



PCTEST ENGINEERING LABORATORY, INC.

6660-B Dobbin Road, Columbia, MD 21045 USA

Tel. 410.290.6652 / Fax 410.290.6554

<http://www.pctestlab.com>



SAR COMPLIANCE EVALUATION REPORT

Applicant Name:

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

Date of Testing:

07/12/10 - 07/23/10

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Test Report Serial No.:

0Y1007071152.BEJ-R1

FCC ID:

BEJAD600

APPLICANT:

LG ELECTRONICS USA

EUT Type:

850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE Certification

Application Type:

CFR §2.1093; FCC/OET Bulletin 65 Supplement C [June 2001]

FCC Rule Part(s):

PCS Licensed Transmitter (PCB)

FCC Classification:

AD600

Model(s):**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)

710 MHz (LTE Band 17)

1712.5 - 1752.5 MHz (LTE Band 4)

Conducted Power:

32.73 dBm GSM/GPRS/EDGE 850, 31.00 dBm GSM/GPRS/EDGE 1900

23.09 dBm UMTS/HSPA V, 22.98 dBm UMTS/HSPA II

22.35 dBm LTE Band 17

22.75 dBm LTE Band 4

Max. SAR

0.91 W/kg GSM 850 Body SAR, 0.90 W/kg GSM 1900 Body SAR

Measurement:

0.57 W/kg UMTS V Body SAR, 1.03 W/kg UMTS II Body SAR

0.70 W/kg LTE Band 17 Body SAR

1.44 W/kg LTE Band 4 Body SAR

Test Device Serial No.:

Pre-Production [S/N: SAR #1, SAR #2, EMI]

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. This revised Test Report (S/N: 0Y1007071152.BEJ-R1) supersedes and replaces the previously issued test report on the same subject EUT for the same type of testing as indicated. Please discard and destroy the previously issued test report (S/N: 0Y1007071152.BEJ) and dispose of it accordingly.

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


Randy Ortanez
President



FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 1 of 52

T A B L E O F C O N T E N T S

1	INTRODUCTION	3
2	TEST SITE LOCATION	4
3	SAR MEASUREMENT SETUP	5
4	DASY E-FIELD PROBE SYSTEM	7
5	PROBE CALIBRATION PROCESS	8
6	PHANTOM AND EQUIVALENT TISSUES.....	9
7	DOSIMETRIC ASSESSMENT & PHANTOM SPECS.....	11
8	SAR TEST POSITIONING	12
9	RF EXPOSURE LIMITS	13
10	MEASUREMENT UNCERTAINTIES	14
11	SYSTEM VERIFICATION.....	15
12	4G LTE SAR TEST CONSIDERATIONS	18
13	FCC 3G MEASUREMENT PROCEDURES.....	31
14	SAR DATA SUMMARY	33
15	EQUIPMENT LIST	43
16	CONCLUSION.....	44
17	REFERENCES	45
18	SAR TEST SETUP PHOTOGRAPHS.....	47

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 2 of 52

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[2] and Health Canada RF Exposure Guidelines Safety Code 6 [26]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [3] 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/m³)
- E = Total RMS electric field strength (V/m)

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

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 3 of 52

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 (See Figure 2).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49' 38" W longitude. The facility is 1.5 miles north of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4 on January 27, 2006 and Industry Canada.

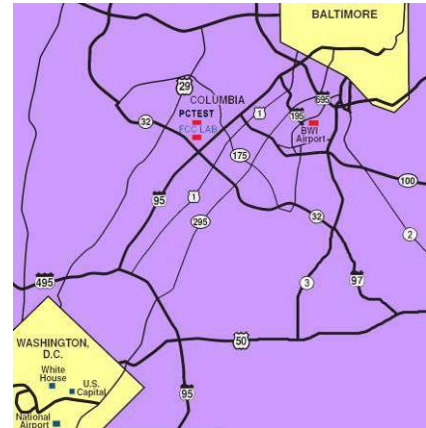
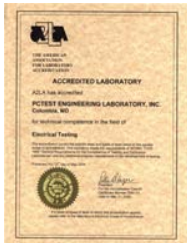


Figure 2-1

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

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), 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

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSMA USB Modem with Band 4 and 17 LTE		Page 4 of 52

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 high precision robotics system (Staubli), robot controller, Pentium 4 computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain 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, AD-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 of the DAE and transfers data to the PC plug-in card.

3.3 System Electronics

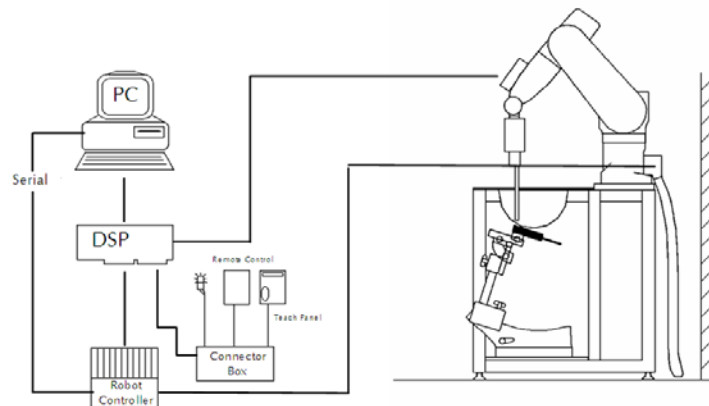


Figure 3-1
SAR Measurement System Setup

The DAE4 consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, 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. The system is described in detail in [7].

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 5 of 52

3.4 Automated Test System Specifications

Positioner

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: DASY4, SEMCAD software
Connecting Lines: Optical Downlink for data and status info
Optical upload for commands and clock

PC Interface Card

Function: 166MHz low power Pentium MMX 32MB chipdisk
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
DASY4 SAR Measurement System

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSMA USB Modem with Band 4 and 17 LTE	Page 6 of 52	

4.1 Probe Measurement System



Figure 4-1
SAR System

The SAR measurements were conducted with the dosimetric probe EX3DV4, designed in the classical triangular configuration [7] (see Figure 4-3) and optimized for dosimetric evaluation. 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 fitting (see Figure 5-1). The approach is stopped at reaching the maximum.

4.2 Probe Specifications

Model:	ES3DV3, EX3DV4
Frequency Range:	10 MHz – 6.0 GHz (EX3DV4) 10 MHz – 4 GHz (ES3DV3)
Calibration:	In brain and muscle simulating tissue at Frequencies from 835 up to 5800MHz
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

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 7 of 52

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 brain 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.

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

where:

Δt = exposure time (30 seconds),

C = heat capacity of tissue (brain or muscle),

ΔT = temperature increase due to RF exposure.

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

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. Now it's possible to quantify the electric field in the simulated tissue by equating the thermally derived SAR to the E-field;

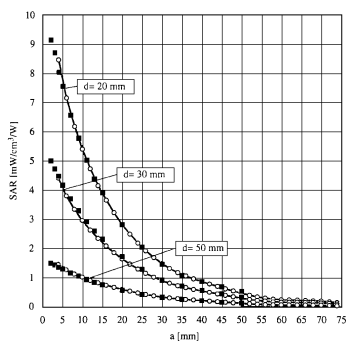


Figure 5-1 E-Field and Temperature measurements at 900MHz [7]

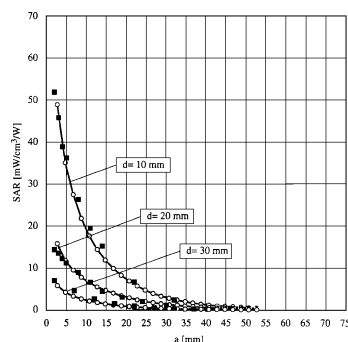


Figure 5-2 E-Field and temperature measurements at 1.9GHz [7]

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: OY1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 8 of 52

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 [11][12]. 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
Simulating Tissue

The mixture is characterized to obtain proper dielectric constant (permittivity) and conductivity of the tissue of interest. The head 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 Head & Body Tissue Equivalent Matter

Frequency (MHz)	835	1750	1900
Tissue	Body	Body	Body
Ingredients (% by weight)			
Bactericide	0.1		
DGBE		31	29.44
HEC	1		
NaCl	0.94	0.2	0.39
Sucrose	44.9		
Water	53.06	68.8	70.16

Table 6-2

750MHz Body Tissue Equivalent Matter

2 Composition / Information on ingredients	
The item is composed of the following ingredients:	
H ₂ O	Water, 35 – 58%
Sucrose	Sugar, white, refined, 40 – 60%
NaCl	Sodium Chloride, 0 – 8%
Hydroxyethyl-cellulose	Medium Viscosity (CAS# 9004-62-0), <0.3%
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone, 0.1 – 0.7%
Relevant for safety: Refer to the respective Safety Data Sheet*.	

Note: 750MHz Body liquid recipe is proprietary SPEAG. The composition is approximate to the actual liquids utilized.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE	Page 9 of 52	

Table 6-3
750MHz Body Tissue Equivalent Matter from tissue manufacturer

f [MHz]	HP-e'	HP-e''	sigma	P/N:	SL AAM 075	TARGET PARAMETERS		
300	61.02	35.43	0.59	Charge:	090224-1	f [MHz]	eps	sigma
350	60.21	32.13	0.63	Mea Date:	05-Mrz-09	700	55.7	0.96
400	59.50	29.71	0.66	Temp [°C]	22	750	55.5	0.96
450	58.79	28.00	0.70			800	55.3	0.97
500	58.16	26.60	0.74					
550	57.57	25.54	0.78					
600	56.99	24.68	0.82					
650	56.43	23.97	0.87					
700	55.88	23.46	0.91					
750	55.35	22.91	0.96					
800	55.02	22.56	1.00					
850	54.50	22.31	1.06					
900	54.02	22.08	1.11					
950	53.55	21.89	1.16					
1000	53.05	21.70	1.21					

7.1 Measurement Procedure

The evaluation was performed using the following procedure:

1. The SAR measurement was taken at a selected spatial reference point to monitor power variations during testing. This fixed point was measured and used as a reference value.
2. The SAR distribution at the exposed side of the head was measured at a distance of 3.0mm 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.
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 Figure 7-1):
 - a. The data at the surface was extrapolated, since the center of the dipoles is 2.7mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2mm. The extrapolation was based on a least square algorithm [15]. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.
 - b. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 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) [15][16]. The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.
 - 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 1, was re-measured. If the value changed by more than 5%, the evaluation is repeated.



Figure 7-1
Sample SAR Area Scan

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 minimized reflections from the upper surface. The liquid depth is maintained at a minimum depth of 15cm to minimize reflections from the upper surface.



Figure 7-2
SAM Twin Phantom Shell

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: OY1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 11 of 52

8.1 SAR test procedure for USB Dongles

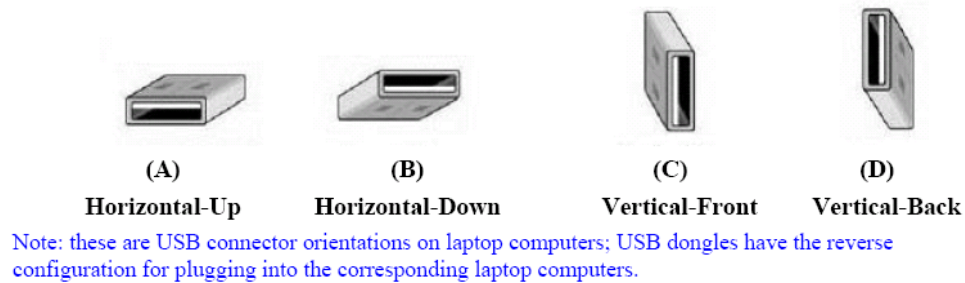


Figure 8-1
USB Dongle Test Configurations

KDB 447498. USB orientations (see Figure 8-1) with a device to phantom separation distance of 5 mm or less, according to KDB 447498 requirements. Current generation laptop computers should be used to ensure proper measurement distances. The same test separation distance should be used for all frequency bands and modes in each USB orientation. The typical Horizontal-Up USB connection (A), found in the majority of laptop computers, must be tested using an appropriate laptop computer. A laptop with either Vertical-Front (C) or Vertical-Back (D) USB connection should be used to test one of the vertical USB orientations. If laptop computers are not available for testing the Horizontal-Down (B) or the remaining Vertical USB orientation, a short and high quality USB cable (12 inches or less) may be used for testing these other orientations. It should be ensured that the USB cable does not affect device radiating characteristics and output power of the dongle.

For the Horizontal-Down (or Horizontal 2) position, the USB dongle was positioned in accordance with KDB 567894, as shown below.

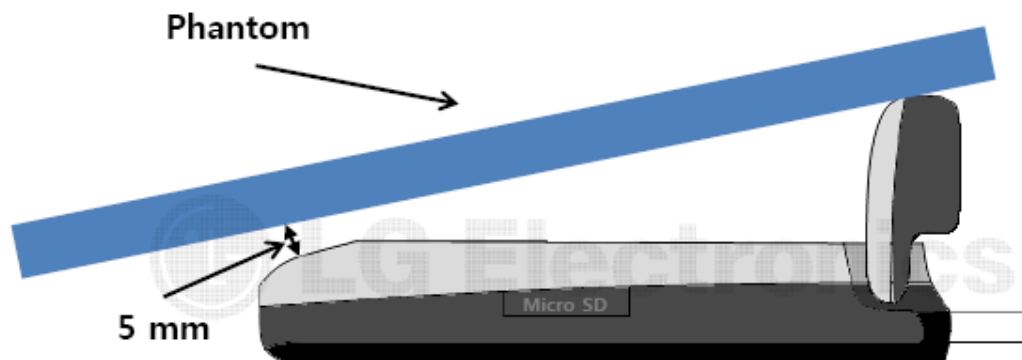


Figure 8-2
Horizontal-Down Configuration

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 12 of 52

9.1 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.

9.2 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 9-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

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

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

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 13 of 52

10 MEASUREMENT UNCERTAINTIES

Applicable for 700 - 2450 MHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	v _i
Measurement System									
Probe Calibration	E.2.1	6.65	N	1	1.0	1.0	6.7	6.7	∞
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	12.1
Expanded Uncertainty (95% CONFIDENCE LEVEL)							k=2	24.8	24.1
									299

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

FCC ID: BEJAD600		SAR COMPLIANCE REPORT			Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE			Page 14 of 52

11 SYSTEM VERIFICATION

11.1 Tissue Verification

Table 11-1
Measured Tissue Properties

Calibrated Date:	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
07/12/2010	835M	820	0.962	54.44	0.969	55.284	-0.72%	-1.53%
		835	0.976	54.31	0.970	55.200	0.62%	-1.61%
		850	0.986	54.19	0.988	55.154	-0.20%	-1.75%
07/12/2010	1900M	1850	1.463	52.33	1.520	53.300	-3.75%	-1.82%
		1880	1.471	52.20	1.520	53.300	-3.22%	-2.06%
		1910	1.540	52.07	1.520	53.300	1.32%	-2.31%
07/12/2010	750M	710	0.914	55.47	0.958	55.091	-4.59%	0.69%
		760	0.930	53.52	0.963	55.284	-3.43%	-3.19%
		775	0.941	53.37	0.964	55.200	-2.39%	-3.32%
		790	0.958	53.24	0.966	55.154	-0.83%	-3.47%
07/19/2010	1750M	1710	1.499	53.03	1.460	53.540	2.67%	-0.95%
		1750	1.531	52.93	1.490	53.430	2.75%	-0.94%
		1790	1.582	52.79	1.510	53.330	4.77%	-1.01%
07/19/2010	750M	710	0.914	55.47	0.958	55.901	-4.59%	-0.77%
		760	0.918	54.61	0.963	55.284	-4.67%	-1.22%
		775	0.955	54.24	0.964	55.200	-0.93%	-1.74%
		790	0.993	53.83	0.966	55.154	2.80%	-2.40%

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

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

11.2 Measurement Procedure for Tissue verification

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

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

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

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 15 of 52

11.3 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 450824:

D750V2 SN: 1003				
Date of Measurement	Return Loss (dB)	Δ %	Impedance (Ω)	$\Delta\Omega$
2/19/2009	-26	0.0%	48.9	0.0
8/29/2010	-24.5	-6%	49.9	1.0

D835V2 SN: 4d026				
Date of Measurement	Return Loss (dB)	Δ %	Impedance (Ω)	$\Delta\Omega$
8/24/2009	-22.5		51	
8/19/2010	-21.4	-5%	50.1	-0.9

D1765V2 SN: 1008				
Date of Measurement	Return Loss (dB)	Δ %	Impedance (Ω)	$\Delta\Omega$
5/19/2009	-24.2		44.8	
8/19/2010	-23.2	-4%	46.5	1.7

D1900V2 SN:5d080				
Date of Measurement	Return Loss (dB)	Δ %	Impedance (Ω)	$\Delta\Omega$
8/18/2009	-24.3		50	
8/19/2010	-22.4	-7.8%	51	1.0

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 16 of 52

11.4 Test System Verification

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

Table 11-2
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 (%)
07/12/2010	23.9	22.3	0.100	835	4d026	Body	0.982	9.78	9.82	0.41%
07/14/2010	23.6	22.3	0.040	1900	5d080	Body	1.67	40.5	41.75	3.09%
07/16/2010	23.6	22.1	0.250	750	1003	Body	2.1	8.74	8.4	-3.89%
07/20/2010	24.1	23.6	0.100	1765	1008	Body	3.7	37.3	37	-0.80%
07/21/2010	23.7	22.0	0.100	1765	1008	Body	3.72	37.3	37.2	-0.27%
07/22/2010	23.5	21.9	0.100	1765	1008	Body	3.72	37.3	37.2	-0.27%
07/23/2010	21.5	20.7	0.100	750	1003	Body	0.863	8.74	8.63	-1.26%

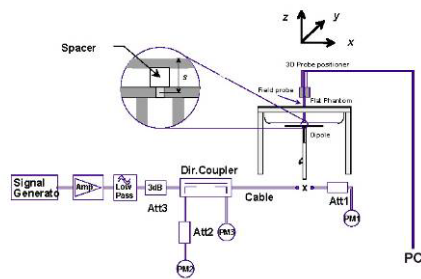


Figure 11-1
System Verification Setup Diagram



Figure 11-2
System Verification Setup Photo

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 17 of 52

12 4G LTE SAR TEST CONSIDERATIONS

12.1 Frequency of Operation per 27.5

Two paired channel blocks of 12 MHz each are available for assignment in band 17 as follows: Block B: 704-710 MHz (UL) and 734-740 MHz (DL); and Block C: 710-716 MHz (UL) and 740-746 MHz (DL).

Therefore, this device can occupy a total frequency range between 704-716 MHz. However, the device will operate at 10MHz BW, only occupying a single channel at 710 MHz.

12.2 Test Conditions

Testing was performed using a SMU200 and programmed UL synchronization signal from the device necessary to establish a live connection. Test software was used to set the device into test configurations.

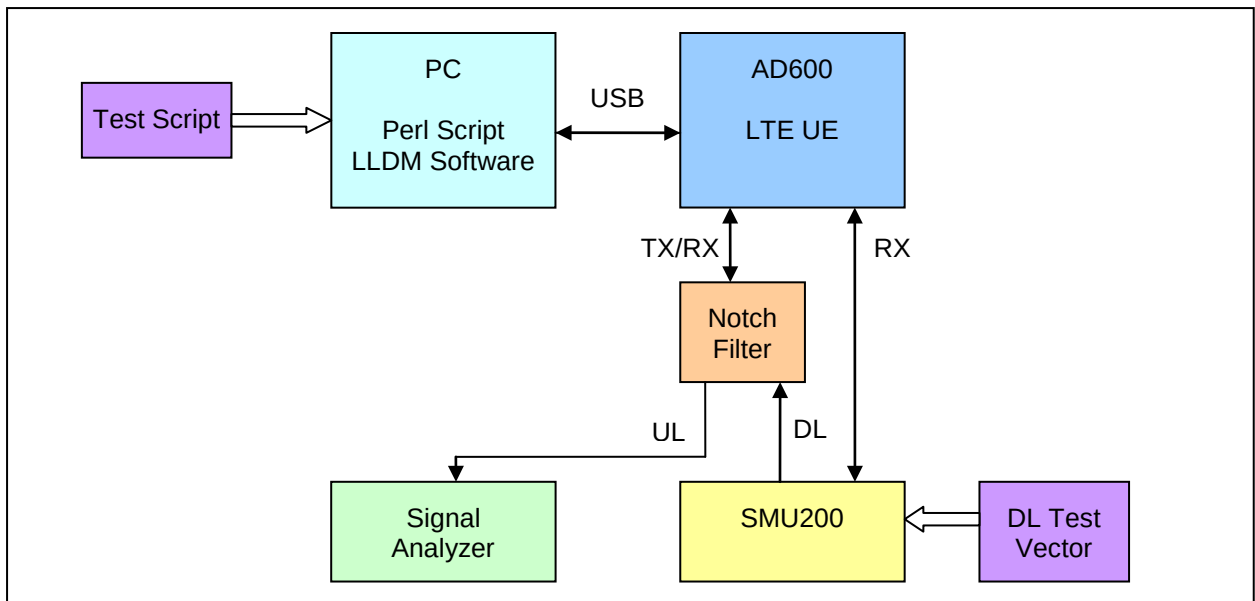


Figure 12-1
LTE Set-up Diagram

For all LTE tests MPR, A-MPR was disabled.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 18 of 52
© 2010 PCTEST Engineering Laboratory, Inc.				REV 8.4M 7/12/2010

12.3 LTE Conducted Power Measurements

12.3.1 LTE Band 17 Conducted Powers

Table 12-1
Maximum RF Output Power, Band 17, 5 MHz & 10 MHz BW

UL Freq. (MHz)	UL Channel	Modulation	Bandwidth	RB Size	Resource Block Offset	Maximum Average Power [dBm]
710	23790	QPSK	5 MHz	1	0	22.35
710	23790	16QAM	5 MHz	1	0	22.01
710	23790	QSPK	5 MHz	1	24	22.13
710	23790	16QAM	5 MHz	1	24	21.78
710	23790	QPSK	5 MHz	12	6	21.97
710	23790	16QAM	5 MHz	12	6	21.86
710	23790	QSPK	5 MHz	25	0	21.83
710	23790	16QAM	5 MHz	25	0	21.78

UL Freq. (Mhz)	UL Channel	Modulation	Bandwidth	RB Size	Resource Block Offset	Maximum Average Power [dBm]
710	23790	QPSK	10 MHz	1	0	23.01
710	23790	16QAM	10 MHz	1	0	23.37
710	23790	QPSK	10 MHz	1	49	22.38
710	23790	16QAM	10 MHz	1	49	22.77
710	23790	QPSK	10 MHz	25	12	22.97
710	23790	16QAM	10 MHz	25	12	22.89
710	23790	QPSK	10 MHz	50	0	22.86
710	23790	16QAM	10 MHz	50	0	22.88

12.3.2 LTE Band 4 Conducted Powers

Table 12-2
Max RF Output Conducted Power Band 4, 10 MHz BW

UL Freq. (Mhz)	UL Channel	Modulation	Bandwidth	RB Size	Resource Block Offset	Maximum Average Power [dBm]
1715	20000	QPSK	10 MHz	1	0	22.69
1715	20000	16QAM	10 MHz	1	0	22.55
1715	20000	QPSK	10 MHz	1	49	23.19
1715	20000	16QAM	10 MHz	1	49	23.43
1715	20000	QPSK	10 MHz	25	12	22.90
1715	20000	16QAM	10 MHz	25	12	22.71
1715	20000	QPSK	10 MHz	50	0	22.84
1715	20000	16QAM	10 MHz	50	0	22.75

UL Freq. (Mhz)	UL Channel	Modulation	Bandwidth	RB Size	Resource Block Offset	Maximum Average Power [dBm]
1730	20150	QPSK	10 MHz	1	0	23.21
1730	20150	16QAM	10 MHz	1	0	23.44
1730	20150	QPSK	10 MHz	1	49	23.01
1730	20150	16QAM	10 MHz	1	49	22.91
1730	20150	QPSK	10 MHz	25	12	22.86
1730	20150	16QAM	10 MHz	25	12	22.90
1730	20150	QPSK	10 MHz	50	0	22.88
1730	20150	16QAM	10 MHz	50	0	22.90

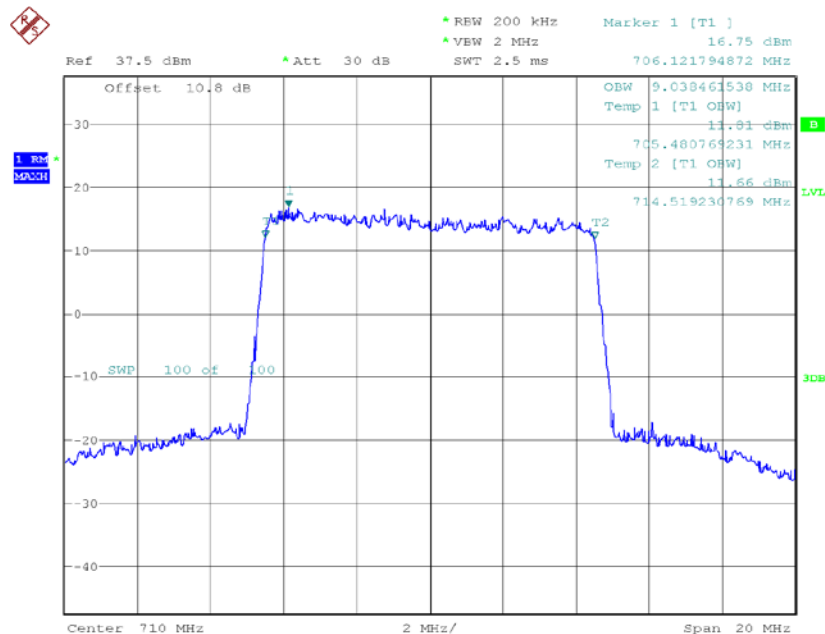
UL Freq. (Mhz)	UL Channel	Modulation	Bandwidth	RB Size	Resource Block Offset	Maximum Average Power [dBm]
1750	20350	QPSK	10 MHz	1	0	23.23
1750	20350	16QAM	10 MHz	1	0	23.52
1750	20350	QPSK	10 MHz	1	49	22.65
1750	20350	16QAM	10 MHz	1	49	22.87
1750	20350	QPSK	10 MHz	25	12	23.18
1750	20350	16QAM	10 MHz	25	12	23.01
1750	20350	QPSK	10 MHz	50	0	23.18
1750	20350	16QAM	10 MHz	50	0	23.18

Table 12-3
Max RF Output Conducted Power Band 4, 5 MHz BW

UL Freq. (MHz)	UL Channel	Modulation	Bandwidth	RB Size	Resource Block Offset	Maximum Average Power [dBm]
1712.5	19975	QPSK	5 MHz	1	0	22.14
1712.5	19975	16QAM	5 MHz	1	0	21.94
1712.5	19975	QSPK	5 MHz	1	24	22.41
1712.5	19975	16QAM	5 MHz	1	24	22.23
1712.5	19975	QPSK	5 MHz	12	6	21.92
1712.5	19975	16QAM	5 MHz	12	6	21.89
1712.5	19975	QSPK	5 MHz	25	0	21.89
1712.5	19975	16QAM	5 MHz	25	0	22.00
UL Freq. (MHz)	UL Channel	Modulation	Bandwidth	RB Size	Resource Block Offset	Maximum Average Power [dBm]
1730	20150	QPSK	5 MHz	1	0	22.61
1730	20150	16QAM	5 MHz	1	0	22.51
1730	20150	QPSK	5 MHz	1	24	22.45
1730	20150	16QAM	5 MHz	1	24	22.25
1730	20150	QPSK	5 MHz	12	6	22.10
1730	20150	16QAM	5 MHz	12	6	21.99
1730	20150	QPSK	5 MHz	25	0	21.91
1730	20150	16QAM	5 MHz	25	0	22.06
UL Freq. (MHz)	UL Channel	Modulation	Bandwidth	RB Size	Resource Block Offset	Maximum Average Power [dBm]
1752.5	20375	QPSK	5 MHz	1	0	22.40
1752.5	20375	16QAM	5 MHz	1	0	22.18
1752.5	20375	QPSK	5 MHz	1	24	22.02
1752.5	20375	16QAM	5 MHz	1	24	21.78
1752.5	20375	QPSK	5 MHz	12	6	21.91
1752.5	20375	16QAM	5 MHz	12	6	22.02
1752.5	20375	QPSK	5 MHz	25	0	21.98
1752.5	20375	16QAM	5 MHz	25	0	21.79

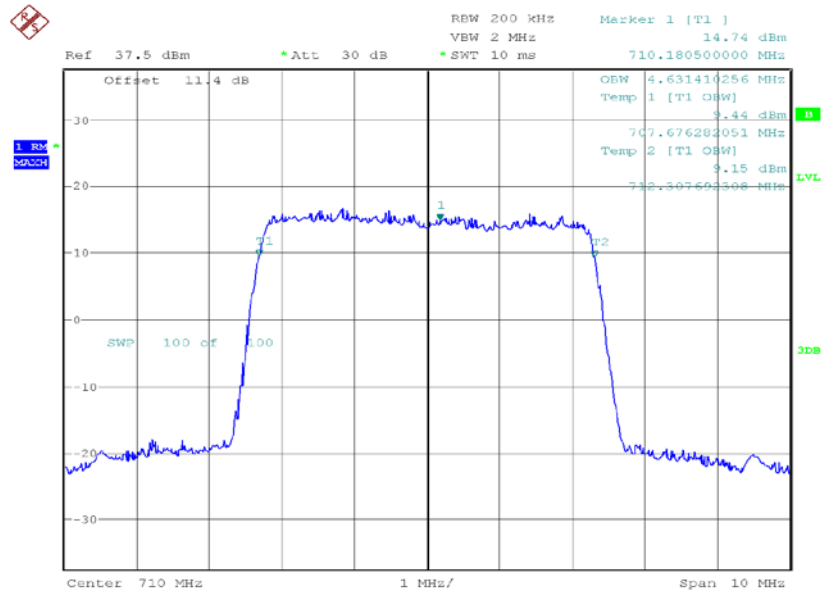
12.3.3 RB Implementation Spectrum Analyzer Plots

The following bandwidth plots represent QPSK in Band 17. Please note that the plots do not represent the device operating at maximum power, but is included for the purpose of showing that the RB offsets were configured properly by the test software. The software which facilitated the RB size and offset configurations showed similar RB size/offset behavior, with the other modulations and bands.



