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SAR COMPLIANCE EVALUATION REPORT

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

Date of Testing:
04/14/11 - 05/18/11
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Test Report Serial No.:
0Y1104120700-R2.A3L

FCC ID:	**A3LGTP7500**
APPLICANT:	**SAMSUNG ELECTRONICS, CO. LTD.**

EUT Type:	850/1900 GPRS/EDGE/WCDMA/HSPA Tablet with Bluetooth and WLAN
Application Type:	Certification
FCC Rule Part(s):	CFR §2.1093; FCC/OET Bulletin 65 Supplement C [June 2001]
Model(s):	GT-P7500
Tx Frequency:	824.20 - 848.80 MHz (GSM 850) / 1850.20 - 1909.80 MHz (GSM 1900) 826.40 - 846.60 MHz (UMTS V) / 1852.4 - 1907.6 MHz (UMTS II) 5180 - 5240 MHz (IEEE 802.11a/n) / 5260 - 5320 MHz (IEEE 802.11a/n) 5500 - 5700 MHz (IEEE 802.11a/n) 5745 - 5825 MHz (IEEE 802.11a/n) 2412 - 2462 MHz (IEEE 802.11b/g/n)
Conducted Power:	32.50 dBm GSM 850 / 28.65 dBm GSM 1900 22.88 dBm UMTS V / 21.17 dBm UMTS II 12.40 dBm 5.2 GHz WLAN / 12.30 dBm 5.3 GHz WLAN 12.91 dBm 5.5 GHz WLAN / 12.84 dBm 5.8 GHz WLAN 13.86 dBm 2.4 GHz WLAN
Max. SAR Measurement:	0.46 W/kg GSM 850 Body SAR / 1.15 W/kg GSM 1900 Body SAR 0.41 W/kg UMTS V Body SAR / 1.18 W/kg UMTS II Body SAR 0.59 W/kg 5.2 GHz WLAN Body SAR / 0.63 W/kg 5.3 GHz WLAN Body SAR 0.69 W/kg 5.5 GHz WLAN Body SAR / 0.67 W/kg 5.8 GHz WLAN Body SAR 0.62 W/kg 2.4 GHz WLAN Body SAR
Test Device Serial No.:	Pre-Production [S/N: 357750040001041, 357750040001058]

Note: This revised Test Report (S/N: 0Y1104120700-R2.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 and dispose of it accordingly.

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

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

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

Randy Ortanez
President

ACCREDITED
TESTING LABORATORY
CERTIFICATE #2041.01

TABLE OF CONTENTS

1 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.

1.1 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]

2 TEST SITE LOCATION

2.1 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.

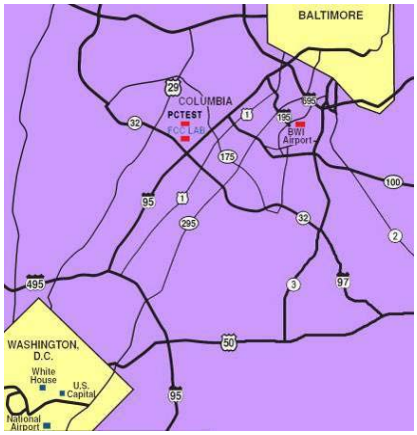


Figure 2-1
Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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.

2.2 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

3 SAR MEASUREMENT SETUP

3.1 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 3-1).

3.2 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.

3.3 System Electronics

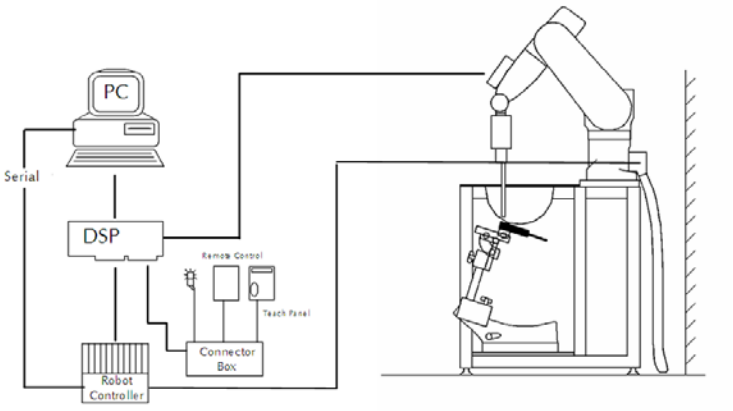


Figure 3-1
SAR Measurement System Setup

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.

3.4 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)
Shell Material: Composite
Thickness: 2.0 ± 0.2 mm

Figure 3-2
SAR Measurement System

4 DASY E-FIELD PROBE SYSTEM

4.1 Probe Measurement System

Figure 4-1
SAR System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration (see Figure 4-3) 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 (see Figure 5-1). The approach is stopped at reaching the maximum.

4.2 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 4-2
Near-Field Probe

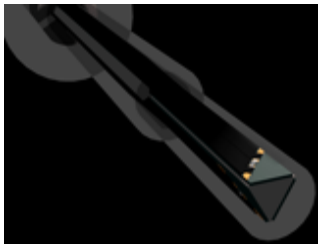


Figure 4-3
Triangular Probe Configuration

5 PROBE CALIBRATION PROCESS

5.1 Dosimetric Assessment Procedure

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm^2) using an RF Signal generator, TEM cell, and RF Power Meter.

5.2 Free Space Assessment

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/cm^2.

5.3 Temperature Assessment

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

where:

Δt = exposure time (30 seconds),
C = heat capacity of tissue (brain or muscle),
ΔT = temperature increase due to RF exposure.

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

where:

σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm^3 for brain tissue)

SAR is proportional to $\Delta T/\Delta t$, the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

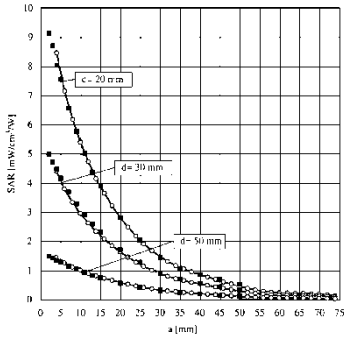


Figure 5-1 E-Field and Temperature measurements at 900MHz [9]

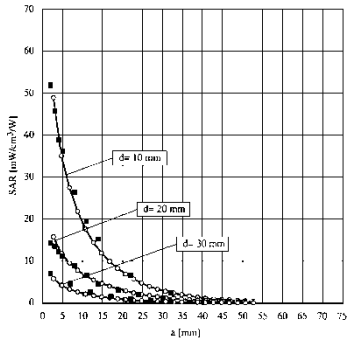


Figure 5-2 E-Field and temperature measurements at 1.9GHz [9]

6 PHANTOM AND EQUIVALENT TISSUES

6.1 SAM Phantoms

Figure 6-1
SAM Phantoms

The SAM Twin Phantom V4.0 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

7 DOSIMETRIC ASSESSMENT & PHANTOM SPECS

7.1 Measurement Procedure

The evaluation was performed using the following procedure:

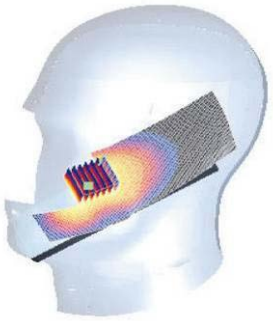


Figure 7-1
Sample SAR Area Scan

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

7.2 Specific Anthropomorphic Mannequin (SAM) Specifications

The phantom for handset SAR assessment testing is a low-loss dielectric shell, with shape and dimensions derived from the anthropometric data of the 90th percentile adult male head dimensions as tabulated by the US Army. The SAM Twin Phantom shell is bisected along the mid-sagittal plane into right and left halves (see Figure 7-2). The perimeter sidewalls of each phantom halves are extended to allow filling with liquid to a depth that is sufficient to minimize reflections from the upper surface. The liquid depth is maintained at a minimum depth of 15 cm.

Figure 7-2
SAM Twin Phantom Shell

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 *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (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.

9 ANTENNA LOCATIONS AND KEY FEATURES

9.1 Antenna and Key Feature Information

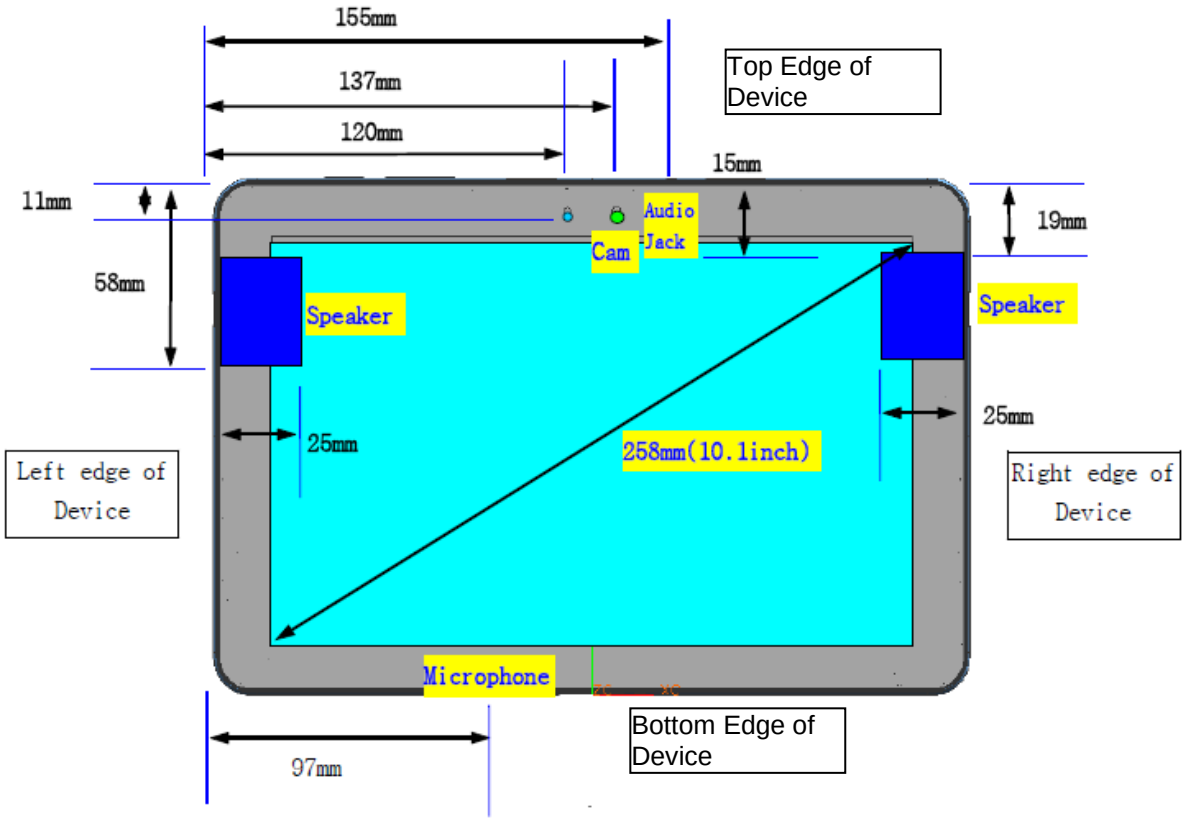


Figure 9-1
Front View of Device

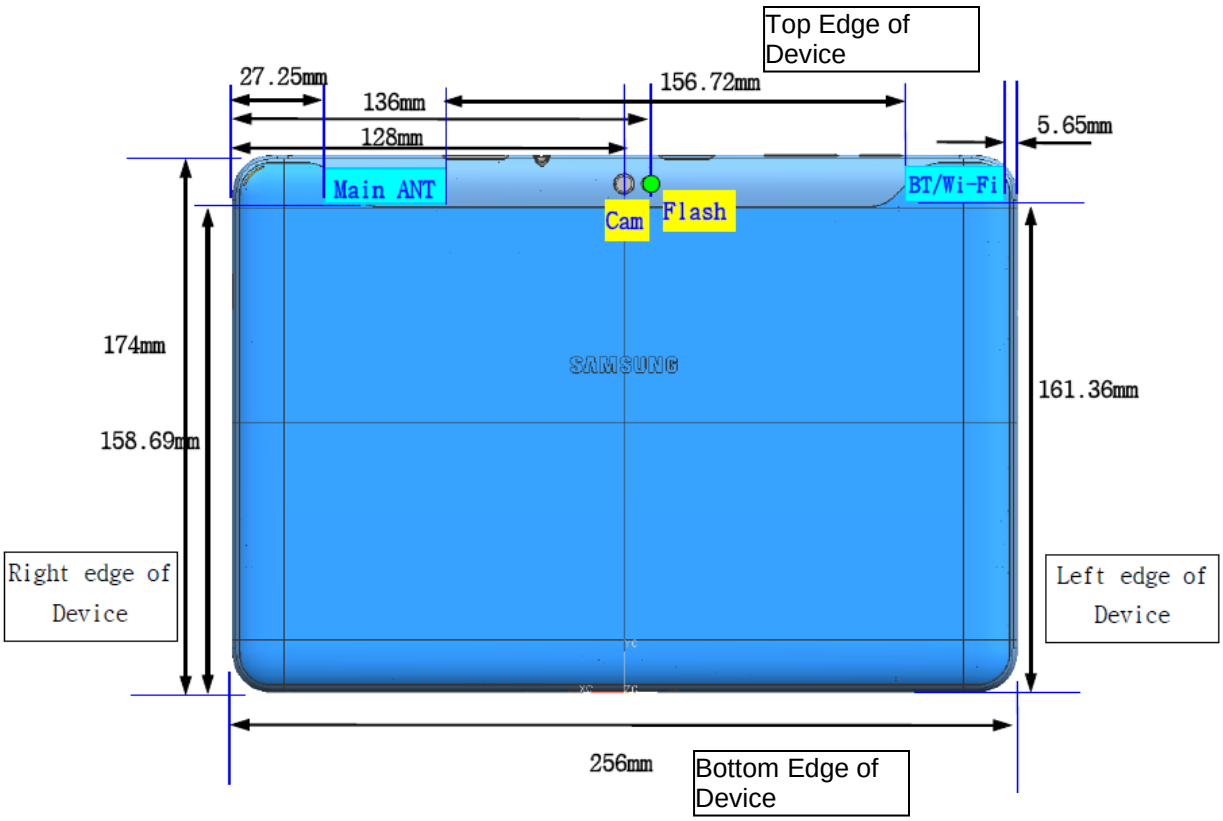


Figure 9-2
Back View of Device

The operational description contains information about designs including sensor size and location.

Note: Rear camera is not for video calls but for standard digital functions.

9.2 Proximity Sensor Information

The sensor pad is located near the upper half of the device to cover exposure conditions to the main antenna. The technical description contains information about sensor size and location. Power reduction levels are provided in Section 11.

9.3 Display Orientations 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 (with KDB 616217 applied to edges with antennas located ≥5 cm from 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.

10 SAR TESTING CONSIDERATIONS & FCC KDB INQUIRIES

10.1 Tablet testing for SAR

Lap-touching devices that have transmitting antennas located less than 20 cm from the lap 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 447498 requirements and are configured with maximum output power during SAR assessment for a worst-case SAR evaluation.

10.2 HSPA Test Considerations for SAR Testing

Since the SAR test setup for HSPA is typically problematic due to static ETFCI and AG requirements for the duration of the SAR test, as long as the maximum average output power for WCDMA and HSPA are similar, testing in WCDMA mode is performed, which also facilitates the exclusion of HSPA testing. HSPA testing was excluded based on the conducted power measurement and SAR results according to KDB 941225 Publication. HSPA+ operations are in the downlink only.

10.3 SAR Testing for Tablet per KDB 447498 Section 4

Per KDB 448498 4) b) i) the bottom face (back of the device) is required to be tested touching the flat phantom.

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 (with KDB 616217 applied to edges with antennas located ≥ 5 cm from 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..

Table 10-1 SAR Requirement Table per KDB pub 616217 D01

Antenna Output Power (mW)	$\leq 60/f_{(GHz)}$	$> 60/f_{(GHz)}$
Individual Transmitter or Antenna	SAR not required	Antenna-to-user distance – $\geq (5 + \frac{1}{2}\cdot n)$ cm: test SAR on highest output channel only $< (5 + \frac{1}{2}\cdot n)$ cm: test SAR according to normal procedures
Simultaneous Transmitting Antennas	SAR not required: antenna-to-antenna or antenna-to-person distance ≥ 5 cm	SAR not required: antenna-to-antenna ≥ $(5 + \frac{1}{2}\cdot n_x + \frac{1}{2}\cdot n_y)$ and antenna-to-person ≥ $(5 + \frac{1}{2}\cdot n_x)$ cm
	SAR not required: when $\sum (SAR_{1g}) <$ SAR limit, antenna-to-antenna distances > 5 cm and antenna-to-user distance > 5 cm if output > 60/f	
	otherwise, test antenna(s) using highest SAR configuration for the individual transmitter/antenna	

Table 10-2
Distance Thresholds calculations KDB 616217 Publication

Mode	Freq (GHz)	Power (mW)	60/f	n={P/(60/f)}-1	distance threshold (5+1/2n) (cm)
GPRS850	0.835	236.0	71.86	2.28	6.1
UMTS850	0.835	194.1	71.86	1.70	5.9
GPRS1900	1.88	101.2	31.91	2.17	6.1
UMTS1900	1.9	130.9	31.58	3.15	6.6
WIFI b	2.437	24.3	24.62	-0.01	5.0
WIFI a	5.2	17.4	11.54	0.51	5.3
	5.3	17.0	11.32	0.50	5.3
	5.5	19.5	10.91	0.79	5.4
	5.8	19.2	10.34	0.86	5.4

Note: GSM Modes represent highest frame-averaged power

According to KDB 616217 publication and the antenna distances from the user to the edges of the device, the main WWAN antenna is required to be tested for SAR at the top and right edges and back of the device for all technologies. The WLAN antenna is required to be tested for SAR at the back, top and left edges of the device.

Per KDB 447498 4) b) since the output power of the antenna is ≤ 60/f (GHz), Bluetooth SAR is not required for both back side and edge exposure conditions.

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

Based on the type and implementation of the sensor, April 2011 FCC-TCB conference notes requires sensor information regarding: (1) additional SAR evaluation at a conservative distance from the device where power back-off is de-activated, and (2) reliability sensor activation data. Reliability sensor activation data is provided for both the back and top edge of the tablet at 0° to cover direct usage and also at 45° to cover angled usage (See Table 10-3, Table 10-4 and Table 10-5).

Since the back-off sensor activation distance at 45° was greater than 6 mm for the top edge, a conservative distance of 5 mm was tested. Details about sensing mechanism and sensor pad location are included in the technical description.

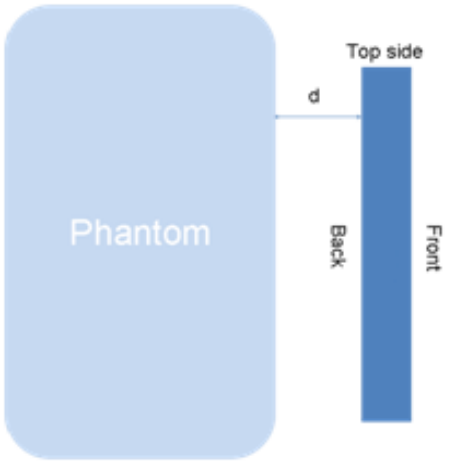
The sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensor in all applicable directions.

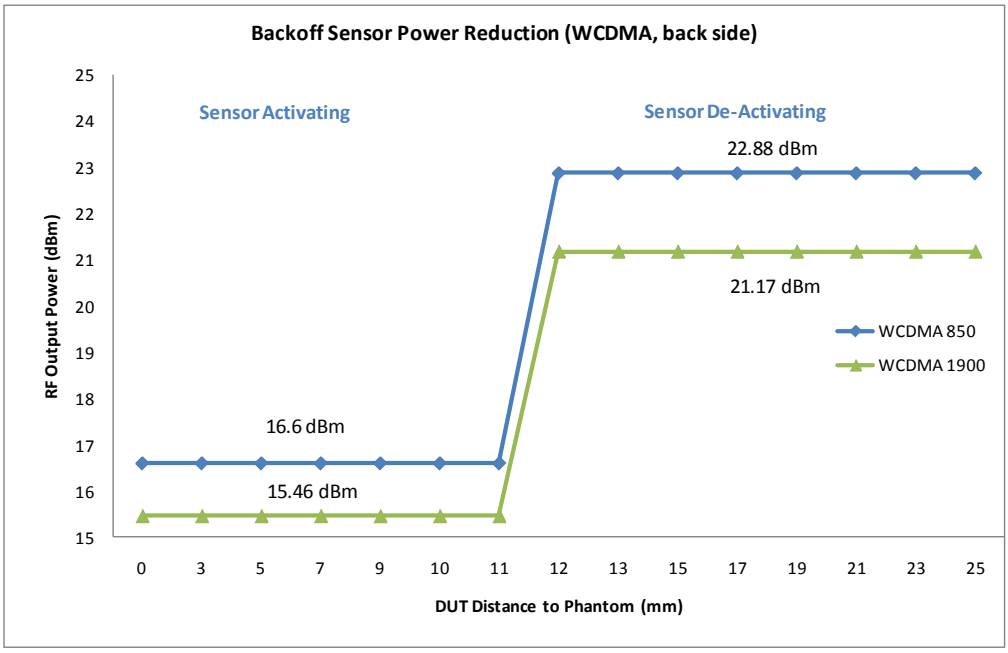
Table 10-3
Distance from Back of Tablet

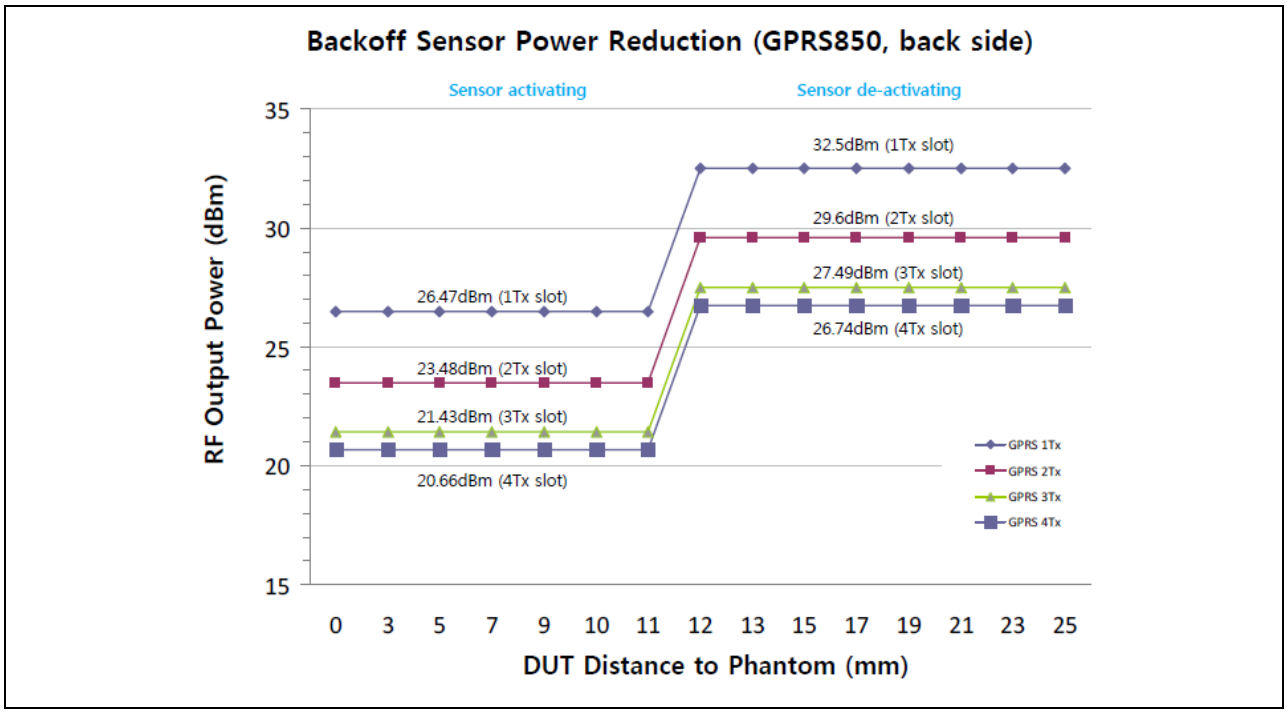
distance in mm	9	10	11	12	13	14
Condition of Sensor in the back of the device	on	on	On	off	off	off

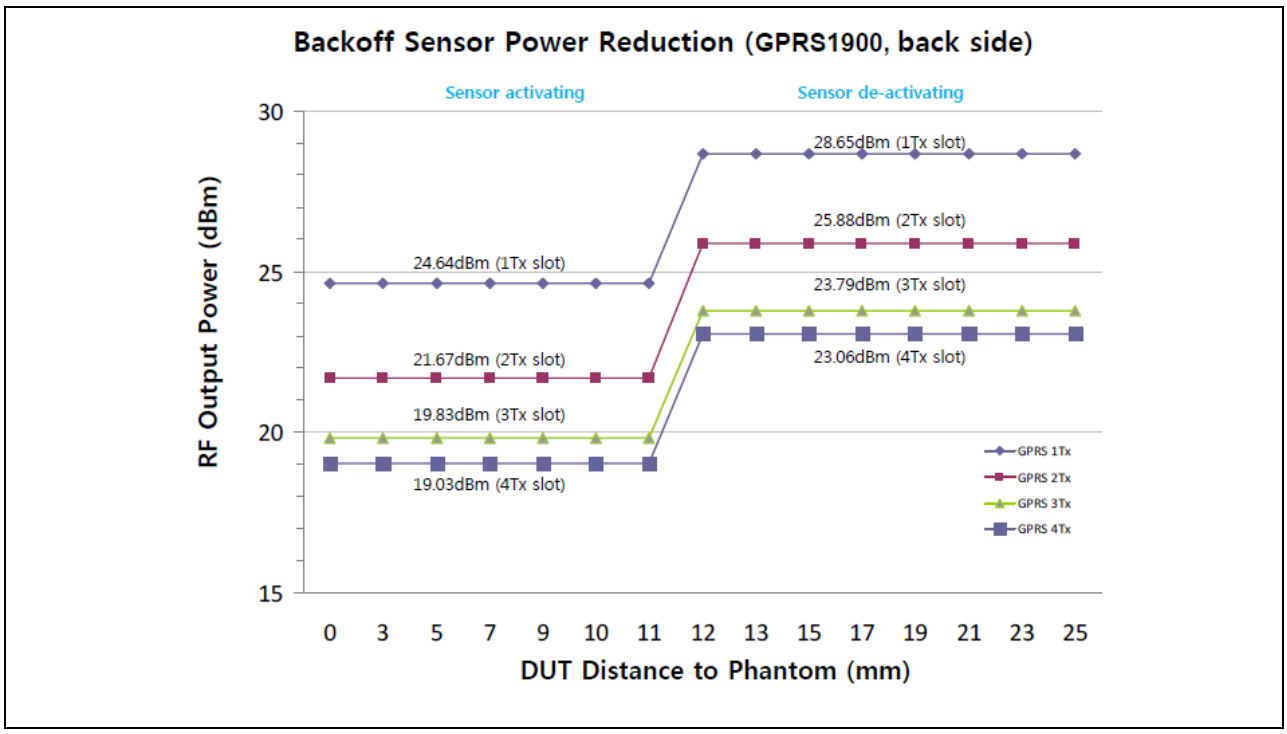
Please see Figure **10-1** for power vs. back-off distance plots for each mode.

