EMC Test Report
Application for Grant of Equipment Authorization
Industry Canada RSS-Gen Issue 3 / RSS 210 Issue 8
FCC Part 15 Subpart C

Intel® Centrino® Advanced-N 6235, Models 6235ANHMRW and 6235ANHRU

IC CERTIFICATION #:	1000M-6235ANHR and 1000M-6235ANHRU
FCC ID:	PD96235ANHR and PD96235ANHRU
APPLICANT:	Intel Corporation 100 Center Point Circle Suite 200 Columbia, SC 29210
TEST SITE(S):	Elliott Laboratories 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-3; 2845B-4, 2845B-5, 2845B-7
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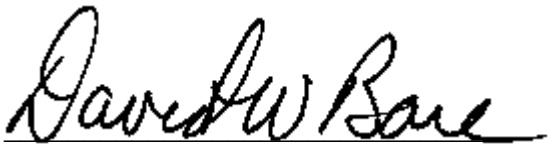

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REVISION HISTORY

Rev#	Date	Comments	Modified By
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SCOPE

An electromagnetic emissions test has been performed on the Intel Corporation model Intel® Centrino® Advanced-N 6235, Models 6235ANHMRW and 6235ANHRU, 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 Elliott Laboratories test procedures:

ANSI C63.4:2003
FHSS test procedure DA 00-0705A1, March 2000

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

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

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

OBJECTIVE

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

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

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

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

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

STATEMENT OF COMPLIANCE

The tested sample of Intel Corporation Intel® Centrino® Advanced-N 6235, Models 6235ANHMRW and 6235ANHRU 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 Intel® Centrino® Advanced-N 6235, Models 6235ANHMRW and 6235ANHRU and therefore apply only to the tested sample. The sample was selected and prepared by Steve 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

FREQUENCY HOPPING SPREAD SPECTRUM (2400 – 2483.5 MHz, less than 75 channels)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247 (a) (1)	RSS 210 A8.1 (1)	20dB Bandwidth	Basic Rate: 1.67 MHz EDR: 1.5MHz	Channel spacing > 2/3rds 20dB bandwidth	Complies
		Channel Separation	1 MHz		Complies
15.247 (a) (1) (iii)	RSS 210 A8.1 (4)	Channel Dwell Time (*average time of occupancy)*	<0.4 second within a period of 0.4 x number of channels	<0.4 second within a period of 0.4 x number of channels	Complies
15.247 (a) (1) (iii)	RSS 210 A8.1 (4)	Number of Channels	Min: 20 Max: 79	15 or more	Complies
15.247 (a) (1)	RSS 210 A8.1 (1)	Channel Utilization	The system uses the Bluetooth algorithm and, therefore, meets all requirements for channel utilization.	All channels shall, on average, be used equally	Complies
15.247 (b) (3)	RSS 210 A8.4 (2)	Output Power	Basic Rate: 0.0033W EDR: 0.0026 W EIRP = 0.0069W Note 1	0.125 Watts.	Complies
15.247(c)	RSS 210 A8.5	Spurious Emissions – 30MHz – 25GHz	All spurious emissions < -20dBc	< -20dBc	Complies
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 30MHz – 25GHz	46.2 dBµV/m @ 2483.5 MHz	15.207 in restricted bands, all others < -20dBc	Complies (- 7.8 dB)
15.247 (a) (1)	RSS 210 A8.1(2)	Receiver bandwidth	Refer to operational description, Page 2	Shall match the channel bandwidth	Complies
Note 1: EIRP calculated using antenna gain of 3.2 dBi					

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Unique connector used	Unique or integral antenna required	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	39.7 dBµV @ 15.416 MHz	Refer to page 18	Complies (-20.3dB)
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Not applicable – the output power is below the 60/f threshold.		
-	RSP 100 RSS GEN 7.1.5	User Manual	Refer to page 11 of the user's manual	Statement required regarding non-interference	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	Not applicable, antenna is integral to host systems.	Statement for products with detachable antenna	Complies
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	Basic Rate: 973 kHz EDR: 1.3 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 devices transmitting simultaneously.

DTS (Wi-Fi in 2.4GHz and 5.7GHz bands) and Bluetooth					
FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.209	RSS 210	Spurious emissions	52.1 dBµV/m @ 7386.9 MHz	15.209 in restricted bands, all others < -20dBc	Complies (-1.9dB)

LELAN/NII (Wi-Fi in 5150-5350/5470-5725MHz bands) and Bluetooth					
FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.209	RSS 210	Spurious emissions	46.1 dBµV/m @ 10400.0 MHz	15.209 in restricted bands, all others < -20dBc	Complies (-7.9dB)
Note: Highest observed emissions above were actually second harmonic of 802.11 signal and not an inter-modulation product, but this was the highest level signal observed with both Bluetooth and Wi-Fi transmitters operational 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 6235ANHMRW and 6235ANHRU are PCIe Half Mini Card for factor Bluetooth/IEEE 802.11a/b/g/n wireless network adapters. The card supports MIMO (2x2) for 802.11n modes and MISO (1x2) for 802.11a/b/g modes.
Bluetooth operates on a single chain and supports Basic rate, Enhanced data rate and Low Energy modes. The Basic and Enhanced data rates fully support frequency hopping while the Low Energy (LE) mode can operate in both hoping and non-hopping modes. The LE mode was evaluated under the rules for digital modulation systems while the other modes were evaluated as FHSS.
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 inside a laptop PC.

The sample was received on April 16, 2012 and tested on April 23 and 30 and May 1, 2, 9 and 10, 2012. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Intel Corporation	6235ANHMRW	PCIe Half Mini Card form factor Bluetooth / IEEE 802.11a/b/g/n wireless network adapter	44850006303D	PD96235ANHR PD96235ANHRU 1000M-6235ANHR
	6235ANHRU			1000M-6235ANHRU

ANTENNA SYSTEM

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

MODIFICATIONS

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

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Intel Corporation	-	Test Fixture		N/A
Dell	PP17L	Laptop PC	CN-ONF743-48643-7B6-0727	N/A
Agilent	E3610A	DC Supply	100708	N/A

No remote support equipment was used during testing.

EUT INTERFACE PORTS

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

Port		Cable(s)		
From	To	Description	Shielded/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 or continuously receive 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 –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 inter-modulation products were created.
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 1.5.4.0399 and the device driver was version 15.1.0.99.

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.

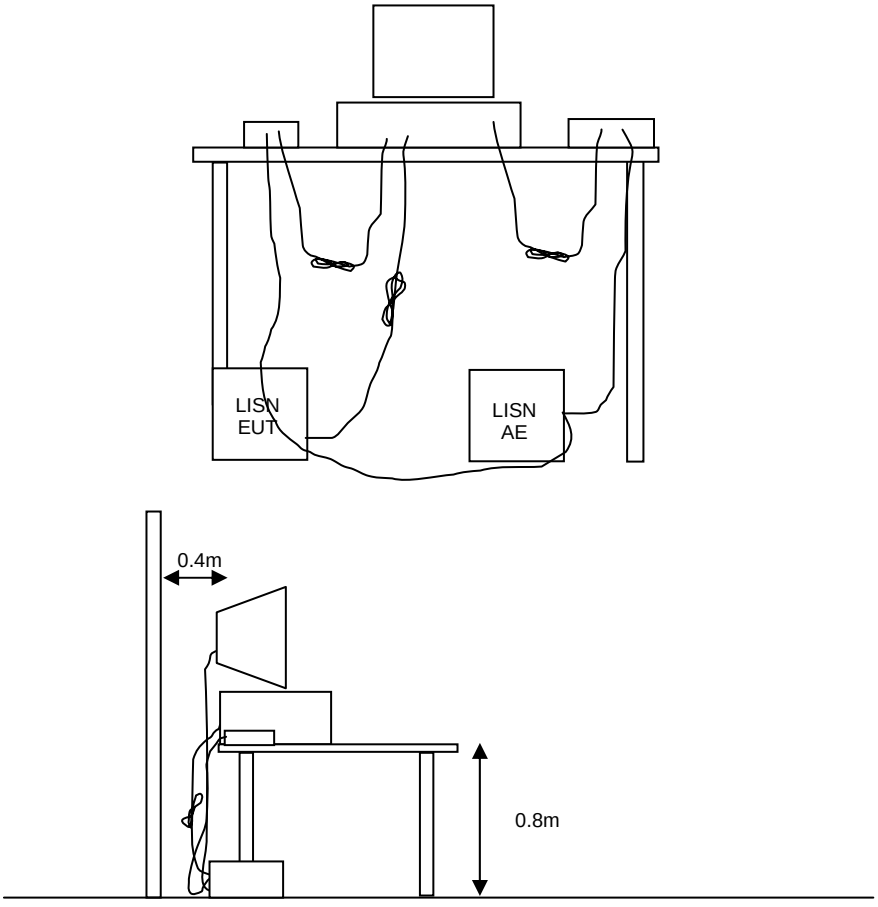


Figure 1 Typical Conducted Emissions Test Configuration

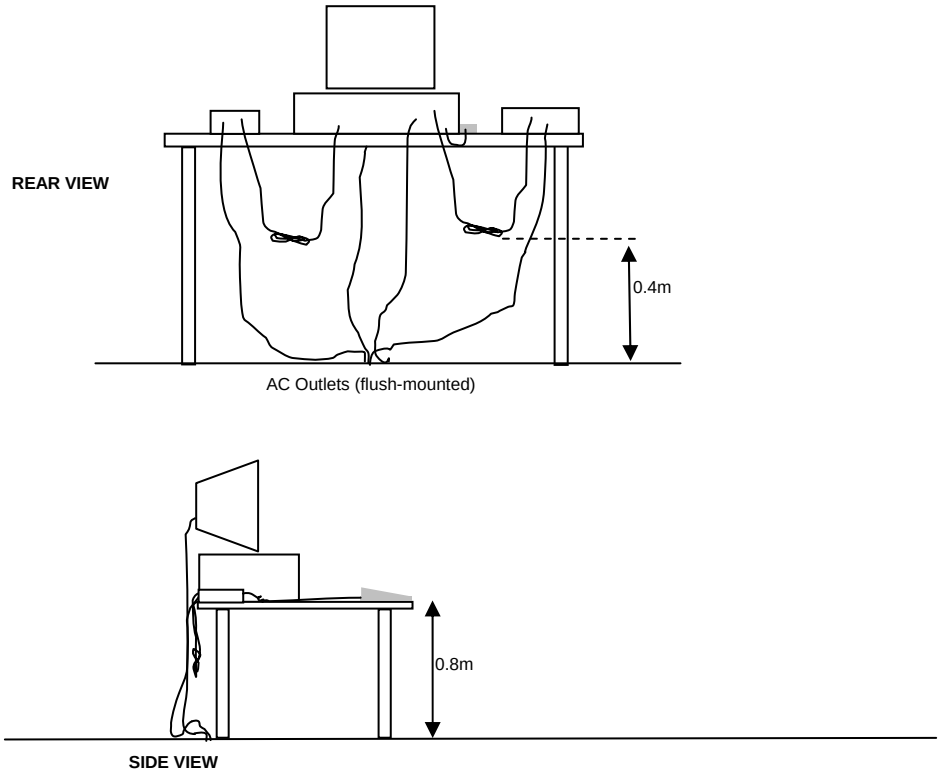
RADIATED EMISSIONS

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.

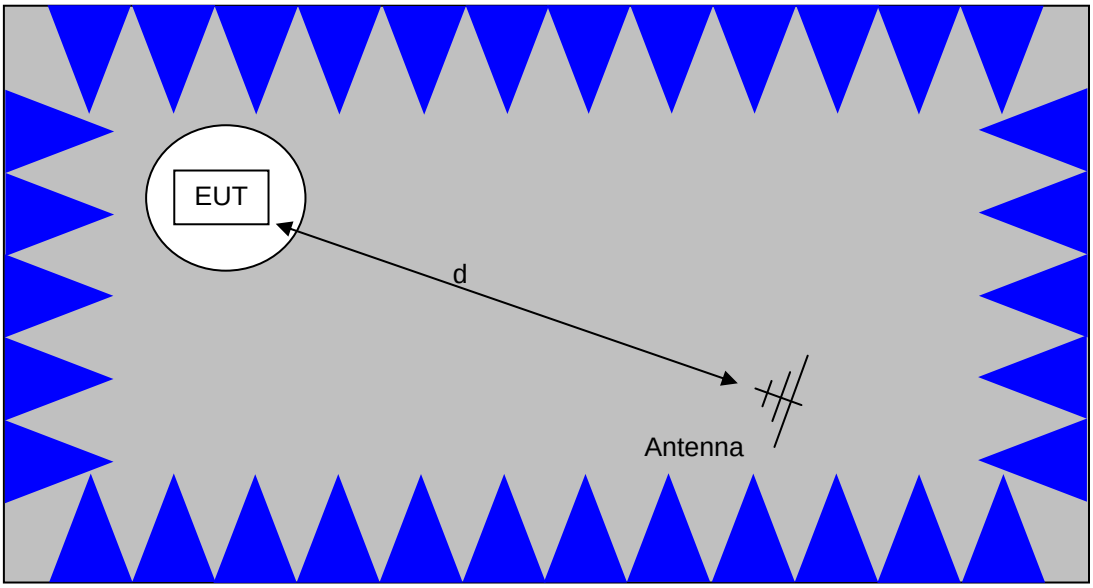
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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.

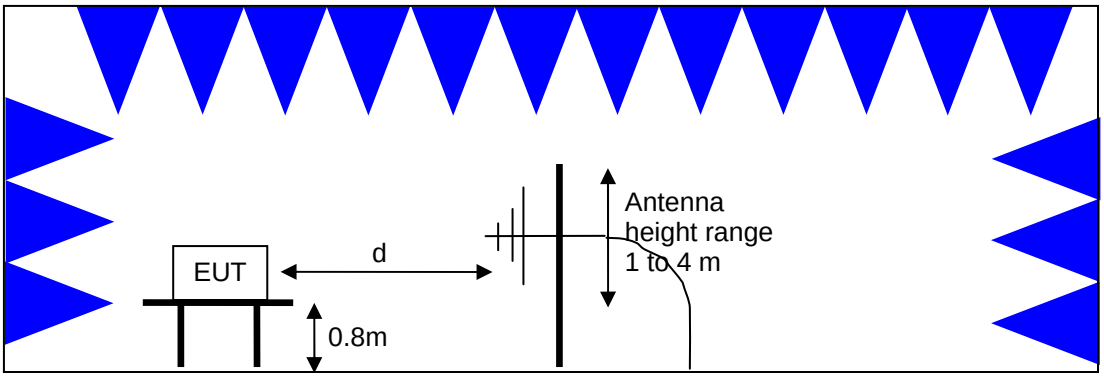


Typical Test Configuration for Radiated Field Strength Measurements



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.

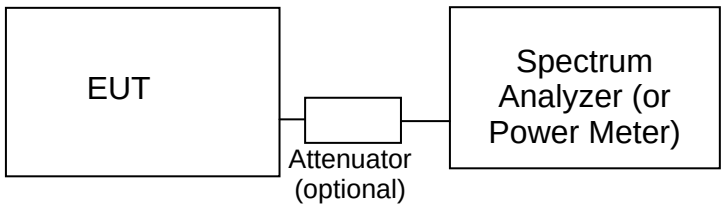
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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 Elliott'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 – FHSS SYSTEMS

The table below shows the limits for output power based on the number of channels available for the hopping system.

Operating Frequency (MHz)	Number of Channels	Output Power
902 – 928	≥ 50	1 Watt (30 dBm)
902 – 928	25 to 49	0.25 Watts (24 dBm)
2400 – 2483.5	≥ 75	1 Watt (30 dBm)
2400 – 2483.5	< 75	0.125 Watts (21 dBm)
5725 – 5850	75	1 Watt (30 dBm)

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

T87211

Manufacturer	Description	Model	Asset #	Cal Due
Radiated Emissions, 1000 - 6,500 MHz, 17-Apr-12				
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/8/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	6/8/2012
Radiated Emissions, 1000 - 6,500 MHz, 18-Apr-12				
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	8/2/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/6/2012
Radiated Emissions, 1,000 - 6,500 MHz, 19-Apr-12				
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/8/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Radiated Emissions, Band Edge, 23-Apr-12				
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/6/2012
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/22/2012
Radiated Emissions, 1000 - 6,500 MHz, 24-Apr-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	7/6/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	6/8/2012
Radiated Emissions, 1000 - 6,500 MHz, 24-Apr-12				
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	6/8/2012
Radiated Emissions, Band Edge, 24-Apr-12				
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/8/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Radiated Emissions, 30 - 18,000 MHz, 25-Apr-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1657	5/28/2012
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	3/23/2013
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	10/4/2012
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2012
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103A	2359	2/14/2013
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Radiated Emissions, 1000 - 26,500 MHz, 25-Apr-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	3/23/2013
A.H. Systems	Blue System Horn, 18-40GHz	SAS-574, p/n: 2581	2159	5/23/2012
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2012
Radiated Emissions, 1,000 - 18,000 MHz, 25-Apr-12				
EMCO	Antenna, Horn, 1-18 GHz	3115	786	12/19/2013
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	3/23/2013
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	2/23/2013
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	7/28/2012
Radiated Emissions, 1000 - 40000MHz, 27-Apr-12				
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	8/2/2012
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	8/15/2012
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1681	9/8/2012
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	11/22/2012
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	10/4/2012
Radiated Spurious Emissions, 1000 - 40,000 MHz, 27-Apr-12				
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1156	6/24/2012
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/22/2012
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	8/5/2012
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	2/23/2013
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	7/28/2012
Radiated Emissions, 1,000 - 18,000 MHz, 28-Apr-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	6/8/2012
Hewlett Packard	High Pass filter, 8.2 GHz (Purple System)	P/N 84300-80039 (84125C)	1767	11/29/2012
Radiated Emissions, 1000 - 26,500 MHz, 30-Apr-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	6/8/2012
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	8/3/2012
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	3/23/2013
A.H. Systems	Blue System Horn, 18-40GHz	SAS-574, p/n: 2581	2159	5/23/2012

Manufacturer	Description	Model	Asset #	Cal Due
Radiated Emissions, 30 - 1,000 MHz, 01-May-12				
Engineer: Chris Groat				
Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/6/2012
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	6/24/2012
Hewlett Packard	9KHz-1300MHz pre-amp	8447F	2328 CG0177	3/16/2013
Conducted Emissions - AC Power Ports, 01-May-12				
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	5/12/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/6/2012
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2000	10/18/2012
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2001	2/15/2013
Radiated Emissions, 1000 - 10,000 MHz, 02-May-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	8/2/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	6/8/2012
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	8/3/2012
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	3/23/2013
Radiated Emissions, 1000 - 15,000 MHz, Simultaneous Transmisison, 02-May-12				
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/8/2012
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1156	6/24/2012
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	8/3/2012
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	3/30/2013
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	10/4/2012
Radio Antenna Port (Power and Spurious Emissions), 04-May-12				
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	3/30/2013
Radiated Emissions, 1,000- 6,500 MHz, 09-May-12				
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Radiated Emissions, 30 - 1,000 MHz, 11-May-12				
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1657	5/28/2012
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103A	2359	2/14/2013
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Conducted Emissions - AC Power Ports, 11-May-12				

Manufacturer	Description	Model	Asset #	Cal Due
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1594	5/17/2012
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2000	10/18/2012
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2001	2/15/2013
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012
Radiated Emissions, 30 - 1,000 MHz, 21-May-12				
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/6/2012
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	6/24/2012
Hewlett Packard	9KHz-1300MHz pre-amp	8447F	2328	5/2/2013
Conducted Emissions - AC Power Ports, 21-May-12				
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	5/15/2012
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2000	10/18/2012
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2001	2/15/2013

Appendix B Test Data

T87211 Pages 28 – 98

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		-
Emissions Standard(s):	FCC 15.247, 15.407	Class:	B
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Intel Corporation

Model

Intel® Centrino® Advanced-N 6235

Date of Last Test: 5/22/2012

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Radiated Emissions 30-1000 MHz, Wireless Module (FCC 15.247/RSS 210)

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

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

Date of Test: 5/10/2012
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#5

Config. Used: Modular Test
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.

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

Ambient Conditions:

Temperature: 21 °C
Rel. Humidity: 34 %

Summary of Results

MAC Address: 44850006301F DRTU Tool Version 1.5.4.0399 Driver version 15.1.0.99

Run #	Test Performed	Limit	Result	Margin
1	Radiated Emissions 30 - 1000 MHz	FCC 15.209 / RSS 210	Pass	38.0 dBµV/m @ 58.48 MHz (-2.0 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

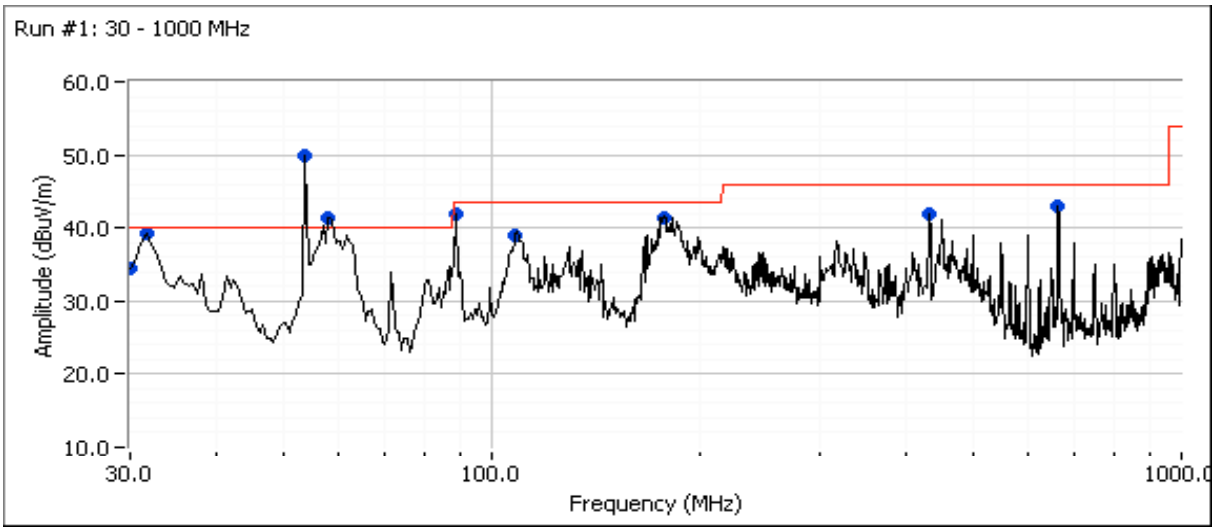
No deviations were made from the requirements of the standard.

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run #1: Preliminary Radiated Emissions, 30 - 1000 MHz

Configured to TX , 802.11b 16.5dBm on each chain (settings 22.5) on channel 6, Bluetooth 7dBm, 1Mb/s (settings 8.0)

Frequency Range	Test 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	
54.342	50.0	V	40.0	10.0	Peak	0	2.5	
31.815	39.3	V	40.0	-0.7	Peak	2	1.5	
431.996	41.9	H	46.0	-4.1	Peak	12	1.0	
178.100	41.3	V	43.5	-2.2	Peak	29	1.0	
663.571	43.1	V	46.0	-2.9	Peak	87	1.0	
30.022	34.6	V	40.0	-5.4	Peak	138	1.0	
108.350	38.9	H	43.5	-4.6	Peak	267	3.0	
58.477	41.5	V	40.0	1.5	Peak	279	1.0	
89.397	41.9	V	43.5	-1.6	Peak	286	1.5	

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Maximized quasi-peak readings (includes 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	
58.477	38.0	V	40.0	-2.0	QP	280	1.0	QP (1.00s)
108.350	38.1	H	43.5	-5.4	QP	270	3.0	QP (1.00s)
431.996	40.0	H	46.0	-6.0	QP	13	1.0	QP (1.00s)
31.815	33.6	V	40.0	-6.4	QP	6	1.5	QP (1.00s)
178.100	36.7	V	43.5	-6.8	QP	33	1.0	QP (1.00s)
30.022	30.8	V	40.0	-9.2	QP	141	1.0	QP (1.00s)
663.571	35.0	V	46.0	-11.0	QP	90	1.0	QP (1.00s)
54.342	24.4	V	40.0	-15.6	QP	0	2.5	QP (1.00s)
89.397	26.1	V	43.5	-17.4	QP	287	1.5	QP (1.00s)

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	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: 5/10/2012
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#5

Config. Used: Modular Test
Config Change: None
Host Unit Voltage 120V/60Hz

General Test Configuration

The test fixture 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.