Date: 16.JUL.2010 18:33:54

Figure 12-2
100% RB, Offset=0, 10 MHz BW operation



Date: 21.JUL.2010 00:28:19

Figure 12-3
100% RB, Offset=0, 5 MHz BW operation

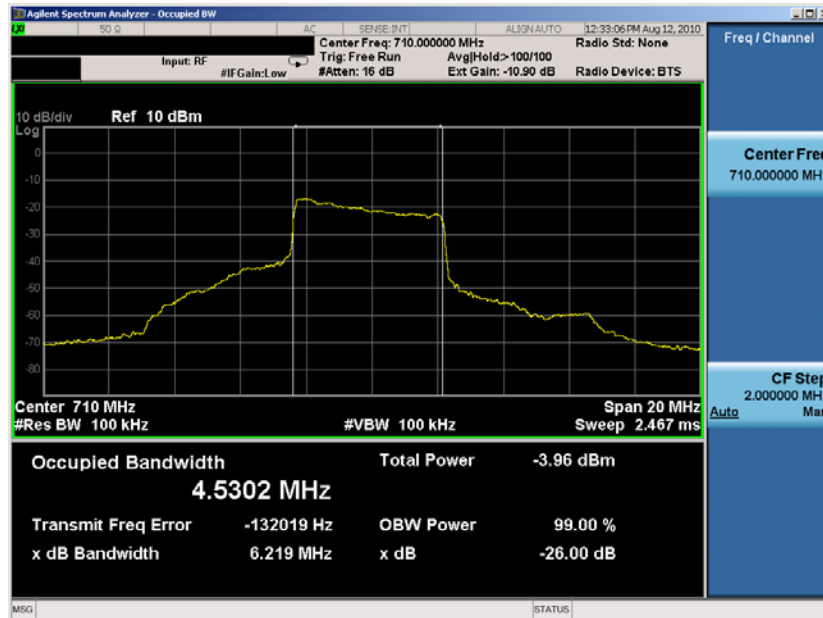


Figure 12-4
25RB (50%), Offset=12, 10 MHz BW operation

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 23 of 52
© 2010 PCTEST Engineering Laboratory, Inc.				REV 8.4M 7/12/2010

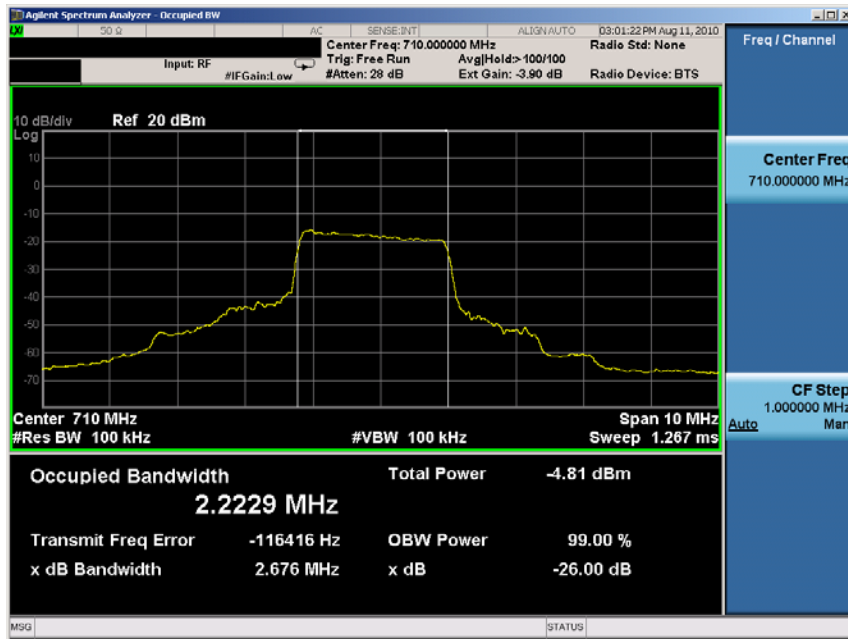


Figure 12-5
12RB (50%), Offset= 6, 5 MHz BW operation

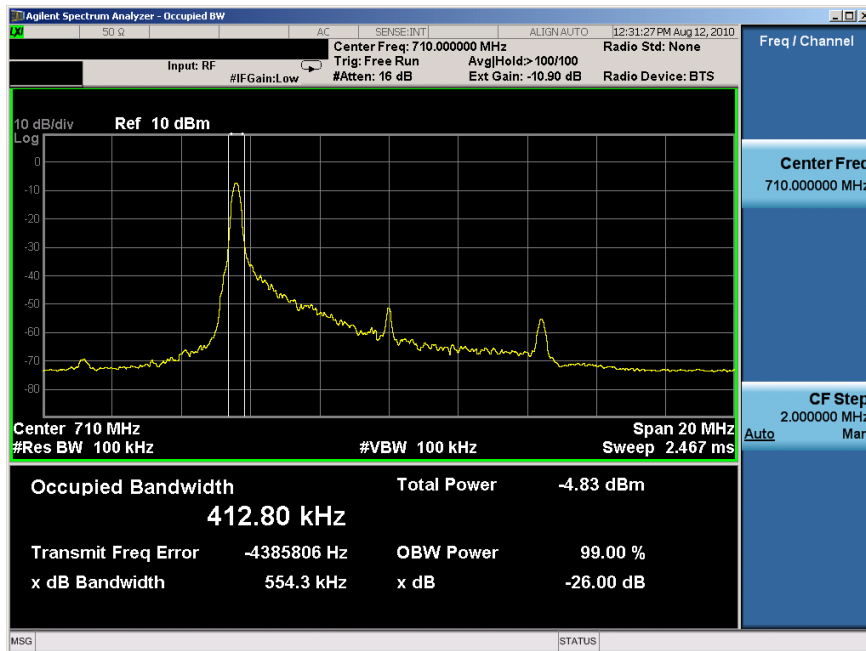


Figure 12-6
1RB, Offset=0, 10 MHz Operation

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 24 of 52
© 2010 PCTEST Engineering Laboratory, Inc.				REV 8.4M 7/12/2010

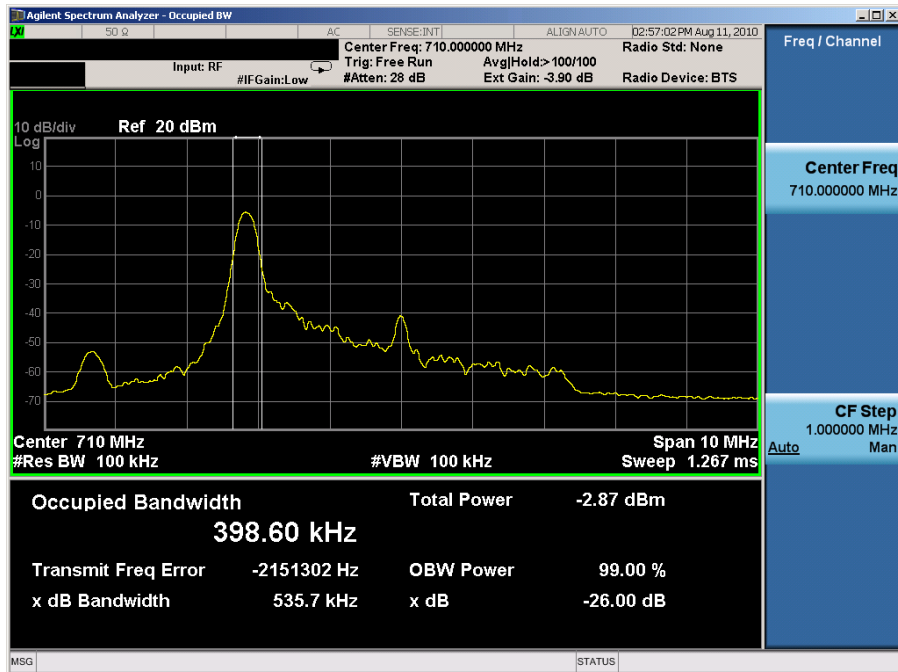


Figure 12-7
 1RB, Offset=0, 5 MHz BW Operation

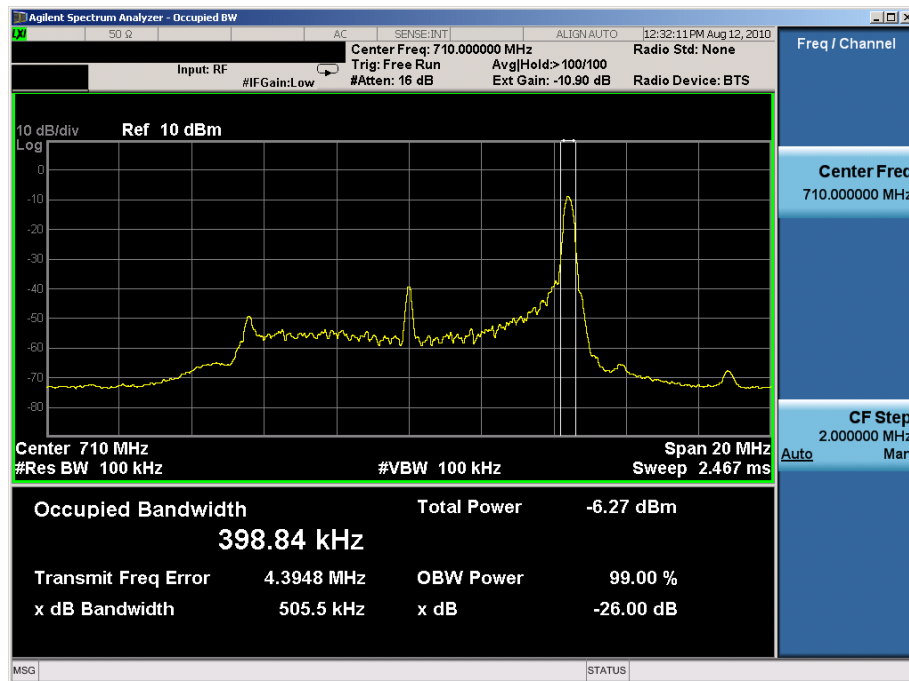


Figure 12-8
 1RB, Offset=49 ,10 MHz BW Operation

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 25 of 52
© 2010 PCTEST Engineering Laboratory, Inc.				REV 8.4M 7/12/2010

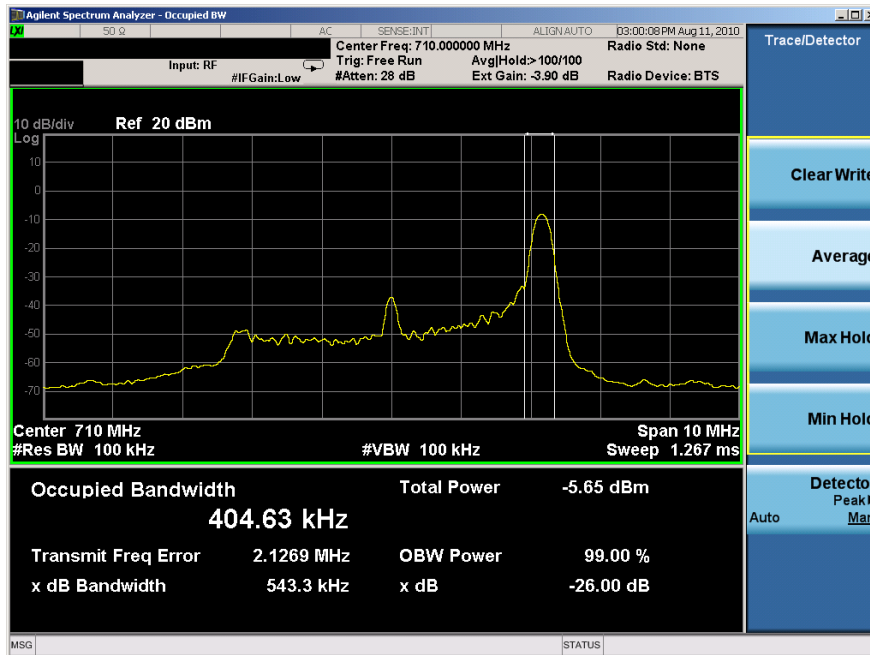


Figure 12-9

12.4 Probe Linearity Analysis

Although PAR is not as high as other 4G technologies, probe linearity data was supplied for the LTE in Band 4 since the SAR in Band 4 was higher than 1.2 W/kg.

The EUT device was placed below the flat phantom. The probe was moved to the location of maximum SAR. Then, the EUT RF output power was set to a minimum value and incrementally increased up to the maximum output power, with point SAR measurements made at several increments in between. The resulting SAR vs. RF Output Power plots each show the probe linearity behavior up to the maximum output power for the LTE signal.

Linearity was assessed using the maximum BW.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 26 of 52

5 MHz BW, QPSK

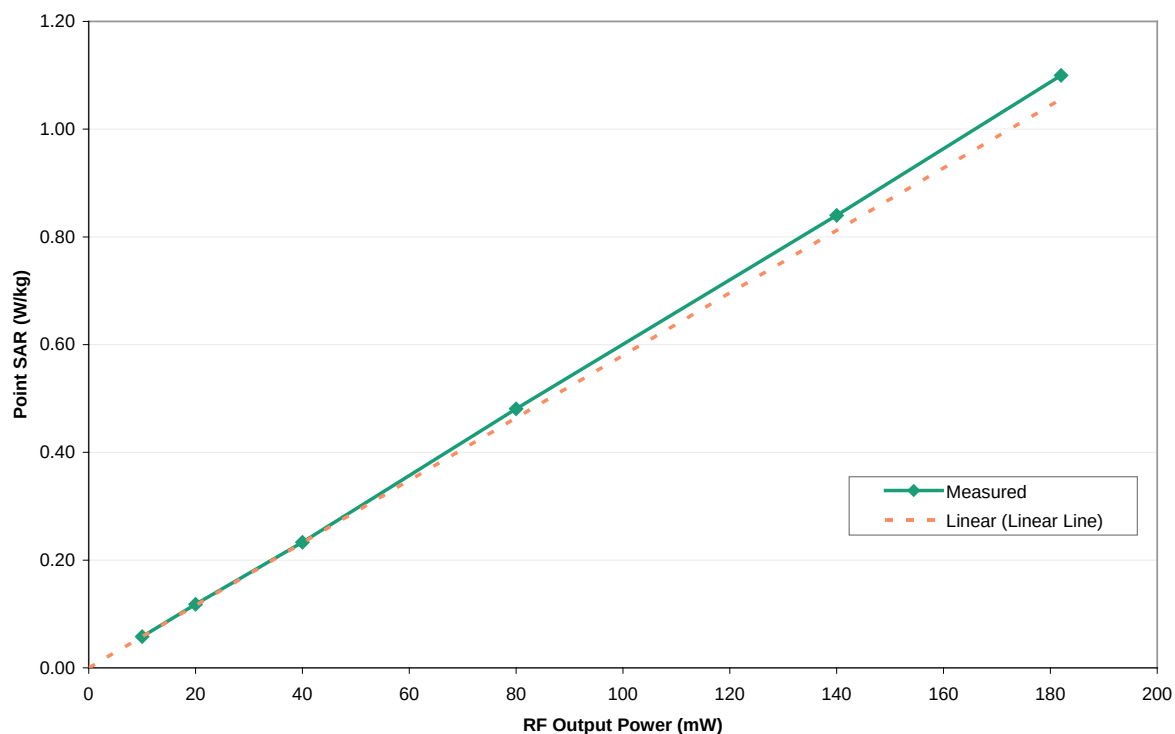


Figure 12-10
5 MHz Bandwidth, QPSK Linearity Plot

Modulation	QPSK					
Bandwidth	5 MHz					
Power (mW)	10	20	40	80	140	182
point SAR (W/kg)	0.0580	0.1180	0.2330	0.4810	0.84	1.100
linear line	0.0580	0.1160	0.2320	0.4640	0.8120	1.0556
ϵ	0.0%	1.7%	0.4%	3.5%	3.3%	4.0%

Table 12-4
5 MHz Bandwidth, QPSK Linearity Tabulated Data

5 MHz BW, 16QAM

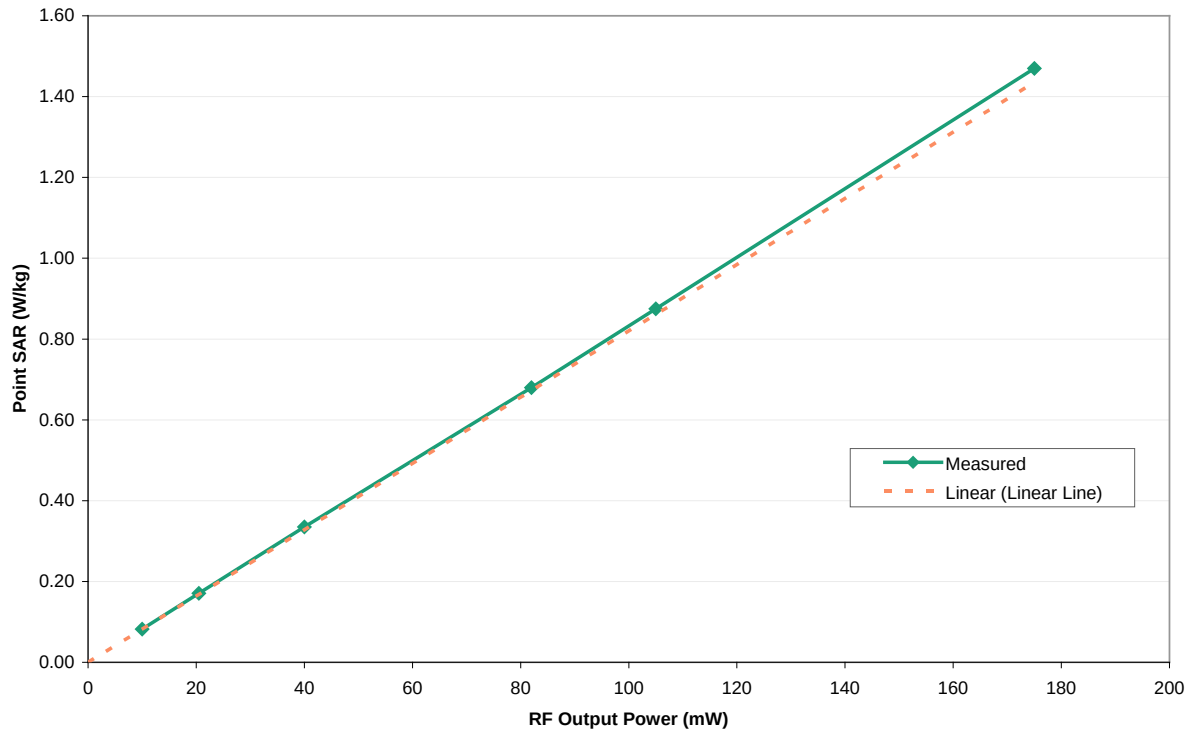


Figure 12-11
5 MHz Bandwidth, 16QAM Probe Linearity Plot

Modulation	16QAM					
Bandwidth	5 MHz					
Power (mW)	10	20.5	40	82	105	175
point SAR (W/kg)	0.0820	0.17070	0.3350	0.6800	0.875	1.470
linear line	0.0820	0.1681	0.3280	0.6724	0.8610	1.4350
ϵ	0.0%	1.5%	2.1%	1.1%	1.6%	2.4%

Table 12-5
5 MHz Bandwidth, 16QAM Linearity Tabulated Data

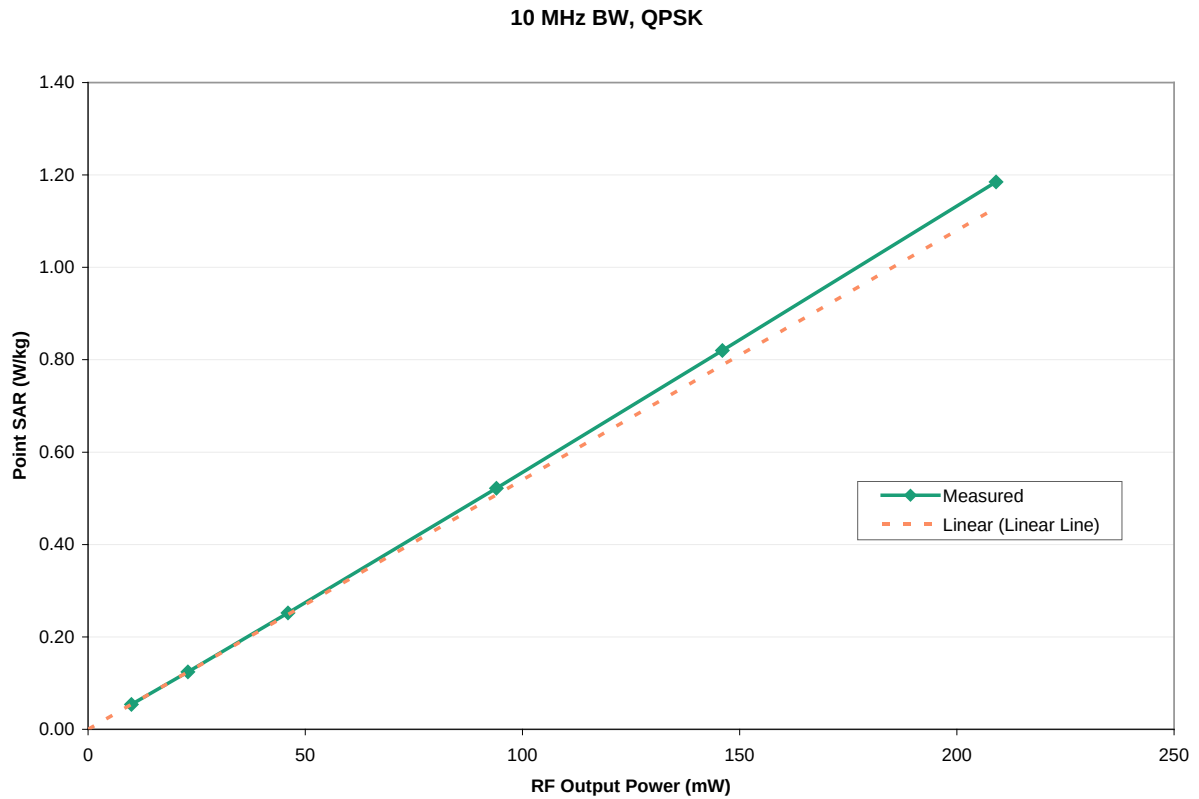


Figure 12-12
10 MHz Bandwidth, QPSK Probe Linearity Plot

QPSK					
10 MHz					
10	23	46	94	146	209
0.0540	0.1244	0.2520	0.5220	0.82	1.185
0.0540	0.1242	0.2484	0.5076	0.7884	1.1286
0.0%	0.2%	1.4%	2.8%	3.9%	4.8%

Table 12-6
10 MHz Bandwidth, QPSK Linearity Tabulated Data

10 MHz BW, 16QAM

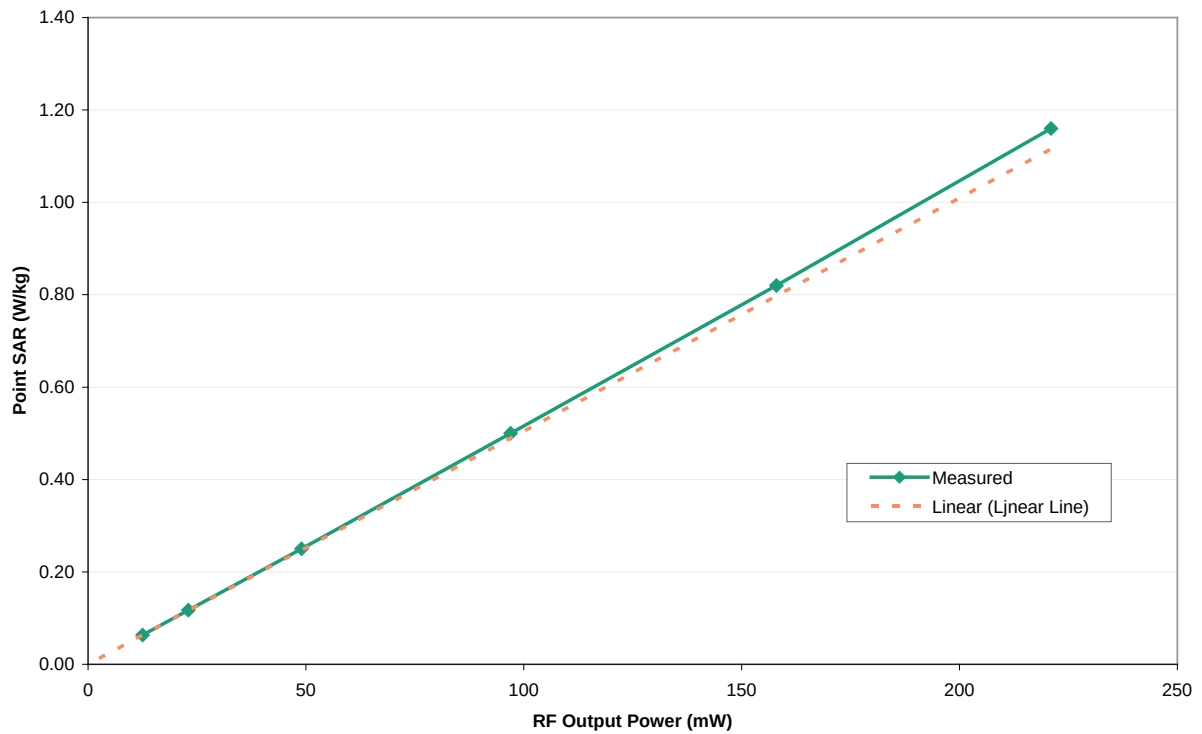


Figure 12-13
10 MHz Bandwidth, 16QAM Probe Linearity Plot

16QAM					
10 MHz					
12.5	23	49	97	158	221
0.0631	0.1170	0.2500	0.5000	0.8200	1.160
0.0631	0.1161	0.2474	0.4897	0.7976	1.1156
0.0%	0.8%	1.1%	2.1%	2.7%	3.8%

Table 12-7
10 MHz Bandwidth, 16QAM Linearity Tabulated Data

13 FCC 3G MEASUREMENT PROCEDURES

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

13.1 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 conducted power deviations of more than 5% occurred, the tests were repeated.

13.2 SAR Measurement Conditions for UMTS

13.2.1 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, using the appropriate RMC or AMR with TPC (transmit power control) set to all "1s".

13.2.2 Head SAR Measurements

SAR for head exposure configurations is measured using the 12.2 kbps RMC with TPC bits configured to all "1s". SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than ¼ dB higher than that measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2 AMR with a 3.4 kbps SRB (signaling radio bearer) using the exposure configuration that results in the highest SAR for that RF channel in 12.2 RMC.

13.2.3 Body SAR Measurements

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

13.2.4 Handsets with HSDPA

Body SAR is not required for handsets with HSDPA capabilities when the maximum average output of each RF channel with HSDPA active is less than ¼ dB higher than that measured without HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is ≤ 75% of the SAR limit. Otherwise, SAR is measured for HSDPA, using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA, on the maximum output channel with the body exposure configuration that results in the highest SAR in 12.2 kbps RMC for that RF channel.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 31 of 52

13.3 RF Conducted Powers

13.3.1 GSM Conducted Powers

		RF Conducted Power Table							
		GPRS Data				EDGE Data			
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	32.73	30.90	28.99	27.96	26.42	26.46	26.42	26.47
	190	32.71	30.91	29.03	27.93	26.38	26.41	26.39	26.36
	251	32.65	30.79	28.97	27.85	26.31	26.36	26.33	26.34
PCS	512	30.69	28.24	26.80	25.66	25.44	25.50	25.48	25.48
	661	30.80	28.38	26.92	25.70	25.52	25.54	25.53	25.53
	810	31.00	28.51	26.93	25.77	25.63	25.63	25.65	25.60

13.3.2 HSPA Conducted Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			β_c	β_d	β_c/β_d	HSDPA FRC	MPR
			4132	4183	4233	9262	9400	9538					
99	WCDMA	12.2 kbps RMC	23.11	23.09	23.00	22.93	22.98	22.90	-	-	-	-	-
6	HSDPA	Subtest 1	23.09	23.06	22.98	22.88	22.98	22.94	2/15	15/15	2/15	H-SET 1	0
6		Subtest 2	23.33	23.30	23.21	23.11	23.15	23.06	12/15	15/15	12/15	H-SET 1	0
6		Subtest 3	23.38	23.38	23.26	23.20	23.25	23.11	15/15	8/15	15/8	H-SET 1	0.5
6		Subtest 4	23.21	23.10	23.01	23.24	23.27	23.08	15/15	4/15	15/4	H-SET 1	0.5
6	HSUPA	Subtest 1	23.33	23.31	23.17	23.14	23.18	23.10	11/15	15/15	11/15	H-SET 1	0
6		Subtest 2	23.13	23.12	23.03	22.98	23.00	22.80	6/15	15/15	6/15	H-SET 1	2
6		Subtest 3	23.35	23.34	23.23	23.22	23.22	23.08	15/15	9/15	15/9	H-SET 1	1
6		Subtest 4	23.10	23.13	23.05	22.98	23.06	22.97	2/15	15/15	2/15	H-SET 1	2
6		Subtest 5	23.33	23.34	23.27	23.16	23.21	23.03	15/15	15/15	15/15	H-SET 1	0

According to 3GPP 25.101 6.2.2, the maximum output power is allowed to be reduced by:

UE transmit channel configuration	CM (dB)	MPR (dB)
For all combinations of: DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH	$0 \leq CM \leq 3.5$	MAX (CM-1, 0)
Note 1: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.		

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

From the chipset, MPR is used to address linearity problems in HSUPA that has high peak-to-average ratios (PAR) that may saturate the DAC. Thus it experiences a reduced power output to the RF chip according to the Cubic Metric. When E-DPDCH channels are present, the beta gains on those channels are reduced first to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a limit is applied at the maximum allowed level.

The software recalculates the cubic metric when the beta gains on the E-DPDCH are reduced. The cubic metric will get lower each time this is done. However, there is no reported reduction of maximum output power in the HSPA mode since the device also increases the gain of the PA. Therefore the DUT output power is the same as the case where there is no MPR in the device.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE	Page 32 of 52	

14 SAR DATA SUMMARY

14.1 GSM 850 Body SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode/Band	C_Power[dBm]		Spacing	Service	Tx Slots	USB Side per KDB 447498	Configuration	SAR (1g)
MHz	Ch.		Start	End						(W/kg)
836.60	190	GSM 850	32.71	32.73	0.5 cm	GPRS	1	Horizontal Up	Laptop	0.603
836.60	190	GSM 850	30.91	30.96	0.5 cm	GPRS	2	Horizontal Up	Laptop	0.782
824.20	128	GSM 850	28.99	29.13	0.5 cm	GPRS	3	Horizontal Up	Laptop	0.830
836.60	190	GSM 850	29.03	29.08	0.5 cm	GPRS	3	Horizontal Up	Laptop	0.909
848.80	251	GSM 850	28.97	29.05	0.5 cm	GPRS	3	Horizontal Up	Laptop	0.543
836.60	190	GSM 850	27.93	27.79	0.5 cm	GPRS	4	Horizontal Up	Laptop	0.785
836.60	190	GSM 850	26.39	25.92	0.5 cm	EDGE	3	Horizontal Up	Laptop	0.266
836.60	190	GSM 850	26.36	26.65	0.5 cm	EDGE	4	Horizontal Up	Laptop	0.453
836.60	190	GSM 850	29.03	28.67	0.5 cm	GPRS	3	Horizontal Down	USB Cable	0.580
836.60	190	GSM 850	29.03	28.97	0.5 cm	GPRS	3	Vertical Front	Laptop	0.413
836.60	190	GSM 850	29.03	28.84	0.5 cm	GPRS	3	Vertical Back	Laptop	0.294
836.60	190	GSM 850	29.03	29.29	0.5 cm	GPRS	3	Tip	Laptop	0.133
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. All modes of operation were investigated, and worst-case results are reported.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. Liquid tissue depth was at least 15.0 cm.
5. Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration (left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
6. Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations.
7. A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
8. Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 33 of 52

14.2 GSM 1900 Body SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode/Band	C_Power[dBm]		Spacing	Service	Tx Slots	USB Side per KDB447498	Configuration	SAR (1g) (W/kg)
MHz	Ch.		Start	End						
1880.00	661	GSM 1900	28.38	28.18	0.5 cm	GPRS	2	Horizontal Up	Laptop	0.726
1850.20	512	GSM 1900	26.80	27.05	0.5 cm	GPRS	3	Horizontal Up	Laptop	0.737
1880.00	661	GSM 1900	26.92	27.06	0.5 cm	GPRS	3	Horizontal Up	Laptop	0.850
1909.80	810	GSM 1900	26.93	27.16	0.5 cm	GPRS	3	Horizontal Up	Laptop	0.719
1850.20	512	GSM 1900	25.66	25.59	0.5 cm	GPRS	4	Horizontal Up	Laptop	0.850
1880.00	661	GSM 1900	25.70	25.83	0.5 cm	GPRS	4	Horizontal Up	Laptop	0.866
1909.80	810	GSM 1900	25.77	25.72	0.5 cm	GPRS	4	Horizontal Up	Laptop	0.718
1880.00	661	GSM 1900	28.38	28.23	0.5 cm	GPRS	2	Horizontal Down	USB Cable	0.779
1850.20	512	GSM 1900	26.80	26.95	0.5 cm	GPRS	3	Horizontal Down	USB Cable	0.822
1880.00	661	GSM 1900	26.92	27.06	0.5 cm	GPRS	3	Horizontal Down	USB Cable	0.846
1909.80	810	GSM 1900	26.93	26.97	0.5 cm	GPRS	3	Horizontal Down	USB Cable	0.865
1850.20	512	GSM 1900	25.66	25.59	0.5 cm	GPRS	4	Horizontal Down	USB Cable	0.878
1880.00	661	GSM 1900	25.70	25.45	0.5 cm	GPRS	4	Horizontal Down	USB Cable	0.901
1909.80	810	GSM 1900	25.77	25.81	0.5 cm	GPRS	4	Horizontal Down	USB Cable	0.891
1880.00	661	GSM 1900	25.53	25.85	0.5 cm	EDGE	3	Horizontal Down	USB Cable	0.745
1880.00	661	GSM 1900	25.53	25.18	0.5 cm	EDGE	4	Horizontal Down	USB Cable	0.721
1880.00	661	GSM 1900	25.70	25.55	0.5 cm	GPRS	4	Vertical Front	Laptop	0.647
1880.00	661	GSM 1900	25.70	25.83	0.5 cm	GPRS	4	Vertical Back	Laptop	0.280
1880.00	661	GSM 1900	25.70	25.27	0.5 cm	GPRS	4	Tip	Laptop	0.762
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. All modes of operation were investigated, and worst-case results are reported.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. Liquid tissue depth was at least 15.0 cm.
5. Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
6. Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations.
7. A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
8. Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT			Reviewed by: Quality Manager
Filename: OY1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE			Page 34 of 52

UMTS V Body SAR Results

MEASUREMENT RESULTS									
FREQUENCY		Mode/Band	C_Power[dBm]		Spacing	Service	USB Side per KDB447498	Configuration	SAR (1g)
MHz	Ch.		Start	End					(W/kg)
836.60	4183	UMTS V	23.09	23.02	0.5 cm	RMC	Horizontal Up	Laptop	0.565
836.60	4183	UMTS V	23.09	23.18	0.5 cm	RMC	Horizontal Down	USB Cable	0.373
836.60	4183	UMTS V	23.09	22.95	0.5 cm	RMC	Vertical Front	Laptop	0.342
836.60	4183	UMTS V	23.09	23.27	0.5 cm	RMC	Vertical Back	Laptop	0.247
836.60	4183	UMTS V	23.09	23.18	0.5 cm	RMC	Tip	Laptop	0.091
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. All modes of operation were investigated, and worst-case results are reported.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. Liquid tissue depth was at least 15.0 cm.
5. Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
6. WCDMA mode was tested under RMC 12.2 kbps with HSPA Inactive. SAR was excluded for HSPA per FCC 3G guidance, please see attestation letter from applicant regarding MPR behavior.
7. Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations.
8. A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
9. Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT			Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE			Page 35 of 52

14.3 UMTS II Body SAR Results

MEASUREMENT RESULTS									
FREQUENCY		Mode	C_Power[dBm]		Spacing	Service	USB Side per KDB447498	Configuration	SAR (1g)
MHz	Ch.		Start	End					(W/kg)
1880.00	9400	UMTS II	22.98	22.86	0.5 cm	RMC	Horizontal Up	Laptop	0.789
1852.40	9262	UMTS II	22.93	22.82	0.5 cm	RMC	Horizontal Down	USB Cable	1.03
1880.00	9400	UMTS II	22.98	23.39	0.5 cm	RMC	Horizontal Down	USB Cable	0.955
1907.60	9538	UMTS II	22.90	22.93	0.5 cm	RMC	Horizontal Down	USB Cable	0.926
1852.40	9262	UMTS II	22.93	23.28	0.5 cm	RMC	Vertical Front	Laptop	0.896
1880.00	9400	UMTS II	22.98	23.32	0.5 cm	RMC	Vertical Front	Laptop	0.889
1907.60	9538	UMTS II	22.90	22.95	0.5 cm	RMC	Vertical Front	Laptop	0.908
1880.00	9400	UMTS II	22.98	22.94	0.5 cm	RMC	Vertical Back	Laptop	0.312
1880.00	9400	UMTS II	22.98	22.61	0.5 cm	RMC	Tip	Laptop	0.733
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. All modes of operation were investigated, and worst-case results are reported.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. Liquid tissue depth was at least 15.0 cm.
5. Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration (left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
6. WCDMA mode was tested under RMC 12.2 kbps with HSPA Inactive. SAR was excluded for HSPA per FCC 3G guidance, please see attestation letter from applicant regarding MPR behavior.
7. Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations.
8. A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
9. Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT			Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE			Page 36 of 52

