



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:

06/21/2012 – 07/02/2012

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

0Y1206150821.A3L

FCC ID:

A3LSGHI547

APPLICANT:

SAMSUNG ELECTRONICS, CO. LTD.

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model(s):

SGH-I547

Test Device Serial No.:

Pre-Production [S/N: FJ-164-A; FJ-164-B]

Band & Mode	Tx Frequency	Conducted Power [dBm]	SAR		
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)
GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	33.40	0.74	0.96	1.01
WCDMA/HSPA 850	826.40 - 846.60 MHz	22.96	0.56	0.45	0.52
GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	29.48	0.41	0.59	0.59
WCDMA/HSPA 1900	1852.4 - 1907.6 MHz	22.30	0.66	0.73	0.73
LTE Band 17	706.5 - 713.5 MHz	23.44	0.32	0.38	0.38
LTE Band 5 (Cell)	826.5 - 846.5 MHz	23.45	0.62	0.59	0.67
LTE Band 4 (AWS)	1712.5 - 1752.5 MHz	23.41	0.32	0.50	0.50
LTE Band 2 (PCS)	1852.5 - 1907.5 MHz	22.40	0.69	0.91	0.92
2.4 GHz WLAN	2412 - 2462 MHz	16.29	0.67	0.07	0.10
Bluetooth	2402 - 2480 MHz	9.47	N/A		
Simultaneous SAR per KDB 690783 D01:			1.42	0.98	1.11

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.

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 denied the 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
GSM/GPRS/EDGE 850	824.20 - 848.80 MHz
WCDMA/HSPA 850	826.40 - 846.60 MHz
GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz
WCDMA/HSPA 1900	1852.4 - 1907.6 MHz
LTE Band 17	706.5 - 713.5 MHz
LTE Band 5 (Cell)	826.5 - 846.5 MHz
LTE Band 4 (AWS)	1712.5 - 1752.5 MHz
LTE Band 2 (PCS)	1852.5 - 1907.5 MHz
2.4 GHz WLAN	2412 - 2462 MHz
Bluetooth	2402 - 2480 MHz
NFC	13.56 MHz

1.2 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the standard battery and will be the only battery available from the manufacturer for this model. Therefore all SAR tests were performed with the standard battery which already integrates the NFC antenna. The device restricts the battery used to battery model: EB-L1D7IBA.

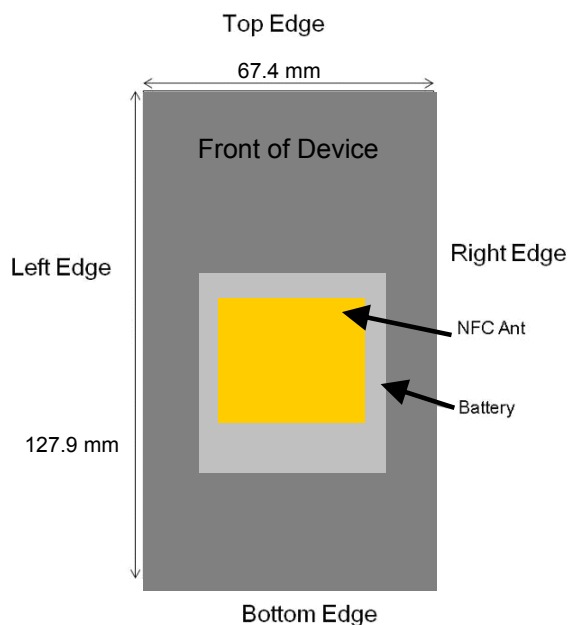


Figure 1-1
NFC Antenna Locations

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1.3 DUT Antenna Locations

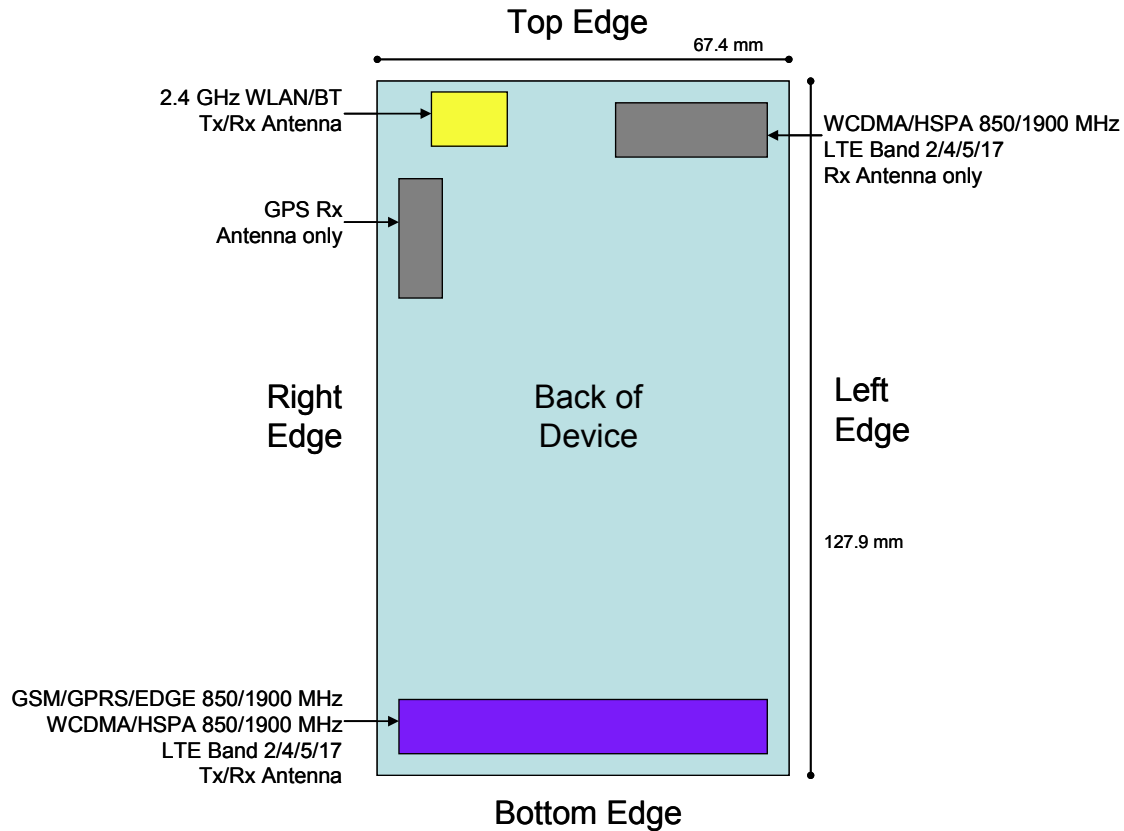


Figure 1-2
DUT Antenna Locations

Table1-1
Mobile Hotspot Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
WCDMA 850	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
WCDMA 1900	Yes	Yes	No	Yes	Yes	Yes
LTE Band 17	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 4 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 2 (PCS)	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN	Yes	Yes	Yes	No	Yes	No

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06 guidance, page 2. The antenna document shows the distances between the transmit antennas and the edges of the device.

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1.4 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 1-3 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 1-3
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 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configurations	Head	Body-Worn Accessory	Hot Spot	Note
		IEEE 1528, Supp C	Supplement C	FCC KDB 941225 D06 edges/sides	
1	GSM850/1900 Mhz Voice + Wifi 2.4Ghz	Yes	10mm	N/A	
2	850/1900 WCDMA Voice + Wifi 2.4Ghz	Yes	10mm	N/A	
3	850/1900 GPRS/EDGE Data + Wifi 2.4Ghz	N/A	N/A	Yes	2G Hotspot
4	850/1900 WCDMA/HSPA Data + Wifi 2.4Ghz	N/A	N/A	Yes	3G Hotspot
5	700/850/1750/1900 Mhz Band 17/5/4/2 LTE Data + Wifi 2.4Ghz	Yes *	10mm *	Yes	4G Hotspot

Note: * = for VoIP 3rd party apps possibly installed by end-user.

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1.5 SAR Test Exclusions Applied

(A) WIFI/BT

The separation distance between the Main Antenna and the Bluetooth/WLAN antenna is 102 mm.

The maximum average RF Conducted Power of Bluetooth Tx is 8.851 mW (See DSS Report for a full set of Bluetooth powers).

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

(B) Licensed Transmitter(s)

This model does not support Simultaneous Voice and Data for the licensed transmitter in any modes except in WCDMA that allows Multi-RAB transmissions that share voice and data operations on a single physical channel.

GSM/GPRS/EDGE DTM is not supported. Therefore GSM Voice cannot transmit simultaneously with GPRS/EDGE Data.

This device is only capable of QPSK HSUPA in the uplink, but is capable of HSPA+ in the downlink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01.

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

1.6 Power Reduction for SAR

There is no power reduction for any band/mode implemented in this device for SAR purposes.

1.7 FCC Guidance Applied

- FCC OET Bulletin 65 Supplement C [June 2001]
- FCC KDB 941225 (2G/3G/4G and Hotspot)
- FCC KDB 248227 (802.11)
- FCC KDB 648474 (Simultaneous)

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LTE CHECKLIST PER KDB 941225 D05

KDB 941225 Pub LTE Information				
KDB 941225 Section	FCC ID	A3LSGHI547		
	Form Factor	Portable Handset		
1)	Frequency Range of each LTE transmission band	BAND2 : Tx (1852.5 ~ 1907.5MHz) BAND4 : Tx (1712.5 ~ 1752.5MHz) BAND5 : Tx (826.5 ~ 846.5MHz) BAND17 : Tx (706.5 ~ 713.5MHz)		
2)	Channel Bandwidths	BAND2 : 5Mhz, 10Mhz BAND4 : 5Mhz, 10Mhz, 15Mhz BAND5 : 5Mhz, 10Mhz BAND17 : 5Mhz, 10Mhz		
3)	Channel Numbers and Frequencies (MHz)	Low	Mid	High
	LTE Band 2 and BW 5MHz	1852.5MHz(18625)	1880MHz(18900)	1907.5MHz(19175)
	LTE Band2 and BW 10Mhz	1855MHz(18650)	1880MHz(18900)	1905MHz(19150)
	LTE Band4 and BW 5Mhz	1712.5MHz(19975)	1732.5MHz(20175)	1752.5MHz(20375)
	LTE Band4 and BW 10Mhz	1715MHz(20000)	1732.5MHz(20175)	1750MHz(20350)
	LTE Band4 and BW 15Mhz	1717.5MHz(20025)	1732.5MHz(20175)	1747.5MHz(20325)
	LTE Band5 and BW 5Mhz	826.5MHz(20425)	836.5MHz(20525)	846.5(20625)
	LTE Band5 and BW 10Mhz	829MHz(20450)	836.5MHz(20525)	844MHz(20600)
	LTE Band17 and BW 5Mhz	706.5MHz(23755)	710MHz(23790)	713.5MHz(23825)
	LTE Band17 and BW 10Mhz	709MHz(23780)	710MHz(23790)	711MHz(23800)
4)(a)	UE Category	3		
(b)	Modulations Supported in UL	QPSK, 16QAM		
	LTE Transmitter and Antenna Implementation	LTE/GSM/WCDMA share one antenna 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)	Yes		
	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 Operating Modes/Band	RF Output Power	RF Exposure Configurations	
	850 MHz GSM	See Page 1	See Page 1	
	1900 MHz GSM			
	850 MHz WCDMA			
	1900 MHz WCDMA			
	2.4GHz Bluetooth			
	2.4GHz WI-FI			
11)	Simultaneous Tx Conditions (Voice and Data Configurations)	See Section 1.4		
12)	Power Reduction used for SAR Compliance?	No		
13)	Describe Power Reduction (LTE Modes)	N/A		
14)	SAR Test Plan	N/A		
15)	SAR test data, preliminary	N/A		

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3

INTRODUCTION

The FCF 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)	835	835	1750	1750	1900	1900	2450	2450
Tissue	Head	Body	Head	Body	Head	Body	Head	Body
Ingredients (% by weight)								
Bactericide	0.1	0.1						
DGBE			47	31	44.92	29.44	7.99	26.7
HEC	1	1						
NaCl	1.45	0.94	0.4	0.2	0.18	0.39	0.16	0.1
Sucrose	57	44.9						
Triton X-100							19.97	
Water	40.45	53.06	52.6	68.8	54.9	70.17	71.88	73.2

See next page for 750 MHz Tissue Composition

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Table 4-2
Composition of 750 MHz Head and 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-e ⁺	HP-e ⁻	
600	57.4	24.88	0.83
625	57.2	24.53	0.85
650	57.0	24.18	0.87
675	56.7	23.90	0.90
700	56.4	23.61	0.92
725	56.2	23.37	0.94
750	55.9	23.12	0.96
775	55.7	22.95	0.99
800	55.4	22.78	1.01
825	55.2	22.61	1.04
850	55.0	22.52	1.05
875	54.9	22.44	1.06
900	54.7	22.30	1.09
925	54.5	22.17	1.11
950	54.2	22.05	1.13
975	53.8	21.85	1.18
1000	53.6	21.75	1.21

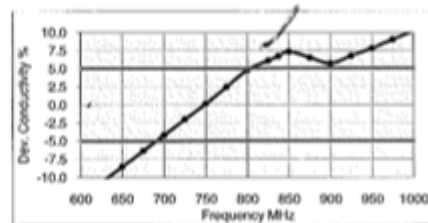
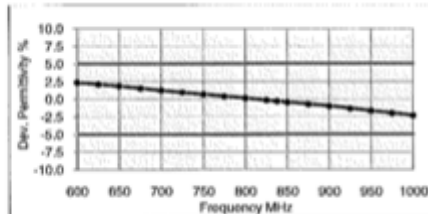


Figure 4-3
750MHz Body Tissue Equivalent Matter

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Measurement Certificate / Material Test

Item Name **Head Tissue Simulating Liquid (HSL 750)**
 Product No. SL AAH 075 (Charge: 110601-1)
 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 1.284 g/cm³
 TSL Heat-capacity 2.701 kJ/(kg*K)

Results

f (MHz)	Measured			Target		Diff. to Target [%]	
	HP-e'	HP-e''	sigma	eps	sigma	Δ-eps	Δ-sigma
600	43.9	23.01	0.77	42.7	0.88	2.7	-12.9
625	43.5	22.75	0.79	42.6	0.88	2.1	-10.5
650	43.1	22.49	0.81	42.5	0.89	1.5	-8.2
675	42.7	22.26	0.84	42.3	0.89	1.0	-5.9
700	42.4	22.03	0.86	42.2	0.89	0.4	-3.5
725	42.0	21.84	0.88	42.1	0.89	-0.1	-1.2
750	41.7	21.65	0.90	41.9	0.89	-0.6	1.1
775	41.4	21.50	0.93	41.8	0.90	-1.1	3.5
800	41.0	21.34	0.95	41.7	0.90	-1.6	5.9
825	40.7	21.19	0.97	41.6	0.91	-2.1	7.3
838	40.5	21.12	0.98	41.5	0.91	-2.4	8.0
850	40.4	21.05	1.00	41.5	0.92	-2.7	8.6
875	40.1	20.91	1.02	41.5	0.94	-3.3	7.9
900	39.8	20.77	1.04	41.5	0.97	-4.0	7.2
925	39.6	20.66	1.06	41.5	0.98	-4.6	8.2
950	39.3	20.55	1.09	41.4	0.99	-5.2	9.2
975	39.0	20.44	1.11	41.4	1.00	-5.8	10.3
1000	38.7	20.32	1.13	41.3	1.01	-6.4	11.4

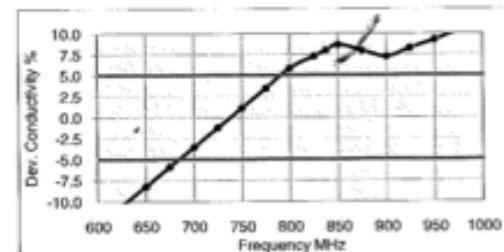
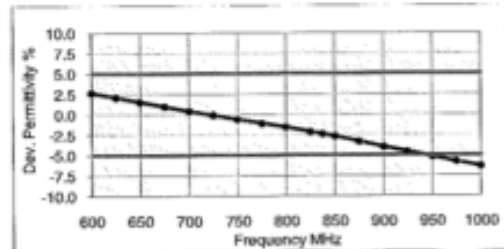


Figure 4-4
750MHz Head Tissue Equivalent Matter

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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. When applicable, for frequencies above 3 GHz, a 10 mm by 10 mm resolution was used.
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.

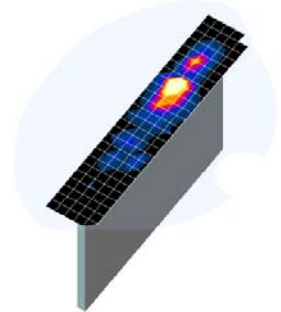


Figure 5-1
Sample SAR Area Scan

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6

DEFINITION OF REFERENCE POINTS

6.1 EAR REFERENCE POINT

Figure 6-2 shows the front, back and side views of the SAM Twin Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point (ERP), and “RE” is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 6-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front) is perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 6-2). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].

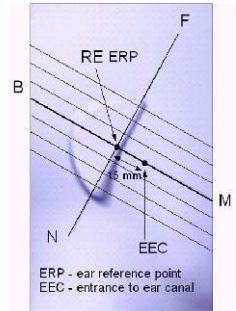


Figure 6-1
Close-Up Side view
of ERP

6.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the “test device reference point” located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (See Figure 6-3). The “test device reference point” was then located at the same level as the center of the ear reference point. The test device was positioned so that the “vertical centerline” was bisecting the front surface of the handset at it’s top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 6-2
Front, back and side view of SAM Twin Phantom

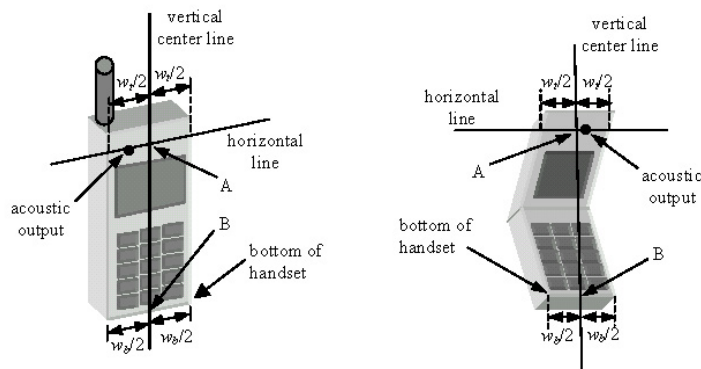


Figure 6-3
Handset Vertical Center & Horizontal Line Reference Points

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7 TEST CONFIGURATION POSITIONS FOR HANDSETS

7.1 Device Holder

The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon = 3$ and loss tangent $\delta = 0.02$.

7.2 Positioning for Cheek/Touch

1. The test device was positioned with the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 7-1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.

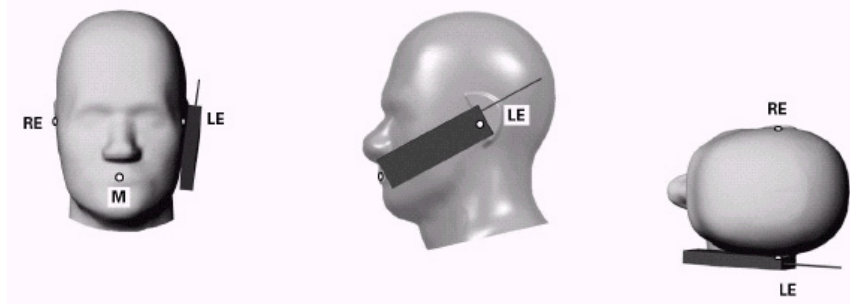


Figure 7-1 Front, Side and Top View of Cheek/Touch Position

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the ear.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the plane normal to MB-NF including the line MB (reference plane).
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the phone contact with the ear, the handset was rotated about the line NF until any point on the handset made contact with a phantom point below the ear (cheek) (See Figure 7-2).

7.3 Positioning for Ear / 15° Tilt

With the test device aligned in the “Cheek/Touch Position”:

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15degree.
2. The phone was then rotated around the horizontal line by 15 degree.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the phone touches the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. The tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 7-2).

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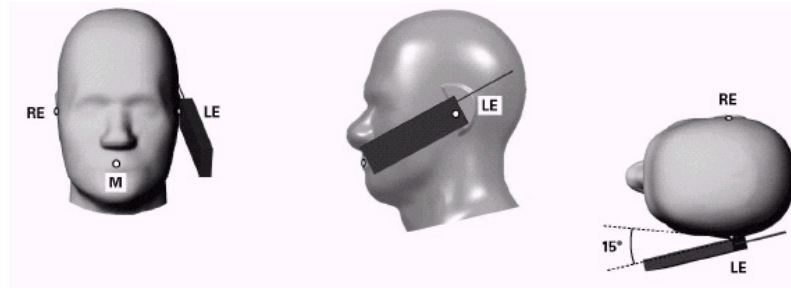


Figure 7-2 Front, Side and Top View of Ear/15° Tilt Position

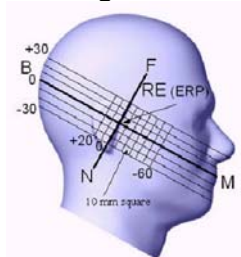


Figure 7-3
Side view w/ relevant markings



Figure 7-4 Body SAR Sample Photo
(Not Actual EUT)

7.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document publication 648474. The SAR required in these regions of SAM should be measured using a flat phantom. **Rectangular shaped phones** should be positioned with its bottom edge positioned from the flat phantom with the same distance provided by the cheek touching position using SAM. The ear reference point (ERP, as defined for SAM) of the phone should be positioned $\frac{1}{2}$ cm from the flat phantom shell. **Clam-shell phones** should be positioned with the hinge against a smooth edge of the flat phantom where the upper half of the phone is unfolded and extended beyond the phantom side wall. The lower half of the phone is secured in the test device holder at a fixed distance below the flat phantom determined by the minimum separation along the lower edge of the phone in the cheek touching position using SAM. Any case with substantial variation in separation distance along the lower edge of a clam shell is discussed with the FCC for best-to-use methodology.

The latest IEEE 1528 committee developments propose the usage of a tilted phantom when the antenna of the phone is mounted at the bottom or in all cases the peak absorption is in the chin region. Both SAM heads of the TwinSAM-Chin20 are rotated 20 degrees around the NF line. Each head can be removed individually from the table for emptying and cleaning.

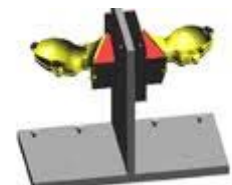


Figure 7-5 Twin SAM
Chin20

7.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 7-4). A device with a headset output is tested with a headset connected to the device.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic

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components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.

Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

7.6 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive internet connectivity through simultaneous transmission of WIFI in conjunction with a separate licensed transmitter. The FCC has provided guidance in KDB Publication 941225 D06 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10 mm from the front, back and edges of the device with antennas 2.5 cm or closer to the edge of the device, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests. Since this device meets the minimum size requirements, procedures in KDB Publication 941225 D06 were used for SAR testing. See Figure 1-2 for device dimensions.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. Therefore, SAR must be evaluated for each frequency transmission and mode separately and summed with the WIFI transmitter according to KDB 648474 publication procedures. The "Portable Hotspot" feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

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8 EXPOSURE LIMITS

8.1 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.

8.2 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 8-1
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.

9.1 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.

9.2 SAR Measurement Conditions for WCDMA

9.2.1 Output Power Verification

Maximum output power is measured on the High, Middle and Low channels for each applicable transmission band according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all "1s".

9.2.2 Head SAR Measurements for Handsets

SAR for head exposure configurations is measured using the 12.2 kbps RMC with TPC bits configured to all "1s". SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than 0.25 dB higher than that measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2 AMR with a 3.4 kbps SRB (signaling radio bearer) using the exposure configuration that resulted in the highest SAR for that RF channel in the 12.2 kbps RMC mode.

9.2.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s".

9.2.4 SAR Measurements for Handsets with Rel 5 HSDPA

Body SAR for HSDPA is not required for handsets with HSDPA capabilities when the maximum average output power of each RF channel with HSDPA active is less than 0.25 dB higher than that measured without HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is $\leq 75\%$ of the SAR limit. Otherwise, SAR is measured for HSDPA, using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration measured in 12.2 kbps RMC without HSDPA, on the maximum output channel with the body exposure configuration that resulted in the highest SAR in 12.2 kbps RMC mode for that RF channel.

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The H-set used in FRC for HSDPA should be configured according to the UE category of a test device. The number of HS-DSCH/HSPDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the applicable H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the FRC for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 2 ms to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors of $\beta_c=9$ and $\beta_d=15$, and power offset parameters of $\Delta_{ACK}=\Delta_{NACK}=5$ and $\Delta_{CQI}=2$ is used. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the FRC.

9.2.5 SAR Measurements for Handsets with Rel 6 HSUPA

Body SAR for HSUPA is not required when the maximum average output of each RF channel with HSUPA/HSDPA active is less than 0.25 dB higher than as measured without HSUPA/HSDPA using 12.2 kbps RMC and maximum SAR for 12.2 kbps RMC is $\leq 75\%$ of the SAR limit. Otherwise SAR is measured on the maximum output channel for the body exposure configuration produced highest SAR in 12.2 kbps RMC for that RF channel, using the additional procedures under “Release 6 HSPA data devices”

Head SAR for VOIP operations under HSPA is not required when maximum average output of each RF channel with HSPA is less than 0.25 dB higher than as measured using 12.2 kbps RMC. Otherwise SAR is measured using same HSPA configuration as used for body SAR.

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

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

9.3 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.

9.3.1 MPR

MPR is implemented for this device by the manufacturer. 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 10.3 for MPR targets.

9.3.2 A-MPR

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

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9.3.3 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.
- 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.
- c. Per Page 4, 3) B), QPSK with 1 RB for both channel edges are required.
- 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 low and high offset 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 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 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 low and high offset 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 50% RB SAR is not > 1.45 W/kg.

9.4 SAR Testing with 802.11 Transmitters

Normal network operating configurations are not suitable for measuring the SAR of 802.11 a/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.

9.4.1 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.

9.4.2 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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10 RF CONDUCTED POWERS

10.1 GSM Conducted Powers

		Maximum Burst-Averaged Output Power				
		Voice	GPRS/EDGE Data (GMSK)		EDGE Data (8-PSK)	
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot
Cellular	128	32.72	32.72	31.47	27.01	26.78
	190	32.77	32.79	31.57	27.07	26.76
	251	33.40	33.42	31.51	27.18	26.89
PCS	512	29.36	29.41	29.20	26.35	26.18
	661	29.48	29.53	29.40	26.48	26.29
	810	29.47	29.46	29.31	26.47	26.29

		Calculated Maximum Frame-Averaged Output Power				
		Voice	GPRS/EDGE Data (GMSK)		EDGE Data (8-PSK)	
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot
Cellular	128	23.69	23.69	25.45	17.98	20.76
	190	23.74	23.76	25.55	18.04	20.74
	251	24.37	24.39	25.49	18.15	20.87
PCS	512	20.33	20.38	23.18	17.32	20.16
	661	20.45	20.50	23.38	17.45	20.27
	810	20.44	20.43	23.29	17.44	20.27

Notes:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- The bolded GPRS modes were selected according to the highest frame-averaged output power table according to KDB 941225 D03.
- CS1 coding scheme was used in GPRS output power measurements and SAR Testing, as a condition where GMSK modulation was ensured. It was investigated that CS1 - CS4 settings do not have any impact on the output levels in the GPRS modes.
- MCS7 coding scheme was used to measure the output powers for EDGE since It was investigated that choosing MCS7 coding scheme will ensure 8-PSK modulation and MCS levels that produce 8-PSK modulation do not have an impact on output power levels.
- Per October 2012 TCB Workshop Notes, high channel was evaluated for GSM850 head and body-worn SAR since the power variation across channels was greater than 0.5 dB.

GSM Class: B

GPRS Multislot class: 10 (max 2 Tx Uplink slots)

EDGE Multislot class: 10 (max 2Tx Uplink slots)

DTM Multislot Class: N/A



Figure 10-1
Power Measurement Setup

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10.2 HSPA Conducted Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			MPR [dB]
			4132	4183	4233	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	22.94	22.96	22.66	22.03	22.30	22.01	-
99		12.2 kbps AMR	22.90	22.87	22.61	22.17	22.16	21.91	-
6	HSDPA	Subtest 1	21.83	21.87	21.68	21.24	21.29	20.92	0
6		Subtest 2	21.90	21.91	21.84	21.62	21.67	21.32	0
6		Subtest 3	21.37	21.40	21.23	20.60	20.82	20.49	0.5
6		Subtest 4	21.32	21.33	21.11	20.61	20.77	20.45	0.5
6	HSUPA	Subtest 1	21.77	21.55	21.60	21.34	21.37	20.83	0
6		Subtest 2	18.86	18.96	18.70	19.95	20.40	20.19	2
6		Subtest 3	20.56	20.65	20.24	20.26	20.05	19.96	1
6		Subtest 4	21.26	21.16	21.20	20.65	20.45	20.05	2
6		Subtest 5	21.60	21.74	21.47	21.11	21.25	21.28	0

WCDMA SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

It is expected by the manufacturer that MPR for some HSUPA subtests may be up to 2 dB more than specified by 3GPP according to the chipset implementation in this model. Detailed information is included in the operational description explaining how the MPR is applied for this model.

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10.3 LTE Conducted Powers

10.3.1

LTE Band 17 Conducted Powers

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	706.5	23755	5	QPSK	1	0	23.25	0	0
	706.5	23755	5	QPSK	1	24	23.34	0	0
	706.5	23755	5	QPSK	12	6	22.26	1	0-1
	706.5	23755	5	QPSK	25	0	22.18	1	0-1
	706.5	23755	5	16-QAM	1	0	22.44	1	0-1
	706.5	23755	5	16-QAM	1	24	22.34	1	0-1
	706.5	23755	5	16-QAM	12	6	21.31	2	0-2
Mid	710.0	23790	5	16-QAM	25	0	21.27	2	0-2
	710.0	23790	5	QPSK	1	0	23.19	0	0
	710.0	23790	5	QPSK	1	24	23.09	0	0
	710.0	23790	5	QPSK	12	6	22.07	1	0-1
	710.0	23790	5	QPSK	25	0	21.89	1	0-1
	710.0	23790	5	16-QAM	1	0	21.99	1	0-1
	710.0	23790	5	16-QAM	1	24	22.38	1	0-1
High	713.5	23825	5	16-QAM	12	6	21.30	2	0-2
	713.5	23825	5	16-QAM	25	0	20.98	2	0-2
	713.5	23825	5	QPSK	1	0	23.19	0	0
	713.5	23825	5	QPSK	1	24	22.87	0	0
	713.5	23825	5	QPSK	12	6	22.11	1	0-1
	713.5	23825	5	QPSK	25	0	21.91	1	0-1
	713.5	23825	5	16-QAM	1	0	22.19	1	0-1
	713.5	23825	5	16-QAM	1	24	22.17	1	0-1
	713.5	23825	5	16-QAM	12	6	21.14	2	0-2
	713.5	23825	5	16-QAM	25	0	21.06	2	0-2

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	709	23780	10	QPSK	1	0	23.36	0	0
	709	23780	10	QPSK	1	49	23.21	0	0
	709	23780	10	QPSK	25	12	22.08	1	0-1
	709	23780	10	QPSK	50	0	22.07	1	0-1
	709	23780	10	16QAM	1	0	22.38	1	0-1
	709	23780	10	16QAM	1	49	22.34	1	0-1
	709	23780	10	16QAM	25	12	21.11	2	0-2
Mid	710.0	23790	10	16QAM	50	0	20.96	2	0-2
	710.0	23790	10	QPSK	1	0	23.44	0	0
	710.0	23790	10	QPSK	1	49	23.19	0	0
	710.0	23790	10	QPSK	25	12	21.97	1	0-1
	710.0	23790	10	QPSK	50	0	21.88	1	0-1
	710.0	23790	10	16QAM	1	0	22.32	1	0-1
	710.0	23790	10	16QAM	1	49	22.17	1	0-1
High	711	23800	10	16QAM	25	12	21.01	2	0-2
	711	23800	10	16QAM	50	0	20.87	2	0-2
	711	23800	10	QPSK	1	0	23.20	0	0
	711	23800	10	QPSK	1	49	23.11	0	0
	711	23800	10	QPSK	25	12	21.99	1	0-1
	711	23800	10	QPSK	50	0	21.87	1	0-1
	711	23800	10	16QAM	1	0	22.16	1	0-1
	711	23800	10	16QAM	1	49	22.16	1	0-1
	711	23800	10	16QAM	25	12	21.03	2	0-2
	711	23800	10	16QAM	50	0	20.94	2	0-2

General test procedures for LTE can be found in Section 9.3.3. According to FCC KDB Publication 941225 D05:

- 1) The output power across low, mid, and high channel was less than 0.5 dB for QPSK 50% RB, therefore **mid channel was tested for QPSK 50% RB**. Low and high channel SAR tests were not required since the SAR values for all configurations were less than 0.8 W/kg.
- 2) The average output power of QPSK 1 RB configurations was more than 0.5 dB higher than QPSK with 50% RB, therefore **mid channel (highest output power) was tested for QPSK 1 RB configurations**. Low and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 3) The average output power of 16 QAM 50% RB is not more than 0.5 dB higher than QPSK, therefore the **mid channel (highest SAR measured with QPSK 50% RB) was tested for 16 QAM 50 % RB**. Low and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 4) The average output power of 16 QAM 1 RB configurations was more than 0.5 dB higher than 16 QAM with 50% RB, therefore **low channel (highest output power) was tested for 16 QAM 1 RB configurations**. Mid and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 5) 100% RB Allocation SAR was not required to be tested since the 50% RB SAR was not > 1.45 W/kg.
- 6) The bolded configurations were tested for SAR.



Figure 10-2
Power Measurement Setup

10.3.2 LTE Band 5 (Cell) Conducted Powers

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	826.5	20425	5	QPSK	1	0	23.07	0	0
	826.5	20425	5	QPSK	1	24	23.26	0	0
	826.5	20425	5	QPSK	12	6	22.17	1	0-1
	826.5	20425	5	QPSK	25	0	21.93	1	0-1
	826.5	20425	5	16-QAM	1	0	22.14	1	0-1
	826.5	20425	5	16-QAM	1	24	22.31	1	0-1
	826.5	20425	5	16-QAM	12	6	21.15	2	0-2
Mid	826.5	20425	5	16-QAM	25	0	21.02	2	0-2
	836.5	20525	5	QPSK	1	0	23.21	0	0
	836.5	20525	5	QPSK	1	24	23.06	0	0
	836.5	20525	5	QPSK	12	6	22.00	1	0-1
	836.5	20525	5	QPSK	25	0	21.92	1	0-1
	836.5	20525	5	16-QAM	1	0	22.22	1	0-1
	836.5	20525	5	16-QAM	1	24	22.08	1	0-1
High	836.5	20525	5	16-QAM	12	6	21.12	2	0-2
	836.5	20525	5	16-QAM	25	0	20.84	2	0-2
	846.5	20625	5	QPSK	1	0	23.06	0	0
	846.5	20625	5	QPSK	1	24	23.04	0	0
	846.5	20625	5	QPSK	12	6	21.73	1	0-1
	846.5	20625	5	QPSK	25	0	21.62	1	0-1
	846.5	20625	5	16-QAM	1	0	22.10	1	0-1
	846.5	20625	5	16-QAM	1	24	21.90	1	0-1
	846.5	20625	5	16-QAM	12	6	20.80	2	0-2
	846.5	20625	5	16-QAM	12	6	20.80	2	0-2
	846.5	20625	5	16-QAM	25	0	20.72	2	0-2

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	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	829	20450	10	QPSK	1	0	23.23	0	0
	829	20450	10	QPSK	1	49	23.04	0	0
	829	20450	10	QPSK	25	12	22.05	1	0-1
	829	20450	10	QPSK	50	0	21.82	1	0-1
	829	20450	10	16QAM	1	0	22.03	1	0-1
	829	20450	10	16QAM	1	49	21.84	1	0-1
	829	20450	10	16QAM	25	12	21.13	2	0-2
Mid	829	20450	10	16QAM	50	0	20.93	2	0-2
	836.5	20525	10	QPSK	1	0	23.45	0	0
	836.5	20525	10	QPSK	1	49	23.21	0	0
	836.5	20525	10	QPSK	25	12	21.87	1	0-1
	836.5	20525	10	QPSK	50	0	21.84	1	0-1
	836.5	20525	10	16QAM	1	0	22.07	1	0-1
	836.5	20525	10	16QAM	1	49	22.27	1	0-1
High	836.5	20525	10	16QAM	25	12	21.07	2	0-2
	836.5	20525	10	16QAM	50	0	20.80	2	0-2
	844	20600	10	QPSK	1	0	23.26	0	0
	844	20600	10	QPSK	1	49	22.93	0	0
	844	20600	10	QPSK	25	12	21.77	1	0-1
	844	20600	10	QPSK	50	0	21.63	1	0-1
	844	20600	10	16QAM	1	0	22.38	1	0-1
	844	20600	10	16QAM	1	49	22.03	1	0-1
	844	20600	10	16QAM	25	12	20.76	2	0-2
	844	20600	10	16QAM	50	0	20.66	2	0-2
	844	20600	10	16QAM	50	0	20.66	2	0-2

General test procedures for LTE can be found in Section 9.3.3. According to FCC KDB Publication 941225 D05:

- 1) The output power across low, mid, and high channel was less than 0.5 dB for QPSK 50% RB, therefore **mid channel was tested for QPSK 50% RB**. Low and high channel SAR tests were not required since the SAR values for all configurations were less than 0.8 W/kg.
- 2) The average output power of QPSK 1 RB configurations was more than 0.5 dB higher than QPSK with 50% RB, therefore **mid channel (highest output power) was tested for QPSK 1 RB configurations**. Low and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 3) The average output power of 16 QAM 50% RB is not more than 0.5 dB higher than QPSK, therefore the **mid channel (highest SAR measured with QPSK 50% RB) was tested for 16 QAM 50 % RB**. Low and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 4) The average output power of 16 QAM 1 RB configurations was more than 0.5 dB higher than 16 QAM with 50% RB, therefore **high channel (highest output power) was tested for 16 QAM 1 RB configurations**. Mid and Low channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 5) 100% RB Allocation SAR was not required to be tested since the 50% RB SAR was not > 1.45 W/kg.
- 6) The bolded configurations were tested for SAR.

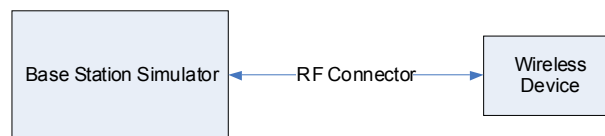


Figure 10-3
Power Measurement Setup

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10.3.3

LTE Band 4 (AWS) Conducted Powers

	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	23.04	0	0
	1712.5	19975	5	QPSK	1	24	23.16	0	0
	1712.5	19975	5	QPSK	12	6	22.04	1	0-1
	1712.5	19975	5	QPSK	25	0	21.91	1	0-1
	1712.5	19975	5	16-QAM	1	0	22.05	1	0-1
	1712.5	19975	5	16-QAM	1	24	22.21	1	0-1
	1712.5	19975	5	16-QAM	12	6	21.17	2	0-2
Mid	1712.5	19975	5	16-QAM	25	0	20.98	2	0-2
	1732.5	20175	5	QPSK	1	0	23.17	0	0
	1732.5	20175	5	QPSK	1	24	23.03	0	0
	1732.5	20175	5	QPSK	12	6	21.85	1	0-1
	1732.5	20175	5	QPSK	25	0	22.18	1	0-1
	1732.5	20175	5	16-QAM	1	0	21.59	1	0-1
	1732.5	20175	5	16-QAM	1	24	21.54	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	21.06	2	0-2
	1752.5	20375	5	QPSK	1	0	22.71	0	0
	1752.5	20375	5	QPSK	1	24	22.91	0	0
	1752.5	20375	5	QPSK	12	6	21.84	1	0-1
	1752.5	20375	5	QPSK	25	0	21.80	1	0-1
	1752.5	20375	5	16-QAM	1	0	21.88	1	0-1
	1752.5	20375	5	16-QAM	1	24	22.25	1	0-1
	1752.5	20375	5	16-QAM	12	6	20.80	2	0-2
	1752.5	20375	5	16-QAM	25	0	20.80	2	0-2

	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	23.17	0	0
	1715	20000	10	QPSK	1	49	22.83	0	0
	1715	20000	10	QPSK	25	12	22.12	1	0-1
	1715	20000	10	QPSK	50	0	21.94	1	0-1
	1715	20000	10	16QAM	1	0	21.81	1	0-1
	1715	20000	10	16QAM	1	49	21.61	1	0-1
	1715	20000	10	16QAM	25	12	21.13	2	0-2
Mid	1715	20000	10	16QAM	50	0	21.07	2	0-2
	1732.5	20175	10	QPSK	1	0	23.10	0	0
	1732.5	20175	10	QPSK	1	49	22.90	0	0
	1732.5	20175	10	QPSK	25	12	21.94	1	0-1
	1732.5	20175	10	QPSK	50	0	21.92	1	0-1
	1732.5	20175	10	16QAM	1	0	22.23	1	0-1
	1732.5	20175	10	16QAM	1	49	21.87	1	0-1
High	1732.5	20175	10	16QAM	25	12	20.80	2	0-2
	1732.5	20175	10	16QAM	50	0	20.90	2	0-2
	1750	20350	10	QPSK	1	0	23.01	0	0
	1750	20350	10	QPSK	1	49	22.85	0	0
	1750	20350	10	QPSK	25	12	21.71	1	0-1
	1750	20350	10	QPSK	50	0	21.68	1	0-1
	1750	20350	10	16QAM	1	0	22.03	1	0-1
	1750	20350	10	16QAM	1	49	21.61	1	0-1
	1750	20350	10	16QAM	25	12	20.73	2	0-2
	1750	20350	10	16QAM	50	0	20.65	2	0-2

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	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	23.40	0	0
	1717.5	20025	15	QPSK	1	74	23.19	0	0
	1717.5	20025	15	QPSK	36	18	21.88	1	0-1
	1717.5	20025	15	QPSK	75	0	22.03	1	0-1
	1717.5	20025	15	16QAM	1	0	21.89	1	0-1
	1717.5	20025	15	16QAM	1	74	21.78	1	0-1
	1717.5	20025	15	16QAM	36	18	20.86	2	0-2
Mid	1717.5	20025	15	16QAM	75	0	20.93	2	0-2
	1732.5	20175	15	QPSK	1	0	23.41	0	0
	1732.5	20175	15	QPSK	1	74	22.97	0	0
	1732.5	20175	15	QPSK	36	18	21.86	1	0-1
	1732.5	20175	15	QPSK	75	0	21.90	1	0-1
	1732.5	20175	15	16QAM	1	0	22.20	1	0-1
	1732.5	20175	15	16QAM	1	74	21.72	1	0-1
High	1732.5	20175	15	16QAM	36	18	20.93	2	0-2
	1732.5	20175	15	16QAM	75	0	20.88	2	0-2
	1747.5	20325	15	QPSK	1	0	22.79	0	0
	1747.5	20325	15	QPSK	1	74	22.84	0	0
	1747.5	20325	15	QPSK	36	18	21.81	1	0-1
	1747.5	20325	15	QPSK	75	0	21.68	1	0-1
	1747.5	20325	15	16QAM	1	0	22.01	1	0-1
	1747.5	20325	15	16QAM	1	74	21.96	1	0-1
	1747.5	20325	15	16QAM	36	18	20.83	2	0-2
	1747.5	20325	15	16QAM	75	0	20.74	2	0-2

General test procedures for LTE can be found in Section 9.3.3. According to FCC KDB Publication 941225 D05:

- 1) The output power across low, mid, and high channel was less than 0.5 dB for QPSK 50% RB, therefore **mid channel was tested for QPSK 50% RB**. Low and high channel SAR tests were not required since the SAR values for all configurations were less than 0.8 W/kg.
- 2) The average output power of QPSK 1 RB configurations was more than 0.5 dB higher than QPSK with 50% RB, therefore **mid channel (highest output power) was tested for QPSK 1 RB configurations**. Low and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 3) The average output power of 16 QAM 50% RB is not more than 0.5 dB higher than QPSK, therefore the **mid channel (highest SAR measured with QPSK 50% RB) was tested for 16 QAM 50 % RB**. Low and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 4) The average output power of 16 QAM 1 RB configurations was more than 0.5 dB higher than 16 QAM with 50% RB, therefore **mid channel (highest output power) was tested for 16 QAM 1 RB configurations**. Low and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 5) 100% RB Allocation SAR was not required to be tested since the 50% RB SAR was not > 1.45 W/kg.
- 6) The bolded configurations were tested for SAR.



Figure 10-4
Power Measurement Setup

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10.3.4

LTE Band 2 (PCS) Conducted Powers

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1852.5	18625	5	QPSK	1	0	21.81	0	0
	1852.5	18625	5	QPSK	1	24	22.21	0	0
	1852.5	18625	5	QPSK	12	6	21.22	1	0-1
	1852.5	18625	5	QPSK	25	0	21.17	1	0-1
	1852.5	18625	5	16-QAM	1	0	21.03	1	0-1
	1852.5	18625	5	16-QAM	1	24	21.37	1	0-1
	1852.5	18625	5	16-QAM	12	6	20.22	2	0-2
	1852.5	18625	5	16-QAM	25	0	20.22	2	0-2
Mid	1880.0	18900	5	QPSK	1	0	22.31	0	0
	1880.0	18900	5	QPSK	1	24	22.35	0	0
	1880.0	18900	5	QPSK	12	6	21.47	1	0-1
	1880.0	18900	5	QPSK	25	0	21.13	1	0-1
	1880.0	18900	5	16-QAM	1	0	21.30	1	0-1
	1880.0	18900	5	16-QAM	1	24	21.18	1	0-1
	1880.0	18900	5	16-QAM	12	6	20.37	2	0-2
	1880.0	18900	5	16-QAM	25	0	20.24	2	0-2
High	1907.5	19175	5	QPSK	1	0	21.90	0	0
	1907.5	19175	5	QPSK	1	24	22.01	0	0
	1907.5	19175	5	QPSK	12	6	21.00	1	0-1
	1907.5	19175	5	QPSK	25	0	21.14	1	0-1
	1907.5	19175	5	16-QAM	1	0	20.90	1	0-1
	1907.5	19175	5	16-QAM	1	24	21.01	1	0-1
	1907.5	19175	5	16-QAM	12	6	20.27	2	0-2
	1907.5	19175	5	16-QAM	25	0	20.14	2	0-2

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1855	18650	10	QPSK	1	0	21.96	0	0
	1855	18650	10	QPSK	1	49	22.08	0	0
	1855	18650	10	QPSK	25	12	21.09	1	0-1
	1855	18650	10	QPSK	50	0	20.99	1	0-1
	1855	18650	10	16QAM	1	0	20.89	1	0-1
	1855	18650	10	16QAM	1	49	21.15	1	0-1
	1855	18650	10	16QAM	25	12	20.13	2	0-2
	1855	18650	10	16QAM	50	0	20.07	2	0-2
Mid	1880.0	18900	10	QPSK	1	0	22.30	0	0
	1880.0	18900	10	QPSK	1	49	22.40	0	0
	1880.0	18900	10	QPSK	25	12	21.20	1	0-1
	1880.0	18900	10	QPSK	50	0	21.32	1	0-1
	1880.0	18900	10	16QAM	1	0	20.99	1	0-1
	1880.0	18900	10	16QAM	1	49	21.17	1	0-1
	1880.0	18900	10	16QAM	25	12	20.42	2	0-2
	1880.0	18900	10	16QAM	50	0	20.28	2	0-2
High	1905	19150	10	QPSK	1	0	21.99	0	0
	1905	19150	10	QPSK	1	49	22.07	0	0
	1905	19150	10	QPSK	25	12	20.83	1	0-1
	1905	19150	10	QPSK	50	0	20.94	1	0-1
	1905	19150	10	16QAM	1	0	21.30	1	0-1
	1905	19150	10	16QAM	1	49	21.21	1	0-1
	1905	19150	10	16QAM	25	12	19.98	2	0-2
	1905	19150	10	16QAM	50	0	19.97	2	0-2

General test procedures for LTE can be found in Section 9.3.3. According to FCC KDB Publication 941225 D05:

- 1) The output power across low, mid, and high channel was less than 0.5 dB for QPSK 50% RB, therefore **mid channel was tested for QPSK 50% RB**. Low and high channel SAR tests were not required since the SAR values for all configurations were less than 0.8 W/kg.
- 2) The average output power of QPSK 1 RB configurations was more than 0.5 dB higher than QPSK with 50% RB, therefore **mid channel (highest output power) was tested for QPSK 1 RB configurations**. Low and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 3) The average output power of 16 QAM 50% RB is not more than 0.5 dB higher than QPSK, therefore the **mid channel (highest SAR measured with QPSK 50% RB) was tested for 16 QAM 50 % RB**. Low and High channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 4) The average output power of 16 QAM 1 RB configurations was more than 0.5 dB higher than 16 QAM with 50% RB, therefore **high channel (highest output power) was tested for 16 QAM 1 RB configurations**. Mid and Low channel SAR tests were not required since the SAR was <1.45 W/kg for all configurations.
- 5) 100% RB Allocation SAR was not required to be tested since the 50% RB SAR was not > 1.45 W/kg.
- 6) The bolded configurations were tested for SAR.



Figure 10-5
Power Measurement Setup

10.4 Measured WLAN Conducted Powers

Table 10-1
IEEE 802.11b Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
802.11b	2412	1	15.62	14.83	15.08	15.03
802.11b	2437	6	15.00	14.37	14.44	14.38
802.11b	2462	11	16.29	15.26	15.42	15.44

Table 10-2
IEEE 802.11g Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11g	2412	1	10.71	10.90	10.88	10.65	10.85	10.62	10.68	10.52
802.11g	2437	6	8.76	7.89	7.67	7.77	7.65	7.55	7.55	7.96
802.11g	2462	11	10.35	10.62	10.09	10.62	10.40	10.23	10.08	10.35

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Table 10-3
IEEE 802.11n Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	20	26	39	52	58	65
802.11n	2412	1	9.16	8.26	9.12	8.12	8.58	8.95	8.91	9.11
802.11n	2437	6	6.35	6.41	6.25	5.97	5.81	6.33	6.05	5.59
802.11n	2462	11	9.42	9.39	9.37	9.15	8.61	8.92	8.64	8.89

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

- For 2.4 GHz WIFI, 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) and data rates 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.
- Because 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 for all bands and configurations, SAR testing on other channels was not required.
- SAR was evaluated on the channels and data rates indicated in bold.



Figure 10-6
Power Measurement Setup

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11 SYSTEM VERIFICATION

11.1 Tissue Verification

Table 11-1
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
6/27/2012	740H	24.0	695	0.869	42.65	0.886	42.193	-1.92%	1.08%
			710	0.883	42.43	0.887	42.113	-0.45%	0.75%
			725	0.897	42.22	0.888	42.033	1.01%	0.44%
			740	0.912	42.06	0.889	41.953	2.59%	0.26%
			755	0.924	41.85	0.891	41.876	3.70%	-0.06%
6/21/2012	835H	24.9	820	0.899	42.00	0.898	41.571	0.11%	1.03%
			835	0.915	41.85	0.900	41.500	1.67%	0.84%
			850	0.931	41.67	0.916	41.500	1.64%	0.41%
7/2/2012	835H	22.5	820	0.885	41.62	0.898	41.571	-1.45%	0.12%
			835	0.889	41.19	0.900	41.500	-1.22%	-0.75%
			850	0.907	41.04	0.916	41.500	-0.98%	-1.11%
6/26/2012	1750H	22.3	1710	1.311	39.78	1.348	40.136	-2.74%	-0.89%
			1750	1.366	39.49	1.370	40.100	-0.29%	-1.52%
			1790	1.438	39.38	1.394	40.020	3.16%	-1.60%
6/25/2012	1900H	24.0	1850	1.332	39.82	1.400	40.000	-4.86%	-0.45%
			1880	1.355	39.65	1.400	40.000	-3.21%	-0.88%
			1910	1.386	39.44	1.400	40.000	-1.00%	-1.40%
6/27/2012	1900H	24.2	1850	1.353	38.46	1.400	40.000	-3.36%	-3.85%
			1880	1.400	38.45	1.400	40.000	0.00%	-3.87%
			1910	1.427	38.39	1.400	40.000	1.93%	-4.03%
6/25/2012	2450H	24.9	2401	1.781	38.02	1.758	39.298	1.31%	-3.25%
			2450	1.837	37.83	1.800	39.200	2.06%	-3.49%
			2499	1.891	37.59	1.852	39.135	2.11%	-3.95%
6/27/2012	740B	24.9	695	0.937	54.81	0.957	55.985	-2.09%	-2.10%
			710	0.951	54.68	0.958	55.901	-0.73%	-2.18%
			725	0.963	54.52	0.960	55.817	0.31%	-2.32%
			740	0.976	54.45	0.961	55.733	1.56%	-2.30%
			755	0.992	54.31	0.963	55.649	3.01%	-2.41%
6/24/2012	835B	24.7	820	0.996	54.70	0.969	55.284	2.79%	-1.06%
			835	1.013	54.67	0.970	55.200	4.43%	-0.96%
			850	1.029	54.49	0.988	55.154	4.15%	-1.20%
6/25/2012	835B	24.8	820	0.993	54.30	0.969	55.284	2.48%	-1.78%
			835	1.008	54.18	0.970	55.200	3.92%	-1.85%
			850	1.025	54.03	0.988	55.154	3.74%	-2.04%
6/26/2012	1750B	22.1	1710	1.415	53.16	1.460	53.540	-3.08%	-0.71%
			1750	1.473	52.88	1.490	53.430	-1.14%	-1.03%
			1790	1.541	52.85	1.510	53.330	2.05%	-0.90%
6/21/2012	1900B	22.8	1850	1.506	53.23	1.520	53.300	-0.92%	-0.13%
			1880	1.550	53.12	1.520	53.300	1.97%	-0.34%
			1910	1.571	53.02	1.520	53.300	3.36%	-0.53%
6/25/2012	1900B	22.9	1850	1.460	53.03	1.520	53.300	-3.95%	-0.51%
			1880	1.489	53.01	1.520	53.300	-2.04%	-0.54%
			1910	1.526	52.93	1.520	53.300	0.39%	-0.69%
6/25/2012	2450B	24.5	2401	1.851	53.96	1.903	52.765	-2.73%	2.26%
			2450	1.909	53.82	1.950	52.700	-2.10%	2.13%
			2499	1.969	53.65	2.019	52.638	-2.48%	1.92%

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 due to rounding.

