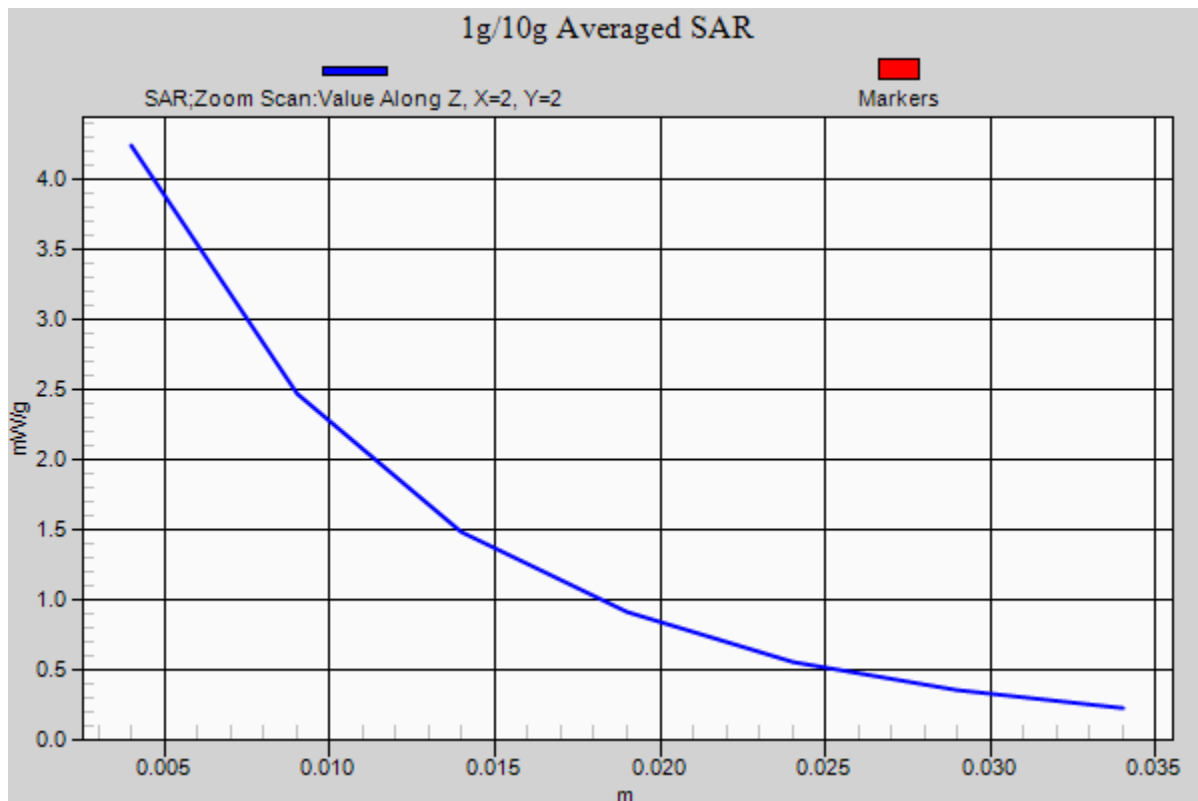
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.84 mW/g; SAR(10 g) = 2.05 mW/g

Deviation = 2.13 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.436 \text{ mho/m}$; $\epsilon_r = 53.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2012; Ambient Temp: 23.4°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.16, 5.16, 5.16); Calibrated: 7/9/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 4/12/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1750 MHz System Verification

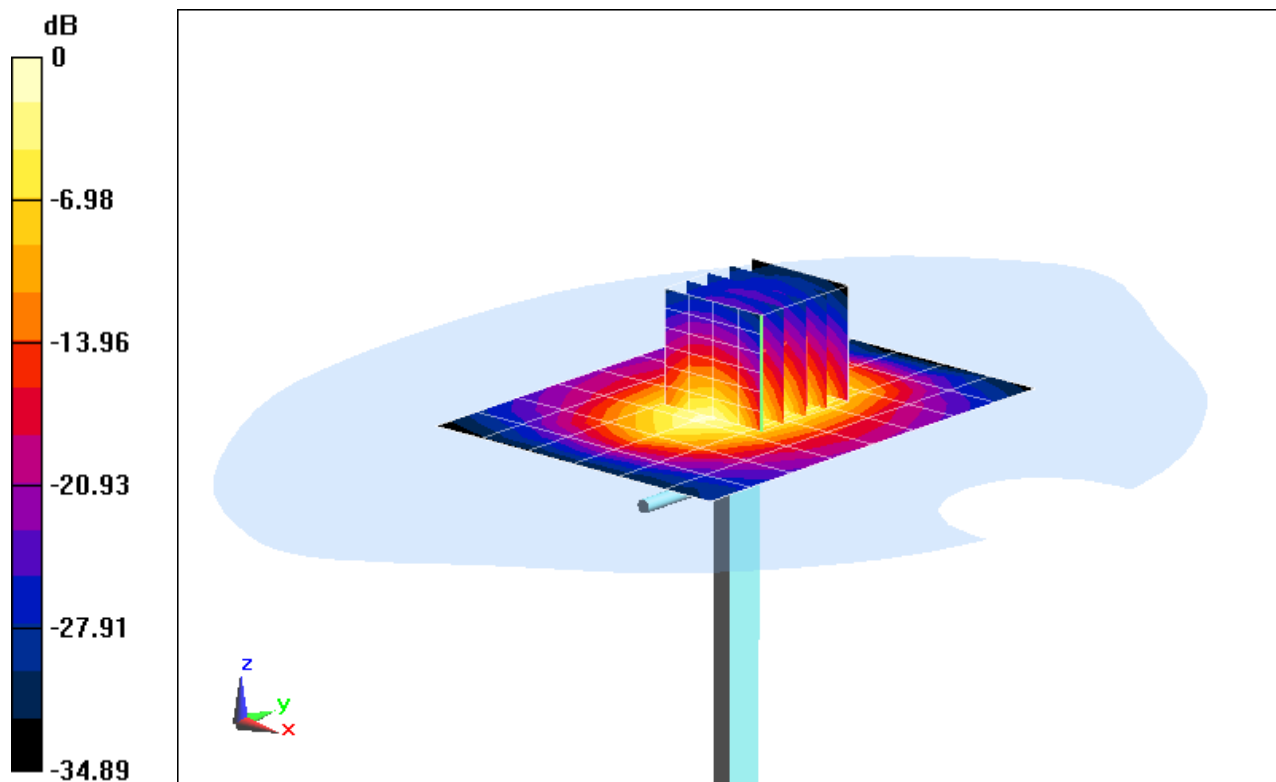
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power: 20.0 dBm (100 mW)

SAR(1 g) = 3.72 mW/g; SAR(10 g) = 1.95 mW/g

Deviation: -1.06%



0 dB = 4.10 mW/g = 12.26 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.436 \text{ mho/m}$; $\epsilon_r = 53.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2012; Ambient Temp: 23.4°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.16, 5.16, 5.16); Calibrated: 7/9/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 4/12/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1750 MHz System Verification

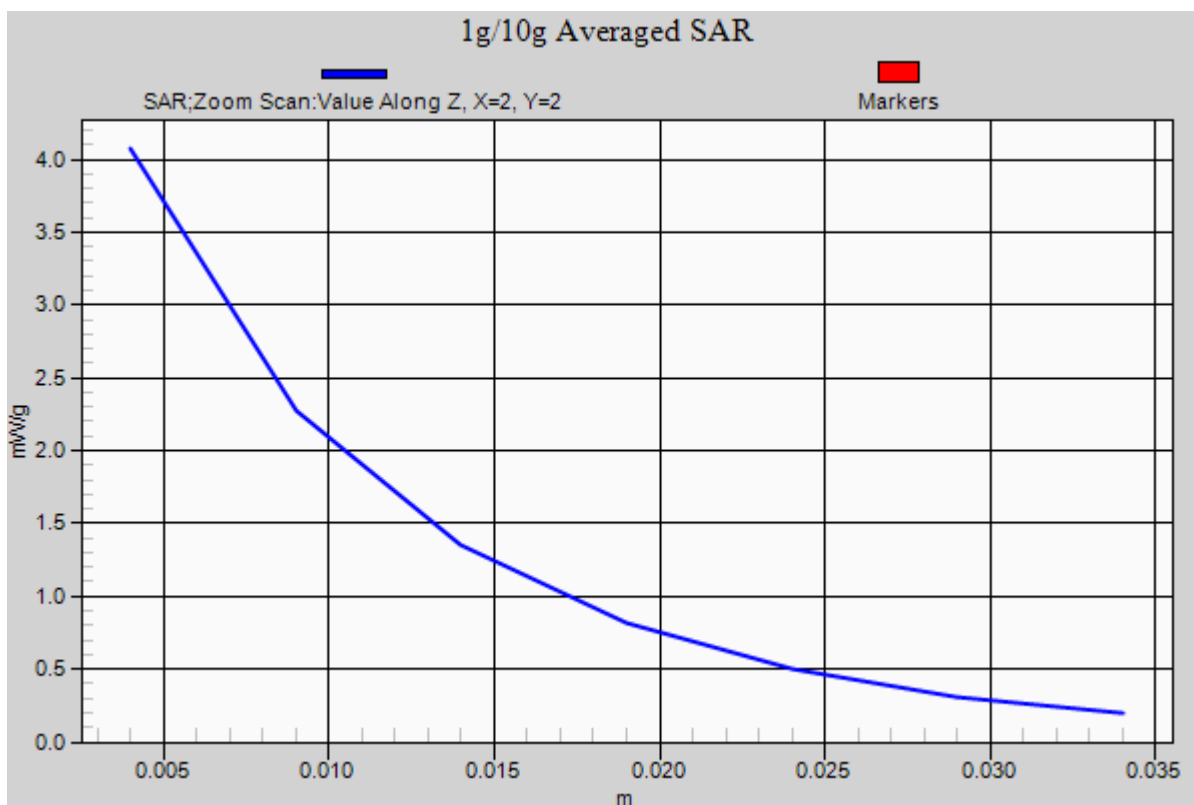
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power: 20.0 dBm (100 mW)