14.4 LTE Band 17 5MHz Bandwidth Body SAR Results

MEASUREMENT RESULTS													
FREQUENCY		Mode	C_Power[dBm]		Position	Spacing	Bandwidth	Modulation	RB Size	RB Offset	Side	Configuration	SAR (1g)
MHz	Ch.		Start	End									(W/kg)
710.00	Mid	LTE	21.83	21.56	Body	0.5 cm	5 MHz	QPSK	25	0	Horizontal Up	Laptop	0.685
710.00	Mid	LTE	21.78	21.86	Body	0.5 cm	5 MHz	16 QAM	25	0	Horizontal Up	Laptop	0.665
710.00	Mid	LTE	22.35	22.41	Body	0.5 cm	5 MHz	QPSK	1	0	Horizontal Up	Laptop	0.599
710.00	Mid	LTE	21.96	21.96	Body	0.5 cm	5 MHz	16 QAM	1	0	Horizontal Up	Laptop	0.595
710.00	Mid	LTE	22.13	22.44	Body	0.5 cm	5 MHz	QPSK	1	24	Horizontal Up	Laptop	0.681
710.00	Mid	LTE	21.89	21.94	Body	0.5 cm	5 MHz	16 QAM	1	24	Horizontal Up	Laptop	0.674
710.00	Mid	LTE	21.97	22.06	Body	0.5 cm	5 MHz	QPSK	12	6	Horizontal Up	Laptop	0.628
710.00	Mid	LTE	22.14	22.15	Body	0.5 cm	5 MHz	16 QAM	12	6	Horizontal Up	Laptop	0.651
710.00	Mid	LTE	21.83	21.89	Body	0.5 cm	5 MHz	QPSK	25	0	Horizontal Down	USB Cable	0.639
710.00	Mid	LTE	21.78	21.76	Body	0.5 cm	5 MHz	16 QAM	25	0	Horizontal Down	USB Cable	0.647
710.00	Mid	LTE	21.83	21.87	Body	0.5 cm	5 MHz	QPSK	25	0	Vertical Front	Laptop	0.371
710.00	Mid	LTE	21.78	21.76	Body	0.5 cm	5 MHz	16 QAM	25	0	Vertical Front	Laptop	0.374
710.00	Mid	LTE	21.83	21.82	Body	0.5 cm	5 MHz	QPSK	25	0	Vertical Back	Laptop	0.225
710.00	Mid	LTE	21.78	21.71	Body	0.5 cm	5 MHz	16 QAM	25	0	Vertical Back	Laptop	0.226
710.00	Mid	LTE	21.83	21.79	Body	0.5 cm	5 MHz	QPSK	25	0	Tip	Laptop	0.097
710.00	Mid	LTE	21.78	21.87	Body	0.5 cm	5 MHz	16 QAM	25	0	Tip	Laptop	0.094
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. All modes of operation were investigated, and worst-case results are reported.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. Liquid tissue depth was at least 15.0 cm.
5. Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations.
6. A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
7. LTE dongle does not support VOIP.
8. LTE test configurations are determined according to KDB 178562. 1RB, 50% RB and full RB allocations were tested at the highest SAR configuration. Although Interim LTE guidance cases were tested, additional test cases were tested to ensure max SAR was reported for this device.
9. MPR/A-MPR was disabled for all SAR tests.
10. The Mid. channel UL channel number is 23790.
11. Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE	Page 37 of 52	

14.5 LTE Band 17 10MHz Bandwidth Body SAR Results

MEASUREMENT RESULTS													
FREQUENCY		Mode	C_Power[dBm]		Position	Spacing	Bandwidth	Modulation	RB Size	RB Offset	Side	Configuration	SAR (1g) (W/kg)
MHz	Ch.		Start	End									
710.00	Mid	LTE	22.86	22.88	Body	0.5 cm	10 MHz	QPSK	50	0	Horizontal Up	Laptop	0.628
710.00	Mid	LTE	22.88	22.68	Body	0.5 cm	10 MHz	16 QAM	50	0	Horizontal Up	Laptop	0.617
710.00	Mid	LTE	22.86	22.70	Body	0.5 cm	10 MHz	QPSK	50	0	Horizontal Down	USB Cable	0.653
710.00	Mid	LTE	22.88	22.76	Body	0.5 cm	10 MHz	16 QAM	50	0	Horizontal Down	USB Cable	0.652
710.00	Mid	LTE	22.86	22.85	Body	0.5 cm	10 MHz	QPSK	50	0	Vertical Front	Laptop	0.389
710.00	Mid	LTE	22.86	22.77	Body	0.5 cm	10 MHz	QPSK	50	0	Vertical Back	Laptop	0.211
710.00	Mid	LTE	22.88	22.80	Body	0.5 cm	10 MHz	16 QAM	50	0	Vertical Back	Laptop	0.493
710.00	Mid	LTE	22.86	22.88	Body	0.5 cm	10 MHz	QPSK	50	0	Tip	Laptop	0.093
710.00	Mid	LTE	23.01	22.84	Body	0.5 cm	10 MHz	QPSK	1	0	Horizontal Down	USB Cable	0.483
710.00	Mid	LTE	22.38	22.17	Body	0.5 cm	10 MHz	QPSK	1	49	Horizontal Down	USB Cable	0.699
710.00	Mid	LTE	23.19	22.91	Body	0.5 cm	10 MHz	16 QAM	1	0	Horizontal Down	USB Cable	0.644
710.00	Mid	LTE	22.51	22.64	Body	0.5 cm	10 MHz	16 QAM	1	49	Horizontal Down	USB Cable	0.531
710.00	Mid	LTE	22.97	23.06	Body	0.5 cm	10 MHz	QPSK	25	12	Horizontal Down	USB Cable	0.609
710.00	Mid	LTE	22.92	22.74	Body	0.5 cm	10 MHz	16 QAM	25	12	Horizontal Down	USB Cable	0.567
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:

- 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].
- Tissue parameters and temperatures are listed on the SAR plots.
- Liquid tissue depth was at least 15.0 cm.
- Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations.
- A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
- LTE dongle does not support VOIP.
- LTE test configurations are determined according to KDB 178562. 1RB, 50% RB and full RB allocations were tested at the highest SAR configuration. Although Interim LTE guidance cases were tested, additional test cases were tested to ensure max SAR was reported for this device.
- MPR/A-MPR was disabled for all SAR tests.
- The Mid. channel UL channel number is 23790.
- Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 38 of 52

14.6 LTE Band 4 5MHz BW Body SAR Results

MEASUREMENT RESULTS													
FREQUENCY		Mode	C_Power[dBm]		Position	Spacing	Bandwidth	Modulation	RB Size	RB Offset	Side	Configuration	SAR (1g)
MHz	Ch.		Start	End									(W/kg)
1712.50	Low	LTE	21.89	21.75	Body	0.5 cm	5 MHz	QPSK	25	0	Horizontal Up	Laptop	1.260
1730.00	Mid.	LTE	21.91	21.83	Body	0.5 cm	5 MHz	QPSK	25	0	Horizontal Up	Laptop	1.280
1752.50	High	LTE	21.98	21.89	Body	0.5 cm	5 MHz	QPSK	25	0	Horizontal Up	Laptop	1.190
1712.50	Low	LTE	21.79	21.62	Body	0.5 cm	5 MHz	16 QAM	25	0	Horizontal Up	Laptop	1.280
1730.00	Mid.	LTE	22.13	22.13	Body	0.5 cm	5 MHz	16 QAM	25	0	Horizontal Up	Laptop	1.340
1752.50	High	LTE	21.77	21.78	Body	0.5 cm	5 MHz	16 QAM	25	0	Horizontal Up	Laptop	1.200
1712.50	Low	LTE	21.89	22.02	Body	0.5 cm	5 MHz	QPSK	25	0	Horizontal Down	USB Cable	0.811
1730.00	Mid.	LTE	21.91	22.20	Body	0.5 cm	5 MHz	QPSK	25	0	Horizontal Down	USB Cable	0.860
1752.50	High	LTE	21.98	21.81	Body	0.5 cm	5 MHz	QPSK	25	0	Horizontal Down	USB Cable	0.837
1712.50	Low	LTE	21.79	21.95	Body	0.5 cm	5 MHz	16 QAM	25	0	Horizontal Down	USB Cable	0.866
1730.00	Mid.	LTE	22.13	22.06	Body	0.5 cm	5 MHz	16 QAM	25	0	Horizontal Down	USB Cable	0.896
1752.50	High	LTE	21.77	21.82	Body	0.5 cm	5 MHz	16 QAM	25	0	Horizontal Down	USB Cable	0.843
1712.50	Low	LTE	22.14	22.16	Body	0.5 cm	5 MHz	QPSK	1	0	Horizontal Up	Laptop	1.270
1730.00	Mid.	LTE	22.61	22.74	Body	0.5 cm	5 MHz	QPSK	1	0	Horizontal Up	Laptop	1.330
1752.50	High	LTE	22.40	22.47	Body	0.5 cm	5 MHz	QPSK	1	0	Horizontal Up	Laptop	1.290
1712.50	Low	LTE	21.61	21.60	Body	0.5 cm	5 MHz	16 QAM	1	0	Horizontal Up	Laptop	1.310
1730.00	Mid.	LTE	21.91	21.90	Body	0.5 cm	5 MHz	16 QAM	1	0	Horizontal Up	Laptop	1.350
1752.50	High	LTE	22.17	22.13	Body	0.5 cm	5 MHz	16 QAM	1	0	Horizontal Up	Laptop	1.270
ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Body							
Spatial Peak						1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population						averaged over 1 gram							

(continued on next page..)

Notes:

1. The test data reported are the worst-case SAR value with the position set in a typical configuration. Test procedures used were according to FCC/OET Bulletin 65, Supplement C [June 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. Liquid tissue depth was at least 15.0 cm.
5. Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
6. Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations.
7. A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
8. LTE dongle does not support VOIP.
9. LTE test configurations are determined according to KDB 178562. 1RB, 50% RB and full RB allocations were tested at the highest SAR configuration. Although Interim LTE guidance cases were tested, additional test cases were tested to ensure max SAR was reported for this device.
10. MPR/A-MPR was disabled for all SAR tests.
11. The Low, Mid. And High channels UL channel numbers are 19975, 20150, and 20375.
12. Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: OY1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 39 of 52

14.7 LTE Band 4 5MHz BW Body SAR Results (Continued)

MEASUREMENT RESULTS													
1712.50	Low	LTE	22.41	22.36	Body	0.5 cm	5 MHz	QPSK	1	24	Horizontal Up	Laptop	1.230
1730.00	Mid.	LTE	22.45	22.31	Body	0.5 cm	5 MHz	QPSK	1	24	Horizontal Up	Laptop	1.420
1752.50	High	LTE	22.02	21.87	Body	0.5 cm	5 MHz	QPSK	1	24	Horizontal Up	Laptop	1.120
1712.50	Low	LTE	21.91	21.88	Body	0.5 cm	5 MHz	16 QAM	1	24	Horizontal Up	Laptop	1.240
1730.00	Mid.	LTE	22.23	22.46	Body	0.5 cm	5 MHz	16 QAM	1	24	Horizontal Up	Laptop	1.440
1752.50	High	LTE	21.74	21.89	Body	0.5 cm	5 MHz	16 QAM	1	24	Horizontal Up	Laptop	1.080
1712.50	Low	LTE	21.92	21.86	Body	0.5 cm	5 MHz	QPSK	12	6	Horizontal Up	Laptop	1.300
1730.00	Mid.	LTE	22.10	22.09	Body	0.5 cm	5 MHz	QPSK	12	6	Horizontal Up	Laptop	1.350
1752.50	High	LTE	21.91	21.81	Body	0.5 cm	5 MHz	QPSK	12	6	Horizontal Up	Laptop	1.150
1712.50	Low	LTE	22.03	22.04	Body	0.5 cm	5 MHz	16 QAM	12	6	Horizontal Up	Laptop	1.320
1730.00	Mid.	LTE	22.24	22.21	Body	0.5 cm	5 MHz	16 QAM	12	6	Horizontal Up	Laptop	1.340
1752.50	High	LTE	22.04	21.96	Body	0.5 cm	5 MHz	16 QAM	12	6	Horizontal Up	Laptop	1.200
1712.50	Low	LTE	21.89	22.10	Body	0.5 cm	5 MHz	QPSK	25	0	Vertical Front	Laptop	1.100
1730.00	Mid.	LTE	21.91	21.76	Body	0.5 cm	5 MHz	QPSK	25	0	Vertical Front	Laptop	1.320
1752.50	High	LTE	21.98	22.02	Body	0.5 cm	5 MHz	QPSK	25	0	Vertical Front	Laptop	1.200
1712.50	Low	LTE	21.79	21.89	Body	0.5 cm	5 MHz	16 QAM	25	0	Vertical Front	Laptop	1.070
1730.00	Mid.	LTE	22.13	22.08	Body	0.5 cm	5 MHz	16 QAM	25	0	Vertical Front	Laptop	1.310
1752.50	High	LTE	21.77	21.85	Body	0.5 cm	5 MHz	16 QAM	25	0	Vertical Front	Laptop	1.180
1730.00	Mid.	LTE	21.91	21.83	Body	0.5 cm	5 MHz	QPSK	25	0	Vertical Back	Laptop	0.267
1730.00	Mid.	LTE	22.13	22.38	Body	0.5 cm	5 MHz	16 QAM	25	0	Vertical Back	Laptop	0.251
1712.50	Low	LTE	21.89	21.99	Body	0.5 cm	5 MHz	QPSK	25	0	Tip	Laptop	1.150
1730.00	Mid.	LTE	21.91	21.65	Body	0.5 cm	5 MHz	QPSK	25	0	Tip	Laptop	1.060
1752.50	High	LTE	21.98	22.03	Body	0.5 cm	5 MHz	QPSK	25	0	Tip	Laptop	1.020
1712.50	Low	LTE	21.79	21.99	Body	0.5 cm	5 MHz	16 QAM	25	0	Tip	Laptop	1.120
1730.00	Mid.	LTE	22.13	22.22	Body	0.5 cm	5 MHz	16 QAM	25	0	Tip	Laptop	1.080
1752.50	High	LTE	21.77	21.81	Body	0.5 cm	5 MHz	16 QAM	25	0	Tip	Laptop	0.998
ANSI / IEEE C95.1 1992 - SAFETY LIMIT					Body								
Spatial Peak					1.6 W/kg (mW/g)								
Uncontrolled Exposure/General Population					averaged over 1 gram								

Notes:

- 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].
- All modes of operation were investigated, and worst-case results are reported.
- Tissue parameters and temperatures are listed on the SAR plots.
- Liquid tissue depth was at least 15.0 cm.
- Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
- Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations
- A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
- LTE dongle does not support VOIP.
- LTE test configurations are determined according to KDB 178562. 1RB, 50% RB and full RB allocations were tested at the highest SAR configuration. Although Interim LTE guidance cases were tested, additional test cases were tested to ensure max SAR was reported for this device.
- MPR/A-MPR was disabled for all SAR tests.
- The Low, Mid. And High channels UL channel numbers are 19975, 20150, and 20375.
- Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: OY1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE	Page 40 of 52	

14.8 LTE Band 4 10MHz Bandwidth Body SAR Results

MEASUREMENT RESULTS													
FREQUENCY		Mode	C. Power[dBm]		Position	Spacing	Bandwidth	Modulation	RB Size	RB Offset	Side	Configuration	SAR (1g)
MHz	Ch.		Start	End									(W/kg)
1715.00	Low	LTE	22.84	22.75	Body	0.5 cm	10 MHz	QPSK	50	0	Horizontal Up	Laptop	1.010
1730.00	Mid.	LTE	22.88	22.94	Body	0.5 cm	10 MHz	QPSK	50	0	Horizontal Up	Laptop	1.100
1750.00	High	LTE	23.18	23.16	Body	0.5 cm	10 MHz	QPSK	50	0	Horizontal Up	Laptop	1.020
1715.00	Low	LTE	22.98	22.88	Body	0.5 cm	10 MHz	16 QAM	50	0	Horizontal Up	Laptop	1.030
1730.00	Mid.	LTE	22.91	23.00	Body	0.5 cm	10 MHz	16 QAM	50	0	Horizontal Up	Laptop	1.050
1750.00	High	LTE	23.06	23.03	Body	0.5 cm	10 MHz	16 QAM	50	0	Horizontal Up	Laptop	1.020
1715.00	Low	LTE	22.84	23.06	Body	0.5 cm	10 MHz	QPSK	50	0	Horizontal Down	USB Cable	0.930
1730.00	Mid.	LTE	22.88	22.81	Body	0.5 cm	10 MHz	QPSK	50	0	Horizontal Down	USB Cable	1.010
1750.00	High	LTE	23.18	23.07	Body	0.5 cm	10 MHz	QPSK	50	0	Horizontal Down	USB Cable	0.991
1715.00	Low	LTE	22.98	22.94	Body	0.5 cm	10 MHz	16 QAM	50	0	Horizontal Down	USB Cable	0.911
1730.00	Mid.	LTE	22.91	22.87	Body	0.5 cm	10 MHz	16 QAM	50	0	Horizontal Down	USB Cable	1.060
1750.00	High	LTE	23.06	22.90	Body	0.5 cm	10 MHz	16 QAM	50	0	Horizontal Down	USB Cable	0.994
1715.00	Low	LTE	23.19	23.27	Body	0.5 cm	10 MHz	QPSK	1	49	Horizontal Up	Laptop	0.907
1730.00	Mid.	LTE	23.01	23.05	Body	0.5 cm	10 MHz	QPSK	1	49	Horizontal Up	Laptop	1.300
1750.00	High	LTE	22.65	22.69	Body	0.5 cm	10 MHz	QPSK	1	49	Horizontal Up	Laptop	1.050
1715.00	Low	LTE	22.69	22.68	Body	0.5 cm	10 MHz	QPSK	1	0	Horizontal Up	Laptop	0.953
1730.00	Mid.	LTE	23.21	23.14	Body	0.5 cm	10 MHz	QPSK	1	0	Horizontal Up	Laptop	1.110
1750.00	High	LTE	23.23	23.31	Body	0.5 cm	10 MHz	QPSK	1	0	Horizontal Up	Laptop	1.250
1715.00	Low	LTE	22.76	22.73	Body	0.5 cm	10 MHz	16 QAM	1	0	Horizontal Up	Laptop	0.939
1730.00	Mid.	LTE	23.23	23.22	Body	0.5 cm	10 MHz	16 QAM	1	0	Horizontal Up	Laptop	1.100
1750.00	High	LTE	23.15	23.14	Body	0.5 cm	10 MHz	16 QAM	1	0	Horizontal Up	Laptop	1.210
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:

- 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].
- All modes of operation were investigated, and worst-case results are reported.
- Batteries are fully charged for all readings.
- Tissue parameters and temperatures are listed on the SAR plots.
- Liquid tissue depth was at least 15.0 cm.
- Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration (left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
- Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations
- A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
- LTE dongle does not support VOIP.
- LTE test configurations are determined according to KDB 178562. 1RB, 50% RB and full RB allocations were tested at the highest SAR configuration. Although Interim LTE guidance cases were tested, additional test cases were tested to ensure max SAR was reported for this device.
- MPR/A-MPR was disabled for all SAR tests.
- Low, Mid. And High channels are 20000, 20150, and 20350.
- Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: OY1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 41 of 52

14.9 LTE Band 4 10MHz Bandwidth Body SAR Results (Continued)

MEASUREMENT RESULTS													
1715.00	Low	LTE	23.17	23.11	Body	0.5 cm	10 MHz	16 QAM	1	49	Horizontal Up	Laptop	0.916
1730.00	Mid.	LTE	22.77	22.82	Body	0.5 cm	10 MHz	16 QAM	1	49	Horizontal Up	Laptop	1.320
1750.00	High	LTE	22.82	22.85	Body	0.5 cm	10 MHz	16 QAM	1	49	Horizontal Up	Laptop	1.050
1715.00	Low	LTE	22.90	22.81	Body	0.5 cm	10 MHz	QPSK	25	12	Horizontal Up	Laptop	0.987
1730.00	Mid.	LTE	22.86	22.74	Body	0.5 cm	10 MHz	QPSK	25	12	Horizontal Up	Laptop	1.210
1750.00	High	LTE	23.18	23.13	Body	0.5 cm	10 MHz	QPSK	25	12	Horizontal Up	Laptop	1.040
1715.00	Low	LTE	22.71	22.69	Body	0.5 cm	10 MHz	16 QAM	25	12	Horizontal Up	Laptop	1.000
1730.00	Mid.	LTE	22.92	23.04	Body	0.5 cm	10 MHz	16 QAM	25	12	Horizontal Up	Laptop	1.170
1750.00	High	LTE	22.99	23.01	Body	0.5 cm	10 MHz	16 QAM	25	12	Horizontal Up	Laptop	1.040
1730.00	Mid.	LTE	22.88	22.87	Body	0.5 cm	10 MHz	QPSK	50	0	Vertical Front	Laptop	1.020
1730.00	Mid.	LTE	22.91	22.94	Body	0.5 cm	10 MHz	16 QAM	50	0	Vertical Front	Laptop	1.020
1730.00	Mid.	LTE	22.88	23.28	Body	0.5 cm	10 MHz	QPSK	50	0	Vertical Back	Laptop	0.318
1730.00	Mid.	LTE	22.91	23.13	Body	0.5 cm	10 MHz	16 QAM	50	0	Vertical Back	Laptop	0.338
1715.00	Low	LTE	22.84	22.84	Body	0.5 cm	10 MHz	QPSK	50	0	Tip	Laptop	0.981
1730.00	Mid.	LTE	22.88	22.92	Body	0.5 cm	10 MHz	QPSK	50	0	Tip	Laptop	1.030
1750.00	High	LTE	23.18	23.18	Body	0.5 cm	10 MHz	QPSK	50	0	Tip	Laptop	0.983
1715.00	Low	LTE	22.98	22.98	Body	0.5 cm	10 MHz	16 QAM	50	0	Tip	Laptop	0.972
1730.00	Mid.	LTE	22.91	22.90	Body	0.5 cm	10 MHz	16 QAM	50	0	Tip	Laptop	0.989
1750.00	High	LTE	23.06	23.06	Body	0.5 cm	10 MHz	16 QAM	50	0	Tip	Laptop	0.958
ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Body							
Spatial Peak						1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population						averaged over 1 gram							

Notes:

- 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].
- All modes of operation were investigated, and worst-case results are reported.
- Batteries are fully charged for all readings.
- Tissue parameters and temperatures are listed on the SAR plots.
- Liquid tissue depth was at least 15.0 cm.
- Justification for reduced test configurations: Per FCC/OET Bulletin 65 Supplement C (June 2001) and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration (left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
- Lenovo ThinkPad notebooks were used as hosts for testing the modem configurations
- A spacing of 0.5 cm was used for all sides of the modem per KDB 447498. Guidance per KDB 567894 was used to test the Horizontal down position for this USB dongle.
- LTE dongle does not support VOIP.
- LTE test configurations are determined according to KDB 178562. 1RB, 50% RB and full RB allocations were tested at the highest SAR configuration. Although Interim LTE guidance cases were tested, additional test cases were tested to ensure max SAR was reported for this device.
- MPR/A-MPR was disabled for all SAR tests.
- Low, Mid. And High channels are 20000, 20150, and 20350.
- Due to the small form factor of the USB dongle, the zoom scan was evaluated with 7x7x7 measurement points.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: OY1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 42 of 52

15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8648D	(9kHz-4GHz) Signal Generator	9/19/2009	Biennial	9/19/2011	3613A00315
Agilent	8753E	(30kHz-6GHz) Network Analyzer	3/31/2010	Annual	3/31/2011	JP38020182
Agilent	E5515C	Wireless Communications Test Set	9/10/2009	Annual	9/10/2010	GB46110872
Agilent	E5515C	Wireless Communications Test Set	9/11/2009	Annual	9/11/2010	GB46310798
Agilent	E5515C	Wireless Communications Test Set	8/25/2009	Annual	8/25/2010	GB41450275
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/30/2010	Annual	3/30/2011	MY45470194
Gigatronics	80701A	(0.05-18GHz) Power Sensor	9/9/2009	Annual	9/9/2010	1833460
Gigatronics	8651A	Universal Power Meter	9/9/2009	Annual	9/9/2010	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
Rohde & Schwarz	CMU200	Base Station Simulator	9/11/2009	Annual	9/11/2010	836371/0079
Rohde & Schwarz	CMU200	Base Station Simulator	6/21/2010	Annual	6/21/2011	833855/0010
Rohde & Schwarz	CMU200	Base Station Simulator	9/4/2009	Annual	9/4/2010	109892
Rohde & Schwarz	NRV	Dual Channel Power Meter	8/20/2008	Biennial	8/20/2010	101695
Rohde & Schwarz	NRV-Z32	Peak Power Sensor (100uW-2W)	12/5/2008	Biennial	12/5/2010	100155
Rohde & Schwarz	NRV-Z33	Peak Power Sensor (1mW-20W)	12/5/2008	Biennial	12/5/2010	100004
SPEAG	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	1/20/2009	Biennial	1/20/2011	502
SPEAG	D1900V2	1900 MHz SAR Dipole	8/18/2009	Biennial	8/18/2011	50080
SPEAG	D2300V2	2300 MHz SAR Dipole	3/6/2008	Biennial	3/6/2010	1008
SPEAG	D2450V2	2450 MHz SAR Dipole	8/27/2009	Biennial	8/27/2011	719
SPEAG	D2450V2	2450 MHz SAR Dipole	1/8/2009	Biennial	1/8/2011	797
SPEAG	D2600V2	2600 MHz SAR Dipole	8/12/2009	Biennial	8/12/2011	1004
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/19/2009	Biennial	8/19/2011	1007
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/15/2009	Biennial	1/15/2011	1057
SPEAG	D835V2	835 MHz SAR Dipole	1/19/2009	Biennial	1/19/2011	4d047
SPEAG	D835V2	835 MHz SAR Dipole	8/24/2009	Biennial	8/24/2011	4d026
SPEAG	DAE3	Dasy Data Acquisition Electronics	9/17/2009	Annual	9/17/2010	455
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/22/2010	Annual	3/22/2011	704
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/21/2010	Annual	4/21/2011	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/22/2010	Annual	1/22/2011	649
SPEAG	ES3DV2	SAR Probe	9/18/2009	Annual	9/18/2010	3022
SPEAG	EX3DV4	SAR Probe	1/26/2010	Annual	1/26/2011	3550
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/8/2010	Annual	7/8/2011	859
SPEAG	D750V3	750 MHz Dipole	2/19/2009	Biennial	2/19/2011	1003
Speag	ES3DV3	SAR Probe	3/16/2010	Annual	3/16/2011	3213
Speag	ES3DV3	SAR Probe	4/20/2010	Annual	4/20/2011	3209
Rohde & Schwarz	SMIQ03B	Signal Generator	4/1/2010	Annual	4/1/2011	DE27259
Speag	D1640V2	1640 MHz Dipole	8/21/2008	Biennial	8/21/2010	321
Rohde & Schwarz	CMW500	LTE Base Station Simulator	8/25/2009	Annual	8/25/2010	100976
Anritsu	MA2481A	Power Sensor	12/2/2009	Annual	12/2/2010	5318
Anritsu	MA2481A	Power Sensor	12/3/2009	Annual	12/3/2010	5442
Anritsu	ML2438A	Power Meter	12/3/2009	Annual	12/3/2010	1190013
Anritsu	ML2438A	Power Meter	12/3/2009	Annual	12/3/2010	98150041
Agilent	8648D	Signal Generator	4/1/2010	Annual	4/1/2011	3629U00687
Anritsu	ML2438A	Power Meter	12/3/2009	Annual	12/3/2010	1070030
Anritsu	MA2481A	Power Sensor	12/2/2009	Annual	12/2/2010	5821
Anritsu	MA2481A	Power Sensor	12/3/2009	Annual	12/3/2010	8013
Anritsu	MA2481A	Power Sensor	12/3/2009	Annual	12/3/2010	2400
Apriel	ALS-PR-DIEL	Dielectric Probe Kit	N/A		N/A	260-00959
Agilent	E5515C	Wireless Communications Tester	4/14/2010	Annual	4/14/2011	US41140256
Speag	ES3DV3	SAR Probe	2/10/2010	Annual	2/10/2011	3173
Rohde & Schwarz	SMU-200A	Vector Signal Generator	10/6/2009	Annual	10/6/2010	114.2005.02

Notes:

Justification for 2-year calibration cycle for SAR dipoles is found in Section 11.3

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 43 of 52

16 CONCLUSION

16.1 Measurement Conclusion

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

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

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 44 of 52

17 REFERENCES

- [1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.
- [2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300kHz to 100GHz, New York: IEEE, 2006.
- [3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300kHz to 100GHz, New York: IEEE, Sept. 1992.
- [4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.
- [5] Federal Communications Commission, OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, June 2001.
- [6] IEEE Standards Coordinating Committee 34 – IEEE Std. 1528-2003, Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices.
- [7] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.
- [8] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.
- [9] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 120-124.
- [10] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.
- [11] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.
- [12] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Head Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.
- [13] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.
- [14] G. Hartsgrrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.
- [15] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 45 of 52

- [16] W. Gander, Computermathematick, Birkhaeuser, Basel, 1992.
- [17] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recepies in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.
- [18] Federal Communications Commission, OET Bulletin 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields. Supplement C, Dec. 1997.
- [19] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.
- [20] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.
- [21] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hoschschule Zürich, Dosimetric Evaluation of the Cellular Phone.
- [22] IEC 62209-1, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz), Feb. 2005.
- [23] Industry Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 4, March 2010.
- [24] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz – 300 GHz, 2009
- [25] FCC Public Notice DA-02-1438. Office of Engineering and Technology Announces a Transition Period for the Phantom Requirements of Supplement C to OET Bulletin 65, June 19, 2002
- [26] FCC SAR Measurement Procedures for 3G Devices KDB 941225
- [27] SAR Measurement procedures for IEEE 802.11a/b/g KDB 248227
- [28] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB 648474
- [29] FCC Application Note for SAR Probe Calibration and System Verification Consideration for Measurements at 150 MHz – 3 GHz, KDB 450824
- [30] FCC SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens, KDB 616217
- [31] FCC SAR Measurement Requirements for 3 – 6 GHz, KDB 865664
- [32] FCC Mobile Portable RF Exposure Procedure, KDB 447498
- [33] FCC SAR Procedures for Dongle Transmitters, KDB 447498
- [34] Anexo à Resolução No. 533, de 10 de Setembro de 2009.

FCC ID: BEJAD600		SAR COMPLIANCE REPORT		Reviewed by: Quality Manager
Filename: 0Y1007071152.BEJ-R1	Test Dates: 07/12/10 - 07/23/10	EUT Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem with Band 4 and 17 LTE		Page 46 of 52

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Muscle Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 850, Body SAR, Horizontal Up, Mid.ch, 3 Tx Slots

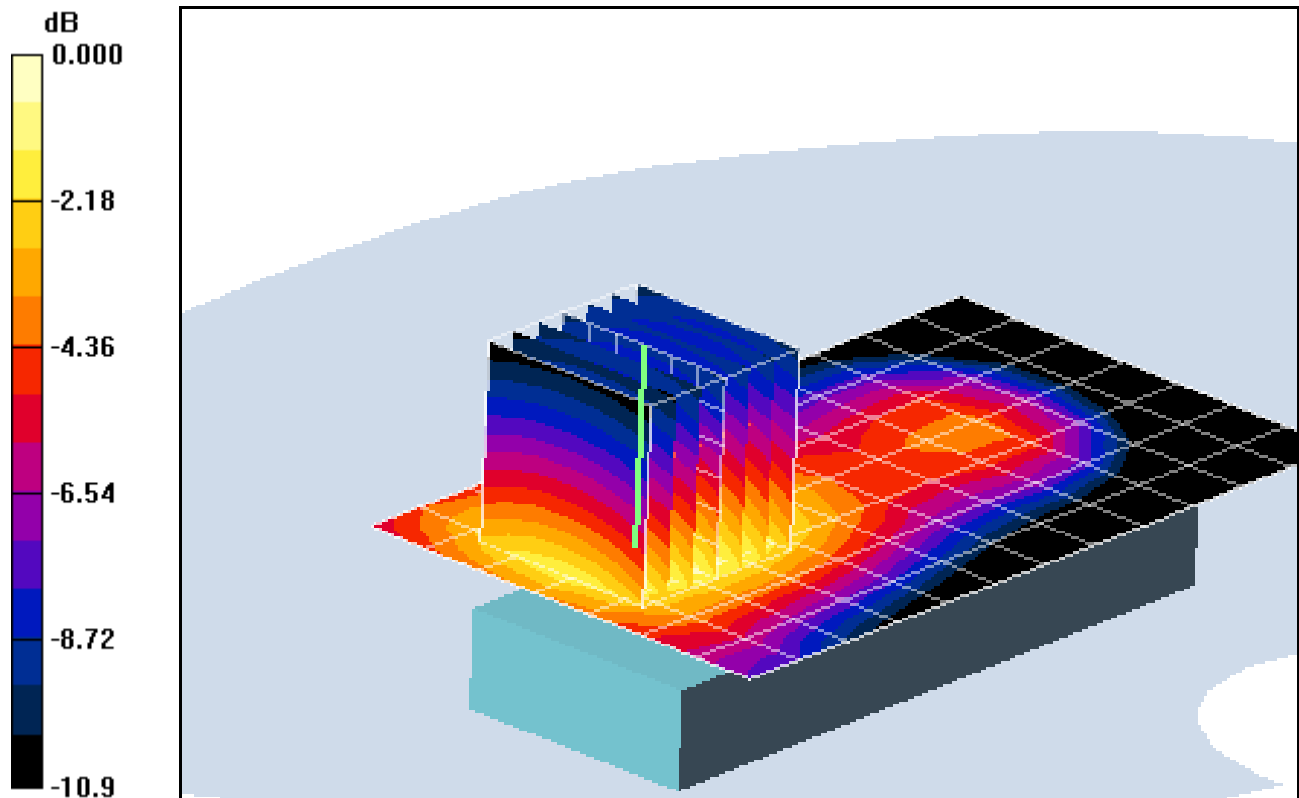
Area Scan (8x13x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.9 V/m; Power Drift = 0.050 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.909 mW/g; SAR(10 g) = 0.597 mW/g



0 dB = 1.06mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Muscle Medium parameters used (interpolated):

$$f = 836.6 \text{ MHz}; \sigma = 0.969 \text{ mho/m}; \epsilon_r = 54.3; \rho = 1000 \text{ kg/m}^3$$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 850, Body SAR, Horizontal Up, Mid.ch, 3 Tx Slots

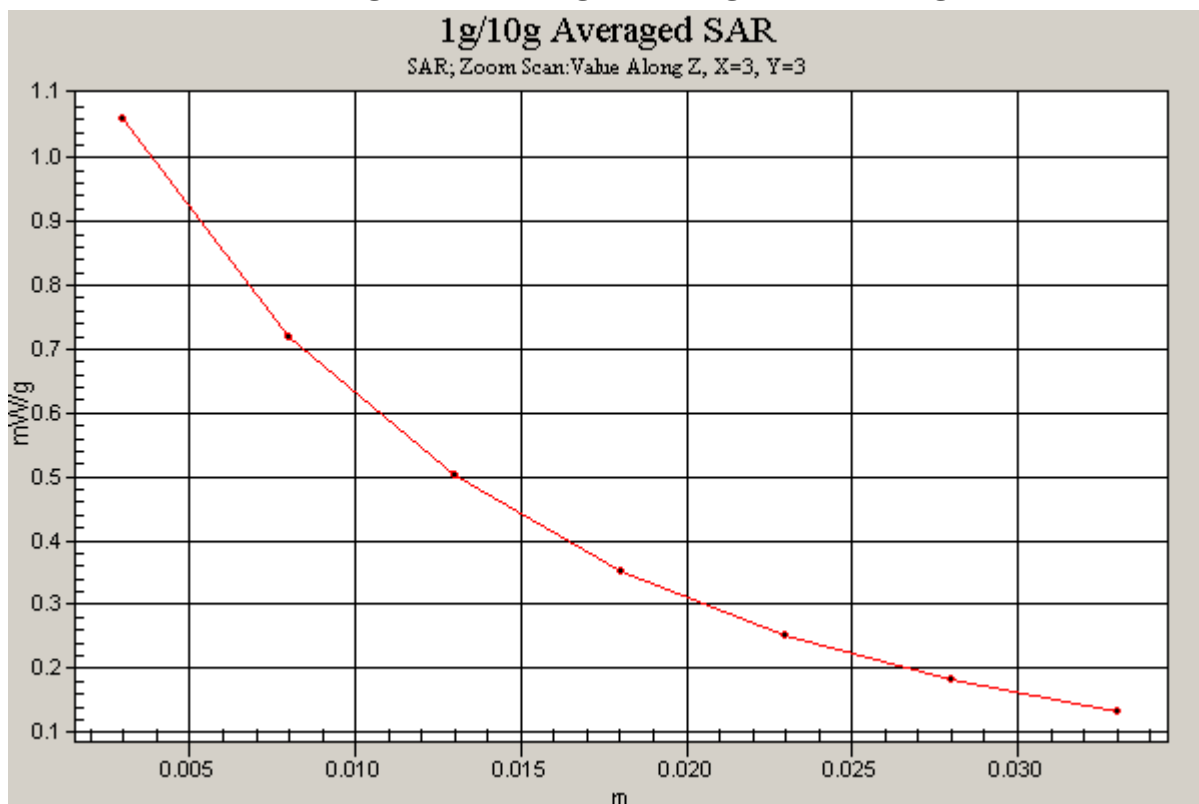
Area Scan (8x13x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.9 V/m; Power Drift = 0.050 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.909 mW/g; SAR(10 g) = 0.597 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Muscle Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 850, Body SAR, Horizontal Down, Mid.ch, 3 Tx slots

