FCC OET BULLETIN 65 SUPPLEMENT C 01-01
IEEE Std 1528-2003 and IEEE Std 1528a-2005

SAR EVALUATION REPORT

For
802.11a/g/n WLAN + Bluetooth PCI-E Custom Combination Card
(Tested inside of MacBook Pro. model A1425)

Model: BCM94331CSAX
FCC ID: QDS-BRCM1062

Report Number: 12U14483-4A1
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Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	7/24/2012	Initial Issue	--
A	8/21/2012	Updated report based on KDB inquiry (tracking number is 755218) 1. Included SAR data with Antenna vendor B based on the highest SAR mode obtained from Antenna vendor A. 2. Section 15: Added appendix 15.8_SAR Test Plots for WiFi Antenna Vendor B	Sunny Shih
A1	8/24/2012	Updated report based on reviewer's comment Sec. 7: Updated note for Antenna tested.	Sunny Shih

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1. Attestation of Test Results

Applicant	BROADCOM CORPORATION		
EUT description	802.11a/g/n WLAN + Bluetooth PCI-E Custom Combination Card (Tested inside of MacBook Pro. model A1425)		
Model numbers	BCM94331CSAX		
Test device is	An identical prototype		
Device category	Portable device		
Exposure category	General Population/Uncontrolled Exposure		
Date tested	6/22/2012 – 7/05/2012		
FCC Rule Parts	Freq. Range	Highest 1-g SAR	Limit
15.247	2412-2462 MHz	1.180 W/kg	1.6 W/kg
15.407	5150-5250 MHz	0.879 W/kg	
	5250-5350 MHz	1.170 W/kg	
	5500-5700 MHz	1.190 W/kg	
15.247	5725-5850 MHz	1.190 W/kg	
Applicable Standards			Test Results
FCC OET Bulletin 65 Supplement C 01-01, IEEE STD 1528:2003 and IEEE Std 1528a-2005			Pass

UL CCS tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above.

Approved & Released For UL CCS By:

Sunny Shih
Engineering Team Leader
UL CCS

Tested By:

Devin Chang
SAR Engineer
UL CCS

2. Test Methodology

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C Edition 01-01, IEEE STD 1528-2003, IEEE Std 1528a-2005 and the following KDB Procedures.

- KDB 248227 D01 SAR meas for 802 11abg v01r02
- KDB 865664 SAR 3 to 6 GHz Rev
- KDB 616217 D03 SAR Supp Note and Netbook Laptop V01
- KDB 447498 D01 Mobile Portable RF Exposure v04

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. Calibration and Uncertainty

4.1. Measuring Instrument Calibration

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due date		
				MM	DD	Year
Dielectronic Probe kit	HP	85070C	N/A	N/A		
ESA Series Network Analyzer	Agilent	E5071B	MY42100131	2	11	2013
Synthesized Signal Generator	HP	83732B	US34490599	7	14	2012
E-Field Probe	SPEAG	EX3DV4	3749	1	27	2013
Thermometer	ERTCO	639-1S	1718	7	19	2012
Data Acquisition Electronics	SPEAG	DAE3	427	1	17	2013
System Validation Dipole	SPEAG	D2450V2	706	4	11	2013
System Validation Dipole	SPEAG	D2450V2	748	2	7	2013
System Validation Dipole	SPEAG	D5GHzV2	1003	8	23	2012
Power Meter	HP	437B	3125U15418	11	3	2012
Power Sensor	HP	8481A	1926A16917	11	4	2012
Power Meter	HP	437B	3125U09516	9	14	2013
Power Sensor	HP	8481A	3318A92374	11	4	2012
Power Meter	HP	437B	3125U11364	11	3	2012
Power Sensor	HP	8481A	2702A76223	10	29	2012
Amplifier	MITEQ	4D00400600-50-30P	1620606	N/A		
Directional coupler	Werlatone	C8060-102	2141	N/A		

4.2. Measurement Uncertainty

Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram

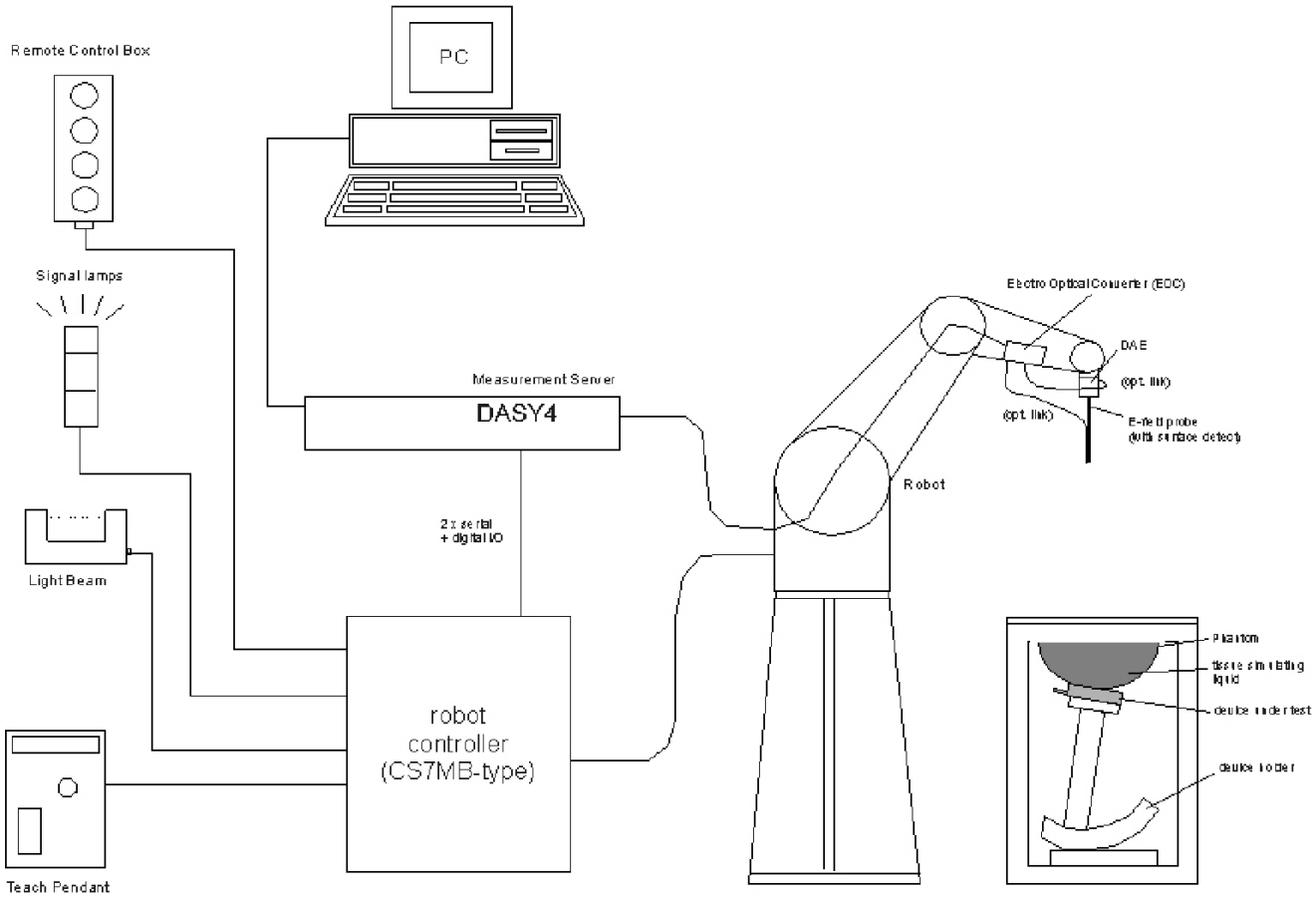
Component	Error, %	Distribution	Divisor	Sensitivity	U (Xi), %
Measurement System					
Probe Calibration (k=1)	**6.00**	Normal	1	1	6.00
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	2.30	Rectangular	1.732	0.7071	0.94
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	3.45	Rectangular	1.732	1	1.99
System Detection Limits	1.00	Rectangular	1.732	1	0.58
Readout Electronics	0.30	Normal	1	1	0.30
Response Time	0.80	Rectangular	1.732	1	0.46
Integration Time	2.60	Rectangular	1.732	1	1.50
RF Ambient Conditions - Noise	3.00	Rectangular	1.732	1	1.73
RF Ambient Conditions - Reflections	3.00	Rectangular	1.732	1	1.73
Probe Positioner Mechanical Tolerance	0.40	Rectangular	1.732	1	0.23
Probe Positioning with respect to Phantom	2.90	Rectangular	1.732	1	1.67
Extrapolation, Interpolation and Integration	1.00	Rectangular	1.732	1	0.58
Test Sample Related					
Test Sample Positioning	2.90	Normal	1	1	2.90
Device Holder Uncertainty	3.60	Normal	1	1	3.60
Output Power Variation - SAR Drift	5.00	Rectangular	1.732	1	2.89
Phantom and Tissue Parameters					
Phantom Uncertainty (shape and thickness)	4.00	Rectangular	1.732	1	2.31
Liquid Conductivity - deviation from target	5.00	Rectangular	1.732	0.64	1.85
Liquid Conductivity - measurement (MSL 2450 MHz)	**-4.61**	Normal	1	0.64	-2.95
Liquid Permittivity - deviation from target	5.00	Rectangular	1.732	0.6	1.73
Liquid Permittivity - measurement uncertainty (MSL2450 MHz)	**-1.87**	Normal	1	0.6	-1.12
				Combined Standard Uncertainty Uc(y) =	10.24
				Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence = 20.48	%
				Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence = 1.62	dB

Measurement uncertainty for 3 to 6 GHz averaged over 1 gram

Component	Error, %	Distribution	Divisor	Sensitivity	U (Xi), %
Measurement System					
Probe Calibration (k=1)	**6.55**	Normal	1	1	6.55
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	2.30	Rectangular	1.732	0.7071	0.94
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	3.45	Rectangular	1.732	1	1.99
System Detection Limits	1.00	Rectangular	1.732	1	0.58
Readout Electronics	1.00	Normal	1	1	1.00
Response Time	0.80	Rectangular	1.732	1	0.46
Integration Time	2.60	Rectangular	1.732	1	1.50
RF Ambient Conditions - Noise	3.00	Rectangular	1.732	1	1.73
RF Ambient Conditions - Reflections	3.00	Rectangular	1.732	1	1.73
Probe Positioner Mechanical Tolerance	0.40	Rectangular	1.732	1	0.23
Probe Positioning with respect to Phantom	2.90	Rectangular	1.732	1	1.67
Extrapolation, Interpolation and Integration	3.90	Rectangular	1.732	1	2.25
Test Sample Related					
Test Sample Positioning	1.10	Normal	1	1	1.10
Device Holder Uncertainty	3.60	Normal	1	1	3.60
Output Power Variation - SAR Drift	5.00	Rectangular	1.732	1	2.89
Phantom and Tissue Parameters					
Phantom Uncertainty (shape and thickness)	4.00	Rectangular	1.732	1	2.31
Liquid Conductivity - deviation from target	5.00	Rectangular	1.732	0.64	1.85
Liquid Conductivity - measurement (MSL5GHz)	**-4.23**	Normal	1	0.64	-2.71
Liquid Permittivity - deviation from target	10.00	Rectangular	1.732	0.6	3.46
Liquid Permittivity - measurement uncertainty (MSL5GHz)	**-4.24**	Normal	1	0.6	-2.54
				Combined Standard Uncertainty Uc(y), %:	11.09
				Expanded Uncertainty U, Coverage Factor = 1.96, > 95 % Confidence = 21.74	%
				Expanded Uncertainty U, Coverage Factor = 1.96, > 95 % Confidence = 1.71	dB

5. Measurement System Description and Setup

The DASY4 system for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot (Stäubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- 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.
- 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.
- 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.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY software.
- Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing validating the proper functioning of the system.

6. SAR Measurement Procedures

6.1. Normal SAR Measurement Procedure

Step 1: Power Reference Measurement
The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan
The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Step 3: Zoom Scan
Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures ≥ 7x7x9 (above 4.5 GHz) or 5x5x7 (below 3 GHz) points within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Step 4: Power drift measurement
The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan
The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation, the extrapolated distance should not be larger than the step size in Z-direction.

7. Device Under Test

<table>
<tr><td colspan="2">802.11a/g/n WLAN + Bluetooth PCI-E Custom Combination Card
(Tested inside of MacBook Pro. model A1425)
Model: BCM94331CSAX</td></tr>
<tr><td>Normal operation</td><td>Laptop mode (notebook).</td></tr>
<tr><td>Antennas tested</td><td>
<u>Vendor</u> <u>Part Number</u>
Amphenol (A) / Molex (B) WiFi 3 & Bluetooth: 613-0131 (for chain 1)
WiFi 2: 613-0131 (for chain 0)
WiFi 1: 613-0131 (for chain 2)
<table>
<tr><td></td><td>613-0131 Wi-Fi1</td><td>613-0131 Wi-Fi2</td><td>613-0131 Wi-Fi3 & Bluetooth</td></tr>
<tr><td></td><td>Peak Gain (includes cable loss)</td><td>Peak Gain (includes cable loss)</td><td>Peak Gain (includes cable loss)</td></tr>
<tr><td>Freq [GHz]</td><td></td><td></td><td></td></tr>
<tr><td>2.4 – 2.484</td><td>2.47</td><td>2.64</td><td>4.82</td></tr>
<tr><td>5.15 – 5.25</td><td>4.18</td><td>4.22</td><td>4.63</td></tr>
<tr><td>5.25 – 5.35</td><td>3.35</td><td>3.44</td><td>3.01</td></tr>
<tr><td>5.50 – 5.70</td><td>3.32</td><td>2.41</td><td>4.63</td></tr>
<tr><td>5.725 – 5.85</td><td>3.56</td><td>3.68</td><td>4.31</td></tr>
</table>
Note:
Amphenol (A) and Molex (B) antenna physically are identical to each other except vendor; All SAR tests were performed with the Antenna Vendor (A) and additional test with Antenna vendor B based on the highest SAR mode obtained from Antenna vendor A.
The Antenna-to-module mapping for this C2PC has been changed to
Chain 0 - WiFi Antenna 2
Chain 1 - WiFi Antenna 3
Chain 2 - WiFi Antenna 1
</td></tr>
<tr><td>Simultaneous transmission</td><td>WiFi 5 GHz bands can transmit simultaneously with Bluetooth
WiFi 2.4 GHz band can transmit simultaneously with Bluetooth</td></tr>
<tr><td>Assessment for SAR evaluation for Simultaneous transmission</td><td>WiFi vs Bluetooth
Due to Bluetooth’s max. output is 6.15 mW [<60/f(GHz) mW] and stand-alone SAR is not required, thus WiFi and Bluetooth are not considered as simultaneous transmission.</td></tr>
</table>

7.1. Possible Combinations of 802.11 Modes vs. Tx Diversity Configurations

Band (GHz)	802.11 modes	Tx diversity configurations	Original	C2PC
2.4	11b	1 Tx	√	√
		2 Tx	√	√
		3 Tx	√	√
	11g	1 Tx	√	√
		2 Tx	√	√
		3 Tx	√	√
	11n	HT20 (1 Tx)	√	√
		HT40 (1 Tx)	disabled	disabled
		HT20 (2 Tx)	√	√
		HT40 (2 Tx)	disabled	disabled
		HT20 (3 Tx)	√	√
		HT40 (3Tx)	disabled	disabled
Note: 1Tx, 2Tx and 3Tx power levels detailed apply to all CDD/STBC/SDM modes as applicable.				

Band (GHz)	802.11 modes	Tx diversity configurations	Original	C2PC
5.2	11a	Legacy (1 Tx)	√	√
		CDD (2 Tx)	disabled	disabled
		CDD (3 Tx)	disabled	disabled
	11n	HT20 SISO (1 Tx)	√	√
		HT40 SISO (1 Tx)	√	√
		HT20 CDD (2 Tx)	disabled	disabled
		HT20 STBC (2 Tx)	√	√
		HT20 SDM (2 Tx)	√	√
		HT40 CDD (2 Tx)	√	√
		HT40 STBC (2 Tx)	√	√
		HT40 SDM (2 Tx)	√	√
		HT20 CDD (3 Tx)	disabled	disabled
		HT20 STBC (3 Tx)	√	√
		HT20 SDM (3 Tx)	√	√
		HT40 CDD (3 Tx)	disabled	disabled
		HT40 STBC (3 Tx)	√	√
		HT40 SDM (3 Tx)	√	√
Band (GHz)	802.11 modes	Tx diversity configurations	Original	C2PC
5.3	11a	Legacy (1 Tx)	√	√
		CDD (2 Tx)	√	√
		CDD (3 Tx)	√	√
	11n	HT20 SISO (1 Tx)	√	√
		HT40 SISO (1 Tx)	√	√
		HT20 CDD (2 Tx)	√	√
		HT20 STBC (2 Tx)	√	√
		HT20 SDM (2 Tx)	√	√
		HT40 CDD (2 Tx)	√	√
		HT40 STBC (2 Tx)	√	√
		HT40 SDM (2 Tx)	√	√
		HT20 CDD (3 Tx)	√	√
		HT20 STBC (3 Tx)	√	√
		HT20 SDM (3 Tx)	√	√
		HT40 CDD (3 Tx)	√	√
		HT40 STBC (3 Tx)	√	√
		HT40 SDM (3 Tx)	√	√

Possible Combinations of 802.11 Modes vs. Tx Diversity Configurations continued

Band (GHz)	802.11 modes	Tx diversity configurations	Original	C2PC
5.5	11a	Legacy (1 Tx)	√	√
		CDD (2 Tx)	√	√
		CDD (3 Tx)	√	√
	11n	HT20 SISO (1 Tx)	√	√
		HT40 SISO (1 Tx)	√	√
		HT20 CDD (2 Tx)	√	√
		HT20 STBC (2 Tx)	√	√
		HT20 SDM (2 Tx)	√	√
		HT40 CDD (2 Tx)	√	√
		HT40 STBC (2 Tx)	√	√
		HT40 SDM (2 Tx)	√	√
		HT20 CDD (3 Tx)	√	√
		HT20 STBC (3 Tx)	√	√
		HT20 SDM (3 Tx)	√	√
		HT40 CDD (3 Tx)	√	√
		HT40 STBC (3 Tx)	√	√
		HT40 SDM (3 Tx)	√	√

Band (GHz)	802.11 modes	Tx diversity configurations	Original	C2PC
5.8	11a	Legacy (1 Tx)	√	√
		CDD (2 Tx)	√	√
		CDD (3 Tx)	√	√
	11n	HT20 SISO (1 Tx)	√	√
		HT40 SISO (1 Tx)	√	√
		HT20 CDD (2 Tx)	√	√
		HT20 STBC (2 Tx)	√	√
		HT20 SDM (2 Tx)	√	√
		HT40 CDD (2 Tx)	√	√
		HT40 STBC (2 Tx)	√	√
		HT40 SDM (2 Tx)	√	√
		HT20 CDD (3 Tx)	√	√
		HT20 STBC (3 Tx)	√	√
		HT20 SDM (3 Tx)	√	√
		HT40 CDD (3 Tx)	√	√
		HT40 STBC (3 Tx)	√	√
		HT40 SDM (3 Tx)	√	√

8. Tissue Dielectric Property

IEEE Std 1528-2003 Table 2

Target Frequency (MHz)	Head	
	ε_r	σ (S/m)
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800 – 2000	40.0	1.40
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40

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Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.8
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.9	55.2	0.97
900	41.5	0.97	55	1.05
915	41.5	0.98	55	1.06
1450	40.5	1.2	54	1.3
1610	40.3	1.29	53.8	1.4
1800 – 2000	40	1.4	53.3	1.52
2450	39.2	1.8	52.7	1.95
3000	38.5	2.4	52	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

8.1. Composition of Ingredients for the Tissue Material Used in the SAR Tests

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

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

Simulating Liquids for 5 GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	78
Mineral oil	11
Emulsifiers	9
Additives and Salt	2

8.2. Tissue Dielectric Parameters Check Results

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
06/22/2012	Body 5180	e'	50.5714	Relative Permittivity (ϵ_r):	50.57	49.05	3.11	10
		e''	17.6604	Conductivity (σ):	5.09	5.27	-3.51	5
	Body 5200	e'	50.5615	Relative Permittivity (ϵ_r):	50.56	49.02	3.15	10
		e''	17.6934	Conductivity (σ):	5.12	5.29	-3.38	5
	Body 5500	e'	50.1252	Relative Permittivity (ϵ_r):	50.13	48.61	3.11	10
		e''	17.9074	Conductivity (σ):	5.48	5.64	-2.98	5
	Body 5800	e'	49.6155	Relative Permittivity (ϵ_r):	49.62	48.20	2.94	10
		e''	18.1633	Conductivity (σ):	5.86	6.00	-2.37	5
	Body 5825	e'	49.6021	Relative Permittivity (ϵ_r):	49.60	48.20	2.91	10
		e''	18.2626	Conductivity (σ):	5.92	6.00	-1.42	5
06/23/2012	Body 5180	e'	47.2026	Relative Permittivity (ϵ_r):	47.20	49.05	-3.76	10
		e''	19.0223	Conductivity (σ):	5.48	5.27	3.94	5
	Body 5200	e'	47.1723	Relative Permittivity (ϵ_r):	47.17	49.02	-3.77	10
		e''	19.0456	Conductivity (σ):	5.51	5.29	4.01	5
	Body 5500	e'	46.6782	Relative Permittivity (ϵ_r):	46.68	48.61	-3.98	10
		e''	19.1656	Conductivity (σ):	5.86	5.64	3.84	5
	Body 5800	e'	46.1832	Relative Permittivity (ϵ_r):	46.18	48.20	-4.18	10
		e''	19.3113	Conductivity (σ):	6.23	6.00	3.80	5
	Body 5825	e'	46.1570	Relative Permittivity (ϵ_r):	46.16	48.20	-4.24	10
		e''	19.3086	Conductivity (σ):	6.25	6.00	4.23	5
06/24/2012	Body 5180	e'	48.9708	Relative Permittivity (ϵ_r):	48.97	49.05	-0.15	10
		e''	18.2736	Conductivity (σ):	5.26	5.27	-0.15	5
	Body 5200	e'	48.9343	Relative Permittivity (ϵ_r):	48.93	49.02	-0.17	10
		e''	18.3010	Conductivity (σ):	5.29	5.29	-0.06	5
	Body 5500	e'	48.4341	Relative Permittivity (ϵ_r):	48.43	48.61	-0.37	10
		e''	18.6446	Conductivity (σ):	5.70	5.64	1.02	5
	Body 5800	e'	47.9926	Relative Permittivity (ϵ_r):	47.99	48.20	-0.43	10
		e''	18.8901	Conductivity (σ):	6.09	6.00	1.53	5
	Body 5825	e'	47.9450	Relative Permittivity (ϵ_r):	47.95	48.20	-0.53	10
		e''	18.9009	Conductivity (σ):	6.12	6.00	2.03	5
06/25/2012	Body 5180	e'	49.0369	Relative Permittivity (ϵ_r):	49.04	49.05	-0.02	10
		e''	17.5978	Conductivity (σ):	5.07	5.27	-3.85	5
	Body 5200	e'	49.0019	Relative Permittivity (ϵ_r):	49.00	49.02	-0.04	10
		e''	17.6399	Conductivity (σ):	5.10	5.29	-3.67	5
	Body 5500	e'	48.4255	Relative Permittivity (ϵ_r):	48.43	48.61	-0.39	10
		e''	18.1327	Conductivity (σ):	5.55	5.64	-1.76	5
	Body 5800	e'	47.7859	Relative Permittivity (ϵ_r):	47.79	48.20	-0.86	10
		e''	18.5200	Conductivity (σ):	5.97	6.00	-0.46	5
	Body 5825	e'	47.7439	Relative Permittivity (ϵ_r):	47.74	48.20	-0.95	10
		e''	18.6362	Conductivity (σ):	6.04	6.00	0.60	5
06/27/2012	Body 5180	e'	47.7577	Relative Permittivity (ϵ_r):	47.76	49.05	-2.63	10
		e''	18.2709	Conductivity (σ):	5.26	5.27	-0.17	5
	Body 5200	e'	47.7162	Relative Permittivity (ϵ_r):	47.72	49.02	-2.66	10
		e''	18.3071	Conductivity (σ):	5.29	5.29	-0.03	5
	Body 5500	e'	47.0841	Relative Permittivity (ϵ_r):	47.08	48.61	-3.15	10
		e''	18.7488	Conductivity (σ):	5.73	5.64	1.58	5
	Body 5800	e'	46.4203	Relative Permittivity (ϵ_r):	46.42	48.20	-3.69	10
		e''	19.1552	Conductivity (σ):	6.18	6.00	2.96	5
	Body 5825	e'	46.3824	Relative Permittivity (ϵ_r):	46.38	48.20	-3.77	10
		e''	19.1986	Conductivity (σ):	6.22	6.00	3.64	5

Tissue dielectric parameters check results continued

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
06/28/2012	Body 5180	e'	47.8099	Relative Permittivity (ϵ_r):	47.81	49.05	-2.52	10
		e''	18.2242	Conductivity (σ):	5.25	5.27	-0.42	5
	Body 5200	e'	47.7712	Relative Permittivity (ϵ_r):	47.77	49.02	-2.55	10
		e''	18.2441	Conductivity (σ):	5.28	5.29	-0.37	5
	Body 5500	e'	47.1549	Relative Permittivity (ϵ_r):	47.15	48.61	-3.00	10
		e''	18.7529	Conductivity (σ):	5.73	5.64	1.60	5
	Body 5800	e'	46.5290	Relative Permittivity (ϵ_r):	46.53	48.20	-3.47	10
		e''	19.1454	Conductivity (σ):	6.17	6.00	2.91	5
	Body 5825	e'	46.4911	Relative Permittivity (ϵ_r):	46.49	48.20	-3.55	10
		e''	19.2693	Conductivity (σ):	6.24	6.00	4.02	5
06/29/2012	Body 5180	e'	49.3292	Relative Permittivity (ϵ_r):	49.33	49.05	0.58	10
		e''	17.8797	Conductivity (σ):	5.15	5.27	-2.31	5
	Body 5200	e'	49.2730	Relative Permittivity (ϵ_r):	49.27	49.02	0.52	10
		e''	17.9615	Conductivity (σ):	5.19	5.29	-1.91	5
	Body 5500	e'	48.7789	Relative Permittivity (ϵ_r):	48.78	48.61	0.34	10
		e''	18.4416	Conductivity (σ):	5.64	5.64	-0.08	5
	Body 5800	e'	48.0863	Relative Permittivity (ϵ_r):	48.09	48.20	-0.24	10
		e''	18.8577	Conductivity (σ):	6.08	6.00	1.36	5
	Body 5825	e'	48.1047	Relative Permittivity (ϵ_r):	48.10	48.20	-0.20	10
		e''	19.0893	Conductivity (σ):	6.18	6.00	3.05	5
06/30/2012	Body 5180	e'	47.9963	Relative Permittivity (ϵ_r):	48.00	49.05	-2.14	10
		e''	18.1181	Conductivity (σ):	5.22	5.27	-1.00	5
	Body 5200	e'	47.9603	Relative Permittivity (ϵ_r):	47.96	49.02	-2.16	10
		e''	18.1424	Conductivity (σ):	5.25	5.29	-0.93	5
	Body 5500	e'	47.4349	Relative Permittivity (ϵ_r):	47.43	48.61	-2.42	10
		e''	18.5758	Conductivity (σ):	5.68	5.64	0.64	5
	Body 5800	e'	46.8287	Relative Permittivity (ϵ_r):	46.83	48.20	-2.85	10
		e''	18.9226	Conductivity (σ):	6.10	6.00	1.71	5
	Body 5825	e'	46.8350	Relative Permittivity (ϵ_r):	46.84	48.20	-2.83	10
		e''	18.9794	Conductivity (σ):	6.15	6.00	2.45	5
07/01/2012	Body 5180	e'	48.2835	Relative Permittivity (ϵ_r):	48.28	49.05	-1.56	10
		e''	18.7507	Conductivity (σ):	5.40	5.27	2.45	5
	Body 5200	e'	48.3093	Relative Permittivity (ϵ_r):	48.31	49.02	-1.45	10
		e''	18.8035	Conductivity (σ):	5.44	5.29	2.68	5
	Body 5500	e'	47.7196	Relative Permittivity (ϵ_r):	47.72	48.61	-1.84	10
		e''	19.0469	Conductivity (σ):	5.82	5.64	3.20	5
	Body 5800	e'	47.2501	Relative Permittivity (ϵ_r):	47.25	48.20	-1.97	10
		e''	19.3390	Conductivity (σ):	6.24	6.00	3.95	5
	Body 5825	e'	47.2082	Relative Permittivity (ϵ_r):	47.21	48.20	-2.06	10
		e''	19.3139	Conductivity (σ):	6.26	6.00	4.26	5
07/02/2012	Body 2450	e'	53.2551	Relative Permittivity (εr):	53.26	52.70	1.05	5
		e''	13.7075	Conductivity (σ):	1.87	1.95	-4.24	5
	Body 2410	e'	53.3062	Relative Permittivity (εr):	53.31	52.76	1.04	5
		e''	13.5784	Conductivity (σ):	1.82	1.91	-4.61	5
	Body 2435	e'	53.2925	Relative Permittivity (εr):	53.29	52.73	1.07	5
		e''	13.6667	Conductivity (σ):	1.85	1.93	-4.18	5
	Body 2460	e'	53.2085	Relative Permittivity (εr):	53.21	52.69	0.99	5
		e''	13.7383	Conductivity (σ):	1.88	1.96	-4.32	5

Tissue dielectric parameters check results continued

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
07/03/2012	Body 2450	e'	51.7365	Relative Permittivity (ϵ_r):	51.74	52.70	-1.83	5
		e''	14.7837	Conductivity (σ):	2.01	1.95	3.28	5
	Body 2410	e'	51.8698	Relative Permittivity (ϵ_r):	51.87	52.76	-1.69	5
		e''	14.6212	Conductivity (σ):	1.96	1.91	2.72	5
	Body 2435	e'	51.7894	Relative Permittivity (ϵ_r):	51.79	52.73	-1.78	5
		e''	14.7212	Conductivity (σ):	1.99	1.93	3.21	5
	Body 2460	e'	51.7046	Relative Permittivity (ϵ_r):	51.70	52.69	-1.87	5
		e''	14.8215	Conductivity (σ):	2.03	1.96	3.22	5
07/05/2012	Body 2450	e'	52.7709	Relative Permittivity (ϵ_r):	52.77	52.70	0.13	5
		e''	14.6383	Conductivity (σ):	1.99	1.95	2.26	5
	Body 2410	e'	52.8231	Relative Permittivity (ϵ_r):	52.82	52.76	0.12	5
		e''	14.4936	Conductivity (σ):	1.94	1.91	1.82	5
	Body 2435	e'	52.8128	Relative Permittivity (ϵ_r):	52.81	52.73	0.16	5
		e''	14.5921	Conductivity (σ):	1.98	1.93	2.31	5
	Body 2460	e'	52.7243	Relative Permittivity (ϵ_r):	52.72	52.69	0.07	5
		e''	14.6717	Conductivity (σ):	2.01	1.96	2.18	5

Tissue dielectric parameters check results continued

9. System Performance Check

The system performance check is performed prior to any usage of the system in order to verify SAR system measurement accuracy. The system performance check verifies that the system operates within its specifications of ±10%.