SAR(1 g) = 3.72 mW/g; SAR(10 g) = 1.95 mW/g

Deviation: -1.06%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.463 \text{ mho/m}$; $\epsilon_r = 52.38$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2012; Ambient Temp: 23.3°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3213; ConvF(4.68, 4.68, 4.68); Calibrated: 4/24/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1750 MHz System Verification

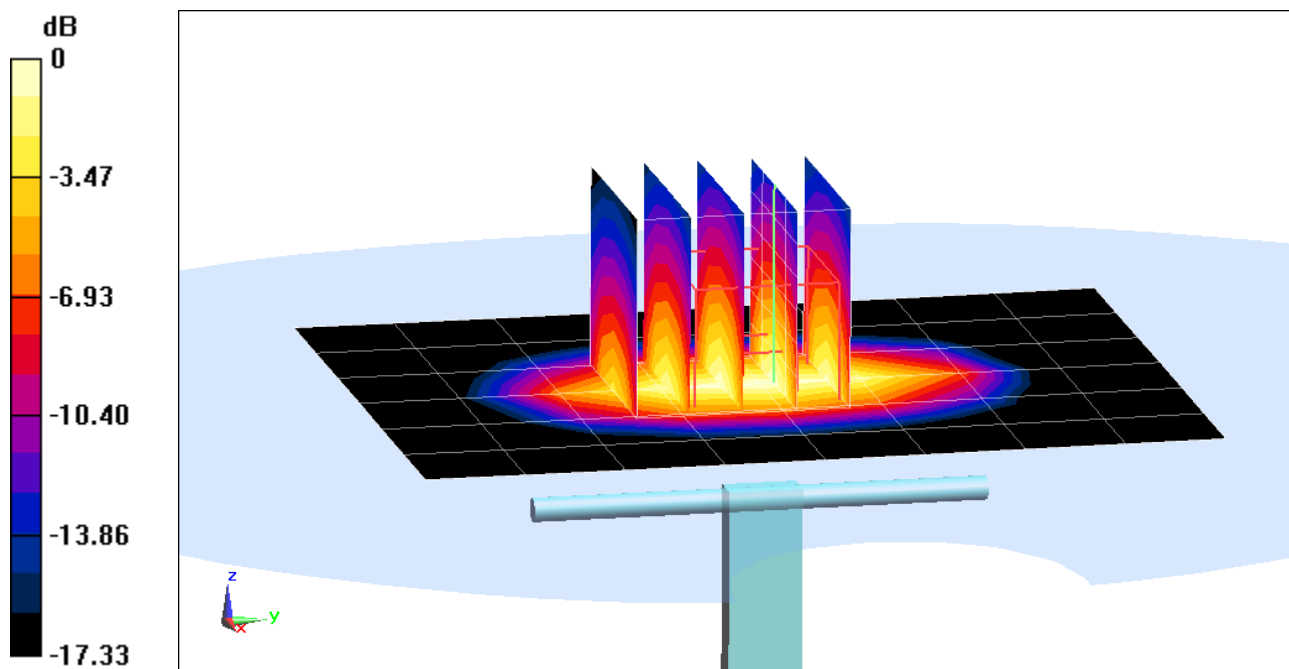
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.89 mW/g; SAR(10 g) = 2.07 mW/g

Deviation = 3.46 %



0 dB = 4.340mW/g = 12.75 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.463 \text{ mho/m}$; $\epsilon_r = 52.38$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2012; Ambient Temp: 23.3°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3213; ConvF(4.68, 4.68, 4.68); Calibrated: 4/24/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1750 MHz System Verification

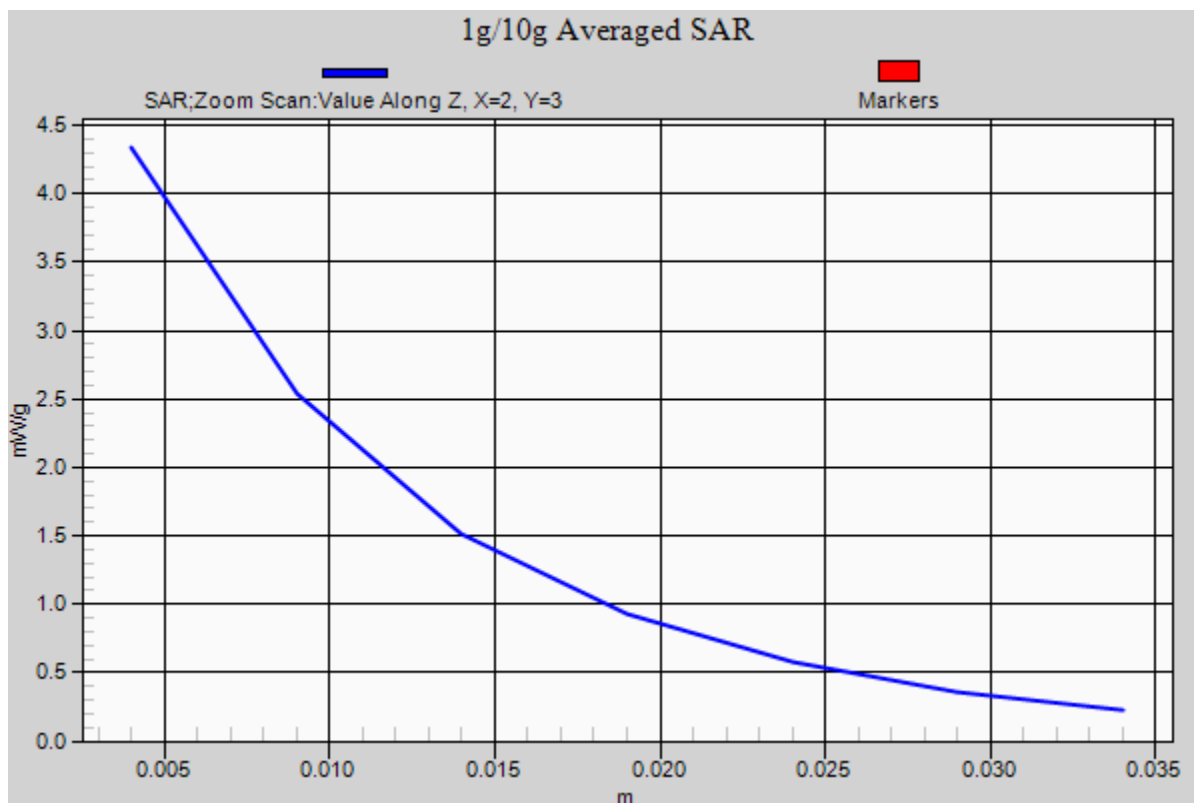
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.89 mW/g; SAR(10 g) = 2.07 mW/g

Deviation = 3.46 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.567 \text{ mho/m}$; $\epsilon_r = 51.787$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

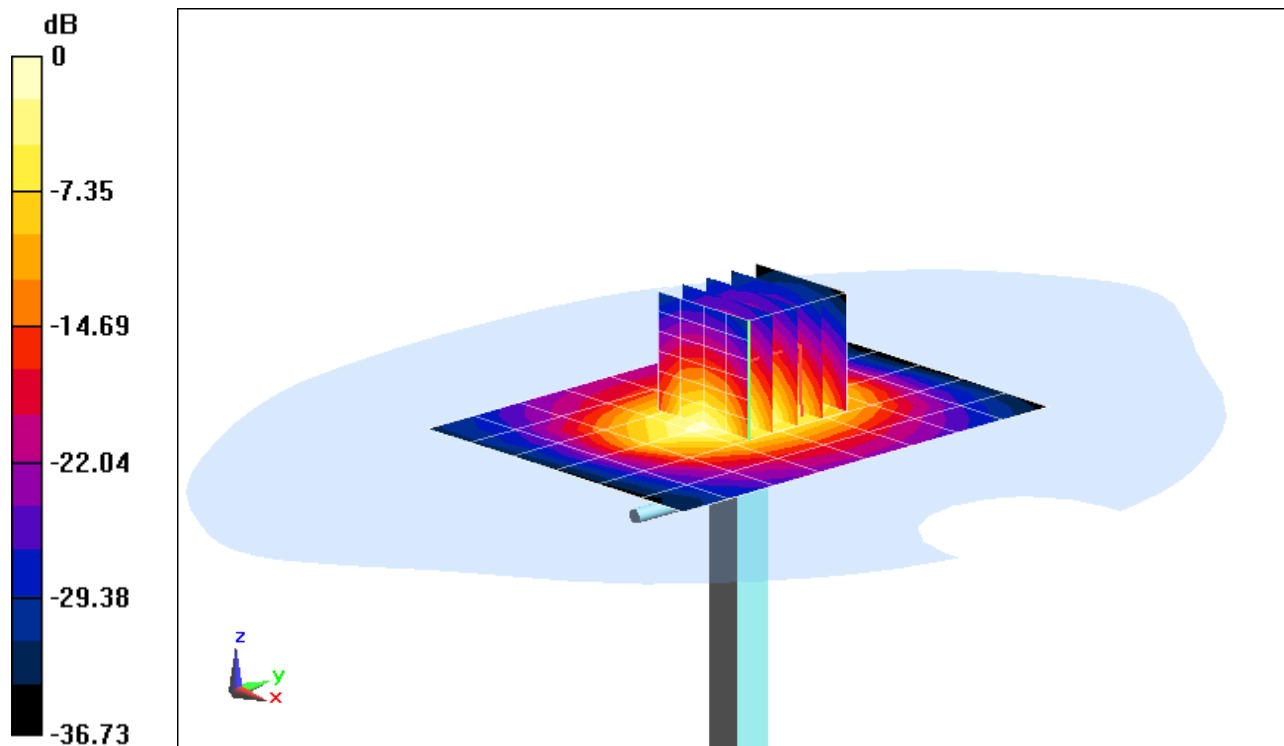
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 4.13 mW/g; SAR(10 g) = 2.14 mW/g

