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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

Models: 6235ANNGW and 6235ANNGU

IC CERTIFICATION #:	1000M-6235ANNG and 1000M-6235ANNGU
FCC ID:	PD96235ANNG and PD96235ANNGU
APPLICANT:	Intel Corporation 100 Center Point Circle, Suite 200 Columbia, SC 29210, USA
TEST SITE(S):	NTS Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-3; 2845B-4, 2845B-5, 2845B-7
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Testing Cert #0214.26

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REVISION HISTORY

Rev#	Date	Comments	Modified By
1	1-14-2013	First release	

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SCOPE

An electromagnetic emissions test has been performed on the Intel Corporation models 6235ANNGW and 6235ANNGU, 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

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(s) of Intel Corporation models 6235ANNGW and 6235ANNGU 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 Intel Corporation models 6235ANNGW and 6235ANNGU and therefore apply only to the tested sample(s). The sample(s) were selected and prepared by Stephen Hackett of Intel 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 digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	All modes > 500 kHz	>500kHz	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	BT: 4.0 dBm b: 15.9 dBm g: 18.9 dBm n20: 19.1 dBm n40: 18.1 dBm EIRP = 0.170 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	BT: -10.0 dBm/3kHz b: -8.0 dBm/3kHz g: -8.4 dBm/3kHz n20: -4.6 dBm/3kHz n40: -11.3 dBm/3kHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All spurious emissions < -20dBc or -30dBc	< -20dBc or < -30dBc Note 2	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	53.8 dBµV/m @ 4879.2 MHz (-0.2 dB)	15.209 in restricted bands, all others < -20dBc or <-30dBc Note 2	Complies

Note 1: EIRP calculated using antenna gain of 3.2 dBi for the highest EIRP system.
Note 2: A limit of -30dBc was used when the maximum conducted output power was measured and a limit of -20dBc was used when maximum peak conducted output power was measured.

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	Systems uses OFDM/DSSS/GFSK techniques	System must utilize digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	All modes > 500 kHz	>500kHz	Complies
15.247 (b)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	a: 17.3 dBm n20: 17.5 dBm n40: 16.6 dBm EIRP = 0.175 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	a: -8.4 dBm/3kHz n20: -7.9 dBm/3kHz n40: -11.8 dBm/3kHz	Maximum permitted is 8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions – 30MHz – 40 GHz	All spurious emissions < -20dBc or -30dBc	< -20dBc or < -30dBc Note 2	Complies
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 30MHz – 40 GHz	56.6 dBµV/m @ 1195.7 MHz (-17.4 dB)	15.209 in restricted bands, all others < -20dBc or <-30dBc Note 2	Complies

Note 1: EIRP calculated using antenna gain of 5.0 dBi for the highest EIRP system multi-point system.
Note 2: A limit of -30dBc was used when the maximum conducted output power was measured and a limit of -20dBc was used when maximum peak conducted output power was measured.

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Not applicable as antennas are integral in host systems.	Unique or integral antenna required	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	31.3 dBµV @ 4.428 MHz (-24.7 dB)	Refer to page 19	Complies
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to SAR report and RSS 102 declaration	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	Refer to User Manual for details	Statement required regarding non-interference	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	No detachable antenna	Statement for products with detachable antenna	Complies
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	2.4 GHz BT: 1.048 MHz b: 13.6 MHz g: 20.0 MHz n20: 25.0 MHz n40: 37.4 MHz 5.8 GHz a: 33.9 MHz n20: 35.4 MHz n40: 59.9 MHz	Information only	N/A

ADDITIONAL MEASUREMENTS

As both Bluetooth and 802.11 transmissions can occur simultaneously, radiated spurious measurements were made with both Bluetooth and 802.11 transmitting simultaneously.

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.209	RSS 210 A8.5	Radiated Spurious Emissions	53.3 dBµV/m @ 4874.0 MHz (-0.7 dB)	15.209 in restricted bands, all others < -20dBc or <-30dBc Note 2	Complies
Emission was second harmonic of the 802.11 signal and not an intermodulation product, but was the highest amplitude emissions observed with both Bluetooth and Wi-Fi operating simultaneously.					

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 Intel Corporation Intel® Centrino® Advanced-N 6235 models 6235ANNGW and 6235ANNGU are Bluetooth/IEEE 802.11a/b/g/n wireless network adapter modules. The modules support MIMO (2x2) for 802.11n modes and MISO (1x2) for 802.11a/b/g modes. Bluetooth only operation mode is a 1x1. When Bluetooth is operational then 802.11b/g/n modes operate as SISO (1x1). 802.11a/n modes still operate as MIMO (2x2) with Bluetooth operational.
The card is sold under two different FCC/IC ID numbers (see table below). The ID's ending in "U" are intended to allow user install conditions and host systems must be provided with a BIOS locking feature that prevents installation of unauthorized devices.
For radio testing purposes the card was installed in a test fixture that exposed all sides of the card. For digital device testing for certification under equipment code JBP the card was installed in a test fixture external to the PC.

The samples were received on December 1, 2012 and tested on December 3, 4, 5, 6, 7, 12, 17, 21, 26, 27, 28, 31 and January 2, 3 and 4, 2013. The samples tested are as follows:

Company	Model	Description	Serial Number	FCC ID
Intel Corporation	6235ANNGW	Bluetooth / IEEE 802.11a/b/g/n wireless network adapter module	50405 (JBP) 50405 (DSS, DTS and NII)	PD96235ANNG PD96235ANNGU 1000M-6235ANNG
	6235ANNGU			1000M-6235ANNGU

ANTENNA SYSTEM

The EUT antenna is a two-antenna PIFA antenna system – Shanghai Universe Communication Electron Co., Ltd,
The antenna connects to the EUT via a non-standard antenna connector, thereby meeting the requirements of FCC 15.203.

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 NTS Silicon Valley.

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Intel Corporation	-	NGFF Test Fixture	3902412-151	N/A
Dell	Latitude D520	Laptop PC	HM9383J	N/A
Dell	Latitude E5400	Laptop PC	GFZW54J	N/A
Agilent	E3610A	DC Supply	MY4001740	N/A

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Laptop USB	Fixture USB	USB cable	Shielded	1.5
Laptop Mini PCI	Fixture PCIe	Ribbon	unshielded	0.7
DC Power	Fixture DC power	2-wire	unshielded	0.7

EUT OPERATION

The EUT was installed into a test fixture that exposed all sides of the card. The test fixture interfaced to a laptop computer and dc power supply. The laptop computer was used to configure the EUT to continuously transmit at a specified output power on the channel specified in the test data. For transmit mode measurements the system was configured to operate in each of the available operating modes – 802.11b, 802.11g, 802.11n (20 MHz channel bandwidth) and 802.11n (40MHz channel bandwidth), Bluetooth 1Mb/s and Bluetooth 3Mb/s. In addition radiated spurious tests were repeated with the device operating in both Bluetooth and 802.11 modes to determine if any spurious emissions due to intermodulation products were created.

The data rates used for all tests were the lowest data rates for each 802.11 mode – 1Mb/s for 802.11b, 6Mb/s for 802.11a and 802.11g, 6.5MB/s for 802.11n (20MHz), and 13 Mb/s for 802.11n (40MHz) except that power for 802.11b mode was tested at 5.5Mb/s. The device operates at its maximum output power at the lowest data rate except for 802.11b mode (this was confirmed through separate measurements – refer to test data for actual measurements). Bluetooth operation was evaluated at both 1Mb/s and 3Mb/s data rates. 2Mb/s data rate was found, through preliminary testing, to produce emissions similar to those for 3Mb/s.

The PC was using the Intel test utility DRTU Version 1.5.6-0445 and the device driver was version 15.3.1.2.

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	
Chamber 5	211948	2845B-5	
Chamber 7	A2LA accreditation	2845B-7	

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.

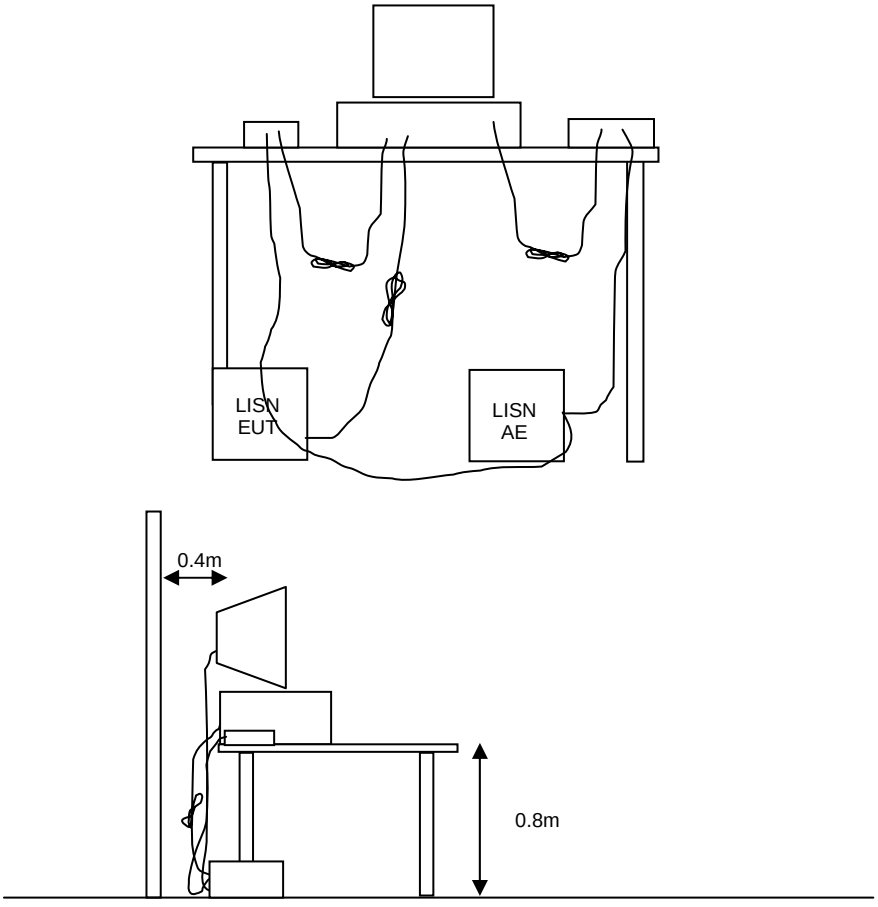


Figure 1 Typical Conducted Emissions Test Configuration

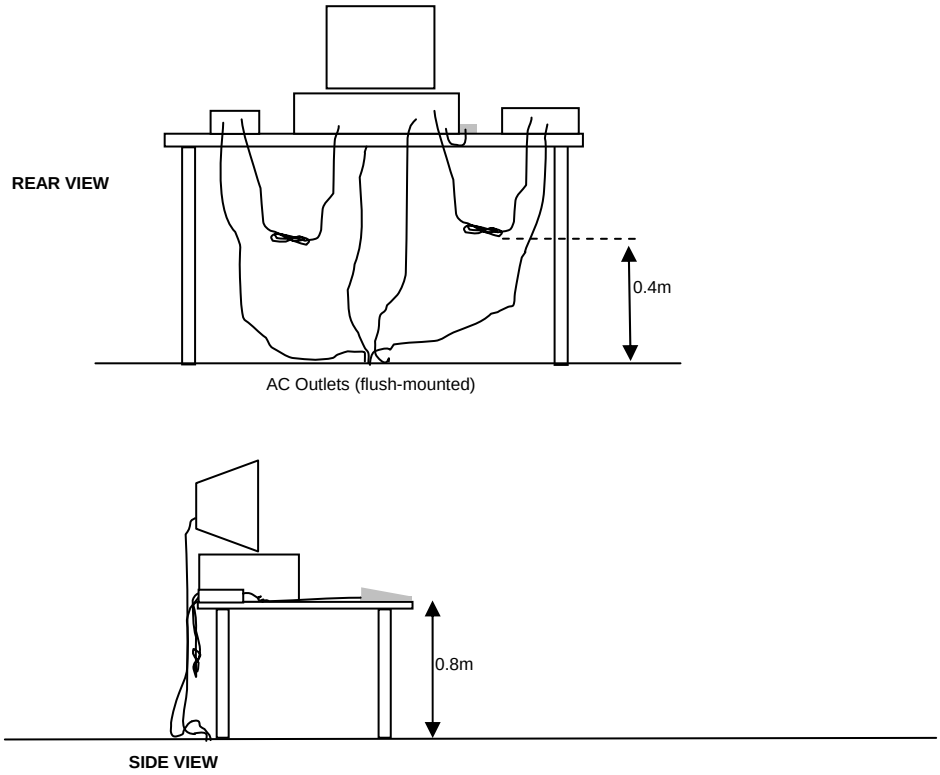
RADIATED EMISSIONS

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.

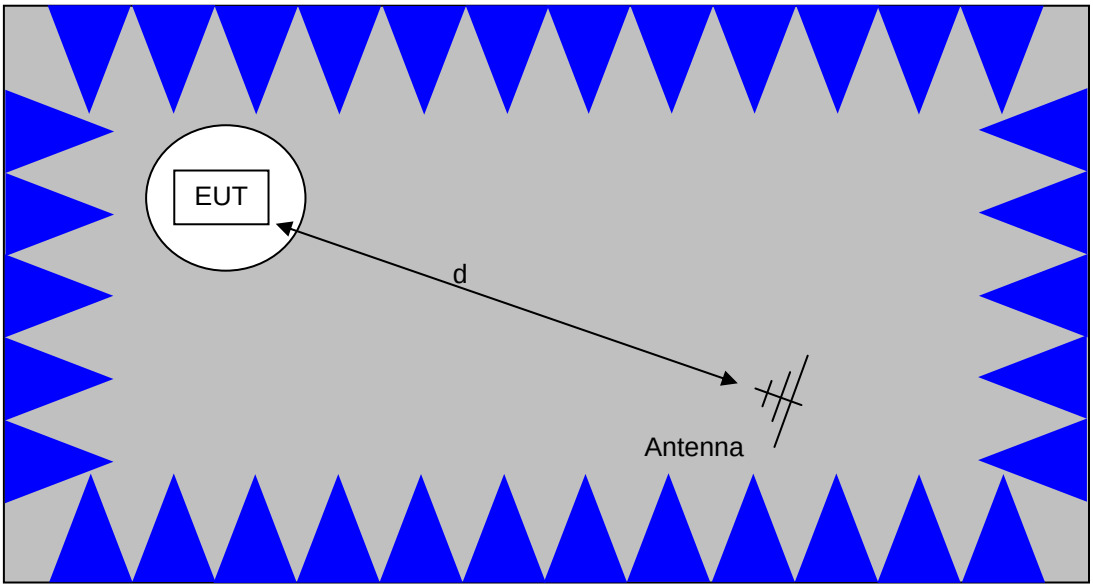
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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.

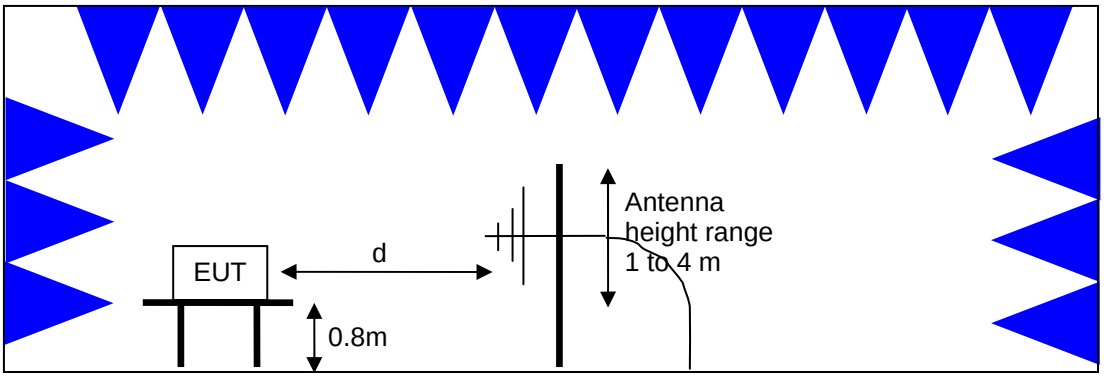


Typical Test Configuration for Radiated Field Strength Measurements



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.

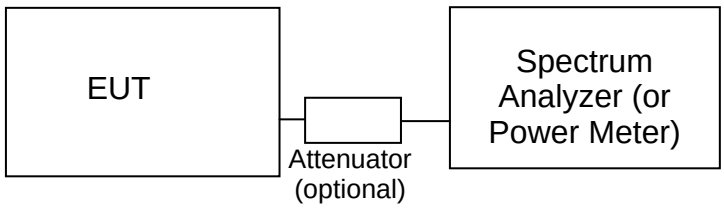
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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
Tx Bandedge, 03-Dec-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	19-Jul-14
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	31-May-13
Tx Spurious Emissions, 04-Dec-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	19-Jul-14
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	09-Dec-12
Radiated Emissions, BE, 1000 - 6,500 MHz, 05-Dec-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	19-Jul-14
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	09-Dec-12
Radiated Emissions, 1000 - 2,500 MHz, 07-Dec-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	19-Jul-14
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	09-Jan-13
Radiated Emissions, 1000 - 6,000 MHz, 10-Dec-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	19-Jul-14
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	06-Jan-13
Radiated Emissions, 1000 - 11,000 MHz, 12-Dec-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	29-Mar-13
EMCO	Antenna, Horn, 1-18 GHz	3115	487	19-Jul-14
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	01-May-13
Rohde & Schwarz	Power Meter, Single Channel, +1795+1796	NRVS	1534	28-Jun-13
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1555	22-Feb-13
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2238	04-Oct-13
Conducted Emissions, 18-Dec-12				
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	16-Feb-13
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	15-May-13
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12-Dec-13
Com-Power	9KHz-30MHz, 50uH, 15Aac, 10Adc, max	LI-215A	2672	25-May-13

Manufacturer	Description	Model #	Asset #	Cal Due
Radiated Emissions, 1000 - 40000MHz, 18-Dec-12				
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	23-Aug-14
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	23-Feb-13
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	10-Aug-13
Radiated Emissions, 1000 - 40,000 MHz, 19-Dec-12				
Narda West	High Pass Filter, 8 GHz	HPF 180	821	22-Mar-13
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	23-Aug-14
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	02-Aug-13
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	23-Feb-13
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	10-Aug-13
Radiated Spurious Emissions, 1000 - 40,000 MHz, 20-Dec-12				
Narda West	High Pass Filter, 8 GHz	HPF 180	821	22-Mar-13
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	23-Aug-14
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	02-Aug-13
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	23-Feb-13
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	10-Aug-13
Radiated Spurious Emissions, 1000 - 25,000 MHz, 21-Dec-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	19-Jul-14
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	23-Feb-13
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	11-Oct-13
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	10-Aug-13
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	09-Jan-13
Radiated Spurious Emissions, 1000 - 25,000 MHz, 26-Dec-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	19-Jul-14
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	23-Feb-13
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	11-Oct-13
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	10-Aug-13
Hewlett Packard	Head (Inc W1-W4, 1946 , 1947) Purple	84125C	1772	01-May-13
A.H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	17-Apr-13

Manufacturer	Description	Model #	Asset #	Cal Due
Radiated Emissions, 30 - 15,000 MHz, 28-Dec-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	19-Jul-14
Hewlett Packard	Preamplifier, 100 kHz - 1.3 GHz	8447D OPT 010	1826	18-May-13
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	2197	07-Feb-14
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	23-Feb-13
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	04-Oct-13
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	04-Oct-13
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	2241	04-Oct-13
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	11-Oct-13
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	10-Aug-13
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	09-Jan-13
Radio Antenna Port (Power and Spurious Emissions), 28-Dec-12				
Agilent	PSA, Spectrum Analyzer	E4446A	2139	23-Feb-13
Radio Antenna Port (Power and Spurious Emissions), 31-Dec-12				
Agilent	PSA, Spectrum Analyzer	E4446A	2139	23-Feb-13
Radio Antenna Port (Power and Spurious Emissions), 04-Jan-13				
Agilent	PSA, Spectrum Analyzer	E4446A	2139	23-Feb-13
Radio Antenna Port (Power and Spurious Emissions), 05-Jan-13				
Agilent	PSA, Spectrum Analyzer	E4446A	2139	23-Feb-13
Radiated Emissions, 1000 - 26,500 MHz, 07-Jan-13				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	09-Nov-13
EMCO	Antenna, Horn, 1-18GHz	3115	868	19-Jun-14
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	14-Sep-13
Radio Antenna Port (Power and Spurious Emissions), 08-Jan-13				
Agilent	50GHz PSA Spectrum Analyzer	E4448A-M27	199979	15-Nov-13
Conducted Emissions, 18-Dec-12				
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	16-Feb-13
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	15-May-13

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12-Dec-13
Com-Power	9KHz-30MHz, 50uH, 15Aac, 10Adc, max	LI-215A	2672	25-May-13
Radiated Emissions, Band edge, 09-Jan-13				
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1422	13-Jan-13
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	12-Jul-14
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	21-May-13
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1796	14-Jun-13
Radio Antenna Port (Power), 09-Jan-13				
Rohde & Schwarz	Power Meter, Dual Channel, DC to 40 GHz, 100 pW to 30 W, 9 kHz to 3 GHz, 200µV to 1000V	NRVD	1787	18-Dec-13
Rohde & Schwarz	Attenuator, 20 dB, 10W, DC-18 GHz	20dB, 10W, Type N	1795	14-Jun-13
Agilent	PSA, Spectrum Analyzer	E4446A	2139	23-Feb-13

Appendix B Test Data

T89578 Pages 29 - 201

Client:	Intel	Job Number:	J88901
Product	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Emissions Standard(s):	FCC 15.247, 15.407, 15.209, RSS 210	Class:	B
Immunity Standard(s):	-	Environment:	Radio

EMC Test Data

For The

Intel

Product

Intel® Centrino® Advanced-N 6235

Date of Last Test: 1/10/2013

Client:	Intel	Job Number:	J88901
Product	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manger:	Christine Krebill
Contact:	Steve Hackett		
Emissions Standard(s):	FCC 15.247, 15.407, 15.209, RSS 210	Class:	B
Immunity Standard(s):	-	Environment:	Radio

Power vs. Data Rate

In normal operating modes the card uses power settings stored on EEPROM to set the output power. For a given nominal output power the actual transmit power normally is redcued as the data rate increases, therefore testing was performed at the data rate in the mode wiht highest power to determine compliance with the requirements.
The following power measurements,were made using an average power meter and the with the device configured in a continuous transmit mode on Chain 1 at the various data rates in each mode to verify the highest power mode:

Date of Test:	12/3/2012	Config. Used:	1
Test Engineer:	Mark Hill	Config Change:	None
Test Location:	FT#3	Host Unit Voltage	120V/60Hz

Chain 1, 2.4 GHz channel 6

Mode	Data Rate	Power (dBm)	Power setting
802.11b	1	16.2	26.5
	2	16.2	
	5.5	**16.5**	
	11	16.3	
802.11g	**6**	**15.9**	32.0
	9	15.8	
	12	15.8	
	18	15.8	
	24	15.7	
	36	15.7	
	48	15.7	
	54	15.6	
802.11n 20MHz	**6.5**	**16.2**	33.0
	13	16.2	
	19.5	16.2	
	26	16.1	
	39	16.1	
	52	16.0	
	58.5	16.0	
	65	16.0	
802.11n 40MHz	**13.5**	**16.3**	33.0
	27	16.3	
	40.5	16.2	
	54	16.0	
	81	15.9	
	108	15.7	
	121.5	15.7	
	135	15.7	

Note : Power setting - the software power setting used during testing, included for reference only.

Client:	Intel	Job Number:	J88901
Product	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manger:	Christine Krebill
Contact:	Steve Hackett		
Emissions Standard(s):	FCC 15.247, 15.407, 15.209, RSS 210	Class:	B
Immunity Standard(s):	-	Environment:	Radio

Chain 1, 5 GHz Channel 157

Mode	Data Rate	Power (dBm)	Power setting
802.11a	6	14.8	39.0
	9	14.7	
	12	14.7	
	18	14.8	
	24	14.7	
	36	14.7	
	48	14.7	
	54	14.7	
802.11n 20MHz	6.5	14.8	39.0
	13	14.7	
	19.5	14.8	
	26	14.8	
	39	14.8	
	52	14.7	
	58.5	14.6	
	65	14.5	
802.11n 40MHz	13.5	14.6	39.0
	27	14.5	
	40.5	14.5	
	54	14.4	
	81	14.4	
	108	14.3	
	121.5	14.3	
	135	14.4	

Note : Power setting - the software power setting used during testing, included for reference only.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

Power, PSD, Bandwidth and Spurious Emissions - Chain A

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: 12/31/2012 & 1/2/13
Test Engineer: John Caizzi / R. Varelas
Test Location: Power Fault Lab

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: 21.4 °C
Rel. Humidity: 37 %

Summary of Results

MAC Address: 001500B50432 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	See Below	See Below	Output Power	15.247(b)	Pass	802.11b: 38.9 mW 802.11g: 77.6 mW n20: 81.3 mW n40: 43.7 mW
2	See Below	See Below	Power spectral Density (PSD)	15.247(d)	Pass	-6.7 dBm/3kHz
3	See Below	See Below	Minimum 6dB Bandwidth	15.247(a)	Pass	7.9 MHz
3	See Below	See Below	99% Bandwidth	RSS GEN	-	802.11b: 13.6 MHz 802.11g: 17.1 MHz n20: 18.0 MHz n40: 36.6 MHz
4	See Below	See Below	Spurious emissions	15.247(b)	Pass	All emissions below the 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.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1: Output Power

802.11b Mode

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
20.5	2412	13.8	24.0	3.2	Pass	17.0	0.050	14.5	28.2
21.0	2437	14.3	26.9	3.2	Pass	17.5	0.056	15.0	31.6
25.0	2462	15.9	38.9	3.2	Pass	19.1	0.081	17.3	53.7

Note 1:	Output power measured using average power meter with thermocouple detector. Spurious limit is -30dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using Peak power meter and is included for reference only.
Note 4:	Modulation type: 5.5 Mbps

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

802.11g Mode

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
28	2412	18.1	64.6	3.2	Pass	21.3	0.135	14.7	29.5
30	2437	18.9	77.6	3.2	Pass	22.1	0.162	16.3	42.7
28	2462	18.3	67.6	3.2	Pass	21.5	0.141	15.0	31.6

Note 1:	Output power measured using peak power meter. Spurious limit is -20dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

802.11n 20MHz Mode

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
27.5	2412	18.0	63.1	3.2	Pass	21.2	0.132	14.3	26.9
34.0	2437	19.1	81.3	3.2	Pass	22.3	0.170	16.5	44.7
27.5	2462	18.0	63.1	3.2	Pass	21.2	0.132	14.4	27.5

Note 1:	Output power measured using peak power meter. Spurious limit is -20dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

802.11n 40MHz Mode

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
24.0	2422	15.2	33.1	3.2	Pass	18.4	0.069	11.7	14.8
27.5	2437	16.4	43.7	3.2	Pass	19.6	0.091	13.5	22.4
25.0	2452	16.0	39.8	3.2	Pass	19.2	0.083	12.6	18.2

Note 1:	Output power measured using peak power meter. Spurious limit is -20dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #2: Power spectral Density

Mode	Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
802.11b	20.5	2412	-11.2	8.0	Pass
	21.0	2437	-11.0	8.0	Pass
	25.0	2462	-8.0	8.0	Pass
802.11g	28	2412	-9.5	8.0	Pass
	30	2437	-8.4	8.0	Pass
	28	2462	-9.3	8.0	Pass
802.11n 20MHz	27.5	2412	-11.1	8.0	Pass
	36.0	2437	-6.7	8.0	Pass
	27.5	2462	-11.3	8.0	Pass
802.11n 40MHz	24.0	2422	-16.4	8.0	Pass
	31.5	2437	-12.8	8.0	Pass
	25.0	2452	-15.1	8.0	Pass

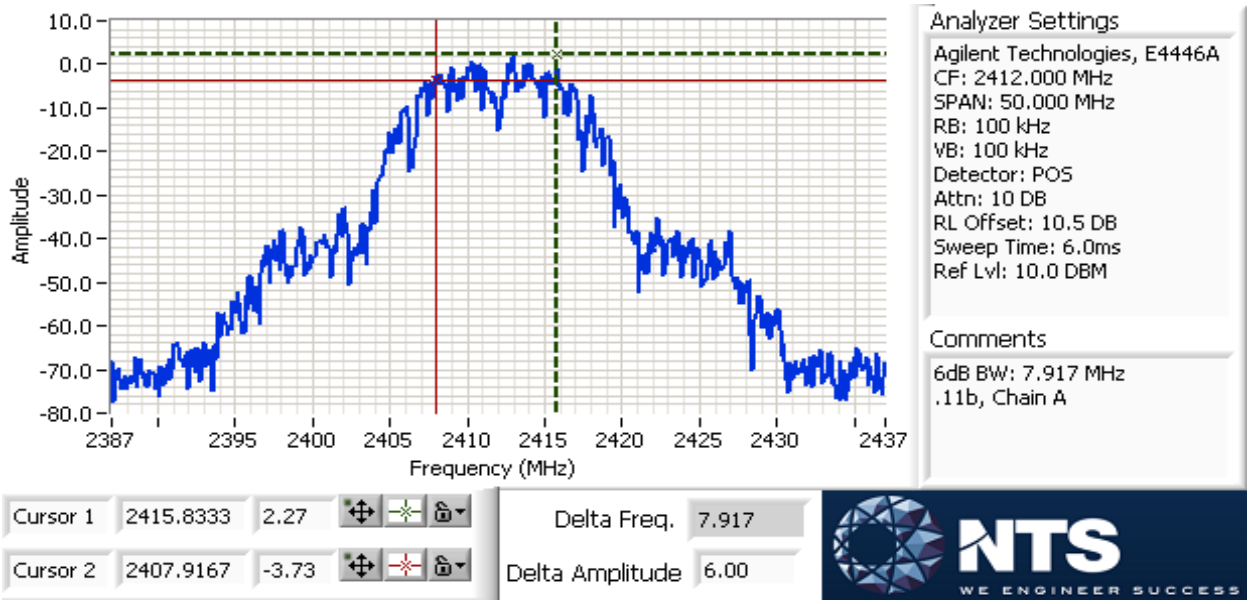
Note 1: Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster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

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #3: Signal Bandwidth

Mode	Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	Resolution Bandwidth	Bandwidth (MHz) 99%
802.11b	20.5	2412	100kHz	7.9	1 MHz	13.0
	21.0	2437	100kHz	9.1	1 MHz	13.1
	25.0	2462	100kHz	9.8	1 MHz	13.6
802.11g	28.0	2412	100kHz	16.2	1 MHz	17.1
	30.0	2437	100kHz	15.0	1 MHz	16.9
	28.0	2462	100kHz	15.4	1 MHz	17.0
802.11n 20MHz	27.5	2412	100kHz	16.5	1 MHz	18.0
	34.0	2437	100kHz	17.1	1 MHz	17.9
	27.5	2462	100kHz	16.9	1 MHz	17.9
802.11n 40MHz	24.0	2422	100kHz	35.8	1 MHz	36.1
	27.5	2437	100kHz	36.0	1 MHz	36.6
	25.0	2452	100kHz	36.0	1 MHz	36.1

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

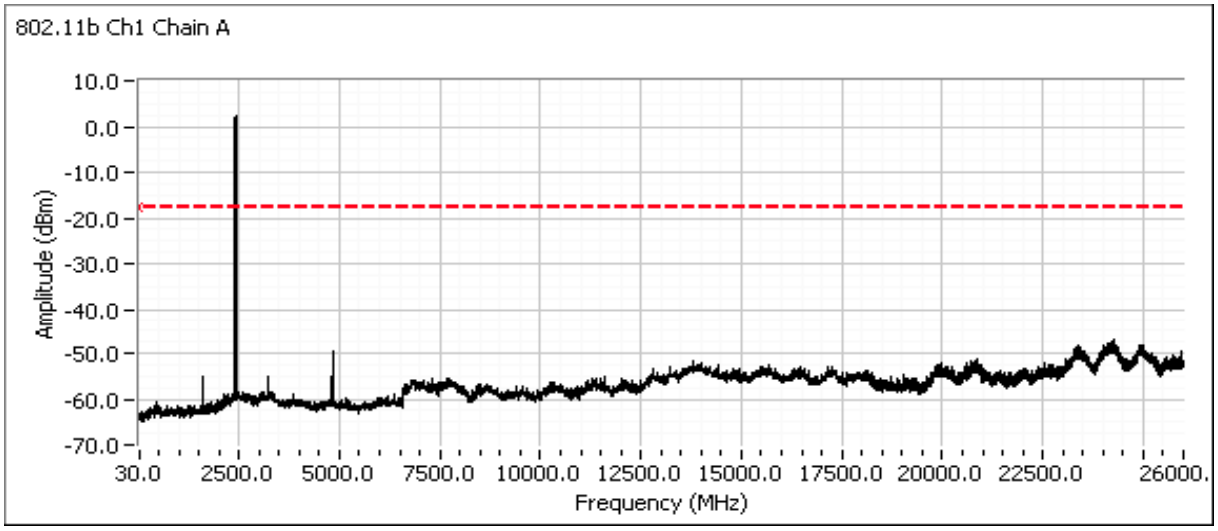


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #4: Out of Band Spurious Emissions
802.11b Mode

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

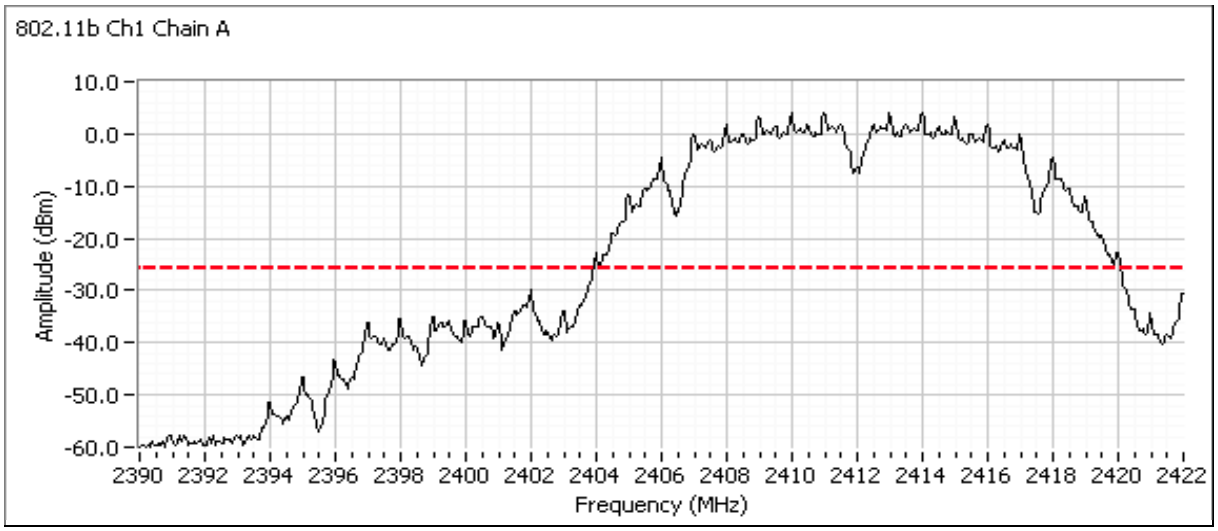
Plots for low channel, power setting = 20.5



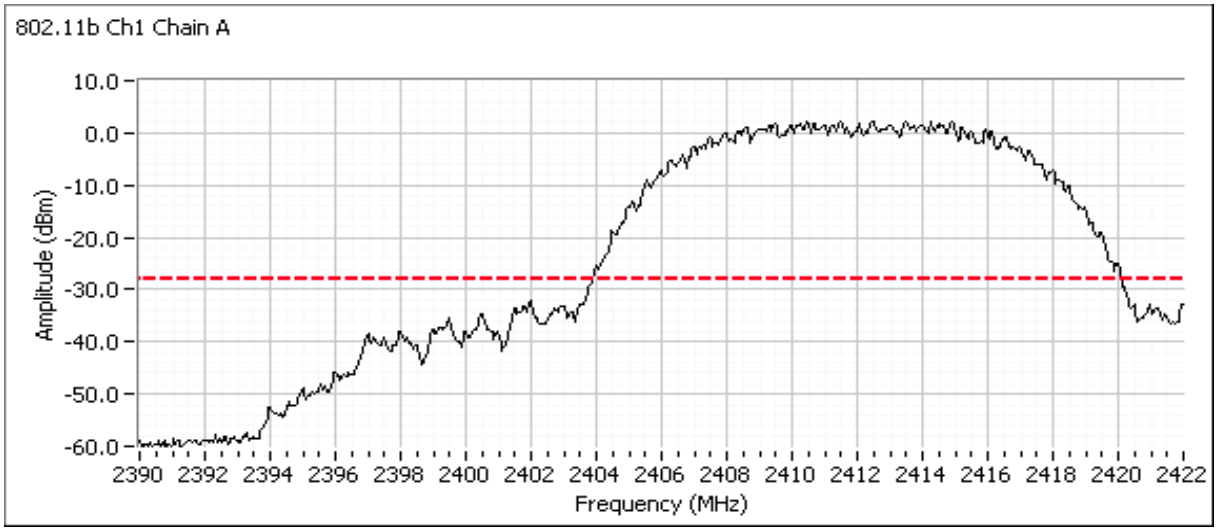
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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.

1 Mbps

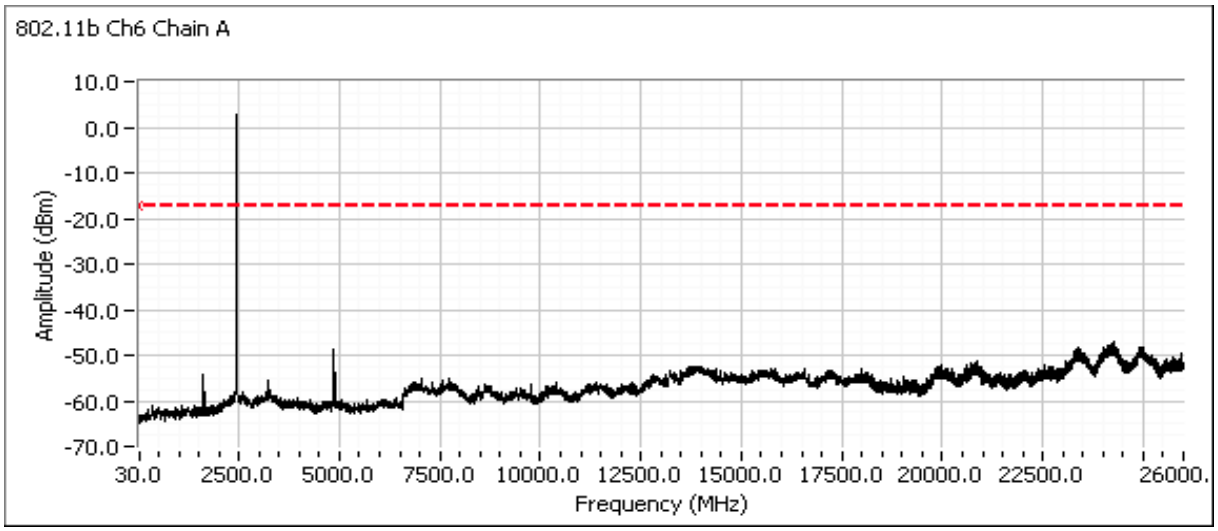


5.5 Mbps

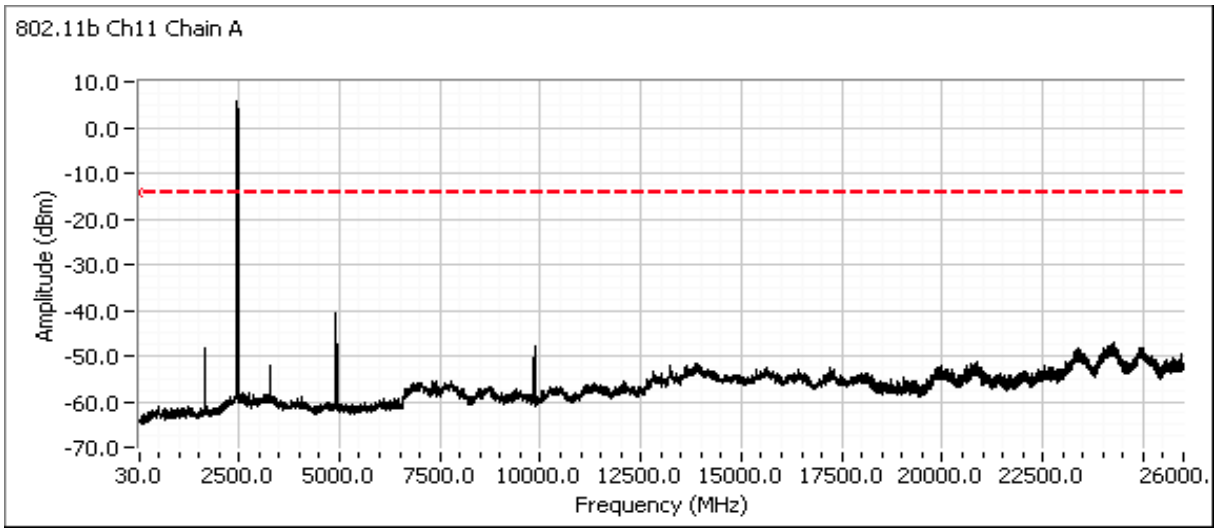


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 21.0



Plots for high channel, power setting = 25

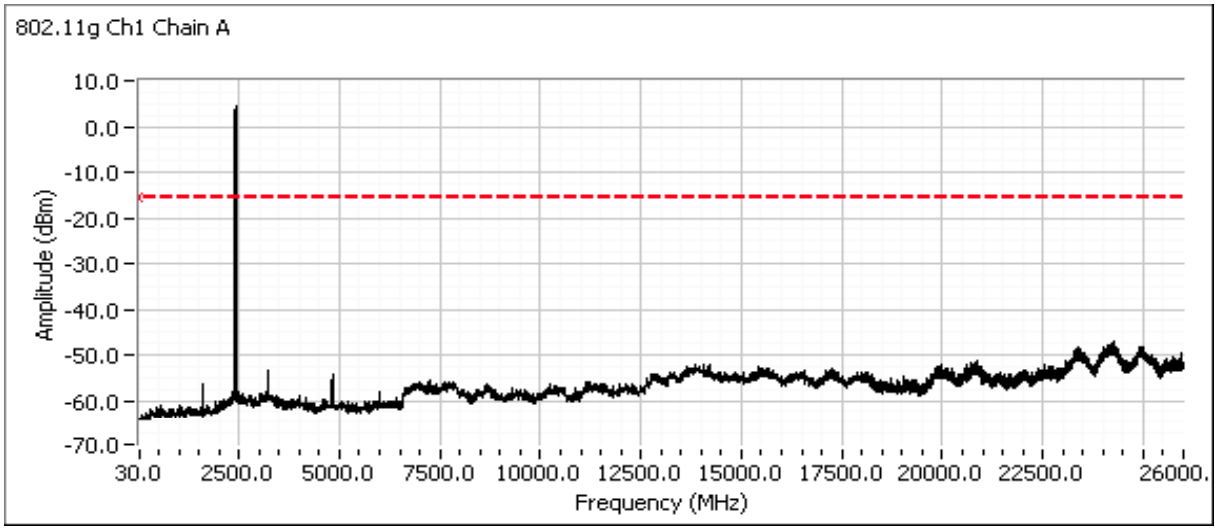


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

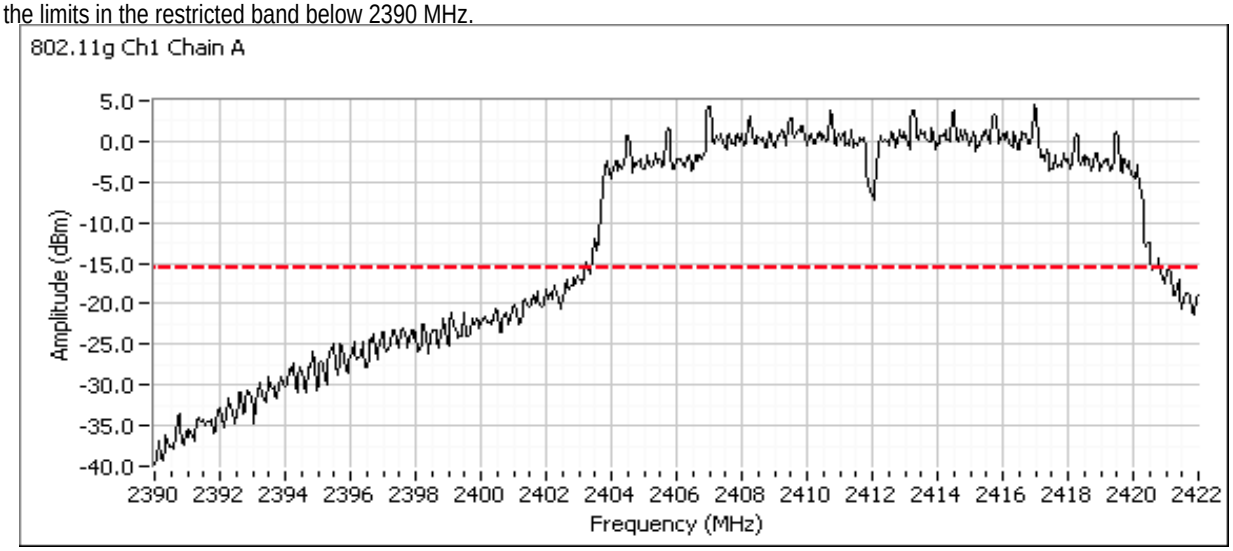
Run #4: Out of Band Spurious Emissions
802.11g Mode

Frequency (MHz)	Limit	Result
2412	-20dBc	Pass
2437	-20dBc	Pass
2462	-20dBc	Pass

Plots for low channel, power setting = 28.5

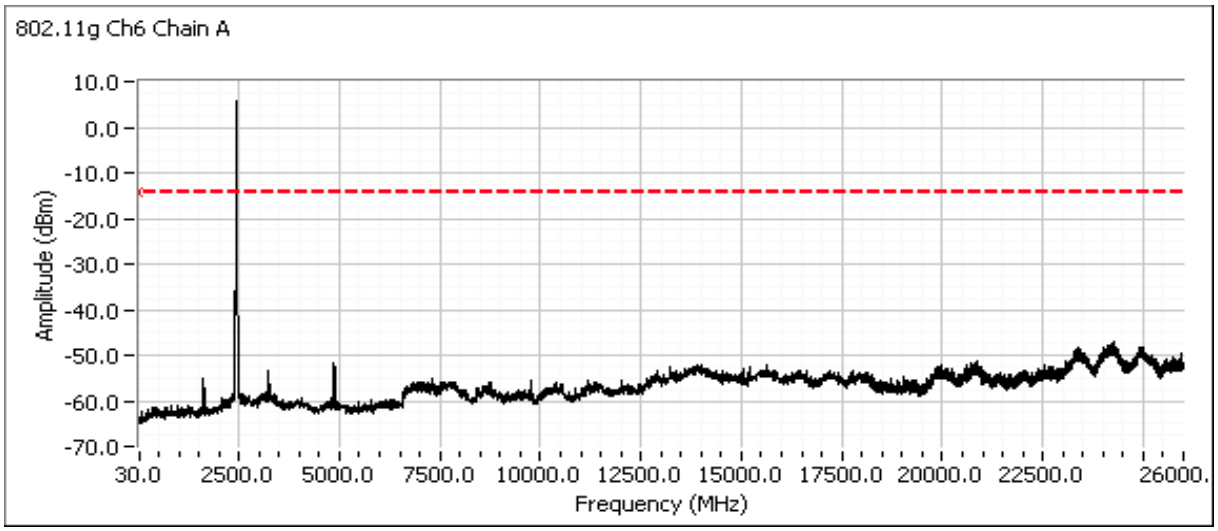


Additional plot showing compliance with -20dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

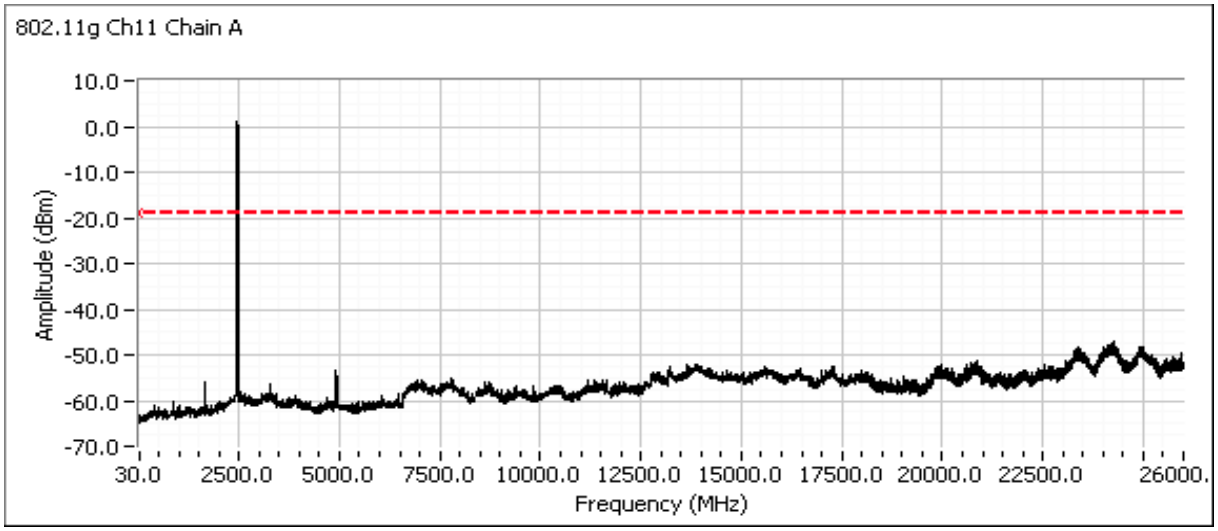


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 30



Plots for high channel, power setting = 28

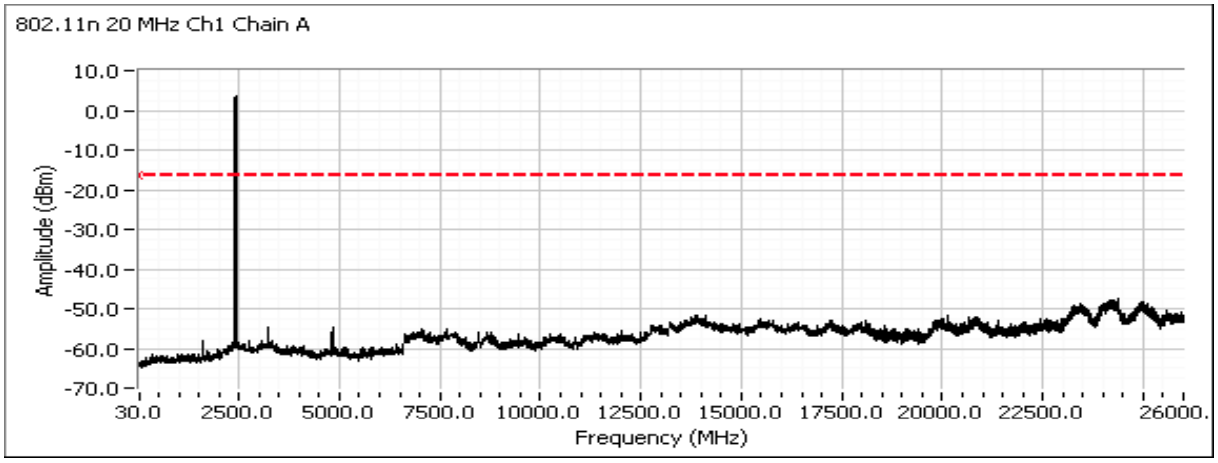


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

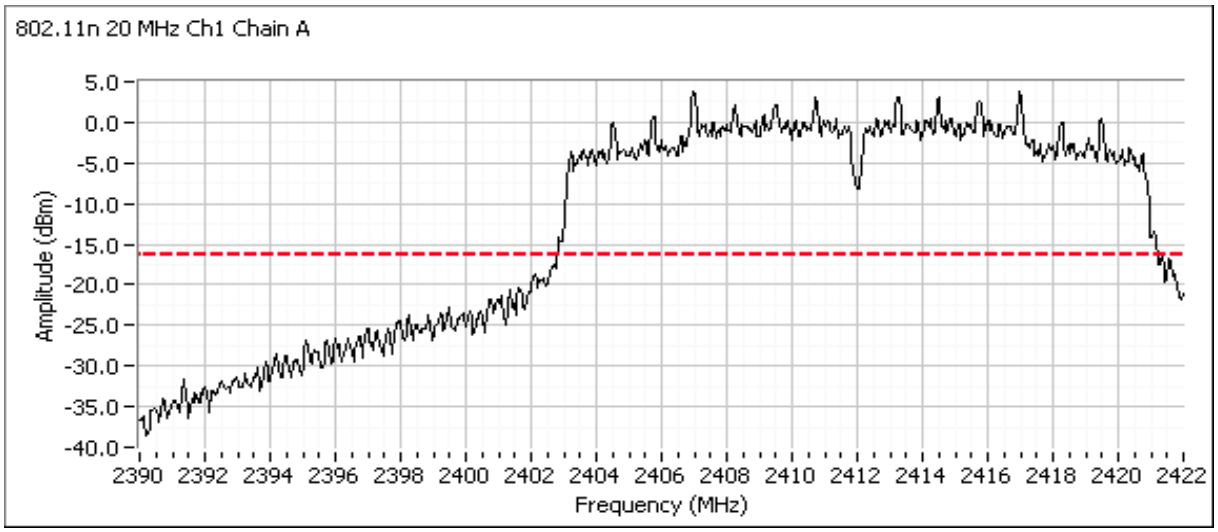
Run #4: Out of Band Spurious Emissions
802.11n 20MHz Mode

Frequency (MHz)	Limit	Result
2412	-20dBc	Pass
2437	-20dBc	Pass
2462	-20dBc	Pass

Plots for low channel, power setting = 27.5

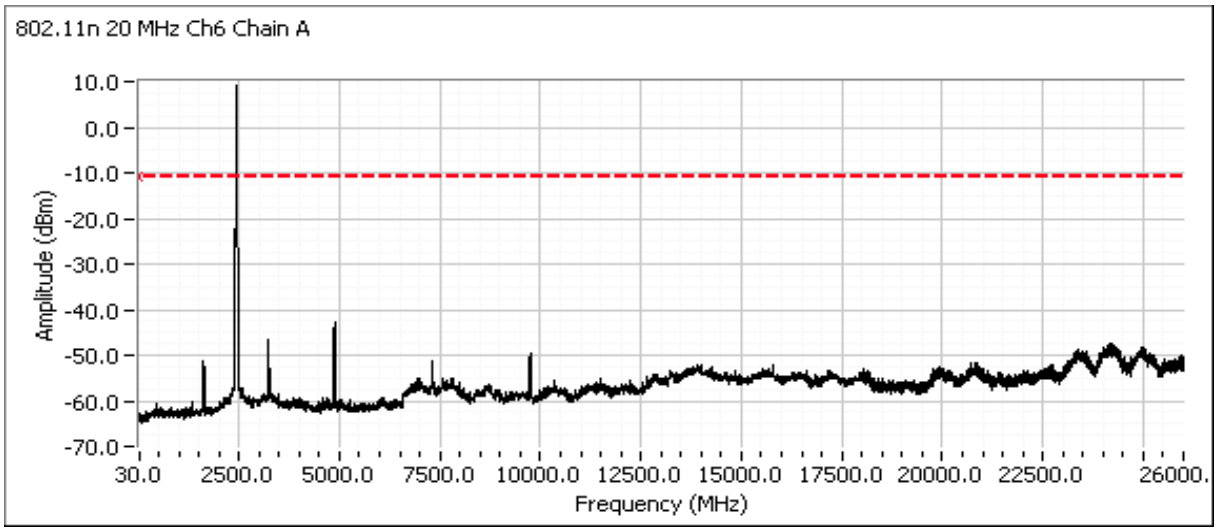


Additional plot showing compliance with -20dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