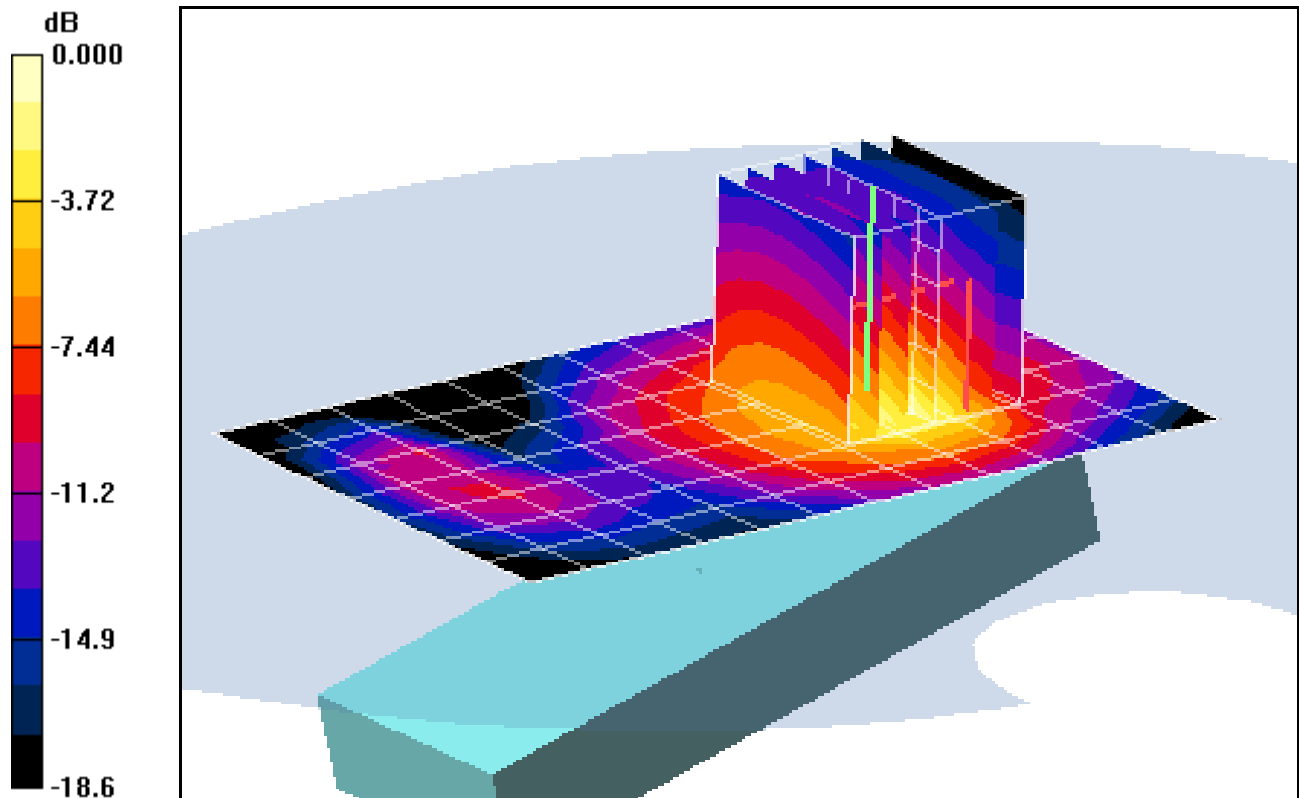
Area Scan (8x13x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.0 V/m; Power Drift = -0.358 dB

Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.580 mW/g; SAR(10 g) = 0.278 mW/g



0 dB = 0.784mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Muscle Medium parameters used (interpolated):
 $f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 850, Body SAR, Vertical Front, Mid.ch, 3 Tx slots

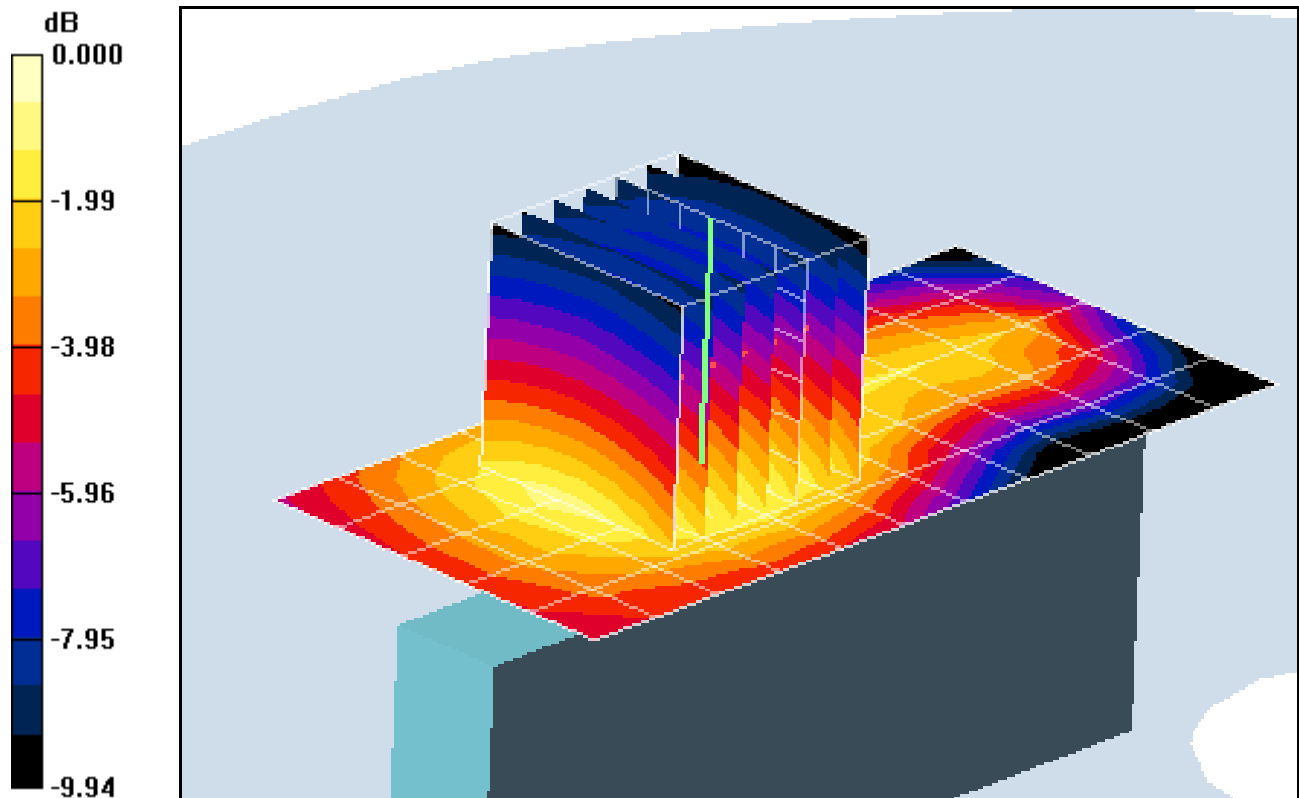
Area Scan (6x12x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 22.1 V/m; Power Drift = -0.064 dB

Peak SAR (extrapolated) = 0.606 W/kg

SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.279 mW/g



0 dB = 0.475mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Muscle Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 850, Body SAR, Vertical Back, Mid.ch, 3 Tx slots

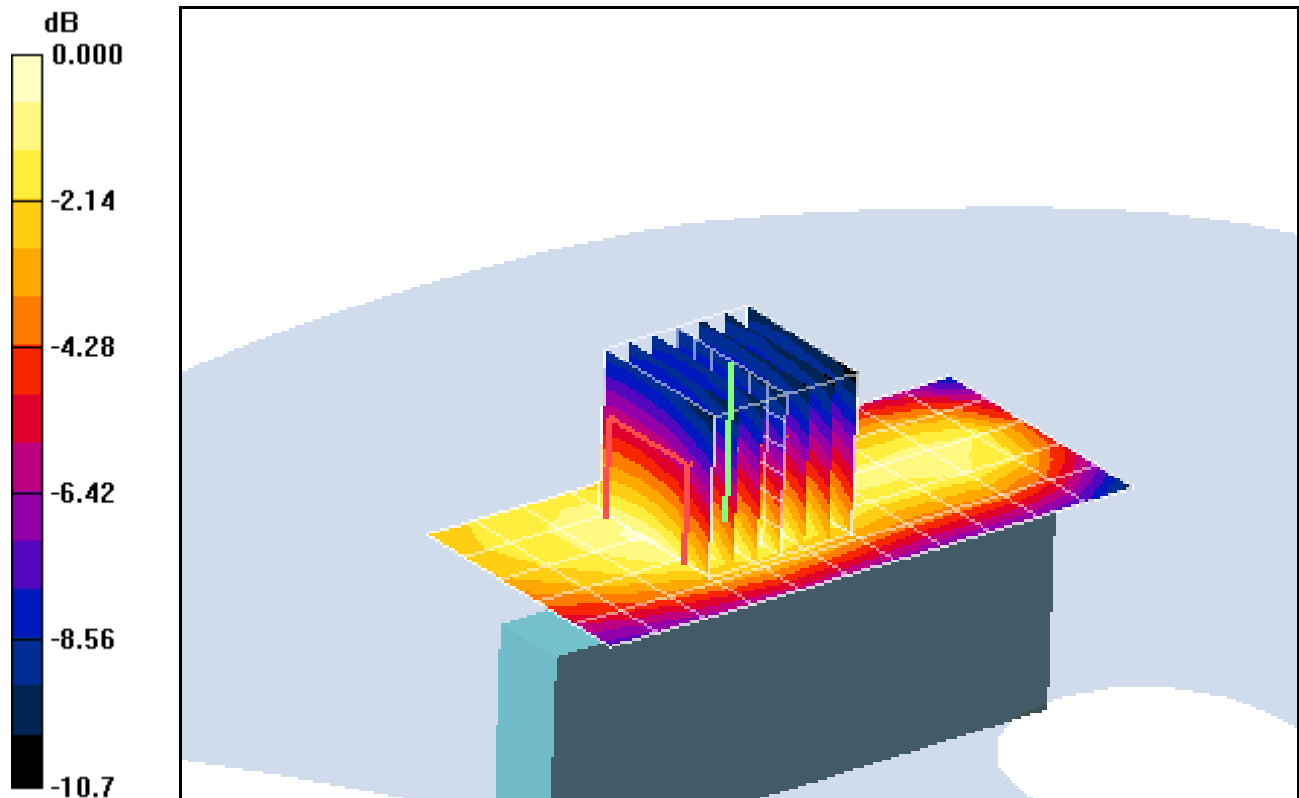
Area Scan (6x12x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.8 V/m; Power Drift = -0.194 dB

Peak SAR (extrapolated) = 0.450 W/kg

SAR(1 g) = 0.294 mW/g; SAR(10 g) = 0.194 mW/g



0 dB = 0.346mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: GSM850 GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Muscle Medium parameters used (interpolated):
 $f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 850, Body SAR, Tip, Mid.ch, 3 Tx Slots

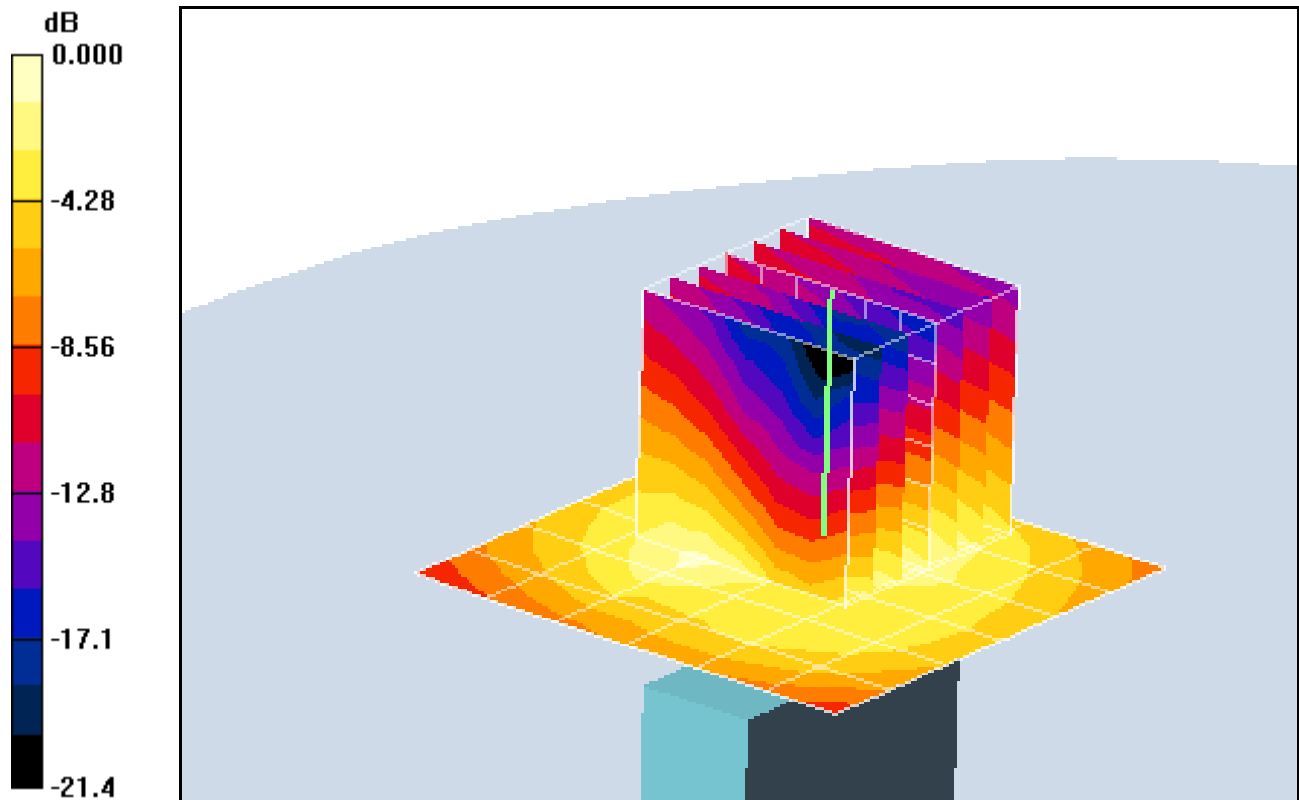
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.3 V/m; Power Drift = 0.258 dB

Peak SAR (extrapolated) = 0.258 W/kg

SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.074 mW/g



0 dB = 0.165mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

Communication System: GSM1900 EGPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076

Medium: 1900 Muscle Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 1900, Body SAR, Horizontal Up, Mid.ch, 4 Tx slots

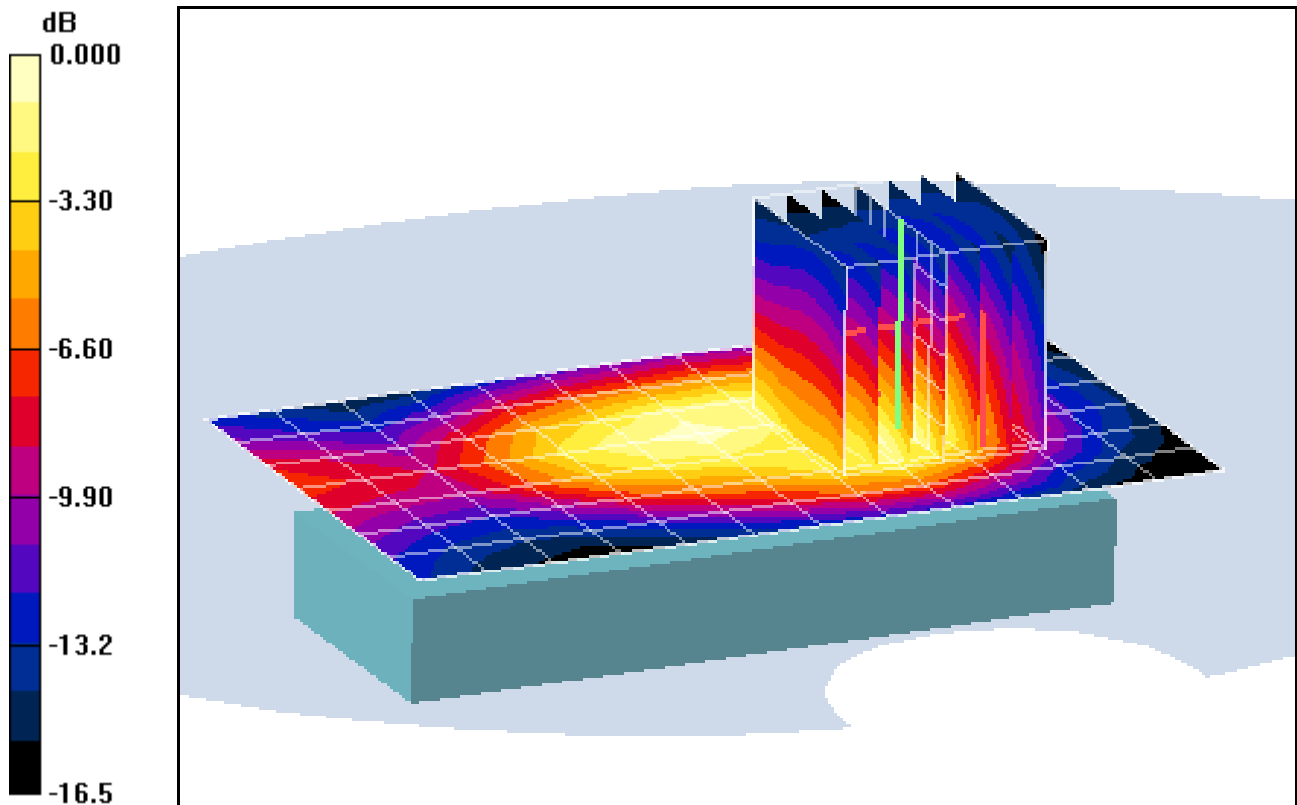
Area Scan (8x13x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.6 V/m; Power Drift = 0.133 dB

Peak SAR (extrapolated) = 1.72 W/kg

SAR(1 g) = 0.866 mW/g; SAR(10 g) = 0.436 mW/g



0 dB = 1.13mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

Communication System: GSM1900 EGPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076

Medium: 1900 Muscle Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 1900, Body SAR, Horizontal Down, Mid.ch, 4 Tx slots

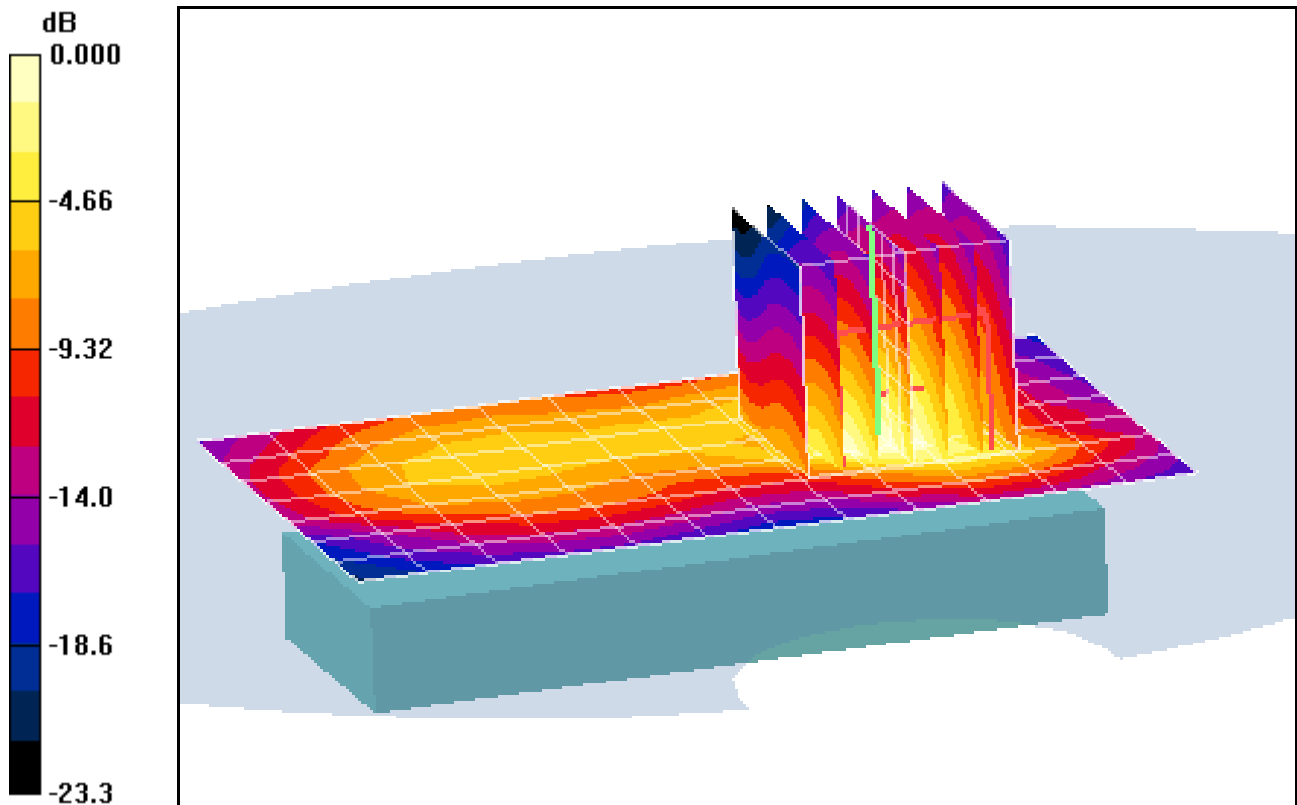
Area Scan (8x13x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 26.5 V/m; Power Drift = -0.254 dB

Peak SAR (extrapolated) = 1.70 W/kg

SAR(1 g) = 0.901 mW/g; SAR(10 g) = 0.434 mW/g



0 dB = 1.16mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

Communication System: GSM1900 EGPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076

Medium: 1900 Muscle Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 1900, Body SAR, Horizontal Down, Mid.ch, 4 Tx slots

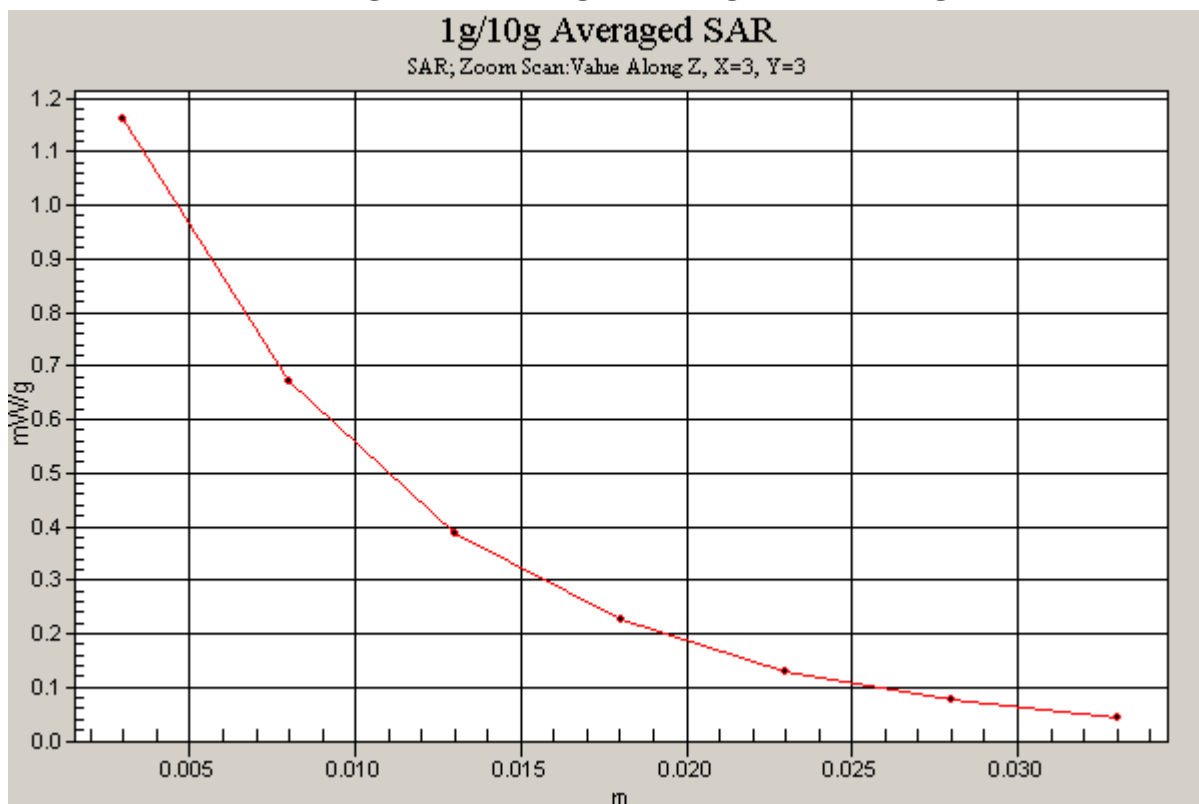
Area Scan (8x13x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 26.5 V/m; Power Drift = -0.254 dB

Peak SAR (extrapolated) = 1.70 W/kg

SAR(1 g) = 0.901 mW/g; SAR(10 g) = 0.434 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

Communication System: GSM1900 EGPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076

Medium: 1900 Muscle Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 1900, Body SAR, Vertical Front, Mid.ch, 4 Tx slots

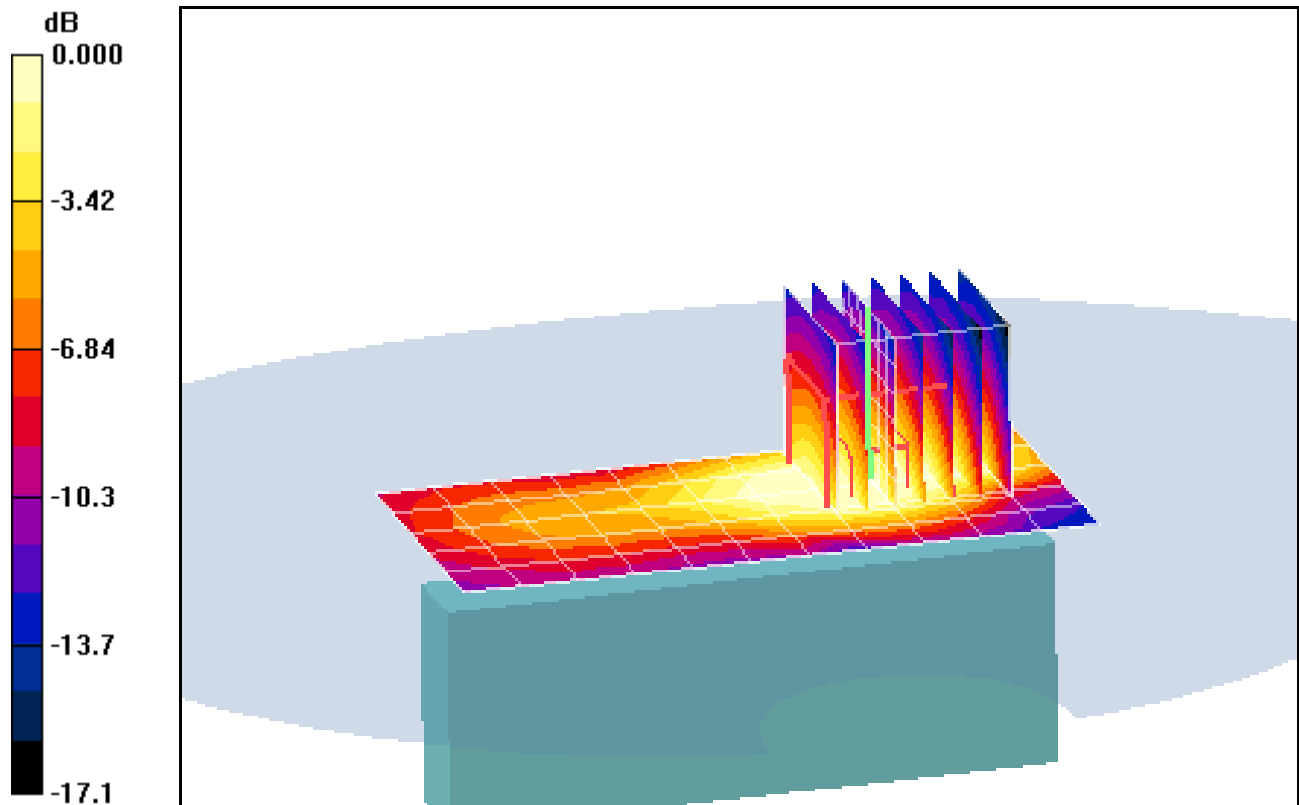
Area Scan (6x12x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 23.9 V/m; Power Drift = -0.147 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.647 mW/g; SAR(10 g) = 0.372 mW/g



0 dB = 0.784mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

Communication System: GSM1900 EGPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076

Medium: 1900 Muscle Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 1900, Body SAR, Vertical Back, Mid.ch, 4 Tx slots

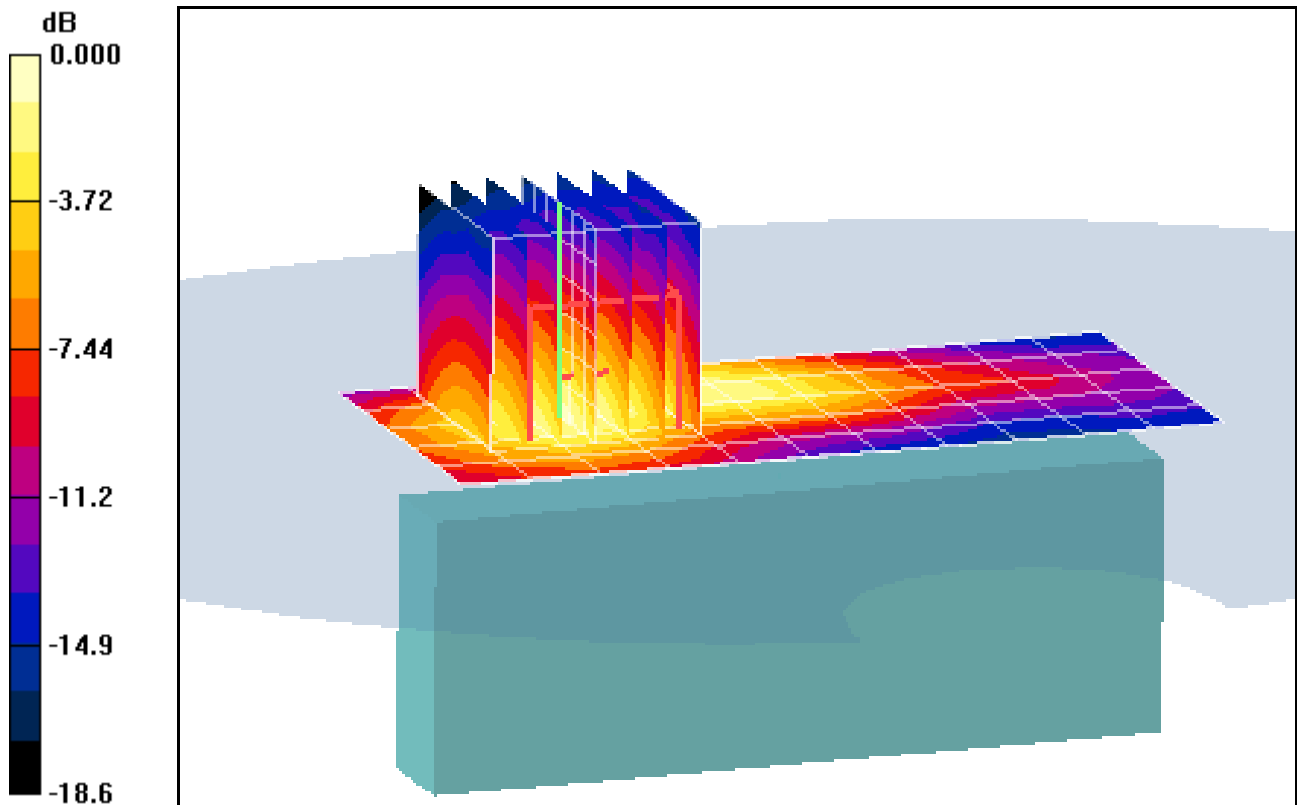
Area Scan (6x12x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 14.8 V/m; Power Drift = 0.130 dB

Peak SAR (extrapolated) = 0.519 W/kg

SAR(1 g) = 0.280 mW/g; SAR(10 g) = 0.147 mW/g



0 dB = 0.361mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

Communication System: GSM1900 EGPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076

Medium: 1900 Muscle Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: GPRS 1900, Body SAR, Tip, Mid.ch, 4 Tx slots