Deviation: 5.09%



0 dB = 4.62 mW/g = 13.29 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.567 \text{ mho/m}$; $\epsilon_r = 51.787$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

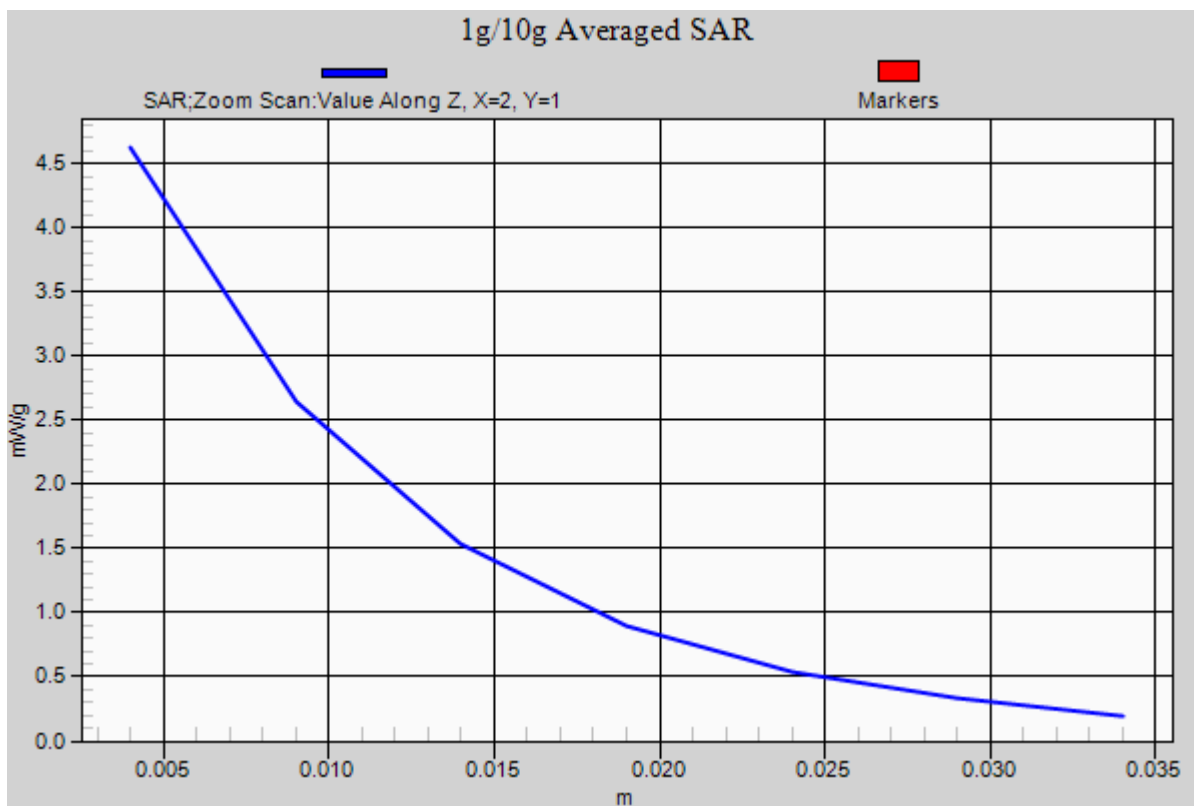
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 4.13 mW/g; SAR(10 g) = 2.14 mW/g

Deviation: 5.09%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.508 \text{ mho/m}$; $\epsilon_r = 52.49$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2012; Ambient Temp: 21.9°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

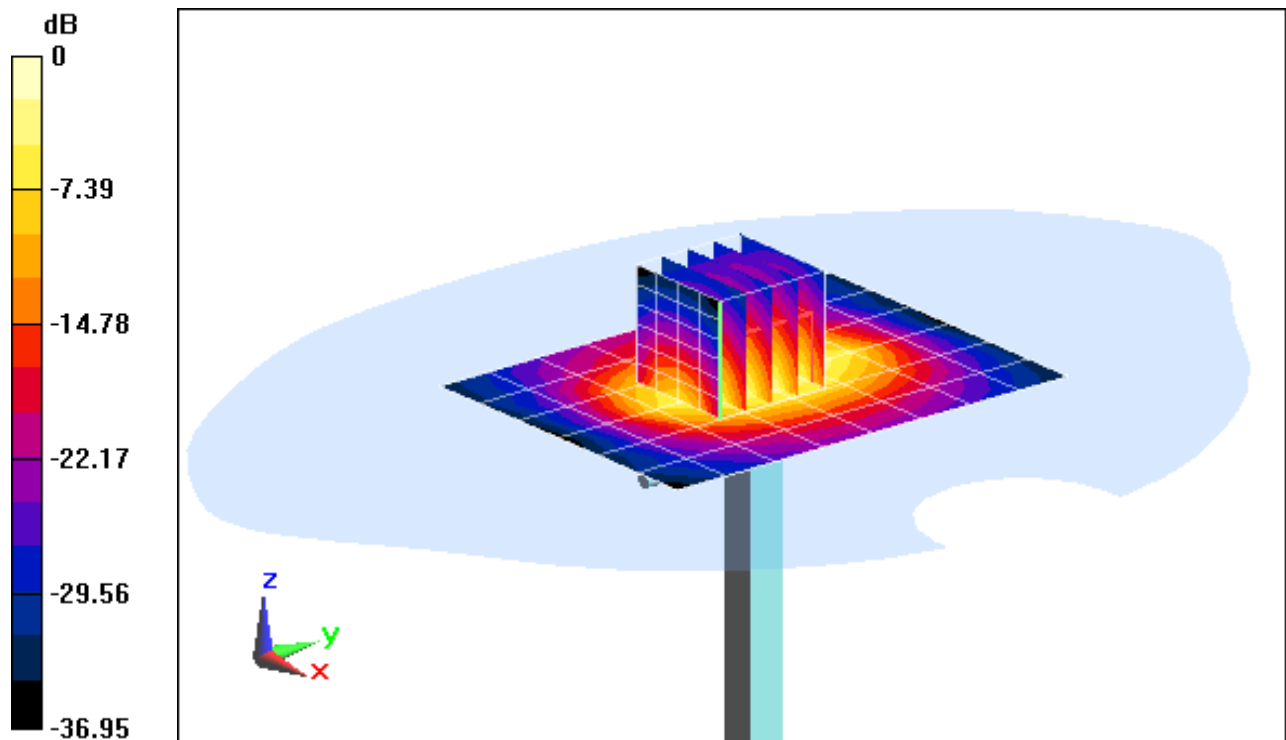
Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power: 20.0 dBm (100 mW)

SAR(1 g) = 3.83 mW/g; SAR(10 g) = 2 mW/g

Deviation: -2.54%



0 dB = 4.34 mW/g = 12.74 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.508 \text{ mho/m}$; $\epsilon_r = 52.49$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2012; Ambient Temp: 21.9°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3287; ConvF(4.76, 4.76, 4.76); Calibrated: 2/7/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

