A Test Lab Techno Corp.

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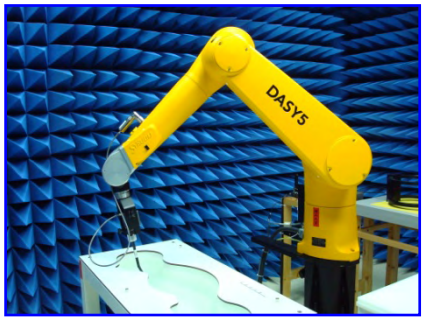
SAR EVALUATION REPORT

Test Report No.	:	1708FS25
Applicant	:	Edimax Technology Co., Ltd.
Product Type	:	11ac Wireless Dual-Band Selectable USB Adapter
Trade Name	:	EDIMAX
Model Number	:	EW-7822UTC
Date of Received	:	Jul. 04, 2017
Test Period	:	Aug. 02 ~ Aug. 09, 2017
Date of Issued	:	Oct. 06, 2017
Test Environment	:	Ambient Temperature： 22 ±2 ° C
		Relative Humidity：40 - 70 %
Standard	:	ANSI/IEEE C95.1-1992 / IEEE Std. 1528-2013
		47 CFR Part §2.1093
		KDB 865664 D01 v01r04 / KDB 865664 D02 v01r02
		KDB 447498 D01 v06 / KDB 447498 D02 v02r01
		KDB 248227 D01 v02r02
Test Lab Location	:	Chang-an Lab
Test Firm MRA designation number	:	TW0010



1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
3. The measurement report has to be written approval of A Test Lab Techno Corp. It may only be reproduced or published in full. This report shall not be reproduced except in full, without the written approval of A Test Lab Techno Corp. The test results in the report only apply to the tested sample.

Approved By : (Mark Duan)

Tested By : (Sky Chou)

Contents

1. Summary of Maximum Reported SAR Value

Equipment Class	Mode	Highest Reported			
		Head SAR_{1g} (W/kg)	Body SAR_{1g} (W/kg)	Hotspot SAR_{1g} (W/kg)	Extremity SAR_{1g} (W/kg)
DTS	2.4GHz WLAN	N/A	0.53	N/A	N/A
U-NII	5GHz WLAN U-NII-1	N/A	0.84	N/A	N/A
	5GHz WLAN U-NII-3	N/A	0.79	N/A	N/A
Highest Simultaneous Transmission SAR		Head SAR_{1g} (W/kg)	Body SAR_{1g} (W/kg)	Hotspot SAR_{1g} (W/kg)	Extremity SAR_{1g} (W/kg)
U-NII Ant-0+ANT-1 at test position Horizontal-Down		N/A	1.19	N/A	N/A

NOTE: 1. The N/A is EUT not apply to the assessment of the exposure conditions.

2. The SAR limit (Head & Body: SAR1g 1.6 W/kg) for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.

2. Description of Equipment under Test (EUT)

Applicant	Edimax Technology Co., Ltd. No.278, Xinhu 1st Rd., Neihu Dist., Taipei City, Taiwan	
Manufacture	Edimax Technology Co., Ltd. No.278, Xinhu 1st Rd., Neihu Dist., Taipei City, Taiwan	
Product Type	11ac Wireless Dual-Band Selectable USB Adapter	
Trade Name	EDIMAX	
Model Number	EW-7822UTC	
FCC ID	NDD9578221703	
RF Function	Operate Bands	Operate Frequency (MHz)
	IEEE 802.11b	2412 - 2462
	IEEE 802.11g	2412 - 2462
	IEEE 802.11n 2.4GHz 20MHz (256-QAM)	2412 - 2462
	IEEE 802.11n 2.4GHz 40MHz (256-QAM)	2422 - 2452
	IEEE 802.11a Band I	5180 – 5240
	IEEE 802.11a Band III	5745 – 5825
	IEEE 802.11n 5GHz 20MHz Band I IEEE 802.11ac 20MHz Band I	5180 – 5240
	IEEE 802.11n 5GHz 20MHz Band III IEEE 802.11ac 20MHz Band III	5745 – 5825
	IEEE 802.11n 5GHz 40MHz Band I IEEE 802.11ac 40MHz Band I	5190 – 5230
	IEEE 802.11n 5GHz 40MHz Band III IEEE 802.11ac 40MHz Band III	5755 – 5795
	IEEE 802.11ac 80MHz Band I	5210
	IEEE 802.11ac 80MHz Band III	5775
Antenna Type	PIFA Antenna	
Device Category	Portable Device	
Application Type	Certification	

Note:The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

3. Introduction

The A Test Lab Techno Corp. has performed measurements of the maximum potential exposure to the user of **Edimax Technology Co., Ltd. Trade Name：EDIMAX Model(s)：EW-7822UTC**. The test procedures, as described in American National Standards, Institute C95.1-1999〔1〕were employed and they specify the maximum exposure limit of 1.6mW/g as averaged over any 1 gram of tissue for portable devices being used within 20cm between user and EUT in the uncontrolled environment. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the equipment used are included within this test report.

3.1 SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy (dw) 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 Figure 2).

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

Figure 2. **SAR Mathematical Equation**

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

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

Where：

σ = conductivity of the tissue (S/m)

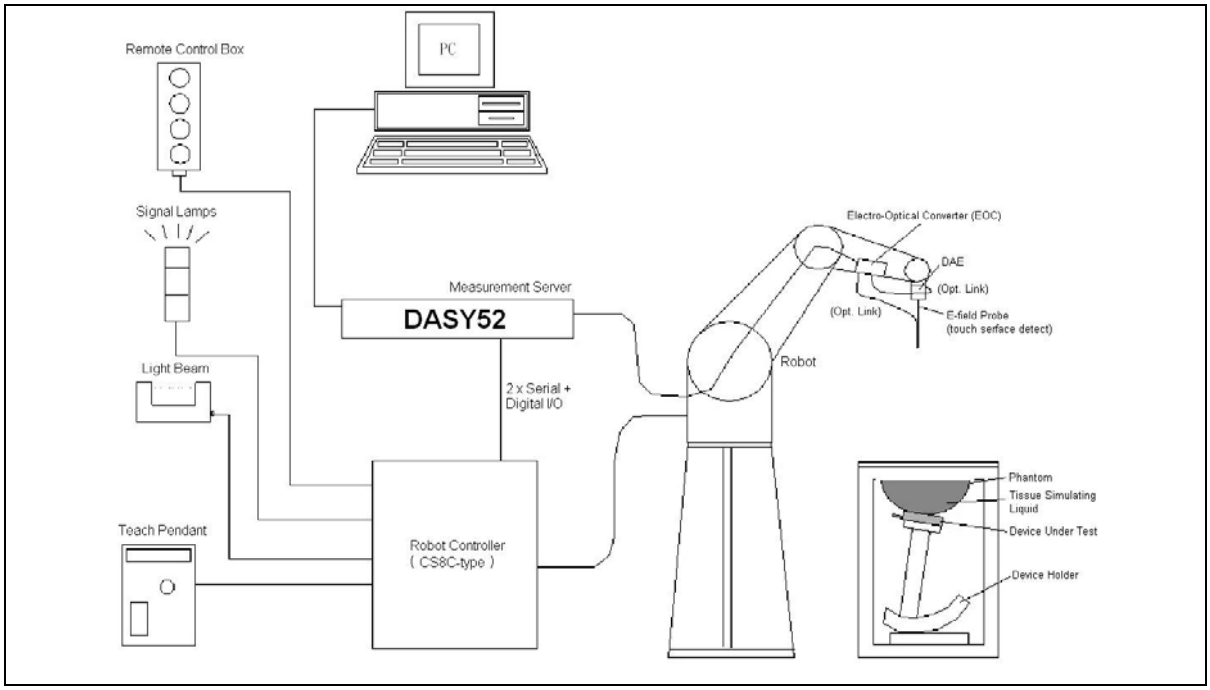
ρ = mass density of the tissue (kg/m3)

E = 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 relations 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〔2〕

4. SAR Measurement Setup



The DASY52 system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli TX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
4. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
5. A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
6. A computer operating Windows 2000 or Windows XP.
7. DASY52 software.
8. Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
9. The SAM twin phantom enabling testing left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. Validation dipole kits allowing validating the proper functioning of the system.

4.1 DASY E-Field Probe System

The SAR measurements were conducted with the dosimetric probe (manufactured by SPEAG), designed in the classical triangular configuration〔3〕and optimized for dosimetric evaluation. The probes is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped when reaching the maximum.

4.1.1 E-Field Probe Specification

Construction	Symmetrical design with triangular core
	Built-in shielding against static charges
	PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to > 6 GHz
	Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	±0.3 dB in brain tissue (rotation around probe axis)
	±0.5 dB in brain tissue (rotation normal probe axis)
Dimensions	Overall length: 337 mm (Tip: 20 mm)
	Tip diameter: 2.5 mm (Body: 12 mm)
	Typical distance from probe tip to dipole centers: 1 mm

Figure 3. E-field Probe

Figure 4. Probe setup on robot

4.1.2 E-Field Probe Calibration process

Dosimetric Assessment Procedure

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

Free Space Assessment

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

Temperature Assessment

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

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

Where：

Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (head or body),

ΔT = Temperature increase due to RF exposure.

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

Where：

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

4.2 Data Acquisition Electronic (DAE) System

Model：	DAE3, DAE4
Construction：	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.
Measurement Range：	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)
Input Offset Voltage：	< 5µV (with auto zero)
Input Bias Current：	< 50 fA
Dimensions：	60 x 60 x 68 mm

4.3 Robot

Positioner：	Stäubli Unimation Corp. Robot Model: TX90XL
Repeatability：	±0.02 mm
No. of Axis：	6

4.4 Measurement Server

Processor：	PC/104 with a 400MHz intel ULV Celeron
I/O-board：	Link to DAE4 (or DAE3) 16-bit A/D converter for surface detection system Digital I/O interface Serial link to robot Direct emergency stop output for robot

4.5 Device Holder

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

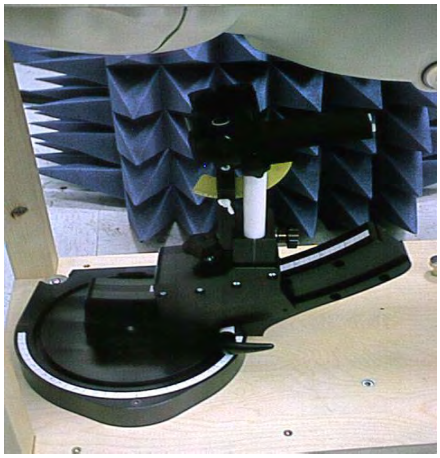


Figure 5. Device Holder

4.6 Oval Flat Phantom - ELI 5.0

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (Oval Flat) phantom defined in IEEE 1528-2013, CENELEC 50361 and IEC 62209-2. It enables the dosimetric evaluation of wireless portable device usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.

Shell Thickness	2 ±0.2 mm
Filling Volume	Approx. 30 liters
Dimensions	190×600×400 mm (H×L×W)

Table 1. Specification of ELI 5.0

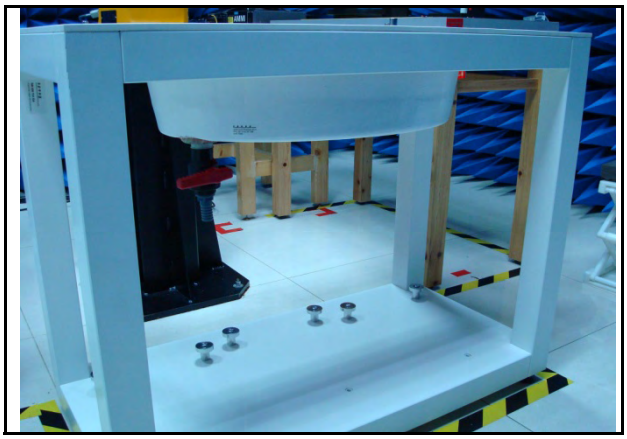


Figure 6. Oval Flat Phantom

4.7 Data Storage and Evaluation

4.7.1 Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension DA4 or DA5. The post processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

4.7.2 Data Evaluation

The DASY post processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software：

Probe parameters：	- Sensitivity	*Normi, ai0, ai1, ai2*
	- Conversion factor	*ConvFi*
	- Diode compression point	*dcpi*
Device parameters：	- Frequency	*f*
	- Crest factor	*cf*
Media parameters：	- Conductivity	*σ*
	- Density	*ρ*

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.
The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as：

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

With *Vi* = compensated signal of channel i (i = x, y, z)
Ui = input signal of channel i (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcpi = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated：

E-field probes： $$E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

H-field probes： $$H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

with *Vi* = compensated signal of channel i (i = x, y, z)
Normi = sensor sensitivity of channel i (i = x, y, z)
μV/(V/m)2 for E-field Probes
ConvF = sensitivity enhancement in solution
aij = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
Ei = electric field strength of channel i in V/*m*
Hi = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude)：

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

with *SAR* = local specific absorption rate in mW/g
Etot = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm3

＊Note：That the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = \frac{E_{tot}^2}{3770} \quad or \quad P_{pwe} = \frac{H_{tot}^2}{37.7}$$

with *Ppwe* = equivalent power density of a plane wave in mW/cm2
Etot = total electric field strength in V/m
Htot = total magnetic field strength in A/m

5. Tissue Simulating Liquids

The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.
The dielectric parameters of the liquids were verified prior to the SAR evaluation using an 85070C Dielectric Probe Kit and an E5071B Network Analyzer.

IEEE SCC-34/SC-2 in 1528 recommended Tissue Dielectric Parameters

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in 1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in human head. Other head and body tissue parameters that have not been specified in 1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equation and extrapolated according to the head parameter specified in 1528.

Target Frequency	Head		Body	
(MHz)	εr	σ (S/m)	εr	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 - 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00
(εr = relative permittivity, σ = conductivity and ρ = 1000 kg/m3)				

Table 2. Tissue dielectric parameters for head and body phantoms

5.1 Ingredients

The following ingredients are used:

- Water: deionized water (pure H_20), resistivity ≥ 16 M Ω -as basis for the liquid
- Sugar: refied white sugar (typically 99.7 % sucrose, available as crystal sugar in food shops) -to reduce relative permittivity
- Salt: pure NaCl -to increase conductivity
- Cellulose: Hydroxyethyl-cellulose, medium viscosity (75-125 mPa.s, 2% in water, 20°C), CAS # 54290 -to increase viscosity and to keep sugar in solution.
- Preservative: Preventol D-7 Bayer AG, D-51368 Leverkusen, CAS # 55965-84-9 -to prevent the spread of bacteria and molds
- DGBE: Diethylenglycol-monobuthyl ether (DGBE), Fluka Chemie GmbH, CAS # 112-34-5 -to reduce relative permittivity

5.2 Recipes

The following tables give the recipes for tissue simulating liquids to be used in different frequency bands.
Note: The goal dielectric parameters (at 22 ℃) must be achieved within a tolerance of ±5% for εand ±5% for σ.

Ingredients (% by weight)	Frequency (MHz)												Frequency (GHz)	
	750		835		1750		1900		2450		2600		5GHz	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	39.28	51.30	41.45	52.40	54.50	40.20	54.90	40.40	62.70	73.20	60.30	71.40	65.5	78.6
Salt (NaCl)	1.47	1.42	1.45	1.50	0.17	0.49	0.18	0.50	0.50	0.10	0.60	0.20	0.00	0.00
Sugar	58.15	46.18	56.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HEC	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bactericide	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.2	10.7
DGBE	0.00	0.00	0.00	0.00	45.33	59.31	44.92	59.10	36.80	26.70	39.10	28.40	0.00	0.00
Dielectric Constant	41.88	54.60	42.54	56.10	40.10	53.60	39.90	54.00	39.80	52.50	39.80	52.50	0.00	0.00
Conductivity (S/m)	0.90	0.97	0.91	0.95	1.39	1.49	1.42	1.45	1.88	1.78	1.88	1.78	0.00	0.00
Diethylene Glycol Mono-hexlether	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.3	10.7

Salt: 99+% Pure Sodium Chloride Sugar: 98+% Pure Sucrose
Water: De-ionized, 16 MΩ+ resistivity HEC: Hydroxyethyl Cellulose
DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1, 3, 3-tetramethylbutyl)phenyl]ether

5.3 Liquid Depth

According to KDB865664 ,the depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm with ≤ ± 0.5 cm variation for SAR measurements ≤ 3 GHz and ≥ 10.0 cm with ≤ ± 0.5 cm variation for measurements > 3 GHz.

Figure 7. Body-Position

6. SAR Testing with RF Transmitters

6.1 SAR Testing with 802.11 Transmitters

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the initial test position(s) by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The initial test position(s) is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the reported SAR for the initial test position is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions are tested.
  - For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
  - When it is unclear, all equivalent conditions must be tested.

- For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required test channels are considered.
  - The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.

- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the initial test position, Area Scans were performed to determine the position with the Maximum Value of SAR (measured). The position that produced the highest Maximum Value of SAR is considered the worst case position; thus used as the initial test position.

6.2 Conducted Power

Band	Data Rate	CH	Frequency (MHz)	Average Power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11b	1M	1	2412.0	14.22	---	---
		6	2437.0	14.95	---	---
		11	2462.0	14.32	---	---
	2M	6	2437.0	14.92	---	---
	5.5M	6	2437.0	14.87	---	---
	11M	6	2437.0	14.90	---	---
IEEE 802.11g	6M	1	2412.0	12.76	---	---
		6	2437.0	16.32	---	---
		11	2462.0	16.61	---	---
	9M	6	2437.0	16.27	---	---
	12M	6	2437.0	16.22	---	---
	18M	6	2437.0	16.30	---	---
	24M	6	2437.0	16.12	---	---
	36M	6	2437.0	16.19	---	---
	48M	6	2437.0	16.12	---	---
	54M	6	2437.0	16.05	---	---
IEEE 802.11n 2.4 GHz 20MHz (256-QAM)	13M	1	2412.0	12.43	12.34	15.40
		6	2437.0	12.31	17.77	18.86
		11	2462.0	12.08	18.10	19.07
	28.8M	6	2437.0	12.22	17.75	18.82
	43.4M	6	2437.0	12.16	17.71	18.78
	57.8M	6	2437.0	12.13	17.68	18.75
	86.6M	6	2437.0	12.07	17.65	18.71
	115.6M	6	2437.0	12.10	17.51	18.61
	130M	6	2437.0	12.00	17.58	18.64
	144.4M	6	2437.0	12.03	17.63	18.69
	173.4M	6	2437.0	11.97	17.57	18.63
IEEE 802.11n 2.4 GHz 40MHz (256-QAM)	27M	3	2422.0	12.05	15.08	16.83
		6	2437.0	12.08	15.92	17.42
		9	2452.0	12.21	13.97	16.19
	60M	6	2437.0	12.06	15.87	17.38
	90M	6	2437.0	11.96	15.82	17.32
	120M	6	2437.0	11.94	15.88	17.35
	180M	6	2437.0	11.90	15.77	17.26
	240M	6	2437.0	12.02	15.74	17.28
	270M	6	2437.0	11.81	15.68	17.17
	300M	6	2437.0	11.84	15.90	17.34
	360M	6	2437.0	11.76	15.81	17.25
	400M	6	2437.0	11.72	15.75	17.20

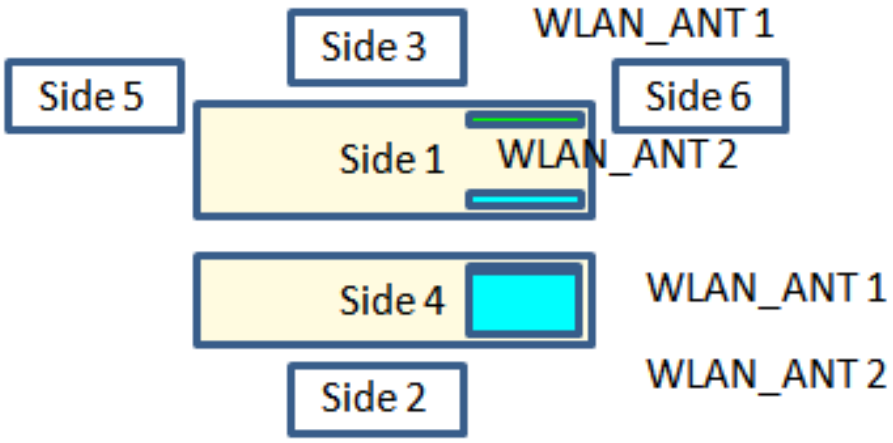
Band	Data Rate	CH	Frequency (MHz)	Average Power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11a	6M	36	5180.0	13.35	---	---
		40	5200.0	13.89	---	---
		44	5220.0	14.10	---	---
		48	5240.0	13.67	---	---
		149	5745.0	13.37	---	---
		153	5765.0	13.56	---	---
		157	5785.0	13.80	---	---
		161	5805.0	13.92	---	---
		165	5825.0	13.51	---	---
	54M	36	5180.0	13.10	---	---
		40	5200.0	13.62	---	---
		44	5220.0	13.85	---	---
		48	5240.0	13.37	---	---
		149	5745.0	13.04	---	---
		153	5765.0	13.23	---	---
		157	5785.0	13.43	---	---
		161	5805.0	13.67	---	---
		165	5825.0	13.28	---	---
IEEE 802.11ac 20MHz	13M	36	5180.0	11.00	11.33	14.18
		40	5200.0	11.17	11.40	14.30
		44	5220.0	11.60	11.28	14.45
		48	5240.0	11.49	11.20	14.36
		149	5745.0	11.32	13.06	15.29
		153	5765.0	11.69	13.15	15.49
		157	5785.0	11.34	13.07	15.30
		161	5805.0	11.21	13.33	15.41
		165	5825.0	11.46	13.02	15.32
	173.4M	36	5180.0	10.72	11.07	13.91
		40	5200.0	10.93	11.18	14.07
		44	5220.0	11.31	11.00	14.17
		48	5240.0	11.17	10.88	14.04
		149	5745.0	11.11	12.79	15.04
		153	5765.0	11.43	12.82	15.19
		157	5785.0	11.07	12.79	15.02
		161	5805.0	11.01	13.08	15.18
		165	5825.0	11.13	12.81	15.06
IEEE 802.11ac 40MHz	27M	38	5190.0	11.47	11.06	14.28
		46	5230.0	11.49	11.12	14.32
		151	5755.0	11.58	13.25	15.51
		159	5795.0	11.33	13.13	15.33
	400M	38	5190.0	11.22	10.77	14.01
		46	5230.0	11.25	10.95	14.11
		151	5755.0	11.27	12.93	15.19
		159	5795.0	11.12	12.84	15.07
IEEE 802.11ac 80MHz	58.6M	42	5210.0	11.34	11.55	14.46
		155	5775.0	11.53	13.03	15.35
	866.6M	42	5210.0	11.07	11.17	14.13
		155	5775.0	11.17	12.71	15.02