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11.2 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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11.3 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 11-2
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	Head	06/27/2012	24.9	24.1	0.100	1003	3022	0.807	8.400	8.070	-3.93%
835	Head	06/21/2012	23.8	23.9	0.100	4d026	3258	1.01	9.460	10.100	6.77%
835	Head	07/02/2012	22.4	22.1	0.100	4d047	3561	0.932	9.410	9.320	-0.96%
1750	Head	06/26/2012	24.2	23.3	0.100	1008	3209	3.71	36.400	37.100	1.92%
1900	Head	06/25/2012	21.4	22.1	0.100	5d149	3288	3.9	39.300	39.000	-0.76%
1900	Head	06/27/2012	24.3	23.3	0.100	5d080	3209	3.92	39.900	39.200	-1.75%
2450	Head	06/25/2012	24.2	22.9	0.100	797	3209	5.3	52.100	53.000	1.73%
750	Body	06/27/2012	23.0	23.0	0.100	1003	3022	0.873	8.720	8.730	0.11%
835	Body	06/24/2012	23.9	23.2	0.100	4d026	3258	1.01	9.660	10.100	4.55%
835	Body	06/25/2012	24.9	24.2	0.100	4d133	3258	1.02	9.600	10.200	6.25%
1750	Body	06/26/2012	23.1	22.9	0.100	1008	3209	3.8	37.400	38.000	1.60%
1900	Body	06/21/2012	23.5	22.9	0.100	5d148	3288	4.01	39.100	40.100	2.56%
1900	Body	06/25/2012	23.4	22.5	0.100	5d148	3288	3.86	39.100	38.600	-1.28%
2450	Body	06/25/2012	24.9	23.6	0.100	797	3209	5.31	50.800	53.100	4.53%

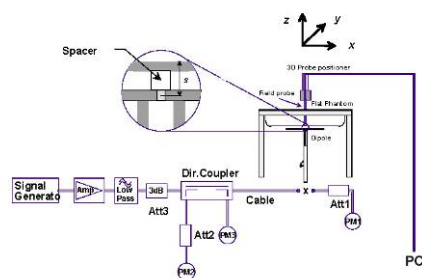


Figure 11-1
System Verification Setup Diagram



Figure 11-2
System Verification Setup Photo

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12 SAR DATA SUMMARY

12.1 Standalone Head SAR Data

Table 12-1
GSM Head SAR Results

MEASUREMENT RESULTS								
FREQUENCY		Mode/Band	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.							(W/kg)
848.80	251	GSM 850	33.40	0.01	Right	Touch	FJ-164-B	0.625
848.80	251	GSM 850	33.40	0.01	Right	Tilt	FJ-164-B	0.320
848.80	251	GSM 850	33.40	0.01	Left	Touch	FJ-164-B	0.742
848.80	251	GSM 850	33.40	-0.06	Left	Tilt	FJ-164-B	0.334
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram			

Note: Per October 2010 TCB Workshop, the mid. channel may be used as a default test channel when the output power deviation across the channels is <0.5 dB, otherwise the maximum output power must be used; thus high channel was used for SAR testing for GSM850. If the SAR measured at for each test configuration for the default channel is at least 3.0 dB lower than the SAR limit, testing at the other channels is optional for such test configuration(s).

MEASUREMENT RESULTS								
FREQUENCY		Mode/Band	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.							(W/kg)
1880.00	661	GSM 1900	29.48	0.01	Right	Touch	FJ-164-B	0.177
1880.00	661	GSM 1900	29.48	0.04	Right	Tilt	FJ-164-B	0.133
1880.00	661	GSM 1900	29.48	0.08	Left	Touch	FJ-164-B	0.405
1880.00	661	GSM 1900	29.48	-0.05	Left	Tilt	FJ-164-B	0.123
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram			

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Table 12-2
WCDMA Head SAR Results

MEASUREMENT RESULTS								
FREQUENCY		Mode/Band	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.							(W/kg)
836.60	4183	WCDMA 850	22.96	-0.04	Right	Touch	FJ-164-B	0.539
836.60	4183	WCDMA 850	22.96	-0.02	Right	Tilt	FJ-164-B	0.317
836.60	4183	WCDMA 850	22.96	0.02	Left	Touch	FJ-164-B	0.562
836.60	4183	WCDMA 850	22.96	0.10	Left	Tilt	FJ-164-B	0.274
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram			

MEASUREMENT RESULTS								
FREQUENCY		Mode	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.							(W/kg)
1880.00	9400	WCDMA 1900	22.30	-0.05	Right	Touch	FJ-164-B	0.325
1880.00	9400	WCDMA 1900	22.30	0.11	Right	Tilt	FJ-164-B	0.283
1880.00	9400	WCDMA 1900	22.30	0.04	Left	Touch	FJ-164-B	0.662
1880.00	9400	WCDMA 1900	22.30	-0.04	Left	Tilt	FJ-164-B	0.222
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram			

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Table 12-3
LTE Band 17 Head SAR Results

MEASUREMENT RESULTS														
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	# of RB	RB Offset	Device Serial Number	SAR (1g)	
MHz	Ch.												(W/kg)	
710.00	23790	Mid	LTE Band 17	10	21.97	-0.03	1	Right	Touch	QPSK	25	12	FJ-164-A	0.229
710.00	23790	Mid	LTE Band 17	10	23.44	0.08	0	Right	Touch	QPSK	1	0	FJ-164-A	0.307
710.00	23790	Mid	LTE Band 17	10	23.19	0.01	0	Right	Touch	QPSK	1	49	FJ-164-A	0.322
710.00	23790	Mid	LTE Band 17	10	21.01	0.08	2	Right	Touch	16 QAM	25	12	FJ-164-A	0.185
709.00	23780	Low	LTE Band 17	10	22.38	0.04	1	Right	Touch	16 QAM	1	0	FJ-164-A	0.247
709.00	23780	Low	LTE Band 17	10	22.34	0.05	1	Right	Touch	16 QAM	1	49	FJ-164-A	0.251
710.00	23790	Mid	LTE Band 17	10	21.97	-0.13	1	Right	Tilt	QPSK	25	12	FJ-164-A	0.118
710.00	23790	Mid	LTE Band 17	10	23.44	0.13	0	Right	Tilt	QPSK	1	0	FJ-164-A	0.143
710.00	23790	Mid	LTE Band 17	10	23.19	0.01	0	Right	Tilt	QPSK	1	49	FJ-164-A	0.174
710.00	23790	Mid	LTE Band 17	10	21.01	0.09	2	Right	Tilt	16 QAM	25	12	FJ-164-A	0.096
709.00	23780	Low	LTE Band 17	10	22.38	0.09	1	Right	Tilt	16 QAM	1	0	FJ-164-A	0.105
709.00	23780	Low	LTE Band 17	10	22.34	0.13	1	Right	Tilt	16 QAM	1	49	FJ-164-A	0.127
710.00	23790	Mid	LTE Band 17	10	21.97	-0.03	1	Left	Touch	QPSK	25	12	FJ-164-A	0.191
710.00	23790	Mid	LTE Band 17	10	23.44	-0.01	0	Left	Touch	QPSK	1	0	FJ-164-A	0.254
710.00	23790	Mid	LTE Band 17	10	23.19	0.00	0	Left	Touch	QPSK	1	49	FJ-164-A	0.255
710.00	23790	Mid	LTE Band 17	10	21.01	0.09	2	Left	Touch	16 QAM	25	12	FJ-164-A	0.182
709.00	23780	Low	LTE Band 17	10	22.38	0.00	1	Left	Touch	16 QAM	1	0	FJ-164-A	0.186
709.00	23780	Low	LTE Band 17	10	22.34	-0.03	1	Left	Touch	16 QAM	1	49	FJ-164-A	0.183
710.00	23790	Mid	LTE Band 17	10	21.97	-0.17	1	Left	Tilt	QPSK	25	12	FJ-164-A	0.098
710.00	23790	Mid	LTE Band 17	10	23.44	0.08	0	Left	Tilt	QPSK	1	0	FJ-164-A	0.142
710.00	23790	Mid	LTE Band 17	10	23.19	0.10	0	Left	Tilt	QPSK	1	49	FJ-164-A	0.141
710.00	23790	Mid	LTE Band 17	10	21.01	0.03	2	Left	Tilt	16 QAM	25	12	FJ-164-A	0.083
709.00	23780	Low	LTE Band 17	10	22.38	-0.02	1	Left	Tilt	16 QAM	1	0	FJ-164-A	0.109
709.00	23780	Low	LTE Band 17	10	22.34	0.14	1	Left	Tilt	16 QAM	1	49	FJ-164-A	0.114
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Head						
Spatial Peak								1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population								averaged over 1 gram						

Note: Per KDB 941225 D05, when the maximum average output power of 1 RB allocation is more than 0.5 dB higher than the 50% RB allocation, the highest output power for the 1 RB allocations is tested. Therefore, low channel was tested for the 16QAM, 1 RB allocation configurations.

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Table 12-4
LTE Band 5 (Cell) Head SAR Results

MEASUREMENT RESULTS													
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	# of RB	RB Offset	Device Serial Number	SAR (1g) (W/kg)
MHz	Ch.												
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	0.11	1	Right	Touch	QPSK	25	12	FJ-164-A 0.401
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	-0.03	0	Right	Touch	QPSK	1	0	FJ-164-A 0.329
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	0.07	0	Right	Touch	QPSK	1	49	FJ-164-A 0.531
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	-0.09	2	Right	Touch	16 QAM	25	12	FJ-164-A 0.328
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	0.01	1	Right	Touch	16 QAM	1	0	FJ-164-A 0.440
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	0.00	1	Right	Touch	16 QAM	1	49	FJ-164-A 0.362
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	-0.10	1	Right	Tilt	QPSK	25	12	FJ-164-A 0.233
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	-0.01	0	Right	Tilt	QPSK	1	0	FJ-164-A 0.185
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	-0.15	0	Right	Tilt	QPSK	1	49	FJ-164-A 0.321
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	-0.02	2	Right	Tilt	16 QAM	25	12	FJ-164-A 0.187
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	0.01	1	Right	Tilt	16 QAM	1	0	FJ-164-A 0.263
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	0.07	1	Right	Tilt	16 QAM	1	49	FJ-164-A 0.200
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	-0.02	1	Left	Touch	QPSK	25	12	FJ-164-A 0.498
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	-0.03	0	Left	Touch	QPSK	1	0	FJ-164-A 0.390
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	-0.04	0	Left	Touch	QPSK	1	49	FJ-164-A 0.624
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	-0.04	2	Left	Touch	16 QAM	25	12	FJ-164-A 0.393
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	0.14	1	Left	Touch	16 QAM	1	0	FJ-164-A 0.525
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	0.04	1	Left	Touch	16 QAM	1	49	FJ-164-A 0.433
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	-0.03	1	Left	Tilt	QPSK	25	12	FJ-164-A 0.232
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	0.02	0	Left	Tilt	QPSK	1	0	FJ-164-A 0.176
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	0.05	0	Left	Tilt	QPSK	1	49	FJ-164-A 0.322
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	-0.03	2	Left	Tilt	16 QAM	25	12	FJ-164-A 0.185
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	0.02	1	Left	Tilt	16 QAM	1	0	FJ-164-A 0.285
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	-0.04	1	Left	Tilt	16 QAM	1	49	FJ-164-A 0.202
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram					

Note: Per KDB 941225 D05, when the maximum average output power of 1 RB allocation is more than 0.5 dB higher than the 50% RB allocation, the highest output power for the 1 RB allocations is tested. Therefore, high channel was tested for the 16QAM, 1 RB allocation configurations.

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Table 12-5
LTE Band 4 (AWS) Head SAR Results

MEASUREMENT RESULTS														
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	# of RB	RB Offset	Device Serial Number	SAR (1g)
MHz	Ch.	(W/kg)												
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	0.01	1	Right	Touch	QPSK	36	18	FJ-164-A	0.137
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	0.03	0	Right	Touch	QPSK	1	0	FJ-164-A	0.171
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	0.07	0	Right	Touch	QPSK	1	74	FJ-164-A	0.192
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	0.03	2	Right	Touch	16 QAM	36	18	FJ-164-A	0.107
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	0.02	1	Right	Touch	16 QAM	1	0	FJ-164-A	0.137
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	-0.01	1	Right	Touch	16 QAM	1	74	FJ-164-A	0.152
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	0.03	1	Right	Tilt	QPSK	36	18	FJ-164-A	0.096
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	0.15	0	Right	Tilt	QPSK	1	0	FJ-164-A	0.104
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	-0.03	0	Right	Tilt	QPSK	1	74	FJ-164-A	0.115
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	0.20	2	Right	Tilt	16 QAM	36	18	FJ-164-A	0.073
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	0.18	1	Right	Tilt	16 QAM	1	0	FJ-164-A	0.092
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	0.02	1	Right	Tilt	16 QAM	1	74	FJ-164-A	0.093
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	-0.15	1	Left	Touch	QPSK	36	18	FJ-164-A	0.250
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	0.02	0	Left	Touch	QPSK	1	0	FJ-164-A	0.312
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	0.17	0	Left	Touch	QPSK	1	74	FJ-164-A	0.316
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	0.11	2	Left	Touch	16 QAM	36	18	FJ-164-A	0.188
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	0.03	1	Left	Touch	16 QAM	1	0	FJ-164-A	0.237
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	0.09	1	Left	Touch	16 QAM	1	74	FJ-164-A	0.237
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	0.09	1	Left	Tilt	QPSK	36	18	FJ-164-A	0.106
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	0.07	0	Left	Tilt	QPSK	1	0	FJ-164-A	0.143
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	0.11	0	Left	Tilt	QPSK	1	74	FJ-164-A	0.154
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	0.04	2	Left	Tilt	16 QAM	36	18	FJ-164-A	0.085
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	0.07	1	Left	Tilt	16 QAM	1	0	FJ-164-A	0.111
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	0.02	1	Left	Tilt	16 QAM	1	74	FJ-164-A	0.111
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram						

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Table 12-6
LTE Band 2 (PCS) Head SAR Results

MEASUREMENT RESULTS													
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	# of RB	RB Offset	Device Serial Number	SAR (1g) (W/kg)
MHz	Ch.												
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	-0.01	1	Right	Touch	QPSK	25	12	FJ-164-A 0.284
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	-0.17	0	Right	Touch	QPSK	1	0	FJ-164-A 0.351
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	0.02	0	Right	Touch	QPSK	1	49	FJ-164-A 0.409
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	0.00	2	Right	Touch	16 QAM	25	12	FJ-164-A 0.236
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	-0.05	1	Right	Touch	16 QAM	1	0	FJ-164-A 0.243
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	-0.05	1	Right	Touch	16 QAM	1	49	FJ-164-A 0.252
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	-0.06	1	Right	Tilt	QPSK	25	12	FJ-164-A 0.201
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	0.05	0	Right	Tilt	QPSK	1	0	FJ-164-A 0.257
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	0.14	0	Right	Tilt	QPSK	1	49	FJ-164-A 0.289
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	0.17	2	Right	Tilt	16 QAM	25	12	FJ-164-A 0.166
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	0.20	1	Right	Tilt	16 QAM	1	0	FJ-164-A 0.197
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	0.11	1	Right	Tilt	16 QAM	1	49	FJ-164-A 0.217
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	-0.04	1	Left	Touch	QPSK	25	12	FJ-164-A 0.489
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	0.02	0	Left	Touch	QPSK	1	0	FJ-164-A 0.604
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	-0.07	0	Left	Touch	QPSK	1	49	FJ-164-A 0.686
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	-0.06	2	Left	Touch	16 QAM	25	12	FJ-164-A 0.398
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	0.02	1	Left	Touch	16 QAM	1	0	FJ-164-A 0.435
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	-0.02	1	Left	Touch	16 QAM	1	49	FJ-164-A 0.455
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	0.01	1	Left	Tilt	QPSK	25	12	FJ-164-A 0.166
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	-0.13	0	Left	Tilt	QPSK	1	0	FJ-164-A 0.192
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	0.05	0	Left	Tilt	QPSK	1	49	FJ-164-A 0.224
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	0.01	2	Left	Tilt	16 QAM	25	12	FJ-164-A 0.133
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	-0.05	1	Left	Tilt	16 QAM	1	0	FJ-164-A 0.146
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	0.15	1	Left	Tilt	16 QAM	1	49	FJ-164-A 0.153
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Head					
Spatial Peak								1.6 W/kg (mW/g)					
Uncontrolled Exposure/General Population								averaged over 1 gram					

Note: Per KDB 941225 D05, when the maximum average output power of 1 RB allocation is more than 0.5 dB higher than the 50% RB allocation, the highest output power for the 1 RB allocations is tested. Therefore, high channel was tested for the 16QAM, 1 RB allocation configurations.

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Table 12-7
2.4 GHz WLAN Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	SAR (1g)
MHz	Ch.									(W/kg)
2462	11	IEEE 802.11b	DSSS	16.29	-0.08	Right	Touch	FJ-164-A	1	0.204
2462	11	IEEE 802.11b	DSSS	16.29	0.03	Right	Tilt	FJ-164-A	1	0.161
2462	11	IEEE 802.11b	DSSS	16.29	0.04	Left	Touch	FJ-164-A	1	0.673
2462	11	IEEE 802.11b	DSSS	16.29	0.03	Left	Tilt	FJ-164-A	1	0.277
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram				

12.2 Standalone Body-Worn SAR Data

Table 12-8
GSM/WCDMA Body-Worn SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Side	SAR (1g)
MHz	Ch.									(W/kg)
848.80	251	GSM 850	GSM	33.40	-0.01	1.0 cm	FJ-164-B	1	back	0.598
824.20	128	GSM 850	GPRS	31.47	-0.05	1.0 cm	FJ-164-B	2	back	0.866
836.60	190	GSM 850	GPRS	31.57	-0.09	1.0 cm	FJ-164-B	2	back	0.923
848.80	251	GSM 850	GPRS	31.51	-0.10	1.0 cm	FJ-164-B	2	back	0.963
836.60	4183	WCDMA 850	RMC	22.96	-0.07	1.0 cm	FJ-164-B	N/A	back	0.451
1880.00	661	GSM 1900	GSM	29.48	-0.02	1.0 cm	FJ-164-B	1	back	0.313
1880.00	661	GSM 1900	GPRS	29.40	-0.01	1.0 cm	FJ-164-B	2	back	0.587
1880.00	9400	WCDMA 1900	RMC	22.30	0.00	1.0 cm	FJ-164-B	N/A	back	0.727
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram				

Note: For GPRS and WCDMA modes, Hotspot SAR Data was also used for supporting body-worn-accessory compliance per FCC KDB Publication 941225 D06.

Note: Per October 2010 TCB Workshop, the mid. channel may be used as a default test channel when the output power deviation across the channels is <0.5 dB, otherwise the maximum output power must be used; thus high channel was used for SAR testing for GSM850. If the SAR measured at for each test configuration for the default channel is at least 3.0 dB lower than the SAR limit, testing at the other channels is optional for such test configuration(s).

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Table 12-9
LTE Body-Worn SAR Results

MEASUREMENT RESULTS														
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)
MHz	Ch.													(W/kg)
710.00	23790	Mid	LTE Band 17	10	21.97	-0.02	1	FJ-164-A	QPSK	25	12	1.0 cm	back	0.256
710.00	23790	Mid	LTE Band 17	10	23.44	0.06	0	FJ-164-A	QPSK	1	0	1.0 cm	back	0.382
710.00	23790	Mid	LTE Band 17	10	23.19	-0.04	0	FJ-164-A	QPSK	1	49	1.0 cm	back	0.318
710.00	23790	Mid	LTE Band 17	10	21.01	-0.01	2	FJ-164-A	16 QAM	25	12	1.0 cm	back	0.207
709.00	23780	Low	LTE Band 17	10	22.38	0.14	1	FJ-164-A	16 QAM	1	0	1.0 cm	back	0.276
709.00	23780	Low	LTE Band 17	10	22.34	-0.09	1	FJ-164-A	16 QAM	1	49	1.0 cm	back	0.233
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	-0.10	1	FJ-164-A	QPSK	25	12	1.0 cm	back	0.352
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	-0.14	0	FJ-164-A	QPSK	1	0	1.0 cm	back	0.369
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	0.00	0	FJ-164-A	QPSK	1	49	1.0 cm	back	0.586
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	0.14	2	FJ-164-A	16 QAM	25	12	1.0 cm	back	0.285
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	-0.09	1	FJ-164-A	16 QAM	1	0	1.0 cm	back	0.454
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	0.00	1	FJ-164-A	16 QAM	1	49	1.0 cm	back	0.299
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	-0.03	1	FJ-164-A	QPSK	36	18	1.0 cm	back	0.342
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	0.02	0	FJ-164-A	QPSK	1	0	1.0 cm	back	0.499
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	-0.03	0	FJ-164-A	QPSK	1	74	1.0 cm	back	0.503
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	0.17	2	FJ-164-A	16 QAM	36	18	1.0 cm	back	0.278
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	0.13	1	FJ-164-A	16 QAM	1	0	1.0 cm	back	0.358
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	0.02	1	FJ-164-A	16 QAM	1	74	1.0 cm	back	0.332
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	-0.02	1	FJ-164-A	QPSK	25	12	1.0 cm	back	0.587
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	-0.15	0	FJ-164-A	QPSK	1	0	1.0 cm	back	0.698
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	0.08	0	FJ-164-A	QPSK	1	49	1.0 cm	back	0.910
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	0.13	2	FJ-164-A	16 QAM	25	12	1.0 cm	back	0.516
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	0.17	1	FJ-164-A	16 QAM	1	0	1.0 cm	back	0.597
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	0.18	1	FJ-164-A	16 QAM	1	49	1.0 cm	back	0.678
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: For LTE modes, Hotspot SAR Data was also used for supporting body-worn-accessory compliance per FCC KDB Publication 941225 D06.

Note: Per KDB 941225 D05, when the maximum average output power of 1 RB allocation is more than 0.5 dB higher than the 50% RB allocation, the highest output power for the 1 RB allocations is tested. Therefore, low channel was tested for the 16QAM, 1 RB allocation configurations for LTE Band 17. High channel was tested for the 16QAM, 1 RB allocation configurations for LTE Band 5 (Cell) and LTE band 2 (PCS).

Table 12-10
2.4 GHz WLAN Body-Worn SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	SAR (1g) (W/kg)
MHz	Ch.									
2462	11	IEEE 802.11b	DSSS	16.29	0.19	1.0 cm	FJ-164-A	1	back	0.067
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram				

Note: For 802.11b mode, Hotspot SAR Data was also used for supporting body-worn accessory compliance per FCC KDB Publication 941225 D06.

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12.3 Standalone Wireless Router SAR Data

Table 12-11
GSM/WCDMA Hotspot SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of GPRS Slots	Side	SAR (1g)
MHz	Ch.									(W/kg)
824.20	128	GSM 850	GPRS	31.47	-0.05	1.0 cm	FJ-164-B	2	back	0.866
836.60	190	GSM 850	GPRS	31.57	-0.09	1.0 cm	FJ-164-B	2	back	0.923
848.80	251	GSM 850	GPRS	31.51	-0.10	1.0 cm	FJ-164-B	2	back	0.963
824.20	128	GSM 850	GPRS	31.47	-0.02	1.0 cm	FJ-164-B	2	front	0.827
836.60	190	GSM 850	GPRS	31.57	-0.09	1.0 cm	FJ-164-B	2	front	0.892
848.80	251	GSM 850	GPRS	31.51	-0.05	1.0 cm	FJ-164-B	2	front	1.010
836.60	190	GSM 850	GPRS	31.57	-0.01	1.0 cm	FJ-164-B	2	bottom	0.268
836.60	190	GSM 850	GPRS	31.57	-0.04	1.0 cm	FJ-164-B	2	right	0.626
836.60	190	GSM 850	GPRS	31.57	0.08	1.0 cm	FJ-164-B	2	left	0.725
836.60	4183	WCDMA 850	RMC	22.96	-0.07	1.0 cm	FJ-164-B	N/A	back	0.451
836.60	4183	WCDMA 850	RMC	22.96	-0.01	1.0 cm	FJ-164-B	N/A	front	0.522
836.60	4183	WCDMA 850	RMC	22.96	0.02	1.0 cm	FJ-164-B	N/A	bottom	0.206
836.60	4183	WCDMA 850	RMC	22.96	-0.04	1.0 cm	FJ-164-B	N/A	right	0.339
836.60	4183	WCDMA 850	RMC	22.96	-0.01	1.0 cm	FJ-164-B	N/A	left	0.374
1880.00	661	GSM 1900	GPRS	29.40	-0.01	1.0 cm	FJ-164-B	2	back	0.587
1880.00	661	GSM 1900	GPRS	29.40	-0.03	1.0 cm	FJ-164-B	2	front	0.506
1880.00	661	GSM 1900	GPRS	29.40	0.00	1.0 cm	FJ-164-B	2	bottom	0.531
1880.00	661	GSM 1900	GPRS	29.40	0.04	1.0 cm	FJ-164-B	2	right	0.077
1880.00	661	GSM 1900	GPRS	29.40	-0.05	1.0 cm	FJ-164-B	2	left	0.232
1880.00	9400	WCDMA 1900	RMC	22.30	0.00	1.0 cm	FJ-164-B	N/A	back	0.727
1880.00	9400	WCDMA 1900	RMC	22.30	-0.04	1.0 cm	FJ-164-B	N/A	front	0.650
1880.00	9400	WCDMA 1900	RMC	22.30	-0.14	1.0 cm	FJ-164-B	N/A	bottom	0.696
1880.00	9400	WCDMA 1900	RMC	22.30	-0.11	1.0 cm	FJ-164-B	N/A	right	0.088
1880.00	9400	WCDMA 1900	RMC	22.30	-0.07	1.0 cm	FJ-164-B	N/A	left	0.269
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 12-12
LTE Band 17 Hotspot SAR Results

MEASUREMENT RESULTS														
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)
MHz	Ch.	High												(W/kg)
710.00	23790	Mid	LTE Band 17	10	21.97	-0.02	1	FJ-164-A	QPSK	25	12	1.0 cm	back	0.256
710.00	23790	Mid	LTE Band 17	10	23.44	0.06	0	FJ-164-A	QPSK	1	0	1.0 cm	back	0.382
710.00	23790	Mid	LTE Band 17	10	23.19	-0.04	0	FJ-164-A	QPSK	1	49	1.0 cm	back	0.318
710.00	23790	Mid	LTE Band 17	10	21.01	-0.01	2	FJ-164-A	16 QAM	25	12	1.0 cm	back	0.207
709.00	23780	Low	LTE Band 17	10	22.38	0.14	1	FJ-164-A	16 QAM	1	0	1.0 cm	back	0.276
709.00	23780	Low	LTE Band 17	10	22.34	-0.09	1	FJ-164-A	16 QAM	1	49	1.0 cm	back	0.233
710.00	23790	Mid	LTE Band 17	10	21.97	-0.12	1	FJ-164-A	QPSK	25	12	1.0 cm	front	0.225
710.00	23790	Mid	LTE Band 17	10	23.44	-0.06	0	FJ-164-A	QPSK	1	0	1.0 cm	front	0.324
710.00	23790	Mid	LTE Band 17	10	23.19	-0.15	0	FJ-164-A	QPSK	1	49	1.0 cm	front	0.289
710.00	23790	Mid	LTE Band 17	10	21.01	0.10	2	FJ-164-A	16 QAM	25	12	1.0 cm	front	0.188
709.00	23780	Low	LTE Band 17	10	22.38	0.09	1	FJ-164-A	16 QAM	1	0	1.0 cm	front	0.263
709.00	23780	Low	LTE Band 17	10	22.34	-0.12	1	FJ-164-A	16 QAM	1	49	1.0 cm	front	0.259
710.00	23790	Mid	LTE Band 17	10	21.97	0.03	1	FJ-164-A	QPSK	25	12	1.0 cm	bottom	0.115
710.00	23790	Mid	LTE Band 17	10	23.44	-0.05	0	FJ-164-A	QPSK	1	0	1.0 cm	bottom	0.149
710.00	23790	Mid	LTE Band 17	10	23.19	-0.04	0	FJ-164-A	QPSK	1	49	1.0 cm	bottom	0.149
710.00	23790	Mid	LTE Band 17	10	21.01	0.04	2	FJ-164-A	16 QAM	25	12	1.0 cm	bottom	0.094
709.00	23780	Low	LTE Band 17	10	22.38	-0.16	1	FJ-164-A	16 QAM	1	0	1.0 cm	bottom	0.121
709.00	23780	Low	LTE Band 17	10	22.34	0.00	1	FJ-164-A	16 QAM	1	49	1.0 cm	bottom	0.122
710.00	23790	Mid	LTE Band 17	10	21.97	0.06	1	FJ-164-A	QPSK	25	12	1.0 cm	right	0.212
710.00	23790	Mid	LTE Band 17	10	23.44	-0.05	0	FJ-164-A	QPSK	1	0	1.0 cm	right	0.292
710.00	23790	Mid	LTE Band 17	10	23.19	0.04	0	FJ-164-A	QPSK	1	49	1.0 cm	right	0.274
710.00	23790	Mid	LTE Band 17	10	21.01	0.15	2	FJ-164-A	16 QAM	25	12	1.0 cm	right	0.166
709.00	23780	Low	LTE Band 17	10	22.38	0.08	1	FJ-164-A	16 QAM	1	0	1.0 cm	right	0.235
709.00	23780	Low	LTE Band 17	10	22.34	0.17	1	FJ-164-A	16 QAM	1	49	1.0 cm	right	0.232
710.00	23790	Mid	LTE Band 17	10	21.97	0.05	1	FJ-164-A	QPSK	25	12	1.0 cm	left	0.115
710.00	23790	Mid	LTE Band 17	10	23.44	0.07	0	FJ-164-A	QPSK	1	0	1.0 cm	left	0.143
710.00	23790	Mid	LTE Band 17	10	23.19	-0.19	0	FJ-164-A	QPSK	1	49	1.0 cm	left	0.160
710.00	23790	Mid	LTE Band 17	10	21.01	0.02	2	FJ-164-A	16 QAM	25	12	1.0 cm	left	0.092
709.00	23780	Low	LTE Band 17	10	22.38	0.04	1	FJ-164-A	16 QAM	1	0	1.0 cm	left	0.120
709.00	23780	Low	LTE Band 17	10	22.34	0.09	1	FJ-164-A	16 QAM	1	49	1.0 cm	left	0.131
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body						
Spatial Peak								1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population								averaged over 1 gram						

Note: Per KDB 941225 D05, when the maximum average output power of 1 RB allocation is more than 0.5 dB higher than the 50% RB allocation, the highest output power for the 1 RB allocations is tested. Therefore, low channel was tested for the 16QAM, 1 RB allocation configurations.

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Table 12-13
LTE Band 5 (Cell) Hotspot SAR Results

MEASUREMENT RESULTS														
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)
MHz	Ch.													(W/kg)
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	-0.10	1	FJ-164-A	QPSK	25	12	1.0 cm	back	0.352
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	-0.14	0	FJ-164-A	QPSK	1	0	1.0 cm	back	0.369
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	0.00	0	FJ-164-A	QPSK	1	49	1.0 cm	back	0.586
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	0.14	2	FJ-164-A	16 QAM	25	12	1.0 cm	back	0.285
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	-0.09	1	FJ-164-A	16 QAM	1	0	1.0 cm	back	0.454
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	0.00	1	FJ-164-A	16 QAM	1	49	1.0 cm	back	0.299
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	-0.10	1	FJ-164-A	QPSK	25	12	1.0 cm	front	0.463
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	-0.03	0	FJ-164-A	QPSK	1	0	1.0 cm	front	0.457
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	0.01	0	FJ-164-A	QPSK	1	49	1.0 cm	front	0.665
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	0.04	2	FJ-164-A	16 QAM	25	12	1.0 cm	front	0.411
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	-0.01	1	FJ-164-A	16 QAM	1	0	1.0 cm	front	0.525
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	-0.20	1	FJ-164-A	16 QAM	1	49	1.0 cm	front	0.382
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	0.02	1	FJ-164-A	QPSK	25	12	1.0 cm	bottom	0.162
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	-0.14	0	FJ-164-A	QPSK	1	0	1.0 cm	bottom	0.114
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	0.01	0	FJ-164-A	QPSK	1	49	1.0 cm	bottom	0.247
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	-0.01	2	FJ-164-A	16 QAM	25	12	1.0 cm	bottom	0.119
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	-0.09	1	FJ-164-A	16 QAM	1	0	1.0 cm	bottom	0.223
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	0.06	1	FJ-164-A	16 QAM	1	49	1.0 cm	bottom	0.176
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	0.03	1	FJ-164-A	QPSK	25	12	1.0 cm	right	0.288
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	-0.01	0	FJ-164-A	QPSK	1	0	1.0 cm	right	0.262
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	-0.09	0	FJ-164-A	QPSK	1	49	1.0 cm	right	0.450
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	0.08	2	FJ-164-A	16 QAM	25	12	1.0 cm	right	0.275
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	-0.04	1	FJ-164-A	16 QAM	1	0	1.0 cm	right	0.387
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	0.18	1	FJ-164-A	16 QAM	1	49	1.0 cm	right	0.236
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.87	0.11	1	FJ-164-A	QPSK	25	12	1.0 cm	left	0.326
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.45	0.02	0	FJ-164-A	QPSK	1	0	1.0 cm	left	0.290
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.21	0.04	0	FJ-164-A	QPSK	1	49	1.0 cm	left	0.550
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.07	0.02	2	FJ-164-A	16 QAM	25	12	1.0 cm	left	0.231
844.00	20600	High	LTE Band 5 (Cell)	10	22.38	0.00	1	FJ-164-A	16 QAM	1	0	1.0 cm	left	0.462
844.00	20600	High	LTE Band 5 (Cell)	10	22.03	-0.09	1	FJ-164-A	16 QAM	1	49	1.0 cm	left	0.253
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body						
Spatial Peak								1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population								averaged over 1 gram						

Note: Per KDB 941225 D05, when the maximum average output power of 1 RB allocation is more than 0.5 dB higher than the 50% RB allocation, the highest output power for the 1 RB allocations is tested. Therefore, high channel was tested for the 16QAM, 1 RB allocation configurations.

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Table 12-14
LTE Band 4 (AWS) Hotspot SAR Results

MEASUREMENT RESULTS														
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)
MHz	Ch.	(W/kg)												
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	-0.03	1	FJ-164-A	QPSK	36	18	1.0 cm	back	0.342
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	0.02	0	FJ-164-A	QPSK	1	0	1.0 cm	back	0.499
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	-0.03	0	FJ-164-A	QPSK	1	74	1.0 cm	back	0.503
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	0.17	2	FJ-164-A	16 QAM	36	18	1.0 cm	back	0.278
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	0.13	1	FJ-164-A	16 QAM	1	0	1.0 cm	back	0.358
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	0.02	1	FJ-164-A	16 QAM	1	74	1.0 cm	back	0.332
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	-0.02	1	FJ-164-A	QPSK	36	18	1.0 cm	front	0.311
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	0.02	0	FJ-164-A	QPSK	1	0	1.0 cm	front	0.454
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	0.02	0	FJ-164-A	QPSK	1	74	1.0 cm	front	0.455
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	0.00	2	FJ-164-A	16 QAM	36	18	1.0 cm	front	0.257
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	0.01	1	FJ-164-A	16 QAM	1	0	1.0 cm	front	0.332
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	-0.02	1	FJ-164-A	16 QAM	1	74	1.0 cm	front	0.319
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	-0.05	1	FJ-164-A	QPSK	36	18	1.0 cm	bottom	0.317
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	-0.17	0	FJ-164-A	QPSK	1	0	1.0 cm	bottom	0.483
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	-0.13	0	FJ-164-A	QPSK	1	74	1.0 cm	bottom	0.495
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	-0.01	2	FJ-164-A	16 QAM	36	18	1.0 cm	bottom	0.258
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	-0.09	1	FJ-164-A	16 QAM	1	0	1.0 cm	bottom	0.336
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	0.10	1	FJ-164-A	16 QAM	1	74	1.0 cm	bottom	0.308
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	-0.05	1	FJ-164-A	QPSK	36	18	1.0 cm	right	0.034
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	-0.04	0	FJ-164-A	QPSK	1	0	1.0 cm	right	0.040
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	-0.02	0	FJ-164-A	QPSK	1	74	1.0 cm	right	0.040
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	-0.04	2	FJ-164-A	16 QAM	36	18	1.0 cm	right	0.022
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	-0.06	1	FJ-164-A	16 QAM	1	0	1.0 cm	right	0.027
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	-0.05	1	FJ-164-A	16 QAM	1	74	1.0 cm	right	0.029
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.86	0.00	1	FJ-164-A	QPSK	36	18	1.0 cm	left	0.105
1732.50	20175	Mid	LTE Band 4 (AWS)	15	23.41	0.02	0	FJ-164-A	QPSK	1	0	1.0 cm	left	0.150
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.97	0.04	0	FJ-164-A	QPSK	1	74	1.0 cm	left	0.151
1732.50	20175	Mid	LTE Band 4 (AWS)	15	20.93	0.03	2	FJ-164-A	16 QAM	36	18	1.0 cm	left	0.086
1732.50	20175	Mid	LTE Band 4 (AWS)	15	22.20	-0.02	1	FJ-164-A	16 QAM	1	0	1.0 cm	left	0.110
1732.50	20175	Mid	LTE Band 4 (AWS)	15	21.72	0.11	1	FJ-164-A	16 QAM	1	74	1.0 cm	left	0.107
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 12-15
LTE Band 2 (PCS) Hotspot SAR Results

MEASUREMENT RESULTS														
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)	
MHz	Ch.												(W/kg)	
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	-0.02	1	FJ-164-A	QPSK	25	12	1.0 cm	back	0.587
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	-0.15	0	FJ-164-A	QPSK	1	0	1.0 cm	back	0.698
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	0.08	0	FJ-164-A	QPSK	1	49	1.0 cm	back	0.910
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	0.00	2	FJ-164-A	16 QAM	25	12	1.0 cm	back	0.516
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	0.17	1	FJ-164-A	16 QAM	1	0	1.0 cm	back	0.597
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	0.18	1	FJ-164-A	16 QAM	1	49	1.0 cm	back	0.678
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	0.14	1	FJ-164-A	QPSK	25	12	1.0 cm	front	0.622
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	-0.03	0	FJ-164-A	QPSK	1	0	1.0 cm	front	0.721
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	-0.16	0	FJ-164-A	QPSK	1	49	1.0 cm	front	0.919
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	-0.02	2	FJ-164-A	16 QAM	25	12	1.0 cm	front	0.545
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	-0.04	1	FJ-164-A	16 QAM	1	0	1.0 cm	front	0.550
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	-0.16	1	FJ-164-A	16 QAM	1	49	1.0 cm	front	0.662
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	0.04	1	FJ-164-A	QPSK	25	12	1.0 cm	bottom	0.558
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	-0.13	0	FJ-164-A	QPSK	1	0	1.0 cm	bottom	0.629
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	-0.02	0	FJ-164-A	QPSK	1	49	1.0 cm	bottom	0.818
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	0.00	2	FJ-164-A	16 QAM	25	12	1.0 cm	bottom	0.460
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	0.02	1	FJ-164-A	16 QAM	1	0	1.0 cm	bottom	0.533
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	0.16	1	FJ-164-A	16 QAM	1	49	1.0 cm	bottom	0.595
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	-0.01	1	FJ-164-A	QPSK	25	12	1.0 cm	right	0.059
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	-0.03	0	FJ-164-A	QPSK	1	0	1.0 cm	right	0.073
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	0.00	0	FJ-164-A	QPSK	1	49	1.0 cm	right	0.077
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	0.04	2	FJ-164-A	16 QAM	25	12	1.0 cm	right	0.047
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	-0.13	1	FJ-164-A	16 QAM	1	0	1.0 cm	right	0.046
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	-0.17	1	FJ-164-A	16 QAM	1	49	1.0 cm	right	0.048
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.20	-0.12	1	FJ-164-A	QPSK	25	12	1.0 cm	left	0.273
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.30	0.05	0	FJ-164-A	QPSK	1	0	1.0 cm	left	0.309
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.40	0.16	0	FJ-164-A	QPSK	1	49	1.0 cm	left	0.389
1880.00	18900	Mid	LTE Band 2 (PCS)	10	20.42	0.05	2	FJ-164-A	16 QAM	25	12	1.0 cm	left	0.221
1905.00	19150	High	LTE Band 2 (PCS)	10	21.30	-0.03	1	FJ-164-A	16 QAM	1	0	1.0 cm	left	0.239
1905.00	19150	High	LTE Band 2 (PCS)	10	21.21	-0.09	1	FJ-164-A	16 QAM	1	49	1.0 cm	left	0.271
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: Per KDB 941225 D05, when the maximum average output power of 1 RB allocation is more than 0.5 dB higher than the 50% RB allocation, the highest output power for the 1 RB allocations is tested. Therefore, high channel was tested for the 16QAM, 1 RB allocation configurations.

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Table 12-16
2.4 GHz WLAN Hotspot SAR Results

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	16.29	0.19	1.0 cm	FJ-164-A	1	back	0.067
2462	11	IEEE 802.11b	DSSS	16.29	-0.03	1.0 cm	FJ-164-A	1	front	0.096
2462	11	IEEE 802.11b	DSSS	16.29	-0.07	1.0 cm	FJ-164-A	1	top	0.033
2462	11	IEEE 802.11b	DSSS	16.29	0.05	1.0 cm	FJ-164-A	1	right	0.077
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram				

12.4 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR value with the position set in a typical configuration. Test procedures used were according to FCC/OET Bulletin 65, Supplement C [June 2001], IEEE 1528-2003.
2. Batteries are fully charged for all readings. The standard battery was used.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical, and thermal characteristics and are within operational tolerances.
5. 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.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR using headphones.
2. Per FCC guidance, GPRS Data Mode is additionally required for body-worn configuration. Per KDB 941225 D06, when the same wireless modes and device transmission configurations are required for body-worn accessories and hotspot mode, it is not necessary to additionally test body-worn accessory SAR for the same device orientation. Therefore, the hotspot data for the back side configurations additionally shows body-worn compliance at the same distance.
3. Justification for reduced test configurations per KDB Publication 941225 D03: The source-based time-averaged output power was evaluated for all multi-slot operations. The worst case configuration was tested for SAR.
4. Per October 2010 TCB Workshop, the mid. channel may be used as a default test channel when the output power deviation across the channels is <0.5 dB, otherwise the maximum output power must be used. If the SAR measured at for each test configuration for the default channel is at least 3.0 dB lower than the SAR limit, testing at the other channels is optional for such test configuration(s).

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WCDMA Notes:

1. Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, 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. WCDMA mode in Body SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
3. Per FCC KDB Publication 941225 D06, when the same wireless modes and device transmission configurations are required for body-worn accessories and hotspot mode, it is not necessary to additionally test body-worn accessory SAR for the same device orientation. Therefore, the hotspot data for the back side configuration additionally shows body-worn compliance at the same distance.

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 and were evaluated independently of position. General test procedures can be found in Section 9.3.3.
2. MPR is implemented for this device by the manufacturer. 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. Per FCC KDB Publication 941225 D06, when the same wireless modes and device transmission configurations are required for body-worn accessories and hotspot mode, it is not necessary to additionally test body-worn accessory SAR for the same device orientation. Therefore, the hotspot data for the back side configuration additionally shows body-worn compliance at the same distance.

WLAN Notes:

1. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Workshop 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. Because the maximum extrapolated peak SAR of the zoom scan for the maximum output channel of the lowest data rate is <1.6 W/kg and the 1g averaged SAR is <0.8 W/kg for all bands and configurations, SAR testing on other channels was not required.
4. Per FCC KDB Publication 941225 D06, when the same wireless modes and device transmission configurations are required for body-worn accessories and hotspot mode, it is not necessary to additionally test body-worn accessory SAR for the same device orientation. Therefore, the hotspot data for the back side configuration for IEEE 802.11b additionally shows body-worn compliance at the same distance.

Hotspot Notes:

1. Top edge for the GSM/WCDMA/LTE transmitter was not tested since the antenna distance from the edge was greater than 2.5 cm per FCC KDB Publication 941225 D06 guidance (see Section 1.3).
2. Bottom edge and left edge for the WLAN transmitter were not tested since the antenna distance from the edge was greater than 2.5 cm per FCC KDB Publication 941225 D06 (see Section 1.3).
3. During SAR Testing for the Wireless Router conditions per KDB 941225 D06, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 7.6.)

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13 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

13.1 Introduction

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” FCC KDB Publication 648474 are applicable to handsets with built-in unlicensed transmitters such as 802.11a/b/g/n and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

13.2 FCC Power Tables & Conditions

	2.45	5.15 - 5.35	5.47 - 5.85	GHz
P_{Ref}	12	6	5	mW

Device output power should be rounded to the nearest mW to compare with values specified in this table.

Figure 13-1
Output Power Thresholds for Unlicensed Transmitters

	Individual Transmitter	Simultaneous Transmission
Licensed Transmitters	<u>Routine evaluation required</u>	SAR not required: <u>Unlicensed only</u>
Unlicensed Transmitters	<u>When there is no simultaneous transmission –</u> - output ≤ 60/f: SAR not required - output > 60/f: stand-alone SAR required <u>When there is simultaneous transmission –</u> <u>Stand-alone SAR not required when</u> - output $\leq 2 \cdot P_{Ref}$ and antenna is ≥ 5.0 cm from other antennas - output $\leq P_{Ref}$ and antenna is ≥ 2.5 cm from other antennas - output $\leq P_{Ref}$ and antenna is < 2.5 cm from other antennas, each with either output power $\leq P_{Ref}$ or 1-g SAR < 1.2 W/kg <u>Otherwise stand-alone SAR is required</u> <u>When stand-alone SAR is required</u> - test SAR on highest output channel for each wireless mode and exposure condition - if SAR for highest output channel is $> 50\%$ of SAR limit, evaluate all channels according to normal procedures	<u>Licensed & Unlicensed</u> - when the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmitting antennas - when SAR to peak location separation ratio of simultaneous transmitting antenna pair is < 0.3 SAR required: <u>Licensed & Unlicensed</u> antenna pairs with SAR to peak location separation ratio ≥ 0.3; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply

Figure 13-2
SAR Evaluation Requirements for Multiple Transmitter Handsets

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13.3 Simultaneous Transmission Capabilities

According to Figure 13-1 and Figure 13-2, simultaneous transmission analysis of SAR may be required for this device for the two licensed and unlicensed transmitters. Possible simultaneous transmissions (between the two licensed transmitters and the unlicensed transmitter) for this device were numerically summed using stand-alone SAR data and are shown in the following tables.

Per KDB Publication 648474, standalone Bluetooth SAR tests were not required. Standalone SAR tests for 2.4 GHz WLAN was required. See Section 1.5(A) for more information.

Table 13-1
Possible Simultaneous Transmission Scenarios

No.	Capable Transmit Configurations	Head	Body-Worn Accessory	Hot Spot	Note
		IEEE 1528, Supp C	Supplement C	FCC KDB 941225 D06 edges/sides	
1	GSM850/1900 Mhz Voice + Wifi 2.4Ghz	Yes	10mm	N/A	
2	850/1900 WCDMA Voice + Wifi 2.4Ghz	Yes	10mm	N/A	
3	850/1900 GPRS/EDGE Data + Wifi 2.4Ghz	N/A	N/A	Yes	2G Hotspot
4	850/1900 WCDMA/HSPA Data + Wifi 2.4Ghz	N/A	N/A	Yes	3G Hotspot
5	700/850/1750/1900 Mhz Band 17/5/4/2 LTE Data + Wifi 2.4Ghz	Yes *	10mm *	Yes	4G Hotspot

Note: * = for VoIP 3rd party apps possibly installed by end-user.

13.4 Held to Ear Simultaneous Transmission Analysis

Table 13-2
Simultaneous Transmission Scenario (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.625	0.204	0.829	Head SAR	Right Cheek	0.177	0.204	0.381
	Right Tilt	0.320	0.161	0.481		Right Tilt	0.133	0.161	0.294
	Left Cheek	0.742	0.673	1.415		Left Cheek	0.405	0.673	1.078
	Left Tilt	0.334	0.277	0.611		Left Tilt	0.123	0.277	0.400

Simult Tx	Configuration	WCDMA 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	WCDMA 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.539	0.204	0.743	Head SAR	Right Cheek	0.325	0.204	0.529
	Right Tilt	0.317	0.161	0.478		Right Tilt	0.283	0.161	0.444
	Left Cheek	0.562	0.673	1.235		Left Cheek	0.662	0.673	1.335
	Left Tilt	0.274	0.277	0.551		Left Tilt	0.222	0.277	0.499

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Simult Tx	Configuration	LTE Band 17 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.322	0.204	0.526	Head SAR	Right Cheek	0.531	0.204	0.735
	Right Tilt	0.174	0.161	0.335		Right Tilt	0.321	0.161	0.482
	Left Cheek	0.255	0.673	0.928		Left Cheek	0.624	0.673	1.297
	Left Tilt	0.142	0.277	0.419		Left Tilt	0.322	0.277	0.599
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.192	0.204	0.396	Head SAR	Right Cheek	0.409	0.204	0.613
	Right Tilt	0.115	0.161	0.276		Right Tilt	0.289	0.161	0.450
	Left Cheek	0.316	0.673	0.989		Left Cheek	0.686	0.673	1.359
	Left Tilt	0.154	0.277	0.431		Left Tilt	0.224	0.277	0.501

13.5 Body-Worn Simultaneous Transmission Analysis

Table 13-3
Simultaneous Transmission Scenario (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	0.598	0.067	0.665
Back Side	WCDMA 850	0.451	0.067	0.518
Back Side	GSM 1900	0.313	0.067	0.380
Back Side	WCDMA 1900	0.727	0.067	0.794

Configuration	Mode	LTE SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	LTE Band 17	0.382	0.067	0.449
Back Side	LTE Band 5 (Cell)	0.586	0.067	0.653
Back Side	LTE Band 4 (AWS)	0.503	0.067	0.570
Back Side	LTE Band 2 (PCS)	0.910	0.067	0.977

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13.6 Hotspot Simultaneous Transmission Analysis

Table 13-4
Simultaneous Transmission Scenario (Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.963	0.067	1.030	Body SAR	Back	0.587	0.067	0.654
	Front	1.010	0.096	1.106		Front	0.506	0.096	0.602
	Top	-	0.033	0.033		Top	-	0.033	0.033
	Bottom	0.268	-	0.268		Bottom	0.531	-	0.531
	Right	0.626	0.077	0.703		Right	0.077	0.077	0.154
	Left	0.725	-	0.725		Left	0.232	-	0.232

Simult Tx	Configuration	WCDMA 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	WCDMA 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.451	0.067	0.518	Body SAR	Back	0.727	0.067	0.794
	Front	0.522	0.096	0.618		Front	0.650	0.096	0.746
	Top	-	0.033	0.033		Top	-	0.033	0.033
	Bottom	0.206	-	0.206		Bottom	0.696	-	0.696
	Right	0.339	0.077	0.416		Right	0.088	0.077	0.165
	Left	0.374	-	0.374		Left	0.269	-	0.269

Simult Tx	Configuration	LTE Band 17 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.382	0.067	0.449	Body SAR	Back	0.586	0.067	0.653
	Front	0.324	0.096	0.420		Front	0.665	0.096	0.761
	Top	-	0.033	0.033		Top	-	0.033	0.033
	Bottom	0.149	-	0.149		Bottom	0.247	-	0.247
	Right	0.292	0.077	0.369		Right	0.450	0.077	0.527
	Left	0.160	-	0.160		Left	0.550	-	0.550

Simult Tx	Configuration	LTE Band 4 (AWS) SAR W/kg	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.503	0.067	0.570	Body SAR	Back	0.910	0.067	0.977
	Front	0.455	0.096	0.551		Front	0.919	0.096	1.015
	Top	-	0.033	0.033		Top	-	0.033	0.033
	Bottom	0.495	-	0.495		Bottom	0.818	-	0.818
	Right	0.040	0.077	0.117		Right	0.077	0.077	0.154
	Left	0.151	-	0.151		Left	0.389	-	0.389

Note: Per FCC KDB Publication 941225 D06, the edges with antennas more than 2.5 cm are not required to be evaluated for SAR ("").

13.7 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 648474.

