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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:
10/31/12
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
0Y1210261546.A3L

FCC ID: **A3LEKKC120S**

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

DUT Type: Portable Camera
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model(s): EK-KC120S
Test Device Serial No.: Pre-Production [S/N: SAR#1, SAR #2]

Band & Mode	Tx Frequency	Conducted Power [dBm]	Hand SAR (W/kg)	Body SAR (W/kg)
			10 gram (0mm)	1 gram (10mm)
UMTS 1900	1852.4 - 1907.6 MHz	22.40	2.41	0.31
2.4 GHz WLAN	2412 - 2462 MHz	16.71	0.10	0.04
5.8 GHz WLAN	5745 - 5825 MHz	13.66	0.23	0.21
5.2 GHz WLAN	5180 - 5240 MHz	7.88	0.08	0.04
5.3 GHz WLAN	5260 - 5320 MHz	7.78	0.11	0.07
5.5 GHz WLAN	5500 - 5700 MHz	7.22	0.06	0.06
Bluetooth	2402 - 2480 MHz	10.53	N/A	
Simultaneous SAR per KDB 690783 D01:				0.32

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

TABLE OF CONTENTS

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Tx Frequency
UMTS/HSPA 1900	1852.4 - 1907.6 MHz
2.4 GHz WLAN	2412 - 2462 MHz
5.8 GHz WLAN	5745 - 5825 MHz
5.2 GHz WLAN	5180 - 5240 MHz
5.3 GHz WLAN	5260 - 5320 MHz
5.5 GHz WLAN	5500 - 5700 MHz
Bluetooth	2402 - 2480 MHz

1.2 DUT Antenna Locations

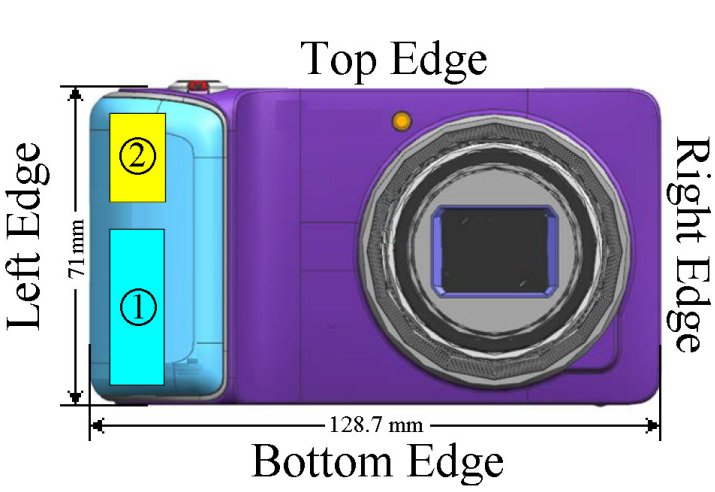

Figure 1-1
DUT Antenna Locations

Table 1-1
Device Sides tested for SAR

Sides for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
UMTS 1900	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN	Yes	Yes	Yes	No	No	Yes

Note: Particular EUT edges were not required to be evaluated for SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D07 guidance, page 1. The antenna document shows the distances between the transmitting antennas and the edges of the device.

1.3 SAR Test Exclusions Applied

Head SAR testing was not required for this camera because it does not have an optical viewfinder or a voice receiver which would allow held-to-face/ear configuration usage. Hand SAR and Body SAR were tested according to the device procedures in KDB Publication 941225 D07.

(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. There are no simultaneous transmission combinations using 5 GHz WIFI.

The separation between the main antenna and the Bluetooth/ WLAN antenna is 4.2 mm.
The average RF Conducted Power of Bluetooth Tx is 11.78 mW (Please refer to the EMC DSS Report for a full set of Bluetooth conducted powers).

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.

(B) Licensed Transmitter(s)

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.

1.4 Power Reduction for SAR

There is no power reduction for any band/mode implemented in this device for SAR purposes.

1.5 FCC Guidance Applied

- FCC KDB 941225 (3G, UMPC Devices)
- FCC KDB 248227 (802.11)
- FCC KDB 648474 (Simultaneous)
- FCC KDB 865664 (5 GHz)

2 INTRODUCTION

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

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

2.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 2-1).

Equation 2-1
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]

3 SAR MEASUREMENT SETUP

3.1 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 3-1
SAR Measurement System

Figure 3-2
Near-Field Probe

Table 3-1
Composition of the Tissue Equivalent Matter

Frequency (MHz)	1900	2450	5200-5800
Tissue	Body	Body	Body
Ingredients (% by weight)			
DGBE	29.44	26.7	
NaCl	0.39	0.1	
Polysorbate (Tween) 80			20
Water	70.17	73.2	80

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure:

1. The SAR distribution at the exposed side of the 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-body 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.

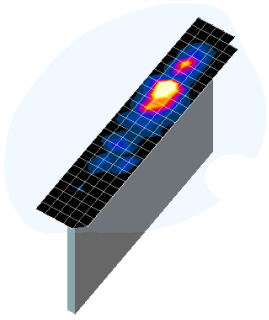

Figure 4-1
Sample SAR Area Scan

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.

5 FCC RF EXPOSURE LIMITS

5.1 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.

5.2 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 5-1
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.

6 SAR TESTING PROCEDURES

6.1 SAR Testing for UMPC Mini-Tablet Device per KDB Publication 941225 D07

Hand-held devices that have transmitting antennas located less than 25 mm from the edge/surface of the device require routine SAR evaluation. Such devices are considered portable, and are designed primarily for interactive hand-held use next to or near the body of a user. Devices are to be setup according to KDB publication 941225 D07 requirements and are configured with maximum output power during SAR assessment for a worst-case SAR evaluation.

Per KDB Publication 941225 D07, SAR testing applies for the device edges with antennas located within 25 mm of each device edge closest to the user. A test separation distance of 10 mm may be considered for 1-g SAR, with the addition of 10-g SAR measurement at 0 mm test separation distance for all 1-g SAR configurations to address hand exposure.

6.2 Power Reduction for SAR

There is no power reduction for any band/mode implemented in this device for SAR purposes.

6.3 Wireless Router Configurations

When the user enables the personal wireless router functions for the device, 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 device was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

7 FCC MEASUREMENT PROCEDURES

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

7.1 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.

7.2 SAR Measurement Conditions for WCDMA

7.2.1 Output Power Verification

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

7.2.2 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.

7.2.3 Body SAR Measurements

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

7.2.4 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 $\leq$ 75% of the SAR limit. Otherwise, SAR is measured for HSDPA, using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration measured in 12.2 kbps RMC without HSDPA, on the maximum output channel with the body exposure configuration that resulted in the highest SAR in 12.2 kbps RMC mode for that RF channel.

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

7.2.5 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"

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.

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

7.3.1 General Device Setup

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

7.3.2 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.

8 RF CONDUCTED POWERS

8.1 HSPA Conducted Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	PCS Band [dBm]			MPR 3GPP [dB]
			9262	9400	9538	
99	WCDMA	12.2 kbps RMC	22.32	22.40	22.23	-
6	HSDPA	Subtest 1	21.54	21.39	21.20	0
6		Subtest 2	21.39	21.46	21.24	0
6		Subtest 3	20.92	20.96	20.84	0.5
6		Subtest 4	20.95	20.85	20.88	0.5
6	HSUPA	Subtest 1	21.44	21.47	20.84	0
6		Subtest 2	20.55	20.59	20.39	2
6		Subtest 3	21.04	20.82	20.74	1
6		Subtest 4	20.71	20.83	20.77	2
6		Subtest 5	20.92	20.76	20.93	0

UMTS 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 2 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model.

Figure 8-1
Power Measurement Setup

8.2 WLAN Conducted Powers

Table 8-1
IEEE 802.11b Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm] Data Rate [Mbps]			
			1	2	5.5	11
802.11b	2412	1	16.60	16.63	16.68	16.73
802.11b	2437	**6**	**16.71**	16.67	16.51	16.79
802.11b	2462	11	16.69	16.67	16.68	16.74

Table 8-2
IEEE 802.11g Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm] Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11g	2412	1	13.52	13.57	13.52	13.51	13.57	13.55	13.55	13.59
802.11g	2437	6	13.54	13.62	13.61	13.59	13.57	13.64	13.64	13.70
802.11g	2462	11	13.57	13.7	13.66	13.60	13.53	13.51	13.58	13.64

Table 8-3
IEEE 802.11n Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm] Data Rate [Mbps]							
			6.5	13	20	26	39	52	58	65
802.11n	2412	1	12.40	12.34	12.41	12.61	12.42	12.45	12.4	12.52
802.11n	2437	6	12.45	12.47	12.48	12.45	12.52	12.58	12.54	12.56
802.11n	2462	11	12.43	12.48	12.53	12.44	12.57	12.65	12.51	12.61

Table 8-4
IEEE 802.11a Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm] Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11a	5180	36*	7.30	7.75	7.85	7.85	7.85	7.9	7.99	8.00
802.11a	5200	40	7.70	7.82	7.8	7.71	7.9	7.9	7.82	7.88
802.11a	5220	**44**	**7.88**	7.7	7.95	8.00	7.95	7.9	8.1	8.00
802.11a	5240	48*	7.86	7.8	7.85	7.77	7.9	8.03	7.99	7.98
802.11a	5260	52*	7.73	7.7	7.75	7.8	7.86	7.85	7.99	8.01
802.11a	5280	56	7.70	7.8	7.90	7.92	7.77	7.8	7.91	7.97
802.11a	5300	**60**	**7.78**	7.75	7.65	7.6	7.74	7.86	7.88	7.99
802.11a	5320	64*	7.76	7.82	7.83	7.6	7.61	7.6	7.9	8.00
802.11a	5500	100	7.15	7.12	7.10	7.23	7.15	7.12	7.10	7.00
802.11a	5520	**104***	**7.22**	7.23	7.08	7.00	7.17	7.15	7.01	7.10
802.11a	5540	108	7.11	7.10	7.10	7.12	7.14	7.20	7.37	7.39
802.11a	5560	112	7.03	7.00	7.05	7.14	7.12	7.20	7.35	7.41
802.11a	5580	116*	7.18	7.15	7.11	7.15	7.20	7.23	7.17	7.25
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	7.07	7.00	7.05	7.10	7.15	7.00	7.36	7.40
802.11a	5680	136*	7.06	7.00	6.99	7.05	7.10	6.95	7.23	7.29
802.11a	5700	140	7.00	6.95	6.9	6.95	6.9	6.88	7.25	7.30
802.11a	5745	149*	13.64	13.68	13.62	13.69	13.61	13.74	13.71	13.73
802.11a	5765	153	13.63	13.64	13.71	13.65	13.74	13.61	13.66	13.65
802.11a	5785	157*	13.58	13.67	13.58	13.60	13.63	13.59	13.57	13.64
802.11a	5805	161*	13.62	13.68	13.69	13.61	13.59	13.60	13.62	13.65
802.11a	5825	**165**	**13.66**	13.59	13.59	13.53	13.52	13.61	13.52	13.65

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.

Table 8-5
IEEE 802.11n (20 MHz Bandwidth) Average RF Power

Mode	Freq	Channel	802.11n (20 MHz Bandwidth) Conducted Power [dBm]							
			Data Rate [Mbps]							
	[MHz]		6.5	13	20	26	39	52	58	65
802.11n	5180	36	7.54	7.64	7.68	7.50	7.58	7.54	7.54	7.65
802.11n	5200	40	7.67	7.50	7.40	7.45	7.55	7.62	7.50	7.62
802.11n	5220	44	7.75	7.65	7.55	7.62	7.59	7.61	7.60	7.64
802.11n	5240	48	7.67	7.60	7.55	7.65	7.60	7.60	7.54	7.68
802.11n	5260	52	7.38	7.50	7.54	7.65	7.70	7.78	7.80	7.85
802.11n	5280	56	7.55	7.56	7.55	7.45	7.50	7.70	7.75	7.70
802.11n	5300	60	7.50	7.56	7.50	7.55	7.59	7.65	7.80	7.82
802.11n	5320	64	7.45	7.34	7.70	7.57	7.67	7.70	7.77	7.80
802.11n	5500	100	6.92	7.00	7.12	7.20	7.22	7.22	7.30	7.00
802.11n	5520	104	6.83	6.90	7.12	7.15	7.00	7.15	7.20	7.23
802.11n	5540	108	7.02	7.03	6.95	7.04	7.10	7.12	7.15	7.29
802.11n	5560	112	6.90	6.97	6.93	7.05	7.08	7.12	7.15	7.20
802.11n	5580	116	6.90	6.95	6.95	7.05	7.10	7.11	7.12	7.12
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	6.80	6.92	6.98	7.01	7.00	7.15	7.20	7.20
802.11n	5680	136	6.88	6.88	7.05	7.00	6.95	7.15	7.12	7.25
802.11n	5700	140	6.82	6.90	6.93	7.15	7.21	7.25	7.09	7.01
802.11n	5745	149	12.58	12.72	12.73	12.70	12.74	12.77	12.80	12.75
802.11n	5765	153	12.60	12.70	12.65	12.64	12.67	12.65	12.62	12.78
802.11n	5785	157	12.59	12.62	12.69	12.75	12.64	12.64	12.71	12.74
802.11n	5805	161	12.56	12.66	12.64	12.56	12.69	12.63	12.62	12.67
802.11n	5825	165	12.50	12.62	12.65	12.52	12.56	12.51	12.53	12.64

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.

Table 8-6
IEEE 802.11n (40 MHz Bandwidth) 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	7.30	7.32	7.35	7.40	7.41	7.45	7.42	7.40
802.11n	5230	46	7.22	7.41	7.45	7.42	7.60	7.65	7.50	7.51
802.11n	5270	54	7.25	7.22	7.38	7.41	7.50	7.48	7.45	7.50
802.11n	5310	62	7.25	7.23	7.36	7.46	7.48	7.50	7.53	7.54
802.11n	5510	102	6.71	7.00	6.88	7.00	7.40	7.51	7.52	7.54
802.11n	5550	110	7.00	7.05	6.90	6.93	6.95	7.07	7.06	7.10
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	6.75	6.60	6.77	6.95	7.02	7.10	7.12	7.20
802.11n	5755	151	13.06	13.15	13.04	13.11	13.12	13.10	13.06	13.15
802.11n	5795	159	12.98	13.04	13.03	13.02	13.01	13.03	13.05	13.07

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.

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 20MHz bandwidth and 802.11n 40MHz bandwidth) 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 8-2
Power Measurement Setup

9 SYSTEM VERIFICATION

9.1 Tissue Verification

Table 9-1
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
10/31/2012	1900B	20.6	1850	1.544	51.89	1.52	53.30	*1.58%*	*-2.65%*
			1880	1.576	51.69	1.52	53.30	*3.68%*	*-3.02%*
			1910	1.586	51.63	1.52	53.30	*4.34%*	*-3.13%*
10/31/2012	2450B	22.7	2401	1.966	52.01	1.903	52.765	*3.31%*	*-1.43%*
			2450	2.044	51.82	1.950	52.700	*4.82%*	*-1.67%*
			2499	2.099	51.68	2.019	52.638	*3.96%*	*-1.82%*
10/31/2012	5200B-5800B	23.4	5200	5.320	48.01	5.299	49.014	*0.40%*	*-2.05%*
			5220	5.357	47.89	5.323	48.987	*0.64%*	*-2.24%*
			5300	5.514	47.80	5.416	48.851	*1.81%*	*-2.15%*
			5500	5.781	47.15	5.650	48.580	*2.32%*	*-2.94%*
			5520	5.850	47.15	5.673	48.553	*3.12%*	*-2.89%*
			5800	6.290	46.50	6.000	48.200	*4.83%*	*-3.53%*
			5825	6.304	46.49	6.029	48.132	*4.56%*	*-3.41%*

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).

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.

9.2 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 $j = \sqrt{-1}$.

9.3 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 9-2
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 (%)
1900	Body	10/31/2012	21.9	19.9	0.100	5d148	3213	4.17	39.100	41.700	6.65%
2450	Body	10/31/2012	21.2	21.0	0.100	797	3209	5.38	50.800	53.800	5.91%
5200	Body	10/31/2012	23.6	23.0	0.055	1057	3589	4.33	73.400	78.727	7.26%
5500	Body	10/31/2012	23.6	23.1	0.055	1057	3589	4.53	78.900	82.364	4.39%
5800	Body	10/31/2012	23.5	22.9	0.055	1057	3589	3.95	74.300	71.818	-3.34%

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.

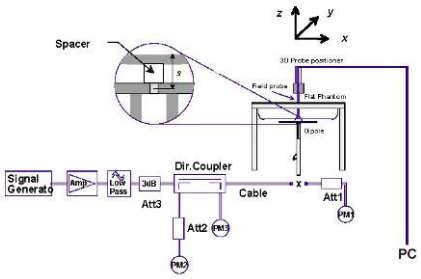

Figure 9-1
System Verification Setup Diagram

Figure 9-2
System Verification Setup Photo

10 SAR DATA SUMMARY

10.1 Standalone Hand SAR Data

Table 10-1
Licensed Transmitter Hand SAR Results

MEASUREMENT RESULTS									
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Side	SAR (10g)
MHz	Ch.								(W/kg)
1880.00	9400	WCDMA 1900	RMC	22.40	0.01	0.0 cm	SAR #2	back	0.149
1880.00	9400	WCDMA 1900	RMC	22.40	-0.03	0.0 cm	SAR #2	front	0.895
1880.00	9400	WCDMA 1900	RMC	22.40	0.04	0.0 cm	SAR #2	bottom	0.159
1852.40	9262	WCDMA 1900	RMC	22.32	0.02	0.0 cm	SAR #2	left	2.180
1880.00	9400	WCDMA 1900	RMC	22.40	0.12	0.0 cm	SAR #2	left	2.130
1907.60	9538	WCDMA 1900	RMC	22.23	0.04	0.0 cm	SAR #2	left	2.410
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**						**Hand** **4.0 W/kg (mW/g)** averaged over 10 grams			

Table 10-2
IEEE 802.11b 2.4 GHz WLAN Hand SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	SAR (10g)
MHz	Ch.									(W/kg)
2437	6	IEEE 802.11b	DSSS	16.71	0.12	0.0 cm	SAR #2	1	back	0.010
2437	6	IEEE 802.11b	DSSS	16.71	0.11	0.0 cm	SAR #2	1	front	0.046
2437	6	IEEE 802.11b	DSSS	16.71	0.12	0.0 cm	SAR #2	1	top	0.028
2437	6	IEEE 802.11b	DSSS	16.71	-0.06	0.0 cm	SAR #2	1	left	0.098
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**						**Hand** **4.0 W/kg (mW/g)** averaged over 10 grams				

Table 10-3
IEEE 802.11a 5 GHz WLAN Hand SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	SAR (10g)
MHz	Ch.									(W/kg)
5825	165	IEEE 802.11a	OFDM	13.66	-0.11	0.0 cm	SAR #1	6	back	0.024
5825	165	IEEE 802.11a	OFDM	13.66	0.12	0.0 cm	SAR #1	6	front	0.234
5825	165	IEEE 802.11a	OFDM	13.66	0.18	0.0 cm	SAR #1	6	top	0.021
5825	165	IEEE 802.11a	OFDM	13.66	0.08	0.0 cm	SAR #1	6	left	0.193
5220	44	IEEE 802.11a	OFDM	7.88	0.18	0.0 cm	SAR #1	6	back	0.003
5220	44	IEEE 802.11a	OFDM	7.88	-0.04	0.0 cm	SAR #1	6	front	0.044
5220	44	IEEE 802.11a	OFDM	7.88	-0.11	0.0 cm	SAR #1	6	top	0.002
5220	44	IEEE 802.11a	OFDM	7.88	0.09	0.0 cm	SAR #1	6	left	0.079
5300	60	IEEE 802.11a	OFDM	7.78	-0.13	0.0 cm	SAR #1	6	back	0.008
5300	60	IEEE 802.11a	OFDM	7.78	0.20	0.0 cm	SAR #1	6	front	0.071
5300	60	IEEE 802.11a	OFDM	7.78	0.18	0.0 cm	SAR #1	6	top	0.003
5300	60	IEEE 802.11a	OFDM	7.78	0.21	0.0 cm	SAR #1	6	left	0.112
5520	104	IEEE 802.11a	OFDM	7.22	0.13	0.0 cm	SAR #1	6	back	0.002
5520	104	IEEE 802.11a	OFDM	7.22	-0.09	0.0 cm	SAR #1	6	front	0.030
5520	104	IEEE 802.11a	OFDM	7.22	0.13	0.0 cm	SAR #1	6	top	0.005
5520	104	IEEE 802.11a	OFDM	7.22	0.11	0.0 cm	SAR #1	6	left	0.061
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**						**Hand** **4.0 W/kg (mW/g)** averaged over 10 grams				