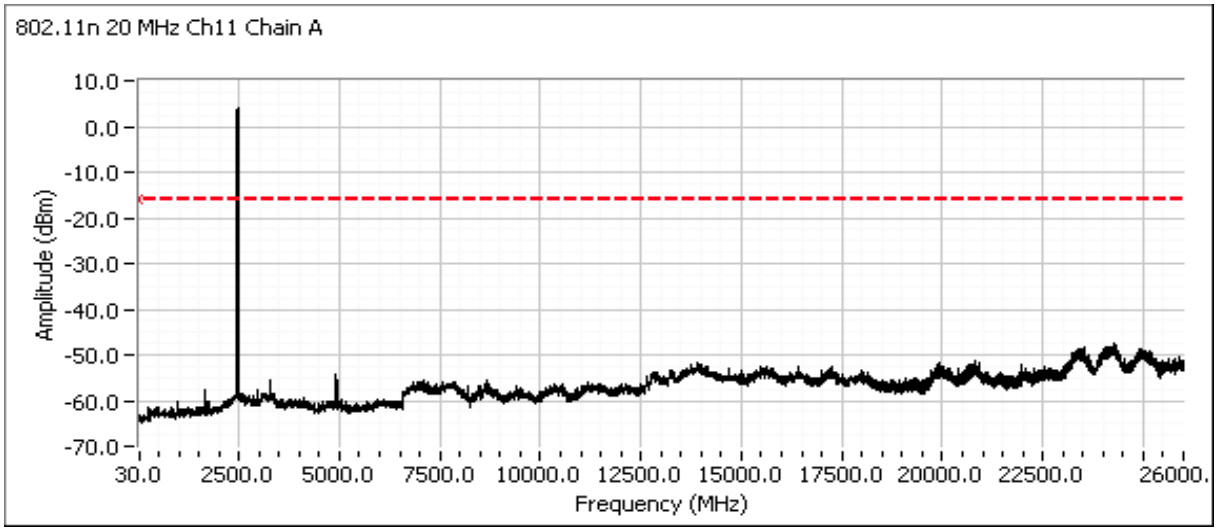


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 36.0



Plots for high channel, power setting = 27.5

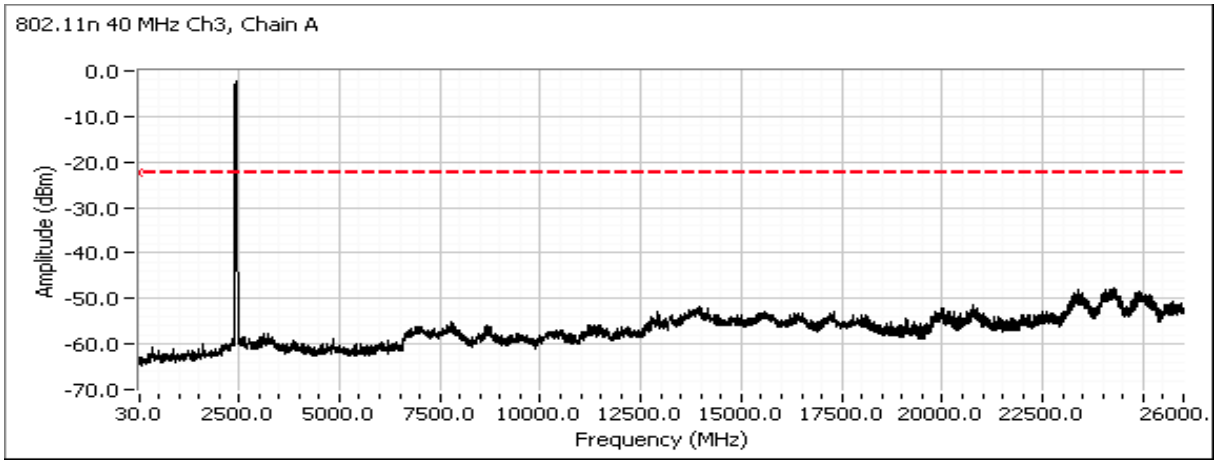


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

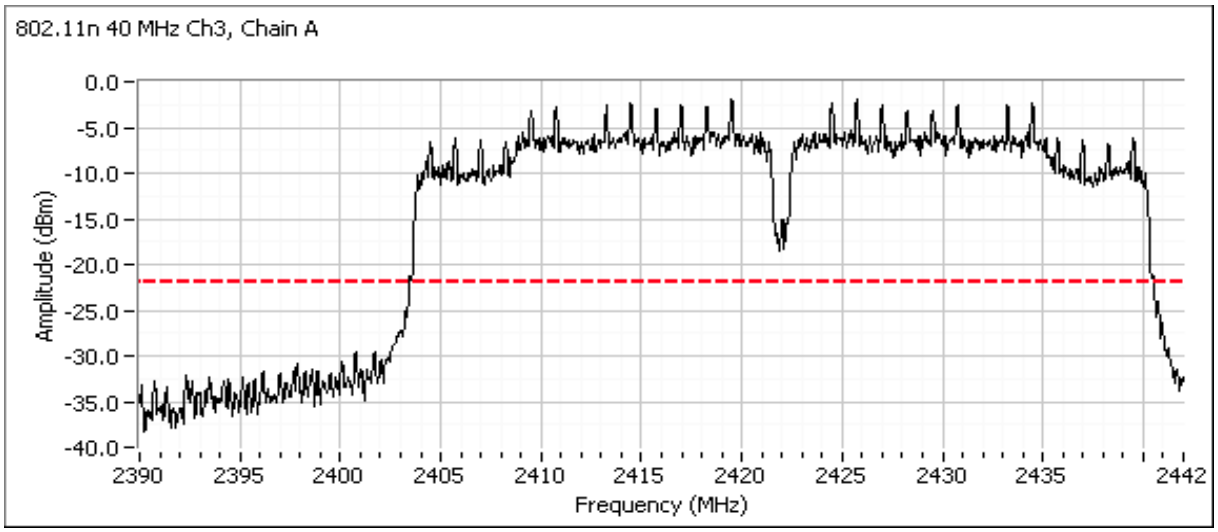
Run #4: Out of Band Spurious Emissions
802.11n 40MHz Mode

Frequency (MHz)	Limit	Result
2422	-20dBc	Pass
2437	-20dBc	Pass
2452	-20dBc	Pass

Plots for low channel, power setting = 24.0

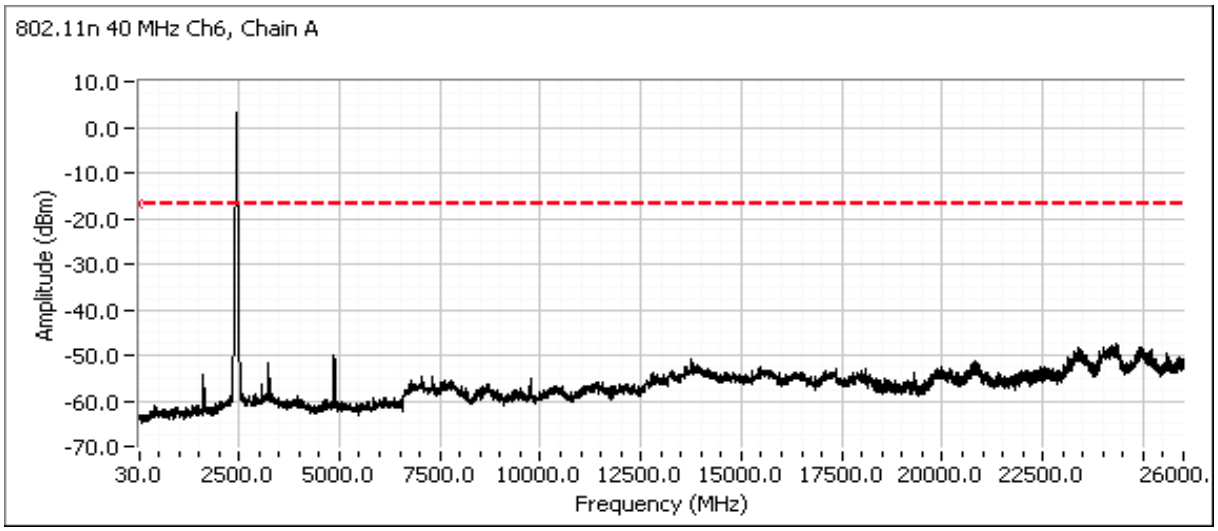


Additional plot showing compliance with -20dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

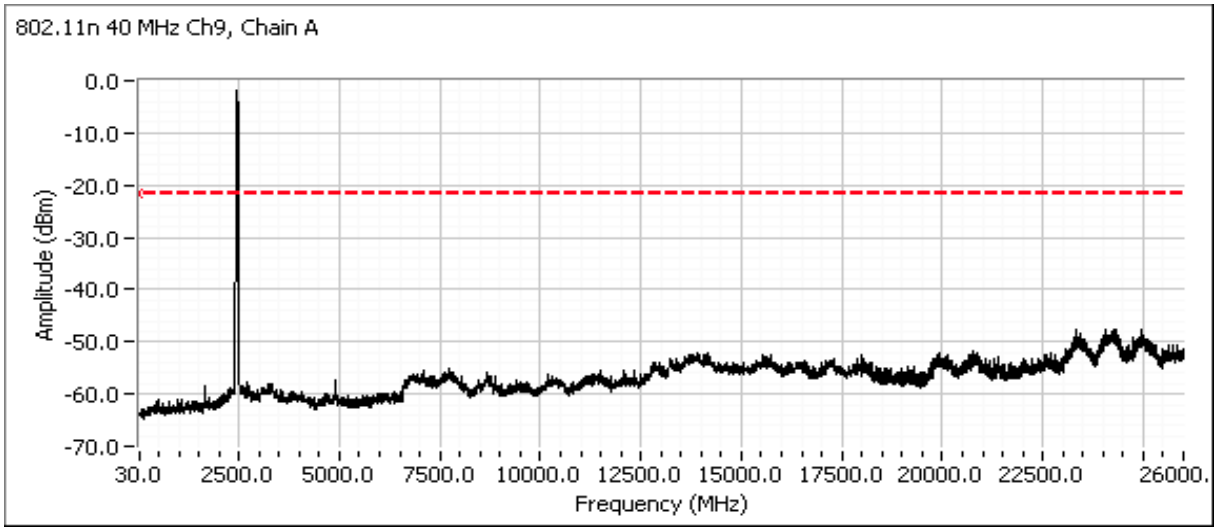


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 31.5



Plots for high channel, power setting = 25.0



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

Power, PSD, Bandwidth and Spurious Emissions - Chain 2

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: 12/31/2012 & 1/3/13
Test Engineer: Joseph Cadigal & John Caizzi
Test Location: FT Lab #6

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: 38 %

Summary of Results

MAC Address: 001500B50432 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	See Below	See Below	Output Power	15.247(b)	Pass	802.11b: 17.4 mW 802.11g: 42.7 mW n20: 51.3 mW n40: 30.9 mW
2	See Below	See Below	Power spectral Density (PSD)	15.247(d)	Pass	-13.7 dBm/3kHz
3	See Below	See Below	Minimum 6dB Bandwidth	15.247(a)	Pass	9.75 MHz
3	See Below	See Below	99% Bandwidth	RSS GEN	-	802.11b: 13.228 MHz 802.11g: 19.667 MHz n20: 24.958 MHz n40: 37.354 MHz
4	See Below	See Below	Spurious emissions	15.247(b)	Pass	All emissions below the limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Deviations From The Standard

No deviations were made from the requirements of the standard.

Run #1: Output Power

802.11b Mode

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
20.5	2412	11.4	13.8	3.2	Pass	14.6	0.029	10.9	12.3
21.0	2437	12.0	15.8	3.2	Pass	15.2	0.033	11.5	14.1
21.5	2462	12.4	17.4	3.2	Pass	15.6	0.036	12.1	16.2

Note 1:	Output power measured using peak power meter. Spurious limit is -20dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.
Note 4:	Modulation type: 5.5Mbps

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

802.11g Mode

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
31.0	2412	16.3	42.7	3.2	Pass	19.5	0.089	14.0	25.1
30.0	2437	15.9	38.9	3.2	Pass	19.1	0.081	13.5	22.4
29.0	2462	15.5	35.5	3.2	Pass	18.7	0.074	13.0	20.0

Note 1:	Output power measured using peak power meter. Spurious limit is -20dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

802.11n 20MHz Mode

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
29.5	2412	15.7	37.2	3.2	Pass	18.9	0.078	12.9	19.5
33.0	2437	17.1	51.3	3.2	Pass	20.3	0.107	15.1	32.4
28.5	2462	15.3	33.9	3.2	Pass	18.5	0.071	12.5	17.8

Note 1:	Output power measured using peak power meter. Spurious limit is -20dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

802.11n 40MHz Mode

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
25.5	2422	13.1	20.4	3.2	Pass	16.3	0.043	10.1	10.2
33.5	2437	14.9	30.9	3.2	Pass	18.1	0.065	12.5	17.8
25.0	2452	12.7	18.6	3.2	Pass	15.9	0.039	9.9	9.8

Note 1:	Output power measured using peak power meter. Spurious limit is -20dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #2: Power spectral Density

Mode	Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
802.11b	20.5	2412	-14.4	8.0	Pass
	21	2437	-14.1	8.0	Pass
	21.5	2462	-13.7	8.0	Pass
802.11g	31	2412	-18.0	8.0	Pass
	30	2437	-19.9	8.0	Pass
	29	2462	-20.4	8.0	Pass
802.11n 20MHz	29.5	2412	-20.3	8.0	Pass
	33	2437	-19.3	8.0	Pass
	28.5	2462	-21.5	8.0	Pass
802.11n 40MHz	25.5	2422	-27.9	8.0	Pass
	33.5	2437	-23.6	8.0	Pass
	25	2452	-26.9	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

Run #3: Signal Bandwidth

Mode	Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	Resolution Bandwidth	Bandwidth (MHz) 99%
802.11b	20.5	2412	100kHz	10.3	1 MHz	13.2
	21	2437	100kHz	10.1	1 MHz	12.9
	21.5	2462	100kHz	9.8	1 MHz	13.0
802.11g	31	2412	100kHz	15.0	1 MHz	20.0
	30	2437	100kHz	15.1	1 MHz	18.9
	29	2462	100kHz	15.0	1 MHz	18.4
802.11n 20MHz	29.5	2412	100kHz	15.2	1 MHz	20.1
	33	2437	100kHz	15.2	1 MHz	25.0
	28.5	2462	100kHz	15.2	1 MHz	19.3
802.11n 40MHz	25.5	2422	100kHz	35.0	1 MHz	36.2
	33.5	2437	100kHz	32.5	1 MHz	37.4
	25	2452	100kHz	35.0	1 MHz	36.1

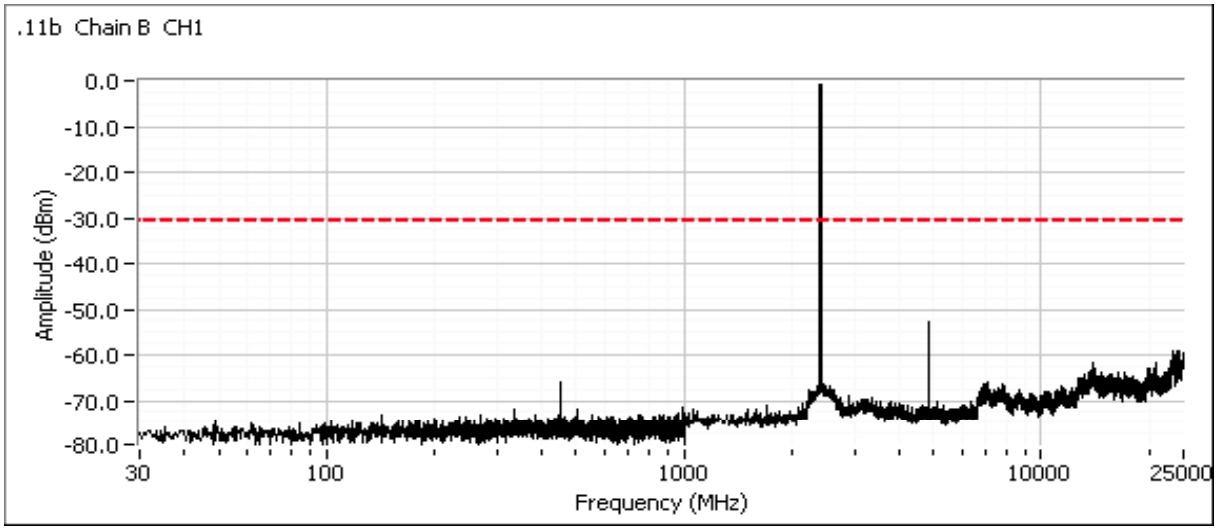
Note 1:	99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

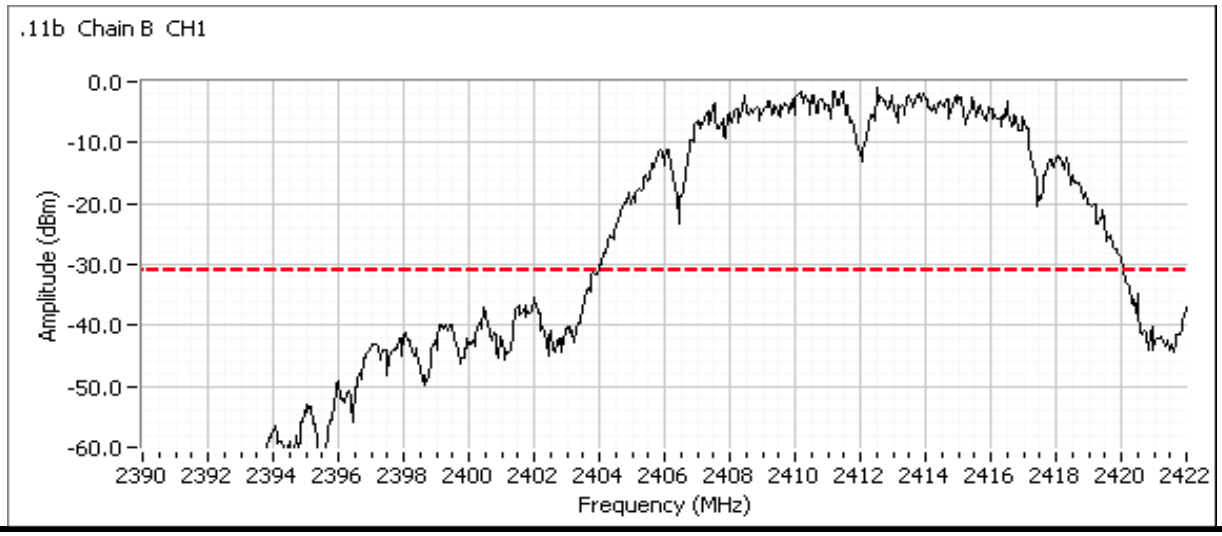
Run #4: Out of Band Spurious Emissions
802.11b Mode

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

Plots for low channel, power setting = 20.5

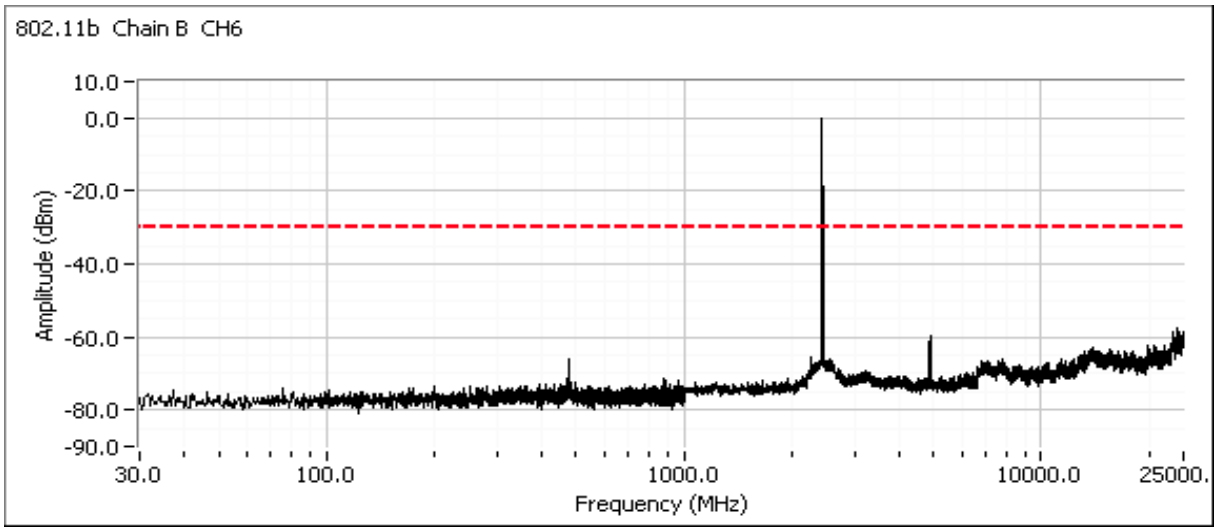


Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

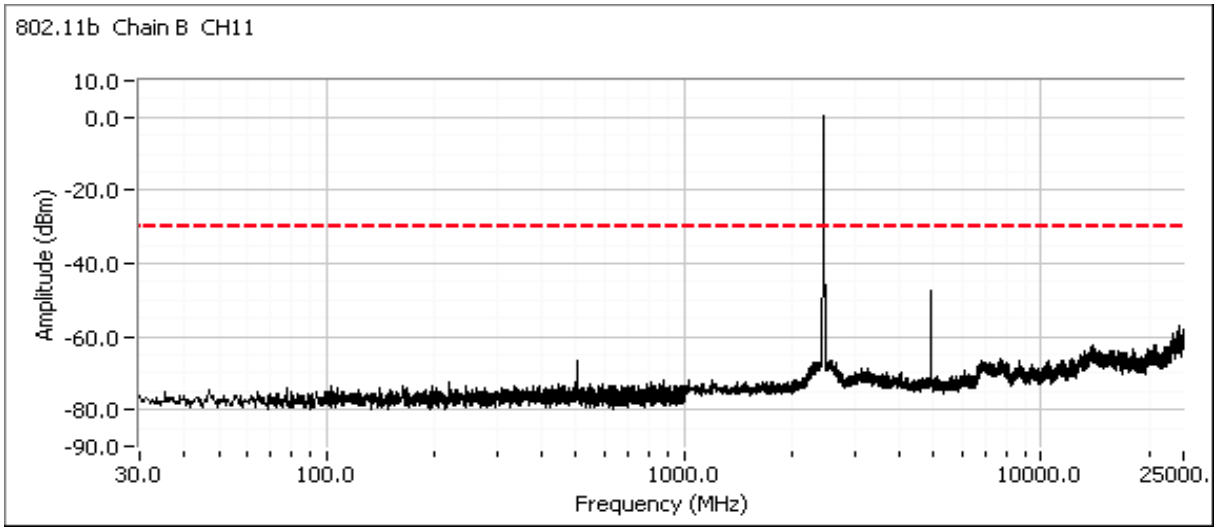


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 21.0



Plots for high channel, power setting = 21.5

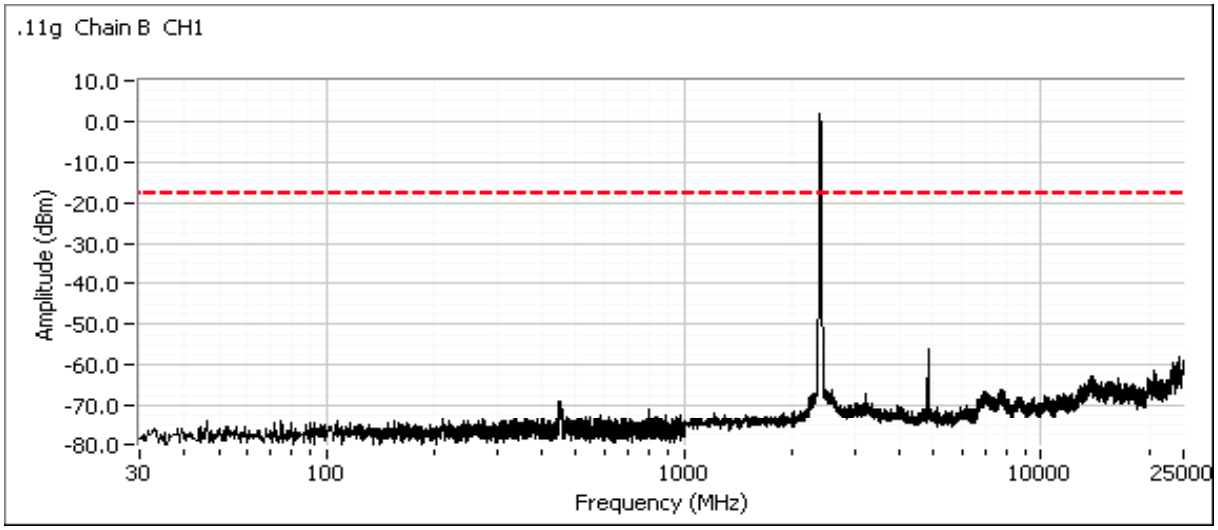


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

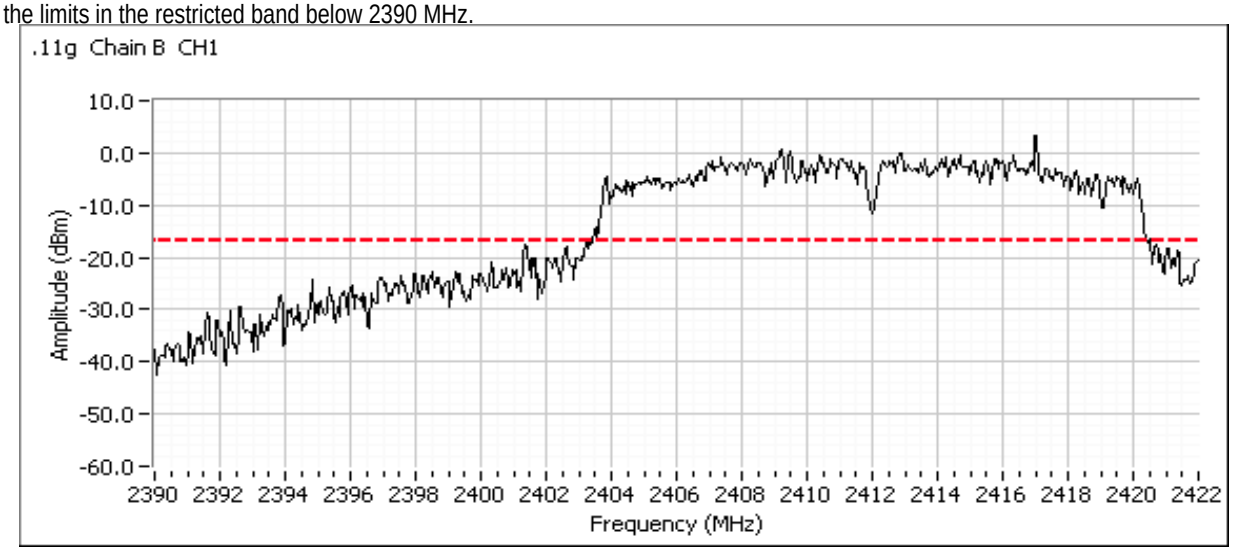
Run #4: Out of Band Spurious Emissions
802.11g Mode

Frequency (MHz)	Limit	Result
2412	-20dBc	Pass
2437	-20dBc	Pass
2462	-20dBc	Pass

Plots for low channel, power setting = 31.0

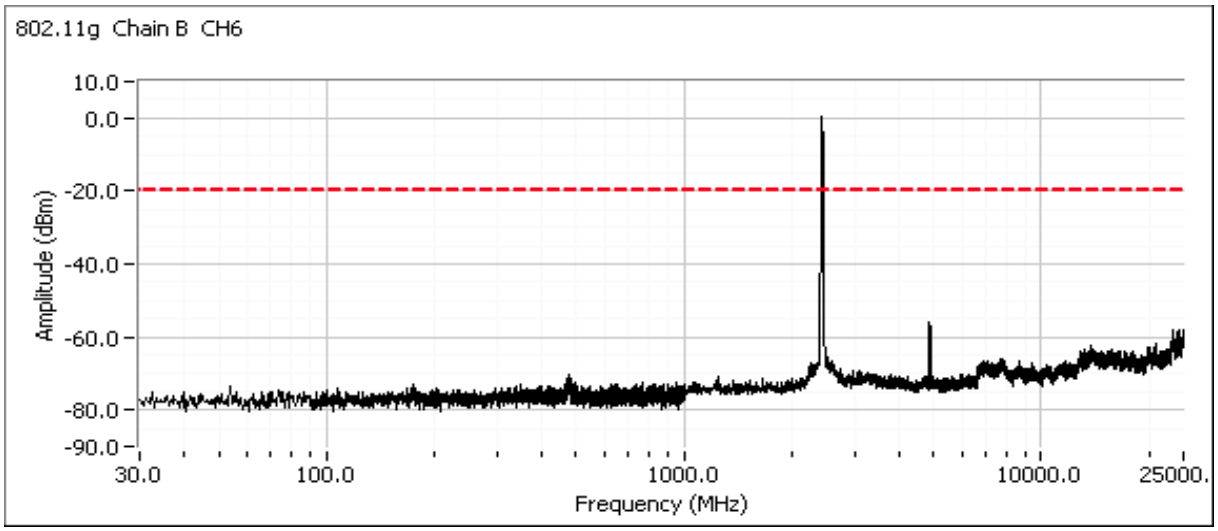


Additional plot showing compliance with -20dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

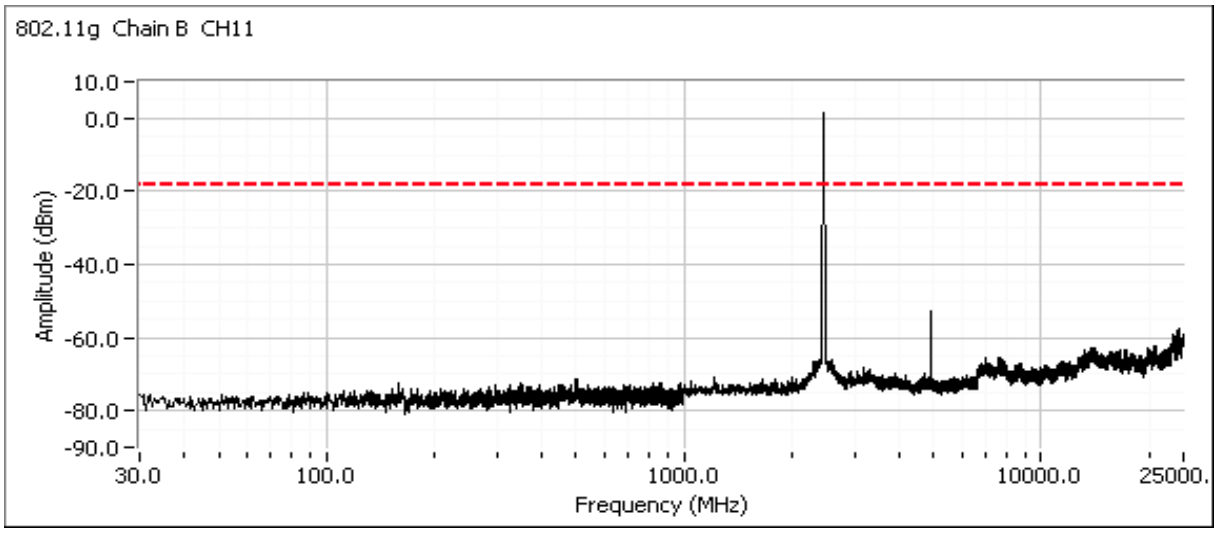


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 30.0



Plots for high channel, power setting = 29.0

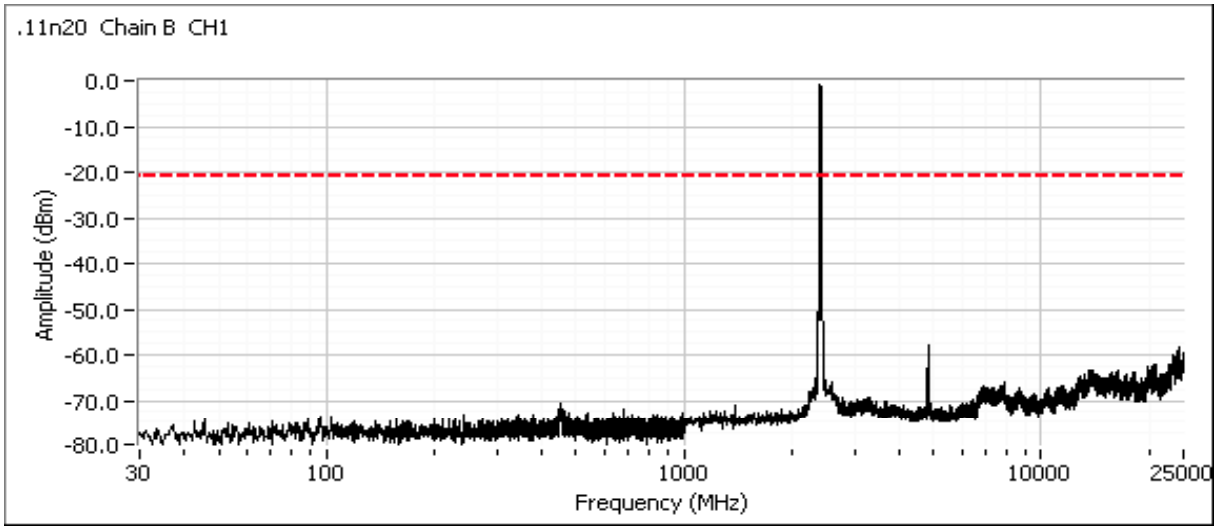


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

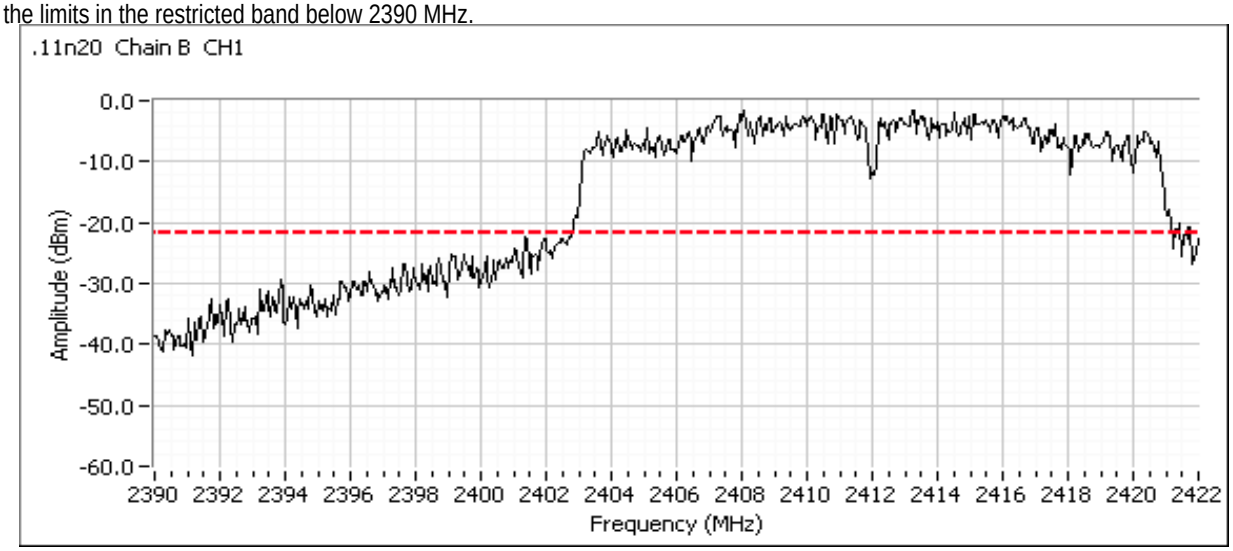
Run #4: Out of Band Spurious Emissions
802.11n 20MHz Mode

Frequency (MHz)	Limit	Result
2412	-20dBc	Pass
2437	-20dBc	Pass
2462	-20dBc	Pass

Plots for low channel, power setting = 29.5

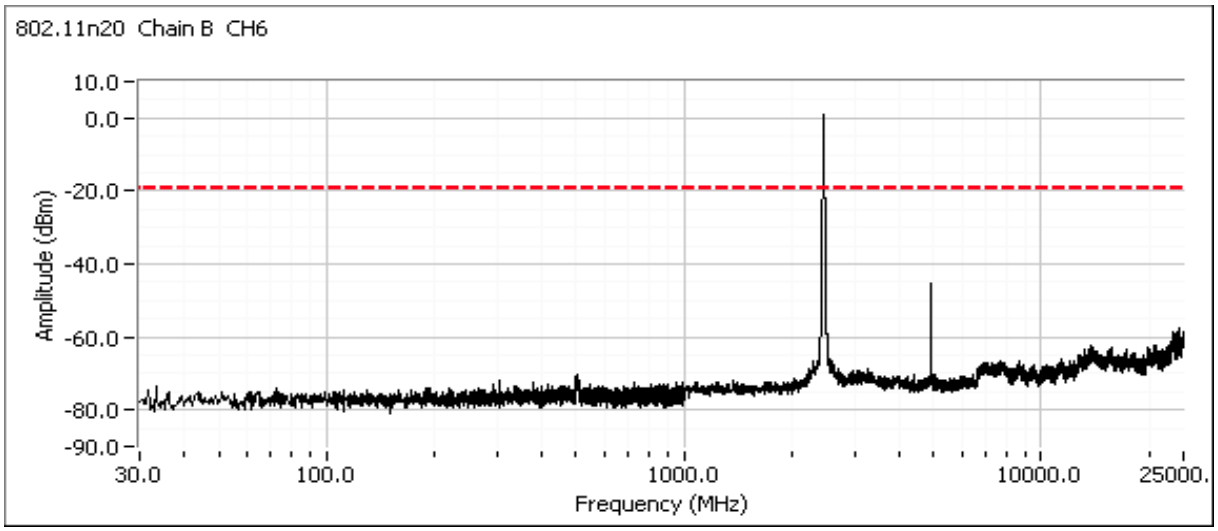


Additional plot showing compliance with -20dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

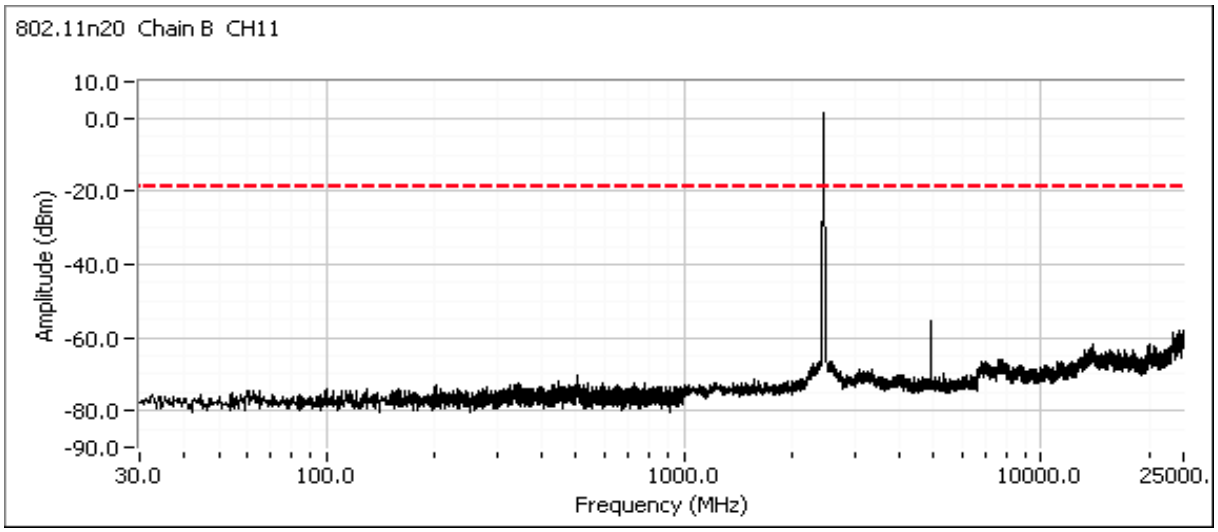


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 33.0



Plots for high channel, power setting(= 28.5

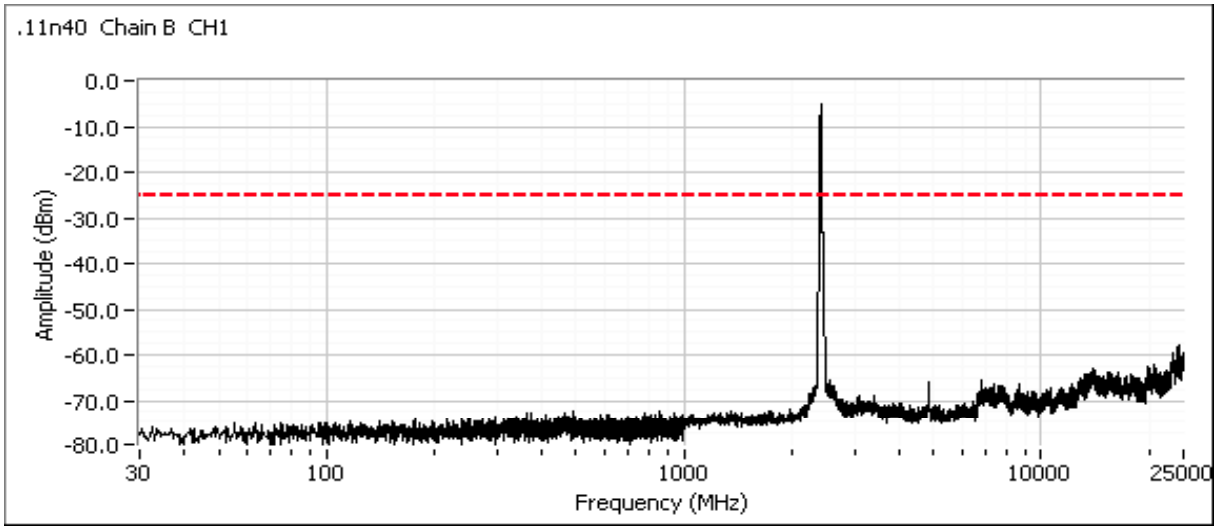


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

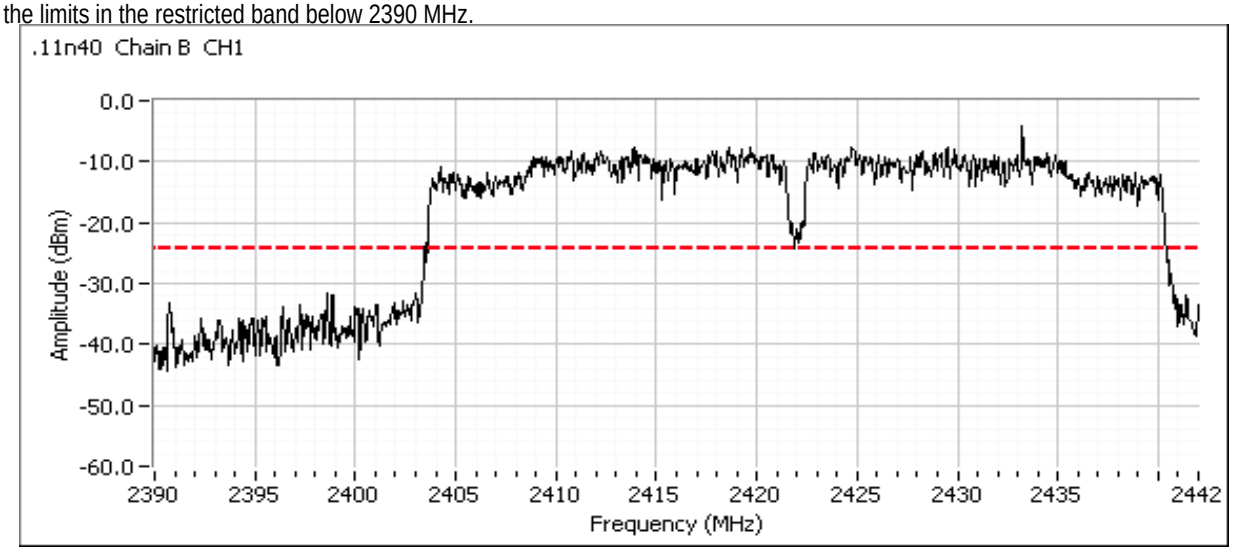
Run #4: Out of Band Spurious Emissions
802.11n 40MHz Mode

Frequency (MHz)	Limit	Result
2422	-20dBc	Pass
2437	-20dBc	Pass
2452	-20dBc	Pass

Plots for low channel, power setting = 25.5

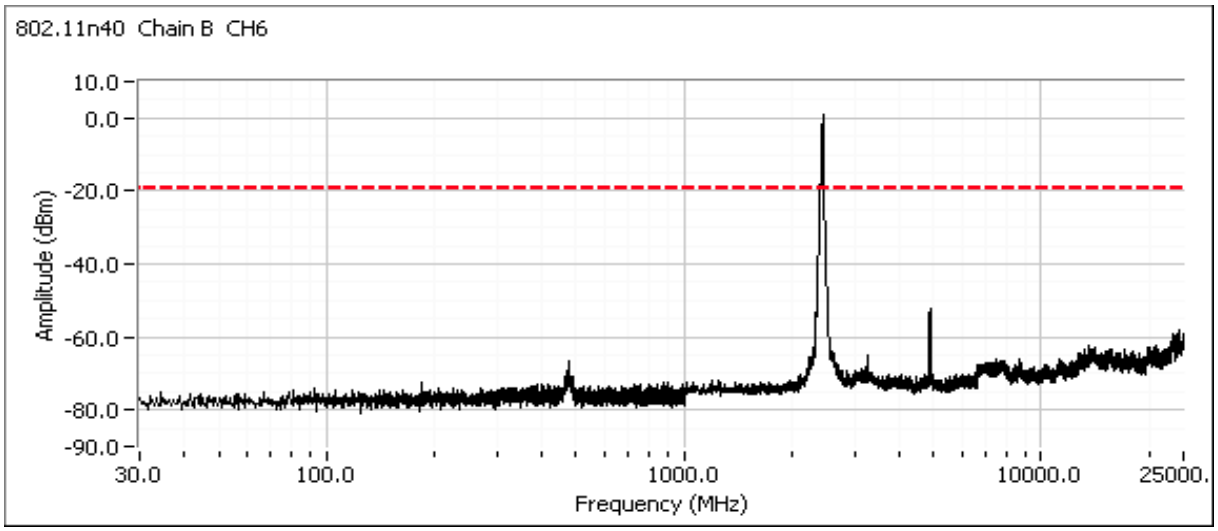


Additional plot showing compliance with -20dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

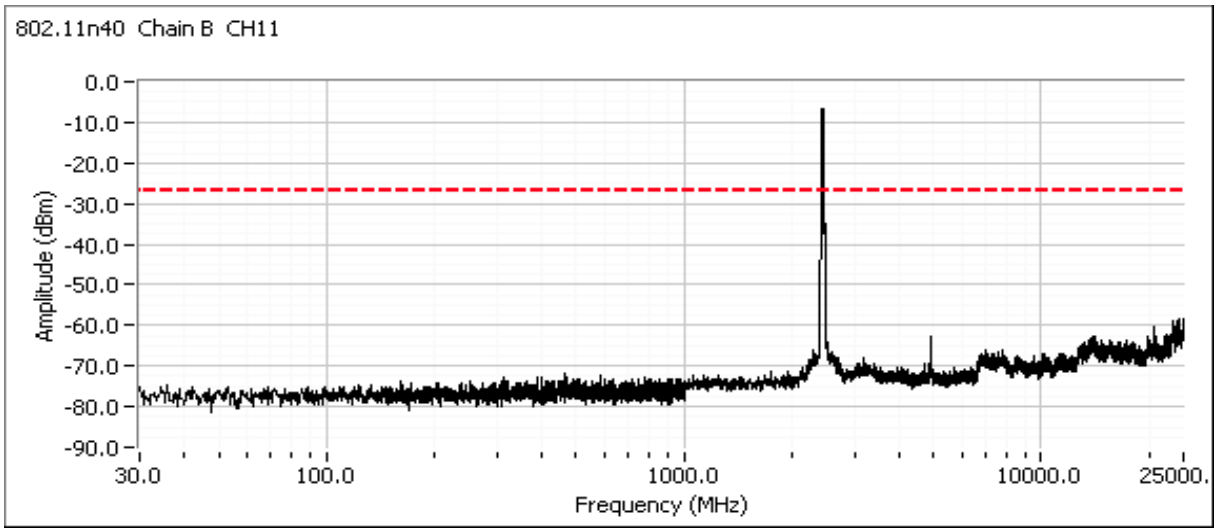


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 33.5



Plots for high channel, power setting = 25



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements
MIMO and Smart Antenna Systems
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: 1/3/2012
Test Engineer: John Caizzi
Test Location: Power Fault Lab

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: 38 %

Summary of Results

MAC Address: 001500B50432 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	See Below	See Below	Output Power,	15.247(b)	Pass	n20: 78 mW n40: 64 mW
2	See Below	See Below	Power spectral Density (PSD)	15.247(d)	Pass	-4.6 dBm/3kHz
3			Minimum 6dB Bandwidth	15.247(a)		These measurements are covered by the single chain data
3			99% Bandwidth	RSS GEN		
4			Spurious emissions	15.247(b)		

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.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1: Output Power - Chain A + B

Use the same method for power measurement for each mode as was used for single chain measurements.

Operating Mode: 802.11n20

Transmitted signal on chain is coherent ? No

802.11 n 20MHz 2412 MHz	Chain A	Chain B	Chain 3	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	28.0	31.0						
Average Power Note 3	11.8	11.6			14.7 dBm	0.030 W		
Output Power (dBm) Note 1	15.3	14.3			17.8 dBm	0.061 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	3.2	3.2				3.2 dBi	Pass	
eirp (dBm) Note 2	18.5	17.5			21.0 dBm	0.127 W		

802.11 n 20MHz 2437 MHz	Chain A	Chain B	Chain 3	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	36.0	33.0						
Average Power Note 3	13.4	13.0			16.2 dBm	0.042 W		
Output Power (dBm) Note 1	16.3	15.5			18.9 dBm	0.078 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	3.2	3.2				3.2 dBi	Pass	
eirp (dBm) Note 2	19.5	18.7			22.1 dBm	0.163 W		

802.11 n 20MHz 2462 MHz	Chain A	Chain B	Chain 3	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	29.0	32.0						
Average Power Note 3	12.8	12.5			15.7 dBm	0.037 W		
Output Power (dBm) Note 1	16.2	14.9			18.6 dBm	0.073 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	3.2	3.2				3.2 dBi	Pass	
eirp (dBm) Note 2	19.4	18.1			21.8 dBm	0.152 W		

Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc. (Peak Conducted Output Power, Option 3 of KDB 558074)
Note 2:	As there is no coherency between chains the total EIRP is the sum of the individual EIRPs and effective antenna gain equals the eirp divide by the sum of the power on each chain.
Note 3:	Power setting and average power are for reference only. Average power measured using average power sensor.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Operating Mode: 802.11n40
Transmitted signal on chain is coherent ? No

802.11 n 40MHz 2422 MHz	Chain A	Chain B	Chain 3	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	24.5	26.5						
Average Power Note 3	9.1	8.2			11.7 dBm	0.015 W		
Output Power (dBm) Note 1	12.6	11.1			14.9 dBm	0.031 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	3.2	3.2				3.2 dBi	Pass	
eirp (dBm) Note 2	15.8	14.3			18.1 dBm	0.065 W		

802.11 n 40MHz 2437 MHz	Chain A	Chain B	Chain 3	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	29.0	32.5						
Average Power Note 3	12.4	12.5			15.5 dBm	0.035 W		
Output Power (dBm) Note 1	15.1	15			18.1 dBm	0.064 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	3.2	3.2				3.2 dBi	Pass	
eirp (dBm) Note 2	18.3	18.2			21.3 dBm	0.134 W		

802.11 n 40MHz 2452 MHz	Chain A	Chain B	Chain 3	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	25.0	27.0						
Average Power Note 3	9.7	8.8			12.3 dBm	0.017 W		
Output Power (dBm) Note 1	13.2	11.5			15.4 dBm	0.035 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	3.2	3.2				3.2 dBi	Pass	
eirp (dBm) Note 2	16.4	14.7			18.6 dBm	0.073 W		

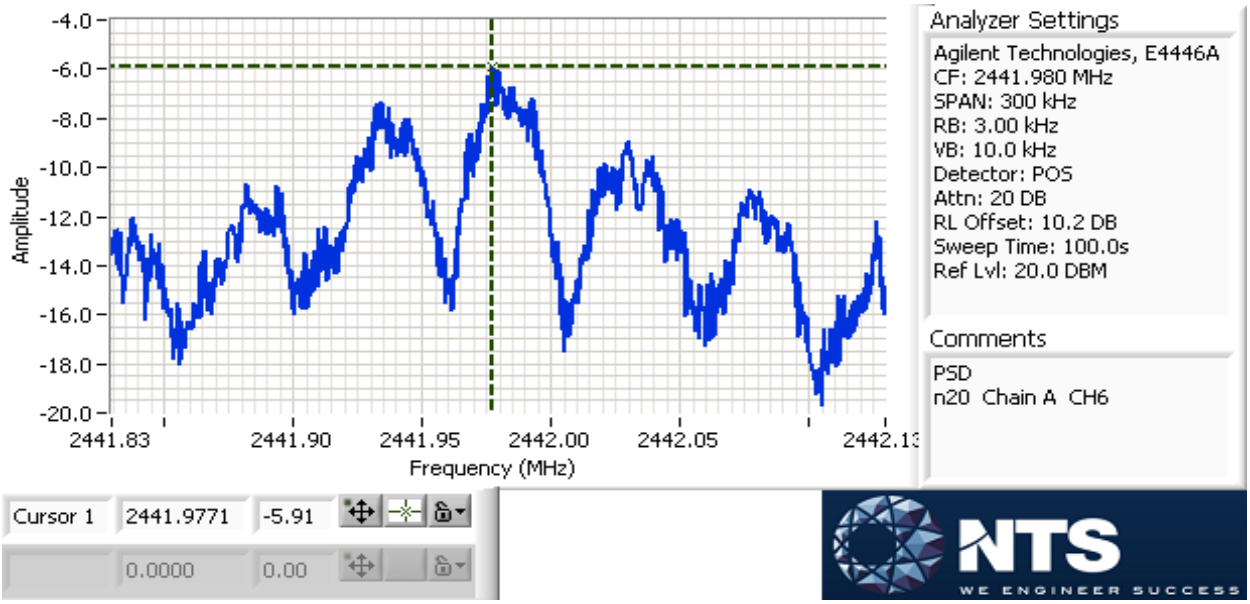
Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc. (Peak Conducted Output Power, Option 3 of KDB 558074)
Note 2:	As there is no coherency between chains the total EIRP is the sum of the individual EIRPs and effective antenna gain equals the eirp divide by the sum of the power on each chain.
Note 3:	Power setting and average power are for reference only. Average power measured using average power sensor.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

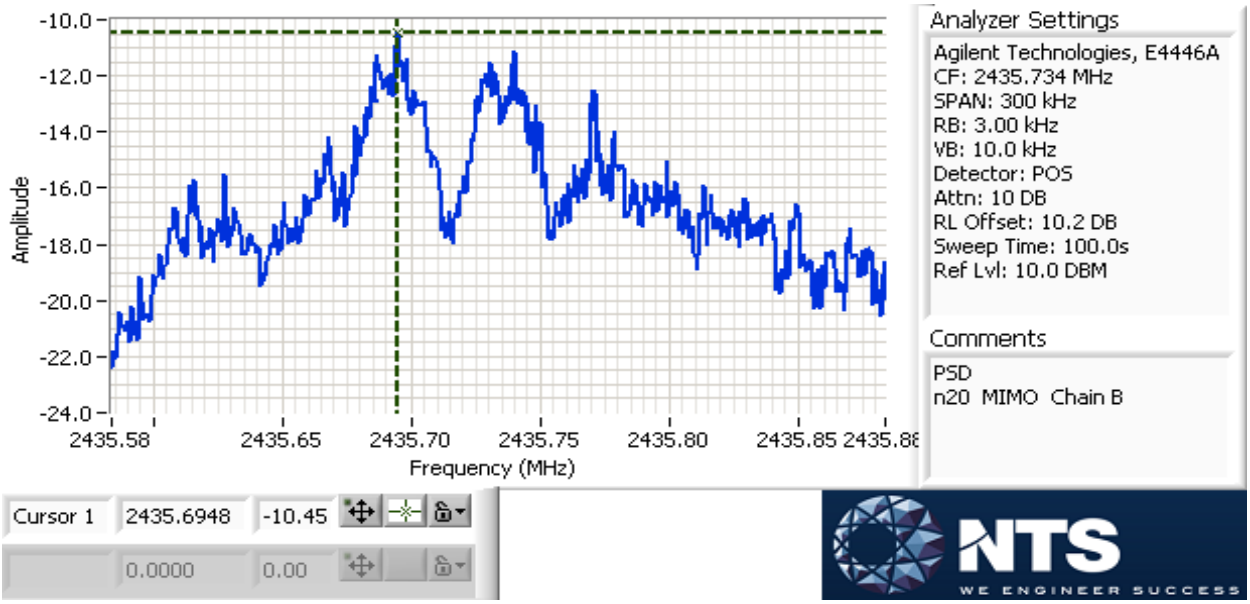
Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1 Chain A	Chain B	Chain 3	Chain 4	Total	Limit dBm/3kHz	Result
802.11n 20MHz								
28.0, 31.0	2412	-11.7	-12.0			-8.8	8.0	Pass
36.0, 33.0	2437	-5.9	-10.5			-4.6	8.0	Pass
29.0, 32.0	2462	-11.0	-11.8			-8.4	8.0	Pass
802.11n 40MHz								
24.5, 26.5	2422	-19.3	-20.3			-16.8	8.0	Pass
31.5, 33.5	2437	-14.1	-14.6			-11.3	8.0	Pass
25.0, 27.0	2452	-18.6	-18.8			-15.7	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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

Power, PSD, Bandwidth and Spurious Emissions - Chain A

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: 01/02/2013, 01/03/2013
Test Engineer: Mehran Birgani, Deniz Demirci
Test Location: FT Lab#4a

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: 21 °C
Rel. Humidity: 36 %

Summary of Results

MAC Address: 001500B50432 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	See Below	See Below	Output Power	15.247(b)	Pass	802.11a: 49.0 mW n20: 51.3 mW n40: 45.7 mW
2	See Below	See Below	Power spectral Density (PSD)	15.247(d)	Pass	802.11a: -8.4 dBm/3kHz n20: -11.2 dBm/3kHz n40: -13.5 dBm/3kHz
3	See Below	See Below	Minimum 6dB Bandwidth	15.247(a)	Pass	16.25 MHz
3	See Below	See Below	99% Bandwidth	RSS GEN	-	802.11a: 32.9 MHz n20: 33.9 MHz n40: 59.1 MHz
4	See Below	See Below	Spurious emissions	15.247(b)	Pass	All Emissions below the 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.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1: Output Power

802.11a Mode

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
39.0	5745	16.9	49.0	5.0	Pass	21.9	0.155	15.8	38.0
39.0	5785	16.9	49.0	5.0	Pass	21.9	0.155	15.8	38.0
39.0	5825	17.0	50.1	5.0	Pass	22.0	0.158	16.0	39.8

802.11n 20MHz Mode

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
39.0	5745	16.9	49.0	5.0	Pass	21.9	0.155	15.7	37.2
39.0	5785	16.9	49.0	5.0	Pass	21.9	0.155	15.7	37.2
39.0	5825	17.1	51.3	5.0	Pass	22.1	0.162	16.0	39.8

802.11n 40MHz Mode

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
32.0	5755	15.0	31.6	5.0	Pass	20.0	0.100	12.4	17.4
39.0	5795	16.6	45.7	5.0	Pass	21.6	0.145	15.4	34.7

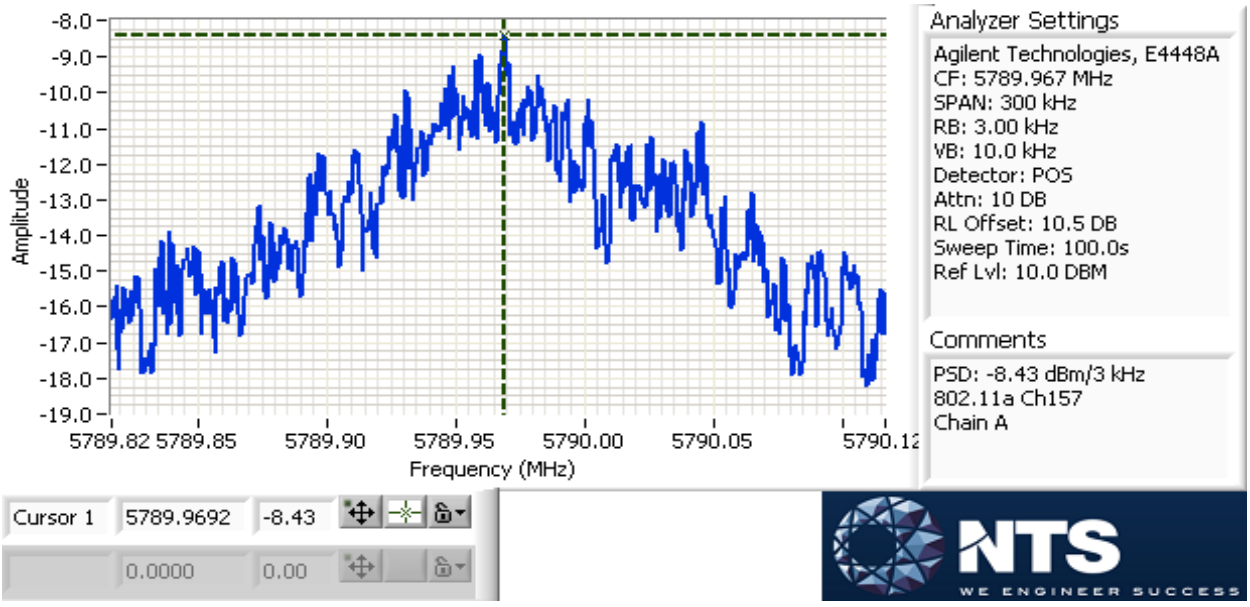
Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc. (Peak Conducted Output Power, Option 3 of KDB 558074)
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #2: Power spectral Density

Mode	Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
802.11a	39.0	5745	-11.2	8.0	Pass
	39.0	5785	-8.4	8.0	Pass
	39.0	5825	-9.5	8.0	Pass
802.11n 20MHz	39.0	5745	-11.3	8.0	Pass
	39.0	5785	-11.2	8.0	Pass
	39.0	5825	-11.3	8.0	Pass
802.11n 40MHz	32.0	5755	-16.5	8.0	Pass
	39.0	5795	-13.5	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.

