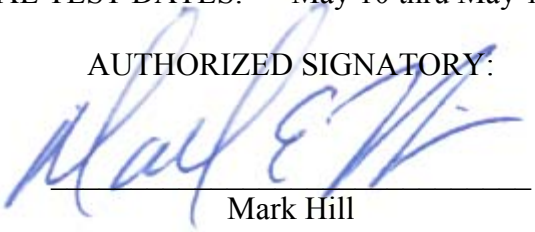
EMC Test Report
Application for Grant of Equipment Authorization
Class II Permissive Change/Reassessment
pursuant to
Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7
FCC Part 15 Subpart C

Model: BCM94322HM8L

IC CERTIFICATION #:	4324A-BRCM1031
FCC ID:	QDS-BRCM1031
APPLICANT:	Broadcom Corporation 190 Mathilda Ave. Sunnyvale, CA 94086, USA
TEST SITE(S):	Elliott Laboratories 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-3; 2845B-4
REPORT DATE:	May 21, 2010
FINAL TEST DATES:	May 10 thru May 13, 2010

AUTHORIZED SIGNATORY:



Mark Hill
Staff Engineer
Elliott Laboratories

ACCREDITED

Testing Cert #2016-01

REVISION HISTORY

Rev#	Date	Comments	Modified By
	May 21, 2010	First release	

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SCOPE

An electromagnetic emissions test has been performed on the Broadcom Corporation model BCM94322HM8L, pursuant to the following rules:

Industry Canada RSS-Gen Issue 2
RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
FCC Part 15 Subpart C

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 Elliott Laboratories 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 BCM94322HM8L complied with the requirements of the following regulations:

Industry Canada RSS-Gen Issue 2
RSS 210 Issue 7 "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 BCM94322HM8L 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	N/A - Unchanged from original filing		
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	N/A - Unchanged from original filing		
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	Power was confirmed to be consistent with the original filing		
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	N/A - Unchanged from original filing		
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	N/A - Unchanged from original filing		
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	53.9dBµV/m @ 2483.6MHz (-0.1dB)	15.207 in restricted bands, all others < -30dBc Note 2	Complies

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst) / RMS averaging over a time interval, as permitted under RSS 210 section A8.4(4).

DIGITAL TRANSMISSION SYSTEMS (5725 –5850 MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	N/A - Unchanged from original filing		
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	N/A - Unchanged from original filing		
15.247 (b)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	Power was confirmed to be consistent with the original filing		
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	N/A - Unchanged from original filing		
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions – 30MHz – 40 GHz	N/A - Unchanged from original filing		
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 30MHz – 40 GHz	63.8dBµV/m @ 1594.6MHz (-10.2dB)	15.207 in restricted bands, all others <-30dBc Note 2	Complies

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst) / RMS averaging over a time interval, as permitted under RSS 210 section A8.4(4).

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	N/A - Unchanged from original filing		
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	61.5dBµV/m @ 1593.5MHz (-12.5dB)	Refer to Standard	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	N/A - Unchanged from original filing		
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	N/A - Unchanged from original filing		
-	RSP 100 RSS GEN 7.1.5	User Manual	N/A - Unchanged from original filing		
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	N/A - Unchanged from original filing		

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 BCM94322HM8L is an 802.11ag/Draft 802.11n WLAN PCI-E Minicard that is designed to enable wireless data transmission in PCs. 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 3.3Vdc from the host.

The sample was received on May 10, 2010 and tested on May 10 thru May 13, 2010. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Broadcom	BCM94322HM 8L	802.11ag/Draft 802.11n WLAN PCI-E Minicard	-	QDS-BRCM1031

OTHER EUT DETAILS

The following EUT details should be noted: Testing for a permissive change for a new antenna type with higher gain in the 5.4-5.7GHz band. Worse case modes for band edge and spurious emissions was performed in all other bands. Bandedge and Spurious was performed in the 5.4GHz band.

ANTENNA SYSTEM

The new antennas being evaluated:
(1) Laird, 802.11abgn Bluetooth antenna, model MAF 94449. Gain: 3.81 dBi (2400-2483.5 MHz), 5.58 dBi (5150-5350 MHz), 5.67 dBi (5470-5825 MHz), 5.67 dBi (5725-5850 MHz)
(2) Amphenal, 802.11abgn Bluetooth antenna, model CI1693-15-000-R. Gain: 3.2 dBi (2400-2483.5 MHz), 4.9 dBi (5150-5350 MHz), 5.5 dBi (5470-5825 MHz), 5.5 dBi (5725-5850 MHz)

Note, as the Laird antenna has the higher gain, all testing was performed with the Laird antenna.

ENCLOSURE

The EUT has no enclosure. It is designed to be installed within the enclosure of a host computer.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at Elliott.

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Dell	Inspiron 1526	Laptop Computer	-	DoC

No equipment was used as remote support equipment for emissions testing.

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Main RF Port	Antenna	coax	shielded	0.15
Aux RF Port	Antenna	coax	shielded	0.15
PCMCIA Buss	Extender Card with EUT	Direct Connection	-	-
DC Power on Computer	AC/DC Adapter	multiconductor	shielded	1.5
AC/DC Adapter	AC Mains	3 wire	unshielded	1.5

EUT OPERATION

During testing, the EUT was configured to either transmit continuously on the desired channel or set into a receive mode at the desired channel, as noted on the test data sheets.

All transmitter spurious emissions testing (radiated or conducted) was done at the highest power setting within the band. All band edge, power and other measurements were taken at the maximum power allowed by the EUTs power table for that particular channel.

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 3	769238	2845B-3	41039 Boyce Road Fremont, CA 94538-2435
Chamber 4	211948	2845B-4	

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.

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.

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.

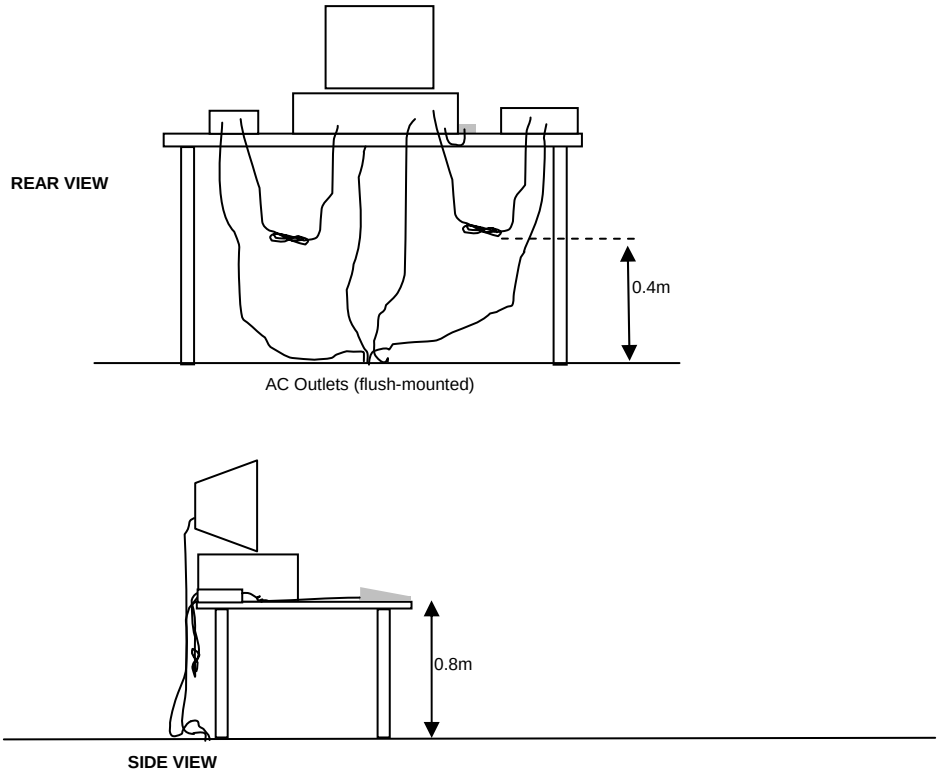
RADIATED EMISSIONS

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

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:

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:

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

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

Radio Spurious Emissions, 10-May-10

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	3/16/2011

Radio (Spurious Emissions), 12-May-10

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	6/3/2010
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	7/15/2010
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	6/12/2010
Hewlett Packard	High Pass filter, 8.2 GHz (Red System)	P/N 84300-80039 (84125C)	1152	9/28/2010
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	9/25/2010

Radiated Emissions, DTS Bandedge, 12-May-10

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/10/2010
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	3/16/2011

Radio Spurious Emissions, 30 - 6,500 MHz, 13-May-10

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	3/16/2011

Radiated Emissions, 1000 - 40,000 MHz, 14-May-10

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/10/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/14/2011
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	9/17/2010

Appendix B Test Data

T79260 21 Pages

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		-
Emissions Standard(s):	15.209 / 15.247 / 15.E / RSS-210	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Broadcom Corporation

Model

BCM94322HM8L

Date of Last Test: 5/13/2010

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	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: 19.4 °C

Rel. Humidity: 40 %

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

Worse Case Mode for Bandedges: 40MHz CDD

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	40MHz CDD	3	-	-	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.1dBµV/m @ 2388.5MHz (-0.9dB)
1b	40MHz CDD	4	-	-	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.8dBµV/m @ 2390.1MHz (-1.2dB)
1c	40MHz CDD	7	-	-	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	43.5dBµV/m @ 2484.7MHz (-10.5dB)
1d	40MHz CDD	8	-	-	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	53.9dBµV/m @ 2483.6MHz (-0.1dB)
1e	40MHz CDD	9	-	-	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	50.8dBµV/m @ 2484.8MHz (-3.2dB)

Worse Case mode for Spurious: 802.11b

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
2a	802.11b	1	-	-	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	51.0dBµV/m @ 9648.0MHz (-3.0dB)
2b	802.11b	6	-	-	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.4dBµV/m @ 9748.0MHz (-0.6dB)
2c	802.11b	11	-	-	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	48.8dBµV/m @ 9848.0MHz (-5.2dB)

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

Note: Preliminary testing showed no emissions below 1 GHz and above 18GHz.

