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SAR EVALUATION REPORT

Applicant Name:
Samsung Electronics Co., Ltd.
416, Maetan 3-dong, Yeongtong-gu, Suwon-si
Gyeonggi-do, 443-742
Republic of Korea

Date of Testing:
08/23/12 - 09/05/12
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
0Y1208241196.A3L

FCC ID: **A3LSCHI605**

APPLICANT: **SAMSUNG ELECTRONICS CO., LTD.**

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model(s): SCH-I605

Band & Mode	Tx Frequency	Conducted Power [dBm]	SAR		
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)
Cell. CDMA/EVDO	824.70 - 848.31 MHz	24.82	0.16	0.45	0.45
GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	32.67	0.11	0.52	0.52
UMTS 850	826.40 - 846.60 MHz	22.29	0.10	0.30	0.30
PCS CDMA/EVDO	1851.25 - 1908.75 MHz	24.52	0.19	0.58	0.58
GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	29.65	0.10	0.43	0.43
UMTS 1900	1852.4 - 1907.6 MHz	22.35	0.12	0.55	0.55
LTE Band 13	782 MHz	22.91	0.24	0.37	0.45
2.4 GHz WLAN	2412 - 2462 MHz	15.68	<0.10	0.10	0.10
5.8 GHz WLAN	5745 - 5825 MHz	12.82	<0.10	<0.10	
5.2 GHz WLAN	5180 - 5240 MHz	13.27	<0.10	<0.10	
5.3 GHz WLAN	5260 - 5320 MHz	13.03	<0.10	0.21	
5.5 GHz WLAN	5500 - 5700 MHz	12.73	<0.10	<0.10	
Bluetooth	2402 - 2480 MHz	8.96	N/A		
Simultaneous SAR per KDB 690783 D01:			0.28	0.82	0.82

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

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

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

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

Randy Ortanez
President

ACCREDITED
TESTING LABORATORY
CERTIFICATE #2041.01

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Tx Frequency
Cell. CDMA/EVDO	824.70 - 848.31 MHz
GSM/GPRS/EDGE 850	824.20 - 848.80 MHz
UMTS 850	826.40 - 846.60 MHz
PCS CDMA/EVDO	1851.25 - 1908.75 MHz
GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz
UMTS 1900	1852.4 - 1907.6 MHz
LTE Band 13	782 MHz
2.4 GHz WLAN	2412 - 2462 MHz
5.8 GHz WLAN	5745 - 5825 MHz
5.2 GHz WLAN	5180 - 5240 MHz
5.3 GHz WLAN	5260 - 5320 MHz
5.5 GHz WLAN	5500 - 5700 MHz
Bluetooth	2402 - 2480 MHz
NFC	13.56 MHz

1.2 Near Field Communication Antenna

This DUT has NFC operations. The NFC antenna is integrated into the standard battery cover, and will be the only battery cover available from the manufacturer for this model. Therefore all tests were performed using the standard battery cover which already integrates the NFC antenna.

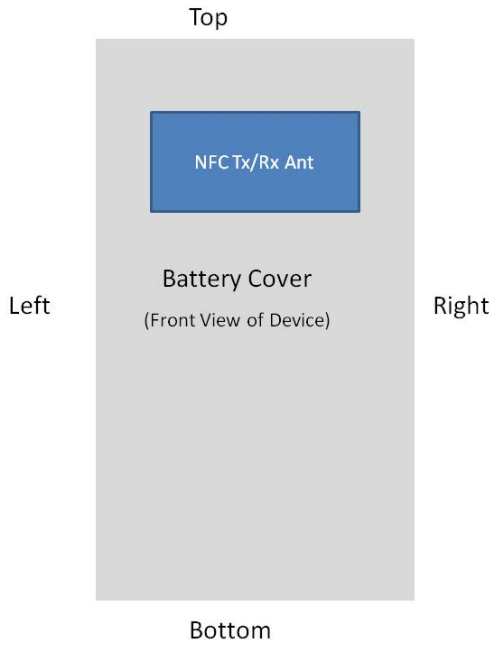

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Figure 1-1
NFC Antenna Location

1.3 DUT Antenna Locations

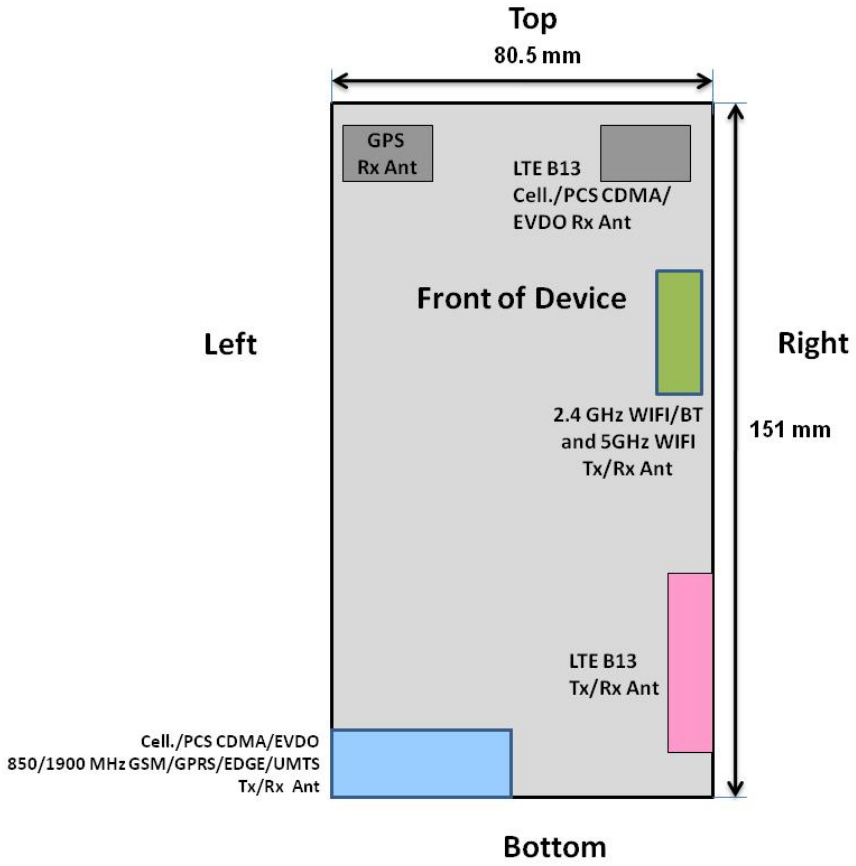

Figure 1-2
DUT Antenna Locations

Table 1-1
Mobile Hotspot Sides for SAR Testing

Mobile Hotspot Sides for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
Cell. EVDO	Yes	Yes	No	Yes	No	Yes
GPRS 850	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	No	Yes
PCS EVDO	Yes	Yes	No	Yes	No	Yes
GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes	No
2.4 GHz WLAN	Yes	Yes	Yes	No	Yes	No

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06 guidance, page 2. The antenna document shows the distances between the transmit antennas and the edges of the device. When the wireless router mode is enabled, all 5 GHz bands are disabled. Therefore 5 GHz WIFI is not considered in this section.

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1.4 Power Reduction for SAR

This device uses power reduction mechanisms for LTE during SVLTE, voice (1x-RTT CDMA) + LTE data, operation for SAR compliance. See Section 11 for more details.

1.5 Simultaneous Transmission Capabilities

According to KDB 648474, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the DUT are shown in Figure **1-3** and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

Figure 1-3
Simultaneous Transmission Paths

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to KDB 447498 3) procedures.

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Table 1-2
Simultaneous Transmission Scenarios Transmission Supported by DUT

Ref.	Simultaneous Transmit Configurations	Power Reduction	Head	Body-Worn Accessory	Hot Spot	Note
			IEEE 1528, Supp C	Supplement C	FCC KDB 941225 D06 edges/sid	
1	1X CDMA 850 Voice + LTE 782 MHz Data	LTE	Yes	Yes	N/A	SVLTE
2	1X CDMA 1900 Voice + LTE 782 MHz Data	LTE	Yes	Yes	N/A	SVLTE
3	1X CDMA 850 Voice + 2.4 GHz WIFI	N/A	Yes	Yes	N/A	
4	1X CDMA 850 Voice + 5 GHz WIFI	N/A	Yes	Yes	N/A	
5	1X CDMA 1900 Voice + 2.4 GHz WIFI	N/A	Yes	Yes	N/A	
6	1X CDMA 1900 Voice + 5 GHz WIFI	N/A	Yes	Yes	N/A	
7	GSM850 Voice + 2.4 GHz WIFI	N/A	Yes	Yes	N/A	
8	GSM850 Voice + 5 GHz WIFI	N/A	Yes	Yes	N/A	
9	GSM1900 Voice + 2.4 GHz WIFI	N/A	Yes	Yes	N/A	
10	GSM1900 Voice + 5 GHz WIFI	N/A	Yes	Yes	N/A	
11	WCDMA 850 Voice + 2.4 GHz WIFI	N/A	Yes	Yes	N/A	
12	WCDMA 1900 Voice + 2.4 GHz WIFI	N/A	Yes	Yes	N/A	
13	WCDMA 850 Voice + 5 GHz WIFI	N/A	Yes	Yes	N/A	
14	WCDMA 1900 Voice + 5 GHz WIFI	N/A	Yes	Yes	N/A	
15	1X CDMA 850 Voice + LTE 782 MHz Data + 2.4 GHz WIFI	LTE	Yes	Yes	Yes	Voice + LTE + WIFI Hotspot
16	1X CDMA 1900 Voice + LTE 782 MHz Data + 2.4 GHz WIFI	LTE	Yes	Yes	Yes	Voice + LTE + WIFI Hotspot
17	1X CDMA 850 Data / EVDO 850 Data + 2.4 GHz WIFI	N/A	Yes	Yes	Yes	1X CDMA Data / EVDO +WIFI Hotspot
18	1X CDMA 1900 Data / EVDO 1900 Data + 2.4 GHz WIFI	N/A	Yes	Yes	Yes	1X CDMA Data / EVDO +WIFI Hotspot
19	WCDMA 850 Data + 2.4 GHz WIFI	N/A	N/A	N/A	Yes	WCDMA + WIFI Hotspot
20	WCDMA 1900 Data + 2.4 GHz WIFI	N/A	N/A	N/A	Yes	WCDMA + WIFI Hotspot
21	LTE 782 MHz Data + 2.4 GHz WIFI	N/A	Yes	Yes	Yes	LTE+WIFI Hotspot
22	GPRS/EDGE 850 Data + 2.4 GHz WIFI	N/A	N/A	N/A	Yes	GPRS/EDGE + WIFI Hotspot
23	GPRS/EDGE 1900 Data + 2.4 GHz WIFI	N/A	N/A	N/A	Yes	GPRS/EDGE + WIFI Hotspot
24	1X CDMA 850 Voice + EVDO 850 Data	N/A	N/A	N/A	N/A	Not Supported by HW
25	1X CDMA 850 Voice + EVDO 1900 Data	N/A	N/A	N/A	N/A	Not Supported by HW
26	1X CDMA 1900 Voice + EVDO 850 Data	N/A	N/A	N/A	N/A	Not Supported by HW
27	1X CDMA 1900 Voice + EVDO 1900 Data	N/A	N/A	N/A	N/A	Not Supported by HW
28	1X CDMA 850 Voice + EVDO 850 Data + 2.4 GHz WIFI	N/A	N/A	N/A	N/A	Not Supported by HW (Voice + EVDO + WIFI
29	1X CDMA 1900 Voice + EVDO 850 Data + 2.4 GHz WIFI	N/A	N/A	N/A	N/A	Not Supported by HW (Voice + EVDO + WIFI
30	1X CDMA 850 Voice + EVDO 1900 Data + 2.4 GHz WIFI	N/A	N/A	N/A	N/A	Not Supported by HW (Voice + EVDO + WIFI
31	1X CDMA 1900 Voice + EVDO 1900 Data + 2.4 GHz WIFI	N/A	N/A	N/A	N/A	Not Supported by HW (Voice + EVDO + WIFI
32	GSM 850/1900 Voice + 850/1900 1X-RTT CDMA Data	N/A	N/A	N/A	N/A	Not Supported by HW
33	GSM 850/1900 Voice + EVDO/GPRS/EDGE Data	N/A	N/A	N/A	N/A	Not Supported by HW
34	GSM 850/1900 Voice + LTE	N/A	N/A	N/A	N/A	Not Supported by SW
35	GSM 850/1900 Voice + 850/1900 1X-RTT CDMA + 2.4/5 GHz WIFI	N/A	N/A	N/A	N/A	Not Supported by HW
36	GSM 850/1900 Voice + EVDO/GPRS/EDGE + 2.4/5 GHz WIFI	N/A	N/A	N/A	N/A	Not supported by HW
37	GSM 850/1900 Voice + LTE + 2.4/5 GHz WIFI	N/A	N/A	N/A	N/A	Not supported by SW
38	1X CDMA 850 Voice + LTE 782 MHz Data + 5 GHz WIFI	N/A	N/A	N/A	N/A	Wireless Router functions not available in 5 GHz
39	1X CDMA 1900 Voice + LTE 782 MHz Data + 5 GHz WIFI	N/A	N/A	N/A	N/A	Wireless Router functions not available in 5 GHz
40	GPRS/EDGE 850/1900 Data + 5 GHz WIFI	N/A	N/A	N/A	N/A	Wireless Router functions not available in 5 GHz
41	LTE 782MHz Data + 5 GHz WIFI	N/A	N/A	N/A	N/A	Wireless Router functions not available in 5 GHz
42	1X 850/1900 Data + 5 GHz WIFI	N/A	N/A	N/A	N/A	Wireless Router functions not available in 5 GHz
43	EVDO 850/1900 Data + 5 GHz WIFI	N/A	N/A	N/A	N/A	Wireless Router functions not available in 5 GHz
44	WCDMA 850/1900 Data + 5GHz WIFI	N/A	N/A	N/A	N/A	Wireless Router functions not available in 5 GHz
45	850/1900 GPRS/EDGE Data + LTE 782 MHz Data	N/A	N/A	N/A	N/A	Not supported by the SW
46	850/1900 EVDO Data + 850/1900 GPRS/EDGE Data	N/A	N/A	N/A	N/A	Not supported by the HW
47	850/1900 EVDO data + LTE 782 MHz Data	N/A	N/A	N/A	N/A	Not supported by the SW
48	WCDMA 850/1900 Voice + 850/1900 1X-RTT CDMA Data	N/A	N/A	N/A	N/A	Not Supported by HW
49	WCDMA 850/1900 Voice + EVDO/GPRS/EDGE Data	N/A	N/A	N/A	N/A	Not Supported by HW
50	WCDMA 850/1900 Voice + LTE	N/A	N/A	N/A	N/A	Not Supported by SW
51	WCDMA 850/1900 Voice + 850/1900 1X-RTT CDMA + 2.4/5 GHz WIFI	N/A	N/A	N/A	N/A	Not Supported by HW
52	WCDMA 850/1900 Voice + EVDO/GPRS/EDGE + 2.4/5 GHz WIFI	N/A	N/A	N/A	N/A	Not supported by HW
53	WCDMA 850/1900 Voice + LTE + 2.4/5 GHz WIFI	N/A	N/A	N/A	N/A	Not supported by SW

Notes:

1. **CDMA and EVDO share the same antenna path and cannot transmit simultaneously. (Non-SVDO)**
2. **Bluetooth and 2.4 GHz WLAN share the same antenna path and cannot transmit simultaneously.**

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1.6 SAR Test Exclusions Applied

(A) WIFI/BT

Since Wireless Router operations are not allowed by the chipset firmware using 5 GHz WIFI, only 2.4 GHz WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations in KDB 941225 D06.

RF Conducted Power of Bluetooth Tx is 7.87 mW (Please refer to the EMC DSS Report for a full set of Bluetooth conducted powers).

The separation between the CDMA/EVDO/GSM/GPRS/EDGE/UMTS antenna and the Bluetooth/WLAN antenna is 89.1 mm. The separation between the LTE antenna and the Bluetooth/WLAN antenna is 30.2 mm.

2.4 GHz and 5 GHz WIFI and Bluetooth share the same antenna path and cannot transmit simultaneously.

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

This device supports 20 MHz and 40 MHz Bandwidths for IEEE 802.11n for 5 GHz WIFI only. 802.11n was not evaluated for SAR since the average output power of 20 MHz and 40 MHz bandwidths was not more than 0.25 dB higher than the average output power of 802.11a.

(B) Licensed Transmitter(s)

This model supports Simultaneous Voice and Data for the licensed transmitter in WCDMA that allows Multi-RAB transmissions that share voice and data operations on a single physical channel.

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

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

1.7 Guidance Applied

- FCC OET Bulletin 65 Supplement C [June 2001]
- IEEE 1528-2003
- FCC KDB 941225 (2G/3G/4G and Hotspot)
- FCC KDB 248227 (802.11)
- FCC KDB 648474 (Simultaneous)
- FCC KDB 865664 (5 GHz)

1.8 Samples Used for SAR Testing

Mode/Band	Cell CDMA/EVDO		PCS CDMA/EVDO		GSM 850	GSM 1900	WCDMA	LTE		WLAN
Target Power (dBm)	24.5	18	24.5	18	32.5	29.5	22.5	23	19	-
Serial Number:	1	2	1	2	5	5	6	3	4	7

Several samples were used for SAR testing with identical hardware. Reduced power levels were configured by the manufacturer to support SAR test cases.

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2 LTE CHECKLIST PER KDB 941225 D05

KDB 941225 Pub LTE Information				
KDB 941225 Sec.	FCC ID:	A3LSCHI605		
	Form Factor	Portable Handset		
1)	Frequency Range of each LTE transmission band	BAND 13: 782 MHz		
2)	Channel Bandwidths (MHz)	Band 13: 10 MHz		
3)	Channel Numbers and Frequencies (MHz)	Low	Mid	High
	LTE Band 2 and BW 5MHz		782 MHz (23230)	
4)(a)	UE Category	3		
(b)	Modulations Supported in UL	QPSK, 16QAM		
	LTE Transmitter and Antenna Implementation	LTE and CDMA/EVDO/GSM/WCDMA operate on separate antenna paths.		
5)	Description of LTE Tx and Ant. Implementation	1 Tx/Rx Ant, 1 Rx Ant only		
6)	LTE Voice available	No		
	Hotspot with LTE+WIFI	Yes		
	Hotspot with LTE+WIFI with Voice	Yes		
7)	LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestatin to be provided)	See Section 10 and Section 11		
	A-MPR (Additional MPR) disabled for SAR Testing?	YES		
8)	Conducted power Table provided for 1RB (low and high offset), 50% RB (centered), 100% RB	YES		
9-10)	Non-LTE US Wireless Operating Modes/Bands	RF Output Power	RF Exposure Configurations	
	Cell. CDMA/EVDO	See Page 1		
	PCS CDMA/EVDO			
	850 MHz GSM/GPRS/EDGE			
	1900 MHz GSM/GPRS/EDGE			
	850 MHz UMTS			
	1900 MHz UMTS			
	2.4 GHz Bluetooth			
	2.4 GHz WI-FI			
	5 GHz Wi-Fi			
11)	Simultaneous Tx Conditions (Voice and Data Configurations)	See Section 1.5		
12)	Power Reduction used for SAR Compliance?	Yes		
13)	Describe Power Reduction (LTE Modes)	See Section 11		
14)	SAR Test Plan	See Section 11		
15)	SAR test data	See Section 13		

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3 INTRODUCTION

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

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [24]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

σ = conductivity of the tissue-simulating material (S/m)
ρ = mass density of the tissue-simulating material (kg/m^3)
E = Total RMS electric field strength (V/m)

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

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4 SAR MEASUREMENT SETUP

4.1 Automated SAR Measurement System

Measurements are performed using the DASY automated dosimetric SAR assessment system. The DASY is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland and consists of a high precision robotics system (Staubli), robot controller, desktop computer, near-field probe, probe alignment sensor, and the SAM phantom containing the head or body equivalent material. The robot is a six-axis industrial robot, performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). See www.speag.com for more information about the specification of the SAR assessment system.

Figure 4-1
SAR Measurement System

Figure 4-2
Near-Field Probe

Table 4-1
Composition of the Tissue Equivalent Matter

Frequency (MHz)	750	750	835	835	1900	1900	2450	2450	5200-5800	5200-5800
Tissue	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Ingredients (% by weight)										
Bactericide	See Next Page	See Next Page	0.1	0.1						
DGBE					44.92	29.44	7.99	26.7		
HEC			1	1						
NaCl			1.45	0.94	0.18	0.39	0.16	0.1		
Sucrose			57	44.9						
Triton X-100							19.97		17.24	
Diethylenglycol monohexylether									17.24	
Polysorbate (Tween) 80										20
Water			40.45	53.06	54.9	70.17	71.88	73.2	65.52	80

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Table 4-2
Composition of 750 MHz Head and Body Tissue Equivalent Matter

2 Composition / Information on ingredients

The Item is composed of the following ingredients:

H_2O	Water, 35 – 58%
Sucrose	Sugar, white, refined, 40 – 60%
NaCl	Sodium Chloride, 0 – 6%
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-methyyl-3(2H)-isothiazolone, 0.1 – 0.7% Relevant for safety; Refer to the respective Safety Data Sheet*.

Note: 750MHz liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

Measurement Certificate / Material Test

Item Name	**Body Tissue Simulating Liquid (MSL 750)**
Product No.	SL AAM 075 AA (Charge: 110606-1)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated OCP probe (type DAK).

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

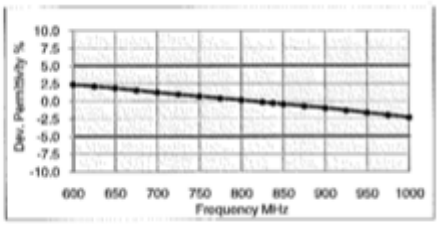
Ambient Condition	22°C ; 30% humidity
TSL Temperature	22°C
Test Date	8-Jun-11

Additional Information

TSL Density	1.212 g/cm³
TSL Heat-capacity	3.006 kJ/(kg*K)

Results

	Measured			Target		Diff.to Target [%]	
f [MHz]	HP-e'	HP-e"	sigma	eps	sigma	Δ-eps	Δ-sigma
600	57.4	24.88	0.83	56.1	0.95	2.4	-12.7
625	57.2	24.53	0.85	56.0	0.95	2.1	-10.6
650	57.0	24.18	0.87	55.9	0.96	1.8	-8.5
675	56.7	23.90	0.90	55.8	0.96	1.5	-6.3
700	56.4	23.61	0.92	55.7	0.96	1.2	-4.2
725	56.2	23.37	0.94	55.6	0.96	0.9	-2.0
750	55.9	23.12	0.96	55.5	0.96	0.7	0.1
775	55.7	22.95	0.99	55.4	0.97	0.4	2.5
800	55.4	22.78	1.01	55.3	0.97	0.1	4.8
825	55.2	22.61	1.04	55.2	0.98	-0.2	6.1
838	55.0	22.52	1.05	55.2	0.98	-0.3	6.7
850	54.9	22.44	1.06	55.2	0.99	-0.4	7.3
875	54.7	22.30	1.09	55.1	1.02	-0.7	6.5
900	54.5	22.17	1.11	55.0	1.05	-1.0	5.7
925	54.2	22.05	1.13	55.0	1.06	-1.3	6.8
950	54.0	21.94	1.16	54.9	1.08	-1.7	7.8
975	53.8	21.85	1.18	54.9	1.09	-2.0	9.0
1000	53.6	21.75	1.21	54.8	1.10	-2.3	10.2



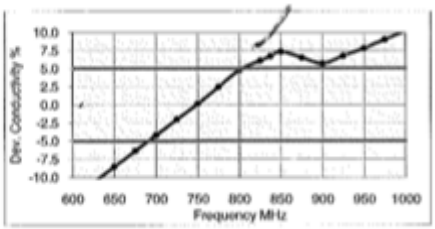


Figure 4-3
750MHz Body Tissue Equivalent Matter

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Measurement Certificate / Material Test

Item Name	**Head Tissue Simulating Liquid (HSL 750)**
Product No.	SL AAH 075 (Charge: 110601-1)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated OCP probe (type DAK).

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

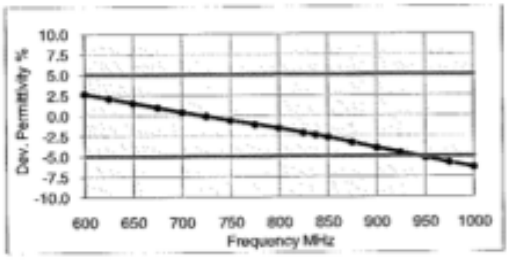
Ambient Condition	22°C ; 30% humidity
TSL Temperature	22°C
Test Date	8-Jun-11

Additional Information

TSL Density	1.284 g/cm^3
TSL Heat-capacity	2.701 kJ/(kg*K)

Results

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



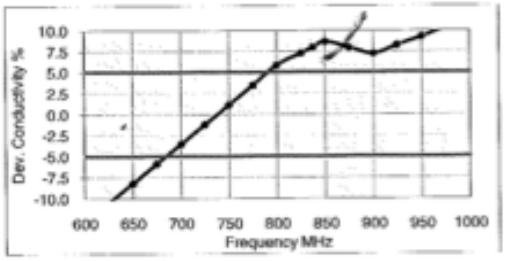


Figure 4-4
750MHz Head Tissue Equivalent Matter

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5 DOSIMETRIC ASSESSMENT

5.1 Measurement Procedure

The evaluation was performed using the following procedure:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head interface and the horizontal grid resolution was 15mm and 15mm for frequencies < 3 GHz in the x and y directions respectively. When applicable, for frequencies above 3 GHz, a 10 mm by 10 mm resolution was used.

2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1 gram cube evaluation. SAR at this fixed point was measured and used as a reference value.

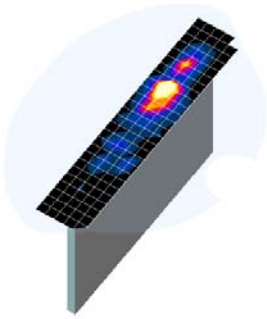

Figure 5-1
Sample SAR Area Scan

3. Based on the area scan data, the peak area of the maximum absorption was determined by spline interpolation. Around this point, a volume of 32mm x 32mm x 30mm (fine resolution volume scan, zoom scan) was assessed by measuring at least 5 x 5 x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

   a. The data was extrapolated to the surface of the outer-shell of the phantom. The combined distance extrapolated was the combined distance from the center of the dipoles 2.7mm away from the tip of the probe housing plus the 1.2 mm distance between the surface and the lowest measuring point. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).

   b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

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

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6 DEFINITION OF REFERENCE POINTS

6.1 EAR REFERENCE POINT

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

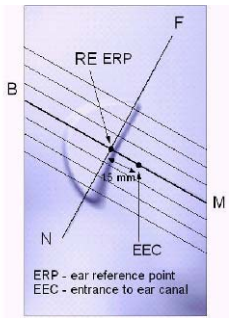

Figure 6-1
Close-Up Side view of ERP

6.2 HANDSET REFERENCE POINTS

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

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

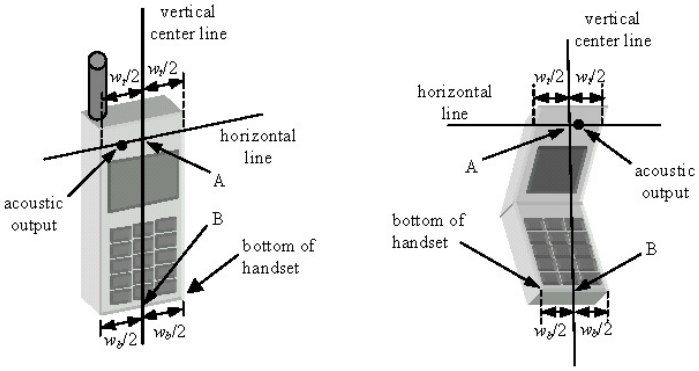

Figure 6-3
Handset Vertical Center & Horizontal Line Reference Points

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7 TEST CONFIGURATION POSITIONS FOR HANDSETS

7.1 Device Holder

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

7.2 Positioning for Cheek/Touch

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

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

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

7.3 Positioning for Ear / 15º Tilt

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

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

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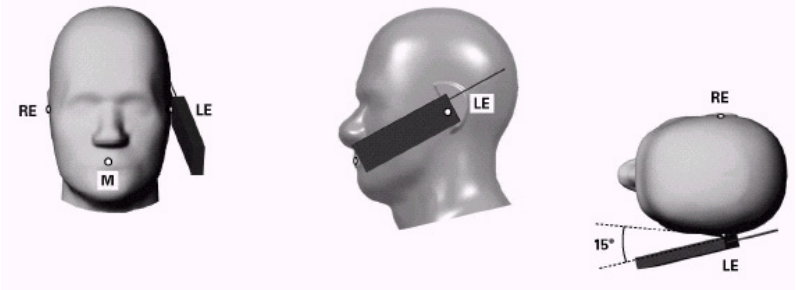

Figure 7-2 Front, Side and Top View of Ear/15º Tilt Position

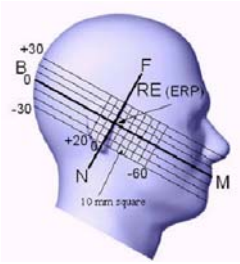

Figure 7-3
Side view w/ relevant markings

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

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

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

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document publication 648474. The SAR required in these regions of SAM should be measured using a flat phantom. **Rectangular shaped phones** should be positioned with its bottom edge positioned from the flat phantom with the same distance provided by the cheek touching position using SAM. The ear reference point (ERP, as defined for SAM) of the phone should be positioned ½ cm from the flat phantom shell. **Clam-shell phones** should be positioned with the hinge against a smooth edge of the flat phantom where the upper half of the phone is unfolded and extended beyond the phantom side wall. The lower half of the phone is secured in the test device holder at a fixed distance below the flat phantom determined by the minimum separation along the lower edge of the phone in the cheek touching position using SAM. Any case with substantial variation in separation distance along the lower edge of a clam shell is discussed with the FCC for best-to-use methodology.

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

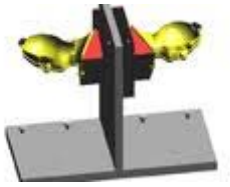

Figure 7-5 Twin SAM Chin20

7.5 Body-Worn Accessory Configurations

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

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Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented. Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

7.6 Wireless Router Configurations

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

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

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8 FCC RF EXPOSURE LIMITS

8.1 Uncontrolled Environment

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

8.2 Controlled Environment

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

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

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

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

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9 FCC MEASUREMENT PROCEDURES

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

9.1 Procedures Used to Establish RF Signal for SAR

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

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

9.2 SAR Measurement Conditions for CDMA2000

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

9.2.1 Output Power Verification

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

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 9-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH_0 and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 9-2 was applied.
5. FCHs were configured at full rate for maximum SAR with "All Up" power control bits.

Table 9-1
Parameters for Max. Power for RC1

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

Table 9-2
Parameters for Max. Power for RC3

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

9.2.2 Head SAR Measurements

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

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EVDO Rev A to determine VoIP compliance. See Section 9.2.5 for EVDO Rev A configuration parameters.

9.2.3 Body SAR Measurements

SAR for body exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCH_n) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only. Otherwise, SAR is measured on the maximum output channel (FCH + SCH_n) with FCH at full rate and SCH_0 enabled at 9600 bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels are enabled, the DUT output may shift by more than 0.5 dB and lead to higher SAR drifts and SCH dropouts. Body SAR was measured using TDSO / SO32 with power control bits in the "All Up"

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

9.2.4 Handsets with EVDO

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

9.2.5 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 per KDB Publication 941225 D01 procedures for "1x Ev-Do data Devices". SAR for Subtype 2 Physical layer configurations is not required for Rev. A when the maximum average output of each RF channels is less than that measured in Subtype 0/1 Physical layer configurations. Otherwise, SAR is measured on the maximum output channel for Rev. A using the exposure configuration that results in the highest SAR for the RF channels in Rev. 0. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations. Both FTAP and FETAP are configured with a Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots. AT power control should be in "All Bits Up" conditions for TAP/ETAP

SAR is not required for 1x RTT for Ev-Do devices that also support 1x RTT voice and/or data operations, when the maximum average output of each channel is less than 1⁄4 dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0. Otherwise, CDMA "Body-SAR Measurement" procedures for "CDMA 2000 1x Handsets" were applied.

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9.3 SAR Measurement Conditions for WCDMA

9.3.1 Output Power Verification

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

9.3.2 Head SAR Measurements for Handsets

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

9.3.3 Body SAR Measurements

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

9.3.4 SAR Measurements for Handsets with Rel 5 HSDPA

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

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

9.3.5 SAR Measurements for Handsets with Rel 6 HSUPA

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

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

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

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

9.4 SAR Measurement Conditions for LTE

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes following SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing.

9.4.1 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

9.4.2 A-MPR

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

9.4.3 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05:

1) Per Page 4, 3) A), QPSK with 50% RB is required for the highest bandwidth.
2) Per Page 4, 3) B), QPSK with 1 RB for both channel edges are required for the highest bandwidth.
3) Per Page 4, 4) A), 16QAM with 50% RB is required for the highest bandwidth.
4) Per Page 4, 4) B) and Page 5 footnote 9, 16QAM with 1RB for both channel edges are required for the highest bandwidth.
5) Per Page 4, 4), A) I) and Page 5, 4), A)I, 100% RB Allocation is not required to be tested when the SAR is not > 1.45 W/kg.

9.5 SAR Testing with 802.11 Transmitters

Normal network operating configurations are not suitable for measuring the SAR of 802.11 a/b/g/n transmitters. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset

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based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 for more details.

9.5.1 General Device Setup

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

9.5.2 Frequency Channel Configurations [27]

For 2.4 GHz, the highest average RF output power channel between the low, mid and high channel at the lowest data rate was selected for SAR evaluation in 802.11b mode. 802.11g/n modes and higher data rates for 802.11b were additionally evaluated for SAR if the output power of the respective mode was 0.25 dB or higher than the powers of the SAR configurations tested in the 802.11b mode.

For 5 GHz, the highest average RF output power channel across the default test channels at the lowest data rate was selected for SAR evaluation in 802.11a. When the adjacent channels are higher in power then the default channels, these “required channels” were considered instead of the default channels for SAR testing. 802.11n modes and higher data rates for 802.11a/n were evaluated only if the respective mode was 0.25 dB or higher than the 802.11a mode.

If the maximum extrapolated peak SAR of the zoom scan for the highest output channel was less than 1.6 W/kg or if the 1g averaged SAR was less than 0.8 W/kg, SAR testing was not required for the other test channels in the band.

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10 RF CONDUCTED POWERS

10.1 CDMA Conducted Powers

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	RC1	RC3	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	824.7	24.94	24.77	24.85	24.82	24.84	24.81
	384	836.52	24.82	24.82	24.72	24.71	24.75	24.72
	777	848.31	24.76	24.70	24.68	24.80	24.76	24.63
PCS	25	1851.25	24.38	24.40	24.27	24.28	24.33	24.32
	600	1880	24.36	24.44	24.42	24.52	24.35	24.32
	1175	1908.75	24.41	24.32	24.29	24.31	24.42	24.40

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

Per KDB Publication 941225 D01:

1. Head SAR was tested with SO55 RC3. SO55 RC1 was not required since the average output power was not more than 0.25 dB than the SO55 RC3 powers.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. Ev-Do and TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers.
3. According to FCC KDB 941225, EVDO SAR (Hotspot) is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. When the maximum output power of Rev. A for each channel is greater than the Rev.0 power, Rev. A must additionally be tested using the highest output channel for the configuration that resulted in the highest SAR for Rev.0.
4. CDMA 1x-RTT SAR was additionally required to be evaluated for Hotspot exposure conditions to support simultaneous capabilities per Table 1-2.
5. Head SAR was additionally evaluated for EVDO Rev. A to determine SAR compliance for VoIP over EVDO.

Figure 10-1
Power Measurement Setup

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10.2 GSM Conducted Powers

		Maximum Burst-Averaged Output Power				
		Voice	*GPRS/EDGE Data (GMSK)*		*EDGE Data (8-PSK)*	
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**
Cellular	128	32.77	32.79	**30.64**	26.11	25.99
	190	32.67	32.73	**30.92**	26.17	26.06
	251	32.36	32.40	**30.57**	26.17	26.03
PCS	512	29.40	29.43	**27.75**	24.62	24.48
	661	29.65	29.70	**27.69**	24.65	24.52
	810	29.55	29.62	**27.74**	24.61	24.50

		Calculated Maximum Frame-Averaged Output Power				
		Voice	*GPRS/EDGE Data (GMSK)*		*EDGE Data (8-PSK)*	
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**
Cellular	128	23.74	23.76	**24.62**	17.08	19.97
	190	23.64	23.70	**24.90**	17.14	20.04
	251	23.33	23.37	**24.55**	17.14	20.01
PCS	512	20.37	20.40	**21.73**	15.59	18.46
	661	20.62	20.67	**21.67**	15.62	18.50
	810	20.52	20.59	**21.72**	15.58	18.48

Note:

1. Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
2. The bolded GPRS modes were selected according to the highest frame-averaged output power table according to KDB 941225 D03.
3. CS1 coding scheme was used in GPRS output power measurements and SAR Testing, as a condition where GMSK modulation was ensured. Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels in the GPRS modes..
4. MCS7 coding scheme was used to measure the output powers for EDGE since It was investigated that choosing MCS7 coding scheme will ensure 8-PSK modulation, MCS levels that produce 8PSK modulation do not have an impact on output power.

GSM Class: B
GPRS Multislot class: 10 (max 2 Tx Uplink slots)
EDGE Multislot class: 10 (max 2 Tx Uplink slots)
DTM Multislot Class: N/A

Figure 10-2
Power Measurement Setup

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10.3 HSPA Conducted Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			MPR [dB]
			4132	4183	4233	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	22.45	22.29	22.40	22.48	22.35	22.49	-
99		12.2 kbps AMR	22.62	22.51	22.61	22.50	22.42	22.47	-
6	HSDPA	Subtest 1	21.58	21.33	21.58	21.56	21.73	21.60	0
6		Subtest 2	21.55	21.39	21.61	21.63	21.71	21.68	0
6		Subtest 3	21.04	20.91	21.03	21.07	21.14	21.17	0.5
6		Subtest 4	21.03	20.84	21.01	21.02	21.10	21.12	0.5
6	HSUPA	Subtest 1	21.41	21.30	21.48	21.19	21.28	21.53	0
6		Subtest 2	20.83	20.75	20.93	21.09	20.82	20.91	2
6		Subtest 3	20.52	20.45	20.07	20.63	20.58	20.87	1
6		Subtest 4	21.20	21.04	21.44	21.52	21.48	21.32	2
6		Subtest 5	20.62	20.53	20.83	20.36	20.63	21.01	0

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

It is expected by the manufacturer that MPR for some HSUPA subtests may be up to 1 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model. Detailed information is included in the operational description explaining how the MPR is applied for this model.

Figure 10-3
Power Measurement Setup

10.4 LTE Conducted Powers

Table 10-1
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
782.0	23230	10	QPSK	1	0	**22.85**	0	0
782.0	23230	10	QPSK	1	49	**22.91**	0	0
782.0	23230	10	QPSK	25	12	**22.04**	1	0-1
782.0	23230	10	QPSK	50	0	21.85	1	0-1
782.0	23230	10	16QAM	1	0	**21.69**	1	0-1
782.0	23230	10	16QAM	1	49	**22.08**	1	0-1
782.0	23230	10	16QAM	25	12	**21.08**	2	0-2
782.0	23230	10	16QAM	50	0	20.91	2	0-2

Notes:
1) Please reference Section 9.4.3 for LTE for LTE testing requirements per FCC KDB 941225 D05.
2) The bolded powers are tested for SAR.

Figure 10-4
Power Measurement Setup

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10.5 WLAN Conducted Powers

Table 10-2
IEEE 802.11b Average RF Power

Mode	Freq	Channel	Conducted Power [dBm]			
			Data Rate [Mbps]			
	[MHz]		1	2	5.5	11
802.11b	2412	1	15.05	14.84	15.37	15.38
802.11b	2437	6	15.57	15.60	15.60	15.56
802.11b	2462	11	**15.68**	15.72	15.74	15.72

Table 10-3
IEEE 802.11g Average RF Power

Mode	Freq	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
	[MHz]		6	9	12	18	24	36	48	54
802.11g	2412	1	14.20	14.28	14.24	14.15	14.21	14.17	14.24	14.20
802.11g	2437	6	14.47	14.42	14.46	14.46	14.48	14.42	14.48	14.54
802.11g	2462	11	14.57	14.61	14.64	14.61	14.68	14.59	14.60	14.55

Table 10-4
IEEE 802.11n Average RF Power

Mode	Freq	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
	[MHz]		6.5	13	20	26	39	52	58	65
802.11n	2412	1	12.25	12.25	12.20	12.33	12.21	12.31	12.26	12.31
802.11n	2437	6	12.53	12.52	12.42	12.53	12.51	12.50	12.38	12.46
802.11n	2462	11	12.65	12.60	12.61	12.63	12.59	12.60	12.59	12.62

Table 10-5
IEEE 802.11a Average RF Power

Mode	Freq	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
	[MHz]		6	9	12	18	24	36	48	54
802.11a	5180	36*	**13.27**	13.31	13.23	13.36	13.34	13.33	13.26	13.28
802.11a	5200	40	13.23	13.19	13.26	13.26	13.24	13.25	13.28	13.25
802.11a	5220	44	13.17	13.09	13.14	13.21	13.17	13.20	13.18	13.16
802.11a	5240	48*	13.11	13.07	13.12	13.15	13.14	13.08	13.17	13.12
802.11a	5260	52*	**13.03**	13.04	13.10	13.03	13.02	13.08	13.15	13.11
802.11a	5280	56	13.00	13.03	12.99	13.03	13.09	13.06	13.10	13.02
802.11a	5300	60	13.01	13.01	12.95	12.97	13.03	13.02	13.04	13.06
802.11a	5320	64*	12.98	13.00	13.01	12.97	12.97	12.98	13.03	12.99
802.11a	5500	100	12.48	12.40	12.47	12.41	12.49	12.47	12.56	12.46
802.11a	5520	104*	12.58	12.49	12.47	12.51	12.56	12.50	12.48	12.53
802.11a	5540	108	12.48	12.51	12.49	12.44	12.49	12.60	12.53	12.57
802.11a	5560	112	12.43	12.44	12.52	12.53	12.54	12.52	12.58	12.56
802.11a	5580	116*	12.56	12.53	12.51	12.59	12.54	12.57	12.55	12.63
802.11a	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5660	132	12.66	12.62	12.62	12.62	12.59	12.65	12.69	12.69
802.11a	5680	136*	12.62	12.63	12.64	12.69	12.72	12.68	12.69	12.79
802.11a	5700	140	**12.73**	12.67	12.70	12.68	12.71	12.80	12.76	12.81
802.11a	5745	149*	12.78	12.76	12.78	12.79	12.81	12.85	12.86	12.83
802.11a	5765	153	12.77	12.83	12.73	12.78	12.73	12.77	12.89	12.90
802.11a	5785	157*	12.82	12.81	12.76	12.79	12.82	12.90	12.85	12.87
802.11a	5805	161*	12.78	12.82	12.82	12.88	12.88	12.85	12.89	12.97
802.11a	5825	165	**12.82**	12.90	12.86	12.84	12.89	12.90	12.98	12.93

Per FCC KDB Publication 443999 and RSS-210 A9.2(3), transmission on channels which overlap the 5600-5650 MHz is prohibited as a client. This device does not transmit any beacons or initiate any transmissions in 5.3 and 5.5 GHz Band. (*) – indicates default channels per KDB Publication 248227. When the adjacent channels are higher in power then the default channels, these “required channels” are considered instead of the default channels for SAR testing.

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Table 10-6
IEEE 802.11n (20 MHz)Average RF Power

Mode	Freq	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
	[MHz]		6.5	13	20	26	39	52	58	65
802.11n	5180	36*	13.16	13.15	13.15	13.14	13.14	13.12	13.23	13.21
802.11n	5200	40	13.07	13.03	13.09	13.04	13.13	13.13	13.18	13.12
802.11n	5220	44	13.06	13.07	13.10	13.09	13.06	13.08	13.07	13.02
802.11n	5240	48*	12.92	12.97	12.87	12.98	12.97	13.03	13.01	13.00
802.11n	5260	52*	12.94	12.92	12.85	12.95	12.96	13.00	12.97	13.01
802.11n	5280	56	12.88	12.86	12.87	12.88	12.95	12.92	12.95	12.96
802.11n	5300	60	12.87	12.92	12.86	12.85	12.86	12.95	12.92	12.95
802.11n	5320	64*	12.85	12.83	12.89	12.90	12.87	12.90	12.91	12.91
802.11n	5500	100	12.26	12.35	12.36	12.29	12.35	12.37	12.40	12.32
802.11n	5520	104*	12.37	12.32	12.37	12.34	12.39	12.38	12.38	12.38
802.11n	5540	108	12.39	12.30	12.35	12.40	12.46	12.43	12.39	12.43
802.11n	5560	112	12.37	12.34	12.43	12.45	12.44	12.44	12.38	12.47
802.11n	5580	116*	12.36	12.37	12.42	12.41	12.40	12.44	12.44	12.39
802.11n	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5660	132	12.54	12.53	12.50	12.49	12.58	12.56	12.58	12.64
802.11n	5680	136*	12.52	12.52	12.50	12.55	12.57	12.60	12.47	12.51
802.11n	5700	140	12.56	12.56	12.52	12.56	12.60	12.62	12.64	12.72
802.11n	5745	149*	12.56	12.68	12.62	12.70	12.71	12.77	12.77	12.69
802.11n	5765	153	12.65	12.67	12.76	12.64	12.68	12.76	12.69	12.73
802.11n	5785	157*	12.62	12.67	12.70	12.72	12.76	12.77	12.73	12.80
802.11n	5805	161*	12.66	12.73	12.69	12.75	12.76	12.78	12.82	12.80
802.11n	5825	165	12.71	12.71	12.74	12.75	12.78	12.84	12.82	12.77

Per FCC KDB Publication 443999 and RSS-210 A9.2(3), transmission on channels which overlap the 5600-5650 MHz is prohibited as a client. This device does not transmit any beacons or initiate any transmissions in 5.3 and 5.5 GHz Bands. (*) – indicates default channels per KDB Publication 248227. When the adjacent channels are higher in power then the default channels, these “required channels” are considered instead of the default channels for SAR testing.

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Table 10-7
IEEE 802.11n (40 MHz) Average RF Power

Mode	Freq	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
	[MHz]		13.5/15	27/30	40.5/45	54/60	81/90	108/120	121.5/135	135/150
802.11n	5190	38	13.33	13.32	13.45	13.39	13.28	13.36	13.33	13.33
802.11n	5230	46	13.20	13.23	13.19	13.14	13.23	13.20	13.36	13.29
802.11n	5270	54	13.07	13.08	13.04	13.14	13.13	13.13	13.12	13.14
802.11n	5310	62	13.05	13.07	13.08	13.13	13.04	13.11	13.13	13.09
802.11n	5510	102	12.46	12.56	12.65	12.50	12.63	12.51	12.58	12.60
802.11n	5550	110	12.53	12.60	12.71	12.50	12.61	12.59	12.69	12.70
802.11n	5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5670	134	12.79	12.84	12.73	12.78	12.68	12.79	12.83	12.83
802.11n	5755	151	12.80	12.94	12.99	12.83	12.89	12.94	12.07	12.89
802.11n	5795	159	13.00	12.93	12.91	12.88	12.95	13.04	12.04	13.05

Per FCC KDB Publication 443999 and RSS-210 A9.2(3), transmission on channels which overlap the 5600-5650 MHz is prohibited as a client. This device does not transmit any beacons or initiate any transmissions in 5.3 and 5.5 GHz Bands. (*) – indicates default channels per KDB Publication 248227. When the adjacent channels are higher in power then the default channels, these “required channels” are considered instead of the default channels for SAR testing.

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

- For 2.4 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other IEEE 802.11 modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
- For 5 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11a were selected for SAR evaluation. Other IEEE 802.11 modes (including 802.11n 20 and 40 MHz) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11a mode.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The bolded data rate and channel above were tested for SAR.

Figure 10-5
Power Measurement Setup

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11 LTE POWER REDUCTION

11.1 Introduction to LTE Power Reduction

This device is capable of Simultaneous Voice and LTE (SVLTE) calls, with the voice call supported by a CDMA 1xRTT transmitter and the data connection supported by separate LTE transmitter. A LTE power reduction scheme is applied during a LTE connection operating simultaneously with 1x-RTT voice calls. The maximum transmit power of LTE is limited depending on the CDMA 1x voice power level. When CDMA 1x Voice is operating at a certain range of high power levels, maximum LTE transmit power is limited. When CDMA 1x Voice power is below a certain threshold transmit power level, LTE can transmit at the maximum power. Target levels of power reduction and CDMA voice threshold levels are provided in Table 11-1.

Table 11-1
SVLTE Power Reduction Scheme

Mode	Cell/PCS CDMA Current Voice Power	LTE Max. Power for B13
SVLTE	P < 18 dBm	23.0 dBm
	P ≥ 18 dBm	19.0 dBm

11.2 Output Power Verification

Per page 7 of KDB Publication 941225 D05, 5) B), output powers were measured in SVLTE mode to determine that the power reduction mechanism was operating reliably and consistently. The power reduction was investigated by simultaneously connecting the device to both LTE and CDMA base station simulators. LTE output powers were measured through conducted RF connections by first connecting the device in a LTE data call and subsequently a CDMA 1xRTT call. CDMA powers were controlled by setting the CDMA base station simulator to active bits. The LTE output power was monitored while changing the CDMA cell output power level.

The power reduction targets and threshold level described in **Table 11-1** were confirmed. Please see results in Table 11-2 to Table 11-7.

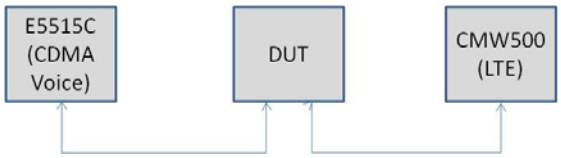

Figure 11-1
SVLTE Conducted Test Setup Diagram

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Table 11-2
SVLTE Power Reduction Verification Results
Low Ch. Cell. CDMA, Mid Ch. 10MHz BW, LTE Band 13

1x-RTT CDMA Voice Band	1x-RTT Cell CDMA Voice Channel	1x-RTT Cell CDMA Voice Tx (dBm)	LTE Band 13 Conducted Power (dBm)							
			QPSK				16QAM			
			1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset	1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset
835 MHz	1013	24	18.87	19.03	19.17	19.13	18.65	18.61	19.19	19.12
		23	18.87	19.03	19.17	19.13	18.65	18.61	19.19	19.12
		22	18.87	19.03	19.17	19.13	18.65	18.61	19.19	19.12
		21	18.87	19.03	19.17	19.13	18.65	18.61	19.19	19.12
		20	18.87	19.03	19.17	19.13	18.65	18.61	19.19	19.12
		19	18.87	19.03	19.17	19.13	18.65	18.61	19.19	19.12
		18	18.87	19.03	19.17	19.13	18.65	18.61	19.19	19.12
		17	22.92	23.01	22.22	22.16	21.93	21.94	21.14	21.03
		16	22.92	23.01	22.22	22.16	21.93	21.94	21.14	21.03
		15	22.92	23.01	22.22	22.16	21.93	21.94	21.14	21.03
		14	22.92	23.01	22.22	22.16	21.93	21.94	21.14	21.03
		13	22.92	23.01	22.22	22.16	21.93	21.94	21.14	21.03

Table 11-3
SVLTE Power Reduction Verification Results
Mid Ch. Cell. CDMA, Mid Ch. 10MHz BW, LTE Band 13

1x-RTT CDMA Voice Band	1x-RTT Cell CDMA Voice Channel	1x-RTT Cell CDMA Voice Tx (dBm)	LTE Band 13 Conducted Power (dBm)							
			QPSK				16QAM			
			1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset	1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset
835 MHz	384	24	18.87	18.96	19.16	19.15	18.72	18.74	19.24	19.13
		23	18.87	18.96	19.16	19.15	18.72	18.74	19.24	19.13
		22	18.87	18.96	19.16	19.15	18.72	18.74	19.24	19.13
		21	18.87	18.96	19.16	19.15	18.72	18.74	19.24	19.13
		20	18.87	18.96	19.16	19.15	18.72	18.74	19.24	19.13
		19	18.87	18.96	19.16	19.15	18.72	18.74	19.24	19.13
		18	18.87	18.96	19.16	19.15	18.72	18.74	19.24	19.13
		17	23.06	23.04	22.09	22.06	22.02	21.91	21.14	21.01
		16	23.06	23.04	22.09	22.06	22.02	21.91	21.14	21.01
		15	23.06	23.04	22.09	22.06	22.02	21.91	21.14	21.01
		14	23.06	23.04	22.09	22.06	22.02	21.91	21.14	21.01
		13	23.06	23.04	22.09	22.06	22.02	21.91	21.14	21.01

Table 11-4
SVLTE Power Reduction Verification Results
High Ch. Cell. CDMA, Mid Ch. 10MHz BW, LTE Band 13

1x-RTT CDMA Voice Band	1x-RTT Cell CDMA Voice Channel	1x-RTT Cell CDMA Voice Tx (dBm)	LTE Band 13 Conducted Power (dBm)							
			QPSK				16QAM			
			1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset	1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset
835 MHz	777	24	18.94	18.93	19.06	18.98	18.64	18.74	19.03	19.02
		23	18.94	18.93	19.06	18.98	18.64	18.74	19.03	19.02
		22	18.94	18.93	19.06	18.98	18.64	18.74	19.03	19.02
		21	18.94	18.93	19.06	18.98	18.64	18.74	19.03	19.02
		20	18.94	18.93	19.06	18.98	18.64	18.74	19.03	19.02
		19	18.94	18.93	19.06	18.98	18.64	18.74	19.03	19.02
		18	18.94	18.93	19.06	18.98	18.64	18.74	19.03	19.02
		17	23.04	22.95	22.02	21.99	21.74	22.01	20.96	20.98
		16	23.04	22.95	22.02	21.99	21.74	22.01	20.96	20.98
		15	23.04	22.95	22.02	21.99	21.74	22.01	20.96	20.98
		14	23.04	22.95	22.02	21.99	21.74	22.01	20.96	20.98
		13	23.04	22.95	22.02	21.99	21.74	22.01	20.96	20.98

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Table 11-5
SVLTE Power Reduction Verification Results
Low Ch. PCS. CDMA, Mid Ch. 10MHz BW, LTE Band 13

1x-RTT CDMA Voice Band	1x-RTT PCS CDMA Voice Channel	1x-RTT PCS CDMA Voice Tx (dBm)	LTE Band 13 Conducted Power (dBm)							
			QPSK				16QAM			
			1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset	1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset
1900 MHz	25	24	18.80	18.83	19.13	19.01	18.89	18.79	18.89	18.89
		23	18.80	18.83	19.13	19.01	18.89	18.79	18.89	18.89
		22	18.80	18.83	19.13	19.01	18.89	18.79	18.89	18.89
		21	18.80	18.83	19.13	19.01	18.89	18.79	18.89	18.89
		20	18.80	18.83	19.13	19.01	18.89	18.79	18.89	18.89
		19	18.80	18.83	19.13	19.01	18.89	18.79	18.89	18.89
		18	18.80	18.83	19.13	19.01	18.89	18.79	18.89	18.89
		17	22.91	22.79	21.96	21.92	21.95	21.83	20.93	20.89
		16	22.91	22.79	21.96	21.92	21.95	21.83	20.93	20.89
		15	22.91	22.79	21.96	21.92	21.95	21.83	20.93	20.89
		14	22.91	22.79	21.96	21.92	21.95	21.83	20.93	20.89
		13	22.91	22.79	21.96	21.92	21.95	21.83	20.93	20.89

Table 11-6
SVLTE Power Reduction Verification Results
Mid Ch. PCS. CDMA, Mid Ch. 10MHz BW, LTE Band 13

1x-RTT CDMA Voice Band	1x-RTT PCS CDMA Voice Channel	1x-RTT PCS CDMA Voice Tx (dBm)	LTE Band 13 Conducted Power (dBm)							
			QPSK				16QAM			
			1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset	1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset
1900 MHz	600	24	18.80	18.94	19.07	19.01	18.74	18.88	19.1	19.02
		23	18.80	18.94	19.07	19.01	18.74	18.88	19.1	19.02
		22	18.80	18.94	19.07	19.01	18.74	18.88	19.1	19.02
		21	18.80	18.94	19.07	19.01	18.74	18.88	19.1	19.02
		20	18.80	18.94	19.07	19.01	18.74	18.88	19.1	19.02
		19	18.80	18.94	19.07	19.01	18.74	18.88	19.1	19.02
		18	18.80	18.94	19.07	19.01	18.74	18.88	19.1	19.02
		17	22.96	22.96	21.96	21.92	21.94	21.94	20.94	20.86
		16	22.96	22.96	21.96	21.92	21.94	21.94	20.94	20.86
		15	22.96	22.96	21.96	21.92	21.94	21.94	20.94	20.86
		14	22.96	22.96	21.96	21.92	21.94	21.94	20.94	20.86
		13	22.96	22.96	21.96	21.92	21.94	21.94	20.94	20.86

Table 11-7
SVLTE Power Reduction Verification Results
High Ch. PCS. CDMA, Mid Ch. 10MHz BW, LTE Band 13

1x-RTT CDMA Voice Band	1x-RTT PCS CDMA Voice Channel	1x-RTT PCS CDMA Voice Tx (dBm)	LTE Band 13 Conducted Power (dBm)							
			QPSK				16QAM			
			1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset	1 RB 0 RB Offset	1 RB 49 RB Offset	25 RB 12 RB Offset	50 RB 0 RB Offset
1900 MHz	1175	24	18.86	18.84	19.11	19.04	18.87	18.79	19.05	19.06
		23	18.86	18.84	19.11	19.04	18.87	18.79	19.05	19.06
		22	18.86	18.84	19.11	19.04	18.87	18.79	19.05	19.06
		21	18.86	18.84	19.11	19.04	18.87	18.79	19.05	19.06
		20	18.86	18.84	19.11	19.04	18.87	18.79	19.05	19.06
		19	18.86	18.84	19.11	19.04	18.87	18.79	19.05	19.06
		18	18.86	18.84	19.11	19.04	18.87	18.79	19.05	19.06
		17	22.97	22.74	21.99	21.89	21.92	21.9	20.96	20.87
		16	22.97	22.74	21.99	21.89	21.92	21.9	20.96	20.87
		15	22.97	22.74	21.99	21.89	21.92	21.9	20.96	20.87
		14	22.97	22.74	21.99	21.89	21.92	21.9	20.96	20.87
		13	22.97	22.74	21.99	21.89	21.92	21.9	20.96	20.87

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11.3 SVLTE SAR Testing Procedures

SAR testing was additionally performed at the reduced CDMA and LTE power levels with respect to the various SVLTE simultaneous transmission scenarios. Additional samples were tuned to reduced power levels for the purpose of evaluating the simultaneous SAR based on the sum SAR of standalone 1x-RTT CDMA and standalone LTE combinations. While the power reduction mechanism is activated at the CDMA Voice power level of 18 dBm, simultaneous SAR summations were evaluated maximum power LTE. SAR was additionally evaluated at reduced power LTE levels to perform simultaneous SAR analysis when CDMA voice is at maximum output power.

Table 11-8
Reduced LTE Conducted Powers - 10 MHz Bandwidth

Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
782.0	23230	10	QPSK	1	0	**18.72**	0	0
782.0	23230	10	QPSK	1	49	**19.03**	0	0
782.0	23230	10	QPSK	25	12	**19.20**	0	0-1
782.0	23230	10	QPSK	50	0	19.02	0	0-1
782.0	23230	10	16QAM	1	0	**18.63**	0	0-1
782.0	23230	10	16QAM	1	49	**18.96**	0	0-1
782.0	23230	10	16QAM	25	12	**19.30**	0	0-2
782.0	23230	10	16QAM	50	0	18.97	0	0-2

Notes:
1) Please reference Section 9.4.3 for LTE for LTE testing requirements per FCC KDB 941225 D05.
2) The bolded powers are tested for SAR.

Table 11-9
Fixed CDMA Conducted Powers

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]
	F-RC	MHz	RC1	RC3	FCH+SCH	FCH
Cellular	1013	824.7	18.37	18.31	18.32	18.36
	384	836.52	18.21	18.20	18.27	18.32
	777	848.31	18.13	18.16	18.13	18.14
PCS	25	1851.25	18.39	18.21	17.98	17.93
	600	1880	18.33	18.21	18.36	18.35
	1175	1908.75	18.47	18.46	18.45	18.42

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

Note: There is no power reduction applied to the CDMA Voice modes, however the device with output powers represented in the table above was tuned down (for SAR Test purposes only) to analyze simultaneous SAR scenarios in the SVLTE condition where LTE is operating at maximum output power in conjunction with a lower CDMA voice level (See Table 11-1).

CDMA 1x Test Notes Per KDB Publication 941225 D01:
1. Head SAR was tested with SO55 RC3. SO55 RC1 was not required since the average output power was not more than 0.25 dB than the SO55 RC3 powers.
2. Body-Worn and Hotspot SAR was tested with 1x RTT with TDSO / SO32 FCH Only. TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers.