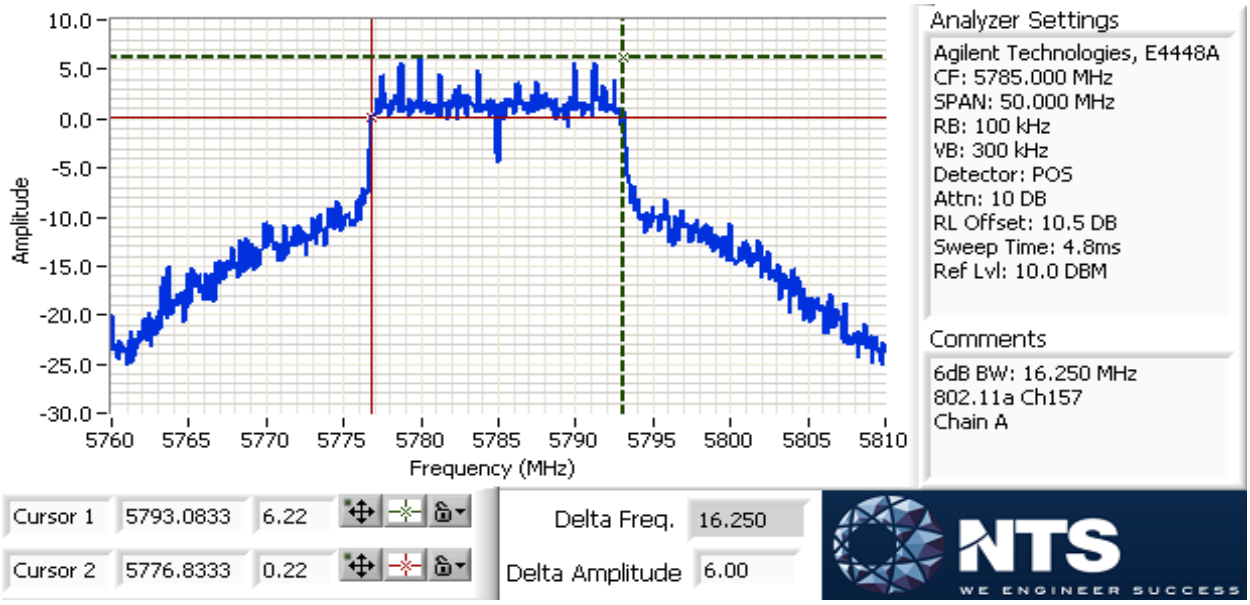


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #3: Signal Bandwidth

Mode	Power Setting	Frequency (MHz)	Bandwidth (MHz) 6dB	Resolution Bandwidth	Bandwidth (MHz) 99%
802.11a	39.0	5745	16.25	510 kHz	32.4
	39.0	5785	16.25	510 kHz	32.7
	39.0	5825	16.25	510 kHz	32.9
802.11n 20MHz	39.0	5745	17.58	510 kHz	33.9
	39.0	5785	17.58	510 kHz	33.9
	39.0	5825	17.58	510 kHz	33.8
802.11n 40MHz	32.0	5755	35.07	1 MHz	38.1
	39.0	5795	32.53	1 MHz	59.1

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

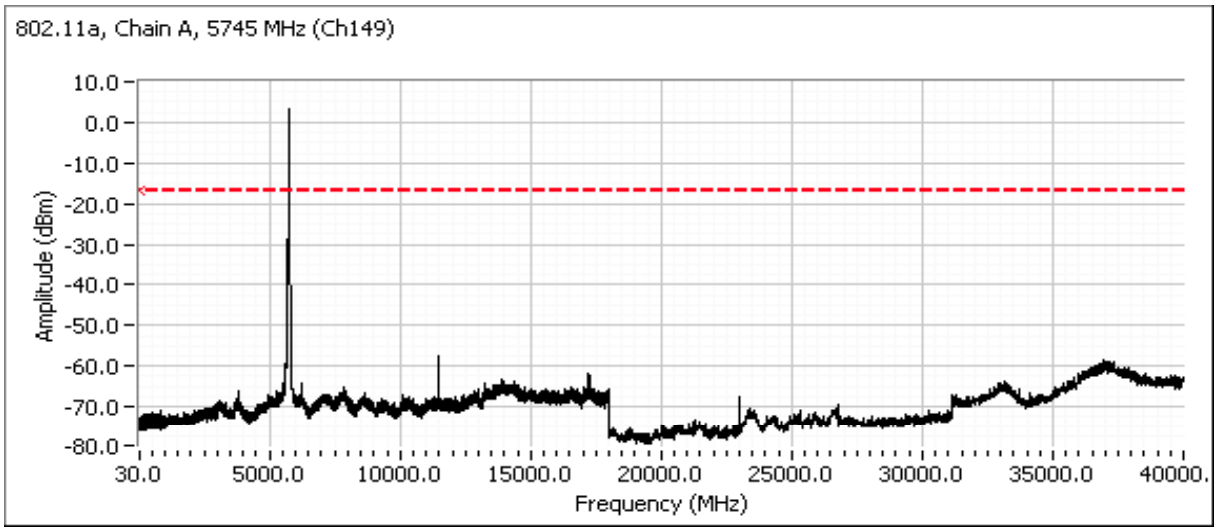


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

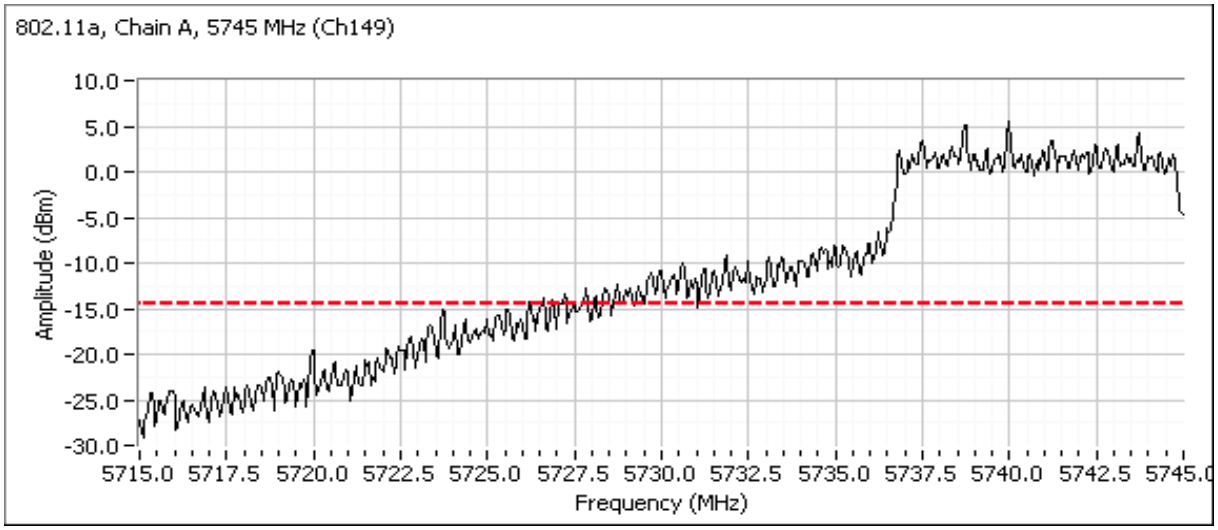
Run #4: Out of Band Spurious Emissions
802.11a Mode

Frequency (MHz)	Limit	Result
5745	-20dBc	Pass
5785	-20dBc	Pass
5825	-20dBc	Pass

Plots for low channel, power setting = 39.0 (Max pwr)

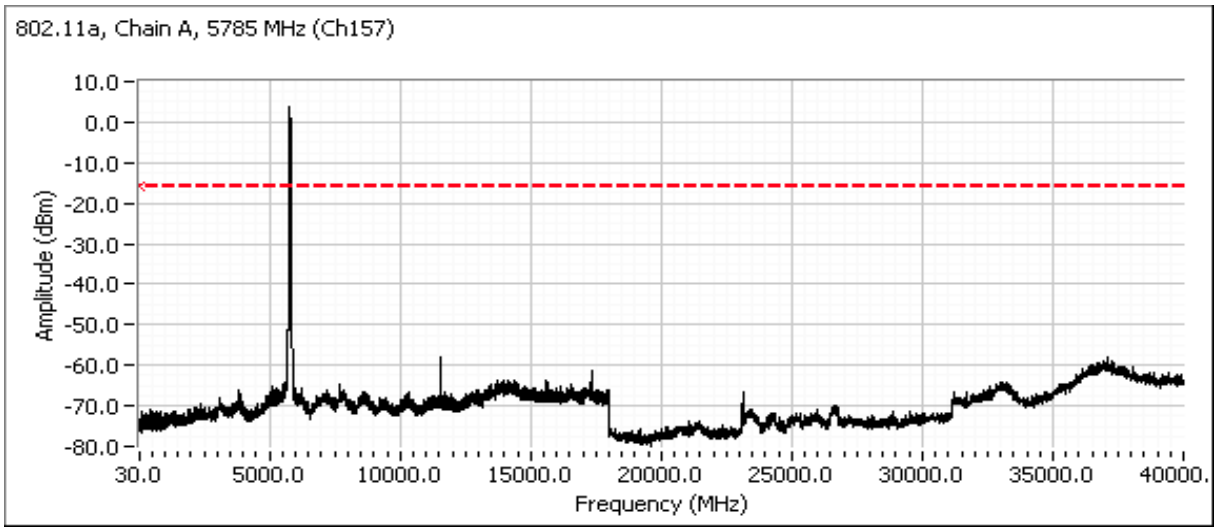


Additional plot from 5715 - 5745 MHz showing compliance with -20dBc at the band edge.



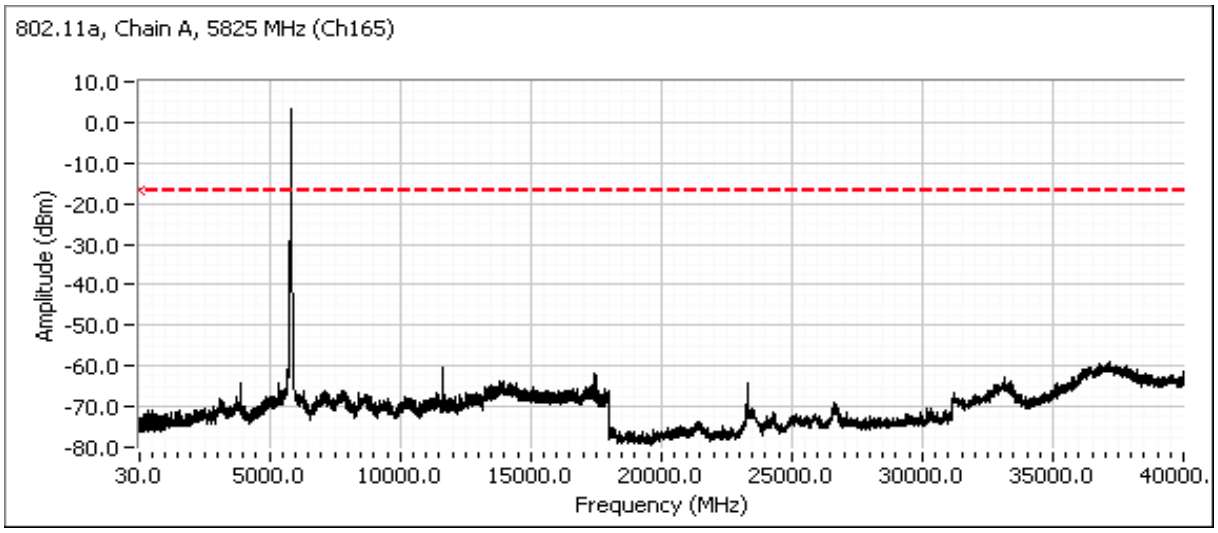
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 39.0 (Max pwr)

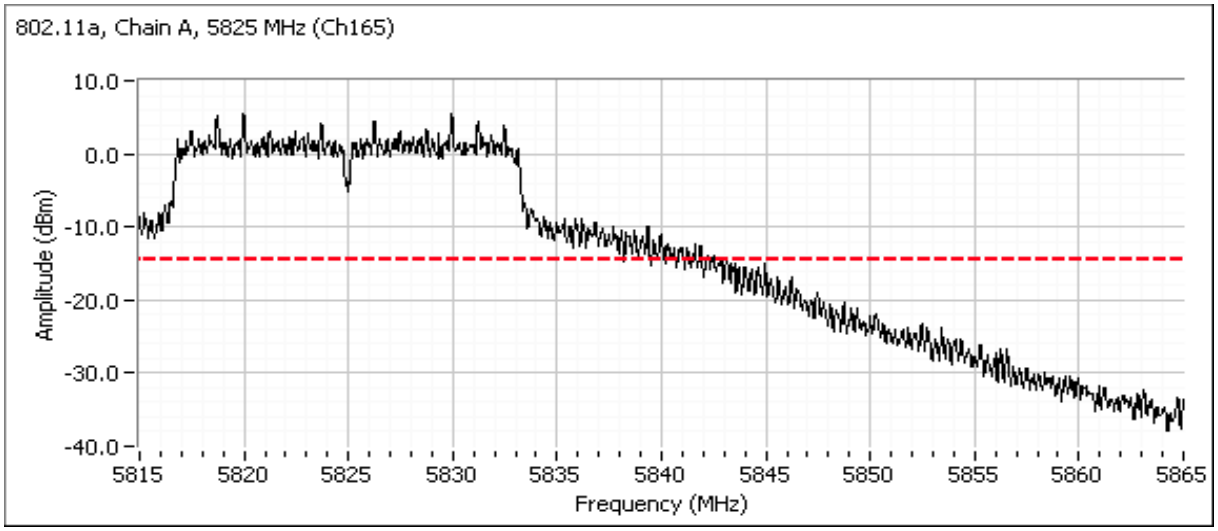


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for high channel, power setting = 39.0 (Max pwr)



Additional plot from 5815 - 5865 MHz showing compliance with -20dBc at the band edge.

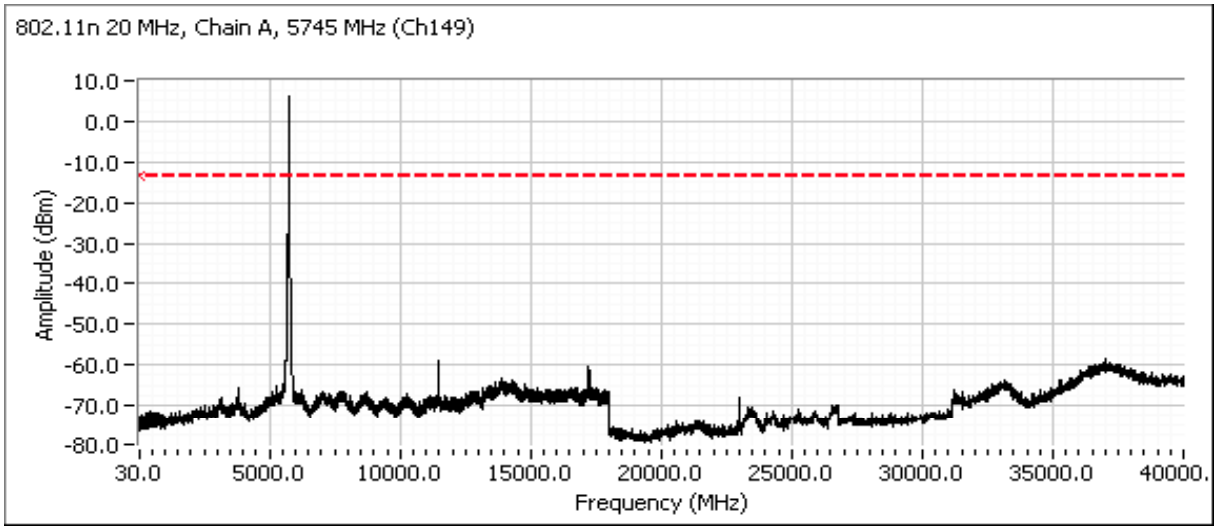


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

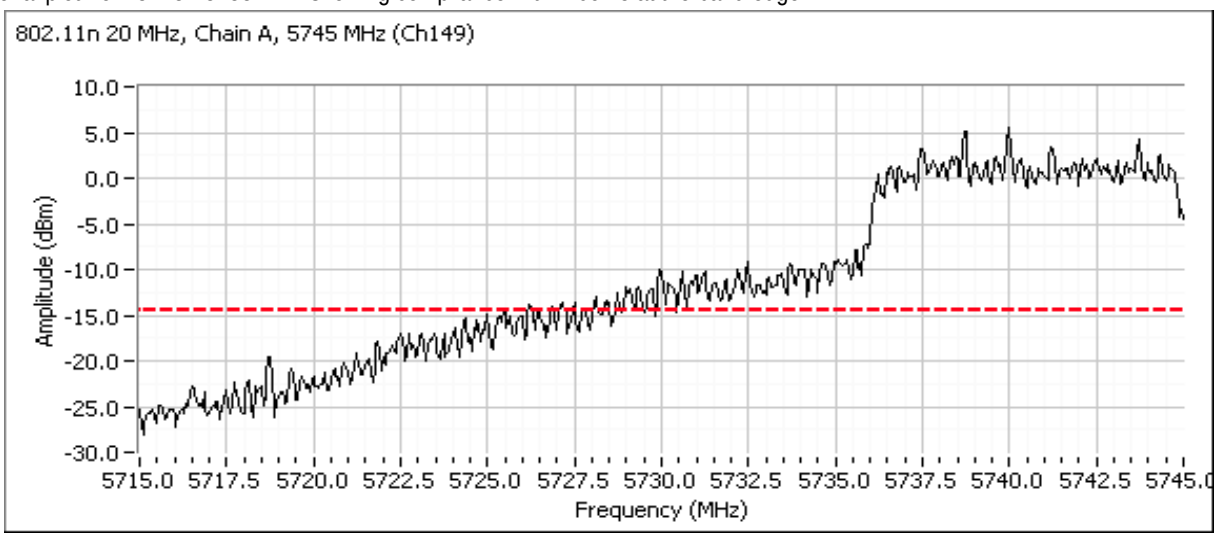
802.11n 20MHz Mode

Frequency (MHz)	Limit	Result
5745	-20dBc	Pass
5785	-20dBc	Pass
5825	-20dBc	Pass

Plots for low channel, power setting = 39.0 (Max pwr)

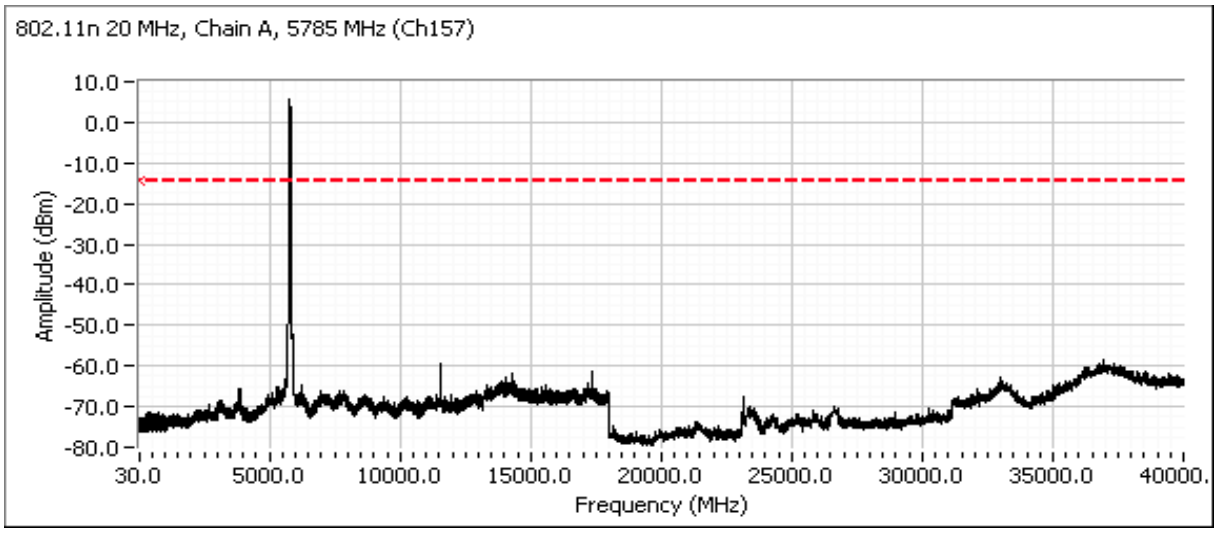


Additional plot from 5715 - 5755 MHz showing compliance with -20dBc at the band edge.



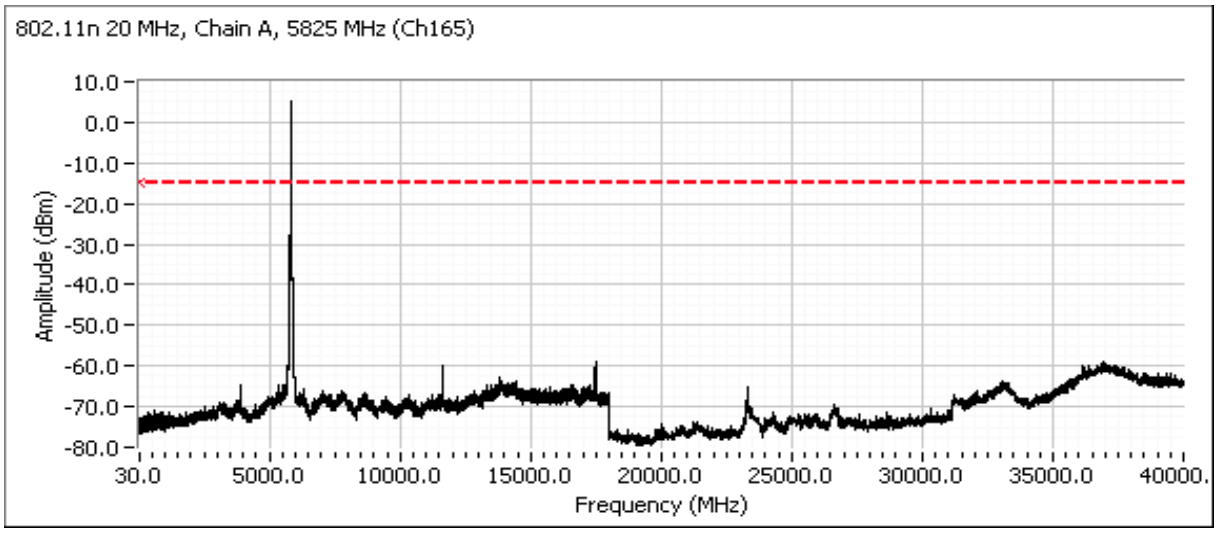
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 39.0 (Max pwr)

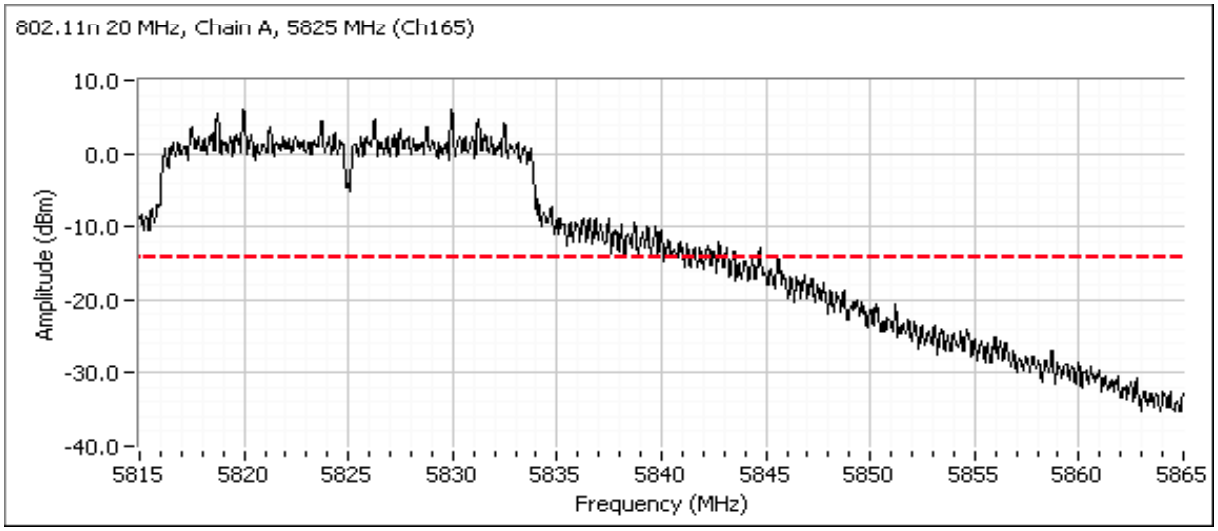


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for high channel, power setting = 39.0 (Max pwr)



Additional plot from 5815 - 5865 MHz showing compliance with -20dBc at the band edge.

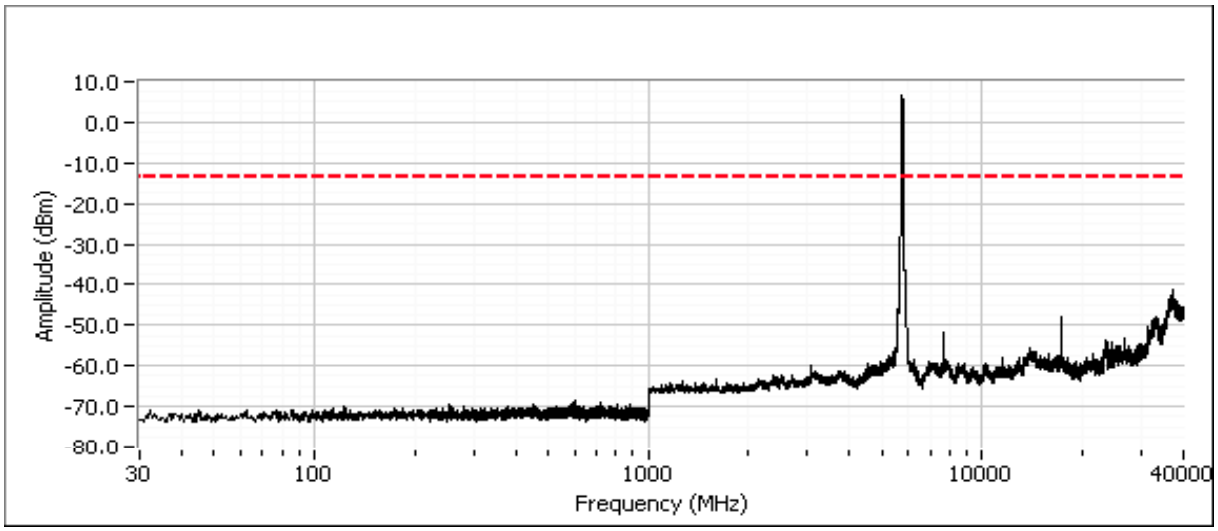


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

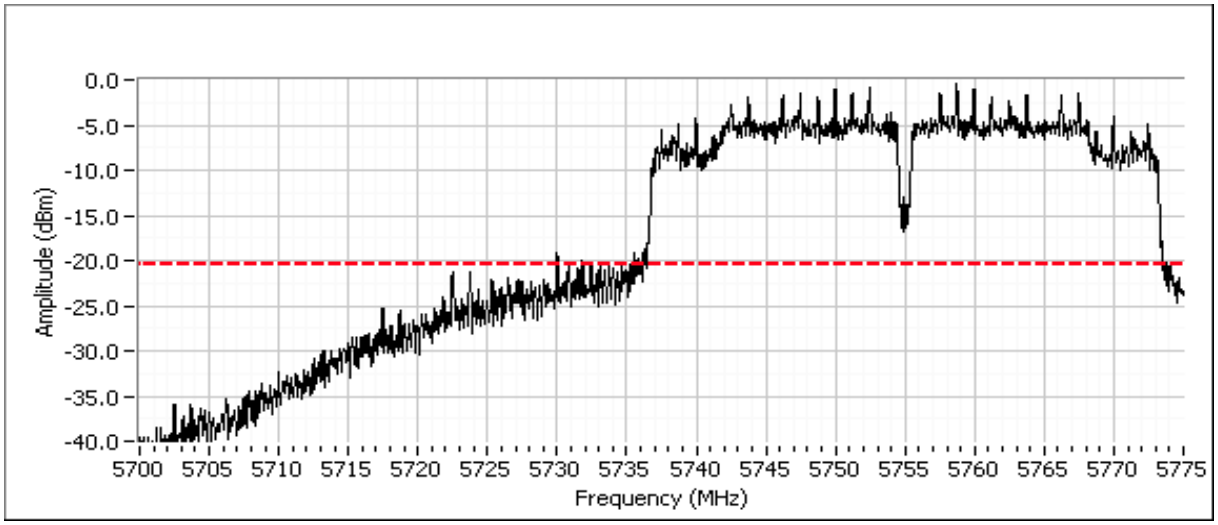
802.11n 40MHz Mode

Frequency (MHz)	Limit	Result
5755	-20dBc	Pass
5795	-20dBc	Pass

Plots for low channel, power setting = 32.0

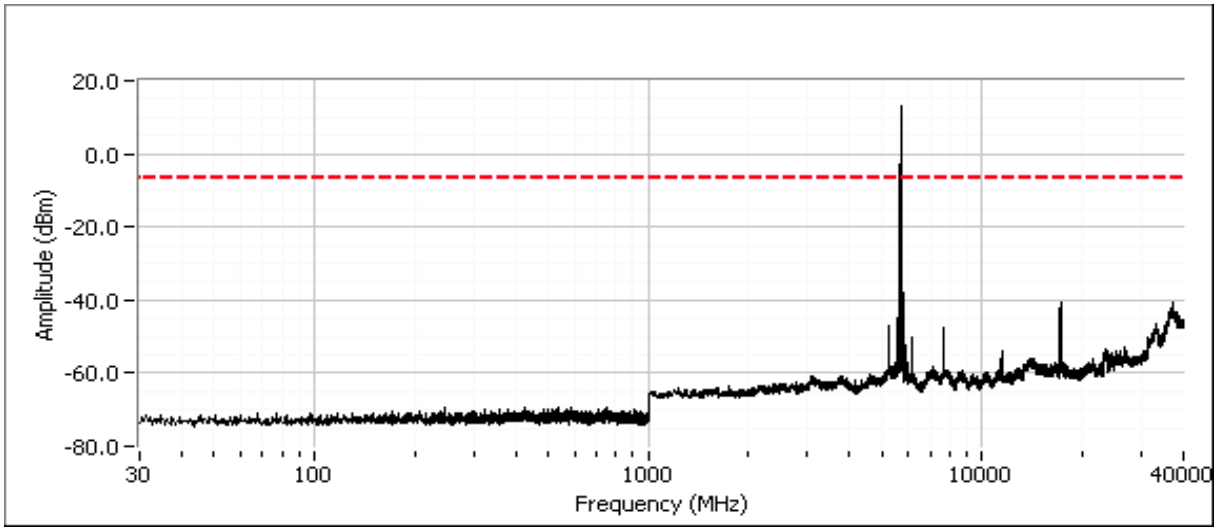


Additional plot from 5715 - 5775 MHz showing compliance with -20dBc at the band edge.

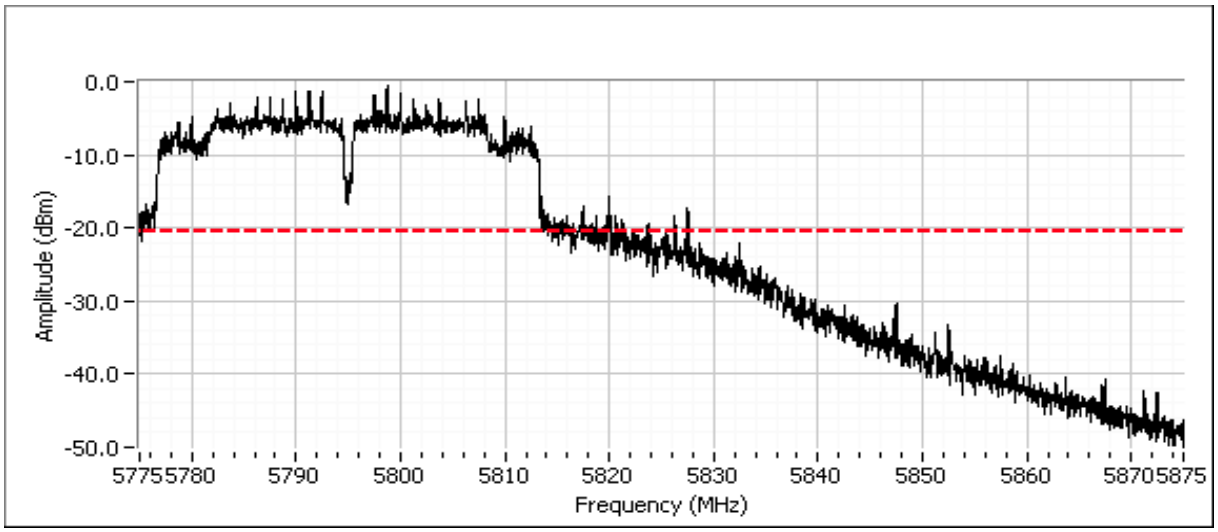


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for high channel, power setting = 39.0 dBm



Additional plot from 5775 - 5875 MHz showing compliance with -20dBc at the band edge.



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements
Power, PSD, Bandwidth and Spurious Emissions - Chain B

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: 1/3/2013
Test Engineer: Deniz Demirci
Test Location: FT Lab#4a

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: 21 °C
Rel. Humidity: 36 %

Summary of Results

MAC Address: 001500B50432 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	See Below	See Below	Output Power	15.247(b)	Pass	802.11a: 53.7 mW n20: 52.5 mW n40: 45.7 mW
2	See Below	See Below	Power spectral Density (PSD)	15.247(d)	Pass	802.11a:-9.2 dBm/3kHz n20: -7.9 dBm/3kHz n40: -12.1 dBm/3kHz
3	See Below	See Below	Minimum 6dB Bandwidth	15.247(a)	Pass	16.25 MHz
3	See Below	See Below	99% Bandwidth	RSS GEN	-	802.11a: 33.9 MHz n20: 35.4 MHz n40: 59.9 MHz
4	See Below	See Below	Spurious emissions	15.247(b)	Pass	All Emissions below the 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.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1: Output Power

802.11a Mode

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
39.0	5745	17.3	53.7	5.0	Pass	22.3	0.170	16.2	41.7
39.0	5785	17.2	52.5	5.0	Pass	22.2	0.166	16.0	39.8
39.0	5825	16.9	49.0	5.0	Pass	21.9	0.155	15.8	38.0

802.11n 20MHz Mode

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
39.0	5745	17.2	52.5	5.0	Pass	22.2	0.166	16.1	40.7
39.0	5785	17.0	50.1	5.0	Pass	22.0	0.158	15.9	38.9
39.0	5825	16.6	45.7	5.0	Pass	21.6	0.145	15.6	36.3

802.11n 40MHz Mode

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
32.0	5755	15.7	37.2	5.0	Pass	20.7	0.117	13.2	20.9
39.0	5795	16.6	45.7	5.0	Pass	21.6	0.145	15.5	35.5

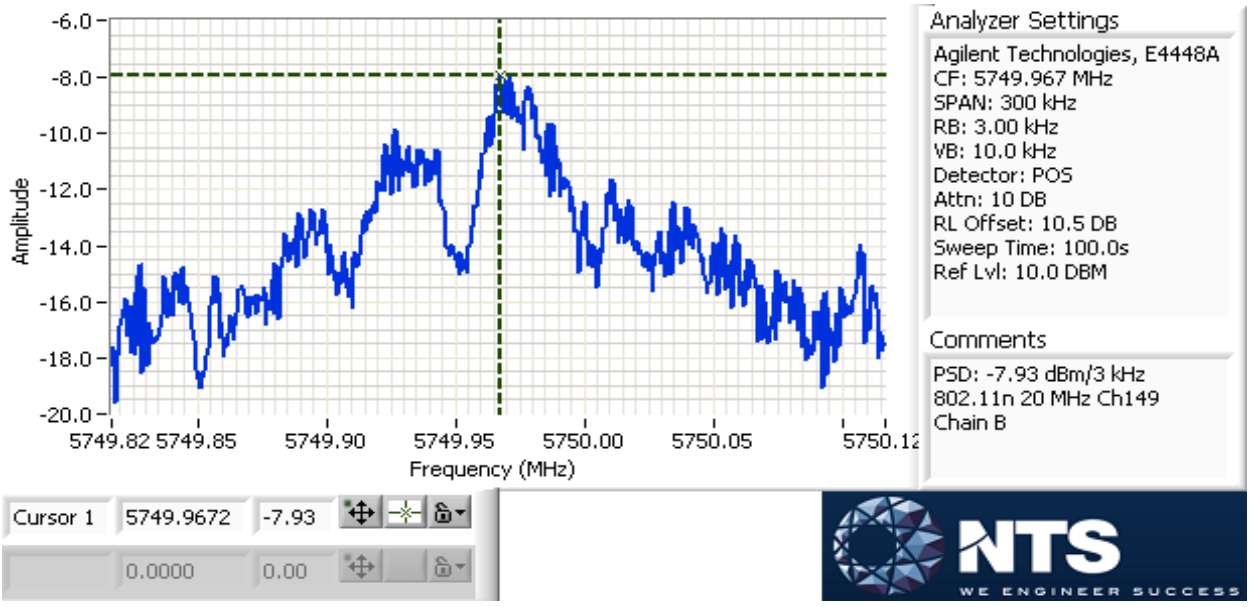
Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc. (Peak Conducted Output Power, Option 3 of KDB 558074)
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #2: Power spectral Density

Mode	Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
802.11a	39.0	5745	-10.1	8.0	Pass
	39.0	5785	-9.2	8.0	Pass
	39.0	5825	-10.3	8.0	Pass
802.11n 20MHz	39.0	5745	-7.9	8.0	Pass
	39.0	5785	-9.0	8.0	Pass
	39.0	5825	-9.9	8.0	Pass
802.11n 40MHz	32.0	5755	-14.2	8.0	Pass
	39.0	5795	-12.1	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.

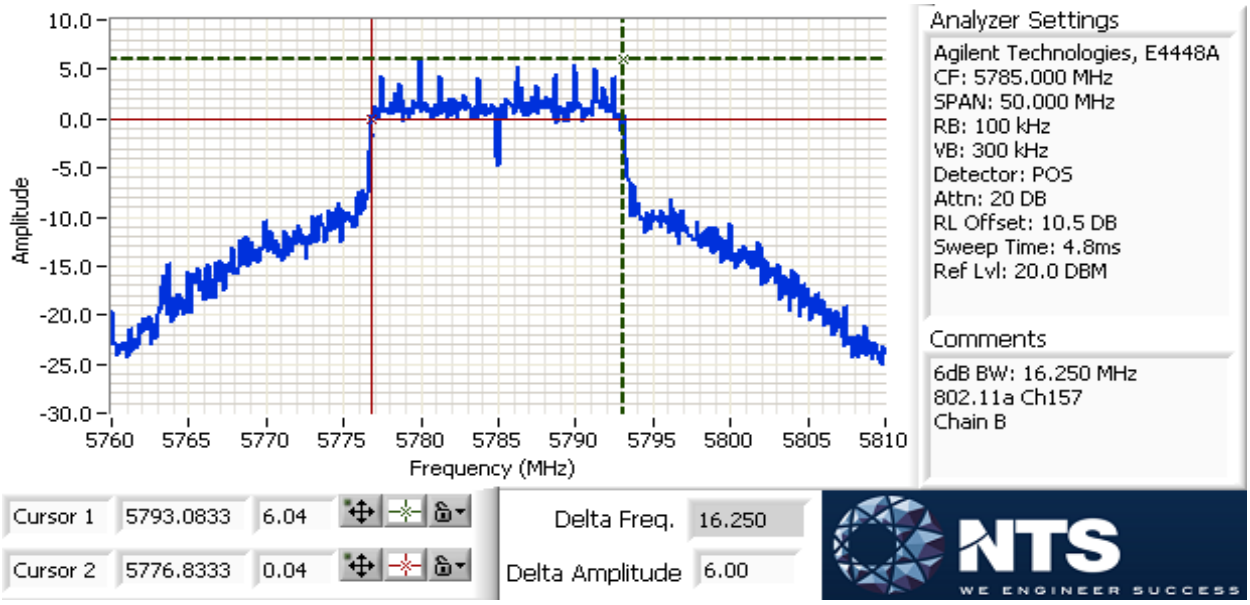


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #3: Signal Bandwidth

Mode	Power Setting	Frequency (MHz)	Bandwidth (MHz) 6dB	Resolution Bandwidth	Bandwidth (MHz) 99%
802.11a	39.0	5745	16.25	510 kHz	33.7
	39.0	5785	16.25	510 kHz	33.8
	39.0	5825	16.25	510 kHz	33.9
802.11n 20MHz	39.0	5745	17.58	510 kHz	35.1
	39.0	5785	17.58	510 kHz	34.9
	39.0	5825	17.58	510 kHz	35.4
802.11n 40MHz	32.0	5755	35.07	1 MHz	40.1
	39.0	5795	33.33	1 MHz	59.9

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

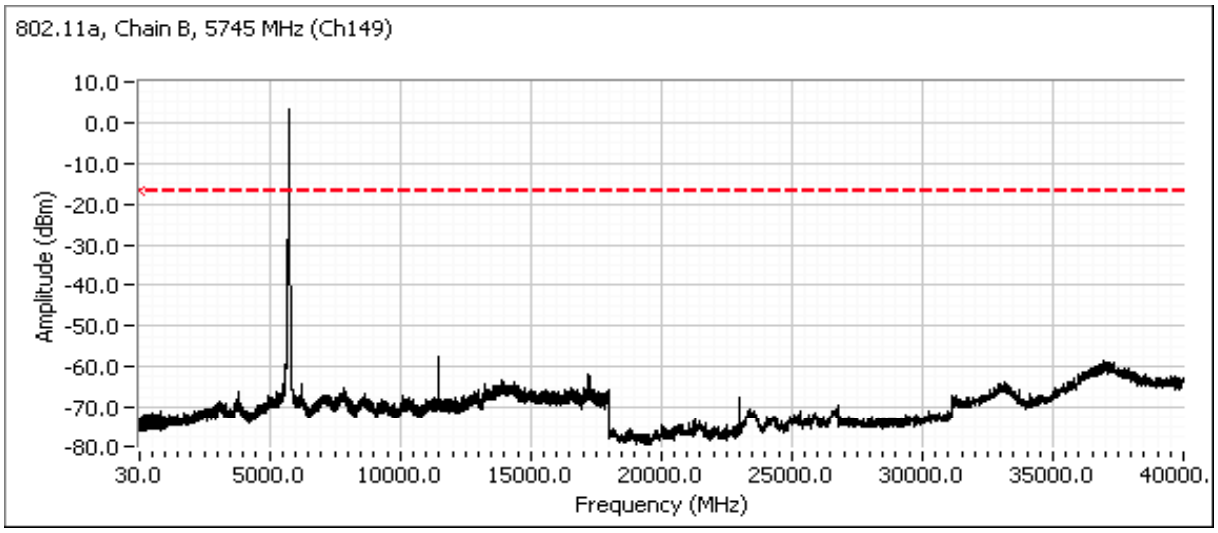


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

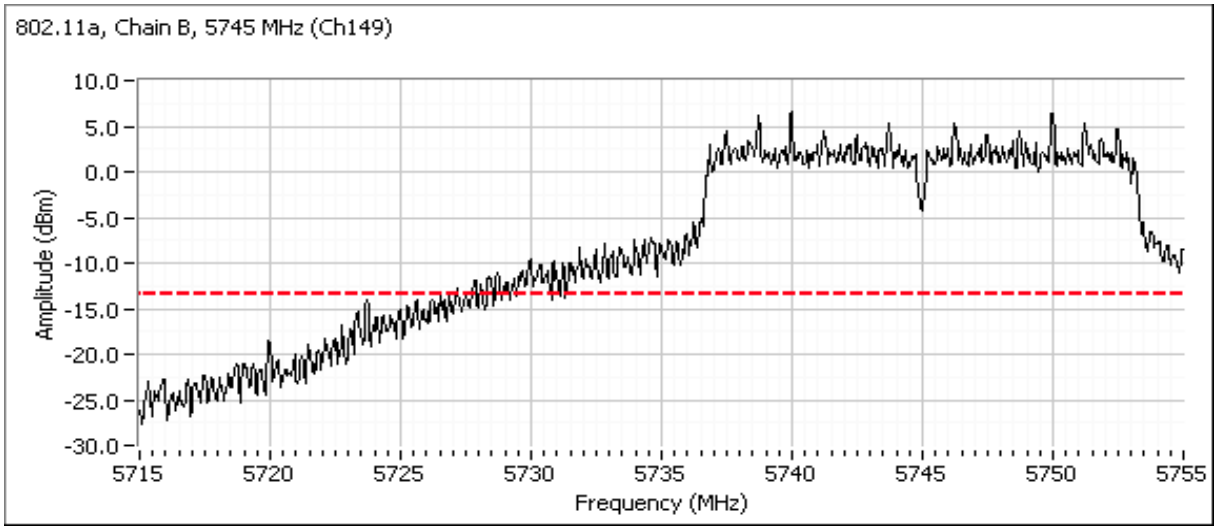
Run #4: Out of Band Spurious Emissions
802.11a Mode

Frequency (MHz)	Limit	Result
5745	-20dBc	Pass
5785	-20dBc	Pass
5825	-20dBc	Pass

Plots for low channel, power setting = 39.0 (Max pwr)

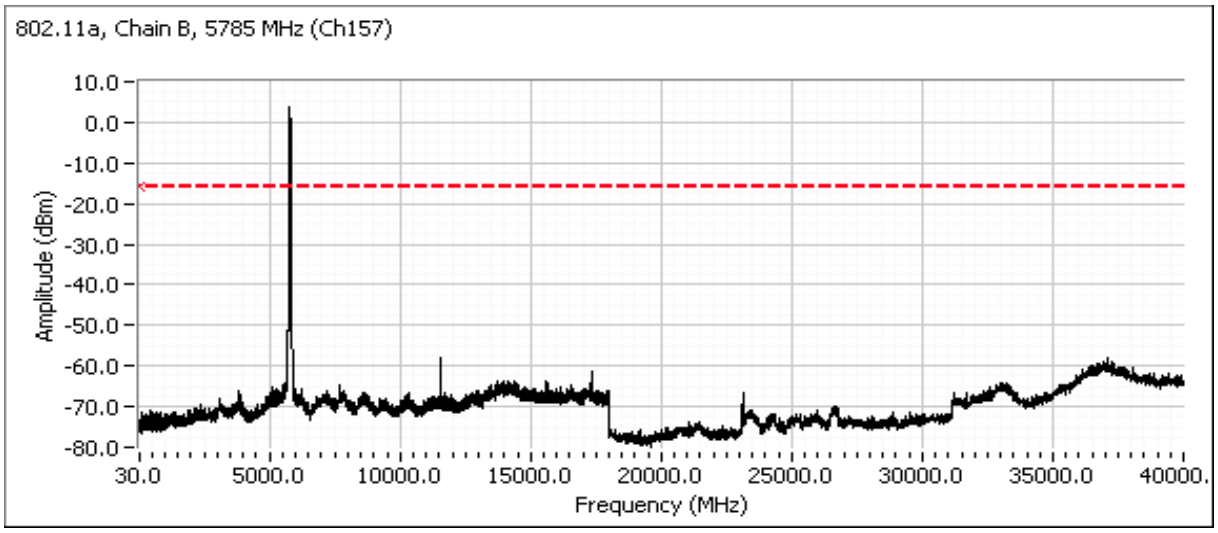


Additional plot from 5715 - 5755 MHz showing compliance with -20dBc at the band edge.



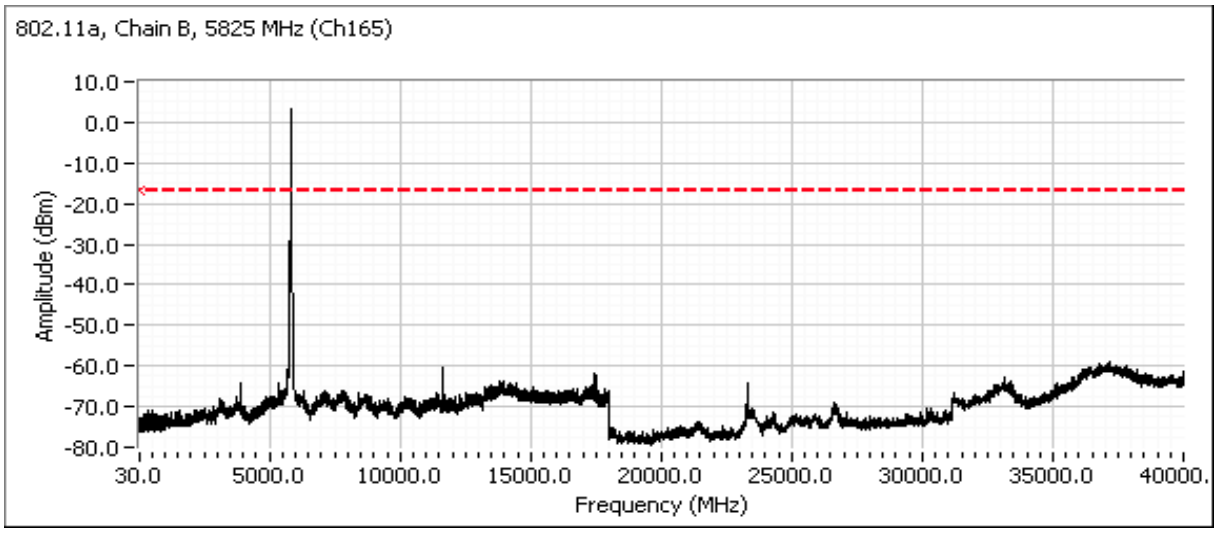
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 39.0 (Max pwr)

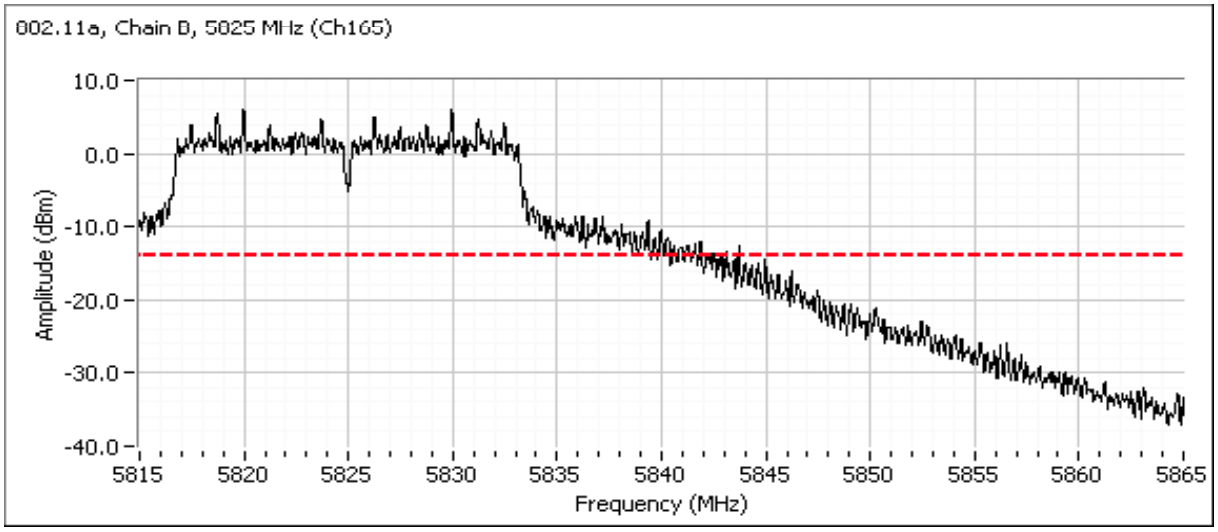


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for high channel, power setting = 39.0 (Max pwr)



Additional plot from 5815 - 5865 MHz showing compliance with -20dBc at the band edge.