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14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	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	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	E5515C	Wireless Communications Test Set	2/9/2012	Annual	2/9/2013	GB43460554
Agilent	85047A	S-Parameter Test Set	N/A			2904A00579
Amplifier Research	5S1G4	5W, 800MHz-4.2GHz	CBT	CBT	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	ML2438A	Power Meter	10/13/2011	Annual	10/13/2012	1070030
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	5821
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	8013
Anritsu	MT8820C	Radio Communication Tester	11/11/2011	Annual	11/11/2012	6200901190
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	CBT	CBT	M3W1A00-1002
Control Company	36934-158	Wall-Mounted Thermometer	1/4/2012	Biennial	1/4/2014	122014497
Control Company	36934-158	Wall-Mounted Thermometer	1/4/2012	Biennial	1/4/2014	122014488
Control Company	61220-416	Long-Stem Thermometer	10/12/2011	Biennial	10/12/2013	111860820
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	CBT	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	CBT	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	CBT	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	CBT	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	CBT	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	CBT	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	CBT	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	CBT	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	CBT	CBT	120
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	CBT	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	5/22/2012	Annual	5/22/2013	109892
Rohde & Schwarz	NRVD	Dual Channel Power Meter	4/8/2011	Biennial	4/8/2013	101695
Rohde & Schwarz	SMIQ03B	Signal Generator	4/5/2012	Annual	4/5/2013	DE27259
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	8/25/2011	Annual	8/25/2012	100976
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	10/7/2011	Annual	10/7/2012	103962
Seekonk	NC-100	Torque Wrench (8" lb)	11/29/2011	Triennial	11/29/2014	21053
SPEAG	D1765V2	1765 MHz SAR Dipole	5/18/2012	Annual	5/18/2013	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	7/22/2011	Annual	7/22/2012	5d080
SPEAG	D2450V2	2450 MHz SAR Dipole	1/24/2012	Annual	1/24/2013	797
SPEAG	D835V2	835 MHz SAR Dipole	8/15/2011	Annual	8/15/2012	4d026
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/19/2012	Annual	4/19/2013	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/20/2012	Annual	2/20/2013	649
SPEAG	ES3DV2	SAR Probe	8/25/2011	Annual	8/25/2012	3022
SPEAG	D750V3	750 MHz Dipole	1/27/2012	Annual	1/27/2013	1003
SPEAG	D835V2	835 MHz SAR Dipole	1/25/2012	Annual	1/25/2012	4d047
SPEAG	ES3DV3	SAR Probe	3/16/2012	Annual	3/16/2013	3209
SPEAG	EX3DV4	SAR Probe	7/27/2011	Annual	7/27/2012	3561
SPEAG	ES3DV3	SAR Probe	2/21/2012	Annual	2/21/2013	3258
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/18/2012	Annual	1/18/2013	1272
Speag	DAK-3.5	Dielectric Assessment Kit	12/1/2011	Annual	12/1/2012	1031
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	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	D835V2	835 MHz SAR Dipole	2/17/2012	Annual	2/17/2013	4d133
SPEAG	D1900V2	1900 MHz SAR Dipole	2/8/2012	Annual	2/8/2013	5d148
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	11286445
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 an amplifier, cable, attenuator, 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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15 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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16 CONCLUSION

16.1 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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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 17; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 695 Head Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.883 \text{ mho/m}$; $\epsilon_r = 42.43$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.1°C

Probe: ES3DV2 - SN3022; ConvF(6.27, 6.27, 6.27); Calibrated: 8/25/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 17, Right Head, Touch, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

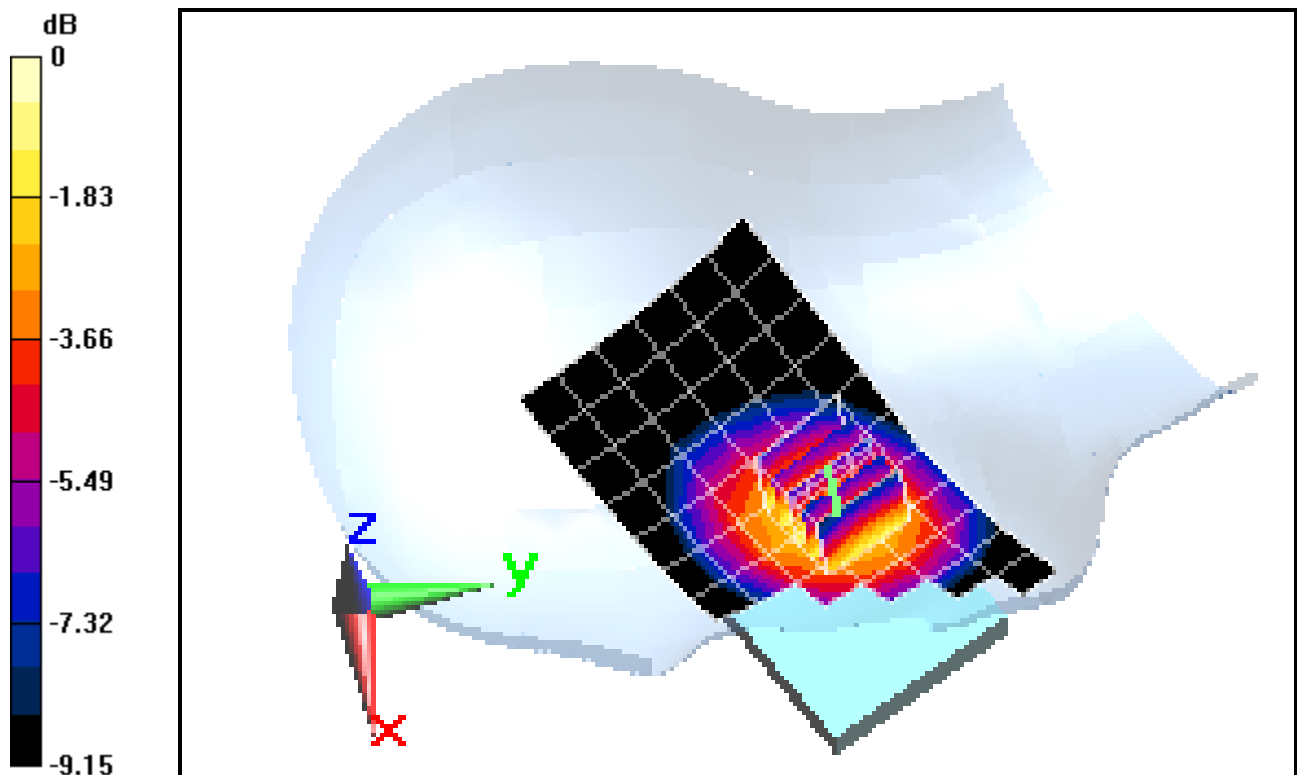
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.62 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.4030

SAR(1 g) = 0.322 mW/g; SAR(10 g) = 0.243 mW/g



0 dB = 0.340mW/g = -9.37 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 17; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 695 Head Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.883 \text{ mho/m}$; $\epsilon_r = 42.43$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.1°C

Probe: ES3DV2 - SN3022; ConvF(6.27, 6.27, 6.27); Calibrated: 8/25/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 17, Right Head, Tilt, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

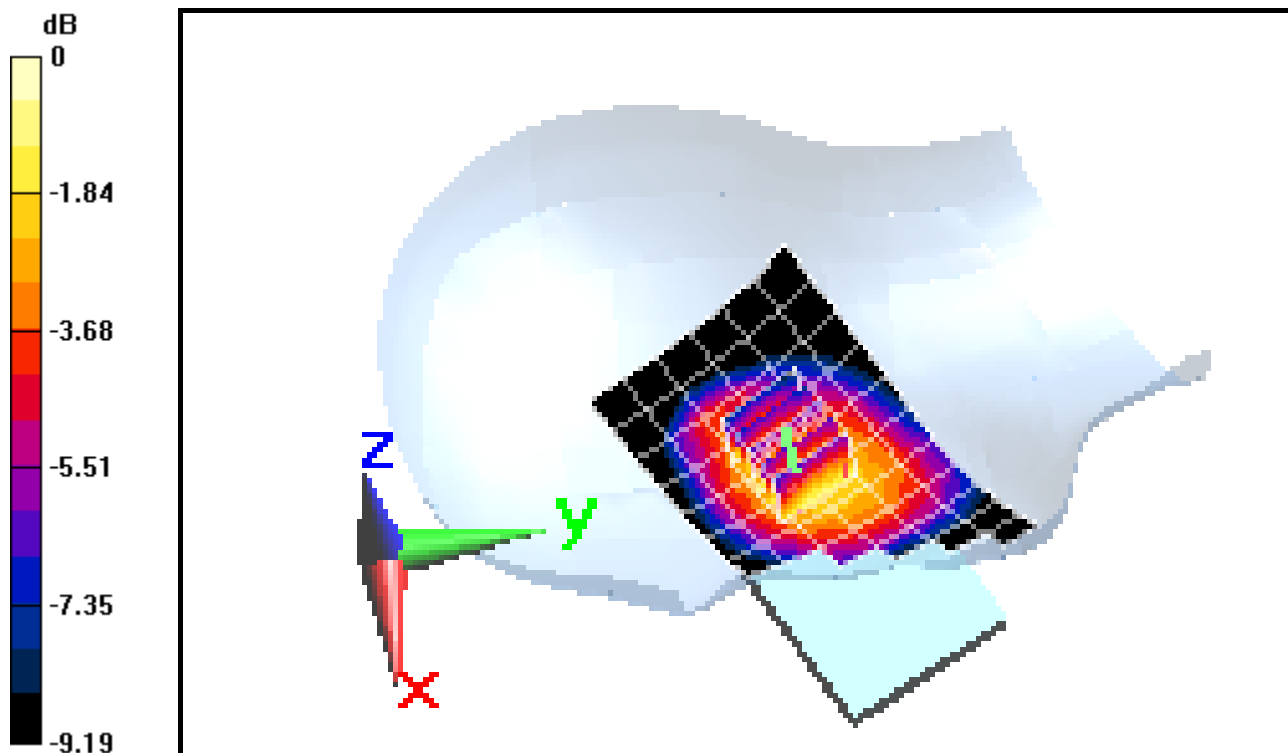
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 15.022 V/m; Power Drift = 0.0087 dB

Peak SAR (extrapolated) = 0.2140

SAR(1 g) = 0.174 mW/g; SAR(10 g) = 0.134 mW/g



0 dB = 0.180mW/g = -14.89 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 17; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 695 Head Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.883 \text{ mho/m}$; $\epsilon_r = 42.43$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.1°C

Probe: ES3DV2 - SN3022; ConvF(6.27, 6.27, 6.27); Calibrated: 8/25/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 17, Left Head, Touch, Mid.ch

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

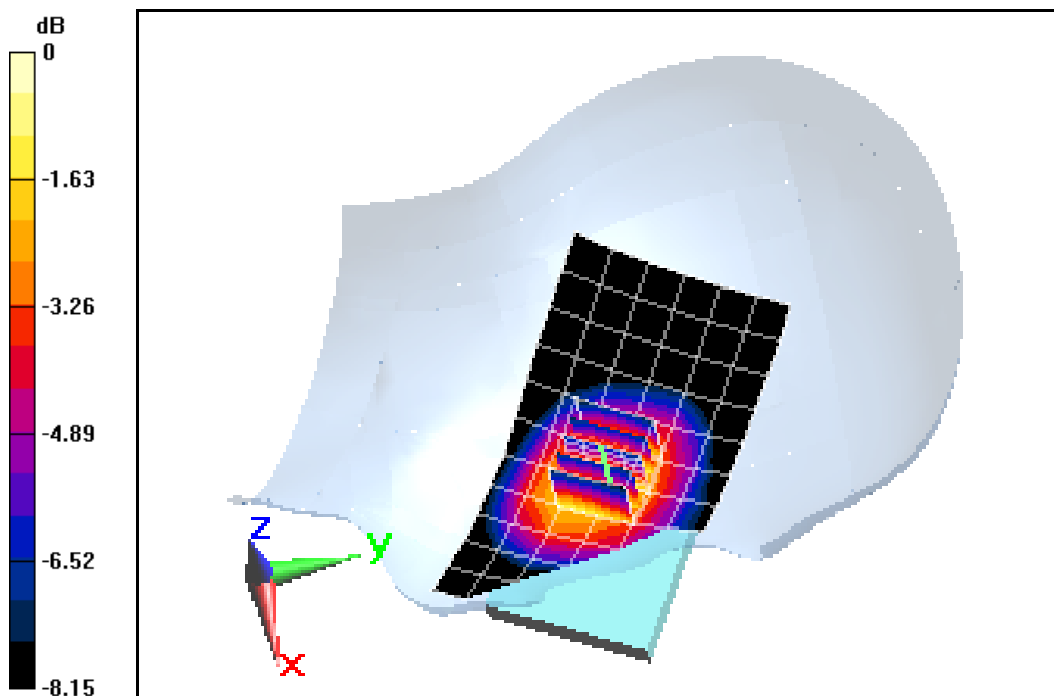
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.165 V/m; Power Drift = 0.0045 dB

Peak SAR (extrapolated) = 0.3140

SAR(1 g) = 0.255 mW/g; SAR(10 g) = 0.192 mW/g



0 dB = 0.270mW/g = -11.37 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 17; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 695 Head Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.883 \text{ mho/m}$; $\epsilon_r = 42.43$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.1°C

Probe: ES3DV2 - SN3022; ConvF(6.27, 6.27, 6.27); Calibrated: 8/25/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 17, Left Head, Tilt, Mid.ch

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

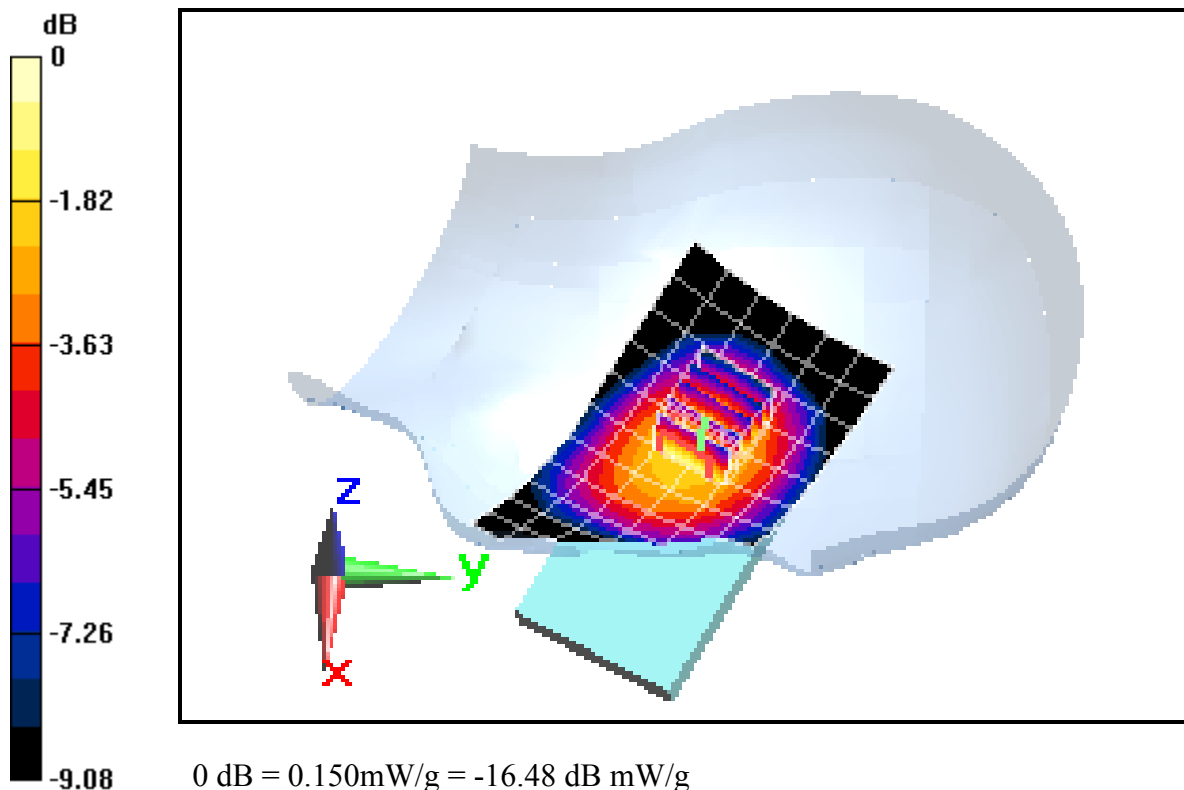
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 13.234 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.1770

SAR(1 g) = 0.142 mW/g; SAR(10 g) = 0.109 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: 835 Head Medium parameters used (interpolated):

$f = 848.8 \text{ MHz}$; $\sigma = 0.906 \text{ mho/m}$; $\epsilon_r = 41.10$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 07-02-2012; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(8.07, 8.07, 8.07); Calibrated: 7/27/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP-: 1687

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

Mode: GSM 850, Right Head, Touch, High.ch

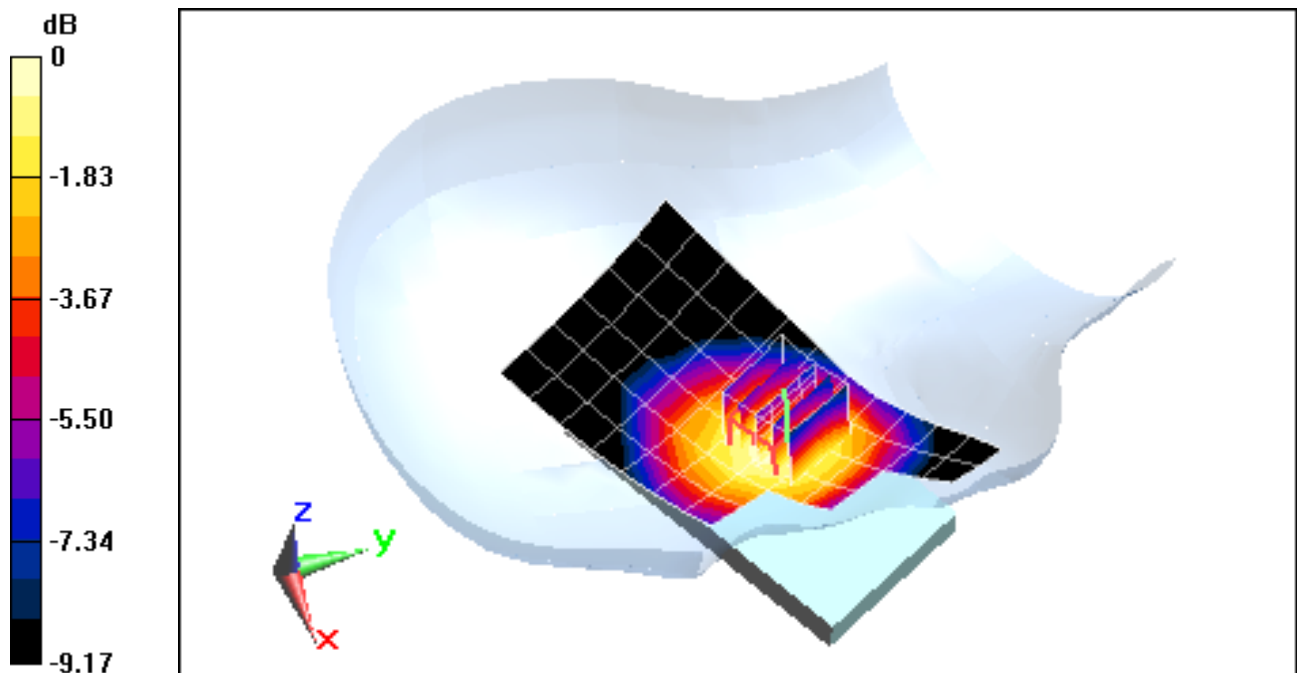
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.045 V/m; Power Drift = 0.0077 dB

Peak SAR (extrapolated) = 0.6110

SAR(1 g) = 0.625 mW/g; SAR(10 g) = 0.465 mW/g



0 dB = 0.520mW/g = -5.68 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: 835 Head Medium parameters used (interpolated):

$f = 848.8 \text{ MHz}$; $\sigma = 0.906 \text{ mho/m}$; $\epsilon_r = 41.10$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 07-02-2012; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(8.07, 8.07, 8.07); Calibrated: 7/27/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP-: 1687

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

Mode: GSM 850, Right Head, Tilt, High.ch

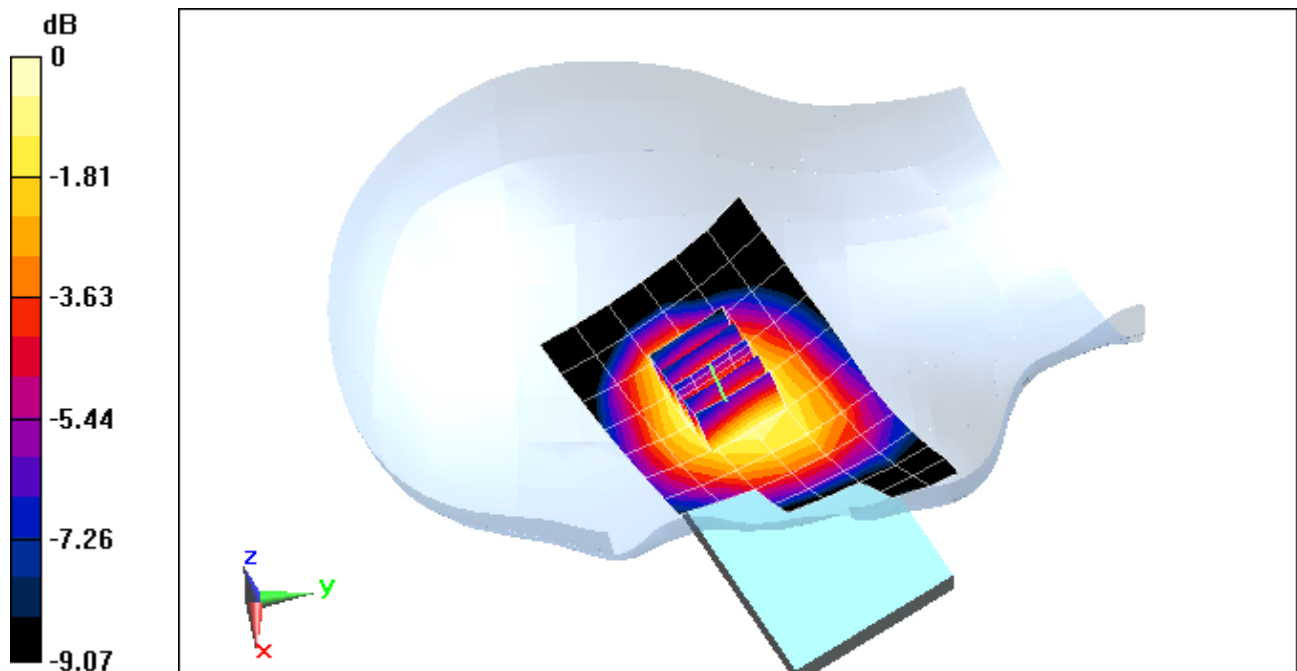
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.312 V/m; Power Drift = 0.006 dB

Peak SAR (extrapolated) = 0.3540

SAR(1 g) = 0.320 mW/g; SAR(10 g) = 0.239 mW/g



0 dB = 0.300mW/g = -10.46 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: 835 Head Medium parameters used (interpolated):

$f = 848.8 \text{ MHz}$; $\sigma = 0.906 \text{ mho/m}$; $\epsilon_r = 41.10$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-02-2012; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(8.07, 8.07, 8.07); Calibrated: 7/27/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP-: 1687

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

Mode: GSM 850, Left Head, Touch, High.ch

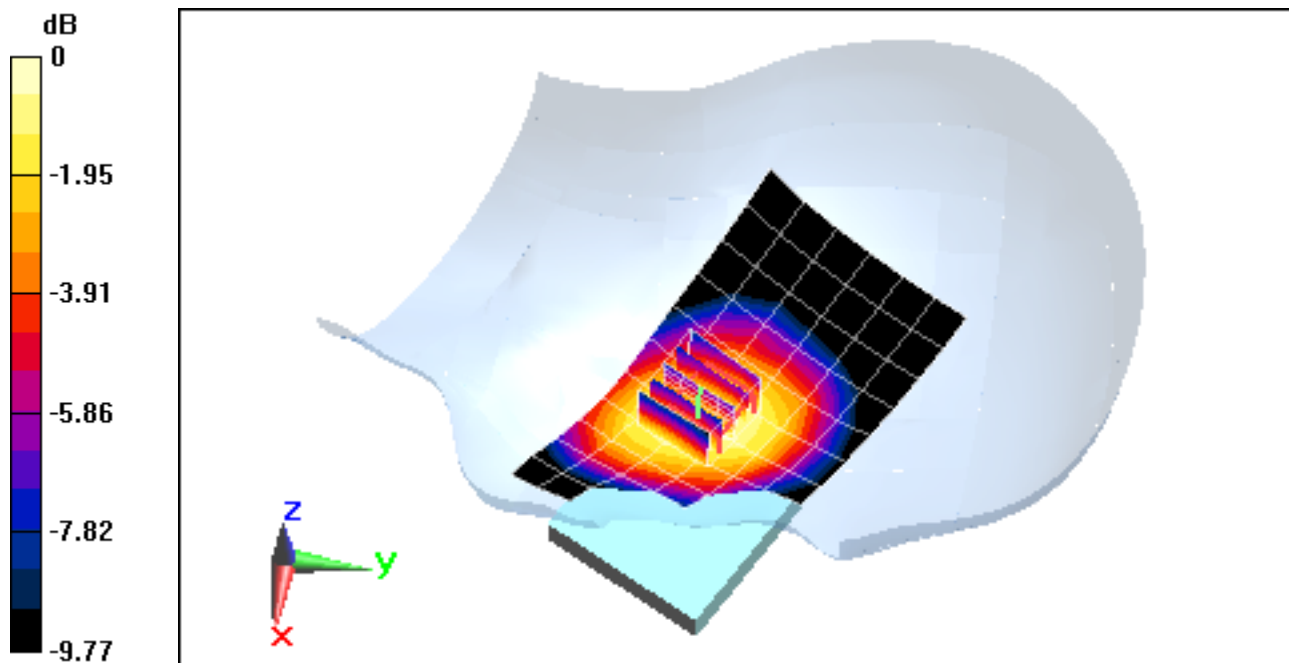
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 25.572 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 0.7090

SAR(1 g) = 0.742 mW/g; SAR(10 g) = 0.554 mW/g



0 dB = 0.590 mW/g = -4.58 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: 835 Head Medium parameters used (interpolated):

$f = 848.8 \text{ MHz}$; $\sigma = 0.906 \text{ mho/m}$; $\epsilon_r = 41.10$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-02-2012; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(8.07, 8.07, 8.07); Calibrated: 7/27/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP-: 1687

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

Mode: GSM 850, Left Head, Tilt, High.ch

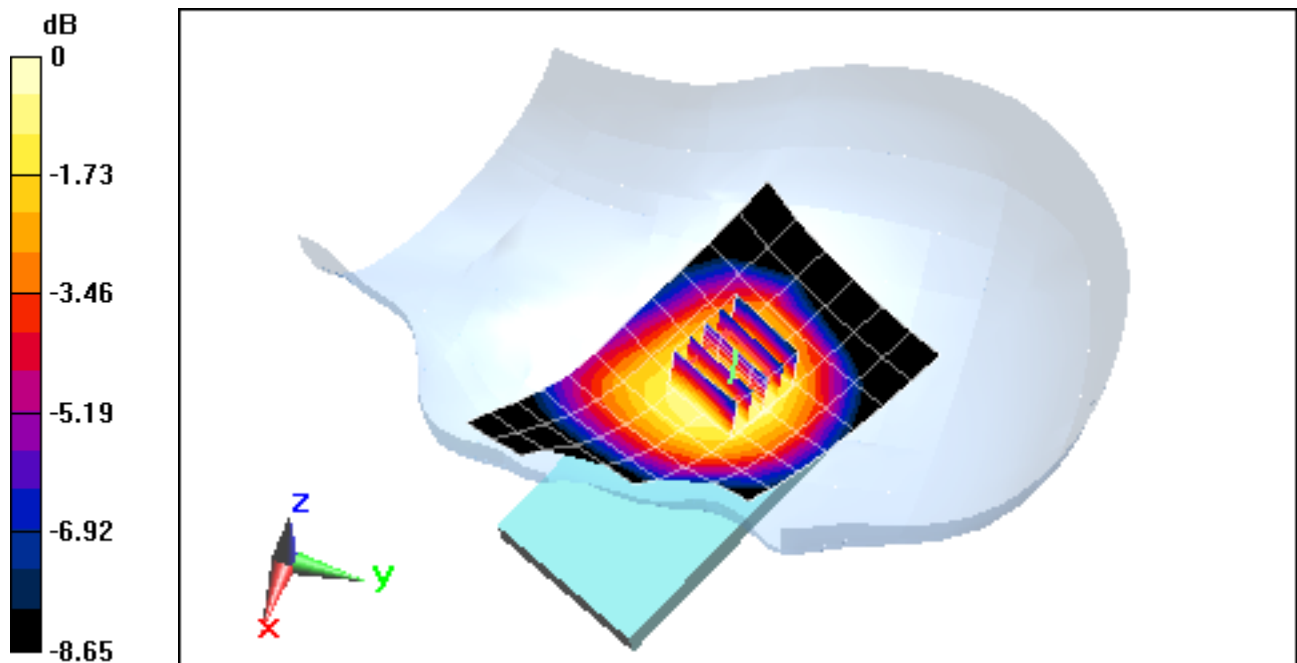
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 17.780 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.3240

SAR(1 g) = 0.334 mW/g; SAR(10 g) = 0.254 mW/g



0 dB = 0.280mW/g = -11.06 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 41.831$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: WCDMA 850, Right Head, Touch, Mid.ch

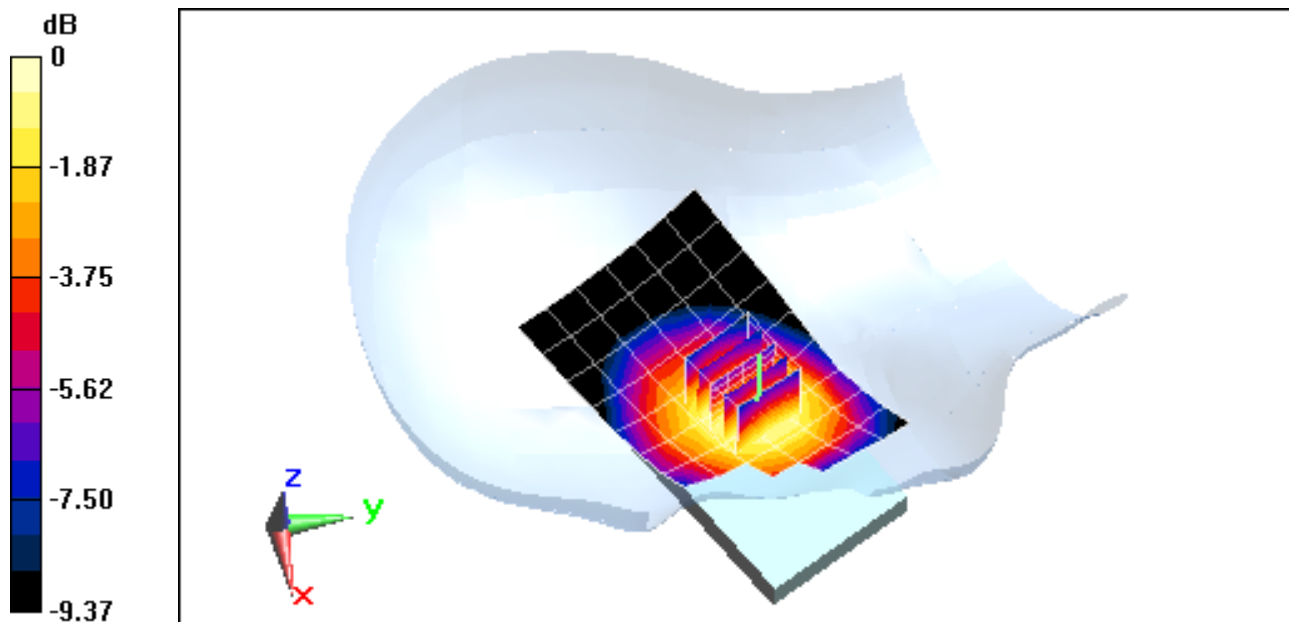
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.403 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.6690

SAR(1 g) = 0.539 mW/g; SAR(10 g) = 0.403 mW/g



0 dB = 0.560mW/g = -5.04 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 41.831$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: WCDMA 850, Right Head, Tilt, Mid.ch

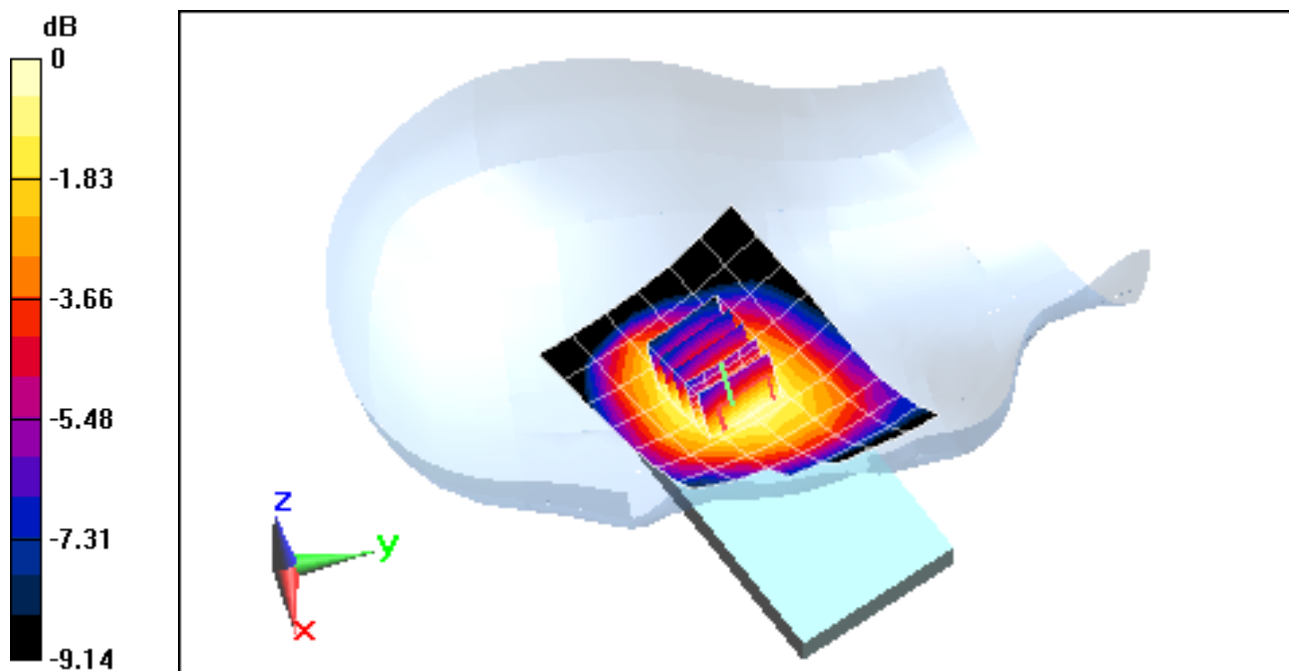
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.440 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.3830

SAR(1 g) = 0.317 mW/g; SAR(10 g) = 0.242 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 41.831$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: WCDMA 850, Left Head, Touch, Mid.ch

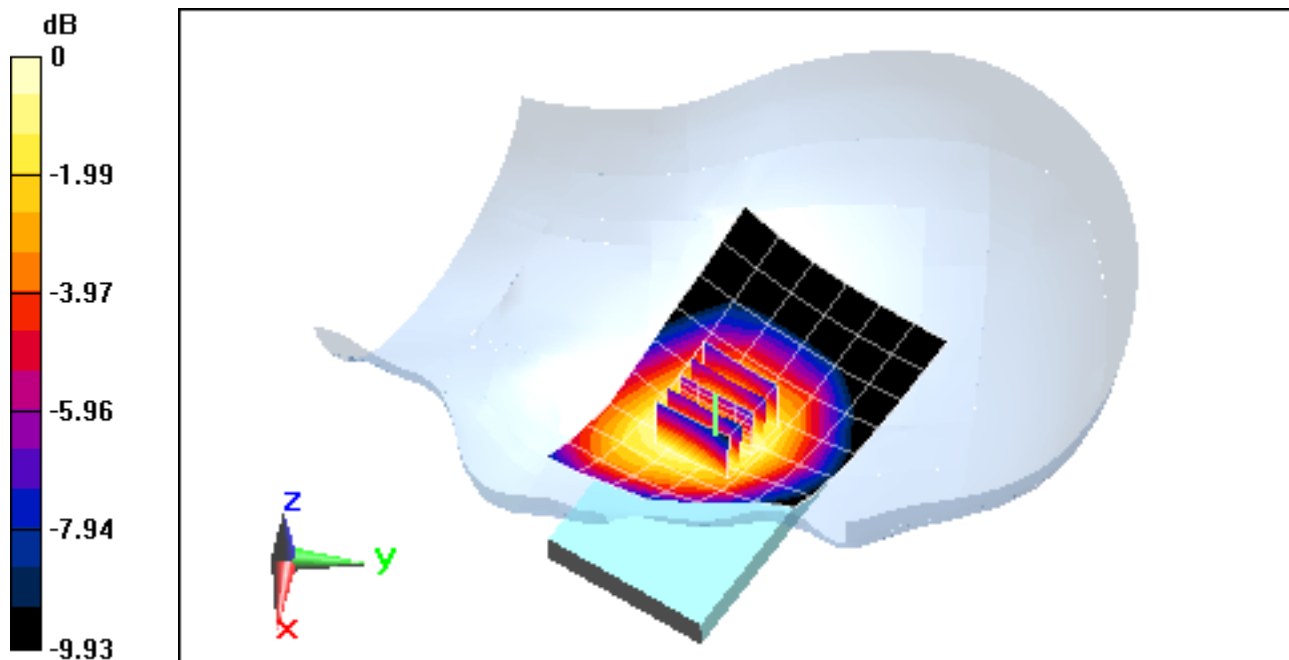
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 25.192 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.6950

SAR(1 g) = 0.562 mW/g; SAR(10 g) = 0.426 mW/g



0 dB = 0.600mW/g = -4.44 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 41.831$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: WCDMA 850, Left Head, Tilt, Mid.ch

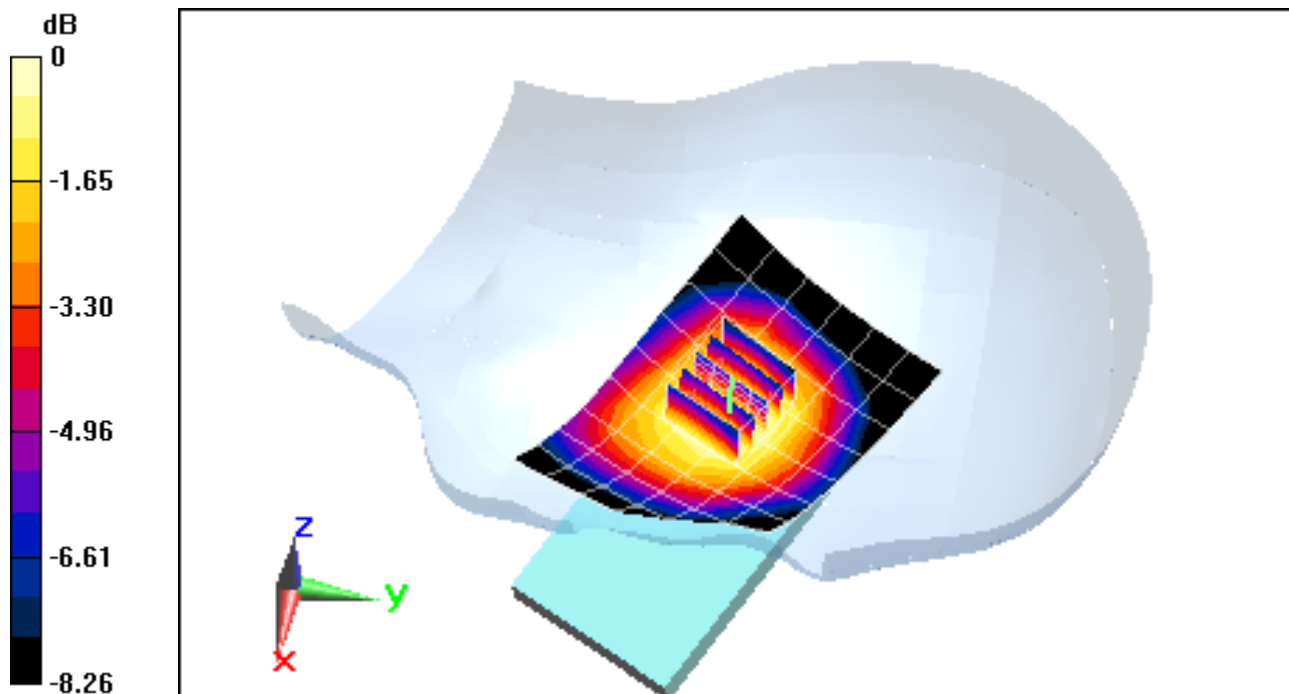
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 17.752 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.3350

SAR(1 g) = 0.274 mW/g; SAR(10 g) = 0.210 mW/g



0 dB = 0.290mW/g = -10.75 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 41.832$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 5 (Cell), Right Head, Touch, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

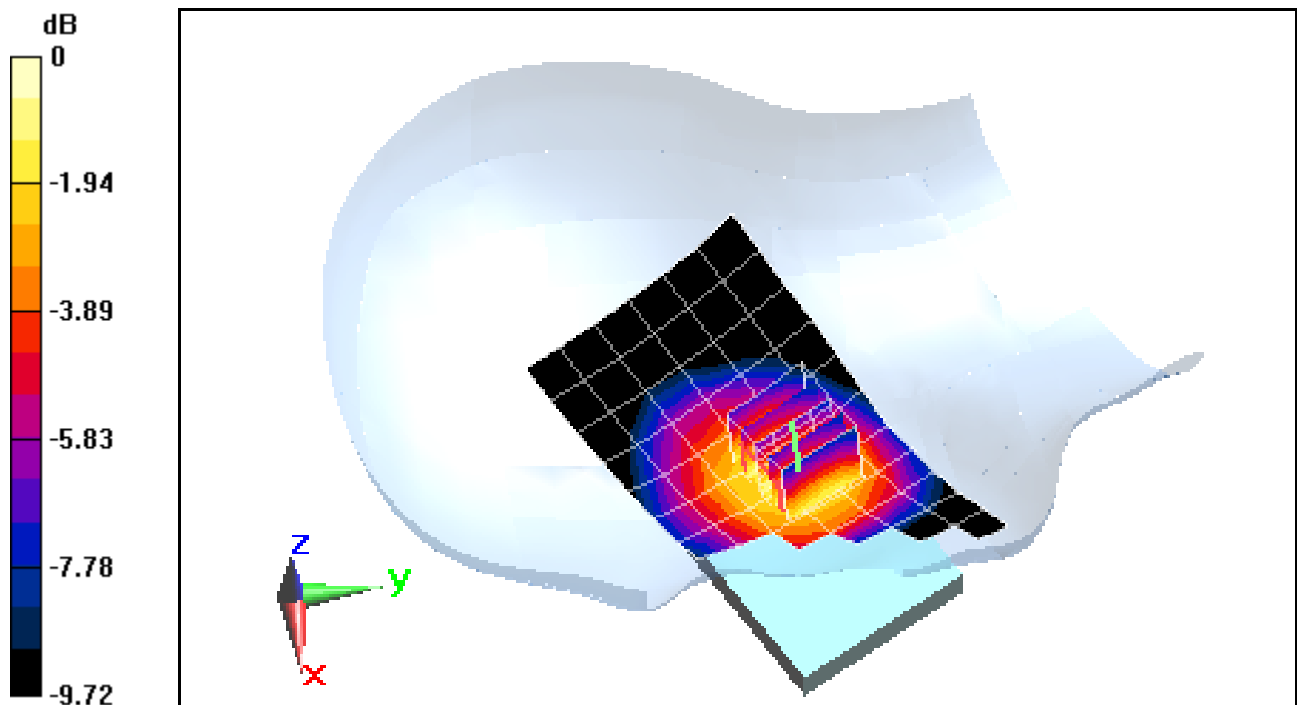
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 26.015 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.6730

SAR(1 g) = 0.531 mW/g; SAR(10 g) = 0.394 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 41.832$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 5 (Cell), Right Head, Tilt, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

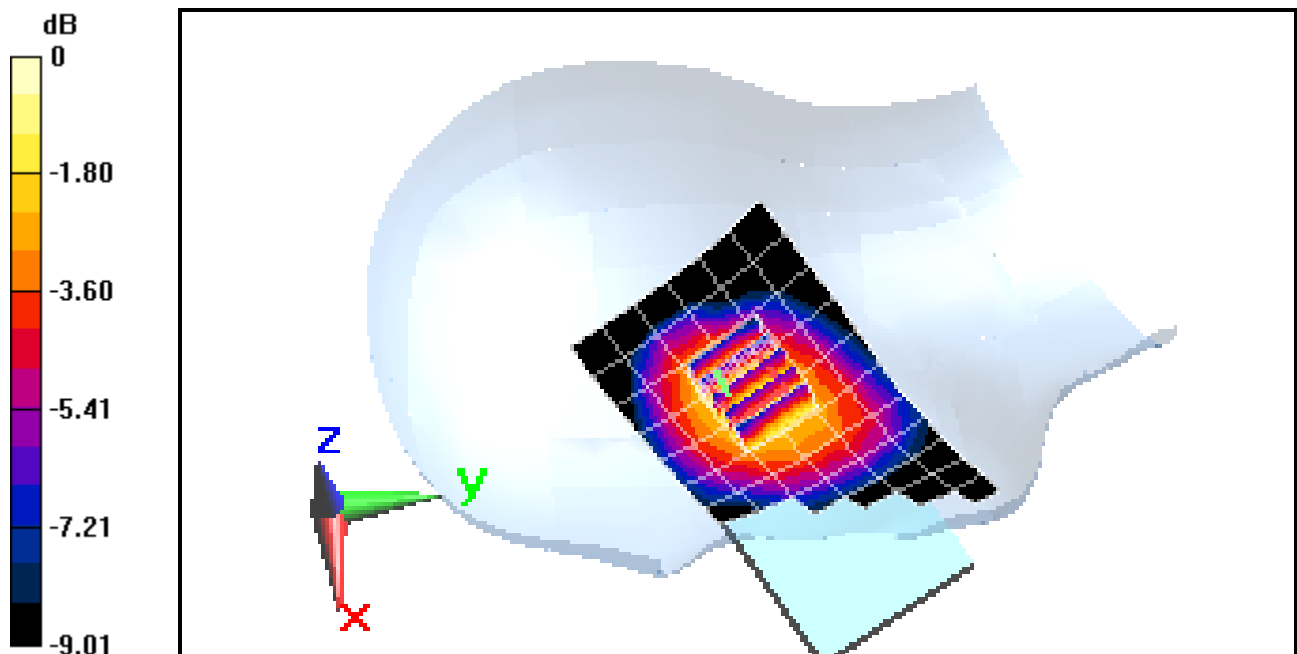
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.356 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.4050

SAR(1 g) = 0.321 mW/g; SAR(10 g) = 0.240 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 41.832$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 5 (Cell), Left Head, Touch, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

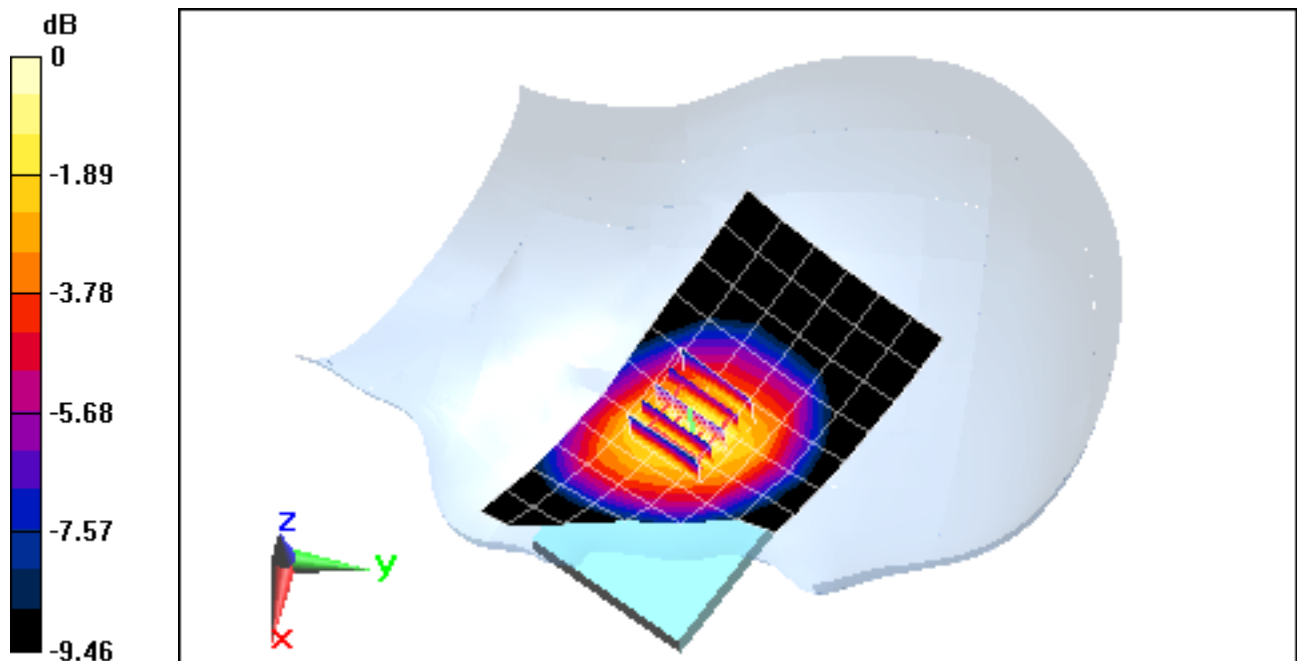
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 28.826 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.7950

SAR(1 g) = 0.624 mW/g; SAR(10 g) = 0.464 mW/g



0 dB = 0.670mW/g = -3.48 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 41.832$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 5 (Cell), Left Head, Tilt, Mid.ch

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

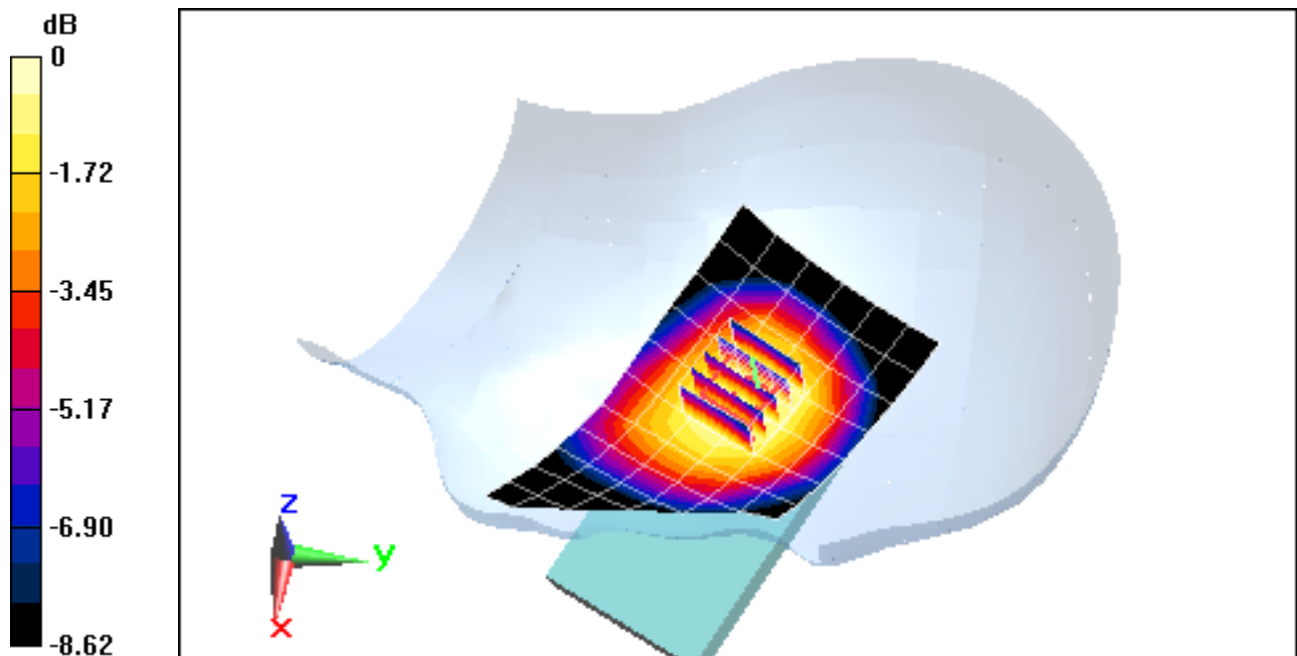
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.143 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.4030

SAR(1 g) = 0.322 mW/g; SAR(10 g) = 0.246 mW/g



0 dB = 0.340mW/g = -9.37 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.342 \text{ mho/m}$; $\epsilon_r = 39.617$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-26-2012; Ambient Temp: 24.2°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); 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 14.6.4 (4989)

Mode: LTE Band 4 (AWS), Right Head, Touch, Mid.ch
QPSK, 15 MHz Bandwidth, 1 RB, RB Offset 74

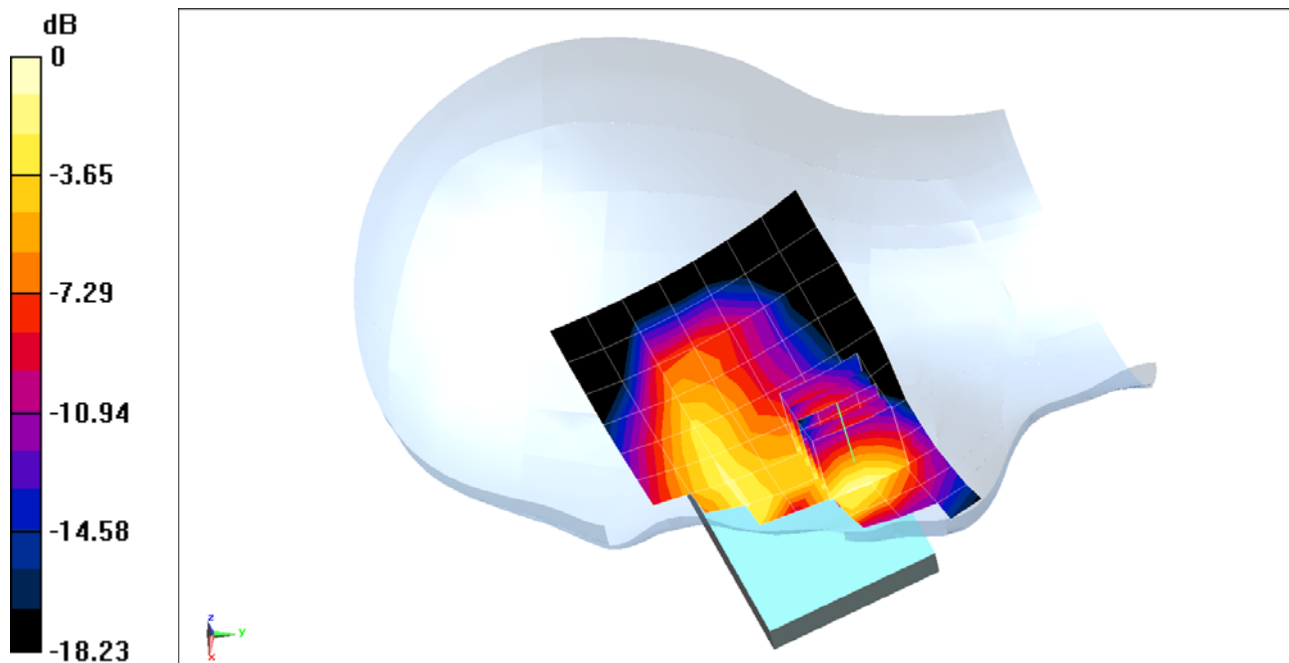
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.992 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.2790

SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.120 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.342 \text{ mho/m}$; $\epsilon_r = 39.617$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-26-2012; Ambient Temp: 24.2°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); 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 14.6.4 (4989)

Mode: LTE Band 4 (AWS), Right Head, Tilt, Mid.ch

QPSK, 15 MHz Bandwidth, 1 RB, RB Offset 74

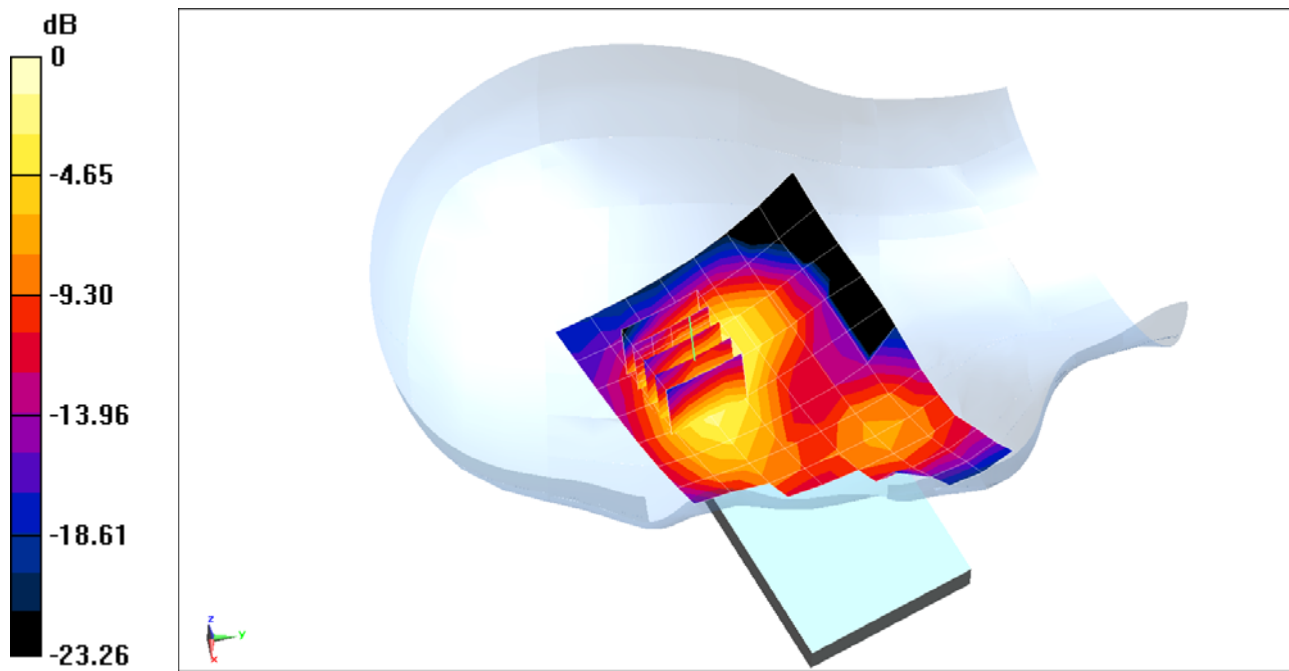
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 9.860 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.1810

SAR(1 g) = 0.115 mW/g; SAR(10 g) = 0.067 mW/g



0 dB = 0.130mW/g = -17.72 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.342 \text{ mho/m}$; $\epsilon_r = 39.617$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-26-2012; Ambient Temp: 24.2°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); 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 14.6.4 (4989)

Mode: LTE Band 4 (AWS), Left Head, Touch, Mid. Ch
QPSK, 15 MHz Bandwidth, 1 RB, RB Offset 74

