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SAR COMPLIANCE EVALUATION REPORT

Applicant Name:
LG Electronics USA
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
United States

Date of Testing:
05/12/11 - 05/17/11

Test Site/Location:
PCTEST Lab, Columbia, MD, USA

FCC ID: BEJMS910

APPLICANT: LG ELECTRONICS USA

Model(s): MS910, LG-MS910
DUT Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with BT and WLAN
Test Device Serial No.: Pre-Production [S/N: SAR, CDMA RF, LTE RF]
Applicable FCC Rules: CFR §2.1093
Report Type: Certification

Band & Mode	Tx Frequency	SAR			
		Conducted Power	1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)
Cellular CDMA	824.70 - 848.31 MHz	24.57 dBm	0.48	0.52	
AWS CDMA	1711.25 - 1753.75 MHz	24.65 dBm	0.62	0.24	
PCS CDMA	1851.25 - 1908.75 MHz	24.87 dBm	0.85	0.23	
AWS LTE	1710.7 - 1754.3 MHz	23.54 dBm	0.52	0.77	0.77
PCS LTE	1850.7 - 1909.3 MHz	23.64 dBm	0.52	0.79	0.79
WLAN 2.4GHz	2412 - 2462 MHz	14.79 dBm	0.12	0.06	0.10

All models indicated are confirmed to be identical per the manufacturer.

Note: This revised Test Report (S/N: 0Y1105170891-R1.BEJ) supersedes and replaces the previously issued test report on the same subject EUT for the same type of testing as indicated. Please discard or destroy the previously issued test report and dispose of it accordingly.

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

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

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


Randy Ortanez
President



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1 LTE INFORMATION PER FCC KDB 941225 D05

KDB 941225 Pub LTE Information				
	FCC ID			BEJMS910
	Form Factor			Handset
1)	Frequency Range of each LTE transmission band			See 3)
2)	Channel Bandwidths			1.4, 3, 5, and 10 MHz BW
3)	H, M, L channel numbers and frequencies			
	Low	Mid	High	Band 4
	1710.7 MHz (CH: 19957)	1732.5 MHz (CH: 20175)	1754.3 MHz (CH: 20393)	1.4 MHz BW:
	1711.5 MHz (CH: 19965)	1732.5 MHz (CH: 20175)	1753.5 MHz (CH: 20385)	3 MHz BW
	1712.5 MHz (CH: 19975)	1732.5 MHz (CH: 20175)	1752.5 MHz (CH: 20375)	5 MHz BW
	1715 MHz (CH: 20000)	1732.5 MHz (CH: 20175)	1750 MHz (CH: 20350)	10 MHz BW
	Low	Mid	High	Band 2
	1850.7 MHz (CH: 18607)	1880 MHz (18900)	1909.3 (CH: 19193)	1.4 MHz BW:
	1851.5 MHz (CH: 18615)	1880 MHz (18900)	1908.5 (CH: 19185)	3 MHz BW
	1852.5 MHz (CH: 18625)	1880 MHz (18900)	1907.5 (CH: 19175)	5 MHz BW
	1855 MHz (CH: 18650)	1880 MHz (18900)	1905 (CH: 19150)	10 MHz BW
4)(a)	UE Category			3
(b)	Modulations Supported in UL			QPSK, 16QAM
	LTE Transmitter and Antenna Implementation			More details in Technical Descriptions
5)	Description of LTE Tx and Ant. Implementation			1 TX/RX Ant; 1 Rx Ant
6)	LTE Voice available?			VoIP
	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 (dBm)
	835 MHz CDMA			24.57
	1750 MHz CDMA			24.65
	1900 MHz CDMA			24.87
	2.4 GHz Bluetooth			9.94
	2.4 GHz WI-FI			14.79
11)	Simultaneous Tx conditions			See Section 17
12)	Power Reduction used for SAR Compliance?			No
13)	Descriptions of SAR tests			See Section 16
14)	SAR Test Plan Proposal			Discussed in the KDB Inquiry #569388
15)	SAR test data			See Section 16

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2 INTRODUCTION

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

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [24]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Device Under Test (DUT). 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.

2.1 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.

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

Figure 2-1
SAR Mathematical Equation

SAR is expressed in units of Watts per Kilogram W/kg or mW/g.

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

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/m^3)
- 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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3 TEST SITE LOCATION

3.1 INTRODUCTION

The map at the right shows the location of the PCTEST LABORATORY in Columbia, Maryland. It is in proximity to the FCC Laboratory, the Baltimore-Washington International (BWI) airport, the city of Baltimore and Washington, DC.

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49' 38" W longitude. The facility is 1.5 miles north of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4 and Industry Canada.

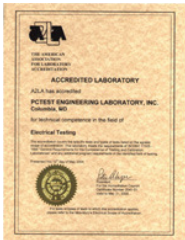


Figure 3-1

Map of the Greater Baltimore and Metropolitan Washington, D.C. area

3.2 Test Facility / Accreditations:

Measurements were performed at an independent accredited PCTEST Engineering Lab located in Columbia, MD 21045, U.S.A.



- PCTEST Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing-Aid Compatibility (HAC), Battery Safety, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (IC-2451).
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and all Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (IC-2451) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS and CDMA, and EvDO mobile phones.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO Data, CDMA 1xRTT Data

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4 SAR MEASUREMENT SETUP

4.1 Robotic System

Measurements are performed using the DASY automated dosimetric 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 Figure 4-1).

4.2 System Hardware

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and a remote control used to drive the robot motors. The PC consists of the SAR Measurement Software, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit that performs the signal amplification, signal multiplexing, A/D conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal from the DAE and transfers data to the PC card.

4.3 System Electronics

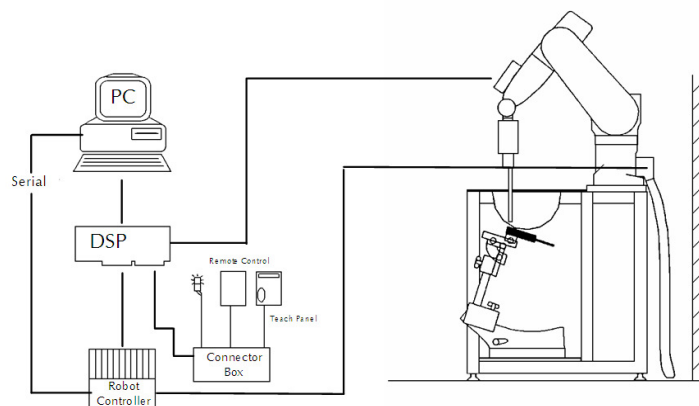


Figure 4-1
SAR Measurement System Setup

The DAE consists of a highly sensitive electrometer-grade auto-zeroing preamplifier, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

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4.4 Automated Test System Specifications

Test Software: SPEAG DASY4 version 4.7 Measurement Software
Robot: Stäubli Unimation Corp. Robot RX60L or RX90
Repeatability: 0.02 mm
No. of Axes: 6

Data Acquisition Electronic System (DAE)

Description: Signal amplifier, multiplexer, A/D converter and control logic
Measurement Range: -100 to +300 mV (16 bit resolution and two range settings:
4mV, 400mV)
Input Resistance: 200 M Ω

Data Converter

Features: Signal Amplifier, multiplexer, A/D converter & control logic
Software: SEMCAD software
Connecting Lines: Optical Downlink for data and status info
Optical upload for commands and clock

PC Interface Card

Function: Link to DAE
16-bit A/D converter for surface detection system
Two Serial & Ethernet link to robotics
Direct emergency stop output for robot



Figure 4-2
SAR Measurement System

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5.1 Probe Measurement System



Figure 5-1
SAR System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration (see Figure 5-3) and optimized for dosimetric evaluation [9]. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The measurement software reads the reflection during a software approach and looks

for the maximum using a 2nd order curve fitting (see **Error! Reference source not found.**). The approach is stopped at reaching the maximum.

5.2 Probe Specifications

Model(s):	ES3DV2, ES3DV3, EX3DV4
Frequency	10 MHz – 6.0 GHz (EX3DV4)
Range:	10 MHz – 4 GHz (ES3DV3)
Calibration:	In head and body simulating tissue at Frequencies from 300 up to 6000 MHz
Linearity:	± 0.2 dB (30 MHz to 6 GHz) for EX3DV4 ± 0.2 dB (30 MHz to 4 GHz) for ES3DV3
Dynamic Range:	10 mW/kg – 100 W/kg
Probe Length:	330 mm
Probe Tip	
Length:	20 mm
Body Diameter:	12 mm
Tip Diameter:	2.5 mm (3.9 mm for ES3DV3)
Tip-Center:	1 mm (2.0 mm for ES3DV3)
Application:	SAR Dosimetry Testing Compliance tests of mobile phones Dosimetry in strong gradient fields



Figure 5-2
Near-Field Probe

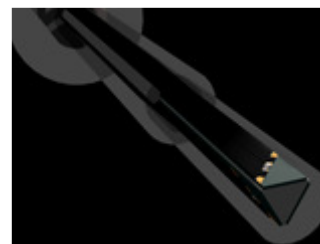


Figure 5-3
Triangular Probe Configuration

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6 SAR PHANTOM AND EQUIVALENT TISSUES

6.1 SAR Phantom

The SAM Twin Phantom V4.0 is constructed of Vinylester, a glass fiber reinforced (VE-GF) material integrated in a table. The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1.

The shape of the shell is based on data from an anatomical study designed to represent the 90th percentile of adult male head

dimensions as tabulated by the US Army [12][13]. The phantom enables the dosimetric evaluation of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. The SAM Twin Phantom shell is bisected along the mid-sagittal plane into right and left halves. The perimeter sidewalls of each phantom halves are extended to allow filling with liquid to a depth that is sufficient to minimize reflections from the upper surface.

Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. The shell phantom has a 2 mm $\pm$ 0.2 mm shell thickness (except the ear region where shell thickness increases to 6 mm $\pm$ 0.2 mm).



Figure 6-1 Twin SAM SAR Phantom

6.2 Tissue Simulating Mixture Characterization

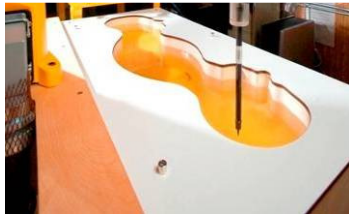


Figure 6-2 SAM Phantom with Simulating Tissue

The mixture is characterized to obtain proper dielectric constant (permittivity) and conductivity of the tissue of interest. The tissue dielectric parameters recommended in IEEE 1528 and IEC 62209 have been used as targets for the compositions, and are to match within FCC recommendations.

**Table 6-1
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

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DOSIMETRIC SAR ASSESSMENT PROCEDURE

7.1 Measurement Procedure

The evaluation was performed using the following procedure (according to IEEE 1528 and Supplement C):

1. The SAR distribution at the exposed side of the phantom was measured at a distance no greater than 4.0 mm from the inner surface of the shell. The horizontal grid spacing was 15mm x 15mm (10mm x 10mm for 5 GHz)
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 testing the 1 gram cube. This fixed point was measured and used as a reference value.
3. Based on the area scan data, the location 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 5 x 5 x 7 points. From this zoom scan, the spatial peak SAR value was evaluated per IEEE 1528 procedures:
 - a. The data was extrapolated to the surface of the outer-shell of the phantom. The total distance extrapolated was the combined distance from the center of the diodes 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 within 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 measured after the zoom scan was complete. This is the drift of the 1 gram SAR assessment. If this value drifted by more than 5%, the evaluation was repeated.

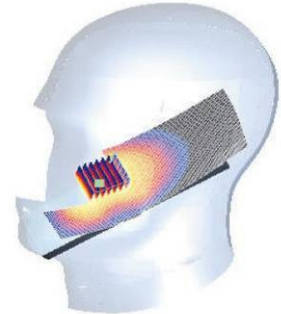


Figure 7-1
Sample SAR Area Scan

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DEFINITION OF REFERENCE POINTS

8.1 EAR REFERENCE POINT

Figure 8-1 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 8-1. 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 8-2). 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].

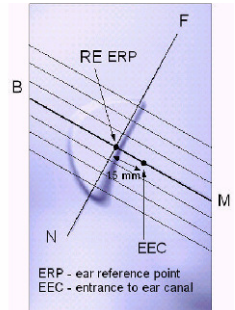


Figure 8-1
Close-Up Side view
of ERP

8.2 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 8-3). 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 its 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 8-2
Front, back and side view of SAM Twin Phantom

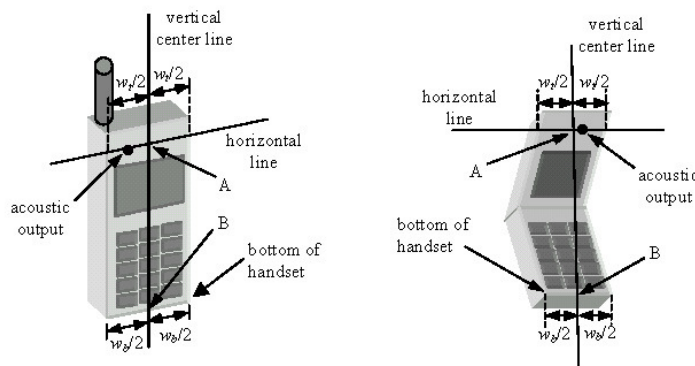


Figure 8-3
Handset Vertical Center & Horizontal Line Reference Points

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9

TEST CONFIGURATION POSITIONS

9.1 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 $\delta = 0.02$.

9.2 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 9-1), 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.

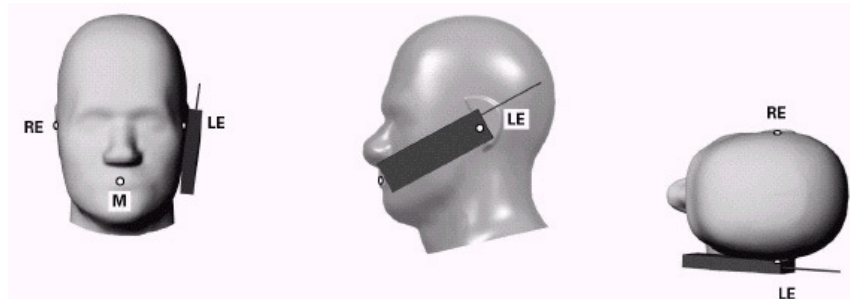


Figure 9-1 Front, Side and Top View of Cheek/Touch Position

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 9-2).

9.3 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 9-2).

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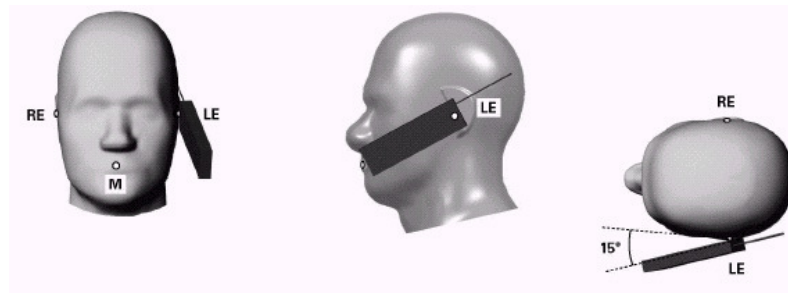


Figure 9-2 Front, Side and Top View of Ear/15° Tilt Position

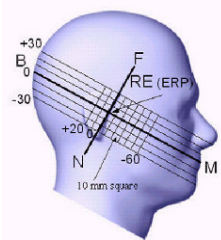


Figure 9-3
Side view w/ relevant markings



Figure 9-4 Body SAR Sample Photo
(Not Actual DUT)

9.4 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. It has been known for some time that there are SAR measurement difficulties in these regions of the SAM phantom. SAR probes are calibrated in tissue equivalent liquids with sufficient separation between the probe sensors and nearby physical boundaries to ensure scattering does not affect probe calibration. When the probe tip is moved into tight regions with multiple boundaries surrounding its sensors, probe calibration and measurement accuracy can become questionable. In addition, these measurement locations often require a probe to be tilted at steep angles, where it may no longer comply with calibration requirements and measurement protocols, or satisfy the required measurement uncertainty. In some situations it is not feasible to tilt the probe or rotate the phantom, as suggested by measurement standards, to conduct these measurements.

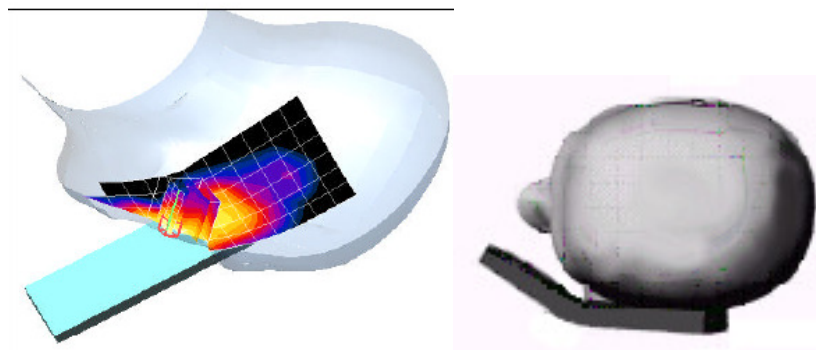


Figure 9-5
SAR Scans near the Jaw/Mouth

In order to ensure there is sufficient conservativeness for ensuring compliance until practical solutions are available, additional measurement considerations are necessary to address these technical difficulties.

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When measurements are required near the mouth, nose, jaw or similar tight regions of the SAM phantom, area or zoom scans are often unable to fully enclose the peak SAR location as required by IEEE 1528 and Supplement C, due to probe orientation and positioning difficulties. Even when limited measurements are possible, the test results could be questionable due to probe calibration and measurement uncertainty issues. 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 ½ 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 flat phantom data should allow test results to be compared uniformly across measurement systems, until suitable solutions are available in measurement standards to address certain probe calibration and positioning issues, due to implementation differences between horizontal and upright SAM configurations. These flat phantom procedures are only applicable for stand-alone SAR evaluation in tight regions of the SAM phantom, where measurement is not feasible or test results can be questionable due to probe calibration and accessibility issues. Details on device positioning and photos showing how separation distances are determined are included in the SAR report Photographs. SAR for other regions of the head must be evaluated using SAM; therefore, a phone with antennas at different locations may require flat and SAM phantom evaluation for the different antennas.

9.5 Body Holster /Belt Clip 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 9-4). 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 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.

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10 FCC RF EXPOSURE LIMITS

10.1 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.

10.2 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 10-1
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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11 POWER MEASUREMENT PROCEDURES

11.1 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.

11.1.1 MPR

MPR is permanently implemented for this device. The specific manufacturer target MPR is indicated alongside the SAR results. With the MPR permanently implemented, this device will never operate at higher power levels. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

11.1.2 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests

11.1.3 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05:

1. Per KDB Publication 941225 D05 Page 4, 3) A), QPSK with 50% RB is required.
2. Per KDB Publication 941225 D05 Page 4, 3) B), QPSK with 1 RB for both channel edges are required.
3. Per KDB Publication 941225 D05 Page 4, 4) A), 16QAM with 50% RB is required.
4. Per KDB Publication 941225 D05 Page 4, 4) B), 16QAM with 1RB for both channel edges are required.
5. Per KDB Publication 941225 D05 Page 4, A) I), 100% RB Allocation is not required to be tested since SAR is not > 1.45 W/kg.

11.1.4 Power Reduction for LTE

There is no power reduction scheme implemented for LTE operations for this model.

11.2 SAR Measurement Conditions for CDMA2000

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

11.2.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by “SAR Measurement Procedures for 3G Devices” v02, October 2007. Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the “All Up” condition.

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, 3GPP2 C.S0011 Table 4.4.5.2-1 parameters were applied.

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3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH₀ and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH₀ data rate.
4. Under RC3, 3GPP2 C.S0011 Table 4.4.5.2-2, Table 13-2 was applied.
5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

Table 11-1
Parameters for Max. Power for RC1

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

Table 11-2
Parameters for Max. Power for RC3

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

11.2.2 Head SAR Measurements

SAR for head exposure configurations is measured in RC3 with the DUT configured to transmit at full rate using Loopback Service Option SO55. SAR for RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1 using the exposure configuration that results in the highest SAR for that channel in RC3.

11.2.3 Body SAR Measurements

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

Body SAR in RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1; with Loopback Service Option SO55, at full rate, using the body exposure configuration that results in the highest SAR for that channel in RC3.

11.2.4 Handsets with EVDO

For handsets with EVDO capabilities, when the maximum average output of each channel in Rev. 0 is less than ¼ dB higher than that measured in RC3 (1x RTT), body SAR for EVDO is not required. Otherwise, SAR for Rev. 0 is measured on the maximum output channel at 153.6 kbps using the body exposure configuration that results in the highest SAR for that channel in RC3. SAR for Rev. A is not required when the maximum average output of each channel is less than that measured in Rev. 0 or less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel for Rev. A using a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations. A Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots would be configured in the downlink for both Rev. 0 and Rev. A.

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11.2.5 Power Reduction for CDMA/EVDO

There is no power reduction scheme implemented for CDMA/EVDO operations for this model.

11.3 SAR Measurements for 802.11 modes

The SAR test procedures for devices with 802.11 modes are adopted from FCC KDB 248227 publication.

Normal network operating configurations are not suitable for measuring the SAR of 802.11 modes. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices is therefore measured using chipset based test mode software to ensure the results are consistent and reliable.

11.3.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. According to KDB 248227, 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 correspond to actual channel frequencies defined for domestic use. If the device has switched diversity, SAR is measured with only one antenna transmitting at a time during each SAR measurement, with a fixed modulation and data rate, and antenna pattern. The same data pattern was used for all measurements.

11.3.2 2.4 GHz and 5 GHz Frequency Channel Requirements

802.11 modes are tested independently according to the service requirements in each frequency band.

802.11a is tested for UNII operations on channels listed on Table 11-3 with a check mark. These are referred to as the “default test channels”. Adjacent channels marked with an asterisk represent channels to be tested if the powers are greater than that of the check marked channels.

If the SAR < 0.8 W/kg within a colored 5 GHz band, then only testing SAR at the highest output channel is required.

802.11g/n mode was evaluated only if the output power was 0.25 dB higher than the 802.11b mode.

Table 11-3 IEEE 802.11 Default Test Channels

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

12 FCC PERSONAL WIRELESS ROUTER CONFIGURATIONS

12.1 Personal Wireless Router Considerations

The FCC has provided guidance in KDB Publication 941225 D06 for battery-operated handsets that have the capability to transmit and receive Internet connectivity through simultaneous transmission of WIFI in conjunction with another transmitter. SAR test considerations are based on a standard composite test separation distance of 10 mm from the edges, front and back of the device ($L \times W \geq 9\text{cm} \times 5\text{cm}$) with antennas 2.5 cm or closer to the edge of the device. This has been determined by the FCC from general mixed use conditions for this type of devices. If the device is smaller, then a 5mm distance is required.

12.2 SAR Test Setup for Personal Wireless Router Features

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 valid within a single transmission frequency.

The standalone head and body SAR data for the applicable voice and data configurations in each wireless mode and frequency band is analyzed separately to determine simultaneous transmission SAR test exclusion according to the procedures in KDB 648474 publication.

12.3 Head and Body-Worn Accessory SAR with Hotspot Mode

When hotspot mode use is not restricted during voice calls, SAR compliance is addressed for the simultaneous voice and hotspot data configurations in head and body-worn accessory use conditions.

This model does not support SVLTE (Simultaneous CDMA Voice and LTE) or SVDO (Simultaneous CDMA Voice and EVDO) and therefore does not support router functions simultaneously with voice which is described in the technical descriptions for this device.

12.4 Power Reduction for Portable Hotspot Mode

When the portable hotspot mode is enabled it does not apply any power reduction.

12.5 Applicable Router Modes

This device only supports LTE mode router operations and does not support 1X RTT Data or EVDO when portable hotspot mode is enabled.

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12.6 SAR Test Configurations

Table 12-1
Hotspot Sides for SAR Testing

Mobile Hotspot Sides for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
Band 4 LTE	Yes	Yes	Yes	No	No	Yes
Band 2 LTE	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN	Yes	Yes	No	Yes	Yes	No

Note: When Hotspot mode is active, 1X-RTT and EVDO operations for all bands are disabled. Therefore, Hotspot edges per KDB 941225 D06 were not required to be evaluated for CDMA.

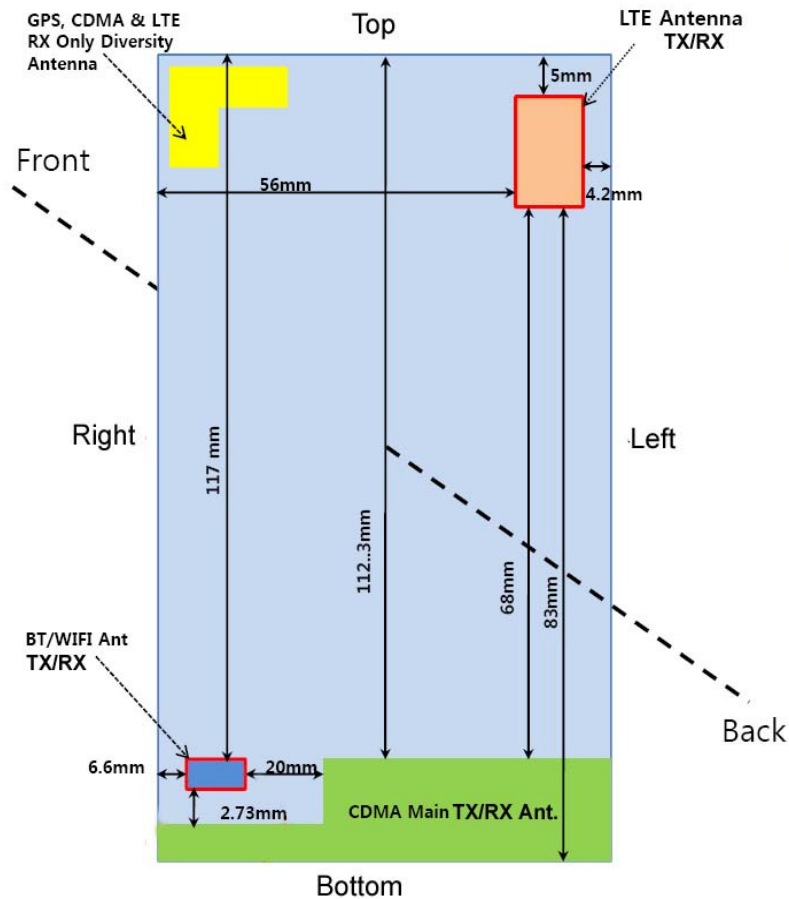


Figure 12-1
Identification of Sides/Edges for SAR Testing (Back View)

Note: Per FCC KDB Publication 941225 D06, the edges with antennas within 2.5 cm are required to be evaluated for SAR. See Figure 12-1 for distances of the actual device.

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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 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> - when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas Licensed & Unlicensed - 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: Licensed & Unlicensed 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
Unlicensed Transmitters	When there is no simultaneous transmission – - output ≤ 60/f: SAR not required - output > 60/f: stand-alone SAR required When there is simultaneous transmission – <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> When stand-alone SAR is required - 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	

Figure 13-2
SAR Evaluation Requirements for Multiple Transmitter Handsets

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14 OUTPUT POWER MEASUREMENTS

14.1 LTE Mode

Table 14-1
AWS LTE Low Ch. RF Output Conducted Powers

Frequency [MHz]	Uplink Channel Number	BW[MHz]	# of Resource Blocks	RB Offset	Modulation	Target Power	MPR per 3GPP [dB]	MPR [dB]	Maximum Average Power [dBm]
1710.7	19957	1.4	1	0	QPSK	23.2	0	0	23.28
1710.7	19957	1.4	1	5	QPSK	23.2	0	0	23.35
1710.7	19957	1.4	3	2	QPSK	23.2	0	0	23.02
1710.7	19957	1.4	6	0	QPSK	23.2	0-1	0.5	22.64
1710.7	19957	1.4	1	0	16-QAM	23.2	0-1	0.8	22.58
1710.7	19957	1.4	1	5	16-QAM	23.2	0-1	0.8	22.61
1710.7	19957	1.4	3	2	16-QAM	23.2	0-1	0.8	22.63
1710.7	19957	1.4	6	0	16-QAM	23.2	0-2	1.5	21.65
1711.5	19965	3	1	0	QPSK	23.2	0	0	23.14
1711.5	19965	3	1	14	QPSK	23.2	0	0	23.38
1711.5	19965	3	8	4	QPSK	23.2	0-1	0.5	22.78
1711.5	19965	3	15	0	QPSK	23.2	0-1	0.5	22.68
1711.5	19965	3	1	0	16-QAM	23.2	0-1	1	22.44
1711.5	19965	3	1	14	16-QAM	23.2	0-1	1	22.39
1711.5	19965	3	8	4	16-QAM	23.2	0-2	1.5	21.94
1711.5	19965	3	15	0	16-QAM	23.2	0-2	1.5	21.64
1712.5	19975	5	1	0	QPSK	23.2	0	0	23.25
1712.5	19975	5	1	24	QPSK	23.2	0	0	23.21
1712.5	19975	5	12	6	QPSK	23.2	0-1	0.5	22.75
1712.5	19975	5	25	0	QPSK	23.2	0-1	0.5	22.65
1712.5	19975	5	1	0	16-QAM	23.2	0-1	0.5	22.53
1712.5	19975	5	1	24	16-QAM	23.2	0-1	0.5	22.61
1712.5	19975	5	12	6	16-QAM	23.2	0-2	1.5	21.59
1712.5	19975	5	25	0	16-QAM	23.2	0-2	1.5	21.62
1715	20000	10	1	0	QPSK	23.2	0	0	23.41
1715	20000	10	1	49	QPSK	23.2	0	0	23.36
1715	20000	10	25	12	QPSK	23.2	0-1	0.5	22.78
1715	20000	10	50	0	QPSK	23.2	0-1	0.5	22.94
1715	20000	10	1	0	16-QAM	23.2	0-1	0.5	22.53
1715	20000	10	1	49	16-QAM	23.2	0-1	0.5	22.64
1715	20000	10	25	12	16-QAM	23.2	0-2	1.5	21.67
1715	20000	10	50	0	16-QAM	23.2	0-2	1.5	21.85

Note: Differences from expected MPR levels are a result of measurement uncertainty. Per the manufacturer, the measured powers are acceptable for use within the intended network infrastructure. Powers measured below the expected levels on the devices were extrapolated to ensure compliance for SAR.

FCC ID: BEJMS910		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1105170891-R1.BEJ	Test Dates: 05/12/11 - 05/17/11	DUT Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with BT and WLAN		Page 22 of 48

Table 14-2
AWS LTE Mid Ch. RF Output Conducted Powers

Frequency [MHz]	Uplink Channel Number	BW[MHz]	# of Resouce Blocks	RB Offset	Modulation	Target Power	MPR per 3GPP [dB]	MPR [dB]	Maximum Average Power [dBm]
1732.5	20175	1.4	1	0	QPSK	23.2	0	0	23.37
1732.5	20175	1.4	1	5	QPSK	23.2	0	0	23.28
1732.5	20175	1.4	3	2	QPSK	23.2	0	0	23.27
1732.5	20175	1.4	6	0	QPSK	23.2	0-1	0.5	22.77
1732.5	20175	1.4	1	0	16-QAM	23.2	0-1	0.8	22.55
1732.5	20175	1.4	1	5	16-QAM	23.2	0-1	0.8	22.58
1732.5	20175	1.4	3	2	16-QAM	23.2	0-1	0.8	22.62
1732.5	20175	1.4	6	0	16-QAM	23.2	0-2	1.5	21.94
1732.5	20175	3	1	0	QPSK	23.2	0	0	23.42
1732.5	20175	3	1	14	QPSK	23.2	0	0	23.44
1732.5	20175	3	8	4	QPSK	23.2	0-1	0.5	22.8
1732.5	20175	3	15	0	QPSK	23.2	0-1	0.5	22.72
1732.5	20175	3	1	0	16-QAM	23.2	0-1	1	22.41
1732.5	20175	3	1	14	16-QAM	23.2	0-1	1	22.38
1732.5	20175	3	8	4	16-QAM	23.2	0-2	1.5	21.89
1732.5	20175	3	15	0	16-QAM	23.2	0-2	1.5	21.75
1732.5	20175	5	1	0	QPSK	23.2	0	0	23.42
1732.5	20175	5	1	24	QPSK	23.2	0	0	23.36
1732.5	20175	5	12	6	QPSK	23.2	0-1	0.5	22.71
1732.5	20175	5	25	0	QPSK	23.2	0-1	0.5	22.67
1732.5	20175	5	1	0	16-QAM	23.2	0-1	0.5	22.63
1732.5	20175	5	1	14	16-QAM	23.2	0-1	0.5	22.53
1732.5	20175	5	12	6	16-QAM	23.2	0-2	1.5	21.93
1732.5	20175	5	25	0	16-QAM	23.2	0-2	1.5	21.66
1732.5	20175	10	1	0	QPSK	23.2	0	0	23.54
1732.5	20175	10	1	49	QPSK	23.2	0	0	23.29
1732.5	20175	10	25	12	QPSK	23.2	0-1	0.5	22.67
1732.5	20175	10	50	0	QPSK	23.2	0-1	0.5	22.69
1732.5	20175	10	1	0	16-QAM	23.2	0-1	0.5	22.69
1732.5	20175	10	1	49	16-QAM	23.2	0-1	0.5	22.57
1732.5	20175	10	25	12	16-QAM	23.2	0-2	1.5	21.67
1732.5	20175	10	50	0	16-QAM	23.2	0-2	1.5	21.82

Note: Differences from expected MPR levels are a result of measurement uncertainty. Per the manufacturer, the measured powers are acceptable for use within the intended network infrastructure. Powers measured below the expected levels on the devices were extrapolated to ensure compliance for SAR.

Table 14-3
AWS LTE High Ch. RF Output Conducted Powers

Frequency [MHz]	Uplink Channel Number	BW[MHz]	# of Resouce Blocks	RB Offset	Modulation	Target Power	MPR per 3GPP [dB]	MPR [dB]	Maximum Average Power [dBm]
1754.3	20393	1.4	1	0	QPSK	23.2	0	0	22.94
1754.3	20393	1.4	1	5	QPSK	23.2	0	0	22.93
1754.3	20393	1.4	3	2	QPSK	23.2	0	0	22.82
1754.3	20393	1.4	6	0	QPSK	23.2	0-1	0.5	22.47
1754.3	20393	1.4	1	0	16-QAM	23.2	0-1	0.8	22.1
1754.3	20393	1.4	1	5	16-QAM	23.2	0-1	0.8	22.17
1754.3	20393	1.4	3	2	16-QAM	23.2	0-1	0.8	22.48
1754.3	20393	1.4	6	0	16-QAM	23.2	0-2	1.5	21.47
1753.5	20385	3	1	0	QPSK	23.2	0	0	22.89
1753.5	20385	3	1	14	QPSK	23.2	0	0	22.9
1753.5	20385	3	8	4	QPSK	23.2	0-1	0.5	22.46
1753.5	20385	3	15	0	QPSK	23.2	0-1	0.5	22.48
1753.5	20385	3	1	0	16-QAM	23.2	0-1	1	22.18
1753.5	20385	3	1	14	16-QAM	23.2	0-1	1	22.32
1753.5	20385	3	8	4	16-QAM	23.2	0-2	1.5	21.73
1753.5	20385	3	15	0	16-QAM	23.2	0-2	1.5	21.45
1752.5	20375	5	1	0	QPSK	23.2	0	0	23.07
1752.5	20375	5	1	24	QPSK	23.2	0	0	22.96
1752.5	20375	5	12	6	QPSK	23.2	0-1	0.5	22.53
1752.5	20375	5	25	0	QPSK	23.2	0-1	0.5	22.48
1752.5	20375	5	1	0	16-QAM	23.2	0-1	0.5	22.47
1752.5	20375	5	1	24	16-QAM	23.2	0-1	0.5	22.45
1752.5	20375	5	12	6	16-QAM	23.2	0-2	1.5	21.6
1752.5	20375	5	25	0	16-QAM	23.2	0-2	1.5	21.75
1750	20350	10	1	0	QPSK	23.2	0	0	23.47
1750	20350	10	1	49	QPSK	23.2	0	0	23.17
1750	20350	10	25	12	QPSK	23.2	0-1	0.5	22.62
1750	20350	10	50	0	QPSK	23.2	0-1	0.5	22.68
1750	20350	10	1	0	16-QAM	23.2	0-1	0.5	22.63
1750	20350	10	1	49	16-QAM	23.2	0-1	0.5	22.38
1750	20350	10	25	12	16-QAM	23.2	0-2	1.5	21.47
1750	20350	10	50	0	16-QAM	23.2	0-2	1.5	21.59

Note: Differences from expected MPR levels are a result of measurement uncertainty. Per the manufacturer, the measured powers are acceptable for use within the intended network infrastructure. Powers measured below the expected levels on the devices were extrapolated to ensure compliance for SAR.

