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EMC Test Report

Application for Grant of Equipment Authorization

Industry Canada RSS-Gen Issue 3 / RSS 210 Issue 8
FCC Part 15 Subpart C

Model: BCM94330UARTSDB (802.11bgn WLAN + BT combo Card (2.4GHz, SISO only)

IC CERTIFICATION #:	4324A-BRCM1065
FCC ID:	QDS-BRCM1065
APPLICANT:	Broadcom Corporation 190 Mathilda Ave. Sunnyvale, CA 94086
TEST SITE(S):	NTS Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-5
REPORT DATE:	May 8, 2012
REISSUE DATE:	July 25, 2012
FINAL TEST DATES:	April 12-17, 19-20, 26, May 4, and July 11, 2012
TOTAL NUMBER OF PAGES:	98

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Testing Cert #0214.26

REVISION HISTORY

Rev#	Date	Comments	Modified By
-	05-08-2012	First release	
1	5-15-2012	Reissued to add 99% bandwidth plots to the test data	Dave Guidotti
2	07-25-2012	Reissued to update the power level for Channel 6 802.11b mode	Dave Guidotti

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SCOPE

An electromagnetic emissions test has been performed on the Broadcom Corporation model BCM94330UARTSDB (802.11bgn WLAN + BT combo Card (2.4GHz, SISO only), pursuant to the following rules:

Industry Canada RSS-Gen Issue 3
RSS 210 Issue 8 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
FCC Part 15 Subpart C

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in NTS Silicon Valley test procedures:

ANSI C63.4:2003
FCC DTS Measurement Procedure KDB558074, March 2005

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, all unlicensed transmitters and transceivers require certification. Receive-only devices operating between 30 MHz and 960 MHz are subject to either certification or a manufacturer's declaration of conformity, with all other receive-only devices exempt from the technical requirements.

Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification. Class II devices are required to meet the appropriate technical requirements but are exempt from certification requirements.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

STATEMENT OF COMPLIANCE

The tested sample of Broadcom Corporation model BCM94330UARTSDB (802.11bgn WLAN + BT combo Card (2.4GHz, SISO only) complied with the requirements of the following regulations:

Industry Canada RSS-Gen Issue 3
RSS 210 Issue 8 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
FCC Part 15 Subpart C

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

The test results recorded herein are based on a single type test of Broadcom Corporation model BCM94330UARTSDB (802.11bgn WLAN + BT combo Card (2.4GHz, SISO only) and therefore apply only to the tested sample. The sample was selected and prepared by Anne Liang of Broadcom Corporation.

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report.

TEST RESULTS SUMMARY

DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM / DSSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	802.11b: 6.5 MHz 802.11g: 14.9 MHz BLE: 0.658 MHz	>500kHz	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	802.11b: 18.1 dBm (65mW) 802.11g: 15.5 dBm (35mW) BLE: 6.0 dBm (4mW) EIRP = 0.158 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	802.11b: -2.1 dBm/3kHz 802.11g: -5.0 dBm/3kHz BLE: -8.5 dBm/3kHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All emissions below the -30dBc limit	< -20dBc < -30dBc Note 2	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	53.9 dBµV/m @ 2483.5 MHz (-0.1 dB)	15.207 in restricted bands, all others < -20dBc <-30dBc Note 2	Complies

Note 1: EIRP calculated using antenna gain of 3.9 dBi for the highest EIRP system.
Note 2: Limit of -30dBc used for the CCK and OFDM modes because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst). Limit of -20dBc used for the GFSK (BLE mode) as power was measured using peak power meter.

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	EUT uses u.FL connectors	Unique or integral antenna required	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	45.8 dBµV @ 0.291 MHz (-4.7 dB)	Refer to page 19	Complies
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	-	-	N/A
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in Exhibit 11, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding non-interference	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual		Statement for products with detachable antenna	Complies
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	802.11b: 13.8 MHz 802.11g: 26.9 MHz BLE: 1.09 MHz	Information only	N/A

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF power, conducted (power meter)	dBm	25 to 7000 MHz	± 0.52 dB
RF power, conducted (Spectrum analyzer)	dBm	25 to 7000 MHz	± 0.7 dB
Conducted emission of transmitter	dBm	25 to 26500 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 26500 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Radiated emission (field strength)	dBµV/m	25 to 1000 MHz	± 3.6 dB
		1000 to 40000 MHz	± 6.0 dB
Conducted Emissions (AC Power)	dBµV	0.15 to 30 MHz	± 2.4 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Broadcom Corporation model BCM94330UARTSDB (802.11bgn WLAN + BT combo Card (2.4GHz, SISO only) is an 802.11bgn (20MHz SISO only) + Bluetooth 4.0 radio module. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is powered from 3.3V from the host system.

The sample was received on March 20, 2011 and tested on April 12-17, 19-20, 26, May 4, and July 11, 2012. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Broadcom	BCM94330UA RTSDB	802.11bgn WLAN + BT 4.0, 20MHz SISO only module	81	QDS-BRCM1065
Broadcom	BCM94330UA RTSDB	802.11bgn WLAN + BT 4.0, 20MHz SISO only module	80	QDS-BRCM1065

OTHER EUT DETAILS

The following EUT details should be noted: 802.11g is being tested as representative of 802.11n20 SISO mode.

The Bluetooth is rev 4.0, supporting the basic, EDR and LE modes. The results for the LE mode are reported here. The results for the basic and EDR modes are reported in NTS Silicon Valley report R87269.

ANTENNA SYSTEM

The EUT antenna is a 3.9dBi WLAN antenna.

The antenna connects to the EUT via a non-standard u.FL antenna connector, thereby meeting the requirements of FCC 15.203.

ENCLOSURE

The EUT does not have an enclosure as it is designed to be installed within the enclosure of a host computer or system.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at NTS Silicon Valley.

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for testing (radio):

Company	Model	Description	Serial Number	FCC ID
Dell	E6400	Laptop	-	-
Broadcom	BCM9433EVB	Test Board	-	-
Broadcom	-	Support Board	-	-
-	-	PCMCIA card	-	-

No remote support equipment was used during testing.

The following equipment was used as local support equipment for testing (AC conducted emissions):

Company	Model	Description	Serial Number	FCC ID
Dell	E6400	Laptop	-	-
Broadcom	BCM9433EVB	Test Board	-	-
Broadcom	-	Support Board	-	-
-	-	PCMCIA card	-	-
HP	5650	Printer	C64904	-

The following equipment was used as remote support equipment for testing (AC conducted emissions):

Company	Model	Description	Serial Number	FCC ID
Cisco	SD2005	Switch	DNI145303V1	-

EUT INTERFACE PORTS

The I/O cabling configuration during testing (radio) was as follows:

Port		Cable(s)		
From	To	Description	Shielded/Unshielded	Length(m)
Main	Main Antenna	-	-	-
AUX	Aux Antenna	-	-	-
EUT board	Test Board	-	-	-
Test Board	Support Board	-	-	-
Support Board	PCMCIA card	-	-	-
PCMCIA card	Laptop	-	-	-
AC Power	AC Mains	2Wire	Unshielded	1.5

The I/O cabling configuration during testing (AC conducted emissions) was as follows:

Port		Cable(s)		
From	To	Description	Shielded/Unshielded	Length(m)
Main	Main Antenna	-	-	-
AUX	Aux Antenna	-	-	-
EUT board	Test Board	-	-	-
Test Board	Support Board	-	-	-
Support Board	PCMCIA card	-	-	-
PCMCIA card	Laptop	-	-	-
Laptop - AC Power	AC Mains	2Wire	Unshielded	1.5
Laptop - USB	Printer	USB	Shielded	1.0
Laptop - Ethernet	Switch	Cat 5	Unshielded	5.0

EUT OPERATION

During testing, the EUT was configured to continuously transmit at the noted channel at the maximum output power. For 802.11b mode testing, the data rate was set to 1 Mb/s. For 802.11g mode, the data rate was set to 6 Mb/s. These data rates represent worse case, as they resulted in the highest output power.

For the BLE mode, the EUT was configured to continuously transmit at the noted channel at the maximum output power. Channel hopping was disabled.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken at the test sites listed below. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission and with industry Canada.

Site	Registration Numbers		Location
	FCC	Canada	
Chamber 5	211948	2845B-5	41039 Boyce Road Fremont, CA 94538-2435

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement. The test site(s) contain separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4:2003. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4:2003.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.4:2003 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4:2003, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.

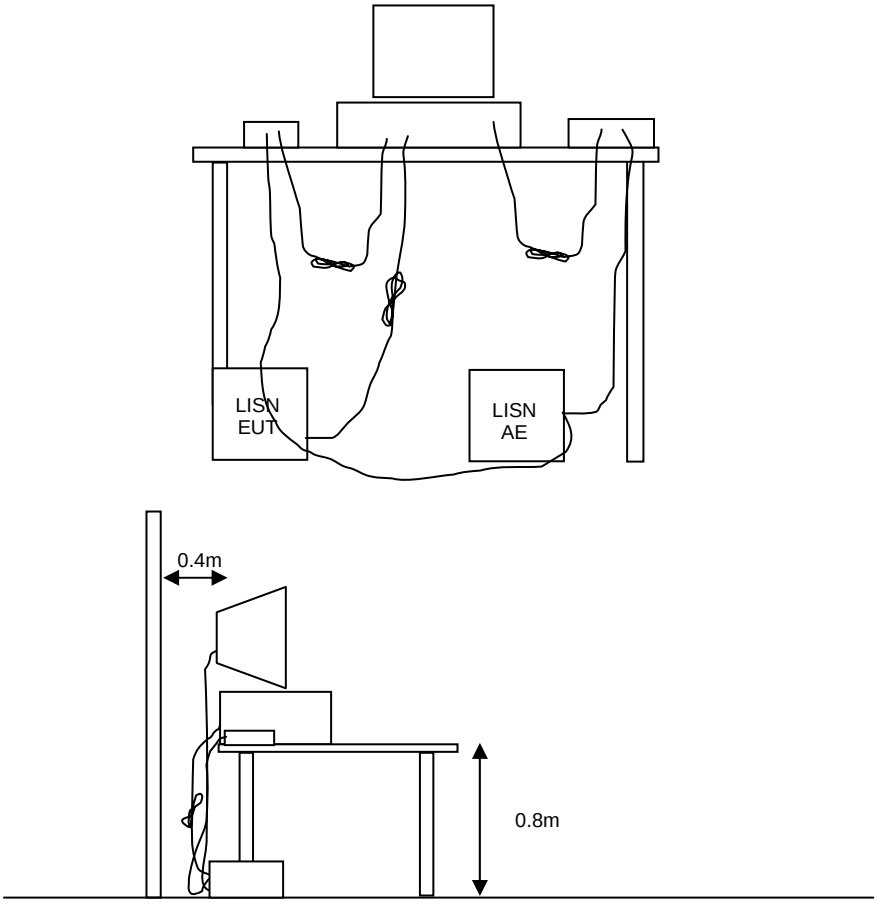


Figure 1 Typical Conducted Emissions Test Configuration

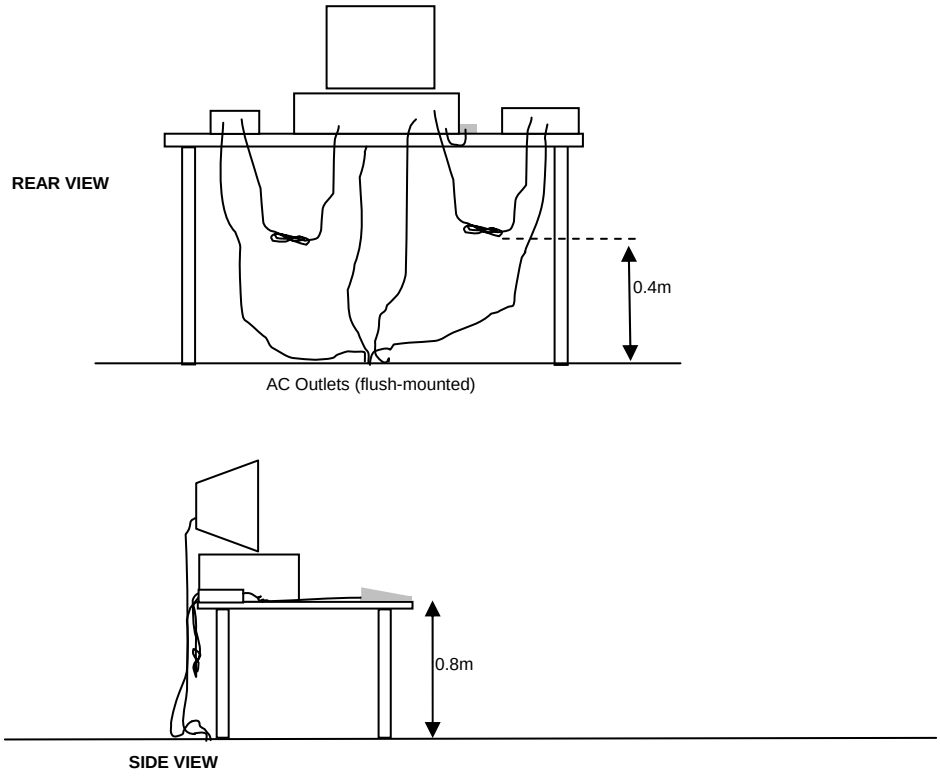
RADIATED EMISSIONS

A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360˚, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

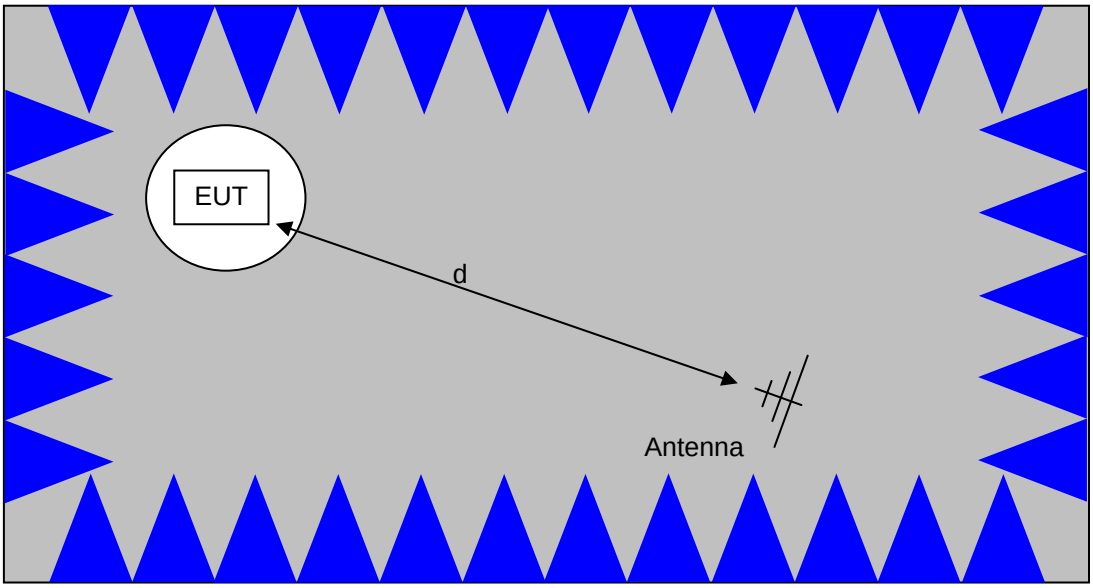
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.

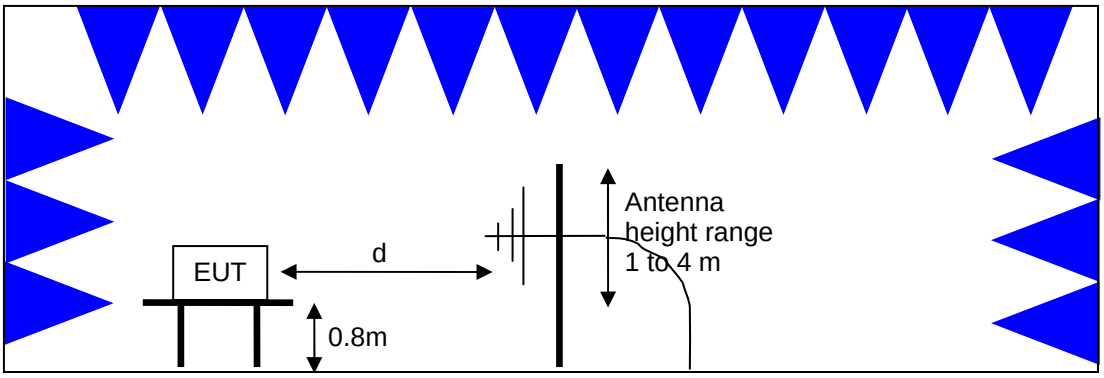


Typical Test Configuration for Radiated Field Strength Measurements



The anechoic materials on the walls and ceiling ensure compliance with the normalized site attenuation requirements of CISPR 16 / CISPR 22 / ANSI C63.4 for an alternate test site at the measurement distances used.

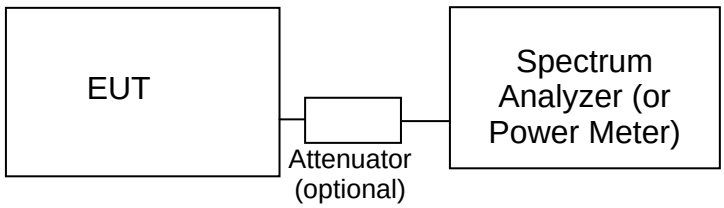
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



Test Configuration for Radiated Field Strength Measurements
Semi-Anechoic Chamber, Plan and Side Views

CONDUCTED EMISSIONS FROM ANTENNA PORT

Direct measurements of power, bandwidth and power spectral density are performed, where possible, with the antenna port of the EUT connected to either the power meter or spectrum analyzer via a suitable attenuator and/or filter. These are used to ensure that the front end of the measurement instrument is not overloaded by the fundamental transmission.



Test Configuration for Antenna Port Measurements

Measurement bandwidths (video and resolution) are set in accordance with the relevant standards and NTS Silicon Valley's test procedures for the type of radio being tested. When power measurements are made using a resolution bandwidth less than the signal bandwidth the power is calculated by summing the power across the signal bandwidth using either the analyzer channel power function or by capturing the trace data and calculating the power using software. In both cases the summed power is corrected to account for the equivalent noise bandwidth (ENBW) of the resolution bandwidth used.

If power averaging is used (typically for certain digital modulation techniques), the EUT is configured to transmit continuously. Power averaging is performed using either the built-in function of the analyzer or, if the analyzer does not feature power averaging, using external software. In both cases the average power is calculated over a number of sweeps (typically 100). When the EUT cannot be configured to continuously transmit then either the analyzer is configured to perform a gated sweep to ensure that the power is averaged over periods that the device is transmitting or power averaging is disabled and a max-hold feature is used.

If a power meter is used to make output power measurements the sensor head type (peak or average) is stated in the test data table.

BANDWIDTH MEASUREMENTS

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; FCC 15.107(a), RSS GEN

The table below shows the limits for the emissions on the AC power line from an intentional radiator and a receiver.

Frequency (MHz)	Average Limit (dBuV)	Quasi Peak Limit (dBuV)
0.150 to 0.500	Linear decrease on logarithmic frequency axis between 56.0 and 46.0	Linear decrease on logarithmic frequency axis between 66.0 and 56.0
0.500 to 5.000	46.0	56.0
5.000 to 30.000	50.0	60.0

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands[1] (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	$2400/F_{KHz}$ @ 300m	$67.6-20*\log_{10}(F_{KHz})$ @ 300m
0.490-1.705	$24000/F_{KHz}$ @ 30m	$87.6-20*\log_{10}(F_{KHz})$ @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS 210 Table 2, RSS GEN Table 1 and RSS 310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

[1] The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

The table below shows the limits for output power and output power density. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
902 – 928	1 Watt (30 dBm)	8 dBm/3kHz
2400 – 2483.5	1 Watt (30 dBm)	8 dBm/3kHz
5725 – 5850	1 Watt (30 dBm)	8 dBm/3kHz

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5850 MHz band are not subject to this restriction.

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

The limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands are those specified in the general limits sections of FCC Part 15 and RSS 210. All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest in-band signal level (30dB if the power is measured using the sample detector/power averaging method).

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40*LOG_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of d (meters) from the equipment under test:

$$E = \frac{1000000 \sqrt{30 P}}{d} \quad \text{microvolts per meter}$$

where P is the eirp (Watts)

For a measurement at 3m the conversion from a logarithmic value for field strength (dBuV/m) to an eirp power (dBm) is -95.3dB.

Appendix A Test Equipment Calibration Data

Manufacturer	Description	Model	Asset #	Cal Due
Radiated Emissions, 1,000 - 26,500 MHz, 12-Apr-12				
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	8/3/2012
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	2/23/2013
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	7/28/2012
Radiated Emissions, 1000 - 12,000 MHz, 13-Apr-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz	3115	786	12/19/2013
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	8/15/2012
Radiated Emissions, 1,000 - 18,000 MHz, 14-Apr-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Radiated Emissions, 1,000 - 18,000 MHz, 15-Apr-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Radiated Spurious Emissions, 1000 - 25,000 MHz, 16-Apr-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Hewlett Packard	HF Amplifier, 45 MHz -50 GHz (with 1620)	83051A (84125C)	1742	5/9/2012
Hewlett Packard	HF Amplifier, 45 MHz -50 GHz (with 1620)	83051A (84125C)	1743	5/9/2012
A.H. Systems	Blue System Horn, 18-40GHz	SAS-574, p/n: 2581	2159	4/23/2012
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2012
Radio Antenna Port (Power and Spurious Emissions), 17-Apr-12				
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	8/15/2012

Manufacturer	Description	Model	Asset #	Cal Due
Rohde & Schwarz	Power Sensor 100 uW - 2 Watts use with 20dB attenuator sn:100059 only	NRV-Z32	1423	9/1/2012
Rohde & Schwarz	Power Meter, Single Channel, +1795+1796	NRVS	1534	5/17/2012
Radio Antenna Port (Power and Spurious Emissions), 19-Apr-12				
Agilent	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	2/23/2013
Radiated Emissions, 1000 - 6,500 MHz, 19-Apr-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	7/6/2012
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	2/23/2013
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	7/28/2012
BLE and WiFi antenna port measurements, 20-Apr-12				
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	12/5/2012
Rohde & Schwarz	Power Sensor 100 uW - 2 Watts (w/ 20 dB pad, SN BJ5155)	NRV-Z32	1536	12/8/2012
Agilent	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	2/23/2013
Radiated Emissions, 30 - 12,000 MHz, 03-May-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz	3115	786	12/19/2013
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	8/3/2012
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	7/28/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Radio Antenna Port (Power and Spurious Emissions), 04-May-12				
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/1/2013
Conducted Emissions - AC Power Ports, 26-Apr-12				
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1594	5/17/2012
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2000	10/18/2012
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2001	2/15/2013
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Radio Antenna port measurements, 11-Jul-12				
Agilent	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	2/23/2013

Appendix B Test Data

T87181 Pages 27 – 91
T86945 Pages 92 - 97

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		-
Emissions Standard(s):	FCC 15.247, LP0002	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Broadcom Corporation

Model

BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103

Date of Last Test: 7/23/2012

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 4/18/2012
Test Engineer: Rafael Varelas, Jospeh Cadigal
Test Location: Fremont EMC Lab #4

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 20.6 °C
Rel. Humidity: 34 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	802.11b: 16.5 dBm (45mW) 802.11g: 15.5dBm (35mW)
2	Power spectral Density (PSD)	15.247(d)	Pass	802.11b: -2.1 dBm/3kHz 802.11g: -5.0 dBm/3kHz
3	Minimum 6dB Bandwidth	15.247(a)	Pass	802.11b: 6.5 MHz 802.11g: 14.9MHz
3	99% Bandwidth	RSS GEN	-	802.11b: 13.8 MHz 802.11g: 26.9 MHz
4	Spurious emissions	15.247(b)	Pass	All emissions below the -30dBc limit

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Notes:

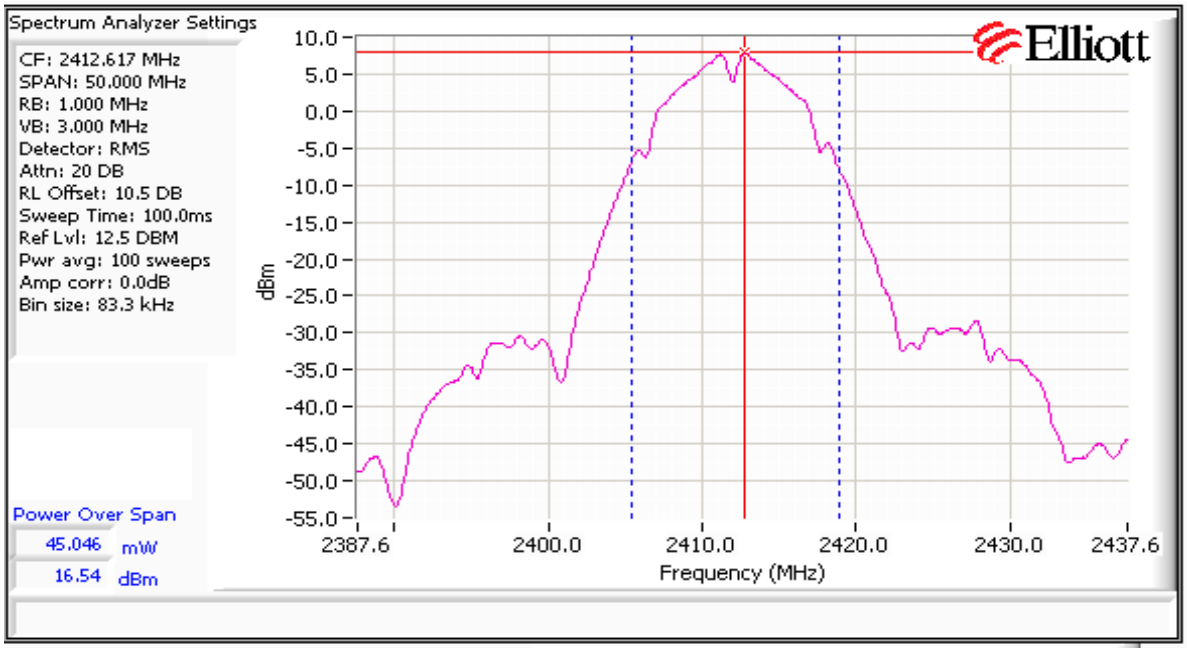
Aux port tested as this was worse case.