10.2 Body SAR Results per KDB 941225 D07

Table 10-4
Licensed Transmitter Body SAR Data

MEASUREMENT RESULTS									
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Side	SAR (1g)
MHz	Ch.								(W/kg)
1880.00	9400	WCDMA 1900	RMC	22.40	0.08	1.0 cm	SAR #2	back	0.067
1880.00	9400	WCDMA 1900	RMC	22.40	0.01	1.0 cm	SAR #2	front	0.308
1880.00	9400	WCDMA 1900	RMC	22.40	0.11	1.0 cm	SAR #2	bottom	0.072
1880.00	9400	WCDMA 1900	RMC	22.40	-0.02	1.0 cm	SAR #2	left	0.228
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 10-5
IEEE 802.11b 2.4 GHz WLAN Body 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)
2437	6	IEEE 802.11b	DSSS	16.71	0.18	1.0 cm	SAR #2	1	back	0.009
2437	6	IEEE 802.11b	DSSS	16.71	0.15	1.0 cm	SAR #2	1	front	0.016
2437	6	IEEE 802.11b	DSSS	16.71	0.00	1.0 cm	SAR #2	1	top	0.006
2437	6	IEEE 802.11b	DSSS	16.71	0.08	1.0 cm	SAR #2	1	left	0.038
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 10-6
IEEE 802.11a 5 GHz WLAN Body 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)
5825	165	IEEE 802.11a	OFDM	13.66	0.11	1.0 cm	SAR #1	6	back	0.026
5825	165	IEEE 802.11a	OFDM	13.66	0.14	1.0 cm	SAR #1	6	front	0.167
5825	165	IEEE 802.11a	OFDM	13.66	0.12	1.0 cm	SAR #1	6	top	0.036
5825	165	IEEE 802.11a	OFDM	13.66	-0.06	1.0 cm	SAR #1	6	left	0.209
5220	44	IEEE 802.11a	OFDM	7.88	-0.11	1.0 cm	SAR #1	6	back	0.003
5220	44	IEEE 802.11a	OFDM	7.88	0.13	1.0 cm	SAR #1	6	front	0.042
5220	44	IEEE 802.11a	OFDM	7.88	0.12	1.0 cm	SAR #1	6	top	0.005
5220	44	IEEE 802.11a	OFDM	7.88	-0.14	1.0 cm	SAR #1	6	left	0.029
5300	60	IEEE 802.11a	OFDM	7.78	0.13	1.0 cm	SAR #1	6	back	0.009
5300	60	IEEE 802.11a	OFDM	7.78	0.18	1.0 cm	SAR #1	6	front	0.074
5300	60	IEEE 802.11a	OFDM	7.78	0.20	1.0 cm	SAR #1	6	top	0.006
5300	60	IEEE 802.11a	OFDM	7.78	-0.15	1.0 cm	SAR #1	6	left	0.049
5520	104	IEEE 802.11a	OFDM	7.22	-0.12	1.0 cm	SAR #1	6	back	0.008
5520	104	IEEE 802.11a	OFDM	7.22	0.04	1.0 cm	SAR #1	6	front	0.028
5520	104	IEEE 802.11a	OFDM	7.22	0.13	1.0 cm	SAR #1	6	top	0.003
5520	104	IEEE 802.11a	OFDM	7.22	0.18	1.0 cm	SAR #1	6	left	0.056
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**						**Body** **1.6 W/kg (mW/g)** averaged over 1 gram				

10.3 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. All samples tested were electrically identical per the applicant. 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. Right Edge and Top Edge for the licensed transmitter were not tested since the antenna distance from the edges was greater than 2.5 cm per FCC KDB Publication 941225 D07 guidance (see Section 1.2).
7. Right Edge and Bottom Edge for the WLAN transmitter were not tested since the antenna distance from the edges was greater than 2.5 cm per FCC KDB Publication 941225 D07 (see Section 1.2).

UMTS Notes:

1. UMTS SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01. HSPA SAR was not required since the RMC measured SAR was not more than 75% of the SAR limit.
2. Per KDB Publication 648474, 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).

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 MHz Bandwidth and 802.11n 40 MHz Bandwidth) 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 was <1.6 W/kg and the 1g averaged SAR was <0.8 W/kg, SAR testing on the other default channels was not required.

11 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

11.1 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.

11.2 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 11-1
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·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 11-2
SAR Evaluation Requirements for Multiple Transmitter Handsets

According to Figure 11-1 and Figure 11-2, simultaneous transmission analysis of SAR may be required for this device for the licensed and unlicensed transmitters. Possible simultaneous transmissions for this device were numerically summed using stand-alone SAR data and are shown in the following tables.

There are no simultaneous transmission combinations using 5 GHz WIFI.

Per KDB Publication 648474, standalone Bluetooth SAR tests were not required. Standalone SAR tests for WLAN were required.

11.3 Hand SAR Simultaneous Transmission Analysis (10 gram)

Table 11-1
Simultaneous Transmission Scenario (Hand SAR 10 gram at 0.0 cm)

Simult Tx	Configuration	WCDMA 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Σ 10g SAR limit per ANSI/IEEE C95.1-1992 (W/kg)
Hand SAR	Back	0.149	0.010	0.159	4.000
	Front	0.895	0.046	0.941	
	Top	-	0.028	0.028	
	Bottom	0.159	-	0.159	
	Right	-	-	0.000	
	Left	2.410	0.098	2.508	

Note: Per FCC KDB Publication 941225 D07, the edges with antennas more than 2.5 cm are not required to be evaluated for SAR ("-"). The above tables represent 10g hand SAR in a portable hotspot condition.

11.4 Body SAR Simultaneous Transmission Analysis

Table 11-2
Simultaneous Transmission Scenario (Body at 1.0 cm)

Simult Tx	Configuration	WCDMA 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ 1g SAR (W/kg)
Body SAR	Back	0.067	0.009	0.076
	Front	0.308	0.016	0.324
	Top	-	0.006	0.006
	Bottom	0.072	-	0.072
	Right	-	-	0.000
	Left	0.228	0.038	0.266

Note: Per FCC KDB Publication 941225 D07, 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.

11.5 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.

It was confirmed that all standalone and simultaneous transmission scenarios remain compliant when extrapolated to the maximum allowed output power.

12 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/10/2012	Annual	10/10/2013	1833460
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/5/2012	Annual	4/5/2013	MY45470194
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/3/2012	Annual	4/3/2013	US37390350
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/4/2012	Annual	4/4/2013	JP38020182
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	10/10/2012	Annual	10/10/2013	3613A00315
SPEAG	D1900V2	1900 MHz SAR Dipole	2/8/2012	Annual	2/8/2013	5d148
SPEAG	D2450V2	2450 MHz SAR Dipole	1/24/2012	Annual	1/24/2013	797
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/19/2012	Annual	1/19/2013	1057
Amplifier Research	5S1G4	5W, 800MHz-4.2GHz	CBT	N/A	CBT	21910
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Narda	4772-3	Attenuator (3dB)	CBT		N/A	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
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/20/2012	Annual	2/20/2013	649
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/19/2012	Annual	4/19/2013	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/24/2012	Annual	8/24/2013	1322
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAK-3.5	Dielectic Assessment Kit	41079	Annual	41444	1070
Agilent	85070E	Dielectric Probe Kit	3/8/2012	Annual	3/8/2013	MY44300633
Rohde & Schwarz	NRVD	Dual Channel Power Meter	10/12/2012	Biennial	10/12/2014	101695
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
VWR	23226-658	Long Stem Thermometer	3/30/2012	Biennial	3/30/2014	122179874
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
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
VWR	62344-925	Mini-Thermometer	40840	Biennial	41571	111886430
Rohde & Schwarz	NRV-Z32	Peak Power Sensor	10/12/2012	Biennial	10/12/2014	836019/013
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Anritsu	ML2438A	Power Meter	2/14/2012	Annual	2/14/2013	1190013
Anritsu	ML2438A	Power Meter	2/14/2012	Annual	2/14/2013	98150041
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	2400
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	5318
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	5442
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	5821
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	8013
Anritsu	MA2481A	Power Sensor	4/5/2012	Annual	4/5/2013	5605
Anritsu	MT8820C	Radio Communication Tester	11/11/2011	Annual	11/11/2012	6200901190
Tektronix	RSA-6114A	Real Time Spectrum Analyzer	4/5/2012	Annual	4/5/2013	B010177
SPEAG	EX3DV4	SAR Probe	1/27/2012	Annual	1/27/2013	3589
SPEAG	ES3DV3	SAR Probe	3/16/2012	Annual	3/16/2013	3209
SPEAG	ES3DV3	SAR Probe	4/24/2012	Annual	4/24/2013	3213
Agilent	8648D	Signal Generator	4/3/2012	Annual	4/3/2013	3629U00687
Rohde & Schwarz	SMIQ03B	Signal Generator	4/5/2012	Annual	4/5/2013	DE27259
Rohde & Schwarz	SME06	Signal Generator	10/11/2012	Annual	10/11/2013	832026
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
COMTECH	AR85729-5/5759E	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Agilent	85047A	S-Parameter Test Set	N/A	N/A	N/A	2904A00579
Seekonk	NC-100	Torque Wrench (8" lb)	11/29/2011	Triennial	11/29/2014	21053
Gigatronics	8651A	Universal Power Meter	10/10/2012	Annual	10/10/2013	8650319
Anritsu	MA24106A	USB Power Sensor	8/22/2012	Annual	8/22/2013	1231535
Anritsu	MA24106A	USB Power Sensor	8/22/2012	Annual	8/22/2013	1231538
VWR	36934-158	Wall-Mounted Thermometer	1/21/2011	Biennial	1/21/2013	111286445
Anritsu	MA2411B	Pulse Sensor	9/19/2012	Annual	9/19/2013	1027293
Anritsu	ML2495A	Pulse Sensor	10/11/2012	Annual	10/11/2013	1039008

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.

13 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

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

14 CONCLUSION

14.1 Measurement Conclusion

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

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

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

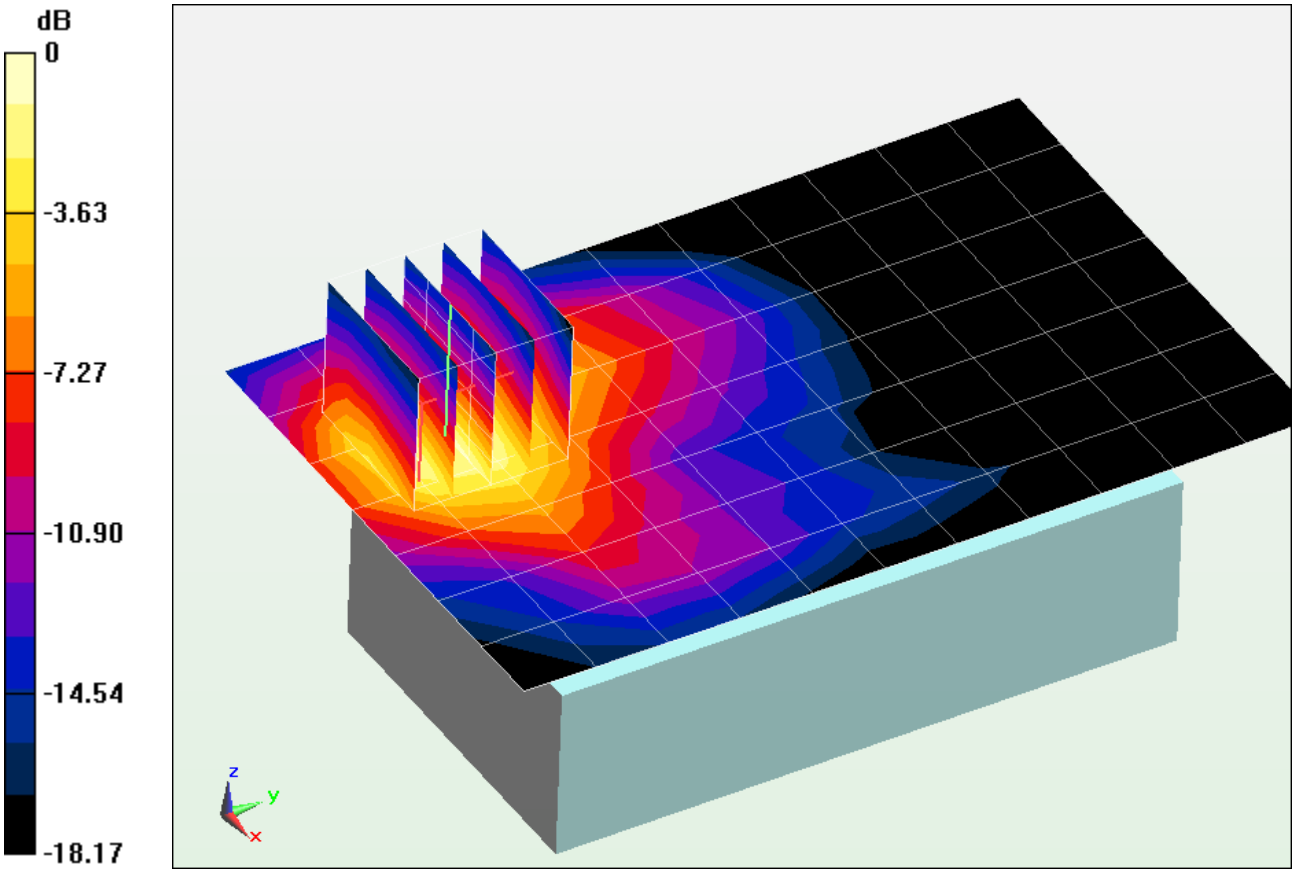
Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.576 mho/m; ε_r = 51.69; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3);SEMCAD X Version 14.6.7 (6848)

Mode: WCDMA 1900, Hand 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 = 13.874 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.567 W/kg
SAR(1 g) = 0.286 W/kg; SAR(10 g) = 0.149 W/kg



0 dB = 0.303 W/kg = -5.19 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

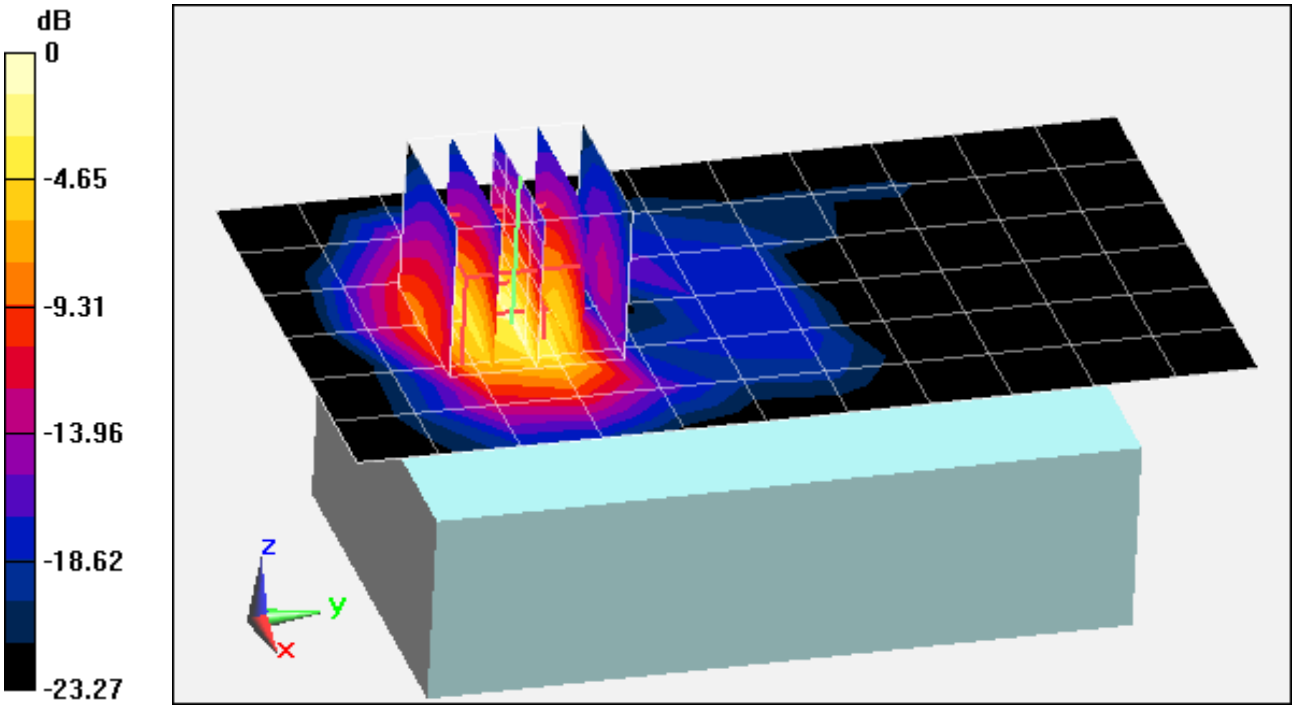
Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.576 mho/m; ε_r = 51.69; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: WCDMA 1900, Hand 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 = 33.591 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 4.87 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 0.895 W/kg