Modifications Made During Testing

Modifications are detailed under each run description.

Deviations From The Standard

No deviations were made from the requirements of the standard.

Run #1: Radiated Spurious Emissions, Bandedge Measurements. Operating Mode: 40MHz CDD

Date of Test: May 12/2010

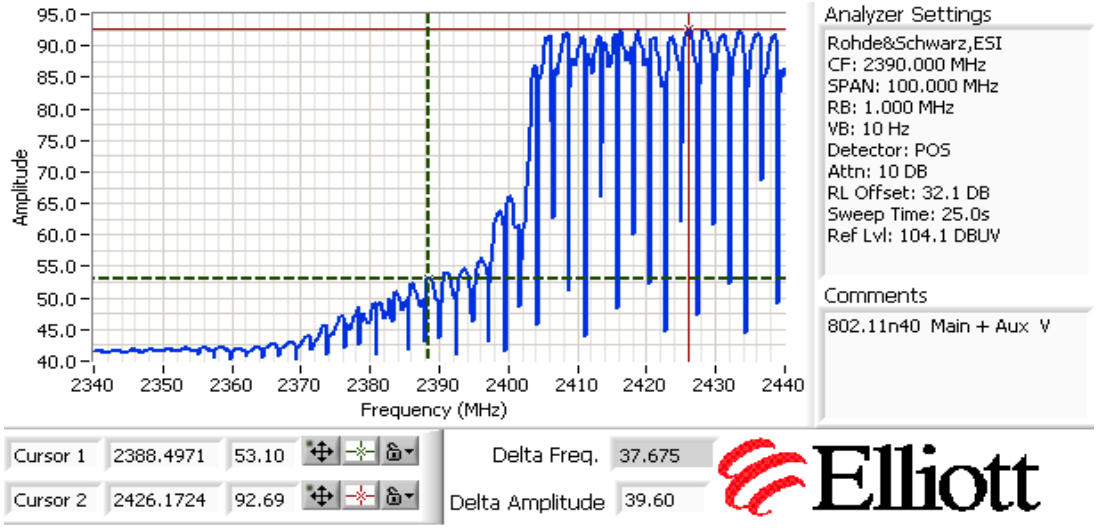
Test Engineer: John Caizzi

Test Location: FT #3

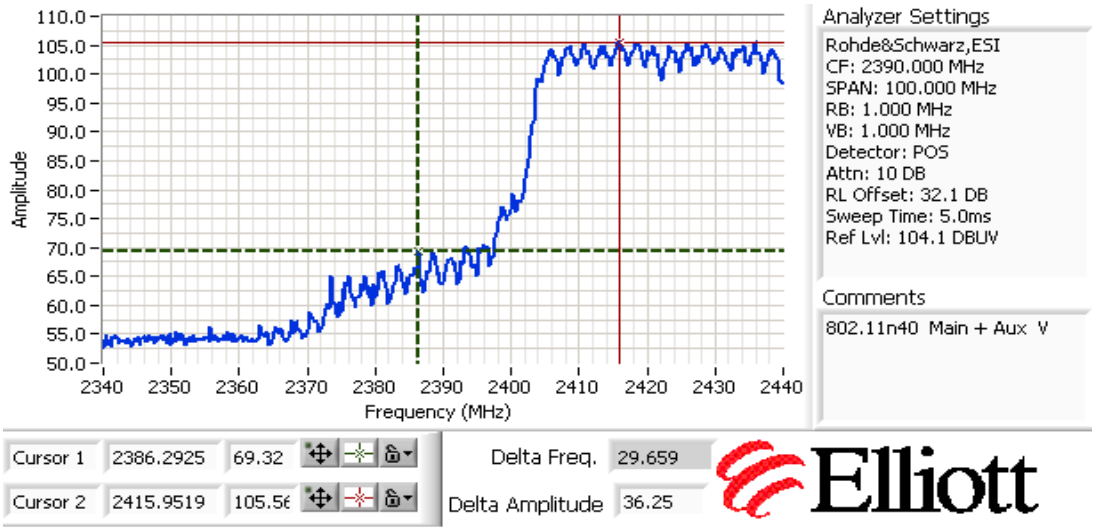
Run #1a: Low Channel (3) @ 2422 MHz

Band Edge Signal Field Strength - Direct measurement of 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	
2388.497	53.1	V	54.0	-0.9	Avg	78	1.43	
2386.293	69.3	V	54.0	15.3	Pk	78	1.43	



Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A



Run #1b: Low Channel (4) @ 2427 MHz

Date of Test: 5/13/2010

Test Engineer: Joseph Cadigal

Test Location: FTChamber#3

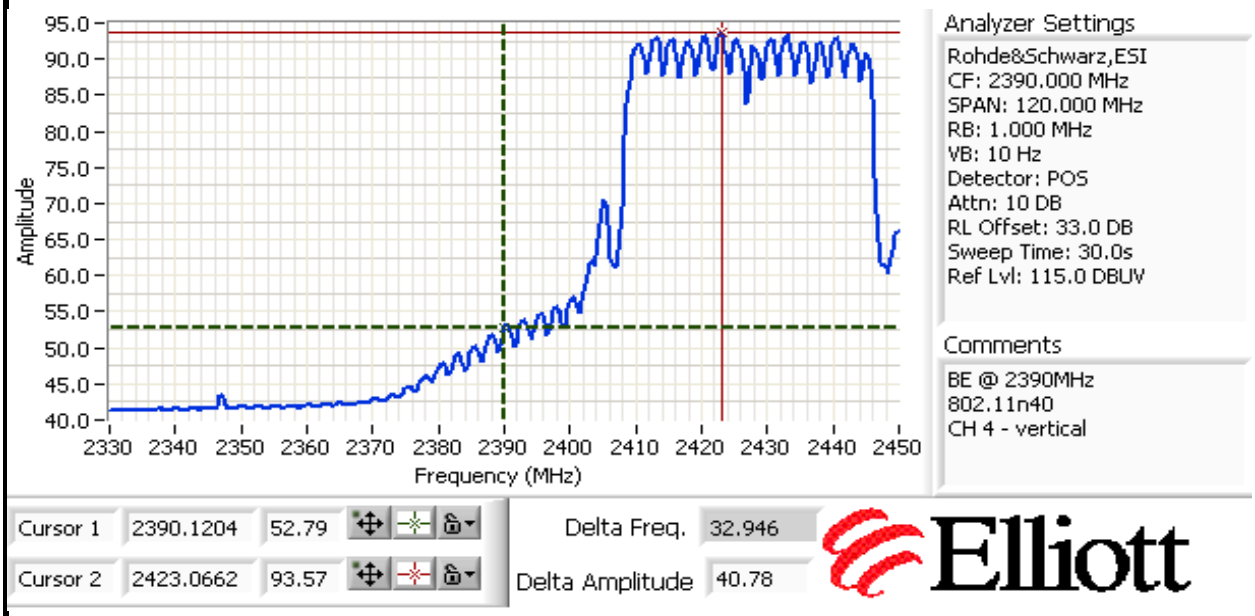
Fundamental Signal Field Strength

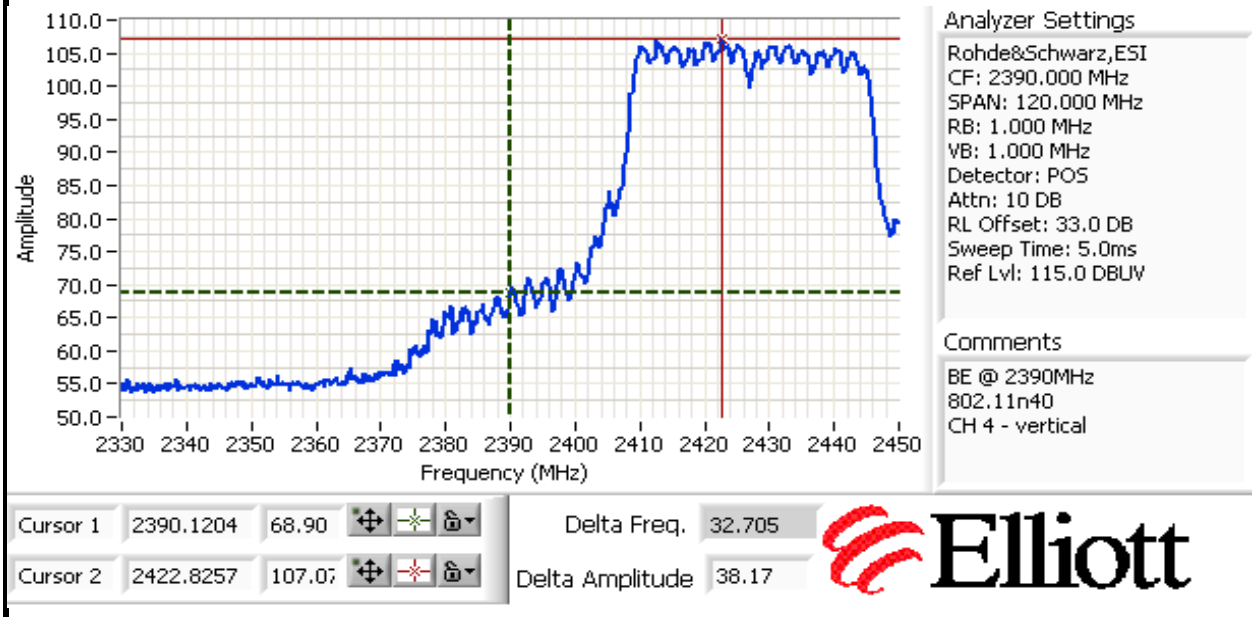
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2422.826	106.9	v	-	-	Pk	270	1.4	RB = VB = 1MHz
2423.066	93.6	v	-	-	Avg	270	1.4	RB = 1MHz, VB = 10Hz