Table 14-4
PCS LTE Low Ch. RF Output Conducted Powers

Frequency [MHz]	Uplink Channel Number	BW[MHz]	# of Resource Blocks	RB Offset	Modulation	Target Power	MPR per 3GPP [dB]	MPR [dB]	Maximum Average Power [dBm]
1850.7	18607	1.4	1	0	QPSK	23.2	0	0	22.88
1850.7	18607	1.4	1	5	QPSK	23.2	0	0	22.86
1850.7	18607	1.4	3	2	QPSK	23.2	0	0	22.79
1850.7	18607	1.4	6	0	QPSK	23.2	0-1	1	22.33
1850.7	18607	1.4	1	0	16-QAM	23.2	0-1	1	22.21
1850.7	18607	1.4	1	5	16-QAM	23.2	0-1	1	22.12
1850.7	18607	1.4	3	2	16-QAM	23.2	0-1	1	22.44
1850.7	18607	1.4	6	0	16-QAM	23.2	0-2	1.5	21.55
1851.5	18615	3	1	0	QPSK	23.2	0	0	22.91
1851.5	18615	3	1	14	QPSK	23.2	0	0	23.14
1851.5	18615	3	8	4	QPSK	23.2	0-1	1	22.26
1851.5	18615	3	15	0	QPSK	23.2	0-1	1	22.27
1851.5	18615	3	1	0	16-QAM	23.2	0-1	1	22.28
1851.5	18615	3	1	14	16-QAM	23.2	0-1	1	22.37
1851.5	18615	3	8	4	16-QAM	23.2	0-2	1.5	21.47
1851.5	18615	3	15	0	16-QAM	23.2	0-2	2	21.42
1852.5	18625	5	1	0	QPSK	23.2	0	0	23.04
1852.5	18625	5	1	24	QPSK	23.2	0	0	23.13
1852.5	18625	5	12	6	QPSK	23.2	0-1	1	22.41
1852.5	18625	5	25	0	QPSK	23.2	0-1	1	22.43
1852.5	18625	5	1	0	16-QAM	23.2	0-1	1	22.07
1852.5	18625	5	1	24	16-QAM	23.2	0-1	1	22.41
1852.5	18625	5	12	6	16-QAM	23.2	0-2	1.5	21.57
1852.5	18625	5	25	0	16-QAM	23.2	0-2	1.5	21.54
1855	18650	10	1	0	QPSK	23.2	0	0	22.89
1855	18650	10	1	49	QPSK	23.2	0	0	23.64
1855	18650	10	25	12	QPSK	23.2	0-1	0.5	22.57
1855	18650	10	50	0	QPSK	23.2	0-1	0.5	22.62
1855	18650	10	1	0	16-QAM	23.2	0-1	0.8	22.16
1855	18650	10	1	49	16-QAM	23.2	0-1	0.8	22.64
1855	18650	10	25	12	16-QAM	23.2	0-2	1.5	21.76
1855	18650	10	50	0	16-QAM	23.2	0-2	1.5	21.71

Note: Differences from expected MPR levels are a result of measurement uncertainty. Per the manufacturer, the measured powers are acceptable for use within the intended network infrastructure. Powers measured below the expected levels on the devices were extrapolated to ensure compliance for SAR.

Table 14-5
PCS LTE Mid Ch. RF Output Conducted Powers

Frequency [MHz]	Uplink Channel Number	BW[MHz]	# of Resource Blocks	RB Offset	Modulation	Target Power	MPR per 3GPP [dB]	MPR [dB]	Maximum Average Power [dBm]
1880	18900	1.4	1	0	QPSK	23.2	0	0	22.91
1880	18900	1.4	1	5	QPSK	23.2	0	0	23.05
1880	18900	1.4	3	2	QPSK	23.2	0	0	22.87
1880	18900	1.4	6	0	QPSK	23.2	0-1	1	22.41
1880	18900	1.4	1	0	16-QAM	23.2	0-1	1	22.19
1880	18900	1.4	1	5	16-QAM	23.2	0-1	1	22.32
1880	18900	1.4	3	2	16-QAM	23.2	0-1	1	22.39
1880	18900	1.4	6	0	16-QAM	23.2	0-2	1.5	21.48
1880	18900	3	1	0	QPSK	23.2	0	0	22.88
1880	18900	3	1	14	QPSK	23.2	0	0	23.03
1880	18900	3	8	4	QPSK	23.2	0-1	1	22.3
1880	18900	3	15	0	QPSK	23.2	0-1	1	22.42
1880	18900	3	1	0	16-QAM	23.2	0-1	1	22.18
1880	18900	3	1	14	16-QAM	23.2	0-1	1	22.15
1880	18900	3	8	4	16-QAM	23.2	0-2	1.5	21.59
1880	18900	3	15	0	16-QAM	23.2	0-2	2	21.31
1880	18900	5	1	0	QPSK	23.2	0	0	23.04
1880	18900	5	1	24	QPSK	23.2	0	0	23.07
1880	18900	5	12	6	QPSK	23.2	0-1	1	22.47
1880	18900	5	25	0	QPSK	23.2	0-1	1	22.45
1880	18900	5	1	0	16-QAM	23.2	0-1	1	22.23
1880	18900	5	1	24	16-QAM	23.2	0-1	1	22.23
1880	18900	5	12	6	16-QAM	23.2	0-2	1.5	21.52
1880	18900	5	25	0	16-QAM	23.2	0-2	1.5	21.51
1880	18900	10	1	0	QPSK	23.2	0	0	23.03
1880	18900	10	1	49	QPSK	23.2	0	0	23.27
1880	18900	10	25	12	QPSK	23.2	0-1	0.5	22.51
1880	18900	10	50	0	QPSK	23.2	0-1	0.5	22.48
1880	18900	10	1	0	16-QAM	23.2	0-1	0.8	22.22
1880	18900	10	1	49	16-QAM	23.2	0-1	0.8	22.45
1880	18900	10	25	12	16-QAM	23.2	0-2	1.5	21.54
1880	18900	10	50	0	16-QAM	23.2	0-2	1.5	21.49

Note: Differences from expected MPR levels are a result of measurement uncertainty. Per the manufacturer, the measured powers are acceptable for use within the intended network infrastructure. Powers measured below the expected levels on the devices were extrapolated to ensure compliance for SAR.

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Table 14-6
PCS LTE High Ch. RF Output Conducted Powers

Frequency [MHz]	Uplink Channel Number	BW[MHz]	# of Resource Blocks	RB Offset	Modulation	Target Power	MPR per 3GPP [dB]	MPR [dB]	Maximum Average Power [dBm]
1909.3	19193	1.4	1	0	QPSK	23.2	0	0	23.03
1909.3	19193	1.4	1	5	QPSK	23.2	0	0	22.78
1909.3	19193	1.4	3	2	QPSK	23.2	0	0	22.75
1909.3	19193	1.4	6	0	QPSK	23.2	0-1	1	22.43
1909.3	19193	1.4	1	0	16-QAM	23.2	0-1	1	22.34
1909.3	19193	1.4	1	5	16-QAM	23.2	0-1	1	22.1
1909.3	19193	1.4	3	2	16-QAM	23.2	0-1	1	22.34
1909.3	19193	1.4	6	0	16-QAM	23.2	0-2	1.5	21.63
1908.5	19185	3	1	0	QPSK	23.2	0	0	23.03
1908.5	19185	3	1	14	QPSK	23.2	0	0	22.91
1908.5	19185	3	8	4	QPSK	23.2	0-1	1	22.24
1908.5	19185	3	15	0	QPSK	23.2	0-1	1	22.32
1908.5	19185	3	1	0	16-QAM	23.2	0-1	1	22.31
1908.5	19185	3	1	14	16-QAM	23.2	0-1	1	22.23
1908.5	19185	3	8	4	16-QAM	23.2	0-2	1.5	21.76
1908.5	19185	3	15	0	16-QAM	23.2	0-2	2	21.33
1907.5	19175	5	1	0	QPSK	23.2	0	0	23.01
1907.5	19175	5	1	24	QPSK	23.2	0	0	22.93
1907.5	19175	5	12	6	QPSK	23.2	0-1	1	22.41
1907.5	19175	5	25	0	QPSK	23.2	0-1	1	22.4
1907.5	19175	5	1	0	16-QAM	23.2	0-1	1	22.13
1907.5	19175	5	1	24	16-QAM	23.2	0-1	1	22.06
1907.5	19175	5	12	6	16-QAM	23.2	0-2	1.5	21.56
1907.5	19175	5	25	0	16-QAM	23.2	0-2	1.5	21.53
1905	19150	10	1	0	QPSK	23.2	0	0	23.59
1905	19150	10	1	49	QPSK	23.2	0	0	23.01
1905	19150	10	25	12	QPSK	23.2	0-1	0.5	22.47
1905	19150	10	50	0	QPSK	23.2	0-1	0.5	22.58
1905	19150	10	1	0	16-QAM	23.2	0-1	0.8	22.61
1905	19150	10	1	49	16-QAM	23.2	0-1	0.8	22.25
1905	19150	10	25	12	16-QAM	23.2	0-2	1.5	21.71
1905	19150	10	50	0	16-QAM	23.2	0-2	1.5	21.71

Note: Differences from expected MPR levels are a result of measurement uncertainty. Per the manufacturer, the measured powers are acceptable for use within the intended network infrastructure. Powers measured below the expected levels on the devices were extrapolated to ensure compliance for SAR.

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14.2 CDMA2000 Modes

Band	Channel	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	RC1	RC3	FCH	(RTAP)	(RETAP)
Cellular	1013	24.57	24.23	24.57	24.45	24.54
	384	24.22	24.29	24.43	24.46	24.53
	777	24.41	24.34	24.47	24.47	24.58
AWS	25	24.60	24.54	24.65	24.27	24.25
	450	24.53	24.46	24.54	24.22	24.24
	875	24.51	24.51	24.35	24.25	24.25
PCS	25	24.86	24.94	24.87	24.57	24.64
	600	24.54	24.83	24.79	24.35	24.43
	1175	24.44	24.63	24.57	24.25	24.30

Note: RC1 is only applicable for IS-95 compatibility.

Per KDB Publication 941225 D01:

1. Head SAR was tested with SO55 RC3. SO55 RC1 was not required since the average output power was not more than 0.25 dB than the SO55 RC3 powers.
2. Body-Worn SAR was tested with TDSO32 FCH mode. EVDO and TDSO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO32 FCH powers.

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14.3 WIFI Mode

Table 14-7
IEEE 802.11b Average RF Power

Freq [MHz]	Channel	Data Rate [Mbps]	Average Power (dBm)
2412	1	1	14.52
		2	14.38
		5.5	14.48
		11	14.14
2437	6	1	14.25
		2	14.16
		5.5	14.02
		11	13.78
2462	11	1	14.79
		2	14.52
		5.5	14.48
		11	14.40

Table 14-8
IEEE 802.11g Average RF Power

Freq [MHz]	Channel	Data Rate [Mbps]	Average Power (dBm)
2412	1	6	9.82
		9	9.70
		12	9.55
		18	9.50
		24	9.36
		36	9.64
		48	9.45
		54	9.58
2437	6	6	9.22
		9	9.04
		12	9.01
		18	9.01
		24	8.93
		36	9.15
		48	9.03
		54	9.07
2462	11	6	9.94
		9	9.72
		12	9.75
		18	9.93
		24	9.81
		36	9.60
		48	9.71
		54	9.76

Table 14-9
IEEE 802.11n Average RF Power

Freq [MHz]	Channel	Data Rate [Mbps]	Average Power (dBm)
2412	1	6.5/7.2	13.66
		13/14.40	13.35
		19.5/21.70	13.32
		26/28.90	13.27
		29/43.3	13.24
		52/57.80	13.25
		58.50/65	13.31
		65/72.2	13.04
2437	6	6.5/7.2	12.76
		13/14.40	12.85
		19.5/21.70	12.59
		26/28.90	12.70
		29/43.3	12.58
		52/57.80	12.65
		58.50/65	12.74
		65/72.2	12.72
2462	11	6.5/7.2	13.59
		13/14.40	13.55
		19.5/21.70	13.45
		26/28.90	13.54
		29/43.3	13.37
		52/57.80	13.28
		58.50/65	13.42
		65/72.2	13.54

Notes:

1. The maximum RF output power for all channels across all data rates was measured.
2. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes: IEEE 802.11n for 5GHz bands and IEEE 802.11g/n for 2.4 GHz Bands and higher data rates for both bands were not investigated since the average output powers were not greater than 0.25 dB that of the corresponding channel in the lowest data rate. Bolded powers above were tested for SAR.

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15 SYSTEM VERIFICATION

15.1 Tissue Verification

Table 15-1
Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	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
05/16/2011	835H	820	0.855	39.68	0.898	41.571	-4.79%	-4.55%
		835	0.856	39.48	0.900	41.500	-4.89%	-4.87%
		850	0.874	39.48	0.916	41.500	-4.59%	-4.87%
05/16/2011	835B	820	0.958	53.80	0.969	55.284	-1.14%	-2.68%
		835	0.964	53.66	0.970	55.200	-0.62%	-2.79%
		850	0.985	53.64	0.988	55.154	-0.30%	-2.75%
05/12/2011	1750H	1710	1.367	40.37	1.348	40.136	1.41%	0.58%
		1750	1.416	40.28	1.370	40.100	3.36%	0.45%
		1790	1.451	39.95	1.394	40.020	4.09%	-0.17%
05/12/2011	1750B	1710	1.462	51.61	1.460	53.540	0.14%	-3.60%
		1750	1.509	51.47	1.490	53.430	1.28%	-3.67%
		1790	1.532	51.27	1.510	53.330	1.46%	-3.86%
05/16/2011	1900H	1850	1.375	38.48	1.400	40.000	-1.79%	-3.80%
		1880	1.409	38.38	1.400	40.000	0.64%	-4.05%
		1910	1.431	38.28	1.400	40.000	2.21%	-4.30%
05/16/2011	1900B	1850	1.524	52.41	1.520	53.300	0.26%	-1.67%
		1880	1.553	52.28	1.520	53.300	2.17%	-1.91%
		1910	1.580	52.23	1.520	53.300	3.95%	-2.01%
05/17/2011	2450H	2401	1.824	38.78	1.758	39.298	3.75%	-1.32%
		2450	1.879	38.57	1.800	39.200	4.39%	-1.61%
		2499	1.935	38.35	1.852	39.135	4.48%	-2.01%
05/16/2011	2450B	2401	1.944	51.02	1.903	52.765	2.15%	-3.31%
		2450	2.012	50.89	1.950	52.700	3.18%	-3.43%
		2499	2.074	50.73	2.019	52.638	2.72%	-3.62%

Note: KDB Publication 450824 was ensured to be applied for probe calibration frequencies greater than or equal to 50 MHz of the DUT frequencies.

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

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15.2 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, for example 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 $j = \sqrt{-1}$.

15.3 Justification for Extended SAR Dipole Calibrations

Usage of SAR dipoles calibrated less than 2 years ago but more than 1 year ago were confirmed in maintaining return loss (< -20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 450824:

D835V2 SN: 4d026								
	Head				Body			
Date of Measurement	Return Loss (dB)	Δ %	Impedance (Ω)	$\Delta\Omega$	Return Loss (dB)	Δ %	Impedance (Ω)	$\Delta\Omega$
8/24/2009	-22.5		51		-20.6		46.9	
3/2/2011	-22.7	0.9%	50.1	-0.9	-20.9	1.5%	48	1.1

D1765V2 SN: 1008								
	Head				Body			
Date of Measurement	Return Loss (dB)	Δ %	Impedance (Ω)	$\Delta\Omega$	Return Loss (dB)	Δ %	Impedance (Ω)	$\Delta\Omega$
5/19/2009	-29.9		48.4		-24.2		44.8	
3/2/2011	-30.1	0.7%	49	0.6	-24.0	-1%	47	2.2

The above tables represent RL and Impedance checks to ensure extended calibrations were acceptable per KDB 450824.

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15.4 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 15-2
System Verification Results

System Verification TARGET & MEASURED										
Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Tissue Frequency (MHz)	Dipole SN	Tissue Type	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation (%)
05/16/2011	24.5	22.8	0.100	835	4d026	Head	0.923	9.460	9.230	-2.43%
05/16/2011	24.2	22.7	0.100	835	4d026	Body	0.987	9.780	9.870	0.92%
05/12/2011	23.7	22.1	0.040	1765	1008	Head	1.44	38.200	36.000	-5.76%
05/12/2011	23.9	22.2	0.040	1765	1008	Body	1.55	37.300	38.750	3.89%
05/16/2011	23.8	22.0	0.040	1900	502	Head	1.6	40.200	40.000	-0.50%
05/16/2011	24.2	22.5	0.040	1900	502	Body	1.69	41.100	42.250	2.80%
05/17/2011	24.0	22.5	0.0158	2450	797	Head	0.79	53.300	50.000	-6.19%
05/16/2011	24.8	22.9	0.0158	2450	797	Body	0.772	52.300	48.861	-6.58%

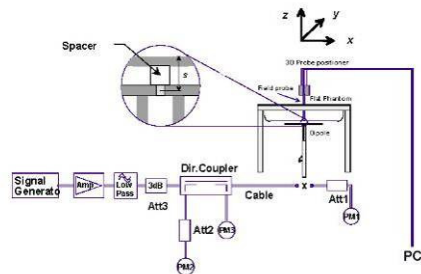


Figure 15-1
System Verification Setup Diagram



Figure 15-2
System Verification Setup Photo

16 SAR DATA SUMMARY

Table 16-1
Cell. CDMA Head SAR Results

MEASUREMENT RESULTS								
FREQUENCY		Mode/Band	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Serial Number	SAR (1g)
MHz	Ch.							(W/kg)
836.52	384	Cell. CDMA	24.29	-0.03	Right	Touch	CDMA RF	0.434
836.52	384	Cell. CDMA	24.29	-0.02	Right	Tilt	CDMA RF	0.271
836.52	384	Cell. CDMA	24.29	0.04	Left	Touch	CDMA RF	0.480
836.52	384	Cell. CDMA	24.29	0.04	Left	Tilt	CDMA RF	0.310
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 16-2
AWS CDMA Head SAR Results

MEASUREMENT RESULTS								
FREQUENCY		Mode/Band	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Serial Number	SAR (1g)
MHz	Ch.							(W/kg)
1732.50	450	AWS CDMA	24.46	0.01	Right	Touch	CDMA RF	0.354
1732.50	450	AWS CDMA	24.46	0.03	Right	Tilt	CDMA RF	0.266
1732.50	450	AWS CDMA	24.46	0.06	Left	Touch	CDMA RF	0.616
1732.50	450	AWS CDMA	24.46	0.04	Left	Tilt	CDMA RF	0.221
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 16-3
PCS CDMA Head SAR Results

MEASUREMENT RESULTS								
FREQUENCY		Mode/Band	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Serial Number	SAR (1g)
MHz	Ch.							(W/kg)
1880.00	600	PCS CDMA	24.54	0.07	Right	Touch	CDMA RF	0.433
1880.00	600	PCS CDMA	24.54	-0.03	Right	Tilt	CDMA RF	0.237
1851.25	25	PCS CDMA	24.86	-0.02	Left	Touch	CDMA RF	0.851
1880.00	600	PCS CDMA	24.54	0.08	Left	Touch	CDMA RF	0.806
1908.75	1175	PCS CDMA	24.44	0.01	Left	Touch	CDMA RF	0.776
1880.00	600	PCS CDMA	24.54	-0.02	Left	Tilt	CDMA RF	0.203
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram		

Table 16-4
2.4 GHz WLAN Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Serial Number	Data Rate (Mbps)	SAR (1g)
MHz	Ch.									(W/kg)
2462	11	IEEE 802.11b	DSSS	14.79	0.02	Right	Touch	SAR	1	0.121
2462	11	IEEE 802.11b	DSSS	14.79	0.09	Right	Tilt	SAR	1	0.032
2462	11	IEEE 802.11b	DSSS	14.79	0.02	Left	Touch	SAR	1	0.066
2462	11	IEEE 802.11b	DSSS	14.79	0.04	Left	Tilt	SAR	1	0.036
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram				

Table 16-5
LTE PCS Head SAR Results

MEASUREMENT RESULTS														
FREQUENCY		Mode	Modulation	Conducted Power [dBm]	Power Drift [dB]	Target [dBm] (± 0.5 dB)	MPR [dB]	Side	Test Position	Bandwidth	Serial Number	Number of resource blocks	RB Offset	SAR (1g)
MHz	Ch.													(W/kg)
1880.00	18900	LTE PCS	QPSK	22.51	-0.07	22.5	0.5	Right	Touch	10 MHz	LTE RF	25	12	0.445
1880.00	18900	LTE PCS	QPSK	23.03	-0.03	23.0	0.0	Right	Touch	10 MHz	LTE RF	1	0	0.524
1880.00	18900	LTE PCS	QPSK	23.27	0.03	23.0	0.0	Right	Touch	10 MHz	LTE RF	1	49	0.503
1880.00	18900	LTE PCS	QPSK	22.51	-0.10	22.5	0.5	Right	Tilt	10 MHz	LTE RF	25	12	0.269
1880.00	18900	LTE PCS	QPSK	23.03	0.00	23.0	0.0	Right	Tilt	10 MHz	LTE RF	1	0	0.293
1880.00	18900	LTE PCS	QPSK	23.27	0.06	23.0	0.0	Right	Tilt	10 MHz	LTE RF	1	49	0.306
1880.00	18900	LTE PCS	QPSK	22.51	-0.02	22.5	0.5	Left	Touch	10 MHz	LTE RF	25	12	0.275
1880.00	18900	LTE PCS	QPSK	23.03	0.07	23.0	0.0	Left	Touch	10 MHz	LTE RF	1	0	0.311
1880.00	18900	LTE PCS	QPSK	23.27	-0.06	23.0	0.0	Left	Touch	10 MHz	LTE RF	1	49	0.310
1880.00	18900	LTE PCS	QPSK	22.51	-0.01	22.5	0.5	Left	Tilt	10 MHz	LTE RF	25	12	0.249
1880.00	18900	LTE PCS	QPSK	23.03	0.01	23.0	0.0	Left	Tilt	10 MHz	LTE RF	1	0	0.290
1880.00	18900	LTE PCS	QPSK	23.27	0.00	23.0	0.0	Left	Tilt	10 MHz	LTE RF	1	49	0.292
1880.00	18900	LTE PCS	16QAM	21.54	-0.02	22.5	0.5	Right	Touch	10 MHz	LTE RF	25	12	0.376
1880.00	18900	LTE PCS	16QAM	22.22	0.05	23.0	0.0	Right	Touch	10 MHz	LTE RF	1	0	0.472
1880.00	18900	LTE PCS	16QAM	22.45	0.04	23.0	0.0	Right	Touch	10 MHz	LTE RF	1	49	0.483
1880.00	18900	LTE PCS	16QAM	21.54	0.03	22.5	0.5	Right	Tilt	10 MHz	LTE RF	25	12	0.230
1880.00	18900	LTE PCS	16QAM	22.22	0.03	23.0	0.0	Right	Tilt	10 MHz	LTE RF	1	0	0.252
1880.00	18900	LTE PCS	16QAM	22.45	0.09	23.0	0.0	Right	Tilt	10 MHz	LTE RF	1	49	0.276
1880.00	18900	LTE PCS	16QAM	21.54	0.02	22.5	0.5	Left	Touch	10 MHz	LTE RF	25	12	0.237
1880.00	18900	LTE PCS	16QAM	22.22	-0.01	23.0	0.0	Left	Touch	10 MHz	LTE RF	1	0	0.271
1880.00	18900	LTE PCS	16QAM	22.45	0.08	23.0	0.0	Left	Touch	10 MHz	LTE RF	1	49	0.279
1880.00	18900	LTE PCS	16QAM	21.54	0.07	22.5	0.5	Left	Tilt	10 MHz	LTE RF	25	12	0.216
1880.00	18900	LTE PCS	16QAM	22.22	0.02	23.0	0.0	Left	Tilt	10 MHz	LTE RF	1	0	0.267
1880.00	18900	LTE PCS	16QAM	22.45	-0.06	23.0	0.0	Left	Tilt	10 MHz	LTE RF	1	49	0.266
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 16-6
LTE AWS Head SAR Results

MEASUREMENT RESULTS														
FREQUENCY		Mode	Modulation	Conducted Power [dBm]	Power Drift [dB]	Target [dBm] (±0.5 dB)	MPR [dB]	Side	Test Position	Bandwidth	Serial Number	Number of resource blocks	RB Offset	SAR (1g) (W/kg)
MHz	Ch.													
1732.50	20175	LTE AWS	QPSK	22.67	0.09	22.5	0.5	Right	Touch	10 MHz	LTE RF	25	12	0.446
1732.50	20175	LTE AWS	QPSK	23.54	0.01	23.0	0.0	Right	Touch	10 MHz	LTE RF	1	0	0.516
1732.50	20175	LTE AWS	QPSK	23.29	-0.04	23.0	0.0	Right	Touch	10 MHz	LTE RF	1	49	0.487
1732.50	20175	LTE AWS	QPSK	22.67	0.00	22.5	0.5	Right	Tilt	10 MHz	LTE RF	25	12	0.317
1732.50	20175	LTE AWS	QPSK	23.54	0.09	23.0	0.0	Right	Tilt	10 MHz	LTE RF	1	0	0.378
1732.50	20175	LTE AWS	QPSK	23.29	-0.05	23.0	0.0	Right	Tilt	10 MHz	LTE RF	1	49	0.353
1732.50	20175	LTE AWS	QPSK	22.67	-0.01	22.5	0.5	Left	Touch	10 MHz	LTE RF	25	12	0.333
1732.50	20175	LTE AWS	QPSK	23.54	0.01	23.0	0.0	Left	Touch	10 MHz	LTE RF	1	0	0.391
1732.50	20175	LTE AWS	QPSK	23.29	0.06	23.0	0.0	Left	Touch	10 MHz	LTE RF	1	49	0.384
1732.50	20175	LTE AWS	QPSK	22.67	-0.02	22.5	0.5	Left	Tilt	10 MHz	LTE RF	25	12	0.389
1732.50	20175	LTE AWS	QPSK	23.54	0.01	23.0	0.0	Left	Tilt	10 MHz	LTE RF	1	0	0.467
1732.50	20175	LTE AWS	QPSK	23.29	-0.10	23.0	0.0	Left	Tilt	10 MHz	LTE RF	1	49	0.465
1732.50	20175	LTE AWS	16QAM	21.67	-0.07	22.5	1.5	Right	Touch	10 MHz	LTE RF	25	12	0.340
1732.50	20175	LTE AWS	16QAM	22.69	0.02	23.0	0.5	Right	Touch	10 MHz	LTE RF	1	0	0.411
1732.50	20175	LTE AWS	16QAM	22.57	0.00	23.0	0.5	Right	Touch	10 MHz	LTE RF	1	49	0.383
1732.50	20175	LTE AWS	16QAM	21.67	-0.08	22.5	1.5	Right	Tilt	10 MHz	LTE RF	25	12	0.252
1732.50	20175	LTE AWS	16QAM	22.69	0.05	23.0	0.5	Right	Tilt	10 MHz	LTE RF	1	0	0.281
1732.50	20175	LTE AWS	16QAM	22.57	0.02	23.0	0.5	Right	Tilt	10 MHz	LTE RF	1	49	0.266
1732.50	20175	LTE AWS	16QAM	21.67	-0.06	22.5	1.5	Left	Touch	10 MHz	LTE RF	25	12	0.254
1732.50	20175	LTE AWS	16QAM	22.69	0.03	23.0	0.5	Left	Touch	10 MHz	LTE RF	1	0	0.306
1732.50	20175	LTE AWS	16QAM	22.57	0.00	23.0	0.5	Left	Touch	10 MHz	LTE RF	1	49	0.292
1732.50	20175	LTE AWS	16QAM	21.67	0.05	22.5	1.5	Left	Tilt	10 MHz	LTE RF	25	12	0.318
1732.50	20175	LTE AWS	16QAM	22.69	0.09	23.0	0.5	Left	Tilt	10 MHz	LTE RF	1	0	0.386
1732.50	20175	LTE AWS	16QAM	22.57	-0.04	23.0	0.5	Left	Tilt	10 MHz	LTE RF	1	49	0.375
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram					

Table 16-7
CDMA Body-Worn SAR Results

MEASUREMENT RESULTS									
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Serial Number	Side	SAR (1g) (W/kg)
MHz	Ch.								
836.52	384	Cell. CDMA	TDSO32	24.43	0.00	2.0 cm	CDMA RF	back	0.519
1732.50	450	AWS CDMA	TDSO32	24.54	0.05	2.0 cm	CDMA RF	back	0.243
1880.00	600	PCS CDMA	TDSO32	24.79	0.00	2.0 cm	CDMA RF	back	0.227
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 16-8
PCS LTE Hotspot SAR Results

MEASUREMENT RESULTS													
FREQUENCY		Mode/Band	Bandwidth	Modulation	Target MPR [dB]	Conducted Power [dBm]	Power Drift [dB]	Number of resource blocks	RB Offset	Side	Spacing	Serial Number	SAR (1g)
MHz	Ch.												(W/kg)
1880.00	18900	LTE PCS	10 MHz	QPSK	0.5	22.57	-0.02	25	12	back	1.0 cm	LTE RF	0.684
1880.00	18900	LTE PCS	10 MHz	QPSK	0.0	23.27	0.16	1	0	back	1.0 cm	LTE RF	0.786
1880.00	18900	LTE PCS	10 MHz	QPSK	0.0	23.36	-0.04	1	49	back	1.0 cm	LTE RF	0.761
1880.00	18900	LTE PCS	10 MHz	16QAM	1.5	22.57	0.06	25	12	back	1.0 cm	LTE RF	0.525
1880.00	18900	LTE PCS	10 MHz	16QAM	0.8	23.27	0.03	1	0	back	1.0 cm	LTE RF	0.646
1880.00	18900	LTE PCS	10 MHz	16QAM	0.8	23.36	0.08	1	49	back	1.0 cm	LTE RF	0.637
1880.00	18900	LTE PCS	10 MHz	QPSK	0.5	22.57	0.02	25	12	front	1.0 cm	LTE RF	0.184
1880.00	18900	LTE PCS	10 MHz	QPSK	0.0	23.27	-0.13	1	0	front	1.0 cm	LTE RF	0.209
1880.00	18900	LTE PCS	10 MHz	QPSK	0.0	23.36	0.06	1	49	front	1.0 cm	LTE RF	0.191
1880.00	18900	LTE PCS	10 MHz	16QAM	1.5	22.57	0.04	25	12	front	1.0 cm	LTE RF	0.153
1880.00	18900	LTE PCS	10 MHz	16QAM	0.8	23.27	0.04	1	0	front	1.0 cm	LTE RF	0.183
1880.00	18900	LTE PCS	10 MHz	16QAM	0.8	23.36	0.08	1	49	front	1.0 cm	LTE RF	0.180
1880.00	18900	LTE PCS	10 MHz	QPSK	0.5	22.57	-0.01	25	12	top	1.0 cm	LTE RF	0.129
1880.00	18900	LTE PCS	10 MHz	QPSK	0.0	23.27	0.00	1	0	top	1.0 cm	LTE RF	0.146
1880.00	18900	LTE PCS	10 MHz	QPSK	0.0	23.36	0.01	1	49	top	1.0 cm	LTE RF	0.146
1880.00	18900	LTE PCS	10 MHz	16QAM	1.5	22.57	-0.02	25	12	top	1.0 cm	LTE RF	0.105
1880.00	18900	LTE PCS	10 MHz	16QAM	0.8	23.27	-0.07	1	0	top	1.0 cm	LTE RF	0.114
1880.00	18900	LTE PCS	10 MHz	16QAM	0.8	23.36	-0.04	1	49	top	1.0 cm	LTE RF	0.115
1880.00	18900	LTE PCS	10 MHz	QPSK	0.5	22.57	-0.06	25	12	left	1.0 cm	LTE RF	0.356
1880.00	18900	LTE PCS	10 MHz	QPSK	0.0	23.27	-0.03	1	0	left	1.0 cm	LTE RF	0.398
1880.00	18900	LTE PCS	10 MHz	QPSK	0.0	23.36	-0.04	1	49	left	1.0 cm	LTE RF	0.387
1880.00	18900	LTE PCS	10 MHz	16QAM	1.5	22.57	-0.14	25	12	left	1.0 cm	LTE RF	0.290
1880.00	18900	LTE PCS	10 MHz	16QAM	0.8	23.27	-0.07	1	0	left	1.0 cm	LTE RF	0.316
1880.00	18900	LTE PCS	10 MHz	16QAM	0.8	23.36	0.02	1	49	left	1.0 cm	LTE RF	0.318
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 mW/g (W/kg) averaged over 1gm					

Note: Modes evaluated for LTE for back side conditions are applicable to body-worn conditions

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Table 16-9
AWS LTE Hotspot SAR Results

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Bandwidth	Modulation	Target MPR [dB]	Conducted Power [dBm]	Power Drift [dB]	Number of resource blocks	RB Offset	Spacing	Position	Side	Serial Number	SAR (1g)
MHz	Ch.													(W/kg)
1732.50	20175	LTE AWS	10 MHz	QPSK	0.5	22.76	-0.03	25	12	1.0 cm	Body	back	LTE RF	0.691
1732.50	20175	LTE AWS	10 MHz	QPSK	0.0	23.40	-0.10	1	0	1.0 cm	Body	back	LTE RF	0.644
1732.50	20175	LTE AWS	10 MHz	QPSK	0.0	23.24	0.09	1	49	1.0 cm	Body	back	LTE RF	0.770
1732.50	20175	LTE AWS	10 MHz	16QAM	0.5	22.76	0.02	25	12	1.0 cm	Body	back	LTE RF	0.478
1732.50	20175	LTE AWS	10 MHz	16QAM	0.0	23.40	0.05	1	0	1.0 cm	Body	back	LTE RF	0.581
1732.50	20175	LTE AWS	10 MHz	16QAM	0.0	23.24	-0.01	1	49	1.0 cm	Body	back	LTE RF	0.596
1732.50	20175	LTE AWS	10 MHz	QPSK	0.5	22.76	0.00	25	12	1.0 cm	Body	front	LTE RF	0.296
1732.50	20175	LTE AWS	10 MHz	QPSK	0.0	23.40	0.02	1	0	1.0 cm	Body	front	LTE RF	0.335
1732.50	20175	LTE AWS	10 MHz	QPSK	0.0	23.24	0.09	1	49	1.0 cm	Body	front	LTE RF	0.312
1732.50	20175	LTE AWS	10 MHz	16QAM	0.5	22.76	0.06	25	12	1.0 cm	Body	front	LTE RF	0.220
1732.50	20175	LTE AWS	10 MHz	16QAM	0.0	23.40	-0.02	1	0	1.0 cm	Body	front	LTE RF	0.284
1732.50	20175	LTE AWS	10 MHz	16QAM	0.0	23.24	-0.04	1	49	1.0 cm	Body	front	LTE RF	0.265
1732.50	20175	LTE AWS	10 MHz	QPSK	0.5	22.76	0.00	25	12	1.0 cm	Body	top	LTE RF	0.182
1732.50	20175	LTE AWS	10 MHz	QPSK	0.0	23.40	-0.01	1	0	1.0 cm	Body	top	LTE RF	0.220
1732.50	20175	LTE AWS	10 MHz	QPSK	0.0	23.24	-0.03	1	49	1.0 cm	Body	top	LTE RF	0.188
1732.50	20175	LTE AWS	10 MHz	16QAM	0.5	22.76	0.06	25	12	1.0 cm	Body	top	LTE RF	0.137
1732.50	20175	LTE AWS	10 MHz	16QAM	0.0	23.40	0.03	1	0	1.0 cm	Body	top	LTE RF	0.177
1732.50	20175	LTE AWS	10 MHz	16QAM	0.0	23.24	-0.21	1	49	1.0 cm	Body	top	LTE RF	0.157
1732.50	20175	LTE AWS	10 MHz	QPSK	0.5	22.76	0.13	25	12	1.0 cm	Body	left	LTE RF	0.240
1732.50	20175	LTE AWS	10 MHz	QPSK	0.0	23.40	-0.03	1	0	1.0 cm	Body	left	LTE RF	0.279
1732.50	20175	LTE AWS	10 MHz	QPSK	0.0	23.24	-0.04	1	49	1.0 cm	Body	left	LTE RF	0.262
1732.50	20175	LTE AWS	10 MHz	16QAM	0.5	22.76	0.02	25	12	1.0 cm	Body	left	LTE RF	0.192
1732.50	20175	LTE AWS	10 MHz	16QAM	0.0	23.40	-0.01	1	0	1.0 cm	Body	left	LTE RF	0.236
1732.50	20175	LTE AWS	10 MHz	16QAM	0.0	23.24	0.00	1	49	1.0 cm	Body	left	LTE RF	0.229
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: Modes evaluated for LTE for back side conditions are applicable to body-worn conditions

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Table 16-10
Hotspot 2.4 GHz Body SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Serial Number	Data Rate (Mbps)	Side	SAR (1g)
MHz	Ch.									(W/kg)
2462	11	IEEE 802.11b	DSSS	14.79	0.01	1.0 cm	SAR	1	back	0.058
2462	11	IEEE 802.11b	DSSS	14.79	0.03	1.0 cm	SAR	1	front	0.059
2462	11	IEEE 802.11b	DSSS	14.79	0.02	1.0 cm	SAR	1	bottom	0.020
2462	11	IEEE 802.11b	DSSS	14.79	-0.07	1.0 cm	SAR	1	right	0.103
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: Modes evaluated for WLAN for back side conditions are applicable to body-worn conditions

General SAR 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].
2. All modes of operation were investigated, and worst-case results are reported.
3. Batteries are fully charged for all readings. Standard battery was used.
4. Tissue parameters and temperatures are listed on the SAR plots.
5. Liquid tissue depth is was at least 15.0 cm.
6. Device was tested using a fixed spacing.
7. All samples tested for CDMA, WIFI, and LTE at maximum power were electrically identical with one another per the applicant.
8. A separation distance of 20 mm for body-worn testing is chosen because Grantee has determined that it supports the types of body-worn accessories available in the marketplace to users for this handset.