9.1. System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

9.2. Reference SAR Values for System Performance Check

The reference SAR values can be obtained from the calibration certificate of system validation dipoles

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	SAR Measured (mW/g)		
				1g/10g	Head	Body
D2450V2	706	4/11/12	2450	1g	51.2	49.6
				10g	23.9	23.4
D2450V2	748	2/7/12	2450	1g	52.7	49.9
				10g	24.6	23.4
D5GHzV2	1003	8/23/11	5200	1g	76.3	74.4
				10g	21.7	20.8
			5500	1g	80.7	79.9
				10g	23.0	22.3
			5800	1g	76.0	76.2
				10g	21.6	21.2

9.3. System Performance Check Results

Date Tested	System Dipole		T.S.	SAR Measured		Target	Delta (%)	Tolerance
	Type	Serial No.	Liquid	(Normalized to 1 W)		(Ref. Value)		(%)
06/22/12	D5GHzV2 5.2 GHz	1003	Body	1g	71.8	74.4	-3.49	±10
				10g	20.5	20.8	-1.44	
06/23/12	D5GHzV2 5.2 GHz	1003	Body	1g	75.8	74.4	1.88	±10
				10g	21.8	20.8	4.81	
06/24/12	D5GHzV2 5.2 GHz	1003	Body	1g	76.0	74.4	2.15	±10
				10g	21.7	20.8	4.33	
06/25/12	D5GHzV2 5.5 GHz	1003	Body	1g	81.7	79.9	2.25	±10
				10g	24.0	22.3	7.62	
06/27/12	D5GHzV2 5.5 GHz	1003	Body	1g	81.7	79.9	2.25	±10
				10g	23.6	22.3	5.83	
06/28/12	D5GHzV2 5.5 GHz	1003	Body	1g	82.9	79.9	3.75	±10
				10g	23.9	22.3	7.17	
06/29/12	D5GHzV2 5.8 GHz	1003	Body	1g	77.2	76.2	1.31	±10
				10g	22.3	21.2	5.19	
06/30/12	D5GHzV2 5.8 GHz	1003	Body	1g	76.7	76.2	0.66	±10
				10g	22.3	21.2	5.19	
07/01/12	D5GHzV2 5.8 GHz	1003	Body	1g	76.4	76.2	0.26	±10
				10g	22.1	21.2	4.25	
07/02/12	D2450V2	748	Body	1g	52.7	49.9	5.61	±10
				10g	24.9	23.4	6.41	
07/03/12	D2450V2	748	Body	1g	53.7	49.9	7.62	±10
				10g	25.0	23.4	6.84	
07/05/12	D2450V2	706	Body	1g	48.4	49.6	-2.42	±10
				10g	22.5	23.4	-3.85	

10. Summary of Required Test Modes

10.1. 2.4 GHz Band

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11b Legacy	1 Tx	1	2412	19.0			18.0			Yes	3
		6	2437	19.0			18.0				
		11	2462	19.0			18.0				
		1	2412		19.0			19.0			2
		6	2437		19.0			19.0			
		11	2462		19.0			19.0			
		1	2412			19.0			18.0		1
		6	2437			19.0			18.0		
		11	2462			19.0			18.0		
	2 Tx	1	2412	19.0	19.0		18.0	19.0		Yes	3, 2
		6	2437	19.0	19.0		18.0	19.0			
		11	2462	19.0	19.0		18.0	19.0			
		1	2412	19.0		19.0	18.0		18.0		3, 1
		6	2437	19.0		19.0	18.0		18.0		
		11	2462	19.0		19.0	18.0		18.0		
		1	2412		19.0	19.0		19.0	18.0		2, 1
		6	2437		19.0	19.0		19.0	18.0		
		11	2462		19.0	19.0		19.0	18.0		
	3 Tx	1	2412	19.0	19.0	19.0	18.0	19.0	18.0	Yes	3, 2, 1
		6	2437	19.0	19.0	19.0	18.0	19.0	18.0		
		11	2462	19.0	19.0	19.0	18.0	19.0	18.0		
11g	1 Tx	1	2412	15.5			15.5			No	Test reduction per KDB 248227
		2	2417	18.0			18.0				
		6	2437	19.0			18.0				
		10	2457	19.0			18.0				
		11	2462	17.5			17.5				
		1	2412		15.5			15.5			
		2	2417		18.0			18.0			
		6	2437		19.0			19.0			
		10	2457		19.0			19.0			
		11	2462		17.5			17.5			
		1	2412			15.5			15.5		
		2	2417			18.0			18.0		
		6	2437			19.0			18.0		
		10	2457			19.0			18.0		
		11	2462			17.5			17.5		

Summary of Required Test Modes for 2.4 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11g	2 Tx	1	2412	15.0	15.0		15.0	15.0		No	Test reduction per KDB 248227
		2	2417	17.0	17.0		17.0	17.0			
		6	2437	19.0	19.0		18.0	19.0			
		10	2457	17.5	17.5		17.5	17.5			
		11	2462	15.0	15.0		15.0	15.0			
		1	2412	15.0		15.0	15.0		15.0		
		2	2417	17.0		17.0	17.0		17.0		
		6	2437	19.0		19.0	18.0		18.0		
		10	2457	17.5		17.5	17.5		17.5		
		11	2462	15.0		15.0	15.0		15.0		
		1	2412		15.0	15.0		15.0	15.0		
		2	2417		17.0	17.0		17.0	17.0		
		6	2437		19.0	19.0		19.0	18.0		
		10	2457		17.5	17.5		17.5	17.5		
		11	2462		15.0	15.0		15.0	15.0		
	3 Tx	1	2412	15.0	15.0	15.0	15.0	15.0	15.0	No	Test reduction per KDB 248227
		2	2417	17.0	17.0	17.0	17.0	17.0	17.0		
		6	2437	19.0	19.0	19.0	18.0	19.0	18.0		
		10	2457	17.5	17.5	17.5	17.5	17.5	17.5		
		11	2462	15.0	15.0	15.0	15.0	15.0	15.0		
11n	HT20 (1 Tx)	1	2412	15.5			15.5			No	Covered by 11b (1Tx)
		2	2417	18.0			18.0				
		6	2437	19.0			18.0				
		10	2457	19.0			18.0				
		11	2462	17.5			17.5				
		1	2412		15.5			15.5			
		2	2417		18.0			18.0			
		6	2437		19.0			19.0			
		10	2457		19.0			19.0			
		11	2462		17.5			17.5			
		1	2412			15.5			15.5		
		2	2417			18.0			18.0		
		6	2437			19.0			18.0		
		10	2457			19.0			18.0		
		11	2462			17.5			17.5		
	HT40 All *2 (1 Tx)	40MHz Transmission disabled in the 2.4GHz Band									

Summary of Required Test Modes for 2.4 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11n	HT20 All *2 (2 Tx)	1	2412	15.0	15.0		15.0	15.0		No	Covered by 11b (1Tx)
		2	2417	17.0	17.0		17.0	17.0			
		6	2437	19.0	19.0		18.0	19.0			
		10	2457	17.5	17.5		17.5	17.5			
		11	2462	15.0	15.0		15.0	15.0			
		1	2412	15.0		15.0	15.0		15.0		
		2	2417	17.0		17.0	17.0		17.0		
		6	2437	19.0		19.0	18.0		18.0		
		10	2457	17.5		17.5	17.5		17.5		
		11	2462	15.0		15.0	15.0		15.0		
		1	2412		15.0	15.0		15.0	15.0		
		2	2417		17.0	17.0		17.0	17.0		
		6	2437		19.0	19.0		19.0	18.0		
		10	2457		17.5	17.5		17.5	17.5		
		11	2462		15.0	15.0		15.0	15.0		
	HT40 All *2 (2 Tx)	40MHz Transmission disabled in the 2.4GHz Band									
	HT20 All *2 (3 Tx)	1	2412	15.0	15.0	15.0	15.0	15.0	15.0	No	Covered by 11b (1Tx)
		2	2417	17.0	17.0	17.0	17.0	17.0	17.0		
		6	2437	19.0	19.0	19.0	18.0	19.0	18.0		
		10	2457	17.5	17.5	17.5	17.5	17.5	17.5		
		11	2462	15.0	15.0	15.0	15.0	15.0	15.0		
	HT40 All *2 (3 Tx)	40MHz Transmission disabled in the 2.4GHz Band									

Note(s):

*1 The “Original Approval” power levels were based upon FCC modular approval testing of the BCM94331CSAX radio. These power levels were approved up to maximum regulatory levels to cover a number of different potential applications. The original maximum regulatory power levels may be reduced further by the driver for one of the following two reasons:

1) For performance (i.e. non-regulatory) reasons to ensure that PER and EVM of the radio meet internal specifications.

2) For application specifics. In this case the power is also reduced to meet the specific SAR requirement per transmit chain over frequency band/channel as per the "Target Maximum Average Power per chain for C2PC" column.

*2 The 11n 2Tx,3Tx HT20/HT40 "All" modes detailed apply to all of CDD/STBC/SDM modes.

10.2. 5.2 GHz Band

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11a	Legacy (1 Tx)	36	5180	14.0			14.0			Yes	3
		40	5200	14.0			14.0				
		44	5220	14.0			14.0				
		48	5240	14.0			14.0				
		36	5180		14.0			14.0			2
		40	5200		14.0			14.0			
		44	5220		14.0			14.0			
		48	5240		14.0			14.0			
		36	5180			14.0			14.0		1
		40	5200			14.0			14.0		
		44	5220			14.0			14.0		
		48	5240			14.0			14.0		
	CDD (2 Tx)	36	5180	This mode disabled in driver. No testing.							
		40	5200								
		44	5220								
		48	5240								
	CDD (3 Tx)	36	5180	This mode disabled in driver. No testing.							
		40	5200								
		44	5220								
		48	5240								
11n	HT20 SISO (1 Tx)	36	5180	14.0			14.0			No	Covered by 11a Legacy (1Tx)
		44	5220	14.0			14.0				
		48	5240	14.0			14.0				
		36	5180		14.0			14.0			
		44	5220		14.0			14.0			
		48	5240		14.0			14.0			
		36	5180			14.0			14.0		
		44	5220			14.0			14.0		
		48	5240			14.0			14.0		
	HT40 SISO (1 Tx)	38	5190	15.5			15.5			Yes	3
		46	5230	15.5			15.5				
		38	5190		15.5			15.5			2
		46	5230		15.5			15.5			
		38	5190			15.5			15.5		1
		46	5230			15.5			15.5		
	HT20 CDD (2 Tx)	36	5180	This mode disabled in driver. No testing.							
		40	5200								
		48	5240								
	HT20 STBC/SDM (2 Tx)	36	5180	11.0	11.0		11.0	11.0		Yes	3, 2
		40	5200	11.0	11.0		11.0	11.0			
		48	5240	11.0	11.0		11.0	11.0			
		36	5180	11.0		11.0	11.0		11.0		3, 1
		40	5200	11.0		11.0	11.0		11.0		
		48	5240	11.0		11.0	11.0		11.0		
		36	5180		11.0	11.0		11.0	11.0		2, 1
		40	5200		11.0	11.0		11.0	11.0		
		48	5240		11.0	11.0		11.0	11.0		

Summary of Required Test Modes for 5.2 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11n	HT40 CDD (2 Tx)	38	5190	9.0	9.0		9.0	9.0		No	Covered by 11n HT20 STBC/SDM (2Tx)
		46	5230	9.0	9.0		9.0	9.0			
		38	5190	9.0		9.0	9.0		9.0		
		46	5230	9.0		9.0	9.0		9.0		
		38	5190		9.0	9.0		9.0	9.0		
		46	5230		9.0	9.0		9.0	9.0		
	HT40 STBC (2 Tx)	38	5190	10.0	10.0		10.0	10.0		No	Covered by 11n HT20 STBC/SDM (2Tx)
		46	5230	10.0	10.0		10.0	10.0			
		38	5190	10.0		10.0	10.0		10.0		
		46	5230	10.0		10.0	10.0		10.0		
		38	5190		10.0	10.0		10.0	10.0		
		46	5230		10.0	10.0		10.0	10.0		
	HT40 SDM (2 Tx)	38	5190	9.0	9.0		9.0	9.0		No	Covered by 11n HT20 STBC/SDM (2Tx)
		46	5230	9.0	9.0		9.0	9.0			
		38	5190	9.0		9.0	9.0		9.0		
		46	5230	9.0		9.0	9.0		9.0		
		38	5190		9.0	9.0		9.0	9.0		
		46	5230		9.0	9.0		9.0	9.0		
	HT20 CDD (3 Tx)	36	5180	This mode disabled in driver. No testing.							
		40	5200								
		48	5240								
	HT20 STBC (3 Tx)	36	5180	9.0	9.0	9.0	9.0	9.0	9.0	No	Covered by 11n HT40 STBC (3Tx)
		40	5200	9.0	9.0	9.0	9.0	9.0	9.0		
		48	5240	9.0	9.0	9.0	9.0	9.0	9.0		
	HT20 SDM (3 Tx)	36	5180	8.0	8.0	8.0	8.0	8.0	8.0	No	Covered by 11n HT40 STBC (3Tx)
		40	5200	8.0	8.0	8.0	8.0	8.0	8.0		
		48	5240	8.0	8.0	8.0	8.0	8.0	8.0		
	HT40 CDD (3 Tx)	38	5190	This mode disabled in driver. No testing.							
		46	5230								
	HT40 STBC (3 Tx)	38	5190	10.0	10.0	10.0	10.0	10.0	10.0	Yes	3, 2, 1
		46	5230	10.0	10.0	10.0	10.0	10.0	10.0		
	HT40 SDM (3 Tx)	38	5190	9.0	9.0	9.0	9.0	9.0	9.0	No	Covered by 11n HT40 STBC (3Tx)
		46	5230	9.0	9.0	9.0	9.0	9.0	9.0		

Note(s):

*1 The “Original Approval” power levels were based upon FCC modular approval testing of the BCM94331CSAX radio. These power levels were approved up to maximum regulatory levels to cover a number of different potential applications. The original maximum regulatory power levels may be reduced further by the driver for one of the following two reasons:

1) For performance (i.e. non-regulatory) reasons to ensure that PER and EVM of the radio meet internal specifications.

2) For application specifics. In this case the power is also reduced to meet the specific SAR requirement per transmit chain over frequency band/channel as per the "Target Maximum Average Power per chain for C2PC" column.

10.3. 5.3 GHz Band

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11a	Legacy (1 Tx)	52	5260	18.5			17.0			Yes	3
		56	5280	18.5			17.0				
		60	5300	18.5			17.0				
		64	5320	17.5			17.0				
		52	5260		18.5			16.0			2
		56	5280		18.5			16.0			
		60	5300		18.5			16.0			
		64	5320		17.5			16.0			
		52	5260			18.5			17.5		1
		56	5280			18.5			17.5		
		60	5300			18.5			17.5		
		64	5320			17.5			17.5		
	CDD (2 Tx)	52	5260	12.5	12.5		12.5	12.5		Yes	3, 2
		56	5280	12.5	12.5		12.5	12.5			
		60	5300	12.5	12.5		12.5	12.5			
		64	5320	12.5	12.5		12.5	12.5			
		52	5260	12.5		12.5	12.5		12.5		3, 1
		56	5280	12.5		12.5	12.5		12.5		
		60	5300	12.5		12.5	12.5		12.5		
		64	5320	12.5		12.5	12.5		12.5		
		52	5260		12.5	12.5		12.5	12.5		2, 1
		56	5280		12.5	12.5		12.5	12.5		
		60	5300		12.5	12.5		12.5	12.5		
		64	5320		12.5	12.5		12.5	12.5		
	CDD (3 Tx)	52	5260	12.5	12.5	12.5	12.5	12.5	12.5	Yes	3, 2, 1
		56	5280	12.5	12.5	12.5	12.5	12.5	12.5		
		60	5300	12.5	12.5	12.5	12.5	12.5	12.5		
		64	5320	12.5	12.5	12.5	12.5	12.5	12.5		
11n	HT20 SISO (1 Tx)	52	5260	18.5			17.0			No	Covered by 11a Legacy (1Tx)
		60	5300	18.5			17.0				
		64	5320	17.5			17.0				
		52	5260		18.5			16.0			
		60	5300		18.5			16.0			
		64	5320		17.5			16.0			
		52	5260			18.5			17.5		
		60	5300			18.5			17.5		
		64	5320			17.5			17.5		
	HT40 SISO (1 Tx)	54	5270	18.0			17.0			No	Covered by 11a Legacy (1Tx)
		62	5310	14.0			14.0				
		54	5270		18.0			16.0			
		62	5310		14.0			14.0			
		54	5270			18.0			17.5		
		62	5310			14.0			14.0		

Summary of Required Test Modes for 5.3 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1 WiFi 3	Chain 0 WiFi 2	Chain 2 WiFi 1	Chain 1 WiFi 3	Chain 0 WiFi 2	Chain 2 WiFi 1		
11n	HT20 CDD (2 Tx)	52	5260	12.5	12.5		12.5	12.5		No	Covered by 11a CDD (2 Tx)
		60	5300	12.5	12.5		12.5	12.5			
		64	5320	12.5	12.5		12.5	12.5			
		52	5260	12.5		12.5	12.5		12.5		
		60	5300	12.5		12.5	12.5		12.5		
		64	5320	12.5		12.5	12.5		12.5		
		52	5260		12.5	12.5		12.5	12.5		
		60	5300		12.5	12.5		12.5	12.5		
		64	5320		12.5	12.5		12.5	12.5		
	HT20 STBC/SDM (2 Tx)	52	5260	15.0	15.0		15.0	15.0		Yes	3, 2
		56	5280	15.0	15.0		15.0	15.0			
		64	5320	15.0	15.0		15.0	15.0			
		52	5260	15.0		15.0	15.0		15.0		3, 1
		56	5280	15.0		15.0	15.0		15.0		
		64	5320	15.0		15.0	15.0		15.0		
		52	5260		15.0	15.0		15.0	15.0		2, 1
		56	5280		15.0	15.0		15.0	15.0		
		64	5320		15.0	15.0		15.0	15.0		
	HT40 CDD (2Tx)	54	5270	14.0	14.0		14.0	14.0		No	Covered by HT20 STBC/SDM (2 Tx)
		62	5310	14.0	14.0		14.0	14.0			
		54	5270	14.0		14.0	14.0		14.0		
		62	5310	14.0		14.0	14.0		14.0		
		54	5270		14.0	14.0		14.0	14.0		
		62	5310		14.0	14.0		14.0	14.0		
	HT40 STBC/SDM (2Tx)	54	5270	15.5	15.5		15.5	15.5		Yes	3, 2
		62	5310	14.0	14.0		14.0	14.0		No	
		54	5270	15.5		15.5	15.5		15.5	Yes	3, 1
		62	5310	14.0		14.0	14.0		14.0	No	
		54	5270		15.5	15.5		15.5	15.5	Yes	2, 1
		62	5310		14.0	14.0		14.0	14.0	No	
	HT20 CDD (3 Tx)	52	5260	12.5	12.5	12.5	12.5	12.5	12.5	No	Covered by HT20 STBC/SDM (3 Tx)
		60	5300	12.5	12.5	12.5	12.5	12.5	12.5		
		64	5320	12.5	12.5	12.5	12.5	12.5	12.5		
	HT20 STBC/SDM (3 Tx)	52	5260	15.0	15.0	15.0	15.0	15.0	15.0	Yes	3, 2, 1
		56	5280	15.0	15.0	15.0	15.0	15.0	15.0		
		64	5320	15.0	15.0	15.0	15.0	15.0	15.0		
	HT40 CDD (3Tx)	54	5270	14.0	14.0	14.0	14.0	14.0	14.0	No	Covered by HT20 STBC/SDM (3 Tx)
		62	5310	14.0	14.0	14.0	14.0	14.0	14.0		
	HT40 STBC/SDM (3 Tx)	54	5270	15.5	15.5	15.5	15.5	15.5	15.5	Yes	3, 2, 1
		62	5310	14.0	14.0	14.0	14.0	14.0	14.0	No	

Note(s):

*1 The “Original Approval” power levels were based upon FCC modular approval testing of the BCM94331CSAX radio. These power levels were approved up to maximum regulatory levels to cover a number of different potential applications. The original maximum regulatory power levels may be reduced further by the driver for one of the following two reasons:

1) For performance (i.e. non-regulatory) reasons to ensure that PER and EVM of the radio meet internal specifications.

2) For application specifics. In this case the power is also reduced to meet the specific SAR requirement per transmit chain over frequency band/channel as per the "Target Maximum Average Power per chain for C2PC" column.

10.4. 5.5 GHz Band

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11a	Legacy (1 Tx)	100	5500	18.0			16.5			Yes	3
		104	5520	18.0			16.5				
		108	5540	18.0			16.5				
		112	5560	18.0			16.5				
		116	5580	18.0			16.5				
		120	5600	18.0			16.5				
		124	5620	18.0			16.5				
		128	5640	18.0			16.5				
		132	5660	18.0			16.5				
		136	5680	18.0			16.5				
		140	5700	18.0			16.5				
		100	5500		18.0			16.5			2
		104	5520		18.0			16.5			
		108	5540		18.0			16.5			
		112	5560		18.0			16.5			
		116	5580		18.0			16.5			
		120	5600		18.0			16.5			
		124	5620		18.0			16.5			
		128	5640		18.0			16.5			
		132	5660		18.0			16.5			
		136	5680		18.0			16.5			
		140	5700		18.0			16.5			
		100	5500			18.0			17.5		1
		104	5520			18.0			17.5		
		108	5540			18.0			17.5		
		112	5560			18.0			17.5		
		116	5580			18.0			17.5		
		120	5600			18.0			17.5		
		124	5620			18.0			17.5		
		128	5640			18.0			17.5		
		132	5660			18.0			17.5		
		136	5680			18.0			17.5		
		140	5700			18.0			17.5		

Summary of Required Test Modes for 5.5 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11a	CDD (2 Tx)	100	5500	12.5	12.5		12.5	12.5		Yes	3, 2
		104	5520	12.5	12.5		12.5	12.5			
		108	5540	12.5	12.5		12.5	12.5			
		112	5560	12.5	12.5		12.5	12.5			
		116	5580	12.5	12.5		12.5	12.5			
		120	5600	12.5	12.5		12.5	12.5			
		124	5620	12.5	12.5		12.5	12.5			
		128	5640	12.5	12.5		12.5	12.5			
		132	5660	12.5	12.5		12.5	12.5			
		136	5680	12.5	12.5		12.5	12.5			
		140	5700	12.5	12.5		12.5	12.5			
		100	5500	12.5		12.5	12.5		12.5		3, 1
		104	5520	12.5		12.5	12.5		12.5		
		108	5540	12.5		12.5	12.5		12.5		
		112	5560	12.5		12.5	12.5		12.5		
		116	5580	12.5		12.5	12.5		12.5		
		120	5600	12.5		12.5	12.5		12.5		
		124	5620	12.5		12.5	12.5		12.5		
		128	5640	12.5		12.5	12.5		12.5		
		132	5660	12.5		12.5	12.5		12.5		
		136	5680	12.5		12.5	12.5		12.5		
		140	5700	12.5		12.5	12.5		12.5		
		100	5500		12.5	12.5		12.5	12.5		2, 1
		104	5520		12.5	12.5		12.5	12.5		
		108	5540		12.5	12.5		12.5	12.5		
		112	5560		12.5	12.5		12.5	12.5		
		116	5580		12.5	12.5		12.5	12.5		
		120	5600		12.5	12.5		12.5	12.5		
		124	5620		12.5	12.5		12.5	12.5		
		128	5640		12.5	12.5		12.5	12.5		
		132	5660		12.5	12.5		12.5	12.5		
		136	5680		12.5	12.5		12.5	12.5		
		140	5700		12.5	12.5		12.5	12.5		
11a	CDD (3 Tx)	100	5500	12.5	12.5	12.5	12.5	12.5	12.5	Yes	3, 2, 1
		104	5520	12.5	12.5	12.5	12.5	12.5	12.5		
		108	5540	12.5	12.5	12.5	12.5	12.5	12.5		
		112	5560	12.5	12.5	12.5	12.5	12.5	12.5		
		116	5580	12.5	12.5	12.5	12.5	12.5	12.5		
		120	5600	12.5	12.5	12.5	12.5	12.5	12.5		
		124	5620	12.5	12.5	12.5	12.5	12.5	12.5		
		128	5640	12.5	12.5	12.5	12.5	12.5	12.5		
		132	5660	12.5	12.5	12.5	12.5	12.5	12.5		
		136	5680	12.5	12.5	12.5	12.5	12.5	12.5		
		140	5700	12.5	12.5	12.5	12.5	12.5	12.5		

Summary of Required Test Modes for 5.5 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11n	HT20 SISO (1 Tx)	102	5510	18.0			16.5			No	Covered by 11a Legacy (1Tx)
		110	5550	18.0			16.5				
		134	5670	18.0			16.5				
		102	5510		18.0			16.5			
		110	5550		18.0			16.5			
		134	5670		18.0			16.5			
		102	5510			18.0			17.5		
		110	5550			18.0			17.5		
		134	5670			18.0			17.5		
	HT40 SISO (1 Tx)	102	5510	15.5			15.5			No	Covered by 11a Legacy (1Tx)
		110	5550	19.0			16.5				
		134	5670	19.0			16.5				
		102	5510		15.5			15.5			
		110	5550		19.0			16.5			
		134	5670		19.0			16.5			
		102	5510			15.5			15.5		
		110	5550			19.0			17.5		
		134	5670			19.0			17.5		
	HT20 CDD (2 Tx)	100	5500	12.5	12.5		12.5	12.5		No	Covered by 11a CDD (2Tx)
		116	5580	12.5	12.5		12.5	12.5			
		140	5700	12.5	12.5		12.5	12.5			
		100	5500	12.5		12.5	12.5		12.5		
		116	5580	12.5		12.5	12.5		12.5		
		140	5700	12.5		12.5	12.5		12.5		
		100	5500		12.5	12.5		12.5	12.5		
		116	5580		12.5	12.5		12.5	12.5		
		140	5700		12.5	12.5		12.5	12.5		
	HT20 STBC/SDM (2 Tx)	100	5500	14.5	14.5		14.5	14.5		No	Covered by HT40 STBC/SDM (2Tx)
		116	5580	14.5	14.5		14.5	14.5			
		140	5700	14.5	14.5		14.5	14.5			
		100	5500	14.5		14.5	14.5		14.5		
		116	5580	14.5		14.5	14.5		14.5		
		140	5700	14.5		14.5	14.5		14.5		
		100	5500		14.5	14.5		14.5	14.5		
		116	5580		14.5	14.5		14.5	14.5		
		140	5700		14.5	14.5		14.5	14.5		
	HT40 CDD (2Tx)	102	5510	13.5	13.5		13.5	13.5		No	Covered by HT40 STBC/SDM (2Tx)
		110	5550	13.5	13.5		13.5	13.5			
		134	5670	13.5	13.5		13.5	13.5			
		102	5510	13.5		13.5	13.5		13.5		
		110	5550	13.5		13.5	13.5		13.5		
		134	5670	13.5		13.5	13.5		13.5		
		102	5510		13.5	13.5		13.5	13.5		
		110	5550		13.5	13.5		13.5	13.5		
		134	5670		13.5	13.5		13.5	13.5		

Summary of Required Test Modes for 5.5 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11n	HT40 STBC/SDM (2Tx)	102	5510	15.5	15.5		15.5	15.5		Yes	3, 2
		110	5550	15.5	15.5		15.5	15.5			
		134	5670	15.5	15.5		15.5	15.5			
		102	5510	15.5		15.5	15.5		15.5		3, 1
		110	5550	15.5		15.5	15.5		15.5		
		134	5670	15.5		15.5	15.5		15.5		
		102	5510		15.5	15.5		15.5	15.5		2, 1
		110	5550		15.5	15.5		15.5	15.5		
		134	5670		15.5	15.5		15.5	15.5		
	HT20 CDD (3 Tx)	100	5500	12.5	12.5	12.5	12.5	12.5	12.5	No	Covered by 11a CDD (3Tx)
		116	5580	12.5	12.5	12.5	12.5	12.5	12.5		
		140	5700	12.5	12.5	12.5	12.5	12.5	12.5		
	HT20 STBC/SDM (3 Tx)	100	5500	14.5	14.5	14.5	14.5	14.5	14.5	No	Covered by 11n HT40 STBC/SDM (3Tx)
		116	5580	14.5	14.5	14.5	14.5	14.5	14.5		
		140	5700	14.5	14.5	14.5	14.5	14.5	14.5		
	HT40 CDD (3 Tx)	102	5510	13.5	13.5	13.5	13.5	13.5	13.5	No	Covered by 11n HT40 STBC/SDM (3Tx)
		110	5550	13.5	13.5	13.5	13.5	13.5	13.5		
		134	5670	13.5	13.5	13.5	13.5	13.5	13.5		
	HT40 STBC/SDM (3 Tx)	102	5510	15.5	15.5	15.5	15.5	15.5	15.5	Yes	3, 2, 1
		110	5550	15.5	15.5	15.5	15.5	15.5	15.5		
		134	5670	15.5	15.5	15.5	15.5	15.5	15.5		

Note(s):

*1 The “Original Approval” power levels were based upon FCC modular approval testing of the BCM94331CSAX radio. These power levels were approved up to maximum regulatory levels to cover a number of different potential applications. The original maximum regulatory power levels may be reduced further by the driver for one of the following two reasons:

1) For performance (i.e. non-regulatory) reasons to ensure that PER and EVM of the radio meet internal specifications.