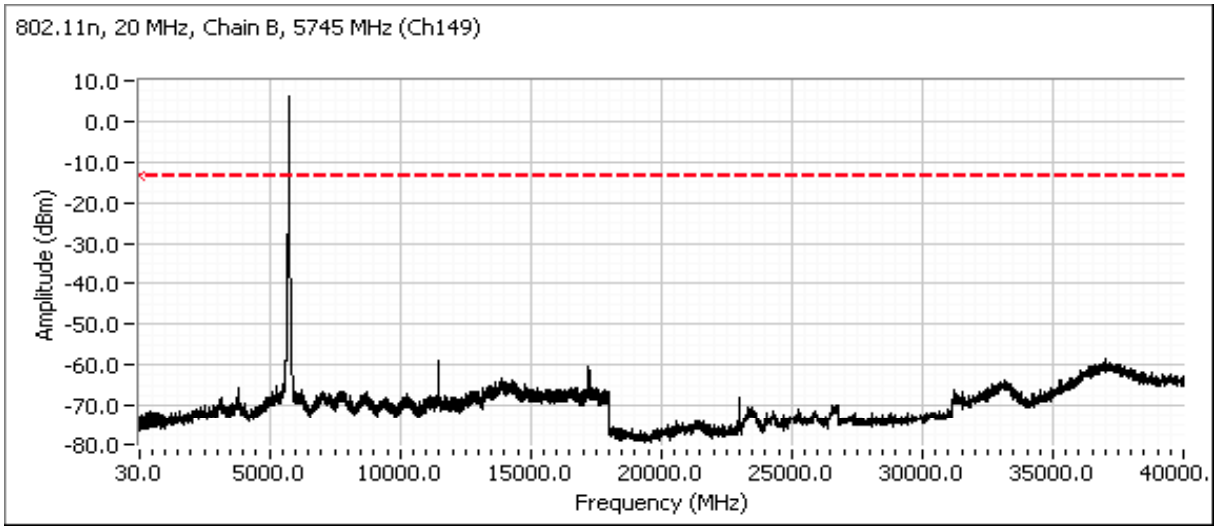


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

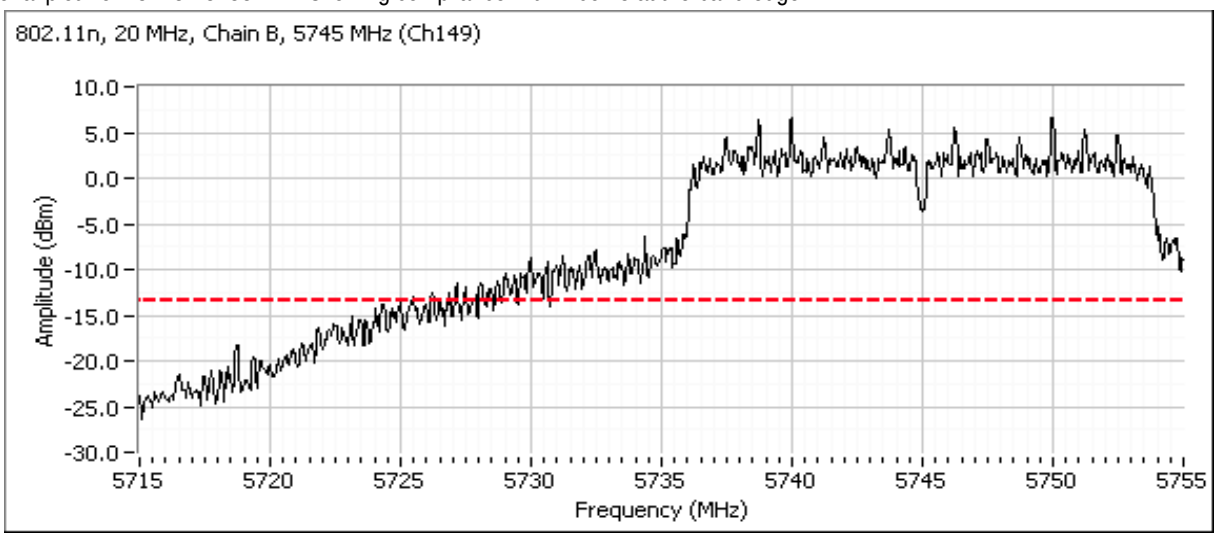
802.11n 20MHz Mode

Frequency (MHz)	Limit	Result
5745	-20dBc	Pass
5785	-20dBc	Pass
5825	-20dBc	Pass

Plots for low channel, power setting = 39.0 (Max pwr)

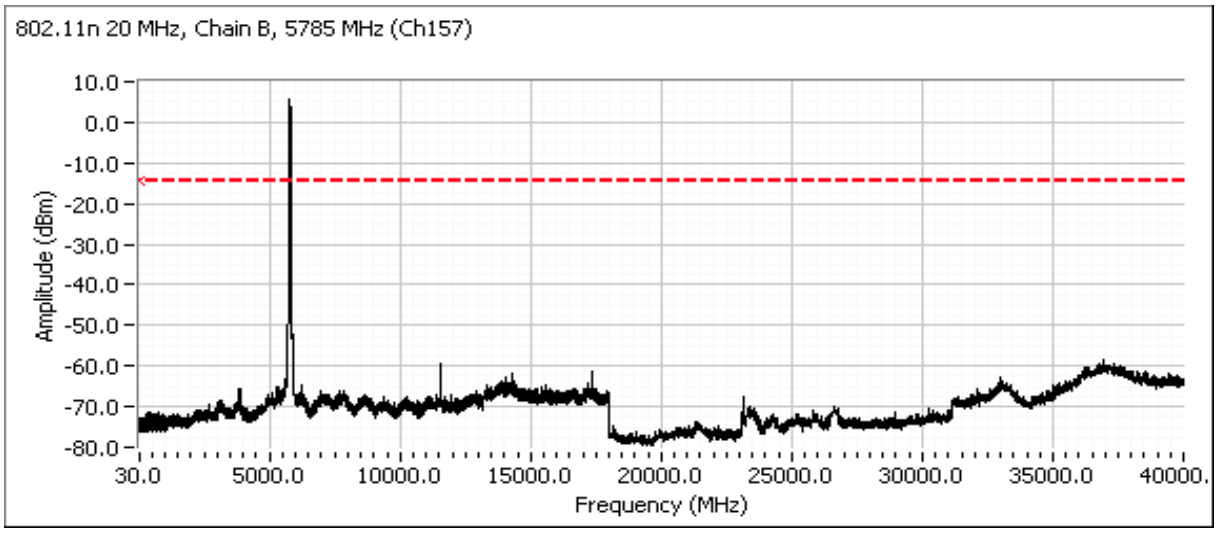


Additional plot from 5715 - 5755 MHz showing compliance with -20dBc at the band edge.



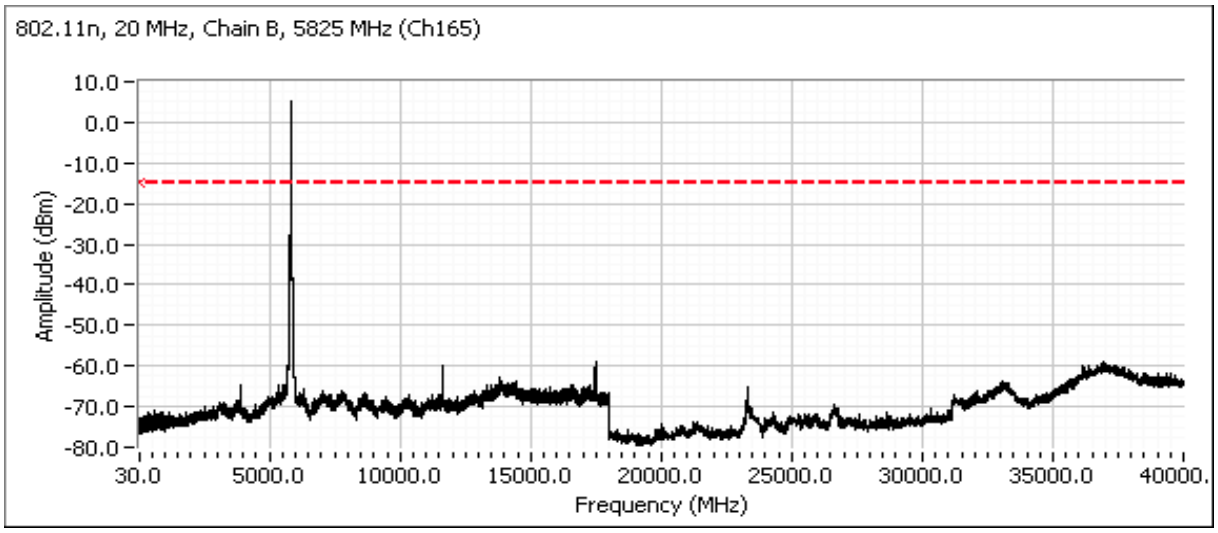
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting = 39.0 (Max pwr)

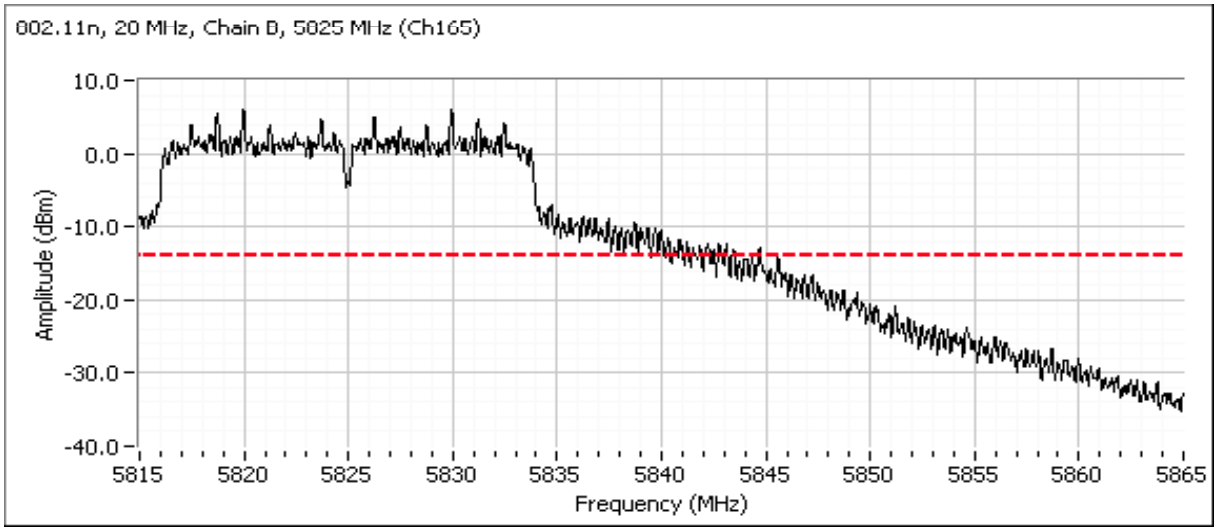


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for high channel, power setting = 39.0 (Max pwr)



Additional plot from 5815 - 5865 MHz showing compliance with -20dBc at the band edge.

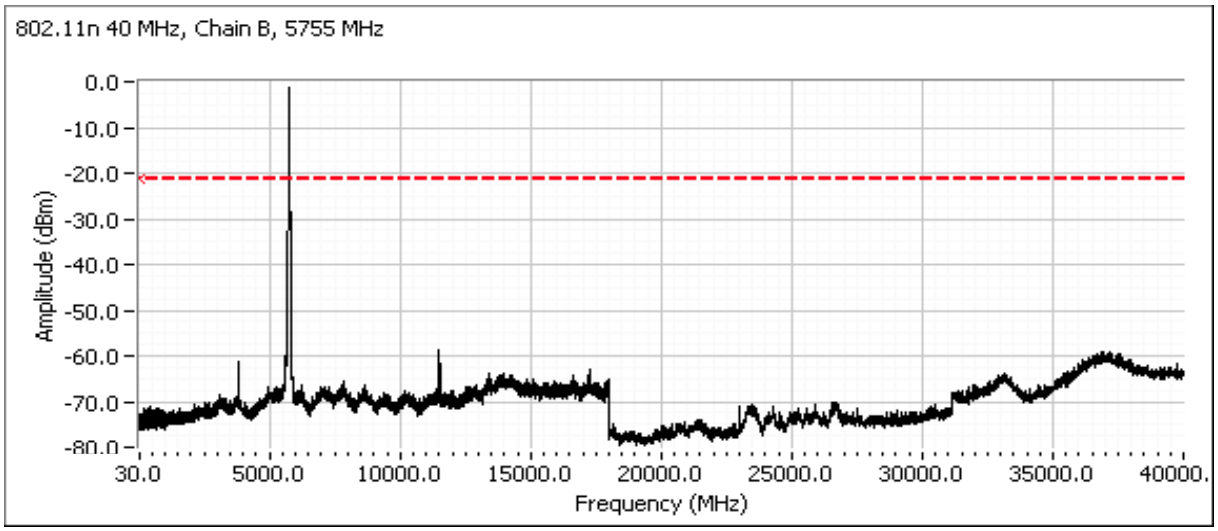


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

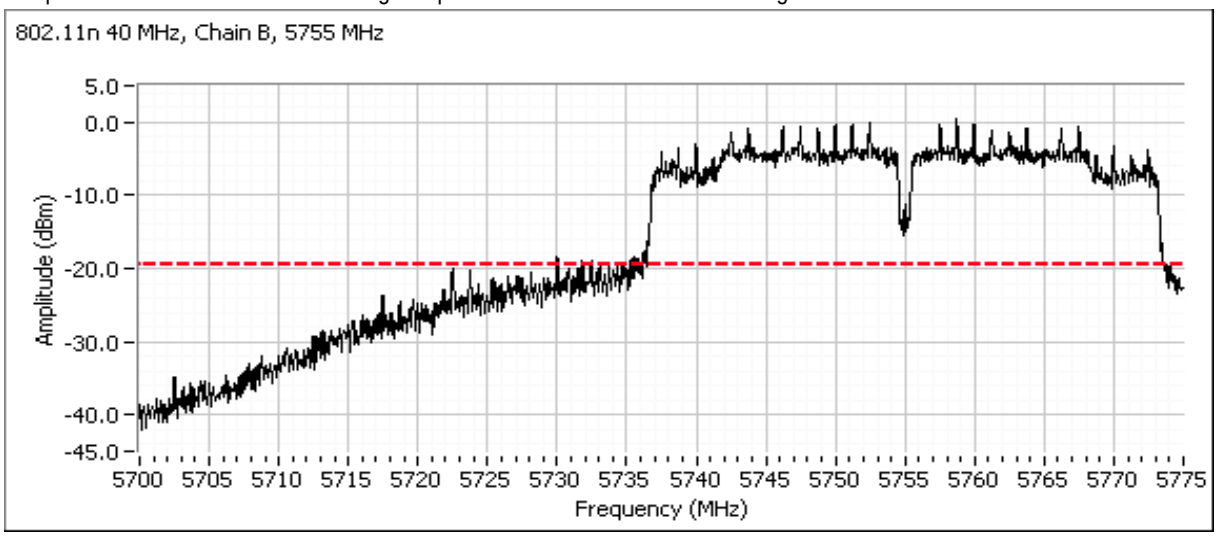
802.11n 40MHz Mode

Frequency (MHz)	Limit	Result
5795	-20dBc	Pass
5755	-20dBc	Pass

Plots for low channel, power setting = 32.0

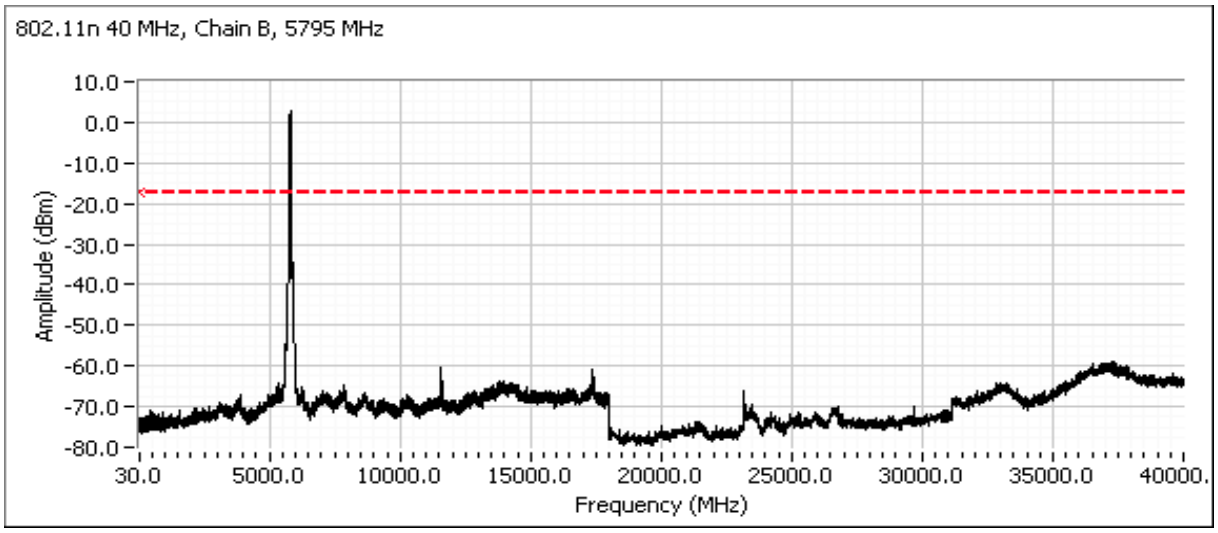


Additional plot from 5700 - 5775 MHz showing compliance with -20dBc at the band edge.

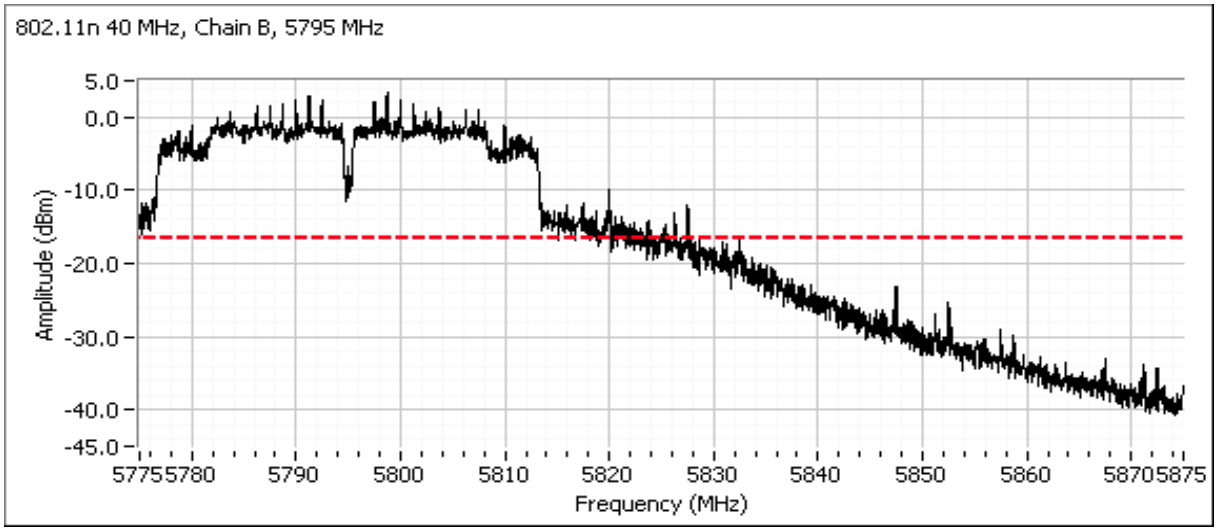


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for high channel, power setting = 39.0 dBm



Additional plot from 5775 - 5875 MHz showing compliance with -20dBc at the band edge.



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements
MIMO Antenna Systems - Chain A + B
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: 1/3/2013
Test Engineer: Deniz Demirci
Test Location: FT Lab#4a

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: 21 °C
Rel. Humidity: 36 %

Summary of Results

MAC Address: 001500B50432 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
Chain A + 2						
1	See Below	See Below	Output Power (Peak)	15.247(b)	Pass	n20: 57 mW n40: 45 mW
2	See Below	See Below	Power spectral Density (PSD)	15.247(d)	Pass	n20: -8.6 dBm/3kHz n40: -11.8 dBm/3kHz
3			Minimum 6dB Bandwidth	15.247(a)		covered by
3			99% Bandwidth	RSS GEN		single chain
4			Spurious emissions	15.247(b)		Measurements

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.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1: Output Power - Chain A + B

Operating Mode: MIMO

Transmitted signal on chain is coherent ? no

802.11n 20MHz 5745 MHz	Chain A	Chain B	Chain C	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	39.0	39.0						
Average power Note 3	13.0	12.1						
Output Power (dBm) Note 1	14.9	14.1			17.5 dBm	0.057 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	5	5				5.0 dBi	Pass	
eirp (dBm) Note 2	19.9	19.1			22.5 dBm	0.179 W		

802.11n 20MHz 5785 MHz	Chain A	Chain B	Chain C	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	39.0	39.0						
Average power Note 3	12.4	12.1						
Output Power (dBm) Note 1	14.2	13.7			17.0 dBm	0.050 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	5	5				5.0 dBi	Pass	
eirp (dBm) Note 2	19.2	18.7			22.0 dBm	0.157 W		

802.11n 20MHz 5825 MHz	Chain A	Chain B	Chain C	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	39.0	39.0						
Average power Note 3	12.0	12.1						
Output Power (dBm) Note 1	13.6	13.7			16.7 dBm	0.046 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	5	5				5.0 dBi	Pass	
eirp (dBm) Note 2	18.6	18.7			21.7 dBm	0.147 W		

Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc. (Peak Conducted Output Power, Option 3 of KDB 558074)
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1: Output Power - Chain A + B

Operating Mode: MIMO

Transmitted signal on chain is coherent ? no

802.11n 40MHz 5755 MHz	Chain A	Chain B	Chain C	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	32.0	32.0						
Average power Note 3	8.3	7.8						
Output Power (dBm) Note 1	11.4	10.7			14.1 dBm	0.026 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	5	5				5.0 dBi	Pass	
eirp (dBm) Note 2	16.4	15.7			19.1 dBm	0.081 W		

802.11n 40MHz 5795 MHz	Chain A	Chain B	Chain C	Chain 4	Total Across All Chains		Limit	
Power Setting Note 3	39.0	39.0						
Average power Note 3	11.8	11.7						
Output Power (dBm) Note 1	13.7	13.4			16.6 dBm	0.045 W	30.0 dBm	1.000 W
Antenna Gain (dBi) Note 2	5	5				5.0 dBi	Pass	
eirp (dBm) Note 2	18.7	18.4			21.6 dBm	0.143 W		

Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc. (Peak Conducted Output Power, Option 3 of KDB 558074)
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

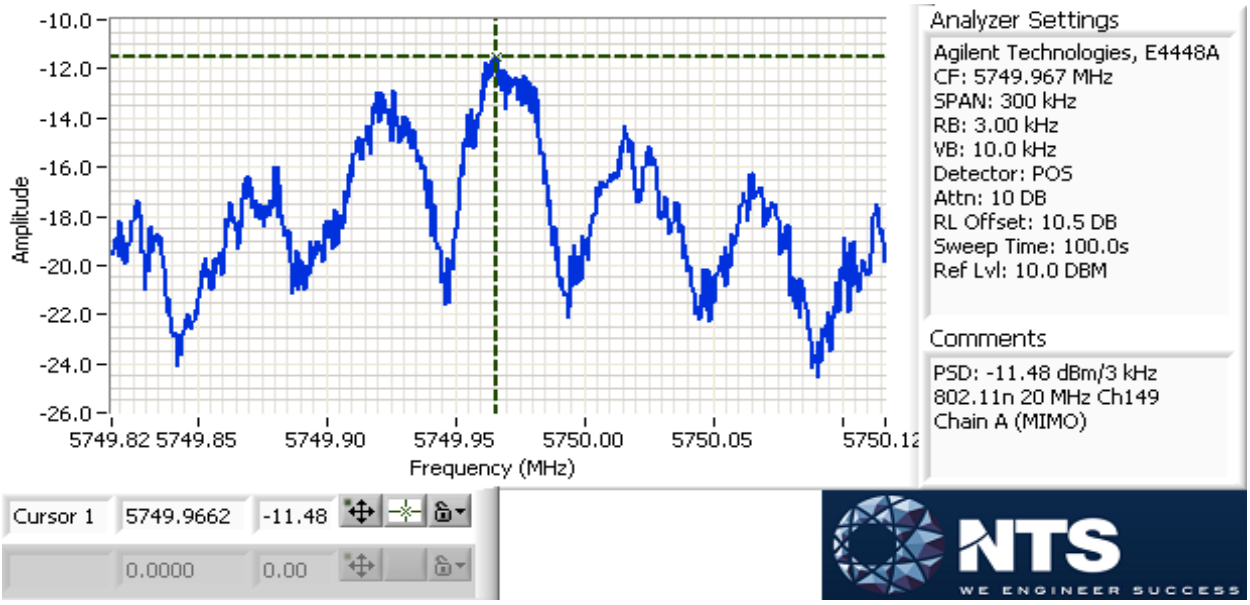
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

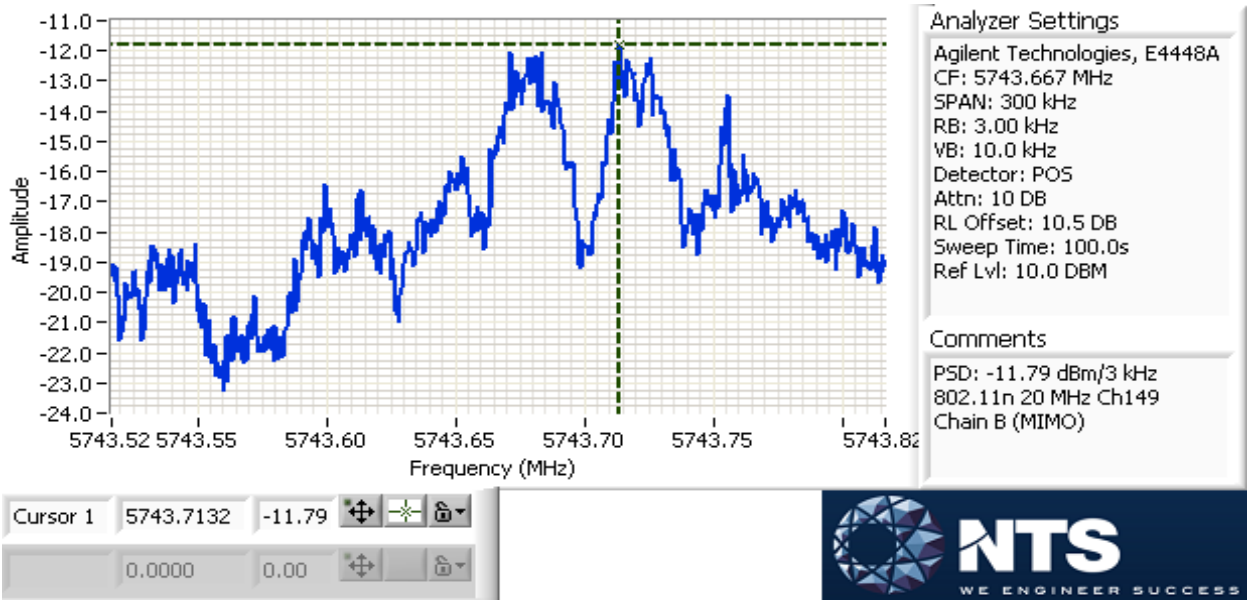
Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1 Chain A	Chain B	Chain C	Chain 4	Total	Limit dBm/3kHz	Result
802.11n 20MHz mode								
39, 39	5745	-11.5	-11.8			-8.6	8.0	Pass
39, 39	5785	-11.4	-13.0			-9.1	8.0	Pass
39, 39	5825	-13.4	-12.7			-10.0	8.0	Pass
802.11n 40MHz mode								
32, 32	5755	-18.5	-19.6			-16.0	8.0	Pass
39, 39	5795	-14.6	-14.9			-11.8	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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A





Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, 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: 19.5 °C
Rel. Humidity: 47 %

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

MAC Address: 001500B50405 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run # 1	802.11b Chain A	#1 2412MHz	16.5	16.6	Restricted Band Edge at 2390 MHz	15.209	41.4 dBµV/m @ 2390.0 MHz (-12.6 dB)
		#11 2462MHz	16.5	16.6	Restricted Band Edge at 2483.5 MHz	15.209	38.3 dBµV/m @ 2483.5 MHz (-15.7 dB)
Run # 2	802.11g Chain A	#1 2412MHz	14.5	14.4	Restricted Band Edge at 2390 MHz	15.209	53.5 dBµV/m @ 2390.0 MHz (-0.5 dB)
		#11 2462MHz	14.0	14.3	Restricted Band Edge at 2483.5 MHz	15.209	51.1 dBµV/m @ 2483.5 MHz (-2.9 dB)
Run # 3	802.11n20 Chain A	#1 2412MHz	13.5	13.1	Restricted Band Edge at 2390 MHz	15.209	53.5 dBµV/m @ 2390.0 MHz (-0.5 dB)
		#11 2462MHz	12.5	12.6	Restricted Band Edge at 2483.5 MHz	15.209	49.6 dBµV/m @ 2483.6 MHz (-4.4 dB)
Run # 4	802.11n40 Chain A	#3 2422MHz	10.5	10.3	Restricted Band Edge at 2390 MHz	15.209	52.8 dBµV/m @ 2390.0 MHz (-1.2 dB)
		#9 2452MHz	10.0	11.0	Restricted Band Edge at 2483.5 MHz	15.209	53.0 dBµV/m @ 2483.5 MHz (-1.0 dB)

If power is more than 3dB below center channel target to pass on lowest and/or highest channel, repeat measurements at target power for next lowest or highest channel

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run # 5	802.11n20 Chain A	#2 2422MHz	16.5	15.6	Restricted Band Edge at 2390 MHz	15.209	52.4 dBµV/m @ 2390.0 MHz (-1.6 dB)
		#10 2457MHz	16.5	16.2	Restricted Band Edge at 2483.5 MHz	15.209	53.3 dBµV/m @ 2483.53 MHz (-0.7 dB)
Run # 6	802.11n40 Chain A	#4 2427MHz	11.5	11.3	Restricted Band Edge at 2390 MHz	15.209	52.8 dBµV/m @ 2390.0 MHz (-1.2 dB)
		#8 2447MHz	11.0	11.3	Restricted Band Edge at 2483.5 MHz	15.209	50.6 dBµV/m @ 2483.5 MHz (-3.4 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.

Notes

802.11b mode tests run with data rate of 5.5Mb/s
Chain A = Chain A in DRTU = port 2 on the EUT
Power level measured at the end of the white pigtail cable, no loss factor applied
Measured power highlighted were measured at the start of testing, wtth the card relatively cold

Note - the target and measured power are average powers (measured with average power sensor) and are used for reference purposes only. Power is set using " GAIN CONTROL" mode in the DRTU tool.

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

Date of Test: 12/3/2012 Test Location: FT#3

Test Engineer: Mark Hill Config Change: none

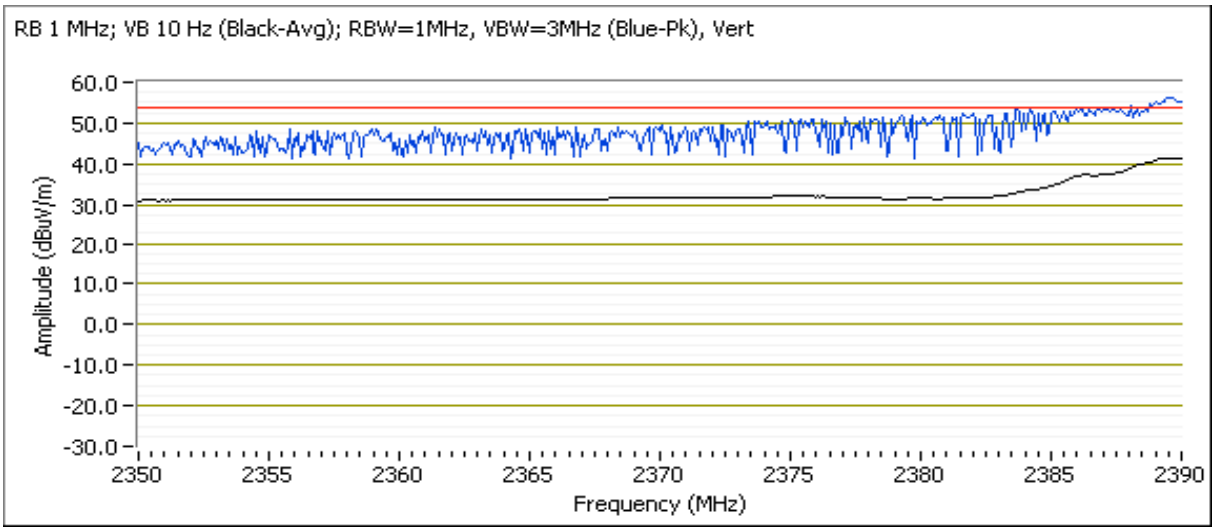
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 1a, EUT on Channel #1 2412MHz - 802.11b, Chain A

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.6	28.0

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	41.4	V	54.0	-12.6	AVG	96	1.0	POS; RB 1 MHz; VB: 10 Hz
2385.510	55.6	V	74.0	-18.4	PK	96	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	41.2	H	54.0	-12.8	AVG	131	1.0	POS; RB 1 MHz; VB: 10 Hz
2386.390	51.3	H	74.0	-22.7	PK	131	1.0	POS; RB 1 MHz; VB: 3 MHz



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

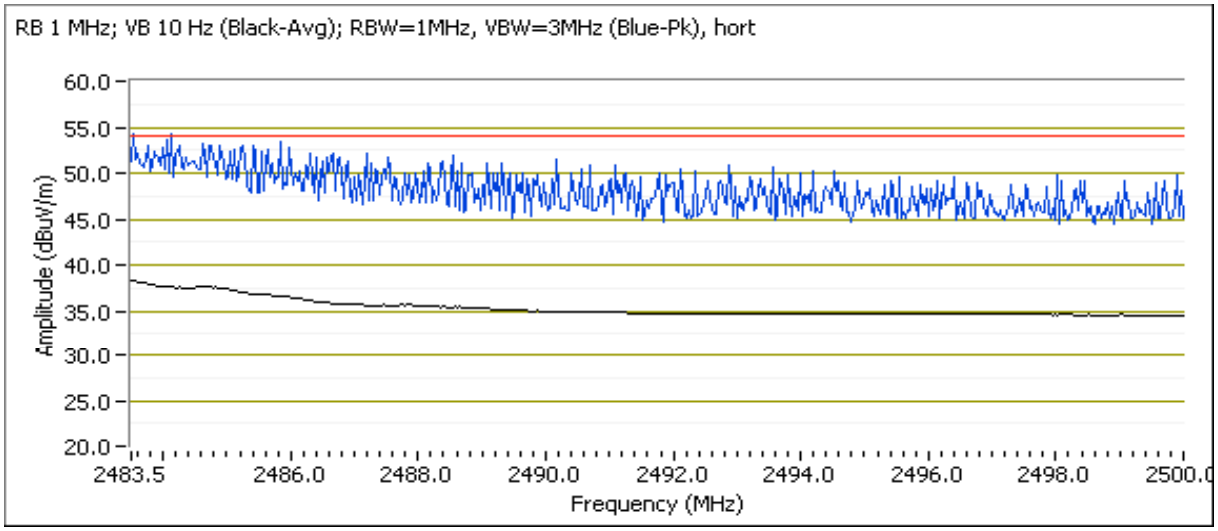
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Chain A	16.5	16.6	26.5

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	38.3	H	54.0	-15.7	AVG	322	1.0	POS; RB 1 MHz; VB: 10 Hz
2484.620	52.1	H	74.0	-21.9	PK	322	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	38.2	V	54.0	-15.8	AVG	92	2.0	POS; RB 1 MHz; VB: 10 Hz
2485.020	52.4	V	74.0	-21.6	PK	92	2.0	POS; RB 1 MHz; VB: 3 MHz



Run # 2, Band Edge Field Strength - 802.11g, Chain A

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

Test Engineer: Mark Hill Config Change: none

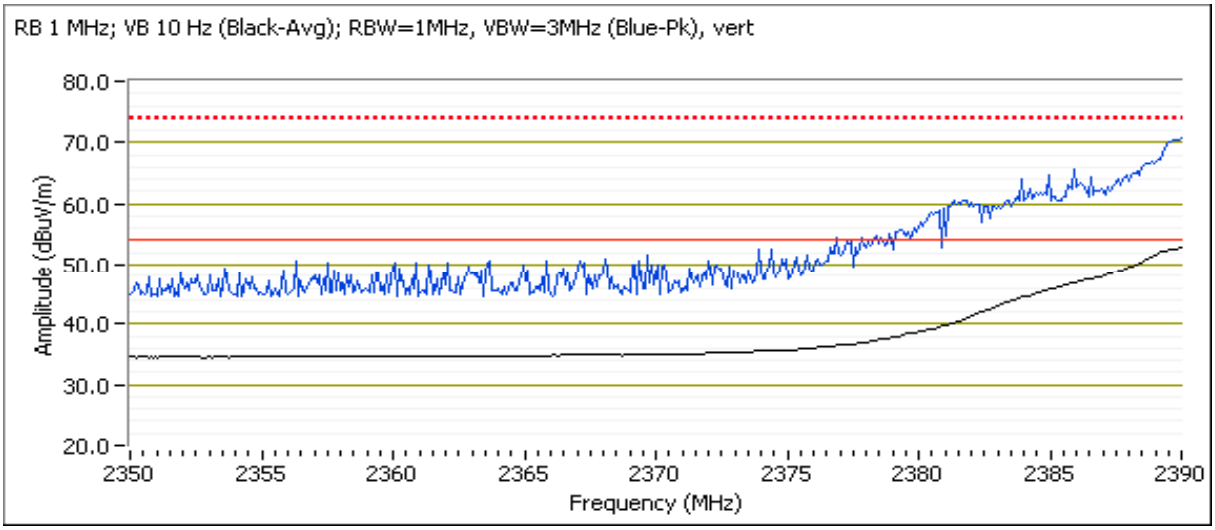
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	14.5	14.4	29.5

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	53.5	V	54.0	-0.5	AVG	73	1.0	POS; RB 1 MHz; VB: 10 Hz, s29.5
2389.440	69.0	V	74.0	-5.0	PK	73	1.0	POS; RB 1 MHz; VB: 3 MHz, s29.5
2390.000	50.6	H	54.0	-3.4	AVG	312	1.5	POS; RB 1 MHz; VB: 10 Hz, s29.5
2390.000	64.0	H	74.0	-10.0	PK	312	1.5	POS; RB 1 MHz; VB: 3 MHz,s29.5



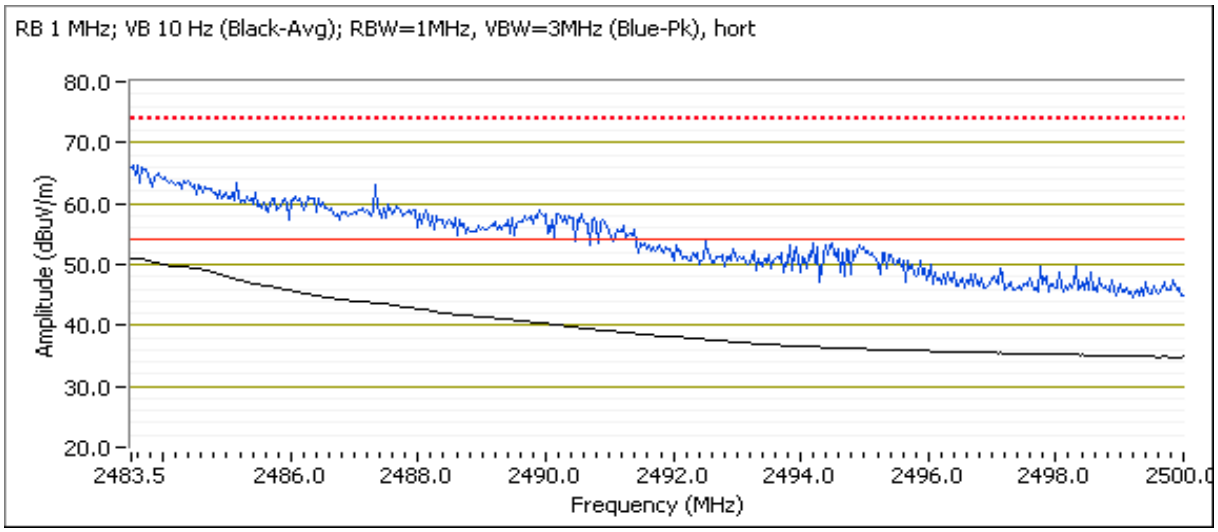
Run # 2b, EUT on Channel #11 2462MHz - 802.11g, Chain A

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	14.0	14.3	29.5

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	51.1	H	54.0	-2.9	AVG	320	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.500	66.2	H	74.0	-7.8	PK	320	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	50.8	V	54.0	-3.2	AVG	87	1.8	POS; RB 1 MHz; VB: 10 Hz
2483.930	64.4	V	74.0	-9.6	PK	87	1.8	POS; RB 1 MHz; VB: 3 MHz

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A



Run # 3, Band Edge Field Strength - 802.11n20, Chain A

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

Test Engineer: Mark Hill Config Change: none

Run # 3a, EUT on Channel #1 2412MHz - 802.11n20, Chain A

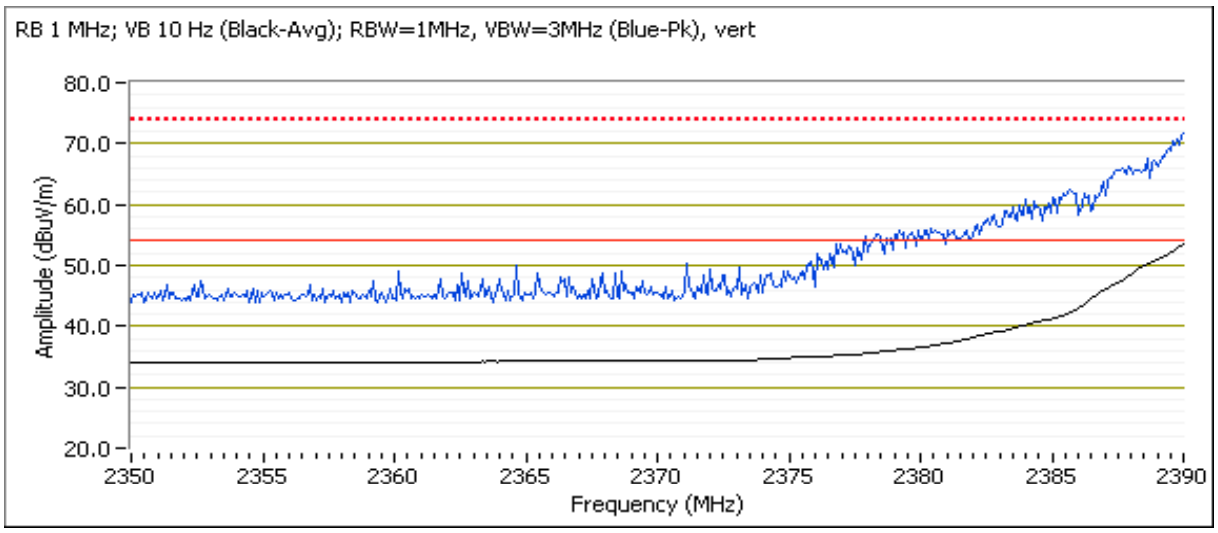
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	13.5	13.1	28.0

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	53.5	V	54.0	-0.5	AVG	76	1.8	POS; RB 1 MHz; VB: 10 Hz

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

2389.520	67.5	V	74.0	-6.5	PK	76	1.8	POS; RB 1 MHz; VB: 3 MHz
2390.000	51.4	H	54.0	-2.6	AVG	320	1.8	POS; RB 1 MHz; VB: 10 Hz
2389.680	67.5	H	74.0	-6.5	PK	320	1.8	POS; RB 1 MHz; VB: 3 MHz



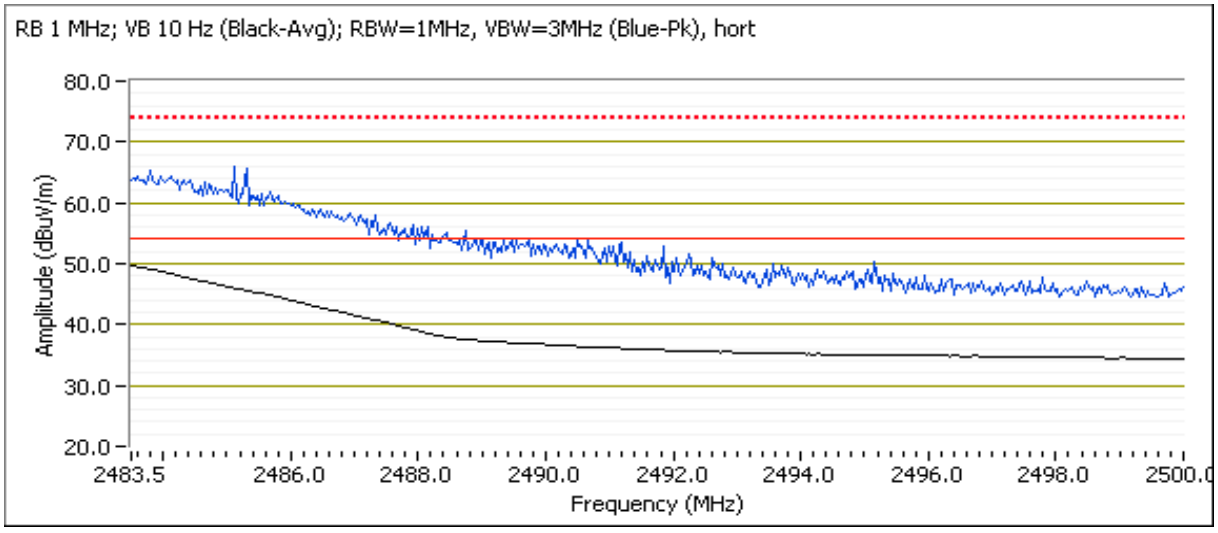
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 3b, EUT on Channel #11 2462MHz - 802.11n20, Chain A

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	12.5	12.6	27.5

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	
2483.570	49.6	H	54.0	-4.4	AVG	321	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.900	64.0	H	74.0	-10.0	PK	321	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.530	49.1	V	54.0	-4.9	AVG	93	1.8	POS; RB 1 MHz; VB: 10 Hz
2484.060	63.6	V	74.0	-10.4	PK	93	1.8	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 4, Band Edge Field Strength - 802.11n40, Chain A

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

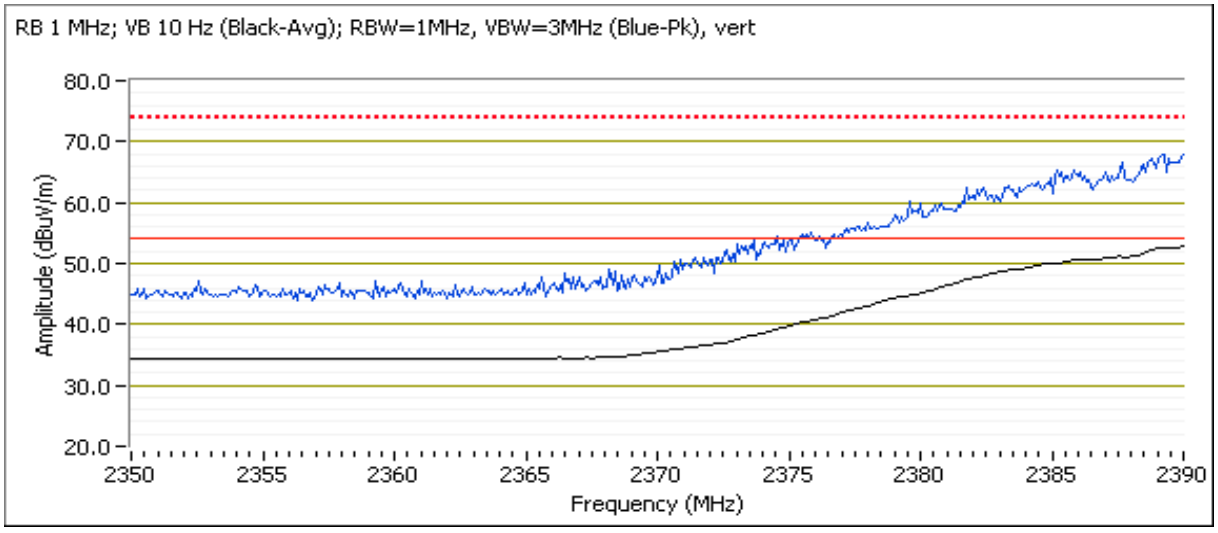
Test Engineer: Mark Hill Config Change: none

Run # 4a, EUT on Channel #3 2422MHz - 802.11n40, Chain A

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	10.5	10.3	24.0

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	52.8	V	54.0	-1.2	AVG	72	1.0	POS; RB 1 MHz; VB: 10 Hz
2388.880	66.7	V	74.0	-7.3	PK	72	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	51.3	H	54.0	-2.7	AVG	312	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.680	65.5	H	74.0	-8.5	PK	312	1.0	POS; RB 1 MHz; VB: 3 MHz



Run # 4b, EUT on Channel #9 2452MHz - 802.11n40, Chain A

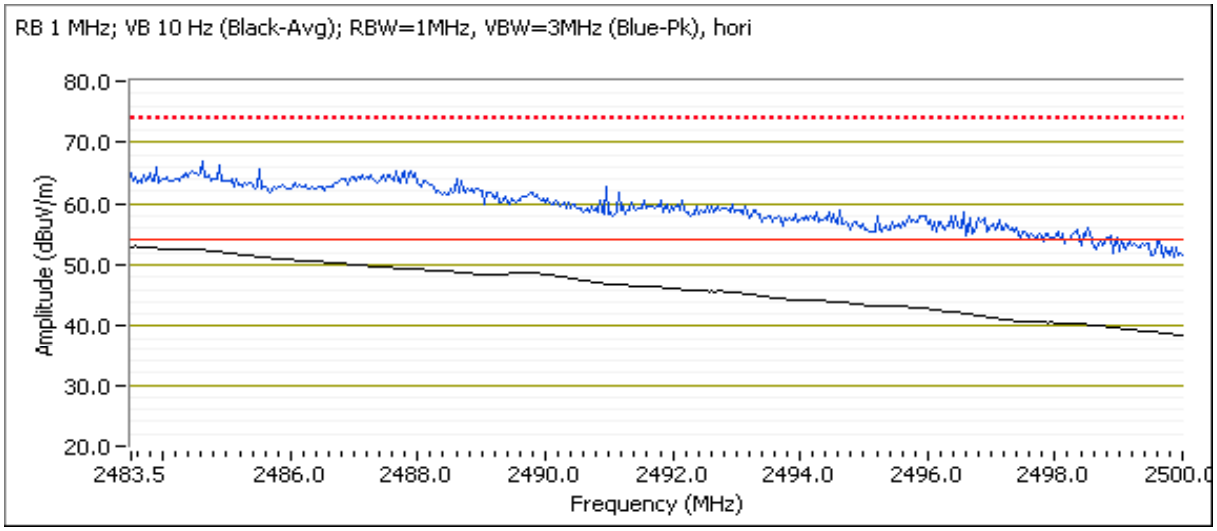
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Chain A	10.0	11.0	25.0

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	53.0	H	54.0	-1.0	AVG	322	1.0	POS; RB 1 MHz; VB: 10 Hz
2487.530	64.0	H	74.0	-10.0	PK	322	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.600	52.4	V	54.0	-1.6	AVG	92	1.8	POS; RB 1 MHz; VB: 10 Hz
2486.940	63.6	V	74.0	-10.4	PK	92	1.8	POS; RB 1 MHz; VB: 3 MHz



Run # 5, Band Edge Field Strength - 802.11n20, Chain A

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

Test Engineer: Mark Hill Config Change: none

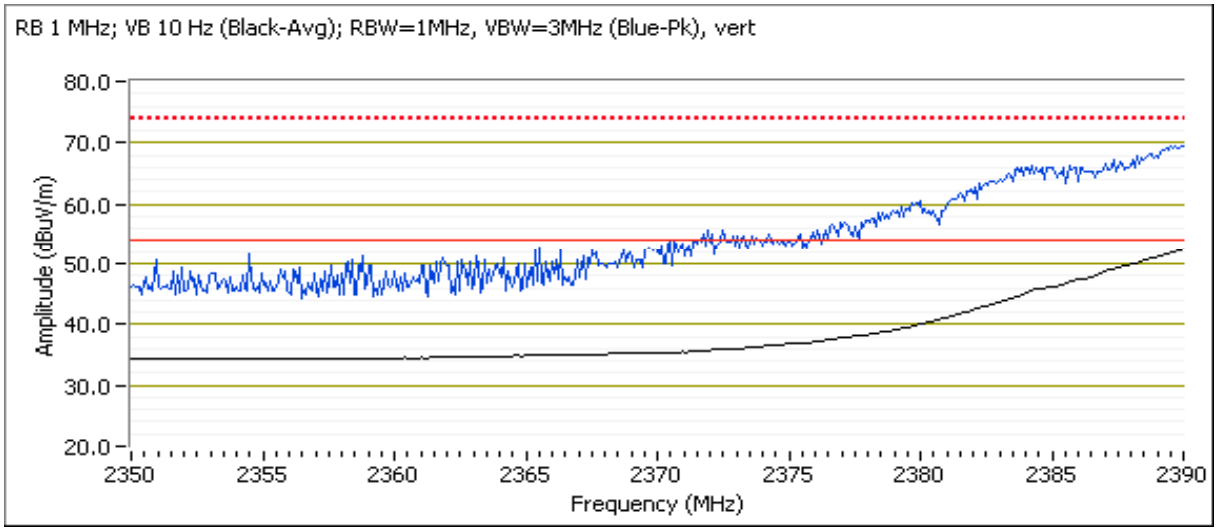
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 5a, EUT on Channel #2 2417MHz - 802.11n20, Chain A

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	15.6	31.5

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	52.4	V	54.0	-1.6	AVG	75	1.9	POS; RB 1 MHz; VB: 10 Hz
2389.200	66.0	V	74.0	-8.0	PK	75	1.9	POS; RB 1 MHz; VB: 3 MHz
2390.000	51.2	H	54.0	-2.8	AVG	312	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.040	66.0	H	74.0	-8.0	PK	312	1.0	POS; RB 1 MHz; VB: 3 MHz



Run # 5b, EUT on Channel #10 2457MHz - 802.11n20, Chain A

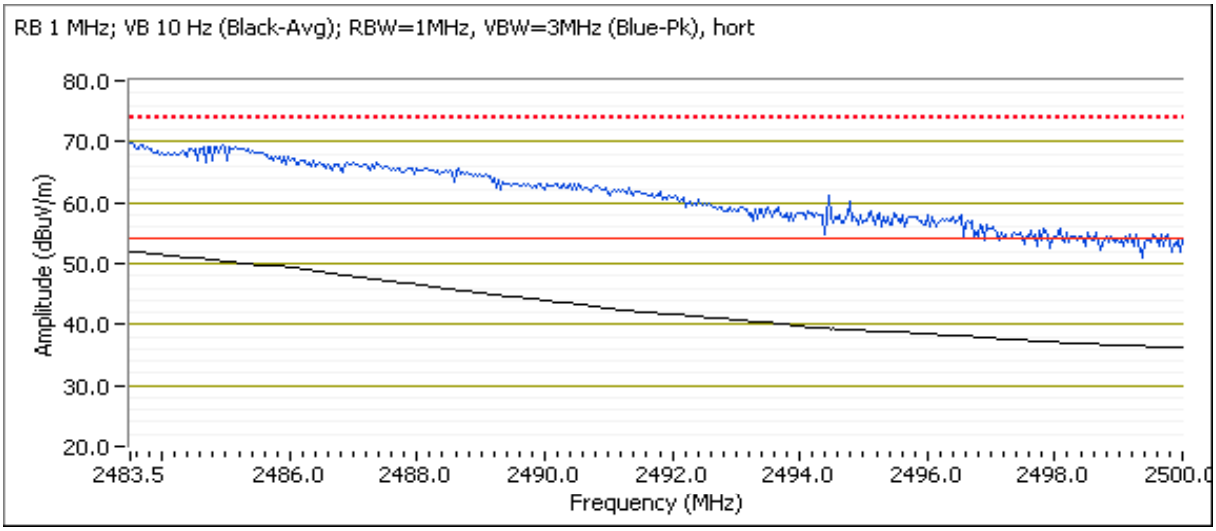
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.2	32.5

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247	Detector	Azimuth	Height	Comments

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	53.3	H	54.0	-0.7	AVG	360	1.3	POS; RB 1 MHz; VB: 10 Hz
2485.650	68.6	H	74.0	-5.4	PK	360	1.3	POS; RB 1 MHz; VB: 3 MHz
2483.530	51.8	V	54.0	-2.2	AVG	86	1.8	POS; RB 1 MHz; VB: 10 Hz
2484.360	68.6	V	74.0	-5.4	PK	86	1.8	POS; RB 1 MHz; VB: 3 MHz



Run # 6, Band Edge Field Strength - 802.11n40, Chain A

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

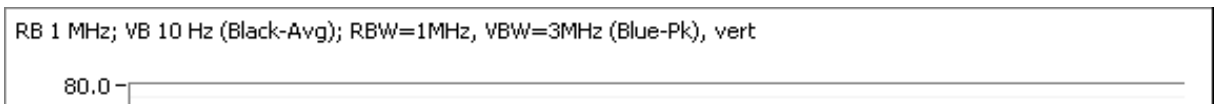
Test Engineer: Mark Hill Config Change: none

Run # 6a, EUT on Channel #4 2427MHz - 802.11n40, Chain A

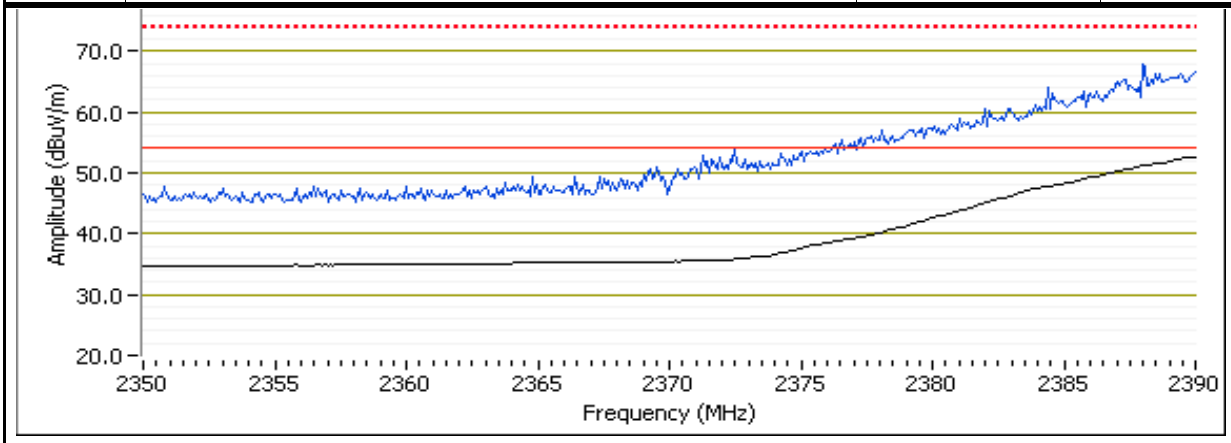
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	11.5	11.3	25.5

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	52.8	V	54.0	-1.2	AVG	91	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.920	63.4	V	74.0	-10.6	PK	91	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	52.6	H	54.0	-1.4	AVG	316	1.1	POS; RB 1 MHz; VB: 10 Hz
2389.440	65.9	H	74.0	-8.1	PK	316	1.1	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