Band Edge Signal Field Strength - Direct measurement of 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	
2390.120	52.8	v	54.0	-1.2	Avg	270	1.4	
2390.120	68.9	v	74.0	-5.1	Pk	270	1.4	

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A





Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

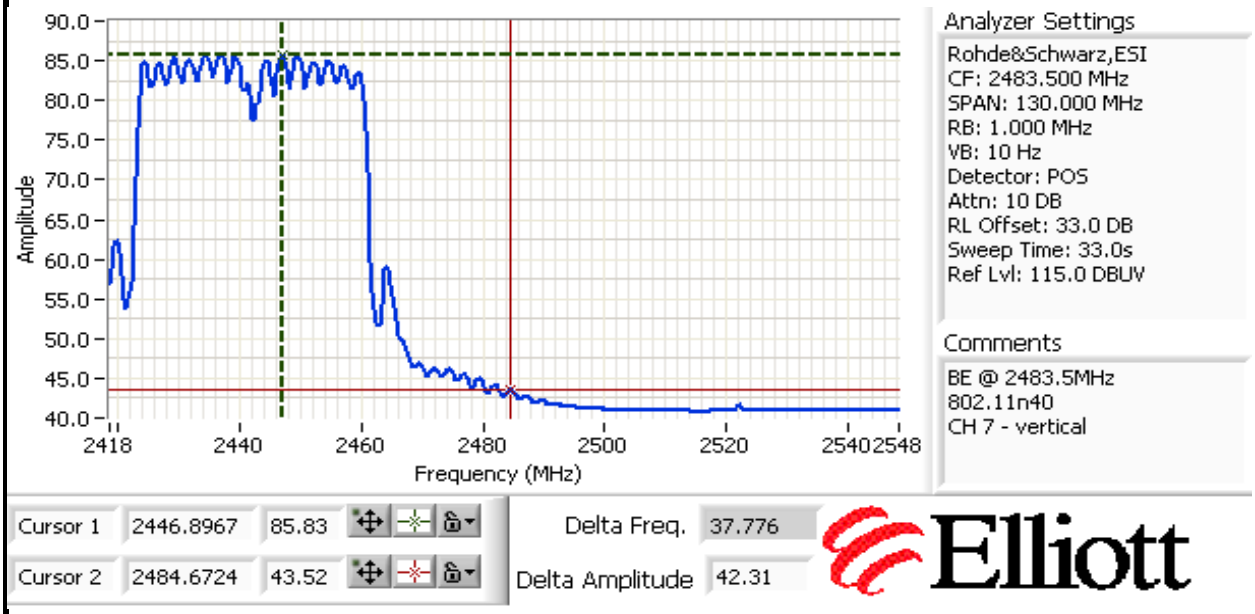
Run #1c: Low Channel (7) @ 2442 MHz

Fundamental Signal Field Strength

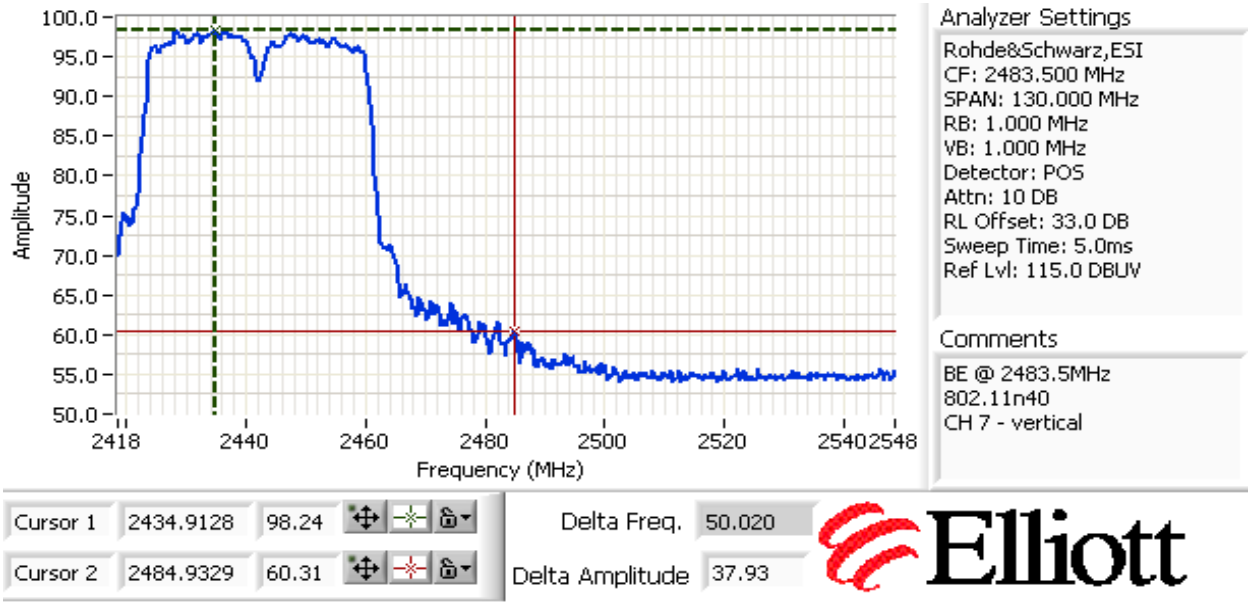
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2436.215	98.0	v	-	-	Pk	98	1.0	RB = VB = 1MHz
2446.897	85.8	v	-	-	Avg	98	1.0	RB = 1MHz, VB = 10Hz

Band Edge Signal Field Strength - Direct measurement of 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	
2484.672	43.5	v	54.0	-10.5	Avg	98	1.0	
2484.672	60.3	v	74.0	-13.7	Pk	98	1.0	



Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

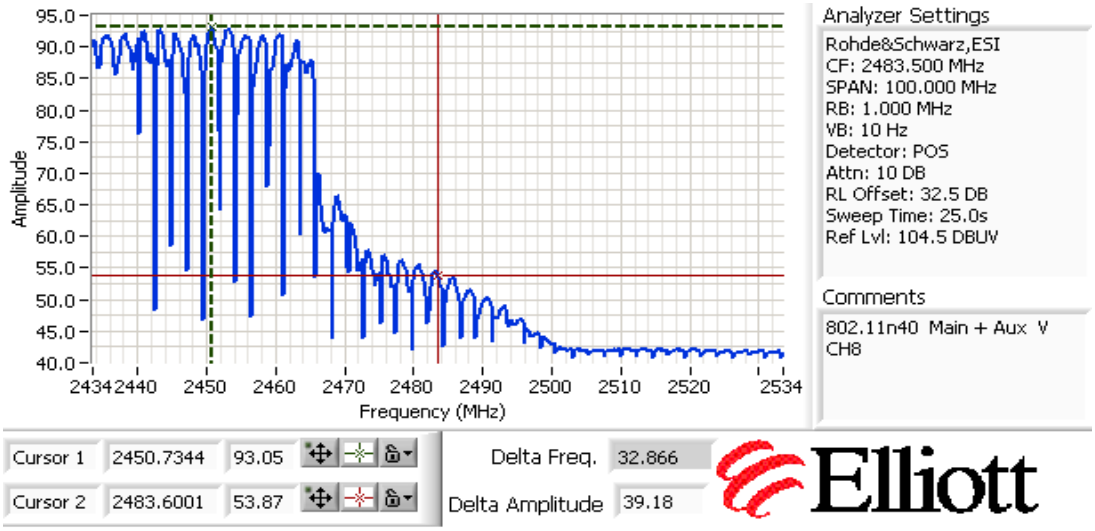


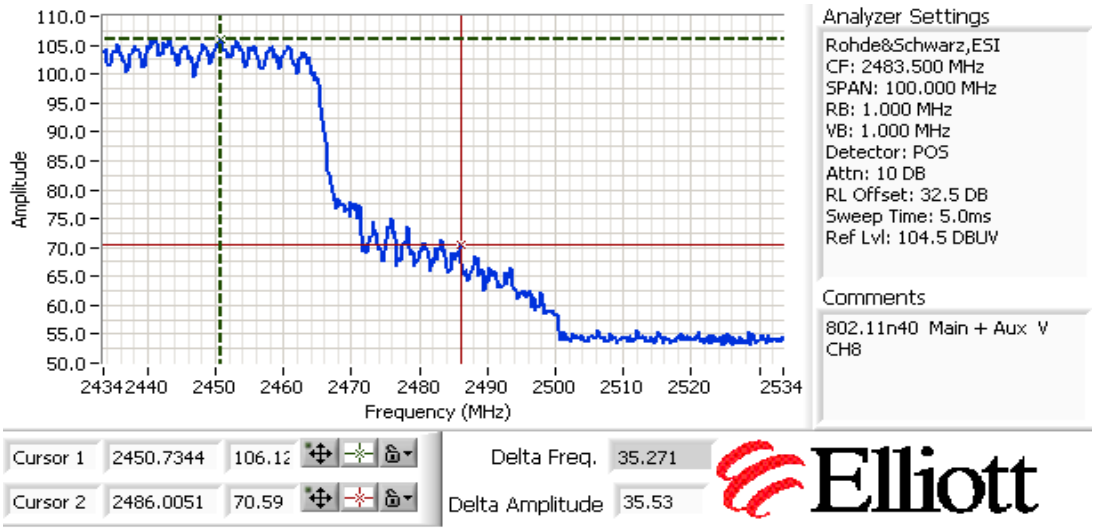
Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