Ambient Conditions:

Temperature: 21 °C
Rel. Humidity: 34 %

Summary of Results

MAC Address: 44850006301F DRTU Tool Version 1.5.4.0399 Driver version 15.1.0.99

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power,120V/60Hz	RSS 210 / 15.207	Pass	39.7 dBµV @ 15.416 MHz (-20.3 dB)

Modifications Made During Testing

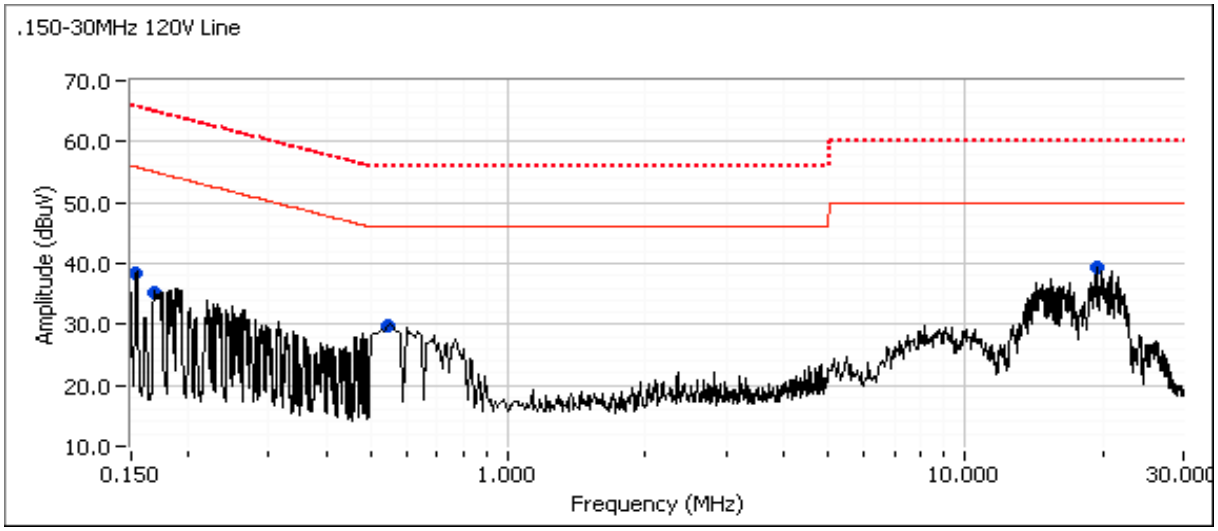
No modifications were made to the EUT during testing

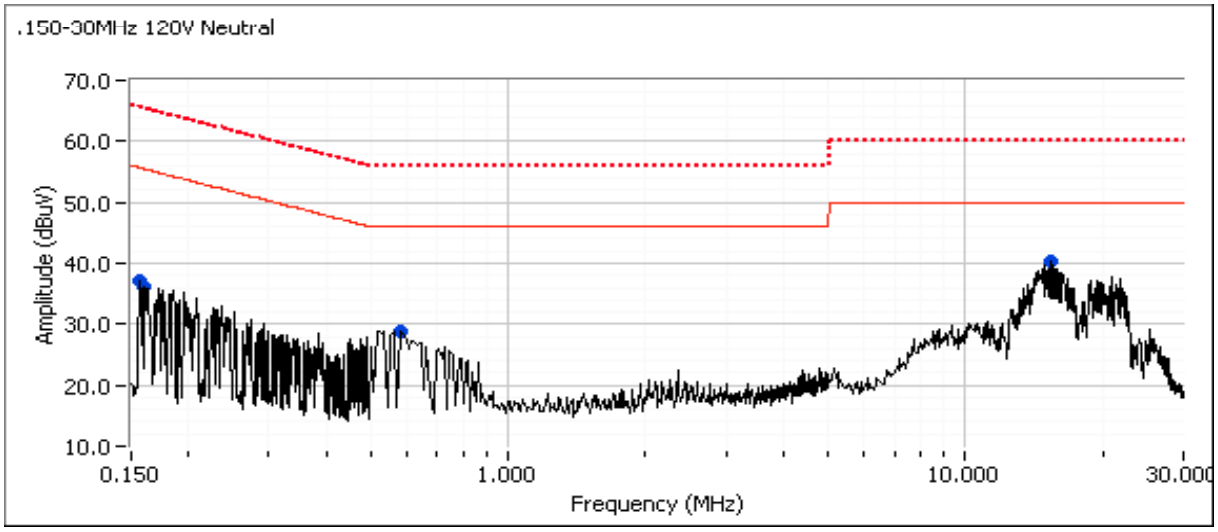
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	B

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





Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	B

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

Frequency	Level	AC	RSS 210 / 15.207		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.153	38.5	Line 1	55.8	-17.3	Peak	
19.320	39.4	Line 1	50.0	-10.6	Peak	
0.553	29.9	Line 1	46.0	-16.1	Peak	
0.168	35.2	Line 1	55.0	-19.8	Peak	
0.157	37.1	Neutral	55.6	-18.5	Peak	
15.416	40.3	Neutral	50.0	-9.7	Peak	
0.573	28.9	Neutral	46.0	-17.1	Peak	
0.161	36.1	Neutral	55.4	-19.3	Peak	

Final quasi-peak and average readings

Frequency	Level	AC	RSS 210 / 15.207		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
15.416	39.7	Neutral	60.0	-20.3	QP	QP (1.00s)
19.320	28.9	Line 1	50.0	-21.1	AVG	AVG (0.10s)
19.320	36.0	Line 1	60.0	-24.0	QP	QP (1.00s)
0.553	21.5	Line 1	56.0	-34.5	QP	QP (1.00s)
0.153	30.6	Line 1	65.8	-35.2	QP	QP (1.00s)
0.573	20.5	Neutral	56.0	-35.5	QP	QP (1.00s)
0.168	28.3	Line 1	65.1	-36.8	QP	QP (1.00s)
0.157	26.9	Neutral	65.6	-38.7	QP	QP (1.00s)
0.161	26.3	Neutral	65.4	-39.1	QP	QP (1.00s)
0.553	4.2	Line 1	46.0	-41.8	AVG	AVG (0.10s)
0.573	3.8	Neutral	46.0	-42.2	AVG	AVG (0.10s)
0.153	11.4	Line 1	55.8	-44.4	AVG	AVG (0.10s)
0.168	9.8	Line 1	55.1	-45.3	AVG	AVG (0.10s)
0.161	9.5	Neutral	55.4	-45.9	AVG	AVG (0.10s)
0.157	9.4	Neutral	55.6	-46.2	AVG	AVG (0.10s)

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

FCC 15.247 FHSS - Power, 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: 5/9/2012 0:00
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#3

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

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators used.

Unless stated otherwise the EUT was operating such that it constantly hopped on either the low, center or high channels.

Ambient Conditions:

Temperature: 30-35 °C
Rel. Humidity: 17-20 %

Summary of Results

MAC Address: 44850006301F DRTU Tool Version 1.5.4.0399 Driver version 15.1.0.99

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Spurious Emissions	FCC Part 15.247(b)	Pass	All emissions below -20dBc
2	Output Power	15.247(b)	Pass	Basic Rate: 5.2 dBm (.0033 W) EDR: 4.2 dBm (.0026 W)
3	20dB Bandwidth	15.247(a)	Pass	Basic Rate: 1.67 MHz EDR: 1.5MHz
3	99% bandwidth	15.247(a)	Pass	Basic Rate: 973 kHz EDR: 1.3 MHz
4	Channel Occupancy	15.247(a)	Pass	Complies with Bluetooth protocol
3	Number of Channels	15.247(a)	Pass	79 channels

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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run #1: Antenna Conducted Spurious Emissions, 30 - 26,500 MHz.

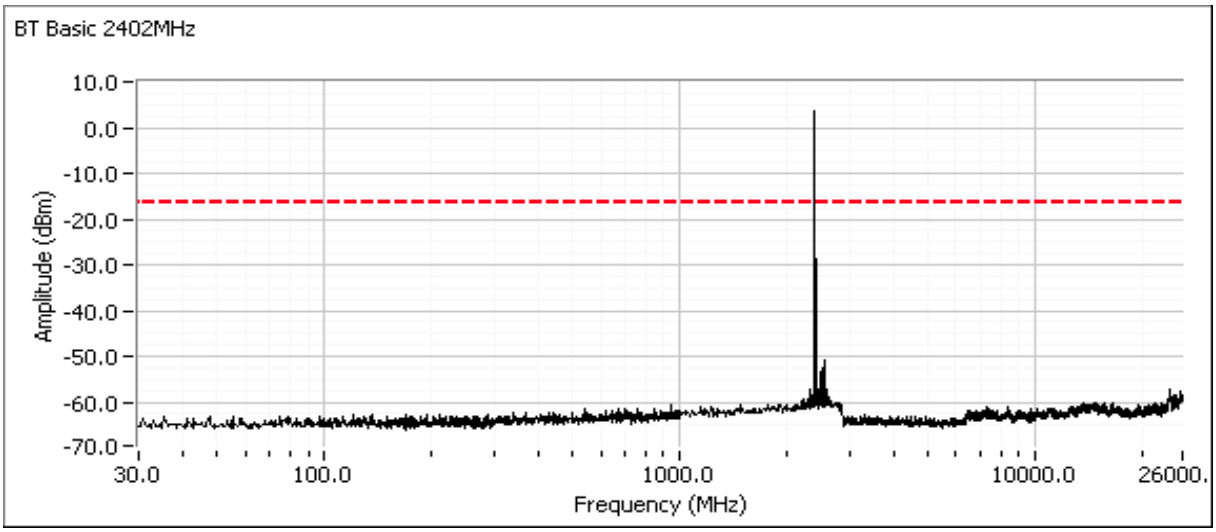
Date of Test: 5/9/2012

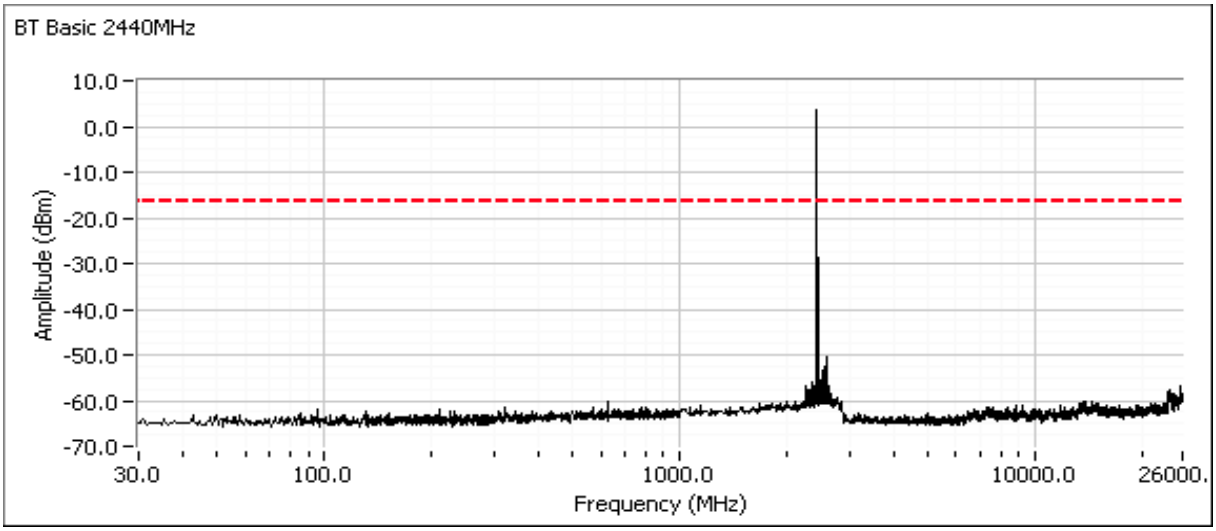
Test Engineer: Joseph Cadigal

Test Location: FT Chamber#3

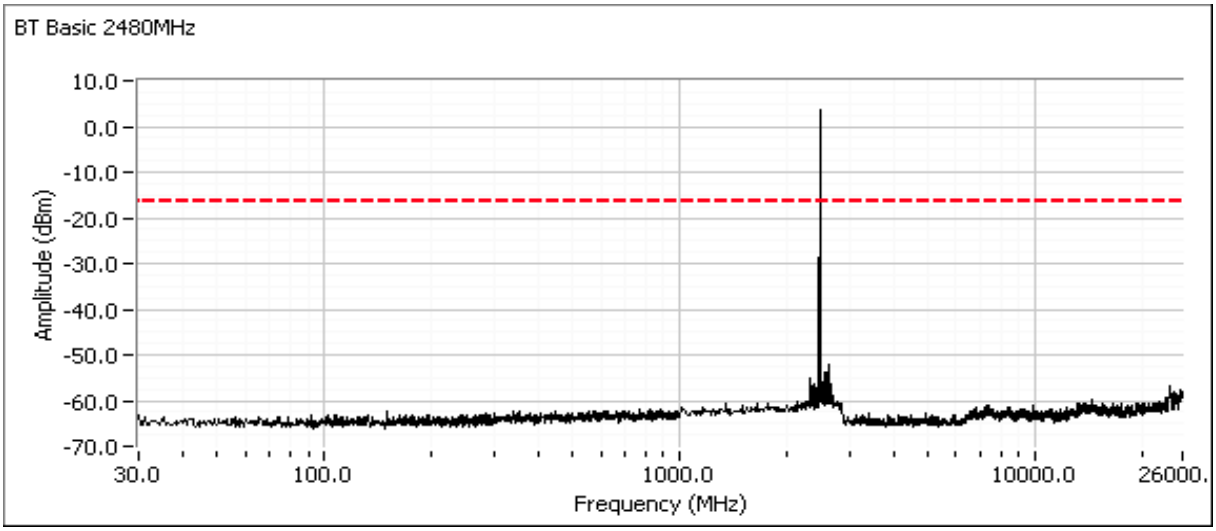
Refer to plots below. Scans made using RBW=VB=100 KHz with the limit line set at 20dB below the highest in-band signal level.

Basic rate (1Mb/s)





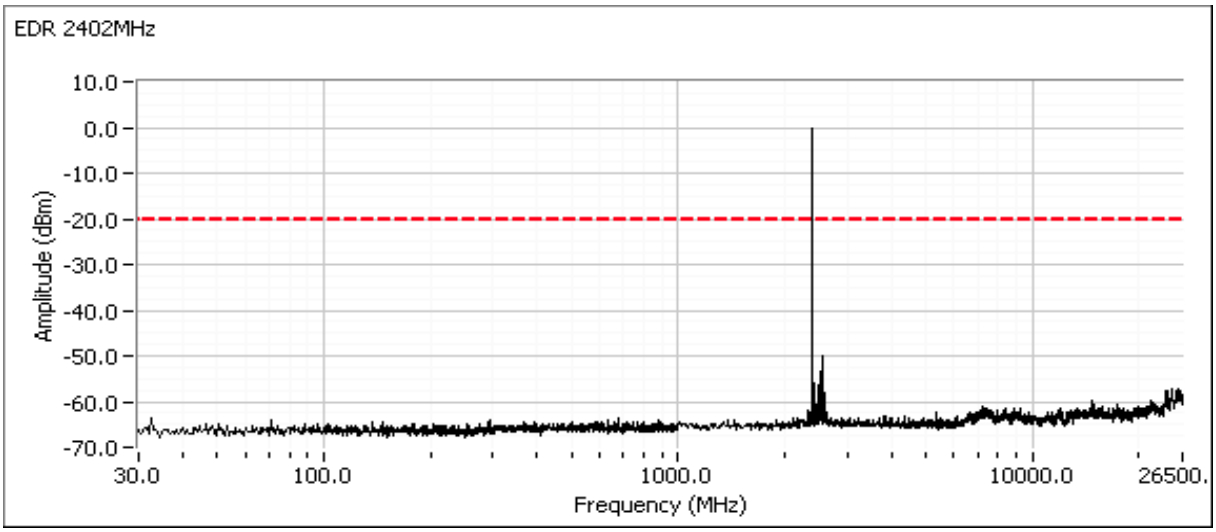
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A



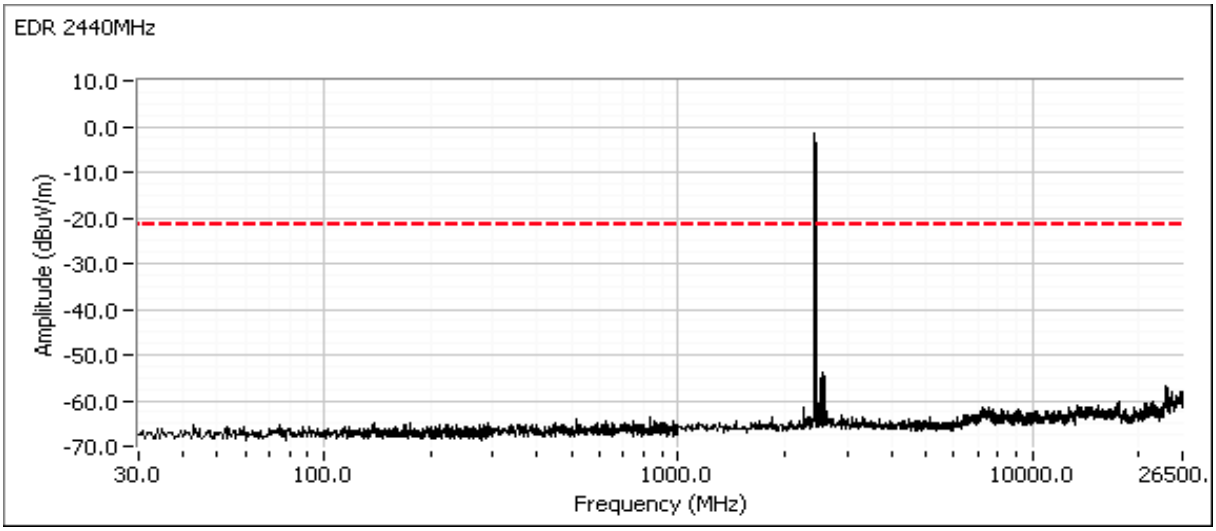
EDR (3Mb/s)

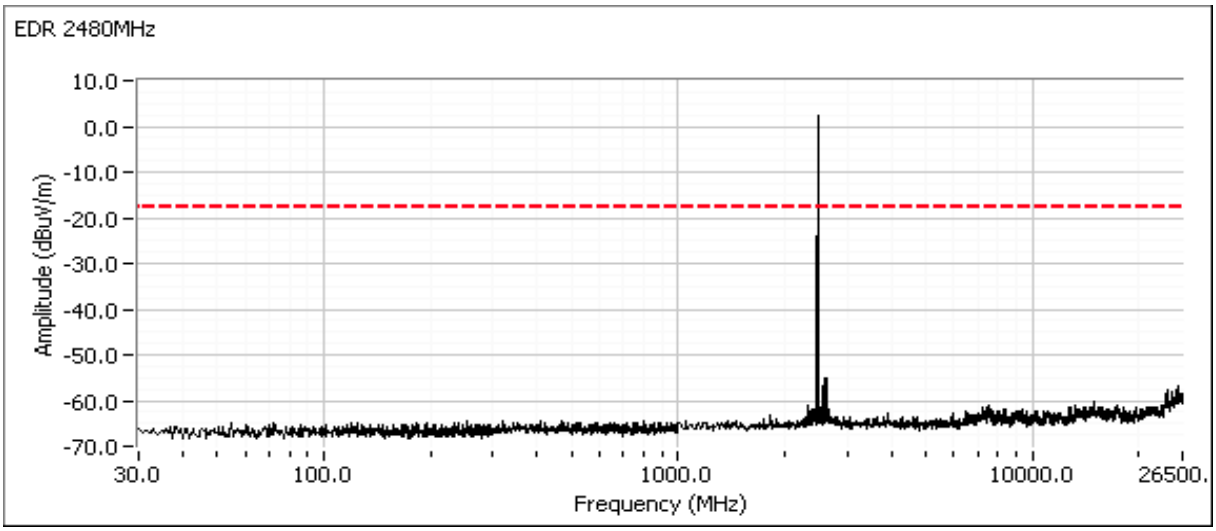
Date of Test: 5/10/2012
Test Engineer: Jack Liu
Test Location: FT Chamber# 5

Refer to plots below. Scans made using RBW=VB=100 KHz with the limit line set at 20dB below the highest in-band signal level.



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A





Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run #2: Output Power

Date of Test: 5/9/2012
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#3

For frequency hopping systems operating in the 2400-2483.5 MHz band employing less than 75 channels or overlapping hopping channels: 0.125 watts.

Maximum antenna gain: 3.2 dBi

Mode	Frequency (MHz)	Setting	Pavg	Output Power (dBm)	Output Power (W)	EIRP (W)
Basic rate	2402	8		4.6	0.0029	0.0060
	2440	8		5.1	0.0032	0.0068
	2480	8		5.2	0.0033	0.0069
EDR (3Mb/s)	2402	8		3.1	0.0020	0.0043
	2440	8		3.9	0.0025	0.0051
	2480	8		4.2	0.0026	0.0055

Note 1:	Output power is measured as a peak power using either a peak power meter or with a spectrum analyzer and VB > 3 x RB and RB > 20dB bandwidth. The actual method used was a peak power meter.
Note 2:	Setting is the test utility software setting and used for reference only. Pavg is the average output power measured with an average power meter and is provided for reference only.