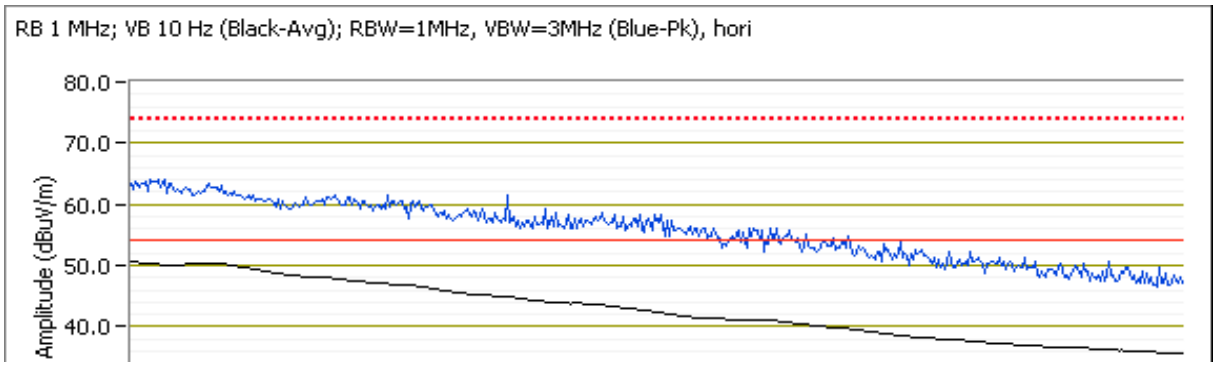


Run # 6b, EUT on Channel #8 2447MHz - 802.11n40, Chain A

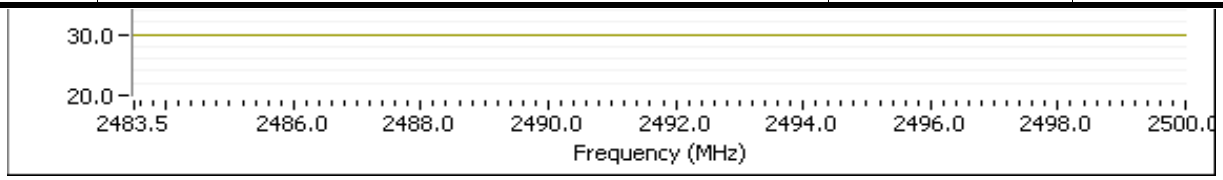
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	11.0	11.3	25.5

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	50.6	H	54.0	-3.4	AVG	344	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.530	62.3	H	74.0	-11.7	PK	344	1.0	POS; RB 1 MHz; VB: 3 MHz
2484.720	50.0	V	54.0	-4.0	AVG	90	1.8	POS; RB 1 MHz; VB: 10 Hz
2484.030	62.8	V	74.0	-11.2	PK	90	1.8	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, 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: 20 °C
Rel. Humidity: 47 %

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

MAC Address: 001500B50405 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run # 1	802.11b Chain B	#1 2412MHz	16.0	16.1	Restricted Band Edge at 2390 MHz	15.209	49.6 dBµV/m @ 2389.4 MHz (-4.4 dB)
		#11 2462MHz	16.0	16.0	Restricted Band Edge at 2483.5 MHz	15.209	52.1 dBµV/m @ 2483.5 MHz (-1.9 dB)
Run # 2	802.11g Chain B	#1 2412MHz	13.5	13.0	Restricted Band Edge at 2390 MHz	15.209	53.3 dBµV/m @ 2390.0 MHz (-0.7 dB)
		#11 2462MHz	13.5	13.1	Restricted Band Edge at 2483.5 MHz	15.209	53.2 dBµV/m @ 2483.5 MHz (-0.8 dB)
Run # 3	802.11n20 Chain B	#1 2412MHz	12.5	12.0	Restricted Band Edge at 2390 MHz	15.209	53.4 dBµV/m @ 2390.0 MHz (-0.6 dB)
		#11 2462MHz	12.5	11.7	Restricted Band Edge at 2483.5 MHz	15.209	52.8 dBµV/m @ 2483.6 MHz (-1.2 dB)

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run # 4	802.11n40 Chain B	#3 2422MHz	9.5	9.6	Restricted Band Edge at 2390 MHz	15.209	53.4 dBµV/m @ 2390.0 MHz (-0.6 dB)
		#4 2427MHz	12.5	10.0	Restricted Band Edge at 2390 MHz	15.209	53.3 dBµV/m @ 2390.0 MHz (-0.7 dB)
		#8 2447MHz	12.5	10.8	Restricted Band Edge at 2483.5 MHz	15.209	53.6 dBµV/m @ 2484.9 MHz (-0.4 dB)
		#9 2452MHz	9.0	8.5	Restricted Band Edge at 2483.5 MHz	15.209	53.0 dBµV/m @ 2483.5 MHz (-1.0 dB)

If power is more than 3dB below center channel target to pass on lowest and/or highest channel, repeat measurements at target power for next lowest or highest channel

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

802.11b mode tests run with data rate of 5.5Mb/s
Chain B = Chain B in DRTU = port 1 on the EUT
Power level measured at the end of the white pigtail cable, no loss factor applied

Note - the target and measured power are average powers (measured with average power sensor) and are used for reference purposes only. Power is set using " GAIN CONTROL" mode in the DRTU tool.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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

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

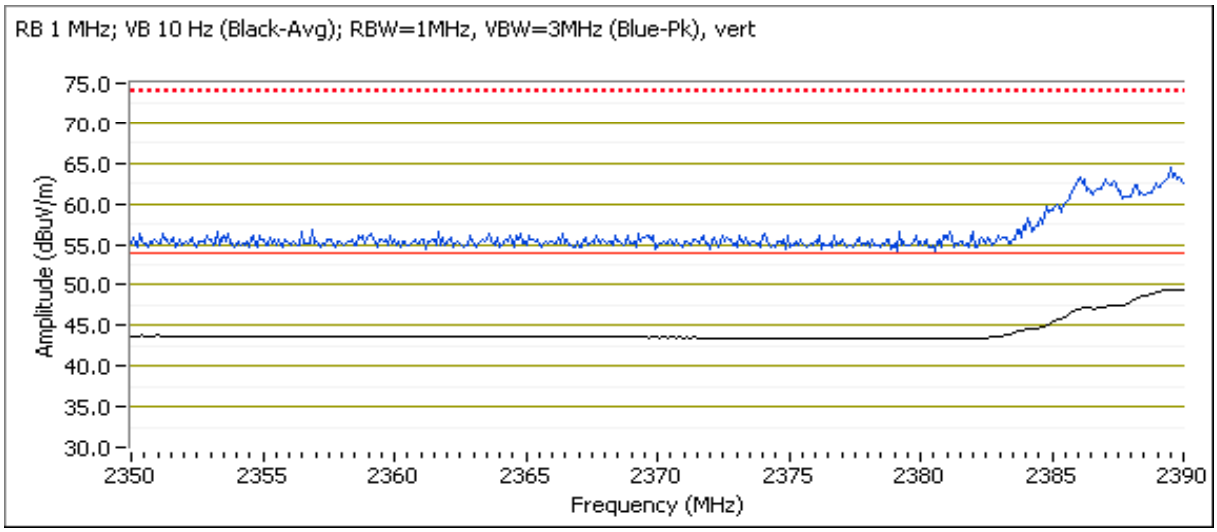
Test Engineer: Joseph Cadigal Config Change: none

Run # 1a, EUT on Channel #1 2412MHz - 802.11b, Chain B

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	16.0	16.1	30.5

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	
2389.360	49.6	V	54.0	-4.4	AVG	81	1.0	POS; RB 1 MHz; VB: 10 Hz
2386.470	61.7	V	74.0	-12.3	PK	81	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	44.8	H	54.0	-9.2	AVG	340	1.0	POS; RB 1 MHz; VB: 10 Hz
2387.350	57.3	H	74.0	-16.7	PK	340	1.0	POS; RB 1 MHz; VB: 3 MHz



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

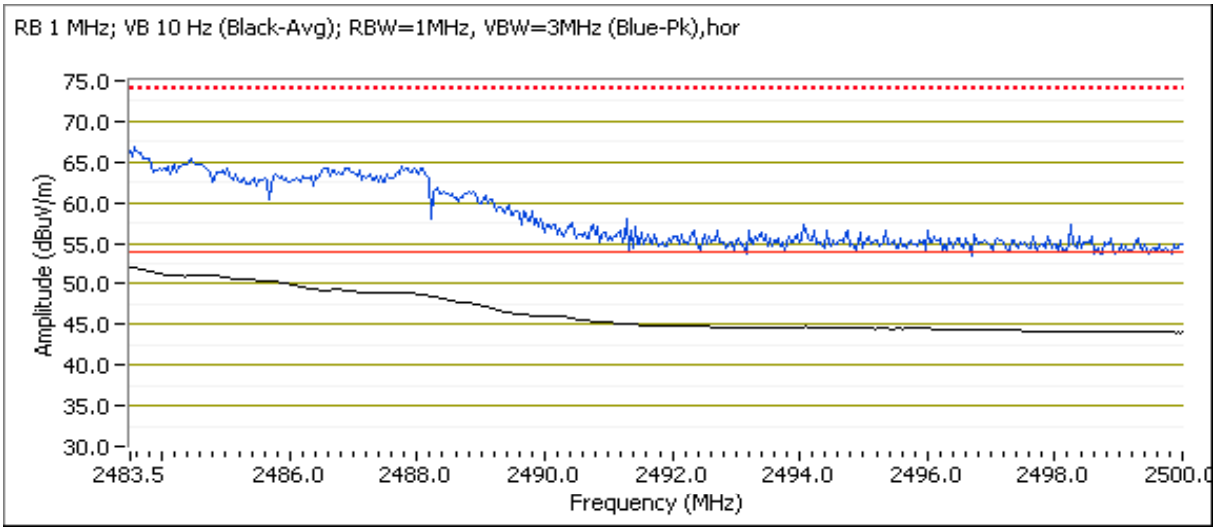
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	16.0	16.0	30.5

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247	Detector	Azimuth	Height	Comments

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	52.1	H	54.0	-1.9	AVG	360	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.670	66.2	H	74.0	-7.8	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	47.0	V	54.0	-7.0	AVG	76	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.800	60.4	V	74.0	-13.6	PK	76	1.0	POS; RB 1 MHz; VB: 3 MHz



Run # 2, Band Edge Field Strength - 802.11g, Chain B

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

Test Engineer: Joseph Cadigal Config Change: none

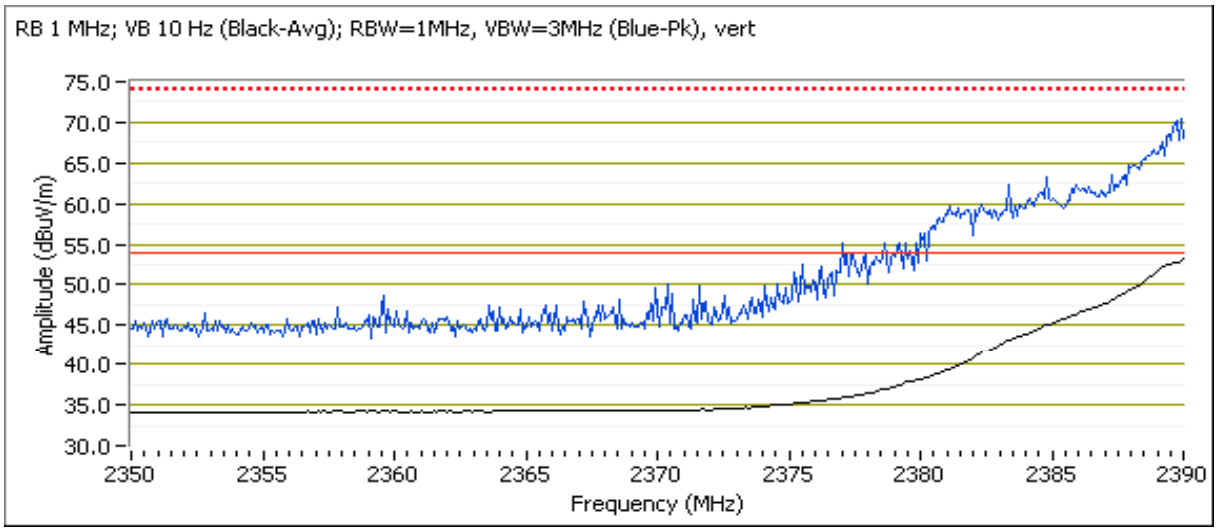
Run # 2a, EUT on Channel #1 2412MHz - 802.11g, Chain B

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	13.5	13.0	31.0

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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	V	54.0	-0.7	AVG	83	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.680	69.9	V	74.0	-4.1	PK	83	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	50.4	H	54.0	-3.6	AVG	339	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.920	67.5	H	74.0	-6.5	PK	339	1.0	POS; RB 1 MHz; VB: 3 MHz



Run # 2b, EUT on Channel #11 2462MHz - 802.11g, Chain B

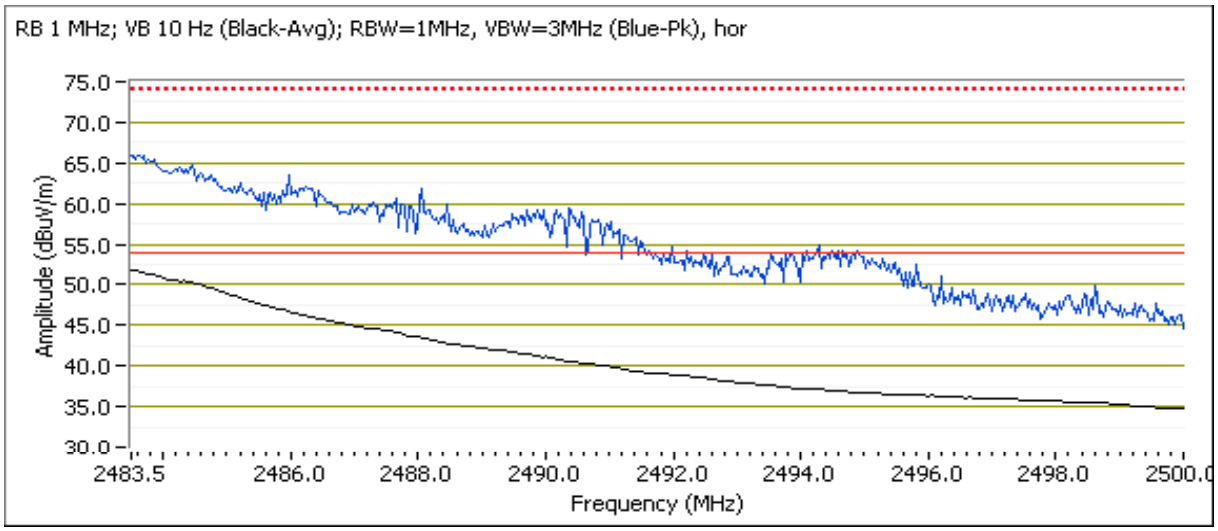
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	13.5	13.1	30.0

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247	Detector	Azimuth	Height	Comments

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	53.2	H	54.0	-0.8	AVG	360	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.600	66.7	H	74.0	-7.3	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	48.6	V	54.0	-5.4	AVG	88	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.530	62.9	V	74.0	-11.1	PK	88	1.0	POS; RB 1 MHz; VB: 3 MHz



Run # 3, Band Edge Field Strength - 802.11n20, Chain B

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

Test Engineer: Joseph Cadigal Config Change: none

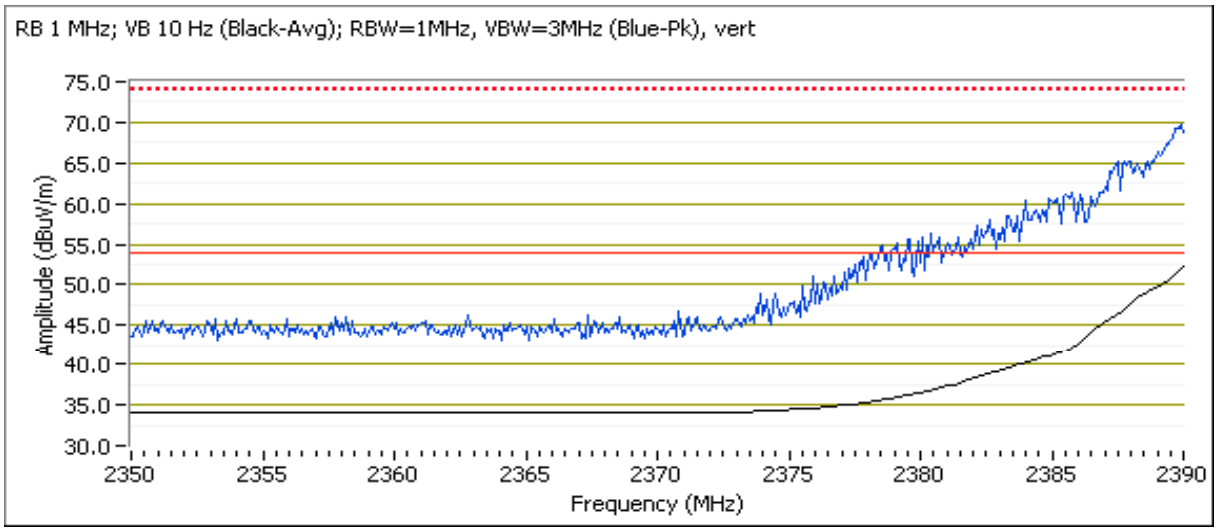
Run # 3a, EUT on Channel #1 2412MHz - 802.11n20, Chain B

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	12.5	12.0	30.0

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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	53.4	V	54.0	-0.6	AVG	82	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.600	68.3	V	74.0	-5.7	PK	82	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	52.2	H	54.0	-1.8	AVG	339	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.520	66.6	H	74.0	-7.4	PK	339	1.0	POS; RB 1 MHz; VB: 3 MHz



Run # 3b, EUT on Channel #11 2462MHz - 802.11n20, Chain B

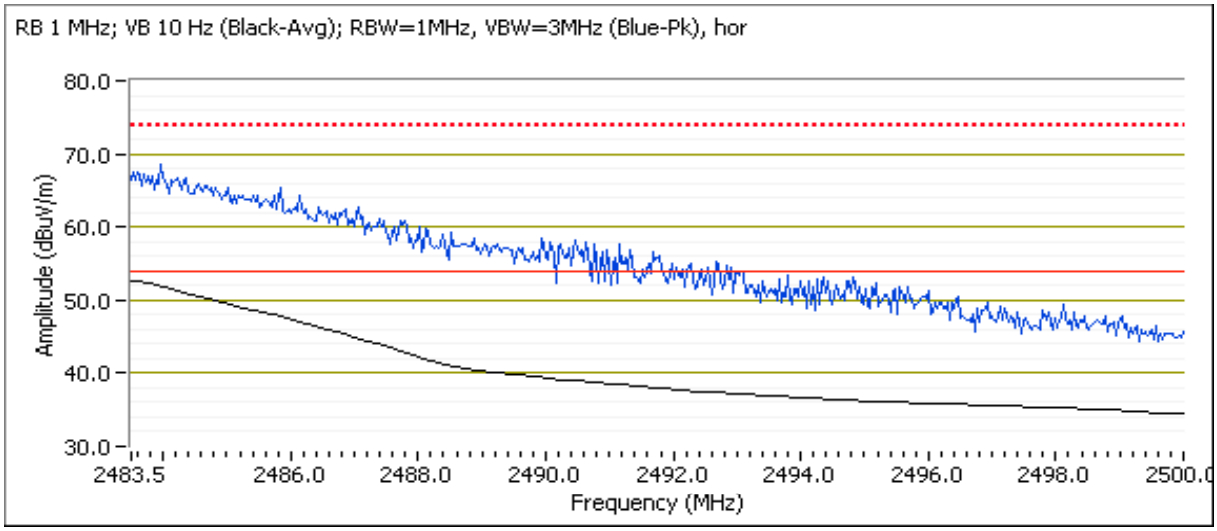
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	12.5	11.7	28.5

2483.5 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.247	Detector	Azimuth	Height	Comments

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.570	52.8	H	54.0	-1.2	AVG	360	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.670	67.3	H	74.0	-6.7	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	48.4	V	54.0	-5.6	AVG	81	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.630	62.5	V	74.0	-11.5	PK	81	1.0	POS; RB 1 MHz; VB: 3 MHz



Run # 4, Band Edge Field Strength - 802.11n40, Chain B

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

Test Engineer: Joseph Cadigal Config Change: none

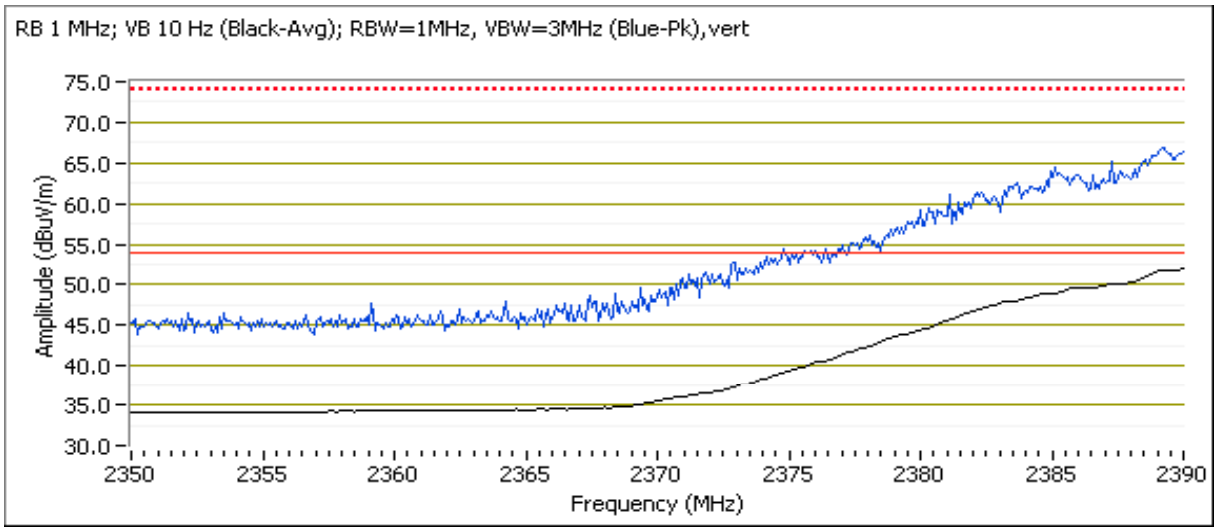
Run # 4a, EUT on Channel #3 2422MHz - 802.11n40, Chain B

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	9.5	9.6	26.0

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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	53.4	V	54.0	-0.6	AVG	92	1.0	POS; RB 1 MHz; VB: 10 Hz
2388.800	65.3	V	74.0	-8.7	PK	92	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	47.6	H	54.0	-6.4	AVG	333	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.760	60.6	H	74.0	-13.4	PK	333	1.0	POS; RB 1 MHz; VB: 3 MHz

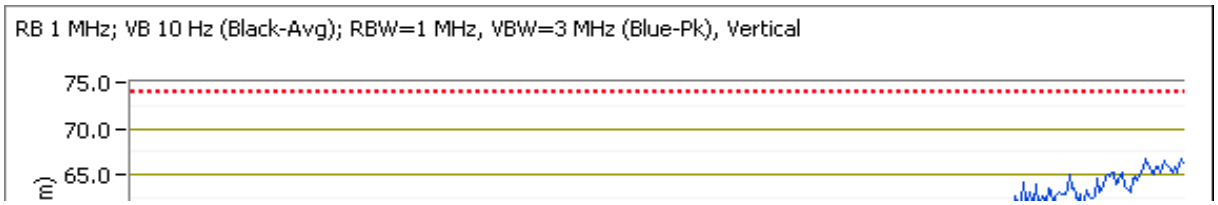


Run # 4a, EUT on Channel #4 2427MHz - 802.11n40, Chain B

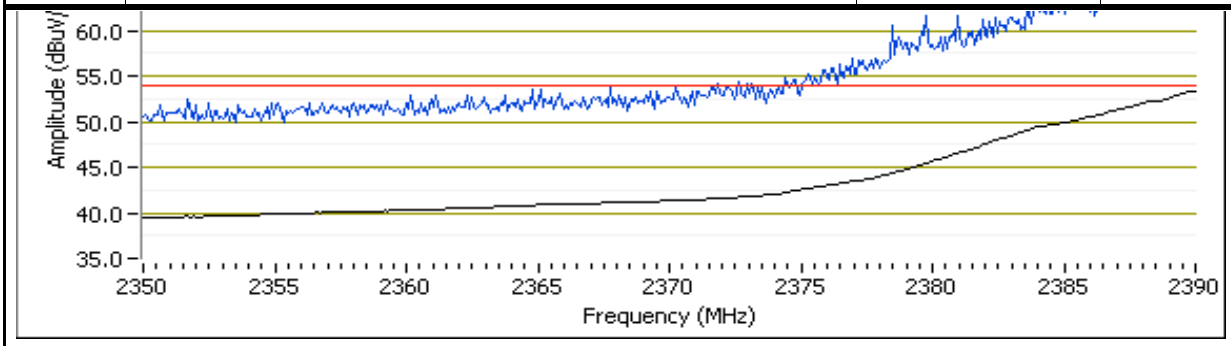
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	12.5	10.0	25.5

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	V	54.0	-0.7	AVG	32	1.3	POS; RB 1 MHz; VB: 10 Hz
2390.000	64.6	V	74.0	-9.4	PK	32	1.3	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

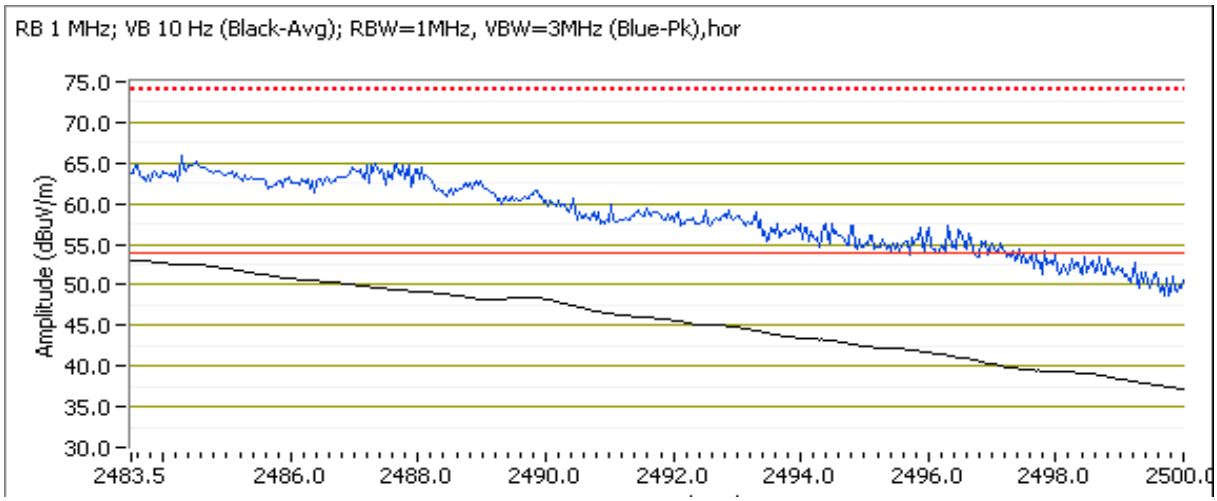


Run # 4b, EUT on Channel #9 2452MHz - 802.11n40, Chain B

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	9.0	8.5	25.0

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	53.0	H	54.0	-1.0	AVG	360	1.1	POS; RB 1 MHz; VB: 10 Hz
2484.790	64.0	H	74.0	-10.0	PK	360	1.1	POS; RB 1 MHz; VB: 3 MHz
2483.530	44.3	H	54.0	-9.7	AVG	71	1.0	POS; RB 1 MHz; VB: 10 Hz
2484.000	55.3	H	74.0	-18.7	PK	71	1.0	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

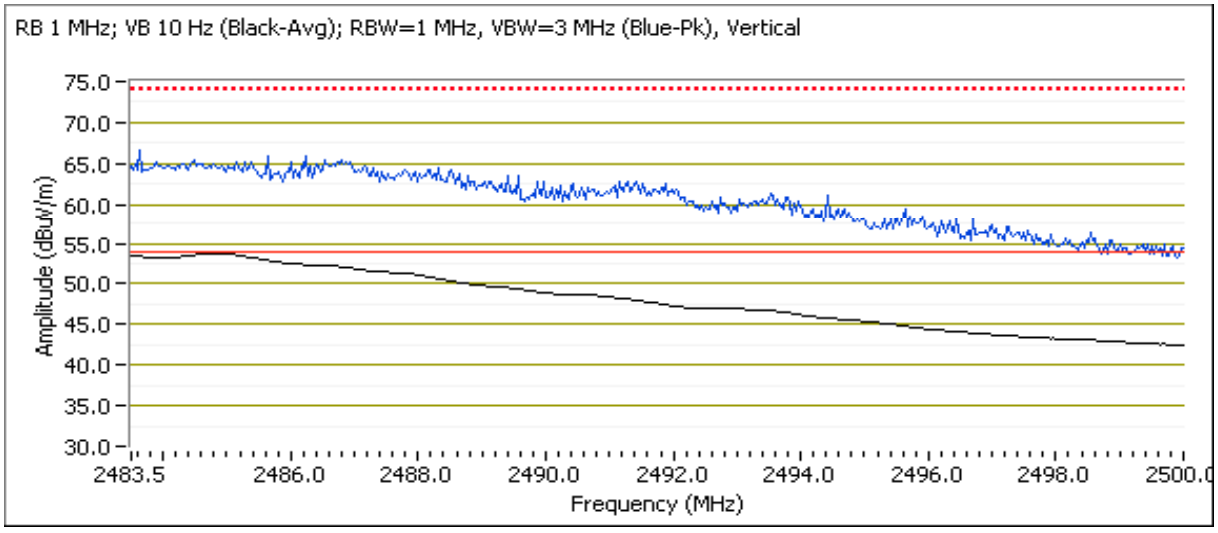
Frequency (MHz)

Run # 4b, EUT on Channel #8 2447MHz - 802.11n40, Chain B

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	12.5	10.8	27.5

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	
2484.860	53.6	V	54.0	-0.4	AVG	40	1.2	POS; RB 1 MHz; VB: 10 Hz
2483.960	65.8	V	74.0	-8.2	PK	40	1.2	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, 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: 20.6 °C
Rel. Humidity: 39.7 %

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

MAC Address: 001500B50405 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run # 1	802.11n20 Chain A+B	#1 2412MHz	A:12.5 B:12.5	A:10.7 B:10.3	Restricted Band Edge at 2390 MHz	15.209	52.3 dBµV/m @ 2390.0 MHz (-1.7 dB)
		#11 2462MHz	A:11.5 B:11.5	A:11.3 B:11.1	Restricted Band Edge at 2483.5 MHz		52.5 dBµV/m @ 2483.5 MHz (-1.5 dB)

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run # 2	802.11n40 Chain A+B	#3 2422MHz	A:7.5 B:7.5	A: 7.6 B: 7.4	Restricted Band Edge at 2390 MHz	15.209	52.2 dBµV/m @ 2389.8 MHz (-1.8 dB)
		#4 2427MHz	A:9.5 B:9.5	A: 8.9 B: 8.7			52.6 dBµV/m @ 2389.7 MHz (-1.4 dB)
		#5 2432MHz	A:11.5 B:11.5	A: 10.3 B: 10.6			53.0 dBµV/m @ 2390.0 MHz (-1.0 dB)
		#7 2442MHz	A:10.5 B:10.5	A: 10.1 B: 10.1	Restricted Band Edge at 2483.5 MHz		53.0 dBµV/m @ 2483.5 MHz (-1.0 dB)
		#8 2447MHz	A:9.0 B:9.0	A: 8.2 B: 8.6			52.4 dBµV/m @ 2483.5 MHz (-1.6 dB)
		#9 2452MHz	A:8.0 B:8.0	A: 8.1 B: 7.9			50.7 dBµV/m @ 2484.3 MHz (-3.3 dB)

If power is more than 3dB below center channel target to pass on lowest and/or highest channel, repeat measurements at target power for next lowest or highest channel

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

Chain A = Chain A in DRTU = port 2 on the EUT
Chain B = Chain B in DRTU = port 1 on the EUT
Power level measured at the end of the white pigtail cable, no loss factor applied

Note - the target and measured power are average powers (measured with average power sensor) and are used for reference purposes only. Power is set using " GAIN CONTROL" mode in the DRTU tool.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 1, Band Edge Field Strength - 802.11n20, Chain A+B

Date of Test: 12/6/2012 Test Location: FT Chamber#4

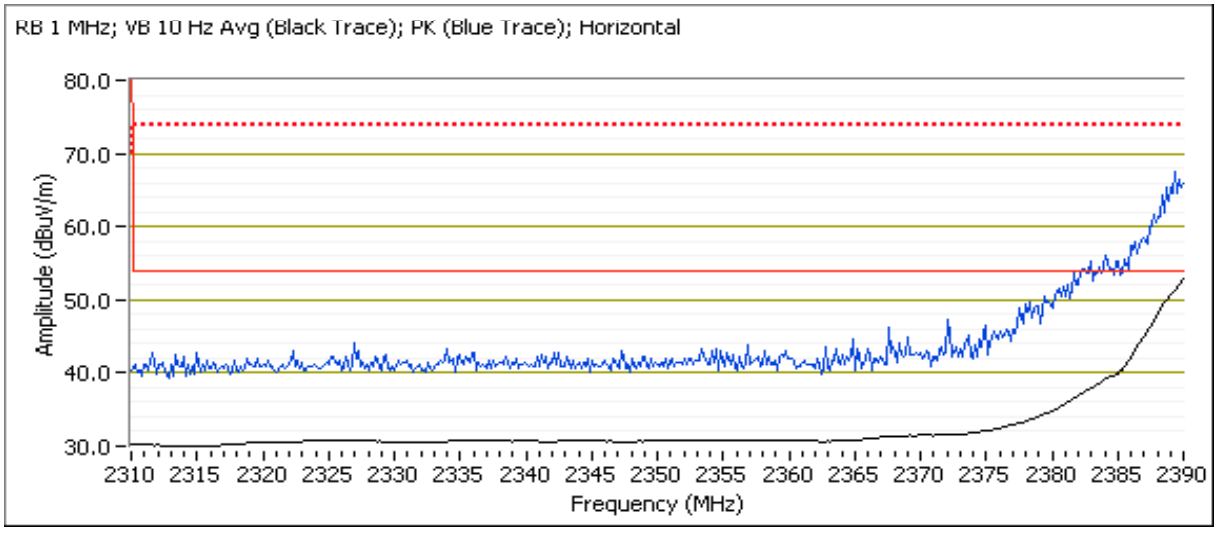
Test Engineer: J.Caizzi / R. Varelas Config Change: none

Run # 1a, EUT on Channel #1 2412MHz

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	A	B	C	Total	A	B	C	Total	
	12.5	12.5		15.5	10.7	10.3		13.5	28.0, 31.0

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	52.3	H	54.0	-1.7	AVG	34	1.0	POS; RB 1 MHz; VB: 10 Hz
2389.240	66.2	H	74.0	-7.8	PK	34	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	51.1	V	54.0	-2.9	AVG	78	1.0	POS; RB 1 MHz; VB: 10 Hz
2388.880	66.5	V	74.0	-7.5	PK	78	1.0	POS; RB 1 MHz; VB: 3 MHz



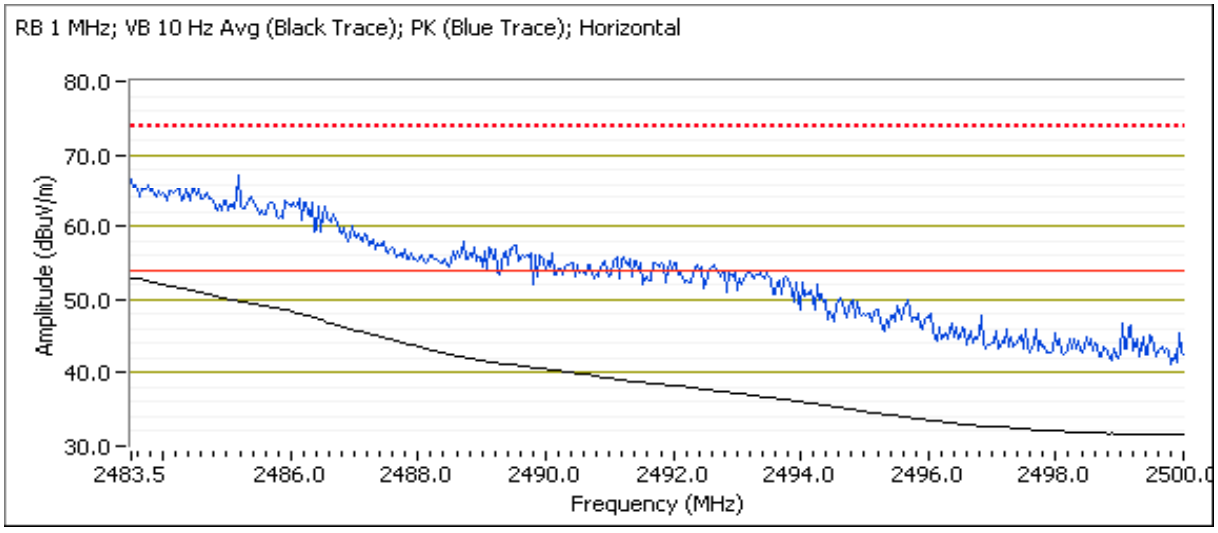
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 1b, EUT on Channel #11 2462MHz

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	1	2	3	Total	1	2	3	Total	
	11.5	11.5		14.5	11.3	11.1		14.2	29.0, 32.0

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	
2483.540	52.5	H	54.0	-1.5	AVG	191	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.520	65.0	H	74.0	-9.0	PK	191	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	50.1	V	54.0	-3.9	AVG	69	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.730	64.2	V	74.0	-9.8	PK	69	1.0	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 2, Band Edge Field Strength - 802.11n40, Chain A+B

Date of Test: 12/7/2012 Test Location: FT Chamber#5

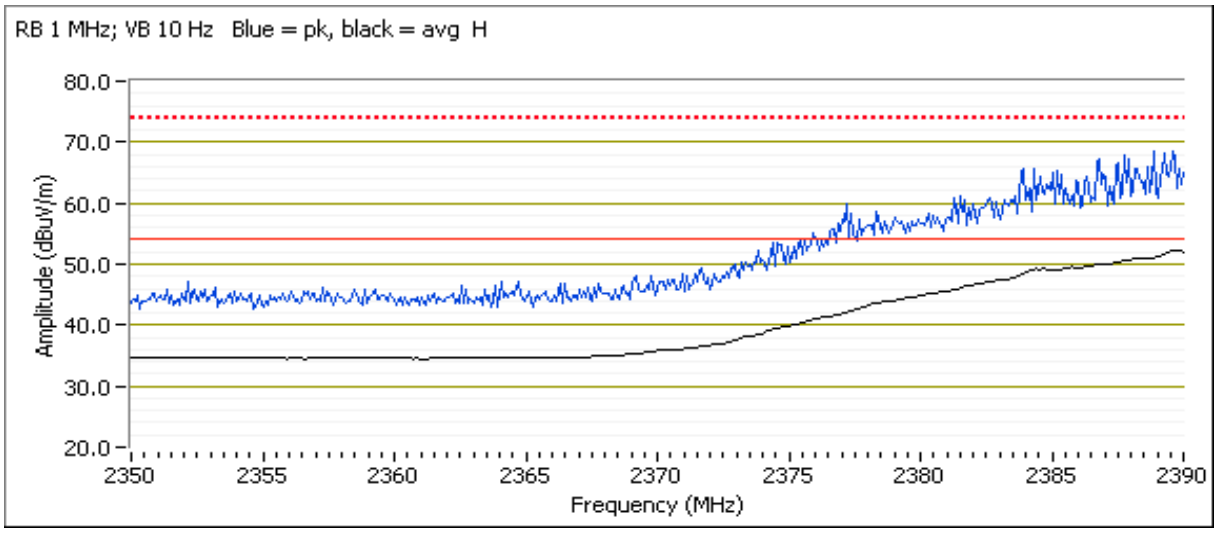
Test Engineer: John Caizzi Config Change: none

Run # 2a, EUT on Channel #3 2422MHz

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	1	2	3	Total	1	2	3	Total	
	7.5	7.5		10.5	7.6	7.4		10.5	24.5, 26.5

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	
2389.760	52.2	H	54.0	-1.8	AVG	306	1.51	
2387.350	68.4	H	74.0	-5.6	PK	306	1.51	
2389.680	51.3	V	54.0	-2.7	AVG	22	1.59	
2389.440	66.8	V	74.0	-7.2	PK	22	1.59	



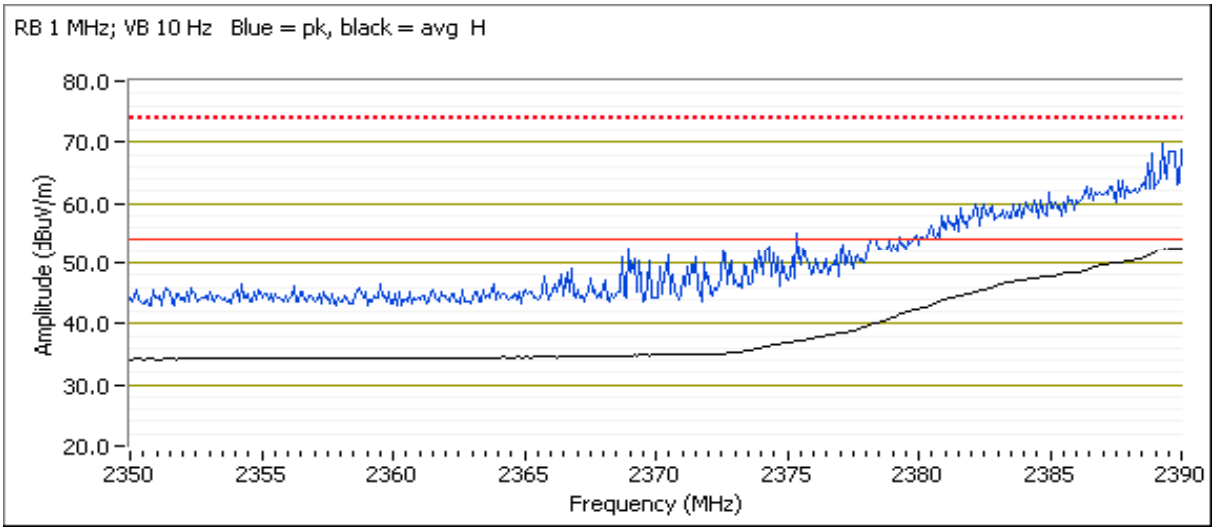
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 2b, EUT on Channel #4 2427MHz

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	1	2	3	Total	1	2	3	Total	
	9.5	9.5		12.5	8.9	8.7		11.8	25.5, 28.0

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	
2389.680	52.6	H	54.0	-1.4	AVG	6	1.65	
2388.880	69.6	H	74.0	-4.4	PK	6	1.65	



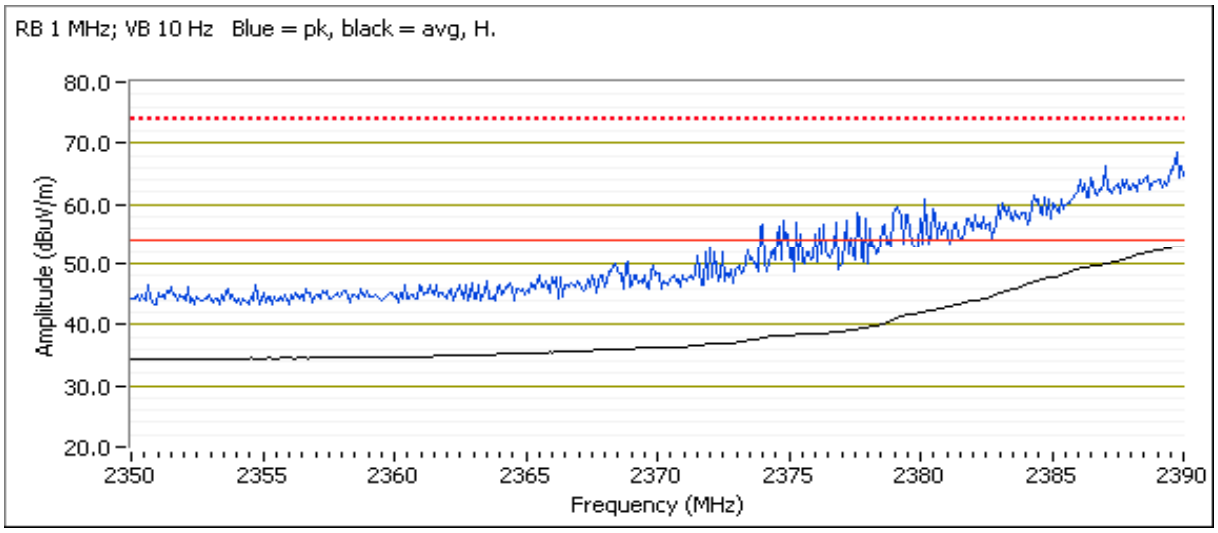
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 2c, EUT on Channel #5 2432MHz

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	1	2	3	Total	1	2	3	Total	
	11.5	11.5		14.5	10.3	10.6		13.5	27.0, 30.5

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	53.0	H	54.0	-1.0	AVG	0	1.66	27.0, 30.5
2388.400	65.4	H	74.0	-8.6	PK	0	1.66	27.0, 30.5



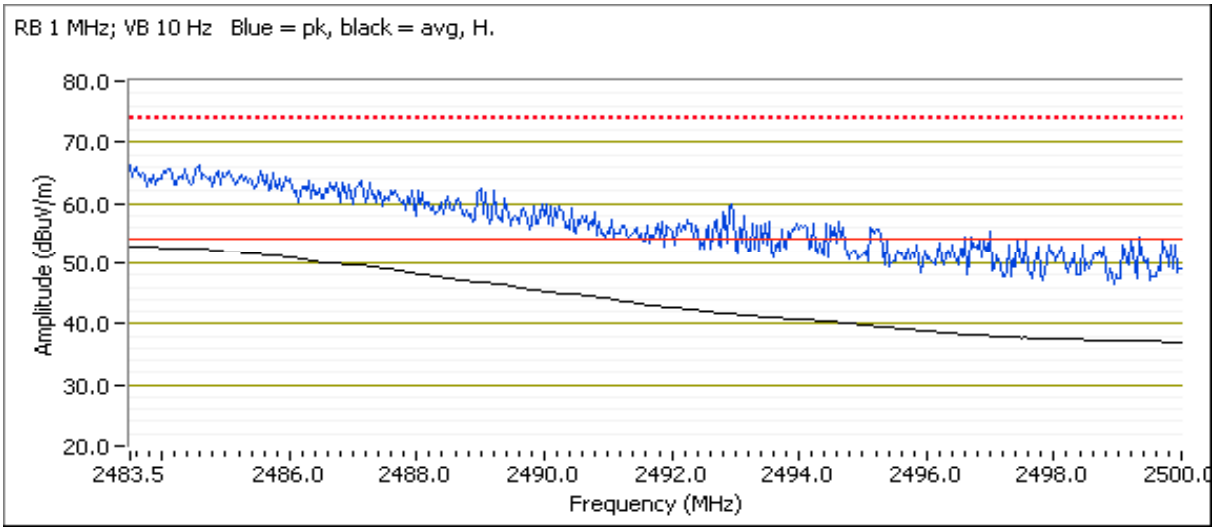
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 2d, EUT on Channel #7 2442MHz

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	1	2	3	Total	1	2	3	Total	
	10.5	10.5		13.5	10.1	10.1		13.1	27.5, 30

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	
2483.500	53.0	H	54.0	-1.0	AVG	343	1.57	27.5, 30.0
2484.430	67.0	H	74.0	-7.0	PK	343	1.57	27.5, 30.0



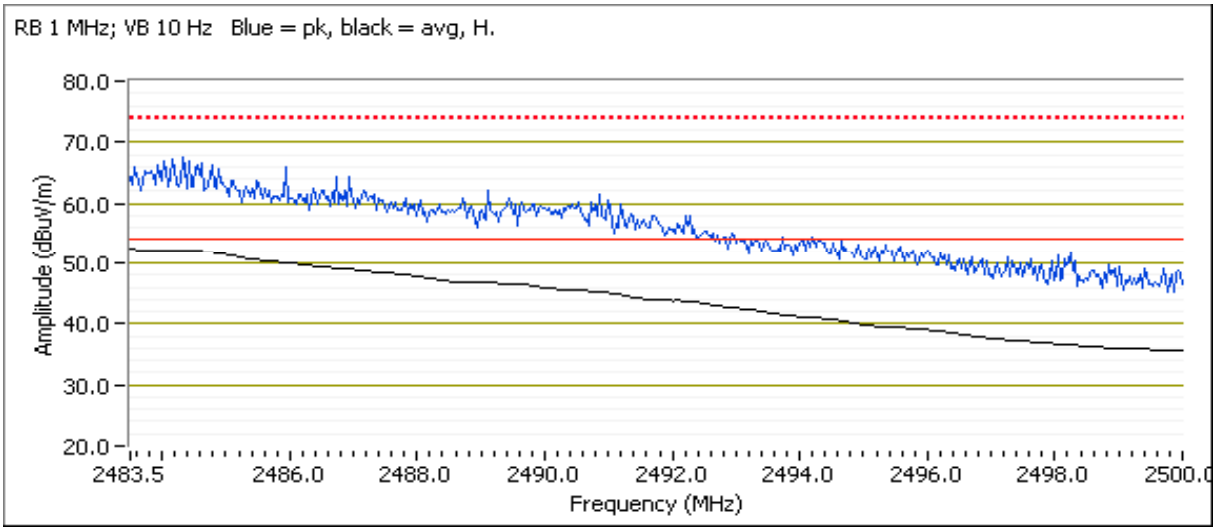
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 2e, EUT on Channel #8 2447MHz

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	1	2	3	Total	1	2	3	Total	
	9.0	9.0		12.0	8.2	8.6		11.4	25, 28

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	
2483.500	52.4	H	54.0	-1.6	AVG	30	1.60	25.0, 28.0
2484.430	67.7	H	74.0	-6.3	PK	30	1.60	25.0, 28.0



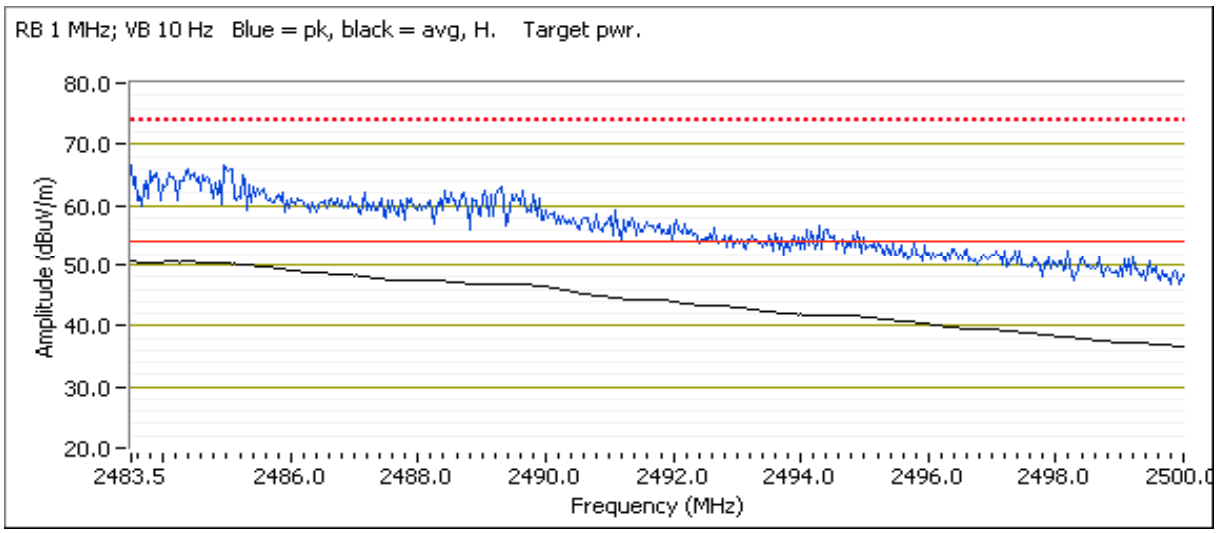
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 2f, EUT on Channel #9 2452MHz

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	1	2	3	Total	1	2	3	Total	
	8.0	8.0		11.0	8.1	7.9		11.0	25, 27

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	
2484.330	50.7	H	54.0	-3.3	AVG	326	1.64	
2485.020	67.1	H	74.0	-6.9	PK	326	1.64	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, 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.

Chain A = Chain A in DRTU = port 2 on the EUT

Ambient Conditions:

Temperature: 20-23 °C
Rel. Humidity: 30-40 %

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

MAC Address: 001500B50405 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run #1	802.11b Chain A	#1 2412MHz	16.5	16.5	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	48.8 dBµV/m @ 4818.7 MHz (-5.2 dB)
		#6 2437MHz	16.0	16.0			44.4 dBµV/m @ 4874.0 MHz (-9.6 dB)
		#11 2462MHz	16.5	16.6			52.6 dBµV/m @ 4923.9 MHz (-1.4 dB)
Run # 2	802.11b Chain B	#1 2412MHz	16.5	14.1	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	53.1 dBµV/m @ 4818.75 MHz (-0.9 dB)
		#6 2437MHz	15.5	11.9			53.8 dBµV/m @ 4879.2 MHz (-0.2 dB)
		#11 2462MHz	16.0	10.7			53.1 dBµV/m @ 4929.17 MHz (-0.9 dB)

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Scans on center channel in all three OFDM modes to determine the worst case mode. Note that for n20 and n40 mode the output power was set to 16.5dBm and 13.5dBm respectively per chain. The maximum power per chain in MIMO mode would be 13.5dBm, however as the single chain power could be 16.5dBm or 13.5dBm the scans were run at the higher single-chain power level with both chains active.							
Run # 3	802.11g Chain A	#6 2437MHz	16.5	16.7	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	50.2 dBµV/m @ 4874.4 MHz (-3.8 dB)
	802.11g Chain B	#6 2437MHz	16.5	12.5			53.0 dBµV/m @ 4874.3 MHz (-1.0 dB)
	802.11n20 Chain A+B	#6 2437MHz	A: 16.5 B: 16.5	A: 16.6 B: 12.3			53.4 dBµV/m @ 4872.97 MHz (-0.6 dB)
	802.11n40 Chain A+B	#6 2437MHz	A: 13.5 B: 12.5	A: 13.6 B: 12.9			50.2 dBµV/m @ 4874.7 MHz (-3.8 dB)
Top and bottom channels in worst case OFDM mode:							
Run # 4	Worst case OFDM	#3 2422MHz	13.5	13.6	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	52.1 dBµV/m @ 4824.3 MHz (-1.9 dB)
	802.11g Chain B	#6 2437MHz	13.5	12.0			53.4 dBµV/m @ 4926.1 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.

Note - the target and measured power are average powers (measured with average power sensor) and are used for reference purposes only. Power is set using " GAIN CONTROL" mode in the DRTU tool.