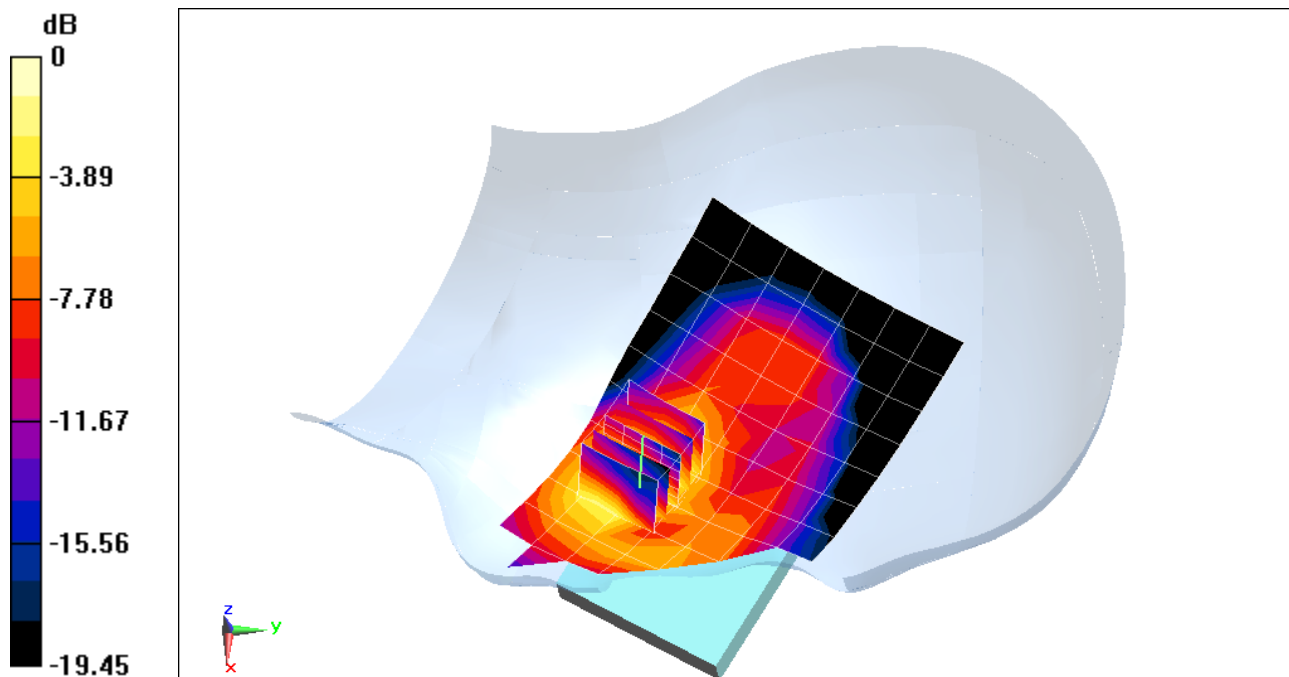
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 16.936 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.5180

SAR(1 g) = 0.316 mW/g; SAR(10 g) = 0.185 mW/g



0 dB = 0.330mW/g = -9.63 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.342 \text{ mho/m}$; $\epsilon_r = 39.617$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-26-2012; Ambient Temp: 24.2°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); 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 14.6.4 (4989)

Mode: LTE Band 4 (AWS), Left Head, Tilt, Mid.ch
QPSK, 15 MHz Bandwidth, 1 RB, RB Offset 74

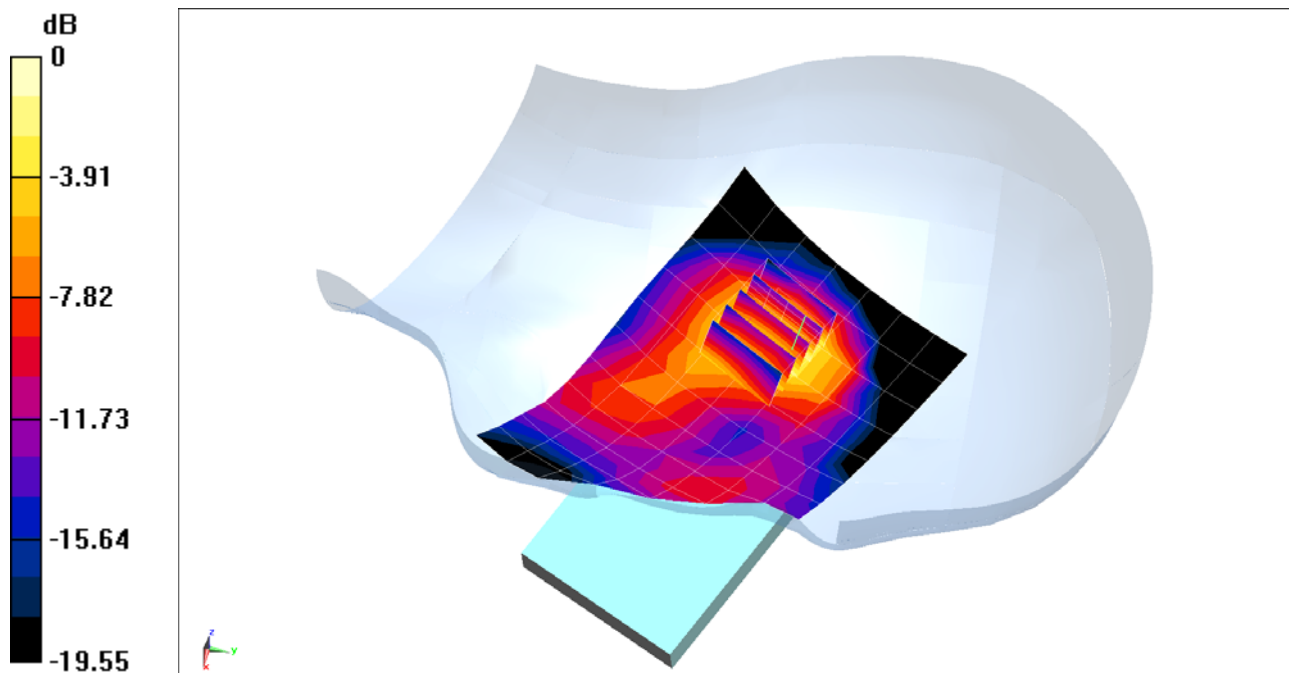
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.125 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.2500

SAR(1 g) = 0.154 mW/g; SAR(10 g) = 0.089 mW/g



0 dB = 0.170mW/g = -15.39 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 38.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

Mode: GSM 1900, Right Head, Touch, Mid.ch

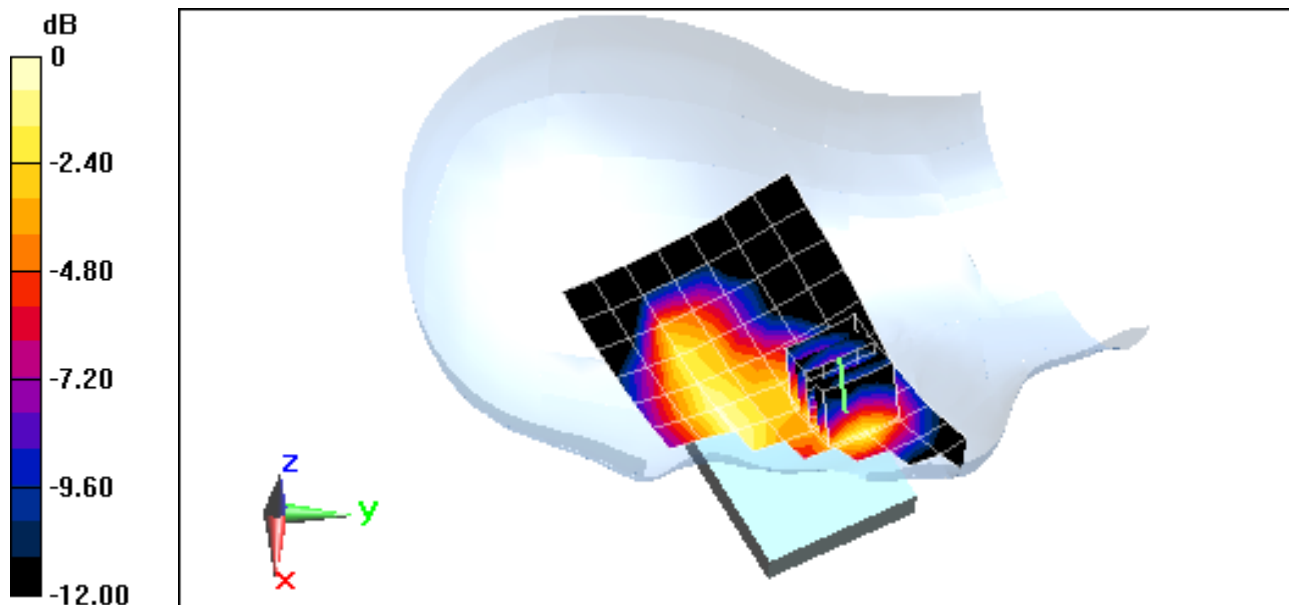
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.794 V/m; Power Drift = 0.006 dB

Peak SAR (extrapolated) = 0.2770

SAR(1 g) = 0.177 mW/g; SAR(10 g) = 0.106 mW/g



0 dB = 0.190mW/g = -14.42 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 38.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

Mode: GSM 1900, Right Head, Tilt, Mid.ch

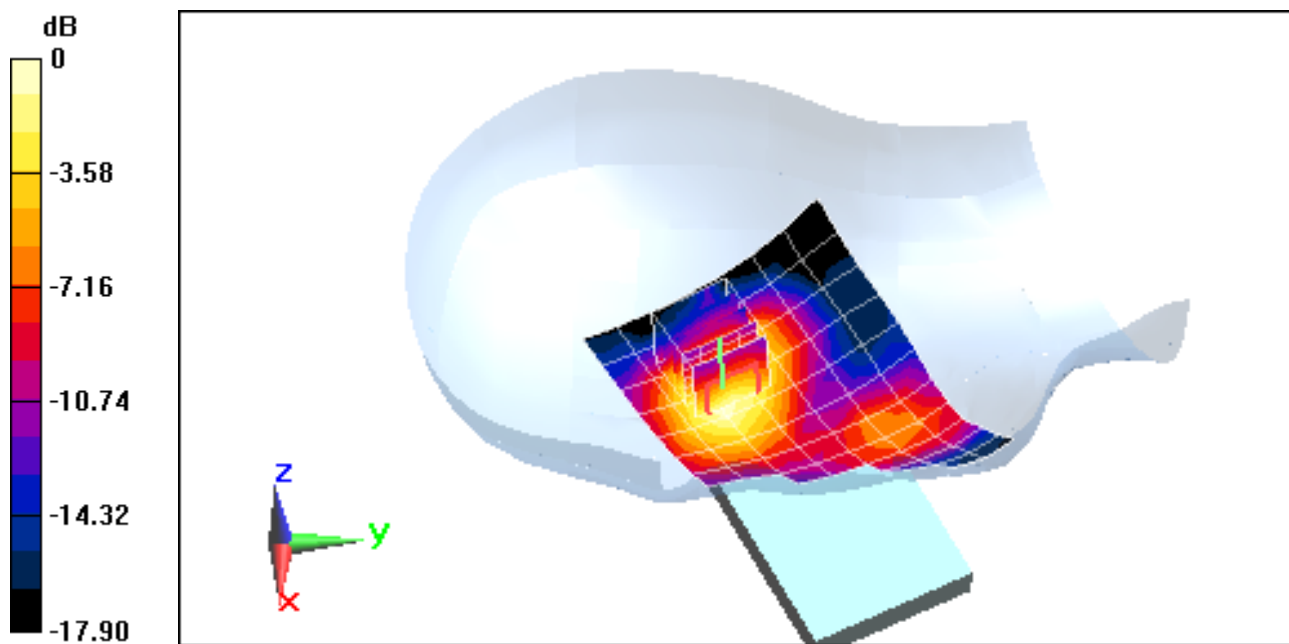
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.139 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.2050

SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.080 mW/g



0 dB = 0.140mW/g = -17.08 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 38.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

Mode: GSM 1900, Left Head, Touch, Mid.ch

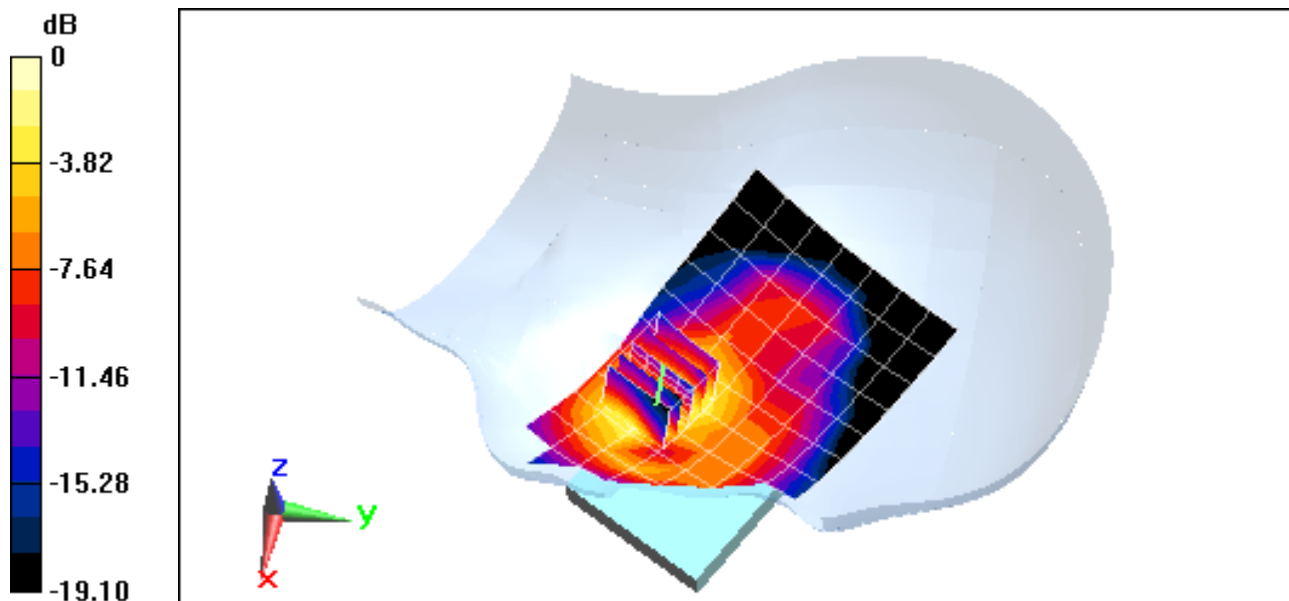
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 17.648 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.6460

SAR(1 g) = 0.405 mW/g; SAR(10 g) = 0.234 mW/g



0 dB = 0.450mW/g = -6.94 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 38.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

Mode: GSM 1900, Left Head, Tilt, Mid.ch

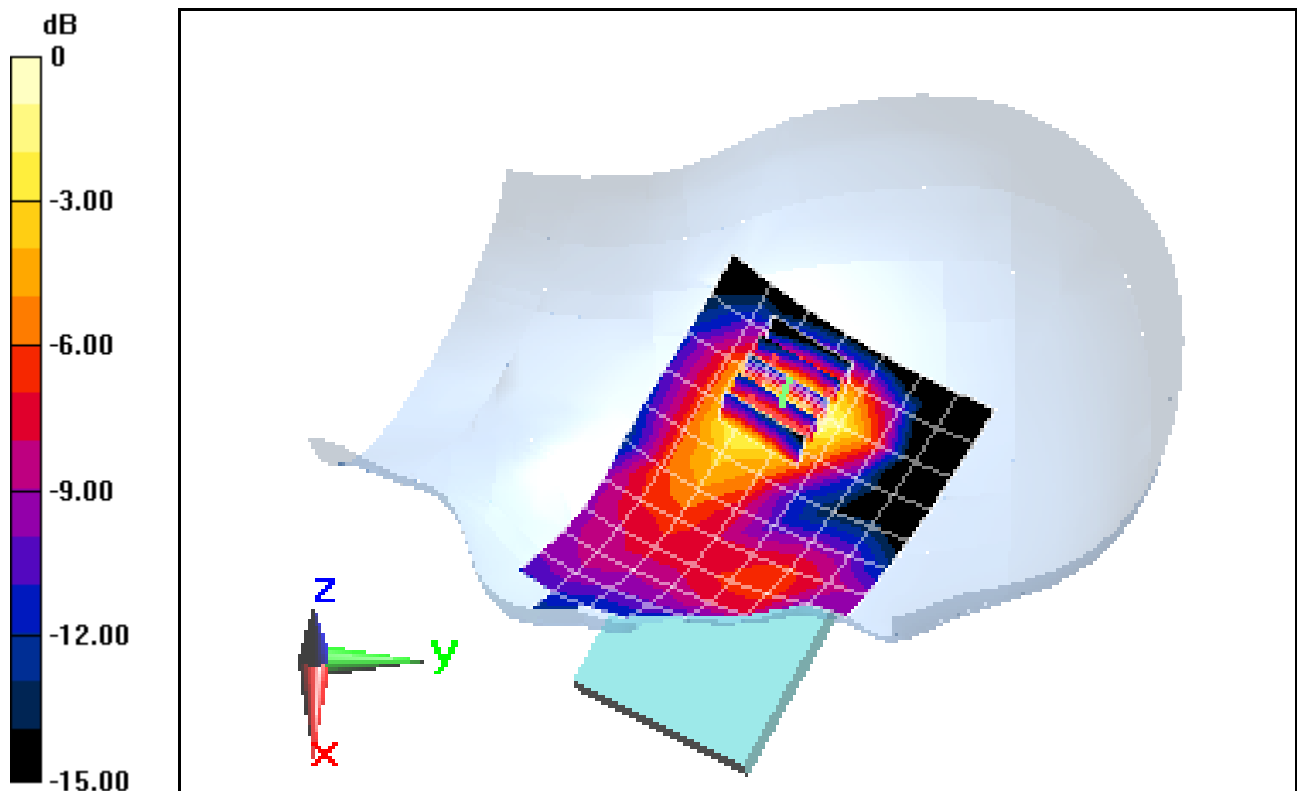
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 9.715 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.1920

SAR(1 g) = 0.123 mW/g; SAR(10 g) = 0.072 mW/g



0 dB = 0.130mW/g = -17.72 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA1900; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 38.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

Mode: WCDMA 1900, Right Head, Touch, Mid.ch

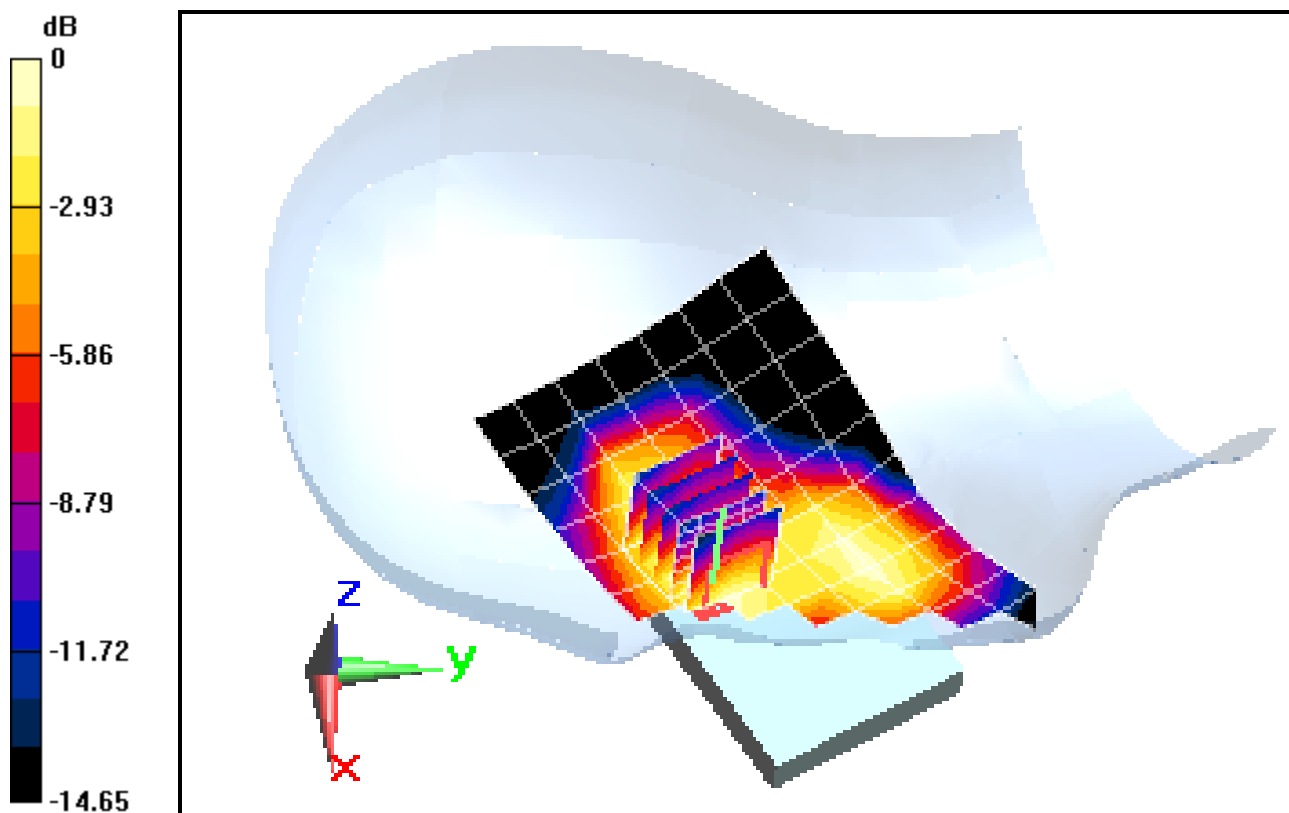
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 15.963 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.5040

SAR(1 g) = 0.325 mW/g; SAR(10 g) = 0.203 mW/g



0 dB = 0.350mW/g = -9.12 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA1900; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 38.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

Mode: WCDMA 1900, Right Head, Tilt, Mid.ch

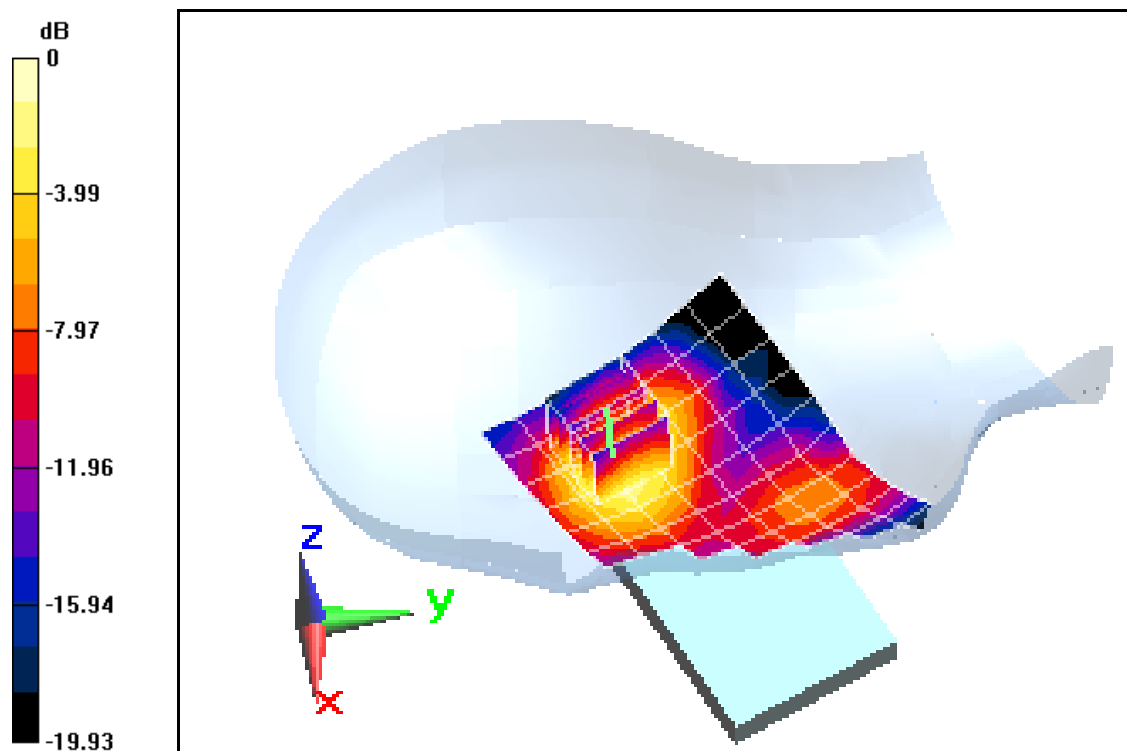
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.194 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.4400

SAR(1 g) = 0.283 mW/g; SAR(10 g) = 0.170 mW/g



0 dB = 0.310 mW/g = -10.17 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA1900; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 38.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

Mode: WCDMA 1900, Left Head, Touch, Mid.ch

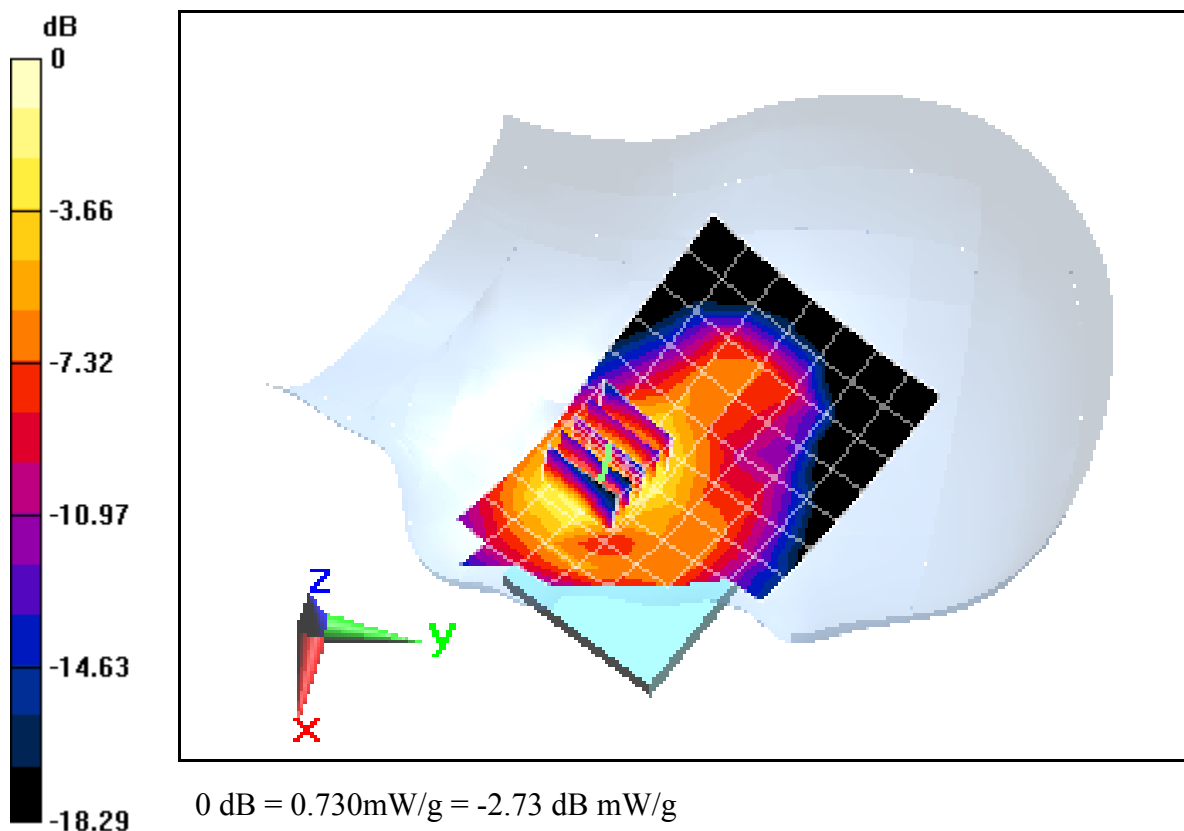
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 18.195 V/m; Power Drift = 0.043 dB

Peak SAR (extrapolated) = 1.0480

SAR(1 g) = 0.662 mW/g; SAR(10 g) = 0.391 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA1900; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 38.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

Mode: WCDMA 1900, Left Head, Tilt, Mid.ch

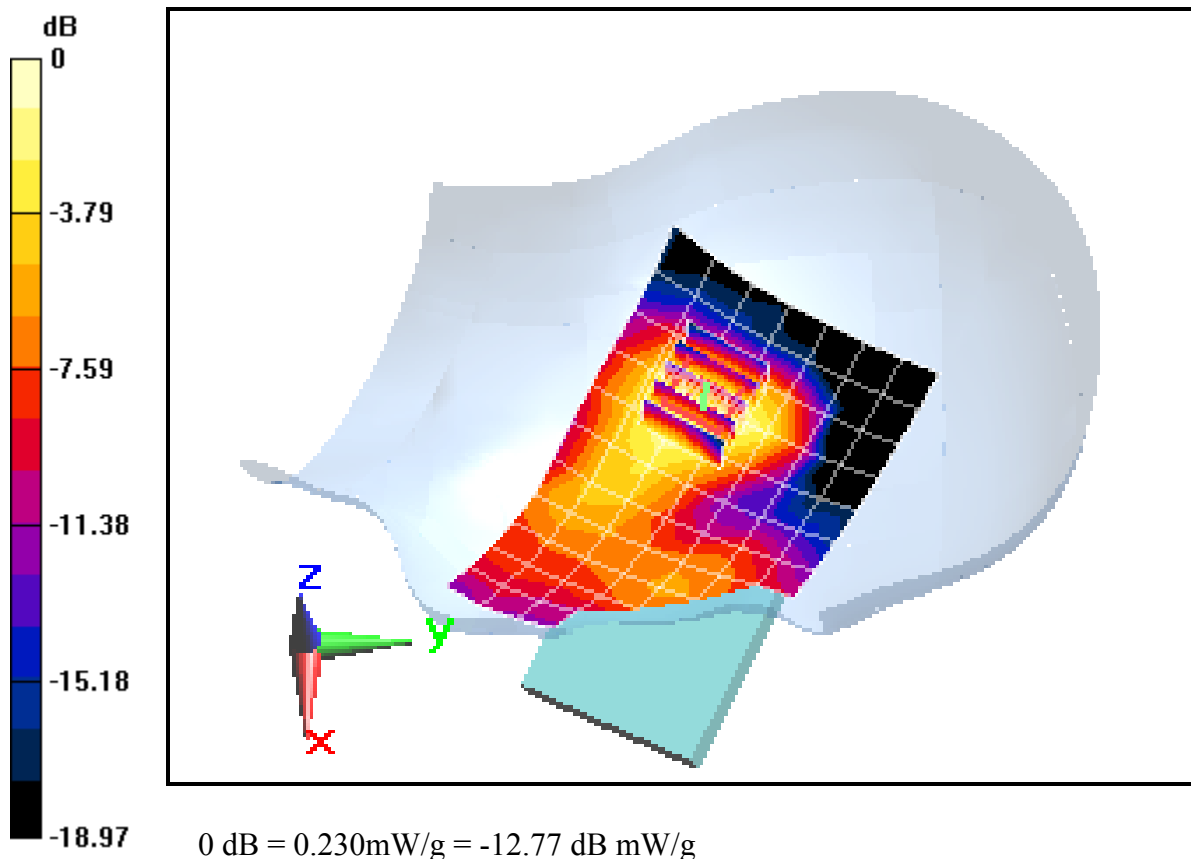
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 13.205 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.3510

SAR(1 g) = 0.222 mW/g; SAR(10 g) = 0.132 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.355 \text{ mho/m}$; $\epsilon_r = 39.65$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-25-2012; Ambient Temp: 21.4°C; Tissue Temp: 22.1°C

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

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

Mode: LTE Band 2 (PCS), Right Head, Touch, Mid.ch

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

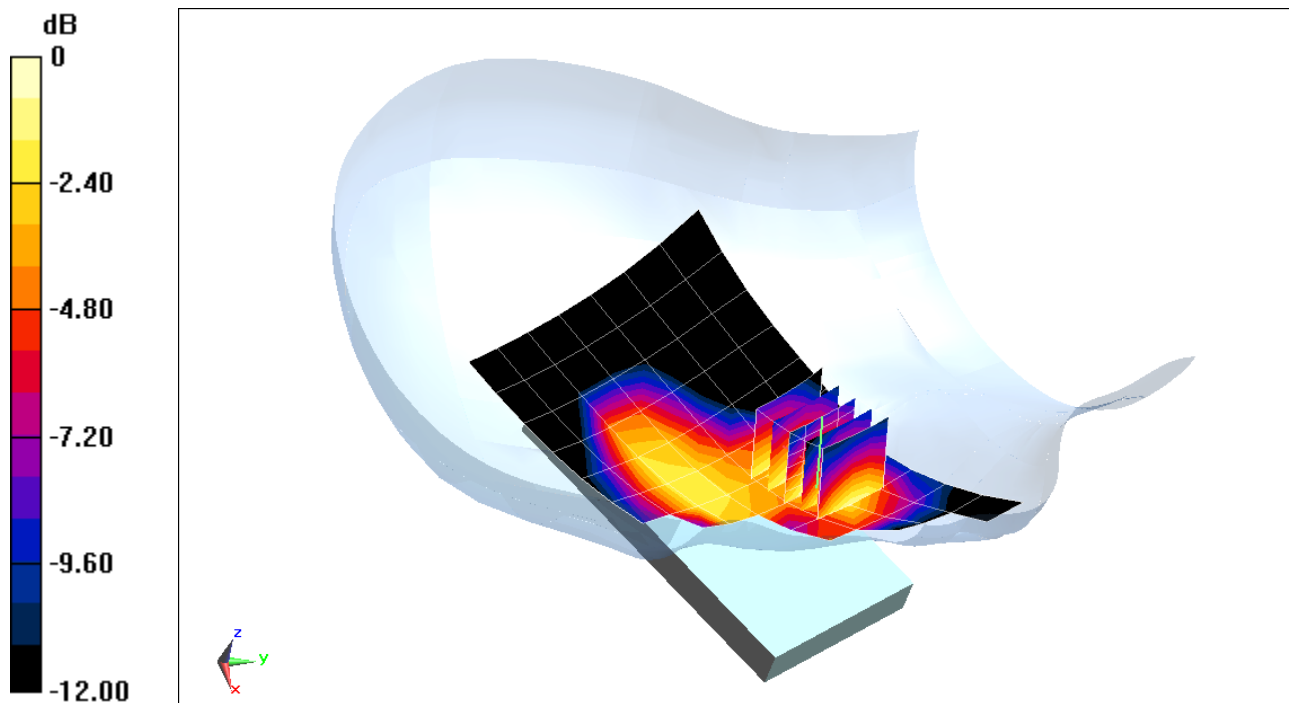
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.008 V/m; Power Drift = 0.024 dB

Peak SAR (extrapolated) = 0.6390

SAR(1 g) = 0.409 mW/g; SAR(10 g) = 0.250 mW/g



0 dB = 0.420mW/g = -7.54 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.355 \text{ mho/m}$; $\epsilon_r = 39.65$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-25-2012; Ambient Temp: 21.4°C; Tissue Temp: 22.1°C

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

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

Mode: LTE Band 2 (PCS), Right Head, Tilt, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

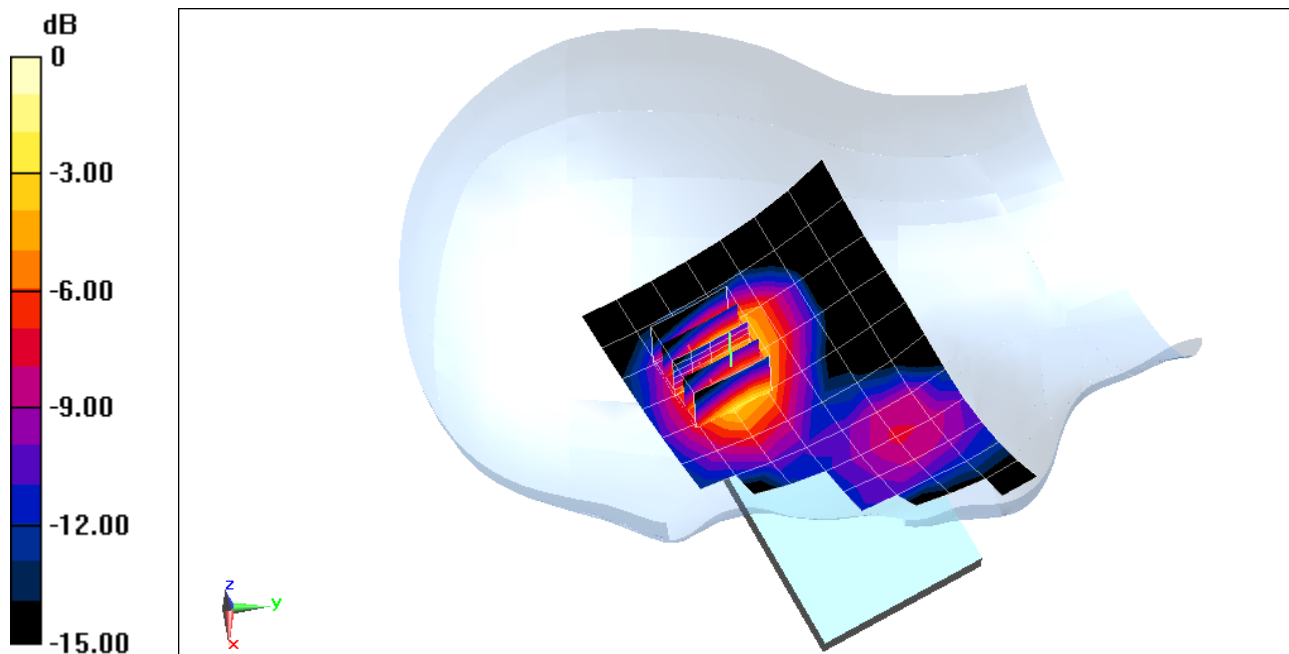
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 15.409 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.4460

SAR(1 g) = 0.289 mW/g; SAR(10 g) = 0.171 mW/g



0 dB = 0.300mW/g = -10.46 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.355 \text{ mho/m}$; $\epsilon_r = 39.65$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-25-2012; Ambient Temp: 21.4°C; Tissue Temp: 22.1°C

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

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

Mode: LTE Band 2 (PCS), Left Head, Touch, Mid.ch

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

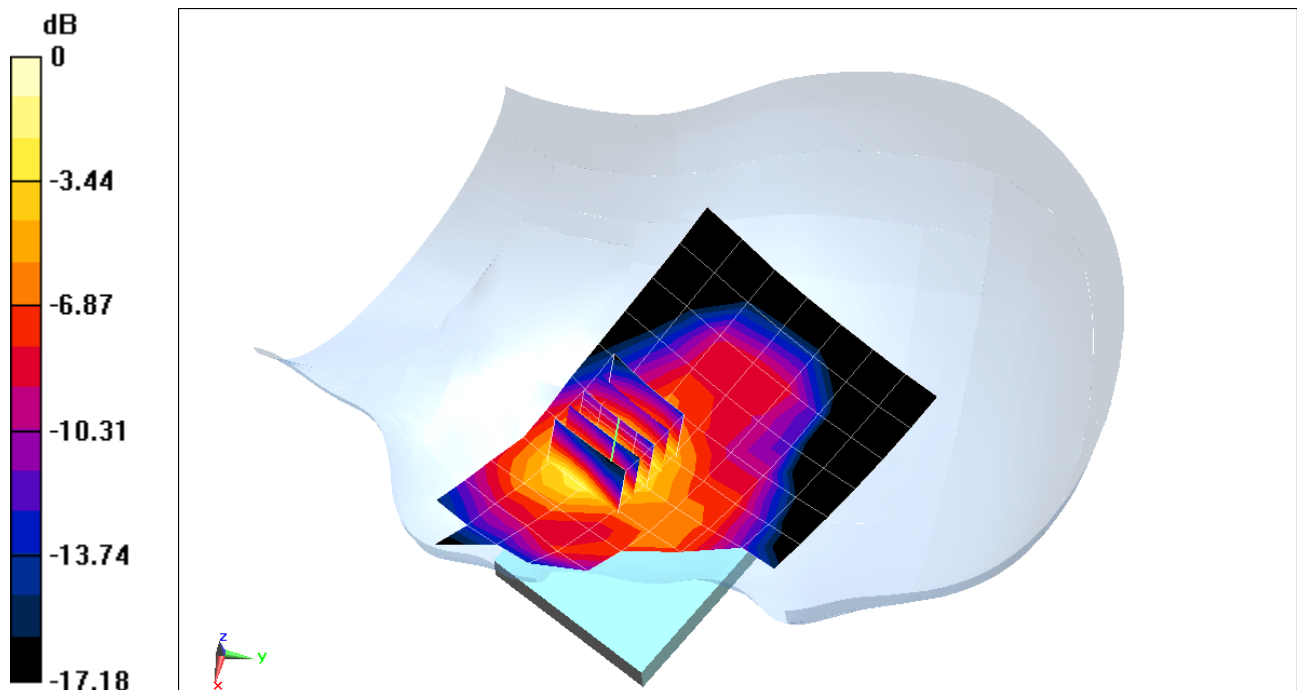
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 25.113 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.0790

SAR(1 g) = 0.686 mW/g; SAR(10 g) = 0.409 mW/g



0 dB = 0.750mW/g = -2.50 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.355 \text{ mho/m}$; $\epsilon_r = 39.65$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-25-2012; Ambient Temp: 21.4°C; Tissue Temp: 22.1°C

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

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

Mode: LTE Band 2 (PCS), Left Head, Tilt, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

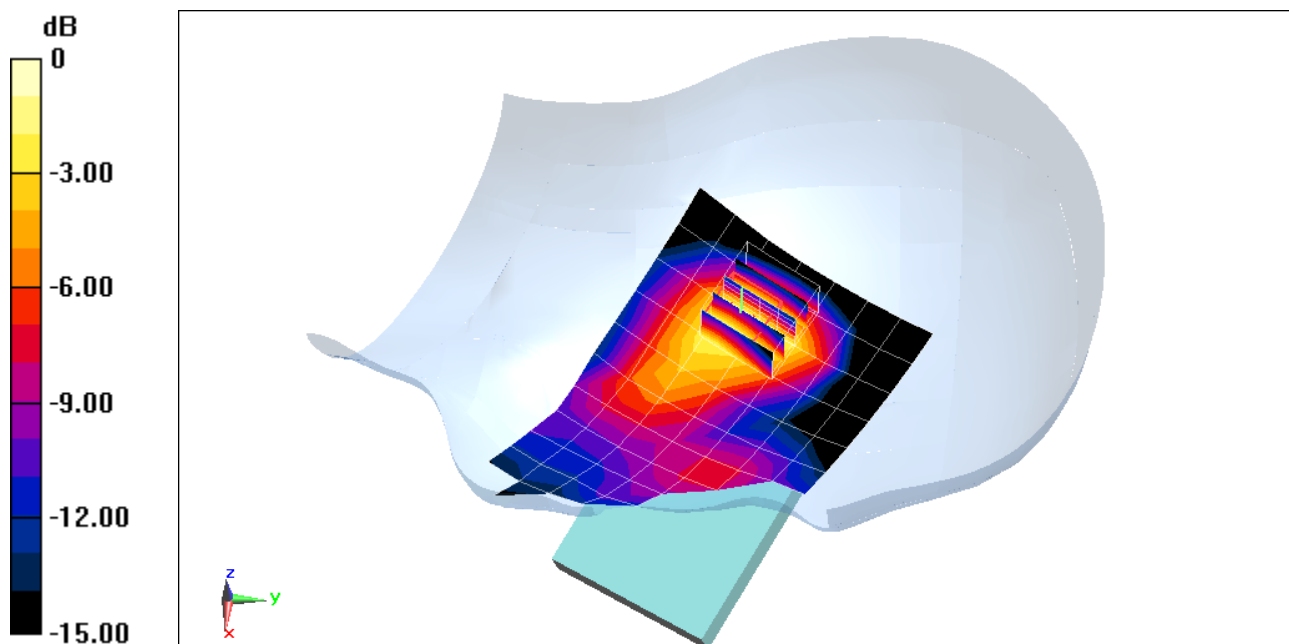
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 13.936 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.3440

SAR(1 g) = 0.224 mW/g; SAR(10 g) = 0.135 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 37.771$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-25-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (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: IEEE 802.11b, Right Head, Touch, Ch 11, 1 Mbps

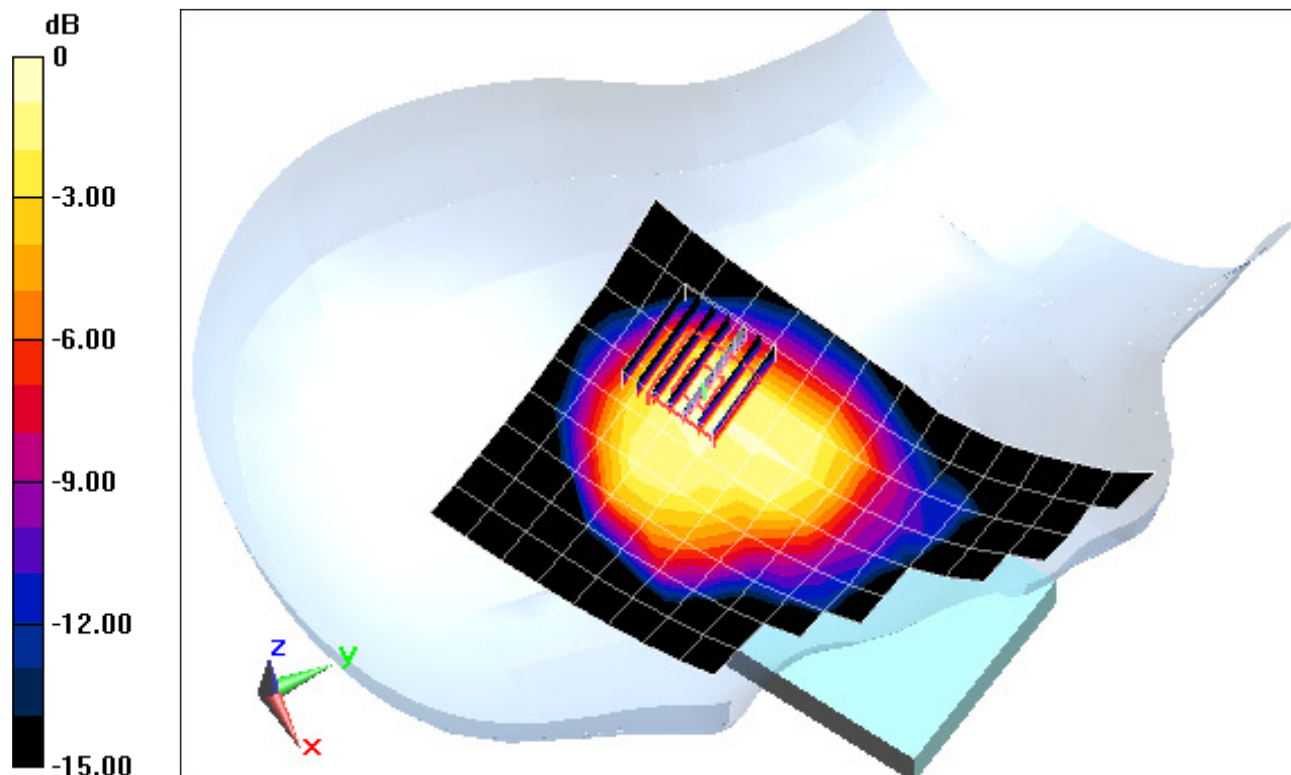
Area Scan (10x15x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 11.142 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.376 mW/g

SAR(1 g) = 0.204 mW/g; SAR(10 g) = 0.115 mW/g



0 dB = 0.284 mW/g = -10.93 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 37.771$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-25-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (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: IEEE 802.11b, Right Head, Tilt, Ch 11, 1 Mbps

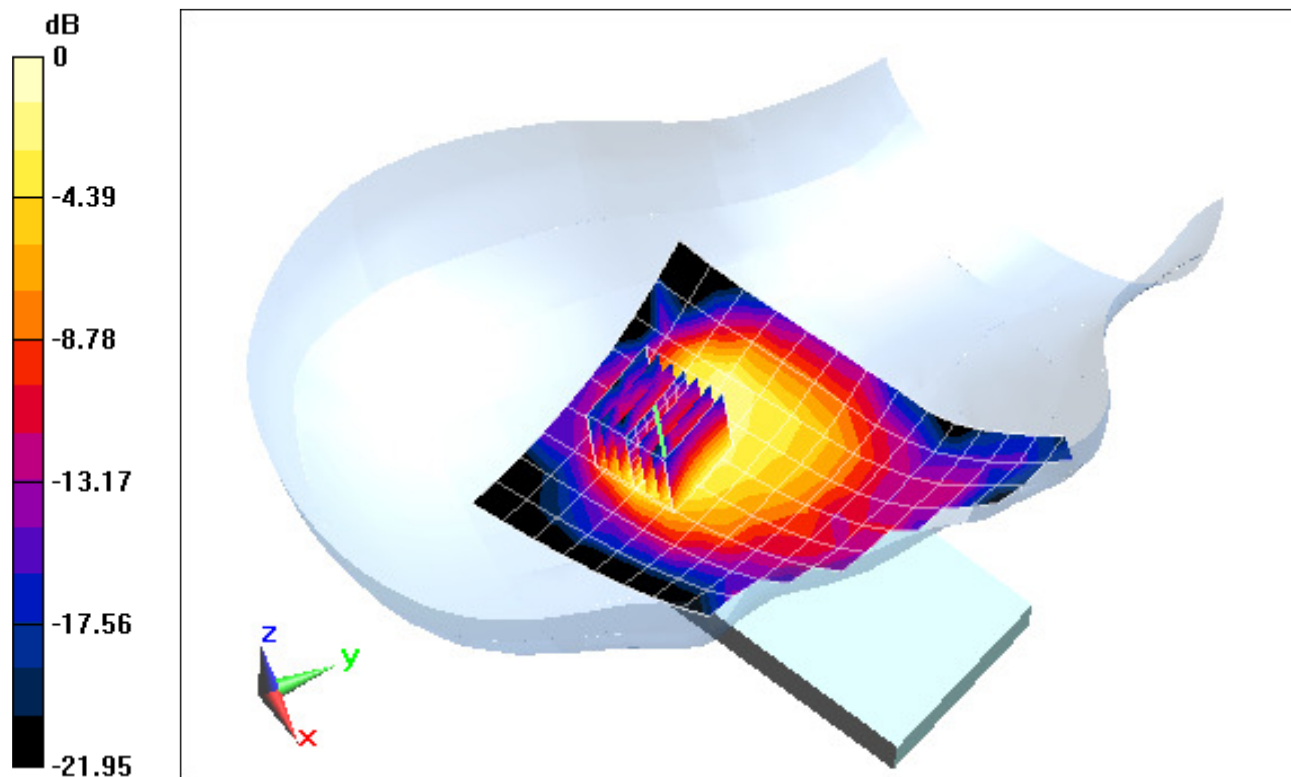
Area Scan (10x15x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 9.763 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.285 mW/g

SAR(1 g) = 0.161 mW/g; SAR(10 g) = 0.086 mW/g



0 dB = 0.198 mW/g = -14.07 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 37.771$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-25-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (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: IEEE 802.11b, Left Head, Touch, Ch 11, 1 Mbps

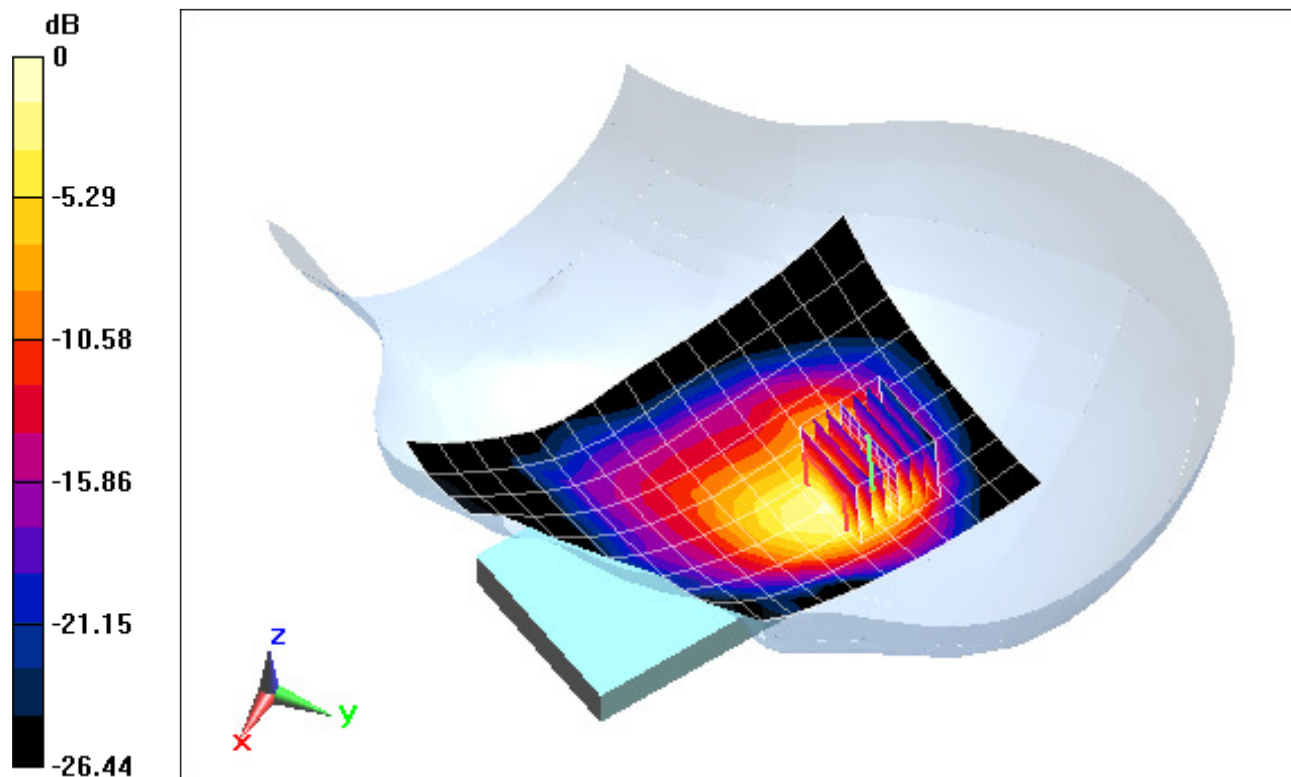
Area Scan (10x15x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 19.852 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.375 mW/g

SAR(1 g) = 0.673 mW/g; SAR(10 g) = 0.330 mW/g



0 dB = 0.878 mW/g = -1.13 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 37.771$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-25-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (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: IEEE 802.11b, Left Head, Tilt, Ch 11, 1 Mbps

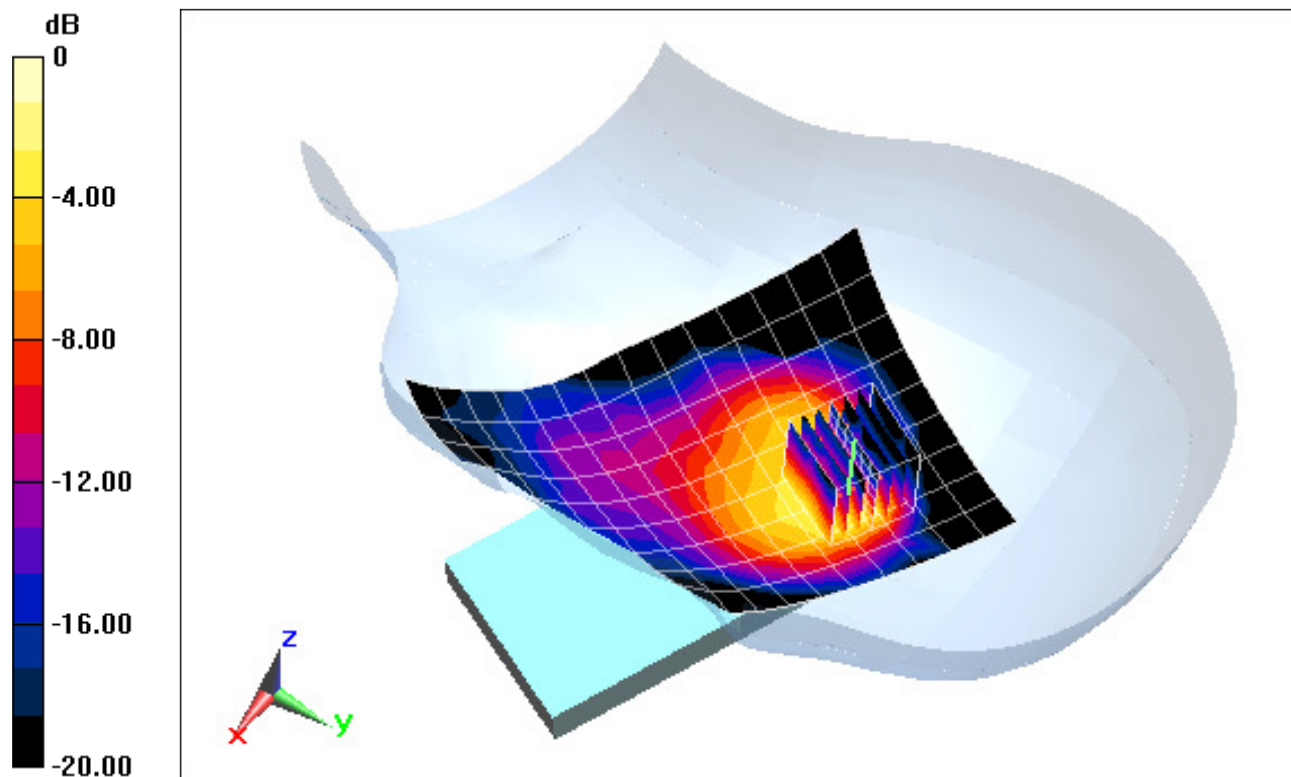
Area Scan (10x15x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 12.569 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.640 mW/g

