



SAR COMPLIANCE EVALUATION REPORT

Applicant Name:

Samsung Electronics, Co. Ltd.
18600 Broadwick St.
Rancho Dominguez, CA 90220
United States

Date of Testing:

08/02/11 - 11/22/11

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Test Report Serial No.:

0Y1108011317-R1.A3L

FCC ID:

A3LSHWM380S

APPLICANT:

SAMSUNG ELECTRONICS, CO. LTD.

EUT Type:

Portable Tablet Computer

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model(s):

SHW-M380S, SHW-M380K

Band & Mode	Tx Frequency	Conducted Power [dBm]	SAR
			1 gm Body (W/kg)
GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	30.73	0.95
WCDMA/HSPA 850	826.40 - 846.60 MHz	21.52	0.34
GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	25.65	1.07
WCDMA/HSPA 1900	1852.4 - 1907.6 MHz	20.29	0.93
2.4 GHz WLAN	2412 - 2462 MHz	13.86	0.78
5.8 GHz WLAN	5745 - 5825 MHz	12.84	1.06
5.2 GHz WLAN	5180 - 5240 MHz	12.40	0.58
5.3 GHz WLAN	5260 - 5320 MHz	12.30	0.70
5.5 GHz WLAN	5500 - 5700 MHz	12.91	0.98
Bluetooth	2402 - 2480 MHz	10.86	N/A
Simultaneous SAR per KDB 690783 D01:			1.49

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

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

Note: This revised Test Report (S/N: 0Y1108011317-R1.A3L) 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(s) and dispose of it accordingly.

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 EQUIPMENT UNDER TEST

1.1 Device Overview

Band & Mode	Tx Frequency
GSM/GPRS/EDGE 850	824.20 - 848.80 MHz
WCDMA/HSPA 850	826.40 - 846.60 MHz
GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz
WCDMA/HSPA 1900	1852.4 - 1907.6 MHz
2.4 GHz WLAN	2412 - 2462 MHz
5.8 GHz WLAN	5745 - 5825 MHz
5.2 GHz WLAN	5180 - 5240 MHz
5.3 GHz WLAN	5260 - 5320 MHz
5.5 GHz WLAN	5500 - 5700 MHz
Bluetooth	2402 - 2480 MHz

1.2 Antenna and Key Feature Information

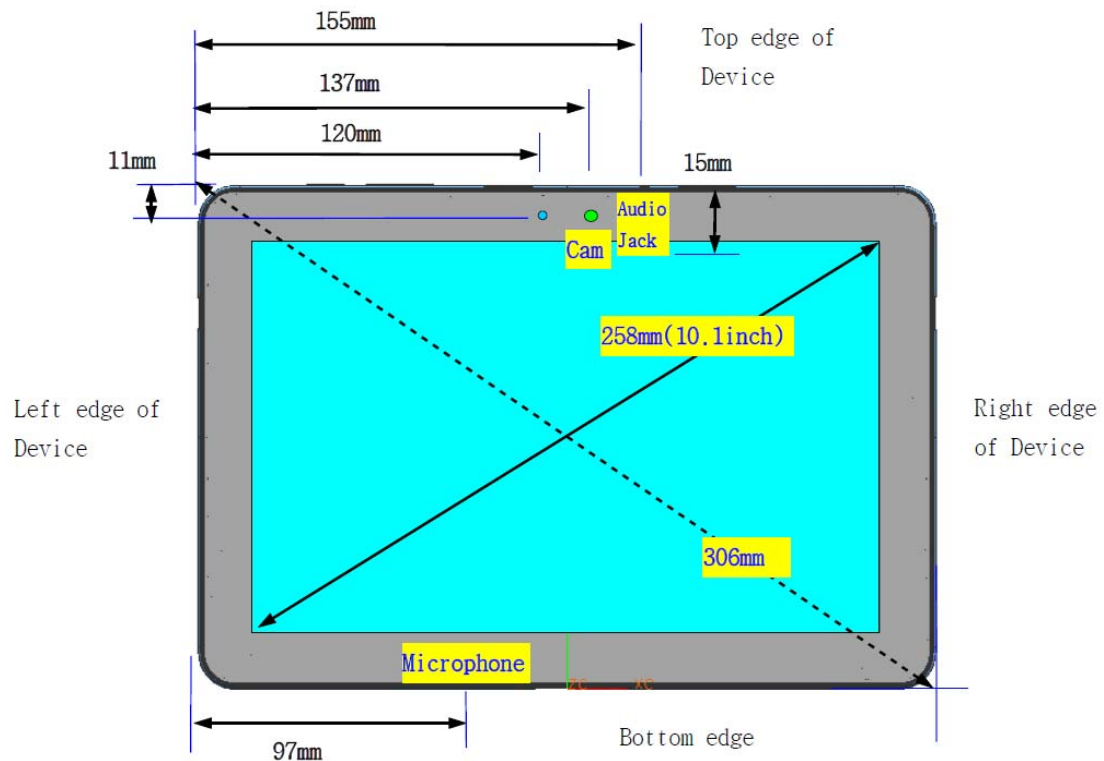
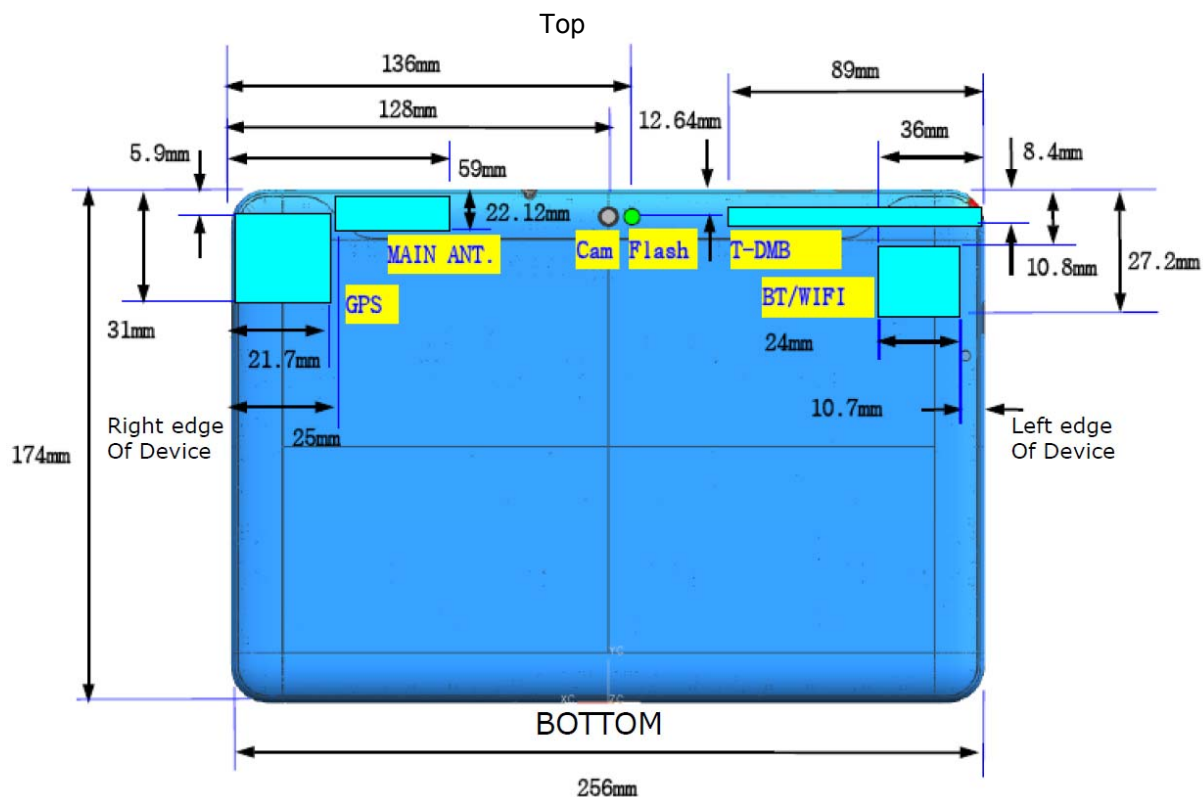


Figure 1-1
Front View of Device

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**Figure 1-2
Back View of Device**

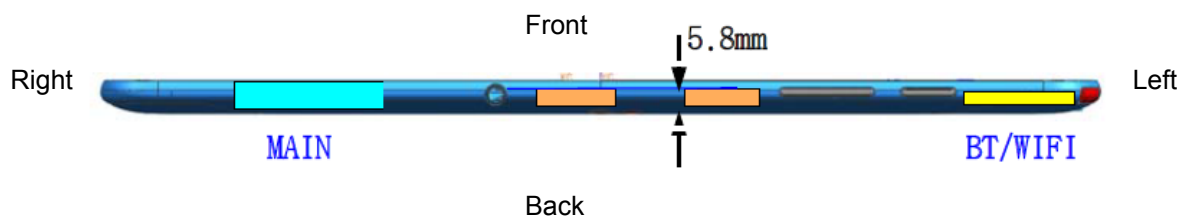


Figure 3. Top of Device view

**Figure 1-3
Top View of Device**

Notes:

- Rear camera is not for video calls but for standard digital functions.
- The operational description contains information about designs including sensor size and location.

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1.3 Device Exclusions Applicable for SAR Testing

(A) WIFI/BT Testing

Per KDB publication 447498:

- Since the output power of the Bluetooth antenna is 12.19 mW and the antenna separation distance is 175 mm, Bluetooth is not required for both back side and edge exposure conditions.
- Since the output power of the WLAN (IEEE 802.11b) antenna is 24.38 mW and the antenna separation distance is 175 mm for WLAN (IEEE 802.11b) is not required but was additionally tested.
- Since the output power of the WLAN (IEEE 802.11a) antenna is 20.42 mW and the antenna separation distance is 175 mm for WLAN (IEEE 802.11a) is required.

5 GHz WIFI cannot transmit simultaneously with the main antenna as shown in Table 1-1.

(B) GSM/WCDMA Testing

Justification for reduced test configurations per KDB Publication 941225 D03: The highest source-based time-averaged output power of GMSK (GPRS CS1) and 8PSK (EDGE MCS7) was evaluated for all multi-slot operations. **EDGE (8PSK MCS7) was additionally tested because the frame averaged output power was higher than the GPRS (GMSK CS1) frame averaged output power. Therefore, EDGE was tested in this mode for 1900 MHz Band.** In addition to the worst-case reported on mid channel, all source-based time-averaged powers within 10% of the worst-case were additionally included in the evaluation for mid channel data modes.

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

This device is only capable of HSUPA in the uplink (QPSK in the uplink), but is capable of HSPA+ in the downlink. Information about the uplink and downlink capabilities are explained in further detail in the technical description for this model.

1.4 Simultaneous Transmission Capabilities

Simultaneous transmissions according to KDB Publication 447498, except for transmissions during network hand-offs, with maximum hand-off duration less than 30 seconds, transmitters are considered to be transmitting simultaneously when there is overlapping transmission.

Table 1-1
Simultaneous Transmission Scenarios

No.	Simultaneous Transmission Scenarios	Body SAR	Note
1	GPRS/EDGE Data + 2.4 GHz WIFI	Yes	2G Hotspot Only
2	WCDMA + 2.4 GHz WIFI	Yes	3G Hotspot Only
3	GPRS/EDGE Data + 5 GHz WIFI	No	Blocked by Chipset F/W
4	WCDMA CDMA EVDO Data + 5 GHz WIFI	No	Blocked by Chipset F/W

Per KDB publication 447498:

- Since the output power of the Bluetooth antenna is 12.19 mW and the antenna separation distance is 175 mm, Bluetooth is not required for both back side and edge exposure conditions.

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- Since the output power of the WLAN (IEEE 802.11b) antenna is 24.38 mW and the antenna separation distance is 175 mm for WLAN (IEEE 802.11b) is not required but was additionally tested.
- Since the output power of the WLAN (IEEE 802.11a) antenna is 20.42 mW and the antenna separation distance is 175 mm for WLAN (IEEE 802.11a) is required.

1.5 Power Reduction for SAR

Proximity Sensors were utilized in the device for SAR purposes. April/October 2011 TCB Workshop Notes regarding Power reduction using proximity sensors were used for guidance for SAR Testing. See Section 9.4 for more information.

1.6 Samples Used for SAR Testing

Several samples with identical hardware were used to facilitate SAR testing only. For maximum power samples, power reduction was disabled via software (only available from the manufacturer) to ensure the device was always transmitting at maximum power when testing at a conservative distance. All reduced power samples were tuned to the reduced power levels. Power reduction was disabled via software (only available from the manufacturer) on this device to ensure the device was always transmitting at reduced power and to confirm reduced power levels. An additional sample was used for WIFI.

Table 1-2
SAR Test Sample Serial Numbers

	GPRS/EDGE	WCDMA	2.4 GHz WIFI	5 GHz WIFI
Maximum Power	M380S-27. 1111-1	M380S-27. 1111-1	M380S-27	FI-186-G
Reduced Power	M380S-33, 1111-2	1111-2		

1.7 FCC Guidance Applied

- FCC OET Supplement C
- IEEE 1528-2003
- FCC KDB 447498 Section 4 (Tablet SAR Considerations)
- April/Oct 2011 TCB Workshop Notes for RF Exposure and Sensors with Power Reduction
- FCC KDB 248227 (802.11)
- FCC KDB 865664 (5-6 GHz techniques)

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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 Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

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 (see Fig. 1-1).

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

Figure 1-1
SAR Mathematical Equation

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

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

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/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 on January 27, 2006 and Industry Canada.

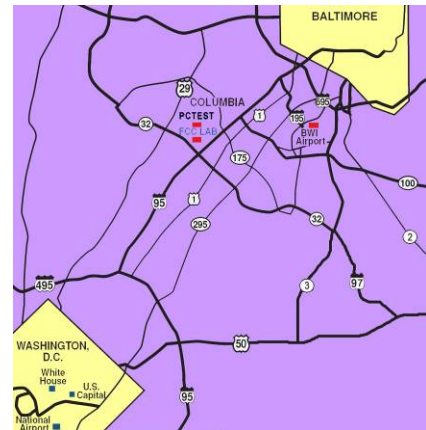
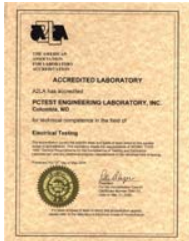


Figure 3-1

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 17025-2005 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 DASY4 automated dosimetric assessment system. The DASY4 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 DASY4, 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

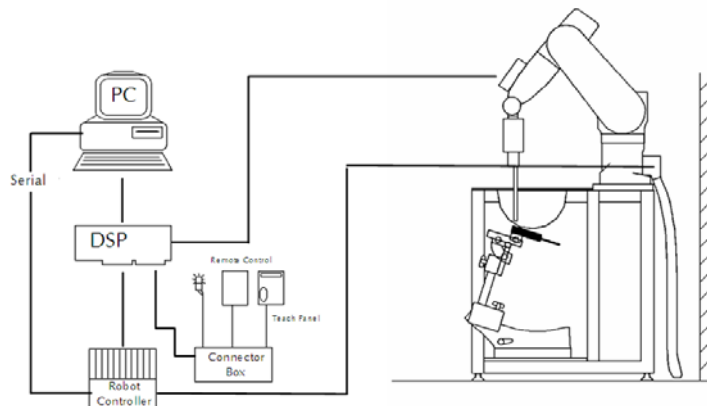


Figure 4-1
SAR Measurement System Setup

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
Repeatability: 0.02 mm
No. of Axes: 6

Data Acquisition Electronic System (DAE)

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

Phantom

Type: SAM Twin Phantom (V4.0 and V5.0)
Shell Material: Composite
Thickness: 2.0 ± 0.2 mm



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 DASY4 software reads the reflection during a software approach and looks for the maximum using a 2nd order curve fitting. The approach is stopped at reaching the maximum.

5.2 Probe Specifications

Model(s):	ES3DV2, ES3DV3, EX3DV4
Frequency Range:	10 MHz – 6.0 GHz (EX3DV4) 10 MHz – 4 GHz (ES3DV3)
Calibration:	In head and body simulating tissue at Frequencies from 300 up to 6000MHz
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 (3.9mm 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 PHANTOM AND EQUIVALENT TISSUES

6.1 SAM Phantoms



Figure 6-1
SAM Phantoms

The SAM Twin Phantom V4.0 and V5.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to represent the 90th percentile of the population [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. 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 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

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 5%, per the FCC recommendations.

Table 6-1
Composition of the Tissue Equivalent Matter

Frequency (MHz)	835	1900	2450	5200-5800
Tissue	Body	Body	Body	Body
Ingredients (% by weight)				
Bactericide	0.1			
DGBE		29.44	26.7	
HEC	1			
NaCl	0.94	0.39	0.1	
Sucrose	44.9			
Triton X-100				10.67
Diethylenglycol monohexylether				10.67
Water	53.06	70.17	73.2	78.66

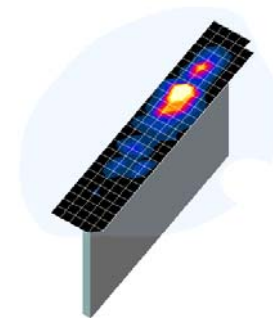
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7 DOSIMETRIC ASSESSMENT

7.1 Measurement Procedure

The evaluation was performed using the following procedure:

1. The SAR distribution area was ensured to cover the entire dimension of the body phantom area with the DUT positioned against the phantom. The horizontal grid resolution was 15mm x 15mm for up to 3 GHz frequencies. The horizontal grid resolution was 10mm x 10mm for 5-6 GHz frequencies per KDB pub 865664.
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 area of the maximum absorption was determined by spline interpolation. Around this point, a fine resolution volume scan, “zoom scan,” was assessed. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual for more details):
 - a. The data was extrapolated to the surface of the outer-shell of the phantom. The combined distance extrapolated was the combined distance from the center of the diodes from the tip of the probe housing plus the distance between the phantom outer surface and the lowest measuring point. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.



Sample SAR Area Scan

7.2 5 GHz SAR Testing Considerations per KDB 865664 Publication

For 5 GHz testing, finer resolution Area scans were performed as specified by FCC SAR Measurement Requirements for 3 – 6 GHz, KDB pub 865664. The 5 GHz Area Scan requires a minimum resolution of 10mm on the x and y axis for each grid measurement point.

For 5 GHz testing finer resolution zoom scans were performed as specified by FCC SAR Measurement Requirements for 3 – 6 GHz, KDB pub 865664. The 5 GHz zoom scan requires a minimum volume of 24mm x 24mm x 20mm and 7 x 7 x 11 points.

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8 FCC RF EXPOSURE LIMITS

8.1 Uncontrolled Environment

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

8.2 Controlled Environment

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

Table 8-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

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

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

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

9.1 Procedures Used to Establish RF Signal for SAR

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

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

9.2 SAR Measurement Conditions for WCDMA per FCC KDB Pub. 941225

9.2.1 Output Power Verification

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

9.2.2 Body SAR Measurements

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

9.2.3 SAR Measurements for Data Devices with Rel 5 HSDPA

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

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

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9.2.4 SAR Measurements for Data Devices with Rel 6 HSUPA

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

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

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

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

9.3 SAR Testing with IEEE 802.11 Transmitters

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

9.3.1 General Device Setup

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

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9.3.2 Frequency Channel Configurations [27]

802.11 a/b/g/n operating modes are tested independently according to the service requirements in each frequency band. 802.11 b/g/n modes are tested on channels 1, 6 and 11. 802.11a/n is tested for UNII operations on channels 36 and 48 in the 5.15-5.25 GHz band; channels 52 and 64 in the 5.25-5.35 GHz band; channels 104, 116, 124 and 136 in the 5.470-5.725 GHz band; and channels 149 and 161 in the 5.8 GHz band. When 5.8 GHz §15.247 is also available, channels 149, 157 and 165 should be tested instead of the UNII channels. These are referred to as the “default test channels”. For 2.4 GHz, 802.11g/n modes were evaluated only if the output power was 0.25 dB higher than the 802.11b mode. For 5 GHz, 802.11n modes were evaluated only if the output power was 0.25 dB higher than the 802.11a mode.

Table 9-1
802.11 Test Channels per FCC KDB Publication 248227

Mode	GHz	Channel	Turbo Channel	“Default Test Channels”		UNII	
				§15.247	802.11g		
802.11 b/g/n	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	Unknown				*
	5.520	104				√	
	5.540	108					*
	5.560	112					*
	5.580	116				√	
	5.600	120					*
	5.620	124				√	
	5.640	128					*
	5.660	132					*
	5.680	136				√	
	5.700	140					*
UNII or §15.247	5.745	149		√		√	
	5.765	153	152 (5.76 GHz)		*		*
	5.785	157		√			*
	5.805	161	160 (5.80 GHz)		*	√	
§15.247	5.825	165		√			

Per FCC KDB Publication 443999 and RSS-210 A9.2(3), transmission on channels which overlap the 5600-5650 MHz is prohibited as a client.

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9.4 SAR Testing for Tablet per KDB Publication 447498 Section 4

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

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

Per KDB Publication 447498 4) b) ii) (2), SAR testing applies for the tablet edges with antennas located within 5 cm of each tablet edge closest to the user. According to KDB Publication 447498 4) b) ii) (2), for each antenna, SAR is only required for the edge with the most conservative exposure condition. Since the diagonal dimension of the device is more than 20 cm (25.8 cm), this device is a tablet.

9.5 Proximity Sensor Information

The sensors pads are located near the upper half of the device to cover exposure conditions to the main antennas. The technical description contains information about sensors size and locations. Power reduction levels are provided in Section 9.7.

9.6 Display Orientation Capabilities

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

9.7 Additional SAR Testing for the Back and Top of the Device

Based on the type and implementation of the sensors, April 2011 FCC-TCB conference notes requires sensor information regarding: (1) additional SAR evaluation at a conservative distance from the device where power reduction is de-activated and (2) reliability sensor activation data. Reliability sensor activation data is provided by the manufacturer at several distances 0 degrees (normal) to the tissue-filled SAR flat phantom for each applicable side of the tablet with sensors, to cover conditions where the user would interface with the tablet sides and additionally at a the manufacturer indicated viewing angle to cover possible angular usage while used near the body (see Tables 9-2 through 9-4).

Since the sensor reliability data from the manufacturer indicates a back-off sensor activation distance for the back side of 11 mm, a conservative distance of 10 mm was tested for the back side for SAR (with maximum output power). Since the back-off sensor activation distance is 6 mm for the top and left edges, a conservative distance of 5 mm was tested for the top and left edges. The sensors are designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions. Further details about the manufacturer's sensing mechanism and sensor coverage assessments are included in the technical descriptions.

9.8 Method of SAR measurement with Power Reduction

This tablet was tested in accordance with April 2011 TCB workshop notes for proximity sensor and power reduction.

Based on the power-reduction activation vs. distance results for the sensors, the device was tested with the device representative of the output powers when the sensors activated (reduced power) at 0mm distance from the phantom according to KDB 447498 Section 4 requirements for tablets.

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9.9 Sensor Triggering Distances

Table 9-2
Distance from Back of Tablet

distance in mm	9	10	11	12	13	14
Condition of Sensors with respect to the back of the device	on	on	off	off	off	off

Please See Figure 9-1 through Figure 9-5 for power vs. Back-off Distance plots for each GPRS multi-slot mode.

Backoff Sensor Power Reduction (back side)

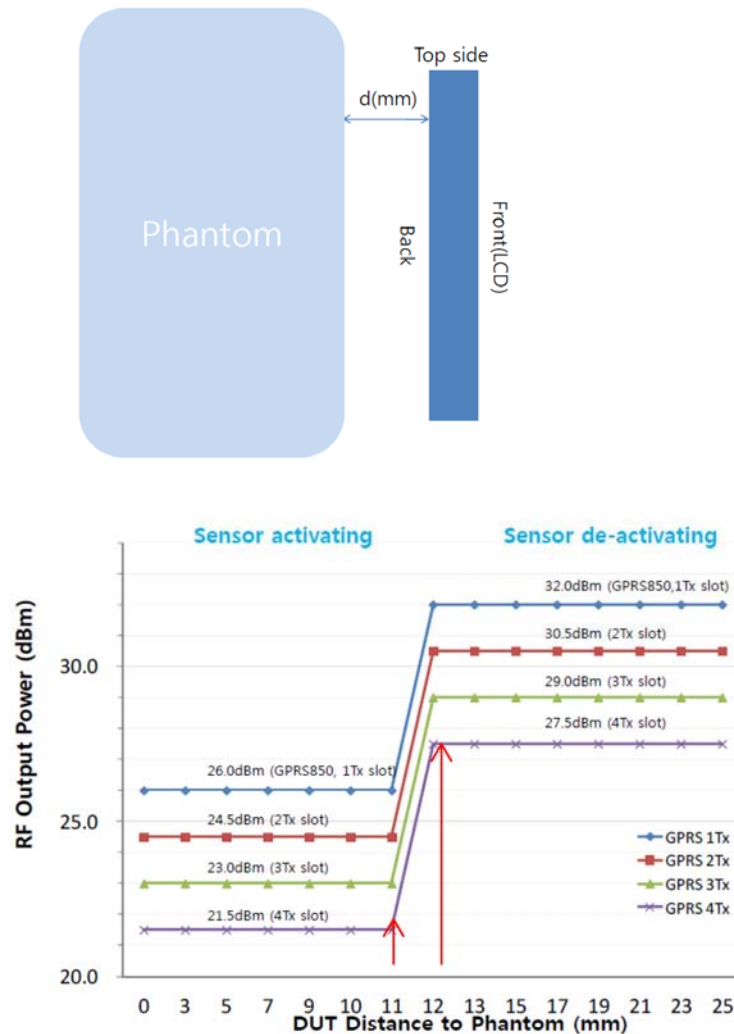


Figure 9-1

GPRS (GMSK) 850 Back off Power Reduction Graph - Back Side

Data in Figure 9-1 demonstrates reduced fixed GPRS (GMSK) power levels at a distance of 10 mm and less from the back, as shown in Table 9-2.

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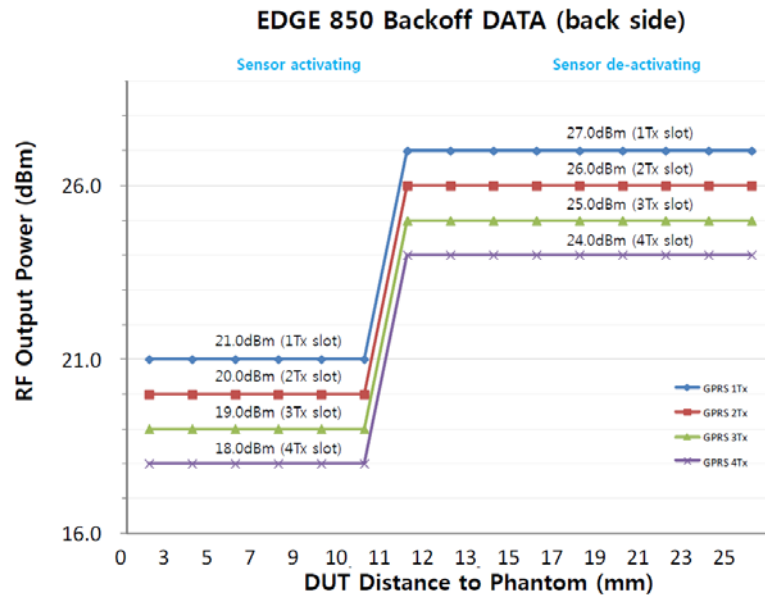


Figure 9-2

EDGE (8-PSK) 850 Back off Power Reduction Graph - Back Side

Data in Figure 9-6 demonstrates reduced fixed EDGE (8-PSK) power levels at a distance of 10 mm and less from the back, as shown in Table 9-2.

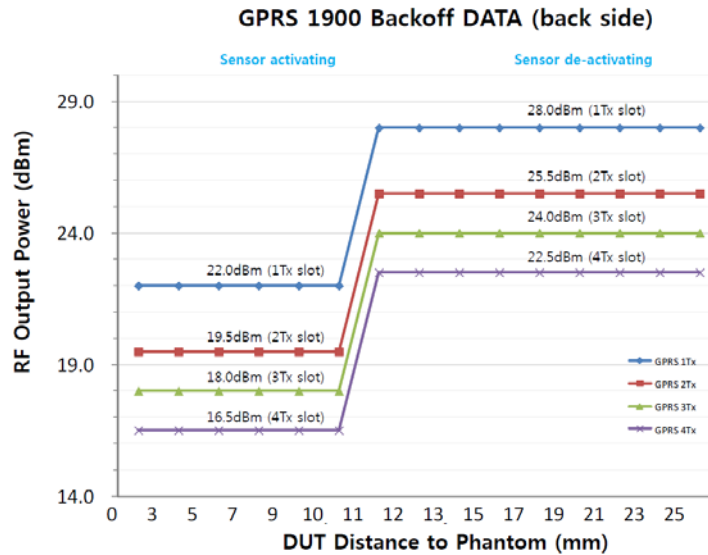


Figure 9-3

GPRS (GMSK) 1900 Back off Power Reduction Graph - Back Side

Data in Figure 9-3 demonstrates reduced fixed GPRS (GMSK) power levels at a distance of 10 mm and less from the back, as shown in Table 9-2.

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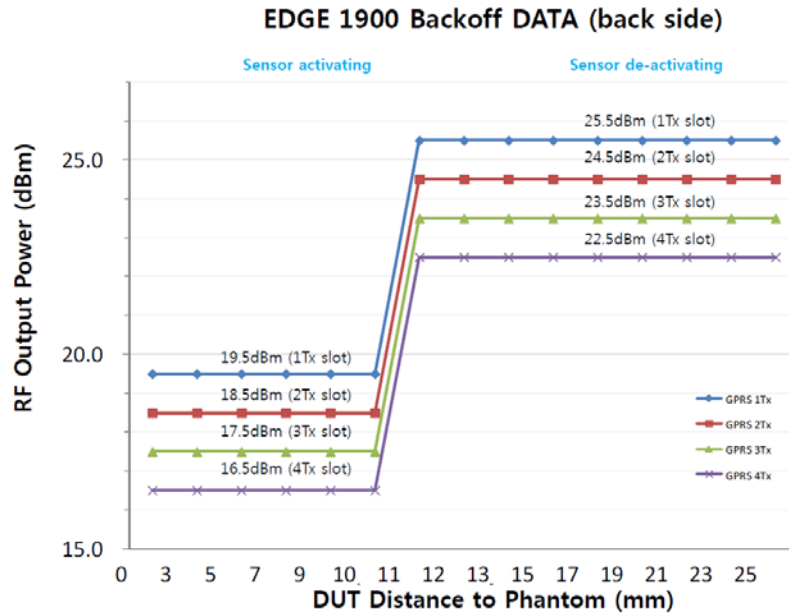


Figure 9-4
EDGE (8-PSK) 1900 Back off Power Reduction Graph - Back Side
 Data in Figure 9-4 demonstrates reduced fixed EDGE (8-PSK) power levels at a distance of 10 mm and less from the back, as shown in Table 9-2.

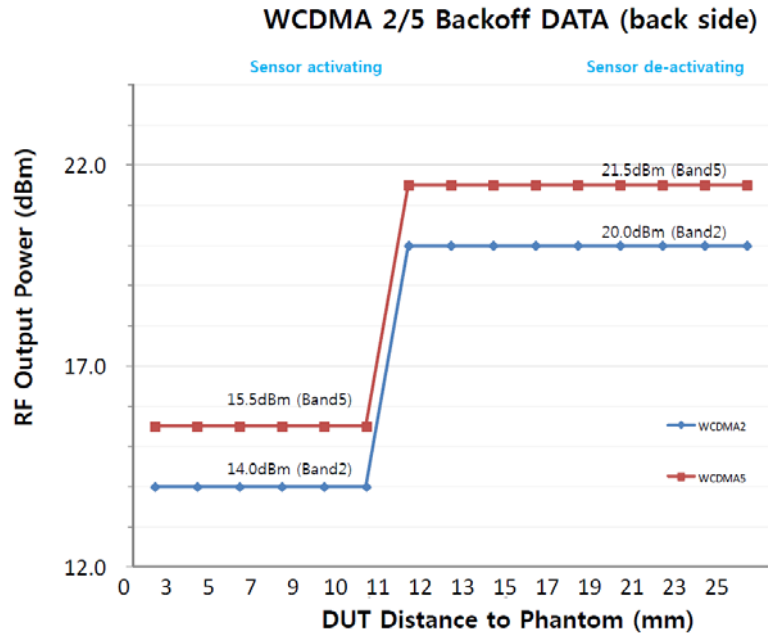


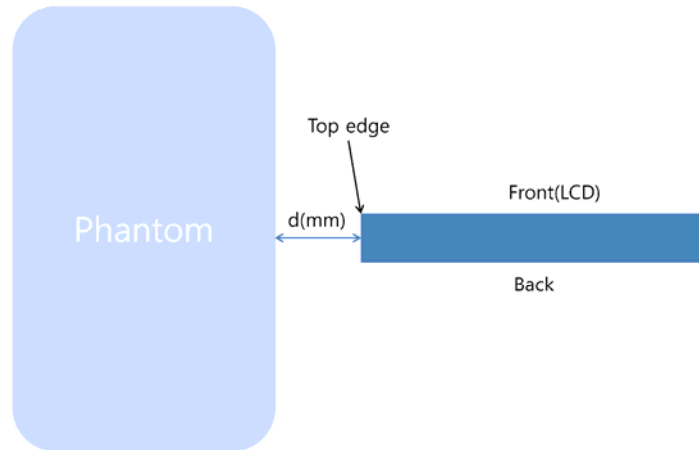
Figure 9-5
WCDMA 850/1900 Back off Power Reduction Graph - Back Side
 Data in Figure 9-5 demonstrates reduced fixed WCDMA power levels at a distance of 10 mm and less from the back, as shown in Table 9-2.

Table 9-3
Distance from Top Edge of Tablet - 0° Angle

distance in mm	5	6	7	8	9	10
Condition of Sensor in the top edge of the device	on	on	off	off	off	off

Please see Figure 9-6 through Figure 9-10 power vs. back-off distance plots for each GPRS multi-slot mode.

Backoff Sensor Power Reduction (Top side, 0° tilted)



GPRS 850 Backoff DATA (Top side)

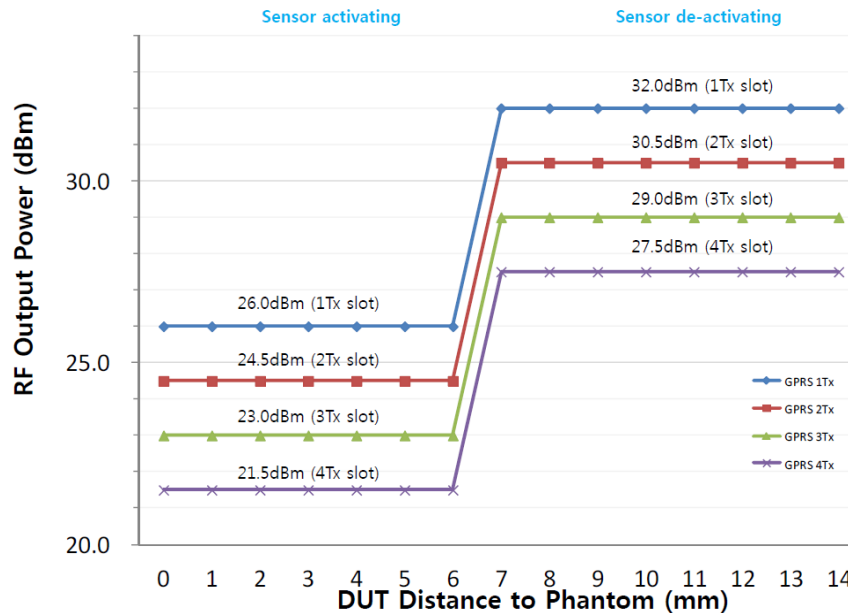


Figure 9-6

GPRS (GMSK) 850 Back off Power Reduction Graph - Top at 0° Angle

Data in Figure 9-6 demonstrates reduced fixed GPRS (GMSK) power levels at a distance of 6 mm and less, from the top edge of the device as shown in Table 9-3.