0 dB = 2.68 W/kg = 4.28 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

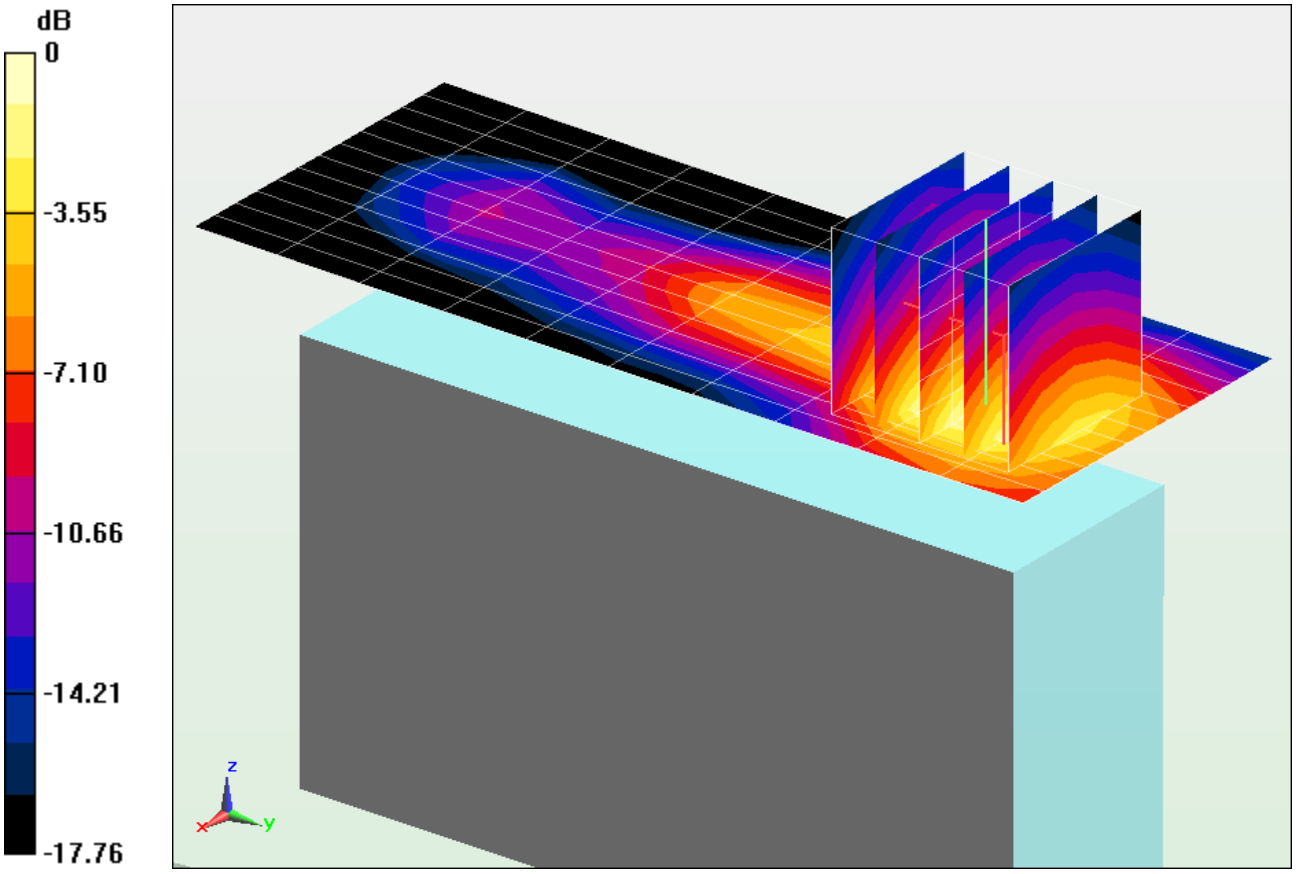
Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.576 mho/m; ε_r = 51.69; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3);SEMCAD X Version 14.6.7 (6848)

Mode: WCDMA 1900, Hand SAR, Bottom Edge, Mid.ch

Area Scan (13x11x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.109 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.520 W/kg
SAR(1 g) = 0.292 W/kg; SAR(10 g) = 0.159 W/kg



0 dB = 0.326 W/kg = -4.87 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

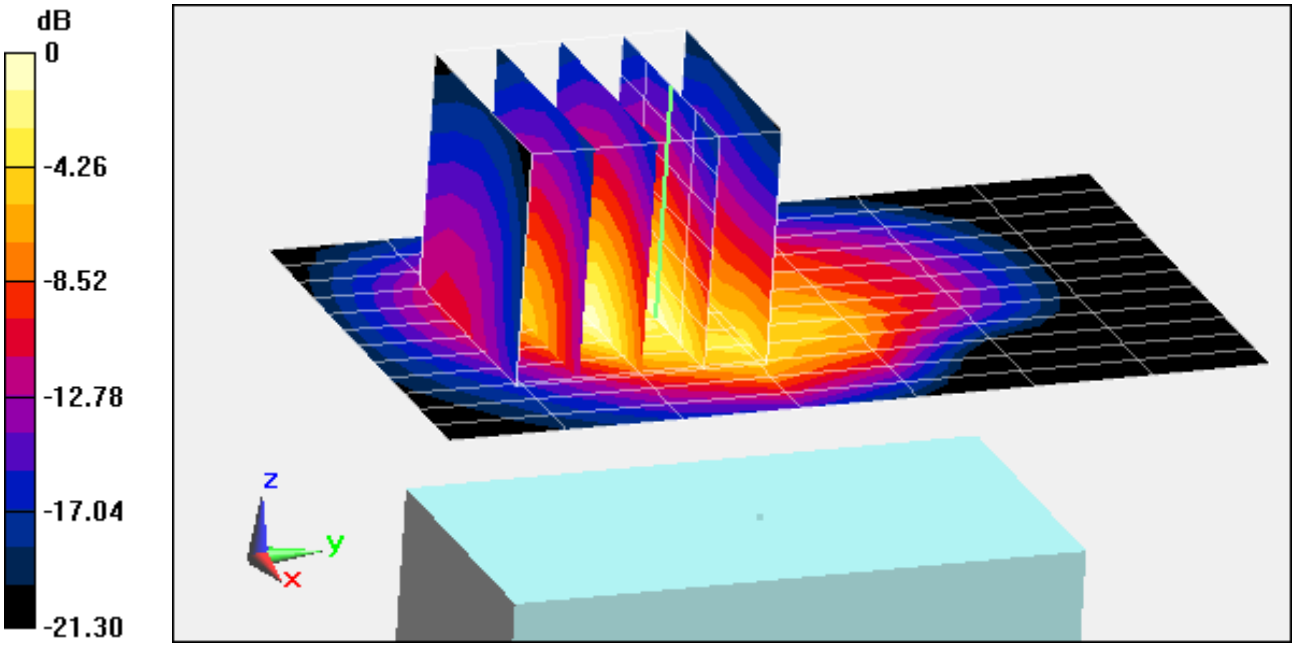
Communication System: WCDMA; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.585 mho/m; ε_r = 51.635; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3);SEMCAD X Version 14.6.7 (6848)

Mode: WCDMA 1900, Hand SAR, Left Edge, High.ch

Area Scan (13x8x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 61.153 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 12.9
SAR(1 g) = 5.74 W/kg; SAR(10 g) = 2.41 W/kg



0 dB = 6.20 W/kg = 7.92 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

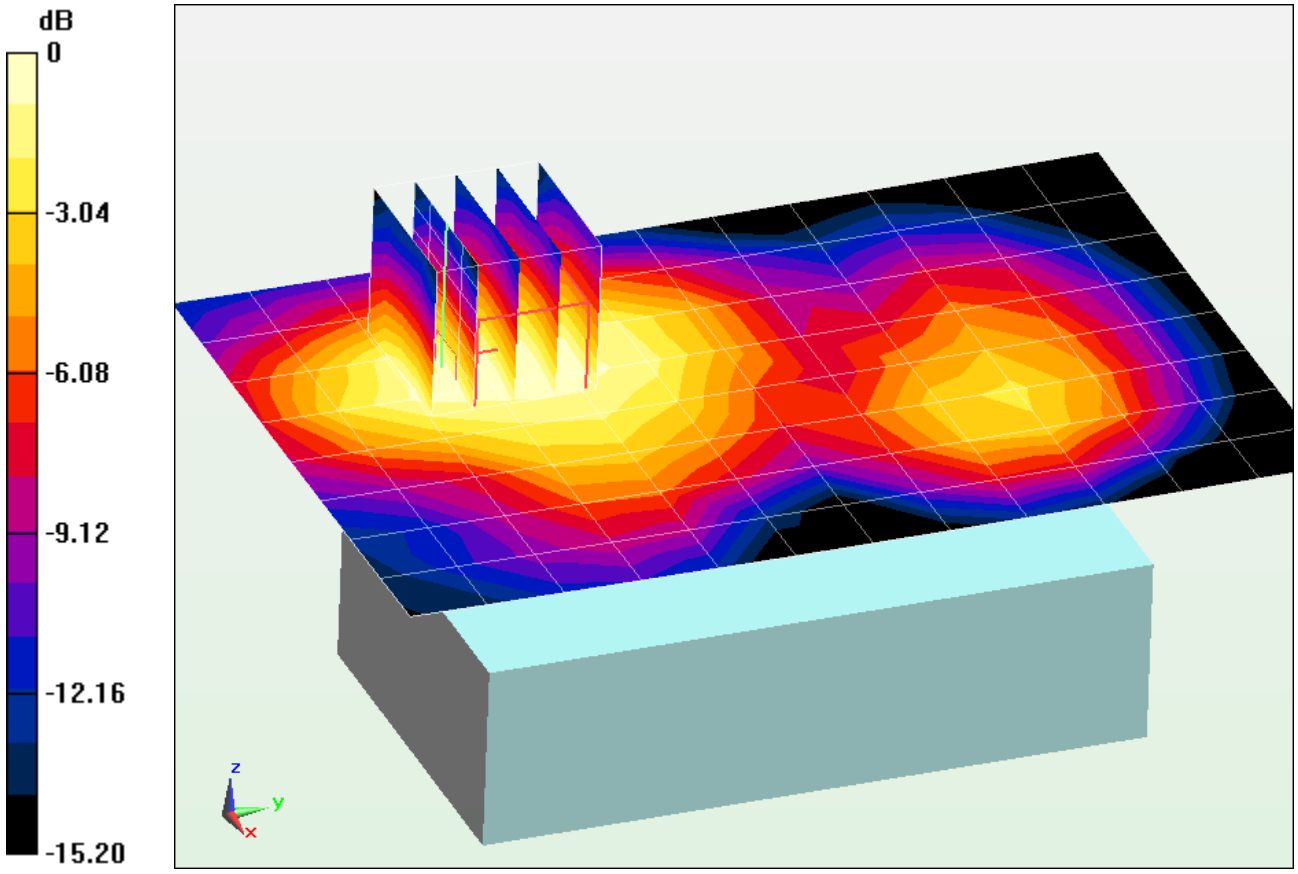
Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.576 mho/m; ε_r = 51.69; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3);SEMCAD X Version 14.6.7 (6848)

Mode: WCDMA 1900, 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 = 6.592 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.110 W/kg
SAR(1 g) = 0.067 W/kg; SAR(10 g) = 0.043 W/kg



0 dB = 0.0717 W/kg = -11.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

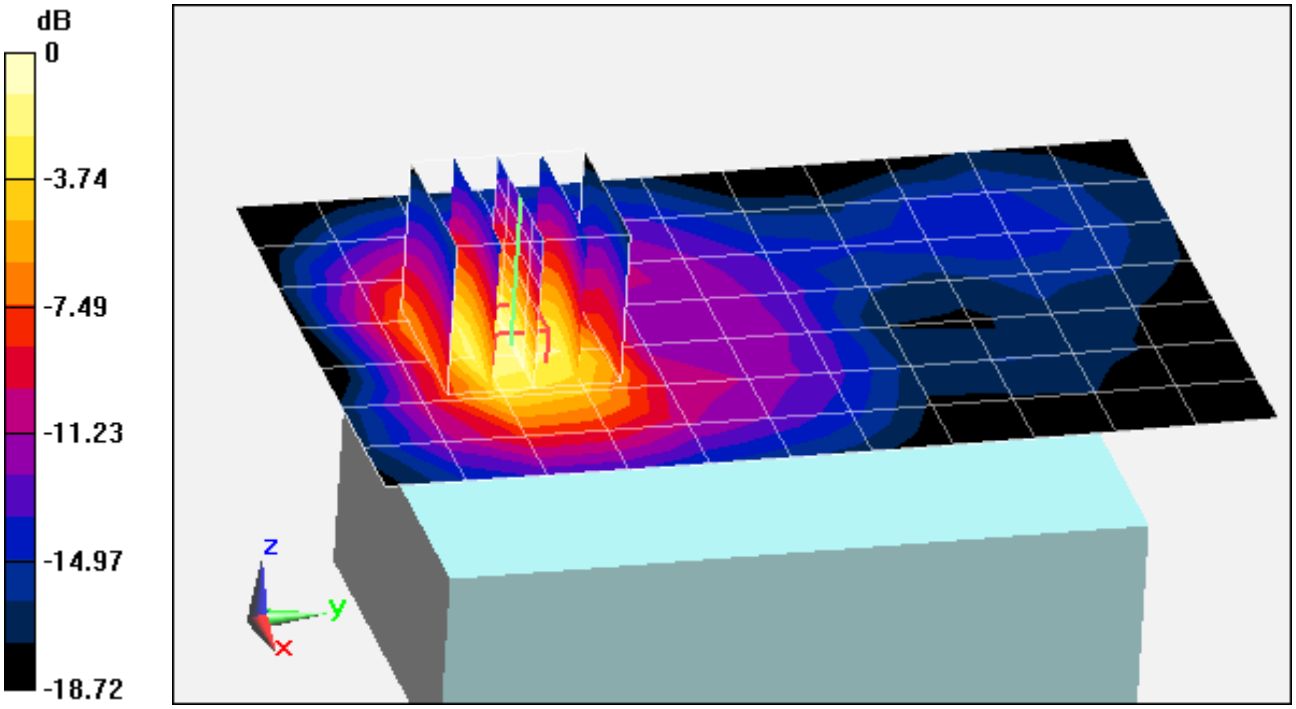
Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.576 mho/m; ε_r = 51.69; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: WCDMA 1900, Body SAR, Front 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 = 13.384 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.556 W/kg
SAR(1 g) = 0.308 W/kg



0 dB = 0.351 W/kg = -4.55 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

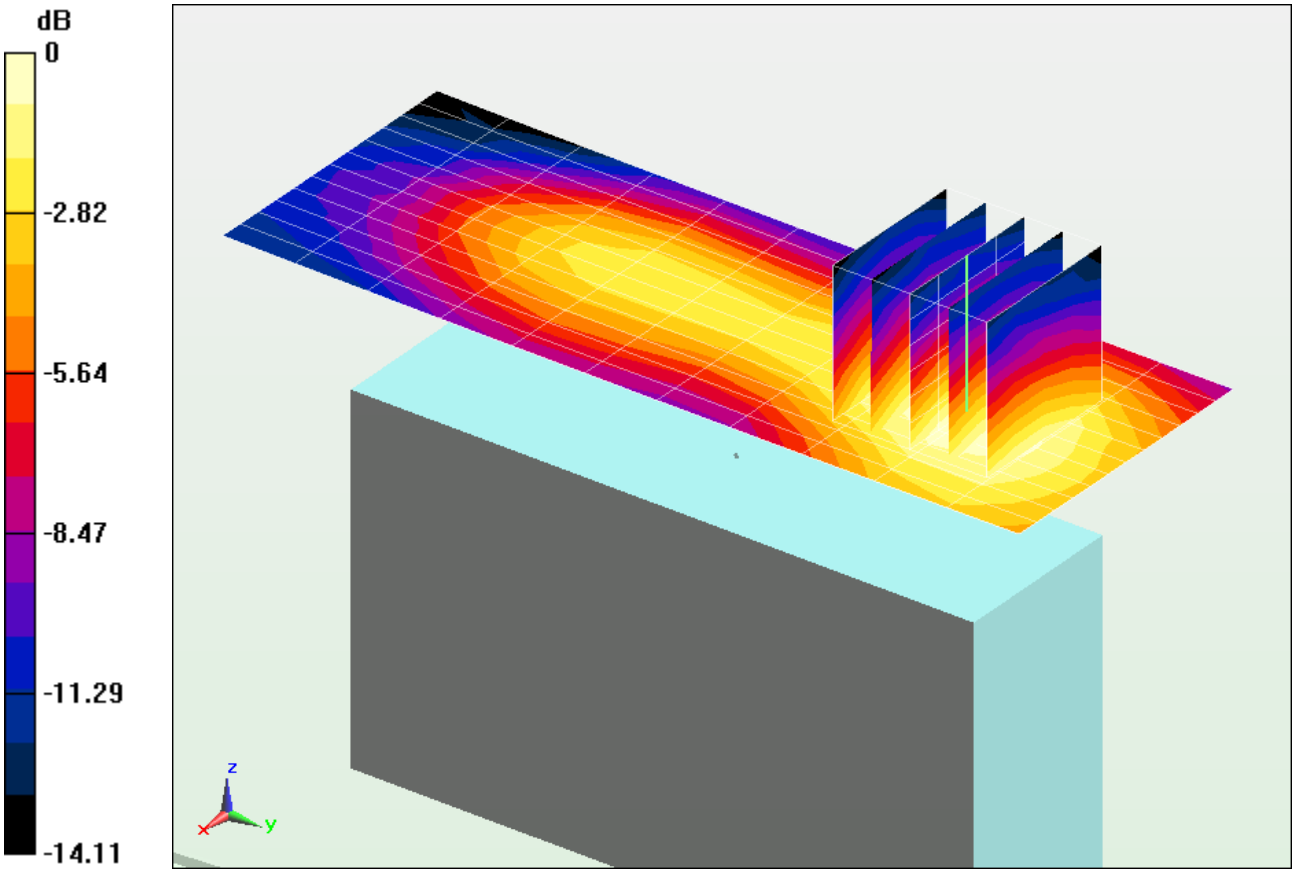
Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.576 mho/m; ε_r = 51.69; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3);SEMCAD X Version 14.6.7 (6848)

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

Area Scan (13x12x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.095 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.113 W/kg
SAR(1 g) = 0.072 W/kg



0 dB = 0.0773 W/kg = -11.12 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

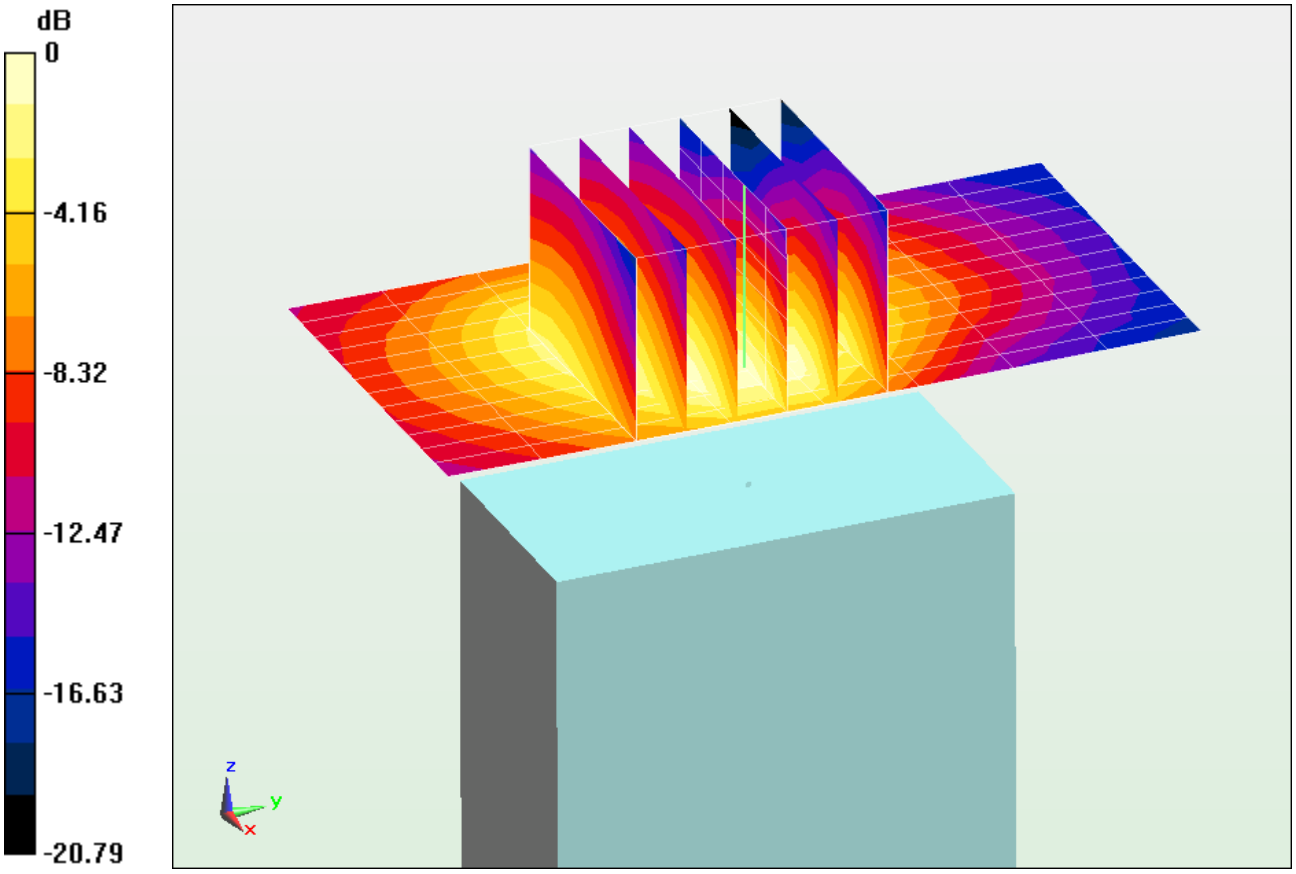
Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.576 mho/m; ε_r = 51.69; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3);SEMCAD X Version 14.6.7 (6848)