CDMA 2000 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 (left, right, cheek/touch, tilt/ear, extended and retracted) 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. Head SAR for CDMA2000 mode was tested under RC3/SO55 per KDB Publication 941225 D01.
3. Body-Worn SAR was tested under RC3/SO32 with FCH only since FCH+SCH modes are not greater than 0.25 dB of the FCH only mode per FCC KDB Publication 941225 D01.
4. AWS CDMA SAR was measured with a probe calibrated at 1750 MHz and is valid for measuring SAR within 50 MHz. The 1750MHz specific body liquid was verified at 1765 MHz with specific probe calibration factors as required per FCC KDB Publication 450824.

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LTE Notes

1. LTE Considerations: LTE test configurations are determined according to SAR Test Considerations for LTE handsets and Data Modems KDB 941225 D05 Publication:
2. Per KDB Publication 941225 D05 Page 4, 3) A), QPSK with 50% RB is required.
3. Per KDB Publication 941225 D05 Page 4, 3) B), QPSK with 1 RB for both channel edges are required.
4. Per KDB Publication 941225 D05 Page 4, 4) A), 16QAM with 50% RB is required.
5. Per KDB Publication 941225 D05 Page 4, 4) B), 16QAM with 1RB for both channel edges are required.
6. Per KDB Publication 941225 D05 Page 4, A) I), 100% RB Allocation is not required to be tested since SAR is not > 1.45 W/kg.
7. Per KDB 941225 D05 Page 5, 5) B), 1.4, 3, and 5 MHz BW is not required to be tested for SAR since 1.4, 3, and 5 MHz BW output powers are within ½ dB higher or lower, and also SAR is not > 1.45 W/kg
8. There is a permanently applied MPR implemented by the manufacturer. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1. The differences noted are not cases of implemented MPR but rather associated with measurement uncertainty and allowable tolerances per 3GPP standard and the manufacturer.
9. SAR evaluation requires a single frequency of measurement for valid measurements using the SAR probe and tissue calibrated which are calibrated for specific limited frequency ranges. Therefore, during SAR evaluation it was ensured that the WIFI transmission was disabled by the manufacturer to assess the standalone SAR to be evaluated for SAR. WIFI SAR was separately evaluated to account for the WIFI SAR for portable hotspot exposure conditions (See Section 12).
5. AWS LTE SAR was measured with a probe calibrated at 1750 MHz and is valid for measuring SAR within 50 MHz. The 1750MHz specific body liquid was verified at 1765 MHz with specific probe calibration factors as required per FCC KDB Publication 450824.
6. 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.
7. VOIP in LTE is an inherent function of the handset and the device readily supports install and use of updates or third-party applications for VOIP in LTE.
8. Because FCC has not published uniform procedures for VOIP in LTE, all channels and modes and modulations required under KDB 941225 D05 LTE procedures were repeated for head SAR testing.

Bluetooth/WLAN Notes

1. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes: Highest average RF output power channel for the lowest data rate were selected for SAR evaluation. Other IEEE 802.11 modes (including 802.11n) were not investigated since the average output powers were not greater than 0.25 dB than that of the corresponding channel in the lowest data rate IEEE 802.11b mode.
2. WLAN transmission was verified using a spectrum analyzer.
3. RF Conducted power of Bluetooth is 9.86 mW. Based on the output power, antenna separation distance, and the Body SAR of the dominant transmitter, a stand-alone Bluetooth SAR test is not required while for WLAN it is required.

Hotspot Notes

1. CDMA Hotspot (Cellular/AWS/PCS EvDO + WiFi) is not supported
2. For LTE Hotspot SAR testing, LTE and WIFI modes were evaluated separately for SAR.

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17 SIMULTANEOUS TRANSMISSION ANALYSIS

The following table shows exposure conditions for all transmitters:

Table 17-1
Enabled Transmission Scenarios

Simultaneous Transmission Configurations									
	Cellular Voice	Cellular EvDO	AWS Voice	AWS EvDO	PCS Voice	PCS EvDO	LTE	WiFi	Sum Scenarios
Cellular Voice	X	X	X	X	X	X	X	Y	Cellular Voice + WiFi
Cellular EvDO	X	X	X	X	X	X	X	X	-
AWS Voice	X	X	X	X	X	X	X	Y	AWS Voice + WiFi
AWS EvDO	X	X	X	X	X	X	X	X	-
PCS Voice	X	X	X	X	X	X	X	Y	PCS Voice + WiFi
PCS EvDO	X	X	X	X	X	X	X	X	-
LTE	X	X	X	X	X	X	X	Y	LTE + WiFi (LTE hotspot)
WiFi	Y	X	Y	X	Y	X	Y	X	WiFi+Cellular Voice, WiFi+AWS Voice, WiFi+PCS Voice, WiFi+LTE/EvDO, WiFi+LTE(Hotspot)

X: Simultaneous transmission is impossible.
Y: Simultaneous transmission is possible.

Note!
1. CDMA & LTE don't transmit simultaneously.
2. CDMA hotspot(Cellular/AWS/PCS 1xdata & EvDO + WiFi) is not supported, but LTE hotspot(AWS/PCS) is supported.
3. LTE VoIP & WiFi don't transmit simultaneously.

Table 17-2
Simultaneous Transmission Scenario (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	WiFi SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.434	0.121	0.555
	Right Tilt	0.271	0.032	0.303
	Left Cheek	0.480	0.066	0.546
	Left Tilt	0.310	0.036	0.346

Simult Tx	Configuration	AWS CDMA SAR (W/kg)	WiFi SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.354	0.121	0.475
	Right Tilt	0.266	0.032	0.298
	Left Cheek	0.616	0.066	0.682
	Left Tilt	0.221	0.036	0.257

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	WiFi SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.433	0.121	0.554
	Right Tilt	0.237	0.032	0.269
	Left Cheek	0.851	0.066	0.917
	Left Tilt	0.203	0.036	0.239

Note: The device when used in LTE VOIP will suspend all WIFI data. Therefore LTE VOIP and WIFI will not transmit simultaneously in the held-to-ear exposure condition.

The device when used in 1X-RTT CDMA Voice will suspend all LTE data sessions (e.g. no SVLTE). Therefore, CDMA and LTE will not transmit simultaneously in the held-to-ear exposure condition.

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Table 17-3
Simultaneous Transmission Scenario (Body-Worn)

Configuration	Mode	2G/3G SAR (W/kg)	WIFI SAR (W/kg)	Σ SAR (W /kg)
Back Side	Cell. CDMA	0.519	<0.058	<0.577
Back Side	AWS CDMA	0.243	<0.058	<0.301
Back Side	PCS CDMA	0.227	<0.058	<0.285
Back Side	LTE PCS	<0.786	<0.058	<0.844
Back Side	LTE AWS	<0.770	<0.058	<0.828

Table 17-4
Simultaneous Transmission Scenario (Hotspot)

Simult Tx	Configuration	LTE PCS SAR (W/kg)	WIFI SAR (W/kg)	Σ SAR (W /kg)
Body SAR	Back	0.786	0.058	0.844
	Front	0.209	0.059	0.268
	Top	0.146	-	0.146
	Bottom	-	0.020	0.020
	Right	-	0.103	0.103
	Left	0.398	-	0.398
Simult Tx	Configuration	LTE AWS SAR (W/kg)	WIFI SAR (W/kg)	Σ SAR (W /kg)
Body SAR	Back	0.770	0.058	0.828
	Front	0.335	0.059	0.394
	Top	0.220	-	0.220
	Bottom	-	0.020	0.020
	Right	-	0.103	0.103
	Left	0.279	-	0.279

Notes:

1. When portable hotspot mode is enabled, only LTE hotspot modes are operational. When portable hotspot mode is enabled CDMA modes are disabled via software by the manufacturer.
2. Per FCC KDB Publication 941225 D06, the edges with antennas more than 2.5 cm are not required to be evaluated for SAR ("-" denoted. 0 W/kg was used for the sum SAR calculations for those entries).
3. For sum SAR calculations at 1.0 cm, WLAN SAR values for 0.0 cm were used since the 0.0 cm test distance for WLAN was more conservative. "<" denotes the 0.0 cm WLAN SAR values used for the summations.

17.1 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. Therefore, no volumetric SAR summation is required per FCC KDB Publication 648474.

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18 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85070B	Dielectric Probe Kit	8/22/2010	Annual	8/22/2011	US33020316
Agilent	8648D	(9kHz-4GHz) Signal Generator	10/13/2010	Annual	10/13/2011	3613A00315
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/21/2011	Annual	4/21/2012	JP38020182
Agilent	E5515C	Wireless Communications Test Set	10/11/2010	Annual	10/11/2011	GB46110872
Agilent	E5515C	Wireless Communications Test Set	10/8/2010	Annual	10/8/2011	GB46310798
Agilent	E5515C	Wireless Communications Test Set	8/13/2010	Annual	8/13/2011	GB41450275
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/8/2011	Annual	4/8/2012	MY45470194
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/11/2010	Annual	10/11/2011	1833460
Gigatronics	8651A	Universal Power Meter	10/11/2010	Annual	10/11/2011	8650319
Index SAR	IXTL-010	Dielectric Measurement Kit	N/A		N/A	N/A
Index SAR	IXTL-030	30MM TEM line for 6 GHz	N/A		N/A	N/A
Pasternack	PE2208-6	Bidirectional Coupler	N/A		N/A	N/A
Pasternack	PE2209-10	Bidirectional Coupler	N/A		N/A	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	11/11/2010	Annual	11/11/2011	836371/0079
Rohde & Schwarz	CMU200	Base Station Simulator	6/21/2010	Annual	6/21/2011	833855/0010
Rohde & Schwarz	CMU200	Base Station Simulator	4/19/2011	Annual	4/19/2012	107826
Rohde & Schwarz	CMU200	Base Station Simulator	11/4/2009	Annual	11/4/2010	109892
Rohde & Schwarz	NRVD	Dual Channel Power Meter	4/8/2011	Biennial	4/8/2013	101695
Rohde & Schwarz	NRV-Z32	Peak Power Sensor (100uW-2W)	12/5/2008	Biennial	12/5/2010	100155
Rohde & Schwarz	NRV-Z33	Peak Power Sensor (1mW-20W)	12/5/2008	Biennial	12/5/2010	100004
SPEAG	D1765V2	1765 MHz SAR Dipole	5/19/2009	Biennial	5/19/2011	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	2/17/2011	Annual	2/17/2012	502
SPEAG	D1900V2	1900 MHz SAR Dipole	8/18/2009	Biennial	8/18/2011	5d080
SPEAG	D2450V2	2450 MHz SAR Dipole	8/27/2009	Biennial	8/27/2011	719
SPEAG	D2450V2	2450 MHz SAR Dipole	2/8/2011	Annual	2/8/2012	797
SPEAG	D835V2	835 MHz SAR Dipole	2/9/2011	Annual	2/9/2012	4d047
SPEAG	D835V2	835 MHz SAR Dipole	8/24/2009	Biennial	8/24/2011	4d026
SPEAG	DAE3	Dasy Data Acquisition Electronics	11/18/2010	Annual	11/18/2011	455
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/17/2011	Annual	3/17/2012	704
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/20/2011	Annual	4/20/2012	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/21/2011	Annual	2/21/2012	649
SPEAG	ES3DV2	SAR Probe	9/21/2010	Annual	9/21/2011	3022
SPEAG	EX3DV4	SAR Probe	8/19/2010	Annual	8/19/2011	3561
SPEAG	EX3DV4	SAR Probe	2/14/2011	Annual	2/14/2012	3550
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/19/2011	Annual	5/19/2012	859
SPEAG	ES3DV3	SAR Probe	3/24/2011	Annual	3/24/2012	3213
SPEAG	ES3DV3	SAR Probe	4/18/2011	Annual	4/18/2012	3209
Rohde & Schwarz	SMIQ03B	Signal Generator	4/6/2011	Annual	4/6/2012	DE27259
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	8/30/2010	Annual	8/30/2011	100976
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	5318
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	5442
Anritsu	ML2438A	Power Meter	2/7/2011	Annual	2/7/2012	1190013
Anritsu	ML2438A	Power Meter	2/7/2011	Annual	2/7/2012	98150041
Agilent	8648D	Signal Generator	4/5/2011	Annual	4/5/2012	3629U00687
Anritsu	ML2438A	Power Meter	2/7/2011	Annual	2/7/2012	1070030
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	5821
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	8013
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	2400
Agilent	E5515C	Wireless Communications Test Set	8/13/2010	Annual	8/13/2011	GB43304447
Agilent	E5515C	Wireless Communications Tester	4/21/2011	Annual	4/21/2012	US41140256
Amplifier Research	5S1G4	5W, 800MHz-4.2GHz Amplifier	N/A			17042
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	N/A			N/A
Agilent	E5515C	Wireless Communications Test Set	2/8/2011	Annual	2/8/2012	GB45360985
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	3/11/2011	Annual	3/11/2012	103962
Control Company	61220-416	Long-Stem Thermometer	2/15/2011	Biennial	2/15/2013	111331322
Control Company	61220-416	Long-Stem Thermometer	2/15/2011	Biennial	2/15/2013	111331323
Control Company	61220-416	Long-Stem Thermometer	2/15/2011	Biennial	2/15/2013	111331330
Control Company	61220-416	Long-Stem Thermometer	2/15/2011	Biennial	2/15/2013	111331332
Control Company	61220-416	Long-Stem Thermometer	3/16/2011	Biennial	3/16/2013	111391601
SPEAG	ES3DV3	SAR Probe	4/8/2011	Annual	4/7/2012	3258
SPEAG	D1750V2	1750 MHz SAR Dipole	5/24/2011	Biennial	5/24/2013	1051

Justification for 2-year calibration cycle for SAR dipoles is found in Section 15.3.

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19 MEASUREMENT UNCERTAINTIES

Applicable for 750 – 3000 MHz.

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 _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	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

FCC ID: BEJMS910		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1105170891-R1.BEJ	Test Dates: 05/12/11 - 05/17/11	DUT Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with BT and WLAN		Page 45 of 48

20 CONCLUSION

20.1 Measurement Conclusion

The SAR evaluation indicates that the DUT 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]

FCC ID: BEJMS910		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1105170891-R1.BEJ	Test Dates: 05/12/11 - 05/17/11	DUT Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with BT and WLAN		Page 46 of 48

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FCC ID: BEJMS910		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1105170891-R1.BEJ	Test Dates: 05/12/11 - 05/17/11	DUT Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with BT and WLAN		Page 47 of 48

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FCC ID: BEJMS910		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1105170891-R1.BEJ	Test Dates: 05/12/11 - 05/17/11	DUT Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with BT and WLAN		Page 48 of 48

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.858 \text{ mho/m}$; $\epsilon_r = 39.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-16-2011; Ambient Temp: 24.5 °C; Tissue Temp: 22.8 °C

Probe: EX3DV4 - SN3550; ConvF(8.04, 8.04, 8.04); Calibrated: 2/14/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/20/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: Cellular CDMA, Right Head, Touch, Mid.ch

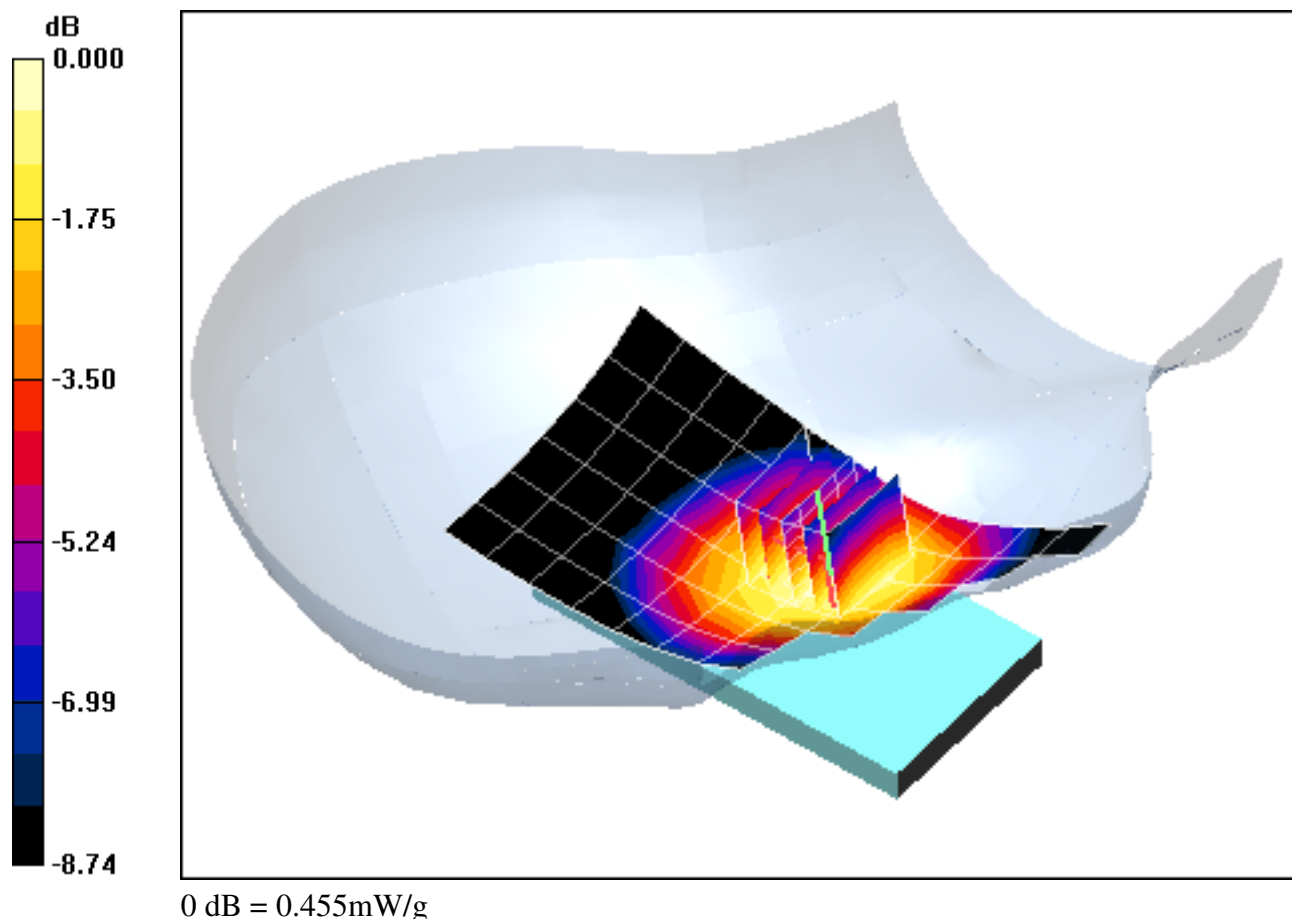
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.5 V/m

Peak SAR (extrapolated) = 0.527 W/kg

SAR(1 g) = 0.434 mW/g; SAR(10 g) = 0.335 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.858 \text{ mho/m}$; $\epsilon_r = 39.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-16-2011; Ambient Temp: 24.5 °C; Tissue Temp: 22.8 °C

Probe: EX3DV4 - SN3550; ConvF(8.04, 8.04, 8.04); Calibrated: 2/14/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/20/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: Cellular CDMA, Right Head, Tilt, Mid.ch

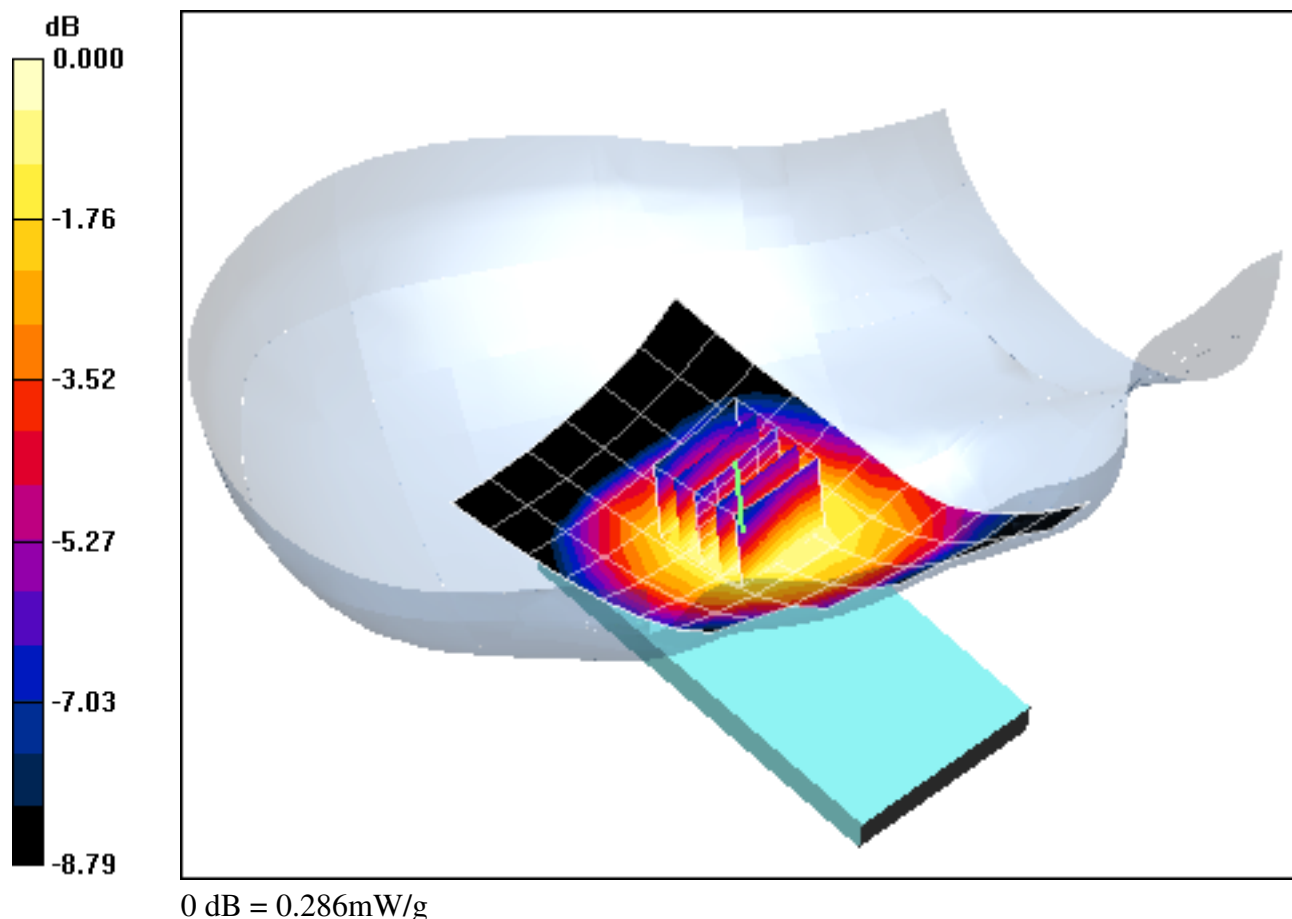
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.5 V/m

Peak SAR (extrapolated) = 0.335 W/kg

SAR(1 g) = 0.271 mW/g; SAR(10 g) = 0.210 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.858 \text{ mho/m}$; $\epsilon_r = 39.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-16-2011; Ambient Temp: 24.5 °C; Tissue Temp: 22.8 °C

Probe: EX3DV4 - SN3550; ConvF(8.04, 8.04, 8.04); Calibrated: 2/14/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/20/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: Cellular CDMA, Left Head, Touch, Mid.ch

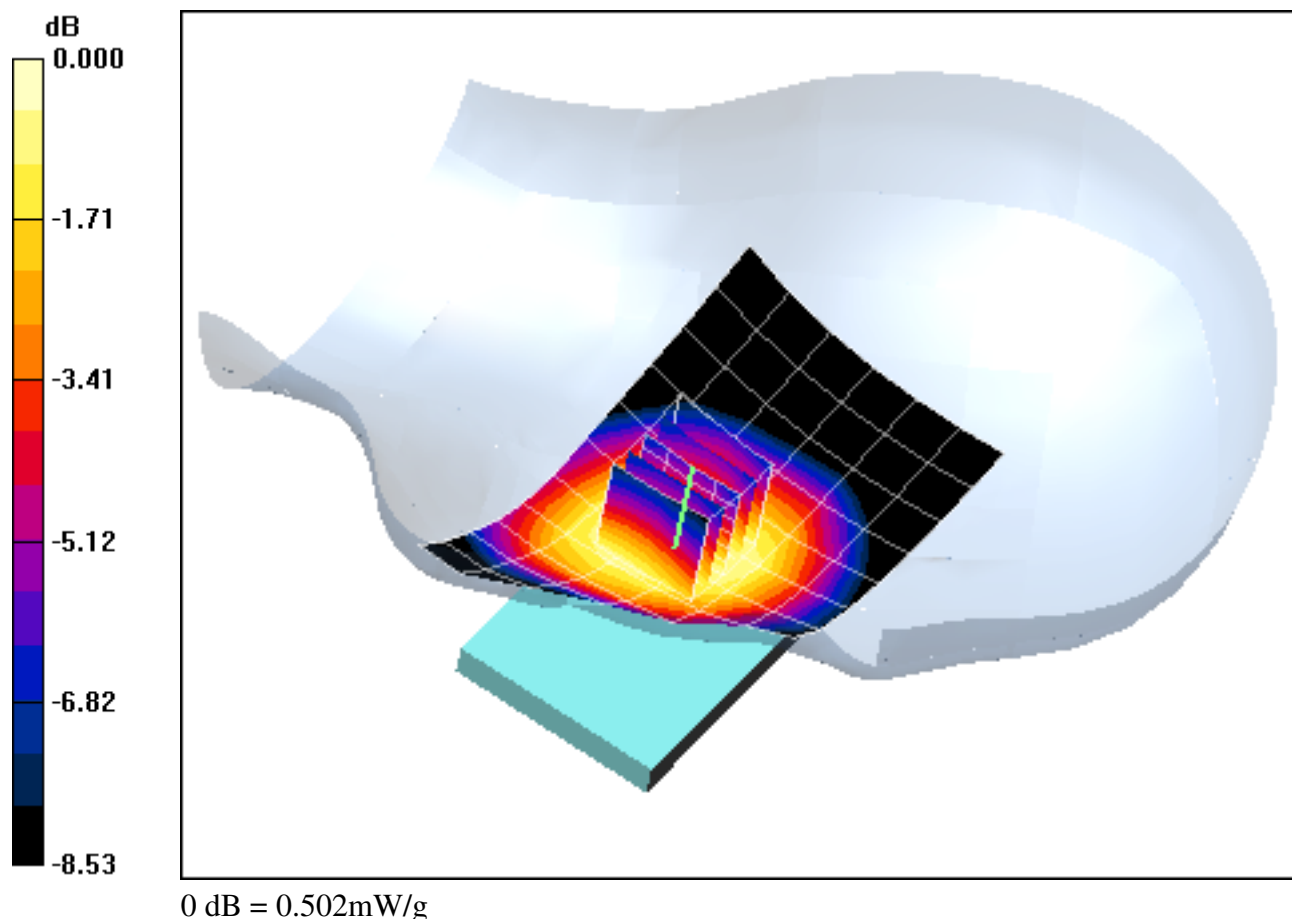
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 7.45 V/m

Peak SAR (extrapolated) = 0.587 W/kg

SAR(1 g) = 0.480 mW/g; SAR(10 g) = 0.371 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.858 \text{ mho/m}$; $\epsilon_r = 39.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-16-2011; Ambient Temp: 24.5 °C; Tissue Temp: 22.8 °C

Probe: EX3DV4 - SN3550; ConvF(8.04, 8.04, 8.04); Calibrated: 2/14/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/20/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: Cellular CDMA, Left Head, Touch, Mid.ch

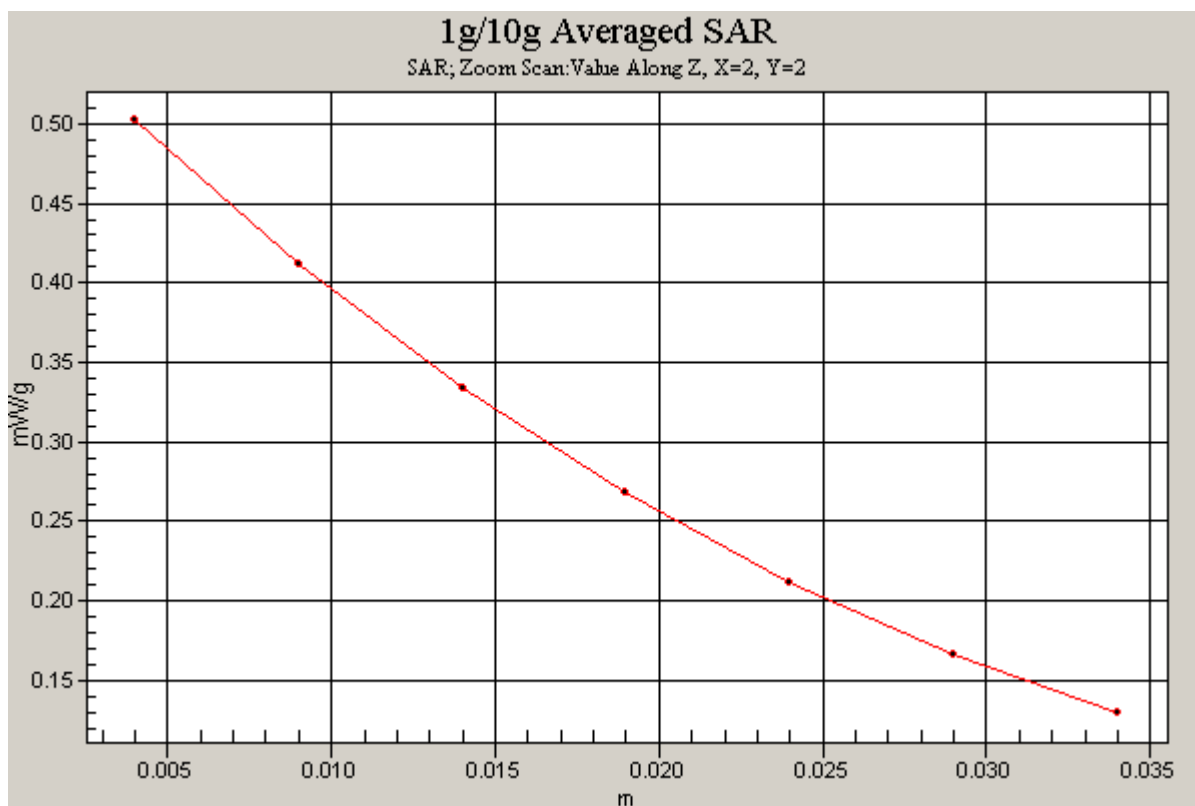
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 7.45 V/m

Peak SAR (extrapolated) = 0.587 W/kg

SAR(1 g) = 0.480 mW/g; SAR(10 g) = 0.371 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.858 \text{ mho/m}$; $\epsilon_r = 39.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-16-2011; Ambient Temp: 24.5 °C; Tissue Temp: 22.8 °C

Probe: EX3DV4 - SN3550; ConvF(8.04, 8.04, 8.04); Calibrated: 2/14/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/20/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: Cellular CDMA, Left Head, Tilt, Mid.ch

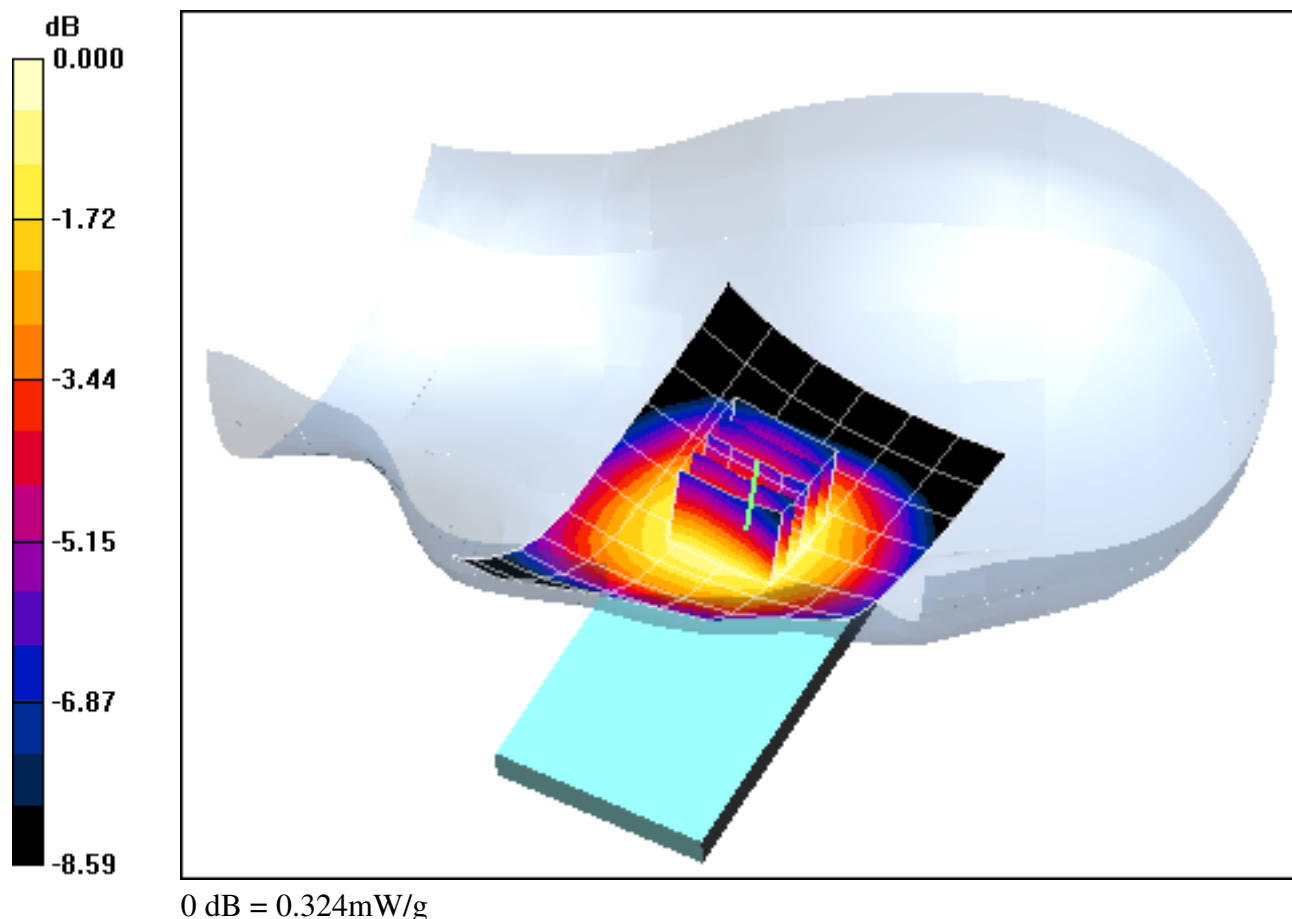
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.5 V/m

Peak SAR (extrapolated) = 0.379 W/kg

SAR(1 g) = 0.310 mW/g; SAR(10 g) = 0.240 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: AWS CDMA, Right Head, Touch, Mid.ch

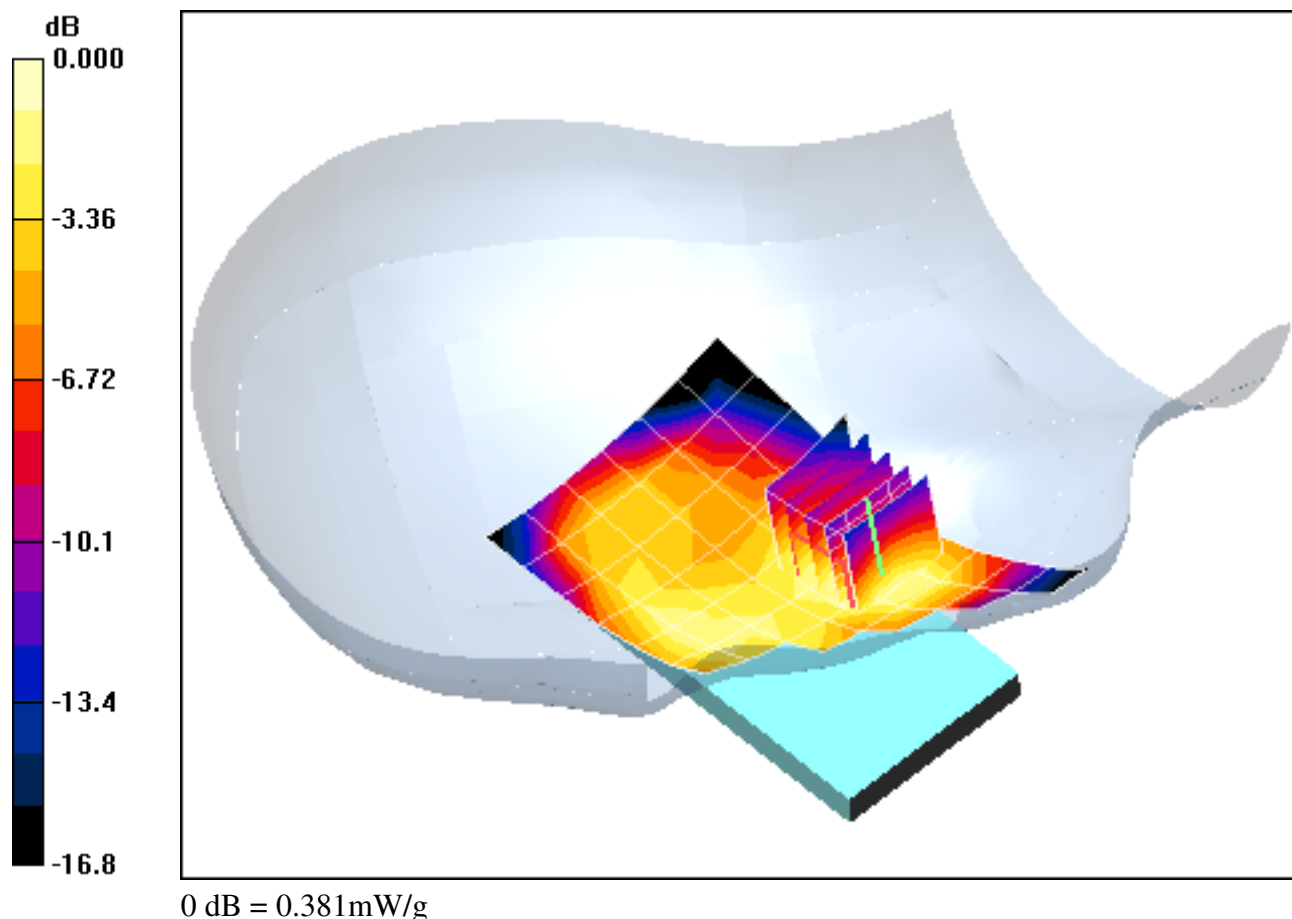
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 15.8 V/m