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12 SYSTEM VERIFICATION

12.1 Tissue Verification

Table 12-1
Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C˚)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
08/27/2012	750H	23.4	725	0.887	43.25	0.89	42.03	-0.11%	2.90%
			740	0.921	42.86	0.89	41.95	3.60%	2.16%
			755	0.931	42.67	0.89	41.88	4.49%	1.90%
			770	0.925	42.40	0.89	41.81	3.70%	1.42%
			785	0.932	42.37	0.89	41.74	4.25%	1.52%
08/24/2012	835H	23.8	820	0.870	40.07	0.90	41.57	-3.12%	-3.61%
			835	0.885	39.89	0.90	41.50	-1.67%	-3.88%
			850	0.900	39.70	0.92	41.50	-1.75%	-4.34%
08/25/2012	835H	23.3	820	0.889	42.38	0.90	41.57	-1.00%	1.95%
			835	0.910	42.20	0.90	41.50	1.11%	1.69%
			850	0.918	41.96	0.92	41.50	0.22%	1.11%
08/29/2012	835H	23.1	820	0.899	42.01	0.90	41.57	0.11%	1.06%
			835	0.911	42.02	0.90	41.50	1.22%	1.25%
			850	0.914	41.90	0.92	41.50	-0.22%	0.96%
09/05/2012	835H	23.7	820	0.887	41.30	0.90	41.57	-1.22%	-0.65%
			835	0.900	41.41	0.90	41.50	0.00%	-0.22%
			850	0.904	40.98	0.92	41.50	-1.31%	-1.25%
08/23/2012	1900H	22.5	1850	1.373	41.19	1.40	40.00	-1.93%	2.97%
			1880	1.419	41.00	1.40	40.00	1.36%	2.50%
			1910	1.455	40.90	1.40	40.00	3.93%	2.25%
08/25/2012	1900H	23.2	1850	1.380	40.72	1.40	40.00	-1.43%	1.80%
			1880	1.380	40.61	1.40	40.00	-1.43%	1.53%
			1910	1.425	40.38	1.40	40.00	1.79%	0.95%
08/27/2012	1900H	23.0	1850	1.370	38.62	1.40	40.00	-2.14%	-3.45%
			1880	1.403	38.42	1.40	40.00	0.21%	-3.95%
			1910	1.435	38.27	1.40	40.00	2.50%	-4.32%
09/05/2012	1900H	23.9	1850	1.343	38.46	1.40	40.00	-4.07%	-3.85%
			1880	1.385	38.24	1.40	40.00	-1.07%	-4.40%
			1910	1.401	38.11	1.40	40.00	0.07%	-4.73%
08/30/2012	2450H	23.8	2401	1.832	38.13	1.76	39.30	4.21%	-2.97%
			2450	1.885	37.95	1.80	39.20	4.72%	-3.19%
			2499	1.942	37.71	1.85	39.14	4.86%	-3.64%
09/02/2012	5200H-5800H	23.7	5180	4.487	35.45	4.64	36.02	-3.28%	-1.58%
			5200	4.510	35.43	4.66	36.00	-3.22%	-1.58%
			5260	4.590	35.47	4.72	35.94	-2.75%	-1.31%
			5500	4.845	35.16	4.965	35.650	-2.42%	-1.37%
			5700	5.034	34.69	5.17	35.40	-2.63%	-2.01%
			5800	5.137	34.65	5.27	35.30	-2.52%	-1.84%
			5825	5.159	34.52	5.30	35.28	-2.59%	-2.14%
08/28/2012	750B	23.7	725	0.941	54.92	0.960	55.817	-1.98%	-1.61%
			740	0.947	54.73	0.961	55.733	-1.46%	-1.80%
			755	0.962	54.80	0.963	55.649	-0.10%	-1.53%
			770	0.981	54.55	0.96	55.56	1.76%	-1.82%
			785	0.985	54.30	0.97	55.48	2.07%	-2.13%
08/27/2012	835B	24.9	820	0.966	54.30	0.97	55.28	-0.31%	-1.78%
			835	0.981	54.18	0.97	55.20	1.13%	-1.85%
			850	0.995	54.04	0.99	55.15	0.71%	-2.02%
08/29/2012	835B	23.7	820	0.942	54.08	0.97	55.28	-2.79%	-2.18%
			835	0.956	53.99	0.97	55.20	-1.44%	-2.19%
			850	0.971	53.88	0.99	55.15	-1.72%	-2.31%
08/25/2012	1900B	22.6	1850	1.451	55.01	1.52	53.30	-4.54%	3.21%
			1880	1.485	54.80	1.52	53.30	-2.30%	2.81%
			1910	1.532	54.73	1.52	53.30	0.79%	2.68%
08/29/2012	1900B	22.9	1850	1.491	54.07	1.52	53.30	-1.91%	1.44%
			1880	1.525	53.75	1.52	53.30	0.33%	0.84%
			1910	1.525	53.48	1.52	53.30	0.33%	0.34%
08/30/2012	2450B	22.7	2401	1.928	51.03	1.90	52.77	1.31%	-3.29%
			2450	1.974	51.10	1.95	52.70	1.23%	-3.04%
			2499	2.024	50.60	2.02	52.64	0.25%	-3.87%
08/30/2012	5200B-5800B	24.5	5180	5.317	48.49	5.28	49.04	0.78%	-1.12%
			5200	5.337	48.49	5.30	49.01	0.72%	-1.07%
			5260	5.417	48.31	5.37	48.91	0.89%	-1.22%
			5500	5.723	48.00	5.65	48.58	1.29%	-1.19%
			5700	6.018	47.64	5.88	48.28	2.35%	-1.32%
			5800	6.146	47.40	6.00	48.20	2.43%	-1.66%
			5825	6.196	47.41	6.03	48.13	2.77%	-1.50%

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

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

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

12.2 Measurement Procedure for Tissue verification

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

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

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

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12.3 Test System Verification

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

Table 12-2
System Verification Results

System Verification TARGET & MEASURED											
Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	Deviation (%)
750	Head	08/27/2012	23.6	23.4	0.100	1054	3287	0.805	8.520	8.050	-5.52%
835	Head	08/24/2012	24.9	24.9	0.100	4d119	3258	0.945	9.420	9.450	0.32%
835	Head	08/25/2012	22.1	23.2	0.100	4d132	3213	0.97	9.450	9.700	2.65%
835	Head	08/29/2012	24.4	23.5	0.100	4d132	3213	0.959	9.450	9.590	1.48%
835	Head	09/05/2012	24.8	24.1	0.100	4d047	3213	0.977	9.410	9.770	3.83%
1900	Head	08/23/2012	23.9	22.7	0.100	5d149	3287	4.18	39.300	41.800	6.36%
1900	Head	08/25/2012	23.7	22.9	0.100	5d149	3287	4.09	39.300	40.900	4.07%
1900	Head	08/27/2012	24.8	23.4	0.100	502	3561	3.92	39.200	39.200	0.00%
1900	Head	09/05/2012	23.3	24.0	0.100	5d149	3288	4.22	39.300	42.200	7.38%
2450	Head	08/30/2012	24.5	22.8	0.010	797	3209	0.528	52.100	52.800	1.34%
5200	Head	09/02/2012	23.1	22.9	0.010	1057	3589	0.801	79.100	80.100	1.26%
5500	Head	09/02/2012	23.2	23.0	0.010	1057	3589	0.827	84.900	82.700	-2.59%
5800	Head	09/02/2012	23.2	22.9	0.010	1057	3589	0.825	79.500	82.500	3.77%
750	Body	08/28/2012	24.9	23.4	0.100	1003	3561	0.828	8.720	8.280	-5.05%
835	Body	08/27/2012	24.9	24.2	0.100	4d119	3258	0.993	9.560	9.930	3.87%
835	Body	08/29/2012	24.5	22.7	0.100	4d119	3258	0.955	9.560	9.550	-0.10%
1900	Body	08/25/2012	24.4	22.9	0.100	5d149	3288	3.84	39.300	38.400	-2.29%
1900	Body	08/29/2012	24.1	23.4	0.100	5d149	3288	3.94	39.300	39.400	0.25%
2450	Body	08/30/2012	24.8	22.3	0.1000	797	3258	5.17	50.800	51.700	1.77%
5200	Body	08/30/2012	23.7	22.6	0.0174	1120	3561	1.23	72.200	70.690	-2.09%
5500	Body	08/30/2012	23.7	22.5	0.0174	1120	3561	1.28	80.000	73.563	-8.05%
5800	Body	08/30/2012	23.7	22.6	0.016	1120	3561	1.17	73.800	73.125	-0.91%

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

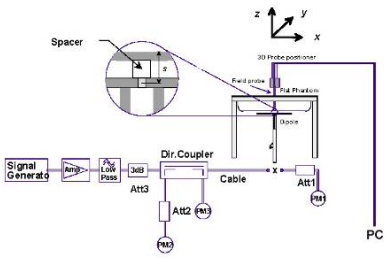

Figure 12-1
System Verification Setup Diagram

Figure 12-2
System Verification Setup Photo

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13 SAR DATA SUMMARY

13.1 Standalone Head SAR Data

Table 13-1
Cell. CDMA Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode/Band	Service	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.									(W/kg)
836.52	384	Cell. CDMA	SO55	24.82	0.03	24.5	Right	Cheek	1	0.132
836.52	384	Cell. CDMA	SO55	24.82	0.16	24.5	Right	Tilt	1	0.089
836.52	384	Cell. CDMA	SO55	24.82	0.19	24.5	Left	Cheek	1	0.153
836.52	384	Cell. CDMA	SO55	24.82	-0.01	24.5	Left	Tilt	1	0.101
836.52	384	Cell. CDMA	EVDO Rev. A	24.72	0.10	24.5	Right	Cheek	1	**0.163**
836.52	384	Cell. CDMA	EVDO Rev. A	24.72	-0.03	24.5	Right	Tilt	1	0.097
836.52	384	Cell. CDMA	EVDO Rev. A	24.72	0.07	24.5	Left	Cheek	1	0.141
836.52	384	Cell. CDMA	EVDO Rev. A	24.72	0.00	24.5	Left	Tilt	1	0.085
836.52	384	Cell. CDMA	SO55	18.20	0.14	18.0	Right	Cheek	2	0.000
836.52	384	Cell. CDMA	SO55	18.20	0.11	18.0	Right	Tilt	2	0.000
836.52	384	Cell. CDMA	SO55	18.20	0.15	18.0	Left	Cheek	2	0.000
836.52	384	Cell. CDMA	SO55	18.20	0.15	18.0	Left	Tilt	2	0.000
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 13-2
GSM 850 Head SAR Results

MEASUREMENT RESULTS									
FREQUENCY		Mode/Band	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.								(W/kg)
836.60	190	GSM 850	32.67	0.08	32.5	Right	Cheek	5	**0.107**
836.60	190	GSM 850	32.67	0.05	32.5	Right	Tilt	5	0.063
836.60	190	GSM 850	32.67	0.00	32.5	Left	Cheek	5	0.099
836.60	190	GSM 850	32.67	-0.07	32.5	Left	Tilt	5	0.056
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram			

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Table 13-3
UMTS 850 Head SAR Results

MEASUREMENT RESULTS									
FREQUENCY		Mode/Band	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.								(W/kg)
836.60	4183	UMTS 850	22.29	-0.04	22.5	Right	Cheek	6	0.099
836.60	4183	UMTS 850	22.29	0.05	22.5	Right	Tilt	6	0.060
836.60	4183	UMTS 850	22.29	-0.11	22.5	Left	Cheek	6	**0.101**
836.60	4183	UMTS 850	22.29	0.11	22.5	Left	Tilt	6	0.063
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 13-4
PCS CDMA Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.									(W/kg)
1880.00	600	PCS CDMA	SO55	24.44	-0.02	24.5	Right	Cheek	1	0.128
1880.00	600	PCS CDMA	SO55	24.44	0.00	24.5	Right	Tilt	1	0.096
1880.00	600	PCS CDMA	SO55	24.44	-0.04	24.5	Left	Cheek	1	0.167
1880.00	600	PCS CDMA	SO55	24.44	-0.04	24.5	Left	Tilt	1	0.092
1880.00	600	PCS CDMA	EVDO Rev. A	24.32	-0.05	24.5	Right	Cheek	1	0.126
1880.00	600	PCS CDMA	EVDO Rev. A	24.32	0.09	24.5	Right	Tilt	1	0.105
1880.00	600	PCS CDMA	EVDO Rev. A	24.32	0.05	24.5	Left	Cheek	1	**0.192**
1880.00	600	PCS CDMA	EVDO Rev. A	24.32	0.08	24.5	Left	Tilt	1	0.107
1880.00	600	PCS CDMA	SO55	18.21	0.06	18.0	Right	Cheek	2	0.014
1880.00	600	PCS CDMA	SO55	18.21	0.12	18.0	Right	Tilt	2	0.012
1880.00	600	PCS CDMA	SO55	18.21	0.06	18.0	Left	Cheek	2	0.021
1880.00	600	PCS CDMA	SO55	18.21	0.20	18.0	Left	Tilt	2	0.011
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram			

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Table 13-5
GSM 1900 Head SAR Results

MEASUREMENT RESULTS									
FREQUENCY		Mode	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.								(W/kg)
1880.00	661	GSM 1900	29.65	0.12	29.5	Right	Cheek	5	0.060
1880.00	661	GSM 1900	29.65	0.07	29.5	Right	Tilt	5	0.056
1880.00	661	GSM 1900	29.65	0.14	29.5	Left	Cheek	5	**0.102**
1880.00	661	GSM 1900	29.65	0.01	29.5	Left	Tilt	5	0.049
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 13-6
UMTS 1900 Head SAR Results

MEASUREMENT RESULTS									
FREQUENCY		Mode	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.								(W/kg)
1880.00	9400	UMTS 1900	22.35	0.04	22.5	Right	Cheek	6	0.095
1880.00	9400	UMTS 1900	22.35	0.06	22.5	Right	Tilt	6	0.076
1880.00	9400	UMTS 1900	22.35	-0.07	22.5	Left	Cheek	6	**0.119**
1880.00	9400	UMTS 1900	22.35	0.18	22.5	Left	Tilt	6	0.070
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram			

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Table 13-7
LTE Band 13 Max Power Head SAR Results

MEASUREMENT RESULTS														
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	MPR [dB]	Side	Test Position	Modulation	# of RB	RB Offset	Device Serial Number	SAR (1g)
MHz	Ch.													(W/kg)
782.00	23230	LTE Band 13	10	22.04	0.05	22	1	Right	Cheek	QPSK	25	12	3	0.190
782.00	23230	LTE Band 13	10	22.85	-0.14	23	0	Right	Cheek	QPSK	1	0	3	0.227
782.00	23230	LTE Band 13	10	22.91	0.13	23	0	Right	Cheek	QPSK	1	49	3	**0.244**
782.00	23230	LTE Band 13	10	21.08	0.09	21	2	Right	Cheek	16 QAM	25	12	3	0.152
782.00	23230	LTE Band 13	10	21.69	0.05	22	1	Right	Cheek	16 QAM	1	0	3	0.180
782.00	23230	LTE Band 13	10	22.08	0.19	22	1	Right	Cheek	16 QAM	1	49	3	0.204
782.00	23230	LTE Band 13	10	22.04	-0.03	22	1	Right	Tilt	QPSK	25	12	3	0.083
782.00	23230	LTE Band 13	10	22.85	-0.06	23	0	Right	Tilt	QPSK	1	0	3	0.108
782.00	23230	LTE Band 13	10	22.91	0.11	23	0	Right	Tilt	QPSK	1	49	3	**0.111**
782.00	23230	LTE Band 13	10	21.08	0.09	21	2	Right	Tilt	16 QAM	25	12	3	0.067
782.00	23230	LTE Band 13	10	21.69	-0.11	22	1	Right	Tilt	16 QAM	1	0	3	0.087
782.00	23230	LTE Band 13	10	22.08	-0.01	22	1	Right	Tilt	16 QAM	1	49	3	0.091
782.00	23230	LTE Band 13	10	22.04	-0.06	22	1	Left	Cheek	QPSK	25	12	3	0.113
782.00	23230	LTE Band 13	10	22.85	0.07	23	0	Left	Cheek	QPSK	1	0	3	0.128
782.00	23230	LTE Band 13	10	22.91	0.11	23	0	Left	Cheek	QPSK	1	49	3	**0.160**
782.00	23230	LTE Band 13	10	21.08	0.05	21	2	Left	Cheek	16 QAM	25	12	3	0.088
782.00	23230	LTE Band 13	10	21.69	0.03	22	1	Left	Cheek	16 QAM	1	0	3	0.101
782.00	23230	LTE Band 13	10	22.08	0.07	22	1	Left	Cheek	16 QAM	1	49	3	0.126
782.00	23230	LTE Band 13	10	22.04	0.03	22	1	Left	Tilt	QPSK	25	12	3	0.062
782.00	23230	LTE Band 13	10	22.85	0.11	23	0	Left	Tilt	QPSK	1	0	3	0.070
782.00	23230	LTE Band 13	10	22.91	0.02	23	0	Left	Tilt	QPSK	1	49	3	**0.082**
782.00	23230	LTE Band 13	10	21.08	0.15	21	2	Left	Tilt	16 QAM	25	12	3	0.051
782.00	23230	LTE Band 13	10	21.69	0.14	22	1	Left	Tilt	16 QAM	1	0	3	0.057
782.00	23230	LTE Band 13	10	22.08	-0.11	22	1	Left	Tilt	16 QAM	1	49	3	0.067
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								**Head 1.6 W/kg (mW/g)** averaged over 1 gram						

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Table 13-8
LTE Band 13 Reduced Power Head SAR Results

MEASUREMENT RESULTS														
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	MPR [dB]	Side	Test Position	Modulation	# of RB	RB Offset	Device Serial Number	SAR (1g)
MHz	Ch.													(W/kg)
782.00	23230	LTE Band 13	10	19.20	0.10	19	0	Right	Cheek	QPSK	25	12	4	0.077
782.00	23230	LTE Band 13	10	18.72	0.09	19	0	Right	Cheek	QPSK	1	0	4	0.071
782.00	23230	LTE Band 13	10	19.03	0.13	19	0	Right	Cheek	QPSK	1	49	4	0.069
782.00	23230	LTE Band 13	10	19.30	0.02	19	0	Right	Cheek	16 QAM	25	12	4	**0.079**
782.00	23230	LTE Band 13	10	18.63	0.02	19	0	Right	Cheek	16 QAM	1	0	4	0.076
782.00	23230	LTE Band 13	10	18.96	0.13	19	0	Right	Cheek	16 QAM	1	49	4	0.074
782.00	23230	LTE Band 13	10	19.20	0.15	19	0	Right	Tilt	QPSK	25	12	4	0.038
782.00	23230	LTE Band 13	10	18.72	0.15	19	0	Right	Tilt	QPSK	1	0	4	0.041
782.00	23230	LTE Band 13	10	19.03	-0.10	19	0	Right	Tilt	QPSK	1	49	4	0.034
782.00	23230	LTE Band 13	10	19.30	0.14	19	0	Right	Tilt	16 QAM	25	12	4	0.039
782.00	23230	LTE Band 13	10	18.63	0.00	19	0	Right	Tilt	16 QAM	1	0	4	**0.042**
782.00	23230	LTE Band 13	10	18.96	-0.09	19	0	Right	Tilt	16 QAM	1	49	4	0.035
782.00	23230	LTE Band 13	10	19.20	0.14	19	0	Left	Cheek	QPSK	25	12	4	**0.051**
782.00	23230	LTE Band 13	10	18.72	-0.04	19	0	Left	Cheek	QPSK	1	0	4	0.039
782.00	23230	LTE Band 13	10	19.03	0.19	19	0	Left	Cheek	QPSK	1	49	4	0.046
782.00	23230	LTE Band 13	10	19.30	0.04	19	0	Left	Cheek	16 QAM	25	12	4	0.050
782.00	23230	LTE Band 13	10	18.63	0.09	19	0	Left	Cheek	16 QAM	1	0	4	0.040
782.00	23230	LTE Band 13	10	18.96	0.13	19	0	Left	Cheek	16 QAM	1	49	4	0.047
782.00	23230	LTE Band 13	10	19.20	0.09	19	0	Left	Tilt	QPSK	25	12	4	0.029
782.00	23230	LTE Band 13	10	18.72	0.19	19	0	Left	Tilt	QPSK	1	0	4	0.024
782.00	23230	LTE Band 13	10	19.03	0.00	19	0	Left	Tilt	QPSK	1	49	4	0.025
782.00	23230	LTE Band 13	10	19.30	0.10	19	0	Left	Tilt	16 QAM	25	12	4	**0.030**
782.00	23230	LTE Band 13	10	18.63	0.13	19	0	Left	Tilt	16 QAM	1	0	4	0.024
782.00	23230	LTE Band 13	10	18.96	0.07	19	0	Left	Tilt	16 QAM	1	49	4	0.017
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								**Head 1.6 W/kg (mW/g)** averaged over 1 gram						

Table 13-9
2.4 GHz WLAN Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	SAR (1g)
MHz	Ch.									(W/kg)
2462	11	IEEE 802.11b	DSSS	15.68	0.14	Right	Cheek	7	1	0.022
2462	11	IEEE 802.11b	DSSS	15.68	0.18	Right	Tilt	7	1	0.018
2462	11	IEEE 802.11b	DSSS	15.68	0.17	Left	Cheek	7	1	0.013
2462	11	IEEE 802.11b	DSSS	15.68	0.07	Left	Tilt	7	1	0.035
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Head 1.6 W/kg (mW/g)** averaged over 1 gram				

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Table 13-10
5.8 GHz WLAN Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	SAR (1g)
MHz	Ch.									(W/kg)
5825	165	IEEE 802.11a	OFDM	12.82	0.10	Right	Cheek	7	6	0.000
5825	165	IEEE 802.11a	OFDM	12.82	0.19	Right	Tilt	7	6	0.001
5825	165	IEEE 802.11a	OFDM	12.82	0.14	Left	Cheek	7	6	0.000
5825	165	IEEE 802.11a	OFDM	12.82	0.17	Left	Tilt	7	6	0.000
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram				

Table 13-11
5.2 GHz WLAN Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	SAR (1g)
MHz	Ch.									(W/kg)
5180	36	IEEE 802.11a	OFDM	13.27	-0.17	Right	Cheek	7	6	0.000
5180	36	IEEE 802.11a	OFDM	13.27	0.15	Right	Tilt	7	6	0.000
5180	36	IEEE 802.11a	OFDM	13.27	0.21	Left	Cheek	7	6	0.012
5180	36	IEEE 802.11a	OFDM	13.27	0.11	Left	Tilt	7	6	0.000
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram				

Table 13-12
5.3 GHz WLAN Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	SAR (1g)
MHz	Ch.									(W/kg)
5260	52	IEEE 802.11a	OFDM	13.03	0.13	Right	Cheek	7	6	0.003
5260	52	IEEE 802.11a	OFDM	13.03	0.16	Right	Tilt	7	6	0.001
5260	52	IEEE 802.11a	OFDM	13.03	0.10	Left	Cheek	7	6	0.021
5260	52	IEEE 802.11a	OFDM	13.03	-0.13	Left	Tilt	7	6	0.013
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram				

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Table 13-13
5.5 - 5.7 GHz WLAN Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	SAR (1g)
MHz	Ch.									(W/kg)
5700	140	IEEE 802.11a	OFDM	12.73	0.10	Right	Cheek	7	6	0.001
5700	140	IEEE 802.11a	OFDM	12.73	0.13	Right	Tilt	7	6	0.001
5700	140	IEEE 802.11a	OFDM	12.73	0.15	Left	Cheek	7	6	0.000
5700	140	IEEE 802.11a	OFDM	12.73	-0.11	Left	Tilt	7	6	0.000
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram				

13.2 Standalone Body-Worn SAR Data

Table 13-14
2G/3G Body-Worn SAR Results

MEASUREMENT RESULTS											
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	Spacing	Device Serial Number	# of Time Slots	Side	SAR (1g)
MHz	Ch.										(W/kg)
836.52	384	Cell. CDMA	TDSO / SO32	24.71	0.04	24.5	1.0 cm	1	N/A	back	**0.449**
836.52	384	Cell. CDMA	TDSO / SO32	18.32	-0.02	18.0	1.0 cm	2	N/A	back	0.002
836.60	190	GSM 850	GSM	32.67	0.12	32.5	1.0 cm	5	1	back	0.230
836.60	190	GSM 850	GPRS	30.92	0.00	30.5	1.0 cm	5	2	back	**0.524**
836.60	4183	UMTS 850	RMC	22.29	-0.02	22.5	1.0 cm	6	N/A	back	**0.297**
1880.00	600	PCS CDMA	TDSO / SO32	24.52	0.03	24.5	1.0 cm	1	N/A	back	**0.575**
1880.00	600	PCS CDMA	TDSO / SO32	18.35	-0.12	18.0	1.0 cm	2	N/A	back	0.061
1880.00	661	GSM 1900	GSM	29.65	0.03	29.5	1.0 cm	5	1	back	0.262
1880.00	661	GSM 1900	GPRS	27.69	-0.21	27.5	1.0 cm	5	2	back	**0.429**
1880.00	9400	UMTS 1900	RMC	22.35	0.01	22.5	1.0 cm	6	N/A	back	**0.549**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram				

Note for CDMA, GPRS and UMTS modes, when the measured SAR is <1.2 W/kg, separate body-worn accessory data measured with a headset cable is not required. Therefore, hotspot SAR data for the back side was considered to determine body-worn SAR compliance, per FCC Guidance.

GSM Tests were performed with Headphones.

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Table 13-15
LTE Body-Worn SAR Results

MEASUREMENT RESULTS														
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)
MHz	Ch.													(W/kg)
782.00	23230	LTE Band 13	10	22.04	0.02	22.0	1	3	QPSK	25	12	1.0 cm	back	0.269
782.00	23230	LTE Band 13	10	22.85	-0.02	23.0	0	3	QPSK	1	0	1.0 cm	back	0.304
782.00	23230	LTE Band 13	10	22.91	-0.01	23.0	0	3	QPSK	1	49	1.0 cm	back	**0.372**
782.00	23230	LTE Band 13	10	21.08	0.05	21.0	2	3	16 QAM	25	12	1.0 cm	back	0.210
782.00	23230	LTE Band 13	10	21.69	-0.19	22.0	1	3	16 QAM	1	0	1.0 cm	back	0.218
782.00	23230	LTE Band 13	10	22.08	0.04	22.0	1	3	16 QAM	1	49	1.0 cm	back	0.283
782.00	23230	LTE Band 13	10	19.20	0.08	19.0	0	4	QPSK	25	12	1.0 cm	back	0.133
782.00	23230	LTE Band 13	10	18.72	-0.02	19.0	0	4	QPSK	1	0	1.0 cm	back	0.119
782.00	23230	LTE Band 13	10	19.03	-0.08	19.0	0	4	QPSK	1	49	1.0 cm	back	0.146
782.00	23230	LTE Band 13	10	19.30	0.01	19.0	0	4	16 QAM	25	12	1.0 cm	back	0.136
782.00	23230	LTE Band 13	10	18.63	-0.16	19.0	0	4	16 QAM	1	0	1.0 cm	back	0.107
782.00	23230	LTE Band 13	10	18.96	0.01	19.0	0	4	16 QAM	1	49	1.0 cm	back	0.136
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note for LTE modes, when the measured SAR is <1.2 W/kg, separate body-worn accessory data measured with a headset cable is not required. Therefore, hotspot SAR data for the back side was considered to determine body-worn SAR compliance, per FCC Guidance..

Table 13-16
WLAN Body-Worn SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	SAR (1g)
MHz	Ch.									(W/kg)
2462	11	IEEE 802.11b	DSSS	15.68	-0.07	1.0 cm	7	1	back	0.095
5825	165	IEEE 802.11a	OFDM	12.82	-0.19	1.0 cm	7	6	back	0.001
5180	36	IEEE 802.11a	OFDM	13.27	0.12	1.0 cm	7	6	back	0.074
5260	52	IEEE 802.11a	OFDM	13.03	0.15	1.0 cm	7	6	back	0.210
5700	140	IEEE 802.11a	OFDM	12.73	-0.13	1.0 cm	7	6	back	0.045
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram				

Note for IEEE 802.11b modes, when the measured SAR is <1.2 W/kg, separate body-worn accessory data measured with a headset cable is not required. Therefore, hotspot SAR data for the back side was considered to determine body-worn SAR compliance, per FCC Guidance.

5 GHz Tests were performed with Headphones.

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13.3 Standalone Wireless Router SAR Data

Table 13-17
2G/3G Hotspot SAR Data

MEASUREMENT RESULTS											
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	Spacing	Device Serial Number	# of GPRS Slots	Side	SAR (1g)
MHz	Ch.										(W/kg)
836.52	384	Cell. CDMA	TDSO / SO32	24.71	0.04	24.5	1.0 cm	1	N/A	back	**0.449**
836.52	384	Cell. CDMA	TDSO / SO32	24.71	-0.03	24.5	1.0 cm	1	N/A	front	0.203
836.52	384	Cell. CDMA	TDSO / SO32	24.71	0.01	24.5	1.0 cm	1	N/A	bottom	0.191
836.52	384	Cell. CDMA	TDSO / SO32	24.71	-0.09	24.5	1.0 cm	1	N/A	left	0.254
836.52	384	Cell. CDMA	EVDO Rev. 0	24.75	0.04	24.5	1.0 cm	1	N/A	back	0.447
836.52	384	Cell. CDMA	EVDO Rev. 0	24.75	0.01	24.5	1.0 cm	1	N/A	front	0.212
836.52	384	Cell. CDMA	EVDO Rev. 0	24.75	0.03	24.5	1.0 cm	1	N/A	bottom	0.196
836.52	384	Cell. CDMA	EVDO Rev. 0	24.75	0.01	24.5	1.0 cm	1	N/A	left	0.280
836.52	384	Cell. CDMA	TDSO / SO32	18.32	-0.02	18.0	1.0 cm	2	N/A	back	0.002
836.52	384	Cell. CDMA	TDSO / SO32	18.32	-0.20	18.0	1.0 cm	2	N/A	front	0.001
836.52	384	Cell. CDMA	TDSO / SO32	18.32	-0.18	18.0	1.0 cm	2	N/A	bottom	0.001
836.52	384	Cell. CDMA	TDSO / SO32	18.32	0.17	18.0	1.0 cm	2	N/A	left	0.001
836.60	190	GSM 850	GPRS	30.92	0.00	30.5	1.0 cm	5	2	back	**0.524**
836.60	190	GSM 850	GPRS	30.92	-0.05	30.5	1.0 cm	5	2	front	0.264
836.60	190	GSM 850	GPRS	30.92	-0.10	30.5	1.0 cm	5	2	bottom	0.180
836.60	190	GSM 850	GPRS	30.92	-0.06	30.5	1.0 cm	5	2	left	0.297
836.60	4183	UMTS 850	RMC	22.29	-0.02	22.5	1.0 cm	6	N/A	back	**0.297**
836.60	4183	UMTS 850	RMC	22.29	-0.02	22.5	1.0 cm	6	N/A	front	0.140
836.60	4183	UMTS 850	RMC	22.29	-0.19	22.5	1.0 cm	6	N/A	bottom	0.135
836.60	4183	UMTS 850	RMC	22.29	-0.03	22.5	1.0 cm	6	N/A	left	0.199
1880.00	600	PCS CDMA	TDSO / SO32	24.52	0.03	24.5	1.0 cm	1	N/A	back	**0.575**
1880.00	600	PCS CDMA	TDSO / SO32	24.52	0.02	24.5	1.0 cm	1	N/A	front	0.407
1880.00	600	PCS CDMA	TDSO / SO32	24.52	0.01	24.5	1.0 cm	1	N/A	bottom	0.395
1880.00	600	PCS CDMA	TDSO / SO32	24.52	0.00	24.5	1.0 cm	1	N/A	left	0.247
1880.00	600	PCS CDMA	EVDO Rev. 0	24.35	0.00	24.5	1.0 cm	1	N/A	back	0.560
1880.00	600	PCS CDMA	EVDO Rev. 0	24.35	-0.03	24.5	1.0 cm	1	N/A	front	0.343
1880.00	600	PCS CDMA	EVDO Rev. 0	24.35	-0.10	24.5	1.0 cm	1	N/A	bottom	0.376
1880.00	600	PCS CDMA	EVDO Rev. 0	24.35	-0.07	24.5	1.0 cm	1	N/A	left	0.252
1880.00	600	PCS CDMA	TDSO / SO32	18.35	-0.12	18.0	1.0 cm	2	N/A	back	0.061
1880.00	600	PCS CDMA	TDSO / SO32	18.35	-0.08	18.0	1.0 cm	2	N/A	front	0.044
1880.00	600	PCS CDMA	TDSO / SO32	18.35	-0.08	18.0	1.0 cm	2	N/A	bottom	0.051
1880.00	600	PCS CDMA	TDSO / SO32	18.35	-0.10	18.0	1.0 cm	2	N/A	left	0.036
1880.00	661	GSM 1900	GPRS	27.69	-0.21	27.5	1.0 cm	5	2	back	**0.429**
1880.00	661	GSM 1900	GPRS	27.69	-0.10	27.5	1.0 cm	5	2	front	0.276
1880.00	661	GSM 1900	GPRS	27.69	-0.02	27.5	1.0 cm	5	2	bottom	0.298
1880.00	661	GSM 1900	GPRS	27.69	-0.14	27.5	1.0 cm	5	2	left	0.187
1880.00	9400	UMTS 1900	RMC	22.35	0.01	22.5	1.0 cm	6	N/A	back	**0.549**
1880.00	9400	UMTS 1900	RMC	22.35	-0.05	22.5	1.0 cm	6	N/A	front	0.410
1880.00	9400	UMTS 1900	RMC	22.35	-0.14	22.5	1.0 cm	6	N/A	bottom	0.439
1880.00	9400	UMTS 1900	RMC	22.35	-0.05	22.5	1.0 cm	6	N/A	left	0.272
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							**Body 1.6 W/kg (mW/g) averaged over 1 gram**				

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Table 13-18
LTE Band 13 Max Power Hotspot SAR Data

MEASUREMENT RESULTS														
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)
MHz	Ch.													(W/kg)
782.00	23230	LTE Band 13	10	22.04	0.02	22	1	3	QPSK	25	12	1.0 cm	back	0.269
782.00	23230	LTE Band 13	10	22.85	-0.02	23	0	3	QPSK	1	0	1.0 cm	back	0.304
782.00	23230	LTE Band 13	10	22.91	-0.01	23	0	3	QPSK	1	49	1.0 cm	back	**0.372**
782.00	23230	LTE Band 13	10	21.08	0.05	21	2	3	16 QAM	25	12	1.0 cm	back	0.210
782.00	23230	LTE Band 13	10	21.69	-0.19	22	1	3	16 QAM	1	0	1.0 cm	back	0.218
782.00	23230	LTE Band 13	10	22.08	0.04	22	1	3	16 QAM	1	49	1.0 cm	back	0.283
782.00	23230	LTE Band 13	10	22.04	0.07	22	1	3	QPSK	25	12	1.0 cm	front	0.262
782.00	23230	LTE Band 13	10	22.85	0.10	23	0	3	QPSK	1	0	1.0 cm	front	0.312
782.00	23230	LTE Band 13	10	22.91	0.13	23	0	3	QPSK	1	49	1.0 cm	front	**0.372**
782.00	23230	LTE Band 13	10	21.08	-0.08	21	2	3	16 QAM	25	12	1.0 cm	front	0.210
782.00	23230	LTE Band 13	10	21.69	-0.16	22	1	3	16 QAM	1	0	1.0 cm	front	0.210
782.00	23230	LTE Band 13	10	22.08	-0.13	22	1	3	16 QAM	1	49	1.0 cm	front	0.283
782.00	23230	LTE Band 13	10	22.04	-0.07	22	1	3	QPSK	25	12	1.0 cm	bottom	0.035
782.00	23230	LTE Band 13	10	22.85	0.04	23	0	3	QPSK	1	0	1.0 cm	bottom	0.049
782.00	23230	LTE Band 13	10	22.91	-0.04	23	0	3	QPSK	1	49	1.0 cm	bottom	**0.059**
782.00	23230	LTE Band 13	10	21.08	0.10	21	2	3	16 QAM	25	12	1.0 cm	bottom	0.027
782.00	23230	LTE Band 13	10	21.69	0.13	22	1	3	16 QAM	1	0	1.0 cm	bottom	0.035
782.00	23230	LTE Band 13	10	22.08	0.13	22	1	3	16 QAM	1	49	1.0 cm	bottom	0.043
782.00	23230	LTE Band 13	10	22.04	0.04	22	1	3	QPSK	25	12	1.0 cm	right	0.393
782.00	23230	LTE Band 13	10	22.85	-0.20	23	0	3	QPSK	1	0	1.0 cm	right	0.443
782.00	23230	LTE Band 13	10	22.91	-0.12	23	0	3	QPSK	1	49	1.0 cm	right	**0.447**
782.00	23230	LTE Band 13	10	21.08	0.13	21	2	3	16 QAM	25	12	1.0 cm	right	0.261
782.00	23230	LTE Band 13	10	21.69	-0.13	22	1	3	16 QAM	1	0	1.0 cm	right	0.249
782.00	23230	LTE Band 13	10	22.08	0.07	22	1	3	16 QAM	1	49	1.0 cm	right	0.344
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								**Body 1.6 W/kg (mW/g) averaged over 1 gram**						

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Table 13-19
LTE Band 13 Reduced Power Hotspot SAR Data

MEASUREMENT RESULTS														
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	Power Drift [dB]	Target Power [dBm]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)
MHz	Ch.													(W/kg)
782.00	23230	LTE Band 13	10	19.20	0.08	19.0	0	4	QPSK	25	12	1.0 cm	back	0.133
782.00	23230	LTE Band 13	10	18.72	-0.02	19.0	0	4	QPSK	1	0	1.0 cm	back	0.119
782.00	23230	LTE Band 13	10	19.03	-0.08	19.0	0	4	QPSK	1	49	1.0 cm	back	**0.146**
782.00	23230	LTE Band 13	10	19.30	0.01	19.0	0	4	16 QAM	25	12	1.0 cm	back	0.136
782.00	23230	LTE Band 13	10	18.63	-0.16	19.0	0	4	16 QAM	1	0	1.0 cm	back	0.107
782.00	23230	LTE Band 13	10	18.96	0.01	19.0	0	4	16 QAM	1	49	1.0 cm	back	0.136
782.00	23230	LTE Band 13	10	19.20	-0.01	19.0	0	4	QPSK	25	12	1.0 cm	front	0.135
782.00	23230	LTE Band 13	10	18.72	-0.06	19.0	0	4	QPSK	1	0	1.0 cm	front	0.117
782.00	23230	LTE Band 13	10	19.03	-0.05	19.0	0	4	QPSK	1	49	1.0 cm	front	**0.147**
782.00	23230	LTE Band 13	10	19.30	0.08	19.0	0	4	16 QAM	25	12	1.0 cm	front	0.133
782.00	23230	LTE Band 13	10	18.63	0.01	19.0	0	4	16 QAM	1	0	1.0 cm	front	0.107
782.00	23230	LTE Band 13	10	18.96	-0.12	19.0	0	4	16 QAM	1	49	1.0 cm	front	0.139
782.00	23230	LTE Band 13	10	19.20	-0.08	19.0	0	4	QPSK	25	12	1.0 cm	bottom	0.012
782.00	23230	LTE Band 13	10	18.72	0.19	19.0	0	4	QPSK	1	0	1.0 cm	bottom	0.019
782.00	23230	LTE Band 13	10	19.03	0.07	19.0	0	4	QPSK	1	49	1.0 cm	bottom	**0.023**
782.00	23230	LTE Band 13	10	19.30	0.14	19.0	0	4	16 QAM	25	12	1.0 cm	bottom	0.018
782.00	23230	LTE Band 13	10	18.63	0.04	19.0	0	4	16 QAM	1	0	1.0 cm	bottom	0.017
782.00	23230	LTE Band 13	10	18.96	-0.10	19.0	0	4	16 QAM	1	49	1.0 cm	bottom	0.022
782.00	23230	LTE Band 13	10	19.20	-0.08	19.0	0	4	QPSK	25	12	1.0 cm	right	0.194
782.00	23230	LTE Band 13	10	18.72	-0.18	19.0	0	4	QPSK	1	0	1.0 cm	right	0.167
782.00	23230	LTE Band 13	10	19.03	0.05	19.0	0	4	QPSK	1	49	1.0 cm	right	**0.199**
782.00	23230	LTE Band 13	10	19.30	-0.07	19.0	0	4	16 QAM	25	12	1.0 cm	right	0.192
782.00	23230	LTE Band 13	10	18.63	-0.01	19.0	0	4	16 QAM	1	0	1.0 cm	right	0.159
782.00	23230	LTE Band 13	10	18.96	-0.02	19.0	0	4	16 QAM	1	49	1.0 cm	right	0.185
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								**Body 1.6 W/kg (mW/g) averaged over 1 gram**						

Table 13-20
WLAN Hotspot SAR Data

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	SAR (1g)
MHz	Ch.									(W/kg)
2462	11	IEEE 802.11b	DSSS	15.68	-0.07	1.0 cm	7	1	back	0.095
2462	11	IEEE 802.11b	DSSS	15.68	-0.16	1.0 cm	7	1	front	0.013
2462	11	IEEE 802.11b	DSSS	15.68	-0.11	1.0 cm	7	1	top	0.009
2462	11	IEEE 802.11b	DSSS	15.68	-0.10	1.0 cm	7	1	right	0.037
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Body 1.6 W/kg (mW/g) averaged over 1 gram**				

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13.4 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR value with the position set in a typical configuration. Test procedures used were according to FCC/OET Bulletin 65, Supplement C [June 2001].
2. Batteries are fully charged for all readings. The standard battery was used.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. Liquid tissue depth was at least 15.0 cm. To confirm the proper SAR liquid depth, the z-axis plots from the system verifications were included since the system verifications were performed using the same liquid, probe and DAE as the SAR tests in the same time period.
5. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR using headphones.
2. Per FCC/OET Bulletin 65 Supplement C 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).
3. Per FCC guidance, when the measured Hotspot SAR is less than <1.2 W/kg for the same device orientation and device transmission configurations, separate body-worn accessory data taken with a headset cable is not required. Therefore, hotspot back side SAR data was considered to determine body-worn SAR compliance.
4. Justification for reduced test configurations per KDB Publication 941225 D03: The source-based time-averaged output power was evaluated for all multi-slot operations. The highest time-average power configuration was evaluated for SAR.

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per KDB Publication 941225 D01.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. Ev-Do and TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01 procedures for data devices. Since the average output power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, then Rev. A SAR is not required.
4. CDMA 1x-RTT SAR was additionally evaluated for Hotspot exposure conditions to support simultaneous capabilities per Table 1-2.
5. Head SAR was additionally evaluated for EVDO Rev. A to determine VoIP compliance.
6. Per FCC/OET Bulletin 65 Supplement C 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).

UMTS Notes:

1. UMTS mode in Body SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
2. Per FCC guidance, when the measured Hotspot SAR is less than <1.2 W/kg for the same device orientation and device transmission configurations, separate body-worn accessory data taken

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with a headset cable is not required. Therefore, hotspot back side SAR data was considered to determine body-worn SAR compliance.

3. Per FCC/OET Bulletin 65 Supplement C 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).

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Test Considerations for LTE handsets and Data Modems KDB 941225 D05 Publication. SAR was evaluated independently of position. General test procedures can be found in Section 9.4.3.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
4. Per FCC guidance, when the measured Hotspot SAR is less than <1.2 W/kg for the same device orientation and device transmission configurations, separate body-worn accessory data taken with a headset cable is not required. Therefore, hotspot back side SAR data was considered to determine body-worn SAR compliance.

WLAN Notes:

1. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes for 2.4 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11b. Other IEEE 802.11 modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
2. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes for 5 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11a. Other IEEE 802.11 modes (including 802.11n 20 and 40 MHz BW) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11a mode.
3. When Hotspot is enabled, all 5 GHz bands are disabled.
4. WLAN transmission was verified using an uncalibrated spectrum analyzer.
5. Since the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required.
6. Per FCC guidance, when the measured Hotspot SAR is less than <1.2 W/kg for the same device orientation and device transmission configurations, separate body-worn accessory data taken with a headset cable is not required. Therefore, hotspot back side SAR data was considered to determine body-worn SAR compliance.

Hotspot Notes:

1. Top and Right edges for the 2G/3G transmitter was not tested since the antenna distance from the edge was greater than 2.5 cm per FCC KDB Publication 941225 D06 guidance (see Section 1.3).
2. Top and Left edges for the 4G (LTE) transmitter was not tested since the antenna distance from the edge was greater than 2.5 cm per FCC KDB Publication 941225 D06 guidance (see Section 1.3).
3. Bottom and Left edges for the WLAN transmitter was not tested since the antenna distance from the edge was greater than 2.5 cm per FCC KDB Publication 941225 D06 (see Section 1.3).
4. During SAR Testing for the Wireless Router conditions per KDB 941225 D06, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 7.6.)

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14 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

14.1 Introduction

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

14.2 FCC Power Tables & Conditions

	2.45	5.15 - 5.35	5.47 - 5.85	GHz
P_{Ref}	12	6	5	mW
Device output power should be rounded to the nearest mW to compare with values specified in this table.				

Figure 14-1
Output Power Thresholds for Unlicensed Transmitters

	Individual Transmitter	Simultaneous Transmission
Licensed Transmitters	Routine evaluation required	SAR not required: Unlicensed only ○ when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas Licensed & Unlicensed ○ when the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmitting antennas ○ when SAR to peak location separation ratio of simultaneous transmitting antenna pair is < 0.3 SAR required: Licensed & Unlicensed antenna pairs with SAR to peak location separation ratio ≥ 0.3; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply
Unlicensed Transmitters	When there is no simultaneous transmission – ○ output ≤ 60/f: SAR not required ○ output > 60/f: stand-alone SAR required When there is simultaneous transmission – Stand-alone SAR not required when ○ output ≤ $2 \cdot P_{Ref}$ and antenna is ≥ 5.0 cm from other antennas ○ output ≤ P_{Ref} and antenna is ≥ 2.5 cm from other antennas ○ output ≤ P_{Ref} and antenna is < 2.5 cm from other antennas, each with either output power ≤ P_{Ref} or 1-g SAR < 1.2 W/kg Otherwise stand-alone SAR is required When stand-alone SAR is required ○ test SAR on highest output channel for each wireless mode and exposure condition ○ if SAR for highest output channel is > 50% of SAR limit, evaluate all channels according to normal procedures	

Figure 14-2
SAR Evaluation Requirements for Multiple Transmitter Handsets

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14.3 Simultaneous Transmission Analysis

According to Figure 14-1 and Figure 14-2, simultaneous transmission analysis of SAR may be required for this device for the licensed and unlicensed transmitters. Possible simultaneous transmissions for this device indicated in Table 14-1 were numerically summed using stand-alone SAR data and are shown in the following tables. Per KDB Publication 648474, standalone Bluetooth SAR tests were not required. Standalone SAR tests for WLAN were required. See Section 1.6(A) for more information.

Table 14-1
Simultaneous Transmission Scenario

Ref.	Simultaneous Transmit Configurations	Power Reduction	Head	Body-Worn Accessory	Hot Spot	Note
			IEEE 1528, Supp C	Supplement C	FCC KDB 941225 D06 edges/sides	
1	1X CDMA 850 Voice + LTE 782 MHz Data	LTE	Table 14-7	Table 14-8	N/A	SVLTE
2	1X CDMA 1900 Voice + LTE 782 MHz Data	LTE	Table 14-7	Table 14-8	N/A	SVLTE
3	1X CDMA 850 Voice + 2.4 GHz WIFI	N/A	Table 14-2	Table 14-4	N/A	
4	1X CDMA 850 Voice + 5 GHz WIFI	N/A	Table 14-3	Table 14-5	N/A	
5	1X CDMA 1900 Voice + 2.4 GHz WIFI	N/A	Table 14-2	Table 14-4	N/A	
6	1X CDMA 1900 Voice + 5 GHz WIFI	N/A	Table 14-3	Table 14-5	N/A	
7	GSM850 Voice + 2.4 GHz WIFI	N/A	Table 14-2	Table 14-4	N/A	
8	GSM850 Voice + 5 GHz WIFI	N/A	Table 14-3	Table 14-5	N/A	
9	GSM1900 Voice + 2.4 GHz WIFI	N/A	Table 14-2	Table 14-4	N/A	
10	GSM1900 Voice + 5 GHz WIFI	N/A	Table 14-3	Table 14-5	N/A	
11	WCDMA 850 Voice + 2.4 GHz WIFI	N/A	Table 14-2	Table 14-4	N/A	
12	WCDMA 1900 Voice + 2.4 GHz WIFI	N/A	Table 14-2	Table 14-4	N/A	
13	WCDMA 850 Voice + 5 GHz WIFI	N/A	Table 14-3	Table 14-5	N/A	
14	WCDMA 1900 Voice + 5 GHz WIFI	N/A	Table 14-3	Table 14-5	N/A	
15	1X CDMA 850 Voice + LTE 782 MHz Data + 2.4 GHz WIFI	LTE	Table 14-7	Table 14-8	Table 14-9	Voice + LTE + WIFI Hotspot
16	1X CDMA 1900 Voice + LTE 782 MHz Data + 2.4 GHz WIFI	LTE	Table 14-7	Table 14-8	Table 14-9	Voice + LTE + WIFI Hotspot
17	1X CDMA 850 Data / EVDO 850 Data + 2.4 GHz WIFI	N/A	Table 14-2	Table 14-4	Table 14-6	1X CDMA Data / EVDO +WIFI Hotspot
18	1X CDMA 1900 Data / EVDO 1900 Data + 2.4 GHz WIFI	N/A	Table 14-2	Table 14-4	Table 14-6	1X CDMA Data / EVDO +WIFI Hotspot
19	WCDMA 850 Data + 2.4 GHz WIFI	N/A	N/A	N/A	Table 14-6	WCDMA + WIFI Hotspot
20	WCDMA 1900 Data + 2.4 GHz WIFI	N/A	N/A	N/A	Table 14-6	WCDMA + WIFI Hotspot
21	LTE 782 MHz Data + 2.4 GHz WIFI	N/A	Table 14-2	Table 14-4	Table 14-6	LTE+WIFI Hotspot
22	GPRS/EDGE 850 Data + 2.4 GHz WIFI	N/A	N/A	N/A	Table 14-6	GPRS/EDGE + WIFI Hotspot
23	GPRS/EDGE 1900 Data + 2.4 GHz WIFI	N/A	N/A	N/A	Table 14-6	GPRS/EDGE + WIFI Hotspot

Notes:

1. CDMA and EVDO share the same antenna path and cannot transmit simultaneously. (Non-SVDO)
2. Bluetooth and 2.4 GHz WLAN share the same antenna path and cannot transmit simultaneously.

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14.4 Head SAR Simultaneous Transmission Analysis

Table 14-2
Simultaneous Transmission Scenario 2.4 GHz WLAN (Held to Ear)

Table 14-1 Simult. Tx Ref.	Configuration	Cell CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	24.5	-	
	Reference	Table 13-1	Table 13-9	
3	Right Cheek	0.132	0.022	0.154
	Right Tilt	0.089	0.018	0.107
	Left Cheek	0.153	0.013	**0.166**
	Left Tilt	0.101	0.035	0.136

Table 14-1 Simult. Tx Ref.	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	24.5	-	
	Reference	Table 13-4	Table 13-9	
5	Right Cheek	0.128	0.022	0.150
	Right Tilt	0.096	0.018	0.114
	Left Cheek	0.167	0.013	**0.180**
	Left Tilt	0.092	0.035	0.127

Table 14-1 Simult. Tx Ref.	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	32.5	-	
	Reference	Table 13-2	Table 13-9	
7	Right Cheek	0.107	0.022	**0.129**
	Right Tilt	0.063	0.018	0.081
	Left Cheek	0.099	0.013	0.112
	Left Tilt	0.056	0.035	0.091

Table 14-1 Simult. Tx Ref.	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	29.5	-	
	Reference	Table 13-5	Table 13-9	
9	Right Cheek	0.060	0.022	0.082
	Right Tilt	0.056	0.018	0.074
	Left Cheek	0.102	0.013	**0.115**
	Left Tilt	0.049	0.035	0.084

Table 14-1 Simult. Tx Ref.	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	22.5	-	
	Reference	13-3	Table 13-9	
11	Right Cheek	0.099	0.022	**0.121**
	Right Tilt	0.060	0.018	0.078
	Left Cheek	0.101	0.013	0.114
	Left Tilt	0.063	0.035	0.098

Table 14-1 Simult. Tx Ref.	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	22.5	-	
	Reference	Table 13-6	Table 13-9	
12	Right Cheek	0.095	0.022	0.117
	Right Tilt	0.076	0.018	0.094
	Left Cheek	0.119	0.013	**0.132**
	Left Tilt	0.070	0.035	0.105

Table 14-1 Simult. Tx Ref.	Configuration	Cell EVDO Rev.A SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	24.5	-	
	Reference	Table 13-1	Table 13-9	
17	Right Cheek	0.163	0.022	**0.185**
	Right Tilt	0.097	0.018	0.115
	Left Cheek	0.141	0.013	0.154
	Left Tilt	0.085	0.035	0.120

Table 14-1 Simult. Tx Ref.	Configuration	PCS EVDO Rev.A SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	24.5	-	
	Reference	Table 13-4	Table 13-9	
18	Right Cheek	0.126	0.022	0.148
	Right Tilt	0.105	0.018	0.123
	Left Cheek	0.192	0.013	**0.205**
	Left Tilt	0.107	0.035	0.142

Table 14-1 Simult. Tx Ref.	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	23	-	
	Reference	Table 13-7	Table 13-9	
21	Right Cheek	0.244	0.022	**0.266**
	Right Tilt	0.111	0.018	0.129
	Left Cheek	0.160	0.013	0.173
	Left Tilt	0.082	0.035	0.117

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Table 14-3
Simultaneous Transmission Scenario 5 GHz WLAN(Held to Ear)

Table 14-1 Simult. Tx Ref.	Configuration	Cell CDMA SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Table 14-1 Simult. Tx Ref.	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	24.5	-			Target Power [dBm]	24.5	-	
	Reference	Table 13-1	Table 13-10 to 13-13			Reference	Table 13-4	Table 13-10 to 13-13	
4	Right Cheek	0.132	0.003	0.135	6	Right Cheek	0.128	0.003	0.131
	Right Tilt	0.089	0.001	0.090		Right Tilt	0.096	0.001	0.097
	Left Cheek	0.153	0.021	**0.174**		Left Cheek	0.167	0.021	**0.188**
	Left Tilt	0.101	0.013	0.114		Left Tilt	0.092	0.013	0.105
Table 14-1 Simult. Tx Ref.	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Table 14-1 Simult. Tx Ref.	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	32.5	-			Target Power [dBm]	29.5	-	
	Reference	Table 13-2	Table 13-10 to 13-13			Reference	Table 13-5	Table 13-10 to 13-13	
8	Right Cheek	0.107	0.003	0.110	10	Right Cheek	0.060	0.003	0.063
	Right Tilt	0.063	0.001	0.064		Right Tilt	0.056	0.001	0.057
	Left Cheek	0.099	0.021	**0.120**		Left Cheek	0.102	0.021	**0.123**
	Left Tilt	0.056	0.013	0.069		Left Tilt	0.049	0.013	0.062
Table 14-1 Simult. Tx Ref.	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Table 14-1 Simult. Tx Ref.	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	22.5	-			Target Power [dBm]	22.5	-	
	Reference	Table 13-3	Table 13-10 to 13-13			Reference	Table 13-6	Table 13-10 to 13-13	
13	Right Cheek	0.099	0.003	0.102	14	Right Cheek	0.095	0.003	0.098
	Right Tilt	0.060	0.001	0.061		Right Tilt	0.076	0.001	0.077
	Left Cheek	0.101	0.021	**0.122**		Left Cheek	0.119	0.021	**0.140**
	Left Tilt	0.063	0.013	0.076		Left Tilt	0.070	0.013	0.083

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14.5 Body-Worn Simultaneous Transmission Analysis

Table 14-4
Simultaneous Transmission Scenario 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Table 14-1 Sumult. Tx Ref	Configuration	Mode	Target Power [dBm]	2G/3G SAR (W/kg) Table 13-14	2.4 GHz WLAN SAR (W/kg) Table 13-16	Σ SAR (W/kg)
3	Back Side	Cell CDMA	24.5	0.449	0.095	0.544
7	Back Side	GSM 850	32.5	0.230	0.095	0.325
11	Back Side	UMTS 850	22.5	0.297	0.095	0.392
5	Back Side	PCS CDMA	24.5	0.575	0.095	**0.670**
9	Back Side	GSM 1900	29.5	0.262	0.095	0.357
12	Back Side	UMTS 1900	22.5	0.549	0.095	0.644
Table 14-1 Sumult. Tx Ref	Configuration	Mode	Target Power [dBm]	4G SAR (W/kg) Table 13-15	2.4 GHz WLAN SAR (W/kg) Table 13-16	Σ SAR (W/kg)
21	Back Side	LTE Band 13	23	0.372	0.095	0.467

Table 14-5
Simultaneous Transmission Scenario 5 GHz WLAN (Body-Worn at 1.0 cm)

Table 14-1 Sumult. Tx Ref	Configuration	Mode	Target Power [dBm]	2G/3G SAR (W/kg) Table 13-14	5 GHz WLAN SAR (W/kg) Table 13-16	Σ SAR (W/kg)
4	Back Side	Cell CDMA	24.5	0.449	0.210	0.659
8	Back Side	GSM 850	32.5	0.230	0.210	0.440
13	Back Side	UMTS 850	22.5	0.297	0.210	0.507
6	Back Side	PCS CDMA	24.5	0.575	0.210	**0.785**
10	Back Side	GSM 1900	29.5	0.262	0.210	0.472
14	Back Side	UMTS 1900	22.5	0.549	0.210	0.759

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14.6 Hotspot SAR Simultaneous Transmission Analysis

Table 14-6
Simultaneous Transmission Scenario (Hotspot at 1.0 cm)

Table 14-1 Simult Tx Ref.	Configuration	Cell EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	24.5	-	
	Reference	Table 13-17	Table 13-20	
13	Back	0.447	0.095	**0.542**
	Front	0.212	0.013	0.225
	Top	-	0.009	0.009
	Bottom	0.196	-	0.196
	Right	-	0.037	0.037
	Left	0.280	-	0.280

Table 14-1 Simult Tx Ref.	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	24.5	-	
	Reference	Table 13-17	Table 13-20	
14	Back	0.560	0.095	**0.655**
	Front	0.343	0.013	0.356
	Top	-	0.009	0.009
	Bottom	0.376	-	0.376
	Right	-	0.037	0.037
	Left	0.252	-	0.252

Table 14-1 Simult Tx Ref.	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	30.5	-	
	Reference	Table 13-17	Table 13-20	
22	Back	0.524	0.095	**0.619**
	Front	0.264	0.013	0.277
	Top	-	0.009	0.009
	Bottom	0.180	-	0.180
	Right	-	0.037	0.037
	Left	0.297	-	0.297

Table 14-1 Simult Tx Ref.	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	27.5	-	
	Reference	Table 13-17	Table 13-20	
23	Back	0.429	0.095	**0.524**
	Front	0.276	0.013	0.289
	Top	-	0.009	0.009
	Bottom	0.298	-	0.298
	Right	-	0.037	0.037
	Left	0.187	-	0.187

Table 14-1 Simult Tx Ref.	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	22.5	-	
	Reference	Table 13-17	Table 13-20	
19	Back	0.297	0.095	**0.392**
	Front	0.140	0.013	0.153
	Top	-	0.009	0.009
	Bottom	0.135	-	0.135
	Right	-	0.037	0.037
	Left	0.199	-	0.199

Table 14-1 Simult Tx Ref.	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	22.5	-	
	Reference	Table 13-17	Table 13-20	
20	Back	0.549	0.095	**0.644**
	Front	0.410	0.013	0.423
	Top	-	0.009	0.009
	Bottom	0.439	-	0.439
	Right	-	0.037	0.037
	Left	0.272	-	0.272

Table 14-1 Simult Tx Ref.	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	Target Power [dBm]	23	-	
	Reference	Table 13-18	Table 13-20	
21	Back	0.372	0.095	**0.467**
	Front	0.372	0.013	0.385
	Top	-	0.009	0.009
	Bottom	0.059	-	0.059
	Right	-	0.037	0.037
	Left	0.447	-	0.447

Note: Per FCC KDB Publication 941225 D06, the edges with antennas more than 2.5 cm are not required to be evaluated for SAR ("-"). The above tables represent a portable hotspot condition.

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14.7 SVLTE Simultaneous Transmission Scenario Analysis

Table 14-7
Simultaneous Transmission Scenario (Held to ear)

Table 14-1 Simult. Tx Ref.	CDMA Power Level [dBm]	Configuration	Cell CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3	1+2	1+2+3
1, 15	p≥18	Target Power [dBm]	24.5	19	-		
		Reference	Table 13-1	Table 13-8	Table 13-9		
		Right Cheek	0.132	0.079	0.022	0.211	0.233
		Right Tilt	0.089	0.042	0.018	0.131	0.149
		Left Cheek	0.153	0.051	0.013	0.204	0.217
		Left Tilt	0.101	0.030	0.035	0.131	0.166
	p<18	Target Power [dBm]	18	23	-		
		Reference	Table 13-1	Table 13-7	Table 13-9		
		Right Cheek	0.000	0.244	0.022	0.244	**0.266**
		Right Tilt	0.000	0.111	0.018	0.111	0.129
		Left Cheek	0.000	0.160	0.013	0.160	0.173
		Left Tilt	0.000	0.082	0.035	0.082	0.117
Table 14-1 Simult. Tx Ref.	CDMA Power Level [dBm]	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3	1+2	1+2+3
2, 16	p≥18	Target Power [dBm]	24.5	19	-		
		Reference	Table 13-4	Table 13-8	Table 13-9		
		Right Cheek	0.128	0.079	0.022	0.211	0.233
		Right Tilt	0.096	0.042	0.018	0.138	0.156
		Left Cheek	0.167	0.051	0.013	0.218	0.231
		Left Tilt	0.092	0.030	0.035	0.122	0.157
	p<18	Target Power [dBm]	18	23	-		
		Reference	Table 13-4	Table 13-7	Table 13-9		
		Right Cheek	0.014	0.244	0.022	0.258	**0.280**
		Right Tilt	0.012	0.111	0.018	0.123	0.141
		Left Cheek	0.021	0.160	0.013	0.181	0.194
		Left Tilt	0.011	0.082	0.035	0.093	0.128

Table 14-8
Simultaneous Transmission Scenario (Body-worn at 1.0 cm)

Table 14-1 Sumult. Tx Ref	Configuration	CDMA Power Level [dBm]	Mode	Cell CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Σ SAR (W/kg)
			Tx Ant	1	2	3	1+2	1+2+3
			Reference	Table 13-14	Table 13-15	Table 13-16		
1, 15	Back Side	p≥18	Target Power [dBm]	24.5	19	-		
			Cell CDMA	0.449	0.146	0.095	0.595	0.690
			PCS CDMA	0.575	0.146	0.095	0.721	**0.816**
2, 16		p<18	Target Power [dBm]	18	23	-		
			Cell CDMA	0.002	0.372	0.095	0.374	0.469
			PCS CDMA	0.061	0.372	0.095	0.433	0.528

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Table 14-9
Simultaneous Transmission Scenario (Hotspot at 1.0 cm)

Table 14-1 Simult Tx Ref.	CDMA Power Level [dBm]	Configuration	Cell CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	1+2+3
15	p≥18	Target Power [dBm]	24.5	19	-	
		Reference	Table 13-17	Table 13-19	Table 13-20	
		Back	0.449	0.146	0.095	**0.690**
		Front	0.203	0.147	0.013	0.363
		Top	-	-	0.009	0.009
		Bottom	0.191	0.023	-	0.214
		Right	-	0.199	0.037	0.236
		Left	0.254	-	-	0.254
	p<18	Target Power [dBm]	18	23	-	
		Reference	Table 13-17	Table 13-18	Table 13-20	
		Back	0.002	0.372	0.095	0.469
		Front	0.001	0.372	0.013	0.386
		Top	-	-	0.009	0.009
		Bottom	0.001	0.059	-	0.060
		Right	-	0.447	0.037	0.484
		Left	0.001	-	-	0.001

Table 14-1 Simult Tx Ref.	CDMA Power Level [dBm]	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	1+2+3
16	p≥18	Target Power [dBm]	24.5	19	-	
		Reference	Table 13-17	Table 13-19	Table 13-20	
		Back	0.575	0.146	0.095	**0.816**
		Front	0.407	0.147	0.013	0.567
		Top	-	-	0.009	0.009
		Bottom	0.395	0.023	-	0.418
		Right	-	0.199	0.037	0.236
		Left	0.247	-	-	0.247
	p<18	Target Power [dBm]	18	23	-	
		Reference	Table 13-17	Table 13-18	Table 13-20	
		Back	0.061	0.372	0.095	0.528
		Front	0.044	0.372	0.013	0.429
		Top	-	-	0.009	0.009
		Bottom	0.051	0.059	-	0.110
		Right	-	0.447	0.037	0.484
		Left	0.036	-	-	0.036

Note: Per FCC KDB Publication 941225 D06, the edges with antennas more than 2.5 cm are not required to be evaluated for SAR ("-"). The above tables represent a portable hotspot condition potentially simultaneously operating with a voice call.

14.8 Simultaneous Transmission Conclusion

The above numerical summed SAR was below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit. No volumetric SAR summation is required per FCC KDB Publication 648474.