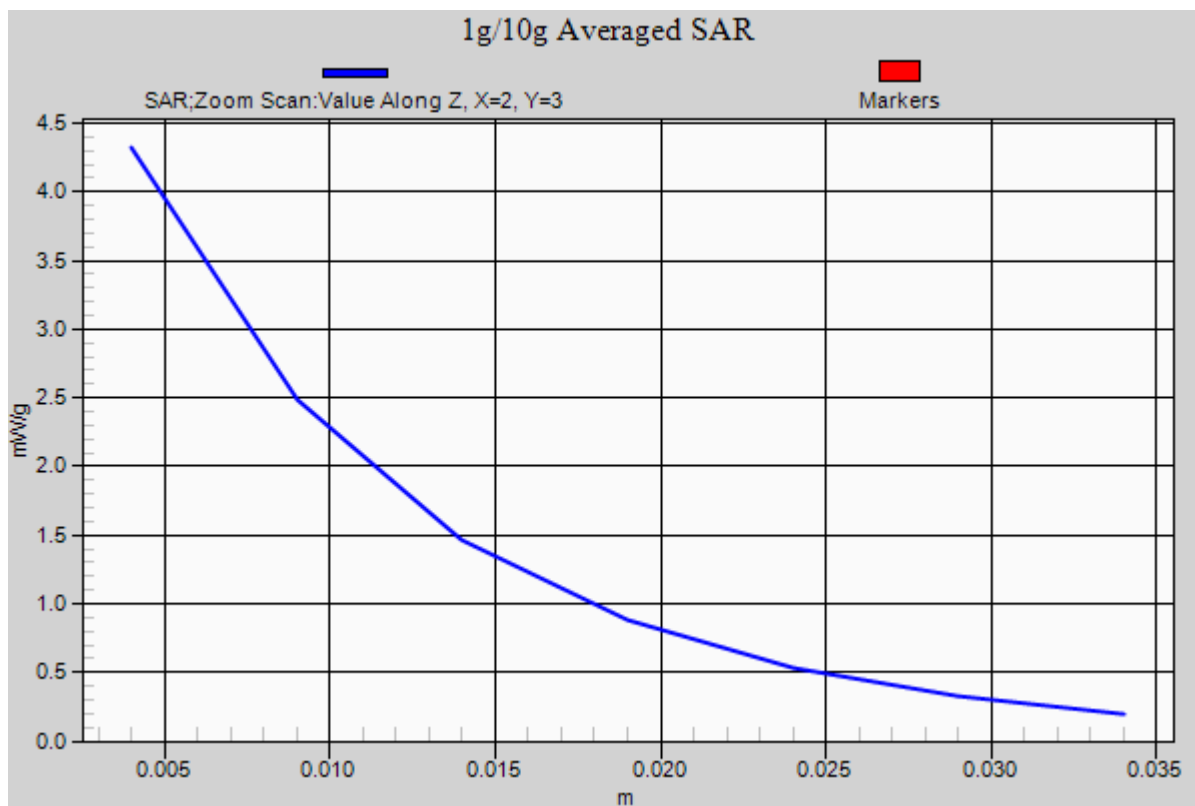
Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power: 20.0 dBm (100 mW)

SAR(1 g) = 3.83 mW/g; SAR(10 g) = 2 mW/g

Deviation: -2.54%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 882

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

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.957 \text{ mho/m}$; $\epsilon_r = 50.28$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2012; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: ES3DV3 - SN3288; ConvF(4.47, 4.47, 4.47); Calibrated: 2/7/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 4/12/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

2450 MHz System Verification

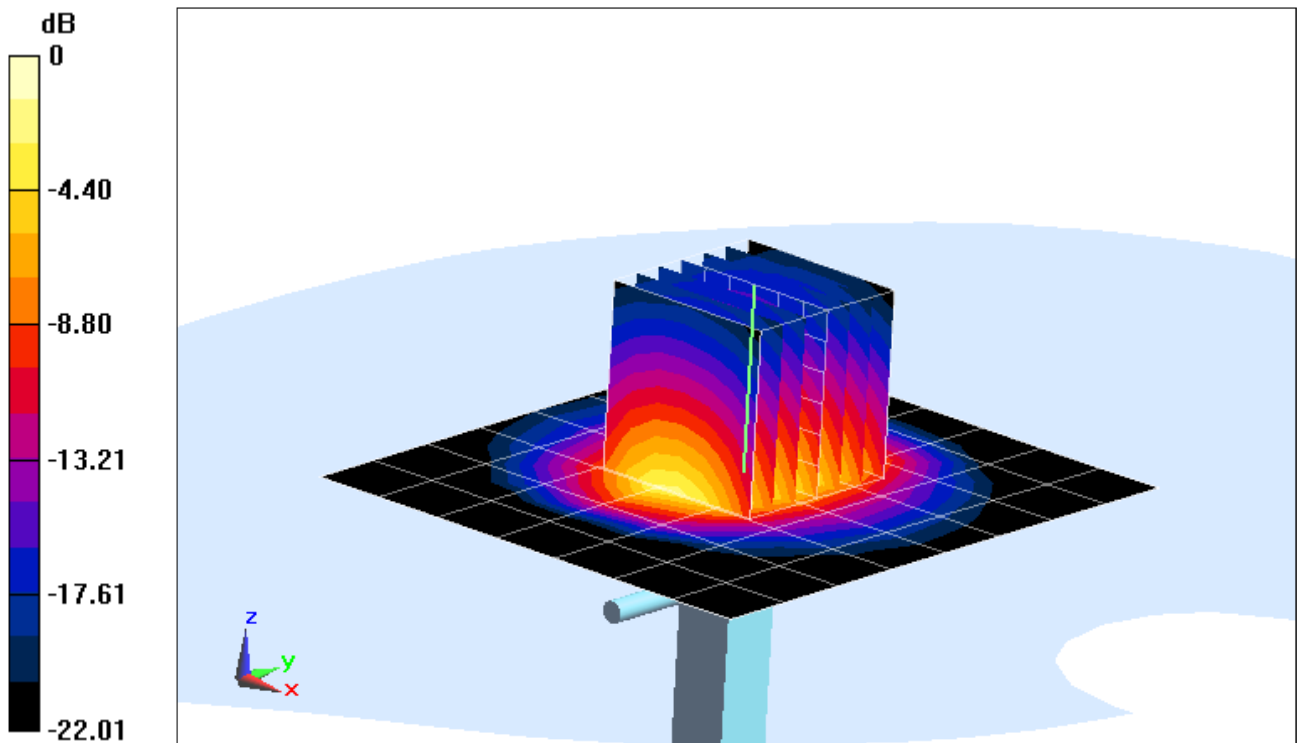
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power = 16.0 dBm (40 mW)

SAR(1 g) = 2.02 mW/g; SAR(10 g) = 0.919 mW/g

Deviation = 0.40 %



0 dB = 2.68 mW/g = 8.56 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 882

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

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.957 \text{ mho/m}$; $\epsilon_r = 50.28$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2012; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: ES3DV3 - SN3288; ConvF(4.47, 4.47, 4.47); Calibrated: 2/7/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 4/12/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

2450 MHz System Verification

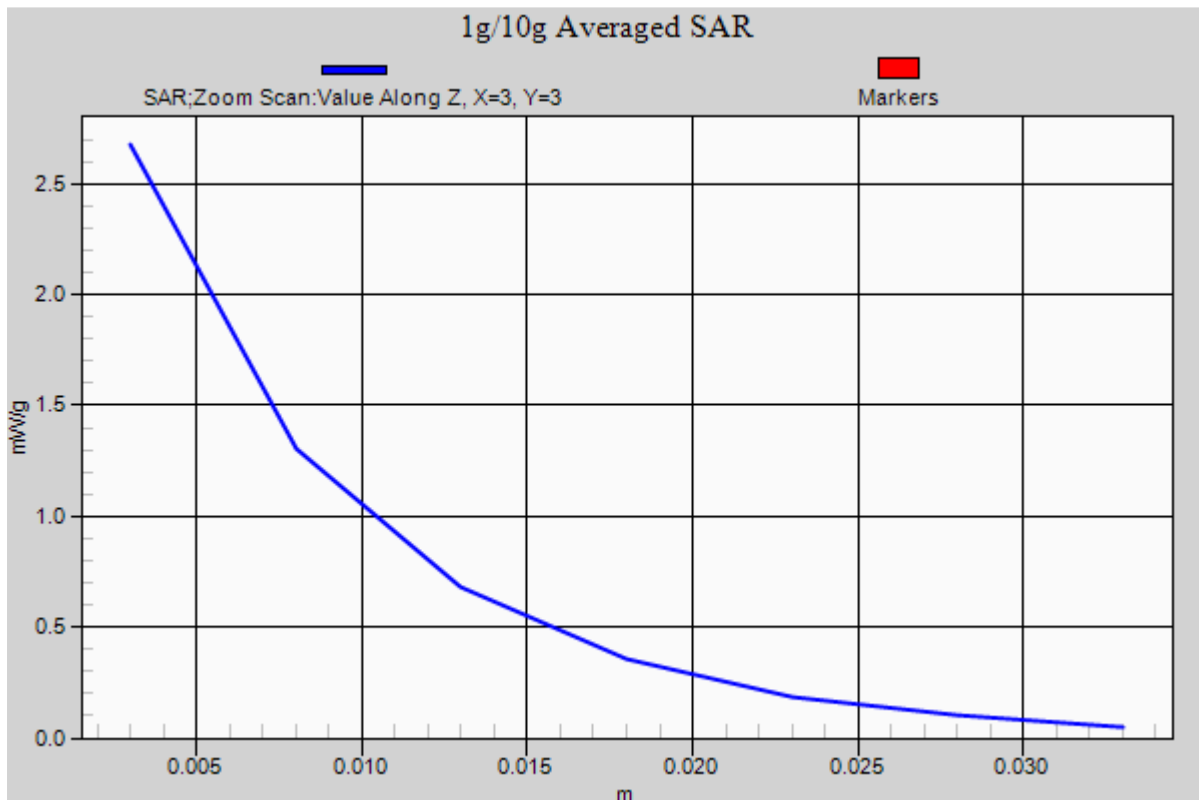
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power = 16.0 dBm (40 mW)

SAR(1 g) = 2.02 mW/g; SAR(10 g) = 0.919 mW/g

Deviation = 0.40 %



APPENDIX C: PROBE CALIBRATION



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 **PC Test**

Certificate No: **D1750V2-1051_Apr12**

CALIBRATION CERTIFICATE

Object **D1750V2 - SN: 1051**

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

Calibration date: **April 24, 2012**

*✓KOK
5/4/12*

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	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	<i>[Signature]</i>
Approved by:	Katja Pokovic	Technical Manager	<i>[Signature]</i>