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

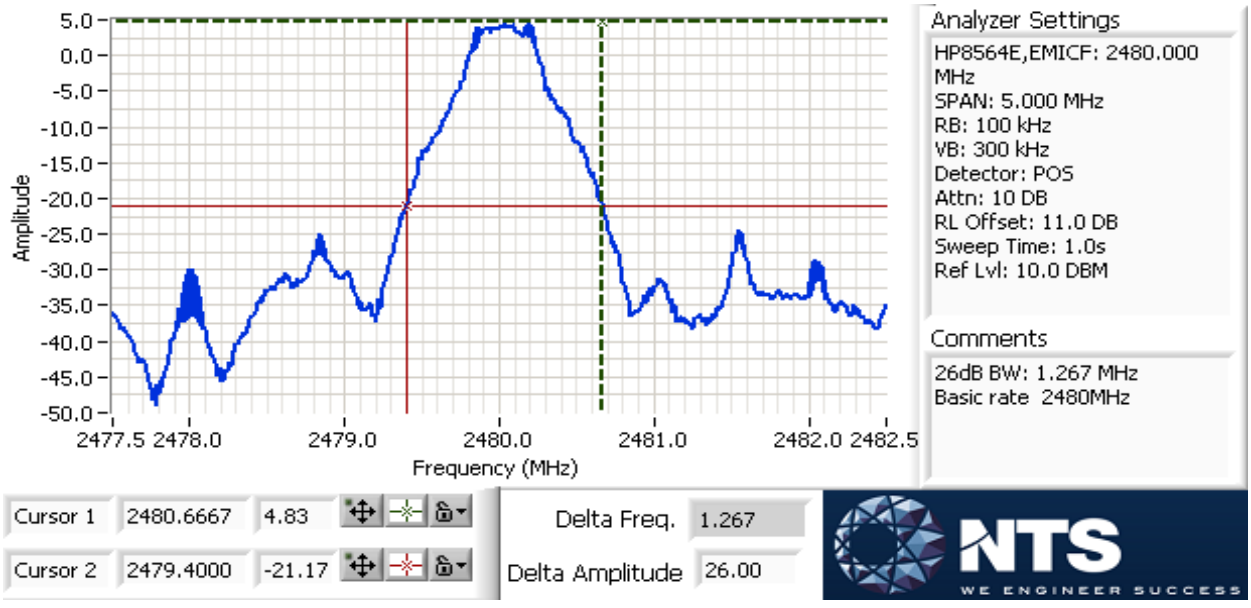
Run #3: Bandwidth and Channel Spacing

Date of Test: 5/10/2012
Test Engineer: Jack Liu
Test Location: FT 3

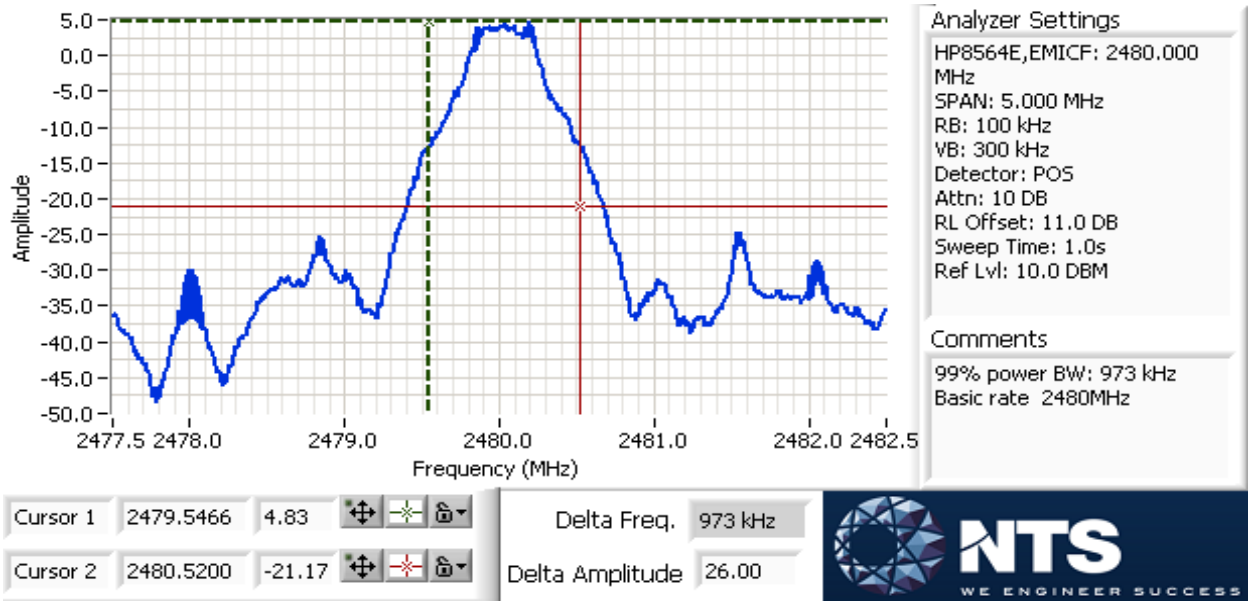
Bandwidth

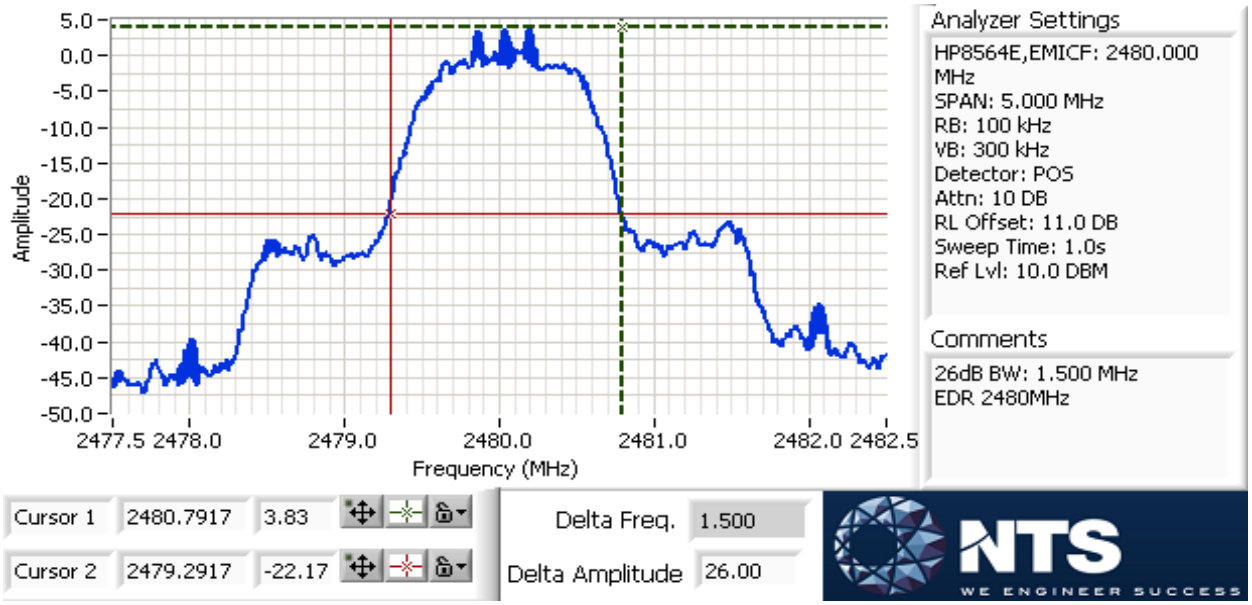
Mode	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
Basic rate	2402	1250	965
	2440	1258	973
	2480	1267	973
EDR (3Mb/s)	2402	1458	1248
	2440	1492	1273
	2480	1500	1298

Note 1:	20dB bandwidth measured using RB = 100kHz, VB = 300kHz (VB > RB)
Note 2:	99% bandwidth measured using RB = 100kHz, VB = 300kHz (VB >=3RB)

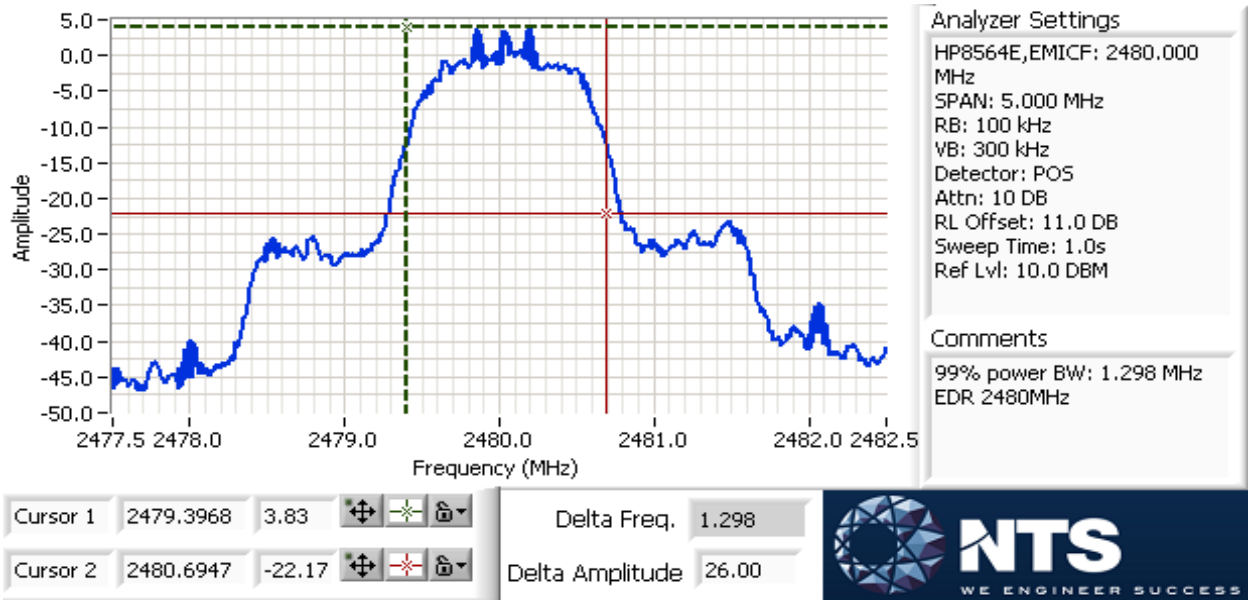


Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A





Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

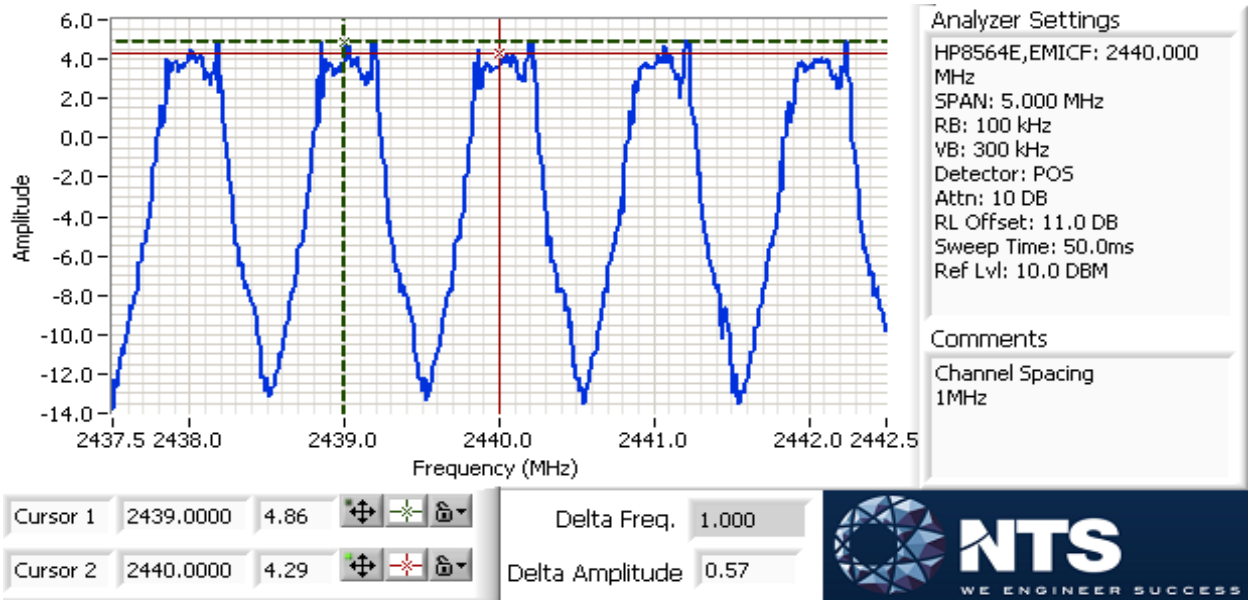


Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

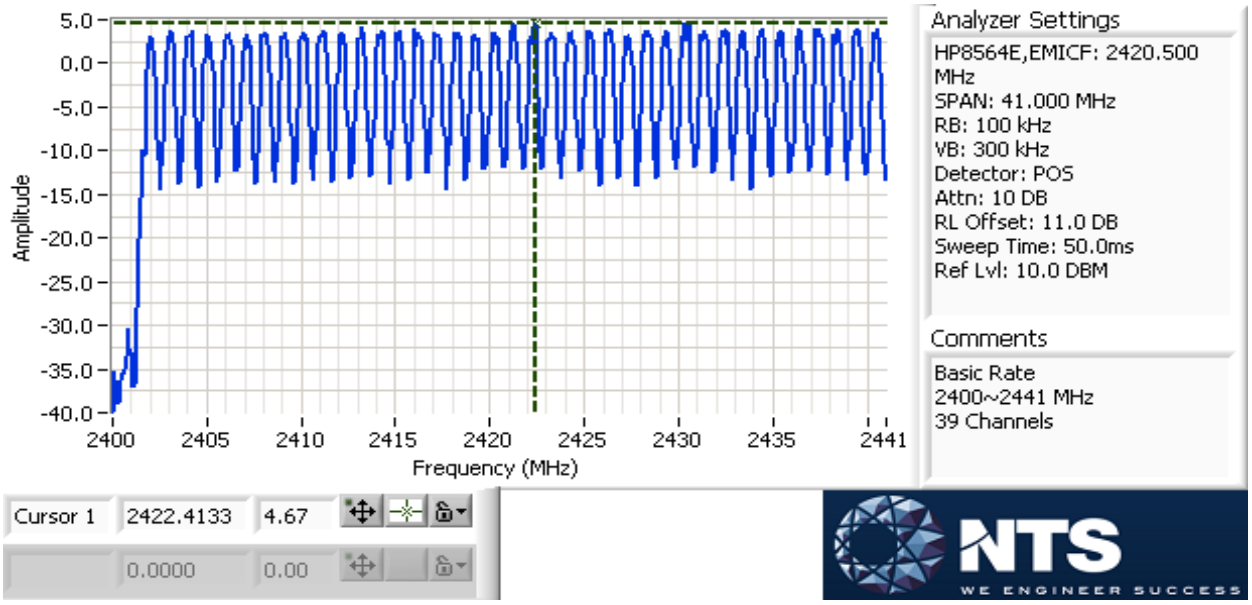
Channel Spacing / Number of Channels

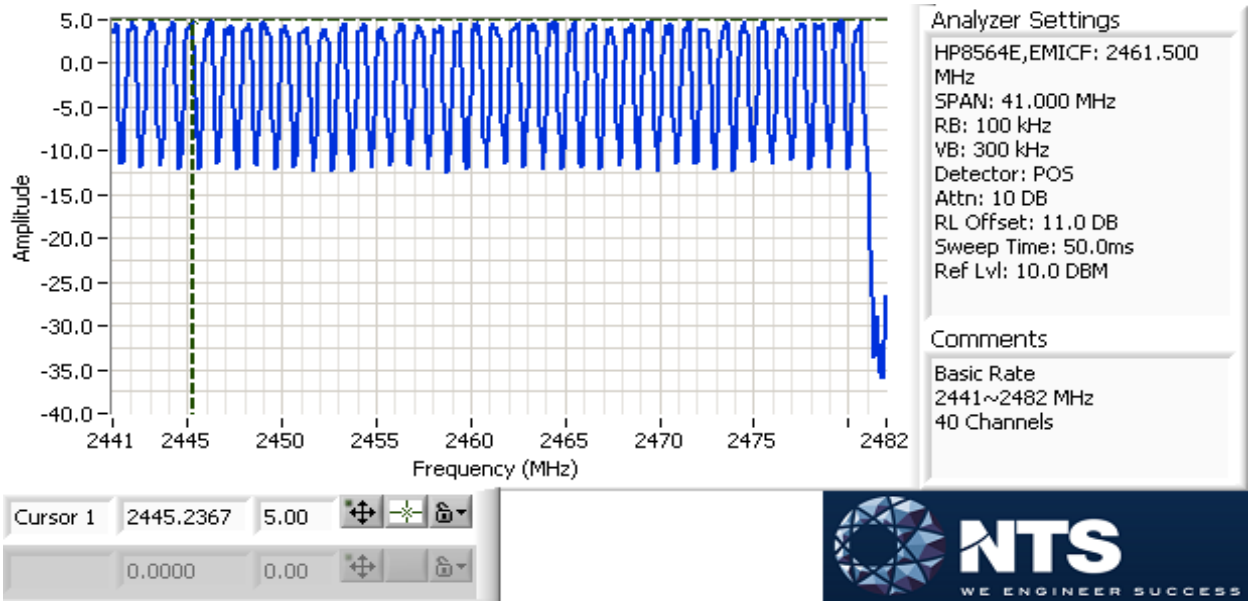
The channel spacing is 1MHz with a minimum of 20 channels and a maximum of 79 channels used. See plots below showing all 79 channels, with first channel at 2402 Mhz and last channel at 2480 MHz

Date of Test: 5/10/2012
Test Engineer: Jack Liu
Test Location: FT 3



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A





Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run #4: Channel Occupancy and Number of Channels

Requirement: Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. (Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.)

The device complies with the Bluetooth protocol and employs a minimum of 20 of the available 79 hopping channels when employing adaptove frequency hopping and all 79 channels when not. Channels are selected in a pseudo random manner to ensure, on average, all channels are used equally.

The hopping rate is 1600 hops per second although any channel may be used for a single hop slot, 3 hop slots or 5 hop slots. The dwell time per channel is, therefore either 0.625ms (single slot), 1.875ms (three slot) or 3.125ms (five slot). The average time of occupancy will not exceed 0.4s in any time interval of 0.4s mutliplied by the number of channels being used.

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

RSS 210 and FCC 15.247 (DSS) Radiated Spurious Emissions
Bluetooth - Transmitter and Receiver Mode

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

Record results for target power and also for the passing power if it fails at target.

MAC Address: 44850006303D DRTU Tool Version 1.5.4.0399 Driver version 15.1.0.99

For Bluetooth: Tx is chain B, Rx is chain B

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:

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
1a	Bluetooth basic rate (1Mb/s)	2402	7.5dBm	4.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	40.6 dBµV/m @ 2362.0 MHz (-13.4 dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	39.7 dBµV/m @ 4880.0 MHz (-14.3 dB)
1b		2440	7.5dBm	4.9	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	33.1 dBµV/m @ 1332.0 MHz (-20.9 dB)
1c		2480	7.5dBm	5.1	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	45.9 dBµV/m @ 2483.5 MHz (-8.1 dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	38.7 dBµV/m @ 4804.0 MHz (-15.3 dB)
2a	Bluetooth EDR (3 Mb/s)	2402	7.5dBm	0.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	34.3 dBµV/m @ 2362.1 MHz (-19.7 dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	35.2 dBµV/m @ 1596.8 MHz (-18.8 dB)
2b		2440	7.5dBm	1.8	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	34.8 dBµV/m @ 1595.9 MHz (-19.2 dB)
2c		2480	7.5dBm	2.3	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	40.2 dBµV/m @ 2483.5 MHz (-13.8 dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	35.8 dBµV/m @ 1332.5 MHz (-18.2 dB)

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/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.

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:	30-35 °C
Rel. Humidity:	17-20 %

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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000-26000 MHz. Operating Mode: Basic data rate (1Mb/s)

Run #1a: Low Channel @ 2402 MHz

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	7.5	4.5	8.0

Fundamental Signal Field Strength: Peak value measured in 100kHz

Date of Test: 4/23/2012
Test Engineer: Mark Hill
Test Location: FT#4

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2401.940	94.6	V	-	-	PK	171	1.0	POS; RB 100 kHz; VB: 100 kHz
2402.040	91.0	V	-	-	AVG	171	1.0	POS; RB 1 MHz; VB: 10 Hz
2402.120	95.8	V	-	-	PK	171	1.0	POS; RB 1 MHz; VB: 3 MHz
2401.840	101.0	H	-	-	PK	54	1.1	POS; RB 100 kHz; VB: 100 kHz
2402.040	96.4	H	-	-	AVG	54	1.1	POS; RB 1 MHz; VB: 10 Hz
2402.160	101.1	H	-	-	PK	54	1.1	POS; RB 1 MHz; VB: 3 MHz

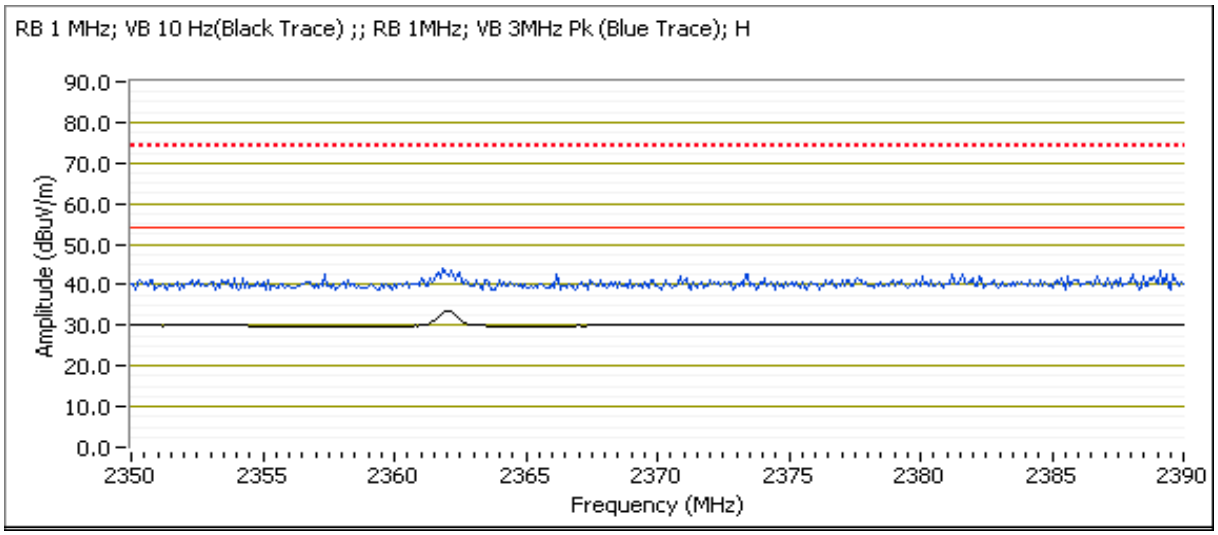
Fundamental emission level @ 3m in 100kHz RBW:	101.0	dBµV/m	
Limit for emissions outside of restricted bands:	81.0	dBµV/m	Limit is -20dBc (Peak power measurement)

Band Edge Signal Field Strength - Direct measurement of field strength

Date of Test: 4/23/2012
Test Engineer: Mark Hill
Test Location: FT#4

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2362.020	40.6	H	54.0	-13.4	AVG	360	1.0	POS; RB 1 MHz; VB: 10 Hz
2369.800	52.1	H	74.0	-21.9	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz
2362.020	31.2	V	54.0	-22.8	AVG	151	1.0	POS; RB 1 MHz; VB: 10 Hz
2377.090	41.7	V	74.0	-32.3	PK	151	1.0	POS; RB 1 MHz; VB: 3 MHz

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A



Other Spurious Emissions

Date of Test: 4/30/2012 & 5/1/12

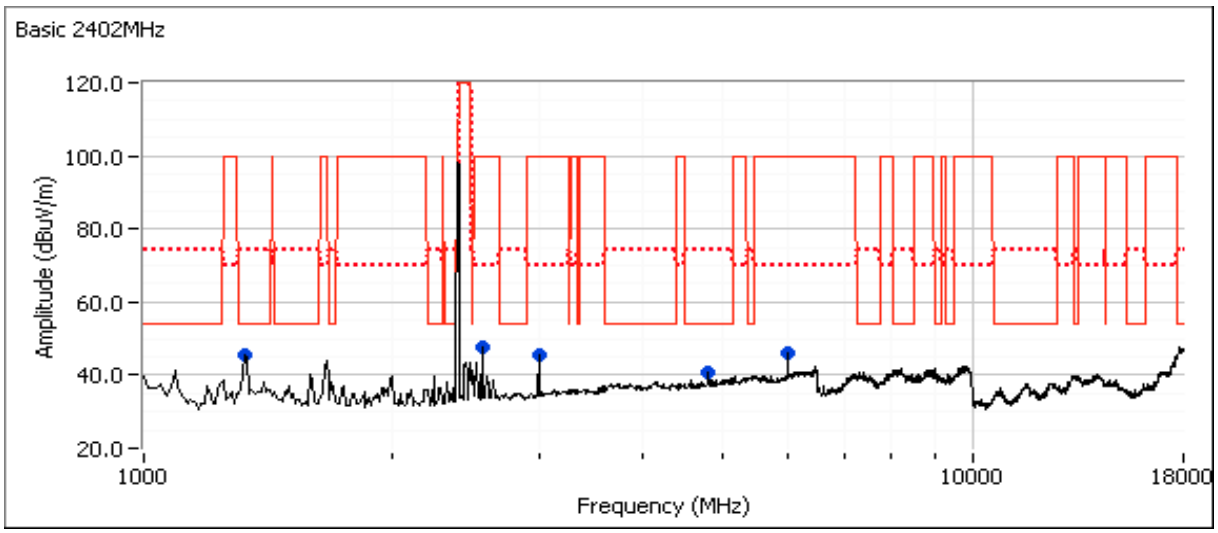
Test Engineer: Jack Liu

Test Location: FT#5

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4803.990	38.7	V	54.0	-15.3	AVG	193	2.3	RB 1 MHz;VB 10 Hz;Peak
1331.050	36.1	V	54.0	-17.9	AVG	303	1.8	RB 1 MHz;VB 10 Hz;Peak
1331.380	54.2	V	74.0	-19.8	PK	303	1.8	RB 1 MHz;VB 3 MHz;Peak
4803.540	44.8	V	74.0	-29.2	PK	193	2.3	RB 1 MHz;VB 3 MHz;Peak
6000.780	48.8	V	81.0	-32.2	PK	153	1.0	RB 1 MHz;VB 3 MHz;Peak
2561.780	50.3	H	81.0	-30.7	PK	177	1.0	RB 1 MHz;VB 3 MHz;Peak
3000.270	49.2	V	81.0	-31.8	PK	194	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 was set 20dB below the level of the fundamental and measured in 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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A