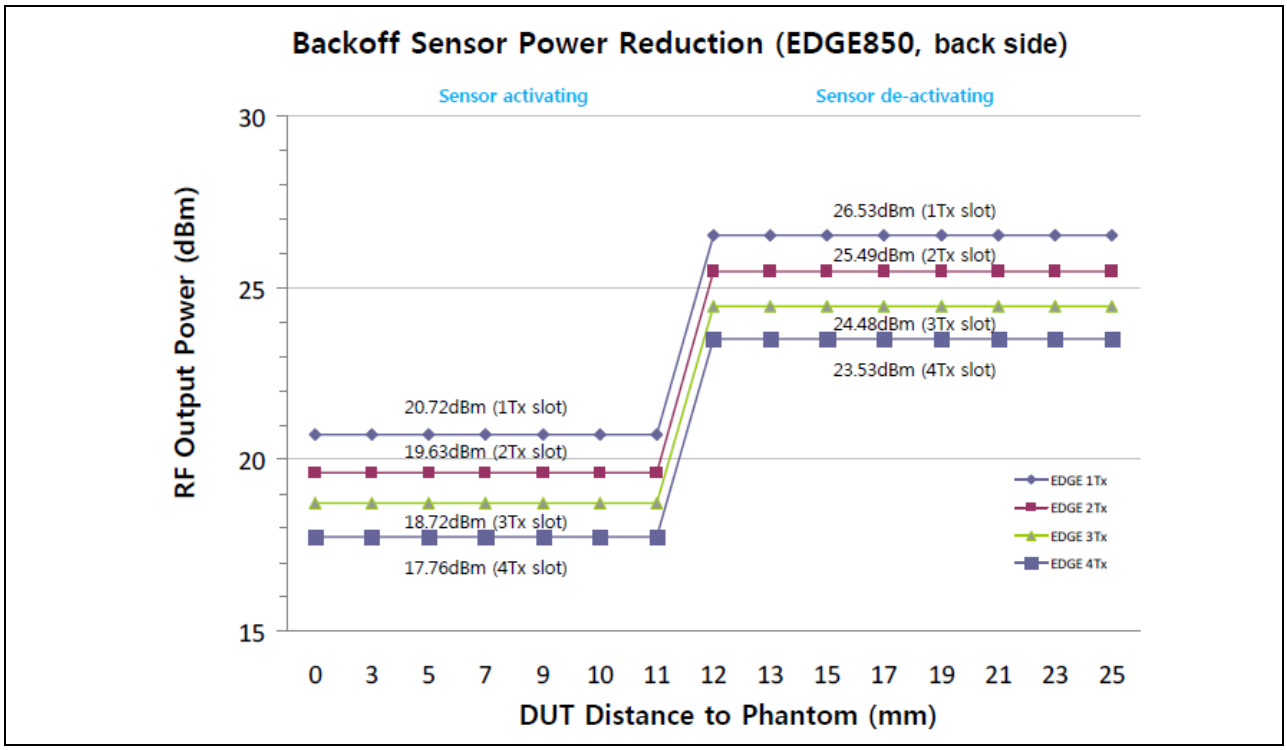
Backoff Sensor Power Reduction (back side)











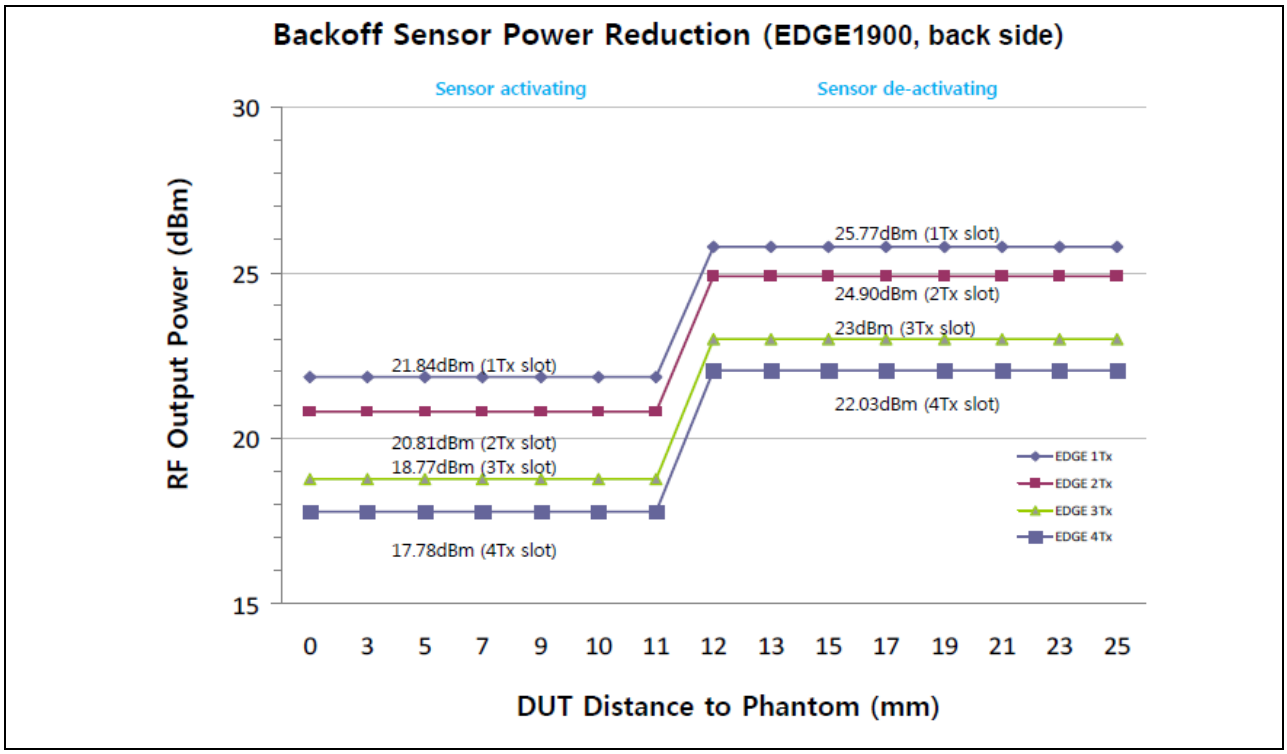
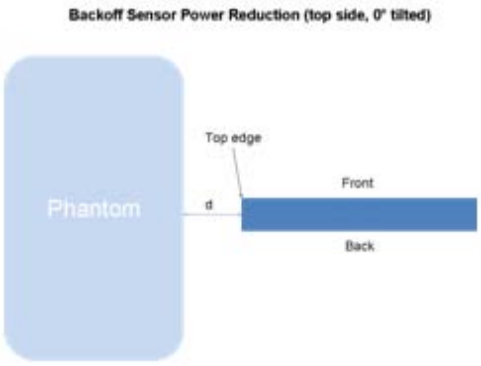


Figure 10-1
Back off Power Reduction Graph – Back at 0° Angle

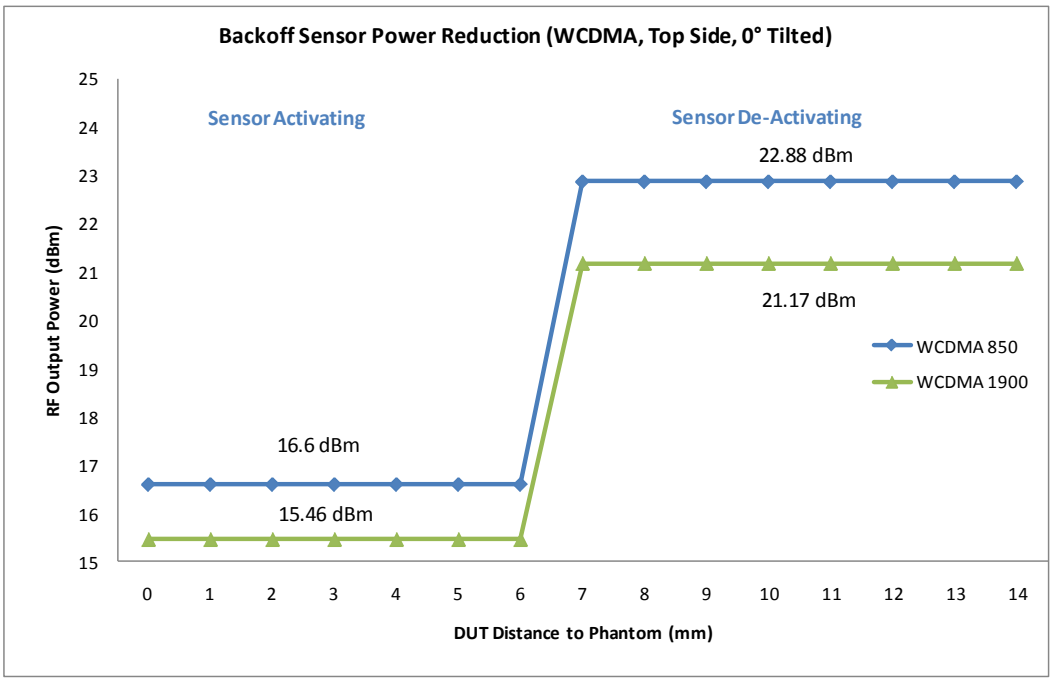
Table 10-4
Distance from Top of Tablet - 0° Angle

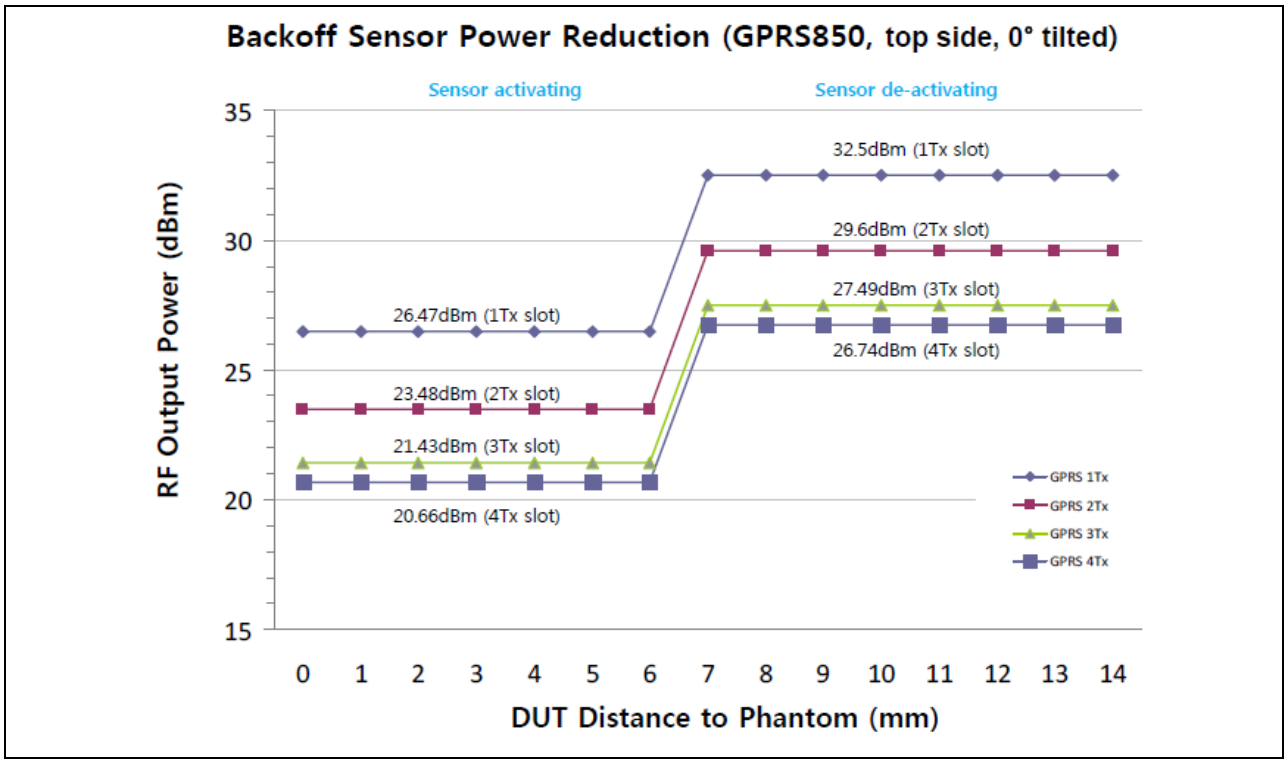
distance in mm	5	6	7	8	9	10
Condition of Sensor in the back of the device	on	on	off	off	off	off

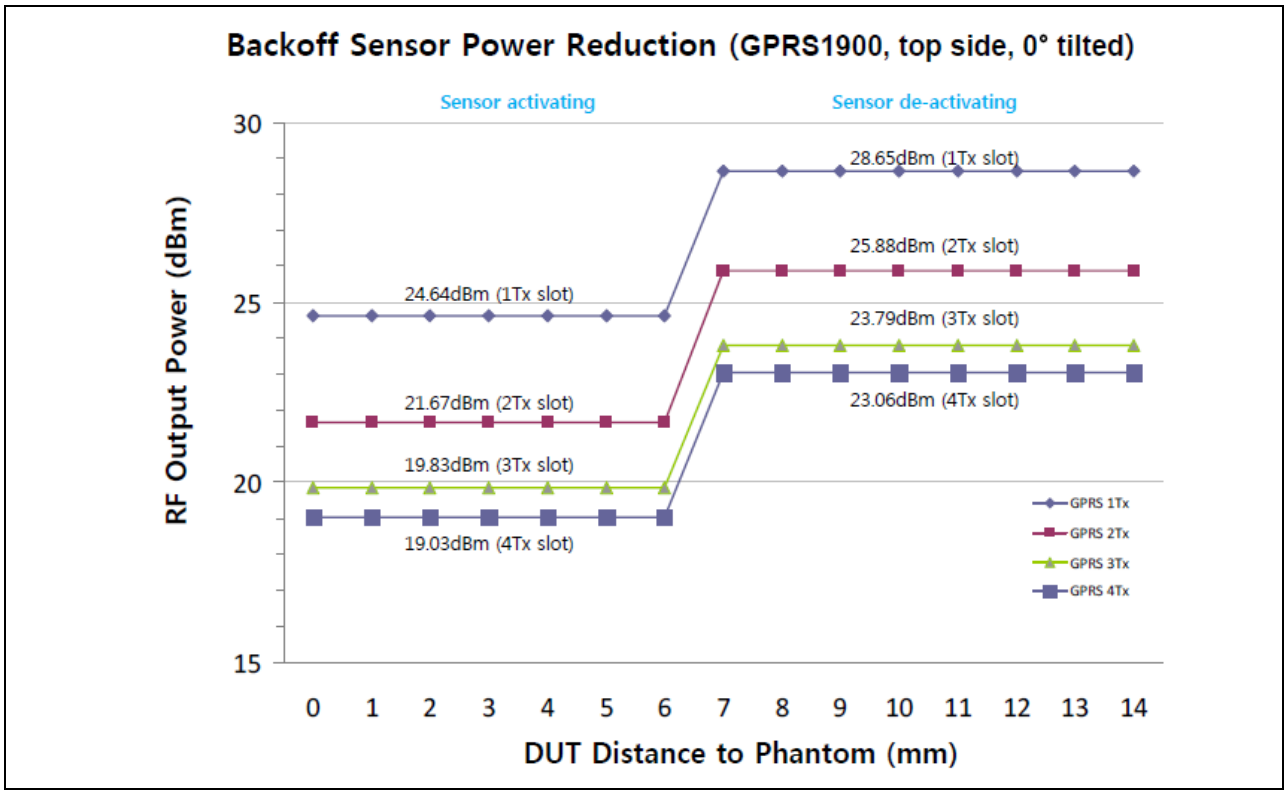
Please see Figure 10-2 for power vs. back-off distance plots for each mode.

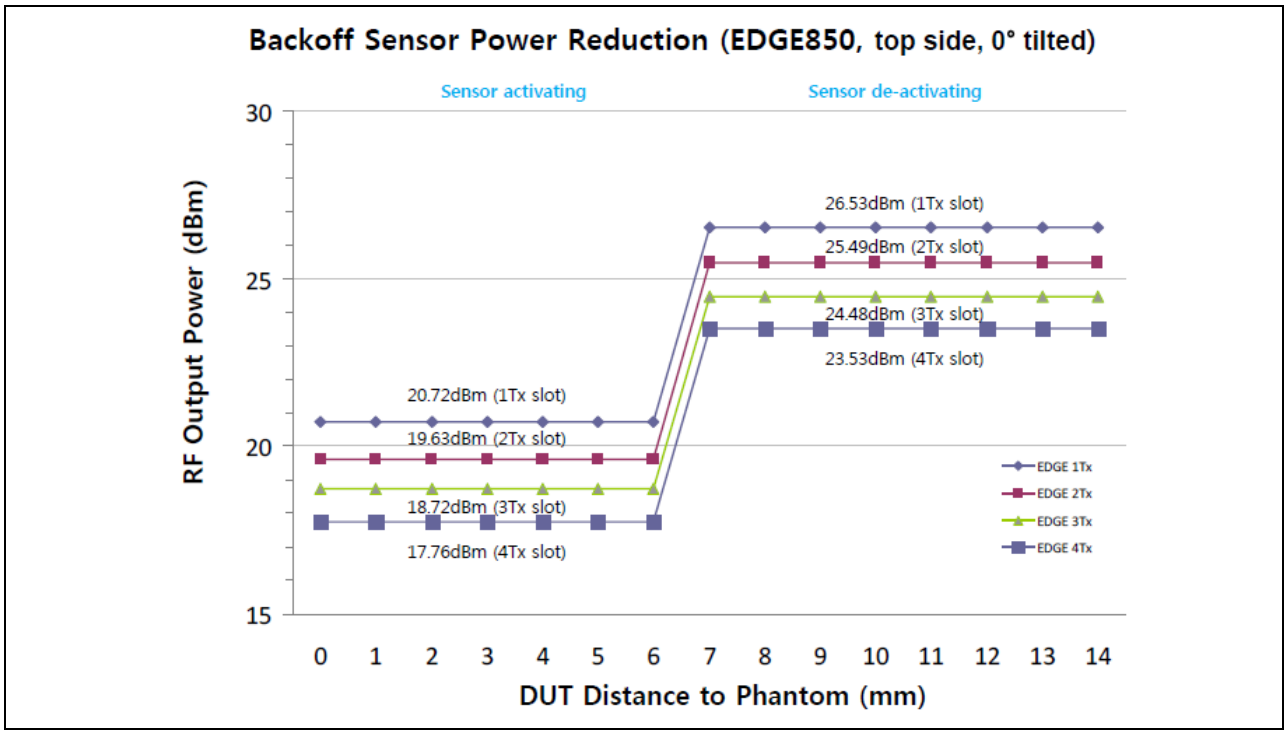


Note: Angle mentioned for top edge description is the perpendicular angle.
Above figure represents “0 degrees”









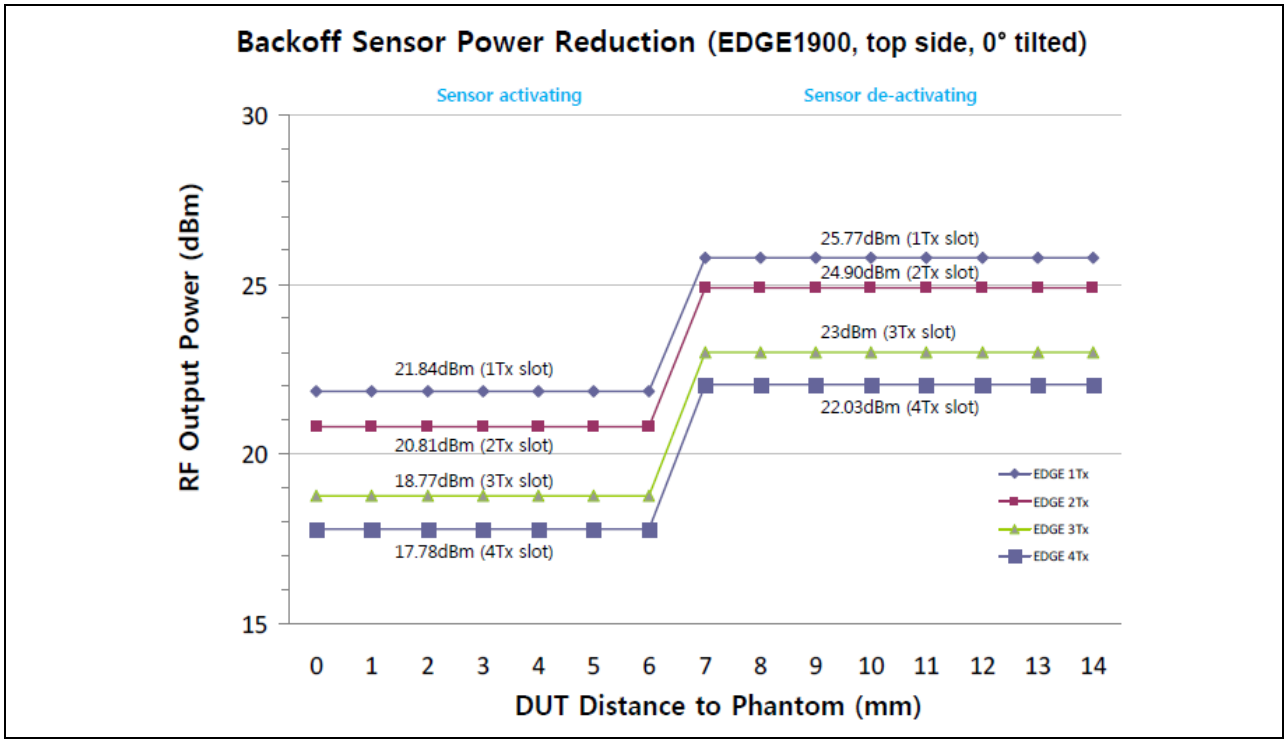
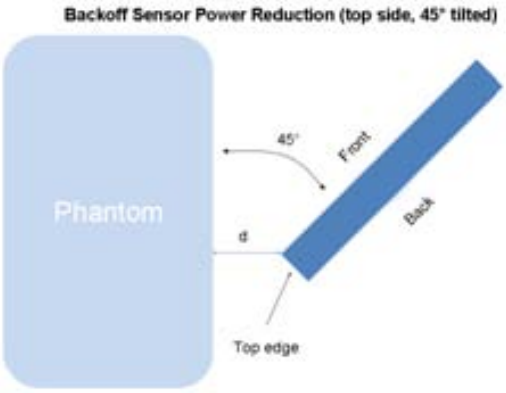


Figure 10-2
Back off Power Reduction Graph – Top at 0° Angle

Table 10-5
Distance from Top of Tablet - 45° Angle

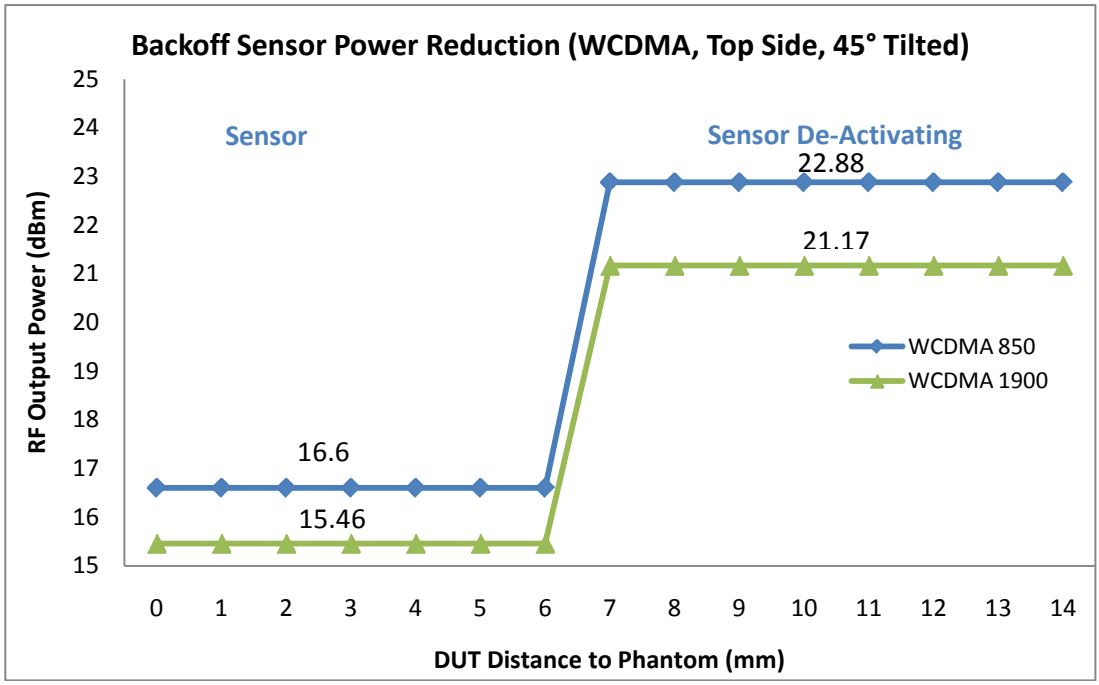
distance in mm	5	6	7	8	9	10
Condition of Sensor in the back of the device	on	on	off	off	off	off

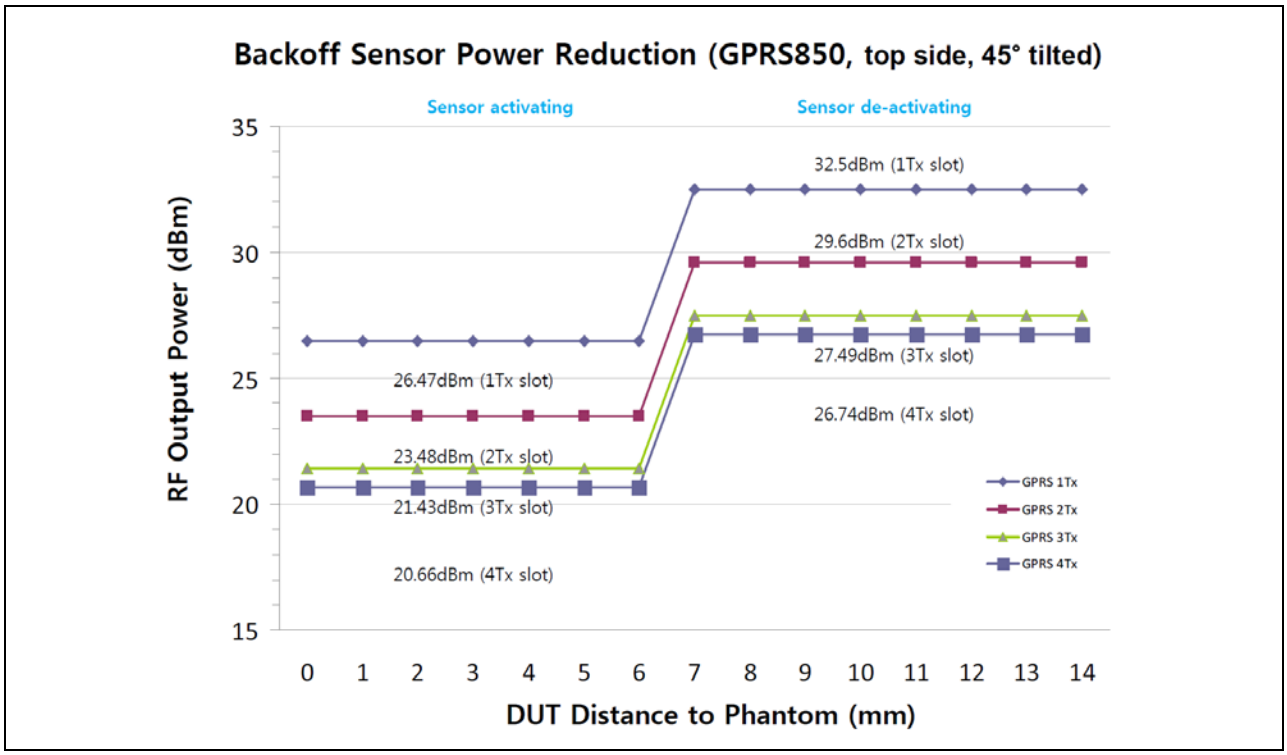
Please see **Figure 10-3** for power vs. back-off distance plots for each mode.

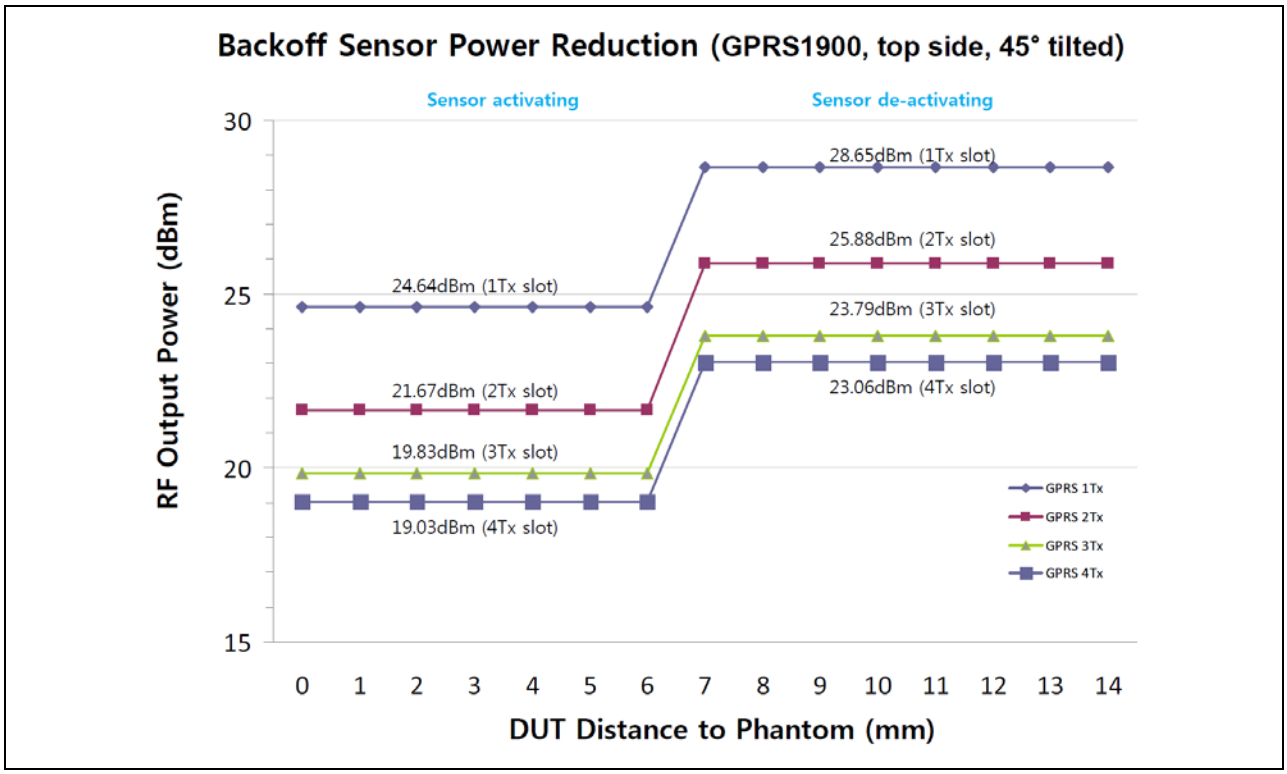


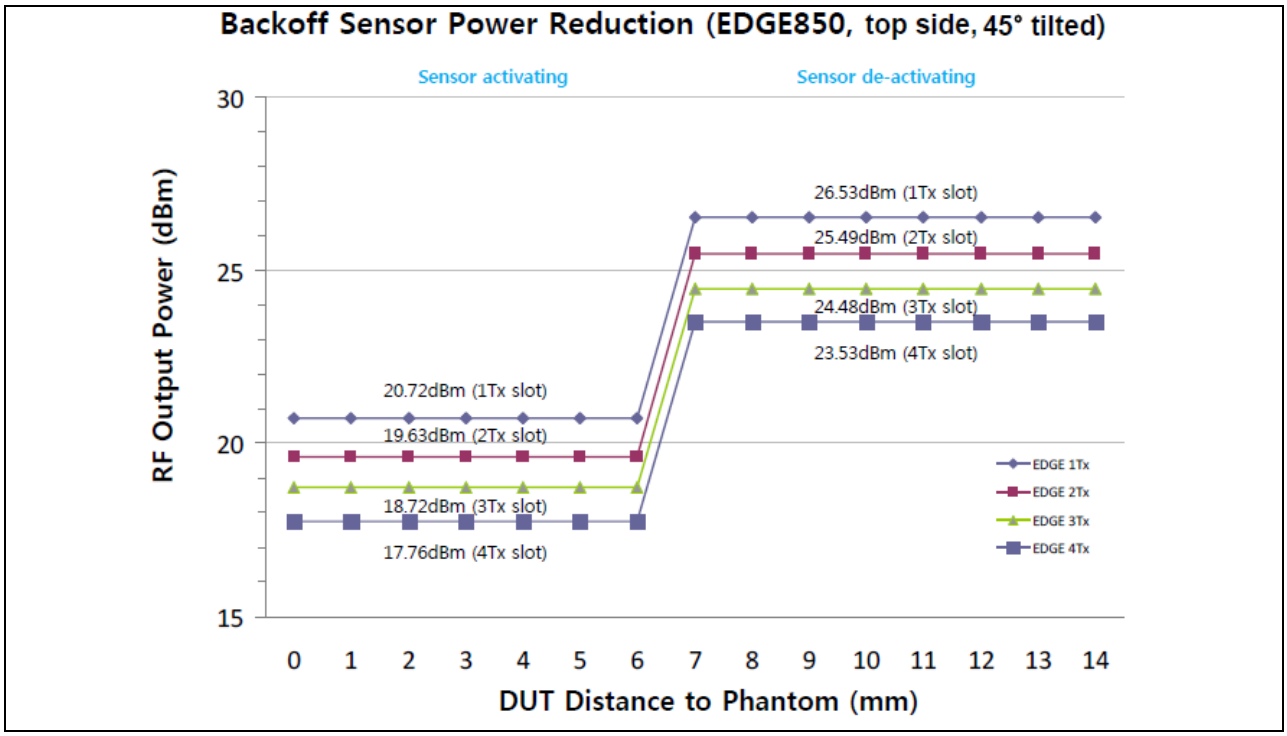
Note: Angle mentioned for top edge description is the perpendicular angle.
Above figure represents “45 degrees” between the screen face and phantom face.