Band	Data Rate	CH	Frequency (MHz)	Average Power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11n 2.4 GHz 20MHz_BF ON (256-QAM)	13	1	2412.0	10.37	10.07	13.23
		6	2437.0	9.94	15.43	16.51
		11	2462.0	9.85	16.01	16.95
	28.8	6	2437.0	9.88	15.39	16.47
	43.4	6	2437.0	9.92	15.31	16.41
	57.8	6	2437.0	9.79	15.30	16.38
	86.6	6	2437.0	9.84	15.27	16.36
	115.6	6	2437.0	9.87	15.24	16.35
	130	6	2437.0	9.74	15.19	16.28
	144.4	6	2437.0	9.78	15.13	16.24
	173.4	6	2437.0	9.66	15.17	16.25
IEEE 802.11n 2.4 GHz 40MHz_BF ON (256-QAM)	27	3	2422.0	9.90	13.02	14.74
		6	2437.0	10.03	13.87	15.37
		9	2452.0	10.16	11.85	14.10
	60	6	2437.0	9.97	13.83	15.33
	90	6	2437.0	9.87	13.79	15.27
	120	6	2437.0	9.89	13.73	15.23
	180	6	2437.0	9.82	13.64	15.15
	240	6	2437.0	9.76	13.60	15.10
	270	6	2437.0	9.84	13.57	15.10
	300	6	2437.0	9.75	13.69	15.16
	360	6	2437.0	9.67	13.50	15.00
	400	6	2437.0	9.71	13.55	15.05
IEEE 802.11ac 20MHz_BF ON	13	36	5180.0	8.85	9.11	11.99
		40	5200.0	9.03	9.33	12.19
		44	5220.0	9.46	9.08	12.28
		48	5240.0	9.22	9.04	12.14
		149	5745.0	9.06	10.98	13.14
		153	5765.0	9.25	11.06	13.26
		157	5785.0	9.10	10.87	13.08
		161	5805.0	9.07	11.14	13.24
		165	5825.0	9.12	10.80	13.05
	173.4	36	5180.0	8.58	8.91	11.76
		40	5200.0	8.82	9.06	11.95
		44	5220.0	9.22	8.73	11.99
		48	5240.0	9.00	8.78	11.90
		149	5745.0	8.83	10.72	12.89
		153	5765.0	9.02	10.79	13.00
		157	5785.0	8.75	10.59	12.78
		161	5805.0	8.80	10.96	13.02
		165	5825.0	8.97	10.55	12.84
IEEE 802.11ac 40MHz_BF ON	27	38	5190.0	9.35	8.84	12.11
		46	5230.0	9.33	9.09	12.22
		151	5755.0	9.21	11.10	13.27
		159	5795.0	9.10	10.97	13.15
	400	38	5190.0	9.12	8.59	11.87
		46	5230.0	9.09	8.82	11.97
		151	5755.0	8.97	10.77	12.97
		159	5795.0	8.76	10.67	12.83
IEEE 802.11ac 80MHz_BF ON	58.6	42	5210.0	9.16	9.27	12.23
		155	5775.0	9.13	10.88	13.10
	866.6	42	5210.0	8.95	9.02	12.00
		155	5775.0	8.90	10.55	12.81

6.3 Antenna location

Antenna-User					
Antenna	Horizontal-Up (mm)	Horizontal-Down (mm)	Vertical Front (mm)	Vertical Back (mm)	Top (mm)
WLAN ANT-0	5	5	5	5	5
WLAN ANT-1	5	5	5	5	5

Note: We use a minimum distance of 5mm for wlan function.



6.4 Stand-alone SAR Evaluate

Transmitter and antenna implementation as below:

Band	WLAN ANT-0	WLAN ANT-1
WLAN	V	V

Stand-alone transmission configurations as below:

Band	Horizontal-Up	Horizontal-Down	Vertical Front	Vertical Back	Top
IEEE 802.11b	V	V	V	V	V
IEEE 802.11g	---	---	---	---	---
IEEE 802.11n 2.4GHz 20MHz	V	V	V	V	V
IEEE 802.11n 2.4GHz 40MHz	---	---	---	---	---
IEEE 802.11a	V	V	V	V	V
IEEE 802.11ac 20MHz	V	V	V	V	V
IEEE 802.11ac 40MHz	---	---	---	---	---
IEEE 802.11ac 80MHz	---	---	---	---	---

Note: The "-" on behalf of Stand-alone SAR is not required (Refer to KDB 248227 D01_v02r02 for the wlan standalone SAR test exclusion considerations)

Stand-alone SAR evaluation

We did not simplify any test configurations, except for following KDB 248227,
So there was no need to provide results of the test exclusion in KDB 447498 D01.

6.5 Simultaneous Transmitting Evaluate

Simultaneous transmission configurations as below:

Condition	Side	Frequency Band	
		WLAN ANT-0	WLAN ANT-1
1	Horizontal-Up	V	V
2	Horizontal-Down	V	V
3	Vertical Front	V	V
4	Vertical Back	V	V
5	Top	V	V

6.5.1 Sum of 1-g SAR of all simultaneously transmitting

When the sum of 1-g SAR of all simultaneously transmitting antennas in and operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration.

Sum of 1-g SAR of summary as below:

Phantom Position		Spacing (mm)	ASSY	WLAN ANT-0		WLAN ANT-1		∑ SAR1g (W/Kg)	Event
				Band	SAR1g (W/Kg)	Band	SAR1g (W/Kg)		
Flat	Horizontal-Up	5	N/A	802.11n 2.4GHz 20MHz	0.15	802.11n 2.4GHz 20MHz	0.17	0.32	<1.6
	Horizontal-Down	5	N/A	802.11n 2.4GHz 20MHz	0.35	802.11n 2.4GHz 20MHz	0.50	0.86	<1.6
	Vertical Front	5	N/A	802.11n 2.4GHz 20MHz	0.26	802.11n 2.4GHz 20MHz	0.11	0.37	<1.6
	Vertical Back	5	N/A	802.11n 2.4GHz 20MHz	0.26	802.11n 2.4GHz 20MHz	0.12	0.37	<1.6
	Top	5	N/A	802.11n 2.4GHz 20MHz	0.14	802.11n 2.4GHz 20MHz	0.22	0.36	<1.6

Phantom Position		Spacing (mm)	ASSY	WLAN ANT-0		WLAN ANT-1		∑ SAR1g (W/Kg)	Event
				Band	SAR1g (W/Kg)	Band	SAR1g (W/Kg)		
Flat	Horizontal-Up	5	N/A	802.11ac 20MHz	0.39	802.11ac 20MHz	0.48	0.87	<1.6
	Horizontal-Down	5	N/A	802.11ac 20MHz	0.60	802.11ac 20MHz	0.59	1.19	<1.6
	Vertical Front	5	N/A	802.11ac 20MHz	0.34	802.11ac 20MHz	0.08	0.42	<1.6
	Vertical Back	5	N/A	802.11ac 20MHz	0.36	802.11ac 20MHz	0.07	0.43	<1.6
	Top	5	N/A	802.11ac 20MHz	0.20	802.11ac 20MHz	0.38	0.58	<1.6

Note: 1. *=Estimated SAR

2. **The Estimated SAR 0.4W/Kg , test separation distances is > 50 mm

3. When the sum of 1-g SAR of all simultaneously transmitting antennas in and operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration.

6.5.2 SAR to peak location separation ratio (SPLSR)

When the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio. The ratio is determined by (SAR1 + SAR2)^1.5/Ri, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

All of sum of SAR < 1.6 W/kg, therefore SPLSR is not required.

6.6 SAR test reduction according to KDB

General:

- 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, Supplement C [June 2001], IEEE1528-2013.
- All modes of operation were investigated, and worst-case results are reported.
- Tissue parameters and temperatures are listed on the SAR plots.
- Batteries are fully charged for all readings.
- When the Channel's SAR 1g of maximum conducted power is > 0.8 mW/g, low, middle and high channel are supposed to be tested.

KDB 447498:

- The test data reported are the worst-case SAR value with the position set in a typical configuration. Test procedures used were according to IEEE1528-2013.

KDB 865664:

- Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg.
- When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg.
- Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

KDB 248227:

- Refer 6.1 SAR Testing with 802.11 Transmitters.

7. System Verification and Validation

7.1 Symmetric Dipoles for System Verification

Construction	Symmetrical dipole with l/4 balun enables measurement of feed point impedance with NWA matched for use near flat phantoms filled with head simulating solutions Includes distance holder and tripod adaptor Calibration Calibrated SAR value for specified position and input power at the flat phantom in head simulating solutions.
Frequency	2450, 5200 and 5800 MHz
Return Loss	> 20 dB at specified verification position
Power Capability	> 100 W (f < 1GHz); > 40 W (f > 1GHz)
Options	Dipoles for other frequencies or solutions and other calibration conditions are available upon request
Dimensions	D2450V2: dipole length 51.5 mm; overall height 300 mm D5GHzV2: dipole length 20.6 mm; overall height 300 mm

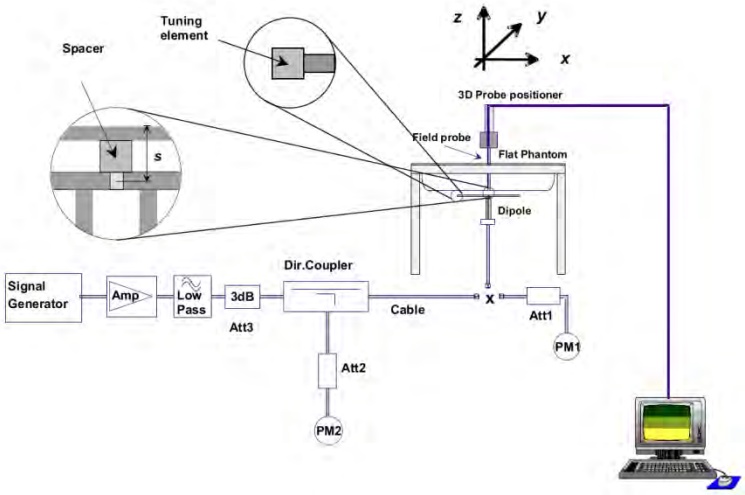


Figure 8. System Verification Setup Diagram

Figure 9. Validation Kit

7.2 Liquid Parameters

In order to comply with the target values of IEC 62209-2, we carry the same decimal place as the target value and provide it in the report. Because the gap between the values is very small, so it look same after the carry in some coefficients.

Liquid Verify								
Ambient Temperature： 22 ± 2 °C；Relative Humidity：40 -70%								
Liquid Type	Frequency	Temp (°C)	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)	Measured Date
2450 (Body)	2400MHz	22	εr	52.77	52.71	-0.19%	± 5	Aug. 02, 2017
			σ	1.902	1.919	1.05%	± 5	
	2450MHz	22	εr	52.70	52.40	-0.57%	± 5	
			σ	1.950	1.964	0.51%	± 5	
	2500MHz	22	εr	52.64	52.42	-0.38%	± 5	
			σ	2.021	2.049	1.49%	± 5	
2450 (Body)	2400MHz	22	εr	52.77	52.71	-0.19%	± 5	Aug. 03, 2017
			σ	1.902	1.919	1.05%	± 5	
	2450MHz	22	εr	52.70	52.40	-0.57%	± 5	
			σ	1.950	1.964	0.51%	± 5	
	2500MHz	22	εr	52.64	52.42	-0.38%	± 5	
			σ	2.021	2.049	1.49%	± 5	
5200 (Body)	5150MHz	22	εr	49.08	48.80	-0.61%	± 5	Aug. 03, 2017
			σ	5.241	5.167	-1.34%	± 5	
	5200MHz	22	εr	49.01	48.77	-0.41%	± 5	
			σ	5.299	5.245	-0.94%	± 5	
	5250MHz	22	εr	48.95	48.59	-0.61%	± 5	
			σ	5.358	5.304	-1.12%	± 5	
5200 (Body)	5150MHz	22	εr	49.08	48.80	-0.61%	± 5	Aug. 04, 2017
			σ	5.241	5.167	-1.34%	± 5	
	5200MHz	22	εr	49.01	48.77	-0.41%	± 5	
			σ	5.299	5.245	-0.94%	± 5	
	5250MHz	22	εr	48.95	48.59	-0.61%	± 5	
			σ	5.358	5.304	-1.12%	± 5	
5200 (Body)	5150MHz	22	εr	49.08	48.80	-0.61%	± 5	Aug. 07, 2017
			σ	5.241	5.167	-1.34%	± 5	
	5200MHz	22	εr	49.01	48.77	-0.41%	± 5	
			σ	5.299	5.245	-0.94%	± 5	
	5250MHz	22	εr	48.95	48.59	-0.61%	± 5	
			σ	5.358	5.304	-1.12%	± 5	

Table 3. Measured Tissue dielectric parameters for body phantoms -1

Liquid Verify								
Ambient Temperature： 22 ± 2 °C；Relative Humidity：40 -70%								
Liquid Type	Frequency	Temp (°C)	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)	Measured Date
5200 (Body)	5150MHz	22	εr	49.08	48.80	-0.61%	± 5	Aug. 08, 2017
			σ	5.241	5.167	-1.34%	± 5	
	5200MHz	22	εr	49.01	48.77	-0.41%	± 5	
			σ	5.299	5.245	-0.94%	± 5	
	5250MHz	22	εr	48.95	48.59	-0.61%	± 5	
			σ	5.358	5.304	-1.12%	± 5	
5200 (Body)	5150MHz	22	εr	49.08	50.69	3.26%	± 5	Aug. 09, 2017
			σ	5.241	5.122	-2.29%	± 5	
	5200MHz	22	εr	49.01	50.58	3.27%	± 5	
			σ	5.299	5.202	-1.89%	± 5	
	5250MHz	22	εr	48.95	50.46	3.27%	± 5	
			σ	5.358	5.281	-1.49%	± 5	
5800 (Body)	5750MHz	22	εr	48.27	47.46	-1.66%	± 5	Aug. 03, 2017
			σ	5.942	6.036	1.68%	± 5	
	5800MHz	22	εr	48.20	47.28	-1.87%	± 5	
			σ	6.000	6.131	2.17%	± 5	
	5850MHz	22	εr	48.20	47.23	-2.08%	± 5	
			σ	6.000	6.202	3.33%	± 5	
5800 (Body)	5750MHz	22	εr	48.27	47.46	-1.66%	± 5	Aug. 07, 2017
			σ	5.942	6.036	1.68%	± 5	
	5800MHz	22	εr	48.20	47.28	-1.87%	± 5	
			σ	6.000	6.131	2.17%	± 5	
	5850MHz	22	εr	48.20	47.23	-2.08%	± 5	
			σ	6.000	6.202	3.33%	± 5	
5800 (Body)	5750MHz	22	εr	48.27	47.46	-1.66%	± 5	Aug. 08, 2017
			σ	5.942	6.036	1.68%	± 5	
	5800MHz	22	εr	48.20	47.28	-1.87%	± 5	
			σ	6.000	6.131	2.17%	± 5	
	5850MHz	22	εr	48.20	47.23	-2.08%	± 5	
			σ	6.000	6.202	3.33%	± 5	
5800 (Body)	5750MHz	22	εr	48.27	49.35	2.07%	± 5	Aug. 09, 2017
			σ	5.942	6.051	1.85%	± 5	
	5800MHz	22	εr	48.20	49.23	2.08%	± 5	
			σ	6.000	6.136	2.33%	± 5	
	5850MHz	22	εr	48.20	49.13	1.87%	± 5	
			σ	6.000	6.212	3.50%	± 5	

Table 4. Measured Tissue dielectric parameters for body phantoms -2

7.3 Verification Summary

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ± 7%. The verification was performed at 2450, 5200 and 5800MHz.

Mixture Type	Frequency (MHz)	Power	SAR_{1g} (W/Kg)	SAR_{10g} (W/Kg)	Drift (dB)	Difference percentage		Probe	Dipole	1W Target		Date
						1g	10g	Model / Serial No.	Model / Serial No.	SAR_{1g} (mW/g)	SAR_{10g} (mW/g)	
Body	2450	250mw	12.6	5.75	0.01	1.0%	-2.1%	EX3DV4-SN3847	D2450V2 – SN712	49.90	23.50	Aug. 02, 2017
		Normalize to 1 Watt	50.40	23.00								
Body	2450	250mw	12.7	5.86	0.03	1.8%	-0.3%	EX3DV4-SN3847	D2450V2 – SN712	49.90	23.50	Aug. 03, 2017
		Normalize to 1 Watt	50.80	23.44								
Body	5200	100mw	7.3	2.14	-0.08	-0.9%	3.4%	EX3DV4-SN3847	D5GHZV2 – SN1021	73.70	20.70	Aug. 03, 2017
		Normalize to 1 Watt	73.00	21.40								
Body	5200	100mw	7.15	2.12	-0.11	-3.0%	2.4%	EX3DV4-SN3847	D5GHZV2 – SN1021	73.70	20.70	Aug. 04, 2017
		Normalize to 1 Watt	71.50	21.20								
Body	5200	100mw	7.12	2.17	-0.19	-3.4%	4.8%	EX3DV4-SN3847	D5GHZV2 – SN1021	73.70	20.70	Aug. 07, 2017
		Normalize to 1 Watt	71.20	21.70								
Body	5200	100mw	7.19	2.16	-0.18	-2.4%	4.3%	EX3DV4-SN3847	D5GHZV2 – SN1021	73.70	20.70	Aug. 08, 2017
		Normalize to 1 Watt	71.90	21.60								
Body	5200	100mw	7.01	2.1	-0.09	-4.9%	1.4%	EX3DV4-SN3847	D5GHZV2 – SN1021	73.70	20.70	Aug. 09, 2017
		Normalize to 1 Watt	70.10	21.00								
Body	5800	100mw	7.65	2.18	-0.12	-1.5%	1.4%	EX3DV4-SN3847	D5GHZV2 – SN1021	77.70	21.50	Aug. 03, 2017
		Normalize to 1 Watt	76.50	21.80								
Body	5800	100mw	7.56	2.22	-0.18	-2.7%	3.3%	EX3DV4-SN3847	D5GHZV2 – SN1021	77.70	21.50	Aug. 07, 2017
		Normalize to 1 Watt	75.60	22.20								
Body	5800	100mw	7.67	2.22	0.17	-1.3%	3.3%	EX3DV4-SN3847	D5GHZV2 – SN1021	77.70	21.50	Aug. 08, 2017
		Normalize to 1 Watt	76.70	22.20								
Body	5800	100mw	7.6	2.21	-0.04	-2.2%	2.8%	EX3DV4-SN3847	D5GHZV2 – SN1021	77.70	21.50	Aug. 09, 2017
		Normalize to 1 Watt	76.00	22.10								

7.4 Validation Summary

Per FCC KDB 865664 D02 v01r02, SAR system validation status should be documented to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in IEEE 1528-2013 and FCC KDB 865664 D01v01r04. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters as below.