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15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85047A	S-Parameter Test Set	N/A	N/A	N/A	2904A00579
Agilent	85070E	Dielectric Probe Kit	3/8/2012	Annual	3/8/2013	MY44300633
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	10/10/2011	Annual	10/10/2012	3613A00315
Agilent	8648D	Signal Generator	4/3/2012	Annual	4/3/2013	3629U00687
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/4/2012	Annual	4/4/2013	JP38020182
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/3/2012	Annual	4/3/2013	US37390350
Agilent	E5515C	Wireless Communications Test Set	10/10/2011	Annual	10/10/2012	GB46110872
Agilent	E5515C	Wireless Communications Test Set	10/20/2011	Annual	10/20/2012	GB46310798
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/5/2012	Annual	4/5/2013	MY45470194
Amplifier Research	5S1G4	5W, 800MHz-4.2GHz	N/A		N/A	21910
Anritsu	MA2411B	Pulse Sensor	10/13/2011	Annual	10/13/2012	1027293
Anritsu	MA2481A	Power Sensor	4/5/2012	Annual	4/5/2013	5605
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	2400
Anritsu	ML2438A	Power Meter	2/14/2012	Annual	2/14/2013	1190013
Anritsu	ML2495A	Power Meter	10/13/2011	Annual	10/13/2012	1039008
Anritsu	MT8820C	Radio Communication Tester	11/11/2011	Annual	11/11/2012	6200901190
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	36934-158	Wall-Mounted Thermometer	1/4/2012	Biennial	1/4/2014	122014497
Control Company	61220-416	Long-Stem Thermometer	2/15/2011	Biennial	2/15/2013	111331322
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/12/2011	Annual	10/12/2012	1833460
Gigatronics	8651A	Universal Power Meter	10/12/2011	Annual	10/12/2012	8650319
Intelligent Weigh	PD-3000	Electronic Balance	3/27/2012	Annual	3/27/2013	11081534
Intelligent Weighing	PD-3000	Electronic Balance	6/29/2012	Annual	6/29/2013	120405017
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Rohde & Schwarz	CMU200	Base Station Simulator	5/22/2012	Annual	5/22/2013	109892
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	10/7/2011	Annual	10/7/2012	103962
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	11/30/2011	Annual	11/30/2012	101699
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	3/5/2012	Annual	3/5/2013	102060
Rohde & Schwarz	NRVD	Dual Channel Power Meter	4/8/2011	Biennial	4/8/2013	101695
Rohde & Schwarz	SMIQ03B	Signal Generator	4/5/2012	Annual	4/5/2013	DE27259
Seekonk	NC-100	Torque Wrench (8" lb)	11/29/2011	Triennial	11/29/2014	21053
SPEAG	D1900V2	1900 MHz SAR Dipole	2/22/2012	Annual	2/22/2013	502
SPEAG	D1900V2	1900 MHz SAR Dipole	2/22/2012	Annual	2/22/2013	5d149
SPEAG	D2450V2	2450 MHz SAR Dipole	1/24/2012	Annual	1/24/2013	797
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/19/2012	Annual	1/19/2013	1057
SPEAG	D5GHzV2	5 GHz SAR Dipole	2/1/2012	Annual	2/1/2013	1120
SPEAG	D750V3	750 MHz Dipole	1/27/2012	Annual	1/27/2013	1003
SPEAG	D750V3	750 MHz Dipole	2/9/2012	Annual	2/9/2013	1054
SPEAG	D835V2	835 MHz SAR Dipole	1/25/2012	Annual	1/25/2013	4d047
SPEAG	D835V2	835 MHz SAR Dipole	4/20/2012	Annual	4/20/2013	4d119
SPEAG	D835V2	835 MHz SAR Dipole	2/3/2012	Annual	2/3/2013	4d132
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/19/2012	Annual	4/19/2013	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/20/2012	Annual	2/20/2013	649
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/15/2012	Annual	5/15/2013	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/18/2012	Annual	1/18/2013	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2012	Annual	2/15/2013	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/12/2012	Annual	4/12/2013	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/7/2012	Annual	5/7/2013	1334
SPEAG	DAK-3.5	Dielectic Assessment Kit	6/19/2012	Annual	6/19/2013	1070
SPEAG	ES3DV3	SAR Probe	4/24/2012	Annual	4/24/2013	3213
SPEAG	ES3DV3	SAR Probe	3/16/2012	Annual	3/16/2013	3209
SPEAG	ES3DV3	SAR Probe	2/21/2012	Annual	2/21/2013	3258
SPEAG	ES3DV3	SAR Probe	2/7/2012	Annual	2/7/2013	3288
SPEAG	ES3DV3	SAR Probe	2/7/2012	Annual	2/7/2013	3287
SPEAG	EX3DV4	SAR Probe	1/27/2012	Annual	1/27/2013	3589
SPEAG	EX3DV4	SAR Probe	7/26/2012	Annual	7/26/2013	3561
Tektronix	RSA-6114A	Real Time Spectrum Analyzer	4/5/2012	Annual	4/5/2013	B010177
VWR	36934-158	Wall-Mounted Thermometer	1/21/2011	Biennial	1/21/2013	111286445
VWR	62344-925	Mini-Thermometer	10/24/2011	Biennial	10/24/2013	111886430

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

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16 MEASUREMENT UNCERTAINTIES

Applicable for frequencies less than 3000 MHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**IEEE 1528 Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	6.0	N	1	1.0	1.0	6.0	6.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)			RSS				12.1	11.7	299
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.2	23.5	

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

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Applicable for frequencies up to 6 GHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**IEEE 1528 Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)			RSS				12.4	12.0	299
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.7	24.0	

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

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17 CONCLUSION

17.1 Measurement Conclusion

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

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

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APPENDIX A: SAR TEST DATA

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PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 3

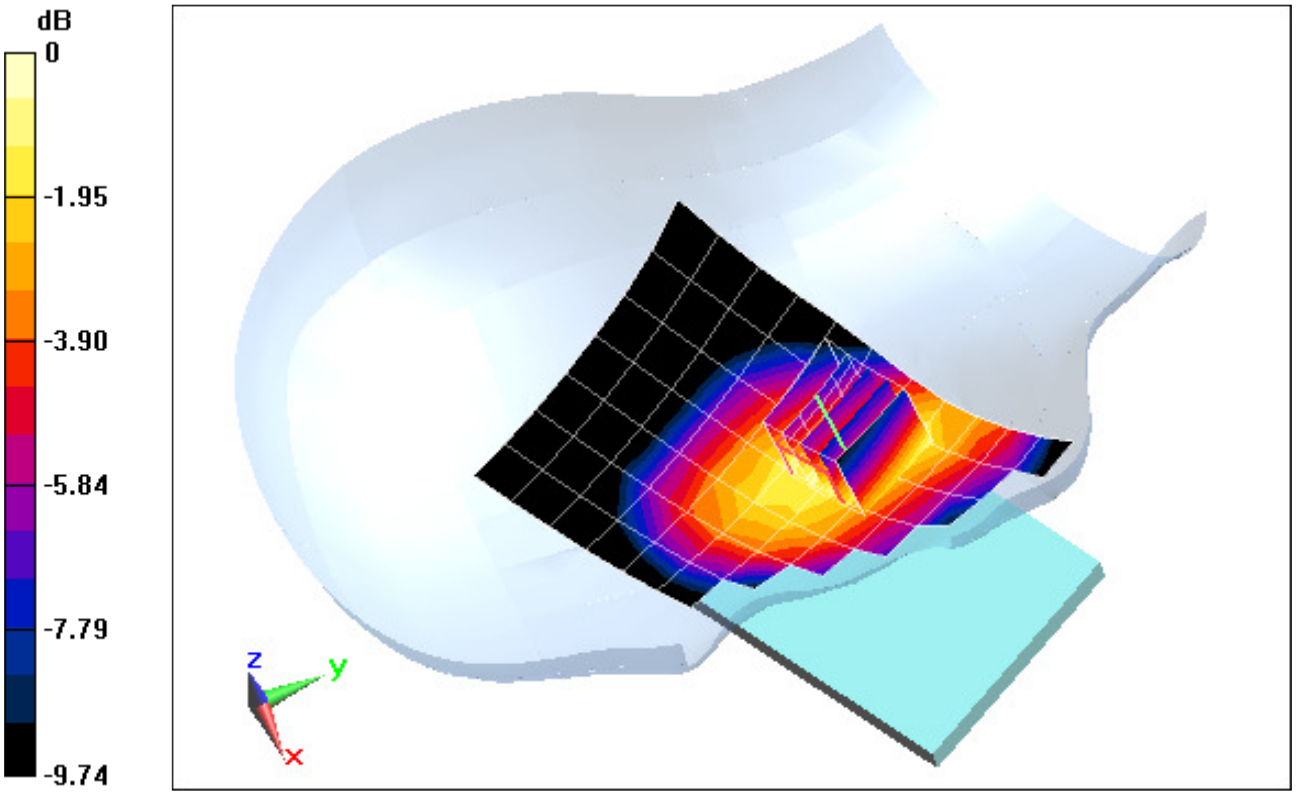
Communication System: LTE Band 13; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: 770 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.931 mho/m; ε_r = 42.376; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-27-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3287; ConvF(6.25, 6.25, 6.25); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Right Head, Cheek, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.718 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.335 mW/g
SAR(1 g) = 0.244 mW/g; SAR(10 g) = 0.182 mW/g



0 dB = 0.256 mW/g = -11.84 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 3

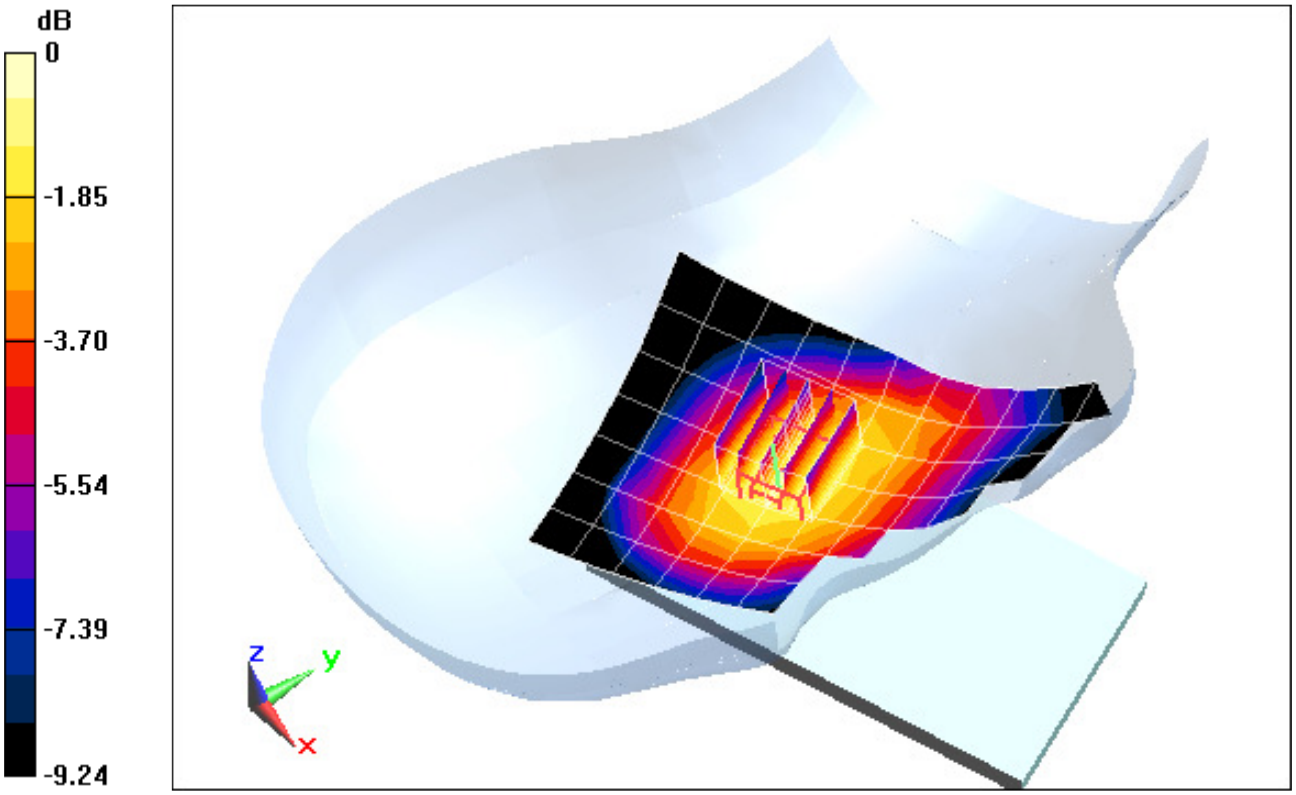
Communication System: LTE Band 13; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: 770 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.931 mho/m; ε_r = 42.376; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-27-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3287; ConvF(6.25, 6.25, 6.25); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Right Head, Tilt, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.648 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.132 mW/g
SAR(1 g) = 0.111 mW/g; SAR(10 g) = 0.087 mW/g



0 dB = 0.116 mW/g = -18.71 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 3

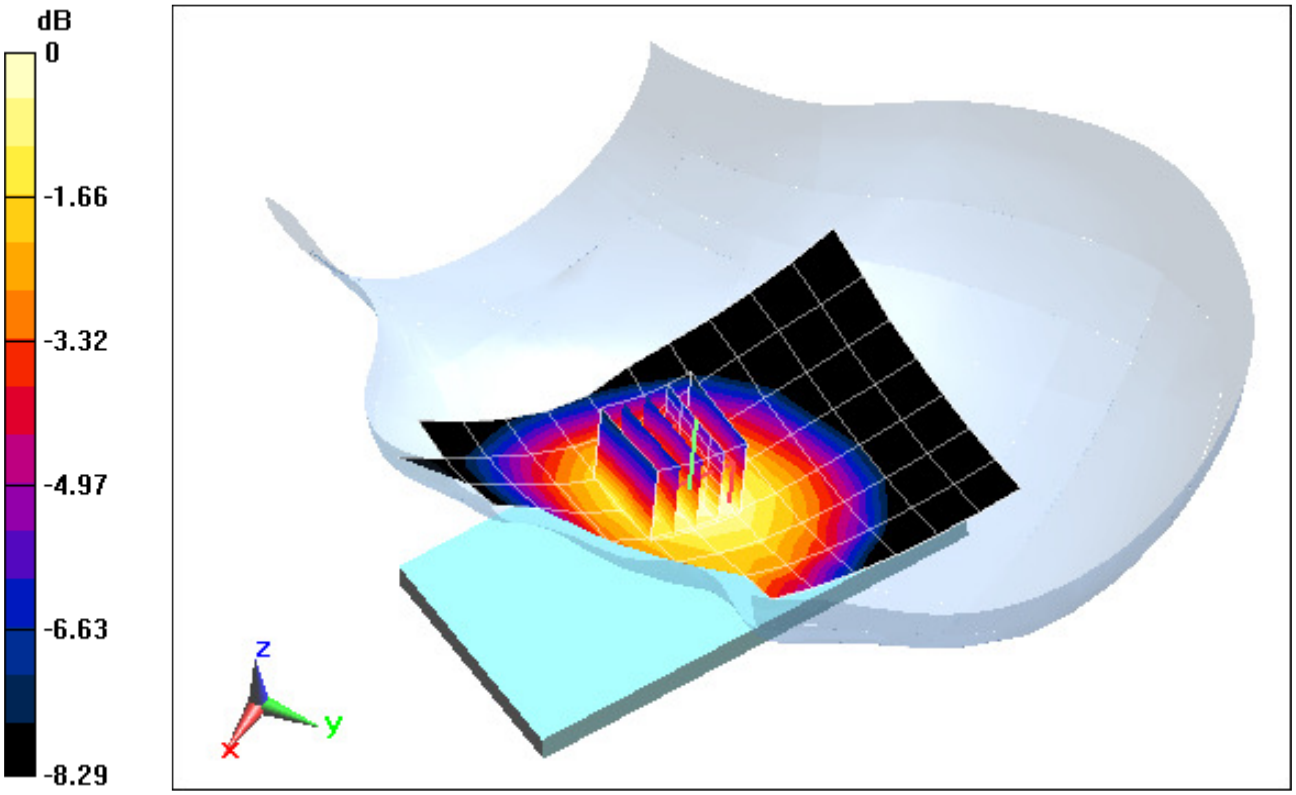
Communication System: LTE Band 13; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: 770 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.931 mho/m; ε_r = 42.376; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-27-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3287; ConvF(6.25, 6.25, 6.25); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Left Head, Cheek, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 49 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.880 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.196 mW/g
SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.121 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 3

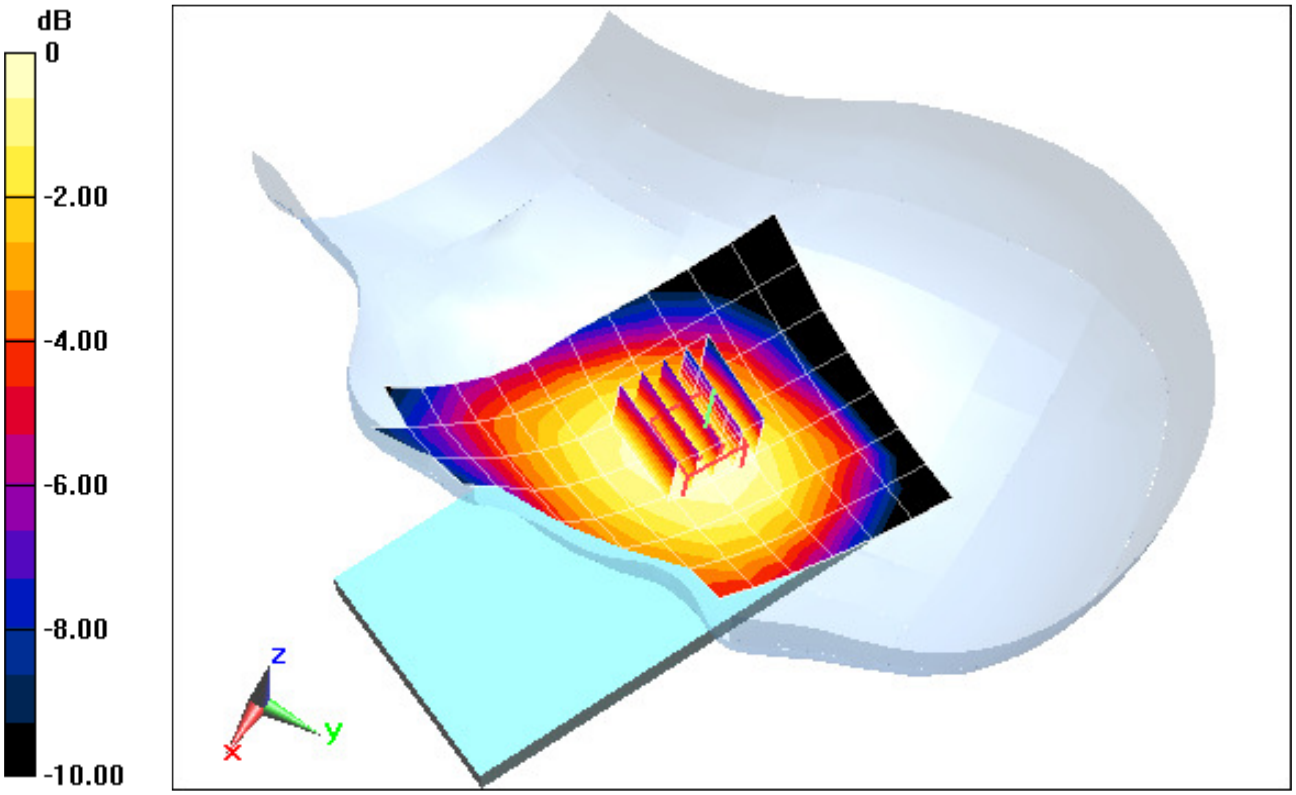
Communication System: LTE Band 13; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: 770 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.931 mho/m; ε_r = 42.376; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-27-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3287; ConvF(6.25, 6.25, 6.25); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Left Head, Tilt, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 49 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.134 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.101 mW/g
SAR(1 g) = 0.082 mW/g; SAR(10 g) = 0.064 mW/g



0 dB = 0.0648 mW/g = -23.77 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

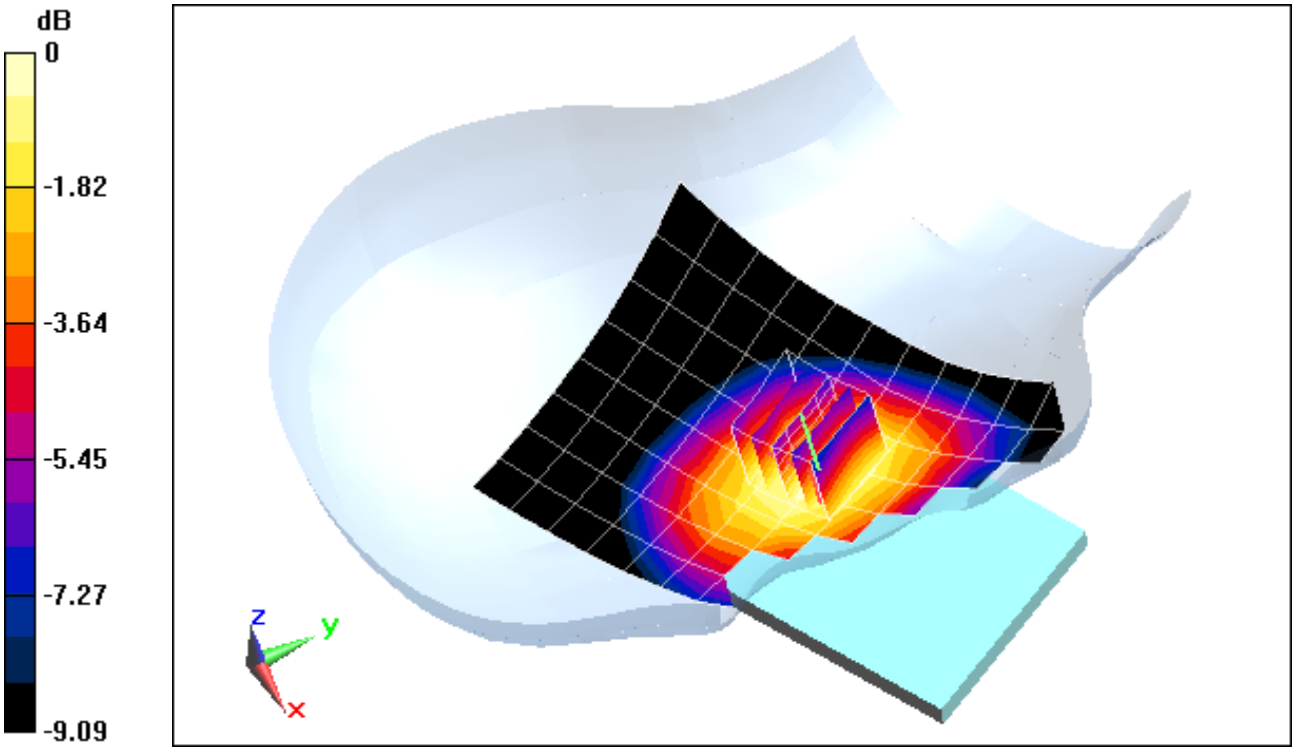
Communication System: CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.9 mho/m; ε_r = 41.366; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 09-05-2012; Ambient Temp: 24.8°C; Tissue Temp: 24.1°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: Cell. EVDO Rev. A, Right Head, Cheek, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.765 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.199 mW/g
SAR(1 g) = 0.163 mW/g; SAR(10 g) = 0.126 mW/g



0 dB = 0.172 mW/g = -15.29 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

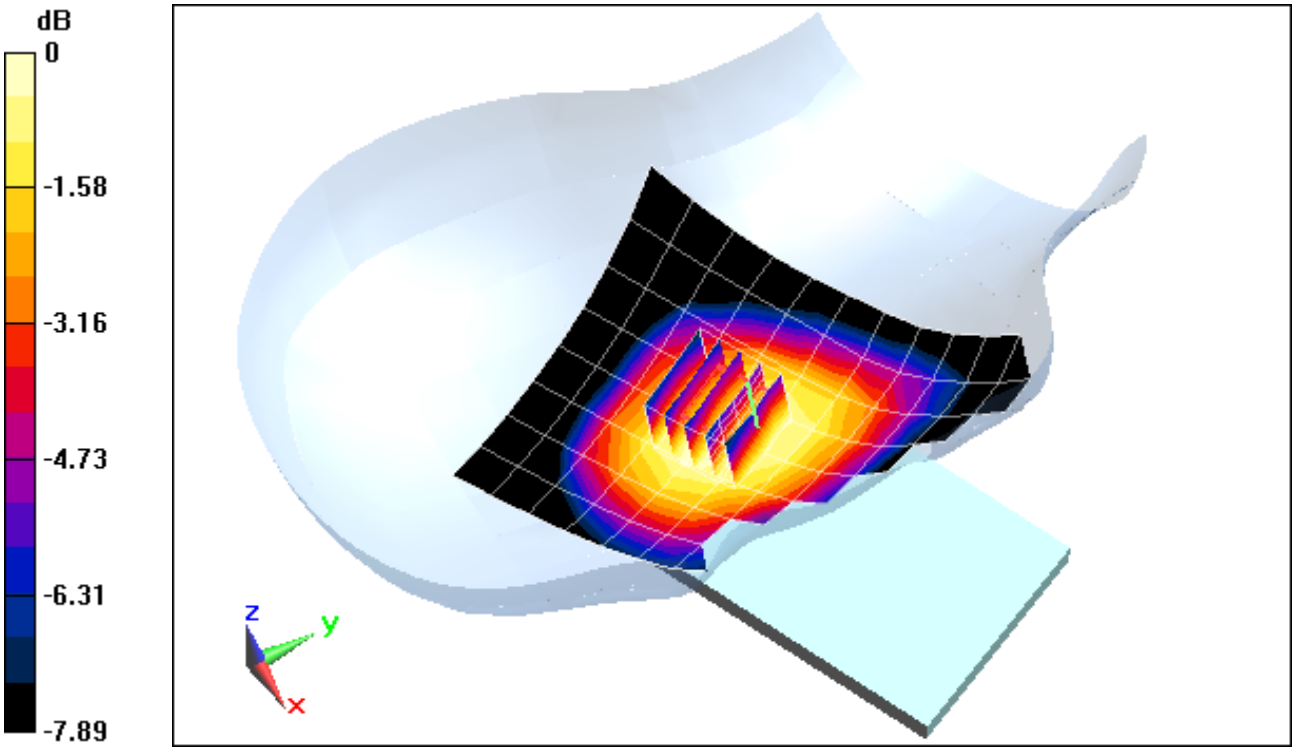
Communication System: CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.9 mho/m; ε_r = 41.366; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 09-05-2012; Ambient Temp: 24.8°C; Tissue Temp: 24.1°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: Cell. EVDO Rev. A, Right Head, Tilt, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.847 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.114 mW/g
SAR(1 g) = 0.097 mW/g; SAR(10 g) = 0.077 mW/g



0 dB = 0.101 mW/g = -19.91 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

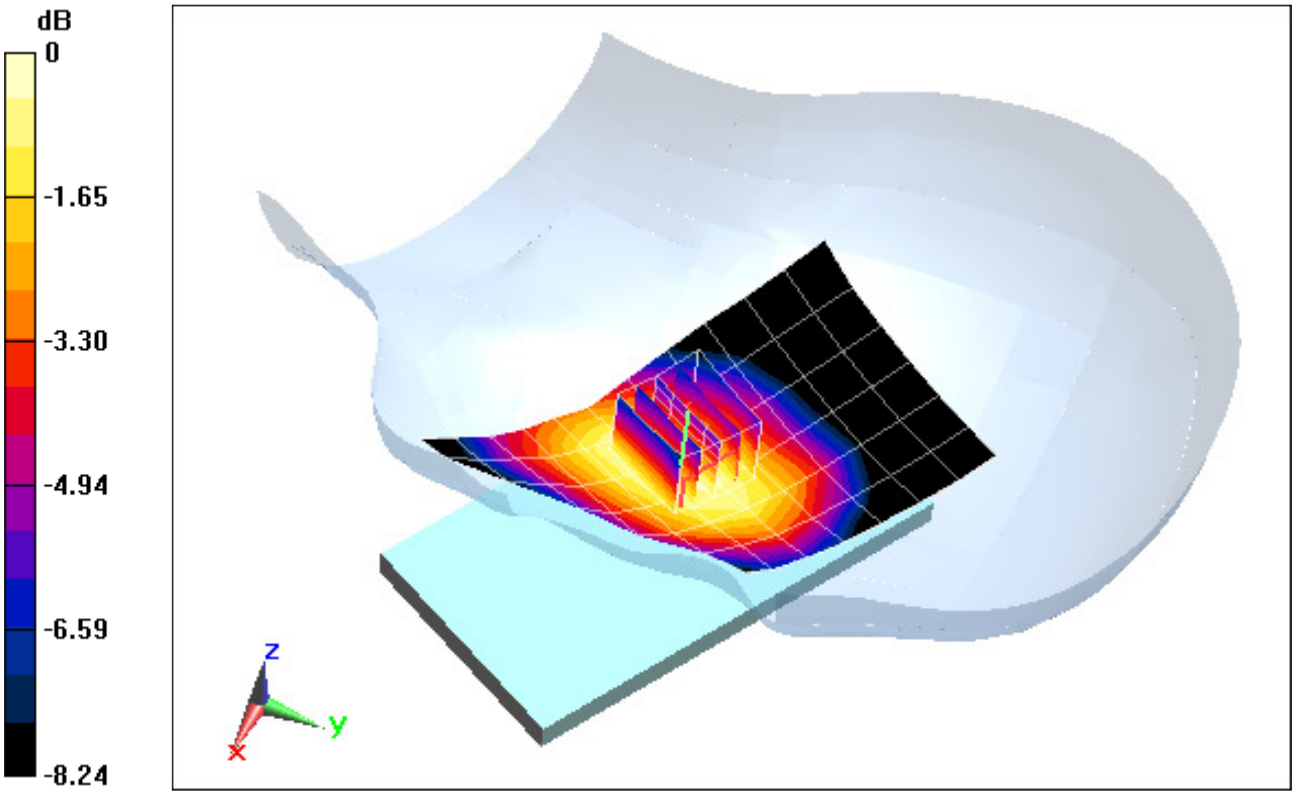
Communication System: Cellular CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.887 mho/m; ε_r = 39.871; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-24-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.009 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.190 mW/g
SAR(1 g) = 0.153 mW/g; SAR(10 g) = 0.118 mW/g



0 dB = 0.162 mW/g = -15.81 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

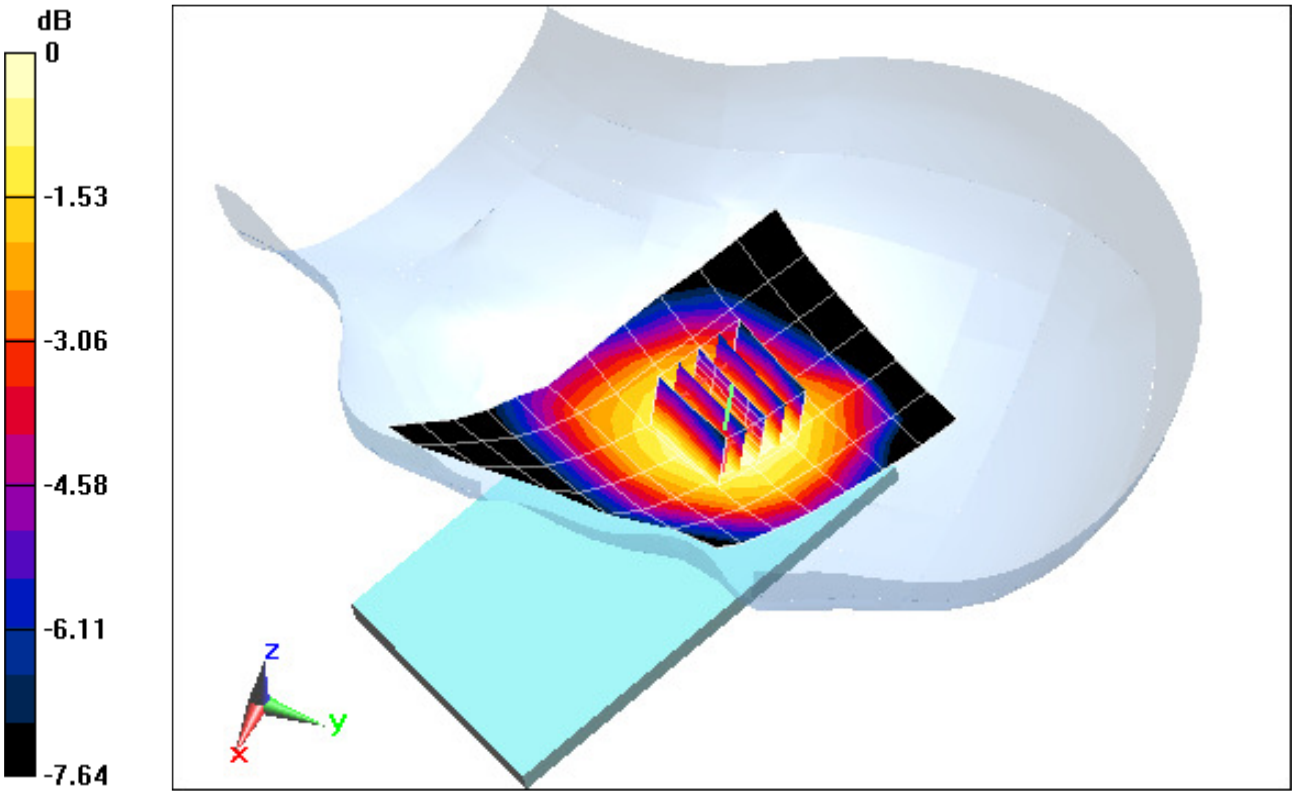
Communication System: Cellular CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.887 mho/m; ε_r = 39.871; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-24-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.405 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.122 mW/g
SAR(1 g) = 0.101 mW/g; SAR(10 g) = 0.079 mW/g



0 dB = 0.106 mW/g = -19.49 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

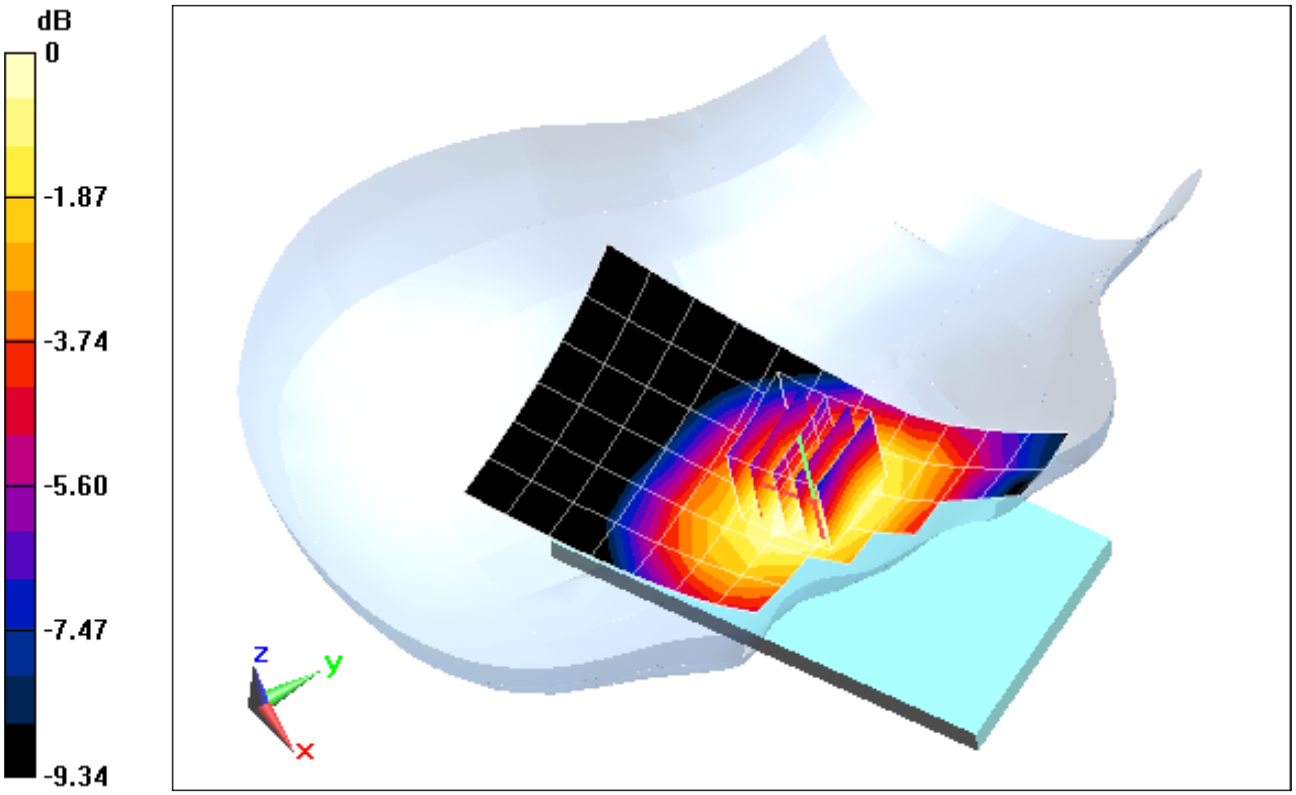
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.911 mho/m; ε_r = 42.174; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-25-2012; Ambient Temp: 22.1°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

Mode: GSM 850, Right Head, Cheek, Mid.ch

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.140 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.129 mW/g
SAR(1 g) = 0.107 mW/g; SAR(10 g) = 0.083 mW/g



0 dB = 0.112 mW/g = -19.02 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

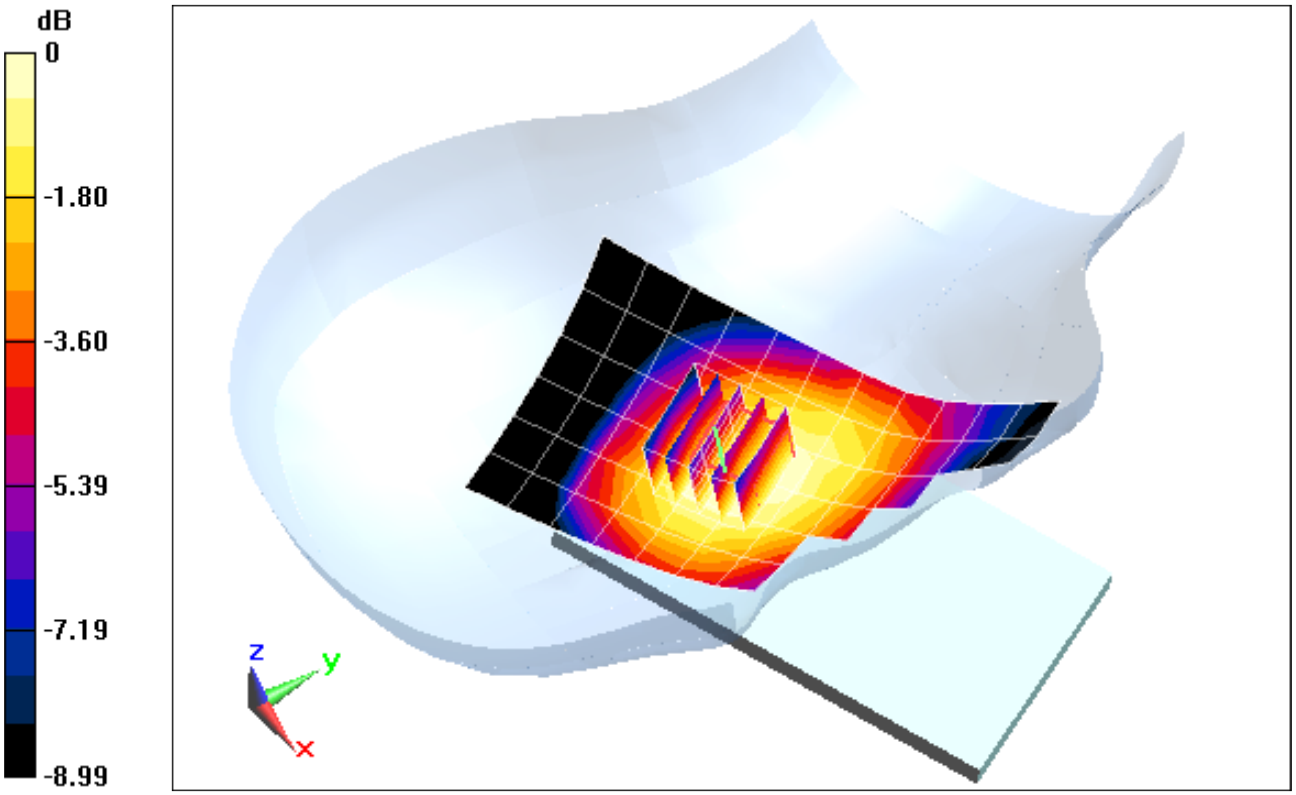
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.911 mho/m; ε_r = 42.174; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-25-2012; Ambient Temp: 22.1°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.643 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.076 mW/g
SAR(1 g) = 0.063 mW/g; SAR(10 g) = 0.050 mW/g



0 dB = 0.0666 mW/g = -23.53 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

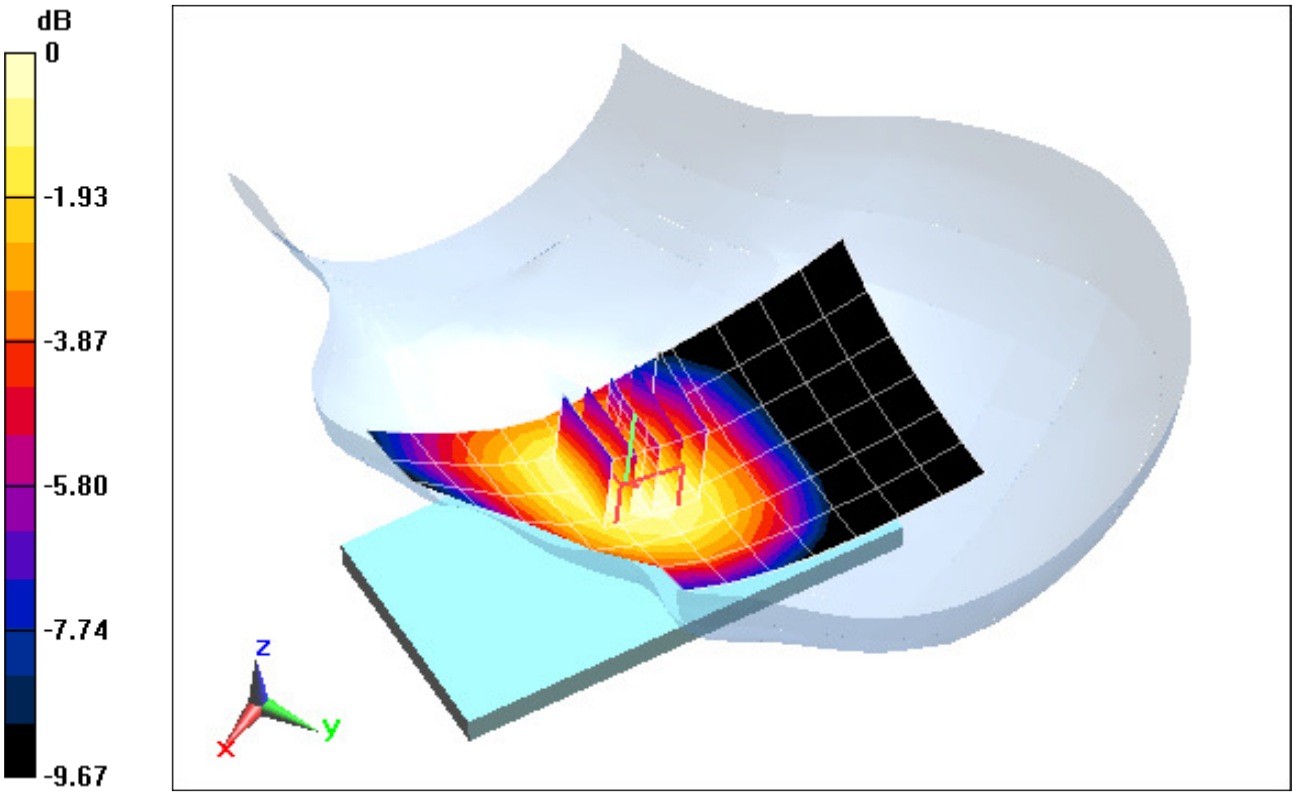
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.911 mho/m; ε_r = 42.174; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-25-2012; Ambient Temp: 22.1°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

Mode: GSM 850, Left Head, Cheek, Mid.ch

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.900 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.122 mW/g
SAR(1 g) = 0.099 mW/g; SAR(10 g) = 0.077 mW/g



0 dB = 0.103 mW/g = -19.74 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

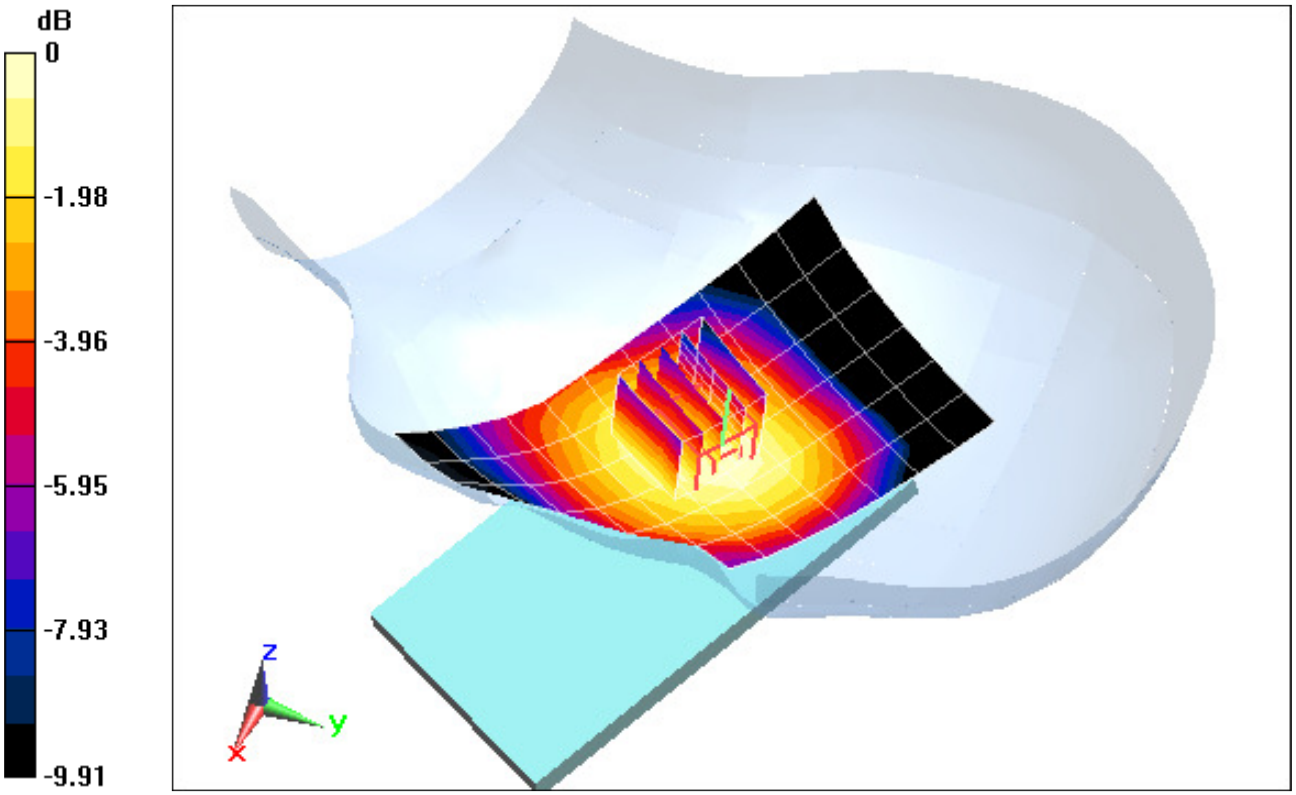
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.911 mho/m; ε_r = 42.174; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-25-2012; Ambient Temp: 22.1°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.012 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.068 mW/g
SAR(1 g) = 0.056 mW/g; SAR(10 g) = 0.043 mW/g



0 dB = 0.0579 mW/g = -24.75 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

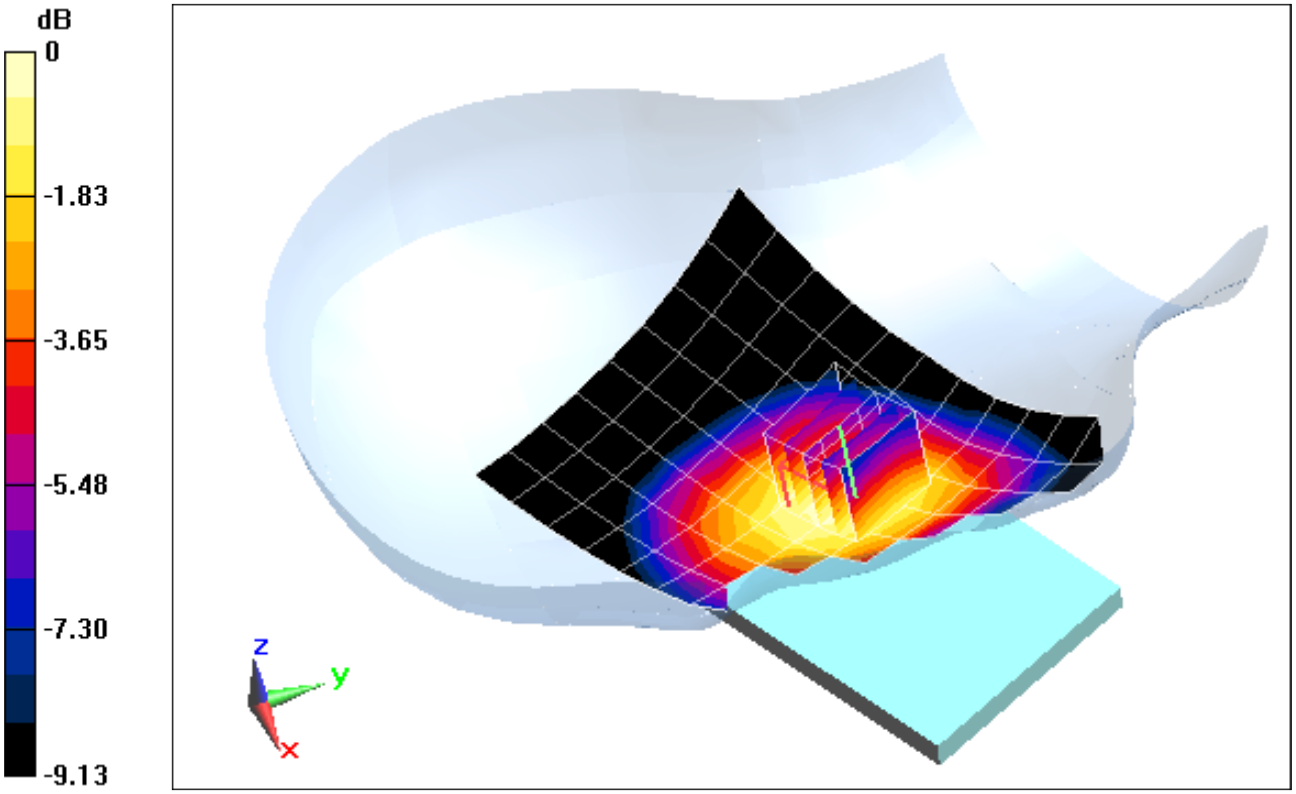
Communication System: WCDMA; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.911 mho/m; ε_r = 42.007; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-29-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

Mode: UMTS 850, Right Head, Cheek, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.720 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.123 mW/g
SAR(1 g) = 0.099 mW/g; SAR(10 g) = 0.076 mW/g



0 dB = 0.104 mW/g = -19.66 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT:A3LSCHI605; Type: Portable Handset; Serial: 6

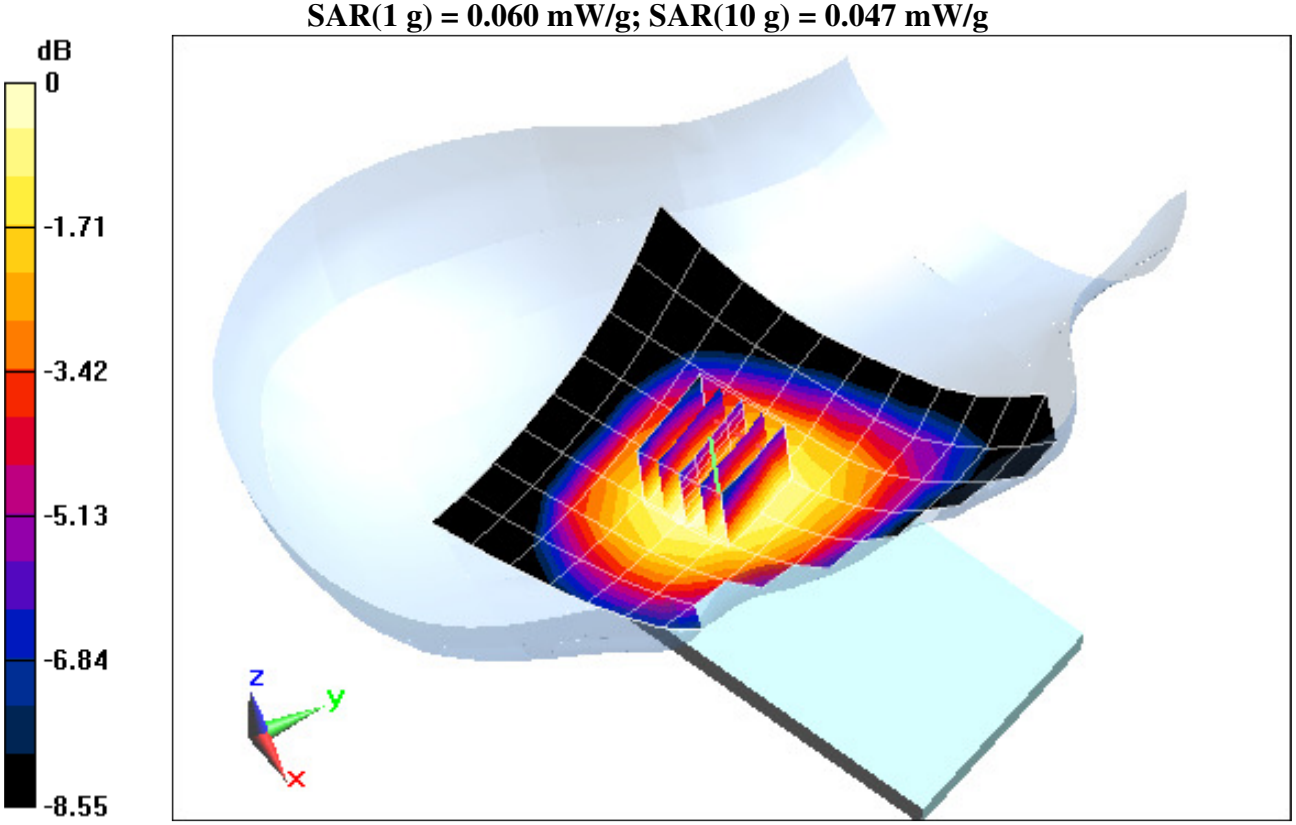
Communication System: WCDMA; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.911 mho/m; ε_r = 42.007; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-29-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.461 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.074 mW/g
SAR(1 g) = 0.060 mW/g; SAR(10 g) = 0.047 mW/g



0 dB = 0.0634 mW/g = -23.96 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

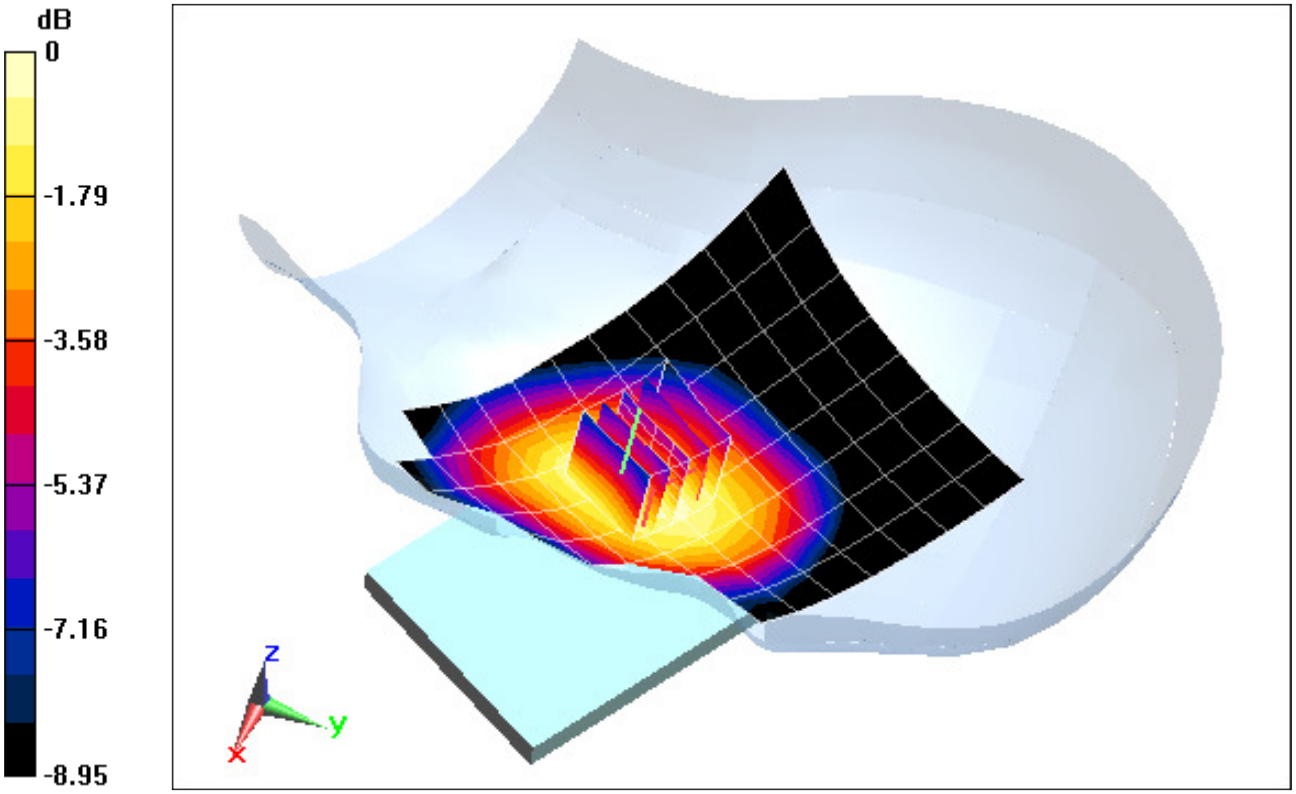
Communication System: WCDMA; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.911 mho/m; ε_r = 42.007; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-29-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

Mode: UMTS 850, Left Head, Cheek, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.820 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.126 mW/g
SAR(1 g) = 0.101 mW/g; SAR(10 g) = 0.078 mW/g



0 dB = 0.105 mW/g = -19.58 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

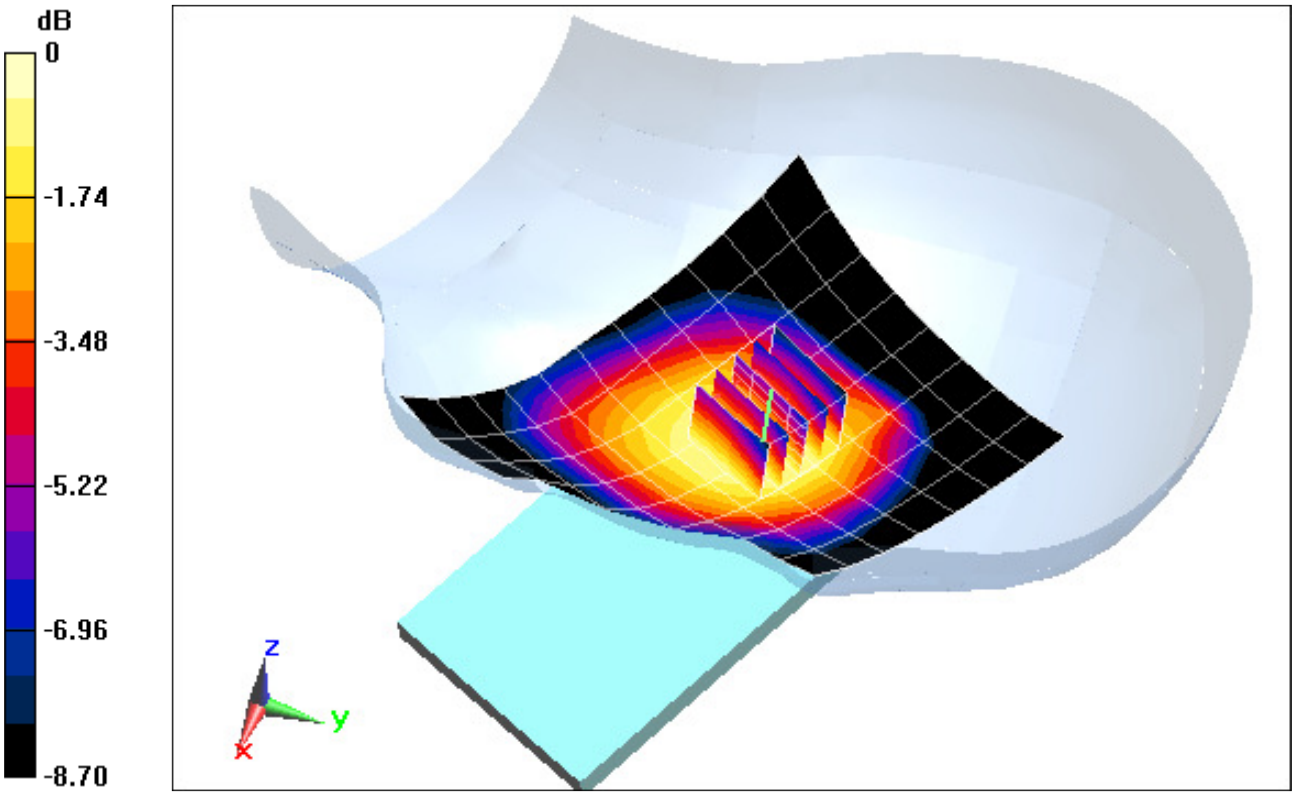
Communication System: WCDMA; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.911 mho/m; ε_r = 42.007; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-29-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.344 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.077 mW/g
SAR(1 g) = 0.063 mW/g; SAR(10 g) = 0.049 mW/g



0 dB = 0.0659 mW/g = -23.62 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

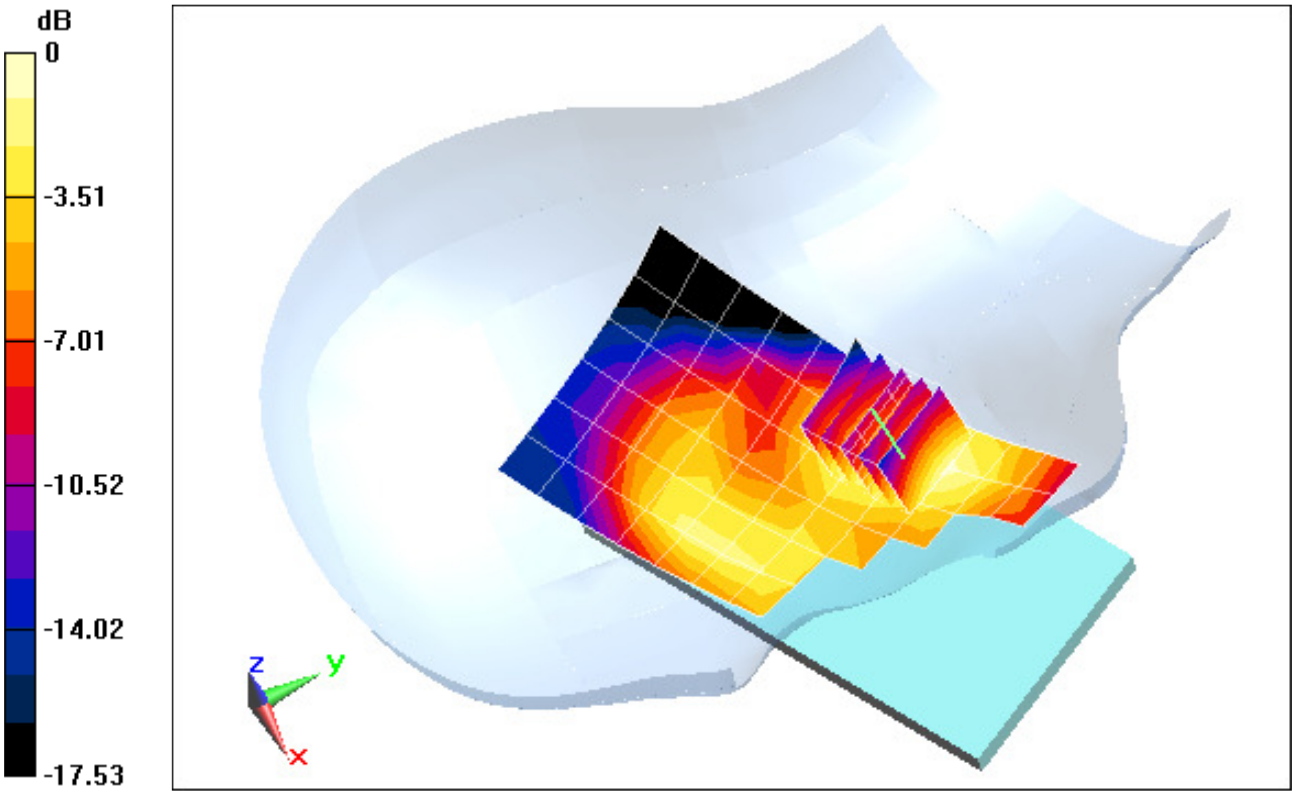
Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.38 mho/m; ε_r = 40.61; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-25-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3287; ConvF(5.06, 5.06, 5.06); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.204 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.194 mW/g
SAR(1 g) = 0.128 mW/g; SAR(10 g) = 0.081 mW/g



0 dB = 0.137 mW/g = -17.27 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

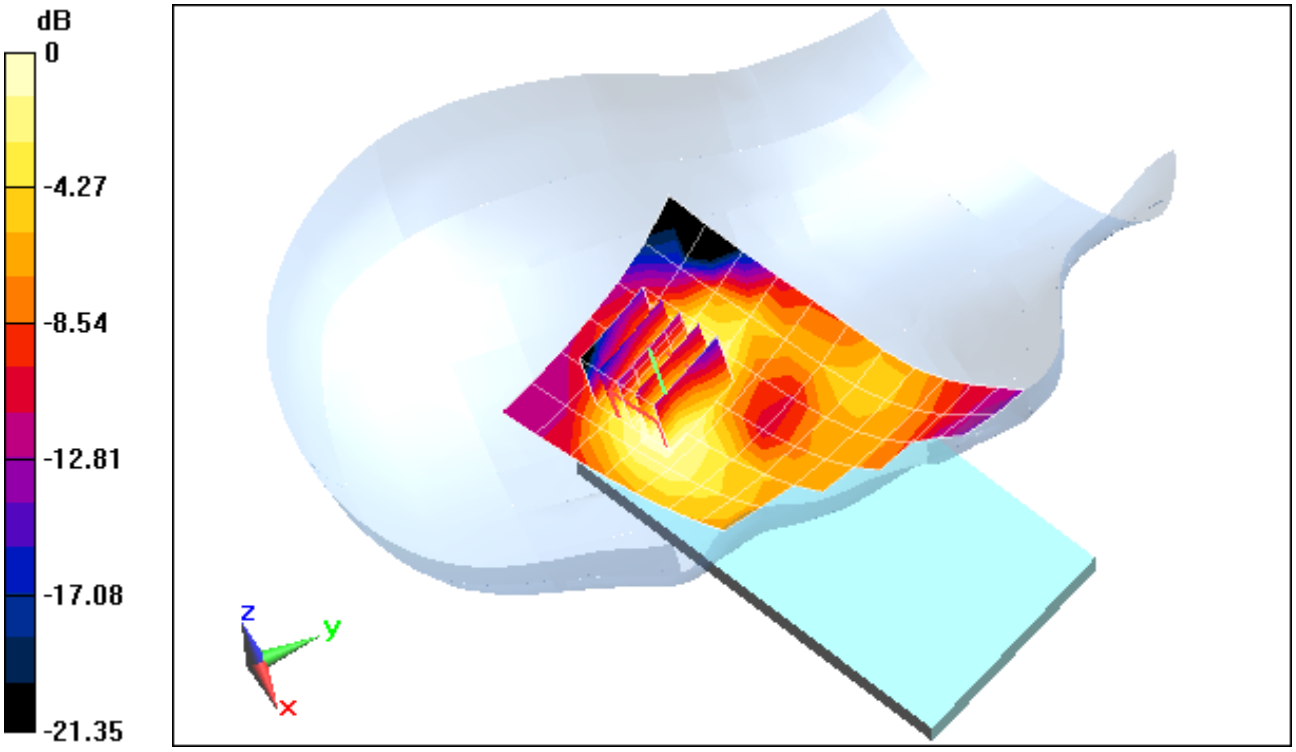
Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.385 mho/m; ε_r = 38.24; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 09-05-2012; Ambient Temp: 23.3°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3288; ConvF(5.16, 5.16, 5.16); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO RevA, Right Head, Tilt, Mid.ch

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.914 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.167 mW/g
SAR(1 g) = 0.105 mW/g; SAR(10 g) = 0.065 mW/g