Please note that the 45 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. 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.









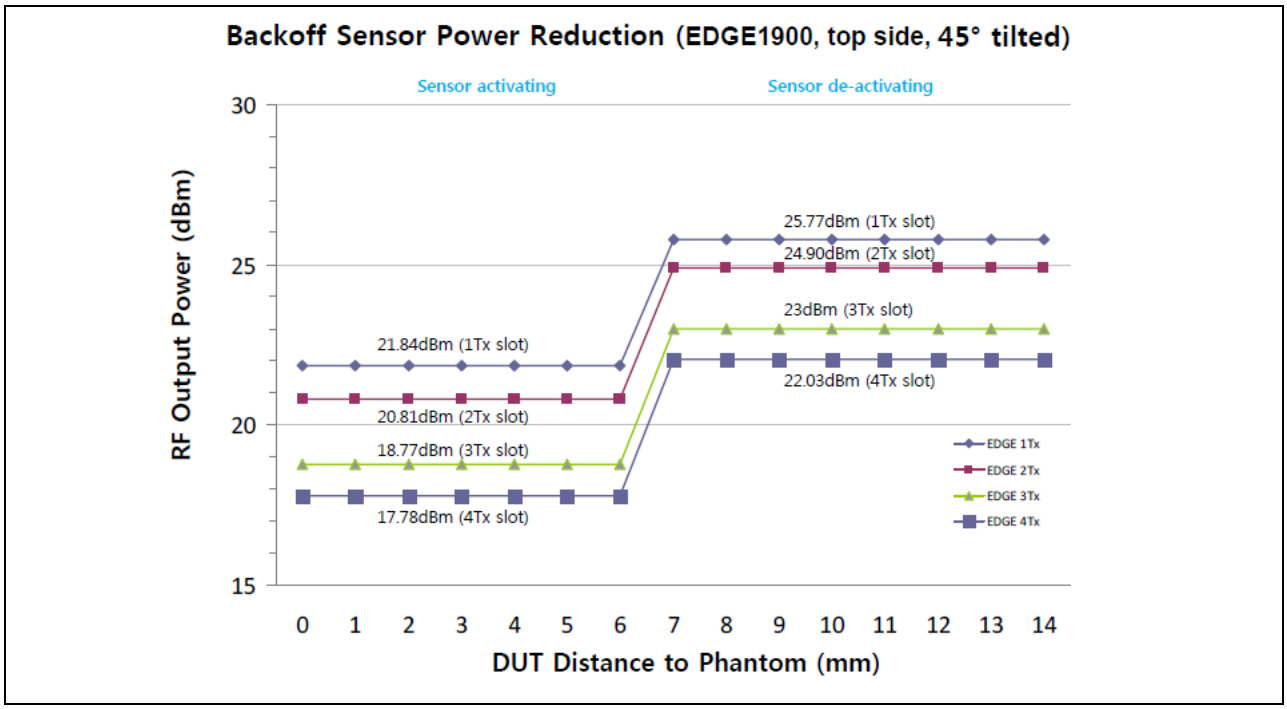


Figure 10-3
Back off Power Reduction Graph – Back at 45° Angle

10.5 Method of SAR Measurement with 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.

To test SAR with power back-off sensor active while touching, the device was placed in maximum power transmit mode with a base station simulator. The device was then positioned to touching position under the tissue equivalent liquid-filled flat phantom, to activate the proximity sensors.

For the additional SAR measurements with the sensors de-activated when the device is positioned away from the user, SAR is needed to be evaluated without power back-off at 10 mm (from the back) and 5mm (from the edge). Since the device sensor detection mechanism may be active at these distances, the sensor had to be disabled via manufacturer test software for SAR test purposes. The device was then placed in maximum power transmit mode with a base station simulator under the tissue equivalent liquid-filled flat phantom at a distance of 10 mm for the back and 5 mm for the top edge with the sensor deactivated (via manufacturer test software) and then tested at maximum power.

11 FCC 3G MEASUREMENT PROCEDURES

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

11.1 Procedures Used to Establish RF Signal for SAR

The device was placed into a simulated call using a base station simulator in a shielded chamber. Such test signals offer a consistent means for testing SAR and are recommended for evaluating SAR [4]. SAR measurements were taken with a fully charged battery. In order to verify that the device was tested and maintained at full power, it was configured with the base station simulator. The SAR measurement software calculates a reference point at the start and end of the test to check for power drifts. If SAR deviations of more than 5% occurred, the tests were repeated.

11.2 Procedures Used to Establish RF Signal for SAR HSPA Devices

The following procedures are applicable to HSDPA data devices operating under 3GPP Release 5. Body exposure conditions are typically applicable to these devices, including handsets and data modems operating in various electronic devices. HSDPA operates in conjunction with WCDMA and requires an active DPCCH. The default test configuration is to measure SAR in WCDMA without HSDPA, with an established radio link between the DUT and a communication test set using a 12.2 kbps RMC configured in Test Loop Mode 1; and test HSDPA within FRC and a 12.2 kbps RMC using the highest SAR configuration in WCDMA. SAR is selectively confirmed for other physical channel configurations according to output power, exposure conditions and device operating capabilities. Maximum output power is verified according to 3GPP TS 23.121 (Release 5) and SAR must be measured according to these maximum output conditions.

11.3 SAR Measurement Conditions for HSPA Data Devices

11.3.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121 (release 5), using the appropriate RMC with TPC (transmit power control) set to all “1s”. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH) is tabulated in the test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations is identified.

11.3.2 Body SAR Measurements

SAR for body exposure configurations are measured according to the ‘Body SAR Measurements’ procedures in the ‘WCDMA Handsets’ section of the FCC 3G document. In addition, body SAR is also measured for HSPA when the maximum average output of each RF channel with HSPA active is at least ¼ dB higher than that measured without HSPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is above 75% of the SAR limit. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 with power control algorithm 2, according to the highest body SAR configuration in 12.2 kbps RMC without HSPA.

Due to inner loop power control requirements in HSPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and EDCH configurations for HSPA should be configured according to the β values indicated below

as well as other applicable procedures described in the 'WCDMA Handset' and 'Release 5 HSDPA Data Devices' sections of the FCC 3G document.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{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	β_{ed1}: 47/15 β_{ed2}: 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (4)	15/15 (4)	64	15/15 (4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_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 β_c = 10/15 and β_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 β_c = 14/15 and β_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.

11.4 RF Conducted Powers

11.4.1 GSM Conducted Powers

Table 11-1
Maximum GSM Powers

		Burst - Averaged Power							
		GPRS/EDGE Data (GMSK)				*EDGE Data (8PSK)*			
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	32.48	**29.58**	27.45	**26.67**	26.48	25.38	24.43	23.49
	190	32.49	**29.57**	27.49	**26.69**	26.51	25.40	24.46	23.52
	251	32.50	**29.60**	27.47	**26.74**	26.53	25.49	24.48	23.53
PCS	512	28.65	25.85	23.77	**23.06**	25.77	24.90	23.00	22.03
	661	28.51	25.73	23.79	**23.00**	25.67	24.85	22.87	21.87
	810	28.33	25.88	23.60	**22.81**	25.59	24.63	22.76	21.80

		Calculated Frame-Averaged Output Power							
		GPRS/EDGE Data (GMSK)				*EDGE Data (8PSK)*			
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	23.45	**23.56**	23.19	**23.66**	17.45	19.36	20.17	20.48
	190	23.46	**23.55**	23.23	**23.68**	17.48	19.38	20.20	20.51
	251	23.47	**23.58**	23.21	**23.73**	17.50	19.47	20.22	20.52
PCS	512	19.62	19.83	19.51	**20.05**	16.74	18.88	18.74	19.02
	661	19.48	19.71	19.53	**19.99**	16.64	18.83	18.61	18.86
	810	19.30	19.86	19.34	**19.80**	16.56	18.61	18.50	18.79

Table 11-2
Reduced GSM Powers

		Burst-Averaged Output Power							
		GPRS/EDGE Data (GMSK)				*EDGE Data (8PSK)*			
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	26.42	**23.40**	21.39	**20.60**	20.57	19.52	18.61	17.66
	190	26.43	**23.42**	21.41	**20.62**	20.61	19.61	18.67	17.71
	251	26.47	**23.48**	21.43	**20.66**	20.72	19.63	18.72	17.76
PCS	512	24.64	21.67	19.83	**19.03**	21.84	20.81	18.77	17.78
	661	24.52	21.61	19.75	**18.88**	21.70	20.69	18.63	17.64
	810	24.35	21.66	19.60	**18.81**	21.56	20.59	18.57	17.56

		Calculated Frame-Averaged Output Power							
		GPRS/EDGE Data(GMSK)				*EDGE Data (8PSK)*			
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	17.39	**17.38**	17.13	**17.59**	11.54	13.50	14.35	14.65
	190	17.40	**17.40**	17.15	**17.61**	11.58	13.59	14.41	14.70
	251	17.44	**17.46**	17.17	**17.65**	11.69	13.61	14.46	14.75
PCS	512	15.61	15.65	15.57	**16.02**	12.81	14.79	14.51	14.77
	661	15.49	15.59	15.49	**15.87**	12.67	14.67	14.37	14.63
	810	15.32	15.64	15.34	**15.80**	12.53	14.57	14.31	14.55

Note: Frame-averaged power was calculated from the measured burst-averaged power. The bolded GPRS/EDGE modes were selected for SAR testing according to the highest frame-averaged output power table per KDB Publication 941225 D03.

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

11.4.2 HSPA Conducted Powers

Table 11-3
Maximum WCDMA Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			βc	βd	3GPP Recommended MPR (dB)
			4132	4183	4233	9262	9400	9538			
99	WCDMA	12.2 kbps RMC	**22.88**	22.62	22.40	**21.17**	20.63	20.79	-	-	
6	HSDPA	Subtest 1	22.21	21.91	21.76	19.99	19.54	19.66	2	15	0
6		Subtest 2	22.22	21.94	21.78	20.02	19.56	19.75	11	15	0
6		Subtest 3	**22.26**	21.96	21.80	**20.06**	19.57	19.77	15	8	0.5
6		Subtest 4	22.21	21.92	21.76	20.03	19.56	19.72	15	4	0.5
6	HSUPA	Subtest 1	21.69	21.48	21.08	18.66	18.34	18.12	10	15	0
6		Subtest 2	20.16	19.95	19.55	16.56	16.24	16.00	6	15	2
6		Subtest 3	21.01	20.80	20.39	17.32	17.34	16.72	15	9	1
6		Subtest 4	20.55	20.14	19.77	16.84	16.44	16.17	2	15	2
6		Subtest 5	**22.19**	21.66	21.51	**19.79**	19.30	19.54	14	15	0

Table 11-4
Reduced WCDMA Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			βc	βd	3GPP Recommended MPR (dB)
			4132	4183	4233	9262	9400	9538			
99	WCDMA	12.2 kbps RMC	16.60	16.51	16.38	15.46	14.95	15.19	-	-	
6	HSDPA	Subtest 1	15.82	15.70	15.62	14.76	14.26	14.51	2	15	0
6		Subtest 2	15.78	15.70	15.65	14.76	14.28	14.54	11	15	0
6		Subtest 3	15.79	15.69	15.62	14.75	14.30	14.53	15	8	0.5
6		Subtest 4	15.77	15.68	15.60	14.64	14.21	14.48	15	4	0.5
6	HSUPA	Subtest 1	16.31	16.23	16.11	15.21	14.71	15.00	10	15	0
6		Subtest 2	14.26	14.19	14.07	13.52	13.74	13.55	6	15	2
6		Subtest 3	15.27	15.21	15.11	14.03	13.53	13.81	15	9	1
6		Subtest 4	14.81	14.68	14.59	15.44	14.97	13.55	2	15	2
6		Subtest 5	15.78	15.70	15.64	14.53	14.05	14.27	14	15	0

MPR is not required when the sensor is active since the power is lower than the maximum output power. Behavior in HSUPA subtests are acceptable by the applicant's operation with the chipset and sensor operation. Detailed information about the MPR implemented by the applicant is included in the operational description explaining how the MPR is applied for this model.

Figure 11-1
Power Measurement Setup

11.5 Summary of Power Reduction due to Proximity Sensor

Mode	Level of Power
GPRS 850	6
GPRS 1900	4
UMTS V	6
UMTS II	6

Note: There is no proximity sensor power reduction for WLAN modes.

12 SAR TESTING WITH IEEE 802.11 TRANSMITTERS

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

12.1 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.

12.2 Frequency Channel Configurations [27]

802.11 a/b/g and 4.9 GHz operating modes are tested independently according to the service requirements in each frequency band. 802.11 b/g modes are tested on channels 1, 6 and 11. 802.11a 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. 4.9 GHz is tested on channels 1, 10 and 5 or 6, whichever has the higher output power, for 5 MHz channels; channels 11, 15 and 19 for 10 MHz channels; and channels 21 and 25 for 20 MHz channels. These are referred to as the "default test channels". 802.11g mode was evaluated only if the output power was 0.25 dB higher than the 802.11b mode.

Table 12-1
802.11 Test Channels per FCC Requirements

Mode		GHz	Channel	Turbo Channel	"Default Test Channels"			
					§15.247		UNII	
					802.11b	802.11g		
802.11 b/g		2.412	1		√	∇		
		2.437	6	6	√	∇		
		2.462	11		√	∇		
802.11a	UNII	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		√			

Table 12-2
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 12-3
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 12-4
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 12-5
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	11.90	11.90	11.83	11.91	11.85	11.85	11.82	11.90
802.11a	*5620*	*124*	11.78	11.90	11.82	11.90	11.83	11.91	11.80	11.80
802.11a	5640	128	11.82	12.02	11.98	11.96	12.00	12.00	11.99	12.10
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

Table 12-6
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	12.04	12.12	12.21	12.12	12.20	12.32	12.29	12.24
802.11n	**5620**	**124**	12.12	12.00	12.17	12.14	12.31	12.26	12.25	12.24
802.11n	5640	128	12.26	12.20	12.32	12.45	12.38	12.48	12.50	12.32
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**	12.61	12.45	12.65	12.60	12.70	12.60	12.71	12.75
802.11n	5765	153	12.60	12.60	12.72	12.75	12.72	12.66	12.68	12.80
802.11n	**5785**	**157**	12.65	12.67	12.80	12.81	12.70	12.81	12.87	12.98
802.11n	**5805**	**161**	12.79	12.70	12.80	12.88	12.88	12.89	12.88	12.86
802.11n	5825	165	12.44	12.14	12.13	12.32	12.23	12.36	12.41	12.43

Notes:

1. The maximum RF output power for all channels across all data rates was measured.

2. Per KDB 248227 Publication, for 5 GHZ bands with 1g SAR < 0.8 W/kg, the highest default channel per 5 GHz band across the lowest data rates were evaluated for SAR.

3. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes: IEEE 802.11n for 5GHz bands and IEEE 802.11g/n for 2.4 GHz Bands and higher data rates for both bands were not investigated since the average output powers were not greater than 0.25 dB that of the corresponding channel in the lowest data rate. Bolded powers in Section 12.2 were tested for SAR.

4. WIFI has no power back-off capability in this device.

Figure 12-1
Power Measurement Setup

13 SYSTEM VERIFICATION

13.1 Tissue Verification

Table 13-1
Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	%dev σ	%dev ε
04/20/2011	835B	820	0.953	53.35	0.969	55.284	-1.65%	-3.50%
		835	0.965	53.27	0.970	55.200	-0.52%	-3.50%
		850	0.974	53.05	0.988	55.154	-1.42%	-3.81%
04/25/2011	835B	820	0.924	52.55	0.969	55.284	-4.64%	-4.95%
		835	0.933	52.46	0.970	55.200	-3.81%	-4.96%
		850	0.967	52.55	0.988	55.154	-2.13%	-4.72%
04/25/2011	1900B	1850	1.482	52.83	1.520	53.300	-2.50%	-0.88%
		1880	1.503	52.76	1.520	53.300	-1.12%	-1.01%
		1910	1.547	52.52	1.520	53.300	1.78%	-1.46%
05/18/2011	1900B	1850	1.445	51.24	1.520	53.300	-4.93%	-3.86%
		1880	1.446	50.94	1.520	53.300	-4.87%	-4.43%
		1910	1.516	50.78	1.520	53.300	-0.26%	-4.73%
04/18/2011	2450B	2401	1.955	50.98	1.903	52.765	2.73%	-3.38%
		2450	2.009	50.91	1.950	52.700	3.03%	-3.40%
		2499	2.064	50.50	2.019	52.638	2.23%	-4.06%
04/14/2011	5200B-5800B	5170	5.303	47.44	5.264	49.055	0.74%	-3.29%
		5210	5.400	47.63	5.311	49.001	1.68%	-2.80%
		5250	5.386	47.52	5.358	48.946	0.52%	-2.91%
		5270	5.482	47.29	5.381	48.919	1.88%	-3.33%
		5310	5.555	47.39	5.428	48.865	2.34%	-3.02%
		5350	5.562	47.38	5.470	48.811	1.68%	-2.93%
		5470	5.827	46.91	5.615	48.648	3.78%	-3.57%
		5510	5.817	46.77	5.661	48.594	2.76%	-3.75%
		5550	5.937	46.68	5.708	48.539	4.01%	-3.83%
		5570	5.883	46.70	5.731	48.512	2.65%	-3.74%
		5610	6.023	46.39	5.778	48.458	4.24%	-4.27%
		5650	6.052	46.47	5.825	48.404	3.90%	-4.00%
		5670	6.047	46.54	5.848	48.376	3.40%	-3.80%
		5710	6.101	46.04	5.895	48.322	3.49%	-4.72%
		5750	6.234	46.25	5.942	48.268	4.91%	-4.18%
		5770	6.194	46.13	5.965	48.241	3.84%	-4.38%
		5810	6.271	45.88	6.012	48.186	4.31%	-4.79%
		5850	6.345	45.79	6.058	48.132	4.74%	-4.87%

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

The above measured tissue parameters were used in the DASY software to perform interpolation 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.

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.

13.2 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):

$$Y = \frac{j2\omega\varepsilon_r\varepsilon_0}{\left[\ln(b/a)\right]^2}\int_a^b\int_a^b\int_0^\pi \cos\phi' \frac{\exp\left[-j\omega r(\mu_0\varepsilon_r^{'}\varepsilon_0)^{1/2}\right]}{r} d\phi' d\rho' d\rho$$

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 $j = \sqrt{-1}$.

13.3 Justification for Extended SAR Dipole Calibrations

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

D2450V2 SN: 719								
	Head				Body			
Date of Measurement	Return Loss (dB)	**Δ %**	Impedance (Ω)	**ΔΩ**	Return Loss (dB)	**Δ %**	Impedance (Ω)	**ΔΩ**
8/27/2009	-28.6		53.4		-27.2		48.2	**0.0**
3/2/2011	-28.6	**0.0%**	52	**-1.4**	-27.4	**0.7%**	49.9	**1.7**

The above table represents RL and Impedance checks to ensure extended calibrations are still acceptable per KDB Publication 450824.

13.4 Test System Verification

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

Table 13-2
System Verification Results

System Verification TARGET & MEASURED										
Date:	**Amb. Temp (°C)**	**Liquid Temp (°C)**	**Input Power (W)**	**Tissue Frequency (MHz)**	**Dipole SN**	**Tissue Type**	**Measured SAR_{1g} (W/kg)**	**1 W Target SAR_{1g} (W/kg)**	**1 W Normalized SAR_{1g} (W/kg)**	**Deviation (%)**
04/20/2011	24.2	22.5	0.063	835	4d047	Body	0.653	9.850	10.365	5.23%
04/25/2011	23.8	22.6	0.063	835	4d047	Body	0.634	9.850	10.0635	2.17%
04/25/2011	23.7	22.1	0.040	1900	502	Body	1.65	41.100	41.250	0.36%
04/18/2011	24.1	23.0	0.0158	2450	719	Body	0.859	51.400	54.367	5.77%
04/14/2011	24.4	22.8	0.025	5200	1057	Body	2.02	77.700	80.800	3.99%
04/14/2011	24.6	22.7	0.025	5500	1057	Body	2.08	84.400	83.200	-1.42%
04/14/2011	24.5	22.8	0.025	5800	1057	Body	1.91	75.000	76.400	1.87%
05/18/2011	24.1	22.5	0.040	1900	502	Body	1.6	41.100	40.000	-2.68%

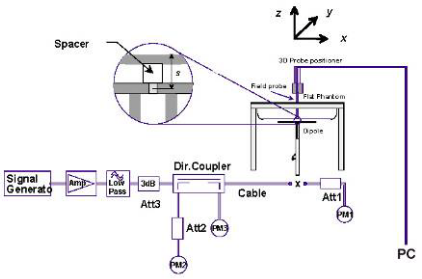


Figure 13-1
System Verification Setup Diagram

Figure 13-2
System Verification Setup Photo

14 SAR DATA SUMMARY

Table 14-1
GPRS Body SAR Results

MEASUREMENT RESULTS											
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Power Reduction [dB]	Spacing	Serial Number	# of GPRS Slots	Side	SAR (1g)
MHz	Ch.										(W/kg)
836.60	190	GSM 850	GPRS	23.42	-0.01	6	0.0 cm	357750040001041	2	back*	**0.439**
836.60	190	GSM 850	GPRS	20.62	0.00	6	0.0 cm	357750040001041	4	back*	**0.457**
836.60	190	GSM 850	GPRS	29.57	0.01	0	1.0 cm	357750040001058	2	back	**0.315**
836.60	190	GSM 850	GPRS	26.69	0.01	0	1.0 cm	357750040001058	4	back	**0.327**
836.60	190	GSM 850	GPRS	20.62	-0.05	6	0.0 cm	357750040001041	4	top*	**0.027**
836.60	190	GSM 850	GPRS	26.69	-0.03	0	0.5 cm	357750040001058	4	top	**0.247**
836.60	190	GSM 850	GPRS	26.69	0.00	0	0.0 cm	357750040001058	4	right	**0.305**
1850.20	512	GSM 1900	GPRS	19.03	0.06	4	0.0 cm	357750040001041	4	back*	**0.912**
1880.00	661	GSM 1900	GPRS	18.88	0.08	4	0.0 cm	357750040001041	4	back*	**0.943**
1909.80	810	GSM 1900	GPRS	18.81	0.06	4	0.0 cm	357750040001041	4	back*	**1.110**
1850.20	512	GSM 1900	GPRS	23.06	-0.02	0	1.0 cm	357750040001058	4	back	**0.963**
1880.00	661	GSM 1900	GPRS	23.00	-0.01	0	1.0 cm	357750040001058	4	back	**0.983**
1909.80	810	GSM 1900	GPRS	22.81	0.00	0	1.0 cm	357750040001058	4	back	**1.150**
1880.00	661	GSM 1900	GPRS	18.88	0.01	4	0.0 cm	357750040001041	4	top*	**0.378**
1850.20	512	GSM 1900	GPRS	23.06	-0.02	0	0.5 cm	357750040001058	4	top	**0.800**
1880.00	661	GSM 1900	GPRS	23.00	0.05	0	0.5 cm	357750040001058	4	top	**0.817**
1909.80	810	GSM 1900	GPRS	22.81	-0.02	0	0.5 cm	357750040001058	4	top	**0.897**
1880.00	661	GSM 1900	GPRS	23.00	-0.07	0	0.0 cm	357750040001058	4	right	**0.158**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Body** **1.6 W/kg (mW/g)** averaged over 1 gram				

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 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 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 (with KDB 616217 applied to edges with antennas located ≥ 5 cm from 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.
4. All modes of operation were investigated, and worst-case results are reported.
5. Tissue parameters and temperatures are listed on the SAR plots.
6. Batteries are fully charged for all readings.
7. Liquid tissue depth was at least 15.0 cm.
8. Device was tested using a fixed spacing.
9. Justification for reduced test configurations per KDB Publication 941225: The source-based time-averaged output power was evaluated for all multi-slot operations. In addition to the worst-case reported, all source-based time-averaged powers within 4% of the worst-case were additionally included in the evaluation.
10. Justification for reduced test configurations: Per KDB 447498 D01 1) e) i), when the SAR procedures require multiple channels to be tested and the 1-g SAR for the highest output channel is less than 0.8 W/kg, the other channels are not required.
11. Asterisk (*) denotes power reduction activated.
12. Per lab KDB Inquiry 738936, a conservative additional test distance of 10 mm from the back and 5 mm from the top were tested for SAR at the maximum power. See Section 10.4 for more details.

Table 14-2
WCDMA Body SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Power Reduction [dB]	Spacing	Serial Number	Side	SAR (1g)
MHz	Ch.									(W/kg)
836.60	4183	UMTS V	RMC	16.51	0.02	6	0.0 cm	357750040001041	back*	**0.407**
836.60	4183	UMTS V	RMC	22.62	-0.03	0	1.0 cm	357750040001058	back	**0.293**
836.60	4183	UMTS V	RMC	16.51	-0.04	6	0.0 cm	357750040001041	top*	**0.027**
836.60	4183	UMTS V	RMC	22.62	0.01	0	0.5 cm	357750040001058	top	**0.192**
836.60	4183	UMTS V	RMC	22.62	0.07	0	0.0 cm	357750040001058	right	**0.312**
1852.40	9262	UMTS II	RMC	15.46	-0.01	6	0.0 cm	357750040001041	back*	**0.532**
1852.40	9262	UMTS II	RMC	21.17	-0.05	0	1.0 cm	357750040001058	back	**0.641**
1852.40	9262	UMTS II	RMC	15.46	0.00	6	0.0 cm	357750040001041	top*	**0.477**
1852.40	9262	UMTS II	RMC	21.17	-0.02	0	0.5 cm	357750040001058	top	**1.160**
1880.00	9400	UMTS II	RMC	20.63	0.00	0	0.5 cm	357750040001058	top	**1.140**
1907.60	9538	UMTS II	RMC	20.79	-0.01	0	0.5 cm	357750040001058	top	**1.180**
1852.40	9262	UMTS II	RMC	21.17	0.02	0	0.0 cm	357750040001058	right	**0.227**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Body** **1.6 W/kg (mW/g)** averaged over 1 gram			

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 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 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 (with KDB 616217 applied to edges with antennas located ≥ 5 cm from 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.
4. All modes of operation were investigated, and worst-case results are reported.
5. Tissue parameters and temperatures are listed on the SAR plots.
6. Batteries are fully charged for all readings.
7. Liquid tissue depth was at least 15.0 cm.
8. Device was tested using a fixed spacing.
9. WCDMA mode in Body SAR was tested under RMC 12.2 kbps with HSPA Inactive. SAR tests with HSPA active were not required since the average output power levels of were not more than 0.25 dBm higher than the RMC levels and SAR was less than 1.2 W/kg per FCC KDB Publication 941225.
10. Per October 2010 TCB Workshop slides, since the average output power of WCDMA1900 mode deviated by more than 0.5 dB across the channels, the highest output channel was chosen as the default channel for SAR testing.
11. Justification for reduced test configurations: Per KDB 447498 D01 1) e) i), when the SAR procedures require multiple channels to be tested and the 1-g SAR for the highest output channel is less than 0.8 W/kg, the other channels are not required.
12. Asterisk (*) denotes power reduction activated.
13. Per lab KDB Inquiry 738936, a conservative additional test distance of 10 mm from the back and 5 mm from the top were tested for SAR at the maximum power. See Section 10.4 for more details.

Table 14-3
2.4 GHz Body SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Serial Number	Data Rate (Mbps)	Side	SAR
MHz	Ch.									(W/kg)
2462	11	IEEE 802.11b	DSSS	13.44	0.00	0.0 cm	357750040001058	1	back	0.623
2462	11	IEEE 802.11b	DSSS	13.44	-0.07	0.0 cm	357750040001058	1	top	0.068
2462	11	IEEE 802.11b	DSSS	13.44	0.06	0.0 cm	357750040001058	1	left	0.079
2462	11	IEEE 802.11g	DSSS	13.86	0.02	0.0 cm	357750040001058	6	back	0.557
2462	11	IEEE 802.11g	DSSS	13.86	0.05	0.0 cm	357750040001058	6	top	0.022
2462	11	IEEE 802.11g	DSSS	13.86	-0.02	0.0 cm	357750040001058	6	left	0.051
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram				

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 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 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 (with KDB 616217 applied to edges with antennas located ≥ 5 cm from 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.
4. All modes of operation were investigated, and worst-case results are reported.
5. Batteries are fully charged for all readings.
6. Tissue parameters and temperatures are listed on the SAR plots.
7. Liquid tissue depth is was at least 15.0 cm.
8. Device was tested using a fixed spacing.
9. 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. IEEE 802.11g was tested since the average output power of the corresponding channel used for SAR testing was more than 0.25 dB higher than IEEE 802.11b mode. 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 corresponding channel in the lowest data rate IEEE 802.11b mode.
10. WLAN transmission was verified using a spectrum analyzer.
11. There is no power reduction for WIFI.
12. Per KDB 447498 4) b) since the output power of the antenna is ≤ 60/f (GHz), Bluetooth SAR is not required for both back side and edge exposure conditions.

Table 14-4
5 GHz Body SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Serial Number	Data Rate (Mbps)	Side	SAR (1g)
MHz	Ch.									(W/kg)
5240	48	IEEE 802.11a	OFDM	12.40	0.08	0.0 cm	357750040001058	6	back	**0.543**
5240	48	IEEE 802.11a	OFDM	12.40	0.04	0.0 cm	357750040001058	6	top	**0.593**
5240	48	IEEE 802.11a	OFDM	12.40	0.06	0.0 cm	357750040001058	6	left	**0.121**
5260	52	IEEE 802.11a	OFDM	12.30	0.01	0.0 cm	357750040001058	6	back	**0.517**
5260	52	IEEE 802.11a	OFDM	12.30	-0.01	0.0 cm	357750040001058	6	top	**0.627**
5260	52	IEEE 802.11a	OFDM	12.30	0.06	0.0 cm	357750040001058	6	left	**0.183**
5500	100	IEEE 802.11a	OFDM	12.91	0.04	0.0 cm	357750040001058	6	back	**0.643**
5500	100	IEEE 802.11a	OFDM	12.91	0.06	0.0 cm	357750040001058	6	top	**0.689**
5500	100	IEEE 802.11a	OFDM	12.91	0.02	0.0 cm	357750040001058	6	left	**0.129**
5805	161	IEEE 802.11a	OFDM	12.84	0.07	0.0 cm	357750040001058	6	back	**0.666**
5805	161	IEEE 802.11a	OFDM	12.84	0.01	0.0 cm	357750040001058	6	top	**0.432**
5805	161	IEEE 802.11a	OFDM	12.84	0.03	0.0 cm	357750040001058	6	left	**0.138**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Body 1.6 W/kg (mW/g) averaged over 1 gram**				

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 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 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 (with KDB 616217 applied to edges with antennas located ≥ 5 cm from 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.
4. All modes of operation were investigated, and worst-case results are reported.
5. Batteries are fully charged for all readings.
6. Tissue parameters and temperatures are listed on the SAR plots.
7. Liquid tissue depth is was at least 15.0 cm.
8. Device was tested using a fixed spacing.
9. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes: Highest average RF output power channel for the lowest data rate were selected for SAR evaluation. Other IEEE 802.11 modes (including 802.11n and higher data) were not investigated since the average output powers were not greater than 0.25 dB than that of the corresponding channel in the lowest data rate IEEE 802.11a mode.
10. Per KDB 248227 Publication, since the SAR < 0.8 W/kg, no additional channels were required.
11. WLAN transmission was verified using a spectrum analyzer.
12. There is no power reduction for WIFI.