Notes

Chain A = Chain A in DRTU = port 2 on the EUT
Chain B = Chain B in DRTU = port 1 on the EUT
Power level measured at the end of the white pigtail cable, no loss factor applied

Antenna: <<antenna connected or state antenna port terminated>>
Duty Cycle: >98%

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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

Date of Test: 12/12/2012 Test Location: FT Ch#5

Test Engineer: Deniz Demirci Config Change: None

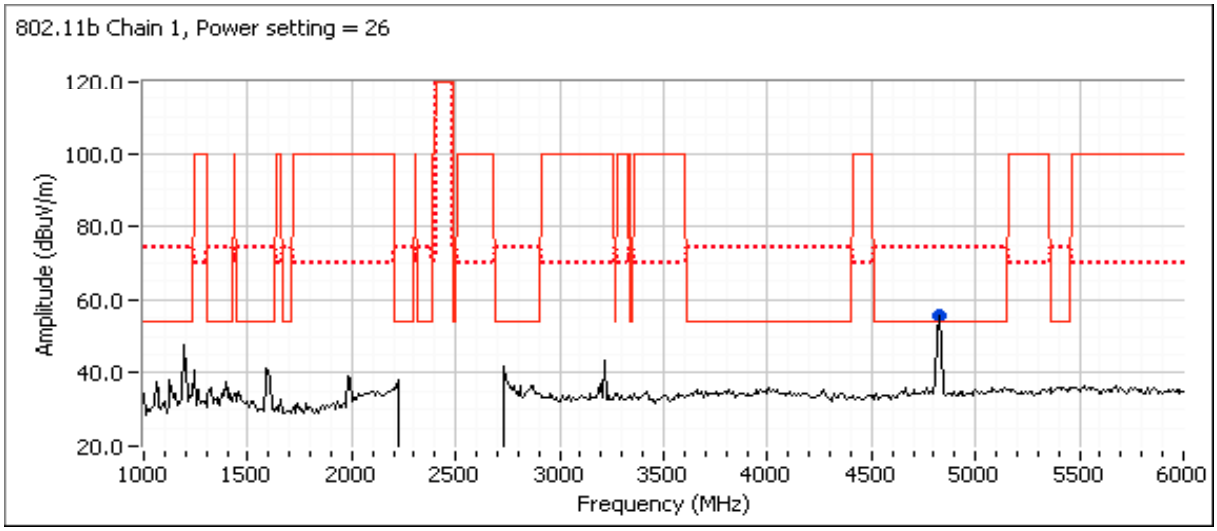
Run #1a, EUT on Channel #1 2412MHz - 802.11b, Chain A

	Power Settings			
	Target (dBm)	Measured (dBm)	Software Setting	
Chain A	16.5	16.5	26	5.5 Mbps

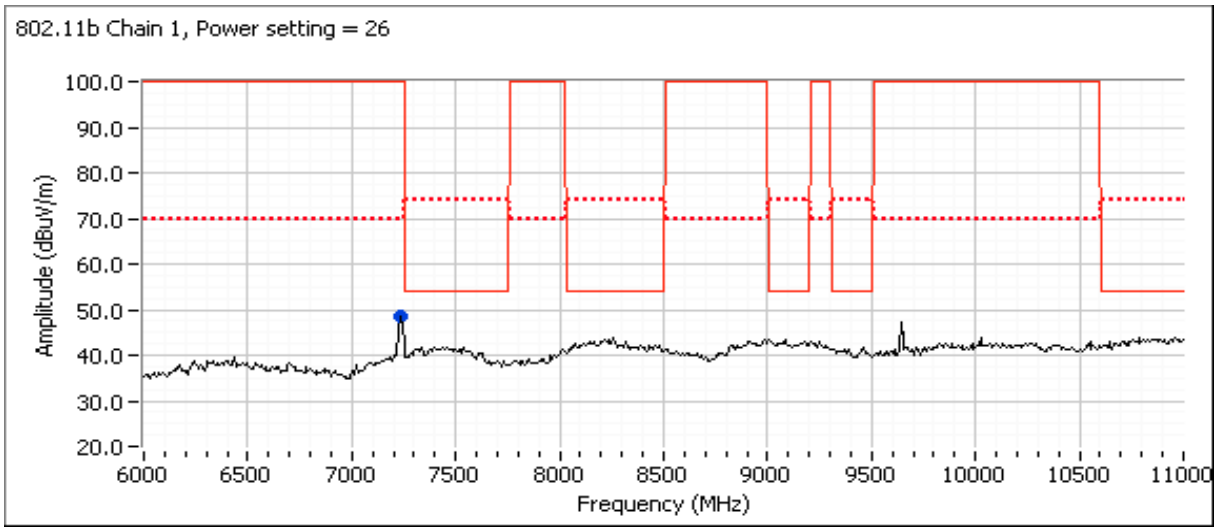
Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4818.700	48.8	V	54.0	-5.2	AVG	294	1.3	RB 1 MHz;VB 10 Hz;Peak
4823.750	59.0	V	74.0	-15.0	PK	294	1.3	RB 1 MHz;VB 3 MHz;Peak

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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1b: , EUT on Channel #6 2437MHz - 802.11b, Chain A

Date of Test: 12/12/2012 Test Location: FT Ch#5

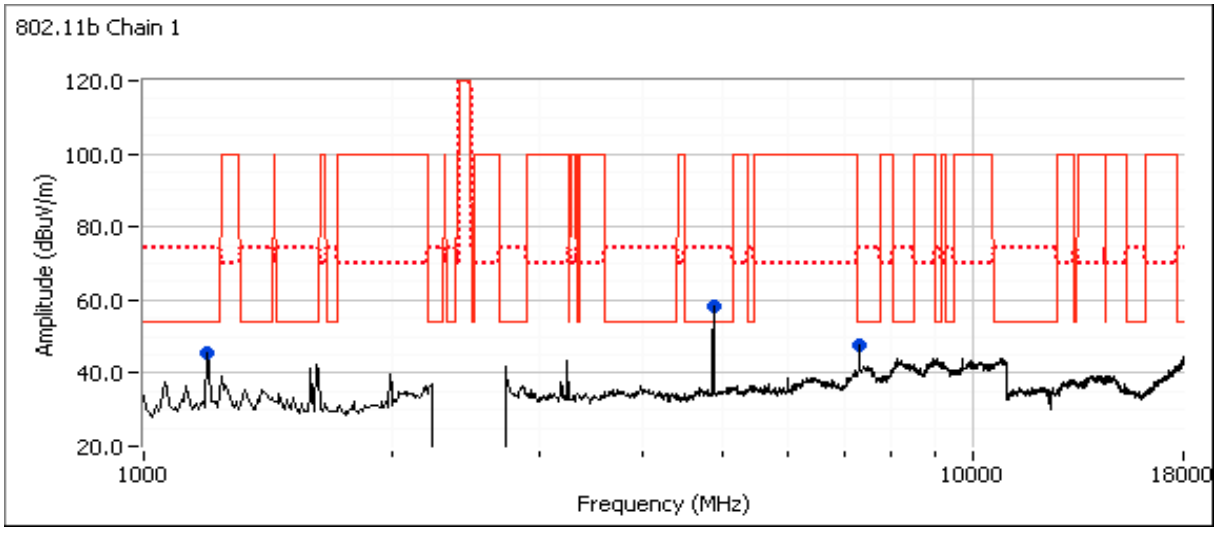
Test Engineer: Joseph Cadigal Config Change: None

	Power Settings			
	Target (dBm)	Measured (dBm)	Software Setting	
Chain A	16.0	16.0	25.5	5.5 Mbps

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	
4873.980	44.4	V	54.0	-9.6	AVG	256	1.2	RB 1 MHz;VB 10 Hz;Peak
4873.920	48.8	V	74.0	-25.2	PK	256	1.2	RB 1 MHz;VB 3 MHz;Peak
1195.460	31.7	V	54.0	-22.3	AVG	167	1.3	RB 1 MHz;VB 10 Hz;Peak
1196.210	52.7	V	74.0	-21.3	PK	167	1.3	RB 1 MHz;VB 3 MHz;Peak
7309.710	41.4	V	54.0	-12.6	AVG	198	2.0	RB 1 MHz;VB 10 Hz;Peak
7309.530	51.6	V	74.0	-22.4	PK	198	2.0	RB 1 MHz;VB 3 MHz;Peak

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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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

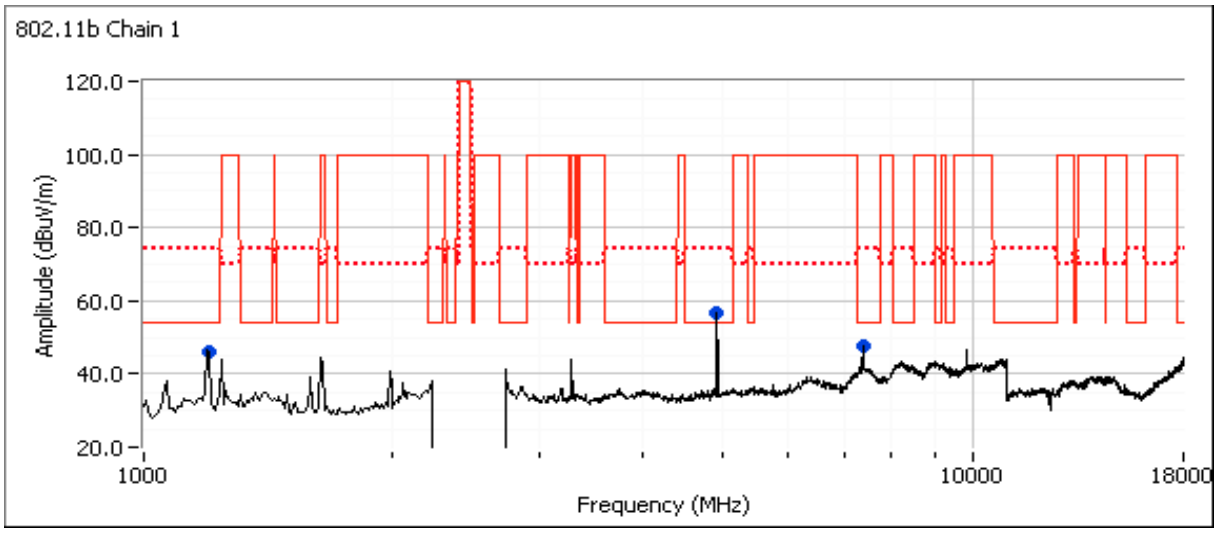
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.6	26.5

5.5 Mbps

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	
4923.940	52.6	V	54.0	-1.4	AVG	106	1.7	RB 1 MHz;VB 10 Hz;Peak
4923.960	55.2	V	74.0	-18.8	PK	106	1.7	RB 1 MHz;VB 3 MHz;Peak
1198.660	31.4	V	54.0	-22.6	AVG	162	1.0	RB 1 MHz;VB 10 Hz;Peak
1196.140	55.5	V	74.0	-18.5	PK	162	1.0	RB 1 MHz;VB 3 MHz;Peak
7386.840	42.5	V	54.0	-11.5	AVG	196	2.0	RB 1 MHz;VB 10 Hz;Peak
7387.160	51.8	V	74.0	-22.2	PK	196	2.0	RB 1 MHz;VB 3 MHz;Peak

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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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

Date of Test: 12/12/2012 Test Location: FT Ch#5

Test Engineer: Deniz Demirci Config Change: None

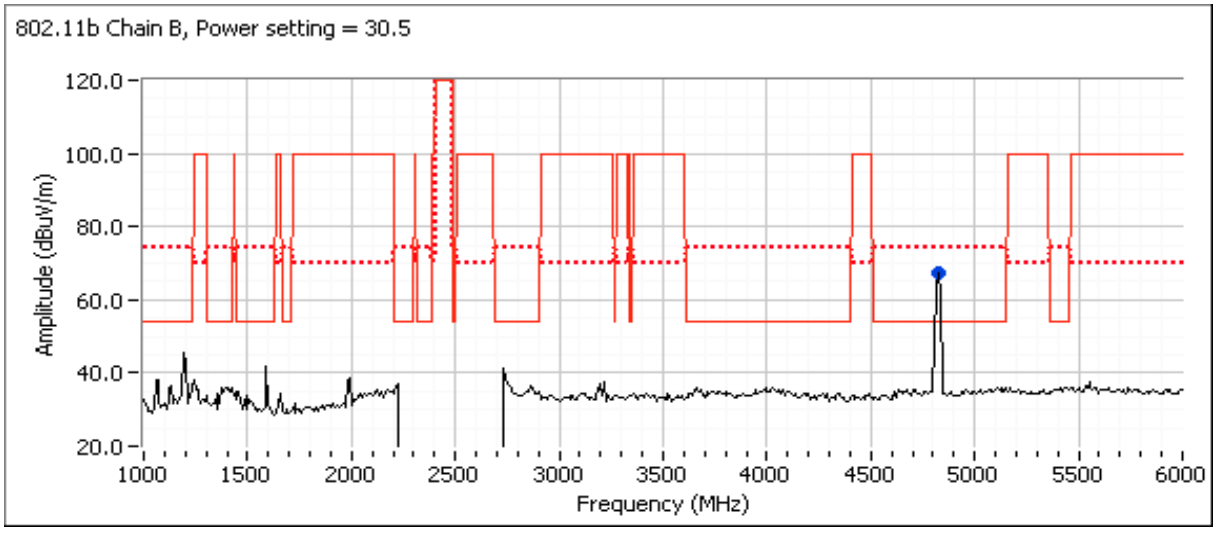
Run # 2a, EUT on Channel #1 2412MHz - 802.11b, Chain B

	Power Settings			
	Target (dBm)	Measured (dBm)	Software Setting	
Chain B	16.5	14.1	26.0	5.5 Mbps

Spurious Radiated Emissions:

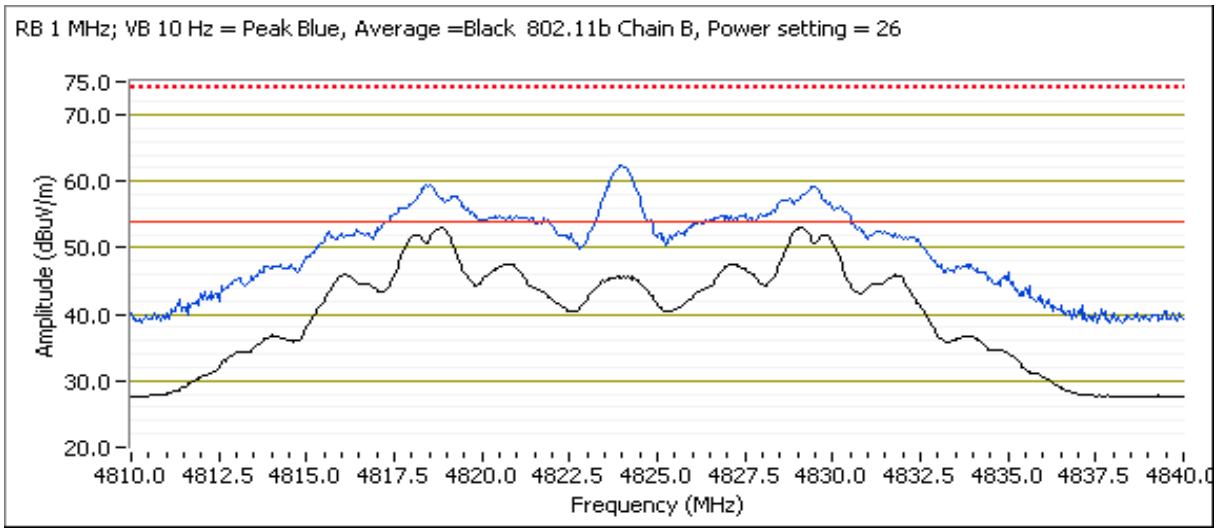
Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4818.750	53.1	V	54.0	-0.9	AVG	281	1.1	
4824.200	61.1	V	74.0	-12.9	PK	281	1.1	

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: Power reduced for final measurements

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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

Date of Test: 12/17/2012 Test Location: FT Ch#5

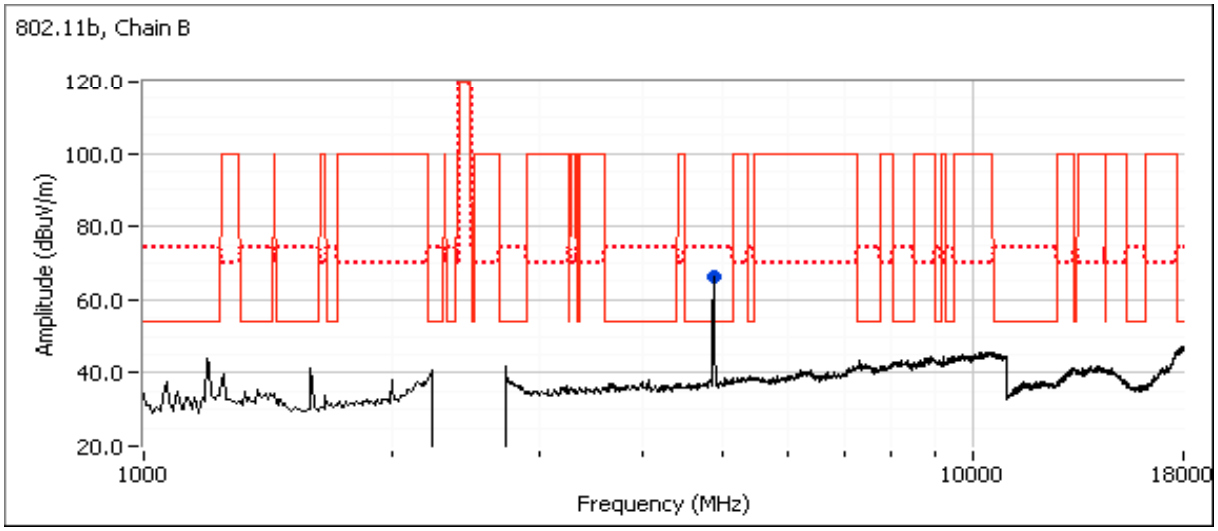
Test Engineer: Mark Hill Config Change: None

	Power Settings			
	Target (dBm)	Measured (dBm)	Software Setting	
Chain B	15.5	11.9	22.5	5.5 Mbps

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	
4879.200	53.8	V	54.0	-0.2	AVG	284	1.4	RB 1 MHz;VB 10 Hz;Peak
4873.830	62.2	V	74.0	-11.8	PK	284	1.4	RB 1 MHz;VB 3 MHz;Peak

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: Power reduced for final measurements

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 2c: , EUT on Channel #11 2462MHz - 802.11b, Chain B

Date of Test: 12/17/2012 Test Location: FT Ch#5

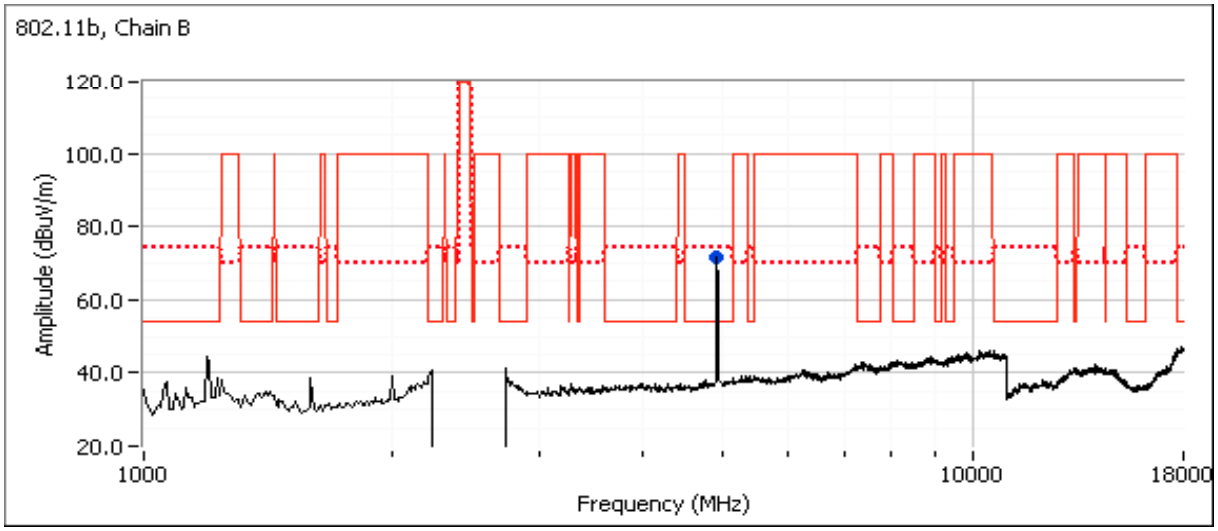
Test Engineer: Mark Hill Config Change: None

	Power Settings			
	Target (dBm)	Measured (dBm)	Software Setting	
Chain B	16.0	10.7	21.5	5.5 Mbps

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	
4929.170	53.1	V	54.0	-0.9	AVG	283	1.5	RB 1 MHz;VB 10 Hz;Peak
4924.430	61.7	V	74.0	-12.3	PK	283	1.5	RB 1 MHz;VB 3 MHz;Peak

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: Power reduced for final measurements

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 3, Radiated Spurious Emissions, 1-26GHz, 802.11g, n20 and n40, Chain A

Date of Test: 12/17/2012 Test Location: FT Ch#5

Test Engineer: Mark Hill Config Change: None

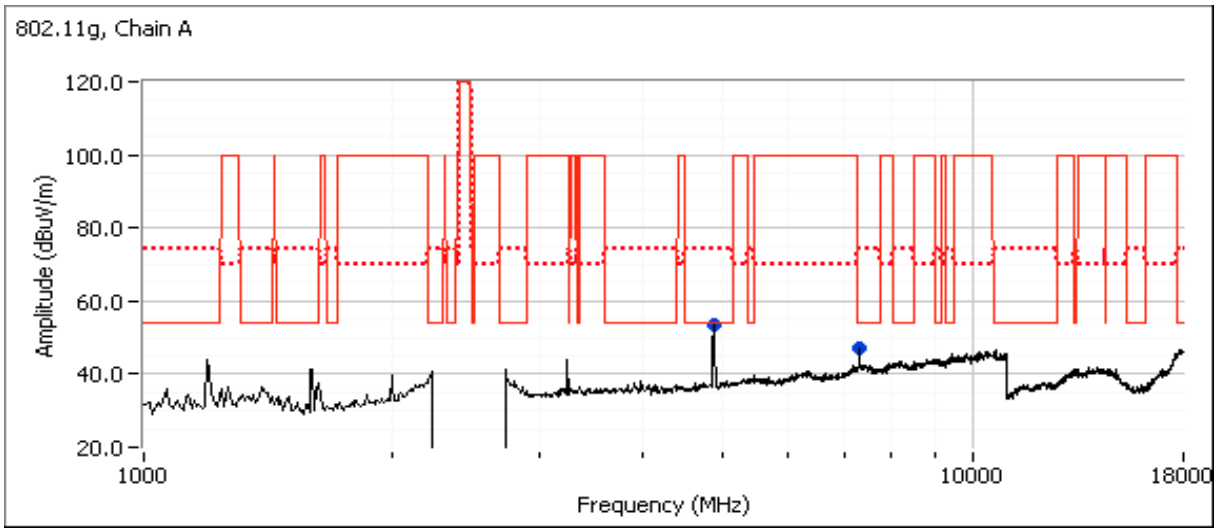
Run # 3a, EUT on Channel #6 2437MHz - 802.11g, Chain A

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.7	33.0

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	
4874.400	50.2	V	54.0	-3.8	AVG	282	2.1	RB 1 MHz;VB 10 Hz;Peak
4874.770	61.6	V	74.0	-12.4	PK	282	2.1	RB 1 MHz;VB 3 MHz;Peak
7310.200	42.1	V	54.0	-11.9	AVG	177	2.0	RB 1 MHz;VB 10 Hz;Peak
7308.740	52.7	V	74.0	-21.3	PK	177	2.0	RB 1 MHz;VB 3 MHz;Peak

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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

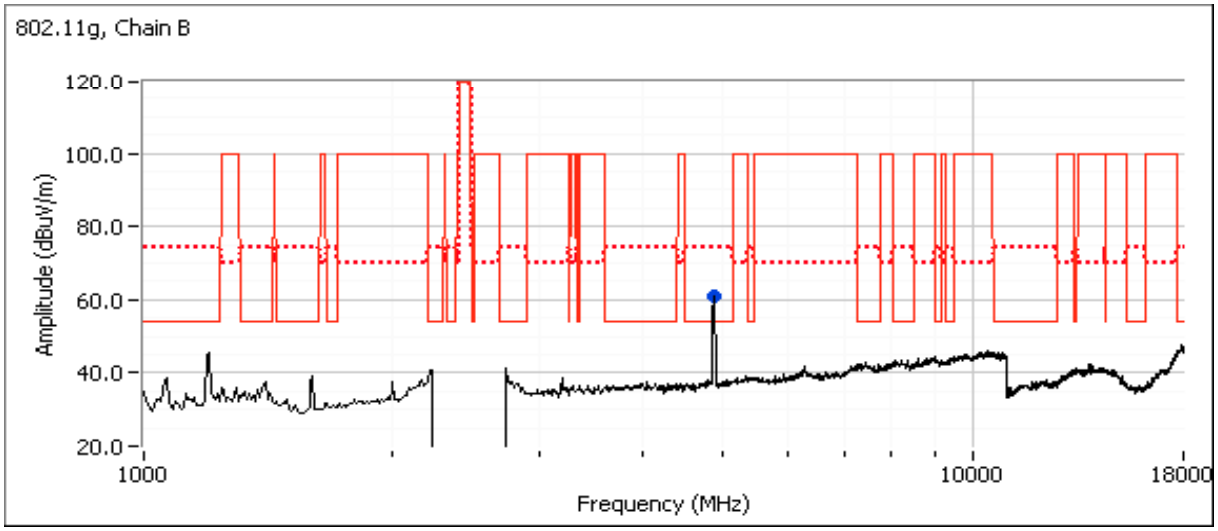
Run # 3b: , EUT on Channel #6 2437MHz - 802.11g, Chain B

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	16.5	12.5	30.0

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	
4874.300	53.0	V	54.0	-1.0	AVG	285	1.4	RB 1 MHz;VB 10 Hz;Peak
4876.200	64.4	V	74.0	-9.6	PK	285	1.4	RB 1 MHz;VB 3 MHz;Peak

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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

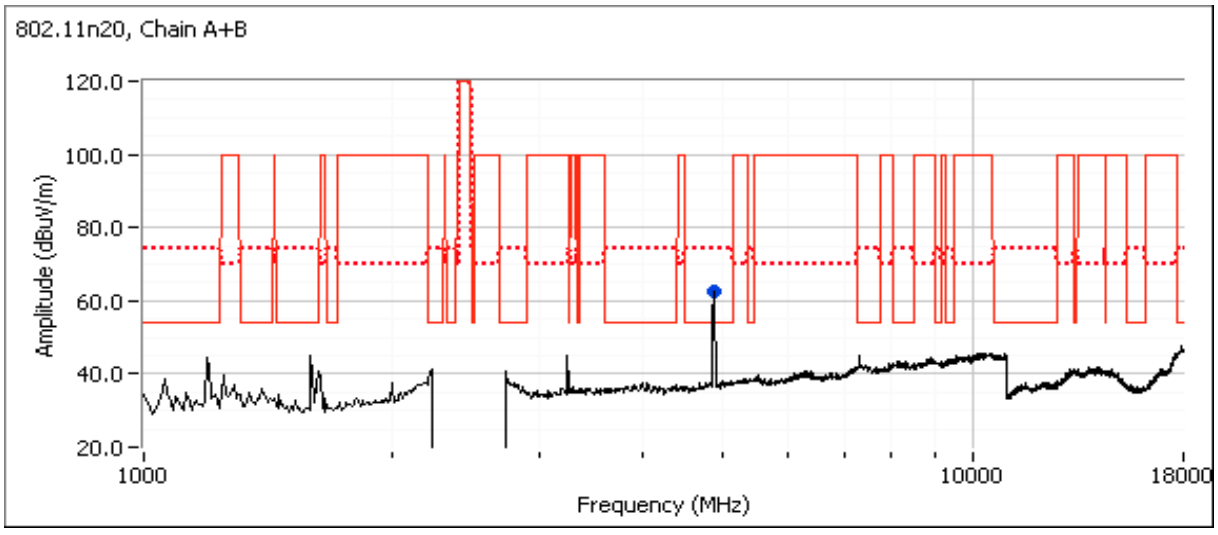
Run # 3c: , EUT on Channel #6 2437MHz - 802.11n20, Chains A+B

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	A	B	C	Total	A	B	C	Total	
	16.5	16.5		19.5	16.6	12.3		18.0	36, 33

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	
4872.970	53.4	V	54.0	-0.6	AVG	286	1.4	RB 1 MHz;VB 10 Hz;Peak
4874.330	67.5	V	74.0	-6.5	PK	286	1.4	RB 1 MHz;VB 3 MHz;Peak

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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

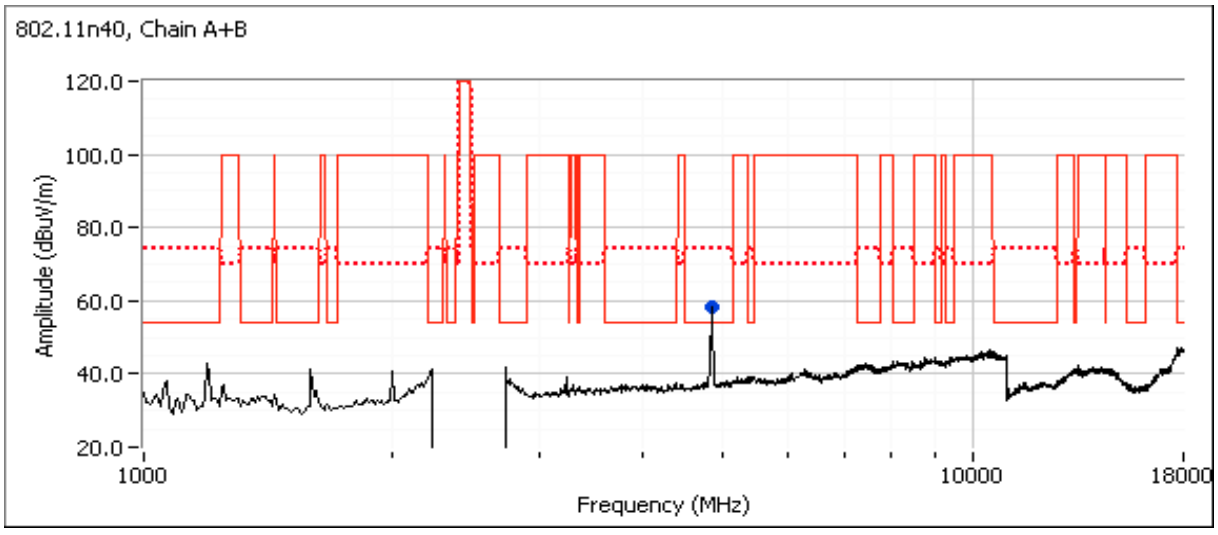
Run # 3d: , EUT on Channel #6 2437MHz - 802.11n40, Chains A+B

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	A	B	C	Total	A	B	C	Total	
	13.5	12.5		16.0	13.6	12.9		16.3	31.5, 33.5

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	
4874.680	50.2	V	54.0	-3.8	AVG	276	1.4	RB 1 MHz;VB 10 Hz;Peak
4873.800	65.5	V	74.0	-8.5	PK	276	1.4	RB 1 MHz;VB 3 MHz;Peak

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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 4, Radiated Spurious Emissions, 1-26GHz, Worst Case OFDM Mode 802.11g, Chain B

Date of Test: 12/17/2012 Test Location: FT Ch#5

Test Engineer: Mark Hill Config Change: None

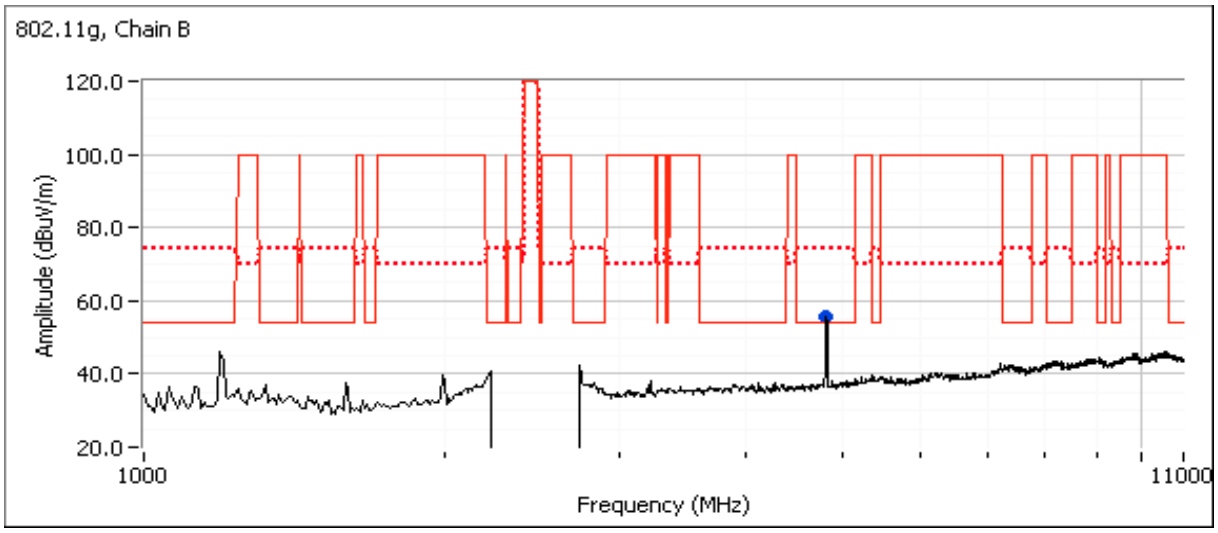
Run # 4a, EUT on Channel #1 2412MHz - 802.11g, Chain B

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	13.5	13.6	31.5

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	
4824.300	52.1	V	54.0	-1.9	AVG	77	1.3	RB 1 MHz;VB 10 Hz;Peak
4827.100	63.3	V	74.0	-10.7	PK	77	1.3	RB 1 MHz;VB 3 MHz;Peak

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:	No emissions above 11GHz observed.



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

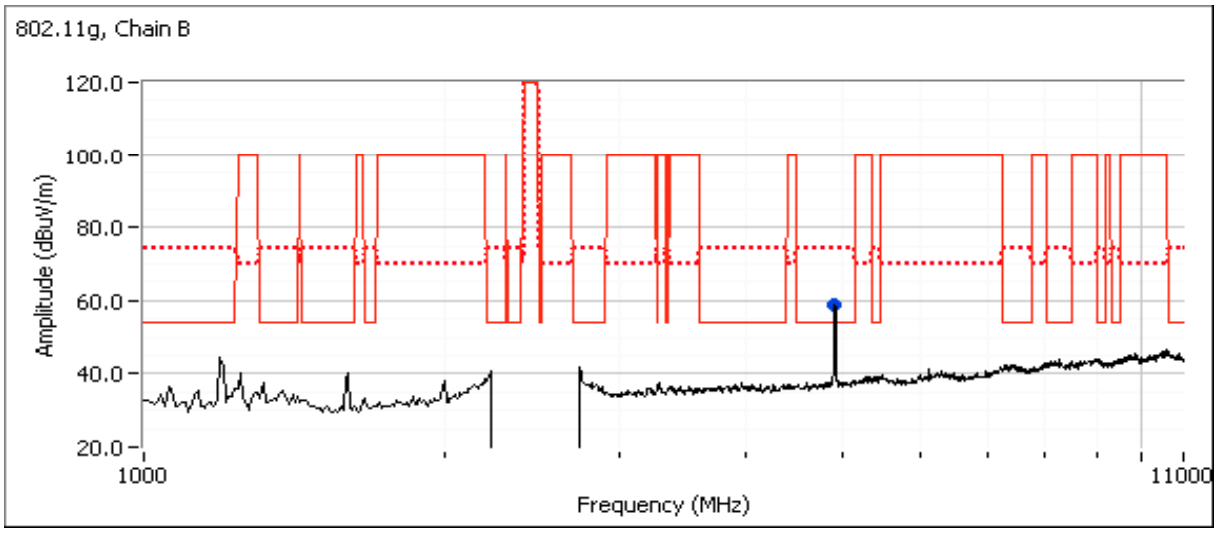
Run # 4b, EUT on Channel #11 2462MHz - 802.11g, Chain B

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	13.5	12.0	29.5

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	
4925.970	53.4	V	54.0	-0.6	AVG	280	1.5	RB 1 MHz;VB 10 Hz;Peak
4926.430	64.7	V	74.0	-9.3	PK	280	1.5	RB 1 MHz;VB 3 MHz;Peak

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:	No emissions above 11GHz observed.



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, 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 °C
Rel. Humidity: 44 %

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

MAC Address: 001500B50405 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Scans on center channel in all three OFDM modes in each operatintg band were used to determine the worst case. Note that for n20 and n40 modes the output power was set to 16.0dBm or the maximum possible per chain. The maximum power per chain in MIMO mode would be 13.5dBm. However, as the single chain power could be more than 13.5dBm, the scans were run at the highest possible power level but with both chains active, to cover both MIMO and MISO modes.							
Run #1	802.11a Chain 1	#157 5785MHz	16.0	15.7	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15.247	54.8 dBµV/m @ 1198.2 MHz (-19.2 dB)
	802.11a Chain 2	#157 5785MHz	16.0	15.2			56.6 dBµV/m @ 1195.7 MHz (-17.4 dB)
	802.11n20 Chain 1+2	#157 5785MHz	A:16.0 B:16.0	A:11.2 B:11.1	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15.247	53.2 dBµV/m @ 1196.1 MHz (-20.8 dB)
	802.11n40 Chain 1+2	#159 5795MHz	A:16.0 B:16.0	A:11.0 B:10.7			56.5 dBµV/m @ 1197.2 MHz (-17.5 dB)
Top and bottom channels in worst case OFDM mode:							
Run # 2	802.11a Chain 2	#149 5745MHz	16.0	15.4	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15.247	54.0 dBµV/m @ 1195.3 MHz (-20.0 dB)
		#165 5825MHz	16.0	14.6			55.0 dBµV/m @ 1195.6 MHz (-19.0 dB)

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	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

Chain A = Chain A in DRTU = port 2 on the EUT
Chain B = Chain B in DRTU = port 1 on the EUT
Power level measured at the end of the white pigtail cable, no loss factor applied
Note - the target and measured power are average powers (measured with average power sensor) and are used for reference purposes only. Power is set using " GAIN CONTROL" mode in the DRTU tool.

Antenna: connected
Duty Cycle: 99%

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1, Radiated Spurious Emissions, 1-40GHz, Center Channel

Date of Test: 12/17/2012 Test Location: FT Chamber #5

Test Engineer: Joseph Cadigal Config Change: none

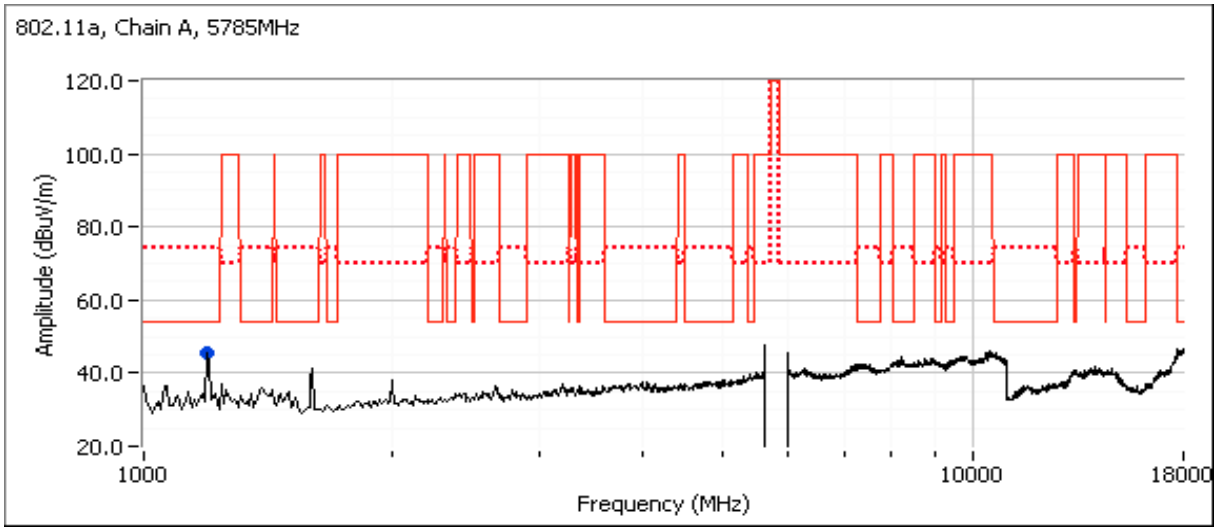
Run #1a, EUT on Channel #157 5785MHz - 802.11a, Chain 1

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain 1	16.0	15.7	39.0

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	
1198.190	54.8	V	74.0	-19.2	PK	228	1.0	RB 1 MHz;VB 3 MHz;Peak
1195.940	32.0	V	54.0	-22.0	AVG	228	1.0	RB 1 MHz;VB 10 Hz;Peak

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 - 40GHz 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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

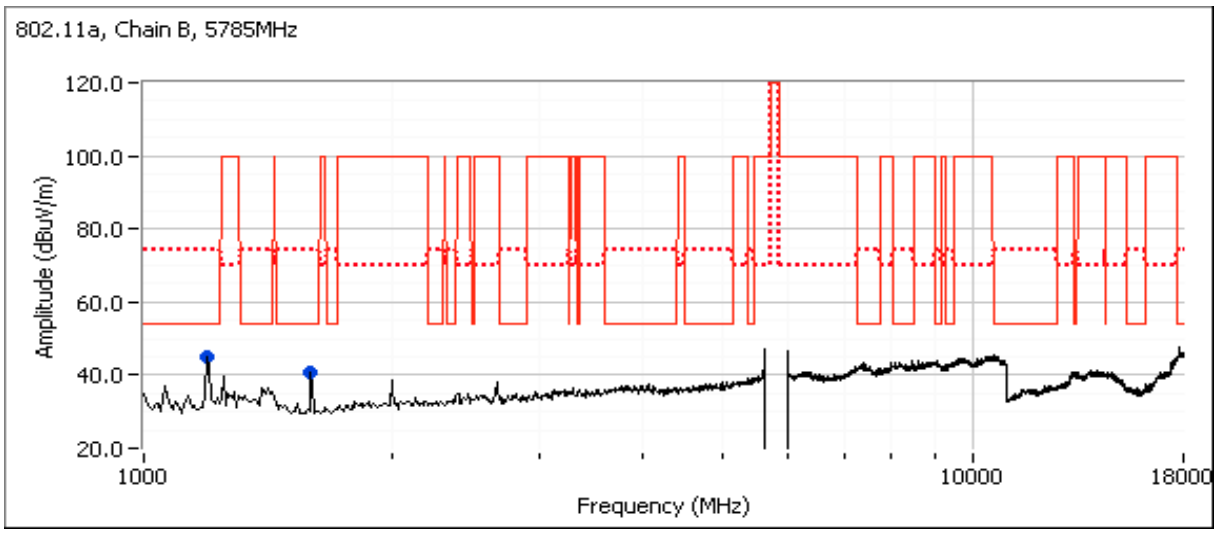
Run #1b: , EUT on Channel #157 5785MHz - 802.11a, Chain 2

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain 2	16.0	15.2	39.0

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	
1195.680	56.6	V	74.0	-17.4	PK	235	1.0	RB 1 MHz;VB 3 MHz;Peak
1194.970	33.5	V	54.0	-20.5	AVG	235	1.0	RB 1 MHz;VB 10 Hz;Peak
1598.170	51.0	V	74.0	-23.0	PK	281	1.0	RB 1 MHz;VB 3 MHz;Peak
1599.060	30.7	V	54.0	-23.3	AVG	281	1.0	RB 1 MHz;VB 10 Hz;Peak

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 - 40GHz 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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

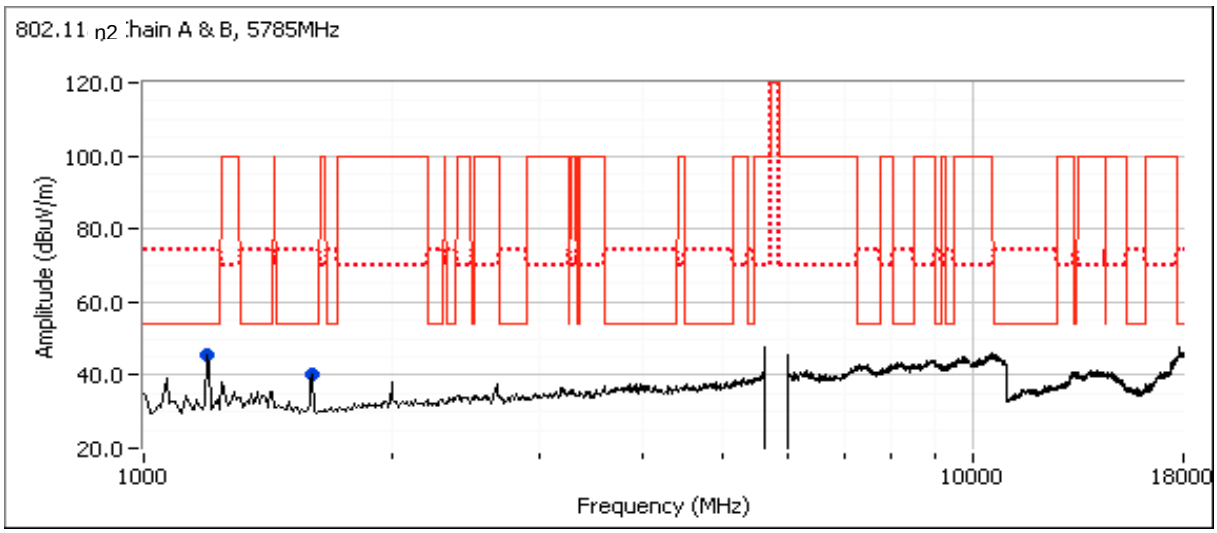
Run #1c: , EUT on Channel #157 5785MHz - 802.11n20, Chain 1+2

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	A	B	C	Total	A	B	C	Total	
	13.0	13.0		16.0	11.2	11.1		14.2	39,39

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	
1196.060	53.2	V	74.0	-20.8	PK	300	1.5	RB 1 MHz;VB 3 MHz;Peak
1195.330	33.0	V	54.0	-21.0	AVG	300	1.5	RB 1 MHz;VB 10 Hz;Peak
1597.990	52.1	V	74.0	-21.9	PK	310	1.0	RB 1 MHz;VB 3 MHz;Peak
1596.570	31.1	V	54.0	-22.9	AVG	310	1.0	RB 1 MHz;VB 10 Hz;Peak

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 - 40GHz 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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

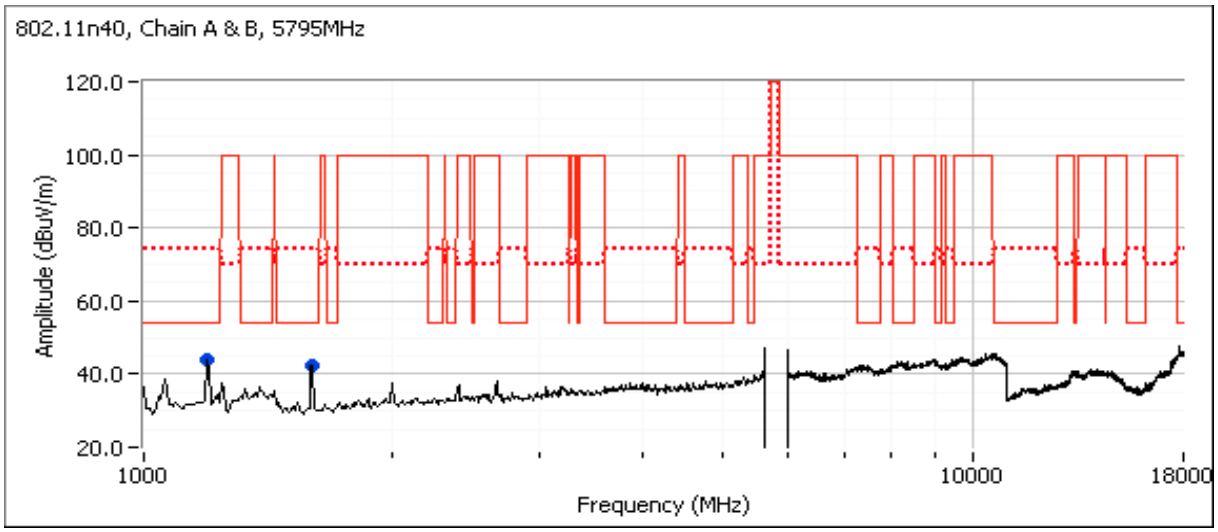
Run # 1d: , EUT on Channel #159 5795MHz - 802.11n40, Chain 1+2

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	A	B	C	Total	A	B	C	Total	
	13.5	13.5		16.5	11.0	10.7		13.9	39,39

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	
1197.160	56.5	V	74.0	-17.5	PK	233	1.0	RB 1 MHz;VB 3 MHz;Peak
1197.020	33.9	V	54.0	-20.1	AVG	233	1.0	RB 1 MHz;VB 10 Hz;Peak
1597.590	31.5	V	54.0	-22.5	AVG	301	1.0	RB 1 MHz;VB 10 Hz;Peak
1595.680	50.5	V	74.0	-23.5	PK	301	1.0	RB 1 MHz;VB 3 MHz;Peak

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 - 40GHz 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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run # 2, Radiated Spurious Emissions, 1-40GHz, Worst Case OFDM Mode 802.11a, Chain 2

Date of Test: 12/17/2012 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

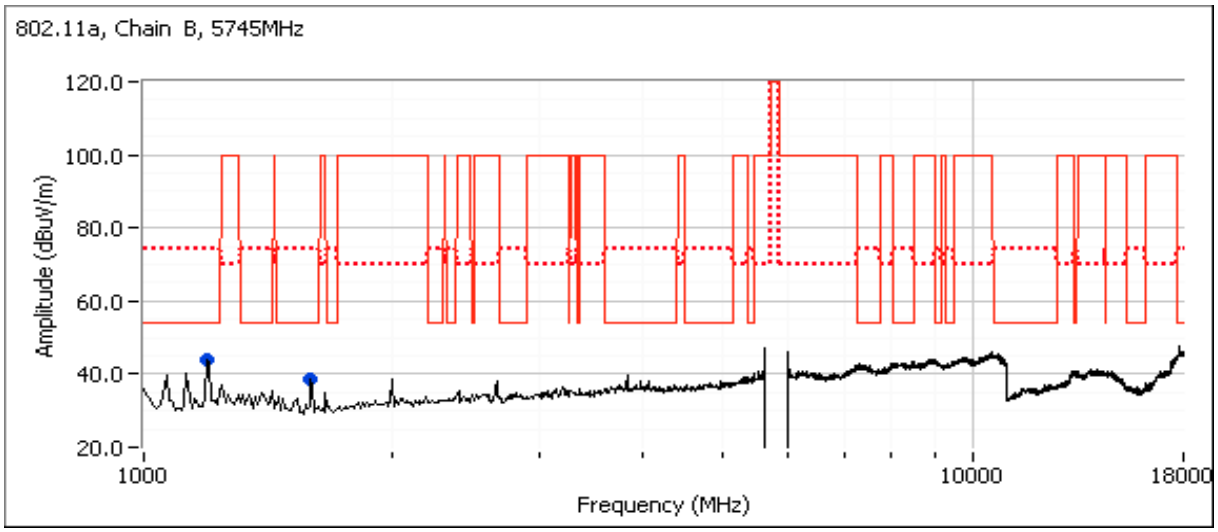
Run # 2a, EUT on Channel #149 5745MHz - 802.11a, Chain 2

	Power Settings								
	Target (dBm)				Measured (dBm)				Software Setting
Chain	A	B	C	Total	A	B	C	Total	
		16.0		16.0		15.4		15.4	39.0

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	
1195.300	54.0	V	74.0	-20.0	PK	252	1.0	RB 1 MHz;VB 3 MHz;Peak
1195.480	31.5	V	54.0	-22.5	AVG	252	1.0	RB 1 MHz;VB 10 Hz;Peak
1590.760	29.2	V	54.0	-24.8	AVG	276	1.0	RB 1 MHz;VB 10 Hz;Peak
1590.550	41.5	V	74.0	-32.5	PK	276	1.0	RB 1 MHz;VB 3 MHz;Peak

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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

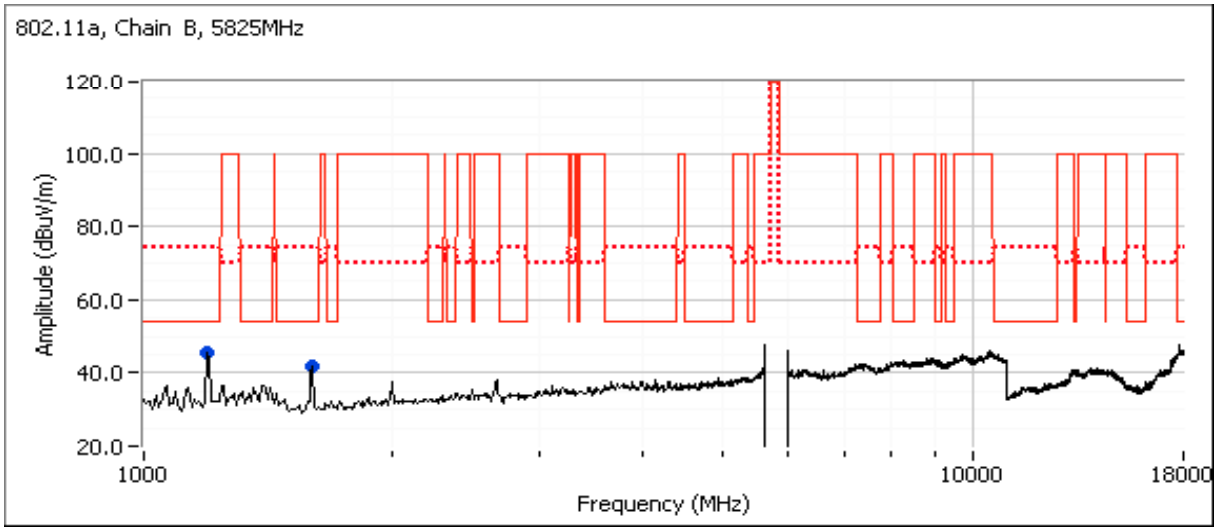
Run # 2b: , EUT on Channel #165 5825MHz - 802.11a, Chain 2

	Power Settings							
	Target (dBm)				Measured (dBm)				Software Setting
Chain	A	B	C	Total	A	B	C	Total	
		16.0		16.0		14.6		14.6	39.0

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	
1195.590	55.0	V	74.0	-19.0	PK	222	1.0	RB 1 MHz;VB 3 MHz;Peak
1194.910	32.9	V	54.0	-21.1	AVG	222	1.0	RB 1 MHz;VB 10 Hz;Peak
1593.580	51.3	V	74.0	-22.7	PK	311	1.0	RB 1 MHz;VB 3 MHz;Peak
1594.060	30.5	V	54.0	-23.5	AVG	311	1.0	RB 1 MHz;VB 10 Hz;Peak

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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	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: 1/4/2013
Test Engineer: Joseph Cadigal
Test Location: Power Fault Lab

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

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: 18 °C
Rel. Humidity: 25 %

Summary of Results

MAC Address: 001500B50405 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	Max		Output Power	15.247(b)	Pass	4.0 dBm
2	Max		Power spectral Density (PSD)	15.247(d)	Pass	-10.0 dBm/3kHz
3	Max		Minimum 6dB Bandwidth	15.247(a)	Pass	710 kHz
3	Max		99% Bandwidth	RSS GEN	-	1.048 MHz
4	Max		Spurious emissions	15.247(b)	Pass	All emission below limits

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.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1: Output Power

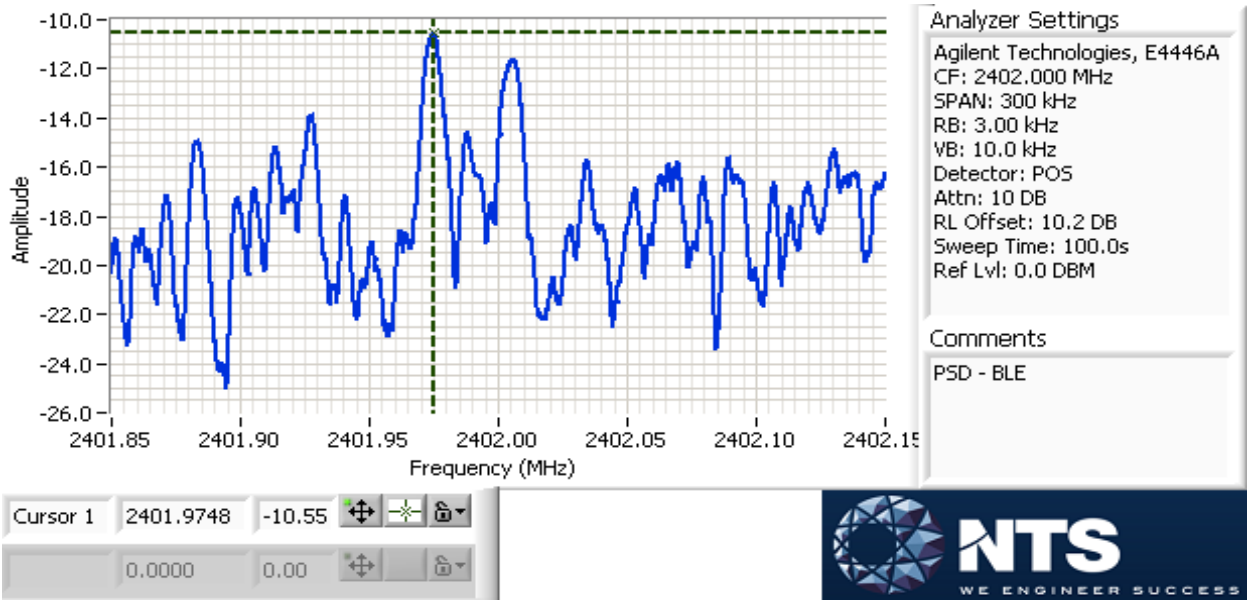
Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP [Note 2] dBm	EIRP W	Output Power (dBm) [3]	Output Power mW
max	2402	4.0	2.5	3.2	Pass	7.2	0.005		
max	2440	3.9	2.5	3.2	Pass	7.1	0.005		
max	2480	3.9	2.5	3.2	Pass	7.1	0.005		

Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter and is included for reference only.