SAR(1 g) = 0.277 mW/g; SAR(10 g) = 0.129 mW/g



0 dB = 0.359 mW/g = -8.90 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 17; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 695 Body Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.951 \text{ mho/m}$; $\epsilon_r = 54.68$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2012; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(6.11, 6.11, 6.11); Calibrated: 8/25/2011

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 14.6.4 (4989)

Mode: LTE Band 17, Body SAR, Back side, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 0

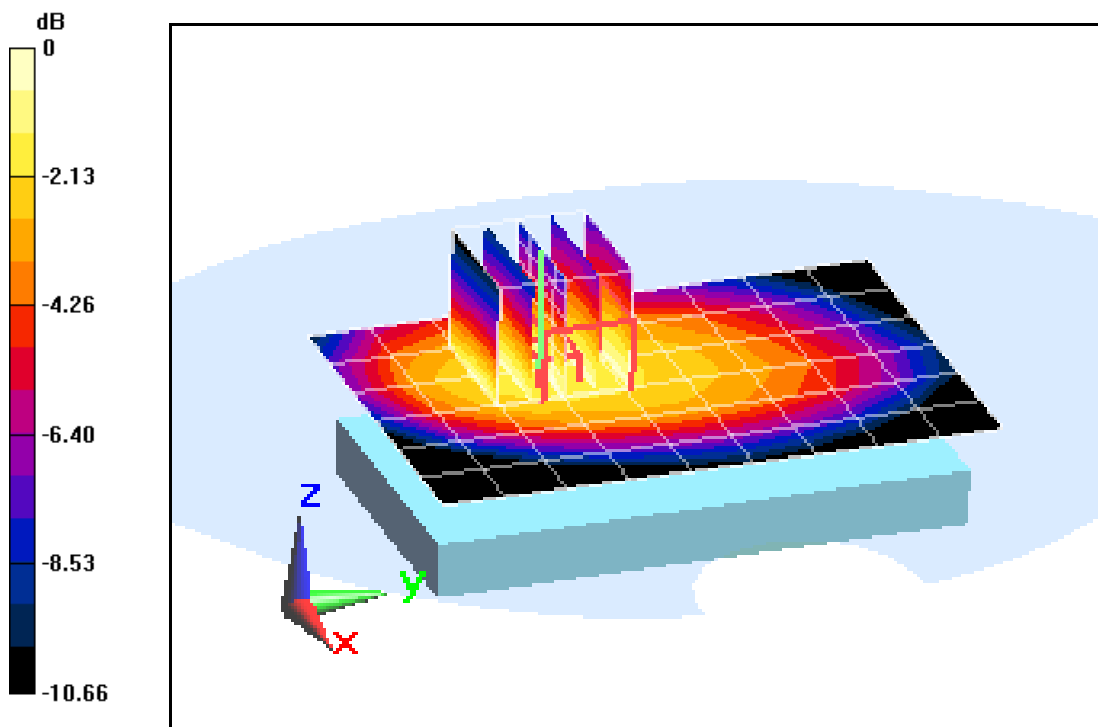
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.579 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.5290

SAR(1 g) = 0.382 mW/g; SAR(10 g) = 0.283 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 17; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 695 Body Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.951 \text{ mho/m}$; $\epsilon_r = 54.68$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2012; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(6.11, 6.11, 6.11); Calibrated: 8/25/2011

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 14.6.4 (4989)

Mode: LTE Band 17, Body SAR, Front side, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 0

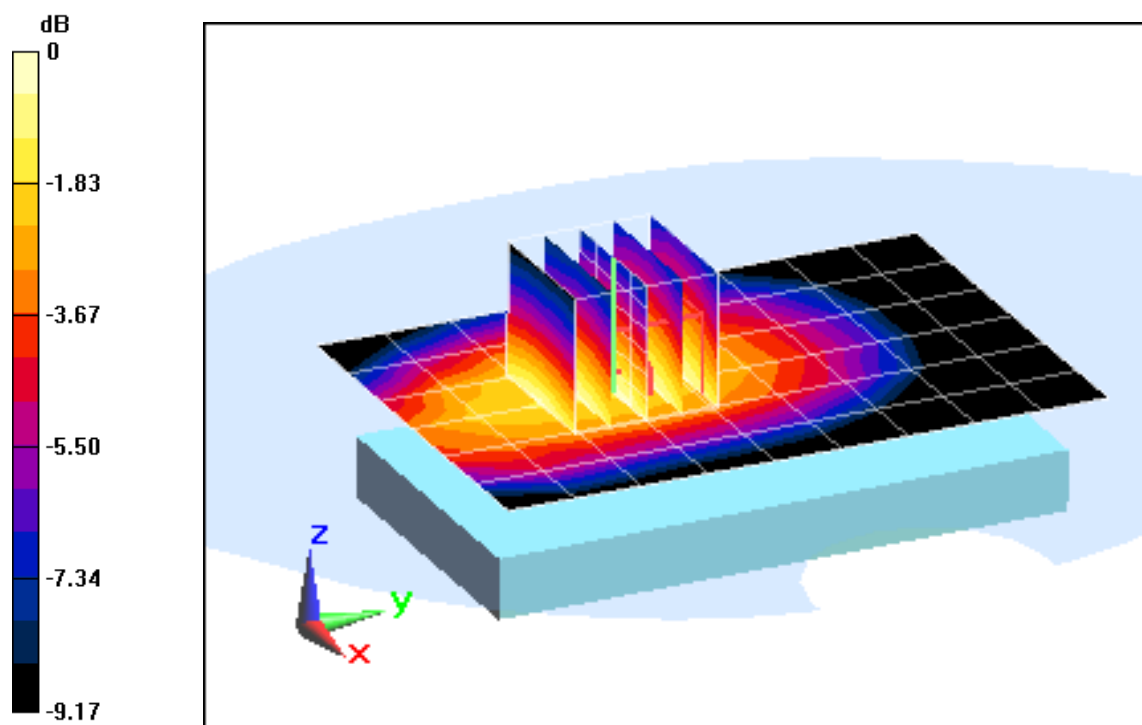
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.182 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.4220

SAR(1 g) = 0.324 mW/g; SAR(10 g) = 0.243 mW/g



0 dB = 0.340mW/g = -9.37 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 17; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 695 Body Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.951 \text{ mho/m}$; $\epsilon_r = 54.68$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2012; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(6.11, 6.11, 6.11); Calibrated: 8/25/2011

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 14.6.4 (4989)

Mode: LTE Band 17, Body SAR, Bottom Edge, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 0

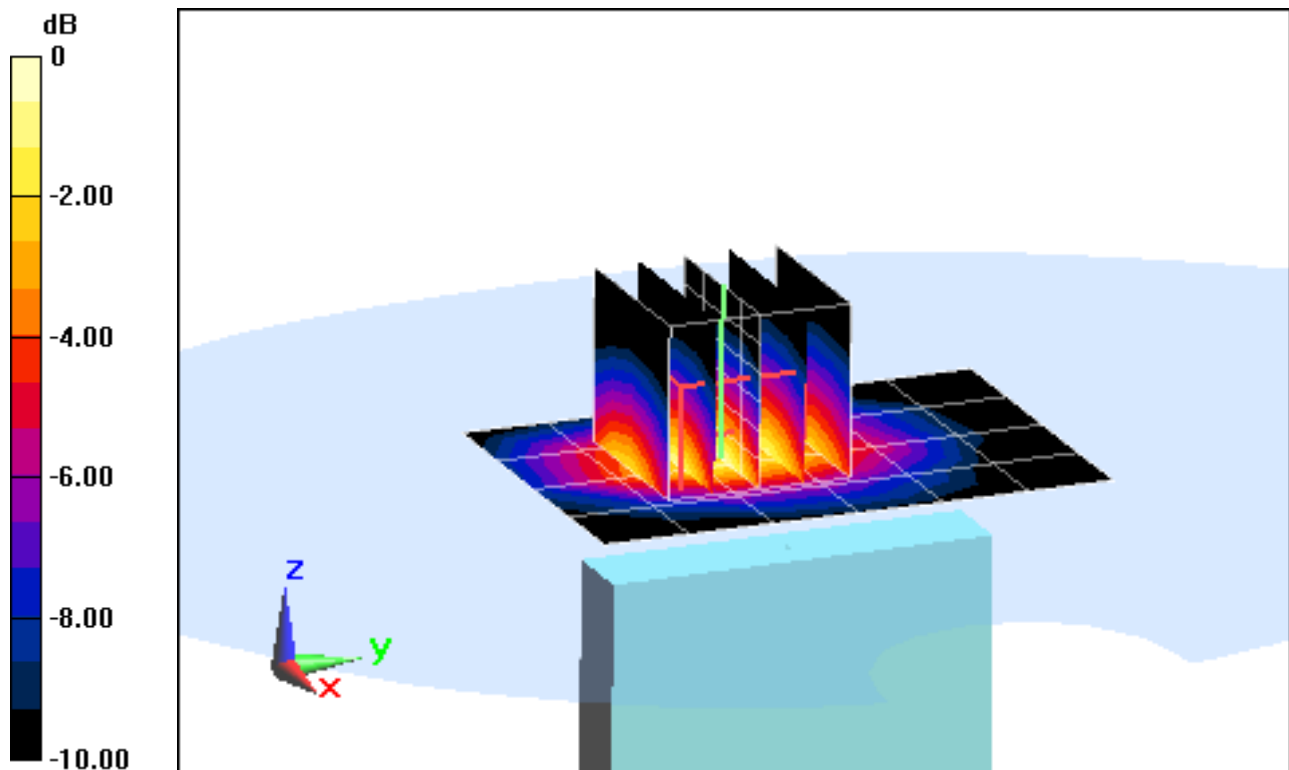
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.577 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.2720

SAR(1 g) = 0.149 mW/g; SAR(10 g) = 0.083 mW/g



0 dB = 0.170mW/g = -15.39 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 17; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 695 Body Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.951 \text{ mho/m}$; $\epsilon_r = 54.68$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2012; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(6.11, 6.11, 6.11); Calibrated: 8/25/2011

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 14.6.4 (4989)

Mode: LTE Band 17, Body SAR, Right Edge, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 0

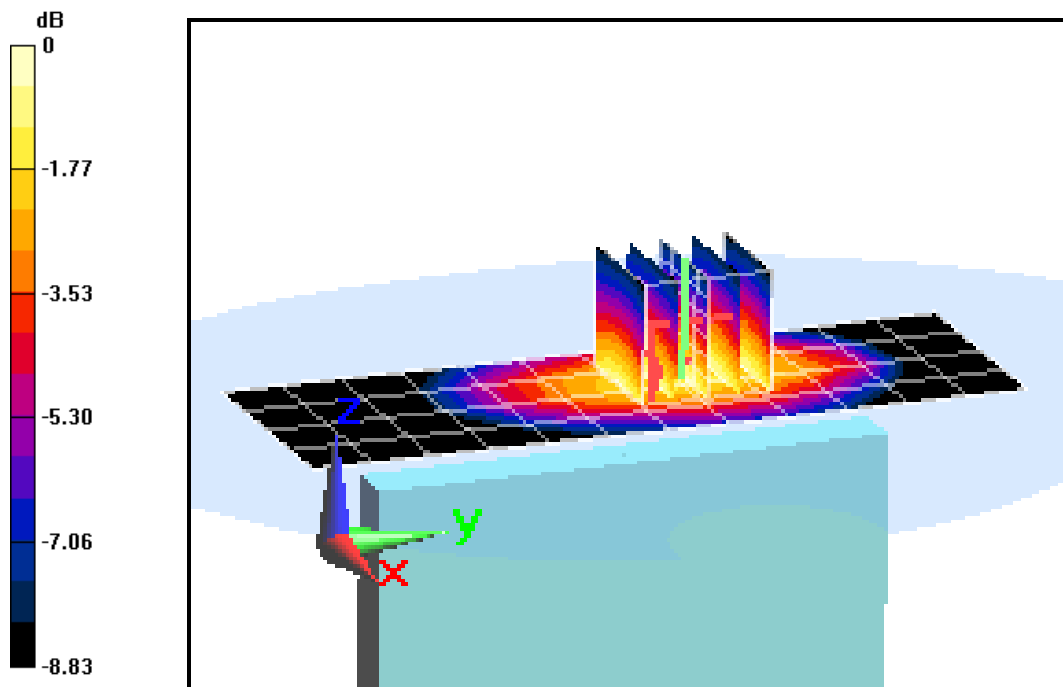
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 18.403 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.3980

SAR(1 g) = 0.292 mW/g; SAR(10 g) = 0.206 mW/g



0 dB = 0.310mW/g = -10.17 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 17; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 695 Body Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.951 \text{ mho/m}$; $\epsilon_r = 54.68$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2012; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(6.11, 6.11, 6.11); Calibrated: 8/25/2011

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 14.6.4 (4989)

Mode: LTE Band 17, Body SAR, Left Edge, Mid.ch

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

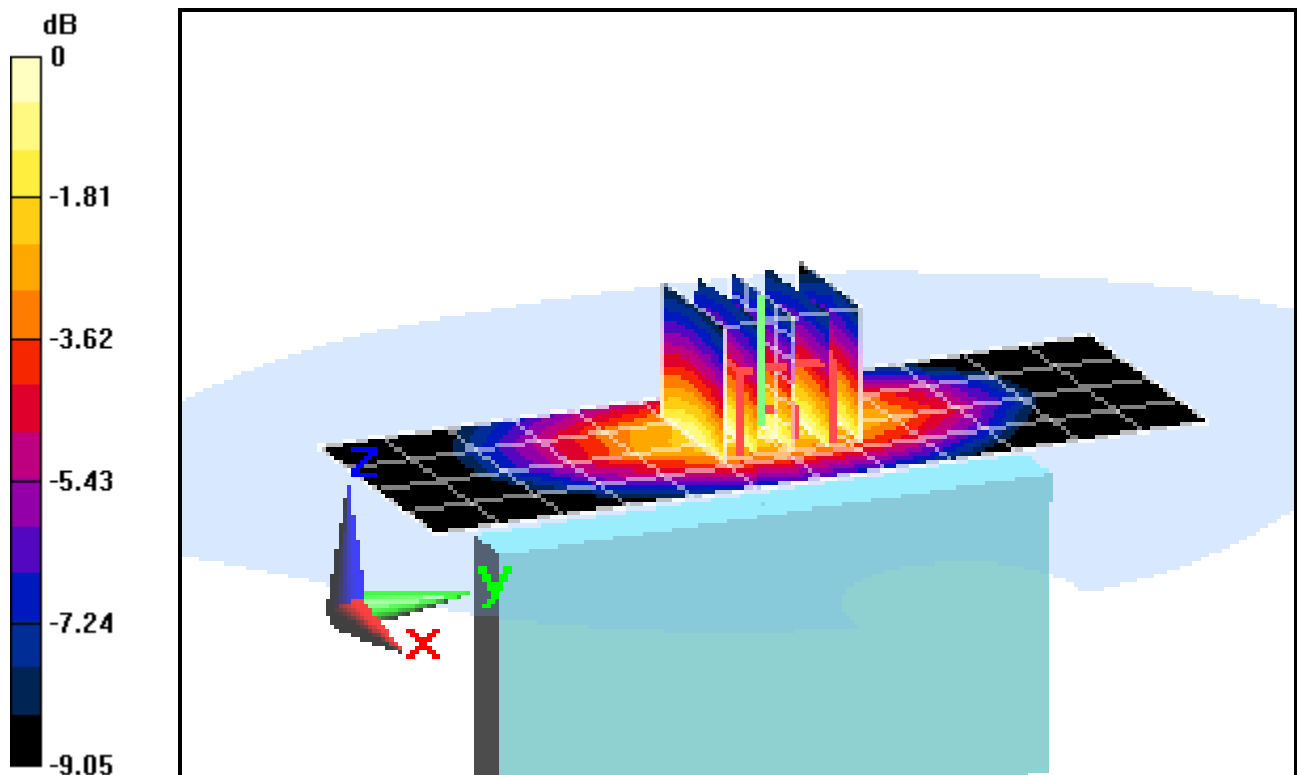
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.788 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 0.2180

SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.115 mW/g



0 dB = 0.170mW/g = -15.39 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM850 GPRS; 2 Tx slots; Frequency: 848.8 MHz; Duty Cycle: 1:4.15

Medium: 835 Body Medium parameters used (interpolated):

$f = 848.8 \text{ MHz}$; $\sigma = 1.024 \text{ mho/m}$; $\epsilon_r = 54.042$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: GPRS 850, Body SAR, Back side, High.ch, 2 Tx Slots

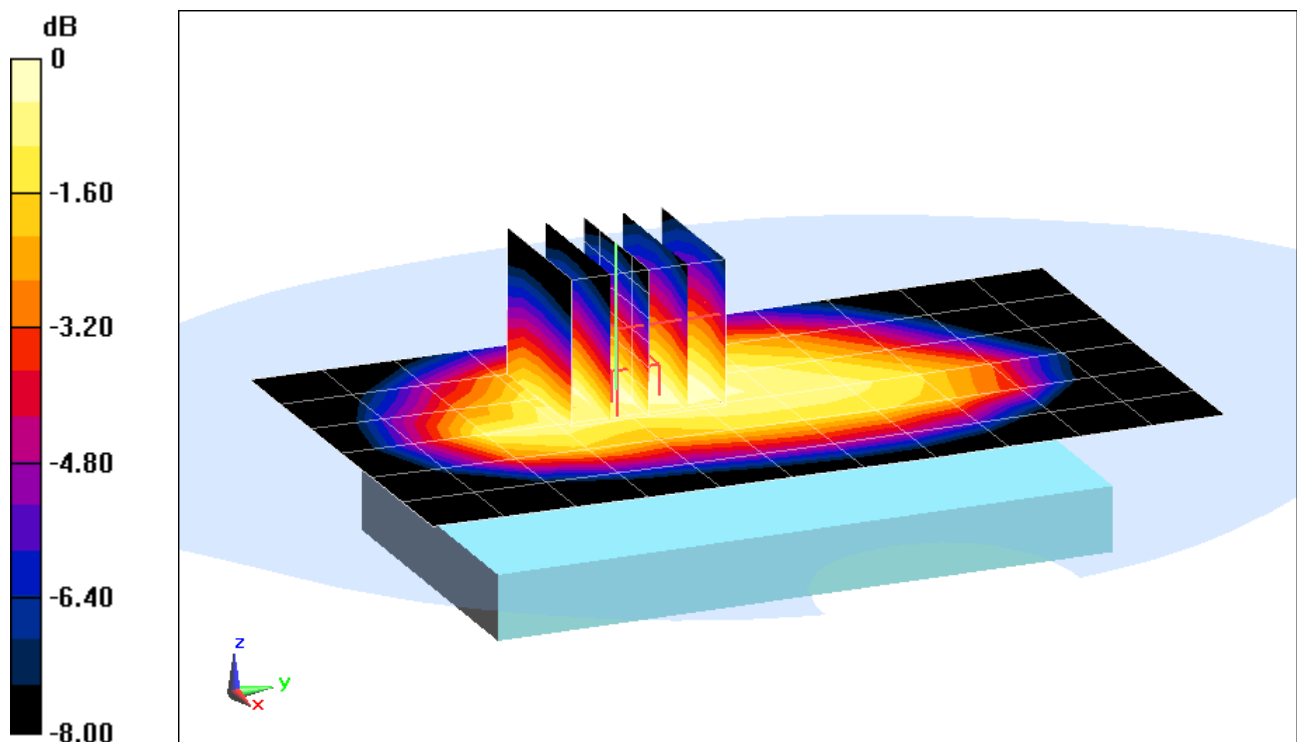
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 32.452 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 1.2490

SAR(1 g) = 0.963 mW/g; SAR(10 g) = 0.709 mW/g



0 dB = 1.020mW/g = 0.17 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM850 GPRS; 2 Tx slots; Frequency: 848.8 MHz; Duty Cycle: 1:4.15

Medium: 835 Body Medium parameters used (interpolated):

$f = 848.8 \text{ MHz}$; $\sigma = 1.024 \text{ mho/m}$; $\epsilon_r = 54.042$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: GPRS 850, Body SAR, Front side, High.ch, 2 Tx Slots

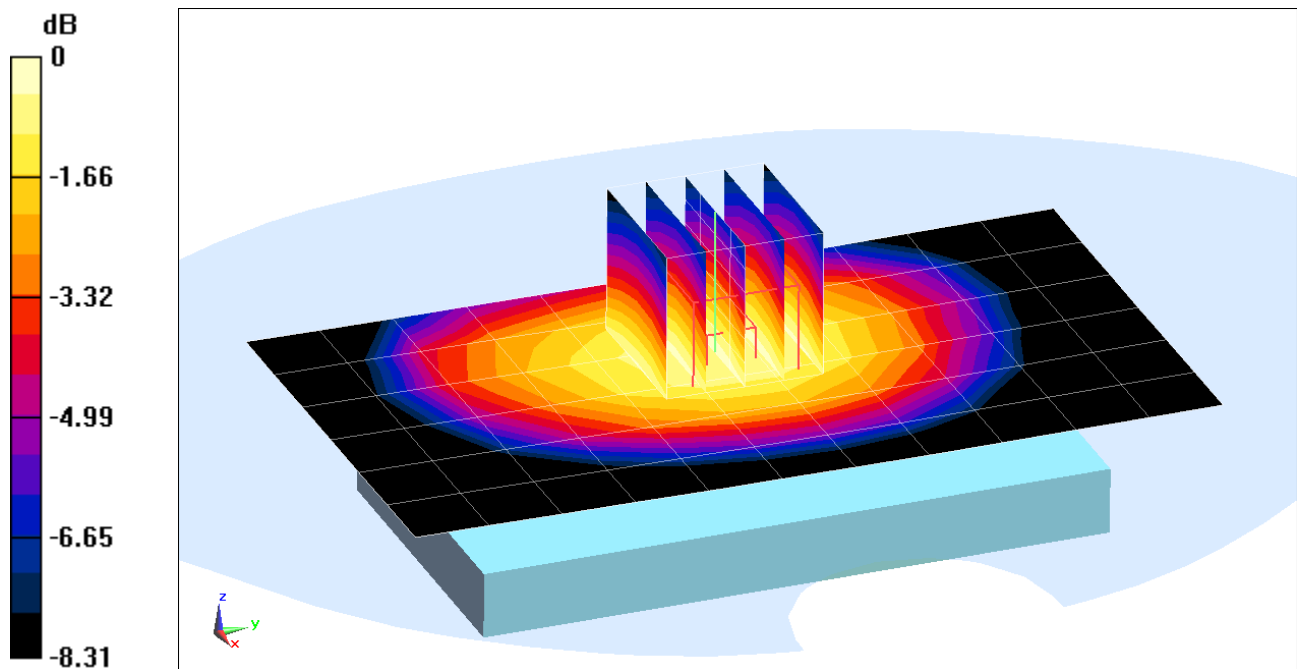
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 32.886 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.2620

SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.777 mW/g



0 dB = 1.060mW/g = 0.51 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM 850 GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.164$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: GPRS 850, Body SAR, Bottom Edge, Mid.ch, 2 Tx Slots

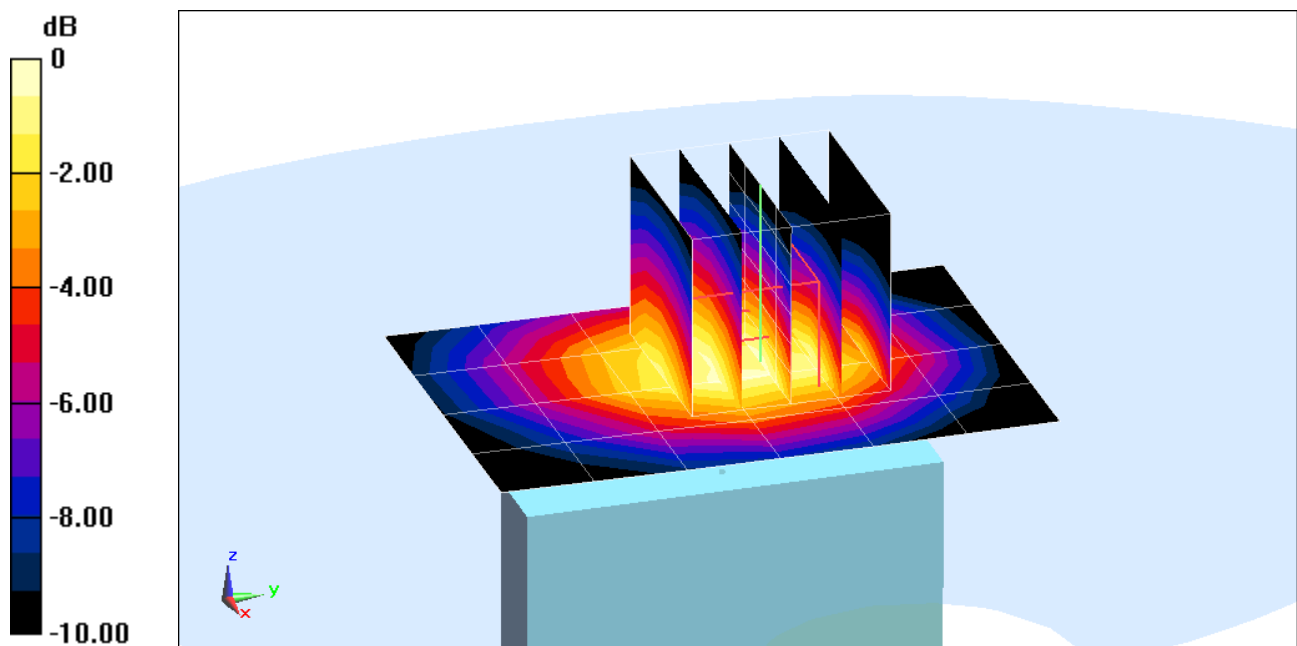
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 16.427 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 0.4330

SAR(1 g) = 0.268 mW/g; SAR(10 g) = 0.167 mW/g



0 dB = 0.290mW/g = -10.75 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM 850 GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.164$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: GPRS 850, Body SAR, Right Edge, Mid.ch, 2 Tx Slots

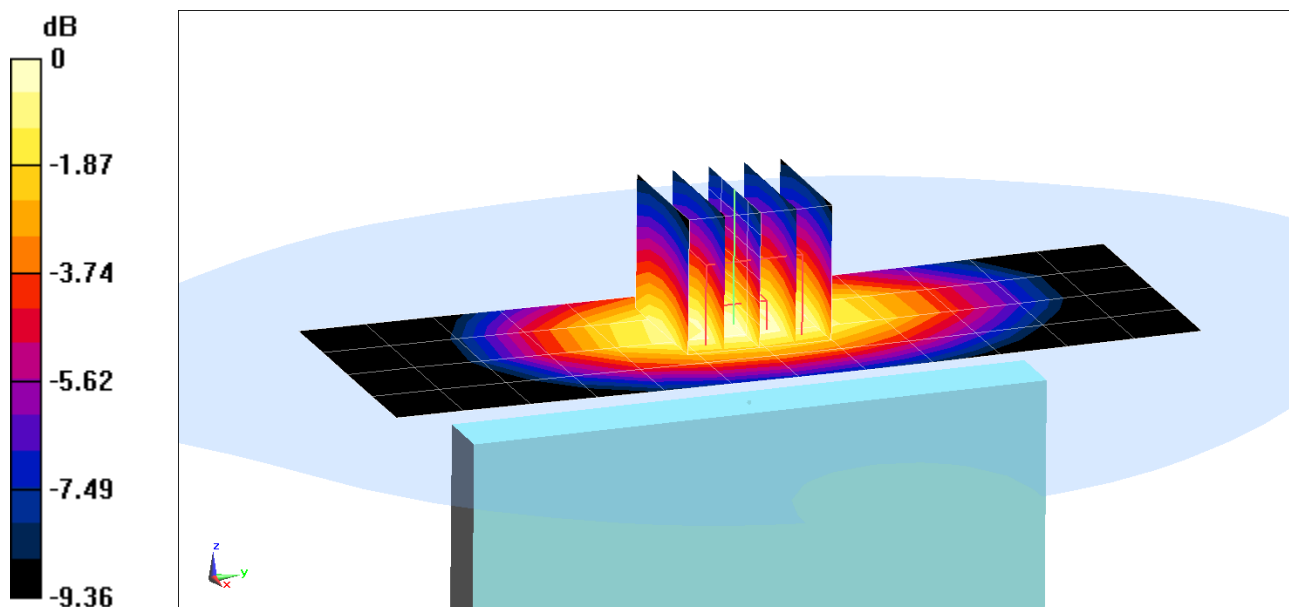
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 25.291 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.8590

SAR(1 g) = 0.626 mW/g; SAR(10 g) = 0.437 mW/g



0 dB = 0.670mW/g = -3.48 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM 850 GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.164$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: GPRS 850, Body SAR, Left Edge, Mid.ch, 2 Tx Slots

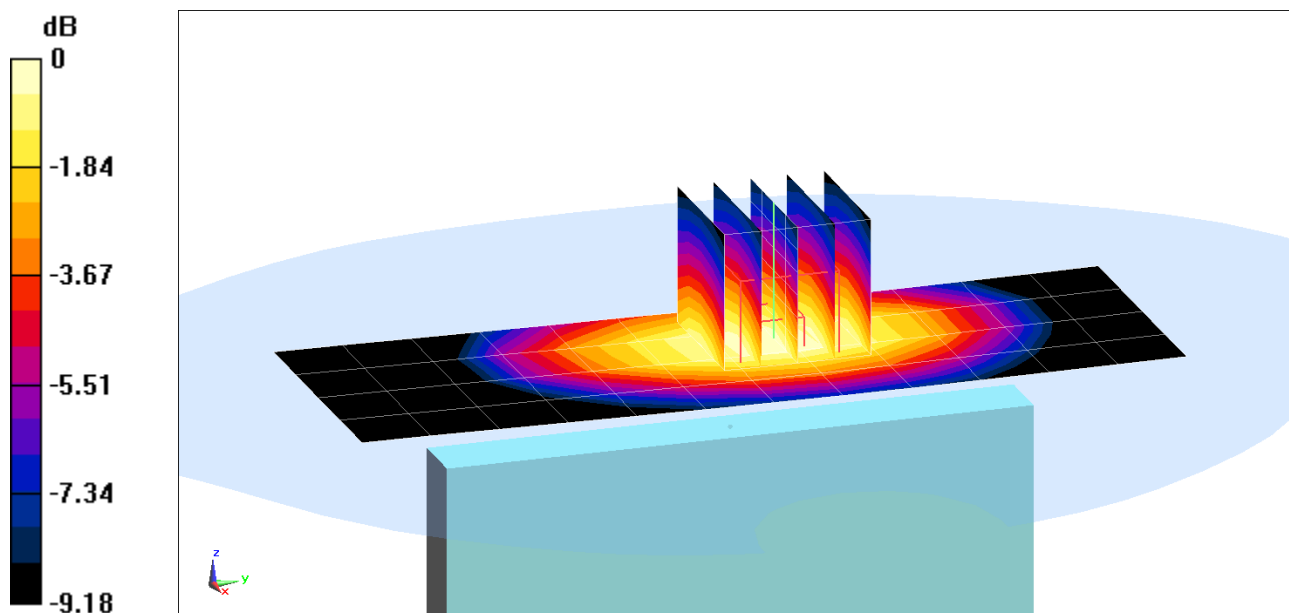
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 27.059 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.9940

SAR(1 g) = 0.725 mW/g; SAR(10 g) = 0.507 mW/g



0 dB = 0.780mW/g = -2.16 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.164$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: WCDMA 850, Body SAR, Back side, Mid.ch

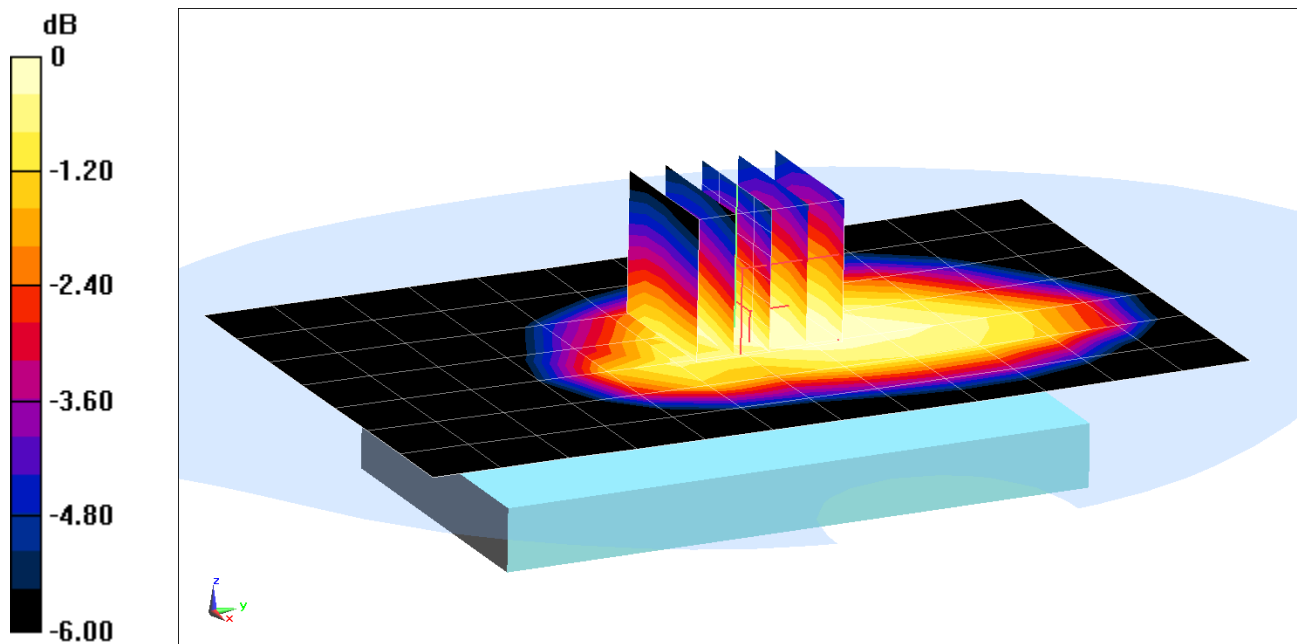
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.822 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.5780

SAR(1 g) = 0.451 mW/g; SAR(10 g) = 0.337 mW/g



0 dB = 0.470mW/g = -6.56 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.164$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: WCDMA 850, Body SAR, Front side, Mid.ch

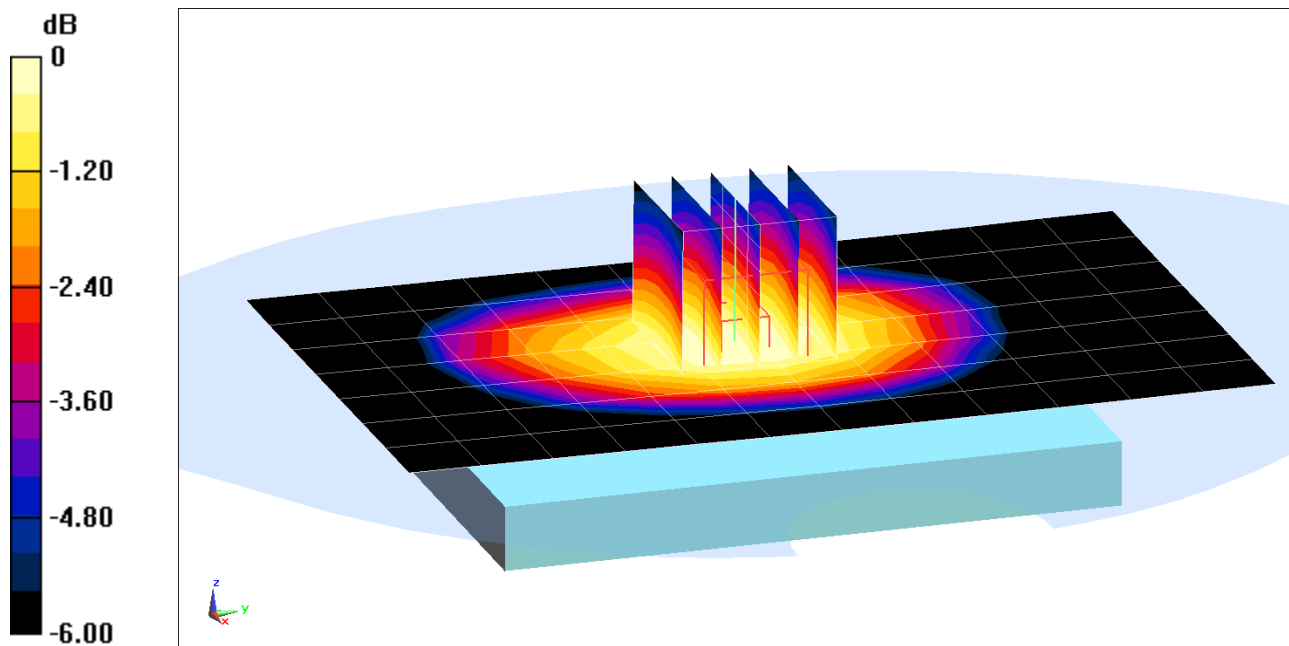
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.569 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.6410

SAR(1 g) = 0.522 mW/g; SAR(10 g) = 0.401 mW/g



0 dB = 0.540mW/g = -5.35 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.164$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: WCDMA 850, Body SAR, Bottom Edge, Mid.ch

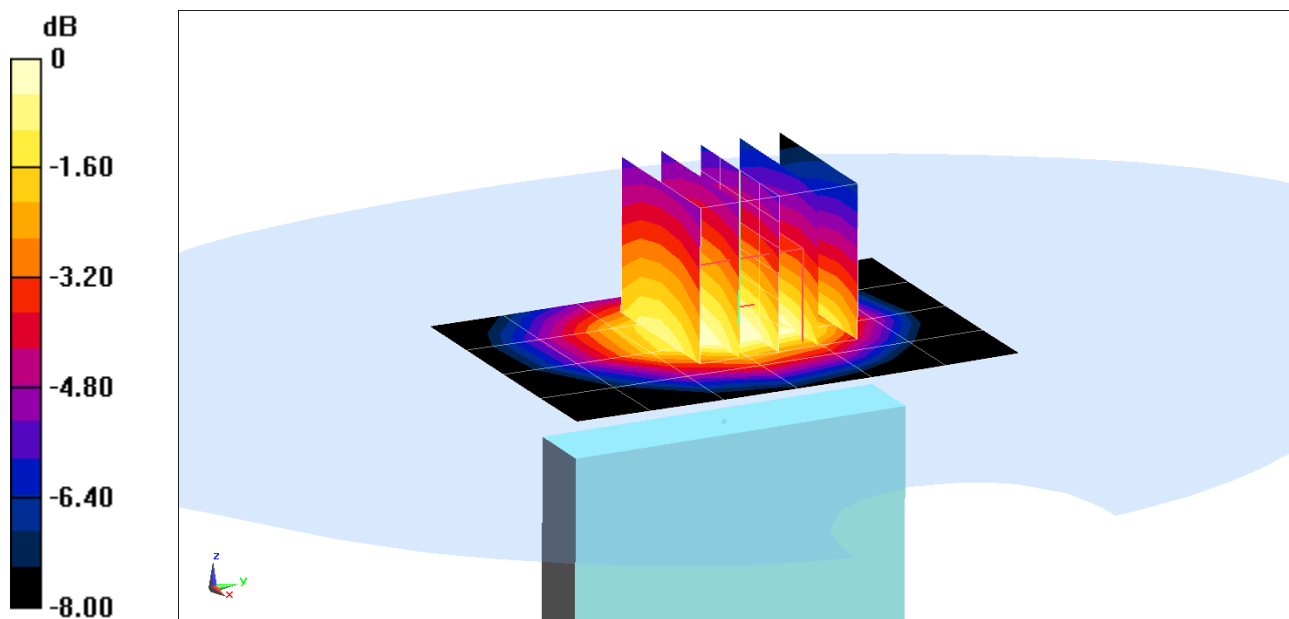
Area Scan (5x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.240 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.3340

SAR(1 g) = 0.206 mW/g; SAR(10 g) = 0.128 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.164$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: WCDMA 850, Body SAR, Right Edge, Mid.ch

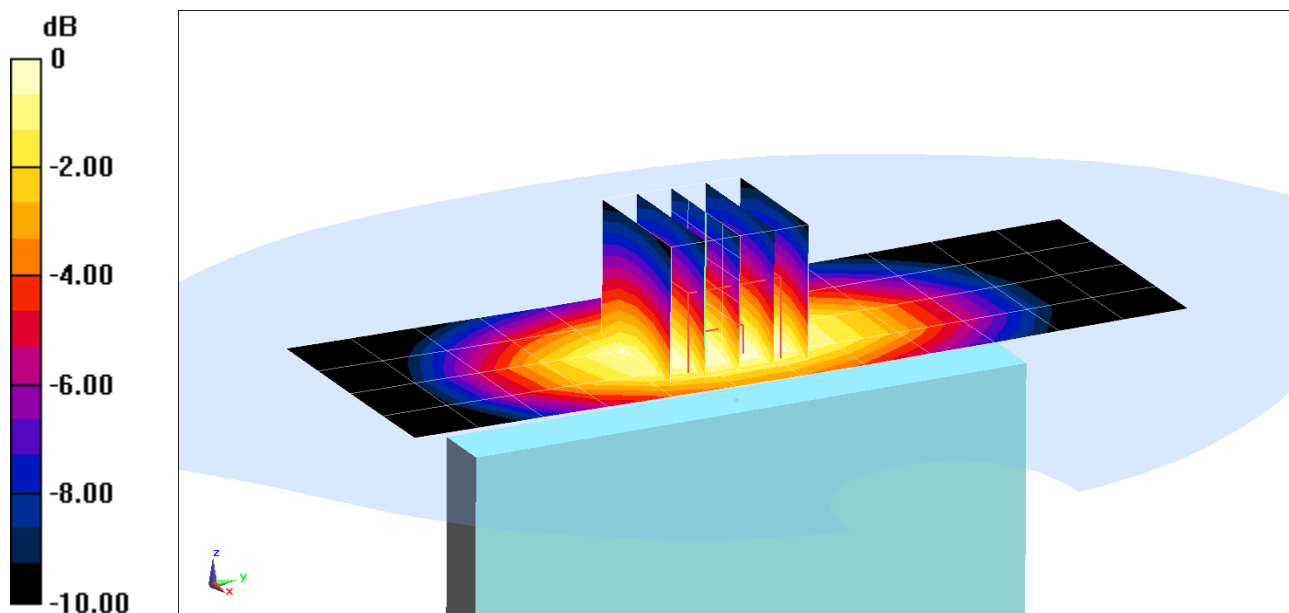
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.489 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.4630

SAR(1 g) = 0.339 mW/g; SAR(10 g) = 0.236 mW/g



0 dB = 0.340mW/g = -9.37 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.164$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

Mode: WCDMA 850, Body SAR, Left Edge, Mid.ch

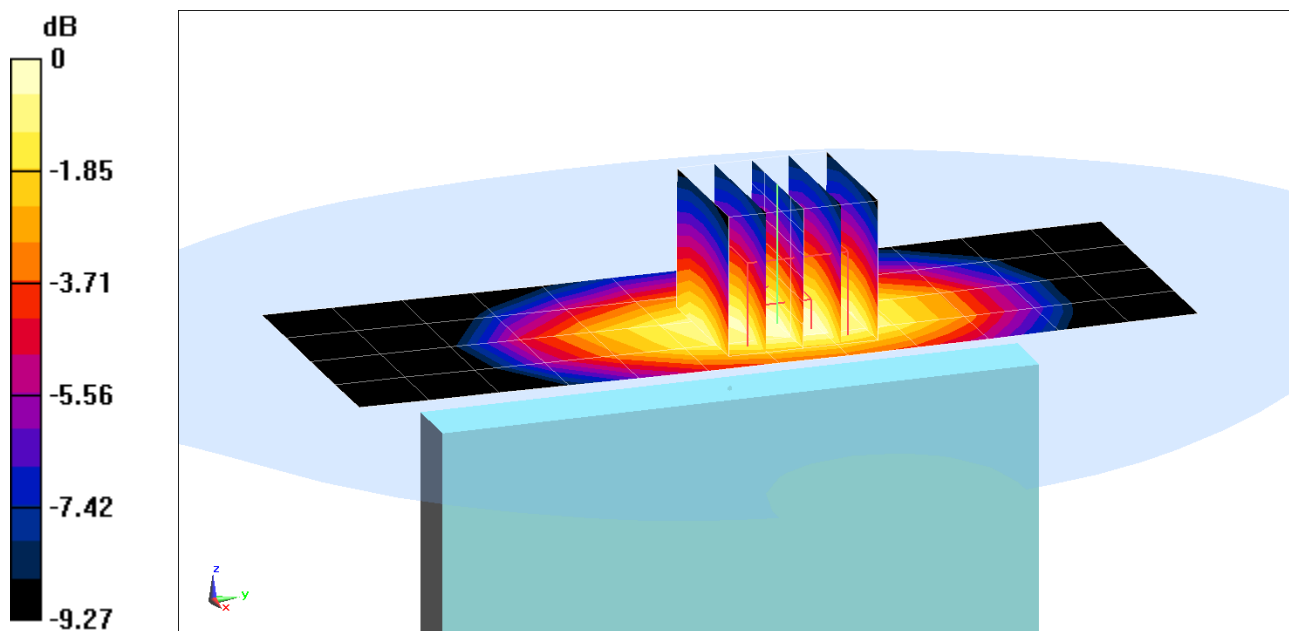
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.200 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.5070

SAR(1 g) = 0.374 mW/g; SAR(10 g) = 0.262 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 1.015 \text{ mho/m}$; $\epsilon_r = 54.652$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-24-2012; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 14.6.4 (4989)

Mode: LTE Band 5 (Cell), Body SAR, Back side, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

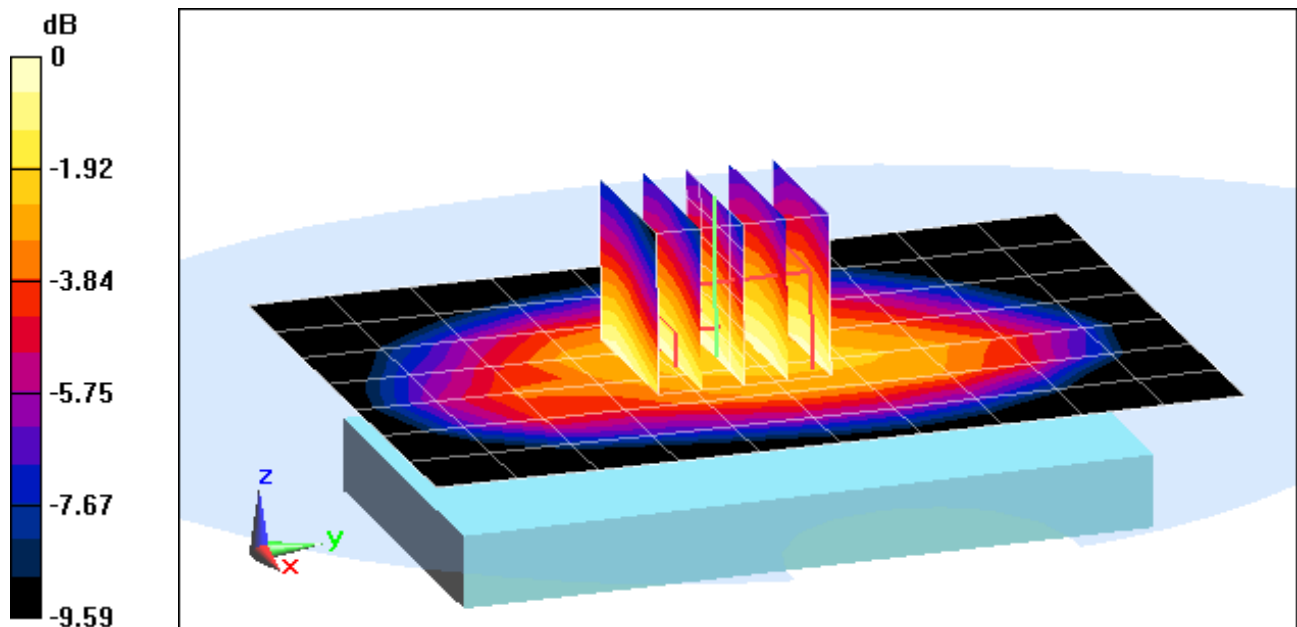
Area Scan (8x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.787 V/m; Power Drift = -0.0033 dB

Peak SAR (extrapolated) = 0.7450

SAR(1 g) = 0.586 mW/g; SAR(10 g) = 0.447 mW/g



0 dB = 0.620mW/g = -4.15 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 1.015 \text{ mho/m}$; $\epsilon_r = 54.652$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-24-2012; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 14.6.4 (4989)

Mode: LTE Band 5 (Cell), Body SAR, Front side, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

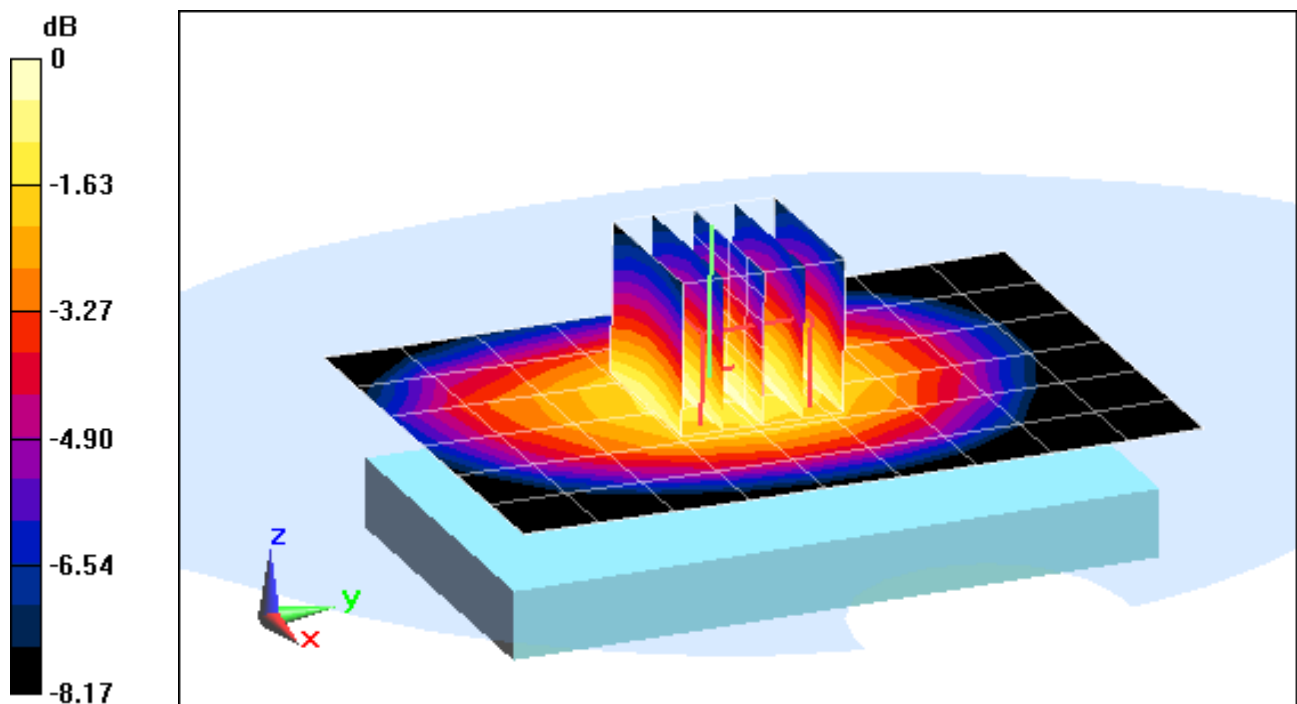
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 26.477 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.8470

SAR(1 g) = 0.665 mW/g; SAR(10 g) = 0.511 mW/g



0 dB = 0.700mW/g = -3.10 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 1.015 \text{ mho/m}$; $\epsilon_r = 54.652$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-24-2012; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 14.6.4 (4989)

Mode: LTE Band 5 (Cell), Body SAR, Bottom Edge, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

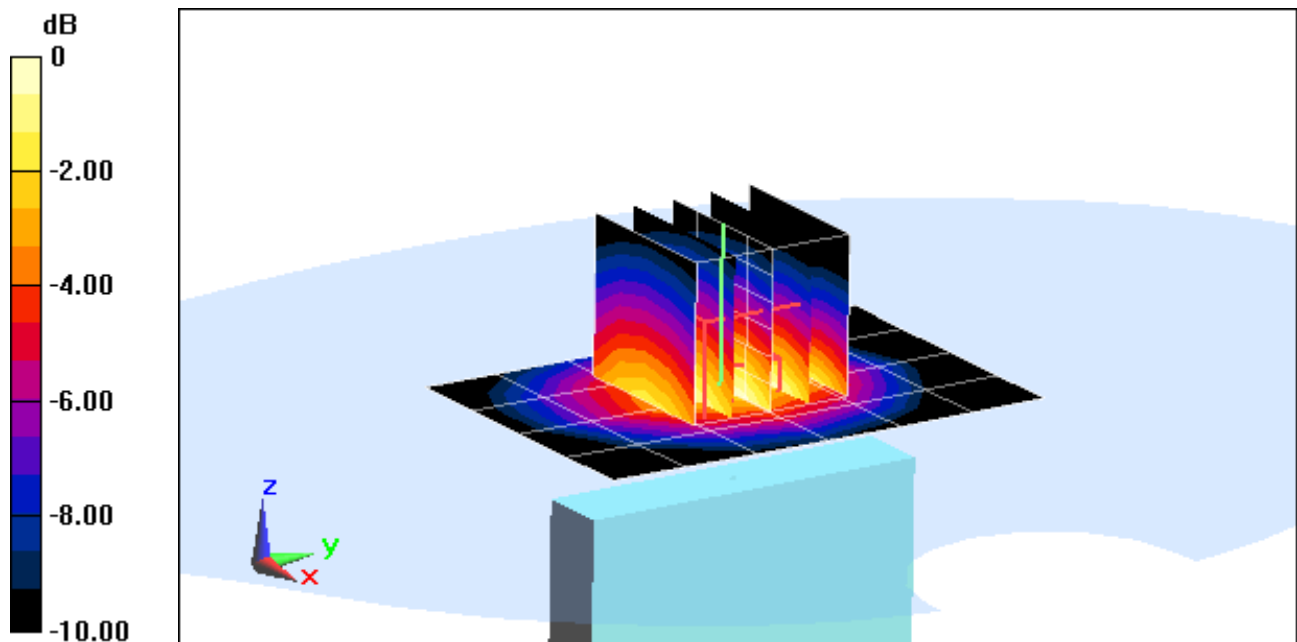
Area Scan (5x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.536 V/m; Power Drift = 0.0067 dB

Peak SAR (extrapolated) = 0.4010

SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.154 mW/g



0 dB = 0.260mW/g = -11.70 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 1.015 \text{ mho/m}$; $\epsilon_r = 54.652$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-24-2012; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 14.6.4 (4989)