15 SIMULTANEOUS TRANSMISSION ANALYSIS

15.1 Simultaneous Transmission Information

This device contains multiple transmitters that may operate simultaneously and therefore, require a simultaneous transmission analysis according to KDB 447498 4) b) iii) procedures (See Section 10.3). The tablet procedures required by KDB 447498 generally do not require separate hotspot mode testing.

Bluetooth and WIFI cannot transmit simultaneously since it shares the same circuit path and are switched by the radio.

5GHz WIFI cannot transmit simultaneously with the 2G/3G antenna. Table 15-1 shows all possible simultaneous transmission scenarios for this device.

Table 15-1
Simultaneous Transmission Scenarios

No.	Capable Tx Configurations	Body SAR Test Distance(s) in mm						Note
		Back	Left Edge	Right Edge	Bottom Edge	Top Edge	Hot Spot	
1	GPRS/EDGE 850 MHz	0*	x	0	x	0*	-	Standalone GPRS/EDGE
2	GPRS/EDGE 1900 MHz	0*	x	0	x	0*	-	Standalone GPRS/EDGE
3	WCDMA/HSPA 850 MHz	0*	x	0	x	0*	-	Standalone WCDMA/HSPA
4	WCDMA/HSPA 1900 MHz	0*	x	0	x	0*	-	Standalone WCDMA/HSPA
5	2.4 GHz WIFI	0	0	x	x	0	-	Standalone WIFI
6	5 GHz WIFI	0	0	x	x	0	-	Standalone WIFI
7	GPRS/EDGE 850 + 2.4 GHz WIFI	0*	0	0	x	0*	yes	GPRS/EDGE 850 WIFI Hotspot
8	GPRS/EDGE 1900 + 2.4 GHz WIFI	0*	0	0	x	0*	yes	GPRS/EDGE 1900 WIFI Hotspot
9	WCDMA/HSPA 850 + 2.4 GHz WIFI	0*	0	0	x	0*	yes	WCDMA/HSPA 850 WIFI Hotspot
10	WCDMA/HSPA 1900 + 2.4 GHz WIFI	0*	0	0	x	0*	yes	WCDMA/HSPA 1900 WIFI Hotspot
11	GPRS/EDGE + 5 GHz WIFI	N/A	N/A	N/A	N/A	N/A	N/A	Not supported. Disabled by SW
12	WCDMA/HSPA + 5 GHz WIFI	N/A	N/A	N/A	N/A	N/A	N/A	Not supported. Disabled by SW

Note: 1. Asterisk(*) denotes power back off activated.
2. X=SAR Testing not required per KDB 447498

No.	Capable Tx Configurations	Body SAR Test Distance(s) in mm						Note
		Back	Left Edge	Right Edge	Bottom Edge	Top Edge	Hot Spot	
1	GPRS/EDGE 850 MHz	10	x	x	x	5	-	Standalone GPRS/EDGE
2	GPRS/EDGE 1900 MHz	10	x	x	x	5	-	Standalone GPRS/EDGE
3	WCDMA/HSPA 850 MHz	10	x	x	x	5	-	Standalone WCDMA/HSPA
4	WCDMA/HSPA 1900 MHz	10	x	x	x	5	-	Standalone WCDMA/HSPA
5	GPRS/EDGE 850 + 2.4 GHz WIFI	10	x	x	x	5	yes	GPRS/EDGE 850 WIFI Hotspot
6	GPRS/EDGE 1900 + 2.4 GHz WIFI	10	x	x	x	5	yes	GPRS/EDGE 1900 WIFI Hotspot
7	WCDMA/HSPA 850 + 2.4 GHz WIFI	10	x	x	x	5	yes	WCDMA/HSPA 850 WIFI Hotspot
8	WCDMA/HSPA 1900 + 2.4 GHz WIFI	10	x	x	x	5	yes	WCDMA/HSPA 1900 WIFI Hotspot

Note: 1. According to the TCB workshop material in 2011 April, a conservative additional test distance of 10mm from the back was tested for SAR at the full power, with the back sensor de-activated. Also, a conservative additional test distance of 5mm from the top edge was chosen to test SAR at full power with the top sensor de-activated.
2. X=SAR Testing not required because sensor is not applicable.
3. Sensors are de-activated for full power SAR test.
4. The chosen conservative test distance of 10mm from the back side is based on the de-activation proximity sensor distance based on the reliability data. The data shows that the proximity sensor is guaranteed to activate at a distance of 10mm. Please see operational description for further details.
5. The chosen conservative test distance of 5mm from the top edge is based on the de-activation proximity sensor distance based on the reliability data. The data shows that the proximity sensor is guaranteed to activate at a distance of 5mm. Please see operational description for further details.

15.1 Simultaneous Transmission Analysis

Table 15-2
Simultaneous Transmission Scenarios

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.457	0.623	**1.080**
	Top	0.247	0.068	**0.315**
	Bottom	-	-	**0.000**
	Right	0.305	-	**0.305**
	Left	-	0.079	**0.079**

Simult Tx	Configuration	UMTS V SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.407	0.623	**1.030**
	Top	0.192	0.068	**0.260**
	Bottom	-	-	**0.000**
	Right	0.312	-	**0.312**
	Left	-	0.079	**0.079**

Simult Tx	Configuration	UMTS II SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.641	0.623	**1.264**
	Top	1.180	0.068	**1.248**
	Bottom	-	-	**0.000**
	Right	0.227	-	**0.227**
	Left	-	0.079	**0.079**

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	SAR sum to peak separation ratio
Body SAR	Back	1.150	0.623	1.15+0.623=1.77	**0.096**
	Top	0.897	0.068	**0.965**	N/A
	Bottom	-	-	**0.000**	N/A
	Right	0.158	-	**0.158**	N/A
	Left	-	0.079	**0.079**	N/A

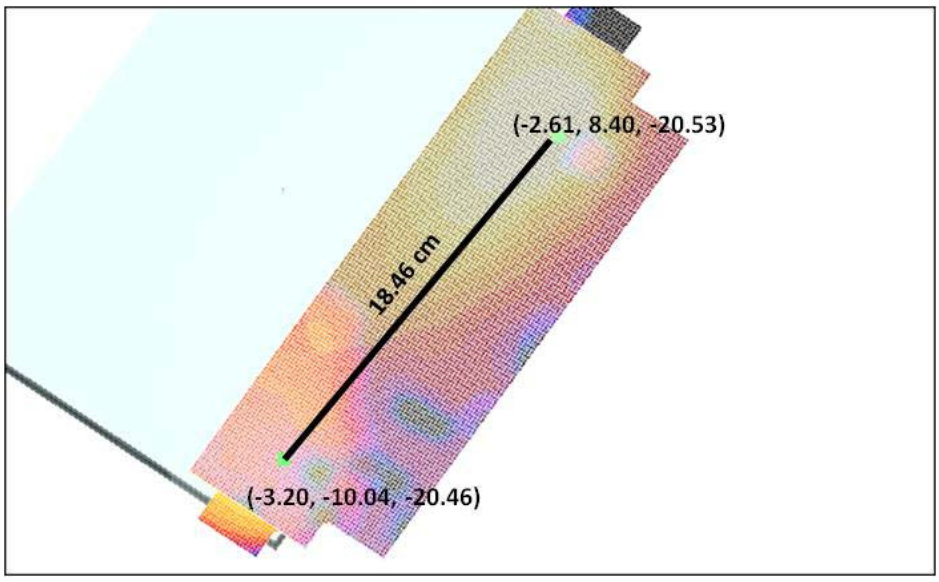
Note: "-" SAR results shown in the tables are zero for summation purposes. SAR was not required to be measured due to exclusions mentioned in Section 10.3.

The standalone SAR results were used to analyze simultaneous transmission SAR exclusion according to procedures in KDB 648474. Although the summation of the 1900 GPRS and 2.4 GHz WLAN body SAR for the back side was 1.15 W/kg + 0.623 W/kg = 1.773 W/kg, which is greater than 1.6 W/kg, the SAR sum to peak separation ratio was less than 0.3.

The distance between the peak licensed transmitter body SAR zoom scan and WLAN body SAR zoom scan was 18.46 cm (See Figure 15-1). The ratio of the summed max SAR and the distance between the SAR zoom scan peaks was 1.773 / 18.46 = 0.096, which is less than 0.3.

$$Ratio = \frac{\text{Sum}}{\text{Distance}} = \frac{1.773}{18.46} = 0.096 < 0.3$$

Therefore, a multi-band volumetric simultaneous SAR evaluation is not required for GPRS 1900 and 2.4 GHz WLAN transmission in body tissue.



$$dist = \sqrt{(-2.61 + 3.20)^2 + (8.40 + 10.04)^2 + (-20.53 + 20.46)^2} = 18.46cm$$

Figure 15-1
Simultaneous Transmission Ratio Analysis for GPRS 1900 and 2.4 GHz WLAN

15.2 Simultaneous Transmission Conclusion

Therefore Per KDB 447498 4) b) iii) and simultaneous transmission procedures in KDB 648474, aggregate volumetric simultaneous transmission is not required.

16 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85070B	Dielectric Probe Kit	8/22/2010	Annual	8/22/2011	US33020316
Agilent	8648D	(9kHz-4GHz) Signal Generator	10/13/2010	Annual	10/13/2011	3613A00315
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/21/2011	Annual	4/21/2012	JP38020182
Agilent	E5515C	Wireless Communications Test Set	10/11/2010	Annual	10/11/2011	GB46110872
Agilent	E5515C	Wireless Communications Test Set	10/8/2010	Annual	10/8/2011	GB46310798
Agilent	E5515C	Wireless Communications Test Set	8/13/2010	Annual	8/13/2011	GB41450275
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/8/2011	Annual	4/8/2012	MY45470194
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/11/2010	Annual	10/11/2011	1833460
Gigatronics	8651A	Universal Power Meter	10/11/2010	Annual	10/11/2011	8650319
Index SAR	IXTL-010	Dielectric Measurement Kit	N/A		N/A	N/A
Index SAR	IXTL-030	30MM TEM line for 6 GHz	N/A		N/A	N/A
Pasternack	PE2208-6	Bidirectional Coupler	N/A		N/A	N/A
Pasternack	PE2209-10	Bidirectional Coupler	N/A		N/A	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	11/11/2010	Annual	11/11/2011	836371/0079
Rohde & Schwarz	CMU200	Base Station Simulator	6/21/2010	Annual	6/21/2011	833855/0010
Rohde & Schwarz	NRVD	Dual Channel Power Meter	4/8/2011	Biennial	4/8/2013	101695
SPEAG	D1450V2	1450 MHz SAR Dipole	5/20/2009	Biennial	5/20/2011	1025
SPEAG	D1765V2	1765 MHz SAR Dipole	5/19/2009	Biennial	5/19/2011	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	2/17/2011	Annual	2/17/2012	502
SPEAG	D1900V2	1900 MHz SAR Dipole	8/18/2009	Biennial	8/18/2011	5d080
SPEAG	D2450V2	2450 MHz SAR Dipole	8/27/2009	Biennial	8/27/2011	719
SPEAG	D2450V2	2450 MHz SAR Dipole	2/8/2011	Annual	2/8/2012	797
SPEAG	D2600V2	2600 MHz SAR Dipole	4/15/2011	Biennial	4/15/2013	1004
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/19/2009	Biennial	8/19/2011	1007
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	D835V2	835 MHz SAR Dipole	8/24/2009	Biennial	8/24/2011	4d026
SPEAG	DAE3	Dasy Data Acquisition Electronics	11/18/2010	Annual	11/18/2011	455
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/17/2011	Annual	3/17/2012	704
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/20/2011	Annual	4/20/2012	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/21/2011	Annual	2/21/2012	649
SPEAG	ES3DV2	SAR Probe	9/21/2010	Annual	9/21/2011	3022
SPEAG	EX3DV4	SAR Probe	8/19/2010	Annual	8/19/2011	3561
SPEAG	EX3DV4	SAR Probe	2/14/2011	Annual	2/14/2012	3550
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/8/2010	Annual	7/8/2011	859
SPEAG	D750V3	750 MHz Dipole	2/14/2011	Annual	2/14/2012	1003
SPEAG	ES3DV3	SAR Probe	3/24/2011	Annual	3/24/2012	3213
SPEAG	ES3DV3	SAR Probe	4/18/2011	Annual	4/18/2012	3209
Rohde & Schwarz	SMIQ03B	Signal Generator	4/6/2011	Annual	4/6/2012	DE27259
SPEAG	D1640V2	1640 MHz Dipole	8/17/2010	Biennial	8/17/2012	321
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	8/30/2010	Annual	8/30/2011	100976
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	5318
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	5442
Anritsu	ML2438A	Power Meter	2/7/2011	Annual	2/7/2012	1190013
Anritsu	ML2438A	Power Meter	2/7/2011	Annual	2/7/2012	98150041
Agilent	8648D	Signal Generator	4/5/2011	Annual	4/5/2012	3629U00687
Anritsu	ML2438A	Power Meter	2/7/2011	Annual	2/7/2012	1070030
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	5821
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	8013
Anritsu	MA2481A	Power Sensor	2/7/2011	Annual	2/7/2012	2400
Aprel	ALS-PR-DIEL	Dielectric Probe Kit	N/A		N/A	260-00959
Agilent	E5515C	Wireless Communications Test Set	8/13/2010	Annual	8/13/2011	GB43304447
Agilent	E5515C	Wireless Communications Tester	4/21/2011	Annual	4/21/2012	US41140256
Amplifier Research	5S1G4	5W, 800MHz-4.2GHz	N/A			17042
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	N/A			N/A
Agilent	E5515C	Wireless Communications Test Set	2/8/2011	Annual	2/8/2012	GB45360985
Speag	D3700V2	3700 MHz SAR Dipole	2/16/2011	Annual	2/16/2012	1002
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	3/11/2011	Annual	3/11/2012	103962
Control Company	61220-416	Long-Stem Thermometer	2/15/2011	Biennial	2/15/2013	111331322
Control Company	61220-416	Long-Stem Thermometer	2/15/2011	Biennial	2/15/2013	111331323
Control Company	61220-416	Long-Stem Thermometer	2/15/2011	Biennial	2/15/2013	111331330
Control Company	61220-416	Long-Stem Thermometer	2/15/2011	Biennial	2/15/2013	111331332
Control Company	61220-416	Long-Stem Thermometer	3/16/2011	Biennial	3/16/2013	111391601
Speag	iSAR	Immediate SAR Measurement System	4/7/2011	Annual	4/7/2012	1084

Justification for 2-year calibration cycle for SAR dipoles is found in Section 13.3.

17 MEASUREMENT UNCERTAINTIES

Applicable for 800 – 3000 MHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**IEEE 1528 Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	5.5	N	1	1.0	1.0	5.5	5.5	∞
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				11.8	11.5	299
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				23.7	23.0	

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

Applicable for 5 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	299
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.7	24.0	

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

18 CONCLUSION

18.1 Measurement Conclusion

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

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

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001041

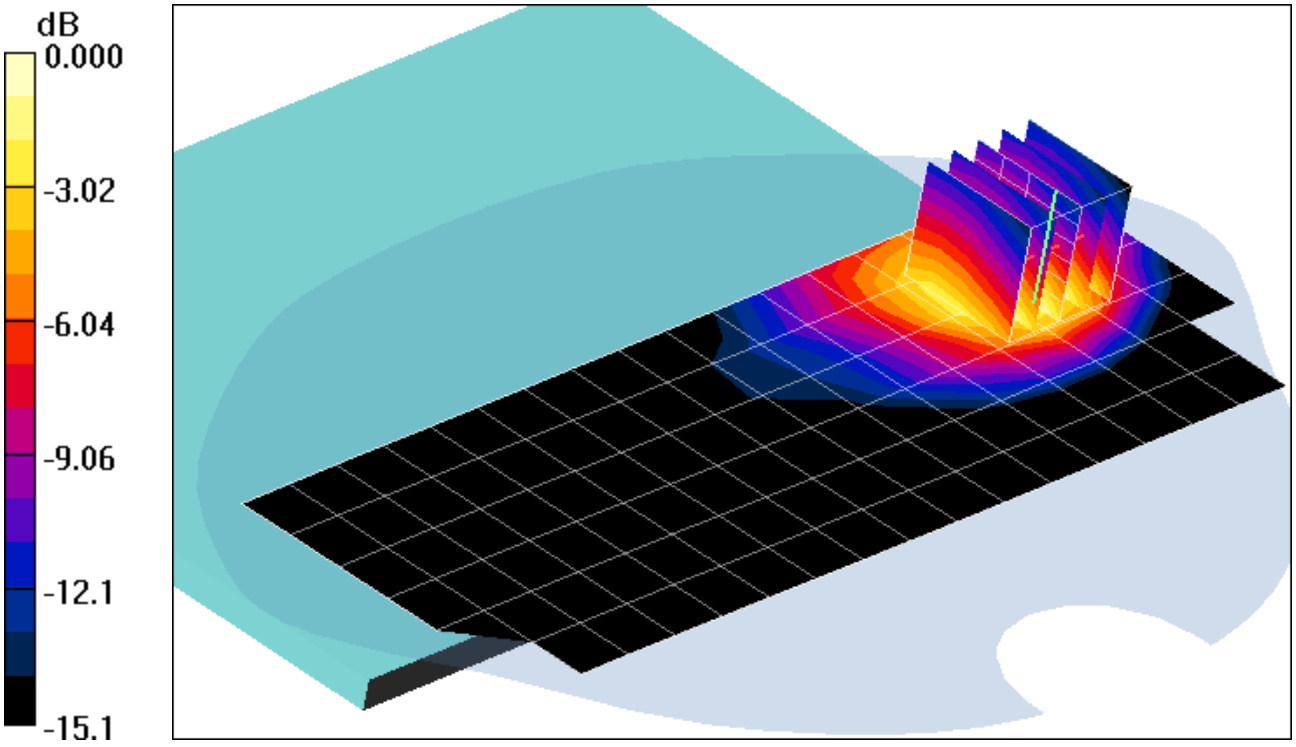
Communication System: GSM850 GPRS; 4 Tx slots; Frequency: 836.6 MHz;Duty Cycle: 1:2.076
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.966 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-20-2011; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.09, 8.09, 8.09); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 4 Tx Slots

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.2 V/m
Peak SAR (extrapolated) = 0.797 W/kg
SAR(1 g) = 0.457 mW/g; SAR(10 g) = 0.268 mW/g



0 dB = 0.483mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001041

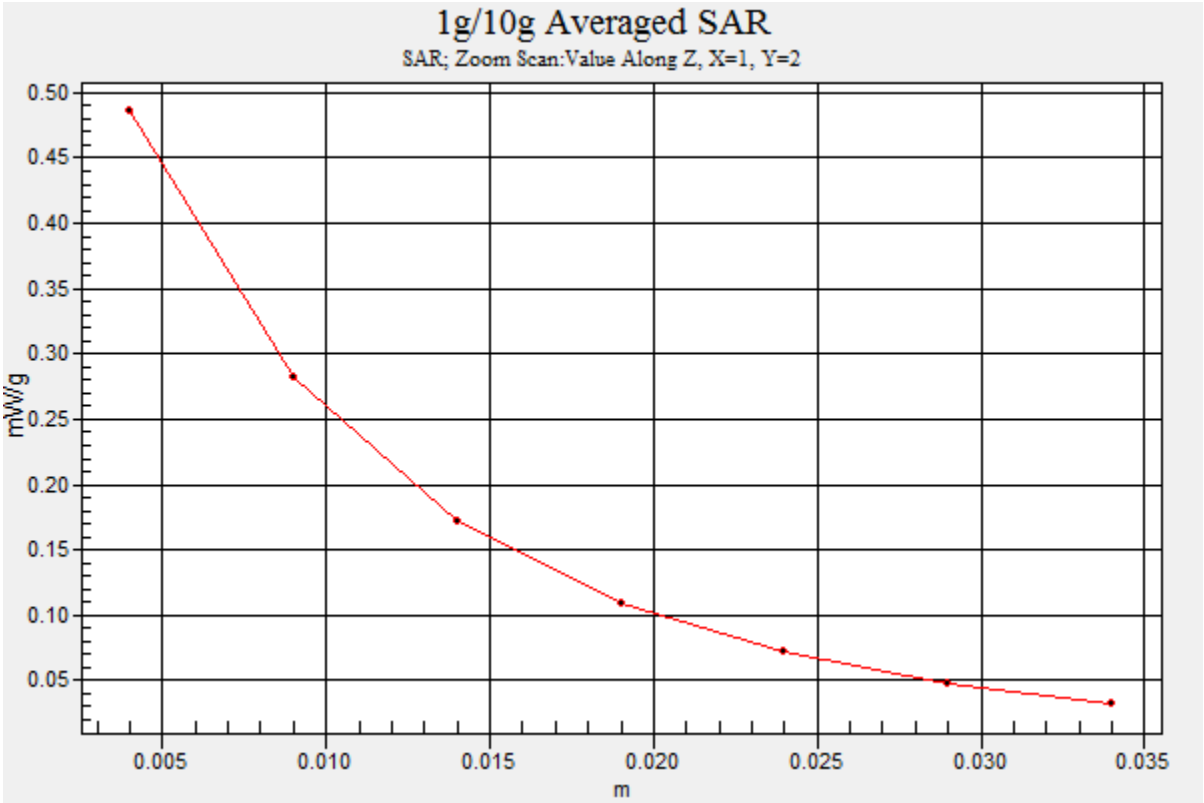
Communication System: GSM850 GPRS; 4 Tx slots; Frequency: 836.6 MHz;Duty Cycle: 1:2.076
Medium: 835 Body Medium parameters used (interpolated):
$f = 836.6$ MHz; $\sigma = 0.966$ mho/m; $\varepsilon_r = 53.2$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-20-2011; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.09, 8.09, 8.09); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 4 Tx Slots

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.2 V/m
Peak SAR (extrapolated) = 0.797 W/kg
SAR(1 g) = 0.457 mW/g; SAR(10 g) = 0.268 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

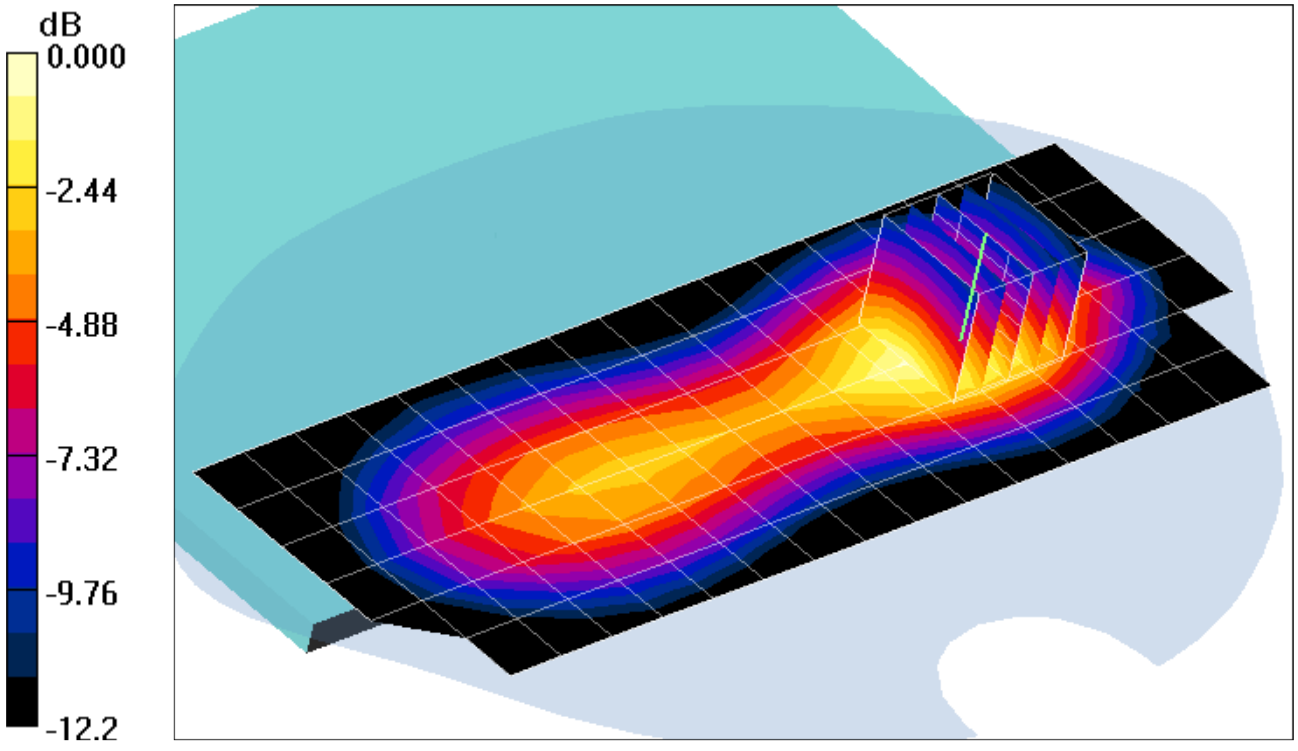
Communication System: GSM850 GPRS; 4 Tx slots; Frequency: 836.6 MHz;Duty Cycle: 1:2.076
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.966 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.5 cm

Test Date: 04-20-2011; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.09, 8.09, 8.09); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: GPRS 850, Body SAR, Top side, Mid.ch, 4 Tx Slots

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.4 V/m
Peak SAR (extrapolated) = 0.376 W/kg
SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.157 mW/g



0 dB = 0.267mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

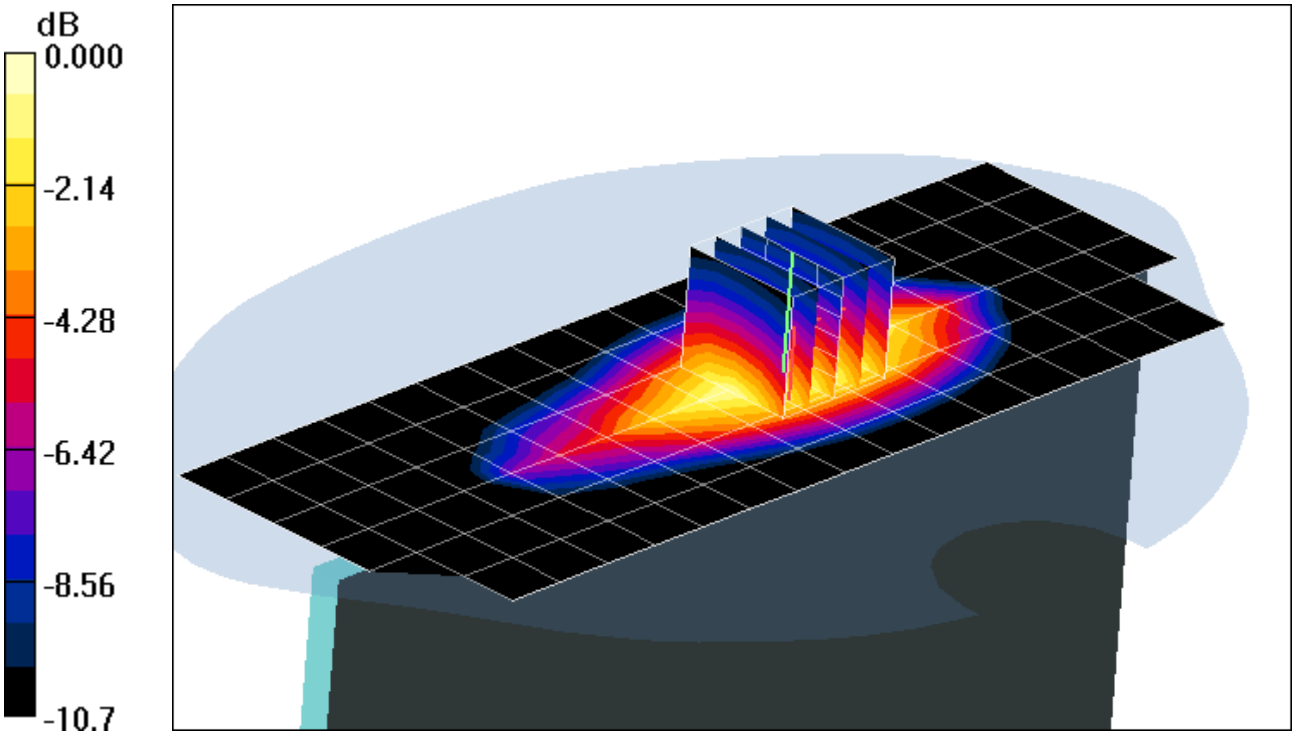
Communication System: GSM850 GPRS; 4 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.076
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.966 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-20-2011; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.09, 8.09, 8.09); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: GPRS 850, Body SAR, Right side, Mid.ch, 4 Tx Slots

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.4 V/m
Peak SAR (extrapolated) = 0.484 W/kg
SAR(1 g) = 0.305 mW/g; SAR(10 g) = 0.195 mW/g



0 dB = 0.333mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPATablet with Bluetooth and WLAN; Serial: 357750040001058

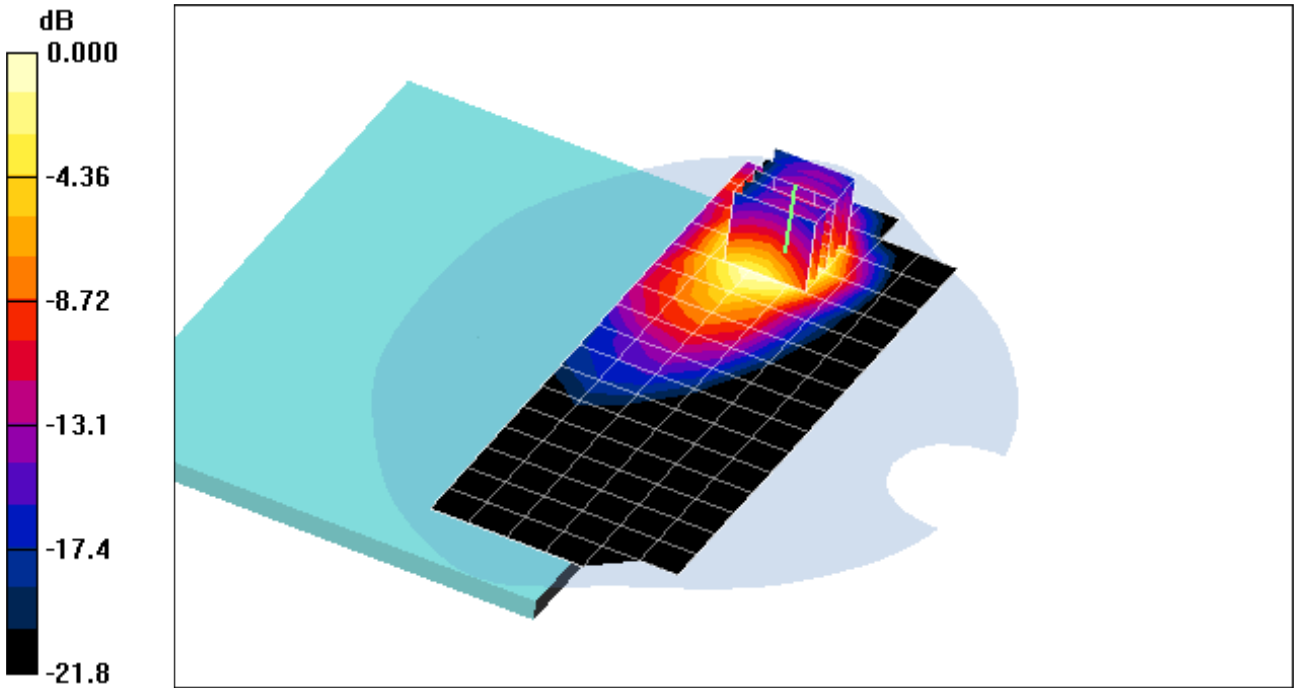
Communication System: GSM1900 GPRS; 4 Tx slots; Frequency: 1909.8 MHz;Duty Cycle: 1:2.076
Medium: 1900 Body Medium parameters used:
f = 1910 MHz; σ = 1.516 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-18-2011; Ambient Temp: 24.1°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: GPRS 1900, Body SAR, Back side, High.ch, 4 Tx Slots