Peak SAR (extrapolated) = 0.587 W/kg

SAR(1 g) = 0.354 mW/g; SAR(10 g) = 0.222 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: AWS CDMA, Right Head, Tilt, Mid.ch

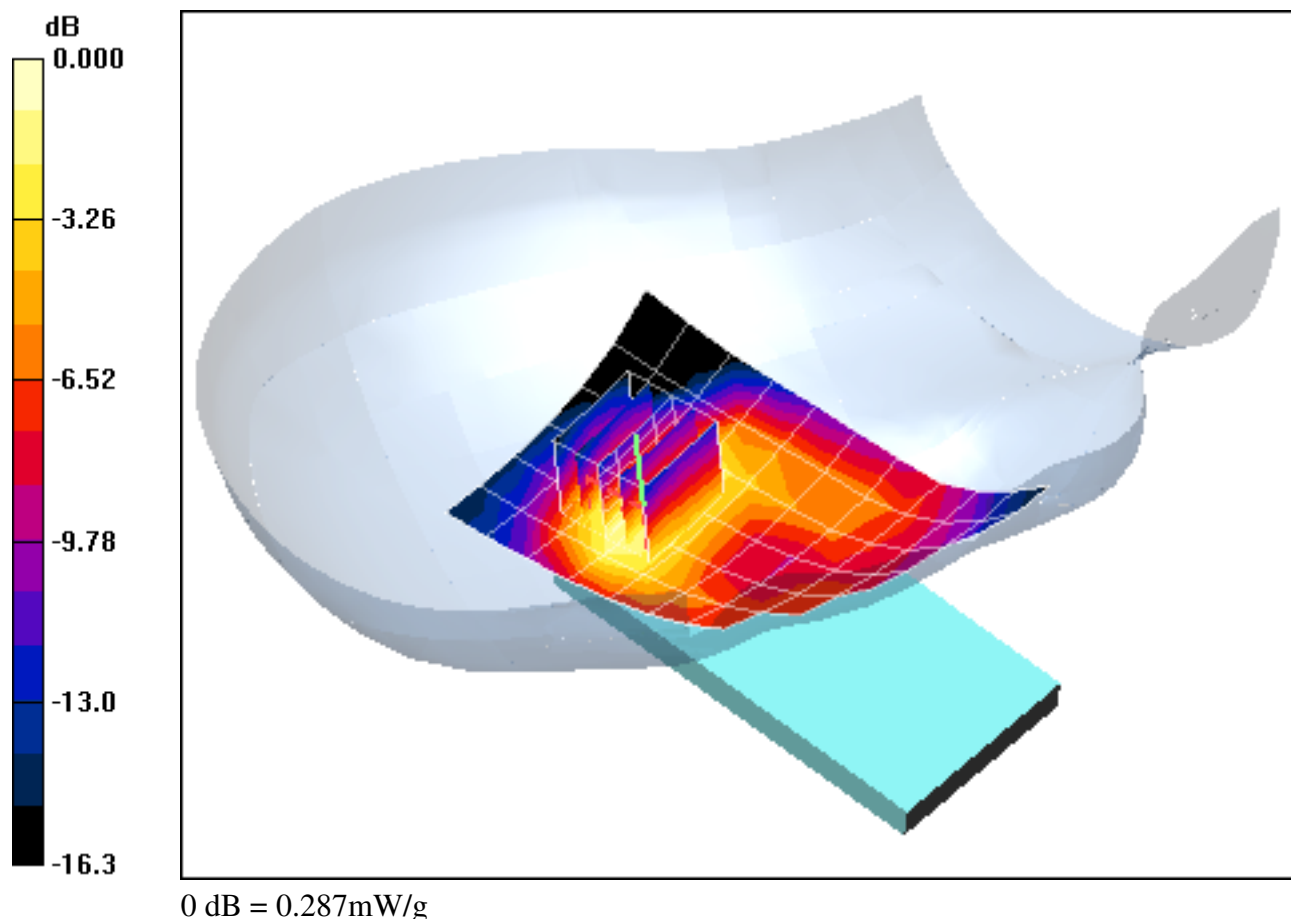
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 14.5 V/m

Peak SAR (extrapolated) = 0.436 W/kg

SAR(1 g) = 0.266 mW/g; SAR(10 g) = 0.156 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: AWS CDMA, Left Head, Touch, Mid.ch

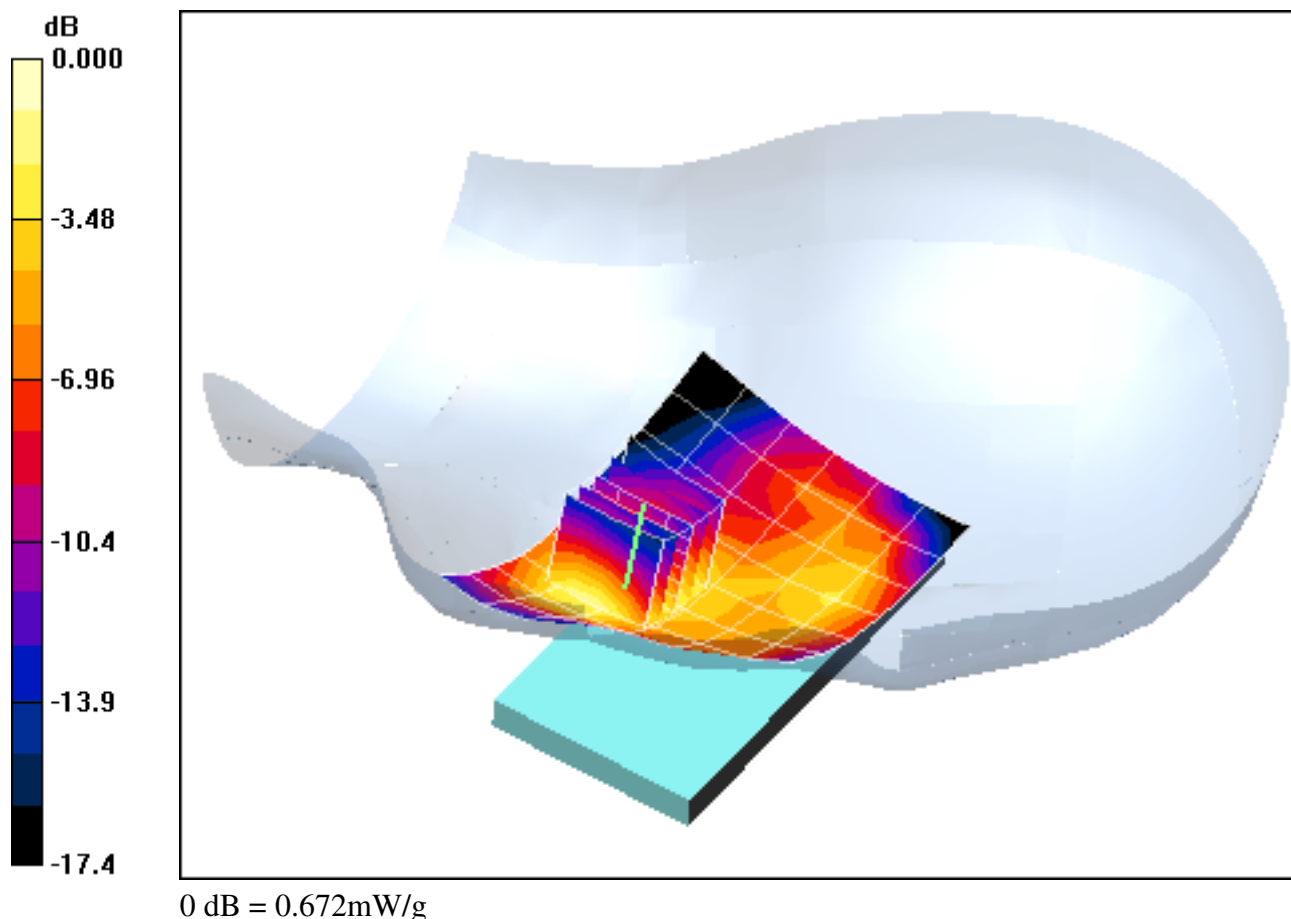
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.5 V/m

Peak SAR (extrapolated) = 0.995 W/kg

SAR(1 g) = 0.616 mW/g; SAR(10 g) = 0.368 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: AWS CDMA, Left Head, Touch, Mid.ch

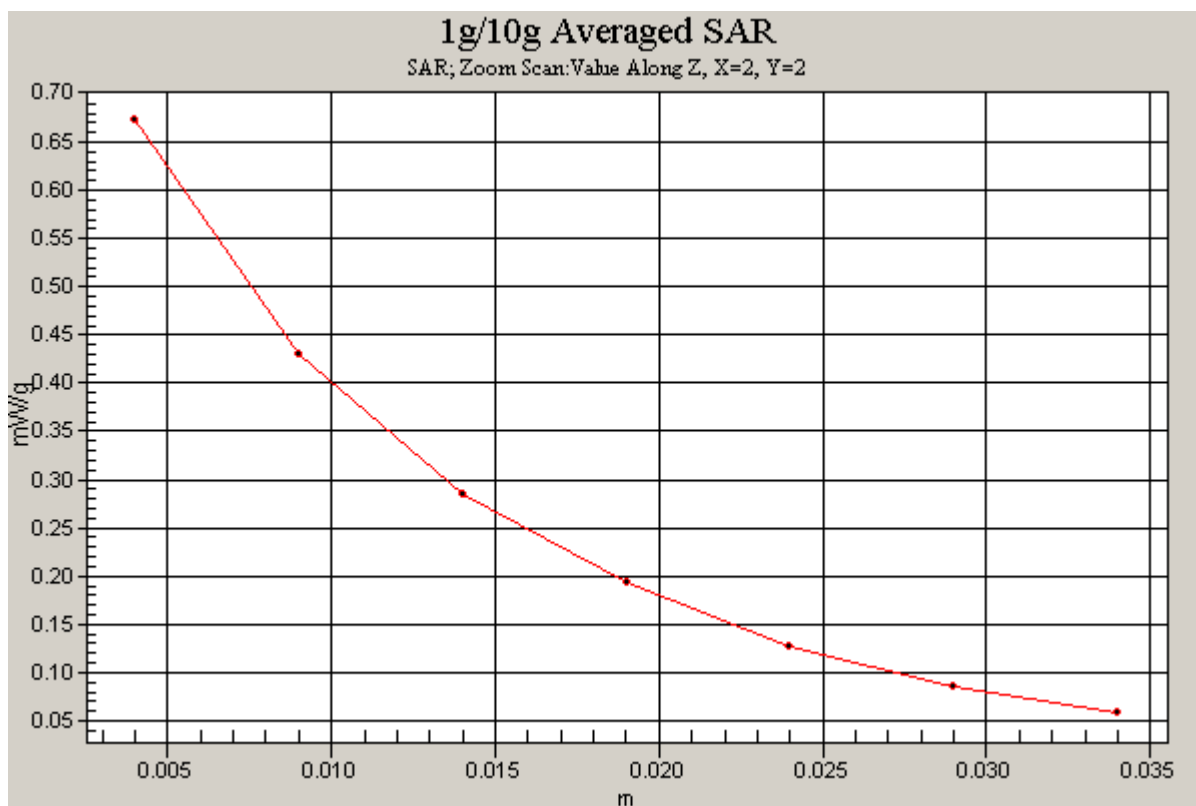
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 21.5 V/m

Peak SAR (extrapolated) = 0.995 W/kg

SAR(1 g) = 0.616 mW/g; SAR(10 g) = 0.368 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: AWS CDMA, Left Head, Tilt, Mid.ch

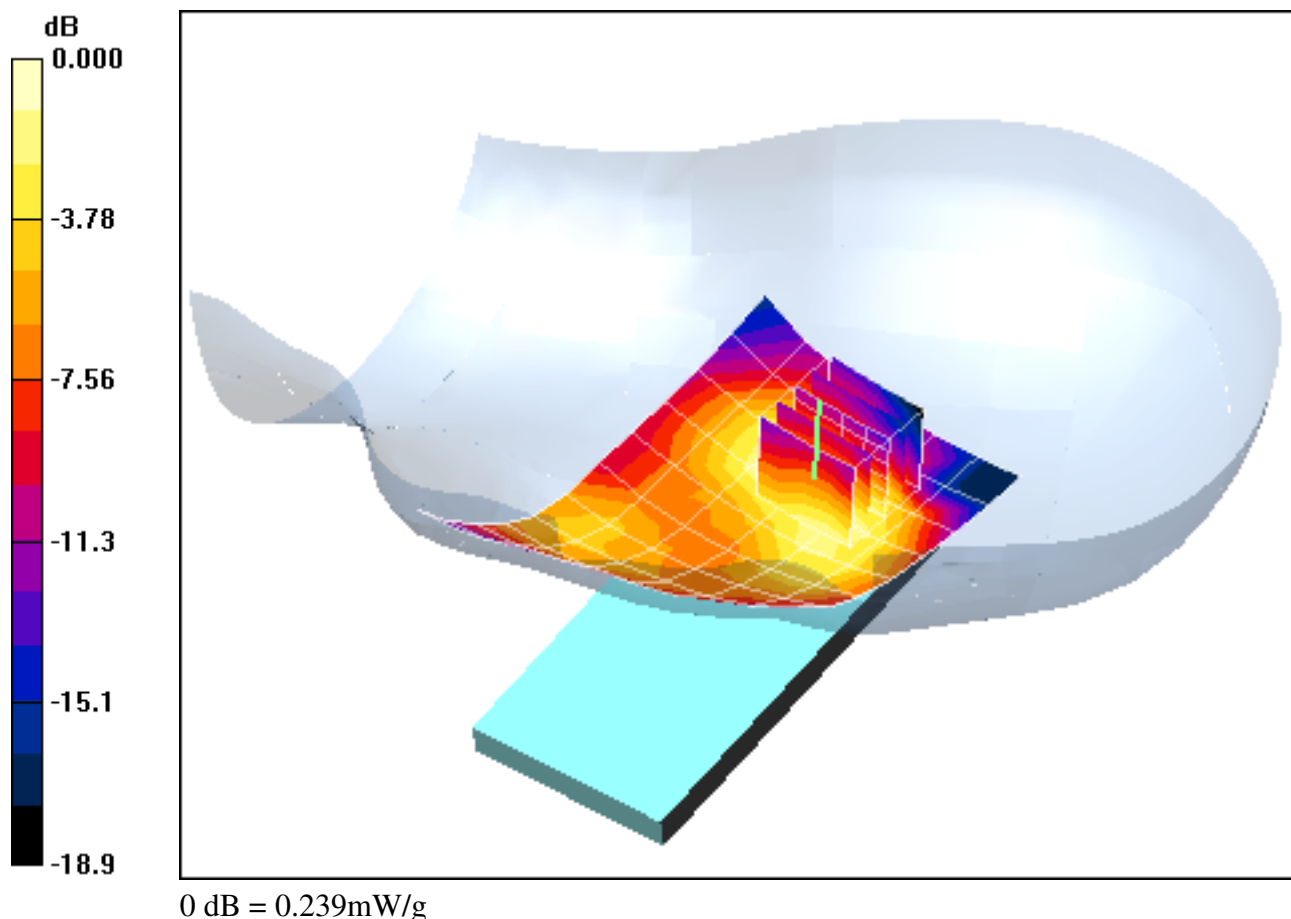
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.4 V/m

Peak SAR (extrapolated) = 0.365 W/kg

SAR(1 g) = 0.221 mW/g; SAR(10 g) = 0.135 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.41 \text{ mho/m}$; $\epsilon_r = 38.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: PCS CDMA, Right Head, Touch, Mid.ch

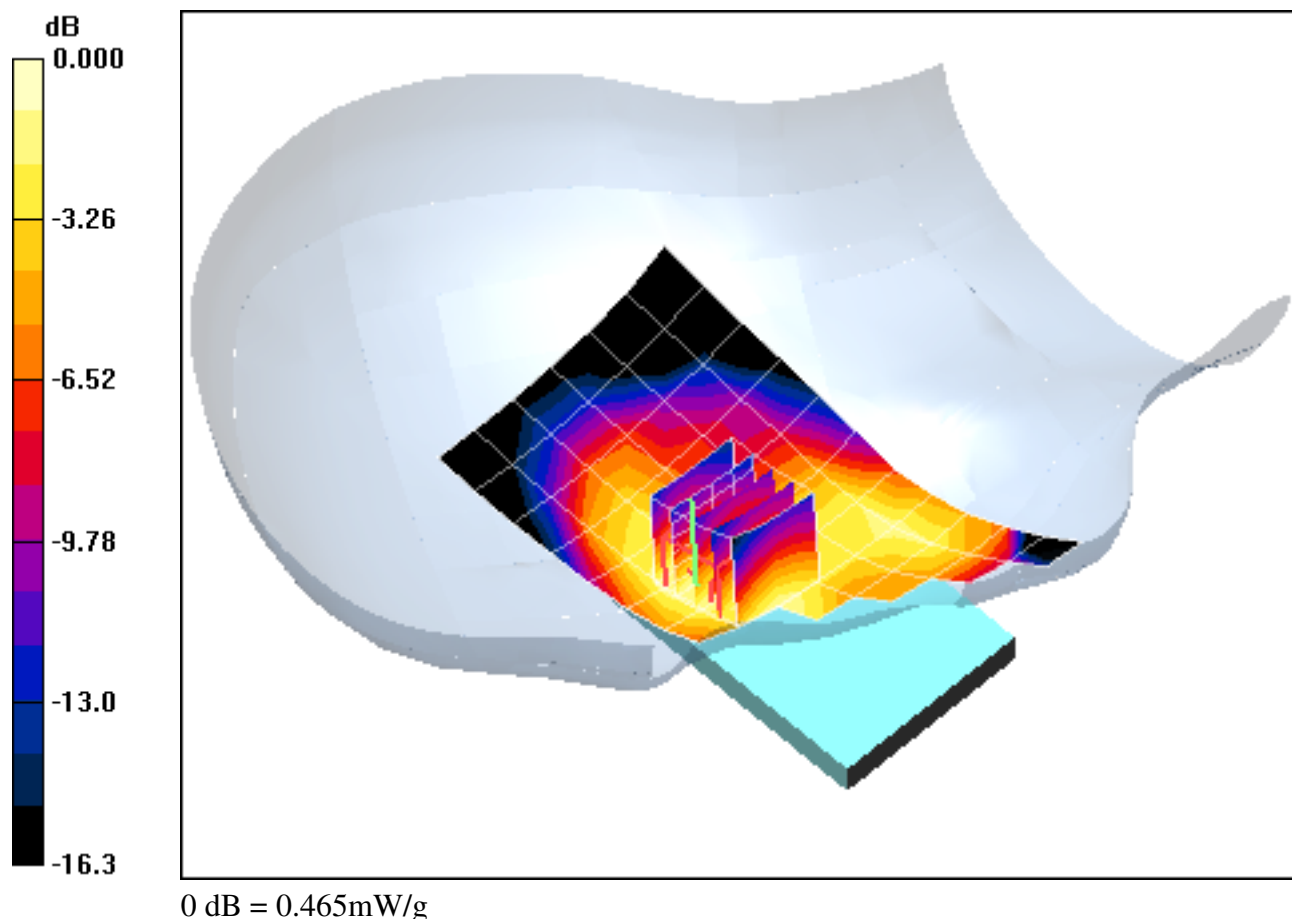
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 17.9 V/m

Peak SAR (extrapolated) = 0.709 W/kg

SAR(1 g) = 0.433 mW/g; SAR(10 g) = 0.261 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.41 \text{ mho/m}$; $\epsilon_r = 38.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: PCS CDMA, Right Head, Tilt, Mid.ch

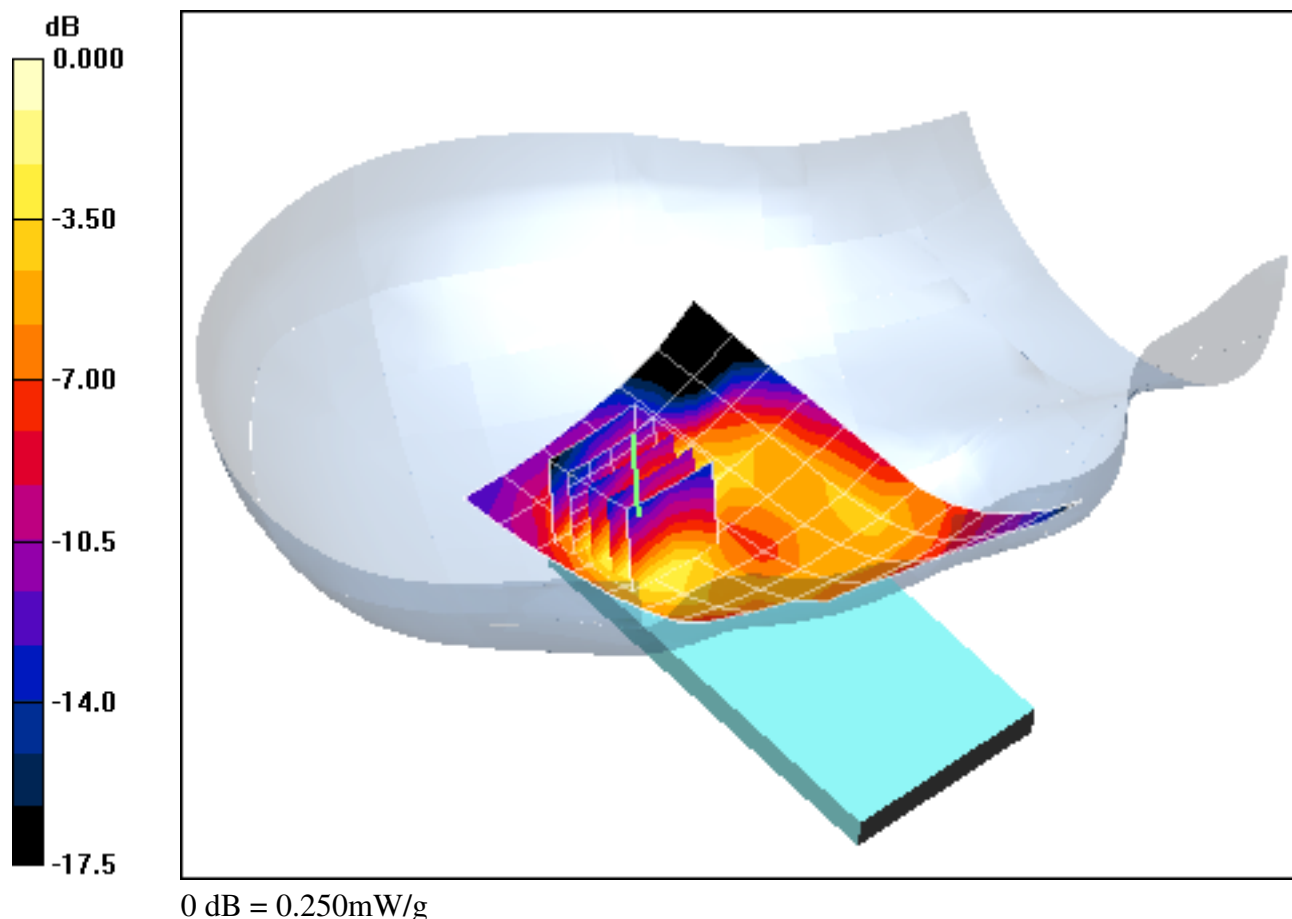
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.3 V/m

Peak SAR (extrapolated) = 0.390 W/kg

SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.140 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

Communication System: PCS CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1851.25 \text{ MHz}$; $\sigma = 1.38 \text{ mho/m}$; $\epsilon_r = 38.48$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: PCS CDMA, Left Head, Touch, Low.ch

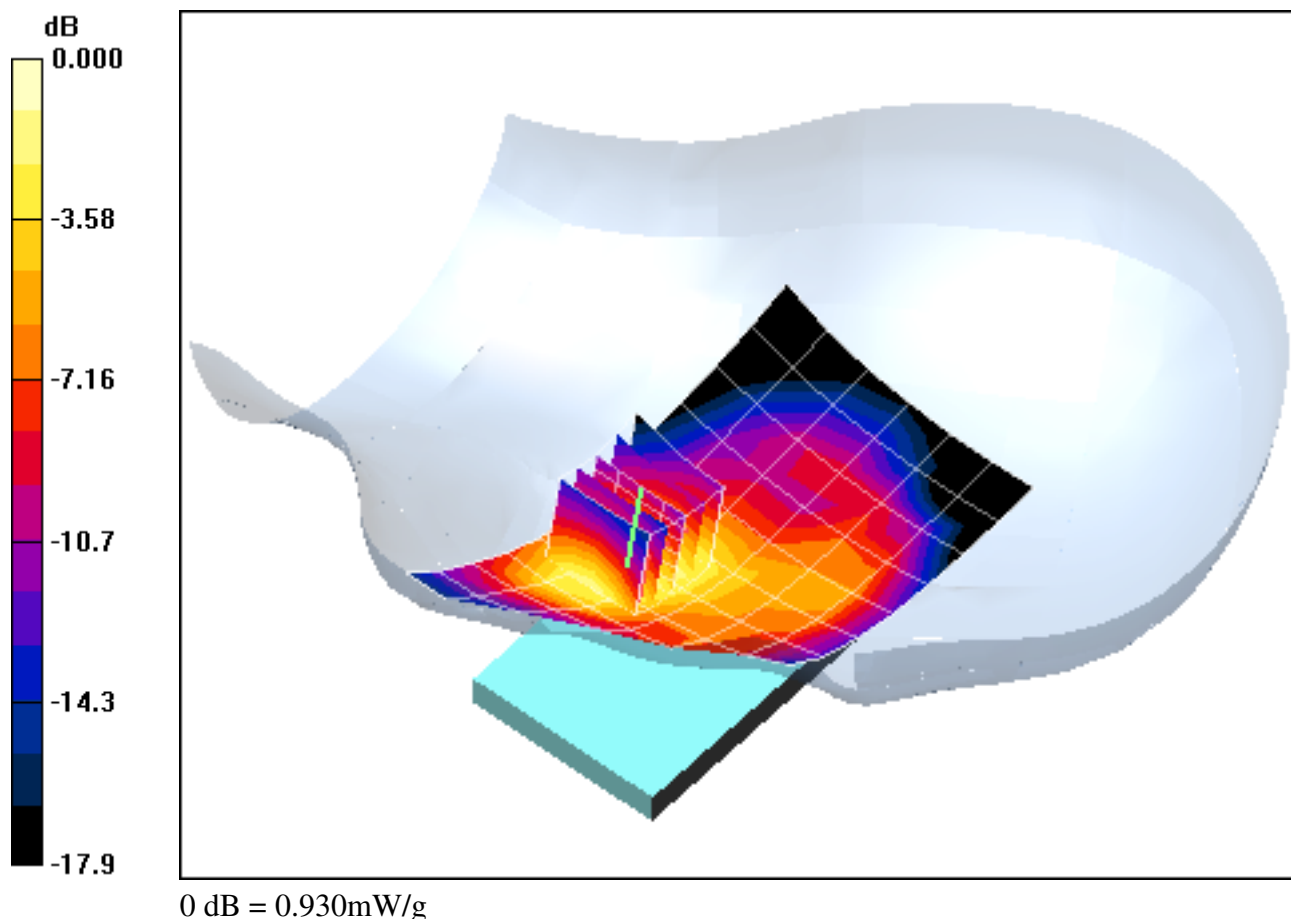
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 27.4 V/m

Peak SAR (extrapolated) = 1.32 W/kg

SAR(1 g) = 0.851 mW/g; SAR(10 g) = 0.516 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

Communication System: PCS CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1851.25 \text{ MHz}$; $\sigma = 1.38 \text{ mho/m}$; $\epsilon_r = 38.48$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: PCS CDMA, Left Head, Touch, Low.ch

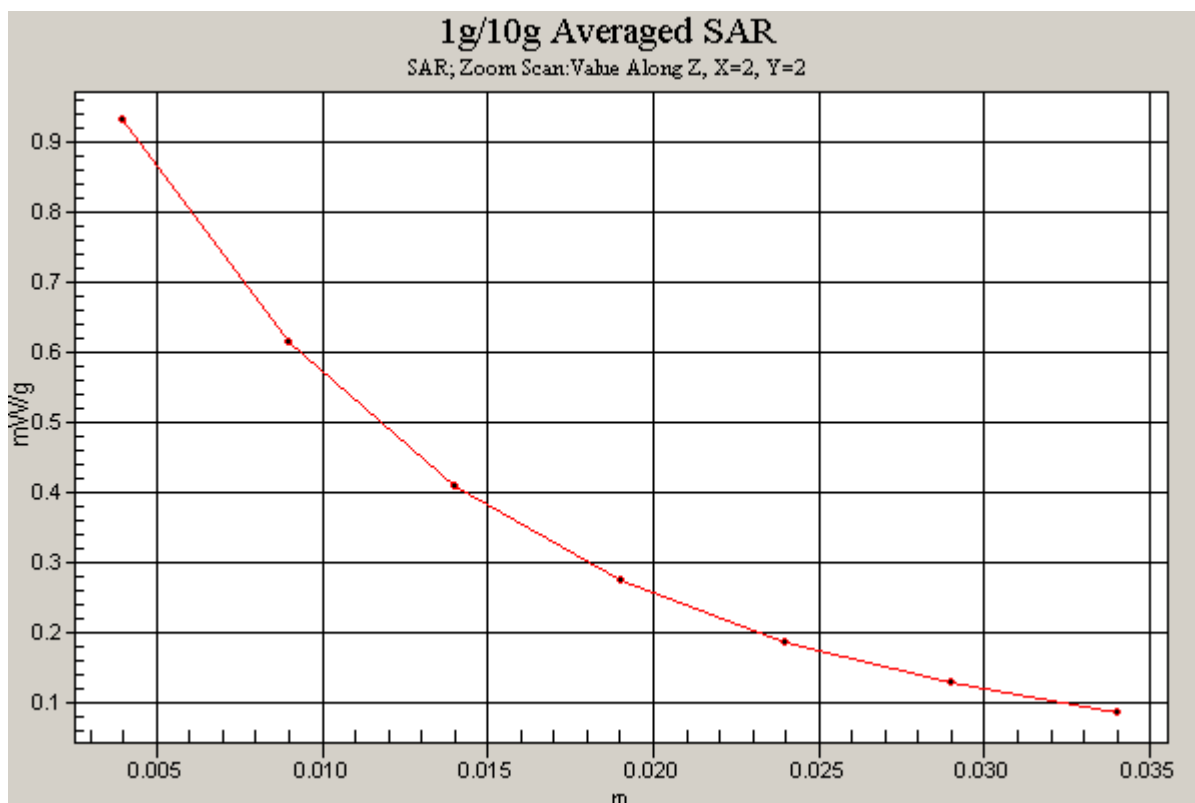
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 27.4 V/m

Peak SAR (extrapolated) = 1.32 W/kg

SAR(1 g) = 0.851 mW/g; SAR(10 g) = 0.516 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.41 \text{ mho/m}$; $\epsilon_r = 38.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: PCS CDMA, Left Head, Tilt, Mid.ch

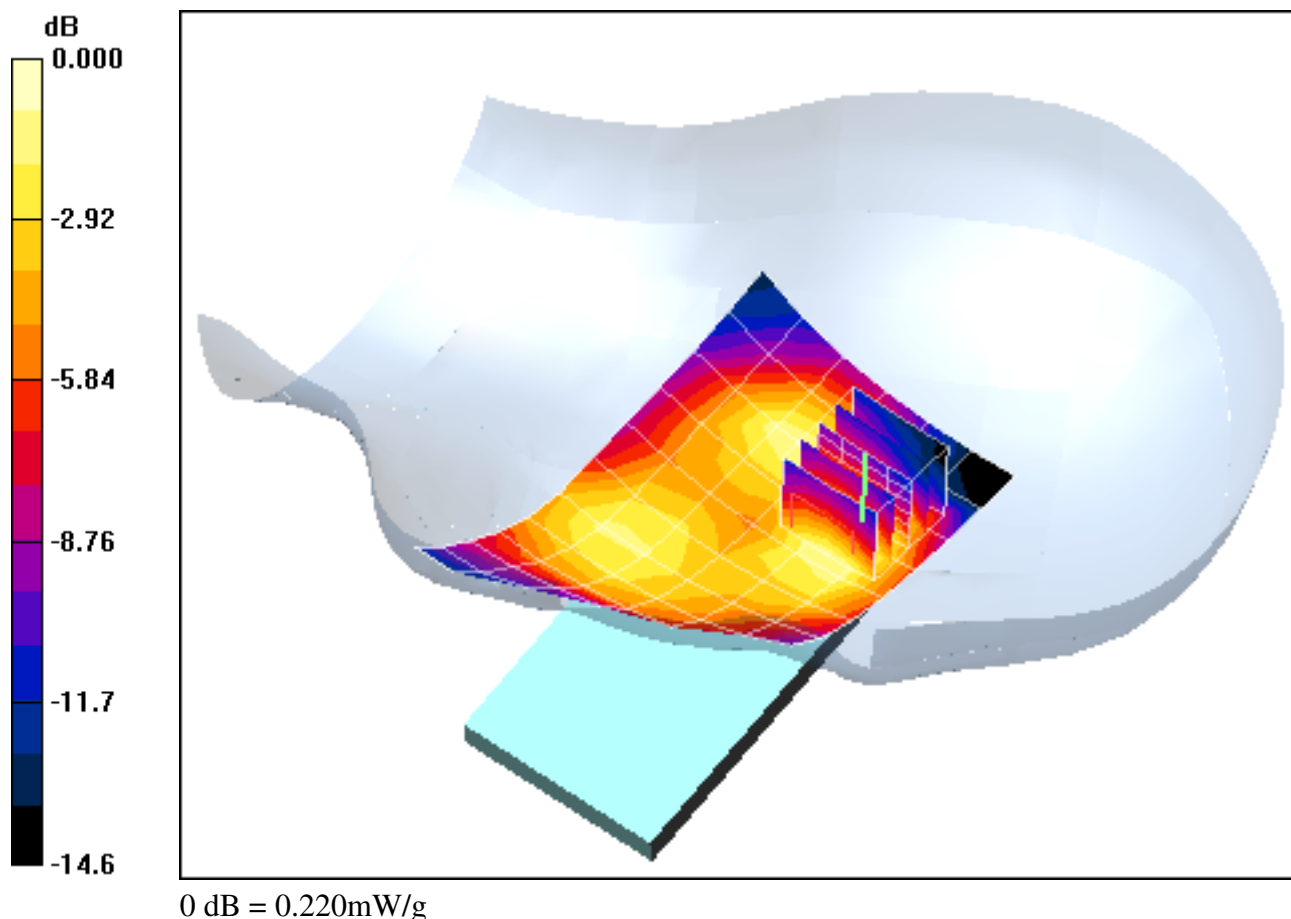
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.4 V/m

Peak SAR (extrapolated) = 0.324 W/kg

SAR(1 g) = 0.203 mW/g; SAR(10 g) = 0.125 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE PCS 10 Mhz; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.41 \text{ mho/m}$; $\epsilon_r = 38.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: PCS LTE, Right Head, Touch, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