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

Area Scan (13x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.805 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.394 W/kg
SAR(1 g) = 0.228 W/kg



0 dB = 0.252 W/kg = -5.99 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

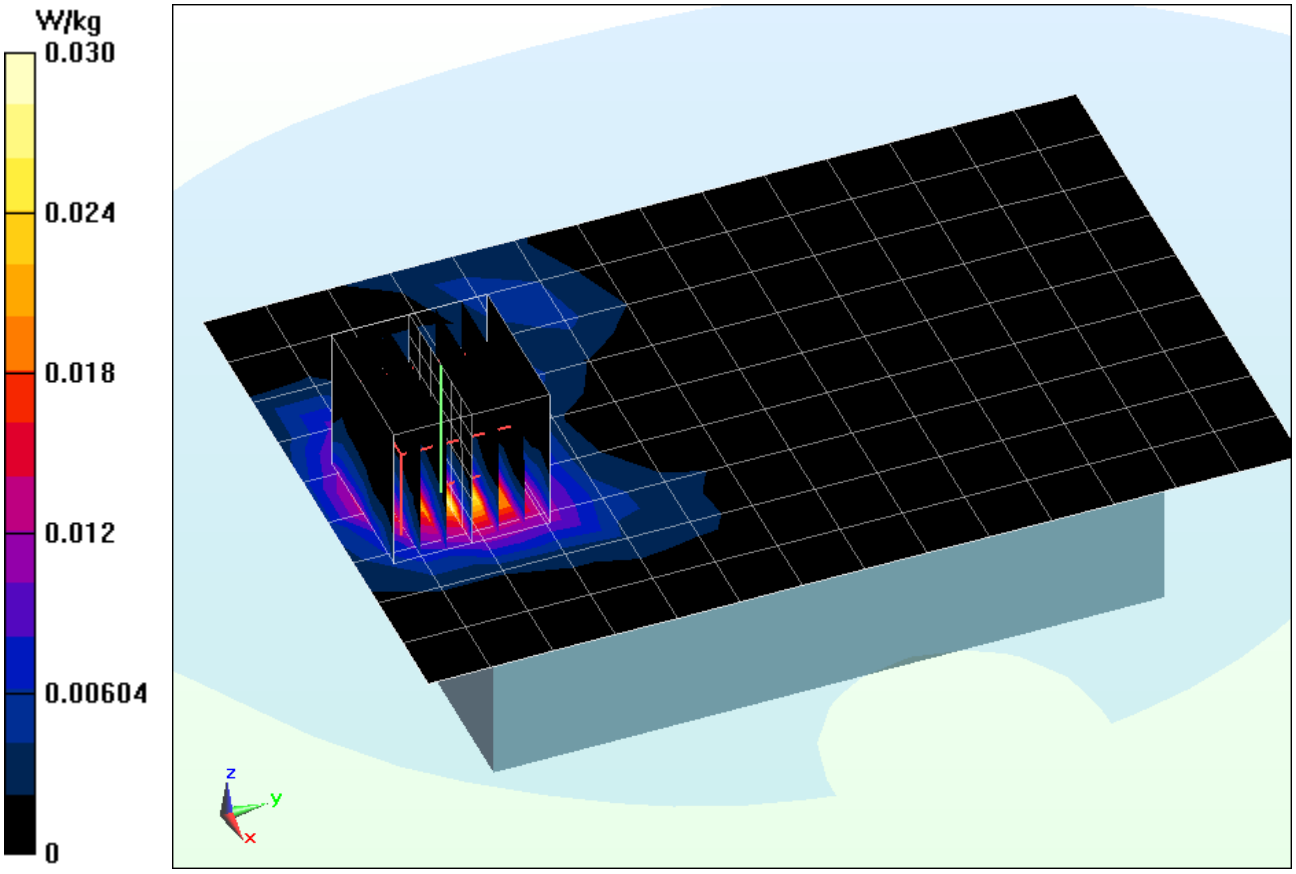
Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.023 mho/m; ε_r = 51.87; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Hand SAR, Ch 06, 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 = 3.571 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.0610 W/kg
SAR(1 g) = 0.023 W/kg; SAR(10 g) = 0.00985 W/kg



DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

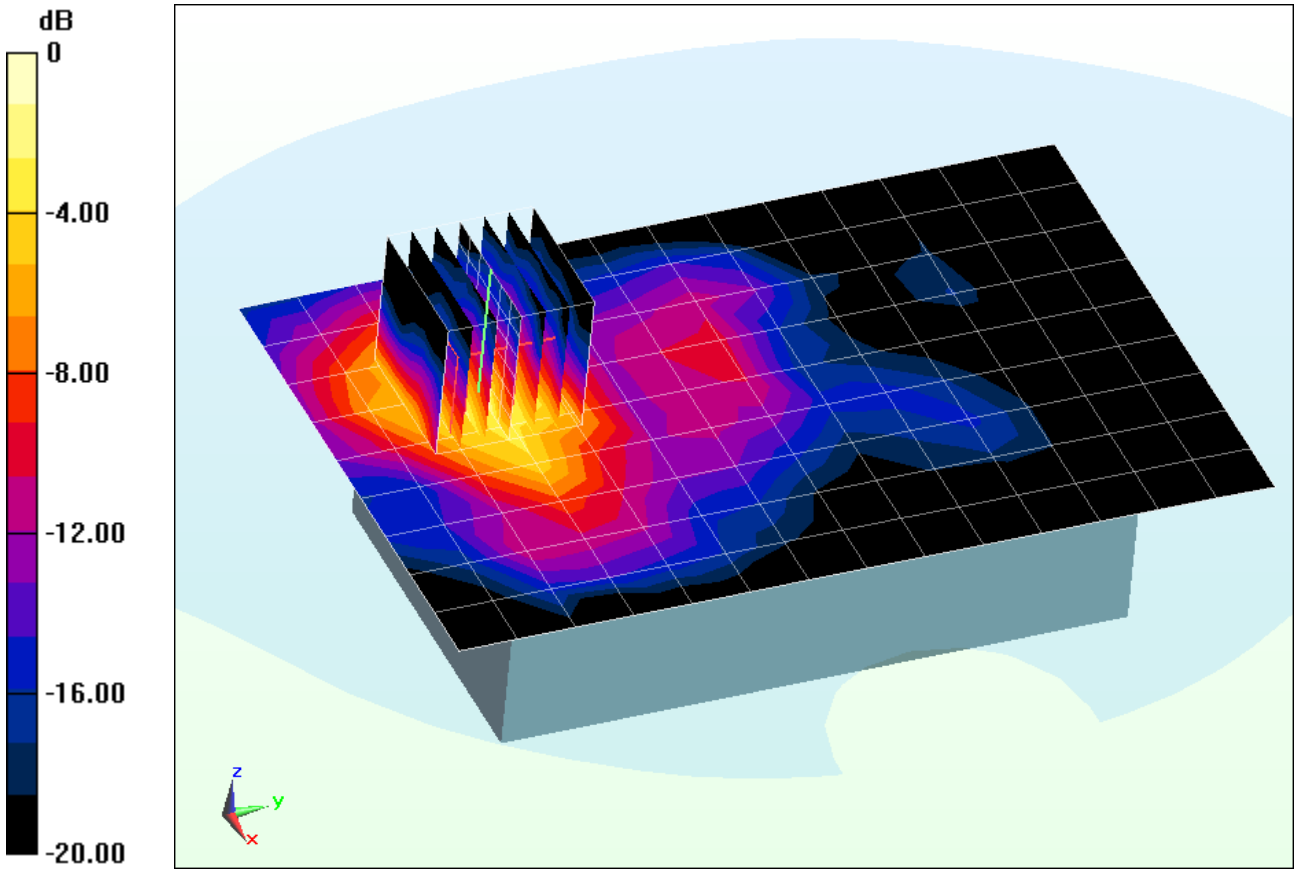
Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.023 mho/m; ε_r = 51.87; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Hand SAR, Ch 06, 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 = 1.519 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.266 W/kg
SAR(1 g) = 0.109 W/kg; SAR(10 g) = 0.046 W/kg



0 dB = 0.165 W/kg = -7.83 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

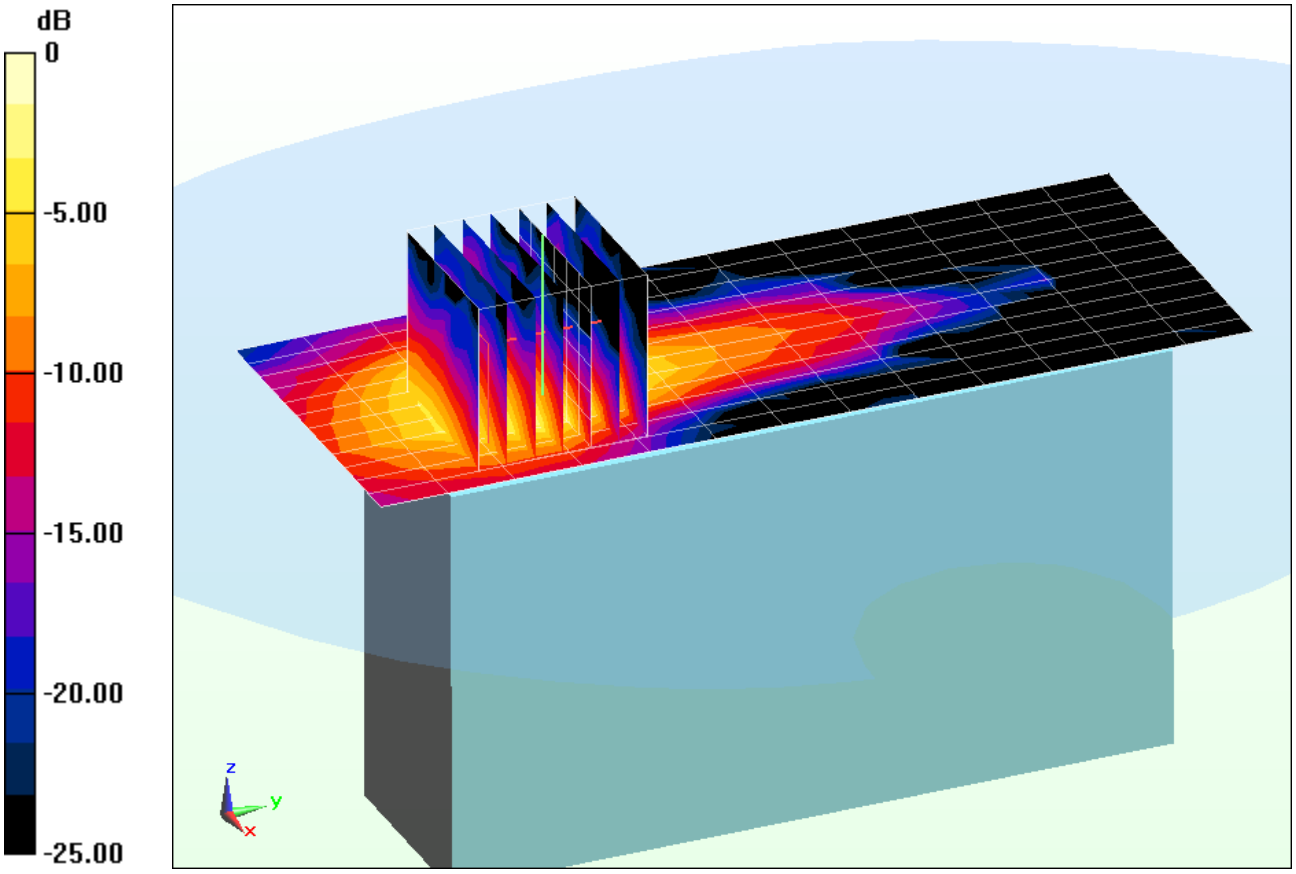
Communication System: 2.4GHz WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.023 mho/m; ε_r = 51.87; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Hand SAR, Ch 06, 1 Mbps, Top Edge

Area Scan (13x14x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.722 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.186 W/kg
SAR(1 g) = 0.067 W/kg; SAR(10 g) = 0.028 W/kg



0 dB = 0.0895 W/kg = -10.48 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

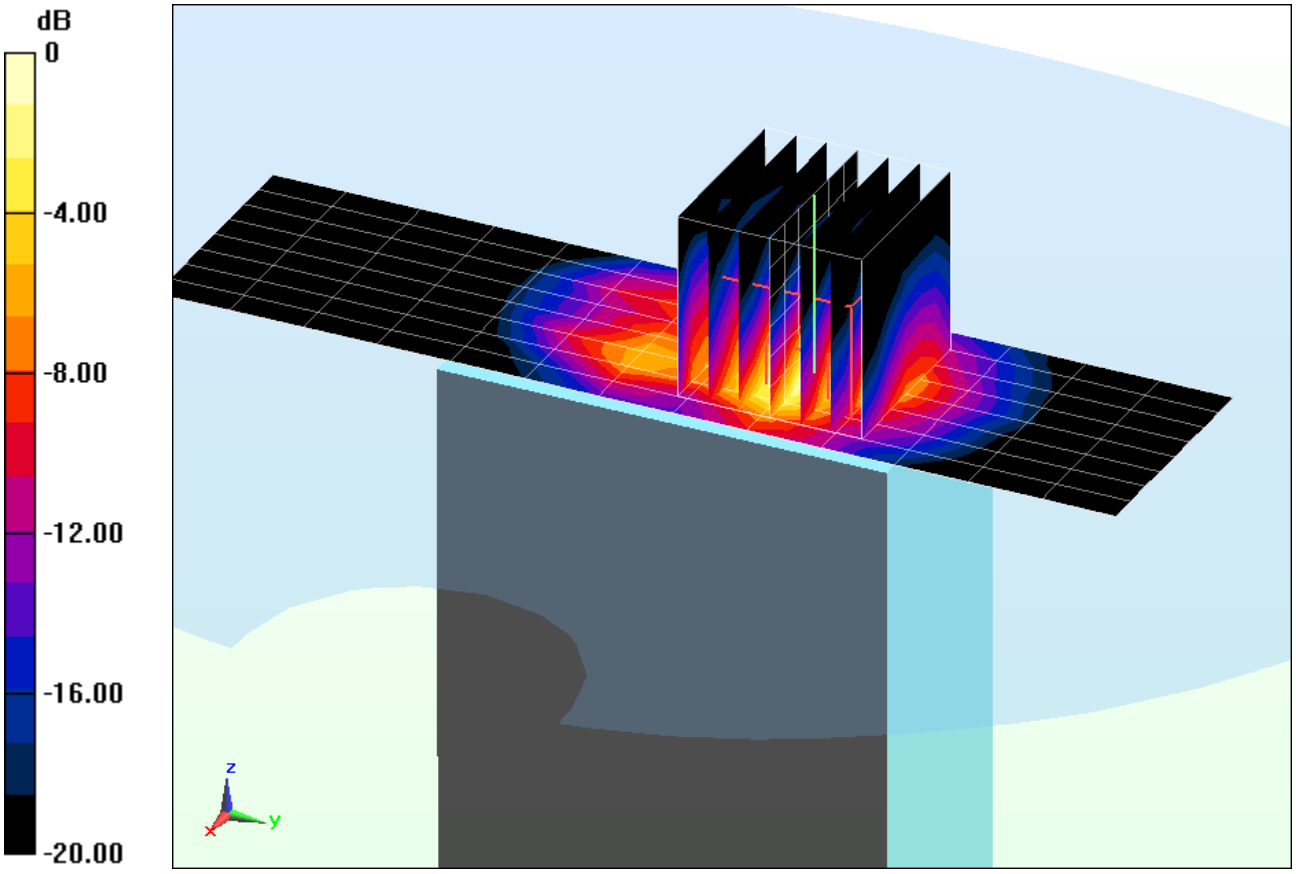
Communication System: 2.4GHz WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.023 mho/m; ε_r = 51.87; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Hand SAR, Ch 06, 1 Mbps, Left Edge

Area Scan (9x14x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.248 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.864 W/kg
SAR(1 g) = 0.284 W/kg; SAR(10 g) = 0.098 W/kg



0 dB = 0.436 W/kg = -3.61 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

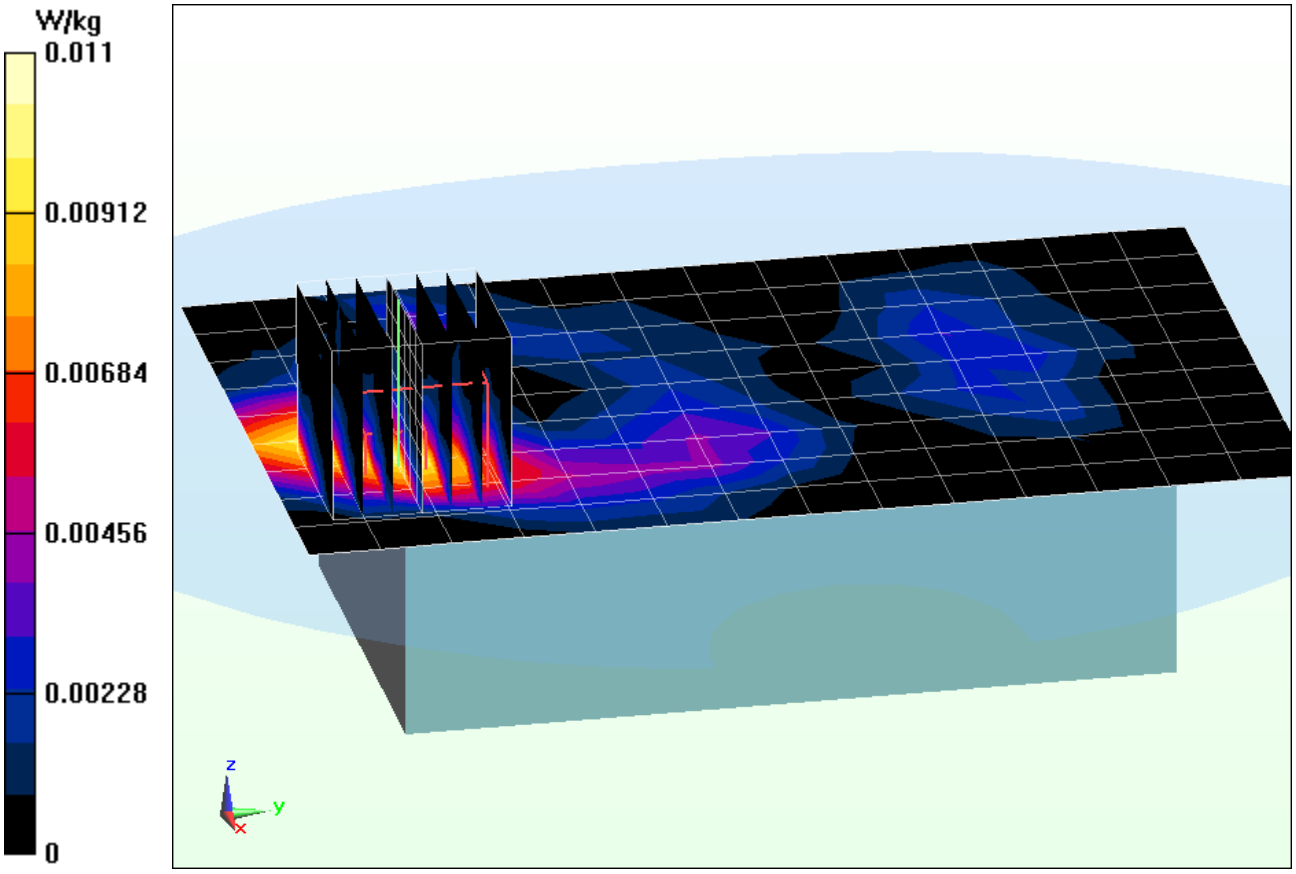
Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.023 mho/m; ε_r = 51.87; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Body SAR, Ch 06, 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 = 1.908 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.0170 W/kg
SAR(1 g) = 0.00867 W/kg; SAR(10 g) = 0.00382 W/kg



DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

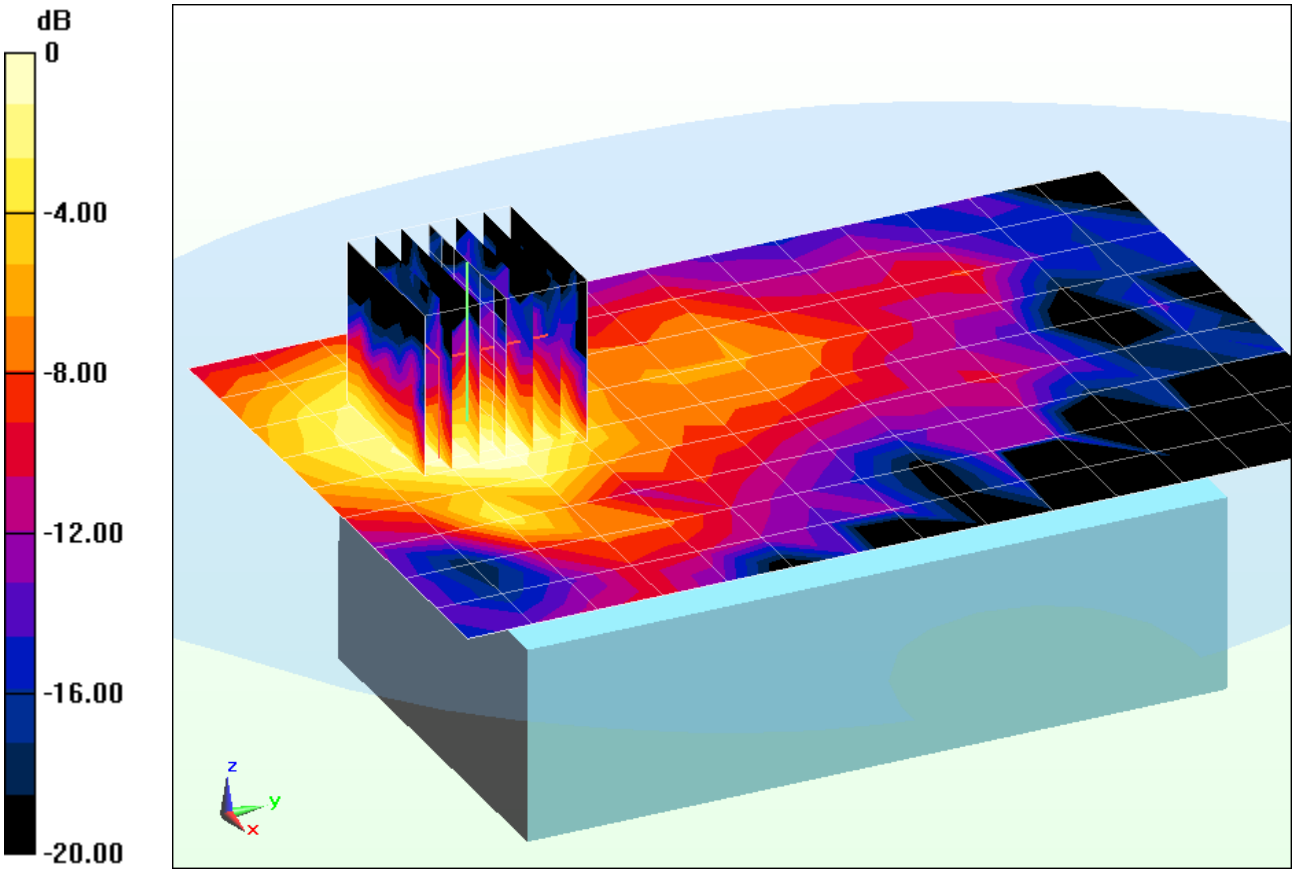
Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.023 mho/m; ε_r = 51.87; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Body SAR, Ch 06, 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 = 2.890 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.0760 W/kg
SAR(1 g) = 0.016 W/kg; SAR(10 g) = 0.00758 W/kg



0 dB = 0.0220 W/kg = -16.58 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

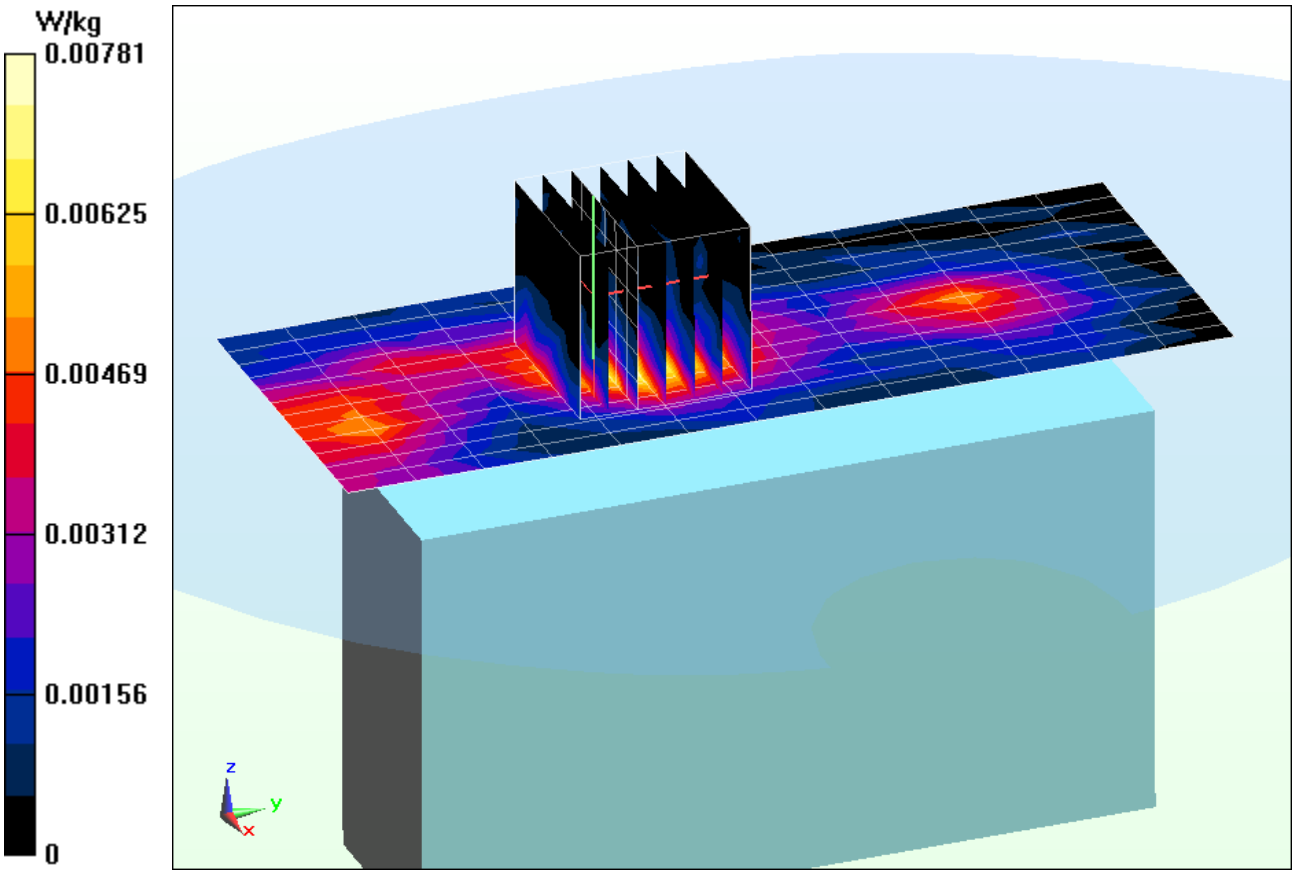
Communication System: 2.4GHz WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.023 mho/m; ε_r = 51.87; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Body SAR, Ch 6, 1 Mbps, Top Edge

Area Scan (13x14x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.848 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.0120 W/kg
SAR(1 g) = 0.00623 W/kg; SAR(10 g) = 0.00298 W/kg



DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #2

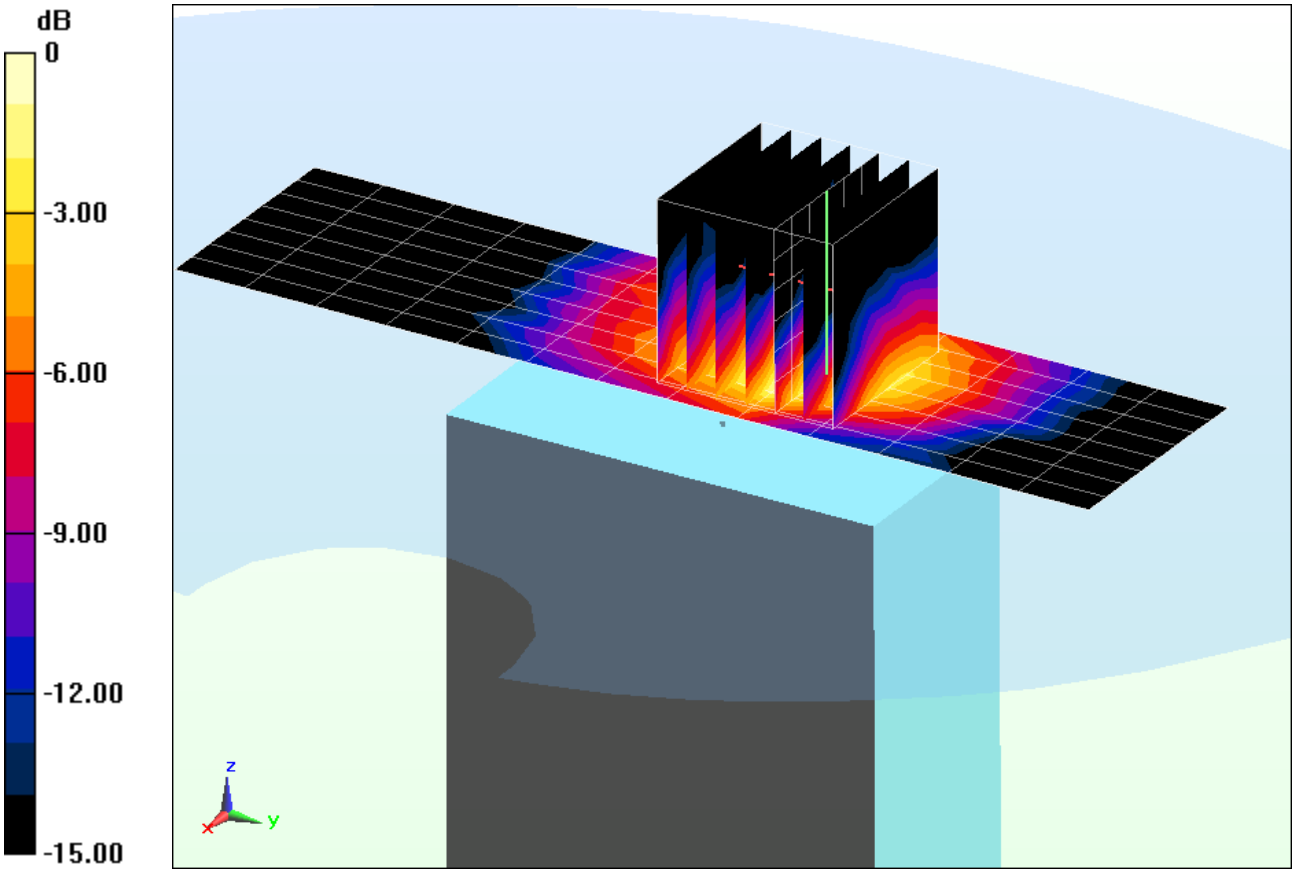
Communication System: 2.4GHz WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.023 mho/m; ε_r = 51.87; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Body SAR, Ch 06, 1 Mbps, Left Edge

Area Scan (9x14x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.597 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.0850 W/kg
SAR(1 g) = 0.038 W/kg; SAR(10 g) = 0.017 W/kg



0 dB = 0.0485 W/kg = -13.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #1

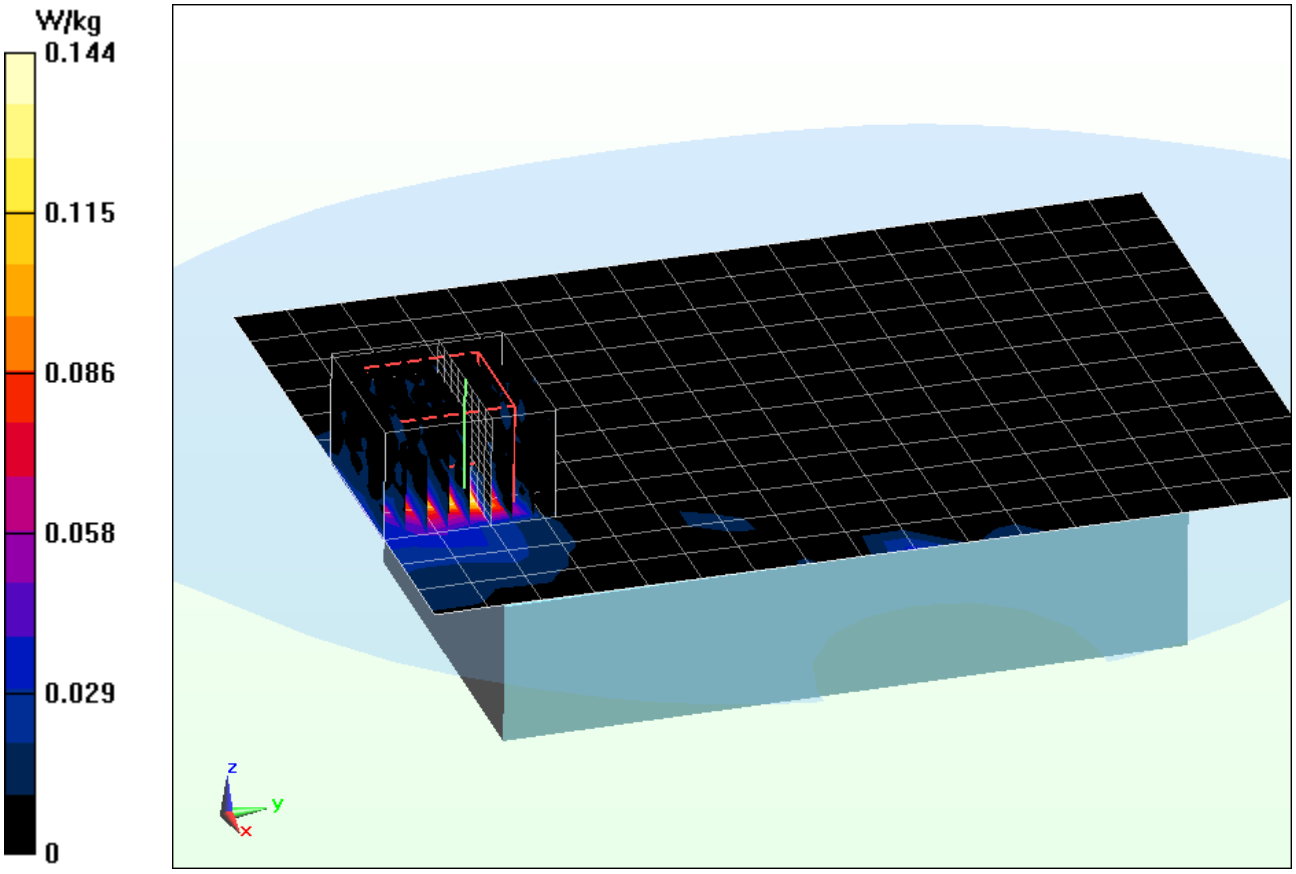
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5825 MHz; σ = 6.304 mho/m; ε_r = 46.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11a, 5.8 GHz, Hand SAR, Ch 165, 6 Mbps, Back Side

Area Scan (13x18x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.639 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.287 W/kg
SAR(1 g) = 0.073 W/kg; SAR(10 g) = 0.024 W/kg



DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #1

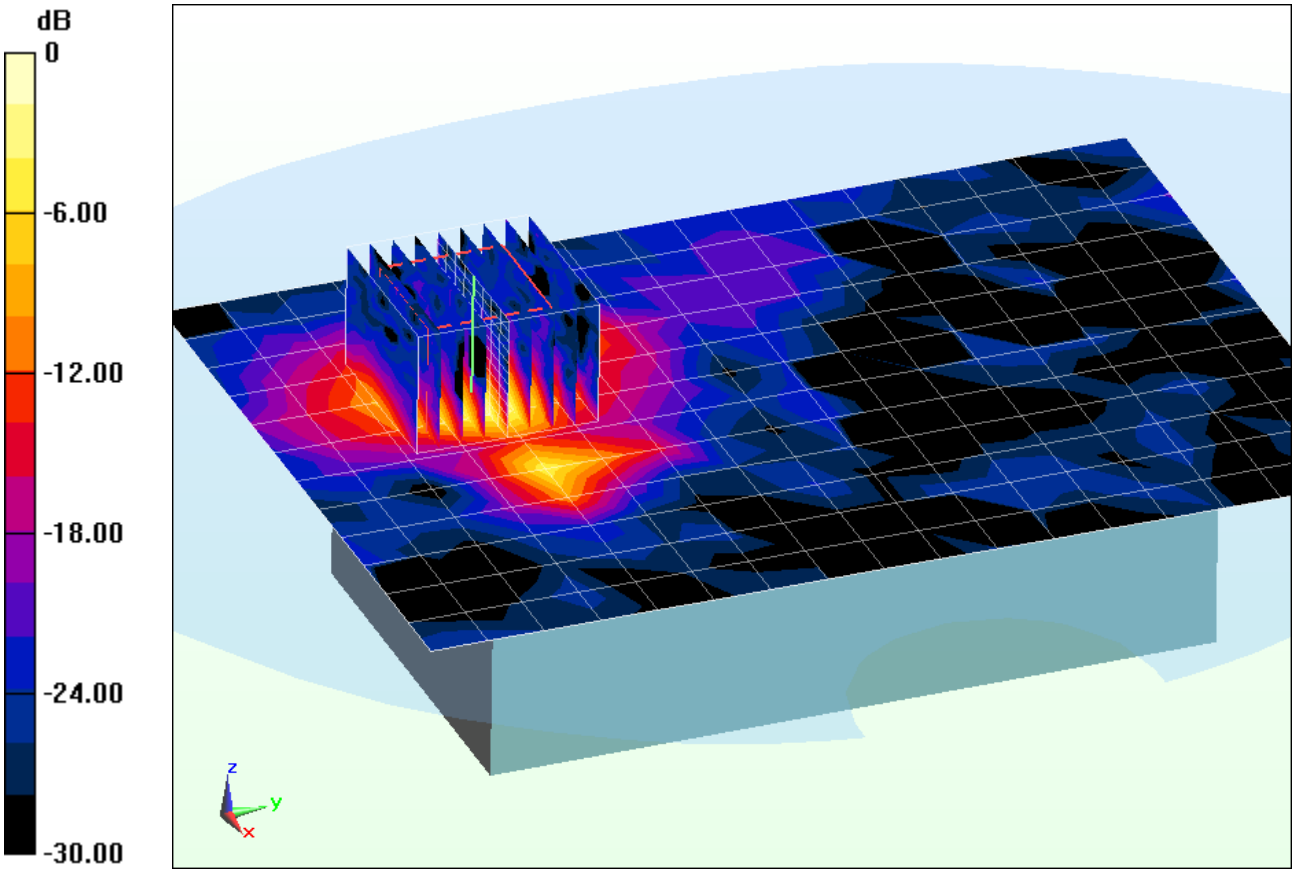
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5825 MHz; σ = 6.304 mho/m; ε_r = 46.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11a, 5.8 GHz, Hand SAR, Ch 165, 6 Mbps, Front Side