FCC ID: A3LSHWM380S	PCTEST ENGINEERING LABORATORY, INC.	SAR COMPLIANCE REPORT	SAMSUNG	Reviewed by: Quality Manager
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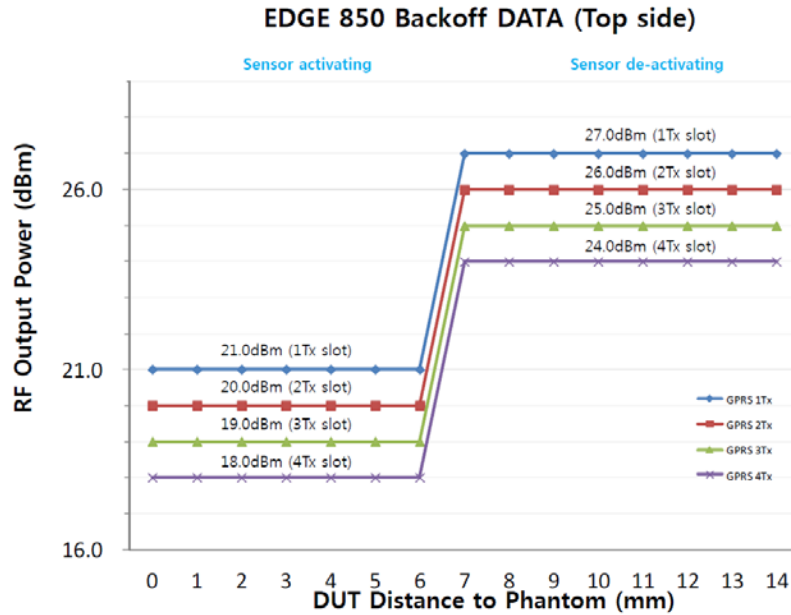


Figure 9-7
EDGE (8-PSK) 850 Back off Power Reduction Graph - Top at 0° Angle
 Data in Figure 9-7 demonstrates reduced fixed EDGE (8-PSK) power levels at a distance of 6 mm and less, from the top edge of the device as shown in Table 9-3.

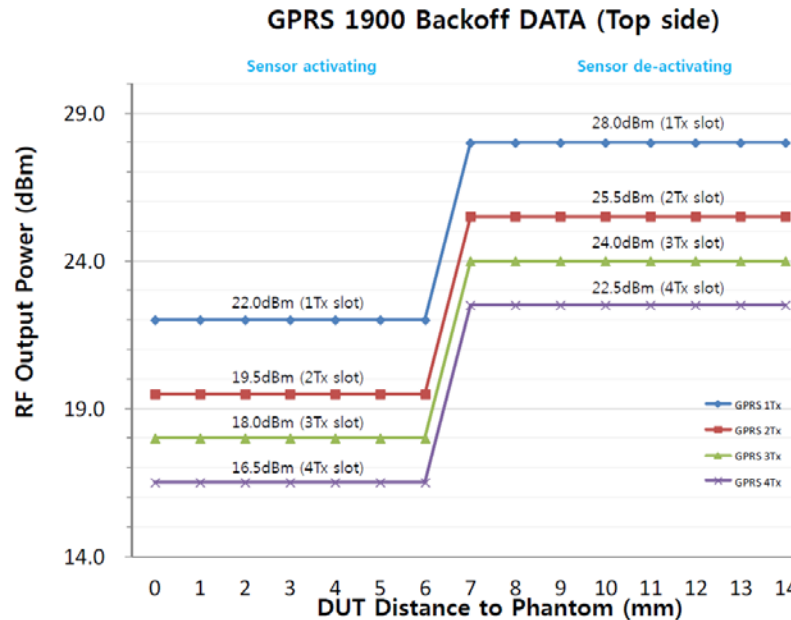


Figure 9-8
GPRS (GMSK) 1900 Back off Power Reduction Graph - Top at 0° Angle
 Data in Figure 9-8 demonstrates reduced fixed GPRS (GMSK) power levels at a distance of 6 mm and less, from the top edge of the device as shown in Table 9-3.

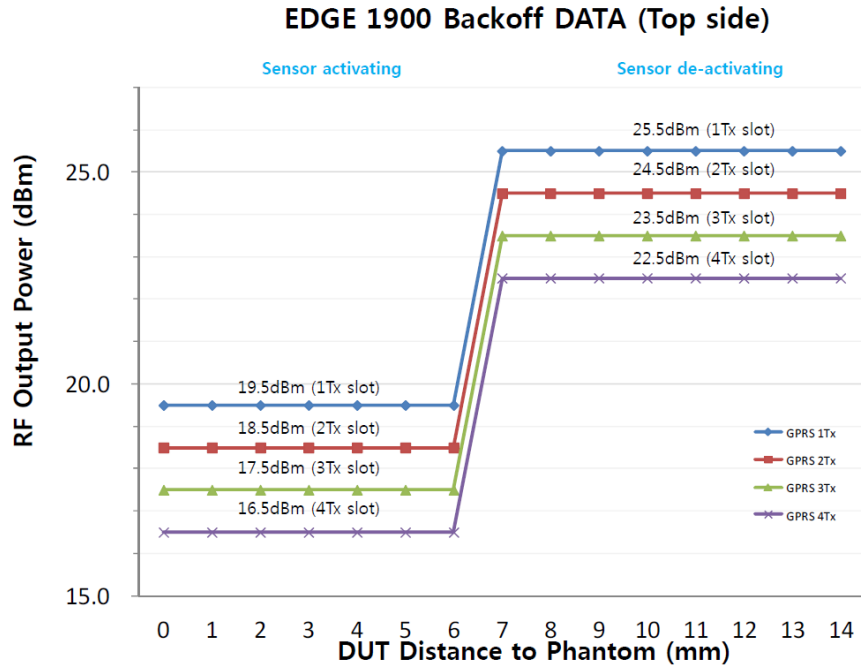


Figure 9-9
EDGE (8-PSK) 1900 Back off Power Reduction Graph - Top at 0° Angle
 Data in Figure 9-9 demonstrates reduced fixed EDGE (8-PSK) power levels at a distance of 6 mm and less, from the top edge of the device as shown in Table 9-3.

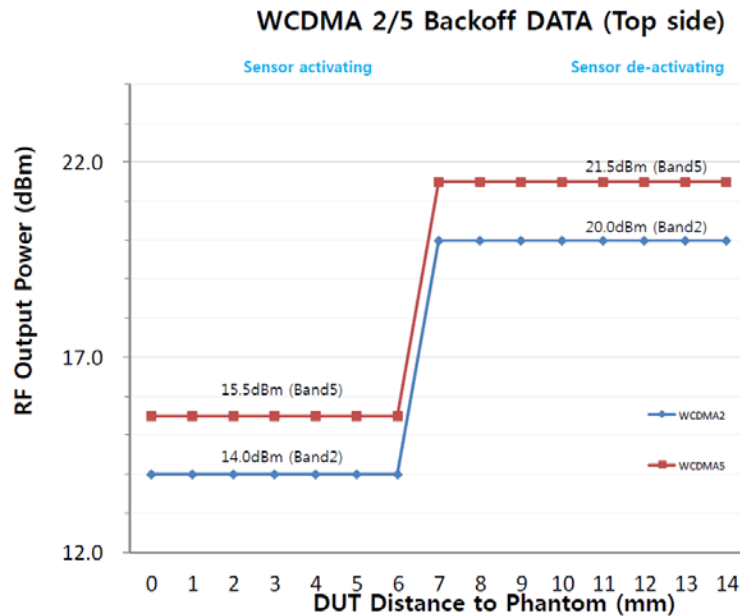


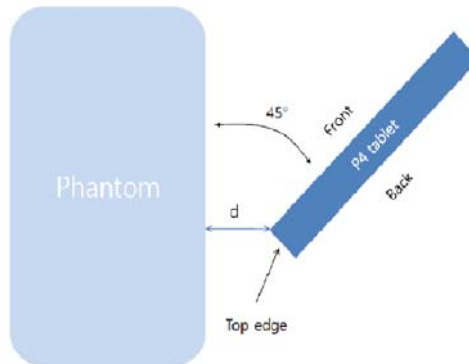
Figure 9-10
WCDMA 850/1900 Back off Power Reduction Graph - Top at 0° Angle
 Data in Figure 9-10 demonstrates reduced fixed WCDMA power levels at a distance of 6 mm and less, from the top edge of the device as shown in Table 9-3.

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Table 9-4
Distance from Top Edge of Tablet - 45° Angle

distance in mm	5	6	7	8	9	10
Condition of Sensor in the top edge of the device	on	on	off	off	off	off

Please see Figure 9-11 through Figure 9-15 for power vs. back-off distance plots for each GPRS multi-slot mode.



Above figure represents “45 degrees” between the screen face and phantom face.

Please note that the 60 degree angle tilt has been used to identify proximity sensor coverage for the top edge, since this angle is consistent with device use conditions and sensor implementation according to the manufacturer. All relevant directions of coverage, as described in the April 2011 TCB workshop slides, have been considered in order to determine the worst case activation and deactivation test distances.

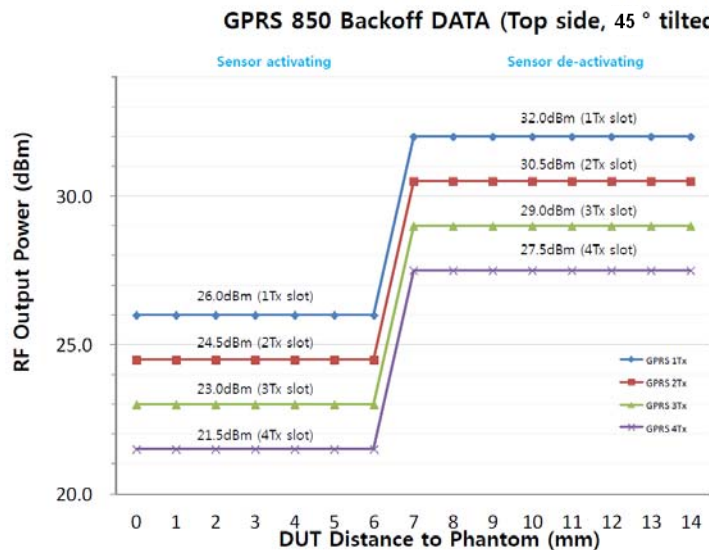


Figure 9-11

GPRS (GMSK) 850 Back off Power Reduction Graph - Top Edge at 45° Angle

Data in Figure 9-11 demonstrates reduced fixed GPRS (GMSK) power levels at a distance of 6 mm and less, from the top edge at a 60 degree angle as shown in Table 9-4.

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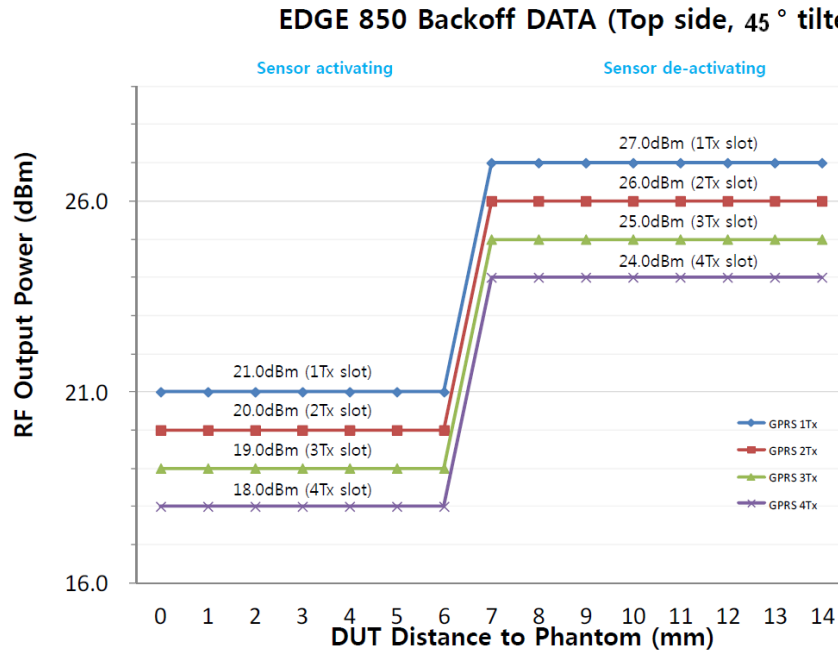


Figure 9-12

EDGE (8-PSK) 850 Back off Power Reduction Graph - Top Edge at 45° Angle

Data in Figure 9-12 demonstrates reduced fixed EDGE (8-PSK) power levels at a distance of 6 mm and less, from the top edge at a 60 degree angle as shown in Table 9-4.

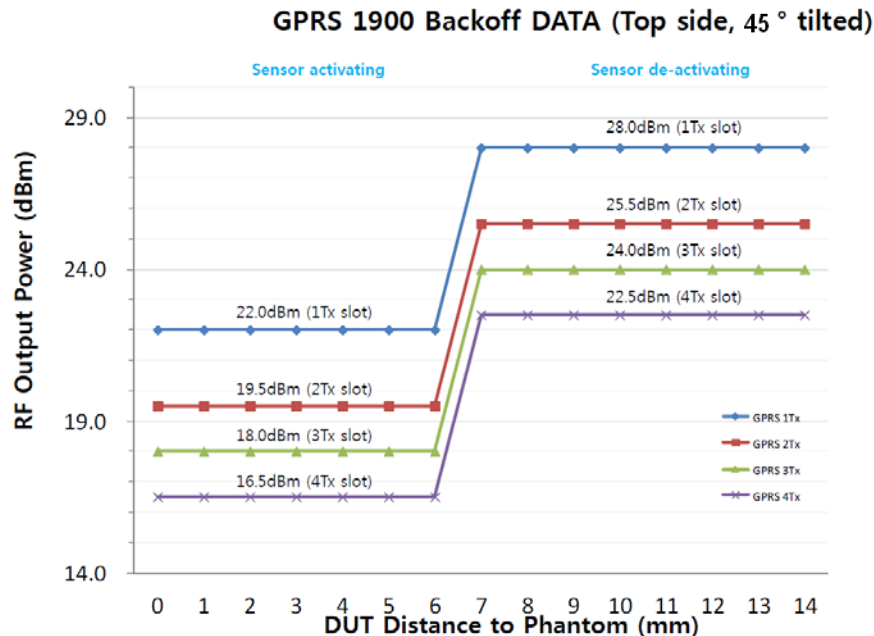


Figure 9-13

GPRS (GMSK) 1900 Back off Power Reduction Graph - Top Edge at 45° Angle

Data in Figure 9-13 demonstrates reduced fixed GPRS (GMSK) power levels at a distance of 6 mm and less, from the top edge at a 60 degree angle as shown in Table 9-4.

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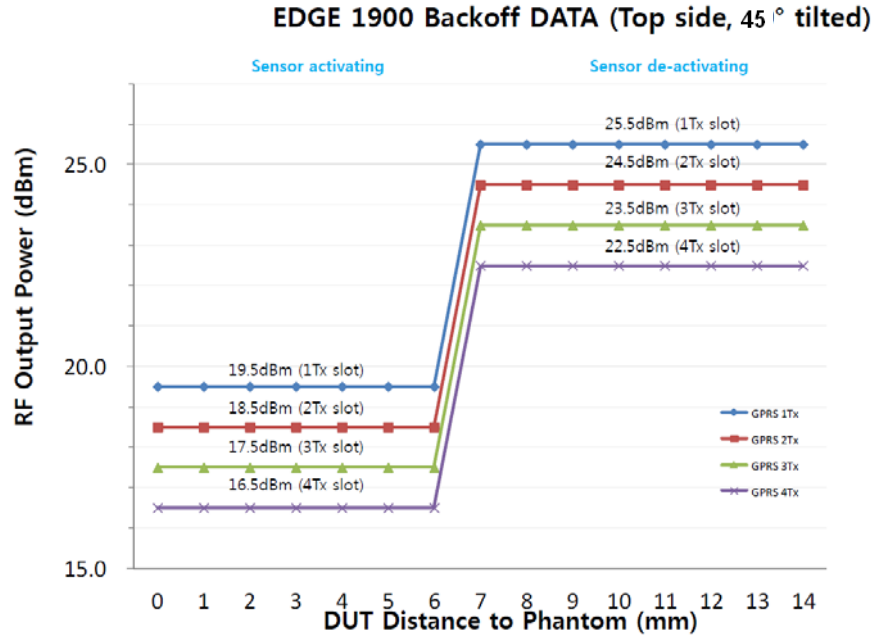


Figure 9-14

EDGE (8-PSK) 1900 Back off Power Reduction Graph - Top Edge at 45° Angle

Data in Figure 9-14 demonstrates reduced fixed EDGE (8-PSK) power levels at a distance of 6 mm and less, from the top edge at a 60 degree angle as shown in Table 9-4.

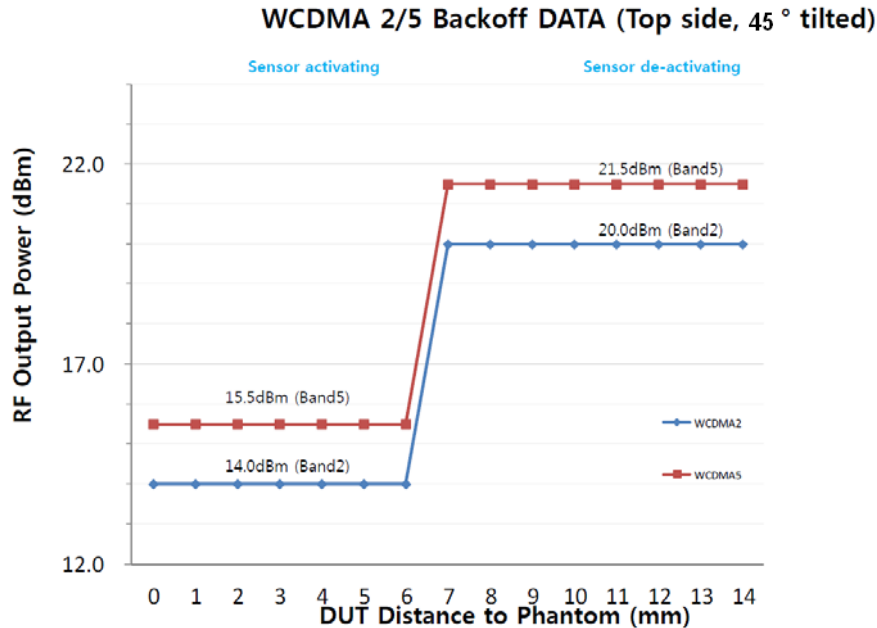


Figure 9-15

WCDMA 850/1900 Back off Power Reduction Graph - Top Edge at 45° Angle

Data in Figure 9-15 demonstrates reduced fixed WCDMA power levels at a distance of 6 mm and less, from the top edge at a 60 degree angle as shown in Table 9-4.

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9.10 Method of SAR measurement with Power Reduction

This tablet was tested in accordance with April 2011 TCB workshop notes for proximity sensor and power reduction.

Based on the power-reduction activation vs. distance results for the sensors, the device was tested at 0mm distance from the phantom with the sensor activated and additionally at a conservative 10 mm distance with the sensor de-activated (max power, no power reduction) from the back side; and 5 mm from the top edge with the sensor de-activated (max power, no power reduction).

SAR evaluation is required without power back-off at 10 mm (from the back) and 5mm (from the top edge). Since the device sensor detection mechanism is active at these distances, the sensor was disabled via manufacturer test software, and the device was placed in maximum power transmit mode with a base station simulator under the tissue equivalent liquid-filled flat phantom at the required distances for testing.

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10 RF CONDUCTED POWERS

10.1 Licensed Transmitter Conducted Powers

10.1.1 GSM Conducted Powers

Table 10-1
Maximum GSM/GPRS Powers (Proximity Sensor Inactive)

		Maximum Burst-Averaged Output Power							
		GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
Cellular	128	32.19	30.72	29.18	27.65	27.02	26.01	25.06	24.12
	190	32.22	30.73	29.18	27.70	27.07	26.03	25.02	24.13
	251	32.19	30.73	29.16	27.67	27.08	26.08	25.08	24.08
PCS	512	27.99	25.52	23.96	22.52	25.42	24.48	23.47	22.86
	661	28.10	25.65	24.14	22.70	25.58	24.68	23.73	22.94
	810	28.08	25.61	24.13	22.71	25.57	24.62	23.62	22.88
		Calculated Maximum Frame-Averaged Output Power							
		GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
Cellular	128	23.16	24.70	24.92	24.64	17.99	19.99	20.80	21.11
	190	23.19	24.71	24.92	24.69	18.04	20.01	20.76	21.12
	251	23.16	24.71	24.90	24.66	18.05	20.06	20.82	21.07
PCS	512	18.96	19.50	19.70	19.51	16.39	18.46	19.21	19.85
	661	19.07	19.63	19.88	19.69	16.55	18.66	19.47	19.93
	810	19.05	19.59	19.87	19.70	16.54	18.60	19.36	19.87

Note:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- The bolded GPRS/EDGE modes were selected according to the highest frame-averaged output power table according to KDB 941225 D03.
- GPRS/EDGE (GMSK) output powers were measured with CS1 since it was the coding scheme with the lowest bit rate and most stable. EDGE (8-PSK) powers were measured with MCS7 on the parameters on the Base Station Simulator since the output powers were most stable with this coding scheme.

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Table 10-2
Reduced GSM/GPRS Powers (Proximity Sensor Active)

		Maximum Burst-Averaged Output Power							
		GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
Cellular	128	26.23	24.68	23.11	21.58	20.75	19.71	18.72	17.71
	190	26.25	24.68	23.22	21.63	20.81	19.83	18.81	17.74
	251	26.25	24.75	23.20	21.64	20.88	19.78	18.86	17.82
PCS	512	21.87	19.47	17.90	16.33	19.53	18.58	17.47	16.51
	661	22.00	19.59	18.07	16.50	19.71	18.75	17.78	16.62
	810	22.09	19.68	18.15	16.58	19.76	18.84	17.92	16.73
		Calculated Maximum Frame-Averaged Output Power							
		GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
Cellular	128	17.20	18.66	18.85	18.57	11.72	13.69	14.46	14.70
	190	17.22	18.66	18.96	18.62	11.78	13.81	14.55	14.73
	251	17.22	18.73	18.94	18.63	11.85	13.76	14.60	14.81
PCS	512	12.84	13.45	13.64	13.32	10.50	12.56	13.21	13.50
	661	12.97	13.57	13.81	13.49	10.68	12.73	13.52	13.61
	810	13.06	13.66	13.89	13.57	10.73	12.82	13.66	13.72

Note:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- The bolded GPRS/EDGE modes were selected according to the highest frame-averaged output power table according to KDB 941225 D03.
- GPRS/EDGE (GMSK) output powers were measured with CS1 since it was the coding scheme with the lowest bit rate and most stable. EDGE (8-PSK) powers were measured with MCS7 on the parameters on the Base Station Simulator since the output powers were most stable with this coding scheme.

GSM Class: C
GPRS Multislot class: 12 (max 4 Tx Uplink slots)
EDGE Multislot class: 12 (max 4 Tx Uplink slots)
DTM Multislot Class: N/A

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10.1.2 GPRS Summary of Power Reduction due to Proximity Sensor

Table 10-3
Power Targets Summary

Band	Proximity Sensor State	Channel	Burst Average Target Power							
			GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
			GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
Cellular	Inactive	128								
		190	32.00	30.50	29.00	27.50	27.00	26.00	25.00	24.00
		251								
Cellular	Active	128								
		190	26.00	24.50	23.00	21.50	21.00	20.00	19.00	18.00
		251								
PCS	Inactive	512								
		661	28.00	25.50	24.00	22.50	25.50	24.50	23.50	22.50
		810								
PCS	Active	512								
		661	22.00	19.50	18.00	16.50	19.50	19.00	17.50	16.50
		810								

Note: The power reduction target for each GPRS Multi-slot configuration can be found in the above table.

10.1.3 WCDMA Conducted Powers

Table 10-4
Maximum WCDMA Powers (Proximity Sensor Inactive)

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			β_c	β_d	MPR
			4132	4183	4233	9262	9400	9538			
99	WCDMA	12.2 kbps RMC	21.64	21.52	21.53	19.81	20.10	20.29	-	-	-
6	HSDPA	Subtest 1	21.63	21.49	21.57	19.82	20.12	20.27	2	15	0
6		Subtest 2	21.44	21.29	21.34	19.66	19.90	20.10	11	15	0
6		Subtest 3	20.89	20.77	20.79	19.16	19.43	19.62	15	8	0.5
6		Subtest 4	20.89	20.77	20.78	19.45	19.45	19.62	15	4	0.5
6	HSUPA	Subtest 1	20.84	20.68	20.72	19.68	19.92	20.10	10	15	0
6		Subtest 2	19.46	19.36	19.37	18.18	18.38	18.70	6	15	2
6		Subtest 3	20.49	20.35	20.38	18.46	18.71	19.01	15	9	1
6		Subtest 4	19.76	19.62	19.67	18.16	18.39	18.67	2	15	2
6		Subtest 5	20.37	20.32	20.31	19.90	20.14	20.35	14	15	0

Table 10-5
Reduced WCDMA Powers (Proximity Sensor Active)

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			β_c	β_d	MPR
			4132	4183	4233	9262	9400	9538			
99	WCDMA	12.2 kbps RMC	15.87	15.85	15.84	13.96	14.01	13.97	-	-	-
6	HSDPA	Subtest 1	16.05	16.00	16.04	13.87	13.91	13.94	2	15	0
6		Subtest 2	15.83	15.78	15.83	13.66	13.68	13.66	11	15	0
6		Subtest 3	15.55	15.52	15.57	13.41	13.47	13.43	15	8	0.5
6		Subtest 4	15.32	15.27	15.33	13.14	13.16	13.17	15	4	0.5
6	HSUPA	Subtest 1	15.83	15.80	15.82	13.73	13.76	13.72	10	15	0
6		Subtest 2	13.92	13.84	13.97	12.18	12.25	12.20	6	15	2
6		Subtest 3	14.80	14.77	14.82	12.62	12.65	12.57	15	9	1
6		Subtest 4	14.05	13.98	14.10	12.04	12.02	12.03	2	15	2
6		Subtest 5	16.09	16.02	16.06	14.02	14.09	14.01	14	15	0

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

This device is only capable of HSUPA in the uplink (QPSK in the uplink), but is capable of HSPA+ in the downlink. Information about the uplink and downlink capabilities are explained in further detail in the technical description for this model.

It is expected by the manufacturer that MPR for some HSUPA subtests may be up to 1.5 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model. Detailed information is included in the operational description explaining how the MPR is applied for this model.

10.1.4 WCDMA Summary of Power Reduction due to Proximity Sensor

Table 10-6
Power Reduction Summary

Mode		Cellular Band [dBm]			PCS Band [dBm]		
		4132	4183	4233	9262	9400	9538
WCDMA	Inactive	21.50			20.00		
	Active	15.50			14.00		



Figure 10-1
Power Measurement Setup

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10.2 WLAN Conducted Powers

Table 10-7
IEEE 802.11b Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
802.11b	2412	1	12.78	12.83	12.73	12.76
802.11b	2437	6	13.24	13.20	13.11	13.15
802.11b	2462	11	13.44	13.38	13.47	13.41

Table 10-8
IEEE 802.11g Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11g	2412	1	13.28	13.26	13.25	13.36	13.24	13.22	13.21	13.23
802.11g	2437	6	13.57	13.60	13.58	13.60	13.56	13.48	13.57	13.58
802.11g	2462	11	13.86	13.86	13.80	13.87	13.82	13.75	13.83	13.85

Table 10-9
IEEE 802.11n Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	20	26	39	52	58	65
802.11n	2412	1	12.20	12.06	12.05	12.07	12.14	12.04	12.04	12.11
802.11n	2437	6	12.54	12.33	12.46	12.44	12.53	12.36	12.39	12.32
802.11n	2462	11	12.76	12.65	12.68	12.65	12.68	12.74	12.70	12.72

Table 10-10
IEEE 802.11a Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11a	5180	36	12.25	12.22	12.16	12.35	12.27	12.22	12.30	12.25
802.11a	5200	40	12.15	12.12	12.21	12.45	12.40	12.40	12.38	12.41
802.11a	5220	44	12.26	12.32	12.30	12.44	12.45	12.41	12.50	12.49
802.11a	5240	48	12.40	12.30	12.31	12.41	12.37	12.38	12.45	12.48
802.11a	5260	52	12.30	12.35	12.31	12.35	12.32	12.28	12.45	12.41
802.11a	5280	56	12.30	12.27	12.24	12.25	12.40	12.34	12.41	12.29
802.11a	5300	60	12.20	12.22	12.21	12.28	12.31	12.24	12.37	12.31
802.11a	5320	64	12.09	12.15	12.20	12.20	12.30	12.31	12.31	12.22
802.11a	5500	100	12.91	12.98	12.85	12.92	13.00	12.97	13.10	13.03
802.11a	5520	104	12.84	12.91	13.00	12.87	12.81	12.90	12.91	12.97
802.11a	5540	108	12.73	12.88	12.79	12.91	12.81	12.80	12.91	12.72
802.11a	5560	112	12.40	12.42	12.31	12.45	12.40	12.47	12.51	12.52
802.11a	5580	116	12.25	12.26	12.22	12.32	12.33	12.40	12.51	12.19
802.11a	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5660	132	12.00	12.05	12.11	12.15	12.10	12.05	12.07	12.11
802.11a	5680	136	12.05	12.15	12.27	12.18	12.12	12.09	12.22	12.18
802.11a	5700	140	12.20	12.21	12.15	12.28	12.20	12.31	12.35	12.30
802.11a	5745	149	12.60	12.55	12.59	12.63	12.57	12.60	12.65	12.67
802.11a	5765	153	12.68	12.66	12.68	12.72	12.67	12.77	12.70	12.69
802.11a	5785	157	12.79	12.76	12.80	12.83	12.85	12.83	12.92	12.94
802.11a	5805	161	12.84	12.93	12.86	12.95	12.94	12.89	12.95	12.94
802.11a	5825	165	12.72	12.63	12.61	12.63	12.56	12.64	12.66	12.71

This device does not transmit any beacons or initiate any transmissions in 5.2 and 5.5 GHz Bands.
Per FCC KDB Publication 443999, 5600-5650 MHz operation is prohibited per FCC even as a client.

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Table 10-11
IEEE 802.11n Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	20	26	39	52	58	65
802.11n	5180	36	12.01	12.02	12.11	12.25	12.26	12.30	12.27	12.16
802.11n	5200	40	12.05	11.96	12.10	12.21	12.20	12.04	12.15	12.20
802.11n	5220	44	11.96	11.84	11.96	12.04	11.94	12.11	12.06	12.06
802.11n	5240	48	11.80	11.85	11.90	11.88	11.95	11.93	12.02	12.00
802.11n	5260	52	11.70	11.75	11.80	11.83	11.91	11.74	11.87	11.80
802.11n	5280	56	11.55	11.61	11.73	11.65	11.81	11.77	11.72	11.77
802.11n	5300	60	11.50	11.51	11.65	11.53	11.60	11.68	11.72	11.75
802.11n	5320	64	11.30	11.31	11.40	11.40	11.55	11.57	11.45	11.42
802.11n	5500	100	12.15	12.22	12.28	12.33	12.24	12.25	12.39	12.35
802.11n	5520	104	12.22	12.15	12.40	12.38	12.34	12.40	12.37	12.42
802.11n	5540	108	12.11	12.01	12.20	12.25	12.35	12.26	12.23	12.31
802.11n	5560	112	12.10	11.98	12.20	12.25	12.27	12.16	12.30	12.22
802.11n	5580	116	12.00	11.99	12.22	12.23	12.14	12.10	12.25	12.32
802.11n	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5660	132	12.30	12.28	12.40	12.45	12.51	12.45	12.50	12.64
802.11n	5680	136	12.39	12.41	12.55	12.56	12.54	12.60	12.70	12.72
802.11n	5700	140	12.50	12.40	12.67	12.73	12.70	12.61	12.78	12.59
802.11n	5745	149	12.91	12.75	12.95	12.90	13.00	12.90	13.01	13.05
802.11n	5765	153	12.90	12.90	13.02	13.05	13.02	12.96	12.98	13.10
802.11n	5785	157	12.95	12.97	13.10	13.11	13.00	13.11	13.17	13.28
802.11n	5805	161	13.09	13.00	13.10	13.18	13.18	13.19	13.18	13.16
802.11n	5825	165	12.74	12.44	12.43	12.62	12.53	12.66	12.71	12.73

This device does not transmit any beacons or initiate any transmissions in 5.2 and 5.5 GHz Bands. Per FCC KDB Publication 443999, 5600-5650 MHz operation is prohibited per FCC even as a client.

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

- 2.4 GHz WLAN was additionally tested although not required per KDB publication 447498.
- Justification for reduced test configurations for WIFI channels per KDB Publication 248227, 648474 and April 2010 FCC/TCB Meeting Notes: Highest average RF output power channel for the lowest data rate were selected for SAR evaluation (as the default channel). Other IEEE 802.11 modes (higher data rates) were not investigated since the average output powers were not greater than 0.25 dB than that of the tested channel in the lowest data rate IEEE 802.11b or g mode.
- For 5 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11a were selected for SAR evaluation. IEEE 802.11 n modes were not investigated since the average output powers were not greater than 0.25 dB than that of the tested channel in the lowest data rate IEEE 802.11a mode.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The underlined data rate and channel above were tested for SAR.

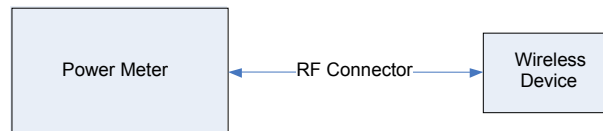


Figure 10-2
Power Measurement Setup

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11 SYSTEM VERIFICATION

11.1 Tissue Verification

Table 11-1
Measured Tissue Properties

Tissue Type	Calibrated for Tests Performed on:	Tissue Temp During Calibration (C°)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
835B	08/02/2011	22.8	820	0.980	53.91	0.97	55.28	1.14%	-2.49%
			835	0.980	54.19	0.97	55.20	1.03%	-1.83%
			850	1.001	53.90	0.99	55.15	1.32%	-2.27%
835B	11/22/2011	23.2	820	0.959	54.66	0.97	55.28	-1.03%	-1.13%
			835	0.975	54.66	0.97	55.20	0.52%	-0.98%
			850	0.986	54.62	0.99	55.15	-0.20%	-0.97%
1900B	08/04/2011	23.6	1850	1.455	51.55	1.52	53.30	-4.28%	-3.28%
			1880	1.476	51.41	1.52	53.30	-2.89%	-3.55%
			1910	1.475	51.10	1.52	53.30	-2.96%	-4.13%
1900B	11/21/2011	22.2	1850	1.469	52.53	1.52	53.30	-3.36%	-1.44%
			1880	1.503	52.43	1.52	53.30	-1.12%	-1.63%
			1910	1.541	52.32	1.52	53.30	1.38%	-1.84%
2450B	08/05/2011	23.2	2401	1.824	52.07	1.90	52.77	-4.15%	-1.32%
			2450	1.883	52.14	1.95	52.70	-3.44%	-1.06%
			2499	1.931	51.72	2.02	52.64	-4.36%	-1.74%
5200B-5800B	08/02/2011	23.8	5170	5.389	47.84	5.26	49.06	2.37%	-2.48%
			5210	5.424	47.80	5.31	49.00	2.13%	-2.45%
			5250	5.536	47.63	5.36	48.95	3.32%	-2.69%
			5270	5.501	47.63	5.38	48.92	2.23%	-2.63%
			5310	5.572	47.66	5.43	48.87	2.65%	-2.47%
			5350	5.677	47.56	5.47	48.81	3.78%	-2.56%
			5470	5.792	47.25	5.62	48.65	3.15%	-2.87%
			5510	5.859	47.28	5.66	48.59	3.50%	-2.70%
			5550	5.940	47.29	5.71	48.54	4.06%	-2.57%
			5570	5.942	47.07	5.73	48.51	3.68%	-2.97%
			5610	6.001	47.00	5.78	48.46	3.86%	-3.01%
			5650	6.079	46.99	5.83	48.40	4.36%	-2.92%
			5670	6.113	47.06	5.85	48.38	4.53%	-2.72%
			5710	6.166	46.88	5.90	48.32	4.60%	-2.98%
			5750	6.209	46.74	5.94	48.27	4.49%	-3.17%
			5770	6.259	46.81	5.97	48.24	4.93%	-2.97%
			5810	6.290	46.69	6.01	48.19	4.62%	-3.10%
5200B-5800B	10/11/2011	22.1	5850	6.349	46.53	6.06	48.13	4.80%	-3.33%
			5180	5.214	47.37	5.28	49.04	-1.18%	-3.41%
			5200	5.260	47.36	5.30	49.01	-0.74%	-3.37%
			5240	5.319	47.22	5.35	48.93	-0.51%	-3.50%
			5260	5.330	47.34	5.37	48.91	-0.73%	-3.20%
			5300	5.386	47.12	5.42	48.85	-0.55%	-3.54%
			5500	5.677	46.78	5.65	48.58	0.48%	-3.71%
			5560	5.785	46.69	5.72	48.50	1.14%	-3.73%
			5700	5.976	46.34	5.88	48.28	1.63%	-4.01%
			5765	6.039	46.33	5.96	48.22	1.34%	-3.92%
			5785	6.087	46.21	5.98	48.24	1.76%	-4.21%
			5800	6.121	46.20	6.00	48.20	2.02%	-4.15%
			5805	6.142	46.26	6.01	48.17	2.28%	-3.96%

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

Probe calibration used within ± 100 MHz of the test frequency in either 5.725 - 5.85 or 5.47-5.725 GHz is acceptable per KDB Publication 865664 since the design of the SAR probe supports the extended frequency, provided the DASY software version recommended is used for the tests, and the expanded calibration uncertainty ($k=2$) is less than or equal to 15% (See SAR probe calibration certificate for this information). The dielectric and conductivities measured are within 10% and 5% respectively of the target parameters specified in Supplement C 01-01.