Probe Type Model / Serial No.	Prob Cal. Point (MHz)	Head / Body	Cond.	Perm.	CW Validation			Mod. Validation			Date
			εr	σ	Sensitivity	Probe Linearity	Probe Isotropy	Mod. Type	Duty Factor	PAR	
EX3DV4-SN3847	2450	Body	52.40	1.964	Pass	Pass	Pass	DSSS/OFDM	N/A	Pass	Aug. 02, 2017
EX3DV4-SN3847	2450	Body	52.40	5.245	Pass	Pass	Pass	DSSS/OFDM	N/A	Pass	Aug. 03, 2017
EX3DV4-SN3847	5200	Body	48.77	0.956	Pass	Pass	Pass	OFDM	N/A	Pass	Aug. 03, 2017
EX3DV4-SN3847	5200	Body	48.77	0.956	Pass	Pass	Pass	OFDM	N/A	Pass	Aug. 04, 2017
EX3DV4-SN3847	5200	Body	48.77	0.956	Pass	Pass	Pass	OFDM	N/A	Pass	Aug. 07, 2017
EX3DV4-SN3847	5200	Body	48.77	0.956	Pass	Pass	Pass	OFDM	N/A	Pass	Aug. 08, 2017
EX3DV4-SN3847	5200	Body	50.58	5.202	Pass	Pass	Pass	OFDM	N/A	Pass	Aug. 09, 2017
EX3DV4-SN3847	5800	Body	47.28	6.131	Pass	Pass	Pass	OFDM	N/A	Pass	Aug. 03, 2017
EX3DV4-SN3847	5800	Body	47.28	6.131	Pass	Pass	Pass	OFDM	N/A	Pass	Aug. 07, 2017
EX3DV4-SN3847	5800	Body	47.28	6.131	Pass	Pass	Pass	OFDM	N/A	Pass	Aug. 08, 2017
EX3DV4-SN3847	5800	Body	49.23	6.136	Pass	Pass	Pass	OFDM	N/A	Pass	Aug. 09, 2017

8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	2450MHz System Validation Kit	D2450V2	712	03/23/2017	03/23/2018
SPEAG	5GHz System Validation Kit	D5GHzV2	1021	04/26/2017	04/26/2018
SPEAG	Dosimetric E-Field Probe	EX3DV4	3847	05/05/2017	05/05/2018
SPEAG	Data Acquisition Electronics	DAE4	541	02/13/2017	02/13/2018
SPEAG	Measurement Server	SE UMS 011 AA	1025	NCR	
SPEAG	Device Holder	N/A	N/A	NCR	
SPEAG	Phantom	ELI V5.0	1133	NCR	
SPEAG	Robot	Staubli TX90XL	F07/564ZA1/A/01	NCR	
SPEAG	Software	DASY52 V52.8 (8)	N/A	NCR	
SPEAG	Software	SEMCAD X V14.6.10(7331)	N/A	NCR	
Agilent	Dielectric Probe Kit	85070C	US99360094	NCR	
HILA	Digital Thermometer	TM-906	GF-006	08/12/2016	08/12/2017
Agilent	Power Sensor	8481H	3318A20779	06/07/2017	06/07/2018
Agilent	Power Meter	EDM Series E4418B	GB40206143	06/07/2017	06/07/2018
Agilent	Signal Generator	E8257D	MY53050382	03/01/2017	03/01/2018
Agilent	Dual Directional Coupler	778D	50334	NCR	
Woken	Dual Directional Coupler	0100AZ20200801O	11012409517	NCR	
Mini-Circuits	Power Amplifier	ZHL-42W-SMA	D111103#5	NCR	
Mini-Circuits	Power Amplifier	ZVE-8G-SMA	D042005 671800514	NCR	
Aisi	Attenuator	IEAT 3dB	N/A	NCR	

Table 5. Test Equipment List

9. Measurement Uncertainty

Measurement uncertainties in SAR measurements are difficult to quantify due to several variables including biological, physiological, and environmental. However, we estimate the measurement uncertainties in SAR_{1g} to be less than ±21.76 % for 300MHz ~3GHz and 3GHz ~ 6GHz ±25.68 %〔8〕.

According to Std. C95.3〔9〕, the overall uncertainties are difficult to assess and will vary with the type of meter and usage situation. However, accuracy's of ±1 to 3 dB can be expected in practice, with greater uncertainties in near-field situations and at higher frequencies (shorter wavelengths), or areas where large reflecting objects are present. Under optimum measurement conditions, SAR measurement uncertainties of at least ±2dB can be expected.

Uncertainty of a Measure SAR of EUT with DASY System

Item	Uncertainty Component	Uncertainty Value	Prob. Dist	Div.	c_i (1g)	c_i (10g)	Std. Unc. （1-g）	Std. Unc. （10-g）	v_i or V_{eff}
Measurement System									
u1	Probe Calibration (k=1)	±6.0%	Normal	1	1	1	±6.0%	±6.0%	∞
u2	Axial Isotropy	±4.7%	Rectangular	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
u3	Hemispherical Isotropy	±9.6%	Rectangular	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	
u4	Boundary Effect	±1.0%	Rectangular	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
u5	Linearity	±4.7%	Rectangular	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
u6	System Detection Limit	±1.0%	Rectangular	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
u7	Readout Electronics	±0.3%	Normal	1	1	1	±0.3%	±0.3%	∞
u8	Response Time	±0.8%	Rectangular	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
u9	Integration Time	±1.9%	Rectangular	$\sqrt{3}$	1	1	±1.1%	±1.1%	∞
u10	RF Ambient Conditions	±3.0%	Rectangular	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
u11	RF Ambient Reflections	±3.0%	Rectangular	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
u12	Probe Positioner Mechanical Tolerance	±0.4%	Rectangular	$\sqrt{3}$	1	1	±0.2%	±0.2%	∞
u13	Probe Positioning with respect to Phantom Shell	±2.9%	Rectangular	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
u14	Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	±1.0%	Rectangular	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Test sample Related									
u15	Test sample Positioning	±3.6%	Normal	1	1	1	±3.6%	±3.6%	89
u16	Device Holder Uncertainty	±2.7%	Normal	1	1	1	±2.7%	±2.7%	5
u17	Output Power Variation - SAR drift measurement	±5.0%	Rectangular	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Tissue Parameters									
u18	Phantom Uncertainty (shape and thickness tolerances)	±4.0%	Rectangular	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
u19	Liquid Conductivity - deviation from target values	±5.0%	Rectangular	$\sqrt{3}$	0.64	0.43	±1.8%	±1.2%	∞
u20	Liquid Conductivity - measurement uncertainty	±2.5%	Normal	1	0.64	0.43	±1.6%	±1.08%	69
u21	Liquid Permittivity - deviation from target values	±5.0%	Rectangular	$\sqrt{3}$	0.6	0.49	±1.7%	±1.4%	∞
u22	Liquid Permittivity - measurement uncertainty	±2.5%	Normal	1	0.6	0.49	±1.5%	±1.23%	69
Combined standard uncertainty			RSS				±10.88%	±10.66%	313
Expanded uncertainty (95% CONFIDENCE LEVEL)			k=2				±21.76%	±21.31%	

Table 6. Uncertainty Budget for frequency range 300MHz to 3GHz

Uncertainty of a Measure SAR of EUT with DASY System

Item	Uncertainty Component	Uncertainty Value	Prob. Dist	Div.	c_i (1g)	c_i (10g)	Std. Unc. （1-g）	Std. Unc. （10-g）	v_i or V_{eff}
Measurement System									
u1	Probe Calibration (k=1)	±6.5%	Normal	1	1	1	±6.5%	±6.5%	∞
u2	Axial Isotropy	±4.7%	Rectangular	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
u3	Hemispherical Isotropy	±9.6%	Rectangular	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	
u4	Boundary Effect	±2.0%	Rectangular	$\sqrt{3}$	1	1	±1.2%	±1.2%	∞
u5	Linearity	±4.7%	Rectangular	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
u6	System Detection Limit	±1.0%	Rectangular	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
u7	Readout Electronics	±0.0%	Normal	1	1	1	±0.0%	±0.0%	∞
u8	Response Time	±0.8%	Rectangular	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
u9	Integration Time	±2.8%	Rectangular	$\sqrt{3}$	1	1	±2.8%	±2.8%	∞
u10	RF Ambient Conditions	±3.0%	Rectangular	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
u11	RF Ambient Reflections	±3.0%	Rectangular	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
u12	Probe Positioner Mechanical Tolerance	±0.7%	Rectangular	$\sqrt{3}$	1	1	±0.7%	±0.7%	∞
u13	Probe Positioning with respect to Phantom Shell	±9.9%	Rectangular	$\sqrt{3}$	1	1	±5.7%	±5.7%	∞
u14	Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	±3.0%	Rectangular	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Test sample Related									
u15	Test sample Positioning	±3.6%	Normal	1	1	1	±3.6%	±3.6%	89
u16	Device Holder Uncertainty	±2.7%	Normal	1	1	1	±2.7%	±2.7%	5
u17	Output Power Variation - SAR drift measurement	±5.0%	Rectangular	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Tissue Parameters									
u18	Phantom Uncertainty (shape and thickness tolerances)	±4.0%	Rectangular	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
u19	Liquid Conductivity - deviation from target values	±5.0%	Rectangular	$\sqrt{3}$	0.64	0.43	±1.8%	±1.2%	∞
u20	Liquid Conductivity - measurement uncertainty	±2.5%	Normal	1	0.64	0.43	±1.6%	±1.08%	69
u21	Liquid Permittivity - deviation from target values	±5.0%	Rectangular	$\sqrt{3}$	0.6	0.49	±1.7%	±1.4%	∞
u22	Liquid Permittivity - measurement uncertainty	±2.5%	Normal	1	0.6	0.49	±1.5%	±1.23%	69
Combined standard uncertainty			RSS				±12.84%	±12.65%	313
Expanded uncertainty (95% CONFIDENCE LEVEL)			k=2				±25.68%	±25.29%	

Table 7. ncertainty Budget for frequency range 3GHz to 6GHz

10. Measurement Procedure

The measurement procedures are as follows:

1. For WLAN function, engineering testing software installed on Notebook can provide continuous transmitting signal.
2. Measure output power through RF cable and power meter
3. Set scan area, grid size and other setting on the DASY software
4. Find out the largest SAR result on these testing positions of each band
5. Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

1. Power reference measurement
2. Area scan
3. Zoom scan
4. Power drift measurement

10.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.
The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.
The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages

1. Extraction of the measured data (grid and values) from the Zoom Scan
2. Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. Generation of a high-resolution mesh within the measured volume
4. Interpolation of all measured values form the measurement grid to the high-resolution grid
5. Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. Calculation of the averaged SAR within masses of 1g and 10g

10.2 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures points and step size follow as below. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

Grid Type	Frequency		Step size (mm)			X*Y*Z (Point)	Cube size			Step size		
			X	Y	Z		X	Y	Z	X	Y	Z
uniform grid	≦ 3GHz	≦2GHz	≤ 8	≤ 8	≤ 5	5*5*7	32	32	30	8	8	5
		2G - 3G	≤ 5	≤ 5	≤ 5	7*7*7	30	30	30	5	5	5
	3 - 6GHz	3 - 4GHz	≤ 5	≤ 5	≤ 4	7*7*8	30	30	28	5	5	4
		4 - 5GHz	≤ 4	≤ 4	≤ 3	8*8*10	28	28	27	4	4	3
		5 - 6GHz	≤ 4	≤ 4	≤ 2	8*8*12	28	28	22	4	4	2

(Our measure settings are refer KDB Publication 865664 D01v01r04)

10.3 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the DUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

10.4 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation. Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

10.5 Power Drift Monitoring

All SAR testing is under the DUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of DUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

11. SAR Test Results Summary

1. When the reported SAR of the highest measured maximum output power channel is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS.
2. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for 2.4G OFDM configuration.
3. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band.
4. SAR for the initial test configuration is measured using the highest maximum output power channel.
5. If Initial test configuration SAR for 5G OFDM band is > 0.8 W/kg, SAR is required for next highest output channel in initial test configuration. The next highest output channel SAR is ≤ 1.2 W/kg, SAR is not required for subsequent next highest output channel.
6. When the highest reported SAR for the initial test configuration, according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

11.1 Head SAR Measurement

Evaluated head SAR is not available.

11.2 Body SAR Measurement

WLAN ANT-0											
Index.	Position	Band	Ch.	Data Rate or Sub-Test (M)	Test Position	Spacing (mm)	SAR 1g (W/kg)	Power Drift	Burst Avg Power	Max tune-up	Reported SAR 1g (W/kg)
#1	Flat	IEEE 802.11b	6	1	Horizontal-Up	5	0.201	0.06	14.95	15	0.20
#2	Flat	IEEE 802.11b	6	1	USB cable _Horizontal-Down	5	0.527	0.16	14.95	15	0.53
#3	Flat	IEEE 802.11b	6	1	USB cable_Vertical Front	5	0.385	0.14	14.95	15	0.39
#4	Flat	IEEE 802.11b	6	1	Vertical Back	5	0.389	0.12	14.95	15	0.39
#5	Flat	IEEE 802.11b	6	1	USB cable_Top	5	0.179	0.14	14.95	15	0.18
#6	Flat	IEEE 802.11n 2.4GHz 20MHz	1	13	Horizontal-Up	5	0.148	-0.04	12.43	12.5	0.15
#7	Flat	IEEE 802.11n 2.4GHz 20MHz	1	13	USB cable _Horizontal-Down	5	0.347	-0.16	12.43	12.5	0.35
#8	Flat	IEEE 802.11n 2.4GHz 20MHz	1	13	USB cable_Vertical Front	5	0.253	0.14	12.43	12.5	0.26
#9	Flat	IEEE 802.11n 2.4GHz 20MHz	1	13	Vertical Back	5	0.252	0.18	12.43	12.5	0.26
#10	Flat	IEEE 802.11n 2.4GHz 20MHz	1	13	USB cable_Top	5	0.142	-0.16	12.43	12.5	0.14
#50	Flat	IEEE 802.11n 2.4GHz 20MHz	1	13	USB cable _Horizontal-Down _BF ON	5	0.32	-0.09	10.37	10.4	0.32
#16	Flat	IEEE 802.11a	44	6	Horizontal-Up	5	0.727	0.06	14.1	14.2	0.74
#17	Flat	IEEE 802.11a	44	6	USB cable _Horizontal-Down	5	0.774	-0.12	14.1	14.2	0.79
#46	Flat	IEEE 802.11a	40	6	USB cable_Vertical Front	5	0.694	-0.03	13.89	14.2	0.75
#18	Flat	IEEE 802.11a	44	6	USB cable_Vertical Front	5	0.804	-0.02	14.1	14.2	0.82
#47	Flat	IEEE 802.11a	40	6	Vertical Back	5	0.784	-0.14	13.89	14.2	0.84
#19	Flat	IEEE 802.11a	44	6	Vertical Back	5	0.789	0.16	14.1	14.2	0.81
#20	Flat	IEEE 802.11a	44	6	USB cable_Top	5	0.613	0.17	14.1	14.2	0.63
#21	Flat	IEEE 802.11a	161	6	Horizontal-Up	5	0.591	0.04	13.92	14	0.60
#22	Flat	IEEE 802.11a	161	6	USB cable _Horizontal-Down	5	0.778	-0.07	13.92	14	0.79
#23	Flat	IEEE 802.11a	161	6	USB cable_Vertical Front	5	0.749	-0.14	13.92	14	0.76
#24	Flat	IEEE 802.11a	161	6	Vertical Back	5	0.745	0.17	13.92	14	0.76
#25	Flat	IEEE 802.11a	161	6	USB cable_Top	5	0.231	0.18	13.92	14	0.24

WLAN ANT-0											
Index.	Position	Band	Ch.	Data Rate or Sub-Test (M)	Test Position	Spacing (mm)	SAR 1g (W/kg)	Power Drift	Burst Avg Power	Max tune-up	Reported SAR 1g (W/kg)
#26	Flat	IEEE 802.11ac 20MHz	44	13	Horizontal-Up	5	0.358	-0.16	11.6	11.7	0.37
#27	Flat	IEEE 802.11ac 20MHz	44	13	USB cable _Horizontal-Down	5	0.581	-0.09	11.6	11.7	0.60
#28	Flat	IEEE 802.11ac 20MHz	44	13	USB cable_Vertical Front	5	0.333	-0.04	11.6	11.7	0.34
#29	Flat	IEEE 802.11ac 20MHz	44	13	Vertical Back	5	0.352	0.04	11.6	11.7	0.36
#30	Flat	IEEE 802.11ac 20MHz	44	13	USB cable_Top	5	0.193	0.15	11.6	11.7	0.20
#31	Flat	IEEE 802.11ac 20MHz	153	13	Horizontal-Up	5	0.391	-0.19	11.69	11.7	0.39
#32	Flat	IEEE 802.11ac 20MHz	153	13	USB cable _Horizontal-Down	5	0.287	0.19	11.69	11.7	0.29
#33	Flat	IEEE 802.11ac 20MHz	153	13	USB cable_Vertical Front	5	0.082	-0.03	11.69	11.7	0.08
#34	Flat	IEEE 802.11ac 20MHz	153	13	Vertical Back	5	0.128	0.07	11.69	11.7	0.13
#35	Flat	IEEE 802.11ac 20MHz	153	13	USB cable_Top	5	0.174	-0.02	11.69	11.7	0.17
#51	Flat	IEEE 802.11ac 20MHz	44	13	USB cable _Horizontal-Down _BF ON	5	0.572	-0.16	9.46	9.5	0.58

WLAN ANT-1											
Index.	Position	Band	Ch.	Data Rate or Sub-Test (M)	Test Position	Spacing (mm)	SAR 1g (W/kg)	Power Drift	Burst Avg Power	Max tune-up	Reported SAR 1g (W/kg)
#11	Flat	IEEE 802.11n 2.4GHz 20MHz	11	13	Horizontal-Up	5	0.161	0.02	18.1	18.2	0.17
#12	Flat	IEEE 802.11n 2.4GHz 20MHz	11	13	USB cable _Horizontal-Down	5	0.493	-0.17	18.1	18.2	0.50
#13	Flat	IEEE 802.11n 2.4GHz 20MHz	11	13	USB cable _Vertical Front	5	0.108	0.17	18.1	18.2	0.11
#14	Flat	IEEE 802.11n 2.4GHz 20MHz	11	13	Vertical Back	5	0.114	-0.06	18.1	18.2	0.12
#15	Flat	IEEE 802.11n 2.4GHz 20MHz	11	13	USB cable_Top	5	0.213	-0.11	18.1	18.2	0.22
#52	Flat	IEEE 802.11n 2.4GHz 20MHz	11	13	USB cable _Horizontal-Down _BF ON	5	0.462	-0.14	16.01	16.1	0.47
#36	Flat	IEEE 802.11ac 20MHz	40	13	Horizontal-Up	5	0.26	0.06	11.4	11.5	0.27
#37	Flat	IEEE 802.11ac 20MHz	40	13	USB cable _Horizontal-Down	5	0.573	-0.19	11.4	11.5	0.59
#38	Flat	IEEE 802.11ac 20MHz	40	13	USB cable _Vertical Front	5	0.073	-0.02	11.4	11.5	0.08
#39	Flat	IEEE 802.11ac 20MHz	40	13	Vertical Back	5	0.069	0.08	11.4	11.5	0.07
#40	Flat	IEEE 802.11ac 20MHz	40	13	USB cable_Top	5	0.367	0.06	11.4	11.5	0.38
#41	Flat	IEEE 802.11ac 20MHz	161	13	Horizontal-Up	5	0.473	0.18	13.33	13.4	0.48
#42	Flat	IEEE 802.11ac 20MHz	161	13	USB cable _Horizontal-Down	5	0.456	0.1	13.33	13.4	0.46
#43	Flat	IEEE 802.11ac 20MHz	161	13	USB cabl _Vertical Front	5	0.061	0	13.33	13.4	0.06
#44	Flat	IEEE 802.11ac 20MHz	161	13	Vertical Back	5	0.058	0.05	13.33	13.4	0.06
#45	Flat	IEEE 802.11ac 20MHz	161	13	USB cable_Top	5	0.215	0.19	13.33	13.4	0.22
#53	Flat	IEEE 802.11ac 20MHz	40	13	USB cable _Horizontal-Down _BF ON	5	0.568	-0.01	9.33	9.4	0.58

11.3 Hot-spot mode SAR Measurement

Hot-spot mode SAR is not available.

11.4 Extremity SAR Measurement

Evaluated extremity SAR is not available.

11.5 SAR Variability Measurement

Detailed evaluations please refer KDB 865664 on "SAR test reduction according to KDB" section.
SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.
The following procedures are applied to determine if repeated measurements are required.

1.The original highest measured Reported SAR 1g is ≥ 0.80 W/kg, repeat that measurement once.

2.Perform a second repeated measurement the ratio of largest to smallest SAR for the original and first repeated measurements is < 1.2,the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

3.Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Index.	Band	Frequency		Test Mode	Test Position	Spacing	Remark	Note	Original SAR 1g	First SAR 1g	First Ratio
		Ch.	MHz			(mm)			(W/kg)	(W/kg)	
#48	IEEE 802.11a	44	5220	6M	USB cable _Vertical Front	5	ANT-0	original #18	0.804	0.699	1.15<1.2

11.6 Std. C95.1-1992 RF Exposure Limit

Human Exposure	Population Uncontrolled Exposure (W/kg) or (mW/g)	Occupational Controlled Exposure (W/kg) or (mW/g)
Spatial Peak SAR* (head)	1.60	8.00
Spatial Peak SAR** (Whole Body)	0.08	0.40
Spatial Peak SAR*** (Partial-Body)	1.60	8.00
Spatial Peak SAR**** (Hands / Feet / Ankle / Wrist)	4.00	20.00

Table 8. Safety Limits for Partial Body Exposure

Notes：

***** 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.

****** The Spatial Average value of the SAR averaged over the whole – body.

******* The Spatial Average value of the SAR averaged over the partial – body.

******** 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.

Population / Uncontrolled Environments： are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational / 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).

12. References

[1] Std. C95.1-1999, "*American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300KHz to 100GHz",* New York.

[2] NCRP, National Council on Radiation Protection and Measurements, "Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields", NCRP report NO. 86, 1986.

[3] T. Schmid, O. Egger, and N. Kuster, "Automatic E-field scanning system for dosimetric assessments", IEEE Transactions on Microwave Theory and Techniques, vol. 44, pp, 105-113, Jan. 1996.

[4] K. Pokovi´c, T. Schmid, and N. Kuster, "Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequency", in ICECOM'97, Dubrovnik, October 15-17, 1997, pp.120-124.

[5] K. Pokovi´c, T. Schmid, and N. Kuster, "E-field probe with improved isotropy in brain simulating liquids", in Proceedings of the ELMAR, Zadar, Croatia, 23-25 June, 1996, pp.172-175.