Area Scan (13x18x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.129 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 3.43 W/kg
SAR(1 g) = 0.824 W/kg; SAR(10 g) = 0.234 W/kg



0 dB = 1.74 W/kg = 2.41 dBW/kg

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #1

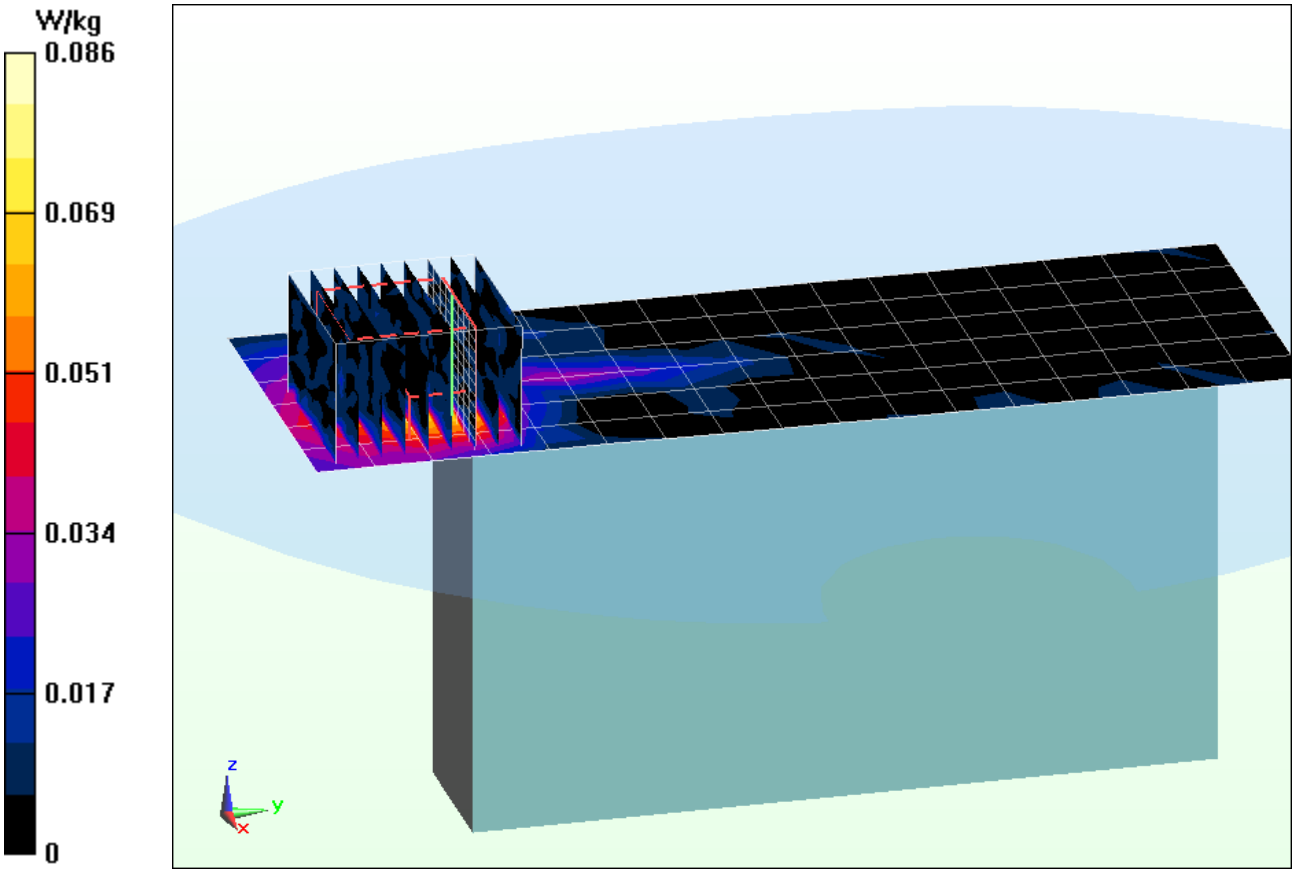
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5825 MHz; σ = 6.304 mho/m; ε_r = 46.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11a, 5.8 GHz, Hand SAR, Ch 165, 6 Mbps, Top Side

Area Scan (7x18x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.367 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.624 W/kg
SAR(1 g) = 0.051 W/kg; SAR(10 g) = 0.021 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #1

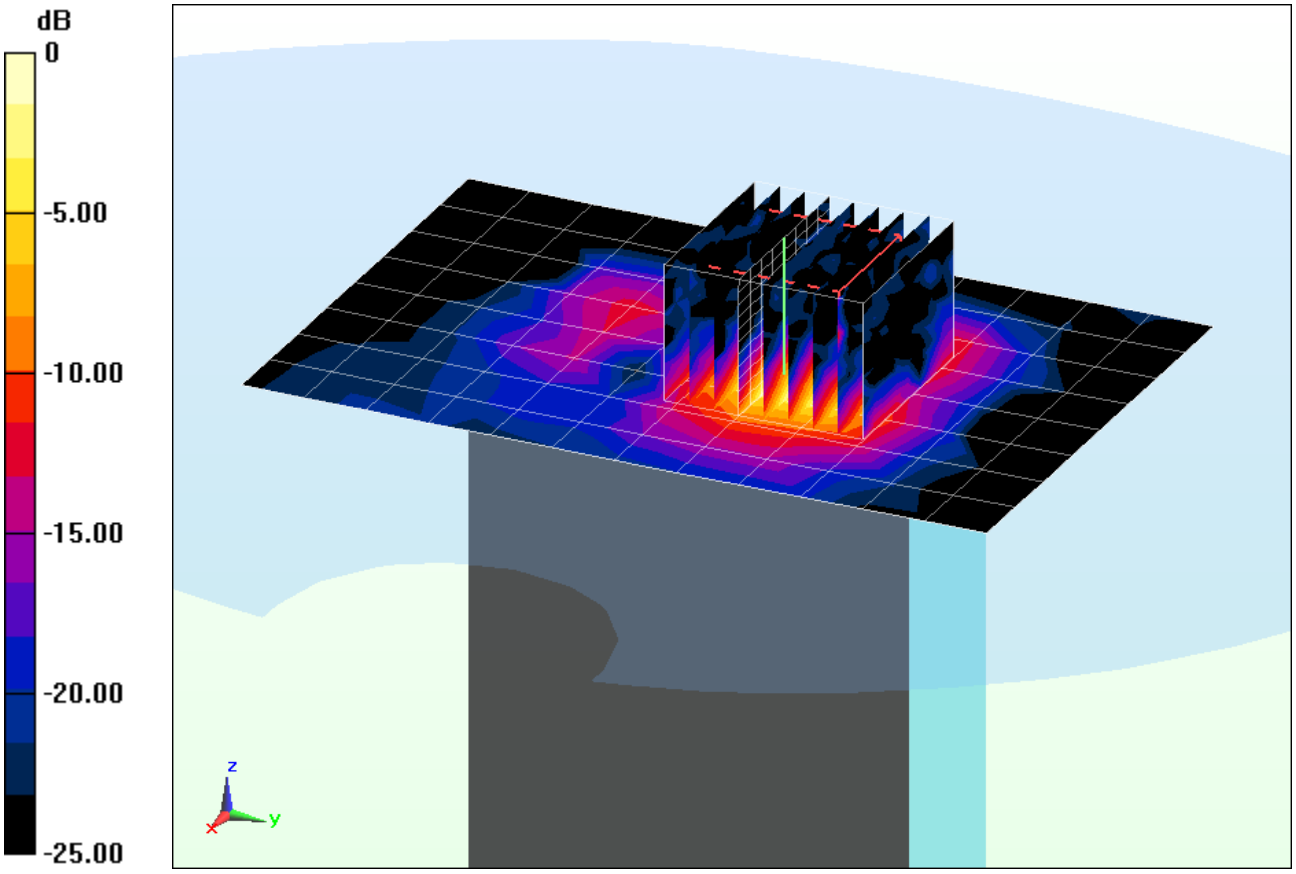
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5825 MHz; σ = 6.304 mho/m; ε_r = 46.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11a, 5.8 GHz, Hand SAR, Ch 165, 6 Mbps, Left Side

Area Scan (9x13x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.831 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.28 W/kg
SAR(1 g) = 0.633 W/kg; SAR(10 g) = 0.193 W/kg



0 dB = 1.28 W/kg = 1.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #1

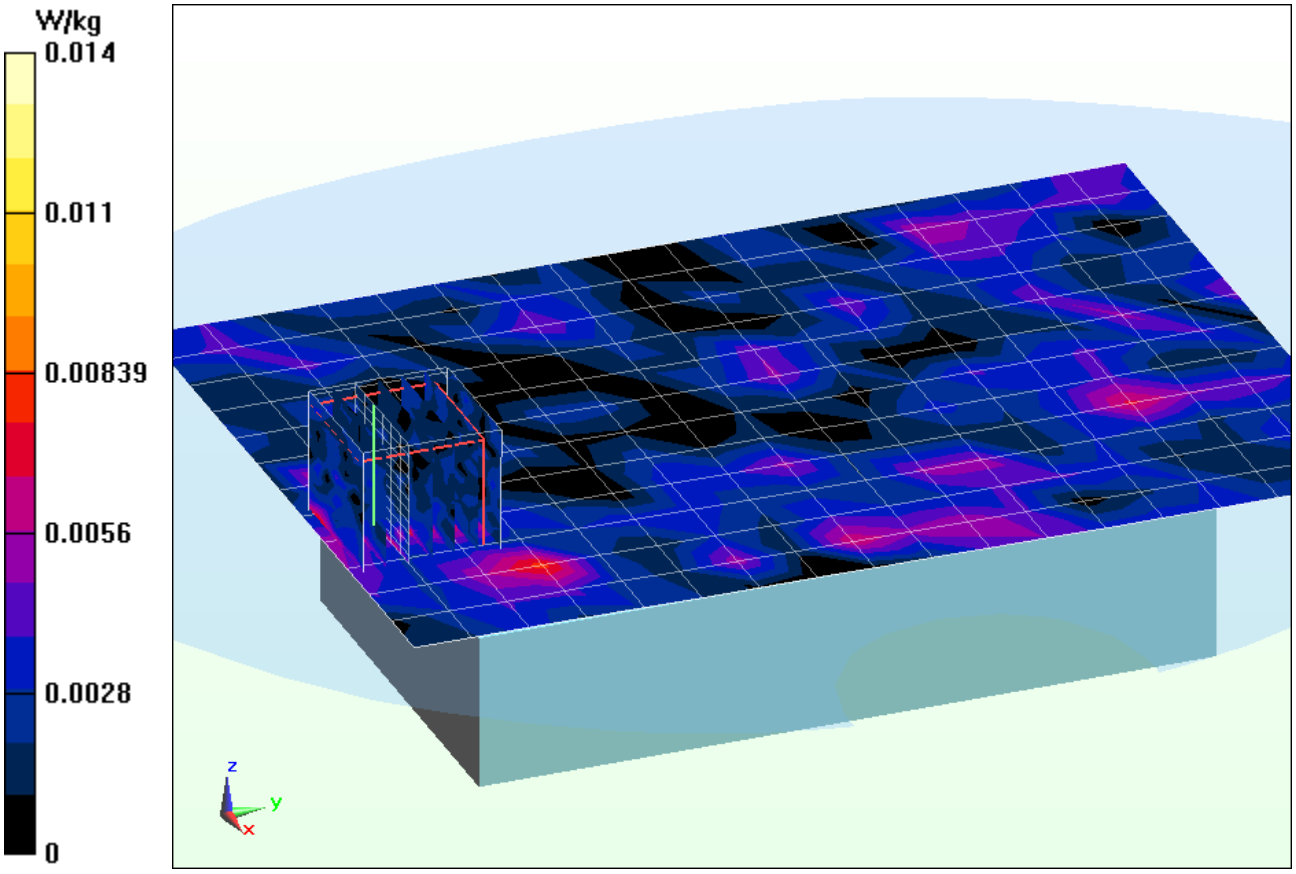
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5825 MHz; σ = 6.304 mho/m; ε_r = 46.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11a, 5.8 GHz, Body SAR, Ch 165, 6 Mbps, Back Side

Area Scan (13x18x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.387 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.171 W/kg
SAR(1 g) = 0.026 W/kg; SAR(10 g) = 0.00838 W/kg



DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #1

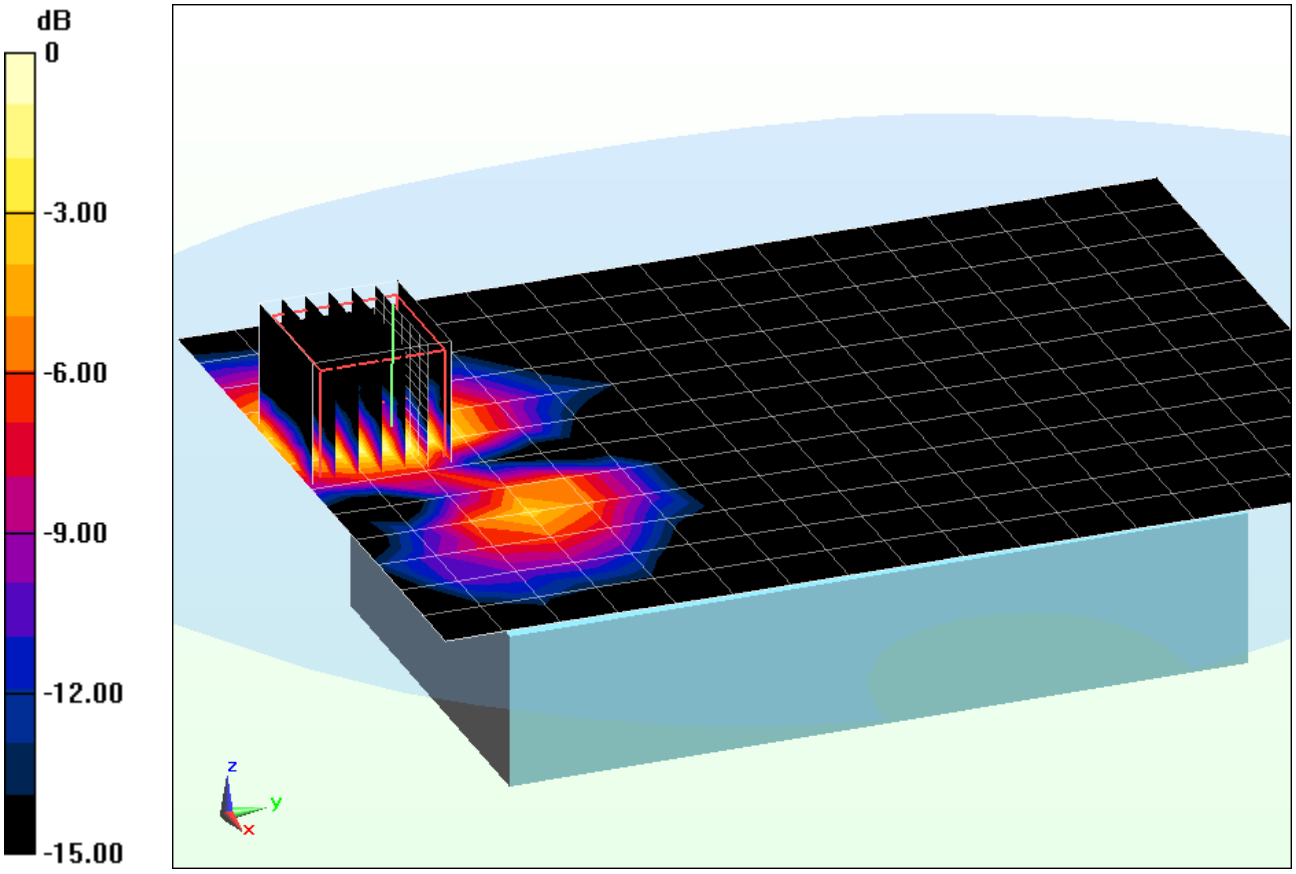
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5825 MHz; σ = 6.304 mho/m; ε_r = 46.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11a, 5.8 GHz, Body SAR, Ch 165, 6 Mbps, Front Side

Area Scan (13x18x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.332 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.580 W/kg
SAR(1 g) = 0.167 W/kg; SAR(10 g) = 0.062 W/kg



0 dB = 0.307 W/kg = -5.13 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #1

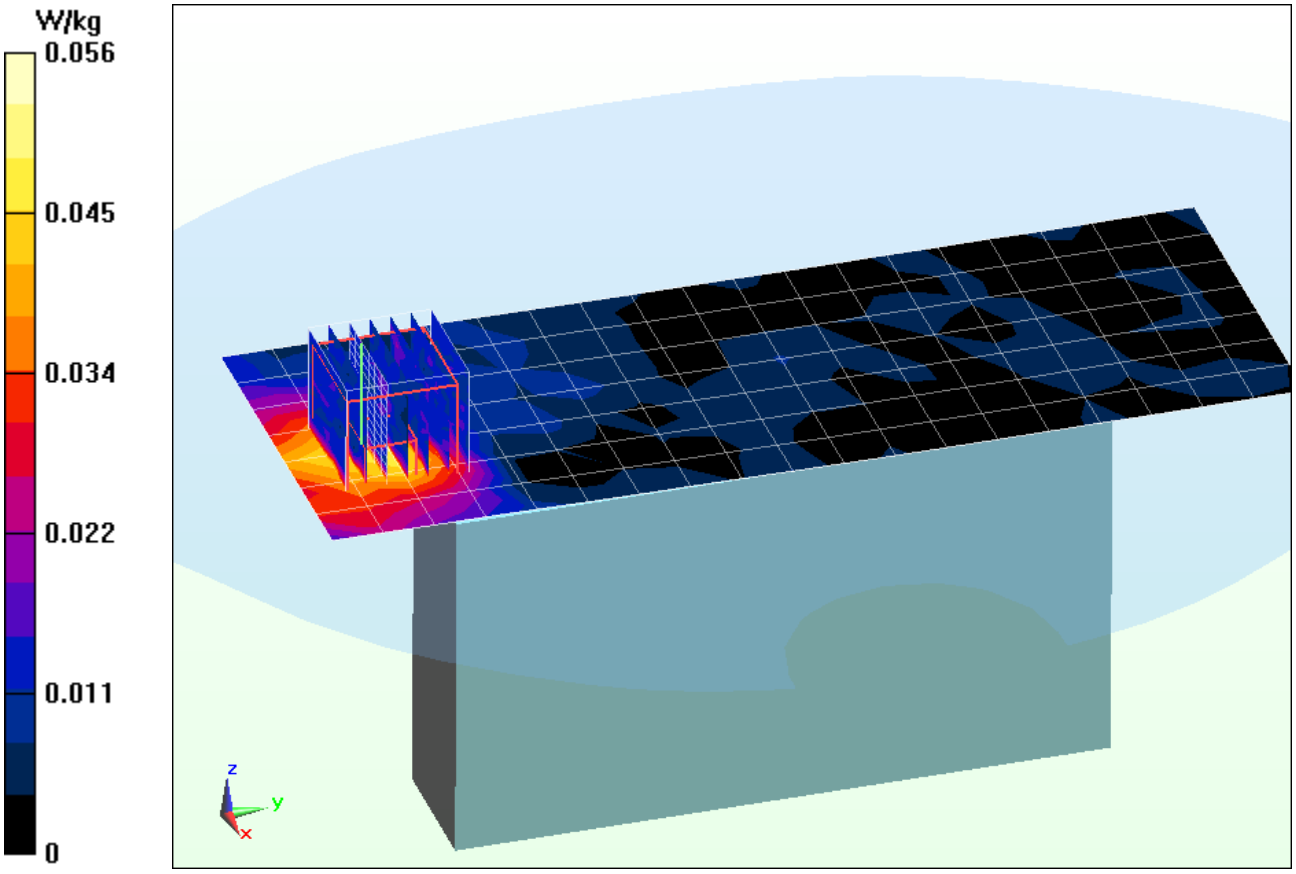
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5825 MHz; σ = 6.304 mho/m; ε_r = 46.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11a, 5.8 GHz, Body SAR, Ch 165, 6 Mbps, Top Side