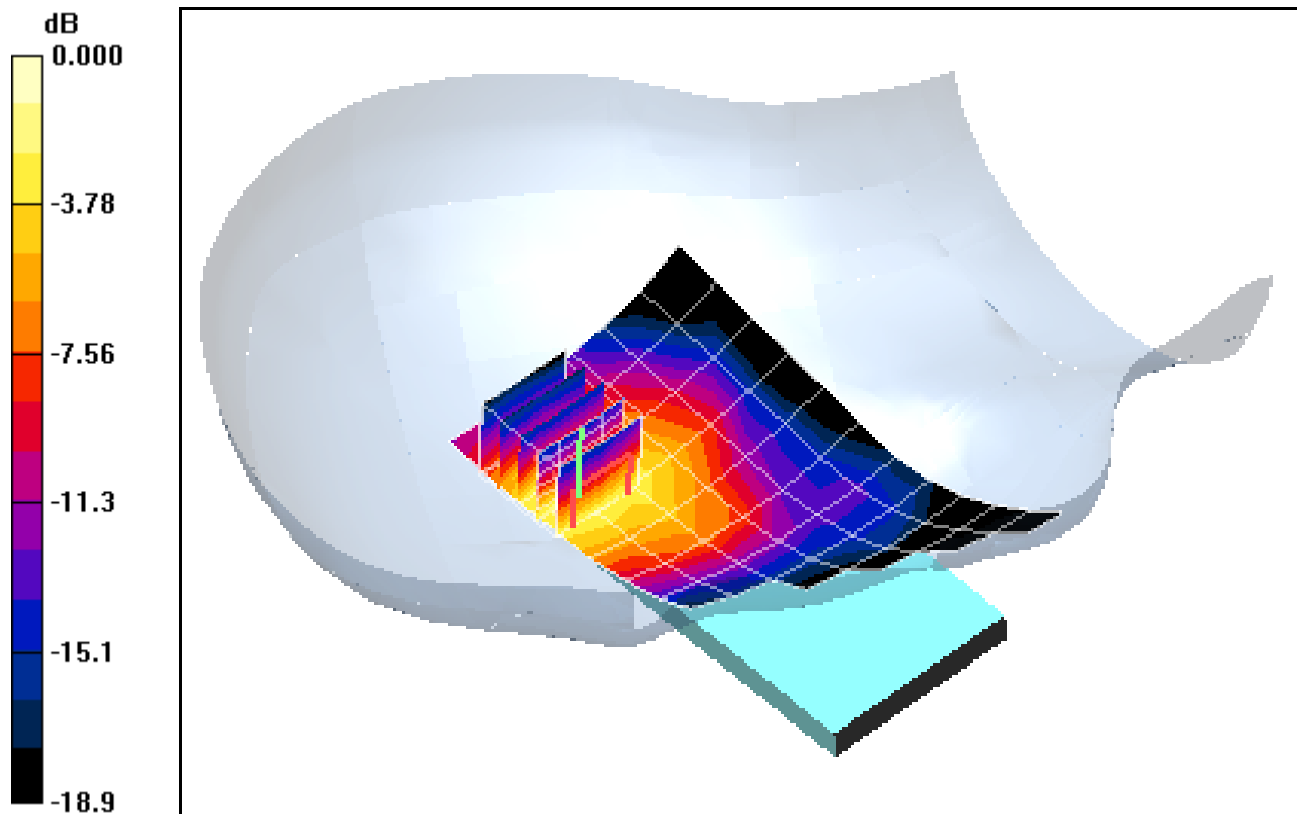
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 20.8 V/m

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.524 mW/g; SAR(10 g) = 0.274 mW/g



0 dB = 0.558mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE PCS 10 Mhz; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.41 \text{ mho/m}$; $\epsilon_r = 38.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: PCS LTE, Right Head, Tilt, Mid.ch, QPSK,
1 RB, RB Offset 49, 10 MHz BW**

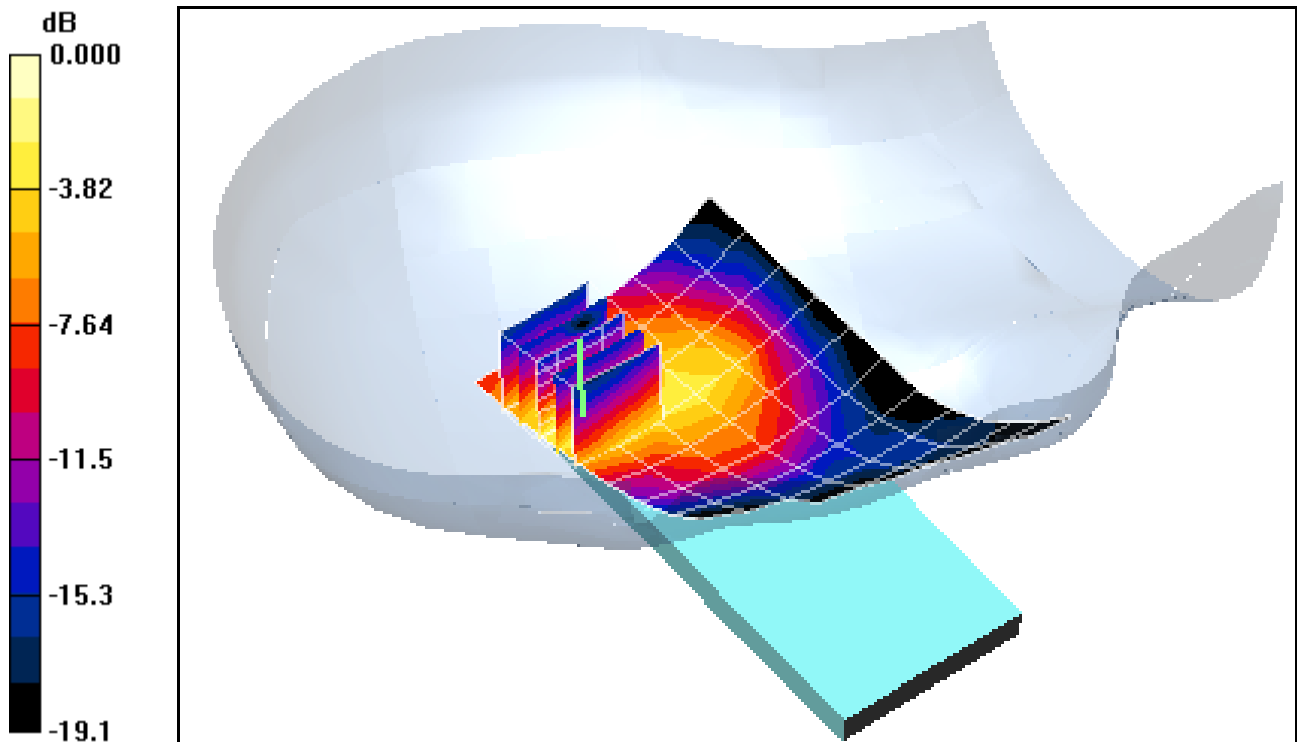
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 16.6 V/m

Peak SAR (extrapolated) = 0.588 W/kg

SAR(1 g) = 0.306 mW/g; SAR(10 g) = 0.156 mW/g



0 dB = 0.347mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE PCS 10 Mhz; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.41 \text{ mho/m}$; $\epsilon_r = 38.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: PCS LTE, 10 MHz, Left Head, Touch, Mid.ch, QPSK,
RB 1, RB Offset 0, 10 MHz BW**

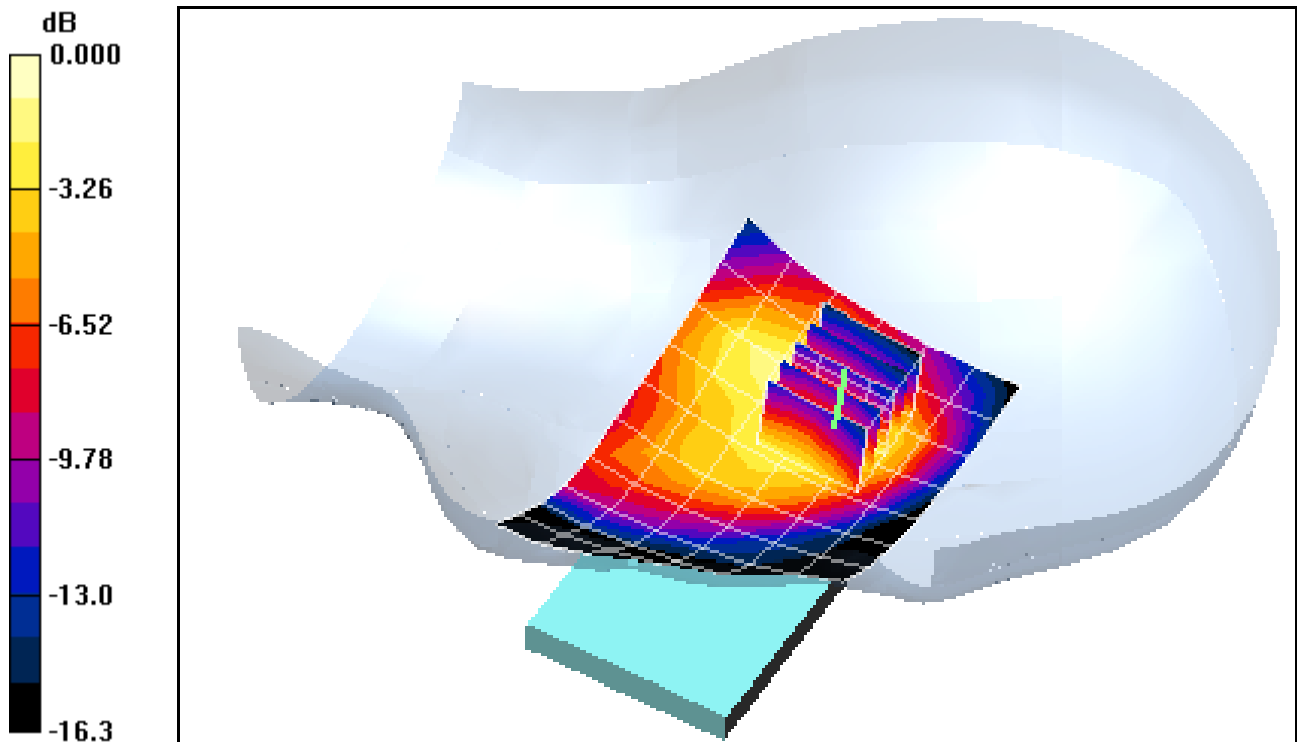
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.7 V/m

Peak SAR (extrapolated) = 0.511 W/kg

SAR(1 g) = 0.311 mW/g; SAR(10 g) = 0.185 mW/g



0 dB = 0.368mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE PCS 10 Mhz; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.41 \text{ mho/m}$; $\epsilon_r = 38.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: PCS LTE, Left Head, Tilt, Mid.ch, QPSK,
RB 1, RB Offset 49, 10 MHz BW**

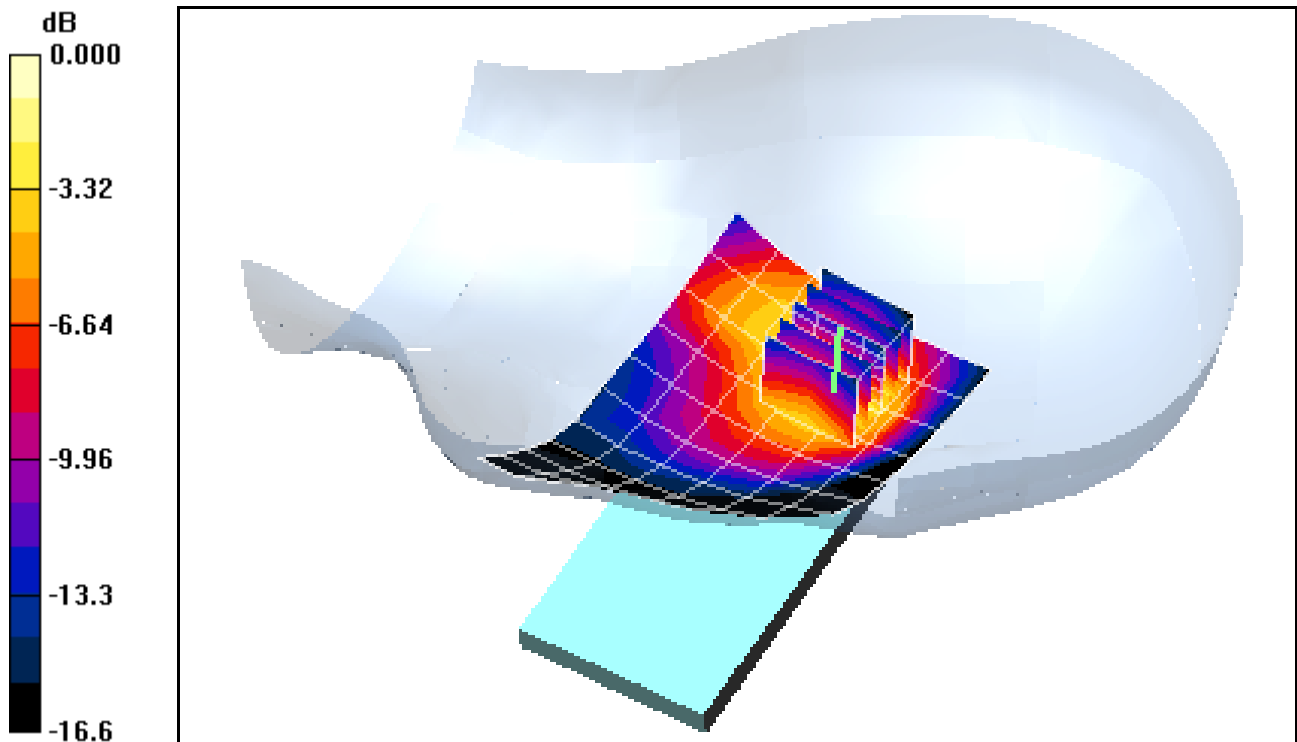
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.8 V/m

Peak SAR (extrapolated) = 0.491 W/kg

SAR(1 g) = 0.292 mW/g; SAR(10 g) = 0.169 mW/g



0 dB = 0.357mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: AWS LTE, Right Head, Touch, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

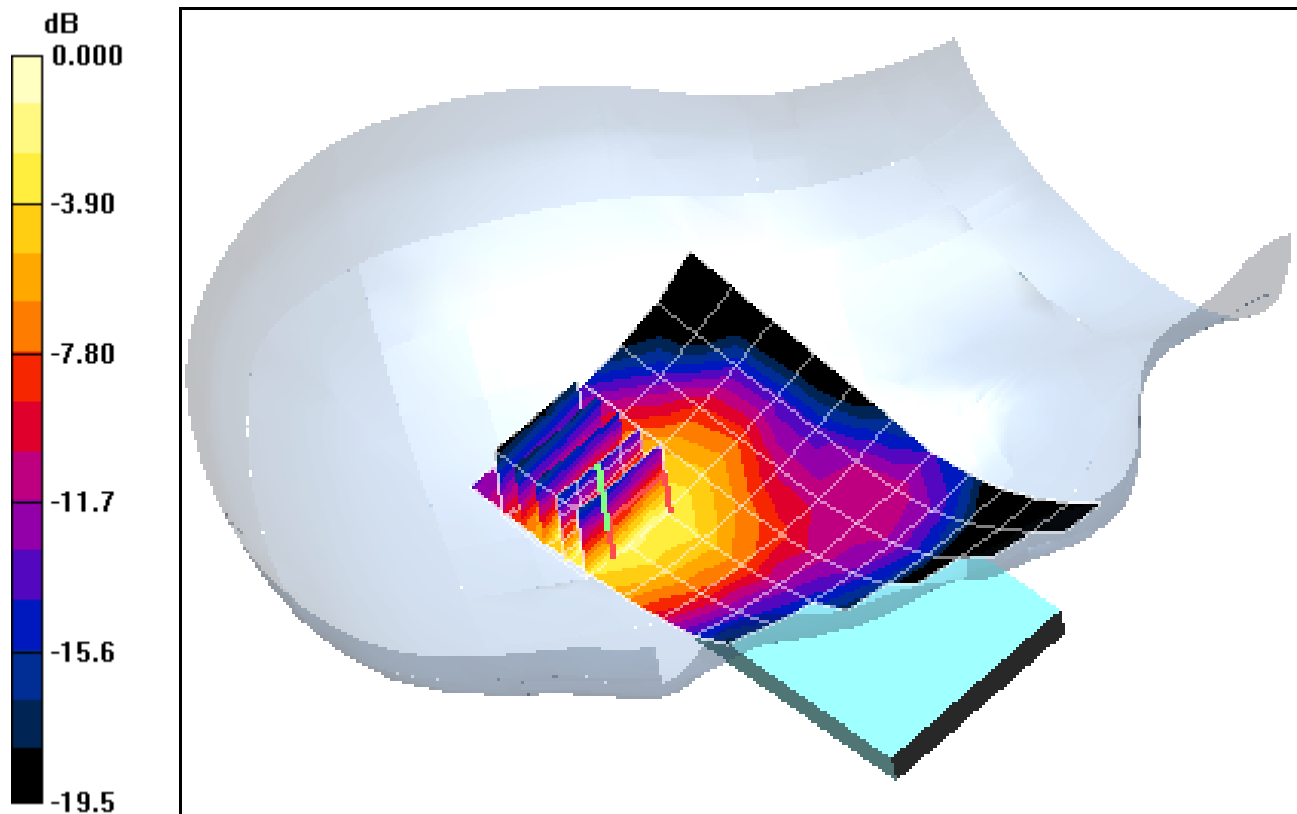
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 20.1 V/m

Peak SAR (extrapolated) = 0.997 W/kg

SAR(1 g) = 0.516 mW/g; SAR(10 g) = 0.273 mW/g



0 dB = 0.550mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: AWS LTE, Right Head, Tilt, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

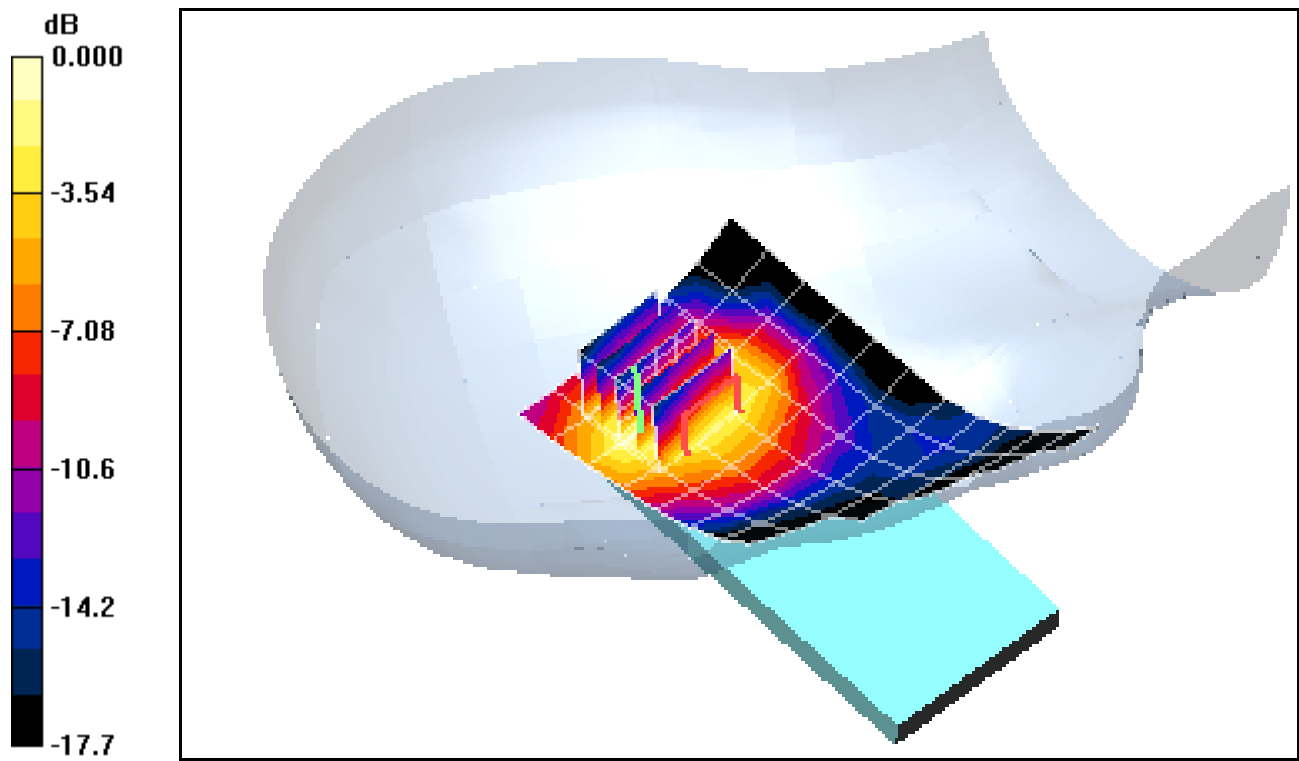
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 17.5 V/m

Peak SAR (extrapolated) = 0.703 W/kg

SAR(1 g) = 0.378 mW/g; SAR(10 g) = 0.225 mW/g



0 dB = 0.411mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone
with Bluetooth and WLAN; Serial: LTE RF**

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: AWS LTE, Left Head, Touch, Mid.ch, QPSK,
RB 1, RB Offset 0, 10 MHz BW**

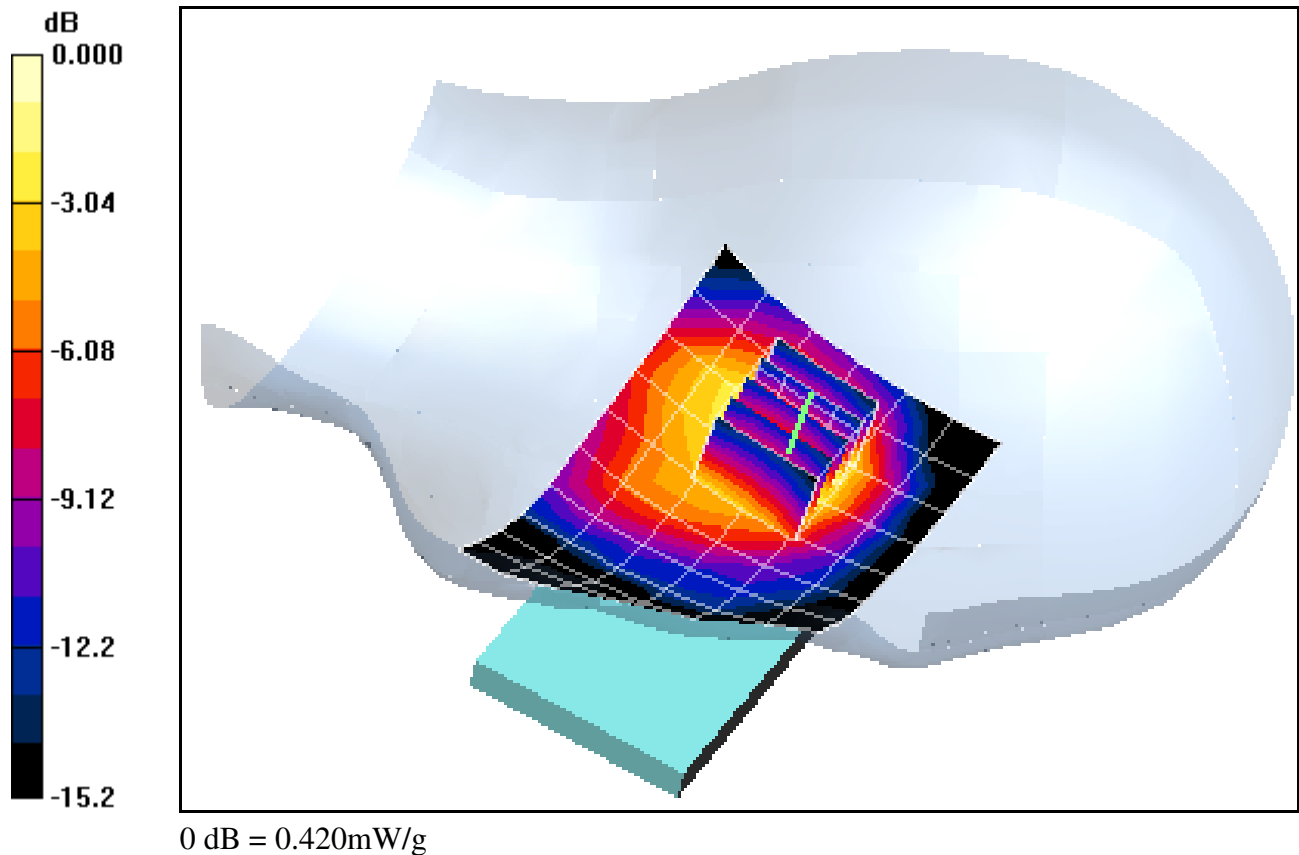
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 16.5 V/m

Peak SAR (extrapolated) = 0.626 W/kg

SAR(1 g) = 0.391 mW/g; SAR(10 g) = 0.238 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone
with Bluetooth and WLAN; Serial: LTE RF**

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: AWS LTE, Left Head, Tilt, Mid.ch, QPSK,
RB 1, RB Offset 0, 10 MHz BW**

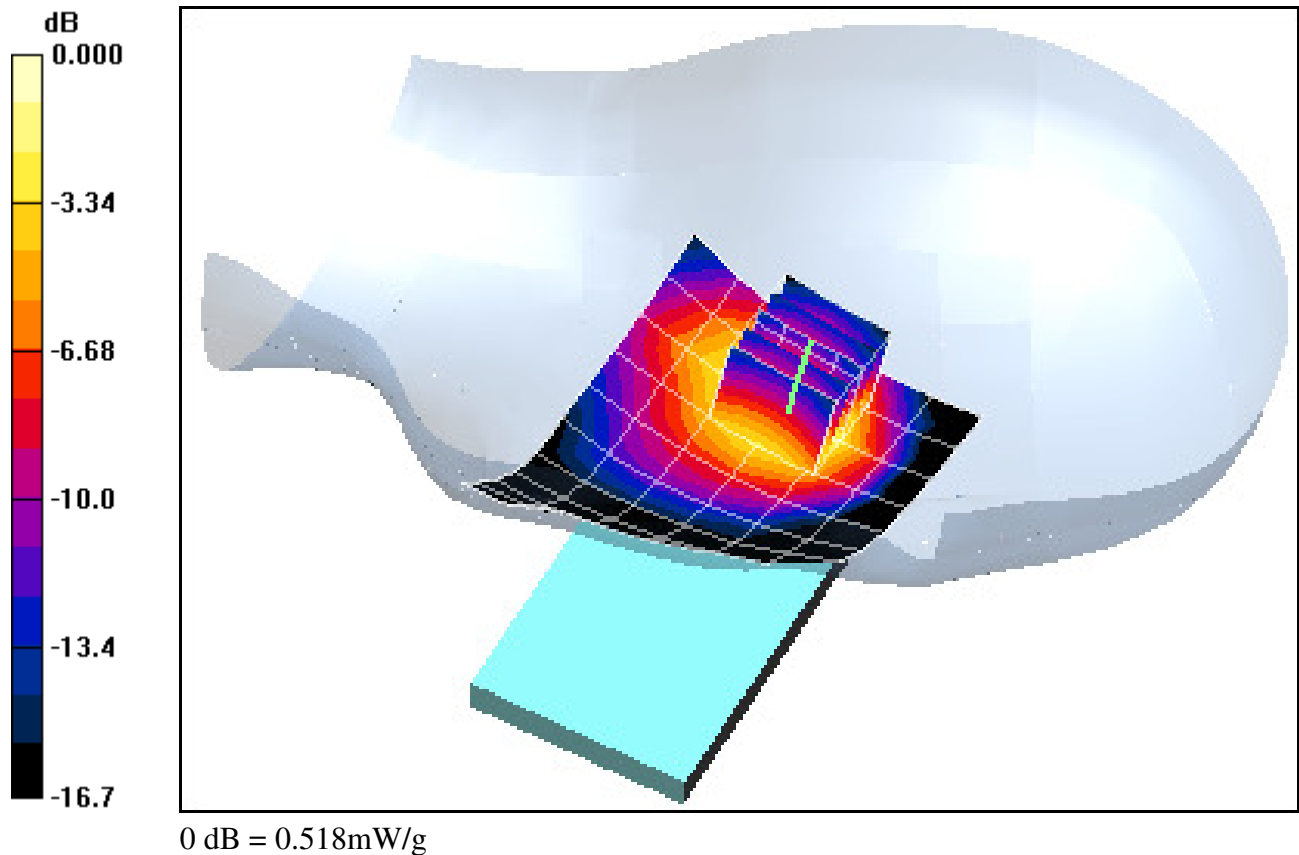
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 17.3 V/m

Peak SAR (extrapolated) = 0.764 W/kg

SAR(1 g) = 0.467 mW/g; SAR(10 g) = 0.274 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 38.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-17-2011; Ambient Temp: 24.0 °C; Tissue Temp: 22.5 °C

Probe: ES3DV2 - SN3022; ConvF(4.21, 4.21, 4.21); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: IEEE 802.11b, Right Head, Touch, Ch 11, 1 Mbps

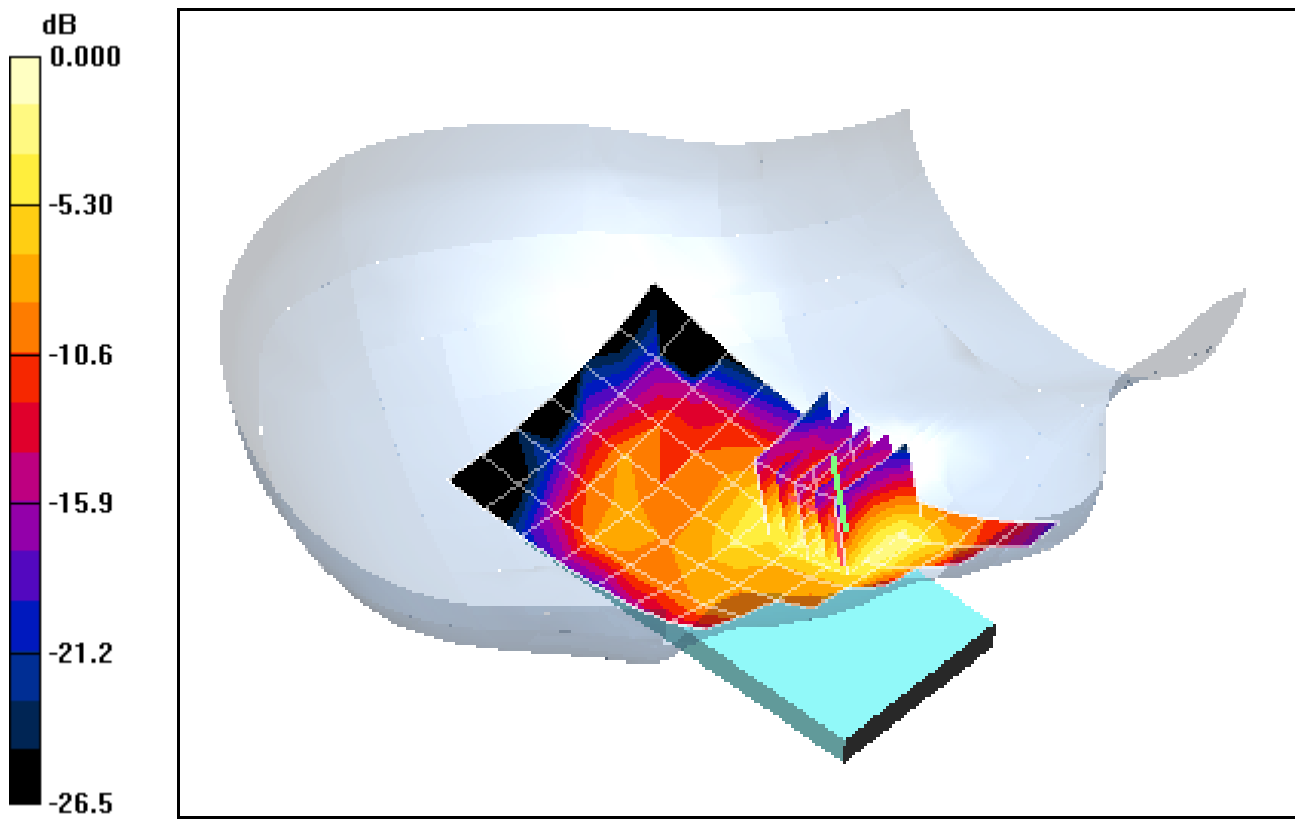
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 7.65 V/m

Peak SAR (extrapolated) = 0.220 W/kg

SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.063 mW/g



0 dB = 0.154mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 38.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-17-2011; Ambient Temp: 24.0 °C; Tissue Temp: 22.5 °C

Probe: ES3DV2 - SN3022; ConvF(4.21, 4.21, 4.21); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: IEEE 802.11b, Right Head, Touch, Ch 11, 1 Mbps

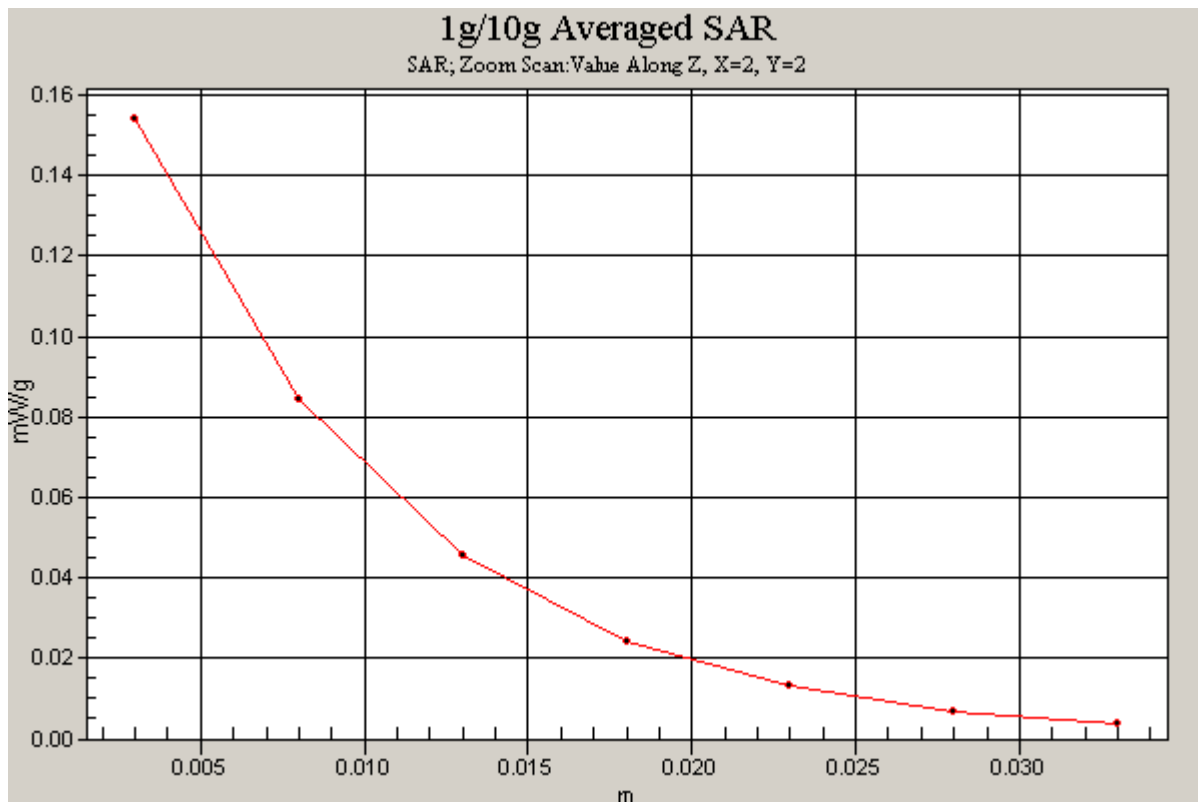
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 7.65 V/m

Peak SAR (extrapolated) = 0.220 W/kg

SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.063 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 38.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 05-17-2011; Ambient Temp: 24.0 °C; Tissue Temp: 22.5 °C

Probe: ES3DV2 - SN3022; ConvF(4.21, 4.21, 4.21); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: IEEE 802.11b, Right Head, Tilt, Ch 11, 1 Mbps

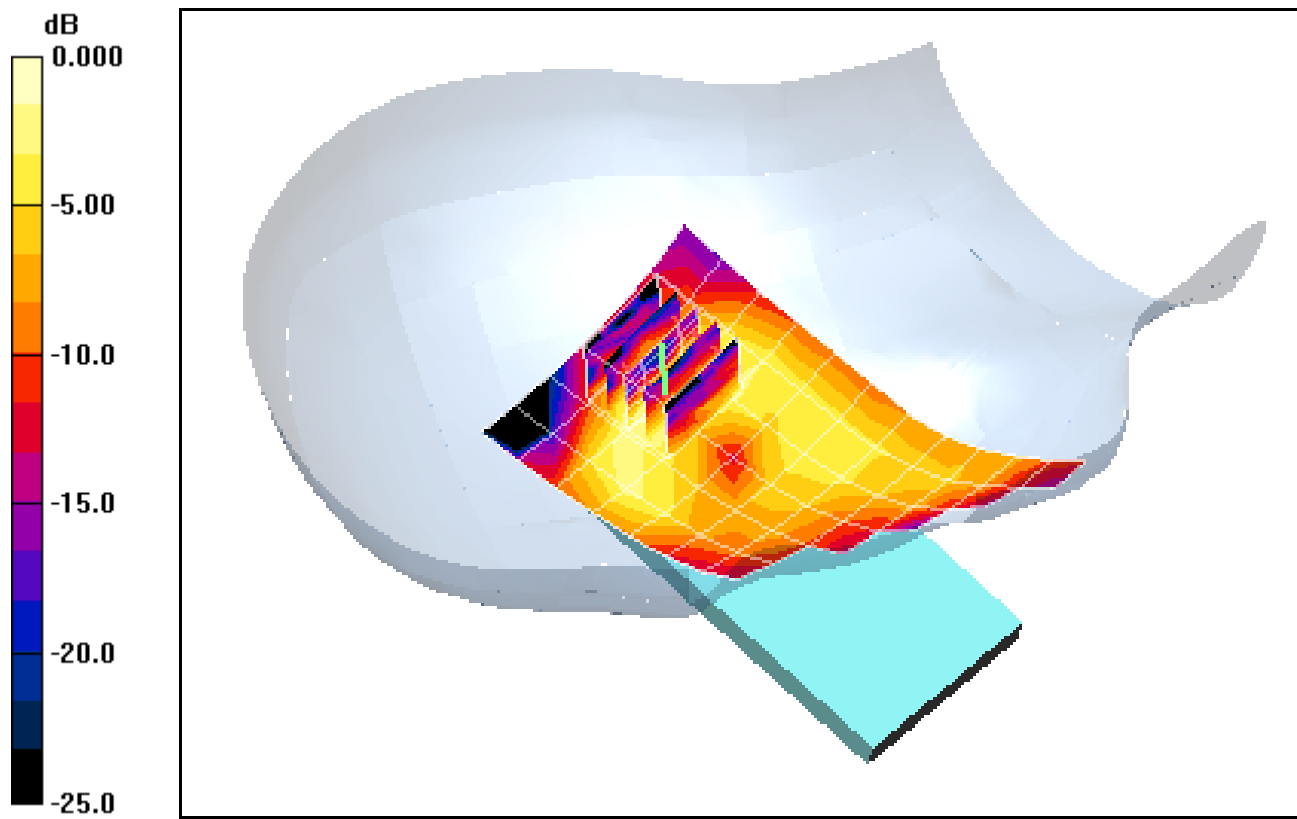
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 4.30 V/m