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.1 V/m
Peak SAR (extrapolated) = 2.32 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.533 mW/g



0 dB = 1.30mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPATablet with Bluetooth and WLAN; Serial: 357750040001058

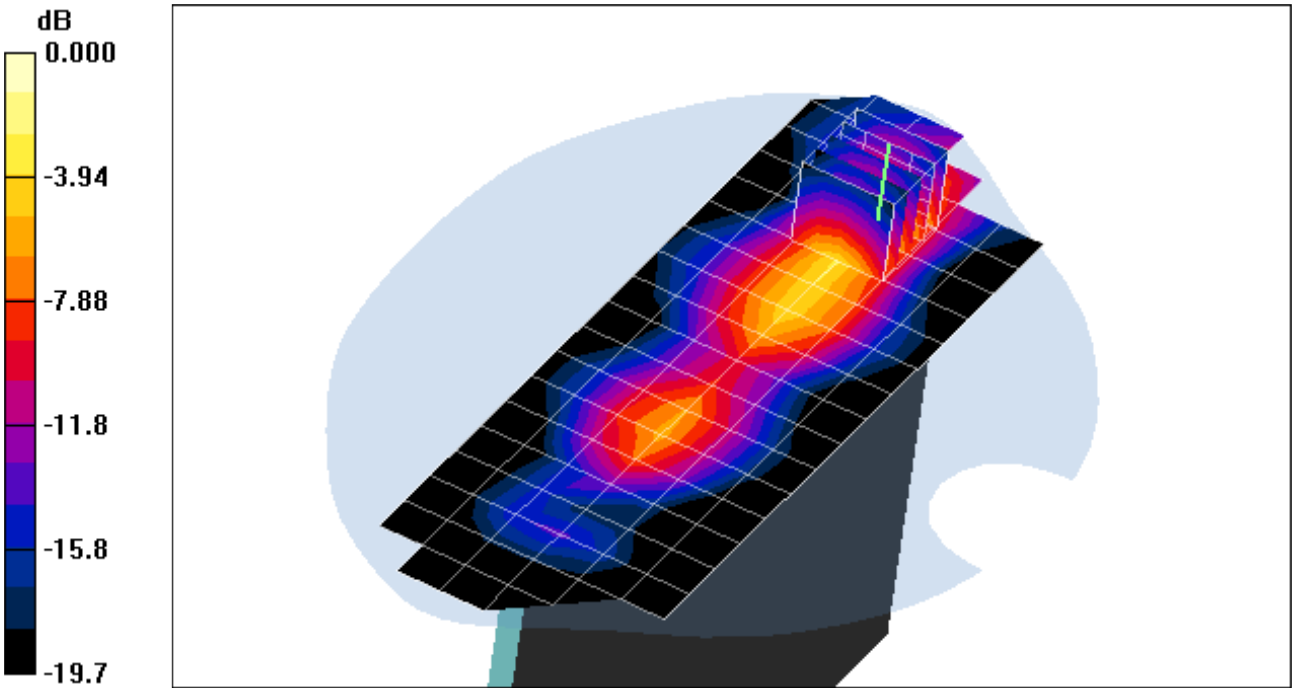
Communication System: GSM1900 GPRS; 4 Tx slots; Frequency: 1909.8 MHz;Duty Cycle: 1:2.076
Medium: 1900 Body Medium parameters used:
f = 1910 MHz; σ = 1.516 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.5 cm

Test Date: 05-18-2011; Ambient Temp: 24.1°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: GPRS 1900, Body SAR, Top Side, High.ch, 4 Tx Slots

Area Scan (7x20x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.6 V/m
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 0.897 mW/g; SAR(10 g) = 0.420 mW/g



0 dB = 1.02mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPATablet with Bluetooth and WLAN; Serial: 357750040001058

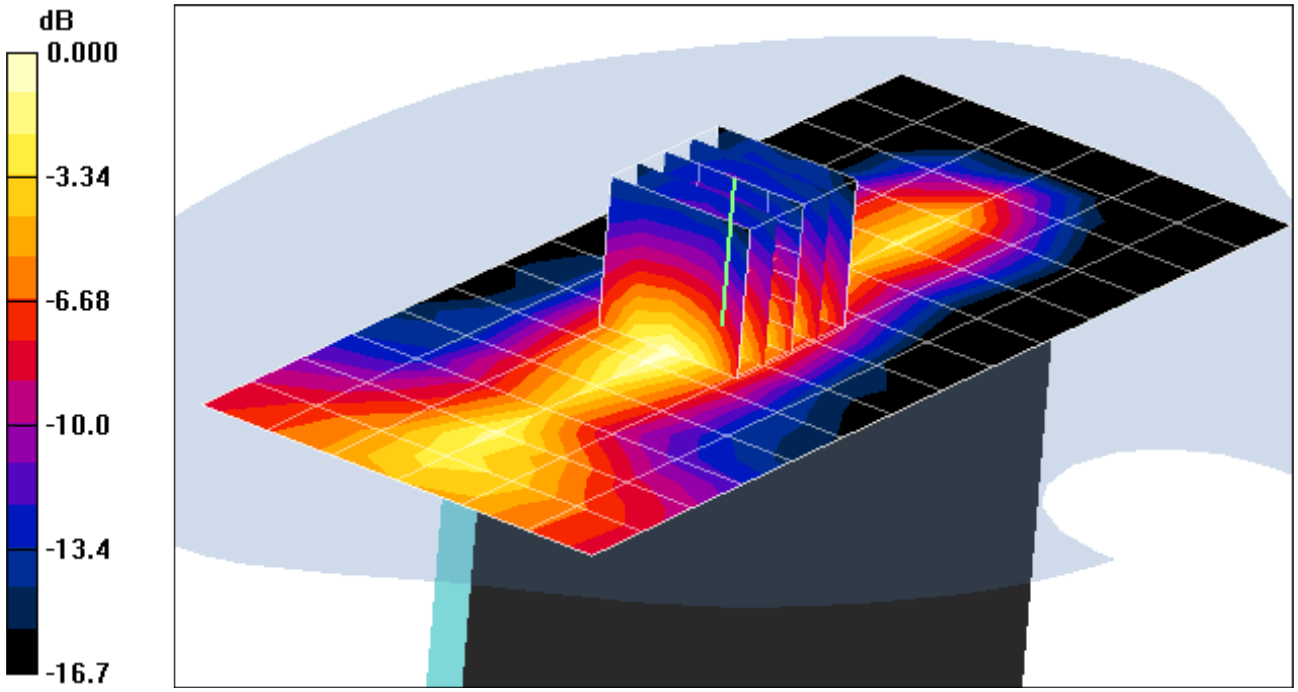
Communication System: GSM1900 GPRS; 4 Tx slots; Frequency: 1880 MHz;Duty Cycle: 1:2.076
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.45 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 05-18-2011; Ambient Temp: 24.1°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: GPRS 1900, Body SAR, Right side, Mid.ch, 4 Tx Slots

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.1 V/m
Peak SAR (extrapolated) = 0.300 W/kg
SAR(1 g) = 0.158 mW/g; SAR(10 g) = 0.083 mW/g



0 dB = 0.176mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001041

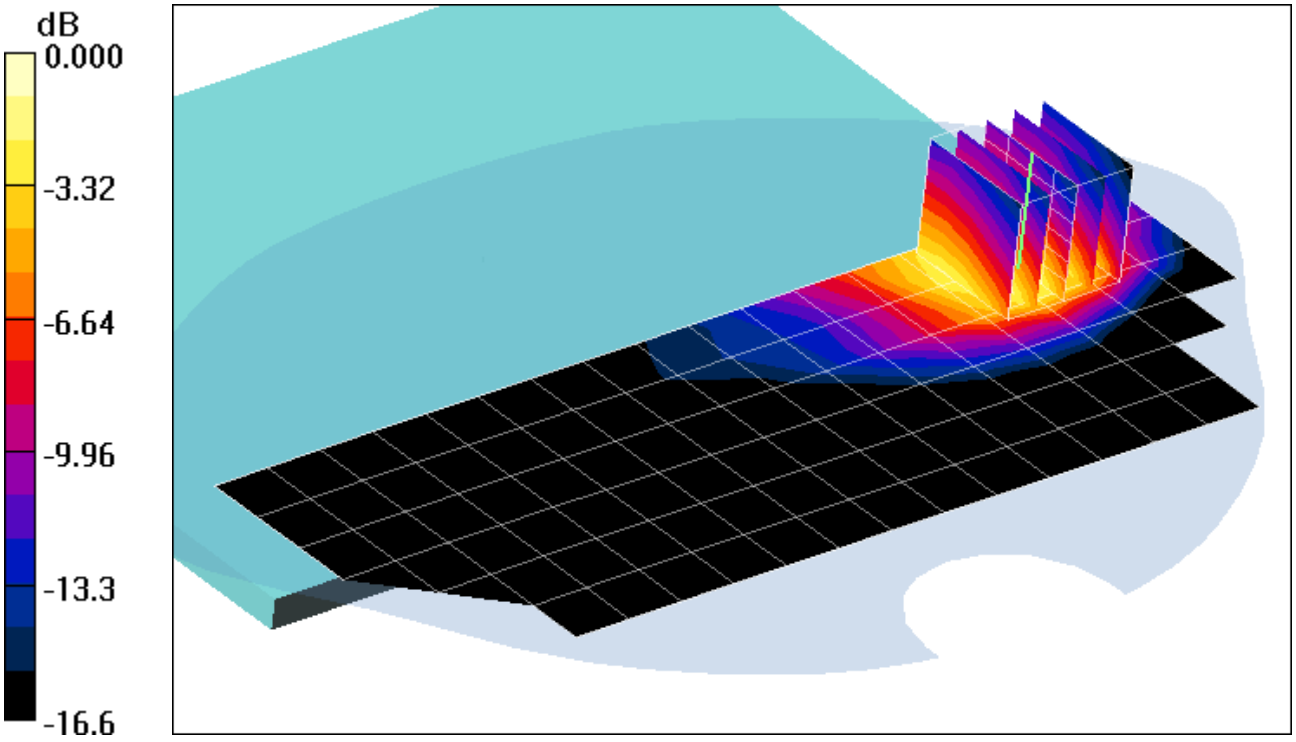
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.937 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-25-2011; Ambient Temp: 23.8°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN3561; ConvF(8.09, 8.09, 8.09); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.8 V/m
Peak SAR (extrapolated) = 0.690 W/kg
SAR(1 g) = 0.407 mW/g; SAR(10 g) = 0.232 mW/g



0 dB = 0.456mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7510; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

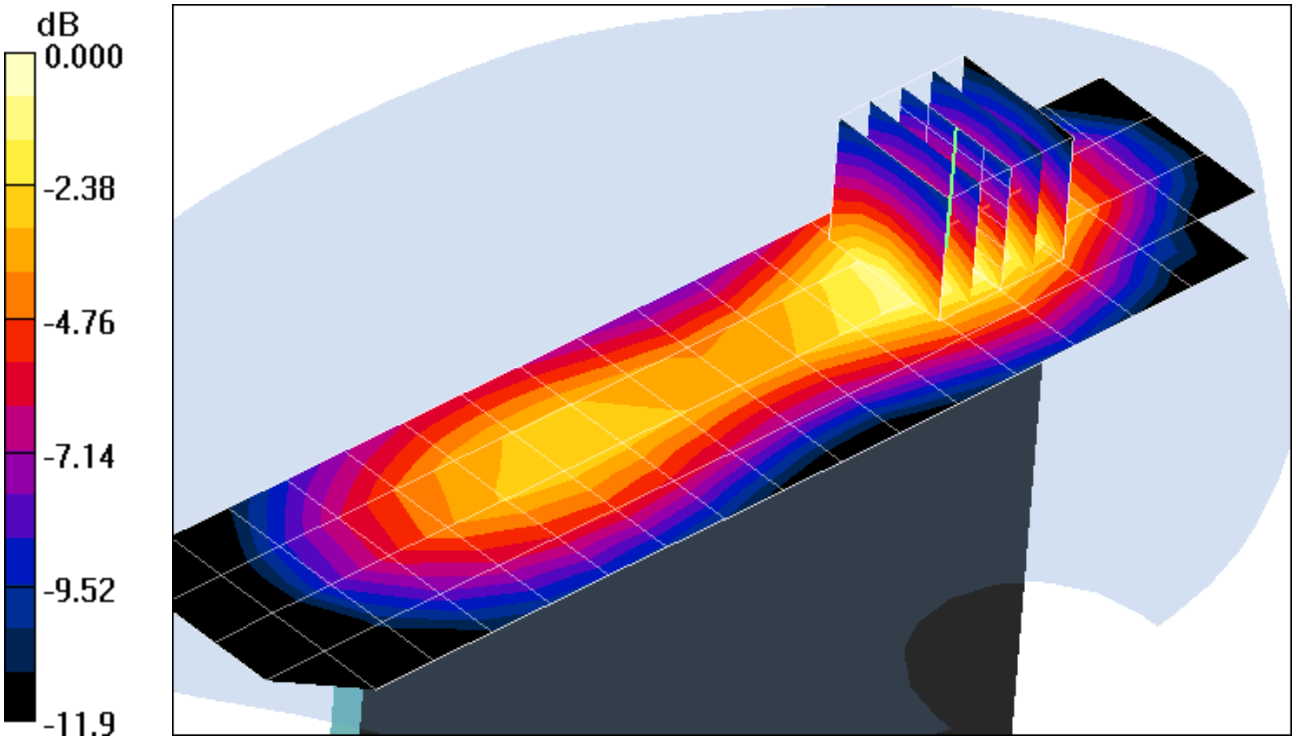
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.966 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.5 cm

Test Date: 04-20-2011; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.09, 8.09, 8.09); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

Area Scan (5x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.0 V/m
Peak SAR (extrapolated) = 0.288 W/kg
SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.124 mW/g



0 dB = 0.209mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7510; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

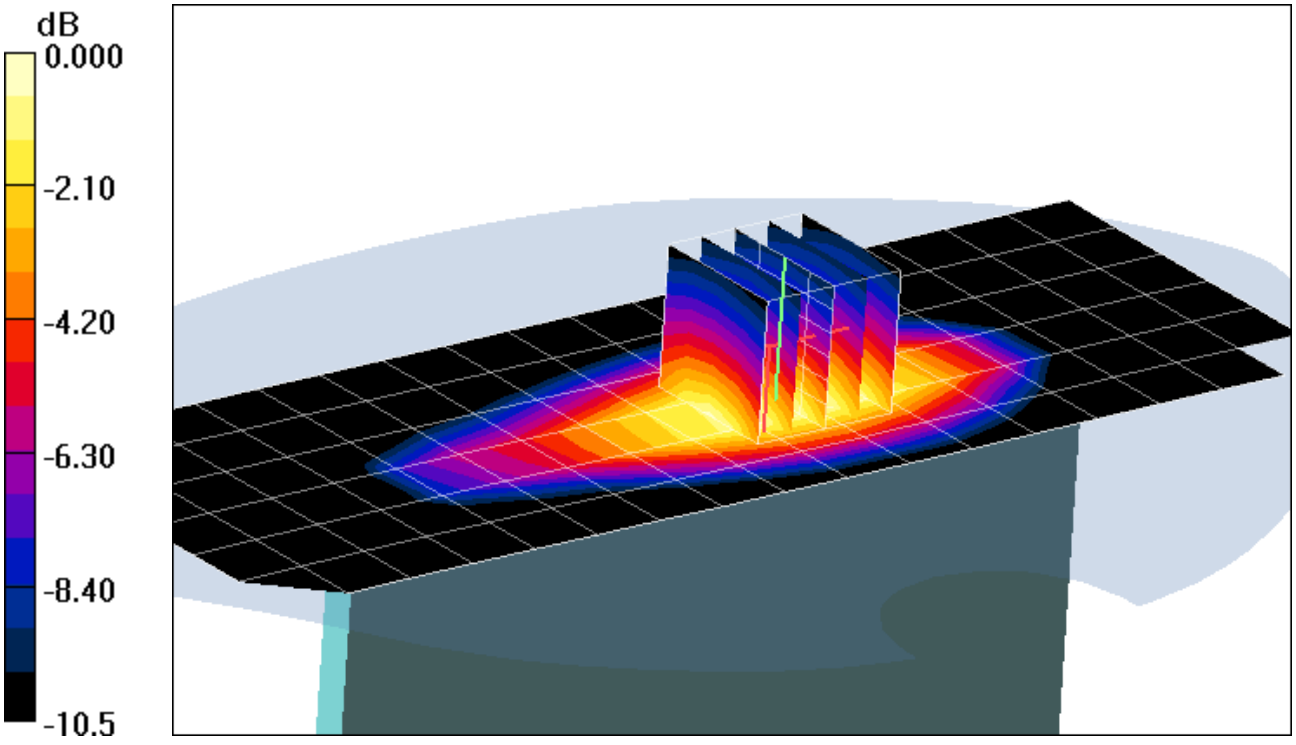
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.966 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-20-2011; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.09, 8.09, 8.09); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.4 V/m
Peak SAR (extrapolated) = 0.487 W/kg
SAR(1 g) = 0.312 mW/g; SAR(10 g) = 0.202 mW/g



0 dB = 0.339mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

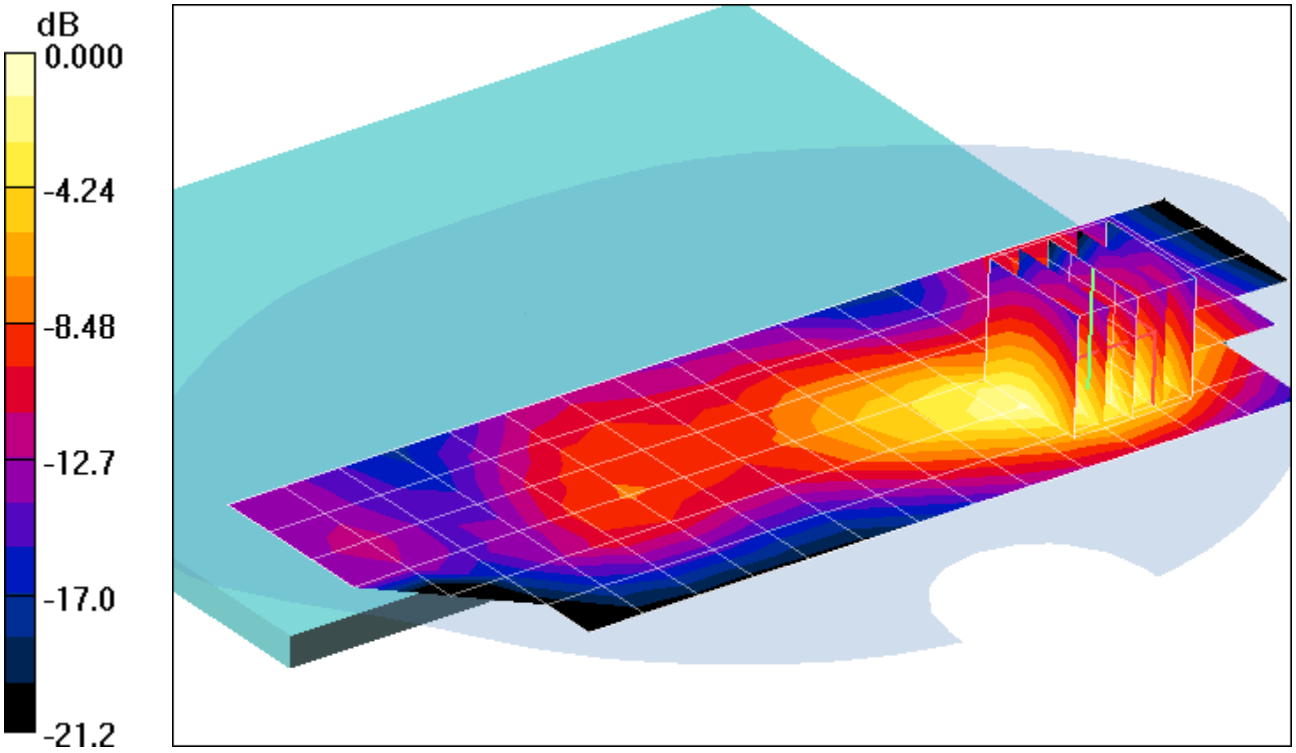
Communication System: WCDMA1900; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1852.4 MHz; σ = 1.482 mho/m; ε_r = 52.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-25-2011; Ambient Temp: 23.7°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: WCDMA 1900, Body SAR, Back side, Low ch

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.3 V/m
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.641 mW/g; SAR(10 g) = 0.343 mW/g



0 dB = 0.713mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

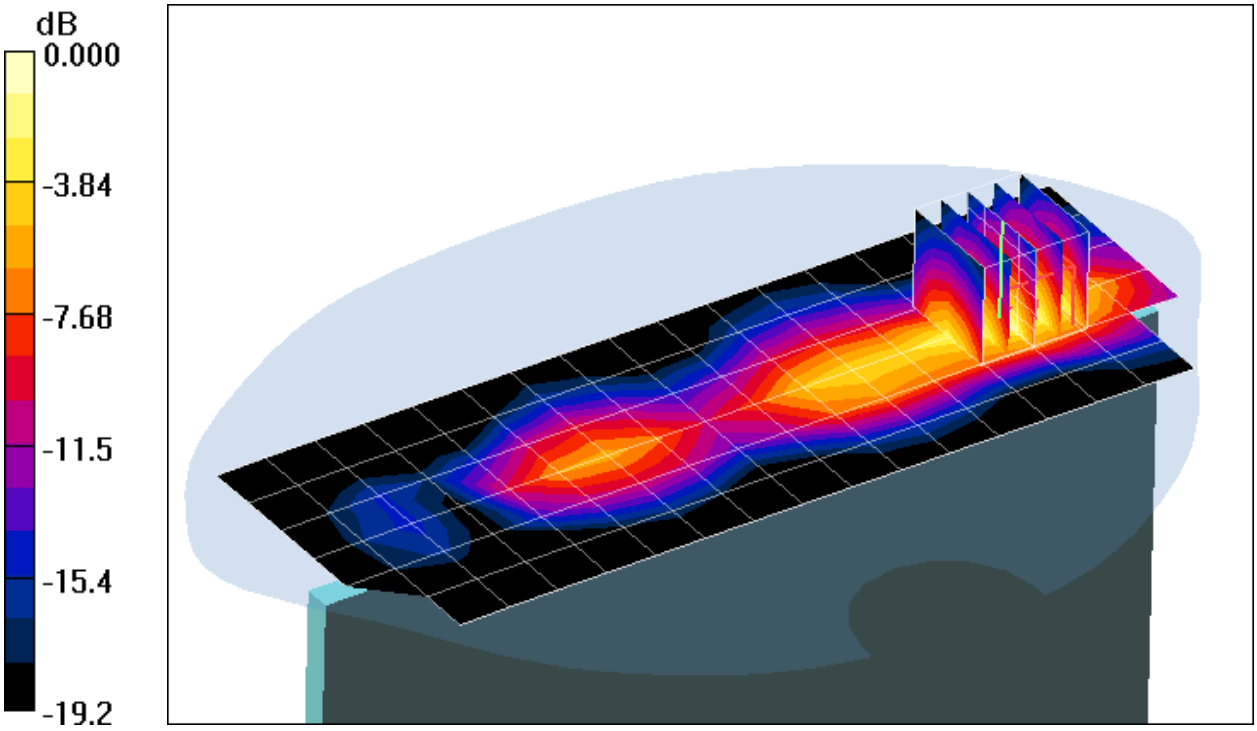
Communication System: WCDMA1900; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.54 mho/m; ε_r = 52.54; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.5 cm

Test Date: 04-25-2011; Ambient Temp: 23.7°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: WCDMA 1900, Body SAR, Top side, High.ch

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.3 V/m
Peak SAR (extrapolated) = 2.18 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.583 mW/g



0 dB = 1.31mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

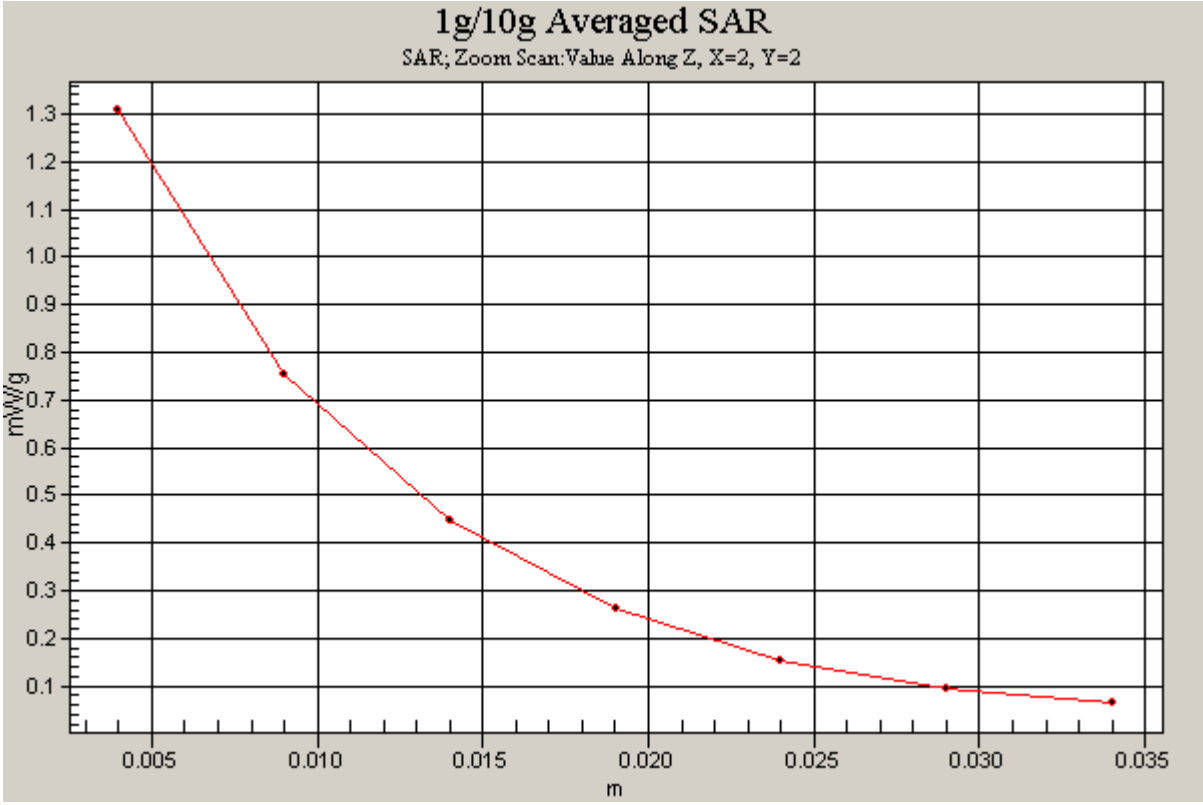
Communication System: WCDMA1900; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.54 mho/m; ε_r = 52.54 ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.5 cm

Test Date: 04-25-2011; Ambient Temp: 23.7°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: WCDMA 1900, Body SAR, Top side, High.ch

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.3 V/m
Peak SAR (extrapolated) = 2.18 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.583 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

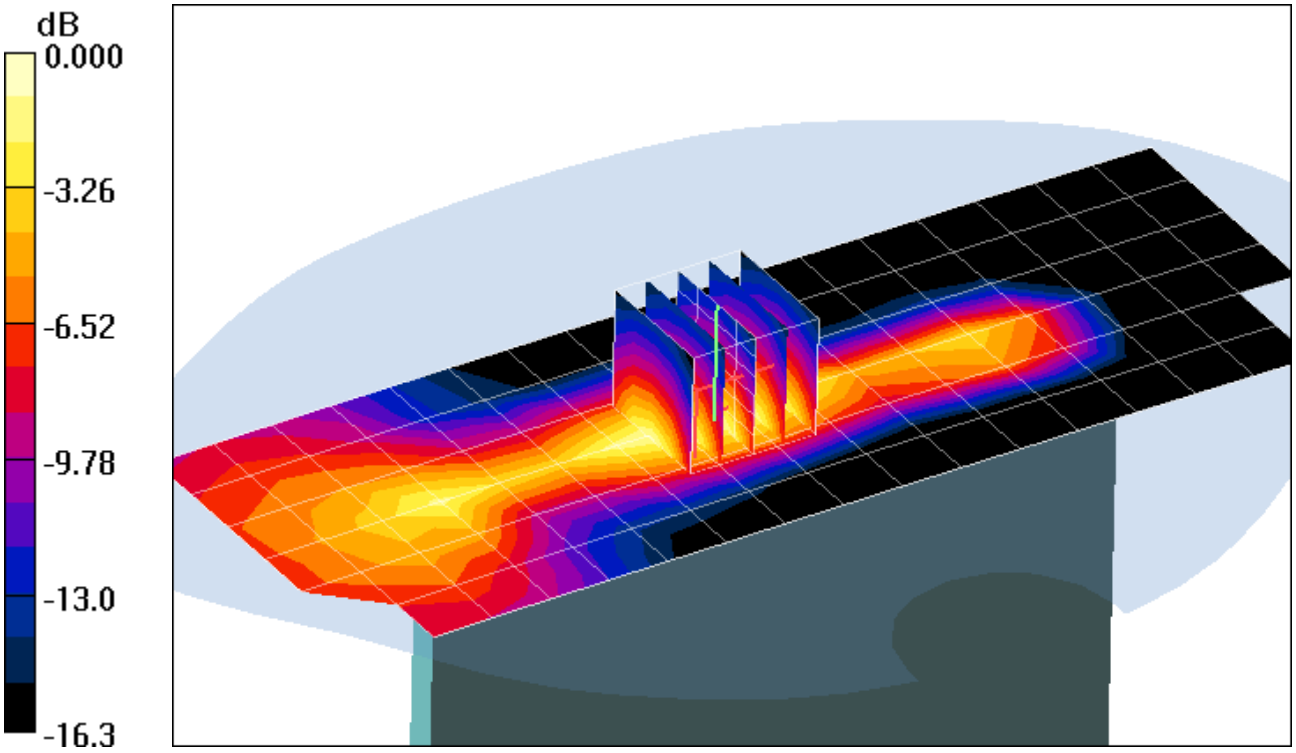
Communication System: WCDMA1900; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
$f = 1852.4$ MHz; $\sigma = 1.482$ mho/m; $\varepsilon_r = 52.8$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-25-2011; Ambient Temp: 23.7°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: WCDMA 1900, Body SAR, Right side, Low ch