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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11.2 Measurement Procedure for Tissue verification

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the sample which was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity , 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 $j = \sqrt{-1}$.

11.3 Test System Verification

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

Table 11-2
System Verification Results

System Verification TARGET & MEASURED											
Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g}	Deviation (%)
835	Body	08/02/2011	22.8	21.7	0.250	4d047	3258	2.4	9.850	9.600	-2.54%
835	Body	11/22/2011	23.1	22.6	0.100	4d047	3550	0.954	9.850	9.540	-3.15%
1900	Body	08/04/2011	24.7	23.1	0.100	502	3022	4.04	41.100	40.400	-1.70%
1900	Body	11/21/2011	23.6	21.9	0.100	502	3209	4.1	41.100	41.000	-0.24%
2450	Body	08/05/2011	23.6	22.4	0.040	797	3550	2.2	52.300	55.000	5.16%
5200	Body	08/02/2011	23.6	21.8	0.100	1057	3550	8.27	77.700	82.700	6.44%
5200	Body	10/11/2011	23.6	22.3	0.100	1057	3550	8.31	77.700	83.100	6.95%
5500	Body	08/02/2011	23.7	21.9	0.100	1057	3550	8.07	84.400	80.700	-4.38%
5500	Body	10/11/2011	23.7	22.5	0.100	1057	3550	8.53	84.400	85.300	1.07%
5800	Body	08/02/2011	23.2	22.3	0.100	1057	3550	7.89	75.000	78.900	5.20%
5800	Body	10/11/2011	23.9	22.8	0.100	1057	3550	7.83	75.000	78.300	4.40%

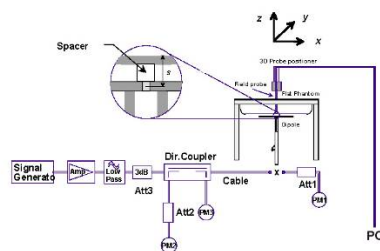


Figure 11-1
System Verification Setup Diagram



Figure 11-2
System Verification Setup Photo

Note: Per KDB Publication 865664, when a reference dipole is not defined within ± 100 MHz of the test frequency, the system verification may be conducted within ± 200 MHz of the center frequency of the measurement frequencies if the SAR probe calibration is valid and the same tissue-equivalent matter is used for verification and test measurements.

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12 SAR DATA SUMMARY

12.1 Body SAR Test Data

Table 12-1
GPRS/EDGE Body SAR Results

MEASUREMENT RESULTS											
FREQUENCY		Mode	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Serial Number	# of GPRS Slots	Side	SAR (1g)
MHz	Ch.										(W/kg)
824.20	128	GSM 850	GPRS	24.5	24.68	-0.01	0.0 cm	M380S-33	2	back*	0.853
836.60	190	GSM 850	GPRS	24.5	24.68	-0.04	0.0 cm	M380S-33	2	back*	0.870
848.80	251	GSM 850	GPRS	24.5	24.75	-0.02	0.0 cm	M380S-33	2	back*	0.874
824.20	128	GSM 850	GPRS	23.0	23.11	0.01	0.0 cm	M380S-33	3	back*	0.928
836.60	190	GSM 850	GPRS	23.0	23.22	-0.07	0.0 cm	M380S-33	3	back*	0.904
848.80	251	GSM 850	GPRS	23.0	23.20	-0.03	0.0 cm	M380S-33	3	back*	0.945
824.20	128	GSM 850	GPRS	21.5	21.58	-0.07	0.0 cm	M380S-33	4	back*	0.861
836.60	190	GSM 850	GPRS	21.5	21.63	-0.04	0.0 cm	M380S-33	4	back*	0.868
848.80	251	GSM 850	GPRS	21.5	21.64	-0.04	0.0 cm	M380S-33	4	back*	0.867
836.60	190	GSM 850	GPRS	30.5	30.73	-0.03	1.0 cm	M380S-27	2	back	0.524
836.60	190	GSM 850	GPRS	29.0	29.18	-0.01	1.0 cm	M380S-27	3	back	0.556
836.60	190	GSM 850	GPRS	27.5	27.70	0.01	1.0 cm	M380S-27	4	back	0.521
836.60	190	GSM 850	GPRS	23.0	23.22	0.07	0.0 cm	M380S-33	3	top*	0.297
836.60	190	GSM 850	GPRS	29.0	29.18	-0.03	0.5 cm	M380S-27	3	top	0.461
836.60	190	GSM 850	GPRS	29.0	29.18	-0.13	0.0 cm	M380S-27	3	right	0.671
1880.00	661	GSM 1900	GPRS	19.5	19.59	-0.05	0.0 cm	M380S-33	2	back*	0.585
1880.00	661	GSM 1900	GPRS	18.0	18.07	-0.16	0.0 cm	M380S-33	3	back*	0.623
1880.00	661	GSM 1900	GPRS	16.5	16.50	-0.10	0.0 cm	M380S-33	4	back*	0.596
1880.00	661	GSM 1900	EDGE	17.5	17.78	-0.02	0.0 cm	1111-2	3	back*	0.553
1880.00	661	GSM 1900	EDGE	16.5	16.62	-0.02	0.0 cm	1111-2	4	back*	0.513
1880.00	661	GSM 1900	GPRS	24.0	24.14	-0.03	1.0 cm	M380S-27	3	back	0.569
1880.00	661	GSM 1900	EDGE	23.5	23.73	-0.10	1.0 cm	1111-1	3	back	0.706
1880.00	661	GSM 1900	GPRS	18.0	18.07	-0.07	0.0 cm	M380S-33	3	top*	0.504
1880.00	661	GSM 1900	EDGE	17.5	17.78	0.06	0.0 cm	1111-2	3	top*	0.460
1880.00	661	GSM 1900	GPRS	25.5	25.65	0.03	0.5 cm	M380S-27	2	top	0.744
1850.20	512	GSM 1900	GPRS	24.0	23.96	-0.06	0.5 cm	M380S-27	3	top	0.752
1880.00	661	GSM 1900	GPRS	24.0	24.14	-0.05	0.5 cm	M380S-27	3	top	0.817
1909.80	810	GSM 1900	GPRS	24.0	24.13	0.00	0.5 cm	M380S-27	3	top	0.819
1880.00	661	GSM 1900	GPRS	22.5	22.70	0.01	0.5 cm	M380S-27	4	top	0.771
1850.20	512	GSM 1900	EDGE	23.5	23.47	0.00	0.5 cm	1111-1	3	top	0.967
1880.00	661	GSM 1900	EDGE	23.5	23.73	0.02	0.5 cm	1111-1	3	top	1.030
1909.80	810	GSM 1900	EDGE	23.5	23.62	-0.05	0.5 cm	1111-1	3	top	1.070
1850.20	512	GSM 1900	EDGE	22.5	22.86	-0.01	0.5 cm	1111-1	4	top	0.910
1880.00	661	GSM 1900	EDGE	22.5	22.94	-0.01	0.5 cm	1111-1	4	top	0.984
1909.80	810	GSM 1900	EDGE	22.5	22.88	0.00	0.5 cm	1111-1	4	top	1.030
1880.00	661	GSM 1900	GPRS	24.0	24.14	-0.03	0.0 cm	M380S-27	3	right	0.131
1880.00	661	GSM 1900	EDGE	23.5	23.73	0.09	0.0 cm	1111-1	3	right	0.159
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram				

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Table 12-2
WCDMA Body SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Serial Number	Side	SAR (1g)
MHz	Ch.									(W/kg)
836.60	4183	WCDMA 850	RMC	15.5	15.85	0.03	0.0 cm	1111-2	back*	0.342
836.60	4183	WCDMA 850	RMC	21.5	21.52	0.03	1.0 cm	M380S-27	back	0.292
836.60	4183	WCDMA 850	RMC	15.5	15.85	-0.04	0.0 cm	1111-2	top*	0.124
836.60	4183	WCDMA 850	RMC	21.5	21.52	0.03	0.5 cm	M380S-27	top	0.198
836.60	4183	WCDMA 850	RMC	21.5	21.52	0.15	0.0 cm	M380S-27	right	0.305
1880.00	9400	WCDMA 1900	RMC	14.0	14.01	-0.01	0.0 cm	M380S-33	back*	0.643
1880.00	9400	WCDMA 1900	RMC	20.0	20.10	0.15	1.0 cm	M380S-27	back	0.628
1880.00	9400	WCDMA 1900	RMC	14.0	14.01	0.05	0.0 cm	M380S-33	top*	0.519
1852.40	9262	WCDMA 1900	RMC	20.0	19.81	-0.01	0.5 cm	M380S-27	top	0.796
1880.00	9400	WCDMA 1900	RMC	20.0	20.10	-0.03	0.5 cm	M380S-27	top	0.909
1907.60	9538	WCDMA 1900	RMC	20.0	20.29	0.01	0.5 cm	M380S-27	top	0.927
1880.00	9400	WCDMA 1900	RMC	20.0	20.10	0.11	0.0 cm	M380S-27	right	0.150
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram			

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Table 12-3
2.4 and 5 GHz Body SAR Results

MEASUREMENT RESULTS											
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Battery Type	Serial Number	Data Rate (Mbps)	Side	SAR (1g)
MHz	Ch.										(W/kg)
2462	11	IEEE 802.11b	DSSS	13.44	0.01	0.0 cm	Standard	M380S-27	1	back	0.782
2462	11	IEEE 802.11b	DSSS	13.44	0.12	0.0 cm	Standard	M380S-27	1	top	0.221
2462	11	IEEE 802.11b	DSSS	13.44	-0.01	0.0 cm	Standard	M380S-27	1	left	0.498
2462	11	IEEE 802.11g	OFDM	13.86	0.03	0.0 cm	Standard	M380S-27	6	back	0.707
2462	11	IEEE 802.11g	OFDM	13.86	0.12	0.0 cm	Standard	M380S-27	6	top	0.188
2462	11	IEEE 802.11g	DSSS	13.86	-0.01	0.0 cm	Standard	M380S-27	6	left	0.476
5765	153	IEEE 802.11a	OFDM	12.68	-0.03	0.0 cm	Standard	FI-186-G	6	back	0.614
5785	157	IEEE 802.11a	OFDM	12.79	0.07	0.0 cm	Standard	FI-186-G	6	back	0.576
5805	161	IEEE 802.11a	OFDM	12.84	-0.01	0.0 cm	Standard	FI-186-G	6	back	0.632
5805	161	IEEE 802.11a	OFDM	12.84	0.09	0.0 cm	Standard	FI-186-G	6	top	0.107
5765	153	IEEE 802.11a	OFDM	12.68	-0.11	0.0 cm	Standard	FI-186-G	6	left	1.060
5785	157	IEEE 802.11a	OFDM	12.79	-0.11	0.0 cm	Standard	FI-186-G	6	left	1.040
5805	161	IEEE 802.11a	OFDM	12.84	-0.11	0.0 cm	Standard	FI-186-G	6	left	0.993
5180	36	IEEE 802.11a	OFDM	12.25	-0.20	0.0 cm	Standard	FI-186-G	6	back	0.423
5240	48	IEEE 802.11a	OFDM	12.40	-0.04	0.0 cm	Standard	FI-186-G	6	back	0.583
5240	48	IEEE 802.11a	OFDM	12.40	0.68	0.0 cm	Standard	FI-186-G	6	top	0.113
5180	36	IEEE 802.11a	OFDM	12.25	-0.11	0.0 cm	Standard	FI-186-G	6	left	0.126
5240	48	IEEE 802.11a	OFDM	12.40	-0.11	0.0 cm	Standard	FI-186-G	6	left	0.262
5260	52	IEEE 802.11a	OFDM	12.30	-0.08	0.0 cm	Standard	FI-186-G	6	back	0.700
5300	60	IEEE 802.11a	OFDM	12.20	-0.08	0.0 cm	Standard	FI-186-G	6	back	0.701
5260	52	IEEE 802.11a	OFDM	12.30	0.16	0.0 cm	Standard	FI-186-G	6	top	0.134
5260	52	IEEE 802.11a	OFDM	12.30	-0.11	0.0 cm	Standard	FI-186-G	6	left	0.275
5500	100	IEEE 802.11a	OFDM	12.91	-0.12	0.0 cm	Standard	FI-186-G	6	back	0.969
5560	112	IEEE 802.11a	OFDM	12.40	-0.03	0.0 cm	Standard	FI-186-G	6	back	0.679
5700	140	IEEE 802.11a	OFDM	12.20	-0.02	0.0 cm	Standard	FI-186-G	6	back	0.825
5500	100	IEEE 802.11a	OFDM	12.91	-0.18	0.0 cm	Standard	FI-186-G	6	top	0.165
5500	100	IEEE 802.11a	OFDM	12.91	-0.11	0.0 cm	Standard	FI-186-G	6	left	0.938
5560	112	IEEE 802.11a	OFDM	12.40	-0.12	0.0 cm	Standard	FI-186-G	6	left	0.980
5700	140	IEEE 802.11a	OFDM	12.20	0.14	0.0 cm	Standard	FI-186-G	6	left	0.678
ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Body					
Spatial Peak						1.6 W/kg (mW/g)					
Uncontrolled Exposure/General Population						averaged over 1 gram					

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12.2 SAR Test Notes

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. Per KDB Pub. 448498 4) b) i) the back side is required to be tested touching the flat phantom.
3. This device is capable of multiple display orientations supporting both portrait and landscape positions. Therefore per KDB Pub. 447498 4) b) ii) (2), SAR testing applies for the tablet edges with antennas located within 5 cm of each tablet edge closest to the user. According to KDB Pub. 447498 4) b) ii) (2), for each antenna, SAR is only required for the edge with the most conservative exposure condition.
4. Batteries are fully charged for all readings.
5. Tissue parameters and temperatures are listed on the SAR plots.
6. Liquid tissue depth is was at least 15.0 cm.
7. Device was tested using a fixed spacing.
8. To confirm the proper SAR liquid depth, the z-axis plots from the system verifications were included since the system verifications were performed using the same probe, DAE, and liquid as the SAR tests in the same time period.

GSM Notes:

1. Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
2. Justification for reduced test configurations per KDB Publication 941225 D03: The highest source-based time-averaged output power of GMSK (GPRS CS1) and 8PSK (EDGE MCS7) was evaluated for all multi-slot operations. **EDGE (8PSK MCS7) was additionally tested because the frame averaged output power was higher than the GPRS (GMSK CS1) frame averaged output power. Therefore, EDGE was tested in this mode for 1900 MHz Band.** In addition to the worst-case reported, all source-based time-averaged powers within 10% of the worst-case were additionally included in the evaluation.
3. Asterisk (*) denotes power reduction activated.
4. Per April 2011 TCB-FCC Workshop Notes, in addition to the 0 mm test distance required for tablet devices under KDB 447498, a conservative additional test distance of 10 mm from the back and 5 mm from the top and left edges were tested for SAR at maximum output power with the sensors deactivated. See Section 9.7 for more details.

WCDMA Notes:

1. Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
2. Asterisk (*) denotes power reduction activated.
3. Per April 2011 TCB-FCC Workshop Notes, in addition to the 0 mm test distance required for tablet devices under KDB 447498, a conservative additional test distance of 10 mm from the back and 5 mm from the top and left edges were tested for SAR at maximum output power.
4. WCDMA mode in Body SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

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WLAN Notes:

1. 2.4 GHz WLAN was additionally included though not required per KDB Publication 648474.
2. Justification for reduced test configurations for WIFI channels per KDB Publication 248227, 648474 and April 2010 FCC/TCB Meeting Notes: Highest average RF output power channel for the lowest data rate were selected for SAR evaluation (as the default channel). Other IEEE 802.11 modes (higher data rates) were not investigated since the average output powers were not greater than 0.25 dB than that of the tested channel in the lowest data rate IEEE 802.11b or g mode.
3. 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 as the default channel. Other IEEE 802.11 modes (including 802.11n and higher data rates) were not investigated since the average output powers were not greater than 0.25 dB than that of the tested channel in the lowest data rate IEEE 802.11a modes.
4. There is no power reduction for WIFI.
5. When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
6. Per the manufacturer all samples are electrically identical for WLAN.

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13

SIMULTANEOUS TRANSMISSION ANALYSIS

Table 13-1
Simultaneous Transmission Scenario 0.0 cm

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	SPLS Ratio	Volume	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	SPLS Ratio	Volume
Body SAR	Back	0.945	0.782	See note 3	0.108	N/A	Body SAR	Back	0.623	0.782	1.405	N/A	N/A
	Top	0.297	0.221	0.518	N/A	N/A		Top	0.504	0.221	0.725	N/A	N/A
	Bottom	-	-	0.000	N/A	N/A		Bottom	-	-	0.000	N/A	N/A
	Right	0.671	-	0.671	N/A	N/A		Right	0.159	-	0.159	N/A	N/A
	Left	-	0.498	0.498	N/A	N/A		Left	-	0.498	0.498	N/A	N/A
Simult Tx	Configuration	WCDMA 850 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	SPLS Ratio	Volume	Simult Tx	Configuration	WCDMA 1900 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	SPLS Ratio	Volume
Body SAR	Back	0.342	0.782	1.124	N/A	N/A	Body SAR	Back	0.643	0.782	1.425	N/A	N/A
	Top	0.124	0.221	0.345	N/A	N/A		Top	0.519	0.221	0.740	N/A	N/A
	Bottom	-	-	0.000	N/A	N/A		Bottom	-	-	0.000	N/A	N/A
	Right	0.305	-	0.305	N/A	N/A		Right	0.150	-	0.150	N/A	N/A
	Left	-	0.498	0.498	N/A	N/A		Left	-	0.498	0.498	N/A	N/A

*SPLS: SAR Sum to peak location separation

Note:

1. "-" SAR results shown in the tables are zero for summation purposes.
2. "-" SAR was not required to be measured due to exclusions mentioned in Section 1.3.
3. No evaluation was performed to determine the aggregate 1-g SAR in this configuration as the SPLS ratio of all antenna pairs was below 0.3 per FCC KDB Publication 648474 D01. See Section 14.4 for SPLS ratio analysis for the GPRS 850 and 2.4 GHz WLAN in the back configuration. See Table 13-3.

Table 13-2
Simultaneous Transmission Scenarios 1.0/0.5 cm

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	SPLS Ratio	Volume	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	SPLS Ratio	Volume
Body SAR	Back at 1.0 cm	0.556	< 0.782	< 1.338	N/A	N/A	Body SAR	Back at 1.0 cm	0.706	< 0.782	< 1.488	N/A	N/A
	Top at 0.5 cm	0.461	< 0.221	< 0.682	N/A	N/A		Top at 0.5 cm	1.070	< 0.221	< 1.291	N/A	N/A
Simult Tx	Configuration	WCDMA 850 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	SPLS Ratio	Volume	Simult Tx	Configuration	WCDMA 1900 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	SPLS Ratio	Volume
Body SAR	Back at 1.0 cm	0.292	< 0.782	< 1.074	N/A	N/A	Body SAR	Back at 1.0 cm	0.628	< 0.782	< 1.410	N/A	N/A
	Top at 0.5 cm	0.198	< 0.221	< 0.419	N/A	N/A		Top at 0.5 cm	0.927	< 0.221	< 1.148	N/A	N/A

*SPLS: SAR Sum to peak location separation

Note:

1. For SAR calculations at 1.0 or 0.5 cm, WLAN SAR values for 0.0 cm were used since the 0.0 cm test distance for WLAN was more conservative.
2. "<" denotes the 0.0 cm WLAN SAR values used for summation purposes.
3. Since the numerical sums were below 1.6 W/kg for, no SAR ratio analysis or aggregate volumetric SAR evaluations for the transmitters was required.

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13.1 SAR Sum to Peak Location Separation (SPLS) Ratio Analysis

Per FCC KDB Publication 648474 D01, when the sum of the standalone transmitters is more than 1.6 W/kg, the SAR sum to peak locations can be analyzed to determine SAR distribution overlaps. Based on the 1-g SAR limit and a separation distance of 5 cm, when the SAR peak to location ratio for each pair of antennas is < 0.3, simultaneous SAR evaluation is not required.

The sum of the standalone SAR values was above 1.6 W/kg for GPRS 850 +2.4 GHz WLAN Back

Mode/Band	x (cm)	y (cm)	z (cm)
GPRS 850 Back at 0.0 cm	-2.00	7.80	-20.57
WLAN Back at 0.0 cm	-0.25	-8.10	-19.67

$$\sqrt{\{(-2.00+0.25)^2 + (7.80+8.10)^2 + (-20.57+19.67)^2\}} = 16.02 \text{ cm}$$

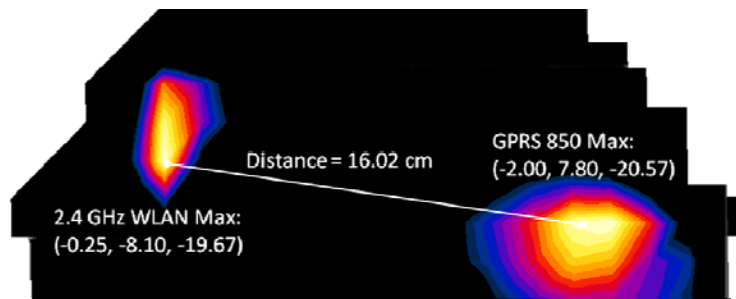


Figure 13-1
SAR Sum to Peak Location

Table 13-3
SAR Sum to Peak Location Separation Ratio Calculation Back

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (cm)	SPLS Ratio
Ant "A"	Ant "B"	A	B	A+B	C	(A+B)/C
GPRS 850	2.4 GHz WLAN	0.945	0.782	1.727	16.02	0.108

Since the SPLS Ratio for each antenna pair was less than 0.3, no volumetric simultaneous transmission scenario is required per FCC KDB 648474 Publication D01.

13.2 Simultaneous Transmission Conclusion

Per FCC KDB Publication 648474 D01, no aggregate volumetric simultaneous transmission is required for the device, since the sum of the standalone SAR values was not > 1.6 or the SAR Sum to peak separation ratios are < 0.3 for each antenna pair.

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14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8648D	(9kHz-4GHz) Signal Generator	10/10/2011	Annual	10/10/2012	3613A00315
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/21/2011	Annual	4/21/2012	JP38020182
Agilent	E5515C	Wireless Communications Test Set	10/10/2011	Annual	10/10/2012	GB46110872
Agilent	E5515C	Wireless Communications Test Set	7/6/2011	Annual	7/6/2012	GB41450275
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/8/2011	Annual	4/8/2012	MY45470194
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/12/2011	Annual	10/12/2012	1833460
Gigatronics	8651A	Universal Power Meter	10/12/2011	Annual	10/12/2012	8650319
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	6/1/2011	Annual	6/1/2012	833855/0010
Rohde & Schwarz	CMU200	Base Station Simulator	4/19/2011	Annual	4/19/2012	107826
Rohde & Schwarz	NRVD	Dual Channel Power Meter	4/8/2011	Biennial	4/8/2013	101695
SPEAG	D1900V2	1900 MHz SAR Dipole	2/17/2011	Annual	2/17/2012	502
SPEAG	D2450V2	2450 MHz SAR Dipole	2/8/2011	Annual	2/8/2012	797
SPEAG	D5GHZV2	5 GHz SAR Dipole	2/11/2011	Annual	2/11/2012	1057
SPEAG	D835V2	835 MHz SAR Dipole	2/9/2011	Annual	2/9/2012	4d047
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	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	4/18/2011	Annual	4/18/2012	3209
Rohde & Schwarz	SMIQ03B	Signal Generator	4/6/2011	Annual	4/6/2012	DE27259
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	5605
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	2400
Agilent	E5515C	Wireless Communications Test Set	7/6/2011	Annual	7/6/2012	GB43304447
Agilent	E5515C	Wireless Communications Tester	4/21/2011	Annual	4/21/2012	US41140256
Amplifier Research	5S1G4	5W, 800MHz-4.2GHz	N/A		N/A	21910
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	N/A		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	10/7/2011	Annual	10/7/2012	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
VWR	36934-158	Wall-Mounted Thermometer	1/21/2011	Biennial	1/21/2013	111286445
VWR	36934-158	Wall-Mounted Thermometer	1/21/2011	Biennial	1/21/2013	111286460
VWR	36934-158	Wall-Mounted Thermometer	5/26/2010	Biennial	5/26/2012	101718589
VWR	36934-158	Wall-Mounted Thermometer	1/21/2011	Biennial	1/21/2013	111286454
VWR	36934-158	Wall-Mounted Thermometer	2/26/2010	Biennial	2/26/2012	101536273
SPEAG	ES3DV3	SAR Probe	4/8/2011	Annual	4/8/2012	3258
MiniCircuits	SLP-2400+	Low Pass Filter	N/A		N/A	R8979500903
Narda	4772-3	Attenuator (3dB)	N/A		N/A	9406
Narda	BW-S3W2	Attenuator (3dB)	N/A		N/A	120
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	8/5/2011	Annual	8/5/2012	112347
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	N/A		N/A	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	N/A		N/A	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	N/A			N/A
MiniCircuits	VLF-6000+	Low Pass Filter	N/A			N/A

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15 MEASUREMENT UNCERTAINTIES

Applicable for < 3 GHz.

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

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Applicable for up to 6 GHz.

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	6.55	N	1	1.0	1.0	6.6	6.6	∞
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	12.4	12.0
Expanded Uncertainty (95% CONFIDENCE LEVEL)							k=2	24.7	24.0

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

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16 CONCLUSION

16.1 Measurement Conclusion

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

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

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- [27] SAR Measurement procedures for IEEE 802.11a/b/g KDB Publication 248227
- [28] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publication 648474
- [29] FCC Application Note for SAR Probe Calibration and System Verification Consideration for Measurements at 150 MHz – 3 GHz, KDB Publication 450824
- [30] FCC SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens, KDB Publication 616217
- [31] FCC SAR Measurement Requirements for 3 – 6 GHz, KDB Publication 865664
- [32] FCC Mobile Portable RF Exposure Procedure, KDB Publication 447498
- [33] FCC SAR Procedures for Dongle Transmitters, KDB Publication 447498
- [34] Anexo à Resolução No. 533, de 10 de Setembro de 2009.
- [35] FCC SAR Test Considerations for LTE Handsets and Data Modems, KDB Publication 941225.
- [36] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.
- [37] FCC Hot Spot SAR v01, KDB Publication 941225 D06.

FCC ID: A3LSHWM380S		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1108011317-R1.A3L	Test Dates: 08/02/11 - 11/22/11	EUT Type: Portable Tablet Computer		Page 49 of 49

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-33

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 848.8 MHz; Duty Cycle: 1:2.76

Medium: 835 Body Medium parameters used (interpolated):

$f = 848.8 \text{ MHz}$; $\sigma = 0.999 \text{ mho/m}$; $\epsilon_r = 53.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.16, 6.16, 6.16); Calibrated: 4/8/2011

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: GPRS 850, Body SAR, Back side, High.ch, 3 Tx Slots

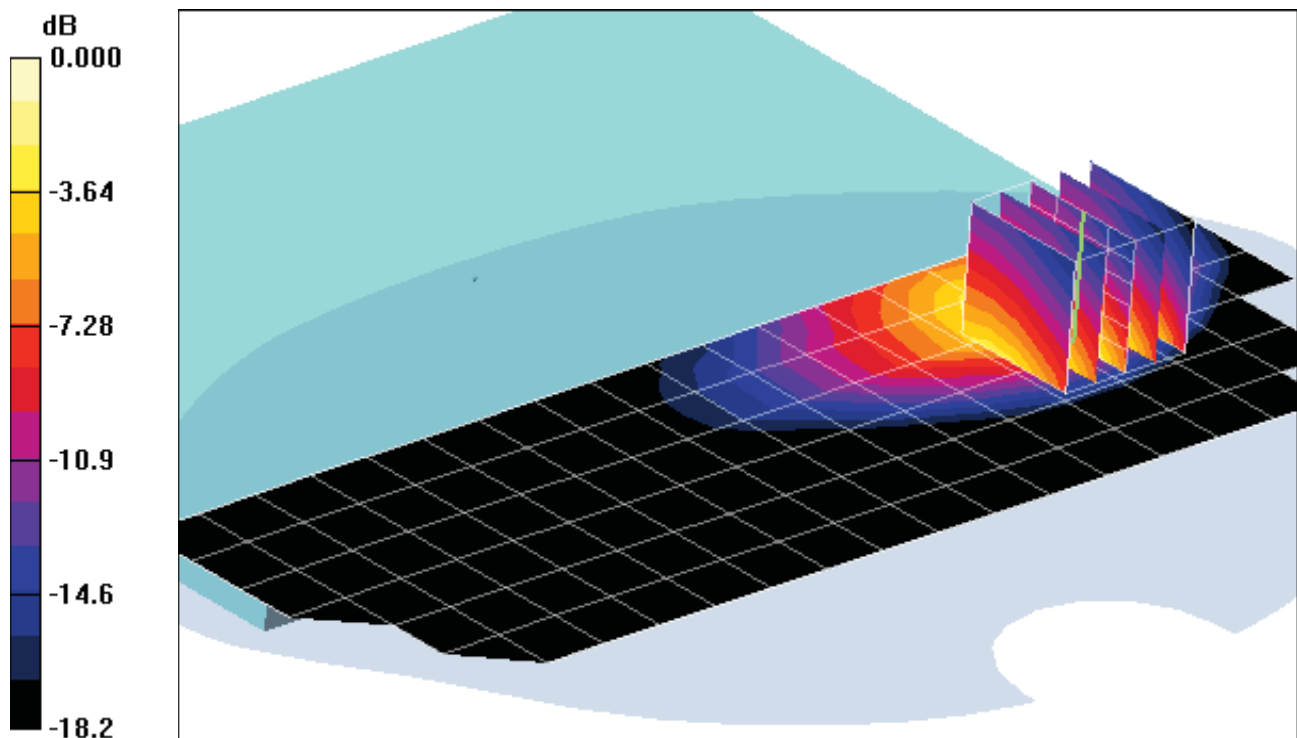
Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 33.3 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 1.79 W/kg

SAR(1 g) = 0.945 mW/g; SAR(10 g) = 0.494 mW/g



0 dB = 1.09mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.982 \text{ mho/m}$; $\epsilon_r = 54.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.16, 6.16, 6.16); Calibrated: 4/8/2011

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: GPRS 850, Body SAR, Back side, Mid.ch, 3 Tx Slots

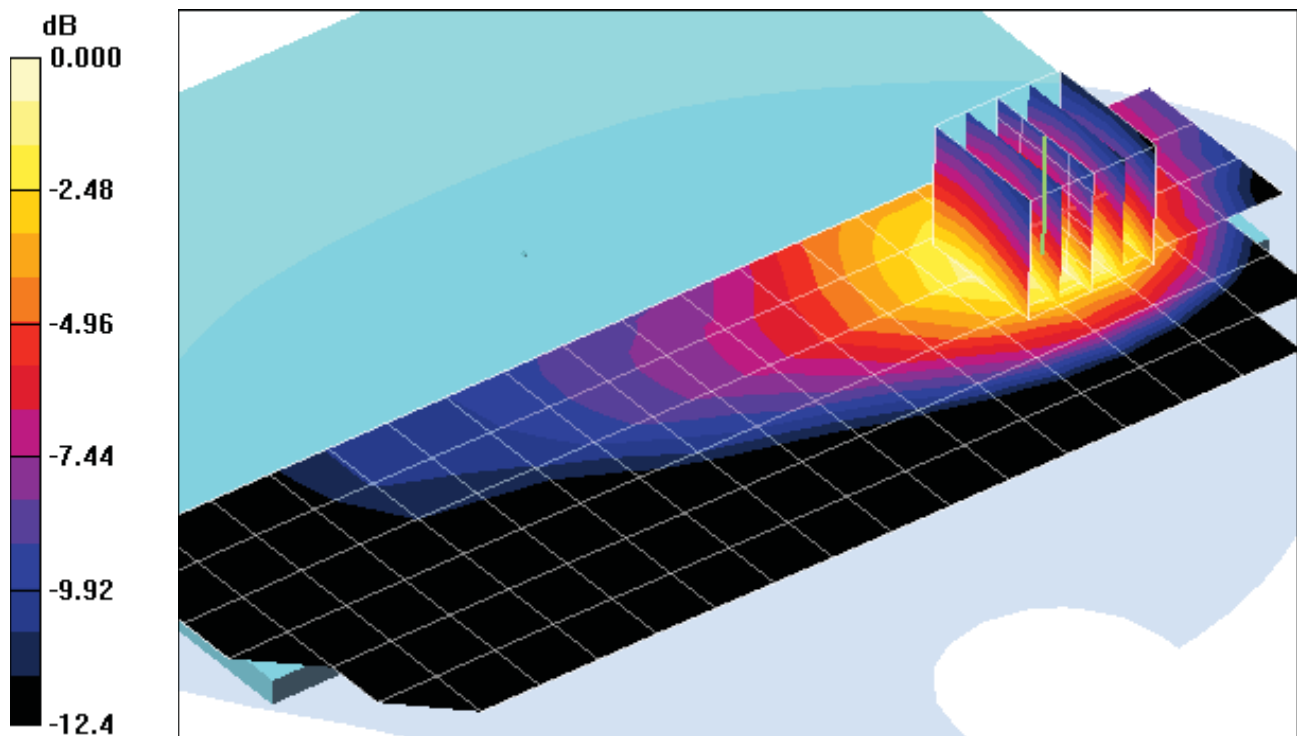
Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 25.0 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 0.826 W/kg

SAR(1 g) = 0.556 mW/g; SAR(10 g) = 0.361 mW/g



0 dB = 0.603mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-33

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.982 \text{ mho/m}$; $\epsilon_r = 54.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.16, 6.16, 6.16); Calibrated: 4/8/2011

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: GPRS 850, Body SAR, Top Edge, Mid.ch, 3 Tx Slots

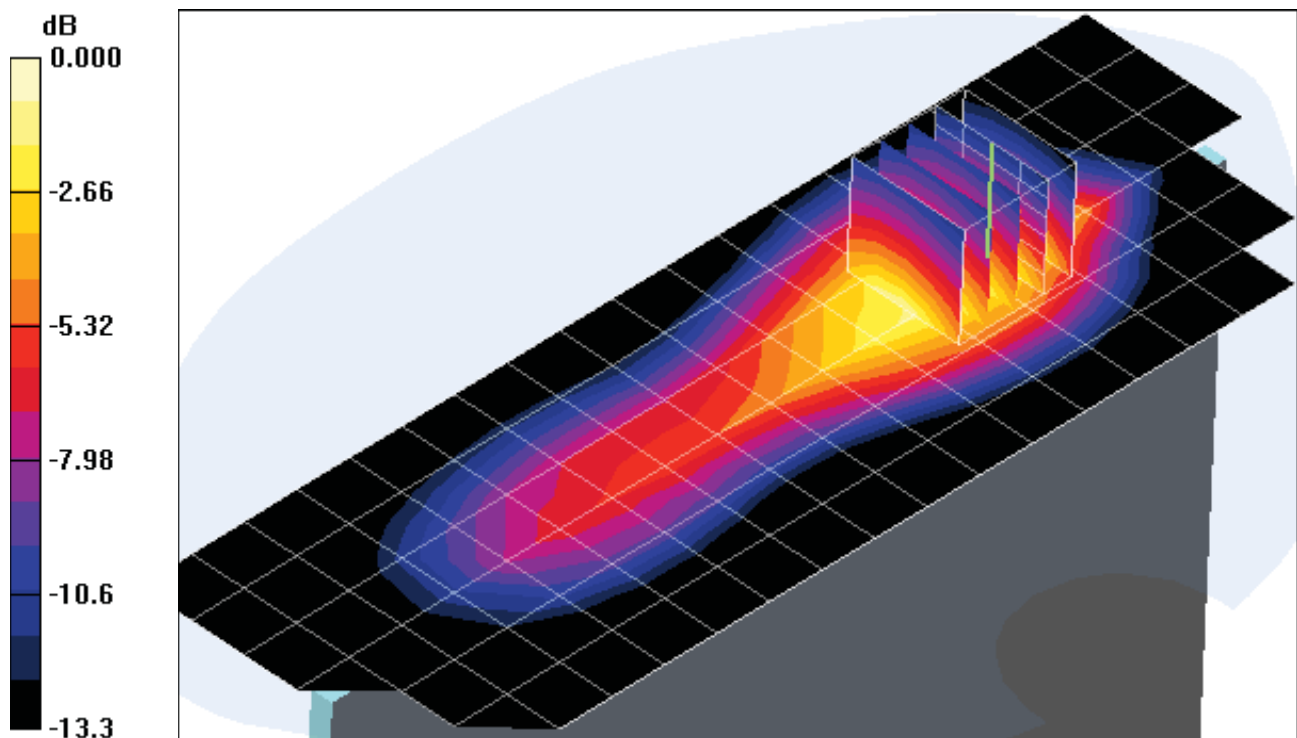
Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.6 V/m; Power Drift = 0.066 dB

Peak SAR (extrapolated) = 0.530 W/kg

SAR(1 g) = 0.297 mW/g; SAR(10 g) = 0.183 mW/g



0 dB = 0.334mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.982 \text{ mho/m}$; $\epsilon_r = 54.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space 0.5 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.16, 6.16, 6.16); Calibrated: 4/8/2011