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) [Note 1]	Limit dBm/3kHz	Result
max	2402	-10.6	8.0	Pass
max	2440	-10.2	8.0	Pass
max	2480	-10.0	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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

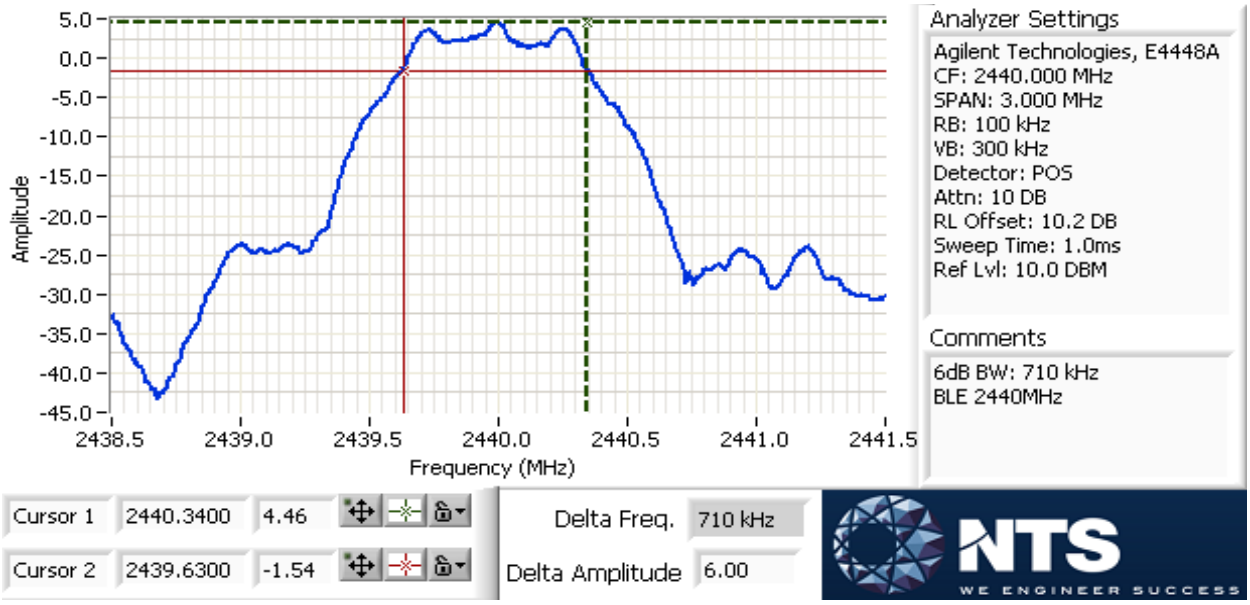
Run #3: Signal Bandwidth

Date of Test: 1/8/2013
Test Engineer: Jack Liu
Test Location: FT Lab 4A

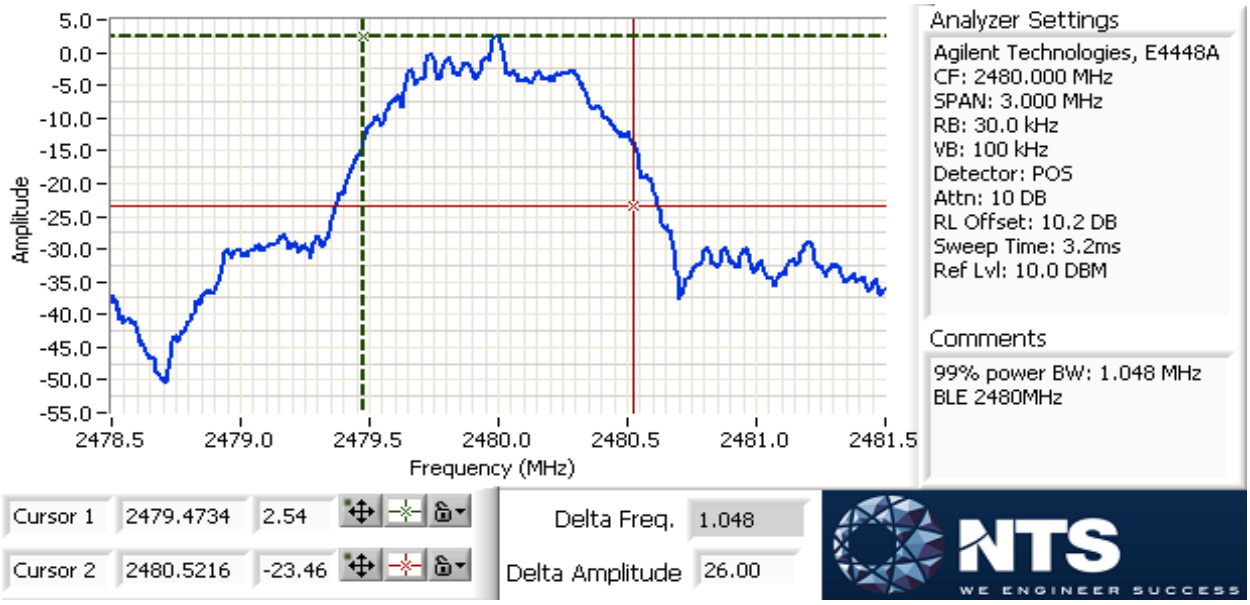
Config. Used: 1
Config Change: none
Host Unit Voltage 120V / 60 Hz

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (kHz) 6dB	Resolution Bandwidth	Bandwidth (MHz) 99%
max	2402	100kHz	710	30kHz	1.038
max	2440	100kHz	710	30kHz	1.038
max	2480	100kHz	720	30kHz	1.048

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



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A



Run #4: Out of Band Spurious Emissions

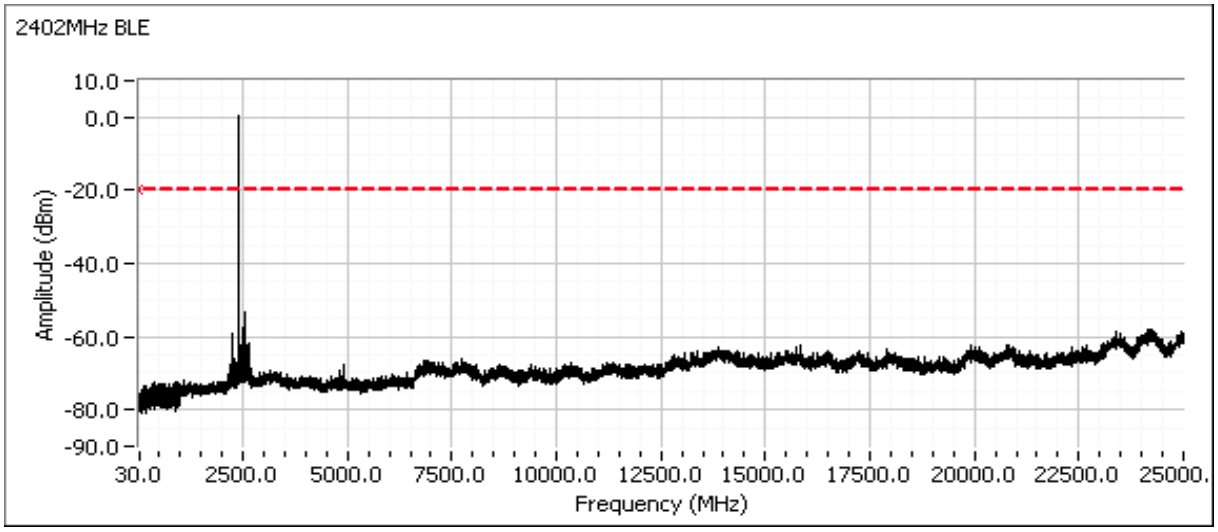
Date of Test: 1/4/2013
Test Engineer: Joseph Cadigal
Test Location: Power Fault Lab

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

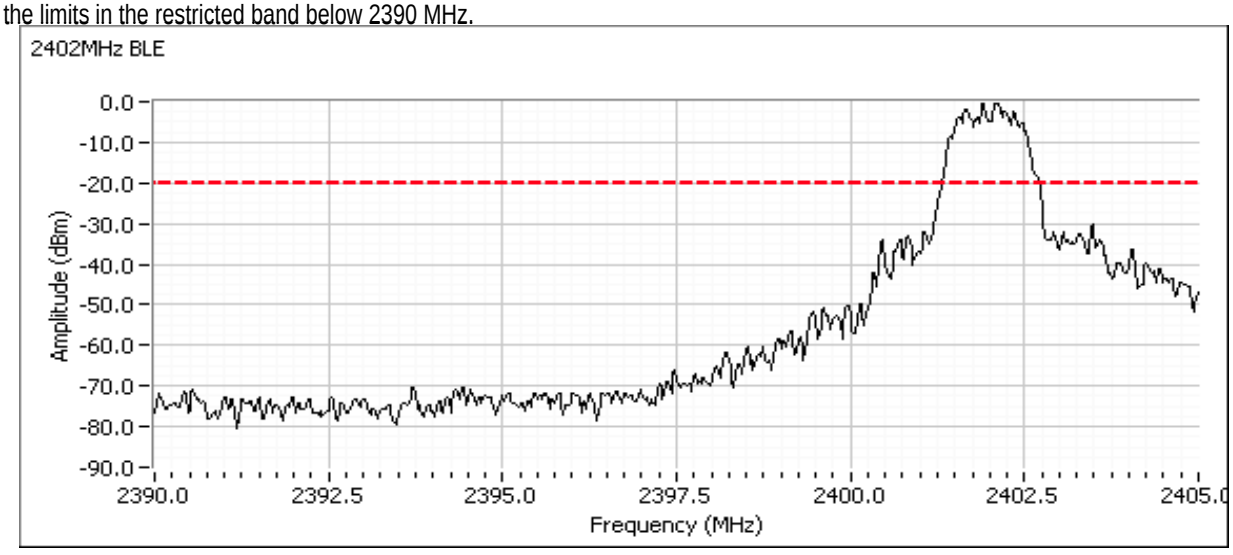
Frequency (MHz)	Limit	Result
2402	-20dBc	Pass
2440	-20dBc	Pass
2480	-20dBc	Pass

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for low channel, power setting(s) = max

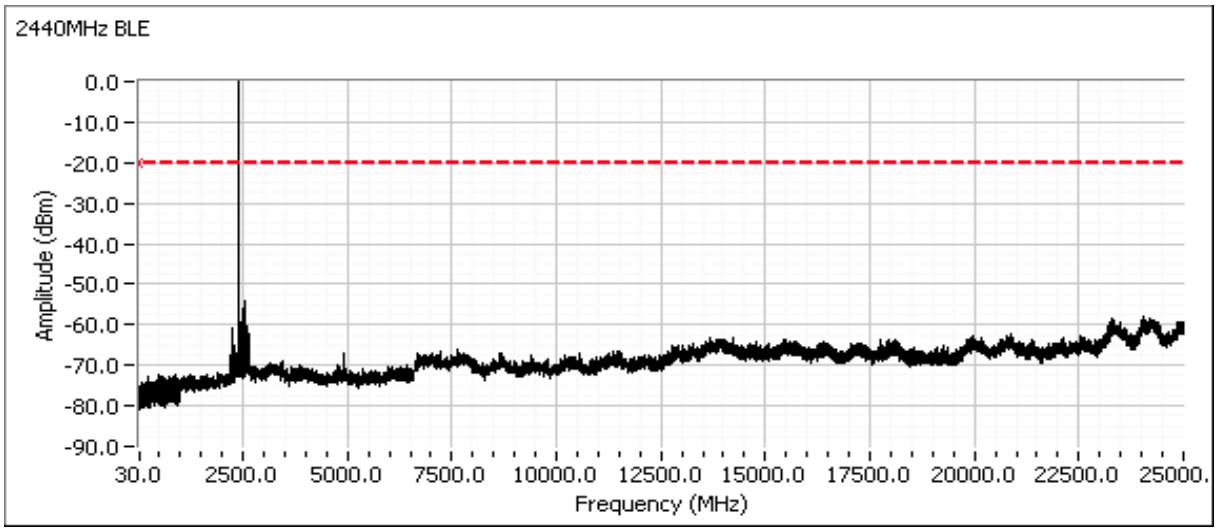


Additional plot showing compliance with -20dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

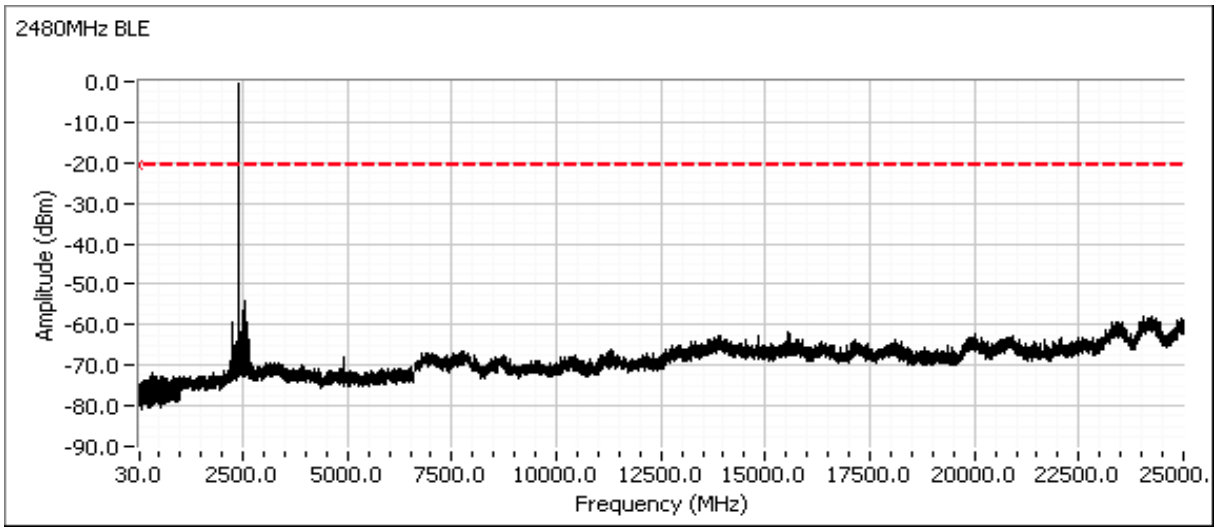


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Plots for center channel, power setting(s) = max



Plots for high channel, power setting(s) = max



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, 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 °C
Rel. Humidity: 40 %

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

MAC Address: 001500B50405 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	Bluetooth LE	low		NA	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	47.4 dBµV/m @ 2247.4 MHz (-6.6 dB)
					Radiated Emissions, 1 - 25 GHz		50.8 dBµV/m @ 4803.9 MHz (-3.2 dB)
1b		center			Radiated Emissions, 1 - 25 GHz		50.3 dBµV/m @ 4879.5 MHz (-3.7 dB)
1c		high			Restricted Band Edge (2483.5 MHz)		51.4 dBµV/m @ 2483.8 MHz (-2.6 dB)
					Radiated Emissions, 1 - 25 GHz		46.3 dBµV/m @ 4959.5 MHz (-7.7 dB)

Modifications Made During Testing

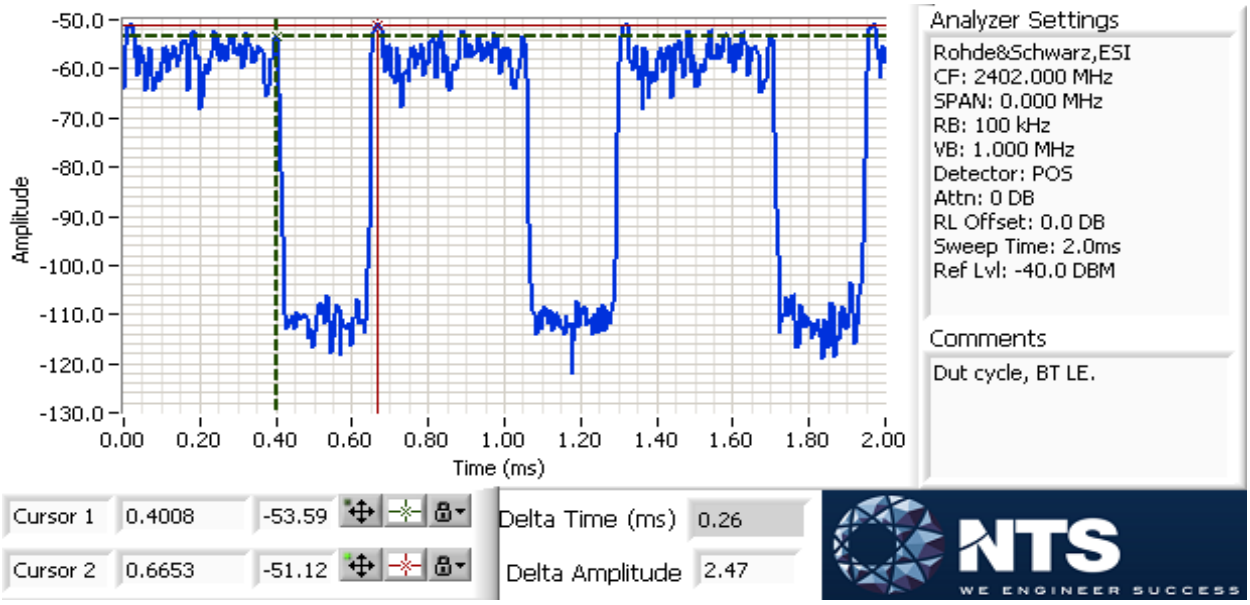
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Antenna: antenna connected.
Duty Cycle: 0.603
Correction Factor (dB) 4.4

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000-26000 MHz. Operating Mode: Low Energy

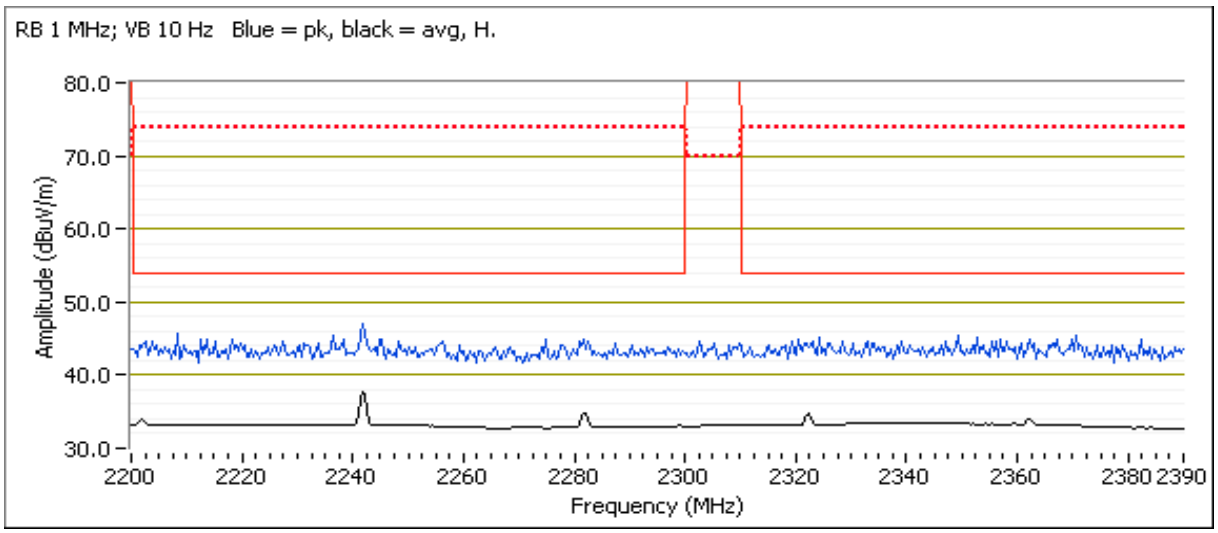
Date of Test: 12/21/2012 & 12/26/12
Test Engineer: John Caizzi
Test Location: Chamber 5

Run #1a: Low Channel @ 2402 MHz

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	NA	NA	NA

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	
2241.720	47.0	V	54.0	-7.0	PK	83	1.11	Pk reading vs avg limit.
2241.720	47.0	V	74.0	-27.0	PK	83	1.11	
2247.370	47.4	H	54.0	-6.6	PK	110	1.05	Pk reading vs avg limit.
2247.370	47.4	H	74.0	-26.6	PK	110	1.05	

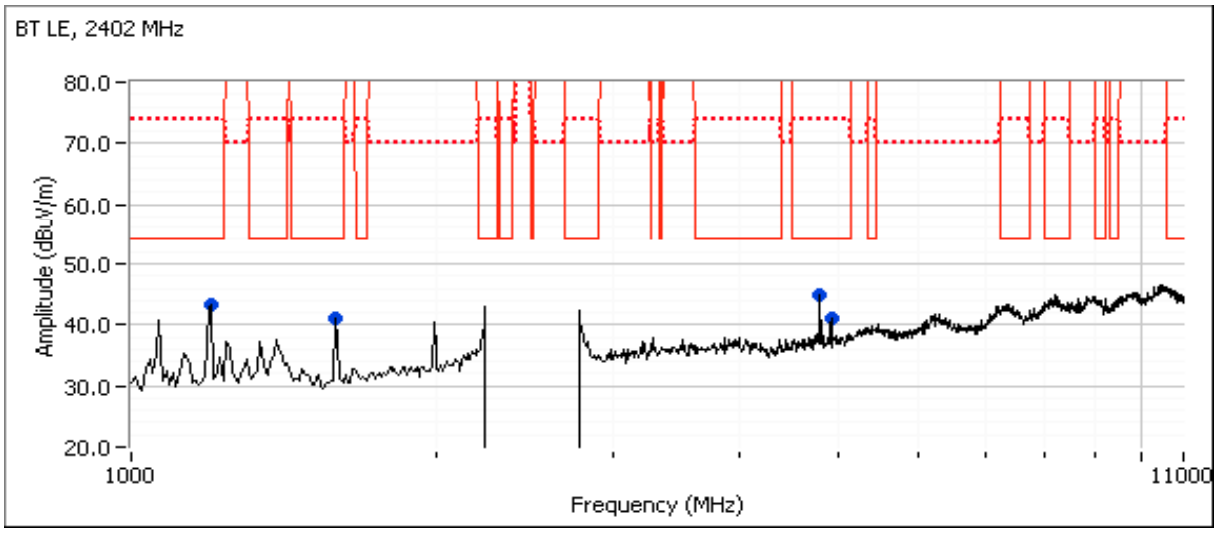


Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

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	
1200.000	*43.3*	*V*	*54.0*	*-10.7*	*Peak*	*202*	*1.0*	*Not radio related.*
1591.670	*41.0*	*V*	*54.0*	*-13.0*	*Peak*	*241*	*1.5*	*Not radio related.*
4803.930	50.8	V	54.0	-3.2	PK	248	1.52	Pk reading vs avg limit.
4803.930	50.8	V	74.0	-23.2	PK	248	1.52	
4924.010	40.2	V	54.0	-13.8	AVG	277	1.86	
4923.930	46.1	V	74.0	-27.9	PK	277	1.86	

Note 2:	Since the center channel scan showed no emissions above 5 GHz, this scan was stopped at 11 GHz.



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

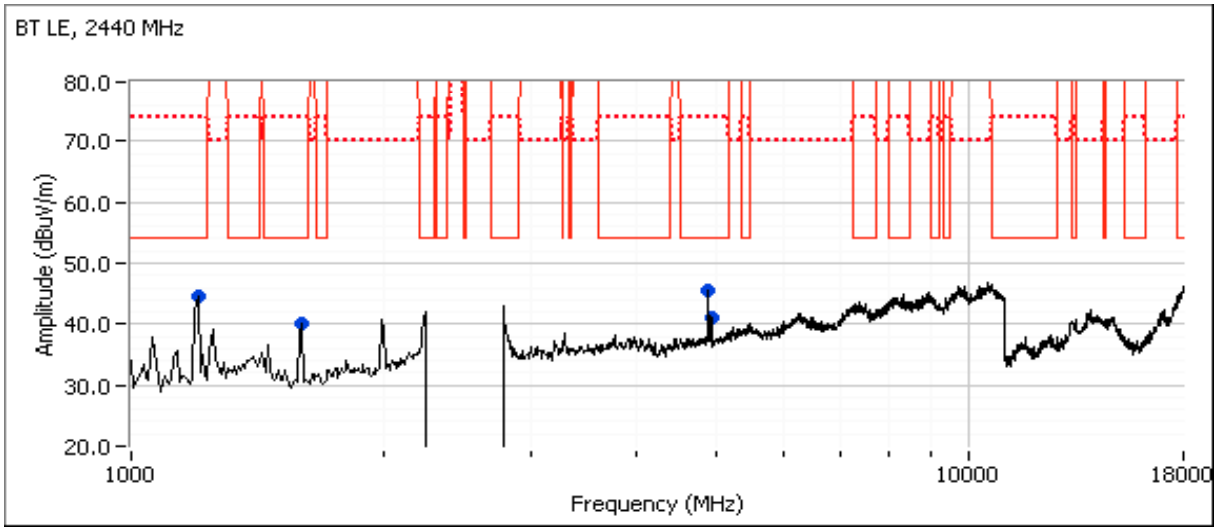
Run #1b: Center Channel @ 2440 MHz

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	NA	NA	NA

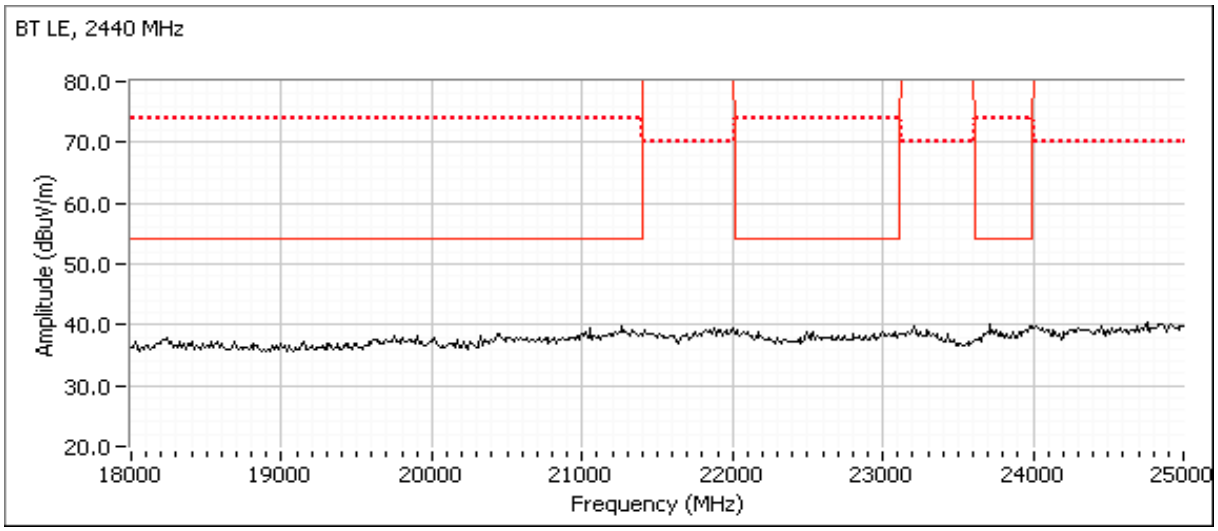
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1200.000	*44.5*	*V*	*54.0*	*-9.5*	*Peak*	*204*	*1.0*	*Not radio related.*
1600.000	*40.2*	*V*	*54.0*	*-13.8*	*Peak*	*122*	*1.0*	*Not radio related.*
4879.510	50.3	V	54.0	-3.7	PK	278	1.53	Pk reading vs avg limit.
4879.510	50.3	V	74.0	-23.7	PK	278	1.53	
4923.960	40.2	V	54.0	-13.8	AVG	276	1.86	
4924.110	46.0	V	74.0	-28.0	PK	276	1.86	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used.



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A



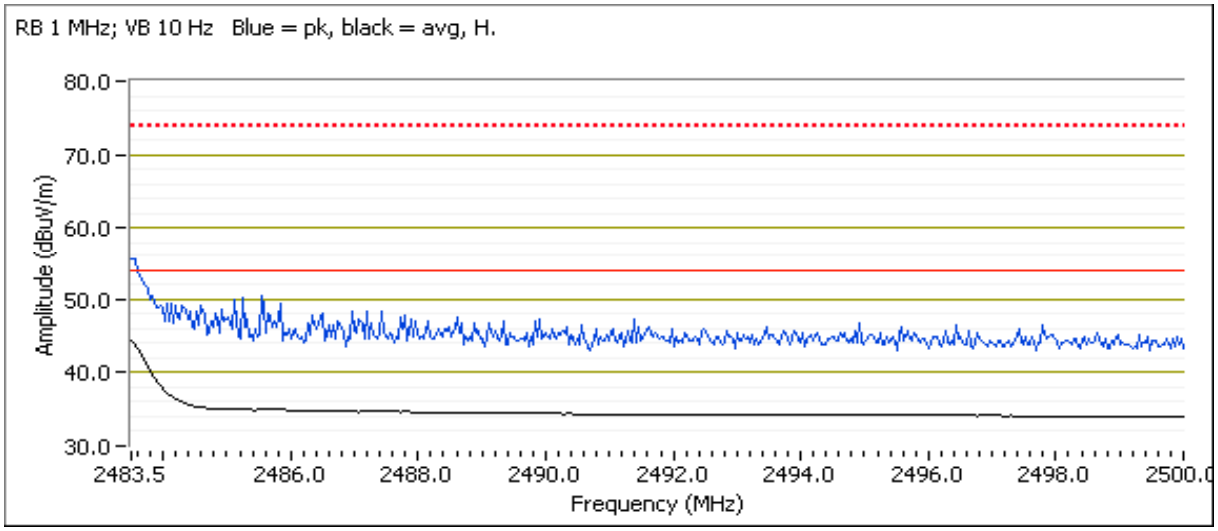
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1c: High Channel @ 2480 MHz

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	NA	NA	NA

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	
2483.830	51.4	H	54.0	-2.6	PK	346	1.10	Note 2
2483.830	55.8	H	74.0	-18.2	PK	346	1.10	

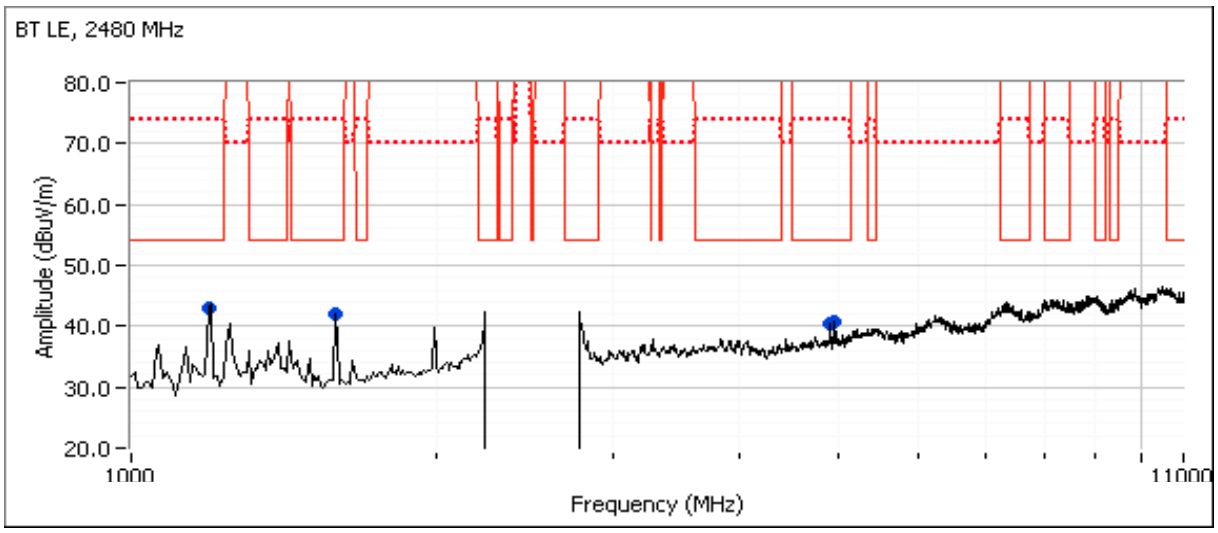


Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1191.670	*42.9*	*V*	*54.0*	*-11.1*	*Peak*	*202*	*2.0*	*Not radio related.*
1591.670	*41.9*	*V*	*54.0*	*-12.1*	*Peak*	*234*	*1.5*	*Not radio related.*
4924.000	39.8	V	54.0	-14.2	AVG	266	1.87	
4923.760	46.1	V	74.0	-27.9	PK	266	1.87	
4959.490	46.3	V	54.0	-7.7	PK	279	1.66	Pk reading vs avg limit.
4959.490	46.3	V	74.0	-27.7	PK	279	1.66	

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 2:	Calculated value based on the pk reading - the duty cycle correction factor.
Note 3:	Since the center channel scan showed no emissions above 5 GHz, this scan was stopped at 11 GHz.



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, 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.

For Bluetooth: Tx is chain 2, Rx is chain 2. For WiFi, only Chain 1 is used for transmit in the 2.4GHz band, both chains used in 5GHz bands.

Ambient Conditions:

Temperature: 13-15 °C
Rel. Humidity: 35-45 %

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:

Bluetooth uses a frequency hopping algorithm that means that the device, during normal operation, is only on a specific channel for a short period of time. The average correction factor is calculated as follows:

A maximum length packet has a duration of 5 time slots.
The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.
With a minimum of 20 hopping channels a channel will not be used more than 4 times in any 100ms period.
The maximum dwell time in a 100ms period is 4 x 3.125ms = 12.5ms.
The average correction factor is, therefore, 20log(12.5/100) =-18dB

As this is a hopping radio the correction factor can be applied to the average value of the signal provided the average value was measured with the device continuously transmitting. DA 00-0705 permits the use of the average correction on the measured average value for frequency hopping radios.

All measurements in this data sheet do not include the average correction factor.

Note - measured power in table below is average power using gated average power meter and is for reference only.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Summary of Results

MAC Address: 001500B50405 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	BT 1Mb/s 802.11b	2402MHz 2412MHz	8.0 20.0	NA 12.4	Radiated Emissions 1- 10 GHz	FCC 15.247	52.8dBµV/m @ 4823.96MHz (-1.2 dB)
2	BT 1Mb/s 802.11b	2480MHz 2462MHz	8.0 23.5	NA 15.2		FCC 15.247	53.2dBµV/m @ 4923.98MHz (-0.8 dB)
3	BT 1Mb/s 802.11g	2402MHz 2412MHz	8.0 28.5	NA 14.5		FCC 15.247	46.6 dBµV/m @ 4824.0 MHz (-7.4 dB)
4	BT 1Mb/s 802.11g	2480MHz 2462MHz	8.0 28.0	NA 14.1		FCC 15.247	41.5 dBµV/m @ 4924.1 MHz (-12.5 dB)
WiFi mode for the following runs based on worst case mode from runs 1 through 4							
5	BT 1Mb/s 802.11b	2402MHz 2437MHz	8.0 21.0	NA 13.3	Radiated Emissions 1- 10 GHz	FCC 15.247	53.3 dBµV/m @ 4874.0 MHz (-0.7 dB)
6	BT 1Mb/s 802.11b	2440MHz 2412MHz	8.0 20.5	NA 12.7		FCC 15.247	52.8 dBµV/m @ 4824.0 MHz (-1.2 dB)
7	BT 1Mb/s 802.11b	2440MHz 2462MHz	8.0 25.0	NA 16.6	Radiated Emissions 1- 10 GHz	FCC 15.247	51.2 dBµV/m @ 4924.0 MHz (-2.8 dB)
8	BT 1Mb/s 802.11b	2480MHz 2437MHz	8.0 23.0	NA 14.8		FCC 15.247	52.8 dBµV/m @ 4874.0 MHz (-1.2 dB)
WiFi mode and channel and Bluetooth channel based on the worst case mode from runs 1 through 8							
9	BT 3Mb/s 802.11b	2402MHz 2412MHz	8.0 21.0	NA 13.1	Radiated Emissions 1- 10 GHz	FCC 15.247	52.7 dBµV/m @ 4824.0 MHz (-1.3 dB)
10	BTLE 802.11b	2402MHz 2412MHz	NA 22.0	NA 14.1		FCC 15.247	53.0 dBµV/m @ 4824.0 MHz (-1.0 dB)
WiFi mode - 802.11n 20MHz with both chains active at 16.5dBm per chain, center channel in each 5GHz band. Bluetooth on center channel, 1Mb/s mode							
11	BT 1Mb/s 802.11n20	2440MHz 5200MHz	8.0 39.0 / 39.0	NA 14.3 / 13.5	Radiated Emissions 1- 15 GHz	FCC 15.247	58.5 dBµV/m @ 10399.7 MHz (-9.8 dB)
12	BT 1Mb/s 802.11n20	2440MHz 5300MHz		NA 14.2 / 13.2			45.8 dBµV/m @ 10600.7 MHz (-8.2 dB)
13	BT 1Mb/s 802.11n20	2440MHz 5580MHz		NA 12.8 / 13.9			46.4 dBµV/m @ 11159.7 MHz (-7.6 dB)
14	BT 1Mb/s 802.11n20	2440MHz 5785MHz		NA 11.2 / 11.1			47.9 dBµV/m @ 11569.8 MHz (-6.1 dB)

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #1: 1-10GHz, 802.11b @ 2412 MHz Chain A, BT Basic Rate @ 2402 MHz Chain B

Date of Test: 12/26/2012 & 12/27/2012 Test Location: FT chambers #5 & #4

Test Engineer: M. Birgani & J. Caizzi Config Change: -

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	12.4	20.0
Chain B	NA	5.5	8.0

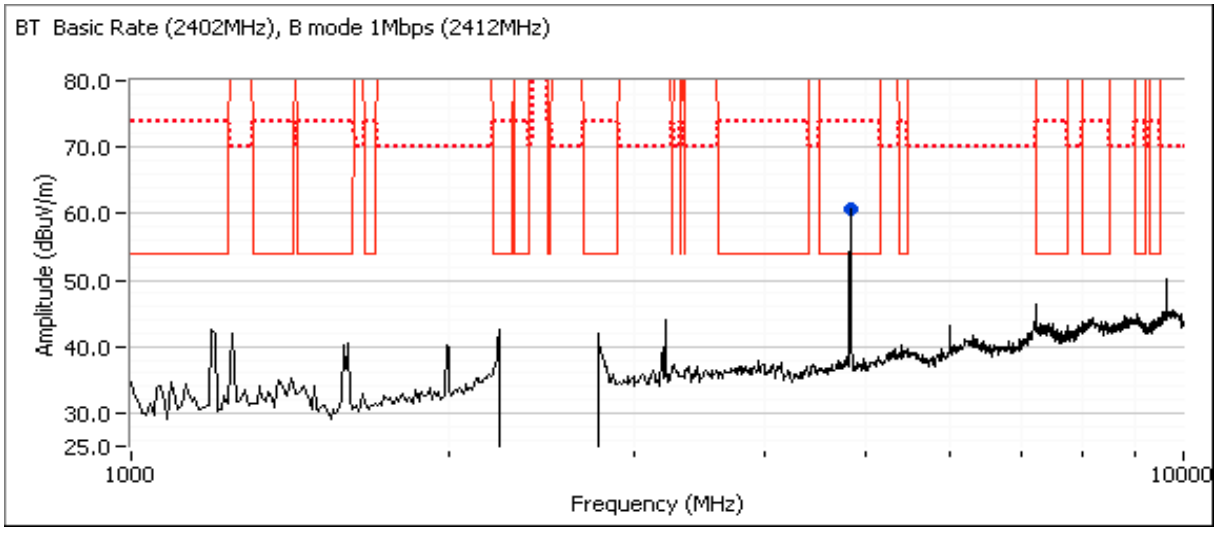
Note - measured power in table above is average power using gated average power meter and is for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4825.000	55.4	V	54.0	1.4	Pk	279	1.7	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4823.960	52.8	V	54.0	-1.2	AVG	279	1.7	Setting: 20.0, 1Mbps (12.4dBm)
4823.990	55.4	V	74.0	-18.6	PK	279	1.7	Setting: 20.0, 1Mbps (12.4dBm)



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

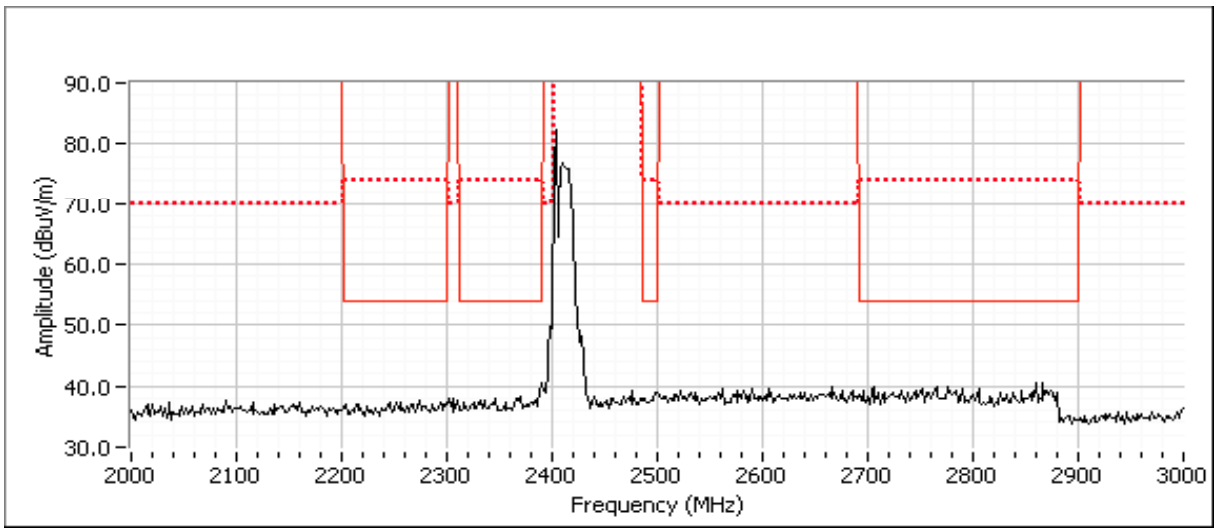
Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB 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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #2: 1-10GHz, 802.11b @ 2462 MHz Chain A, BT Basic Rate @ 2480 MHz Chain B

Date of Test: 12/26/2012 & 12/27/2012 Test Location: FT chambers #5 & #4

Test Engineer: M. Birgani & J. Caizzi Config Change: -

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	15.2	23.5
Chain B	NA		8.0

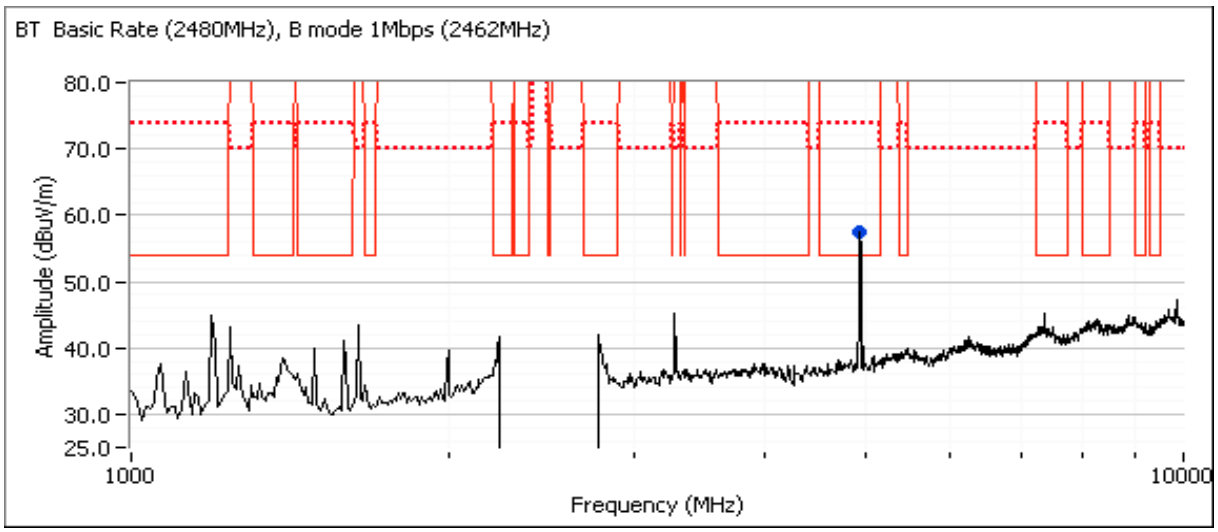
Note - measured power in table above is average power using gated average power meter and is for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4925.000	55.7	V	54.0	1.7	Peak	63	1.0	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4923.980	53.2	V	54.0	-0.8	AVG	63	1.0	Setting: 23.5 (15.2dBm)
4924.070	55.7	V	74.0	-18.3	PK	63	1.0	Setting: 23.5 (15.2dBm)



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

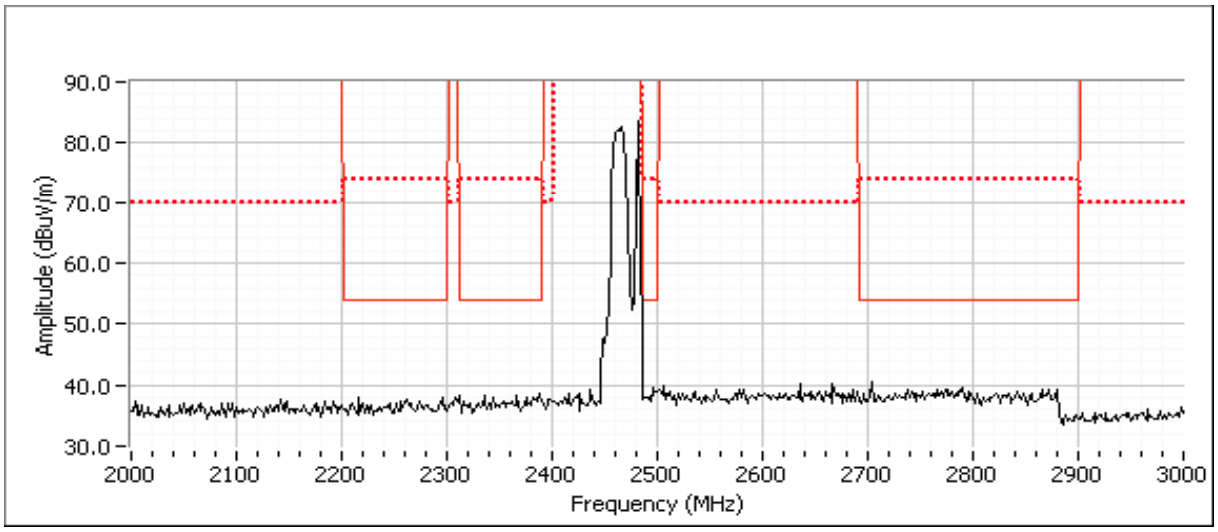
Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB 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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #3: 1-10GHz, 802.11g @ 2412 MHz Chain A, BT Basic Rate @ 2402 MHz Chain B

Date of Test: 12/26/2012 Test Location: FT chamber #5

Test Engineer: M. Birgani Config Change: -

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	14.5	14.5	28.5
Chain B	NA		8.0

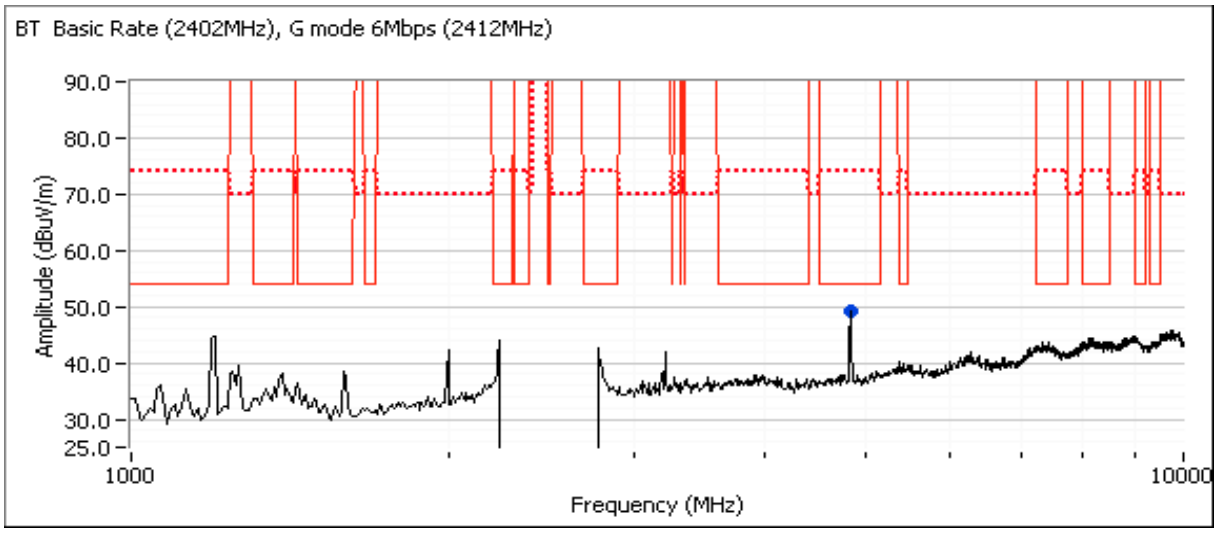
Note - measured power in table above is average power using gated average power meter and is for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4825.000	49.1	V	54.0	-4.9	Peak	235	1.5	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.000	46.6	V	54.0	-7.4	AVG	270	1.6	RB 1 MHz;VB 10 Hz;Peak
4824.870	58.7	V	74.0	-15.3	PK	270	1.6	RB 1 MHz;VB 3 MHz;Peak



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

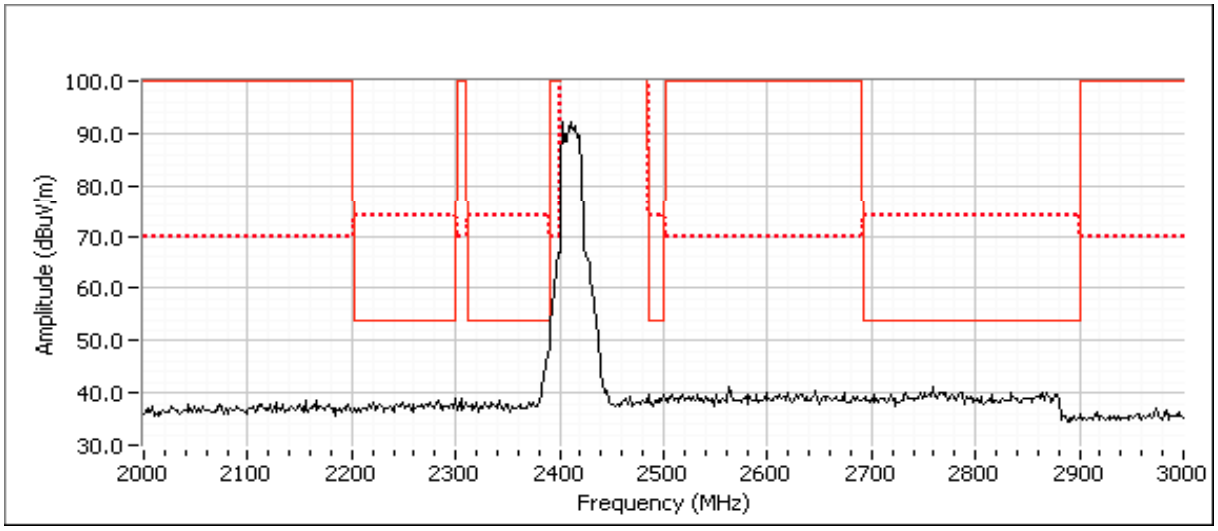
Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB 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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #4: 1-10GHz, 802.11g @ 2462 MHz Chain A, BT Basic Rate @ 2480 MHz Chain B

Date of Test: 12/26/2012 Test Location: FT chamber #5

Test Engineer: M. Birgani Config Change: -

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	14.0	14.1	28.0
Chain B	NA		8.0

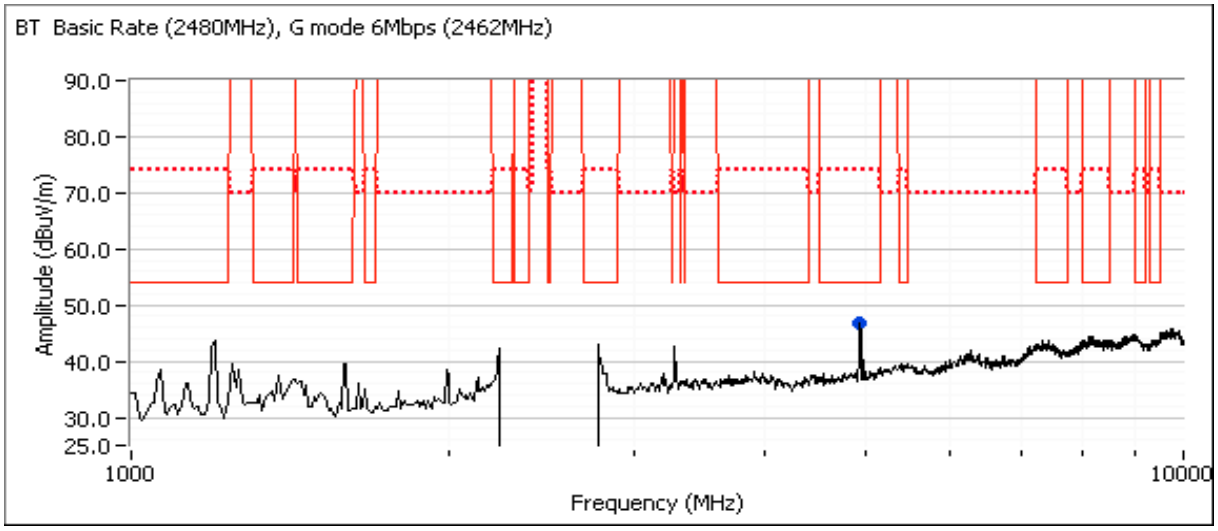
Note - measured power in table above is average power using gated average power meter and is for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4925.000	46.7	V	54.0	-7.3	Peak	284	2.5	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4924.130	41.5	V	54.0	-12.5	AVG	67	1.0	RB 1 MHz;VB 10 Hz;Peak
4920.400	53.2	V	74.0	-20.8	PK	67	1.0	RB 1 MHz;VB 3 MHz;Peak



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

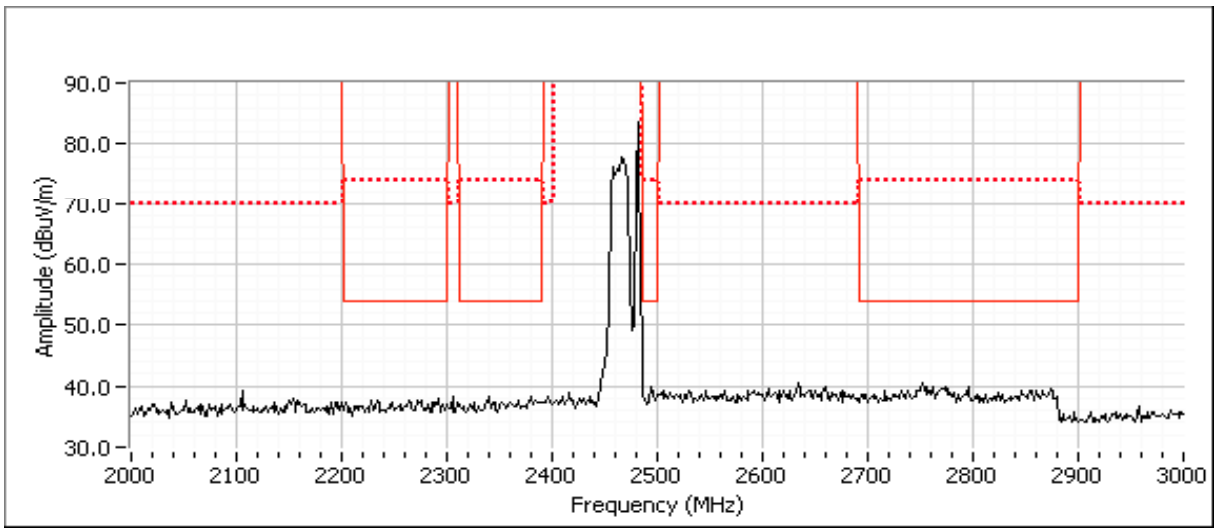
Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB 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:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #5: 1-10GHz, 802.11b @ 2437 MHz Chain A, BT Basic Rate @ 2402 MHz Chain B

Date of Test: 12/27/2012 Test Location: Chamber 4

Test Engineer: M. Birgani Config Change: -

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.0	13.3	21.0
Chain B	NA	NA	8.0

Note - measured power in table above is average power using gated average power meter and is for reference only.

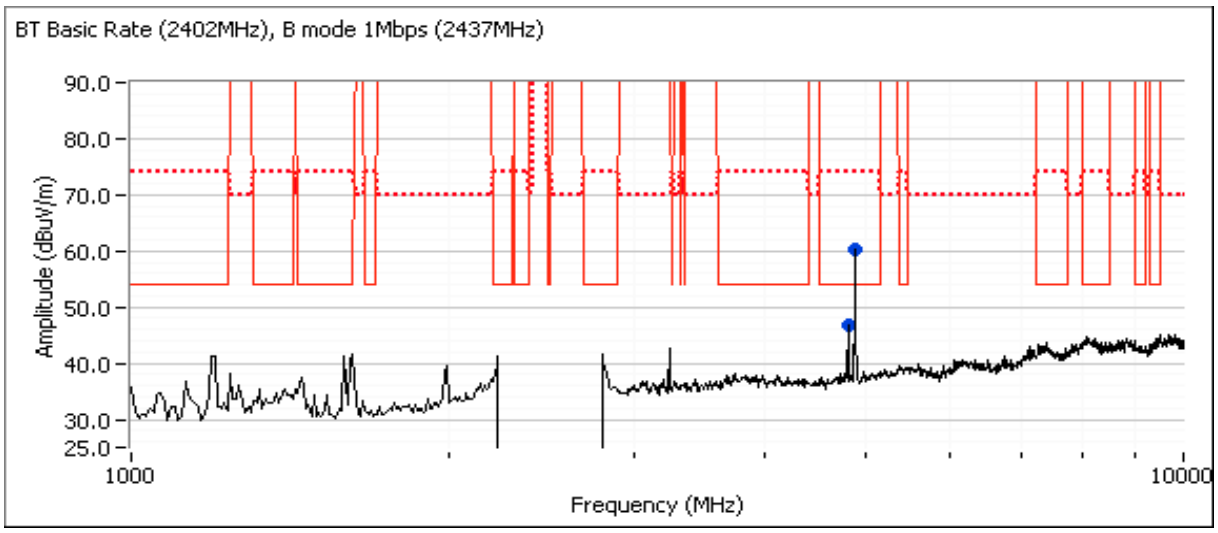
Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4874.080	56.0	V	54.0	2.0	Peak	275	1.0	
4804.000	46.8	V	54.0	-7.2	Peak	273	1.0	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4874.030	53.3	V	54.0	-0.7	AVG	275	1.3	Setting: 21.0 (13.3dBm)
4873.990	56.0	V	74.0	-18.0	PK	275	1.3	Setting: 21.0 (13.3dBm)
4804.250	52.1	V	74.0	-21.9	PK	272	1.3	
4803.930	52.1	V	54.0	-1.9	AVG	272	1.3	Note 3

Note 3:	Signal is only present when Bluetooth is enabled, average correction for hopping occupancy could be applied



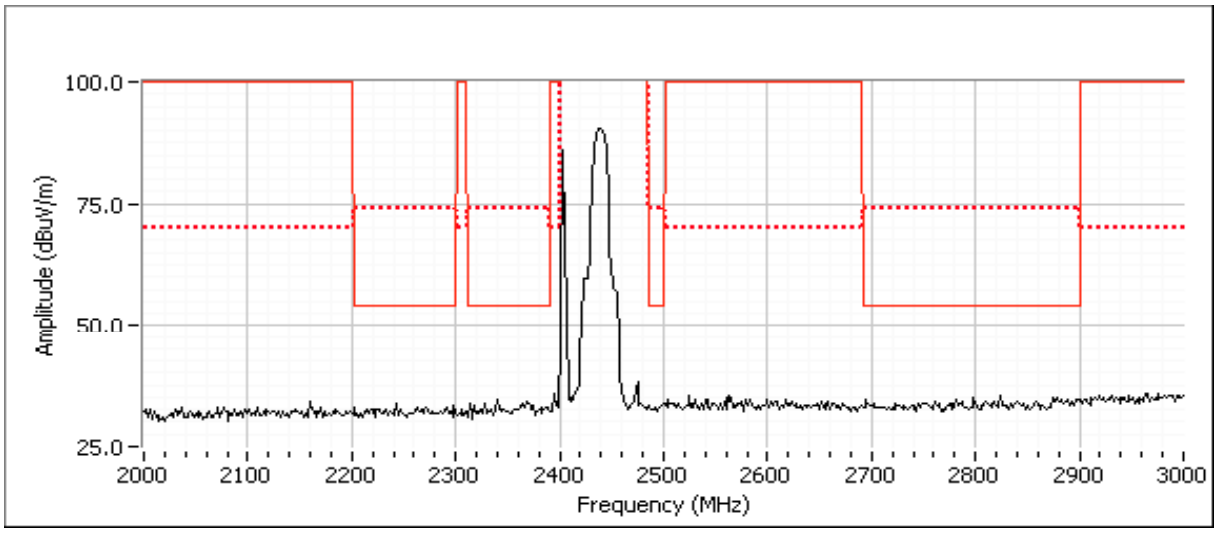
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #6: 1-10GHz, 802.11b @ 2412 MHz Chain A, BT Basic Rate @ 2440 MHz Chain B

Date of Test: 12/27/2012 Test Location: Chamber 4

Test Engineer: M. Birgani Config Change: -

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	12.7	20.5
Chain B	NA	5.8	8.0

Note - measured power in table above is average power using gated average power meter and is for reference only.