0 dB = 0.112 mW/g = -19.02 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

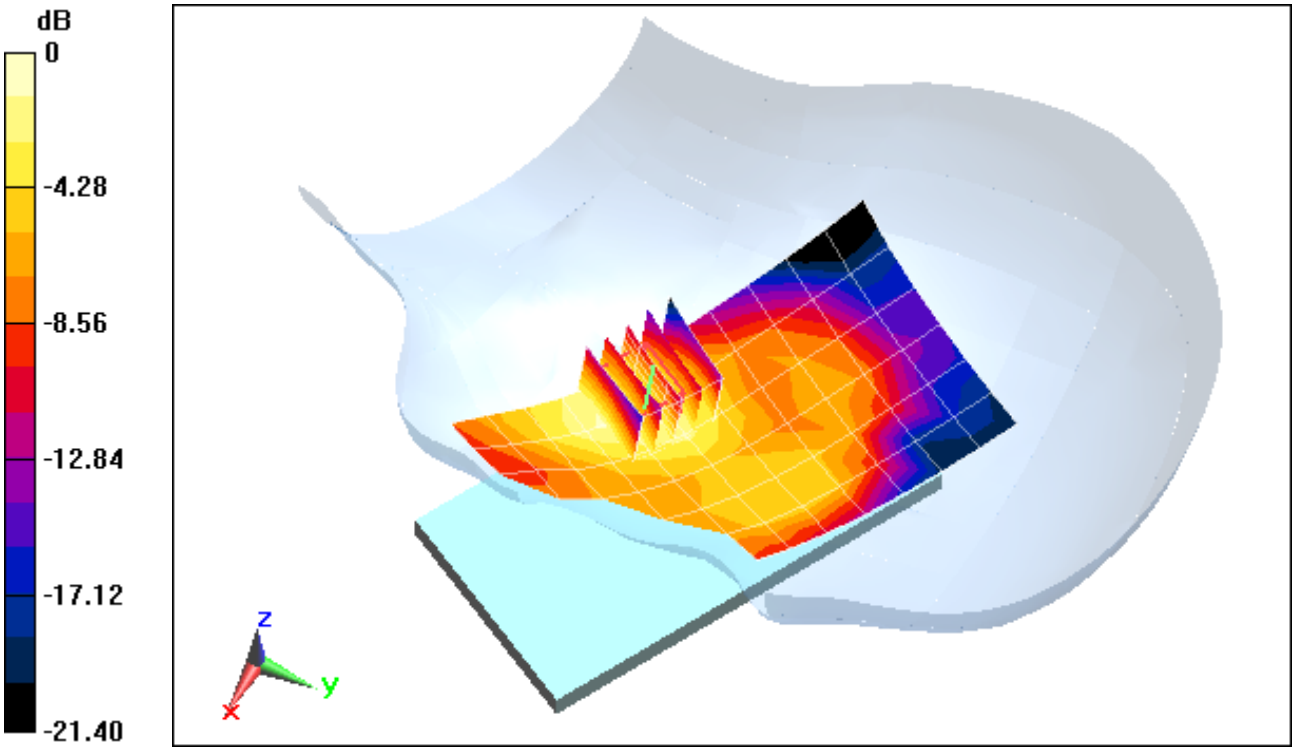
Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.385 mho/m; ε_r = 38.24; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 09-05-2012; Ambient Temp: 23.3°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3288; ConvF(5.16, 5.16, 5.16); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO Rev A, Left Head, Cheek, Mid.ch

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.806 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.292 mW/g
SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.118 mW/g



0 dB = 0.206 mW/g = -13.72 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

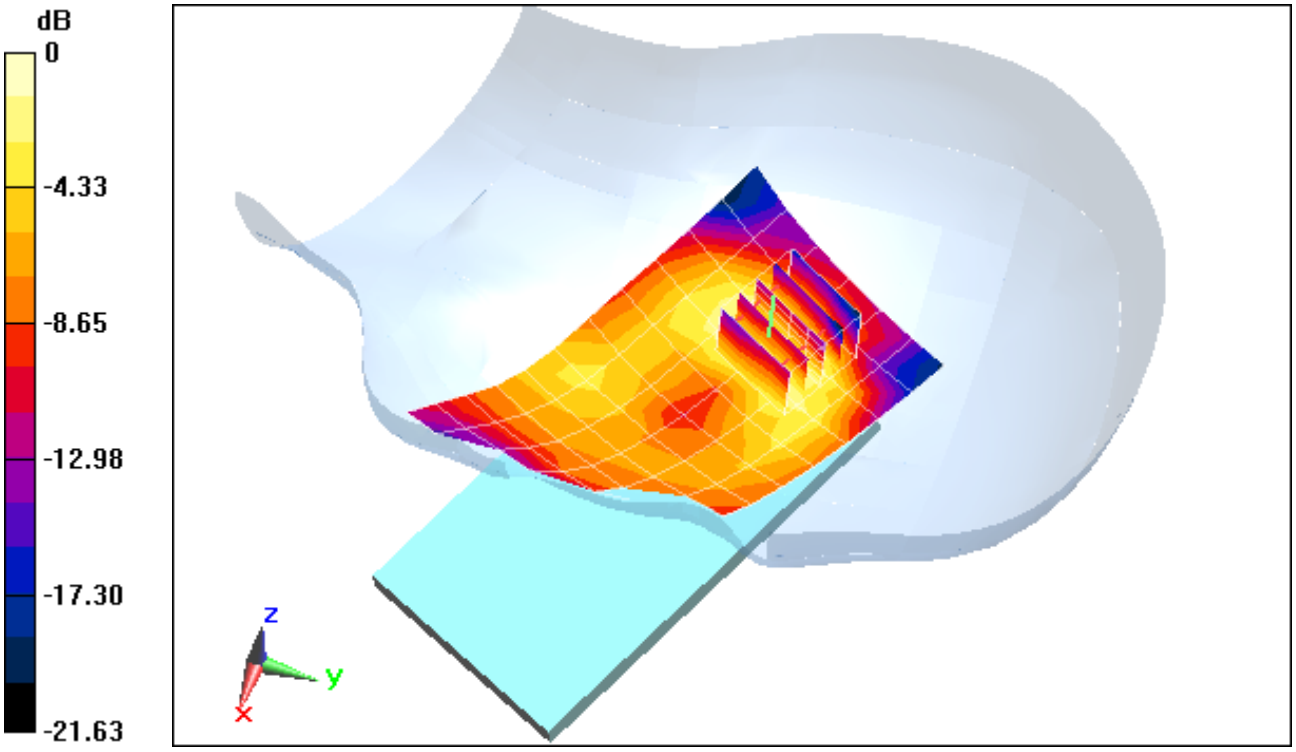
Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.385 mho/m; ε_r = 38.24; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 09-05-2012; Ambient Temp: 23.3°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3288; ConvF(5.16, 5.16, 5.16); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO Rev A, Left Head, Tilt, Mid.ch

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.790 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.179 mW/g
SAR(1 g) = 0.107 mW/g; SAR(10 g) = 0.062 mW/g



0 dB = 0.115 mW/g = -18.79 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

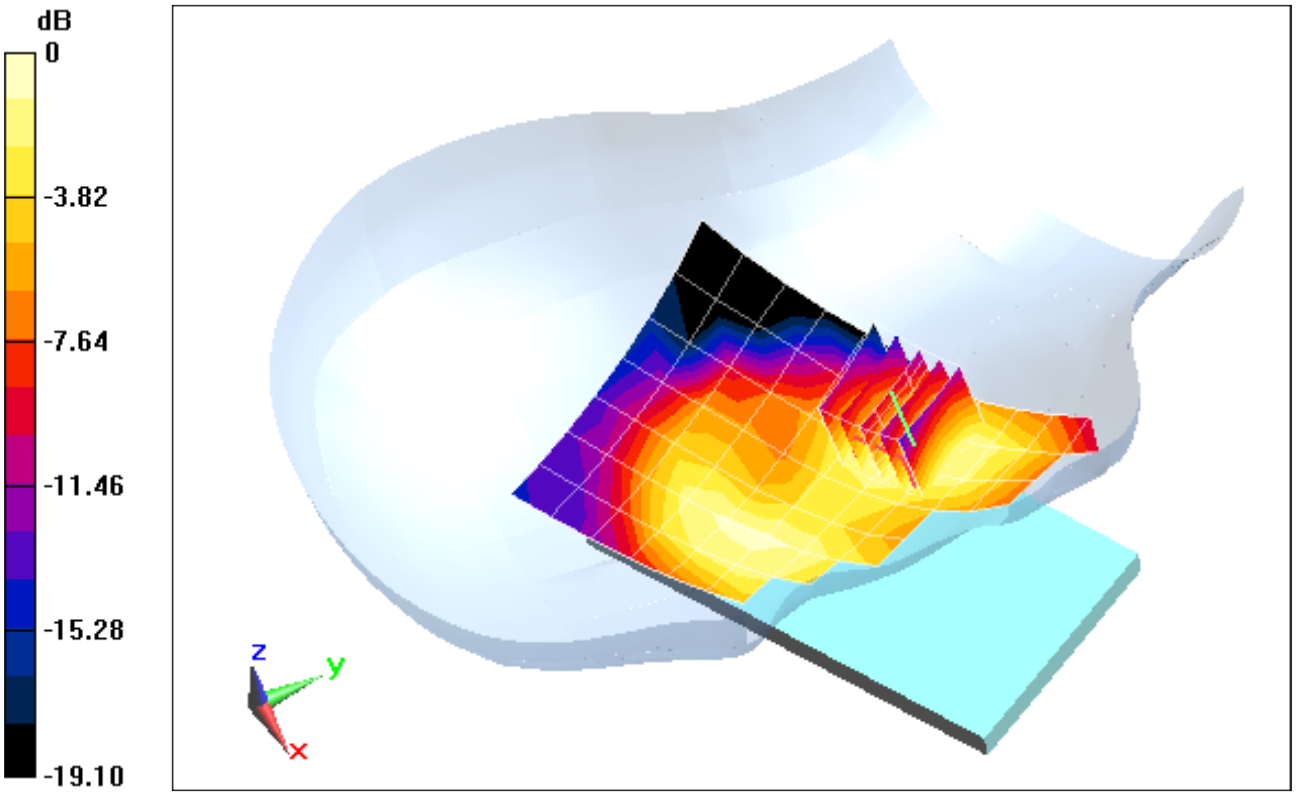
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.419 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-23-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3287; ConvF(5.06, 5.06, 5.06); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.607 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.089 mW/g
SAR(1 g) = 0.060 mW/g; SAR(10 g) = 0.039 mW/g



0 dB = 0.0658 mW/g = -23.64 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

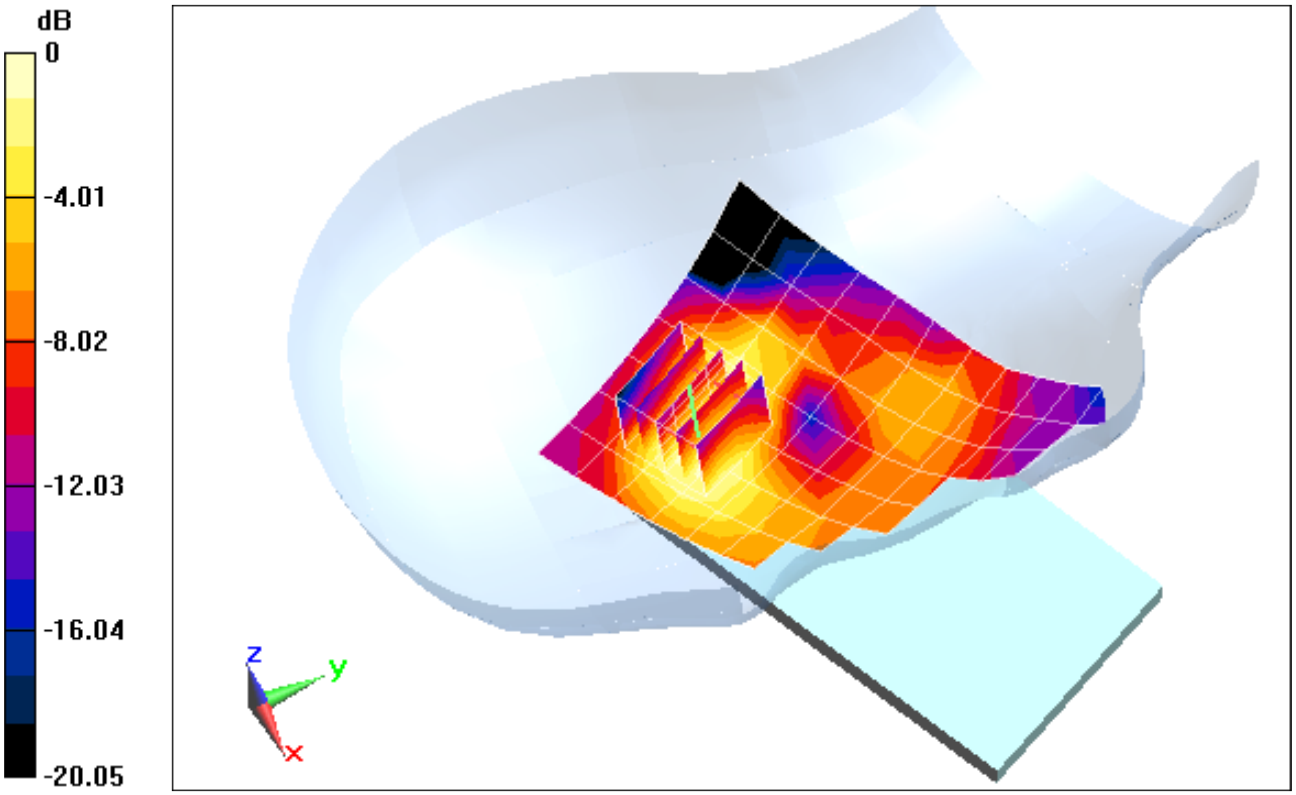
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.419 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-23-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3287; ConvF(5.06, 5.06, 5.06); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.370 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.084 mW/g
SAR(1 g) = 0.056 mW/g; SAR(10 g) = 0.035 mW/g



0 dB = 0.0599 mW/g = -24.45 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

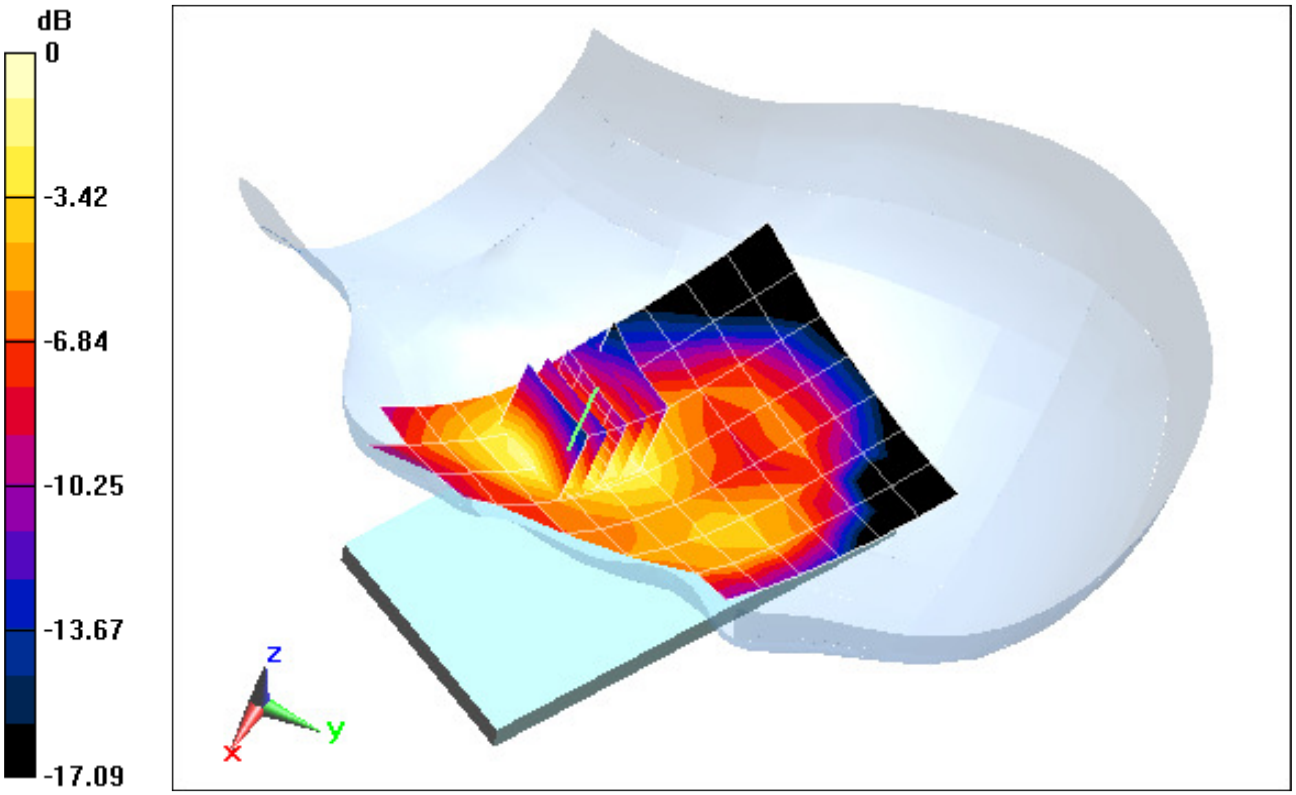
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.419 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-23-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3287; ConvF(5.06, 5.06, 5.06); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.747 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.154 mW/g
SAR(1 g) = 0.102 mW/g; SAR(10 g) = 0.063 mW/g



0 dB = 0.109 mW/g = -19.25 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

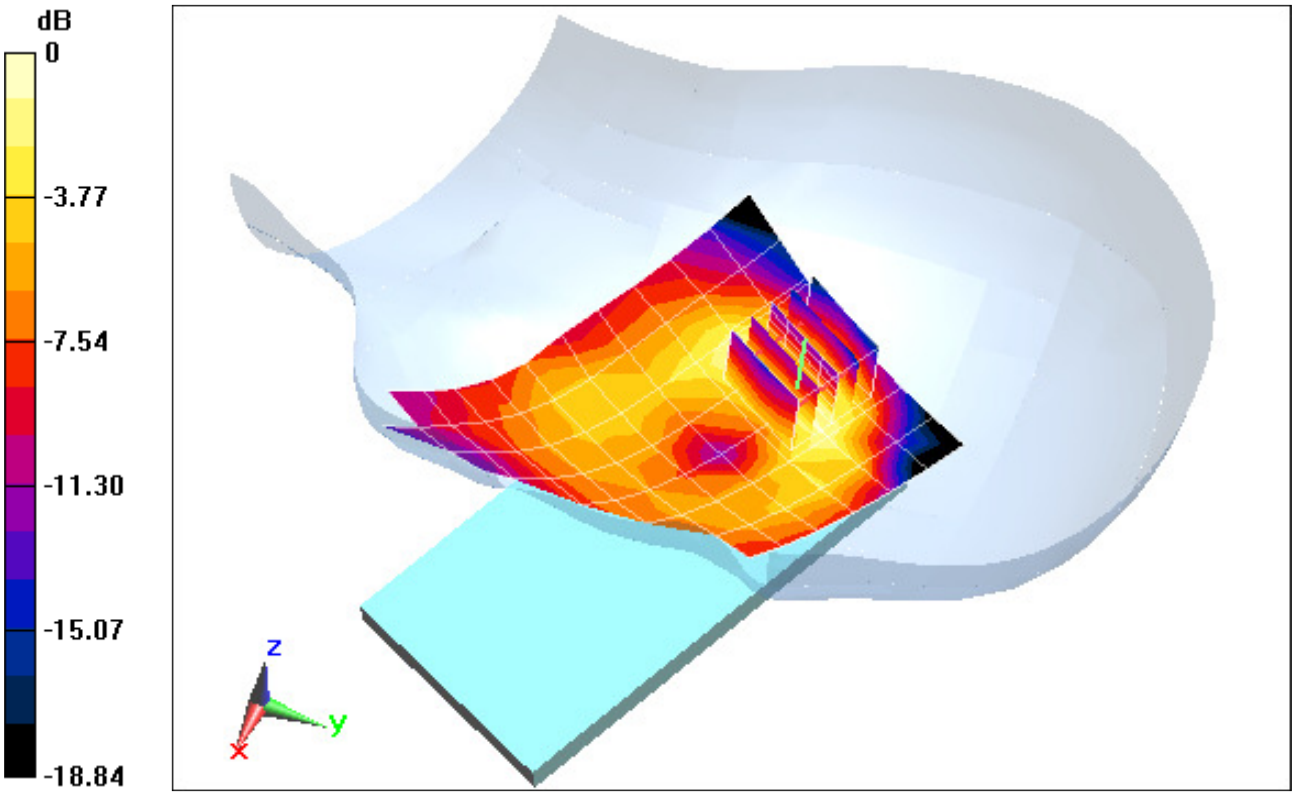
Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.419 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-23-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3287; ConvF(5.06, 5.06, 5.06); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.109 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.082 mW/g
SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.029 mW/g



0 dB = 0.0540 mW/g = -25.35 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

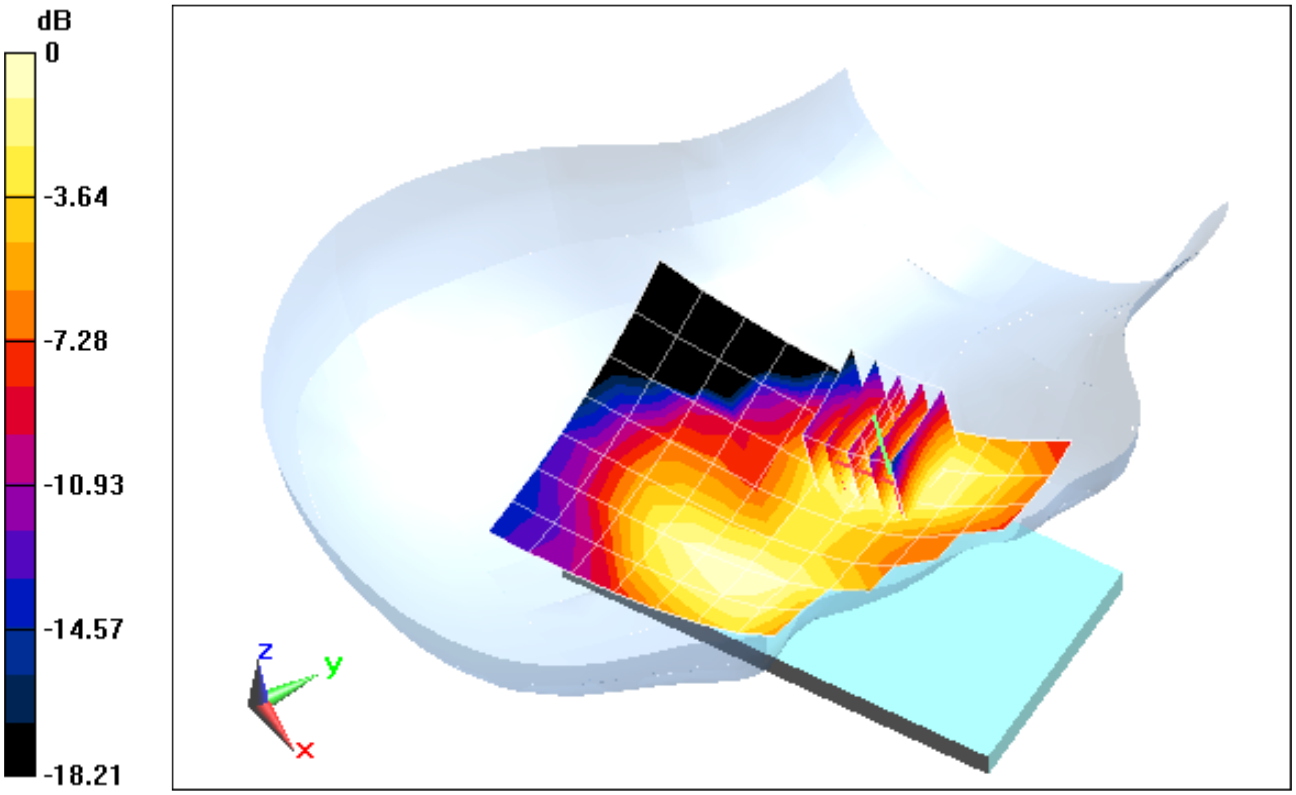
Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.403 mho/m; ε_r = 38.42; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-27-2012; Ambient Temp: 24.8°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(6.95, 6.95, 6.95); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: UMTS 1900, Right Head, Cheek, Mid.ch

Area Scan (8x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.113 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.142 mW/g
SAR(1 g) = 0.095 mW/g; SAR(10 g) = 0.061 mW/g



0 dB = 0.103 mW/g = -19.74 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

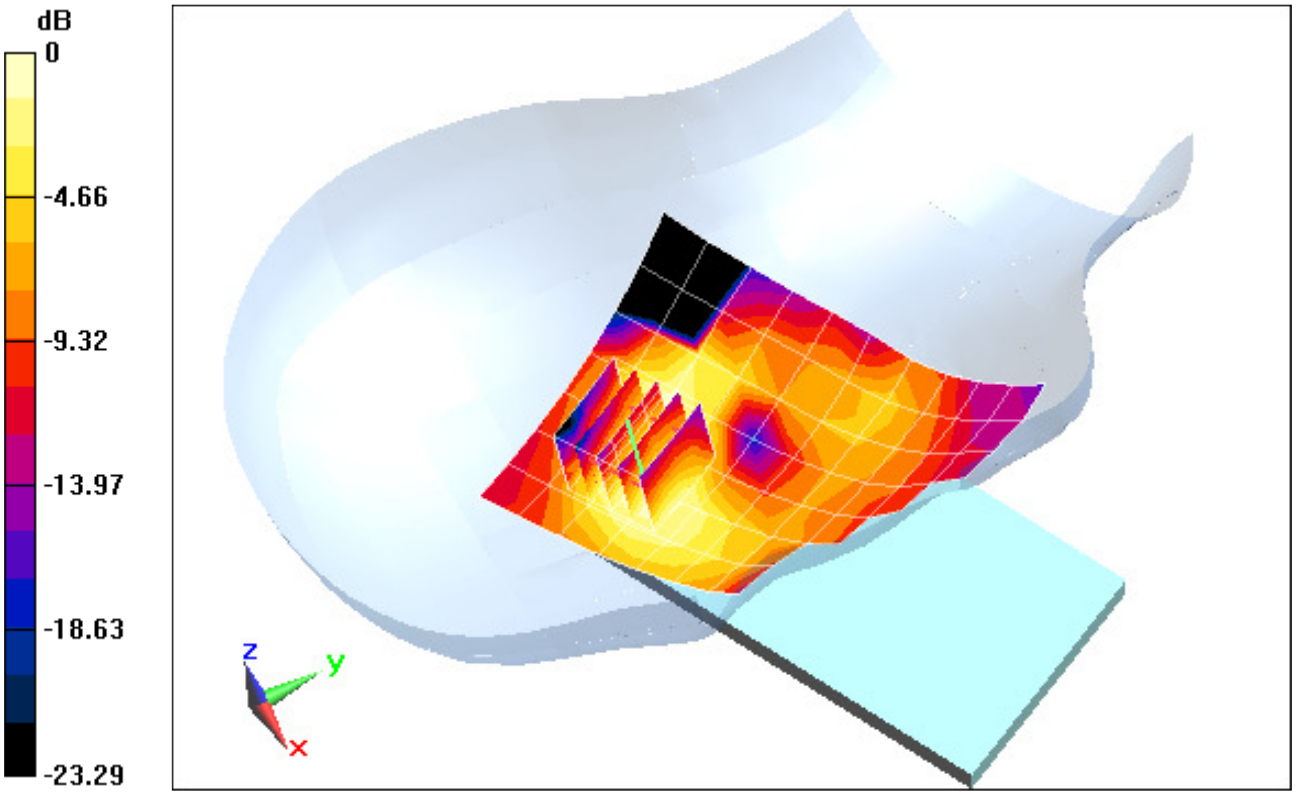
Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.403 mho/m; ε_r = 38.42; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-27-2012; Ambient Temp: 24.8°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(6.95, 6.95, 6.95); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (8x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.408 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.118 mW/g
SAR(1 g) = 0.076 mW/g; SAR(10 g) = 0.046 mW/g



0 dB = 0.0807 mW/g = -21.86 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

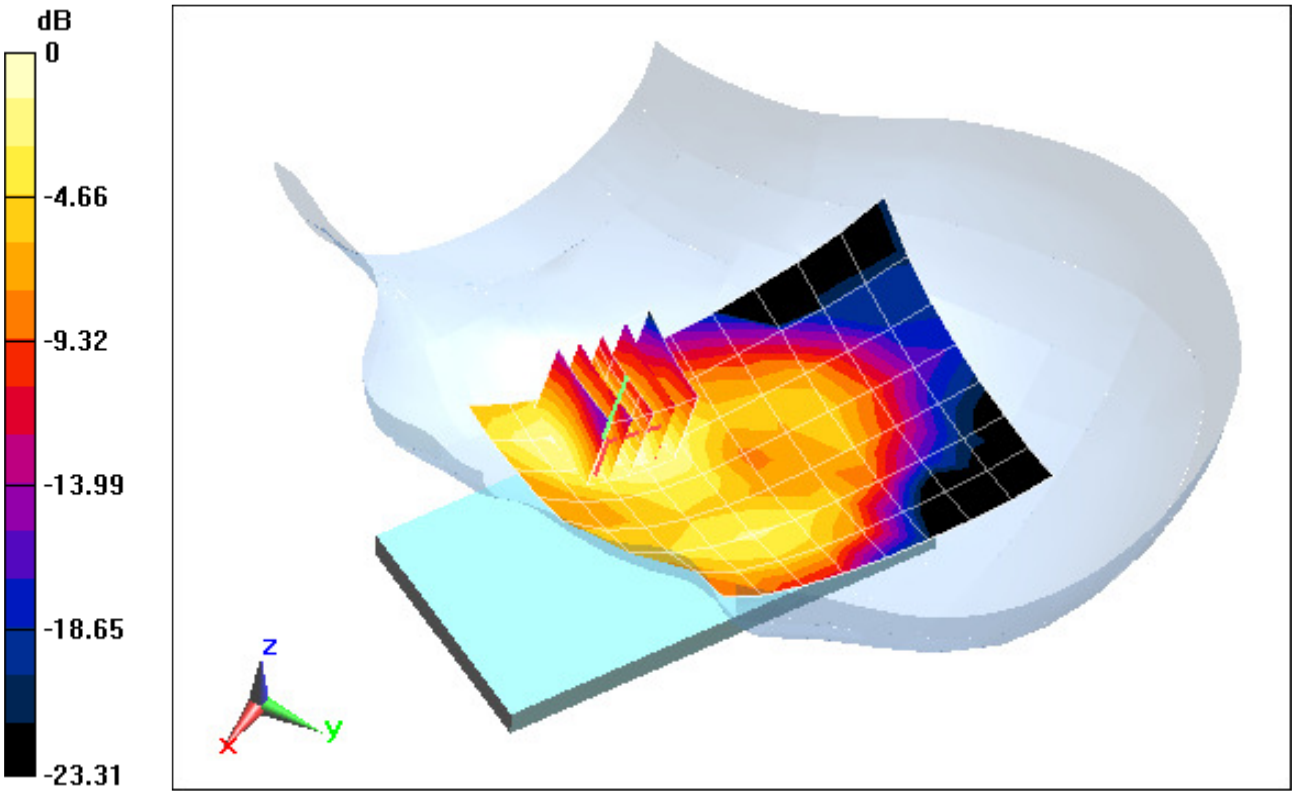
Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.403 mho/m; ε_r = 38.42; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-27-2012; Ambient Temp: 24.8°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(6.95, 6.95, 6.95); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: UMTS 1900, Left Head, Cheek, Mid.ch

Area Scan (8x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.983 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.178 mW/g
SAR(1 g) = 0.119 mW/g; SAR(10 g) = 0.074 mW/g



0 dB = 0.131 mW/g = -17.65 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

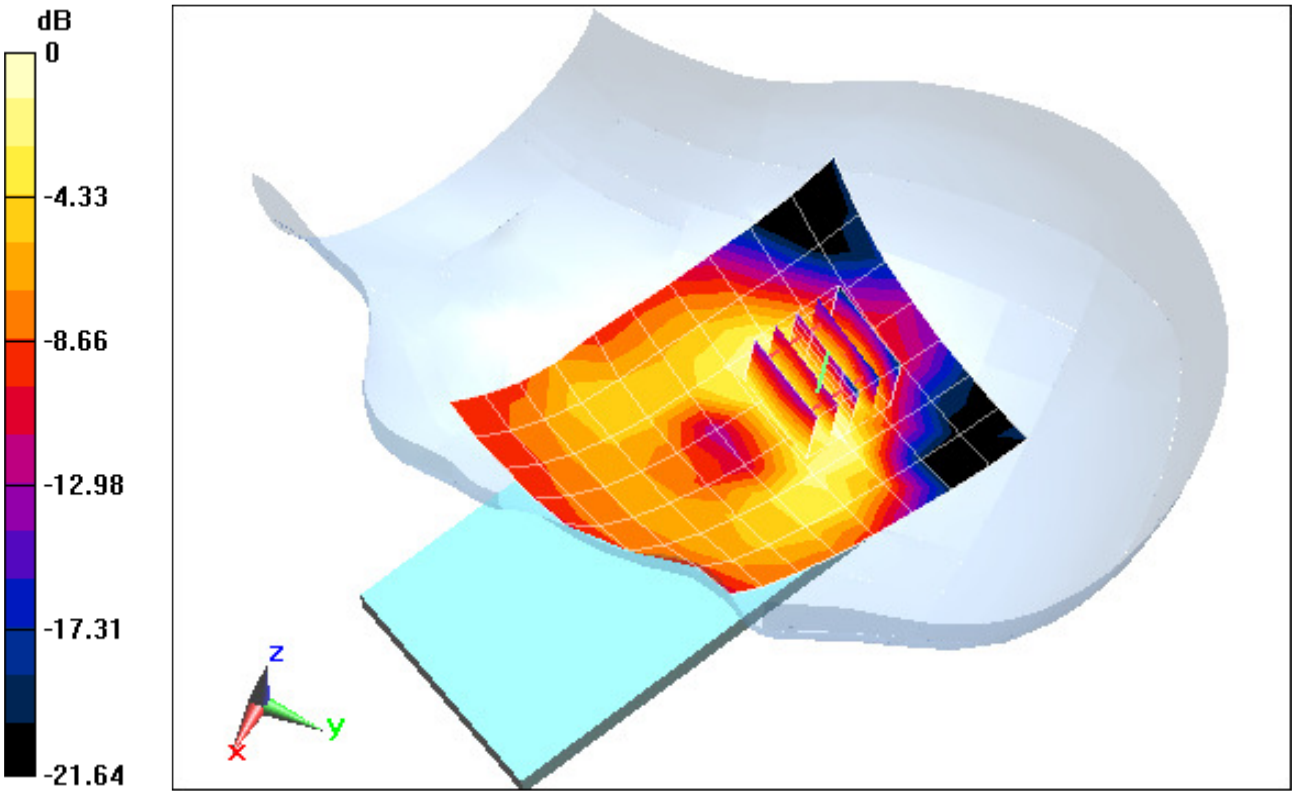
Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.403 mho/m; ε_r = 38.42; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-27-2012; Ambient Temp: 24.8°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(6.95, 6.95, 6.95); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (8x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.167 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.116 mW/g
SAR(1 g) = 0.070 mW/g; SAR(10 g) = 0.040 mW/g



0 dB = 0.0757 mW/g = -22.42 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

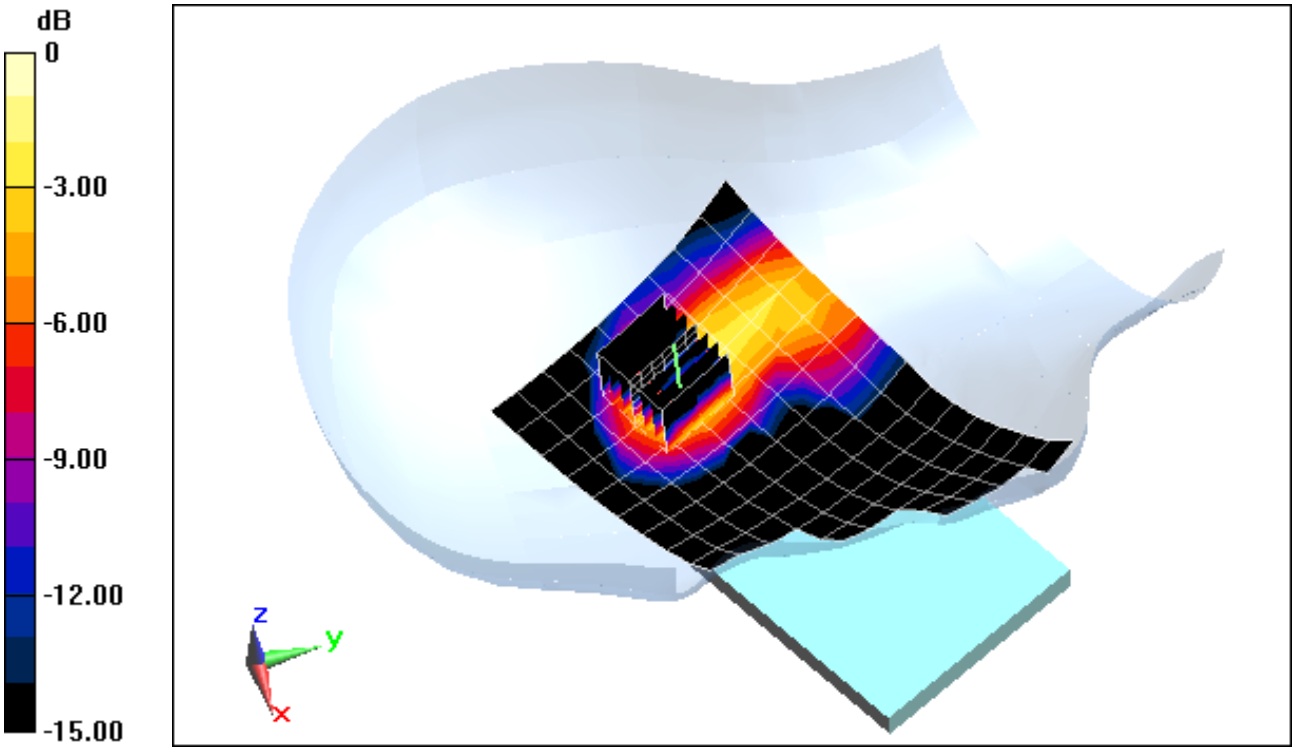
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.899 mho/m; ε_r = 37.891; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-30-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.663 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.052 mW/g
SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.011 mW/g



0 dB = 0.0287 mW/g = -30.84 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

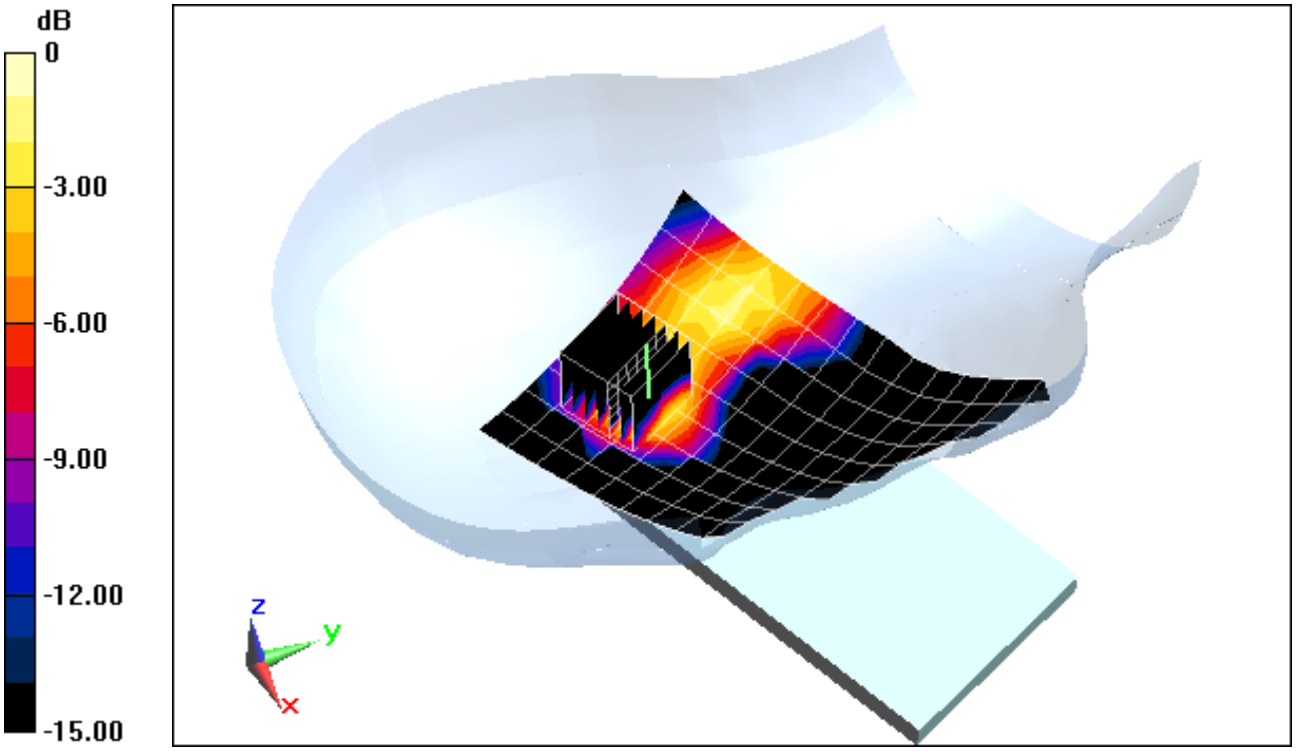
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.899 mho/m; ε_r = 37.891; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-30-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.170 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.033 mW/g
SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.00792 mW/g



0 dB = 0.0223 mW/g = -33.03 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

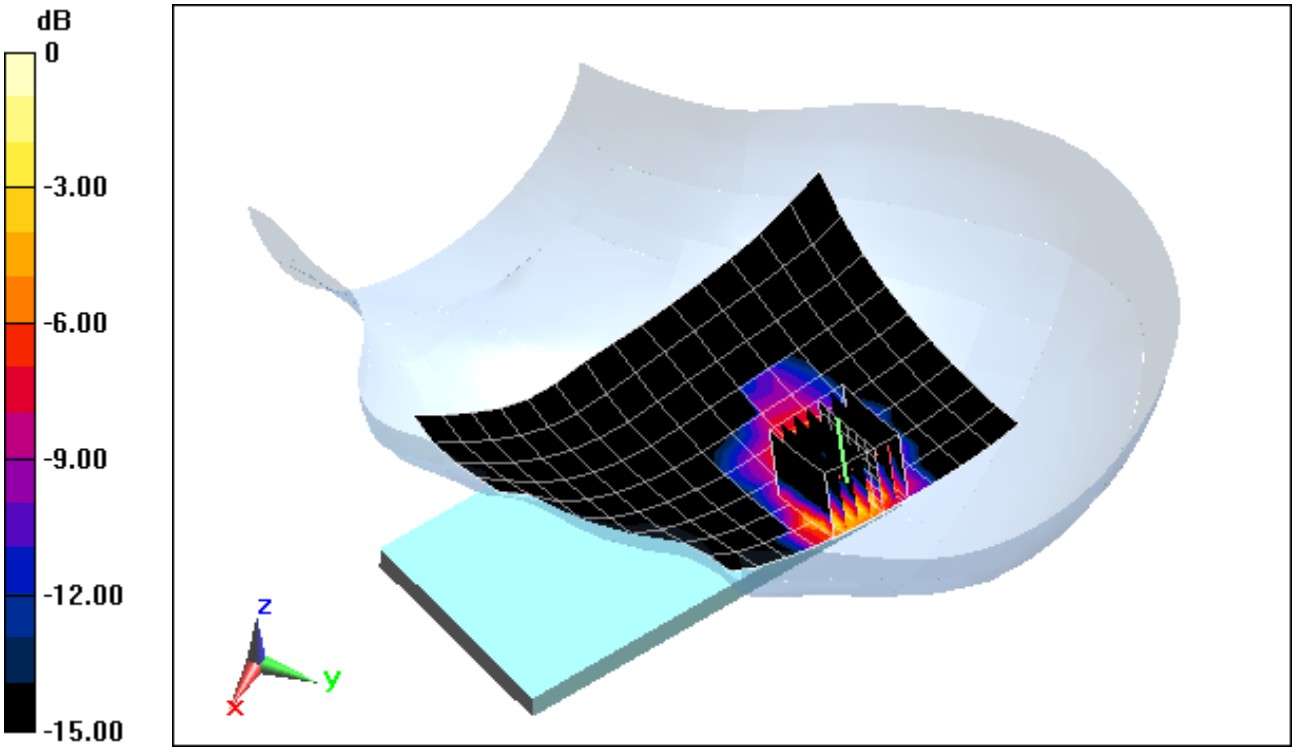
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.899 mho/m; ε_r = 37.891; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-30-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (10x15x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.663 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.026 mW/g
SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00577 mW/g



0 dB = 0.0170 mW/g = -35.39 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

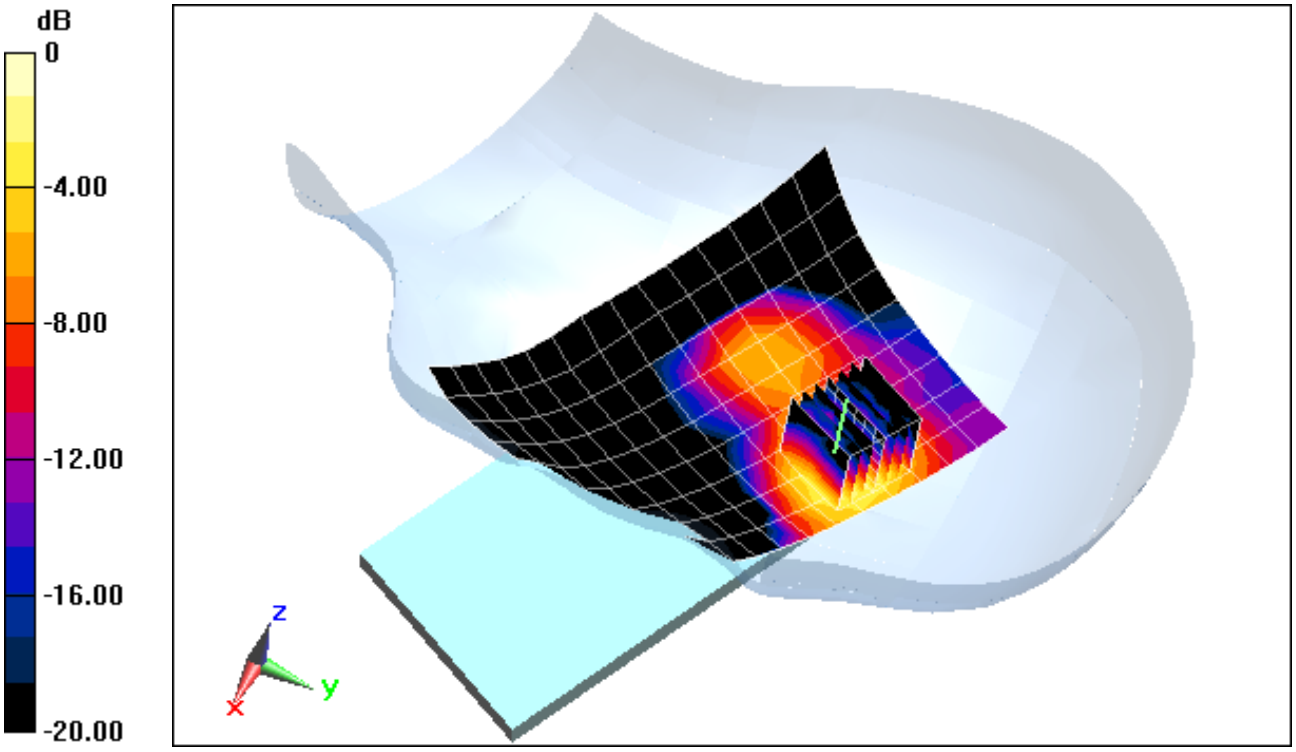
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.899 mho/m; ε_r = 37.891; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-30-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (10x15x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.689 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.067 mW/g
SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.017 mW/g



0 dB = 0.0434 mW/g = -27.25 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

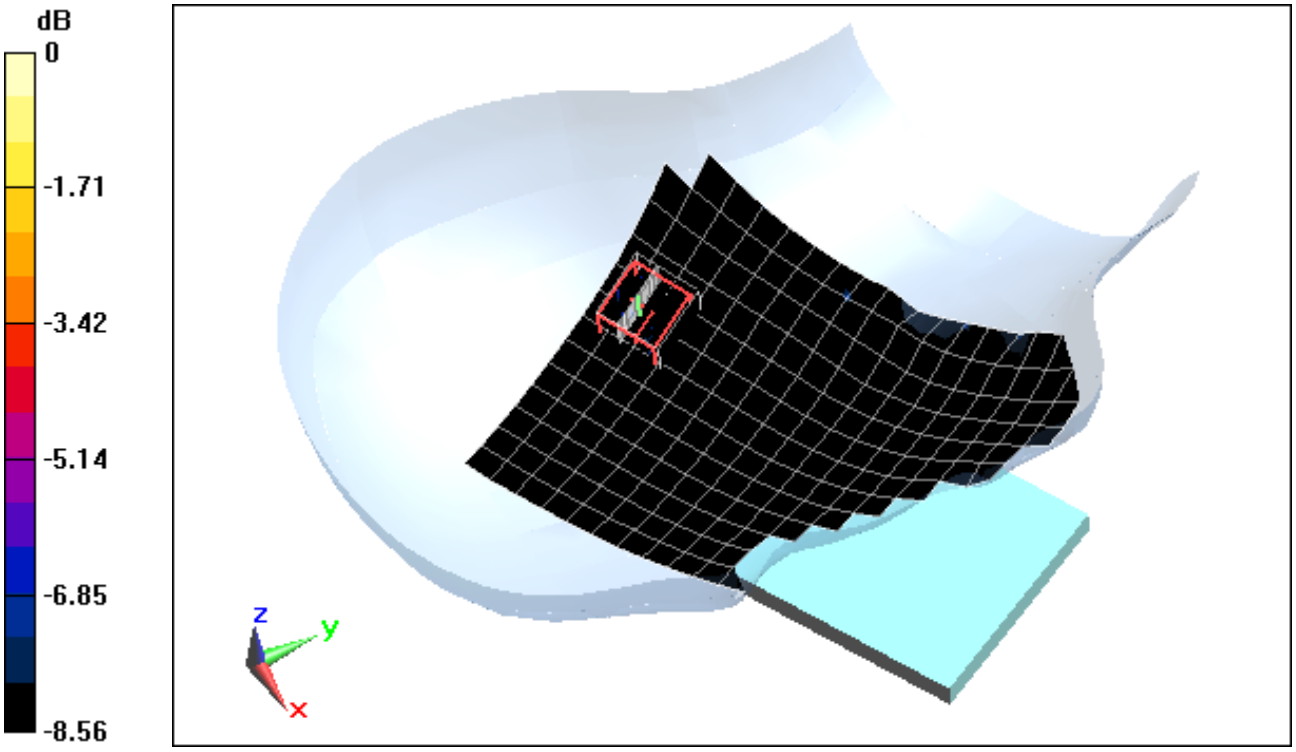
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used:
f = 5260 MHz; σ = 4.59 mho/m; ε_r = 35.47; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 09-02-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(4.36, 4.36, 4.36); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: IEEE 802.11a 5.3 GHz, Right Head, Cheek, Ch 52, 6 Mbps

Area Scan (14x18x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.322 V/m; Power Drift = 0.129 dB
Peak SAR (extrapolated) = 0.066 mW/g
SAR(1 g) = 0.00347 mW/g; SAR(10 g) = 0.00053 mW/g



0 dB = 0.150 mW/g = -16.48 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

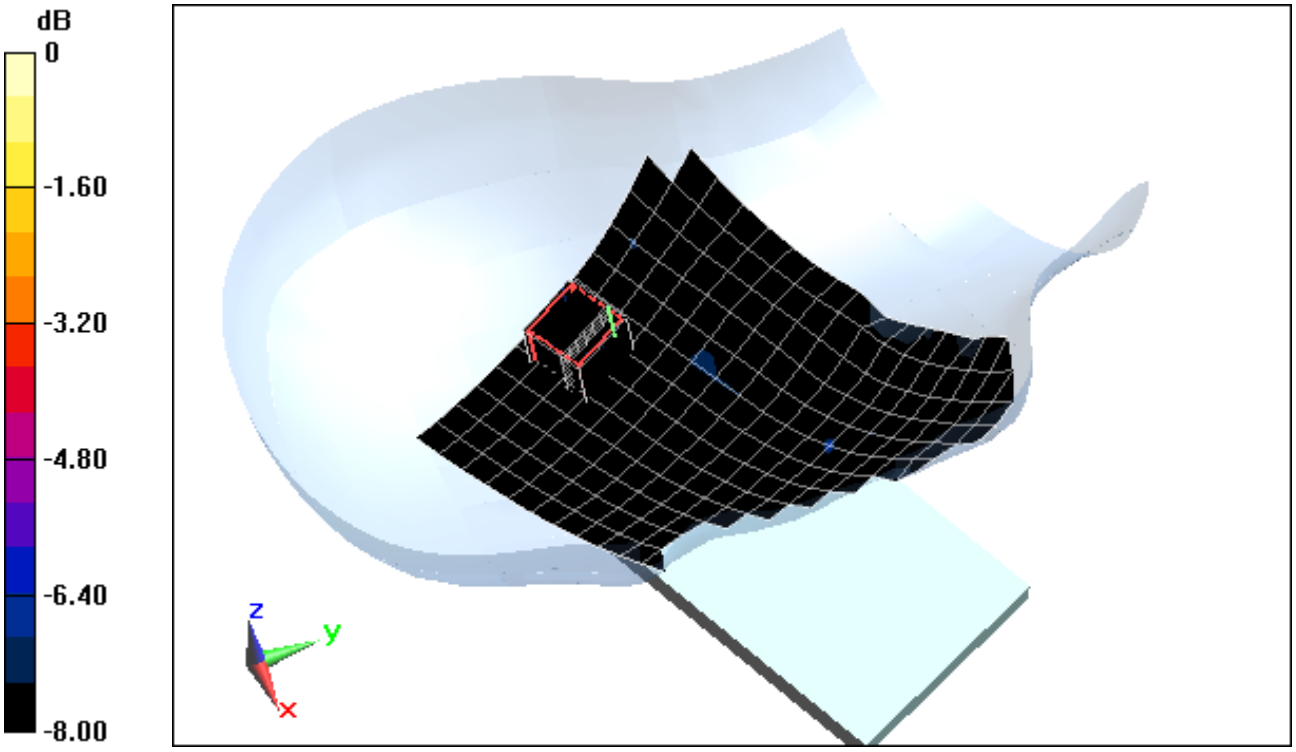
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used:
f = 5260 MHz; σ = 4.59 mho/m; ε_r = 35.47; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 09-02-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(4.36, 4.36, 4.36); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: IEEE 802.11a 5.3 GHz, Right Head, Tilt, Ch 52, 6 Mbps

Area Scan (14x18x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.537 V/m; Power Drift = 0.159 dB
Peak SAR (extrapolated) = 0.029 mW/g
SAR(1 g) = 0.00104 mW/g; SAR(10 g) = 9.4e-005 mW/g



0 dB = 0.150 mW/g = -16.48 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

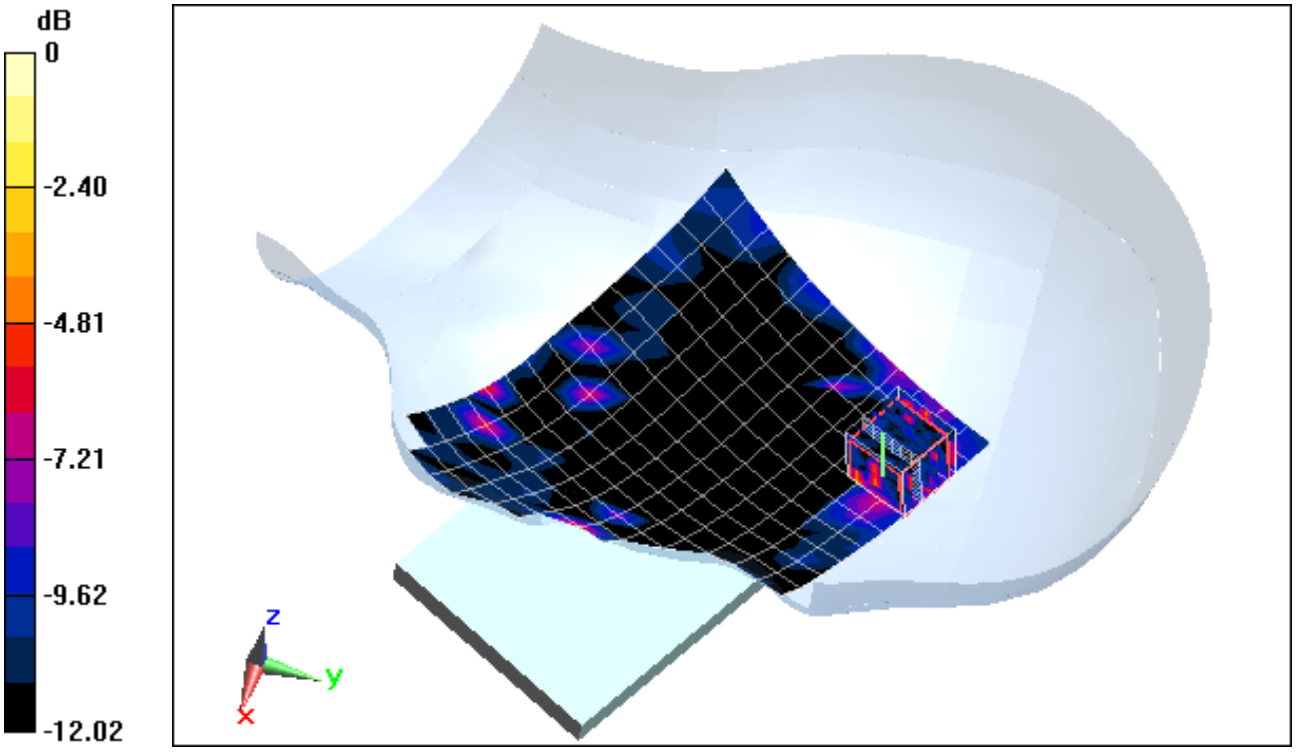
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used:
f = 5260 MHz; σ = 4.59 mho/m; ε_r = 35.47; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 09-02-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(4.36, 4.36, 4.36); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: IEEE 802.11a, 5.3 GHz Left Head, Cheek, Ch52, 6 Mbps

Area Scan (13x19x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.419 V/m; Power Drift = 0.100 dB
Peak SAR (extrapolated) = 0.247 mW/g
SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.0057 mW/g



0 dB = 0.100 mW/g = -20.00 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

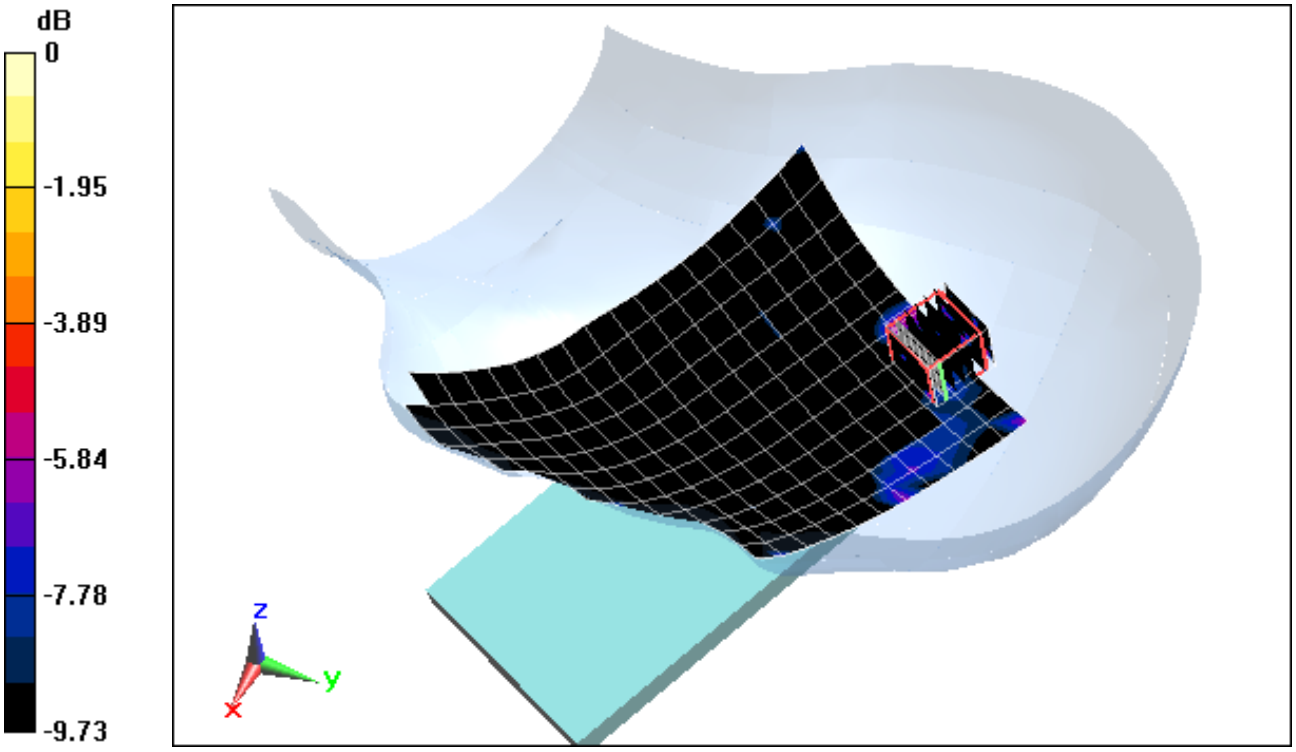
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used:
f = 5260 MHz; σ = 4.59 mho/m; ε_r = 35.47; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 09-02-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(4.36, 4.36, 4.36); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Mode: IEEE 802.11a, 5.3 GHz Left Head, Tilt Ch 52, 6 Mbps

Area Scan (13x19x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.903 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.201 mW/g
SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00251 mW/g



0 dB = 0.150 mW/g = -16.48 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 3

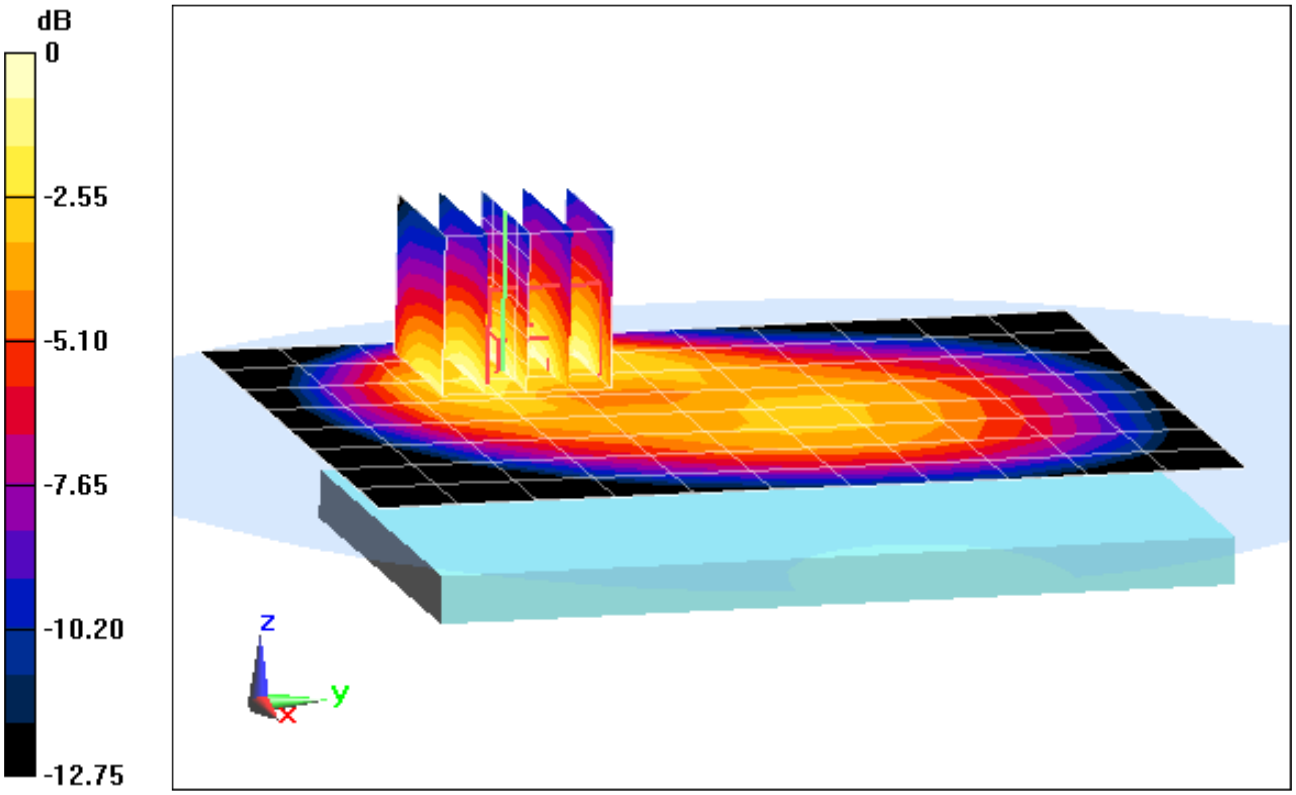
Communication System: LTE RF; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: 740 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.984 mho/m; ε_r = 54.35; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-28-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.236 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.583 mW/g
SAR(1 g) = 0.372 mW/g; SAR(10 g) = 0.236 mW/g