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: GPRS 850, Body SAR, Top Edge, Mid.ch, 3 Tx Slots

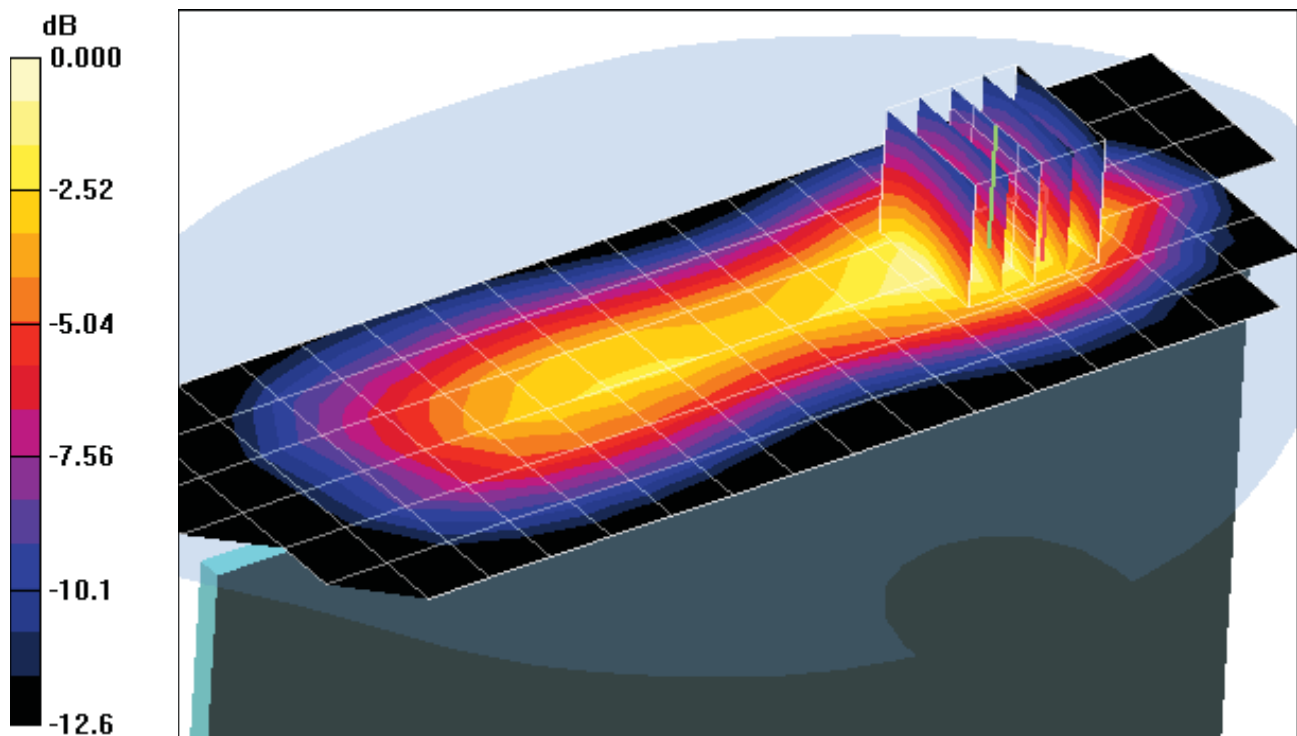
Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.8 V/m; Power Drift = -0.034 dB

Peak SAR (extrapolated) = 0.712 W/kg

SAR(1 g) = 0.461 mW/g; SAR(10 g) = 0.289 mW/g



0 dB = 0.493mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.982 \text{ mho/m}$; $\epsilon_r = 54.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.16, 6.16, 6.16); Calibrated: 4/8/2011

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: GPRS 850, Body SAR, Right Edge, Mid.ch, 3 Tx Slots

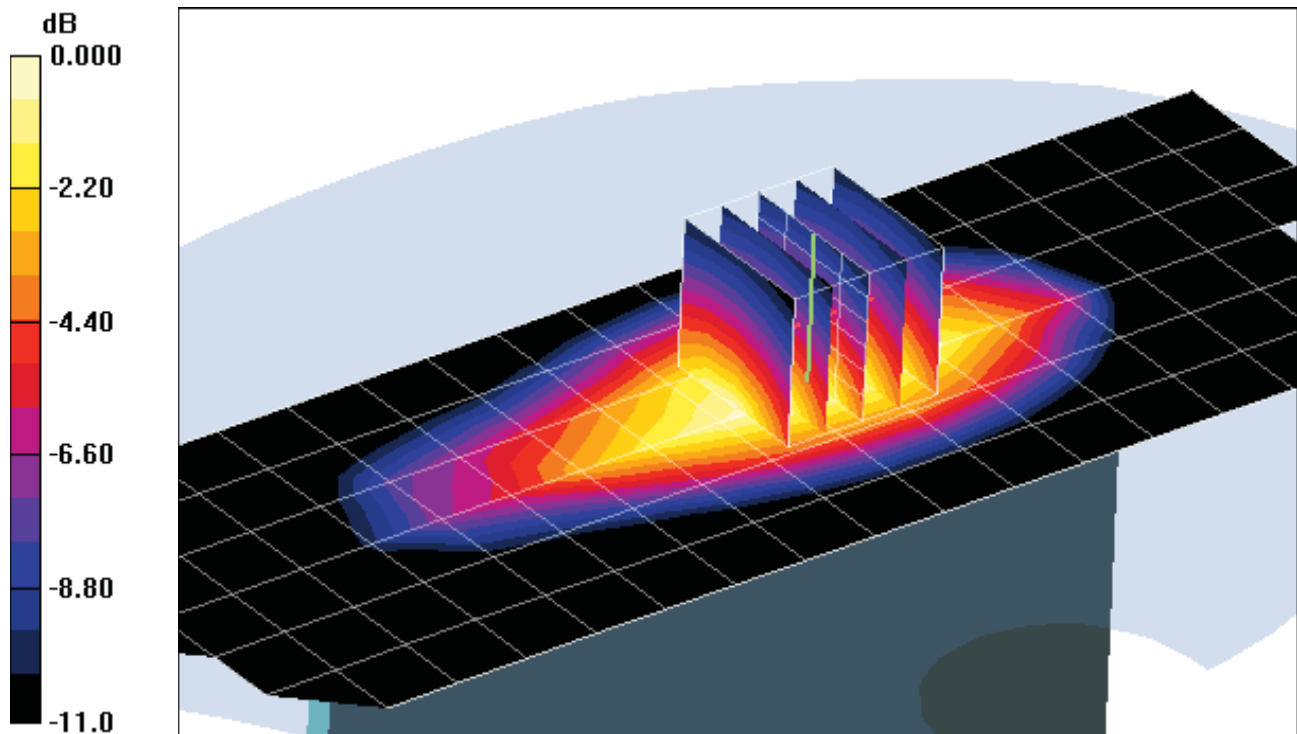
Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 25.0 V/m; Power Drift = -0.126 dB

Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.671 mW/g; SAR(10 g) = 0.422 mW/g



0 dB = 0.712mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: 1111-2

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.976 \text{ mho/m}$; $\epsilon_r = 54.66$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 11-22-2011; Ambient Temp: 23.1°C; Tissue Temp: 22.6°C

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

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

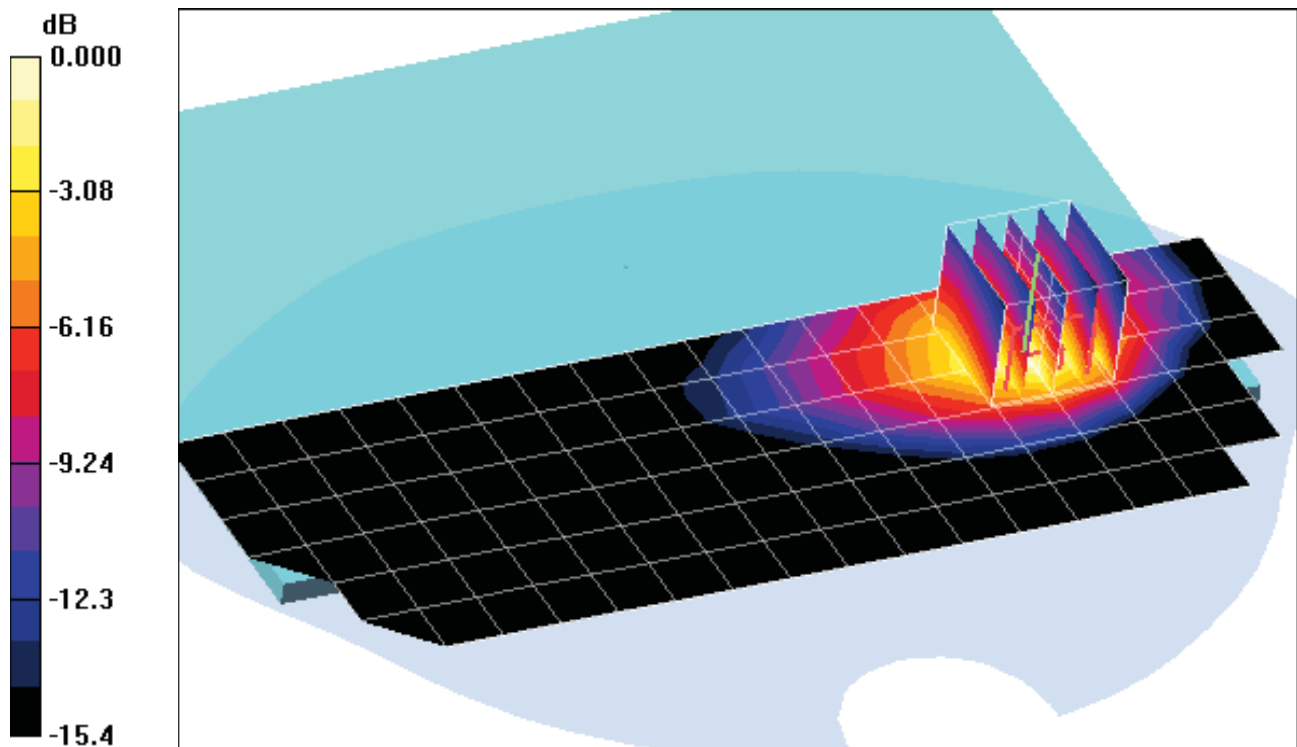
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.1 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 0.607 W/kg

SAR(1 g) = 0.342 mW/g; SAR(10 g) = 0.191 mW/g



0 dB = 0.366mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.982 \text{ mho/m}$; $\epsilon_r = 54.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space 1.0 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.16, 6.16, 6.16); Calibrated: 4/8/2011

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

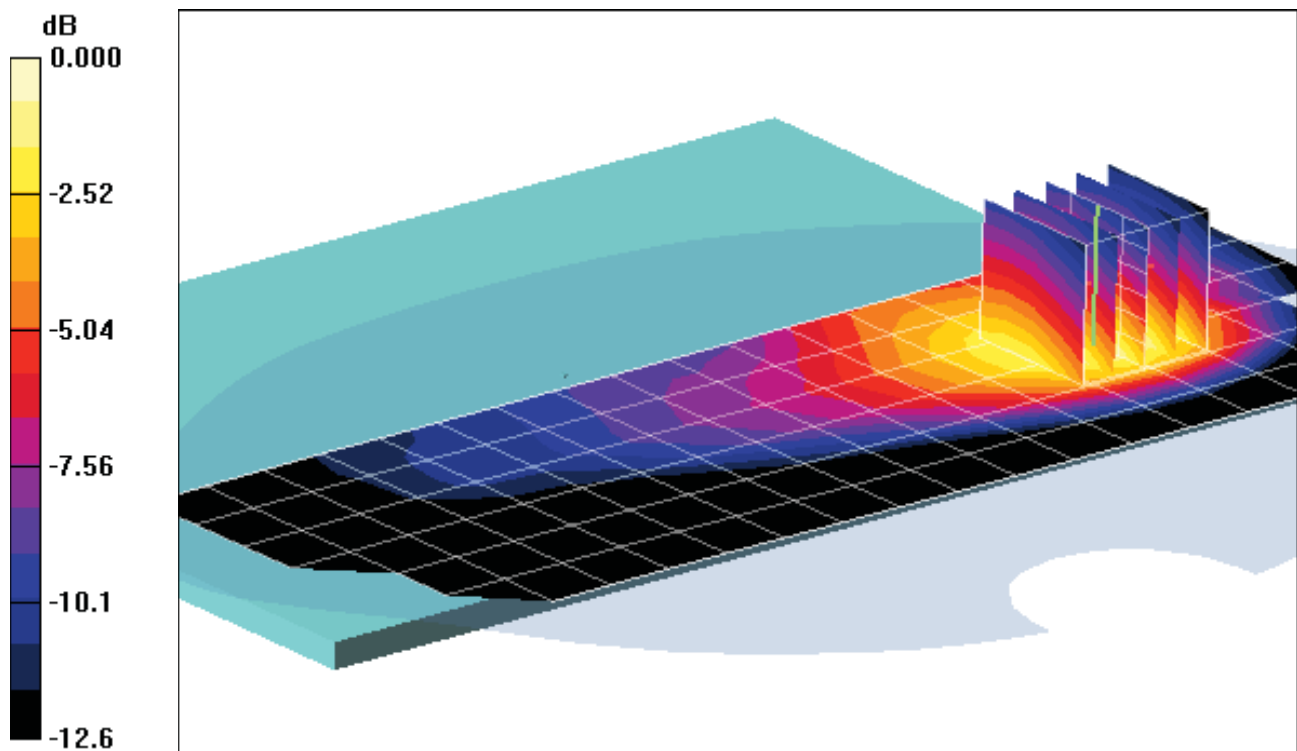
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.3 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 0.440 W/kg

SAR(1 g) = 0.292 mW/g; SAR(10 g) = 0.186 mW/g



0 dB = 0.316 mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: 1111-2

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.976 \text{ mho/m}$; $\epsilon_r = 54.66$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 11-22-2011; Ambient Temp: 23.1°C; Tissue Temp: 22.6°C

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

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: WCDMA 850, Body SAR, Top Edge, Mid.ch

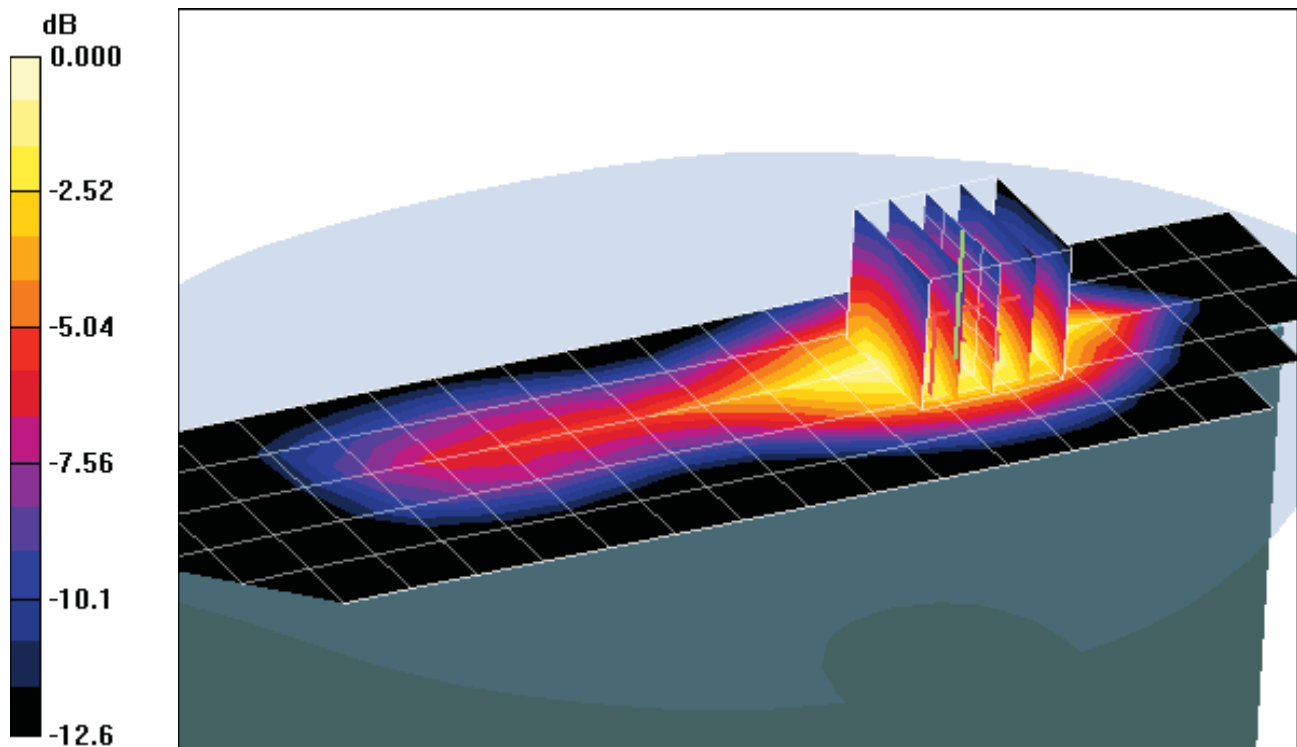
Area Scan (6x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.6 V/m; Power Drift = -0.044 dB

Peak SAR (extrapolated) = 0.205 W/kg

SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.076 mW/g



0 dB = 0.134mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.982 \text{ mho/m}$; $\epsilon_r = 54.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space 0.5 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.16, 6.16, 6.16); Calibrated: 4/8/2011

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: WCDMA 850, Body SAR, Top Edge, Mid.ch

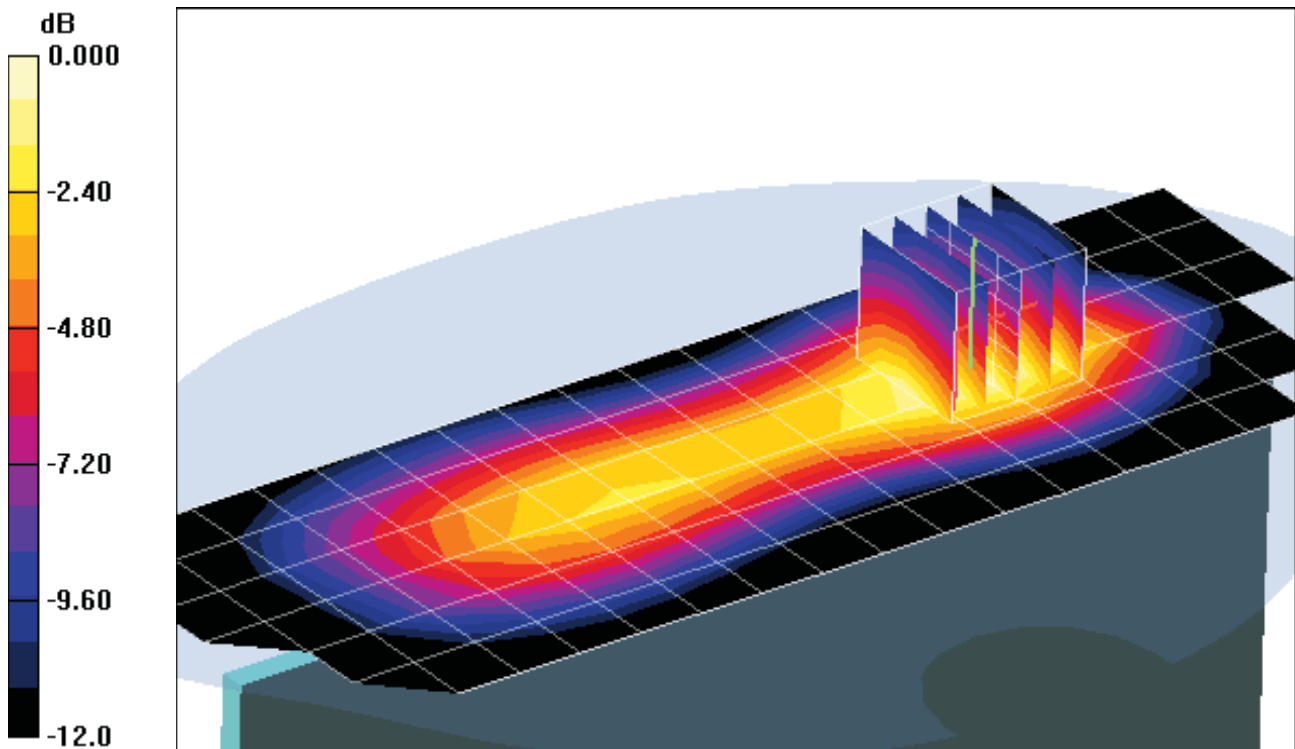
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.3 V/m; Power Drift = 0.031 dB

Peak SAR (extrapolated) = 0.302 W/kg

SAR(1 g) = 0.198 mW/g; SAR(10 g) = 0.126 mW/g



0 dB = 0.215mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.982 \text{ mho/m}$; $\epsilon_r = 54.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space 0.0 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.16, 6.16, 6.16); Calibrated: 4/8/2011

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

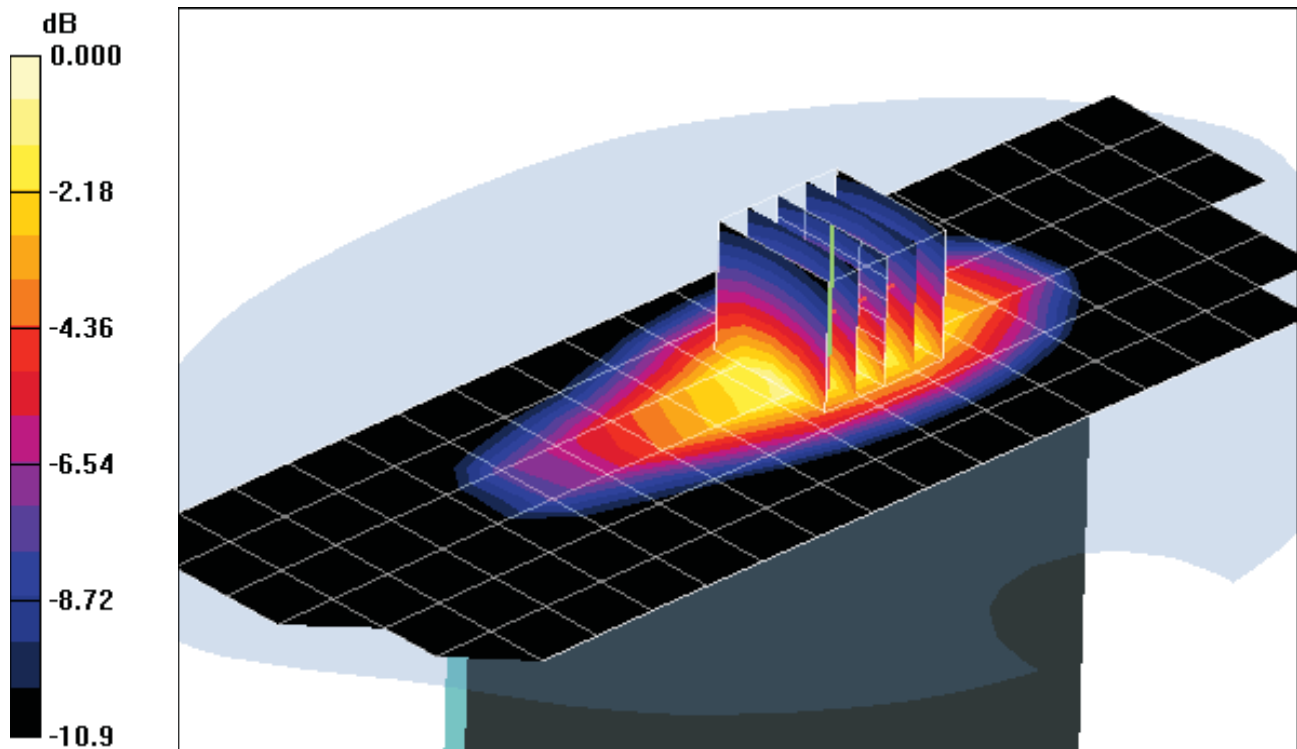
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 17.2 V/m; Power Drift = 0.151 dB

Peak SAR (extrapolated) = 0.490 W/kg

SAR(1 g) = 0.305 mW/g; SAR(10 g) = 0.193 mW/g



0 dB = 0.333mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-33

Communication System: GSM1900 GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: GPRS 1900, Body SAR, Back side, Mid.ch, 3 Tx Slots

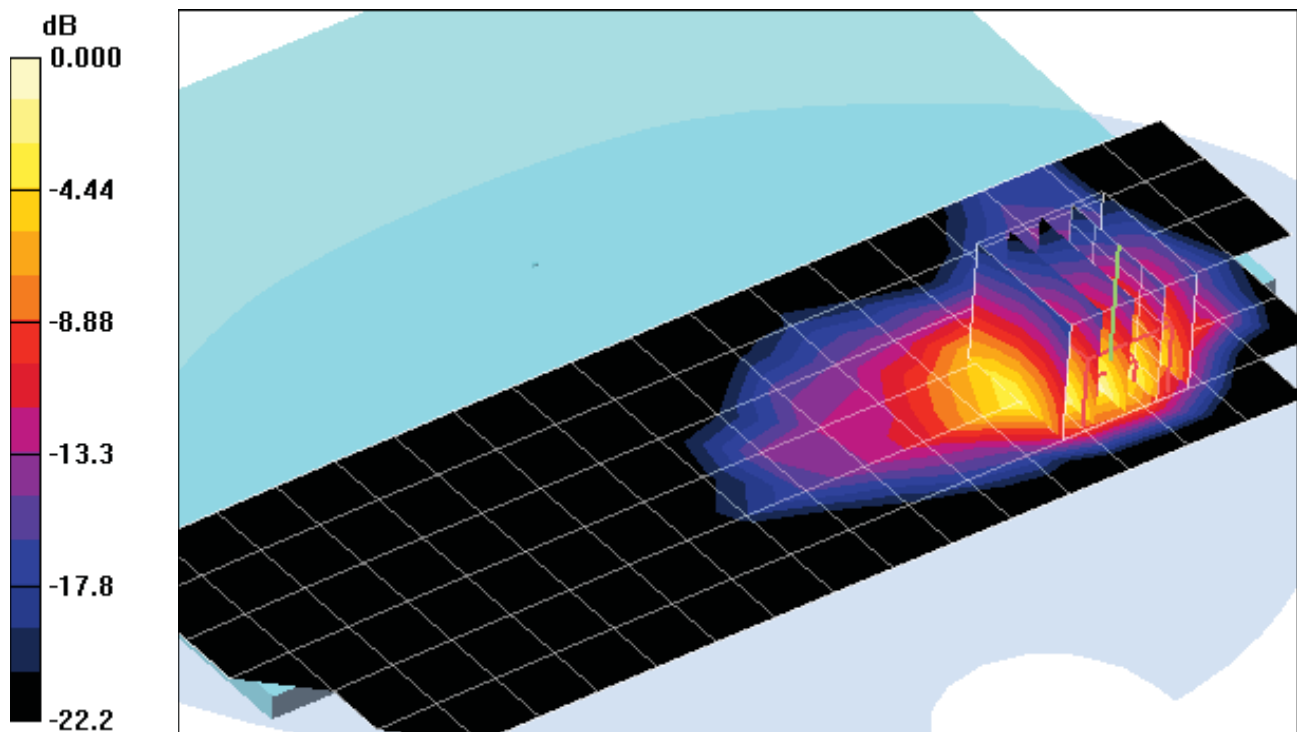
Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 21.8 V/m; Power Drift = -0.157 dB

Peak SAR (extrapolated) = 1.17 W/kg

SAR(1 g) = 0.623 mW/g; SAR(10 g) = 0.284 mW/g



0 dB = 0.703mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: 1111-2

Communication System: GSM1900 EGPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.5 \text{ mho/m}$; $\epsilon_r = 52.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 11-21-2011; Ambient Temp: 23.6°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(4.48, 4.48, 4.48); Calibrated: 4/18/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/19/2011

Phantom: SAM Sub Dasy B; Type: SAM 4.0; Serial: TP-1626

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

Mode: EDGE 1900, Body SAR, Back side, Mid.ch, 3 Tx Slots

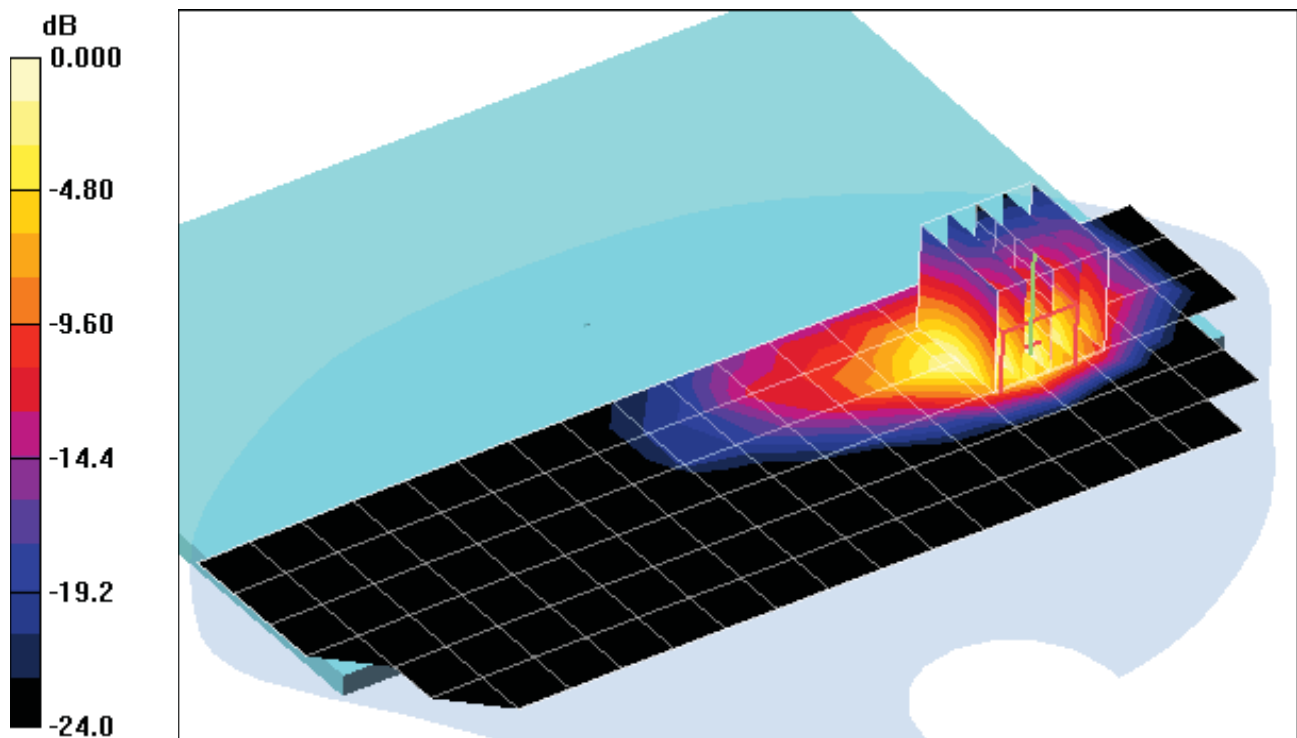
Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.9 V/m; Power Drift = -0.016 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.553 mW/g; SAR(10 g) = 0.253 mW/g



0 dB = 0.635mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

Communication System: GSM1900 GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: GPRS 1900, Body SAR, Back side, Mid.ch, 3 Tx Slots

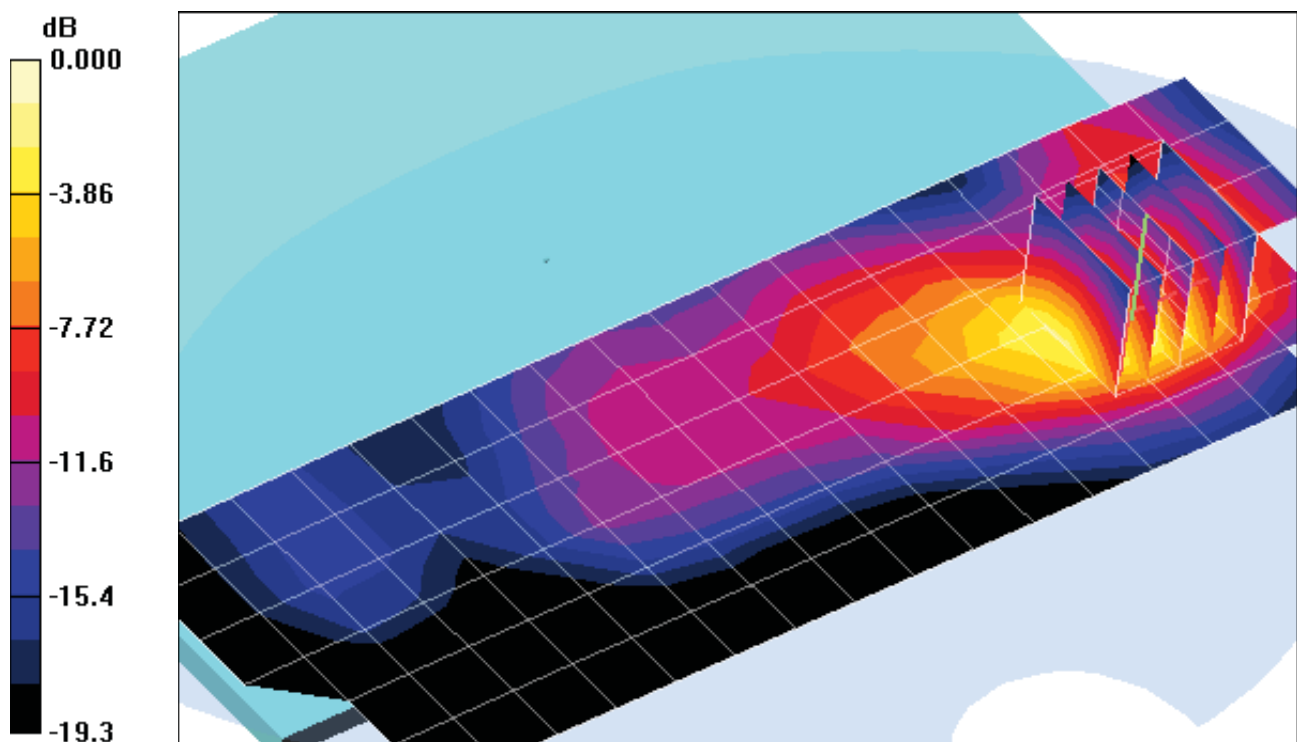
Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 19.3 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.977 W/kg

SAR(1 g) = 0.569 mW/g; SAR(10 g) = 0.290 mW/g



0 dB = 0.640mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: 1111-1

Communication System: GSM1900 EGPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.5 \text{ mho/m}$; $\epsilon_r = 52.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section: Space: 1.0 cm

Test Date: 11-21-2011; Ambient Temp: 23.6°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(4.48, 4.48, 4.48); Calibrated: 4/18/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/19/2011

Phantom: SAM Sub Dasy B; Type: SAM 4.0; Serial: TP-1626

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

Mode: EDGE 1900, Body SAR, Back side, Mid.ch, 3 Tx Slots

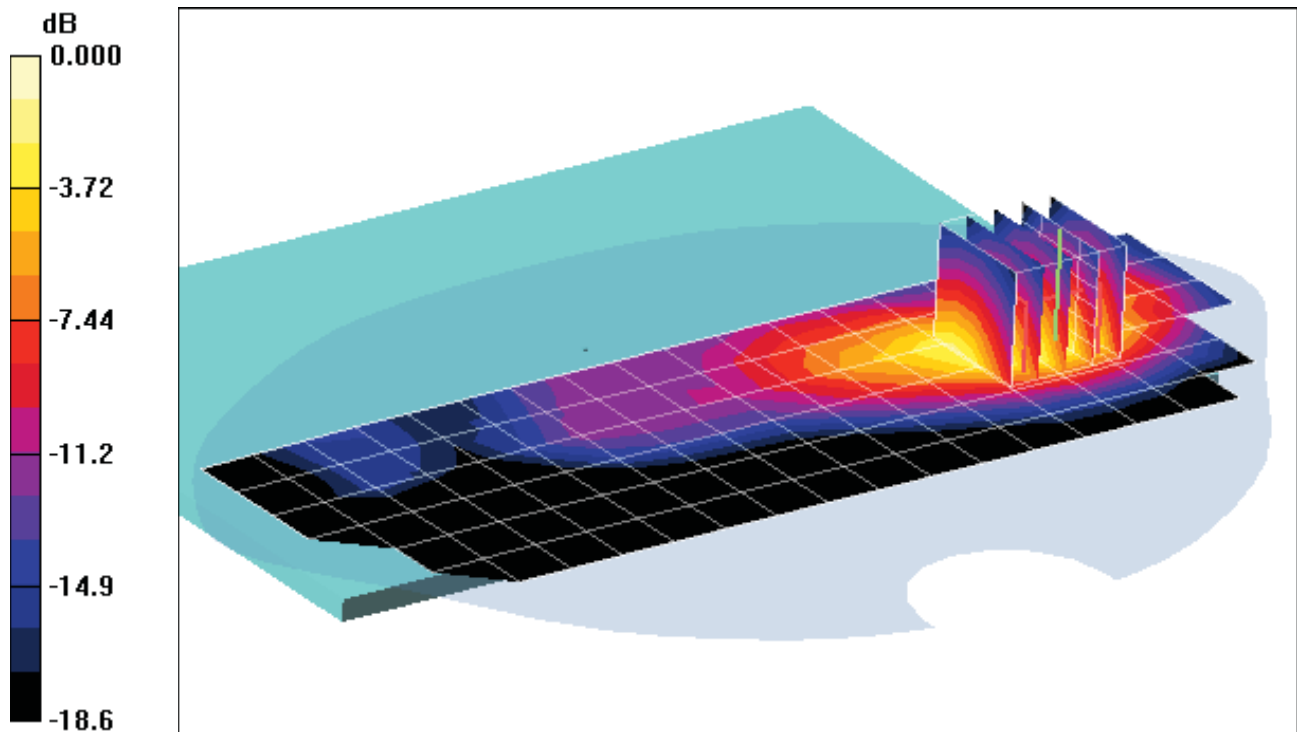
Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.8 V/m; Power Drift = -0.102 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.706 mW/g; SAR(10 g) = 0.346 mW/g