Peak SAR (extrapolated) = 0.066 W/kg

SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.016 mW/g



0 dB = 0.041mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 38.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-17-2011; Ambient Temp: 24.0 °C; Tissue Temp: 22.5 °C

Probe: ES3DV2 - SN3022; ConvF(4.21, 4.21, 4.21); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: IEEE 802.11b, Left Head, Touch, Ch 11, 1 Mbps

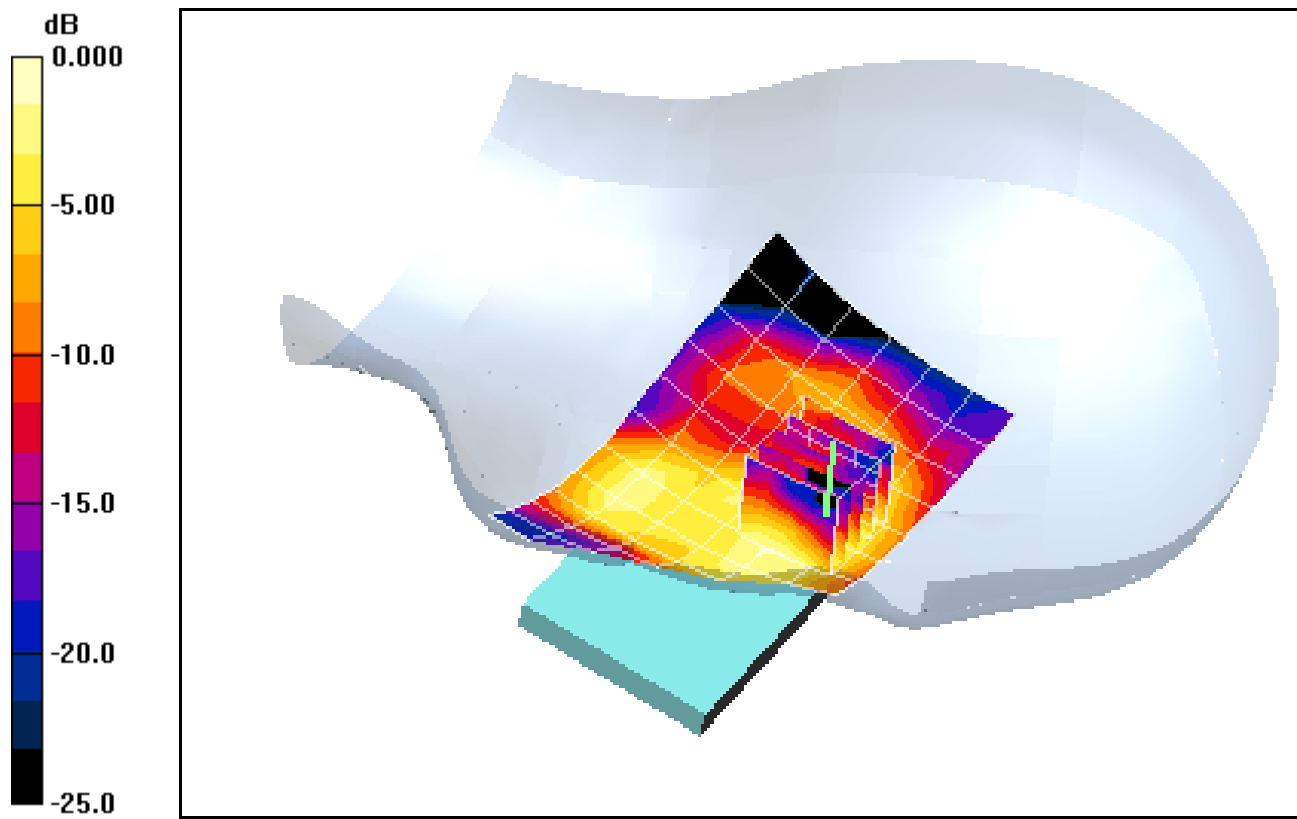
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 6.15 V/m

Peak SAR (extrapolated) = 0.109 W/kg

SAR(1 g) = 0.066 mW/g; SAR(10 g) = 0.036 mW/g



0 dB = 0.082mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 38.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 05-17-2011; Ambient Temp: 24.0 °C; Tissue Temp: 22.5 °C

Probe: ES3DV2 - SN3022; ConvF(4.21, 4.21, 4.21); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: IEEE 802.11b, Left Head, Tilt, Ch 11, 1 Mbps

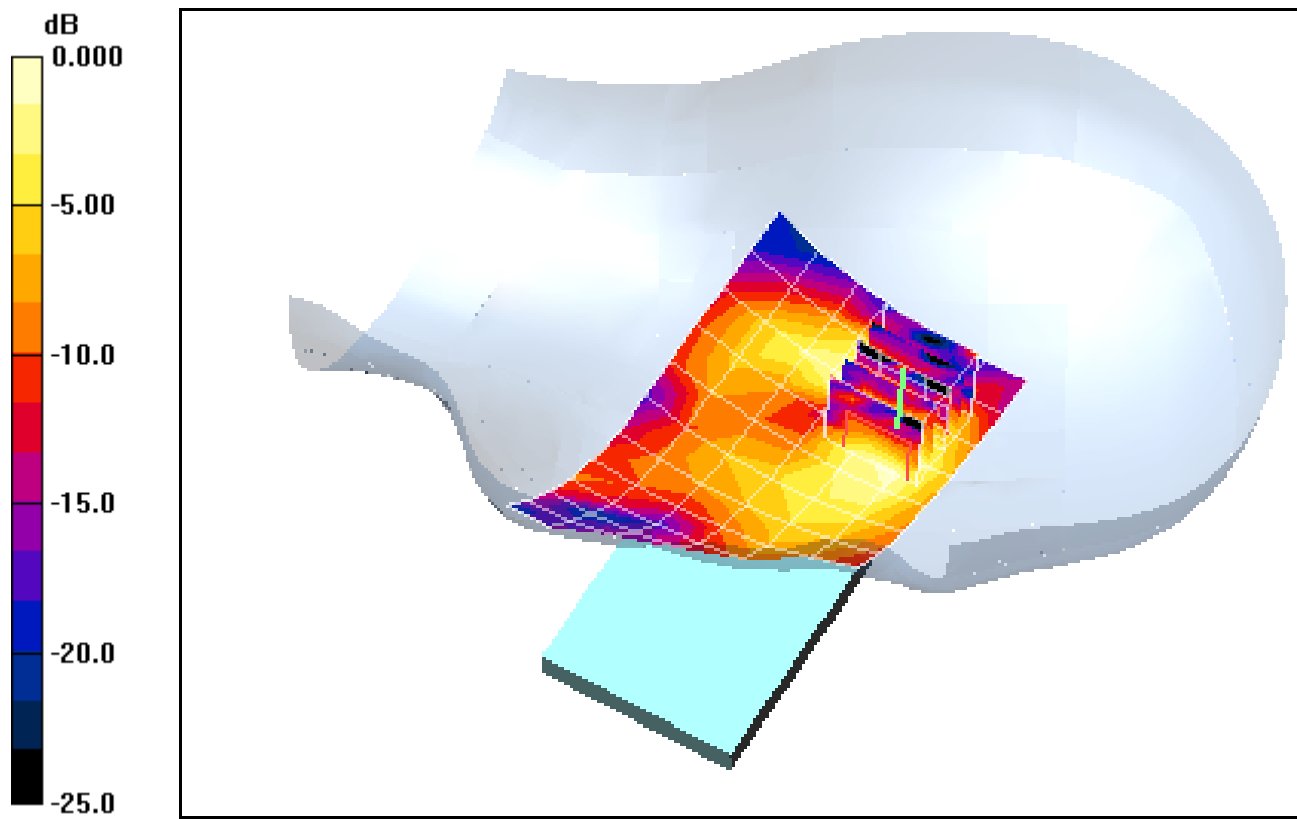
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 4.51 V/m

Peak SAR (extrapolated) = 0.086 W/kg

SAR(1 g) = 0.036 mW/g; SAR(10 g) = 0.019 mW/g



0 dB = 0.042mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.966 \text{ mho/m}$; $\epsilon_r = 53.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 2.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.7 °C

Probe: EX3DV4 - SN3550; ConvF(8.11, 8.11, 8.11); Calibrated: 2/14/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/20/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

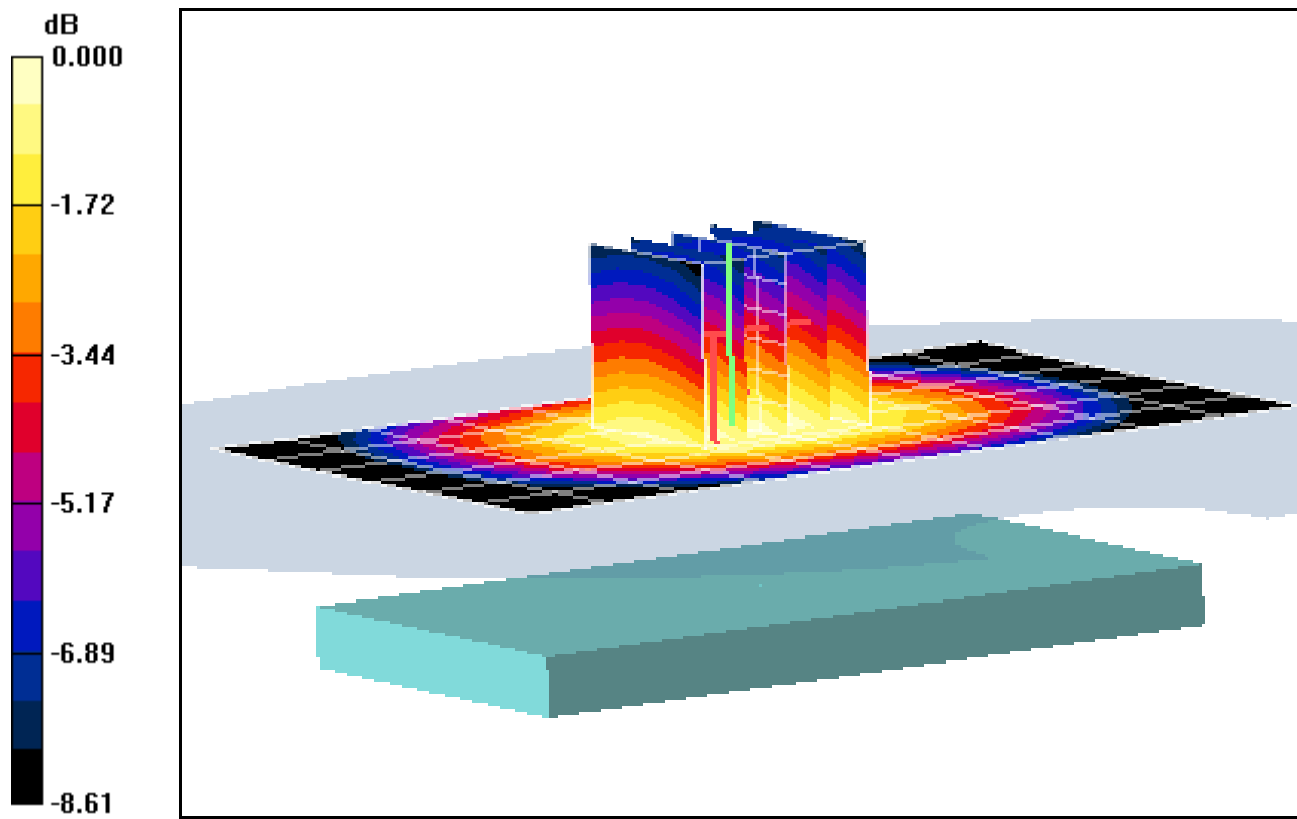
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 24.3 V/m

Peak SAR (extrapolated) = 0.667 W/kg

SAR(1 g) = 0.519 mW/g; SAR(10 g) = 0.387 mW/g



0 dB = 0.547mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.966 \text{ mho/m}$; $\epsilon_r = 53.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 2.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.7 °C

Probe: EX3DV4 - SN3550; ConvF(8.11, 8.11, 8.11); Calibrated: 2/14/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/20/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

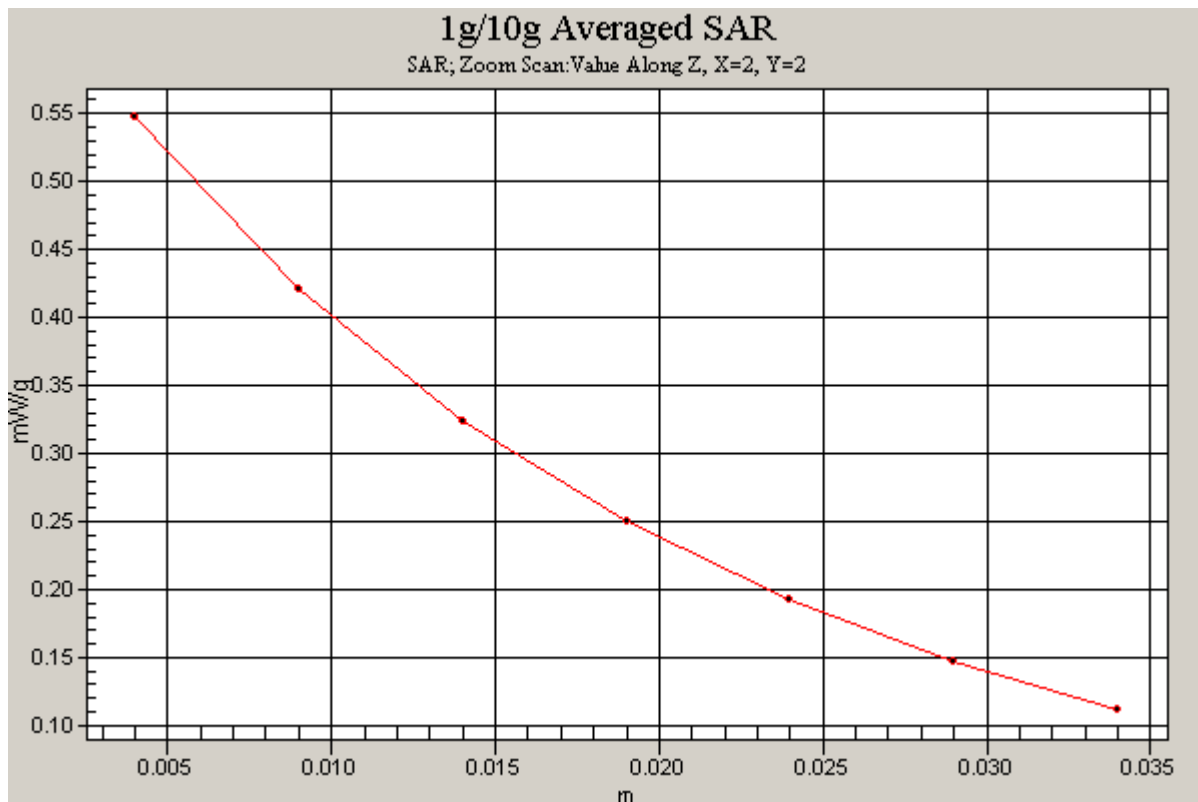
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 24.3 V/m

Peak SAR (extrapolated) = 0.667 W/kg

SAR(1 g) = 0.519 mW/g; SAR(10 g) = 0.387 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 51.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 2.0 cm

Test Date: 05-12-2011; Ambient Temp: 23.9 °C; Tissue Temp: 22.2 °C

Probe: EX3DV4 - SN3561; ConvF(6.84, 6.84, 6.84); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: AWS CDMA, Body SAR, Back side, Mid.ch

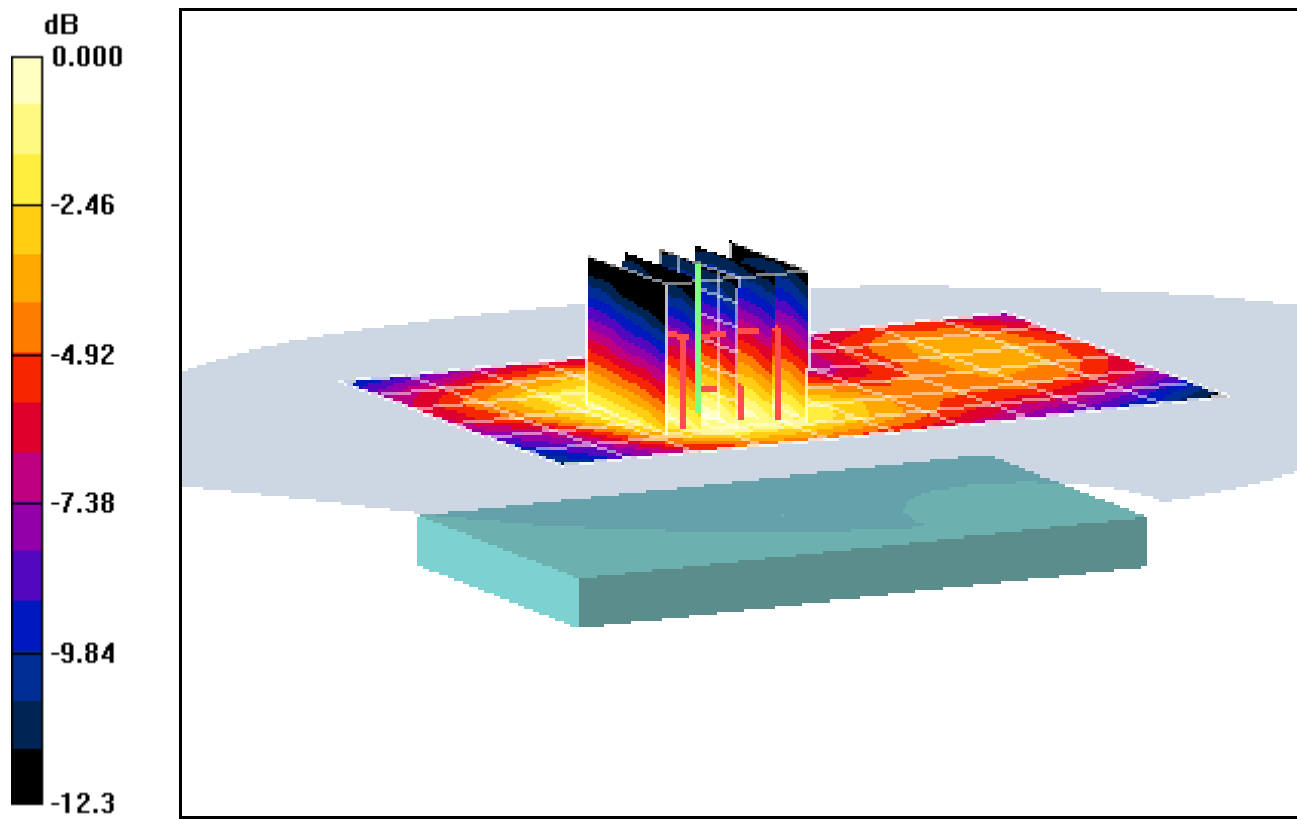
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.2 V/m

Peak SAR (extrapolated) = 0.380 W/kg

SAR(1 g) = 0.243 mW/g; SAR(10 g) = 0.154 mW/g



0 dB = 0.260mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: CDMA RF

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 2.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.5 °C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

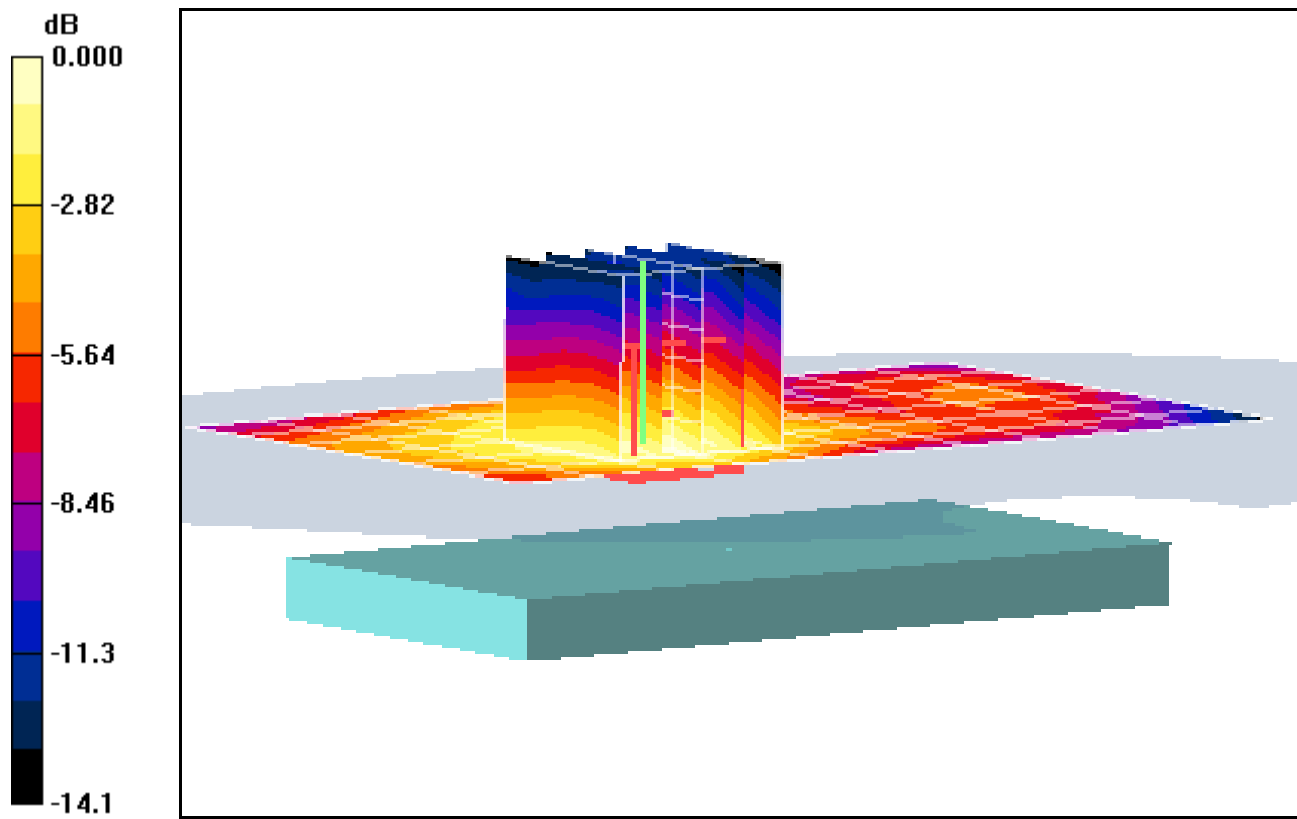
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.2 V/m

Peak SAR (extrapolated) = 0.357 W/kg

SAR(1 g) = 0.227 mW/g; SAR(10 g) = 0.141 mW/g



0 dB = 0.242mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE PCS 10 Mhz; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.5 °C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: PCS LTE, Body SAR, Back side, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

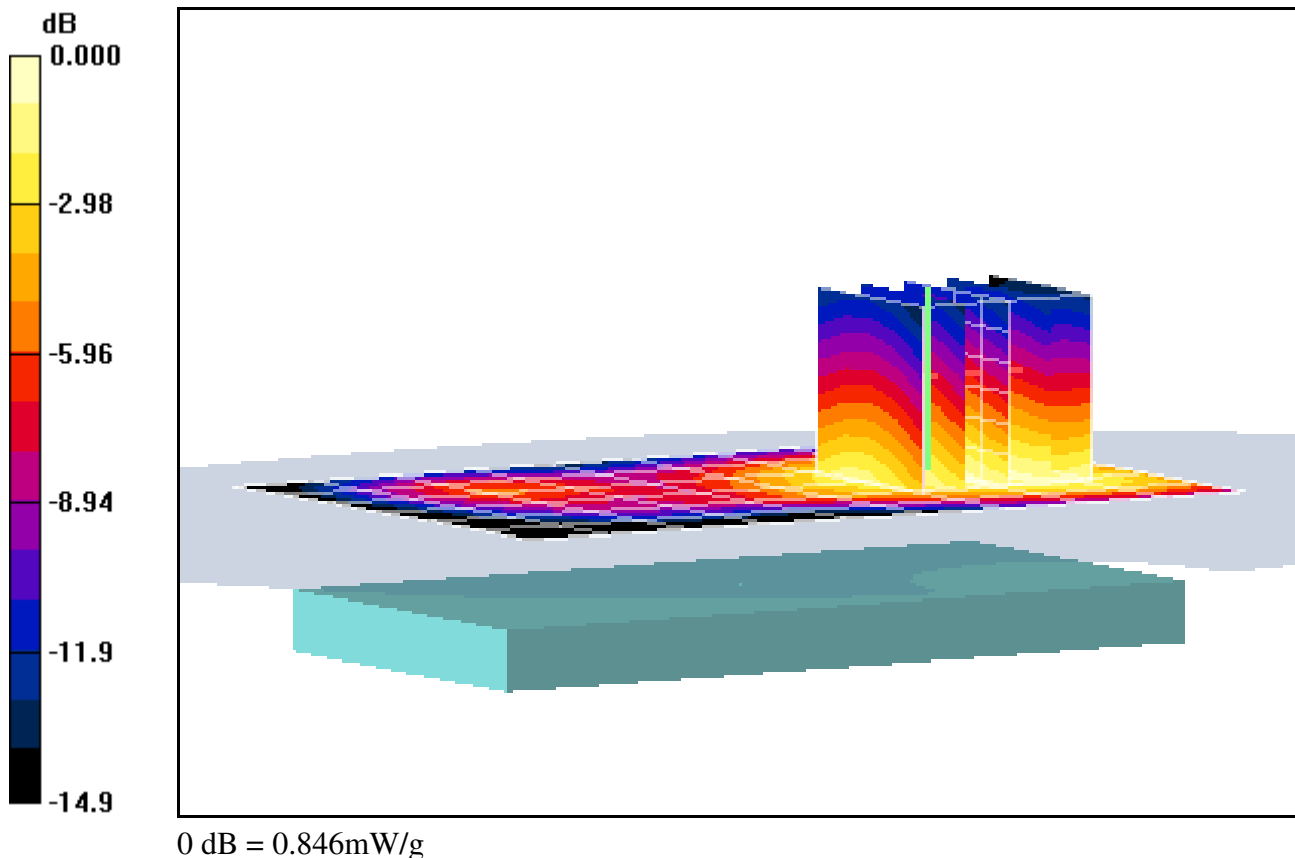
Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 23.1 V/m

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.786 mW/g; SAR(10 g) = 0.483 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE PCS 10 Mhz; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.5 °C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: PCS LTE, Body SAR, Back side, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

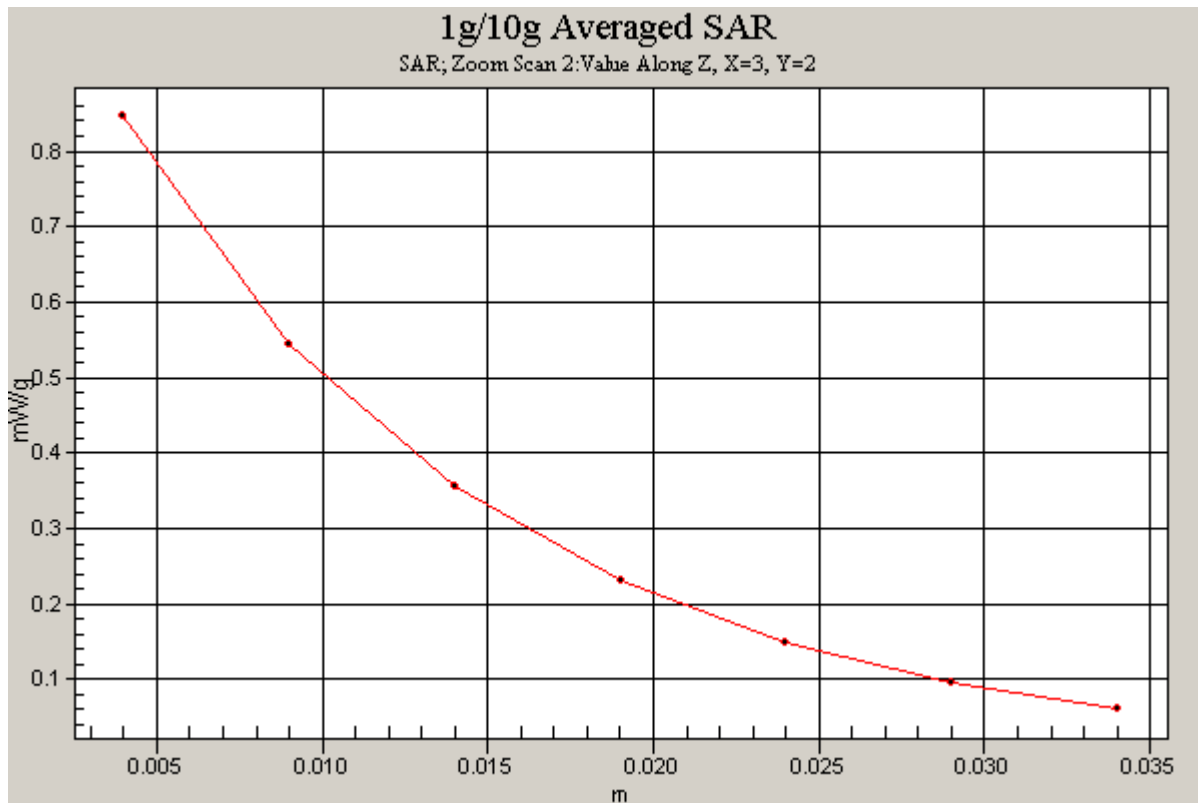
Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 23.1 V/m

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.786 mW/g; SAR(10 g) = 0.483 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE PCS 10 Mhz; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.5 °C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: PCS LTE, Body SAR, Front side, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

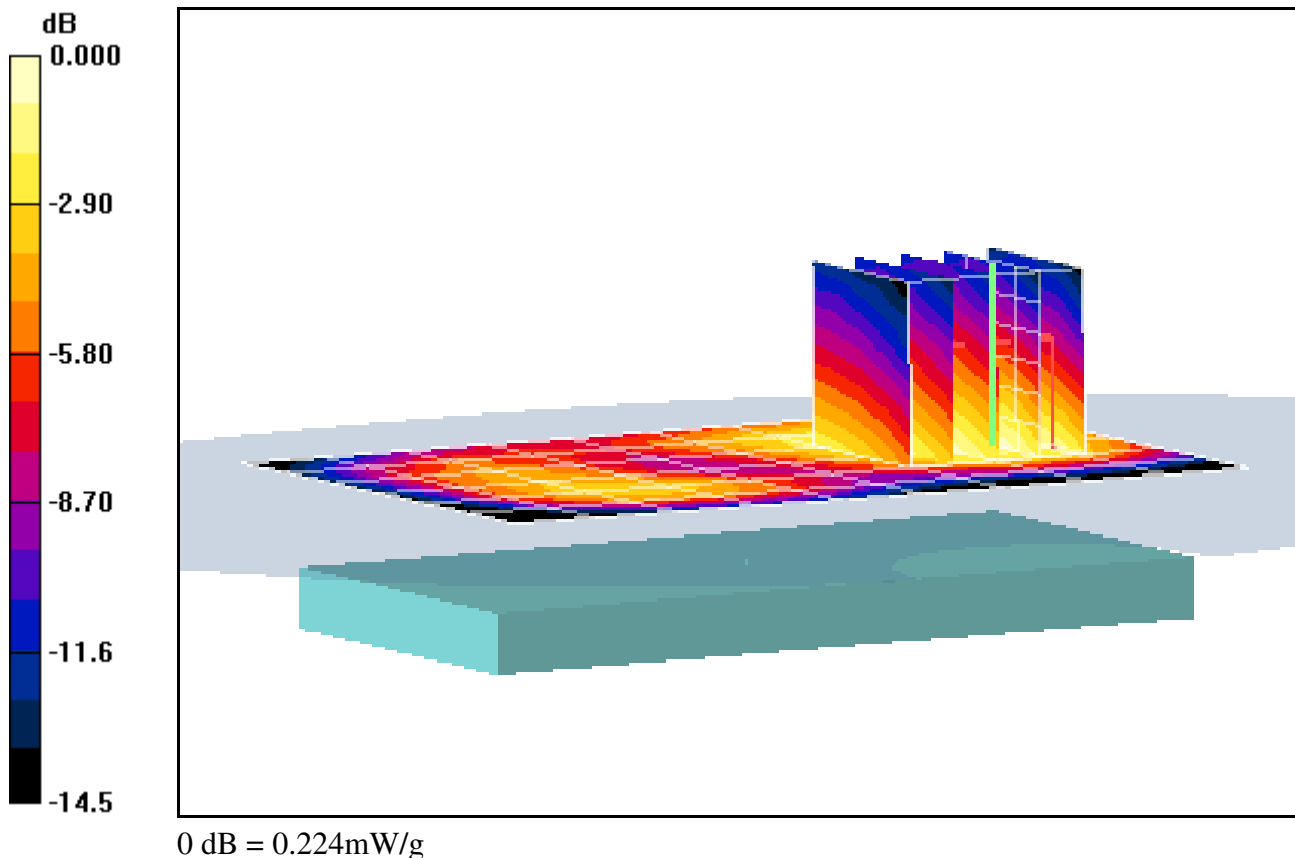
Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.8 V/m

Peak SAR (extrapolated) = 0.315 W/kg

SAR(1 g) = 0.209 mW/g; SAR(10 g) = 0.134 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE PCS 10 Mhz; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.5 °C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: PCS LTE, Body SAR, Top Edge, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

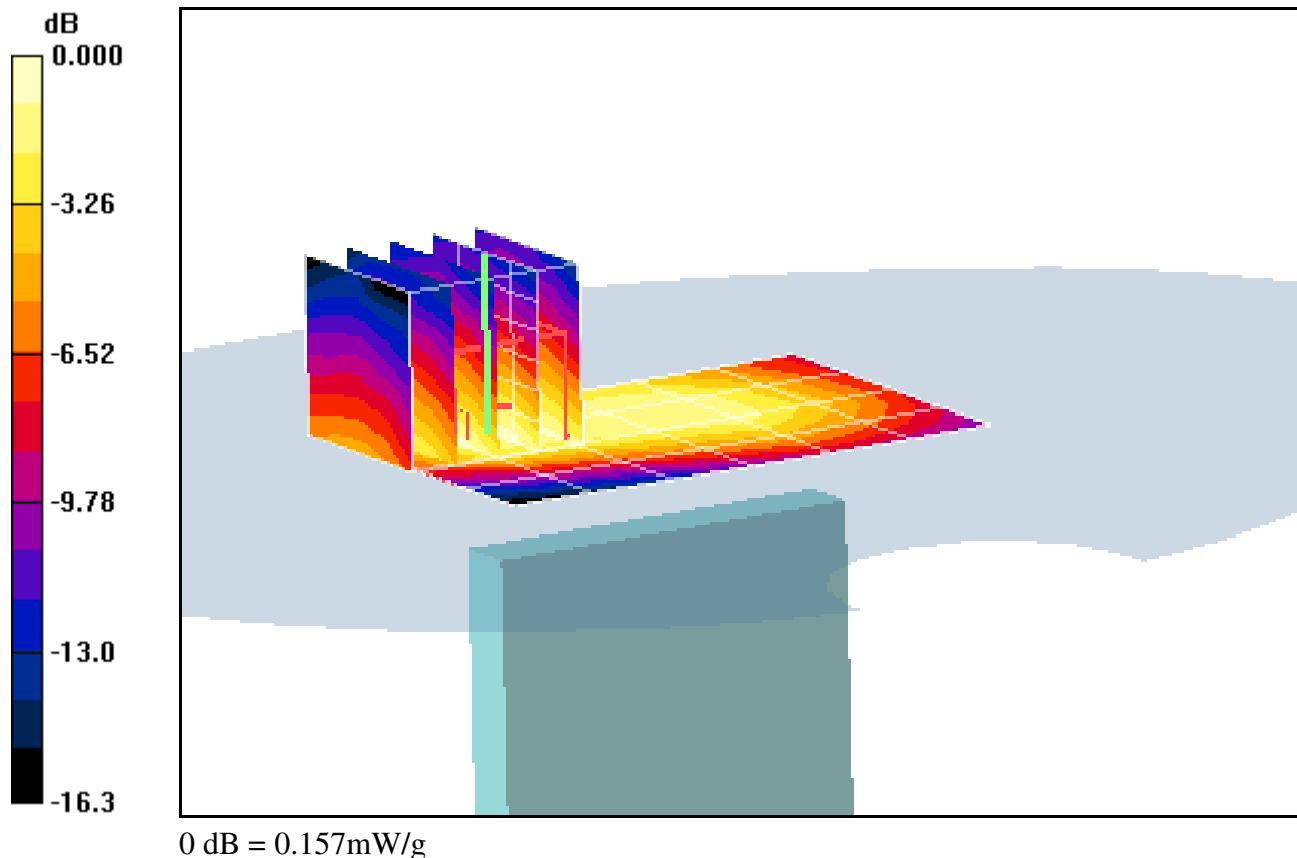
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 9.78 V/m