Run #1d: Low Channel (8) @ 2447 MHz

Band Edge Signal Field Strength - Direct measurement of 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	
2483.600	53.9	V	54.0	-0.1	Avg	81	1.39	
2486.005	70.6	V	54.0	16.6	Pk	81	1.39	

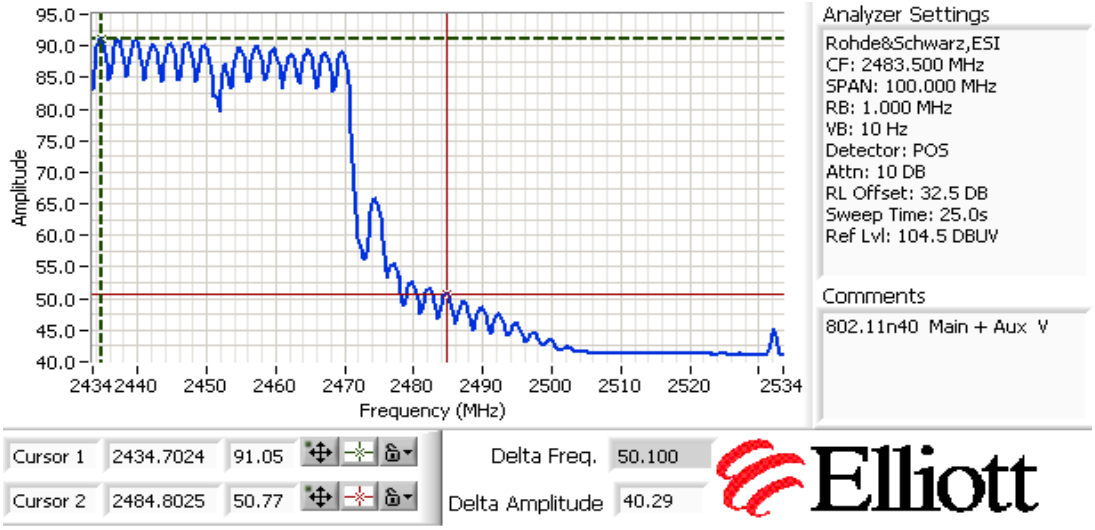


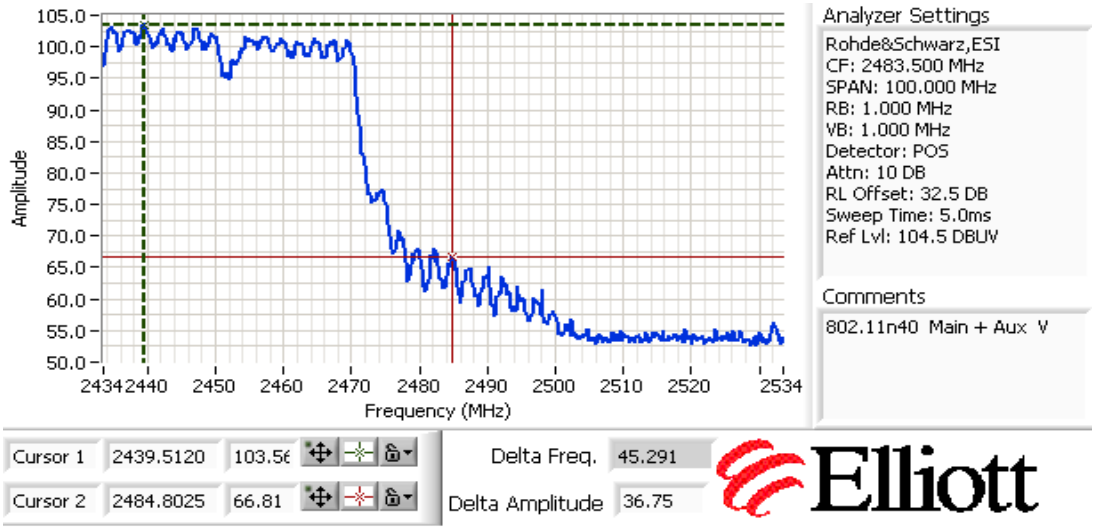


Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

Run #1e: Low Channel (9) @ 2452 MHz
Band Edge Signal Field Strength - Direct measurement of 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	
2484.803	50.8	V	54.0	-3.2	Avg	272	1.74	
2484.803	66.8	V	74.0	-7.2	Pk	272	1.74	
2483.801	48.1	H	54.0	-5.9	Avg	175	1.39	

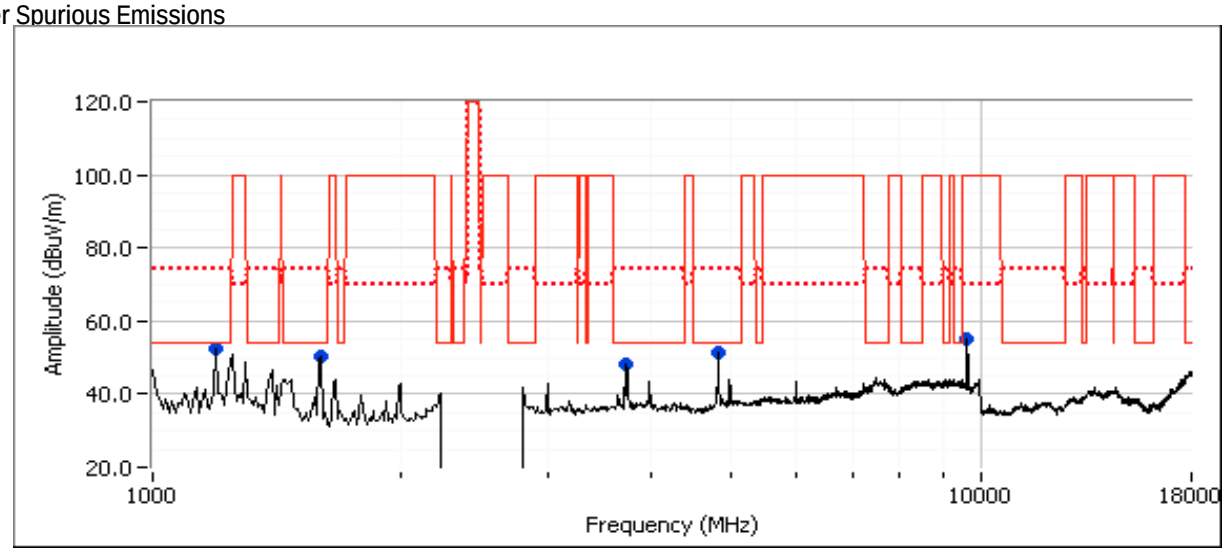




Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

Run #2: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
Date of Test: 5/13/2010
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#3