0 dB = 0.723mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-33

Communication System: GSM1900 GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: GPRS 1900, Body SAR, Top Edge, Mid.ch, 3 Tx Slots

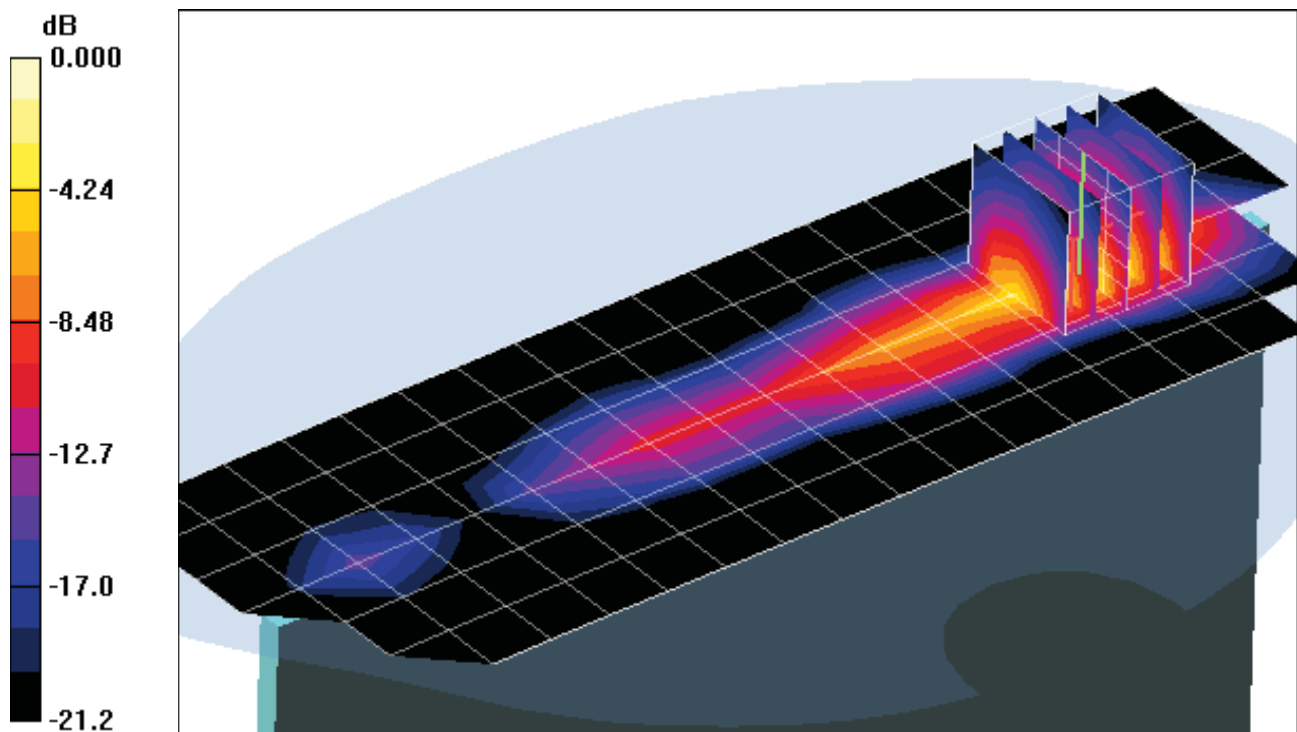
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 19.7 V/m; Power Drift = -0.069 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.504 mW/g; SAR(10 g) = 0.211 mW/g



0 dB = 0.602mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: 1111-2

Communication System: GSM1900 EGPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.5 \text{ mho/m}$; $\epsilon_r = 52.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 11-21-2011; Ambient Temp: 23.6°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(4.48, 4.48, 4.48); Calibrated: 4/18/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/19/2011

Phantom: SAM Sub Dasy B; Type: SAM 4.0; Serial: TP-1626

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

Mode: EDGE 1900, Body SAR, Top Edge, Mid.ch, 3 Tx Slots

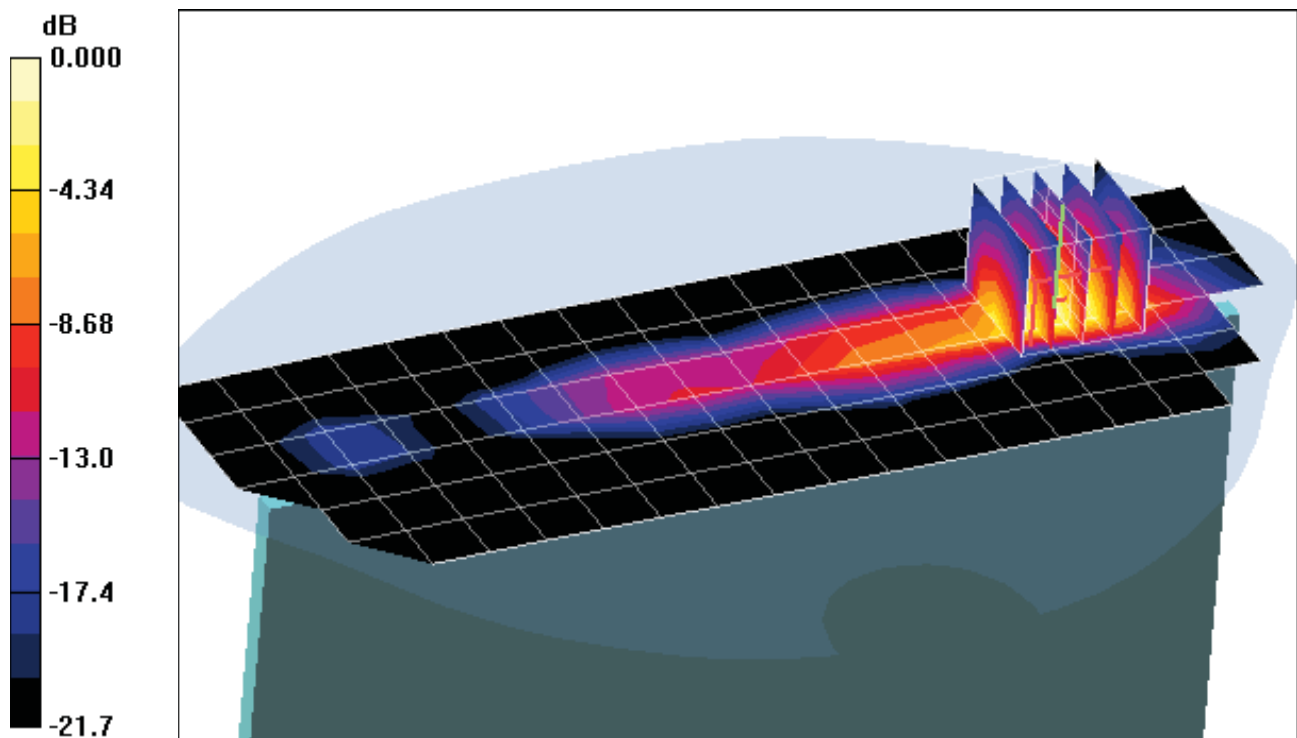
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.5 V/m; Power Drift = 0.056 dB

Peak SAR (extrapolated) = 0.997 W/kg

SAR(1 g) = 0.460 mW/g; SAR(10 g) = 0.196 mW/g



0 dB = 0.552mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

Communication System: GSM1900 GPRS; 3 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: GPRS 1900, Body SAR, Top Edge, High.ch, 3 Tx Slots

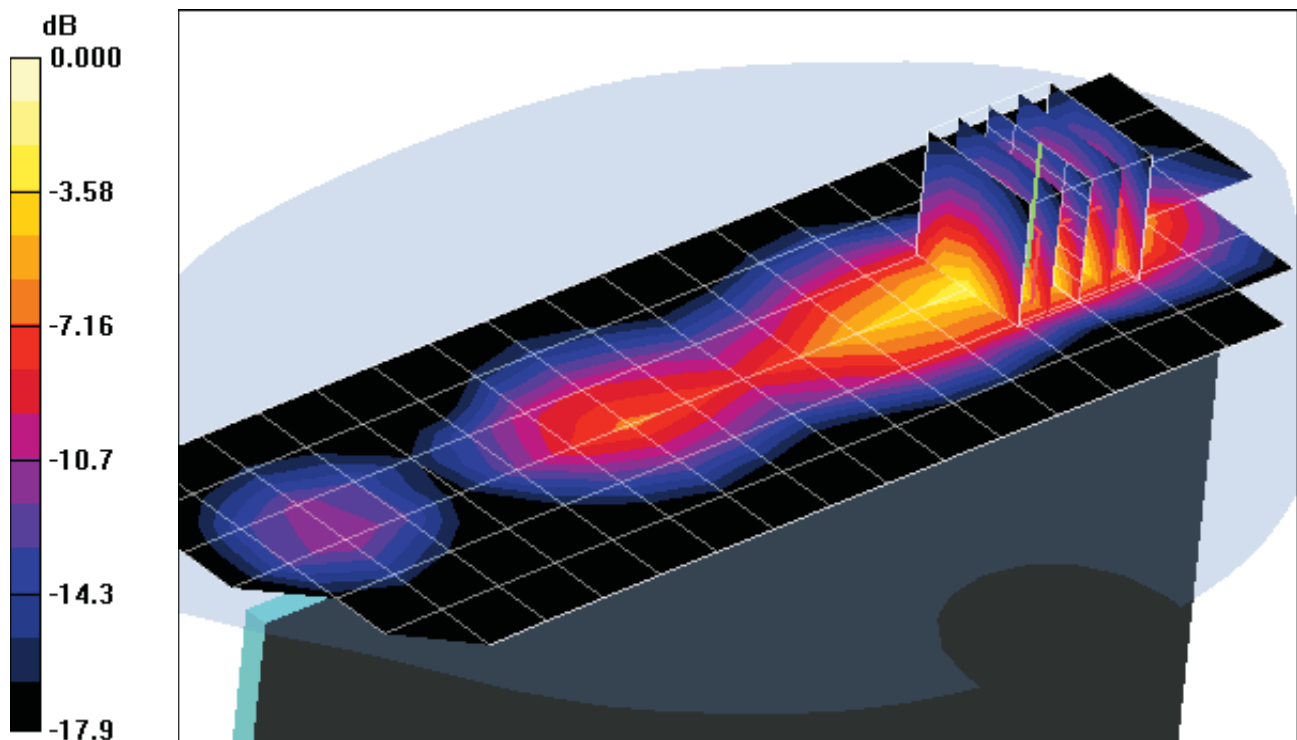
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 26.0 V/m; Power Drift = -0.001 dB;

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 0.819 mW/g; SAR(10 g) = 0.400 mW/g



0 dB = 0.930mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: 1111-1

Communication System: GSM1900 EGPRS; 3 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.54 \text{ mho/m}$; $\epsilon_r = 52.32$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 11-21-2011; Ambient Temp: 23.6°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(4.48, 4.48, 4.48); Calibrated: 4/18/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/19/2011

Phantom: SAM Sub Dasy B; Type: SAM 4.0; Serial: TP-1626

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

Mode: EDGE 1900, Body SAR, Top Edge, High.ch, 3 Tx Slots

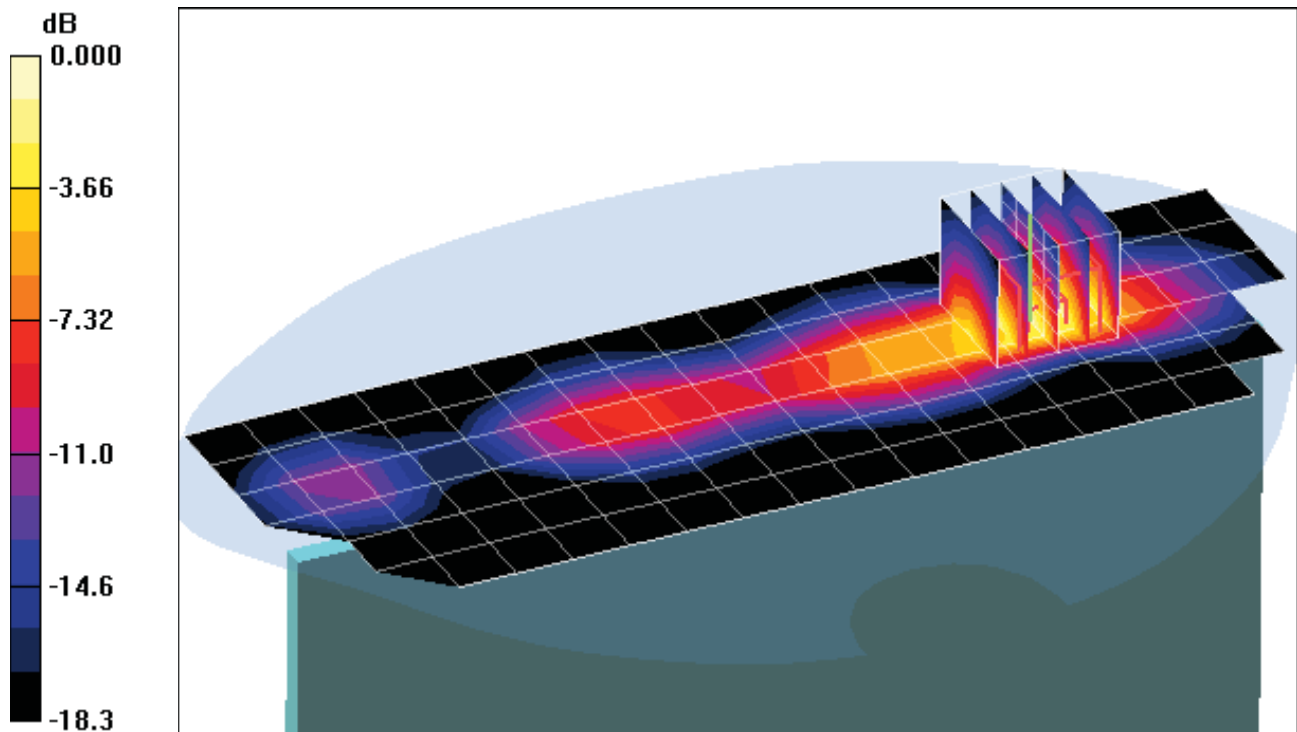
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 28.8 V/m; Power Drift = -0.050 dB

Peak SAR (extrapolated) = 2.07 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.507 mW/g



0 dB = 1.21mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

Communication System: GSM1900 GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: GPRS 1900, Body SAR, Right Edge, Mid.ch, 3 Tx Slots

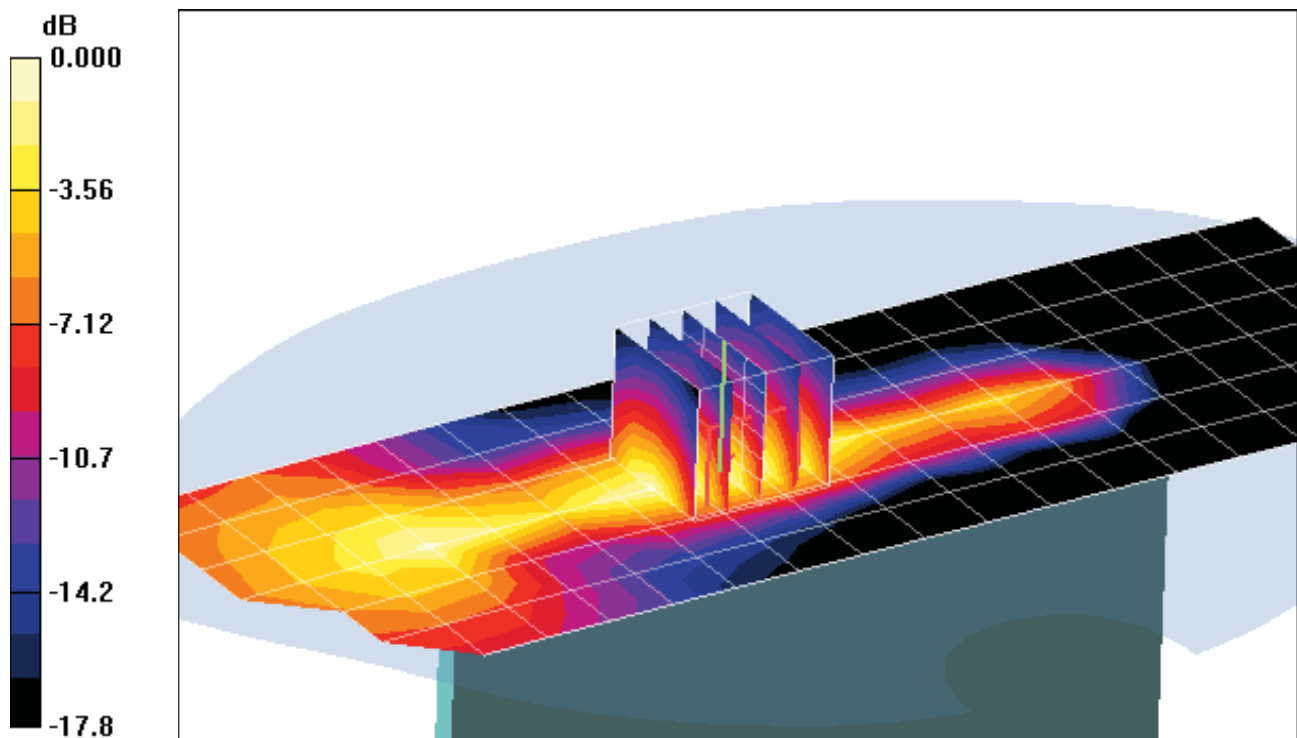
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 10.4 V/m; Power Drift = -0.033 dB

Peak SAR (extrapolated) = 0.225 W/kg

SAR(1 g) = 0.131 mW/g; SAR(10 g) = 0.069 mW/g



0 dB = 0.153mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: 1111-1

Communication System: GSM1900 EGPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.5 \text{ mho/m}$; $\epsilon_r = 52.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 11-21-2011; Ambient Temp: 23.6°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(4.48, 4.48, 4.48); Calibrated: 4/18/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/19/2011

Phantom: SAM Sub Dasy B; Type: SAM 4.0; Serial: TP-1626

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

Mode: EGPRS 1900, Body SAR, Right Edge, Mid.ch, 3 Tx Slots

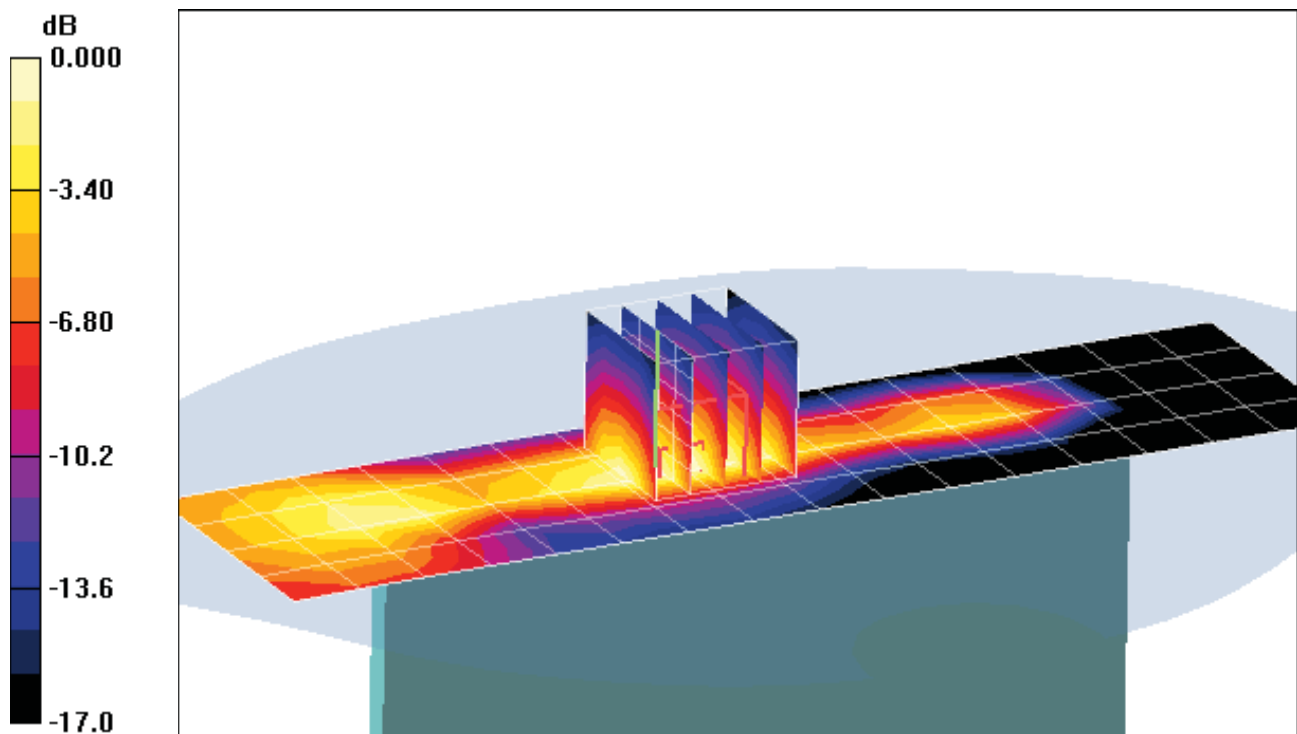
Area Scan (5x17x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 10.3 V/m; Power Drift = 0.094 dB

Peak SAR (extrapolated) = 0.291 W/kg

SAR(1 g) = 0.159 mW/g; SAR(10 g) = 0.085 mW/g



0 dB = 0.177mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-33

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: WCDMA 1900, Body SAR, Back side, Mid.ch

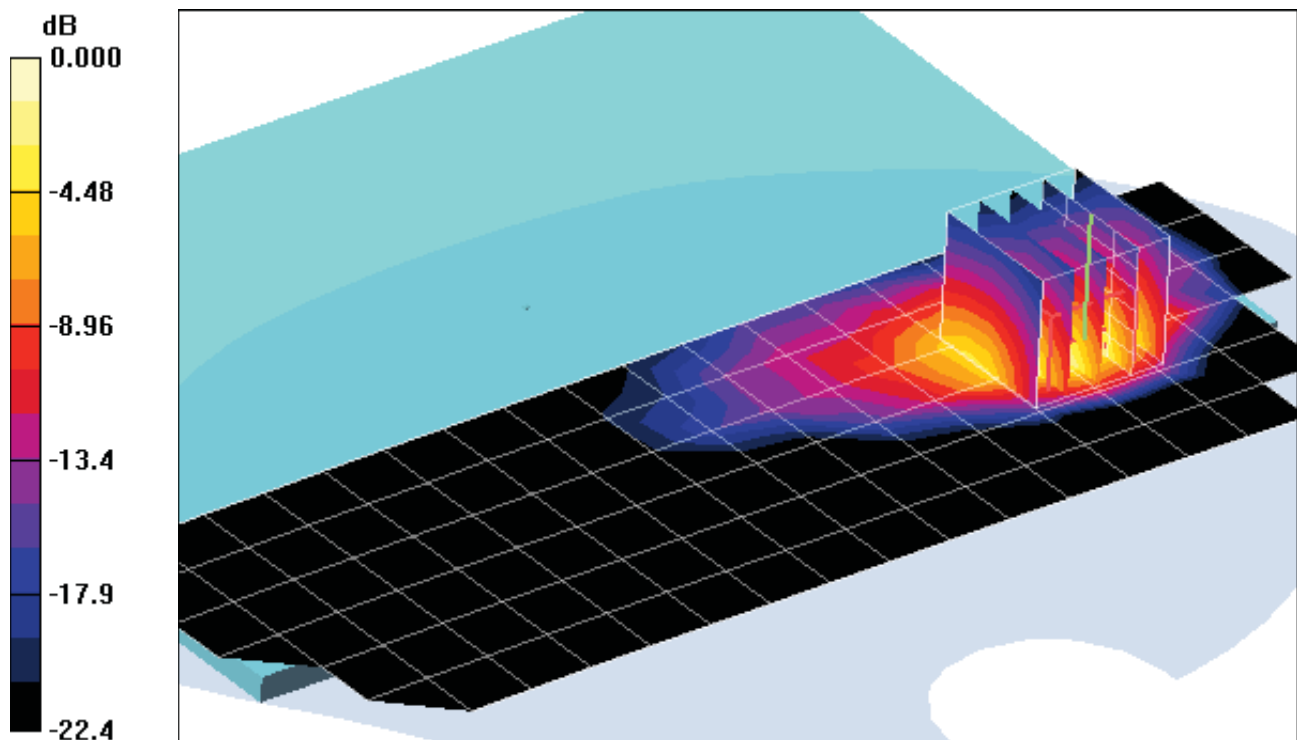
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 24.4 V/m; Power Drift = -0.00632 dB

Peak SAR (extrapolated) = 1.24 W/kg

SAR(1 g) = 0.643 mW/g; SAR(10 g) = 0.287 mW/g



0 dB = 0.790mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: WCDMA 1900, Body SAR, Back side, Mid.ch

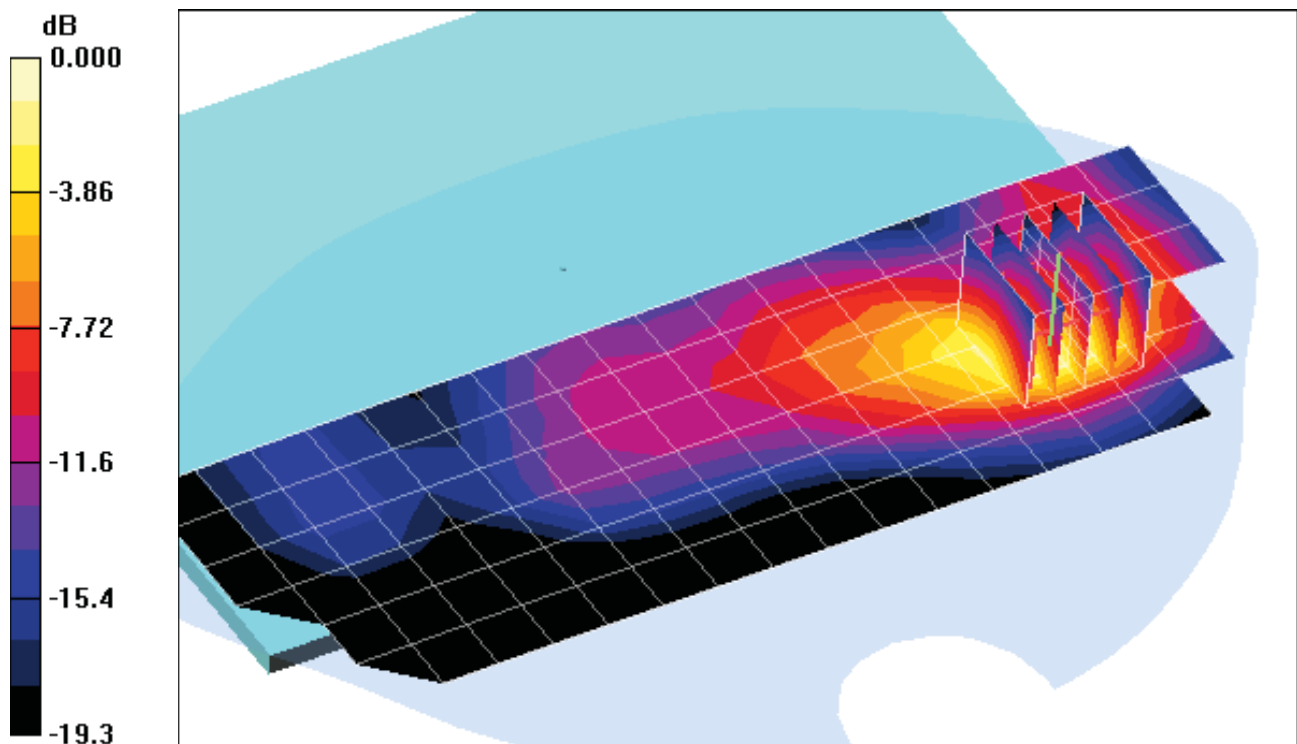
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 16.8 V/m; Power Drift = 0.148 dB

Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.628 mW/g; SAR(10 g) = 0.320 mW/g



0 dB = 0.704mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-33

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: WCDMA 1900, Body SAR, Top Edge, Mid.ch

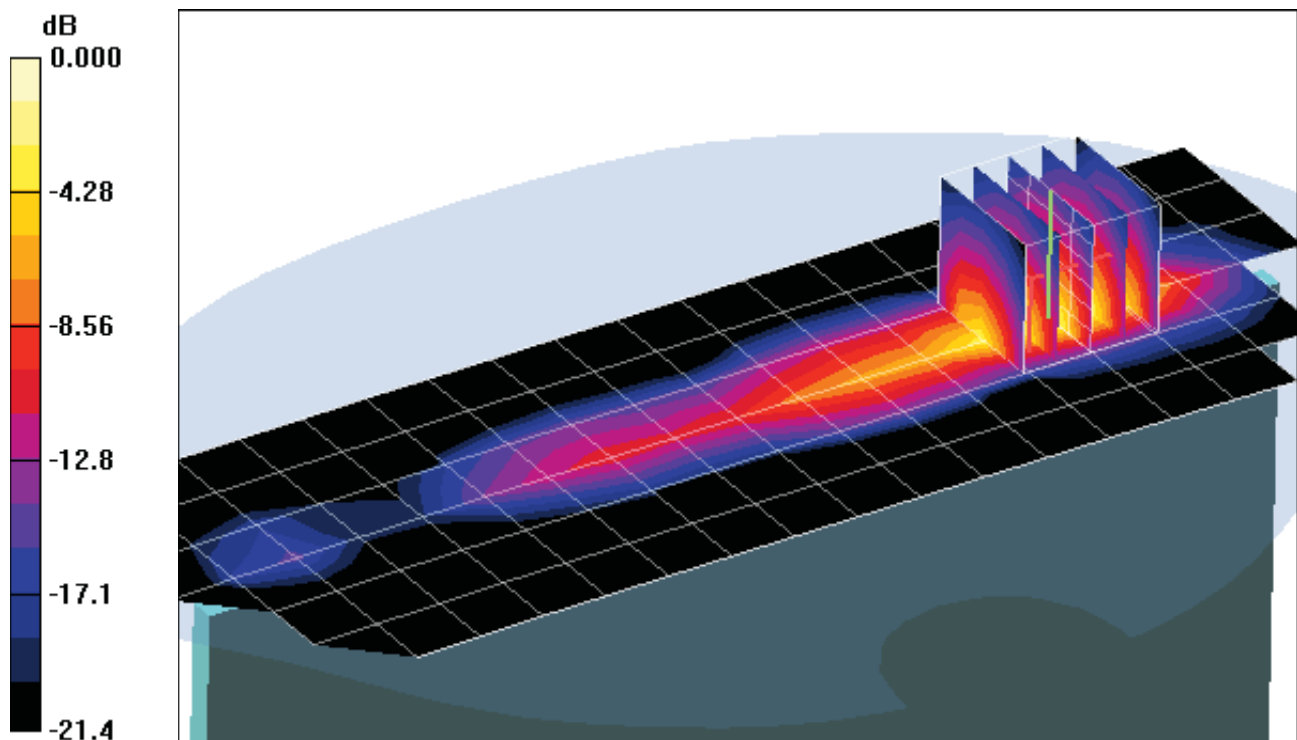
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 15.1 V/m; Power Drift = 0.046 dB;

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.519 mW/g; SAR(10 g) = 0.220 mW/g



0 dB = 0.622mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

Communication System: WCDMA1900; Frequency: 1880 MHz Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1907.6 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; 0.5 cm

Test Date: 08-04-2011; Ambient Temp: 24.7°C; Tissue Temp: 23.1°C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: WCDMA 1900, Body SAR, Top Edge, High ch

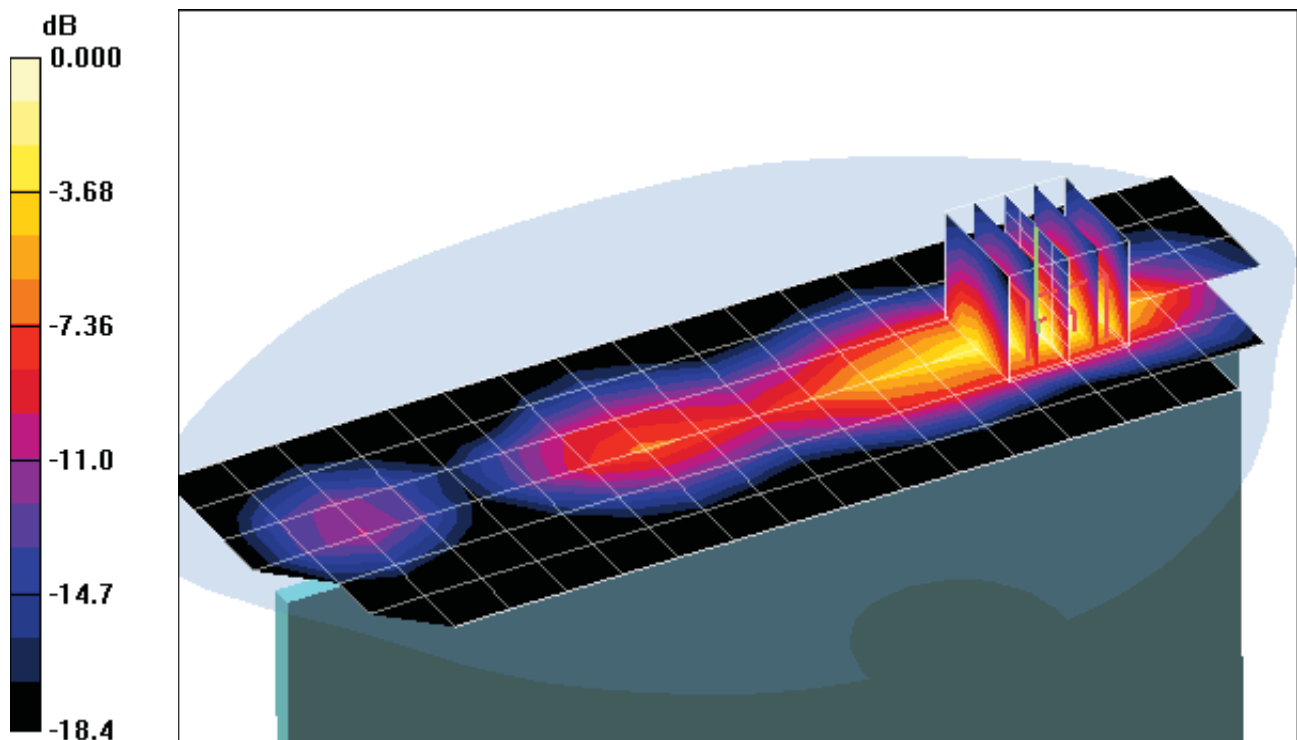
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 27.8 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 1.67 W/kg

SAR(1 g) = 0.927 mW/g; SAR(10 g) = 0.449 mW/g



0 dB = 1.05mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7°C; Tissue Temp: 23.1°C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (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: WCDMA 1900, Body SAR, Right Edge, Mid.ch