[6] N. Kuster, and Q. Balzano, "Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz", IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.

[7] Robert J. Renka, "Multivariate Interpolation Of Large Sets Of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988 , pp. 139-148.

[8] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

[9] Std. C95.3-1991, "IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave, New York: IEEE, Aug. 1992.

[10] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10KHz-300GHz, Jan. 1995.

[11] IEEE Std 1528™-2013 - IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head From Wireless Communications Devices: Measurement Techniques

Appendix A - System Performance Check

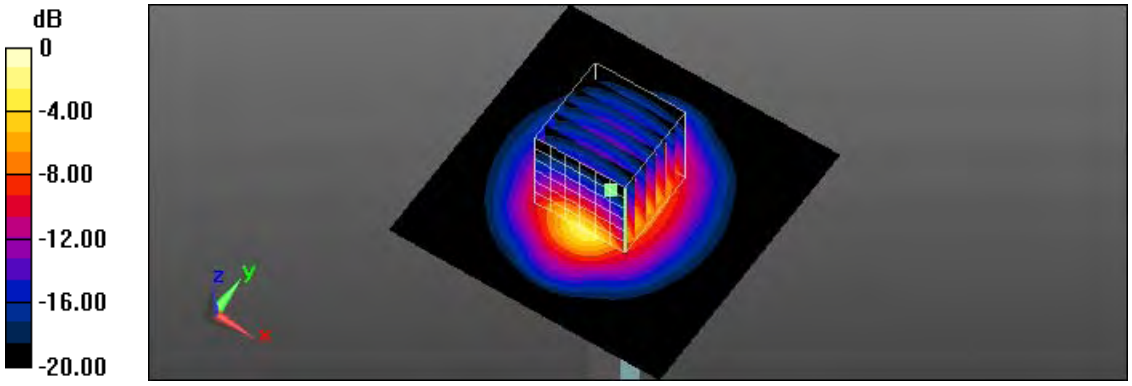
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/2 04:11:56 PM
System Performance Cheak at 2450MHz_20170802_Body
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:712

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.964 S/m; ε_r = 52.402; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 2450MHz/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 19.4 W/kg

System Performance Cheak at 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.0 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 26.8 W/kg
SAR(1 g) = 12.6 W/kg; SAR(10 g) = 5.75 W/kg
Maximum value of SAR (measured) = 19.6 W/kg



0 dB = 19.6 W/kg = 12.92 dBW/kg

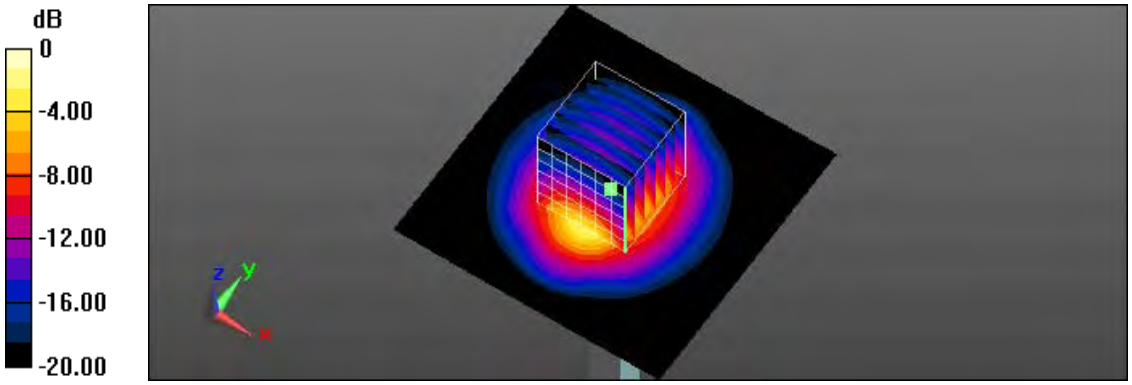
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 03:51:29 PM
System Performance Cheak at 2450MHz_20170803_Body
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:712

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.964 S/m; ε_r = 52.402; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 2450MHz/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 19.4 W/kg

System Performance Cheak at 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.4 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 26.5 W/kg
SAR(1 g) = 12.7 W/kg; SAR(10 g) = 5.86 W/kg
Maximum value of SAR (measured) = 19.6 W/kg



0 dB = 19.6 W/kg = 12.92 dBW/kg

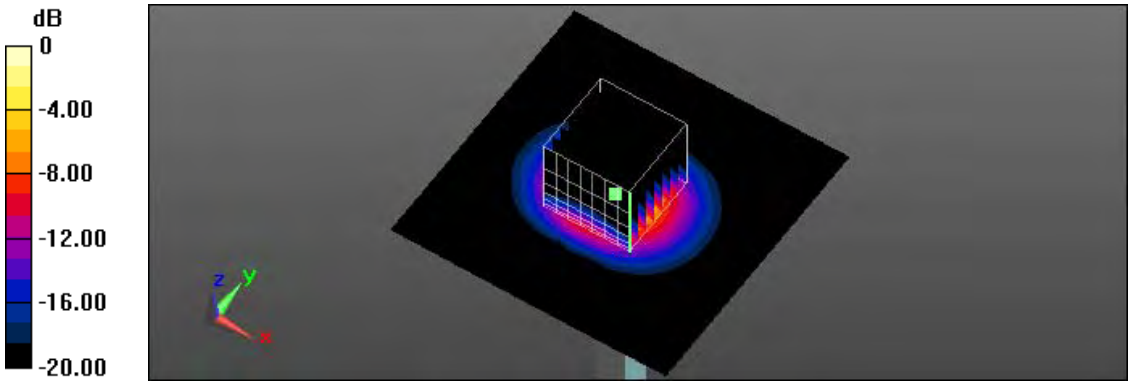
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 08:26:17 PM
System Performance Cheak at 5200MHz_20170803_Body
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1021

Communication System: UID 0, CW (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.245 S/m; ε_r = 48.766; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 5200MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.1 W/kg

System Performance Cheak at 5200MHz/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 55.99 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 25.0 W/kg
SAR(1 g) = 7.3 W/kg; SAR(10 g) = 2.14 W/kg
Maximum value of SAR (measured) = 13.2 W/kg



0 dB = 13.2 W/kg = 11.21 dBW/kg

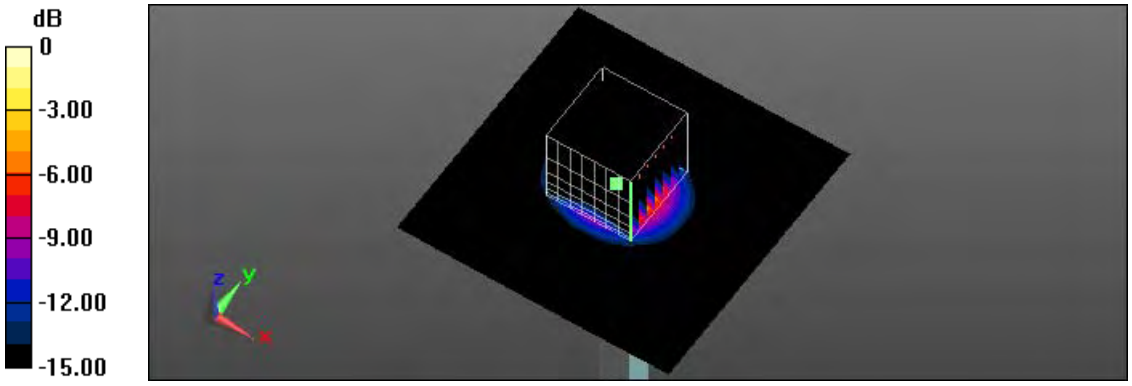
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/4 10:56:55 PM
System Performance Cheak at 5200MHz_20170804_Body
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1021

Communication System: UID 0, CW (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.245 S/m; ε_r = 48.766; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 5200MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.0 W/kg

System Performance Cheak at 5200MHz/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 53.25 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 23.6 W/kg
SAR(1 g) = 7.15 W/kg; SAR(10 g) = 2.12 W/kg
Maximum value of SAR (measured) = 13.1 W/kg



0 dB = 13.1 W/kg = 11.17 dBW/kg

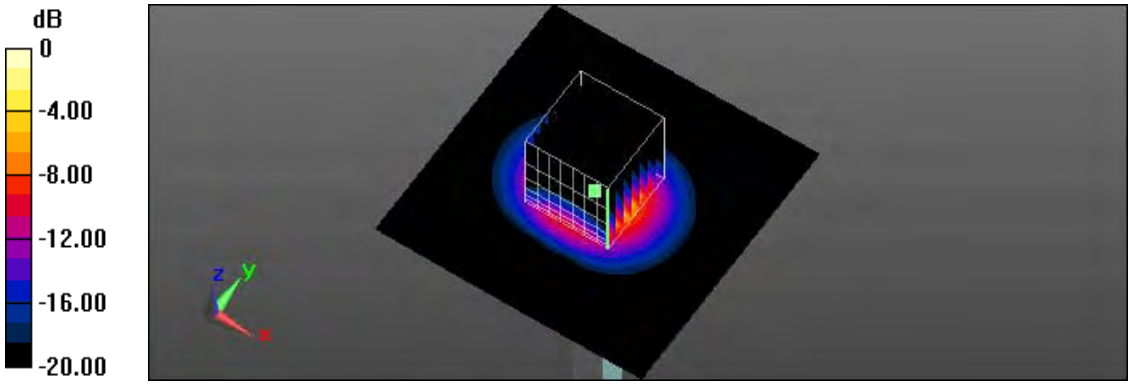
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/7 10:32:28 AM
System Performance Cheak at 5200MHz_20170807_Body
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1021

Communication System: UID 0, CW (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.245 S/m; ε_r = 48.766; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 5200MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 12.8 W/kg

System Performance Cheak at 5200MHz/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 54.89 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 22.4 W/kg
SAR(1 g) = 7.12 W/kg; SAR(10 g) = 2.17 W/kg
Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 12.8 W/kg = 11.07 dBW/kg

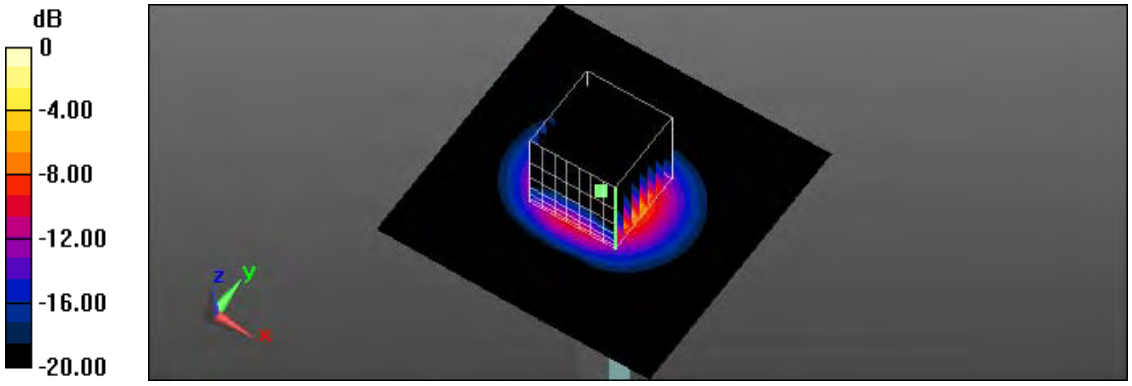
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/8 10:04:42 AM
System Performance Cheak at 5200MHz_20170808_Body
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1021

Communication System: UID 0, CW (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.245 S/m; ε_r = 48.766; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 5200MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 12.9 W/kg

System Performance Cheak at 5200MHz/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 55.45 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 23.4 W/kg
SAR(1 g) = 7.19 W/kg; SAR(10 g) = 2.16 W/kg
Maximum value of SAR (measured) = 13.1 W/kg



0 dB = 13.1 W/kg = 11.17 dBW/kg

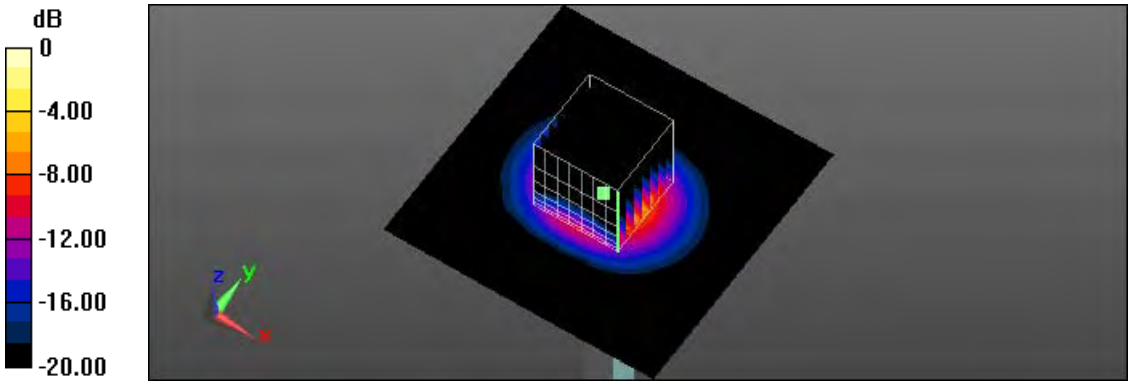
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 09:14:20 AM
System Performance Cheak at 5200MHz_20170809_Body
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1021

Communication System: UID 0, CW (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.202 S/m; ε_r = 50.581; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 5200MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 12.1 W/kg

System Performance Cheak at 5200MHz/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 54.62 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 22.6 W/kg
SAR(1 g) = 7.01 W/kg; SAR(10 g) = 2.1 W/kg
Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 12.8 W/kg = 11.07 dBW/kg

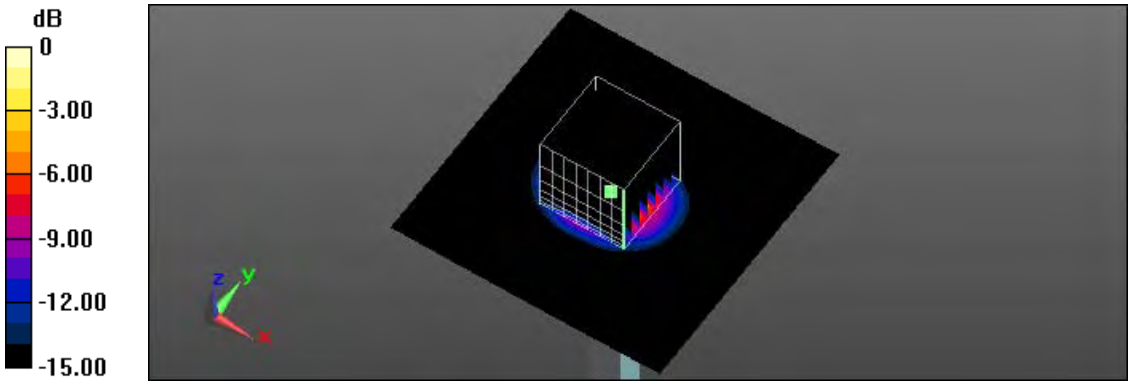
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 09:38:21 PM
System Performance Cheak at 5800MHz_20170803_Body
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1021

Communication System: UID 0, CW (0); Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.131 S/m; ε_r = 47.276; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 5800MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.4 W/kg

System Performance Cheak at 5800MHz/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 55.11 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 28.8 W/kg
SAR(1 g) = 7.65 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg = 11.55 dBW/kg

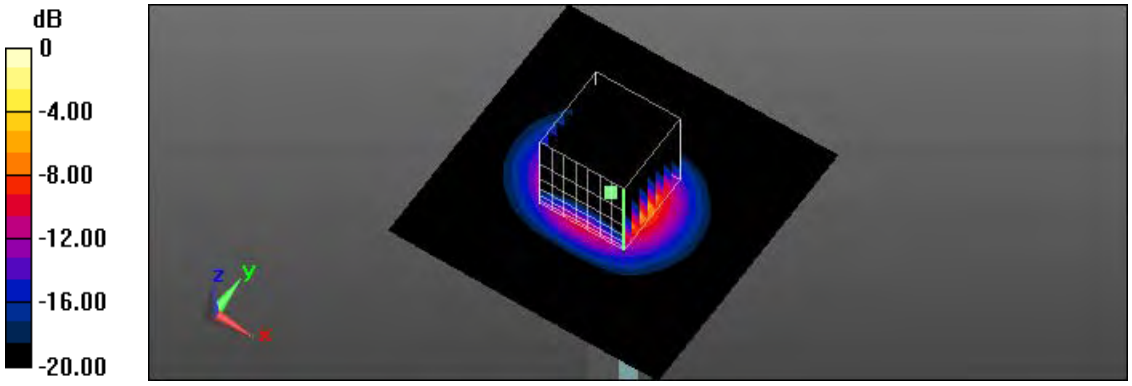
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/7 11:23:33 AM
System Performance Cheak at 5800MHz_20170807_Body
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1021

Communication System: UID 0, CW (0); Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.131 S/m; ε_r = 47.276; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 5800MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.7 W/kg

System Performance Cheak at 5800MHz/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 53.64 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 26.1 W/kg
SAR(1 g) = 7.56 W/kg; SAR(10 g) = 2.22 W/kg
Maximum value of SAR (measured) = 13.8 W/kg



0 dB = 13.8 W/kg = 11.40 dBW/kg

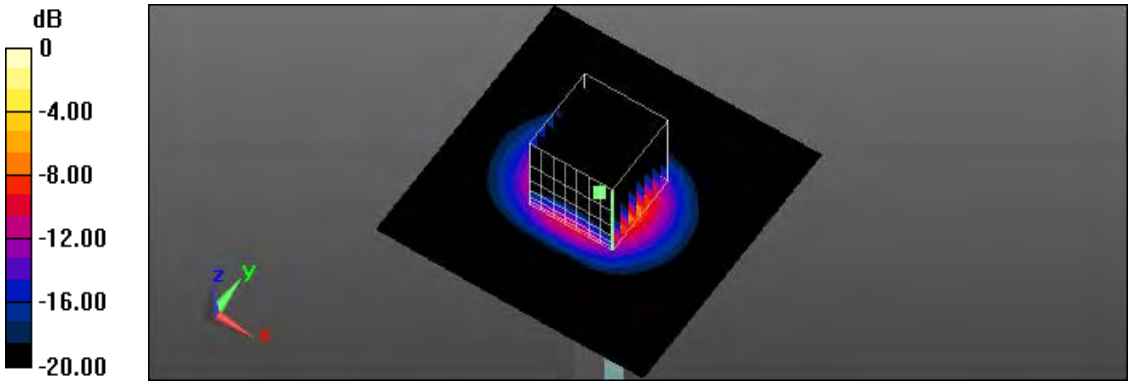
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/8 11:20:34 AM
System Performance Cheak at 5800MHz_20170808_Body
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1021

Communication System: UID 0, CW (0); Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.131 S/m; ε_r = 47.276; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 5800MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.6 W/kg

System Performance Cheak at 5800MHz/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 55.48 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 27.5 W/kg
SAR(1 g) = 7.67 W/kg; SAR(10 g) = 2.22 W/kg
Maximum value of SAR (measured) = 14.6 W/kg



0 dB = 14.6 W/kg = 11.64 dBW/kg

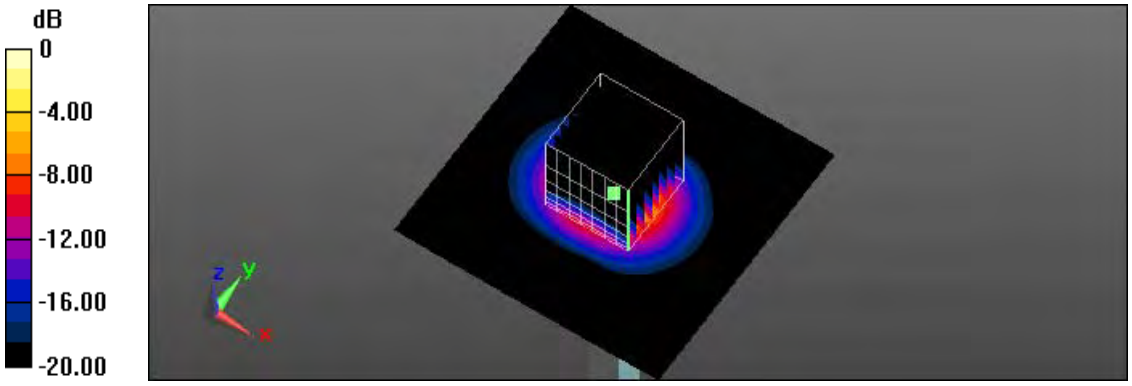
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 09:43:04 AM
System Performance Cheak at 5800MHz_20170809_Body
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1021

Communication System: UID 0, CW (0); Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.136 S/m; ε_r = 49.228; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Cheak at 5800MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.4 W/kg

System Performance Cheak at 5800MHz/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 53.91 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 26.8 W/kg
SAR(1 g) = 7.6 W/kg; SAR(10 g) = 2.21 W/kg
Maximum value of SAR (measured) = 14.1 W/kg