0 dB = 0.393 mW/g = -8.11 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 3

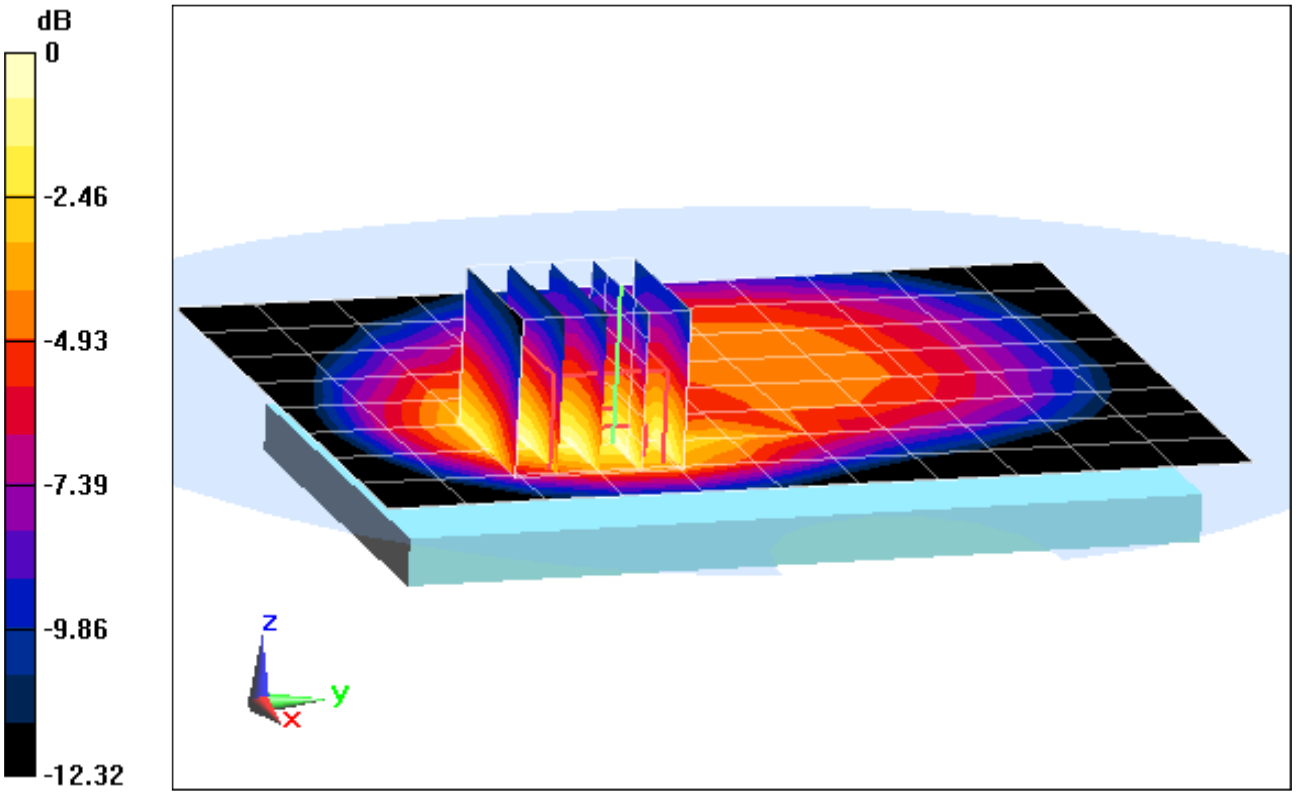
Communication System: LTE RF; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: 740 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.984 mho/m; ε_r = 54.35; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-28-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Body SAR, Front side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.085 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.589 mW/g
SAR(1 g) = 0.372 mW/g; SAR(10 g) = 0.231 mW/g



0 dB = 0.398 mW/g = -8.00 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 3

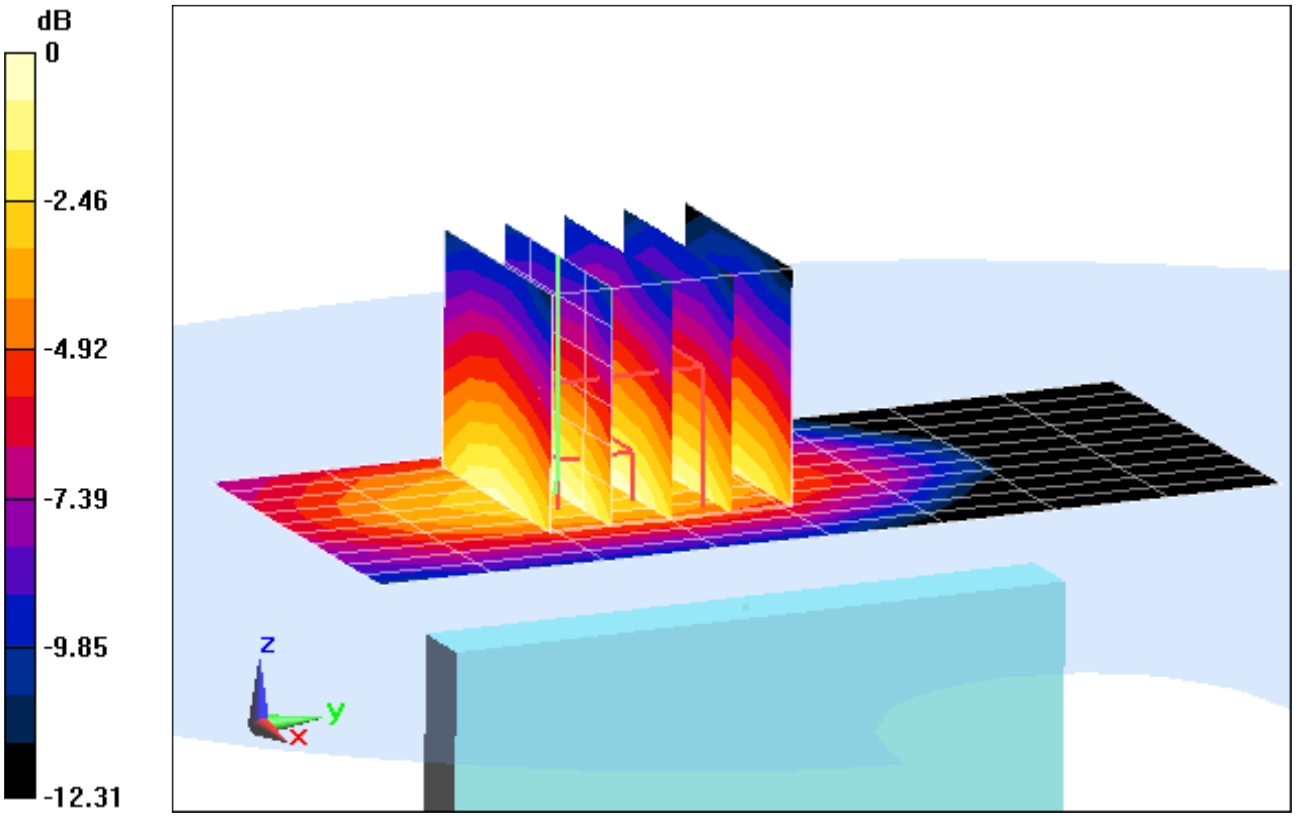
Communication System: LTE RF; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: 740 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.984 mho/m; ε_r = 54.35; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-28-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Body SAR, Bottom Edge, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.891 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.085 mW/g
SAR(1 g) = 0.059 mW/g; SAR(10 g) = 0.039 mW/g



0 dB = 0.0637 mW/g = -23.92 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 3

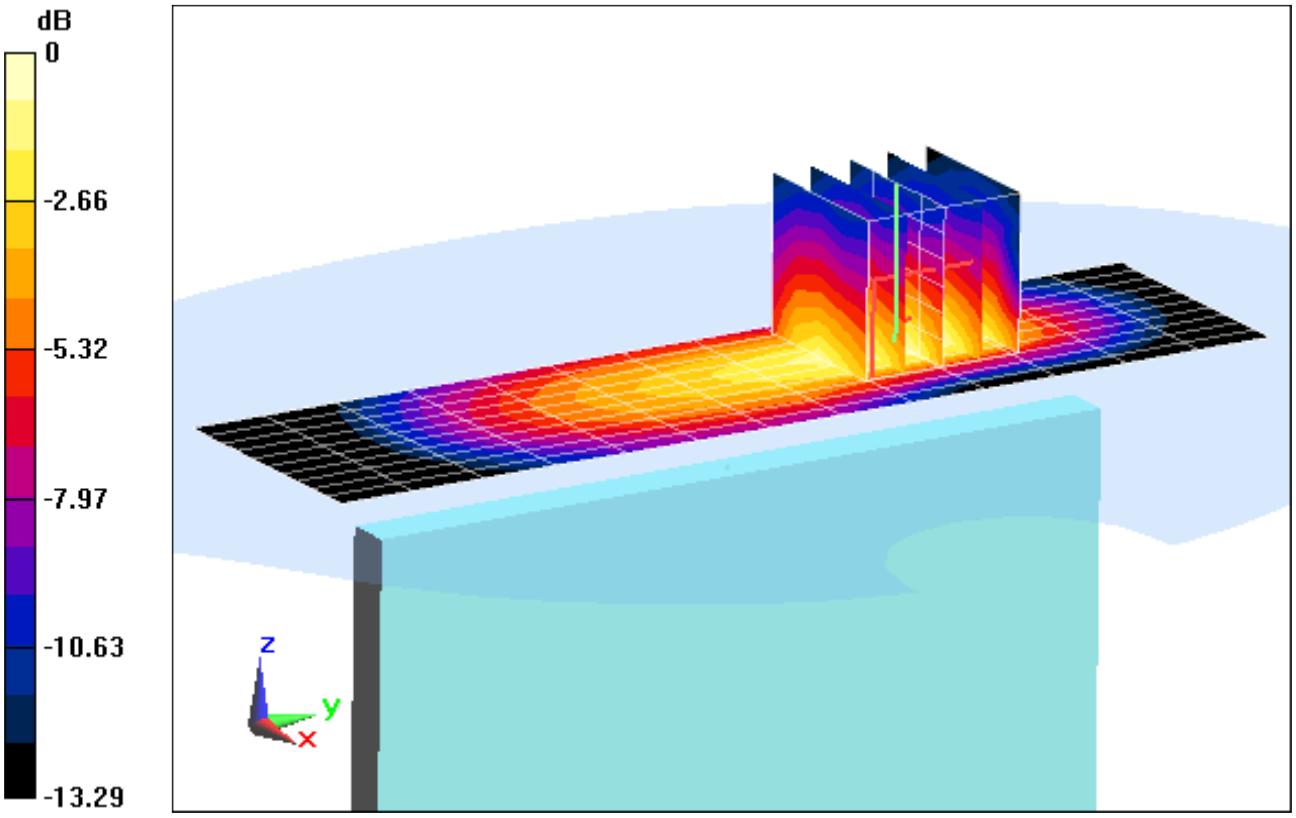
Communication System: LTE RF; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: 740 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.984 mho/m; ε_r = 54.35; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-28-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: LTE Band 13, Body SAR, Right Edge, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (11x14x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.446 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.759 mW/g
SAR(1 g) = 0.447 mW/g; SAR(10 g) = 0.258 mW/g



0 dB = 0.507 mW/g = -5.90 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

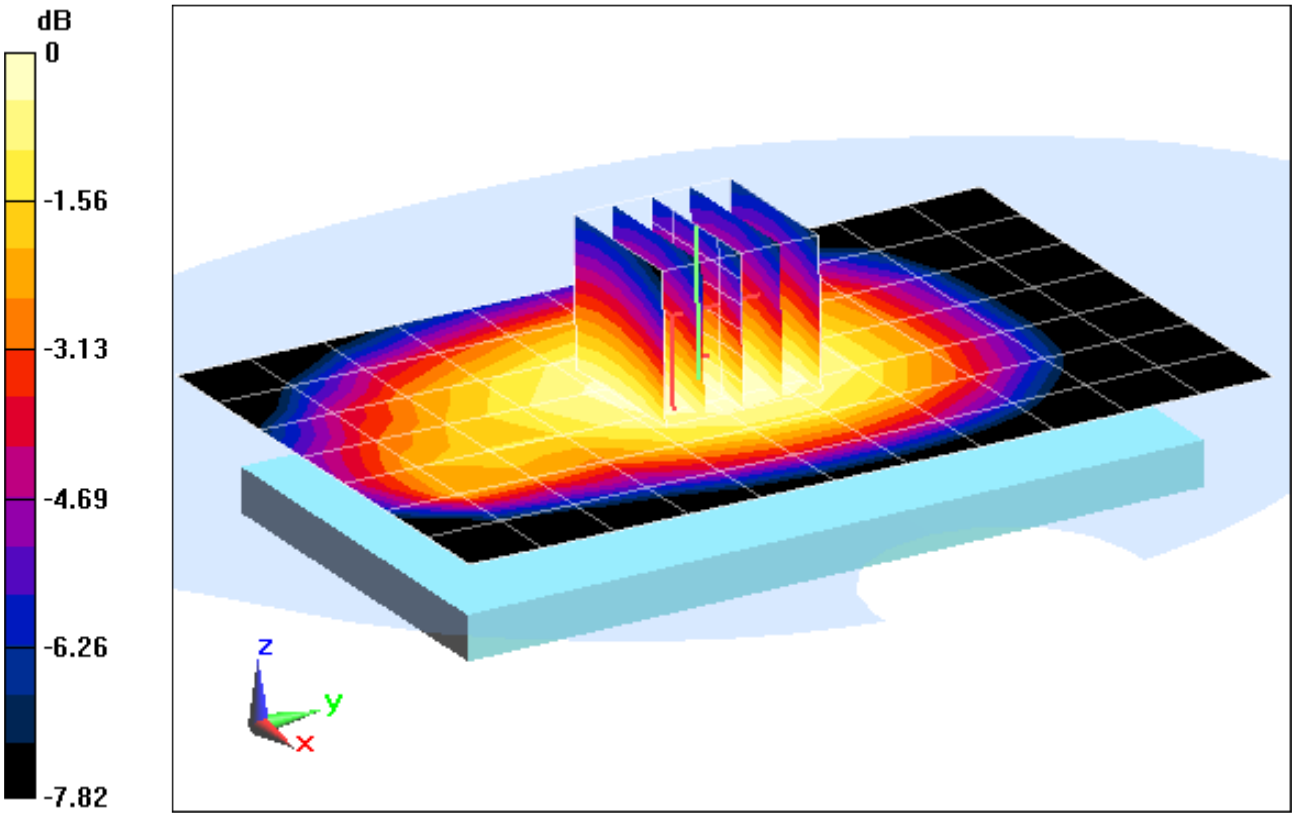
Communication System: Cellular CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.982 mho/m; ε_r = 54.166; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: Cellular TDSO32, Body SAR, Back side, Mid.ch

Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.068 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.546 mW/g
SAR(1 g) = 0.449 mW/g; SAR(10 g) = 0.349 mW/g



0 dB = 0.469 mW/g = -6.58 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

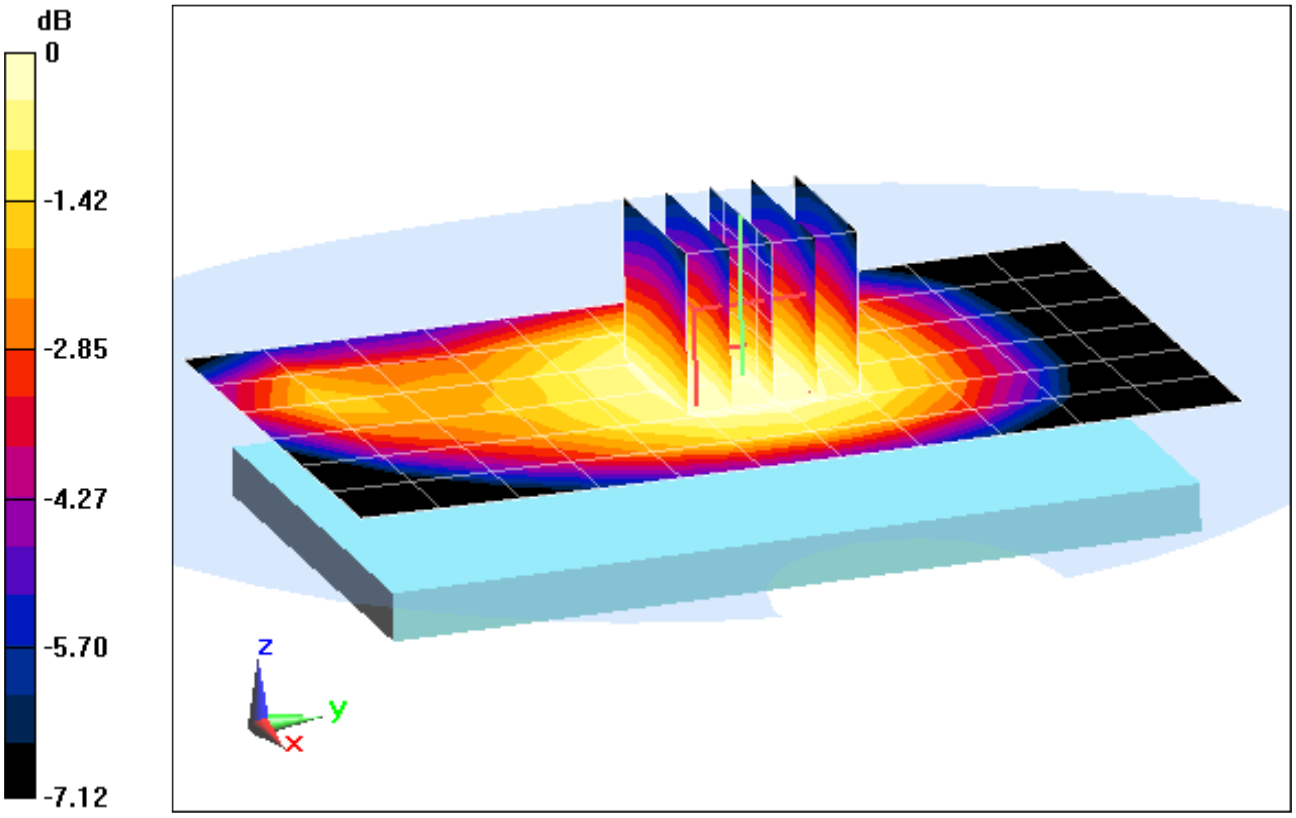
Communication System: Cellular CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.982 mho/m; ε_r = 54.166; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: Cellular EVDO Rev 0, Body SAR, Front side, Mid.ch

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.726 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.264 mW/g
SAR(1 g) = 0.212 mW/g; SAR(10 g) = 0.167 mW/g



0 dB = 0.223 mW/g = -13.03 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

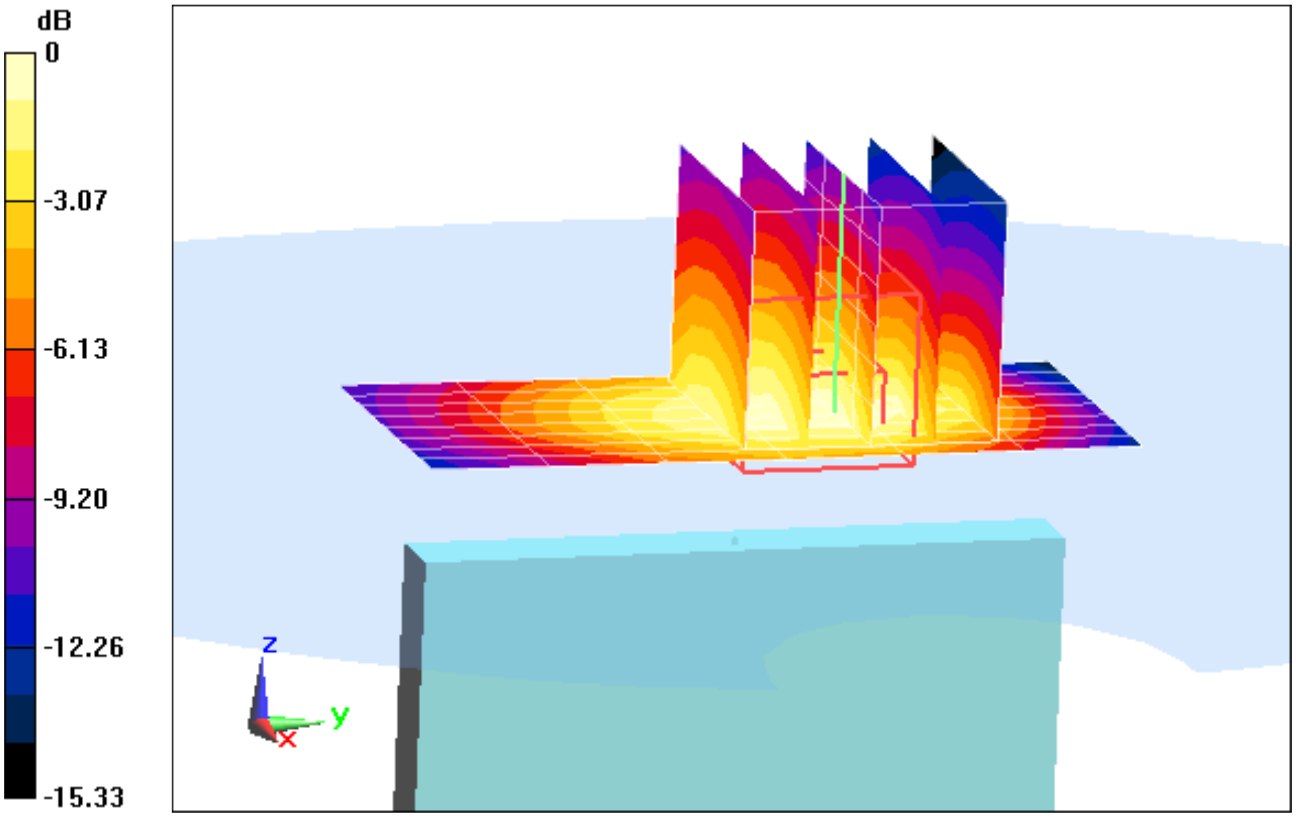
Communication System: Cellular CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.982 mho/m; ε_r = 54.166; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: Cellular EVDO Rev 0, Body SAR, Bottom Edge, Mid.ch

Area Scan (9x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.965 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.325 mW/g
SAR(1 g) = 0.196 mW/g; SAR(10 g) = 0.123 mW/g



0 dB = 0.213 mW/g = -13.43 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT:A3LSCHI605; Type: Portable Handset; Serial: 1

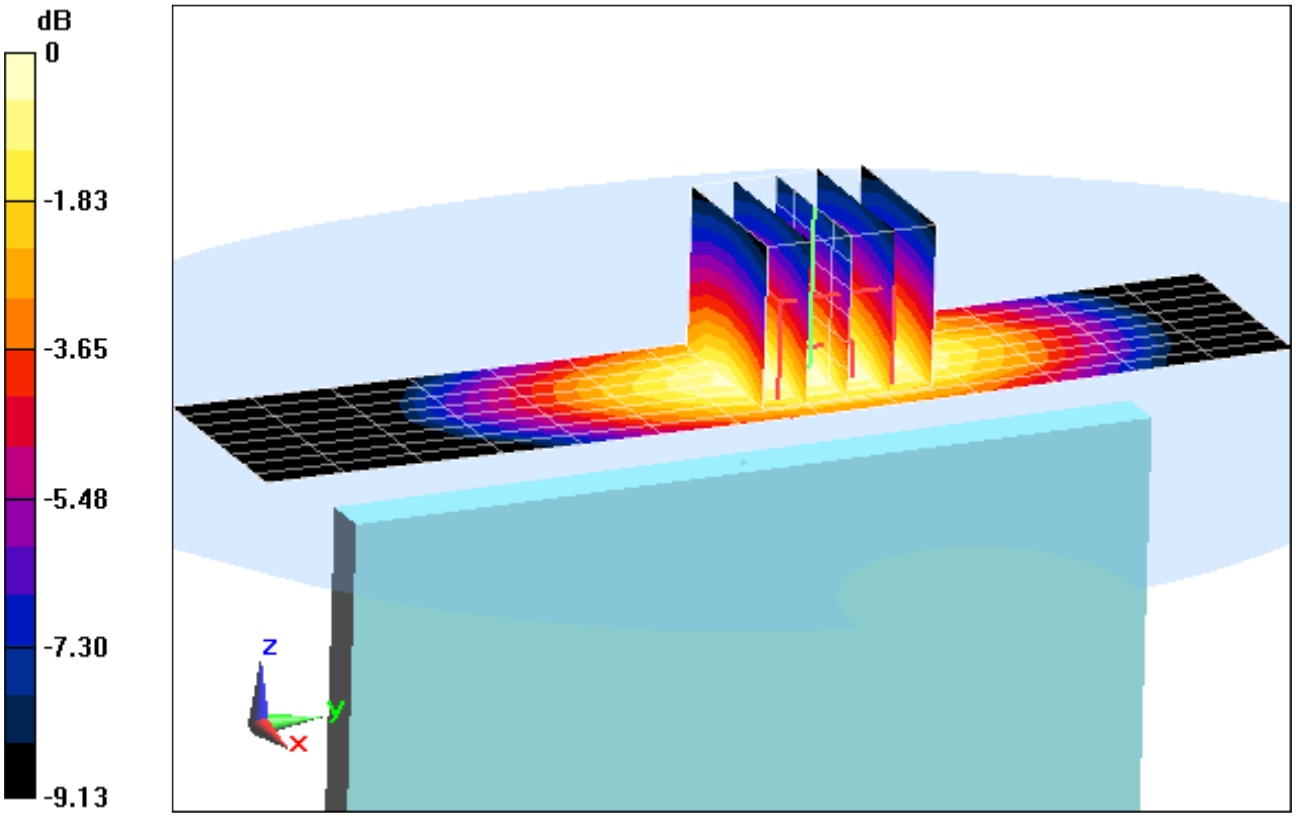
Communication System: Cellular CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.982 mho/m; ε_r = 54.166; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

Mode: Cellular EVDO Rev 0, Body SAR, Left Edge, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.569 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.386 mW/g
SAR(1 g) = 0.280 mW/g; SAR(10 g) = 0.194 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

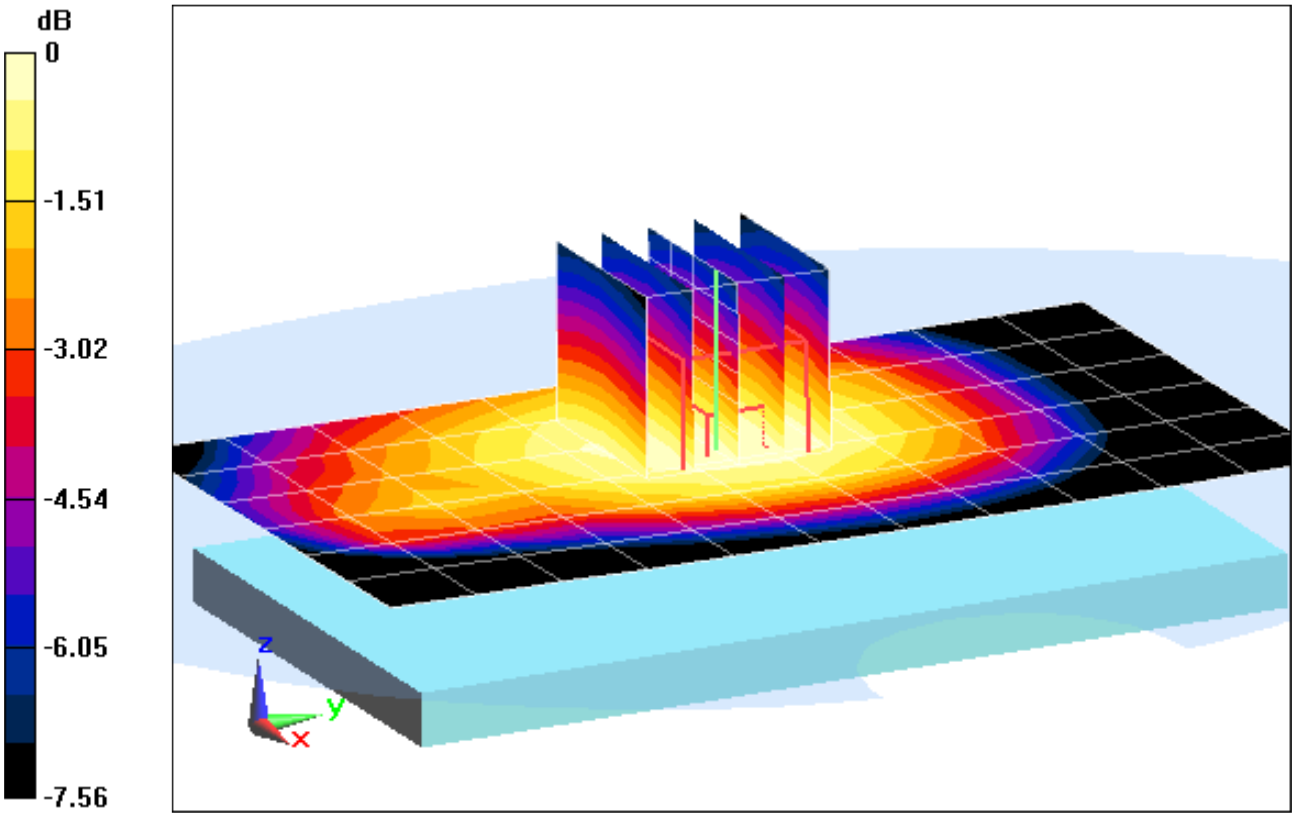
Communication System: GSM850 GPRS; 2 Tx slots; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.982 mho/m; ε_r = 54.165; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.546 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.650 mW/g
SAR(1 g) = 0.524 mW/g; SAR(10 g) = 0.405 mW/g



0 dB = 0.545 mW/g = -5.27 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

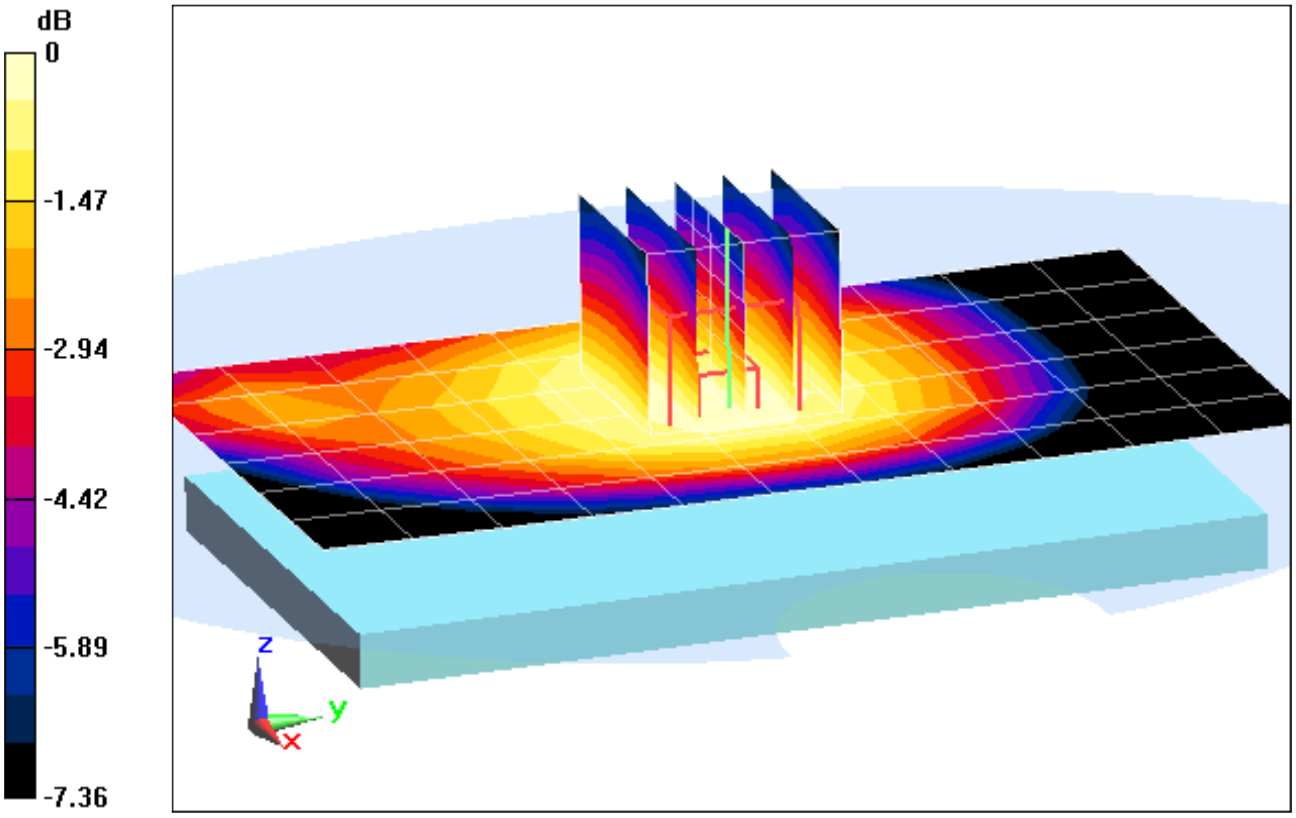
Communication System: GSM850 GPRS; 2 Tx slots; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.982 mho/m; ε_r = 54.165; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.767 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.326 mW/g
SAR(1 g) = 0.264 mW/g; SAR(10 g) = 0.206 mW/g



0 dB = 0.277 mW/g = -11.15 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

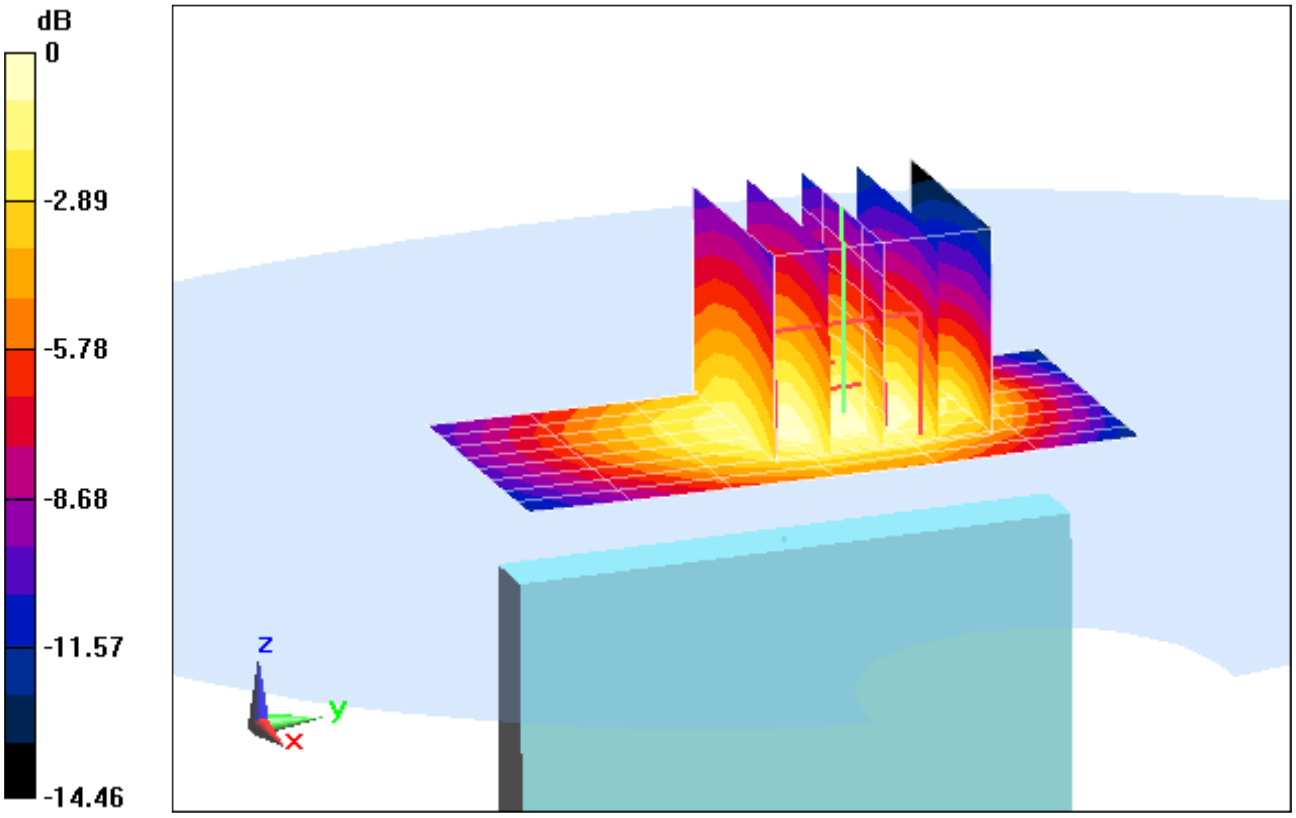
Communication System: GSM850 GPRS; 2 Tx slots; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.982 mho/m; ε_r = 54.165; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (9x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.107 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.279 mW/g
SAR(1 g) = 0.180 mW/g; SAR(10 g) = 0.114 mW/g



0 dB = 0.194 mW/g = -14.24 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

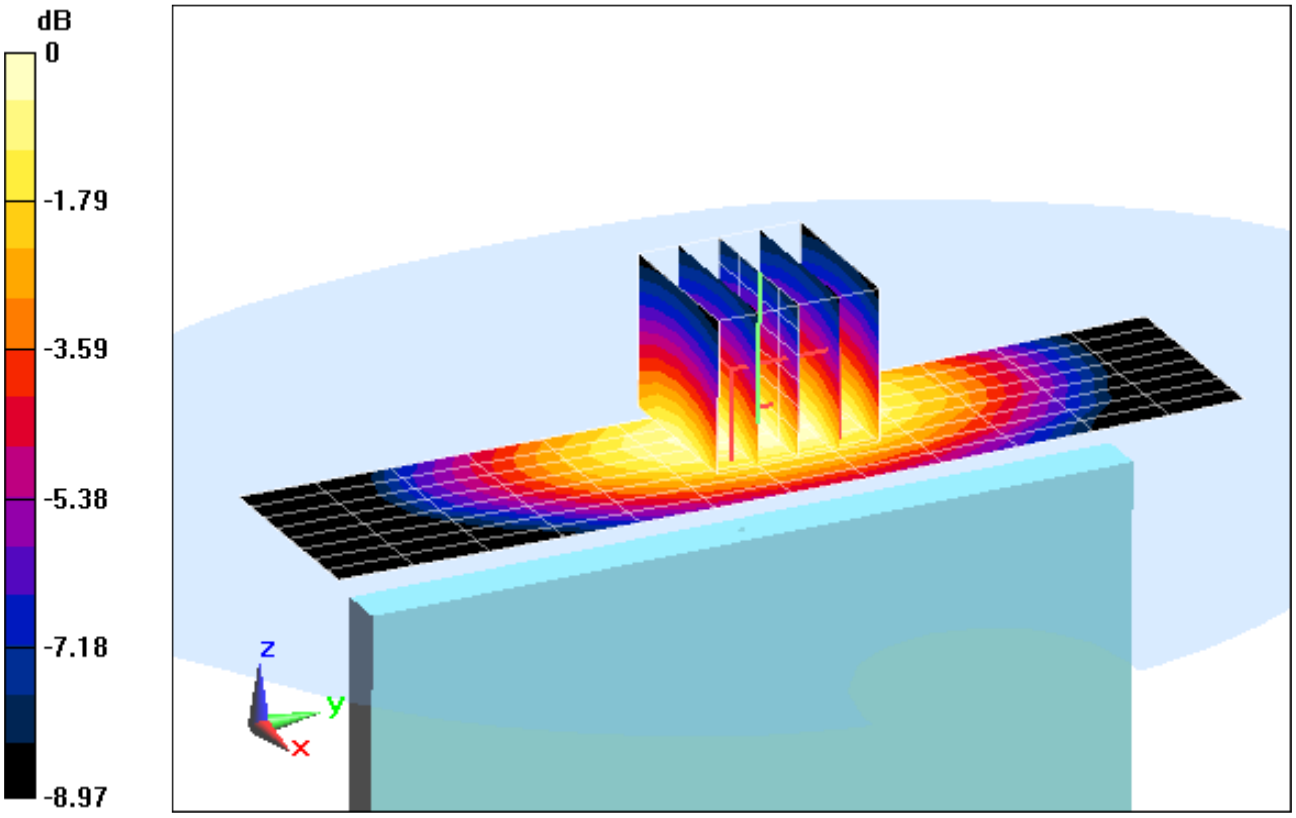
Communication System: GSM850 GPRS; 2 Tx slots; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.982 mho/m; ε_r = 54.165; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

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

Area Scan (9x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.114 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.410 mW/g
SAR(1 g) = 0.297 mW/g; SAR(10 g) = 0.208 mW/g



0 dB = 0.318 mW/g = -9.95 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

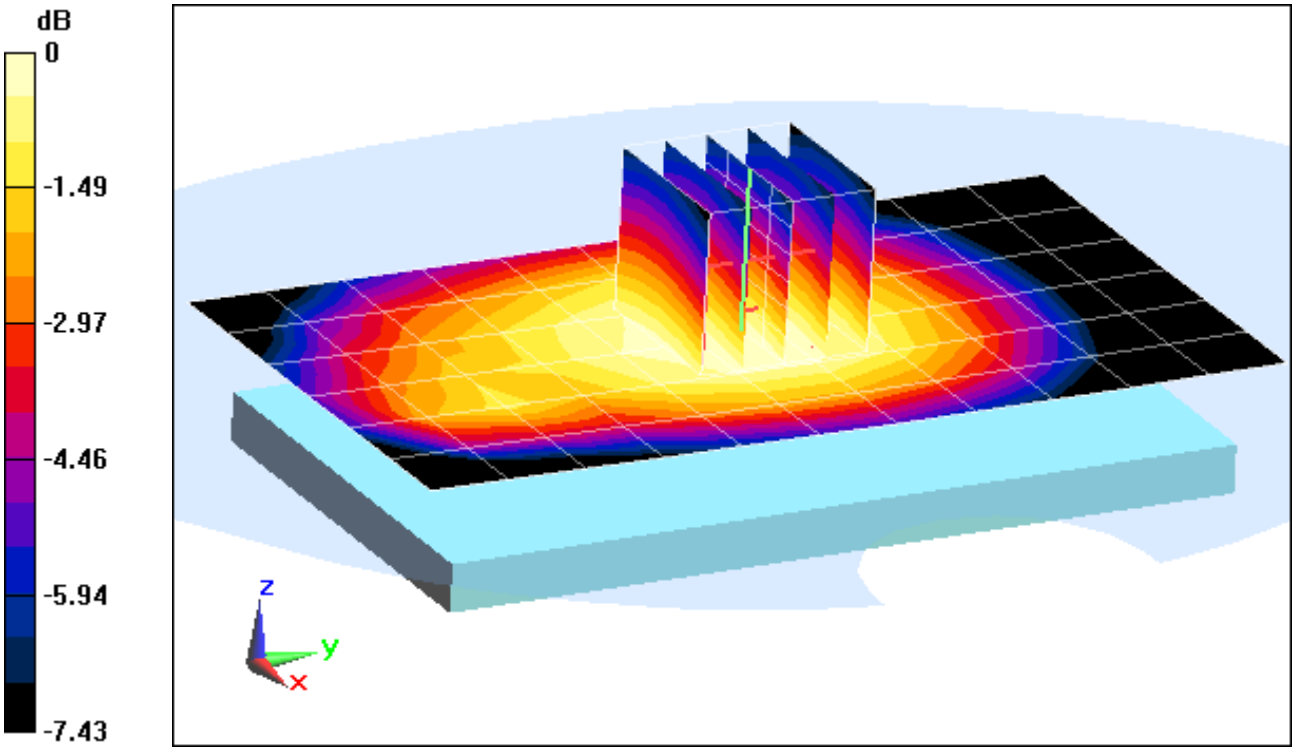
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.958 mho/m; ε_r = 53.978; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.173 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.364 mW/g
SAR(1 g) = 0.297 mW/g; SAR(10 g) = 0.230 mW/g



0 dB = 0.311 mW/g = -10.14 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

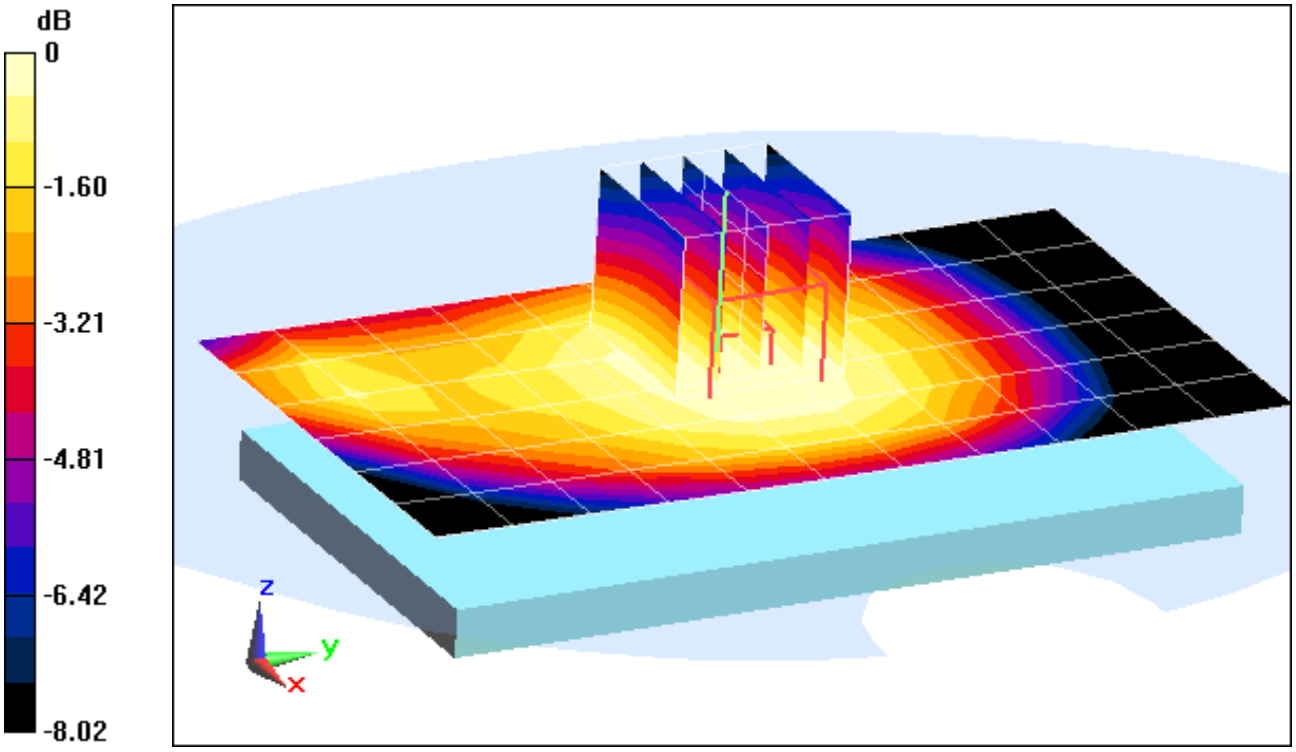
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.958 mho/m; ε_r = 53.978; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.498 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.171 mW/g
SAR(1 g) = 0.140 mW/g; SAR(10 g) = 0.111 mW/g



0 dB = 0.146 mW/g = -16.71 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

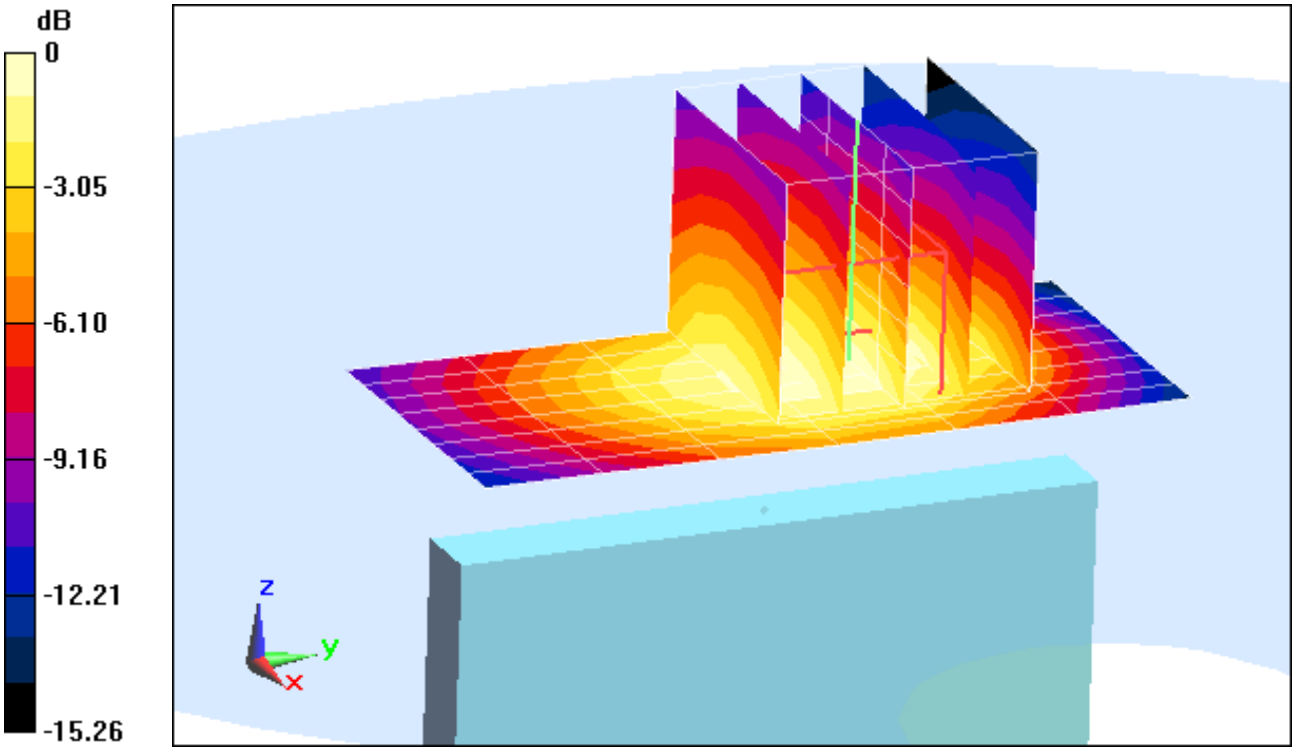
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.958 mho/m; ε_r = 53.978; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (9x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.480 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.224 mW/g
SAR(1 g) = 0.135 mW/g; SAR(10 g) = 0.085 mW/g



0 dB = 0.145 mW/g = -16.77 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

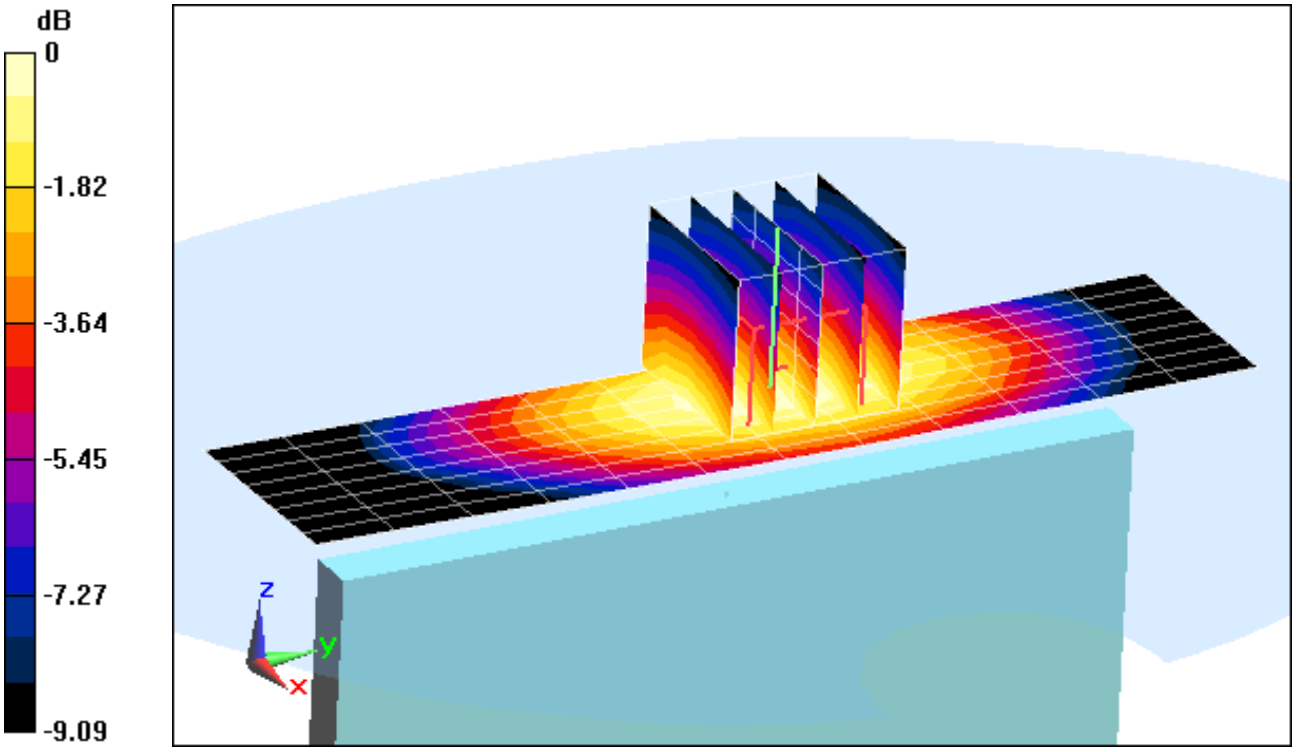
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.958 mho/m; ε_r = 53.978; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (9x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.123 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.273 mW/g
SAR(1 g) = 0.199 mW/g; SAR(10 g) = 0.139 mW/g



0 dB = 0.213 mW/g = -13.43 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

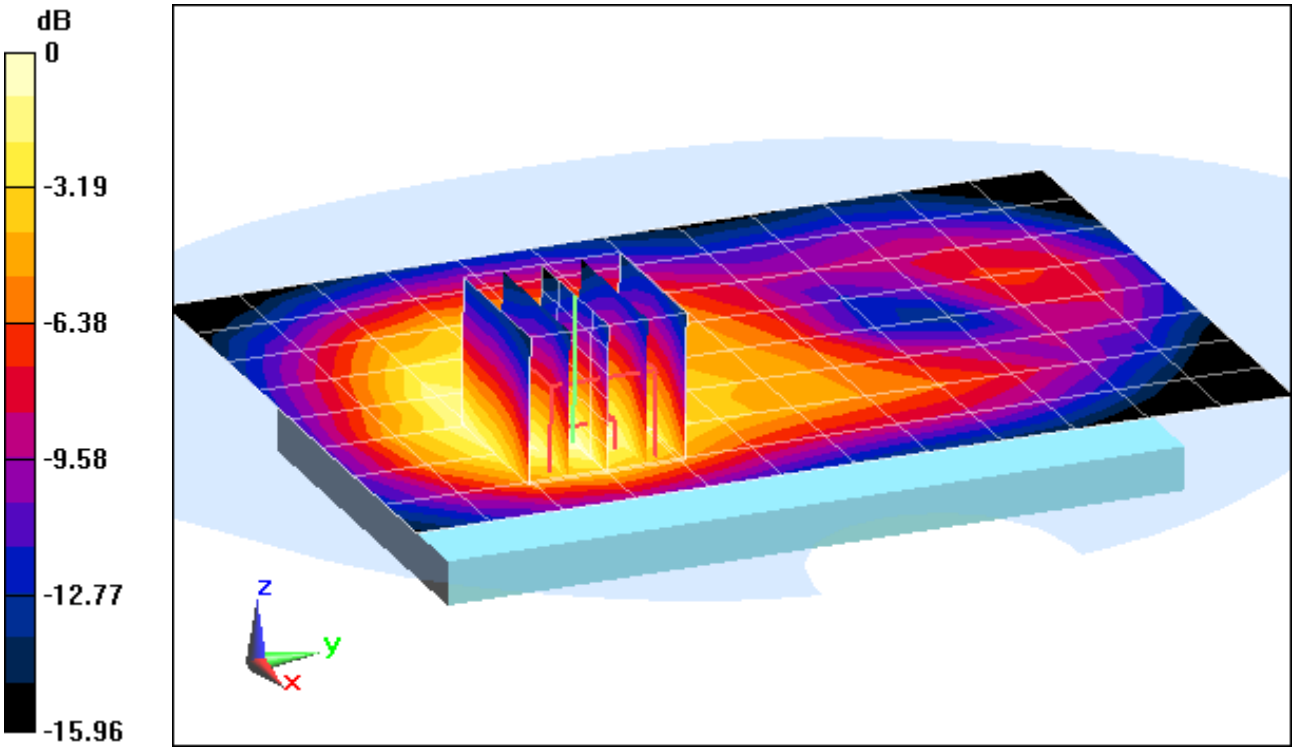
Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.485 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.308 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.963 mW/g
SAR(1 g) = 0.575 mW/g; SAR(10 g) = 0.324 mW/g



0 dB = 0.647 mW/g = -3.78 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

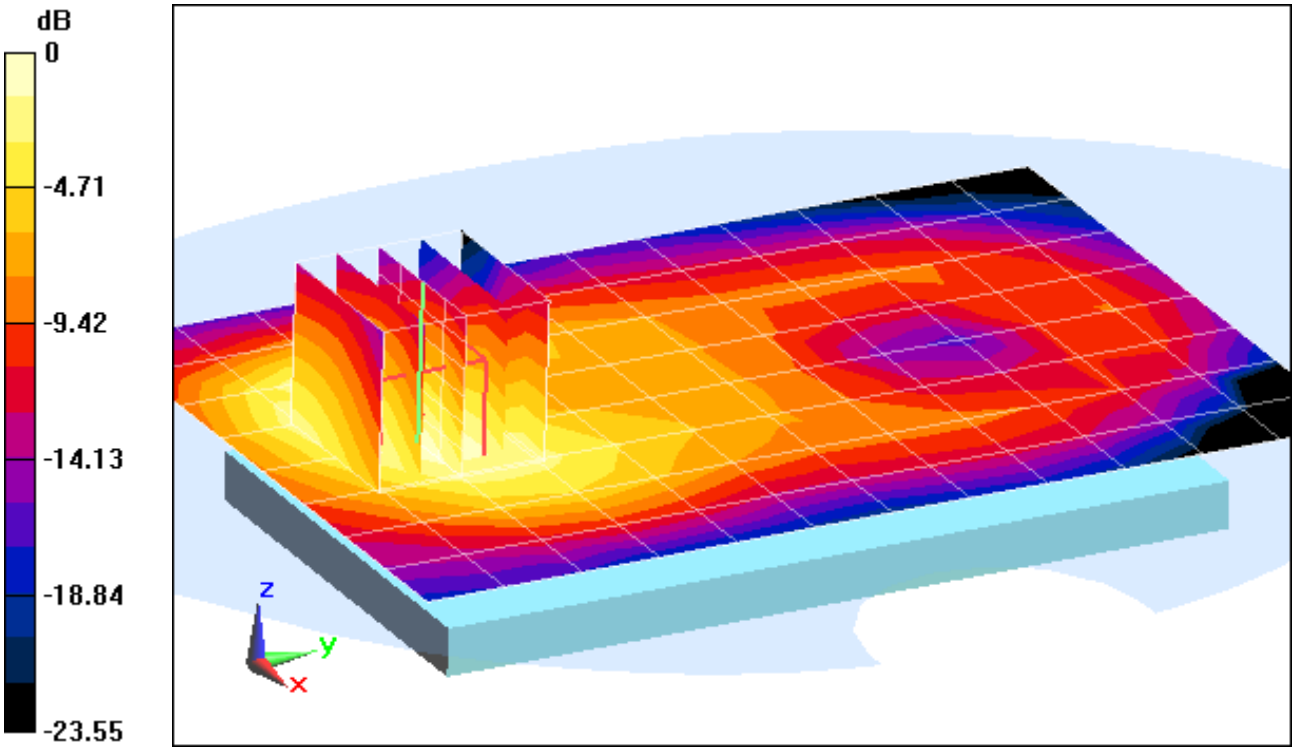
Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.485 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS TDSO, Body SAR, Front side, Mid.ch

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.747 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.675 mW/g
SAR(1 g) = 0.407 mW/g; SAR(10 g) = 0.229 mW/g



0 dB = 0.449 mW/g = -6.96 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

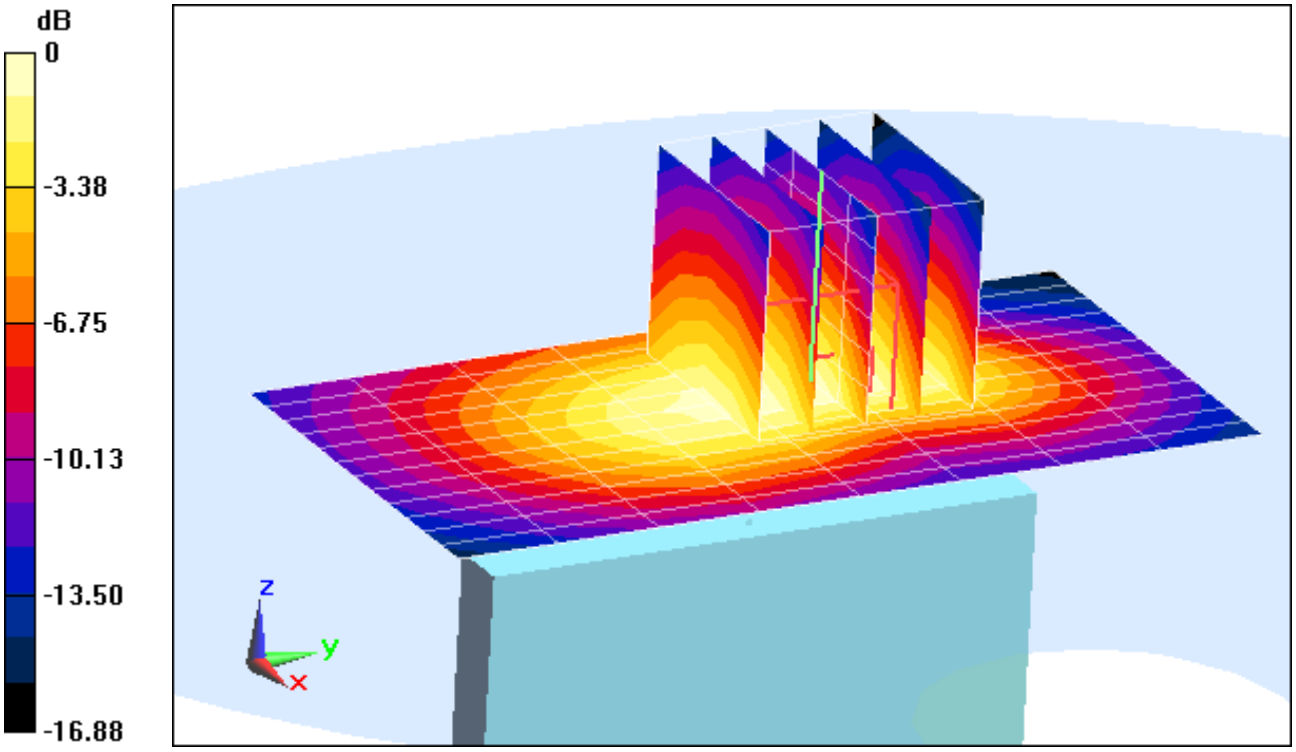
Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.485 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS TDSO, Body SAR, Bottom Edge, Mid.ch

Area Scan (13x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.485 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.643 mW/g
SAR(1 g) = 0.395 mW/g; SAR(10 g) = 0.233 mW/g



0 dB = 0.436 mW/g = -7.21 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 1