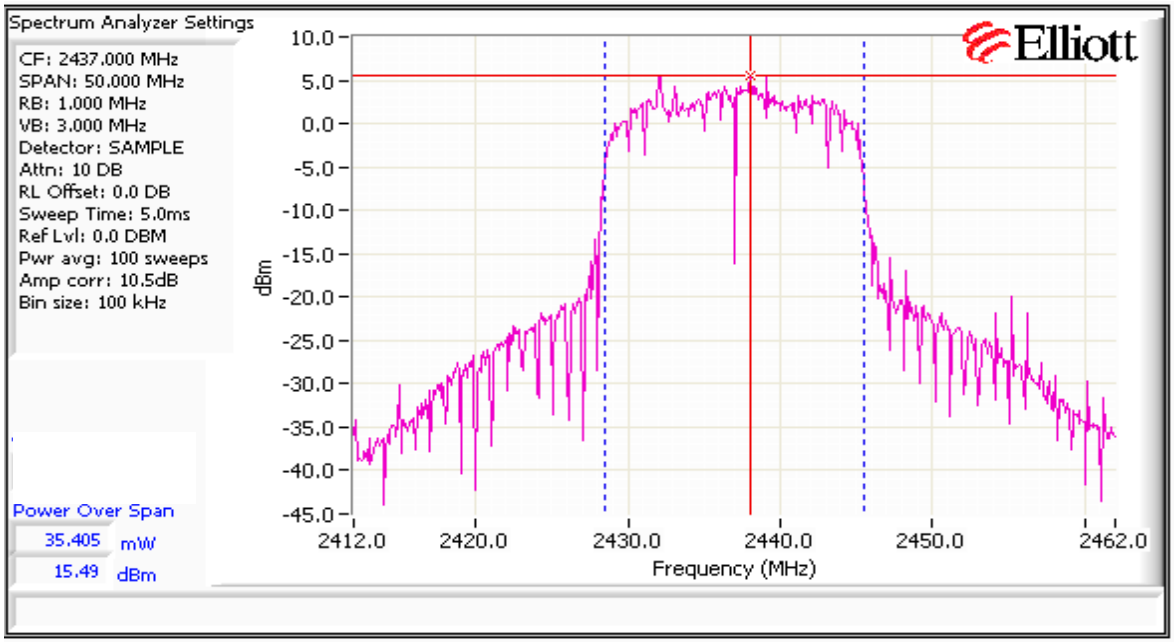
Run #1: Output Power

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP [Note 2] dBm	EIRP [Note 2] W	Output Power (dBm) [3]	Output Power mW
802.11b - Aux									
-	2412	16.5	44.7	3.9	Pass	20.4	0.110		
-	2462	15.7	37.2	3.9	Pass	19.6	0.091		
802.11g - Aux									
-	2412	13.6	22.9	3.9	Pass	17.5	0.056		
-	2437	15.5	35.4	3.9	Pass	19.4	0.087		
-	2462	11.2	13.2	3.9	Pass	15.1	0.032		

Note 1:	Output power measured using a spectrum analyzer (see plots below) with RBW=1MHz, VB=3 MHz, RMS detector, power averaging on (transmitted signal was not continuous but the ESI analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz (option #2, method 1 in KDB 558074, equivalent to method 1 of DA-02-2138A1 for U-NII devices). Spurious limit becomes -30dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using gated average power meter and is included for reference only.

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A





Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #2: Power spectral Density

802.11b-Aux

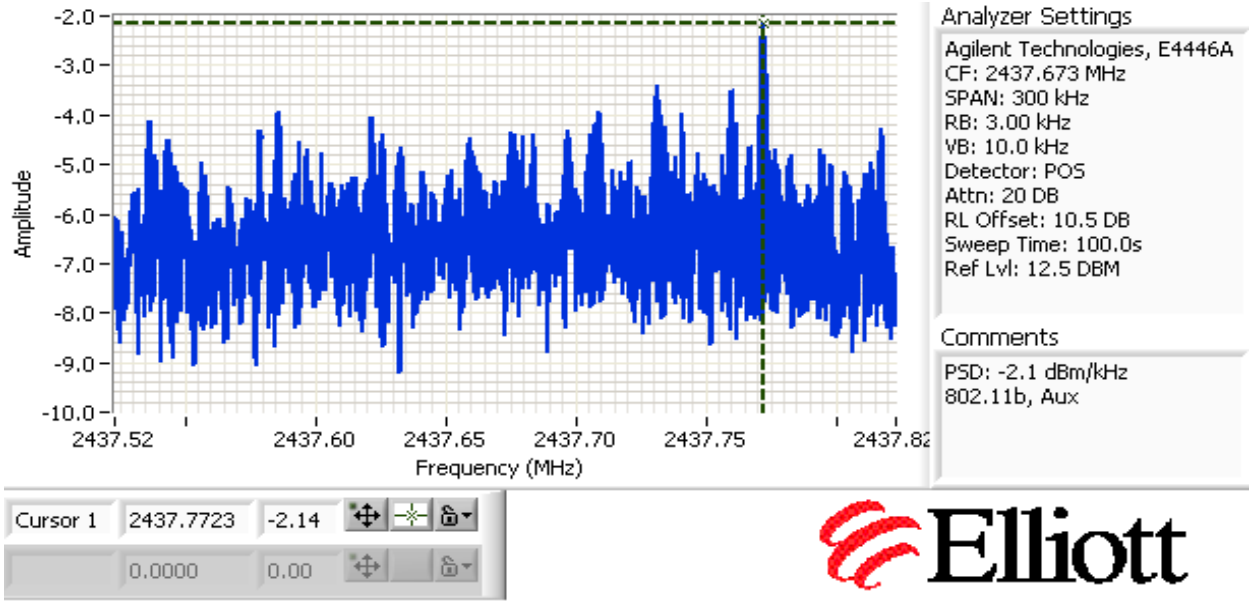
Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
-	2412.7718	-2.8	8.0	Pass
-	2437.7723	-2.1	8.0	Pass
-	2462.7722	-2.1	8.0	Pass

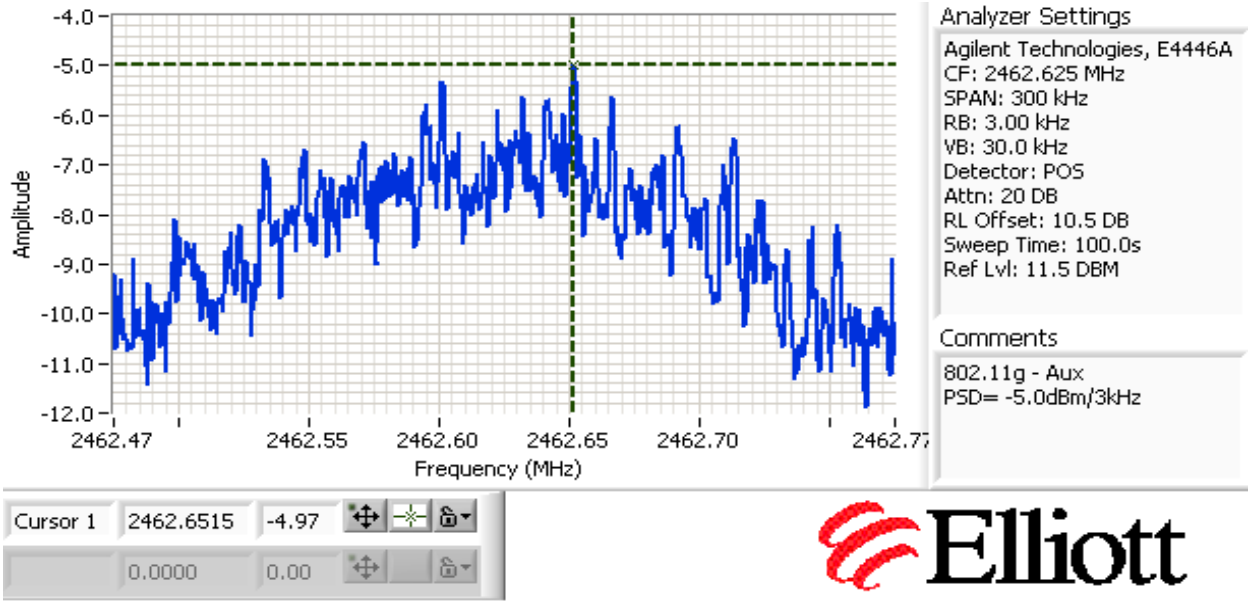
802.11g-Aux

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
-	2412.6457	-7.0	8.0	Pass
-	2437.2911	-5.6	8.0	Pass
-	2462.6515	-5.0	8.0	Pass

Note 1:	Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A





Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #3: Signal Bandwidth

802.11b

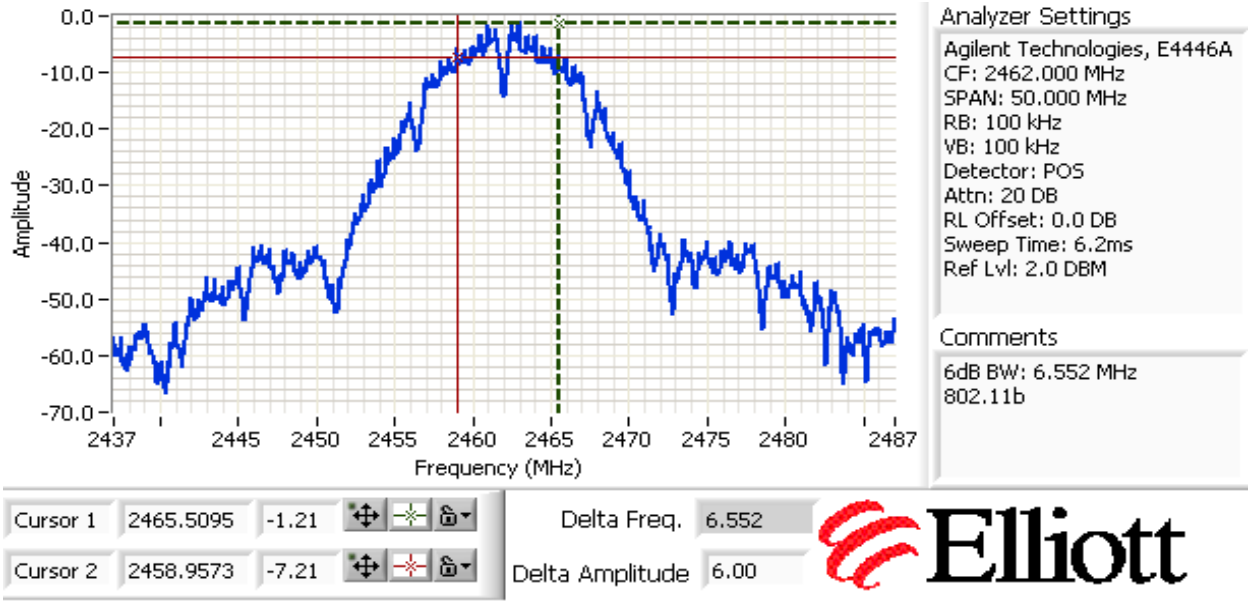
Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	99%
-	2412	100kHz	8.5	13.8
-	2437	100kHz	7.0	13.0
-	2462	100kHz	6.5	12.6

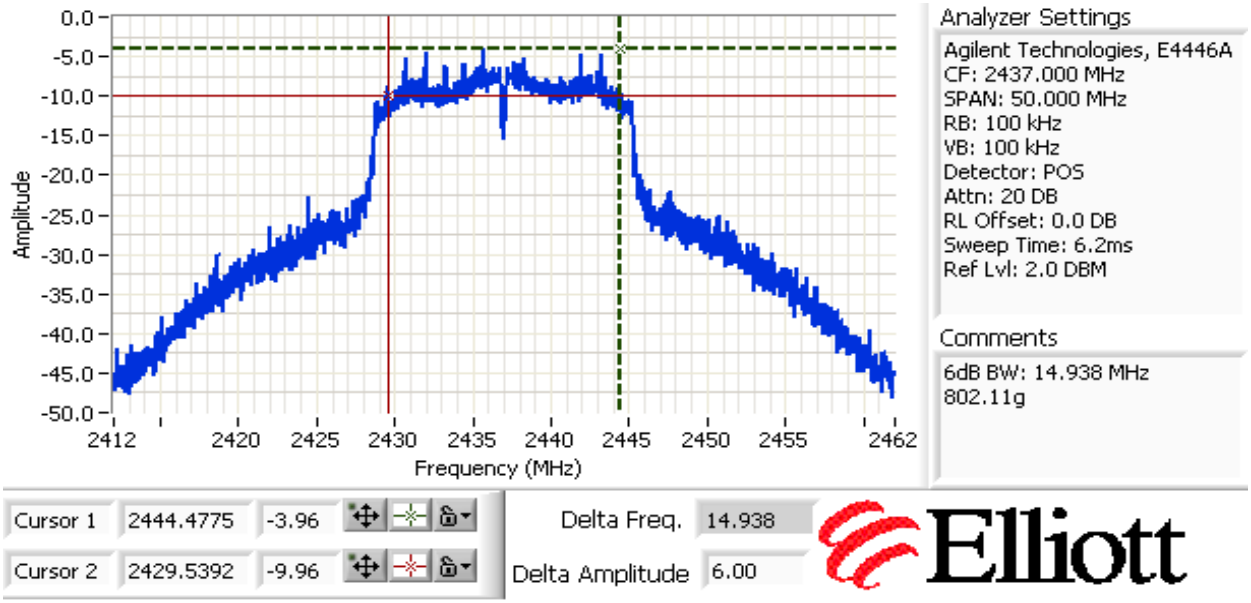
802.11g

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	99%
-	2412	100kHz	15.0	20.0
-	2437	100kHz	14.9	22.5
-	2462	100kHz	15.1	26.9

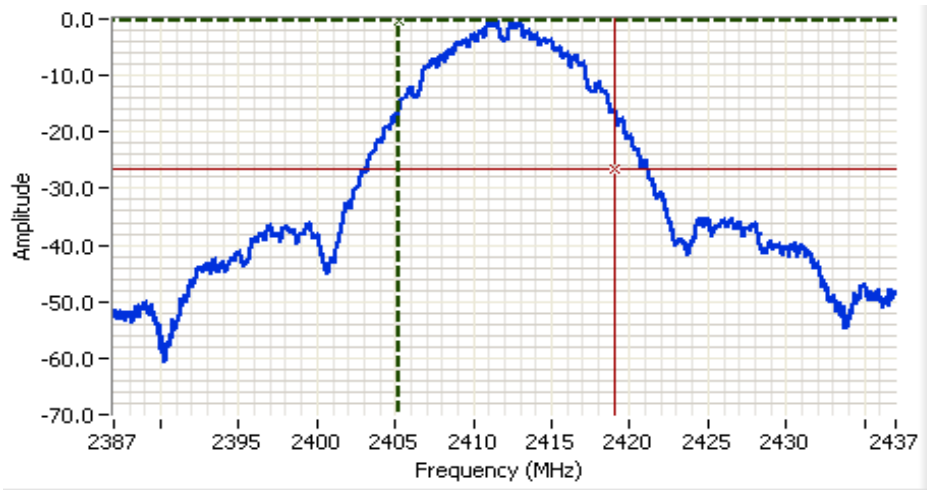
Note 1:	99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A





Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A



Analyzer Settings

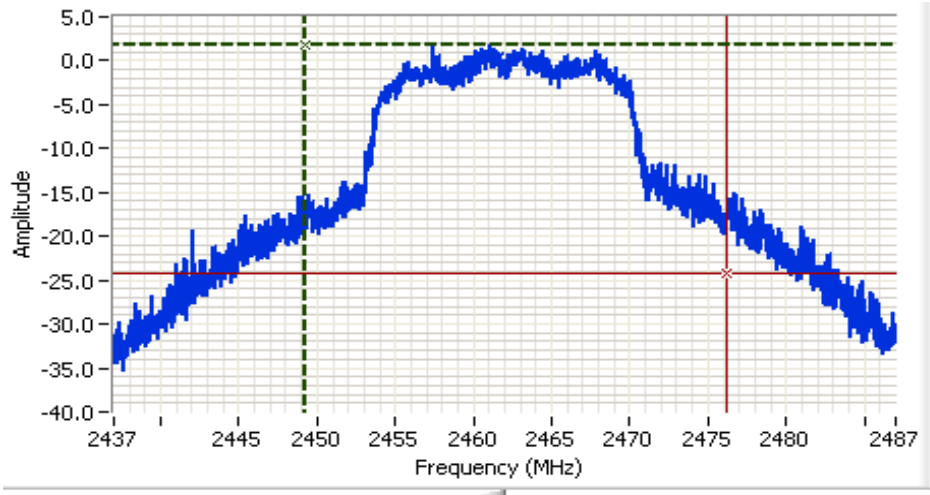
Agilent Technologies, E4446A
CF: 2412.000 MHz
SPAN: 50.000 MHz
RB: 510 kHz
VB: 1.500 MHz
Detector: POS
Attn: 20 DB
RL Offset: 0.0 DB
Sweep Time: 1.0ms
Ref Lvl: 2.0 DBM

Comments

99% BW: 13.800 MHz
802.11b

Cursor 1	2405.2167	-0.48	Delta Freq.	13.800
Cursor 2	2419.0167	-26.48	Delta Amplitude	26.00

Elliott



Analyzer Settings

Agilent Technologies, E4446A
CF: 2462.000 MHz
SPAN: 50.000 MHz
RB: 510 kHz
VB: 1.500 MHz
Detector: POS
Attn: 20 DB
RL Offset: 0.0 DB
Sweep Time: 1.0ms
Ref Lvl: 2.0 DBM

Comments

99% BW: 26.933 MHz
802.11g

Cursor 1	2449.2333	1.80	Delta Freq.	26.933
Cursor 2	2476.1667	-24.20	Delta Amplitude	26.00

Elliott

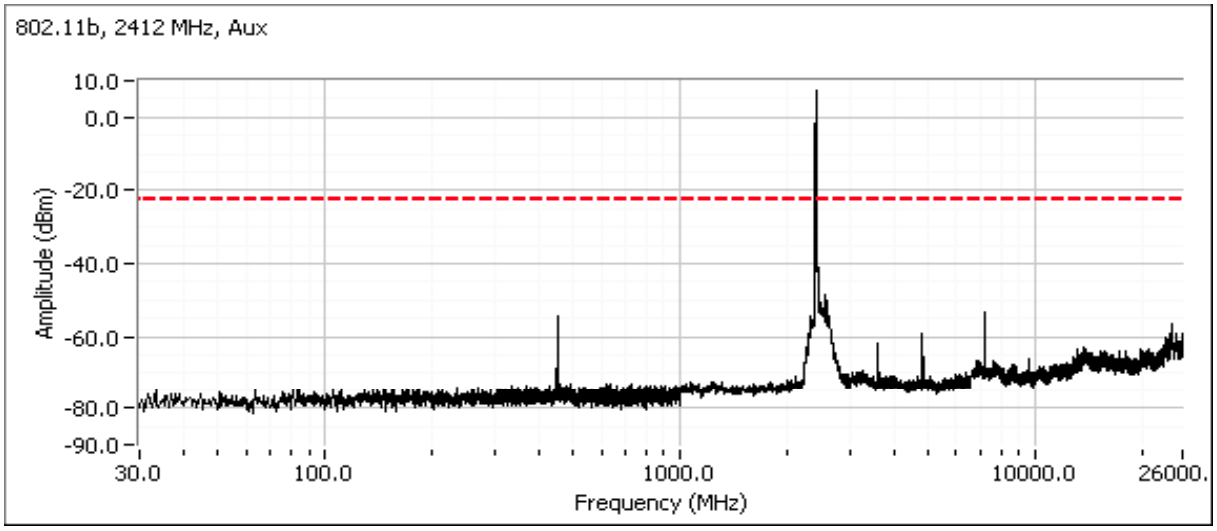
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #4: Out of Band Spurious Emissions

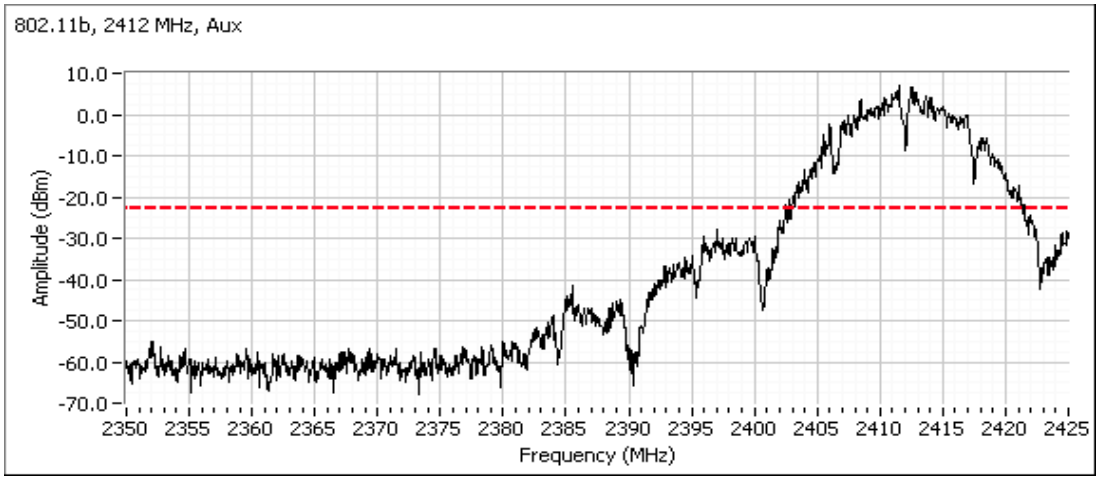
Frequency (MHz)	Limit	Result
2412	-30dBc	Pass
2437	-30dBc	Pass
2462	-30dBc	Pass