Mode: LTE Band 5 (Cell), Body SAR, Right Edge, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

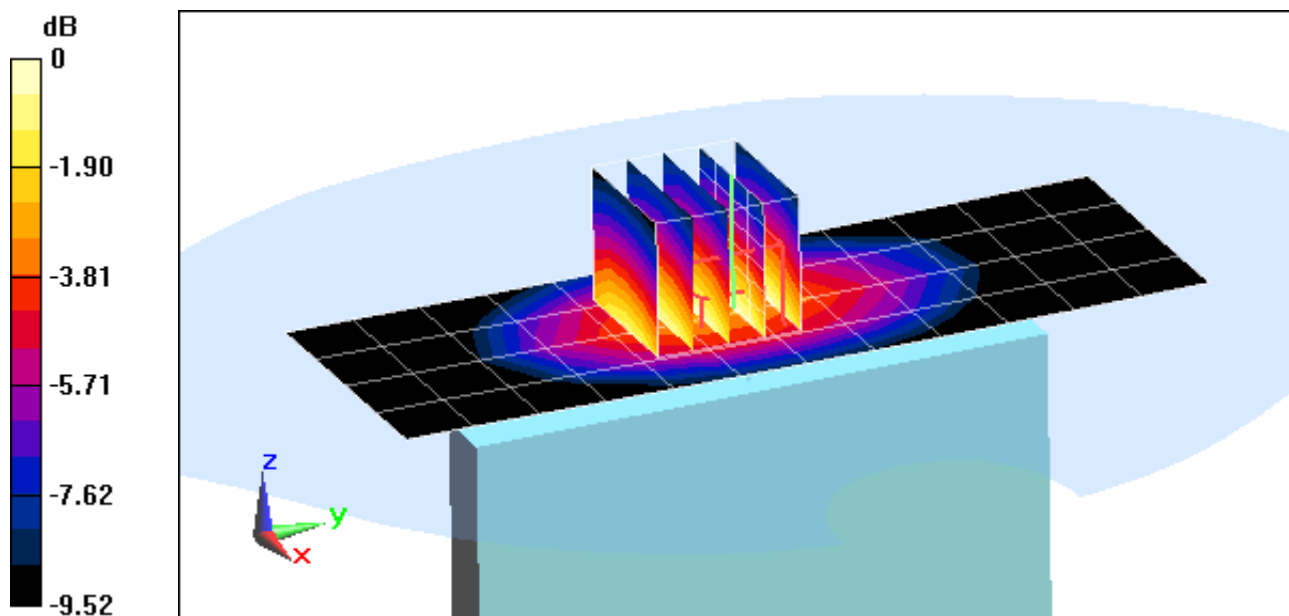
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 22.040 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.6230

SAR(1 g) = 0.450 mW/g; SAR(10 g) = 0.314 mW/g



0 dB = 0.480mW/g = -6.38 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE BAND 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 1.015 \text{ mho/m}$; $\epsilon_r = 54.652$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-24-2012; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 14.6.4 (4989)

Mode: LTE Band 5 (Cell), Body SAR, Left Edge, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

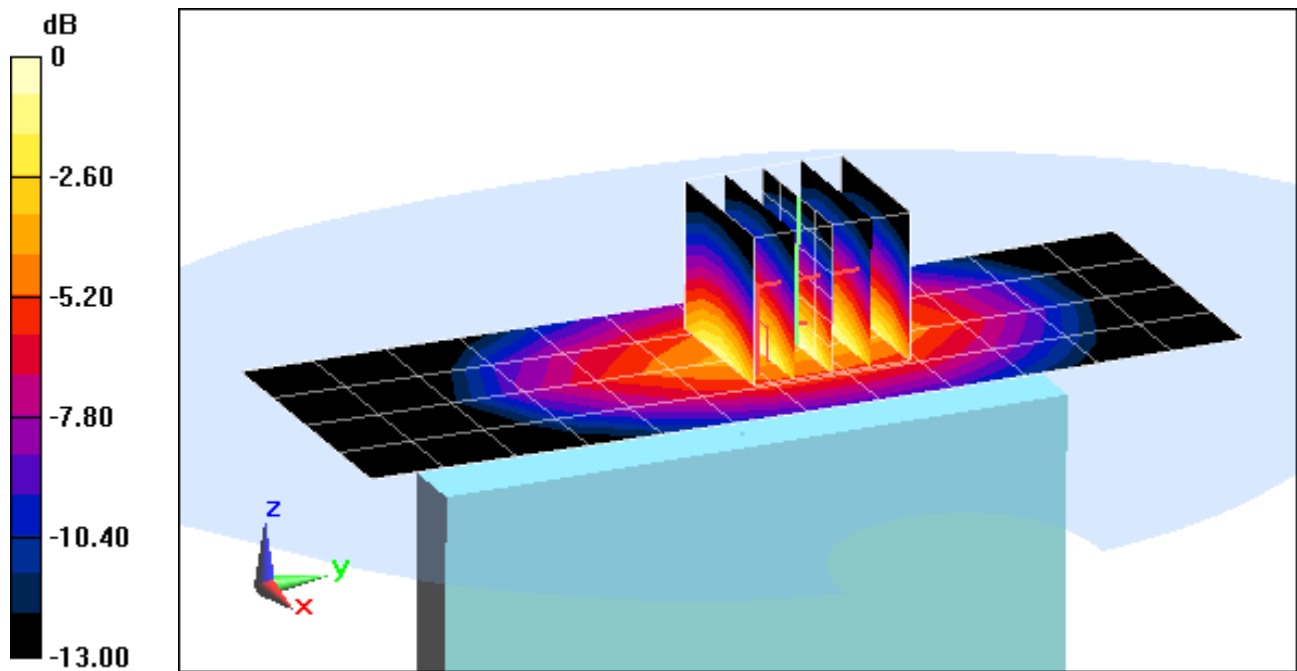
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.196 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.7700

SAR(1 g) = 0.550 mW/g; SAR(10 g) = 0.382 mW/g



0 dB = 0.590 mW/g = -4.58 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.448 \text{ mho/m}$; $\epsilon_r = 53.002$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 4 (AWS), Body SAR, Back side, Mid.ch
QPSK, 15 MHz Bandwidth, 1 RB, RB Offset 74

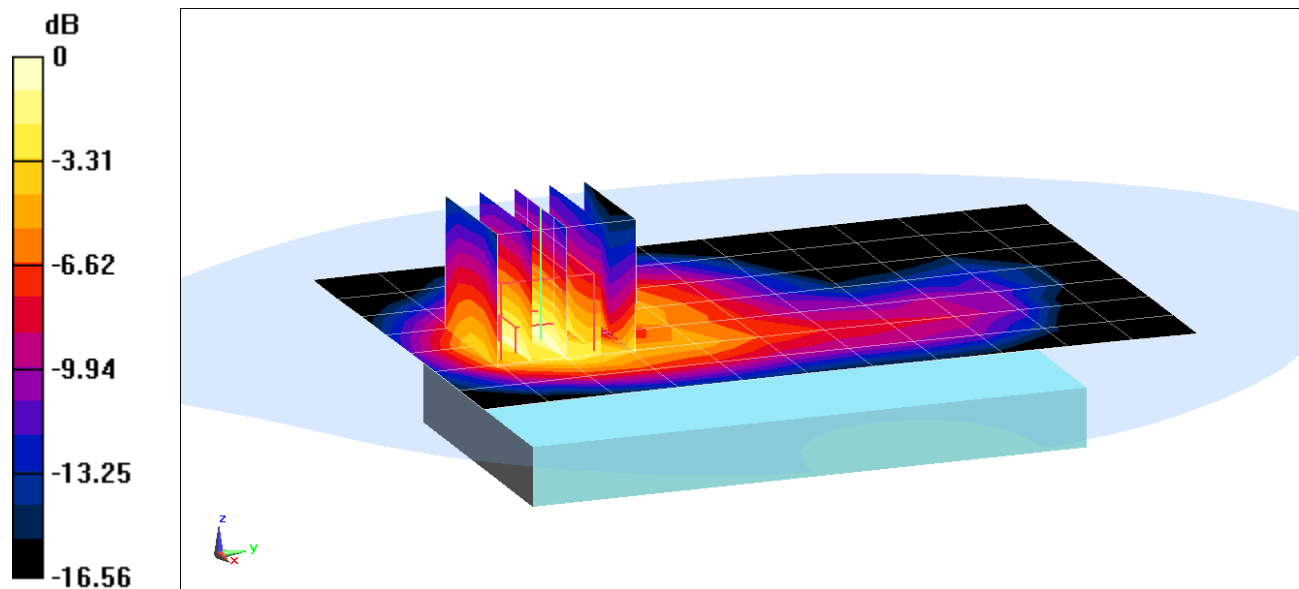
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 19.465 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.8330

SAR(1 g) = 0.503 mW/g; SAR(10 g) = 0.282 mW/g



0 dB = 0.530mW/g = -5.51 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.448 \text{ mho/m}$; $\epsilon_r = 53.002$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 4 (AWS), Body SAR, Front side, Mid.ch
QPSK, 15 MHz Bandwidth, 1 RB RB Offset 74

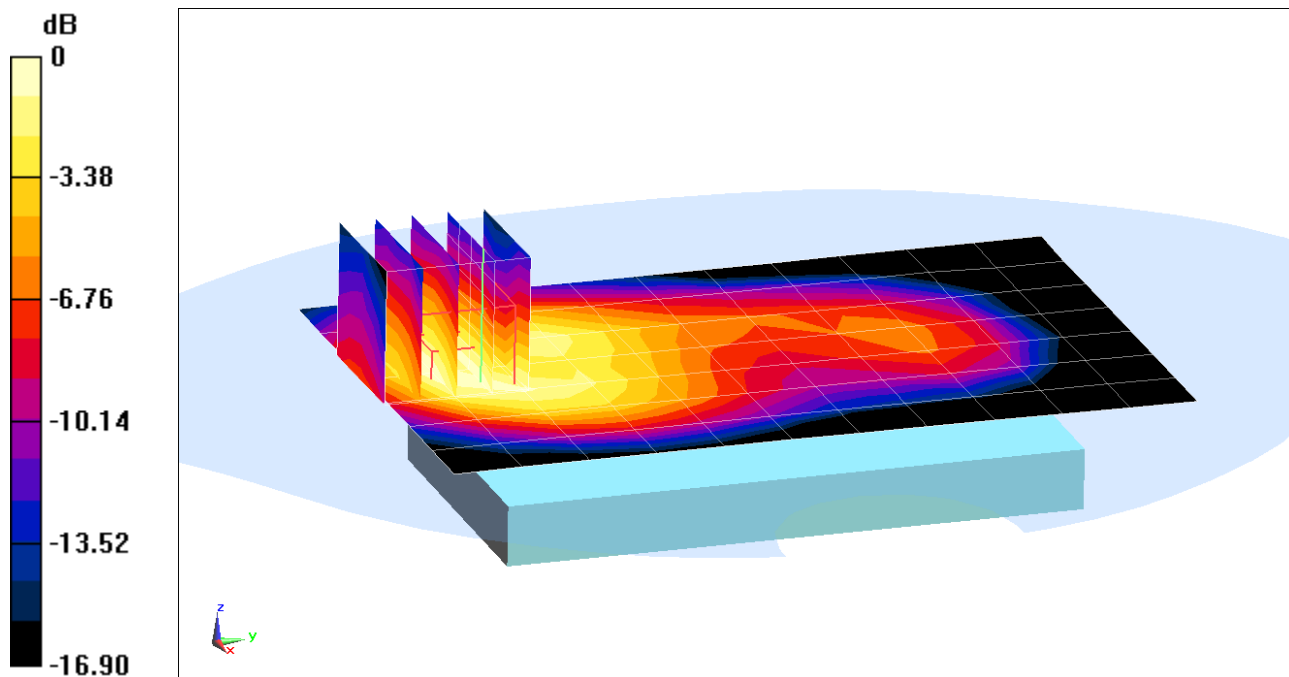
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.101 V/m; Power Drift = 0.024 dB

Peak SAR (extrapolated) = 0.7460

SAR(1 g) = 0.455 mW/g; SAR(10 g) = 0.258 mW/g



0 dB = 0.470 mW/g = -6.56 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.448 \text{ mho/m}$; $\epsilon_r = 53.002$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 4 (AWS), Body SAR, Bottom Edge, Mid.ch
QPSK, 15 MHz Bandwidth, 1 RB, RB Offset 74

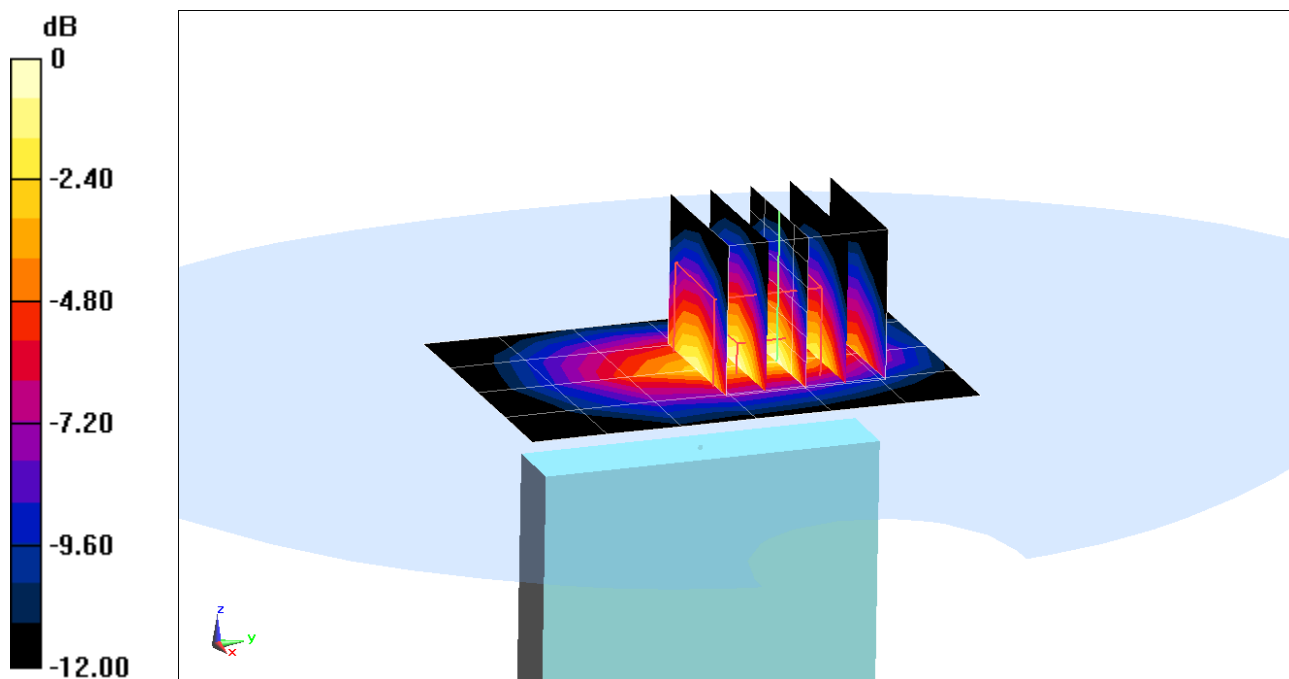
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 19.408 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.8290

SAR(1 g) = 0.495 mW/g; SAR(10 g) = 0.277 mW/g



0 dB = 0.540mW/g = -5.35 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.448 \text{ mho/m}$; $\epsilon_r = 53.002$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode:LTE Band 4 (AWS), Body SAR, Right Edge, Mid.ch
QPSK, 15 MHz Bandwidth, 1 RB, RB Offset 0

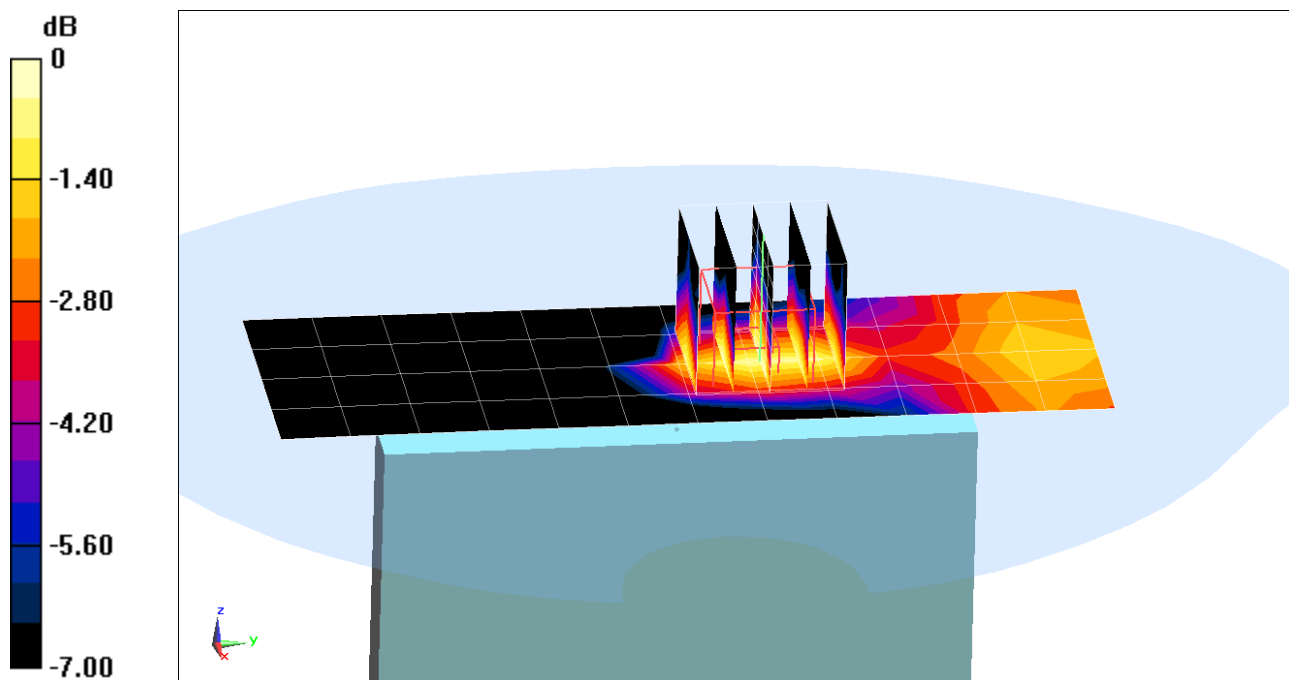
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 5.567 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.0650

SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.023 mW/g



0 dB = 0.040mW/g = -27.96 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.448 \text{ mho/m}$; $\epsilon_r = 53.002$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 4 (AWS), Body SAR, Left Edge, Mid.ch
QPSK, 15 MHz Bandwidth, 1 RB, RB Offset 74

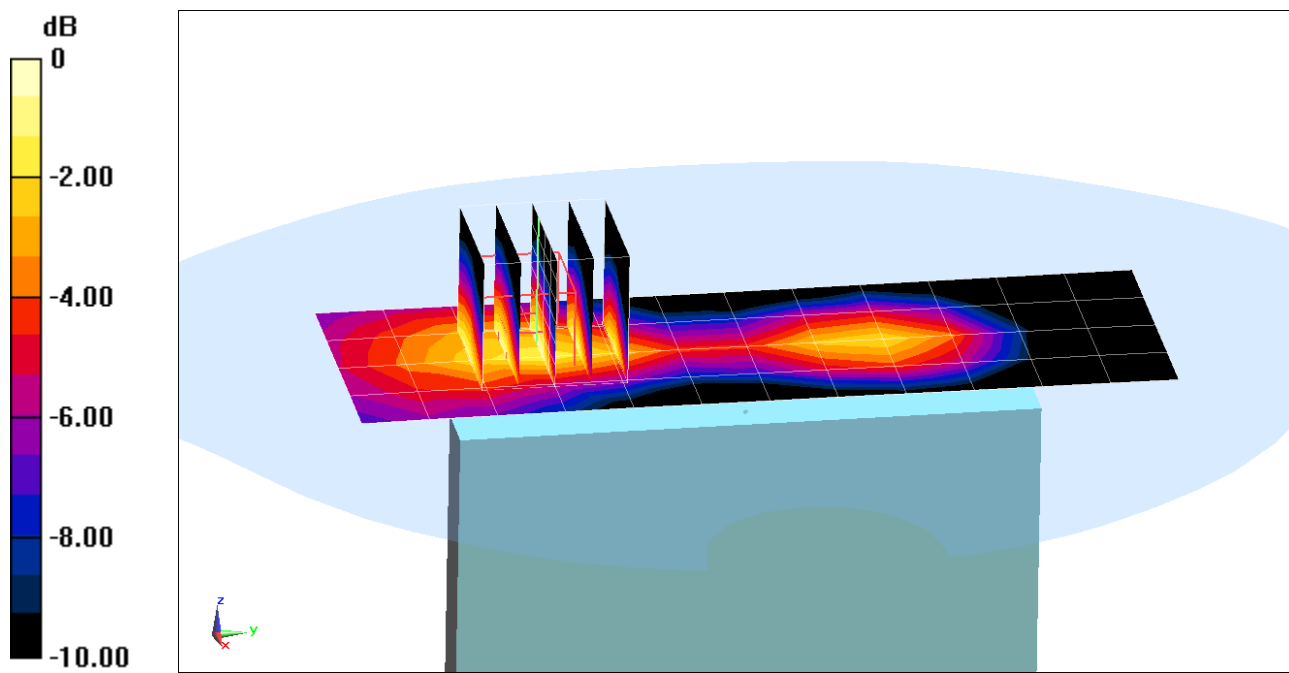
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 10.269 V/m; Power Drift = 0.036 dB

Peak SAR (extrapolated) = 0.2350

SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.092 mW/g



0 dB = 0.160mW/g = -15.92 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: GPRS 1900, Body SAR, Back side, Mid.ch, 2 Tx Slots

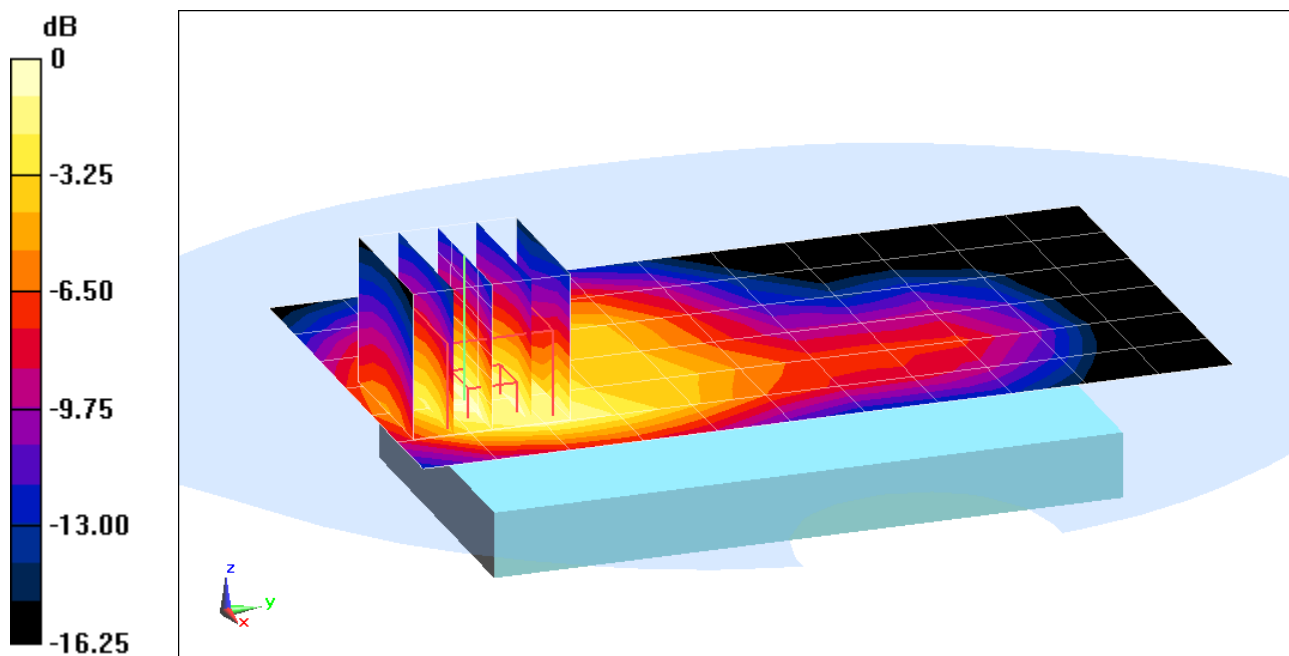
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.504 V/m; Power Drift = -0.0081 dB

Peak SAR (extrapolated) = 0.9620

SAR(1 g) = 0.587 mW/g; SAR(10 g) = 0.338 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: GPRS 1900, Body SAR, Front side, Mid.ch, 2 Tx Slots

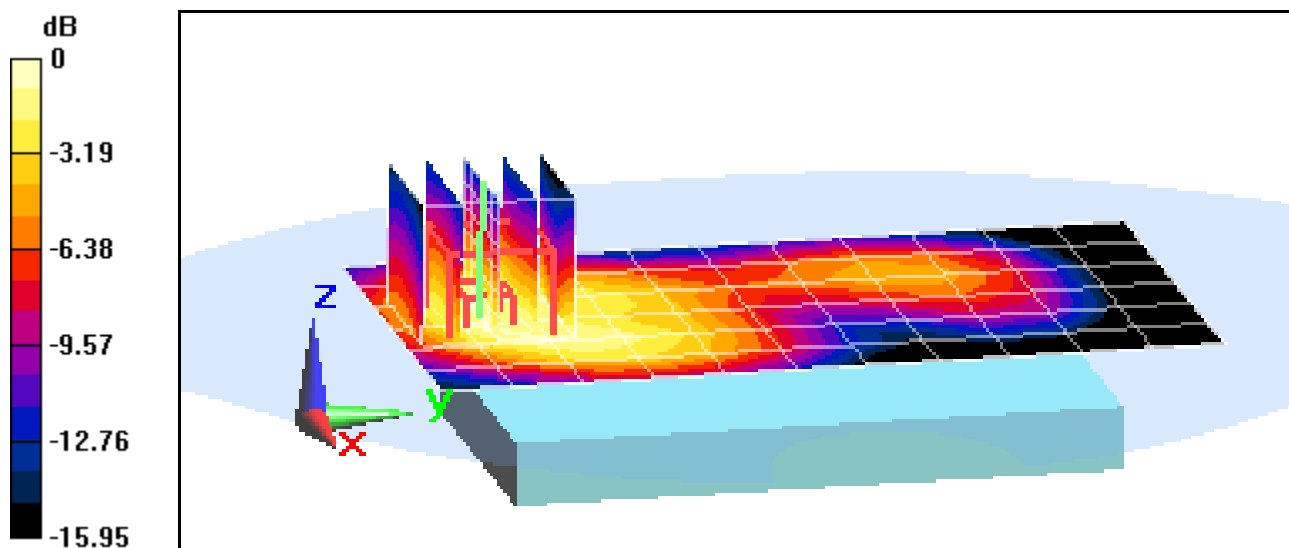
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 17.844 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.8210

SAR(1 g) = 0.506 mW/g; SAR(10 g) = 0.292 mW/g



0 dB = 0.560mW/g = -5.04 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: GPRS 1900, Body SAR, Bottom Edge, Mid.ch, 2 Tx Slots

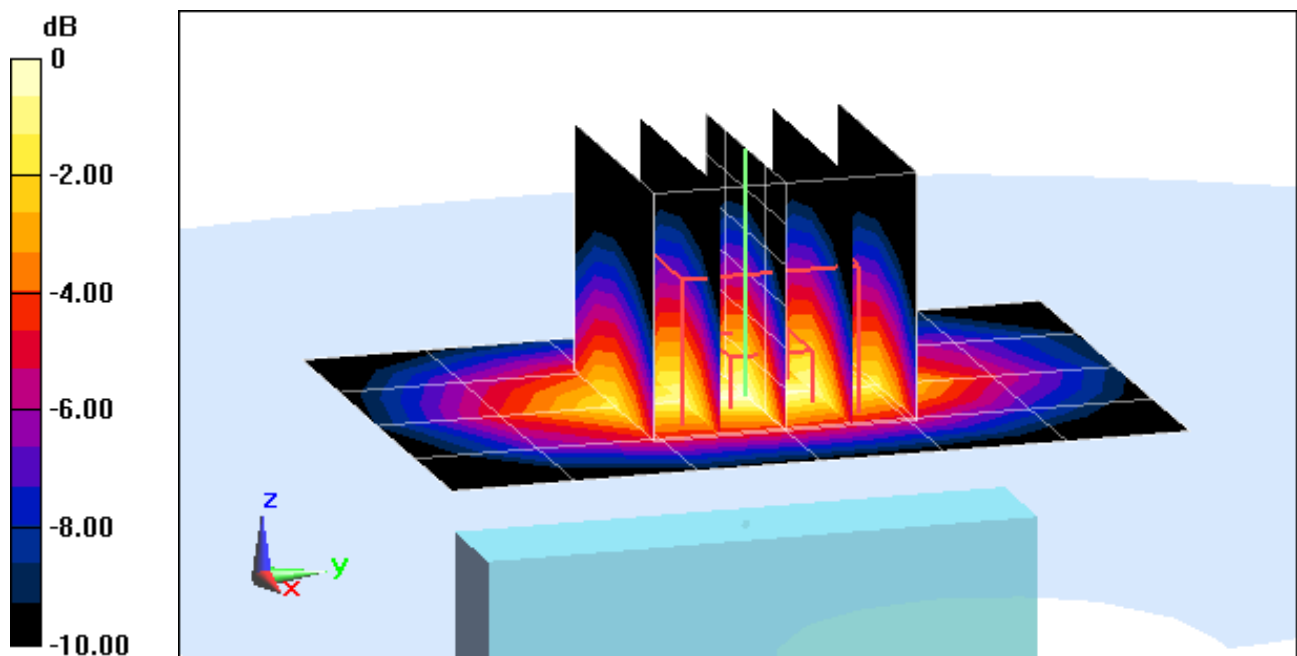
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 20.366 V/m; Power Drift = 0.0039 dB

Peak SAR (extrapolated) = 0.8750

SAR(1 g) = 0.531 mW/g; SAR(10 g) = 0.303 mW/g



0 dB = 0.590mW/g = -4.58 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; SSpace: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: GPRS 1900, Body SAR, Right Edge, Mid.ch, 2 Tx Slots

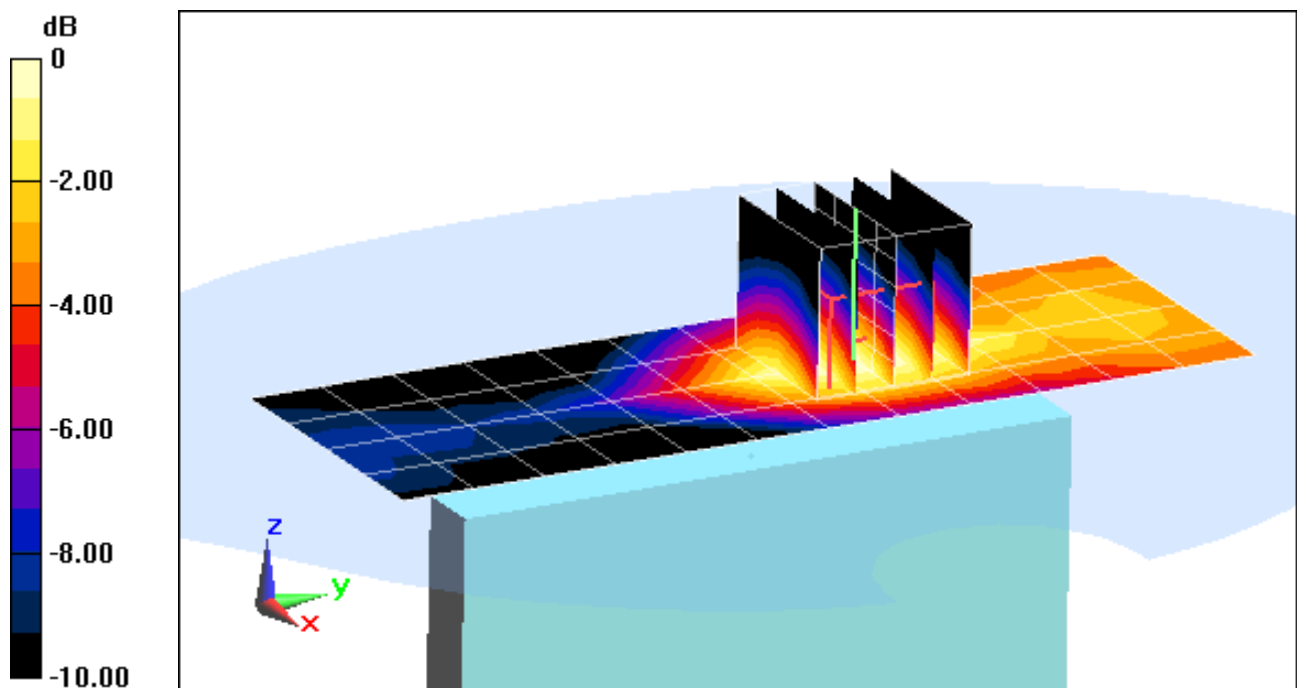
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 7.505 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.1220

SAR(1 g) = 0.077 mW/g; SAR(10 g) = 0.046 mW/g



0 dB = 0.080mW/g = -21.94 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

Communication System: GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: GPRS 1900, Body SAR, Left Edge, Mid.ch, 2 Tx Slots

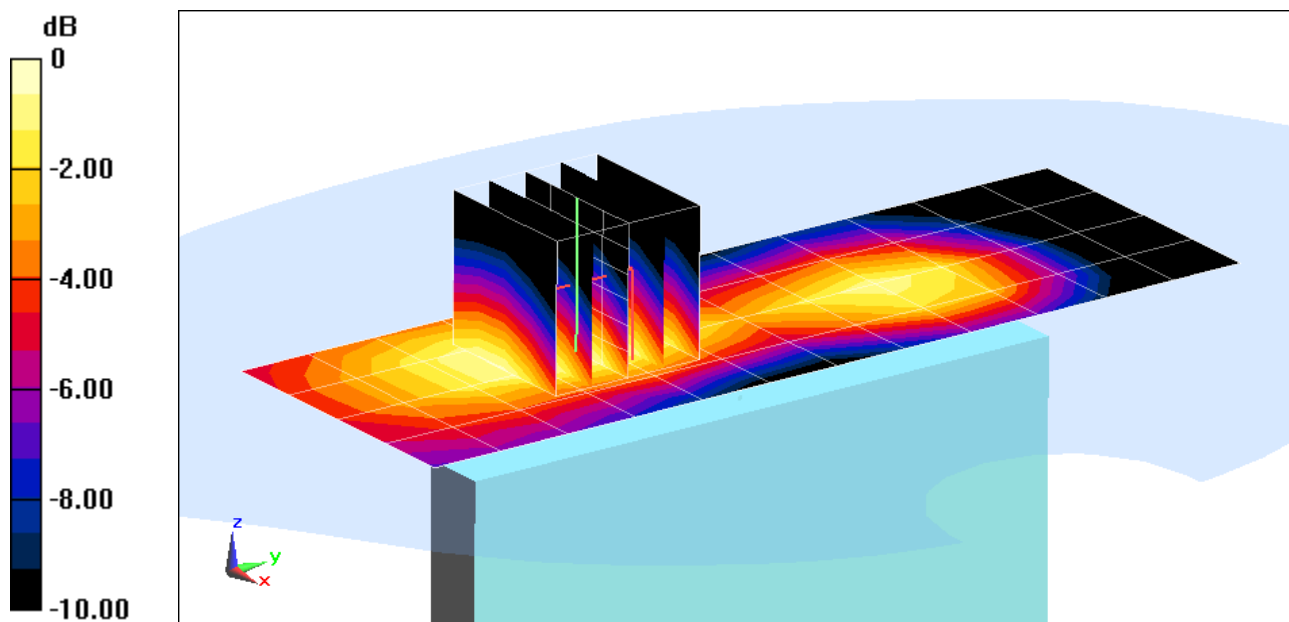
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 13.053 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.3650

SAR(1 g) = 0.232 mW/g; SAR(10 g) = 0.142 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: WCDMA 1900, Body SAR, Back side, Mid.ch

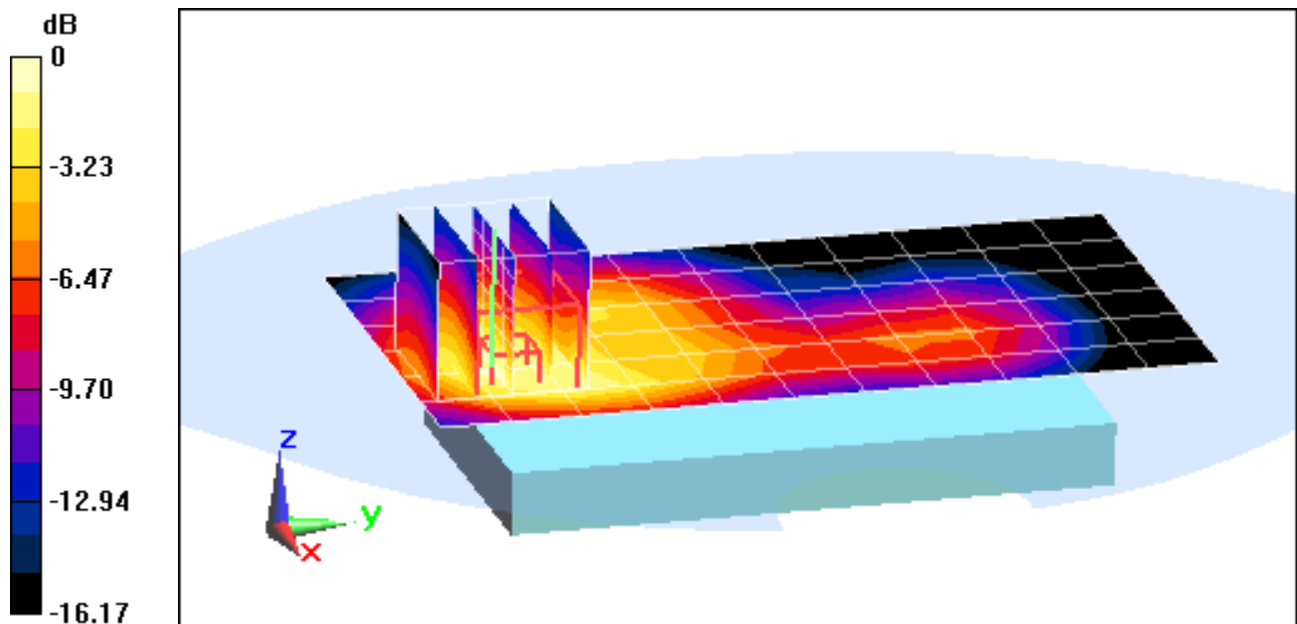
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.398 V/m; Power Drift = -0.0016 dB

Peak SAR (extrapolated) = 1.1760

SAR(1 g) = 0.727 mW/g; SAR(10 g) = 0.419 mW/g



0 dB = 0.780 mW/g = -2.16 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: WCDMA 1900, Body SAR, Front side, Mid.ch

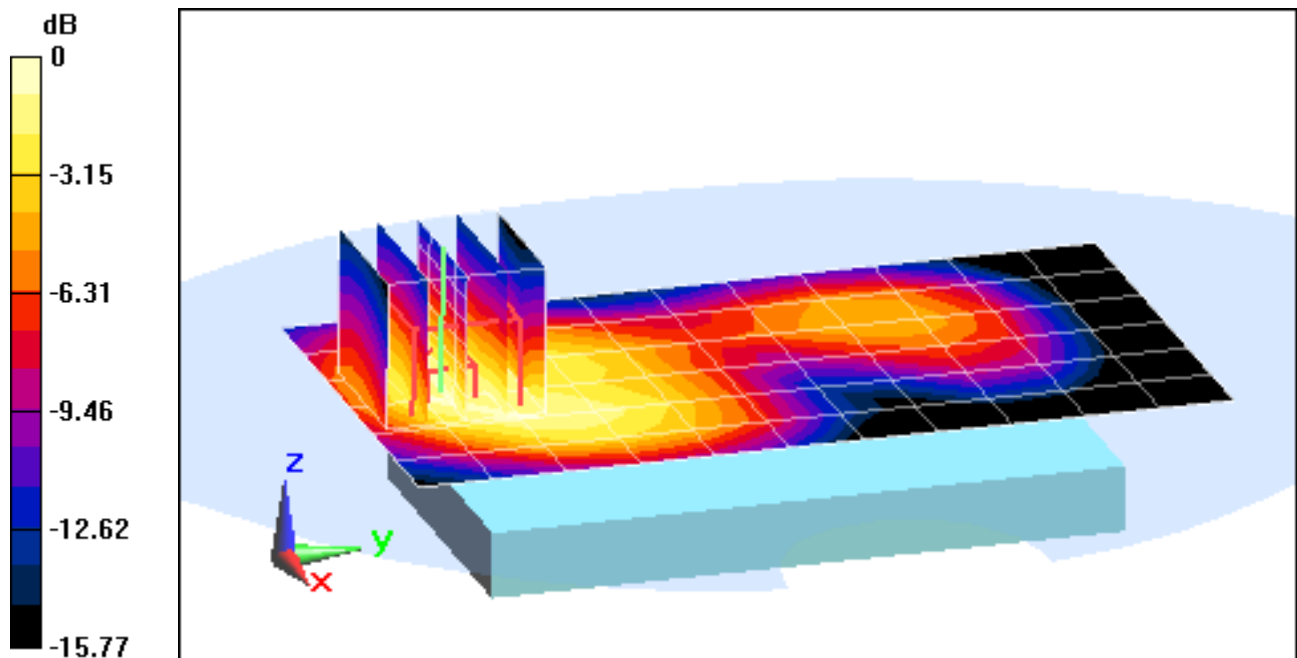
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.196 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.0490

SAR(1 g) = 0.650 mW/g; SAR(10 g) = 0.377 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: WCDMA 1900, Body SAR, Bottom Edge, Mid.ch

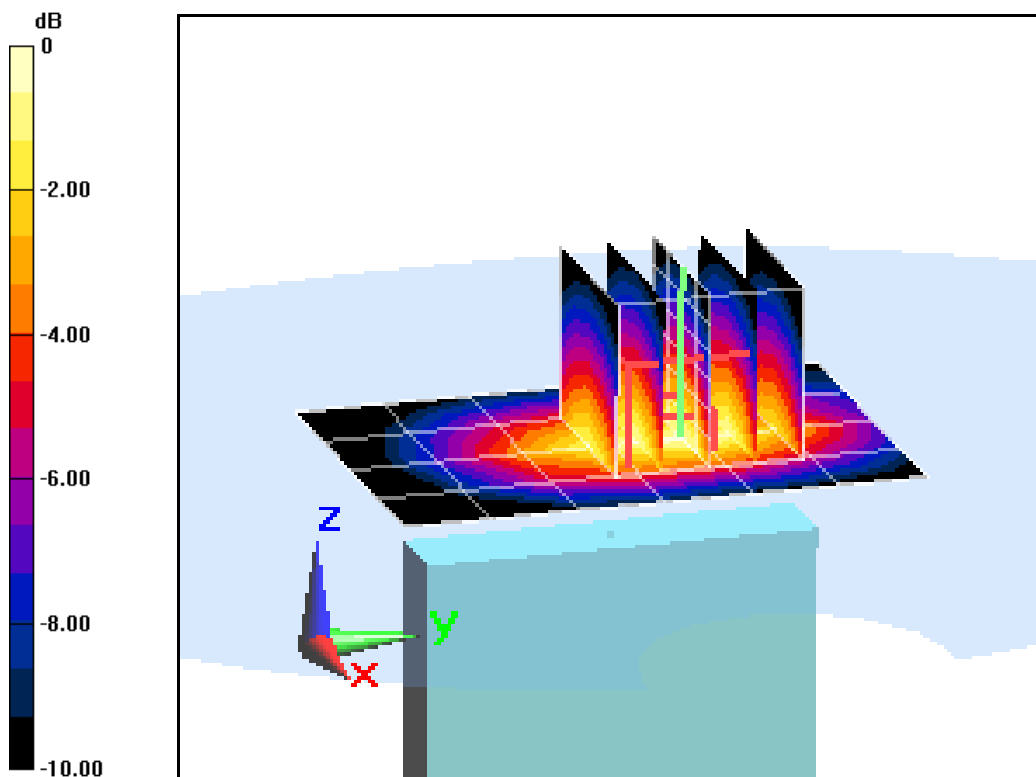
Area Scan (5x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.306 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 1.1430

SAR(1 g) = 0.696 mW/g; SAR(10 g) = 0.396 mW/g



0 dB = 0.780mW/g = -2.16 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: WCDMA 1900, Body SAR, Right Edge, Mid.ch

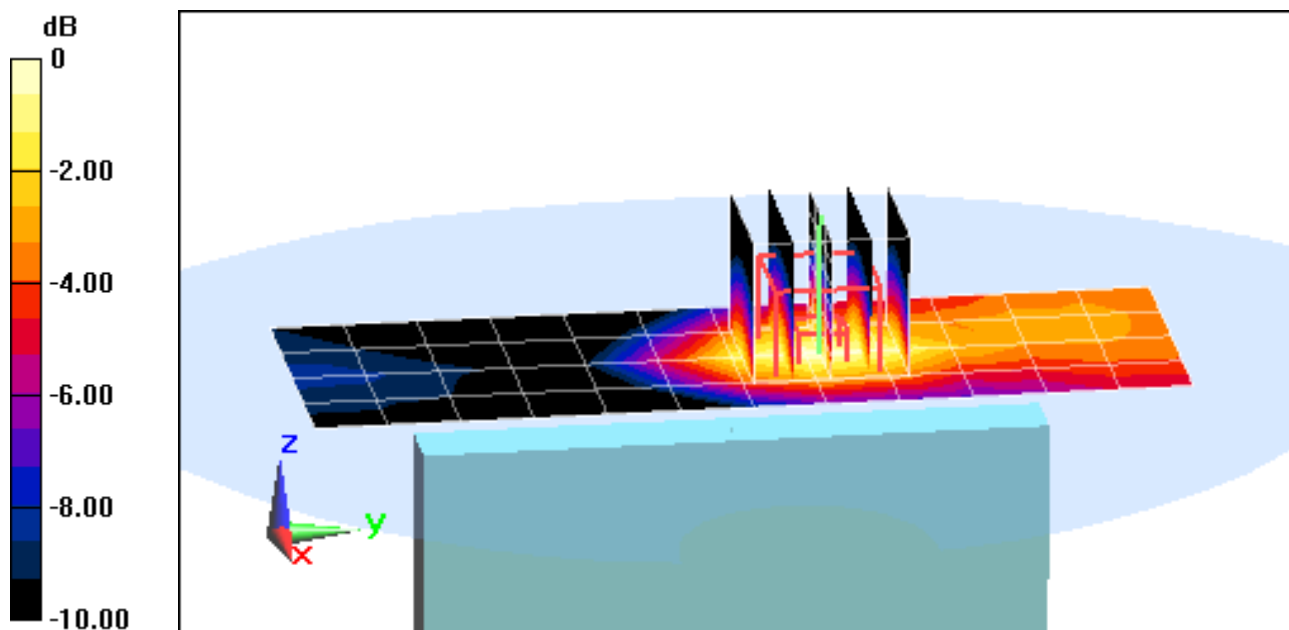
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 8.286 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.1400

SAR(1 g) = 0.088 mW/g; SAR(10 g) = 0.053 mW/g



0 dB = 0.100mW/g = -20.00 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-B

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.489 \text{ mho/m}$; $\epsilon_r = 53.01$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

Mode: WCDMA 1900, Body SAR, Left Edge, Mid.ch

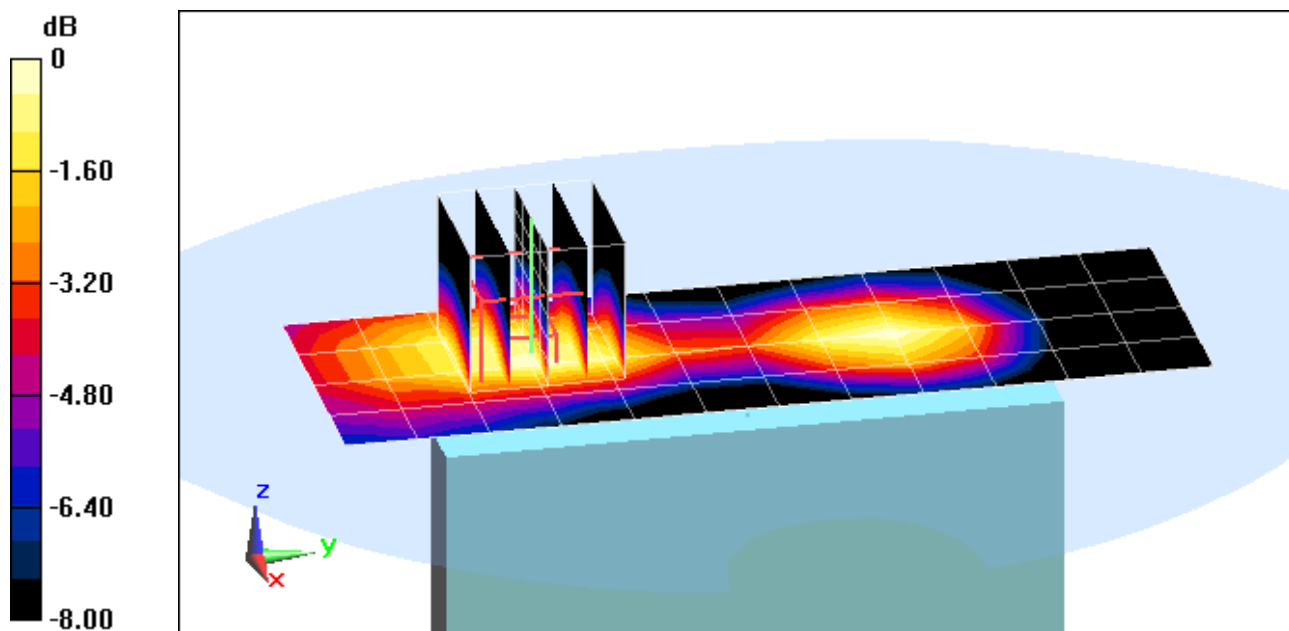
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.167 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.4270

SAR(1 g) = 0.269 mW/g; SAR(10 g) = 0.164 mW/g



0 dB = 0.290mW/g = -10.75 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 53.12$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 2 (PCS), Body SAR, Back side, Mid.ch

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

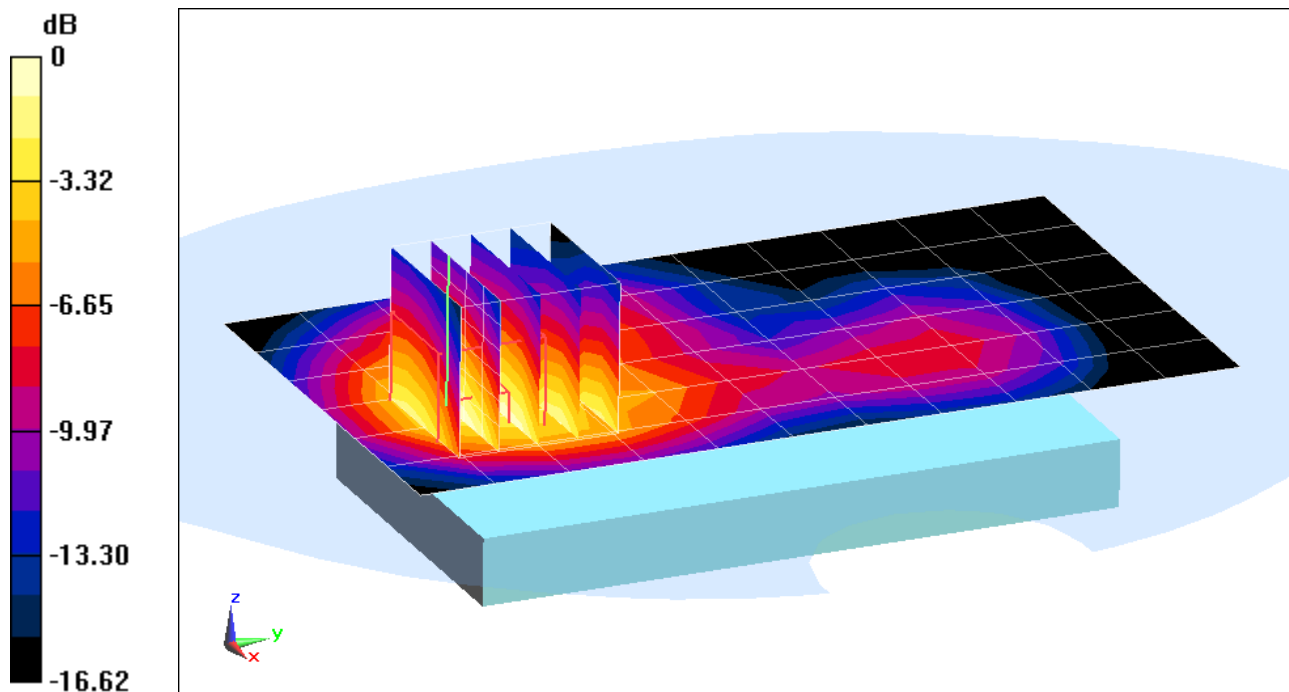
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.951 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.4720

SAR(1 g) = 0.910 mW/g; SAR(10 g) = 0.531 mW/g



0 dB = 0.970mW/g = -0.26 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 53.12$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 2 (PCS), Body SAR, Front side, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

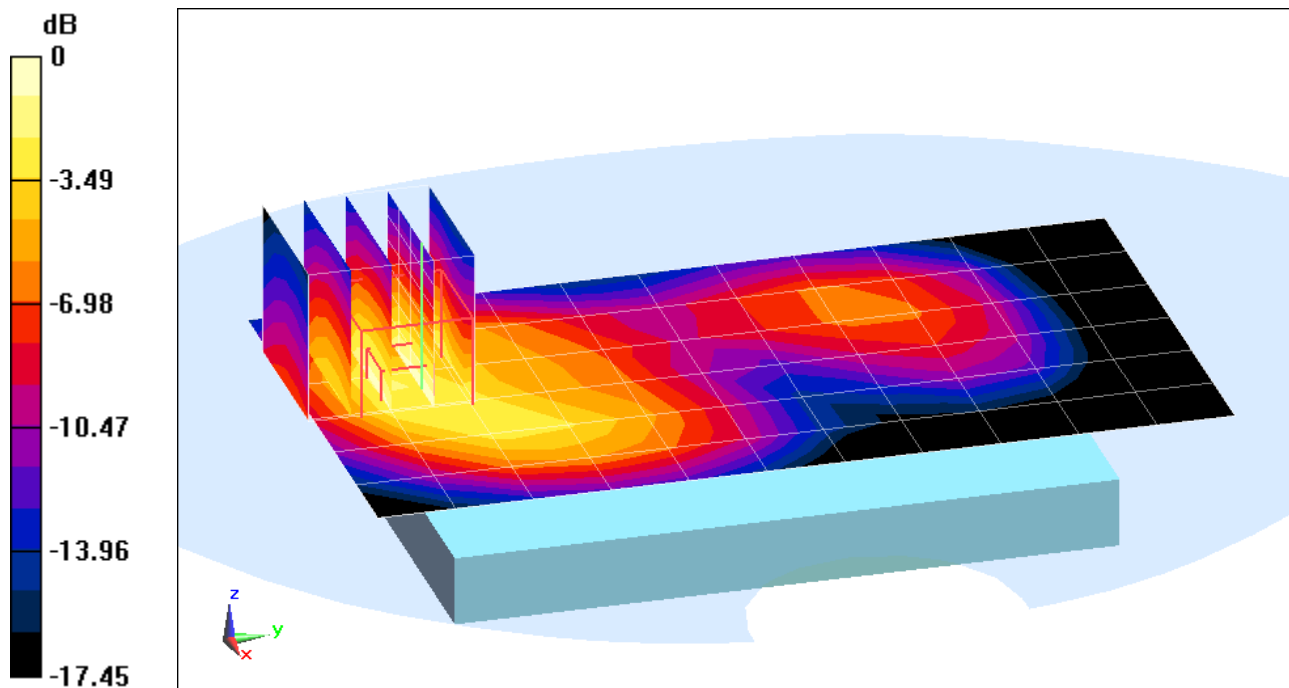
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 24.625 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.5330