Issued: April 24, 2012

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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 $\pm$ 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 $\pm$ 0.2) °C	40.6 $\pm$ 6 %	1.35 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.03 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	36.6 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.83 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	19.5 mW / g $\pm$ 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 $\pm$ 0.2) °C	52.9 $\pm$ 6 %	1.47 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.33 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	37.6 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.03 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.2 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.7 Ω - 0.2 j Ω
Return Loss	- 42.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.0 Ω + 0.0 j Ω
Return Loss	- 27.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.222 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	February 19, 2010

DASY5 Validation Report for Head TSL

Date: 24.04.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1051

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.35$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ 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: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

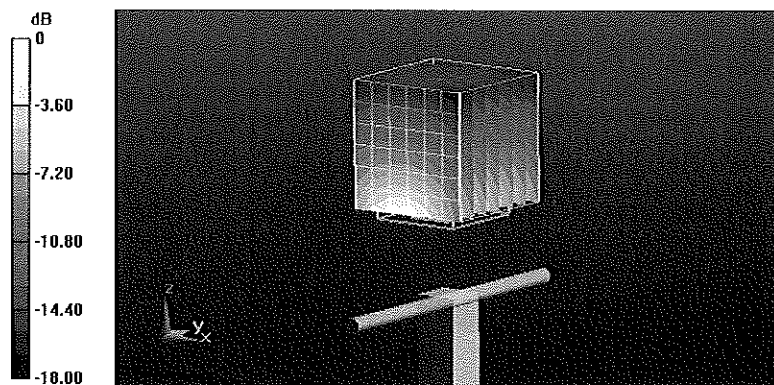
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.857 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 16.022 mW/g

SAR(1 g) = 9.03 mW/g; SAR(10 g) = 4.83 mW/g

Maximum value of SAR (measured) = 11.2 mW/g

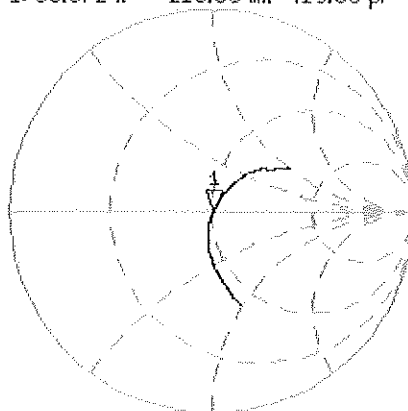


0 dB = 11.2 mW/g = 20.98 dB mW/g

Impedance Measurement Plot for Head TSL

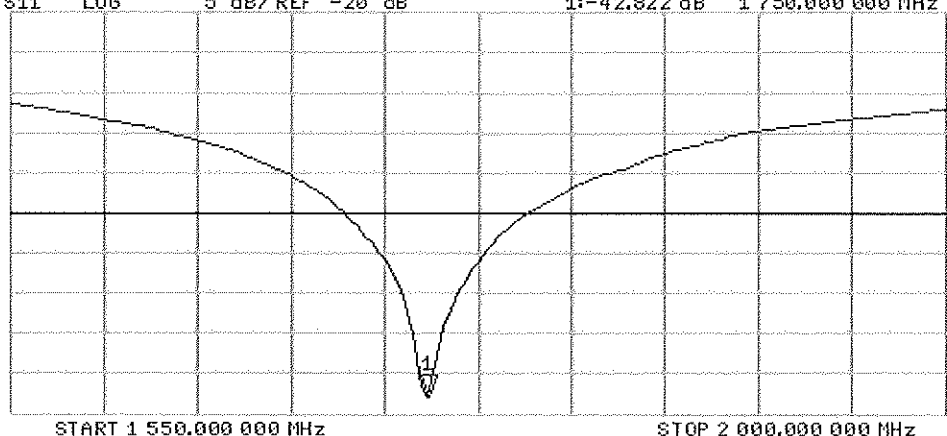
24 Apr 2012 09:49:22
 [CH1] S11 1 U FS 1: 50.672 Ω -216.80 m Ω 419.50 pF 1 750.000 000 MHz

*
 Del
 Cor
 Avg
 16
 H1d



CH2 S11 LOG 5 dB/REF -20 dB 1:-42.822 dB 1 750.000 000 MHz

Cor
 Avg
 16
 H1d



DASY5 Validation Report for Body TSL

Date: 24.04.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1051

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ 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: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

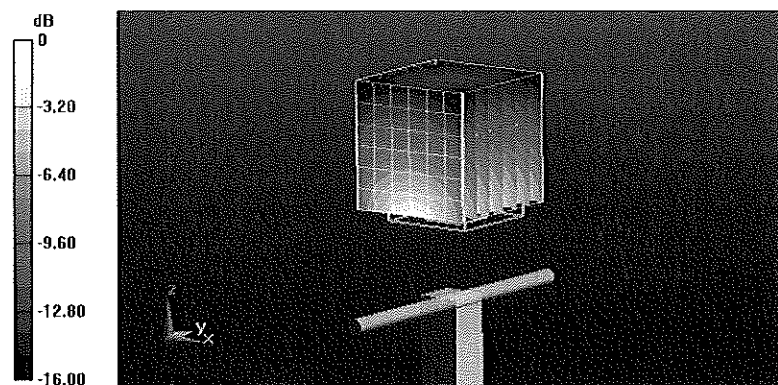
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.394 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 15.953 mW/g

SAR(1 g) = 9.33 mW/g; SAR(10 g) = 5.03 mW/g

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

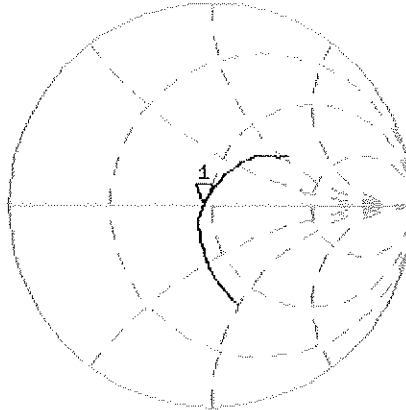


0 dB = 11.7 mW/g = 21.36 dB mW/g

Impedance Measurement Plot for Body TSL

24 Apr 2012 09:48:35
[CH1] S11 1 U FS 1: 45.977 Ω 0.0020 Ω 177.41 fH 1 750.000 000 MHz

*
De1
Cor



Avg
16

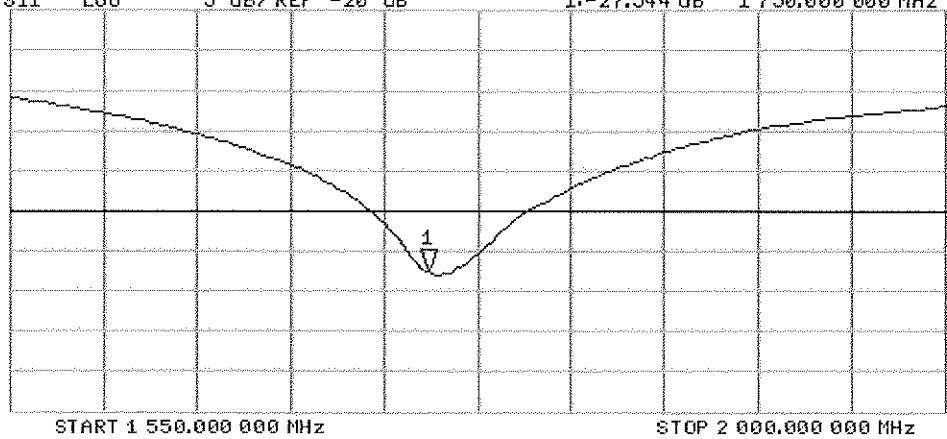
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1:-27.544 dB 1 750.000 000 MHz

Cor

Avg
16

H1d





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Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **D1900V2-5d149_Feb12**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d149**

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

Calibration date: **February 22, 2012**

✓ KOK
 4/11/12

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: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

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

Issued: February 23, 2012

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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.

Measurement Conditions

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

DASY Version	DASY5	V52.8.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.4 $\pm$ 6 %	1.40 mho/m $\pm$ 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	9.80 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	39.3 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.18 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	20.7 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.0 $\pm$ 6 %	1.56 mho/m $\pm$ 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	9.99 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	39.3 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.23 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.7 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$52.4 \Omega + 5.5 j\Omega$
Return Loss	- 24.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$48.0 \Omega + 6.7 j\Omega$
Return Loss	- 23.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns
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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	March 11, 2011

DASY5 Validation Report for Head TSL

Date: 22.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d149

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 40.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

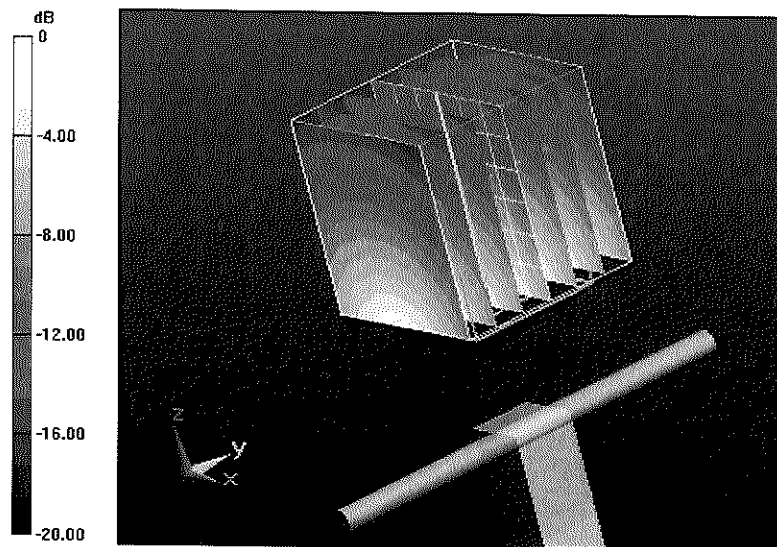
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 96.685 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 17.4710