802.11b - Aux

Plots for low channel

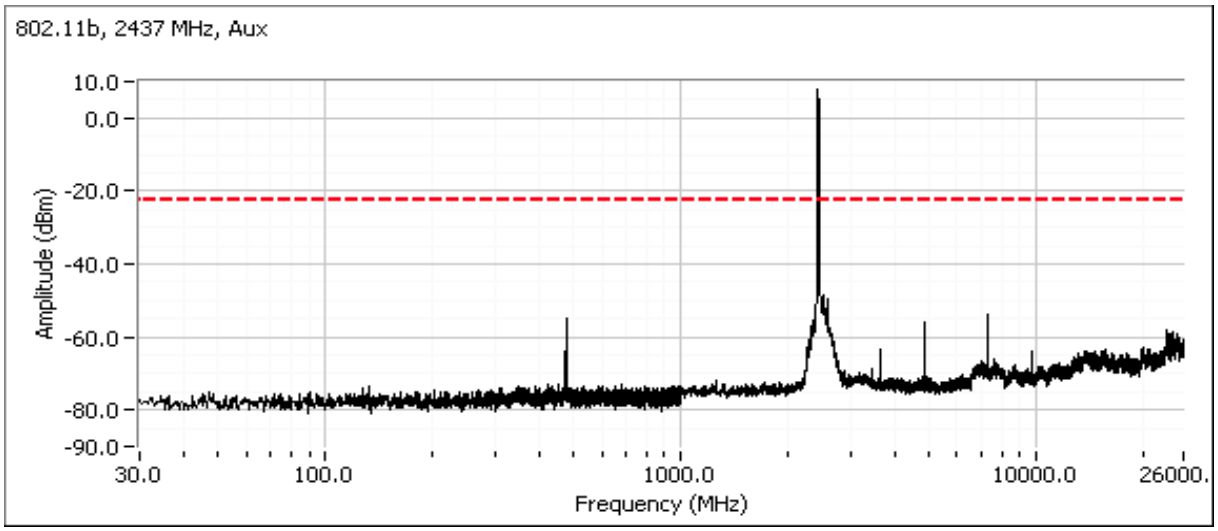


Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

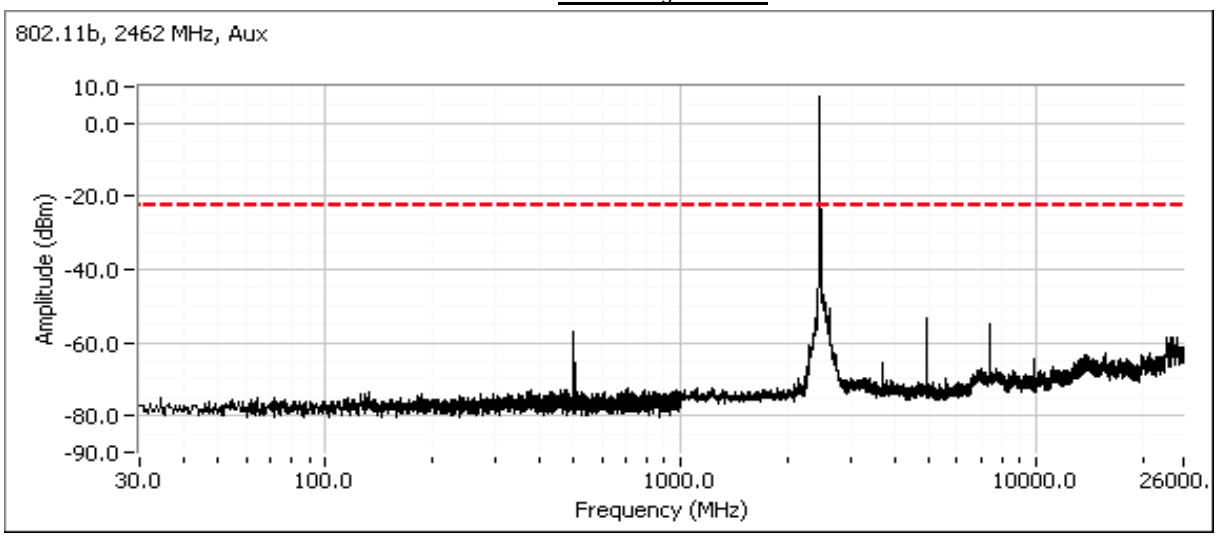


Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Plots for center channel



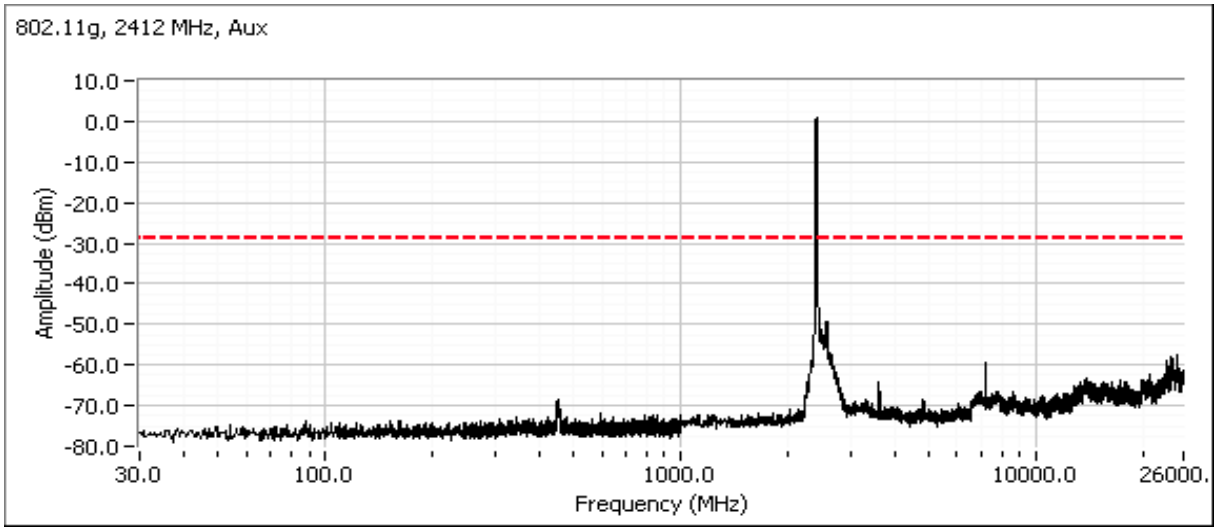
Plots for high channel



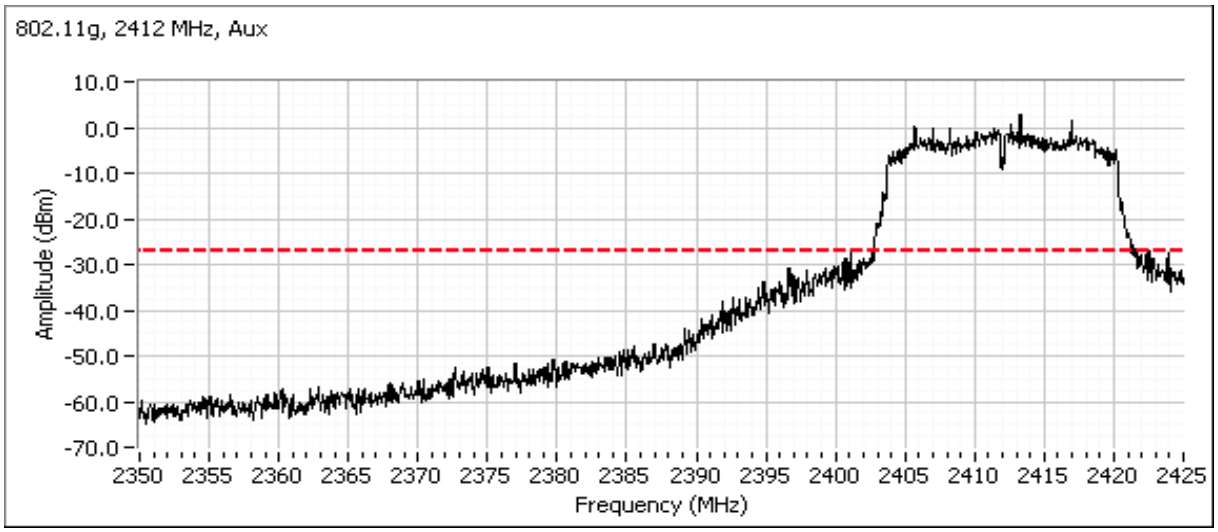
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

802.11g - Aux

Plots for low channel

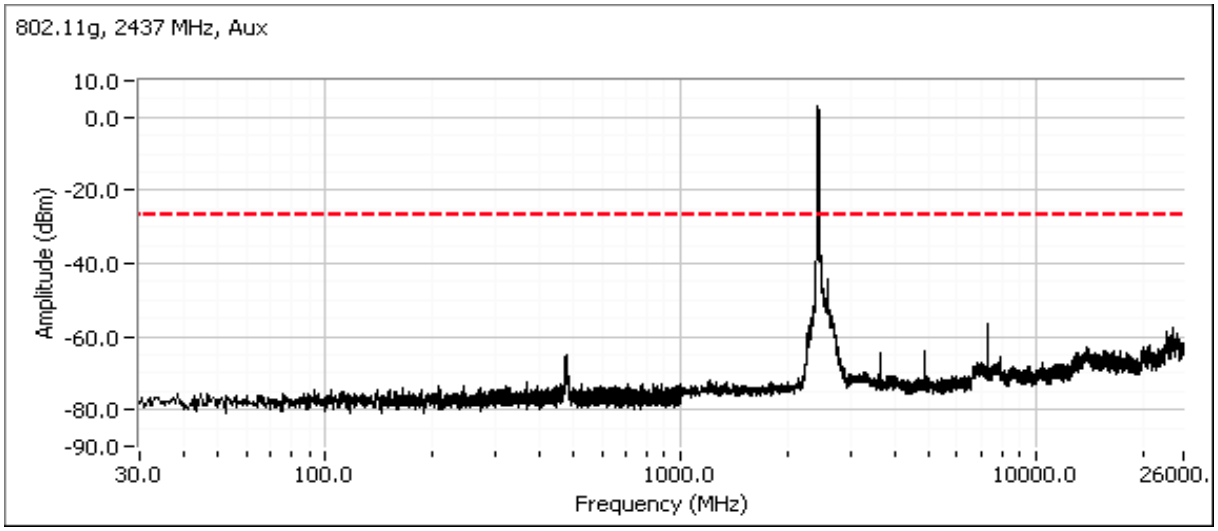


Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

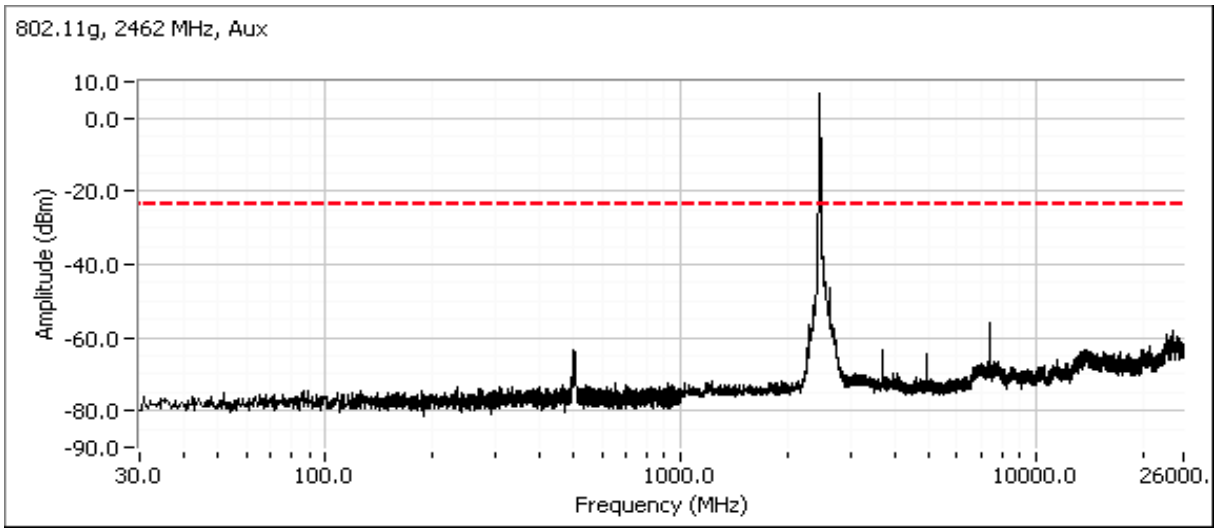


Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Plots for center channel



Plots for high channel



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 7/11/2012
Test Engineer: Mark Hill
Test Location: Fremont EMC Lab #4

Config. Used: 1
Config Change: none
Host Unit Voltage 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 22 °C
Rel. Humidity: 34 %

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Information

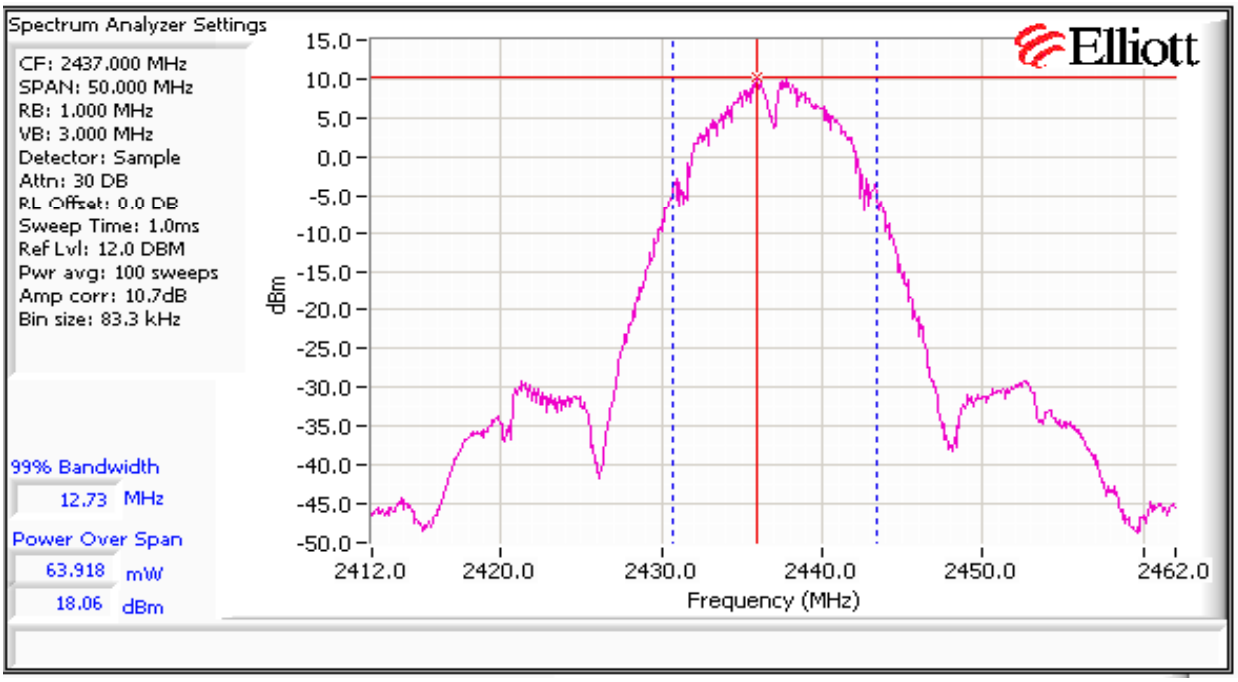
EUT s/n: 80
Software driver: 5.90.125.89

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #1: Output Power (EUT #80)

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP [Note 2] dBm	EIRP [Note 2] W	Output Power (dBm) [3]	Output Power mW
-	2437(b mode)	18.1	64.6	3.9	Pass	22.0	0.158	-	-

Note 1:	Output power measured using a spectrum analyzer (see plots below) with RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the PSA analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz (option #2, method 1 in KDB 558074, equivalent to method 1 of DA-02-2138A1 for U-NII devices). Spurious limit becomes -30dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 13-15 °C
Rel. Humidity: 30-40 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Passing Power	Test Performed	Limit	Result / Margin
Run #1	802.11b Aux	#1 2412MHz	-	-	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	48.3 dBµV/m @ 4824.1 MHz (-5.7 dB)
		#11 2462MHz	-	-			48.2 dBµV/m @ 4909.2 MHz (-5.8 dB)
Run # 2	802.11g Aux	#1 2412MHz	-	-	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	40.9 dBµV/m @ 4822.9 MHz (-13.1 dB)
		#6 2437MHz	-	-			41.9 dBµV/m @ 7310.6 MHz (-12.1 dB)
		#11 2462MHz	-	-			42.4 dBµV/m @ 7387.1 MHz (-11.6 dB)
Run # 3	RX	#6 2437MHz	-	-	Radiated Emissions, 1 - 8 GHz	LP0002	41.9 dBµV/m @ 1500.0 MHz (-12.1 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Information

EUT s/n: 82
Software driver: 5.90.125.89

No radio related emissions below 1GHz observed in preliminary testing.

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #1, Radiated Spurious Emissions, 1-26GHz, 802.11b

Date of Test: 4/11/2012 Test Location: FT Chamber #5

Test Engineer: Mehran Birgani Config Change: -

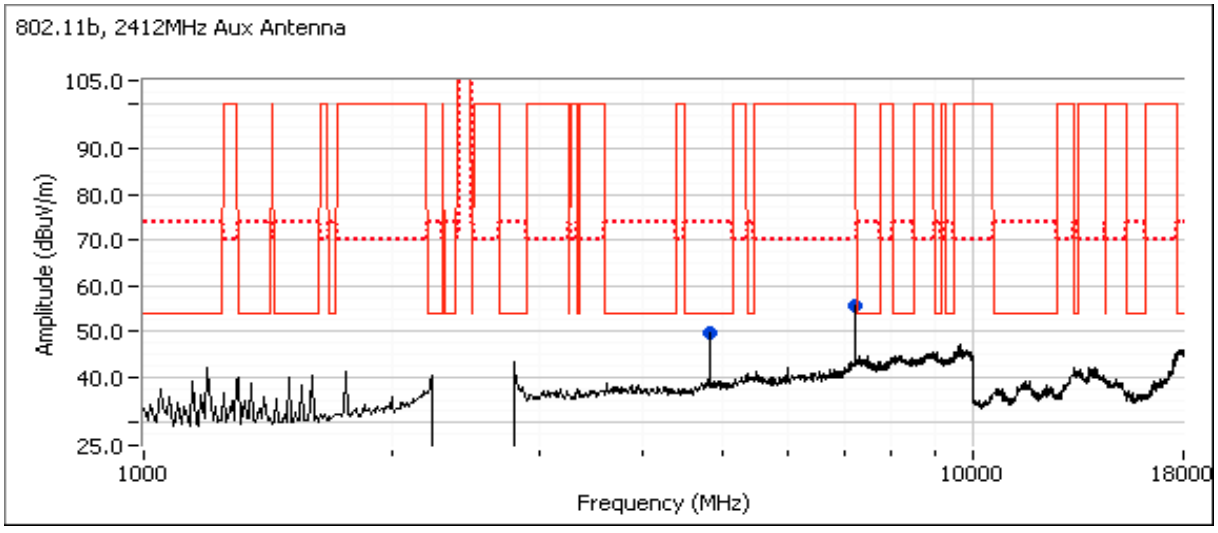
Run #1b, EUT on Channel #1 2412MHz - 802.11b, Aux chain

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain Aux	-	-	-

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.060	48.3	V	54.0	-5.7	AVG	168	2.2	RB 1 MHz;VB 10 Hz;Pk
7236.800	53.9	V	-	-	-	163	2.1	RB=VB= 100 kHz;Pk, note 3
4824.070	51.4	V	74.0	-22.6	PK	168	2.2	RB 1 MHz;VB 3 MHz;Pk

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.
Note 2:	Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range
Note 3:	Refer to antenna port measurements.



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

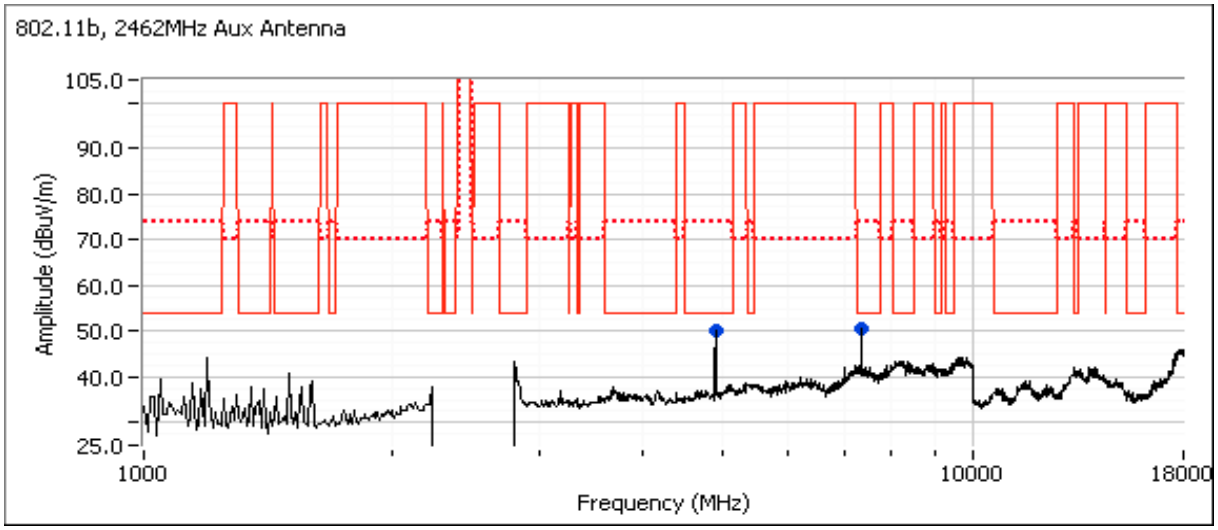
Run #1c: , EUT on Channel #11 2462MHz - 802.11b, Chain Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain Aux	-	-	-

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4909.210	48.2	V	54.0	-5.8	AVG	221	1.0	RB 1 MHz;VB 10 Hz;Pk
4908.930	53.6	V	74.0	-20.4	PK	221	1.0	RB 1 MHz;VB 3 MHz;Pk
7362.650	46.4	V	54.0	-7.6	AVG	186	2.0	RB 1 MHz;VB 10 Hz;Pk
7361.850	54.2	V	74.0	-19.8	PK	186	2.0	RB 1 MHz;VB 3 MHz;Pk

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.
Note 2:	Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 2, Radiated Spurious Emissions, 1-26GHz, 802.11g, Chain

Date of Test: 4/12/2012 Test Location: FT Chamber #5

Test Engineer: Mehran Birgani Config Change: -

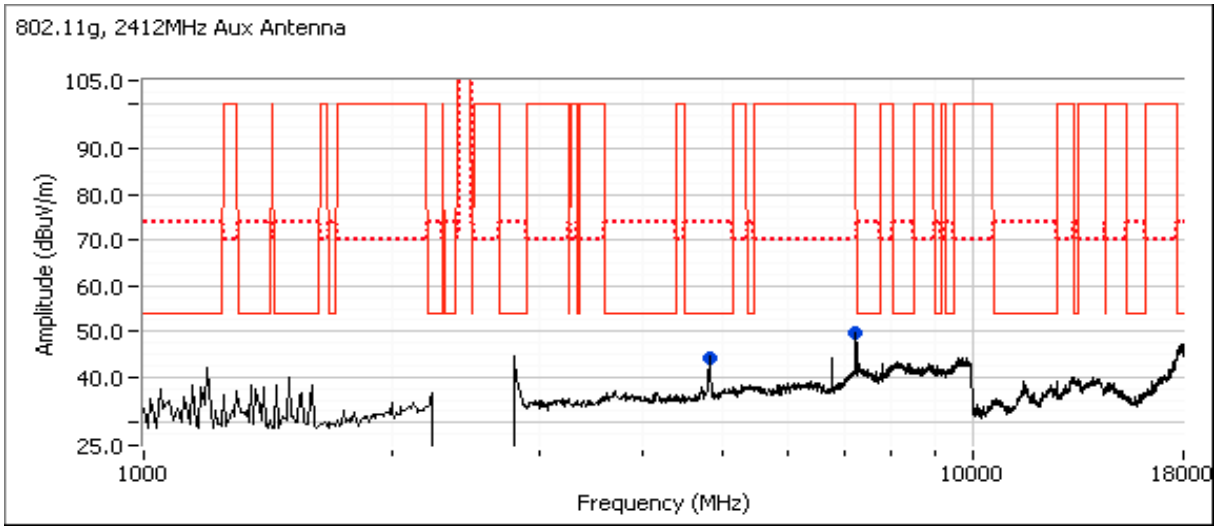
Run # 2a, EUT on Channel #1 2412MHz - 802.11g, Chain Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain Aux	-	-	-

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4822.880	40.9	V	54.0	-13.1	AVG	192	1.4	RB 1 MHz;VB 10 Hz;Pk
4829.280	54.3	V	74.0	-19.7	PK	192	1.4	RB 1 MHz;VB 3 MHz;Pk
7237.060	51.3	V	-	-	-	176	1.4	RB=VB= 100kHz;Pk, note 3

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.
Note 2:	Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range
Note 3:	Refer to antenna port measurements.