Peak SAR (extrapolated) = 0.239 W/kg

SAR(1 g) = 0.146 mW/g; SAR(10 g) = 0.087 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE PCS 10 Mhz; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.5 °C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: PCS LTE, Body SAR, Left Edge, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

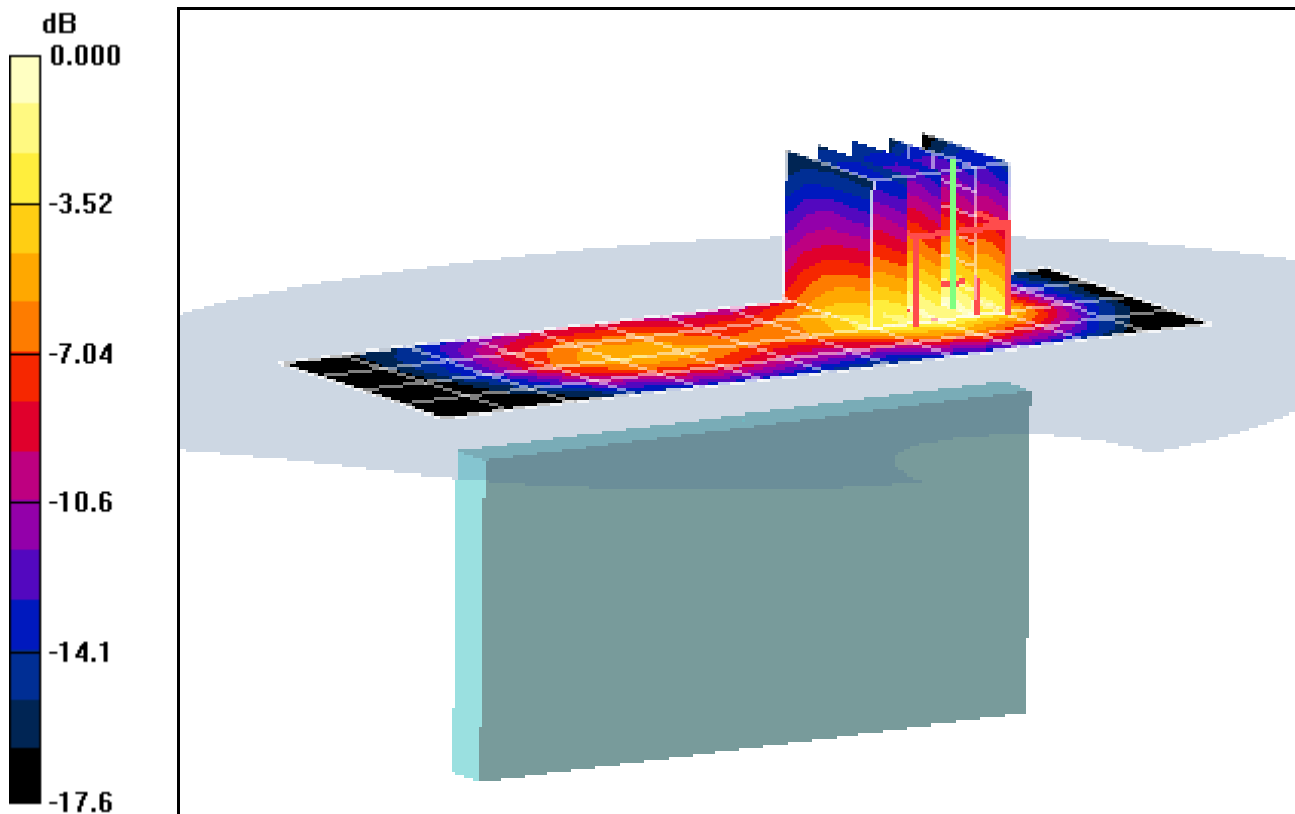
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 15.0 V/m

Peak SAR (extrapolated) = 0.697 W/kg

SAR(1 g) = 0.398 mW/g; SAR(10 g) = 0.217 mW/g



0 dB = 0.443mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE 1750; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 51.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-12-2011; Ambient Temp: 23.9 °C; Tissue Temp: 22.2 °C

Probe: EX3DV4 - SN3561; ConvF(6.84, 6.84, 6.84); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: AWS LTE, Body SAR, Back side, Mid.ch, QPSK,
1 RB, RB Offset 49, 10 MHz BW**

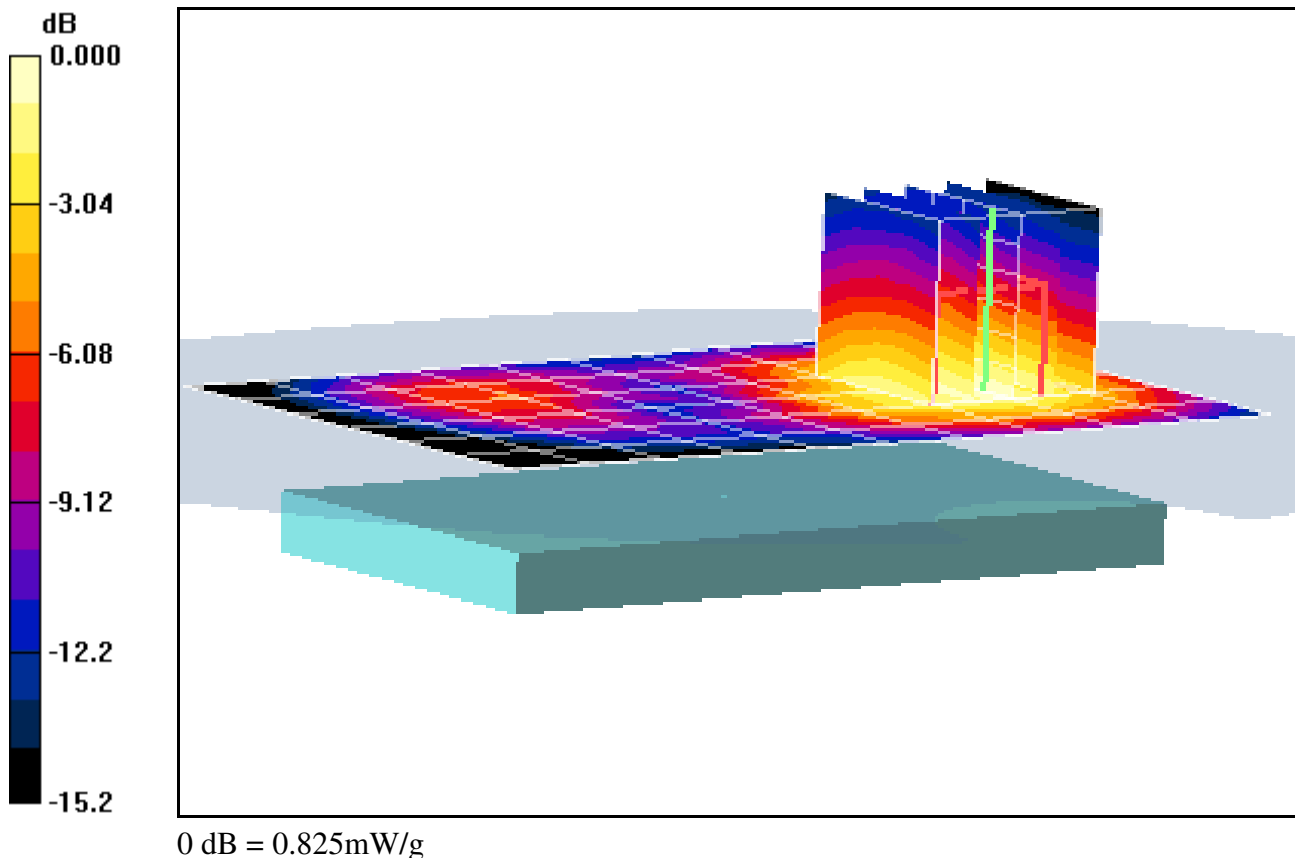
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 23.8 V/m

Peak SAR (extrapolated) = 1.20 W/kg

SAR(1 g) = 0.770 mW/g; SAR(10 g) = 0.483 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE 1750; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 51.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-12-2011; Ambient Temp: 23.9 °C; Tissue Temp: 22.2 °C

Probe: EX3DV4 - SN3561; ConvF(6.84, 6.84, 6.84); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: AWS LTE, Body SAR, Back side, Mid.ch, QPSK,
1 RB, RB Offset 49, 10 MHz BW**

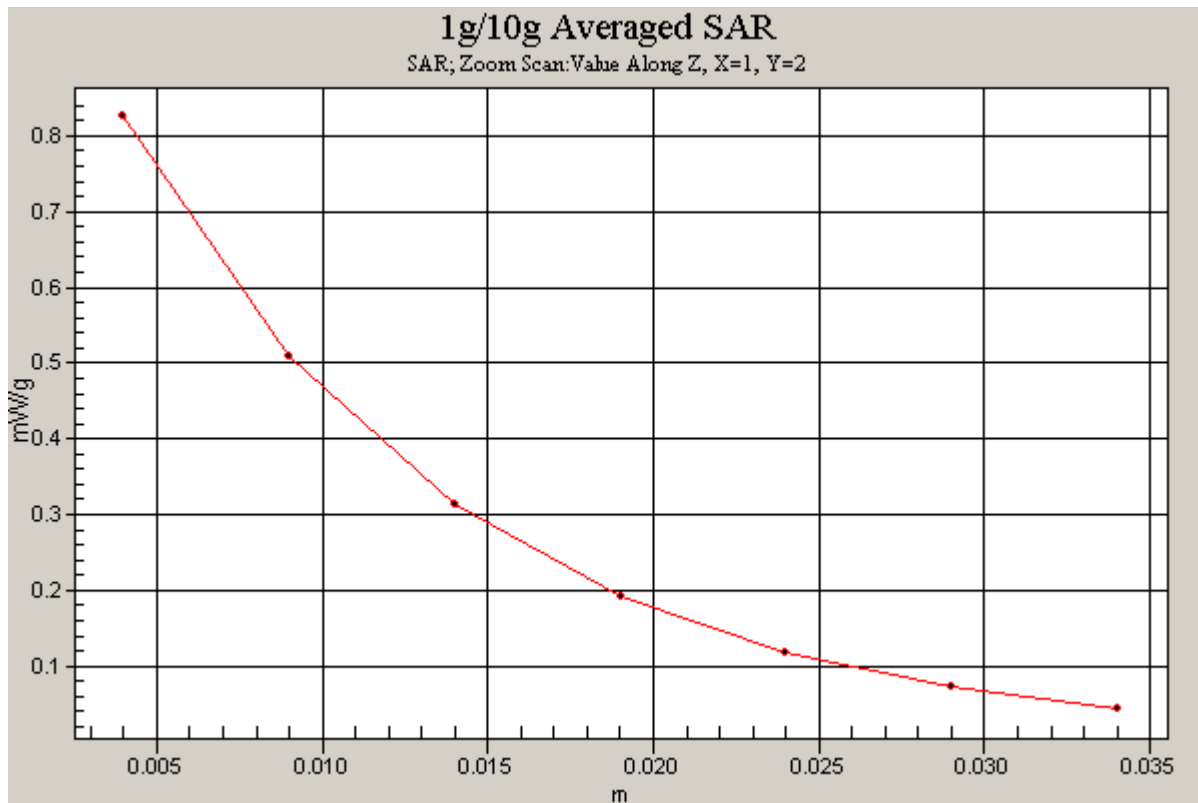
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 23.8 V/m

Peak SAR (extrapolated) = 1.20 W/kg

SAR(1 g) = 0.770 mW/g; SAR(10 g) = 0.483 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE 1750; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 51.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-12-2011; Ambient Temp: 23.9 °C; Tissue Temp: 22.2 °C

Probe: EX3DV4 - SN3561; ConvF(6.84, 6.84, 6.84); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: AWS LTE, Body SAR, Front side, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

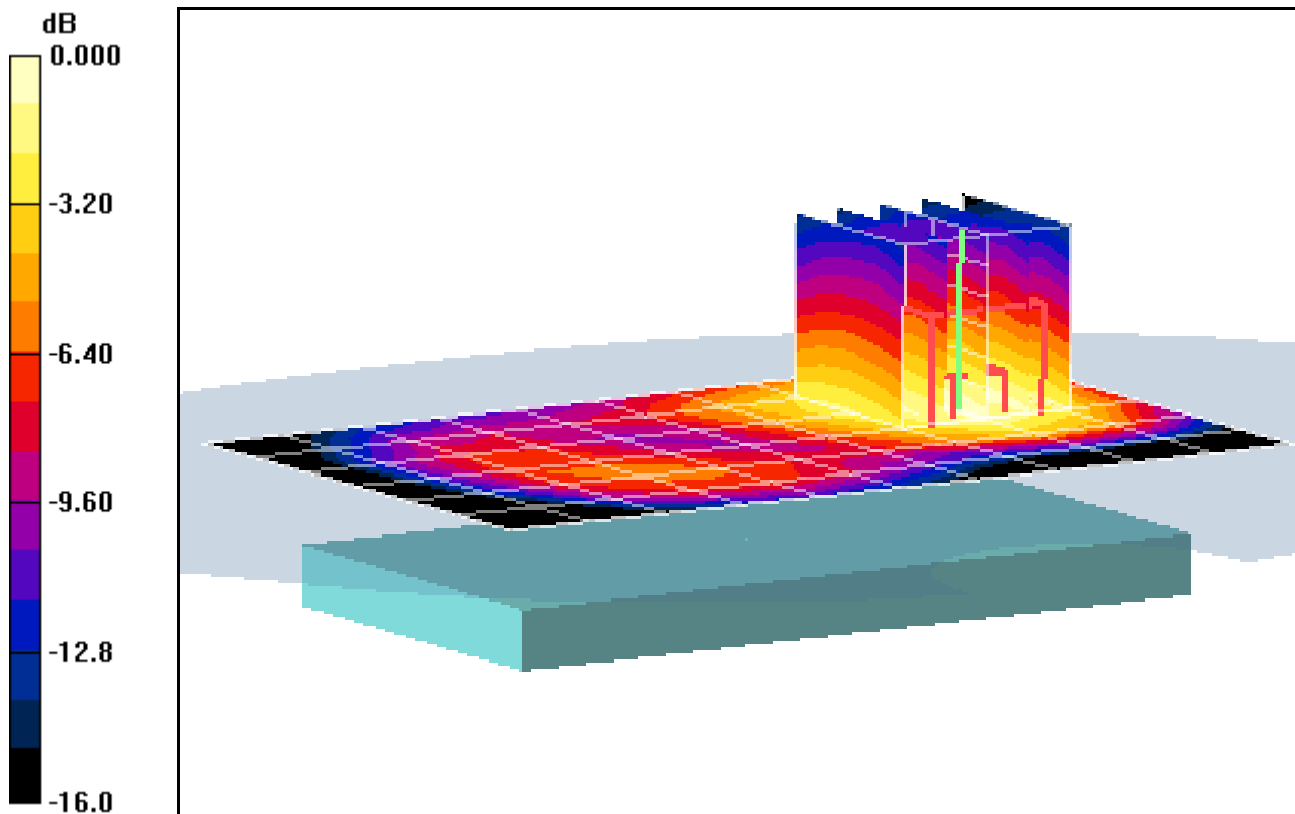
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 15.3 V/m

Peak SAR (extrapolated) = 0.521 W/kg

SAR(1 g) = 0.335 mW/g; SAR(10 g) = 0.209 mW/g



0 dB = 0.355mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE 1750; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 51.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-12-2011; Ambient Temp: 23.9 °C; Tissue Temp: 22.2 °C

Probe: EX3DV4 - SN3561; ConvF(6.84, 6.84, 6.84); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: AWS LTE, Body SAR, Top Edge, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

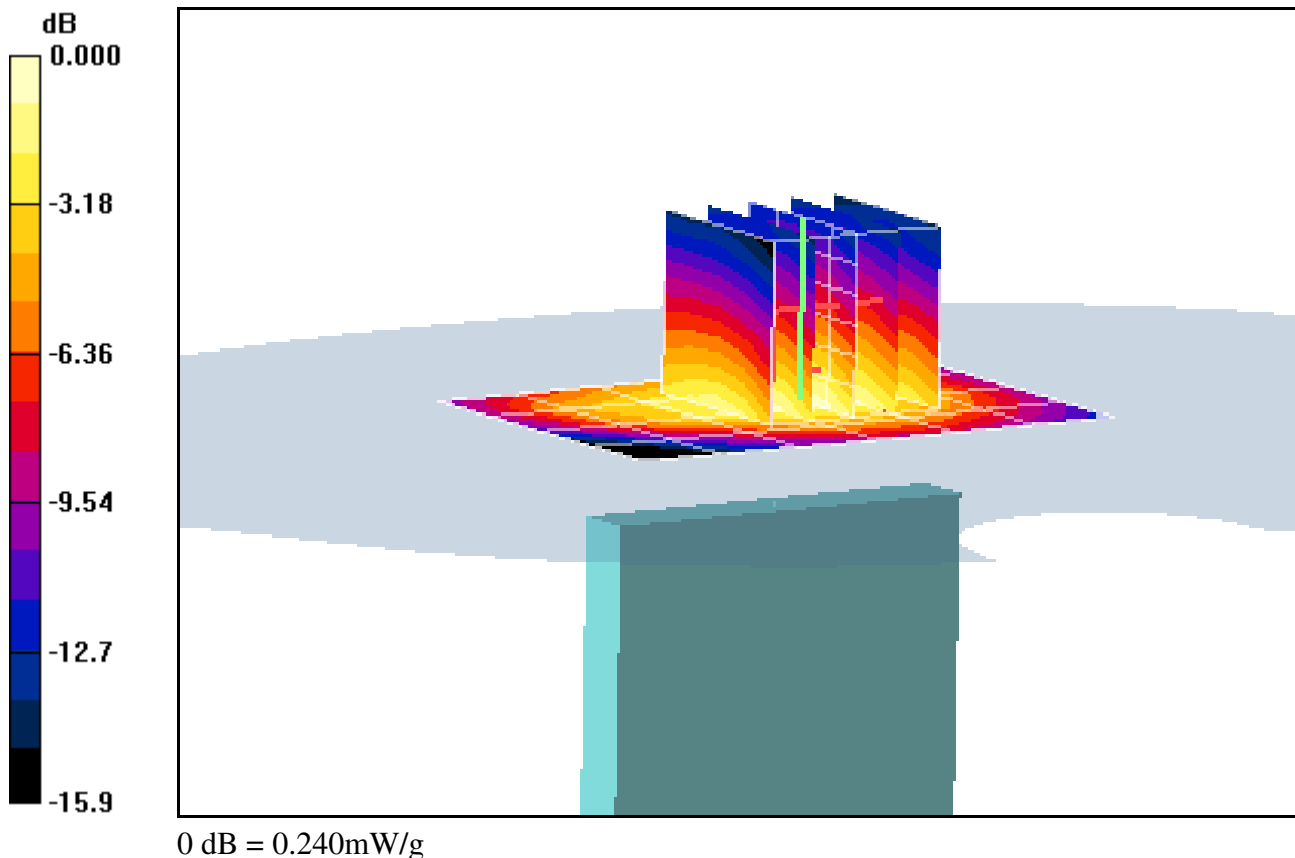
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.4 V/m

Peak SAR (extrapolated) = 0.362 W/kg

SAR(1 g) = 0.220 mW/g; SAR(10 g) = 0.130 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: LTE RF

Communication System: LTE 1750; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 51.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-12-2011; Ambient Temp: 23.9 °C; Tissue Temp: 22.2 °C

Probe: EX3DV4 - SN3561; ConvF(6.84, 6.84, 6.84); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Mode: AWS LTE, Body SAR, Left Edge, Mid.ch, QPSK,
1 RB, RB Offset 0, 10 MHz BW**

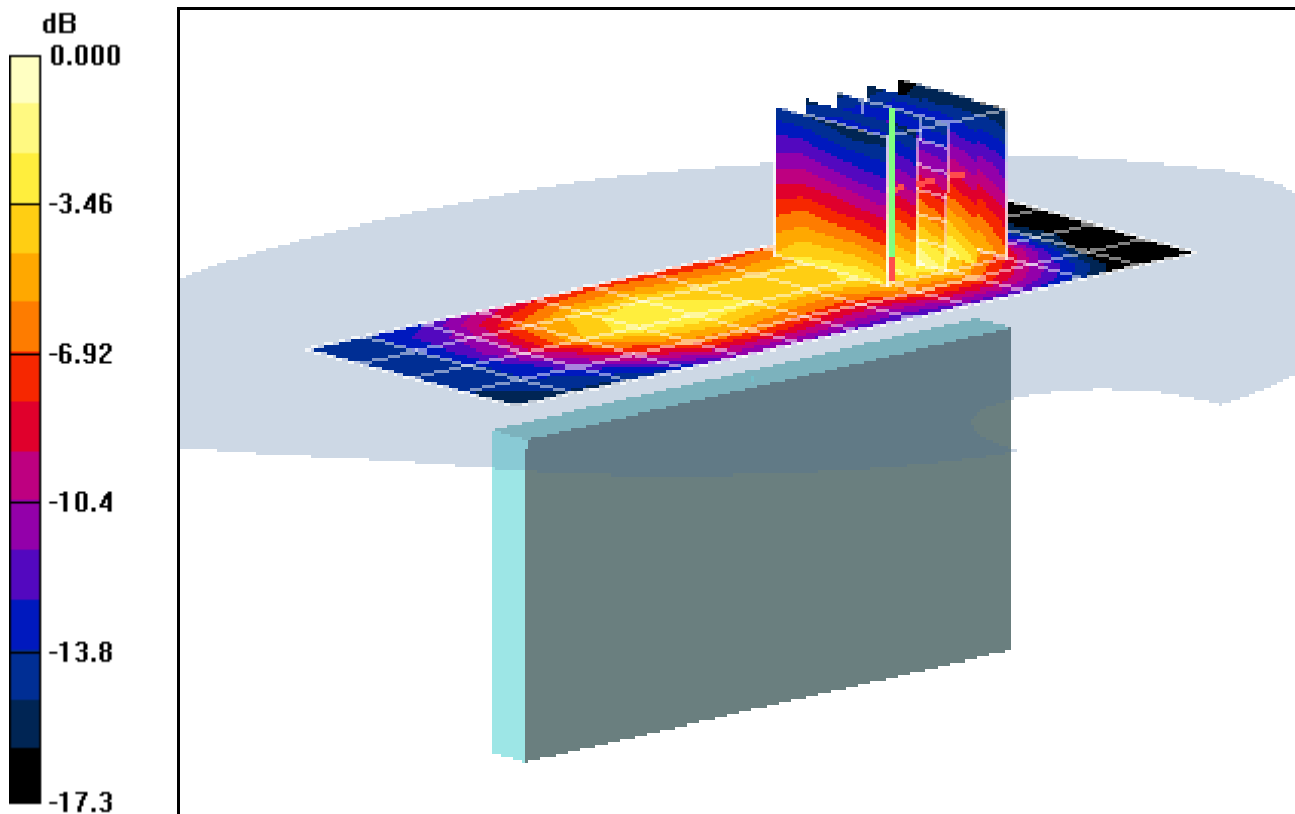
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 14.4 V/m

Peak SAR (extrapolated) = 0.505 W/kg

SAR(1 g) = 0.279 mW/g; SAR(10 g) = 0.148 mW/g



0 dB = 0.307mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 50.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.8 °C; Tissue Temp: 22.9 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

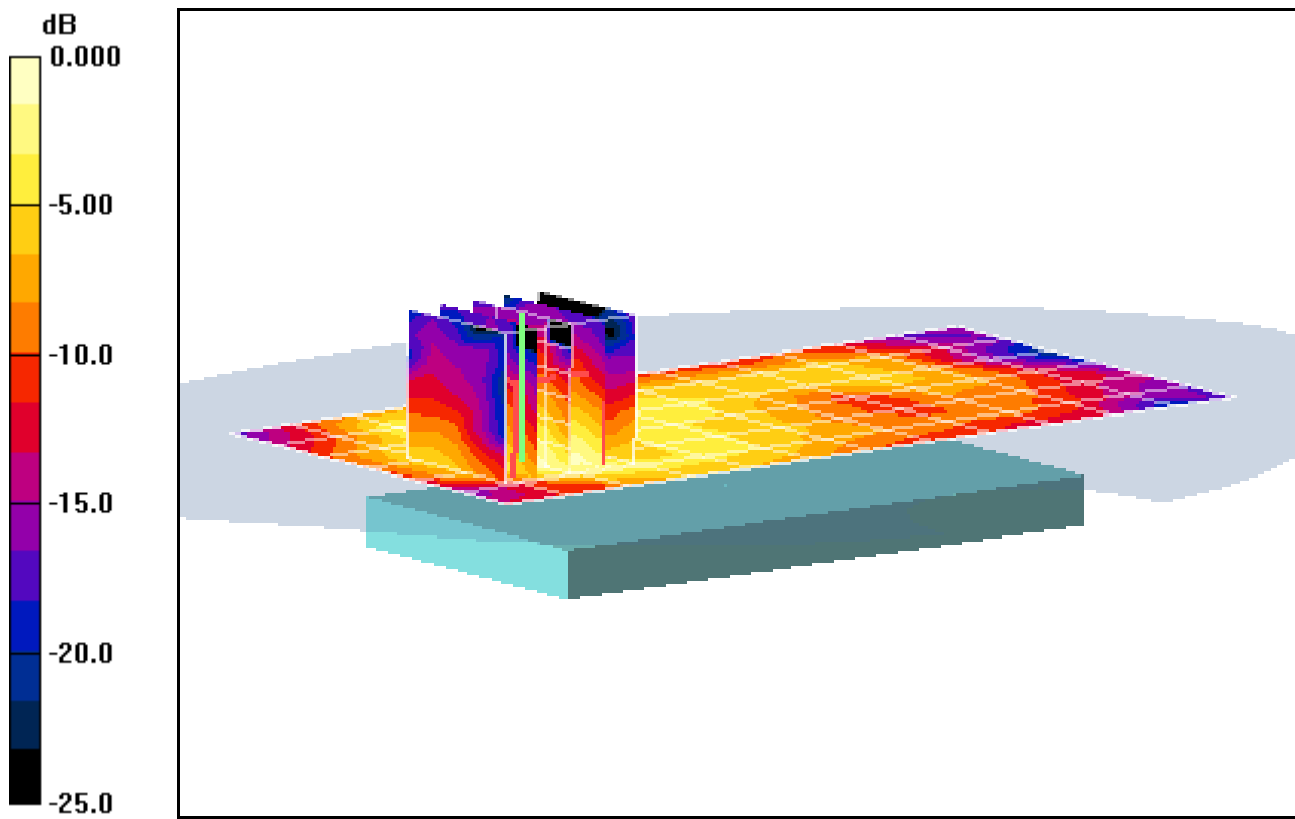
Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 5.71 V/m

Peak SAR (extrapolated) = 0.109 W/kg

SAR(1 g) = 0.058 mW/g; SAR(10 g) = 0.028 mW/g



0 dB = 0.070mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 50.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.8 °C; Tissue Temp: 22.9 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

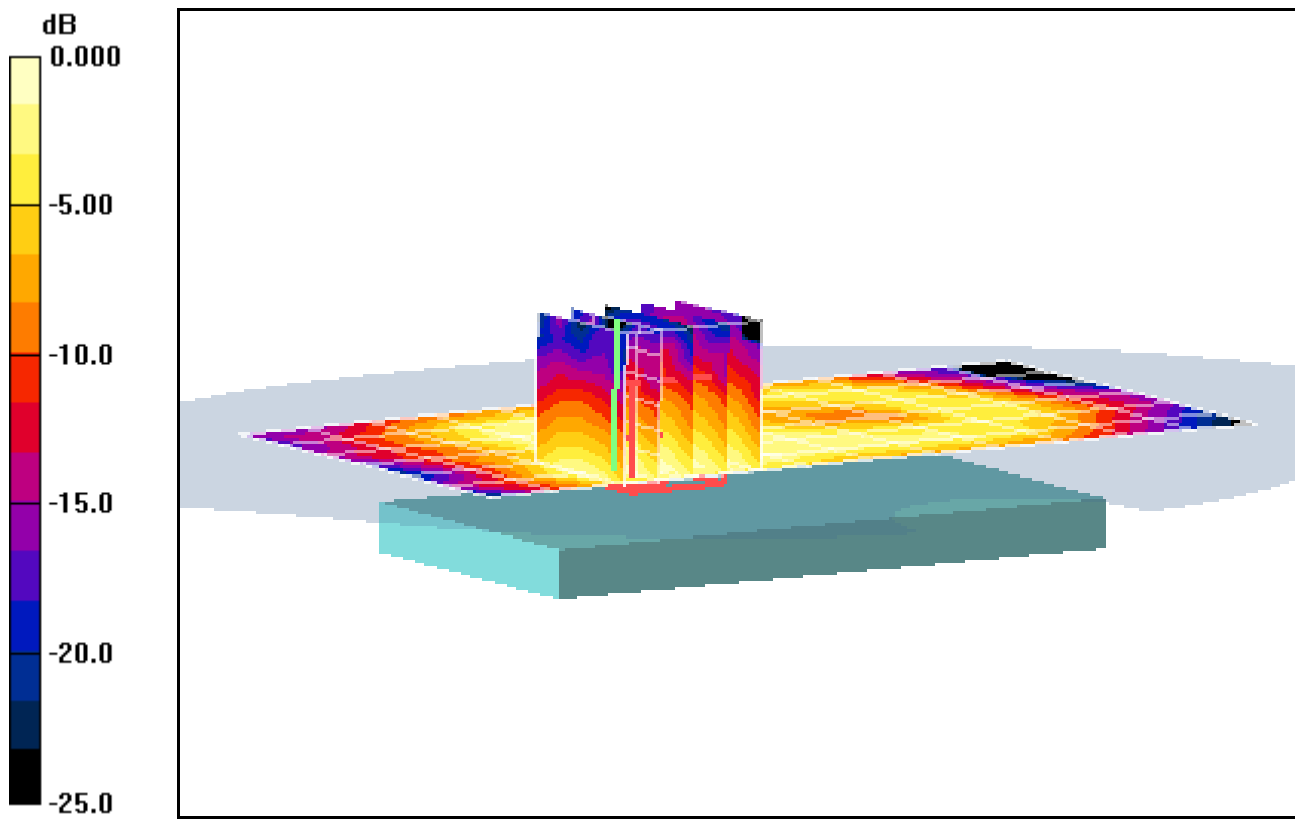
Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 5.60 V/m

Peak SAR (extrapolated) = 0.117 W/kg

SAR(1 g) = 0.059 mW/g; SAR(10 g) = 0.032 mW/g



0 dB = 0.073mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 50.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.8 °C; Tissue Temp: 22.9 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

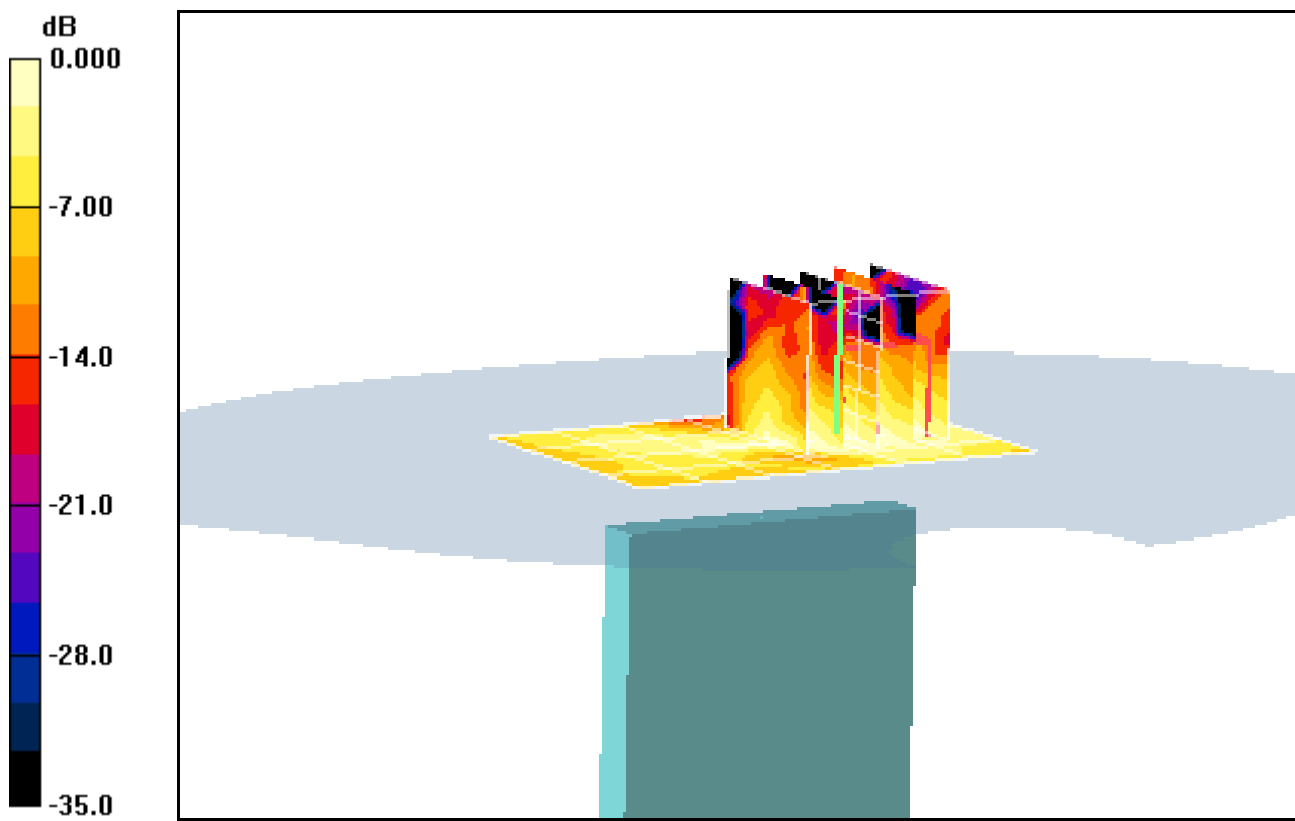
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 3.18 V/m

Peak SAR (extrapolated) = 0.032 W/kg

SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.00985 mW/g



0 dB = 0.025mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 50.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.8 °C; Tissue Temp: 22.9 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

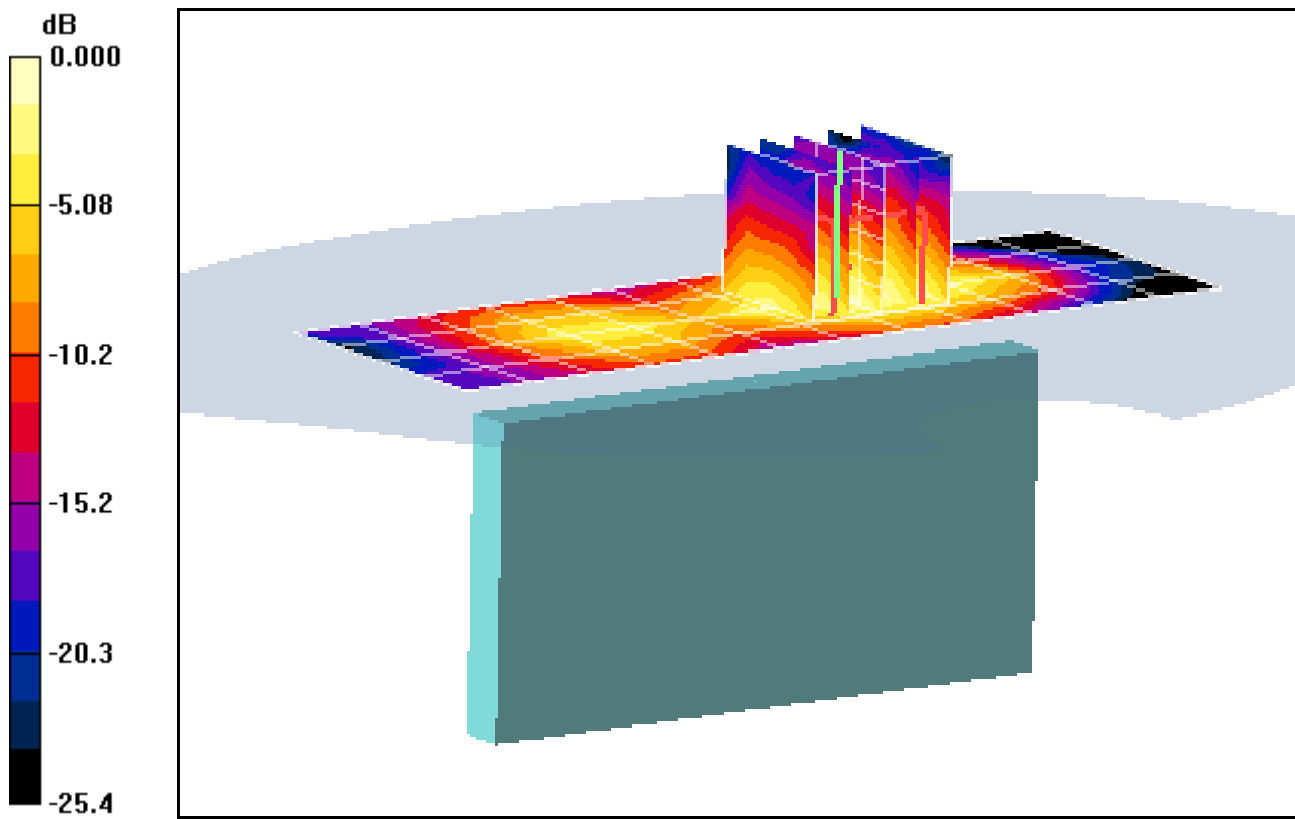
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 7.59 V/m