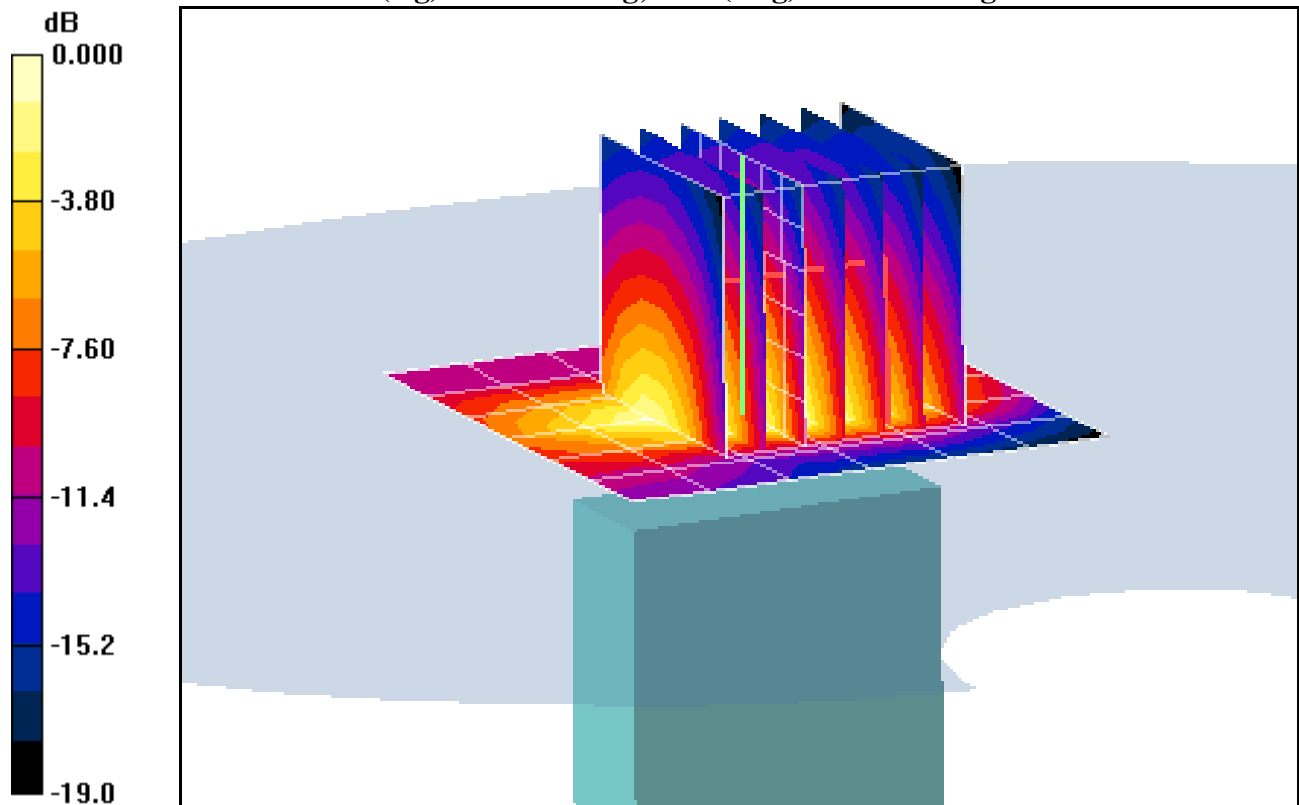
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.6 V/m; Power Drift = -0.431 dB

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.762 mW/g; SAR(10 g) = 0.365 mW/g



0 dB = 0.971mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

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

Medium: 835 Muscle Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 850, Body SAR, Horizontal Up, Mid.ch

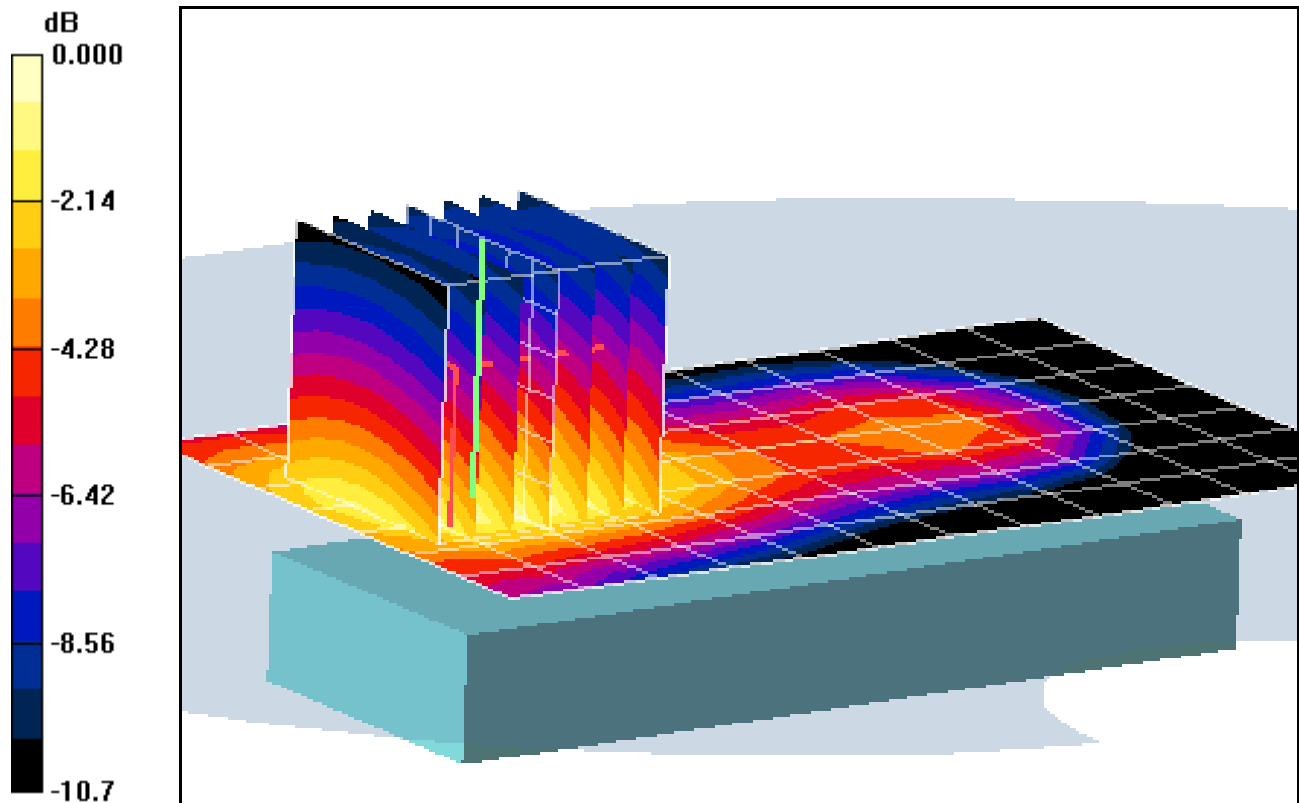
Area Scan (8x13x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.0 V/m; Power Drift = -0.074 dB

Peak SAR (extrapolated) = 0.826 W/kg

SAR(1 g) = 0.565 mW/g; SAR(10 g) = 0.372 mW/g



0 dB = 0.659mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

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

Medium: 835 Muscle Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 850, Body SAR, Horizontal Up, Mid.ch

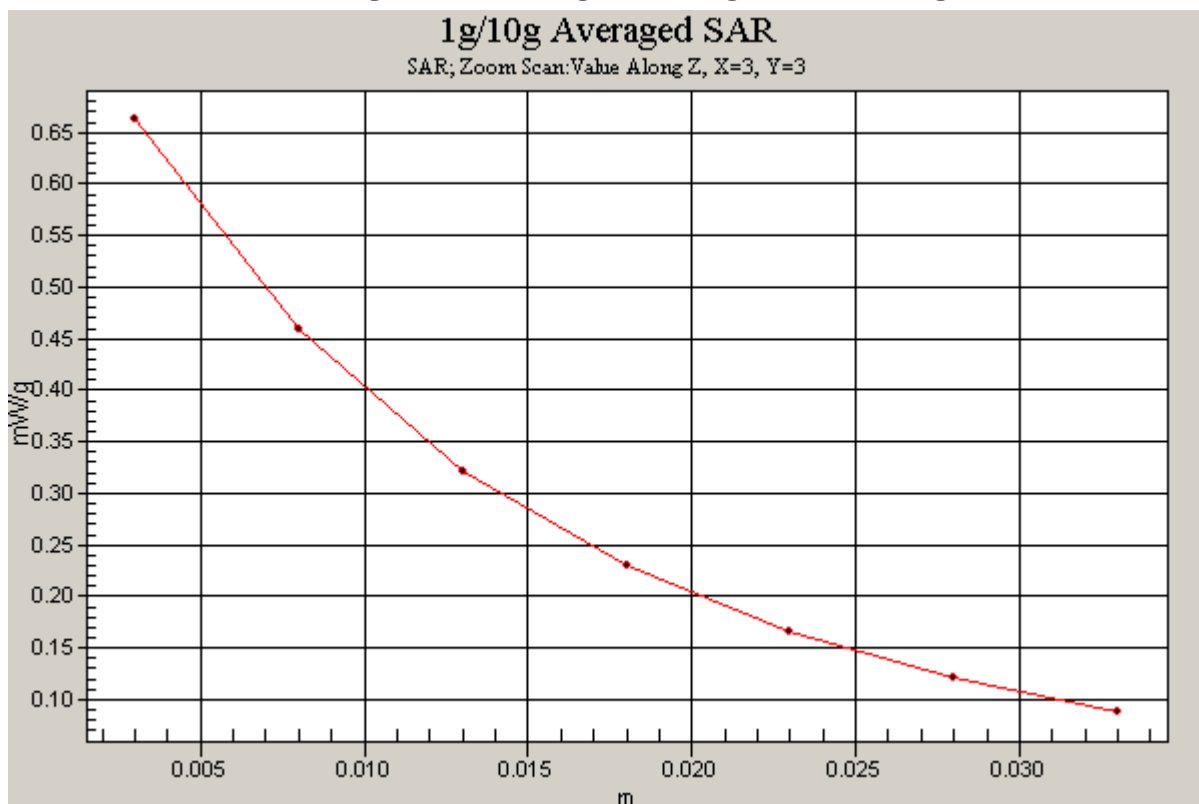
Area Scan (8x13x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.0 V/m; Power Drift = -0.074 dB

Peak SAR (extrapolated) = 0.826 W/kg

SAR(1 g) = 0.565 mW/g; SAR(10 g) = 0.372 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

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

Medium: 835 Muscle Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 850, Body SAR, Horizontal Down, Mid.ch

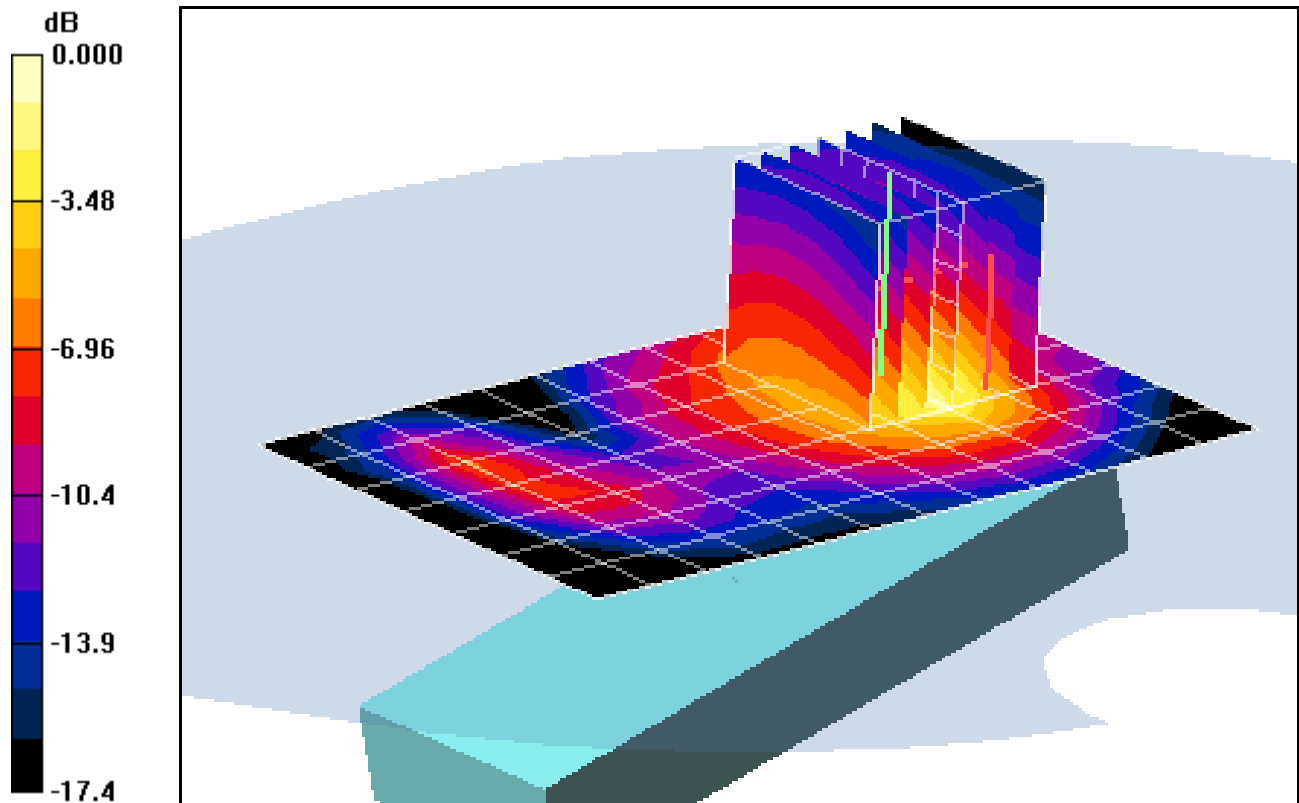
Area Scan (8x13x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.0 V/m; Power Drift = 0.085 dB

Peak SAR (extrapolated) = 0.753 W/kg

SAR(1 g) = 0.373 mW/g; SAR(10 g) = 0.187 mW/g



0 dB = 0.481mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

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

Medium: 835 Muscle Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

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

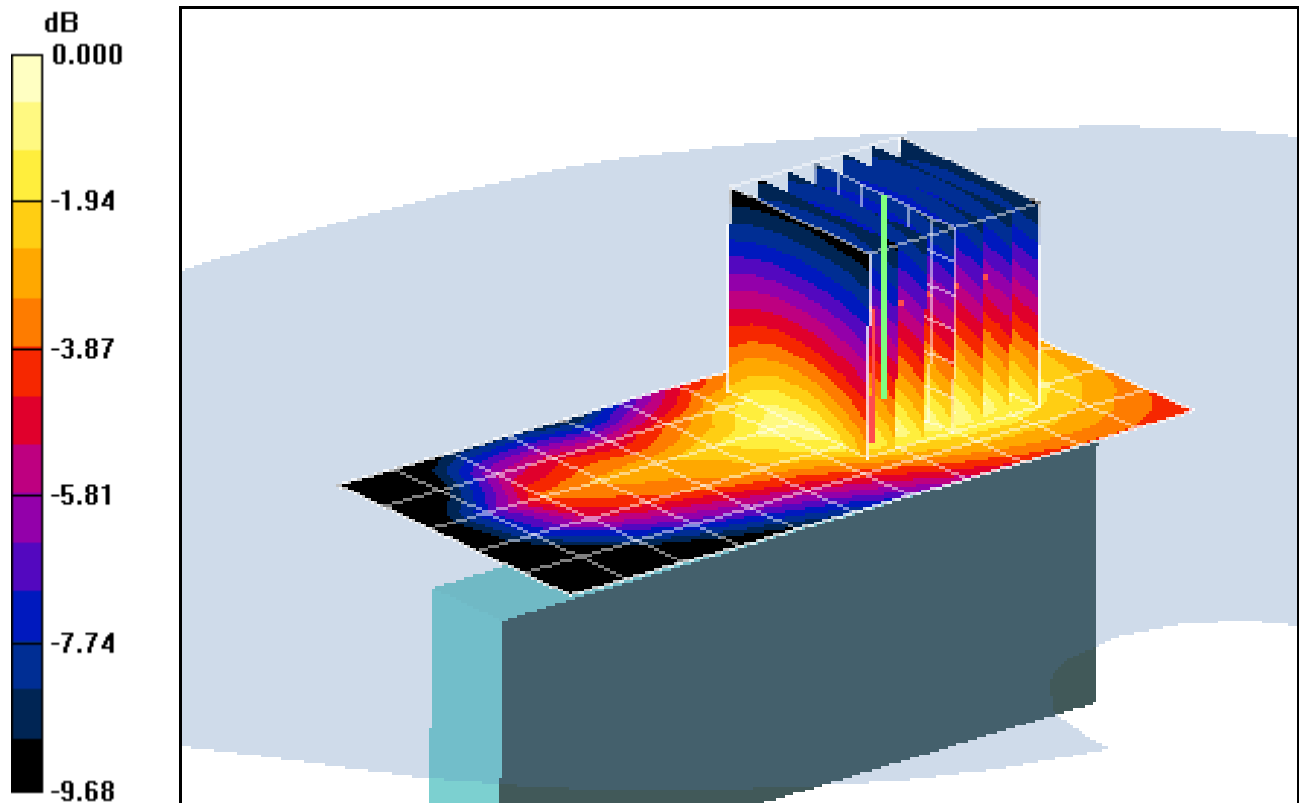
Area Scan (6x12x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.4 V/m; Power Drift = -0.144 dB

Peak SAR (extrapolated) = 0.490 W/kg

SAR(1 g) = 0.342 mW/g; SAR(10 g) = 0.234 mW/g



0 dB = 0.394mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

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

Medium: 835 Muscle Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

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

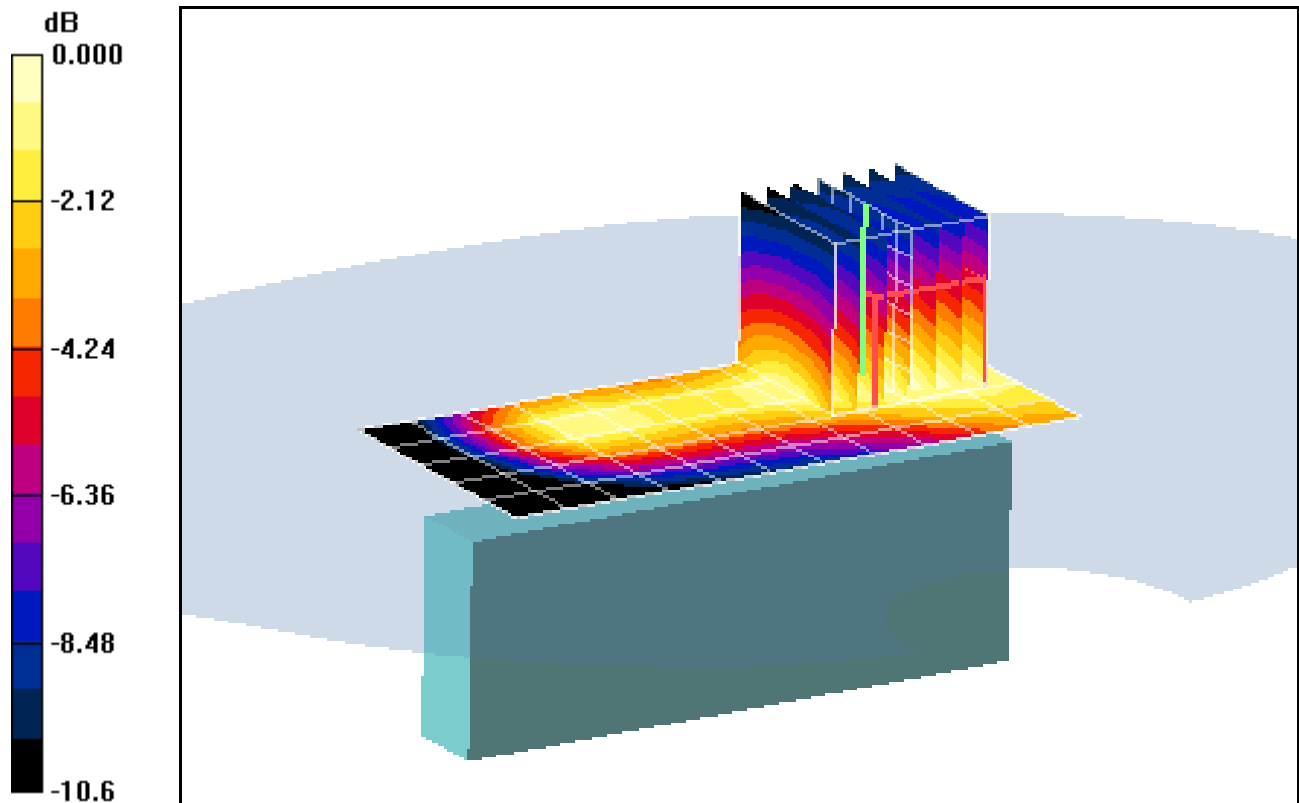
Area Scan (6x12x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.9 V/m; Power Drift = 0.176 dB

Peak SAR (extrapolated) = 0.366 W/kg

SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.166 mW/g



0 dB = 0.286mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

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

Medium: 835 Muscle Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 850, Body SAR, Tip, Mid.ch

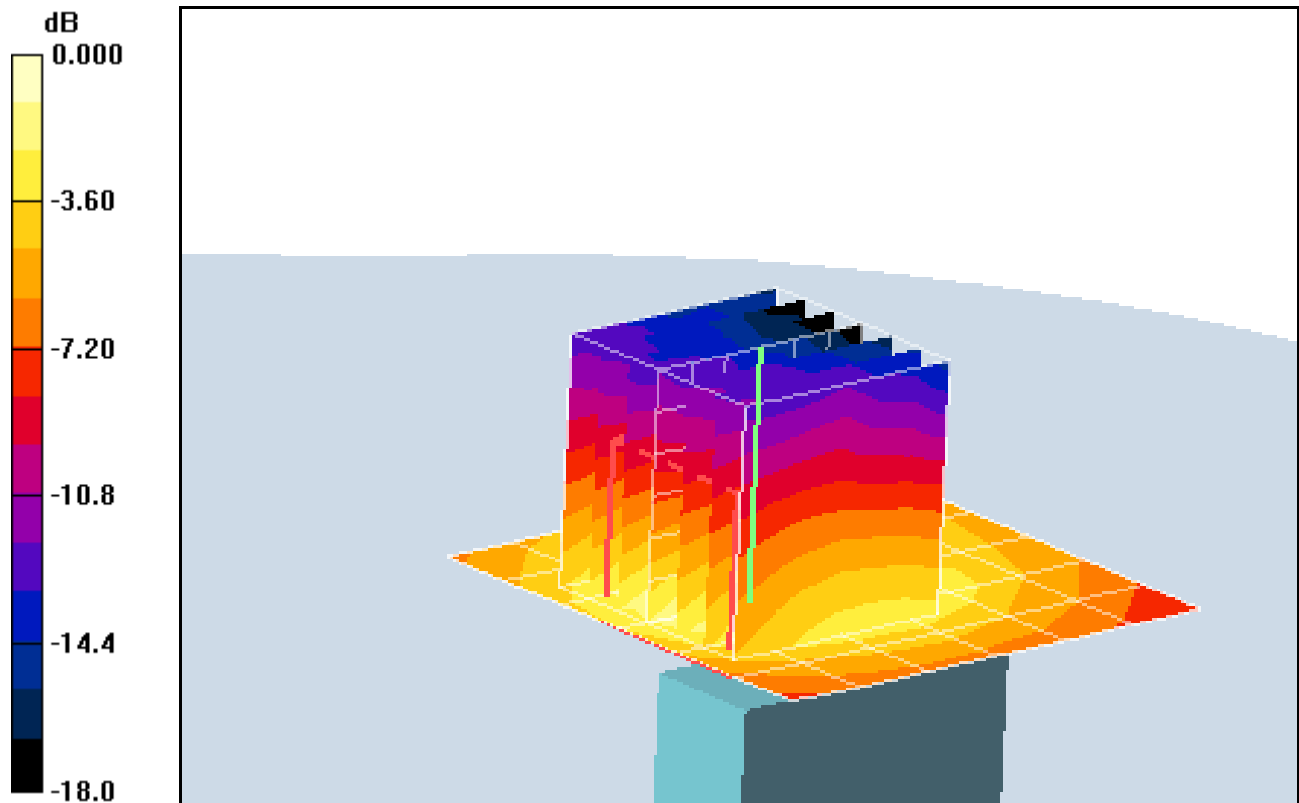
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.0 V/m; Power Drift = 0.090 dB

Peak SAR (extrapolated) = 0.190 W/kg

SAR(1 g) = 0.091 mW/g; SAR(10 g) = 0.049 mW/g



0 dB = 0.117mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

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

Medium: 1900 Muscle Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 1900, Body SAR, Horizontal Up, Mid.ch

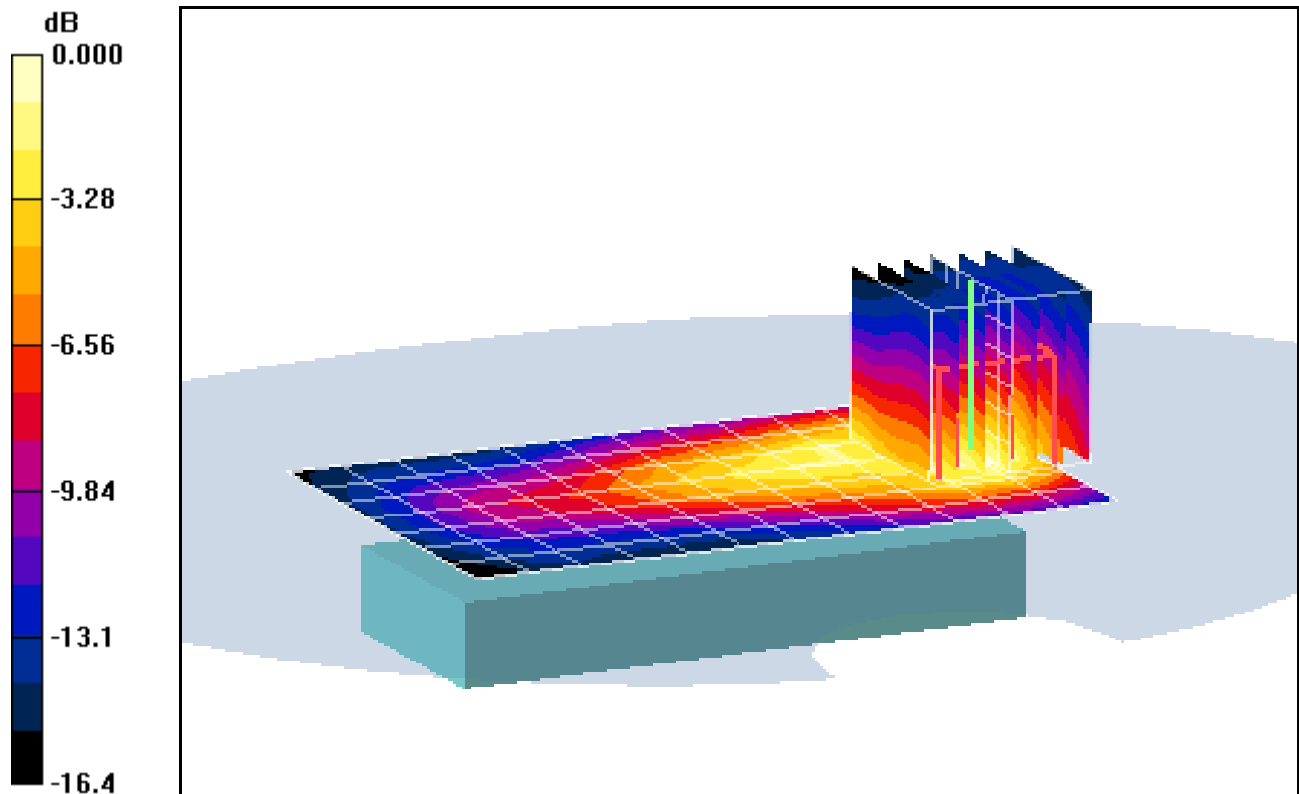
Area Scan (8x13x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.1 V/m; Power Drift = -0.123 dB

Peak SAR (extrapolated) = 1.52 W/kg

SAR(1 g) = 0.789 mW/g; SAR(10 g) = 0.399 mW/g



0 dB = 1.03mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

Communication System: WCDMA1900; Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900 Muscle Medium parameters used:

$f = 1852.4 \text{ MHz}$; $\sigma = 1.46 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 1900, Body SAR, Horizontal Down, Low ch

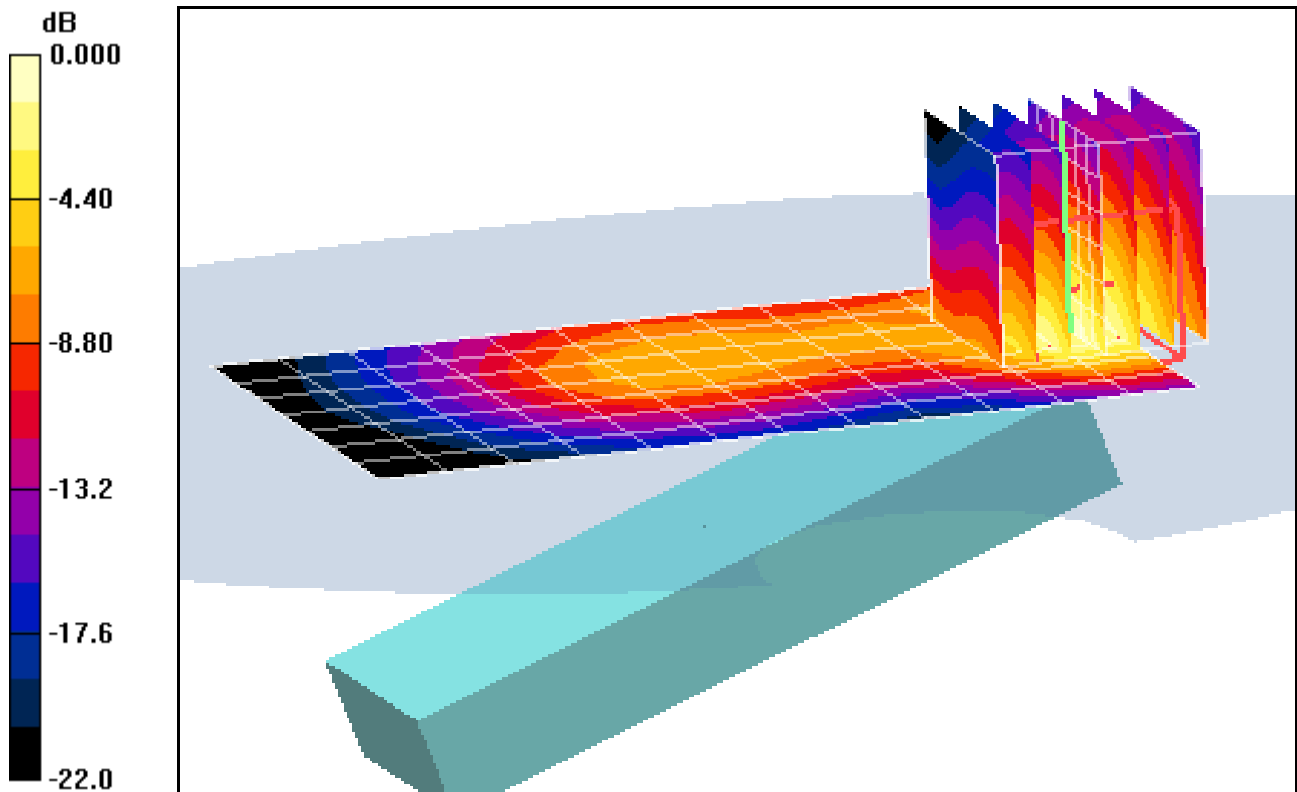
Area Scan (8x13x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 30.3 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 1.90 W/kg

SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.498 mW/g



0 dB = 1.31mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

Communication System: WCDMA1900; Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900 Muscle Medium parameters used:

$f = 1852.4 \text{ MHz}$; $\sigma = 1.46 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 1900, Body SAR, Horizontal Down, Low ch

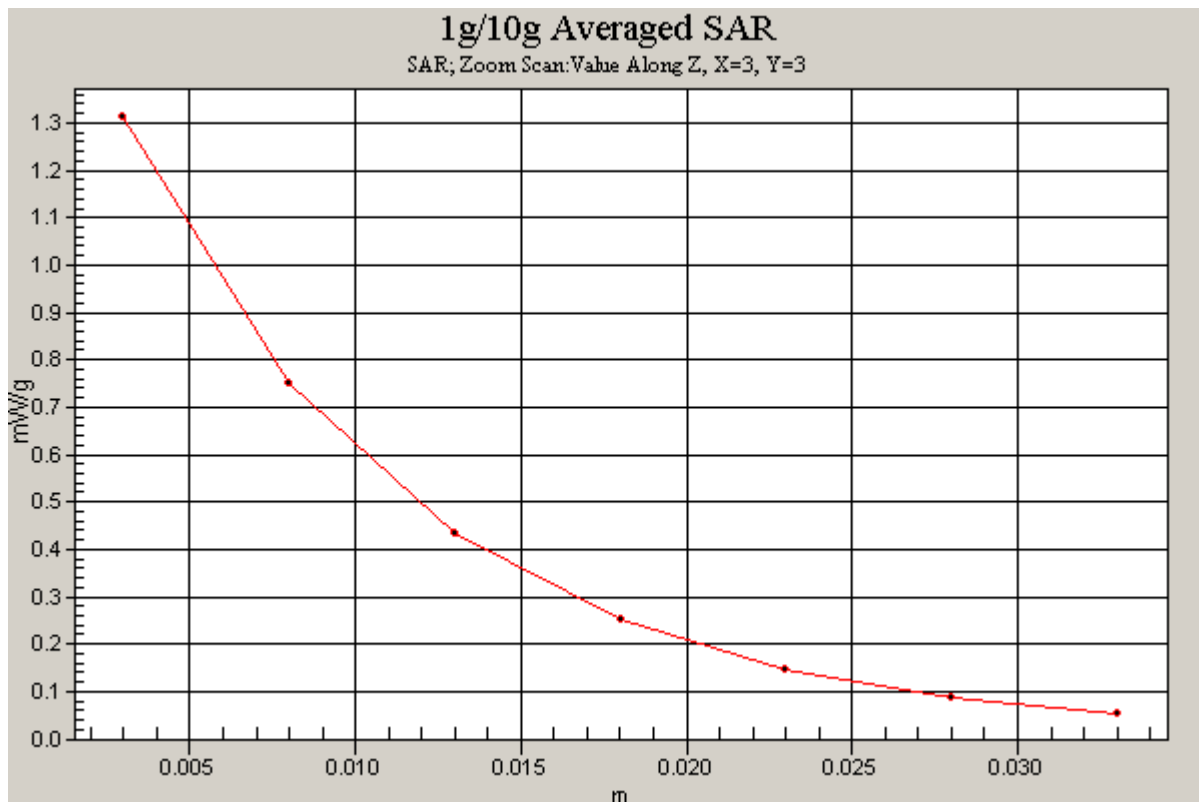
Area Scan (8x13x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 30.3 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 1.90 W/kg

SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.498 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

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

Medium: 1900 Muscle Medium parameters used:

$f = 1907.6 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 52.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 1900, Body SAR, Vertical Front, High.ch