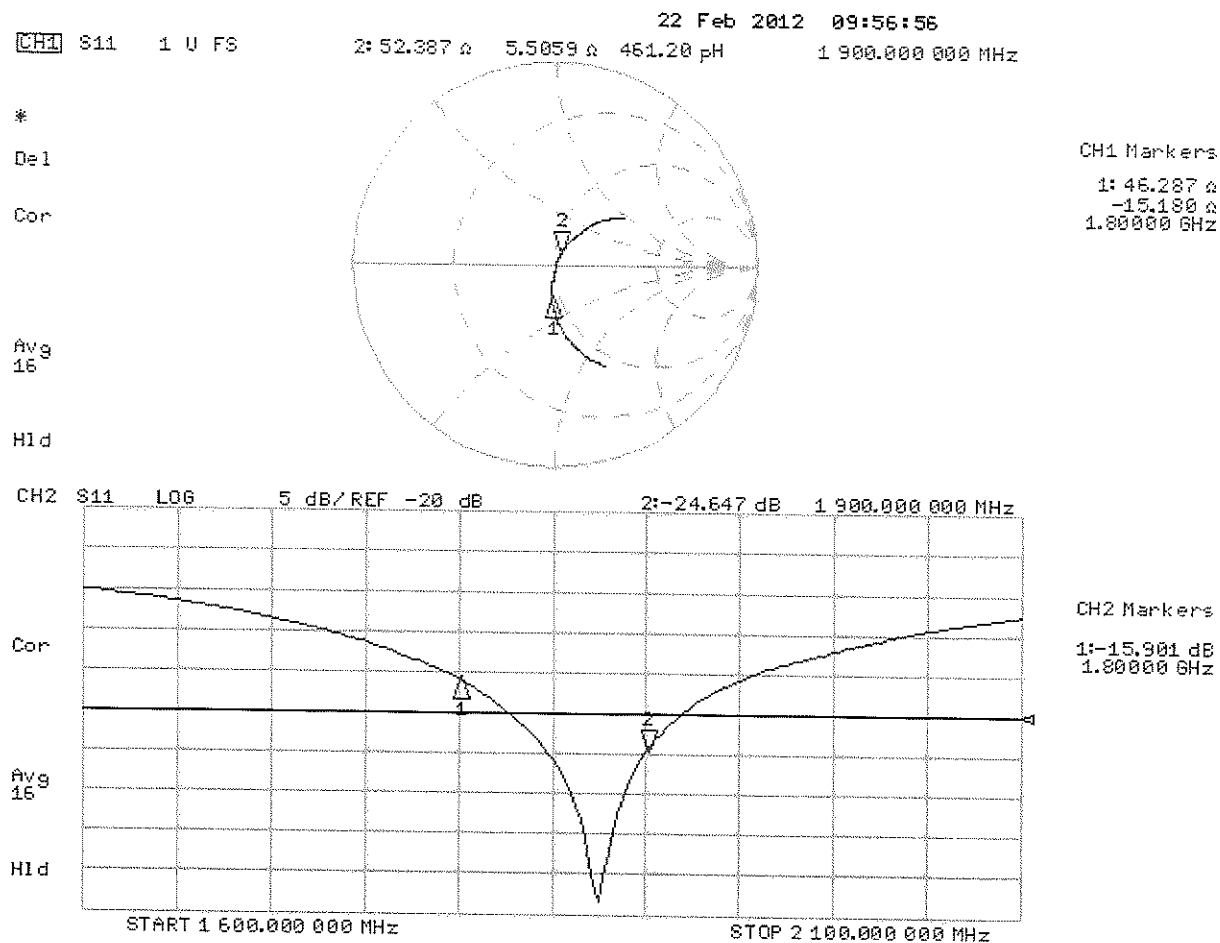
SAR(1 g) = 9.8 mW/g; SAR(10 g) = 5.18 mW/g

Maximum value of SAR (measured) = 12.114 mW/g



0 dB = 12.110mW/g = 21.66 dB mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 06.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d149

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

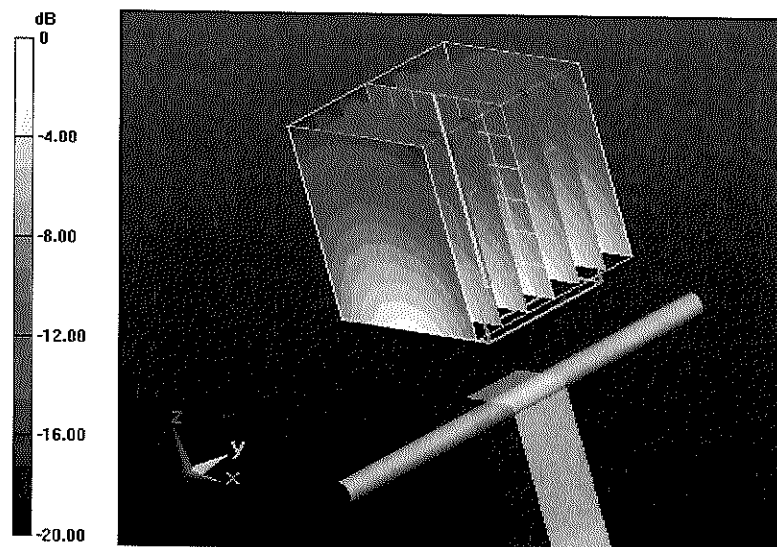
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.047 V/m; Power Drift = 0.0017 dB

Peak SAR (extrapolated) = 18.1310

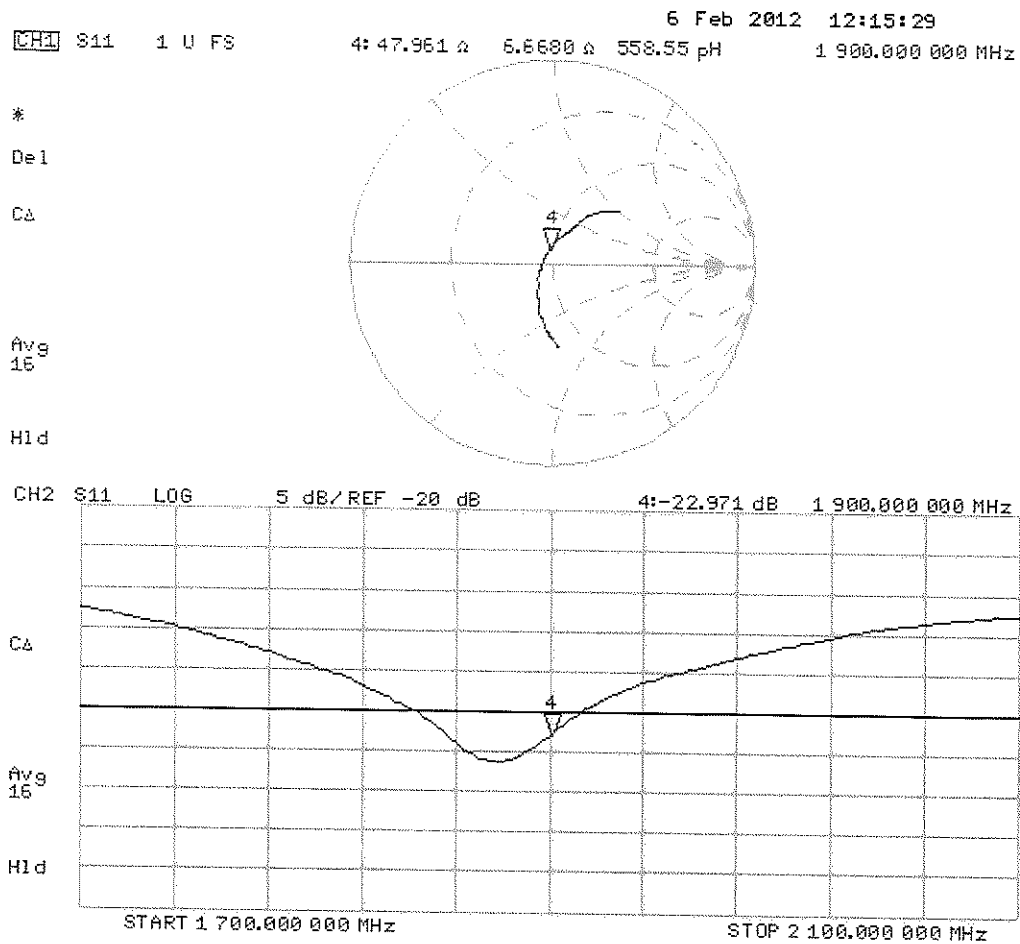
SAR(1 g) = 9.99 mW/g; SAR(10 g) = 5.23 mW/g

Maximum value of SAR (measured) = 12.672 mW/g



0 dB = 12.670mW/g = 22.06 dB mW/g

Impedance Measurement Plot for Body TSL





Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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Client **PC Test**

Certificate No: **D2450V2-882_Feb12**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 882**

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

Calibration date: **February 07, 2012**

LOK
4/6/12

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: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

Calibrated by:	Name Israe El-Naouq	Function Laboratory Technician	Signature <i>Israe El-Naouq</i>
Approved by:	Katja Pokovic	Technical Manager	<i>Katja Pokovic</i>

Issued: February 15, 2012

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The Swiss Accreditation Service is one of the signatories to the EA
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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.