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

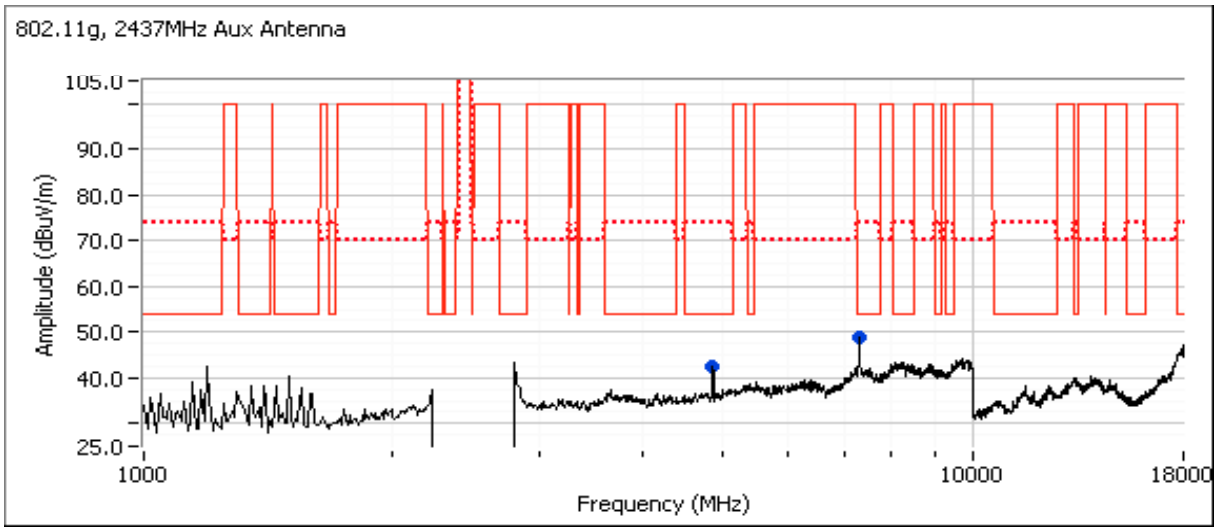
Run # 2b: , EUT on Channel #6 2437MHz - 802.11g, Chain Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain Aux	-	-	-

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
7310.630	41.9	V	54.0	-12.1	AVG	289	1.0	RB 1 MHz;VB 10 Hz;Pk
7317.830	53.1	V	74.0	-20.9	PK	289	1.0	RB 1 MHz;VB 3 MHz;Pk
4873.830	39.0	V	54.0	-15.0	AVG	195	2.1	RB 1 MHz;VB 10 Hz;Pk
4867.550	50.8	V	74.0	-23.2	PK	195	2.1	RB 1 MHz;VB 3 MHz;Pk

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.
Note 2:	Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

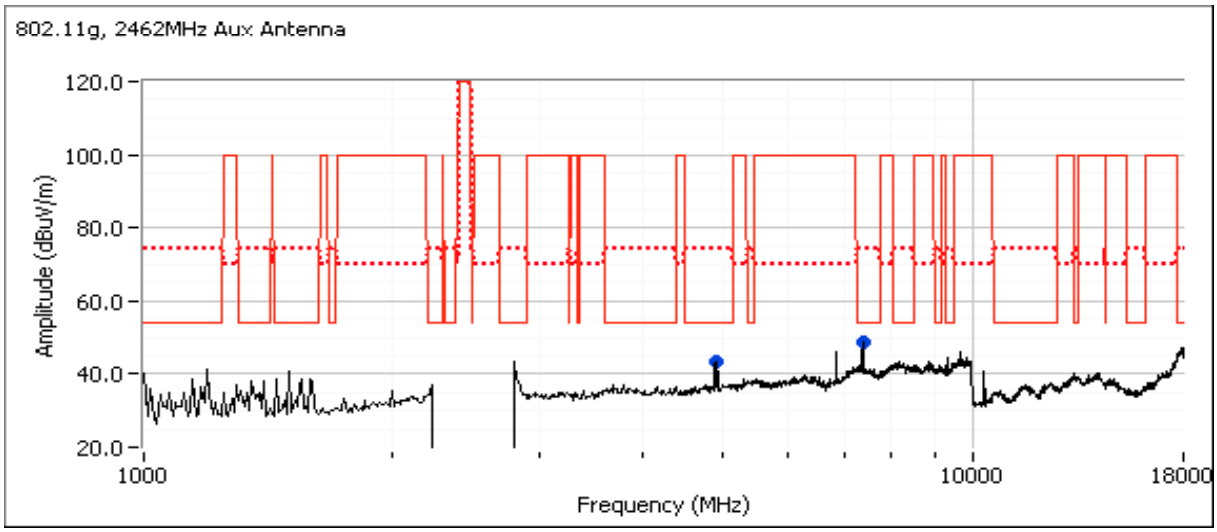
Run # 2c: , EUT on Channel #11 2462MHz - 802.11g, Chain Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain Aux	-	-	-

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
7387.060	42.4	V	54.0	-11.6	AVG	89	1.3	RB 1 MHz;VB 10 Hz;Pk
7388.880	54.0	V	74.0	-20.0	PK	89	1.3	RB 1 MHz;VB 3 MHz;Pk
4924.140	33.8	V	54.0	-20.2	AVG	220	1.6	RB 1 MHz;VB 10 Hz;Pk
4923.850	45.4	V	74.0	-28.6	PK	220	1.6	RB 1 MHz;VB 3 MHz;Pk

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.
Note 2:	Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 3, Radiated Spurious Emissions, 1-8GHz, RX

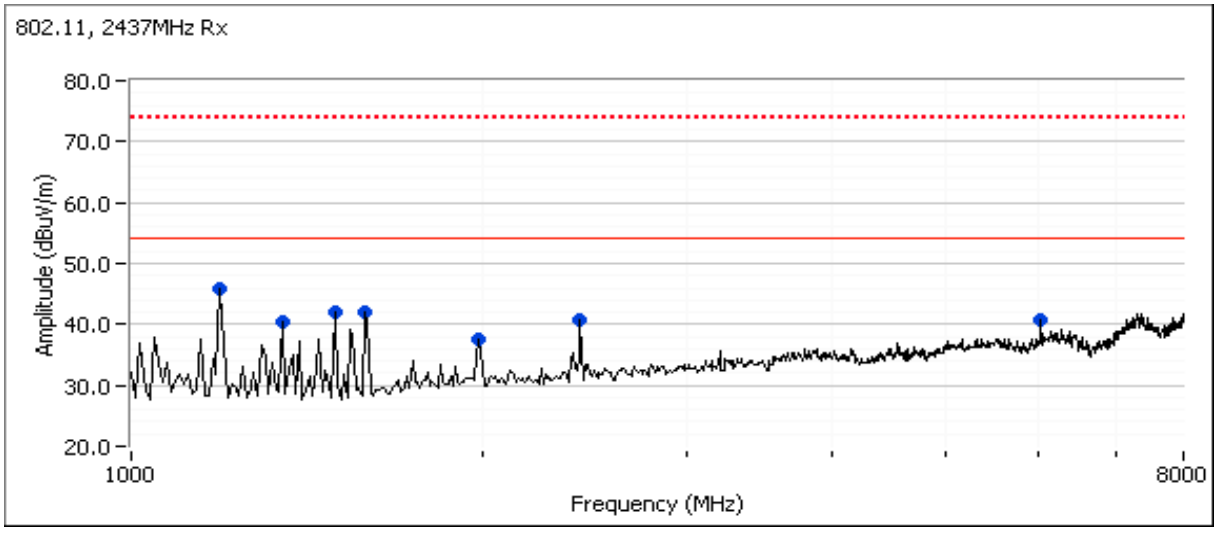
Date of Test: 4/12/2012 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

Run # 3a, EUT on Channel #6 2437MHz - RX

Spurious Radiated Emissions:

Frequency	Level	Pol	LP0002, 2.8		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	41.9	H	54.0	-12.1	AVG	306	1.3	RB 1 MHz;VB 10 Hz;Pk
1349.960	39.0	H	54.0	-15.0	AVG	324	1.0	RB 1 MHz;VB 10 Hz;Pk
2437.000	37.5	H	54.0	-16.5	AVG	271	1.9	RB 1 MHz;VB 10 Hz;Pk
1194.790	53.5	V	74.0	-20.5	PK	181	2.2	RB 1 MHz;VB 3 MHz;Pk
6043.880	31.3	H	54.0	-22.7	AVG	360	2.5	RB 1 MHz;VB 10 Hz;Pk
1595.010	49.0	V	74.0	-25.0	PK	355	2.5	RB 1 MHz;VB 3 MHz;Pk
1991.860	47.1	V	74.0	-26.9	PK	349	2.5	RB 1 MHz;VB 3 MHz;Pk
1195.600	26.8	V	54.0	-27.2	AVG	181	2.2	RB 1 MHz;VB 10 Hz;Pk
1992.050	26.6	V	54.0	-27.4	AVG	349	2.5	RB 1 MHz;VB 10 Hz;Pk
1597.110	26.5	V	54.0	-27.5	AVG	355	2.5	RB 1 MHz;VB 10 Hz;Pk
1500.030	44.4	H	74.0	-29.6	PK	306	1.3	RB 1 MHz;VB 3 MHz;Pk
2437.020	43.3	H	74.0	-30.7	PK	271	1.9	RB 1 MHz;VB 3 MHz;Pk
6044.230	43.1	H	74.0	-30.9	PK	360	2.5	RB 1 MHz;VB 3 MHz;Pk
1350.230	42.8	H	74.0	-31.2	PK	324	1.0	RB 1 MHz;VB 3 MHz;Pk



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 13-15 °C
Rel. Humidity: 30-40 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Passing Power	Test Performed	Limit	Result / Margin
Run #1	802.11b Aux	#6 2437MHz	-	-	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	53.4 dBµV/m @ 4874.0 MHz (-0.6 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Information

EUT s/n: 80
Software driver: 5.90.125.89

No radio related emissions below 1GHz observed in preliminary testing.

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #1, Radiated Spurious Emissions, 1-26GHz, 802.11b, EUT #80.

Date of Test: 5/3/2012 Test Location: FT Chamber #5
Test Engineer: Mehran Birgani Config Change: -

Run #1a: EUT on Channel #6 2437MHz - 802.11b, Chain Main and Aux

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters		
4873.970	53.4	V	54.0	-0.6	AVG	161	2.3	RB 1 MHz;VB 10 Hz;Pea	Aux
4873.980	52.5	V	54.0	-1.5	AVG	199	2.0	RB 1 MHz;VB 10 Hz;Pea	Main
7311.700	51.0	V	54.0	-3.0	AVG	186	1.6	RB 1 MHz;VB 10 Hz;Pea	Aux
4873.980	50.3	H	54.0	-3.7	AVG	224	1.2	RB 1 MHz;VB 10 Hz;Pea	Aux
4874.000	50.2	H	54.0	-3.8	AVG	232	1.0	RB 1 MHz;VB 10 Hz;Pea	Main
7311.680	49.0	V	54.0	-5.0	AVG	318	1.1	RB 1 MHz;VB 10 Hz;Pea	Main
7311.670	48.0	H	54.0	-6.0	AVG	0	1.0	RB 1 MHz;VB 10 Hz;Pea	Aux
7311.680	47.0	H	54.0	-7.0	AVG	219	1.0	RB 1 MHz;VB 10 Hz;Pea	Main
7310.100	55.8	V	74.0	-18.2	PK	186	1.6	RB 1 MHz;VB 3 MHz;Pe	Aux
4873.910	54.8	V	74.0	-19.2	PK	161	2.3	RB 1 MHz;VB 3 MHz;Pe	Aux
4874.000	54.1	V	74.0	-19.9	PK	199	2.0	RB 1 MHz;VB 3 MHz;Pe	Main
7311.900	53.6	V	74.0	-20.4	PK	318	1.1	RB 1 MHz;VB 3 MHz;Pe	Main
7310.030	52.7	H	74.0	-21.3	PK	0	1.0	RB 1 MHz;VB 3 MHz;Pe	Aux
7311.720	52.5	H	74.0	-21.5	PK	219	1.0	RB 1 MHz;VB 3 MHz;Pe	Main
4873.970	52.2	H	74.0	-21.8	PK	224	1.2	RB 1 MHz;VB 3 MHz;Pe	Aux
4874.040	52.1	H	74.0	-21.9	PK	232	1.0	RB 1 MHz;VB 3 MHz;Pe	Main

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.
Note 2:	Based on preliminary measurements, only the emissions at the 2nd and 3rd harmonics are significant.

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 19.7 °C

Rel. Humidity: 34 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Passing Power	Test Performed	Limit	Result / Margin
Run # 1	802.11b Main	#1 2412MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	52.6 dBµV/m @ 2390.0 MHz (-1.4 dB)
		#11 2462MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.0 dBµV/m @ 2490.3 MHz (-1.0 dB)
	802.11b Aux	#1 2412MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	48.4 dBµV/m @ 2382.1 MHz (-5.6 dB)
		#11 2462MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.9 dBµV/m @ 2484.2 MHz (-0.1 dB)
Run # 2	802.11b Main	#2 2417MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	49.9 dBµV/m @ 2390.0 MHz (-4.1 dB)
		#10 2457MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.6 dBµV/m @ 2494.5 MHz (-0.4 dB)
	802.11b Aux	#2 2417MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	51.4 dBµV/m @ 2390.0 MHz (-2.6 dB)
		#10 2457MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.2 dBµV/m @ 2490.7 MHz (-0.8 dB)
Run # 3	802.11g Main	#1 2412MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	51.1 dBµV/m @ 2390.0 MHz (-2.9 dB)
		#11 2462MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.5 dBµV/m @ 2483.5 MHz (-0.5 dB)
	802.11g Aux	#1 2412MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	52.5 dBµV/m @ 2390.0 MHz (-1.5 dB)
		#11 2462MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.9 dBµV/m @ 2483.5 MHz (-0.1 dB)

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #	Mode	Channel	Target Power	Passing Power	Test Performed	Limit	Result / Margin
Run # 4	802.11g Main	#2 2417MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	53.3 dBµV/m @ 2390.0 MHz (-0.7 dB)
		#10 2457MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.4 dBµV/m @ 2483.5 MHz (-0.6 dB)
		#9 2452MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.1 dBµV/m @ 2483.6 MHz (-0.9 dB)
Run # 5	802.11g Aux	#2 2417MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	53.1 dBµV/m @ 2390.0 MHz (-0.9 dB)
		#10 2457MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.2 dBµV/m @ 2483.5 MHz (-0.8 dB)
		#3 2422MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	53.8 dBµV/m @ 2390.0 MHz (-0.2 dB)
		#9 2452MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.2 dBµV/m @ 2483.6 MHz (-0.8 dB)
		#4 2427MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.8 dBµV/m @ 2389.8 MHz (-0.2 dB)
		#8 2447MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.9 dBµV/m @ 2484.4 MHz (-0.1 dB)
		#7 2442MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.7 dBµV/m @ 2483.5 MHz (-0.3 dB)
		#6 2437MHz	-	-	Restricted Band Edge at 2390 MHz	15.209	49.9 dBµV/m @ 2390.0 MHz (-4.1 dB)
		#6 2437MHz	-	-	Restricted Band Edge at 2483.5 MHz	15.209	53.3 dBµV/m @ 2483.5 MHz (-0.7 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Information

EUT s/n: 82

Software driver: 5.90.125.89

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 1: Band Edge Field Strength - 802.11b, Chain

Date of Test: 4/12/2012 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

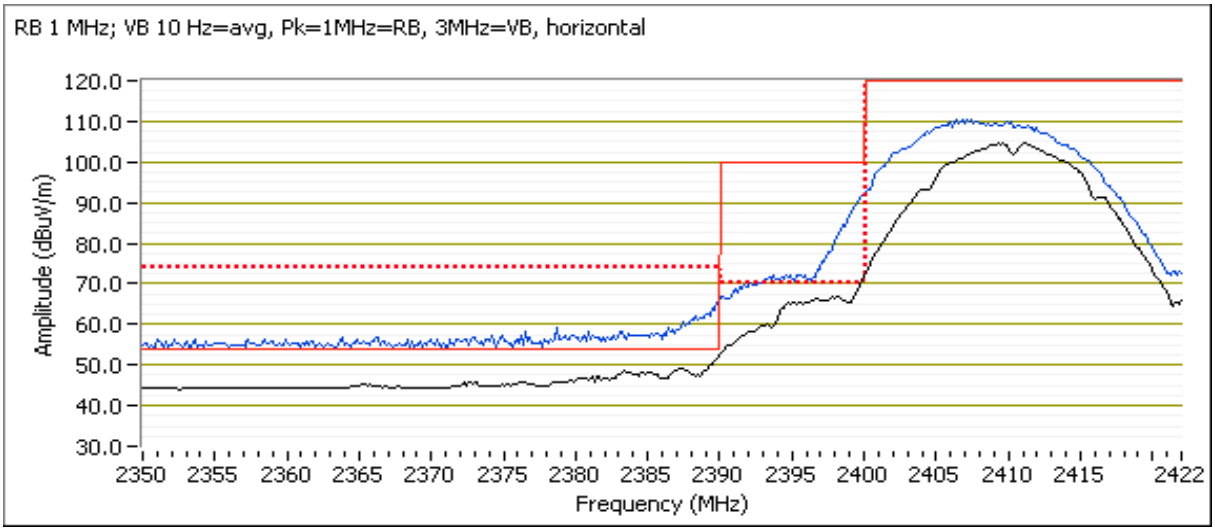
Run # 1a, EUT on Channel #1 2412MHz - 802.11b, Chain Main & Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Main	-	-	-
Aux	-	-	-

2390 MHz Band Edge Signal Field Strength

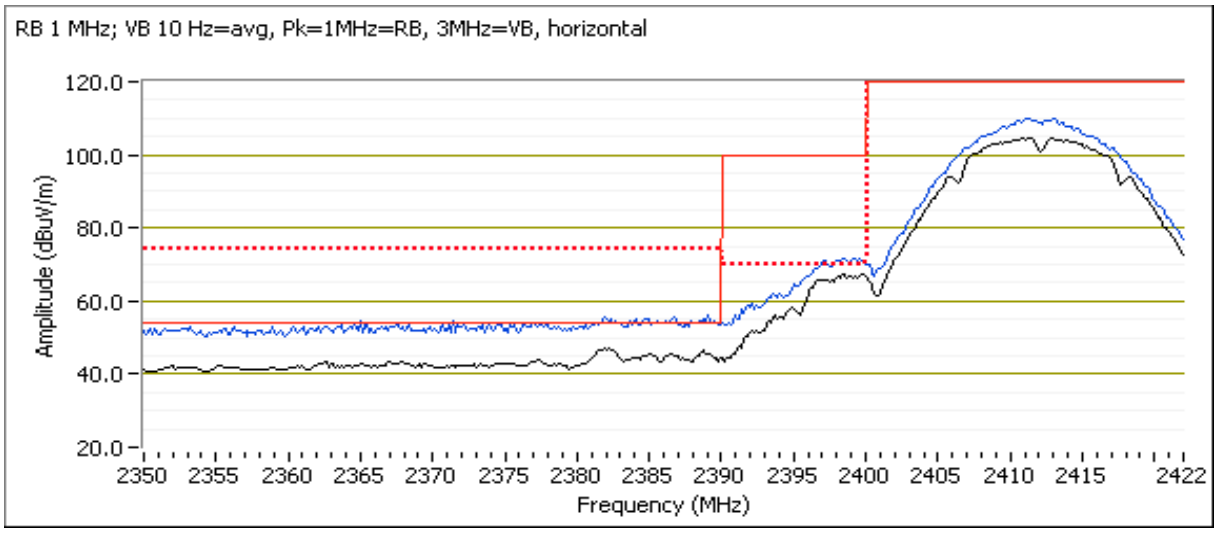
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	52.6	H	54.0	-1.4	AVG	291	1.5	Main
2390.000	64.3	H	74.0	-9.7	PK	291	1.5	Main
2382.140	48.4	H	54.0	-5.6	AVG	315	1.0	Aux
2370.680	58.7	H	74.0	-15.3	PK	315	1.0	Aux
2382.140	40.7	V	54.0	-13.3	AVG	134	1.0	Aux
2388.240	50.3	V	74.0	-23.7	PK	134	1.0	Aux

Main



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Aux



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

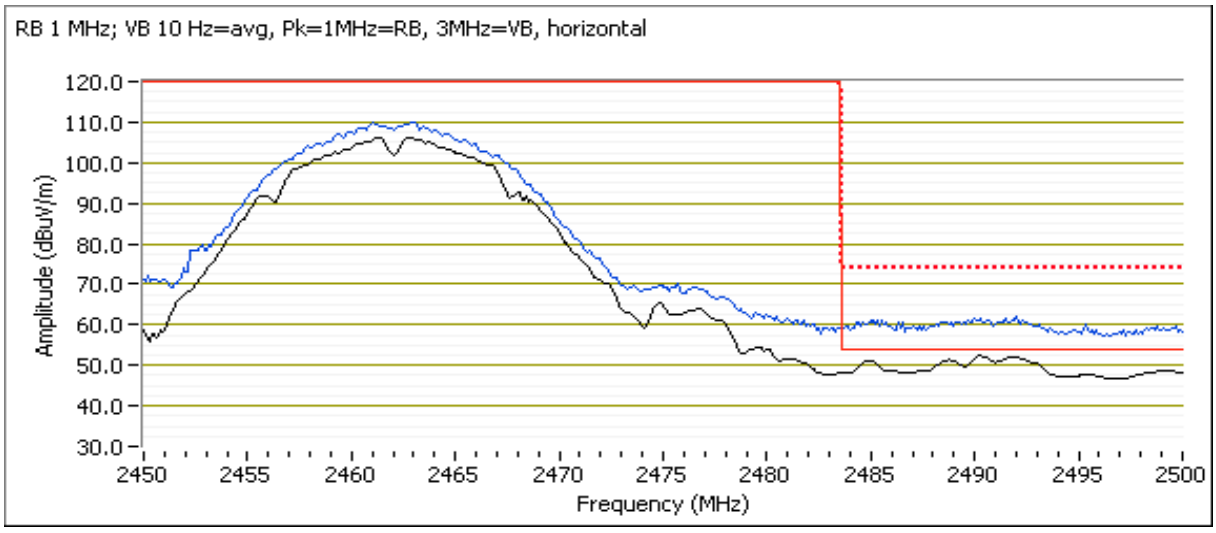
Run # 1b: EUT on Channel #11 2462MHz - 802.11b, Chain

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Main	-	-	-
Aux	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

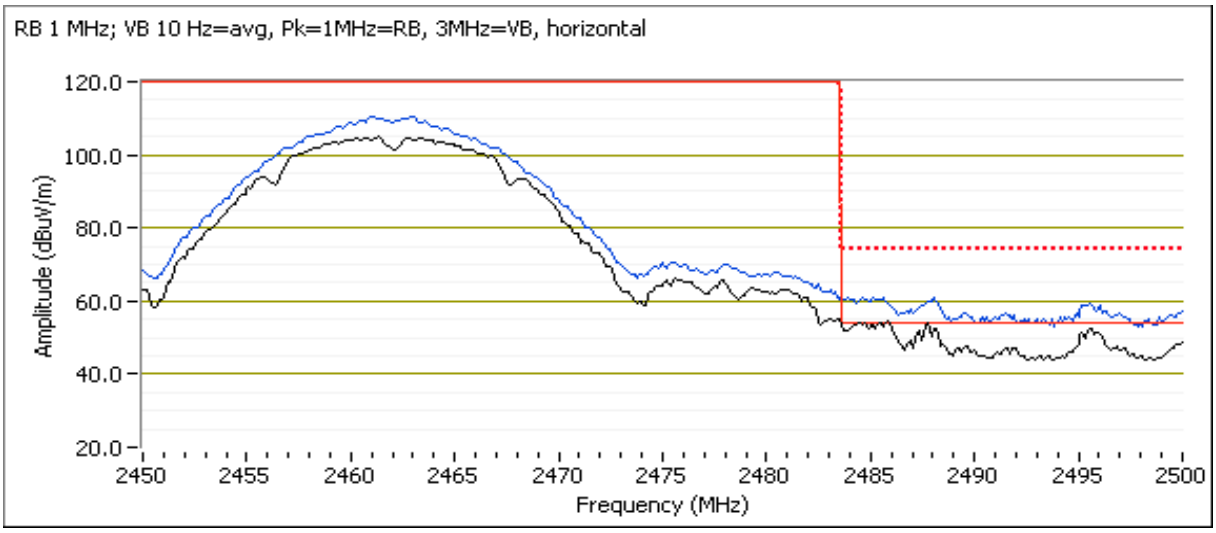
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2490.410	50.2	V	54.0	-3.8	AVG	0	1.0	Main
2484.890	59.6	V	74.0	-14.4	PK	0	1.0	Main
2490.250	53.0	H	54.0	-1.0	AVG	48	1.0	Main
2490.050	62.3	H	74.0	-11.7	PK	48	1.0	Main
2484.230	53.9	H	54.0	-0.1	AVG	73	1.0	Aux
2484.230	61.5	H	74.0	-12.5	PK	73	1.0	Aux
2485.780	48.1	V	54.0	-5.9	AVG	33	1.0	Aux
2484.920	58.0	V	74.0	-16.0	PK	33	1.0	Aux

Main



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Aux



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 2: Band Edge Field Strength - 802.11b, Chain

Date of Test: 4/12/2012 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

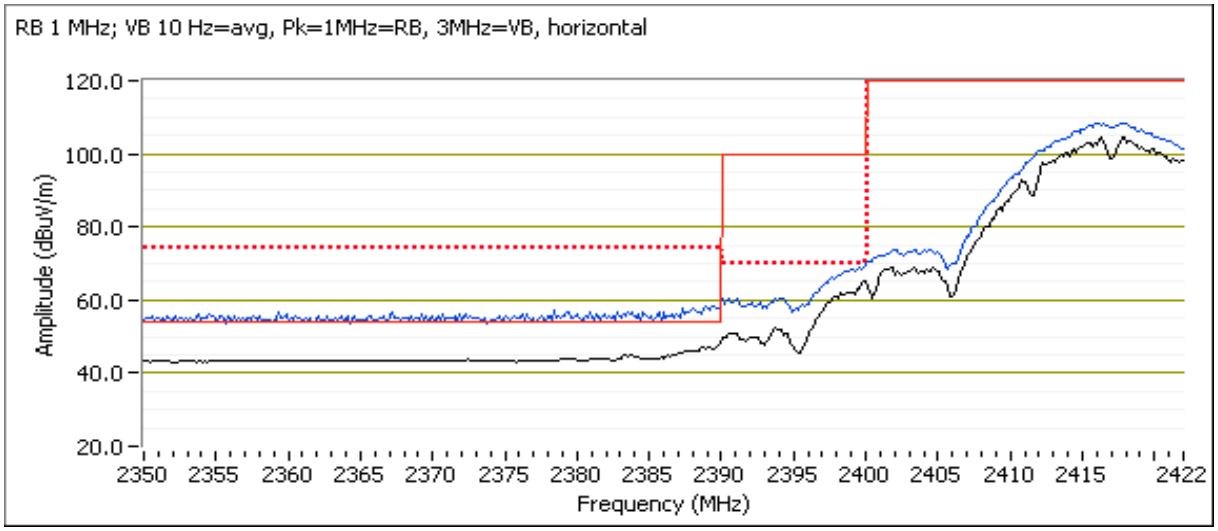
Run # 2a: EUT on Channel #2 2417MHz - 802.11b, Chain