SAR(1 g) = 0.919 mW/g; SAR(10 g) = 0.514 mW/g



0 dB = 0.970mW/g = -0.26 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 53.12$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 2 (PCS), Body SAR, Bottom Edge, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

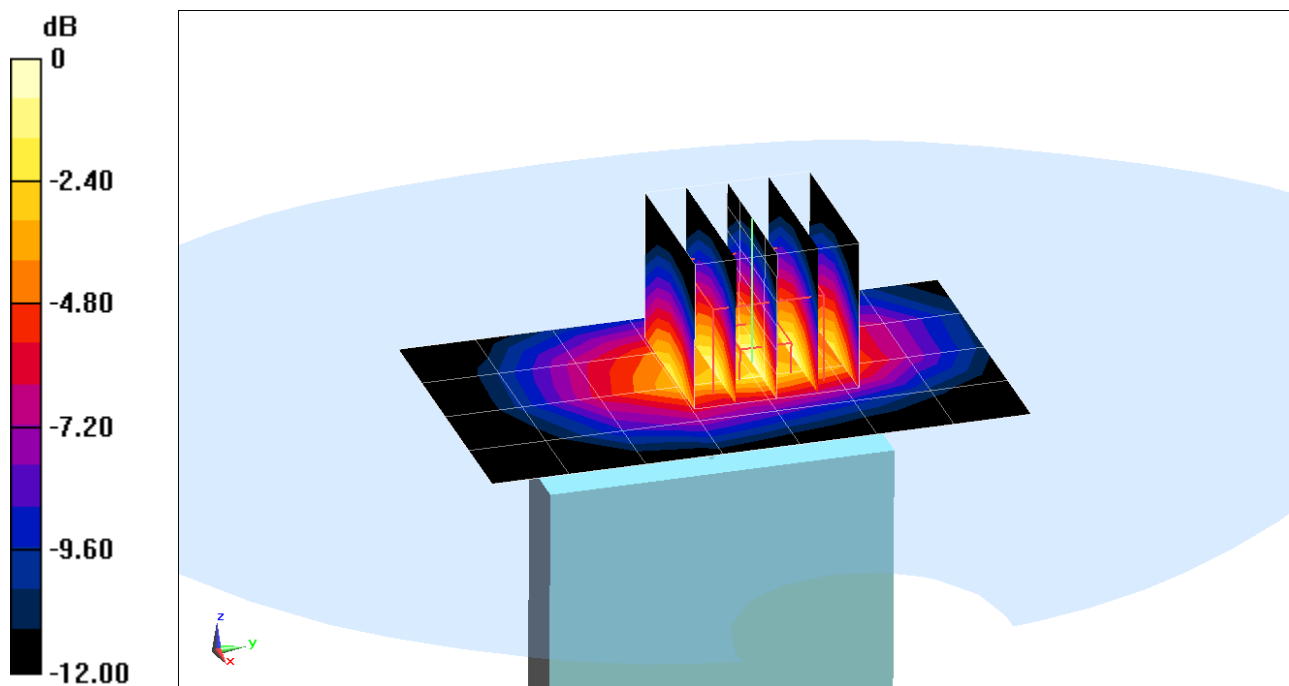
Area Scan (5x8x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 24.853 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.3680

SAR(1 g) = 0.818 mW/g; SAR(10 g) = 0.459 mW/g



0 dB = 0.910mW/g = -0.82 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 53.12$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 2 (PCS), Body SAR, Right Edge, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

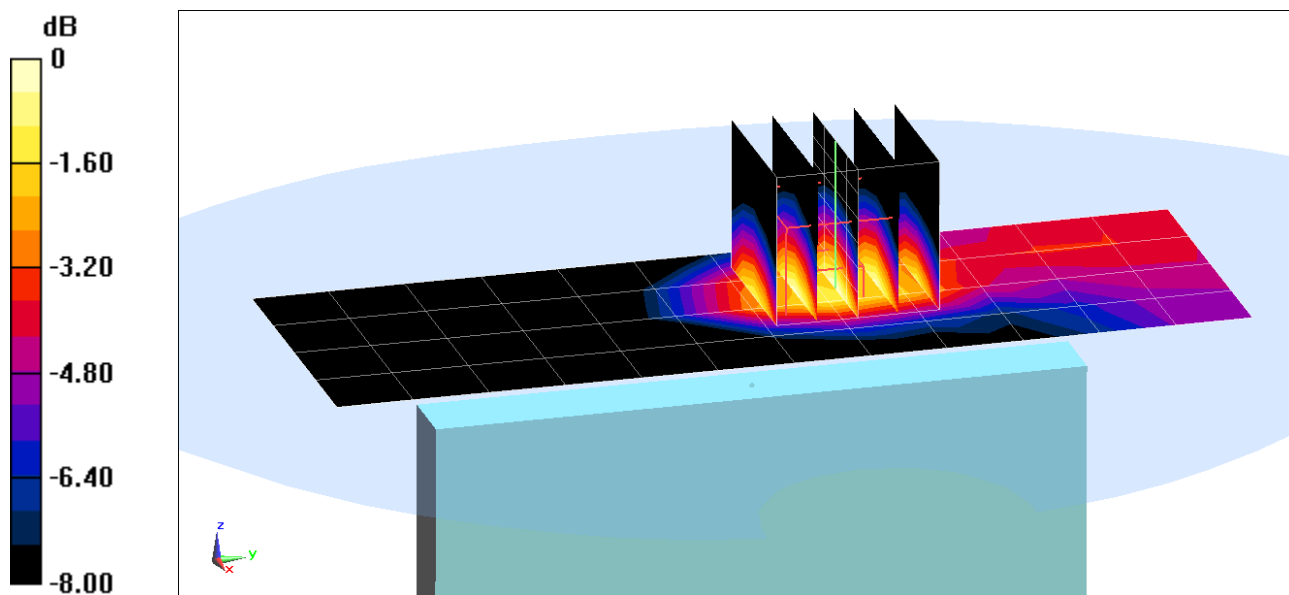
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 7.530 V/m; Power Drift = 0.0024 dB

Peak SAR (extrapolated) = 0.1250

SAR(1 g) = 0.077 mW/g; SAR(10 g) = 0.046 mW/g



0 dB = 0.080mW/g = -21.94 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 53.12$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.4 (4989)

Mode: LTE Band 2 (PCS), Body SAR, Left Edge, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, RB Offset 49

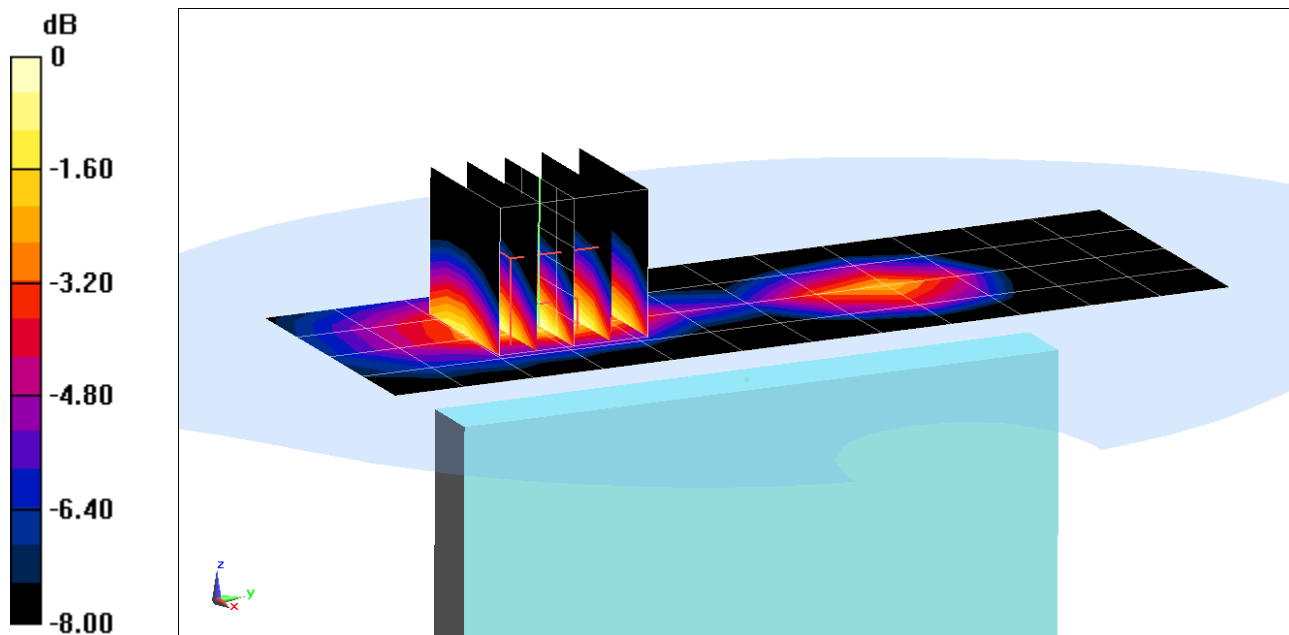
Area Scan (5x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.893 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.6060

SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.236 mW/g



0 dB = 0.430mW/g = -7.33 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.924 \text{ mho/m}$; $\epsilon_r = 53.778$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

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

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

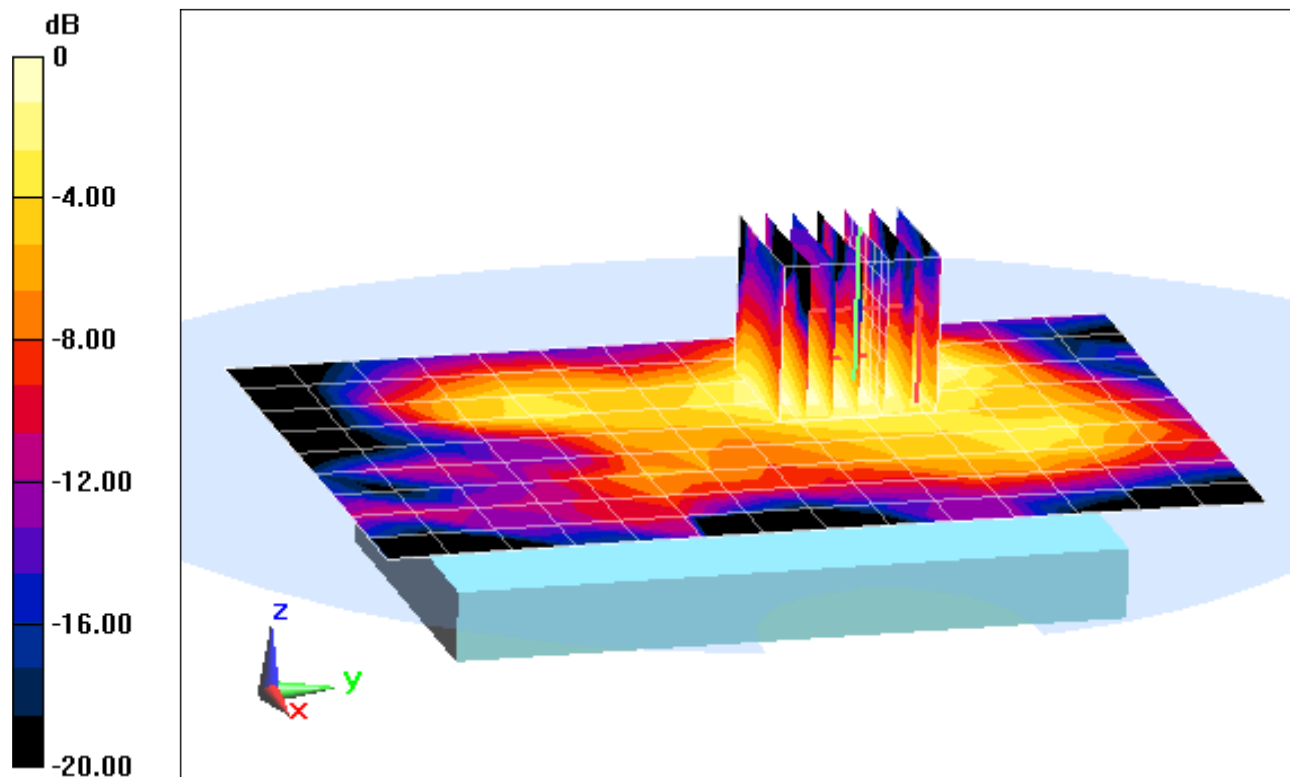
Area Scan (10x15x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 5.901 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.126 mW/g

SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.037 mW/g



0 dB = 0.0824 mW/g = -21.68 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.924 \text{ mho/m}$; $\epsilon_r = 53.778$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

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

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

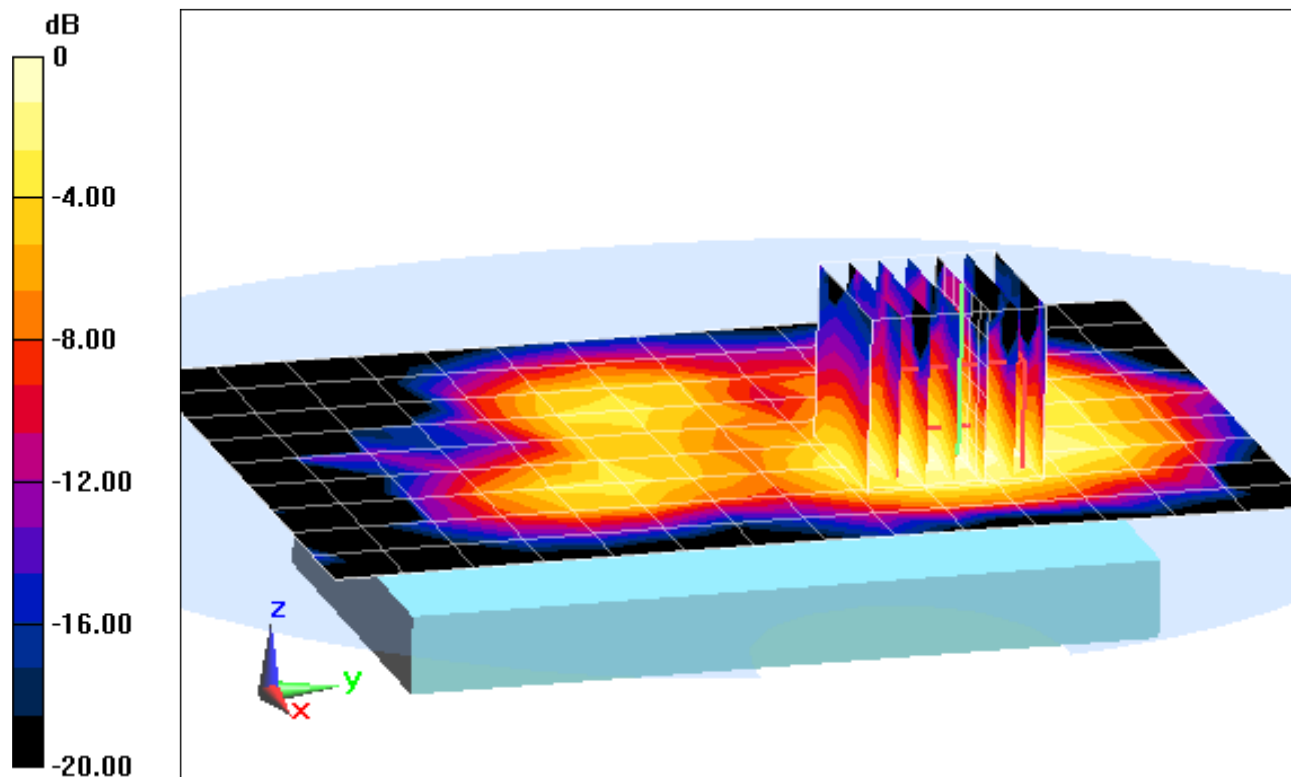
Area Scan (10x15x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 7.210 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.188 mW/g

SAR(1 g) = 0.096 mW/g; SAR(10 g) = 0.054 mW/g



0 dB = 0.116 mW/g = -18.71 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.924 \text{ mho/m}$; $\epsilon_r = 53.778$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

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

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

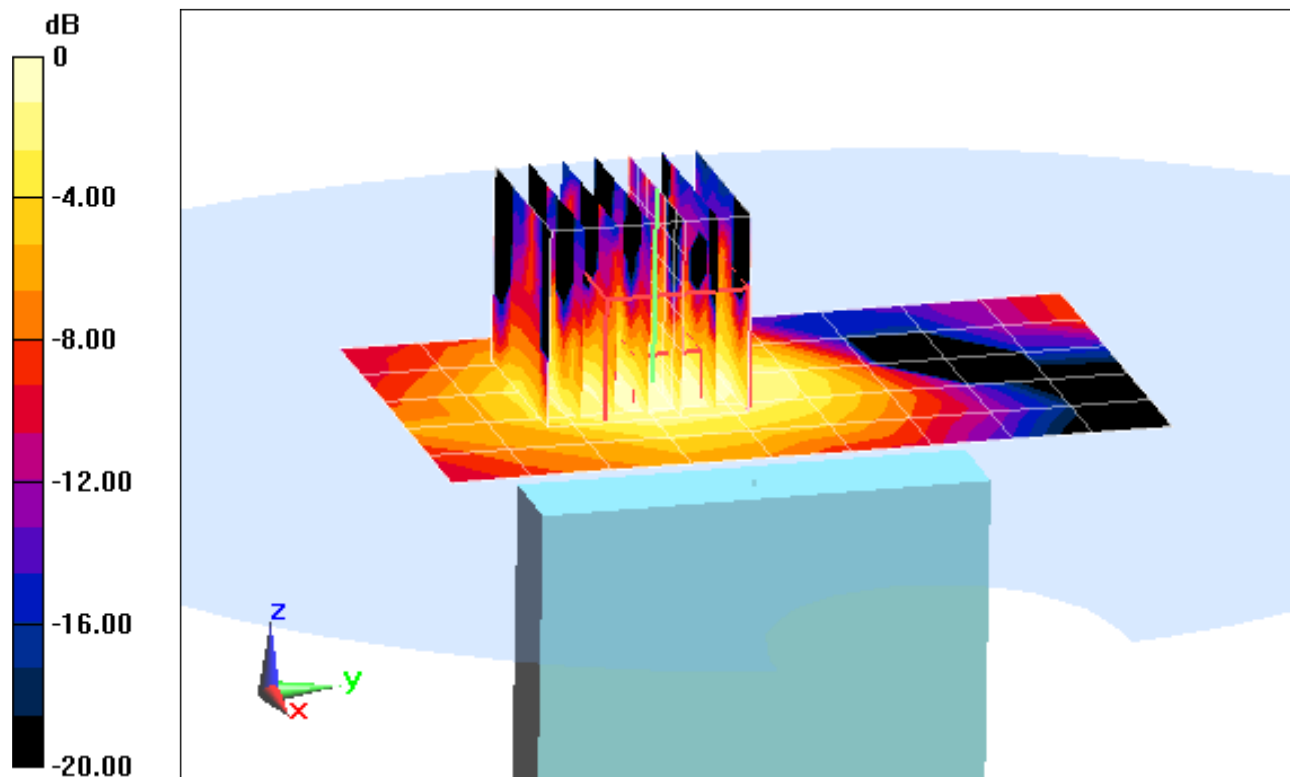
Area Scan (6x10x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 4.317 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.140 mW/g

SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.017 mW/g



0 dB = 0.0411 mW/g = -27.72 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSGHI547; Type: Portable Handset; Serial: FJ-164-A

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.924 \text{ mho/m}$; $\epsilon_r = 53.778$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

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

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

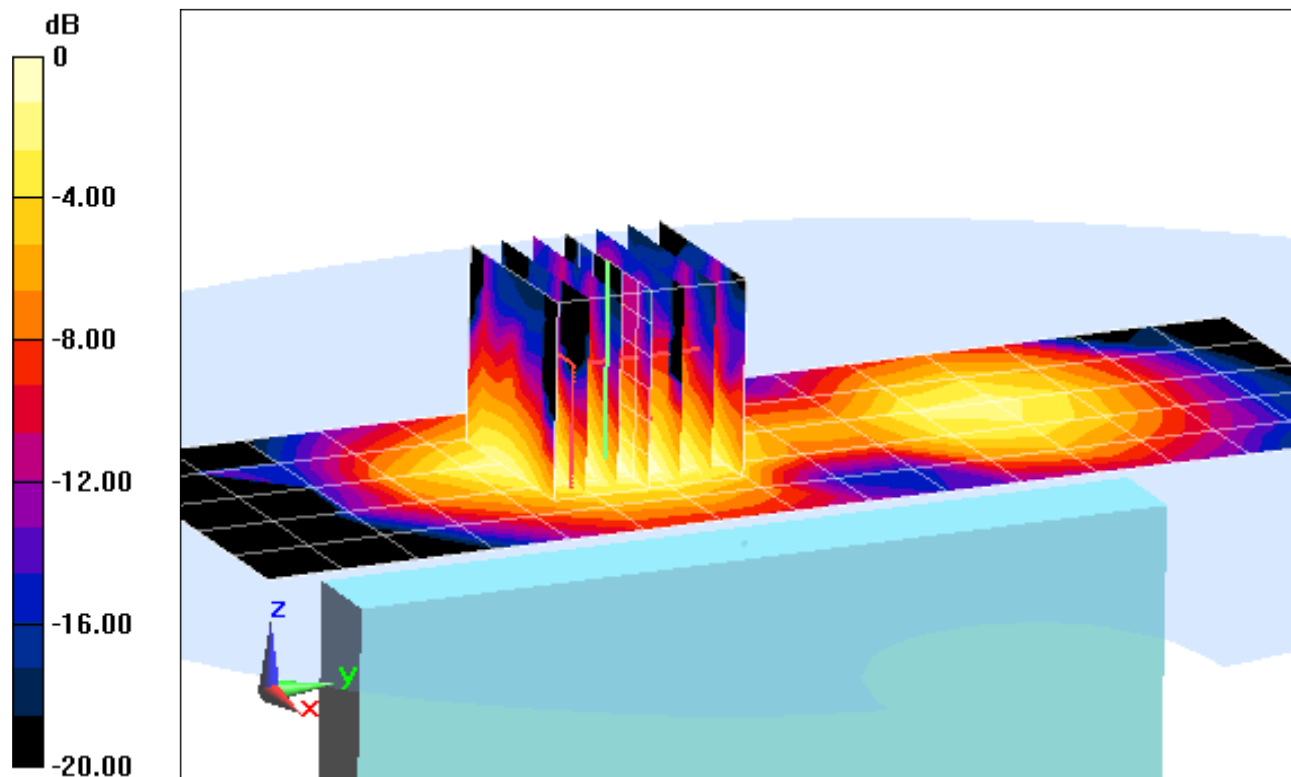
Area Scan (6x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 6.589 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.149 mW/g

SAR(1 g) = 0.077 mW/g; SAR(10 g) = 0.042 mW/g



0 dB = 0.0952 mW/g = -20.43 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 Head Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.92 \text{ mho/m}$; $\epsilon_r = 41.92$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.1°C

Probe: ES3DV2 - SN3022; ConvF(6.27, 6.27, 6.27); Calibrated: 8/25/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

750MHz System Verification

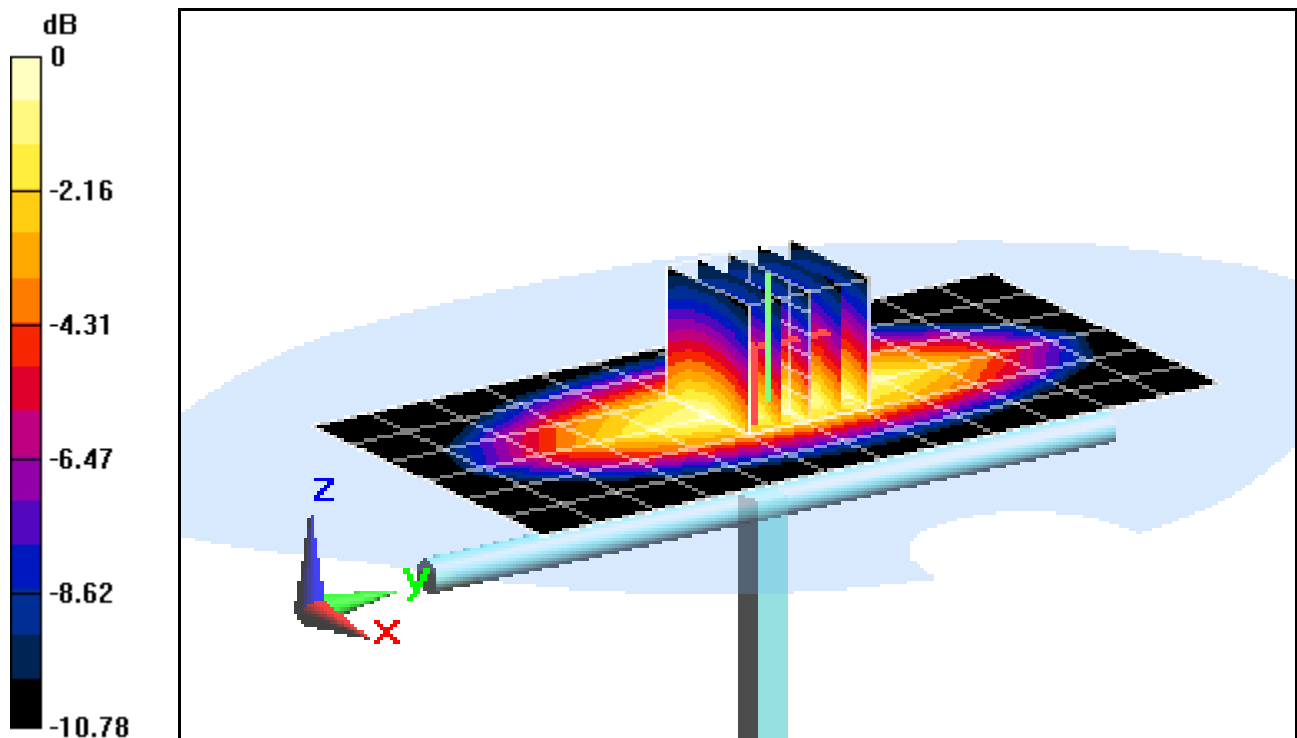
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 0.807 mW/g; SAR(10 g) = 0.523 mW/g

Deviation = -3.93 %



0 dB = 0.880mW/g = -1.11 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 Head Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.92 \text{ mho/m}$; $\epsilon_r = 41.92$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.1°C

Probe: ES3DV2 - SN3022; ConvF(6.27, 6.27, 6.27); Calibrated: 8/25/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

750MHz System Verification

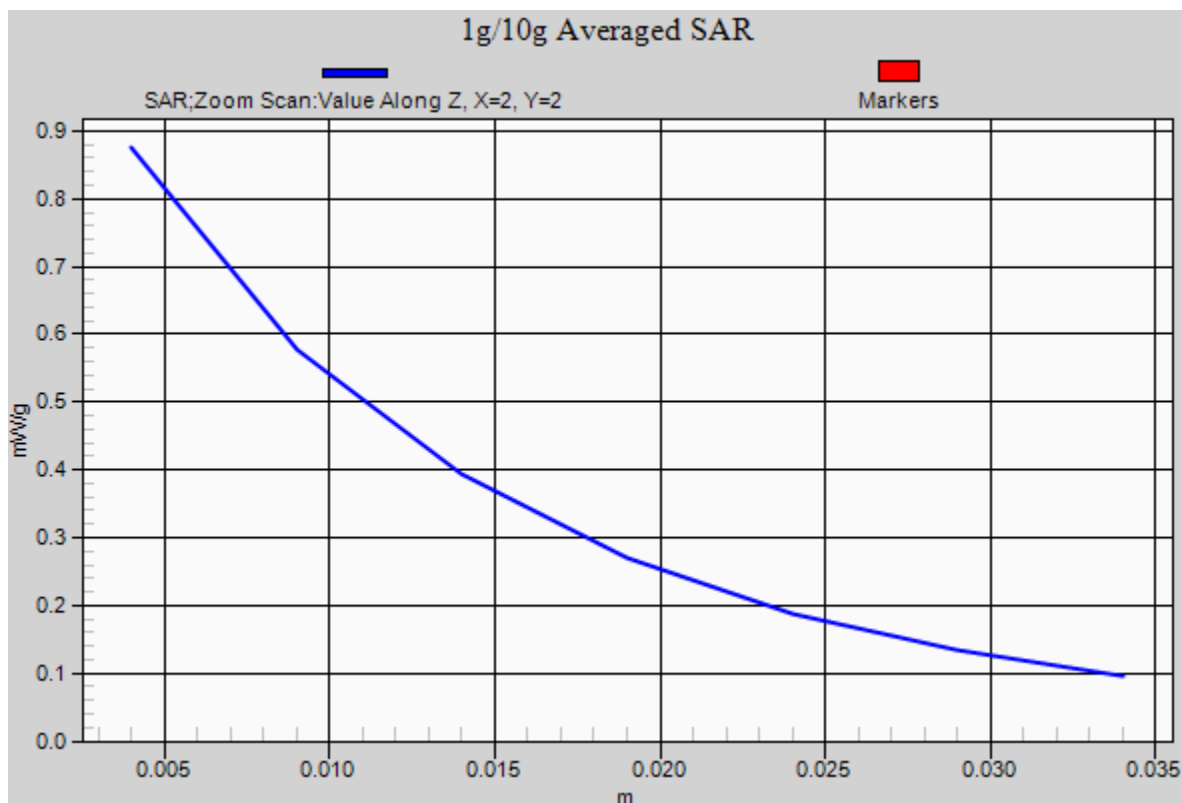
Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.807 mW/g; SAR(10 g) = 0.523 mW/g

Deviation = -3.93 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d026

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

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.915 \text{ mho/m}$; $\epsilon_r = 41.85$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

835MHz System Verification

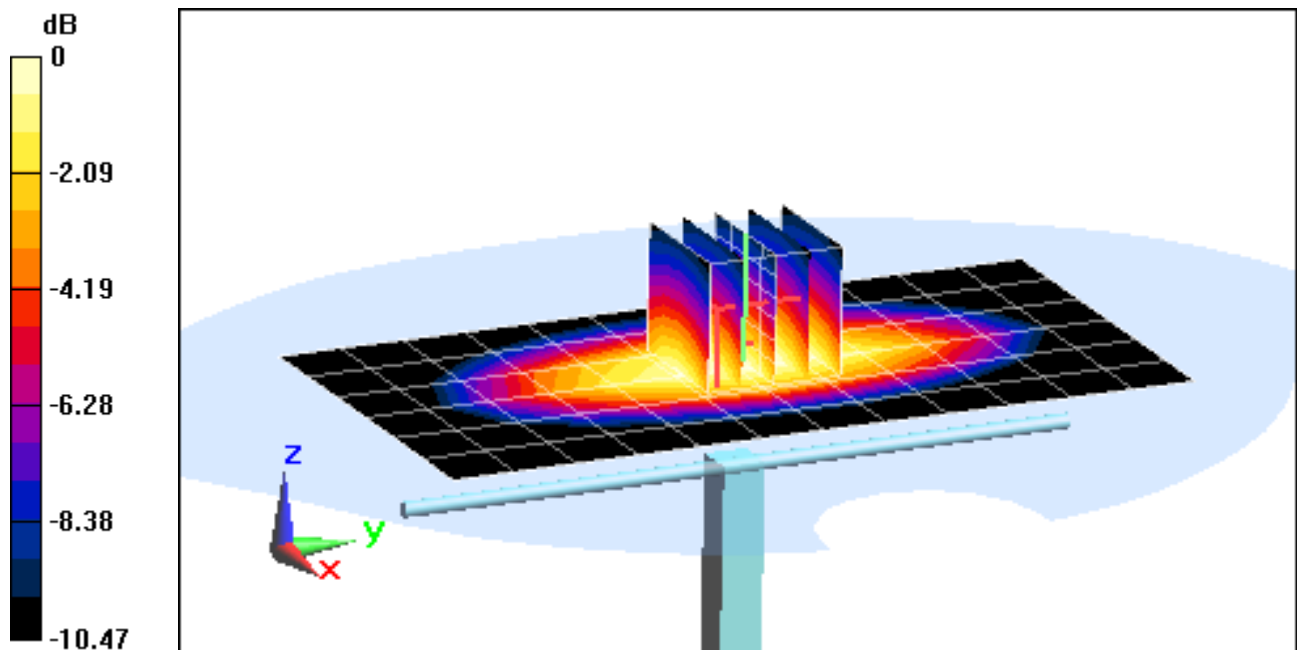
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 0.659 mW/g

Deviation = 6.77 %



0 dB = 1.090mW/g = 0.75 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d026

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

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.915 \text{ mho/m}$; $\epsilon_r = 41.85$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-21-2012; Ambient Temp: 23.8°C; Tissue Temp: 23.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

835MHz System Verification

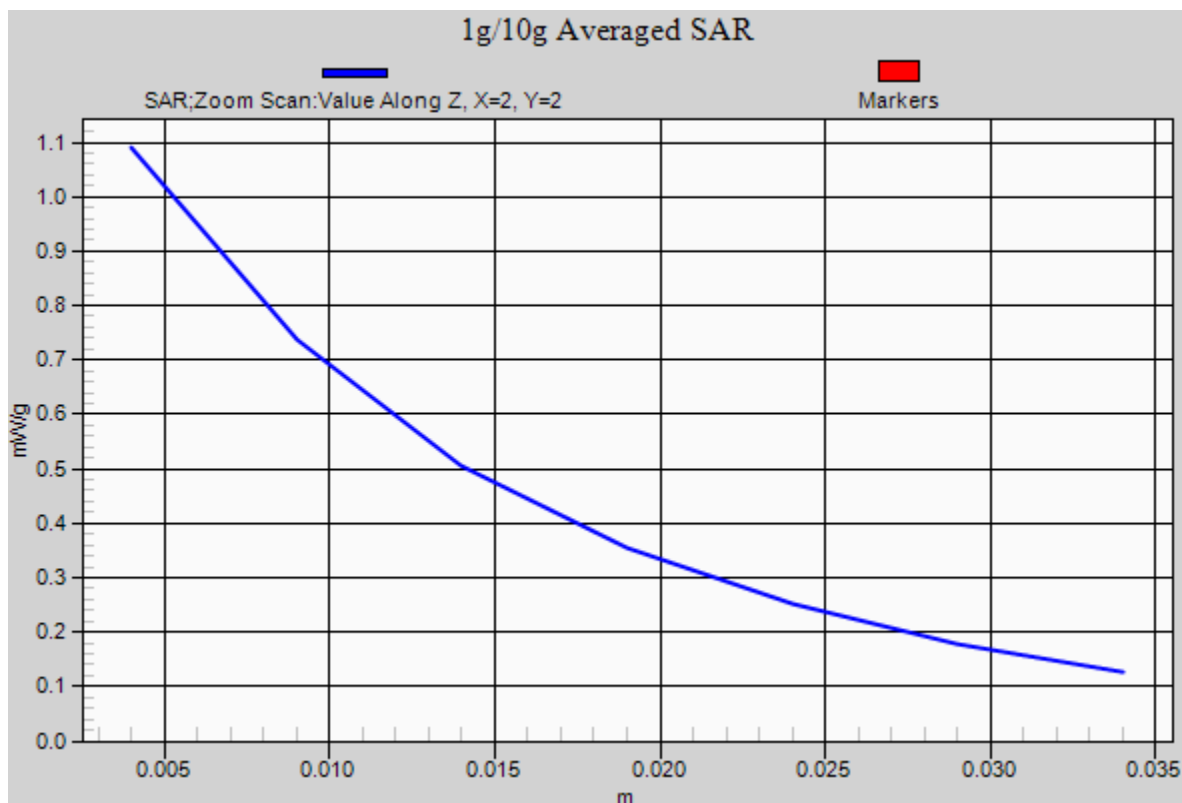
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 0.659 mW/g

Deviation = 6.77 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 835 MHz; Type: D835V2; Serial: 4d047

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

Medium: 835 Head; Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.889 \text{ mho/m}$; $\epsilon_r = 41.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-02-2012; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(8.07, 8.07, 8.07); Calibrated: 7/27/2011;

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

835 MHz System Verification

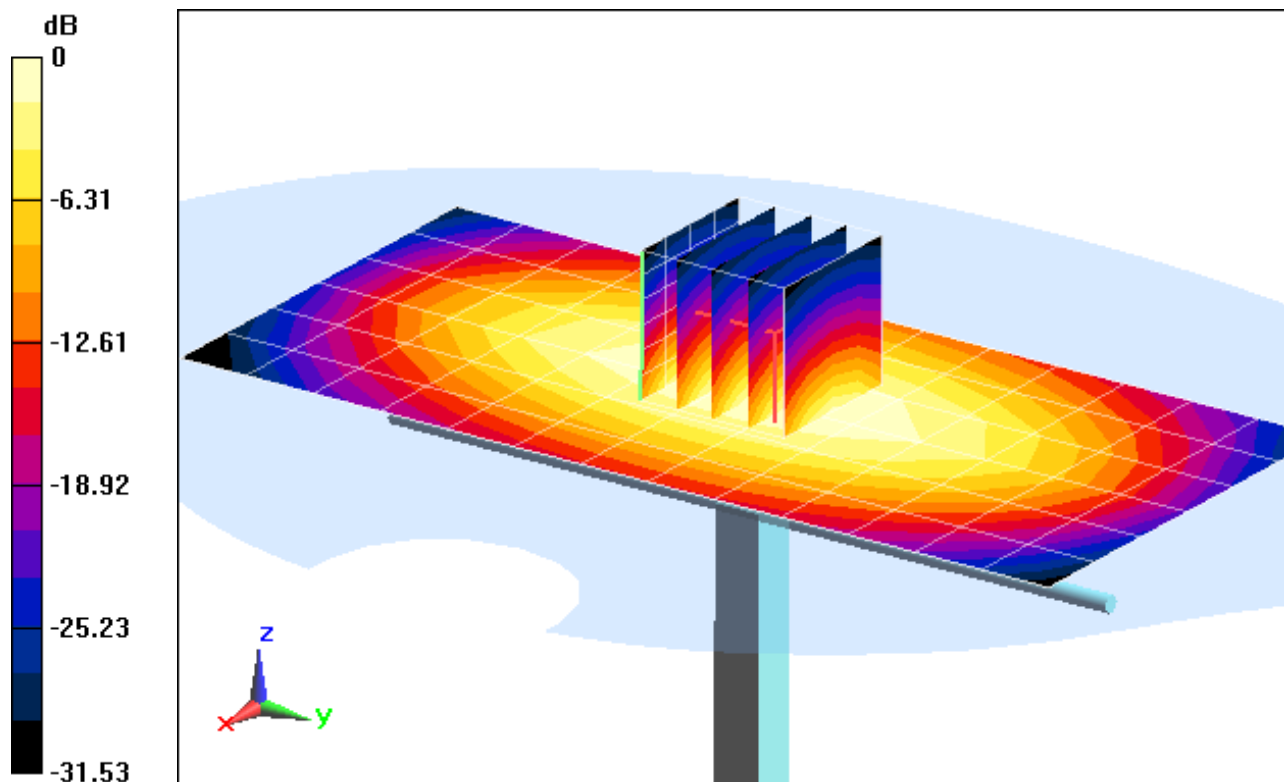
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 0.932 mW/g; SAR(10 g) = 0.608 mW/g

Deviation = -0.96%



0 dB = 0.953 mW/g = -0.42 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 835 MHz; Type: D835V2; Serial: 4d047

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

Medium: 835 Head; Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.889 \text{ mho/m}$; $\epsilon_r = 41.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-02-2012; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(8.07, 8.07, 8.07); Calibrated: 7/27/2011;

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

835 MHz System Verification

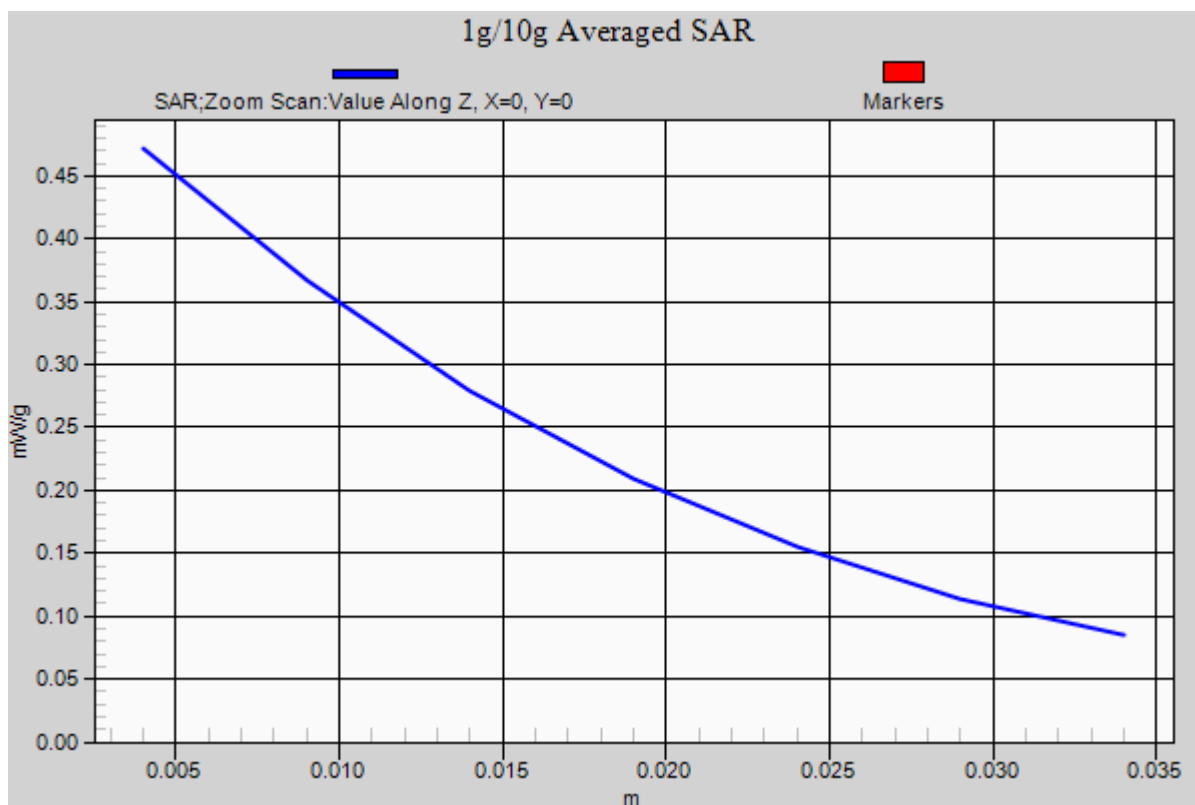
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.932 mW/g; SAR(10 g) = 0.608 mW/g

Deviation = -0.96%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1008

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

Medium: 1750 Head Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.366 \text{ mho/m}$; $\epsilon_r = 39.49$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2012; Ambient Temp: 24.2°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); 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 14.6.4 (4989)

1750 MHz System Verification

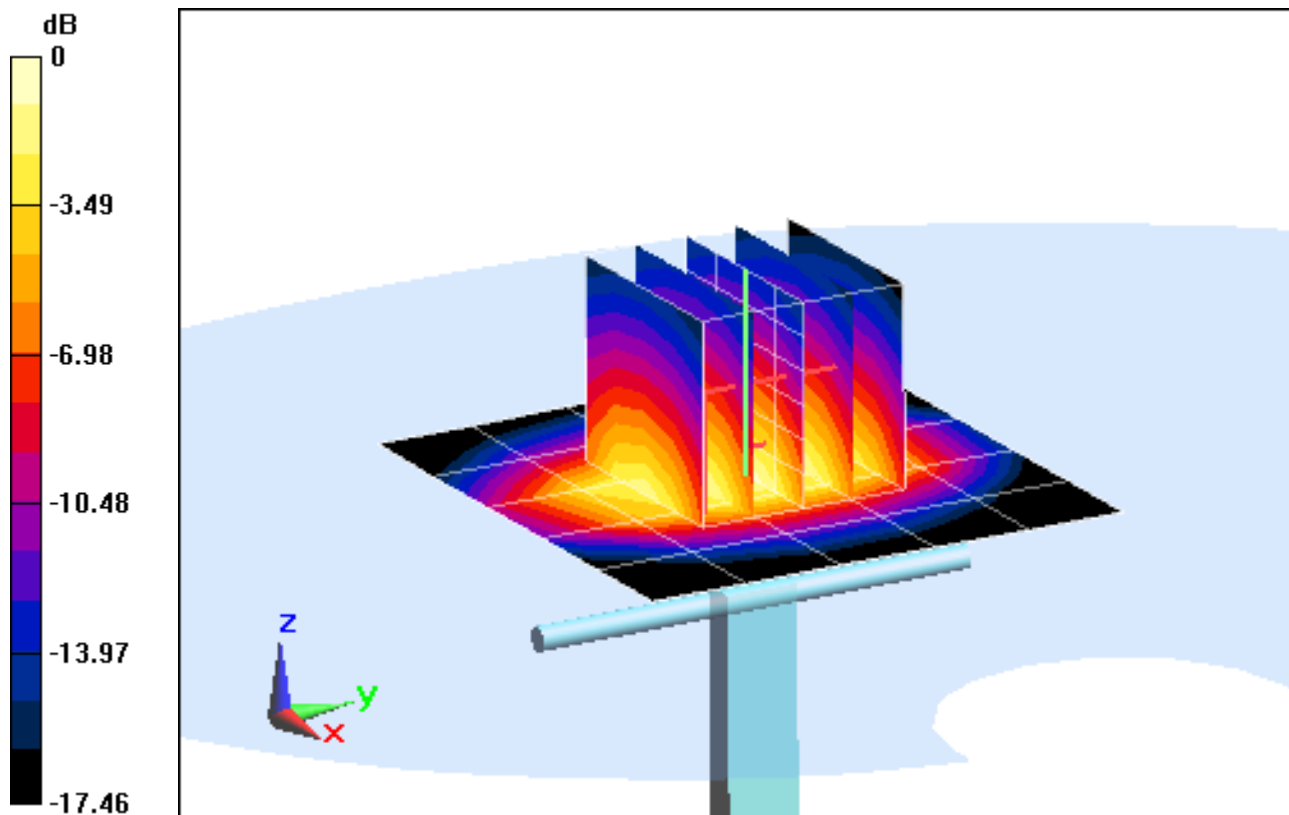
Area Scan (6x6x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 3.71 mW/g; SAR(10 g) = 1.95 mW/g

Deviation = 1.92 %



0 dB = 4.180mW/g = 12.42 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1008

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

Medium: 1750 Head Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.366 \text{ mho/m}$; $\epsilon_r = 39.49$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2012; Ambient Temp: 24.2°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); 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 14.6.4 (4989)

1750 MHz System Verification

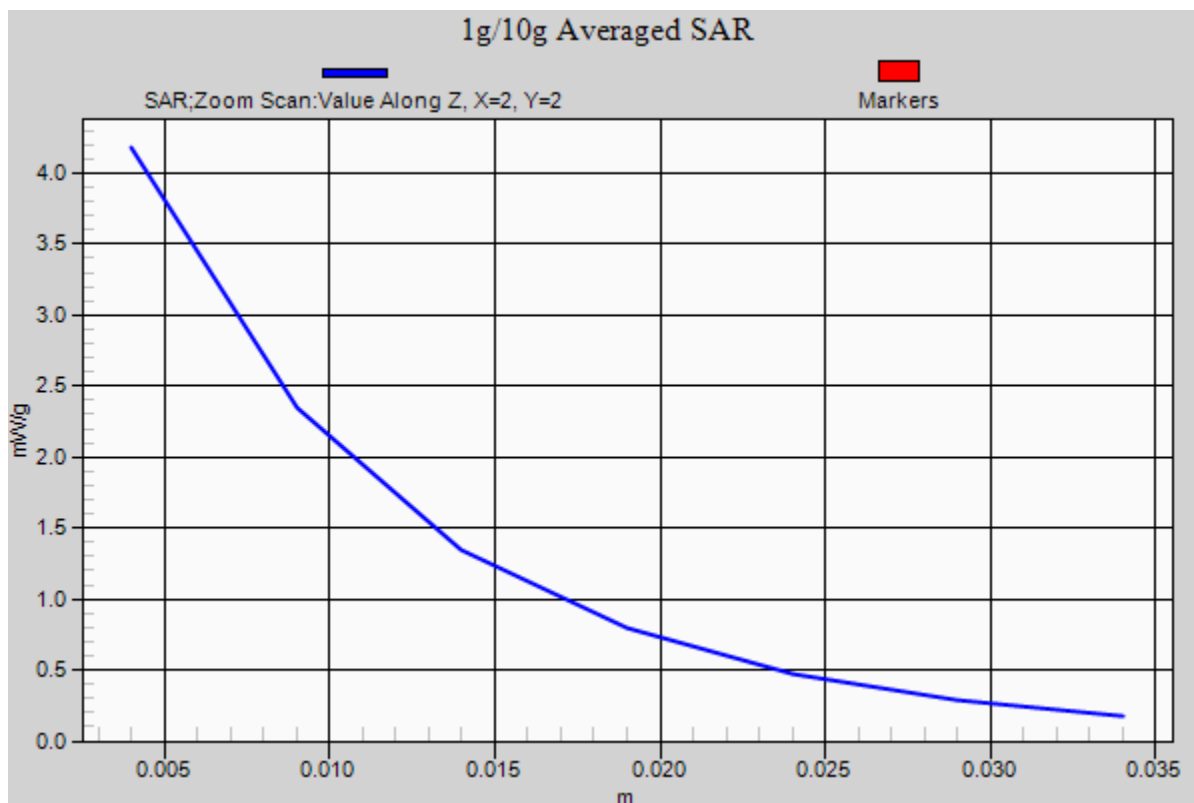
Area Scan (6x6x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.71 mW/g; SAR(10 g) = 1.95 mW/g

Deviation = 1.92 %



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 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.376 \text{ mho/m}$; $\epsilon_r = 39.51$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 21.4°C; Tissue Temp: 22.1°C

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

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

1900 MHz System Verification

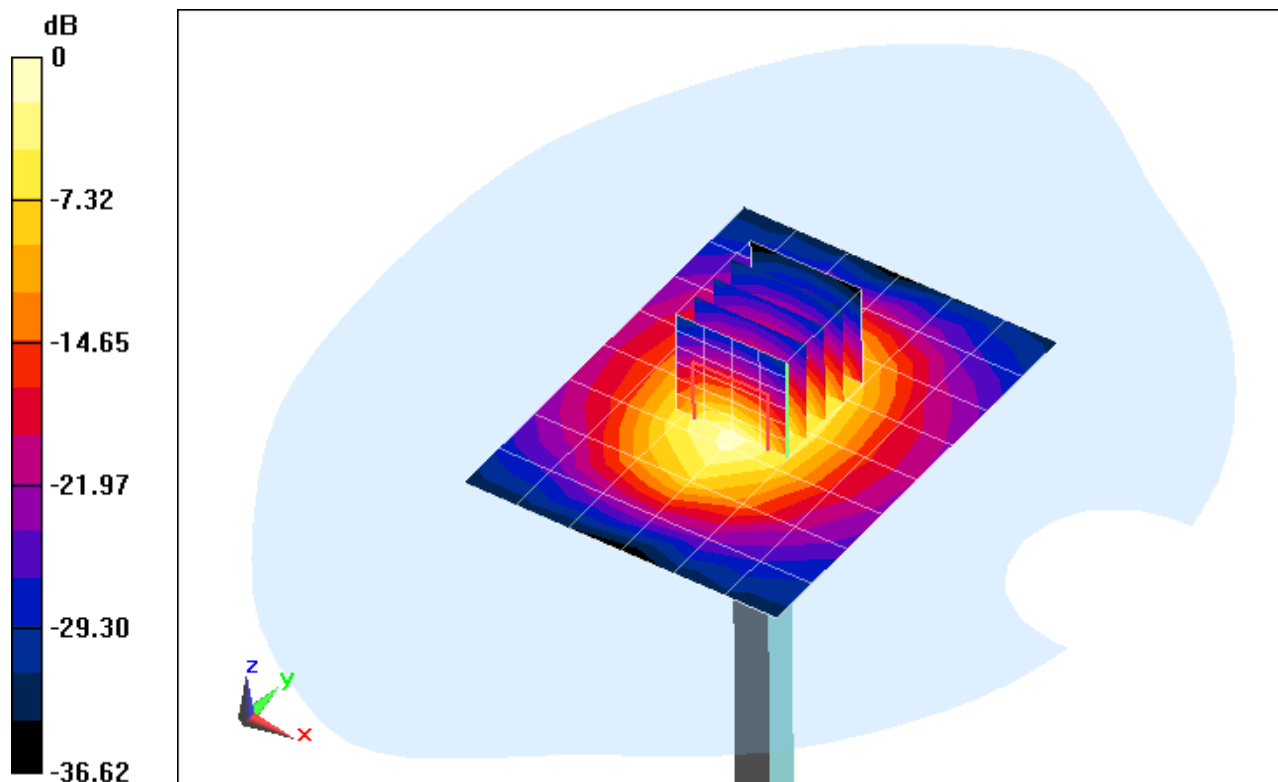
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power: 20.0 dBm (100 mW)

SAR(1 g) = 3.9 mW/g; SAR(10 g) = 2.01 mW/g

Deviation: -0.76%



0 dB = 4.32 mW/g = 12.70 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 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.376 \text{ mho/m}$; $\epsilon_r = 39.51$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 21.4°C; Tissue Temp: 22.1°C

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

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

1900 MHz System Verification

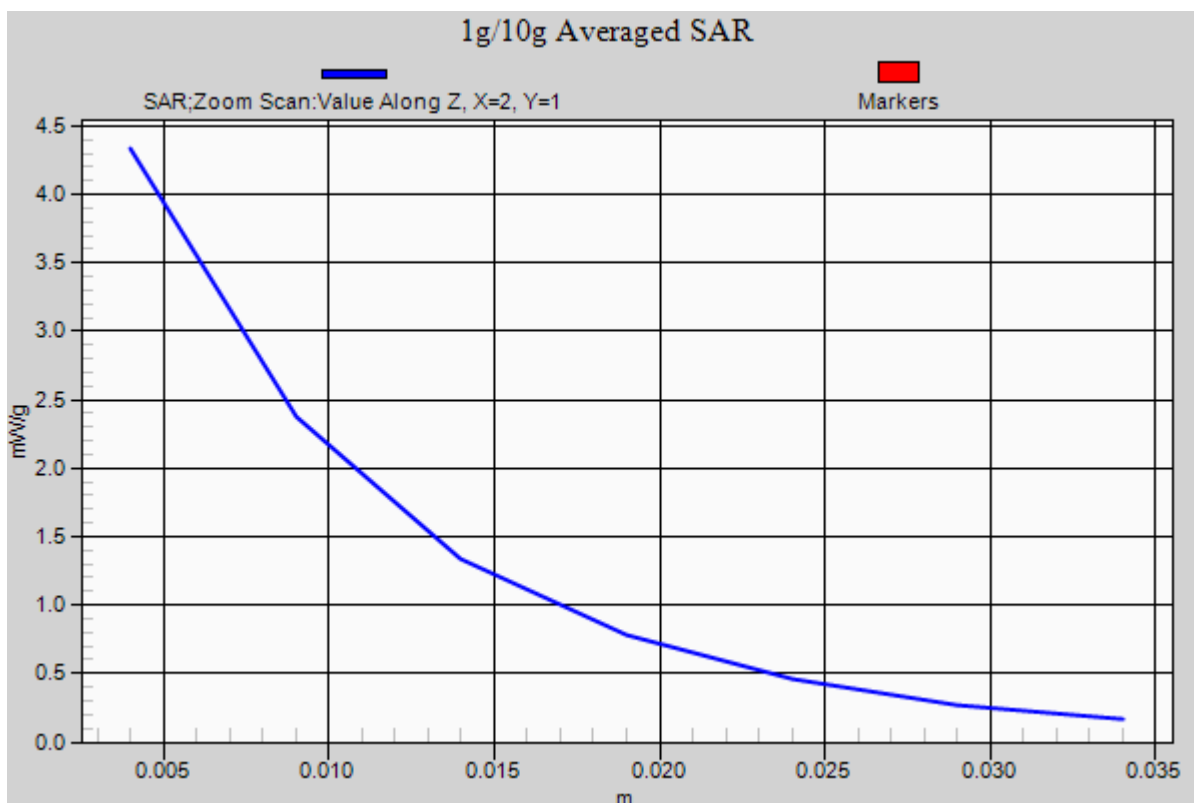
Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 3.9 mW/g; SAR(10 g) = 2.01 mW/g