Run #2a: Low Channel (1) @ 2412 MHz
Other Spurious Emissions

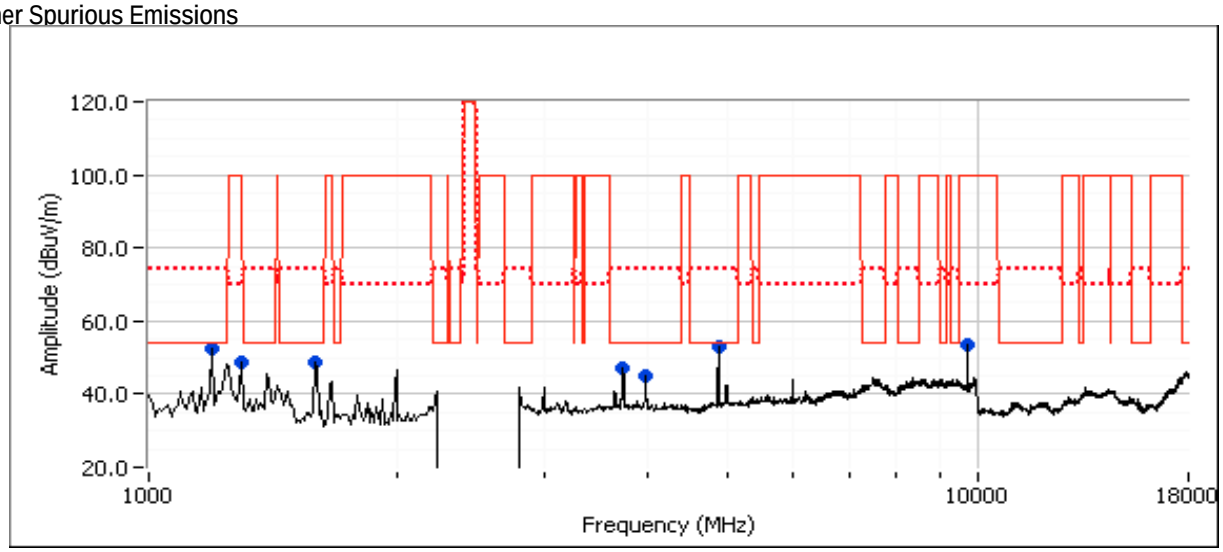


Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
9648.020	51.0	V	54.0	-3.0	AVG	65	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
4824.040	50.7	V	54.0	-3.3	AVG	25	1.0	RB 1 MHz;VB 10 Hz;Pk
1196.770	62.2	V	74.0	-11.8	PK	297	1.0	RB 1 MHz;VB 3 MHz;Pk
1196.200	41.5	V	54.0	-12.5	AVG	297	1.0	RB 1 MHz;VB 10 Hz;Pk
1594.850	39.8	V	54.0	-14.2	AVG	47	1.0	RB 1 MHz;VB 10 Hz;Pk
1594.160	59.7	V	74.0	-14.3	PK	47	1.0	RB 1 MHz;VB 3 MHz;Pk
3747.520	59.3	V	74.0	-14.7	PK	183	1.3	RB 1 MHz;VB 3 MHz;Pk
9648.000	55.3	V	74.0	-18.7	PK	65	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
3746.120	34.1	V	54.0	-19.9	AVG	183	1.3	RB 1 MHz;VB 10 Hz;Pk
4824.090	53.0	V	74.0	-21.0	PK	25	1.0	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 was set 20dB below the level of the fundamental and measured in 100kHz.
Note 2:	Signal is not in a restricted band but the more stringent restricted band limit was used.

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

Run #2b: Center Channel (6) @ 2437 MHz
Other Spurious Emissions

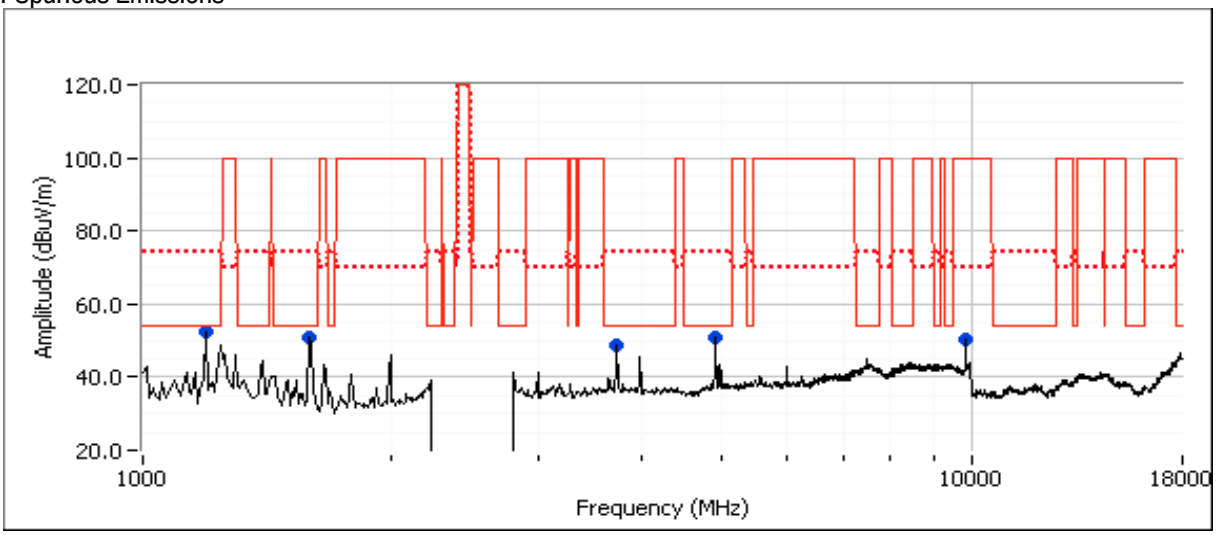


Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
9748.010	53.4	V	54.0	-0.6	AVG	40	1.3	RB 1 MHz;VB 10 Hz;Pk, note 2
4874.040	52.8	V	54.0	-1.2	AVG	28	1.0	RB 1 MHz;VB 10 Hz;Pk
3747.760	60.8	V	74.0	-13.2	PK	168	1.6	RB 1 MHz;VB 3 MHz;Pk
1296.210	40.5	V	54.0	-13.5	AVG	76	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
1595.120	40.0	V	54.0	-14.0	AVG	132	1.0	RB 1 MHz;VB 10 Hz;Pk
1196.310	39.9	V	54.0	-14.1	AVG	282	1.0	RB 1 MHz;VB 10 Hz;Pk
1594.200	59.8	V	74.0	-14.2	PK	132	1.0	RB 1 MHz;VB 3 MHz;Pk
1194.830	57.5	V	74.0	-16.5	PK	282	1.0	RB 1 MHz;VB 3 MHz;Pk
9748.040	56.1	V	74.0	-17.9	PK	40	1.3	RB 1 MHz;VB 3 MHz;Pk, note 2
4873.960	54.8	V	74.0	-19.2	PK	28	1.0	RB 1 MHz;VB 3 MHz;Pk
3745.250	34.1	V	54.0	-19.9	AVG	168	1.6	RB 1 MHz;VB 10 Hz;Pk
1296.490	51.8	V	74.0	-22.2	PK	76	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
3974.440	31.5	V	54.0	-22.5	AVG	322	1.3	RB 1 MHz;VB 10 Hz;Pk
3974.600	42.8	V	74.0	-31.2	PK	322	1.3	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 was set 20dB below the level of the fundamental and measured in 100kHz.
Note 2:	Signal is not in a restricted band but the more stringent restricted band limit was used.

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

Run #2c: High Channel (11) @ 2462 MHz
Other Spurious Emissions



Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
9848.000	48.8	V	54.0	-5.2	AVG	294	1.3	RB 1 MHz;VB 10 Hz;Pk, note 2
4923.630	47.0	V	54.0	-7.0	AVG	28	1.0	RB 1 MHz;VB 10 Hz;Pk
1594.980	63.0	V	74.0	-11.0	PK	135	1.0	RB 1 MHz;VB 3 MHz;Pk
1594.580	42.1	V	54.0	-11.9	AVG	135	1.0	RB 1 MHz;VB 10 Hz;Pk
1197.800	61.3	V	74.0	-12.7	PK	318	1.6	RB 1 MHz;VB 3 MHz;Pk
1196.400	40.7	V	54.0	-13.3	AVG	318	1.6	RB 1 MHz;VB 10 Hz;Pk
3738.480	60.3	V	74.0	-13.7	PK	171	1.3	RB 1 MHz;VB 3 MHz;Pk
3738.850	34.1	V	54.0	-19.9	AVG	171	1.3	RB 1 MHz;VB 10 Hz;Pk
9847.870	53.4	V	74.0	-20.6	PK	294	1.3	RB 1 MHz;VB 3 MHz;Pk, note 2
4923.610	50.1	V	74.0	-23.9	PK	28	1.0	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 was set 20dB below the level of the fundamental and measured in 100kHz.
Note 2:	Signal is not in a restricted band but the more stringent restricted band limit was used.

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	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: 19.4 °C

Rel. Humidity: 40 %

Summary of Results - Device Operating in the 5725 - 5850 MHz Band

Worse Case Spurious Emissions: 40MHz CDD

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	40MHz CDD	151	-	-	Radiated Emissions, 1 - 40GHz	FCC Part 15.209 / 15.247(c)	63.8dBµV/m @ 1594.6MHz (-10.2dB)
1b	40MHz CDD	159	-	-	Radiated Emissions, 1 - 40GHz	FCC Part 15.209 / 15.247(c)	41.9dBµV/m @ 1594.6MHz (-12.1dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

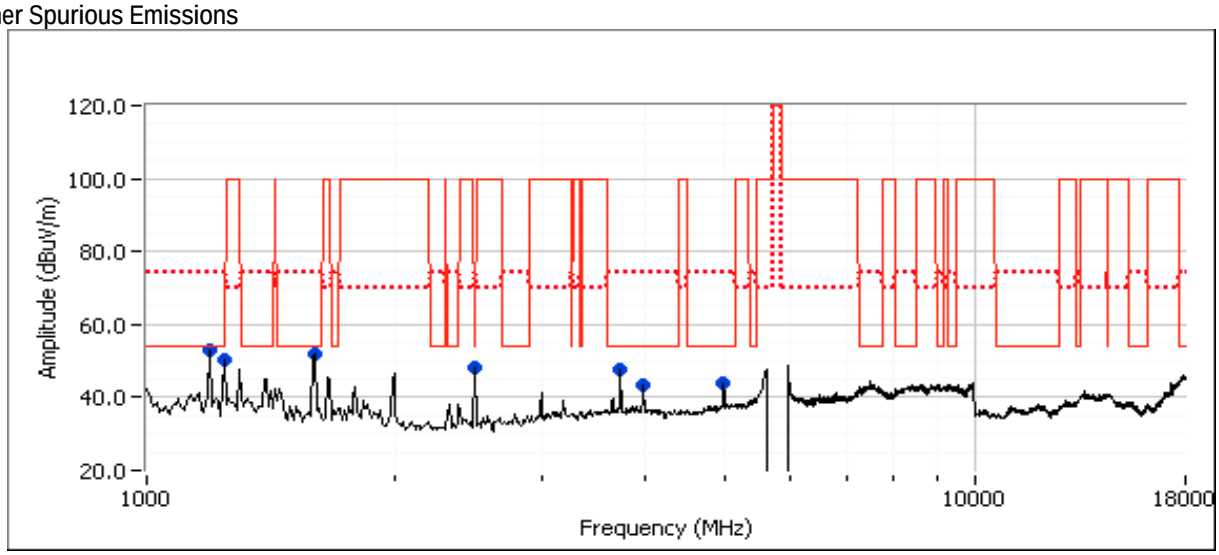
No deviations were made from the requirements of the standard.

Note: Preliminary testing showed no emissions below 1 GHz and above 18GHz.

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 - 40000 MHz. Operating Mode: 40MHz CDD
Date of Test: 5/14/2010
Test Engineer: Joseph Cadigal
Test Location: FTChamber#3

Run #1a: Low Channel (151) @ 5755 MHz
Other Spurious Emissions

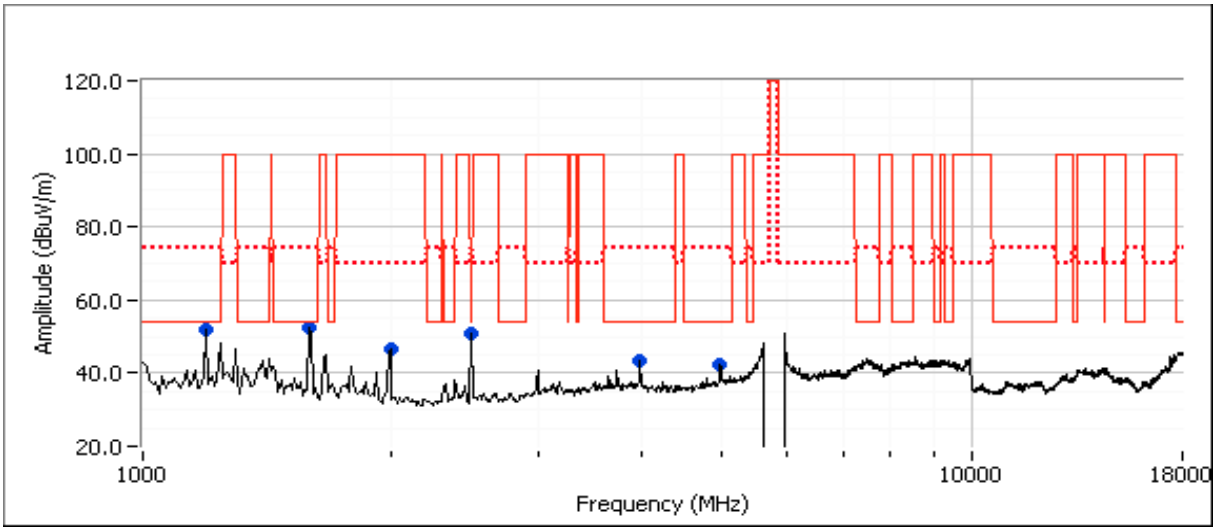


Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1594.560	63.8	V	74.0	-10.2	PK	137	1.0	RB 1 MHz;VB 3 MHz;Pk
1196.800	63.5	V	74.0	-10.5	PK	299	1.0	RB 1 MHz;VB 3 MHz;Pk
1594.910	43.3	V	54.0	-10.7	AVG	137	1.0	RB 1 MHz;VB 10 Hz;Pk
1196.030	42.2	V	54.0	-11.8	AVG	299	1.0	RB 1 MHz;VB 10 Hz;Pk
1245.720	35.2	V	54.0	-18.8	AVG	109	1.9	RB 1 MHz;VB 10 Hz;Pk, note 2
4973.630	31.7	H	54.0	-22.3	AVG	218	1.3	RB 1 MHz;VB 10 Hz;Pk
3747.210	31.5	V	54.0	-22.5	AVG	189	1.9	RB 1 MHz;VB 10 Hz;Pk
3972.510	31.1	V	54.0	-22.9	AVG	322	1.3	RB 1 MHz;VB 10 Hz;Pk
1244.080	49.2	V	74.0	-24.8	PK	109	1.9	RB 1 MHz;VB 3 MHz;Pk, note 2
2488.140	28.8	V	54.0	-25.2	AVG	90	1.6	RB 1 MHz;VB 10 Hz;Pk
2488.150	48.6	V	74.0	-25.4	PK	90	1.6	RB 1 MHz;VB 3 MHz;Pk
3748.060	44.1	V	74.0	-29.9	PK	189	1.9	RB 1 MHz;VB 3 MHz;Pk
4973.840	43.0	H	74.0	-31.0	PK	218	1.3	RB 1 MHz;VB 3 MHz;Pk
3973.570	42.5	V	74.0	-31.5	PK	322	1.3	RB 1 MHz;VB 3 MHz;Pk

Note 2:	Signal is not in a restricted band but the more stringent restricted band limit was used.

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	N/A

Run #1b: High Channel (159) @ 5795 MHz



Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1594.580	41.9	V	54.0	-12.1	AVG	125	1.0	RB 1 MHz;VB 10 Hz;Pk
1195.820	41.7	V	54.0	-12.3	AVG	62	2.2	RB 1 MHz;VB 10 Hz;Pk
1594.900	61.6	V	74.0	-12.4	PK	125	1.0	RB 1 MHz;VB 3 MHz;Pk
1195.860	61.0	V	74.0	-13.0	PK	62	2.2	RB 1 MHz;VB 3 MHz;Pk
1996.690	56.0	V	74.0	-18.0	PK	140	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1996.640	34.4	V	54.0	-19.6	AVG	140	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
4978.870	33.9	H	54.0	-20.1	AVG	202	1.3	RB 1 MHz;VB 10 Hz;Pk
4978.050	53.5	H	74.0	-20.5	PK	202	1.3	RB 1 MHz;VB 3 MHz;Pk
3970.990	31.5	V	54.0	-22.5	AVG	17	1.9	RB 1 MHz;VB 10 Hz;Pk
2476.850	27.6	V	54.0	-26.4	AVG	80	1.9	RB 1 MHz;VB 10 Hz;Pk, note 2
2477.020	46.5	V	74.0	-27.5	PK	80	1.9	RB 1 MHz;VB 3 MHz;Pk, note 2
3970.550	42.5	V	74.0	-31.5	PK	17	1.9	RB 1 MHz;VB 3 MHz;Pk

Note 2:	Signal is not in a restricted band but the more stringent restricted band limit was used.

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	-

Receive Spurious Radiated Emissions (RSS-GEN)

(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: 5/14/2010
Test Engineer: Joseph Cadigal
Test Location: FTChamber#3

Config. Used: 1
Config Change: none
EUT Voltage: Powered from host laptop

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing. Any remote support equipment was located outside 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.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, **preliminary** testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. **Maximized** testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions:

Temperature: 18.9 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1 (2.4GHz)	Radiated Emissions 1 GHz - 10 GHz Maximized	RSS-GEN	Pass	60.9dBµV/m @ 1596.1MHz (-13.1dB)
2 (5.15-5.25GHz)	Radiated Emissions 1 GHz - 18 GHz Maximized	RSS-GEN	Pass	62.2dBµV/m @ 1196.4MHz (-11.8dB)
3 (5.25-5.35GHz)	Radiated Emissions 1 GHz - 18 GHz Maximized	RSS-GEN	Pass	63.2dBµV/m @ 1595.4MHz (-10.8dB)
4 (5.4-5.7GHz)	Radiated Emissions 1 GHz - 18 GHz Maximized	RSS-GEN	Pass	53.5dBµV/m @ 1195.1MHz (-20.5dB)
5 (5.7-5.8GHz)	Radiated Emissions 1 GHz - 18 GHz Maximized	RSS-GEN	Pass	61.5dBµV/m @ 1593.5MHz (-12.5dB)

Note: Preliminary testing showed no radio related emissions below 1 GHz

Client:	Broadcom Corporation	Job Number:	J79248
Model:	BCM94322HM8L	T-Log Number:	T79249
		Account Manager:	Sheareen Washington
Contact:	Pin Wen		
Standard:	15.209 / 15.247 / 15.E / RSS-210	Class:	-