Measurement Conditions

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

DASY Version	DASY5	V52.8.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	38.9 $\pm$ 6 %	1.86 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.6 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	53.5 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.27 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	24.8 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.3 $\pm$ 6 %	2.02 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.8 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	50.3 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.94 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	23.5 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$53.7 \Omega + 1.1 j\Omega$
Return Loss	- 28.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$51.0 \Omega + 3.2 j\Omega$
Return Loss	- 29.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.156 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	October 06, 2011

DASY5 Validation Report for Head TSL

Date: 07.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 882

Communication System: CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 38.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.45, 4.45, 4.45); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

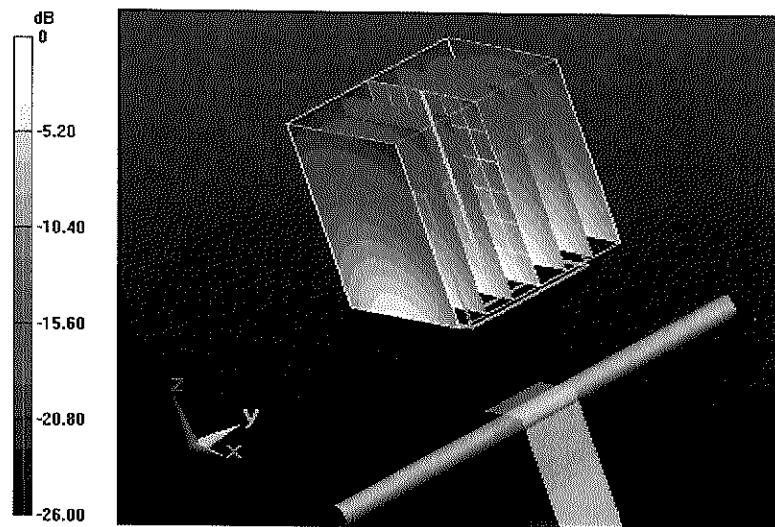
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.8 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 28.3920

SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.27 mW/g

Maximum value of SAR (measured) = 17.598 mW/g

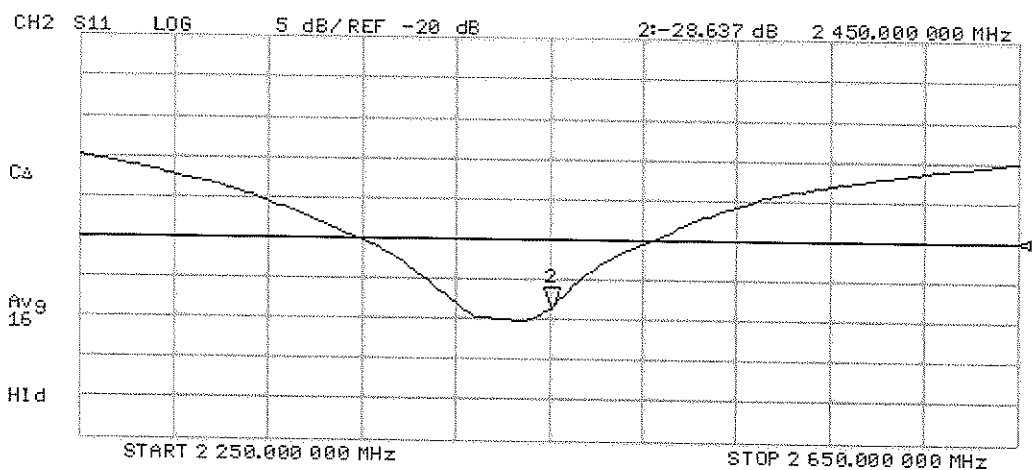
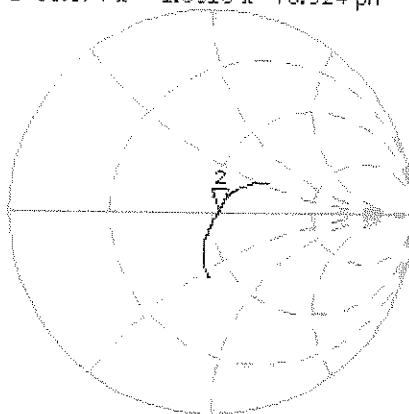


0 dB = 17.600mW/g = 24.91 dB mW/g

Impedance Measurement Plot for Head TSL

7 Feb 2012 11:30:04
 CH1 S11 1 U FS 2: 53.674 $\angle$ 1.0918 $\angle$ 70.924 μ H 2 450.000 000 MHz

*
 Del
 CA
 Avg
 16
 H1 d



DASY5 Validation Report for Body TSL

Date: 07.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 882

Communication System: CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.02$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.26, 4.26, 4.26); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

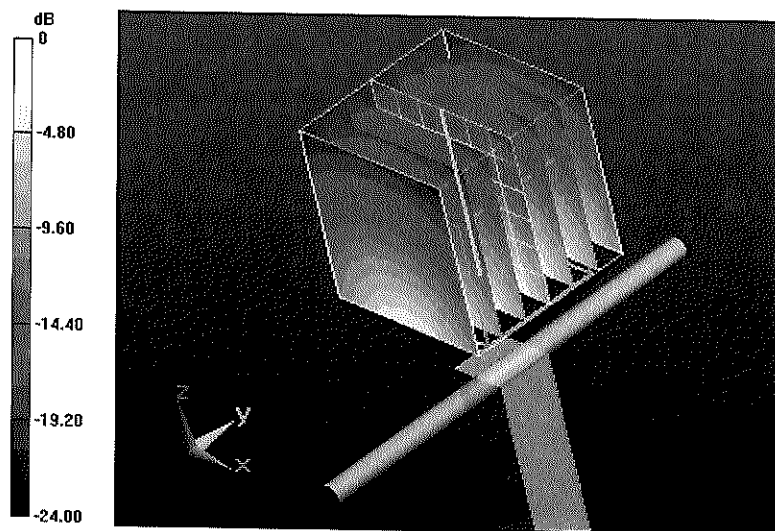
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.959 V/m; Power Drift = 0.0036 dB

Peak SAR (extrapolated) = 26.2610

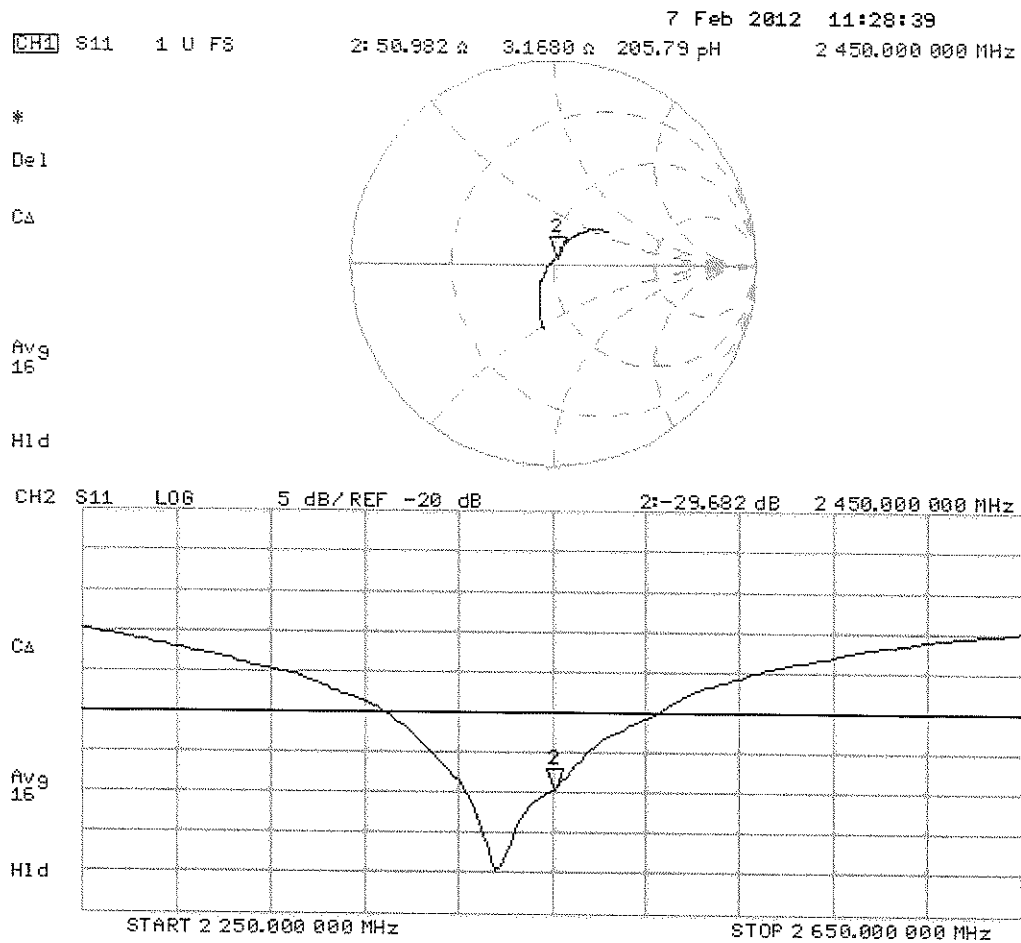
SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.94 mW/g

Maximum value of SAR (measured) = 16.899 mW/g



0 dB = 16.900mW/g = 24.56 dB mW/g

Impedance Measurement Plot for Body TSL





Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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

Client **PC Test**

Certificate No: **D750V3-1003_Jan12**

CALIBRATION CERTIFICATE

Object **D750V3 - SN: 1003**

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

Calibration date: **January 27, 2012**

KOK
2/6/12

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: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

Calibrated by: **Jeton Kastrati** **Laboratory Technician** *[Signature]*

Approved by: **Katja Pokovic** **Technical Manager** *[Signature]*

Issued: January 27, 2012

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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

Glossary:

TSL	tissue simulating liquid
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.