Area Scan (7x18x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.7 V/m
Peak SAR (extrapolated) = 0.420 W/kg
SAR(1 g) = 0.227 mW/g; SAR(10 g) = 0.119 mW/g



0 dB = 0.257mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

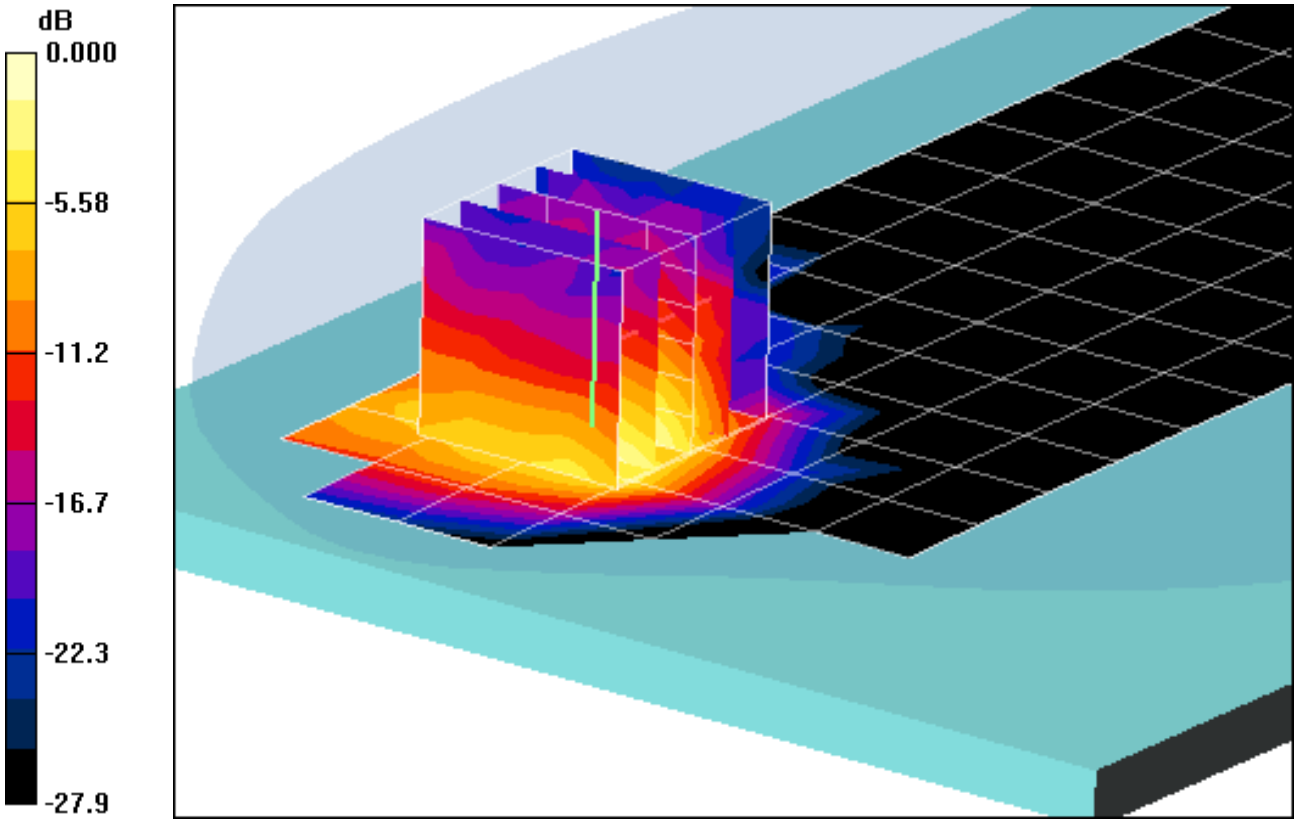
Communication System: IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2462 MHz; σ = 2.02 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-18-2011; Ambient Temp: 24.1 °C; Tissue Temp: 23.0 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn704; Calibrated: 3/17/2011
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: IEEE 802.11b, Body SAR, Ch.11, 1Mbps, 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 = 18.4 V/m
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 0.623 mW/g; SAR(10 g) = 0.261 mW/g



0 dB = 0.772mW/g

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

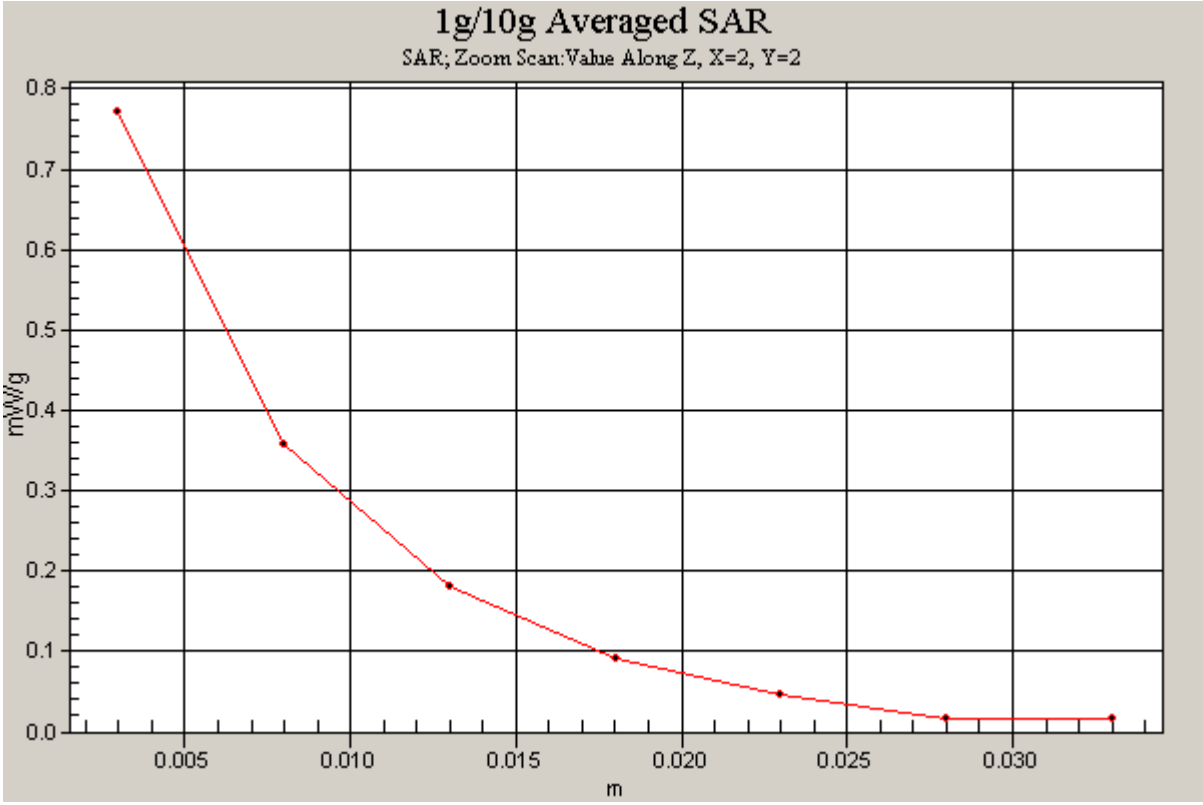
Communication System: IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2462 MHz; σ = 2.02 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-18-2011; Ambient Temp: 24.1 °C; Tissue Temp: 23.0 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn704; Calibrated: 3/17/2011
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: IEEE 802.11b, Body SAR, Ch.11, 1Mbps, 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 = 18.4 V/m
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 0.623 mW/g; SAR(10 g) = 0.261 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

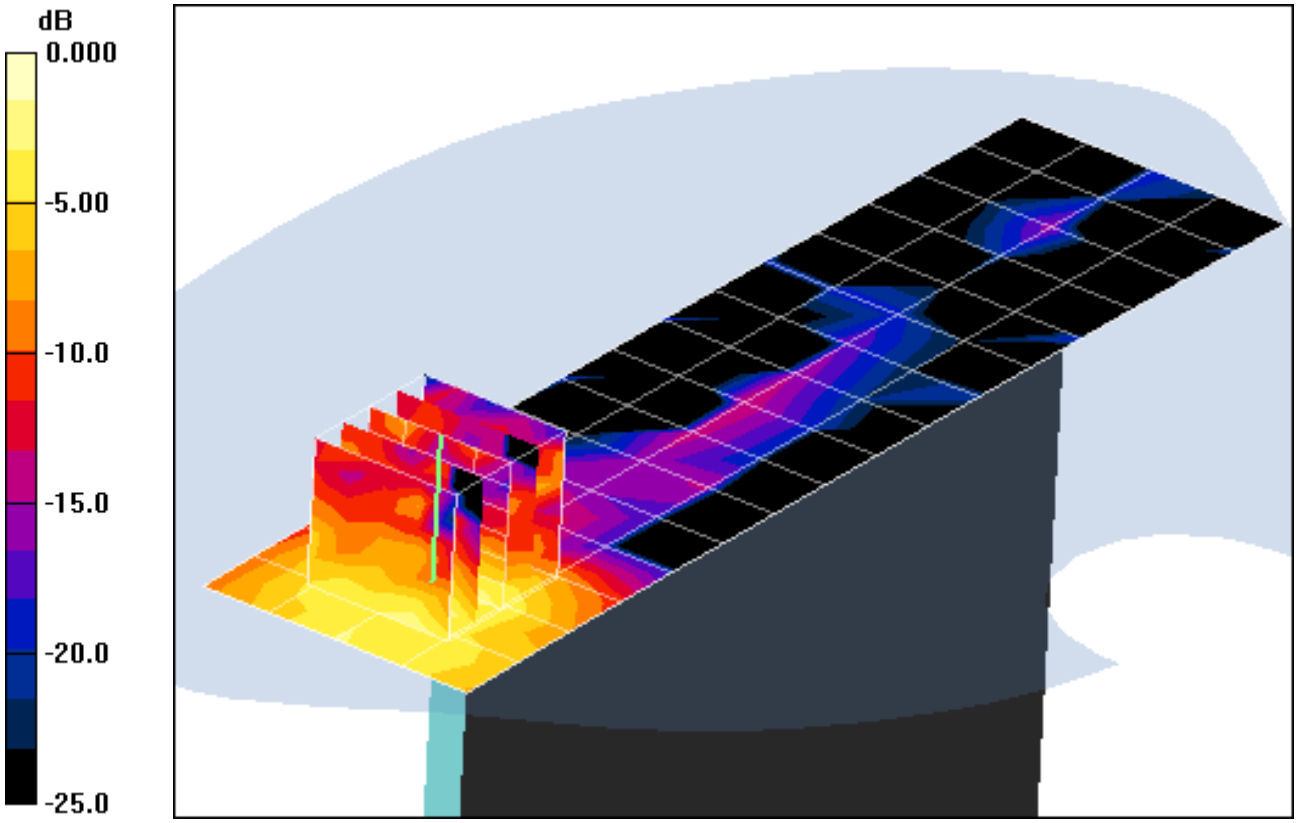
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2462 MHz; σ = 2.02 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-18-2011; Ambient Temp: 24.1 °C; Tissue Temp: 23.0 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn704; Calibrated: 3/17/2011
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

Area Scan (5x17x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.34 V/m
Peak SAR (extrapolated) = 0.155 W/kg
SAR(1 g) = 0.068 mW/g; SAR(10 g) = 0.029 mW/g



0 dB = 0.084mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

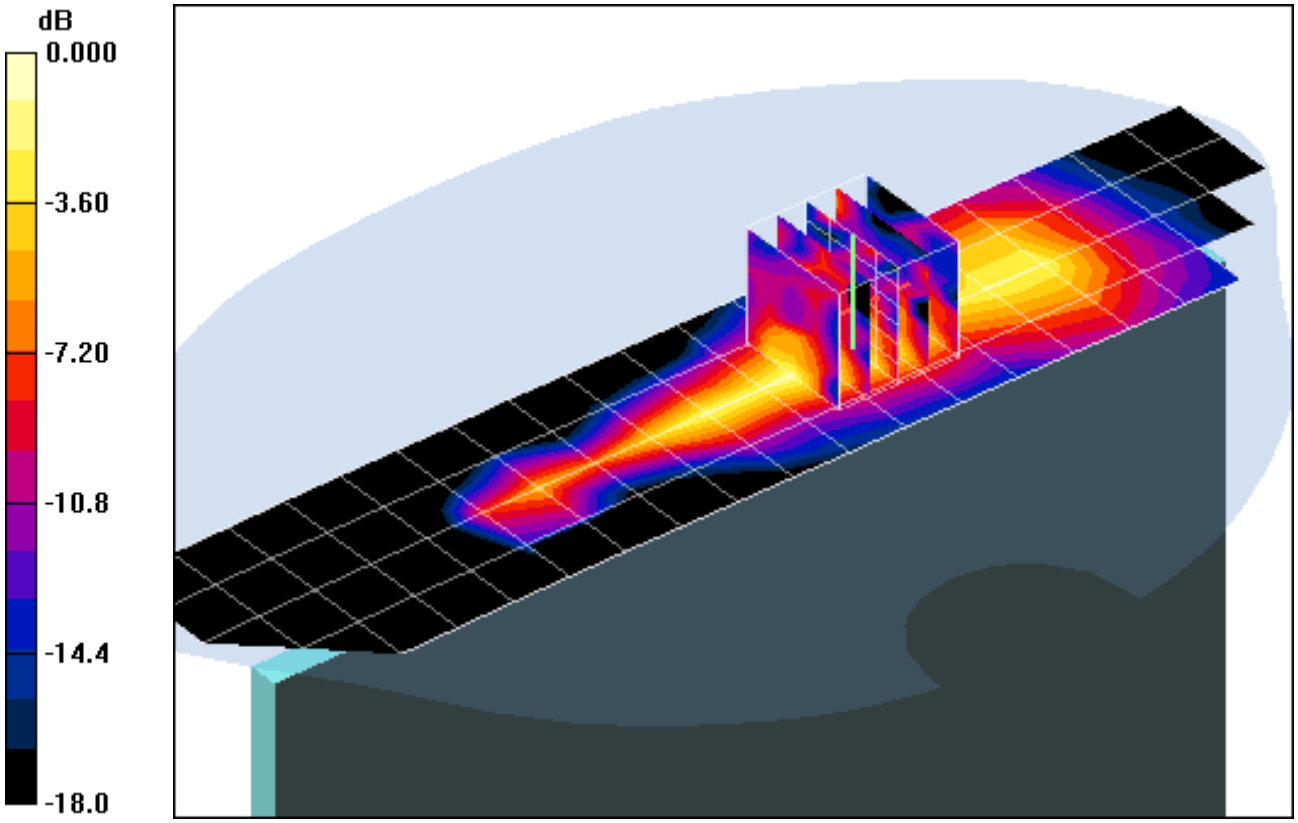
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2462 MHz; σ = 2.02 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-18-2011; Ambient Temp: 24.1 °C; Tissue Temp: 23.0 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn704; Calibrated: 3/17/2011
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

Area Scan (5x20x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.44 V/m
Peak SAR (extrapolated) = 0.142 W/kg
SAR(1 g) = 0.079 mW/g; SAR(10 g) = 0.037 mW/g



0 dB = 0.104mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5240 MHz; Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5240 MHz; σ = 5.39 mho/m; ε_r = 47.5; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.4°C; Tissue Temp: 22.8°C

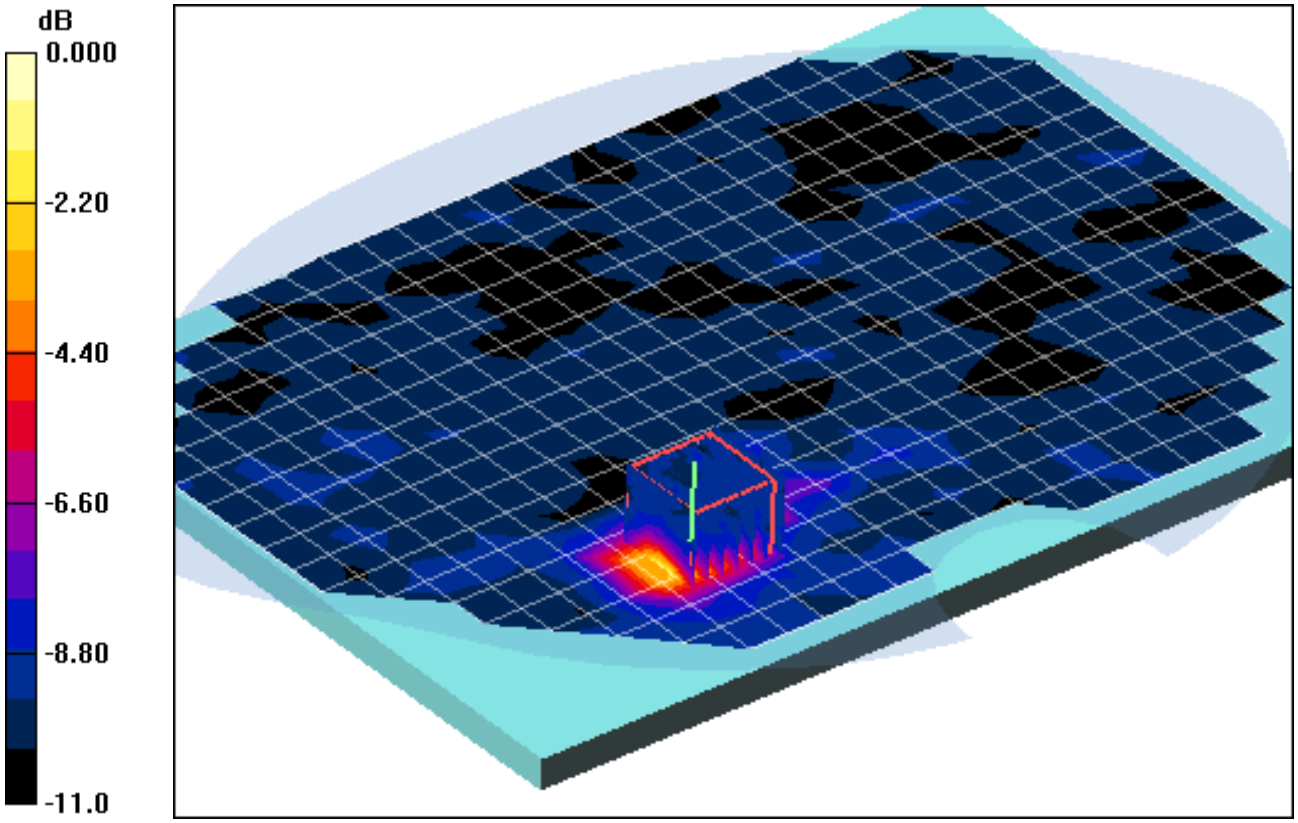
Probe: EX3DV4 - SN3550; ConvF(3.58, 3.58, 3.58); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Mode: IEEE 802.11a 5.2 GHz, Back Side, Ch 48, 6Mbps

Area Scan (18x26x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 12.2 V/m

Peak SAR (extrapolated) = 1.84 W/kg

SAR(1 g) = 0.543 mW/g; SAR(10 g) = 0.235 mW/g



0 dB = 1.19mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

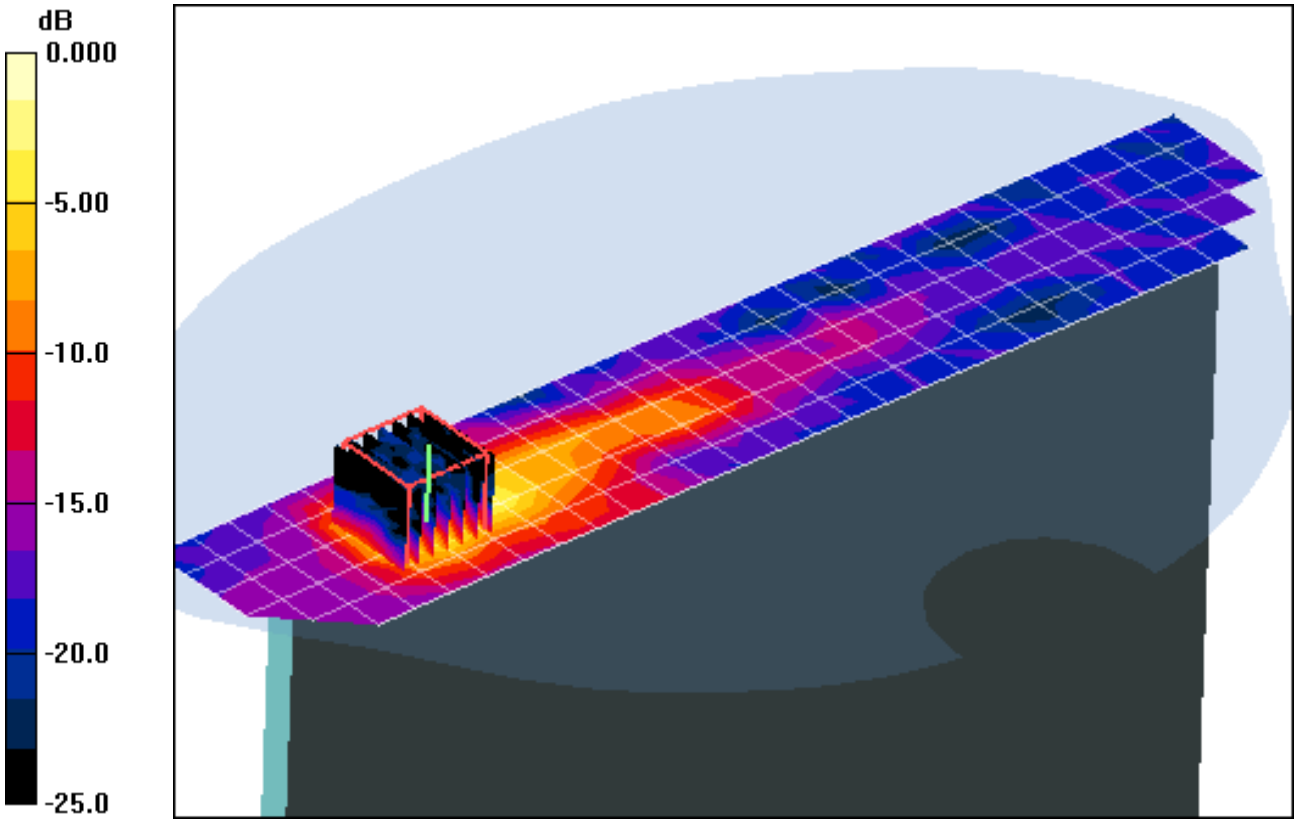
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5240 MHz; Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5240 MHz; σ = 5.39 mho/m; ε_r = 47.5; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.4°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3550; ConvF(3.58, 3.58, 3.58); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 802.11a 5.2 GHz, Top Side, Ch 48, 6Mbps

Area Scan (6x29x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.3 V/m
Peak SAR (extrapolated) = 2.37 W/kg
SAR(1 g) = 0.593 mW/g; SAR(10 g) = 0.153 mW/g



0 dB = 1.22mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

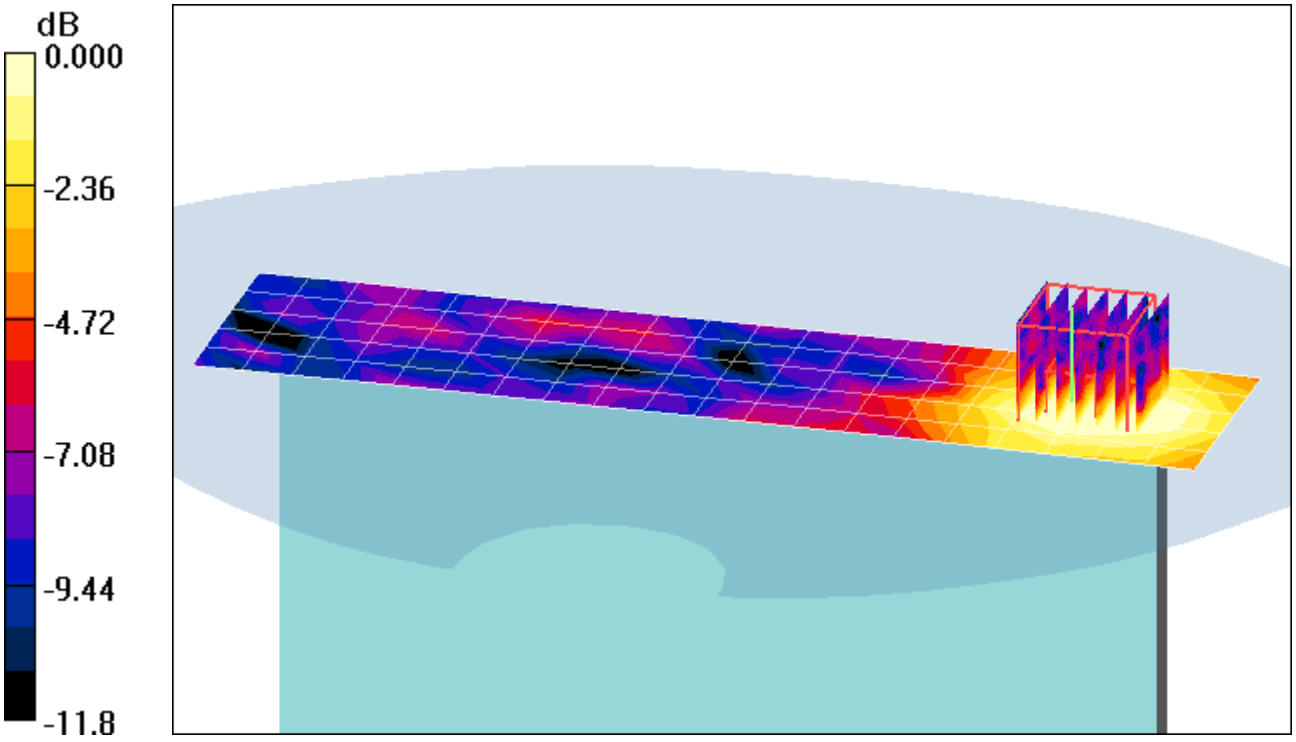
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5240 MHz;Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
$f = 5240$ MHz; $\sigma = 5.39$ mho/m; $\varepsilon_r = 47.5$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.4°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3550; ConvF(3.58, 3.58, 3.58); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 802.11a 5.2 GHz, Left Side, Ch 48, 6Mbps

Area Scan (6x21x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.46 V/m
Peak SAR (extrapolated) = 0.369 W/kg
SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.070 mW/g



0 dB = 0.197mW/g

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

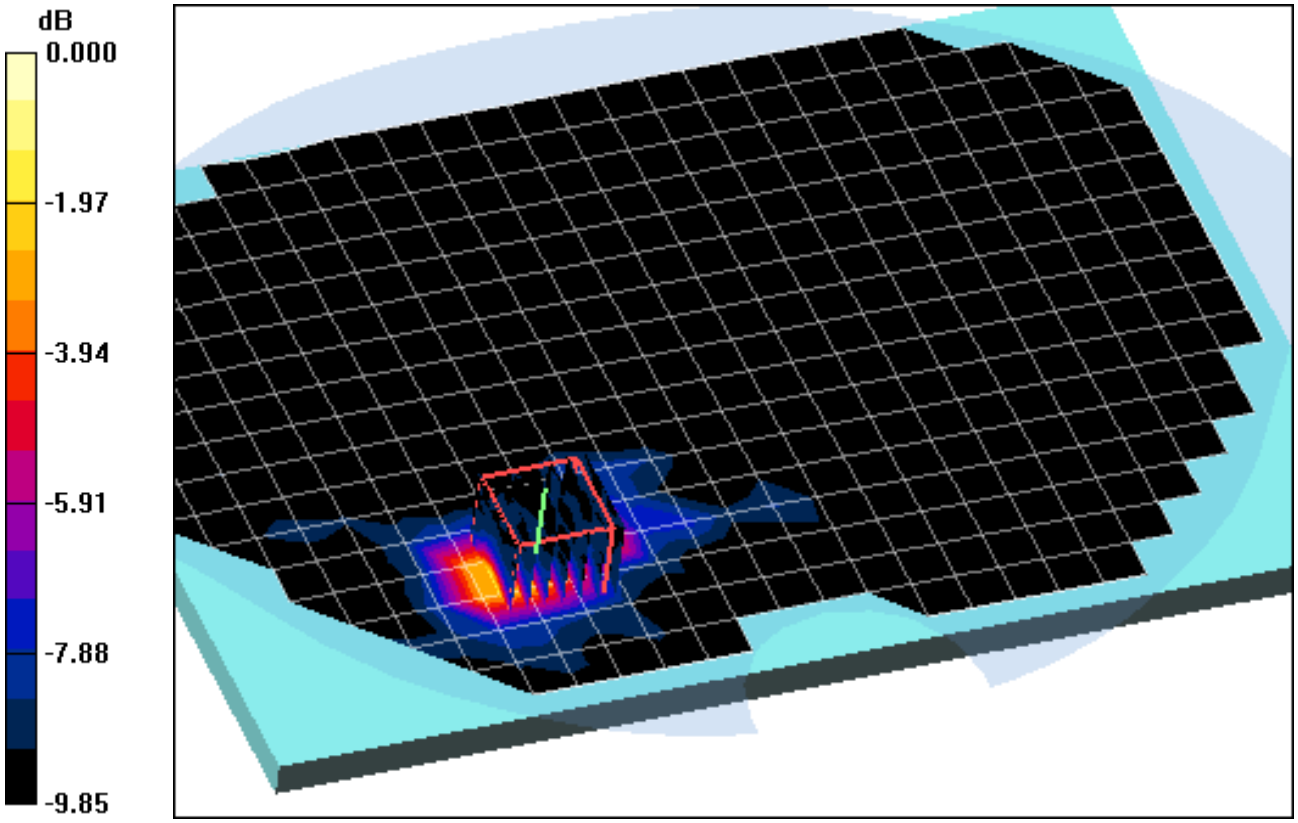
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5260 MHz; σ = 5.43 mho/m; ε_r = 47.4; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.4°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3550; ConvF(3.31, 3.31, 3.31); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 802.11a 5.3 GHz, Back Side, Ch 52, 6Mbps