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Main	-	-	-
Aux	-	-	-

2390 MHz Band Edge Signal Field Strength

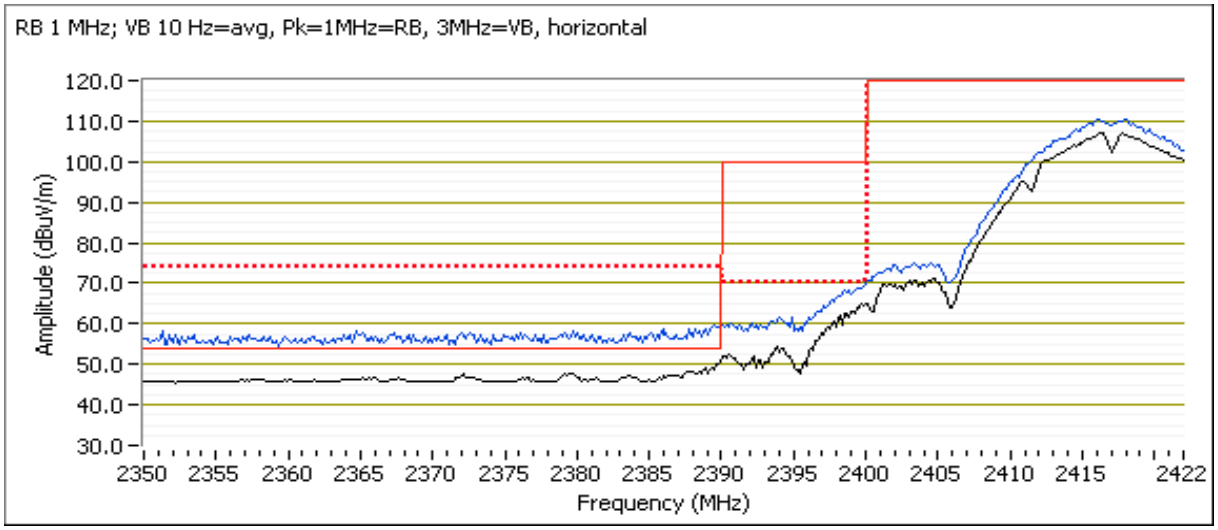
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	49.9	H	54.0	-4.1	AVG	55	1.0	Main
2389.680	58.5	H	74.0	-15.5	PK	55	1.0	Main
2390.000	49.5	V	54.0	-4.5	AVG	0	1.0	Main
2390.000	59.1	V	74.0	-14.9	PK	0	1.0	Main
2390.000	51.4	H	54.0	-2.6	AVG	318	1.0	Aux
2383.270	59.2	H	74.0	-14.8	PK	318	1.0	Aux
2390.000	46.3	V	54.0	-7.7	AVG	239	1.0	Aux
2387.920	56.8	V	74.0	-17.2	PK	239	1.0	Aux

Main



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Aux



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

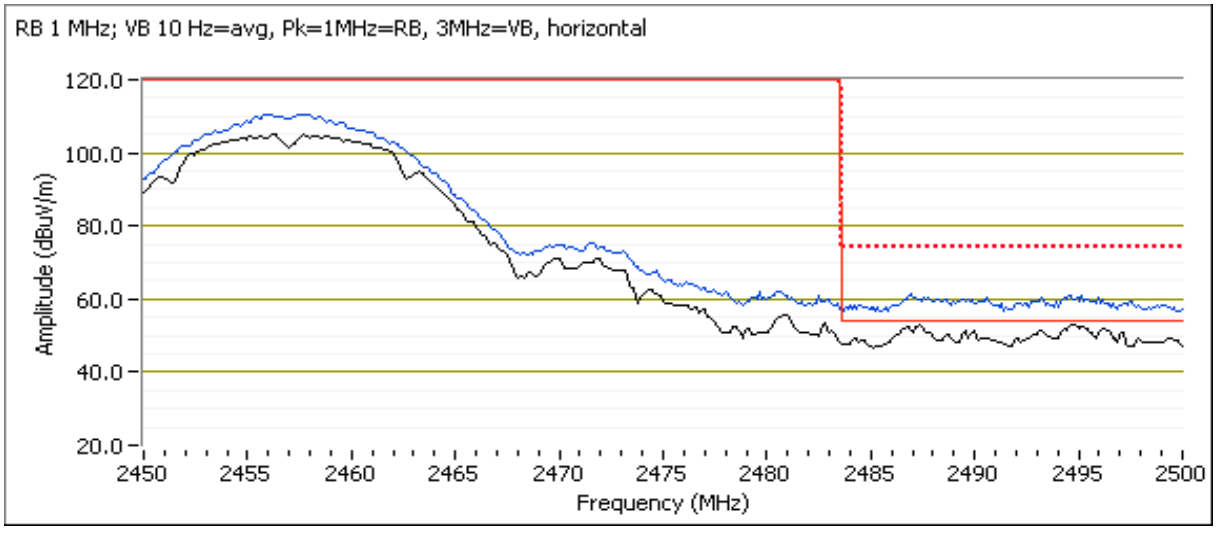
Run # 2b: EUT on Channel #10 2457MHz - 802.11b, Chain

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Main	-	-	-
Aux	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

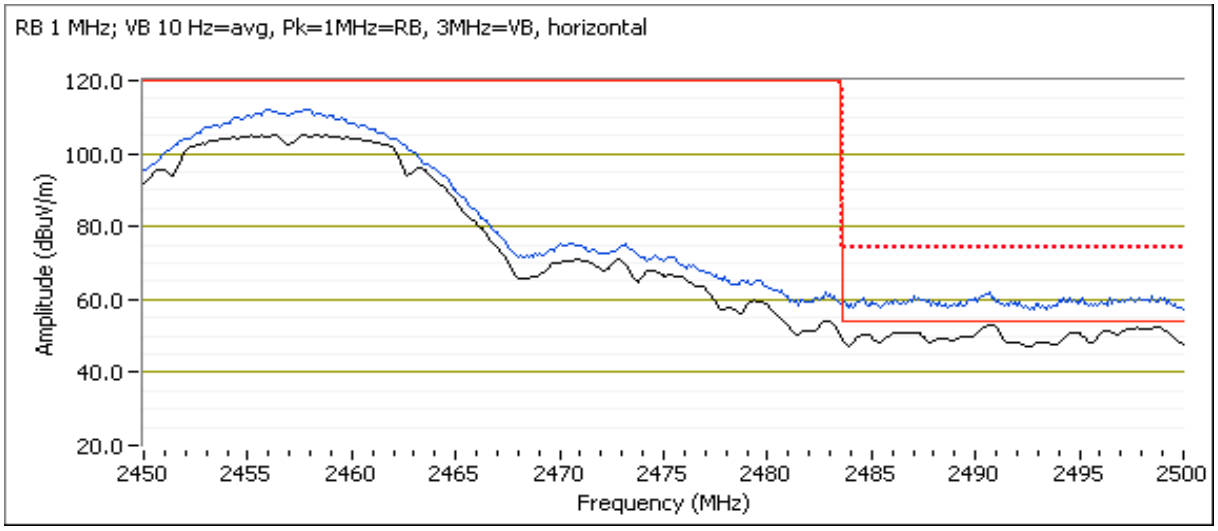
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2494.480	53.6	H	54.0	-0.4	AVG	294	1.0	Main
2494.440	62.1	H	74.0	-11.9	PK	294	1.0	Main
2490.740	53.2	H	54.0	-0.8	AVG	316	1.2	Aux
2490.340	61.9	H	74.0	-12.1	PK	316	1.2	Aux
2490.640	46.8	V	54.0	-7.2	AVG	235	1.0	Aux
2489.980	58.2	V	74.0	-15.8	PK	235	1.0	Aux

Main



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Aux



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 3: Band Edge Field Strength - 802.11g, Chain

Date of Test: 4/12/2012 Test Location: FT Chamber#5

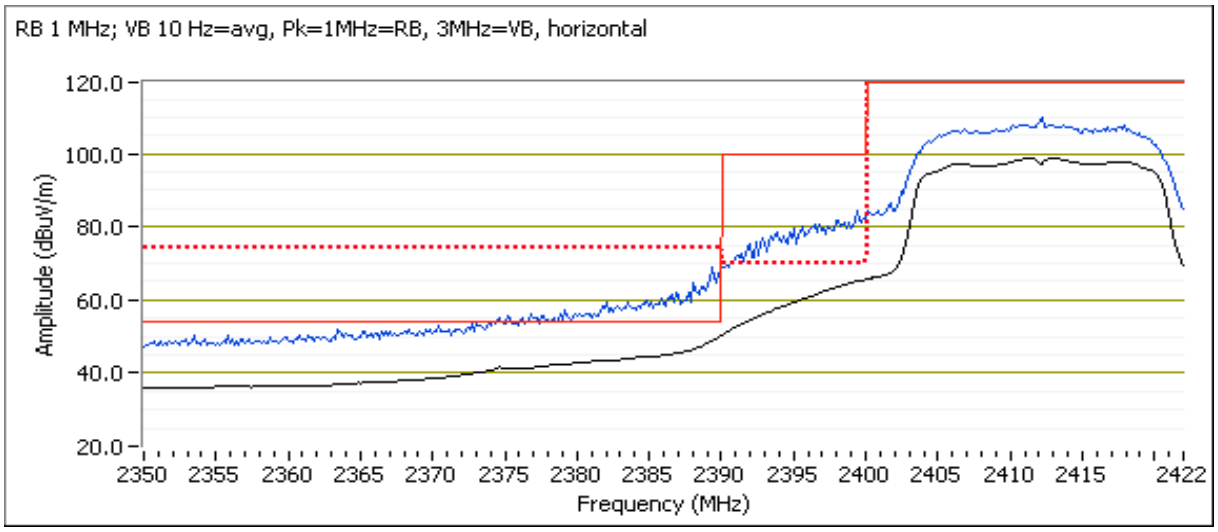
Test Engineer: Joseph Cadigal Config Change: none

Run # 3a: EUT on Channel #1 2412MHz - 802.11g, Chain - Main

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Main	-	-	-

2390 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	51.1	H	54.0	-2.9	AVG	291	1.0	Main
2389.920	63.3	H	74.0	-10.7	PK	291	1.0	Main
2390.000	51.0	V	54.0	-3.0	AVG	354	1.0	Main
2390.000	66.2	V	74.0	-7.8	PK	354	1.0	Main



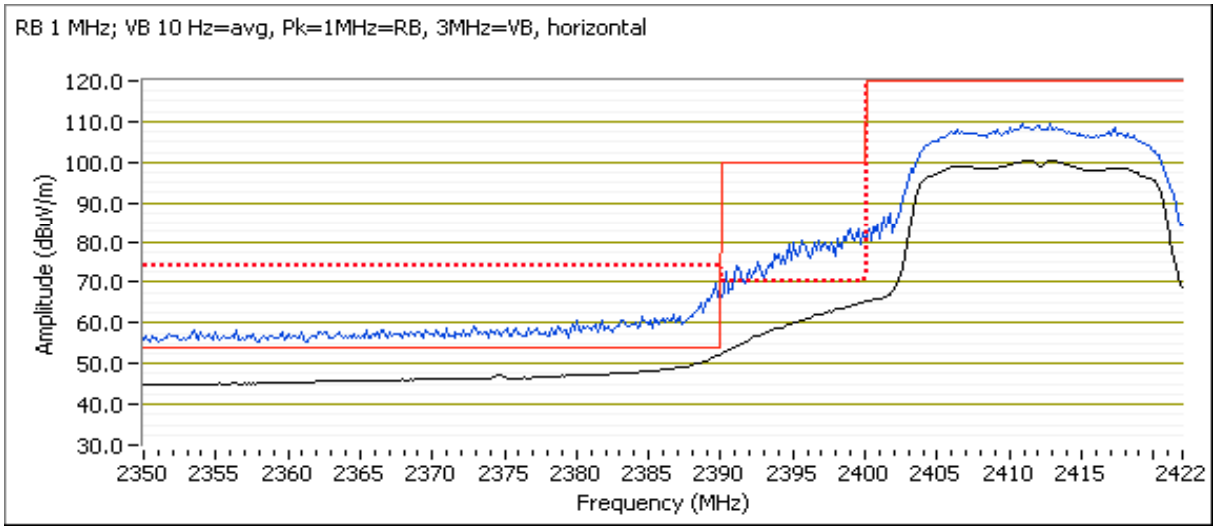
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 3b, EUT on Channel #1 2412MHz - 802.11g, Chain - Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Aux	-	-	-

2390 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	52.5	H	54.0	-1.5	AVG	319	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.920	65.5	H	74.0	-8.5	PK	319	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	47.5	V	54.0	-6.5	AVG	241	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.360	59.4	V	74.0	-14.6	PK	241	1.0	POS; RB 1 MHz; VB: 3 MHz



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

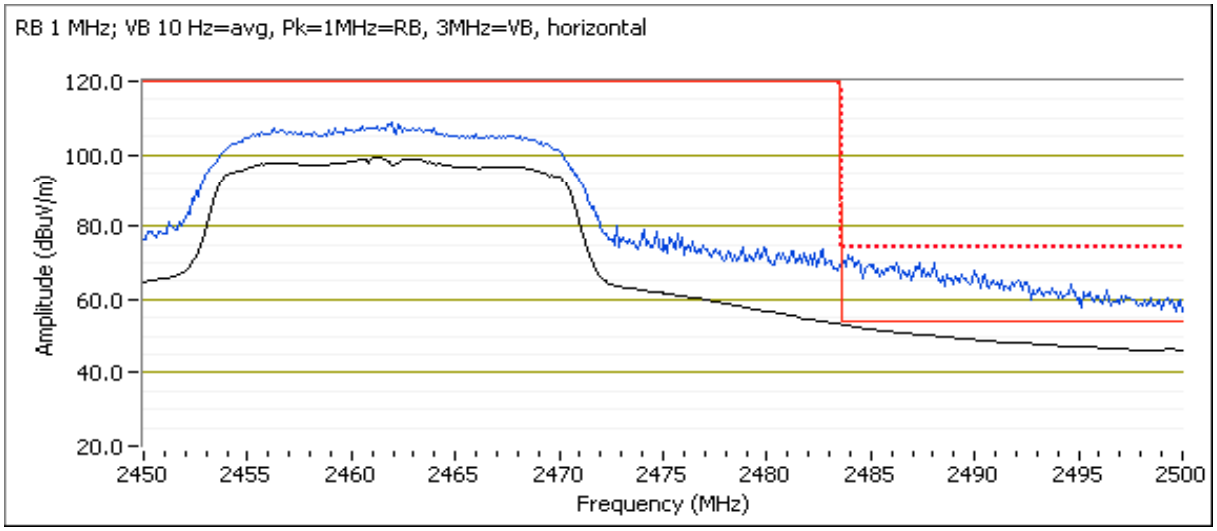
Run # 3c, EUT on Channel #11 2462MHz - 802.11g

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Aux	-	-	-
Main	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

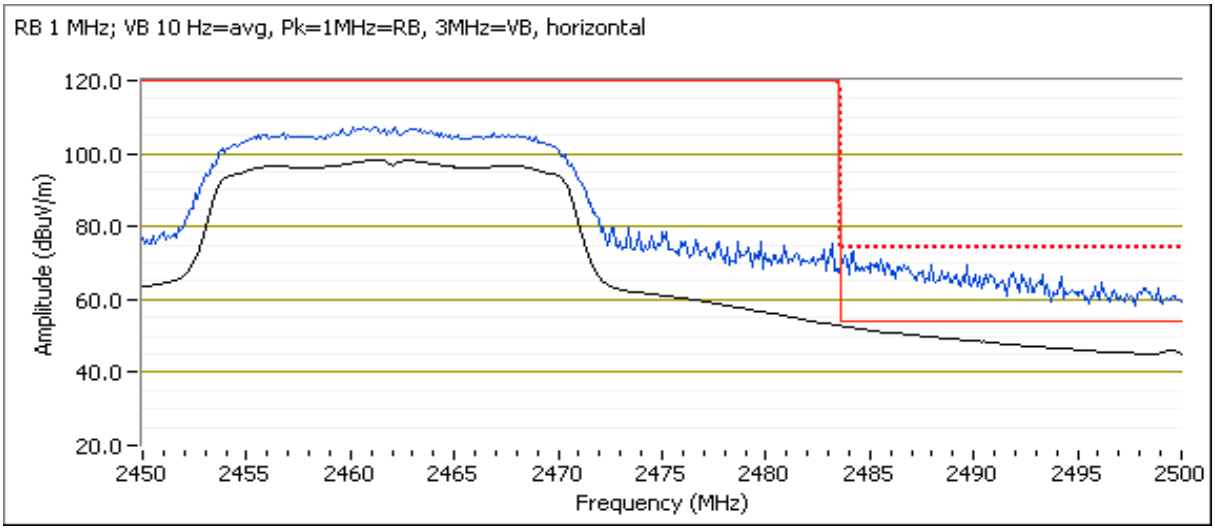
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	53.5	H	54.0	-0.5	AVG	313	1.0	Aux
2486.050	72.5	H	74.0	-1.5	PK	313	1.0	Aux
2483.530	53.9	H	54.0	-0.1	AVG	57	1.0	Main
2483.730	73.1	H	74.0	-0.9	PK	57	1.0	Main

Aux



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Main



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 4, Band Edge Field Strength - 802.11g, Chain - Main

Date of Test: 4/12/2012 Test Location: FT Chamber#5

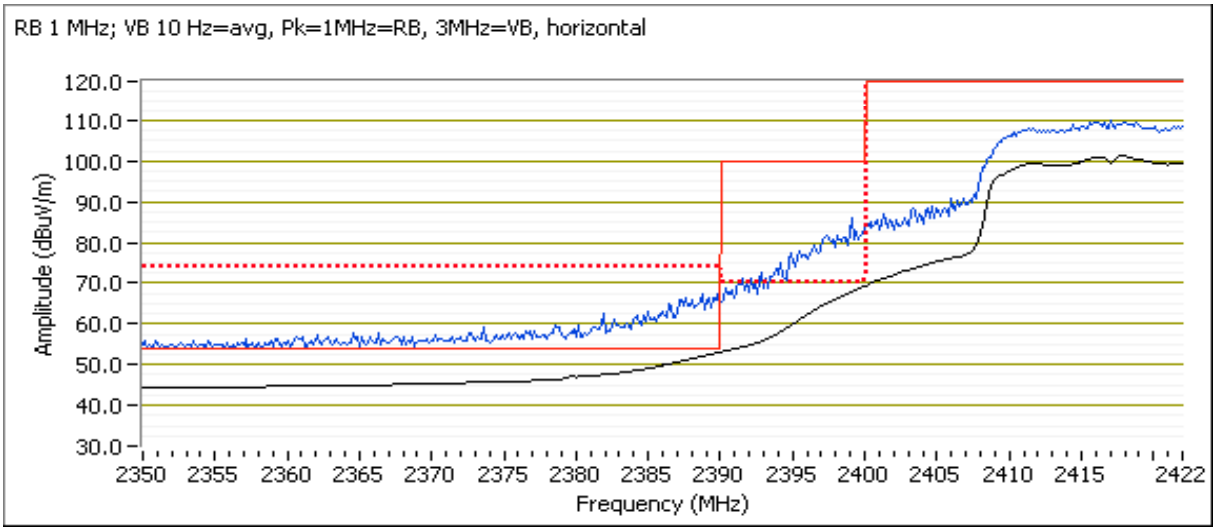
Test Engineer: Joseph Cadigal Config Change: none

Run # 4a, EUT on Channel #2 2417MHz - 802.11g, Chain - Main

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Main	-	-	-

2390 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	53.3	H	54.0	-0.7	AVG	290	1.0	Main
2384.950	68.9	H	74.0	-5.1	PK	290	1.0	Main
2389.440	71.0	V	74.0	-3.0	PK	345	1.0	Main
2390.000	55.8	V	54.0	1.8	AVG	345	1.0	Main



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 4b, EUT on Channel #10 2457MHz - 802.11g, Chain - Main

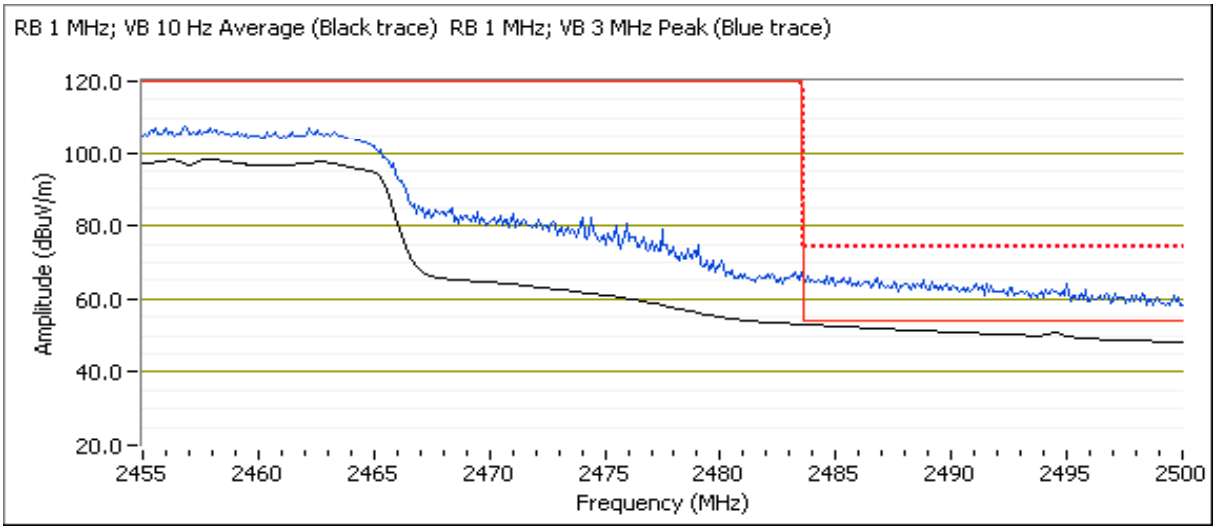
Date of Test: 4/16/2012 Test Location: FT Chamber#5

Test Engineer: M. Birgani Config Change: -

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Main	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	53.4	H	54.0	-0.6	AVG	116	1.4	POS; RB 1 MHz; VB: 10 Hz
2483.600	50.0	V	54.0	-4.0	AVG	189	1.1	POS; RB 1 MHz; VB: 10 Hz
2487.010	66.4	H	74.0	-7.6	PK	116	1.4	POS; RB 1 MHz; VB: 3 MHz
2483.730	63.5	V	74.0	-10.5	PK	189	1.1	POS; RB 1 MHz; VB: 3 MHz



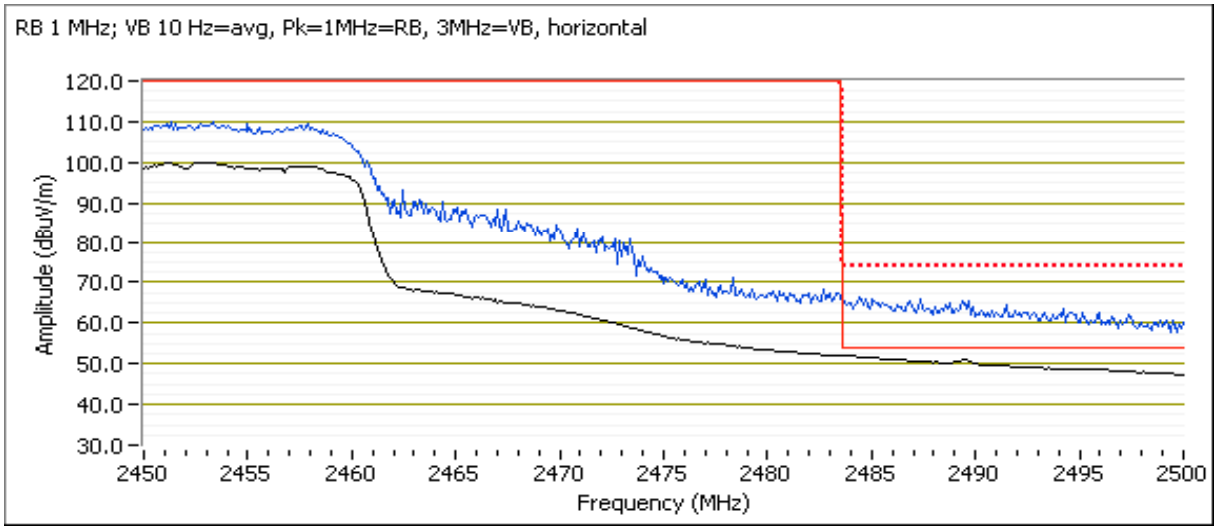
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 4c, EUT on Channel #9 2452MHz - 802.11g, Chain - Main