Area Scan (8x20x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.827 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.434 W/kg
SAR(1 g) = 0.036 W/kg; SAR(10 g) = 0.014 W/kg



DUT: A3LEKKC120S; Type: Portable Camera; Serial: SAR #1

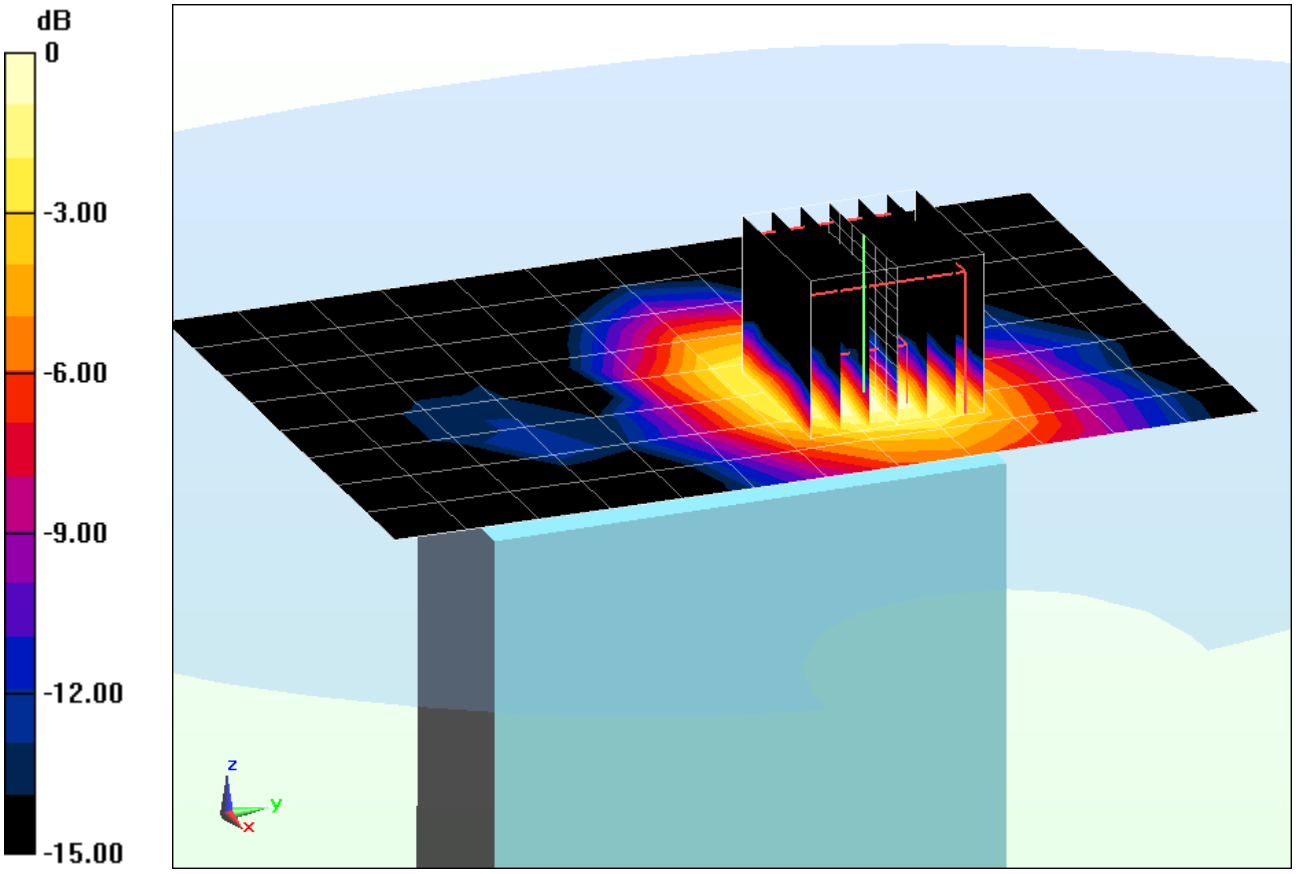
Communication System: IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5825 MHz; σ = 6.304 mho/m; ε_r = 46.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11a, 5.8 GHz, Body SAR, Ch 165, 6 Mbps, Left Side

Area Scan (9x13x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.668 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.712 W/kg
SAR(1 g) = 0.209 W/kg; SAR(10 g) = 0.078 W/kg



0 dB = 0.396 W/kg = -4.02 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

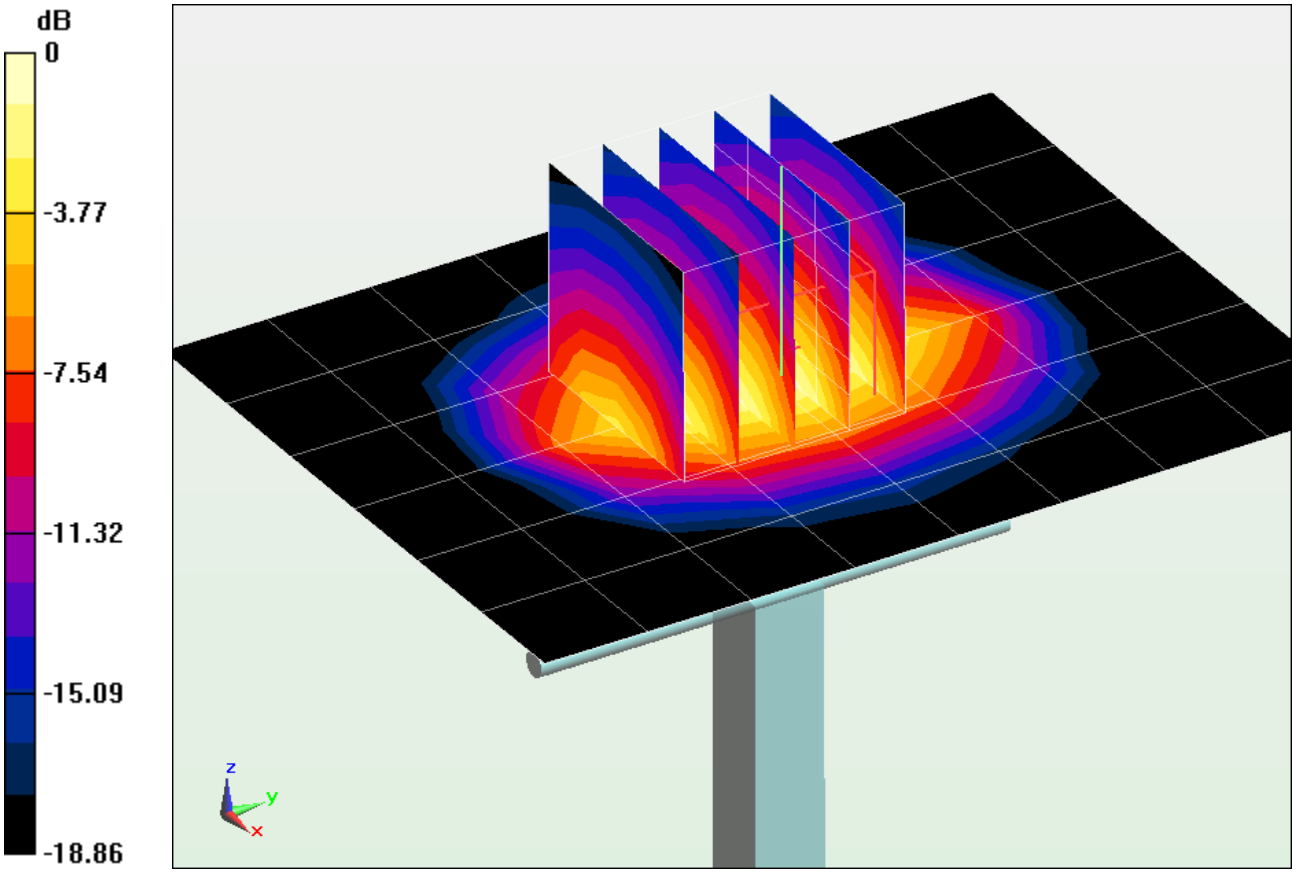
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.583 mho/m; ε_r = 51.65; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3);SEMCAD X Version 14.6.7 (6848)

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) = 7.68 W/kg
SAR(1 g) = 4.17 W/kg; SAR(10 g) = 2.16 W/kg
Deviation = 6.65%



0 dB = 4.63 W/kg = 6.66 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

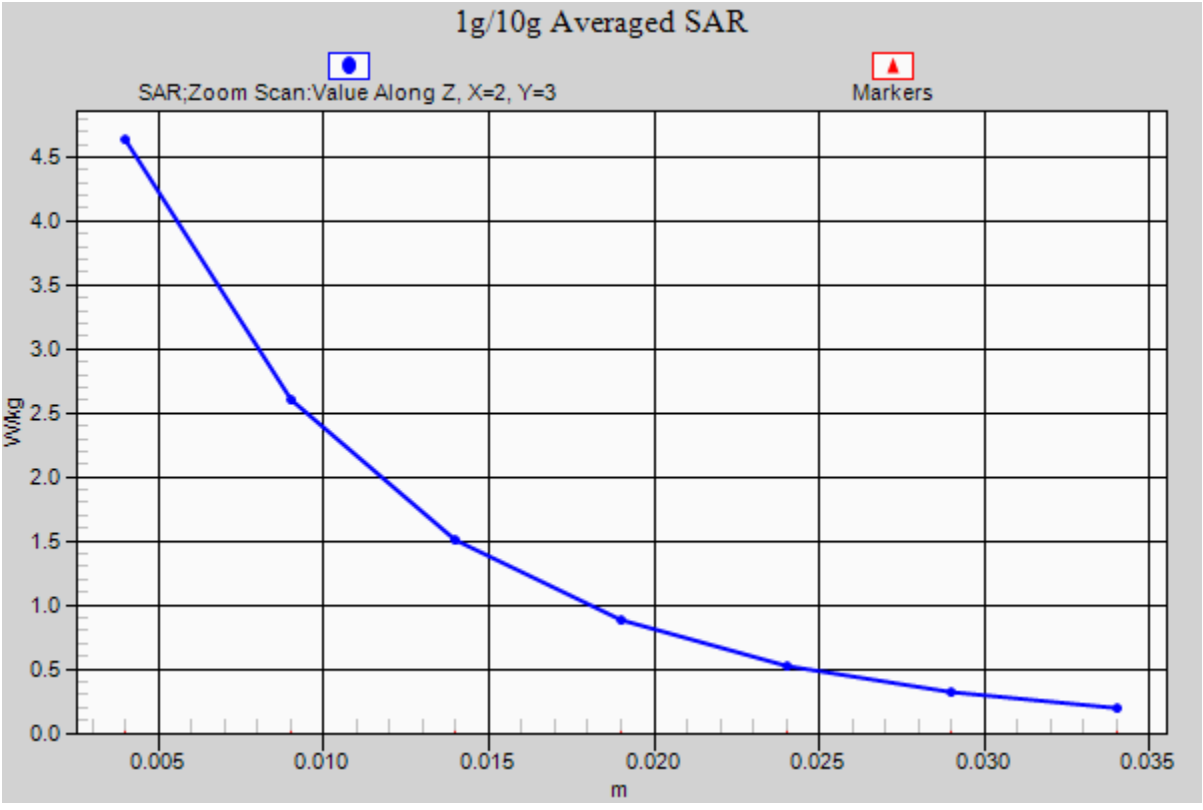
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.583 mho/m; ε_r = 51.65; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.9°C; Tissue Temp: 19.9°C

Probe: ES3DV3 - SN3213; ConvF(4.5, 4.5, 4.5); Calibrated: 4/24/2012;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 4/19/2012
Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

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) = 7.68 W/kg
SAR(1 g) = 4.17 W/kg; SAR(10 g) = 2.16 W/kg
Deviation = 6.65%



PCTEST ENGINEERING LABORATORY, INC.

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

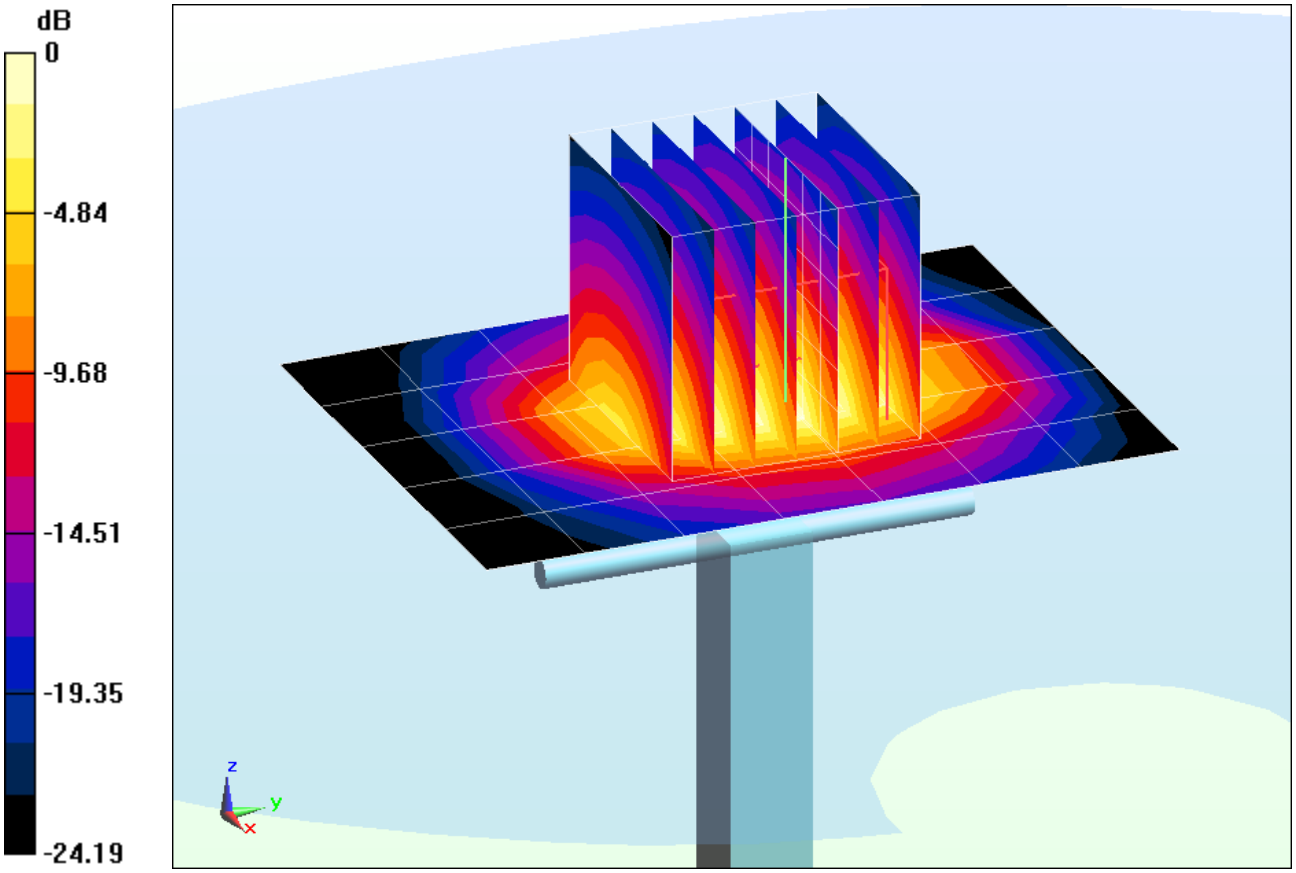
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2450 MHz; σ = 2.044 mho/m; ε_r = 51.82; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

2450 MHz 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 dBm (100 mW)
Peak SAR (extrapolated) = 11.8 W/kg
SAR(1 g) = 5.38 W/kg; SAR(10 g) = 2.44 W/kg
Deviation = 5.91%



0 dB = 7.02 W/kg = 8.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

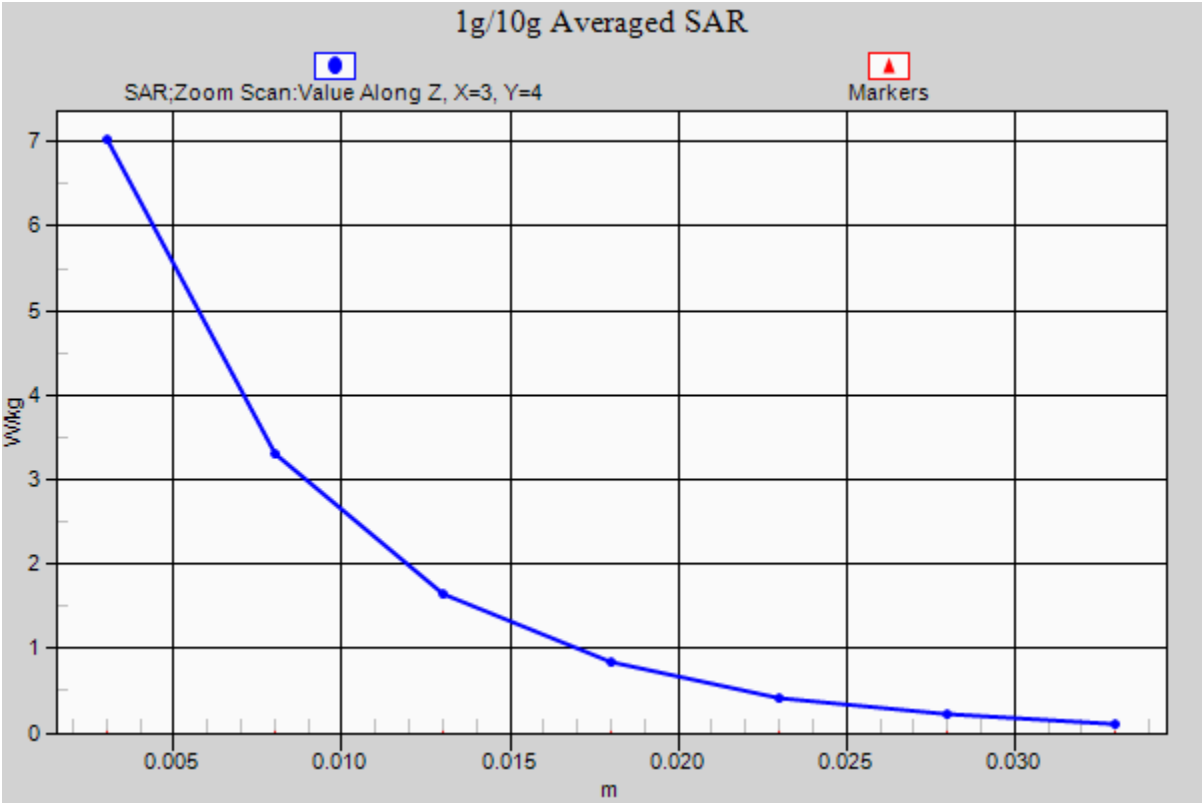
Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.044 mho/m; ε_r = 51.82; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 21.2°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(4.23, 4.23, 4.23); Calibrated: 3/16/2012;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 2/20/2012
Phantom: SAM with CRP; Type: SAM; Serial: TP1375
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