2) For application specifics. In this case the power is also reduced to meet the specific SAR requirement per transmit chain over frequency band/channel as per the "Target Maximum Average Power per chain for C2PC" column.

10.5. 5.8 GHz Band

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11a	Legacy (1 Tx)	149	5745	18.0			16.5			Yes	3
		153	5765	19.0			16.5				
		157	5785	19.0			16.5				
		161	5805	19.0			16.5				
		165	5825	18.0			16.5				
		149	5745		18.0			17.5			2
		153	5765		19.0			17.5			
		157	5785		19.0			17.5			
		161	5805		19.0			17.5			
		165	5825		18.0			17.5			
		149	5745			18.0			17.5		1
		153	5765			19.0			17.5		
		157	5785			19.0			17.5		
		161	5805			19.0			17.5		
		165	5825			18.0			17.5		
	CDD (2 Tx)	149	5745	18.0	18.0		16.5	17.5		Yes	3, 2
		153	5765	19.0	19.0		16.5	17.5			
		157	5785	19.0	19.0		16.5	17.5			
		161	5805	19.0	19.0		16.5	17.5			
		165	5825	18.0	18.0		16.5	17.5			
		149	5745	18.0		18.0	16.5		17.5		3, 1
		153	5765	19.0		19.0	16.5		17.5		
		157	5785	19.0		19.0	16.5		17.5		
		161	5805	19.0		19.0	16.5		17.5		
		165	5825	18.0		18.0	16.5		17.5		
		149	5745		18.0	18.0		17.5	17.5		2, 1
		153	5765		19.0	19.0		17.5	17.5		
		157	5785		19.0	19.0		17.5	17.5		
		161	5805		19.0	19.0		17.5	17.5		
		165	5825		18.0	18.0		17.5	17.5		
	CDD (3 Tx)	149	5745	18.0	18.0	18.0	16.5	17.5	17.5	Yes	3, 2, 1
		153	5765	19.0	19.0	19.0	16.5	17.5	17.5		
		157	5785	19.0	19.0	19.0	16.5	17.5	17.5		
		161	5805	19.0	19.0	19.0	16.5	17.5	17.5		
		165	5825	18.0	18.0	18.0	16.5	17.5	17.5		
11n	HT20 SISO (1 Tx)	149	5745	18.0			16.5			No	Covered by 11a Legacy (1Tx)
		157	5785	19.0			16.5				
		165	5825	18.0			16.5				
		149	5745		18.0			17.5			
		157	5785		19.0			17.5			
		165	5825		18.0			17.5			
		149	5745			18.0			17.5		
		157	5785			19.0			17.5		
		165	5825			18.0			17.5		

Summary of Required Test Modes for 5.8 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Maximum Target power setting from original approval (*1 See Note) (dBm)			Maximum Target power setting from C2PC/A1425 Host (dBm)			SAR Test (Yes/No)	SAR test chains (WiFi 3, 2 ,1)
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2		
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1		
11n	HT40 CDD (1 Tx)	151	5755	19.0			16.5			No	Covered by 11a Legacy (1Tx)
		159	5795	19.0			16.5				
		151	5755		19.0			17.5			
		159	5795		19.0			17.5			
		151	5755			19.0			17.5		
		159	5795			19.0			17.5		
	HT20 CDD/STBC /SDM (2 Tx)	149	5745	18.0	18.0		16.5	17.5		No	Covered by 11a CDD (2Tx)
		157	5785	19.0	19.0		16.5	17.5			
		165	5825	18.0	18.0		16.5	17.5			
		149	5745	18.0		18.0	16.5		17.5		
		157	5785	19.0		19.0	16.5		17.5		
		165	5825	18.0		18.0	16.5		17.5		
		149	5745		18.0	18.0		17.5	17.5		
		157	5785		19.0	19.0		17.5	17.5		
		165	5825		18.0	18.0		17.5	17.5		
	HT40 CDD/STBC /SDM (2 Tx)	151	5755	19.0	19.0		16.5	17.5		No	Covered by 11a CDD (2Tx)
		159	5795	19.0	19.0		16.5	17.5			
		151	5755	19.0		19.0	16.5		17.5		
		159	5795	19.0		19.0	16.5		17.5		
		151	5755		19.0	19.0		17.5	17.5		
		159	5795		19.0	19.0		17.5	17.5		
	HT20 CDD (3 Tx)	149	5745	18.0	18.0	18.0	16.5	17.5	17.5	No	Covered by 11a CDD (3Tx)
		157	5785	19.0	19.0	19.0	16.5	17.5	17.5		
		165	5825	18.0	18.0	18.0	16.5	17.5	17.5		
	HT40 CDD (3 Tx)	151	5755	19.0	19.0	19.0	16.5	17.5	17.5	No	Covered by 11a CDD (3Tx)
		159	5795	19.0	19.0	19.0	16.5	17.5	17.5		
	HT40 STBC/ SDM (3 Tx)	151	5755	19.0	19.0	19.0	16.5	17.5	17.5	No	Covered by 11a CDD (3Tx)
		159	5795	19.0	19.0	19.0	16.5	17.5	17.5		

Note(s):

*1 The “Original Approval” power levels were based upon FCC modular approval testing of the BCM94331CSAX radio. These power levels were approved up to maximum regulatory levels to cover a number of different potential applications. The original maximum regulatory power levels may be reduced further by the driver for one of the following two reasons:

1) For performance (i.e. non-regulatory) reasons to ensure that PER and EVM of the radio meet internal specifications.

2) For application specifics. In this case the power is also reduced to meet the specific SAR requirement per transmit chain over frequency band/channel as per the "Target Maximum Average Power per chain for C2PC" column.

11. RF Output Power Measurement

11.1. 2.4 GHz Band

The following power measurement is based on sec. 10.1 required test modes.

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Target Maximum Average Power per chain for C2PC (dBm)			Measured Pwr (See note1 and 2) (dBm)		
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1
11b Legacy	1 Tx	1	2412	18.0			17.6		
		6	2437	18.0			17.7		
		11	2462	18.0			17.5		
		1	2412		19.0			19.0	
		6	2437		19.0			19.1	
		11	2462		19.0			19.0	
		1	2412			18.0			18.1
		6	2437			18.0			18.1
		11	2462			18.0			18.0
	2 Tx	1	2412	18.0	19.0		17.6	19.0	
		6	2437	18.0	19.0		17.6	19.0	
		11	2462	18.0	19.0		17.5	19.0	
		1	2412	18.0		18.0	17.6		18.2
		6	2437	18.0		18.0	17.6		18.2
		11	2462	18.0		18.0	17.5		18.0
		1	2412		19.0	18.0		19.1	18.2
		6	2437		19.0	18.0		19.1	18.2
		11	2462		19.0	18.0		19.0	18.0
	3 Tx	1	2412	18.0	19.0	18.0	17.5	19.1	18.1
		6	2437	18.0	19.0	18.0	17.6	19.1	18.1
		11	2462	18.0	19.0	18.0	17.6	19.1	18.0

Note(s):

1. The “Measured power” levels in some instances were higher than the “Target Maximum Average Power” due to test software tool limitations, which only allows for adjustments in steps of ¼ dB.
2. Even though the SAR test power levels were higher for some configurations, the maximum output of all production units certified under this permissive change will be set to not exceed the power levels allowed for this permissive change.

11.2. 5.2 GHz Band

The following power measurement is based on sec. 10.2 required test modes.

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Target Maximum Average Power per chain for C2PC (dBm)			Measured Pwr (See note1 and 2) (dBm)		
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1
11a	Legacy (1 Tx)	36	5180	14.0			14.5		
		40	5200	14.0			14.5		
		44	5220	14.0			14.4		
		48	5240	14.0			14.2		
		36	5180		14.0			14.5	
		40	5200		14.0			14.5	
		44	5220		14.0			14.3	
		48	5240		14.0			14.3	
		36	5180			14.0			14.3
		40	5200			14.0			14.3
		44	5220			14.0			14.3
		48	5240			14.0			14.2
11n	HT40 SISO (1 Tx)	38	5190	15.5			15.7		
		46	5230	15.5			15.5		
		38	5190		15.5			15.8	
		46	5230		15.5			15.6	
		38	5190			15.5			15.8
		46	5230			15.5			15.6
	HT20 STBC/SDM (2 Tx)	36	5180	11.0	11.0		11.4	11.3	
		40	5200	11.0	11.0		10.8	11.2	
		48	5240	11.0	11.0		10.9	11.3	
		36	5180	11.0		11.0	11.4		11.2
		40	5200	11.0		11.0	10.9		11.2
		48	5240	11.0		11.0	10.8		11.3
		36	5180		11.0	11.0		11.2	11.2
		40	5200		11.0	11.0		11.1	11.2
		48	5240		11.0	11.0		11.2	11.3
	HT40 STBC (3 Tx)	38	5190	10.0	10.0	10.0	10.4	10.5	10.5
		46	5230	10.0	10.0	10.0	10.2	10.5	10.5

Note(s):

1. The “Measured power” levels in some instances were higher than the “Target Maximum Average Power” due to test software tool limitations, which only allows for adjustments in steps of ¼ dB.
2. Even though the SAR test power levels were higher for some configurations, the maximum output of all production units certified under this permissive change will be set to not exceed the power levels allowed for this permissive change.

11.3. 5.3 GHz Band

The following power measurement is based on sec. 10.3 required test modes.

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Target Maximum Average Power per chain for C2PC (dBm)			Measured Pwr (See note1 and 2) (dBm)		
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1
11a	Legacy (1 Tx)	52	5260	17.0			17.0		
		56	5280	17.0			17.0		
		60	5300	17.0			17.0		
		64	5320	17.0			17.1		
		52	5260		16.0			16.0	
		56	5280		16.0			16.0	
		60	5300		16.0			16.1	
		64	5320		16.0			16.1	
		52	5260			17.5			17.6
		56	5280			17.5			17.6
		60	5300			17.5			17.6
		64	5320			17.5			17.7
	CDD (2 Tx)	52	5260	12.5	12.5		12.3	12.8	
		56	5280	12.5	12.5		12.2	12.9	
		60	5300	12.5	12.5		12.2	12.9	
		64	5320	12.5	12.5		12.0	12.8	
		52	5260	12.5		12.5	12.2		12.2
		56	5280	12.5		12.5	12.3		13.0
		60	5300	12.5		12.5	12.2		13.0
		64	5320	12.5		12.5	12.0		12.8
		52	5260		12.5	12.5		12.8	12.2
		56	5280		12.5	12.5		13.0	13.0
		60	5300		12.5	12.5		13.0	13.0
		64	5320		12.5	12.5		12.9	12.8
	CDD (3 Tx)	52	5260	12.5	12.5	12.5	12.2	12.9	12.3
		56	5280	12.5	12.5	12.5	12.2	13.0	13.0
		60	5300	12.5	12.5	12.5	12.1	13.0	13.0
		64	5320	12.5	12.5	12.5	12.0	12.8	12.8
11n	HT20 STBC/SDM (2 Tx)	52	5260	15.0	15.0		14.9	15.4	
		56	5280	15.0	15.0		14.5	15.4	
		64	5320	15.0	15.0		14.5	15.4	
		52	5260	15.0		15.0	15.0		15.0
		56	5280	15.0		15.0	14.6		15.0
		64	5320	15.0		15.0	14.5		14.8
		52	5260		15.0	15.0		15.4	15.0
		56	5280		15.0	15.0		15.4	15.0
		64	5320		15.0	15.0		15.3	14.9
	HT40 STBC/SDM (2 Tx)	54	5270	15.5	15.5		15.4	16.0	
		54	5270	15.5		15.5	15.3		15.8
		54	5270		15.5	15.5		16.0	15.7
	HT20 STBC/SDM (3 Tx)	64	5320	15.0	15.0	15.0	14.5	15.5	14.9
	HT40 STBC/SDM (3 Tx)	54	5270	15.5	15.5	15.5	15.2	16.0	15.9

Note(s):

1. The “Measured power” levels in some instances were higher than the “Target Maximum Average Power” due to test software tool limitations, which only allows for adjustments in steps of ¼ dB.
2. Even though the SAR test power levels were higher for some configurations, the maximum output of all production units certified under this permissive change will be set to not exceed the power levels allowed for this permissive change.

11.4. 5.5 GHz Band

The following power measurement is based on sec. 10.4 required test modes.

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Target Maximum Average Power per chain for C2PC (dBm)			Measured Pwr (dBm)		
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1
11a	Legacy (1 Tx)	100	5500	16.5			16.5		
		104	5520	16.5			16.5		
		108	5540	16.5			16.5		
		112	5560	16.5			16.6		
		116	5580	16.5			16.6		
		120	5600	16.5			16.6		
		124	5620	16.5			16.6		
		128	5640	16.5			16.6		
		132	5660	16.5			16.6		
		136	5680	16.5			16.5		
		140	5700	16.5			16.5		
		100	5500		16.5			16.5	
		104	5520		16.5			16.6	
		108	5540		16.5			16.6	
		112	5560		16.5			16.6	
		116	5580		16.5			16.6	
		120	5600		16.5			16.6	
		124	5620		16.5			16.6	
		128	5640		16.5			16.6	
		132	5660		16.5			16.6	
		136	5680		16.5			16.6	
		140	5700		16.5			16.6	
		100	5500			17.5			17.5
		104	5520			17.5			17.5
		108	5540			17.5			17.5
		112	5560			17.5			17.6
		116	5580			17.5			17.6
		120	5600			17.5			17.6
		124	5620			17.5			17.6
		128	5640			17.5			17.6
		132	5660			17.5			17.6
		136	5680			17.5			17.6
		140	5700			17.5			17.5

Power Measurement for 5.5 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Target Maximum Average Power per chain for C2PC (dBm)			Measured Pwr (dBm)		
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1
11a	CDD (2 Tx)	100	5500	12.5	12.5		12.9	12.9	
		104	5520	12.5	12.5		12.9	12.9	
		108	5540	12.5	12.5		12.8	12.9	
		112	5560	12.5	12.5		12.9	12.8	
		116	5580	12.5	12.5		12.8	12.5	
		120	5600	12.5	12.5		12.7	12.8	
		124	5620	12.5	12.5		12.8	12.9	
		128	5640	12.5	12.5		12.7	12.9	
		132	5660	12.5	12.5		12.8	12.7	
		136	5680	12.5	12.5		12.8	12.7	
		140	5700	12.5	12.5		12.8	12.7	
		100	5500	12.5		12.5	12.8		13.0
		104	5520	12.5		12.5	12.9		13.0
		108	5540	12.5		12.5	12.9		13.0
		112	5560	12.5		12.5	12.8		13.0
		116	5580	12.5		12.5	12.8		12.6
		120	5600	12.5		12.5	12.8		12.9
		124	5620	12.5		12.5	12.8		12.9
		128	5640	12.5		12.5	12.8		12.9
		132	5660	12.5		12.5	12.8		13.0
		136	5680	12.5		12.5	12.8		13.0
		140	5700	12.5		12.5	12.8		12.9
		100	5500		12.5	12.5		12.8	13.0
		104	5520		12.5	12.5		12.9	13.0
		108	5540		12.5	12.5		12.8	13.0
		112	5560		12.5	12.5		12.9	13.0
		116	5580		12.5	12.5		12.4	12.7
		120	5600		12.5	12.5		12.8	13.0
		124	5620		12.5	12.5		12.8	12.9
		128	5640		12.5	12.5		12.8	12.9
		132	5660		12.5	12.5		12.8	12.9
		136	5680		12.5	12.5		12.8	12.9
		140	5700		12.5	12.5		12.8	12.9
	CDD (3 Tx)	100	5500	12.5	12.5	12.5	12.9	12.8	13.0
		104	5520	12.5	12.5	12.5	12.8	12.9	13.0
		108	5540	12.5	12.5	12.5	12.8	12.9	13.0
		112	5560	12.5	12.5	12.5	12.9	12.9	13.0
		116	5580	12.5	12.5	12.5	12.9	12.4	12.6
		120	5600	12.5	12.5	12.5	12.8	12.9	13.0
		124	5620	12.5	12.5	12.5	12.8	12.9	12.9
		128	5640	12.5	12.5	12.5	12.8	12.9	12.9
		132	5660	12.5	12.5	12.5	12.8	12.7	13.0
		136	5680	12.5	12.5	12.5	12.8	12.9	13.0
		140	5700	12.5	12.5	12.5	12.8	12.9	12.9

Power Measurement for 5.5 GHz (continued)

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Target Maximum Average Power per chain for C2PC (dBm)			Measured Pwr (dBm)		
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1
11n	HT40 STBC/SDM (2Tx)	102	5510	15.5	15.5		15.7	15.8	
		110	5550	15.5	15.5		15.7	16.0	
		134	5670	15.5	15.5		15.9	15.7	
		102	5510	15.5		15.5	15.7		15.7
		110	5550	15.5		15.5	15.6		16.0
		134	5670	15.5		15.5	15.9		15.9
		102	5510		15.5	15.5		15.7	15.7
		110	5550		15.5	15.5		15.9	16.0
		134	5670		15.5	15.5		15.7	15.9
	HT40 STBC/SDM (3 Tx)	102	5510	15.5	15.5	15.5	15.6	15.8	15.6
		110	5550	15.5	15.5	15.5	15.6	15.9	16.0
		134	5670	15.5	15.5	15.5	15.9	15.6	15.9

Note(s):

1. The “Measured power” levels in some instances were higher than the “Target Maximum Average Power” due to test software tool limitations, which only allows for adjustments in steps of ¼ dB.
2. Even though the SAR test power levels were higher for some configurations, the maximum output of all production units certified under this permissive change will be set to not exceed the power levels allowed for this permissive change.

11.5. 5.8 GHz Band

The following power measurement is based on sec. 10.5 required test modes.

Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Target Maximum Average Power per chain for C2PC (dBm)			Measured Pwr (dBm)		
				Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2
				WiFi 3	WiFi 2	WiFi 1	WiFi 3	WiFi 2	WiFi 1
11a	Legacy (1 Tx)	149	5745	16.5			16.5		
		153	5765	16.5			16.5		
		157	5785	16.5			16.6		
		161	5805	16.5			16.6		
		165	5825	16.5			16.6		
		149	5745		17.5			17.4	
		153	5765		17.5			17.4	
		157	5785		17.5			17.4	
		161	5805		17.5			17.4	
		165	5825		17.5			17.4	
		149	5745			17.5			17.6
		153	5765			17.5			18.0
		157	5785			17.5			18.0
		161	5805			17.5			18.0
		165	5825			17.5			17.5
	CDD (2 Tx)	149	5745	16.5	17.5		16.6	17.4	
		153	5765	16.5	17.5		16.6	17.4	
		157	5785	16.5	17.5		16.6	17.4	
		161	5805	16.5	17.5		16.5	17.4	
		165	5825	16.5	17.5		16.5	17.4	
		149	5745	16.5		17.5	16.7		17.7
		153	5765	16.5		17.5	16.6		18.0
		157	5785	16.5		17.5	16.6		18.0
		161	5805	16.5		17.5	16.5		18.0
		165	5825	16.5		17.5	16.5		17.5
		149	5745		17.5	17.5		17.3	17.8
		153	5765		17.5	17.5		17.3	18.0
		157	5785		17.5	17.5		17.3	18.0
		161	5805		17.5	17.5		17.3	18.0
		165	5825		17.5	17.5		17.3	17.5
	CDD (3 Tx)	149	5745	16.5	17.5	17.5	16.5	17.4	17.7
		153	5765	16.5	17.5	17.5	16.5	17.4	18.0
		157	5785	16.5	17.5	17.5	16.5	17.4	18.0
		161	5805	16.5	17.5	17.5	16.6	17.4	18.0
		165	5825	16.5	17.5	17.5	16.5	17.4	17.4

Note(s):

1. The “Measured power” levels in some instances were higher than the “Target Maximum Average Power” due to test software tool limitations, which only allows for adjustments in steps of ¼ dB.
2. Even though the SAR test power levels were higher for some configurations, the maximum output of all production units certified under this permissive change will be set to not exceed the power levels allowed for this permissive change.

12. Required Test Channels per KDB 248227 D01

Mode		Band	GHz	Channel	"Default Test Channels"	
					802.11b	802.11g
802.11b/g		2.4 GHz	2.412	1#	√	∇
			2.437	6	√	∇
			2.462	11#	√	∇
802.11a	UNII (15.407)	5.2 GHz	5.180	36	√	
			5.200	40		*
			2.220	44		*
			5.240	48	√	
		5.3 GHz	5.260	52	√	
			5.280	56		*
			5.300	60		*
			5.320	64	√	
		5.5 GHz	5.500	100		
			5.520	104	√	
			5.540	108		*
			5.560	112		*
			5.580	116	√	
			5.600	120		*
			5.620	124	√	
			5.640	128		*
			5.660	132		*
			5.680	136	√	
			5.700	140		*
	DTS (15.247)	5.8 GHz	5.745	149	√	
			5.765	153		*
			5.785	157	√	
			5.805	161		*
			5.825	165	√	

√ = "default test channels"

* = possible 802.11a channels with maximum average output > the "default test channels"

∇ = possible 802.11g channels with maximum average output ¼ dB ≥ the "default test channels"

= when output power is reduced for channel 1 and /or 11 to meet restricted band requirements the highest output channels closest to each of these channels should be tested.

13. SAR Test Results

13.1. 2.4GHz band

Test mode reduction considerations

1. For frequency bands with an operating range of < 100 MHz, when the SAR for the highest output power channel within is ≤ 0.8 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) i).
2. KDB 248227 - SAR is not required for 802.11g/HT20 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11b channels.

Lap-held (Antenna Vendor A)

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2	
					WiFi3	WiFi2	WiFi1	WiFi3	WiFi2	WiFi1	
2.4	11b Legacy	1 Tx	1	2412	17.6			0.951			
			6	2437	17.7			0.983			
			11	2462	17.5			0.961			
			1	2412		19.0			0.858		
			6	2437		19.1			0.868		
			11	2462		19.0			0.885		
			1	2412			18.1			1.010	
			6	2437			18.1			1.080	*
			11	2462			18.0			1.030	
		2 Tx	1	2412	17.6	19.0		1.000	0.883		
			6	2437	17.6	19.0		1.060	0.920		
			11	2462	17.5	19.0		1.010	0.903		
			1	2412	17.6		18.2	0.980		1.040	
			6	2437	17.6		18.2	1.000		1.030	
			11	2462	17.5		18.0	1.010		1.090	
			1	2412		19.1	18.2		0.884	1.070	
			6	2437		19.1	18.2		0.933	1.090	
			11	2462		19.0	18.0		0.922	1.150	*
		3 Tx	1	2412	17.5	19.1	18.1	1.080	0.946	1.140	
			6	2437	17.6	19.1	18.1	1.030	0.969	1.180	*
			11	2462	17.6	19.1	18.0	1.050	0.943	1.130	

Lap-held (Antenna Vendor B)

Additional test with Antenna vendor B based on the highest SAR mode obtained from Antenna vendor A

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2	
					WiFi3	WiFi2	WiFi1	WiFi3	WiFi2	WiFi1	
2.4	11b Legacy	3 Tx	1	2412	17.5	19.1	18.1	1.030	0.851	1.150	
			6	2437	17.6	19.1	18.1	1.030	0.912	1.180	
			11	2462	17.6	19.1	18.0	1.020	0.924	1.130	

Note(s):

*: Worst case SAR results for the given mode in the corresponding frequency band.

13.2. 5 GHz Bands

Test mode reduction considerations

1. For frequency bands with an operating range of < 100 MHz, when the SAR for the highest output power channel within is ≤ 0.8 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) i).
2. For frequency bands with an operating range of < 200 MHz, when the SAR for the highest output power channel within is ≤ 0.4 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) ii).

Lap-held (Antenna Vendor A)

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2	
					WiFi3	WiFi2	WiFi1	WiFi3	WiFi2	WiFi1	
5.2	11a	Legacy (1 Tx)	36	5180	14.5			0.531			
			44	5220	14.4			0.529			
			36	5180		14.5			0.682		*
			44	5220		14.3			0.629		
			36	5180			14.3			0.442	
			44	5220			14.3			0.414	
	11n	HT40 SISO (1 Tx)	38	5190	15.7			0.704			
			38	5190		15.8			0.879		*
			46	5230		15.6			0.864		
			38	5190			15.8			0.596	
		HT20 STBC/SDM (2 Tx)	36	5180	11.4	11.3		0.249	0.370		*
			36	5180	11.4		11.2	0.245		0.207	
			48	5240		11.2	11.3		0.303	0.263	
		HT40 STBC (3 Tx)	38	5190	10.4	10.5	10.5	0.217	0.273	0.226	*
			46	5230	10.2	10.5	10.5	0.210	0.248	0.230	

Lap-held (Antenna Vendor B)

Additional test with Antenna vendor B based on the highest SAR mode obtained from Antenna vendor A

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2	
					WiFi3	WiFi2	WiFi1	WiFi3	WiFi2	WiFi1	
5.2	11n	HT40 SISO (1 Tx)	38	5190	15.7			0.656			
			38	5190		15.8			0.872		
			46	5230		15.6			0.865		
			38	5190			15.8			0.594	

Note(s):

*: Worst case SAR results for the given mode in the corresponding frequency band.

5 GHz Bands continued

Lap-held (Antenna Vendor A)

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1 WiFi3	Chain 0 WiFi2	Chain 2 WiFi1	Chain 1 WiFi3	Chain 0 WiFi2	Chain 2 WiFi1	
5.3	11a	Legacy (1 Tx)	52	5260	17.0			0.949			
			64	5320	17.1			1.010			
			52	5260		16.0			0.984		
			64	5320		16.1			1.150		*
			52	5260			17.6			0.927	
			64	5320			17.7			1.010	
		CDD (2 Tx)	56	5280	12.2	12.9		0.360	0.642		
			60	5300	12.2	12.9		0.404	0.694		*
			56	5280	12.3		13.0	0.352		0.317	
			60	5300	12.2		13.0	0.354		0.348	
			56	5280		13.0	13.0		0.668	0.384	
			60	5300		13.0	13.0		0.682	0.406	
		CDD (3 Tx)	56	5280	12.2	13.0	13.0	0.377	0.800	0.403	*
			60	5300	12.1	13.0	13.0	0.392	0.787	0.414	
	11n	HT20 STBC/SDM (2 Tx)	52	5260	14.9	15.4		0.688	1.020		
			56	5280	14.5	15.4		0.661	1.070		
			64	5320	14.5	15.4		0.641	1.160		
			52	5260	15.0		15.0	0.703		0.658	
			56	5280	14.6		15.0	0.629		0.666	
			64	5320	14.5		14.8	0.578		0.785	
			52	5260		15.4	15.0		1.170	0.754	*
			56	5280		15.4	15.0		1.150	0.731	
			64	5320		15.3	14.9		1.150	0.728	
		HT40 STBC/SDM (2 Tx)	54	5270	15.4	16.0		0.892	1.150		*
			54	5270	15.3		15.8	0.854		0.862	
			54	5270		16.0	15.7		1.130	0.824	
		HT20 STBC/SDM (3 Tx)	64	5320	14.5	15.5	14.9	0.603	1.000	0.817	*
		HT40 STBC/SDM (3 Tx)	54	5270	15.2	16.0	15.9	0.804	1.170	0.944	*

Lap-held (Antenna Vendor B)

Additional test with Antenna vendor B based on the highest SAR mode obtained from Antenna vendor A

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1 WiFi3	Chain 0 WiFi2	Chain 2 WiFi1	Chain 1 WiFi3	Chain 0 WiFi2	Chain 2 WiFi1	
5.3	11n	HT40 STBC/SDM (3 Tx)	54	5270	15.2	16.1	15.8	0.795	**1.120**	0.954	

Note(s):

*: Worst case SAR results for the given mode in the corresponding frequency band.