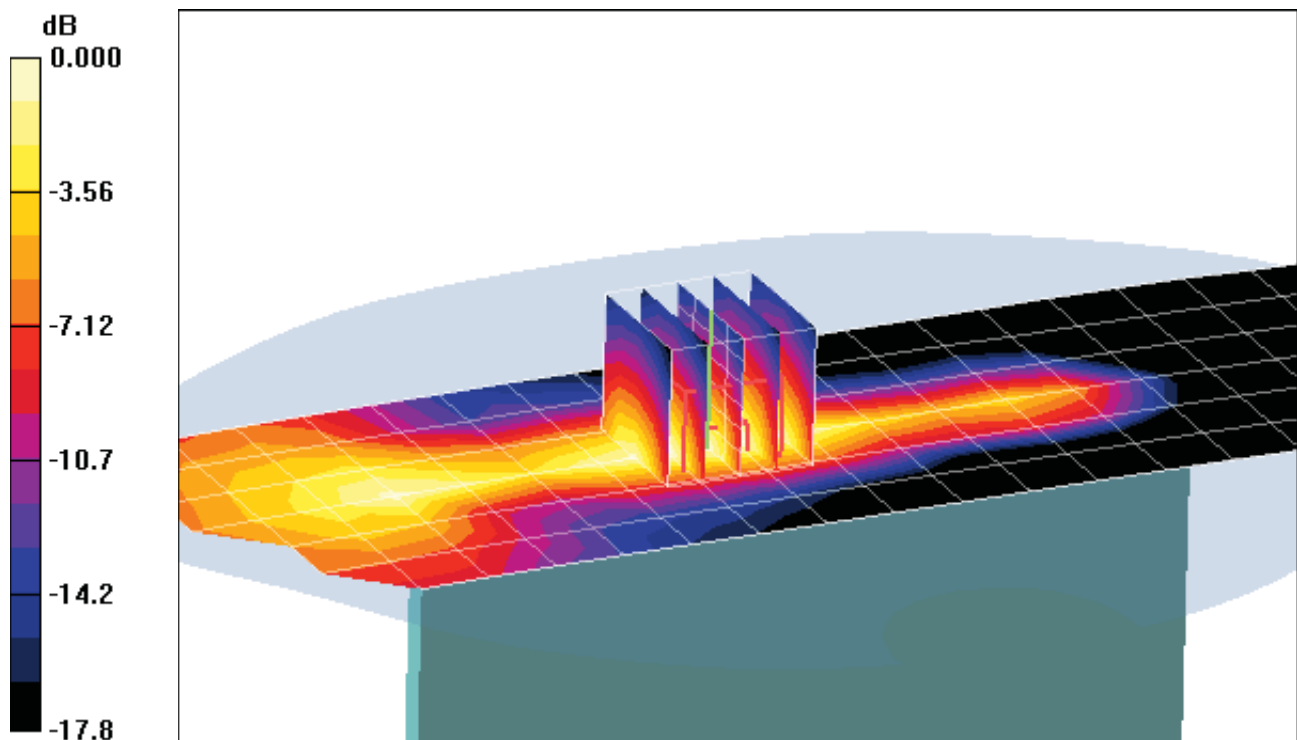
Area Scan (7x21x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.9 V/m; Power Drift = 0.114 dB

Peak SAR (extrapolated) = 0.256 W/kg

SAR(1 g) = 0.150 mW/g; SAR(10 g) = 0.080 mW/g



0 dB = 0.171mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSE WM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-05-2011; Ambient Temp: 23.6 °C; Tissue Temp: 22.4 °C

Probe: EX3DV4 - SN3550; ConvF(6.25, 6.25, 6.25); Calibrated: 2/14/2011

Sensor-Surface: 3mm (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: IEEE 802.11b, Body SAR, Ch 11, 1 Mbps, Back Side

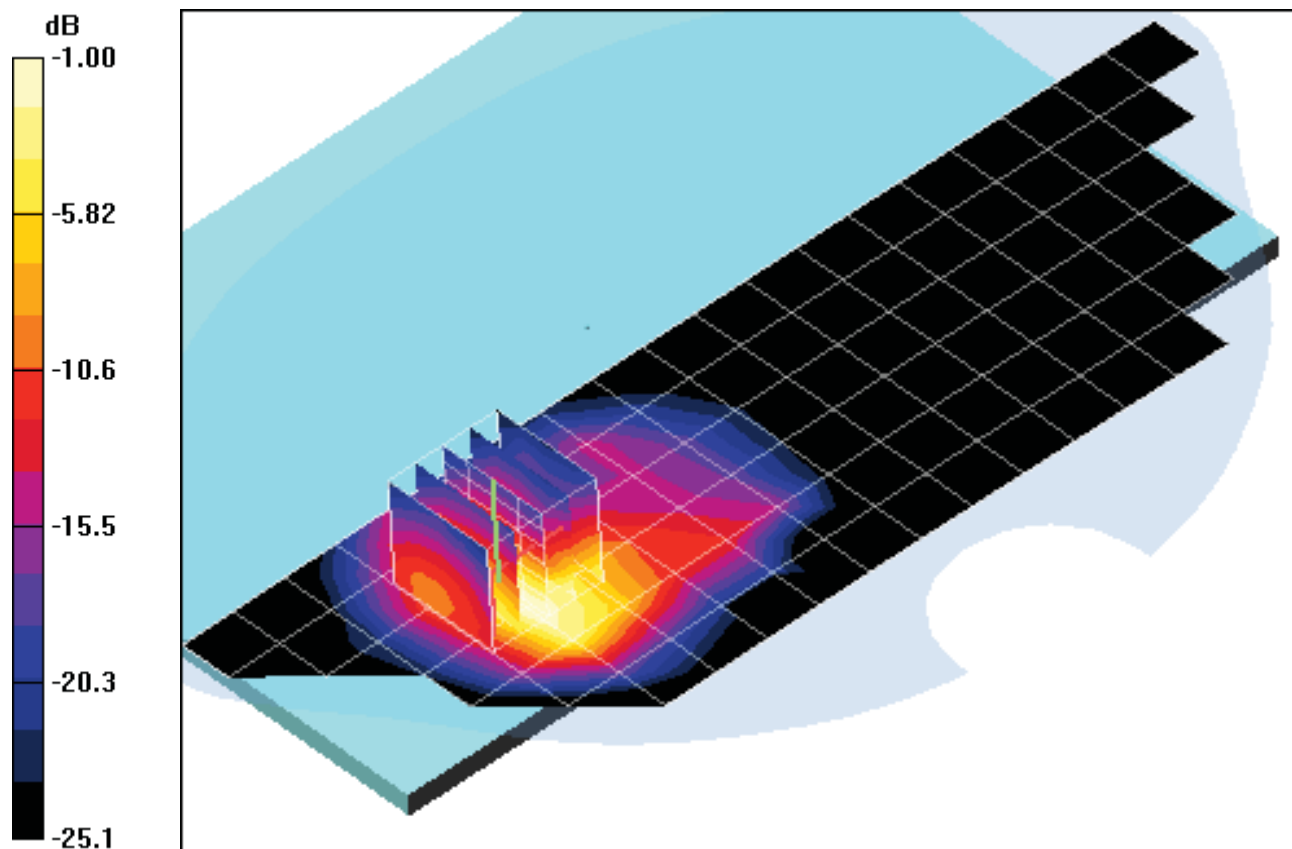
Area Scan (7x20x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 21.9 V/m; Power Drift = 0.008 dB

Peak SAR (extrapolated) = 2.04 W/kg

SAR(1 g) = 0.782 mW/g; SAR(10 g) = 0.308 mW/g



0 dB = 1.03mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSE WM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-05-2011; Ambient Temp: 23.6 °C; Tissue Temp: 22.4 °C

Probe: EX3DV4 - SN3550; ConvF(6.25, 6.25, 6.25); Calibrated: 2/14/2011

Sensor-Surface: 3mm (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: IEEE 802.11b, Body SAR, Ch 11, 1 Mbps, Top Edge

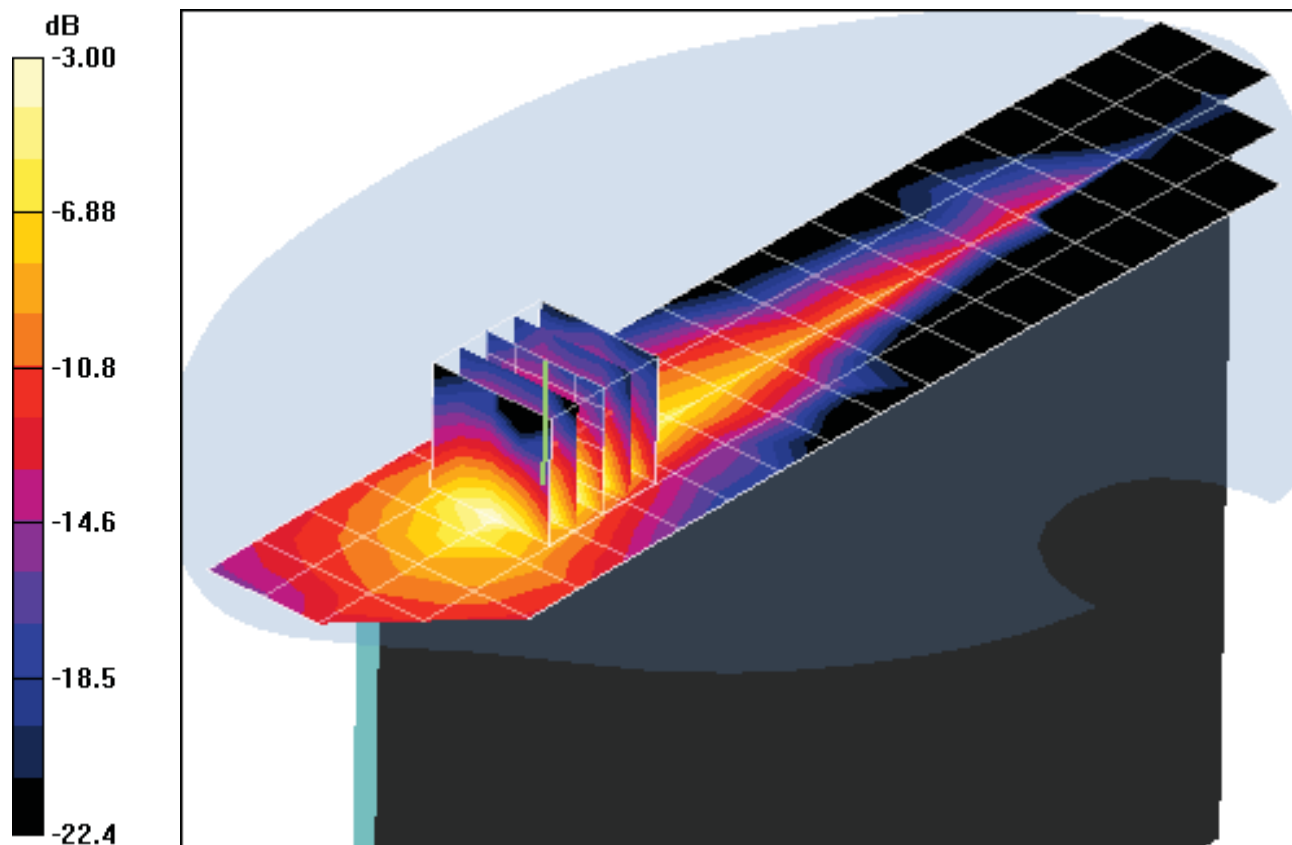
Area Scan (5x20x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.8 V/m; Power Drift = 0.120 dB;

Peak SAR (extrapolated) = 0.458 W/kg

SAR(1 g) = 0.221 mW/g; SAR(10 g) = 0.098 mW/g



0 dB = 0.302mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSE WM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-05-2011; Ambient Temp: 23.6 °C; Tissue Temp: 22.4 °C

Probe: EX3DV4 - SN3550; ConvF(6.25, 6.25, 6.25); Calibrated: 2/14/2011

Sensor-Surface: 3mm (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: IEEE 802.11b, Body SAR, Ch 11, 1 Mbps, Left Edge

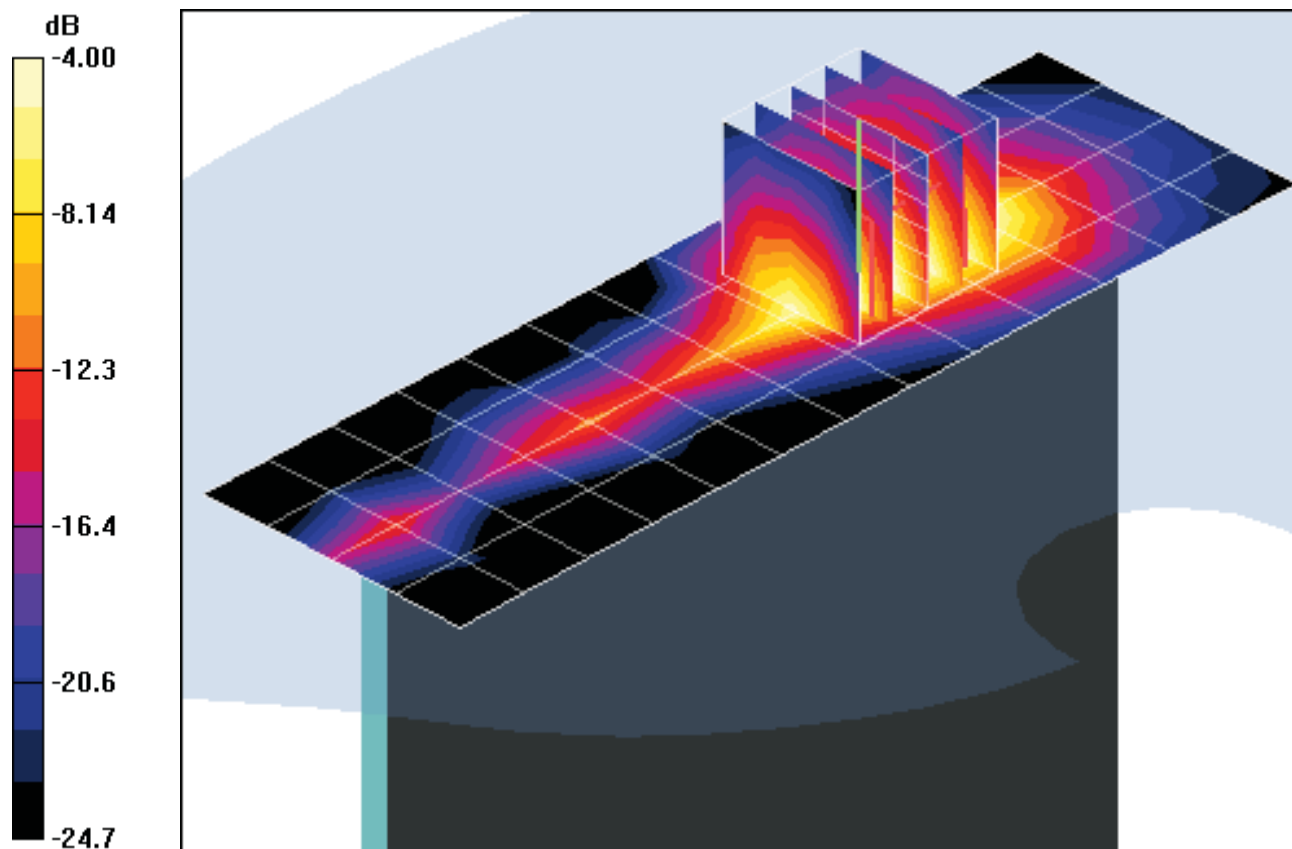
Area Scan (5x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 17.0 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.498 mW/g; SAR(10 g) = 0.216 mW/g



0 dB = 0.694mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSE WM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-05-2011; Ambient Temp: 23.6 °C; Tissue Temp: 22.4 °C

Probe: EX3DV4 - SN3550; ConvF(6.25, 6.25, 6.25); Calibrated: 2/14/2011

Sensor-Surface: 3mm (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: IEEE 802.11g, Body SAR, Ch 11, 6 Mbps, Back Side

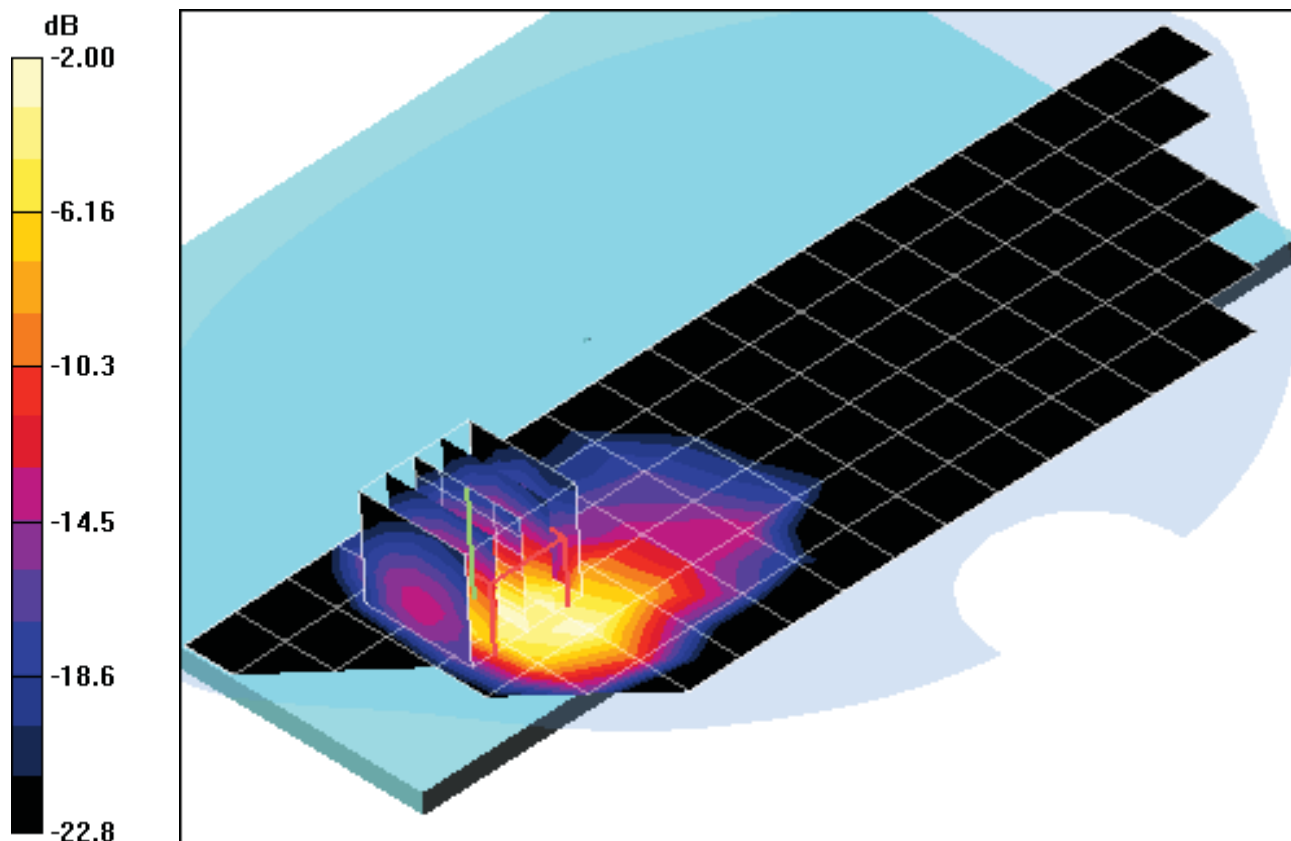
Area Scan (7x20x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 16.3 V/m; Power Drift = 0.029 dB

Peak SAR (extrapolated) = 1.83 W/kg

SAR(1 g) = 0.707 mW/g; SAR(10 g) = 0.293 mW/g



0 dB = 1.07mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSE WM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-05-2011; Ambient Temp: 23.6 °C; Tissue Temp: 22.4 °C

Probe: EX3DV4 - SN3550; ConvF(6.25, 6.25, 6.25); Calibrated: 2/14/2011

Sensor-Surface: 3mm (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: IEEE 802.11g, Body SAR, Ch 11, 6 Mbps, Top Edge

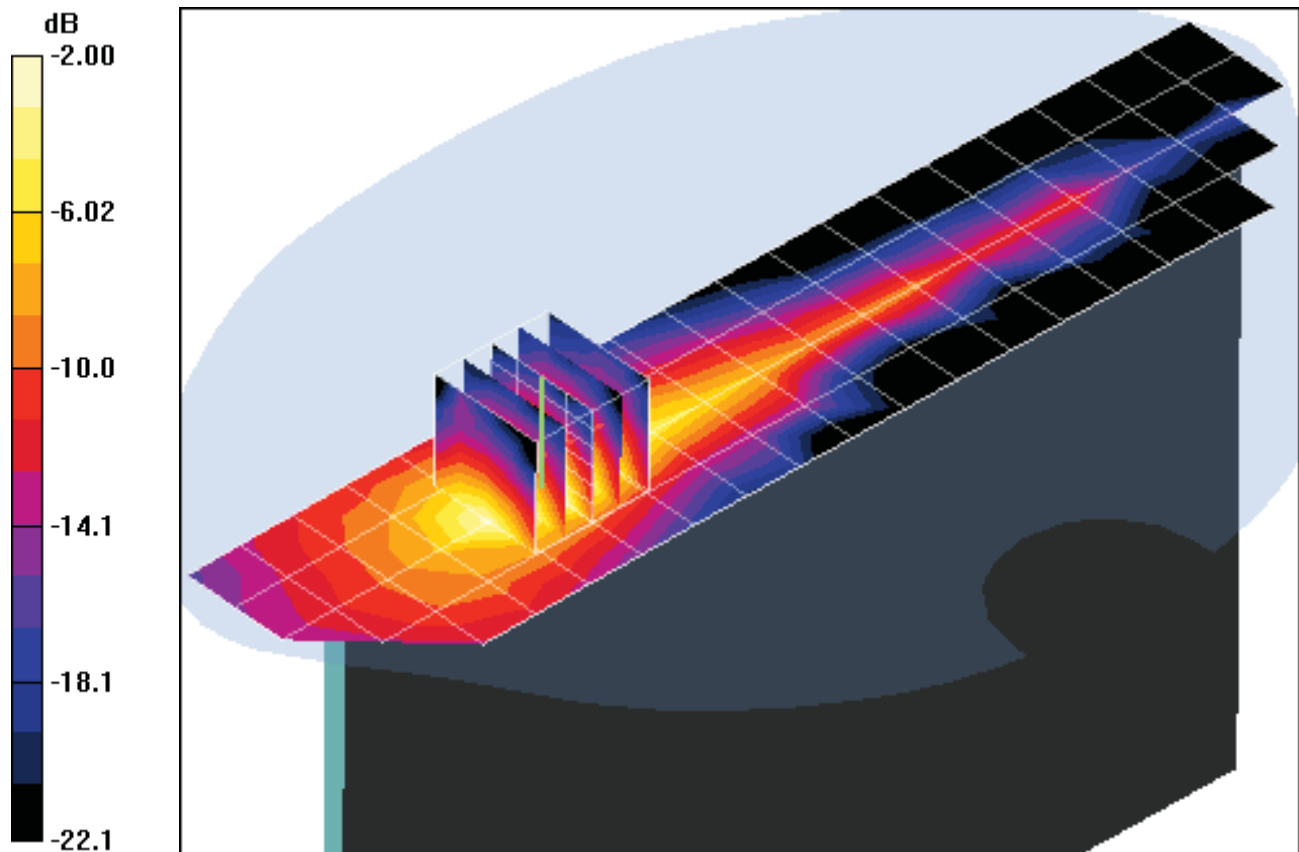
Area Scan (5x20x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.2 V/m; Power Drift = 0.115 dB

Peak SAR (extrapolated) = 0.394 W/kg

SAR(1 g) = 0.188 mW/g; SAR(10 g) = 0.084 mW/g



0 dB = 0.259mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSE WM380S; Type: Portable Tablet Computer; Serial: M380S-27

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

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-05-2011; Ambient Temp: 23.6 °C; Tissue Temp: 22.4 °C

Probe: EX3DV4 - SN3550; ConvF(6.25, 6.25, 6.25); Calibrated: 2/14/2011

Sensor-Surface: 3mm (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: IEEE 802.11g, Body SAR, Ch 11, 6 Mbps, Left Edge

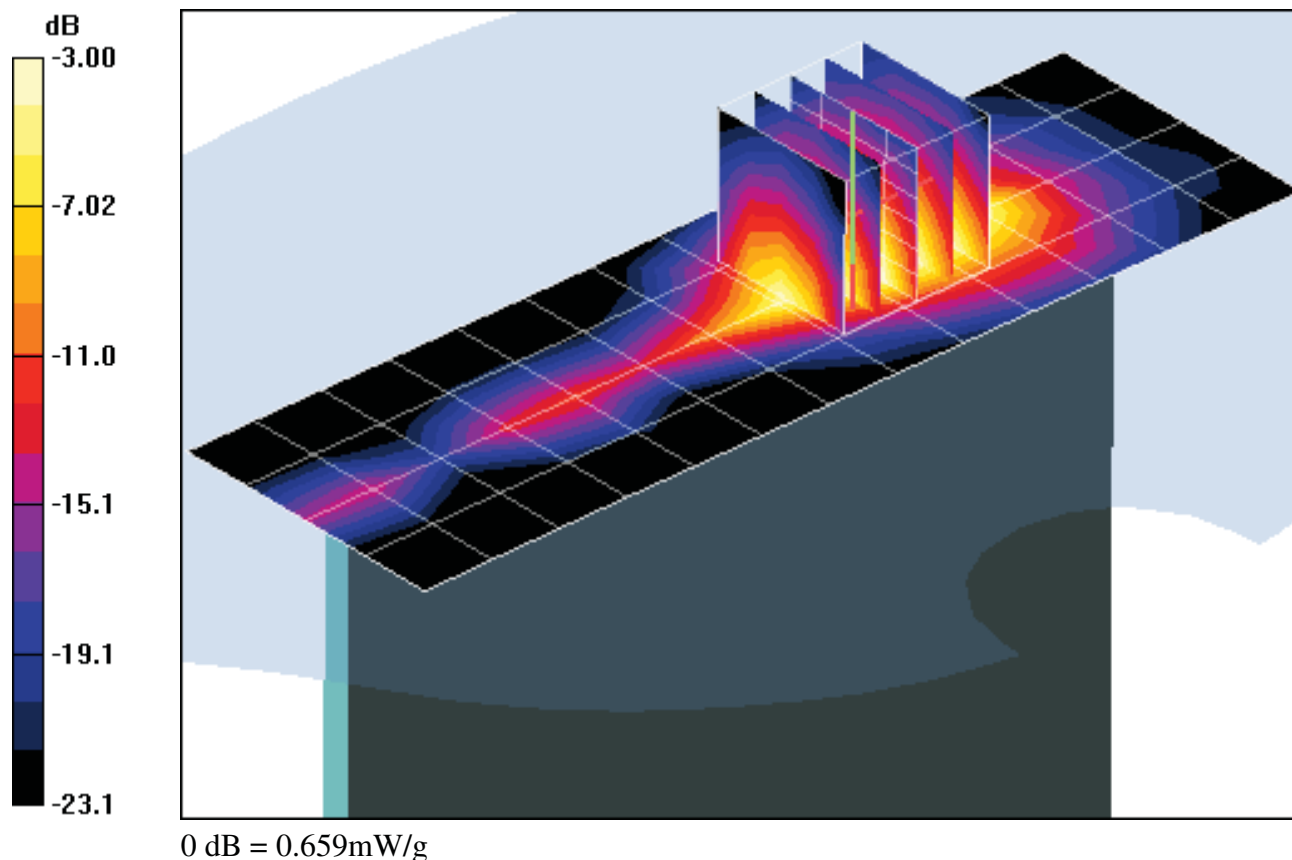
Area Scan (5x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 17.1 V/m; Power Drift = - 0.011 dB

Peak SAR (extrapolated) = 1.03 W/kg

SAR(1 g) = 0.476 mW/g; SAR(10 g) = 0.205 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: MGO^1

Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.677 \text{ mho/m}$; $\epsilon_r = 46.78$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-11-2011; Ambient Temp: 23.7°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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: WLAN 802.11a 5.5 GHz, Ch 100, 6 Mbps, Back Side

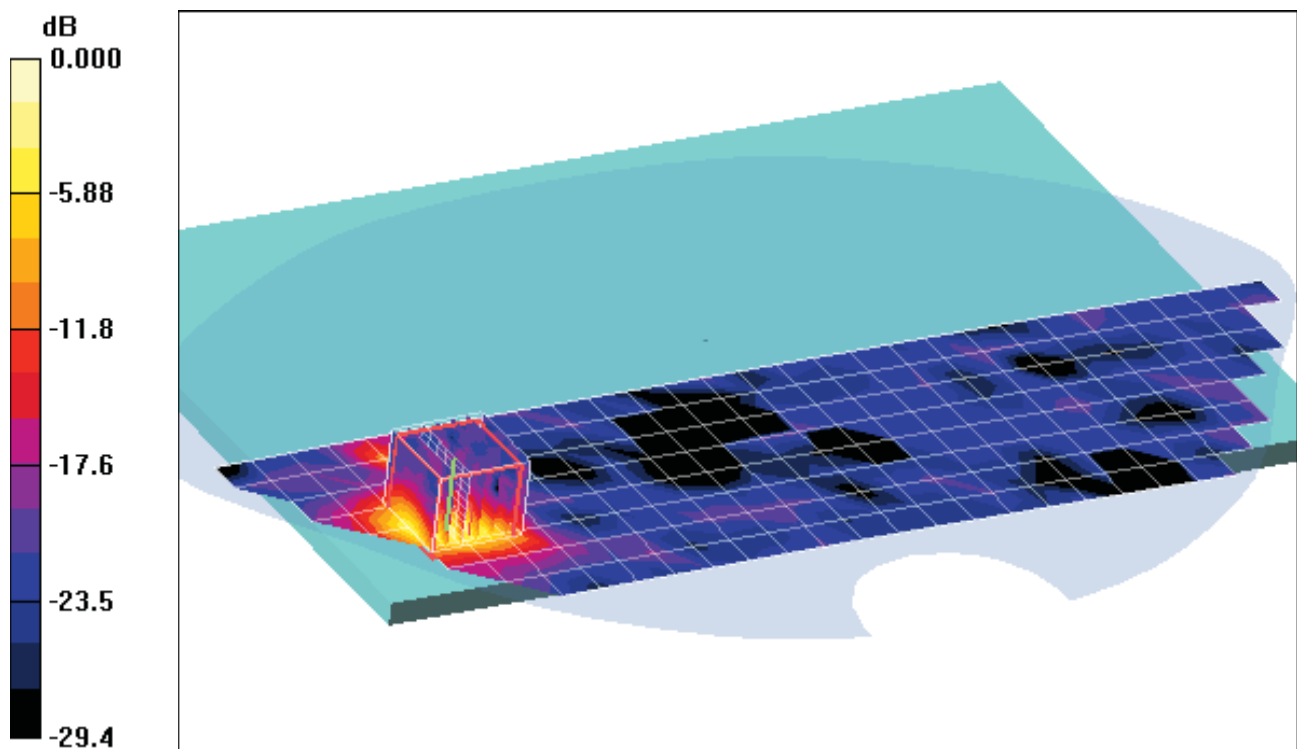
Area Scan (9x29x1): Measurement grid: dx=10mm, dy=10mm

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

Reference Value = 8.04 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 5.40 W/kg

SAR(1 g) = 0.969 mW/g; SAR(10 g) = 0.277 mW/g



0 dB = 2.13mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: M380S-27

Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5500 \text{ MHz}$; $\sigma = 5.84 \text{ mho/m}$; $\epsilon_r = 47.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-02-2011; Ambient Temp: 23.7°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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: WLAN 802.11a 5.5 GHz, Ch 100, 6 Mbps, Top Edge

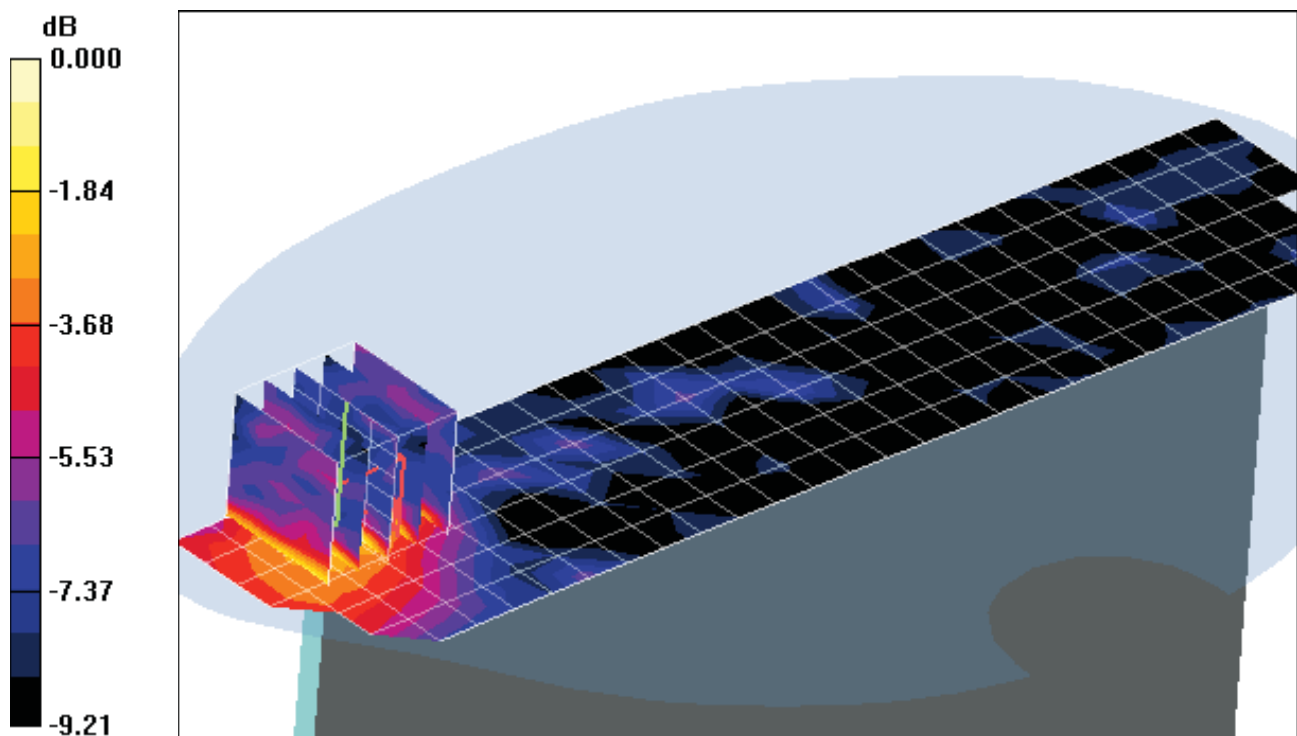
Area Scan (7x29x1): Measurement grid: dx=10mm, dy=10mm

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

Reference Value = 6.13 V/m; Power Drift = -0.179 dB

Peak SAR (extrapolated) = 0.792 W/kg

SAR(1 g) = 0.165 mW/g; SAR(10 g) = 0.094 mW/g



0 dB = 0.245mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSHWM380S; Type: Portable Tablet Computer; Serial: FI-186-G

Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5560 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5560 \text{ MHz}$; $\sigma = 5.785 \text{ mho/m}$; $\epsilon_r = 46.69$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-11-2011; Ambient Temp: 23.7°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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: WLAN 802.11a 5.5 GHz, Ch 112, 6 Mbps, Left Edge

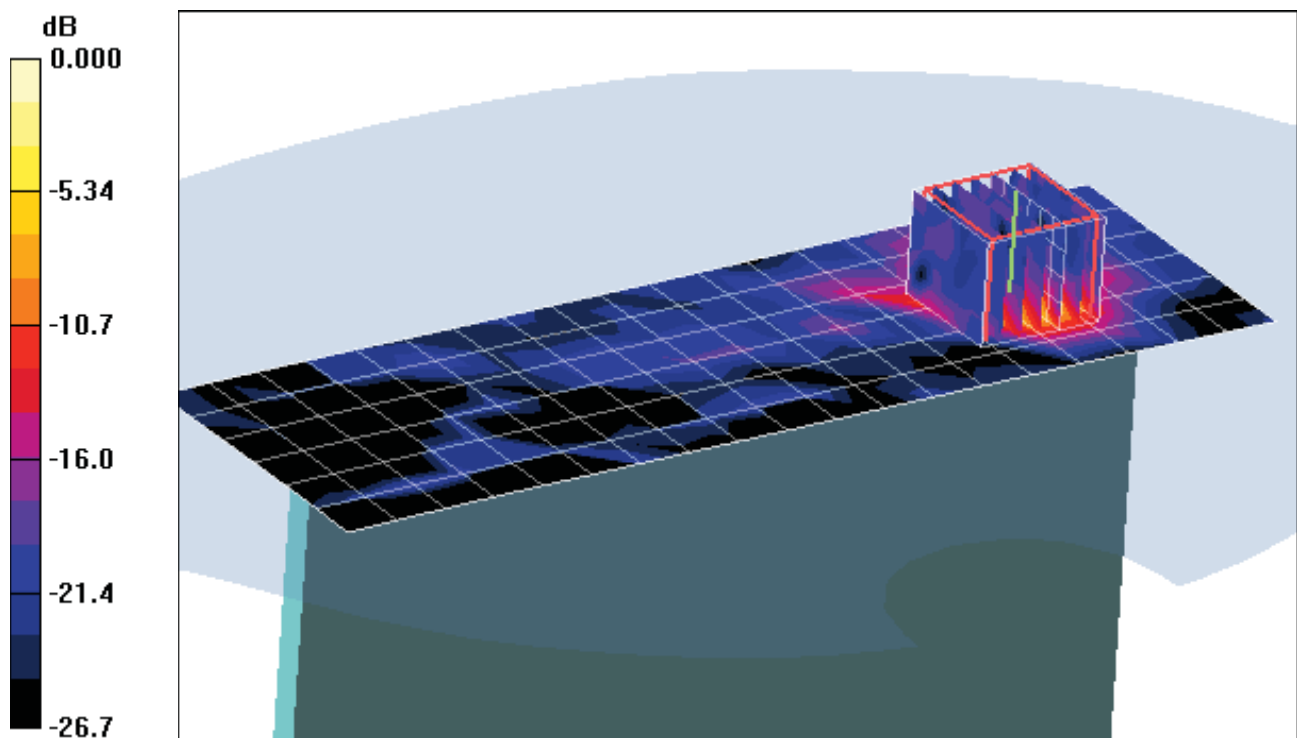
Area Scan (7x20x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=5mm