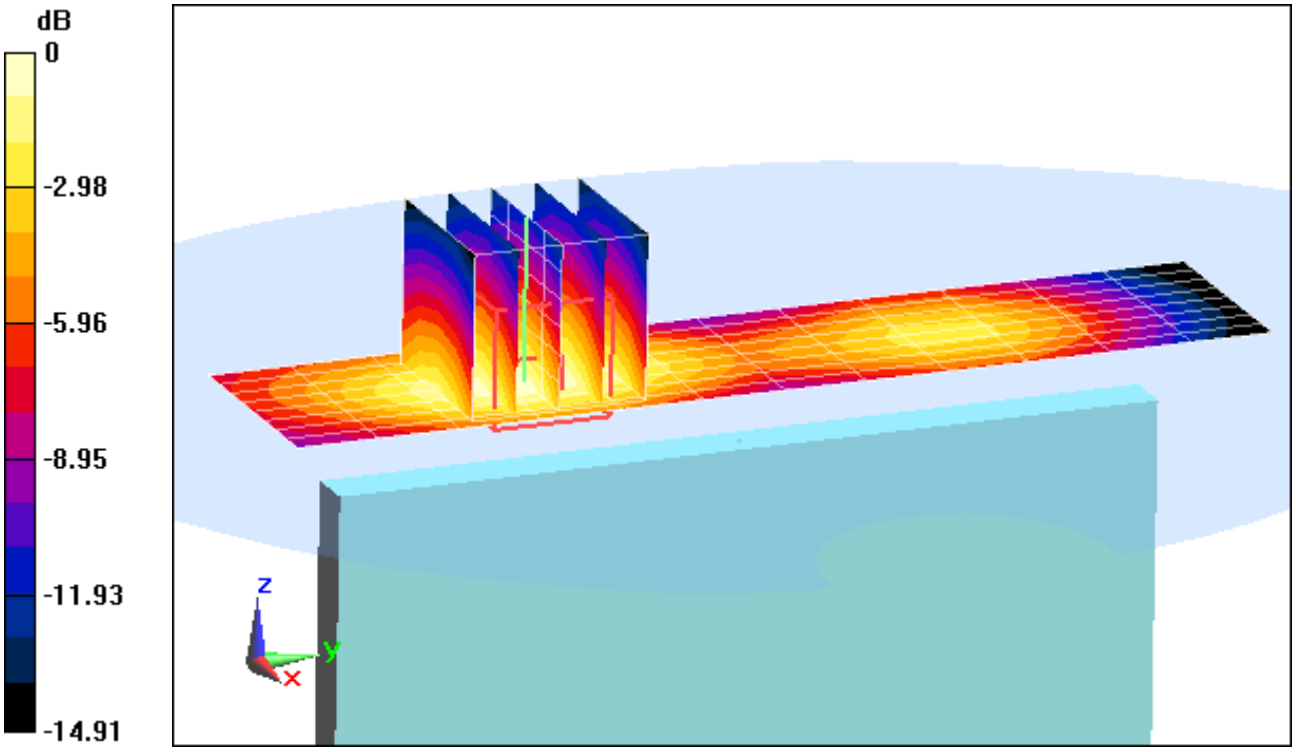
Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.485 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: PCS EVDO Rev 0, Body SAR, Left Edge, Mid.ch

Area Scan (9x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.879 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.400 mW/g
SAR(1 g) = 0.252 mW/g; SAR(10 g) = 0.150 mW/g



0 dB = 0.278 mW/g = -11.12 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

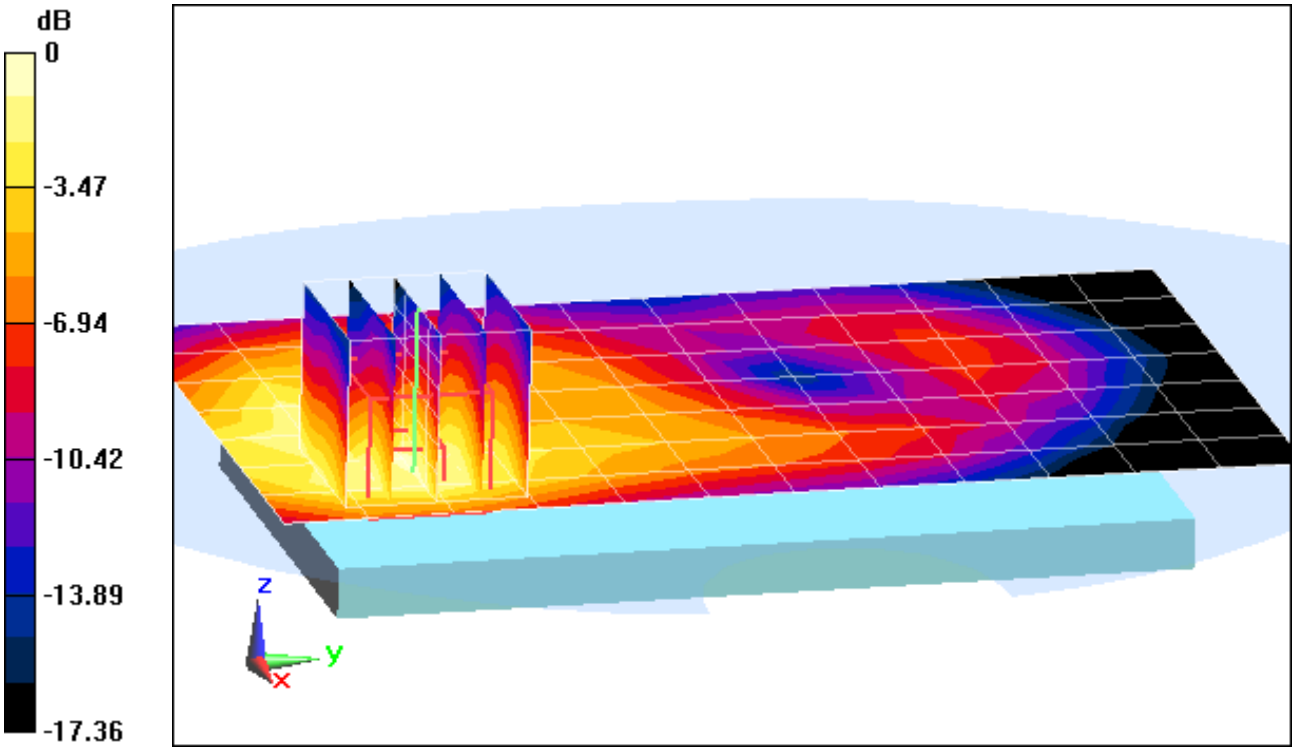
Communication System: GSM1900 GPRS; 2 Tx Slots; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.485 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: GPRS 1900, Body SAR, Back side, Mid.ch, 2 Tx Slots

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.088 V/m; Power Drift = -0.21 dB
Peak SAR (extrapolated) = 0.718 mW/g
SAR(1 g) = 0.429 mW/g; SAR(10 g) = 0.240 mW/g



0 dB = 0.476 mW/g = -6.45 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

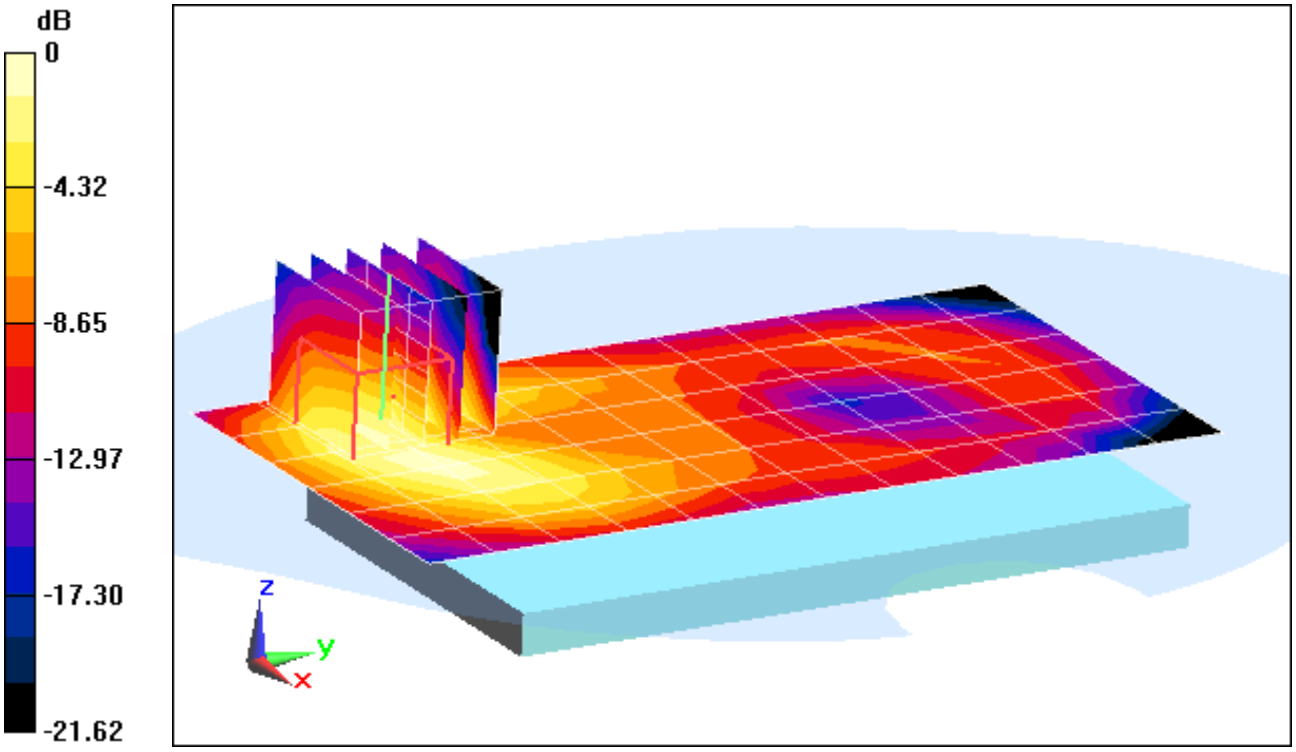
Communication System: GSM1900 GPRS; 2 Tx Slots; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.485 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: GPRS 1900, Body SAR, Front side, Mid.ch, 2 Tx Slots

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.576 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.524 mW/g
SAR(1 g) = 0.276 mW/g; SAR(10 g) = 0.153 mW/g



0 dB = 0.328 mW/g = -9.68 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

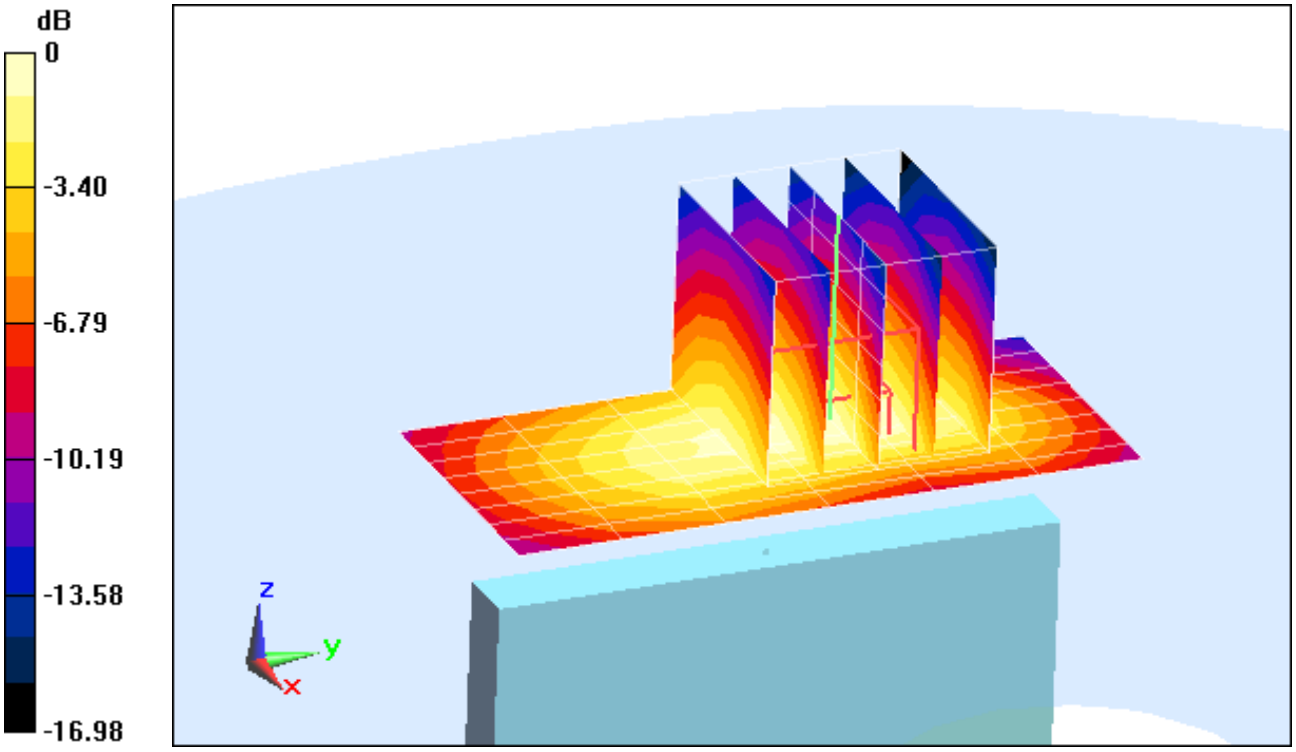
Communication System: GSM1900 GPRS; 2 Tx Slots; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.485 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: GPRS 1900, Body SAR, Bottom Edge, Mid.ch, 2 Tx Slots

Area Scan (9x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.066 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.486 mW/g
SAR(1 g) = 0.298 mW/g; SAR(10 g) = 0.174 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 5

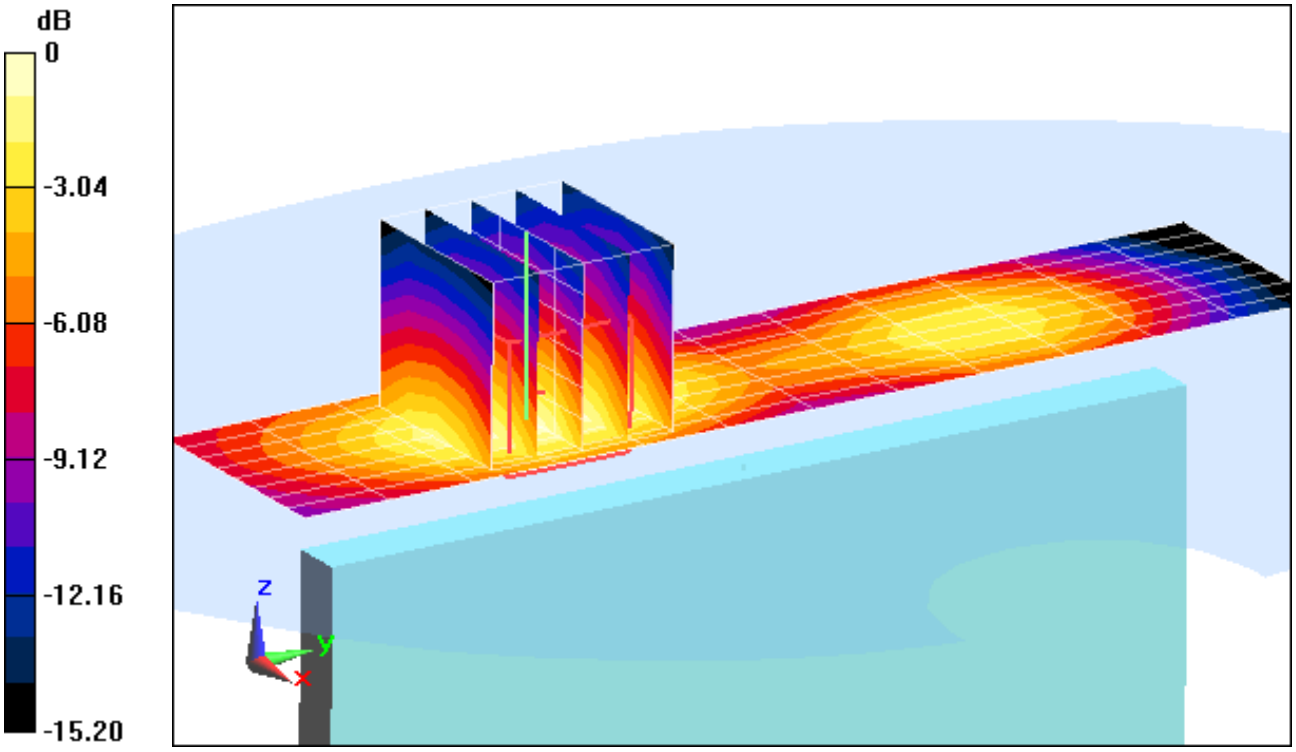
Communication System: GSM GPRS; 2 Tx slots; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.485 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: GPRS 1900, Body SAR, Left Edge, Mid.ch, 2 Tx Slots

Area Scan (9x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.758 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.300 mW/g
SAR(1 g) = 0.187 mW/g; SAR(10 g) = 0.112 mW/g



0 dB = 0.207 mW/g = -13.68 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

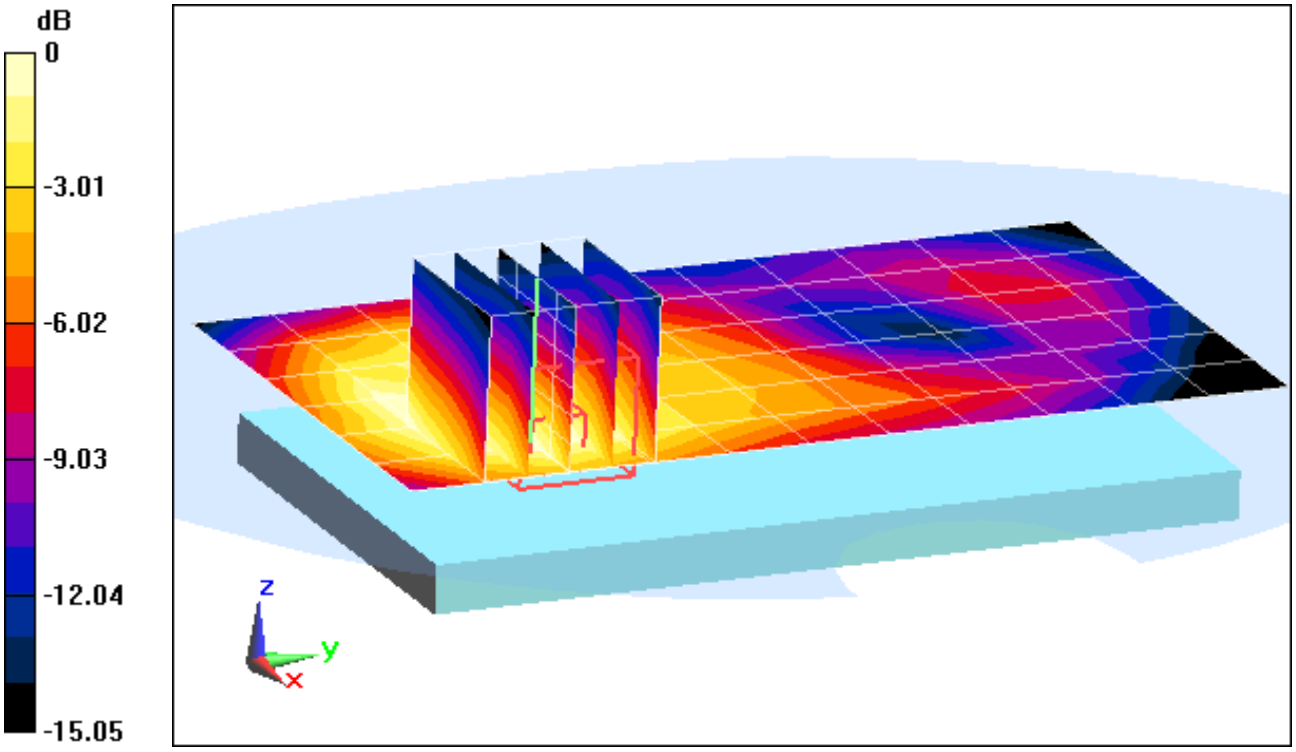
Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.75; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.1 °C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: UMTS 1900, Body SAR, Back side, Mid.ch

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.401 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.912 mW/g
SAR(1 g) = 0.549 mW/g; SAR(10 g) = 0.316 mW/g



0 dB = 0.610 mW/g = -4.29 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ILLINOIS; Type: Portable Handset; Serial 6

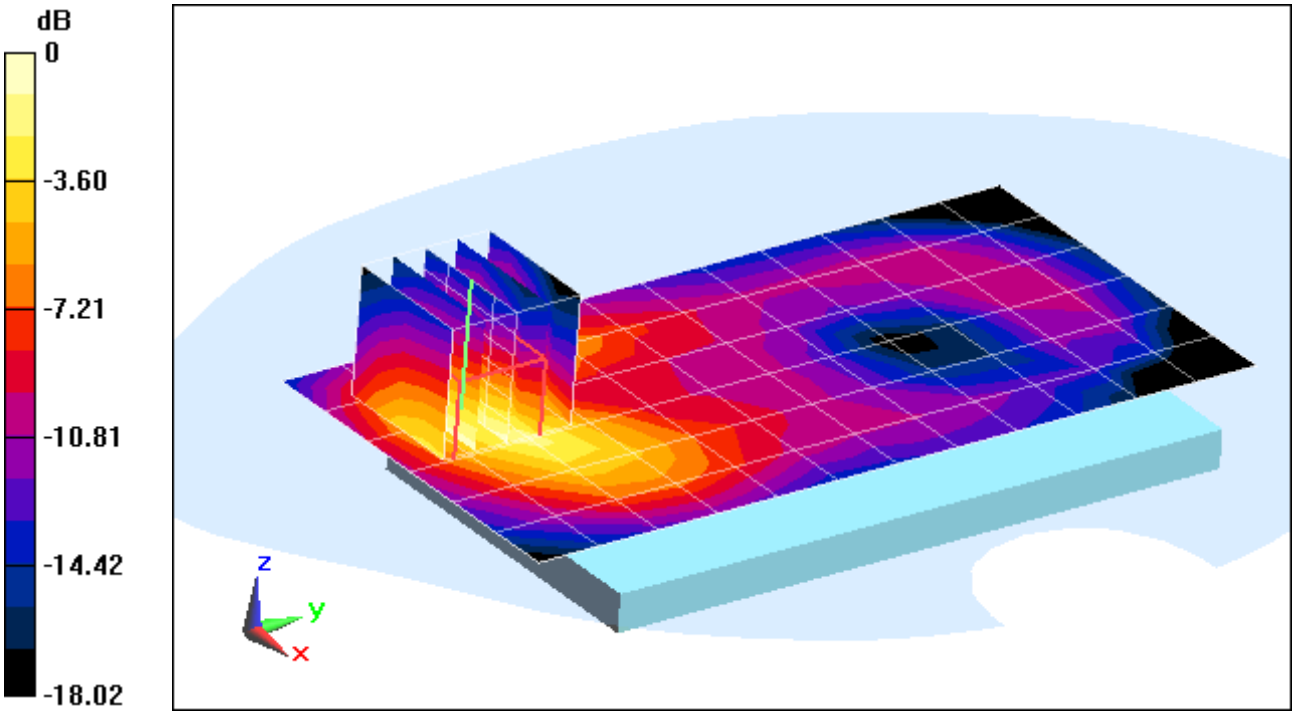
Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.75; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.1 °C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: UMTS 1900, Body SAR, Front side, Mid.ch

Area Sacan: (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.108 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.764 mW/g
SAR(1 g) = 0.410 mW/g; SAR(10 g) = 0.223 mW/g



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

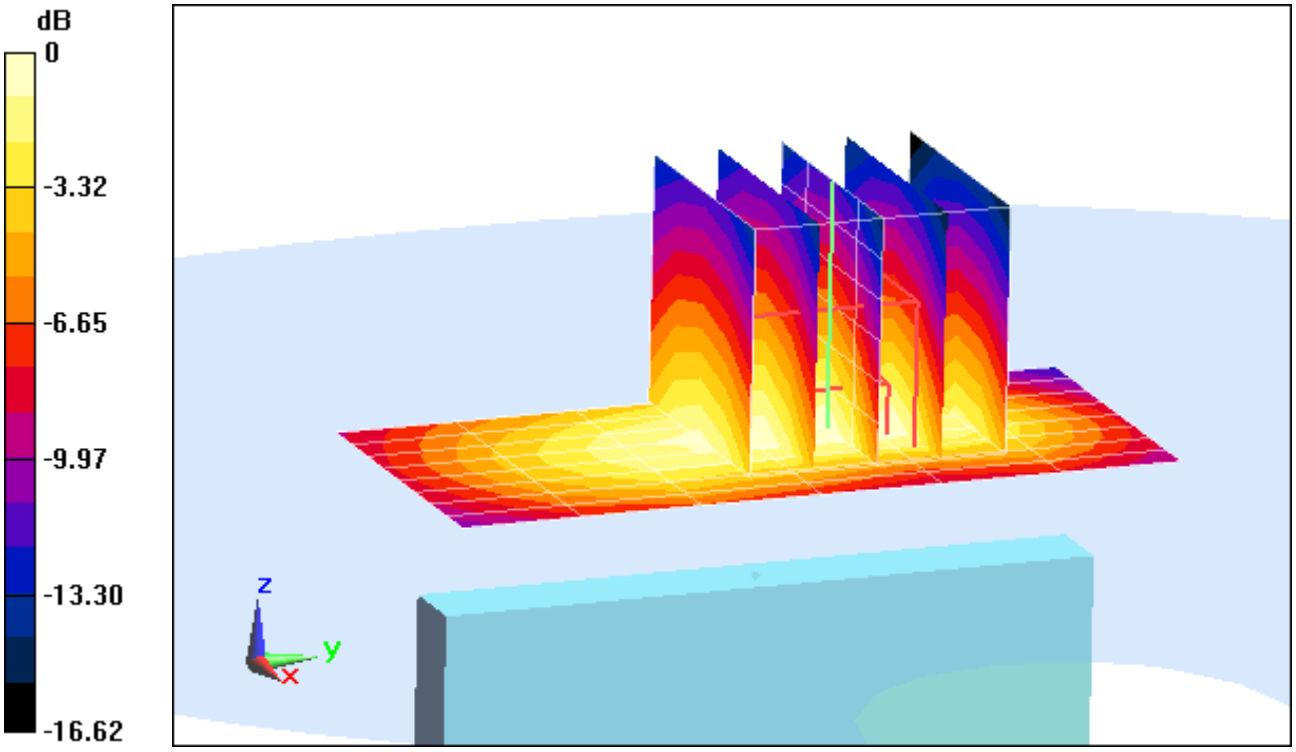
Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.75; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.1 °C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: UMTS 1900, Body SAR, Bottom Edge, Mid.ch

Area Scan (9x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.398 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.722 mW/g
SAR(1 g) = 0.439 mW/g; SAR(10 g) = 0.256 mW/g



0 dB = 0.488 mW/g = -6.23 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 6

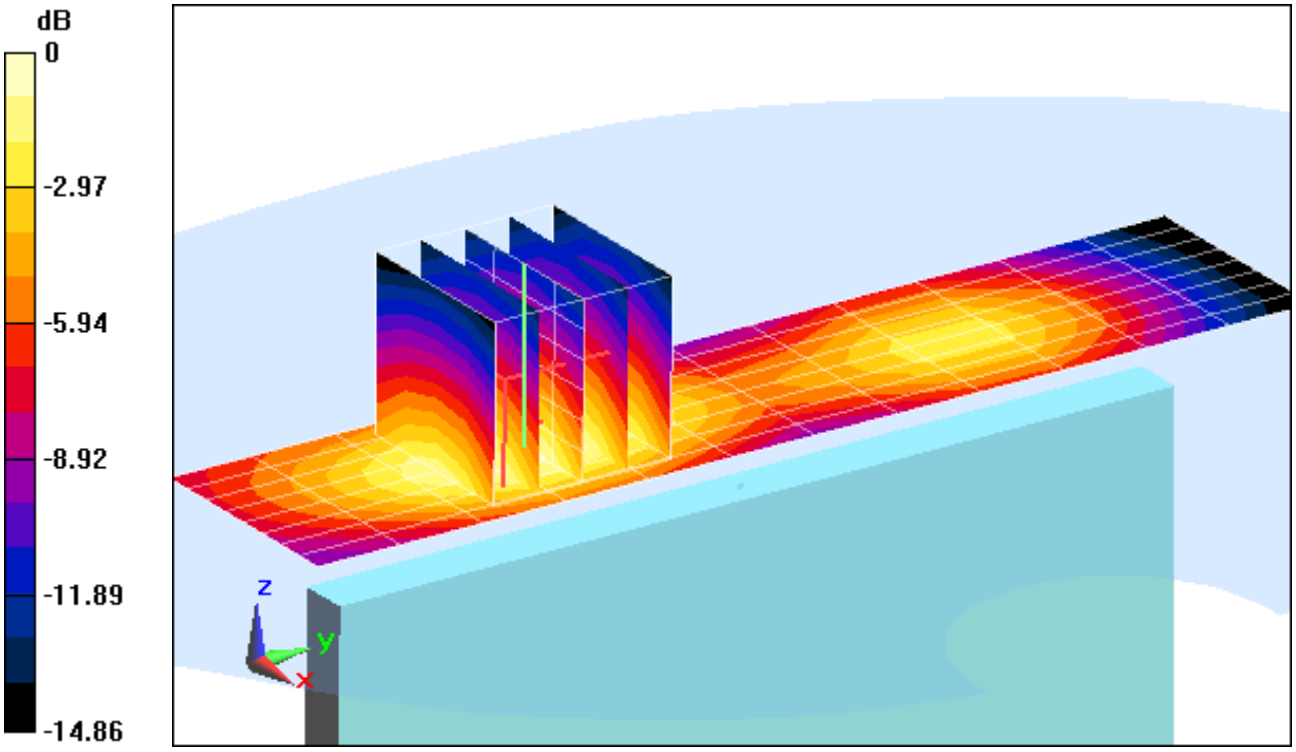
Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.75; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.1 °C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: UMTS 1900, Body SAR, Left Edge, Mid.ch

Area Scan (9x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.033 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.435 mW/g
SAR(1 g) = 0.272 mW/g; SAR(10 g) = 0.161 mW/g



0 dB = 0.301 mW/g = -10.43 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

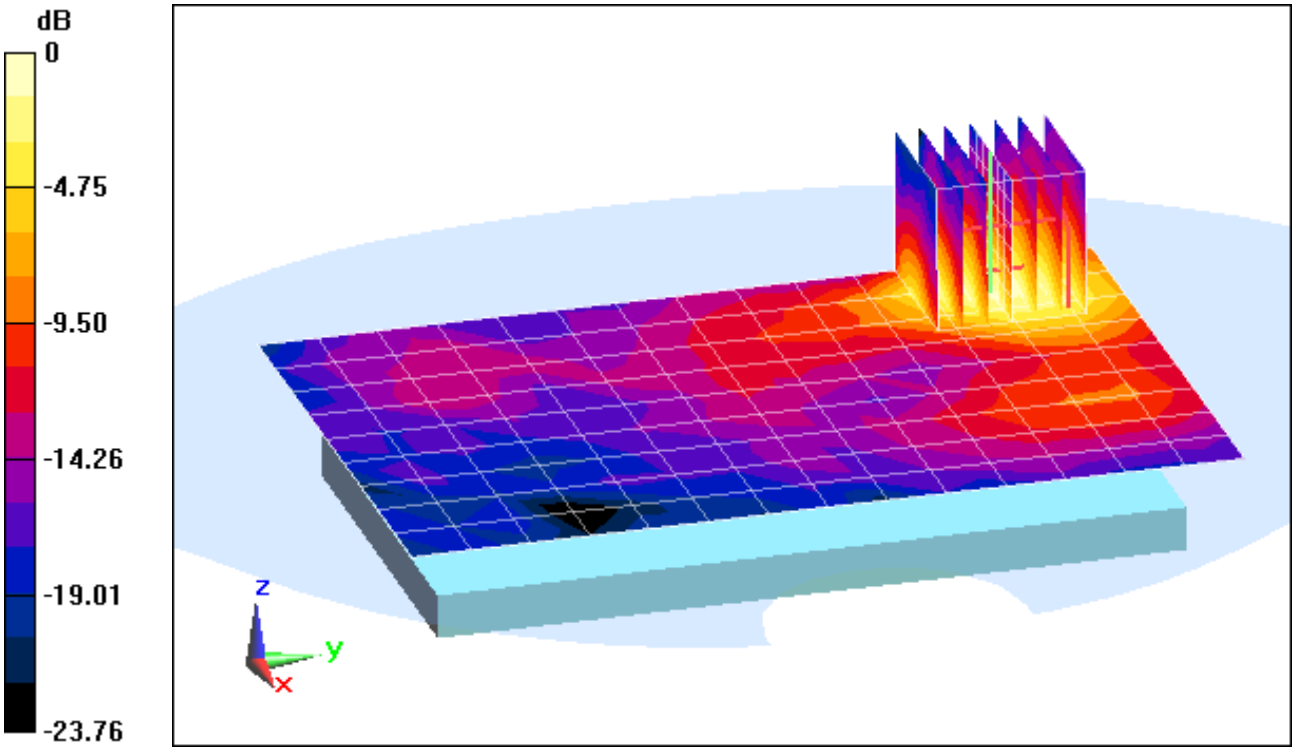
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.986 mho/m; ε_r = 50.978; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 24.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3258; ConvF(4.28, 4.28, 4.28); Calibrated: 2/21/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (10x15x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.013 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.196 mW/g
SAR(1 g) = 0.095 mW/g; SAR(10 g) = 0.045 mW/g



0 dB = 0.121 mW/g = -18.34 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

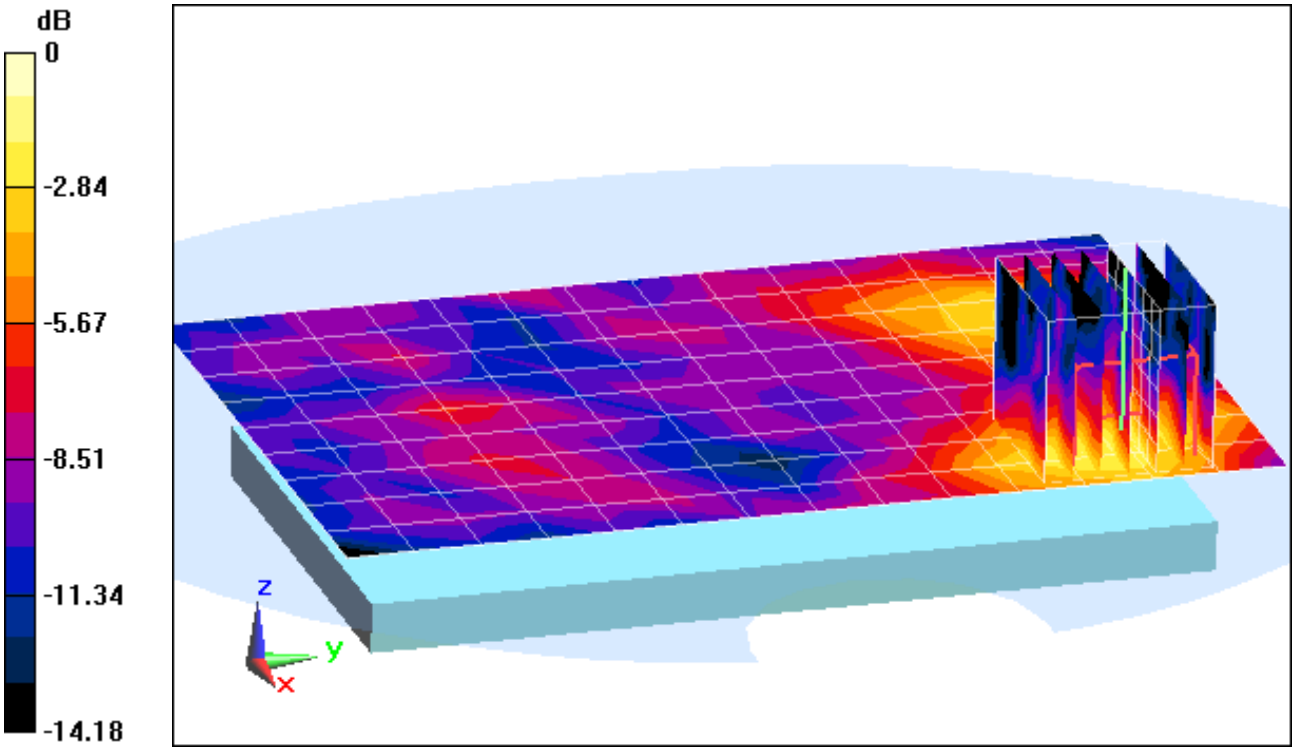
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.986 mho/m; ε_r = 50.978; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 24.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3258; ConvF(4.28, 4.28, 4.28); Calibrated: 2/21/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (10x15x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.631 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.025 mW/g
SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00673 mW/g



0 dB = 0.0200 mW/g = -33.98 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

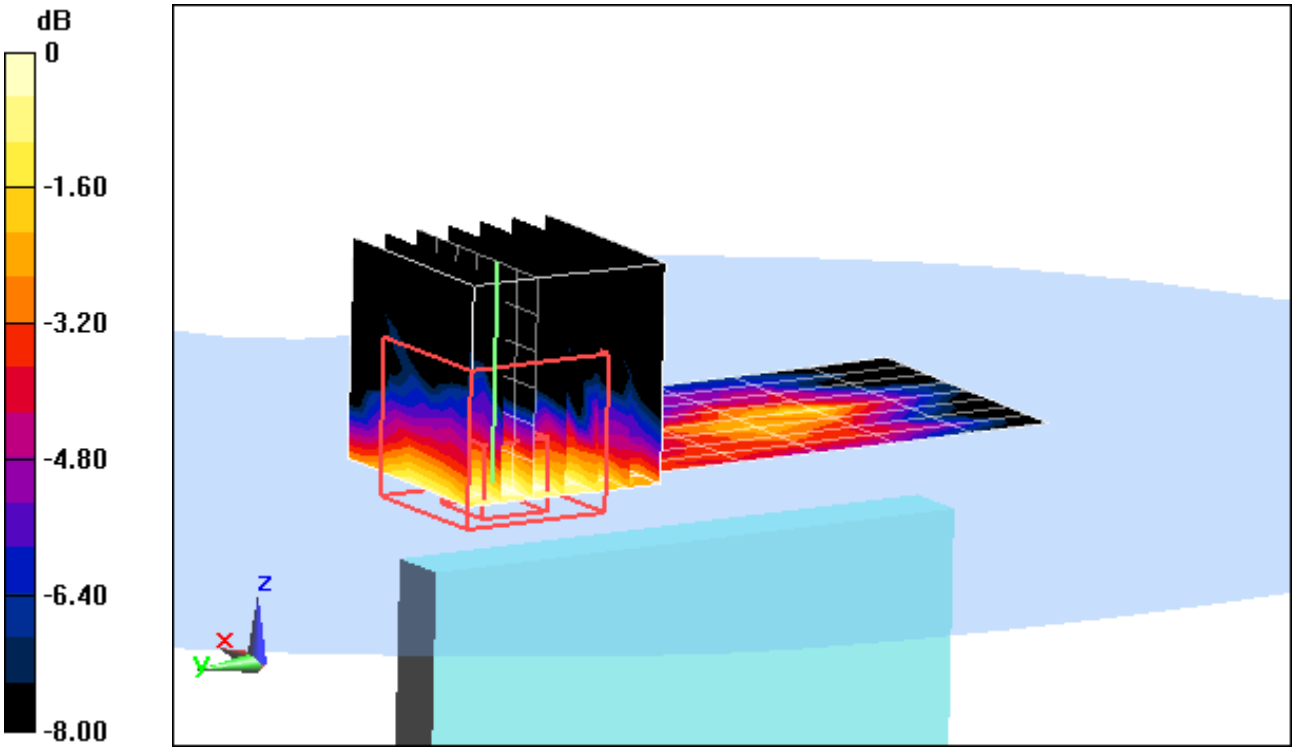
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.986 mho/m; ε_r = 50.978; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 24.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3258; ConvF(4.28, 4.28, 4.28); Calibrated: 2/21/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (9x8x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.233 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.016 mW/g
SAR(1 g) = 0.0089 mW/g; SAR(10 g) = 0.00508 mW/g



0 dB = 0.0115 mW/g = -38.79 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

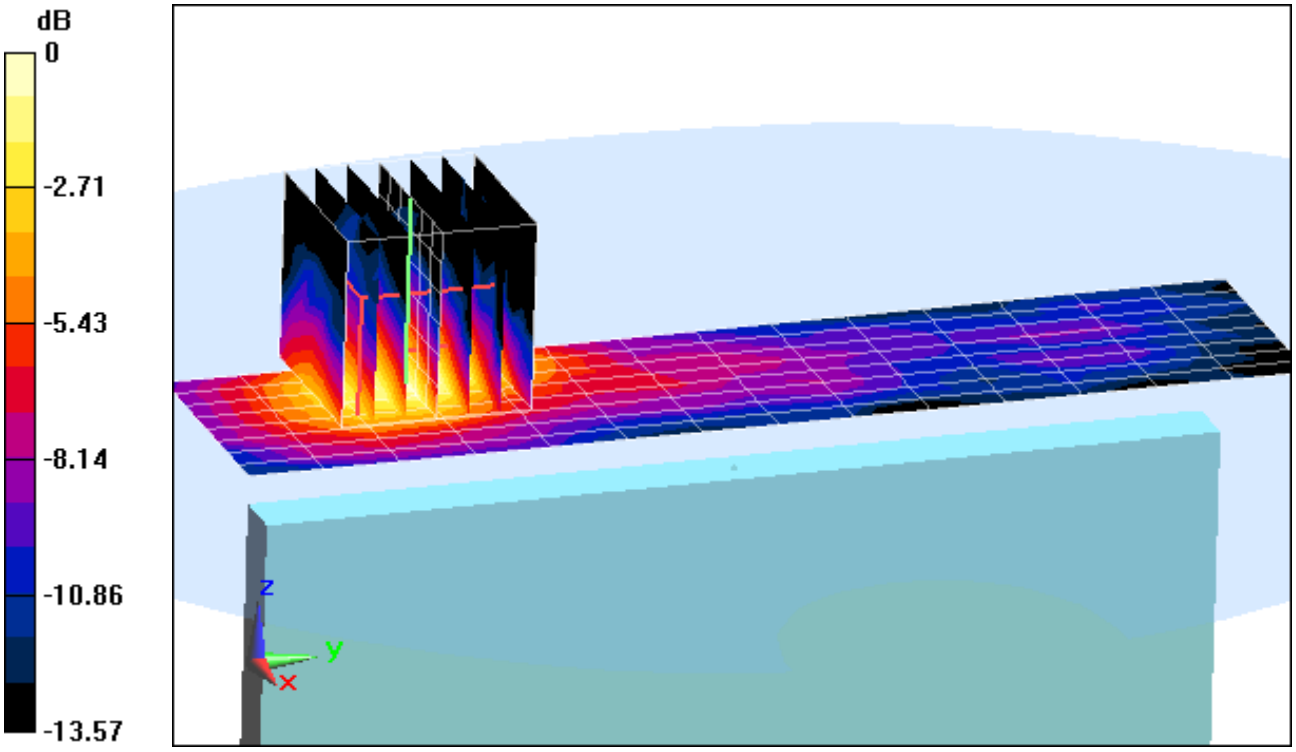
Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.986 mho/m; ε_r = 50.978; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 24.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3258; ConvF(4.28, 4.28, 4.28); Calibrated: 2/21/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Area Scan (9x15x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.662 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.080 mW/g
SAR(1 g) = 0.037 mW/g; SAR(10 g) = 0.018 mW/g



0 dB = 0.0478 mW/g = -26.41 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSCHI605; Type: Portable Handset; Serial: 7

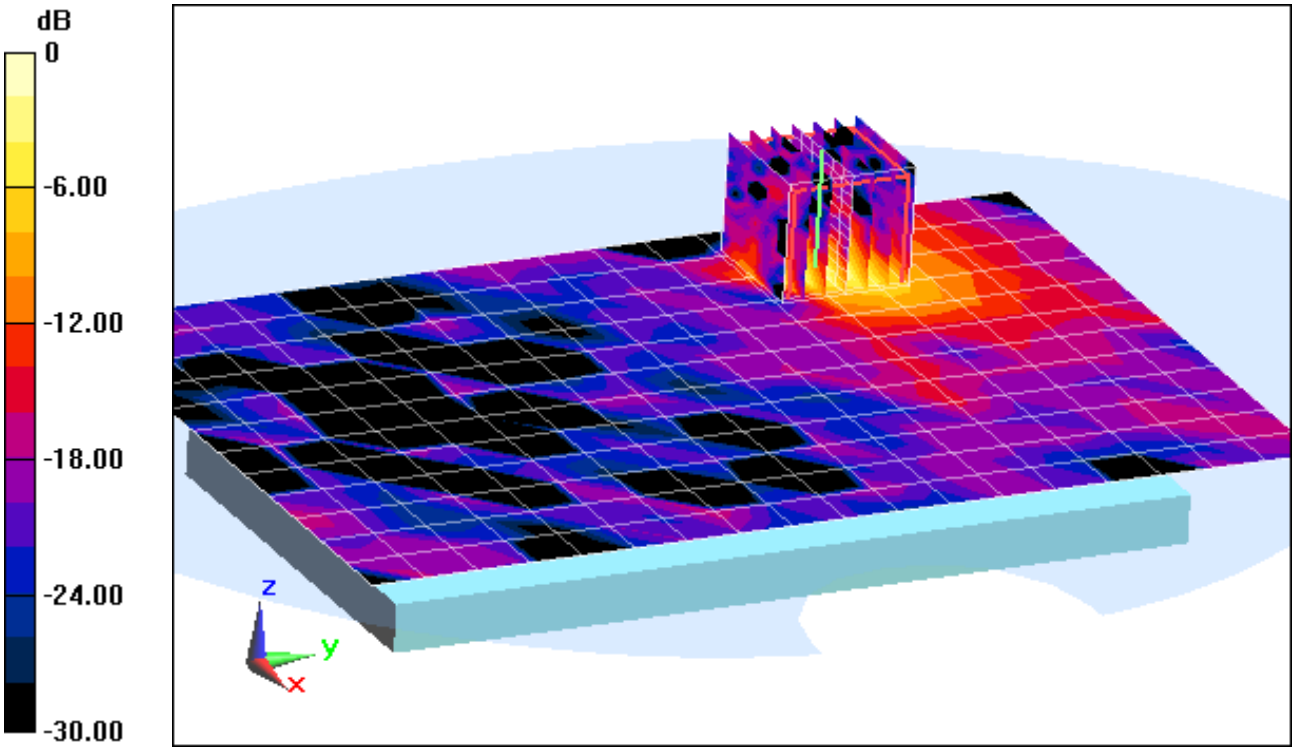
Communication System: IEEE 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5260 MHz; σ = 5.417 mho/m; ε_r = 48.31; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN3561; ConvF(3.54, 3.54, 3.54); Calibrated: 7/26/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/15/2012
Phantom: SAM Left; Type: SAM; Serial: 1688
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Mode: IEEE 802.11a, 5.3 GHz, Body SAR, Ch 52, 6 Mbps, Back Side

Area Scan (13x19x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.666 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.156 mW/g
SAR(1 g) = 0.210 mW/g; SAR(10 g) = 0.053 mW/g



0 dB = 0.454 mW/g = -6.86 dB mW/g

APPENDIX B: SYSTEM VERIFICATION

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PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

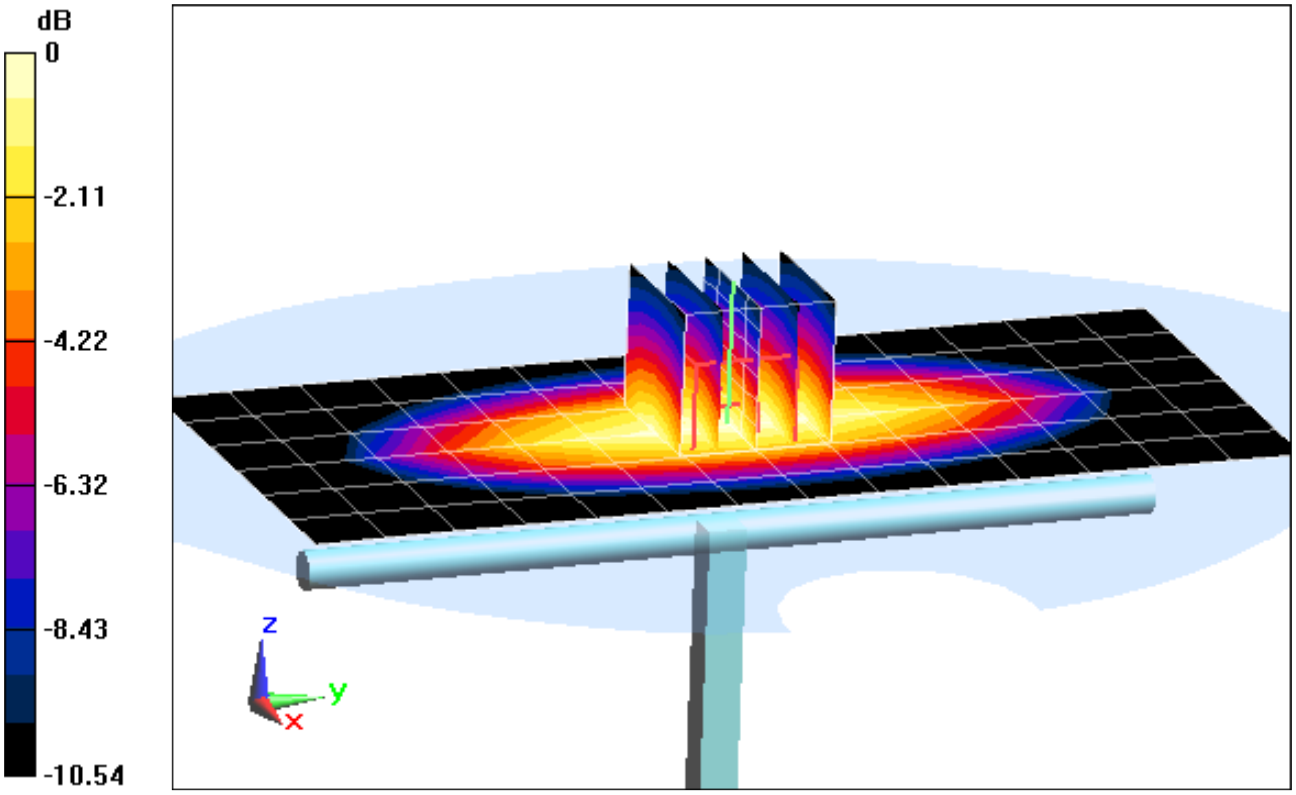
Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: 740 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.928 mho/m; ε_r = 42.733; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-27-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3287; ConvF(6.25, 6.25, 6.25); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.180 mW/g
SAR(1 g) = 0.805 mW/g; SAR(10 g) = 0.527 mW/g
Deviation = -5.52%



0 dB = 0.871 mW/g = -1.20 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

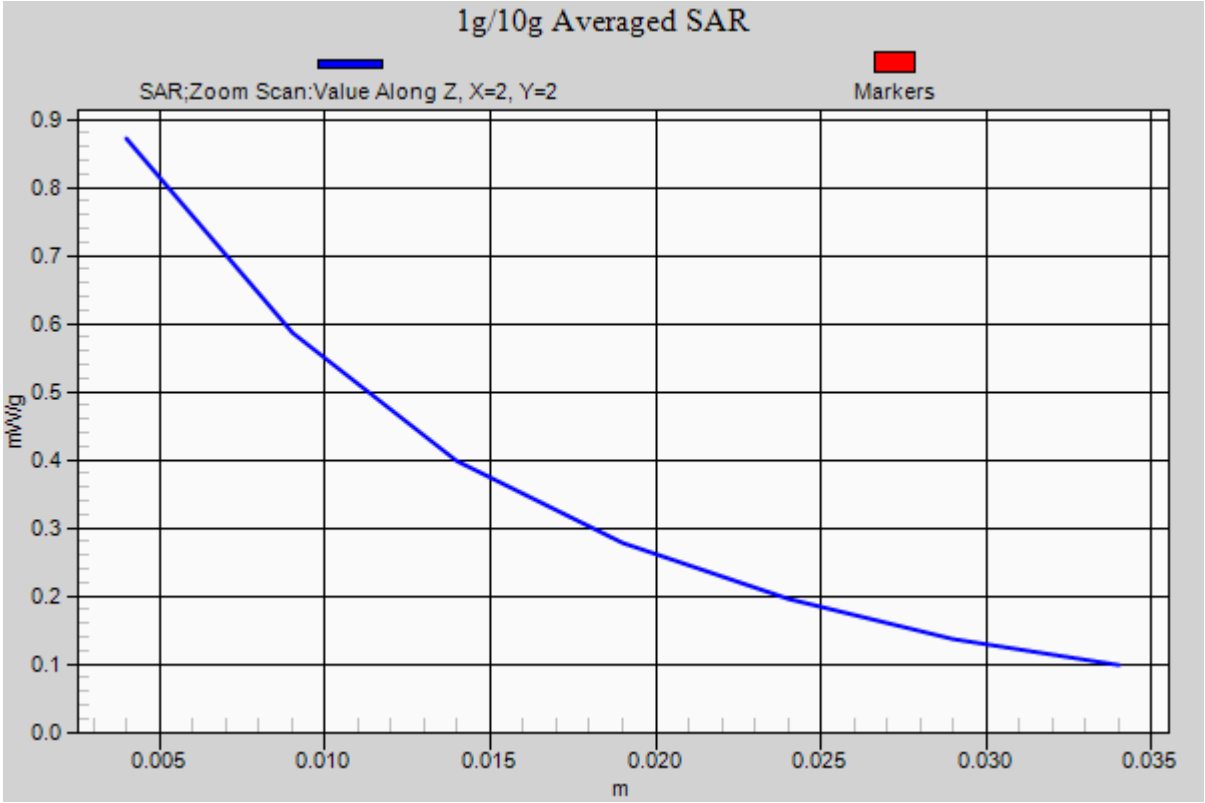
Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: 740 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.928 mho/m; ε_r = 42.733; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-27-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3287; ConvF(6.25, 6.25, 6.25); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

750 MHz System Verification

Area Scan (7x15x1): 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)
Peak SAR (extrapolated) = 1.180 mW/g
SAR(1 g) = 0.805 mW/g; SAR(10 g) = 0.527 mW/g
Deviation: -5.52%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.885 mho/m; ε_r = 39.89; ρ = 1000 kg/m^3

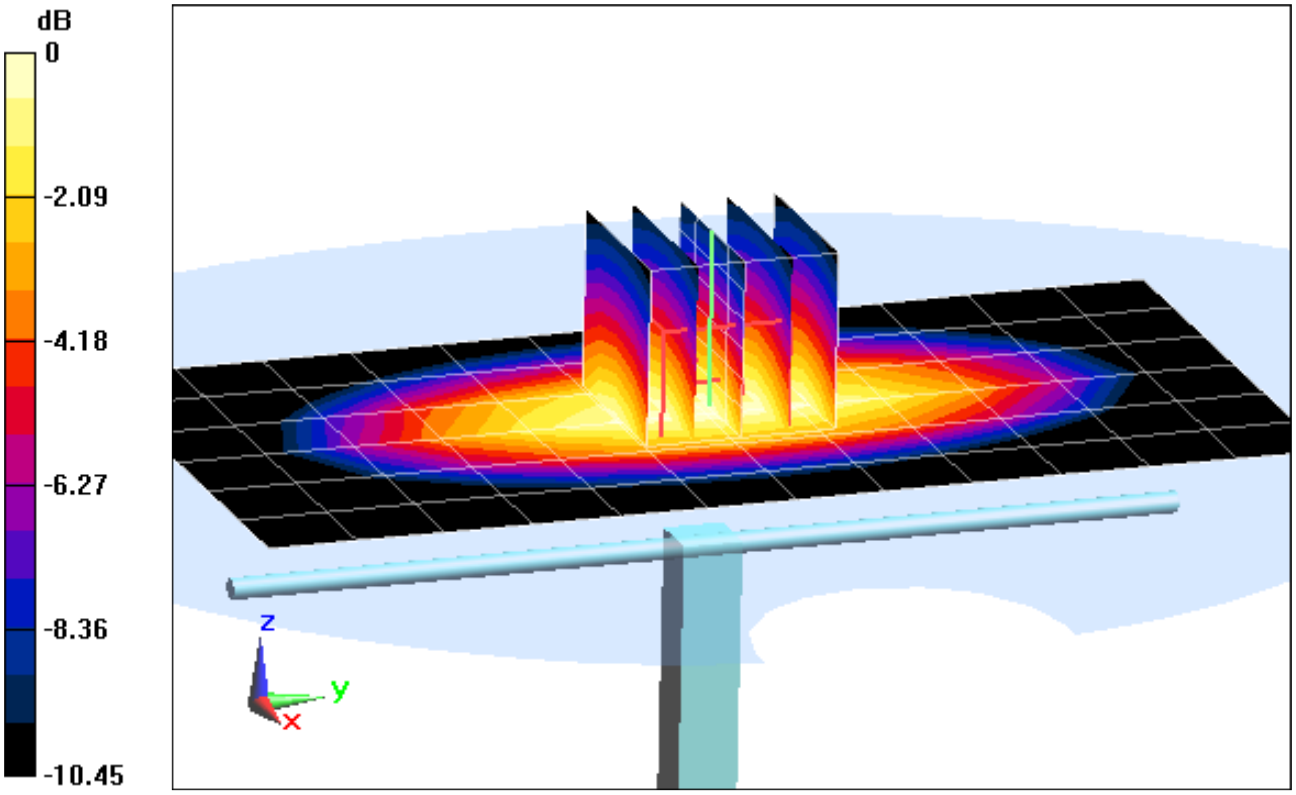
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-24-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.394 mW/g
SAR(1 g) = 0.945 mW/g; SAR(10 g) = 0.619 mW/g
Deviation = 0.32%



0 dB = 1.02 mW/g = 0.17 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.885 mho/m; ε_r = 39.89; ρ = 1000 kg/m^3

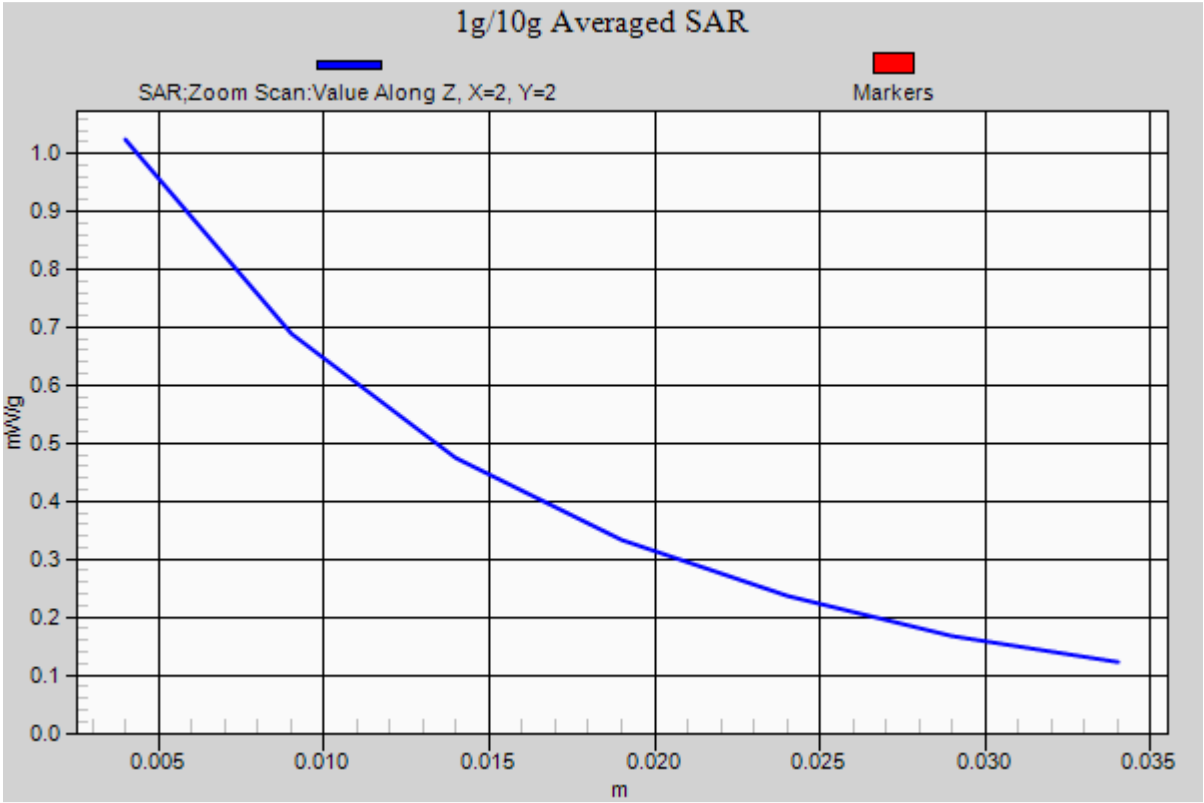
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-24-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.9°C

Probe: ES3DV3 - SN3258; ConvF(6.01, 6.01, 6.01); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.394 mW/g
SAR(1 g) = 0.945 mW/g; SAR(10 g) = 0.619 mW/g
Deviation = 0.32%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 835 MHz; Type: D835V2; Serial: 4d132

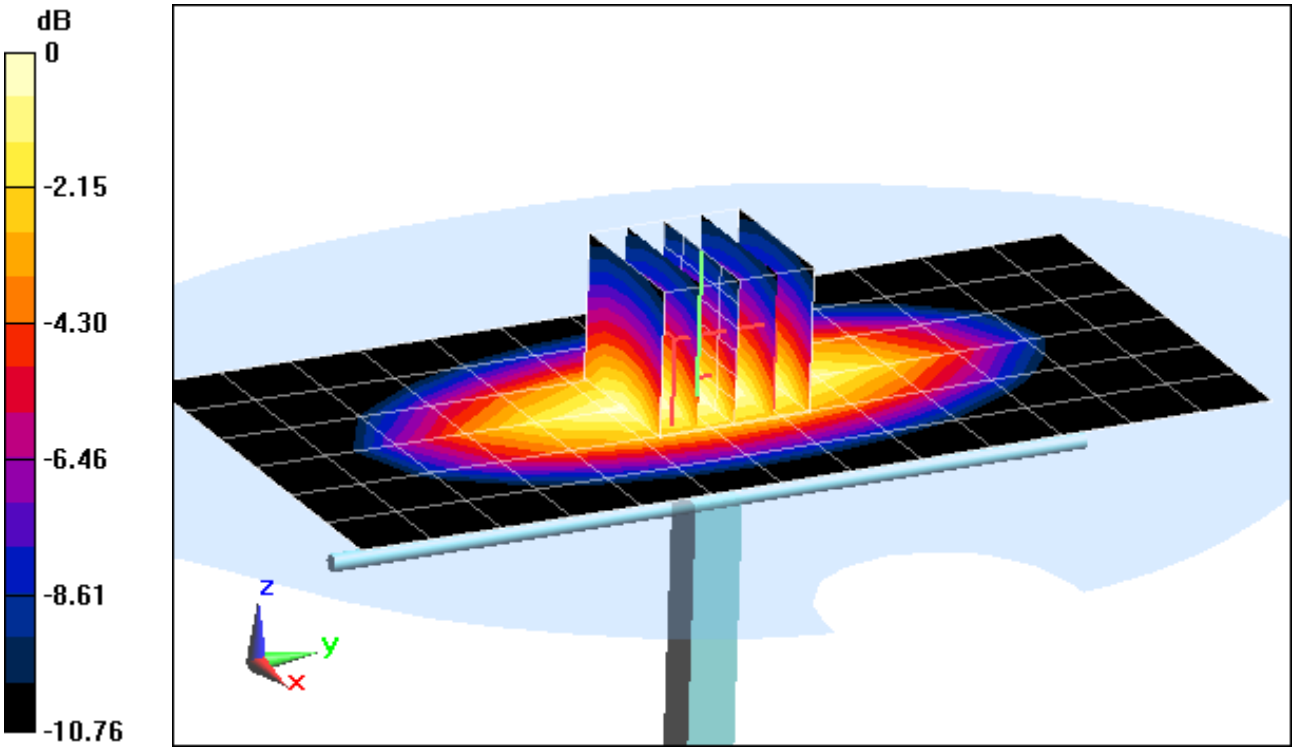
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.91 mho/m; ε_r = 42.2; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-25-2012; Ambient Temp: 22.1°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.444 mW/g
SAR(1 g) = 0.970 mW/g; SAR(10 g) = 0.630 mW/g
Deviation = 2.65 %



0 dB = 1.05 mW/g = 0.42 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 835 MHz; Type: D835V2; Serial: 4d132

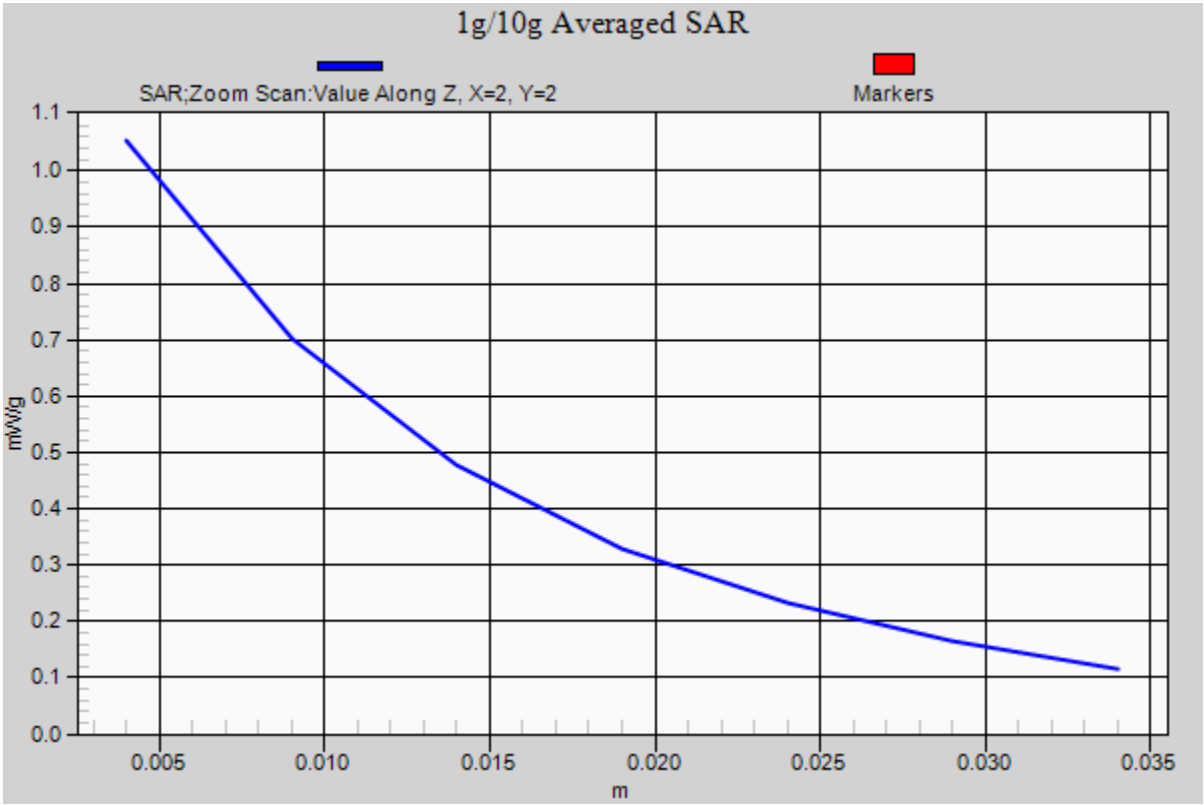
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.91 mho/m; ε_r = 42.2; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-25-2012; Ambient Temp: 22.1°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.444 mW/g
SAR(1 g) = 0.970 mW/g; SAR(10 g) = 0.630 mW/g
Deviation = 2.65 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 835 MHz; Type: D835V2; Serial: 4d132

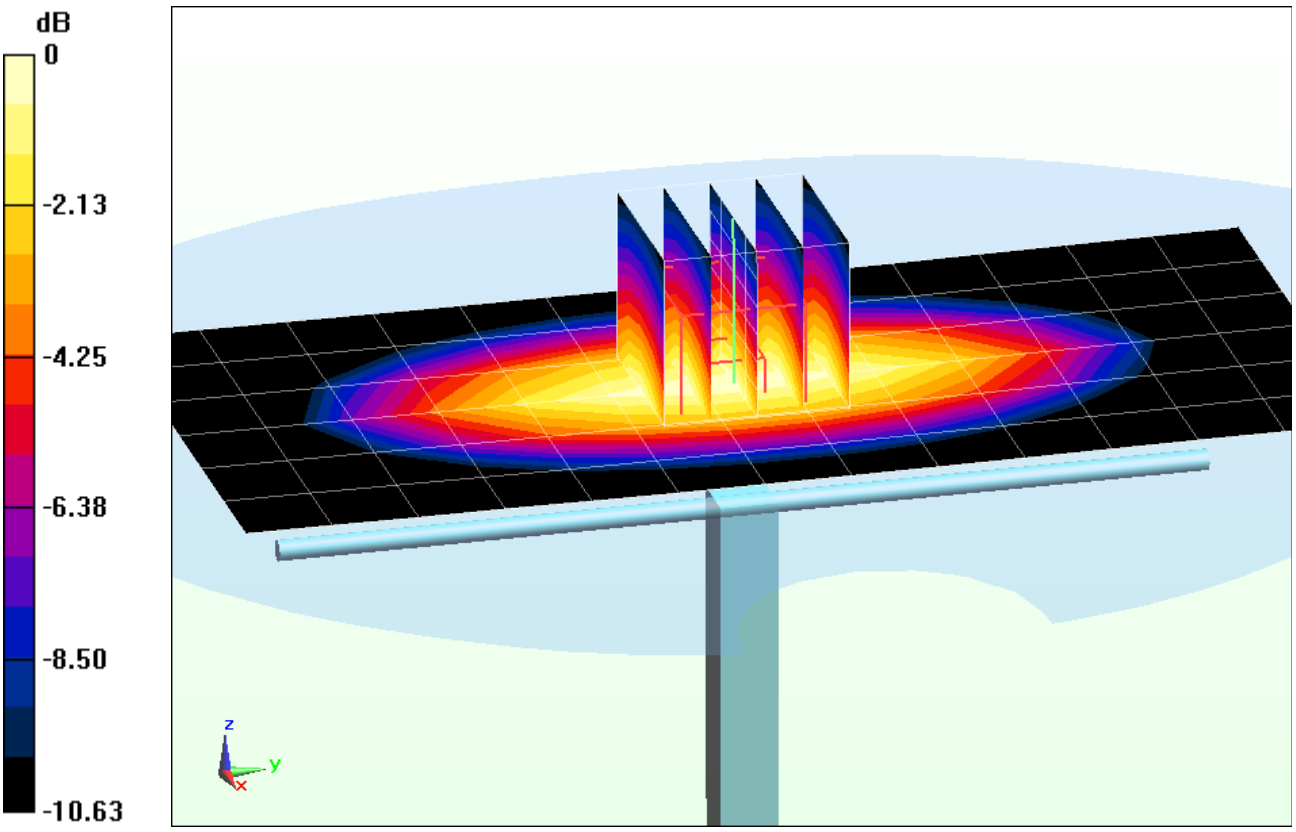
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used:
f = 835 MHz; σ = 0.911 mho/m; ε_r = 42.02; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 1.415 mW/g
SAR(1 g) = 0.959 mW/g; SAR(10 g) = 0.627 mW/g
Deviation = 1.48%



0 dB = 1.04 mW/g = 0.34 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 835 MHz; Type: D835V2; Serial: 4d132

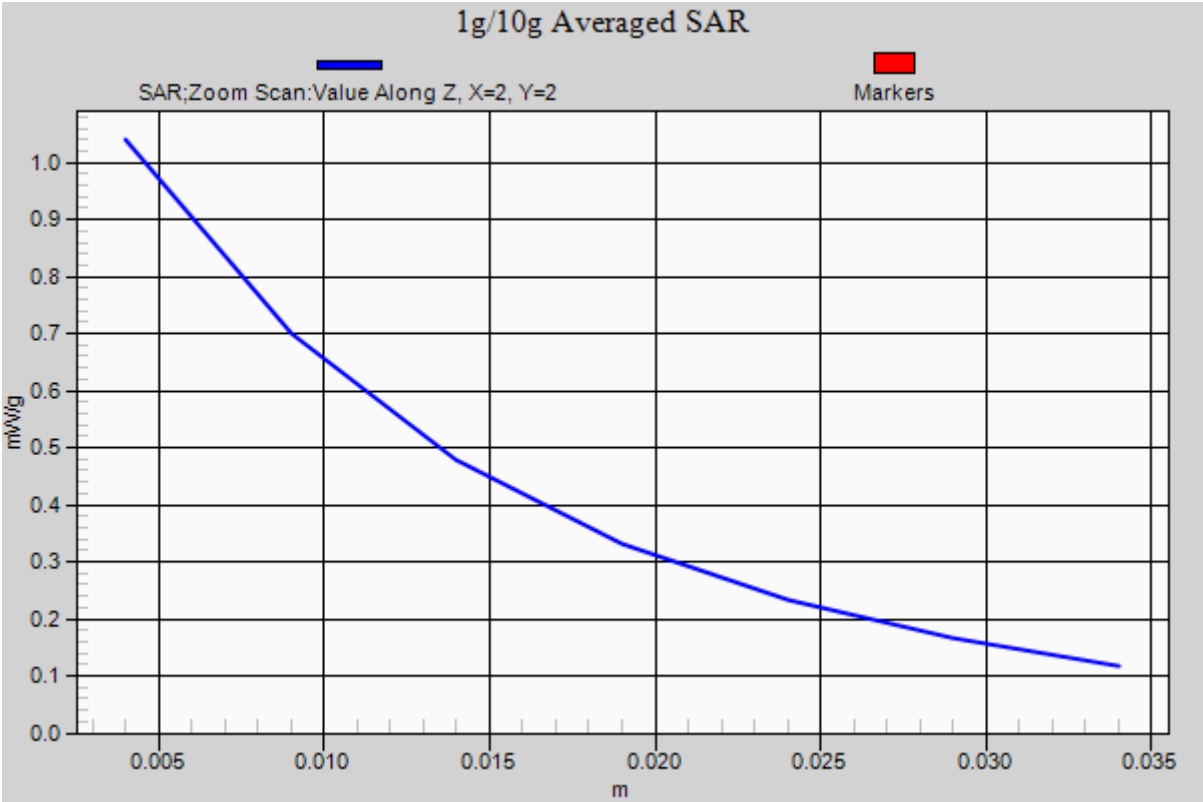
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used:
f = 835 MHz; σ = 0.911 mho/m; ε_r = 42.02; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2012; Ambient Temp: 24.4°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 1.415 mW/g
SAR(1 g) = 0.959 mW/g; SAR(10 g) = 0.627 mW/g
Deviation = 1.48%



PCTEST ENGINEERING LABORATORY, INC.