Modifications Made During Testing

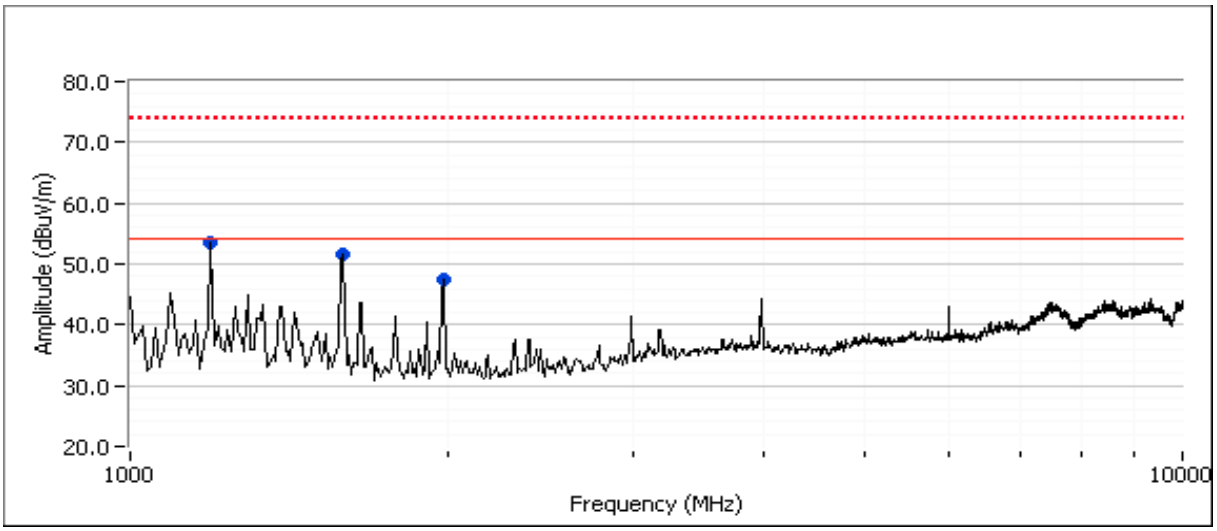
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Run #1: Receive Mode Spurious Emissions, EUT tuned to Channel 6 (2437 MHz)

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0



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

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1597.390	51.7	V	54.0	-2.3	Peak	133	1.0	
1998.360	47.6	V	54.0	-6.4	Peak	140	1.0	
1197.010	53.6	V	54.0	-0.4	Peak	322	1.3	

Final peak and average readings

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1596.110	60.9	V	74.0	-13.1	PK	131	1.0	RB 1 MHz;VB 3 MHz;Pk
1595.940	40.2	V	54.0	-13.8	AVG	131	1.0	RB 1 MHz;VB 10 Hz;Pk
1998.690	57.2	V	74.0	-16.8	PK	141	1.0	RB 1 MHz;VB 3 MHz;Pk
1196.320	36.7	V	54.0	-17.3	AVG	324	1.3	RB 1 MHz;VB 10 Hz;Pk
1195.840	55.5	V	74.0	-18.5	PK	324	1.3	RB 1 MHz;VB 3 MHz;Pk
1997.060	34.8	V	54.0	-19.2	AVG	141	1.0	RB 1 MHz;VB 10 Hz;Pk

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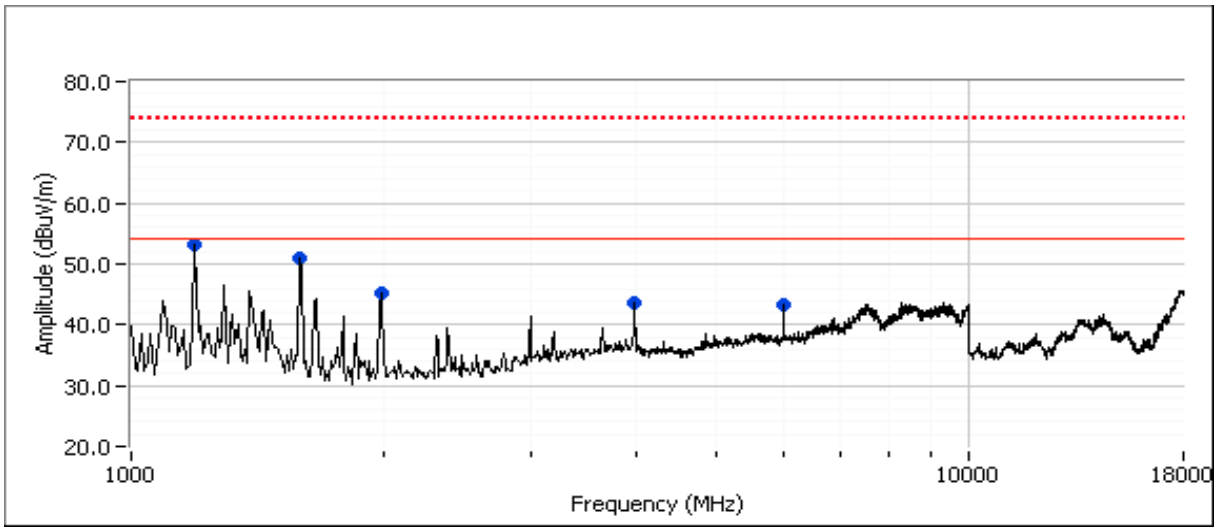
Run #2: Receive Mode Spurious Emissions, EUT tuned to Channel 40 (5200 MHz)

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0



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

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
6003.430	43.4	V	54.0	-10.6	Peak	40	1.9	
1990.790	45.1	H	54.0	-8.9	Peak	141	1.9	
1594.390	51.1	V	54.0	-2.9	Peak	258	1.0	
1197.350	53.3	V	54.0	-0.7	Peak	319	1.0	
3971.240	43.5	V	54.0	-10.5	Peak	322	1.3	

Final peak and average readings

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1196.400	62.2	V	74.0	-11.8	PK	320	1.0	RB 1 MHz;VB 3 MHz;Pk
1196.120	41.3	V	54.0	-12.7	AVG	320	1.0	RB 1 MHz;VB 10 Hz;Pk
1594.980	39.9	V	54.0	-14.1	AVG	259	1.0	RB 1 MHz;VB 10 Hz;Pk
1595.740	59.7	V	74.0	-14.3	PK	259	1.0	RB 1 MHz;VB 3 MHz;Pk
1991.220	54.6	H	74.0	-19.4	PK	142	1.9	RB 1 MHz;VB 3 MHz;Pk
1991.810	33.5	H	54.0	-20.5	AVG	142	1.9	RB 1 MHz;VB 10 Hz;Pk
6001.940	32.0	V	54.0	-22.0	AVG	38	1.9	RB 1 MHz;VB 10 Hz;Pk
3972.380	31.0	V	54.0	-23.0	AVG	322	1.3	RB 1 MHz;VB 10 Hz;Pk
6002.680	43.7	V	74.0	-30.3	PK	38	1.9	RB 1 MHz;VB 3 MHz;Pk
3971.860	42.3	V	74.0	-31.7	PK	322	1.3	RB 1 MHz;VB 3 MHz;Pk

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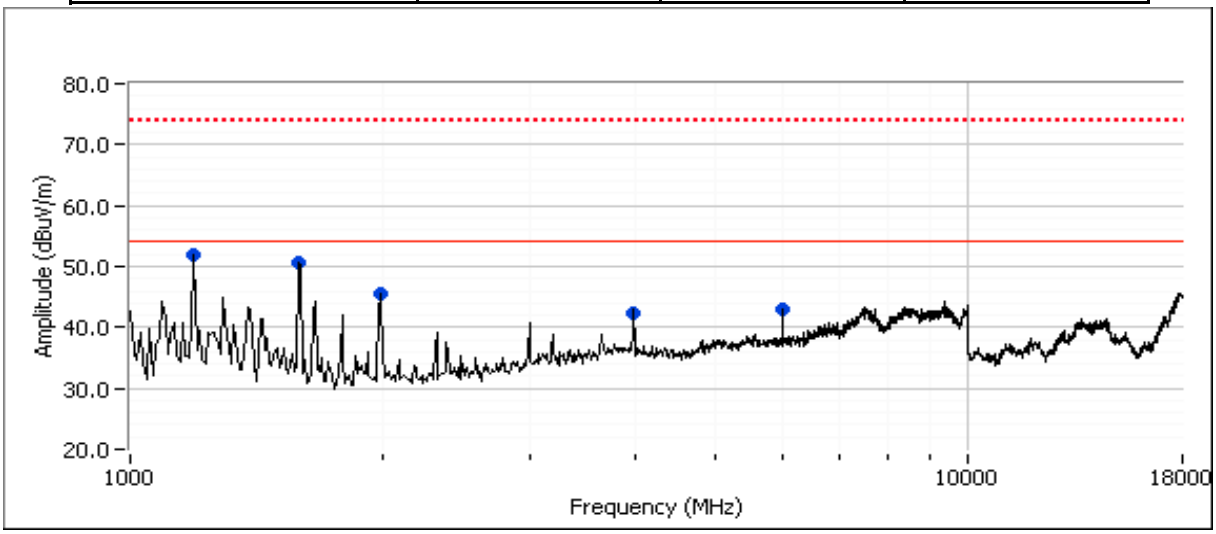
Run #3: Receive Mode Spurious Emissions, EUT tuned to Channel 60 (5300 MHz)

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0



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

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5988.690	42.9	V	54.0	-11.1	Peak	40	1.9	
1595.090	50.7	V	54.0	-3.3	Peak	137	1.0	
1993.720	45.5	V	54.0	-8.5	Peak	137	1.0	
1196.280	51.8	V	54.0	-2.2	Peak	311	1.0	
3984.760	42.3	V	54.0	-11.7	Peak	320	1.3	