Measurement Conditions

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

DASY Version	DASY5	V52.8.0
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 $\pm$ 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 $\pm$ 0.2) °C	42.3 $\pm$ 6 %	0.92 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.15 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	8.40 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.40 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	5.49 mW / g $\pm$ 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 $\pm$ 0.2) °C	55.6 $\pm$ 6 %	0.96 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.18 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	8.72 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.45 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	5.80 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.3 Ω - 1.5 j Ω
Return Loss	- 27.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.5 Ω - 2.8 j Ω
Return Loss	- 31.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.044 ns
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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 21, 2009

DASY5 Validation Report for Head TSL

Date: 27.01.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1003

Communication System: CW; Frequency: 750 MHz

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.92 \text{ mho/m}$; $\epsilon_r = 42.3$; $\rho = 1000 \text{ kg/m}^3$

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: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

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

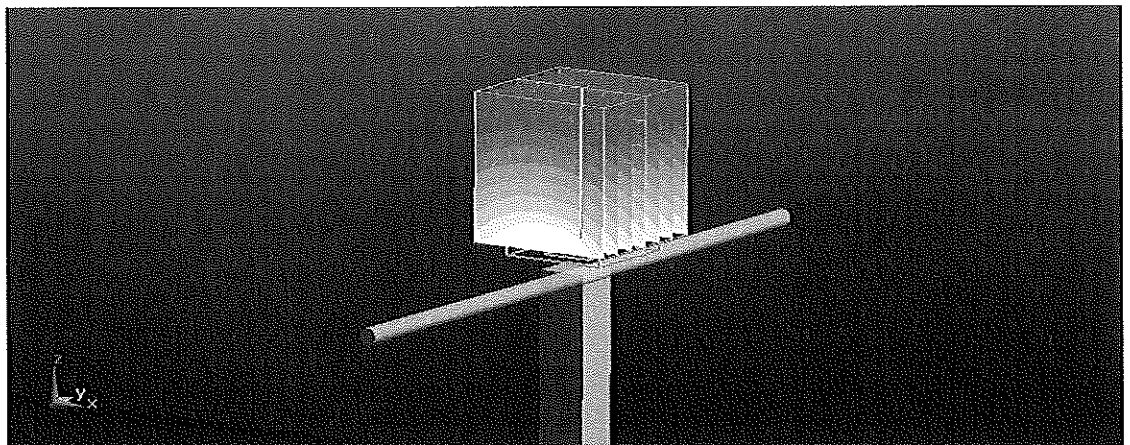
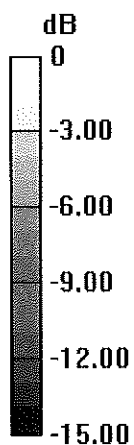
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 53.564 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.2610

SAR(1 g) = 2.15 mW/g; SAR(10 g) = 1.4 mW/g

Maximum value of SAR (measured) = 2.510 mW/g



0 dB = 2.510mW/g = 7.99 dB mW/g

Impedance Measurement Plot for Head TSL

27 Jan 2012 13:38:24

CH1 S11 1 U FG 1:54.242 1:4822 142.59 pF 750.000 000 MHz

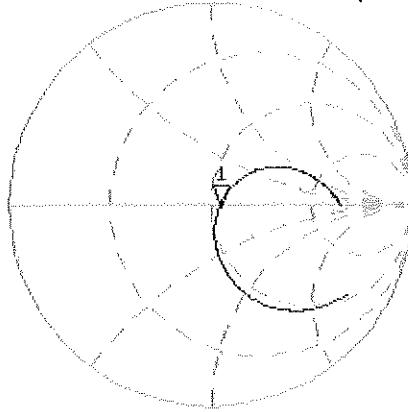
*

Del

Cor

Avg
16

H1d

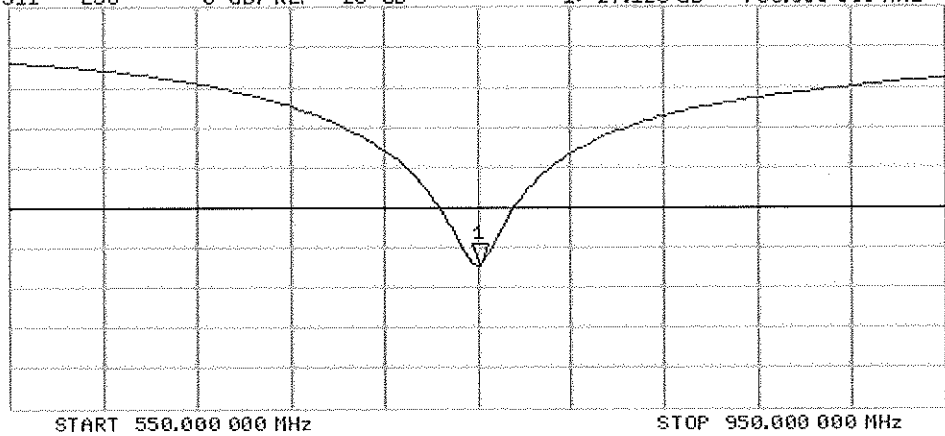


CH2 S11 LOG 5 dB/REF -20 dB 1:-27.125 dB 750.000 000 MHz

Cor

Avg
16

H1d



DASY5 Validation Report for Body TSL

Date: 27.01.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1003

Communication System: CW; Frequency: 750 MHz

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.96 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$

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: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

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

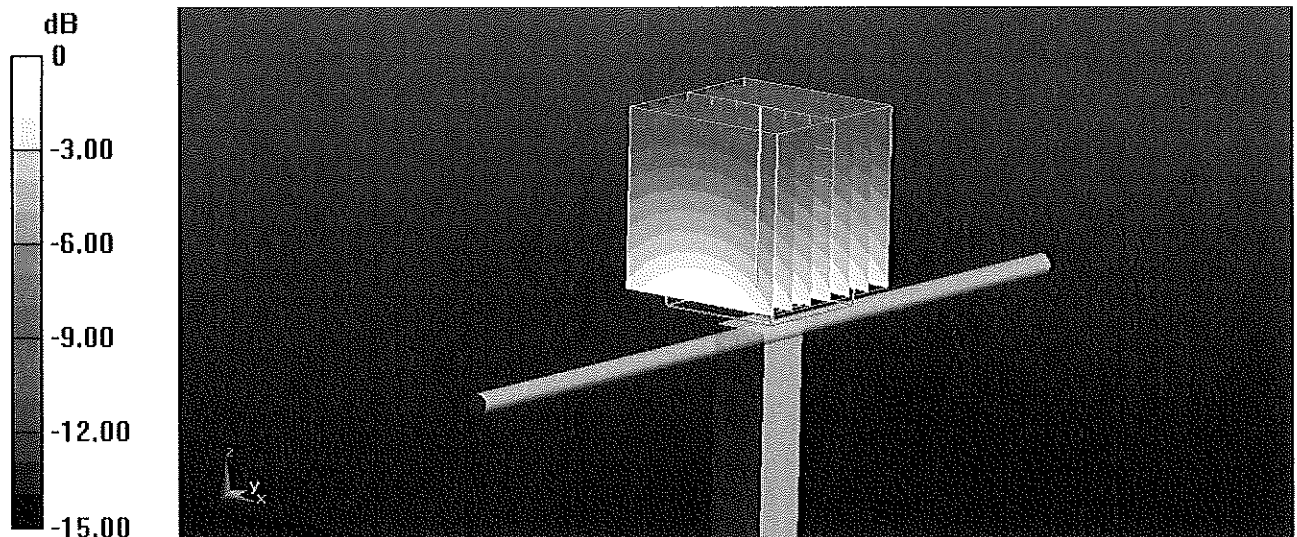
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 52.545 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 3.2460

SAR(1 g) = 2.18 mW/g; SAR(10 g) = 1.45 mW/g

Maximum value of SAR (measured) = 2.548 mW/g

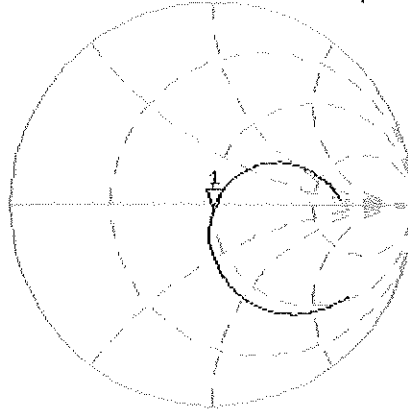


0 dB = 2.550mW/g = 8.13 dB mW/g

Impedance Measurement Plot for Body TSL

27 Jan 2012 10:10:56
[S11] S11 1 u FS 1: 50.527 $\angle$ -2.7500 $\angle$ 77.166 pF 750.000 000 MHz

*
De1
Cor



Avg
16

H1 d

CH2 S11 LOG 5 dB/REF -20 dB 1:-31.102 dB 750.000 000 MHz

Cor

Avg
16

H1 d