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

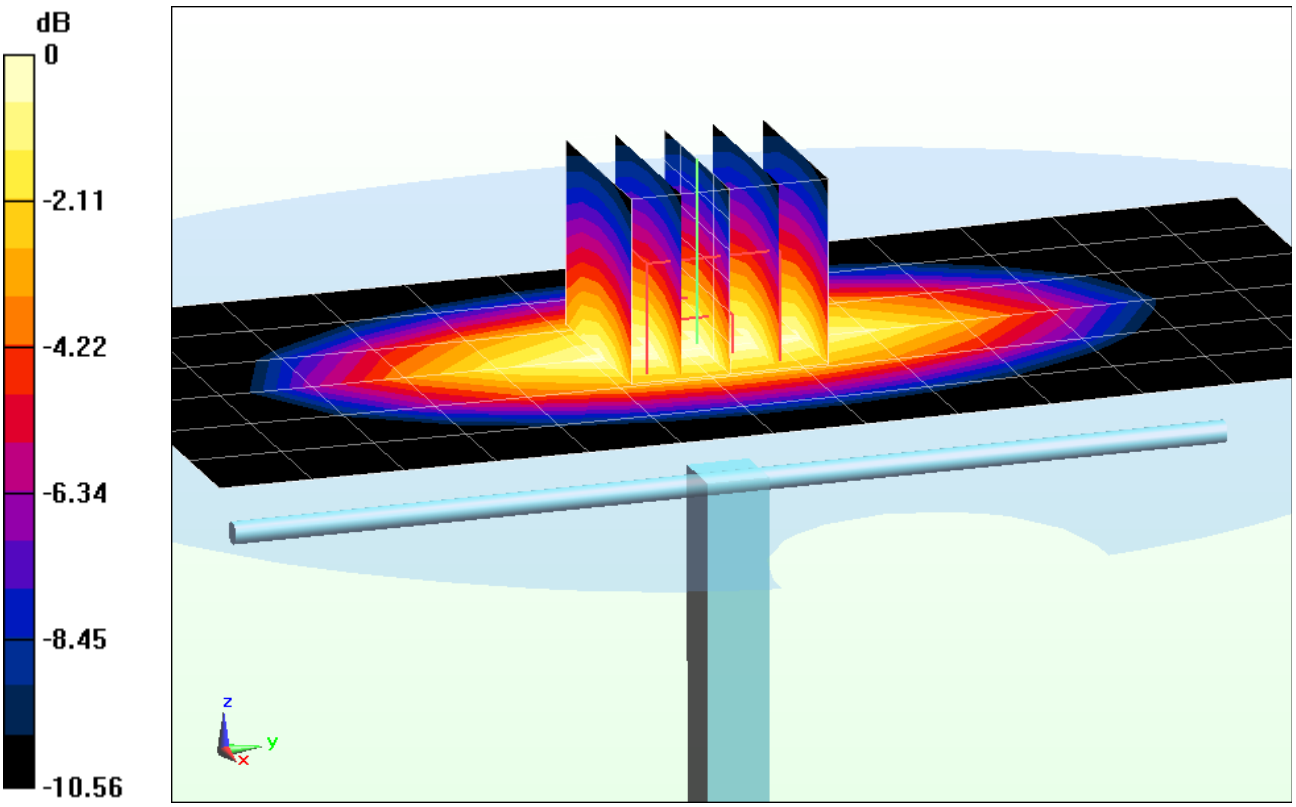
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used:
f = 835 MHz; σ = 0.9 mho/m; ε_r = 41.41; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 09-05-2012; Ambient Temp: 24.8°C; Tissue Temp: 24.1°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 1.445 mW/g
SAR(1 g) = 0.977 mW/g; SAR(10 g) = 0.638 mW/g
Deviation = 3.83%



0 dB = 1.06 mW/g = 0.51 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

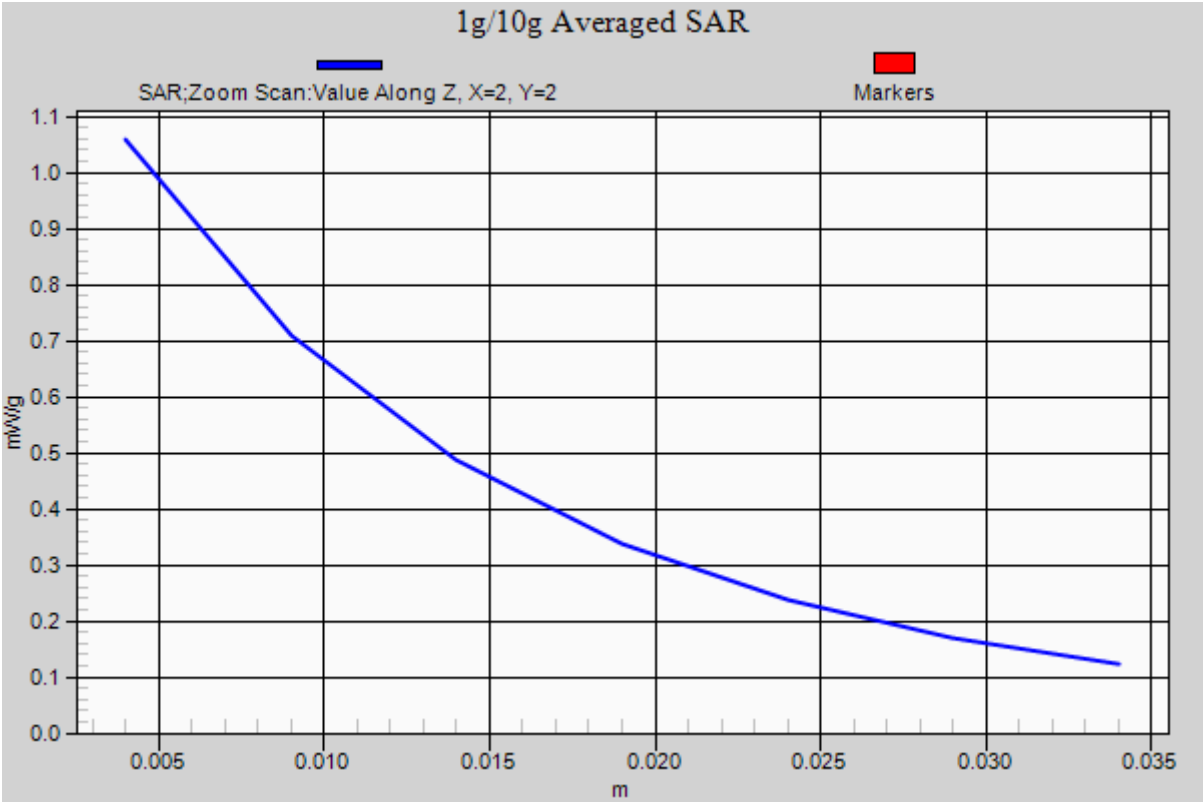
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used:
f = 835 MHz; σ = 0.9 mho/m; ε_r = 41.41; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 09-05-2012; Ambient Temp: 24.8°C; Tissue Temp: 24.1°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 5/7/2012
Phantom: SAM Front; Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 1.445 mW/g
SAR(1 g) = 0.977 mW/g; SAR(10 g) = 0.638 mW/g
Deviation = 3.83%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

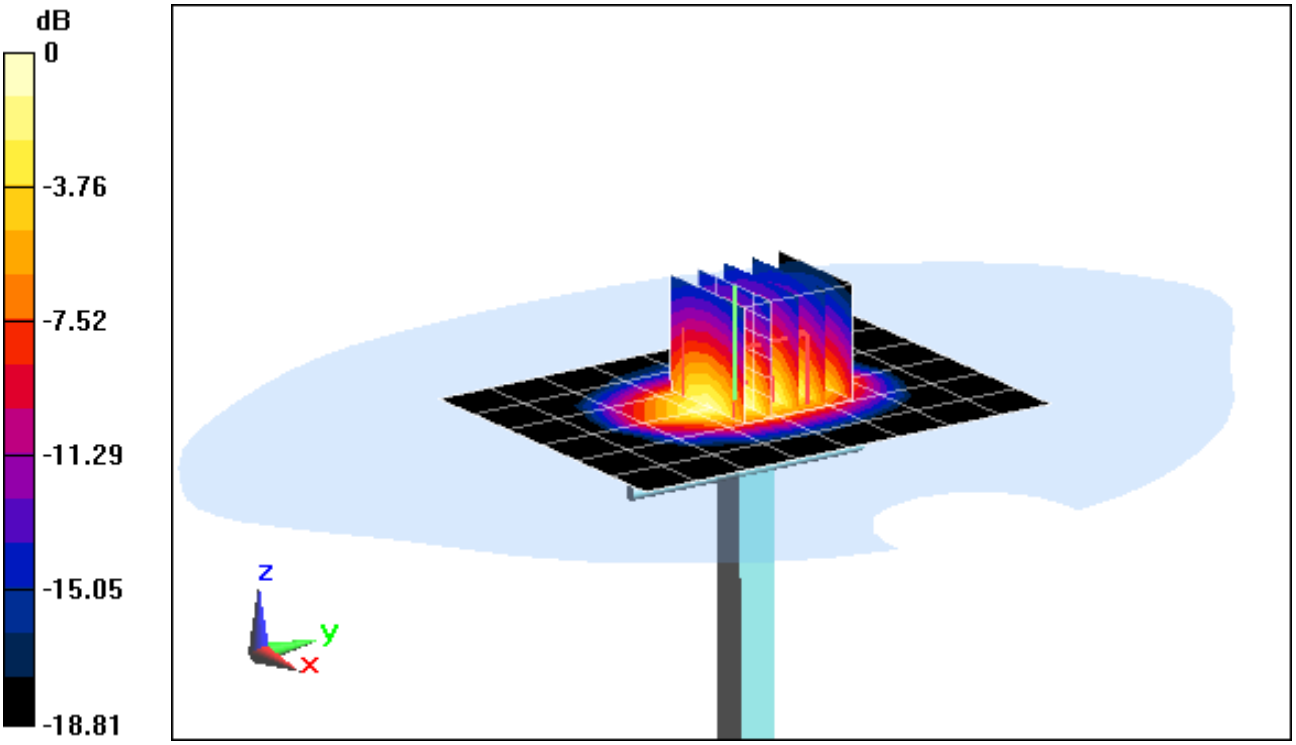
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.443 mho/m; ε_r = 40.933; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-23-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3287; ConvF(5.06, 5.06, 5.06); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power: 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 7.789 mW/g
SAR(1 g) = 4.18 mW/g; SAR(10 g) = 2.17 mW/g
Deviation: 6.36%



0 dB = 4.64 mW/g = 13.33 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

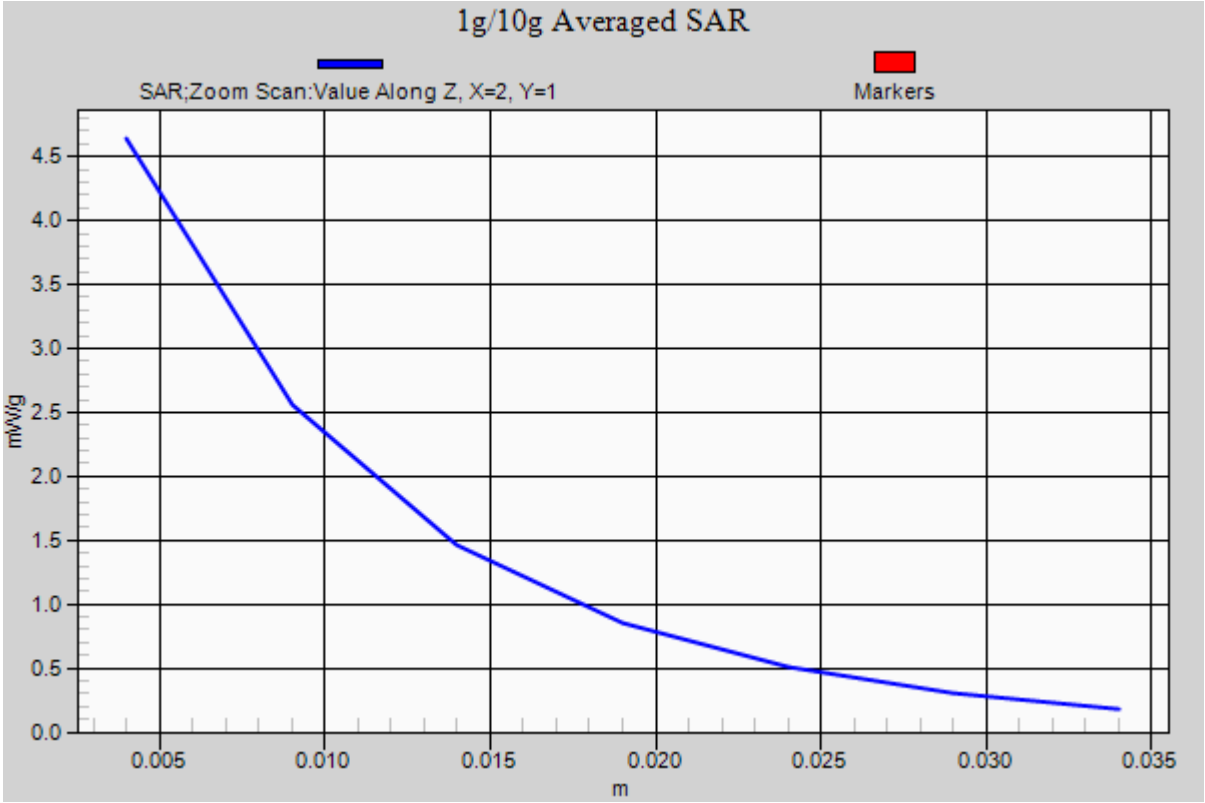
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.443 mho/m; ε_r = 40.933; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-23-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3287; ConvF(5.06, 5.06, 5.06); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power: 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 7.789 mW/g
SAR(1 g) = 4.18 mW/g; SAR(10 g) = 2.17 mW/g
Deviation: 6.36%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

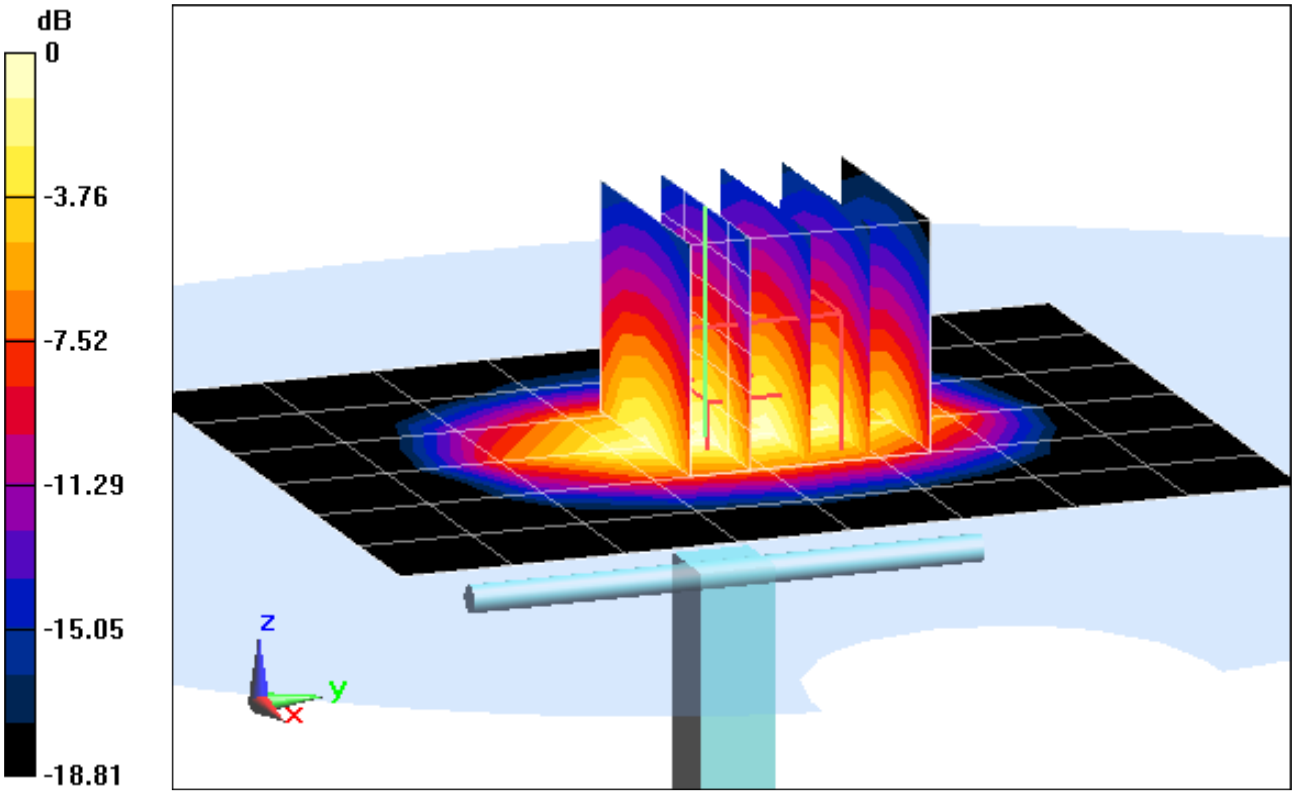
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.41 mho/m; ε_r = 40.457; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3287; ConvF(5.06, 5.06, 5.06); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.611 mW/g
SAR(1 g) = 4.09 mW/g; SAR(10 g) = 2.12 mW/g
Deviation = 4.07%



0 dB = 4.53 mW/g = 13.12 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

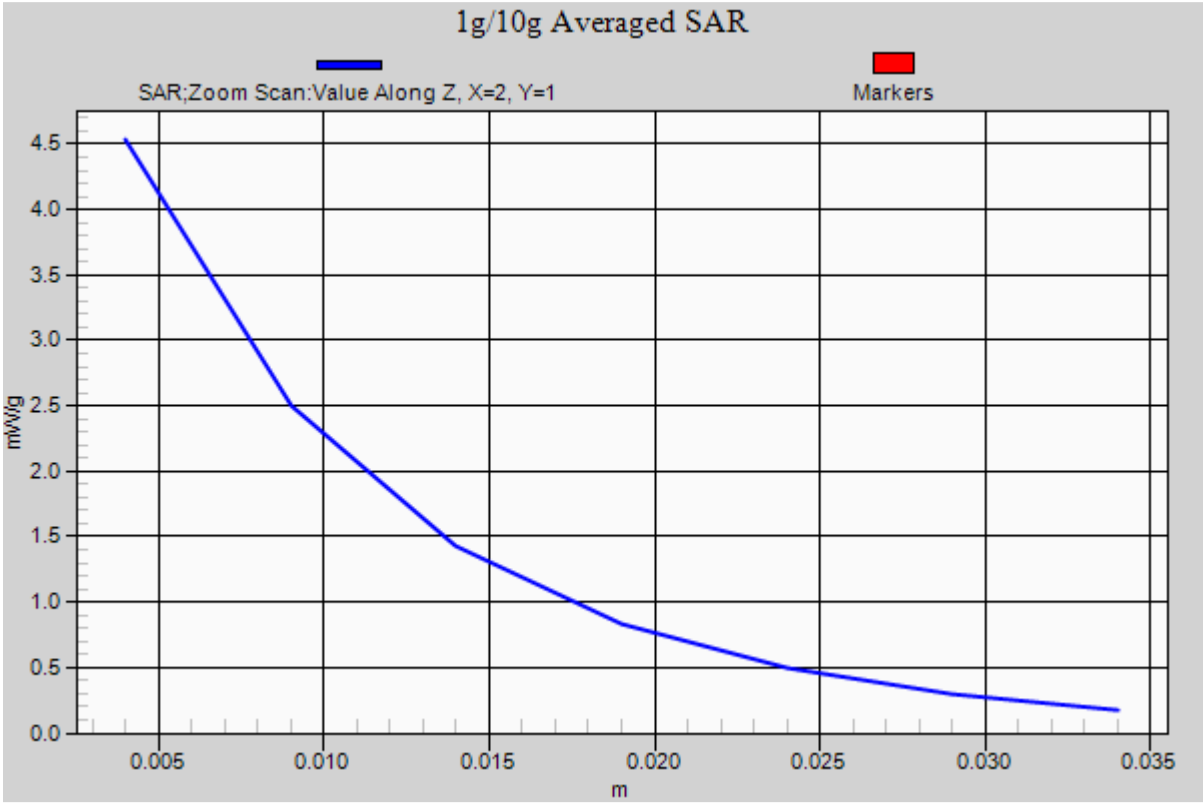
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.41 mho/m; ε_r = 40.457; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3287; ConvF(5.06, 5.06, 5.06); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.611 mW/g
SAR(1 g) = 4.09 mW/g; SAR(10 g) = 2.12 mW/g
Deviation = 4.07%



PCTEST ENGINEERING LABORATORY, INC.

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

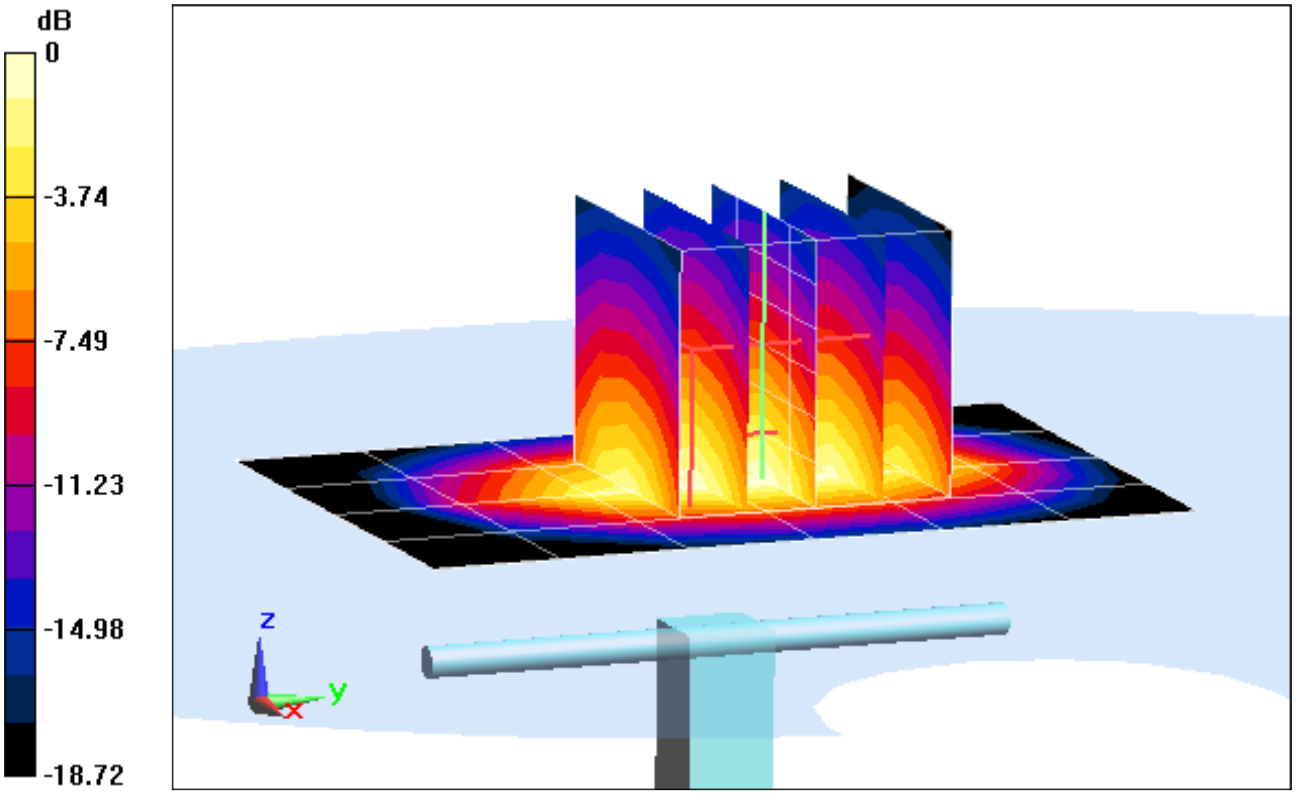
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.424 mho/m; ε_r = 38.32; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.8°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(6.95, 6.95, 6.95); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

1900MHz System Verification

Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.273 mW/g
SAR(1 g) = 3.92 mW/g; SAR(10 g) = 2.02 mW/g
Deviation = 0.00 %



0 dB = 4.36 mW/g = 12.79 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

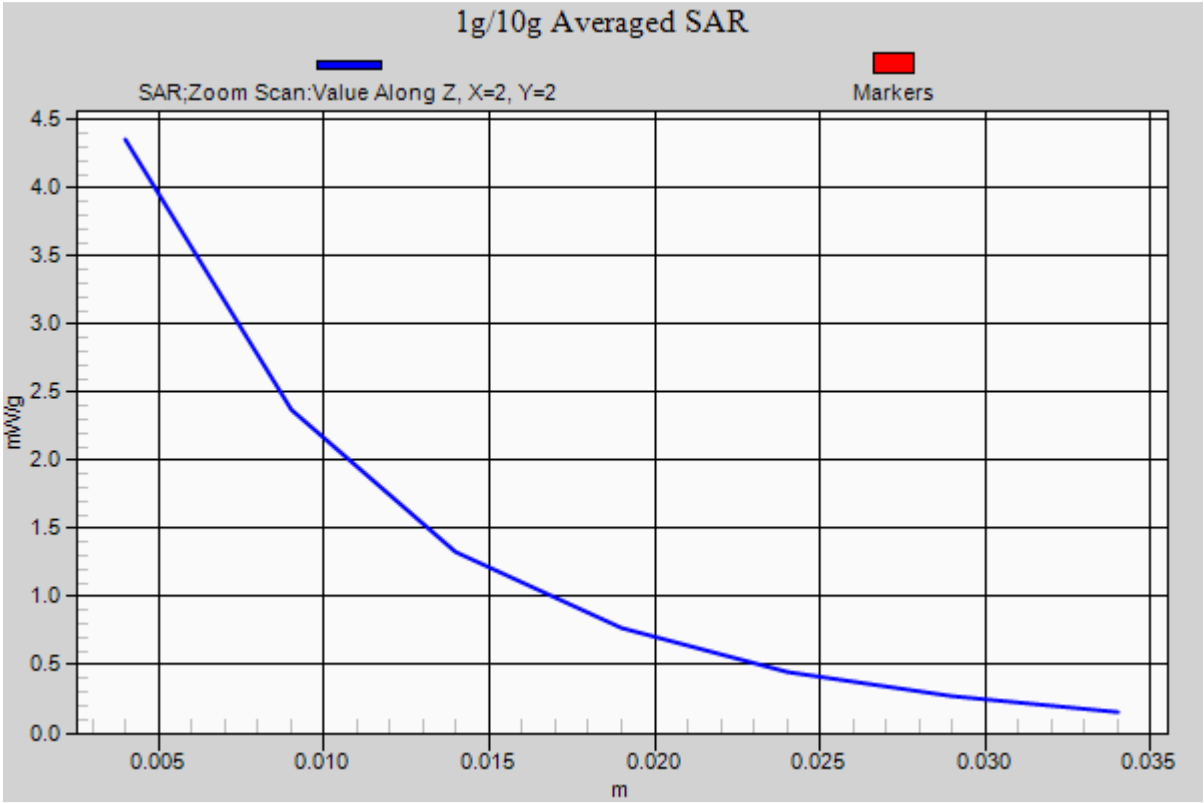
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.424 mho/m; ε_r = 38.32; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-27-2012; Ambient Temp: 24.8°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(6.95, 6.95, 6.95); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

1900MHz System Verification

Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.273 mW/g
SAR(1 g) = 3.92 mW/g; SAR(10 g) = 2.02 mW/g
Deviation = 0.00 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

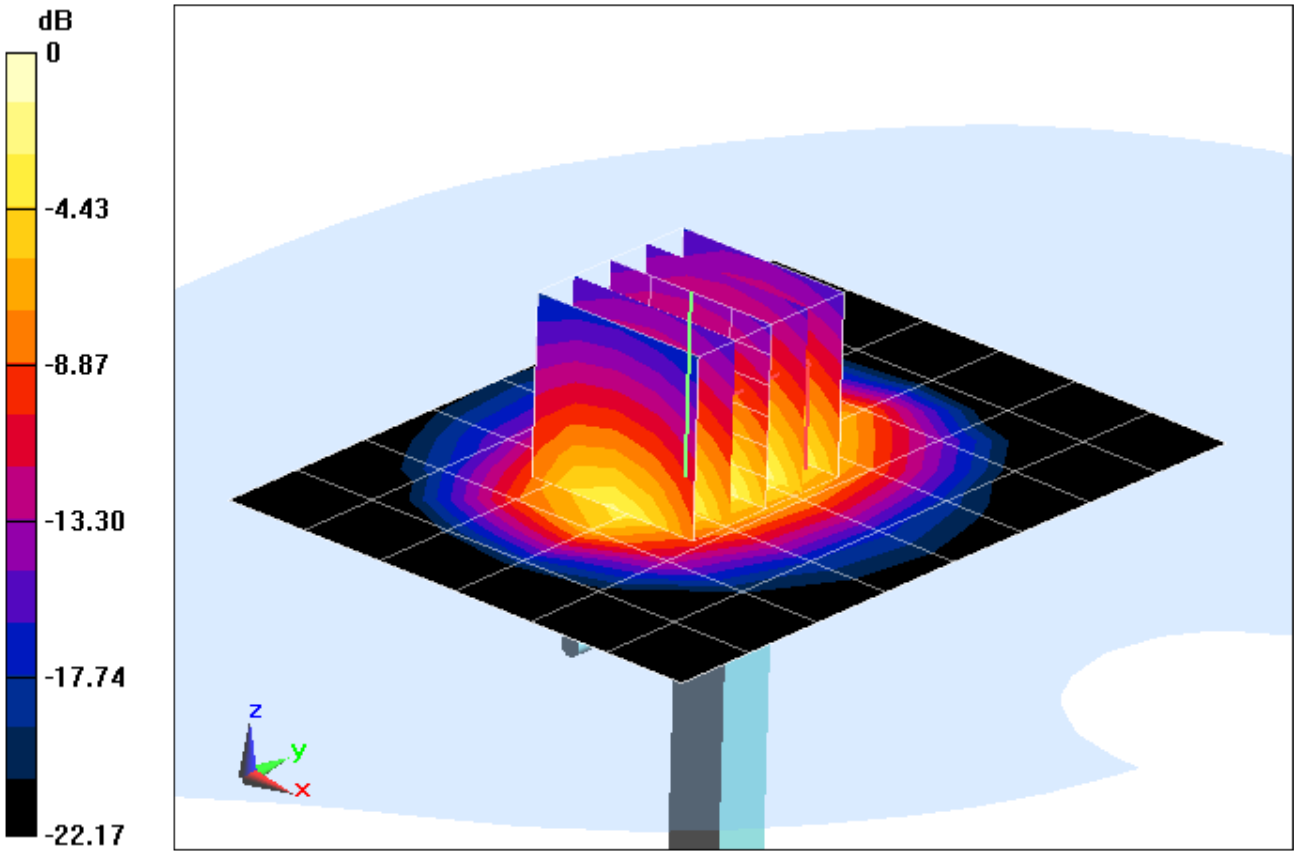
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.396 mho/m; ε_r = 38.153; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-05-2012; Ambient Temp: 23.3°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3288; ConvF(5.16, 5.16, 5.16); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 7.850 mW/g
SAR(1 g) = 4.22 mW/g; SAR(10 g) = 2.21 mW/g
Deviation = 7.38 %



0 dB = 4.63 mW/g = 13.31 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

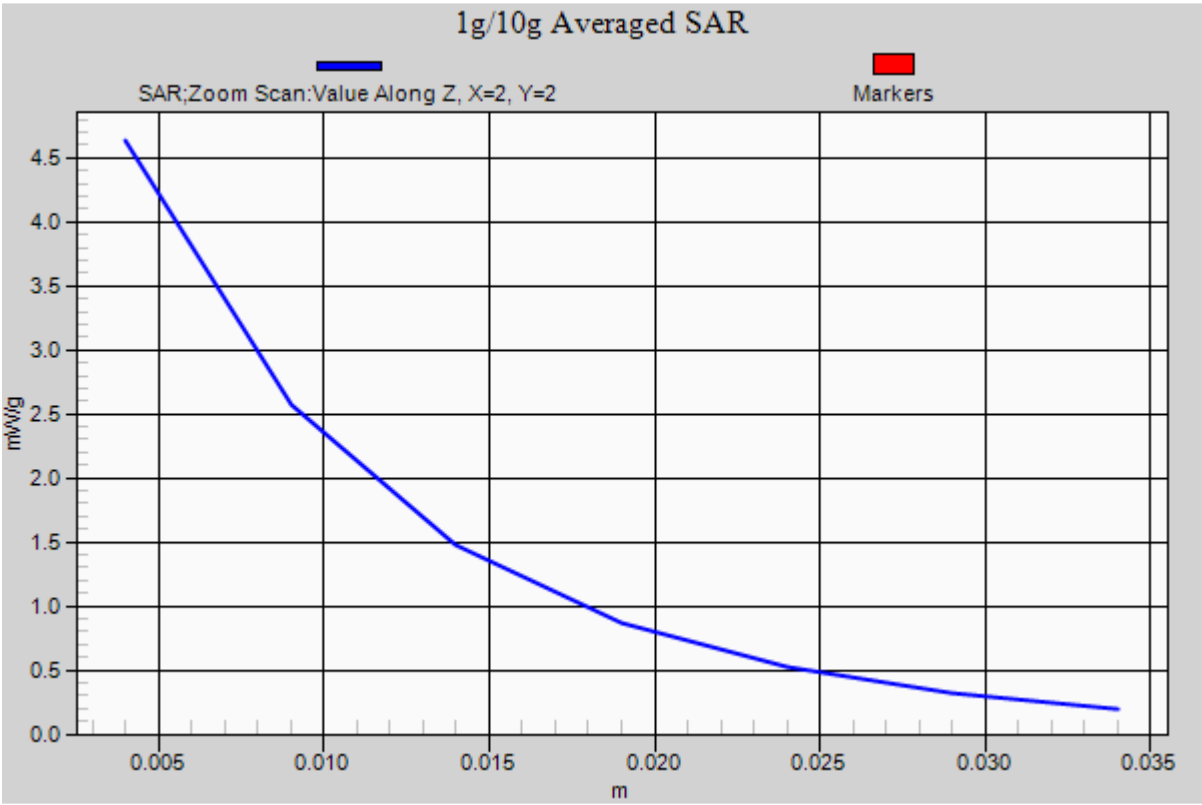
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.396 mho/m; ε_r = 38.153; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-05-2012; Ambient Temp: 23.3°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3288; ConvF(5.16, 5.16, 5.16); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 7.850 mW/g
SAR(1 g) = 4.22 mW/g; SAR(10 g) = 2.21 mW/g
Deviation = 7.38 %



PCTEST ENGINEERING LABORATORY, INC.

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

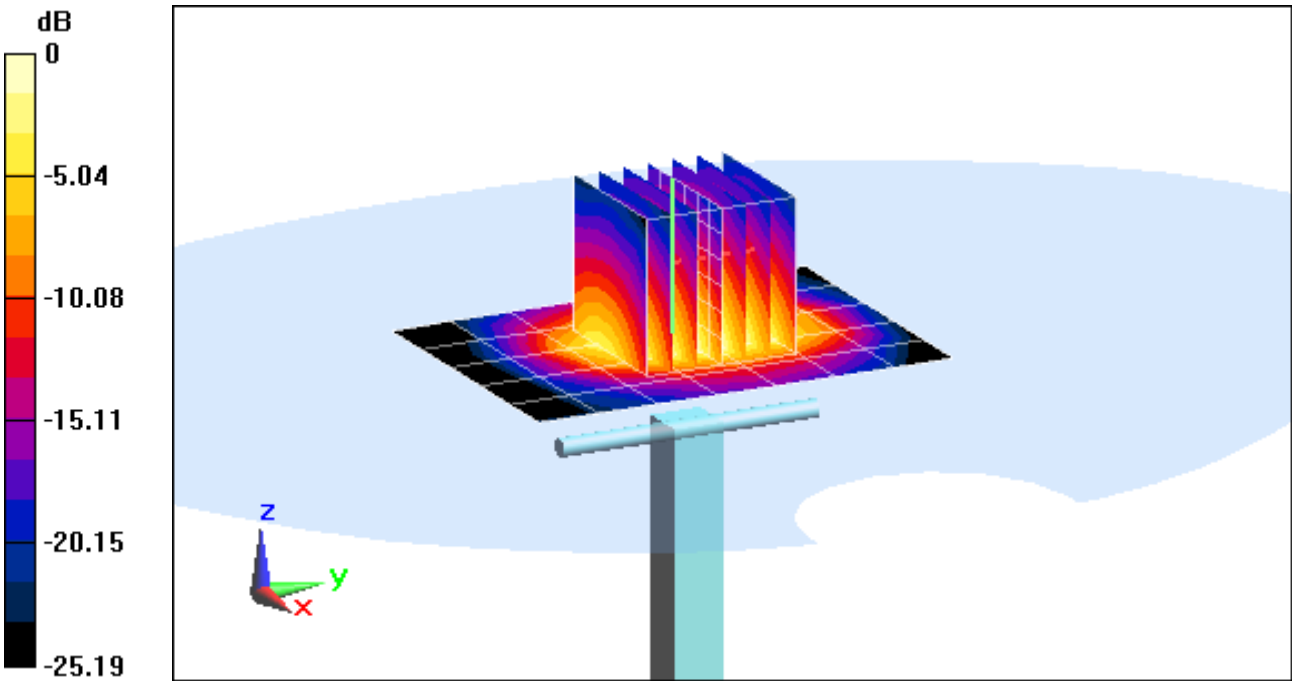
Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.885 mho/m; ε_r = 37.95; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

2450MHz System Verification

Area Scan (6x8x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Input Power = 10 dBm (10 mW)
Peak SAR (extrapolated) = 1.148 mW/g
SAR(1 g) = 0.528 mW/g; SAR(10 g) = 0.244 mW/g
Deviation = 1.34%



0 dB = 0.716 mW/g = -2.90 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.885 mho/m; ε_r = 37.95; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

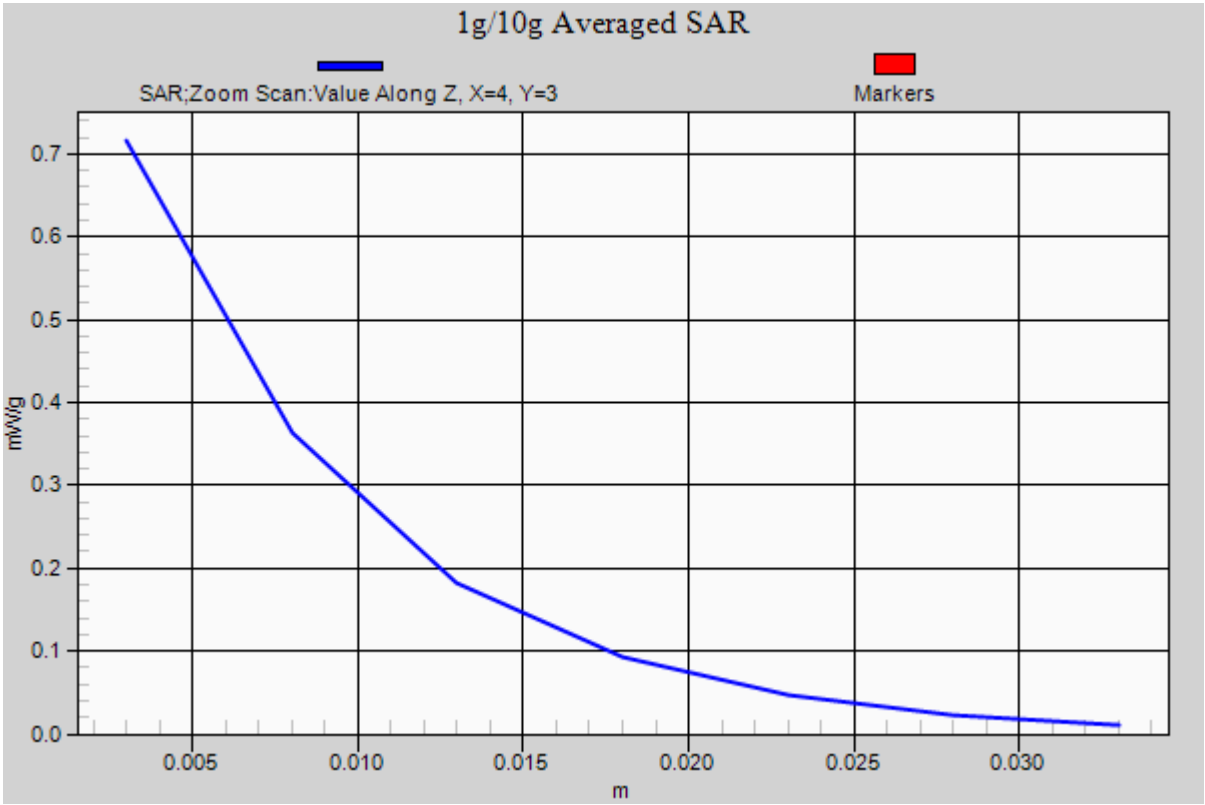
Test Date: 08-30-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.46, 4.46, 4.46); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

2450MHz System Verification

Area Scan (6x8x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Input Power = 10 dBm (10 mW)
Peak SAR (extrapolated) = 1.148 mW/g

SAR(1 g) = 0.528 mW/g; SAR(10 g) = 0.244 mW/g
Deviation = 1.34%



PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5 GHz Head Medium parameters used:

f = 5200 MHz; σ = 4.51 mho/m; ε_r = 35.43; ρ = 1000 kg/m^3

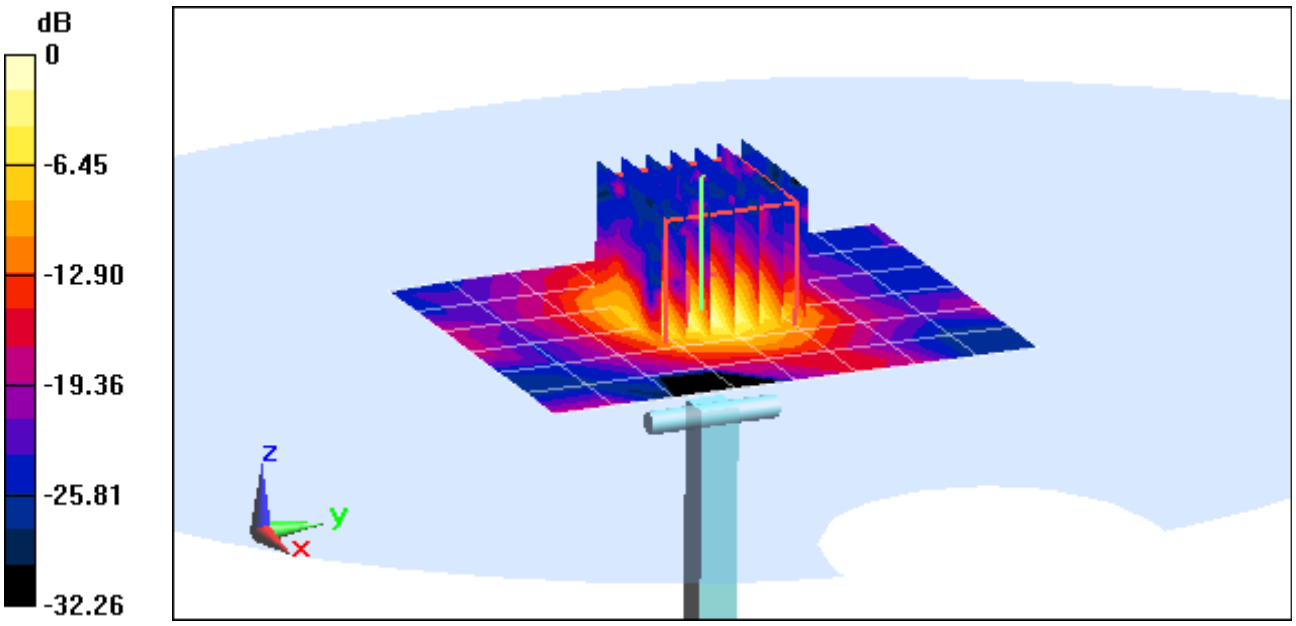
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-02-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(4.59, 4.59, 4.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

5200MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 10 dBm (10 mW)
Peak SAR (extrapolated) = 3.528 mW/g
SAR(1 g) = 0.801 mW/g; SAR(10 g) = 0.216 mW/g
Deviation = 1.26%



0 dB = 1.68 mW/g = 4.51 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5 GHz Head Medium parameters used:

f = 5200 MHz; σ = 4.51 mho/m; ε_r = 35.43; ρ = 1000 kg/m^3

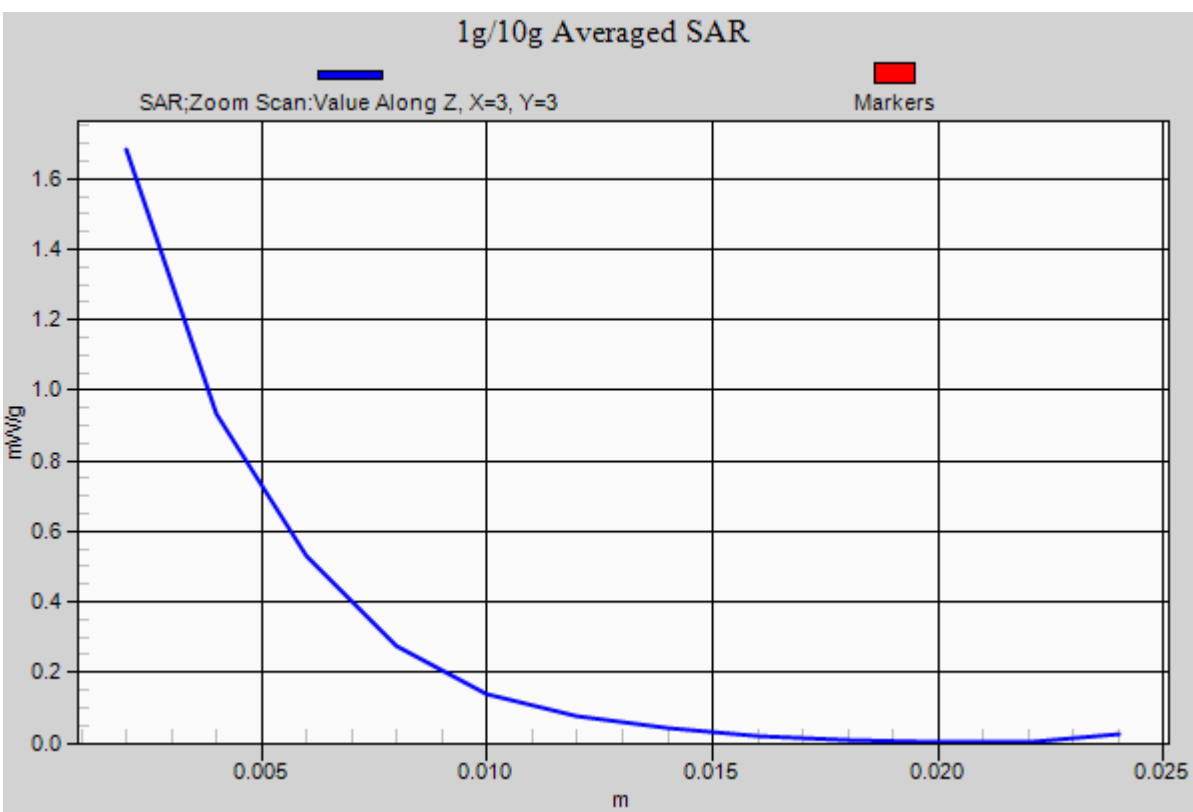
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-02-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(4.59, 4.59, 4.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

5200MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 10 dBm (10 mW)
Peak SAR (extrapolated) = 3.528 mW/g
SAR(1 g) = 0.801 mW/g; SAR(10 g) = 0.216 mW/g
Deviation = 1.26%



PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5GHz Head Medium parameters used:

f = 5500 MHz; σ = 4.845 mho/m; ε_r = 35.16; ρ = 1000 kg/m^3

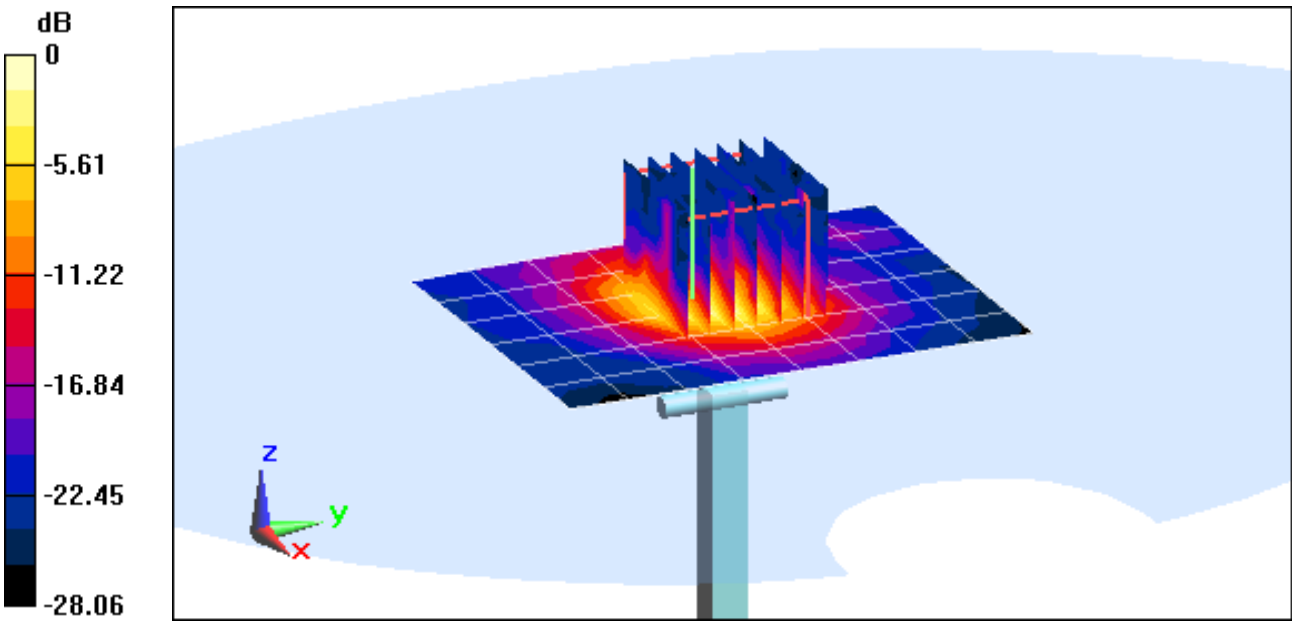
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-02-2012; Ambient Temp: 23.2°C; Tissue Temp: 23.0°C

Probe: EX3DV4 - SN3589; ConvF(4.33, 4.33, 4.33); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

5500MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 10 dBm (10 mW)
Peak SAR (extrapolated) = 3.600 mW/g
SAR(1 g) = 0.827 mW/g; SAR(10 g) = 0.215 mW/g
Deviation = -2.59%



0 dB = 1.59 mW/g = 4.03 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5GHz Head Medium parameters used:

f = 5500 MHz; σ = 4.845 mho/m; ε_r = 35.16; ρ = 1000 kg/m^3

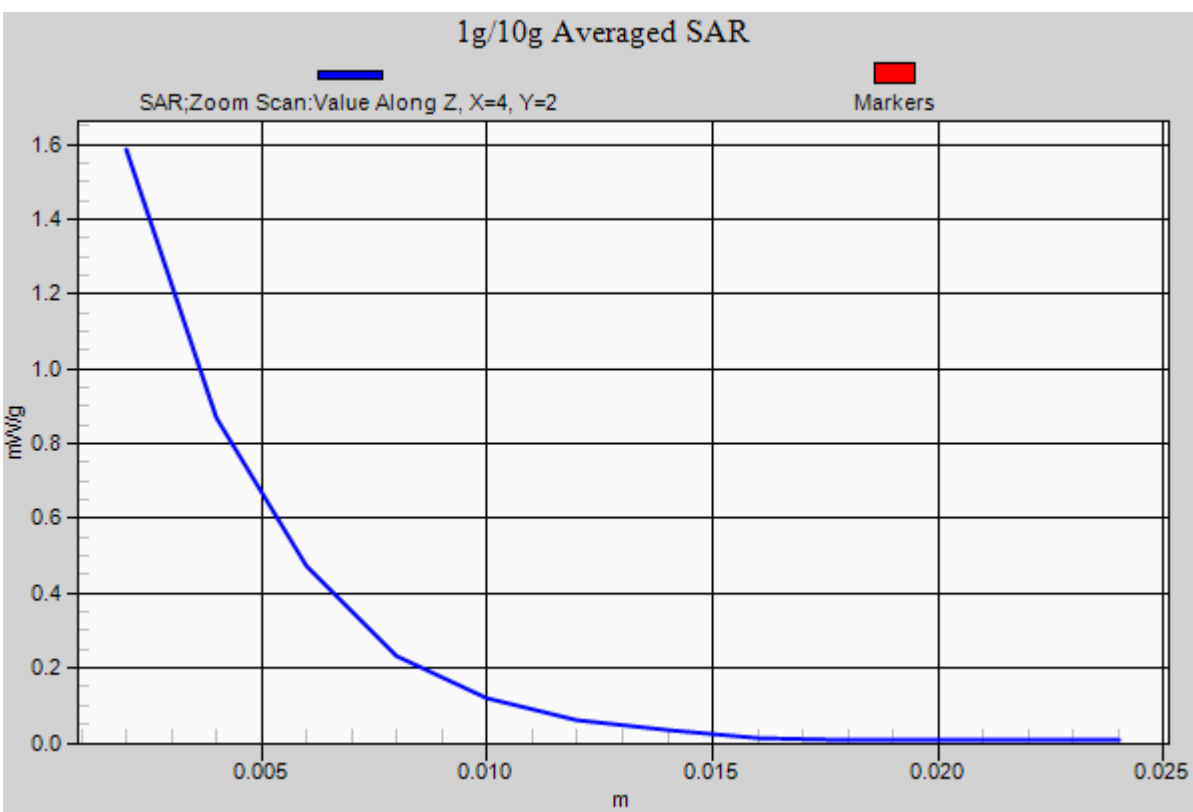
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-02-2012; Ambient Temp: 23.2°C; Tissue Temp: 23.0°C

Probe: EX3DV4 - SN3589; ConvF(4.33, 4.33, 4.33); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

5500MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 10 dBm (10 mW)
Peak SAR (extrapolated) = 3.600 mW/g
SAR(1 g) = 0.827 mW/g; SAR(10 g) = 0.215 mW/g
Deviation = -2.59%



PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5GHz Head Medium parameters used:

f = 5800 MHz; σ = 5.137 mho/m; ε_r = 34.65; ρ = 1000 kg/m^3

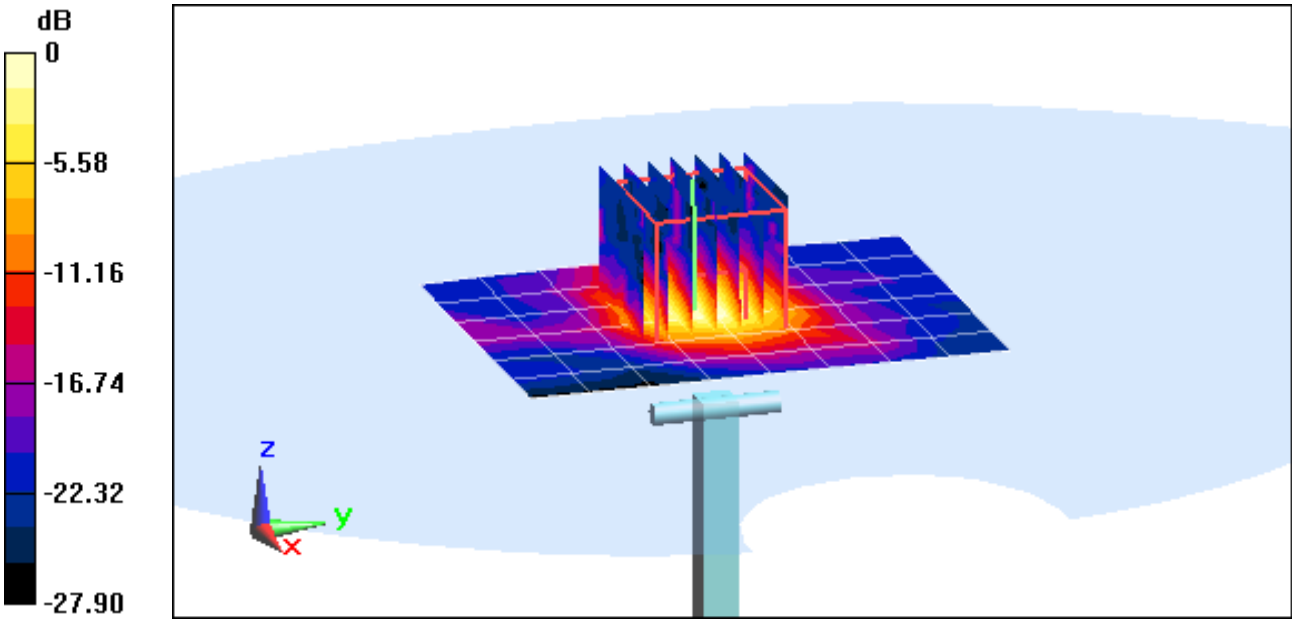
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-02-2012; Ambient Temp: 23.2°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(4.05, 4.05, 4.05); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

5800MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 10 dBm = (10 mW)
Peak SAR (extrapolated) = 3.892 mW/g
SAR(1 g) = 0.825 mW/g; SAR(10 g) = 0.220 mW/g
Deviation = 3.77%



0 dB = 1.75 mW/g = 4.86 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5GHz Head Medium parameters used:

f = 5800 MHz; σ = 5.137 mho/m; ε_r = 34.65; ρ = 1000 kg/m^3

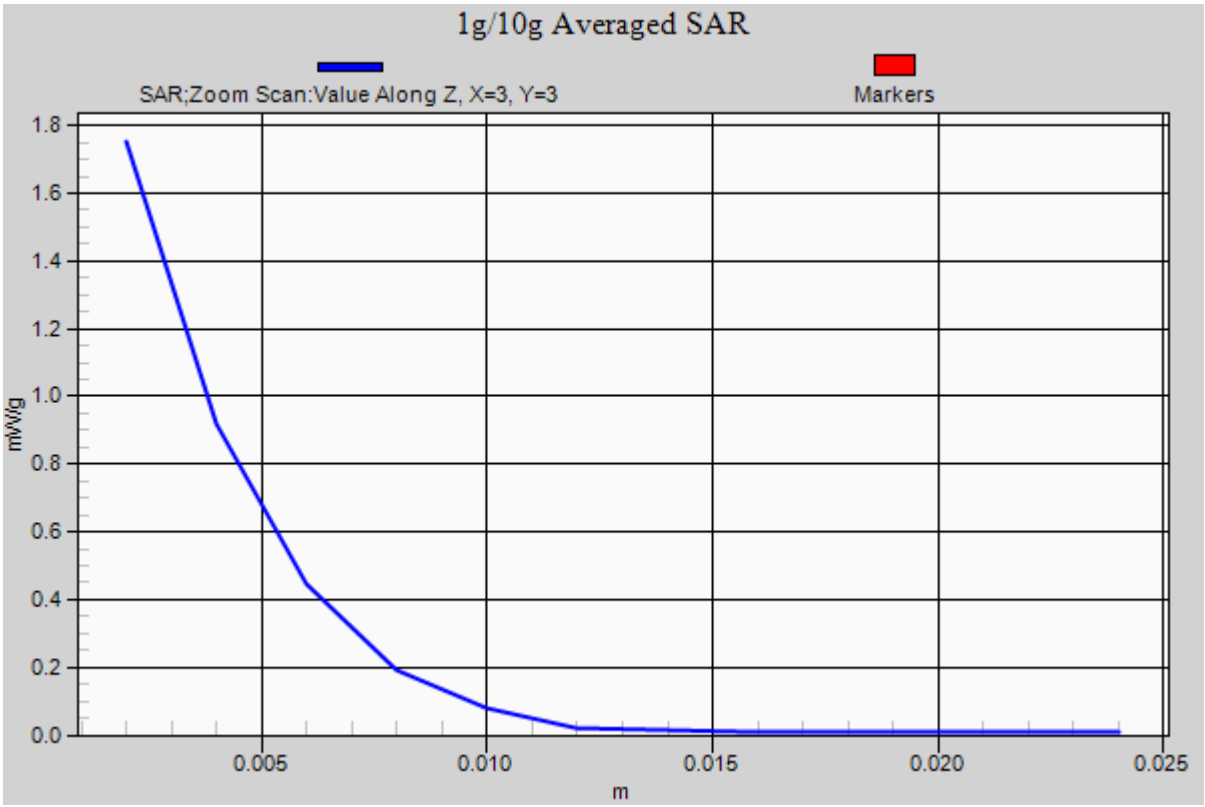
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-02-2012; Ambient Temp: 23.2°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(4.05, 4.05, 4.05); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 2/15/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

5800MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 10 dBm = (10 mW)
Peak SAR (extrapolated) = 3.892 mW/g
SAR(1 g) = 0.825 mW/g; SAR(10 g) = 0.220 mW/g
Deviation = 3.77%



PCTEST ENGINEERING LABORATORY, INC.