	Power Settings			
	Target (dBm)	Measured (dBm)	Software Setting	
Main	-	-	-	Main

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	52.3	H	54.0	-1.7	AVG	290	1.0	Main
2484.690	65.1	H	74.0	-8.9	PK	290	1.0	Main
2483.600	53.1	V	54.0	-0.9	AVG	345	1.0	Main
2484.720	66.0	V	74.0	-8.0	PK	345	1.0	Main



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 5, Band Edge Field Strength - 802.11g, Chain - Aux

Date of Test: 4/16/2012 Test Location: FT Chamber#5

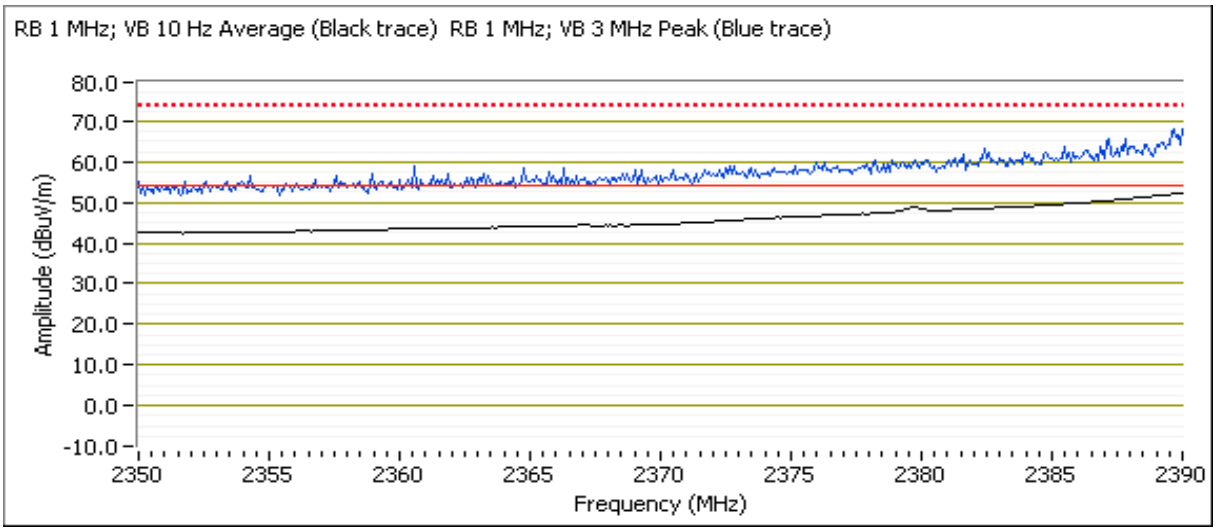
Test Engineer: M. Birgani Config Change: -

Run # 5a, EUT on Channel #2 2417MHz - 802.11g, Chain - Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Aux	-	-	-

2390 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	53.1	H	54.0	-0.9	AVG	239	1.1	POS; RB 1 MHz; VB: 10 Hz
2389.920	49.8	V	54.0	-4.2	AVG	242	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.920	64.8	H	74.0	-9.2	PK	239	1.1	POS; RB 1 MHz; VB: 3 MHz
2388.160	61.2	V	74.0	-12.8	PK	242	1.0	POS; RB 1 MHz; VB: 3 MHz



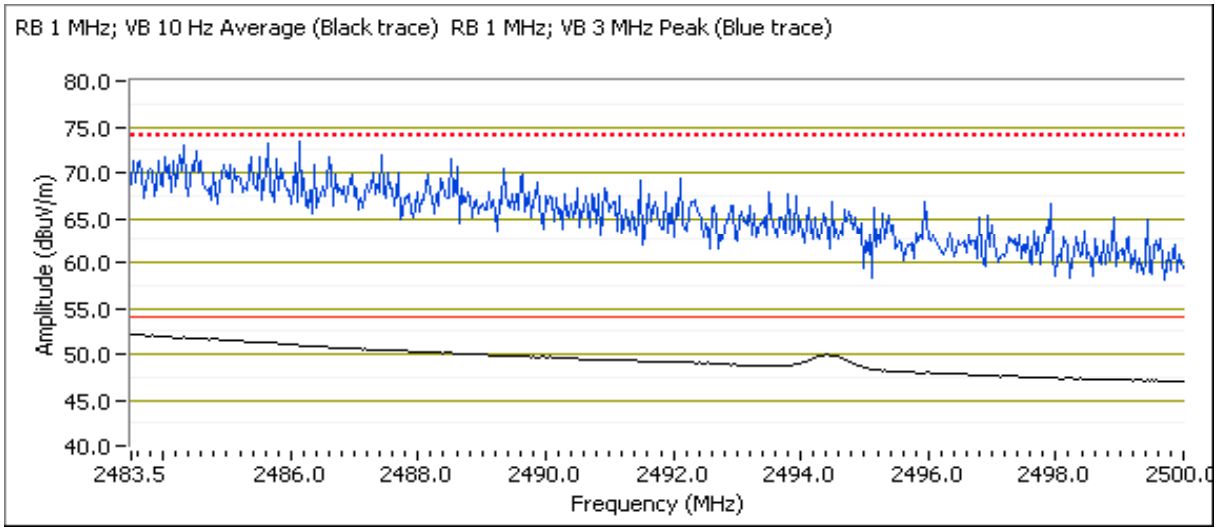
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 5b, EUT on Channel #10 2457MHz - 802.11g, Chain - Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Aux	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	53.2	H	54.0	-0.8	AVG	247	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.570	71.4	H	74.0	-2.6	PK	247	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.670	49.2	V	54.0	-4.8	AVG	171	1.1	POS; RB 1 MHz; VB: 10 Hz
2484.260	64.5	V	74.0	-9.5	PK	171	1.1	POS; RB 1 MHz; VB: 3 MHz



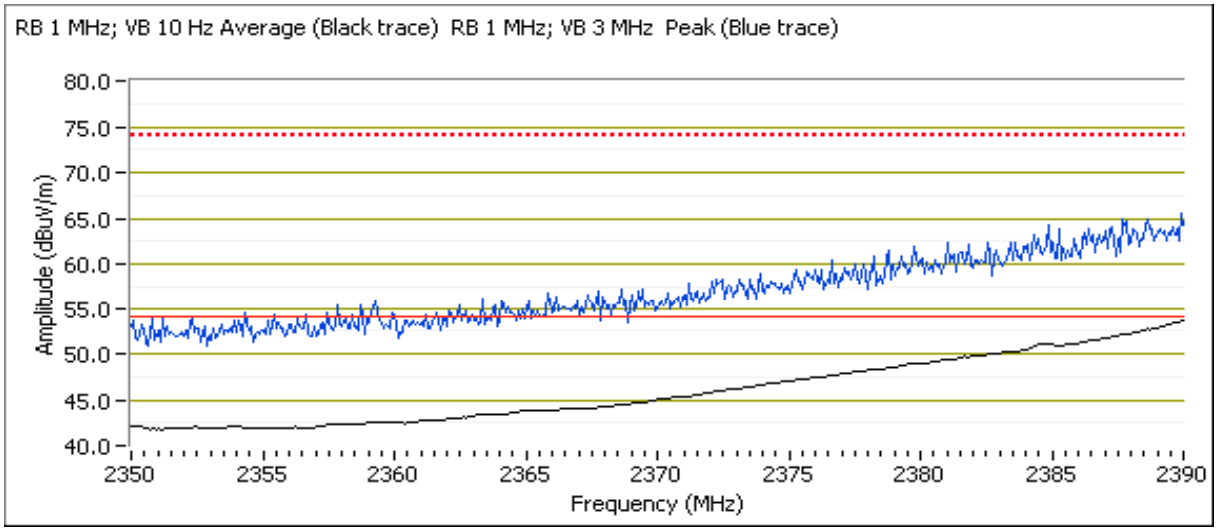
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 5c, EUT on Channel #3 2422MHz - 802.11g, Chain - Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Aux	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	53.8	H	54.0	-0.2	AVG	143	1.0	
2387.680	71.5	H	74.0	-2.5	PK	143	1.0	



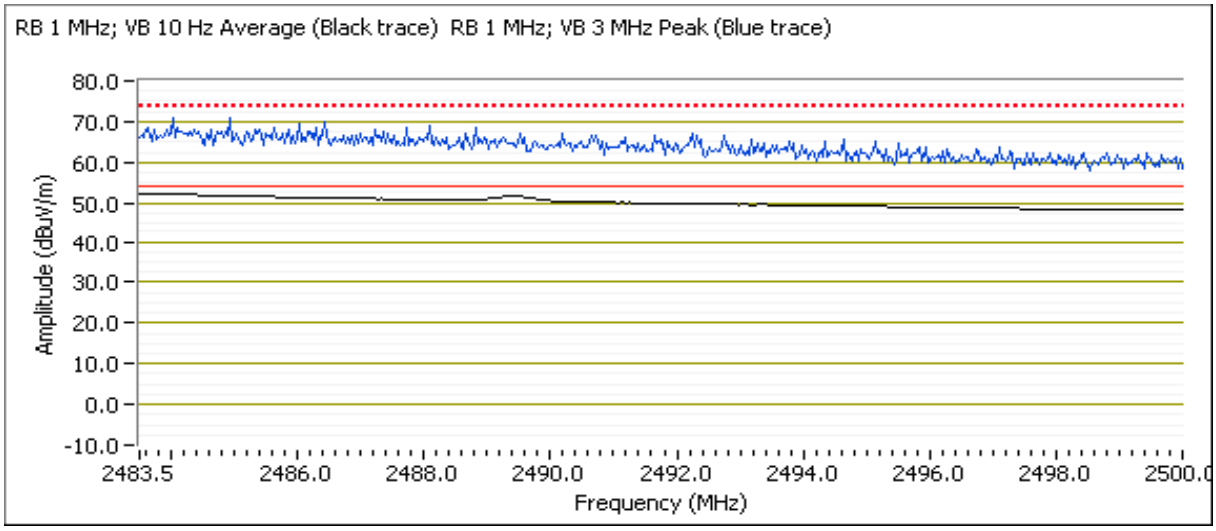
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 5d, EUT on Channel #9 2452MHz - 802.11g, Chain - Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Aux	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.630	53.2	H	54.0	-0.8	AVG	235	1.0	POS; RB 1 MHz; VB: 10 Hz
2485.580	69.9	H	74.0	-4.1	PK	235	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	44.7	V	54.0	-9.3	AVG	233	1.0	POS; RB 1 MHz; VB: 10 Hz
2485.650	61.0	V	74.0	-13.0	PK	233	1.0	POS; RB 1 MHz; VB: 3 MHz



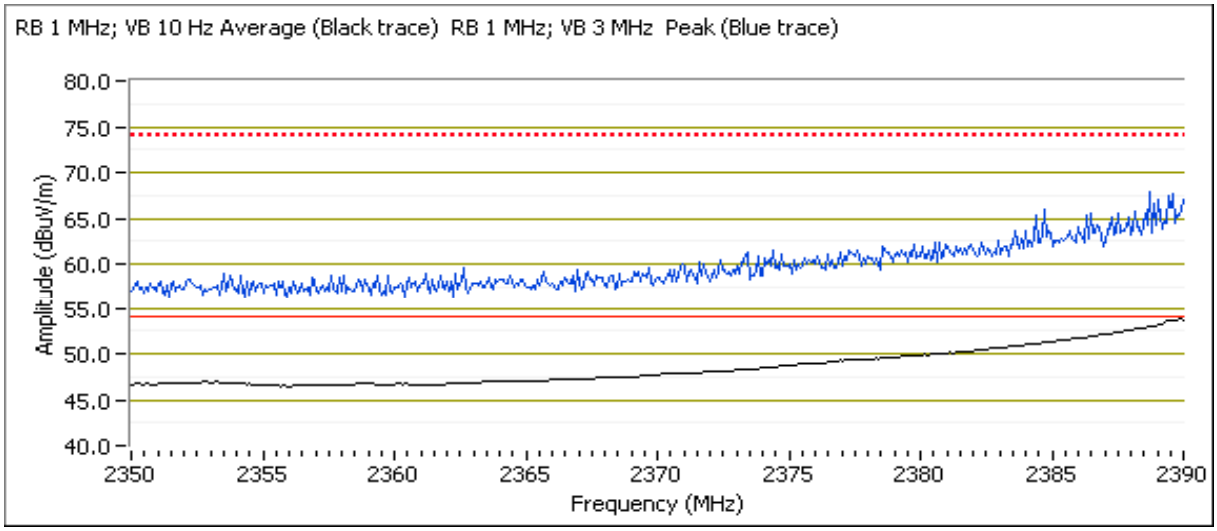
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 5e EUT on Channel #4 2427MHz - 802.11g, Chain - Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Aux	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.840	53.8	H	54.0	-0.2	AVG	140	1.0	
2389.200	68.6	H	74.0	-5.4	PK	140	1.0	



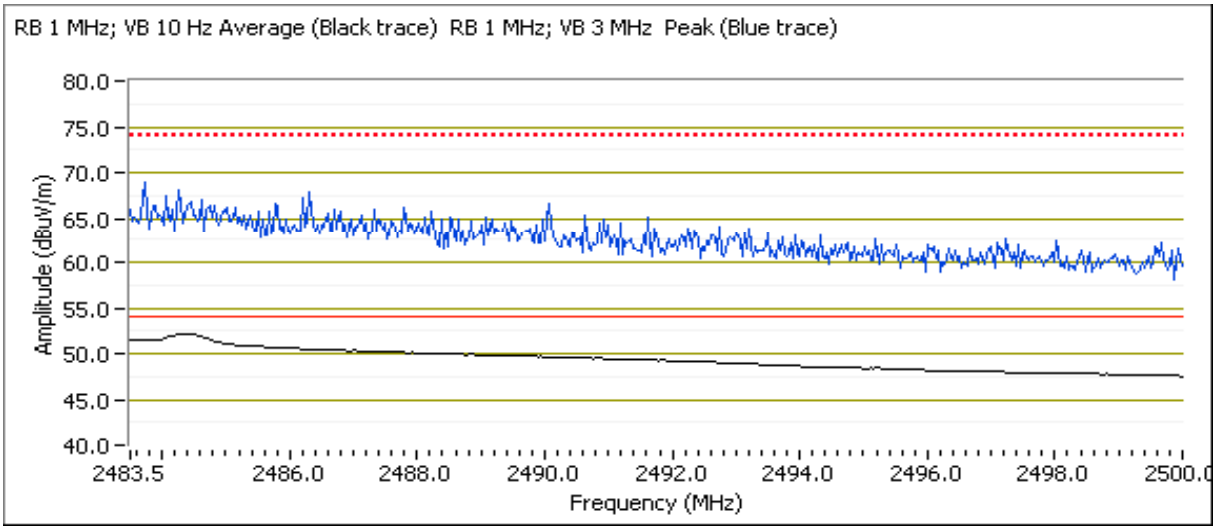
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 5f, EUT on Channel #8 2447MHz - 802.11g, Chain - Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Aux	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.430	53.9	H	54.0	-0.1	AVG	146	1.0	
2484.130	66.2	H	74.0	-7.8	PK	146	1.0	
2484.360	48.1	V	54.0	-5.9	AVG	255	1.0	
2488.660	62.2	V	74.0	-11.8	PK	255	1.0	



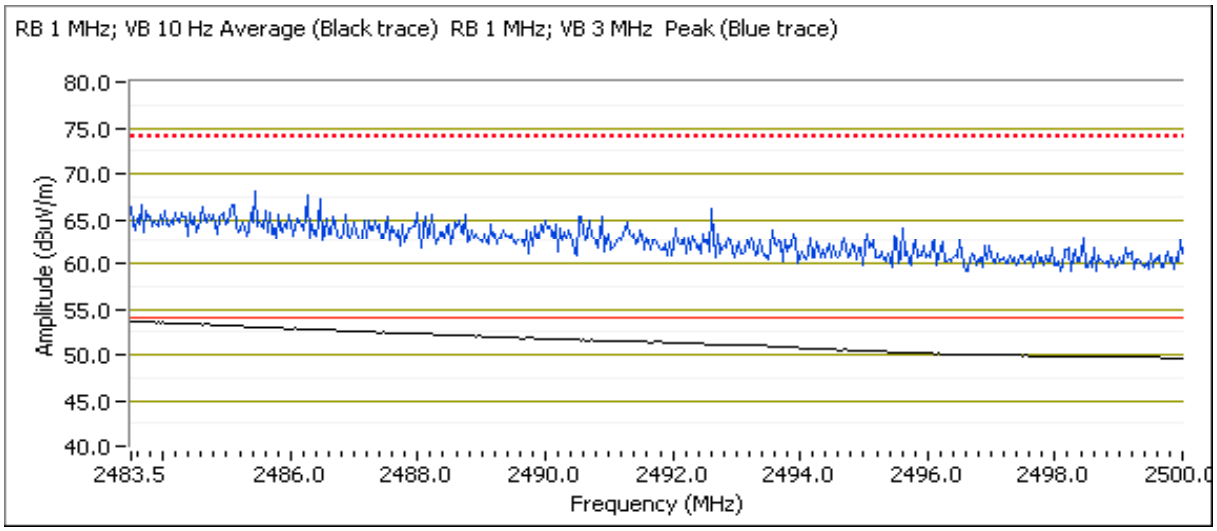
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 5h, EUT on Channel #7 2442MHz - 802.11g, Chain - Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Main	-	-	-

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	53.7	H	54.0	-0.3	AVG	147	1.0	
2484.260	66.3	H	74.0	-7.7	PK	147	1.0	
2483.530	49.6	V	54.0	-4.4	AVG	264	1.0	
2483.900	62.4	V	74.0	-11.6	PK	264	1.0	



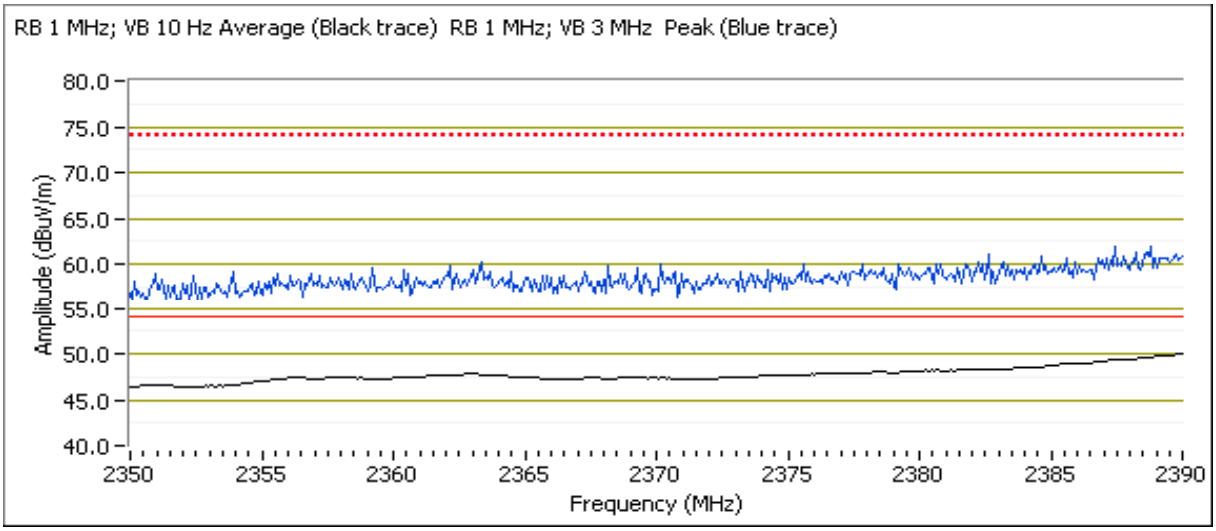
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 5i, EUT on Channel #6 2437MHz - 802.11g, Chain - Aux

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Aux	-	-	-

2390 MHz Band Edge Signal Radiated Field Strength

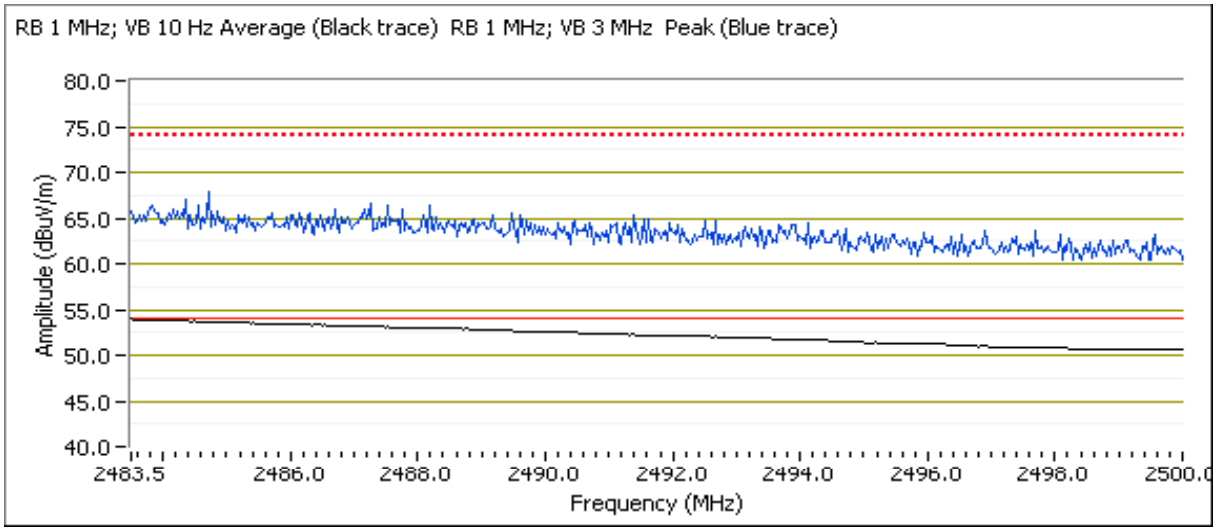
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	49.9	H	54.0	-4.1	AVG	140	1.0	
2389.680	61.6	H	74.0	-12.4	PK	140	1.0	



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	53.3	H	54.0	-0.7	AVG	156	1.0	
2483.830	67.2	H	74.0	-6.8	PK	156	1.0	



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 22.4 °C

Rel. Humidity: 37 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
Run #1	BLE Chain	2402	Default	-	Restricted Band Edge at 2390 MHz	15.209	36.6 dBµV/m @ 2387.7 MHz (-17.4 dB)
		2480	Default	-	Restricted Band Edge at 2483.5 MHz	15.209	36.0 dBµV/m @ 2483.5 MHz (-18.0 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Information

EUT s/n: 81

Software driver:

Notes

Bluetooth operation limited to Aux chain

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #1, Band Edge Field Strength - BLE, Chain

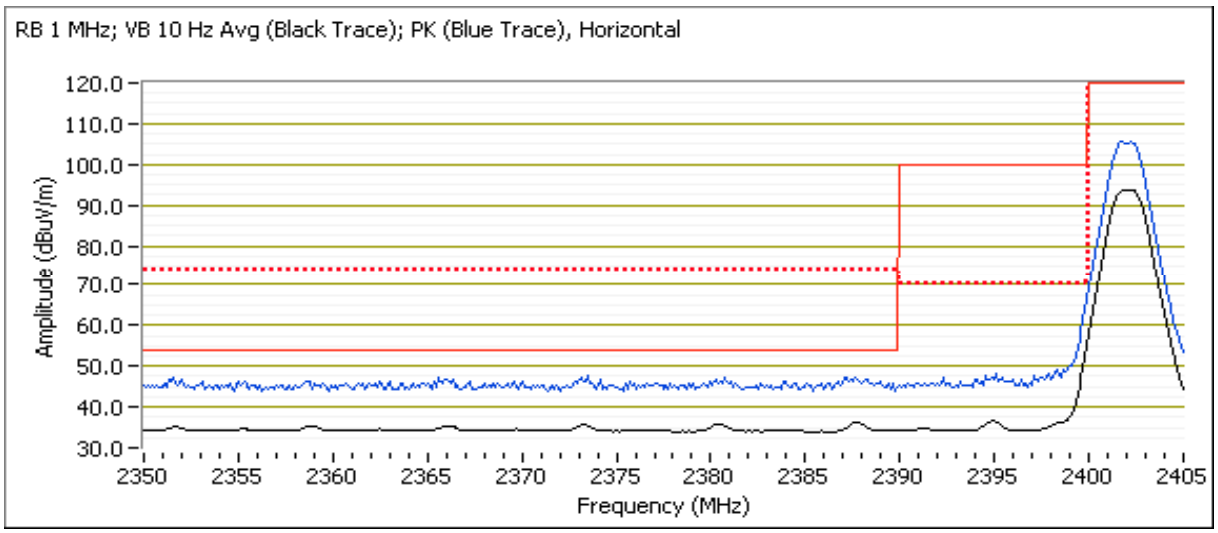
Date of Test: 4/15/2012 Test Location: FT5