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 dBm (100 mW)
Peak SAR (extrapolated) = 11.8 W/kg
SAR(1 g) = 5.38 W/kg; SAR(10 g) = 2.44 W/kg
Deviation = 5.91 %



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

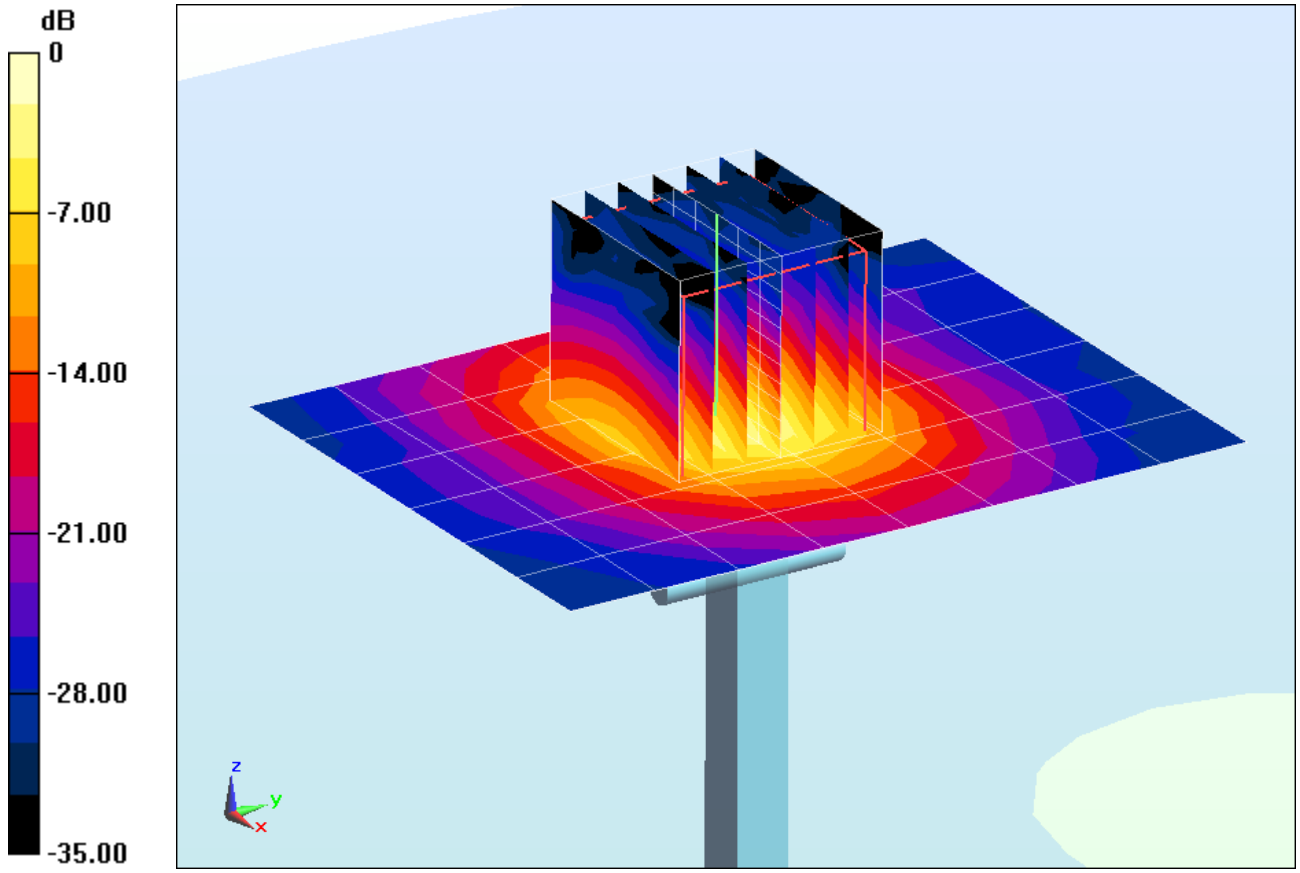
Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.01; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.0°C

Probe: EX3DV4 - SN3589; ConvF(3.92, 3.92, 3.92); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

5200 MHz 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 = 17.4 dBm (55 mW)
Peak SAR (extrapolated) = 17.3 W/kg
SAR(1 g) = 4.33 W/kg; SAR(10 g) = 1.2 W/kg
Deviation = 7.26%



0 dB = 9.05 W/kg = 9.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

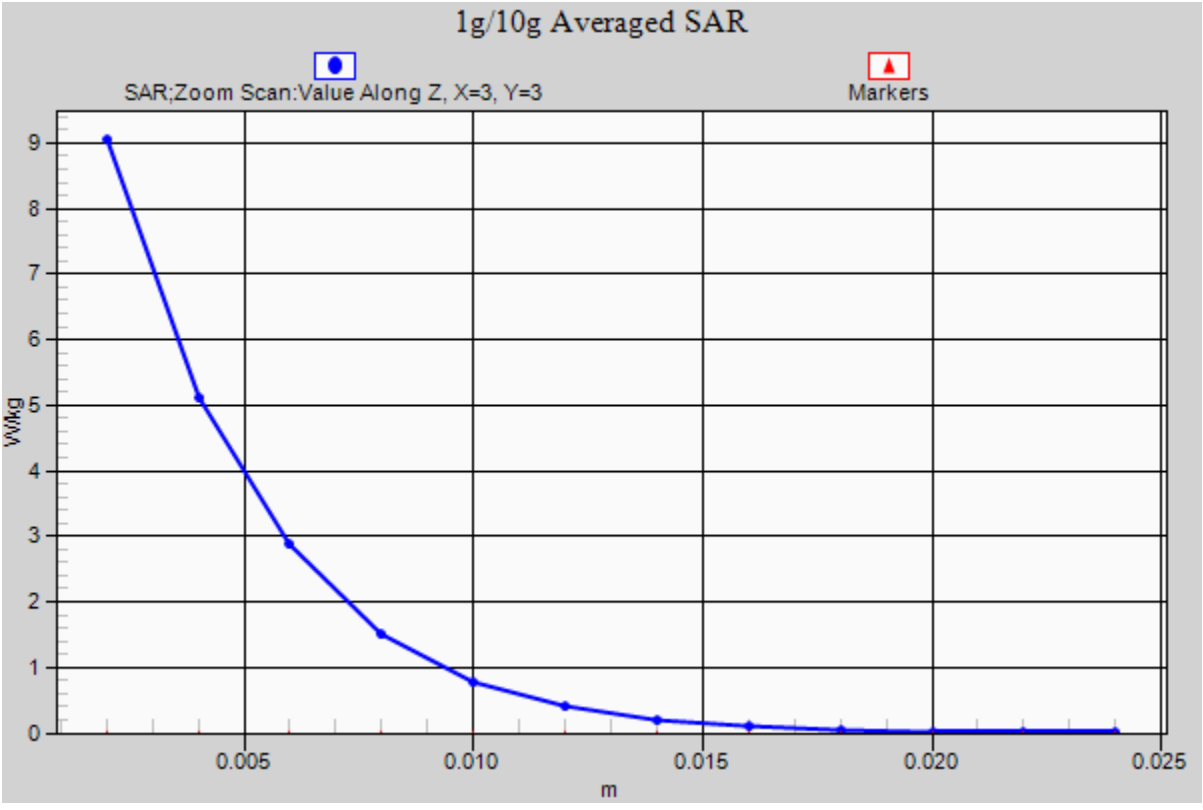
Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5GHz Body Medium parameters used:
f = 5200 MHz; σ = 5.32 mho/m; ε_r = 48.01; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.0°C

Probe: EX3DV4 - SN3589; ConvF(3.92, 3.92, 3.92); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

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 = 17.4 dBm (55 mW)
Peak SAR (extrapolated) = 17.3 W/kg
SAR(1 g) = 4.33 W/kg; SAR(10 g) = 1.2 W/kg
Deviation = 7.26%



PCTEST ENGINEERING LABORATORY, INC.

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

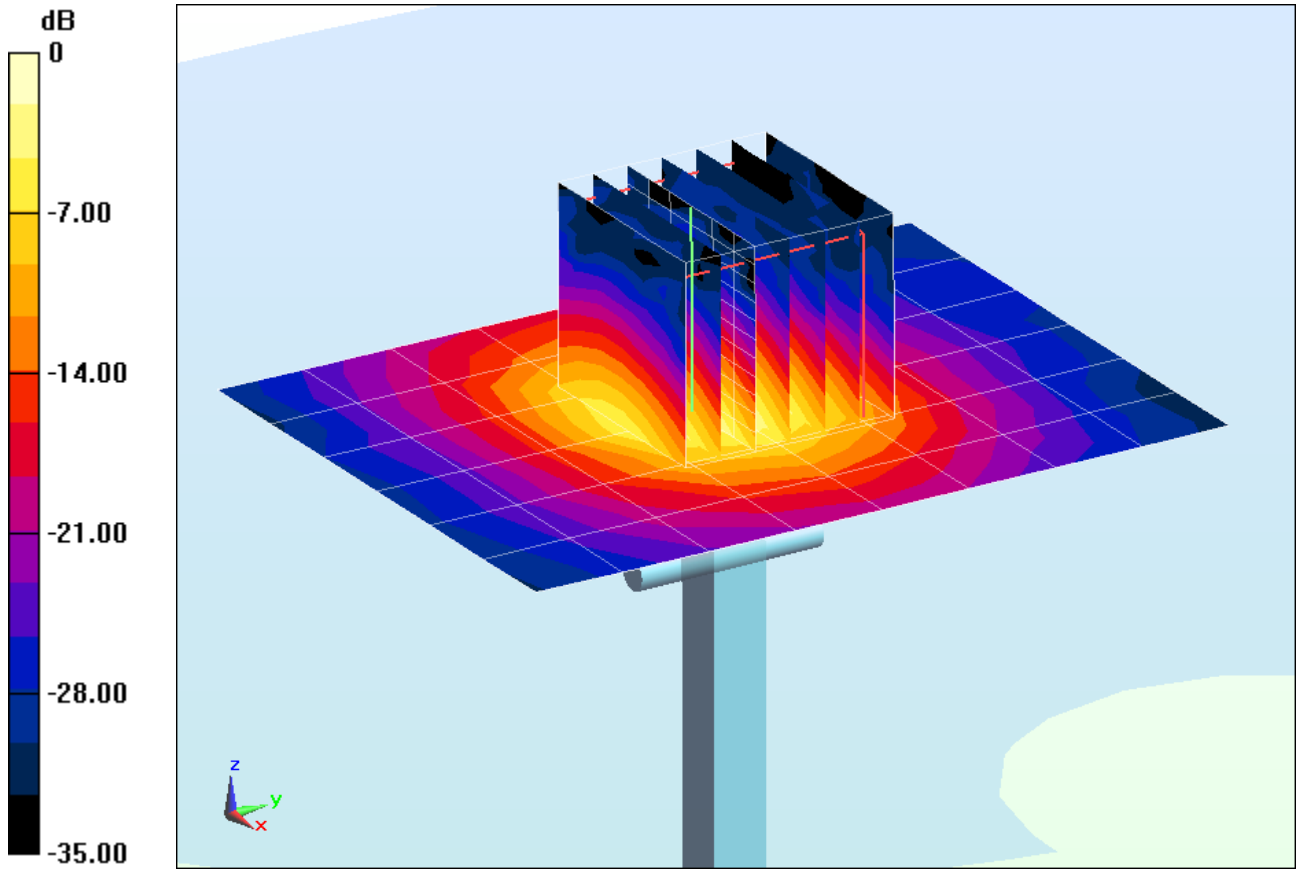
Communication System: CW; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5500 MHz; σ = 5.781 mho/m; ε_r = 47.15; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.1°C

Probe: EX3DV4 - SN3589; ConvF(3.4, 3.4, 3.4); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

5500 MHz 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 = 17.4 dBm (55mW)
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 4.53 W/kg; SAR(10 g) = 1.22 W/kg
Deviation = 4.39%



0 dB = 9.41 W/kg = 9.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

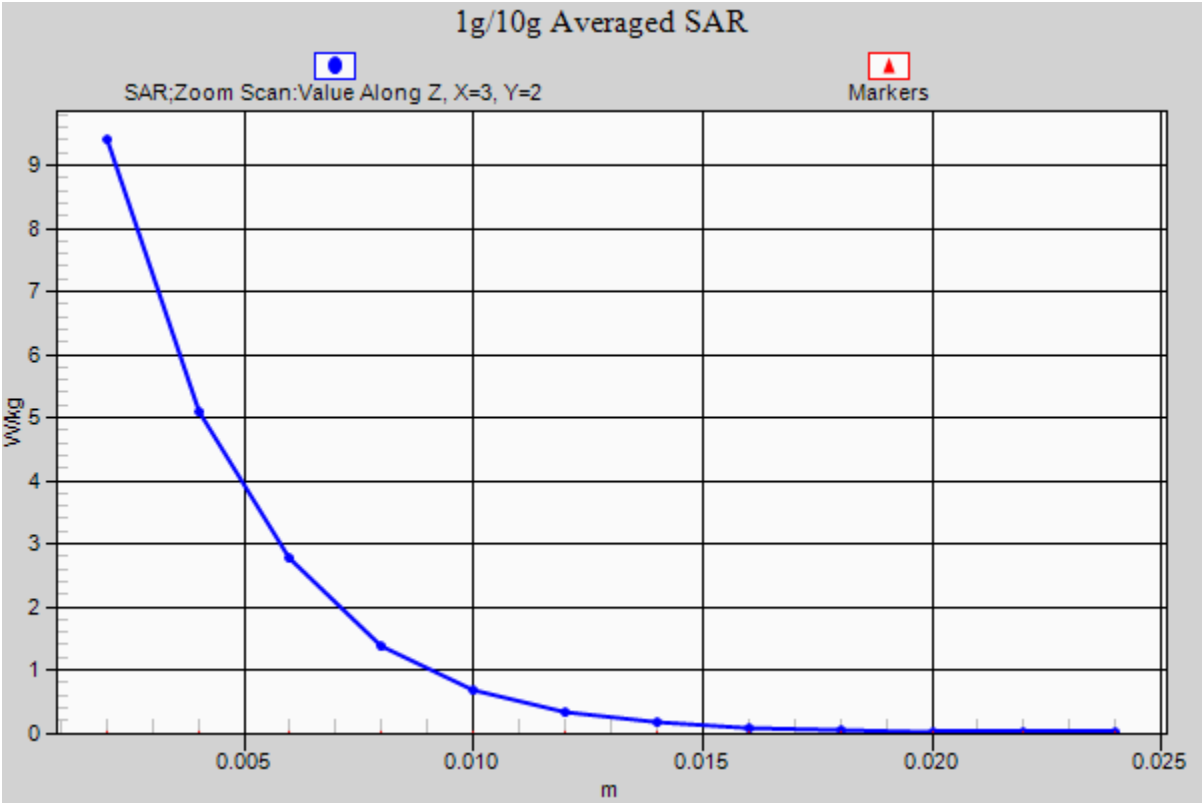
Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5GHz Body Medium parameters used:
f = 5500 MHz; σ = 5.781 mho/m; ε_r = 47.15; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.6°C; Tissue Temp: 23.1°C

Probe: EX3DV4 - SN3589; ConvF(3.4, 3.4, 3.4); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

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 = 17.4 dBm (55 mW)
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 4.53 W/kg; SAR(10 g) = 1.22 W/kg
Deviation = 4.39 %



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

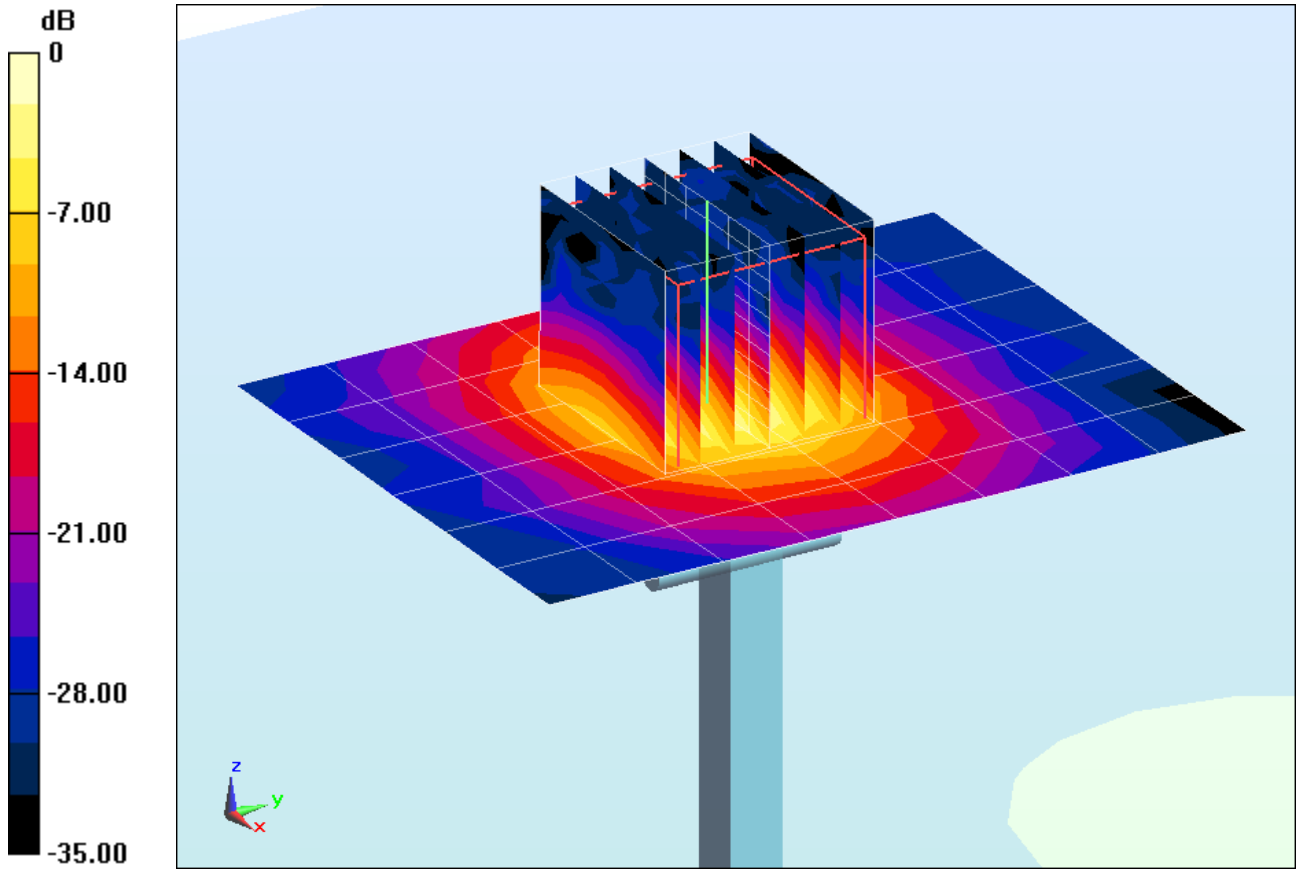
Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used:
f = 5800 MHz; σ = 6.29 mho/m; ε_r = 46.5; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80);SEMCAD X Version 14.6.7 (6848)

5800 MHz 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 = 17.4 dBm (55 mW)
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 3.95 W/kg; SAR(10 g) = 1.08 W/kg
Deviation = -3.34%



0 dB = 8.38 W/kg = 9.23 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5GHz Body Medium parameters used:
f = 5800 MHz; σ = 6.29 mho/m; ε_r = 46.5; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-31-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3589; ConvF(3.59, 3.59, 3.59); Calibrated: 1/27/2012;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2012
Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

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 = 17.4 dBm (55 mW)
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 3.95 W/kg; SAR(10 g) = 1.08 W/kg
Deviation = -3.34%