Final peak and average readings

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1595.420	63.2	V	74.0	-10.8	PK	139	1.0	RB 1 MHz;VB 3 MHz;Pk
1195.470	62.7	V	74.0	-11.3	PK	312	1.0	RB 1 MHz;VB 3 MHz;Pk
1594.440	42.3	V	54.0	-11.7	AVG	139	1.0	RB 1 MHz;VB 10 Hz;Pk
1196.010	42.1	V	54.0	-11.9	AVG	312	1.0	RB 1 MHz;VB 10 Hz;Pk
1994.500	55.7	V	74.0	-18.3	PK	136	1.0	RB 1 MHz;VB 3 MHz;Pk
3984.500	35.1	V	54.0	-18.9	AVG	322	1.3	RB 1 MHz;VB 10 Hz;Pk
1993.670	33.7	V	54.0	-20.3	AVG	136	1.0	RB 1 MHz;VB 10 Hz;Pk
5988.560	32.1	V	54.0	-21.9	AVG	38	1.9	RB 1 MHz;VB 10 Hz;Pk
3983.580	49.5	V	74.0	-24.5	PK	322	1.3	RB 1 MHz;VB 3 MHz;Pk
5988.400	43.4	V	74.0	-30.6	PK	38	1.9	RB 1 MHz;VB 3 MHz;Pk

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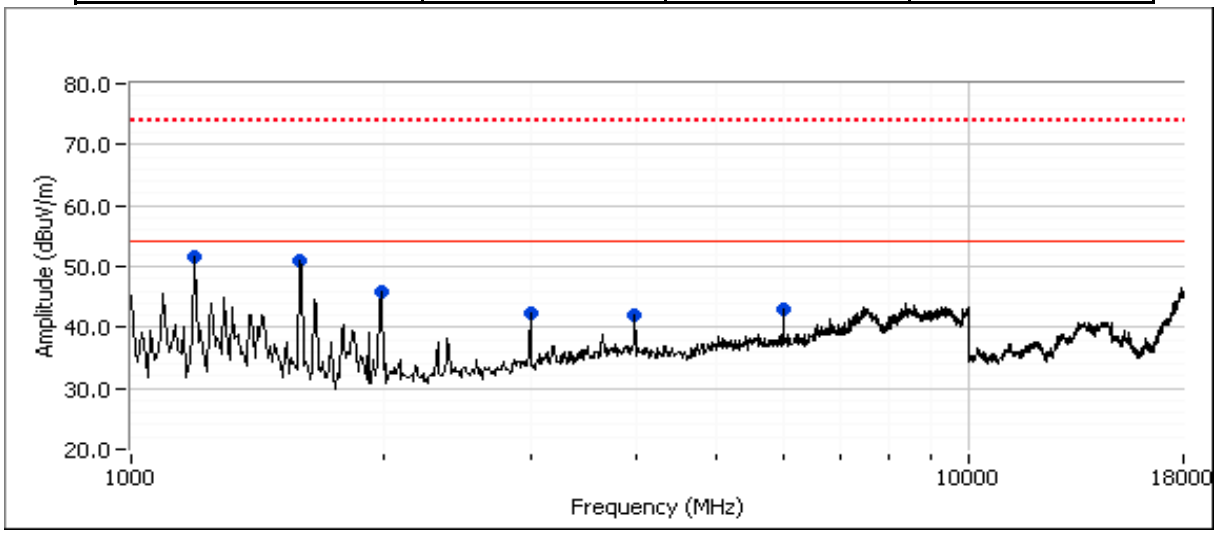
Run #4: Receive Mode Spurious Emissions, EUT tuned to Channel 120 (5600 MHz)

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0



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

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
6004.710	43.1	V	54.0	-10.9	Peak	45	1.9	
1593.660	51.1	V	54.0	-2.9	Peak	143	1.0	
1994.970	46.0	V	54.0	-8.0	Peak	265	1.0	
1196.070	51.6	V	54.0	-2.4	Peak	299	1.0	
3985.220	42.0	V	54.0	-12.0	Peak	347	1.3	
3000.430	42.2	V	54.0	-11.8	Peak	357	1.9	

Final peak and average readings

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1195.060	53.5	V	74.0	-20.5	PK	299	1.0	RB 1 MHz;VB 3 MHz;Pk
1196.270	31.9	V	54.0	-22.1	AVG	299	1.0	RB 1 MHz;VB 10 Hz;Pk
1594.370	51.3	V	74.0	-22.7	PK	144	1.0	RB 1 MHz;VB 3 MHz;Pk
1594.950	30.4	V	54.0	-23.6	AVG	144	1.0	RB 1 MHz;VB 10 Hz;Pk
3000.410	29.9	V	54.0	-24.1	AVG	358	1.9	RB 1 MHz;VB 10 Hz;Pk
1994.470	29.4	V	54.0	-24.6	AVG	266	1.0	RB 1 MHz;VB 10 Hz;Pk
1996.090	48.0	V	74.0	-26.0	PK	266	1.0	RB 1 MHz;VB 3 MHz;Pk
3985.520	26.4	V	54.0	-27.6	AVG	348	1.3	RB 1 MHz;VB 10 Hz;Pk
6004.860	22.6	V	54.0	-31.4	AVG	43	1.9	RB 1 MHz;VB 10 Hz;Pk
3984.110	40.7	V	74.0	-33.3	PK	348	1.3	RB 1 MHz;VB 3 MHz;Pk

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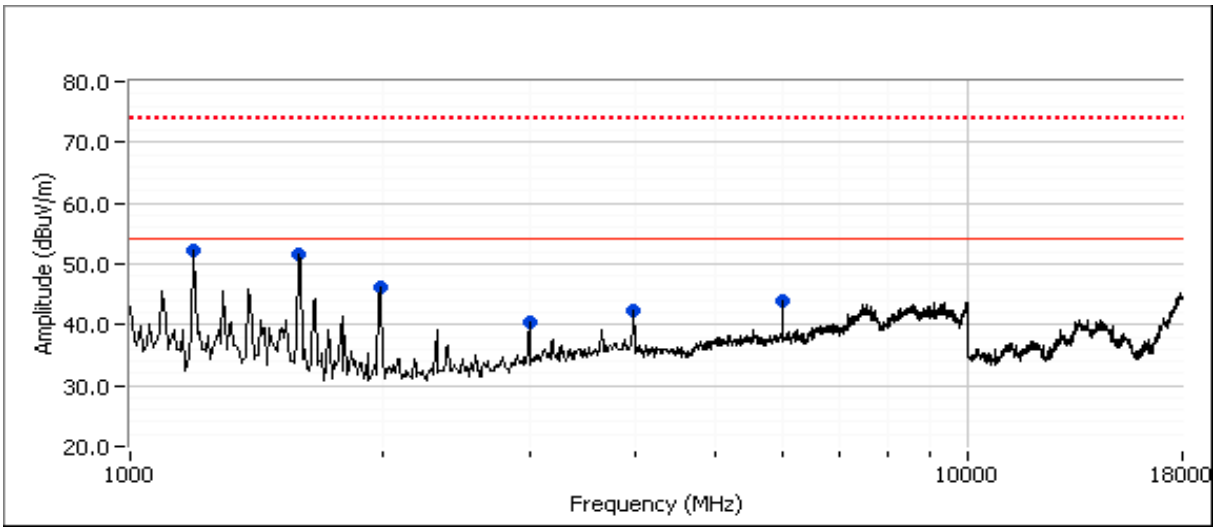
Run #5: Receive Mode Spurious Emissions, EUT tuned to Channel 157 (5785 MHz)

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0



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

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5988.230	43.8	V	54.0	-10.2	Peak	43	1.9	
3986.410	42.3	V	54.0	-11.7	Peak	122	1.3	
1593.440	51.6	V	54.0	-2.4	Peak	142	1.0	
3000.430	40.5	H	54.0	-13.5	Peak	189	2.2	
1993.630	46.3	V	54.0	-7.7	Peak	264	1.0	
1195.460	52.3	V	54.0	-1.7	Peak	319	1.3	

Final peak and average readings

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1593.470	61.5	V	74.0	-12.5	PK	143	1.0	RB 1 MHz;VB 3 MHz;Pk
1196.690	40.2	V	54.0	-13.8	AVG	320	1.3	RB 1 MHz;VB 10 Hz;Pk
1594.830	40.1	V	54.0	-13.9	AVG	143	1.0	RB 1 MHz;VB 10 Hz;Pk
1195.850	59.5	V	74.0	-14.5	PK	320	1.3	RB 1 MHz;VB 3 MHz;Pk
1994.710	59.4	V	74.0	-14.6	PK	265	1.0	RB 1 MHz;VB 3 MHz;Pk
1994.560	39.1	V	54.0	-14.9	AVG	265	1.0	RB 1 MHz;VB 10 Hz;Pk
3000.430	38.5	H	54.0	-15.5	AVG	190	2.2	RB 1 MHz;VB 10 Hz;Pk
3987.440	34.2	V	54.0	-19.8	AVG	123	1.3	RB 1 MHz;VB 10 Hz;Pk
5987.350	32.1	V	54.0	-21.9	AVG	41	1.9	RB 1 MHz;VB 10 Hz;Pk
3985.870	47.9	V	74.0	-26.1	PK	123	1.3	RB 1 MHz;VB 3 MHz;Pk

Appendix C Photographs of Test Configurations

Uploaded as a separate exhibit

Appendix D RF Exposure Information

Uploaded as a separate exhibit