Deviation: -0.76%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

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

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.418 \text{ mho/m}$; $\epsilon_r = 38.41$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

1900MHz System Verification

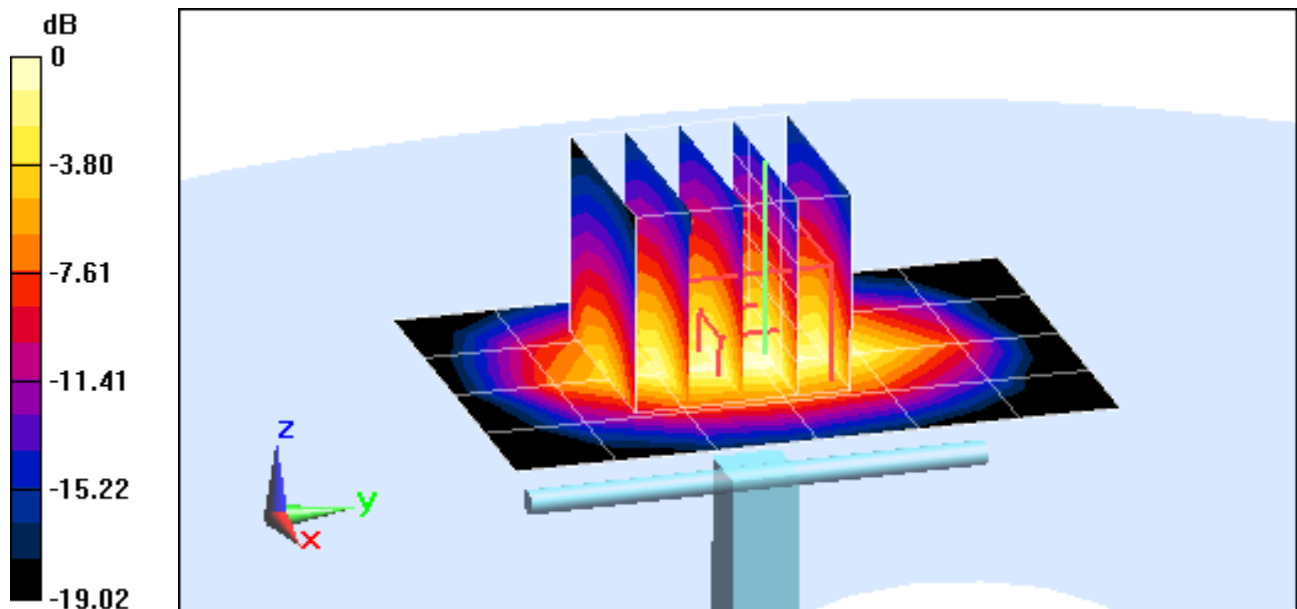
Area Scan (5x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 3.92 mW/g; SAR(10 g) = 2 mW/g

Deviation = -1.75 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

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

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.418 \text{ mho/m}$; $\epsilon_r = 38.41$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2012; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3209; ConvF(5.15, 5.15, 5.15); 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 14.6.4 (4989)

1900MHz System Verification

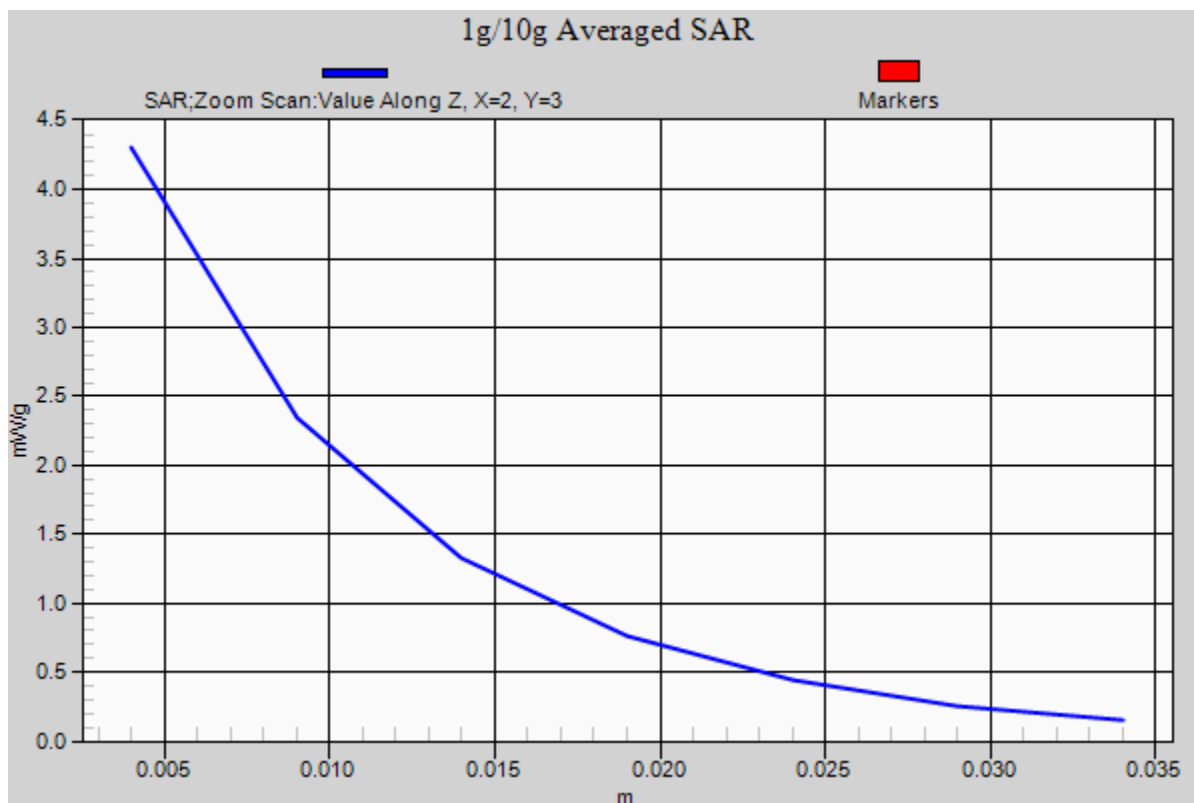
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.92 mW/g; SAR(10 g) = 2 mW/g

Deviation = -1.75 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 2450 MHz; Type: D2450V2; Serial: 797

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

Medium: 2450 Head Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.837 \text{ mho/m}$; $\epsilon_r = 37.83$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (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)

2450MHz System Verification

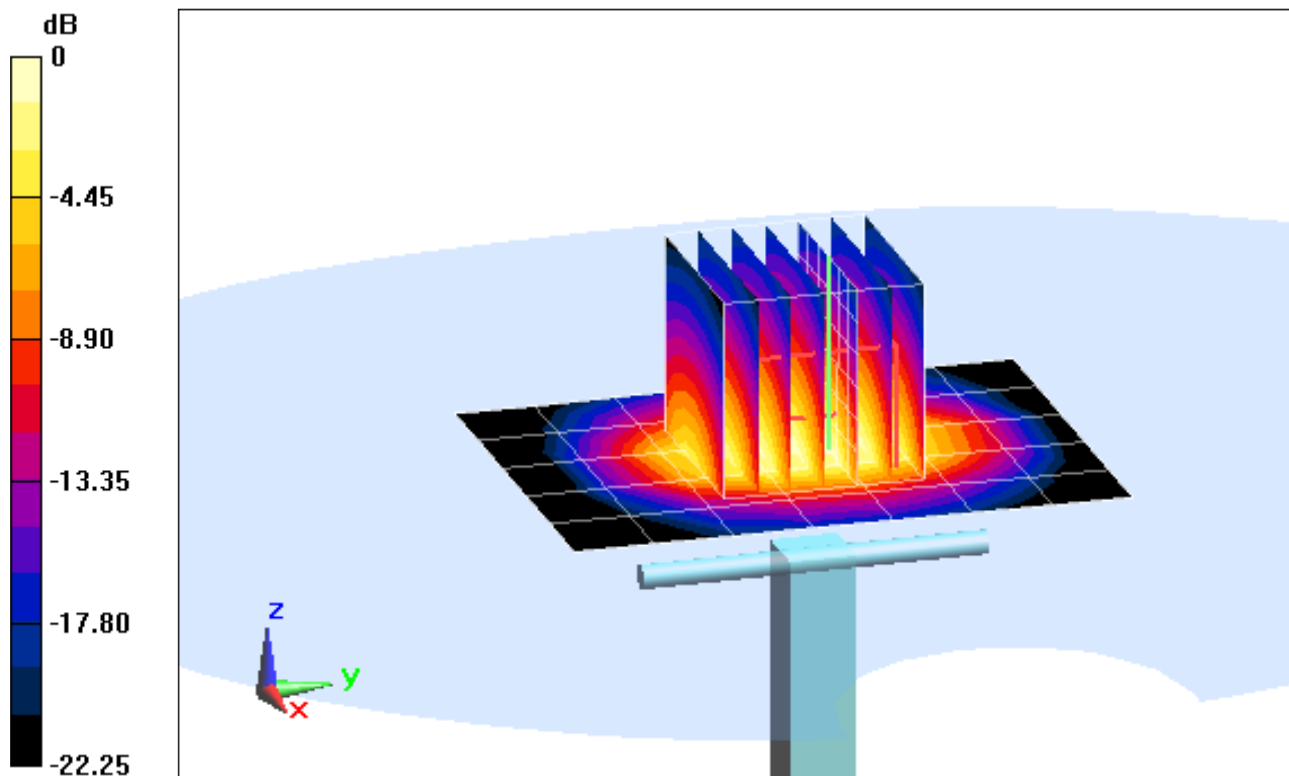
Area Scan (6x8x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 5.3 mW/g; SAR(10 g) = 2.48 mW/g

Deviation = 1.73%



0 dB = 6.75 mW/g = 16.59 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 2450 MHz; Type: D2450V2; Serial: 797

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

Medium: 2450 Head Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.837 \text{ mho/m}$; $\epsilon_r = 37.83$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (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)

2450MHz System Verification

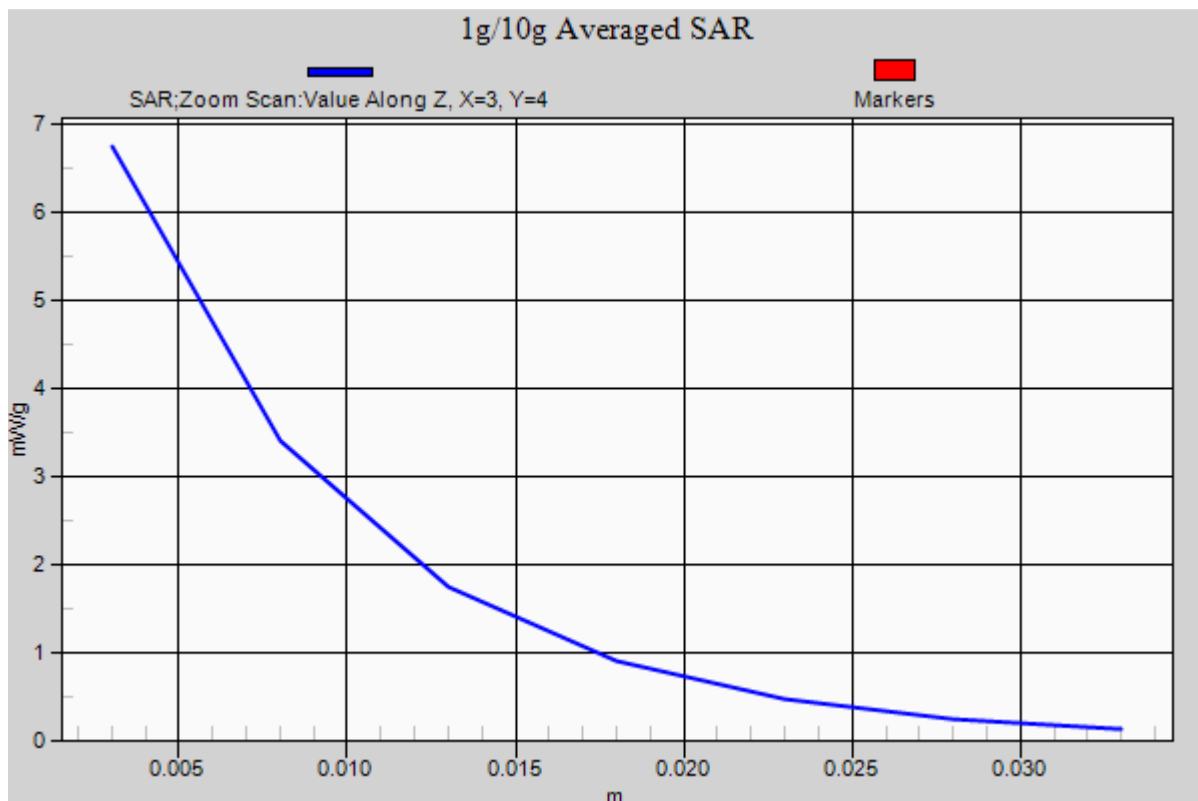
Area Scan (6x8x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 5.3 mW/g; SAR(10 g) = 2.48 mW/g

Deviation = 1.73%



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):

$f = 750 \text{ MHz}$; $\sigma = 0.987 \text{ mho/m}$; $\epsilon_r = 54.357$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-27-2012; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(6.11, 6.11, 6.11); Calibrated: 8/25/2011

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 14.6.4 (4989)

750MHz System Verification

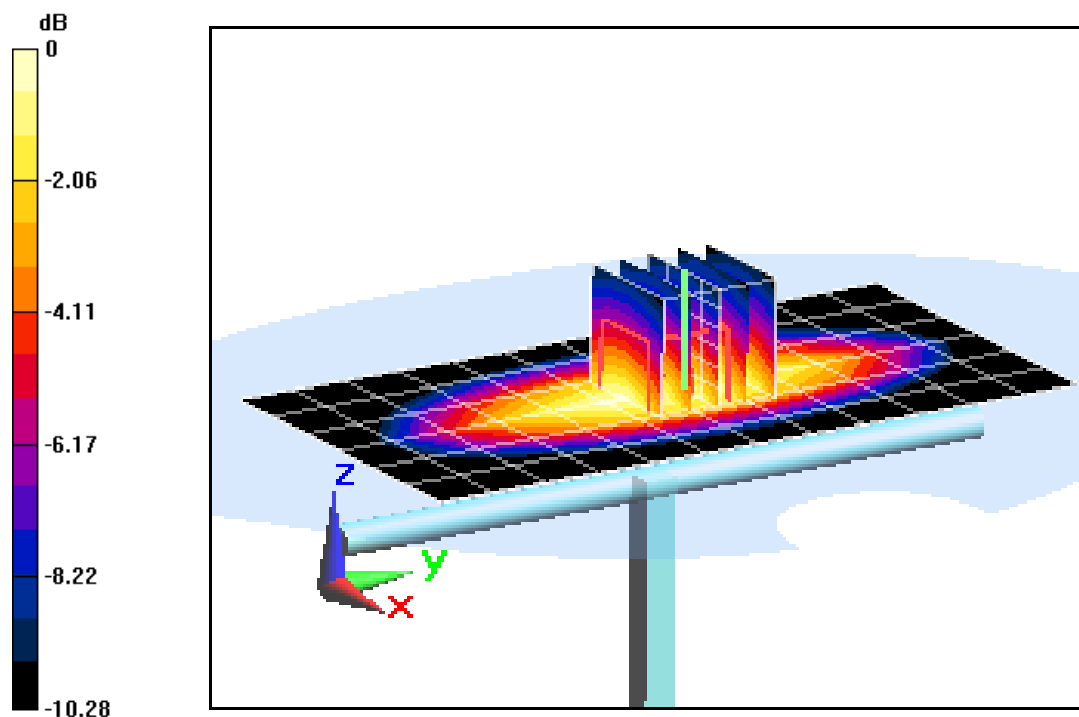
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 0.873 mW/g; SAR(10 g) = 0.581 mW/g

Deviation = 0.11 %



0 dB = 0.230mW/g = -12.77 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):

$f = 750 \text{ MHz}$; $\sigma = 0.987 \text{ mho/m}$; $\epsilon_r = 54.357$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-27-2012; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(6.11, 6.11, 6.11); Calibrated: 8/25/2011

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); SEMCADX Version 14.6.4 (4989)

750MHz System Verification

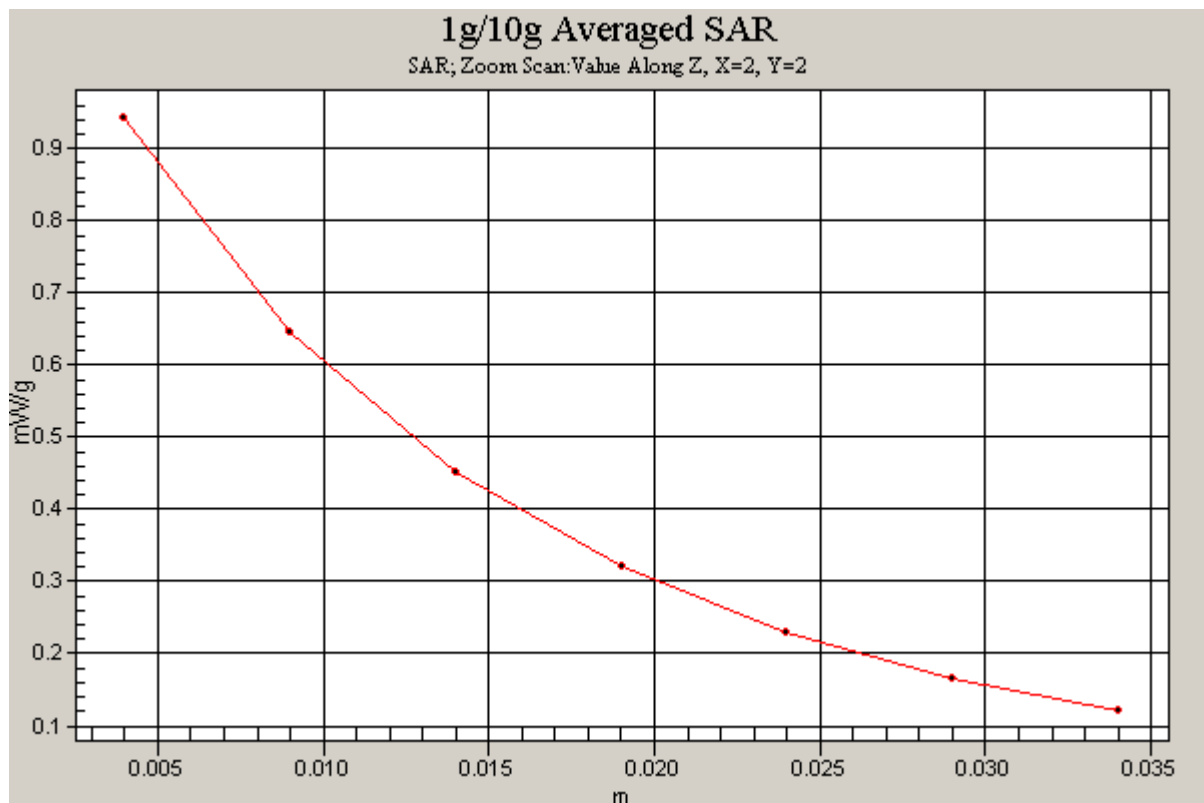
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 0.873 mW/g; SAR(10 g) = 0.581 mW/g

Deviation = 0.11 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d026

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.013 \text{ mho/m}$; $\epsilon_r = 54.67$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-24-2012; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 14.6.4 (4989)

835MHz System Verification

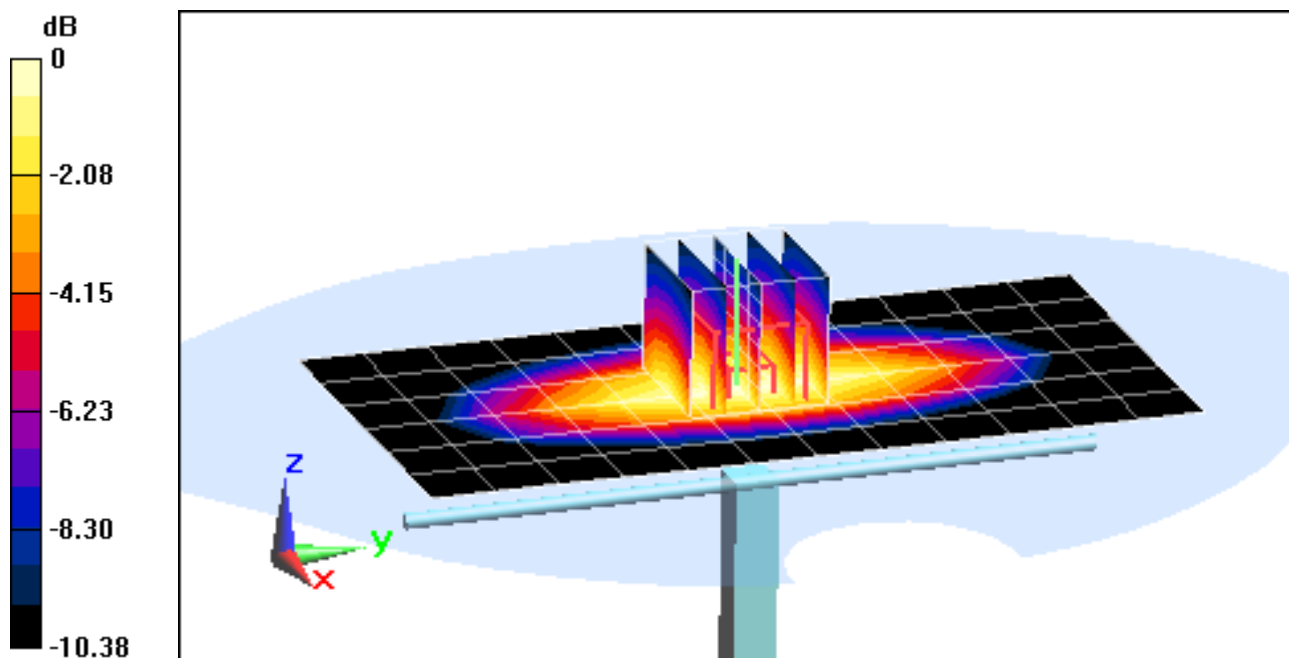
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 0.667 mW/g

Deviation = 4.55 %



0 dB = 1.100mW/g = 0.83 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d026

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.013 \text{ mho/m}$; $\epsilon_r = 54.67$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-24-2012; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 14.6.4 (4989)

835MHz System Verification

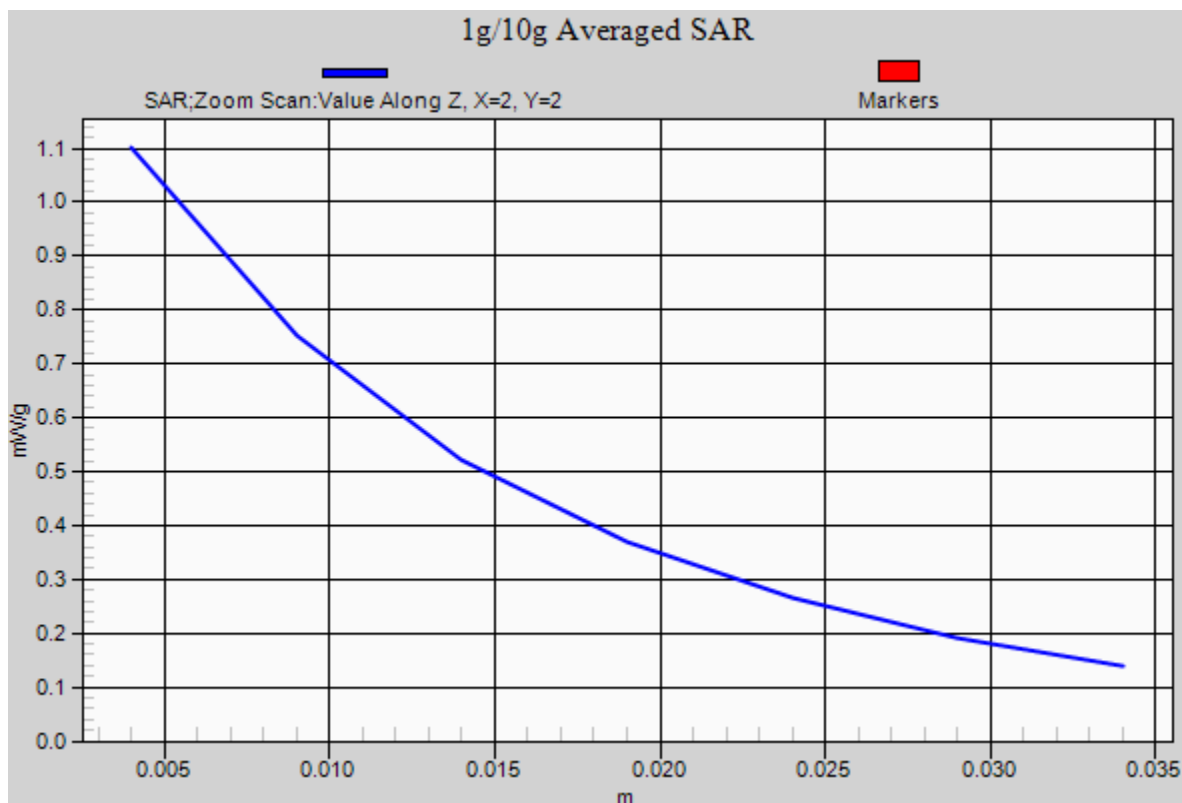
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 0.667 mW/g

Deviation = 4.55 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.008 \text{ mho/m}$; $\epsilon_r = 54.18$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

835MHz System Verification

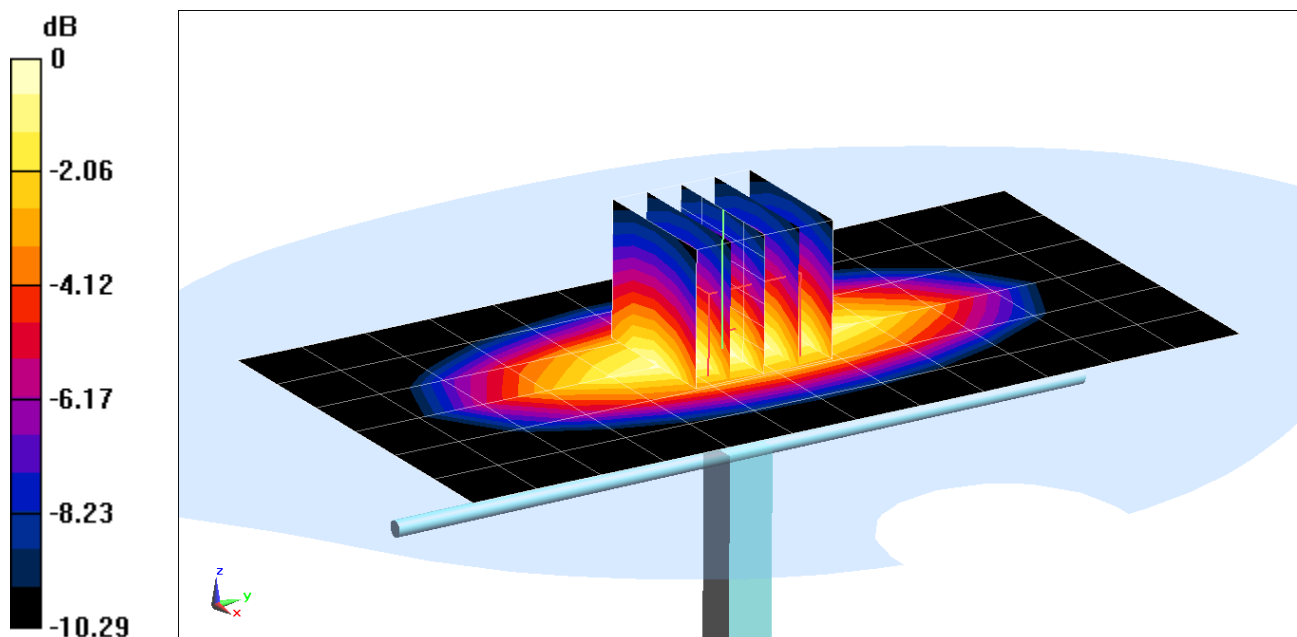
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 1.02 mW/g; SAR(10 g) = 0.673 mW/g

Deviation = 6.25 %



0 dB = 1.110mW/g = 0.91 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.008 \text{ mho/m}$; $\epsilon_r = 54.18$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°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 14.6.4 (4989)

835MHz System Verification

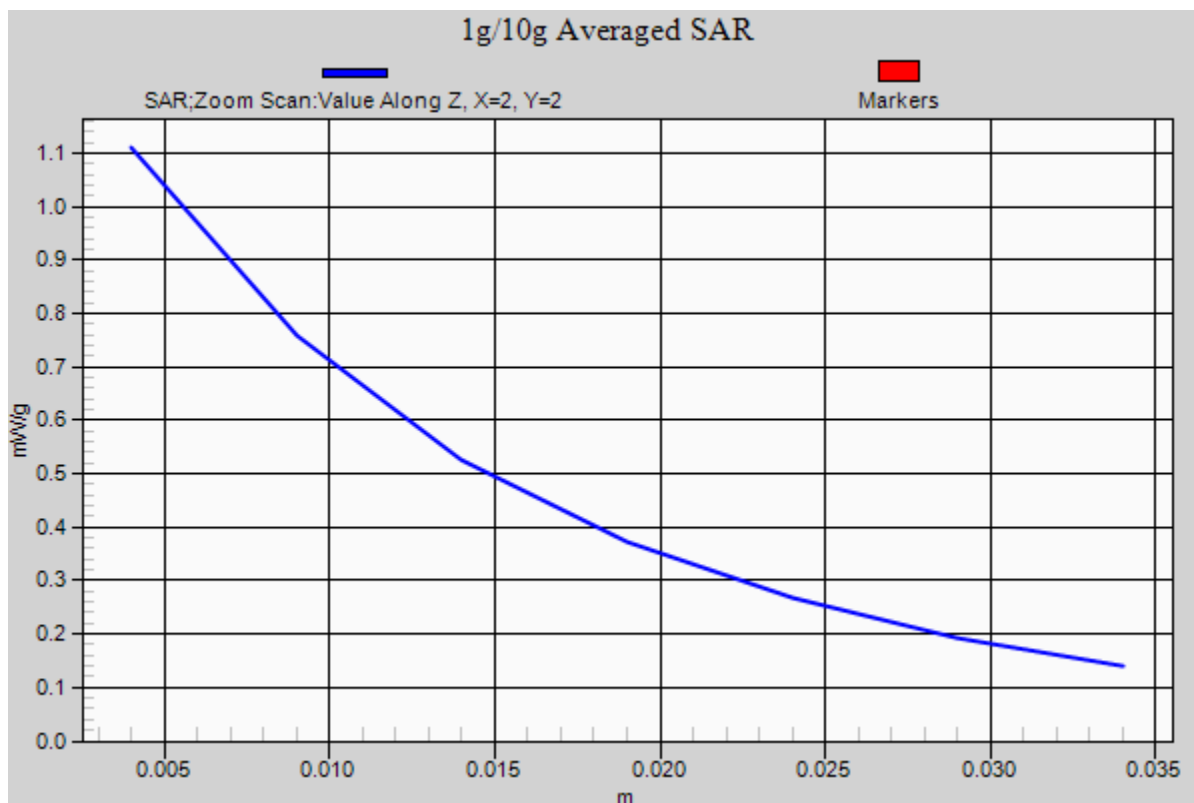
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 1.02 mW/g; SAR(10 g) = 0.673 mW/g

Deviation = 6.25 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1008

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.473 \text{ mho/m}$; $\epsilon_r = 52.88$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

1750 MHz System Verification

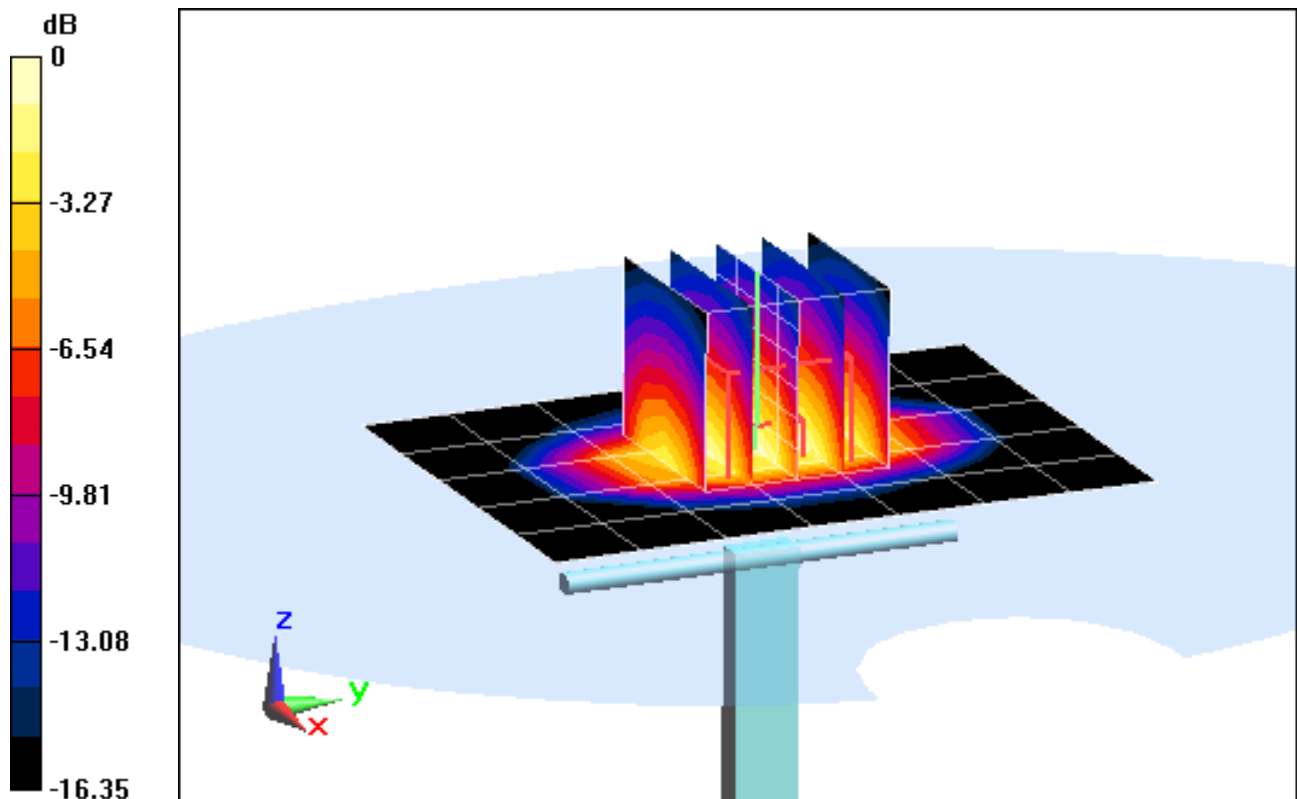
Area Scan (6x8x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 3.8 mW/g; SAR(10 g) = 2.01 mW/g

Deviation = 1.60 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1008

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.473 \text{ mho/m}$; $\epsilon_r = 52.88$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.4 (4989)

1750 MHz System Verification

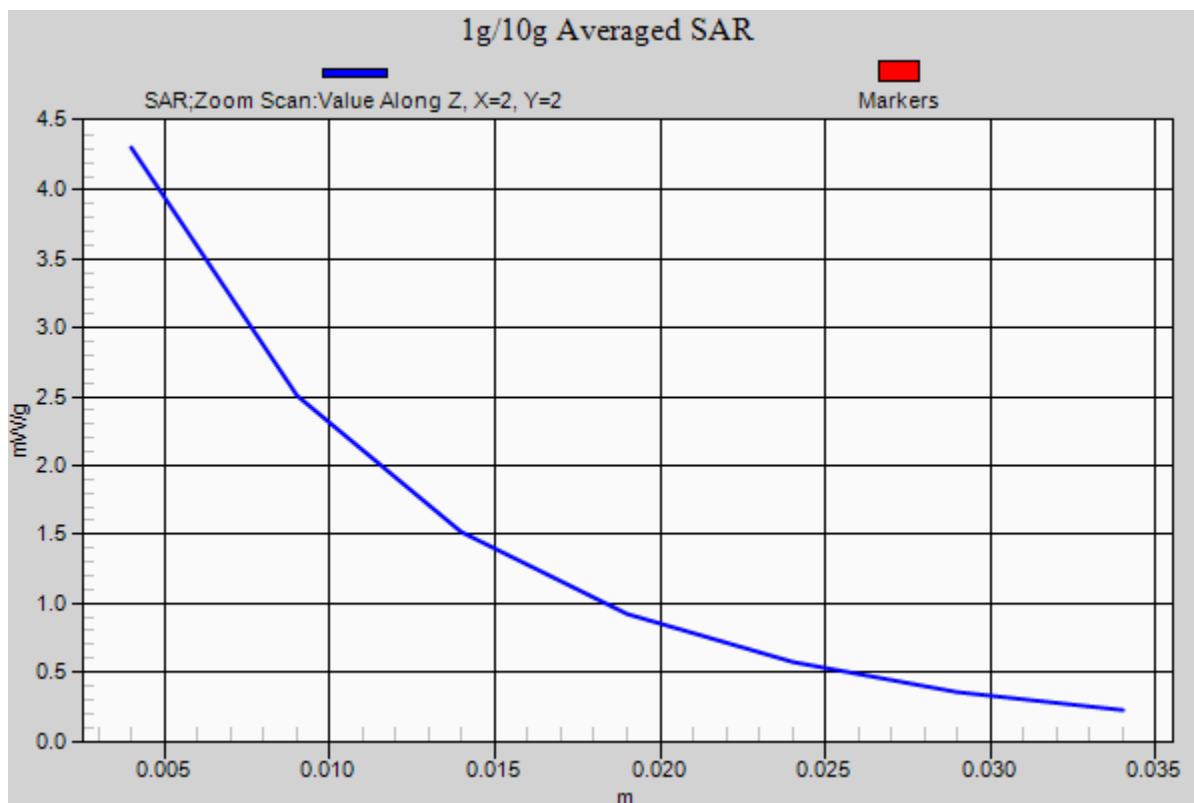
Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.8 mW/g; SAR(10 g) = 2.01 mW/g

Deviation = 1.60 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.564 \text{ mho/m}$; $\epsilon_r = 53.053$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

1900 MHz System Verification

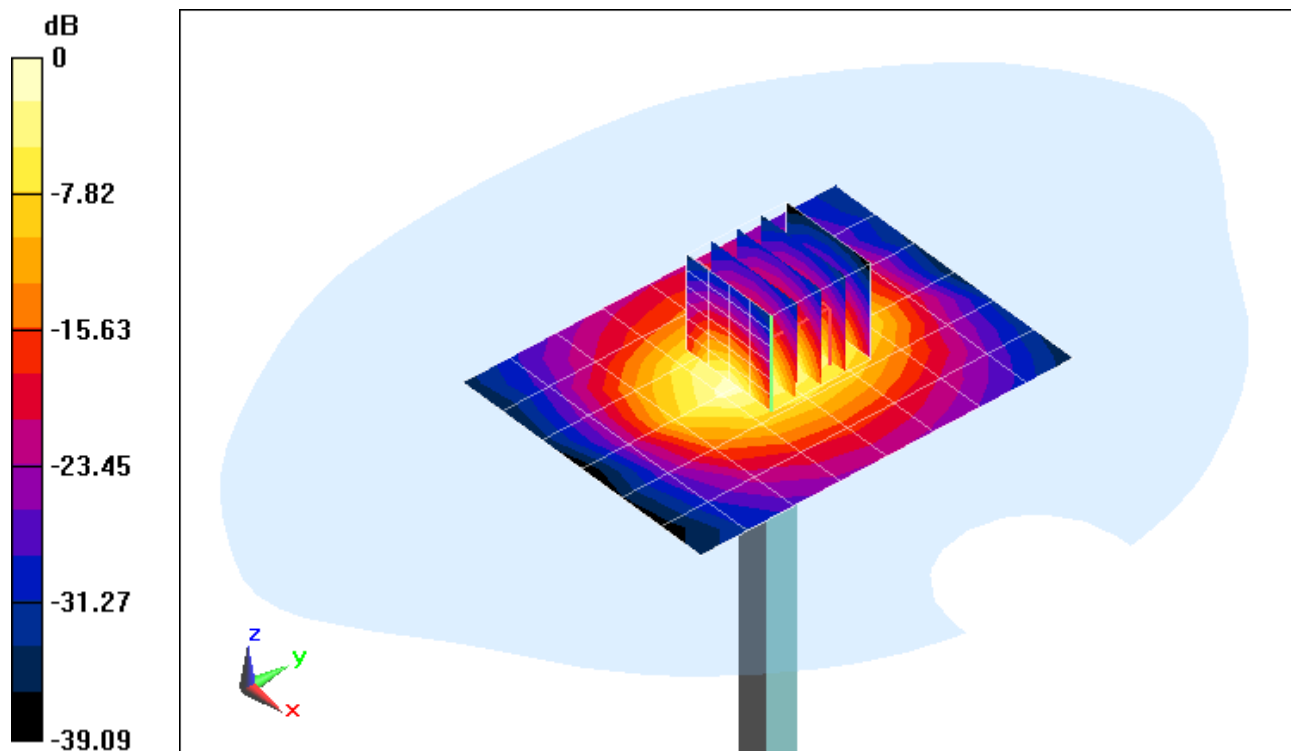
Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 4.01 mW/g; SAR(10 g) = 2.1 mW/g

Deviation: 2.56%



0 dB = 4.27 mW/g = 12.61 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.564 \text{ mho/m}$; $\epsilon_r = 53.053$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

1900 MHz System Verification

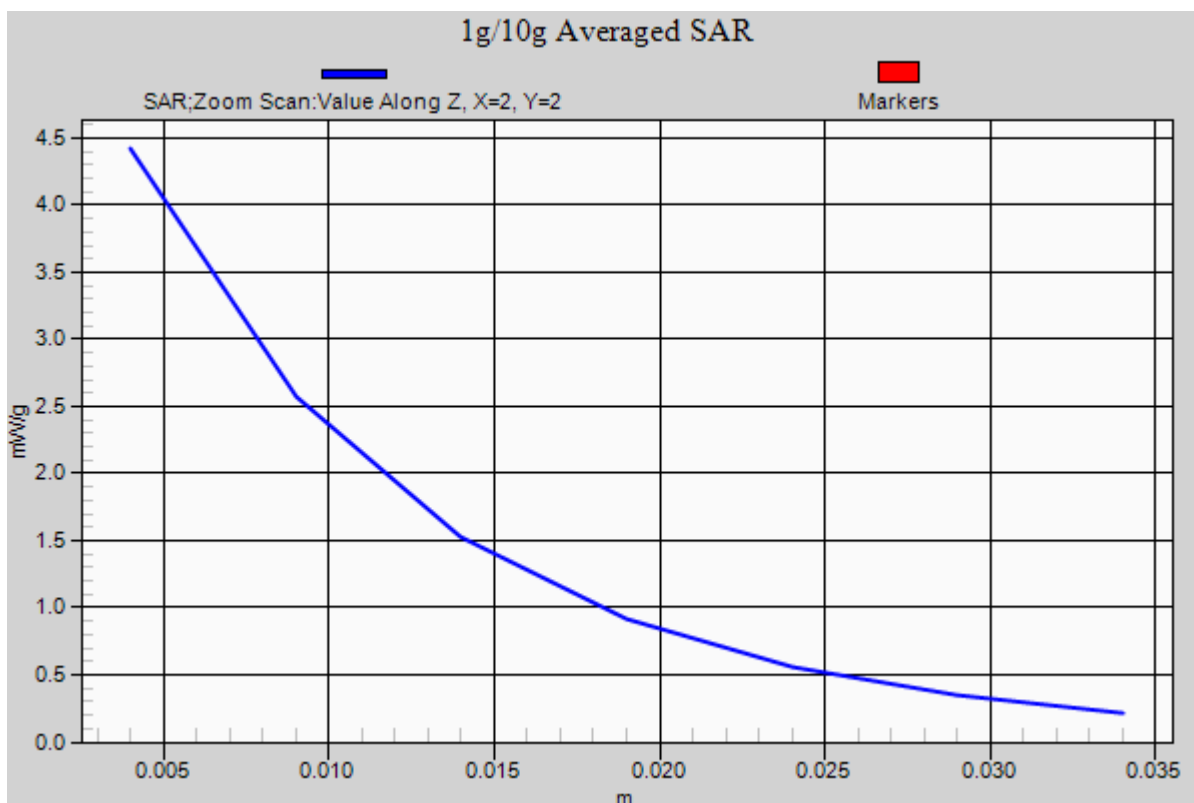
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power: 20.0 dBm (100 mW)

SAR(1 g) = 4.01 mW/g; SAR(10 g) = 2.1 mW/g

Deviation: 2.56%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.514 \text{ mho/m}$; $\epsilon_r = 52.957$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

1900 MHz System Verification

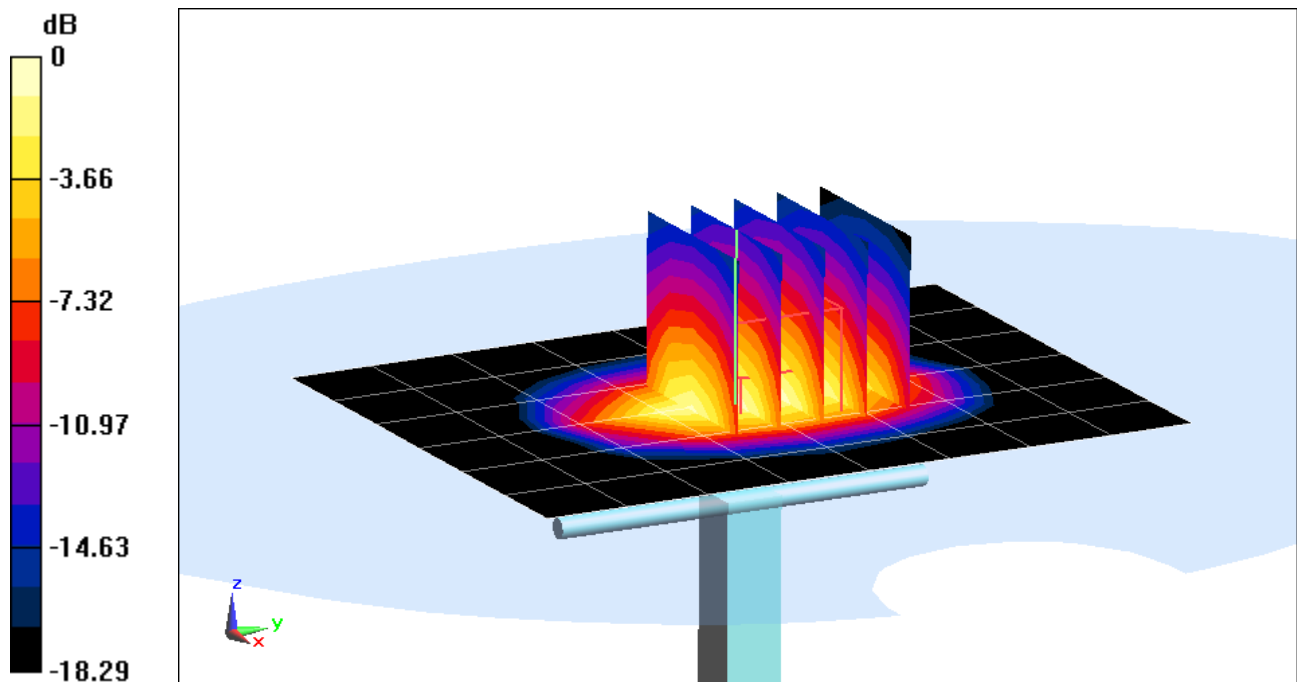
Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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) = 3.86 mW/g; SAR(10 g) = 2.01 mW/g

Deviation = -1.28 %



0 dB = 4.290mW/g = 12.65 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.514 \text{ mho/m}$; $\epsilon_r = 52.957$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); 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 (0); SEMCAD X Version 14.6.4 (4989)

1900 MHz System Verification

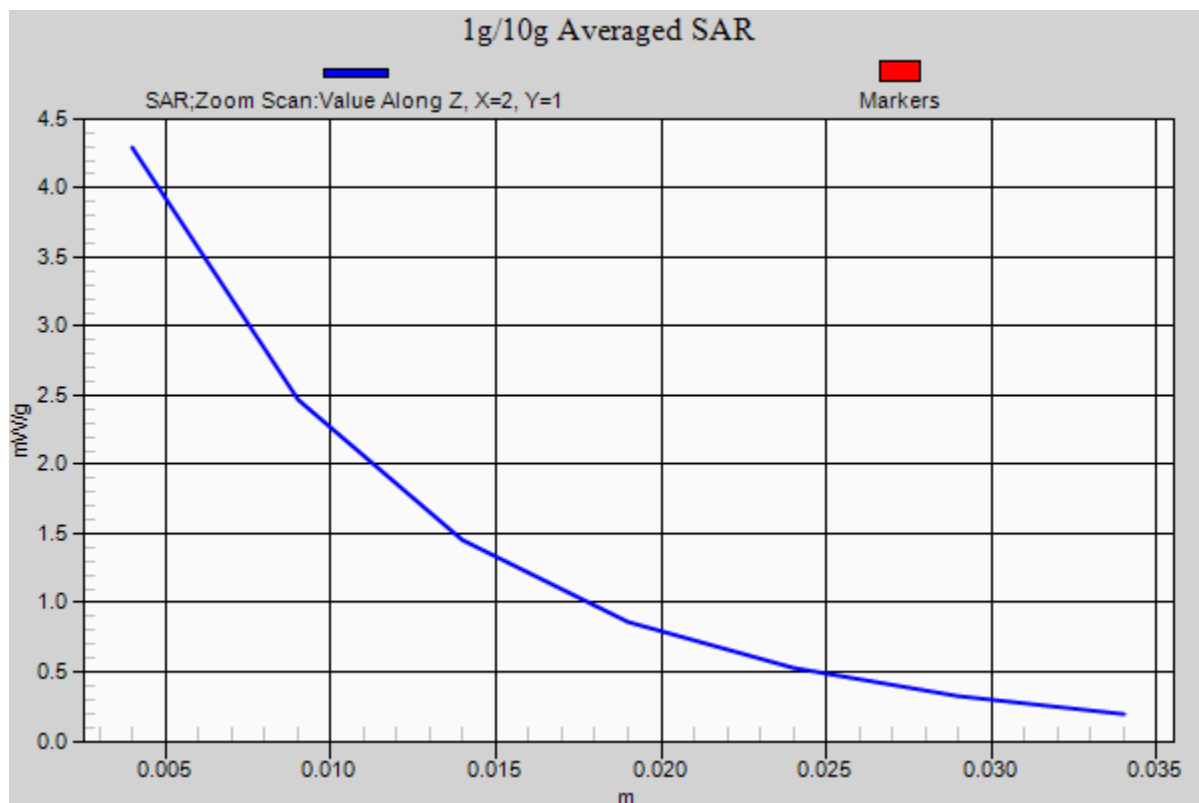
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.86 mW/g; SAR(10 g) = 2.01 mW/g

Deviation = -1.28 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 2450 MHz; Type: D2450V2; Serial: 797

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

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.909 \text{ mho/m}$; $\epsilon_r = 53.82$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

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

2450MHz System Verification

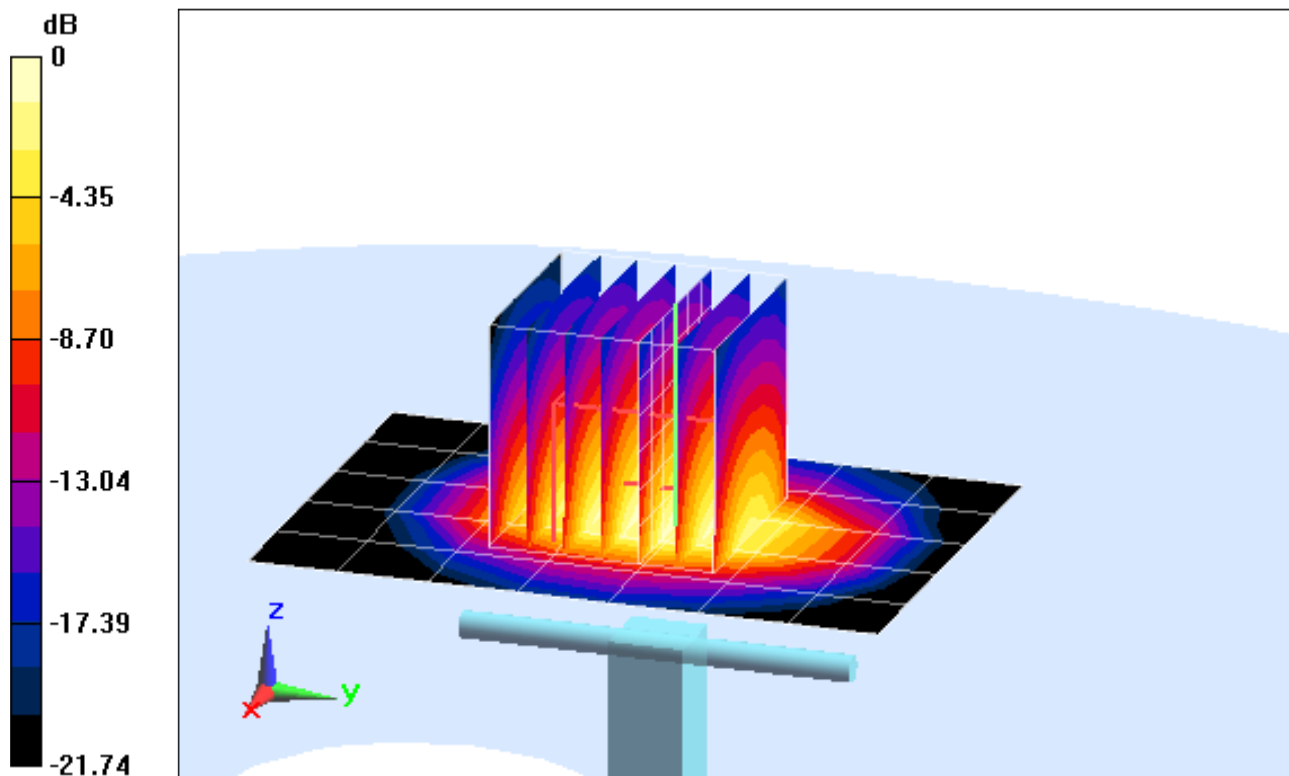
Area Scan (6x8x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 5.31 mW/g; SAR(10 g) = 2.5 mW/g

Deviation = 4.53%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 2450 MHz; Type: D2450V2; Serial: 797

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

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.909 \text{ mho/m}$; $\epsilon_r = 53.82$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

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

2450MHz System Verification

Area Scan (6x8x1): 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 = 20 dBm (100 mW)

SAR(1 g) = 5.31 mW/g; SAR(10 g) = 2.5 mW/g

Deviation = 4.53%