Reference Value = 15.8 V/m; Power Drift = -0.120 dB

Peak SAR (extrapolated) = 4.19 W/kg

SAR(1 g) = 0.980 mW/g; SAR(10 g) = 0.244 mW/g



0 dB = 2.08mW/g

APPENDIX B: DIPOLE VALIDATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.98 \text{ mho/m}$; $\epsilon_r = 54.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.12, 6.12, 6.12); Calibrated: 4/8/2011

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

835MHz System Verification

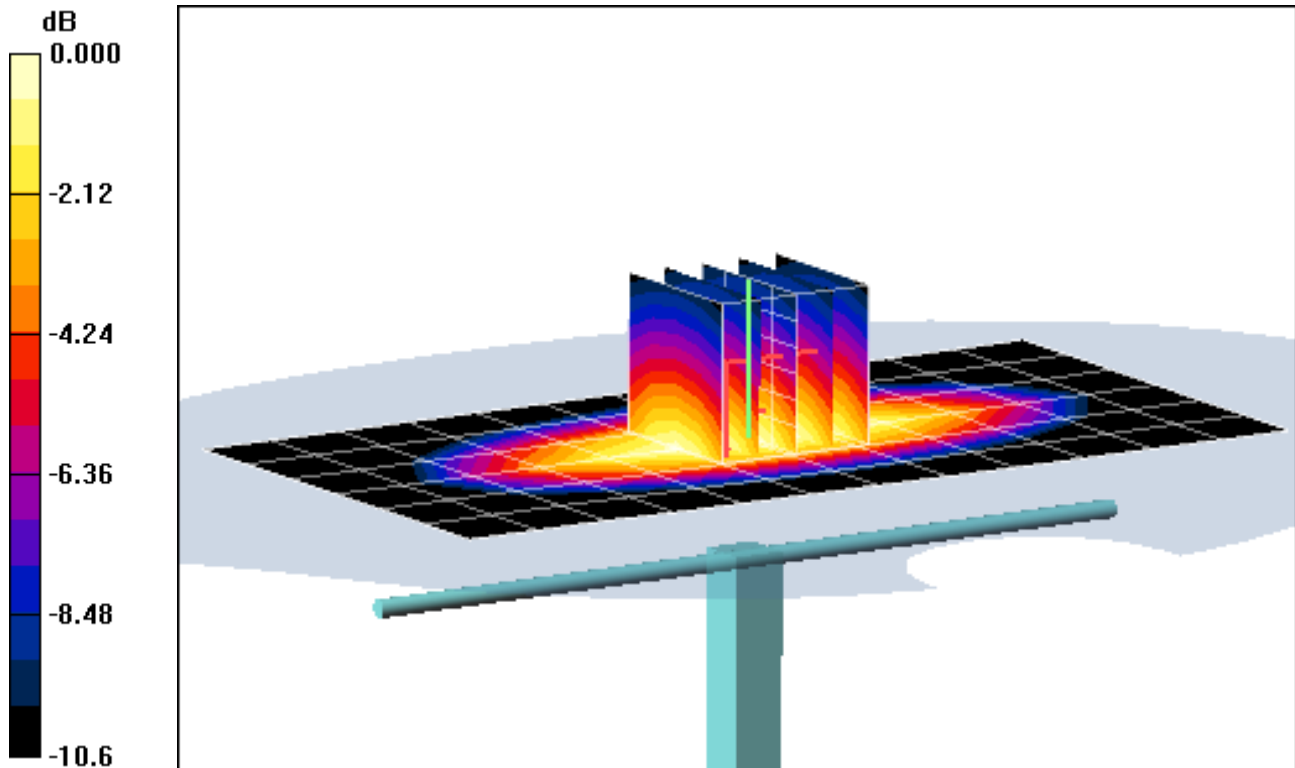
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 24 dBm (250 mW)

SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.56 mW/g

Deviation = -2.54 %



0 dB = 2.59mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.98 \text{ mho/m}$; $\epsilon_r = 54.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-02-2011; Ambient Temp: 22.8 °C; Tissue Temp: 21.7 °C

Probe: ES3DV3 - SN3258; ConvF(6.16, 6.16, 6.16); Calibrated: 4/8/2011

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

835MHz System Verification

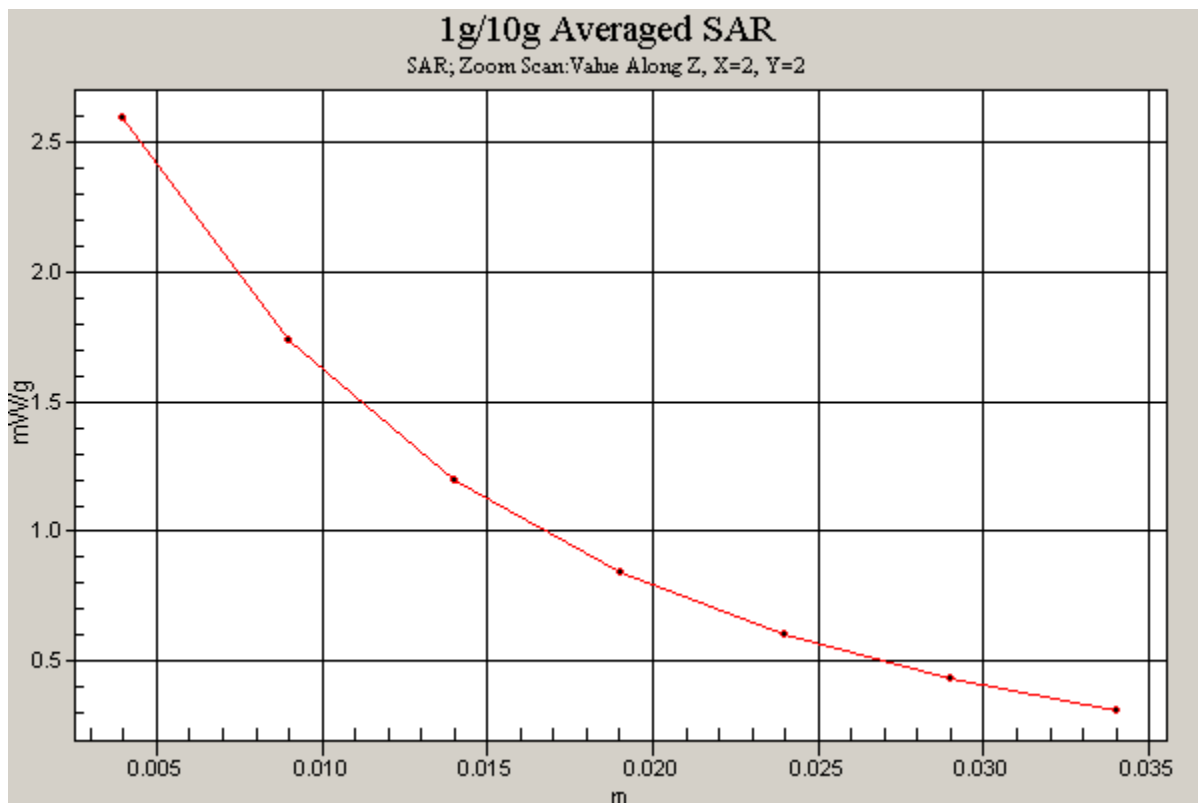
Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 24 dBm (250 mW)

SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.56 mW/g

Deviation = -2.54 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.975 \text{ mho/m}$; $\epsilon_r = 54.66$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-22-2011; Ambient Temp: 23.1°C; Tissue Temp: 22.6°C

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

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

835MHz System Verification

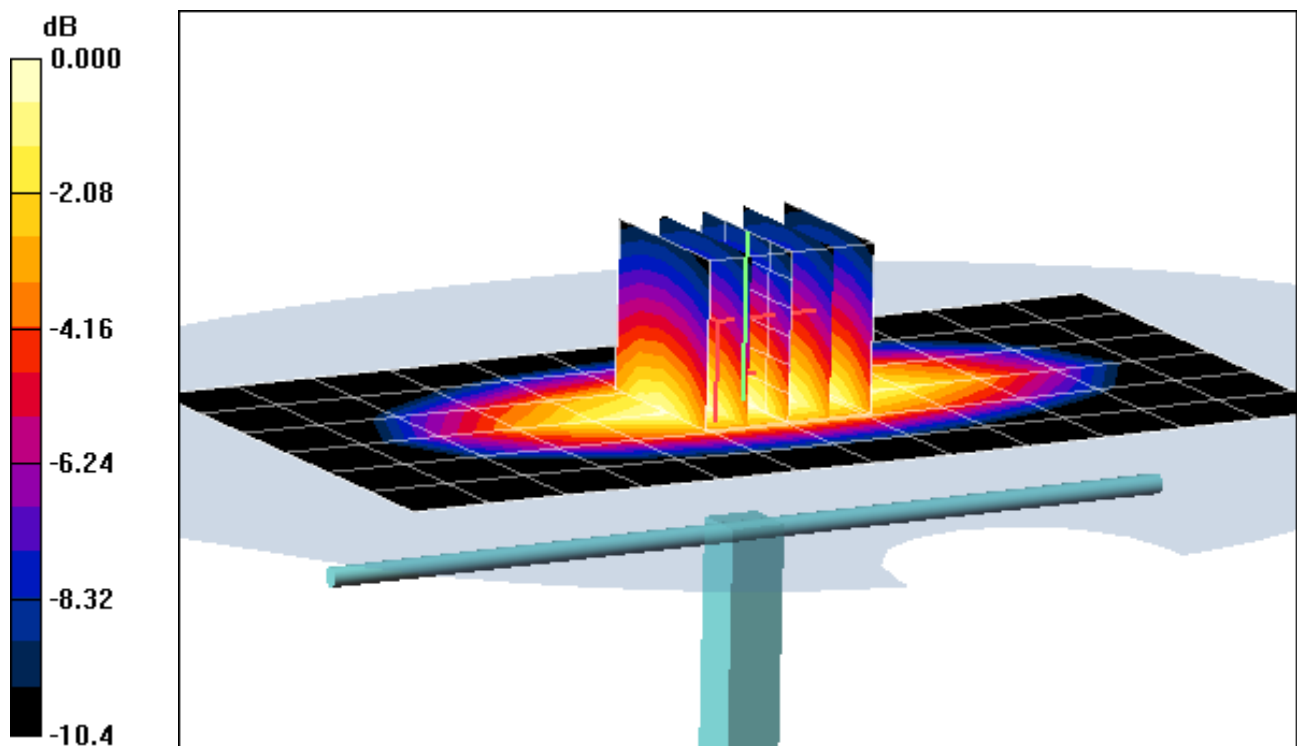
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 0.954 mW/g; SAR(10 g) = 0.625 mW/g

Deviation = -3.15%



0 dB = 1.03mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.975 \text{ mho/m}$; $\epsilon_r = 54.66$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-22-2011; Ambient Temp: 23.1°C; Tissue Temp: 22.6°C

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

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

835MHz System Verification

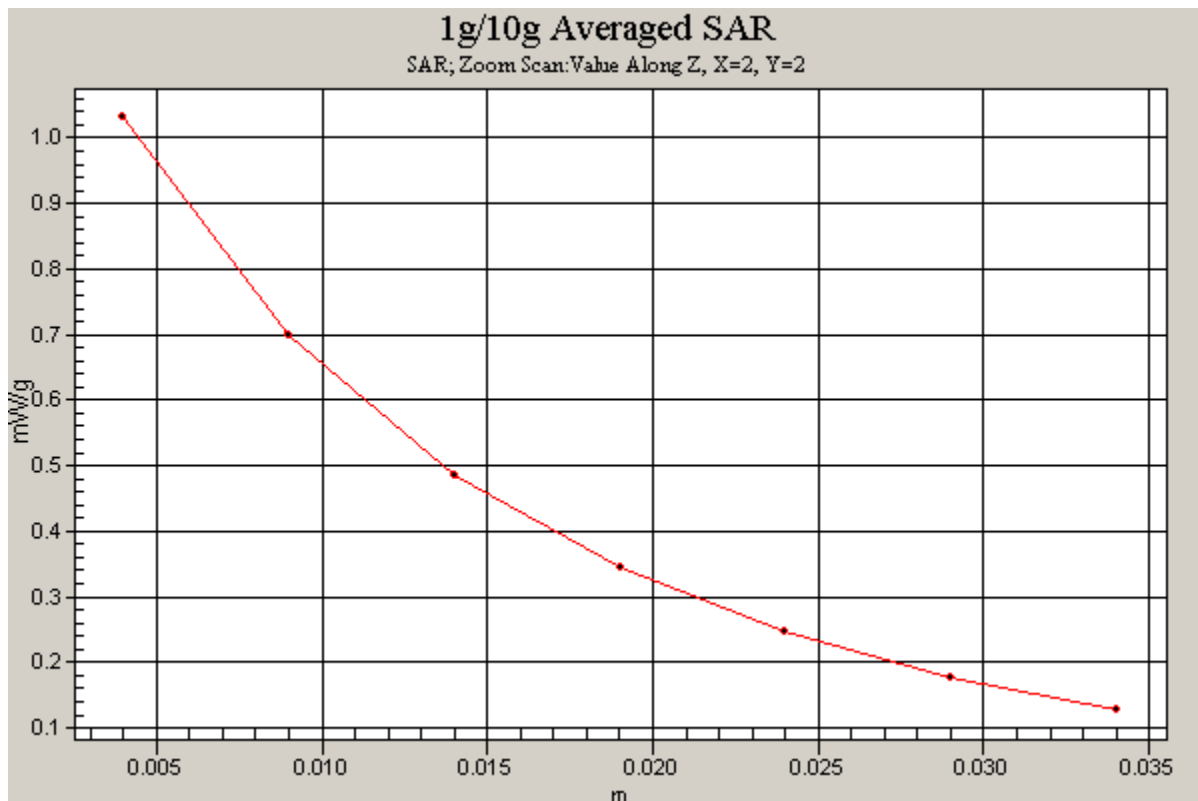
Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 0.954 mW/g; SAR(10 g) = 0.625 mW/g

Deviation = -3.15%



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):

$f = 1900 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM 4.0; Serial: TP1375

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

1900MHz System Verification

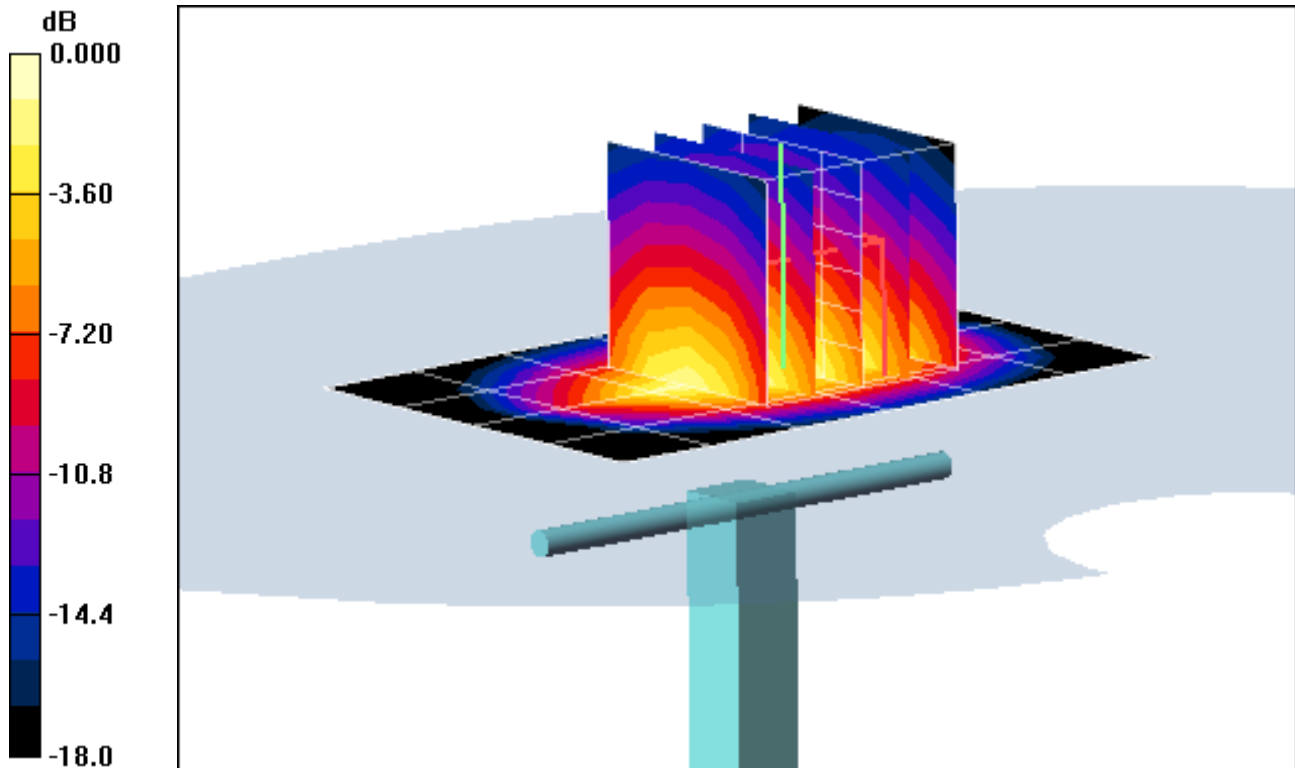
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 4.04 mW/g; SAR(10 g) = 2.11 mW/g

Deviation = -1.70 %



0 dB = 4.50mW/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 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.476 \text{ mho/m}$; $\epsilon_r = 51.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2011; Ambient Temp: 24.7 °C; Tissue Temp: 23.1 °C

Probe: ES3DV2 - SN3022; ConvF(4.34, 4.34, 4.34); Calibrated: 9/21/2010

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM 4.0; Serial: TP1375

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

1900MHz System Verification

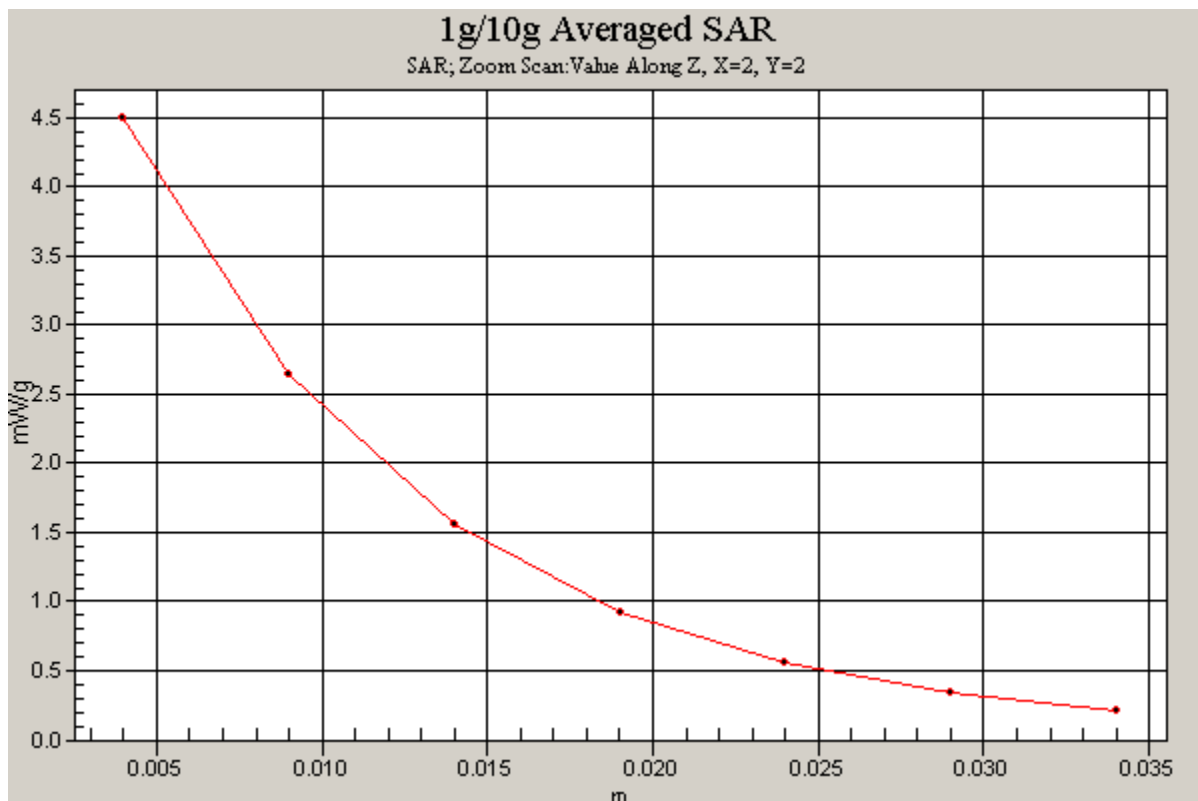
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 4.04 mW/g; SAR(10 g) = 2.11 mW/g

Deviation = -1.70 %



PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 52.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-21-2011; Ambient Temp: 23.6°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(4.48, 4.48, 4.48); Calibrated: 4/18/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/19/2011

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

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

1900MHz System Verification

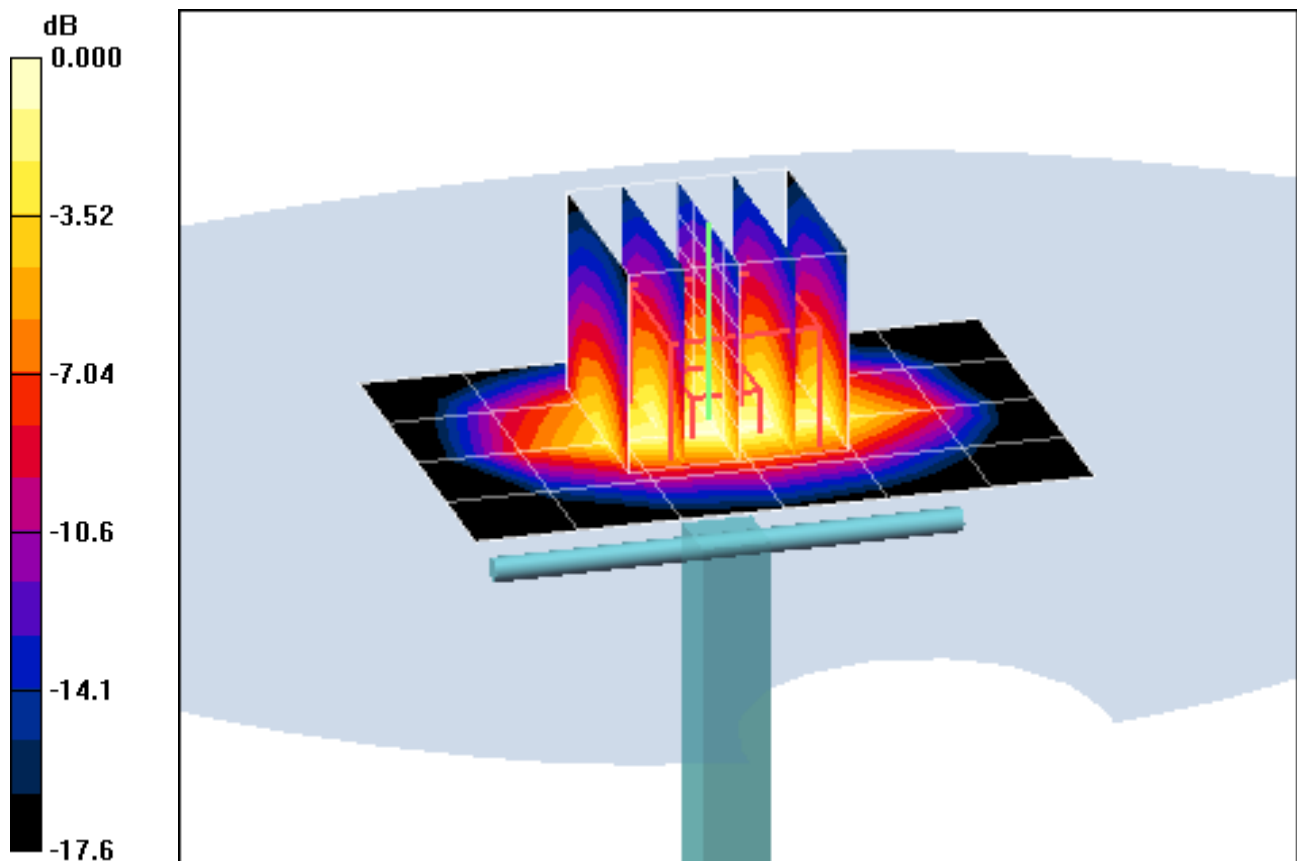
Area Scan (5x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 4.1 mW/g; SAR(10 g) = 2.16 mW/g

Deviation = -0.24%



0 dB = 4.58mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 52.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-21-2011; Ambient Temp: 23.6°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(4.48, 4.48, 4.48); Calibrated: 4/18/2011

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/19/2011

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

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

1900MHz System Verification

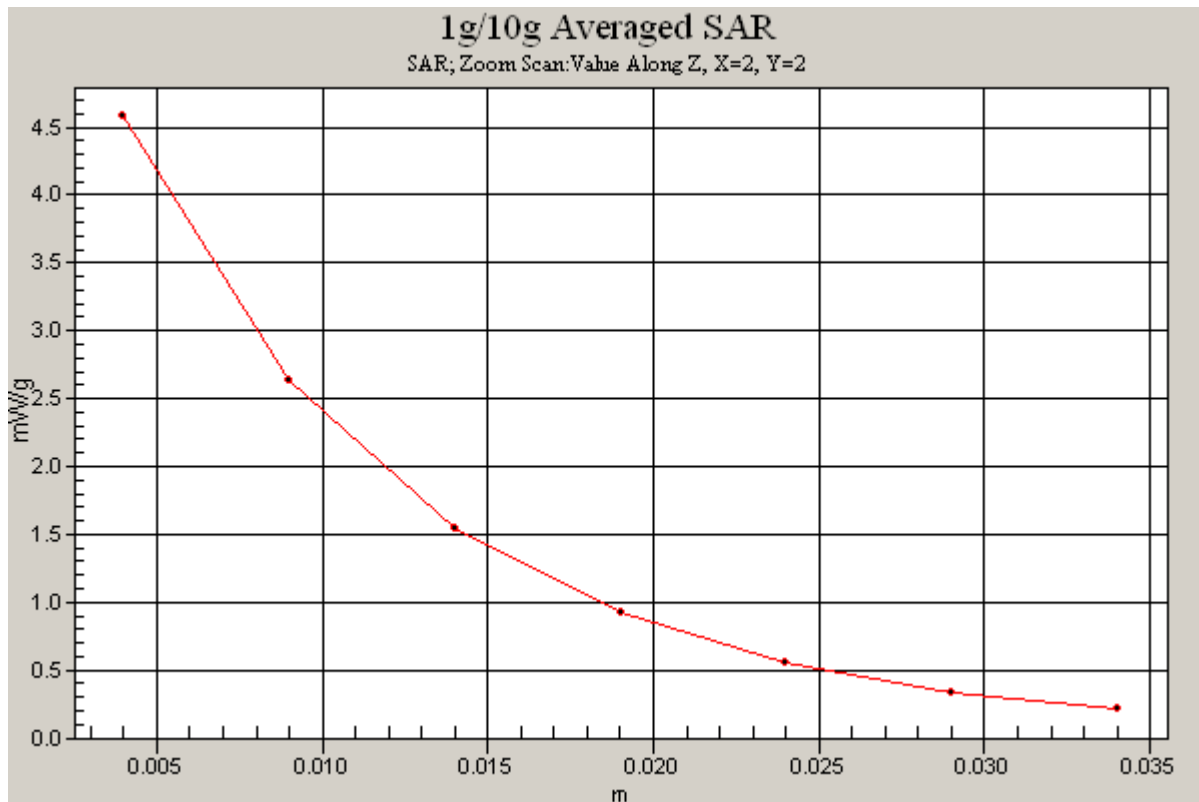
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 4.1 mW/g; SAR(10 g) = 2.16 mW/g

Deviation = -0.24%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 2450 MHz; Type: D2450V2; Serial: 797

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

Medium: 2450 Body; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.88 \text{ mho/m}$; $\epsilon_r = 52.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-05-2011; Ambient Temp: 23.6 °C; Tissue Temp: 22.4 °C

Probe: EX3DV4 - SN3550; ConvF(6.25, 6.25, 6.25); Calibrated: 2/14/2011

Sensor-Surface: 3mm (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

2450MHz System Verification

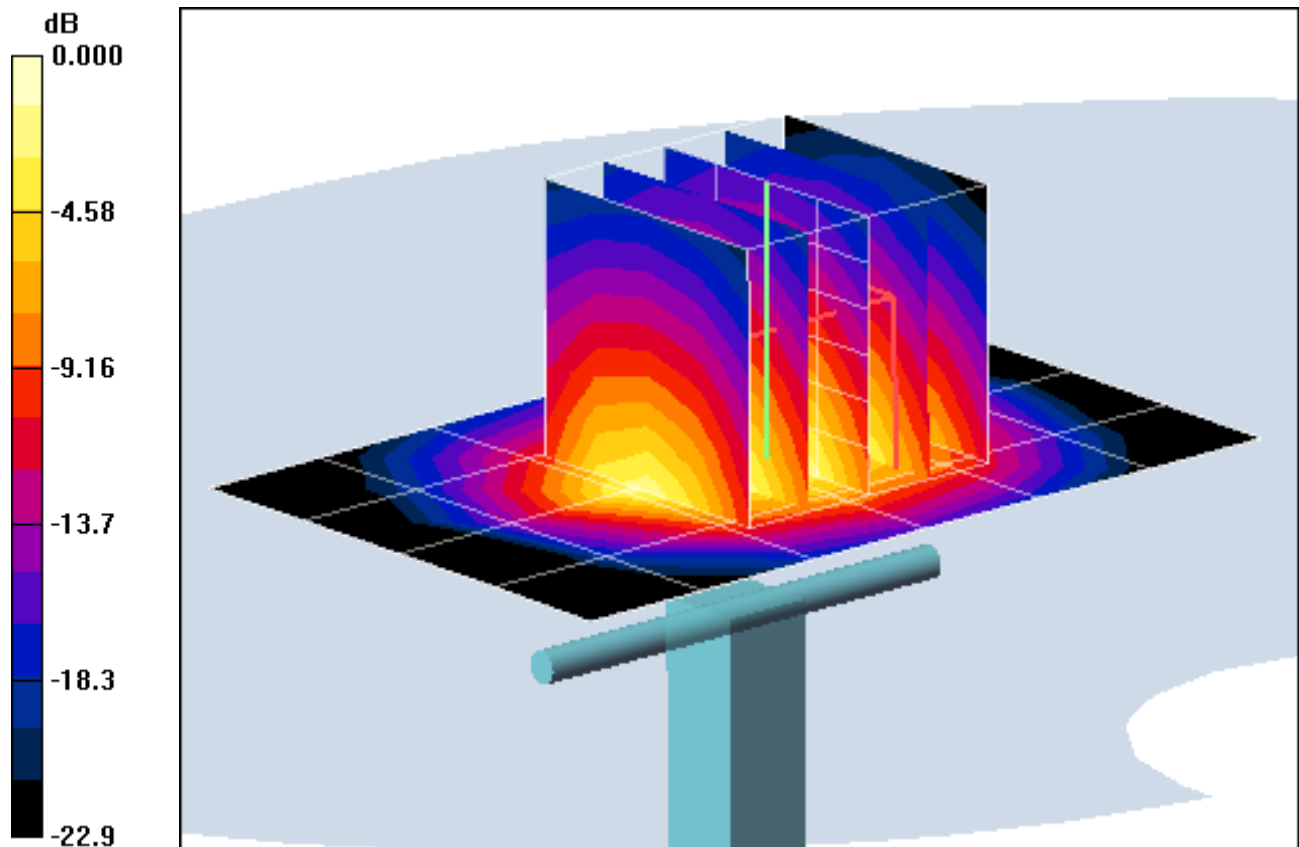
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 16.0 dBm (40 mW)

SAR(1 g) = 2.2 mW/g; SAR(10 g) = 1.01 mW/g

Deviation = 5.16 %



0 dB = 2.88mW/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 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.88 \text{ mho/m}$; $\epsilon_r = 52.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-05-2011; Ambient Temp: 23.6 °C; Tissue Temp: 22.4 °C

Probe: EX3DV4 - SN3550; ConvF(6.25, 6.25, 6.25); Calibrated: 2/14/2011

Sensor-Surface: 3mm (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

2450MHz System Verification

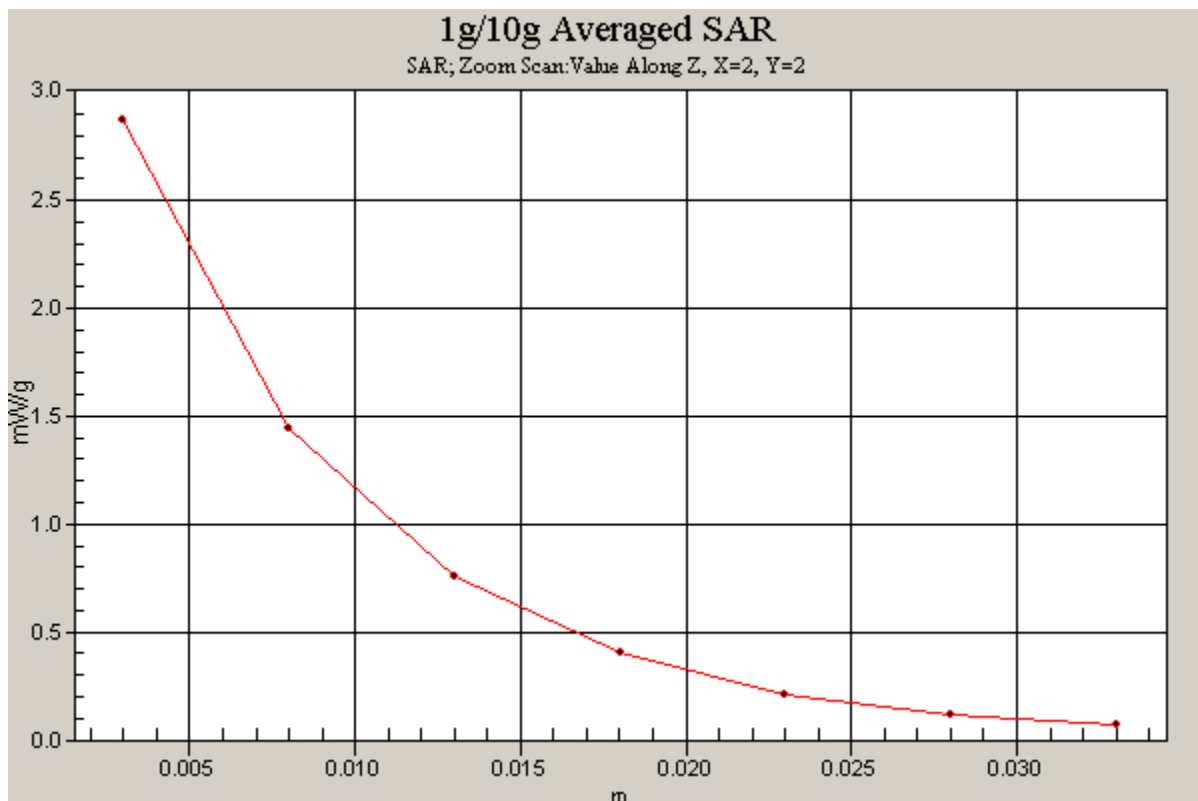
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 16.0 dBm (40 mW)

SAR(1 g) = 2.2 mW/g; SAR(10 g) = 1.01 mW/g

Deviation = 5.16 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5200 \text{ MHz}$; $\sigma = 5.42 \text{ mho/m}$; $\epsilon_r = 47.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-02-2011; Ambient Temp: 23.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3550; ConvF(3.58, 3.58, 3.58); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5200MHz System Verification