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

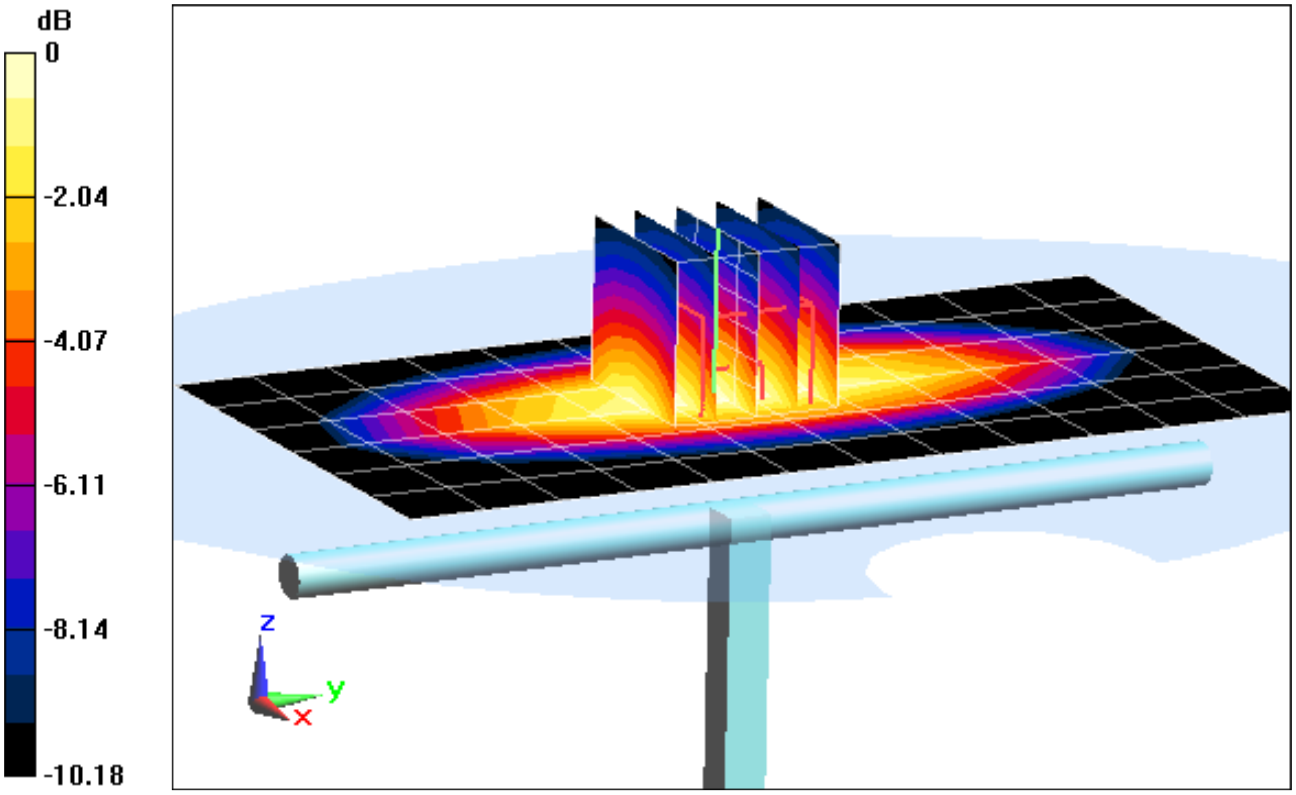
Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: 740 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.957 mho/m; ε_r = 54.777; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-28-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

750MHz System Verification

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.218 mW/g
SAR(1 g) = 0.828 mW/g; SAR(10 g) = 0.549 mW/g
Deviation = -5.05%



0 dB = 0.892 mW/g = -0.99 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

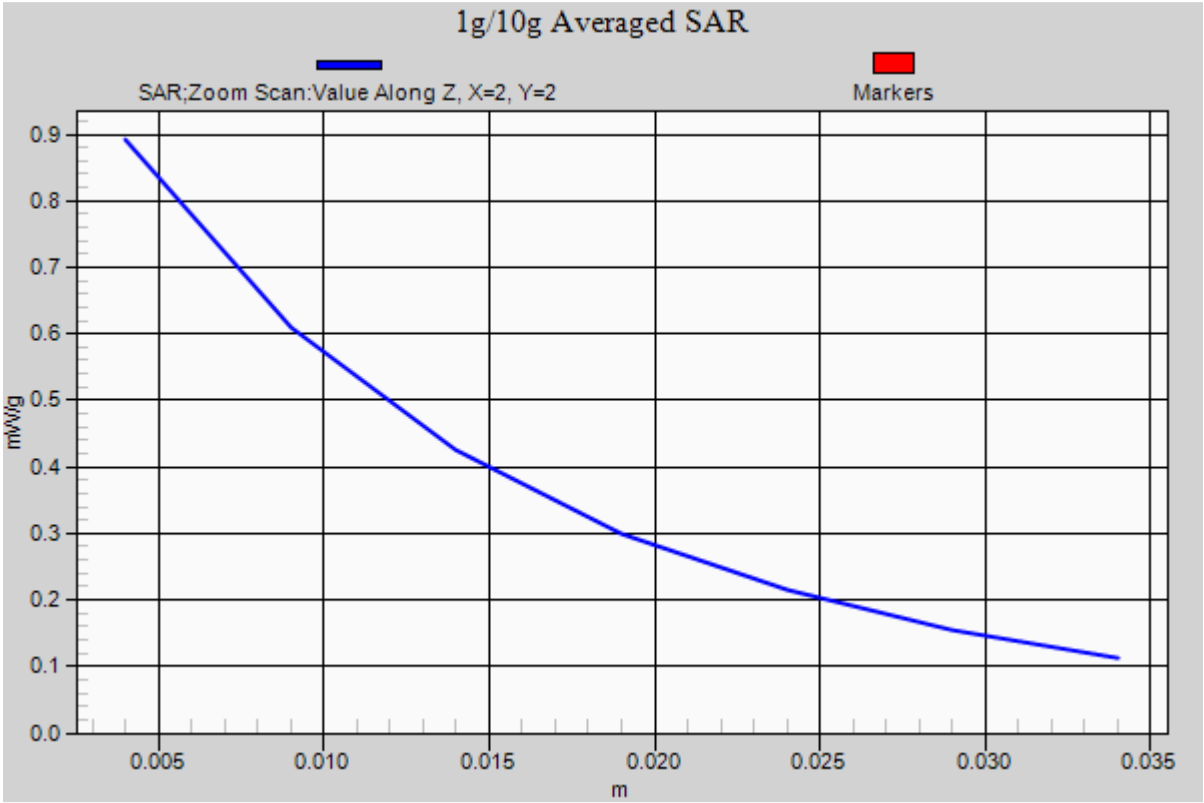
Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: 740 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.957 mho/m; ε_r = 54.777; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-28-2012; Ambient Temp: 24.9°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3561; ConvF(8.18, 8.18, 8.18); Calibrated: 7/26/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

750MHz System Verification

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.218 mW/g
SAR(1 g) = 0.828 mW/g; SAR(10 g) = 0.549 mW/g
Deviation = -5.05%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.981 mho/m; ε_r = 54.18; ρ = 1000 kg/m^3

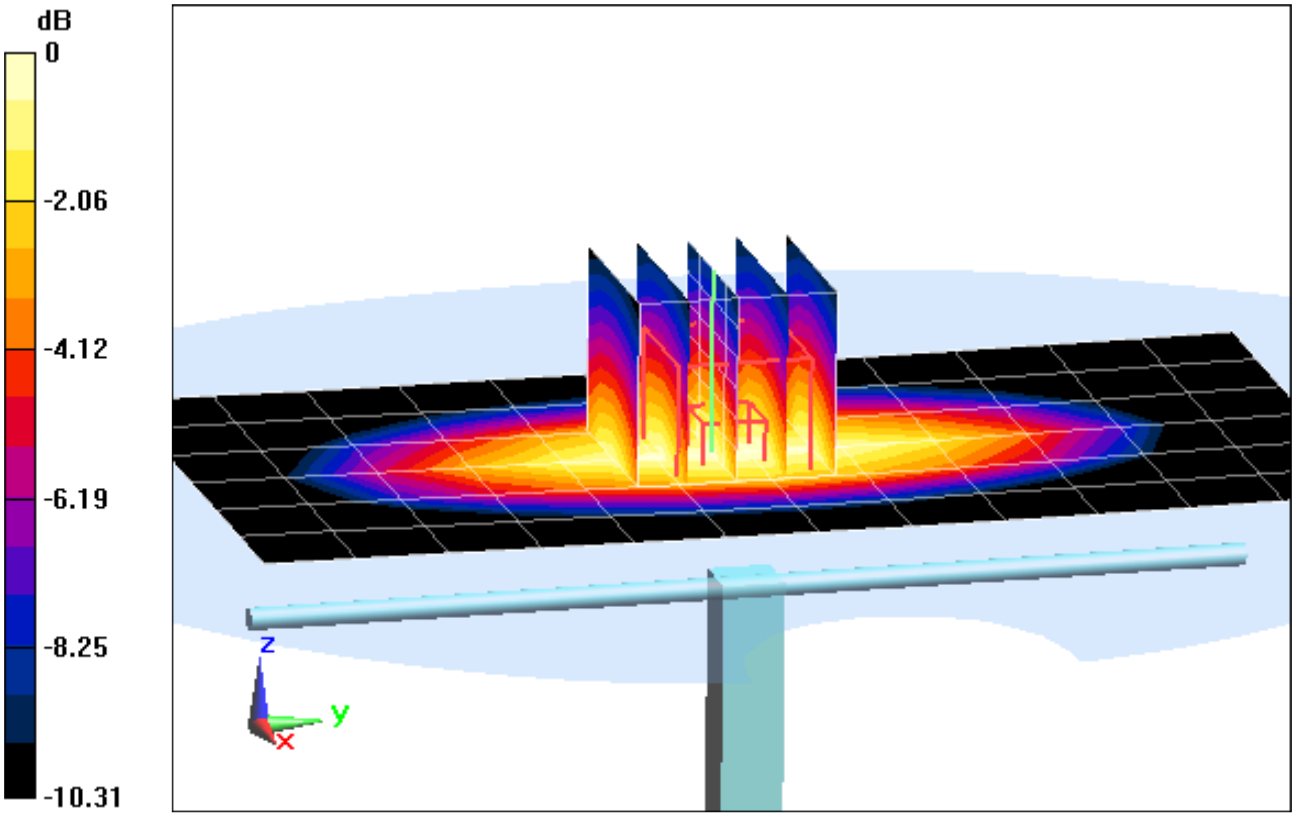
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.445 mW/g
SAR(1 g) = 0.993 mW/g; SAR(10 g) = 0.654 mW/g
Deviation = 3.87%



0 dB = 1.08 mW/g = 0.67 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.981 mho/m; ε_r = 54.18; ρ = 1000 kg/m^3

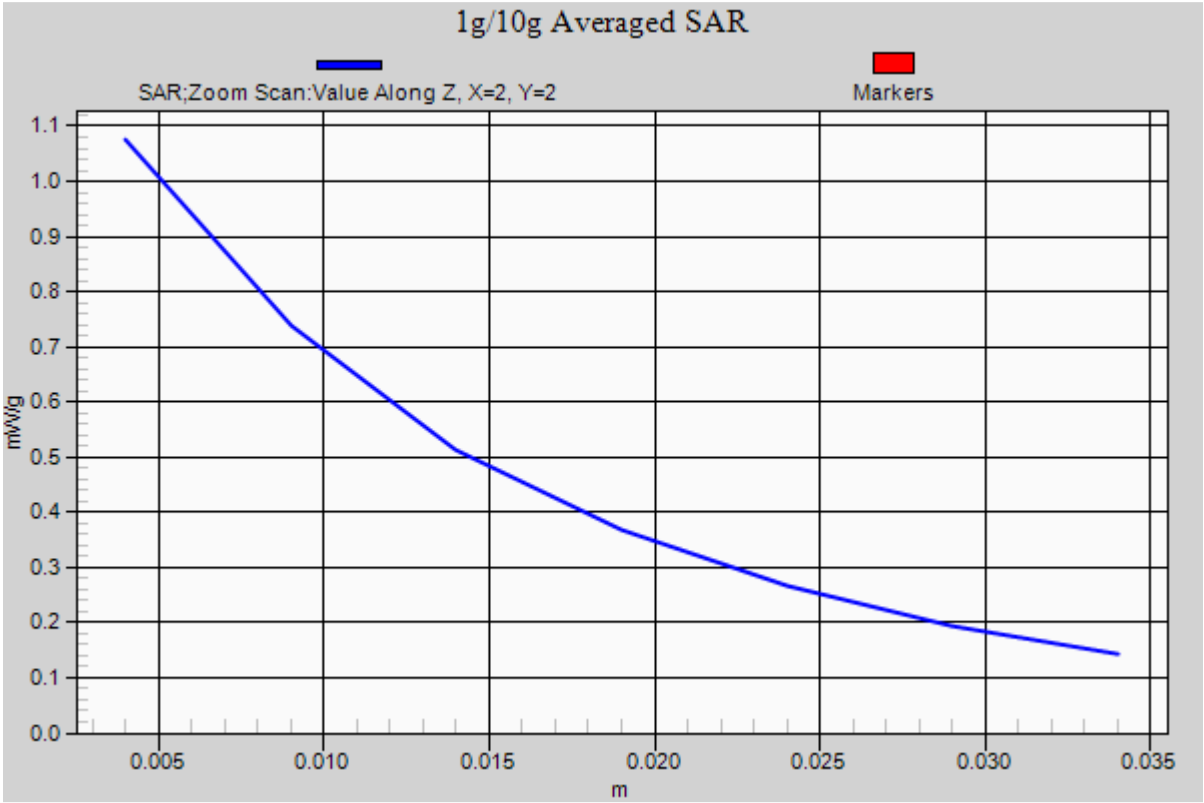
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-27-2012; Ambient Temp: 24.9°C; Tissue Temp: 24.2°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.445 mW/g
SAR(1 g) = 0.993 mW/g; SAR(10 g) = 0.654 mW/g
Deviation = 3.87%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

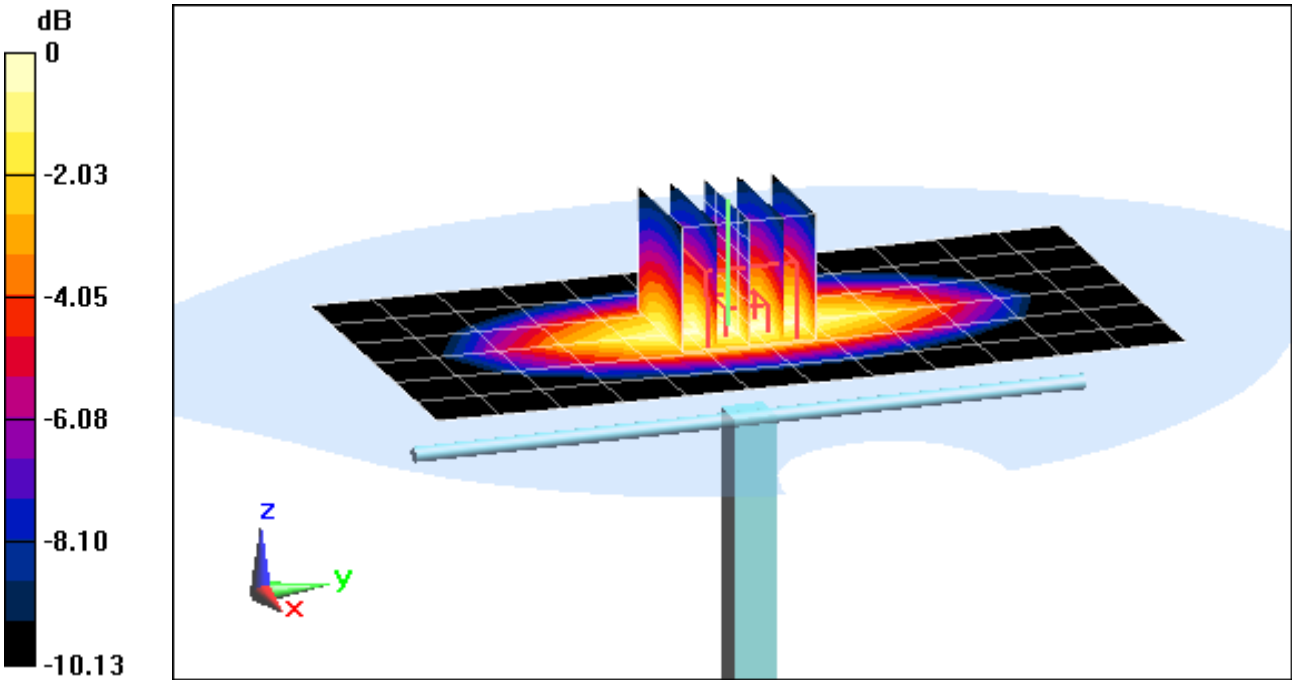
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.956 mho/m; ε_r = 53.99; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 1.382 mW/g
SAR(1 g) = 0.955 mW/g; SAR(10 g) = 0.633 mW/g
Deviation = -0.10%



0 dB = 1.03 mW/g = 0.26 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

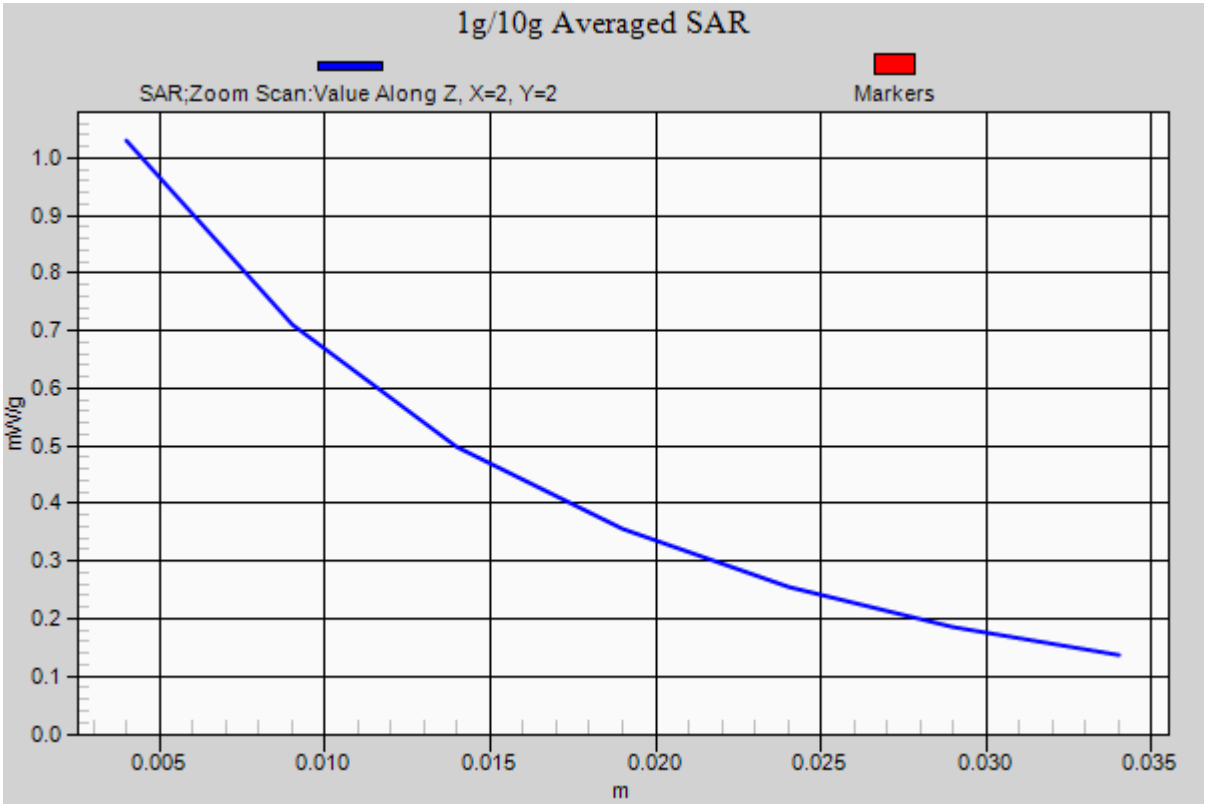
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.956 mho/m; ε_r = 53.99; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2012; Ambient Temp: 24.5°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3258; ConvF(6.06, 6.06, 6.06); Calibrated: 2/21/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

835MHz System Verification

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 1.382 mW/g
SAR(1 g) = 0.955 mW/g; SAR(10 g) = 0.633 mW/g
Deviation = -0.10%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

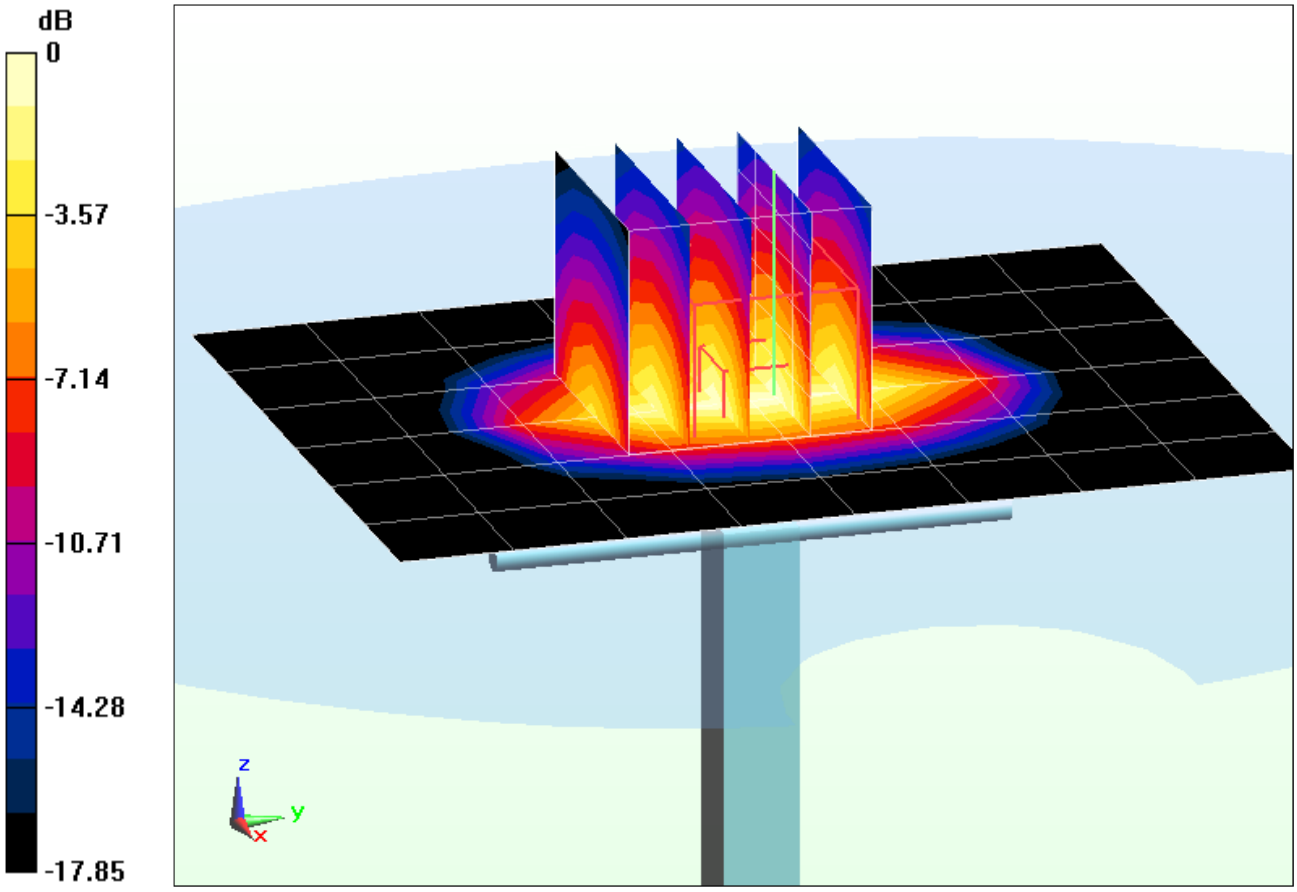
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.516 mho/m; ε_r = 54.753; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 6.767 mW/g
SAR(1 g) = 3.84 mW/g; SAR(10 g) = 2.03 mW/g
Deviation = -2.29%



0 dB = 4.27 mW/g = 12.61 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

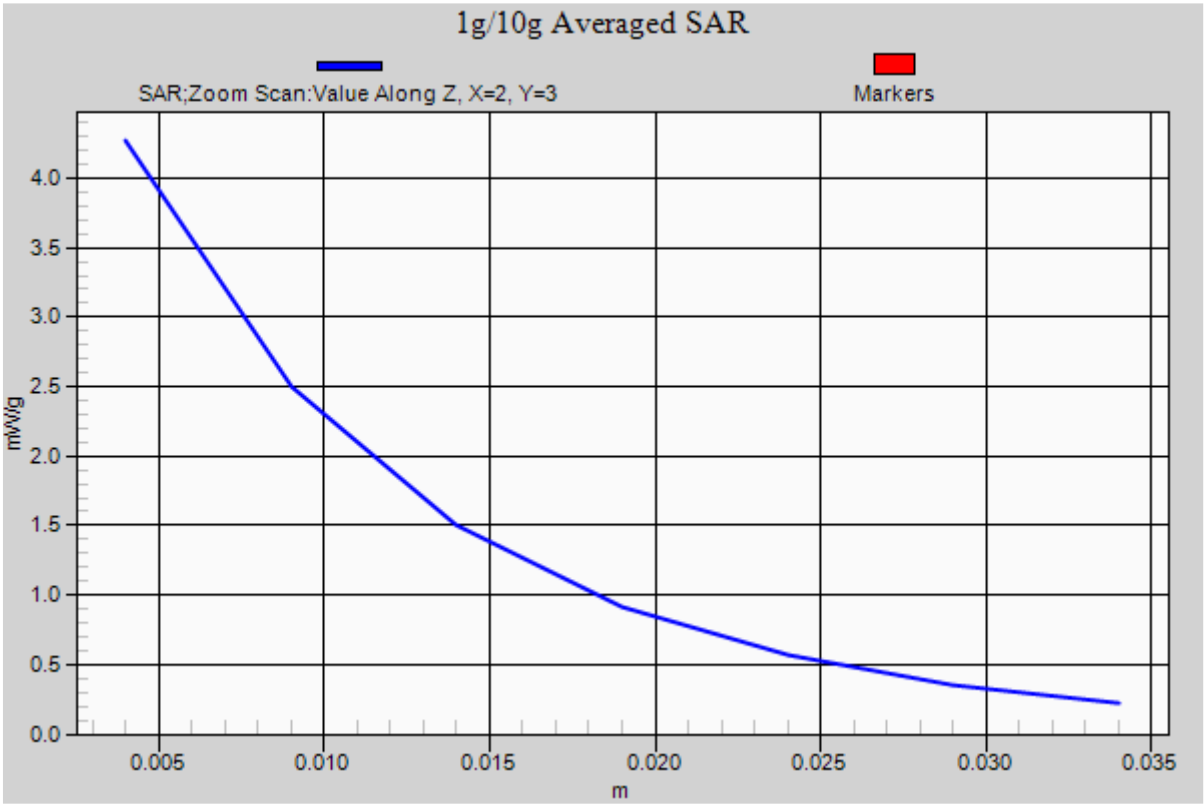
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.516 mho/m; ε_r = 54.753; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 6.767 mW/g
SAR(1 g) = 3.84 mW/g; SAR(10 g) = 2.03 mW/g
Deviation = -2.29%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

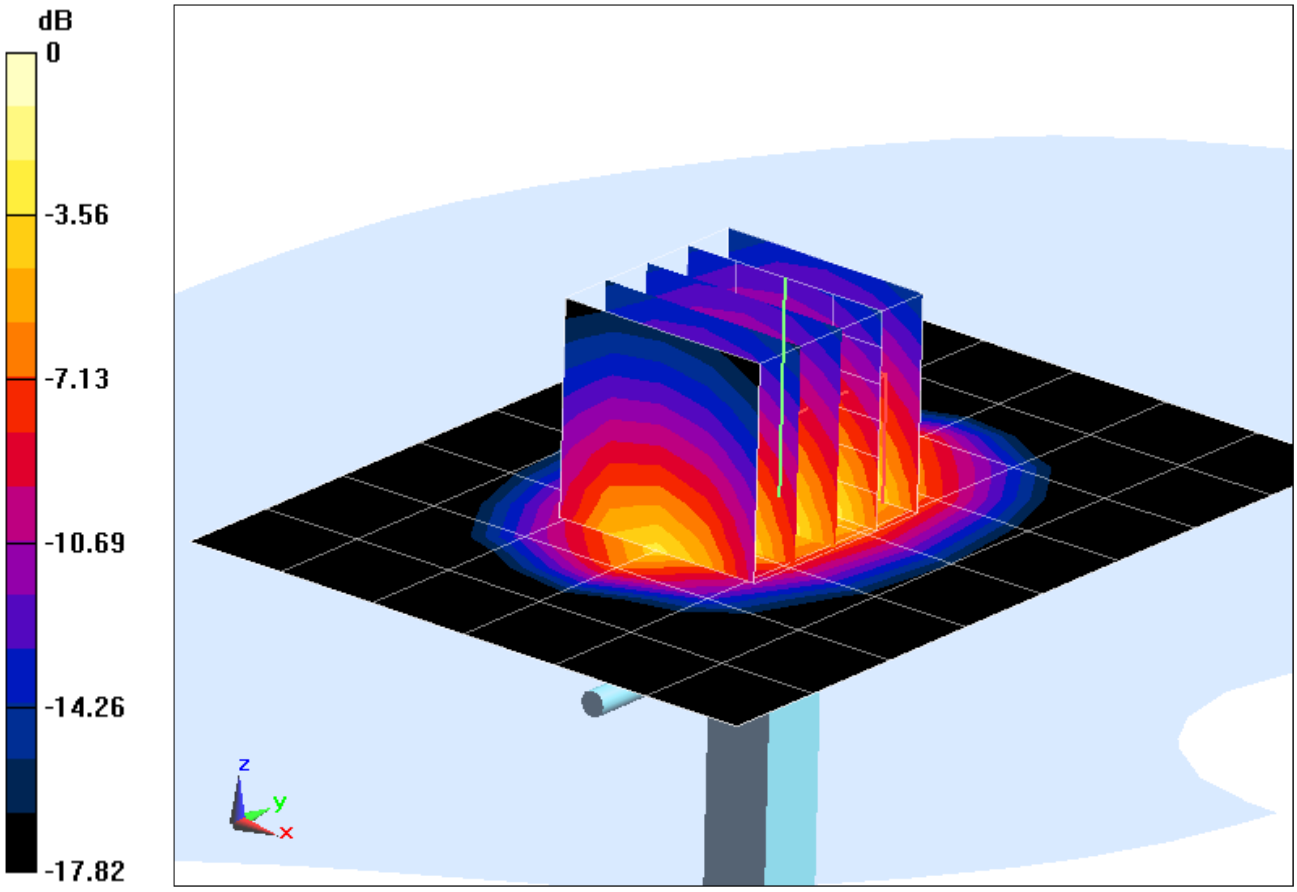
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.525 mho/m; ε_r = 53.57; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.1 °C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 6.920 mW/g
SAR(1 g) = 3.94 mW/g; SAR(10 g) = 2.09 mW/g
Deviation = 0.25 %



0 dB = 4.39 mW/g = 12.85 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

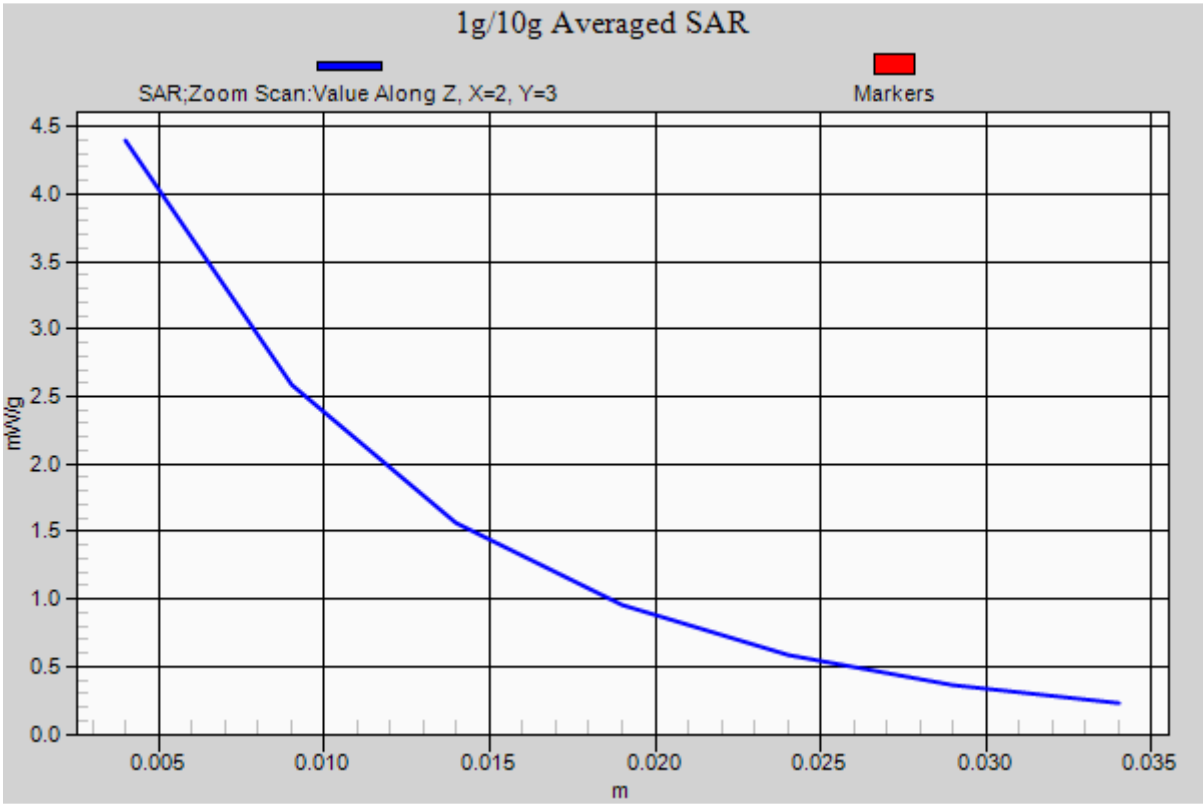
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.525 mho/m; ε_r = 53.57; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2012; Ambient Temp: 24.1 °C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3288; ConvF(5.02, 5.02, 5.02); Calibrated: 2/7/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 4/12/2012
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (1);SEMCAD X Version 14.6.5 (6469)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20.0 dBm (100 mW)
Peak SAR (extrapolated) = 6.920 mW/g
SAR(1 g) = 3.94 mW/g; SAR(10 g) = 2.09 mW/g
Deviation = 0.25 %



PCTEST ENGINEERING LABORATORY, INC.

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

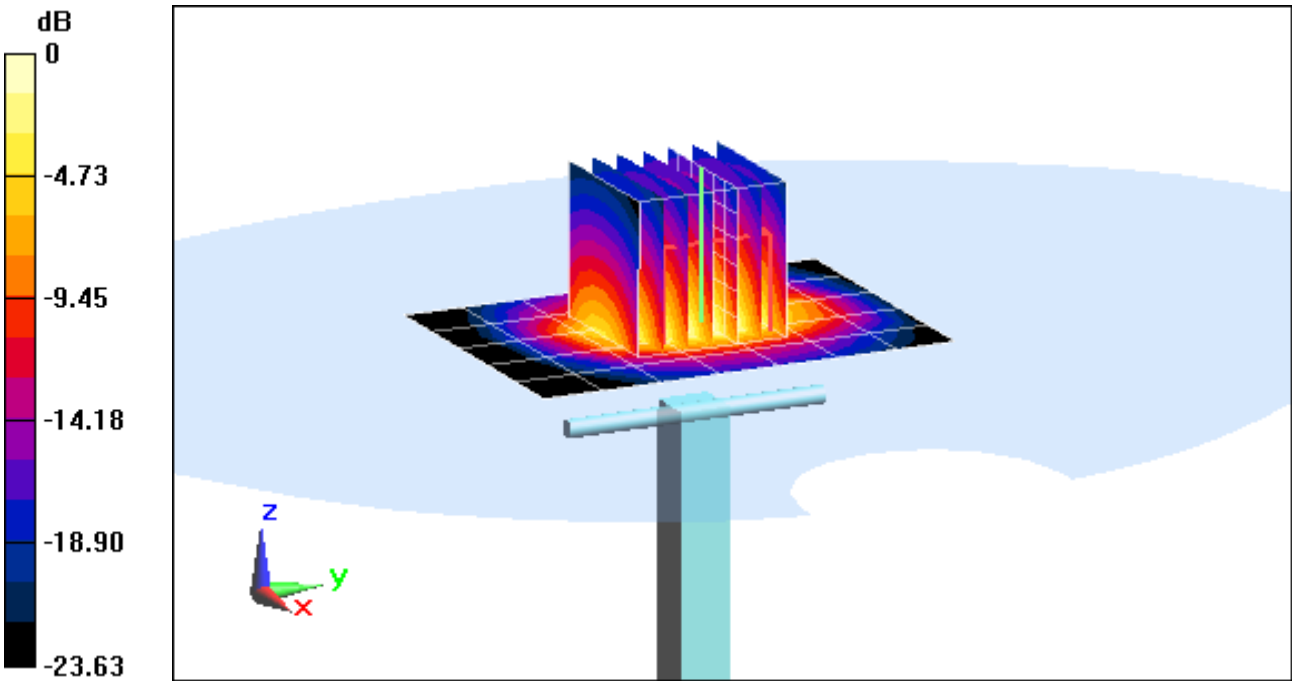
Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 1.974 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 24.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3258; ConvF(4.28, 4.28, 4.28); Calibrated: 2/21/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

2450MHz System Verification

Area Scan (6x8x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Input Power = 20.0 dB (100 mW)
Peak SAR (extrapolated) = 11.499 mW/g
SAR(1 g) = 5.17 mW/g; SAR(10 g) = 2.4 mW/g
Deviation = 1.77%



0 dB = 6.67 mW/g = 16.48 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

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

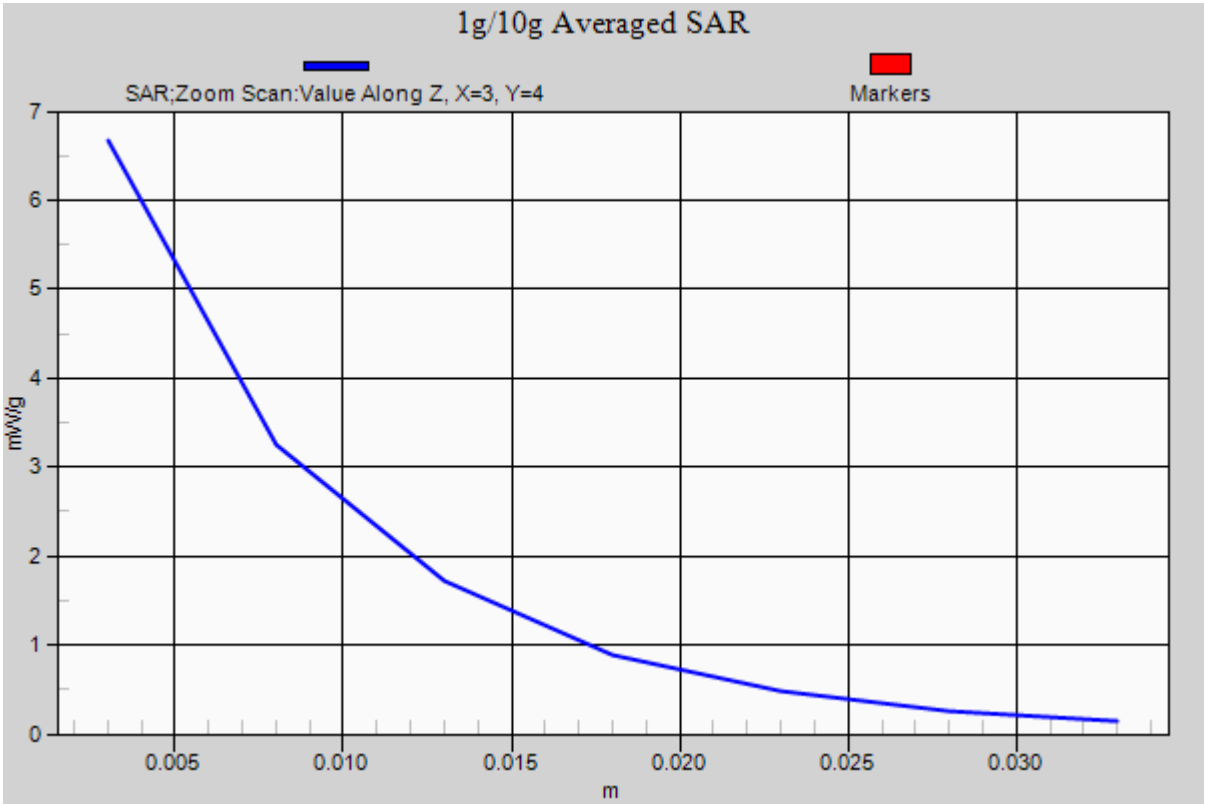
Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 1.974 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 24.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3258; ConvF(4.28, 4.28, 4.28); Calibrated: 2/21/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/18/2012
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1403
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

2450MHz System Verification

Area Scan (6x8x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Input Power = 20.0 dB (100 mW)
Peak SAR (extrapolated) = 11.499 mW/g
SAR(1 g) = 5.17 mW/g; SAR(10 g) = 2.4 mW/g
Deviation = 1.77%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1120

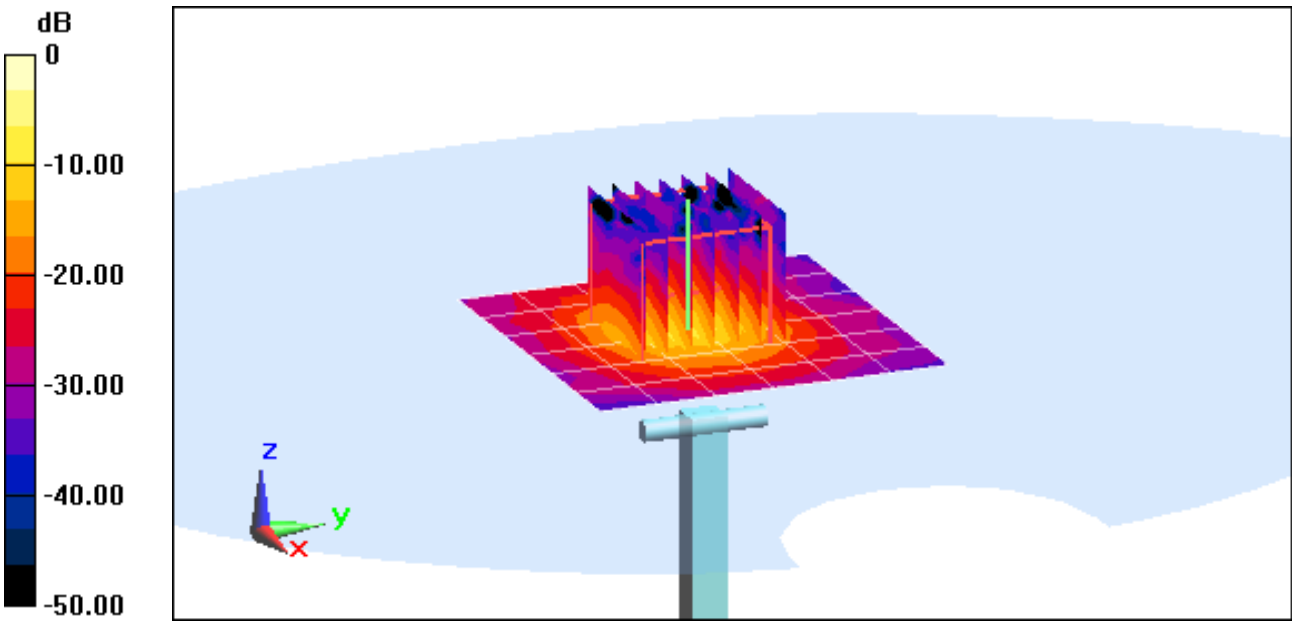
Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5200 MHz; σ = 5.337 mho/m; ε_r = 48.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space:: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN3561; ConvF(3.76, 3.76, 3.76); Calibrated: 7/26/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/15/2012
Phantom: SAM Left; Type: SAM; Serial: 1688
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

5200 MHz System Verification

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 12.4 dBm (17.4 mW)
Peak SAR (extrapolated) = 4.851 mW/g
SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.344 mW/g
Deviation = -2.09%



0 dB = 15.0 mW/g = 23.52 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1120

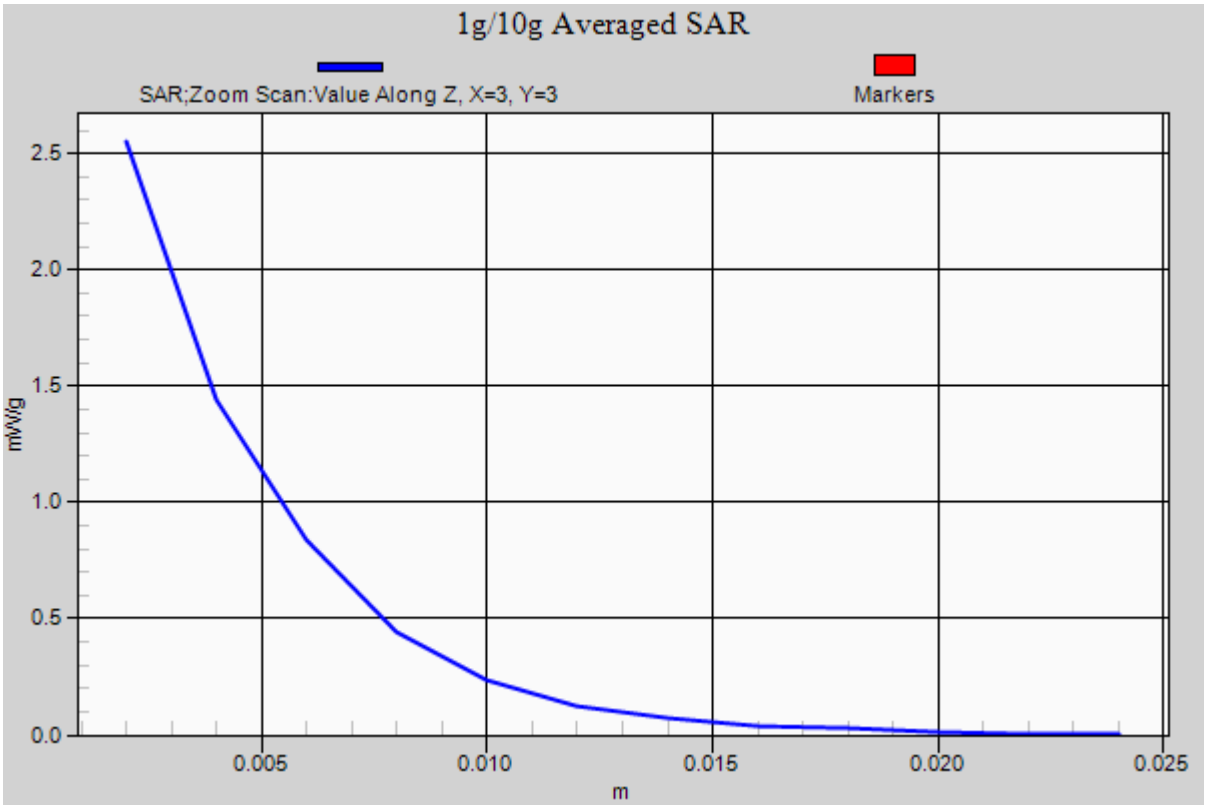
Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5200 MHz; σ = 5.337 mho/m; ε_r = 48.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space:: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN3561; ConvF(3.76, 3.76, 3.76); Calibrated: 7/26/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/15/2012
Phantom: SAM Left; Type: SAM; Serial: 1688
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

5200 MHz System Verification

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 12.4 dBm (17.4 mW)
Peak SAR (extrapolated) = 4.851 mW/g
SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.344 mW/g
Deviation = -2.09%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1120

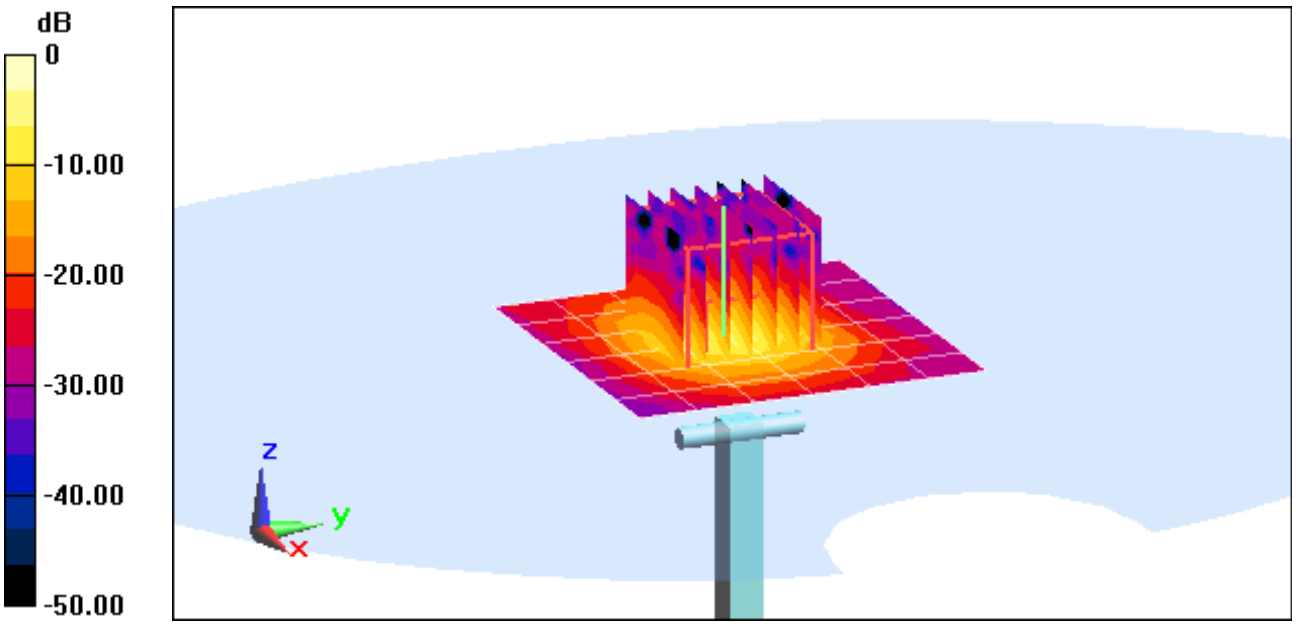
Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5500 MHz; σ = 5.723 mho/m; ε_r = 48; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(3.33, 3.33, 3.33); Calibrated: 7/26/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/15/2012
Phantom: SAM Left; Type: SAM; Serial: 1688
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

5500 MHz System Verification

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 12.4 dBm (17.4 mW)
Peak SAR (extrapolated) = 5.127 mW/g
SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.354 mW/g
Deviation = -8.05%



0 dB = 7.00 mW/g = 16.90 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1120

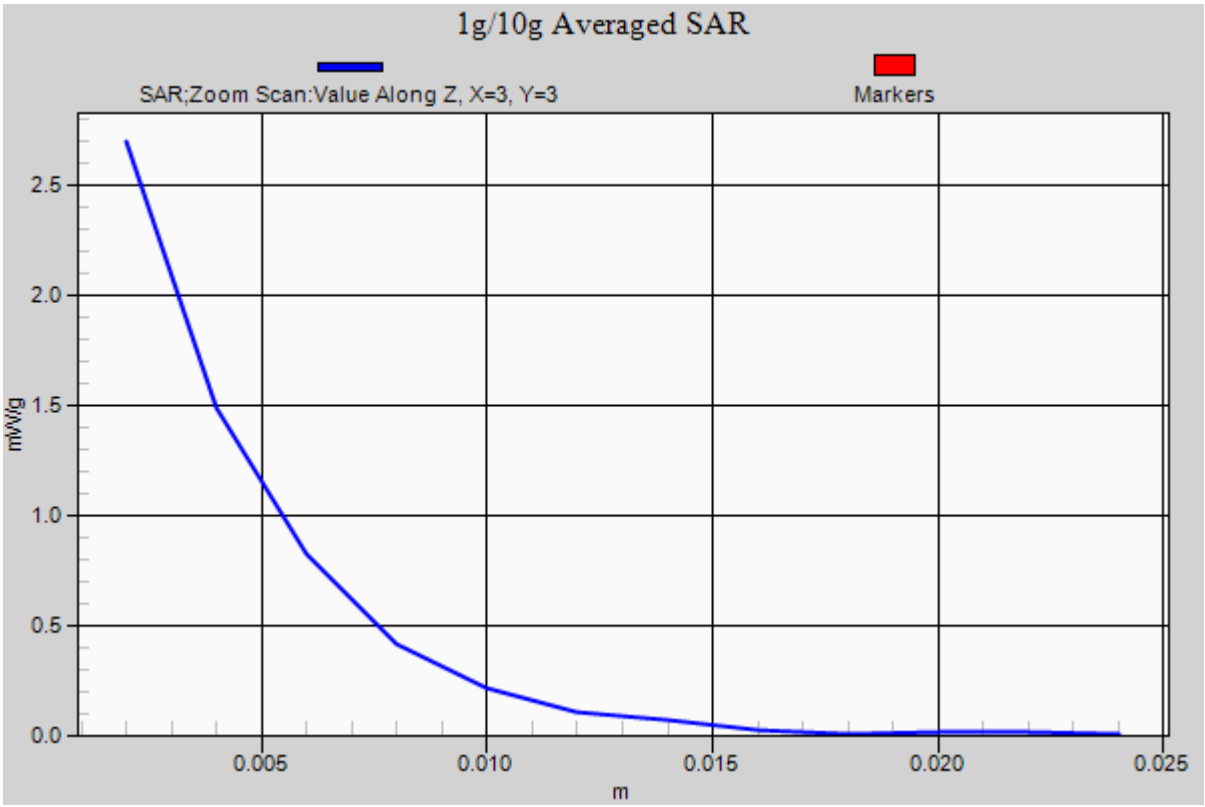
Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5500 MHz; σ = 5.723 mho/m; ε_r = 48; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN3561; ConvF(3.33, 3.33, 3.33); Calibrated: 7/26/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/15/2012
Phantom: SAM Left; Type: SAM; Serial: 1688
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

5500 MHz System Verification

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Input Power = 12.4 dBm (17.4 mW)
Peak SAR (extrapolated) = 5.127 mW/g
SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.354 mW/g
Deviation = -8.05%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1120

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5800 MHz; σ = 6.146 mho/m; ε_r = 47.4; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

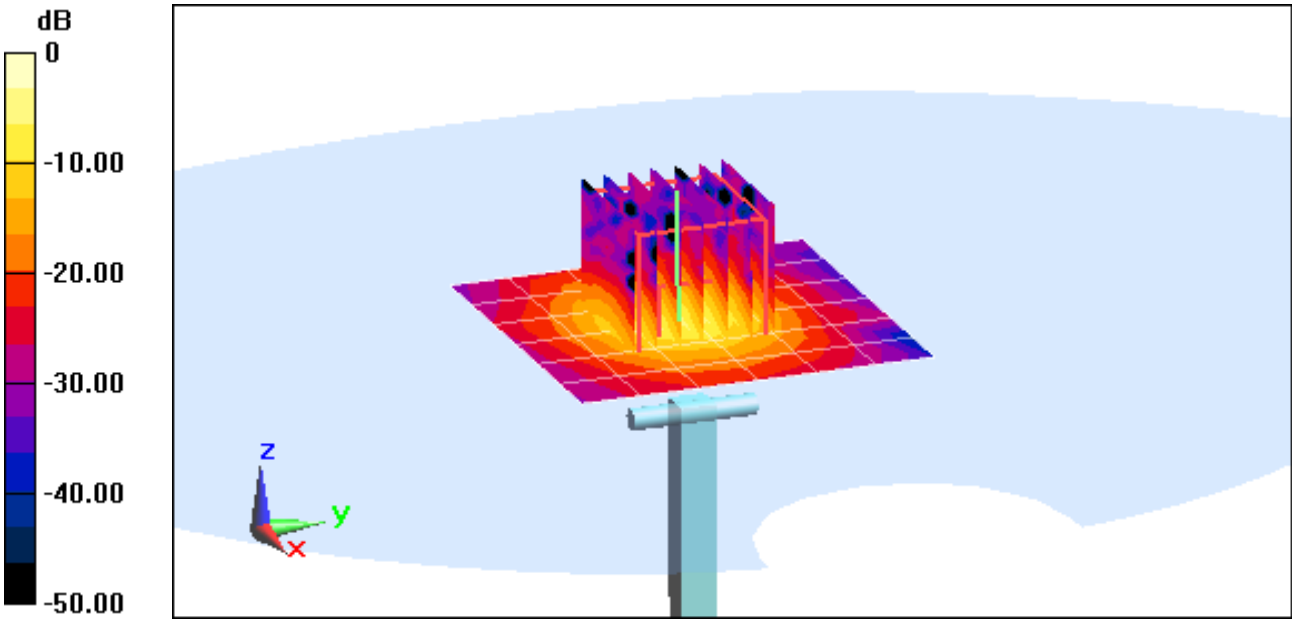
Test Date: 08-30-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN3561; ConvF(3.42, 3.42, 3.42); Calibrated: 7/26/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/15/2012
Phantom: SAM Left; Type: SAM; Serial: 1688
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

5800 MHz System Verification

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Input Power = 12.04 dBm (16 mW)
Peak SAR (extrapolated) = 5.135 mW/g
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.324 mW/g
Deviation = -0.91%



0 dB = 7.00 mW/g = 16.90 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

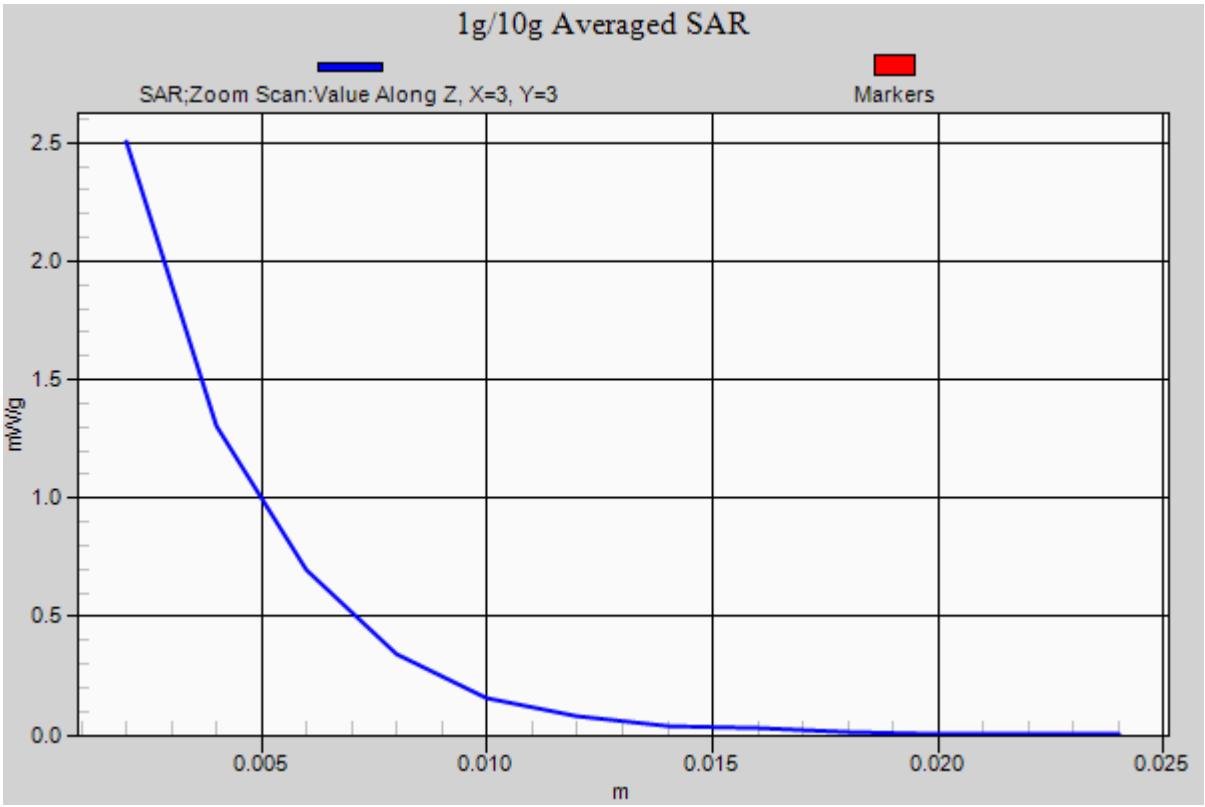
DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1120

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5800 MHz; σ = 6.146 mho/m; ε_r = 47.4; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-30-2012; Ambient Temp: 23.7°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN3561; ConvF(3.42, 3.42, 3.42); Calibrated: 7/26/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/15/2012
Phantom: SAM Left; Type: SAM; Serial: 1688
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

5800 MHz System Verification

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Input Power = 12.04 dBm (16 mW)
Peak SAR (extrapolated) = 5.135 mW/g
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.324 mW/g
Deviation = -0.91%