Test Engineer: Rafael Varelas Config Change: None

Run #1a, EUT on Channel 2402 - BLE, Chain

2390 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2387.670	36.6	H	54.0	-17.4	AVG	121	1.0	POS; RB 1 MHz; VB: 10 Hz
2387.580	47.9	H	74.0	-26.1	PK	121	1.0	POS; RB 1 MHz; VB: 3 MHz
2380.520	34.7	V	54.0	-19.3	AVG	61	1.0	POS; RB 1 MHz; VB: 10 Hz
2380.500	45.8	V	74.0	-28.2	PK	61	1.0	POS; RB 1 MHz; VB: 3 MHz

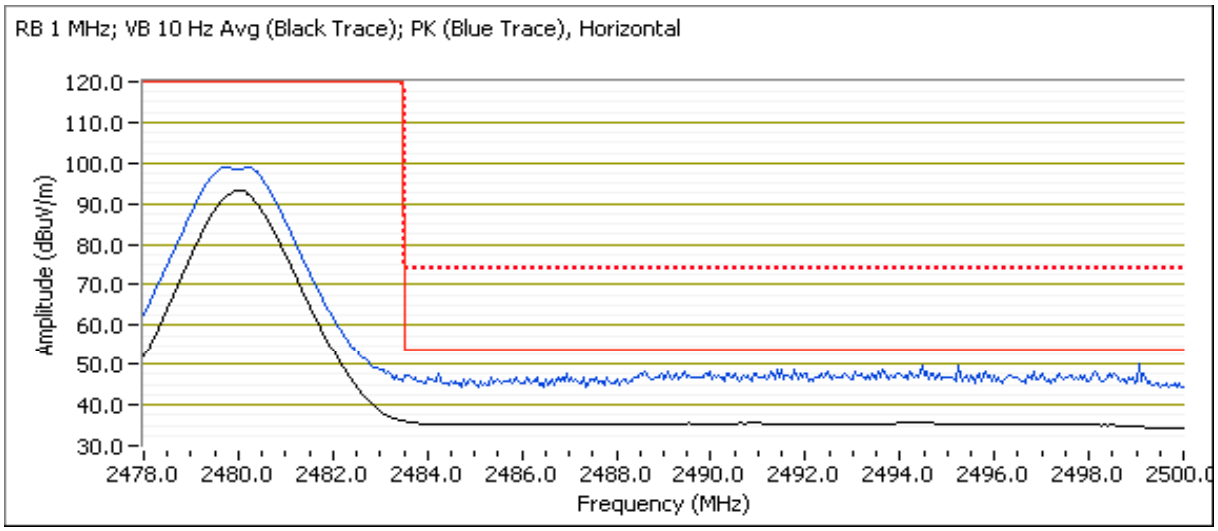


Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #1b, EUT on Channel 2480 - BLE, Chain

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	36.0	V	54.0	-18.0	AVG	3	1.0	POS; RB 1 MHz; VB: 10 Hz
2490.940	48.3	V	74.0	-25.7	PK	3	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	35.8	V	54.0	-18.2	AVG	0	1.6	POS; RB 1 MHz; VB: 10 Hz
2484.730	47.8	V	74.0	-26.2	PK	0	1.6	POS; RB 1 MHz; VB: 3 MHz



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 21 °C

Rel. Humidity: 33 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
Run #1	BLE	2402	Default		Radiated Emissions, 30 MHz - 26 GHz	FCC 15.209 / 15.247	40.5 dBµV/m @ 4795.0 MHz (-13.5 dB)
		2442					43.7 dBµV/m @ 3255.8 MHz (-10.3 dB)
		2480					42.8 dBµV/m @ 4960.0 MHz (-11.2 dB)
Run # 3	RX	2442			Radiated Emissions, 30 MHz - 8 GHz	LP0002, Section 2.8	38.2 dBµV/m @ 2493.3 MHz (-15.8 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Information

EUT s/n: 81

Software driver:

Notes

Bluetooth operation limited to Aux chain

No radio related emissions below 1GHz observed in preliminary testing.

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #1, Radiated Spurious Emissions, 1-26 GHz, BLE

Date of Test: 4/16/2012 Test Location: Chamber 5

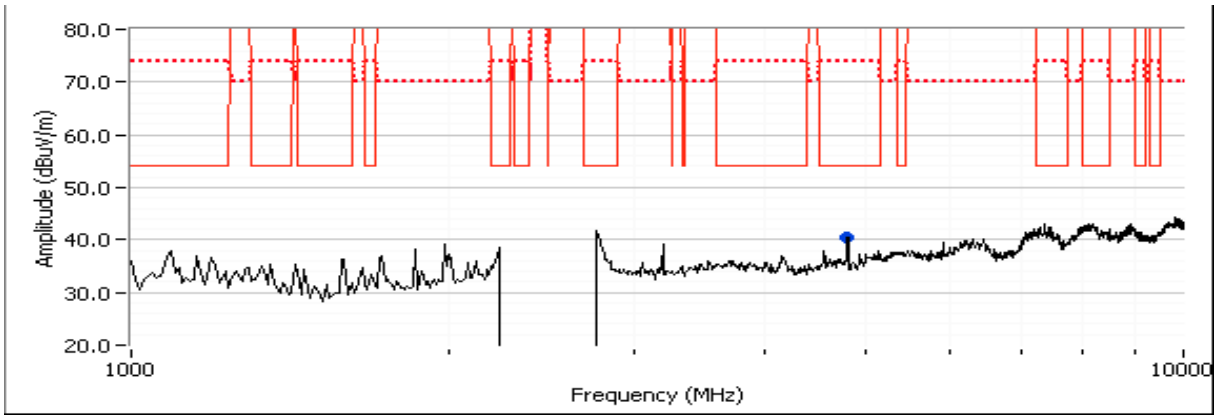
Test Engineer: John Caizzi Config Change: none

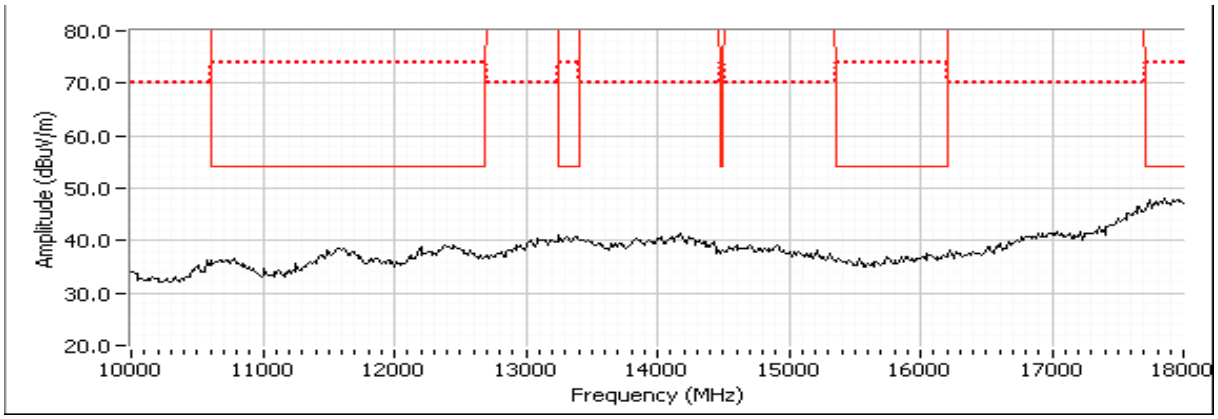
Run #1a, EUT @ 2402 MHz

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4803.950	37.9	V	54.0	-16.1	AVG	259	1.00	
4804.080	45.8	V	74.0	-28.2	PK	259	1.00	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.





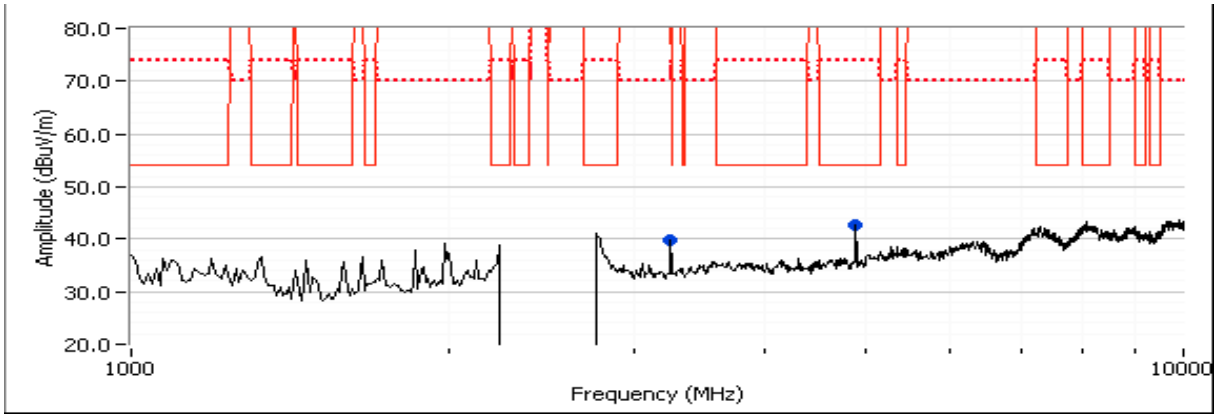
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

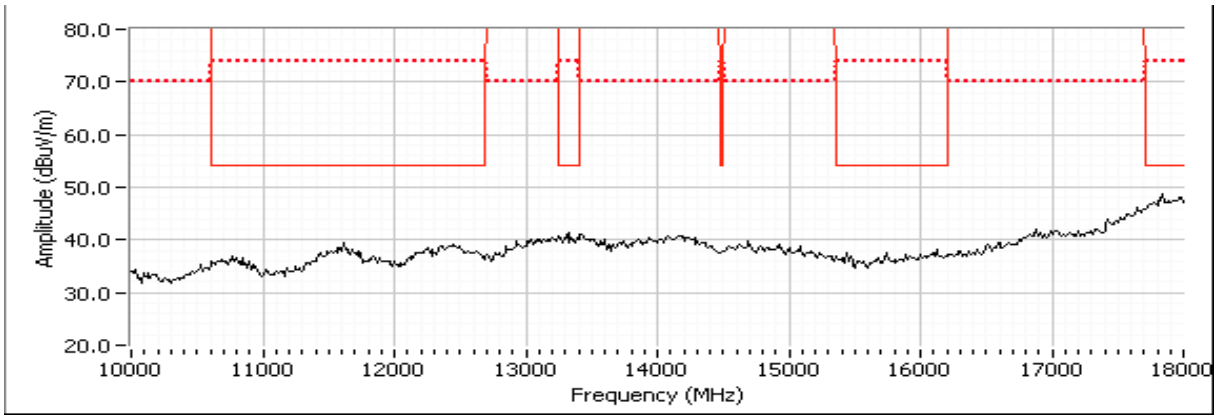
Run #1b: EUT @ 2442 MHz

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3255.820	43.7	H	54.0	-10.3	PK	52	1.63	Note 3
4883.630	40.7	V	54.0	-13.3	AVG	93	1.17	
4883.700	48.6	V	74.0	-25.4	PK	93	1.17	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.
Note 2:	Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas, 20-50cm from the device, indicated there were no signifcant emissions in this frequency range.
Note 3:	Signal is not in restricted band, but 15.209 limit was used. Peak reading vs average limit.





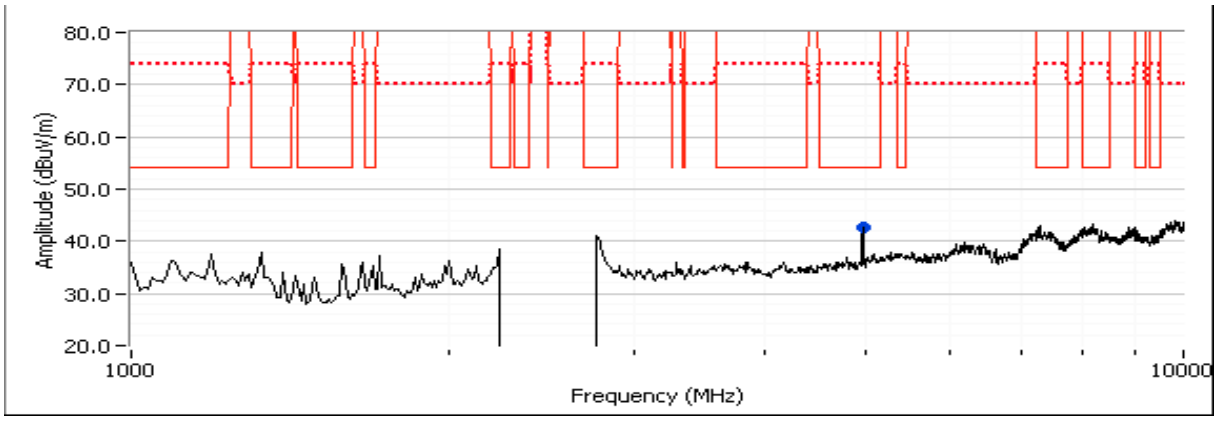
Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

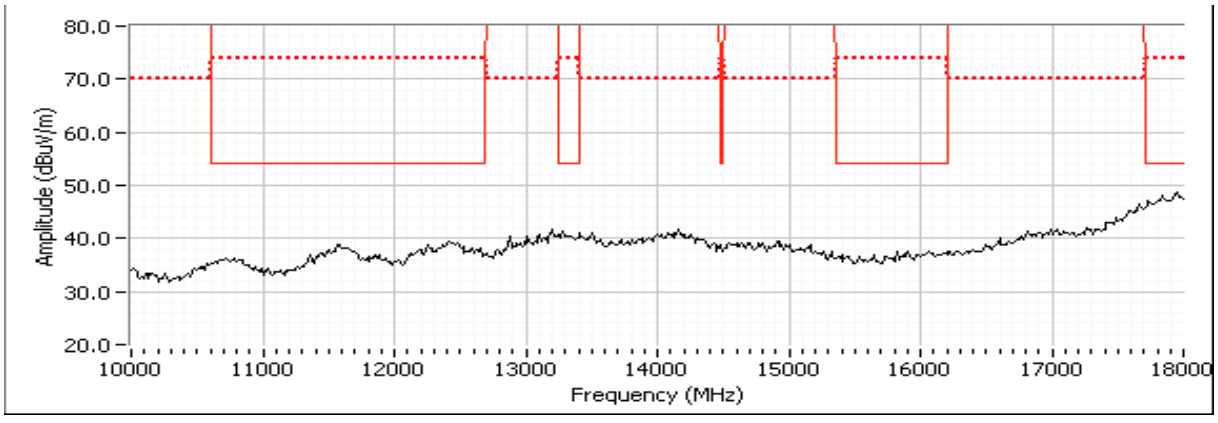
Run #1c: EUT @ 2480 MHz

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4959.750	39.7	V	54.0	-14.3	AVG	93	1.28	
4960.300	48.4	V	74.0	-25.6	PK	93	1.28	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.





Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run # 3: Radiated Spurious Emissions, 1-8GHz, Rx mode.

Date of Test: 4/16/2012 Test Location: Chamber 5

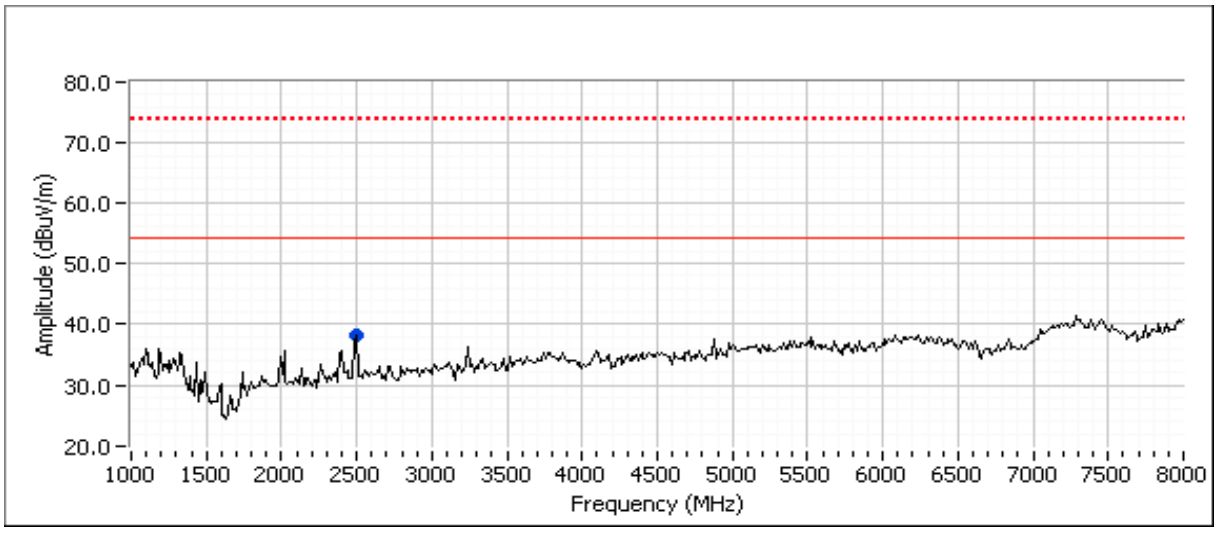
Test Engineer: John Caizzi Config Change: none

Run # 3a: EUT @ 2442 MHz

Spurious Radiated Emissions:

Frequency	Level	Pol	LP0002, Section 2.8		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2493.330	38.2	V	54.0	-15.8	Peak	247	1.3	
2495.530	30.7	V	54.0	-23.3	AVG	348	1.29	
2492.730	45.3	V	74.0	-28.7	PK	348	1.29	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz.



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 4/20/2012
Test Engineer: Mark Hill
Test Location: Fremont EMC Lab #4

Config. Used: 1
Config Change: ???
Host Unit Voltage 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 22.3 °C
Rel. Humidity: 41 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	-	-	Output Power	15.247(b)		6.0 dBm (4mW)
2	-	-	Power spectral Density (PSD)	15.247(d)		-8.5 dBm/3kHz
3	-	-	Minimum 6dB Bandwidth	15.247(a)		0.658 MHz
3	-	-	99% Bandwidth	RSS GEN	-	1.09 MHz
4	-	-	Spurious emissions	15.247(b)		All emissions below the -20dBc limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Information

EUT s/n: 82
Software driver:

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #1: Output Power

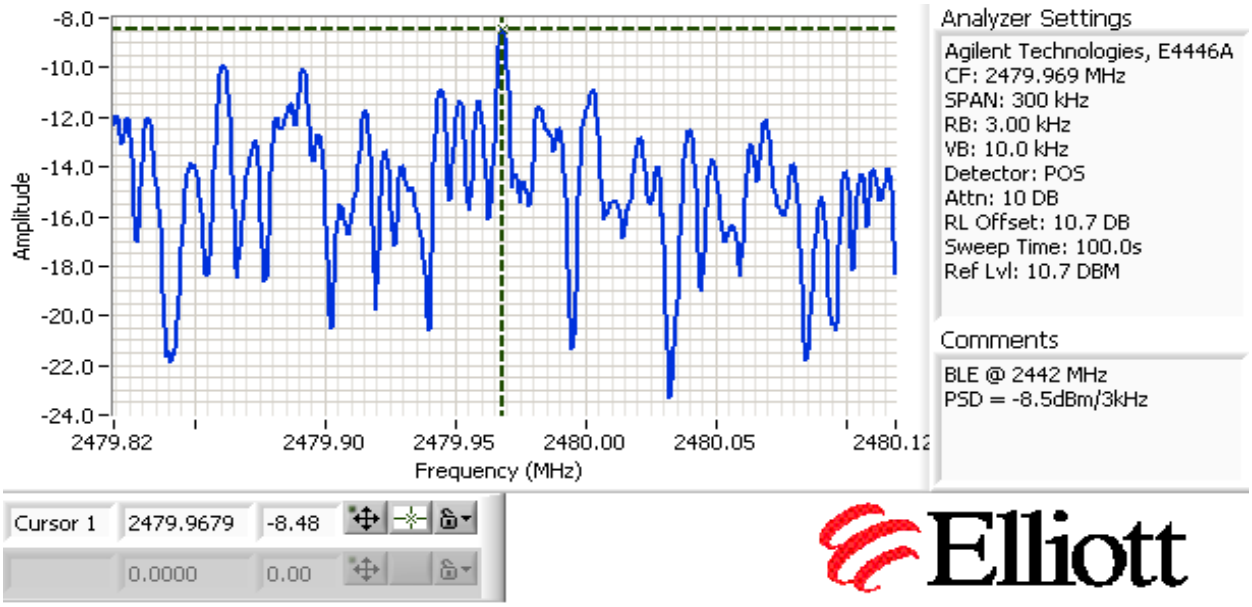
Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP [Note 2] dBm	EIRP W	Output Power (dBm) [3]	Output Power mW
-	2402	5.1	3.2	3.9	Pass	9.0	0.008		
-	2442	5.7	3.7	3.9	Pass	9.6	0.009		
-	2480	6.0	4.0	3.9	Pass	9.9	0.010		

Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc.

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) [Note 1]	Limit dBm/3kHz	Result
-	2401.982	-9.5	8.0	Pass
-	2441.975	-8.8	8.0	Pass
-	2479.968	-8.5	8.0	Pass

Note 1:	Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.