Area Scan (18x26x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 12.0 V/m
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.517 mW/g; SAR(10 g) = 0.233 mW/g



0 dB = 0.852mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

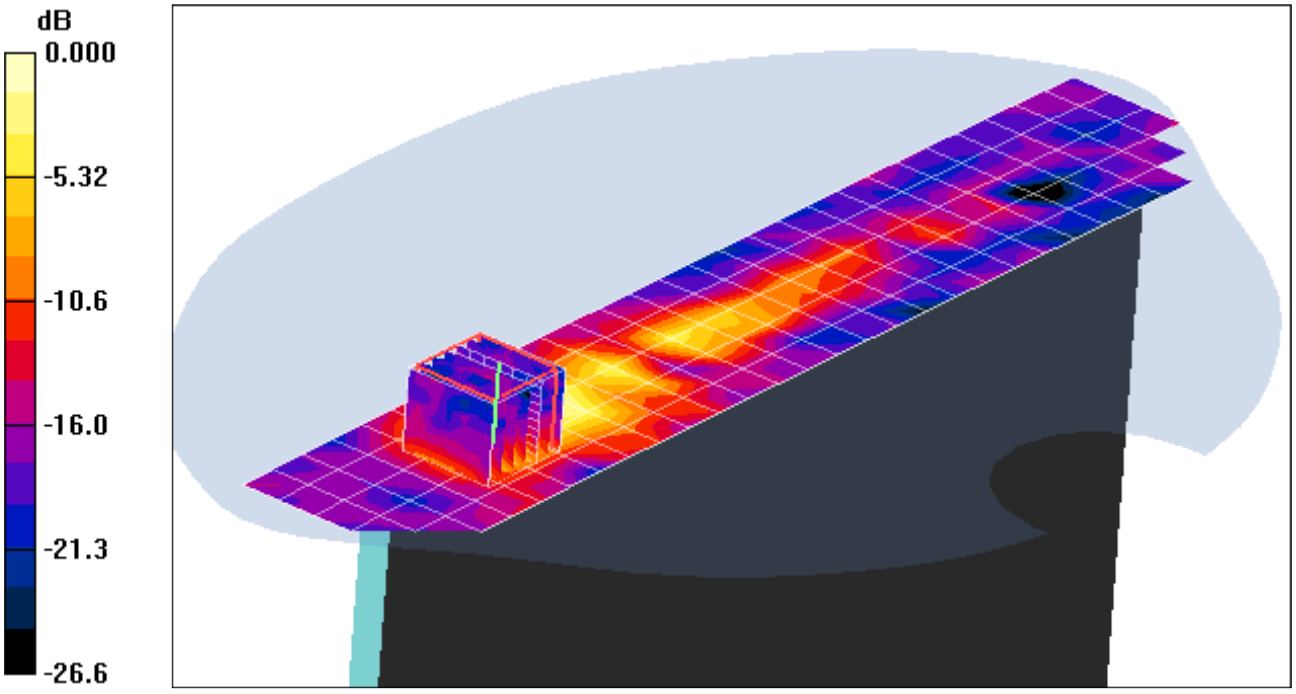
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5260 MHz; σ = 5.43 mho/m; ε_r = 47.4; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.4°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3550; ConvF(3.31, 3.31, 3.31); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 802.11a 5.3 GHz, Top Edge, Ch 52, 6Mbps

Area Scan (6x29x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.7 V/m
Peak SAR (extrapolated) = 2.43 W/kg
SAR(1 g) = 0.627 mW/g; SAR(10 g) = 0.172 mW/g



0 dB = 1.26mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

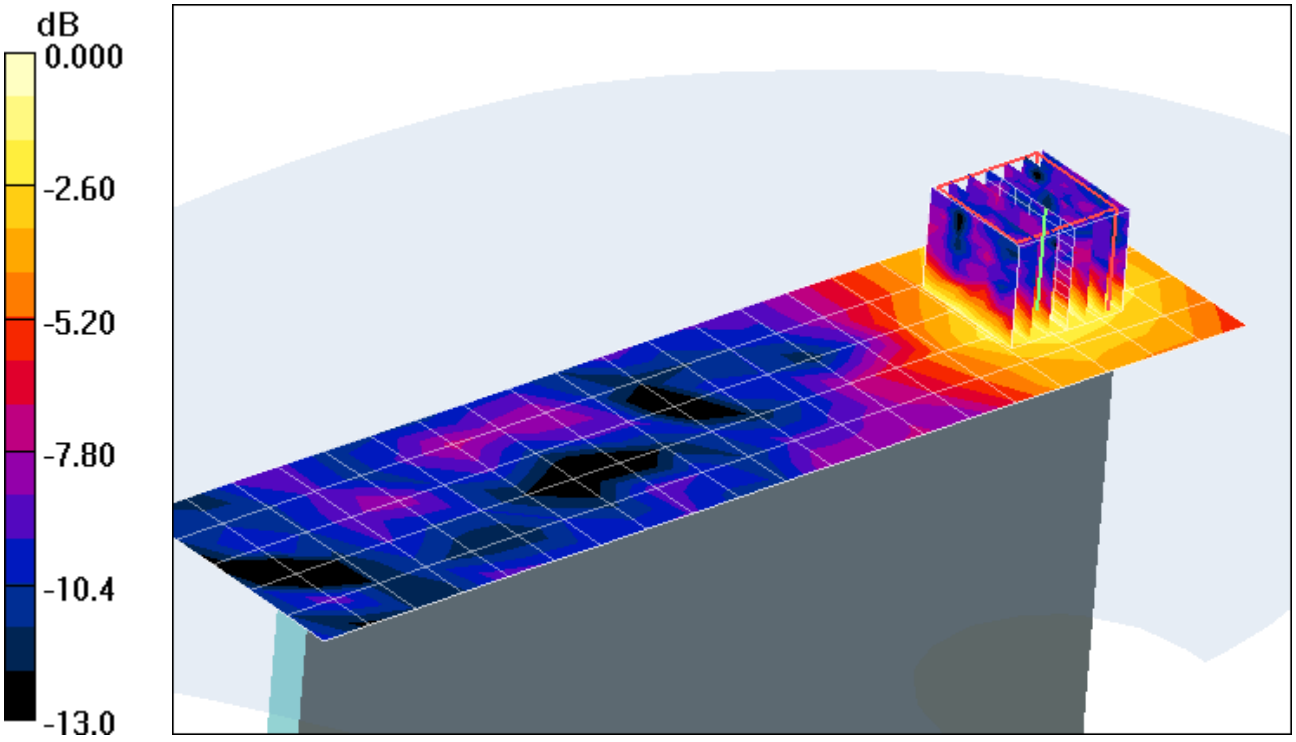
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
$f = 5260$ MHz; $\sigma = 5.43$ mho/m; $\varepsilon_r = 47.4$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.4°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3550; ConvF(3.31, 3.31, 3.31); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 802.11a 5.3 GHz, Left Side, Ch 52, 6Mbps

Area Scan (6x21x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.81 V/m
Peak SAR (extrapolated) = 0.567 W/kg
SAR(1 g) = 0.183 mW/g; SAR(10 g) = 0.101 mW/g



0 dB = 0.302mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

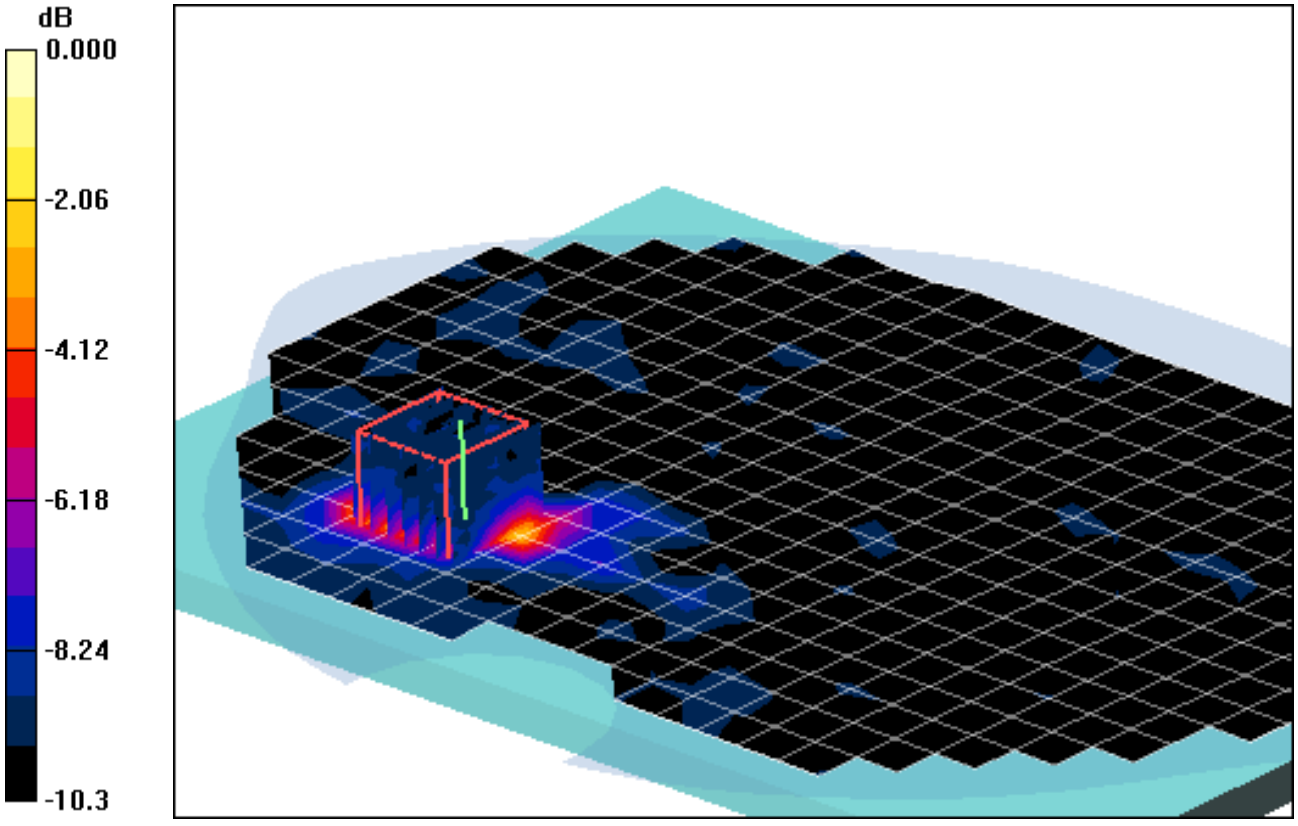
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5500 MHz; σ = 5.82 mho/m; ε_r = 46.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.6°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 802.11a 5.5 GHz, Back Side, Ch 100, 6Mbps

Area Scan (18x26x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.0 V/m
Peak SAR (extrapolated) = 2.43 W/kg
SAR(1 g) = 0.643 mW/g; SAR(10 g) = 0.272 mW/g



0 dB = 0.947mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

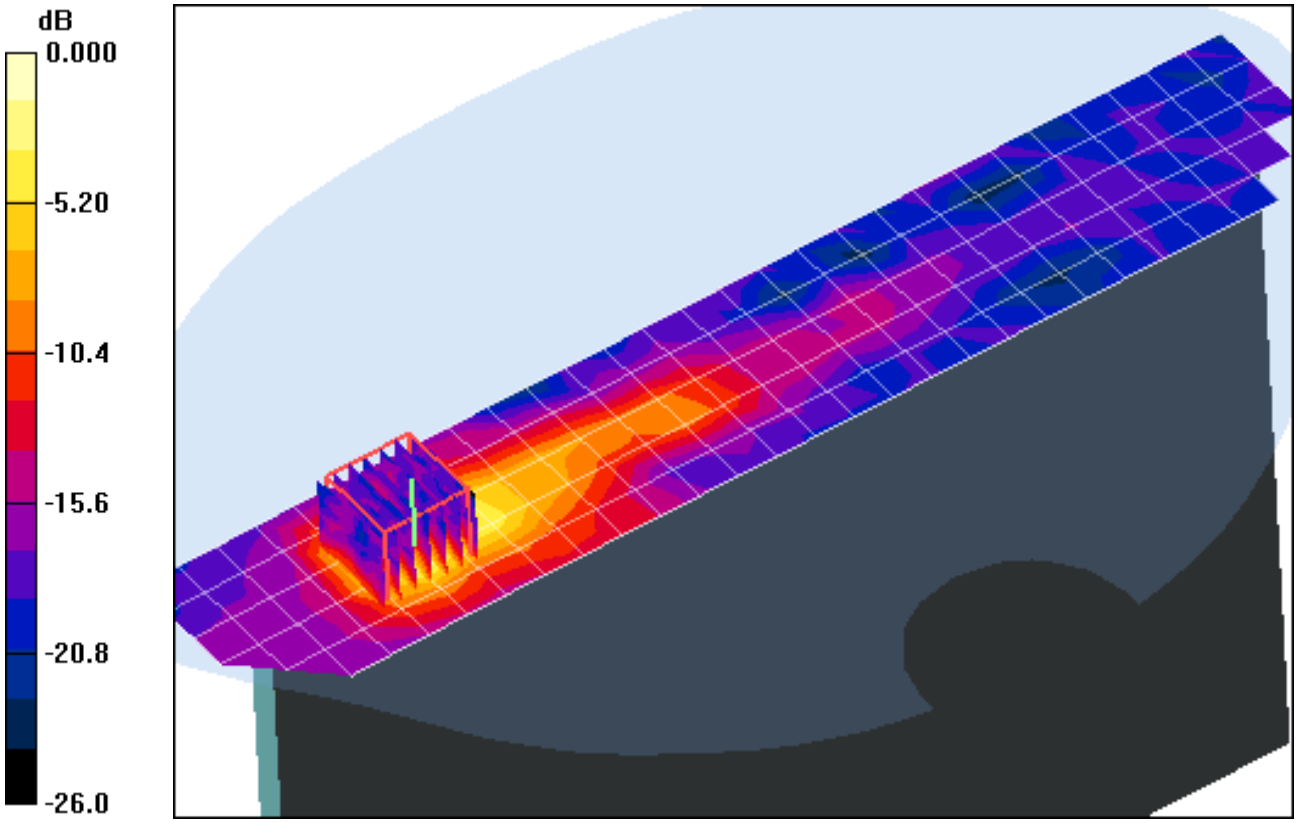
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5500 MHz; σ = 5.82 mho/m; ε_r = 46.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.6°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 802.11a 5.5 GHz, Top Side, Ch 100, 6Mbps

Area Scan (6x29x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.7 V/m
Peak SAR (extrapolated) = 3.04 W/kg
SAR(1 g) = 0.689 mW/g; SAR(10 g) = 0.194 mW/g



0 dB = 1.38mW/g

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

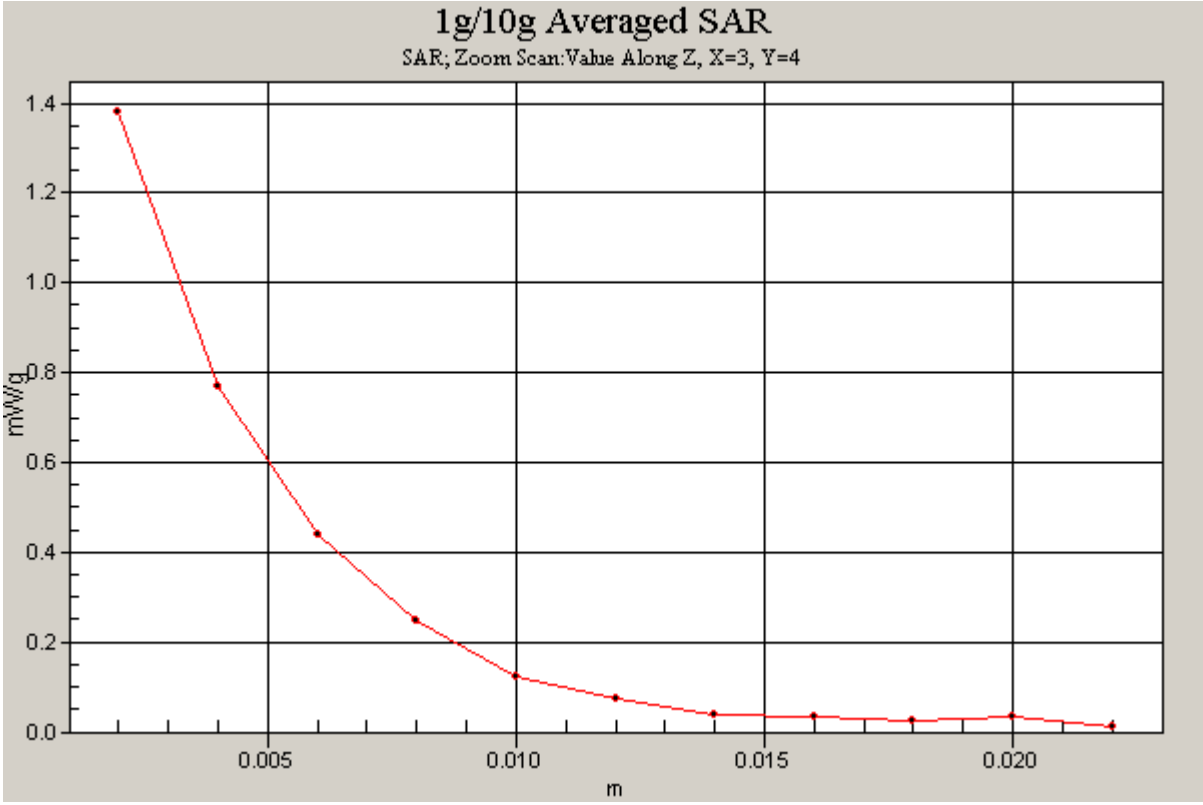
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5500 MHz; σ = 5.82 mho/m; ε_r = 46.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.6°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 802.11a 5.5 GHz, Top Side, Ch 100, 6Mbps

Area Scan (6x29x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.7 V/m
Peak SAR (extrapolated) = 3.04 W/kg
SAR(1 g) = 0.689 mW/g; SAR(10 g) = 0.194 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

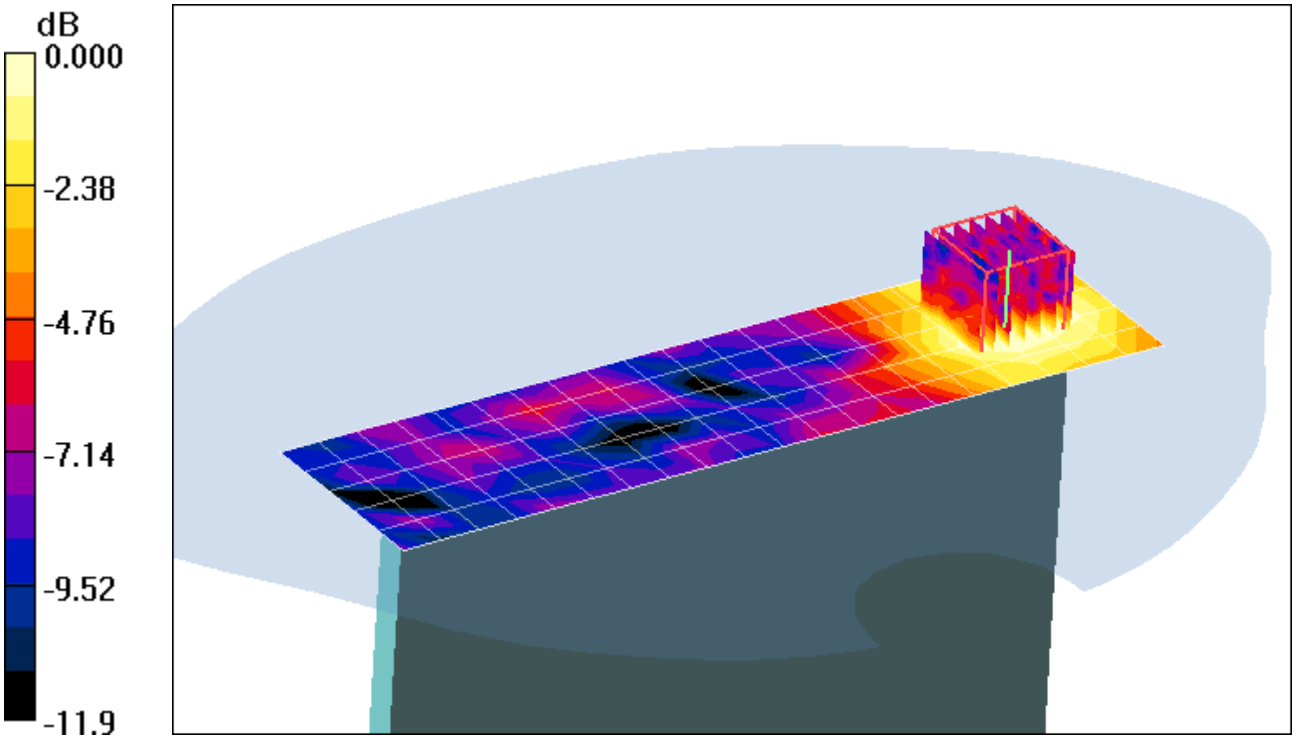
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
$f = 5500$ MHz; $\sigma = 5.82$ mho/m; $\varepsilon_r = 46.8$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.6°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 802.11a 5.5 GHz, Left Side, Ch 100, 6Mbps

Area Scan (6x21x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.45 V/m
Peak SAR (extrapolated) = 0.427 W/kg
SAR(1 g) = 0.129 mW/g; SAR(10 g) = 0.078 mW/g



0 dB = 0.204mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

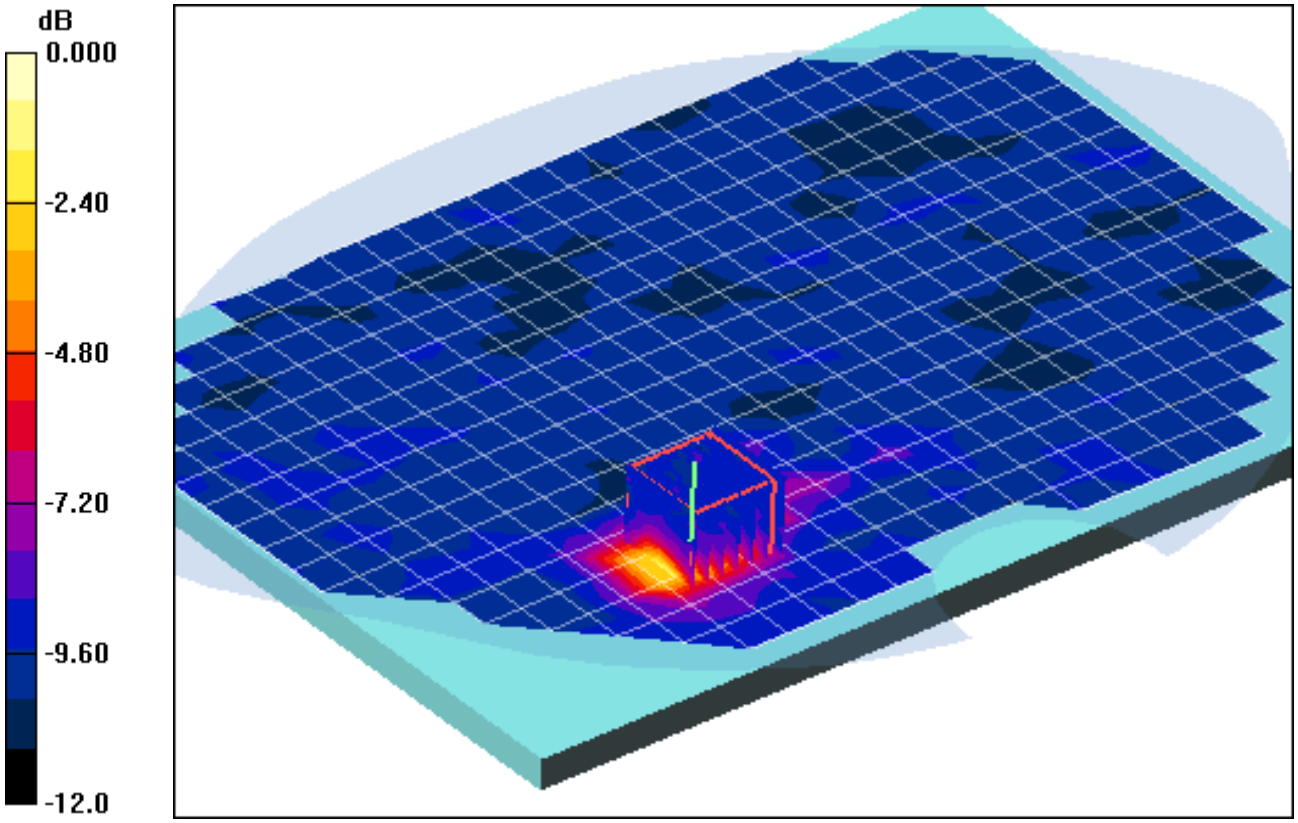
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5805 MHz; Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
$f = 5805$ MHz; $\sigma = 6.26$ mho/m; $\varepsilon_r = 45.9$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.5°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 Sn859; Calibrated: 7/8/2010
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 802.11a 5.8 GHz, Back Side, Ch 161, 6Mbps

Area Scan (18x26x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 12.0 V/m
Peak SAR (extrapolated) = 6.48 W/kg
SAR(1 g) = 0.666 mW/g; SAR(10 g) = 0.318 mW/g



0 dB = 1.34mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

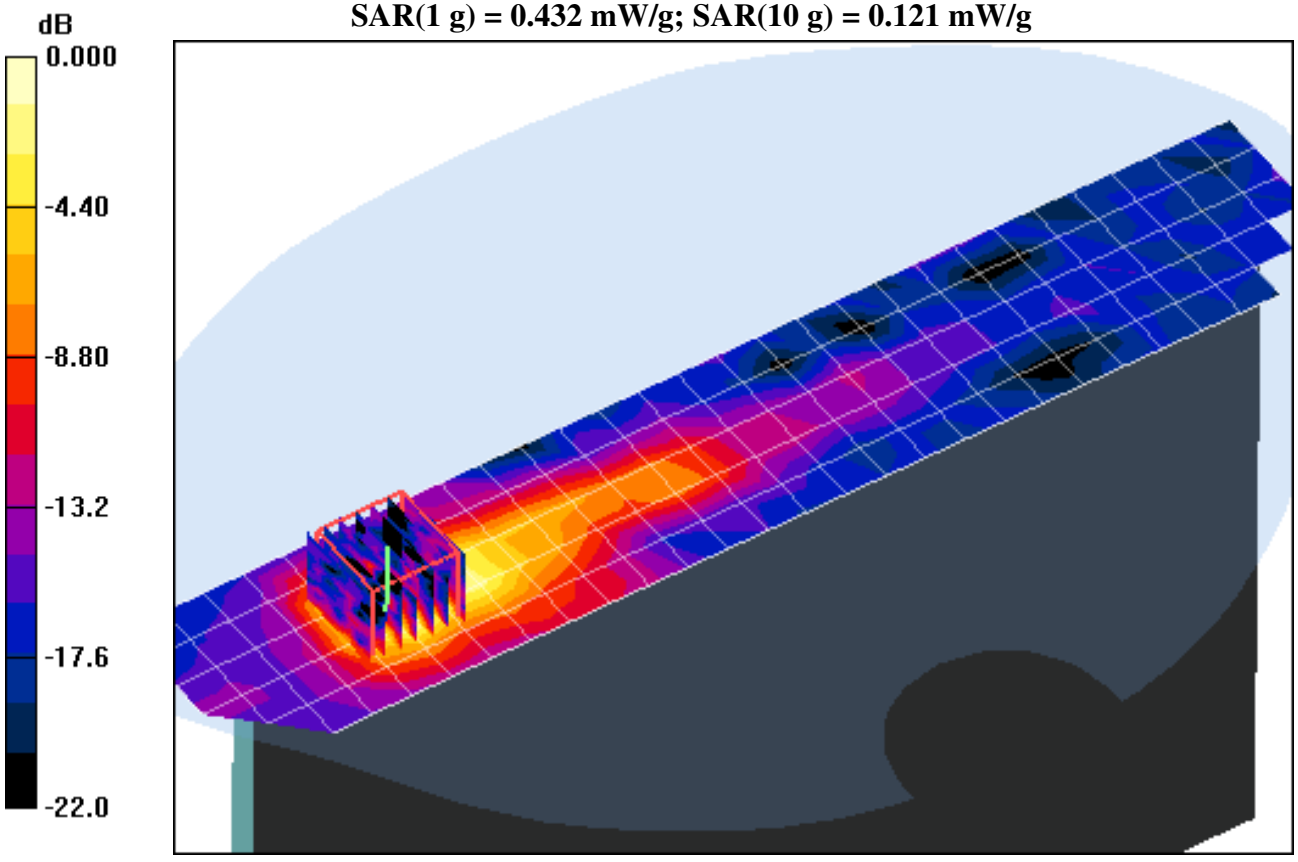
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5805 MHz; σ = 6.26 mho/m; ε_r = 45.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: 04-14-2011; Ambient Temp: 24.5°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 Sn859; Calibrated: 7/8/2010
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 802.11a 5.8 GHz, Top Side, Ch 161, 6Mbps

Area Scan (6x29x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 11.1 V/m
Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 0.432 mW/g; SAR(10 g) = 0.121 mW/g



0 dB = 0.950mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LGTP7500; Type: 850/1900 GPRS/EDGE/HSPA Tablet with Bluetooth and WLAN; Serial: 357750040001058

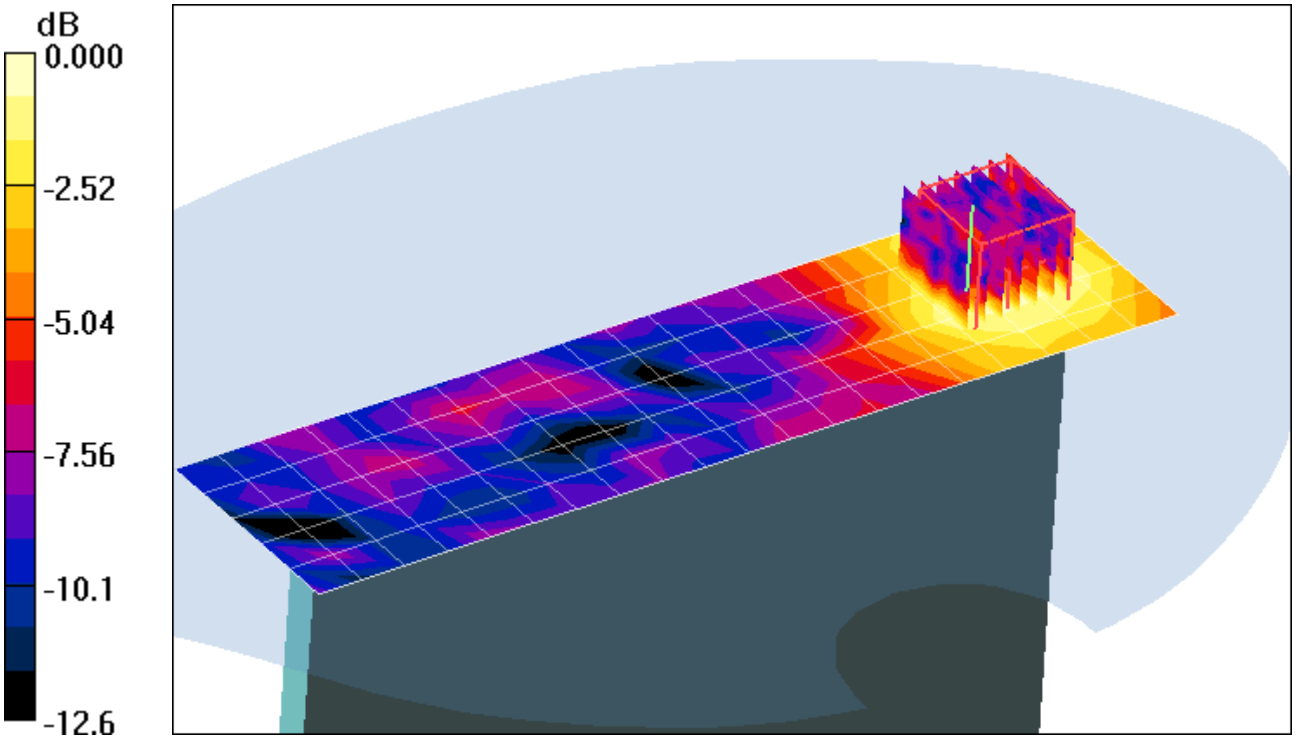
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
$f = 5805$ MHz; $\sigma = 6.26$ mho/m; $\varepsilon_r = 45.9$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.5°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 Sn859; Calibrated: 7/8/2010
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 802.11a 5.8 GHz, Left Side, Ch 161, 6Mbps

Area Scan (6x21x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.66 V/m
Peak SAR (extrapolated) = 0.530 W/kg
SAR(1 g) = 0.138 mW/g; SAR(10 g) = 0.082 mW/g



0 dB = 0.231mW/g

APPENDIX B: DIPOLE VALIDATION

PCTEST ENGINEERING LABORATORY, INC.