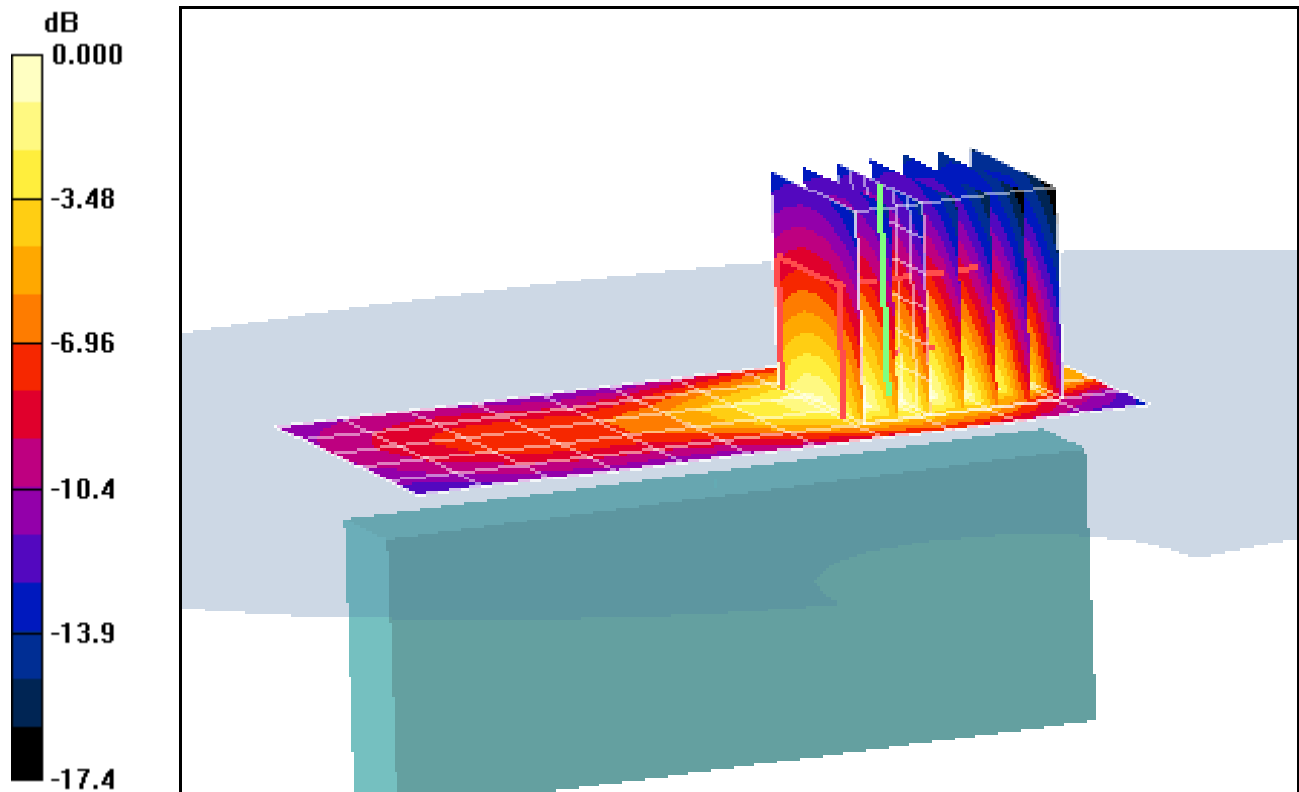
Area Scan (6x12x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 26.8 V/m; Power Drift = 0.055 dB

Peak SAR (extrapolated) = 1.52 W/kg

SAR(1 g) = 0.908 mW/g; SAR(10 g) = 0.511 mW/g



0 dB = 1.10mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

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

Medium: 1900 Muscle Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 1900, Body SAR, Vertical Back, Mid.ch

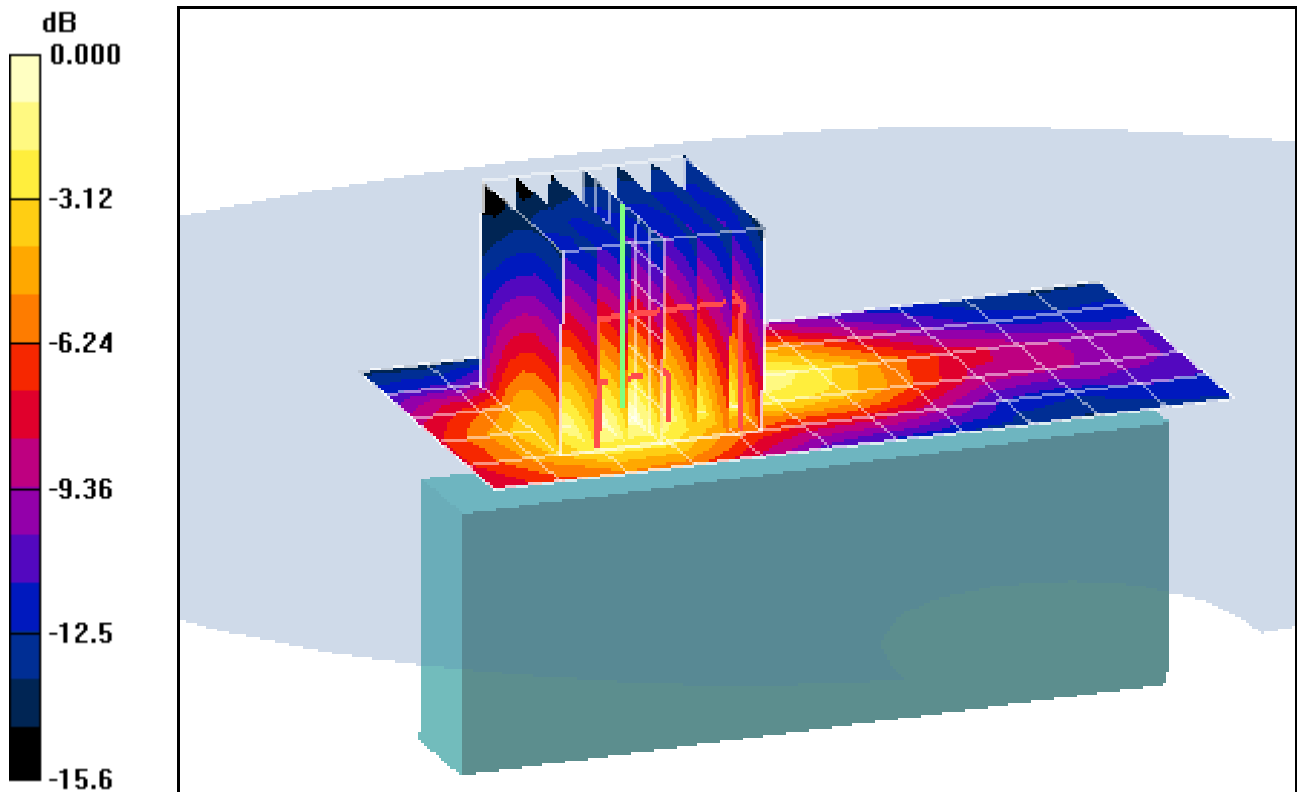
Area Scan (6x12x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 15.9 V/m; Power Drift = -0.042 dB

Peak SAR (extrapolated) = 0.573 W/kg

SAR(1 g) = 0.312 mW/g; SAR(10 g) = 0.168 mW/g



0 dB = 0.391mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: EMI**

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

Medium: 1900 Muscle Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

Mode: WCDMA 1900, Body SAR, Tip, Mid.ch

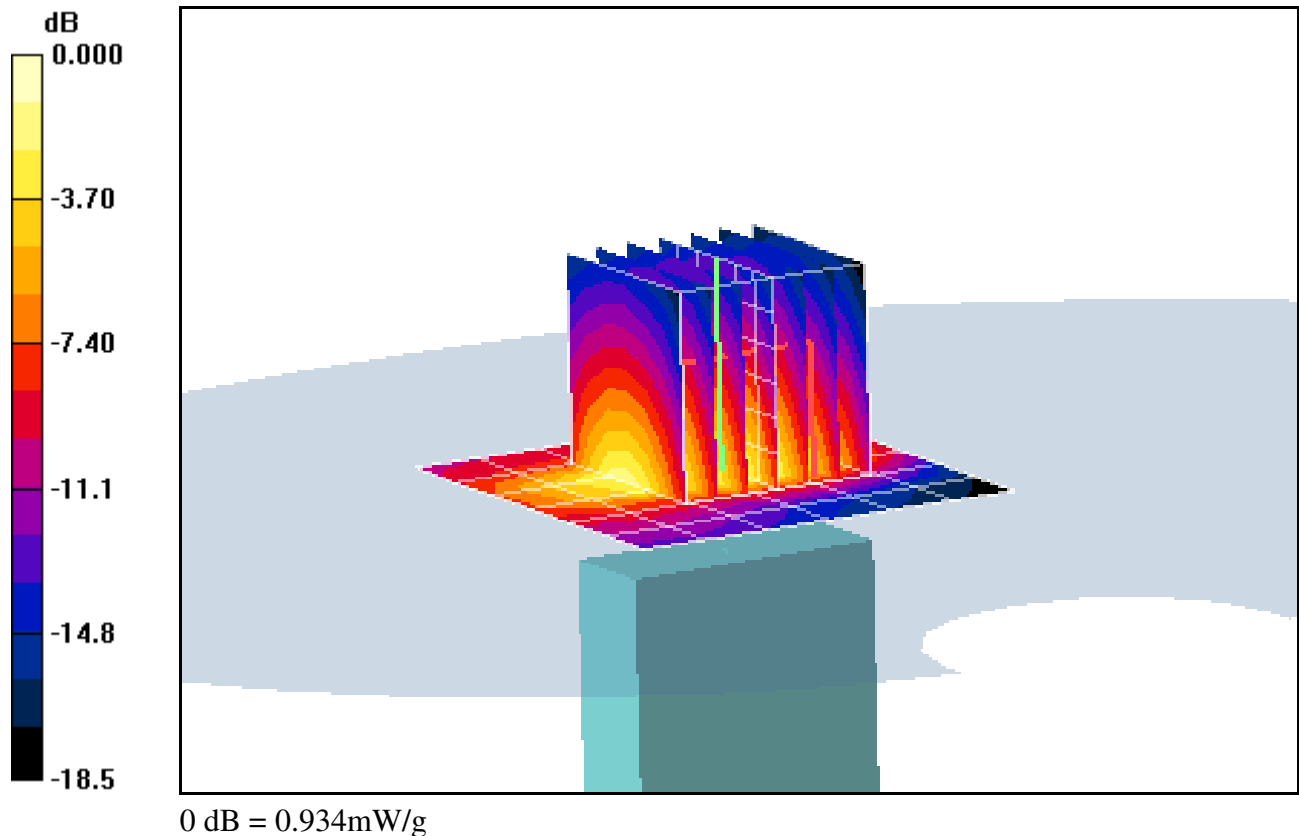
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.8 V/m; Power Drift = -0.375 dB

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.733 mW/g; SAR(10 g) = 0.365 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#2**

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

Medium: 750 Muscle Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.914 \text{ mho/m}$; $\epsilon_r = 55.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-23-2010; Ambient Temp: 21.5 °C; Tissue Temp: 20.7 °C

Probe: ES3DV3 - SN3209; ConvF(6.24, 6.24, 6.24); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 700MHz LTE, Body SAR, Low Ch., RB Size 25, RB Offset 0,
QPSK, 5MHz BW, Horizontal Up**

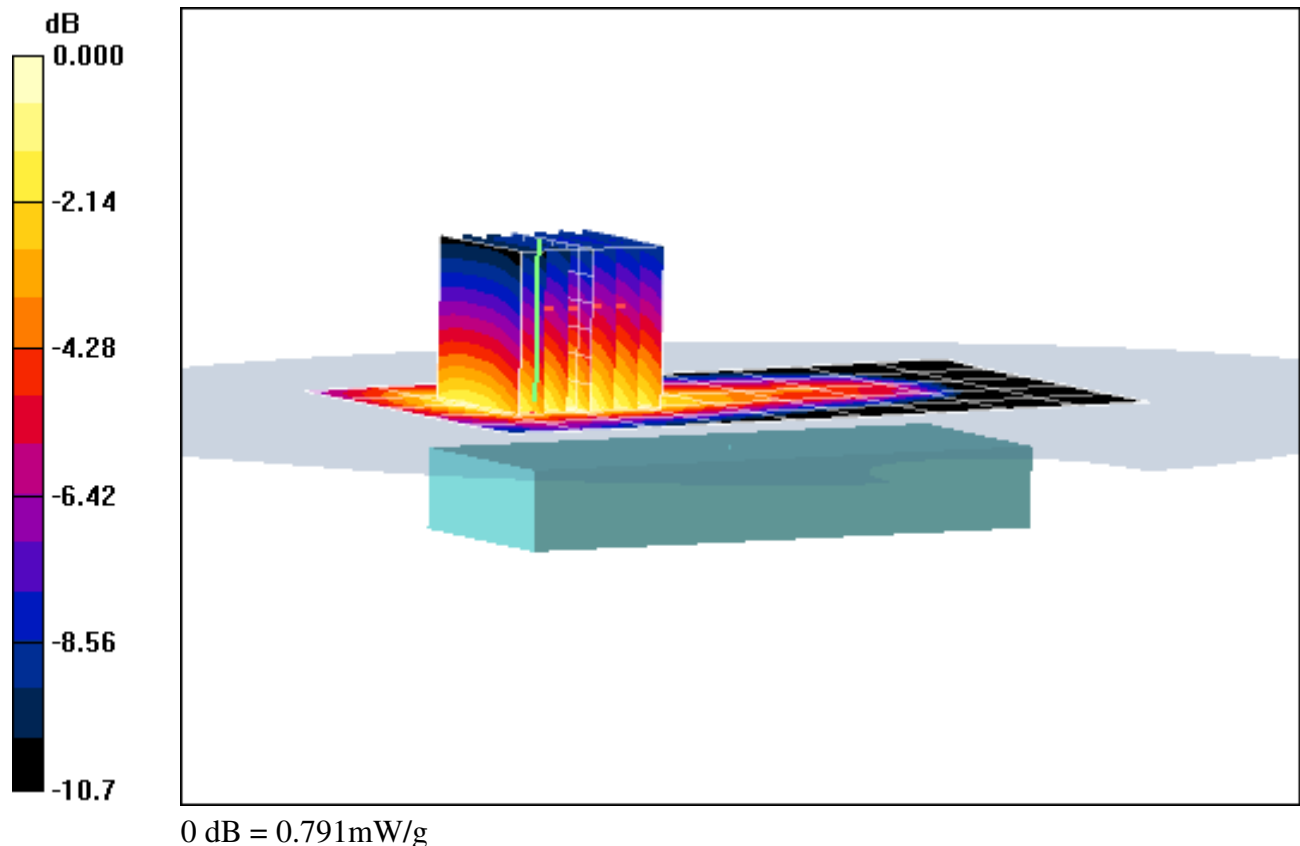
Area Scan (6x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 29.0 V/m; Power Drift = -0.266 dB

Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.685 mW/g; SAR(10 g) = 0.453 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA
USB Modem with 700 and 1700 LTE; Serial: SAR#1**

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

Medium: 750 Muscle Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.914 \text{ mho/m}$; $\epsilon_r = 55.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-16-2010; Ambient Temp: 23.6 °C; Tissue Temp: 22.1 °C

Probe: ES3DV3 - SN3209; ConvF(6.24, 6.24, 6.24); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 700MHz LTE, Body SAR, Low Ch., RB Size 1, RB Offset 49,
QPSK, 10MHz BW, Horizontal Down**

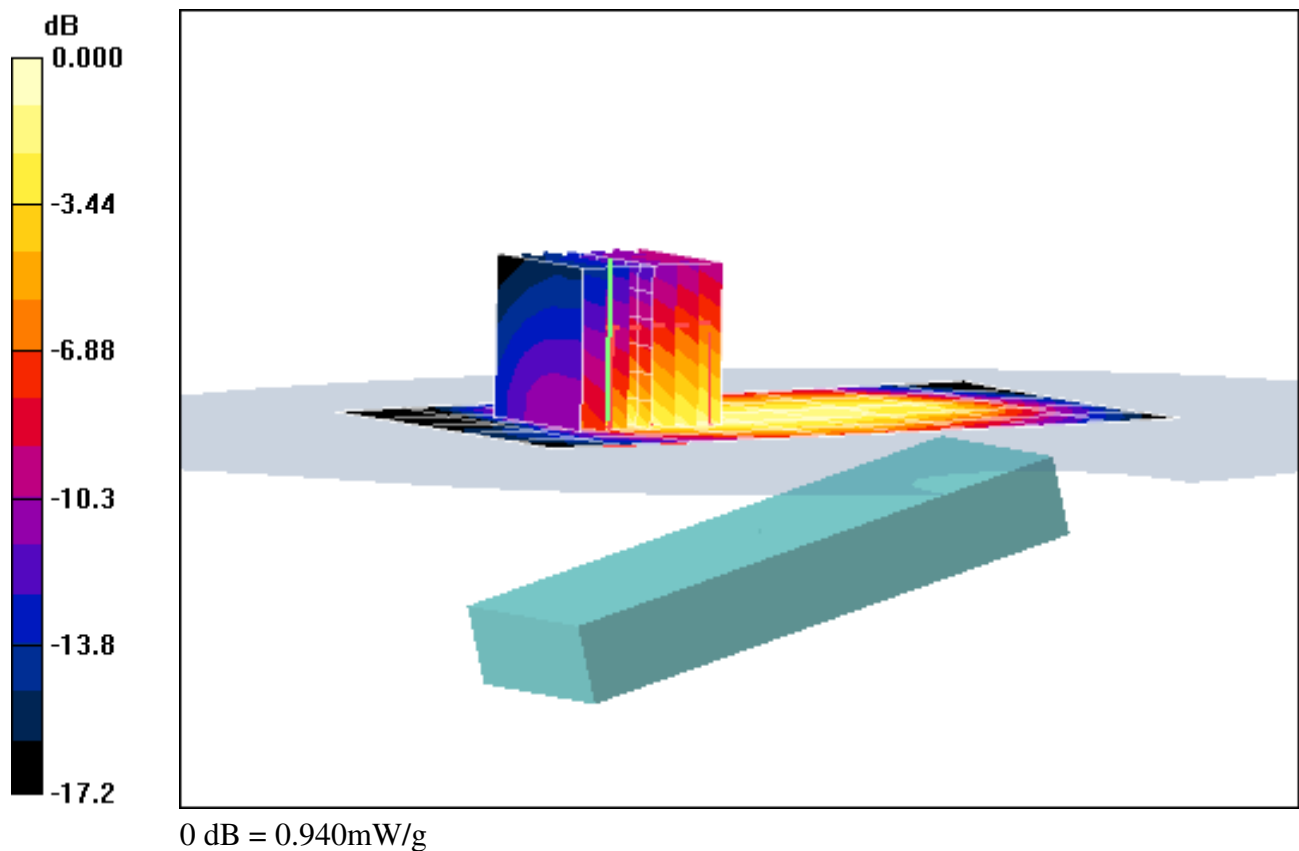
Area Scan (6x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 26.7 V/m; Power Drift = -0.207 dB

Peak SAR (extrapolated) = 1.77 W/kg

SAR(1 g) = 0.699 mW/g; SAR(10 g) = 0.394 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

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

Medium: 750 Muscle Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.914 \text{ mho/m}$; $\epsilon_r = 55.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-16-2010; Ambient Temp: 23.6 °C; Tissue Temp: 22.1 °C

Probe: ES3DV3 - SN3209; ConvF(6.24, 6.24, 6.24); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 700MHz LTE, Body SAR, Low Ch., RB Size 1, RB Offset 49,
QPSK, 10MHz BW, Horizontal Down**

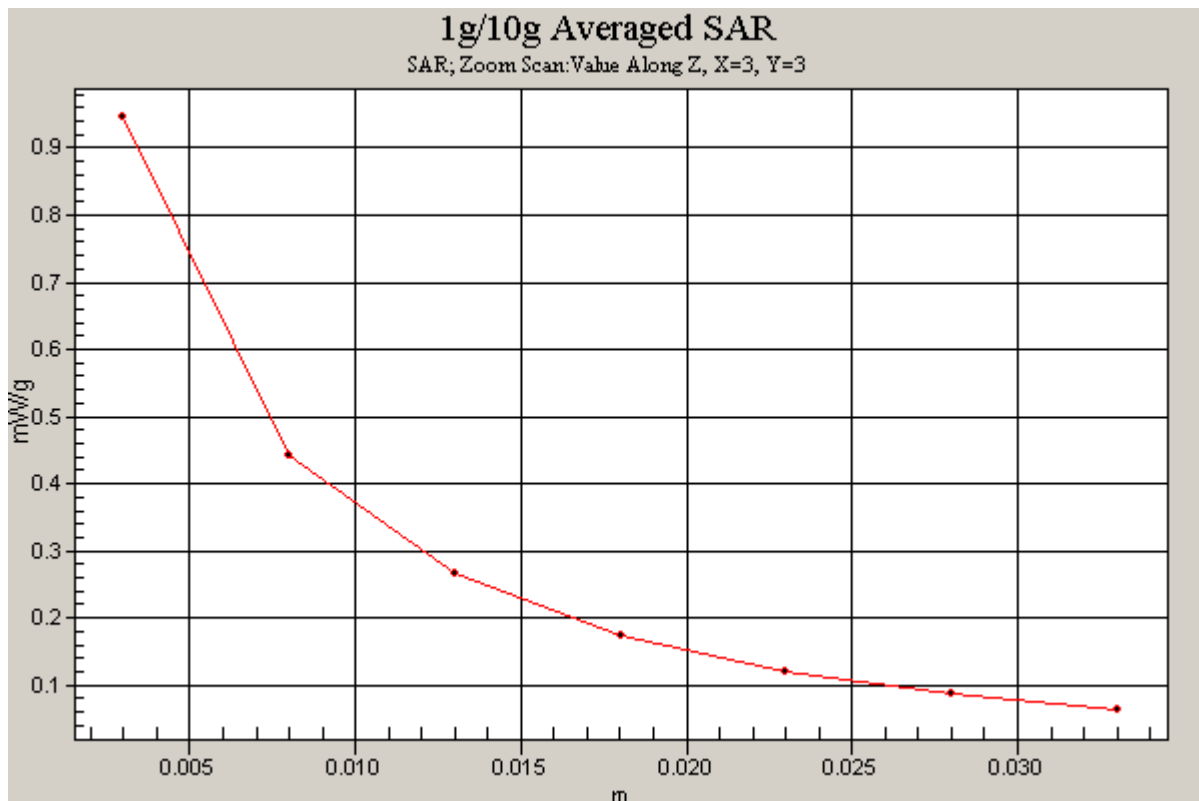
Area Scan (6x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 26.7 V/m; Power Drift = -0.207 dB

Peak SAR (extrapolated) = 1.77 W/kg

SAR(1 g) = 0.699 mW/g; SAR(10 g) = 0.394 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#2**

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

Medium: 750 Muscle Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.914 \text{ mho/m}$; $\epsilon_r = 55.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-23-2010; Ambient Temp: 21.5 °C; Tissue Temp: 20.7 °C

Probe: ES3DV3 - SN3209; ConvF(6.24, 6.24, 6.24); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 700MHz LTE, Body SAR, Low Ch., RB Size 50, RB Offset 0,
16QAM, 10MHz BW, Vertical Front**

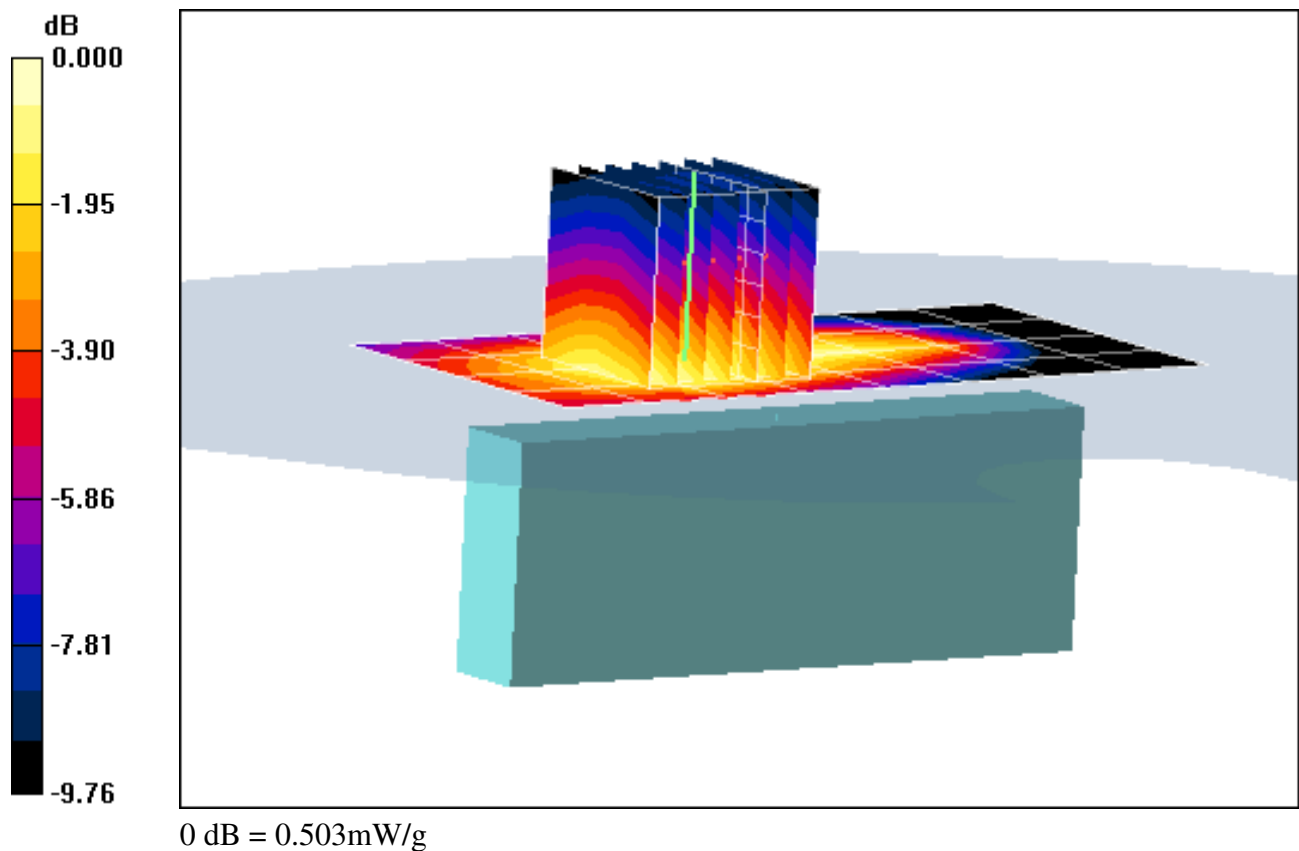
Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.9 V/m; Power Drift = -0.012 dB

Peak SAR (extrapolated) = 0.640 W/kg

SAR(1 g) = 0.437 mW/g; SAR(10 g) = 0.298 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#2**

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

Medium: 750 Muscle Medium parameters used:

$f = 710 \text{ MHz}$; $s = 0.914 \text{ mho/m}$; $\epsilon_r = 55.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-23-2010; Ambient Temp: 21.5 °C; Tissue Temp: 20.7 °C

Probe: ES3DV3 - SN3209; ConvF(6.24, 6.24, 6.24); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 700MHz LTE, Body SAR, Low Ch., RB Size 50, RB Offset 0,
16QAM, 10MHz BW, Vertical Back**

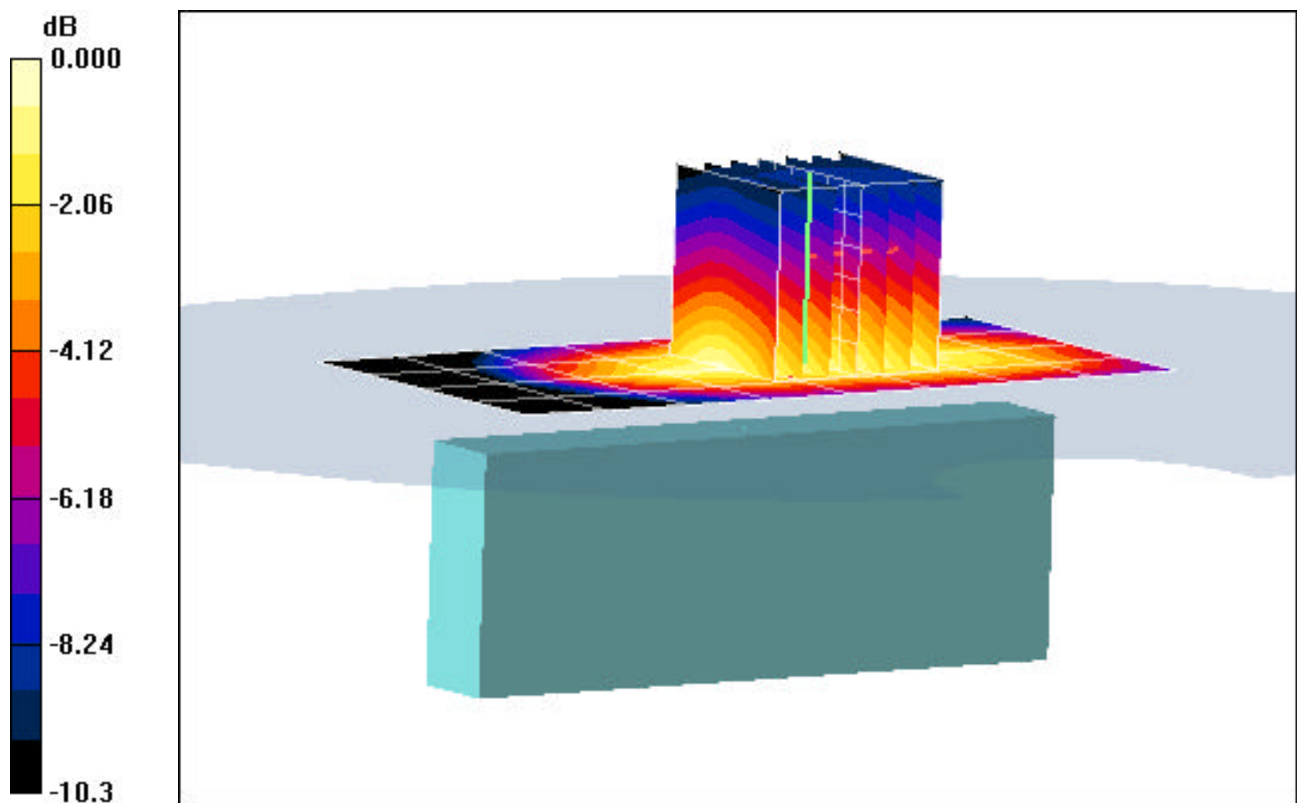
Area Scan (5x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.5 V/m; Power Drift = -0.079 dB

Peak SAR (extrapolated) = 0.737 W/kg

SAR(1 g) = 0.493 mW/g; SAR(10 g) = 0.328 mW/g



0 dB = 0.569mW/g

PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#2**

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

Medium: 750 Muscle Medium parameters used:

$f = 710 \text{ MHz}$; $\sigma = 0.914 \text{ mho/m}$; $\epsilon_r = 55.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-23-2010; Ambient Temp: 21.5 °C; Tissue Temp: 20.7 °C

Probe: ES3DV3 - SN3209; ConvF(6.24, 6.24, 6.24); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 700MHz LTE, Body SAR, Low Ch., RB Size 25, RB Offset 0,
QPSK, 5MHz BW, Tip**

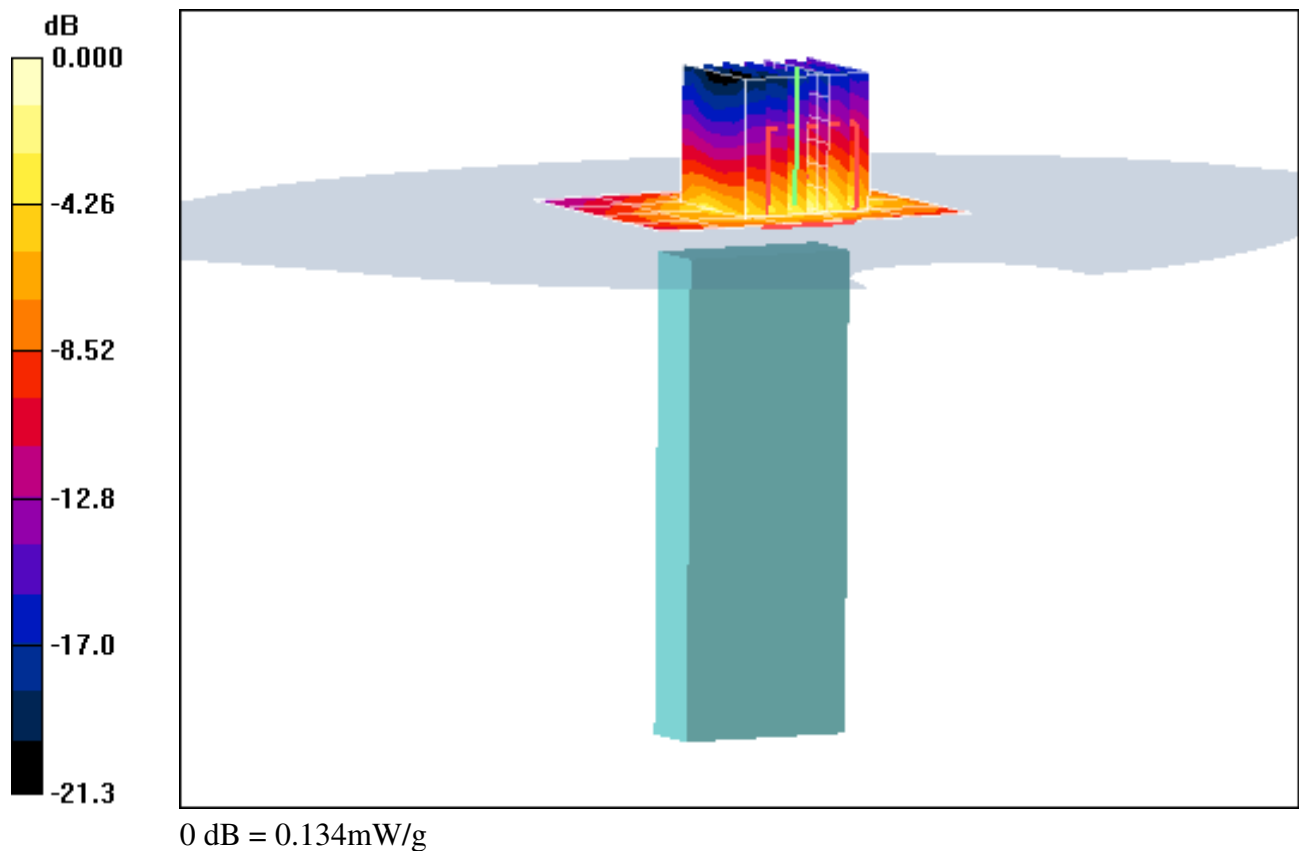
Area Scan (5x6x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.7 V/m; Power Drift = -0.039 dB

Peak SAR (extrapolated) = 0.275 W/kg

SAR(1 g) = 0.097 mW/g; SAR(10 g) = 0.045 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#2**