5 GHz Bands continued

Lap-held (Antenna Vendor A)

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1 WiFi3	Chain 0 WiFi2	Chain 2 WiFi1	Chain 1 WiFi3	Chain 0 WiFi2	Chain 2 WiFi1	
5.5	11a	Legacy (1 Tx)	104	5520	16.5			1.130			
			116	5580	16.6			1.180			*
			124	5620	16.6			1.160			
			136	5680	16.5			1.140			
			104	5520		16.6			1.120		
			116	5580		16.6			1.160		
			124	5620		16.6			1.110		
			136	5680		16.6			1.120		
			104	5520			17.5			1.130	
			116	5580			17.6			1.150	
			124	5620			17.6			1.100	
			136	5680			17.6			1.150	
	11a	CDD (2 Tx)	104	5520	12.9	12.9		0.559	0.666		
			120	5600	12.7	12.8		0.603	0.629		
			124	5620	12.7	12.8		0.619	0.638		
			136	5680	12.8	12.7		0.514	0.524		
			104	5520	12.9		13.0	0.521		0.517	
			112	5560	12.8		13.0	0.533		0.500	
			124	5620	12.8		12.9	0.536		0.498	
			136	5680	12.8		13.0	0.506		0.512	
			104	5520		12.9	13.0		0.702	0.604	*
			112	5560		12.9	13.0		0.701	0.635	
			120	5600		12.8	13.0		0.684	0.603	
			136	5680		12.8	12.9		0.688	0.635	
	11a	CDD (3 Tx)	104	5520	12.8	12.9	13.0	0.613	0.873	0.648	
			112	5560	12.9	12.9	13.0	0.617	0.860	0.667	
			120	5600	12.8	12.9	13.0	0.623	0.851	0.645	
			136	5680	12.8	12.9	13.0	0.690	0.902	0.683	*
	11n	HT40 STBC/SDM (2 Tx)	102	5510	15.7	15.8		1.100	1.190		
			110	5550	15.7	16.0		1.060	1.100		
			134	5670	15.9	15.7		1.050	1.020		
			102	5510	15.7		15.7	1.03		0.884	
			110	5550	15.6		16.0	1.020		1.030	
			134	5670	15.9		15.9	1.010		0.851	
			102	5510		15.7	15.7		1.030	0.889	
			110	5550		15.9	16.0		1.190	0.914	*
			134	5670		15.7	15.9		1.040	0.819	
	11n	HT40 STBC/SDM (3 Tx)	102	5510	15.6	15.8	15.6	0.849	1.150	1.140	*
			110	5550	15.6	15.9	16.0	0.865	1.130	1.120	
			134	5670	15.9	15.6	15.9	0.912	1.090	0.901	

Lap-held (Antenna Vendor B)

Additional test with Antenna vendor B based on the highest SAR mode obtained from Antenna vendor A

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1 WiFi3	Chain 0 WiFi2	Chain 2 WiFi1	Chain 1 WiFi3	Chain 0 WiFi2	Chain 2 WiFi1	
5.5	11n	HT40 STBC/SDM (2 Tx)	102	5510		15.7	15.6		1.020	0.899	
			110	5550		15.9	16.5		1.150	0.943	
			134	5670		15.7	16.2		1.020	0.921	

Note(s):

*: Worst case SAR results for the given mode in the corresponding frequency band.

5 GHz Bands continued

Lap-held (Antenna Vendor A)

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2	
					WiFi3	WiFi2	WiFi1	WiFi3	WiFi2	WiFi1	
5.8	11a	Legacy (1Tx)	149	5745	16.5			1.080			
			157	5785	16.6			1.130			*
			165	5825	16.6			1.040			
			149	5745		17.4			1.060		
			157	5785		17.4			1.000		
			165	5825		17.4			1.070		
			153	5765			18.0			1.040	
			157	5785			18.0			0.991	
			161	5805			18.0			0.924	
	11a	CDD (2 Tx)	149	5745	16.6	17.4		1.150	1.160		
			157	5785	16.6	17.4		1.160	1.160		
			165	5825	16.5	17.4		1.140	1.170		*
			153	5765	16.6		18.0	1.130		1.160	
			157	5785	16.6		18.0	1.110		1.050	
			161	5805	16.5		18.0	1.170		0.971	
			153	5765		17.3	18.0		1.050	1.070	
			157	5785		17.3	18.0		1.050	1.030	
			161	5805		17.3	18.0		1.080	1.010	
	11a	CDD (3 Tx)	153	5765	16.5	17.4	18.0	1.130	1.140	0.947	
			157	5785	16.5	17.4	18.0	1.150	1.190	0.958	*
			161	5805	16.6	17.4	18.0	1.140	1.170	0.942	

Lap-held (Antenna Vendor B)

Additional test with Antenna vendor B based on the highest SAR mode obtained from Antenna vendor A

Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)			1g SAR Test Result (W/kg)			Note
					Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2	
					WiFi3	WiFi2	WiFi1	WiFi3	WiFi2	WiFi1	
5.8	11a	CDD (3 Tx)	153	5765	16.5	17.0	18.0	1.060	1.100	0.983	
			157	5785	16.5	17.0	18.0	1.040	1.060	0.986	
			161	5805	16.6	17.0	18.0	**1.130**	1.090	1.010	

Note(s):

*: Worst case SAR results for the given mode in the corresponding frequency band.

14. Summary of Highest SAR Values

Technology/Band	Test configuration	Mode	Worst case WiFi 3, 2, and 1	Separation distance (mm)	Highest 1g SAR (W/kg)
WiFi 2.4 GHz	Lap-held	802.11b Legacy (1Tx)	1	0	1.080
		802.11b CDD (2Tx)	1	0	1.150
		802.11b CDD (3Tx)	1	0	**1.180**
WiFi 5.2 GHz	Lap-held	802.11a Legacy (1Tx)	2	0	0.682
		802.11n HT40 CDD (1Tx)	2	0	**0.879**
		802.11n HT20 STBC (2Tx)	2	0	0.370
		802.11n HT40 STBC (3Tx)	2	0	0.273
WiFi 5.3 GHz	Lap-held	802.11a Legacy (1Tx)	2	0	1.150
		802.11a CDD (2Tx)	2	0	0.694
		802.11a CDD (3Tx)	2	0	0.800
		802.11n HT20 SDM (2Tx)	2	0	1.170
		802.11n HT40 SDM (2Tx)	2	0	1.150
		802.11n HT20 SDM (3Tx)	2	0	1.000
		802.11n HT40 SDM (3Tx)	2	0	**1.170**
WiFi 5.5 GHz	Lap-held	802.11a Legacy (1Tx)	3	0	1.180
		802.11a CDD (2Tx)	2	0	0.702
		802.11a CDD (3Tx)	2	0	0.902
		802.11n HT40 STBC (2Tx)	2	0	**1.190**
		802.11n HT40 STBC (3Tx)	2	0	1.150
WiFi 5.8 GHz	Lap-held	802.11a Legacy (1Tx)	3	0	1.130
		802.11a CDD (2Tx)	2	0	1.170
		802.11a CDD (3Tx)	2	0	**1.190**

14.1. Scaled SAR Values to the Maximum Target Output Power

The highest measured SAR results were scaled, in cases where measured output power is lower than the maximum target output power level, in each frequency band.

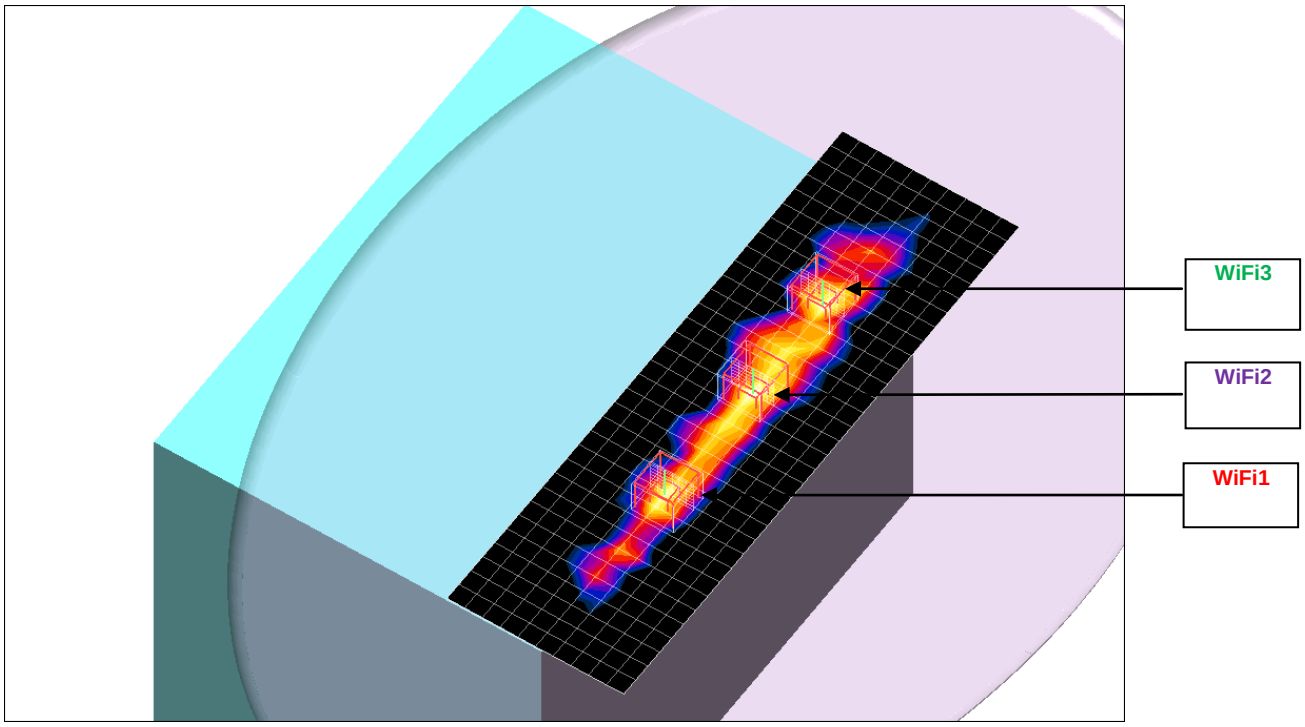
Band (GHz)	Mode (802.11)	# of Tx	Ch. #	Freq. (MHz)	Output power (dBm)						1g SAR Test Result (W/kg)					
					Max. Target Pwr			Measured			Measured			Scaled Up		
					Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2	Chain 1	Chain 0	Chain 2
					WiFi3	WiFi2	WiFi1	WiFi3	WiFi2	WiFi1	WiFi3	WiFi2	WiFi1	WiFi3	WiFi2	WiFi1
2.4	11b Legacy	3 Tx	6	2437	18.0	19.0	18.0	17.6	19.1	18.1	1.030	0.969	1.180	1.132	0.969	1.180
5.2	11n	HT40 SISO (1 Tx)	38	5190		15.5			15.8			0.879			0.879	
5.3	11n	HT20 STBC/SDM (2 Tx)	52	5260		15.0	15.0		15.4	15.0		1.170	0.754		1.170	0.754
		HT40 STBC/SDM (3 Tx)	54	5270	15.5	15.5	15.5	15.2	16.0	15.9	0.804	1.170	0.944	0.854	1.170	0.944
5.5	11n	HT40 STBC/SDM (2 Tx)	110	5550		15.5	15.5		15.9	16.0		1.190	0.914		1.190	0.914
5.8	11n	CDD (3 Tx)	157	5785	16.5	17.5	17.5	16.5	17.4	18.0	1.150	1.190	0.958	1.150	1.218	0.958

Note(s):

SAR Scaling was not applied when the measured output power is greater than the maximum target output power.

14.2. Worst-Case SAR Plots (from Summary of Highest SAR Values table)

The figure below illustrates the approximate locations of the zoom scan cubes for each of the labeled Antennas/Chains. Though the cube location for an Antenna/Chain may vary slightly based on differing operating frequency range and modes, its relation to the cube locations of other Antennas/Chains and the area scan as a whole should remain constant.



14.2.1. Worst-Case SAR Plots for 2.4 GHz Band

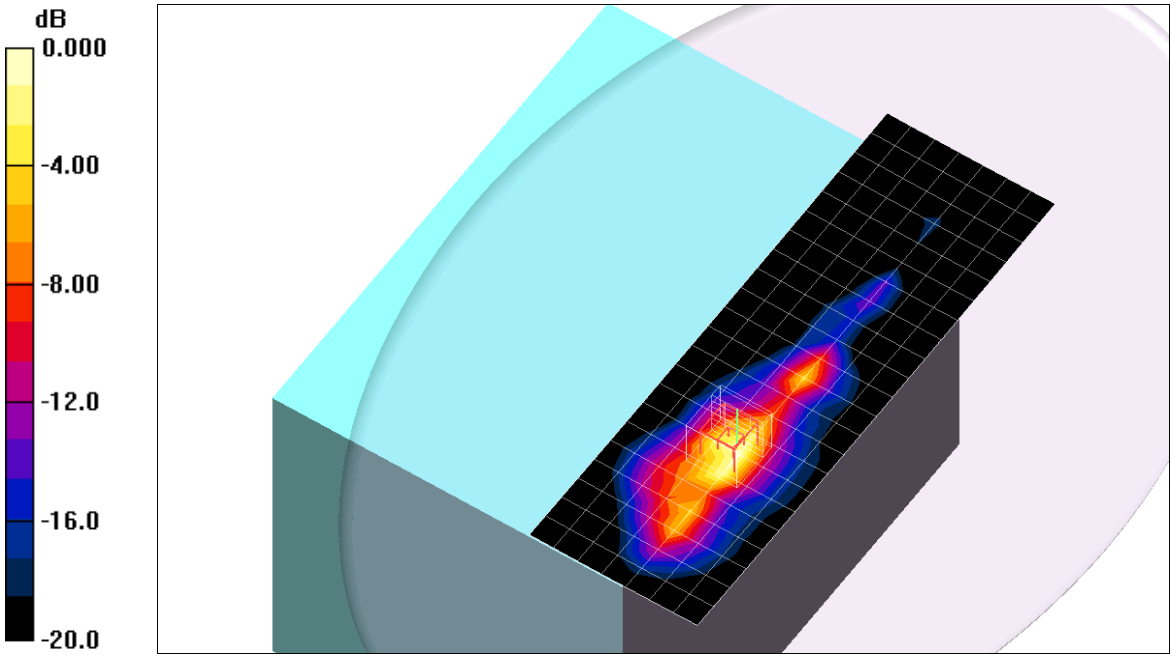
Test Laboratory: UL CCS SAR Lab D Date/Time: 7/2/2012 6:03:47 PM

2.4 GHz band

Frequency: 2437 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.85 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(6.66, 6.66, 6.66); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11b,WiFi 1_Ch 6/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.29 mW/g

802.11b,WiFi 1_Ch 6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.9 V/m; Power Drift = 0.101 dB
Peak SAR (extrapolated) = 2.67 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.458 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.49 mW/g



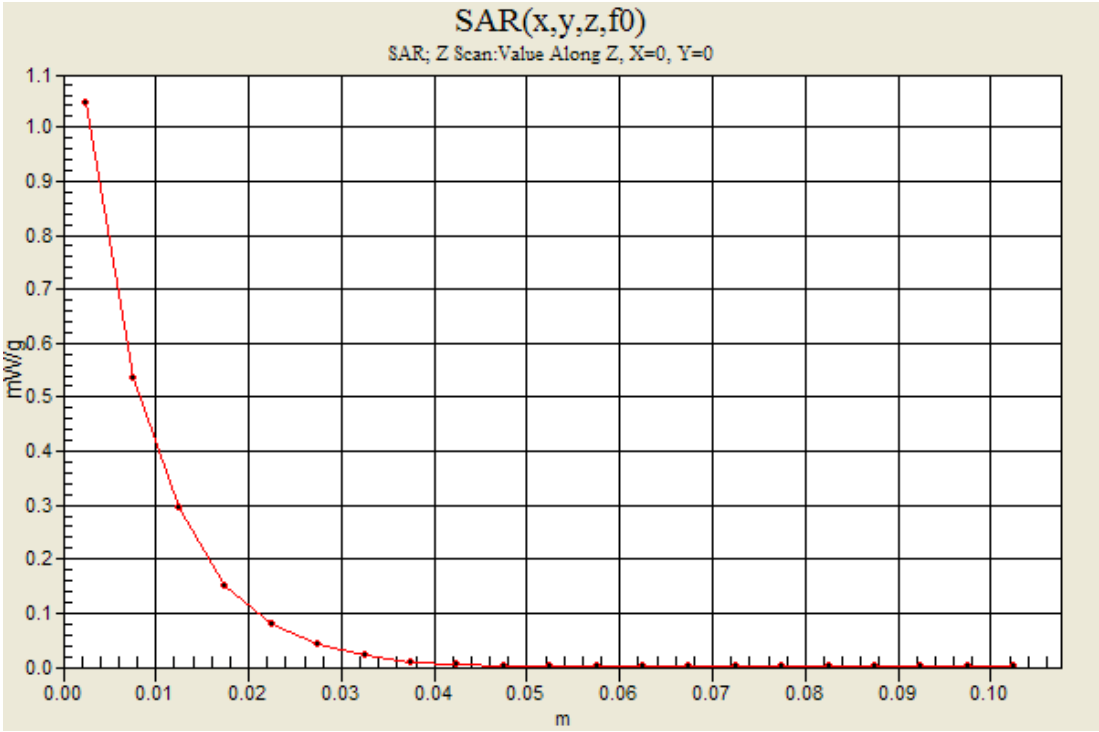
0 dB = 1.49mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 7/2/2012 6:20:17 PM

2.4 GHz band

Frequency: 2437 MHz; Duty Cycle: 1:1

802.11b,WiFi 1_Ch 6/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.04 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 7/5/2012 7:24:08 PM

2.4 GHz band

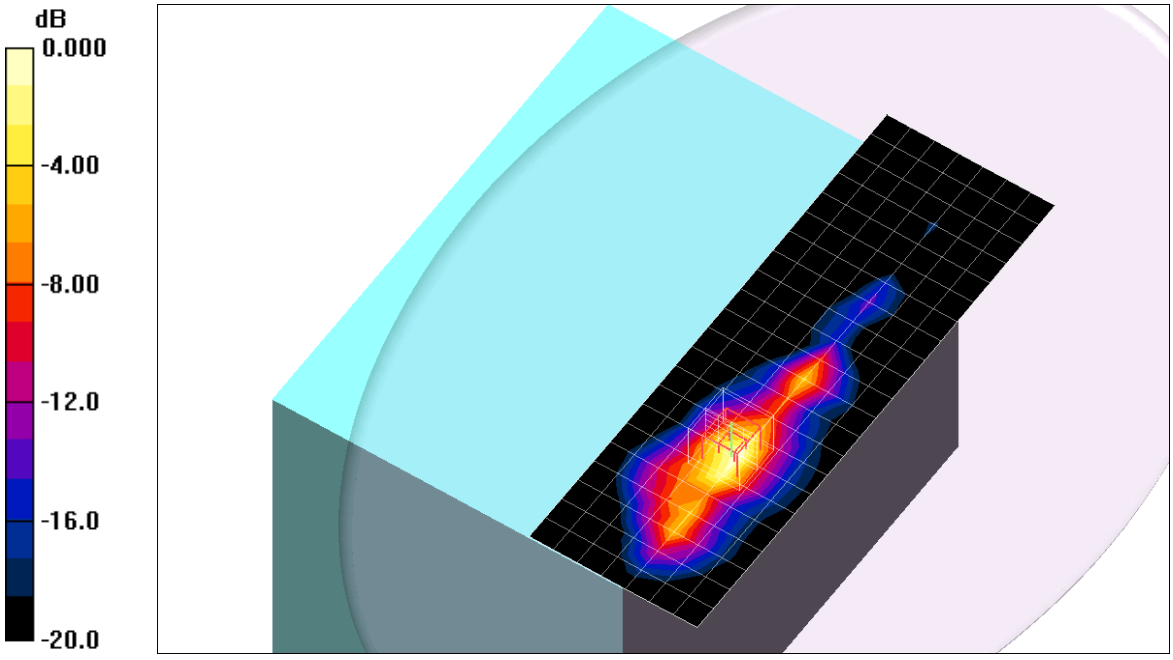
Frequency: 2437 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.98 mho/m; ε_r = 52.8; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(6.66, 6.66, 6.66); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11g,WiFi 1_Ch 6/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.70 mW/g

802.11g,WiFi 1_Ch 6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 26.6 V/m; Power Drift = 0.054 dB
Peak SAR (extrapolated) = 2.94 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.492 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.66 mW/g



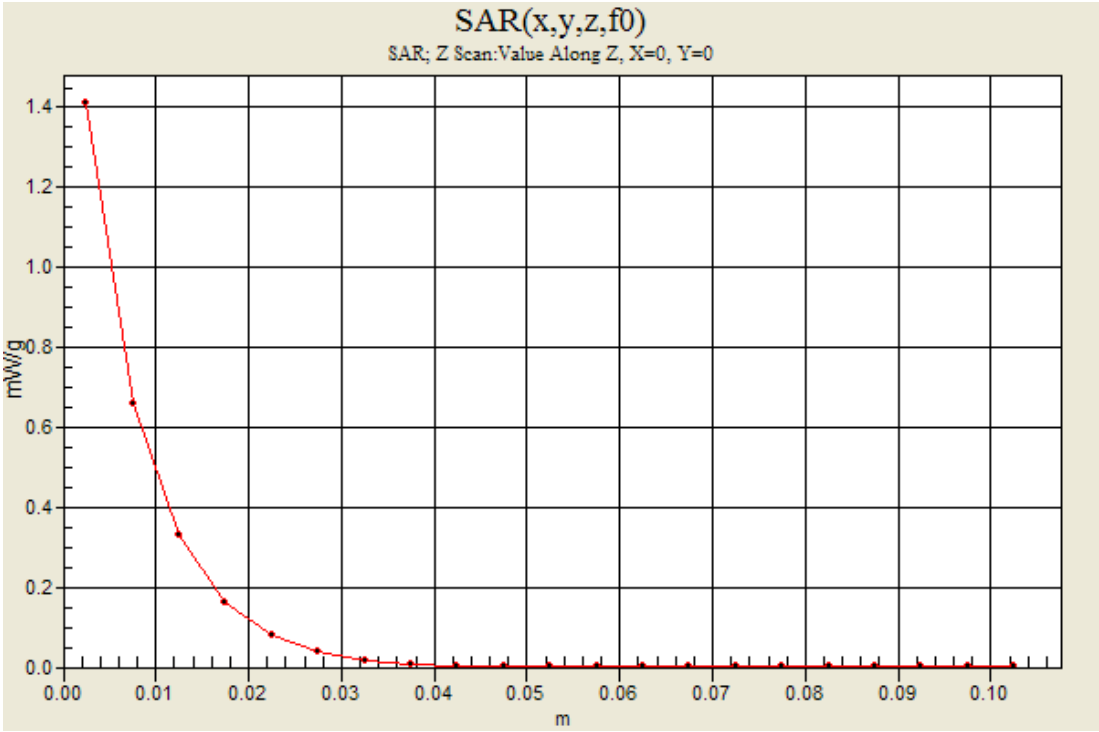
0 dB = 1.66mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 7/5/2012 7:39:26 PM

2.4 GHz band

Frequency: 2437 MHz; Duty Cycle: 1:1

802.11g,WiFi 1_Ch 6/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.41 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 7/3/2012 10:57:40 AM

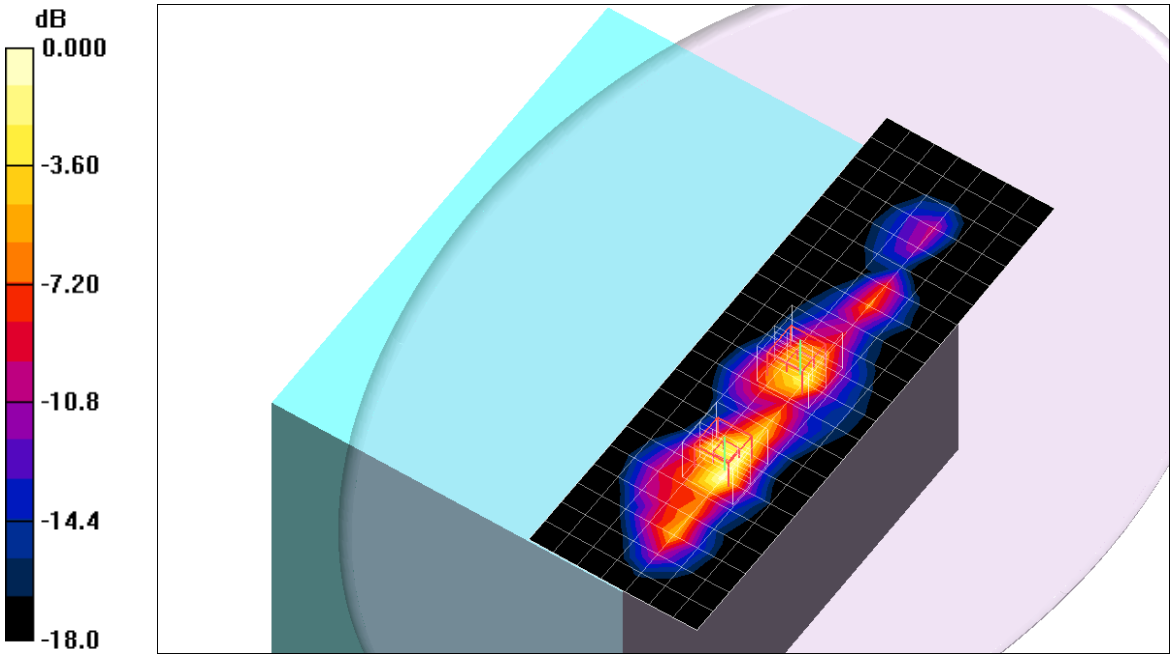
2.4 GHz band

Frequency: 2462 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): f = 2462 MHz; σ = 2.03 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(6.66, 6.66, 6.66); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11b,WiFi 2,1_Ch 11/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.65 mW/g

802.11b,WiFi 2_Ch 11/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.6 V/m; Power Drift = 0.109 dB
Peak SAR (extrapolated) = 2.34 W/kg
SAR(1 g) = 0.922 mW/g; SAR(10 g) = 0.389 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.35 mW/g

802.11b,WiFi 1_Ch 11/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.6 V/m; Power Drift = 0.109 dB
Peak SAR (extrapolated) = 2.70 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.508 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.78 mW/g



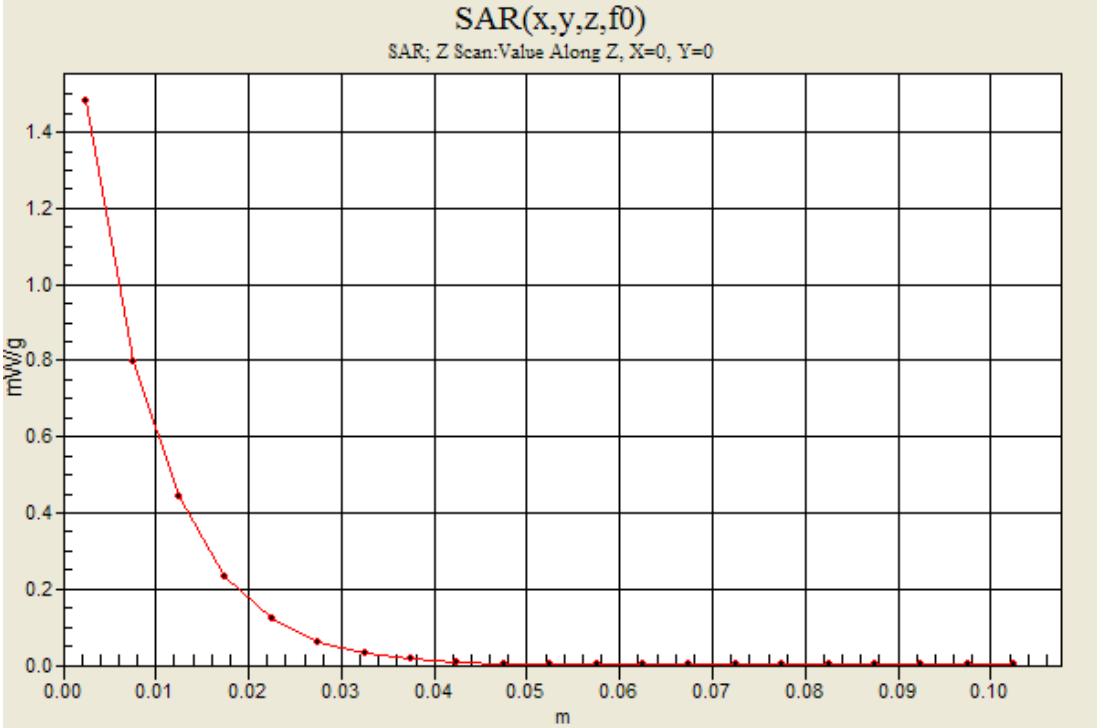
0 dB = 1.78mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 7/3/2012 11:17:23 AM

2.4 GHz band

Frequency: 2462 MHz; Duty Cycle: 1:1

802.11b,WiFi 2,1_Ch 11/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.48 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 7/2/2012 7:39:10 PM

2.4 GHz band

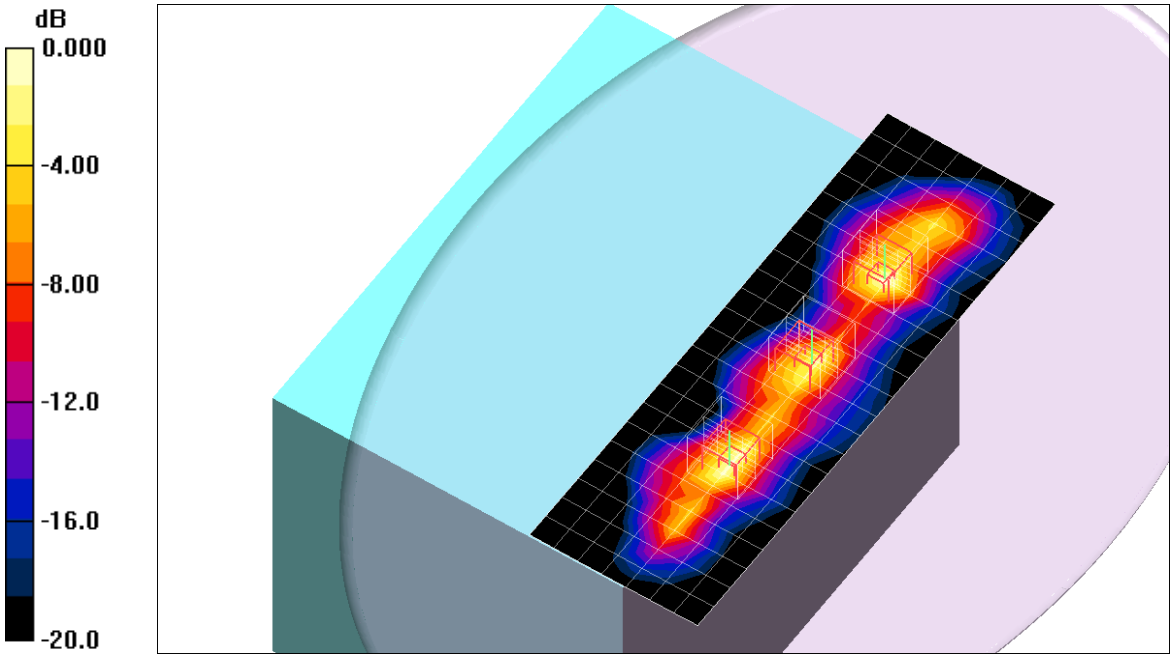
Frequency: 2437 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.85 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(6.66, 6.66, 6.66); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11b,WiFi 3,2,1_Ch 6/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.99 mW/g

802.11b,WiFi 3_Ch 6/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.5 V/m; Power Drift = 0.105 dB
Peak SAR (extrapolated) = 2.51 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.442 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.51 mW/g

802.11b,WiFi 2_Ch 6/Zoom Scan (5x5x7)/Cube 2: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.5 V/m; Power Drift = 0.105 dB
Peak SAR (extrapolated) = 2.38 W/kg
SAR(1 g) = 0.969 mW/g; SAR(10 g) = 0.422 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.32 mW/g

802.11b,WiFi 1_Ch 6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.5 V/m; Power Drift = 0.105 dB
Peak SAR (extrapolated) = 2.54 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.503 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.94 mW/g



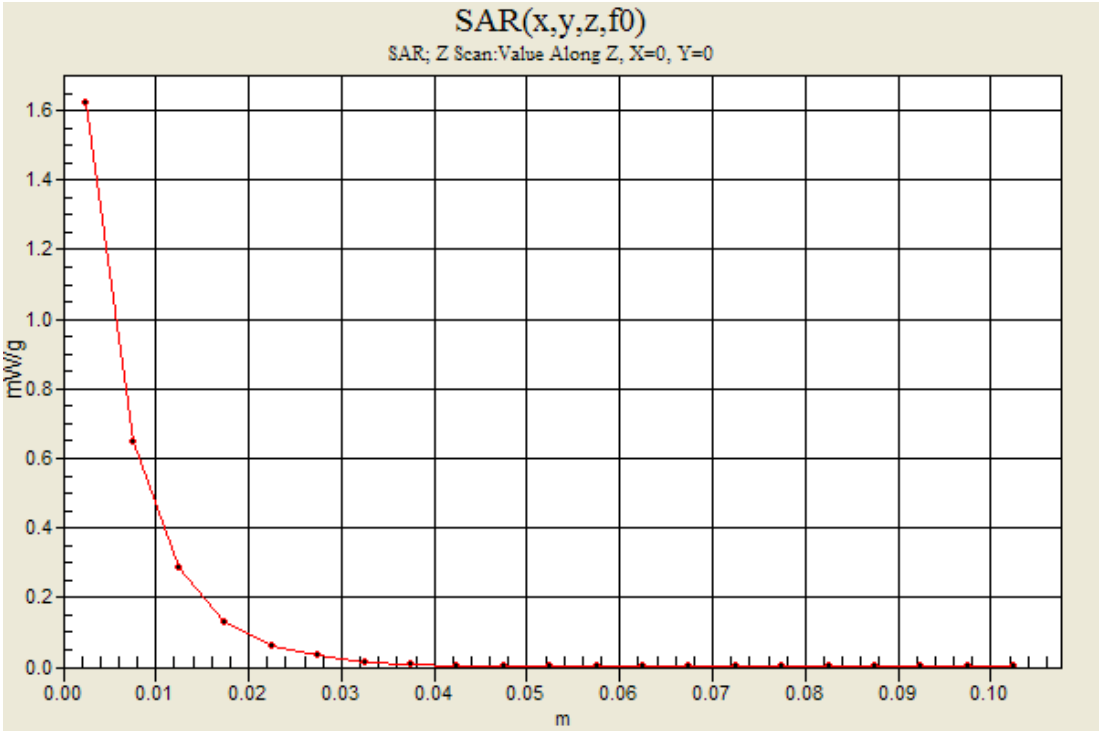
0 dB = 1.94mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 7/2/2012 8:15:08 PM

2.4 GHz band

Frequency: 2437 MHz; Duty Cycle: 1:1

802.11b,WiFi 3,2,1_Ch 6/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.62 mW/g



14.2.2. Worst-Case SAR Plots for 5.2 GHz Band

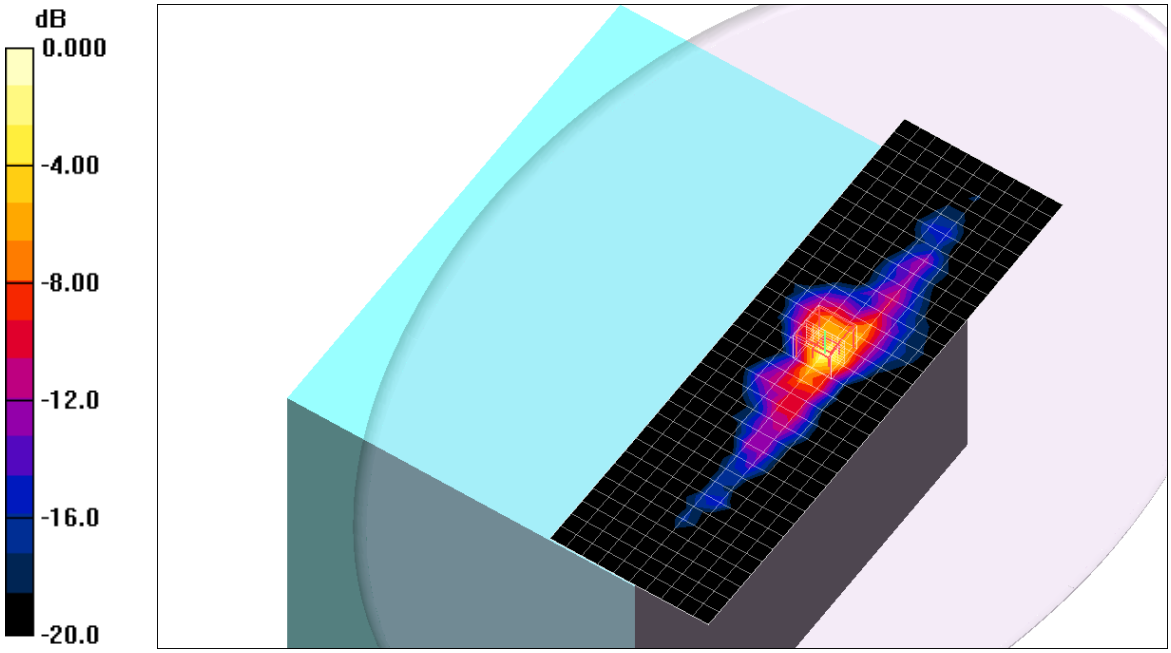
Test Laboratory: UL CCS SAR Lab D Date/Time: 6/22/2012 9:01:50 PM

5GHz bands

Frequency: 5180 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5180 MHz; σ = 5.09 mho/m; ε_r = 50.6; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.23, 4.23, 4.23); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a, WiFi 2_Ch 36/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.08 mW/g

802.11a, WiFi 2_Ch 36/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.6 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 2.86 W/kg
SAR(1 g) = 0.682 mW/g; SAR(10 g) = 0.181 mW/g
Maximum value of SAR (measured) = 1.36 mW/g



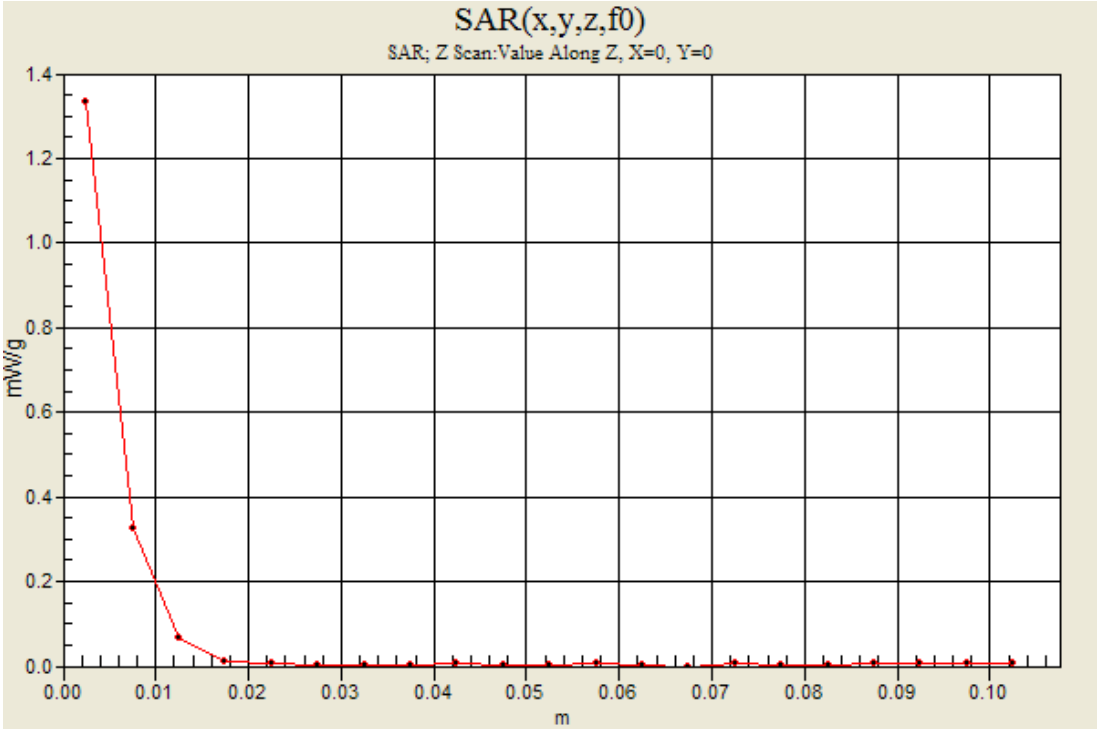
0 dB = 1.36mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/22/2012 9:31:30 PM

5GHz bands

Frequency: 5180 MHz; Duty Cycle: 1:1

802.11a, WiFi 2_Ch 36/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.33 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/22/2012 6:14:17 PM

5GHz bands

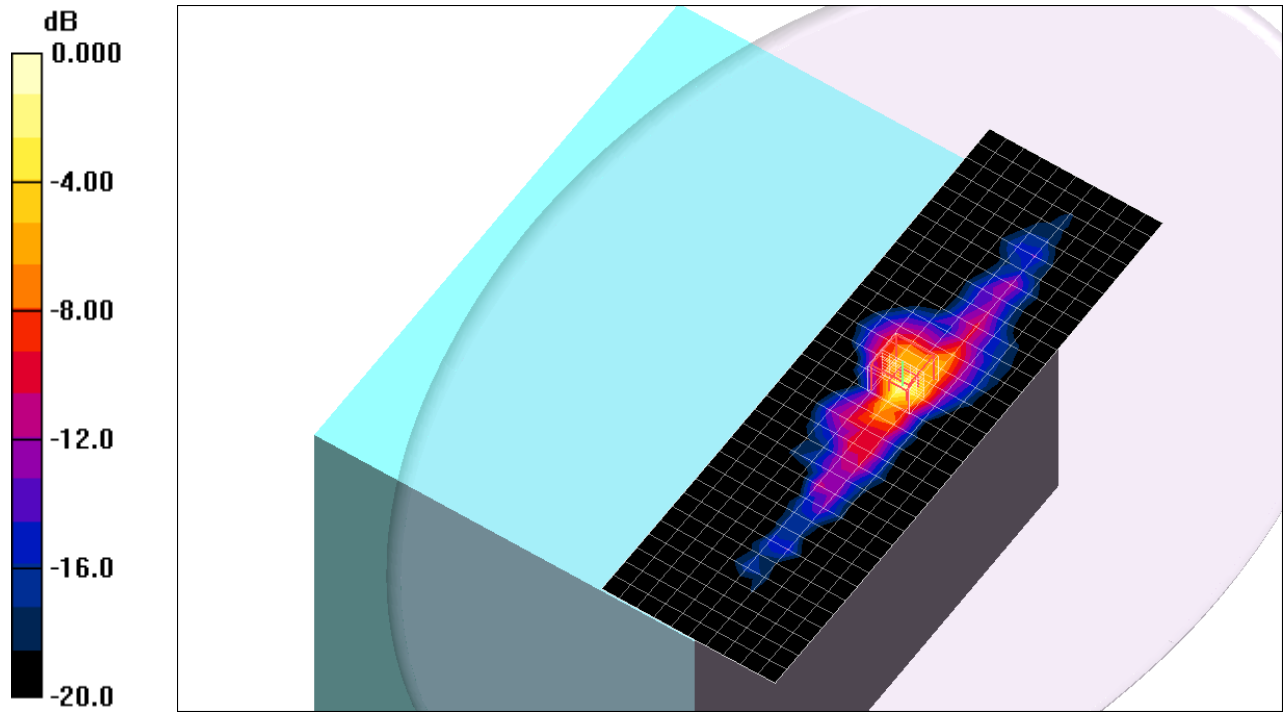
Frequency: 5190 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5190 MHz; σ = 5.1 mho/m; ε_r = 50.6; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.23, 4.23, 4.23); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT40,WiFi 2_Ch 38/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 1.41 mW/g

802.11n HT40,WiFi 2_Ch 38/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 20.0 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 3.78 W/kg
SAR(1 g) = 0.879 mW/g; SAR(10 g) = 0.233 mW/g
Maximum value of SAR (measured) = 1.71 mW/g



0 dB = 1.71mW/g

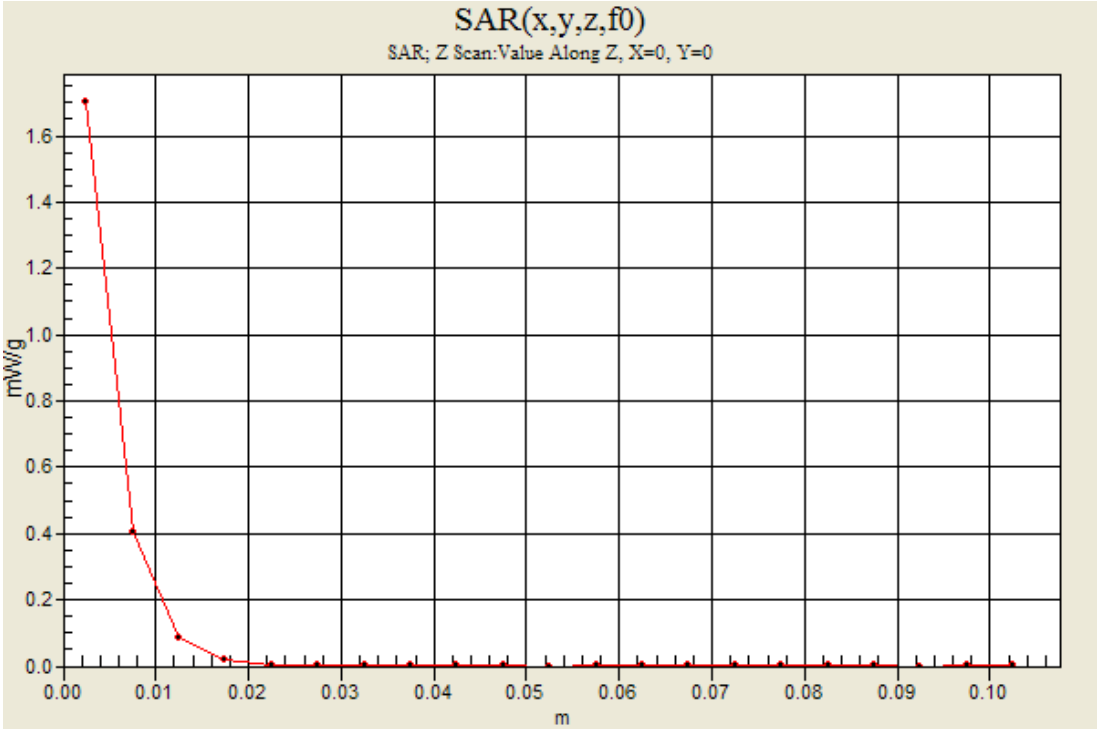
Test Laboratory: UL CCS SAR Lab D Date/Time: 6/22/2012 6:43:20 PM

5GHz bands

Frequency: 5190 MHz; Duty Cycle: 1:1

802.11n HT40,WiFi 2_Ch 38/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 1.70 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/22/2012 4:15:46 PM

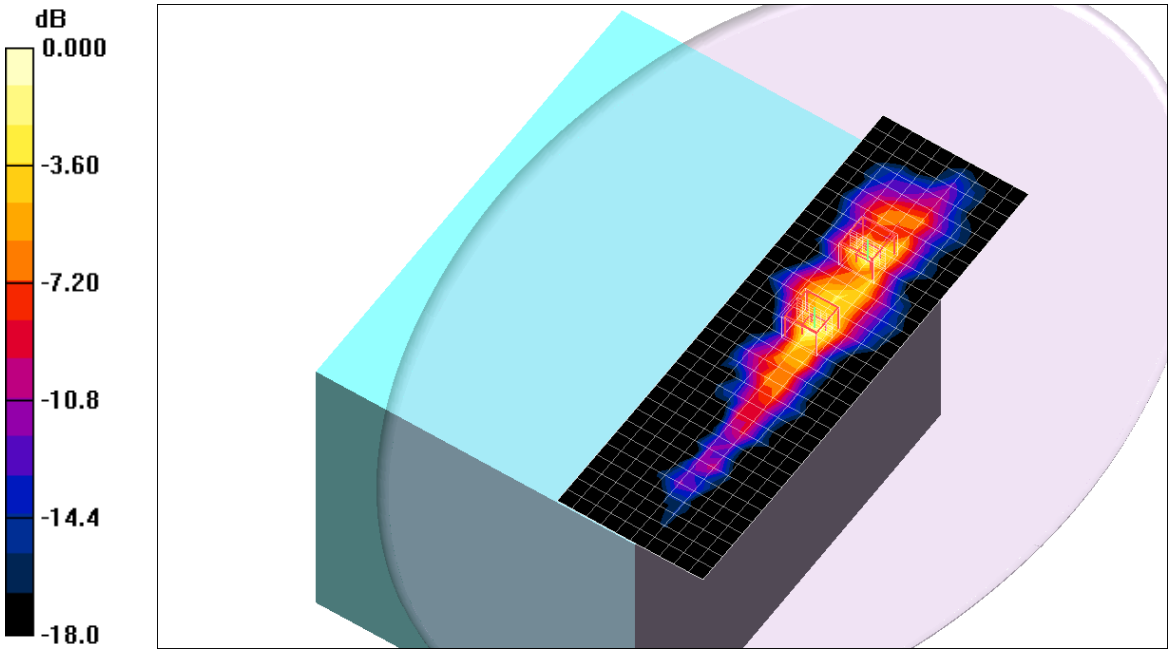
5GHz bands

Frequency: 5180 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5180 MHz; σ = 5.09 mho/m; ε_r = 50.6; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.23, 4.23, 4.23); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT20,WiFi 3,2_Ch 36/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.562 mW/g

802.11n HT20,WiFi 3_Ch 36/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.5 V/m; Power Drift = -0.134 dB
Peak SAR (extrapolated) = 0.923 W/kg
SAR(1 g) = 0.249 mW/g; SAR(10 g) = 0.086 mW/g
Maximum value of SAR (measured) = 0.441 mW/g

802.11n HT20,WiFi 2_Ch 36/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.5 V/m; Power Drift = -0.134 dB
Peak SAR (extrapolated) = 1.44 W/kg
SAR(1 g) = 0.370 mW/g; SAR(10 g) = 0.103 mW/g
Maximum value of SAR (measured) = 0.703 mW/g



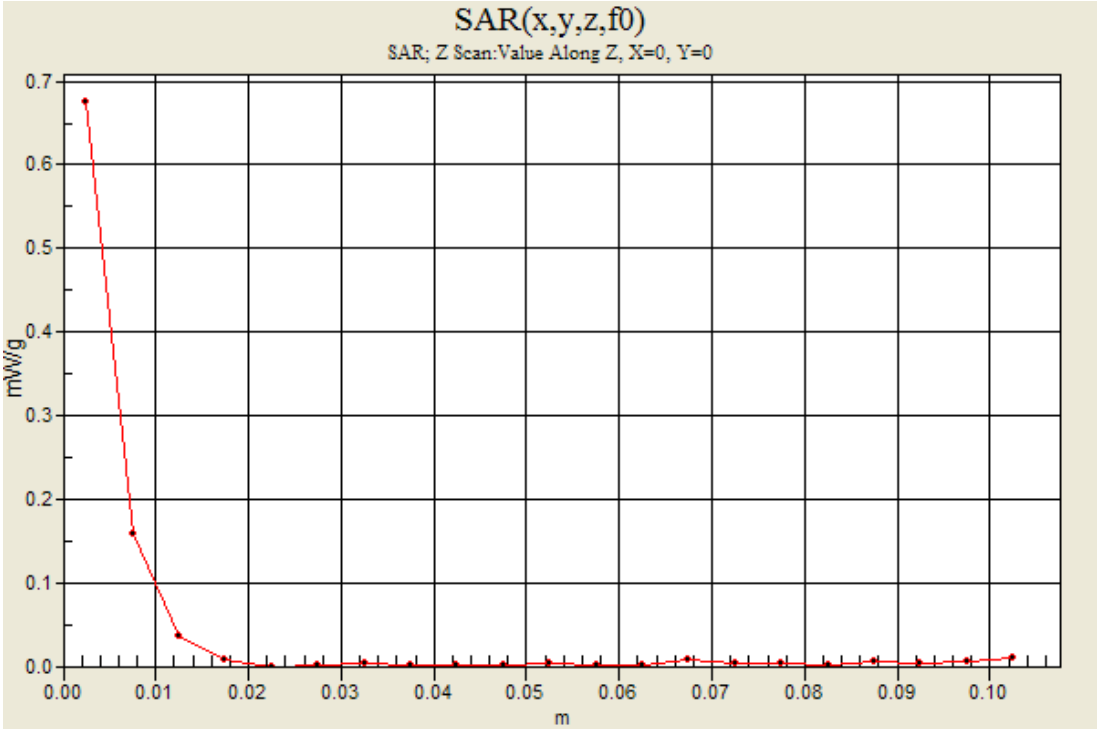
0 dB = 0.703mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/22/2012 4:58:59 PM

5GHz bands

Frequency: 5180 MHz; Duty Cycle: 1:1

802.11n HT20,WiFi 3,2_Ch 36/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.675 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/22/2012 10:42:53 AM

5GHz bands

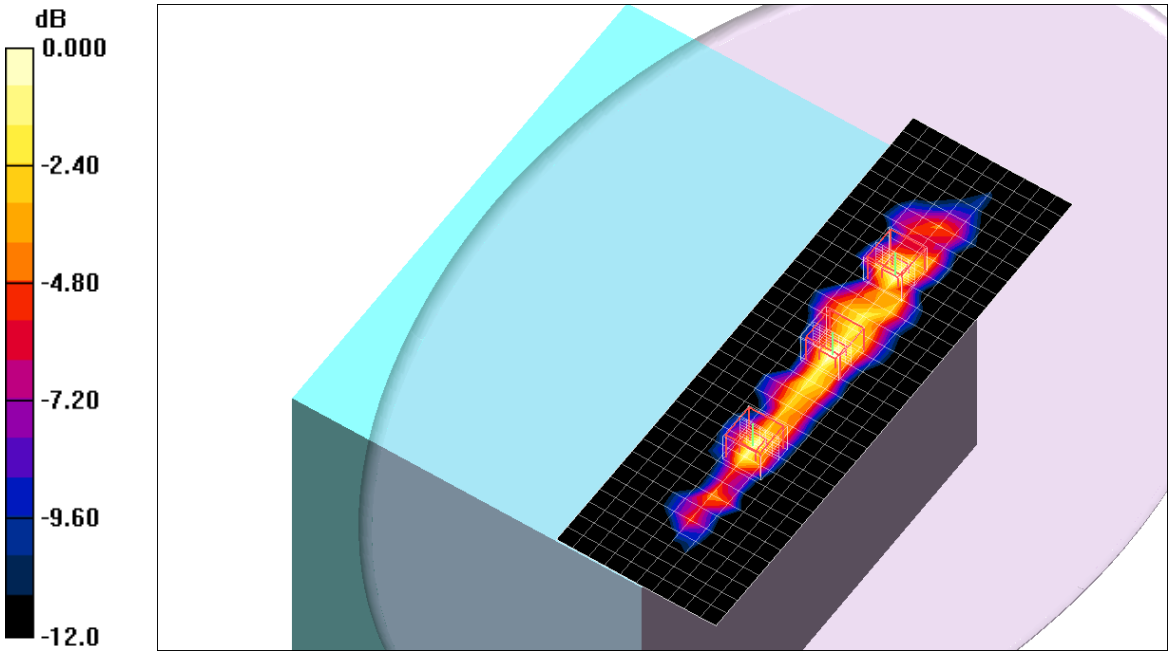
Frequency: 5190 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5190 MHz; σ = 5.1 mho/m; ε_r = 50.6; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.23, 4.23, 4.23); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT40,WiFi 3,2,1_Ch 38/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.446 mW/g

802.11n HT40,WiFi 3_Ch 38/Zoom Scan (7x7x9)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.5 V/m; Power Drift = -0.107 dB
Peak SAR (extrapolated) = 0.791 W/kg
SAR(1 g) = 0.217 mW/g; SAR(10 g) = 0.074 mW/g
Maximum value of SAR (measured) = 0.387 mW/g

802.11n HT40,WiFi 2_Ch 38/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.5 V/m; Power Drift = -0.107 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.273 mW/g; SAR(10 g) = 0.085 mW/g

802.11n HT40,WiFi 1_Ch 38/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.5 V/m; Power Drift = -0.107 dB
Peak SAR (extrapolated) = 0.830 W/kg
SAR(1 g) = 0.226 mW/g; SAR(10 g) = 0.070 mW/g
Maximum value of SAR (measured) = 0.415 mW/g



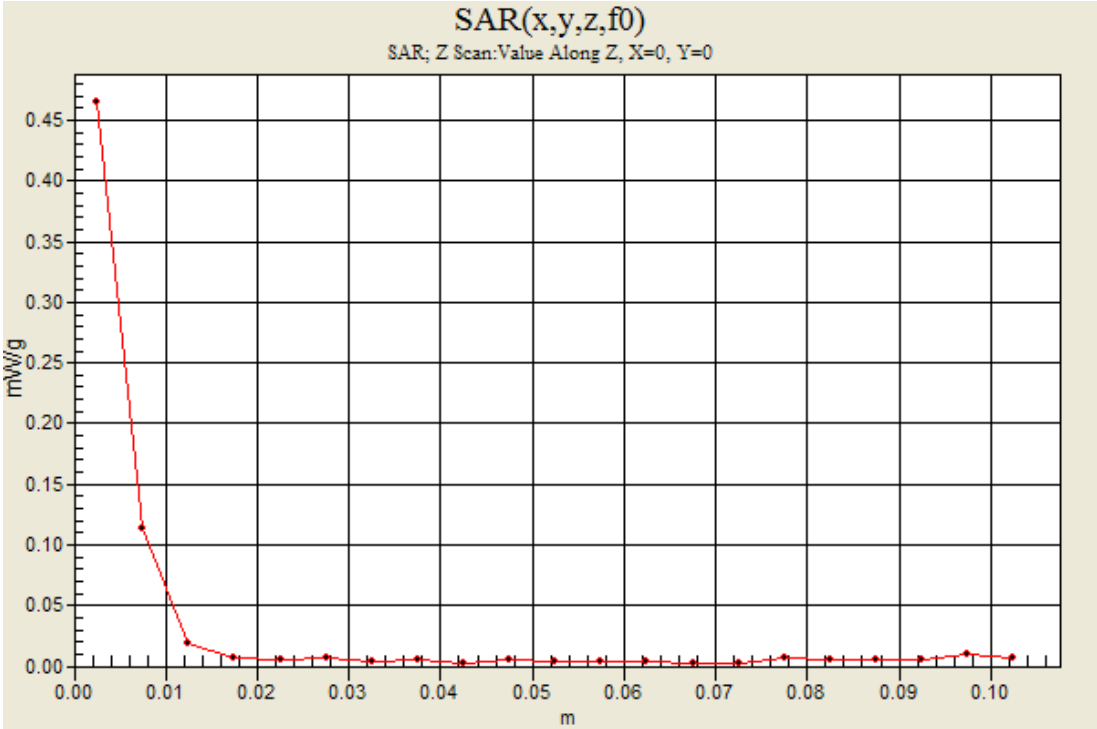
0 dB = 0.415mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/22/2012 11:57:29 AM

5GHz bands

Frequency: 5190 MHz; Duty Cycle: 1:1

802.11n HT40,WiFi 3,2,1_Ch 38/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.465 mW/g



14.2.3. Worst-Case SAR Plots for 5.3 GHz Band

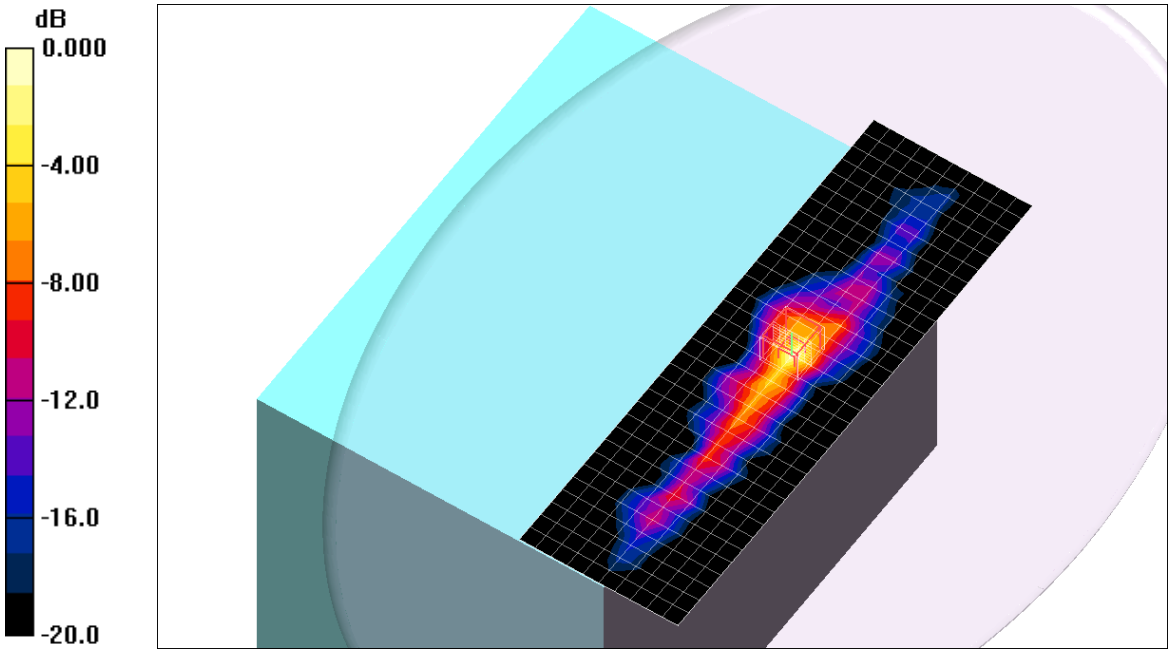
Test Laboratory: UL CCS SAR Lab D Date/Time: 6/25/2012 12:05:21 AM

5GHz bands

Frequency: 5320 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5320 MHz; σ = 5.46 mho/m; ε_r = 48.7; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.11, 4.11, 4.11); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a, WiFi 2_Ch 64/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.18 mW/g

802.11a, WiFi 2_Ch 64/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.0 V/m; Power Drift = -0.096 dB
Peak SAR (extrapolated) = 4.78 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.311 mW/g
Maximum value of SAR (measured) = 2.20 mW/g



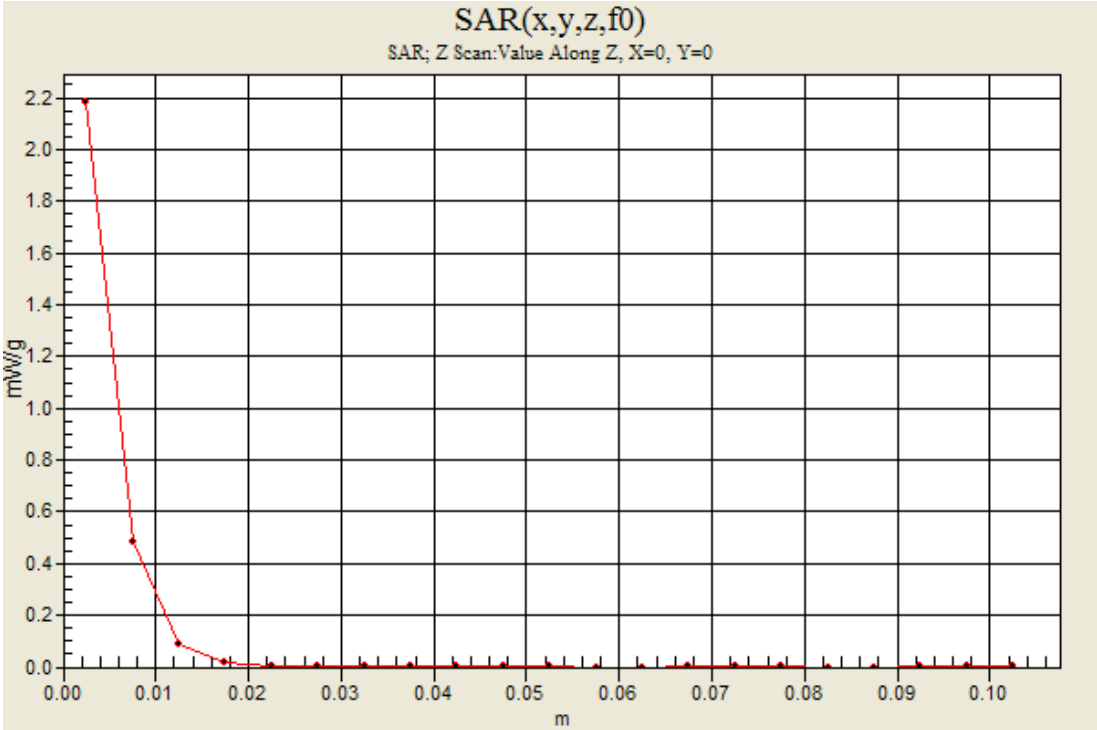
0 dB = 2.20mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/25/2012 12:33:48 AM

5GHz bands

Frequency: 5320 MHz; Duty Cycle: 1:1

802.11a, WiFi 2_Ch 64/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.18 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/25/2012 6:17:39 PM

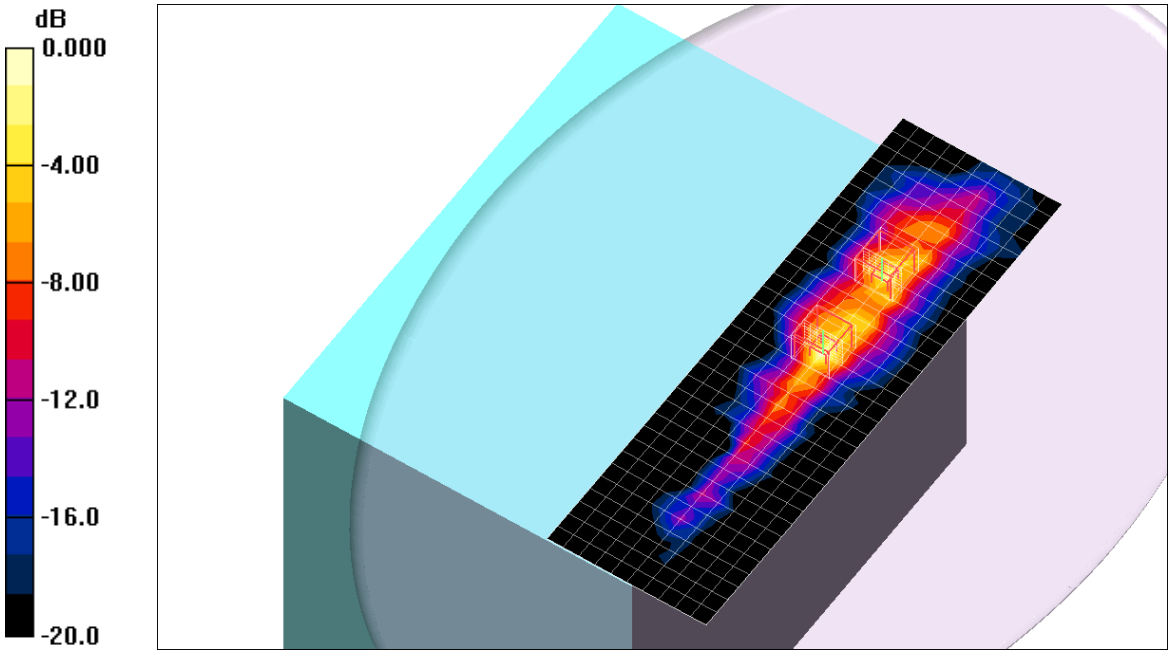
5GHz bands

Frequency: 5300 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5300 MHz; σ = 5.43 mho/m; ε_r = 48.8; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.11, 4.11, 4.11); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a,WiFi 3,2_Ch 60/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.25 mW/g

802.11a,WiFi 3_Ch 60/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 16.9 V/m; Power Drift = -0.093 dB
Peak SAR (extrapolated) = 1.52 W/kg
SAR(1 g) = 0.404 mW/g; SAR(10 g) = 0.140 mW/g
Maximum value of SAR (measured) = 0.706 mW/g

802.11a,WiFi 2_Ch 60/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 16.9 V/m; Power Drift = -0.093 dB
Peak SAR (extrapolated) = 2.80 W/kg
SAR(1 g) = 0.694 mW/g; SAR(10 g) = 0.186 mW/g
Maximum value of SAR (measured) = 1.35 mW/g



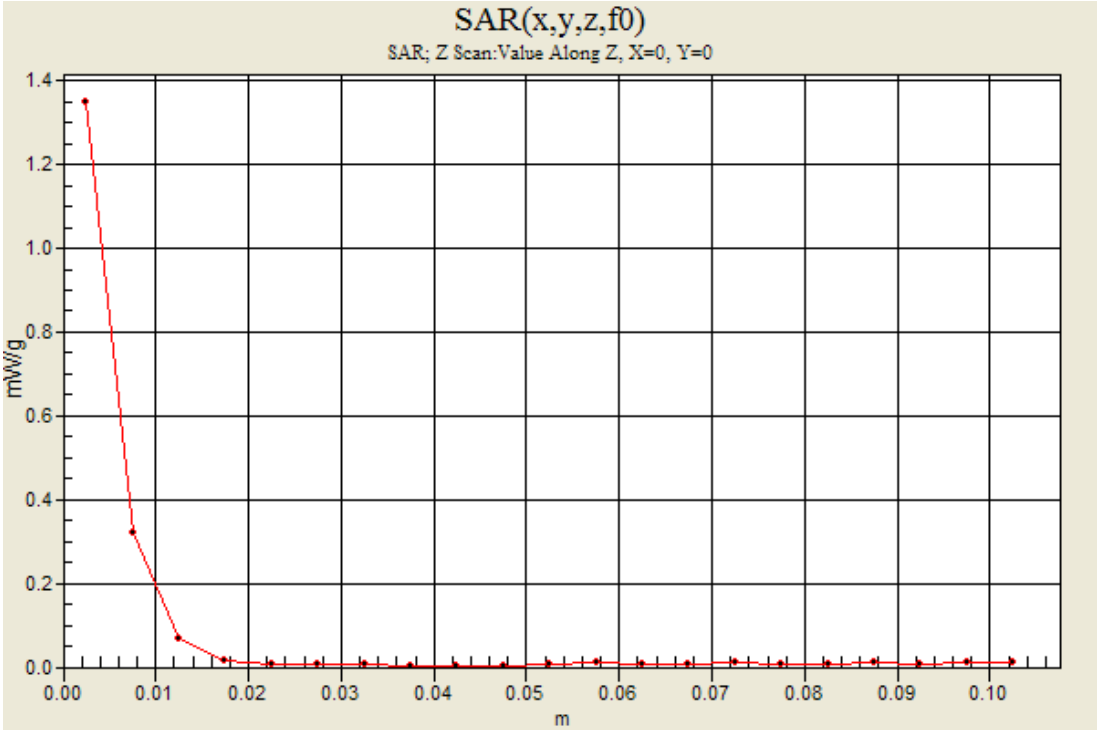
0 dB = 1.35mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/25/2012 7:05:16 PM

5GHz bands

Frequency: 5300 MHz; Duty Cycle: 1:1

802.11a,WiFi 3,2_Ch 60/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.35 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/25/2012 11:04:11 AM

5GHz bands

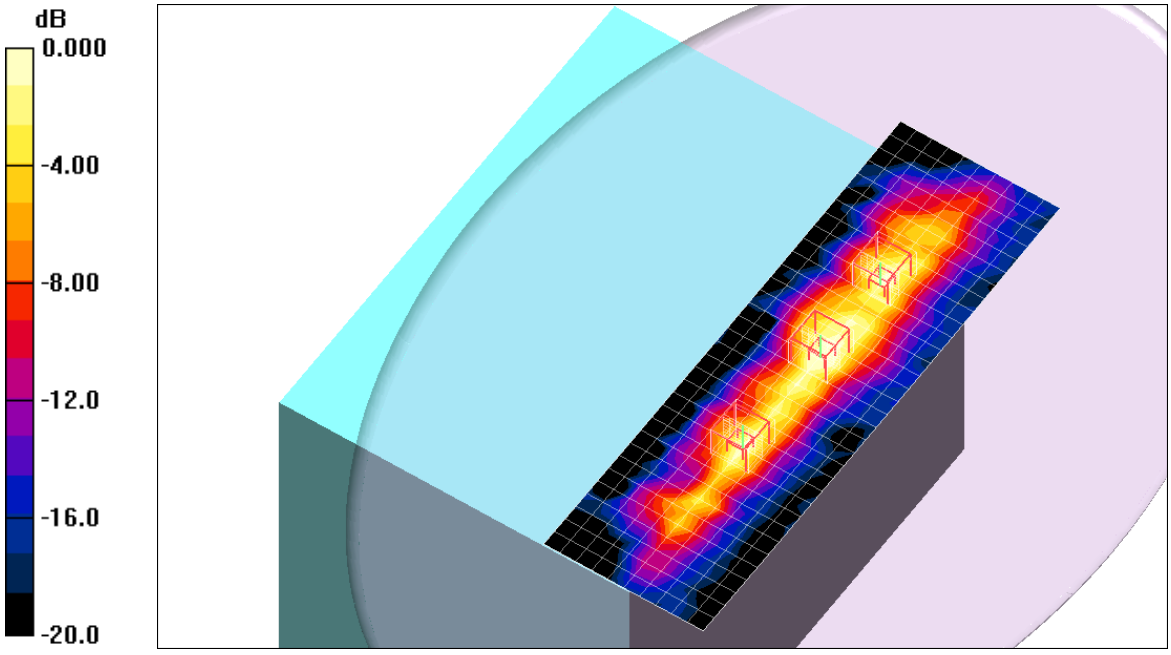
Frequency: 5280 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5280 MHz; σ = 5.4 mho/m; ε_r = 48.8; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.11, 4.11, 4.11); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a,WiFi 3,2,1_Ch 56/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.56 mW/g

802.11a,WiFi 3_Ch 56/Zoom Scan (7x7x9)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.5 V/m; Power Drift = -0.159 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.377 mW/g; SAR(10 g) = 0.131 mW/g
Maximum value of SAR (measured) = 0.687 mW/g

802.11a,WiFi 2_Ch 56/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.5 V/m; Power Drift = -0.159 dB
Peak SAR (extrapolated) = 3.12 W/kg
SAR(1 g) = 0.800 mW/g; SAR(10 g) = 0.216 mW/g
Maximum value of SAR (measured) = 1.53 mW/g

802.11a,WiFi 1_Ch 56/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.5 V/m; Power Drift = -0.159 dB
Peak SAR (extrapolated) = 1.52 W/kg
SAR(1 g) = 0.403 mW/g; SAR(10 g) = 0.125 mW/g
Maximum value of SAR (measured) = 0.700 mW/g



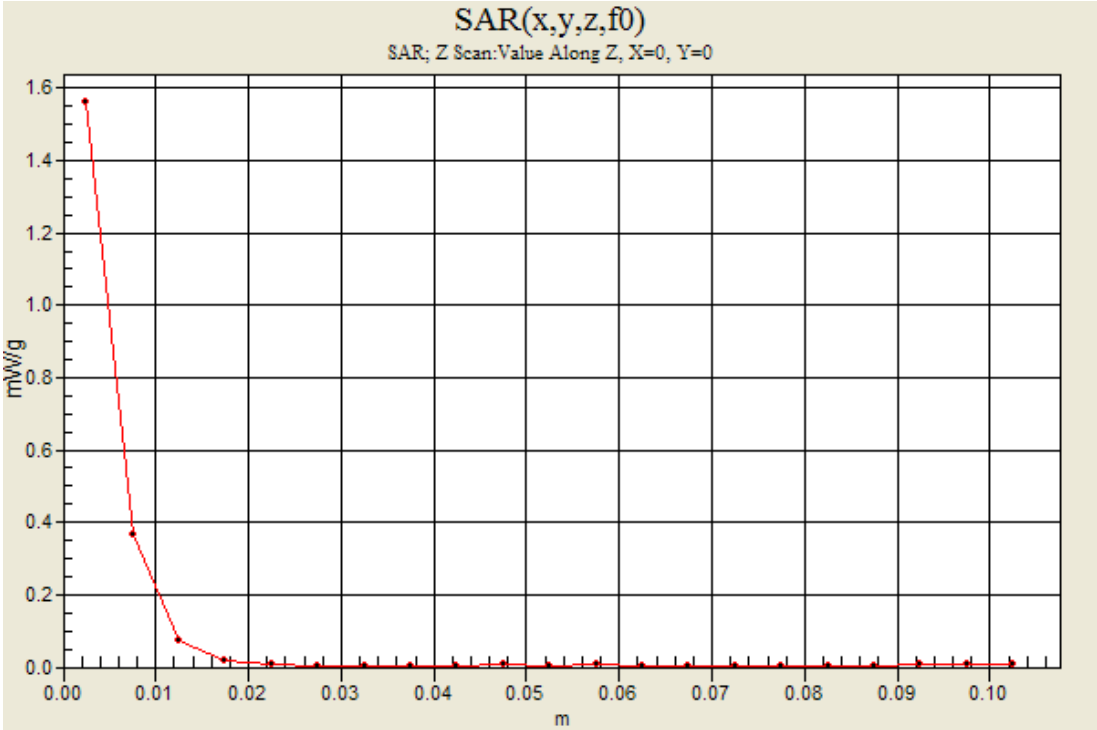
0 dB = 0.700mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/25/2012 12:03:15 PM

5GHz bands

Frequency: 5280 MHz; Duty Cycle: 1:1

802.11a,WiFi 3,2,1_Ch 56/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.56 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/25/2012 4:55:28 AM

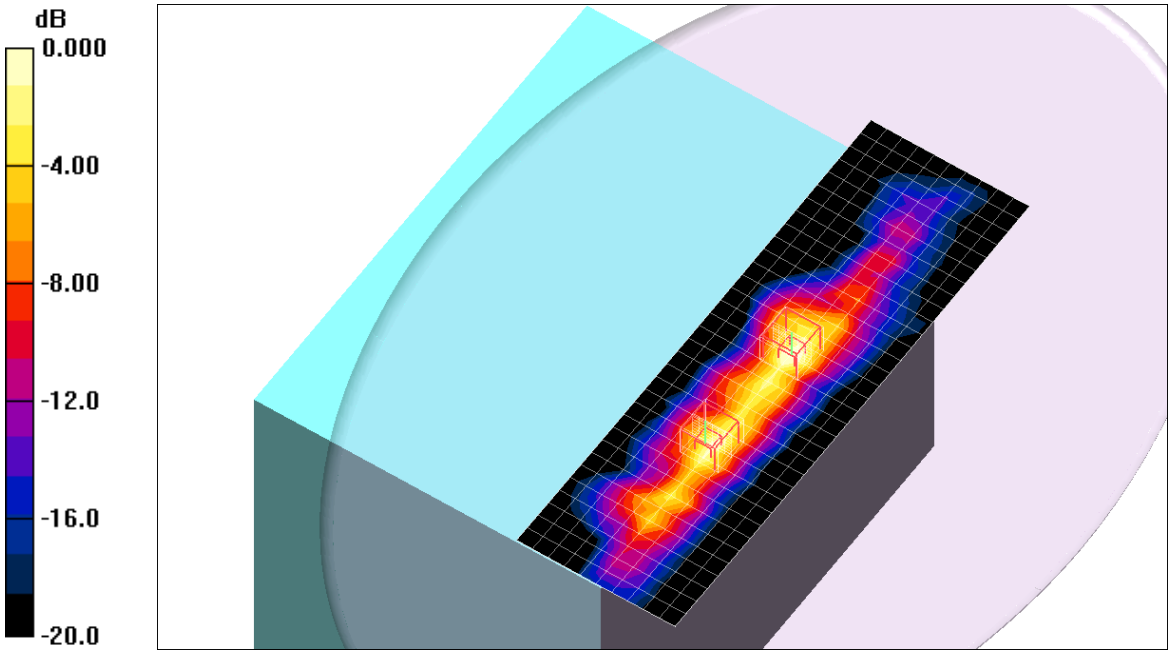
5GHz bands

Frequency: 5260 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5260 MHz; σ = 5.37 mho/m; ε_r = 48.8; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.11, 4.11, 4.11); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT20,WiFi 2,1_Ch 52/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.20 mW/g

802.11n HT20,WiFi 2_Ch 52/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.3 V/m; Power Drift = -0.151 dB
Peak SAR (extrapolated) = 4.82 W/kg
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.317 mW/g

802.11n HT20,WiFi 1_Ch 52/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.3 V/m; Power Drift = -0.151 dB
Peak SAR (extrapolated) = 3.03 W/kg
SAR(1 g) = 0.754 mW/g; SAR(10 g) = 0.240 mW/g
Maximum value of SAR (measured) = 1.34 mW/g



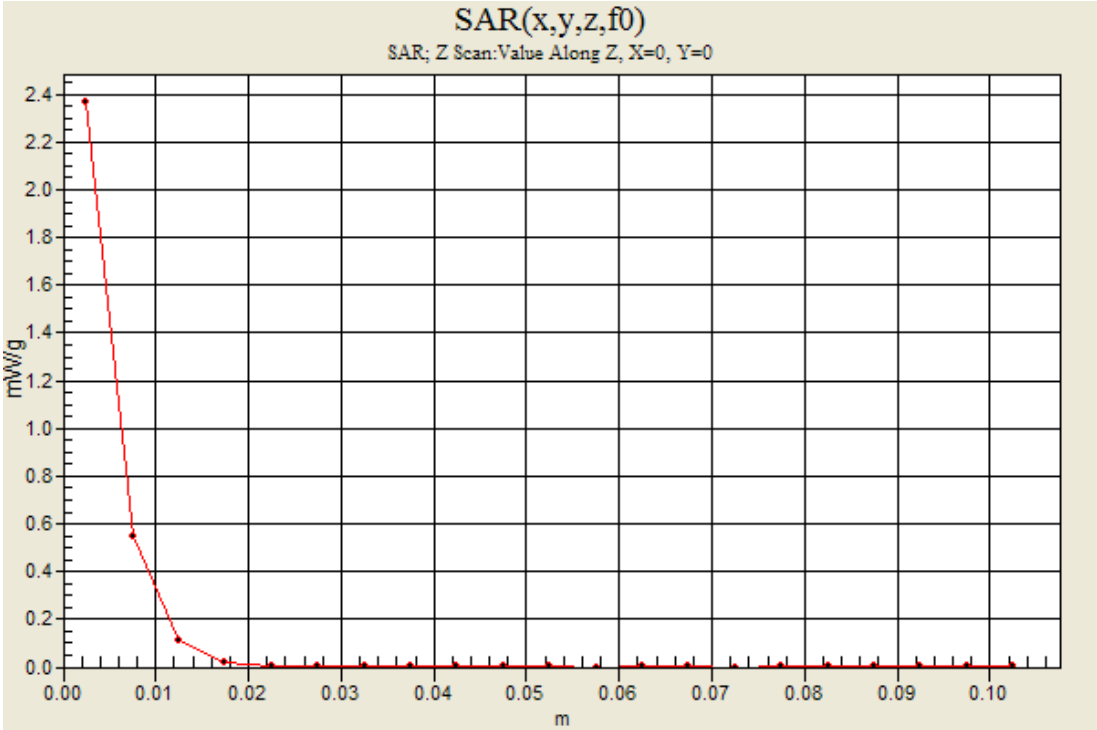
0 dB = 1.34mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/25/2012 5:37:53 AM

5GHz bands

Frequency: 5260 MHz; Duty Cycle: 1:1

802.11n HT20, WiFi 2,1_Ch 52/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.37 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/24/2012 6:00:57 AM

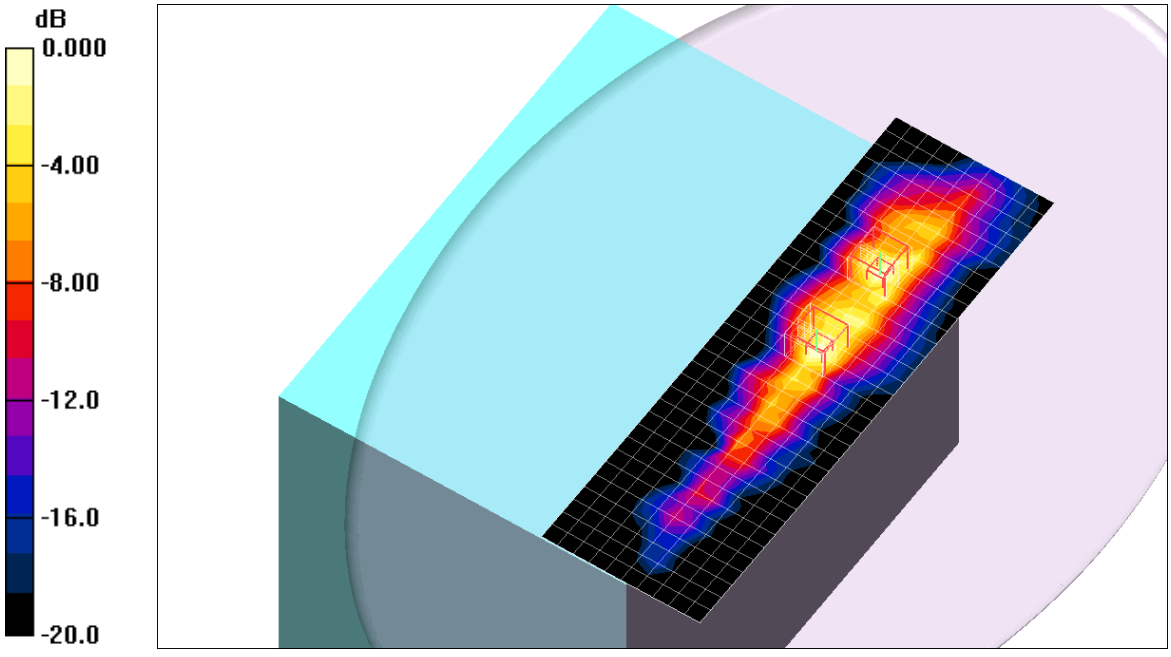
5GHz bands

Frequency: 5270 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5270 MHz; σ = 5.59 mho/m; ε_r = 47; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.11, 4.11, 4.11); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT40,WiFi 3,2_Ch 54/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.74 mW/g

802.11n HT40,WiFi 3_Ch 54/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.1 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 3.43 W/kg
SAR(1 g) = 0.892 mW/g; SAR(10 g) = 0.314 mW/g
Maximum value of SAR (measured) = 1.65 mW/g

802.11n HT40,WiFi 2_Ch 54/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.1 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 4.74 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.317 mW/g
Maximum value of SAR (measured) = 2.23 mW/g



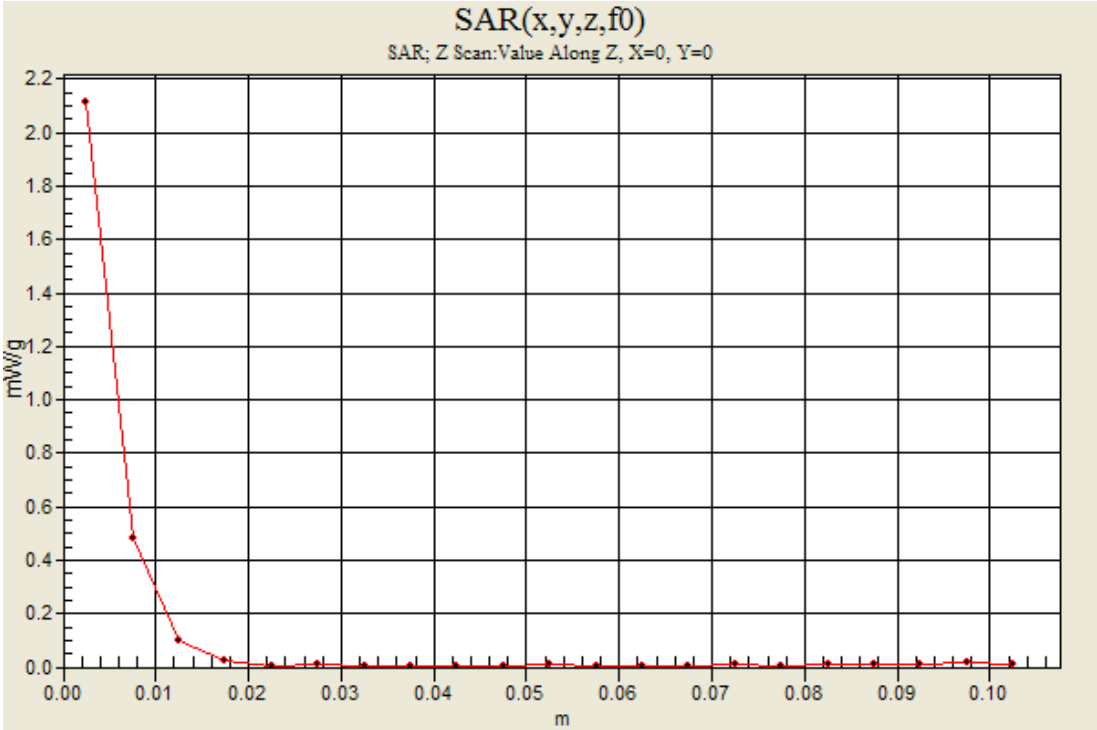
0 dB = 2.23mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/24/2012 7:01:20 AM

5GHz bands

Frequency: 5270 MHz; Duty Cycle: 1:1

802.11n HT40, WiFi 3,2_Ch 54/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.11 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/24/2012 1:57:03 AM

5GHz bands

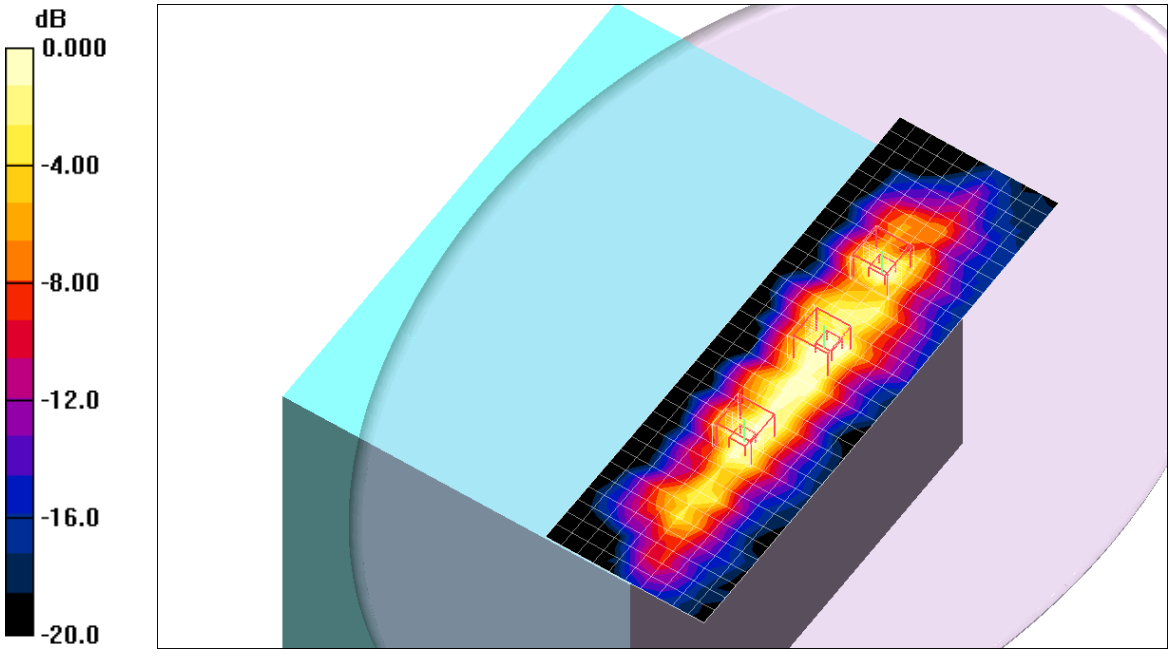
Frequency: 5320 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5320 MHz; σ = 5.65 mho/m; ε_r = 47; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.11, 4.11, 4.11); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT20,WiFi 3,2,1_Ch 64/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.20 mW/g

802.11n HT20,WiFi 3_Ch 64/Zoom Scan (7x7x9)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.8 V/m; Power Drift = -0.090 dB
Peak SAR (extrapolated) = 2.40 W/kg
SAR(1 g) = 0.603 mW/g; SAR(10 g) = 0.199 mW/g
Maximum value of SAR (measured) = 1.10 mW/g

802.11n HT20,WiFi 2_Ch 64/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.8 V/m; Power Drift = -0.090 dB
Peak SAR (extrapolated) = 3.79 W/kg
SAR(1 g) = 1 mW/g; SAR(10 g) = 0.322 mW/g
Maximum value of SAR (measured) = 1.76 mW/g

802.11n HT20,WiFi 1_Ch 64/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.8 V/m; Power Drift = -0.090 dB
Peak SAR (extrapolated) = 3.05 W/kg
SAR(1 g) = 0.817 mW/g; SAR(10 g) = 0.268 mW/g
Maximum value of SAR (measured) = 1.47 mW/g



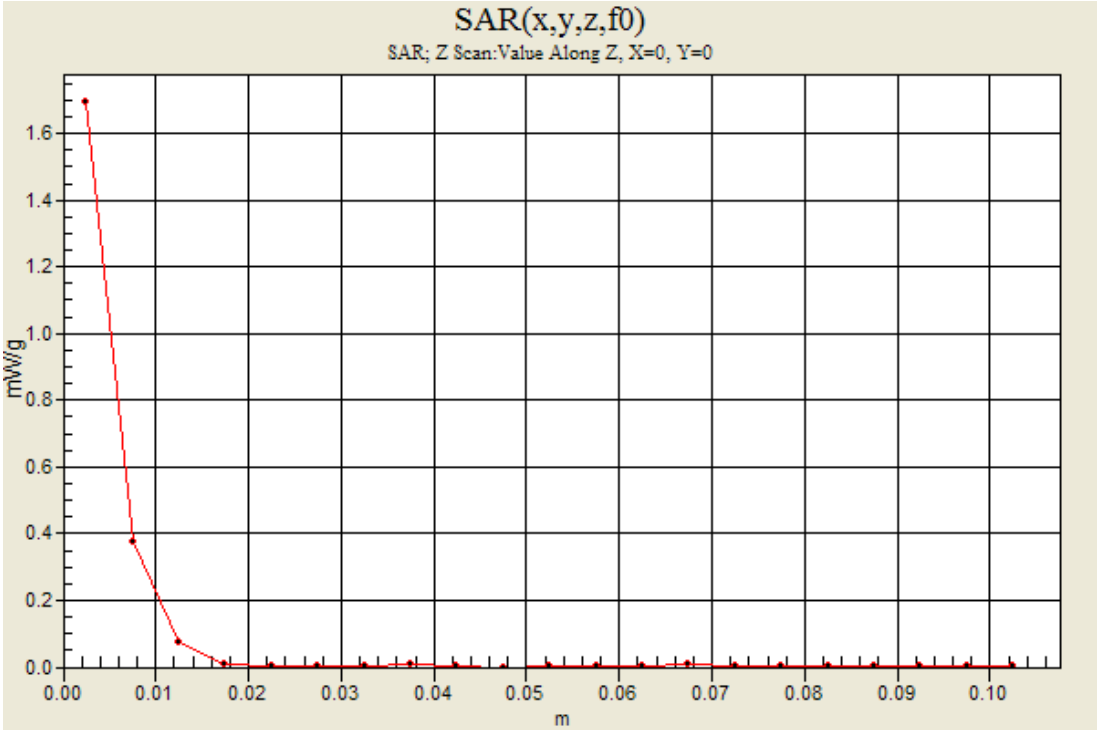
0 dB = 1.47mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/24/2012 2:52:36 AM

5GHz bands

Frequency: 5320 MHz; Duty Cycle: 1:1

802.11n HT20, WiFi 3,2,1_Ch 64/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.69 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/23/2012 11:39:53 PM

5GHz bands

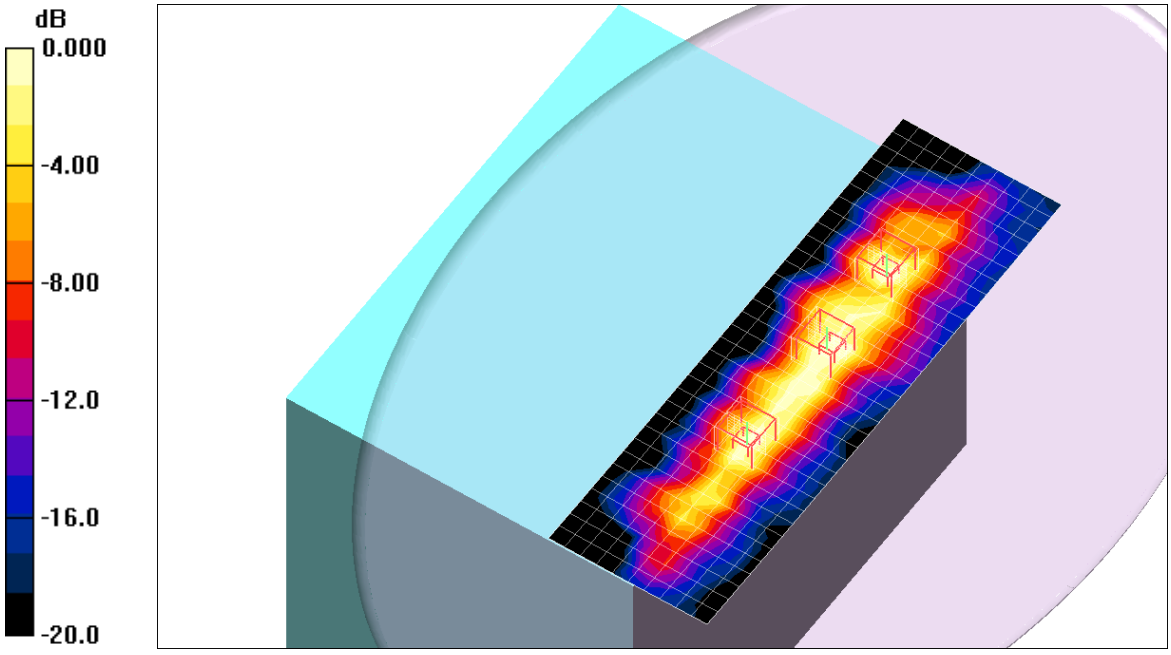
Frequency: 5270 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5270 MHz; σ = 5.59 mho/m; ε_r = 47; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.11, 4.11, 4.11); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT40,WiFi 3,2,1_Ch 54/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.65 mW/g

802.11n HT40,WiFi 3_Ch 54/Zoom Scan (7x7x9)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.8 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 3.10 W/kg
SAR(1 g) = 0.804 mW/g; SAR(10 g) = 0.272 mW/g
Maximum value of SAR (measured) = 1.46 mW/g

802.11n HT40,WiFi 2_Ch 54/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.8 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 4.38 W/kg
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.372 mW/g
Maximum value of SAR (measured) = 2.04 mW/g

802.11n HT40,WiFi 1_Ch 54/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.8 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 0.944 mW/g; SAR(10 g) = 0.316 mW/g
Maximum value of SAR (measured) = 1.71 mW/g



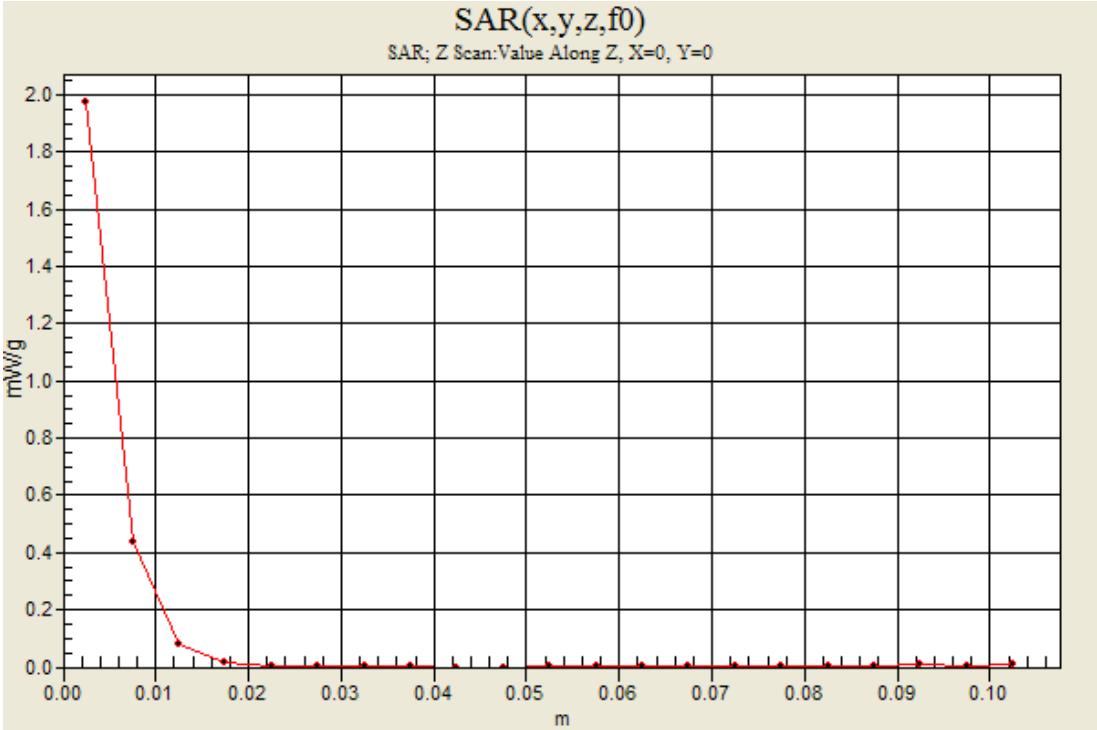
0 dB = 1.71mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/24/2012 12:51:22 AM

5GHz bands

Frequency: 5270 MHz; Duty Cycle: 1:1

802.11n HT40, WiFi 3,2,1_Ch 54/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.97 mW/g



14.2.4. Worst-Case SAR Plots for 5.5 GHz Band

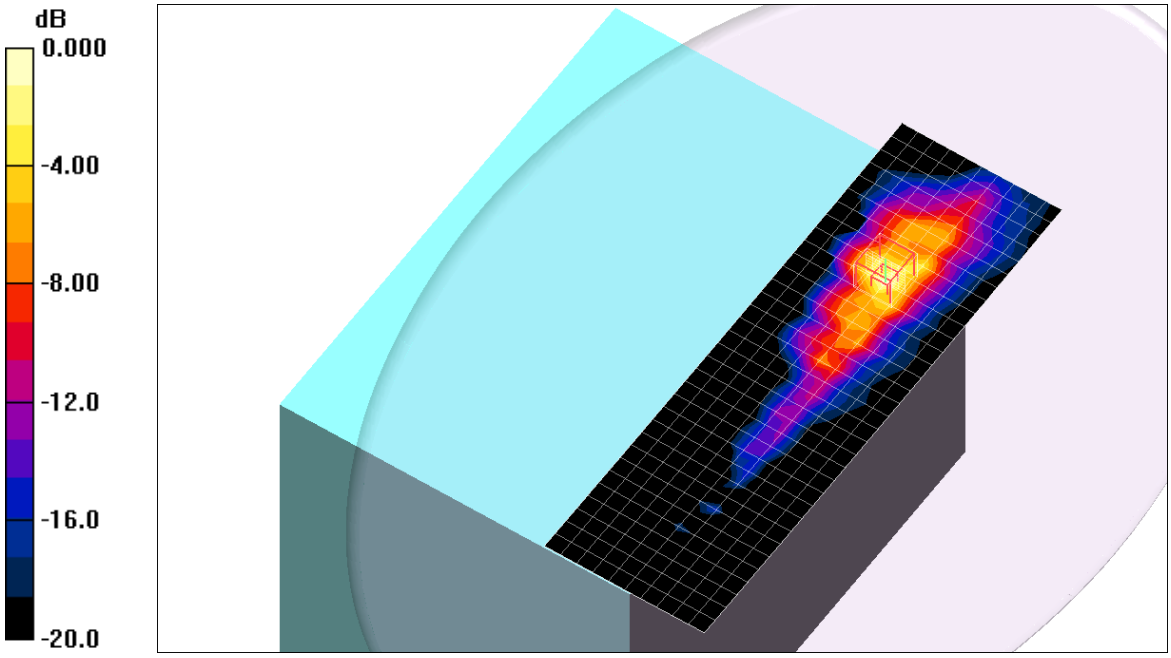
Test Laboratory: UL CCS SAR Lab D Date/Time: 6/29/2012 11:53:43 AM

5GHz bands

Frequency: 5580 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5580 MHz; σ = 5.85 mho/m; ε_r = 47; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.57, 3.57, 3.57); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a,WiFi 3_Ch 116/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.19 mW/g

802.11a,WiFi 3_Ch 116/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.1 V/m; Power Drift = -0.163 dB
Peak SAR (extrapolated) = 4.86 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.387 mW/g
Maximum value of SAR (measured) = 2.27 mW/g



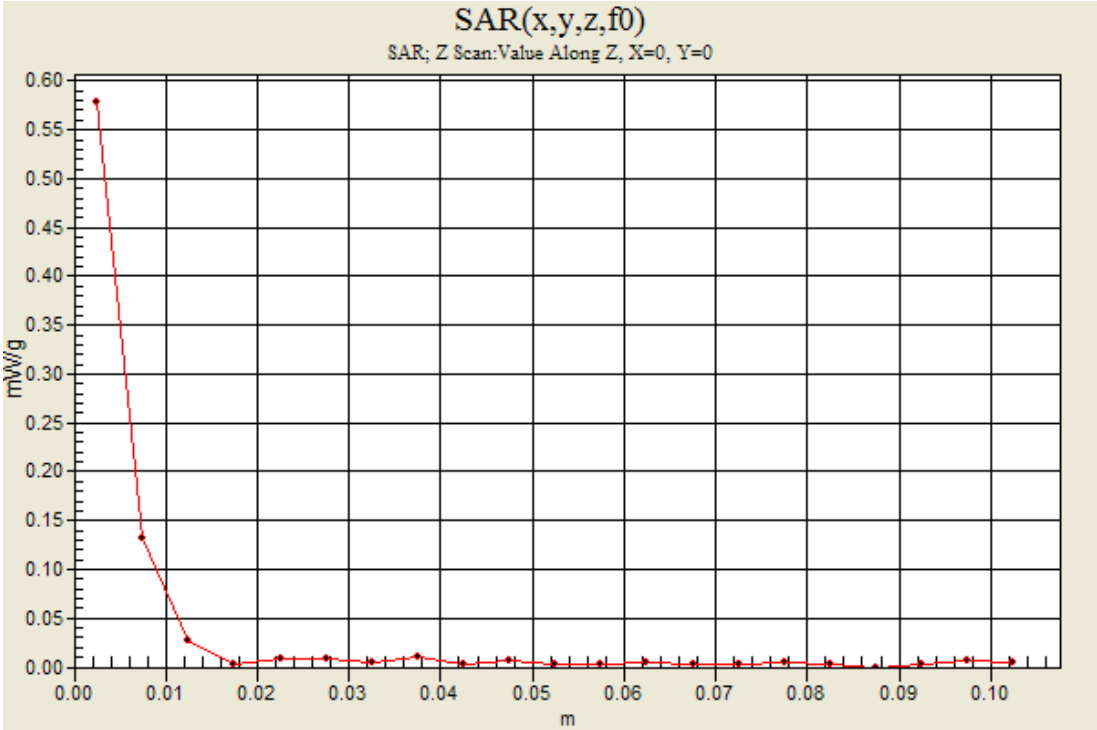
0 dB = 2.27mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/29/2012 12:25:13 PM

5GHz bands

Frequency: 5580 MHz; Duty Cycle: 1:1

802.11a,WiFi 3_Ch 116/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.578 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/28/2012 3:18:21 PM

5GHz bands

Frequency: 5520 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5520 MHz; σ = 5.76 mho/m; ε_r = 47; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.72, 3.72, 3.72); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a,WiFi 2,1_Ch 104/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm

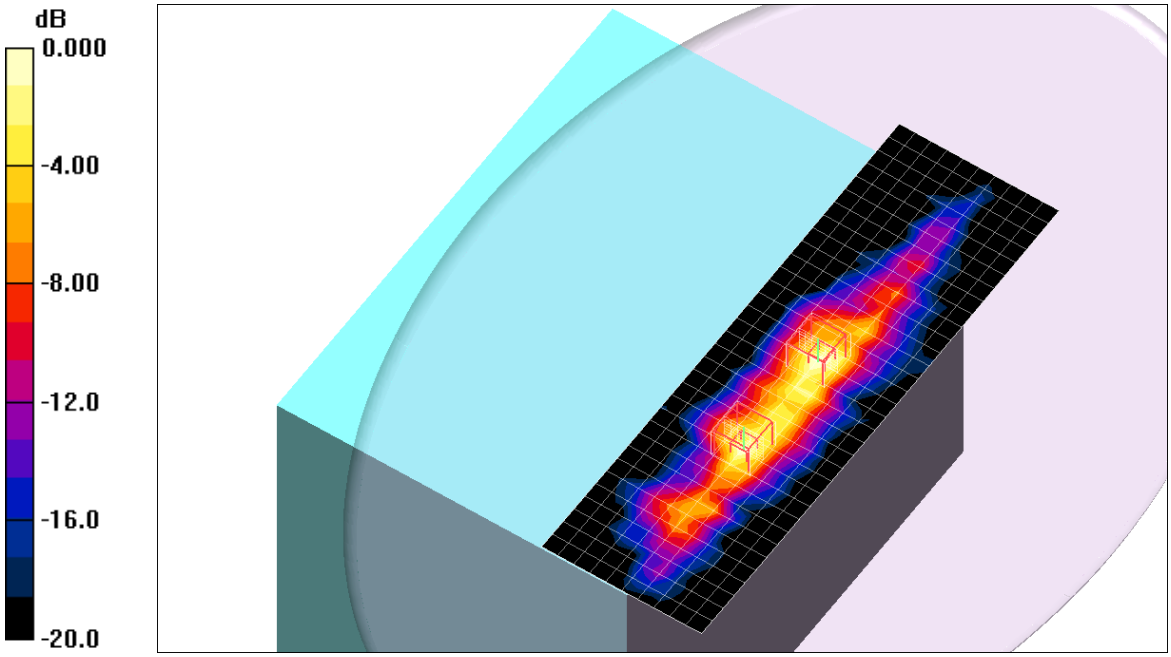
Maximum value of SAR (measured) = 1.23 mW/g

802.11a,WiFi 2_Ch 104/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 15.4 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 2.59 W/kg
SAR(1 g) = 0.702 mW/g; SAR(10 g) = 0.212 mW/g
Maximum value of SAR (measured) = 1.27 mW/g

802.11a,WiFi 1_Ch 104/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 15.4 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 2.29 W/kg
SAR(1 g) = 0.604 mW/g; SAR(10 g) = 0.186 mW/g
Maximum value of SAR (measured) = 1.13 mW/g



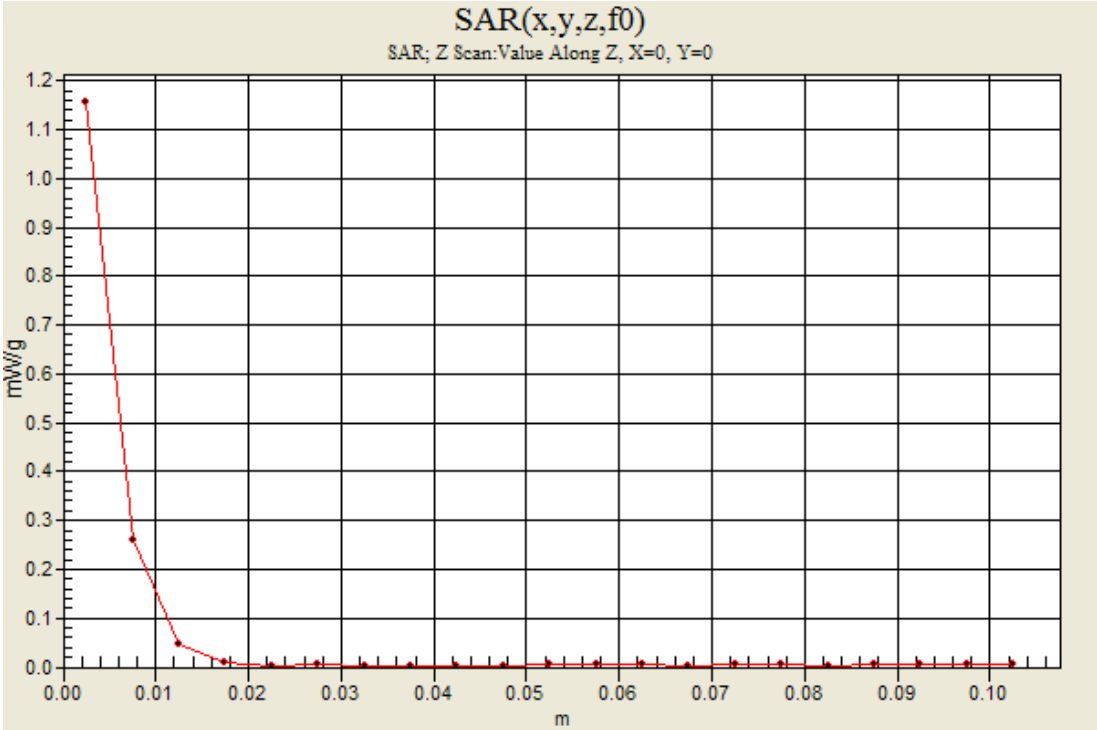
0 dB = 1.13mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/28/2012 4:02:55 PM

5GHz bands

Frequency: 5520 MHz; Duty Cycle: 1:1

802.11a,WiFi 2,1_Ch 104/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.16 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/28/2012 7:17:04 AM

5GHz bands

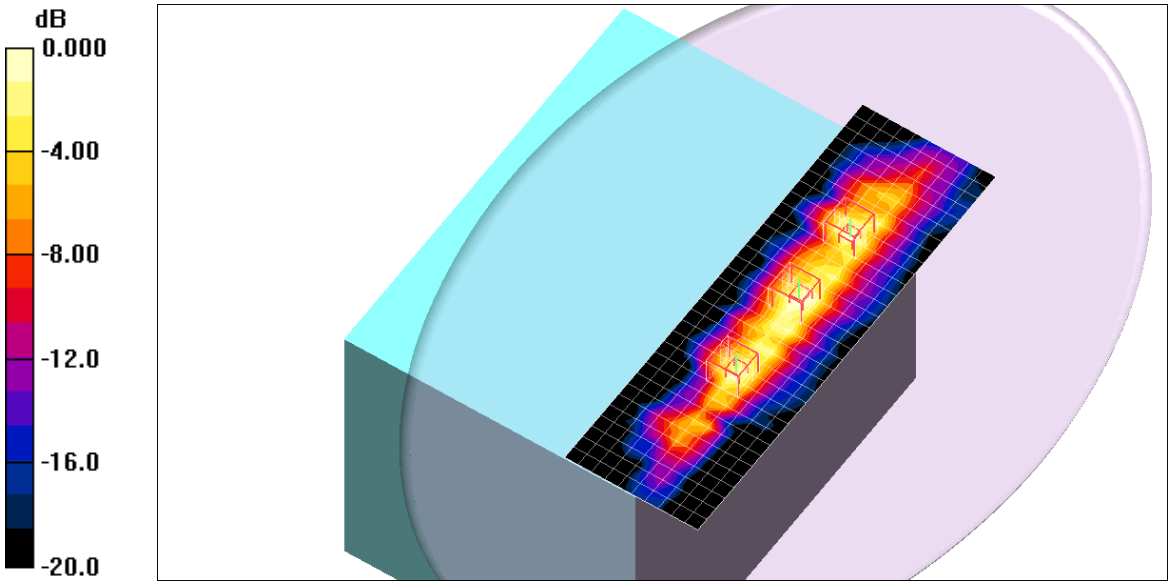
Frequency: 5680 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5680 MHz; σ = 6 mho/m; ε_r = 46.7; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.57, 3.57, 3.57); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a,WiFi 3,2,1_Ch 136/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.46 mW/g

802.11a,WiFi 3_Ch 136/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.8 V/m; Power Drift = -0.152 dB
Peak SAR (extrapolated) = 2.71 W/kg
SAR(1 g) = 0.690 mW/g; SAR(10 g) = 0.218 mW/g
Maximum value of SAR (measured) = 1.30 mW/g

802.11a,WiFi 2_Ch 136/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.8 V/m; Power Drift = -0.152 dB
Peak SAR (extrapolated) = 3.43 W/kg
SAR(1 g) = 0.902 mW/g; SAR(10 g) = 0.275 mW/g
Maximum value of SAR (measured) = 1.68 mW/g

802.11a,WiFi 1_Ch 136/Zoom Scan (7x7x9)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.8 V/m; Power Drift = -0.152 dB
Peak SAR (extrapolated) = 2.51 W/kg
SAR(1 g) = 0.683 mW/g; SAR(10 g) = 0.203 mW/g
Maximum value of SAR (measured) = 1.26 mW/g



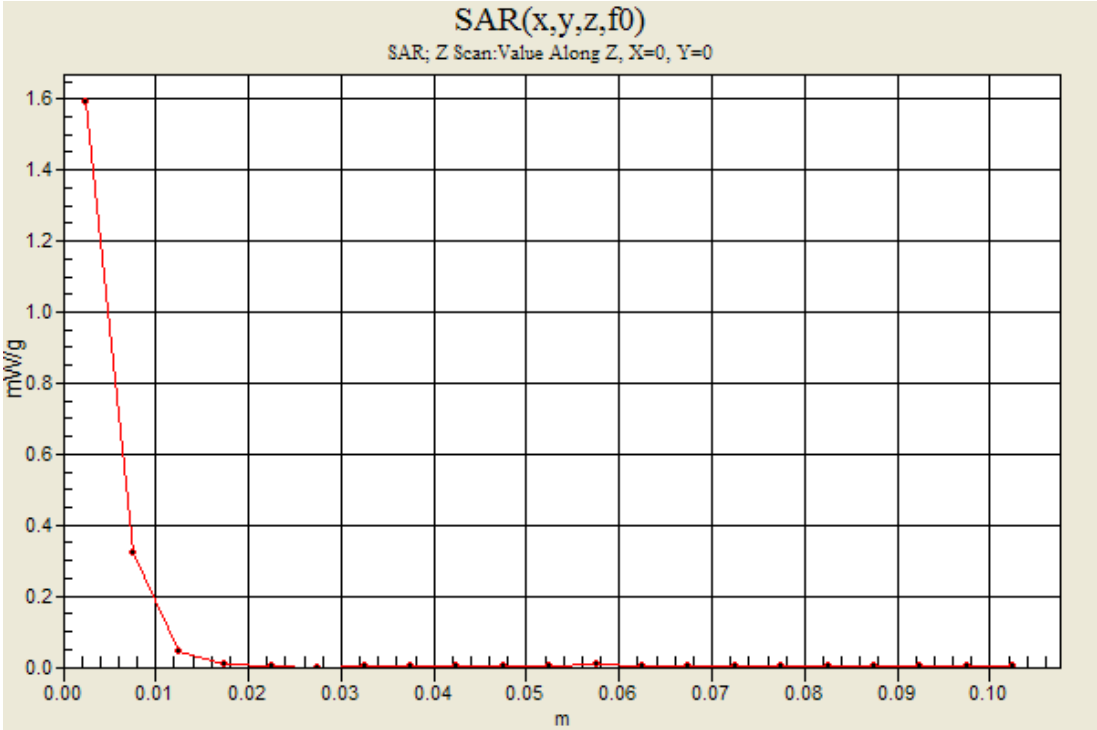
0 dB = 1.26mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/28/2012 8:12:42 AM

5GHz bands

Frequency: 5680 MHz; Duty Cycle: 1:1

802.11a,WiFi 3,2,1_Ch 136/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.59 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/26/2012 6:32:32 AM