0 dB = 14.1 W/kg = 11.49 dBW/kg

Appendix B - SAR Measurement Data

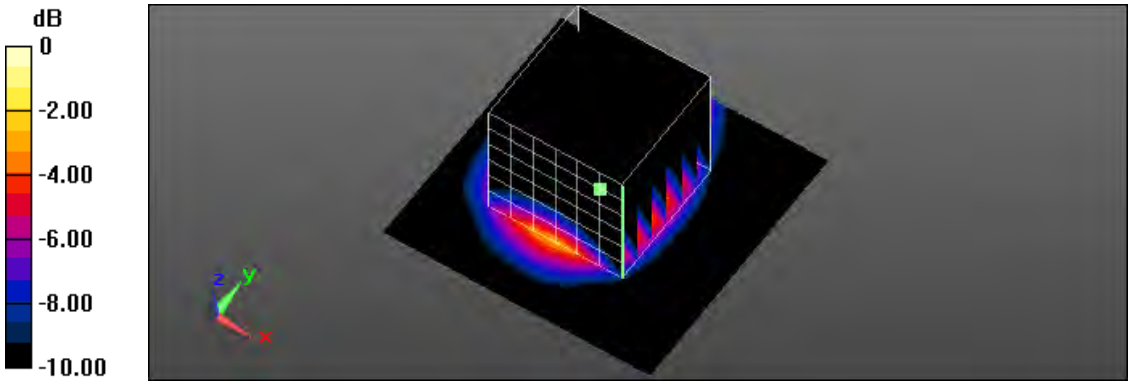
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/2 07:03:58 PM
1_IEEE 802.11b CH 6_1M_Horizontal-Up_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.953 S/m; ε_r = 52.484; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.317 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.65 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.428 W/kg
SAR(1 g) = 0.201 W/kg; SAR(10 g) = 0.096 W/kg
Maximum value of SAR (measured) = 0.302 W/kg



0 dB = 0.302 W/kg = -5.20 dBW/kg

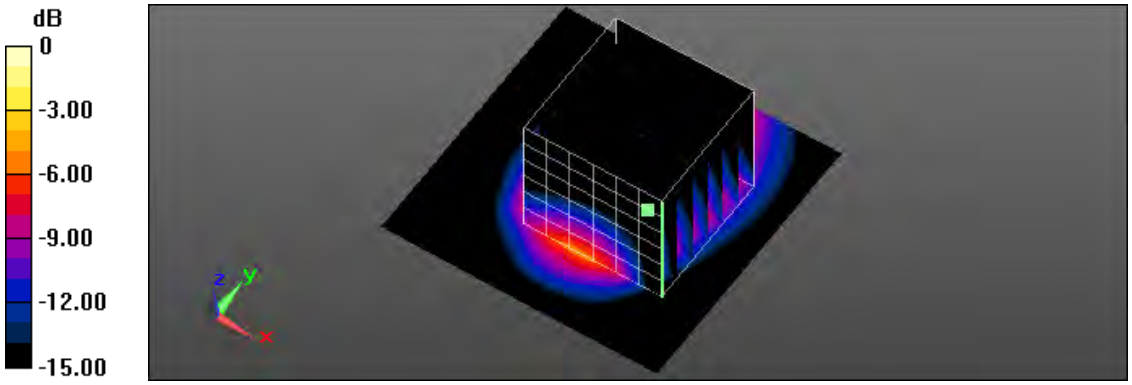
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 01:38:48 AM
2_IEEE 802.11b CH 6_1M_USB cable_Horizontal-Down_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.953 S/m; ε_r = 52.484; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.939 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.70 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.527 W/kg; SAR(10 g) = 0.216 W/kg
Maximum value of SAR (measured) = 0.870 W/kg



0 dB = 0.870 W/kg = -0.60 dBW/kg

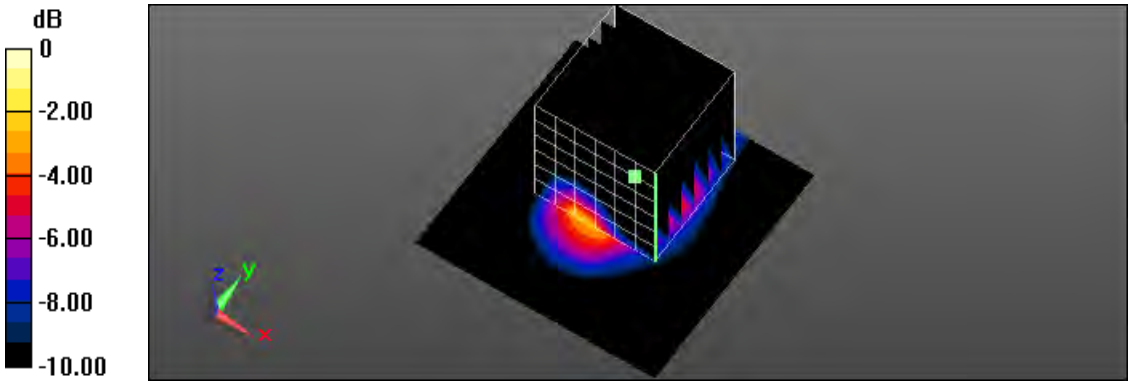
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 12:42:35 PM
3_IEEE 802.11b CH 6_1M_USB cable_Vertical Front_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.953 S/m; ε_r = 52.484; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.588 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.43 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.887 W/kg
SAR(1 g) = 0.385 W/kg; SAR(10 g) = 0.167 W/kg
Maximum value of SAR (measured) = 0.601 W/kg



0 dB = 0.601 W/kg = -2.21 dBW/kg

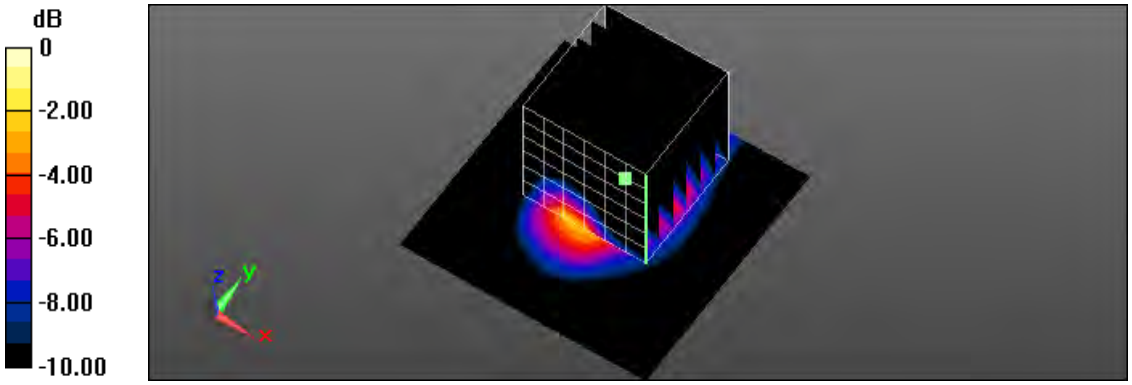
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 12:02:01 PM
4_IEEE 802.11b CH 6_1M_Vertical Back_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.953 S/m; ε_r = 52.484; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.614 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.54 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.892 W/kg
SAR(1 g) = 0.389 W/kg; SAR(10 g) = 0.169 W/kg
Maximum value of SAR (measured) = 0.606 W/kg



0 dB = 0.606 W/kg = -2.18 dBW/kg

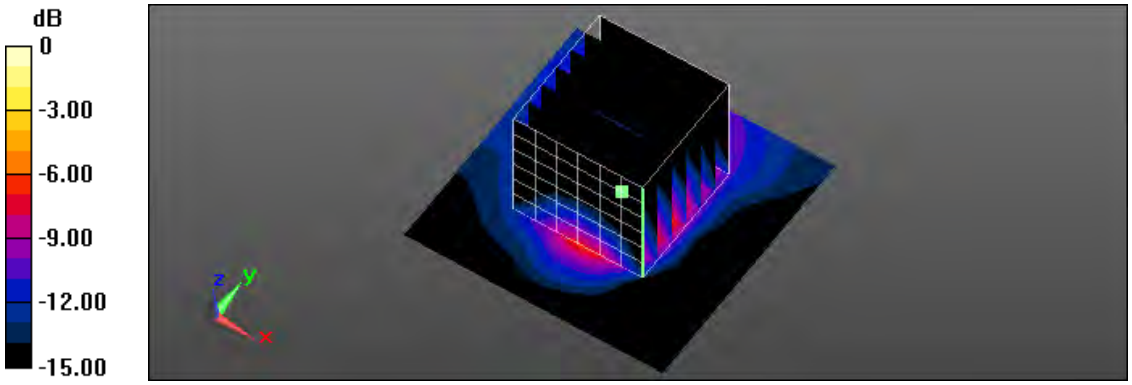
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 06:21:59 PM
5_IEEE 802.11b CH 6_1M_USB cable_Top_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.953 S/m; ε_r = 52.484; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.314 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.73 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.438 W/kg
SAR(1 g) = 0.179 W/kg; SAR(10 g) = 0.070 W/kg
Maximum value of SAR (measured) = 0.301 W/kg



0 dB = 0.301 W/kg = -5.21 dBW/kg

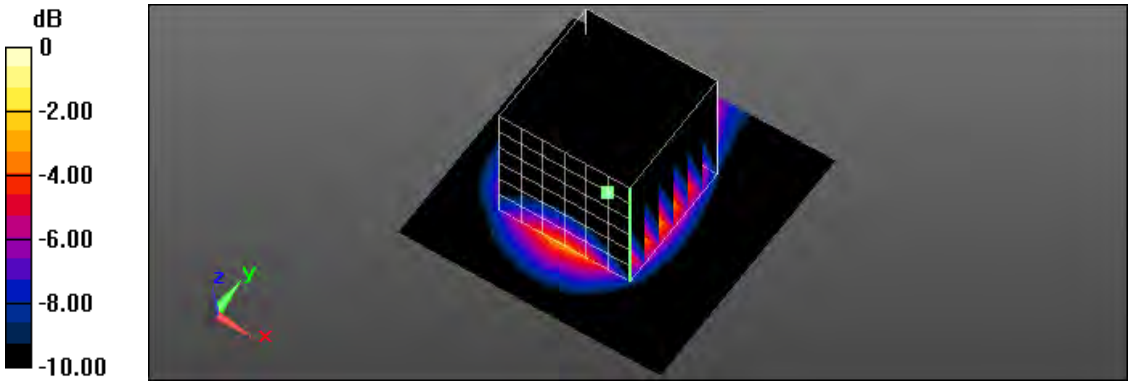
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/2 08:11:37 PM
6_IEEE 802.11n 2.4GHz 20MHz CH 1_13M_Horizontal-Up_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2412 MHz; σ = 1.935 S/m; ε_r = 52.681; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.251 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.05 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.313 W/kg
SAR(1 g) = 0.148 W/kg; SAR(10 g) = 0.070 W/kg
Maximum value of SAR (measured) = 0.217 W/kg



0 dB = 0.217 W/kg = -6.64 dBW/kg

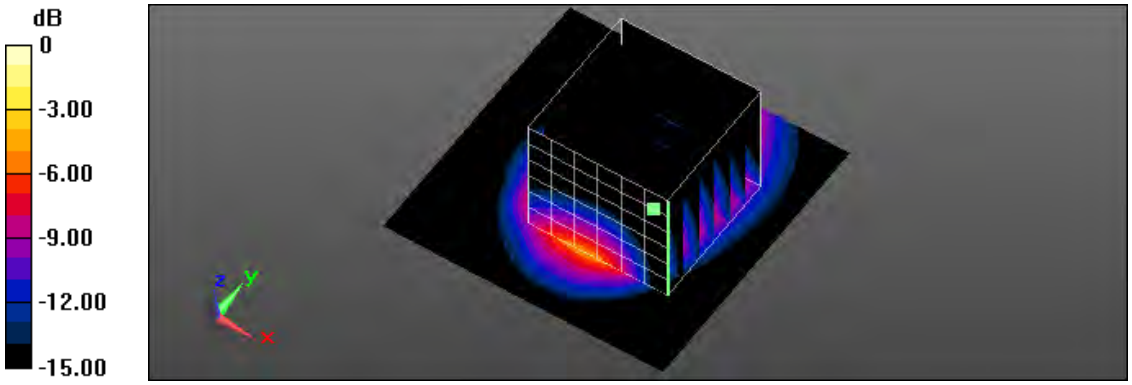
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 01:05:08 AM
7_IEEE 802.11n 2.4GHz 20MHz CH 1_13M_USB cable_Horizontal-Down_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2412 MHz; σ = 1.935 S/m; ε_r = 52.681; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.627 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.31 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.826 W/kg
SAR(1 g) = 0.347 W/kg; SAR(10 g) = 0.143 W/kg
Maximum value of SAR (measured) = 0.565 W/kg



0 dB = 0.565 W/kg = -2.48 dBW/kg

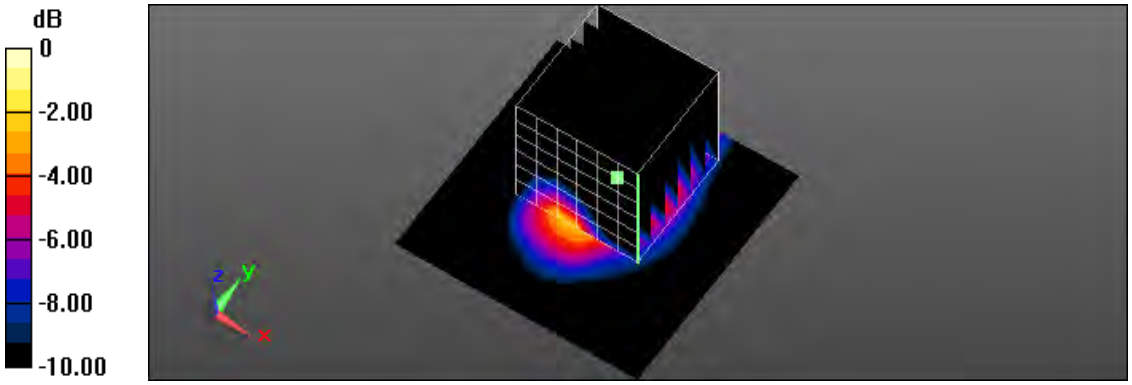
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 01:39:50 PM
8_IEEE 802.11n 2.4GHz 20MHz CH 1_13M_USB cable_Vertical Front_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2412 MHz; σ = 1.935 S/m; ε_r = 52.681; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.408 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.84 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.579 W/kg
SAR(1 g) = 0.253 W/kg; SAR(10 g) = 0.110 W/kg
Maximum value of SAR (measured) = 0.393 W/kg



0 dB = 0.393 W/kg = -4.06 dBW/kg

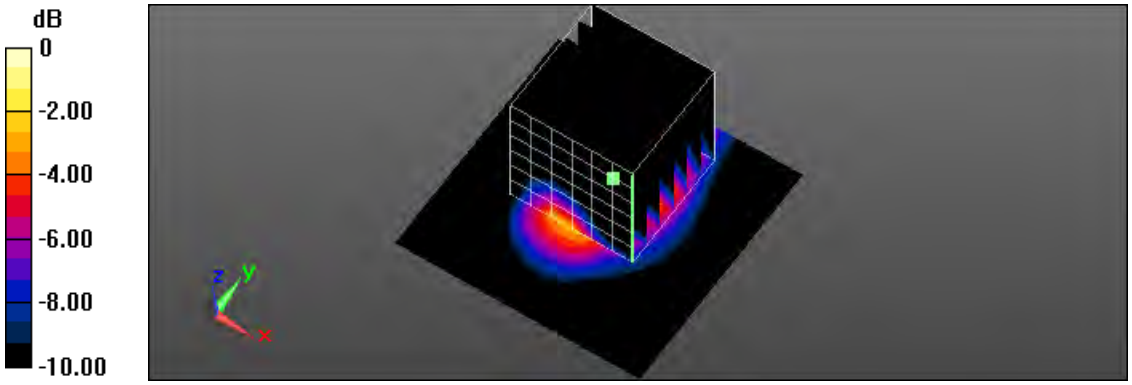
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 09:31:40 AM
9_IEEE 802.11n 2.4GHz 20MHz CH 1_13M_Vertical Back_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2412 MHz; σ = 1.935 S/m; ε_r = 52.681; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.417 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.70 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.564 W/kg
SAR(1 g) = 0.252 W/kg; SAR(10 g) = 0.110 W/kg
Maximum value of SAR (measured) = 0.398 W/kg



0 dB = 0.398 W/kg = -4.00 dBW/kg

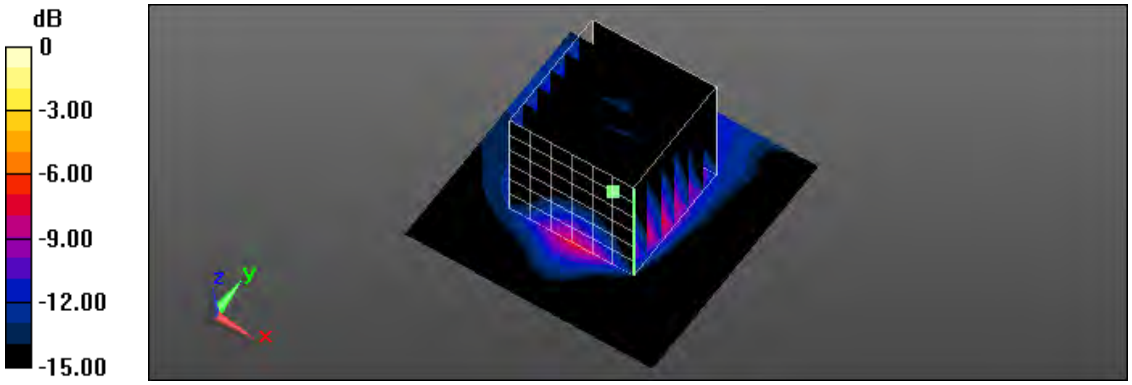
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 06:03:19 PM
10_IEEE 802.11n 2.4GHz 20MHz CH 1_13M_USB cable_Top_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2412 MHz; σ = 1.935 S/m; ε_r = 52.681; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.237 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.13 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.342 W/kg
SAR(1 g) = 0.142 W/kg; SAR(10 g) = 0.055 W/kg
Maximum value of SAR (measured) = 0.237 W/kg



0 dB = 0.237 W/kg = -6.25 dBW/kg

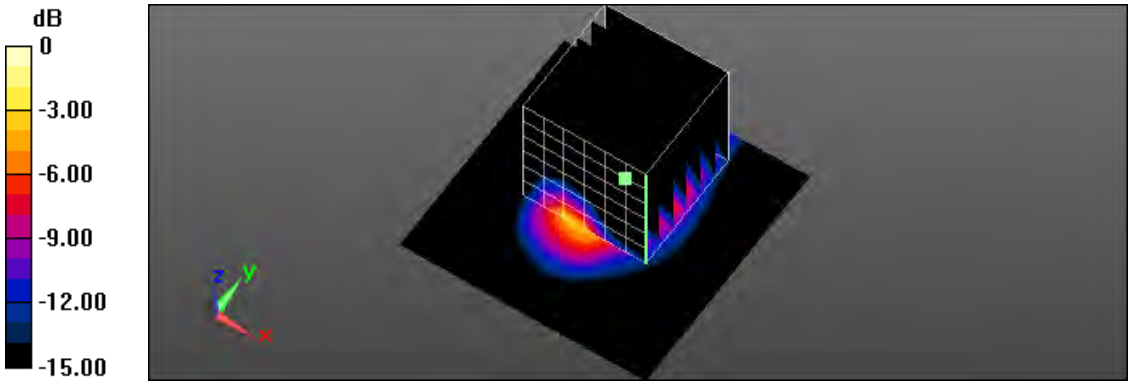
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 06:59:41 PM
50_IEEE 802.11n 2.4GHz 20MHz CH 1_13M_USB cable_Horizontal-Down_5mm_ANT-0_BF ON
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2412 MHz; σ = 1.935 S/m; ε_r = 52.681; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.563 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.15 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.765 W/kg
SAR(1 g) = 0.320 W/kg; SAR(10 g) = 0.133 W/kg
Maximum value of SAR (measured) = 0.537 W/kg



0 dB = 0.563 W/kg = -2.49 dBW/kg

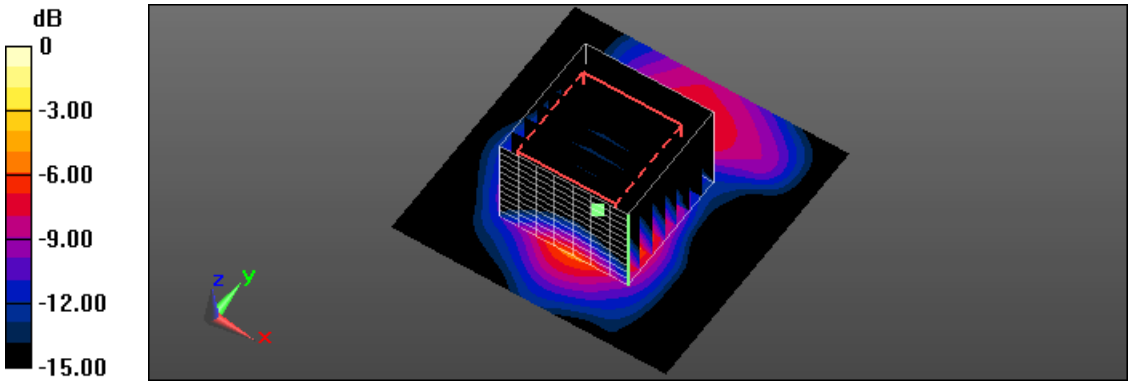
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/7 11:30:06 PM
16_IEEE 802.11a CH 44_6M_Horizontal-Up_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.263 S/m; ε_r = 48.715; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.21 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 15.24 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 2.17 W/kg
SAR(1 g) = 0.727 W/kg; SAR(10 g) = 0.244 W/kg
Maximum value of SAR (measured) = 1.24 W/kg