Communication System: LTE RF; Frequency: 1730 MHz; Duty Cycle: 1:1

Medium: 1750 Muscle Medium parameters used (interpolated):

$f = 1730 \text{ MHz}$; $\sigma = 1.52 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-22-2010; Ambient Temp: 23.5 °C; Tissue Temp: 21.9 °C

Probe: ES3DV3 - SN3209; ConvF(4.85, 4.85, 4.85); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 1700MHz LTE, Body SAR, Mid Ch., RB Size 1, RB Offset 24,
16QAM, 5MHz BW, Horizontal Up**

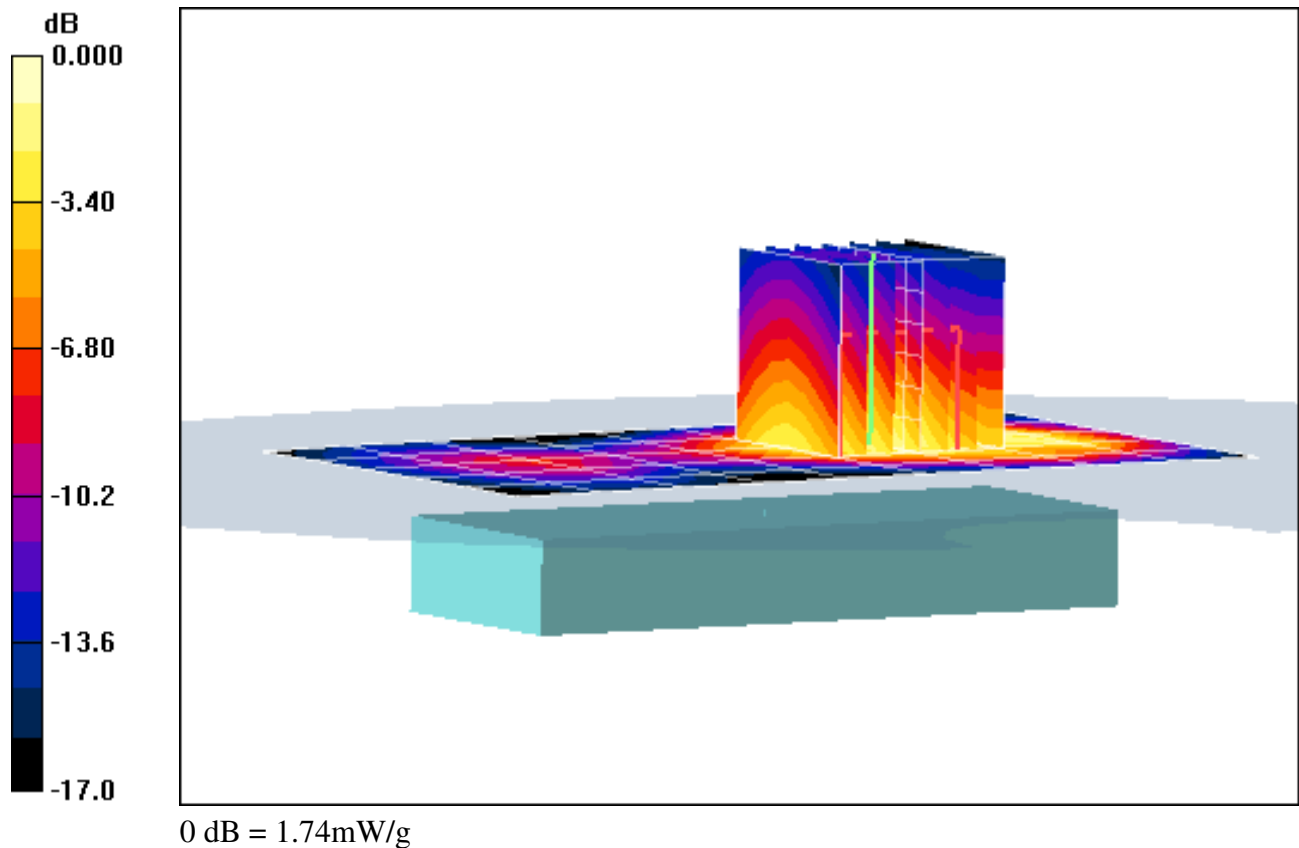
Area Scan (6x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 32.3 V/m; Power Drift = 0.227 dB

Peak SAR (extrapolated) = 2.19 W/kg

SAR(1 g) = 1.44 mW/g; SAR(10 g) = 0.811 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#2**

Communication System: LTE RF; Frequency: 1730 MHz; Duty Cycle: 1:1

Medium: 1750 Muscle Medium parameters used (interpolated):

$f = 1730 \text{ MHz}$; $\sigma = 1.52 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-22-2010; Ambient Temp: 23.5 °C; Tissue Temp: 21.9 °C

Probe: ES3DV3 - SN3209; ConvF(4.85, 4.85, 4.85); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 1700MHz LTE, Body SAR, Mid Ch., RB Size 1, RB Offset 24,
16QAM, 5MHz BW, Horizontal Up**

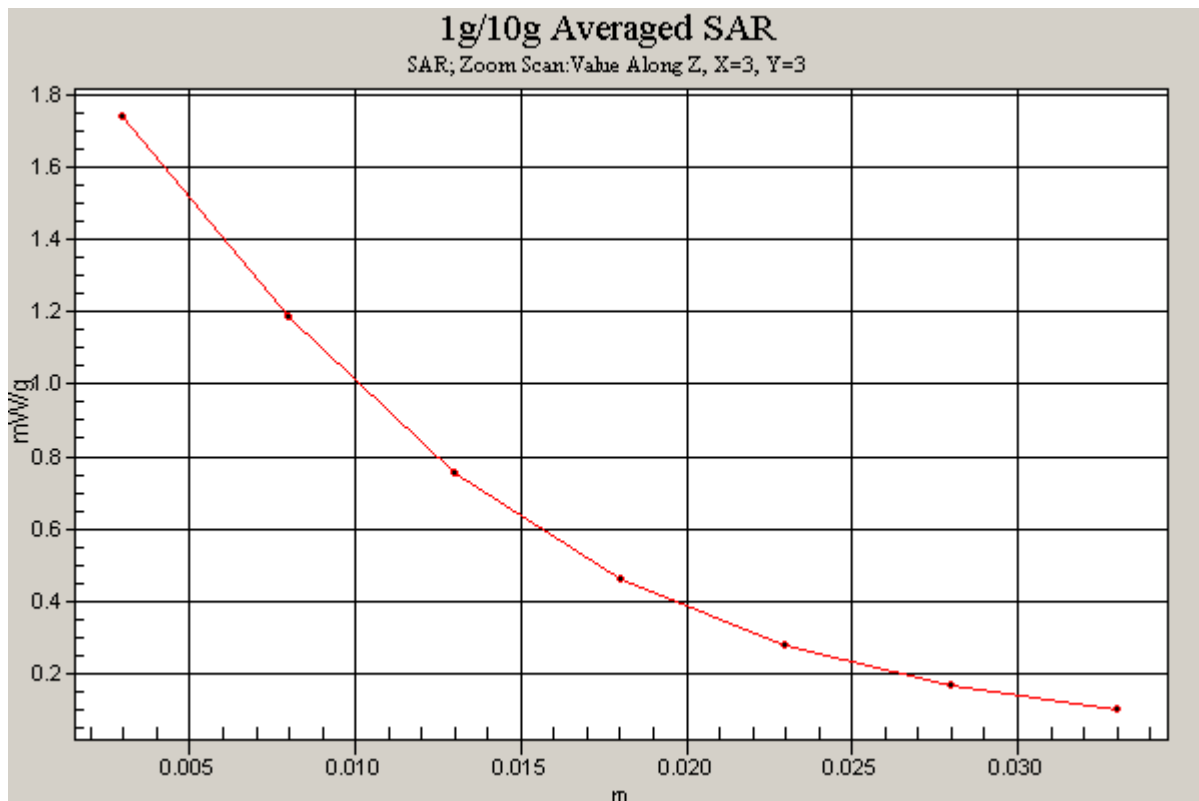
Area Scan (6x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 32.3 V/m; Power Drift = 0.227 dB

Peak SAR (extrapolated) = 2.19 W/kg

SAR(1 g) = 1.44 mW/g; SAR(10 g) = 0.811 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: LTE RF; Frequency: 1730 MHz; Duty Cycle: 1:1

Medium: 1750 Muscle Medium parameters used (interpolated):

$f = 1730 \text{ MHz}$; $\sigma = 1.52 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-20-2010; Ambient Temp: 24.1 °C; Tissue Temp: 23.6 °C

Probe: ES3DV3 - SN3209; ConvF(4.85, 4.85, 4.85); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 1700MHz LTE, Body SAR, Mid Ch., RB Size 50, RB Offset 0,
16QAM, 10MHz BW, Horizontal Down**

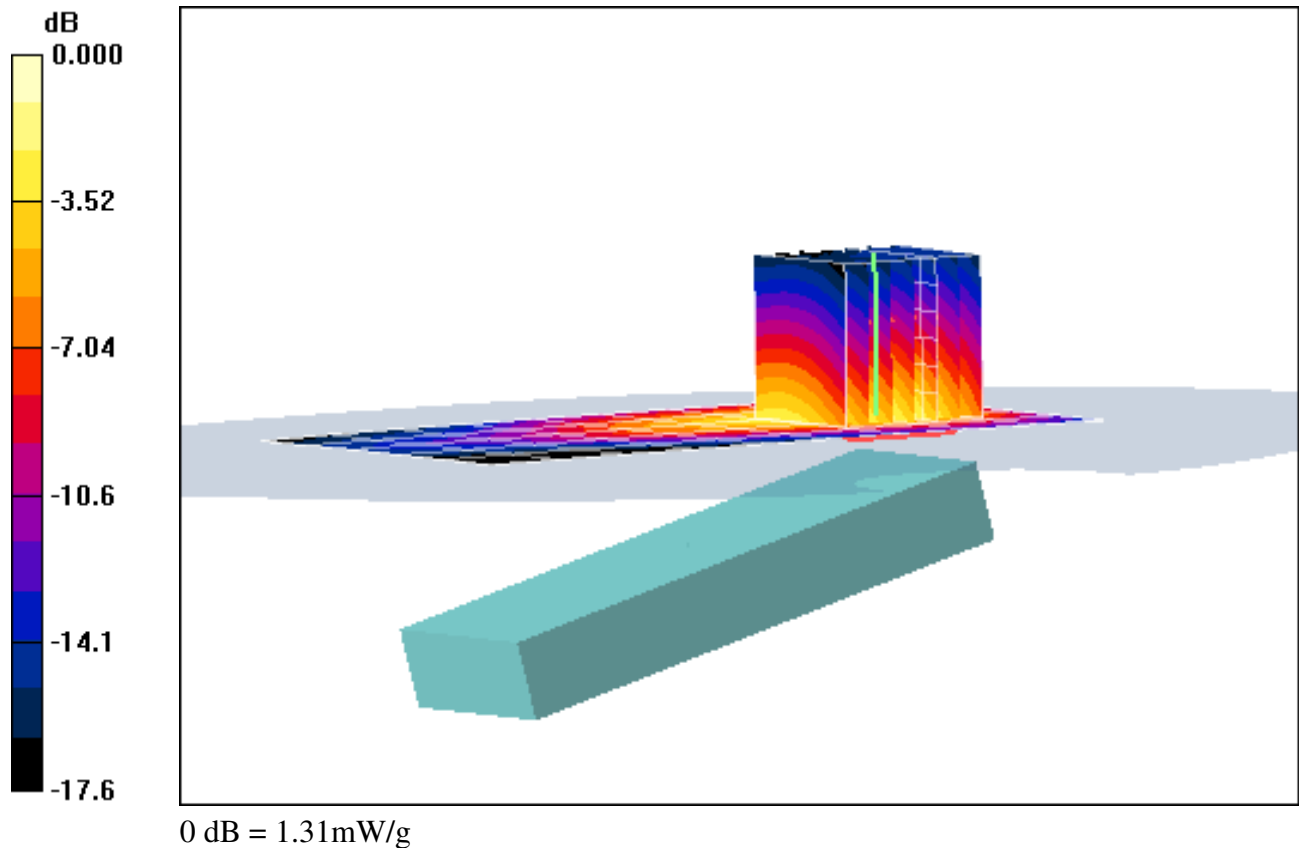
Area Scan (6x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.1 V/m; Power Drift = -0.044 dB

Peak SAR (extrapolated) = 2.06 W/kg

SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.537 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type:850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: LTE RF; Frequency: 1730 MHz; Duty Cycle: 1:1

Medium: 1750 Muscle Medium parameters used (interpolated):

$f = 1730 \text{ MHz}$; $\sigma = 1.52 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-21-2010; Ambient Temp: 23.7 °C; Tissue Temp: 22.0 °C

Probe: ES3DV3 - SN3209; ConvF(4.85, 4.85, 4.85); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 1700MHz LTE, Body SAR, Mid Ch., RB Size 25, RB Offset 0,
QPSK, 5MHz BW, Vertical Front**

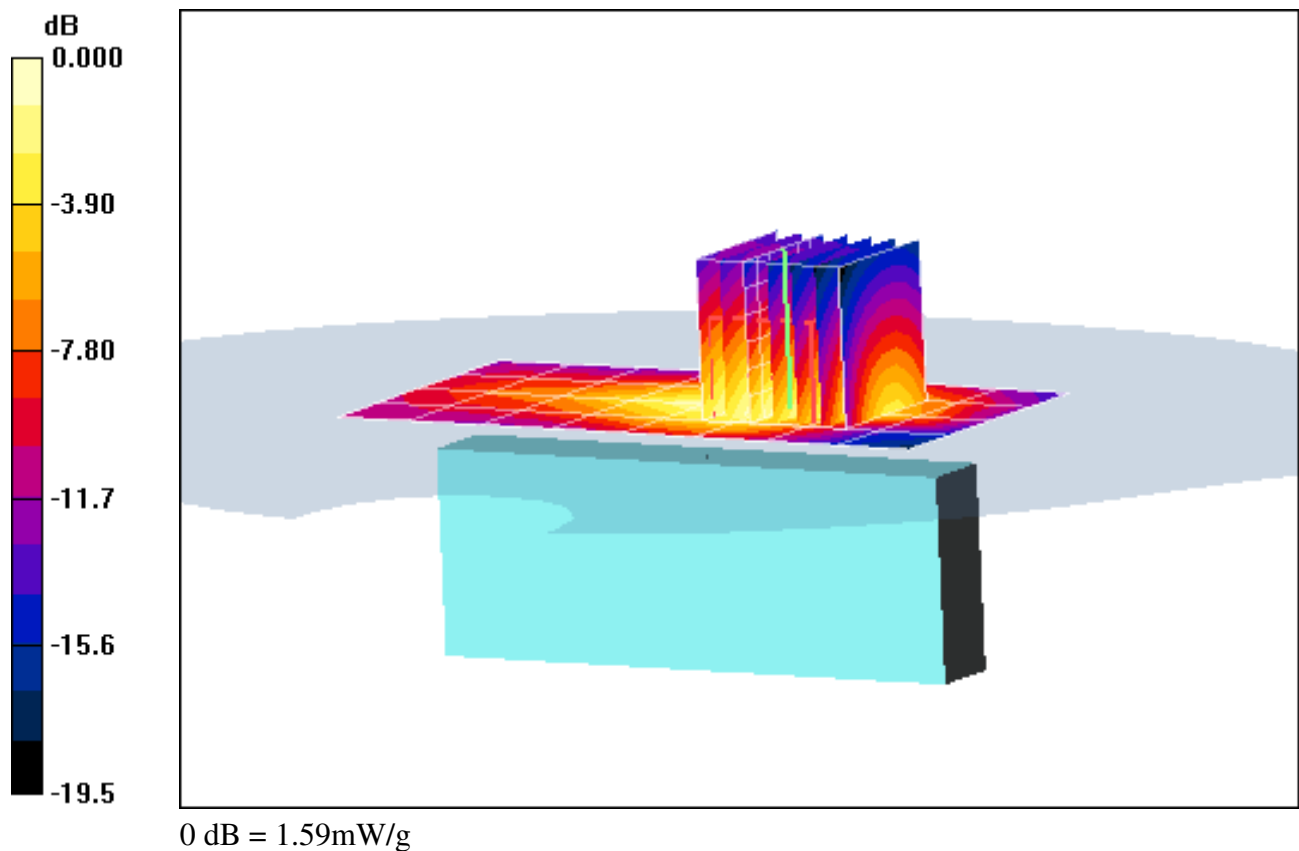
Area Scan (5x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 28.6 V/m; Power Drift = -0.154 dB

Peak SAR (extrapolated) = 2.28 W/kg

SAR(1 g) = 1.32 mW/g; SAR(10 g) = 0.732 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; Type: 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: LTE RF; Frequency: 1730 MHz; Duty Cycle: 1:1

Medium: 1750 Muscle Medium parameters used (interpolated):

$f = 1730 \text{ MHz}$; $\sigma = 1.52 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-21-2010; Ambient Temp: 23.7 °C; Tissue Temp: 22.0 °C

Probe: ES3DV3 - SN3209; ConvF(4.85, 4.85, 4.85); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 1700MHz LTE, Body SAR, Mid Ch., RB Size 50, RB Offset 0,
16QAM, 10MHz BW, Vertical Back**

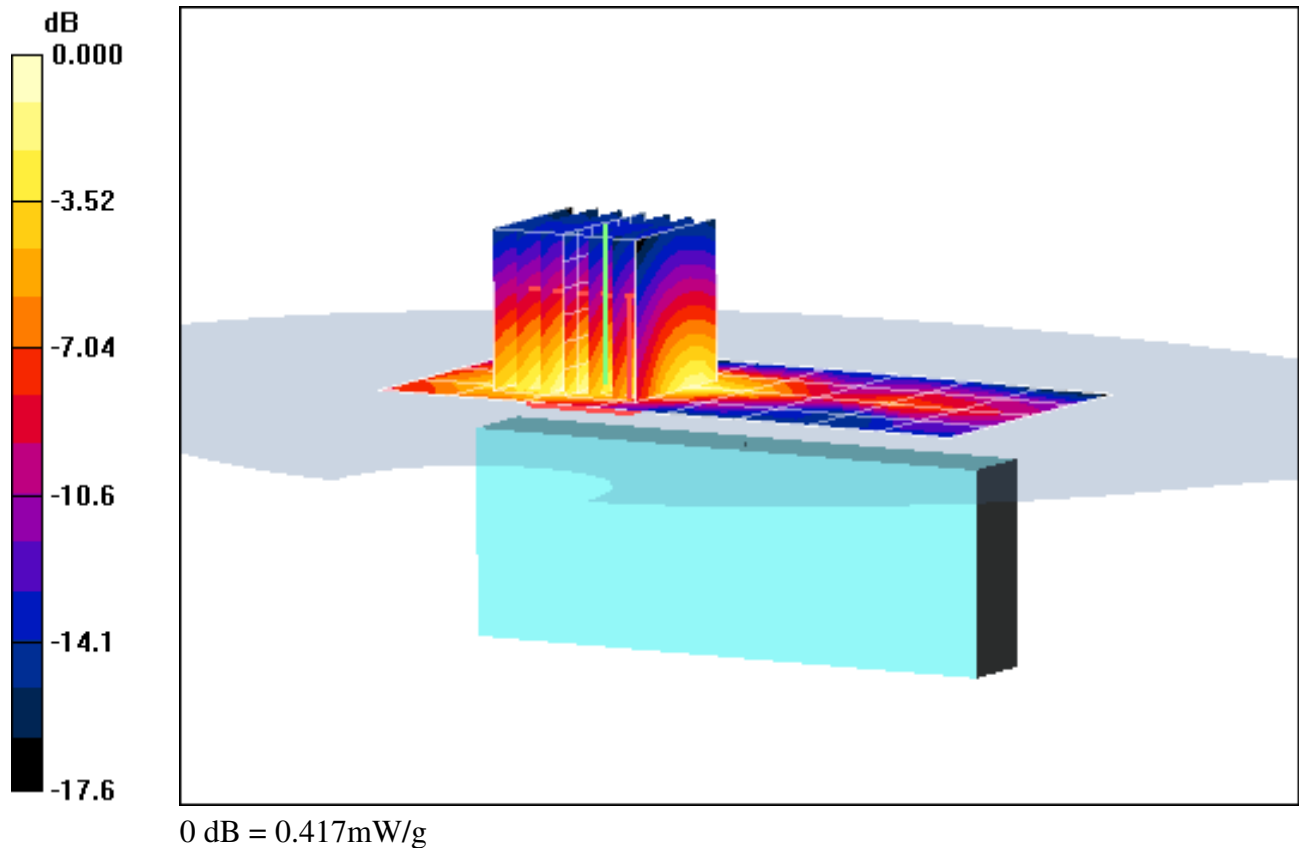
Area Scan (5x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.3 V/m; Power Drift = 0.215 dB

Peak SAR (extrapolated) = 0.584 W/kg

SAR(1 g) = 0.338 mW/g; SAR(10 g) = 0.181 mW/g



PCTEST ENGINEERING LABORATORY, INC.

**DUT: BEJAD600; 850/1900 GPRS/EDGE/WCDMA/HSPA USB Modem
with 700 and 1700 LTE; Serial: SAR#1**

Communication System: LTE RF; Frequency: 1712.5 MHz; Duty Cycle: 1:1

Medium: 1750 Muscle Medium parameters used (interpolated):

$f = 1712.5 \text{ MHz}$; $\sigma = 1.5 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.5 cm

Test Date: 07-21-2010; Ambient Temp: 23.7 °C; Tissue Temp: 22.0 °C

Probe: ES3DV3 - SN3209; ConvF(4.85, 4.85, 4.85); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

**Mode: 1700MHz LTE, Body SAR, Low Ch., RB Size 25, RB Offset 0,
QPSK, 5MHz BW, Tip**

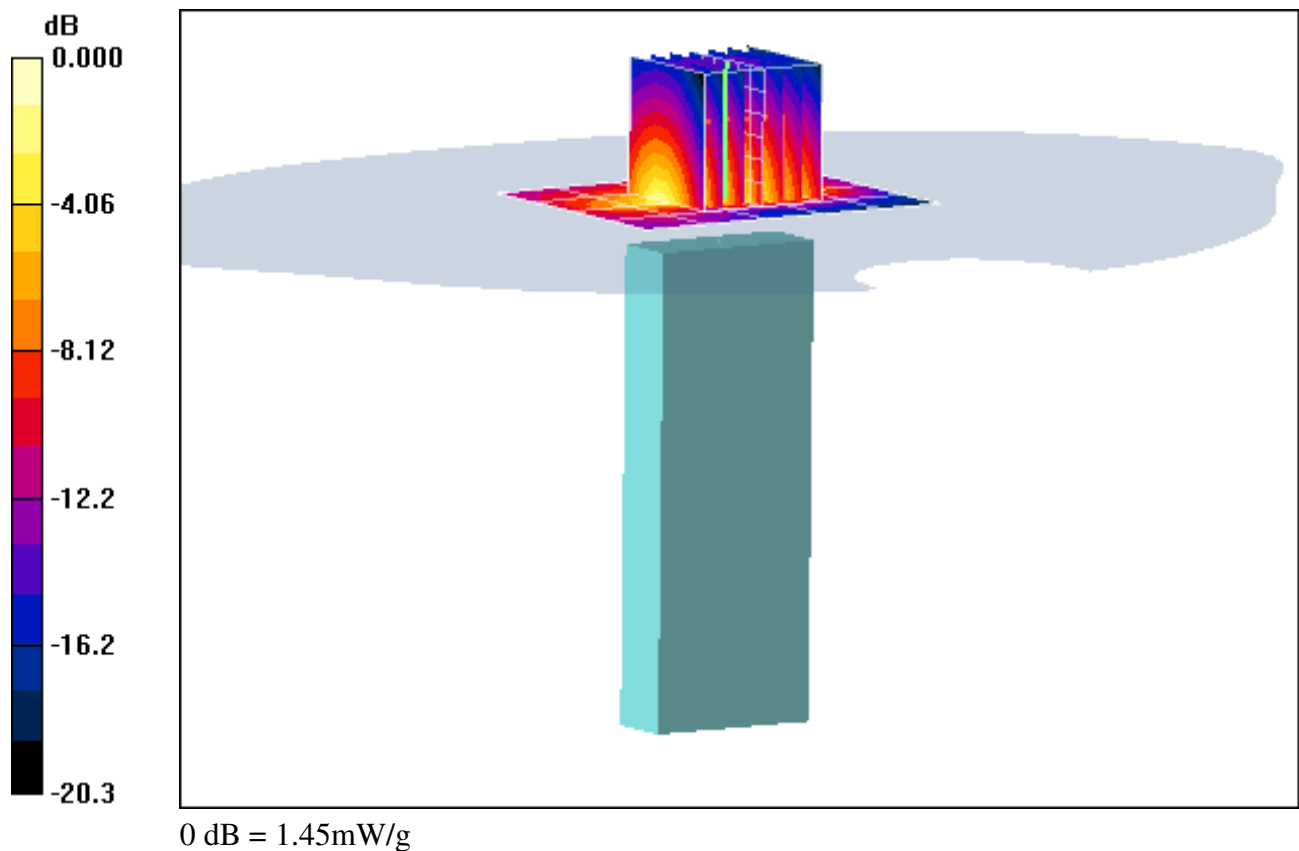
Area Scan (5x6x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 30.2 V/m; Power Drift = 0.096 dB

Peak SAR (extrapolated) = 2.14 W/kg

SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.540 mW/g



APPENDIX B: DIPOLE VALIDATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d026

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

Medium: 835 Muscle Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.967 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-12-2010; Ambient Temp: 23.9° C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(8.3, 8.3, 8.3); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

835MHz System Verification

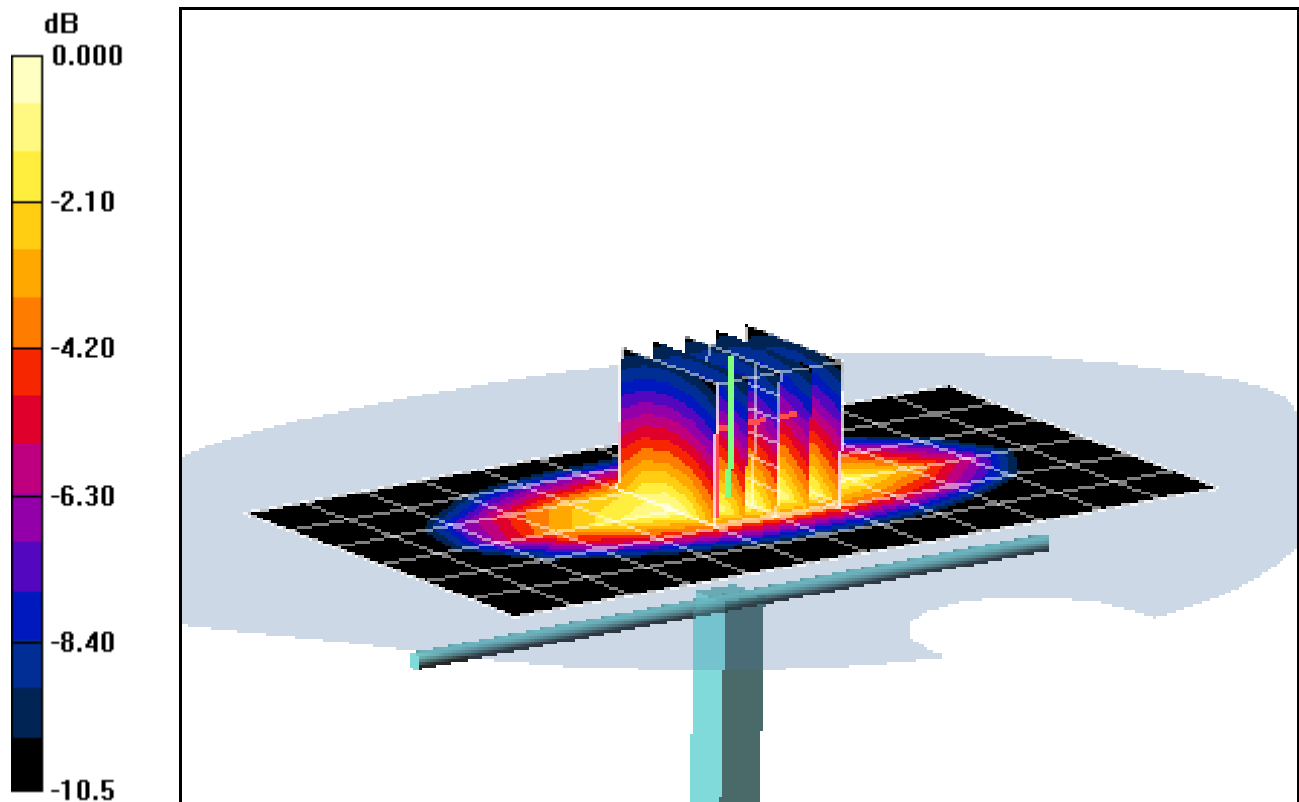
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 20 dBm (100 mW)

SAR(1 g) = 0.982 mW/g; SAR(10 g) = 0.641 mW/g

Deviation = 0.41%



0 dB = 1.15mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

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

Medium: 1900 Muscle Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.52 \text{ mho/m}$; $\epsilon_r = 52.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-14-2010; Ambient Temp: 23.6°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3550; ConvF(6.63, 6.63, 6.63); Calibrated: 1/26/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 1/22/2010

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

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

1900MHz System Verification

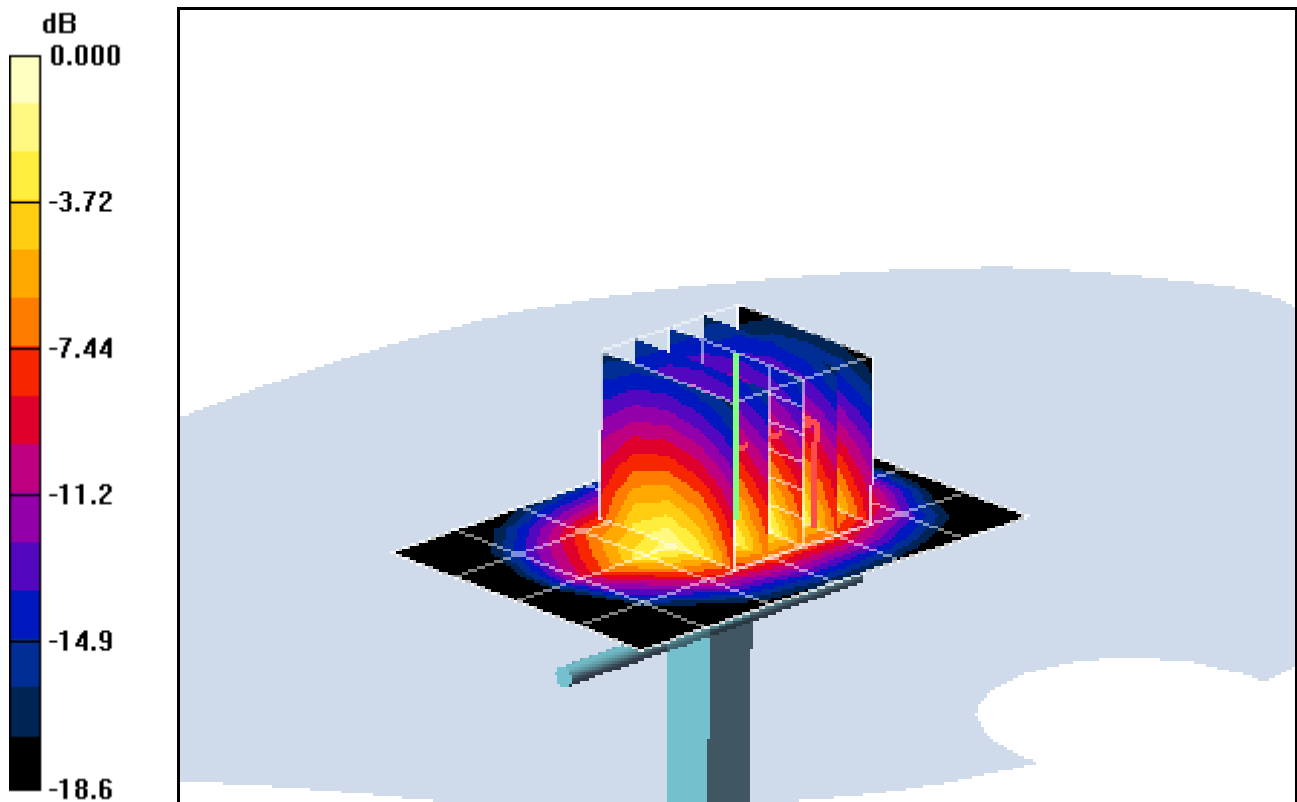
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 16 dBm (40 mW)

SAR(1 g) = 1.67 mW/g; SAR(10 g) = 0.859 mW/g

Deviation = 3.09 %



0 dB = 2.11mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 750 Muscle Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.927 \text{ mho/m}$; $\epsilon_r = 53.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-16-2010; Ambient Temp: 23.6 °C; Tissue Temp: 22.1 °C

Probe: ES3DV3 - SN3209; ConvF(6.24, 6.24, 6.24); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

750MHz System Verification

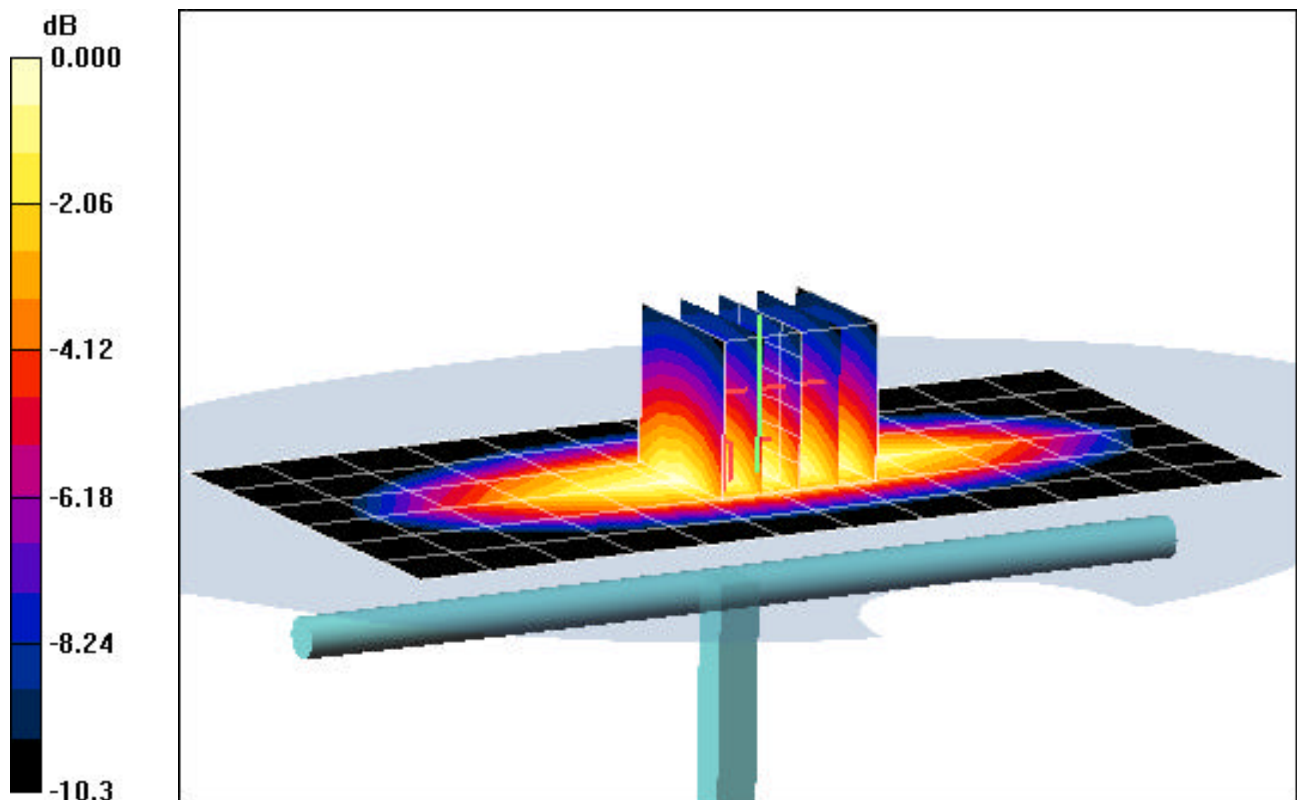
Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 24.0 dBm (250 mW)