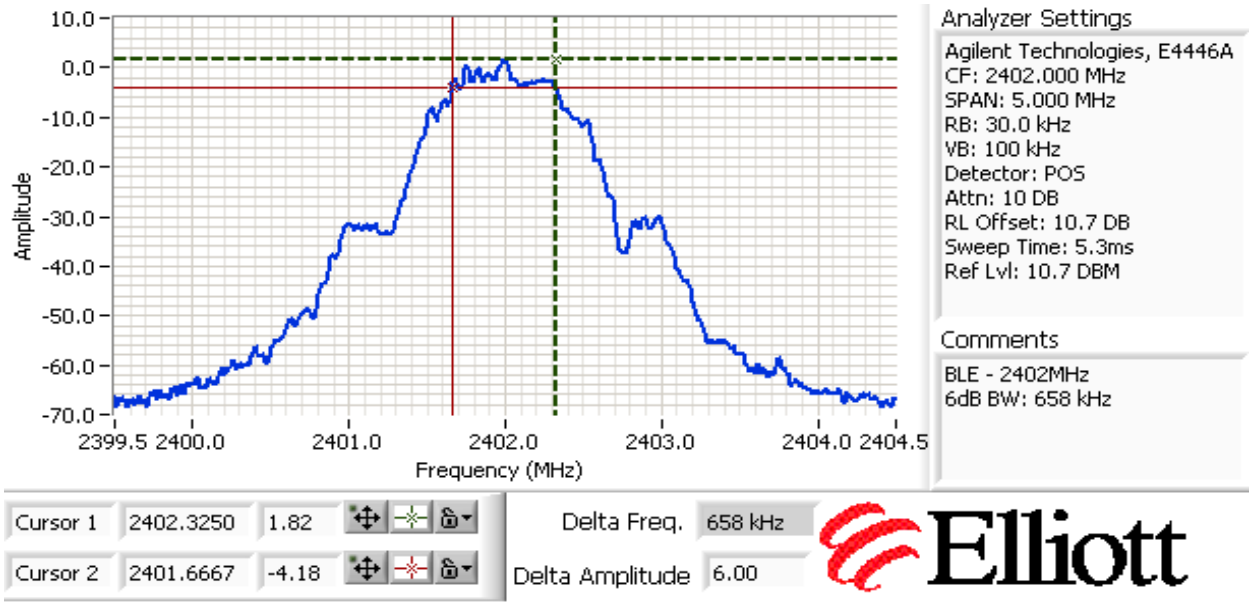


Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

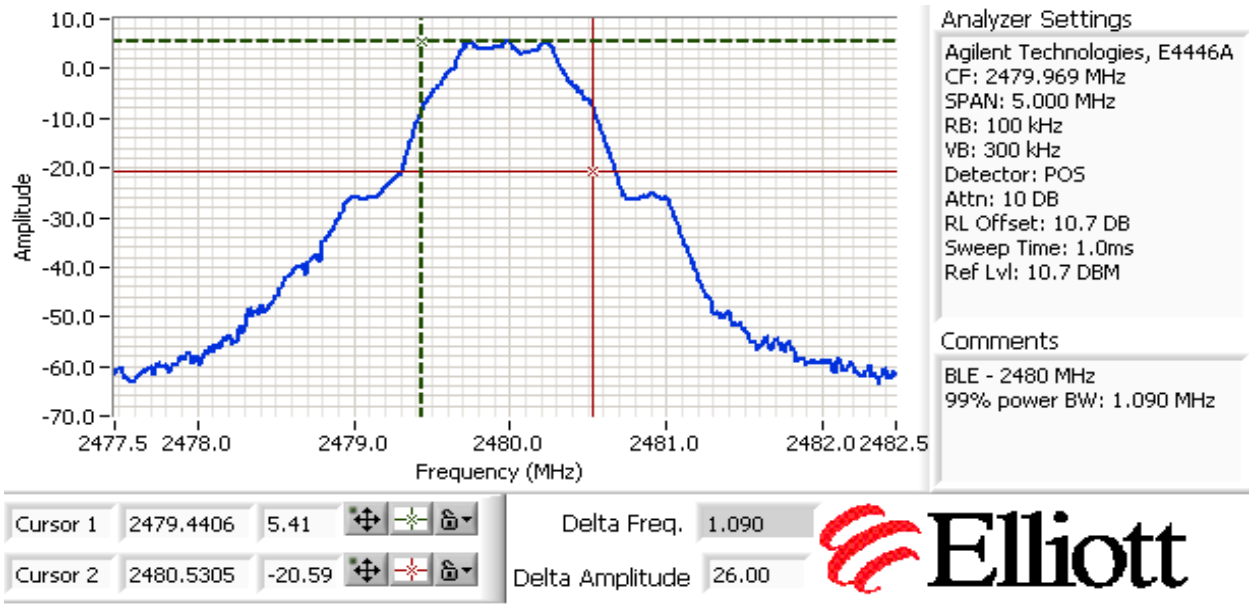
Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	99%
-	2402	30kHz	0.658	1.08
-	2442	30kHz	0.658	1.08
-	2480	30kHz	0.658	1.09

Note 1:	99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

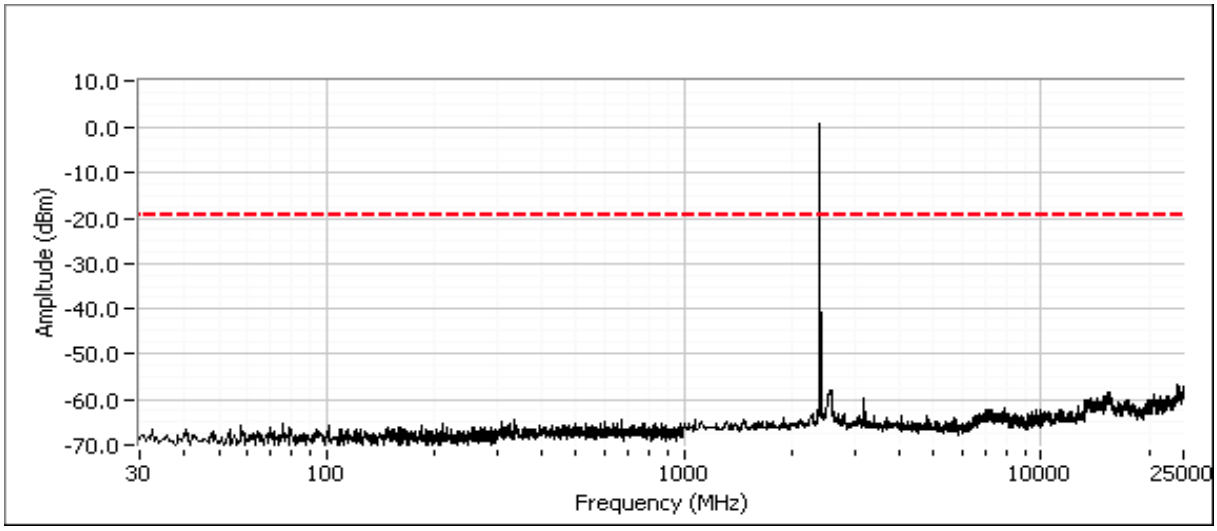


Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Run #4: Out of Band Spurious Emissions

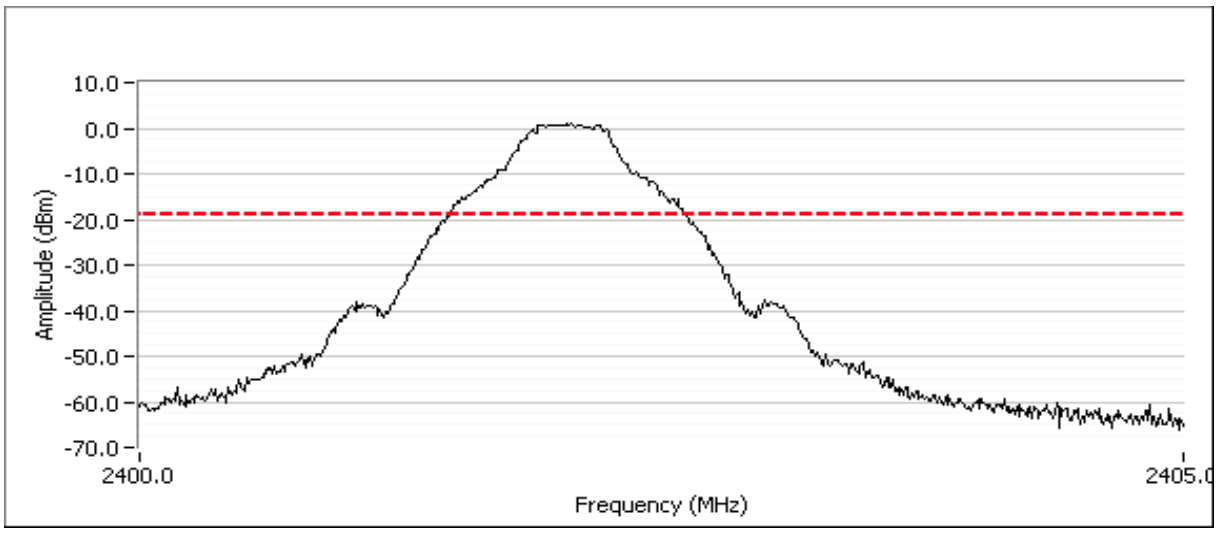
Frequency (MHz)	Limit	Result
2402	-30dBc	Pass
2442	-30dBc	Pass
2480	-30dBc	Pass

Plots for low channel

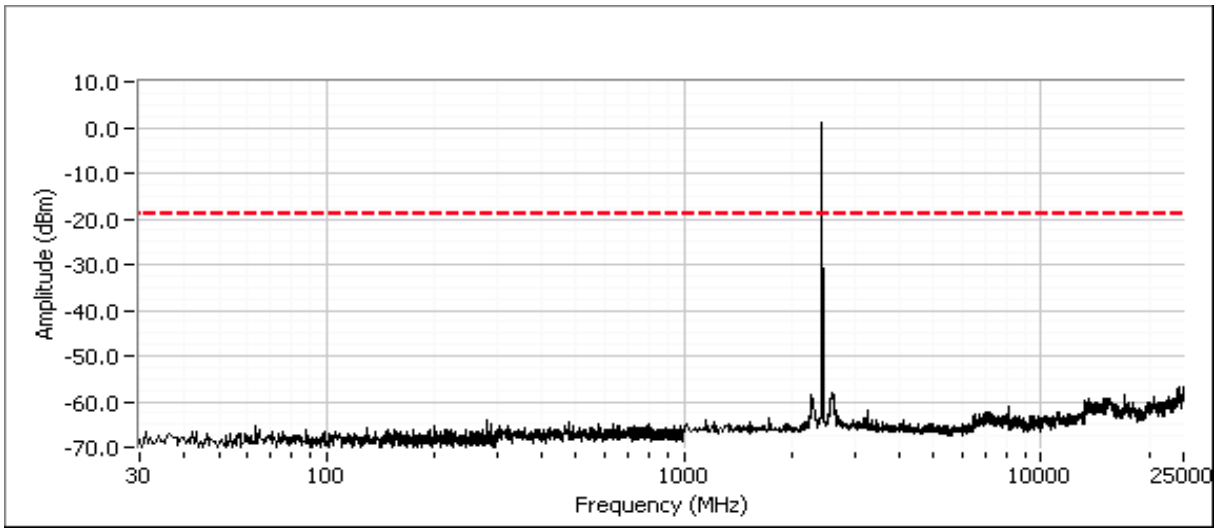


Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

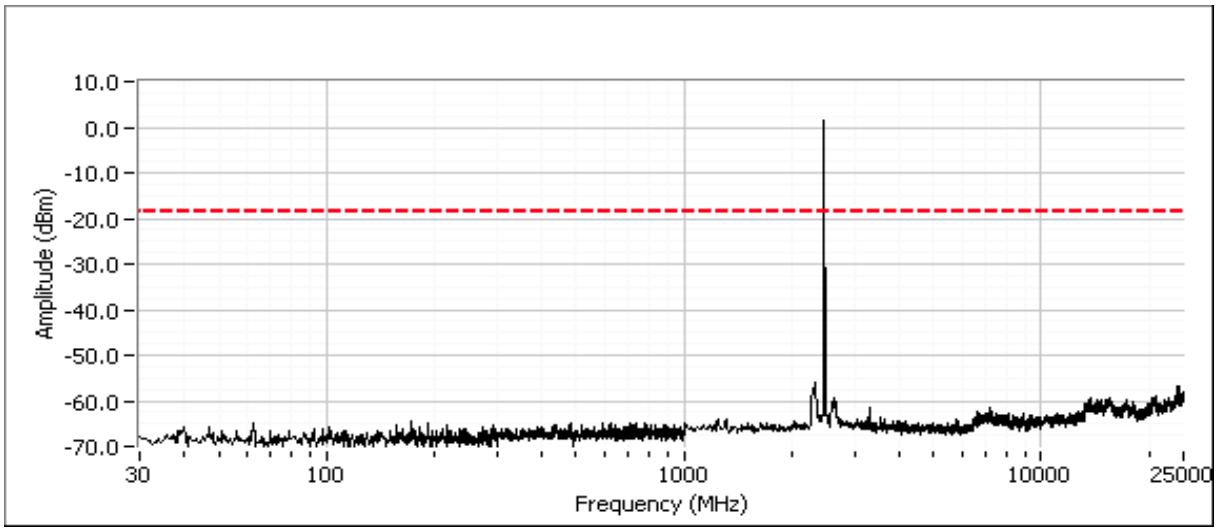


Plots for center channel



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bg WLAN + BT 4.0, 20MHz SISO only) P103	T-Log Number:	T87181
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	FCC 15.247, LP0002	Class:	N/A

Plots for high channel



Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bgn WLAN + BT 4.0, 20MHz SISO only)	T-Log Number:	T86945
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		-
Emissions Standard(s):	EN 300 328 / FCC	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Broadcom Corporation

Model

BCM94330UARTSDB (802.11bgn WLAN + BT 4.0, 20MHz SISO only)

Date of Last Test: 5/21/2012

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bgn WLAN + BT 4.0, 20MHz SISO only)	T-Log Number:	T86945
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	EN 300 328 / FCC	Class:	-

Conducted Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 4/26/2012
Test Engineer: Mehran Birgani
Test Location: Fremont Chamber #5

Config. Used: 1
Config Change: Laptop was used for testing (see below)
Host Unit Voltage Refer to each run

General Test Configuration

The host system was located on a wooden table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment. Remote support equipment was located outside of the semi-anechoic chamber. Any cables running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

Ambient Conditions:

Temperature: 15-18 °C
Rel. Humidity: 35-40 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 230V/50Hz	Class B	Pass	46.3 dBµV @ 0.310 MHz (-3.7 dB)
2	CE, AC Power,120V/60Hz	Class B	Pass	45.8 dBµV @ 0.291 MHz (-4.7 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

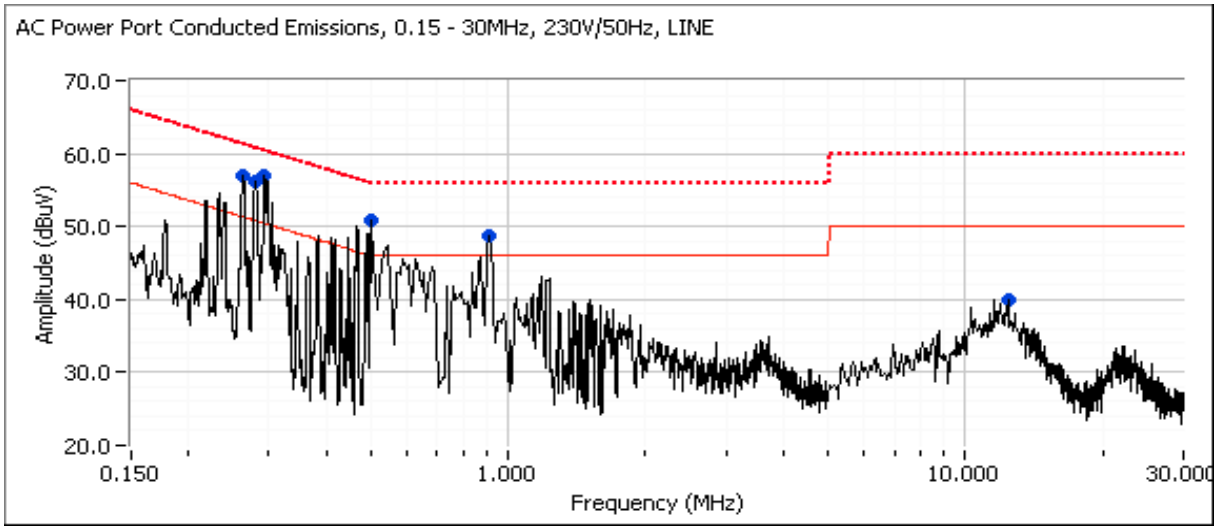
Deviations From The Standard

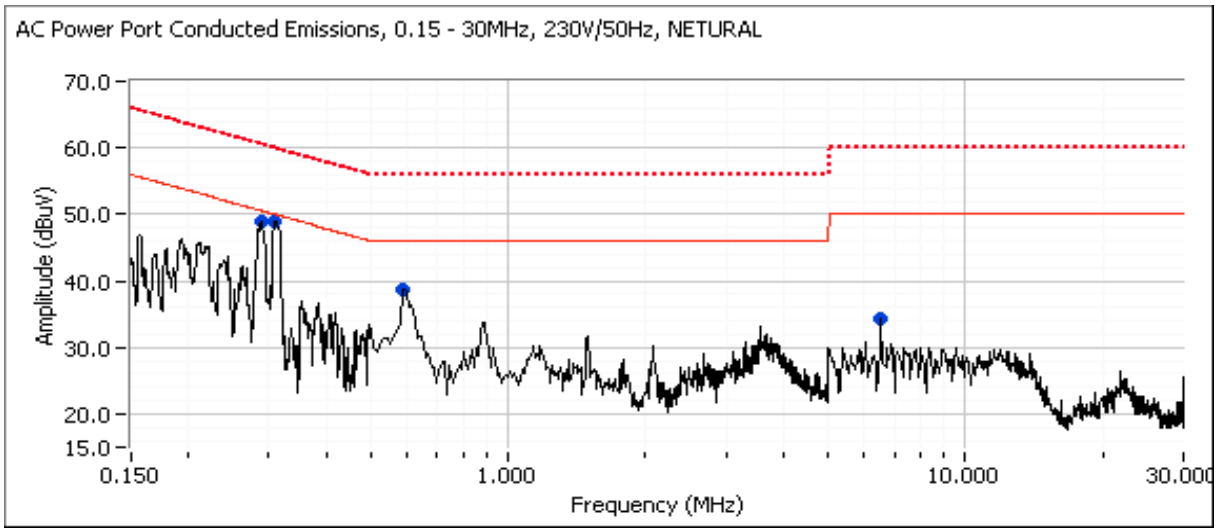
No deviations were made from the requirements of the standard.

Laptop: Dell Model: Latitude E6400 Service Tag: 9XLB3M1

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bgn WLAN + BT 4.0, 20MHz SISO only)	T-Log Number:	T86945
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	EN 300 328 / FCC	Class:	-

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz





Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bgn WLAN + BT 4.0, 20MHz SISO only)	T-Log Number:	T86945
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	EN 300 328 / FCC	Class:	-

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

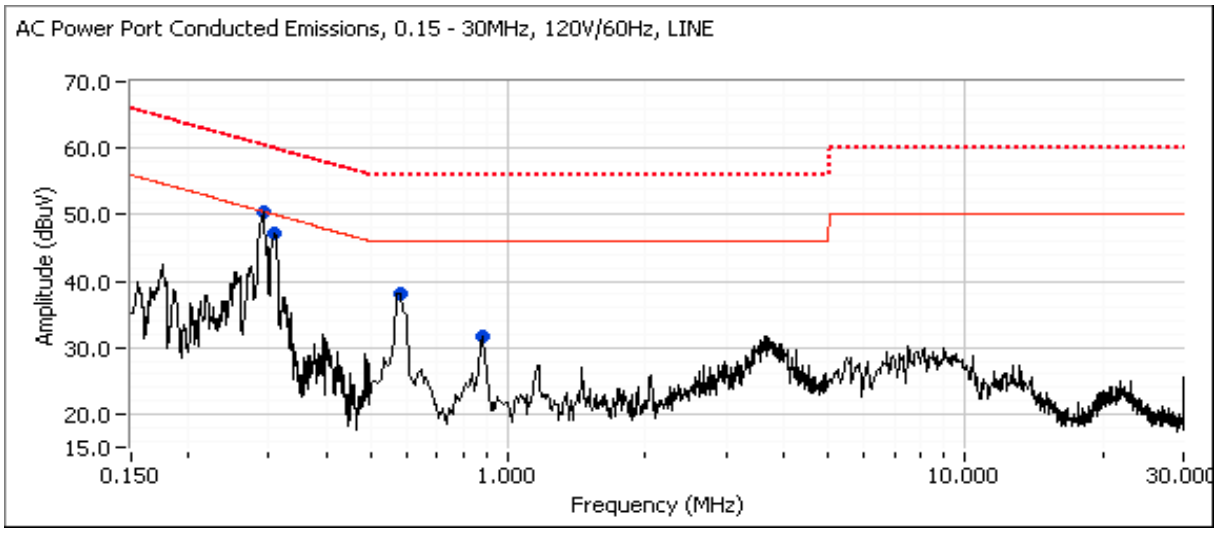
Frequency	Level	AC	Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.294	56.9	Line	50.4	6.5	Peak	
0.264	57.0	Line	51.3	5.7	Peak	
0.281	56.2	Line	50.8	5.4	Peak	
0.500	50.8	Line	46.0	4.8	Peak	
0.906	48.8	Line	46.0	2.8	Peak	
0.310	48.9	Neutral	50.0	-1.1	Peak	
0.289	49.0	Neutral	50.6	-1.6	Peak	
0.590	38.7	Neutral	46.0	-7.3	Peak	
12.415	39.9	Line	50.0	-10.1	Peak	
6.553	34.4	Neutral	50.0	-15.6	Peak	

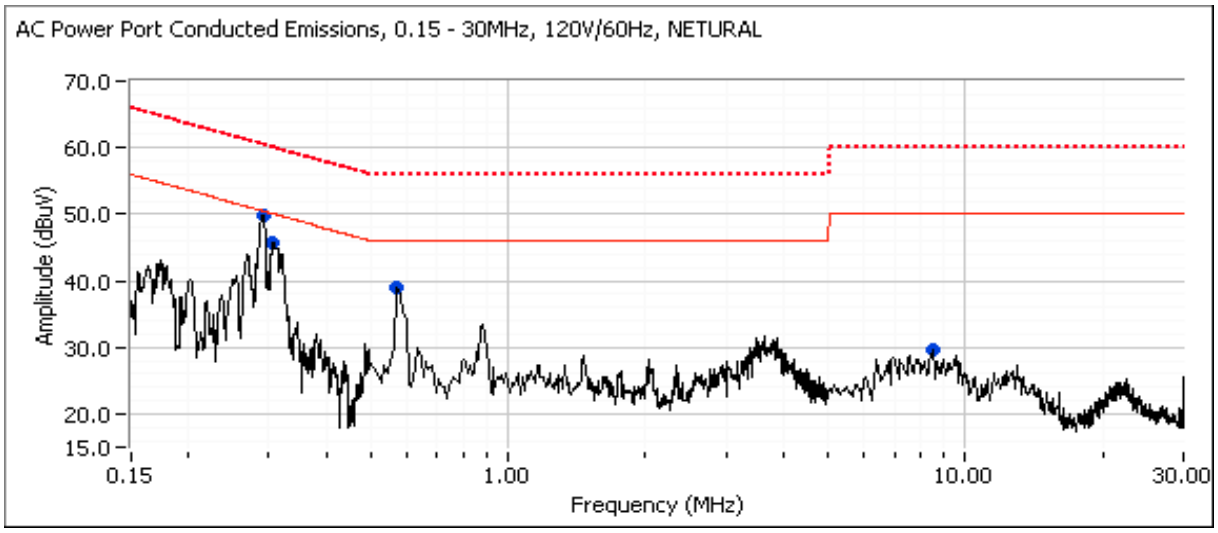
Final quasi-peak and average readings

Frequency	Level	AC	Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.310	46.3	Neutral	50.0	-3.7	AVG	AVG (0.10s)
0.294	45.5	Line	50.4	-4.9	AVG	AVG (0.10s)
0.294	53.4	Line	60.4	-7.0	QP	QP (1.00s)
0.289	42.3	Neutral	50.6	-8.3	AVG	AVG (0.10s)
0.280	51.6	Line	60.8	-9.2	QP	QP (1.00s)
0.264	51.8	Line	61.3	-9.5	QP	QP (1.00s)
0.264	41.0	Line	51.3	-10.3	AVG	AVG (0.10s)
0.310	48.1	Neutral	60.0	-11.9	QP	QP (1.00s)
0.590	33.7	Neutral	46.0	-12.3	AVG	AVG (0.10s)
0.500	42.5	Line	56.0	-13.5	QP	QP (1.00s)
0.289	46.4	Neutral	60.6	-14.2	QP	QP (1.00s)
0.280	34.3	Line	50.8	-16.5	AVG	AVG (0.10s)
0.500	29.2	Line	46.0	-16.8	AVG	AVG (0.10s)
0.906	28.2	Line	46.0	-17.8	AVG	AVG (0.10s)
0.590	37.6	Neutral	56.0	-18.4	QP	QP (1.00s)
0.906	37.4	Line	56.0	-18.6	QP	QP (1.00s)
12.415	21.4	Line	50.0	-28.6	AVG	AVG (0.10s)
12.415	31.0	Line	60.0	-29.0	QP	QP (1.00s)
6.553	16.9	Neutral	50.0	-33.1	AVG	AVG (0.10s)
6.553	24.0	Neutral	60.0	-36.0	QP	QP (1.00s)

Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bgn WLAN + BT 4.0, 20MHz SISO only)	T-Log Number:	T86945
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	EN 300 328 / FCC	Class:	-

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz





Client:	Broadcom Corporation	Job Number:	J86739
Model:	BCM94330UARTSDB (802.11bgn WLAN + BT 4.0, 20MHz SISO only)	T-Log Number:	T86945
		Account Manager:	Sheareen Jacobs
Contact:	Anne Liang (Sachin Sawalapurkar)		
Standard:	EN 300 328 / FCC	Class:	-

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency	Level	AC	Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.292	50.3	Line	50.5	-0.2	Peak	
0.291	49.7	Neutral	50.5	-0.8	Peak	
0.309	47.2	Line	50.0	-2.8	Peak	
0.306	45.7	Neutral	50.1	-4.4	Peak	
0.572	39.1	Neutral	46.0	-6.9	Peak	
0.581	38.2	Line	46.0	-7.8	Peak	
0.879	31.8	Line	46.0	-14.2	Peak	
8.457	29.5	Neutral	50.0	-20.5	Peak	

Final quasi-peak and average readings

Frequency	Level	AC	Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.291	45.8	Neutral	50.5	-4.7	AVG	AVG (0.10s)
0.292	44.0	Line	50.5	-6.5	AVG	AVG (0.10s)
0.306	43.3	Neutral	50.1	-6.8	AVG	AVG (0.10s)
0.309	41.4	Line	50.0	-8.6	AVG	AVG (0.10s)
0.291	49.0	Neutral	60.5	-11.5	QP	QP (1.00s)
0.292	48.0	Line	60.5	-12.5	QP	QP (1.00s)
0.572	32.4	Neutral	46.0	-13.6	AVG	AVG (0.10s)
0.306	45.4	Neutral	60.1	-14.7	QP	QP (1.00s)
0.309	45.2	Line	60.0	-14.8	QP	QP (1.00s)
0.581	30.4	Line	46.0	-15.6	AVG	AVG (0.10s)
0.572	36.8	Neutral	56.0	-19.2	QP	QP (1.00s)
0.879	26.7	Line	46.0	-19.3	AVG	AVG (0.10s)
0.581	36.1	Line	56.0	-19.9	QP	QP (1.00s)
0.879	30.4	Line	56.0	-25.6	QP	QP (1.00s)
8.457	18.9	Neutral	50.0	-31.1	AVG	AVG (0.10s)
8.457	24.5	Neutral	60.0	-35.5	QP	QP (1.00s)

End of Report

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