0 dB = 1.24 W/kg = 0.93 dBW/kg

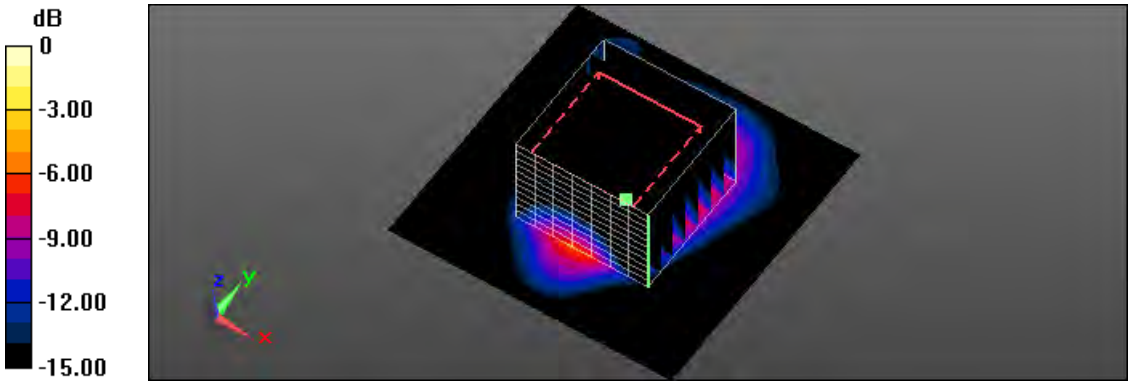
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/4 05:20:51 PM
17_IEEE 802.11a CH 44_6M_USB cable_Horizontal-Down_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.263 S/m; ε_r = 48.715; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.46 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 18.12 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 2.59 W/kg
SAR(1 g) = 0.774 W/kg; SAR(10 g) = 0.228 W/kg
Maximum value of SAR (measured) = 1.43 W/kg



0 dB = 1.43 W/kg = 1.55 dBW/kg

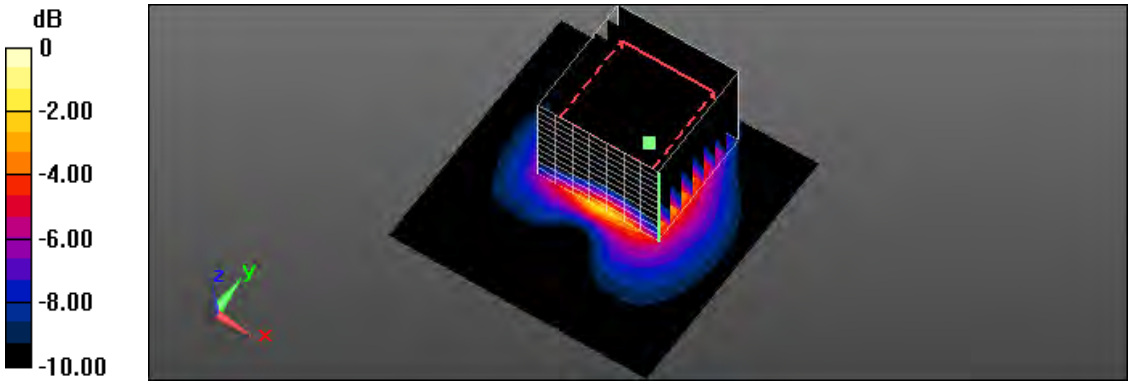
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 10:47:36 AM
46_IEEE 802.11a CH 40_6M_USB cable_Vertical Front_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.202 S/m; ε_r = 50.581; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.28 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 15.19 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.88 W/kg
SAR(1 g) = 0.694 W/kg; SAR(10 g) = 0.278 W/kg
Maximum value of SAR (measured) = 1.10 W/kg



0 dB = 1.10 W/kg = 0.41 dBW/kg

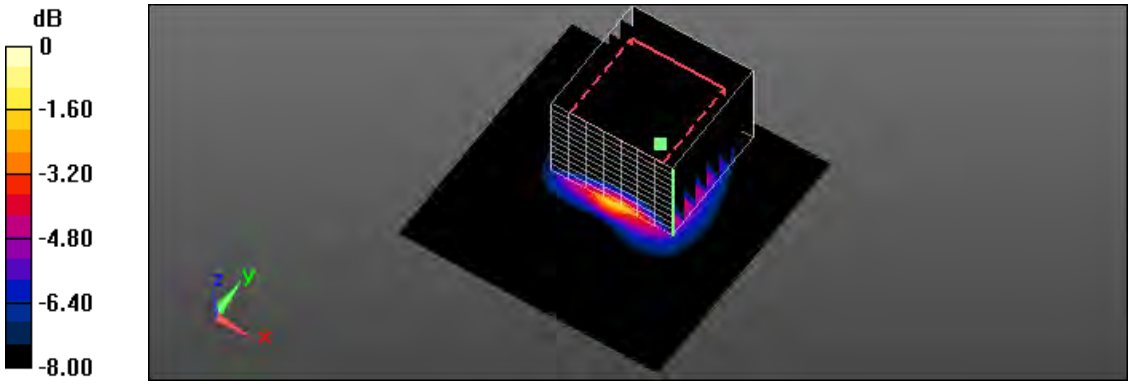
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 01:03:31 AM
18_IEEE 802.11a CH 44_6M_USB cable_Vertical Front_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.263 S/m; ε_r = 48.715; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.50 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 14.90 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 2.21 W/kg
SAR(1 g) = 0.804 W/kg; SAR(10 g) = 0.323 W/kg
Maximum value of SAR (measured) = 1.31 W/kg



0 dB = 1.31 W/kg = 1.17 dBW/kg

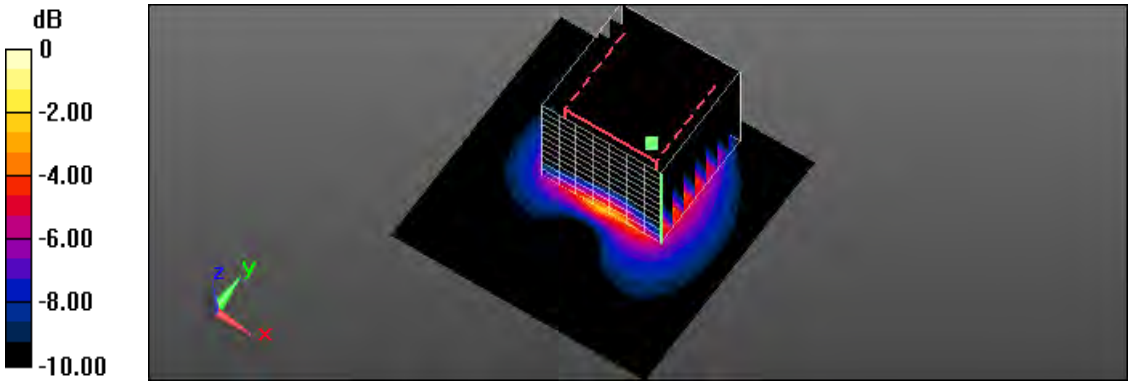
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 11:42:10 AM
47_IEEE 802.11a CH 40_6M_Vertical Back_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.202 S/m; ε_r = 50.581; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.50 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 15.16 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 2.15 W/kg
SAR(1 g) = 0.784 W/kg; SAR(10 g) = 0.318 W/kg
Maximum value of SAR (measured) = 1.24 W/kg



0 dB = 1.24 W/kg = 0.93 dBW/kg

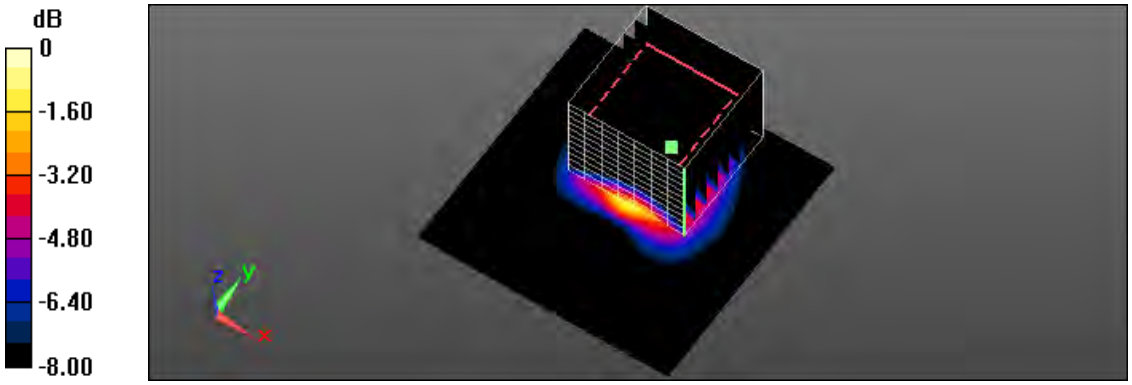
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 12:22:52 AM
19_IEEE 802.11a CH 44_6M_Vertical Back_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.263 S/m; ε_r = 48.715; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.45 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 15.25 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 0.789 W/kg; SAR(10 g) = 0.315 W/kg
Maximum value of SAR (measured) = 1.26 W/kg



0 dB = 1.26 W/kg = 1.00 dBW/kg

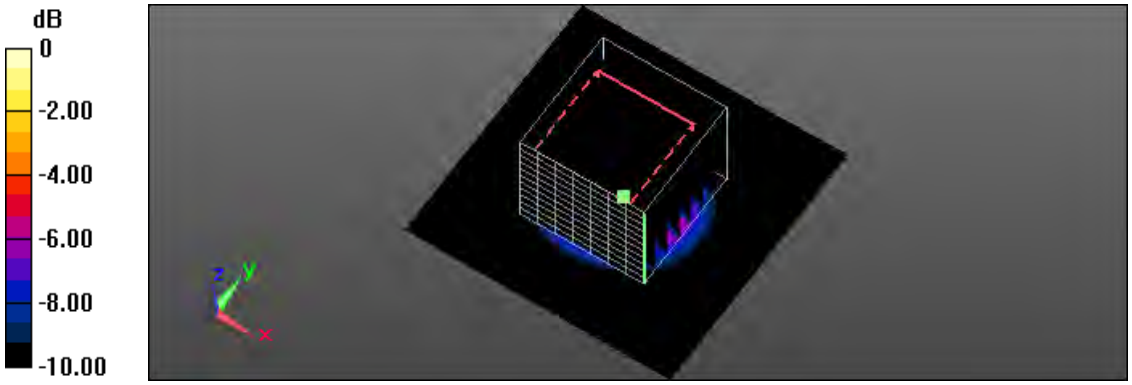
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 02:01:17 PM
20_IEEE 802.11a CH 44_6M_USB cable_Top_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.233 S/m; ε_r = 50.533; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.28 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 17.59 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 2.11 W/kg
SAR(1 g) = 0.613 W/kg; SAR(10 g) = 0.180 W/kg
Maximum value of SAR (measured) = 1.12 W/kg



0 dB = 1.12 W/kg = 0.49 dBW/kg

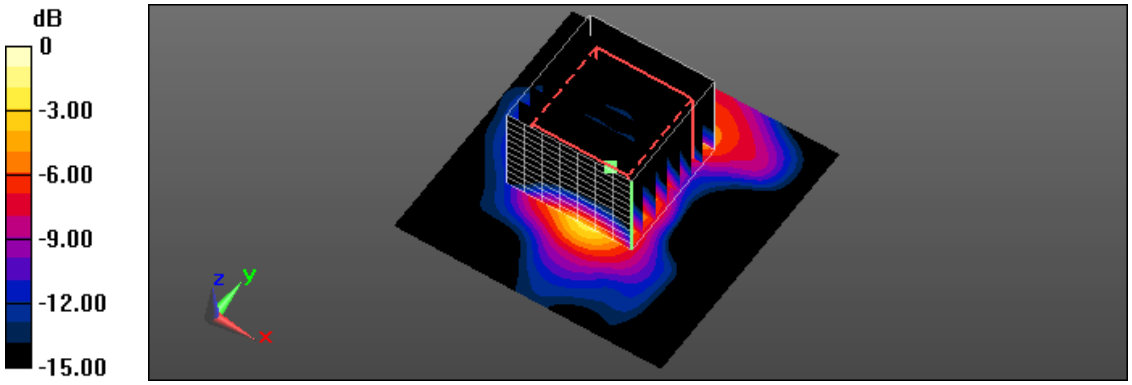
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/8 12:21:08 AM
21_IEEE 802.11a CH 161_6M_Horizontal-Up_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 6.143 S/m; ε_r = 47.269; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.07 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 12.85 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 0.591 W/kg; SAR(10 g) = 0.199 W/kg
Maximum value of SAR (measured) = 0.974 W/kg



0 dB = 0.974 W/kg = -0.11 dBW/kg

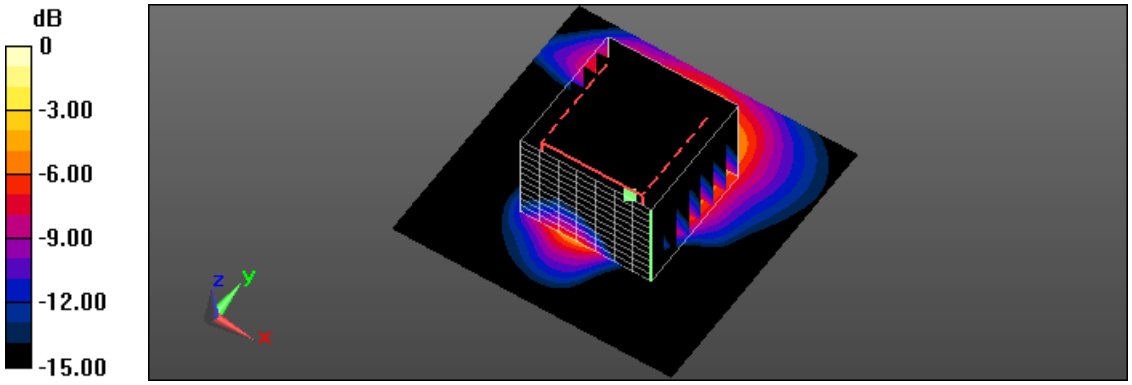
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/4 06:11:43 PM
22_IEEE 802.11a CH 161_6M_USB cable_Horizontal-Down_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 6.143 S/m; ε_r = 47.269; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.51 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 18.07 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 2.78 W/kg
SAR(1 g) = 0.778 W/kg; SAR(10 g) = 0.224 W/kg
Maximum value of SAR (measured) = 1.46 W/kg



0 dB = 1.46 W/kg = 1.64 dBW/kg

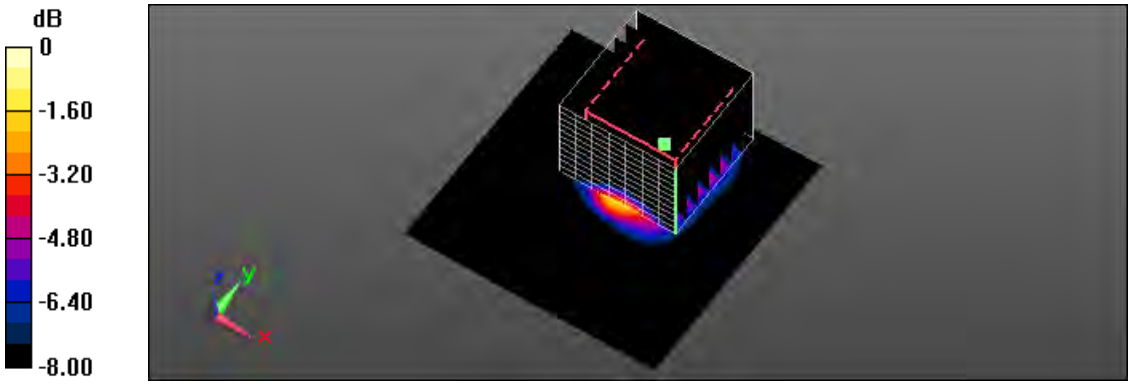
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 02:33:59 AM
23_IEEE 802.11a CH 161_6M_USB cable_Vertical Front_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 6.143 S/m; ε_r = 47.269; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.41 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.12 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 2.37 W/kg
SAR(1 g) = 0.749 W/kg; SAR(10 g) = 0.276 W/kg
Maximum value of SAR (measured) = 1.29 W/kg



0 dB = 1.29 W/kg = 1.11 dBW/kg

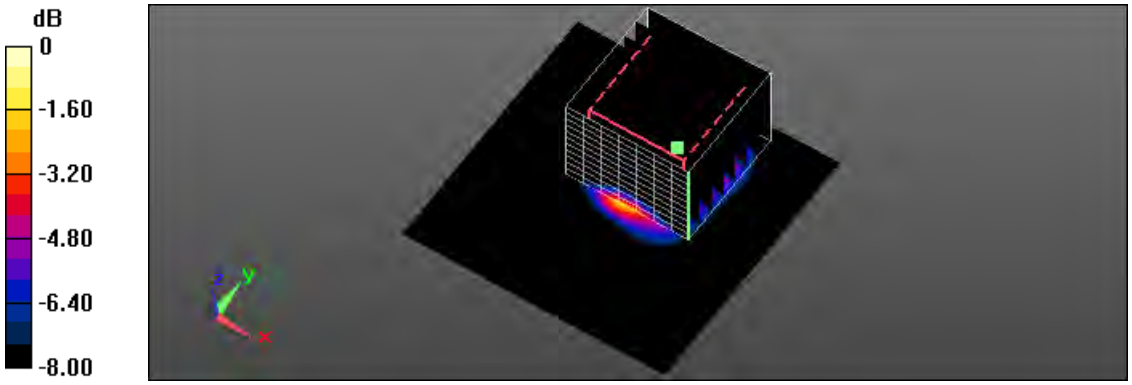
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 01:57:53 AM
24_IEEE 802.11a CH 161_6M_Vertical Back_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 6.143 S/m; ε_r = 47.269; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.40 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 12.72 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 2.35 W/kg
SAR(1 g) = 0.745 W/kg; SAR(10 g) = 0.271 W/kg
Maximum value of SAR (measured) = 1.25 W/kg



0 dB = 1.25 W/kg = 0.97 dBW/kg

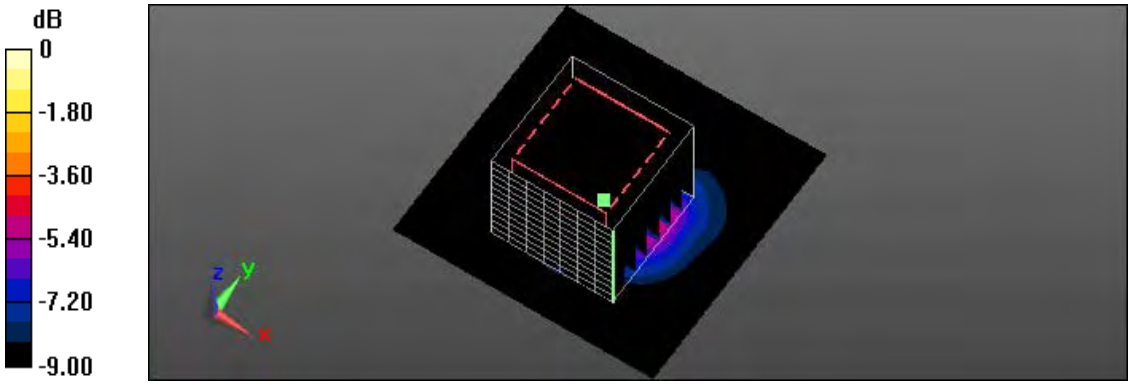
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 02:31:23 PM
25_IEEE 802.11a CH 161_6M_USB cable_Top_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 6.144 S/m; ε_r = 49.22; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.536 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.09 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.782 W/kg
SAR(1 g) = 0.231 W/kg; SAR(10 g) = 0.057 W/kg
Maximum value of SAR (measured) = 0.454 W/kg



0 dB = 0.454 W/kg = -3.43 dBW/kg

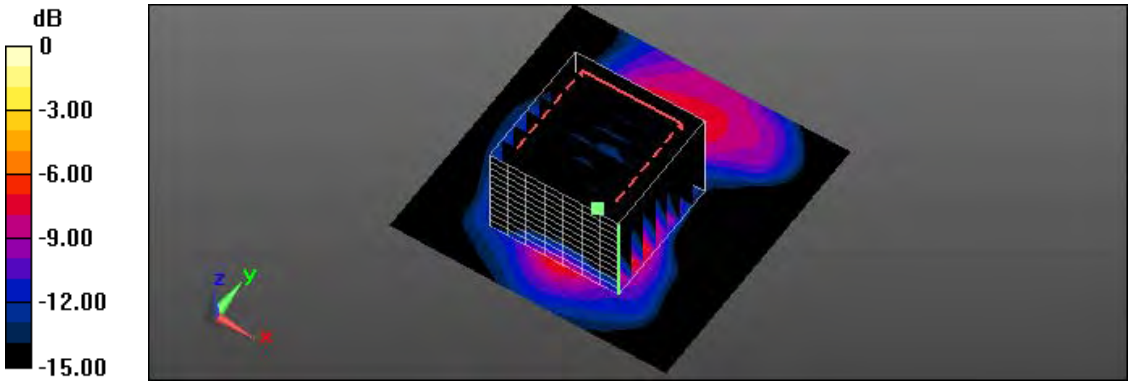
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/7 10:14:34 PM
26_IEEE 802.11ac 20MHz CH 44_13M_Horizontal-Up_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.263 S/m; ε_r = 48.715; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.629 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.24 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.358 W/kg; SAR(10 g) = 0.114 W/kg
Maximum value of SAR (measured) = 0.614 W/kg



0 dB = 0.614 W/kg = -2.12 dBW/kg

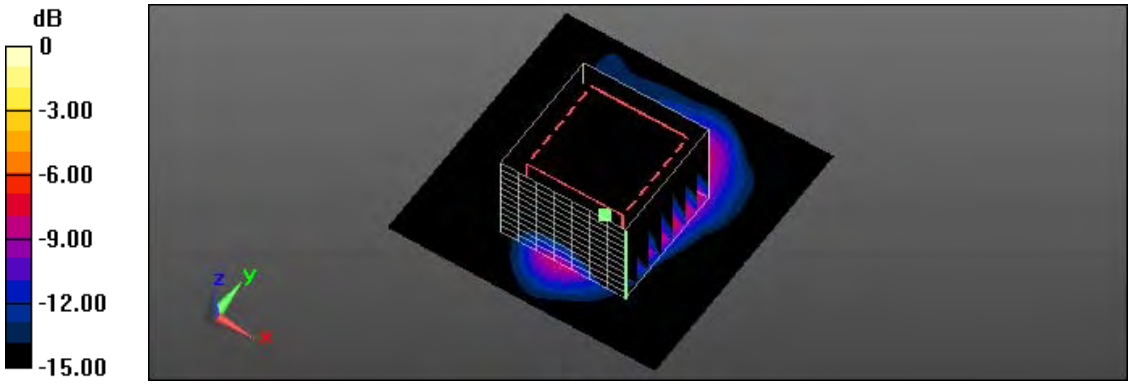
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/4 11:51:19 PM
27_IEEE 802.11ac 20MHz CH 44_13M_USB cable_Horizontal-Down_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.263 S/m; ε_r = 48.715; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.01 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.83 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 2.04 W/kg
SAR(1 g) = 0.581 W/kg; SAR(10 g) = 0.160 W/kg
Maximum value of SAR (measured) = 1.02 W/kg



0 dB = 1.02 W/kg = 0.09 dBW/kg

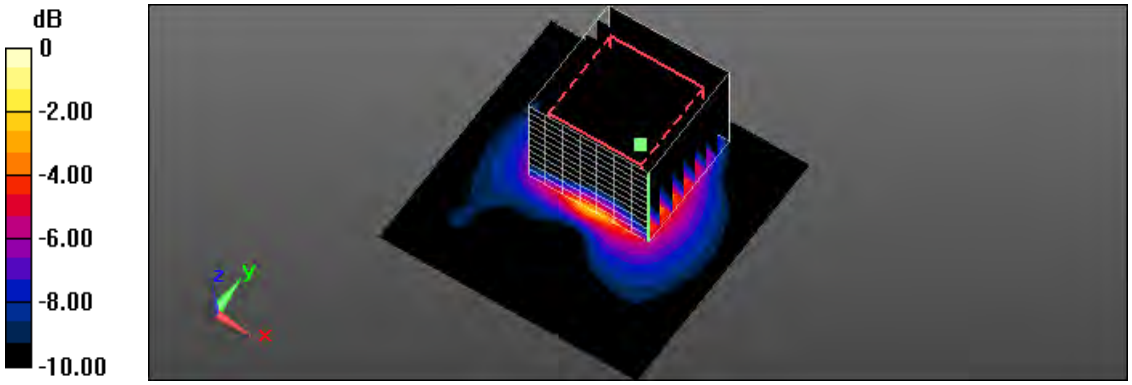
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/8 03:21:38 PM
28_IEEE 802.11ac 20MHz CH 44_13M_USB cable_Vertical Front_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.263 S/m; ε_r = 48.715; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.595 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 9.796 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.929 W/kg
SAR(1 g) = 0.333 W/kg; SAR(10 g) = 0.129 W/kg
Maximum value of SAR (measured) = 0.525 W/kg



0 dB = 0.525 W/kg = -2.80 dBW/kg

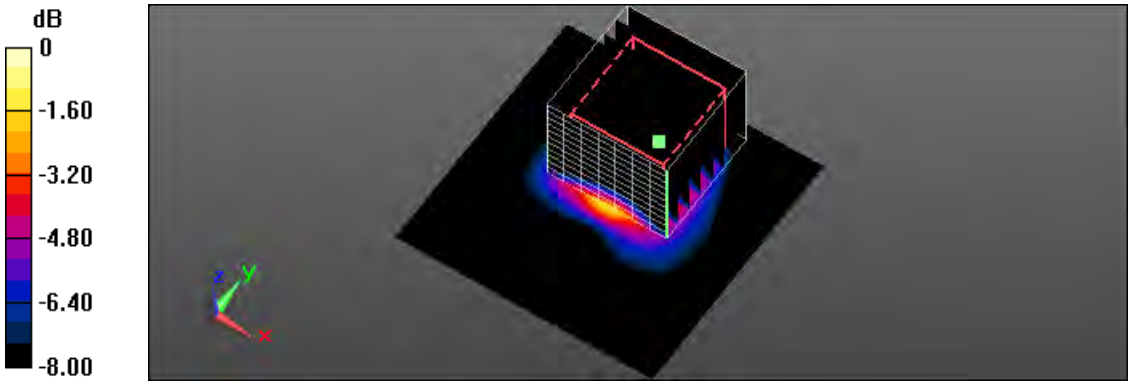
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/8 04:11:17 PM
29_IEEE 802.11ac 20MHz CH 44_13M_Vertical Back_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.263 S/m; ε_r = 48.715; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.689 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 9.847 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.978 W/kg
SAR(1 g) = 0.352 W/kg; SAR(10 g) = 0.134 W/kg
Maximum value of SAR (measured) = 0.567 W/kg



0 dB = 0.567 W/kg = -2.46 dBW/kg

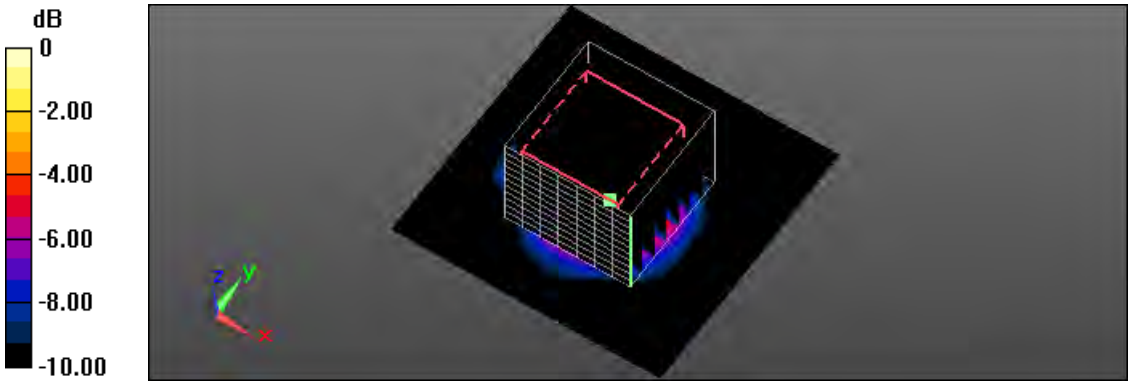
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 03:44:16 PM
30_IEEE 802.11ac 20MHz CH 44_13M_USB cable_Top_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.233 S/m; ε_r = 50.533; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.455 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.23 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.820 W/kg
SAR(1 g) = 0.193 W/kg; SAR(10 g) = 0.049 W/kg
Maximum value of SAR (measured) = 0.357 W/kg



0 dB = 0.357 W/kg = -4.47 dBW/kg

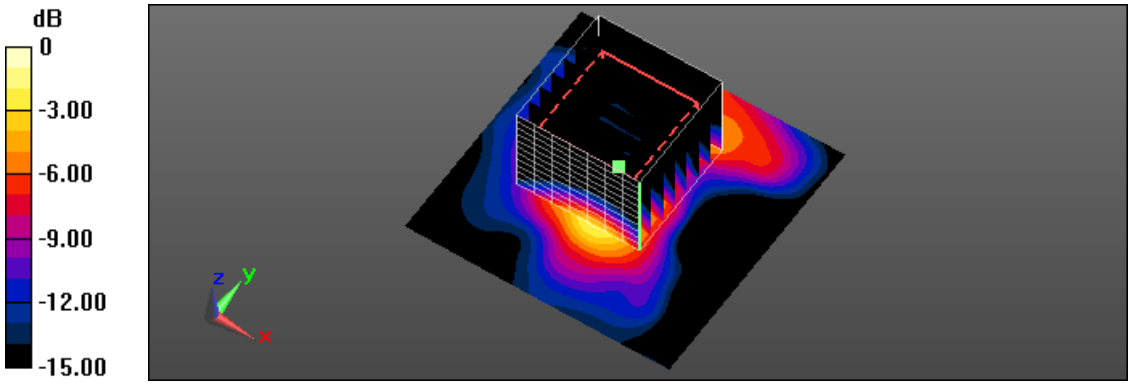
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/7 11:03:18 PM
31_IEEE 802.11ac 20MHz CH 153_13M_Horizontal-Up_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5765 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5765 MHz; σ = 6.055 S/m; ε_r = 47.374; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.827 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 12.30 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.391 W/kg; SAR(10 g) = 0.135 W/kg
Maximum value of SAR (measured) = 0.662 W/kg



0 dB = 0.662 W/kg = -1.79 dBW/kg

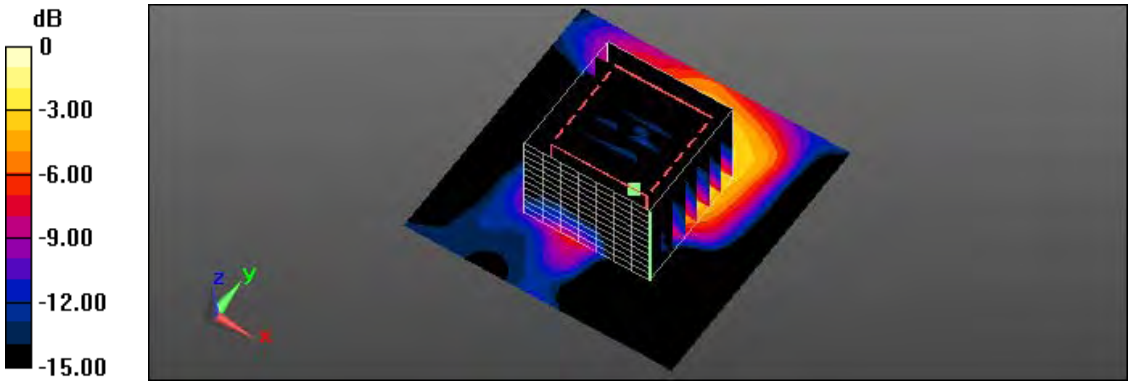
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/7 06:37:03 PM
32_IEEE 802.11ac 20MHz CH 153_13M_USB cable_Horizontal-Down_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5765 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5765 MHz; σ = 6.055 S/m; ε_r = 47.374; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.620 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 11.31 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.858 W/kg
SAR(1 g) = 0.287 W/kg; SAR(10 g) = 0.082 W/kg
Maximum value of SAR (measured) = 0.511 W/kg



0 dB = 0.511 W/kg = -2.92 dBW/kg

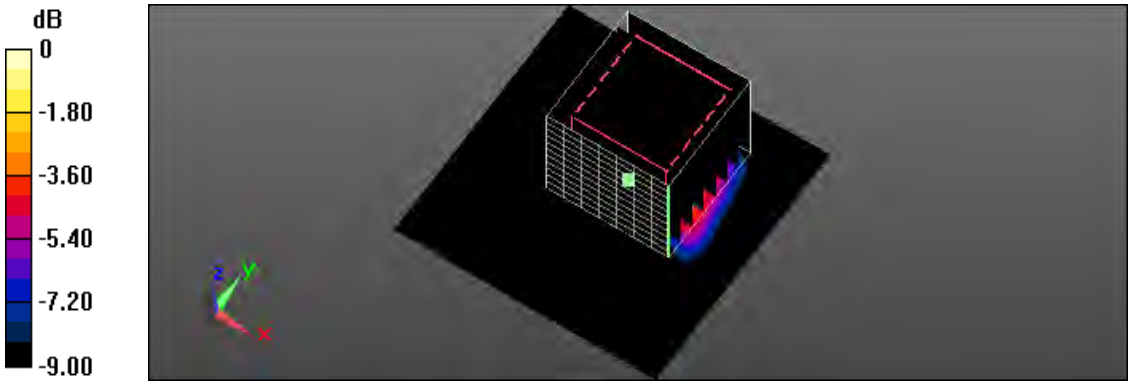
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/8 02:04:01 PM
33_IEEE 802.11ac 20MHz CH 153_13M_USB cable_Vertical Front_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5765 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5765 MHz; σ = 6.055 S/m; ε_r = 47.374; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.229 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.637 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.314 W/kg
SAR(1 g) = 0.082 W/kg; SAR(10 g) = 0.024 W/kg
Maximum value of SAR (measured) = 0.171 W/kg



0 dB = 0.171 W/kg = -7.67 dBW/kg

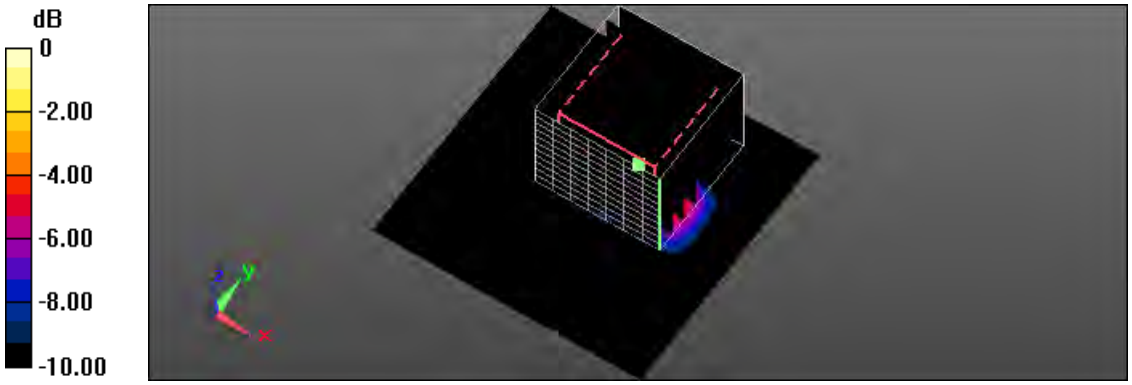
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/8 01:35:54 PM
34_IEEE 802.11ac 20MHz CH 153_13M_Vertical Back_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5765 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5765 MHz; σ = 6.055 S/m; ε_r = 47.374; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.293 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.247 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.417 W/kg
SAR(1 g) = 0.128 W/kg; SAR(10 g) = 0.034 W/kg
Maximum value of SAR (measured) = 0.251 W/kg



0 dB = 0.251 W/kg = -6.00 dBW/kg

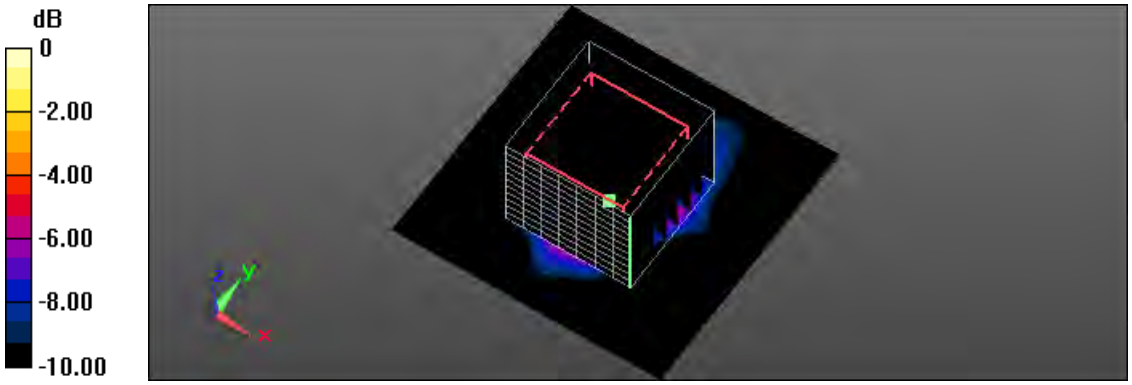
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 04:40:59 PM
35_IEEE 802.11ac 20MHz CH 153_13M_USB cable_Top_5mm_ANT-0
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5765 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5765 MHz; σ = 6.074 S/m; ε_r = 49.302; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.395 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 9.400 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.642 W/kg
SAR(1 g) = 0.174 W/kg; SAR(10 g) = 0.042 W/kg
Maximum value of SAR (measured) = 0.354 W/kg



0 dB = 0.354 W/kg = -4.51 dBW/kg

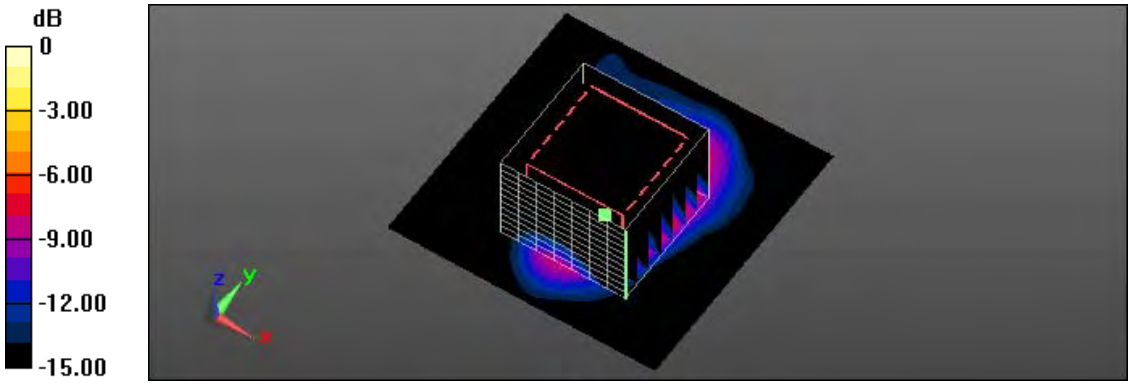
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 06:17:02 PM
51_IEEE 802.11ac 20MHz CH 44_13M_USB cable_Horizontal-Down_5mm_ANT-0_BF ON
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.263 S/m; ε_r = 48.715; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.985 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.80 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 2.00 W/kg
SAR(1 g) = 0.572 W/kg; SAR(10 g) = 0.159 W/kg
Maximum value of SAR (measured) = 1.00 W/kg



0 dB = 1.00 W/kg = 0.01 dBW/kg

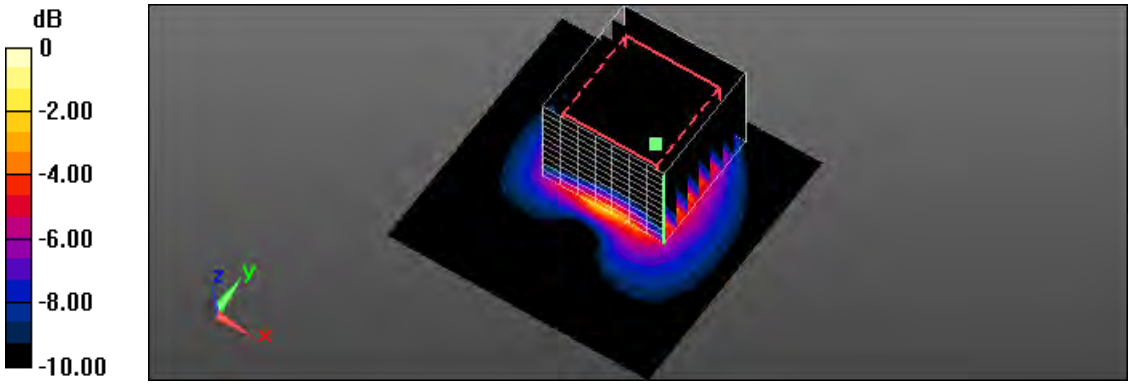
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 12:47:41 PM
48_IEEE 802.11a CH 44_6M_USB cable_Vertical Front_5mm_ANT-0_original #18_measurment once
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11a (0); Frequency: 5220 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5220 MHz; σ = 5.233 S/m; ε_r = 50.533; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.34 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 14.46 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.92 W/kg
SAR(1 g) = 0.699 W/kg; SAR(10 g) = 0.283 W/kg
Maximum value of SAR (measured) = 1.12 W/kg



0 dB = 1.12 W/kg = 0.49 dBW/kg

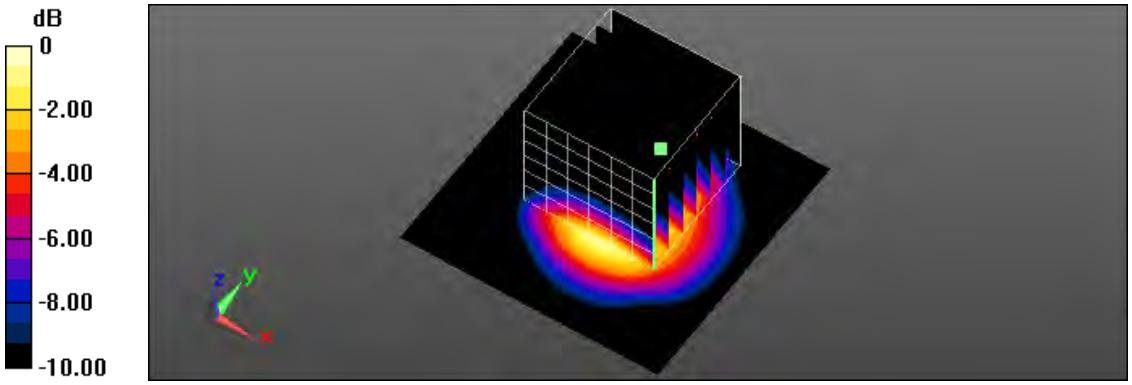
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/2 08:31:26 PM
11_IEEE 802.11n 2.4GHz 20MHz CH 11_13M_Horizontal-Up_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2462 MHz; σ = 1.981 S/m; ε_r = 52.329; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.279 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.74 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.343 W/kg
SAR(1 g) = 0.161 W/kg; SAR(10 g) = 0.080 W/kg
Maximum value of SAR (measured) = 0.243 W/kg



0 dB = 0.243 W/kg = -6.14 dBW/kg

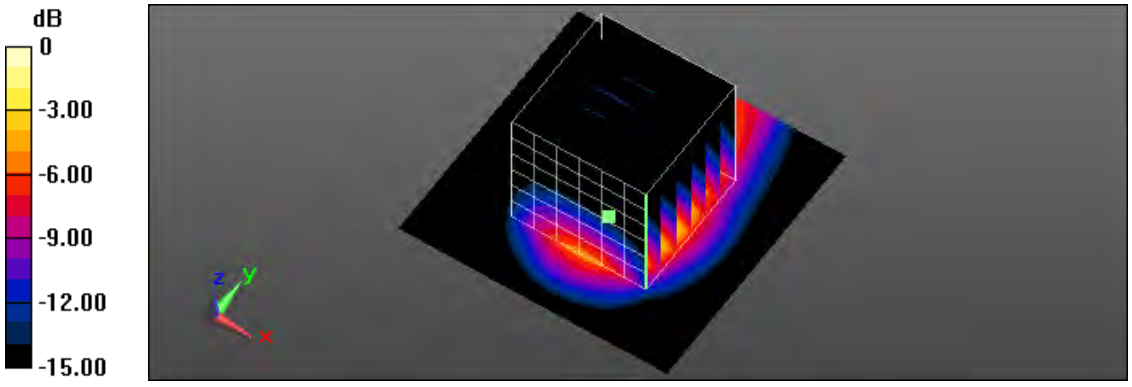
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 12:10:25 AM
12_IEEE 802.11n 2.4GHz 20MHz CH 11_13M_USB cable_Horizontal-Down_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2462 MHz; σ = 1.981 S/m; ε_r = 52.329; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.844 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.63 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.493 W/kg; SAR(10 g) = 0.228 W/kg
Maximum value of SAR (measured) = 0.801 W/kg



0 dB = 0.801 W/kg = -0.96 dBW/kg

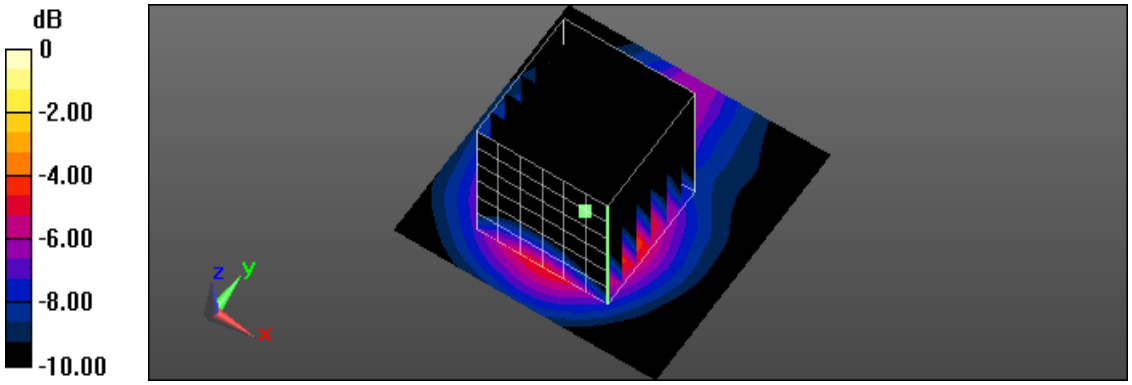
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 03:10:41 PM
13_IEEE 802.11n 2.4GHz 20MHz CH 11_13M_USB cable_Vertical Front_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2462 MHz; σ = 1.981 S/m; ε_r = 52.329; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.171 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.894 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.262 W/kg
SAR(1 g) = 0.108 W/kg; SAR(10 g) = 0.048 W/kg
Maximum value of SAR (measured) = 0.177 W/kg



0 dB = 0.177 W/kg = -7.52 dBW/kg

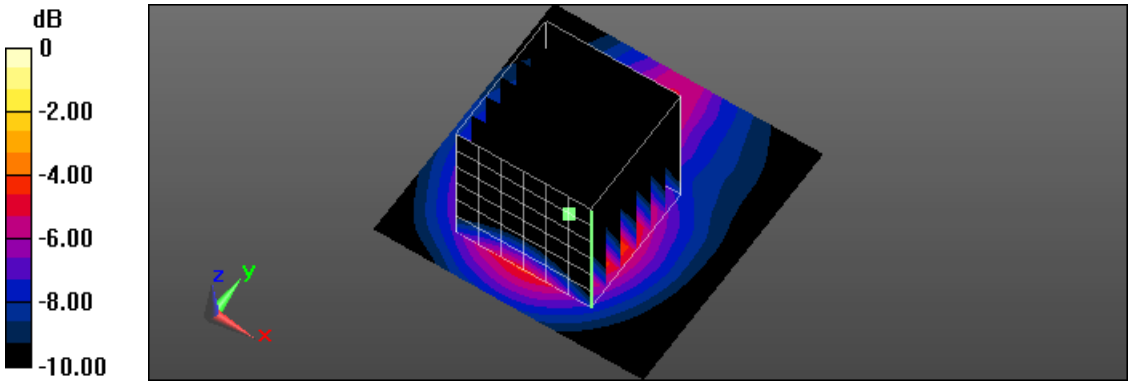
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 10:47:18 AM
14_IEEE 802.11n 2.4GHz 20MHz CH 11_13M_Vertical Back_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2462 MHz; σ = 1.981 S/m; ε_r = 52.329; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.184 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.268 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.281 W/kg
SAR(1 g) = 0.114 W/kg; SAR(10 g) = 0.051 W/kg
Maximum value of SAR (measured) = 0.183 W/kg



0 dB = 0.183 W/kg = -7.38 dBW/kg

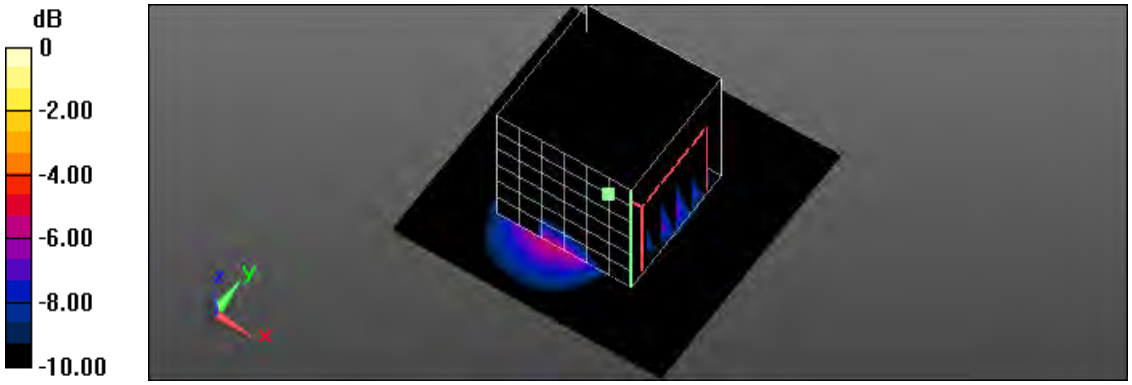
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 04:24:22 PM
15_IEEE 802.11n 2.4GHz 20MHz CH 11_13M_USB cable_Top_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2462 MHz; σ = 1.981 S/m; ε_r = 52.329; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.350 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.16 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.641 W/kg
SAR(1 g) = 0.213 W/kg; SAR(10 g) = 0.071 W/kg
Maximum value of SAR (measured) = 0.318 W/kg



0 dB = 0.318 W/kg = -4.98 dBW/kg

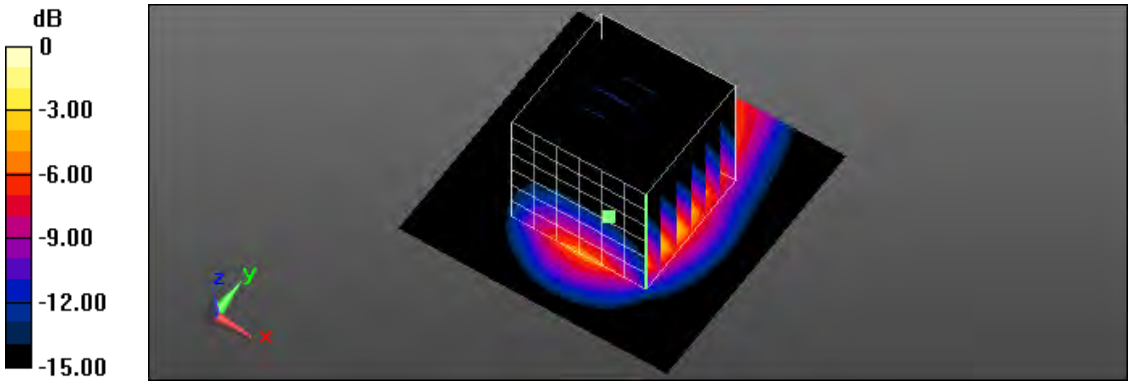
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/3 07:44:18 PM
52_IEEE 802.11n 2.4GHz 20MHz CH 11_13M_USB cable_Horizontal-Down_5mm_ANT-1_BF ON
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11n(2.4GHz) (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2462 MHz; σ = 1.981 S/m; ε_r = 52.329; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.38, 7.38, 7.38); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.818 W/kg

Flat/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.29 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 1.05 W/kg
SAR(1 g) = 0.462 W/kg; SAR(10 g) = 0.213 W/kg
Maximum value of SAR (measured) = 0.734 W/kg



0 dB = 0.734 W/kg = -1.34 dBW/kg

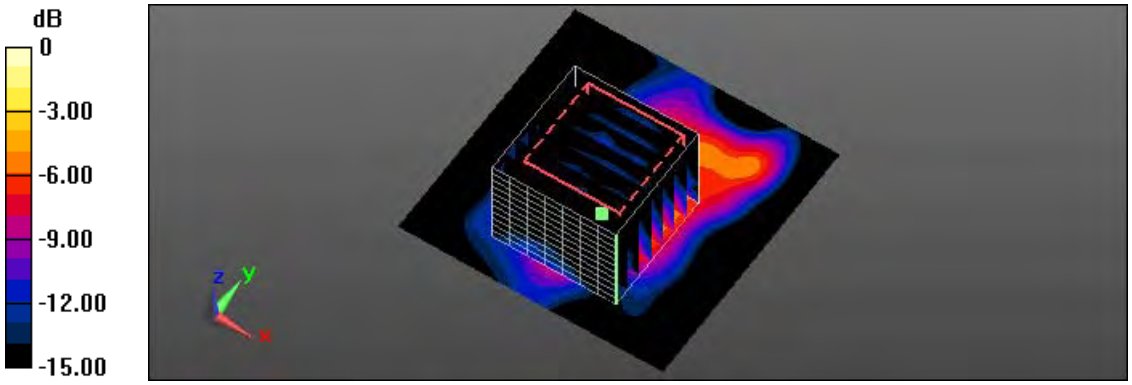
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/7 08:58:59 PM
36_IEEE 802.11ac 20MHz CH 40_13M_Horizontal-Up_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.245 S/m; ε_r = 48.766; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.431 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.914 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.808 W/kg
SAR(1 g) = 0.260 W/kg; SAR(10 g) = 0.090 W/kg
Maximum value of SAR (measured) = 0.446 W/kg



0 dB = 0.446 W/kg = -3.51 dBW/kg

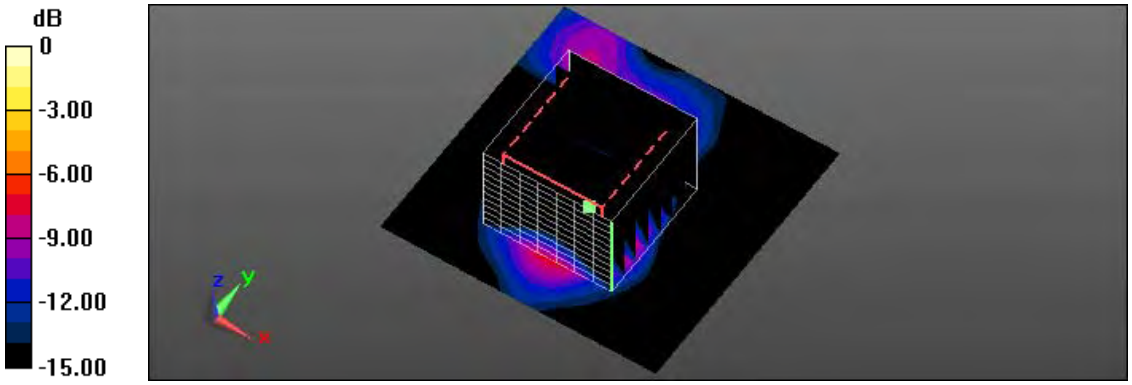
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/5 12:51:04 AM
37_IEEE 802.11ac 20MHz CH 40_13M_USB cable_Horizontal-Down_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.245 S/m; ε_r = 48.766; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.08 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.81 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 0.573 W/kg; SAR(10 g) = 0.170 W/kg
Maximum value of SAR (measured) = 0.994 W/kg



0 dB = 0.994 W/kg = -0.03 dBW/kg

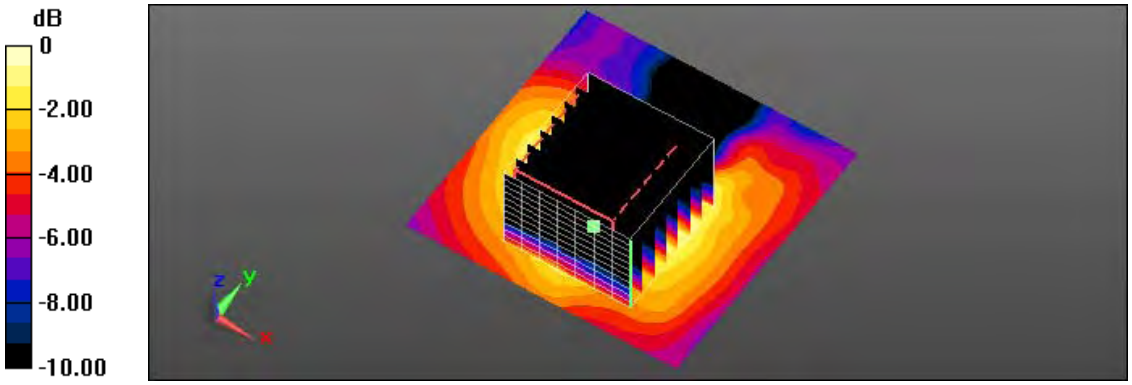
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/8 06:29:38 PM
38_IEEE 802.11ac 20MHz CH 40_13M_USB cable_Vertical Front_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.245 S/m; ε_r = 48.766; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.168 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.738 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.239 W/kg
SAR(1 g) = 0.073 W/kg; SAR(10 g) = 0.029 W/kg
Maximum value of SAR (measured) = 0.144 W/kg



0 dB = 0.144 W/kg = -8.42 dBW/kg

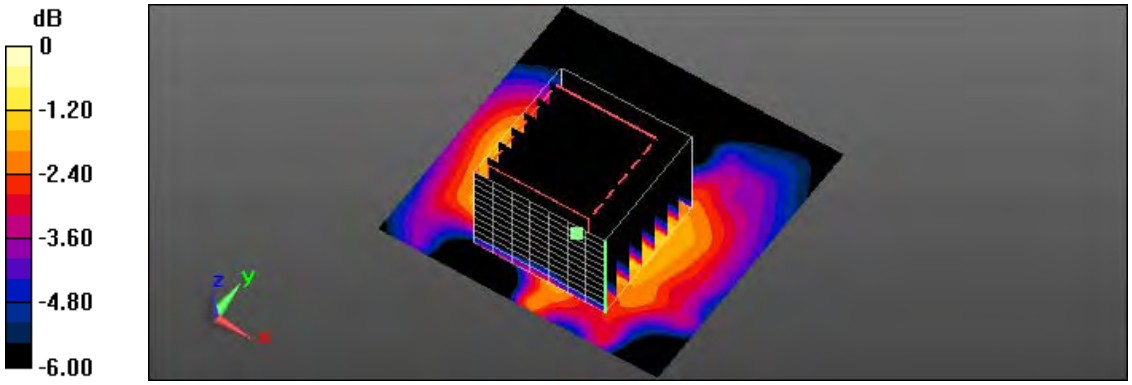
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/8 07:44:42 PM
39_IEEE 802.11ac 20MHz CH 40_13M_Vertical Back_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.245 S/m; ε_r = 48.766; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.161 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.093 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.358 W/kg
SAR(1 g) = 0.069 W/kg; SAR(10 g) = 0.028 W/kg
Maximum value of SAR (measured) = 0.139 W/kg



0 dB = 0.139 W/kg = -8.57 dBW/kg

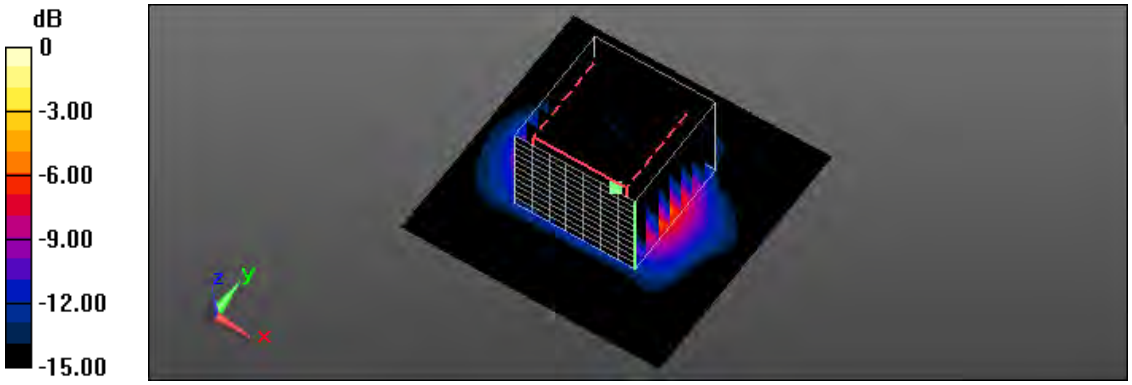
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/9 05:38:18 PM
40_IEEE 802.11ac 20MHz CH 40_13M_USB cable_Top_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.202 S/m; ε_r = 50.581; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.08, 5.08, 5.08); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.711 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 12.63 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.367 W/kg; SAR(10 g) = 0.108 W/kg
Maximum value of SAR (measured) = 0.666 W/kg



0 dB = 0.666 W/kg = -1.77 dBW/kg

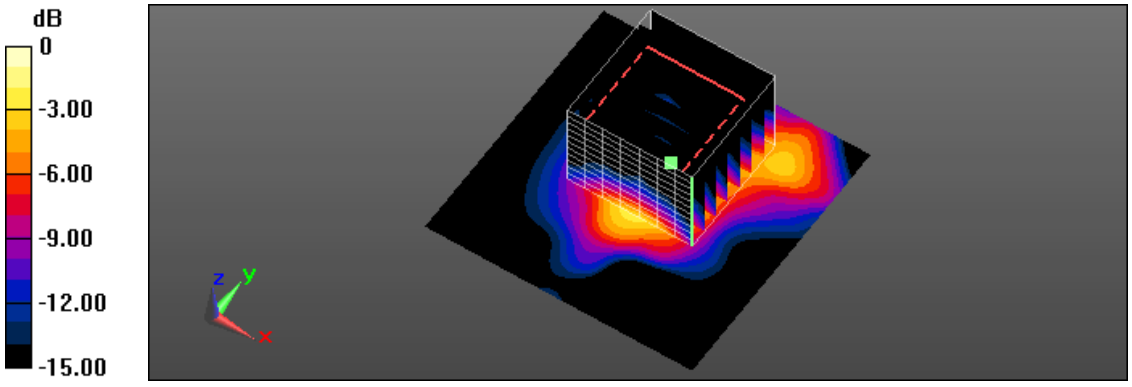
Test Laboratory: A Test Lab Techno Corp.
Date/Time: 2017/8/7 08:08:34 PM
41_IEEE 802.11ac 20MHz CH 161_13M_Horizontal-Up_5mm_ANT-1
DUT: EW-7822UTC; Type: 11ac Wireless Dual-Band Selectable USB Adapter

Communication System: UID 0, IEEE 802.11ac (0); Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 6.143 S/m; ε_r = 47.269; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.31, 4.31, 4.31); Calibrated: 2017/5/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2017/2/13
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1133
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Flat/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.874 W/kg

Flat/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 11.03 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.473 W/kg; SAR(10 g) = 0.152 W/kg
Maximum value of SAR (measured) = 0.811 W/kg



0 dB = 0.811 W/kg = -0.91 dBW/kg