SAR(1 g) = 2.1 mW/g; SAR(10 g) = 1.39 mW/g

Deviation = -3.89 %



0 dB = 2.45mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1765 MHz; Type: D1760V2; Serial: 1008

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

Medium: 1750 Muscle Medium parameters used (interpolated):

$f = 1765 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-20-2010; Ambient Temp: 24.1 °C; Tissue Temp: 23.6 °C

Probe: ES3DV3 - SN3209; ConvF(4.85, 4.85, 4.85); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

1765 MHz System Verification

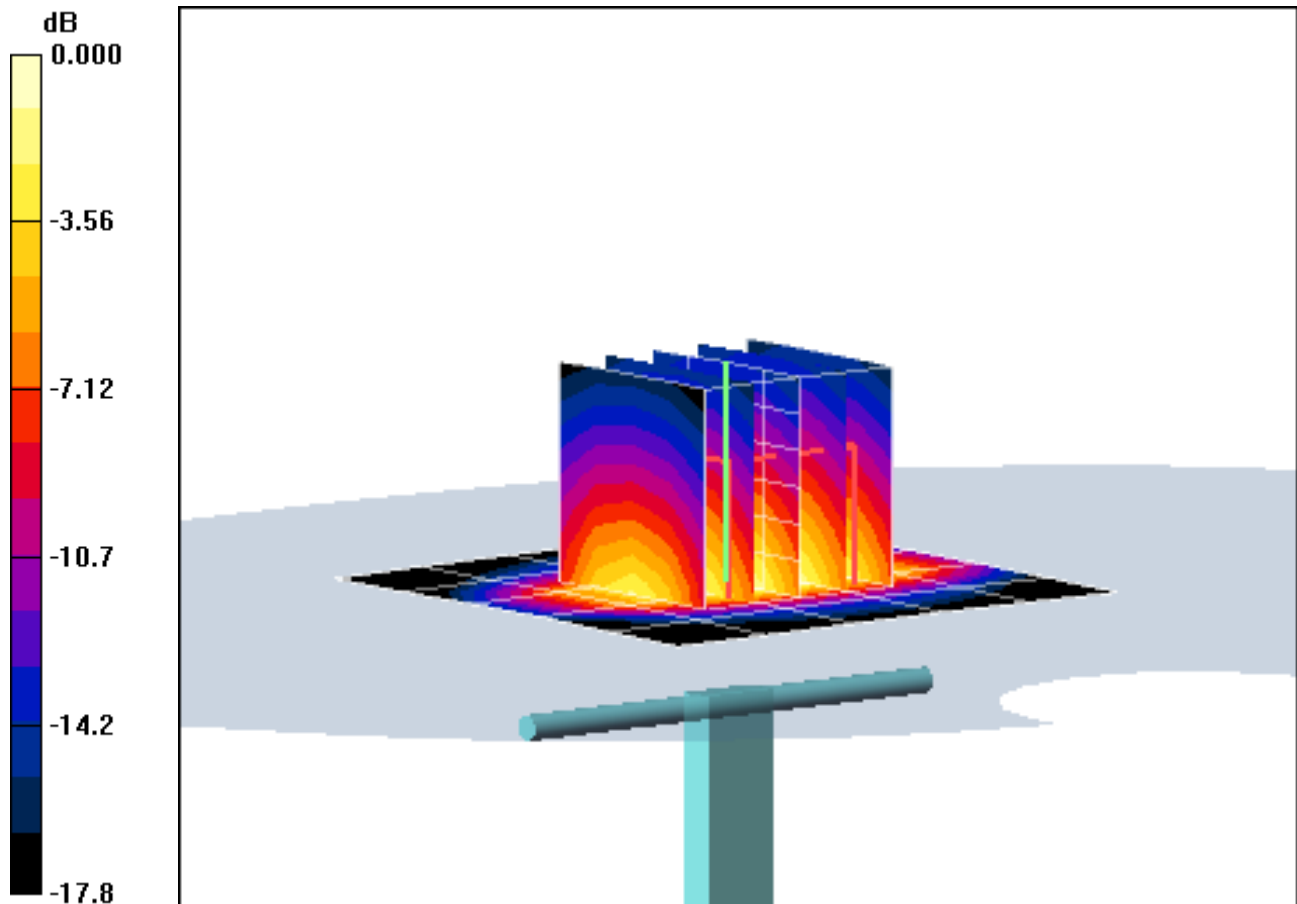
Area Scan (6x6x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.7 mW/g; SAR(10 g) = 1.94 mW/g

Deviation = -0.80 %



0 dB = 4.63mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1765 MHz; Type: D1760V2; Serial: 1008

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

Medium: 1750 Muscle Medium parameters used (interpolated):

$f = 1765 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-21-2010; Ambient Temp: 23.7 °C; Tissue Temp: 22.0 °C

Probe: ES3DV3 - SN3209; ConvF(4.85, 4.85, 4.85); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

1765 MHz System Verification

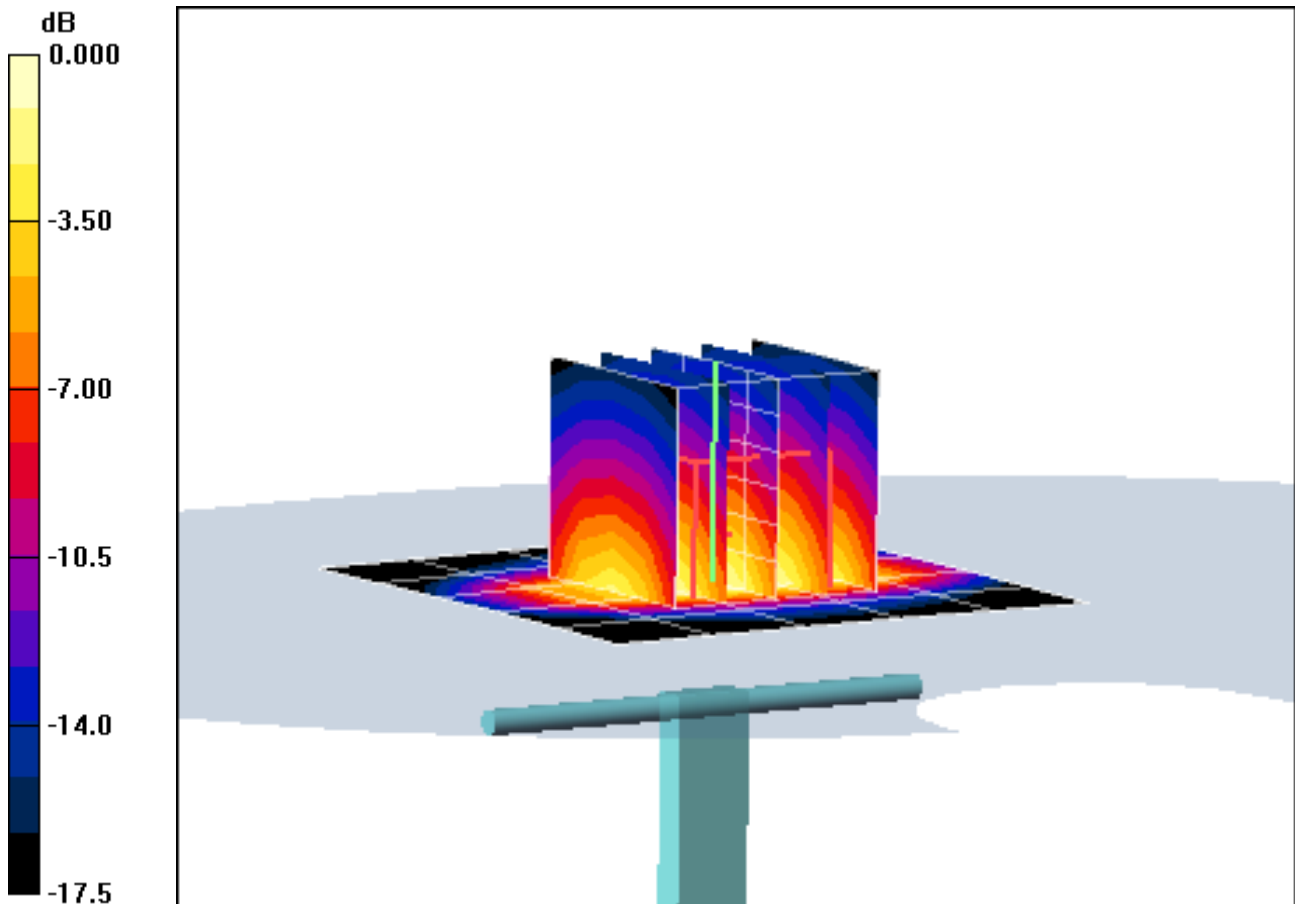
Area Scan (6x6x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 20.0 dBm (100 mW)

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

Deviation = -0.27 %



0 dB = 4.72mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1765 MHz; Type: D1760V2; Serial: 1008

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

Medium: 1750 Muscle Medium parameters used (interpolated):

$f = 1765 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-22-2010; Ambient Temp: 23.7 °C; Tissue Temp: 21.9 °C

Probe: ES3DV3 - SN3209; ConvF(4.85, 4.85, 4.85); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

1765 MHz System Verification

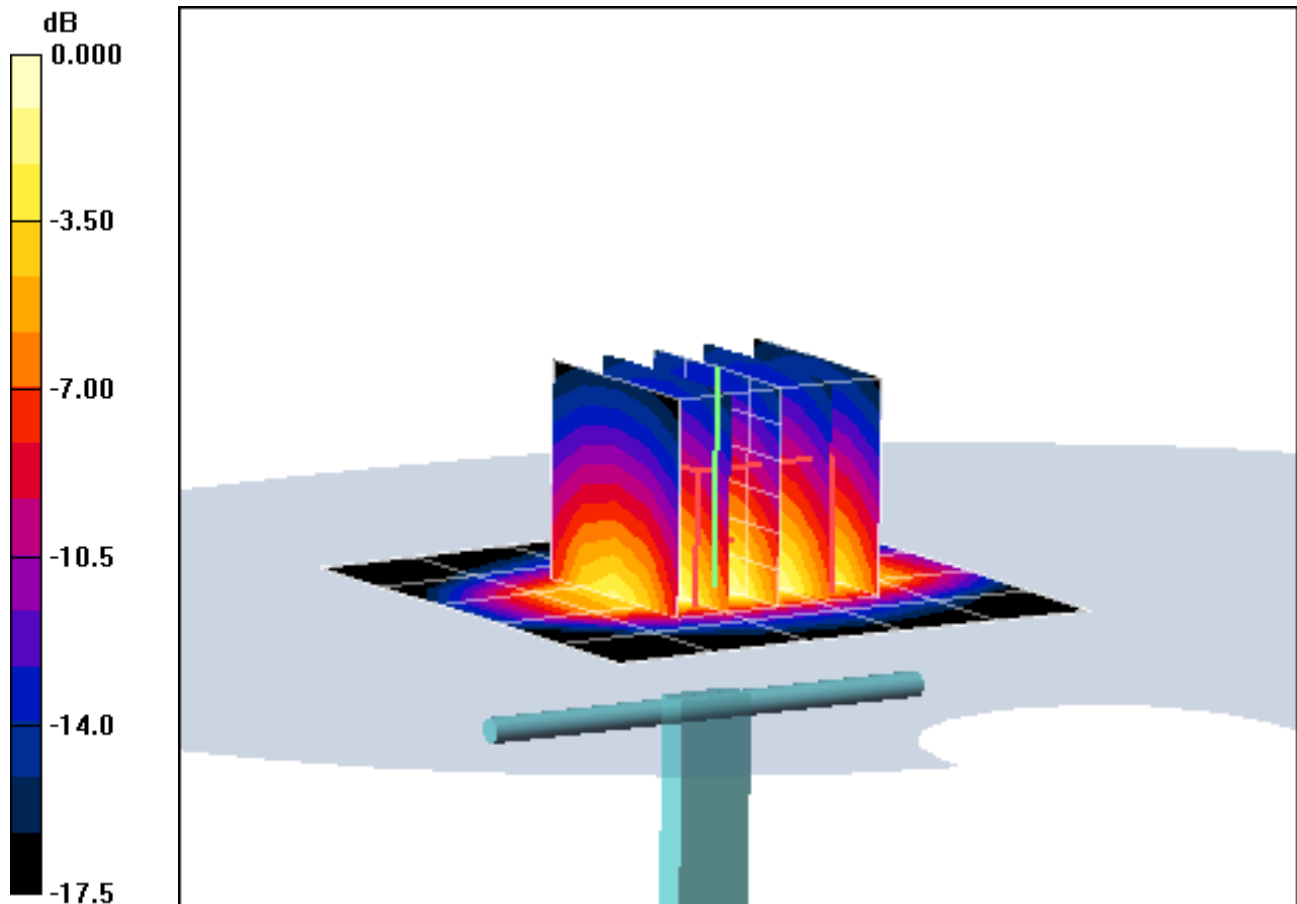
Area Scan (6x6x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 3.72 mW/g; SAR(10 g) = 1.94 mW/g

Deviation = -0.27 %



0 dB = 4.70mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 750 Muscle Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 54.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-23-2010; Ambient Temp: 21.5 °C; Tissue Temp: 20.7 °C

Probe: ES3DV3 - SN3209; ConvF(6.24, 6.24, 6.24); Calibrated: 4/20/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/21/2010

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

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

750MHz System Verification

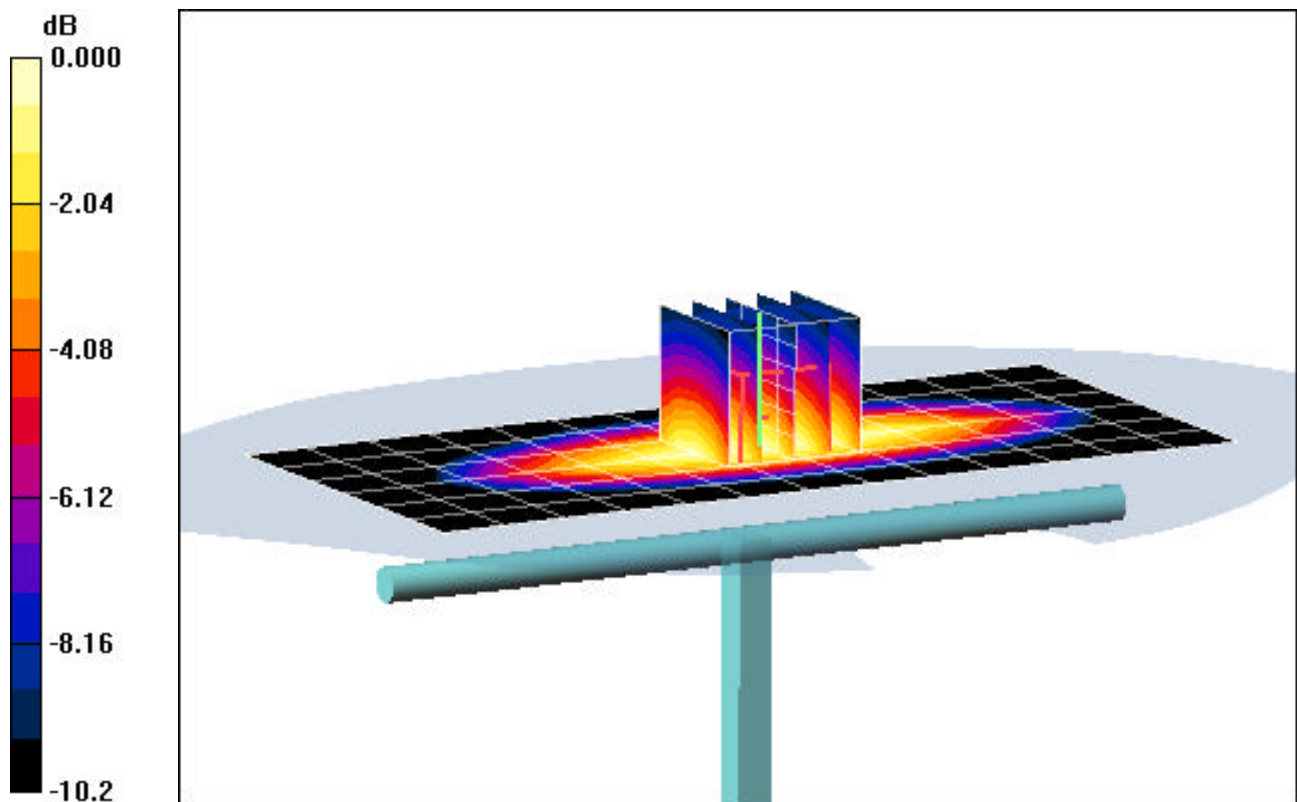
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 0.863 mW/g; SAR(10 g) = 0.570 mW/g

Deviation = -1.26 %



0 dB = 1.00mW/g

APPENDIX C: PROBE CALIBRATION



Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **EX3-3550_Jan10**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3550**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-14.v3, QA CAL-23.v3 and QA CAL-25.v2
Calibration procedure for dosimetric E-field probes**

Calibration date: **January 26, 2010**

✓
1/26/10

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	29-Sep-09 (No. DAE4-660_Sep09)	Sep-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct10

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Fin Bornholt	R&D Director	

Issued: January 26, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization ϕ	ϕ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,y,z}**: A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe EX3DV4

SN:3550

Manufactured:	May 19, 2004
Last calibrated:	January 21, 2009
Recalibrated:	January 26, 2010

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: EX3DV4 SN:3550**Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.48	0.47	0.48	± 10.1%
DCP (mV) ^B	92.9	88.4	91.4	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc ^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300	± 1.5%
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty is determined using the maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

DASY - Parameters of Probe: EX3DV4 SN:3550

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] ^c	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	8.28	8.28	8.28	0.45	0.70 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	7.03	7.03	7.03	0.39	0.75 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	6.81	6.81	6.81	0.32	0.81 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	6.21	6.21	6.21	0.22	1.07 ± 11.0%

^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

DASY - Parameters of Probe: EX3DV4 SN:3550

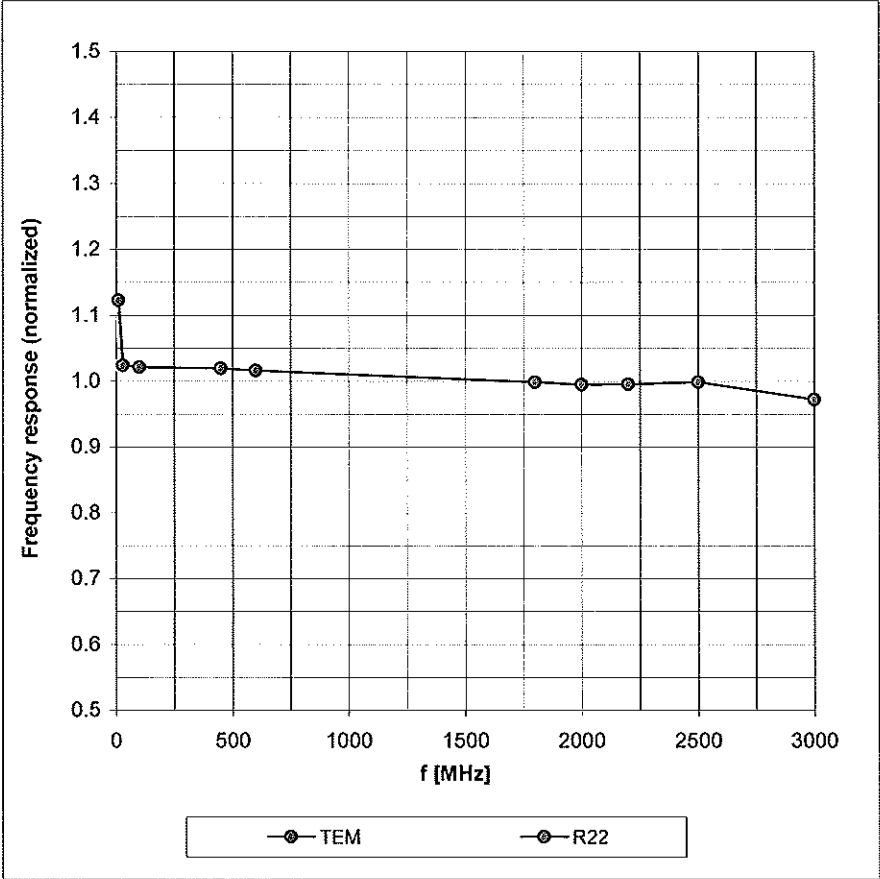
Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz] ^c	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	8.30	8.30	8.30	0.47	0.76 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	6.90	6.90	6.90	0.49	0.69 ± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	6.63	6.63	6.63	0.76	0.54 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	6.40	6.40	6.40	0.22	1.09 ± 11.0%
2600	± 50 / ± 100	52.5 ± 5%	2.16 ± 5%	6.26	6.26	6.26	0.19	1.42 ± 11.0%
4950	± 50 / ± 100	49.4 ± 5%	5.01 ± 5%	3.64	3.64	3.64	0.50	1.75 ± 13.1%
5200	± 50 / ± 100	49.0 ± 5%	5.30 ± 5%	3.73	3.73	3.73	0.50	1.75 ± 13.1%
5300	± 50 / ± 100	48.5 ± 5%	5.42 ± 5%	3.52	3.52	3.52	0.52	1.75 ± 13.1%
5500	± 50 / ± 100	48.6 ± 5%	5.65 ± 5%	3.26	3.26	3.26	0.55	1.80 ± 13.1%
5600	± 50 / ± 100	48.5 ± 5%	5.77 ± 5%	3.16	3.16	3.16	0.65	1.80 ± 13.1%
5800	± 50 / ± 100	48.2 ± 5%	6.00 ± 5%	3.30	3.30	3.30	0.60	1.75 ± 13.1%

^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

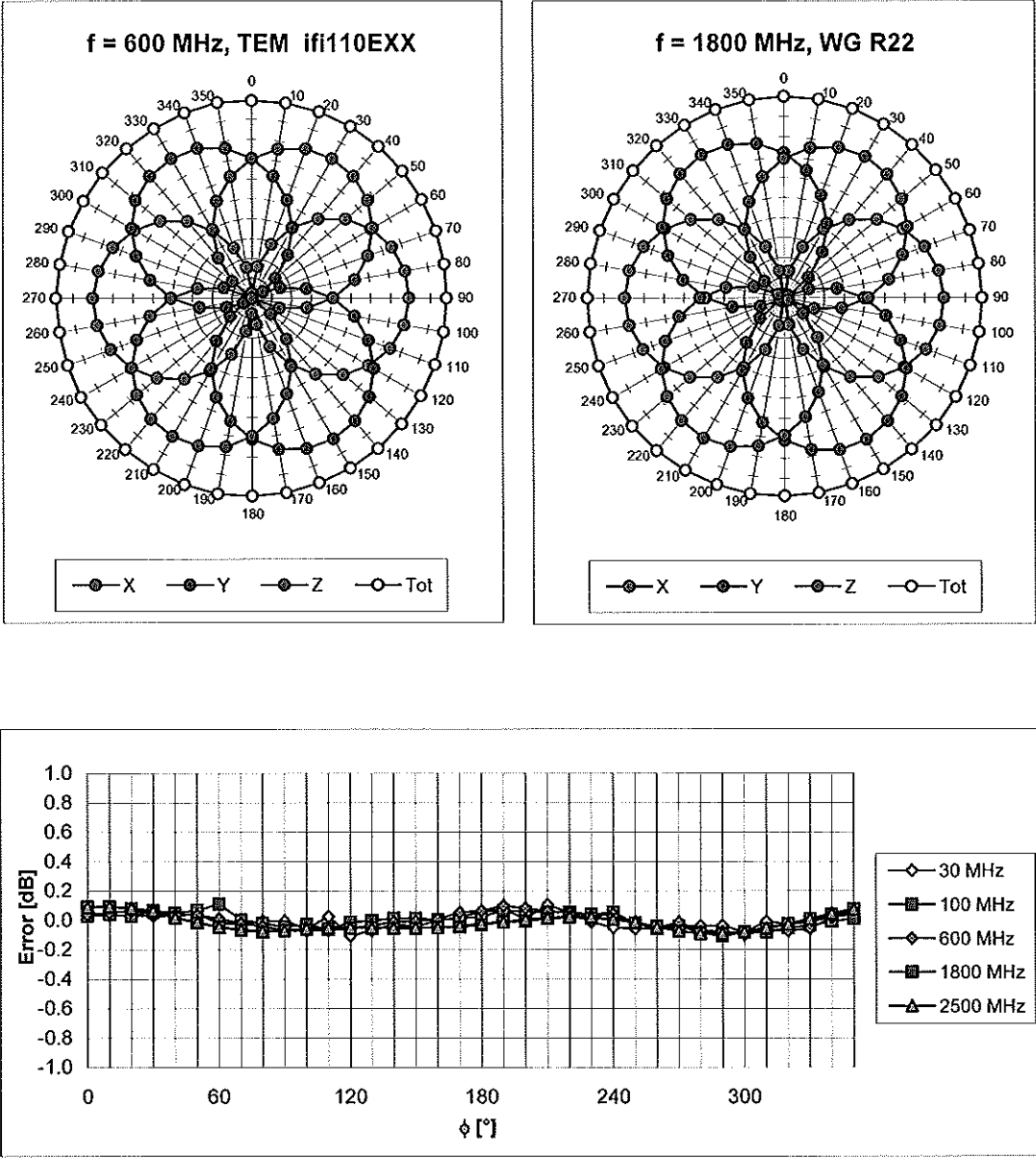
Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



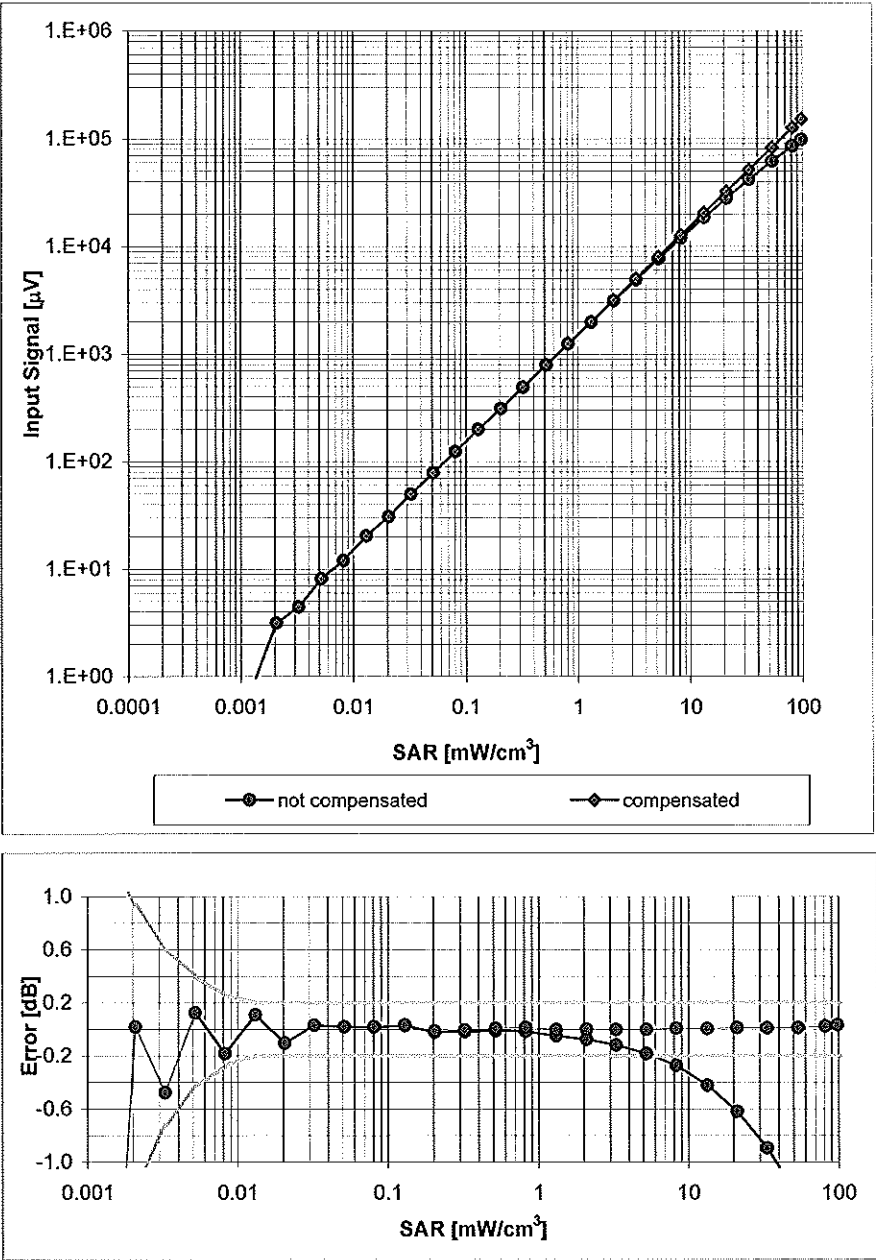
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

Receiving Pattern (ϕ), $\vartheta = 0^\circ$



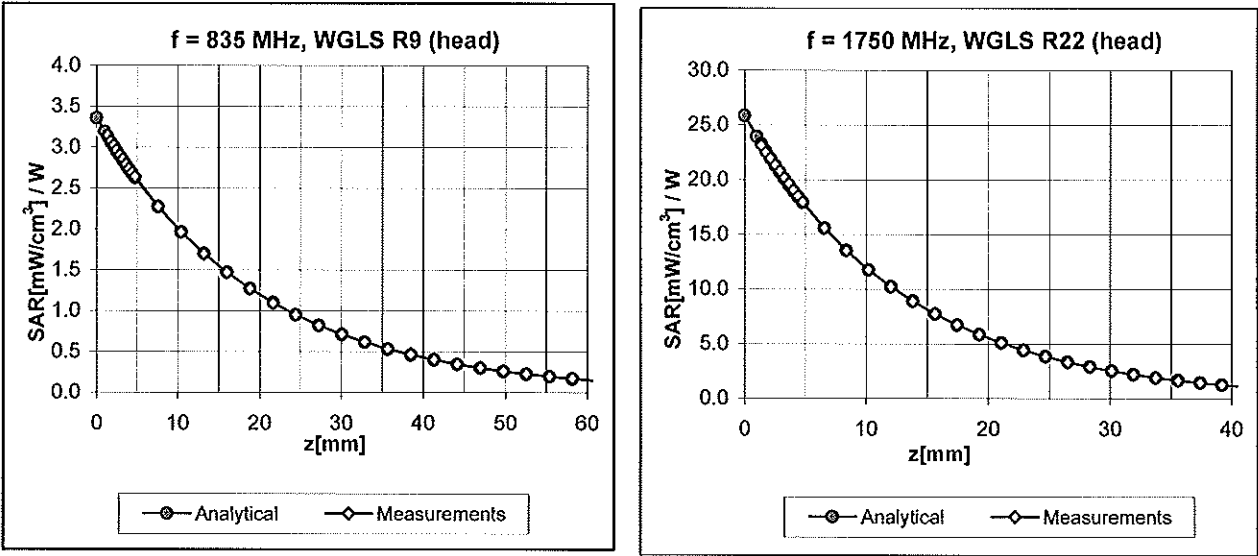
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

Dynamic Range f(SAR_{head})
(Waveguide R22, f = 1800 MHz)



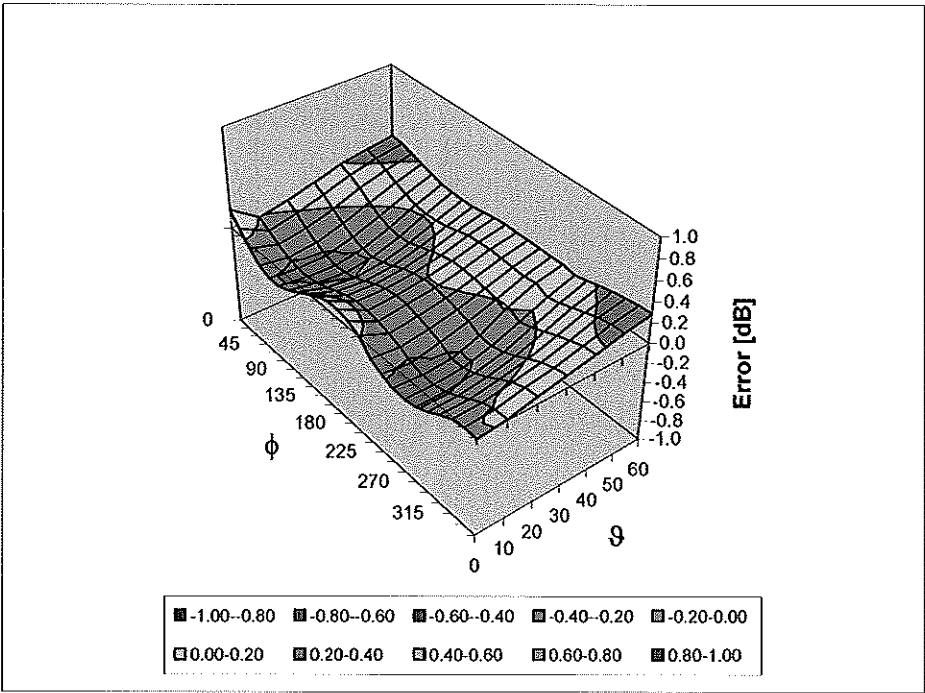
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ, θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm