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

SAR EVALUATION REPORT

For
802.11a/g/n WLAN + Bluetooth PCI-E Custom Combination Card
(Tested inside of MacBook Pro. model A1398)

Model: BCM94331CSAX
FCC ID: QDS-BRCM1062

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Prepared for
BROADCOM CORPORATION
190 MATHILDA PLACE
SUNNYVALE, CA 94086, USA

Prepared by
UL CCS
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	5/18/2012	Initial Issue	--
A	6/22/2012	The following updates were made in this revision: 1. Added table in Sec. 7.1 "Possible Combinations of 802.11 Modes vs. Tx Diversity Configurations" to identify the availability and implementation of all possible transmission modes in this device. 2. Added data for additional testing performed in the 5.3 and 5.5 GHz bands, in accordance with FCC request to determine testing requirements by comparing the output power of individual or equivalent channels of differing modes and not by the highest output power for each mode. 3. Added liquid and system check data for the additional testing performed 4. Updated tables in Sections 10.1 – 10.5 and 11.1 – 11.5. 5. Revised target SAR values in Sec. 9.2 and 9.3 to be match the values in the dipole calibration certificates.	Sunny Shih
B	6/29/2012	Update section 7 with justification on antenna selection for final tests.	Sunny Shih
B1	7/7/2012	Update section 7.1 and section 10 and page 33.	Sunny Shih
B2	7/10/2012	Made the following corrections in this revision: 1. Section 10: Updated power data 2. Section 11: Updated power data and added note to table below	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 A1398)		
Model numbers	BCM94331CSAX		
Test device is	An identical prototype		
Device category	Portable device		
Exposure category	General Population/Uncontrolled Exposure		
Date tested	4/9/2012 – 5/18/2012 and 6/20/2012 – 6/21/2012		
FCC Rule Parts	Freq. Range	Highest 1-g SAR (W/kg)	Limit
15.247	2412-2462 MHz	1.15 W/kg (Lap held)	1.6 W/kg
15.407	5150-5250 MHz	1.13 W/kg (Lap held)	
	5250-5350 MHz	1.18 W/kg (Lap held)	
	5500-5700 MHz	1.18 W/kg (Lap held)	
15.247	5725-5850 MHz	1.12 W/kg (Lap held)	

Applicable Standards	Test Results
FCC OET Bulletin 65 Supplement C 01-01, IEEE STD 1528:2003	Pass

Compliance Certification Services, Inc. (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 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, 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	748	2	7	2013
System Validation Dipole	SPEAG	D5GHzV2	1003	8	23	2012
System Validation Dipole	SPEAG	D5GHzV2	1075	2	14	2013
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

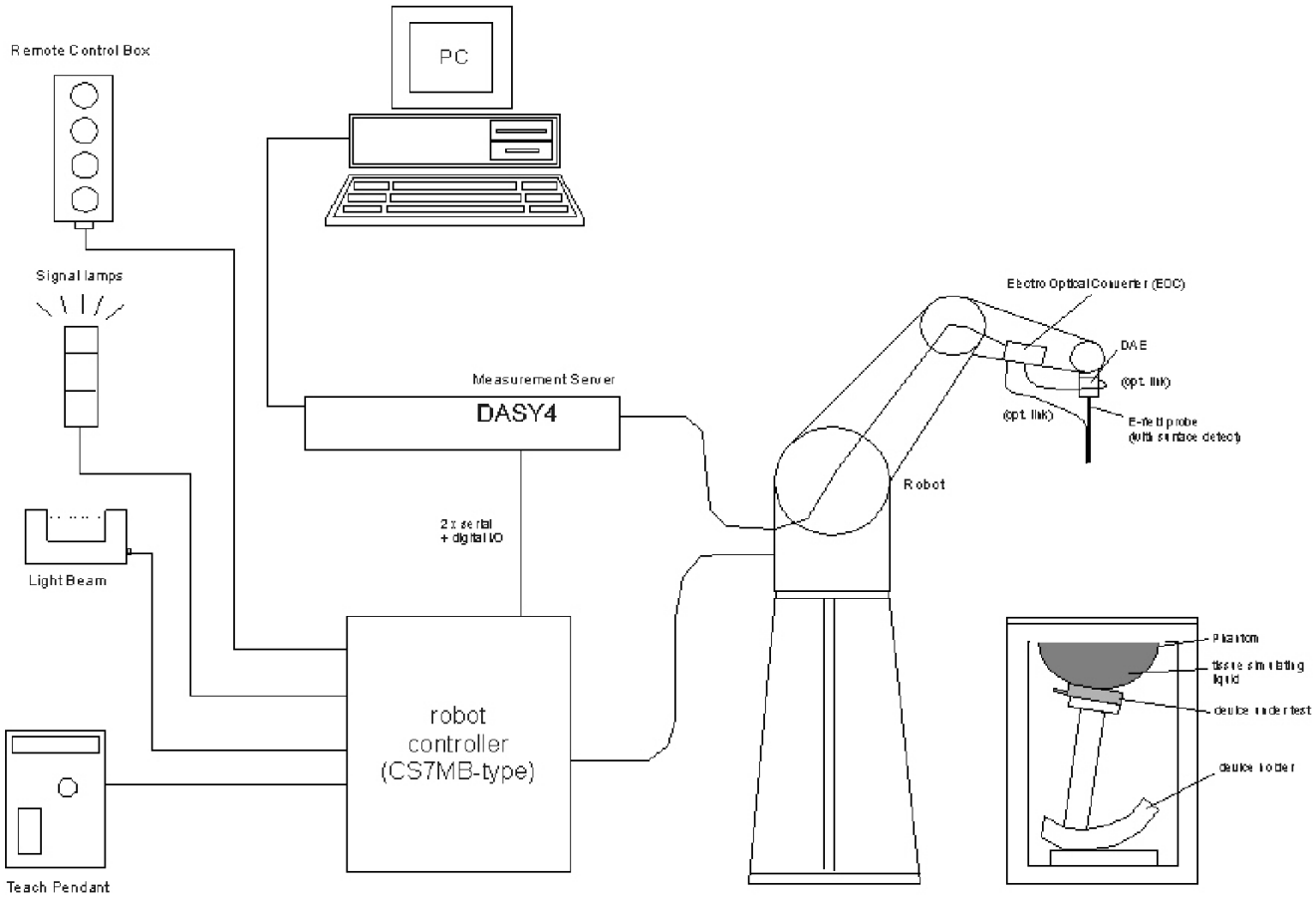
Component	Error, %	Distribution	Divisor	Sensitivity	U (Xi), %
Measurement System					
Probe Calibration (k=1)	**6.00**	Normal	1	1	6.00
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	2.30	Rectangular	1.732	0.7071	0.94
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	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)	**3.58**	Normal	1	0.64	2.29
Liquid Permittivity - deviation from target	5.00	Rectangular	1.732	0.6	1.73
Liquid Permittivity - measurement uncertainty (MSL2450 MHz)	**-3.54**	Normal	1	0.6	-2.12
				Combined Standard Uncertainty Uc(y) =	10.23
				Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence = 20.46	%
				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)	**-4.96**	Normal	1	0.64	-3.17
Liquid Permittivity - deviation from target	10.00	Rectangular	1.732	0.6	3.46
Liquid Permittivity - measurement uncertainty (MSL5GHz)	**4.81**	Normal	1	0.6	2.89
				Combined Standard Uncertainty Uc(y), %:	11.30
				Expanded Uncertainty U, Coverage Factor = 1.96, > 95 % Confidence = 22.14	%
				Expanded Uncertainty U, Coverage Factor = 1.96, > 95 % Confidence = 1.74	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

802.11a/g/n WLAN + Bluetooth PCI-E Custom Combination Card
(Tested inside of MacBook Pro. model A1398)
Model: BCM94331CSAX

Normal operation	Laptop mode (notebook).
Antennas tested	Vendor: Amphenol (A) / Molex (B) Part Number: WiFi 3: 604-2961 (for chain 0); WiFi 2 & Bluetooth: 604-2961 (for chain 1); WiFi 1: 604-2961 (for chain 2)
Simultaneous transmission	WiFi 5 GHz bands can transmit simultaneously with Bluetooth WiFi 2.4 GHz band can transmit simultaneously with Bluetooth
Assessment for SAR evaluation for Simultaneous transmission	**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.

Vendor	No	Peak gain 2402-2484MHz (dBi)	Peak gain 5150 -5250MHz (dBi)	Peak gain 5250-5350MHz (dBi)	Peak gain 5470-5725MHz (dBi)	Peak gain 5275-5850MHz (dBi)
Amphenol	1	0.12	7.04	7.09	5.03	2.66
	2	5.30	6.70	7.06	6.66	5.93
	3	4.69	3.79	3.58	3.94	6.04
Molex	1	-0.79	5.87	5.12	4.16	3.21
	2	4.67	6.60	6.46	6.25	5.41
	3	2.92	4.15	4.32	4.31	4.06

Note:

Amphenol (A) and Molex (B) antenna physically are identical to each other except vendor and antenna gain.

Based upon preliminary SAR investigation on both antenna vendors, Amphenol has shown higher SAR value by comparing to Molex. Preliminary SAR test data is on file.

Based upon preliminary SAR evaluation, "Amphenol was chosen for full SAR testing.

Additional tests with the Molex were also performed based on the highest SAR mode obtained from Amphenol antenna.

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 (CDD)	√	√
		3 Tx (CDD)	√	√
	11g	1 Tx	√	√
		2 Tx (CDD)	√	√
		3 Tx (CDD)	√	√
	11n	HT20 (1 Tx)	√	√
		HT40 (1 Tx)	disabled	disabled
		HT20 All* (2 Tx)	√	√
		HT40 All* (2 Tx)	disabled	disabled
		HT20 All* (3 Tx)	√	√
		HT40 All* (3 Tx)	disabled	disabled
*Note: The 11n 2Tx,3Tx HT20/HT40 "All" modes detailed apply to all of CDD/STBC/SDM modes.				
Band(GHz)	802.11 modes	Tx diversity configurations	Original	C2PC
5.2	11a	1 Tx	√	√
		2 Tx (CDD)	disabled	disabled
		3 Tx (CDD)	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	1 Tx	√	√
		2 Tx (CDD)	√	√
		3 Tx (CDD)	√	√
	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	1 Tx	√	√
		2 Tx (CDD)	√	√
		3 Tx (CDD)	√	√
	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	1 Tx	√	√
		2 Tx (CDD)	√	√
		3 Tx (CDD)	√	√
	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 ±(%)
4/9/2012	Body 5180	e'	48.9884	Relative Permittivity (ϵ_r):	48.99	49.05	-0.12	10
		e''	17.5288	Conductivity (σ):	5.05	5.27	-4.22	5
	Body 5200	e'	48.9523	Relative Permittivity (ϵ_r):	48.95	49.02	-0.14	10
		e''	17.5566	Conductivity (σ):	5.08	5.29	-4.13	5
	Body 5500	e'	48.4787	Relative Permittivity (ϵ_r):	48.48	48.61	-0.28	10
		e''	17.8448	Conductivity (σ):	5.46	5.64	-3.32	5
	Body 5800	e'	47.9701	Relative Permittivity (ϵ_r):	47.97	48.20	-0.48	10
		e''	18.1140	Conductivity (σ):	5.84	6.00	-2.64	5
	Body 5825	e'	47.9393	Relative Permittivity (ϵ_r):	47.94	48.20	-0.54	10
		e''	18.1488	Conductivity (σ):	5.88	6.00	-2.03	5
4/10/2012	Body 5180	e'	49.7803	Relative Permittivity (ϵ_r):	49.78	49.05	1.50	10
		e''	17.3950	Conductivity (σ):	5.01	5.27	-4.96	5
	Body 5200	e'	49.7519	Relative Permittivity (ϵ_r):	49.75	49.02	1.49	10
		e''	17.4193	Conductivity (σ):	5.04	5.29	-4.88	5
	Body 5500	e'	49.2628	Relative Permittivity (ϵ_r):	49.26	48.61	1.34	10
		e''	17.6991	Conductivity (σ):	5.41	5.64	-4.11	5
	Body 5800	e'	48.7744	Relative Permittivity (ϵ_r):	48.77	48.20	1.19	10
		e''	17.9806	Conductivity (σ):	5.80	6.00	-3.35	5
	Body 5825	e'	48.7531	Relative Permittivity (ϵ_r):	48.75	48.20	1.15	10
		e''	17.9916	Conductivity (σ):	5.83	6.00	-2.88	5
4/11/2012	Body 5180	e'	49.8809	Relative Permittivity (ϵ_r):	49.88	49.05	1.70	10
		e''	17.5071	Conductivity (σ):	5.04	5.27	-4.34	5
	Body 5200	e'	49.8544	Relative Permittivity (ϵ_r):	49.85	49.02	1.70	10
		e''	17.5447	Conductivity (σ):	5.07	5.29	-4.19	5
	Body 5500	e'	49.3614	Relative Permittivity (ϵ_r):	49.36	48.61	1.54	10
		e''	17.9104	Conductivity (σ):	5.48	5.64	-2.96	5
	Body 5800	e'	48.9312	Relative Permittivity (ϵ_r):	48.93	48.20	1.52	10
		e''	18.2787	Conductivity (σ):	5.89	6.00	-1.75	5
	Body 5825	e'	48.9019	Relative Permittivity (ϵ_r):	48.90	48.20	1.46	10
		e''	18.3647	Conductivity (σ):	5.95	6.00	-0.86	5
4/12/2012	Body 5180	e'	47.7653	Relative Permittivity (ϵ_r):	47.77	49.05	-2.61	10
		e''	17.6664	Conductivity (σ):	5.09	5.27	-3.47	5
	Body 5200	e'	47.7355	Relative Permittivity (ϵ_r):	47.74	49.02	-2.62	10
		e''	17.7011	Conductivity (σ):	5.12	5.29	-3.34	5
	Body 5500	e'	47.2682	Relative Permittivity (ϵ_r):	47.27	48.61	-2.77	10
		e''	18.0256	Conductivity (σ):	5.51	5.64	-2.34	5
	Body 5800	e'	46.8040	Relative Permittivity (ϵ_r):	46.80	48.20	-2.90	10
		e''	18.3723	Conductivity (σ):	5.93	6.00	-1.25	5
	Body 5825	e'	46.8035	Relative Permittivity (ϵ_r):	46.80	48.20	-2.90	10
		e''	18.3805	Conductivity (σ):	5.95	6.00	-0.78	5
4/13/2012	Body 5180	e'	48.9340	Relative Permittivity (ϵ_r):	48.93	49.05	-0.23	10
		e''	17.5622	Conductivity (σ):	5.06	5.27	-4.04	5
	Body 5200	e'	48.9168	Relative Permittivity (ϵ_r):	48.92	49.02	-0.21	10
		e''	17.5973	Conductivity (σ):	5.09	5.29	-3.90	5
	Body 5500	e'	48.4644	Relative Permittivity (ϵ_r):	48.46	48.61	-0.31	10
		e''	17.9367	Conductivity (σ):	5.49	5.64	-2.82	5
	Body 5800	e'	47.9843	Relative Permittivity (ϵ_r):	47.98	48.20	-0.45	10
		e''	18.2627	Conductivity (σ):	5.89	6.00	-1.84	5
	Body 5825	e'	47.9661	Relative Permittivity (ϵ_r):	47.97	48.20	-0.49	10
		e''	18.3310	Conductivity (σ):	5.94	6.00	-1.05	5

Tissue dielectric parameters check results continued

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
04/14/2012	Body 5180	e'	49.7401	Relative Permittivity (ϵ_r):	49.74	49.05	1.41	10
		e''	17.8936	Conductivity (σ):	5.15	5.27	-2.23	5
	Body 5200	e'	49.6793	Relative Permittivity (ϵ_r):	49.68	49.02	1.35	10
		e''	17.9493	Conductivity (σ):	5.19	5.29	-1.98	5
	Body 5500	e'	49.1918	Relative Permittivity (ϵ_r):	49.19	48.61	1.19	10
		e''	18.3018	Conductivity (σ):	5.60	5.64	-0.84	5
	Body 5800	e'	48.7029	Relative Permittivity (ϵ_r):	48.70	48.20	1.04	10
		e''	18.7020	Conductivity (σ):	6.03	6.00	0.52	5
	Body 5825	e'	48.6658	Relative Permittivity (ϵ_r):	48.67	48.20	0.97	10
		e''	18.7417	Conductivity (σ):	6.07	6.00	1.17	5
04/16/2012	Body 5180	e'	50.8516	Relative Permittivity (ϵ_r):	50.85	49.05	3.68	10
		e''	17.4694	Conductivity (σ):	5.03	5.27	-4.55	5
	Body 5200	e'	50.8174	Relative Permittivity (ϵ_r):	50.82	49.02	3.67	10
		e''	17.5171	Conductivity (σ):	5.06	5.29	-4.34	5
	Body 5500	e'	50.3438	Relative Permittivity (ϵ_r):	50.34	48.61	3.56	10
		e''	17.8894	Conductivity (σ):	5.47	5.64	-3.07	5
	Body 5800	e'	49.8608	Relative Permittivity (ϵ_r):	49.86	48.20	3.45	10
		e''	18.2557	Conductivity (σ):	5.89	6.00	-1.88	5
	Body 5825	e'	49.8341	Relative Permittivity (ϵ_r):	49.83	48.20	3.39	10
		e''	18.3207	Conductivity (σ):	5.93	6.00	-1.10	5
04/17/2012	Body 5180	e'	49.6475	Relative Permittivity (ϵ_r):	49.65	49.05	1.22	10
		e''	17.8582	Conductivity (σ):	5.14	5.27	-2.42	5
	Body 5200	e'	49.6224	Relative Permittivity (ϵ_r):	49.62	49.02	1.23	10
		e''	17.9093	Conductivity (σ):	5.18	5.29	-2.20	5
	Body 5500	e'	49.1289	Relative Permittivity (ϵ_r):	49.13	48.61	1.06	10
		e''	18.2867	Conductivity (σ):	5.59	5.64	-0.92	5
	Body 5800	e'	48.5951	Relative Permittivity (ϵ_r):	48.60	48.20	0.82	10
		e''	18.6065	Conductivity (σ):	6.00	6.00	0.01	5
	Body 5825	e'	48.5754	Relative Permittivity (ϵ_r):	48.58	48.20	0.78	10
		e''	18.7420	Conductivity (σ):	6.07	6.00	1.17	5
04/18/2012	Body 5180	e'	51.1882	Relative Permittivity (ϵ_r):	51.19	49.05	4.37	10
		e''	17.4179	Conductivity (σ):	5.02	5.27	-4.83	5
	Body 5200	e'	51.1538	Relative Permittivity (ϵ_r):	51.15	49.02	4.35	10
		e''	17.4554	Conductivity (σ):	5.05	5.29	-4.68	5
	Body 5500	e'	50.7089	Relative Permittivity (ϵ_r):	50.71	48.61	4.31	10
		e''	17.8008	Conductivity (σ):	5.44	5.64	-3.55	5
	Body 5800	e'	50.2320	Relative Permittivity (ϵ_r):	50.23	48.20	4.22	10
		e''	18.1433	Conductivity (σ):	5.85	6.00	-2.48	5
	Body 5825	e'	50.2346	Relative Permittivity (ϵ_r):	50.23	48.20	4.22	10
		e''	18.2460	Conductivity (σ):	5.91	6.00	-1.51	5
04/19/2012	Body 5180	e'	49.6183	Relative Permittivity (ϵ_r):	49.62	49.05	1.17	10
		e''	17.4246	Conductivity (σ):	5.02	5.27	-4.79	5
	Body 5200	e'	49.5956	Relative Permittivity (ϵ_r):	49.60	49.02	1.18	10
		e''	17.4683	Conductivity (σ):	5.05	5.29	-4.61	5
	Body 5500	e'	49.1189	Relative Permittivity (ϵ_r):	49.12	48.61	1.04	10
		e''	17.8765	Conductivity (σ):	5.47	5.64	-3.14	5
	Body 5800	e'	48.5680	Relative Permittivity (ϵ_r):	48.57	48.20	0.76	10
		e''	18.2087	Conductivity (σ):	5.87	6.00	-2.13	5
	Body 5825	e'	48.5412	Relative Permittivity (ϵ_r):	48.54	48.20	0.71	10
		e''	18.3356	Conductivity (σ):	5.94	6.00	-1.02	5

Tissue dielectric parameters check results continued

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
04/20/2012	Body 5180	e'	50.8788	Relative Permittivity (ϵ_r):	50.88	49.05	3.74	10
		e''	17.4190	Conductivity (σ):	5.02	5.27	-4.82	5
	Body 5200	e'	50.8566	Relative Permittivity (ϵ_r):	50.86	49.02	3.75	10
		e''	17.4596	Conductivity (σ):	5.05	5.29	-4.66	5
	Body 5500	e'	50.4134	Relative Permittivity (ϵ_r):	50.41	48.61	3.70	10
		e''	17.8360	Conductivity (σ):	5.45	5.64	-3.36	5
	Body 5800	e'	49.9605	Relative Permittivity (ϵ_r):	49.96	48.20	3.65	10
		e''	18.1836	Conductivity (σ):	5.86	6.00	-2.26	5
	Body 5825	e'	49.9342	Relative Permittivity (ϵ_r):	49.93	48.20	3.60	10
		e''	18.3036	Conductivity (σ):	5.93	6.00	-1.19	5
04/23/2012	Body 2450	e'	51.0464	Relative Permittivity (ϵ_r):	51.05	52.70	-3.14	5
		e''	14.8270	Conductivity (σ):	2.02	1.95	3.58	5
	Body 2410	e'	51.1924	Relative Permittivity (ϵ_r):	51.19	52.76	-2.97	5
		e''	14.6627	Conductivity (σ):	1.96	1.91	3.01	5
	Body 2435	e'	51.1030	Relative Permittivity (ϵ_r):	51.10	52.73	-3.08	5
		e''	14.7641	Conductivity (σ):	2.00	1.93	3.51	5
	Body 2460	e'	51.0129	Relative Permittivity (ϵ_r):	51.01	52.69	-3.18	5
		e''	14.8708	Conductivity (σ):	2.03	1.96	3.57	5
04/24/2012	Body 2450	e'	50.8549	Relative Permittivity (ϵ_r):	50.85	52.70	-3.50	5
		e''	14.1480	Conductivity (σ):	1.93	1.95	-1.16	5
	Body 2410	e'	50.9822	Relative Permittivity (ϵ_r):	50.98	52.76	-3.37	5
		e''	13.9778	Conductivity (σ):	1.87	1.91	-1.80	5
	Body 2435	e'	50.9061	Relative Permittivity (ϵ_r):	50.91	52.73	-3.45	5
		e''	14.0843	Conductivity (σ):	1.91	1.93	-1.25	5
	Body 2460	e'	50.8216	Relative Permittivity (ϵ_r):	50.82	52.69	-3.54	5
		e''	14.1918	Conductivity (σ):	1.94	1.96	-1.16	5
05/08/2012	Body 5180	e'	50.7939	Relative Permittivity (ϵ_r):	50.79	49.05	3.56	10
		e''	18.2752	Conductivity (σ):	5.26	5.27	-0.15	5
	Body 5200	e'	50.7692	Relative Permittivity (ϵ_r):	50.77	49.02	3.57	10
		e''	18.3117	Conductivity (σ):	5.29	5.29	0.00	5
	Body 5500	e'	50.2205	Relative Permittivity (ϵ_r):	50.22	48.61	3.31	10
		e''	18.6762	Conductivity (σ):	5.71	5.64	1.19	5
	Body 5800	e'	49.6338	Relative Permittivity (ϵ_r):	49.63	48.20	2.97	10
		e''	18.9961	Conductivity (σ):	6.13	6.00	2.10	5
	Body 5825	e'	49.5975	Relative Permittivity (ϵ_r):	49.60	48.20	2.90	10
		e''	19.0607	Conductivity (σ):	6.17	6.00	2.89	5
05/09/2012	Body 5180	e'	51.2957	Relative Permittivity (ϵ_r):	51.30	49.05	4.59	10
		e''	17.6090	Conductivity (σ):	5.07	5.27	-3.79	5
	Body 5200	e'	51.2747	Relative Permittivity (ϵ_r):	51.27	49.02	4.60	10
		e''	17.6289	Conductivity (σ):	5.10	5.29	-3.73	5
	Body 5500	e'	50.7745	Relative Permittivity (ϵ_r):	50.77	48.61	4.45	10
		e''	17.9045	Conductivity (σ):	5.48	5.64	-2.99	5
	Body 5800	e'	50.2875	Relative Permittivity (ϵ_r):	50.29	48.20	4.33	10
		e''	18.1719	Conductivity (σ):	5.86	6.00	-2.33	5
	Body 5825	e'	50.2528	Relative Permittivity (ϵ_r):	50.25	48.20	4.26	10
		e''	18.2154	Conductivity (σ):	5.90	6.00	-1.67	5

Tissue dielectric parameters check results continued

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
05/16/2012	Body 5180	e'	47.8195	Relative Permittivity (ϵ_r):	47.82	49.05	-2.50	10
		e''	17.8426	Conductivity (σ):	5.14	5.27	-2.51	5
	Body 5200	e'	47.7950	Relative Permittivity (ϵ_r):	47.80	49.02	-2.50	10
		e''	17.8846	Conductivity (σ):	5.17	5.29	-2.33	5
	Body 5500	e'	47.2231	Relative Permittivity (ϵ_r):	47.22	48.61	-2.86	10
		e''	18.1464	Conductivity (σ):	5.55	5.64	-1.68	5
	Body 5800	e'	46.5828	Relative Permittivity (ϵ_r):	46.58	48.20	-3.36	10
		e''	18.4152	Conductivity (σ):	5.94	6.00	-1.02	5
	Body 5825	e'	46.5389	Relative Permittivity (ϵ_r):	46.54	48.20	-3.45	10
		e''	18.5210	Conductivity (σ):	6.00	6.00	-0.02	5
05/17/2012	Body 5180	e'	47.6807	Relative Permittivity (ϵ_r):	47.68	49.05	-2.79	10
		e''	18.9813	Conductivity (σ):	5.47	5.27	3.71	5
	Body 5200	e'	47.6556	Relative Permittivity (ϵ_r):	47.66	49.02	-2.78	10
		e''	19.0030	Conductivity (σ):	5.49	5.29	3.77	5
	Body 5500	e'	47.1750	Relative Permittivity (ϵ_r):	47.18	48.61	-2.96	10
		e''	19.1668	Conductivity (σ):	5.86	5.64	3.85	5
	Body 5800	e'	46.6774	Relative Permittivity (ϵ_r):	46.68	48.20	-3.16	10
		e''	19.3349	Conductivity (σ):	6.24	6.00	3.92	5
	Body 5825	e'	46.6462	Relative Permittivity (ϵ_r):	46.65	48.20	-3.22	10
		e''	19.3944	Conductivity (σ):	6.28	6.00	4.69	5
06/20/2012	Body 5180	e'	51.3956	Relative Permittivity (ϵ_r):	51.40	49.05	4.79	10
		e''	17.6089	Conductivity (σ):	5.07	5.27	-3.79	5
	Body 5200	e'	51.3785	Relative Permittivity (ϵ_r):	51.38	49.02	4.81	10
		e''	17.6454	Conductivity (σ):	5.10	5.29	-3.64	5
	Body 5500	e'	50.9123	Relative Permittivity (ϵ_r):	50.91	48.61	4.73	10
		e''	17.8671	Conductivity (σ):	5.46	5.64	-3.20	5
	Body 5800	e'	50.1338	Relative Permittivity (ϵ_r):	50.13	48.20	4.01	10
		e''	18.1205	Conductivity (σ):	5.84	6.00	-2.60	5
	Body 5825	e'	50.3960	Relative Permittivity (ϵ_r):	50.40	48.20	4.56	10
		e''	18.1968	Conductivity (σ):	5.89	6.00	-1.77	5
06/21/2012	Body 5180	e'	51.2462	Relative Permittivity (ϵ_r):	51.25	49.05	4.48	10
		e''	18.1536	Conductivity (σ):	5.23	5.27	-0.81	5
	Body 5200	e'	51.2159	Relative Permittivity (ϵ_r):	51.22	49.02	4.48	10
		e''	18.1679	Conductivity (σ):	5.25	5.29	-0.79	5
	Body 5500	e'	50.6718	Relative Permittivity (ϵ_r):	50.67	48.61	4.23	10
		e''	18.4953	Conductivity (σ):	5.66	5.64	0.21	5
	Body 5800	e'	50.2027	Relative Permittivity (ϵ_r):	50.20	48.20	4.15	10
		e''	18.8096	Conductivity (σ):	6.07	6.00	1.10	5
	Body 5825	e'	50.1460	Relative Permittivity (ϵ_r):	50.15	48.20	4.04	10
		e''	18.8167	Conductivity (σ):	6.09	6.00	1.58	5

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)	Target SAR Values (mW/g)		
				1g/10g	Head	Body
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
D5GHzV2	1075	3/14/2012	5200	1g	79.4	72.7
				10g	22.8	20.5
			5500	1g	85.7	77.7
				10g	24.3	21.7
			5800	1g	78.9	72.5
				10g	22.5	20.2

9.3. System performance check results

Date Tested	System Dipole		T.S.	SAR Measured (Normalized to 1 W)		Target (Ref. Value)	Delta (%)	Tolerance (%)
	Type	Serial No.	Liquid					
04/09/12	D5GHzV2 5.8 GHz	1003	Body	1g	74.7	76.2	-1.97	±10
				10g	21.1	21.2	-0.47	
04/10/12	D5GHzV2 5.8 GHz	1003	Body	1g	79.6	76.2	4.46	±10
				10g	22.6	21.2	6.60	
04/11/12	D5GHzV2 5.5 GHz	1003	Body	1g	74.8	79.9	-6.38	±10
				10g	21.2	22.3	-4.93	
04/12/12	D5GHzV2 5.5 GHz	1003	Body	1g	83.4	79.9	4.38	±10
				10g	23.6	22.3	5.83	
04/12/12	D5GHzV2 5.8 GHz	1003	Body	1g	75.6	76.2	-0.79	±10
				10g	21.5	21.2	1.42	
04/13/12	D5GHzV2 5.5 GHz	1003	Body	1g	83.0	79.9	3.88	±10
				10g	23.4	22.3	4.93	
04/13/12	D5GHzV2 5.8 GHz	1003	Body	1g	72.8	76.2	-4.46	±10
				10g	20.5	21.2	-3.30	
04/14/12	D5GHzV2 5.5 GHz	1003	Body	1g	78.8	79.9	-1.38	±10
				10g	22.4	22.3	0.45	
04/16/12	D5GHzV2 5.5 GHz	1003	Body	1g	77.9	79.9	-2.50	±10
				10g	21.9	22.3	-1.79	
04/17/12	D5GHzV2 5.2 GHz	1003	Body	1g	78.5	74.4	5.51	±10
				10g	22.6	20.8	8.65	
04/17/12	D5GHzV2 5.5 GHz	1003	Body	1g	82.2	79.9	2.88	±10
				10g	23.5	22.3	5.38	
04/18/12	D5GHzV2 5.2 GHz	1003	Body	1g	74.8	74.4	0.54	±10
				10g	21.3	20.8	2.40	
04/19/12	D5GHzV2 5.2 GHz	1003	Body	1g	74.1	74.4	-0.40	±10
				10g	21.3	20.8	2.40	
04/20/12	D5GHzV2 5.2 GHz	1003	Body	1g	75.4	74.4	1.34	±10
				10g	21.7	20.8	4.33	
04/23/12	D2450V2	748	Body	1g	51.3	49.9	2.81	±10
				10g	23.5	23.4	0.43	
04/24/12	D2450V2	748	Body	1g	49.2	49.9	-1.40	±10
				10g	22.7	23.4	-2.99	
05/08/12	D5GHzV2 5.2 GHz	1003	Body	1g	79.8	74.4	7.26	±10
				10g	22.7	20.8	9.13	
05/09/12	D5GHzV2 5.2 GHz	1075	Body	1g	68.0	72.7	-6.46	±10
				10g	19.9	20.5	-2.93	
05/16/12	D5GHzV2 5.2 GHz	1003	Body	1g	74.8	74.4	0.54	±10
				10g	21.6	20.8	3.85	
05/17/12	D5GHzV2 5.5 GHz	1003	Body	1g	75.4	79.9	-5.63	±10
				10g	21.7	22.3	-2.69	
06/20/12	D5GHzV2 5.2 GHz	1003	Body	1g	67.9	74.4	-8.74	±10
				10g	19.3	20.8	-7.21	
06/20/12	D5GHzV2 5.5 GHz	1003	Body	1g	84.2	79.9	5.38	±10
				10g	23.9	22.3	7.17	
06/20/12	D5GHzV2 5.6 GHz	1003	Body	1g	78.9	79.9	-1.25	±10
				10g	22.2	22.3	-0.45	
06/20/12	D5GHzV2 5.8 GHz	1075	Body	1g	69.9	72.5	-3.59	±10
				10g	19.9	20.2	-1.49	
06/21/12	D5GHzV2 5.5 GHz	1075	Body	1g	77.9	77.7	0.26	±10
				10g	22.4	21.7	3.23	

Note(s):
According to KDB 450824, the alternative system verification method A. The measurement SAR should be within 15% of the manufacture calibrated target at the offset frequency.

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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11b Legacy	1 Tx	1	2412	19.0			17.5			Yes	0
		6	2437	19.0			17.5				
		11	2462	19.0			17.5				
		1	2412		19.0			16.0			1
		6	2437		19.0			16.0			
		11	2462		19.0			16.0			
		1	2412			19.0			17.5		2
		6	2437			19.0			17.5		
		11	2462			19.0			17.5		
	2 Tx	1	2412	19.0	19.0		17.5	16.0		Yes	0, 1
		6	2437	19.0	19.0		17.5	16.0			
		11	2462	19.0	19.0		17.5	16.0			
		1	2412	19.0		19.0	17.5		17.5		0, 2
		6	2437	19.0		19.0	17.5		17.5		
		11	2462	19.0		19.0	17.5		17.5		
		1	2412		19.0	19.0		16.0	17.5		1, 2
		6	2437		19.0	19.0		16.0	17.5		
		11	2462		19.0	19.0		16.0	17.5		
	3 Tx	1	2412	19.0	19.0	19.0	17.5	16.0	17.5	Yes	0, 1, 2
		6	2437	19.0	19.0	19.0	17.5	16.0	17.5		
		11	2462	19.0	19.0	19.0	17.5	16.0	17.5		
11g	1 Tx	1	2412	15.5			15.5			No	Test reduction per KDB 248227
		2	2417	18.0			17.5				
		6	2437	19.0			17.5				
		10	2457	19.0			17.5				
		11	2462	17.5			17.5				
		1	2412		15.5			15.5			
		2	2417		18.0			16.0			
		6	2437		19.0			16.0			
		10	2457		19.0			16.0			
		11	2462		17.5			16.0			
		1	2412			15.5			15.5		
		2	2417			18.0			17.5		
		6	2437			19.0			17.5		
		10	2457			19.0			17.5		
		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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
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	16.0			
		6	2437	19.0	19.0		17.5	16.0			
		10	2457	17.5	17.5		17.5	16.0			
		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	17.5		17.5		
		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		16.0	17.0		
		6	2437		19.0	19.0		16.0	17.5		
		10	2457		17.5	17.5		16.0	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	16.0	17.0		
		6	2437	19.0	19.0	19.0	17.5	16.0	17.5		
		10	2457	17.5	17.5	17.5	17.5	16.0	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			17.5				
		6	2437	19.0			17.5				
		10	2457	19.0			17.5				
		11	2462	17.5			17.5				
		1	2412		15.5			15.5			
		2	2417		18.0			16.0			
		6	2437		19.0			16.0			
		10	2457		19.0			16.0			
		11	2462		17.5			16.0			
		1	2412			15.5			15.5		
		2	2417			18.0			17.5		
		6	2437			19.0			17.5		
		10	2457			19.0			17.5		
		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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11n	HT20 All *2 (2 Tx)	1	2412	15.0	15.0		15.0	15.0		No	Covered by 11b (2Tx)
		2	2417	17.0	17.0		17.5	16.0			
		6	2437	19.0	19.0		17.5	16.0			
		10	2457	17.5	17.5		17.5	16.0			
		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	17.5		17.5		
		6	2437	19.0		19.0	17.5		17.5		
		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		16.0	17.5		
		6	2437		19.0	19.0		16.0	17.5		
		10	2457		17.5	17.5		16.0	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 (3Tx)
		2	2422	17.0	17.0	17.0	17.0	17.0	17.0		
		6	2437	19.0	19.0	19.0	17.5	16.0	17.5		
		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 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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11a	Legacy (1 Tx)	36	5180	14.0			14.0			Yes	0
		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			
		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		
	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			14.0			Yes	0
		46	5230	15.5			15.5				
		38	5190		15.5			14.0			1
		46	5230		15.5			15.5			
		38	5190			15.5			14.0		2
		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	0, 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		0, 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		1, 2
		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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11n	HT40 CDD (2 Tx)	38	5190	9.0	9.0		9.0	9.0		No	Covered by 11n HT20 STBC (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 (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 (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	0, 1, 2
		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 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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11a	Legacy (1 Tx)	52	5260	18.5			15.0			Yes	0
		56	5280	18.5			15.0				
		60	5300	18.5			15.0				
		64	5320	17.5			15.0				
		52	5260		18.5			15.5			1
		56	5280		18.5			15.5			
		60	5300		18.5			15.5			
		64	5320		17.5			15.5			
		52	5260			18.5			17.0		2
		56	5280			18.5			17.0		
		60	5300			18.5			17.0		
		64	5320			17.5			17.0		
	CDD (2 Tx)	52	5260	12.5	12.5		12.5	12.5		Yes	0, 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		0, 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		1, 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		
	CDD (3 Tx)	52	5260	12.5	12.5	12.5	12.5	12.5	12.5	Yes	0, 1, 2
		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			15.0			No	Covered by 11a Legacy (1Tx)
		60	5300	18.5			15.0				
		64	5320	17.5			15.0				
		52	5260		18.5			15.5			
		60	5300		18.5			15.5			
		64	5320		17.5			15.5			
		52	5260			18.5			17.0		
		60	5300			18.5			17.0		
		64	5320			17.5			17.0		
	HT40 SISO (1 Tx)	54	5270	18.0			15.0			No	Covered by 11a Legacy (1Tx)
		62	5310	14.0			14.0				
		54	5270		18.0			15.5			
		62	5310		14.0			14.0			
		54	5270			18.0			17.0		
		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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
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	0, 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		0, 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		1, 2
		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		13.5	13.5		No	Covered by HT20 STBC/SDM (2 Tx)
		62	5310	14.0	14.0		13.5	13.5			
		54	5270	14.0		14.0	13.5		13.5		
		62	5310	14.0		14.0	13.5		13.5		
		54	5270		14.0	14.0		13.5	13.5		
		62	5310		14.0	14.0		13.5	13.5		
	HT40 STBC/SDM (2Tx)	54	5270	15.5	15.5		15.5	15.5		Yes	0, 1
		62	5310	14.0	14.0		12.5	12.5			
		54	5270	15.5		15.5	15.5		15.5		0, 2
		62	5310	14.0		14.0	12.5		12.5		
		54	5270		15.5	15.5		15.5	15.5		1, 2
		62	5310		14.0	14.0		12.5	12.5		
	HT20 CDD (3 Tx)	52	5260	12.5	12.5	12.5	12.5	12.5	12.5	No	Covered by 11n 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	0, 1, 2
		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	13.5	13.5	13.5	No	Covered by 11n 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	0, 1, 2
		62	5310	14.0	14.0	14.0	12.5	12.5	12.5		

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 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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11a	Legacy (1 Tx)	100	5500	18.0			16.0			Yes	0
		104	5520	18.0			16.0				
		108	5540	18.0			16.0				
		112	5560	18.0			16.0				
		116	5580	18.0			16.0				
		120	5600	18.0			16.0				
		124	5620	18.0			16.0				
		128	5640	18.0			16.0				
		132	5660	18.0			16.0				
		136	5680	18.0			16.0				
		140	5700	18.0			16.0				
		100	5500		18.0			15.5			1
		104	5520		18.0			15.5			
		108	5540		18.0			15.5			
		112	5560		18.0			15.5			
		116	5580		18.0			15.5			
		120	5600		18.0			15.5			
		124	5620		18.0			15.5			
		128	5640		18.0			15.5			
		132	5660		18.0			15.5			
		136	5680		18.0			15.5			
		140	5700		18.0			15.5			
		100	5500			18.0			18.0		2
		104	5520			18.0			18.0		
		108	5540			18.0			18.0		
		112	5560			18.0			18.0		
		116	5580			18.0			18.0		
		120	5600			18.0			18.0		
		124	5620			18.0			18.0		
		128	5640			18.0			18.0		
		132	5660			18.0			18.0		
		136	5680			18.0			18.0		
		140	5700			18.0			18.0		

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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11a	CDD (2 Tx)	100	5500	12.5	12.5		12.5	12.5		Yes	0, 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		0, 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		1, 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		
	CDD (3 Tx)	100	5500	12.5	12.5	12.5	12.5	12.5	12.5	Yes	0, 1, 2
		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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11n	HT20 SISO (1 Tx)	102	5510	18.0			16.0			No	Covered by 11a Legacy (1Tx)
		110	5550	18.0			16.0				
		134	5670	18.0			16.0				
		102	5510		18.0			15.5			
		110	5550		18.0			15.5			
		134	5670		18.0			15.5			
		102	5510			18.0			18.0		
		110	5550			18.0			18.0		
		134	5670			18.0			18.0		
	HT40 SISO (1 Tx)	102	5510	15.5			15.5			No	Covered by 11a Legacy (1Tx)
		110	5550	19.0			16.0				
		134	5670	19.0			16.0				
		102	5510		15.5			15.5			
		110	5550		19.0			15.5			
		134	5670		19.0			15.5			
		102	5510			15.5			15.5		
		110	5550			19.0			18.0		
		134	5670			19.0			18.0		
	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		Yes	0, 1
		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		0, 2
		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		1, 2
		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 HT20 STBC/SDM (2 Tx)
		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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11n	HT40 STBC/SDM (2Tx)	102	5510	15.5	15.5		15.5	15.5		Yes	0, 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		0, 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		1, 2
		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	0, 1, 2
		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 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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11a	Legacy (1 Tx)	149	5745	18.0			18.0			Yes	0
		153	5765	19.0			18.0				
		157	5785	19.0			18.0				
		161	5805	19.0			18.0				
		165	5825	18.0			18.0				
		149	5745		18.0			15.0			1
		153	5765		19.0			15.0			
		157	5785		19.0			15.0			
		161	5805		19.0			15.0			
		165	5825		18.0			15.0			
		149	5745			18.0			17.5		2
		153	5765			19.0			18.0		
		157	5785			19.0			18.0		
		161	5805			19.0			18.0		
		165	5825			18.0			17.5		
	CDD (2 Tx)	149	5745	18.0	18.0		18.0	15.0		Yes	0, 1
		153	5765	19.0	19.0		18.0	15.0			
		157	5785	19.0	19.0		18.0	15.0			
		161	5805	19.0	19.0		18.0	15.0			
		165	5825	18.0	18.0		18.0	15.0			
		149	5745	18.0		18.0	18.0		17.5		0, 2
		153	5765	19.0		19.0	18.0		18.0		
		157	5785	19.0		19.0	18.0		18.0		
		161	5805	19.0		19.0	18.0		18.0		
		165	5825	18.0		18.0	18.0		17.5		
		149	5745		18.0	18.0		15.0	17.5		1, 2
		153	5765		19.0	19.0		15.0	18.0		
		157	5785		19.0	19.0		15.0	18.0		
		161	5805		19.0	19.0		15.0	18.0		
		165	5825		18.0	18.0		15.0	17.5		
	CDD (3 Tx)	149	5745	18.0	18.0	18.0	18.0	15.0	17.5	Yes	0, 1, 2
		153	5765	19.0	19.0	19.0	18.0	15.0	18.0		
		157	5785	19.0	19.0	19.0	18.0	15.0	18.0		
		161	5805	19.0	19.0	19.0	18.0	15.0	18.0		
		165	5825	18.0	18.0	18.0	18.0	15.0	17.5		
11n	HT20 SISO (1 Tx)	149	5745	18.0			18.0			No	Covered by 11a Legacy (1Tx)
		157	5785	19.0			18.0				
		165	5825	18.0			18.0				
		149	5745		18.0			15.0			
		157	5785		19.0			15.0			
		165	5825		18.0			15.0			
		149	5745			18.0			17.5		
		157	5785			19.0			18.0		
		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/A1398 Host (dBm)			SAR Test (Yes/No)	SAR test chains (0, 1 & 2)
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2		
11n	HT40 SISO (1 Tx)	151	5755	19.0			18.0			No	Covered by 11a Legacy (1Tx)
		159	5795	19.0			18.0				
		151	5755		19.0			15.0			
		159	5795		19.0			15.0			
		151	5755			19.0			18.0		
		159	5795			19.0			18.0		
	HT20 CDD/STBC /SDM (2 Tx)	149	5745	18.0	18.0		18.0	15.0		No	Covered by 11a CDD (3Tx)
		157	5785	19.0	19.0		18.0	15.0			
		165	5825	18.0	18.0		18.0	15.0			
		149	5745	18.0		18.0	18.0		17.5		
		157	5785	19.0		19.0	18.0		18.0		
		165	5825	18.0		18.0	18.0		17.5		
		149	5745		18.0	18.0		15.0	17.5		
		157	5785		19.0	19.0		15.0	18.0		
		165	5825		18.0	18.0		15.0	17.5		
	HT40 CDD/STBC /SDM (2 Tx)	151	5755	19.0	19.0		18.0	15.0		No	Covered by 11a Legacy (3Tx)
		159	5795	19.0	19.0		18.0	15.0			
		151	5755	19.0		19.0	18.0		18.0		
		159	5795	19.0		19.0	18.0		18.0		
		151	5755		19.0	19.0		15.0	18.0		
		159	5795		19.0	19.0		15.0	18.0		
	HT20 CDD/STBC /SDM (3 Tx)	149	5745	18.0	18.0	18.0	18.0	15.0	17.5	No	Covered by 11a CDD (3Tx)
		157	5785	19.0	19.0	19.0	18.0	15.0	18.0		
		165	5825	18.0	18.0	18.0	18.0	15.0	17.5		
	HT40 CDD (3 Tx)	151	5755	19.0	19.0	19.0	18.0	15.0	18.0	Yes	0, 1, 2
		159	5795	19.0	19.0	19.0	18.0	15.0	18.0		
	HT40 STBC/ SDM (3 Tx)	151	5755	19.0	19.0	19.0	18.0	15.0	18.0	Yes	Covered by 11n HT40 CDD (3Tx)
		159	5795	19.0	19.0	19.0	18.0	15.0	18.0		

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 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, 2 and 3) (dBm)		
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2
11b Legacy	1 Tx	1	2412	17.5			17.6		
		6	2437	17.5			17.6		
		11	2462	17.5			17.5		
		1	2412		16.0			16.1	
		6	2437		16.0			16.2	
		11	2462		16.0			16.0	
		1	2412			17.5			17.6
		6	2437			17.5			17.6
		11	2462			17.5			17.6
	2 Tx	1	2412	17.5	16.0		17.5	16.0	
		6	2437	17.5	16.0		17.6	16.1	
		11	2462	17.5	16.0		17.6	16.1	
		1	2412	17.5		17.5	17.6		17.6
		6	2437	17.5		17.5	17.7		17.7
		11	2462	17.5		17.5	17.6		17.6
		1	2412		16.0	17.5		16.1	17.6
		6	2437		16.0	17.5		16.1	17.6
		11	2462		16.0	17.5		16.1	17.6
	3 Tx	1	2412	17.5	16.0	17.5	17.6	16.0	17.5
		6	2437	17.5	16.0	17.5	17.6	16.0	17.6
		11	2462	17.5	16.0	17.5	17.5	16.0	17.5

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. Furthermore, in order to adhere to SAR reminder check list issued by FCC on 01/2002, which states that "Conducted power in SAR report should be greater than or equal to what's in EMC report, but not exceeding tune-up/tolerance.", the power setting was increased in certain cases as to ensure that the average power documented in the SAR report is equal to or greater than that found in the "Target Maximum Average Power".
3. 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, 2 and 3) (dBm)		
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2
11a	Legacy (1 Tx)	36	5180	14.0			14.5		
		40	5200	14.0			14.5		
		44	5220	14.0			14.3		
		48	5240	14.0			14.0		
		36	5180		14.0			14.5	
		40	5200		14.0			14.5	
		44	5220		14.0			14.3	
		48	5240		14.0			14.0	
		36	5180			14.0			14.5
		40	5200			14.0			14.5
		44	5220			14.0			14.3
		48	5240			14.0			14.0
11n	HT40 SISO (1 Tx)	38	5190	14.0			14.3		
		46	5230	15.5			15.3		
		38	5190		14.0			14.3	
		46	5230		15.5			15.3	
		38	5190			14.0			14.3
		46	5230			15.5			15.3
	HT20 STBC/SDM (2 Tx)	36	5180	11.0	11.0		11.3	11.5	
		40	5200	11.0	11.0		11.3	10.9	
		48	5240	11.0	11.0		11.3	10.9	
		36	5180	11.0		11.0	11.3		11.4
		40	5200	11.0		11.0	11.3		11.2
		48	5240	11.0		11.0	11.3		11.4
		36	5180		11.0	11.0		11.4	11.2
		40	5200		11.0	11.0		10.9	11.3
		48	5240		11.0	11.0		10.8	11.3
	HT40 STBC (3 Tx)	38	5190	10.0	10.0	10.0	10.6	10.4	10.4
		46	5230	10.0	10.0	10.0	10.5	10.2	10.7

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. Furthermore, in order to adhere to SAR reminder check list issued by FCC on 01/2002, which states that "Conducted power in SAR report should be greater than or equal to what's in EMC report, but not exceeding tune-up/tolerance.", the power setting was increased in certain cases as to ensure that the average power documented in the SAR report is equal to or greater than that found in the "Target Maximum Average Power".
3. 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, 2 and 3) (dBm)		
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2
11a	Legacy (1 Tx)	52	5260	15.0			15.1		
		56	5280	15.0			15.1		
		60	5300	15.0			15.1		
		64	5320	15.0			15.1		
		52	5260		15.5			15.6	
		56	5280		15.5			15.6	
		60	5300		15.5			15.6	
		64	5320		15.5			15.6	
		52	5260			17.0			17.0
		56	5280			17.0			17.0
		60	5300			17.0			17.0
		64	5320			17.0			17.1
	CDD (2 Tx)	52	5260	12.5	12.5		13.0	12.2	
		56	5280	12.5	12.5		13.2	12.2	
		60	5300	12.5	12.5		13.2	12.2	
		64	5320	12.5	12.5		13.0	11.9	
		52	5260	12.5		12.5	13.0		12.2
		56	5280	12.5		12.5	13.2		13.0
		60	5300	12.5		12.5	13.2		13.0
		64	5320	12.5		12.5	13.0		12.9
		52	5260		12.5	12.5		12.3	12.2
		56	5280		12.5	12.5		12.3	13.0
		60	5300		12.5	12.5		12.3	13.0
		64	5320		12.5	12.5		11.9	12.8
	CDD (3 Tx)	52	5260	12.5	12.5	12.5	12.8	12.3	12.2
		56	5280	12.5	12.5	12.5	13.2	12.3	12.9
		60	5300	12.5	12.5	12.5	13.2	12.3	12.9
		64	5320	12.5	12.5	12.5	13.0	11.9	12.7
11n	HT20 STBC/SDM (2 Tx)	52	5260	15.0	15.0		15.5	15.0	
		56	5280	15.0	15.0		15.6	14.6	
		64	5320	15.0	15.0		15.5	14.2	
		52	5260	15.0		15.0	15.6		15.0
		56	5280	15.0		15.0	15.6		15.0
		64	5320	15.0		15.0	15.5		14.9
		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		14.2	15.0
	HT40 STBC/SDM (2 Tx)	54	5270	15.5	15.5		15.8	15.4	
		54	5270	15.5		15.5	15.9		15.8
		54	5270		15.5	15.5		15.4	15.8
	HT20 STBC/SDM (3 Tx)	64	5320	15.0	15.0	15.0	15.5	14.2	14.8
	HT40 STBC/SDM (3 Tx)	54	5270	15.5	15.5	15.5	15.7	15.2	15.7
		62	5310	12.5	12.5	12.5	12.7	12.4	12.8

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. Furthermore, in order to adhere to SAR reminder check list issued by FCC on 01/2002, which states that "Conducted power in SAR report should be greater than or equal to what's in EMC report, but not exceeding tune-up/tolerance.", the power setting was increased in certain cases as to ensure that the average power documented in the SAR report is equal to or greater than that found in the "Target Maximum Average Power".
3. 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 (See note1, 2 and 3) (dBm)		
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2
11a	Legacy (1 Tx)	100	5500	16.0			16.0		
		104	5520	16.0			16.1		
		108	5540	16.0			16.1		
		112	5560	16.0			16.1		
		116	5580	16.0			16.2		
		120	5600	16.0			16.1		
		124	5620	16.0			16.1		
		128	5640	16.0			16.0		
		132	5660	16.0			16.1		
		136	5680	16.0			16.1		
		140	5700	16.0			16.0		
		100	5500		15.5			15.5	
		104	5520		15.5			15.6	
		108	5540		15.5			15.6	
		112	5560		15.5			15.5	
		116	5580		15.5			15.6	
		120	5600		15.5			15.5	
		124	5620		15.5			15.6	
		128	5640		15.5			15.6	
		132	5660		15.5			15.6	
		136	5680		15.5			15.6	
		140	5700		15.5			15.6	
		100	5500			18.0			18.1
		104	5520			18.0			18.2
		108	5540			18.0			18.2
		112	5560			18.0			18.2
		116	5580			18.0			18.2
		120	5600			18.0			18.2
		124	5620			18.0			18.2
		128	5640			18.0			18.2
		132	5660			18.0			18.0
		136	5680			18.0			18.0
		140	5700			18.0			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. Furthermore, in order to adhere to SAR reminder check list issued by FCC on 01/2002, which states that "Conducted power in SAR report should be greater than or equal to what's in EMC report, but not exceeding tune-up/tolerance.", the power setting was increased in certain cases as to ensure that the average power documented in the SAR report is equal to or greater than that found in the "Target Maximum Average Power".
3. 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.

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 (See note1, 2 and 3) (dBm)		
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2
11a	CDD (2 Tx)	100	5500	12.5	12.5		12.7	12.8	
		104	5520	12.5	12.5		12.8	12.9	
		108	5540	12.5	12.5		12.8	12.9	
		112	5560	12.5	12.5		12.8	12.8	
		116	5580	12.5	12.5		12.5	12.8	
		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	12.8	
		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	
		100	5500	12.5		12.5	12.8		13.1
		104	5520	12.5		12.5	12.8		13.1
		108	5540	12.5		12.5	12.8		13.1
		112	5560	12.5		12.5	12.8		13.1
		116	5580	12.5		12.5	12.4		12.6
		120	5600	12.5		12.5	12.8		12.9
		124	5620	12.5		12.5	12.8		13.0
		128	5640	12.5		12.5	12.8		13.0
		132	5660	12.5		12.5	12.8		12.9
		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	13.1
		104	5520		12.5	12.5		12.8	13.1
		108	5540		12.5	12.5		12.8	13.1
		112	5560		12.5	12.5		12.8	13.1
		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	13.0
		128	5640		12.5	12.5		12.8	13.0
		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
	CDD (3 Tx)	100	5500	12.5	12.5	12.5	12.8	12.8	13.1
		104	5520	12.5	12.5	12.5	12.8	12.8	13.1
		108	5540	12.5	12.5	12.5	12.8	12.8	13.1
		112	5560	12.5	12.5	12.5	12.8	12.7	13.1
		116	5580	12.5	12.5	12.5	12.4	12.8	12.6
		120	5600	12.5	12.5	12.5	12.8	12.8	13.0
		124	5620	12.5	12.5	12.5	12.8	12.8	13.0
		128	5640	12.5	12.5	12.5	12.8	12.8	13.0
		132	5660	12.5	12.5	12.5	12.8	12.8	13.0
		136	5680	12.5	12.5	12.5	12.8	12.8	13.0
		140	5700	12.5	12.5	12.5	12.8	12.8	13.0

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. Furthermore, in order to adhere to SAR reminder check list issued by FCC on 01/2002, which states that "Conducted power in SAR report should be greater than or equal to what's in EMC report, but not exceeding tune-up/tolerance.", the power setting was increased in certain cases as to ensure that the average power documented in the SAR report is equal to or greater than that found in the "Target Maximum Average Power".
3. 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.

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 (See note1, 2 and 3) (dBm)		
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2
11n	HT20 STBC/SDM (2 Tx)	100	5500	14.5	14.5		14.9	14.8	
		116	5580	14.5	14.5		14.7	14.8	
		140	5700	14.5	14.5		14.8	15.1	
		100	5500	14.5		14.5	14.8		14.9
		116	5580	14.5		14.5	14.7		14.8
		140	5700	14.5		14.5	14.8		14.7
		100	5500		14.5	14.5		14.7	14.9
		116	5580		14.5	14.5		14.8	14.8
		140	5700		14.5	14.5		15.1	14.7
	HT40 STBC/SDM (2Tx)	102	5510	15.5	15.5		15.8	15.8	
		110	5550	15.5	15.5		15.9	15.7	
		134	5670	15.5	15.5		15.7	15.9	
		102	5510	15.5		15.5	15.8		15.7
		110	5550	15.5		15.5	15.9		16.5
		134	5670	15.5		15.5	15.7		16.2
		102	5510		15.5	15.5		15.7	15.7
		110	5550		15.5	15.5		15.7	16.5
		134	5670		15.5	15.5		15.9	16.3
	HT40 STBC/SDM (3 Tx)	102	5510	15.5	15.5	15.5	15.9	15.7	15.7
		110	5550	15.5	15.5	15.5	15.9	15.6	16.6
		134	5670	15.5	15.5	15.5	15.6	15.9	16.2

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. Furthermore, in order to adhere to SAR reminder check list issued by FCC on 01/2002, which states that "Conducted power in SAR report should be greater than or equal to what's in EMC report, but not exceeding tune-up/tolerance.", the power setting was increased in certain cases as to ensure that the average power documented in the SAR report is equal to or greater than that found in the "Target Maximum Average Power".
3. 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.

		Ch. #	Freq. (MHz)	Target Maximum Average Power per chain for C2PC (dBm)			Measured Pwr (See note1, 2 and 3) (dBm)		
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2
11a	Legacy (1 Tx)	149	5745	18.0			18.1		
		153	5765	18.0			18.1		
		157	5785	18.0			18.1		
		161	5805	18.0			18.1		
		165	5825	18.0			18.1		
		149	5745		15.0			15.1	
		153	5765		15.0			15.1	
		157	5785		15.0			15.1	
		161	5805		15.0			15.0	
		165	5825		15.0			15.0	
		149	5745			17.5			17.7
		153	5765			18.0			18.0
		157	5785			18.0			18.1
		161	5805			18.0			18.0
		165	5825			17.5			17.4
	CDD (2 Tx)	149	5745	18.0	15.0		18.1	15.1	
		153	5765	18.0	15.0		18.1	15.0	
		157	5785	18.0	15.0		18.1	15.1	
		161	5805	18.0	15.0		18.1	15.1	
		165	5825	18.0	15.0		18.1	15.1	
		149	5745	18.0		17.5	18.0		17.7
		153	5765	18.0		18.0	18.0		18.0
		157	5785	18.0		18.0	18.1		18.0
		161	5805	18.0		18.0	18.1		18.0
		165	5825	18.0		17.5	18.0		17.4
		149	5745		15.0	17.5		15.1	17.7
		153	5765		15.0	18.0		15.1	18.0
		157	5785		15.0	18.0		15.1	18.1
		161	5805		15.0	18.0		15.1	18.1
		165	5825		15.0	17.5		15.0	17.4
	CDD (3 Tx)	149	5745	18.0	15.0	17.5	18.0	15.0	17.7
		153	5765	18.0	15.0	18.0	18.0	15.0	18.0
		157	5785	18.0	15.0	18.0	18.1	15.1	18.0
		161	5805	18.0	15.0	18.0	18.1	15.1	18.0
		165	5825	18.0	15.0	17.5	18.1	15.1	17.4
11n	HT40 CDD (3 Tx)	151	5755	18.0	15.0	18.0	18.1	15.0	18.0
		159	5795	18.0	15.0	18.0	18.1	15.1	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. Furthermore, in order to adhere to SAR reminder check list issued by FCC on 01/2002, which states that "Conducted power in SAR report should be greater than or equal to what's in EMC report, but not exceeding tune-up/tolerance.", the power setting was increased in certain cases as to ensure that the average power documented in the SAR report is equal to or greater than that found in the "Target Maximum Average Power".
3. 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)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
2.4	11b Legacy	1 Tx	1	2412	17.6			1.070			
			6	2437	17.6			1.110			
			11	2462	17.5			0.996			
			1	2412		16.1			1.070		
			6	2437		16.2			**1.110**		*
			11	2462		16.0			0.979		
			1	2412			17.6			1.05	
			6	2437			17.6			1.06	
			11	2462			17.6			1.10	
		2 Tx	1	2412	17.5	16.0		1.020	1.090		
			6	2437	17.6	16.1		1.020	1.100		
			11	2462	17.6	16.1		1.120	1.050		
			1	2412	17.6		17.6	1.030		1.060	
			6	2437	17.7		17.7	1.040		1.070	
			11	2462	17.6		17.6	1.050		0.992	
			1	2412		16.1	17.6		1.140	1.140	
			6	2437		16.1	17.6		1.050	**1.150**	*
			11	2462		16.1	17.6		1.040	1.010	
		3 Tx	1	2412	17.6	16.0	17.5	1.030	**1.100**	1.070	*
			6	2437	17.6	16.0	17.6	0.980	0.968	1.090	
			11	2462	17.5	16.0	17.5	0.899	0.951	0.962	

Note(s):

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

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)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
2.4	11b Legacy	2 Tx	1	2412		16.1	17.6		0.956	0.995	
			6	2437		16.1	17.6		0.907	0.978	
			11	2462		16.1	17.6		0.906	0.982	

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)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
5.2	11a	Legacy (1 Tx)	36	5180	14.5			0.819			
			44	5220	14.3			0.844			
			36	5180		14.5			**0.942**		*
			44	5220		14.3			0.874		
			36	5180			14.5			0.398	
			44	5220			14.3			0.428	
	11n	HT40 SISO (1 Tx)	38	5190	14.3			0.757			
			46	5230	15.3			0.897			
			38	5190		14.3			0.899		
			46	5230		15.3			**1.130**		*
			38	5190			14.3			0.413	
			46	5230			15.3			0.537	
	11n	HT20 STBC/SDM (2 Tx)	36	5180	11.3	11.5		0.363	**0.592**		*
			40	5200	11.3	10.9					
			48	5240	11.3	10.9					
			36	5180	11.3		11.4	0.377		0.220	
			40	5200	11.3		11.2				
			48	5240	11.3		11.4				
			36	5180		11.4	11.2		0.525	0.246	
			40	5200		10.9	11.3				
			48	5240		10.8	11.3				
	11n	HT40 STBC (3 Tx)	38	5190	10.6	10.4	10.4	0.379	**0.423**	0.180	*
			46	5230	10.5	10.2	10.7	0.385	0.400	0.200	

Note(s):
*: Worst case SAR results for the given mode in the corresponding frequency band.

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)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
5.2	11n	HT40 SISO (1 Tx)	38	5190		14.4			0.849		
			46	5230		15.3			0.927		

5 GHz Bands continued

Lap-held (Antenna Vendor A)

Band (GHz)	Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
5.3	11a	Legacy (1 Tx)	52	5260	15.1			1.130			
			64	5320	15.1			1.100			
			52	5260		15.6			**1.130**		*
			64	5320		15.6			1.010		
			52	5260			17.0			1.020	
			64	5320			17.1			1.040	
	11a	CDD (2 Tx)	52	5260	13.0	12.2		0.661	0.500		
			60	5300	13.2	12.2		**0.685**	0.490		*
			52	5260	13.0		12.2	0.665		0.304	
			60	5300	13.2		13.0	0.671		0.433	
			52	5260		12.3	12.2		0.571	0.300	
			60	5300		12.3	13.0		0.609	0.417	
	11a	CDD (3 Tx)	52	5260	12.8	12.3	12.2	0.647	0.556	0.312	
			60	5300	13.2	12.3	12.9	**0.655**	0.527	0.407	*
	11n	HT20 STBC/SDM (2 Tx)	52	5260	15.5	15.0		1.150	1.020		
			56	5280	15.6	14.6		1.140	0.868		
			64	5320	15.5	14.2		1.130	0.741		
			52	5260	15.6		15.0	1.120		0.479	
			56	5280	15.6		15.0	**1.160**		0.485	*
			64	5320	15.5		14.9	1.140		0.472	
			52	5260		15.0	15.0		0.904	0.520	
			56	5280		14.6	15.0		0.893	0.510	
			64	5320		14.2	15.0		0.734	0.489	
	11n	HT40 STBC/SDM (2 Tx)	54	5270	15.8	15.4		1.130	1.130		
			54	5270	15.9		15.8	1.090		0.676	
			54	5270		15.4	15.8		**1.140**	0.703	*
	11n	HT20 STBC/SDM (3 Tx)	64	5320.0	15.5	14.2	14.8	**1.120**	0.798	0.445	*
	11n	HT40 STBC/SDM (3 Tx)	54	5270	15.7	15.2	15.7	**1.180**	1.090	0.588	*
			62	5310	12.7	12.4	12.8	0.904	0.666	0.508	

Note(s):

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

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)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
5.3	11n	HT40 STBC/SDM (3 Tx)	54	5270	15.7	15.2	15.7	0.771	0.981	0.562	
			62	5310	12.7	12.4	12.8	0.434	0.517	0.338	

5 GHz Bands continued

Lap-held (Antenna Vendor A)

Band (GHz)	Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
5.5	11a	Legacy (1 Tx)	104	5520	16.1			1.120			
			116	5580	16.2			1.000			
			124	5620	16.1			1.040			
			136	5680	16.1			1.030			
			104	5520		15.6			**1.130**		*
			116	5580		15.6			1.050		
			124	5620		15.6			1.050		
			136	5680		15.6			0.992		
			104	5520			18.2			1.100	
			116	5580			18.2			1.000	
			124	5620			18.2			1.010	
			136	5680			18.0			1.030	
	11a	CDD (2 Tx)	104	5520	12.8	12.9		0.490	0.569		
			120	5600	12.8	12.9		0.380	0.537		
			124	5620	12.8	12.9		0.361	0.525		
			136	5680	12.8	12.9		0.322	0.497		
			104	5520	12.8		13.1	0.520		0.372	
			112	5560	12.8		13.1	0.525		0.376	
			124	5620	12.8		13.0	0.548		0.386	
			136	5680	12.8		13.0	0.568		0.403	
			104	5520		12.8	13.1		0.559	0.398	
			112	5560		12.8	13.1		0.577	0.399	
			124	5620		12.8	13.0		0.560	0.402	
			136	5680		12.8	13.0		**0.578**	0.405	*
	11a	CDD (3 Tx)	104	5520	12.8	12.8	13.1	0.507	0.559	0.415	
			120	5600	12.8	12.8	13.1	0.483	**0.572**	0.411	*
			124	5620	12.8	12.8	13.0	0.489	0.557	0.401	
			136	5680	12.8	12.8	13.0	0.455	0.572	0.400	
	11n	HT20 STBC/SDM (2 Tx)	100	5500	14.9	14.8		0.829	1.010		
			116	5580	14.7	14.8		0.633	0.995		
			140	5700	14.8	15.1		0.594	0.968		
			100	5500	14.8		14.9	0.747		0.538	
			116	5580	14.7		14.8	0.612		0.512	
			140	5700	14.8		14.7	0.655		0.478	
			100	5500		14.7	14.9		**1.030**	0.541	*
			116	5580		14.8	14.8		1.010	0.515	
			140	5700		15.1	14.7		0.936	0.449	
	11n	HT40 STBC/SDM (2 Tx)	102	5510	15.8	15.8		1.160	1.090		
			110	5550	15.9	15.7		1.040	1.120		
			134	5670	15.7	15.9		0.981	1.140		
			102	5510	15.8		15.7	1.090		0.880	
			110	5550	15.9		16.5	1.140		0.871	
			134	5670	15.7		16.2	0.961		0.760	
			102	5510		15.7	15.7		1.110	0.845	
			110	5550		15.7	16.5		**1.170**	0.871	*
			134	5670		15.9	16.3		1.110	0.755	
	11n	HT40 STBC/SDM (3 Tx)	102	5510	15.9	15.7	15.7	1.170	**1.180**	0.828	*
			110	5550	15.9	15.6	16.6	1.160	1.130	0.887	
			134	5670	15.6	15.9	16.2	1.020	1.160	0.850	

Note(s):

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

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)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
5.5	11n	HT40 STBC/SDM (3 Tx)	102	5510	15.8	15.8	15.7	**0.914**	**1.010**	**0.893**	
			110	5550	15.9	15.6	16.5	0.900	0.982	0.906	
			134	5670	15.7	15.9	16.1	0.882	1.000	0.843	

5 GHz Bands continued

Lap-held (Antenna Vendor A)

Band (GHz)	Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
5.8	11a	Legacy (1Tx)	149	5745	18.1			1.080			
			157	5785	18.1			1.030			
			165	5825	18.1			1.030			
			149	5745		15.0			**1.120**		*
			157	5785		15.1			1.030		
			165	5825		15.0			1.000		
			153	5785			18.0			0.897	
			157	5785			18.1			0.837	
			161	5805			18.0			0.751	
	11a	CDD (2 Tx)	149	5745	18.0	15.1		0.869	0.966		
			157	5785	18.1	15.1		**1.110**	1.040		*
			165	5825	18.0	15.1		1.060	1.000		
			153	5785	18.0		18.0	1.000		0.858	
			157	5785	18.1		18.0	0.960		0.889	
			161	5805	18.1		18.0	0.945		0.815	
			153	5785		15.1	18.0		0.979	0.851	
			157	5785		15.1	18.1		1.080	0.965	
			161	5805		15.1	18.1		1.020	0.723	
	11a	CDD (3 Tx)	153	5785	18.0	15.0	18.0	1.050	1.010	0.883	
			157	5785	18.0	15.0	18.0	1.080	1.030	0.806	
			161	5805	18.1	15.1	18.0	0.900	**1.120**	0.724	*
	11n	HT40 CDD (3 Tx)	151	5755	18.1	15.0	18.0	**1.070**	0.885	0.831	*
			159	5795	18.1	15.1	18.0	1.040	0.952	0.809	

Note(s):

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

Lap-held (Antenna Vendor B)

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

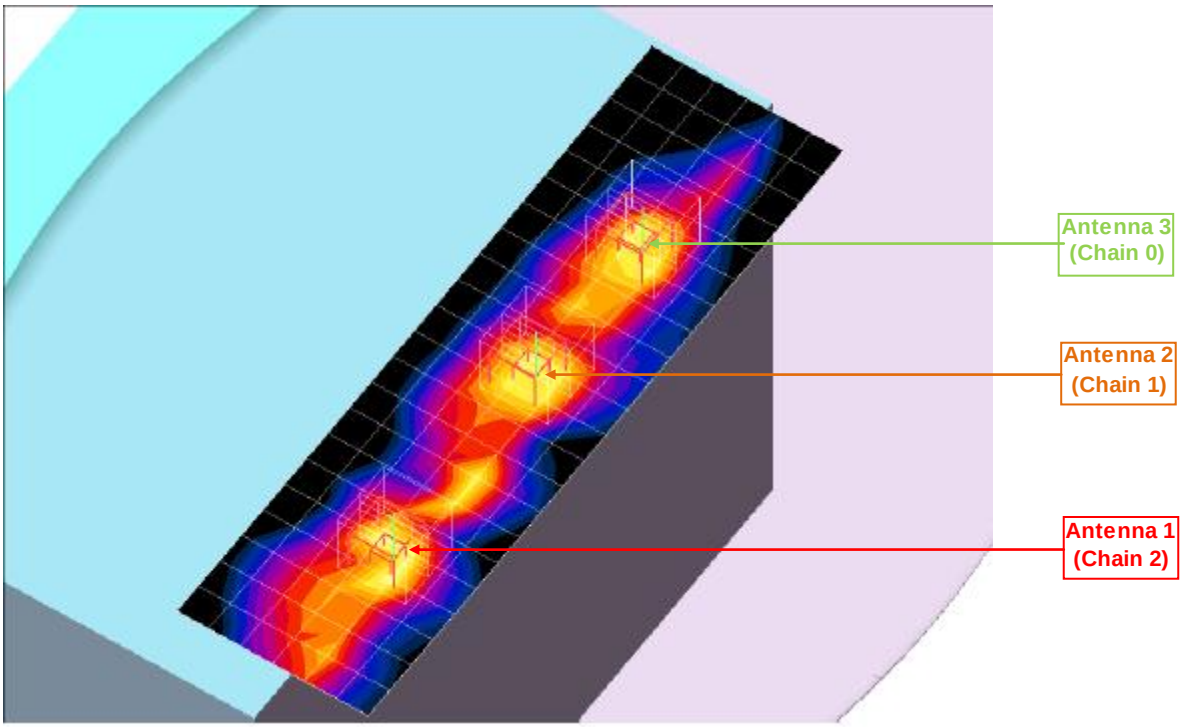
Band (GHz)	Mode (802.11)	No. of Transmitters	Ch. #	Freq. (MHz)	Measured Pwr (dBm)			1-g SAR (W/kg)			Note
					Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	
5.8	11a	CDD (3 Tx)	149	5745	18.1	15.1	17.7	1.030	0.988	0.805	
			157	5785	18.0	15.0	18.0	1.010	0.968	0.851	
			165	5825	18.0	15.0	17.4	0.969	1.020	0.741	

14. Summary of Highest SAR Values

Technology/Band	Test configuration	Mode	Worst case Antenna Chain	Separation distance (mm)	Highest 1g SAR (W/kg)
WiFi 2.4 GHz	Lap-held	802.11b Legacy (1Tx)	1	0	1.110
		802.11b CDD (2Tx)	2	0	**1.150**
		802.11b CDD (3Tx)	1	0	1.100
WiFi 5.2 GHz	Lap-held	802.11a Legacy (1Tx)	1	0	0.942
		802.11n HT40 CDD (1Tx)	1	0	**1.130**
		802.11n HT20 STBC (2Tx)	1	0	0.592
		802.11n HT40 STBC (3Tx)	1	0	0.423
WiFi 5.3 GHz	Lap-held	802.11a Legacy (1Tx)	1	0	1.130
		802.11a CDD (2Tx)	0	0	0.685
		802.11a CDD (3Tx)	0	0	0.655
		802.11n HT20 STBC/SDM (2Tx)	0	0	1.160
		802.11n HT40 STBC/SDM (2Tx)	1	0	1.140
		802.11n HT20 STBC/SDM (3Tx)	0	0	1.120
		802.11n HT40 STBC/SDM (3Tx)	0	0	**1.180**
WiFi 5.5 GHz	Lap-held	802.11a Legacy (1Tx)	1	0	1.130
		802.11a CDD (2Tx)	1	0	0.578
		802.11a CDD (3Tx)	1	0	0.572
		802.11n HT20 STBC/SDM (2Tx)	1	0	1.030
		802.11n HT40 STBC/SDM (2Tx)	1	0	1.170
		802.11n HT40 STBC/SDM (3Tx)	1	0	**1.180**
WiFi 5.8 GHz	Lap-held	802.11a Legacy (1Tx)	1	0	1.120
		802.11a CDD (2Tx)	0	0	1.110
		802.11a CDD (3Tx)	1	0	**1.120**
		802.11n HT40 CDD (3Tx)	0	0	1.070

14.1. 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.



14.1.1. Worst-Case SAR Plots for 2.4 GHz Band

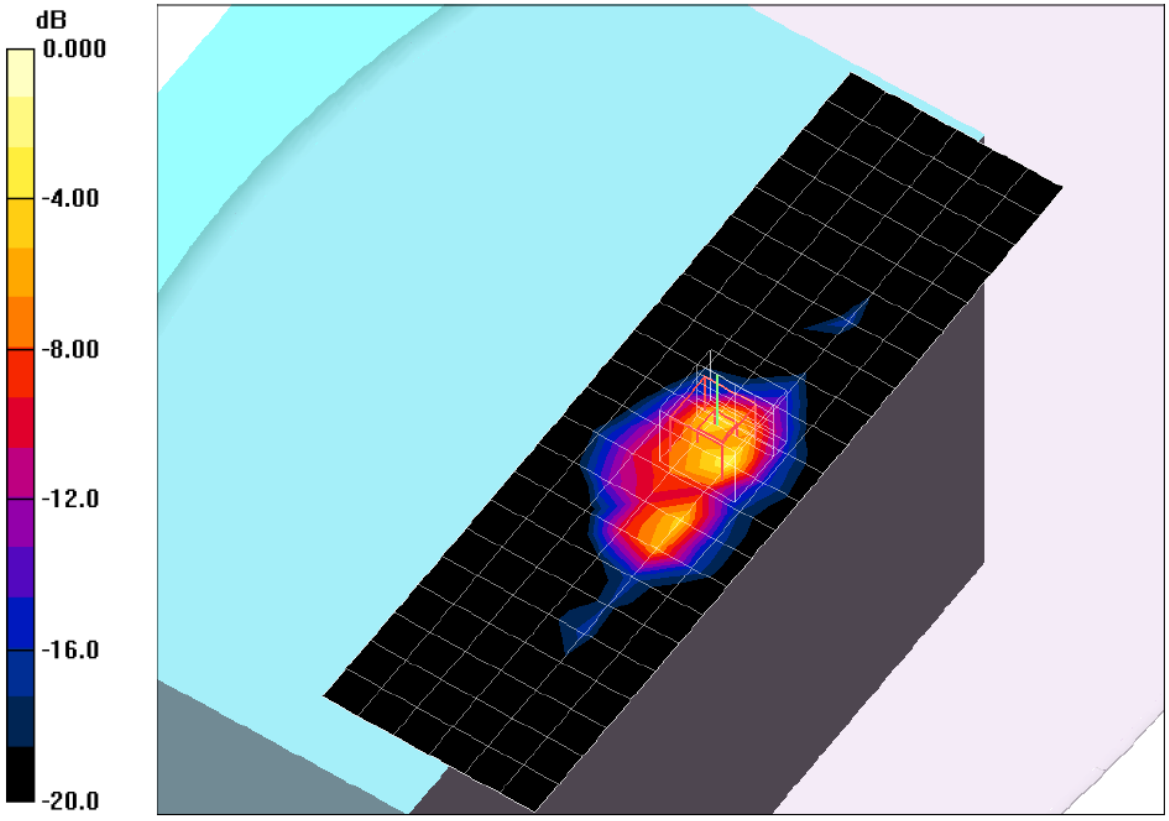
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/24/2012 3:36:47 PM

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 = 1.91 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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, Chain 1_Ch 6/Area Scan (7x23x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.920 mW/g

802.11b, Chain 1_Ch 6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.6 V/m; Power Drift = 0.025 dB
Peak SAR (extrapolated) = 2.86 W/kg
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.463 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.72 mW/g



0 dB = 1.72mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/24/2012 4:15:23 PM

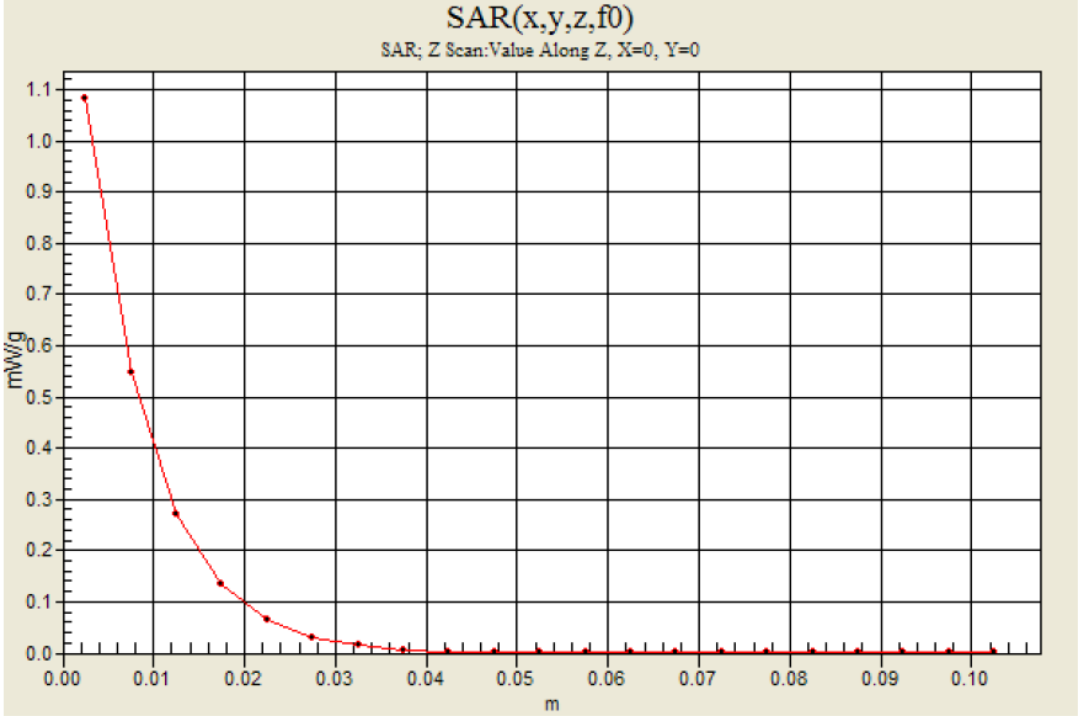
2.4 GHz band

Frequency: 2437 MHz; Duty Cycle: 1:1

802.11b, Chain 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) = 1.08 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/23/2012 7:06:03 PM

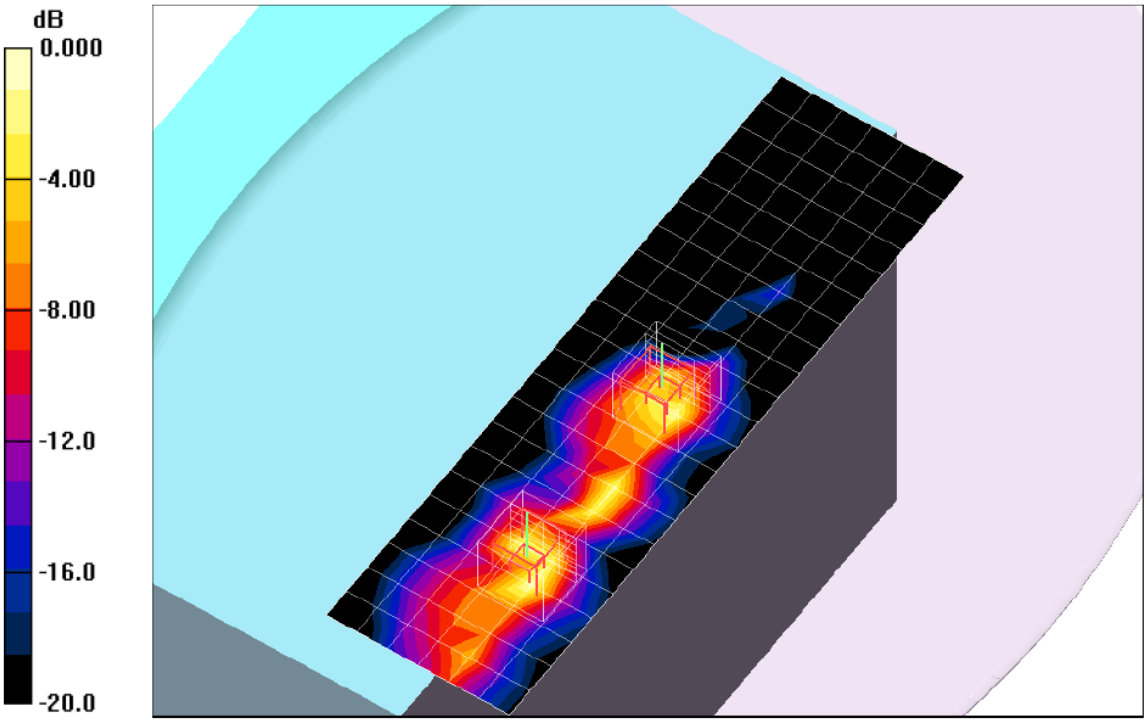
2.4 GHz band

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 = 2 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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, Chain 1,2_Ch 6/Area Scan (7x23x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.24 mW/g

802.11b, Chain 1_Ch 6/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.0 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.57 W/kg
SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.449 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.51 mW/g

802.11b, Chain 2_Ch 6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.0 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.66 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.476 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.52 mW/g



0 dB = 1.52mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/23/2012 7:25:02 PM

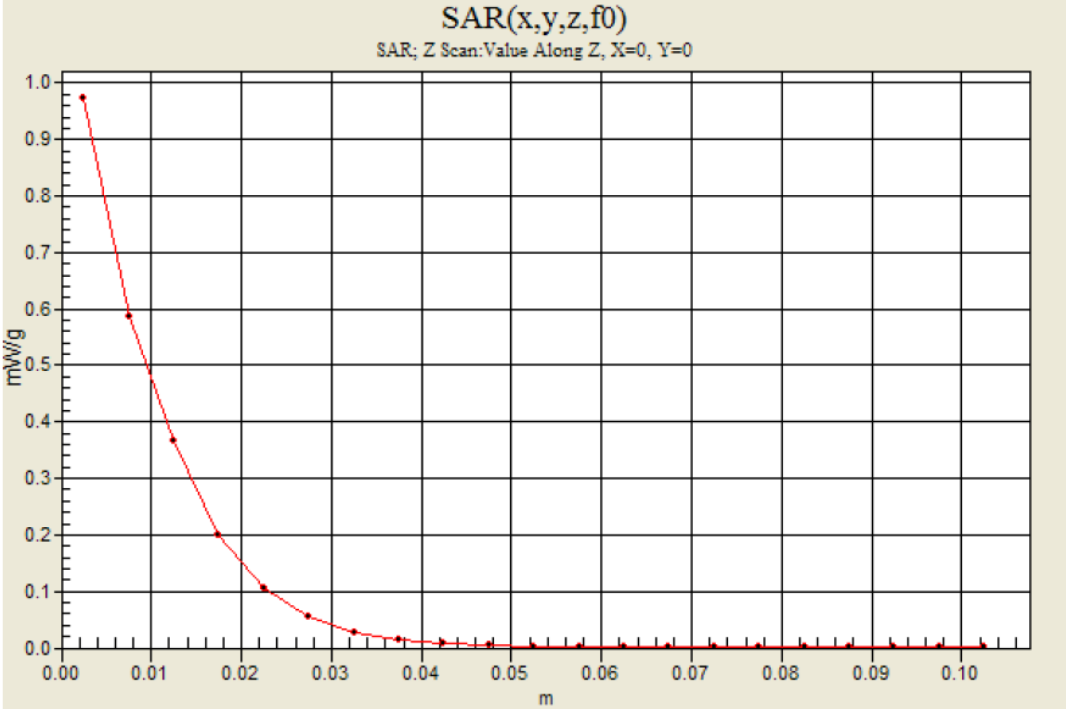
2.4 GHz band

Frequency: 2437 MHz; Duty Cycle: 1:1

802.11b, Chain 1,2_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) = 0.973 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/23/2012 1:23:45 PM

2.4 GHz band

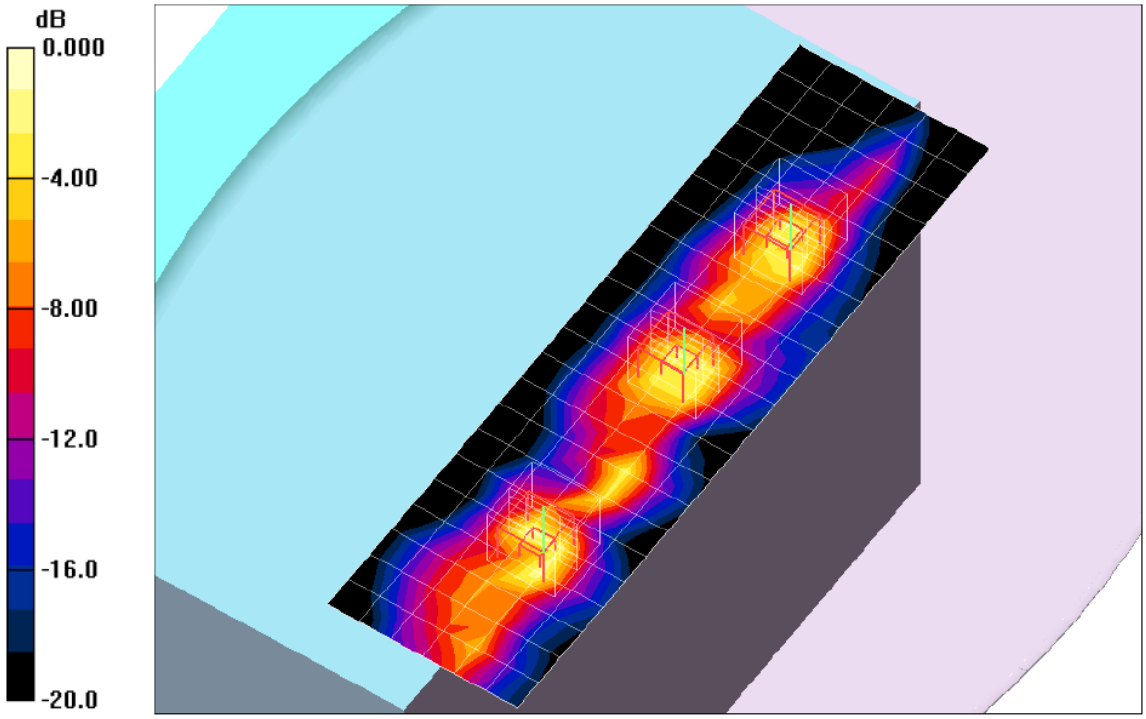
Frequency: 2412 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.97 mho/m; ε_r = 51.2; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(6.66, 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, Chain 0,1,2_Ch 1/Area Scan (7x23x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.09 mW/g

802.11b, Chain 0_Ch 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.1 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 2.70 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.419 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.46 mW/g

802.11b, Chain 1_Ch 1/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.1 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 2.73 W/kg
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.460 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.57 mW/g

802.11b, Chain 2_Ch 1/Zoom Scan (5x5x7)/Cube 2: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.1 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 2.42 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.473 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.51 mW/g



0 dB = 1.51mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/23/2012 3:27:21 PM

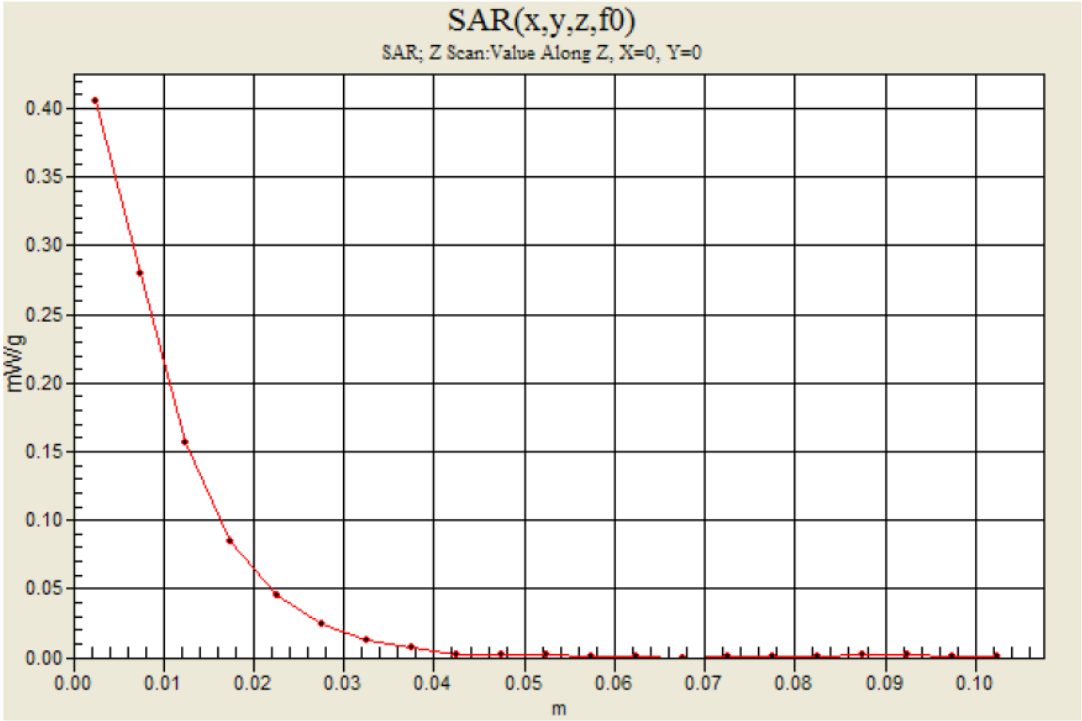
2.4 GHz band

Frequency: 2412 MHz; Duty Cycle: 1:1

802.11b, Chain 0,1,2_Ch 1/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.405 mW/g



14.1.2. Worst-Case SAR Plots for 5.2 GHz Band

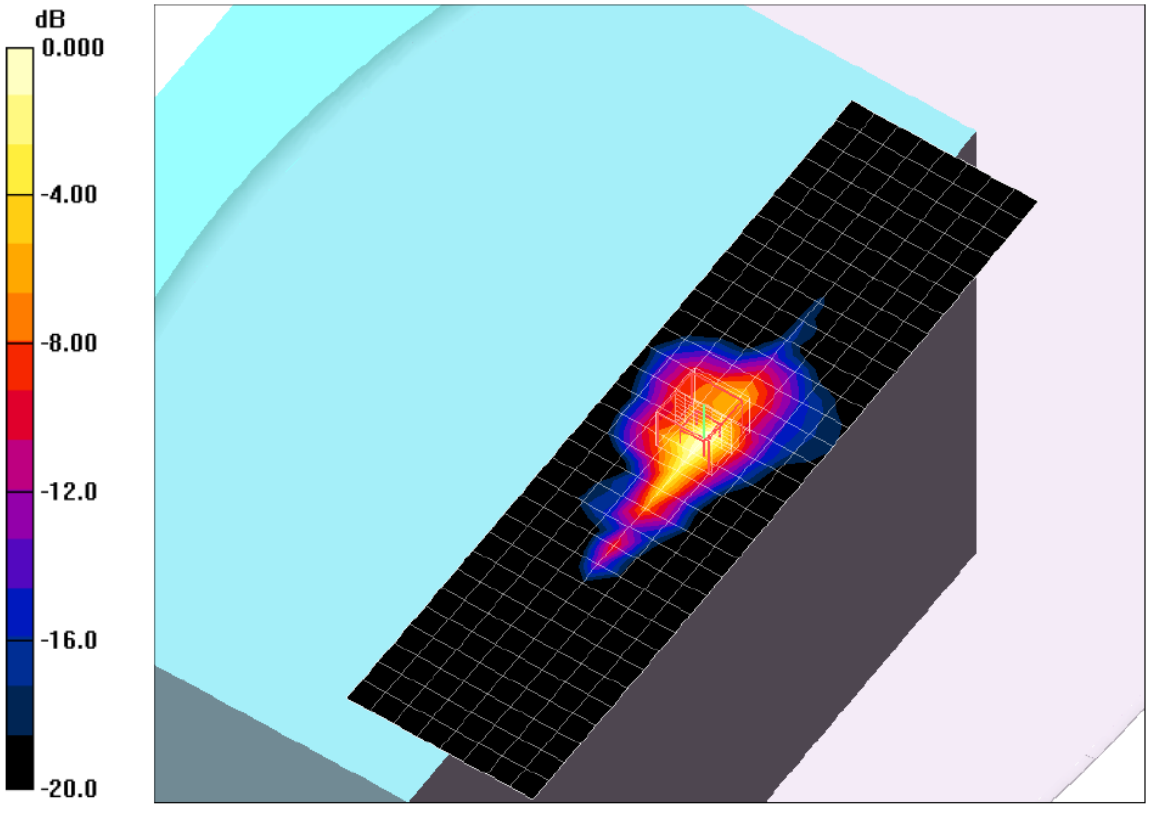
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/20/2012 12:08:15 PM

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 = 5.02 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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, Chain 1_Ch 36/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.66 mW/g

802.11a, Chain 1_Ch 36/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 9.75 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 3.54 W/kg
SAR(1 g) = 0.942 mW/g; SAR(10 g) = 0.264 mW/g
Maximum value of SAR (measured) = 1.70 mW/g



0 dB = 1.70mW/g

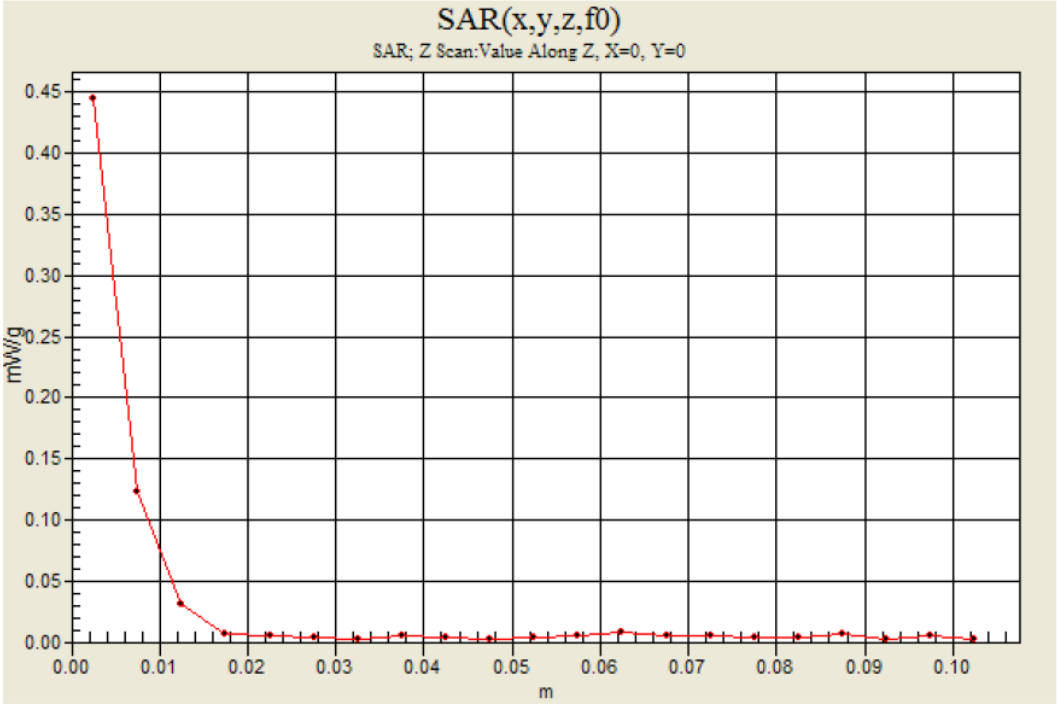
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/20/2012 2:07:51 PM

5GHz bands

Frequency: 5180 MHz; Duty Cycle: 1:1

802.11a, Chain 1_Ch 36/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.445 mW/g



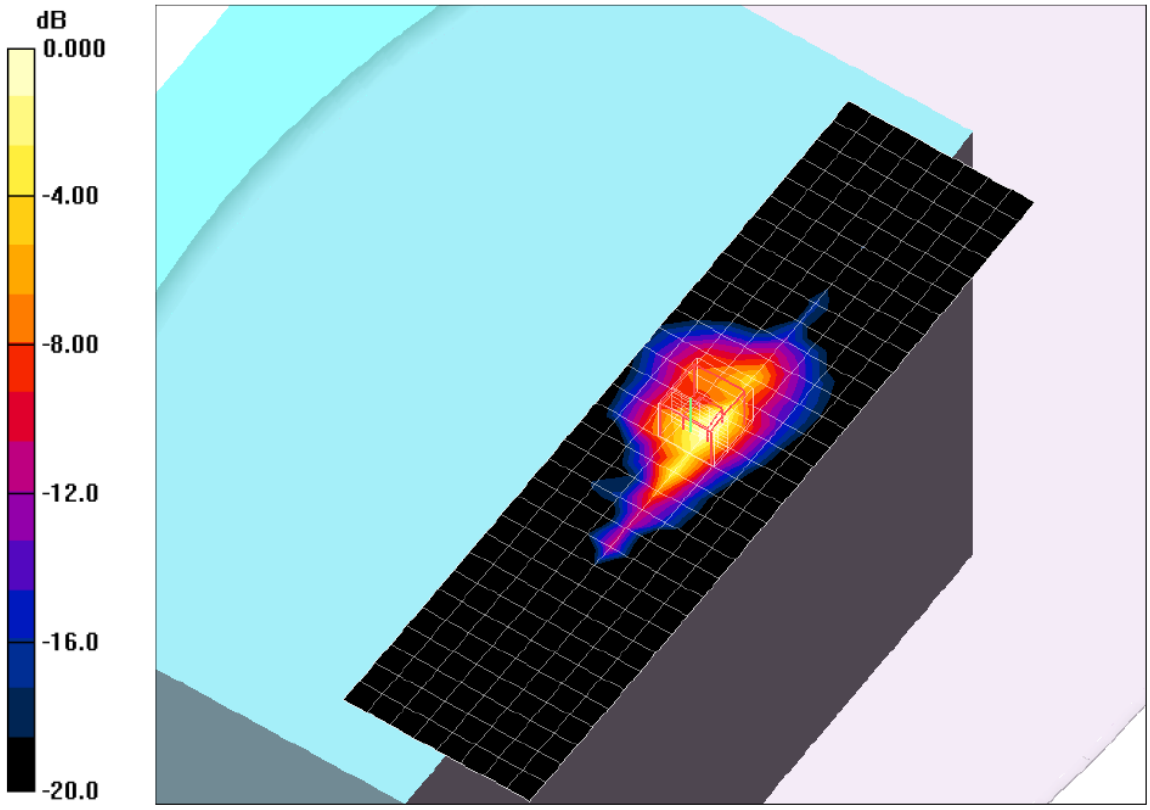
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/20/2012 7:15:51 PM

5GHz bands

Frequency: 5230 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5230 MHz; σ = 5.1 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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, Chain 1_Ch 46/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.89 mW/g

802.11n HT40, Chain 1_Ch 46/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.7 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 4.24 W/kg
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.327 mW/g
Maximum value of SAR (measured) = 2.00 mW/g



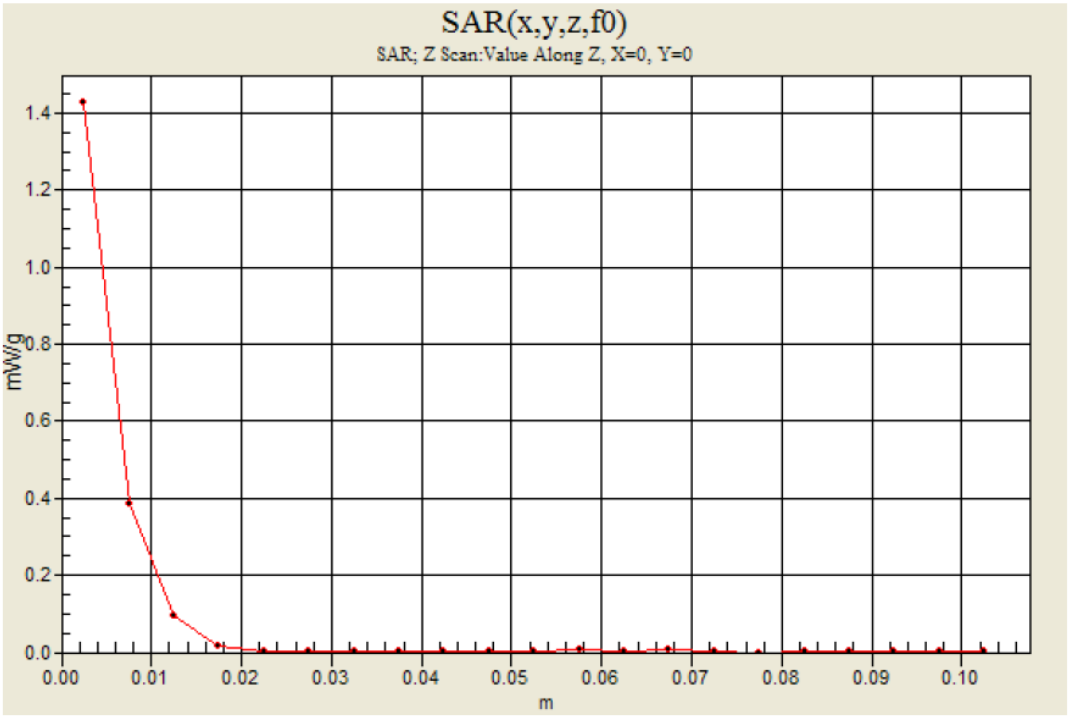
0 dB = 2.00mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/20/2012 7:41:49 PM

5GHz bands

Frequency: 5230 MHz; Duty Cycle: 1:1

802.11n HT40, Chain 1_Ch 46/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.43 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 5/7/2012 12:21:08 PM

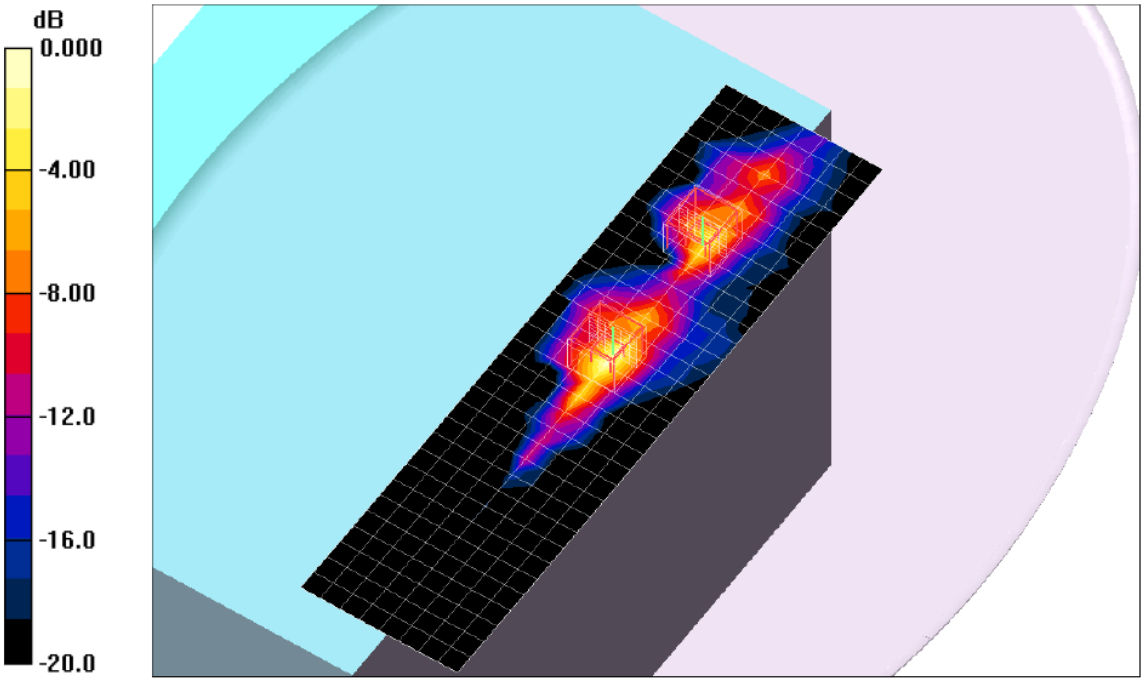
5GHz bands

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 = 5.27 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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,Chain 0,1_Ch 36/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.930 mW/g

802.11n HT20,Chain 0_Ch 36/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 13.3 V/m; Power Drift = -0.114 dB
Peak SAR (extrapolated) = 1.71 W/kg
SAR(1 g) = 0.363 mW/g; SAR(10 g) = 0.100 mW/g
Maximum value of SAR (measured) = 0.675 mW/g

802.11n HT20,Chain 1_Ch 36/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 13.3 V/m; Power Drift = -0.114 dB
Peak SAR (extrapolated) = 2.38 W/kg
SAR(1 g) = 0.592 mW/g; SAR(10 g) = 0.162 mW/g
Maximum value of SAR (measured) = 1.09 mW/g



0 dB = 1.09mW/g

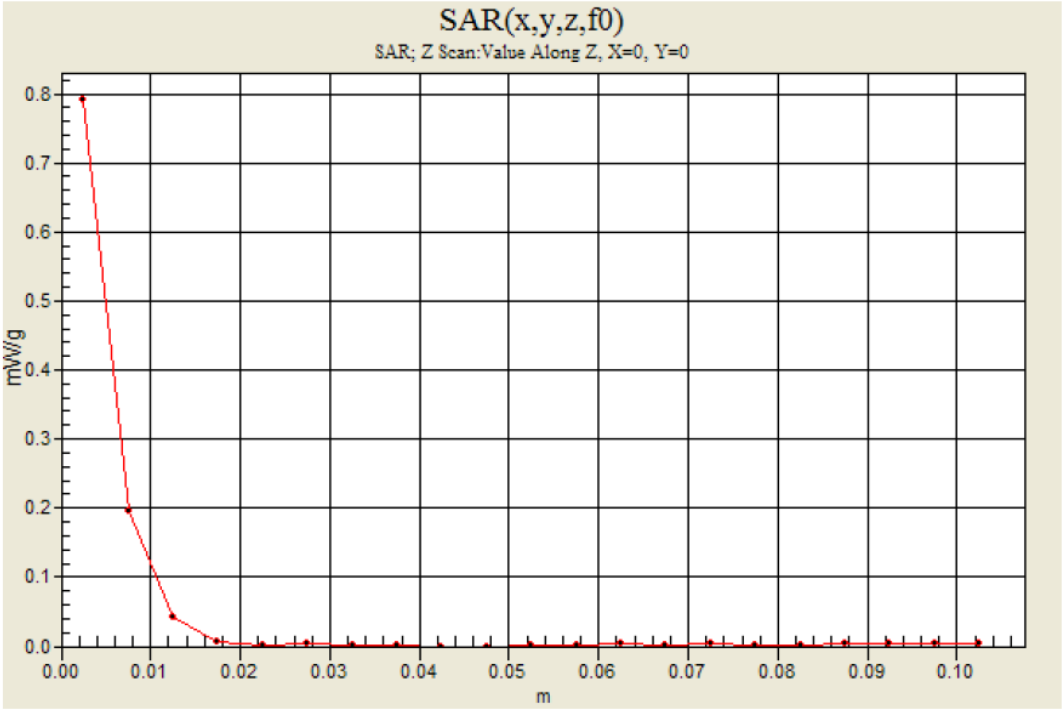
Test Laboratory: UL CCS SAR Lab D Date/Time: 5/7/2012 1:00:21 PM

5GHz bands

Frequency: 5180 MHz; Duty Cycle: 1:1

802.11n HT20,Chain 0,1_Ch 36/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.791 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 5/9/2012 8:12:51 PM

5GHz bands

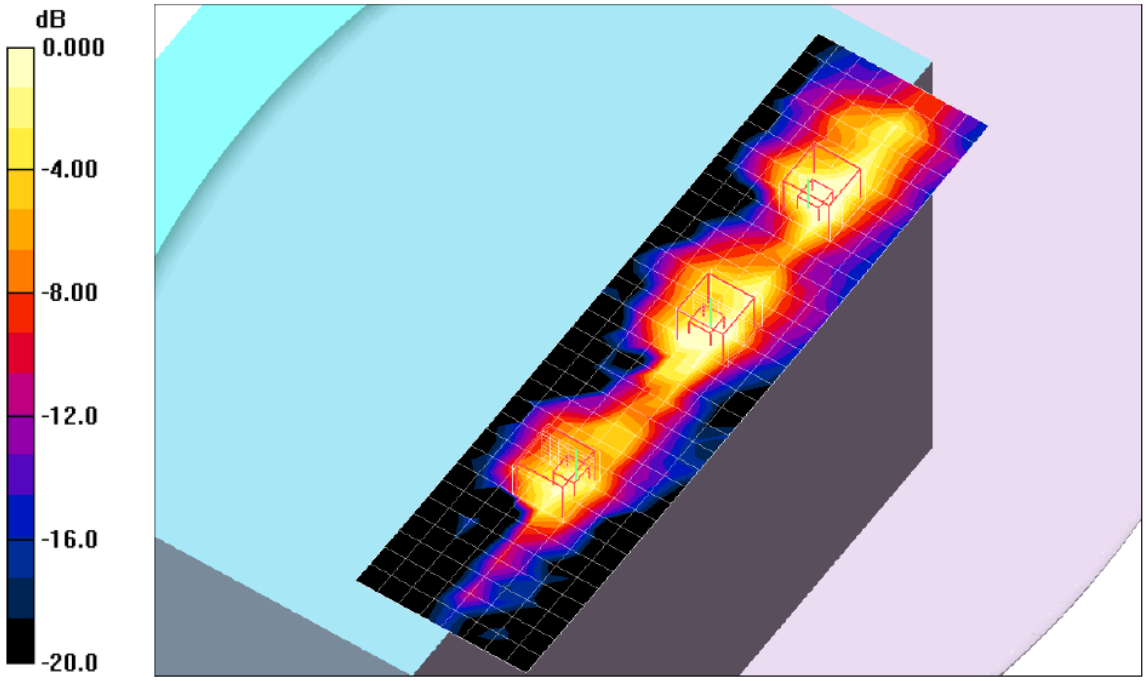
Frequency: 5190 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5190 MHz; σ = 5.09 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.23, 4.23, 4.23); 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,Chain 0,1,2_Ch 38/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.626 mW/g

802.11n HT40,Chain 0_Ch 38/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.1 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 0.379 mW/g; SAR(10 g) = 0.104 mW/g
Maximum value of SAR (measured) = 0.702 mW/g

802.11n HT40,Chain 1_Ch 38/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.1 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 0.423 mW/g; SAR(10 g) = 0.115 mW/g
Maximum value of SAR (measured) = 0.809 mW/g

802.11n HT40,Chain 2_Ch 38/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.1 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 0.619 W/kg
SAR(1 g) = 0.180 mW/g; SAR(10 g) = 0.058 mW/g
Maximum value of SAR (measured) = 0.353 mW/g



0 dB = 0.353mW/g

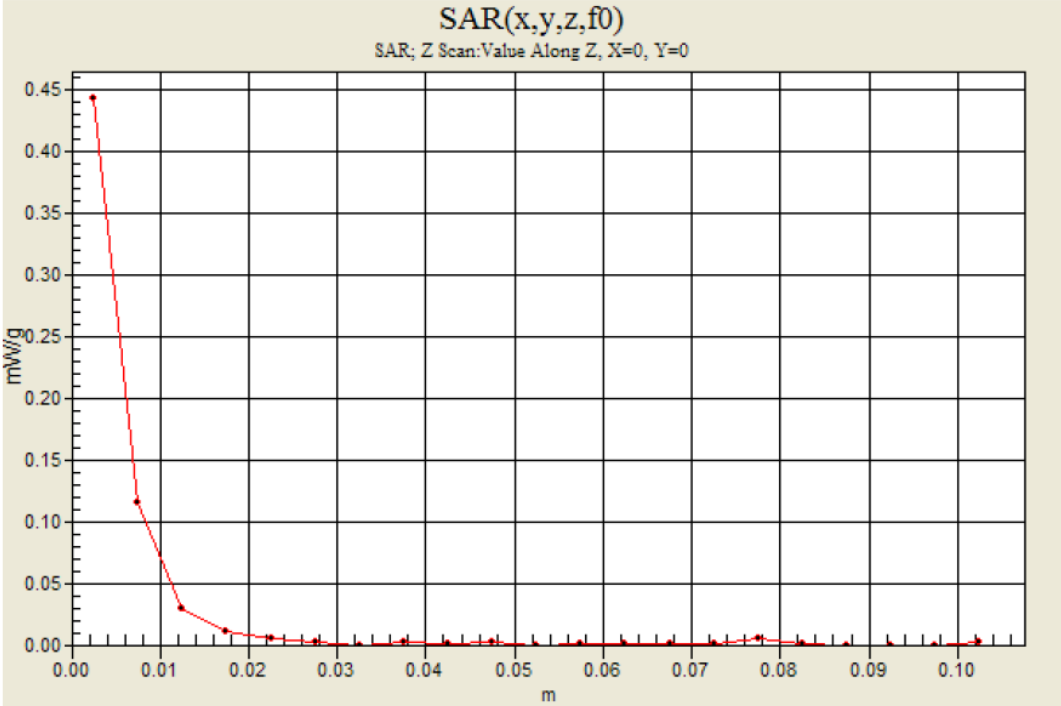
Test Laboratory: UL CCS SAR Lab D Date/Time: 5/9/2012 9:12:38 PM

5GHz bands

Frequency: 5190 MHz; Duty Cycle: 1:1

802.11n HT40,Chain 0,1,2_Ch 38/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.443 mW/g



14.1.3. Worst-Case SAR Plots for 5.3 GHz Band

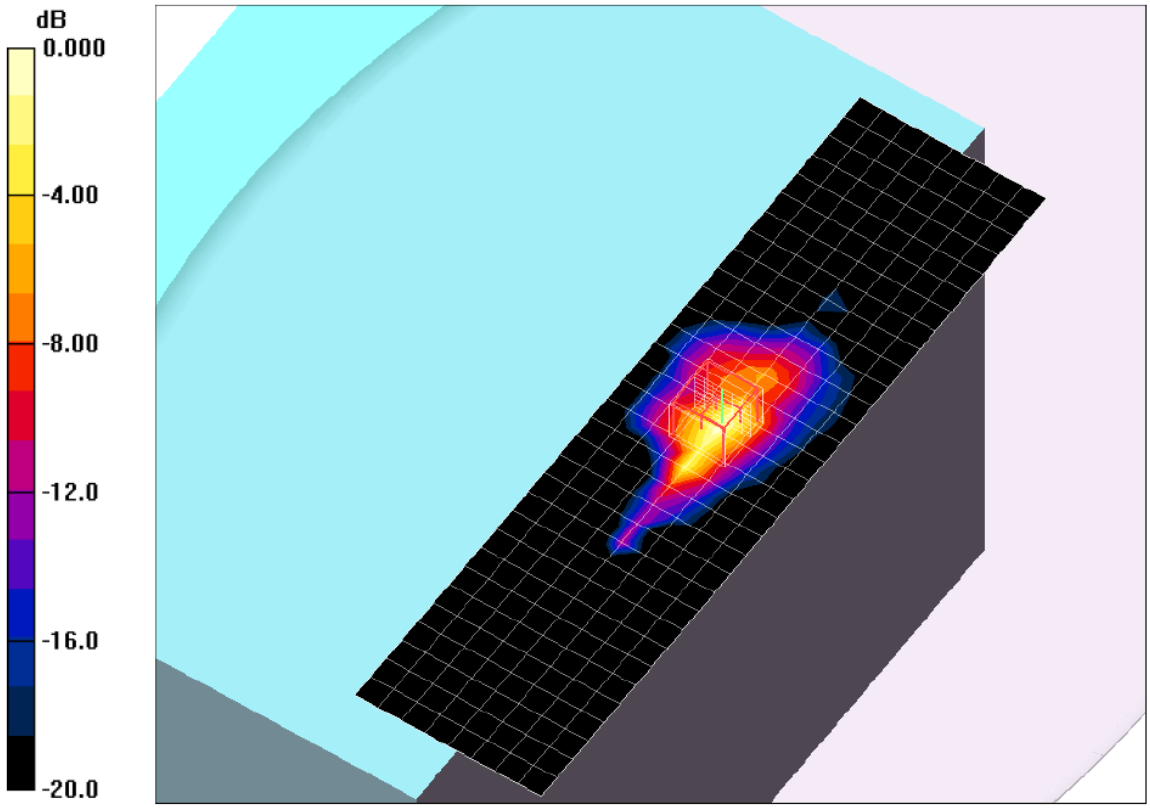
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/18/2012 2:29:53 PM

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 = 5.13 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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, Chain 1_Ch 52/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.85 mW/g

802.11a, Chain 1_Ch 52/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.0 V/m; Power Drift = 0.180 dB
Peak SAR (extrapolated) = 4.42 W/kg
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.329 mW/g
Maximum value of SAR (measured) = 2.10 mW/g



0 dB = 2.10mW/g

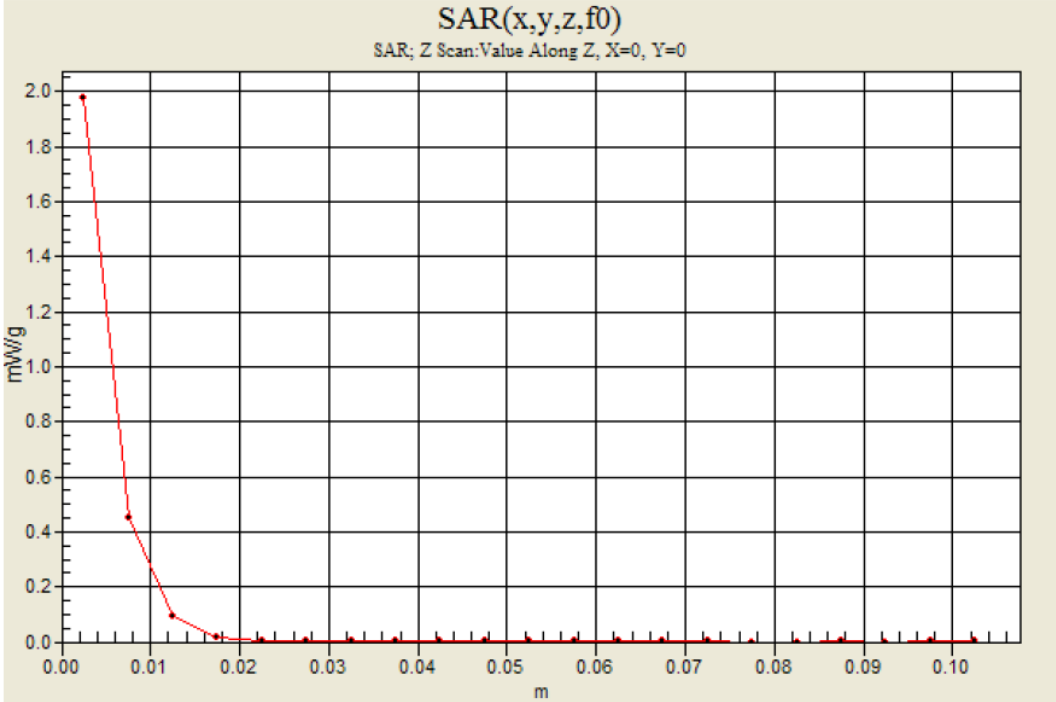
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/18/2012 3:12:21 PM

5GHz bands

Frequency: 5260 MHz; Duty Cycle: 1:1

802.11a, Chain 1_Ch 52/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 1.98 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/18/2012 10:45:31 PM

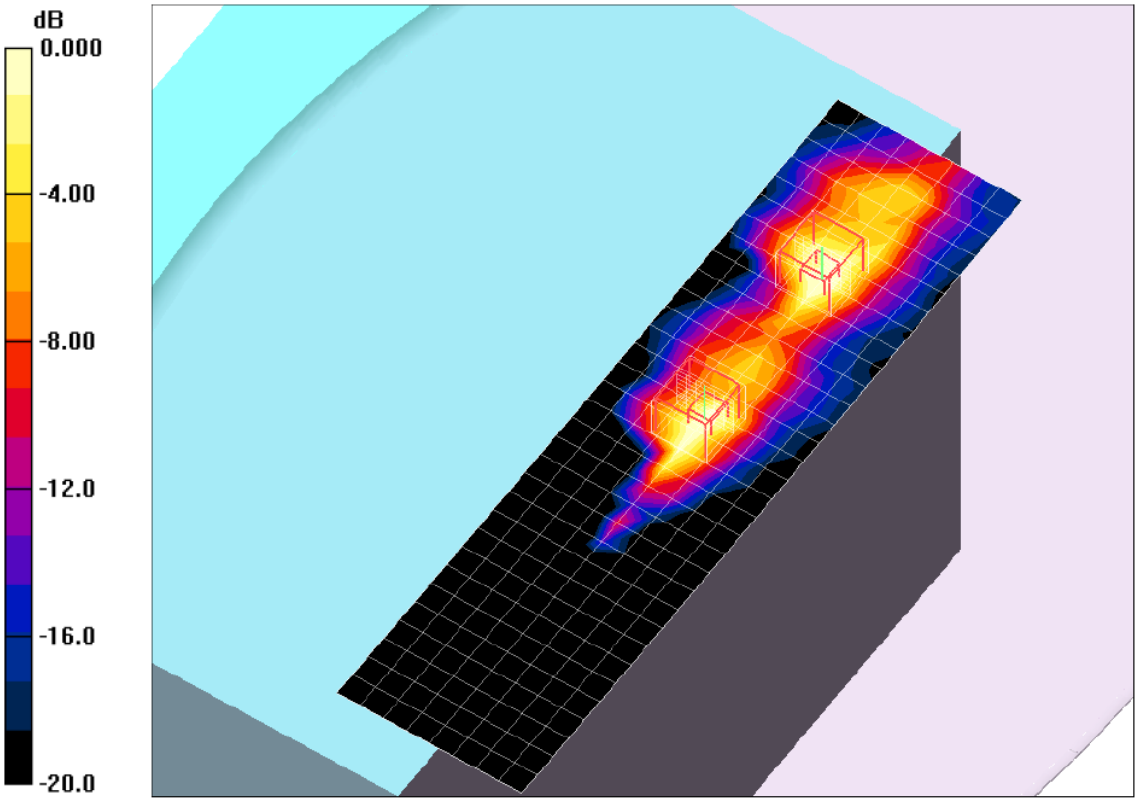
5GHz bands

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 = 5.17 mho/m; ε_r = 51; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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, Chain 0,1_Ch 60/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.73 mW/g

802.11a, Chain 0_Ch 60/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.3 V/m; Power Drift = 0.049 dB
Peak SAR (extrapolated) = 2.92 W/kg
SAR(1 g) = 0.685 mW/g; SAR(10 g) = 0.196 mW/g
Maximum value of SAR (measured) = 1.34 mW/g

802.11a, Chain 1_Ch 60/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.3 V/m; Power Drift = 0.049 dB
Peak SAR (extrapolated) = 1.89 W/kg
SAR(1 g) = 0.490 mW/g; SAR(10 g) = 0.146 mW/g
Maximum value of SAR (measured) = 0.911 mW/g



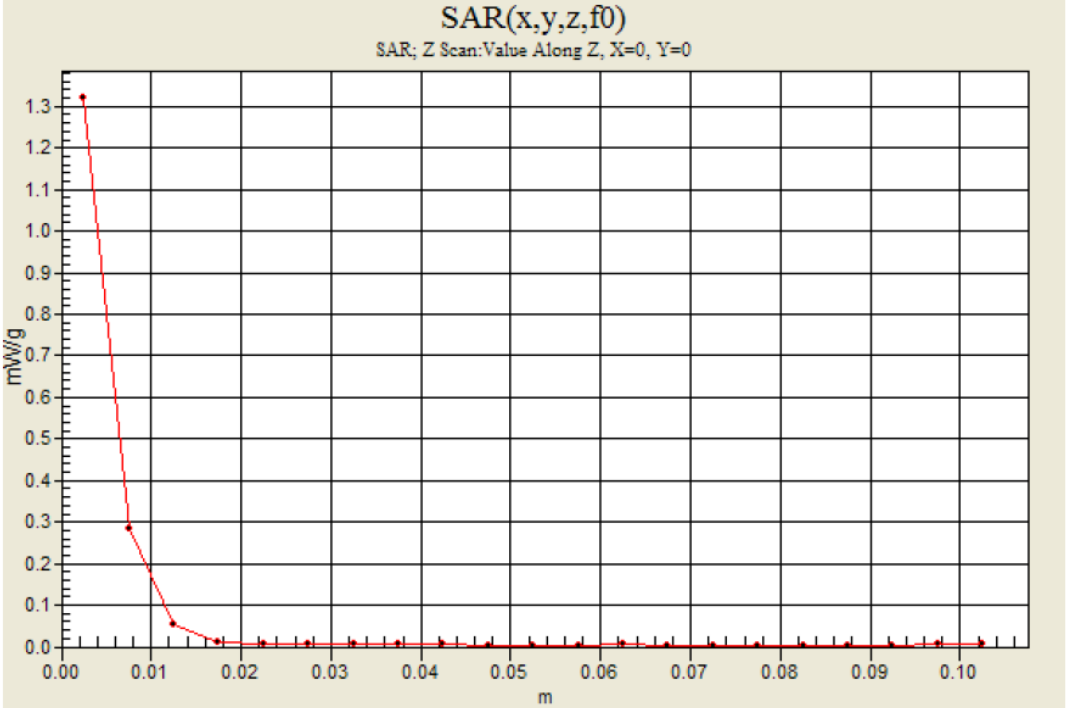
0 dB = 0.911mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/18/2012 11:25:05 PM

5GHz bands

Frequency: 5300 MHz; Duty Cycle: 1:1

802.11a, Chain 0,1_Ch 60/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.32 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/19/2012 3:40:48 AM

5GHz bands

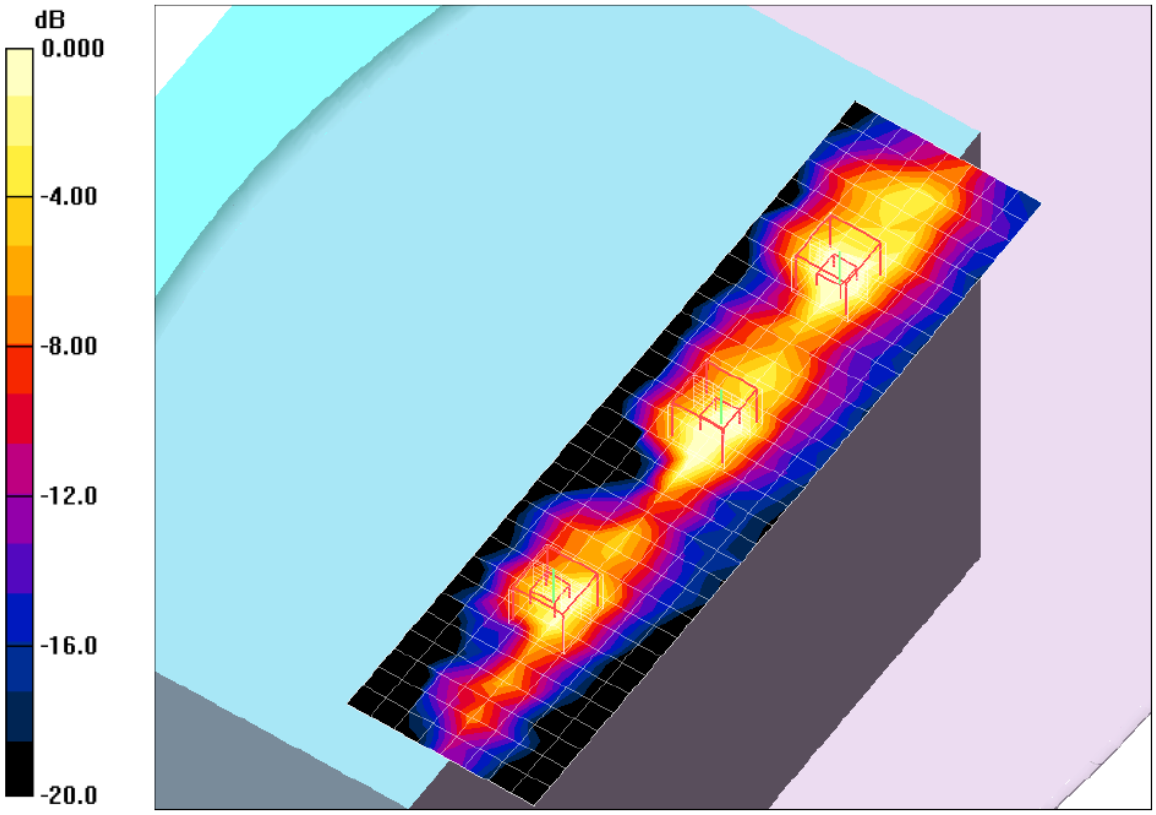
Frequency: 5300 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5300 MHz; σ = 5.17 mho/m; ε_r = 51; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.11, 4.11, 4.11); 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, Chain 0,1,2_Ch 60/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.64 mW/g

802.11a, Chain 0_Ch 60/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.0 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 2.74 W/kg
SAR(1 g) = 0.655 mW/g; SAR(10 g) = 0.188 mW/g
Maximum value of SAR (measured) = 1.28 mW/g

802.11a, Chain 1_Ch 60/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.0 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 1.95 W/kg
SAR(1 g) = 0.527 mW/g; SAR(10 g) = 0.158 mW/g
Maximum value of SAR (measured) = 1.02 mW/g

802.11a, Chain 2_Ch 60/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 17.0 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 0.407 mW/g; SAR(10 g) = 0.123 mW/g
Maximum value of SAR (measured) = 0.688 mW/g



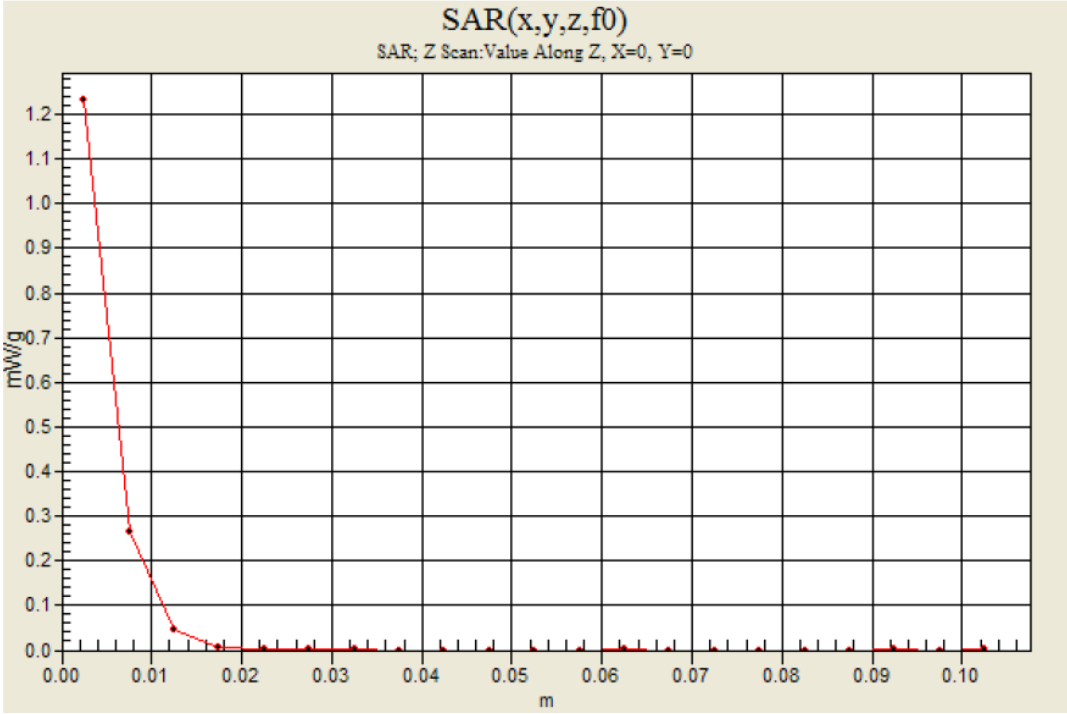
0 dB = 0.688mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/19/2012 3:45:05 AM

5GHz bands

Frequency: 5300 MHz; Duty Cycle: 1:1

802.11a, Chain 0,1,2_Ch 60/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.23 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 5/17/2012 6:14:51 PM

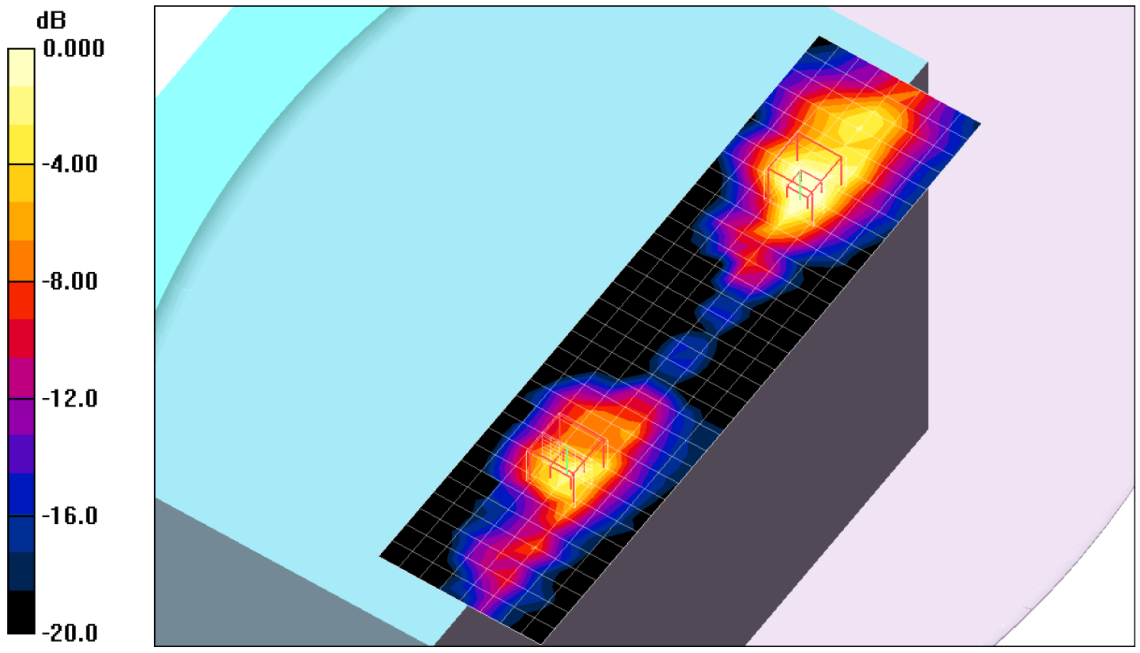
5GHz bands

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 = 5.27 mho/m; ε_r = 47.6; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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,Chain 0,2_Ch 56/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.83 mW/g

802.11n HT20,Chain 0_Ch 56/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.0 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 5.23 W/kg
SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.340 mW/g
Maximum value of SAR (measured) = 2.25 mW/g

802.11n HT20,Chain 2_Ch 56/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.0 V/m; Power Drift = 0. 02 dB
Peak SAR (extrapolated) = 1.73 W/kg
SAR(1 g) = 0.485 mW/g; SAR(10 g) = 0.165 mW/g
Maximum value of SAR (measured) = 0.884 mW/g



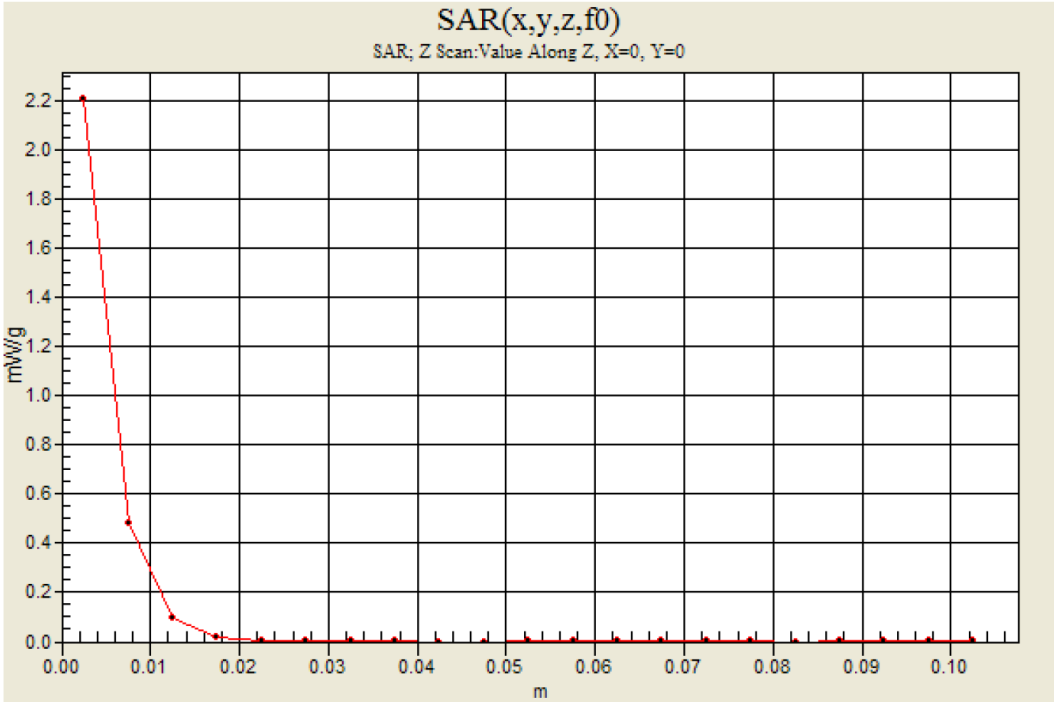
0 dB = 0.884mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 5/17/2012 6:57:48 PM

5GHz bands

Frequency: 5280 MHz; Duty Cycle: 1:1

802.11n HT20,Chain 0,2_Ch 56/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.21 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/20/2012 8:55:58 PM

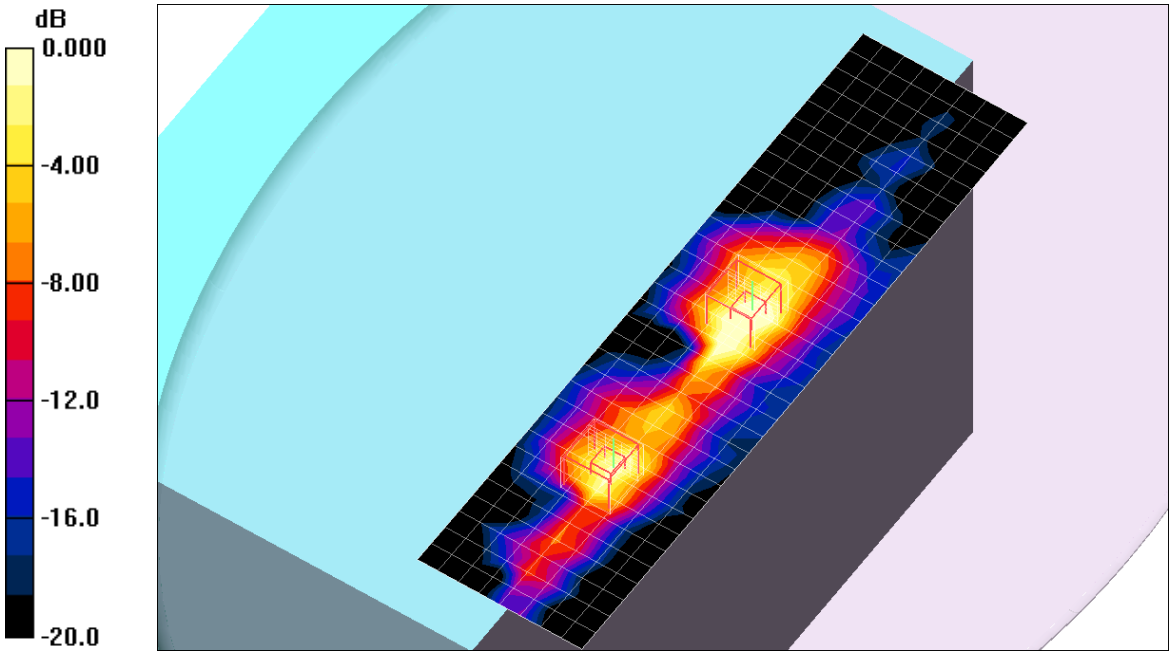
5GHz bands

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 = 5.18 mho/m; ε_r = 51.3; 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(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,Chain 1,2_Ch 54/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.97 mW/g

802.11n HT40,Chain 1_Ch 54/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.3 V/m; Power Drift = -0.147 dB
Peak SAR (extrapolated) = 4.25 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.346 mW/g
Maximum value of SAR (measured) = 2.15 mW/g

802.11n HT40,Chain 2_Ch 54/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.3 V/m; Power Drift = -0.147 dB
Peak SAR (extrapolated) = 2.49 W/kg
SAR(1 g) = 0.703 mW/g; SAR(10 g) = 0.230 mW/g
Maximum value of SAR (measured) = 1.16 mW/g



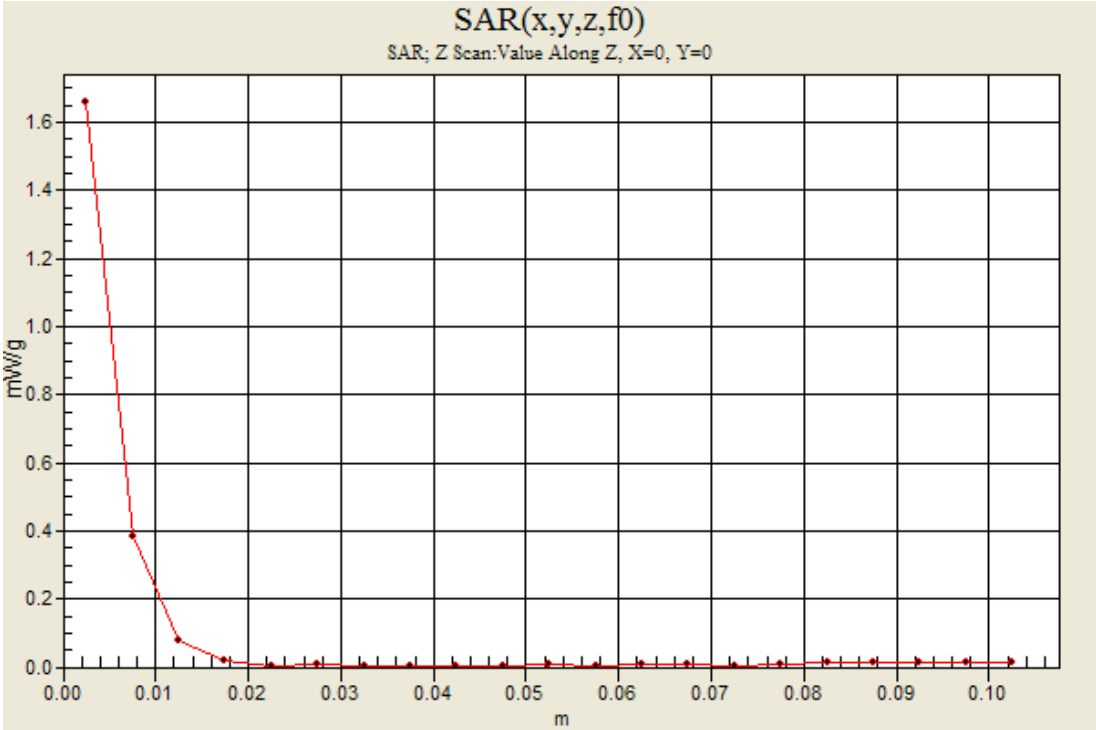
0 dB = 1.16mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/20/2012 9:51:33 PM

5GHz bands

Frequency: 5270 MHz; Duty Cycle: 1:1

802.11n HT40,Chain 1,2_Ch 54/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.66 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/20/2012 6:33:39 PM

5GHz bands

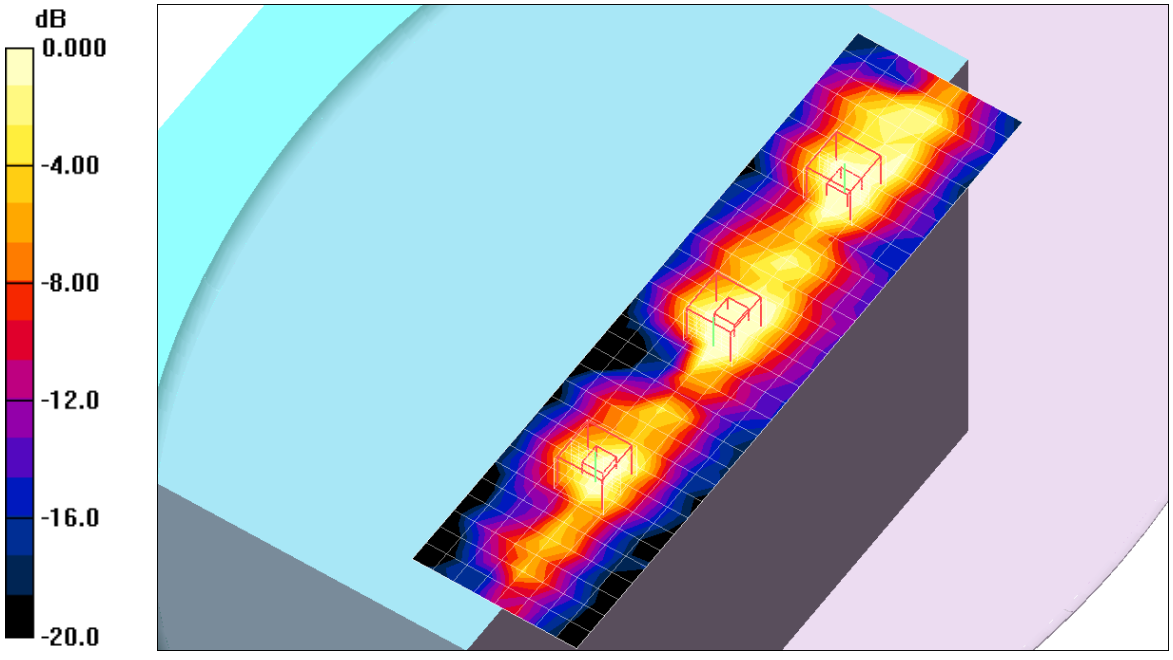
Frequency: 5320 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5320 MHz; σ = 5.25 mho/m; ε_r = 51.2; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(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,Chain 0,1,2_Ch 64/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.20 mW/g

802.11n HT20,Chain 0_Ch 64/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 23.4 V/m; Power Drift = -0.132 dB
Peak SAR (extrapolated) = 5.10 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.314 mW/g
Maximum value of SAR (measured) = 2.25 mW/g

802.11n HT20,Chain 1_Ch 64/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 23.4 V/m; Power Drift = -0.132 dB
Peak SAR (extrapolated) = 3.27 W/kg
SAR(1 g) = 0.798 mW/g; SAR(10 g) = 0.261 mW/g
Maximum value of SAR (measured) = 1.46 mW/g

802.11n HT20,Chain 2_Ch 64/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 23.4 V/m; Power Drift = -0.132 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 0.445 mW/g; SAR(10 g) = 0.149 mW/g
Maximum value of SAR (measured) = 0.763 mW/g



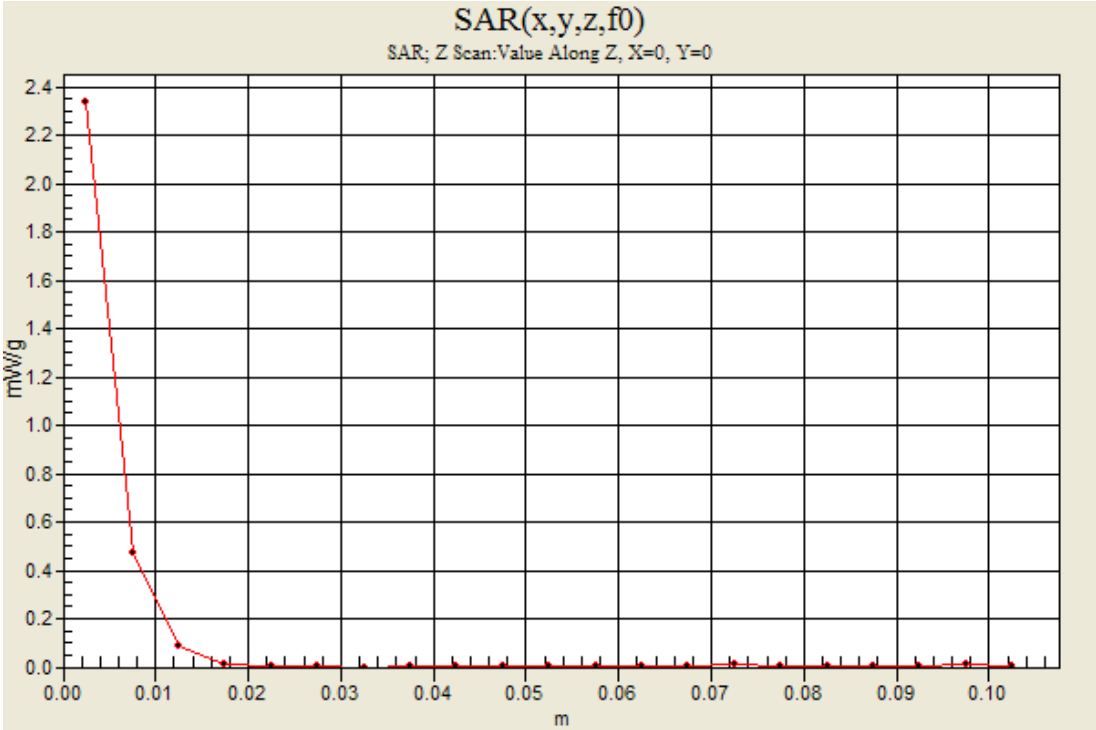
0 dB = 0.763mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 6/20/2012 8:49:46 PM

5GHz bands

Frequency: 5320 MHz; Duty Cycle: 1:1

802.11n HT20,Chain 0,1,2_Ch 64/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.34 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/19/2012 9:50:04 AM

5GHz bands

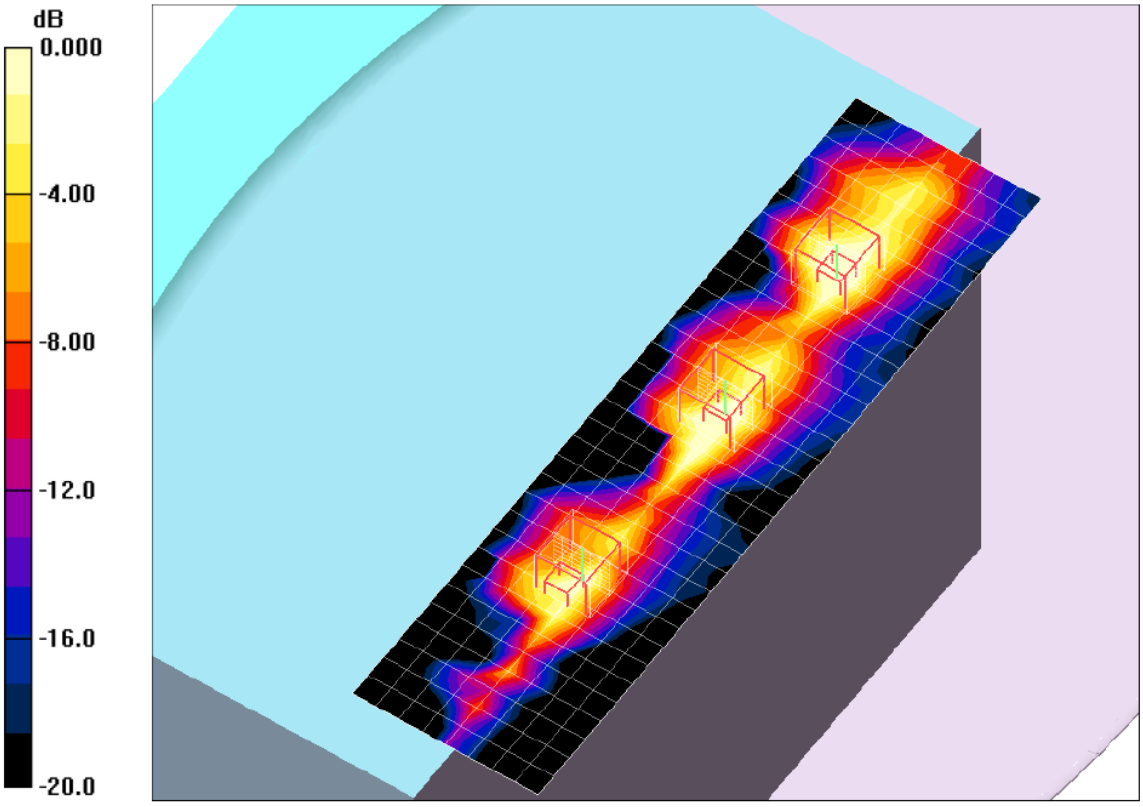
Frequency: 5270 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5270 MHz; σ = 5.15 mho/m; ε_r = 49.5; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(4.11, 4.11, 4.11); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11n HT40, Chain 0,1,2_Ch 54/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.38 mW/g

802.11n HT40, Chain 0_Ch 54/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.6 V/m; Power Drift = 0.075 dB
Peak SAR (extrapolated) = 5.17 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.343 mW/g
Maximum value of SAR (measured) = 2.28 mW/g

802.11n HT40, Chain 1_Ch 54/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.6 V/m; Power Drift = 0.075 dB
Peak SAR (extrapolated) = 4.19 W/kg
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.312 mW/g
Maximum value of SAR (measured) = 2.09 mW/g

802.11n HT40, Chain 2_Ch 54/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.6 V/m; Power Drift = 0.075 dB
Peak SAR (extrapolated) = 2.06 W/kg
SAR(1 g) = 0.588 mW/g; SAR(10 g) = 0.184 mW/g
Maximum value of SAR (measured) = 1.04 mW/g



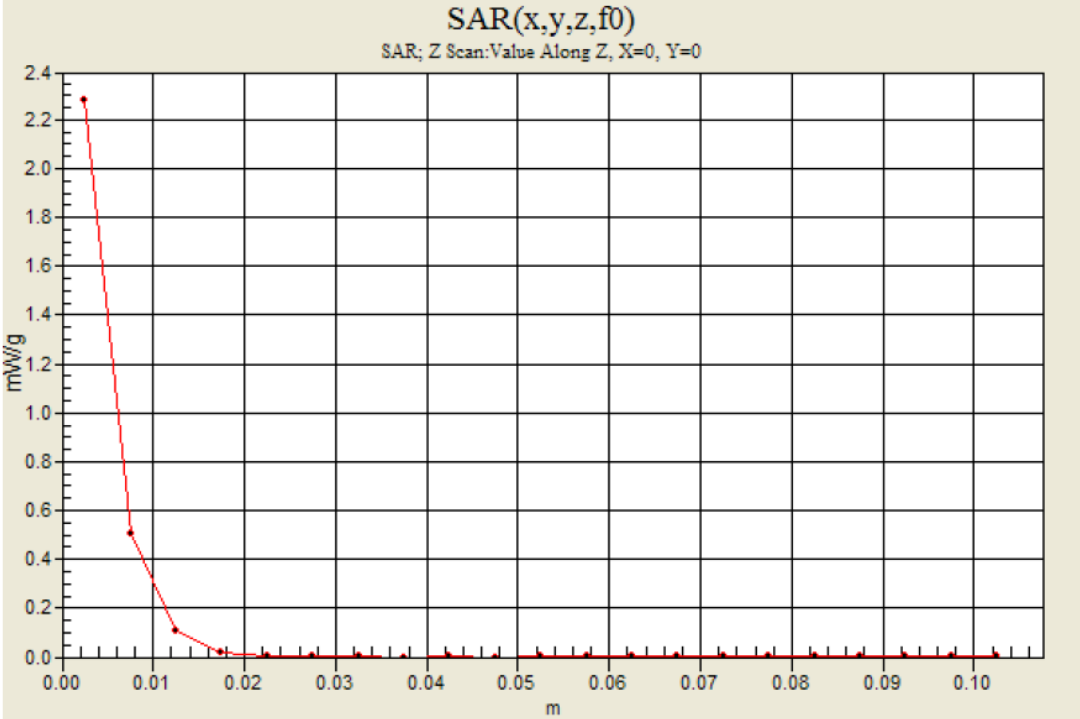
0 dB = 1.04mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/19/2012 11:09:59 AM

5GHz bands

Frequency: 5270 MHz; Duty Cycle: 1:1

802.11n HT40, Chain 0,1,2_Ch 54/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.28 mW/g



14.1.4. Worst-Case SAR Plots for 5.5 GHz Band

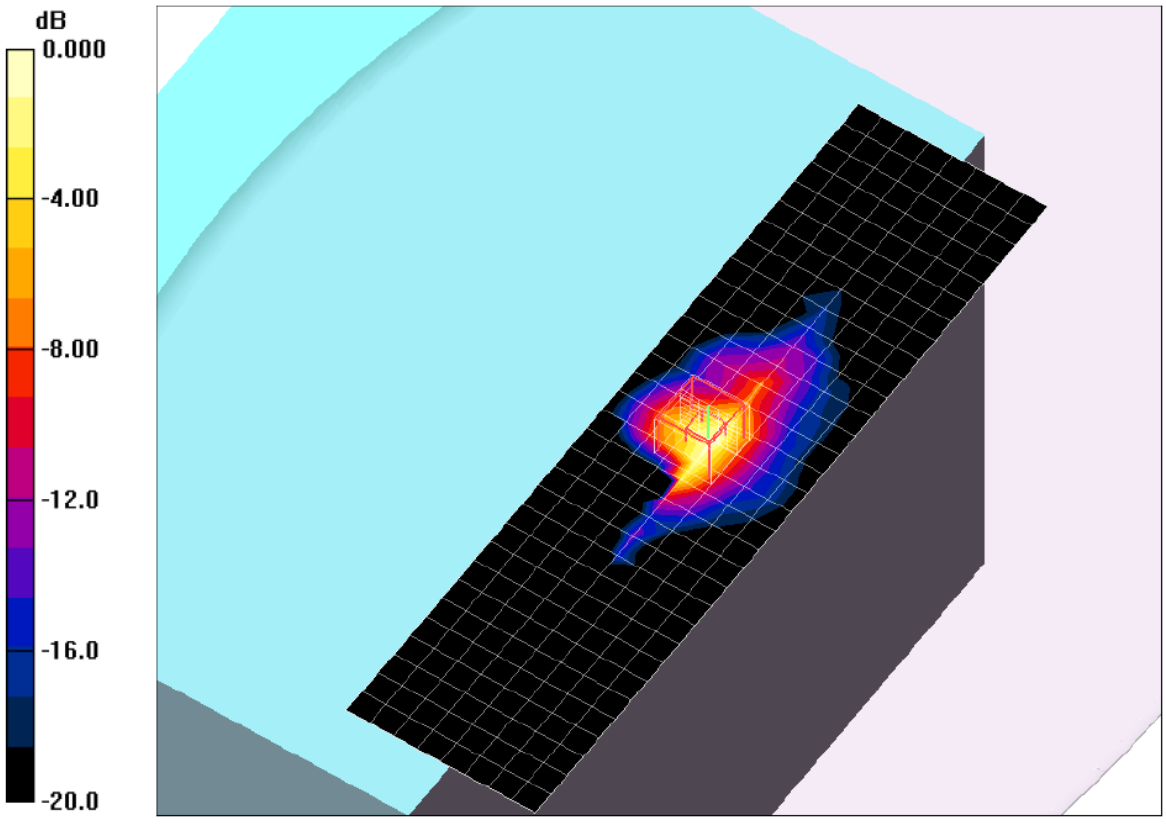
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/14/2012 7:05:57 PM

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 = 5.63 mho/m; ε_r = 49.1; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003

802.11a ,Chain 1_Ch 104/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.85 mW/g

802.11a ,Chain 1_Ch 104/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.6 V/m; Power Drift = 0.060 dB
Peak SAR (extrapolated) = 4.59 W/kg
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.358 mW/g
Maximum value of SAR (measured) = 2.10 mW/g



0 dB = 2.10mW/g

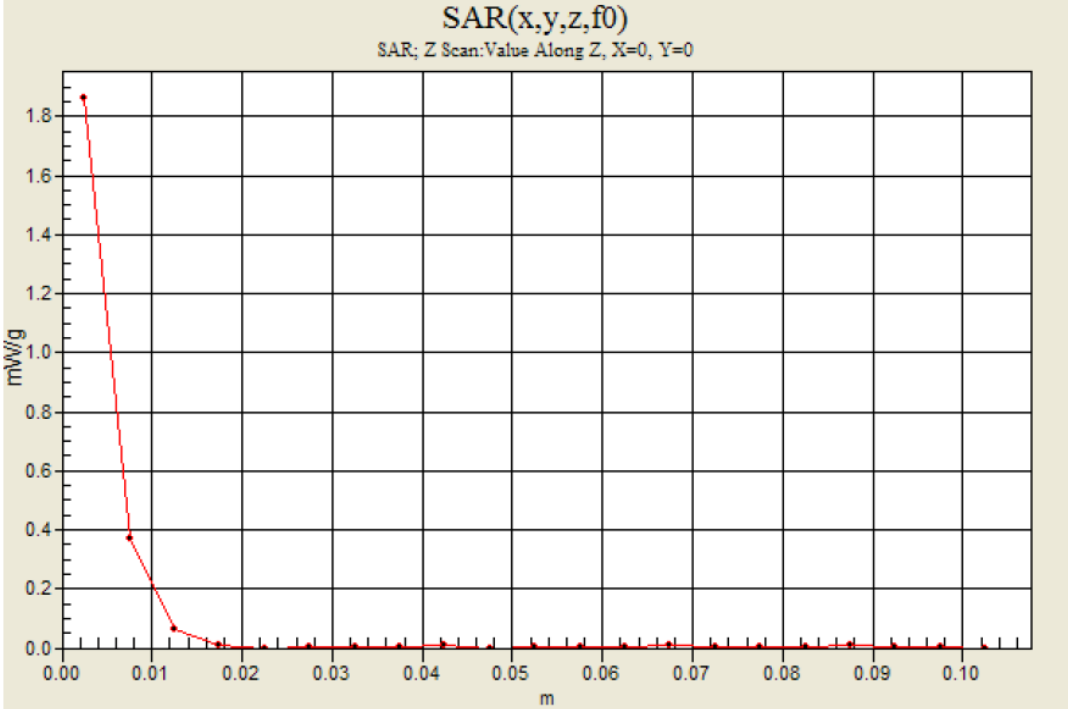
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/14/2012 7:44:05 PM

5GHz bands

Frequency: 5520 MHz; Duty Cycle: 1:1

802.11a ,Chain 1_Ch 104/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 1.86 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/16/2012 7:19:40 PM

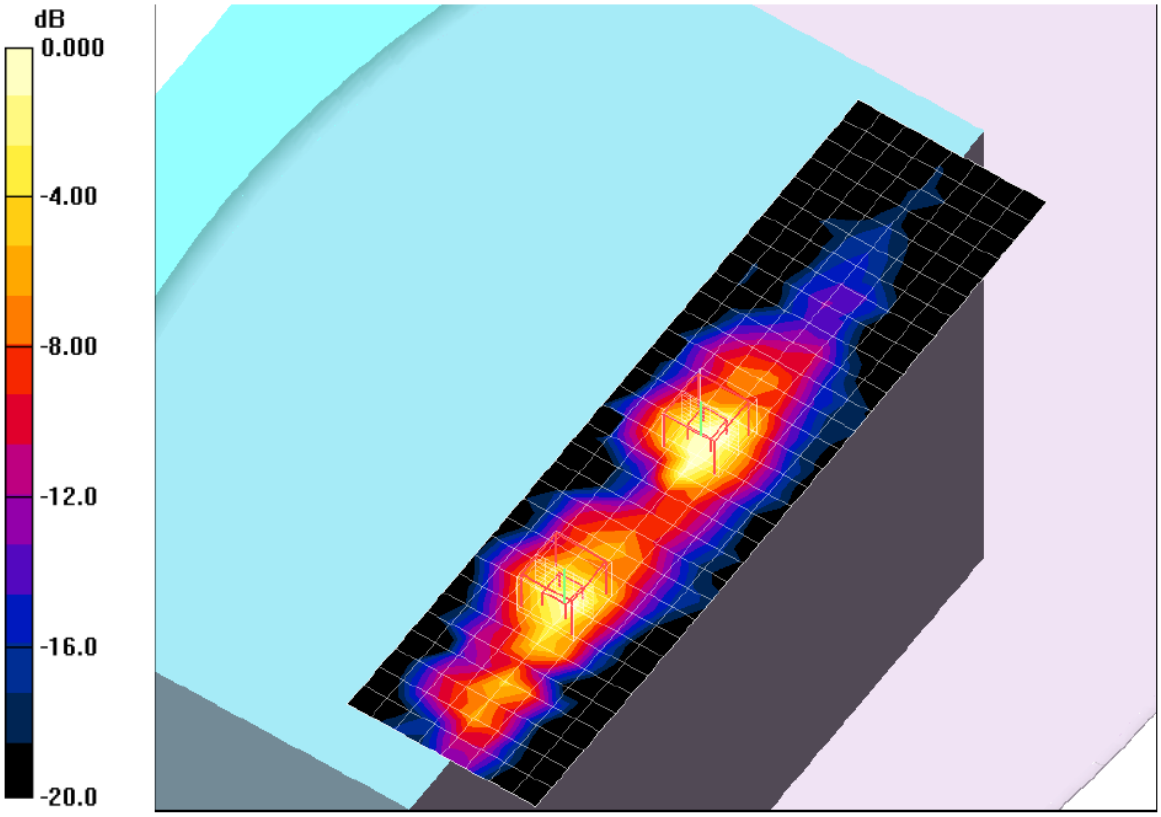
5GHz bands

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 = 5.72 mho/m; ε_r = 50.1; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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,Chain 1,2_Ch 136/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.10 mW/g

802.11a,Chain 1_Ch 136/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 14.5 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 2.42 W/kg
SAR(1 g) = 0.578 mW/g; SAR(10 g) = 0.181 mW/g
Maximum value of SAR (measured) = 1.02 mW/g

802.11a,Chain 2_Ch 136/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 14.5 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 1.65 W/kg
SAR(1 g) = 0.405 mW/g; SAR(10 g) = 0.129 mW/g
Maximum value of SAR (measured) = 0.756 mW/g



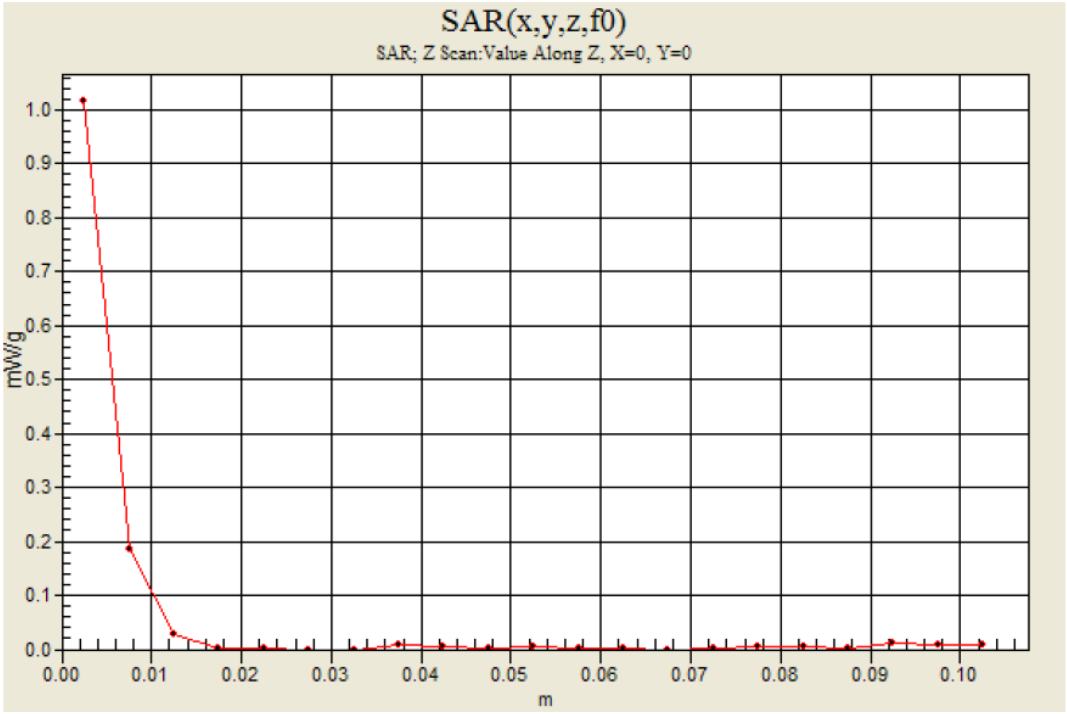
0 dB = 0.756mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/16/2012 8:00:10 PM

5GHz bands

Frequency: 5680 MHz; Duty Cycle: 1:1

802.11a,Chain 1,2_Ch 136/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.02 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/16/2012 9:58:55 PM

5GHz bands

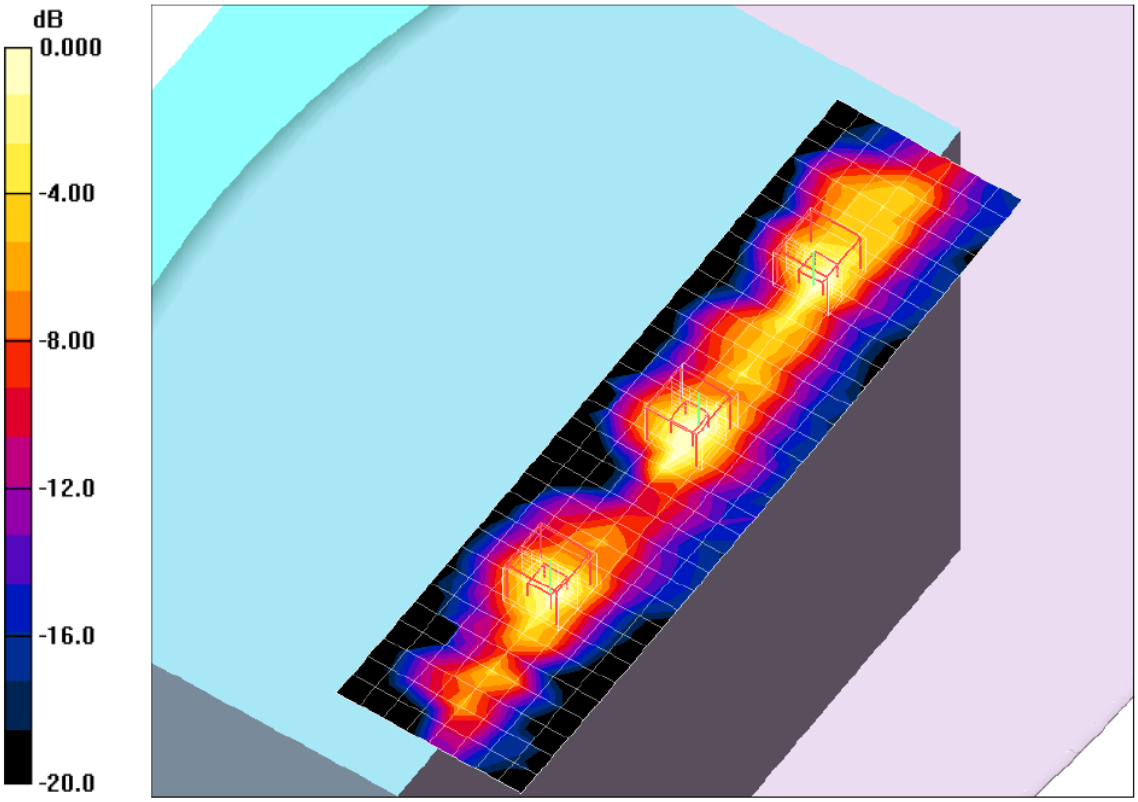
Frequency: 5600 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5600 MHz; σ = 5.62 mho/m; ε_r = 50.2; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.57, 3.57, 3.57); 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,Chain 0,1,2_Ch 120/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.05 mW/g

802.11a,Chain 0_Ch 120/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 14.5 V/m; Power Drift = 0.088 dB
Peak SAR (extrapolated) = 2.15 W/kg
SAR(1 g) = 0.483 mW/g; SAR(10 g) = 0.143 mW/g
Maximum value of SAR (measured) = 0.967 mW/g

802.11a,Chain 1_Ch 120/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 14.5 V/m; Power Drift = 0.088 dB
Peak SAR (extrapolated) = 2.29 W/kg
SAR(1 g) = 0.572 mW/g; SAR(10 g) = 0.178 mW/g
Maximum value of SAR (measured) = 1.01 mW/g

802.11a,Chain 2_Ch 120/Zoom Scan (7x7x9)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 14.5 V/m; Power Drift = 0.088 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 0.411 mW/g; SAR(10 g) = 0.133 mW/g
Maximum value of SAR (measured) = 0.757 mW/g



0 dB = 0.757mW/g

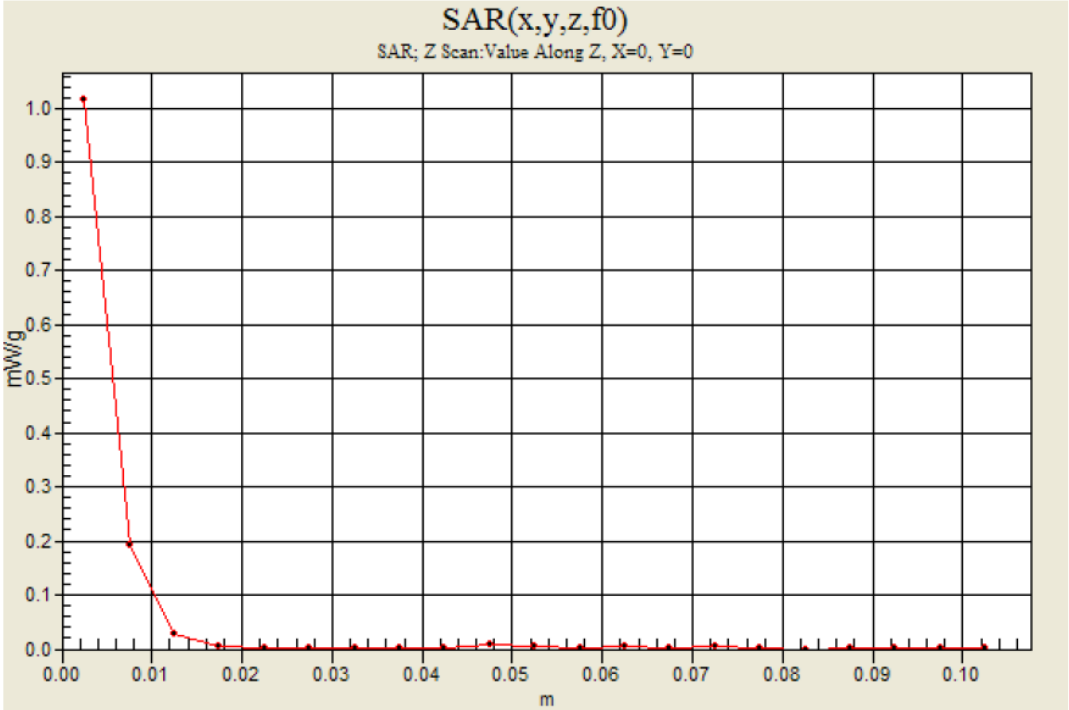
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/16/2012 10:52:47 PM

5GHz bands

Frequency: 5600 MHz; Duty Cycle: 1:1

802.11a,Chain 0,1,2_Ch 120/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 1.02 mW/g



Test Laboratory: UL CCS SAR Lab D
Date/Time: 5/18/2012 6:24:41 AM

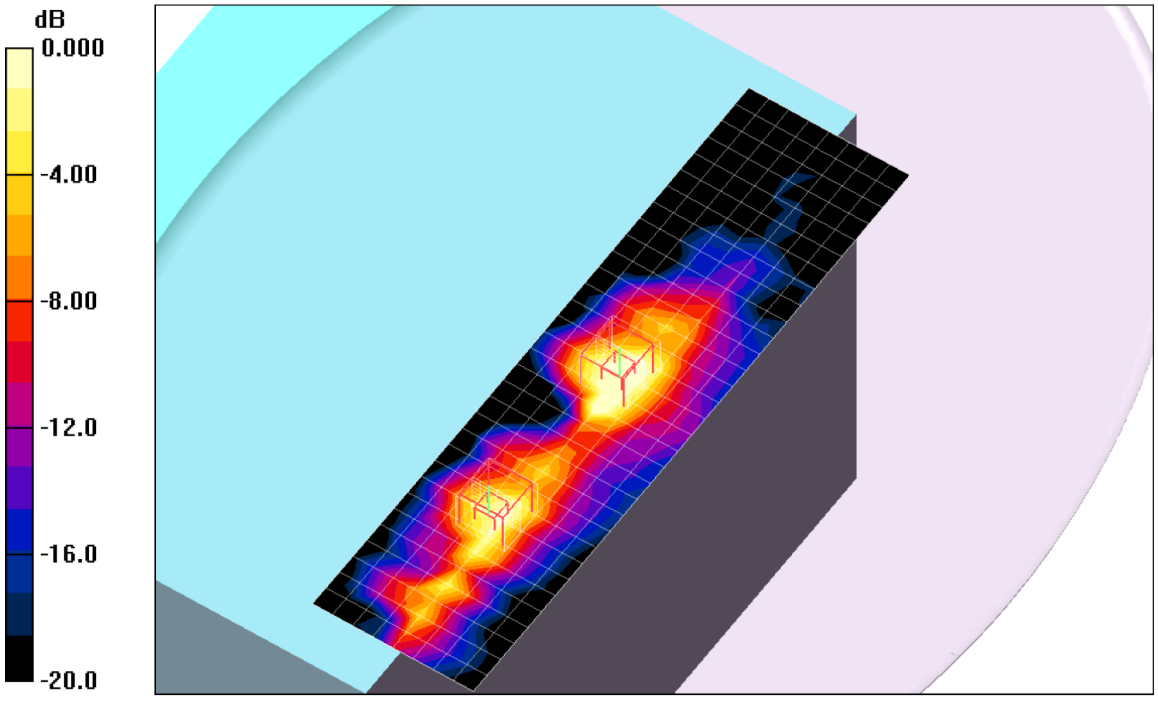
5GHz bands

Frequency: 5500 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5500 MHz; σ = 5.86 mho/m; ε_r = 47.2; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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 HT20,Chain 1,2_Ch 100/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.09 mW/g

802.11n HT20,Chain 1_Ch 100/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.6 V/m; Power Drift = 0.044 dB
Peak SAR (extrapolated) = 4.20 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.325 mW/g
Maximum value of SAR (measured) = 1.84 mW/g

802.11n HT20,Chain 2_Ch 100/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.6 V/m; Power Drift = 0.044 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 0.541 mW/g; SAR(10 g) = 0.177 mW/g
Maximum value of SAR (measured) = 0.970 mW/g



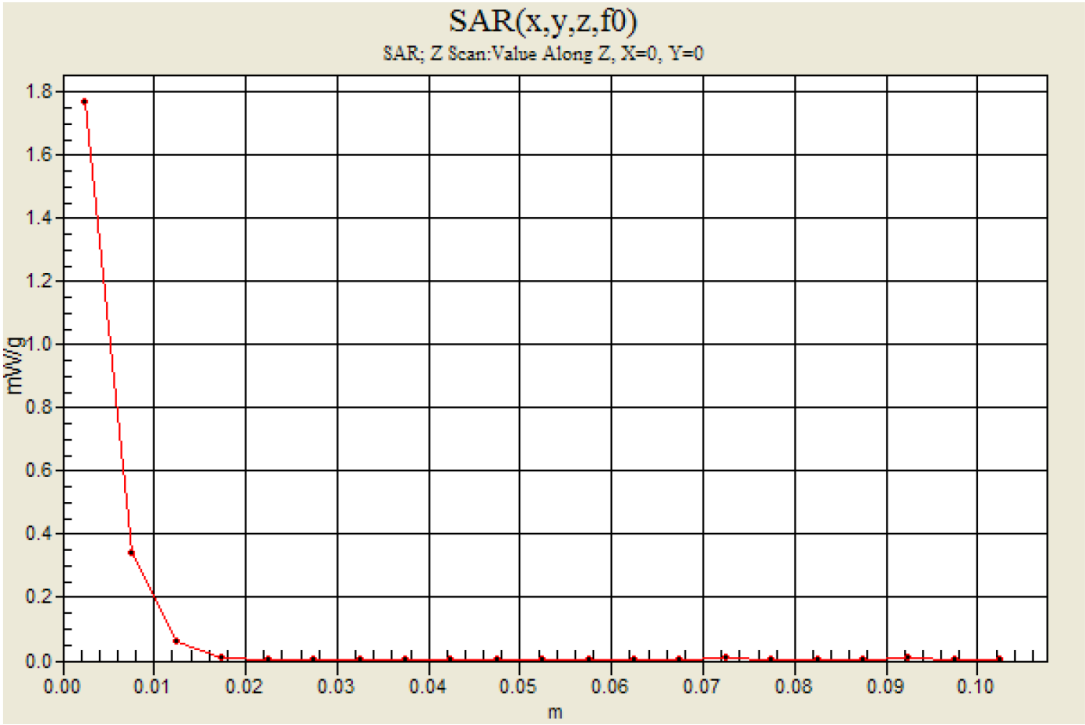
0 dB = 0.970mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 5/18/2012 7:06:49 AM

5GHz bands

Frequency: 5500 MHz; Duty Cycle: 1:1

802.11n HT20,Chain 1,2_Ch 100/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.77 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 6/21/2012 11:41:09 AM

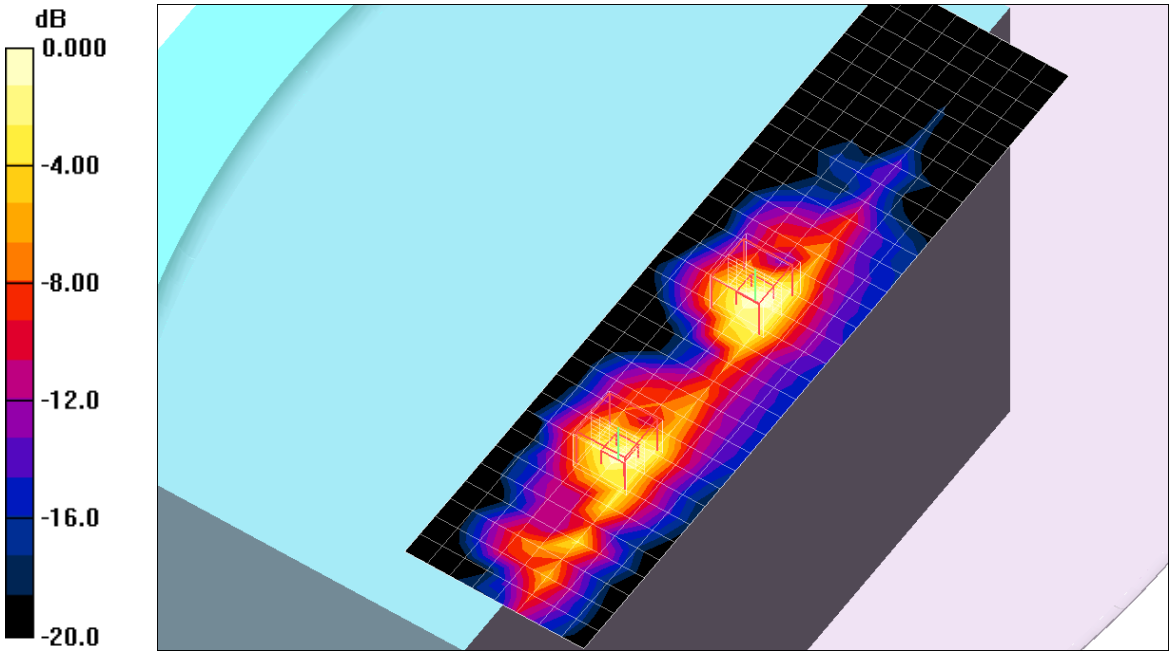
5GHz bands

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 = 5.53 mho/m; ε_r = 50.8; 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(3.72, 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,Chain 1,2_Ch 110/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.79 mW/g

802.11n HT40,Chain 1_Ch 110/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.8 V/m; Power Drift = -0.106 dB
Peak SAR (extrapolated) = 4.57 W/kg
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.373 mW/g
Maximum value of SAR (measured) = 2.19 mW/g

802.11n HT40,Chain 2_Ch 110/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.8 V/m; Power Drift = -0.106 dB
Peak SAR (extrapolated) = 3.41 W/kg
SAR(1 g) = 0.871 mW/g; SAR(10 g) = 0.299 mW/g
Maximum value of SAR (measured) = 1.62 mW/g



0 dB = 1.62mW/g

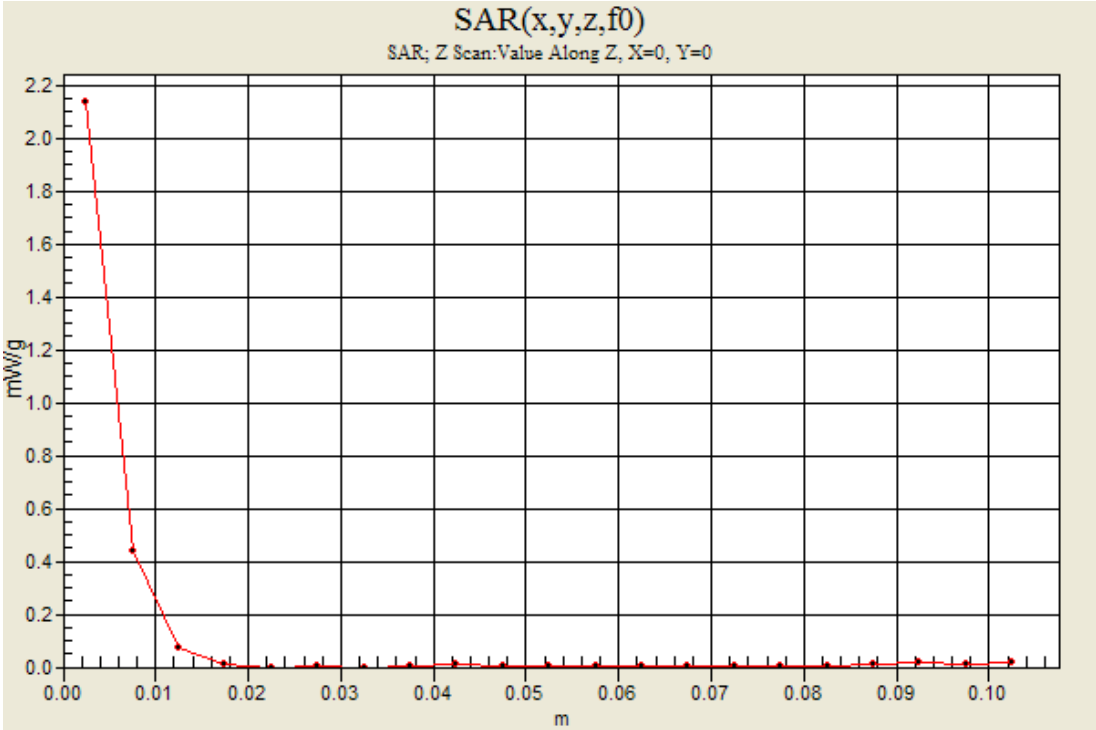
Test Laboratory: UL CCS SAR Lab D Date/Time: 6/21/2012 12:20:44 PM

5GHz bands

Frequency: 5550 MHz; Duty Cycle: 1:1

802.11n HT40,Chain 1,2_Ch 110/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 2.14 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/17/2012 5:46:36 PM

5GHz bands

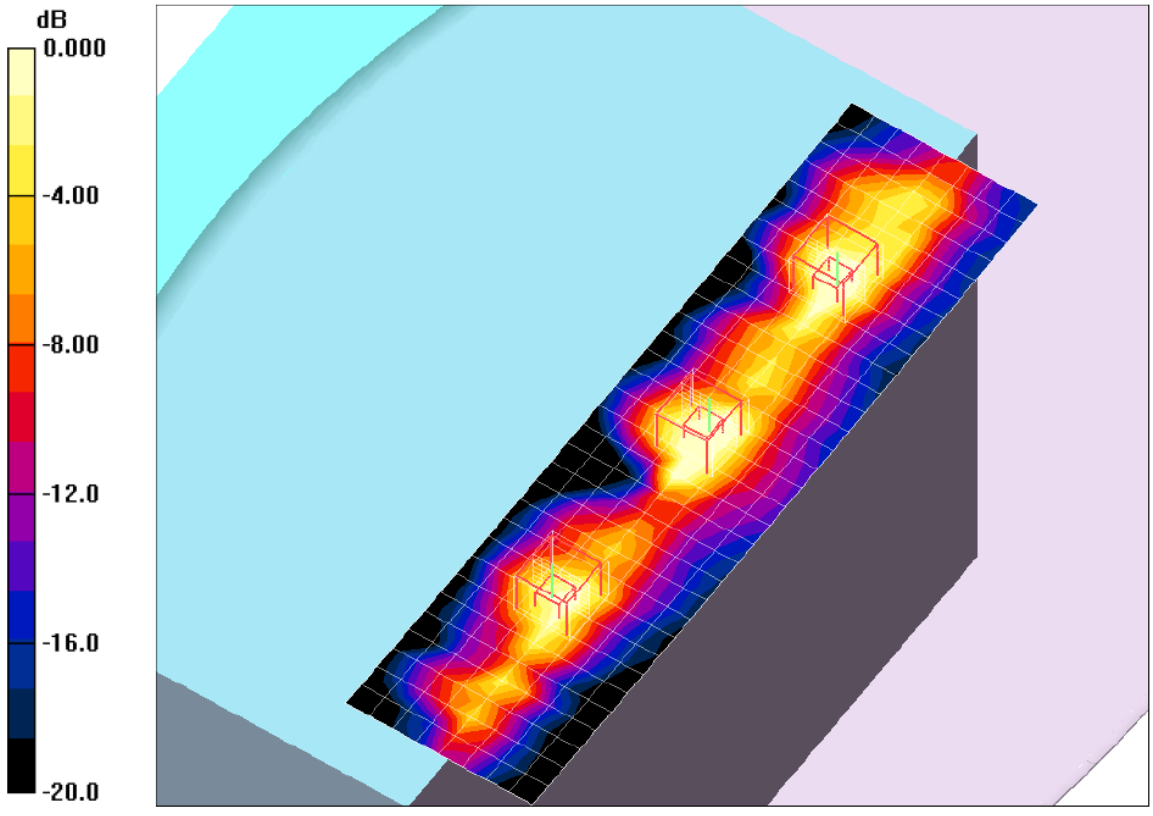
Frequency: 5510 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5510 MHz; σ = 5.6 mho/m; ε_r = 49.1; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.72, 3.72, 3.72); 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,Chain 0,1,2_Ch 102/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 3.12 mW/g

802.11n HT40,Chain 0_Ch 102/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.7 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 4.75 W/kg
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.347 mW/g
Maximum value of SAR (measured) = 2.15 mW/g

802.11n HT40,Chain 1_Ch 102/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.7 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 4.45 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.381 mW/g
Maximum value of SAR (measured) = 2.10 mW/g

802.11n HT40,Chain 2_Ch 102/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.7 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 3.21 W/kg
SAR(1 g) = 0.828 mW/g; SAR(10 g) = 0.279 mW/g
Maximum value of SAR (measured) = 1.44 mW/g



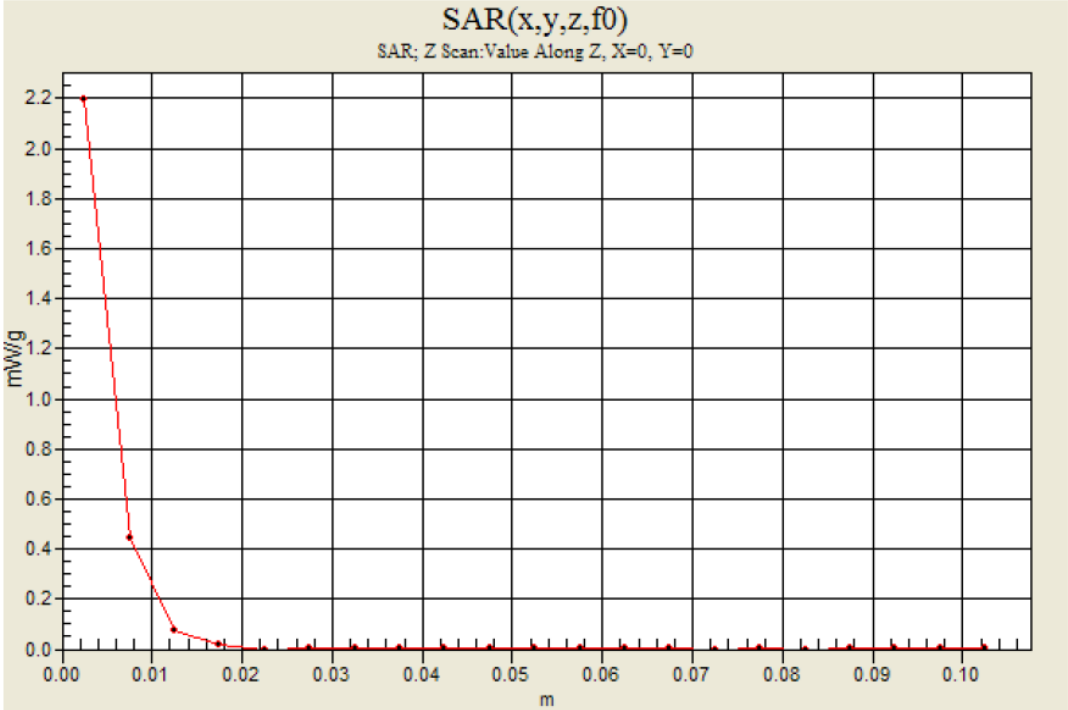
0 dB = 1.44mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/17/2012 6:39:50 PM

5GHz bands

Frequency: 5510 MHz; Duty Cycle: 1:1

802.11n HT40,Chain 0,1,2_Ch 102/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.20 mW/g



14.1.5. Worst-Case SAR Plots for 5.8 GHz Band

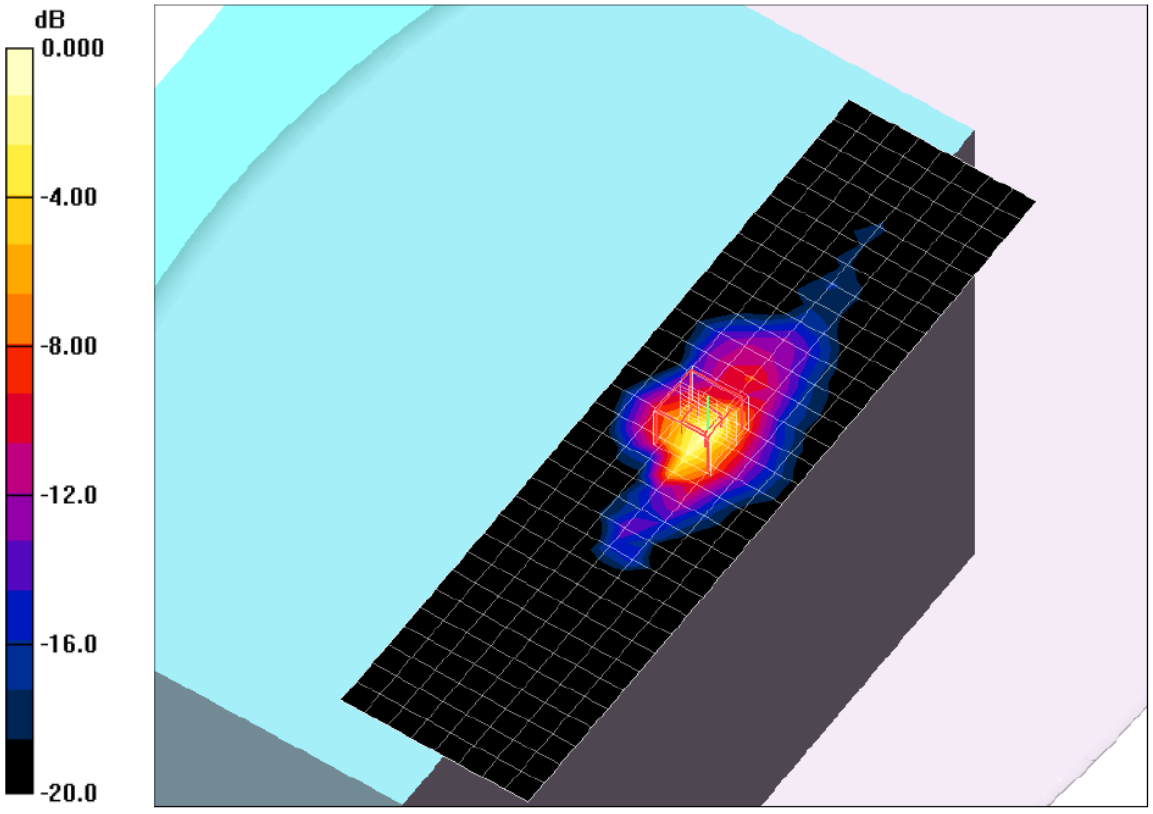
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/12/2012 9:55:09 PM

5GHz bands

Frequency: 5745 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5745 MHz; σ = 5.84 mho/m; ε_r = 46.9; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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,Chain 1 Ch 149/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.76 mW/g

802.11a,Chain 1 Ch 149/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.7 V/m; Power Drift = 0.037 dB
Peak SAR (extrapolated) = 4.94 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.345 mW/g
Maximum value of SAR (measured) = 2.02 mW/g



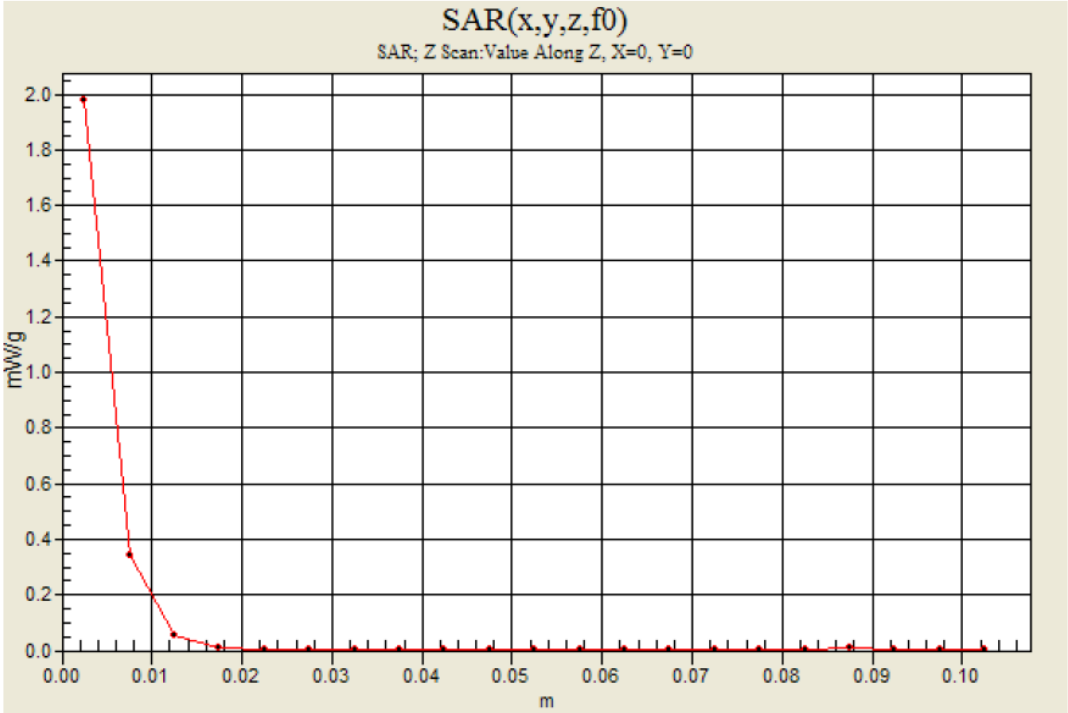
0 dB = 2.02mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/12/2012 10:27:05 PM

5GHz bands

Frequency: 5745 MHz; Duty Cycle: 1:1

802.11a,Chain 1 Ch 149/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.98 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/10/2012 6:22:47 AM

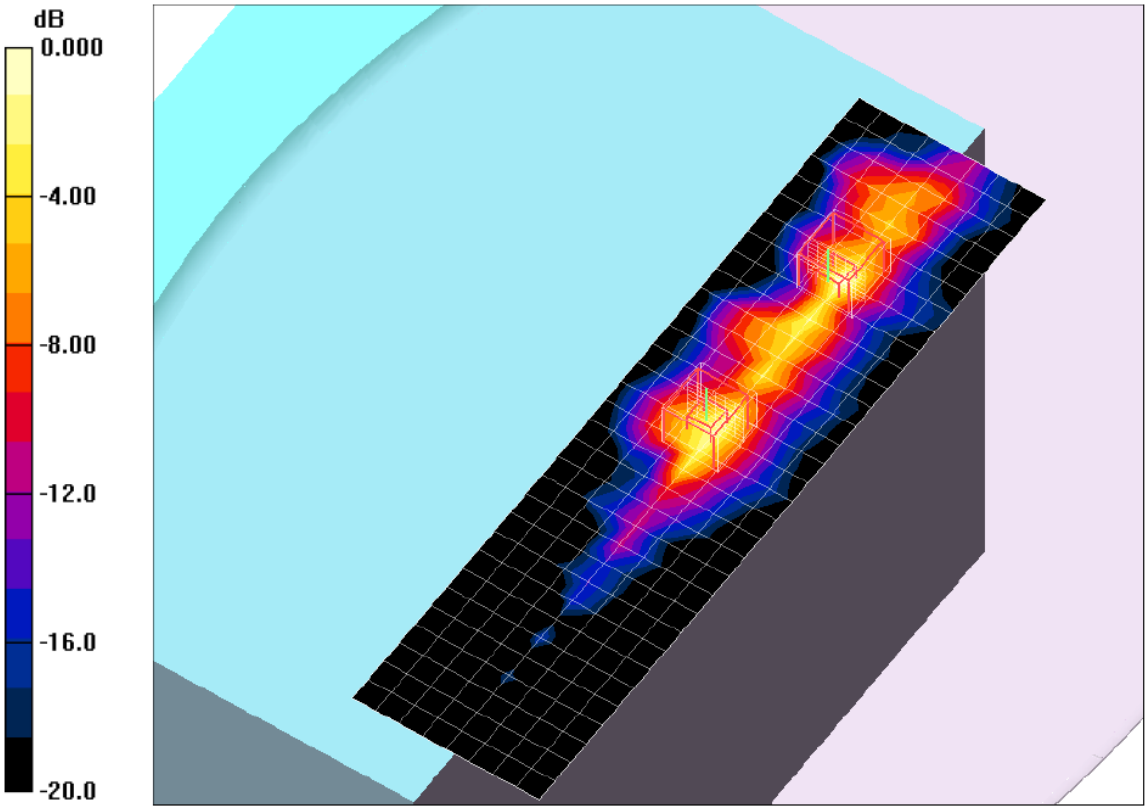
5GHz bands

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 = 5.82 mho/m; ε_r = 48; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- 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,Chain 0,1_Ch 157/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.00 mW/g

802.11a,Chain 0_Ch 157/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.8 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 6.74 W/kg
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.276 mW/g
Maximum value of SAR (measured) = 2.41 mW/g

802.11a,Chain 1_Ch 157/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.8 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 4.68 W/kg
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.325 mW/g
Maximum value of SAR (measured) = 1.97 mW/g



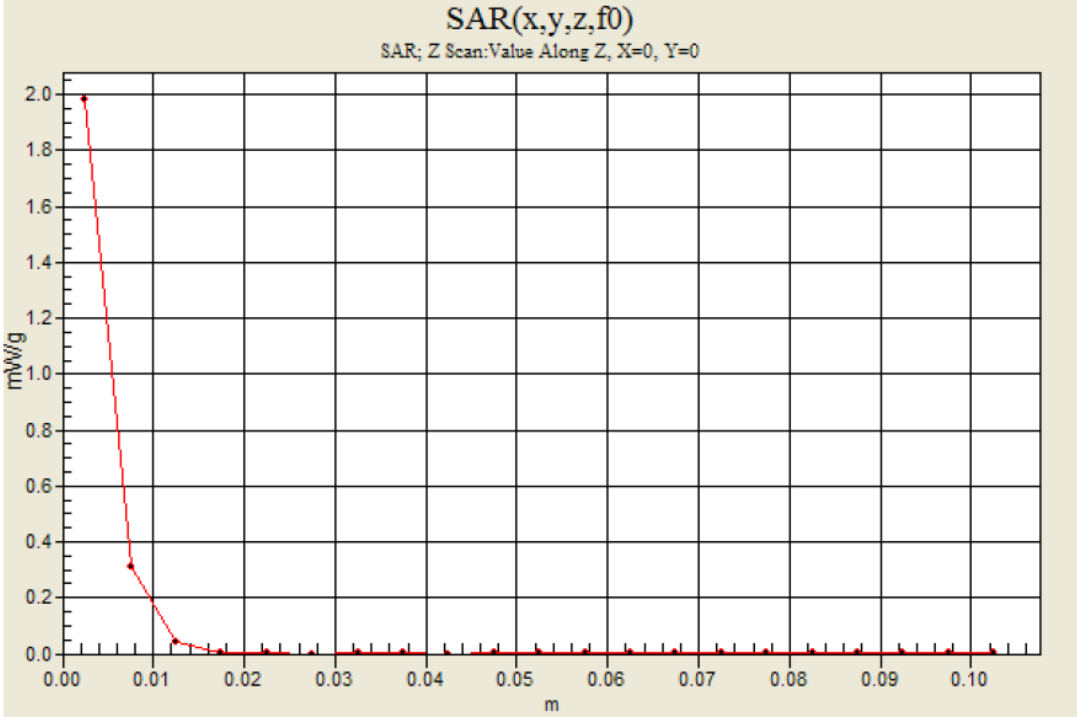
0 dB = 1.97mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/10/2012 7:03:25 AM

5GHz bands

Frequency: 5785 MHz; Duty Cycle: 1:1

802.11a,Chain 0,1_Ch 157/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.98 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/12/2012 2:54:14 AM

5GHz bands

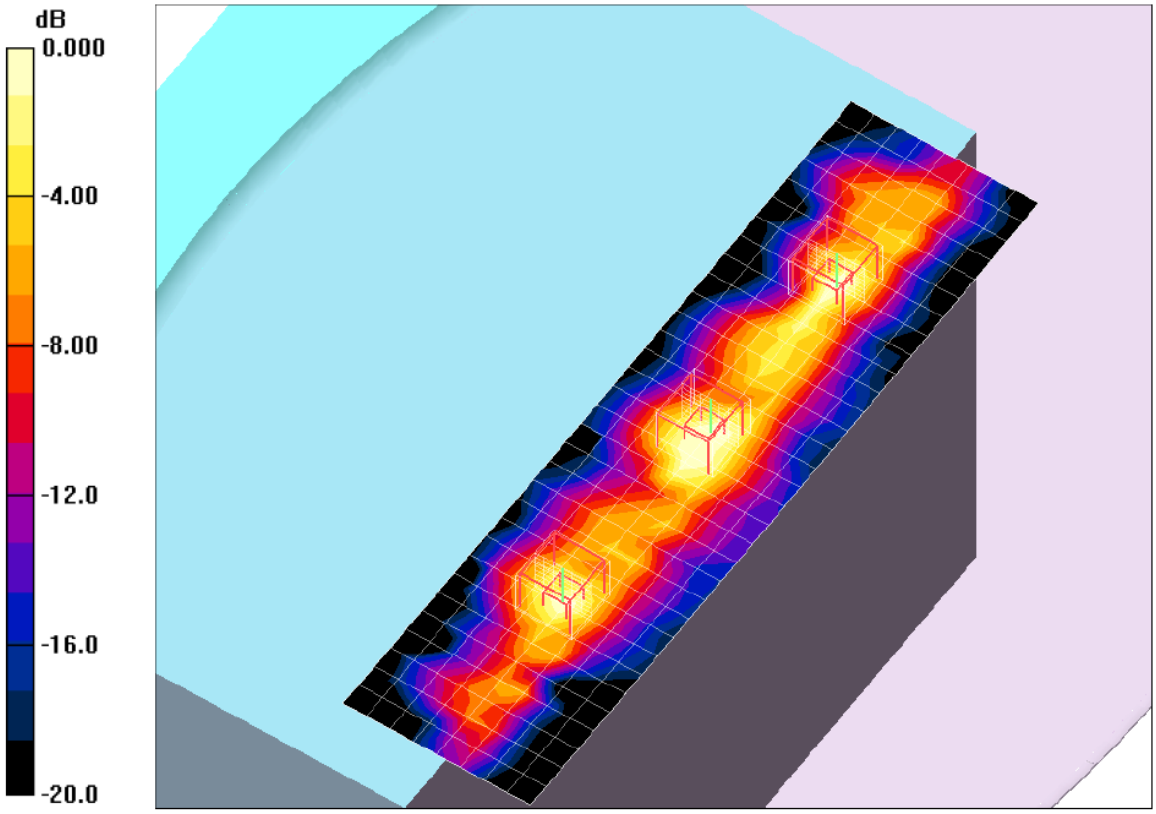
Frequency: 5805 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5805 MHz; σ = 5.91 mho/m; ε_r = 48.9; ρ = 1000 kg/m^3 ;
DASY4 Configuration:
- Electronics: DAE3 Sn427; Calibrated: 1/17/2012
- Probe: EX3DV4 - SN3749; ConvF(3.81, 3.81, 3.81); 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,Chain 0,1,2_Ch 161/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.19 mW/g

802.11a,Chain 0_Ch 161/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.9 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 4.94 W/kg
SAR(1 g) = 0.900 mW/g; SAR(10 g) = 0.237 mW/g
Maximum value of SAR (measured) = 1.88 mW/g

802.11a,Chain 1_Ch 161/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.9 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 4.91 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.369 mW/g
Maximum value of SAR (measured) = 2.07 mW/g

802.11a,Chain 2_Ch 161/Zoom Scan (7x7x9)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.9 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 3.25 W/kg
SAR(1 g) = 0.724 mW/g; SAR(10 g) = 0.231 mW/g
Maximum value of SAR (measured) = 1.36 mW/g



0 dB = 1.36mW/g

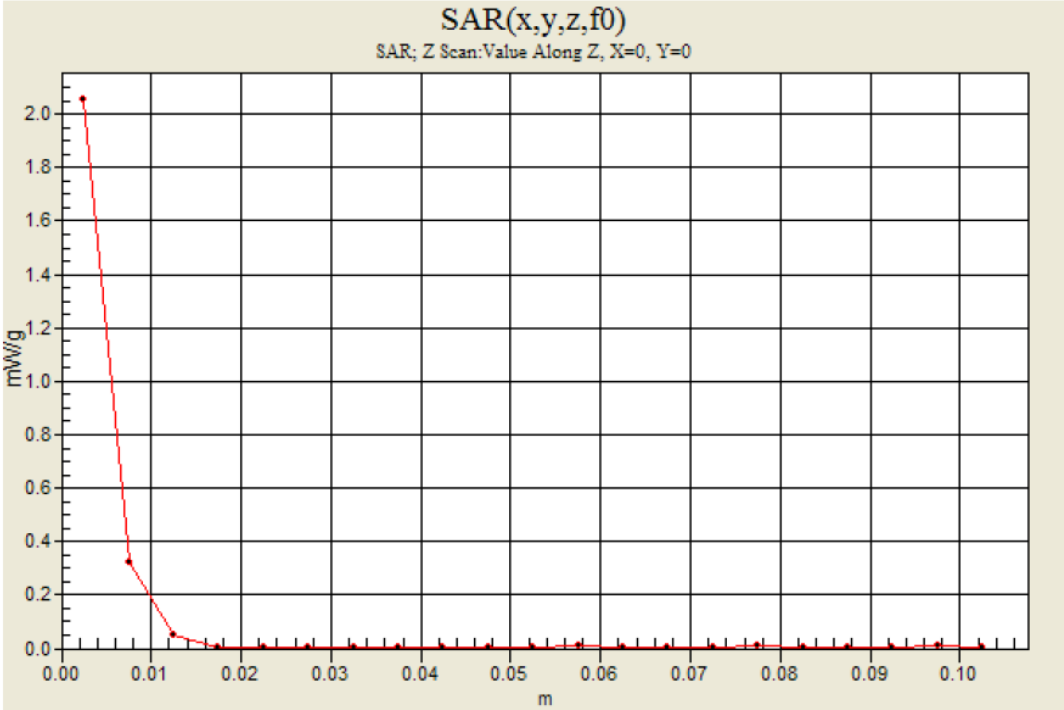
Test Laboratory: UL CCS SAR Lab D Date/Time: 4/12/2012 3:55:17 AM

5GHz bands

Frequency: 5805 MHz; Duty Cycle: 1:1

802.11a,Chain 0,1,2_Ch 161/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

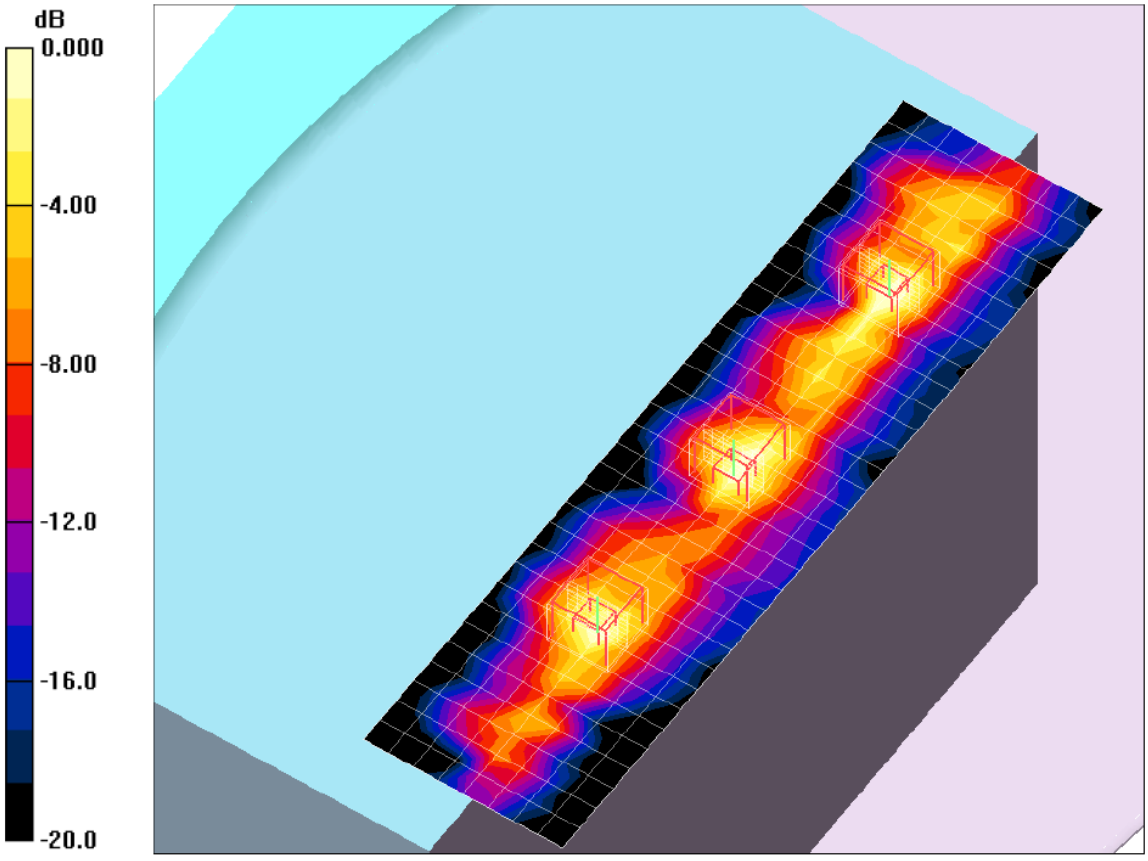
Maximum value of SAR (measured) = 2.05 mW/g



Test Laboratory: UL CCS SAR Lab D Date/Time: 4/13/2012 11:49:15 AM

5GHz bands

Frequency: 5755 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: f = 5755 MHz; σ = 5.82 mho/m; εr = 48.1; ρ = 1000 kg/m3 ;
DASY4 Configuration:
- 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
802.11n HT40,Chain 0,1,2_Ch 151/Area Scan (9x33x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.31 mW/g
802.11n HT40,Chain 0_Ch 151/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.3 V/m; Power Drift = -0.019 dB
Peak SAR (extrapolated) = 6.04 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.278 mW/g
Maximum value of SAR (measured) = 2.09 mW/g
802.11n HT40,Chain 1_Ch 151/Zoom Scan (7x7x9)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.3 V/m; Power Drift = -0.019 dB
Peak SAR (extrapolated) = 4.12 W/kg
SAR(1 g) = 0.885 mW/g; SAR(10 g) = 0.297 mW/g
Maximum value of SAR (measured) = 1.72 mW/g
802.11n HT40,Chain 2_Ch 151/Zoom Scan (7x7x9)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.3 V/m; Power Drift = -0.019 dB
Peak SAR (extrapolated) = 3.76 W/kg
SAR(1 g) = 0.831 mW/g; SAR(10 g) = 0.256 mW/g
Maximum value of SAR (measured) = 1.51 mW/g



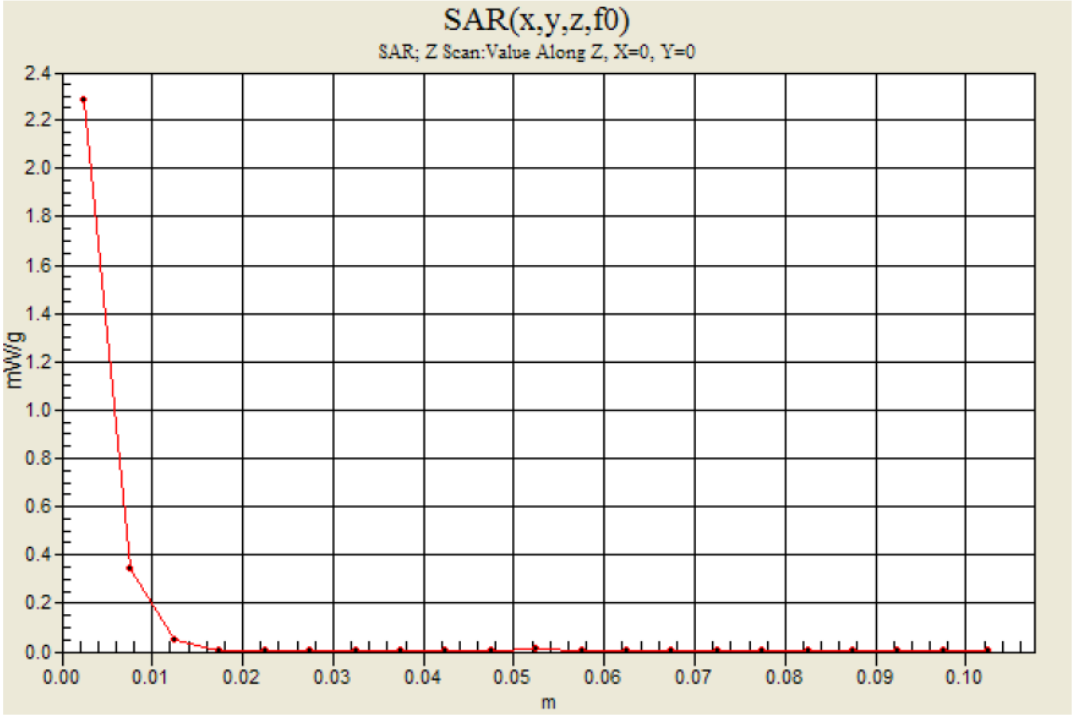
0 dB = 1.51mW/g

Test Laboratory: UL CCS SAR Lab D Date/Time: 4/13/2012 1:50:51 PM

5GHz bands

Frequency: 5755 MHz; Duty Cycle: 1:1

802.11n HT40,Chain 0,1,2_Ch 151/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.28 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 748

15.6. Calibration certificate for D5GHzV2 SN 1003

15.7. Calibration certificate for D5GHzV2 SN 1075