Run #1b: Center Channel @ 2440 MHz

Date of Test: 4/30/2012 & 5/1/12

Test Engineer: Jack Liu

Test Location: FT#5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	7.5	4.9	8.0

Fundamental Signal Field Strength: Peak value measured in 100kHz

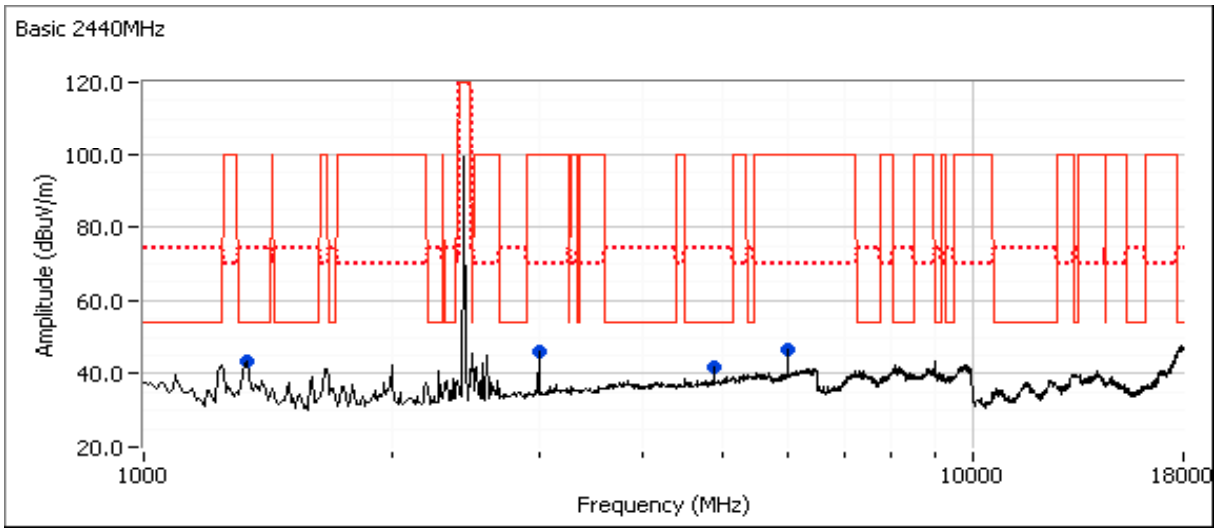
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2440.060	95.6	V	-	-	PK	34	1.0	RB 100 kHz;VB 100 kHz;Peak
2440.000	96.2	V	-	-	AVG	34	1.0	RB 1 MHz;VB 10 Hz;Peak
2439.840	96.8	V	-	-	PK	34	1.0	RB 1 MHz;VB 3 MHz;Peak
2440.000	98.8	H	-	-	PK	180	1.1	RB 100 kHz;VB 100 kHz;Peak
2439.980	99.4	H	-	-	AVG	180	1.1	RB 1 MHz;VB 10 Hz;Peak
2440.160	99.9	H	-	-	PK	180	1.1	RB 1 MHz;VB 3 MHz;Peak

Fundamental emission level @ 3m in 100kHz RBW:	98.8	dBµV/m	
Limit for emissions outside of restricted bands:	78.8	dBµV/m	Limit is -20dBc (Peak power measurement)

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4879.950	39.7	H	54.0	-14.3	AVG	116	1.1	RB 1 MHz;VB 10 Hz;Peak
1330.600	36.2	V	54.0	-17.8	AVG	301	1.7	RB 1 MHz;VB 10 Hz;Peak
1332.900	53.2	V	74.0	-20.8	PK	301	1.7	RB 1 MHz;VB 3 MHz;Peak
4880.580	45.3	H	74.0	-28.7	PK	116	1.1	RB 1 MHz;VB 3 MHz;Peak
6000.760	48.8	V	78.8	-30.0	PK	150	1.0	RB 1 MHz;VB 3 MHz;Peak
3000.270	49.2	V	78.8	-29.6	PK	186	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 was set 20dB below the level of the fundamental and measured in 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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run #1c: High Channel @ 2480 MHz

Date of Test: 4/30/2012 & 5/1/12

Test Engineer: Jack Liu

Test Location: FT#5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	7.5	5.1	8.0

Fundamental Signal Field Strength: Peak value measured in 100kHz

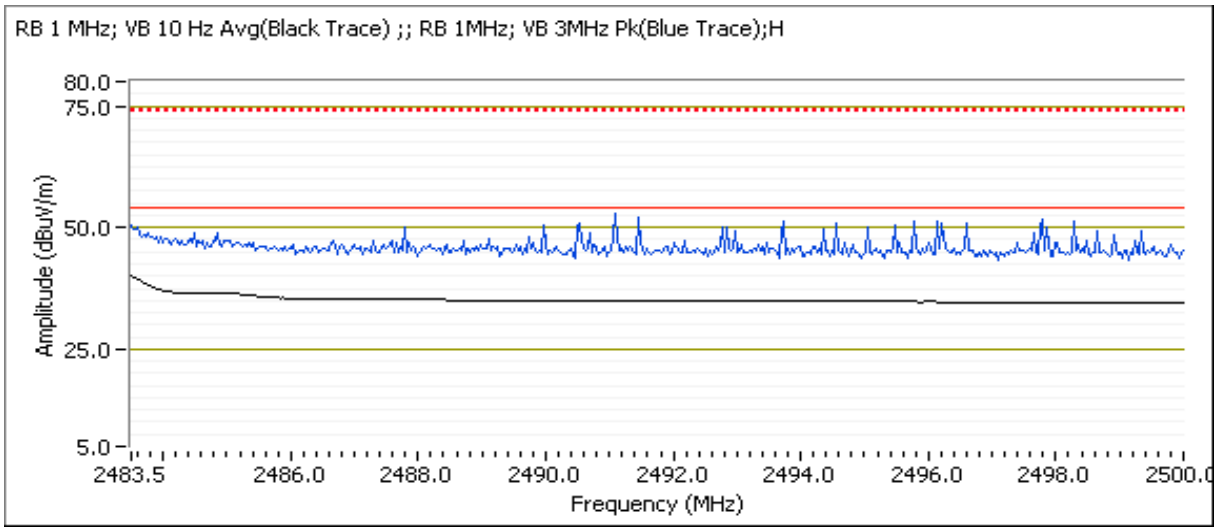
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2479.980	100.4	H	-	-	PK	175	1.1	RB 100 kHz;VB 100 kHz;Peak
2479.970	101.1	H	-	-	AVG	175	1.1	RB 1 MHz;VB 10 Hz;Peak
2479.800	101.6	H	-	-	PK	175	1.1	RB 1 MHz;VB 3 MHz;Peak
2479.980	96.2	V	-	-	PK	67	1.0	RB 100 kHz;VB 100 kHz;Peak
2479.980	97.1	V	-	-	AVG	67	1.0	RB 1 MHz;VB 10 Hz;Peak
2480.150	97.7	V	-	-	PK	67	1.0	RB 1 MHz;VB 3 MHz;Peak

Fundamental emission level @ 3m in 100kHz RBW:	100.4	dBµV/m	
Limit for emissions outside of restricted bands:	80.4	dBµV/m	Limit is -20dBc (Peak power measurement)

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	
2483.500	45.9	H	54.0	-8.1	AVG	179	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.800	56.0	H	74.0	-18.0	PK	179	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	37.8	V	54.0	-16.2	AVG	77	1.1	POS; RB 1 MHz; VB: 10 Hz
2483.500	47.7	V	74.0	-26.3	PK	77	1.1	POS; RB 1 MHz; VB: 3 MHz

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

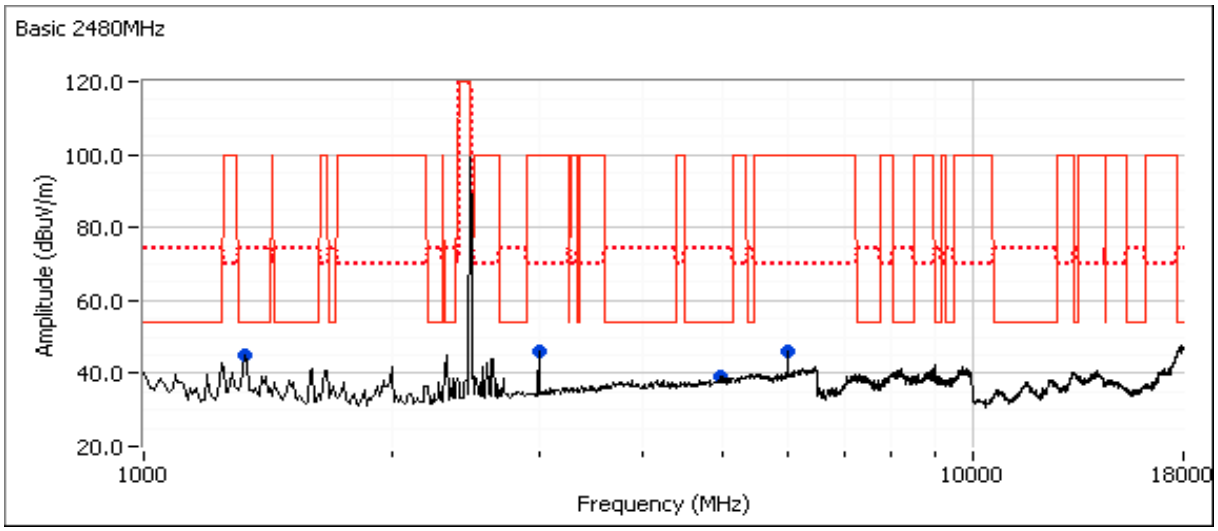


Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1332.030	33.1	V	54.0	-20.9	AVG	348	2.2	RB 1 MHz;VB 10 Hz;Peak
4959.970	32.9	V	54.0	-21.1	AVG	360	1.0	RB 1 MHz;VB 10 Hz;Peak
1329.630	50.0	V	74.0	-24.0	PK	348	2.2	RB 1 MHz;VB 3 MHz;Peak
4959.530	40.5	V	74.0	-33.5	PK	360	1.0	RB 1 MHz;VB 3 MHz;Peak
6000.760	49.1	V	80.4	-31.3	PK	139	1.0	RB 1 MHz;VB 3 MHz;Peak
3000.230	50.4	H	80.4	-30.0	PK	181	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 was set 20dB below the level of the fundamental and measured in 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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A



Run #2: Radiated Spurious Emissions, 1000-26000 MHz. Operating Mode: EDR (3Mb/s)

Date of Test: 4/30/2012

Test Engineer: Jack Liu / Joseph Cadigal

Test Location: FT#5

Run #2a: Low Channel @ 2402 MHz

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	7.5	0.5	8.0

Fundamental Signal Field Strength: Peak value measured in 100kHz

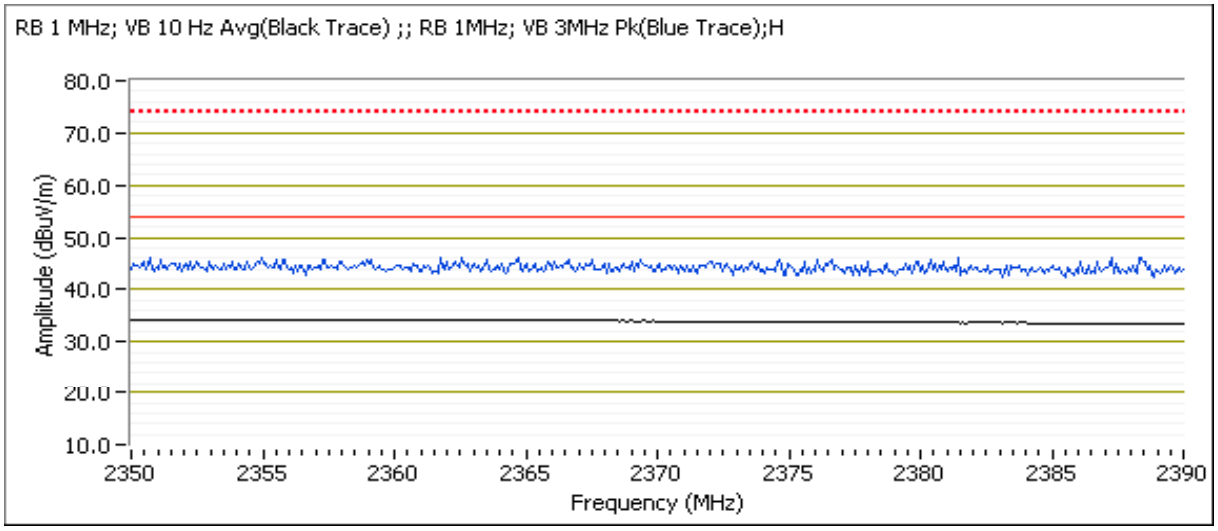
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2402.000	91.6	V	-	-	AVG	71	1.1	RB 1 MHz;VB 10 Hz;Peak
2402.250	94.7	V	-	-	PK	71	1.1	RB 1 MHz;VB 3 MHz;Peak
2401.840	94.5	V	-	-	PK	71	1.1	RB 100 kHz;VB 100 kHz;Peak
2402.010	91.6	H	-	-	AVG	311	1.3	RB 1 MHz;VB 10 Hz;Peak
2402.120	94.9	H	-	-	PK	311	1.3	RB 1 MHz;VB 3 MHz;Peak
2402.060	93.3	H	-	-	PK	311	1.3	RB 100 kHz;VB 100 kHz;Peak

Fundamental emission level @ 3m in 100kHz RBW:	94.5	dBµV/m	
Limit for emissions outside of restricted bands:	74.5	dBµV/m	Limit is -20dBc (Peak power measurement)

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Band Edge Signal Field Strength - Direct measurement of field strength

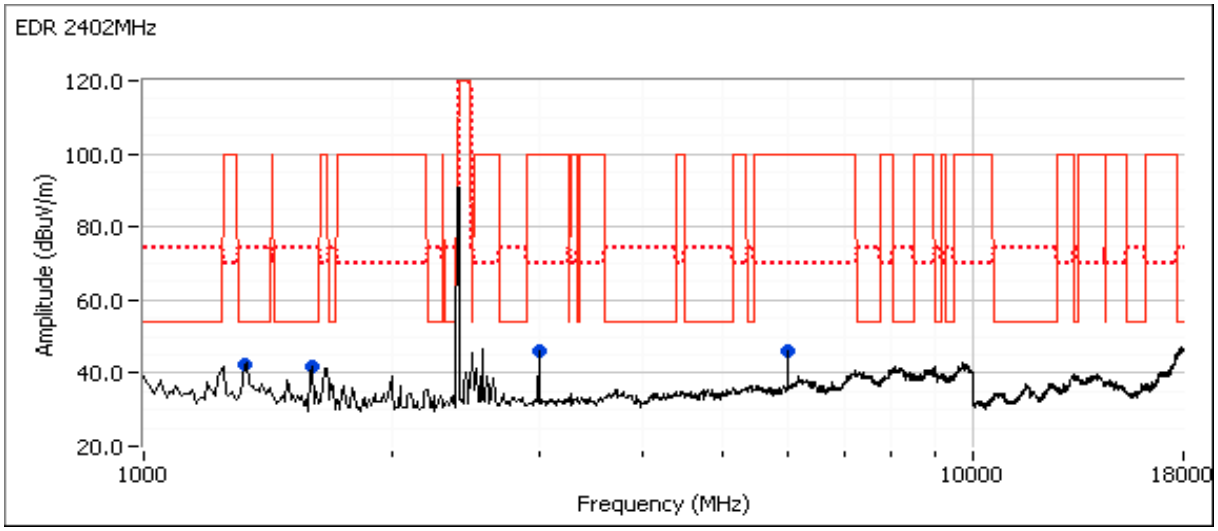
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2362.100	34.3	H	54.0	-19.7	AVG	329	1.8	POS; RB 1 MHz; VB: 10 Hz
2360.340	46.5	H	74.0	-27.5	PK	329	1.8	POS; RB 1 MHz; VB: 3 MHz
2350.000	34.3	V	54.0	-19.7	AVG	163	2.5	POS; RB 1 MHz; VB: 10 Hz
2370.840	45.4	V	74.0	-28.6	PK	163	2.5	POS; RB 1 MHz; VB: 3 MHz



Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1596.820	35.2	V	54.0	-18.8	AVG	127	1.6	RB 1 MHz;VB 10 Hz;Peak
6000.600	50.0	V	74.5	-24.5	PK	150	1.0	RB 1 MHz;VB 3 MHz;Peak
1327.490	32.8	V	54.0	-21.2	AVG	183	1.0	RB 1 MHz;VB 10 Hz;Peak
1597.600	50.0	V	74.0	-24.0	PK	127	1.6	RB 1 MHz;VB 3 MHz;Peak
1328.400	48.8	V	74.0	-25.2	PK	183	1.0	RB 1 MHz;VB 3 MHz;Peak
3000.330	44.8	V	74.5	-29.7	PK	194	1.0	RB 1 MHz;VB 3 MHz;Peak

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	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 20dB below the level of the fundamental and measured in 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.

Run #2b: Center Channel @ 2440 MHz

Date of Test: 4/30/2012

Test Engineer: Joseph Cadigal

Test Location: FT Chamber#5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	7.5	1.8	8.0

Fundamental Signal Field Strength: Peak value measured in 100kHz

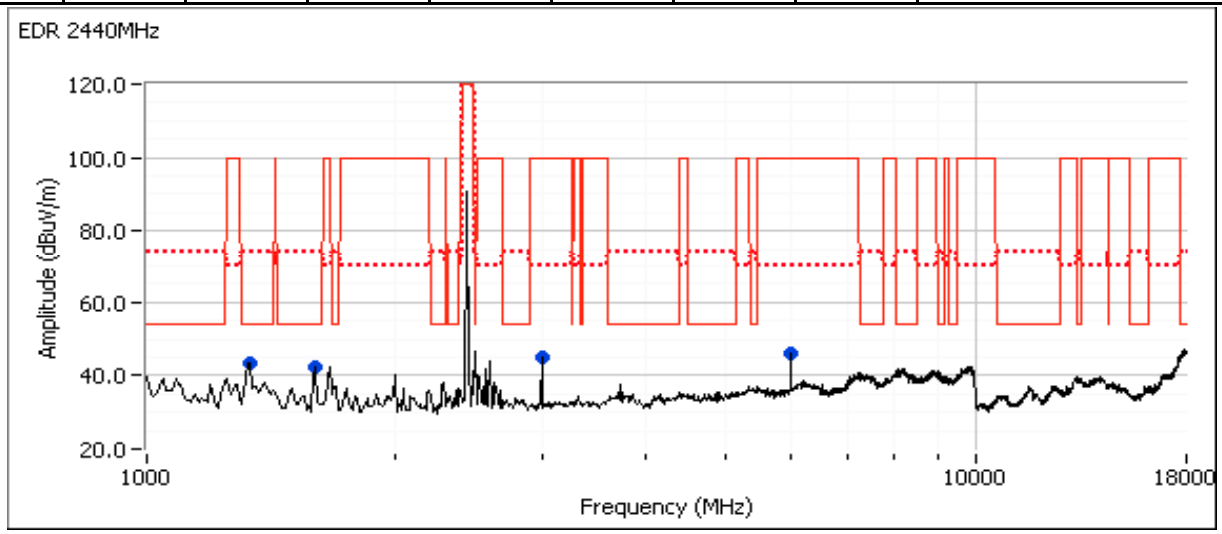
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2440.010	92.5	V	-	-	AVG	69	1.0	RB 1 MHz;VB 10 Hz;Peak
2440.200	95.7	V	-	-	PK	69	1.0	RB 1 MHz;VB 3 MHz;Peak
2440.050	92.6	V	-	-	PK	69	1.0	RB 100 kHz;VB 100 kHz;Peak
2440.020	93.8	H	-	-	AVG	308	1.0	RB 1 MHz;VB 10 Hz;Peak
2440.170	96.9	H	-	-	PK	308	1.0	RB 1 MHz;VB 3 MHz;Peak
2440.050	96.5	H	-	-	PK	308	1.0	RB 100 kHz;VB 100 kHz;Peak

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Fundamental emission level @ 3m in 100kHz RBW:	96.5	dBµV/m
Limit for emissions outside of restricted bands:	76.5	dBµV/m

Limit is -20dBc (Peak power measurement)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1595.850	34.8	V	54.0	-19.2	AVG	183	1.0	RB 1 MHz;VB 10 Hz;Peak
3000.330	50.1	V	76.5	-26.4	PK	189	1.0	RB 1 MHz;VB 3 MHz;Peak
6000.720	48.8	V	76.5	-27.7	PK	143	1.0	RB 1 MHz;VB 3 MHz;Peak
1332.630	30.3	V	54.0	-23.7	AVG	343	1.3	RB 1 MHz;VB 10 Hz;Peak
1595.510	48.6	V	74.0	-25.4	PK	183	1.0	RB 1 MHz;VB 3 MHz;Peak
1331.250	45.9	V	74.0	-28.1	PK	343	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 was set 20dB below the level of the fundamental and measured in 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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run #2c: High Channel @ 2480 MHz

Date of Test: 4/30/2012

Test Engineer: Jack Liu/ Joseph Cadigal

Test Location: FT#5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain B	7.5	2.3	8.0

Fundamental Signal Field Strength: Peak value measured in 100kHz

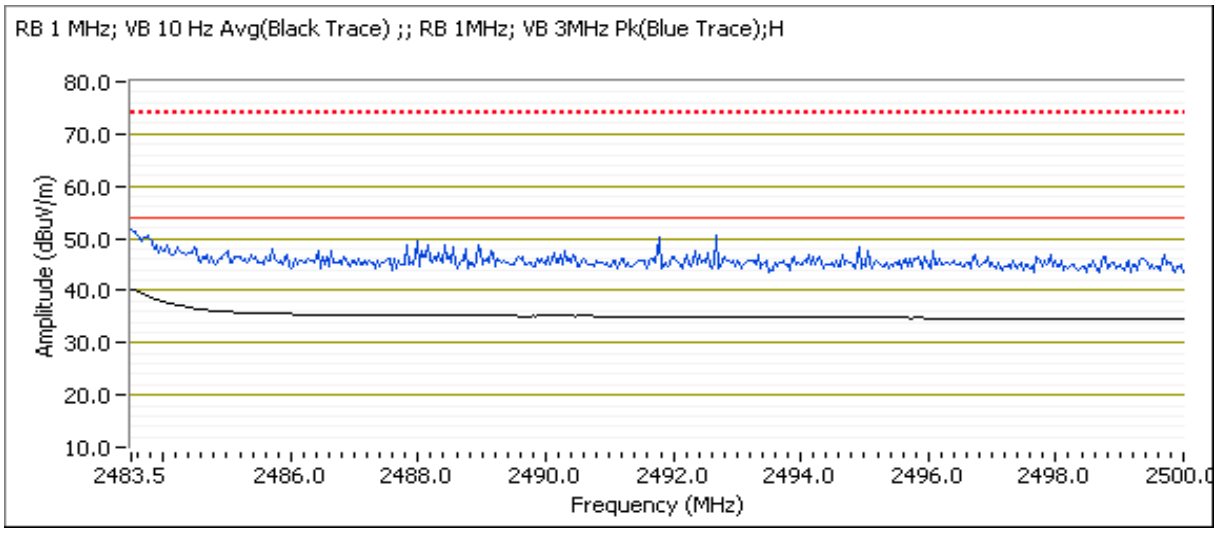
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2479.970	92.2	V	-	-	AVG	68	1.0	RB 1 MHz;VB 10 Hz;Peak
2480.070	95.3	V	-	-	PK	68	1.0	RB 1 MHz;VB 3 MHz;Peak
2480.120	93.2	V	-	-	PK	68	1.0	RB 100 kHz;VB 100 kHz;Peak
2479.970	97.5	H	-	-	AVG	183	1.1	RB 1 MHz;VB 10 Hz;Peak
2480.140	100.6	H	-	-	PK	183	1.1	RB 1 MHz;VB 3 MHz;Peak
2480.080	97.2	H	-	-	PK	183	1.1	RB 100 kHz;VB 100 kHz;Peak