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

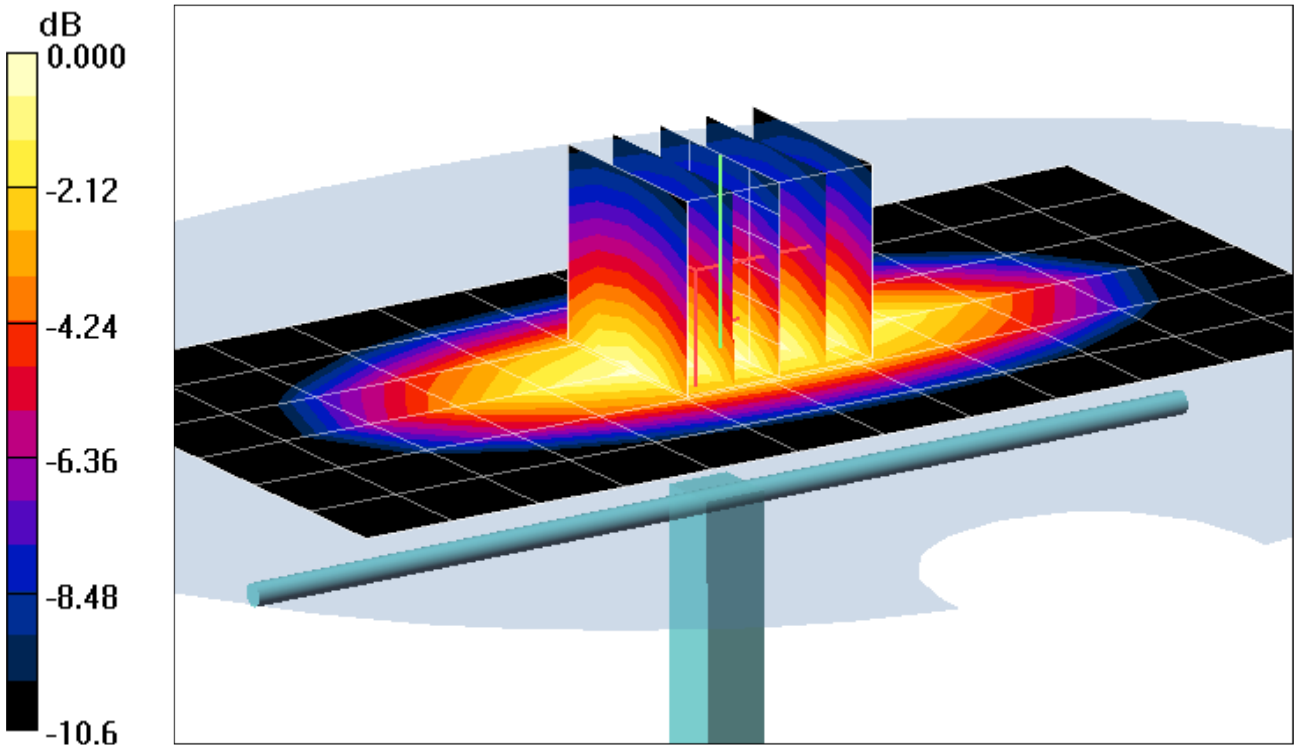
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.965 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 04-20-2011; Ambient Temp: 24.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(8.09, 8.09, 8.09); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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 = 18.0 dBm (63.0 mW)
SAR(1 g) = 0.653 mW/g; SAR(10 g) = 0.428 mW/g
Deviation = 5.23 %



0 dB = 0.705mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

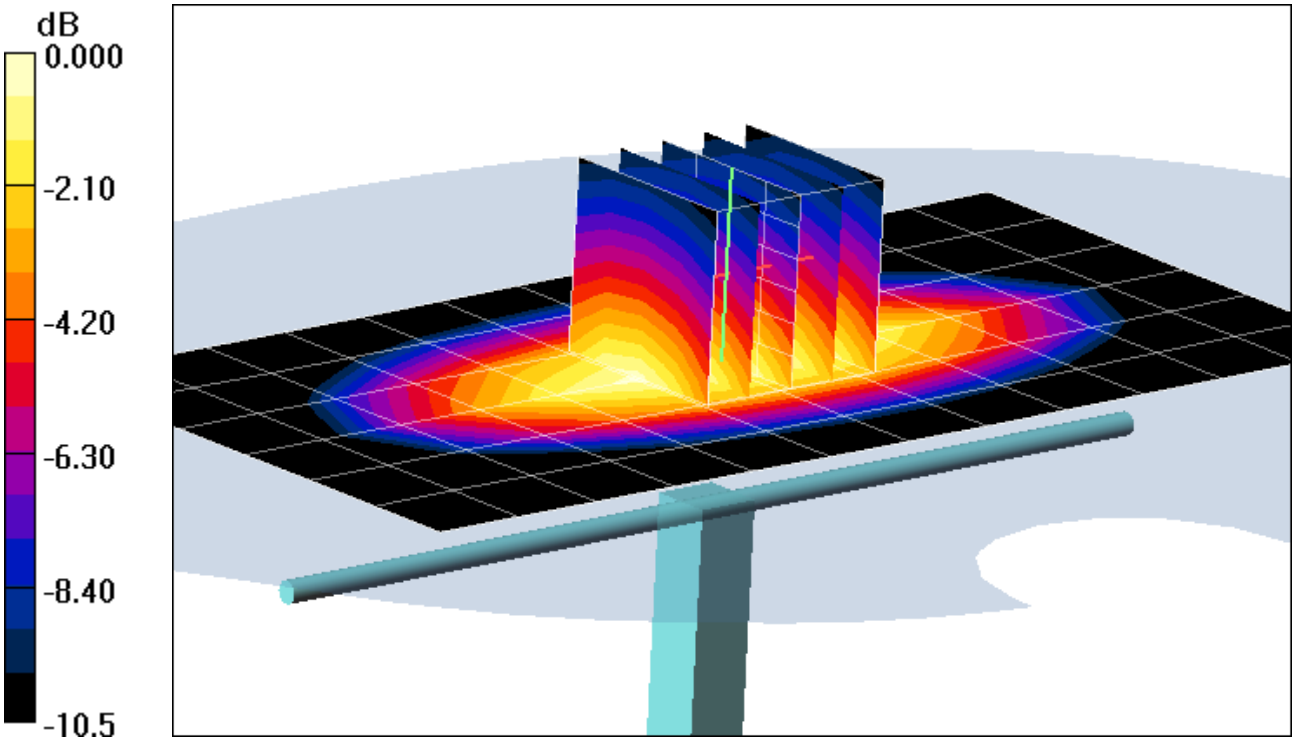
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.933 mho/m; ε_r = 52.46; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 04-25-2011; Ambient Temp: 23.8°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN3561; ConvF(8.09, 8.09, 8.09); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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 = 18.0 dBm (63.0 mW)
SAR(1 g) = 0.634 mW/g; SAR(10 g) = 0.415 mW/g
Deviation = 2.17%



0 dB = 0.683mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

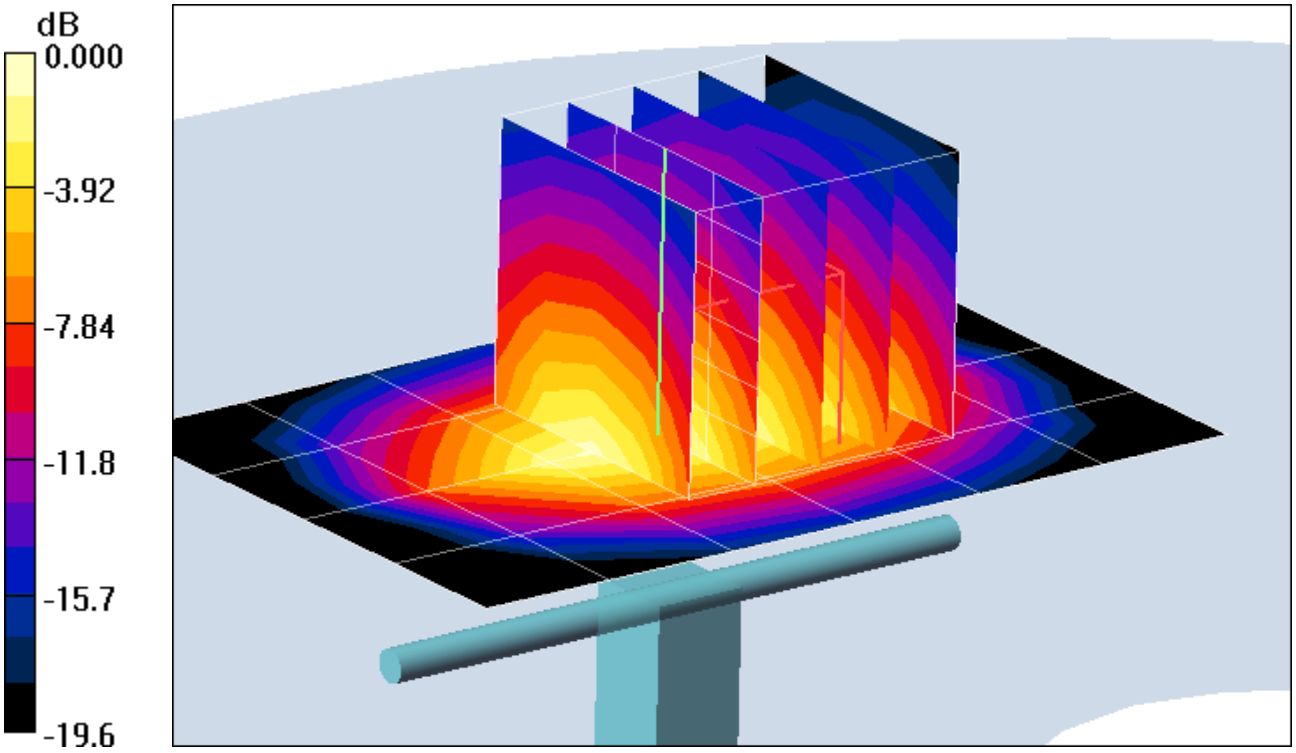
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.53 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-25-2011; Ambient Temp: 23.7°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

1900MHz System Verification

Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 16.0 dBm (40.0 mW)
SAR(1 g) = 1.65 mW/g; SAR(10 g) = 0.844 mW/g
Deviation = 0.36%



0 dB = 1.84mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

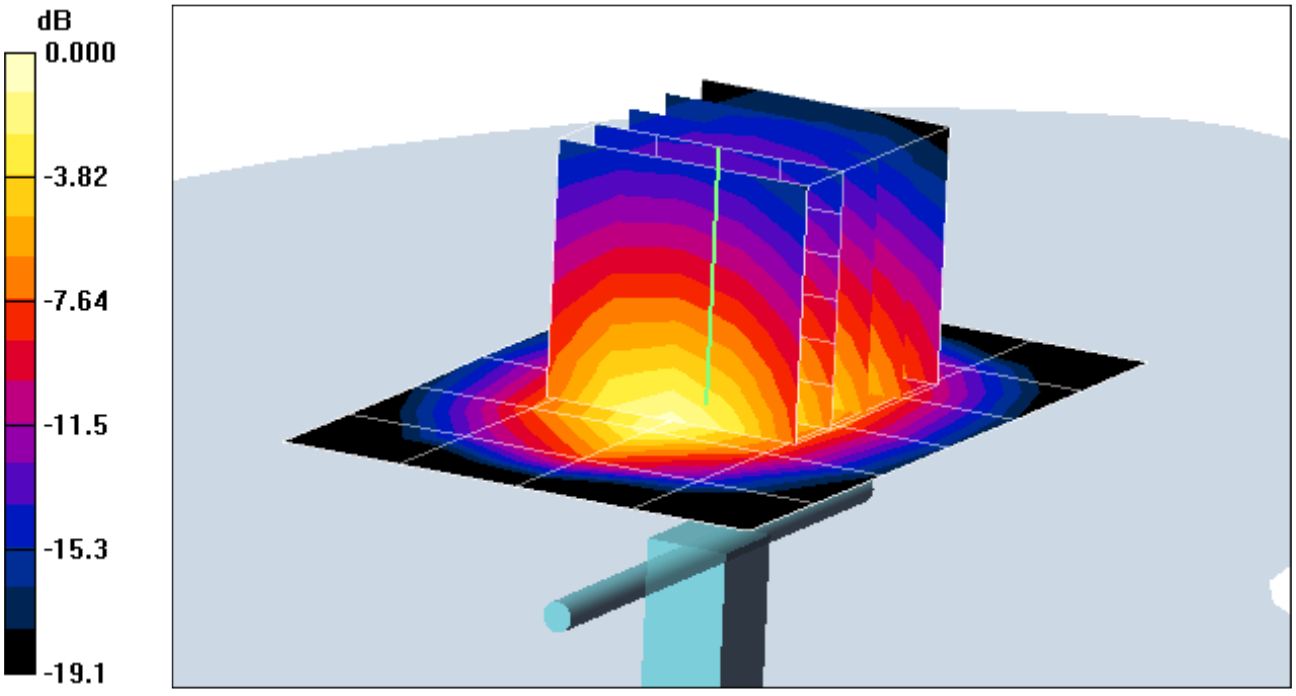
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.49 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-18-2011; Ambient Temp: 24.1°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(6.59, 6.59, 6.59); Calibrated: 8/19/2010
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/21/2011
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

1900MHz System Verification

Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 16.0 dBm (40 mW)
SAR(1 g) = 1.6 mW/g; SAR(10 g) = 0.821 mW/g
Deviation = -2.68%



0 dB = 1.79mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 2450 MHz; Type: D2450V2; Serial: 719

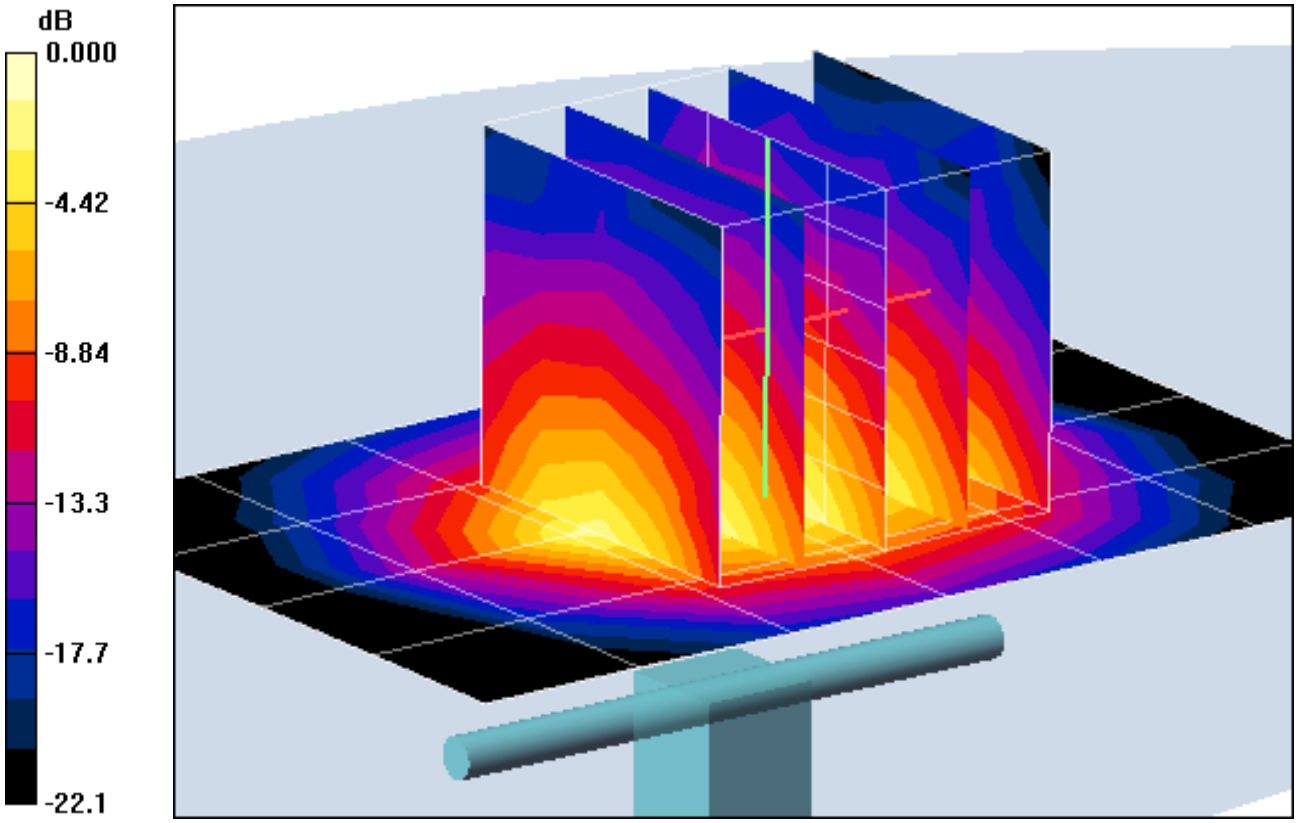
Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.01 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-18-2011; Ambient Temp: 24.1 °C; Tissue Temp: 23.0 °C

Probe: ES3DV2 - SN3022; ConvF(4.06, 4.06, 4.06); Calibrated: 9/21/2010
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn704; Calibrated: 3/17/2011
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

2450MHz System Verification

Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 12.0 dBm (15.8 mW)
SAR(1 g) = 0.859 mW/g; SAR(10 g) = 0.390 mW/g
Deviation = 5.77%



0 dB = 1.12mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

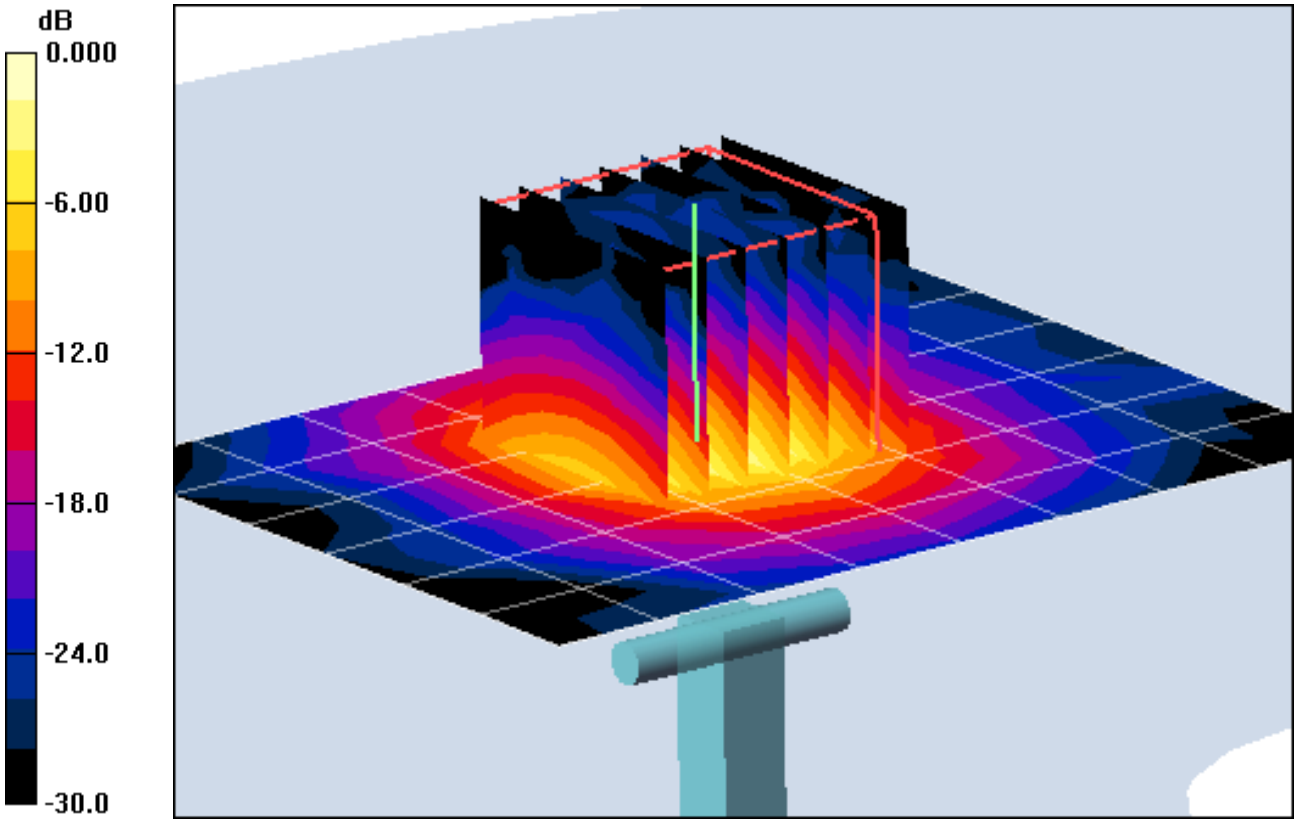
Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5200 MHz; σ = 5.38 mho/m; ε_r = 47.6; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.4°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3550; ConvF(3.58, 3.58, 3.58); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 = 14.0 dBm (25.0 mW)
SAR(1 g) = 2.02 mW/g; SAR(10 g) = 0.561 mW/g
Deviation = 3.99 %



0 dB = 4.15mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

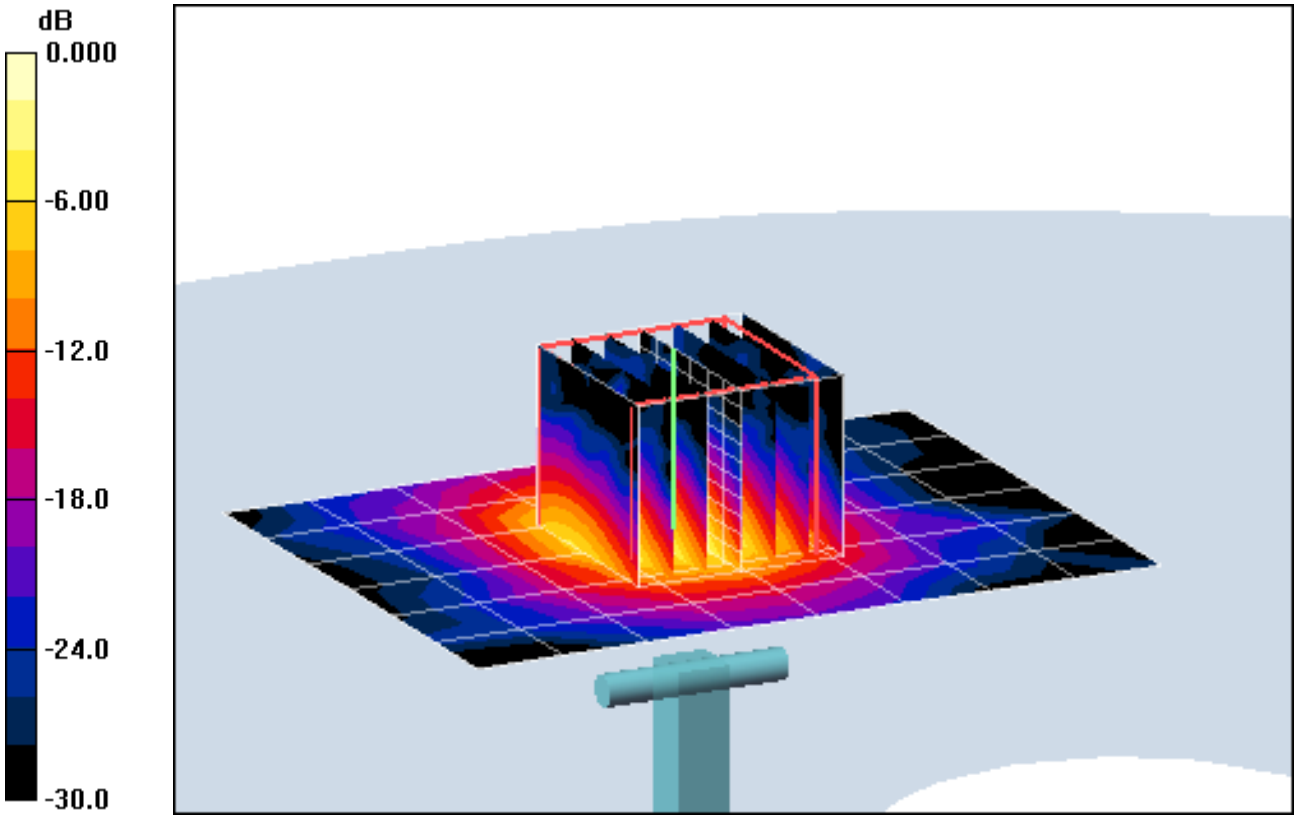
Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5500 MHz; σ = 5.82 mho/m; ε_r = 46.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-14-2011; Ambient Temp: 24.6°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN3550; ConvF(3.21, 3.21, 3.21); Calibrated: 2/14/2011
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 7/8/2010
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 = 14.0 dBm (25.0 mW)
SAR(1 g) = 2.08 mW/g; SAR(10 g) = 0.555 mW/g
Deviation = -1.42 %



0 dB = 4.22mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

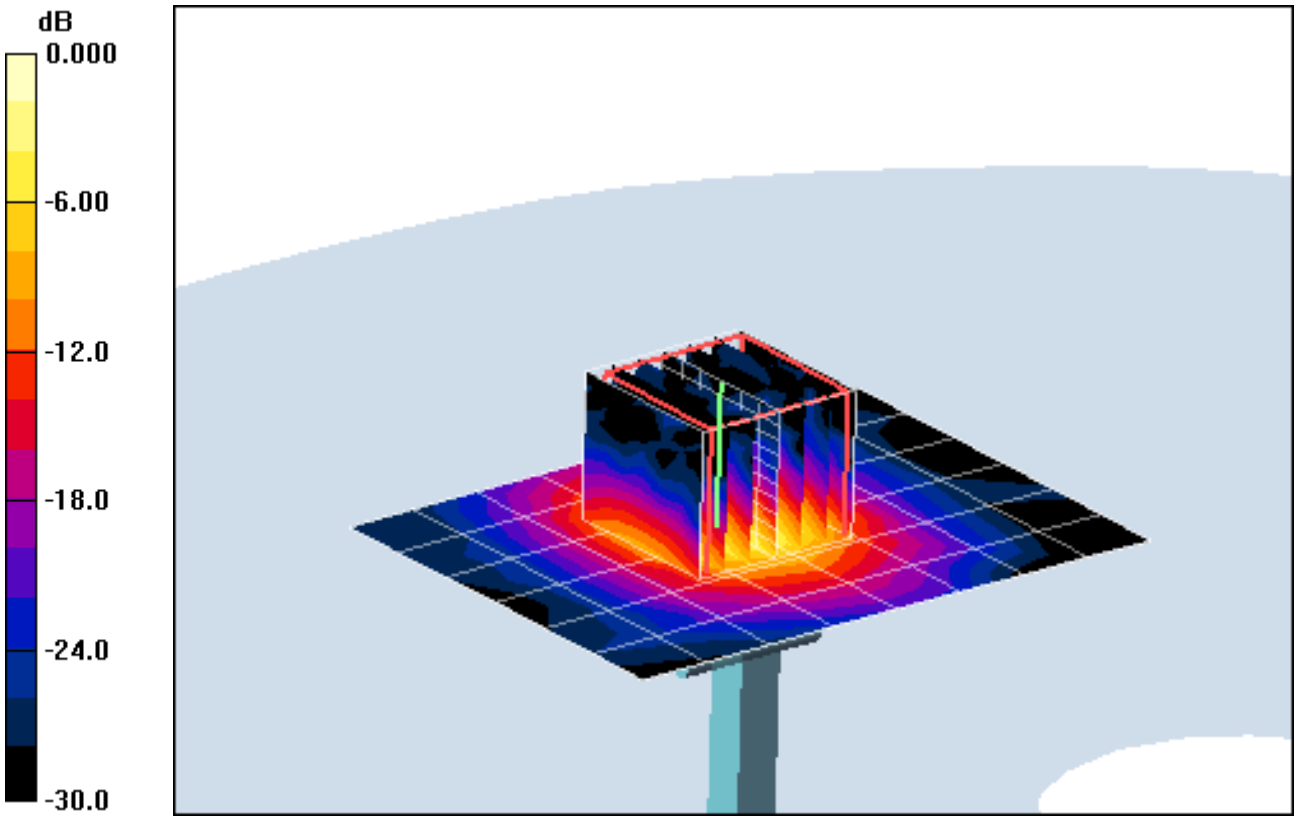
Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5 GHz Medium parameters used (interpolated):
f = 5800 MHz; σ = 6.25 mho/m; ε_r = 45.9; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 4-14-2011; Ambient Temp: 24.5°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 Sn859; Calibrated: 7/8/2010
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 = 14.0 dBm (25.0 mW)
SAR(1 g) = 1.91 mW/g; SAR(10 g) = 0.517 mW/g
Deviation = 1.87 %



0 dB = 4.13mW/g