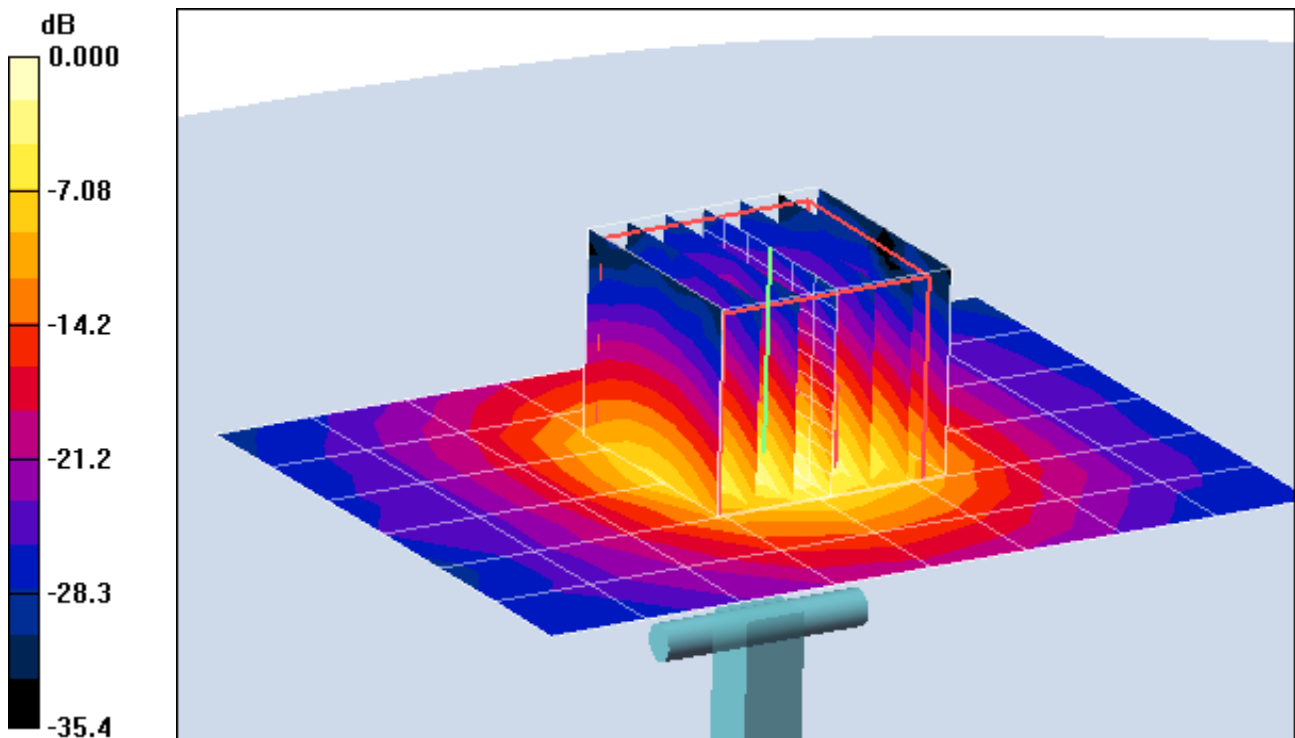
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 8.27 mW/g; SAR(10 g) = 2.28 mW/g

Deviation = 6.44 %



0 dB = 16.8mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5200 \text{ MHz}$; $\sigma = 5.42 \text{ mho/m}$; $\epsilon_r = 47.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-02-2011; Ambient Temp: 23.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3550; ConvF(3.58, 3.58, 3.58); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5200MHz System Verification

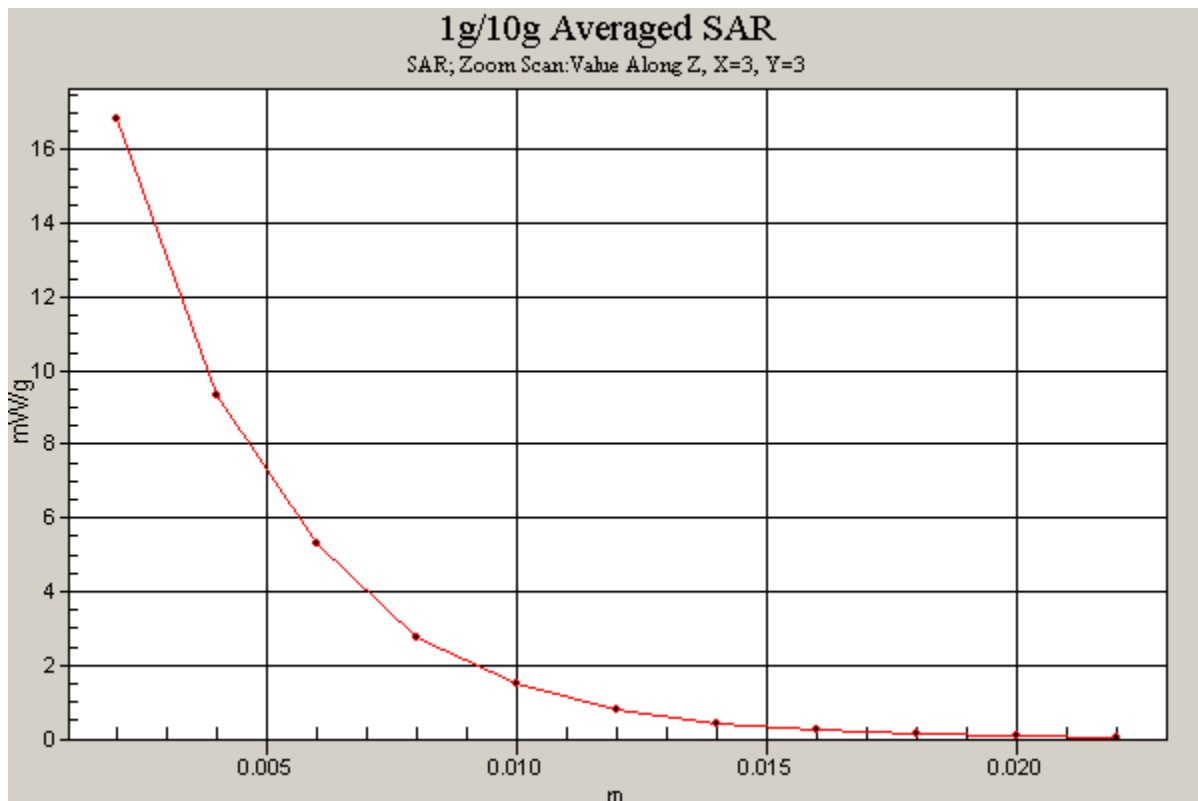
Area Scan (7x9x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (7x7x11)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Input Power = 20 dBm (100 mW)

SAR(1 g) = 8.27 mW/g; SAR(10 g) = 2.28 mW/g

Deviation = 6.44 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 5.260 \text{ mho/m}$; $\epsilon_r = 47.36$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-11-2011; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(3.58, 3.58, 3.58); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5200MHz System Verification

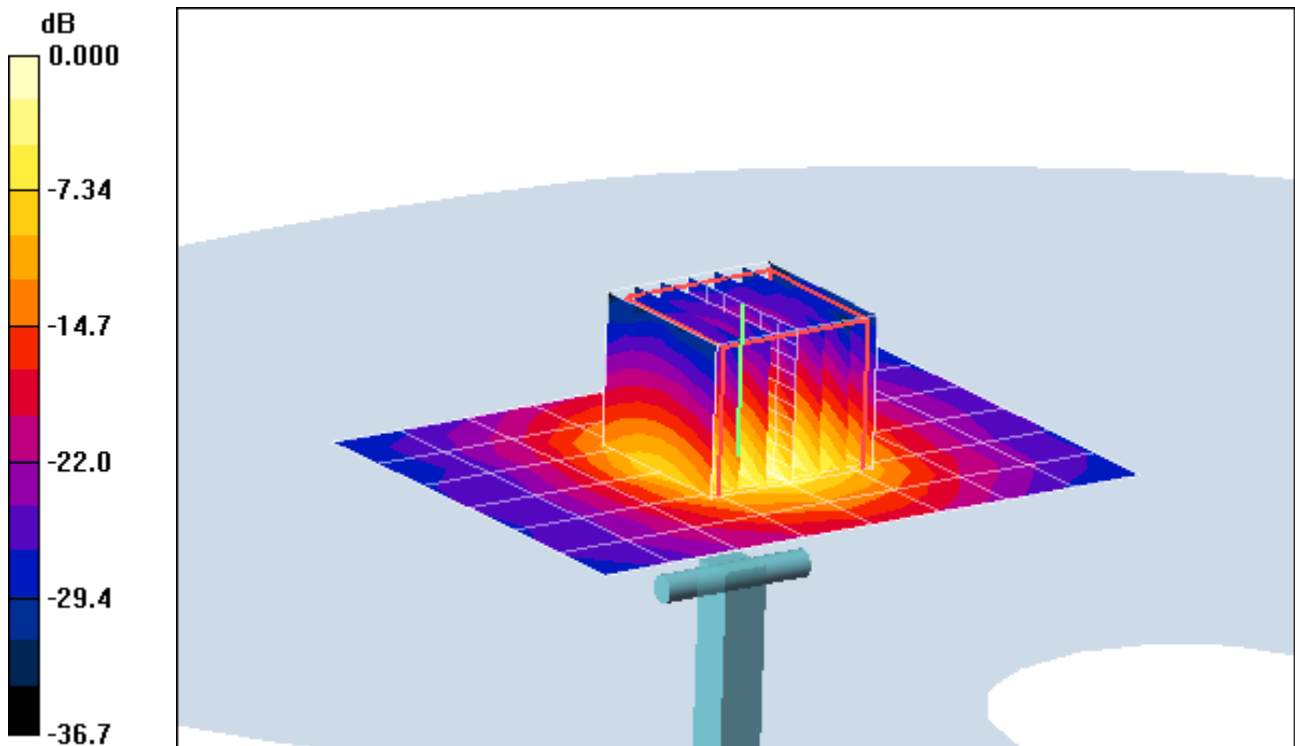
Area Scan (7x9x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (7x7x11)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Input Power = 20 dBm (100 mW)

SAR(1 g) = 8.31 mW/g; SAR(10 g) = 2.31 mW/g

Deviation = 6.95 %



0 dB = 16.9mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 5.260 \text{ mho/m}$; $\epsilon_r = 47.36$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-11-2011; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(3.58, 3.58, 3.58); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5200MHz System Verification

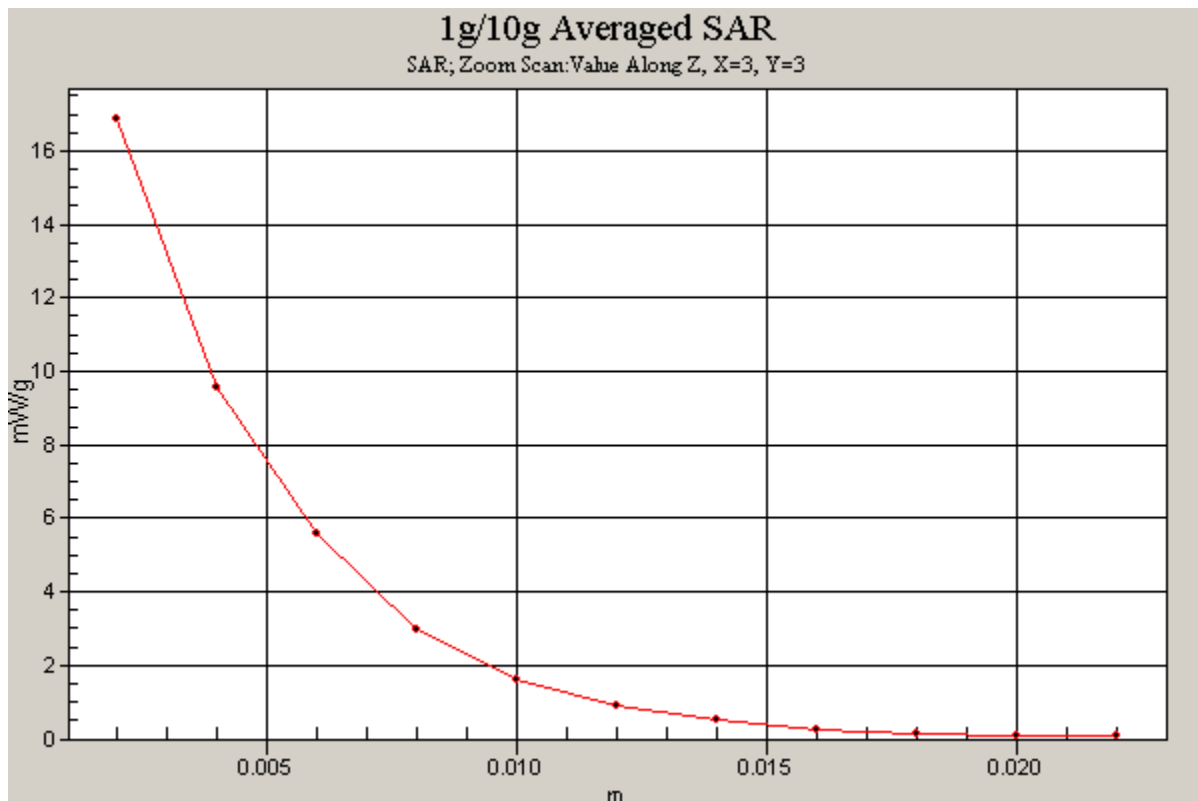
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 8.31 mW/g; SAR(10 g) = 2.31 mW/g

Deviation = 6.95 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

Communication System: CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5500 \text{ MHz}$; $\sigma = 5.84 \text{ mho/m}$; $\epsilon_r = 47.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-02-2011; Ambient Temp: 23.7°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN3550; ConvF(3.39, 3.39, 3.39); Calibrated: 1/21/2009

Sensor-Surface: 2mm (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

5500MHz System Verification

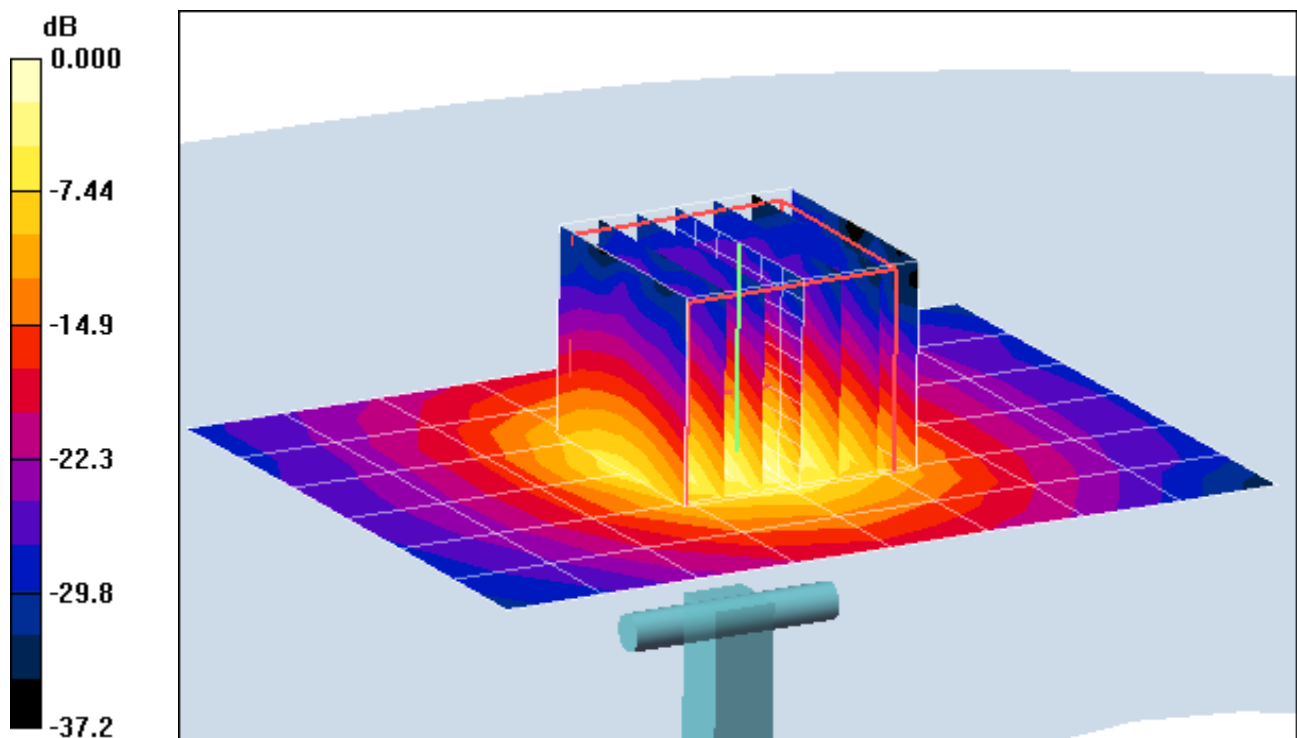
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 8.07 mW/g; SAR(10 g) = 2.2 mW/g

Deviation = -4.38 %



0 dB = 16.6mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

Communication System: CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5500 \text{ MHz}$; $\sigma = 5.84 \text{ mho/m}$; $\epsilon_r = 47.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-02-2011; Ambient Temp: 23.7°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN3550; ConvF(3.39, 3.39, 3.39); Calibrated: 1/21/2009

Sensor-Surface: 2mm (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

5500MHz System Verification

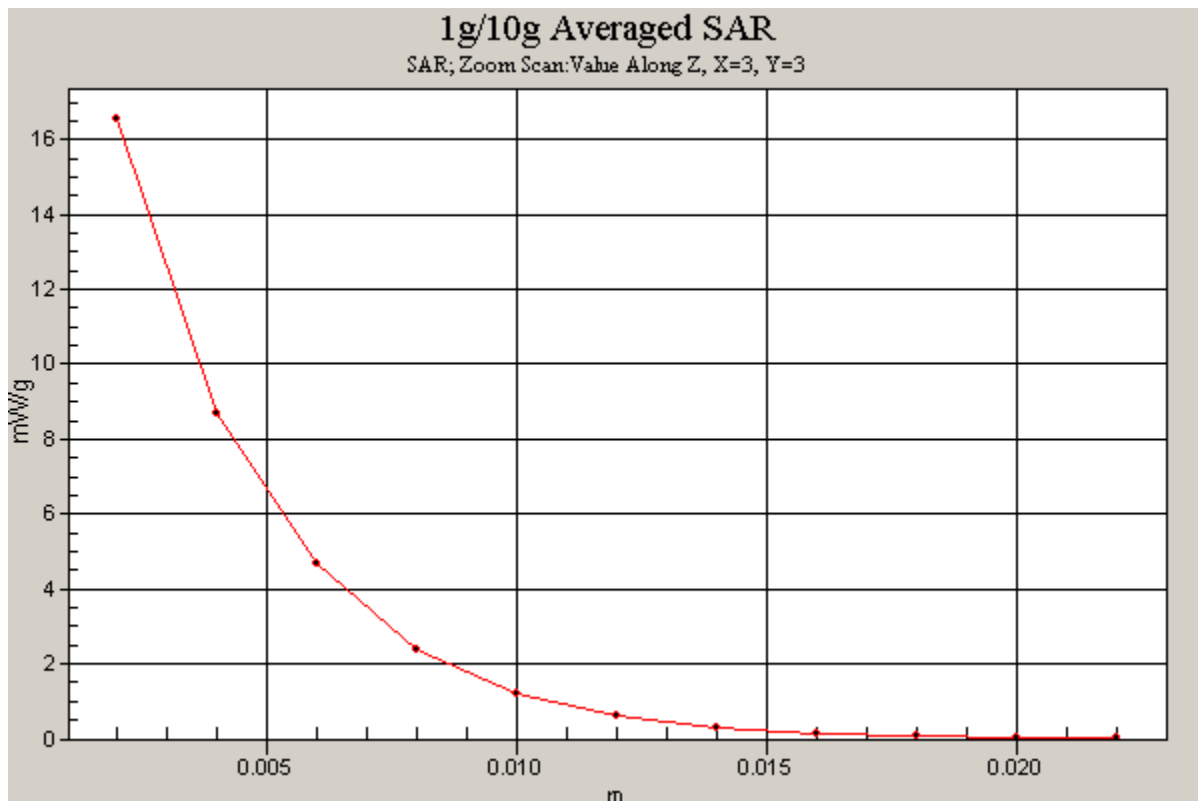
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 8.07 mW/g; SAR(10 g) = 2.2 mW/g

Deviation = -4.38 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

Communication System: CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.677 \text{ mho/m}$; $\epsilon_r = 46.78$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-11-2011; Ambient Temp: 23.7°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5500MHz System Verification

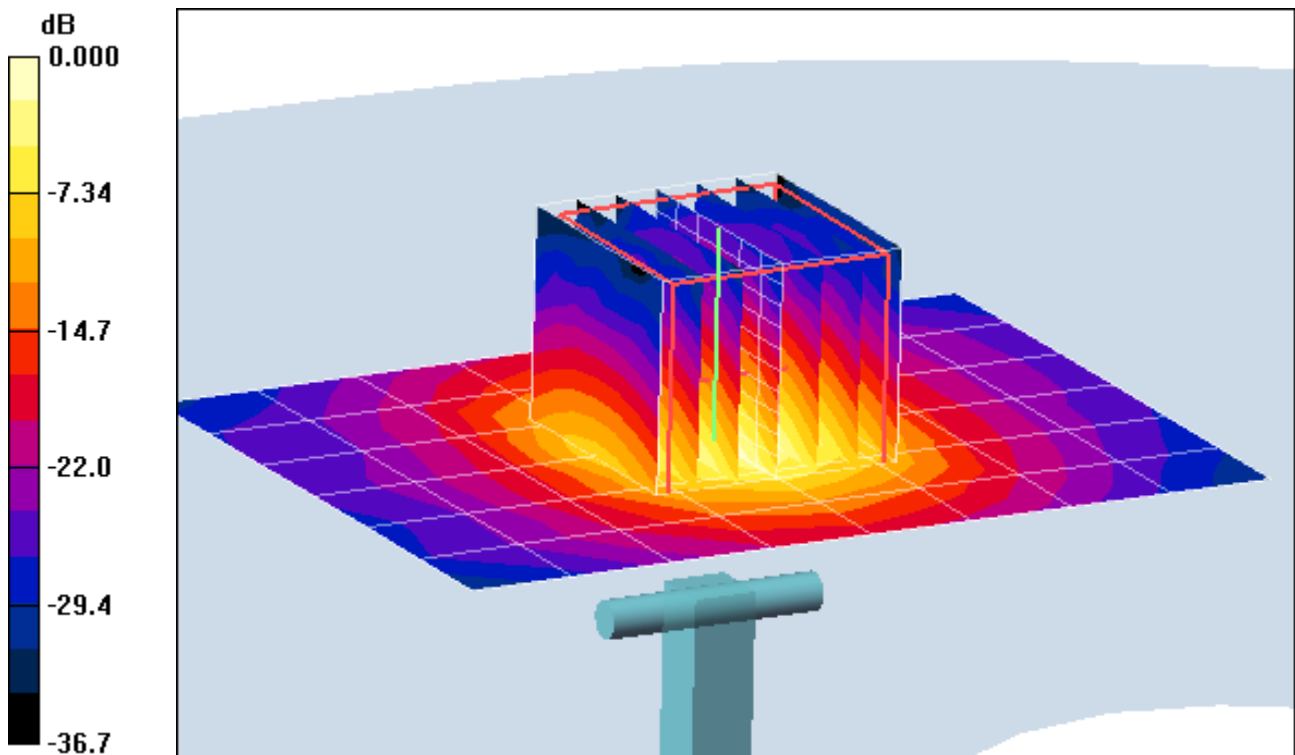
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 8.53 mW/g; SAR(10 g) = 2.34 mW/g

Deviation = 1.07 %



0 dB = 18.0mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

Communication System: CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.677 \text{ mho/m}$; $\epsilon_r = 46.78$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-11-2011; Ambient Temp: 23.7°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5500MHz System Verification

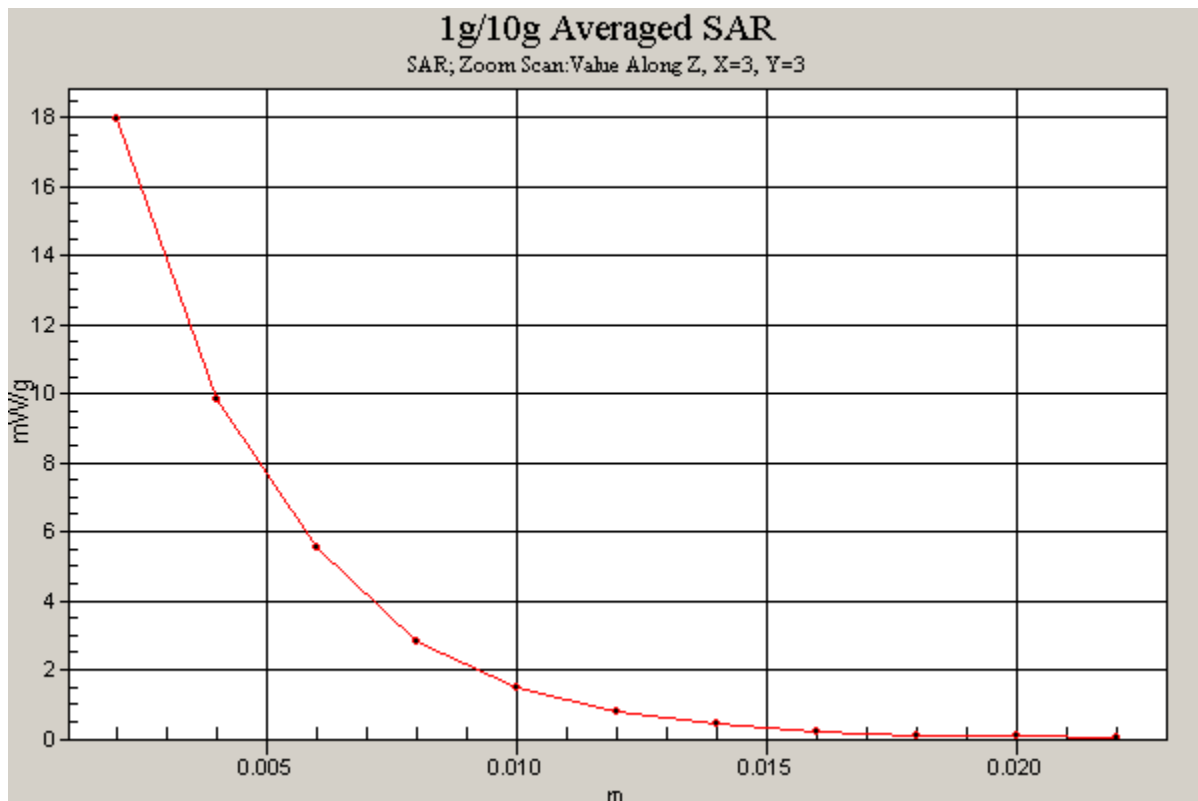
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 8.53 mW/g; SAR(10 g) = 2.34 mW/g

Deviation = 1.07 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5800 \text{ MHz}$; $\sigma = 6.28 \text{ mho/m}$; $\epsilon_r = 46.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-02-2011; Ambient Temp: 23.2°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(3.29, 3.29, 3.29); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5800MHz System Verification

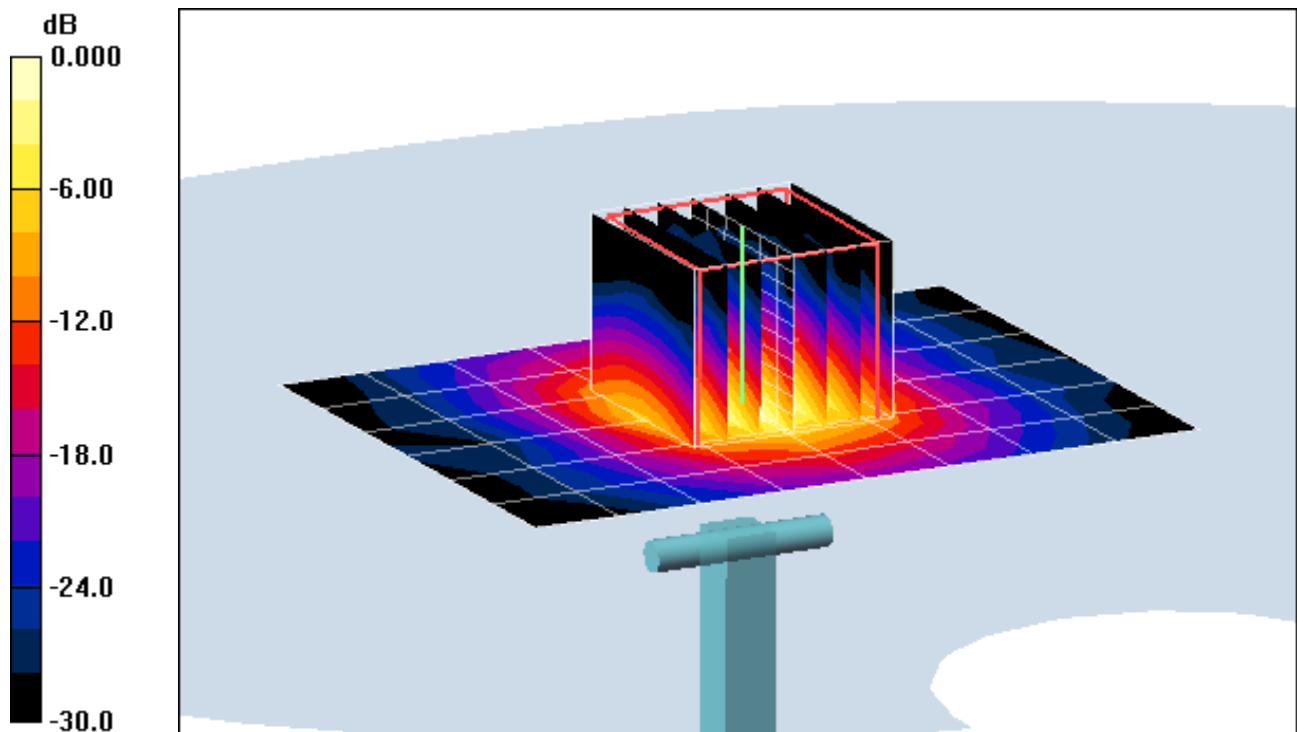
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100mW)

SAR(1 g) = 7.89 mW/g; SAR(10 g) = 2.15 mW/g

Deviation = 5.20 %



0 dB = 16.7mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5800 \text{ MHz}$; $\sigma = 6.28 \text{ mho/m}$; $\epsilon_r = 46.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-02-2011; Ambient Temp: 23.2°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(3.29, 3.29, 3.29); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5800MHz System Verification

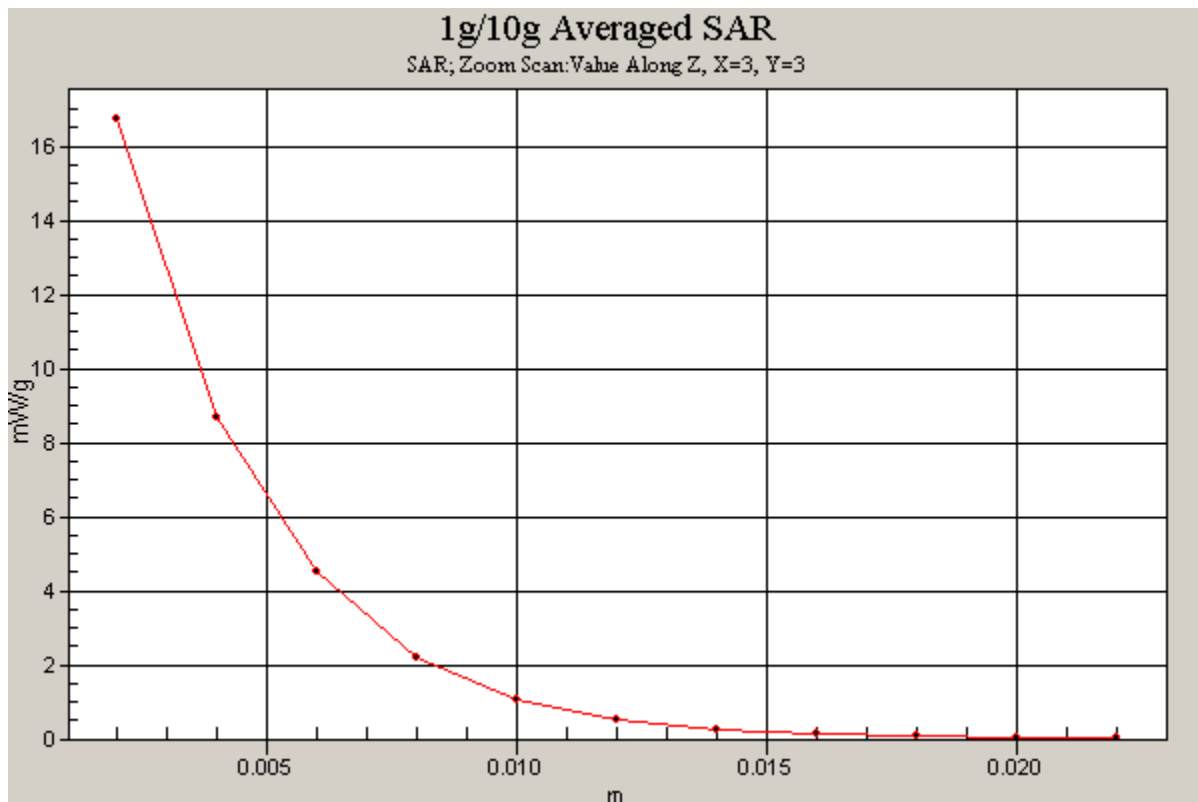
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 7.89 mW/g; SAR(10 g) = 2.15 mW/g

Deviation = 5.20 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 6.121 \text{ mho/m}$; $\epsilon_r = 46.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-11-2011; Ambient Temp: 23.9°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3550; ConvF(3.29, 3.29, 3.29); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5800MHz System Verification

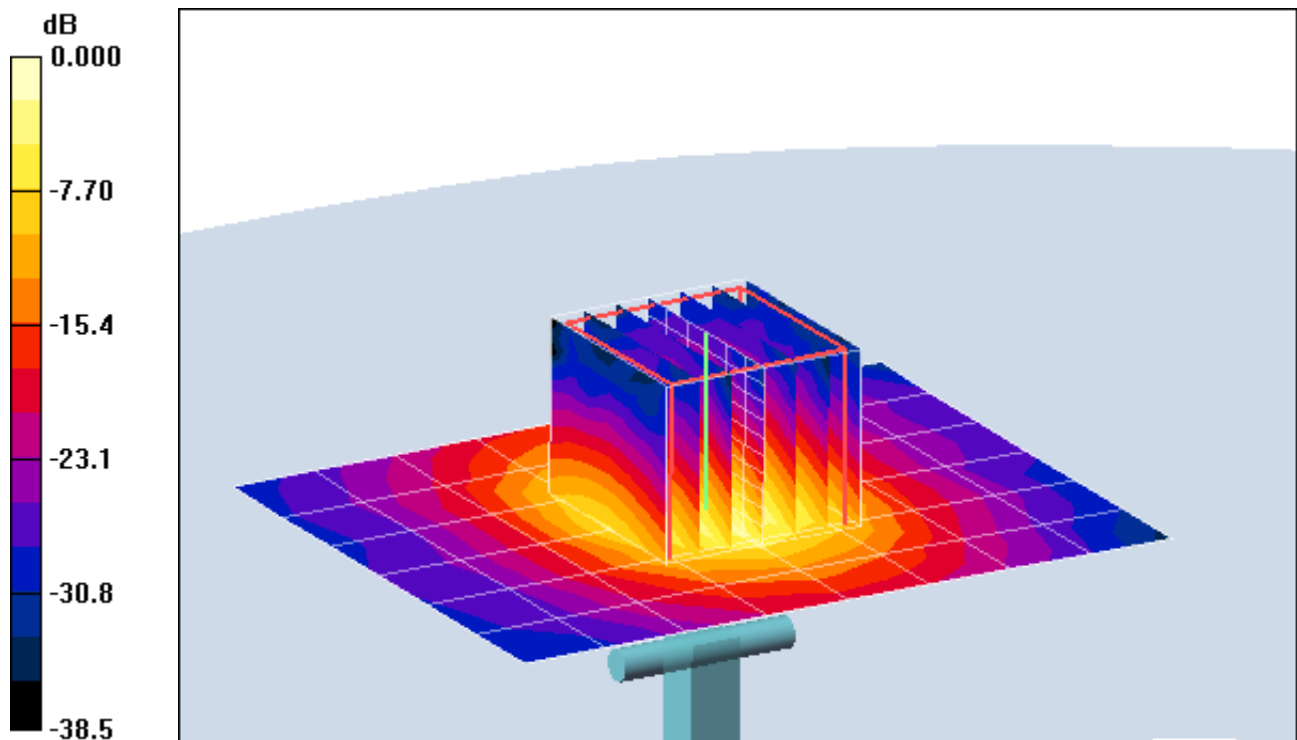
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 7.83 mW/g; SAR(10 g) = 2.18 mW/g

Deviation = 4.40 %



0 dB = 16.5mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 6.121 \text{ mho/m}$; $\epsilon_r = 46.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-11-2011; Ambient Temp: 23.9°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3550; ConvF(3.29, 3.29, 3.29); Calibrated: 2/14/2011

Sensor-Surface: 2mm (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

5800MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 7.83 mW/g; SAR(10 g) = 2.18 mW/g

Deviation = 4.40 %