Fundamental emission level @ 3m in 100kHz RBW:	97.2	dBµV/m	
Limit for emissions outside of restricted bands:	77.2	dBµV/m	Limit is -20dBc (Peak power measurement)

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	
2483.500	40.2	H	54.0	-13.8	AVG	186	1.1	POS; RB 1 MHz; VB: 10 Hz
2483.600	49.8	H	74.0	-24.2	PK	186	1.1	POS; RB 1 MHz; VB: 3 MHz
2483.500	37.9	V	54.0	-16.1	AVG	75	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.530	48.8	V	74.0	-25.2	PK	75	1.0	POS; RB 1 MHz; VB: 3 MHz

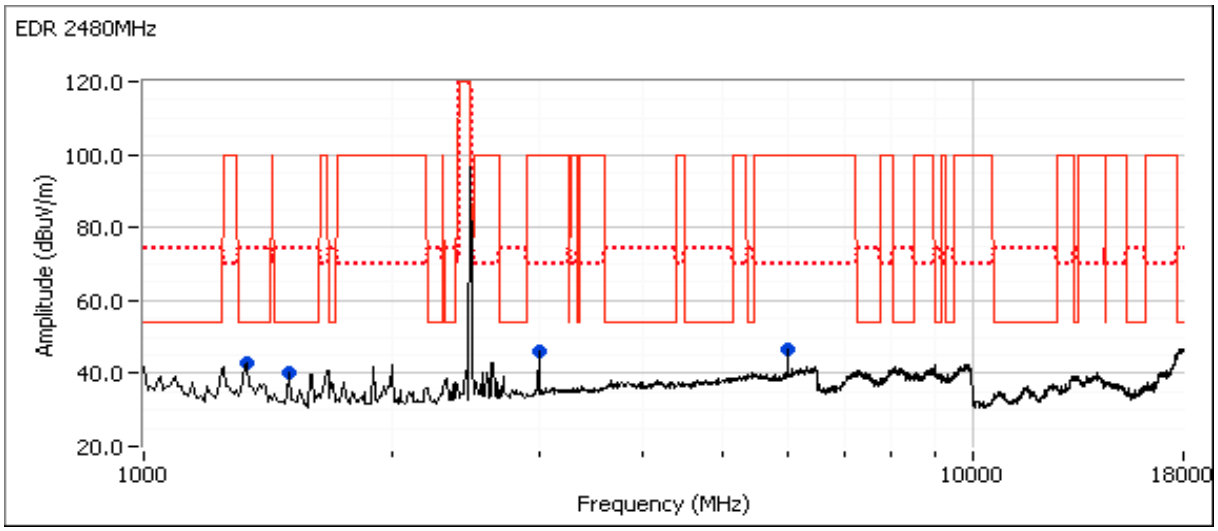
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A



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	
1332.530	35.8	V	54.0	-18.2	AVG	295	1.9	RB 1 MHz;VB 10 Hz;Peak
1333.170	54.1	V	74.0	-19.9	PK	295	1.9	RB 1 MHz;VB 3 MHz;Peak
3000.100	48.8	H	77.2	-28.4	PK	180	1.0	RB 1 MHz;VB 3 MHz;Peak
6000.630	46.1	V	77.2	-31.1	PK	121	1.3	RB 1 MHz;VB 3 MHz;Peak
1497.320	49.8	H	74.0	-24.2	PK	132	1.6	RB 1 MHz;VB 3 MHz;Peak
1496.610	25.4	H	54.0	-28.6	AVG	132	1.6	RB 1 MHz;VB 10 Hz;Peak

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	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 20dB below the level of the fundamental and measured in 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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

RSS 210 and FCC 15.247 (DSS) Radiated Spurious Emissions 802.11bgn and Bluetooth LE - Transmitter Mode

Test Specific Details

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

General Test Configuration

The EUT was installed into a test fixture such that the EUT was exposed (i.e. outside of a host PC).

Summary of Results

For Bluetooth: Tx is chain B, Rx is chain B. For WiFi, only Chain A is used for transmit in the 2.4GHz band, both chains used in 5GHz bands. The channels and WiFi modes were selected based on the worst case results from evaluating the BLE, EDR and Basic-Rate Bluetooth modes. BT Basic was selected because basic has higher power.

MAC Address: 44850006303D DRTU Tool Version 1.5.4.0399 Driver version 15.1.0.99

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
1	BT Basic 802.11b	2402MHz 2412MHz	7dBm 16.5dBm	4.5 16.6	Radiated Spurious Emissions	FCC 15.247	45.9 dBµV/m @ 7235.2 MHz (-8.1 dB)
2	BT Basic 802.11b	2480MHz 2462MHz	7dBm 16.5dBm	5.1 16.54	Radiated Spurious Emissions	FCC 15.247	52.1 dBµV/m @ 7386.9 MHz (-1.9 dB)
3	BT Basic 802.11g	2402MHz 2412MHz	7dBm 16.5dBm	4.5 16.47	Radiated Spurious Emissions	FCC 15.247	47.8 dBµV/m @ 7235.5 MHz (-6.2 dB)
4	BT Basic 802.11g	2480MHz 2462MHz	7dBm 16.5dBm	5.1 16.48	Radiated Spurious Emissions	FCC 15.247	48.3 dBµV/m @ 3282.7 MHz (-5.7 dB)
WiFi mode for the following runs based on worst case mode from runs 1 through 4							
5	BT Basic 802.11b	2402MHz 2437MHz	7dBm 16.5dBm	4.5 16.5	Radiated Emissions 1- 10 GHz	FCC 15.247	44.9 dBµV/m @ 7311.7 MHz (-9.1 dB)
6	BT Basic 802.11b	2440MHz 2412MHz	7dBm 16.5dBm	4.9 16.5		FCC 15.247	42.5 dBµV/m @ 9001.0 MHz (-11.5 dB)
7	BT Basic 802.11b	2440MHz 2462MHz	7dBm 16.5dBm	4.9 16.5	Radiated Emissions 1- 10 GHz	FCC 15.247	44.1 dBµV/m @ 7386.6 MHz (-9.9 dB)
8	BT Basic 802.11b	2480MHz 2437MHz	7dBm 16.5dBm	5.1 16.5		FCC 15.247	45.1 dBµV/m @ 7310.1 MHz (-8.9 dB)

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

WiFi mode and channel and Bluetooth channel based on the worst case mode from runs 1 through 8

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
9	BT 3Mb/s 802.11b	2480 MHz 2462 MHz	7dBm 16.5dBm	2.3 16.5	Radiated Emissions 1- 10 GHz	FCC 15.247	46.0 dBµV/m @ 7386.6 MHz (-8.0 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, Basic mode.

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
10	BT Basic 802.11n20	2440MHz 5200MHz	7dBm 16.5/16.5	4.9 15.0 / 16.0	Radiated Emissions 1- 15 GHz	FCC 15.247	46.1 dBµV/m @ 10400.0 MHz (-7.9 dB)
11	BT Basic 802.11n20	2440MHz 5300MHz	7dBm 16.5/16.5	4.9 15.9 / 16.3		FCC 15.247	38.0 dBµV/m @ 4880.0 MHz (-16.0 dB)
12	BT Basic 802.11n20	2440MHz 5580MHz	7dBm 16.5/16.5	4.9 16.2 / 16.4		FCC 15.247	32.8 dBµV/m @ 1660.7 MHz (-21.2 dB)
13	BT Basic 802.11n20	2440MHz 5785MHz	7dBm 16.5/16.5	4.9 15.2 / 15.6		FCC 15.247	34.1 dBµV/m @ 4880.0 MHz (-19.9 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:

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.

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run # 1, Jackson Peak 2x2: 1-10GHz, 802.11b @ 2412 MHz Chain A, BT Basic @ 2402 MHz Chain B

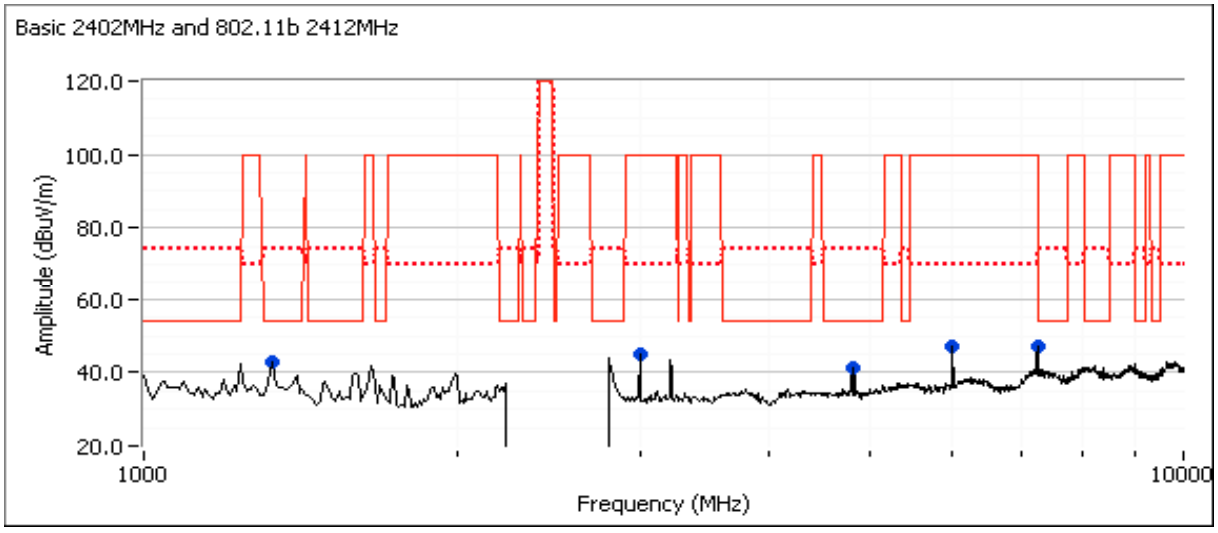
Date of Test: 5/1/2012

Test Engineer: Jack Liu

Test Location: FT 5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.6	23.5
Chain B	7.0	4.5	8.0

Spurious Radiated Emissions, 1 - 10GHz excluding the allocated band:



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	
1330.000	43.0	V	54.0	-11.0	Peak	317	1.3	
4804.170	41.1	V	54.0	-12.9	Peak	220	1.6	
2998.330	45.2	V	54.0	-8.8	Peak	206	1.0	
5995.830	46.9	V	54.0	-7.1	Peak	263	1.0	
7235.000	47.1	V	54.0	-6.9	Peak	82	1.6	

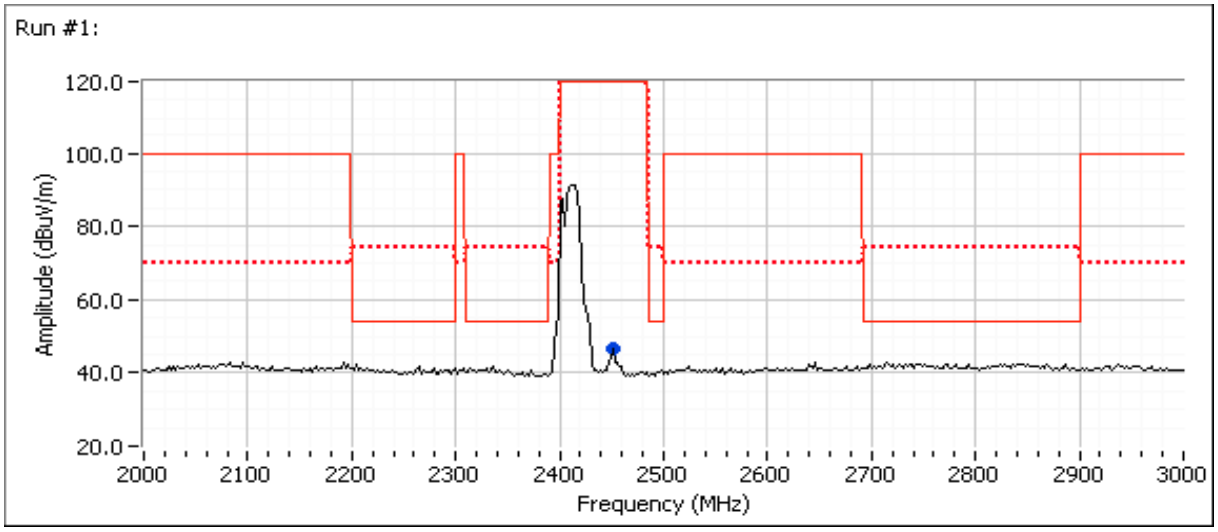
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

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	
7235.230	45.9	V	54.0	-8.1	AVG	67	1.7	RB 1 MHz;VB 10 Hz;Peak
6000.650	44.9	V	54.0	-9.1	AVG	141	1.0	RB 1 MHz;VB 10 Hz;Peak
3000.280	44.4	V	54.0	-9.6	AVG	200	1.0	RB 1 MHz;VB 10 Hz;Peak
4803.940	39.4	V	54.0	-14.6	AVG	219	1.6	RB 1 MHz;VB 10 Hz;Peak
1345.250	32.5	V	54.0	-21.5	AVG	94	1.1	RB 1 MHz;VB 10 Hz;Peak
7235.050	51.8	V	74.0	-22.2	PK	67	1.7	RB 1 MHz;VB 3 MHz;Peak
6000.630	49.0	V	74.0	-25.0	PK	141	1.0	RB 1 MHz;VB 3 MHz;Peak
3000.230	48.4	V	74.0	-25.6	PK	200	1.0	RB 1 MHz;VB 3 MHz;Peak
4804.170	45.6	V	74.0	-28.4	PK	219	1.6	RB 1 MHz;VB 3 MHz;Peak
1346.900	44.5	V	74.0	-29.5	PK	94	1.1	RB 1 MHz;VB 3 MHz;Peak

Spurious Radiated Emissions, 2 - 3GHz

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)



Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2450.900	46.7	H	-	-	Peak	153	1.0	

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	

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run # 2, Jackson Peak 2x2: 1-10GHz, 802.11b @ 2462 MHz Chain A, BT Basic @ 2480 MHz Chain B

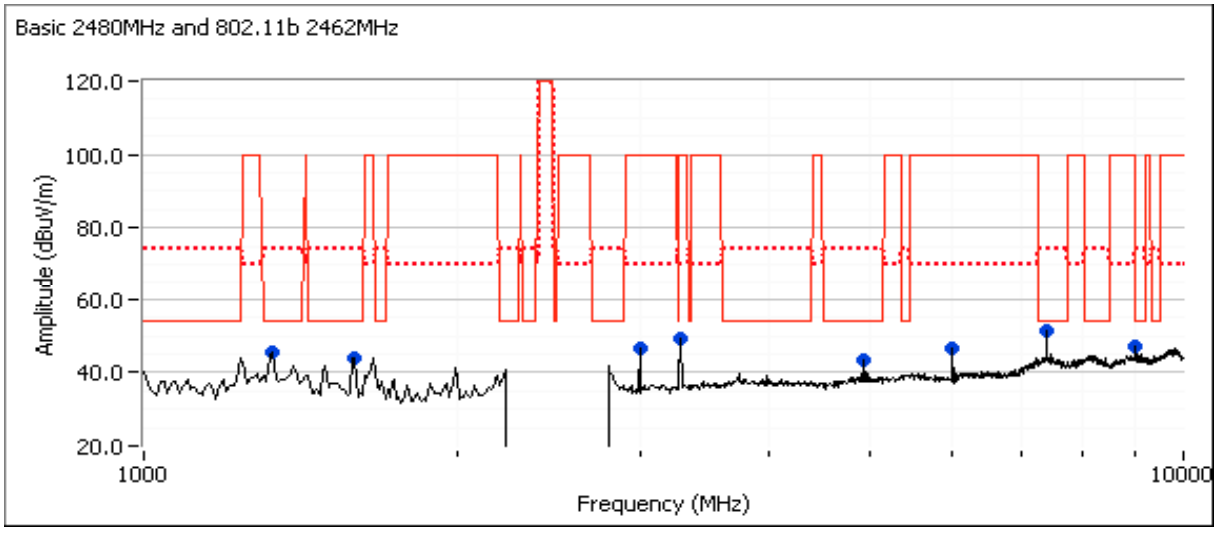
Date of Test: 5/1/2012

Test Engineer: Jack Liu

Test Location: FT 5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.5	23.5
Chain B	7.0	5.1	8.0

Spurious Radiated Emissions, 1 - 10GHz excluding the allocated band:



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	
1330.000	45.7	V	54.0	-8.3	Peak	112	1.3	
1595.830	43.8	V	54.0	-10.2	Peak	179	1.0	
4923.330	43.4	V	54.0	-10.6	Peak	133	1.3	
9002.500	47.1	V	54.0	-6.9	Peak	145	1.0	
7386.670	51.4	V	54.0	-2.6	Peak	71	1.6	
2998.330	46.6	V	54.0	-7.4	Peak	193	1.0	
5995.830	46.8	V	54.0	-7.2	Peak	269	1.0	
3282.500	49.2	V	54.0	-4.8	Peak	89	1.0	

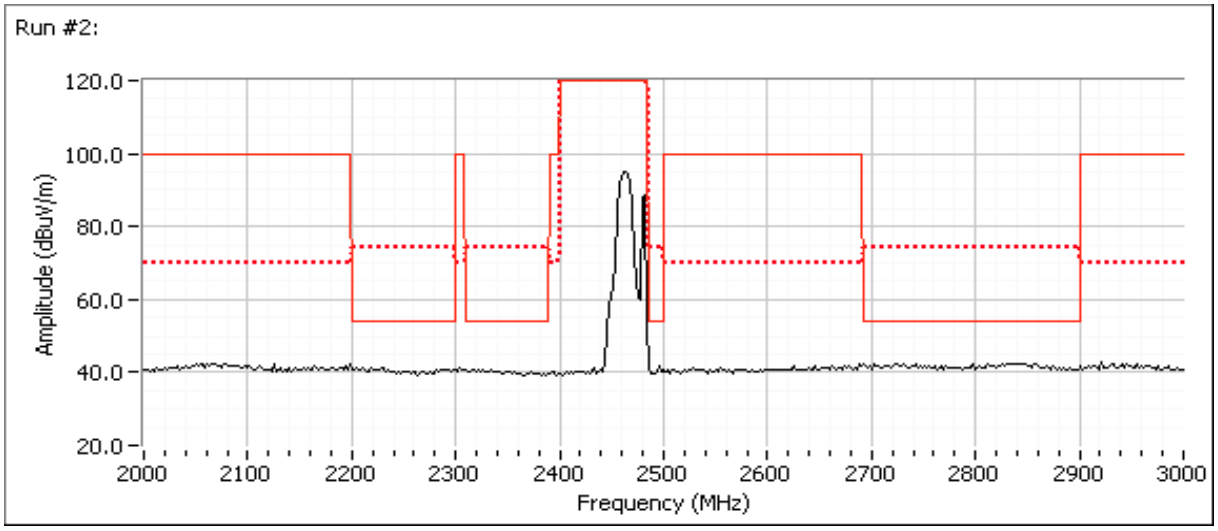
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Final measurements at 3m

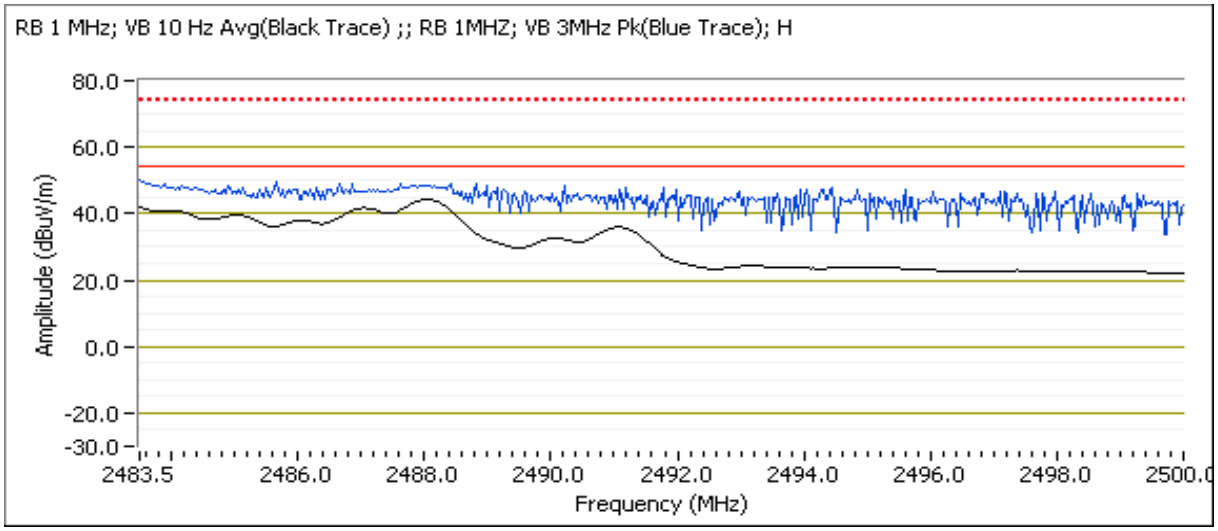
Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7386.870	52.1	V	54.0	-1.9	AVG	63	1.6	RB 1 MHz;VB 10 Hz;Peak
7385.870	58.1	V	74.0	-15.9	PK	63	1.6	RB 1 MHz;VB 3 MHz;Peak
1329.380	35.4	V	54.0	-18.6	AVG	111	1.4	RB 1 MHz;VB 10 Hz;Peak
1332.630	52.7	V	74.0	-21.3	PK	111	1.4	RB 1 MHz;VB 3 MHz;Peak
1595.750	35.8	V	54.0	-18.2	AVG	210	1.0	RB 1 MHz;VB 10 Hz;Peak
1593.210	48.8	V	74.0	-25.2	PK	210	1.0	RB 1 MHz;VB 3 MHz;Peak
4924.050	42.7	V	54.0	-11.3	AVG	134	1.1	RB 1 MHz;VB 10 Hz;Peak
4924.030	48.5	V	74.0	-25.5	PK	134	1.1	RB 1 MHz;VB 3 MHz;Peak
9001.070	45.6	V	54.0	-8.4	AVG	177	1.0	RB 1 MHz;VB 10 Hz;Peak
9001.190	53.7	V	74.0	-20.3	PK	177	1.0	RB 1 MHz;VB 3 MHz;Peak
3000.360	47.1	V	54.0	-6.9	AVG	189	1.0	RB 1 MHz;VB 10 Hz;Peak
3000.390	51.8	V	74.0	-22.2	PK	189	1.0	RB 1 MHz;VB 3 MHz;Peak
3282.720	49.9	V	54.0	-4.1	AVG	82	1.0	RB 1 MHz;VB 10 Hz;Peak
3282.850	52.3	V	74.0	-21.7	PK	82	1.0	RB 1 MHz;VB 3 MHz;Peak
6000.800	46.7	V	54.0	-7.3	AVG	148	1.0	RB 1 MHz;VB 10 Hz;Peak
6000.480	51.0	V	74.0	-23.0	PK	148	1.0	RB 1 MHz;VB 3 MHz;Peak

Spurious Radiated Emissions, 2 - 3GHz

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A



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	
2488.030	44.3	H	54.0	-9.7	AVG	211	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.530	49.0	H	74.0	-25.0	PK	211	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	30.9	V	54.0	-23.1	AVG	200	1.2	POS; RB 1 MHz; VB: 10 Hz
2489.820	42.9	V	74.0	-31.1	PK	200	1.2	POS; RB 1 MHz; VB: 3 MHz