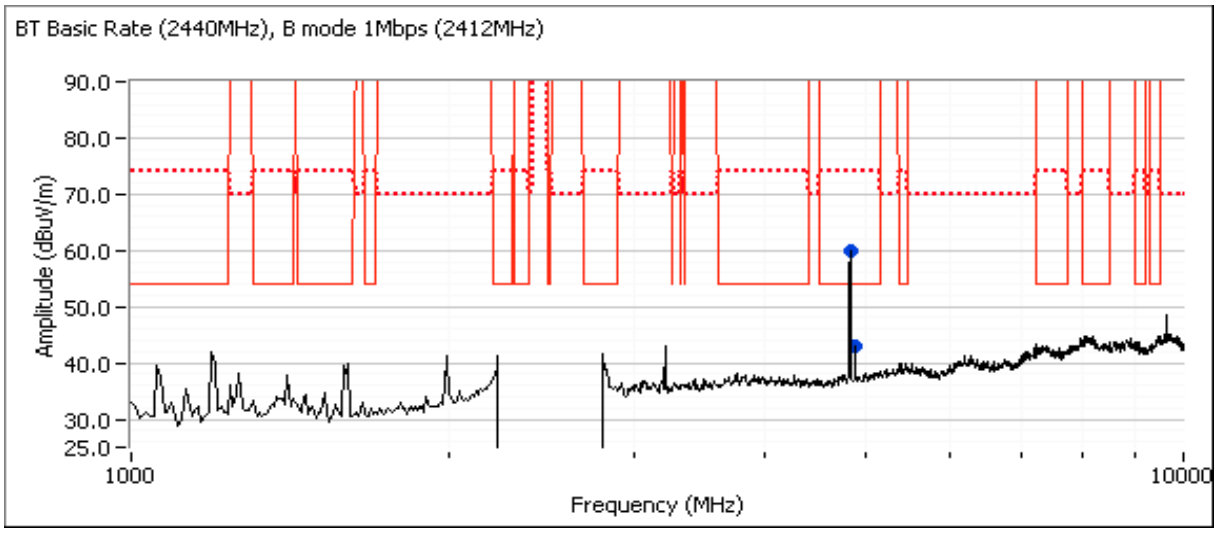
Preliminary Measurements (Peak versus average limit)

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	59.8	V	54.0	5.8	Peak	240	2.5	
4879.990	42.9	V	54.0	-11.1	Peak	90	2.5	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.020	52.8	V	54.0	-1.2	AVG	272	2.3	Setting: 20.5 (12.7dBm)
4824.160	55.7	V	74.0	-18.3	PK	272	2.3	Setting: 20.5 (12.7dBm)
4879.990	47.2	V	54.0	-6.8	AVG	35	1.0	Note 3
4880.510	47.2	V	74.0	-26.8	PK	35	1.0	

Note 3:	Signal is only present when Bluetooth is enabled, average correction for hopping occupancy could be applied



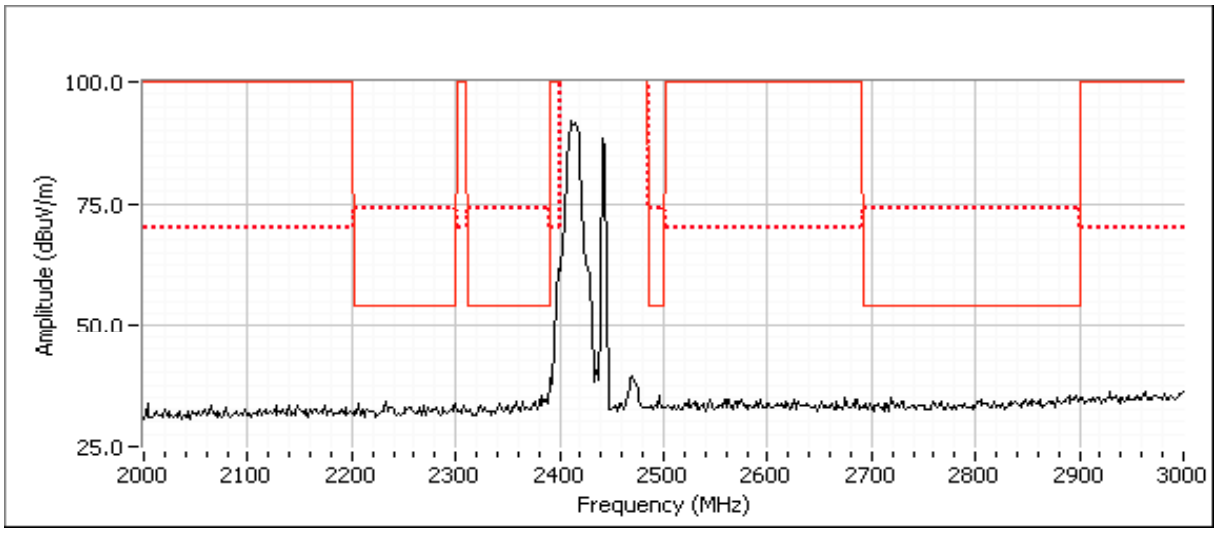
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #7: 1-10GHz, 802.11b @ 2462 MHz Chain A, BT Basic Rate @ 2440 MHz Chain B

Date of Test: 12/27/2012 Test Location: Chamber 4

Test Engineer: Rafael Varelas Config Change: None

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.6	25.0
Chain B	NA		8.0

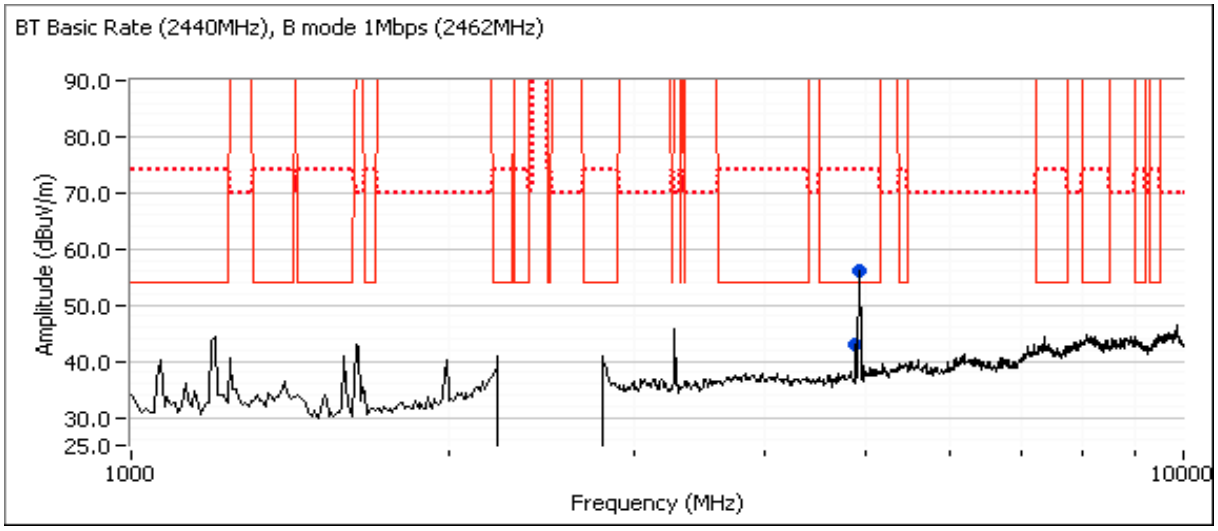
Note - measured power in table above is average power, for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4879.650	43.1	V	54.0	-10.9	Peak	277	1.9	
4923.960	56.1	V	54.0	2.1	Peak	79	1.9	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4924.020	51.2	V	54.0	-2.8	AVG	298	1.0	RB 1 MHz;VB 10 Hz;Peak
4924.020	54.0	V	74.0	-20.0	PK	298	1.0	RB 1 MHz;VB 3 MHz;Peak
4880.010	39.1	V	54.0	-14.9	AVG	305	1.0	RB 1 MHz;VB 10 Hz;Peak
4879.420	47.8	V	74.0	-26.2	PK	305	1.0	RB 1 MHz;VB 3 MHz;Peak



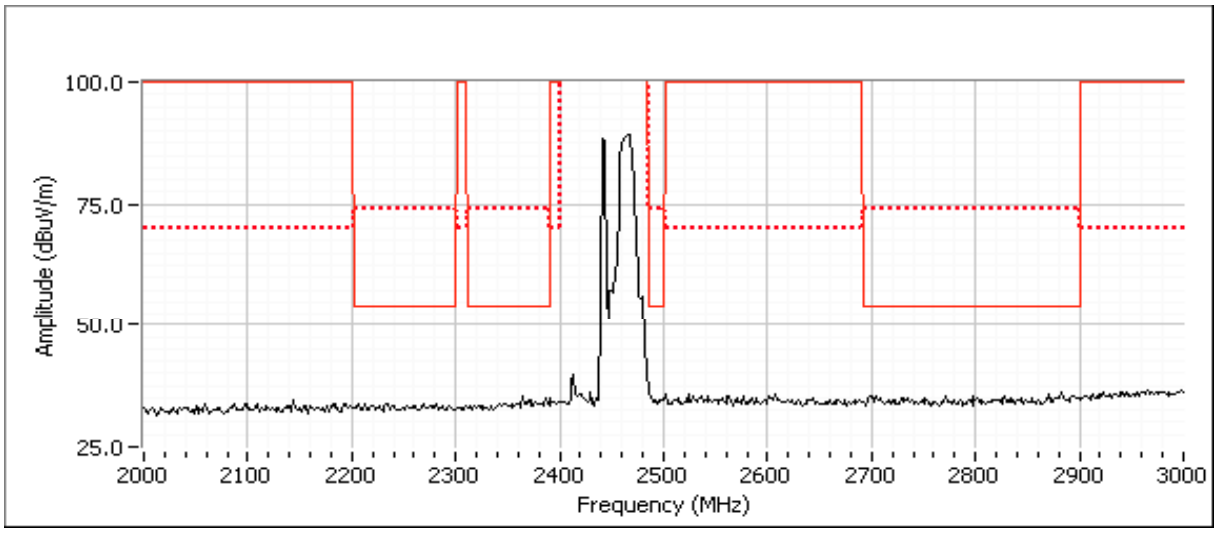
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #8: 1-10GHz, 802.11b @ 2437 MHz Chain A, BT Basic Rate @ 2480 MHz Chain B

Date of Test: 12/27/2012 Test Location: Chamber 4

Test Engineer: Rafael Varelas Config Change: None

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.0	14.8	23.0
Chain B	NA		8.0

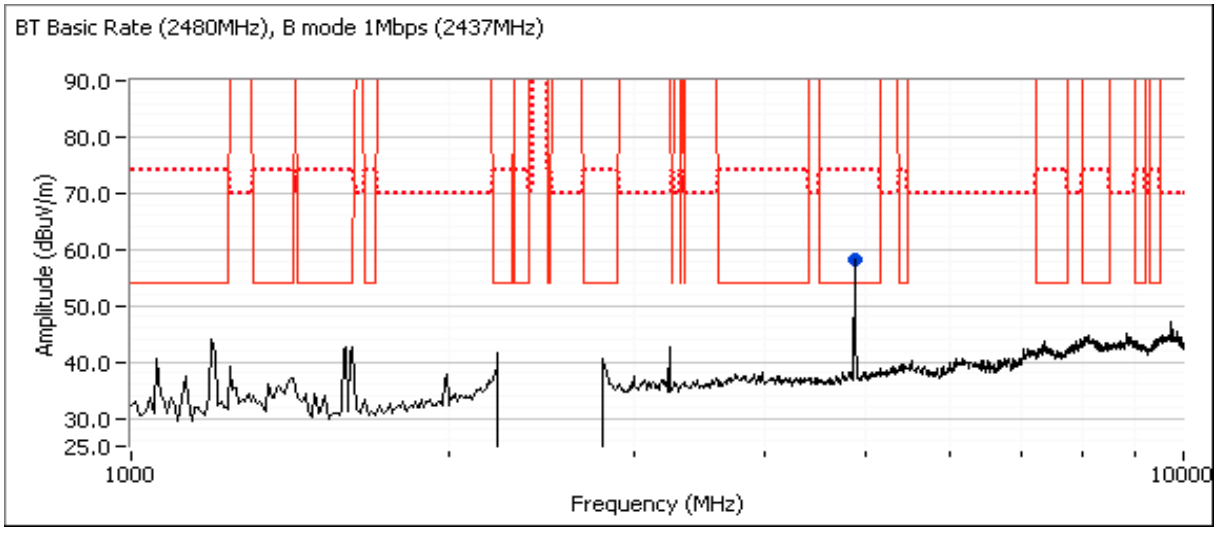
Note - measured power in table above is average power, for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4874.030	55.0	V	54.0	1.0	Peak	273	2.5	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4874.020	52.8	V	54.0	-1.2	AVG	272	1.2	Setting: 23, 1Mbps
4874.050	55.5	V	74.0	-18.5	PK	272	1.2	Setting: 23, 1Mbps



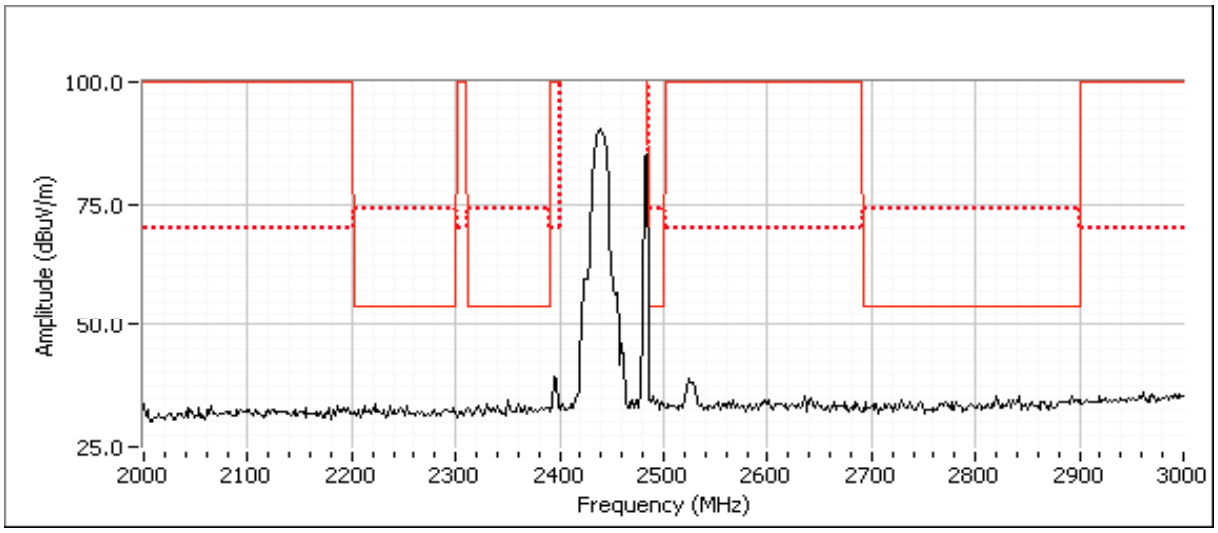
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #9: 1-10GHz, 802.11b @ 2412 MHz Chain A, BT EDR Rate @ 2402 MHz Chain B

Date of Test: 12/27/2012 Test Location: Chamber 4

Test Engineer: Rafael Varelas Config Change: None

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	13.1	21.0
Chain B	NA		8.0

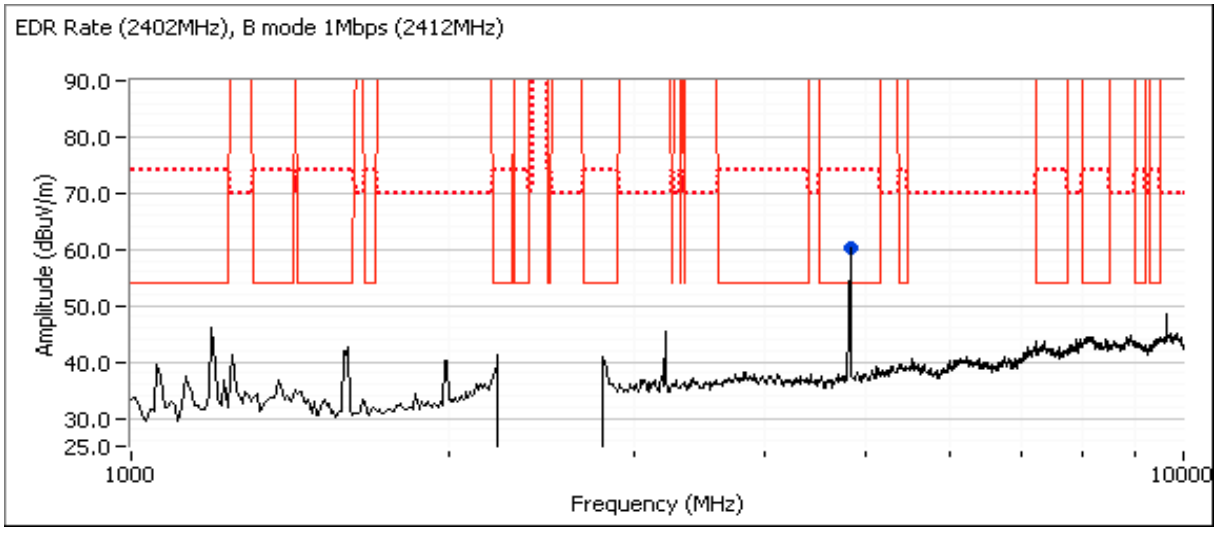
Note - measured power in table above is average power, for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.030	55.2	V	54.0	1.2	Peak	271	2.5	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.040	52.7	V	54.0	-1.3	AVG	277	2.3	Setting: 21.0, 1Mbps
4823.860	55.5	V	74.0	-18.5	PK	277	2.3	Setting: 21.0, 1Mbps



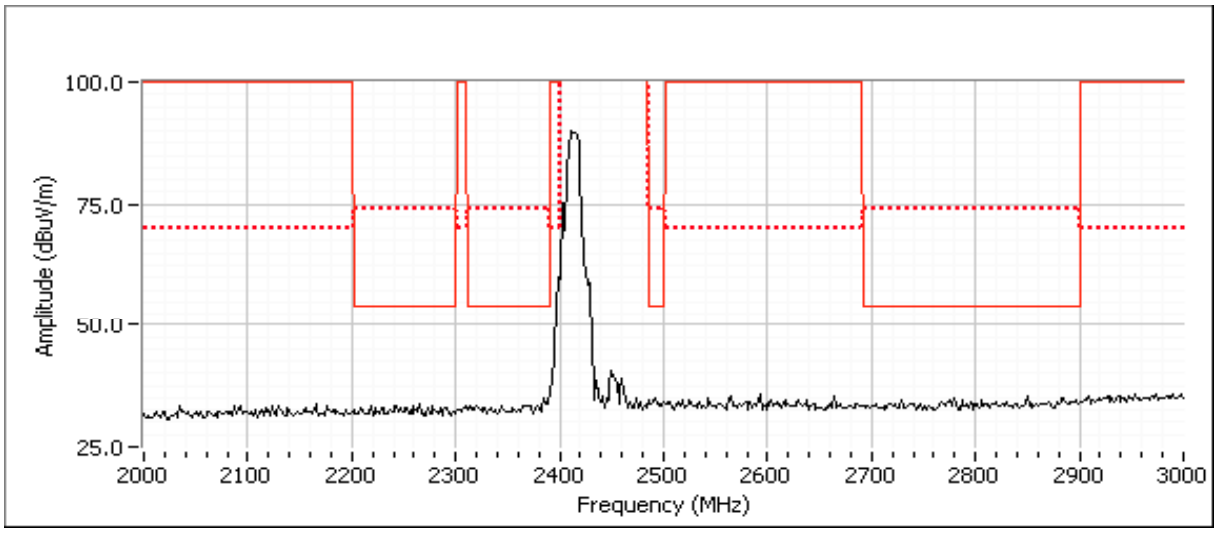
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #10: 1-10GHz, 802.11b @ 2412 MHz Chain A, BTLE @ 2402 MHz Chain B

Date of Test: 12/27/2012 Test Location: Chamber 4

Test Engineer: Rafael Varelas Config Change: None

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	14.1	22.0
Chain B	NA		37bytes

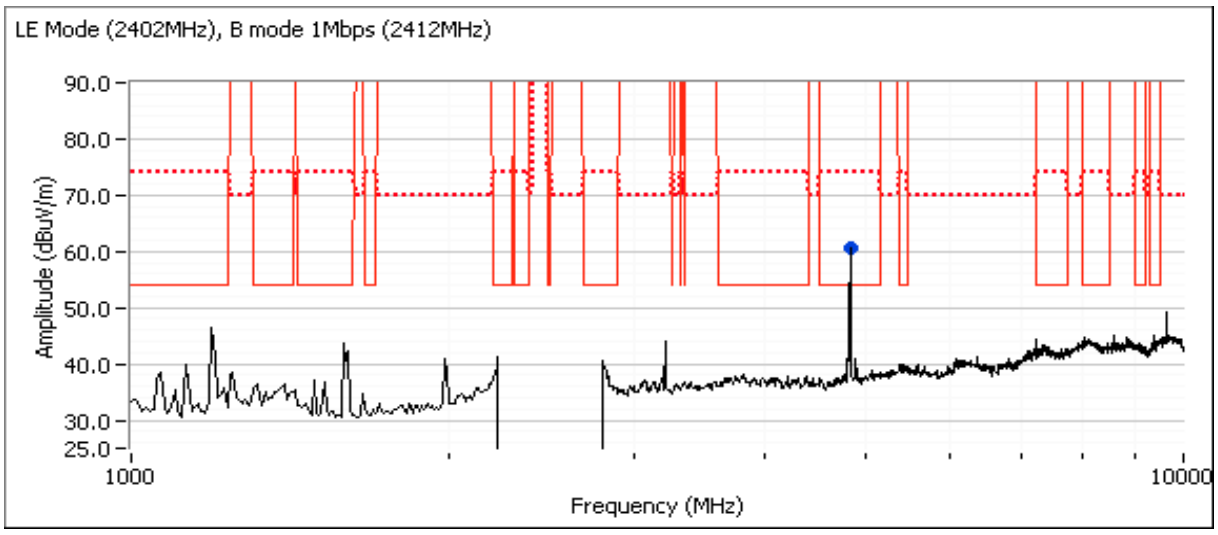
Note - measured power in table above is average power, for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.030	55.6	V	54.0	1.6	Peak	74	1.3	

Spurious Emissions excluding allocated band (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.040	53.0	V	54.0	-1.0	AVG	66	1.2	Setting: 22.0, 1Mbps
4824.190	55.9	V	74.0	-18.1	PK	66	1.2	Setting: 22.0, 1Mbps



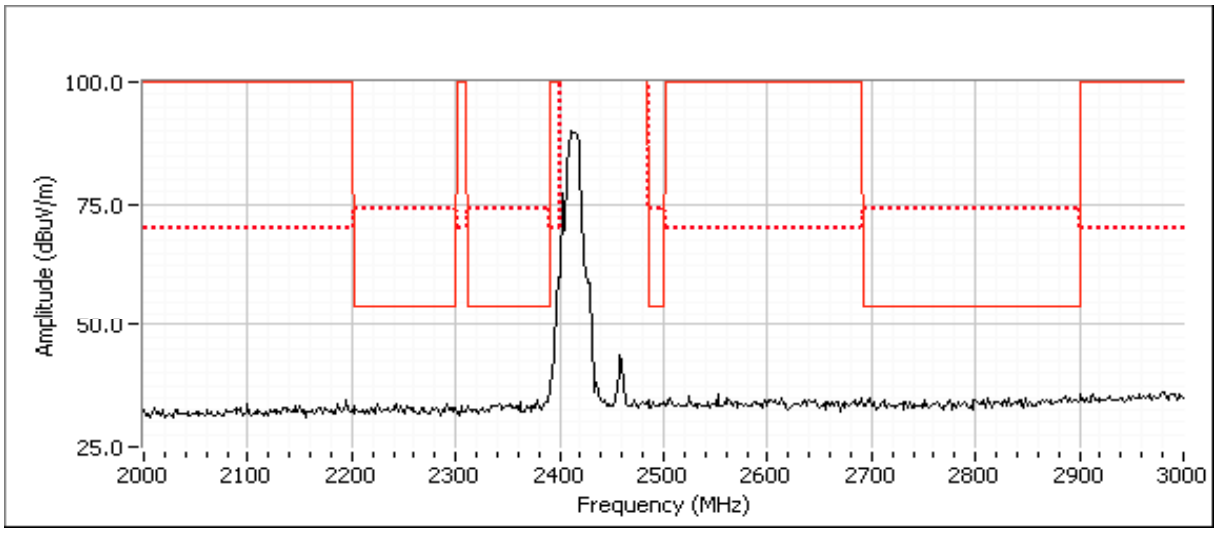
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions near allocated band (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #11: 1-15GHz, 802.11n20 @ 5200 MHz Chain A+B, BT Basic Rate @ 2440 MHz Chain B

Date of Test: 12/28/2012 Test Location: Chamber 5
Test Engineer: John Caizzi Config Change: none

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.0	14.3	39.0
Chain B	16.0	13.5	39.0
Bluetooth	Max	NA	8 dBm

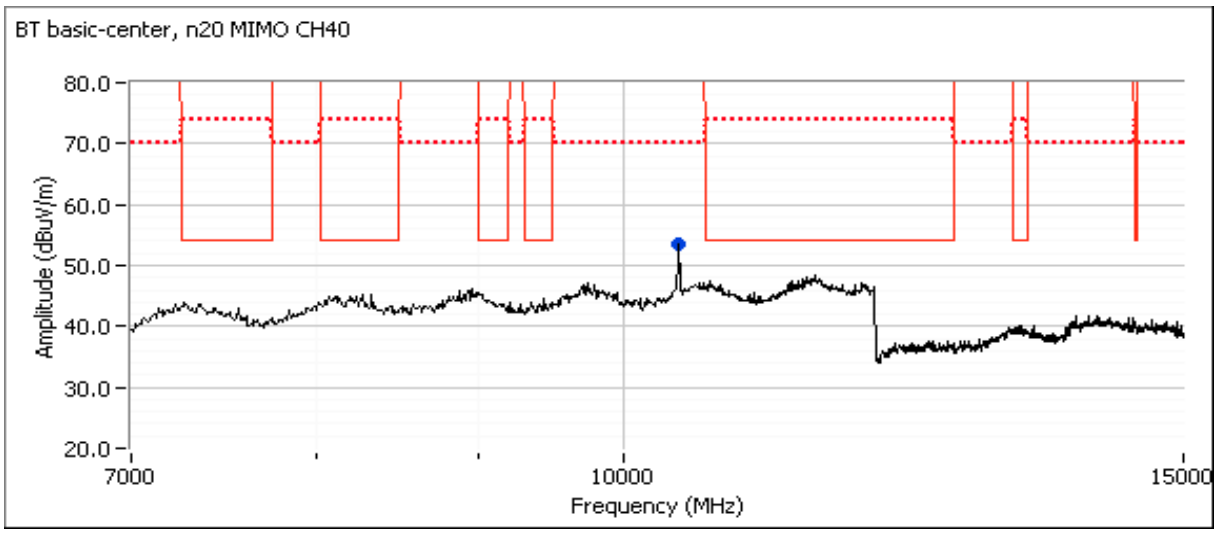
Note - measured power in table above is average power, for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10408.330	*53.4*	*V*	*68.3*	*-14.9*	*Peak*	*69*	*1.0*	

Spurious Emissions (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10399.660	58.5	V	*68.3*	-9.8	PK	70	1.47	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

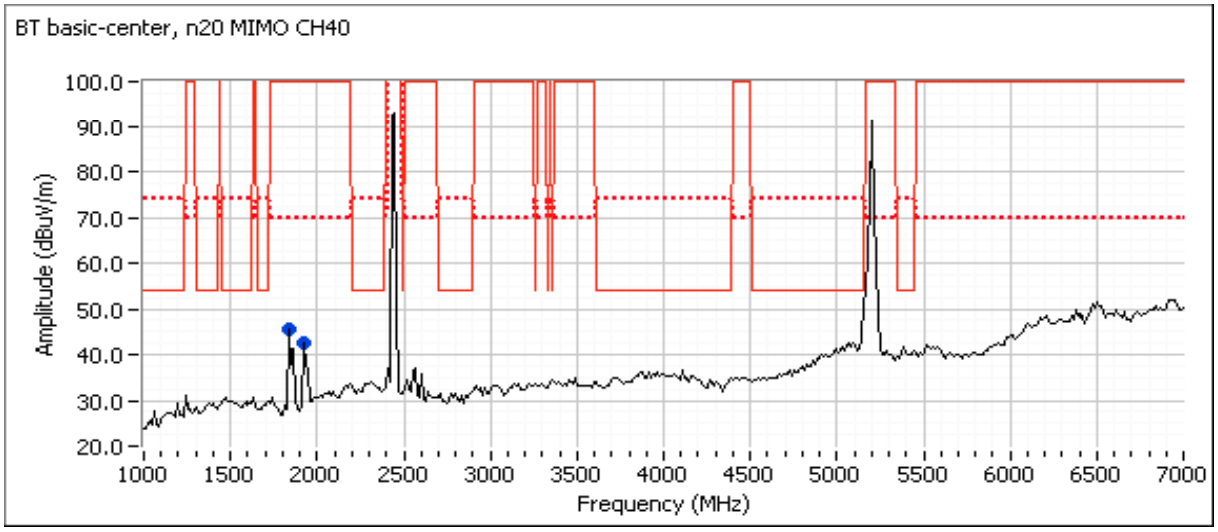
Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1841.680	*45.6*	*V*	54.0	*-8.4*	*Peak*	*0*	*1.0*	
1925.850	*42.5*	*V*	74.0	*-31.5*	*Peak*	*0*	*1.0*	

Spurious Emissions (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1840.190	32.8	V	54.0	*-21.2*	AVG	0	1.0	Note 1
1841.120	44.4	V	74.0	*-29.6*	PK	0	1.0	Note 1
1924.700	33.1	V	54.0	*-20.9*	AVG	0	1.0	Note 1
1924.360	45.9	V	74.0	*-28.1*	PK	0	1.0	Note 1

Note 1:	Noise floor measurement. Could not find signals when maximizing.



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #12: 1-15GHz, 802.11n20 @ 5300 MHz Chain A+B, BT Basic Rate @ 2440 MHz Chain B

Date of Test: 12/28/2012 Test Location: Chamber 5
Test Engineer: John Caizzi Config Change: none

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.0	14.2	39.0
Chain B	16.0	13.2	39.0
Bluetooth	Max	NA	8 dBm

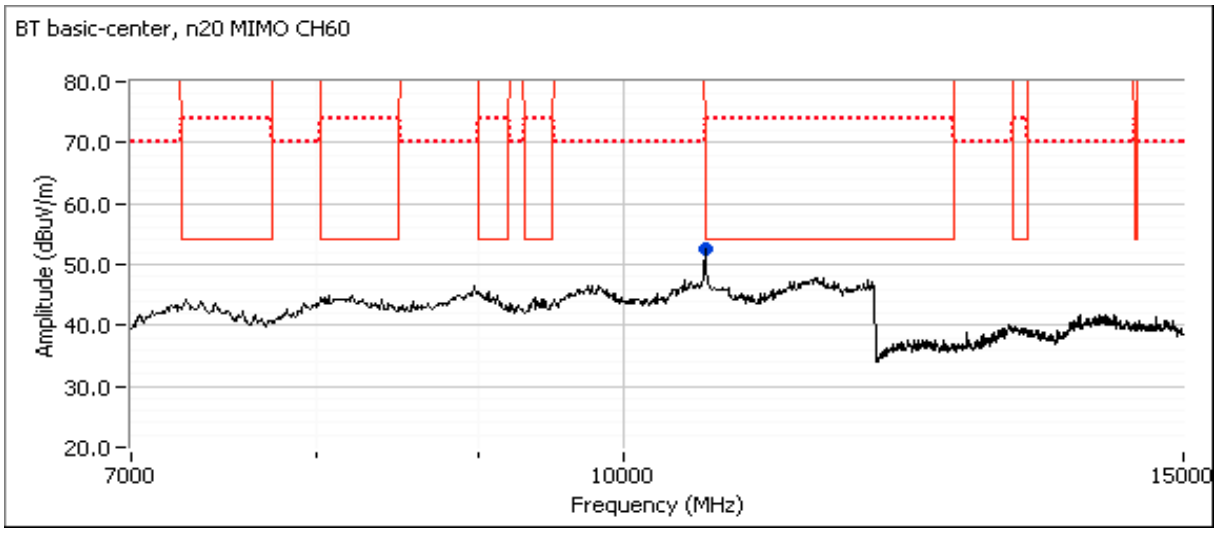
Note - measured power in table above is average power, for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10608.330	*52.7*	*V*	*54.0*	*-1.3*	*Peak*	*127*	*1.0*	

Spurious Emissions (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10600.710	45.8	V	54.0	-8.2	AVG	116	1.00	
10603.870	57.6	V	74.0	-16.4	PK	116	1.00	



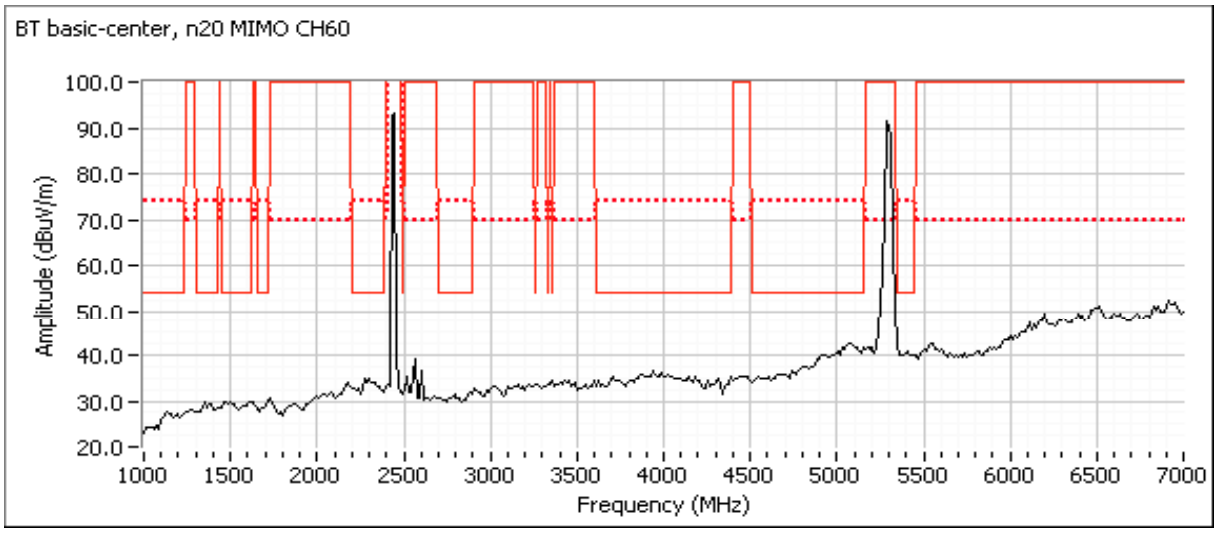
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #13: 1-15GHz, 802.11n20 @ 5580 MHz Chain A+B, BT Basic Rate @ 2440 MHz Chain B

Date of Test: 12/28/2012 Test Location: Chamber 5
Test Engineer: John Caizzi Config Change: none

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.0	12.8	39.0
Chain B	16.0	13.9	39.0
Bluetooth	Max	NA	8 dBm

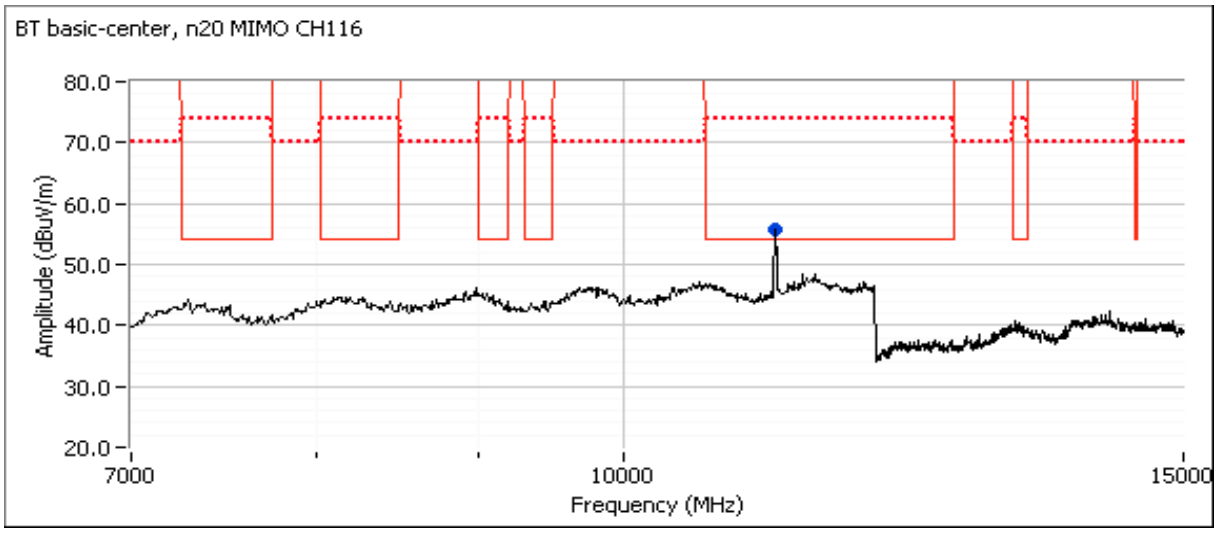
Note - measured power in table above is average power, for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11166.670	*55.9*	*V*	*54.0*	*1.9*	*Peak*	*249*	*1.0*	

Spurious Emissions (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11159.670	46.4	V	54.0	-7.6	AVG	250	1.00	
11160.340	61.6	V	74.0	-12.4	PK	250	1.00	



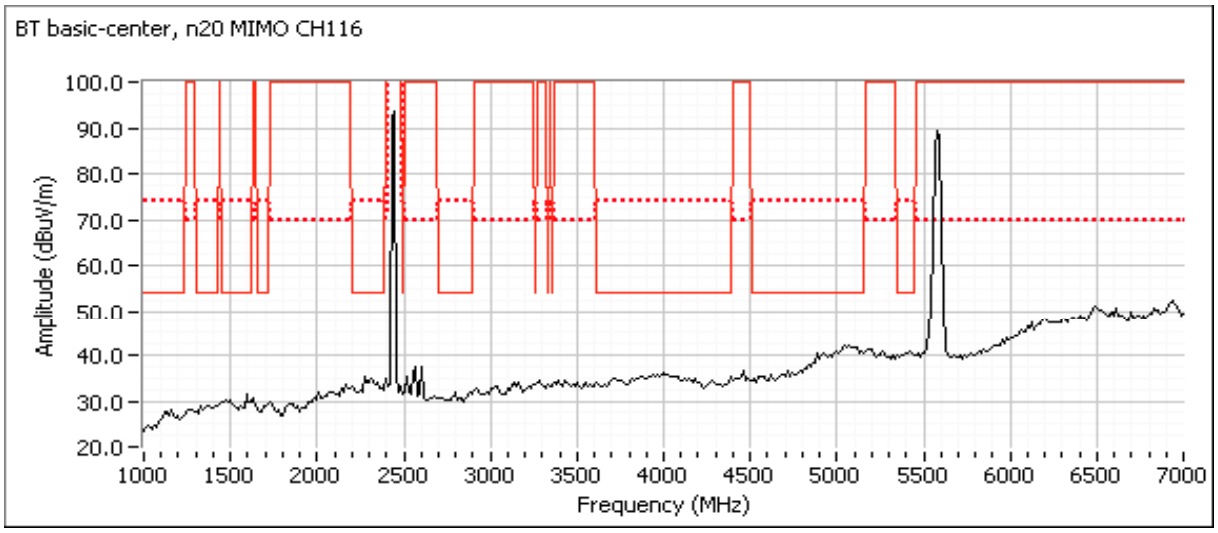
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Run #14: 1-15GHz, 802.11n20 @ 5785 MHz Chain A+B, BT Basic Rate @ 2440 MHz Chain B

Date of Test: 12/28/2012 Test Location: Chamber 5
Test Engineer: John Caizzi Config Change: none

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.0	11.2	39.0
Chain B	16.0	11.1	39.0
Bluetooth	Max	NA	8 dBm

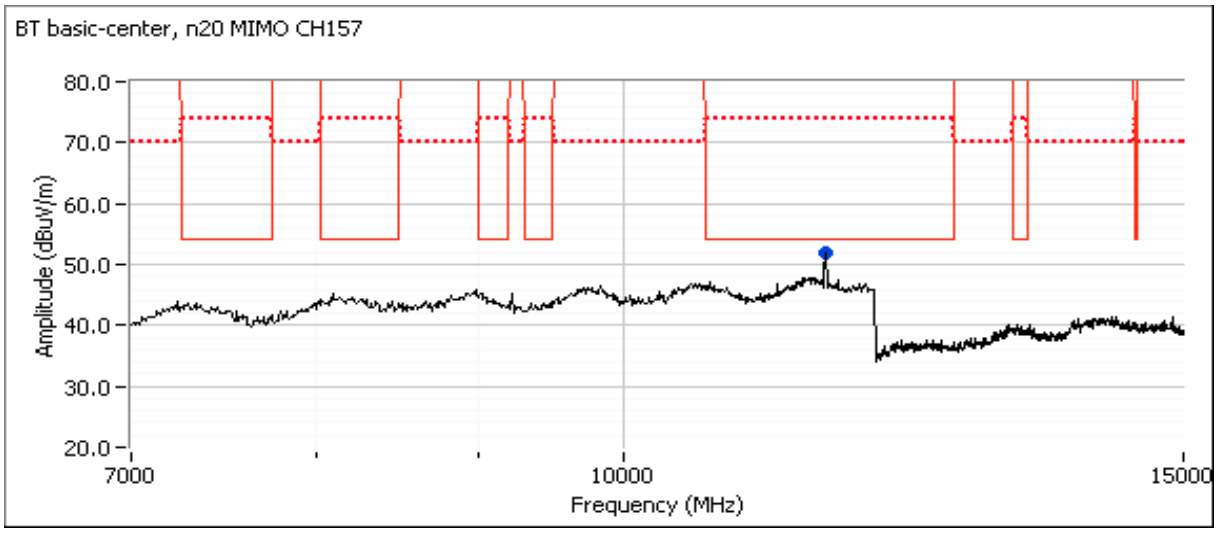
Note - measured power in table above is average power, for reference only.

Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11575.000	*52.0*	*V*	*54.0*	*-2.0*	*Peak*	*72*	*1.0*	

Spurious Emissions (final measurements at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11569.800	47.9	V	54.0	-6.1	AVG	131	1.33	
11570.470	60.9	V	74.0	-13.1	PK	131	1.33	



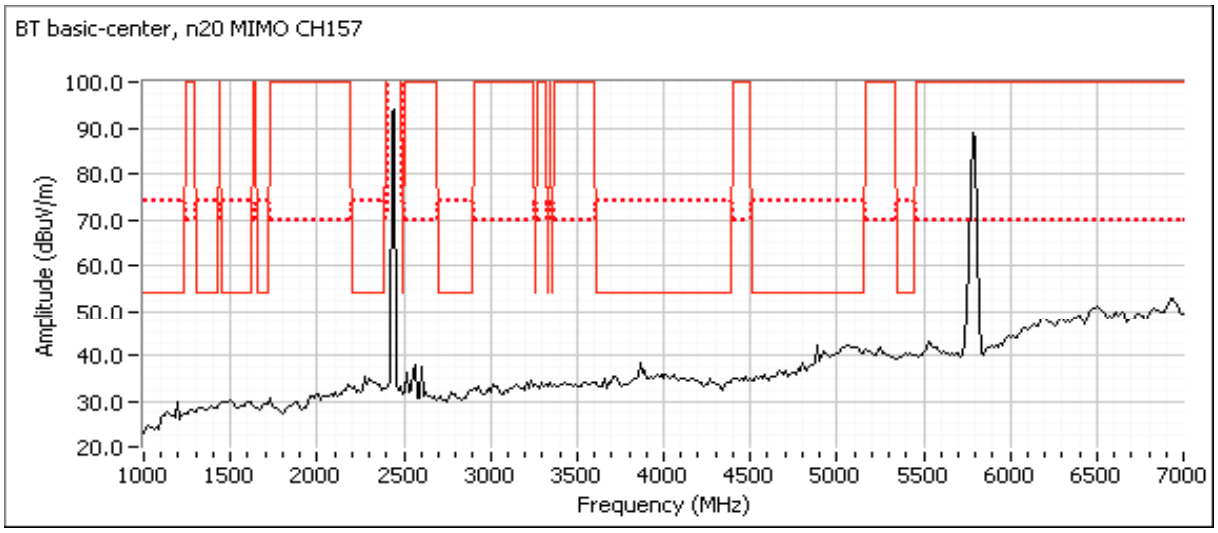
Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	N/A

Preliminary Measurements (Peak versus average limit) at 20-30cm from EUT

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Spurious Emissions (final measurments at 3m)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	



Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	B

Radiated 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: 12/28/2012
Test Engineer: John Caizzi
Test Location: Chamber 5

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

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing.
The test distance and extrapolation factor (if applicable) are detailed under each run description.

Ambient Conditions:

Temperature: 18 °C
Rel. Humidity: 39 %

Summary of Results

MAC Address: 001500B50405 DRTU Tool Version 1.5.6-0445 Driver version 15.3.1.2

Run #	Test Performed	Limit	Result	Margin
1	Radiated Emissions 30 - 1000 MHz, Maximized	FCC 15.209 / RSS 210	Pass	29.0 dBµV/m @ 48.02 MHz (-11.0 dB)

Note - preliminary measurements indicated that the radiated emissions from the combination of test fixture and EUT were not affected by the modules operating frequency or mode (transmit versus receive mode). The system was therefore evaluated against the most stringent set of limits from FCC 15.247, FCC 15E and RSS 210 with the device operating at max power (16.5dBm) on Chain A at 2437MHz, 802.11b mode and max power (7dBm) on the top channel in Bluetooth mode (1Mb/s data rate).

Modifications Made During Testing

No modifications were made to the EUT during testing

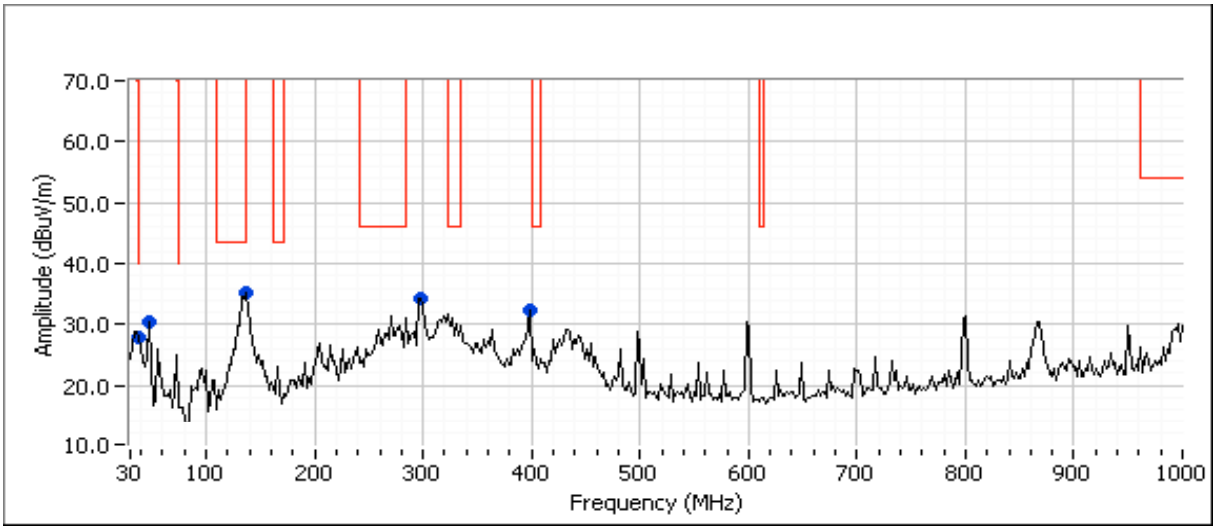
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	B

Run #1: Preliminary Radiated Emissions, 30 - 1000 MHz
Configured to TX , 802.11b, 16.5dBm on Chain A (setting 26.0) on channel 6, Bluetooth 7dBm, 1Mb/s (setting 8.0)

Test Parameters for Preliminary Scan(s)			
Frequency Range	Prescan Distance	Limit Distance	Extrapolation Factor
30 - 1000 MHz	3	3	0.0



Preliminary peak readings captured during pre-scan

Frequency	Level	Pol	FCC 15.209 / RSS 210		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
136.412	35.1	V	43.5	-8.4	Peak	129	1.0	
37.881	28.0	V	40.0	-12.0	Peak	335	1.0	
399.938	32.5	H	46.0	-13.5	Peak	322	1.0	
48.020	30.4	V	40.0	-9.6	Peak	263	1.0	Note 1
299.808	34.4	H	46.0	-11.6	Peak	33	1.0	Note 1

Preliminary quasi-peak readings (no manipulation of EUT interface cables)

Frequency	Level	Pol	FCC 15.209 / RSS 210		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
48.020	29.0	V	40.0	-11.0	QP	304	1.00	Note 1
37.881	23.8	V	40.0	-16.2	QP	346	1.00	
399.938	25.2	H	46.0	-20.8	QP	327	1.00	
48.020	29.0	V	40.0	-11.0	QP	304	1.00	Note 1
136.412	32.1	V	43.5	-11.4	QP	140	1.00	
299.808	29.8	H	46.0	-16.2	QP	31	1.00	Note 1

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	B

Note 1:	Emission is not in restricted band, but the more stringent restricted band limit was used.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	B

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: 12/18/2012
Test Engineer: Mark Hill
Test Location: Fremont Chamber #4
Config. Used: 1
Config Change: -
EUT Voltage: 120V/60Hz

General Test Configuration

For tabletop equipment, the EUT 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: 19 °C
Rel. Humidity: 41 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power,120V/60Hz	Class B	Pass	31.3 dBµV @ 4.428 MHz (-24.7 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.

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	B

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz

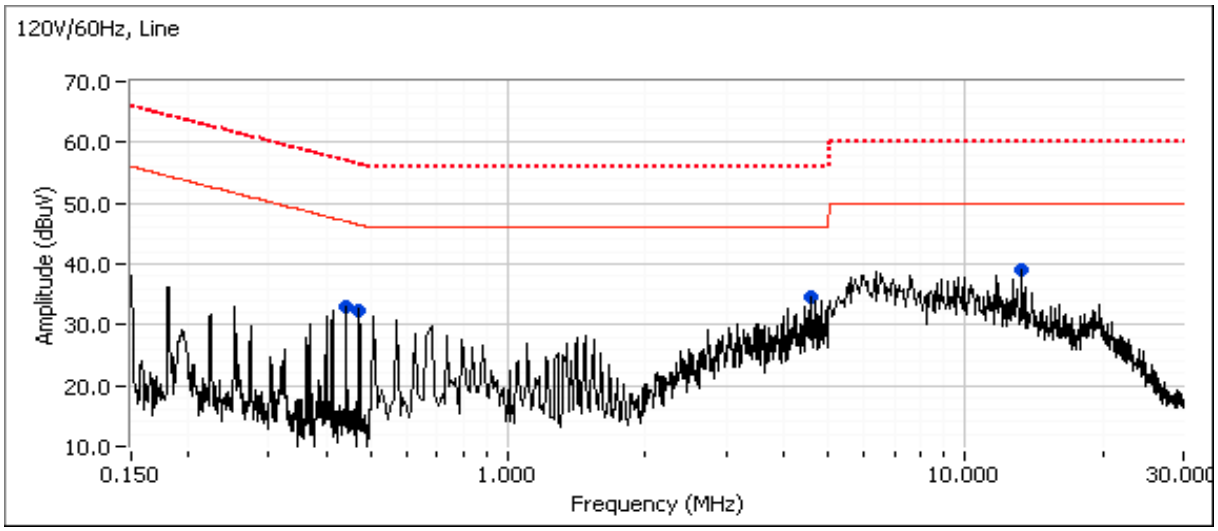
Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

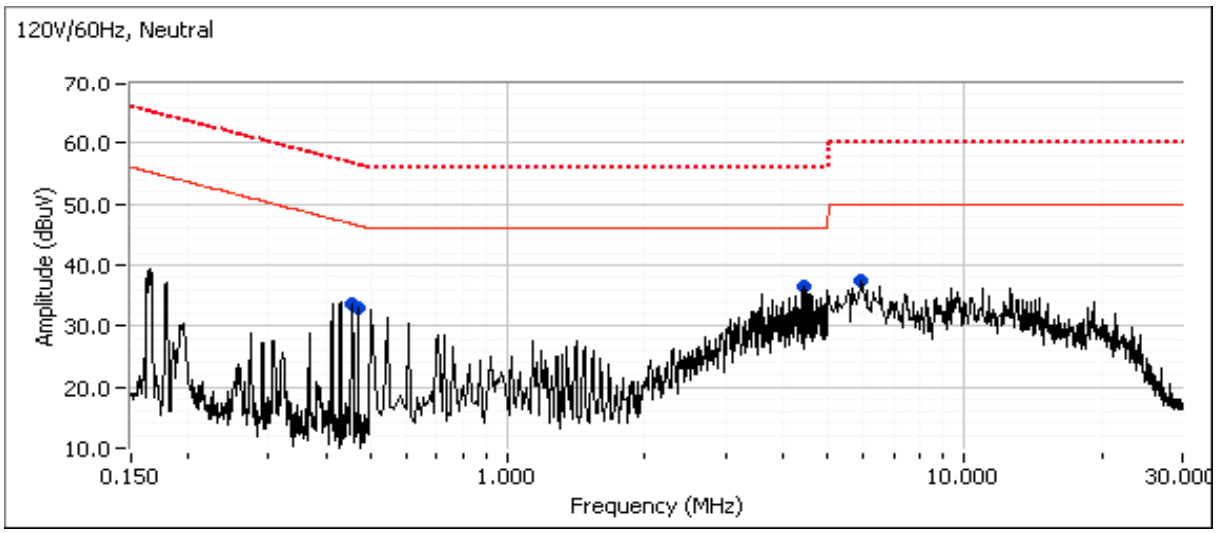
Frequency	Level	AC	Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.455	33.7	Neutral	46.8	-13.1	Peak	
0.471	33.1	Neutral	46.5	-13.4	Peak	
4.428	36.6	Neutral	46.0	-9.4	Peak	
5.983	37.4	Neutral	50.0	-12.6	Peak	
0.443	33.0	Line 1	47.0	-14.0	Peak	
0.473	32.5	Line 1	46.5	-14.0	Peak	
4.621	34.6	Line 1	46.0	-11.4	Peak	
13.329	38.9	Line 1	50.0	-11.1	Peak	

Final quasi-peak and average readings

Frequency	Level	AC	Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
4.428	31.3	Neutral	56.0	-24.7	QP	QP (1.00s)
4.428	20.4	Neutral	46.0	-25.6	AVG	AVG (0.10s)
4.621	28.5	Line 1	56.0	-27.5	QP	QP (1.00s)
5.983	30.9	Neutral	60.0	-29.1	QP	QP (1.00s)
4.621	16.8	Line 1	46.0	-29.2	AVG	AVG (0.10s)
13.329	20.5	Line 1	50.0	-29.5	AVG	AVG (0.10s)
0.443	26.8	Line 1	57.0	-30.2	QP	QP (1.00s)
0.473	26.3	Line 1	56.5	-30.2	QP	QP (1.00s)
0.471	26.2	Neutral	56.5	-30.3	QP	QP (1.00s)
0.455	26.4	Neutral	56.8	-30.4	QP	QP (1.00s)
5.983	19.5	Neutral	50.0	-30.5	AVG	AVG (0.10s)
13.329	28.3	Line 1	60.0	-31.7	QP	QP (1.00s)
0.443	8.3	Line 1	47.0	-38.7	AVG	AVG (0.10s)
0.473	6.9	Line 1	46.5	-39.6	AVG	AVG (0.10s)
0.455	6.6	Neutral	46.8	-40.2	AVG	AVG (0.10s)
0.471	6.1	Neutral	46.5	-40.4	AVG	AVG (0.10s)

Client:	Intel	Job Number:	J88901
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T89578
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407, 15.209, RSS 210	Class:	B





End of Report

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