Peak SAR (extrapolated) = 0.200 W/kg

SAR(1 g) = 0.103 mW/g; SAR(10 g) = 0.053 mW/g



0 dB = 0.130mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: BEJMS910; Type: Cellular/AWS/PCS CDMA/EvDO and AWS/PCS LTE Phone with Bluetooth and WLAN; Serial: SAR

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 50.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.8 °C; Tissue Temp: 22.9 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

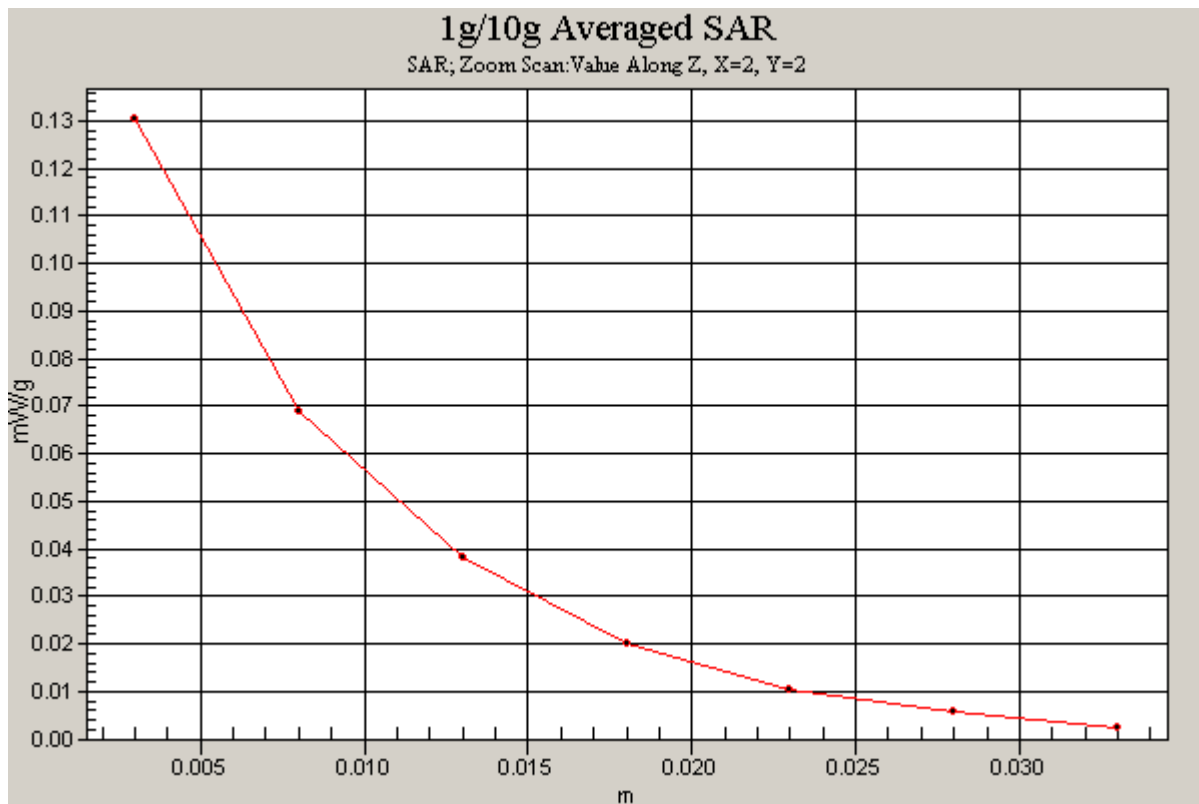
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 7.59 V/m

Peak SAR (extrapolated) = 0.200 W/kg

SAR(1 g) = 0.103 mW/g; SAR(10 g) = 0.053 mW/g



APPENDIX B: DIPOLE VALIDATION

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:

$f = 835 \text{ MHz}$; $\sigma = 0.856 \text{ mho/m}$; $\epsilon_r = 39.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-16-2011; Ambient Temp: 24.5 °C; Tissue Temp: 22.8 °C

Probe: EX3DV4 - SN3550; ConvF(8.04, 8.04, 8.04); Calibrated: 2/14/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/20/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

835MHz System Verification

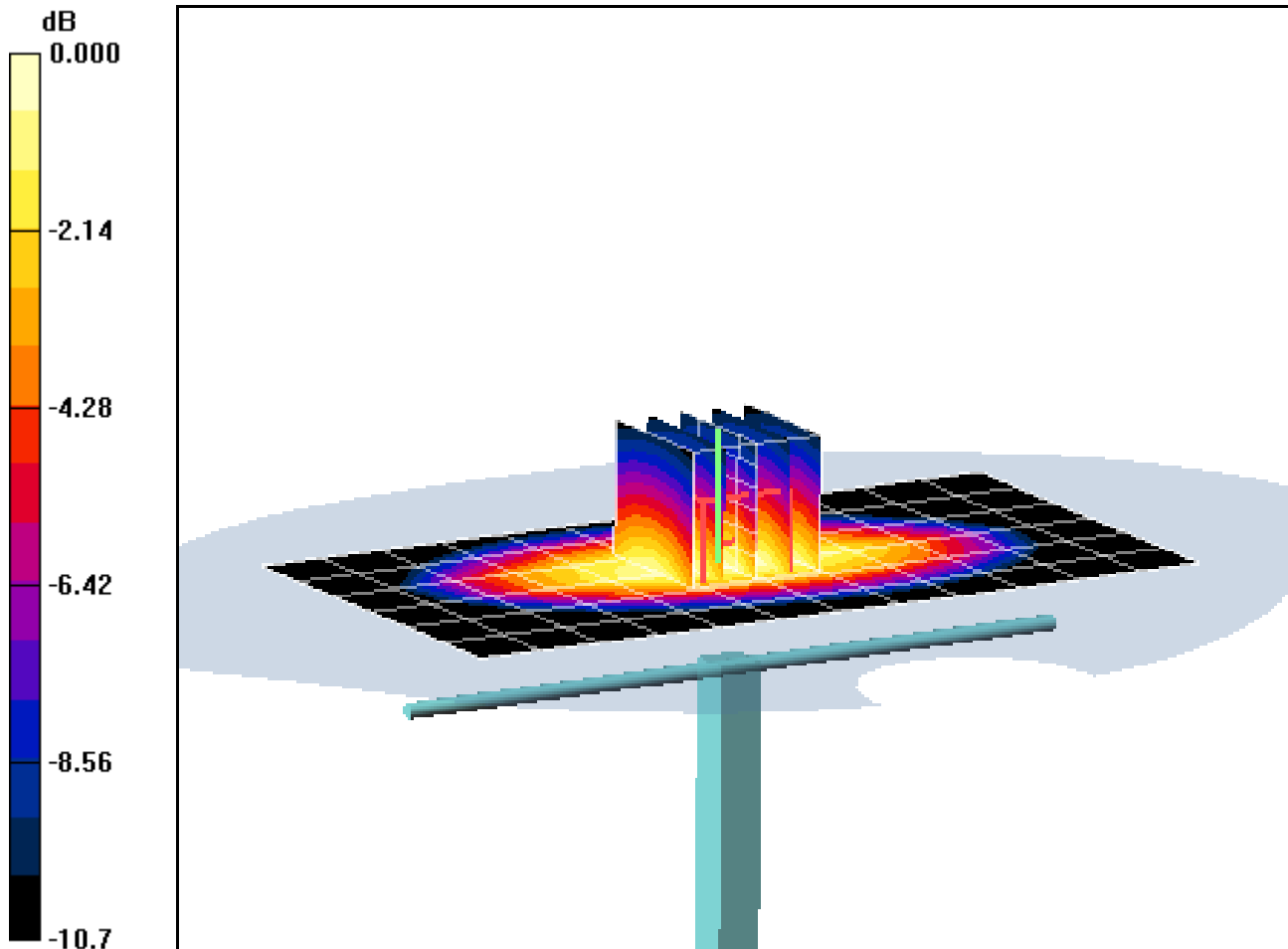
Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.923 mW/g; SAR(10 g) = 0.601 mW/g

Deviation = -2.43 %



0 dB = 0.996mW/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:

$f = 835 \text{ MHz}$; $\sigma = 0.964 \text{ mho/m}$; $\epsilon_r = 53.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.7 °C

Probe: EX3DV4 - SN3550; ConvF(8.11, 8.11, 8.11); Calibrated: 2/14/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/20/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

835MHz System Verification

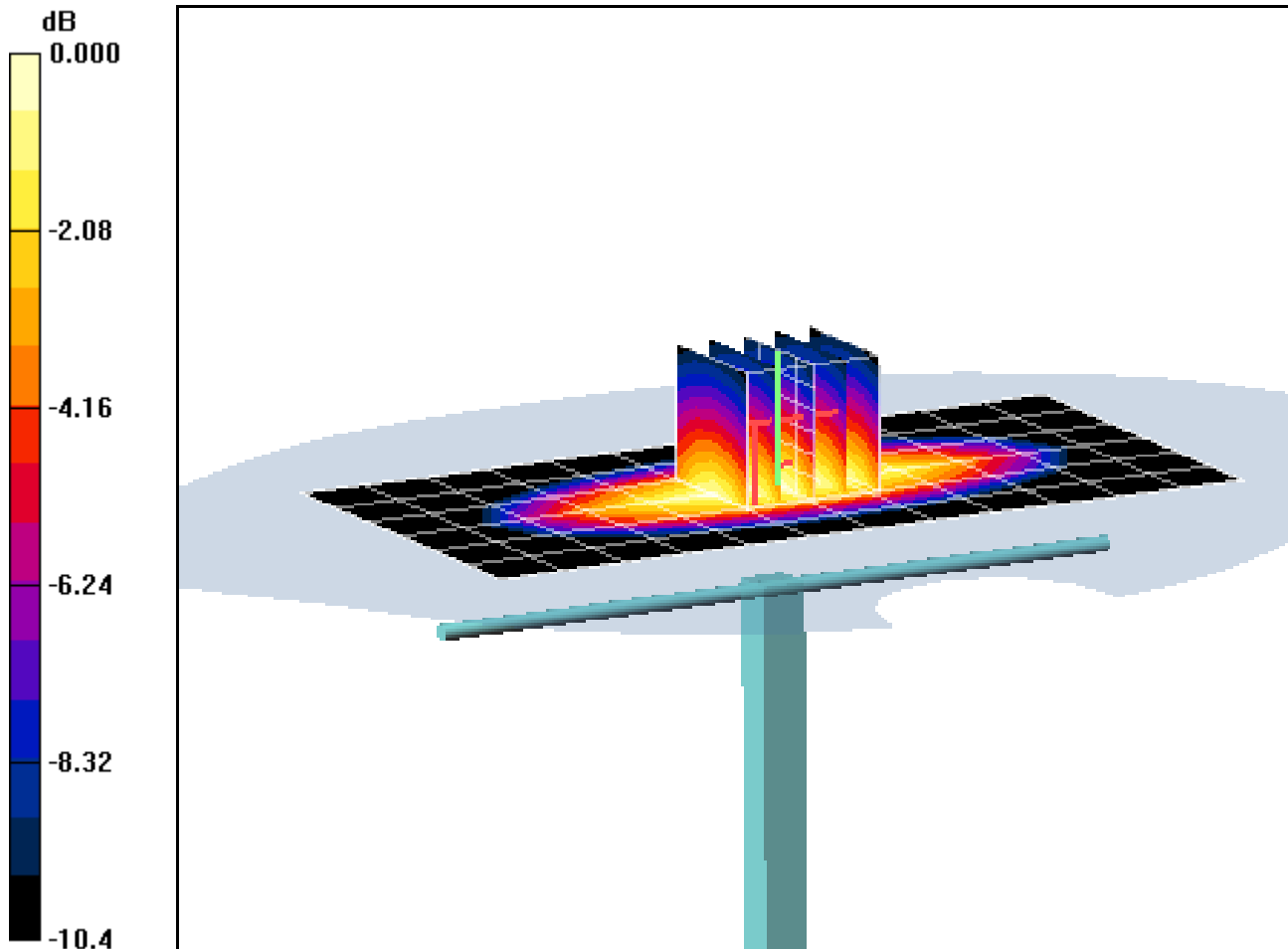
Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.987 mW/g; SAR(10 g) = 0.646 mW/g

Deviation = 0.92 %



0 dB = 1.07mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1765 MHz; Type: D1765V2; Serial: 1008

Communication System: CW; Frequency: 1765 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1765 \text{ MHz}$; $\sigma = 1.43 \text{ mho/m}$; $\epsilon_r = 40.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-12-2011; Ambient Temp: 23.7 °C; Tissue Temp: 22.1 °C

Probe: EX3DV4 - SN3561; ConvF(6.92, 6.92, 6.92); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

1765 MHz System Verification

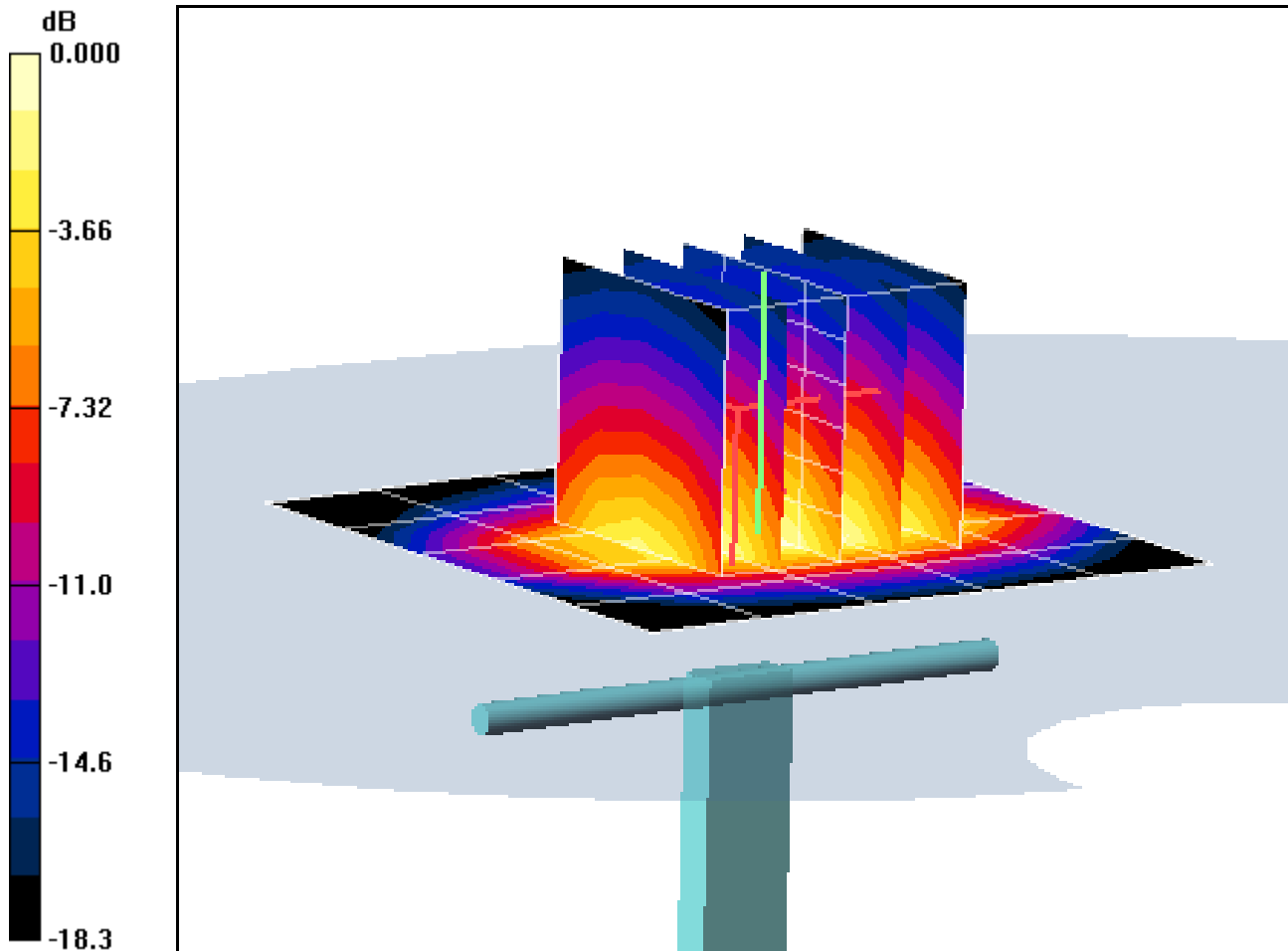
Area Scan (6x6x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 16.0 dBm (40 mW)

SAR(1 g) = 1.44 mW/g; SAR(10 g) = 0.746 mW/g

Deviation = -5.76 %



0 dB = 1.62mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1765 MHz; Type: D1765V2; Serial: 1008

Communication System: CW; Frequency: 1765 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1765 \text{ MHz}$; $\sigma = 1.52 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-12-2011; Ambient Temp: 23.9 °C; Tissue Temp: 22.2 °C

Probe: EX3DV4 - SN3561; ConvF(6.84, 6.84, 6.84); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

1765 MHz System Verification

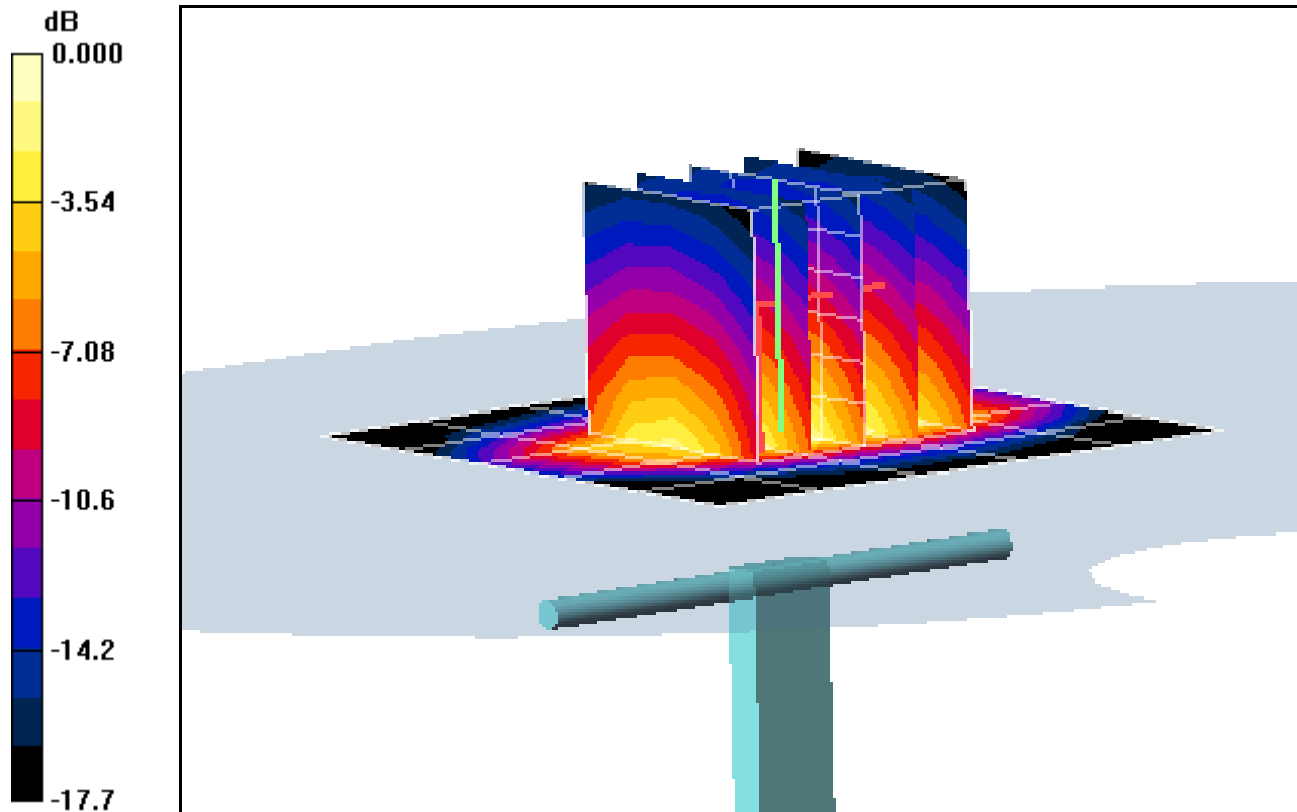
Area Scan (6x6x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 16.0 dBm (40 mW)

SAR(1 g) = 1.55 mW/g; SAR(10 g) = 0.794 mW/g

Deviation = 3.89 %



0 dB = 1.75mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 502

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

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.42 \text{ mho/m}$; $\epsilon_r = 38.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 23.8 °C; Tissue Temp: 22.0 °C

Probe: EX3DV4 - SN3561; ConvF(6.69, 6.69, 6.69); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

1900MHz System Verification

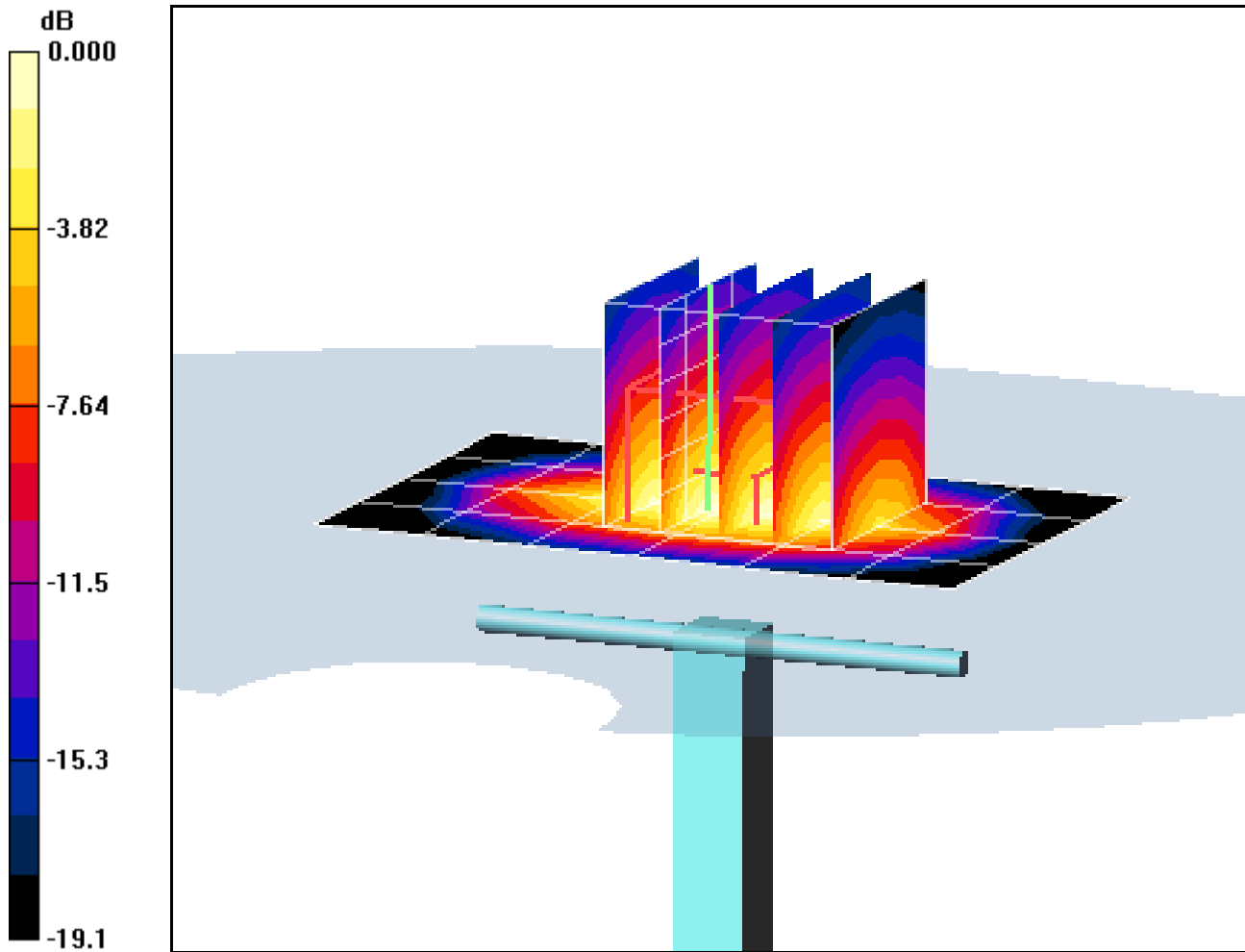
Area Scan (5x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 16.0 dBm (40 mW)

SAR(1 g) = 1.6 mW/g; SAR(10 g) = 0.827 mW/g

Deviation = -0.50 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 502

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.57 \text{ mho/m}$; $\epsilon_r = 52.23$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.2 °C; Tissue Temp: 22.5 °C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/21/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

1900MHz System Verification

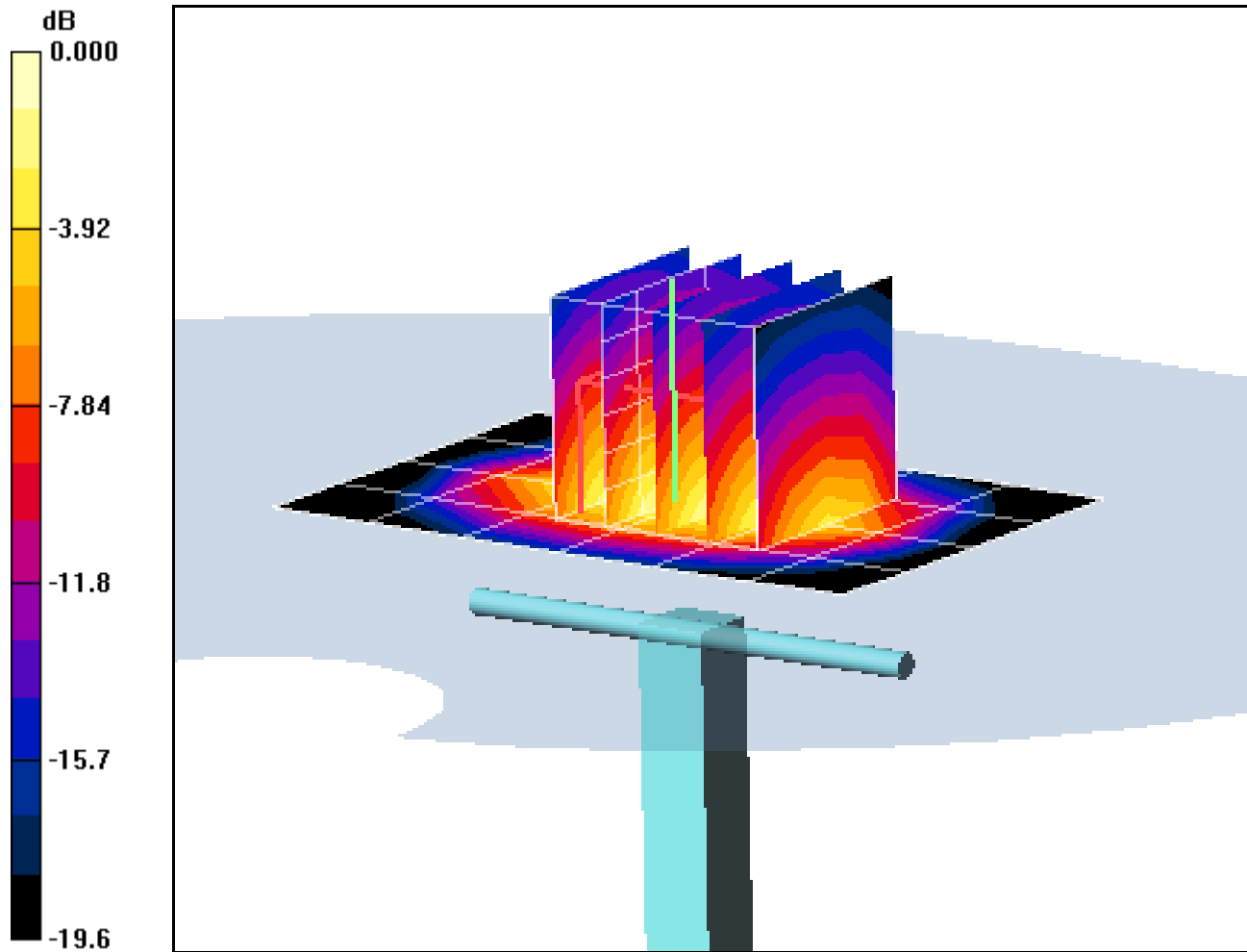
Area Scan (5x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 16.0 dBm (40 mW)

SAR(1 g) = 1.69 mW/g; SAR(10 g) = 0.865 mW/g

Deviation = 2.80 %



0 dB = 1.88mW/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:

$f = 2450 \text{ MHz}$; $\sigma = 1.88 \text{ mho/m}$; $\epsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-17-2011; Ambient Temp: 24.0 °C; Tissue Temp: 22.5 °C

Probe: ES3DV2 - SN3022; ConvF(4.21, 4.21, 4.21); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

2450MHz System Verification

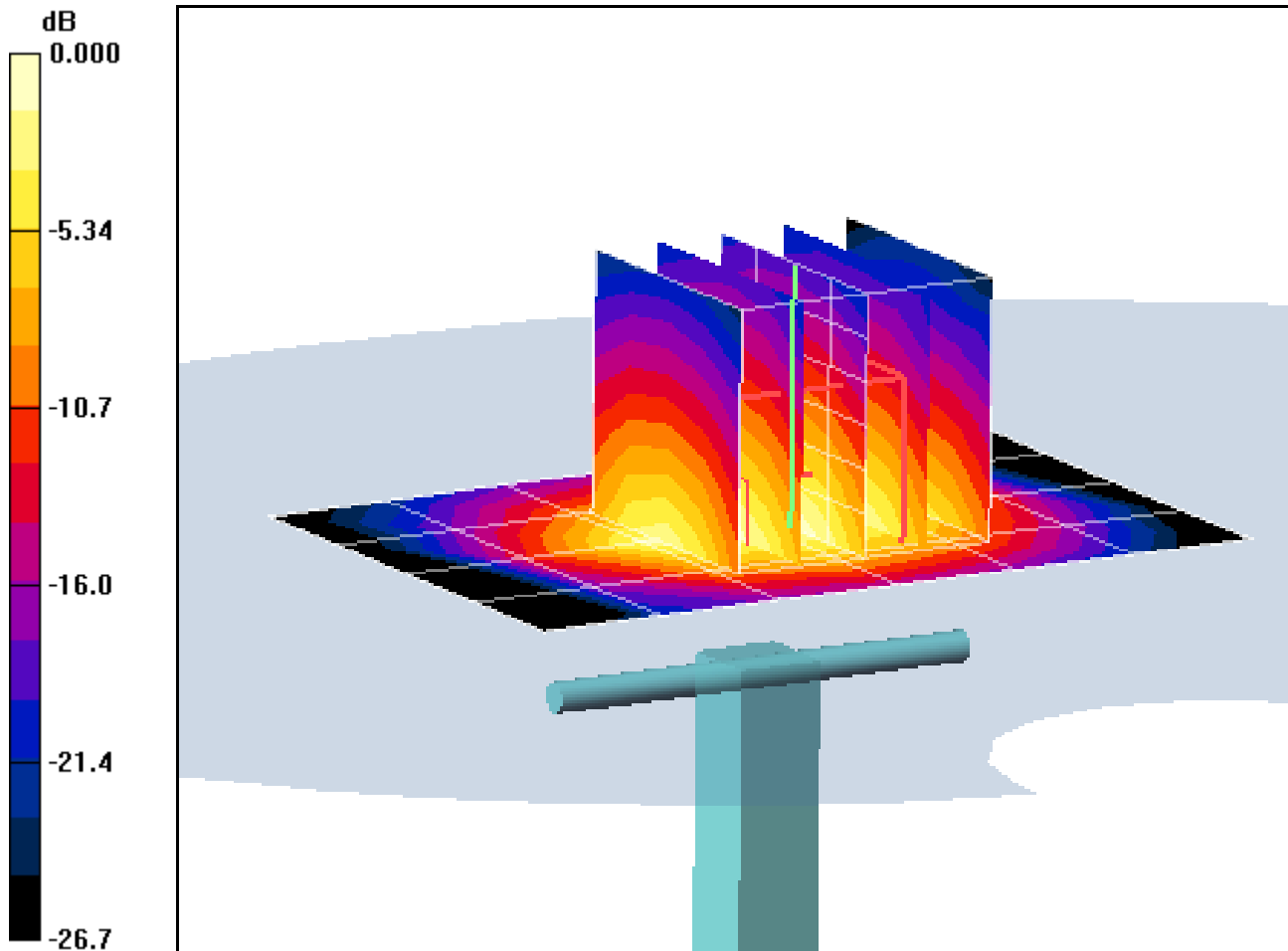
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 12.0 dBm (15.8 mW)

SAR(1 g) = 0.790 mW/g; SAR(10 g) = 0.357 mW/g

Deviation = -6.19 %



0 dB = 1.03mW/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 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.01 \text{ mho/m}$; $\epsilon_r = 50.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-16-2011; Ambient Temp: 24.8 °C; Tissue Temp: 22.9 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn704; Calibrated: 3/17/2011

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

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

2450MHz System Verification

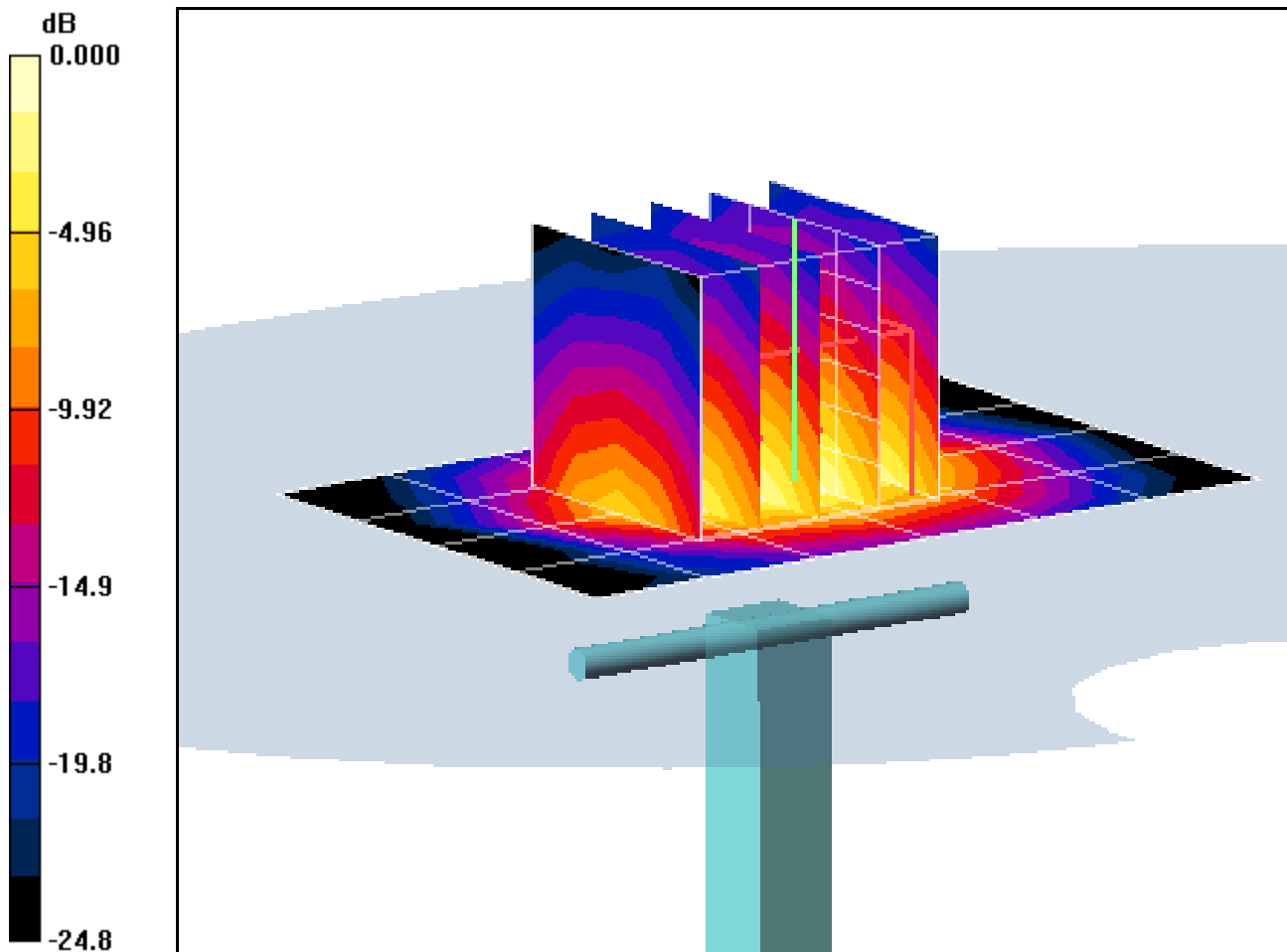
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 12.0 dBm (15.8 mW)

SAR(1 g) = 0.772 mW/g; SAR(10 g) = 0.357 mW/g

Deviation = -6.58 %



0 dB = 0.992mW/g