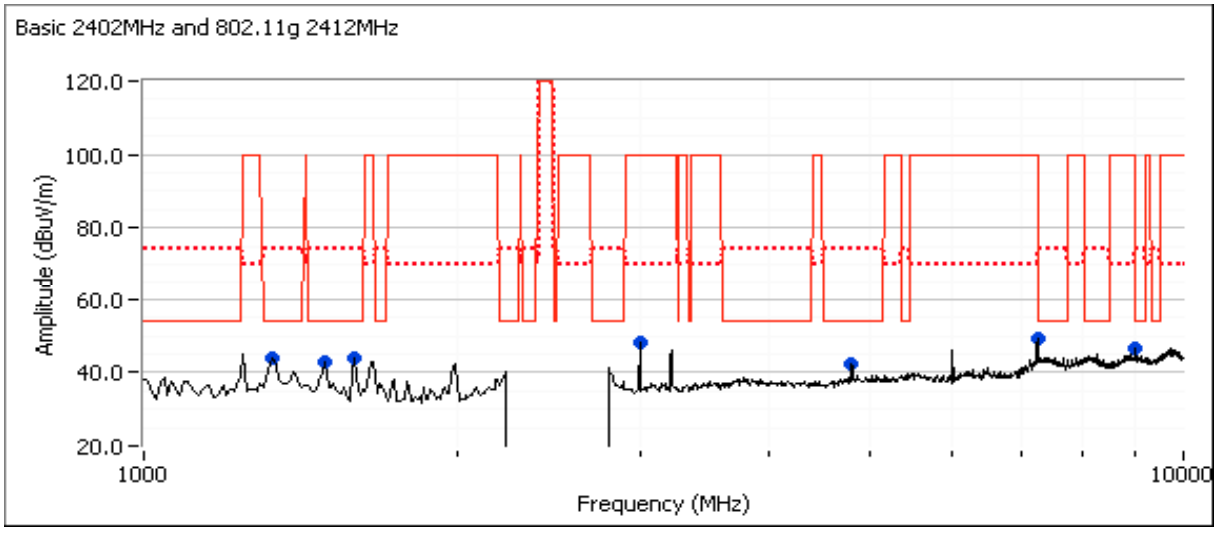
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run # 3, Jackson Peak 2x2: 1-10GHz, 802.11g @ 2412 MHz Chain A, BT Basic @ 2402 MHz Chain B

Date of Test: 5/1/2012
Test Engineer: Jack Liu
Test Location: FT 5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.5	29.5
Chain B	7.0	4.5	8.0

Spurious Radiated Emissions, 1 - 10GHz excluding the allocated band:



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	
1330.000	43.8	V	54.0	-10.2	Peak	317	1.6	
1595.830	44.1	H	54.0	-9.9	Peak	130	1.6	
1495.000	42.9	H	54.0	-11.1	Peak	125	1.0	
4795.000	42.5	H	54.0	-11.5	Peak	150	1.0	
9002.500	46.6	V	54.0	-7.4	Peak	145	1.0	
2998.330	48.2	H	54.0	-5.8	Peak	205	1.0	
7235.000	49.4	V	54.0	-4.6	Peak	226	1.6	

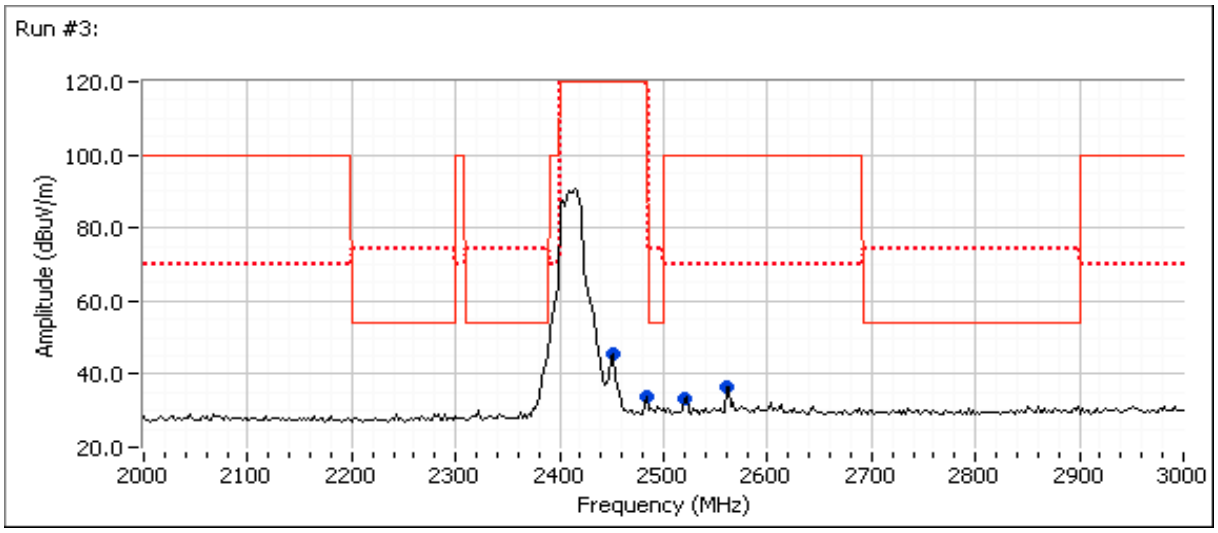
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

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	
7235.470	47.8	V	54.0	-6.2	AVG	222	1.6	RB 1 MHz;VB 10 Hz;Peak
3000.420	46.1	H	54.0	-7.9	AVG	177	1.0	RB 1 MHz;VB 10 Hz;Peak
9001.100	45.8	V	54.0	-8.2	AVG	136	1.0	RB 1 MHz;VB 10 Hz;Peak
4804.020	42.6	H	54.0	-11.4	AVG	144	1.0	RB 1 MHz;VB 10 Hz;Peak
7242.730	59.6	V	74.0	-14.4	PK	222	1.6	RB 1 MHz;VB 3 MHz;Peak
1593.830	36.8	H	54.0	-17.2	AVG	133	1.0	RB 1 MHz;VB 10 Hz;Peak
1494.700	35.6	H	54.0	-18.4	AVG	127	1.0	RB 1 MHz;VB 10 Hz;Peak
1333.250	35.5	V	54.0	-18.5	AVG	286	1.5	RB 1 MHz;VB 10 Hz;Peak
9000.490	53.3	V	74.0	-20.7	PK	136	1.0	RB 1 MHz;VB 3 MHz;Peak
1328.200	53.2	V	74.0	-20.8	PK	286	1.5	RB 1 MHz;VB 3 MHz;Peak
3000.000	51.3	H	74.0	-22.7	PK	177	1.0	RB 1 MHz;VB 3 MHz;Peak
4803.850	49.3	H	74.0	-24.7	PK	144	1.0	RB 1 MHz;VB 3 MHz;Peak
1495.570	49.2	H	74.0	-24.8	PK	127	1.0	RB 1 MHz;VB 3 MHz;Peak
1597.700	49.1	H	74.0	-24.9	PK	133	1.0	RB 1 MHz;VB 3 MHz;Peak

Spurious Radiated Emissions, 2 - 3GHz

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2450.900	45.4	H	54.0	-8.6	Peak	336	1.5	
2482.970	34.0	H	54.0	-20.0	Peak	222	1.0	
2521.040	33.3	H	54.0	-20.7	Peak	180	1.0	
2561.120	36.4	H	54.0	-17.6	Peak	199	1.0	

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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run # 4, Jackson Peak 2x2: 1-10GHz, 802.11g @ 2462 MHz Chain A, BT Basic @ 2480 MHz Chain B

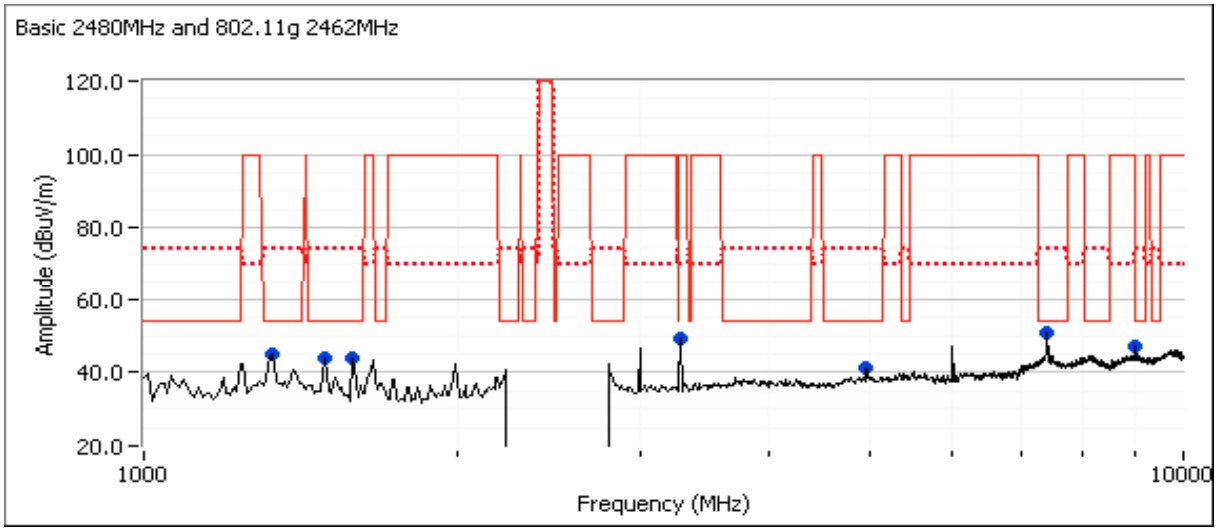
Date of Test: 5/1/2012

Test Engineer: Jack Liu

Test Location: FT 5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.5	29.0
Chain B	7.0	5.1	8.0

Spurious Radiated Emissions, 1 - 10GHz excluding the allocated band:



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	
7386.670	50.8	V	54.0	-3.2	Peak	249	1.3	
9002.500	46.9	V	54.0	-7.1	Peak	137	1.0	
1330.000	45.0	V	54.0	-9.0	Peak	348	1.9	
1485.830	40.2	H	54.0	-13.8	Peak	344	1.9	
1586.670	42.3	V	54.0	-11.7	Peak	118	1.6	
4960.000	42.4	V	54.0	-11.6	Peak	140	1.0	
3282.500	49.8	H	54.0	-4.2	Peak	246	1.0	

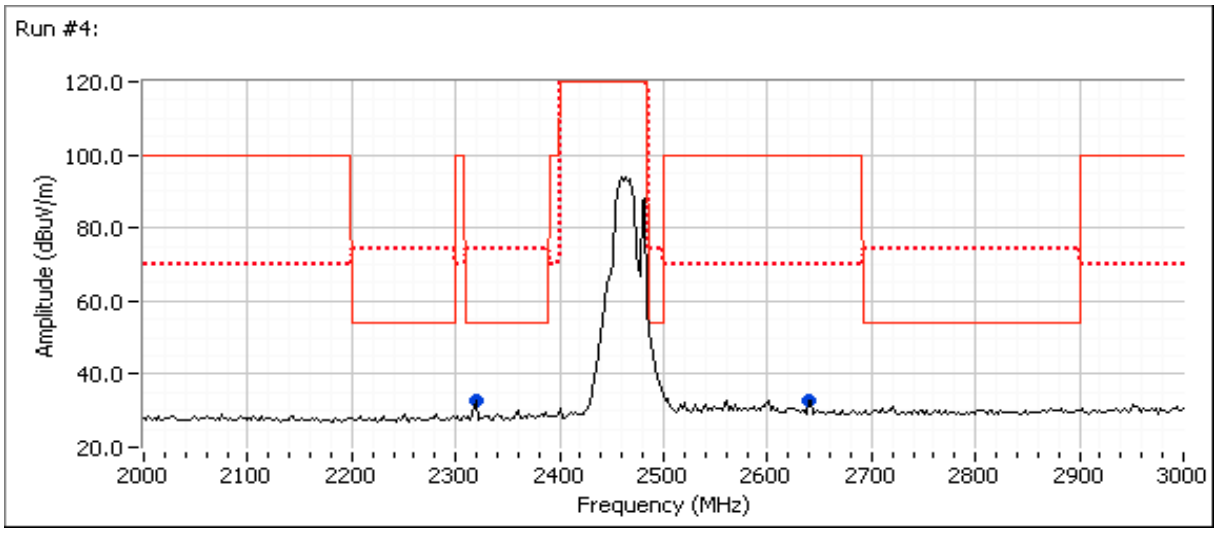
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

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	
3282.720	48.3	H	54.0	-5.7	AVG	244	1.0	RB 1 MHz;VB 10 Hz;Peak
7385.000	47.2	V	54.0	-6.8	AVG	246	1.1	RB 1 MHz;VB 10 Hz;Peak
9001.050	45.3	V	54.0	-8.7	AVG	133	1.0	RB 1 MHz;VB 10 Hz;Peak
7380.540	59.6	V	74.0	-14.4	PK	246	1.1	RB 1 MHz;VB 3 MHz;Peak
4959.970	38.5	V	54.0	-15.5	AVG	85	1.0	RB 1 MHz;VB 10 Hz;Peak
1593.520	37.4	V	54.0	-16.6	AVG	104	1.6	RB 1 MHz;VB 10 Hz;Peak
1328.900	35.0	V	54.0	-19.0	AVG	351	1.9	RB 1 MHz;VB 10 Hz;Peak
9001.420	53.1	V	74.0	-20.9	PK	133	1.0	RB 1 MHz;VB 3 MHz;Peak
1495.130	32.3	H	54.0	-21.7	AVG	333	1.7	RB 1 MHz;VB 10 Hz;Peak
3282.800	52.2	H	74.0	-21.8	PK	244	1.0	RB 1 MHz;VB 3 MHz;Peak
1333.000	51.5	V	74.0	-22.5	PK	351	1.9	RB 1 MHz;VB 3 MHz;Peak
1597.800	50.2	V	74.0	-23.8	PK	104	1.6	RB 1 MHz;VB 3 MHz;Peak
4960.220	47.0	V	74.0	-27.0	PK	85	1.0	RB 1 MHz;VB 3 MHz;Peak
1497.830	44.7	H	74.0	-29.3	PK	333	1.7	RB 1 MHz;VB 3 MHz;Peak

Spurious Radiated Emissions, 2 - 3GHz

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2320.640	32.6	H	54.0	-21.4	Peak	332	1.0	
2639.280	32.7	H	54.0	-21.3	Peak	225	1.0	

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	
2320.070	40.3	H	54.0	-13.7	AVG	117	1.0	POS; RB 1 MHz; VB: 10 Hz
2319.890	45.3	H	74.0	-28.7	PK	117	1.0	POS; RB 1 MHz; VB: 3 MHz

Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run # 5, Jackson Peak 2x2: 1-10GHz, 802.11b @ 2437 MHz Chain A, BT Basic @ 2402 MHz Chain B

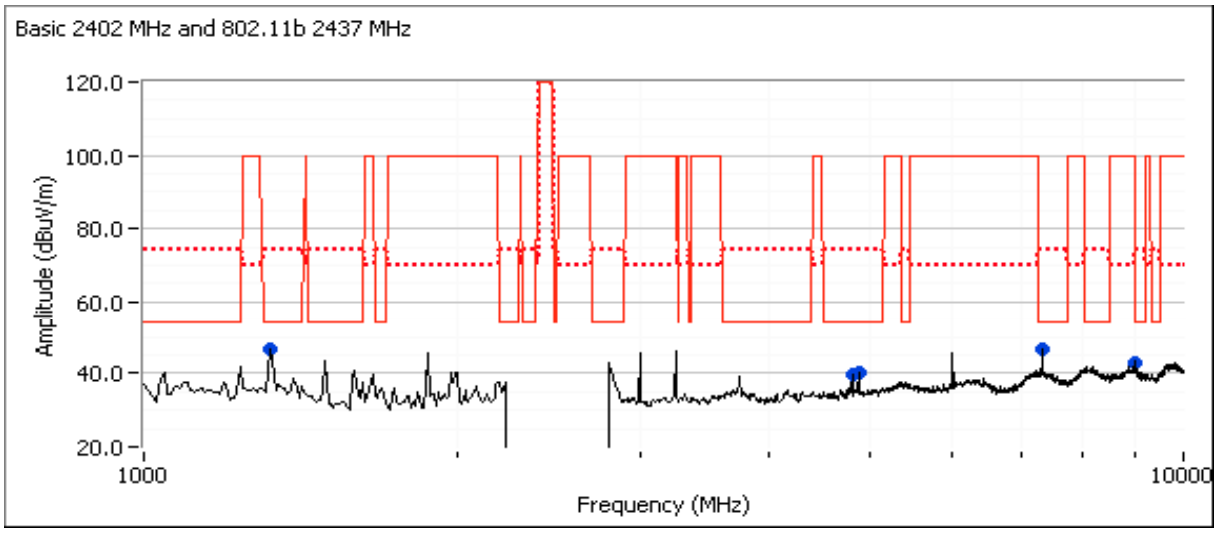
Date of Test: 5/1/2012

Test Engineer: Jack Liu / Rafael Varelas

Test Location: FT 5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.5	23.5
Chain B	7.0	4.5	8.0

Spurious Radiated Emissions, 1 - 10GHz excluding the allocated band:



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	
1320.830	*46.6*	*V*	*54.0*	*-7.4*	*Peak*	*314*	*1.6*	
4868.330	*40.1*	*V*	*54.0*	*-13.9*	*Peak*	*108*	*1.6*	
4804.170	*39.8*	*V*	*54.0*	*-14.2*	*Peak*	*229*	*1.9*	
7310.830	*46.4*	*V*	*54.0*	*-7.6*	*Peak*	*249*	*1.9*	
9002.500	*43.1*	*V*	*54.0*	*-10.9*	*Peak*	*146*	*1.0*	

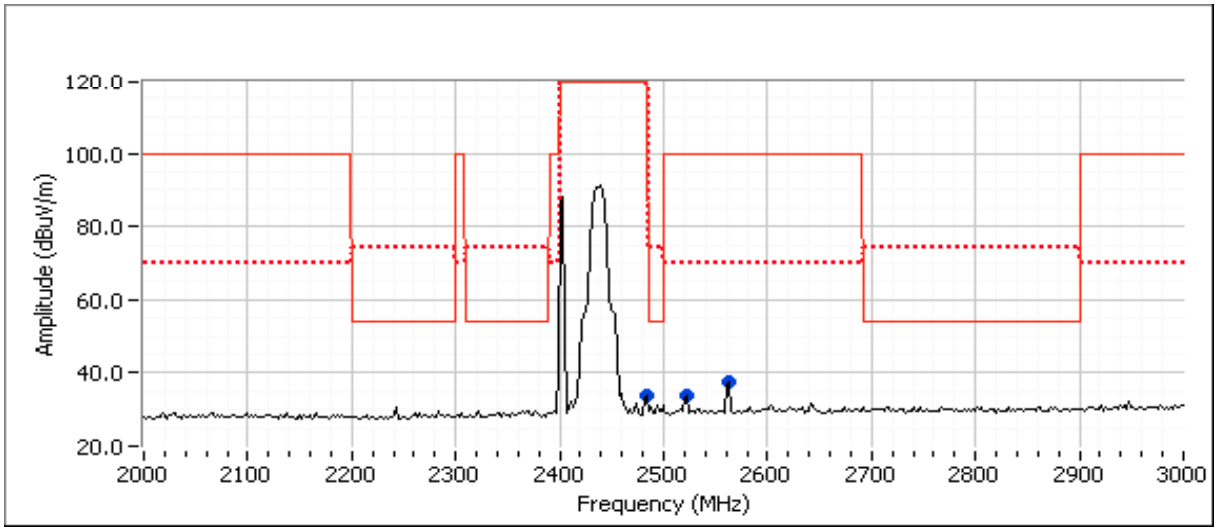
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

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	
7311.700	44.9	V	54.0	-9.1	AVG	251	1.9	RB 1 MHz;VB 10 Hz;Pk
7311.960	50.6	V	74.0	-23.4	PK	251	1.9	RB 1 MHz;VB 3 MHz;Pk
1327.430	36.2	V	54.0	-17.8	AVG	318	1.7	RB 1 MHz;VB 10 Hz;Pk
1328.960	51.0	V	74.0	-23.0	PK	318	1.7	RB 1 MHz;VB 3 MHz;Pk
4873.900	40.3	V	54.0	-13.7	AVG	107	1.6	RB 1 MHz;VB 10 Hz;Pk
4873.880	44.7	V	74.0	-29.3	PK	107	1.6	RB 1 MHz;VB 3 MHz;Pk
4803.970	36.9	V	54.0	-17.1	AVG	227	1.9	RB 1 MHz;VB 10 Hz;Pk
4804.340	43.3	V	74.0	-30.7	PK	227	1.9	RB 1 MHz;VB 3 MHz;Pk
9000.980	43.4	V	54.0	-10.6	AVG	145	1.0	RB 1 MHz;VB 10 Hz;Pk
9000.940	49.2	V	74.0	-24.8	PK	145	1.0	RB 1 MHz;VB 3 MHz;Pk

Spurious Radiated Emissions, 2 - 3GHz

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2482.970	33.6	H	54.0	-20.4	Peak	190	1.0	
2523.050	33.9	H	54.0	-20.1	Peak	225	1.0	
2563.130	37.5	H	54.0	-16.5	Peak	216	1.0	

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	

Run # 6, Jackson Peak 2x2: 1-10GHz, 802.11b @ 2412 MHz Chain A, BT Basic @ 2440 MHz Chain B

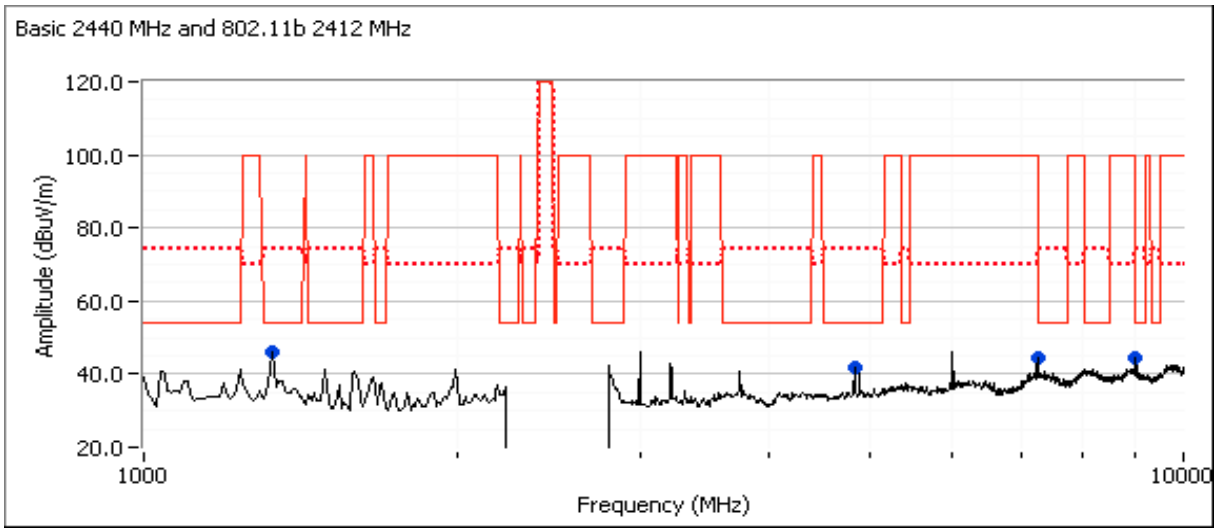
Date of Test: 5/1/2012

Test Engineer: Rafael Varelas

Test Location: FT3

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.5	23.5
Chain B	7.0	4.9	8.0

Spurious Radiated Emissions, 1 - 10GHz excluding the allocated band:



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary Measurements (Peak versus average limit)