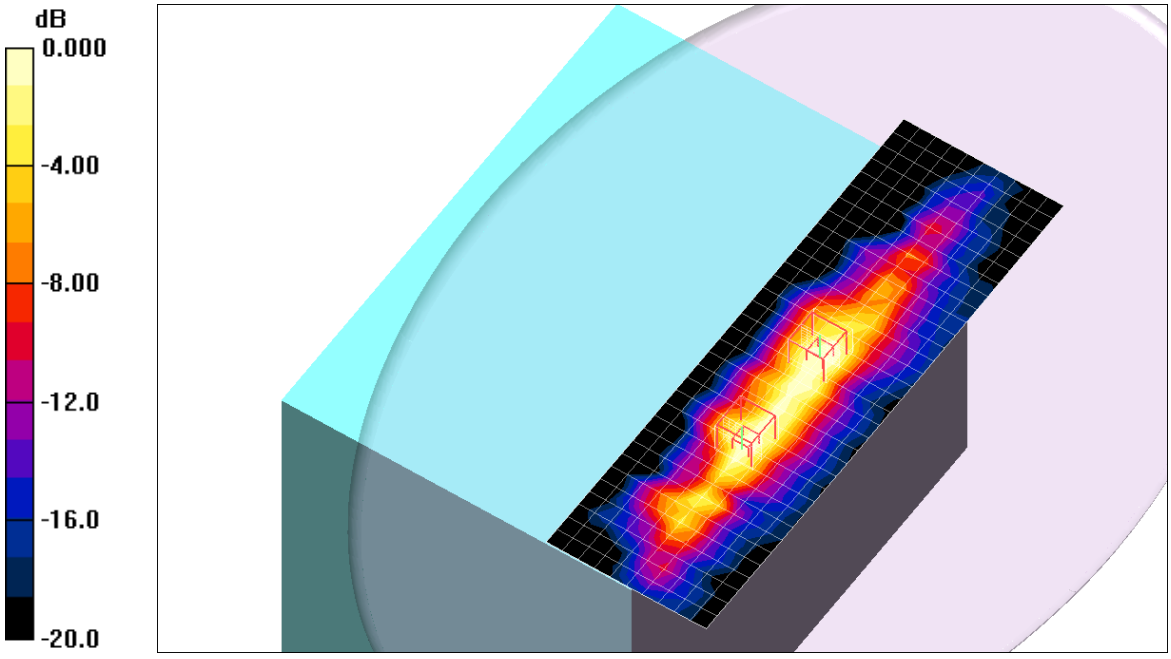
5GHz bands

Frequency: 5550 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5550 MHz; σ = 5.59 mho/m; ε_r = 48.4; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.72, 3.72, 3.72); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT40,WiFi 2,1_Ch 110/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 3.14 mW/g

802.11n HT40,WiFi 2_Ch 110/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.7 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 4.49 W/kg
SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.374 mW/g
Maximum value of SAR (measured) = 2.15 mW/g

802.11n HT40,WiFi 1_Ch 110/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.7 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 3.55 W/kg
SAR(1 g) = 0.914 mW/g; SAR(10 g) = 0.294 mW/g
Maximum value of SAR (measured) = 1.66 mW/g



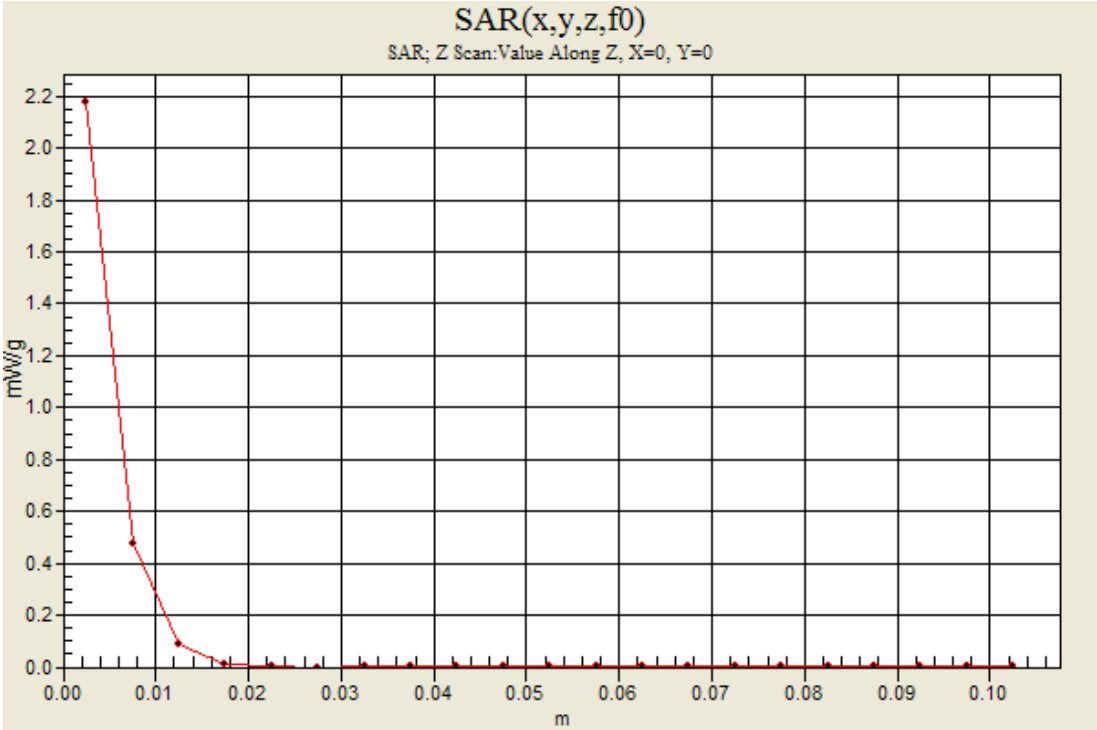
0 dB = 1.66mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/26/2012 7:18:40 AM

5GHz bands

Frequency: 5550 MHz; Duty Cycle: 1:1

802.11n HT40,WiFi 2,1_Ch 110/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.18 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/26/2012 4:01:37 AM

5GHz bands

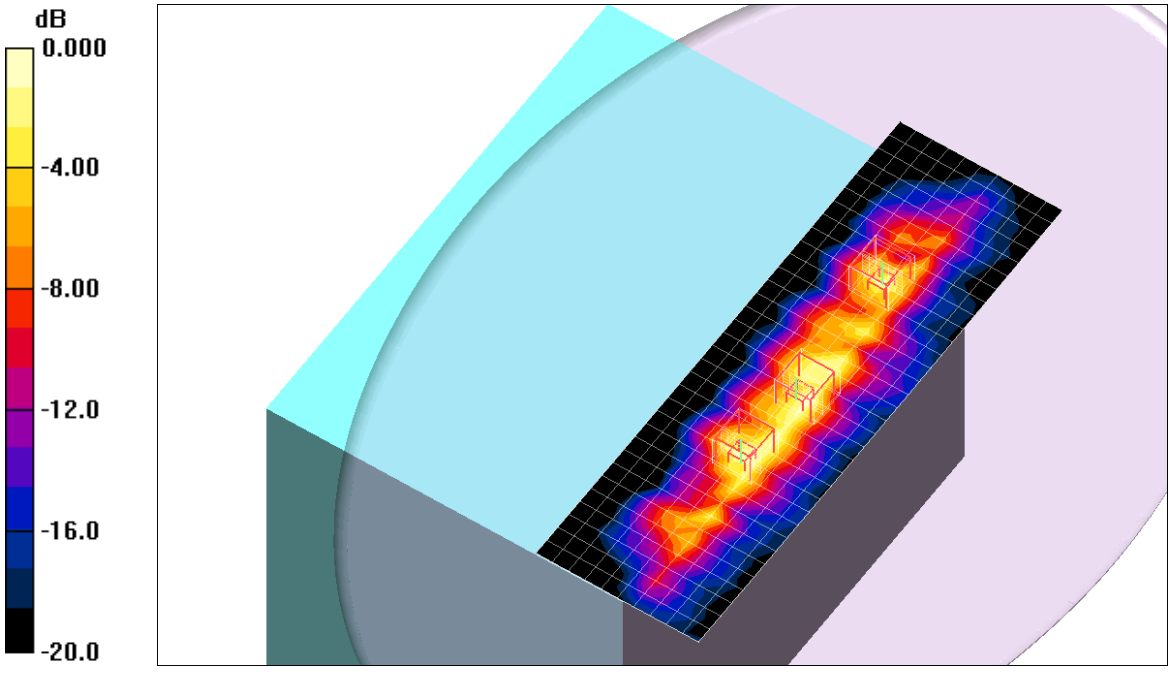
Frequency: 5510 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5510 MHz; σ = 5.56 mho/m; ε_r = 48.4; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.72, 3.72, 3.72); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT40,WiFi 3,2,1_Ch 102/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.82 mW/g

802.11n HT40,WiFi 3_Ch 102/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.1 V/m; Power Drift = 0.879 dB
Peak SAR (extrapolated) = 3.37 W/kg
SAR(1 g) = 0.849 mW/g; SAR(10 g) = 0.273 mW/g
Maximum value of SAR (measured) = 1.54 mW/g

802.11n HT40,WiFi 2_Ch 102/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.1 V/m; Power Drift = 0.879 dB
Peak SAR (extrapolated) = 3.90 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.364 mW/g
Maximum value of SAR (measured) = 2.11 mW/g

802.11n HT40,WiFi 1_Ch 102/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.1 V/m; Power Drift = 0.879 dB
Peak SAR (extrapolated) = 4.36 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.376 mW/g
Maximum value of SAR (measured) = 2.04 mW/g



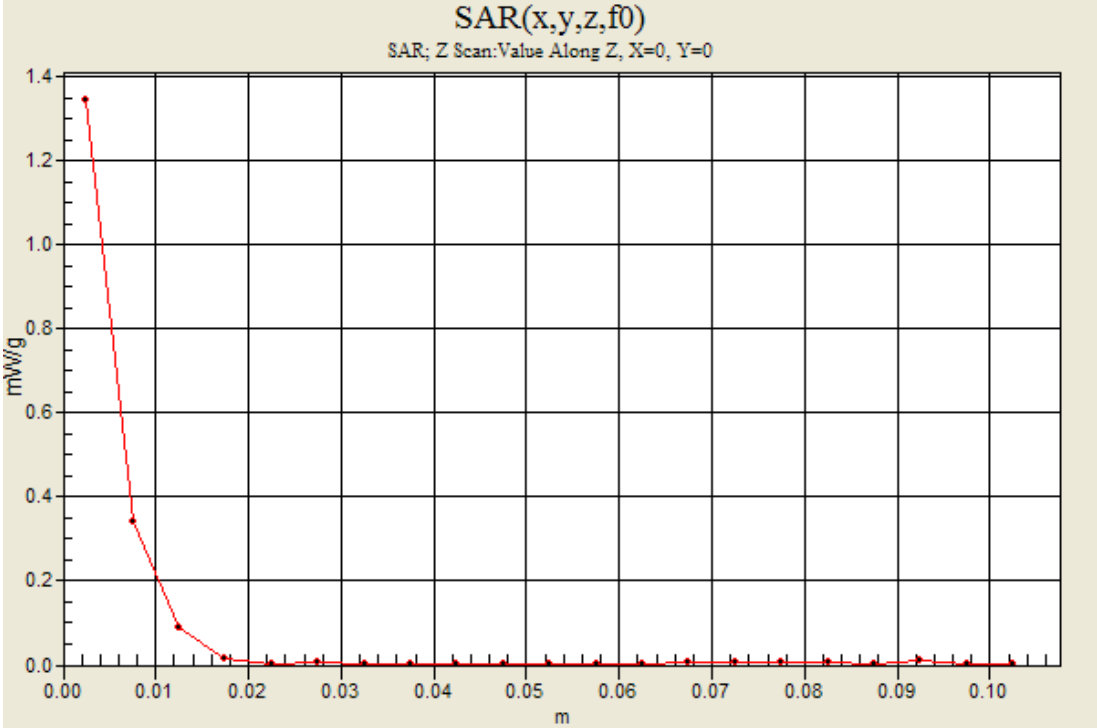
0 dB = 2.04mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/26/2012 4:11:07 AM

5GHz bands

Frequency: 5510 MHz; Duty Cycle: 1:1

802.11n HT40,WiFi 3,2,1_Ch 102/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.34 mW/g



14.2.5. Worst-Case SAR Plots for 5.8 GHz Band

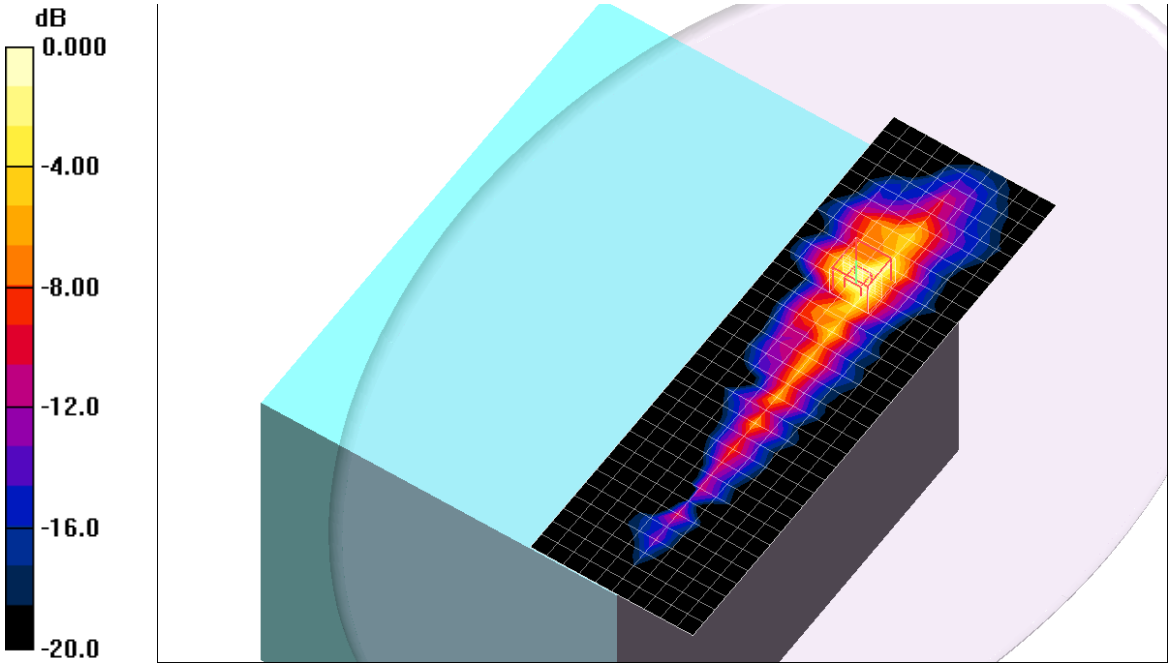
Test Laboratory: UL CCS SAR Lab D Date/Time: 7/1/2012 2:55:05 PM

5GHz bands

Frequency: 5785 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5785 MHz; σ = 6.22 mho/m; ε_r = 47.3; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.81, 3.81, 3.81); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a, WiFi 3_Ch 157/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.64 mW/g

802.11a, WiFi 3_Ch 157/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 14.6 V/m; Power Drift = 0.152 dB
Peak SAR (extrapolated) = 5.12 W/kg
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.329 mW/g
Maximum value of SAR (measured) = 2.13 mW/g



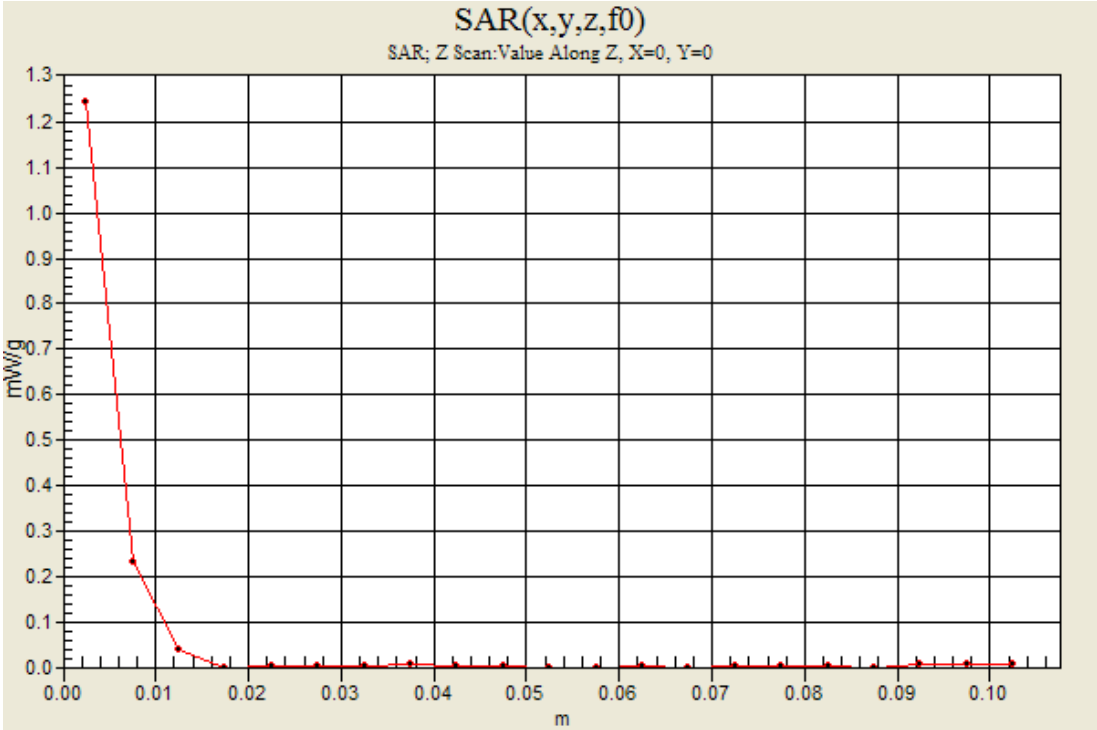
0 dB = 2.13mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 7/1/2012 3:23:11 PM

5GHz bands

Frequency: 5785 MHz; Duty Cycle: 1:1

802.11a, WiFi 3_Ch 157/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.24 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 7/1/2012 2:03:46 AM

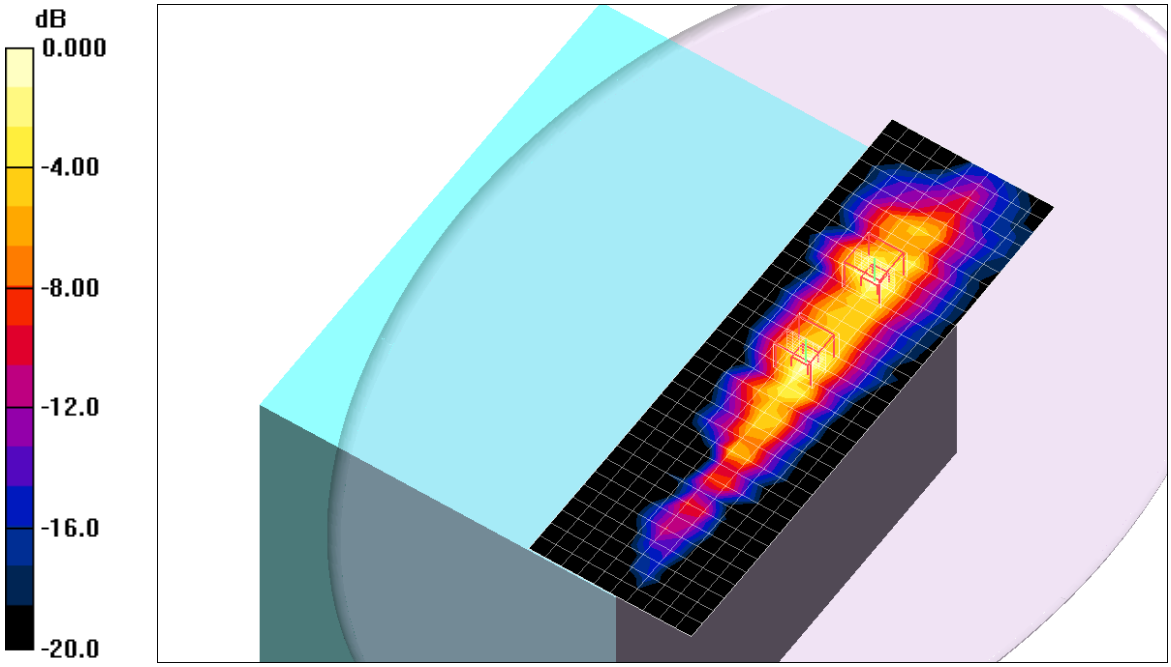
5GHz bands

Frequency: 5825 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5825 MHz; σ = 6.15 mho/m; ε_r = 46.8; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.81, 3.81, 3.81); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a, WiFi 3,2_Ch 165/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.32 mW/g

802.11a, WiFi 3_Ch 165/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.9 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 4.83 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.362 mW/g
Maximum value of SAR (measured) = 2.11 mW/g

802.11a, WiFi 2_Ch 165/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.9 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 4.84 W/kg
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.355 mW/g
Maximum value of SAR (measured) = 2.19 mW/g



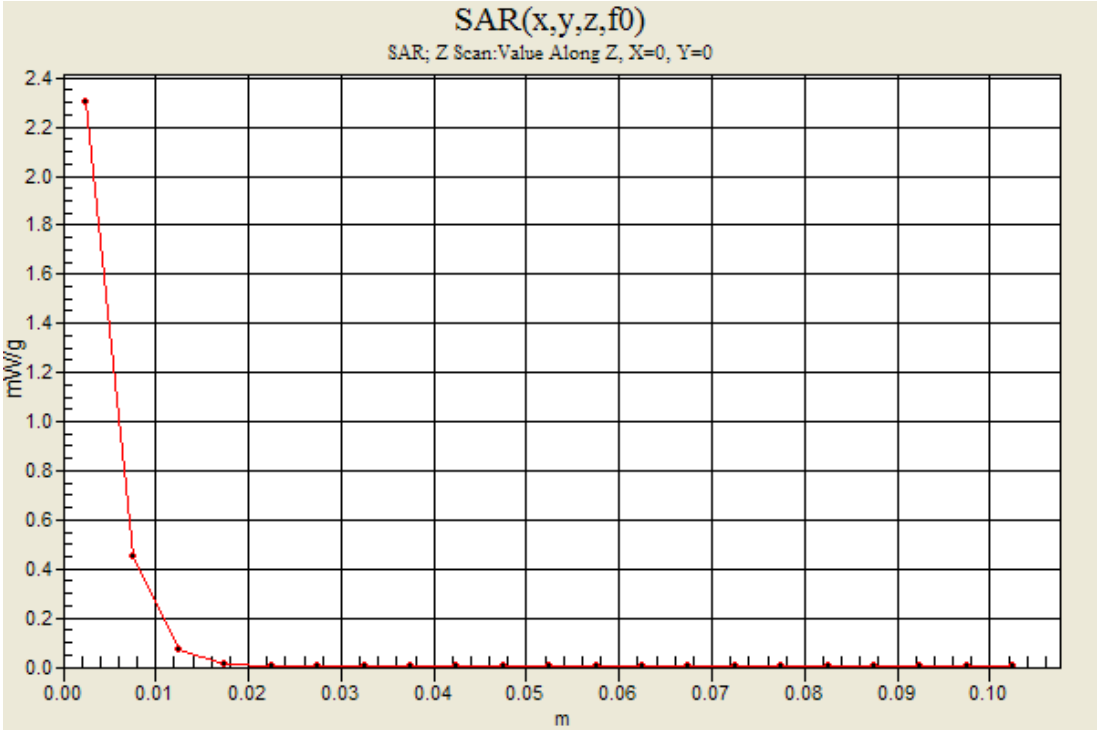
0 dB = 2.19mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 7/1/2012 2:45:34 AM

5GHz bands

Frequency: 5825 MHz; Duty Cycle: 1:1

802.11a, WiFi 3,2_Ch 165/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.30 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/30/2012 3:19:39 PM

5GHz bands

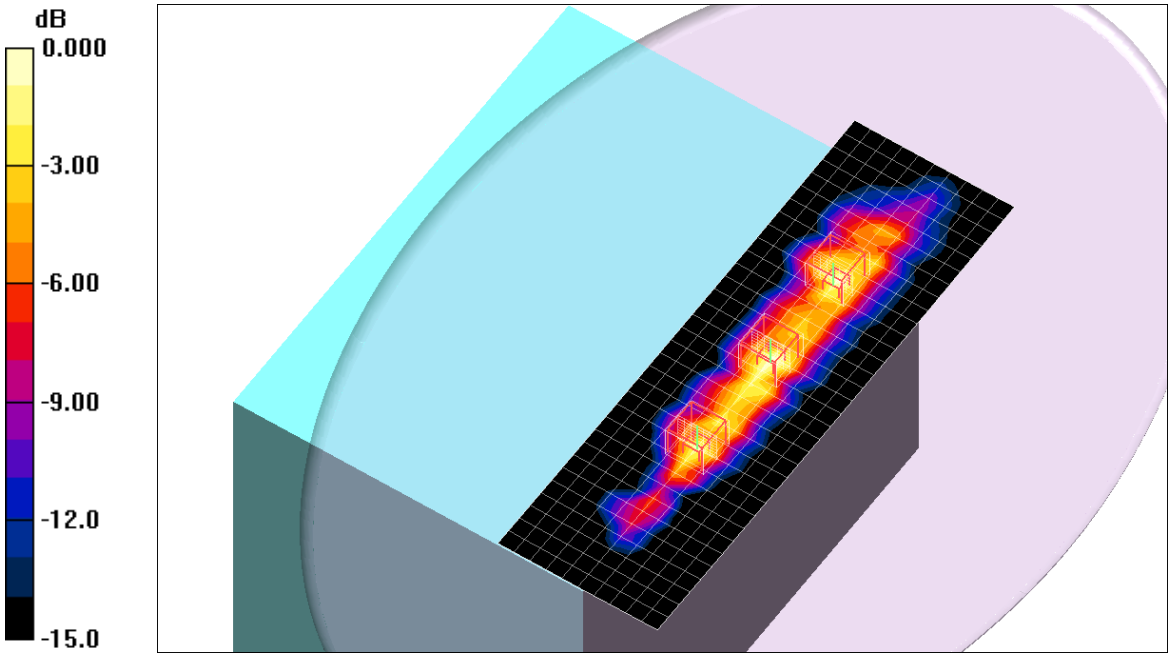
Frequency: 5785 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5785 MHz; σ = 6.01 mho/m; ε_r = 48.2; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.81, 3.81, 3.81); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a, WiFi 3,2,1_Ch 157/Area Scan (11x34x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.67 mW/g

802.11a, WiFi 3_Ch 157/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.3 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 4.81 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.362 mW/g
Maximum value of SAR (measured) = 2.19 mW/g

802.11a, WiFi 2_Ch 157/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.3 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 4.52 W/kg
SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.369 mW/g
Maximum value of SAR (measured) = 2.21 mW/g

802.11a, WiFi 1_Ch 157/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.3 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 3.93 W/kg
SAR(1 g) = 0.958 mW/g; SAR(10 g) = 0.287 mW/g
Maximum value of SAR (measured) = 1.79 mW/g



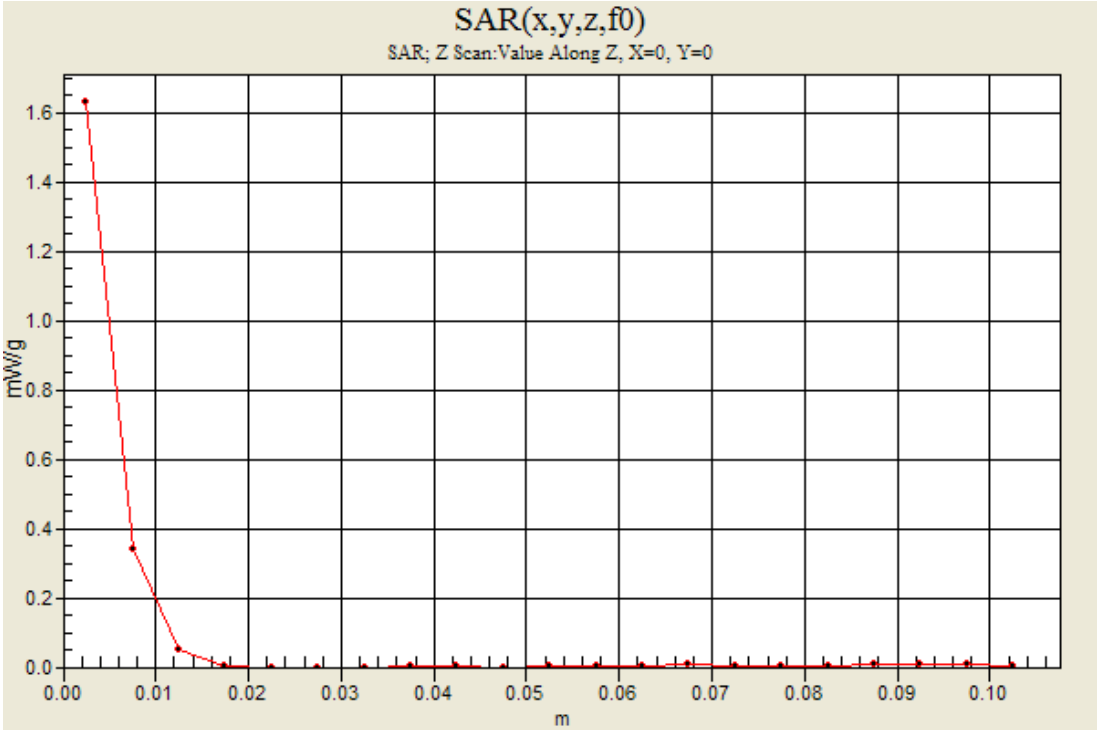
0 dB = 1.79mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/30/2012 7:19:45 PM

5GHz bands

Frequency: 5785 MHz; Duty Cycle: 1:1

802.11a, WiFi 3,2,1_Ch 157/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.63 mW/g



15. Appendixes

Refer to separated files for the following appendixes.

15.1. System Performance Check Plots

15.2. SAR test plots for WiFi 2.4 GHz band

15.3. SAR test plots for WiFi 5 GHz bands

15.4. Calibration certificate for E-Field Probe EX3DV4 SN 3749

15.5. Calibration certificate for D2450V2 SN 706

15.6. Calibration certificate for D2450V2 SN 748

15.7. Calibration certificate for D5GHzV2 SN 1003

15.8. SAR test plots for WiFi Antenna Vendor B