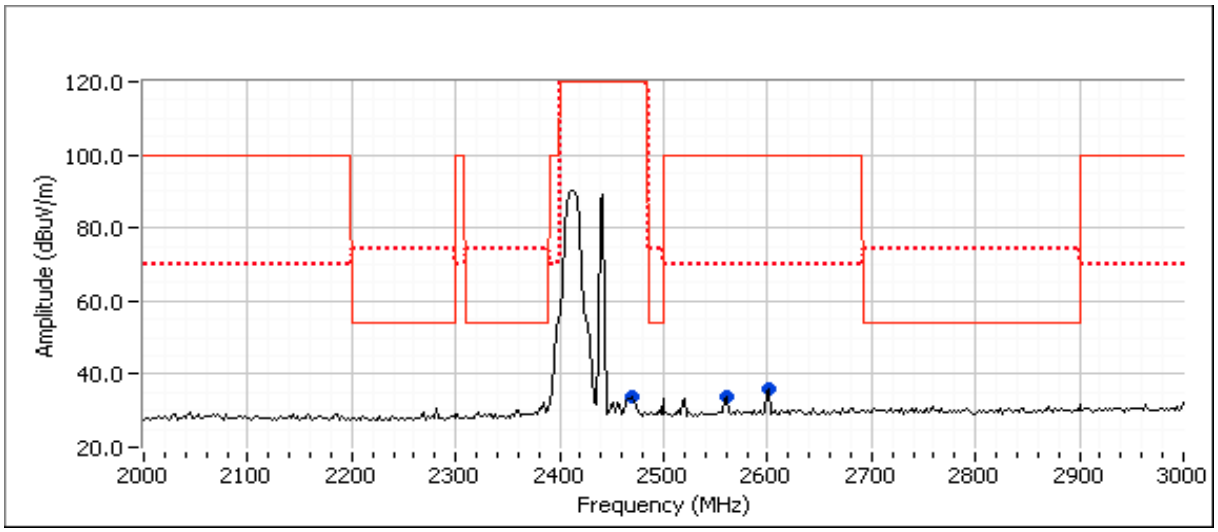
Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1328.930	46.0	V	54.0	-8.0	Peak	313	1.6	
4823.960	42.0	V	54.0	-12.0	Peak	120	1.6	
7234.010	44.3	V	54.0	-9.7	Peak	234	1.6	
9000.330	44.6	V	54.0	-9.4	Peak	186	1.0	

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	
9001.040	42.5	V	54.0	-11.5	AVG	185	1.0	RB 1 MHz;VB 10 Hz;Pk
9001.070	49.4	V	74.0	-24.6	PK	185	1.0	RB 1 MHz;VB 3 MHz;Pk
4823.970	40.7	V	54.0	-13.3	AVG	120	1.7	RB 1 MHz;VB 10 Hz;Pk
4823.870	44.9	V	74.0	-29.1	PK	120	1.7	RB 1 MHz;VB 3 MHz;Pk
1330.730	35.6	V	54.0	-18.4	AVG	312	1.9	RB 1 MHz;VB 10 Hz;Pk
1329.600	54.4	V	74.0	-19.6	PK	312	1.9	RB 1 MHz;VB 3 MHz;Pk

Spurious Radiated Emissions, 2 - 3GHz

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2468.940	34.0	H	54.0	-20.0	Peak	197	1.0	
2561.120	34.0	H	54.0	-20.0	Peak	227	1.0	
2601.200	36.0	H	54.0	-18.0	Peak	219	1.0	

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	

Run # 7, Jackson Peak 2x2: 1-10GHz, 802.11b @ 2462 MHz Chain A, BT Basic @ 2440 MHz Chain B

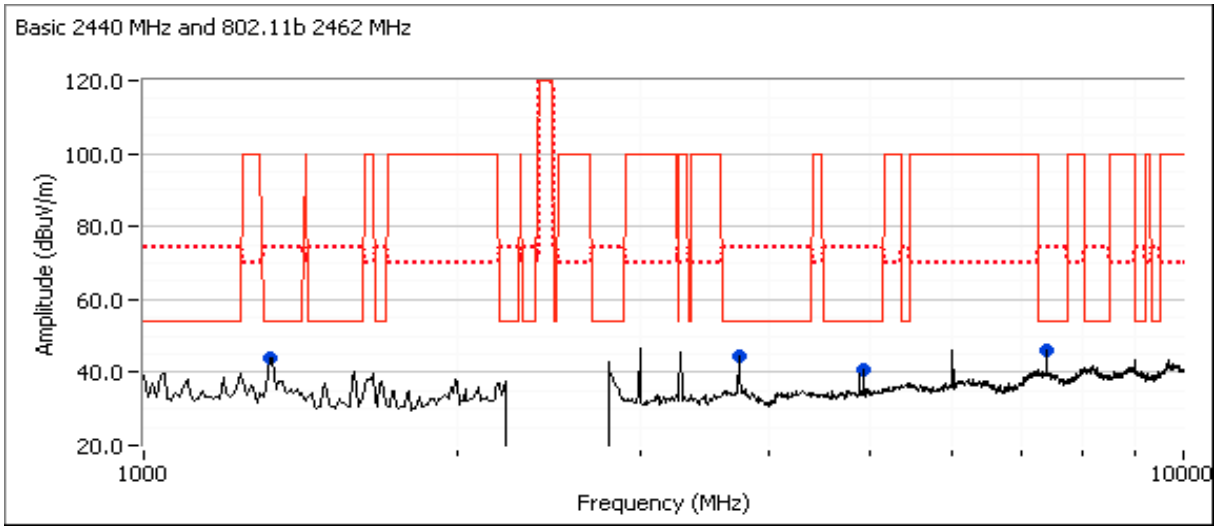
Date of Test: 5/1/2012

Test Engineer: Rafael Varelas

Test Location: FT3

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.5	23.5
Chain B	7.0	4.9	8.0

Spurious Radiated Emissions, 1 - 10GHz excluding the allocated band:



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary Measurements (Peak versus average limit)

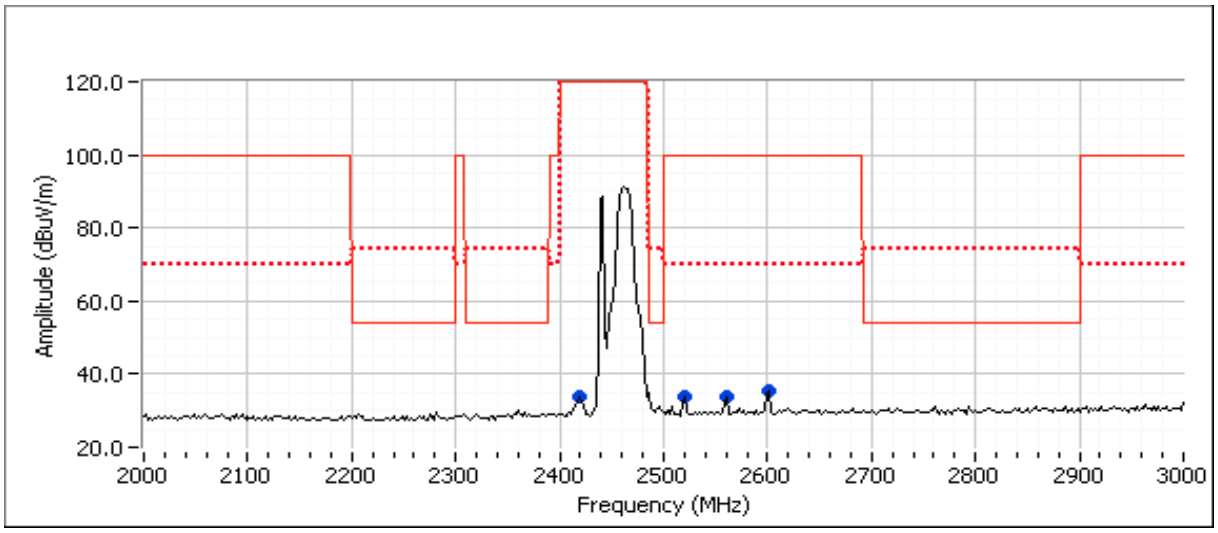
Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1320.830	*44.0*	*V*	*54.0*	*-10.0*	*Peak*	*302*	*1.9*	
3731.700	44.6	H	54.0	-9.4	Peak	130	1.0	
4923.880	40.7	V	54.0	-13.3	Peak	105	1.3	
7386.150	45.8	V	54.0	-8.2	Peak	233	1.6	

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	
7386.620	44.1	V	54.0	-9.9	AVG	238	1.0	RB 1 MHz;VB 10 Hz;Pk
7386.850	49.9	V	74.0	-24.1	PK	238	1.0	RB 1 MHz;VB 3 MHz;Pk
1326.830	30.7	V	54.0	-23.3	AVG	272	2.0	RB 1 MHz;VB 10 Hz;Pk
1327.300	49.1	V	74.0	-24.9	PK	272	2.0	RB 1 MHz;VB 3 MHz;Pk
3750.700	29.1	H	54.0	-24.9	AVG	124	1.0	RB 1 MHz;VB 10 Hz;Pk
3750.300	49.9	H	74.0	-24.1	PK	124	1.0	RB 1 MHz;VB 3 MHz;Pk
4923.920	39.5	V	54.0	-14.5	AVG	78	1.0	RB 1 MHz;VB 10 Hz;Pk
4923.830	44.1	V	74.0	-29.9	PK	78	1.0	RB 1 MHz;VB 3 MHz;Pk

Spurious Radiated Emissions, 2 - 3GHz

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2418.840	33.9	H	54.0	-20.1	Peak	217	1.0	
2521.040	34.0	H	54.0	-20.0	Peak	218	1.0	
2561.120	34.0	H	54.0	-20.0	Peak	220	1.0	
2601.200	35.4	H	54.0	-18.6	Peak	215	1.0	

Final measurements at 3m

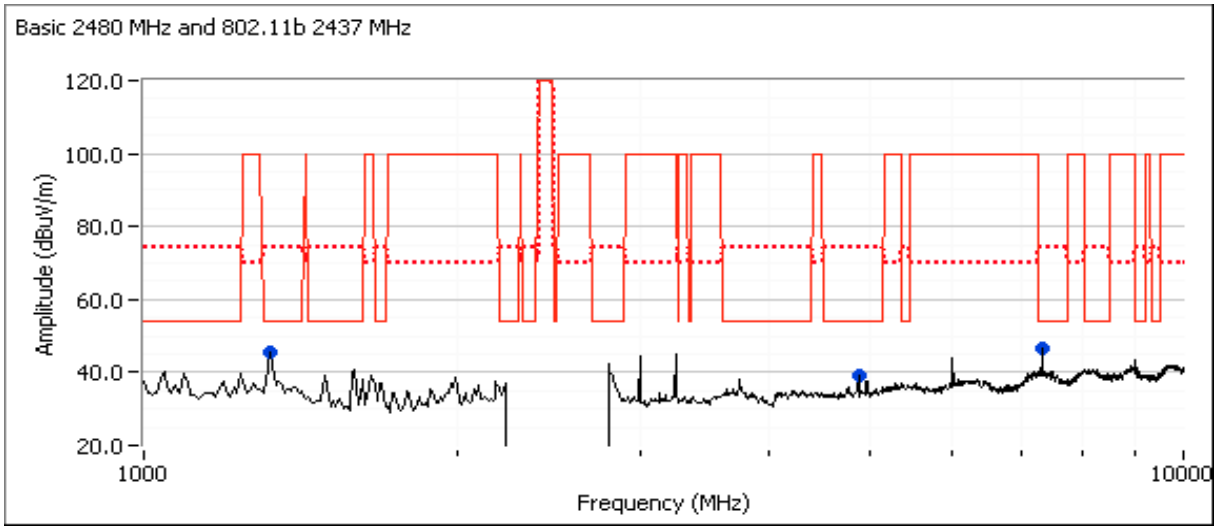
Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	

Run # 8, Jackson Peak 2x2: 1-10GHz, 802.11b @ 2437 MHz Chain A, BT Basic @ 2480 MHz Chain B

Date of Test: 5/1/2012
Test Engineer: Rafael Varelas
Test Location: FT3

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.5	23.5
Chain B	7.0	5.1	8.0

Spurious Radiated Emissions, 1 - 10GHz excluding the allocated band:



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary Measurements (Peak versus average limit)

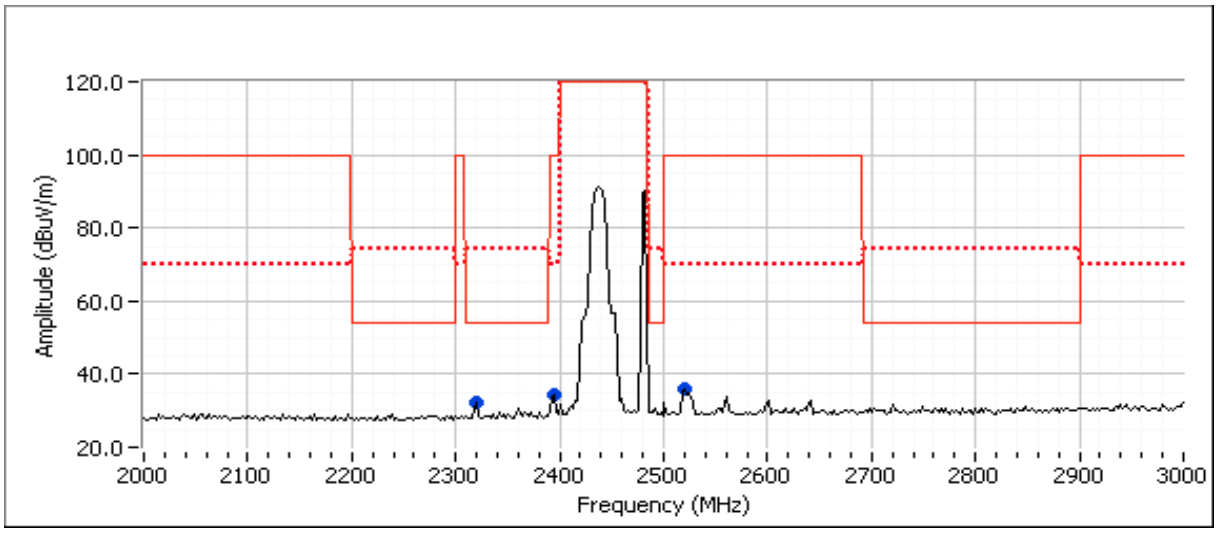
Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1319.980	45.5	V	54.0	-8.5	Peak	313	1.6	
4873.940	39.4	V	54.0	-14.6	Peak	152	1.3	
7310.210	46.4	V	54.0	-7.6	Peak	241	1.9	

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	
7310.140	45.1	V	54.0	-8.9	AVG	234	1.6	RB 1 MHz;VB 10 Hz;Pk
7311.880	50.6	V	74.0	-23.4	PK	234	1.6	RB 1 MHz;VB 3 MHz;Pk
4873.940	37.9	V	54.0	-16.1	AVG	169	1.5	RB 1 MHz;VB 10 Hz;Pk
4873.820	43.8	V	74.0	-30.2	PK	169	1.5	RB 1 MHz;VB 3 MHz;Pk
1331.850	34.7	V	54.0	-19.3	AVG	340	1.5	RB 1 MHz;VB 10 Hz;Pk
1330.910	52.1	V	74.0	-21.9	PK	340	1.5	RB 1 MHz;VB 3 MHz;Pk

Spurious Radiated Emissions, 2 - 3GHz

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2320.640	32.4	V	54.0	-21.6	Peak	80	1.3	
2394.790	34.6	V	54.0	-19.4	Peak	272	1.0	
2521.040	36.1	H	54.0	-17.9	Peak	214	1.0	

Final measurements at 3m

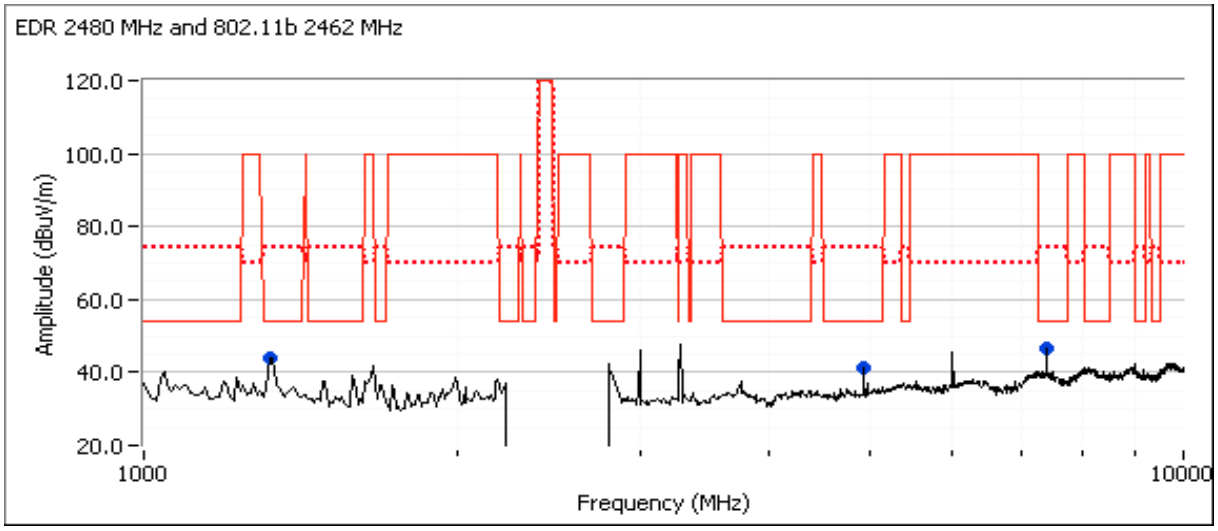
Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2320.050	39.9	V	54.0	-14.1	AVG	91	1.0	POS; RB 1 MHz; VB: 10 Hz
2319.700	46.4	V	74.0	-27.6	PK	91	1.0	POS; RB 1 MHz; VB: 3 MHz

Run # 9, Jackson Peak 2x2: 1-10GHz, 802.11b @ 2462 MHz Chain A, EDR Mode @ 2480 MHz Chain B

Date of Test: 5/1/2012
Test Engineer: Rafael Varelas
Test Location: FT3

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.5	23.5
Chain B	7.0	2.3	8.0

Spurious Radiated Emissions, 1 - 10GHz excluding the allocated band:



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary Measurements (Peak versus average limit)

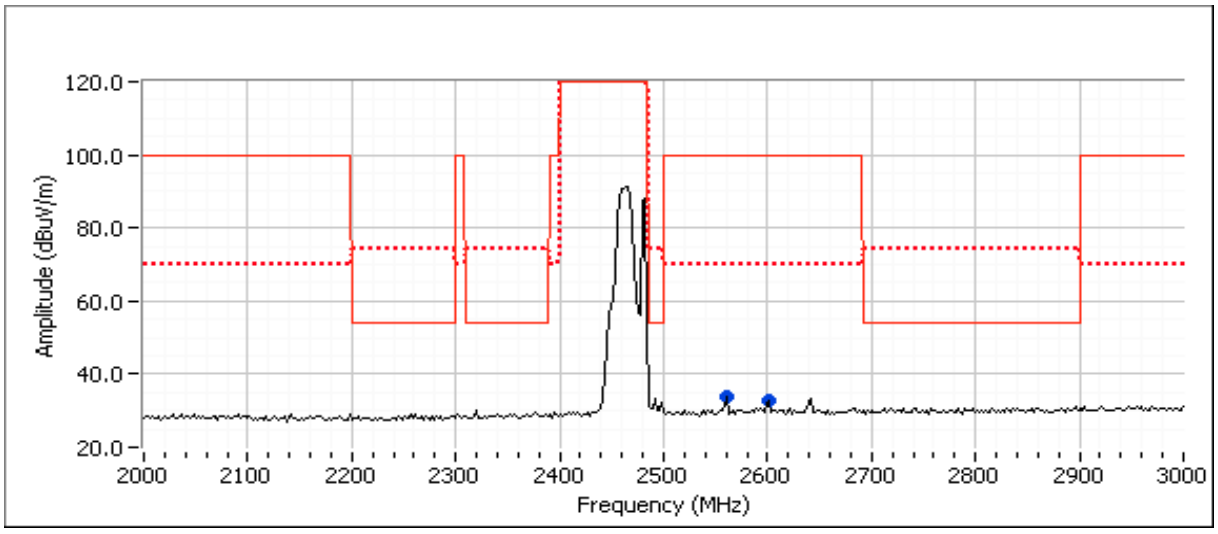
Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1328.210	43.8	V	54.0	-10.2	Peak	296	1.9	
4923.880	41.1	V	54.0	-12.9	Peak	225	1.3	
7387.210	46.5	V	54.0	-7.5	Peak	235	1.6	

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	
7386.610	46.0	V	54.0	-8.0	AVG	256	1.6	RB 1 MHz;VB 10 Hz;Pk
7383.680	51.1	V	74.0	-22.9	PK	256	1.6	RB 1 MHz;VB 3 MHz;Pk
1328.610	30.5	V	54.0	-23.5	AVG	269	1.6	RB 1 MHz;VB 10 Hz;Pk
1330.610	45.5	V	74.0	-28.5	PK	269	1.6	RB 1 MHz;VB 3 MHz;Pk
4923.860	40.2	V	54.0	-13.8	AVG	237	1.7	RB 1 MHz;VB 10 Hz;Pk
4923.950	44.7	V	74.0	-29.3	PK	237	1.7	RB 1 MHz;VB 3 MHz;Pk

Spurious Radiated Emissions, 2 - 3GHz

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2561.120	33.6	H	54.0	-20.4	Peak	214	1.0	
2601.200	32.7	H	54.0	-21.3	Peak	215	1.0	

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	

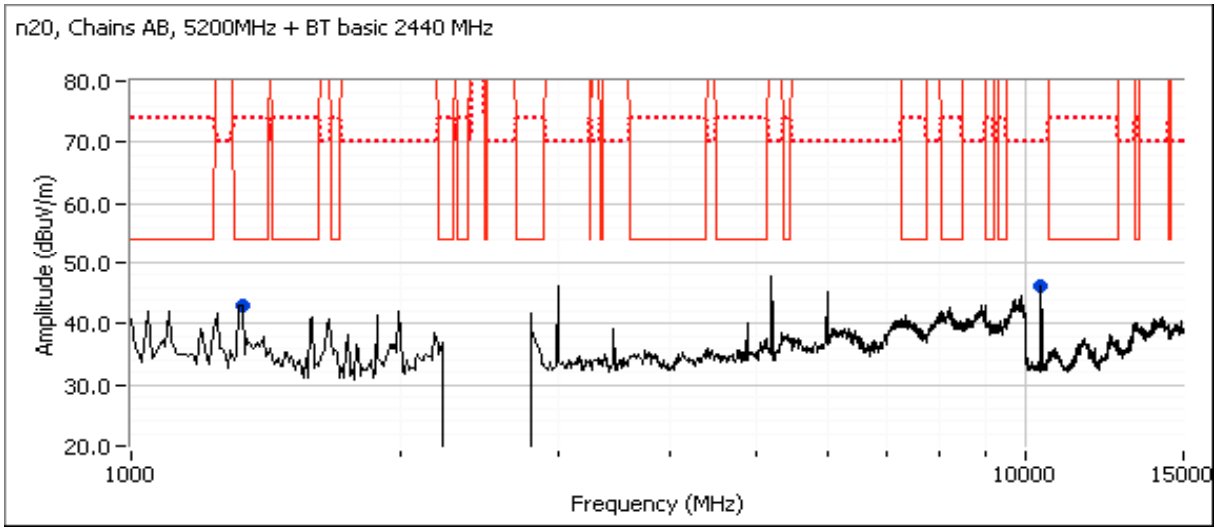
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run # 10, Jackson Peak 2x2: 1-15 GHz, 802.11n20 @ 5200 MHz, Chains A + B, & BT basic @ 2440 MHz.

Date of Test: 5/2/2012
Test Engineer: John Caizzi
Test Location: FT5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	15.0	39.0
Chain B	16.5 / 7	16.0 / 4.9	39.0 / 8.0

Spurious Radiated Emissions, 1 - 15 GHz, excluding the allocated band.



Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

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	
10400.000	*46.1*	*V*	*54.0*	*-7.9*	*Peak*	*65*	*1.0*	*Note 2*
1330.000	*42.9*	*V*	*54.0*	*-11.1*	*Peak*	*172*	*1.0*	*Note 1*

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	

Note 1	Not an intermodulation product. Signal present regardless of band, channel, & mode.
Note 2	Not an intermodulation product. 2nd harmonic of WiFi fundamental.

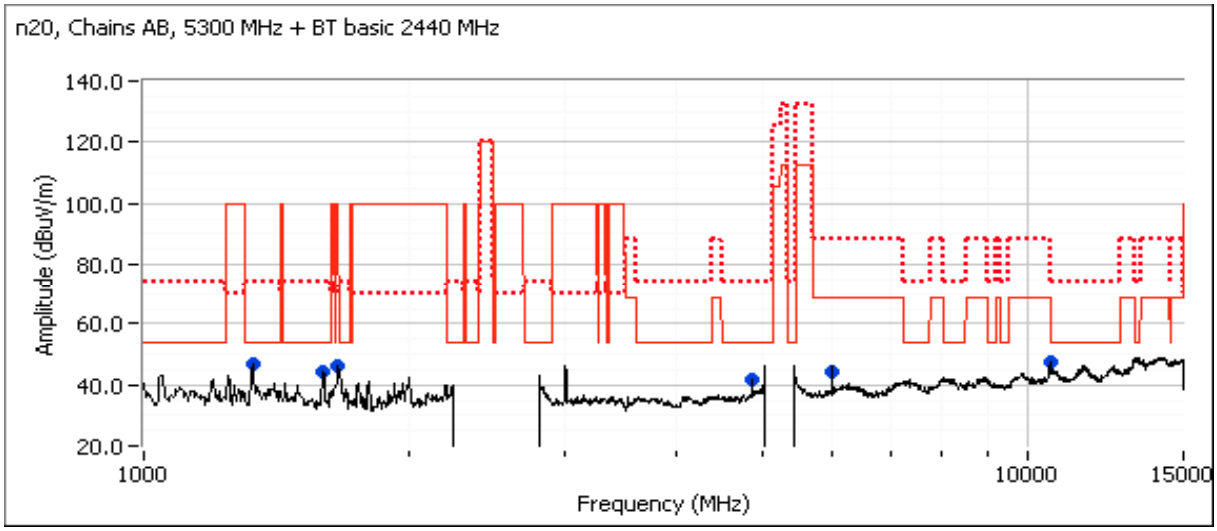
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run # 11, Jackson Peak 2x2: 1-15 GHz, 802.11n20 @ 5300 MHz, Chains A + B, & BT basic @ 2440 MHz.

Date of Test: 5/2/2012
Test Engineer: John Caizzi / Joseph Cadigal
Test Location: FT5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	15.9	39.0
Chain B	16.5 / 7	16.3 / 4.9	39.0 / 8.0

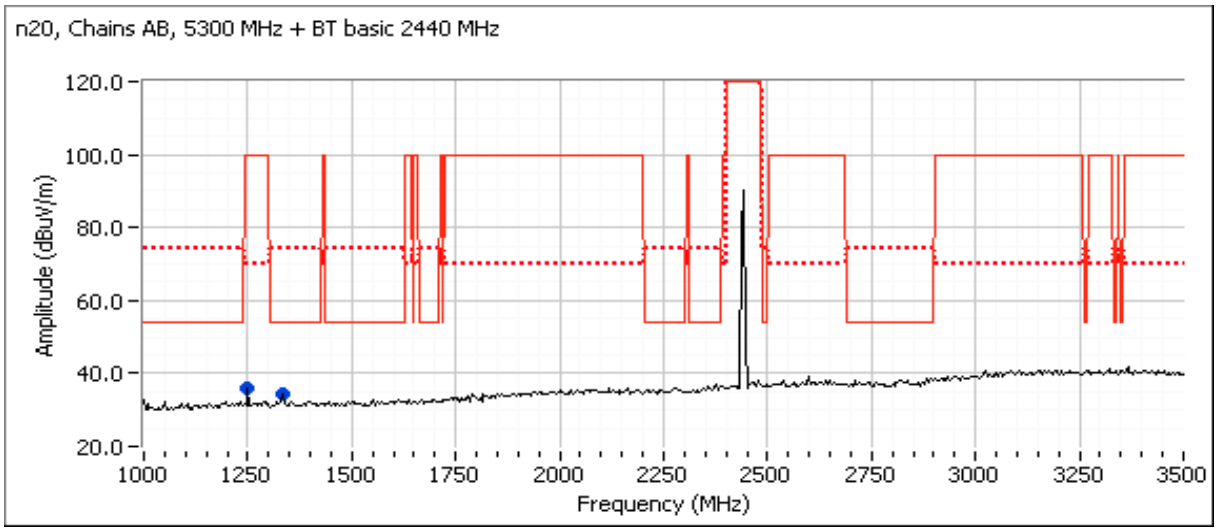
Spurious Radiated Emissions, 1 - 15 GHz, excluding the allocated band.

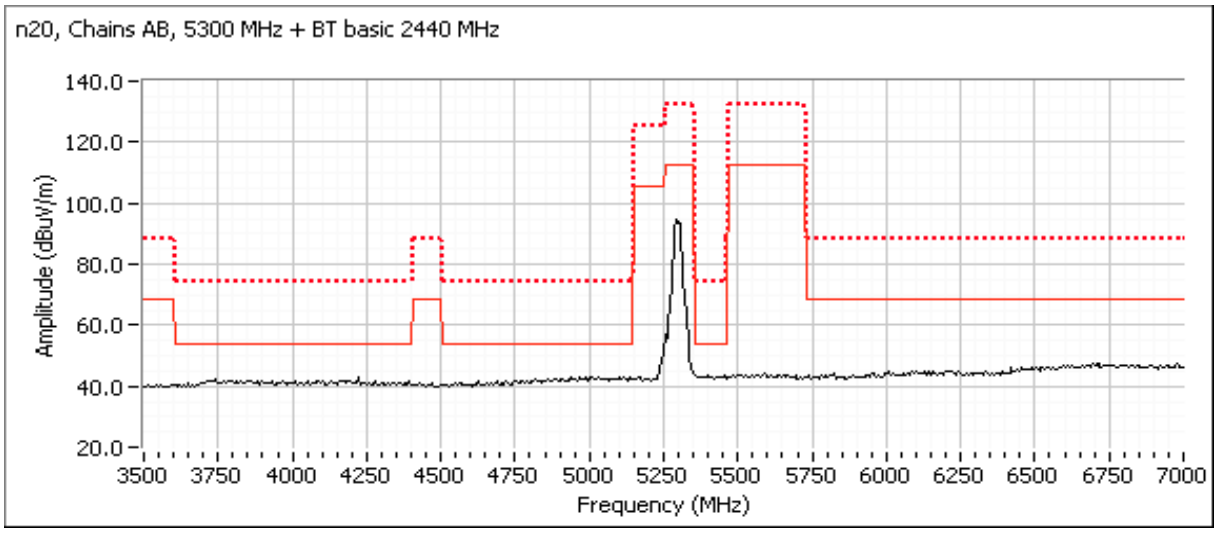


Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz (Scans from 1 - 3.5GHz and 3.5 - 7GHz)

Preliminary Scans at ~ 30cm from the product (card and antenna) to identify potential signals (Peak versus average limit)





Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1253.490	35.8	V	54.0	-18.2	Peak	162	1.0	
1331.570	34.3	V	54.0	-19.7	Peak	341	1.0	

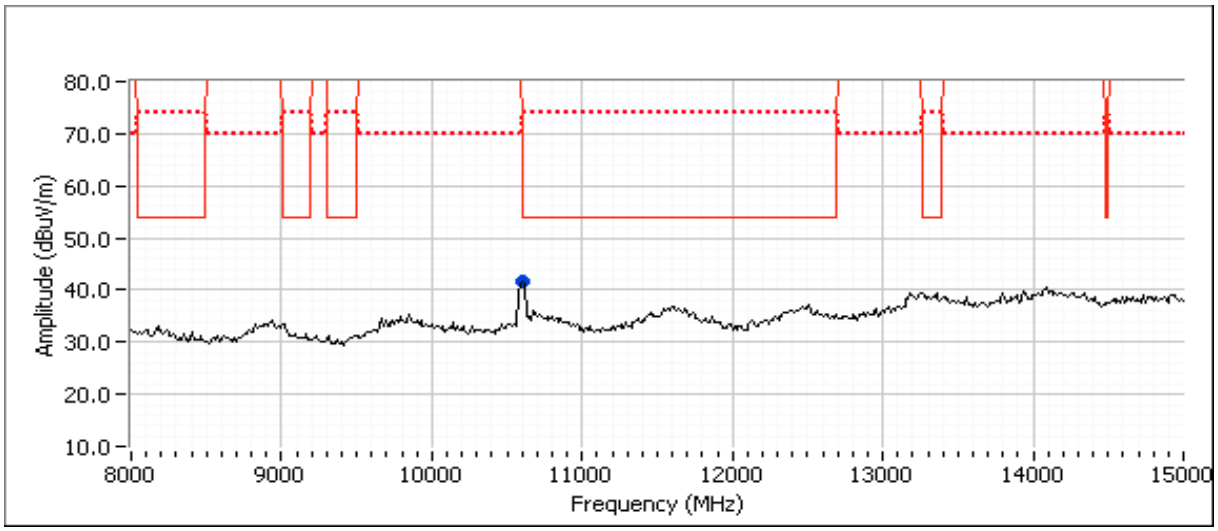
Final measurements at 3m

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

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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preamplifier and high pass filter used for this scan.



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	
10601.670	*41.8*	*V*	*54.0*	*-12.2*	*Peak*	*151*	*1.6*	*Note 1*
1328.340	46.7	V	54.0	-7.3	Peak	163	1.0	
1592.340	44.0	V	54.0	-10.0	Peak	194	1.0	
1658.720	45.9	V	54.0	-8.1	Peak	209	1.0	
6001.410	46.2	V	54.0	-7.8	Peak	135	1.0	
4880.110	41.8	H	54.0	-12.2	Peak	159	1.0	

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	
4879.980	38.0	H	54.0	-16.0	AVG	158	1.0	RB 1 MHz;VB 10 Hz;Peak
10601.330	37.1	V	54.0	-16.9	AVG	233	1.5	RB 1 MHz;VB 10 Hz;Peak
1328.330	33.4	V	54.0	-20.6	AVG	160	1.0	RB 1 MHz;VB 10 Hz;Peak
1659.770	49.2	V	70.0	-20.8	PK	210	1.0	RB 1 MHz;VB 3 MHz;Peak
1660.030	32.5	V	54.0	-21.5	AVG	210	1.0	RB 1 MHz;VB 10 Hz;Peak
1593.310	31.6	V	54.0	-22.4	AVG	198	1.0	RB 1 MHz;VB 10 Hz;Peak
1328.570	51.1	V	74.0	-22.9	PK	160	1.0	RB 1 MHz;VB 3 MHz;Peak
10600.120	50.5	V	74.0	-23.5	PK	233	1.5	RB 1 MHz;VB 3 MHz;Peak
4879.840	44.7	H	74.0	-29.3	PK	158	1.0	RB 1 MHz;VB 3 MHz;Peak
1593.310	44.4	V	74.0	-29.6	PK	198	1.0	RB 1 MHz;VB 3 MHz;Peak
6000.560	48.6	V	68.3	-19.7	PK	133	1.0	RB 1 MHz;VB 3 MHz;Peak

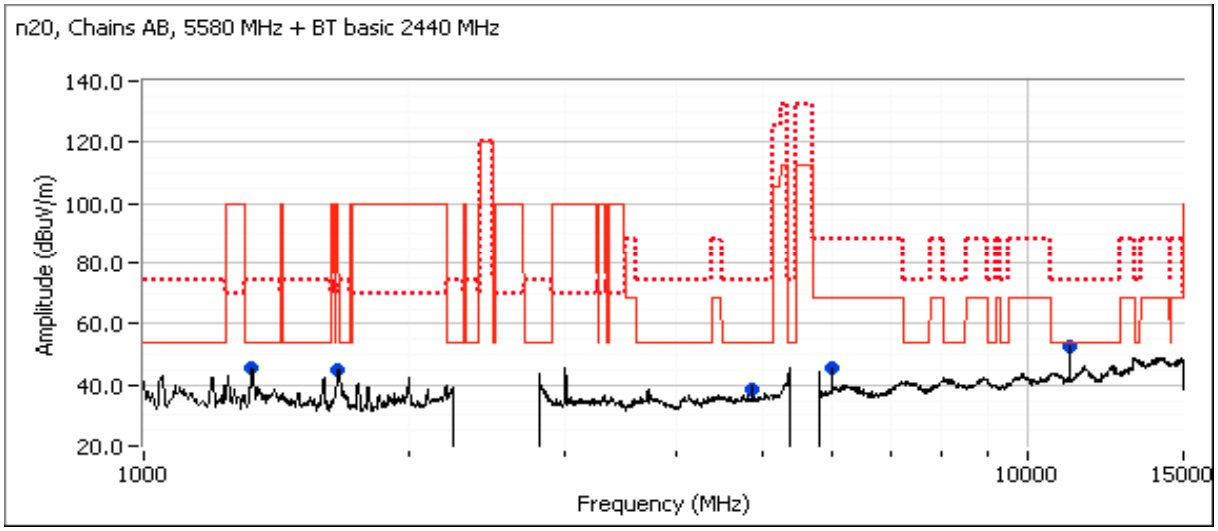
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run # 12, Jackson Peak 2x2: 1-15GHz, 802.11n20 @ 5580 MHz Chain A + B, BT basic @ 2440 MHz.

Date of Test: 5/2/2012
Test Engineer: John Caizzi / Joseph Cadigal
Test Location: FT5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.2	39.0
Chain B	16.5 / 7	16.4 / 4.9	39.0 / 8.0

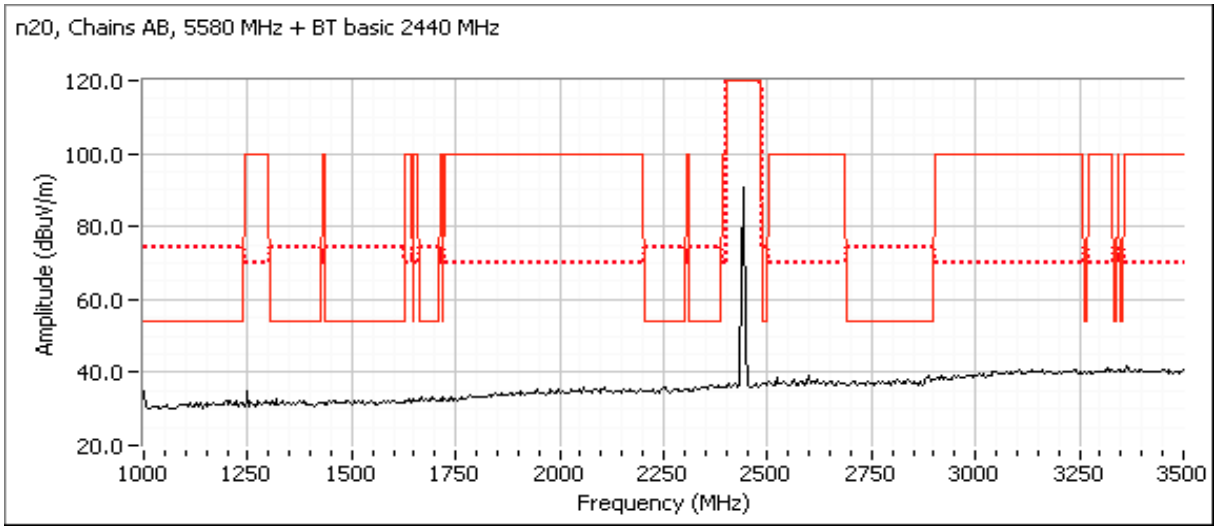
Spurious Radiated Emissions, 1 - 15 GHz:

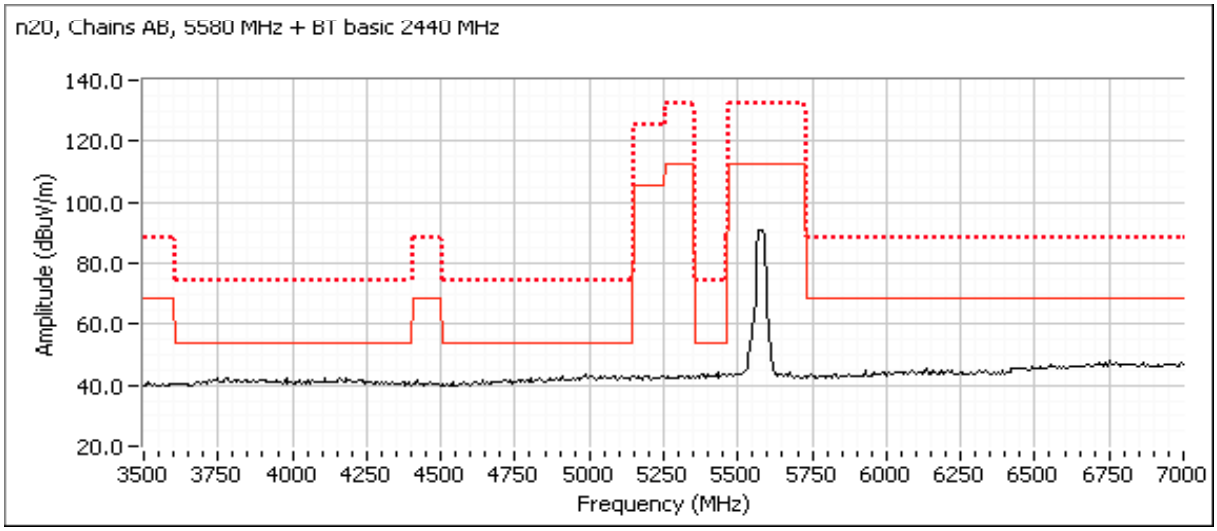


Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz (Scans from 1 - 3.5GHz and 3.5 - 7GHz)

Preliminary Scans at ~ 30cm from the product (card and antenna) to identify potential signals (Peak versus average limit)





Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

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

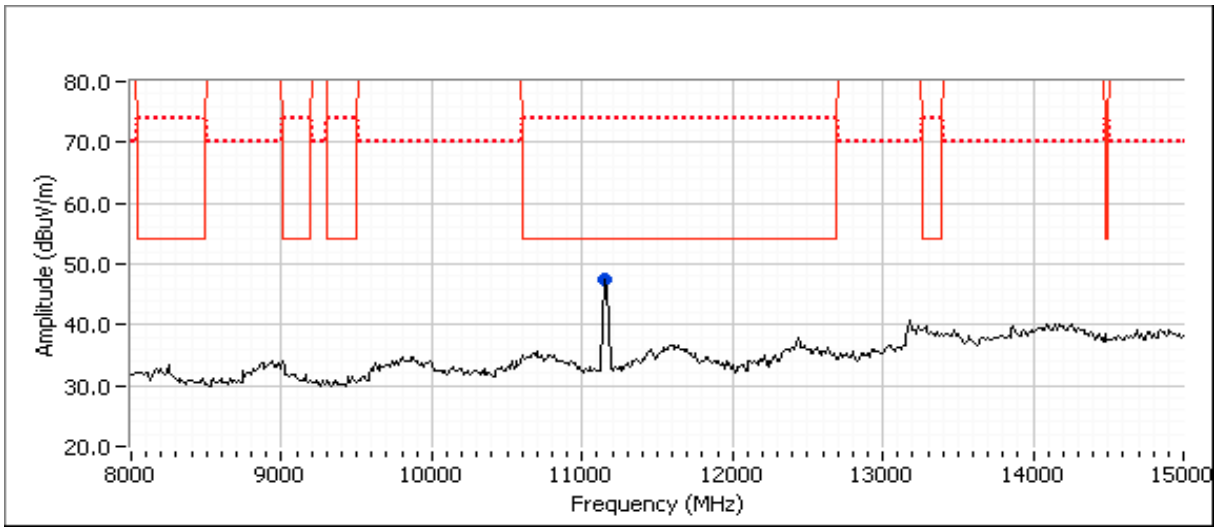
Final measurements at 3m

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

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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preamplifier and high pass filter used for this scan.



Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247/15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11160.040	52.4	V	54.0	-1.6	Peak	289	1.0	Note 1
4880.360	38.7	H	54.0	-15.3	Peak	119	1.0	
6000.650	45.4	V	68.3	-22.9	Peak	134	1.0	
1661.160	44.8	V	70.0	-25.2	Peak	204	1.0	
1328.770	45.7	V	54.0	-8.3	Peak	292	1.5	

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	
1660.730	32.8	V	54.0	-21.2	AVG	208	1.0	RB 1 MHz;VB 10 Hz;Peak
4880.020	32.1	H	54.0	-21.9	AVG	115	1.0	RB 1 MHz;VB 10 Hz;Peak
1328.160	31.7	V	54.0	-22.3	AVG	295	1.5	RB 1 MHz;VB 10 Hz;Peak
1327.730	49.6	V	74.0	-24.4	PK	295	1.5	RB 1 MHz;VB 3 MHz;Peak
5999.920	41.6	V	68.3	-26.7	AVG	134	1.0	RB 1 MHz;VB 10 Hz;Peak
4879.570	41.0	H	74.0	-33.0	PK	115	1.0	RB 1 MHz;VB 3 MHz;Peak
1659.890	49.4	V	68.3	-18.9	PK	208	1.0	RB 1 MHz;VB 3 MHz;Peak
5999.940	47.0	V	68.3	-21.3	PK	134	1.0	RB 1 MHz;VB 3 MHz;Peak

Note 1	Not an intermodulation product. 2nd harmonic of WiFi fundamental.

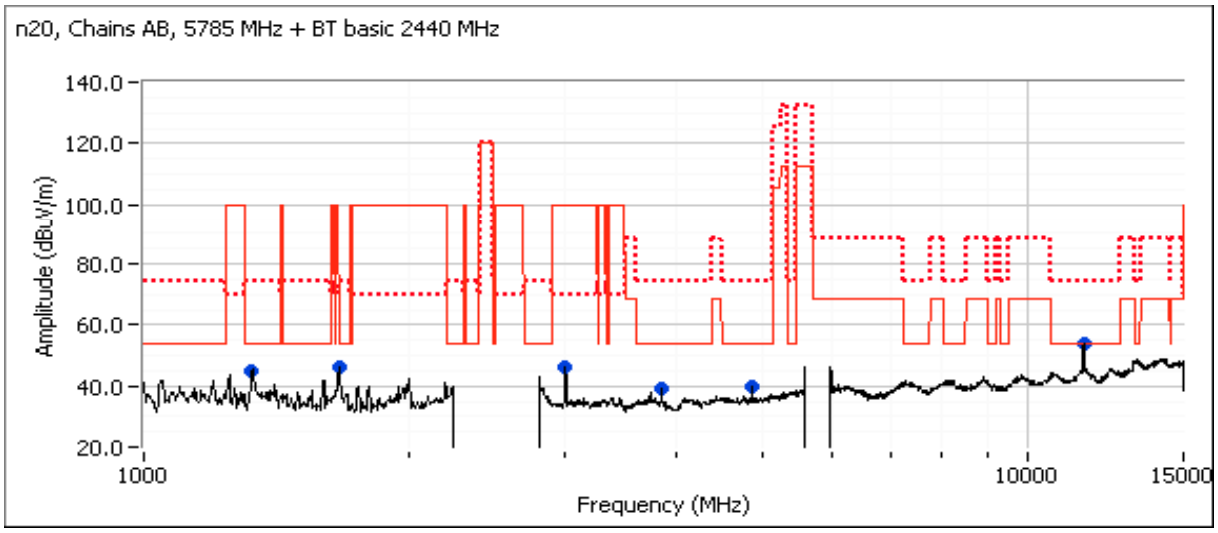
Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Run # 13, Jackson Peak 2x2: 1-15GHz, 802.11n20 @ 5785 MHz Chain A + B, BT basic @ 2440 MHz.

Date of Test: 5/2/2012
Test Engineer: John Caizzi / Joseph Cadigal
Test Location: FT5

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.2	39.0
Chain B	16.5 / 7	16.4 / 4.9	39.0 / 8.0

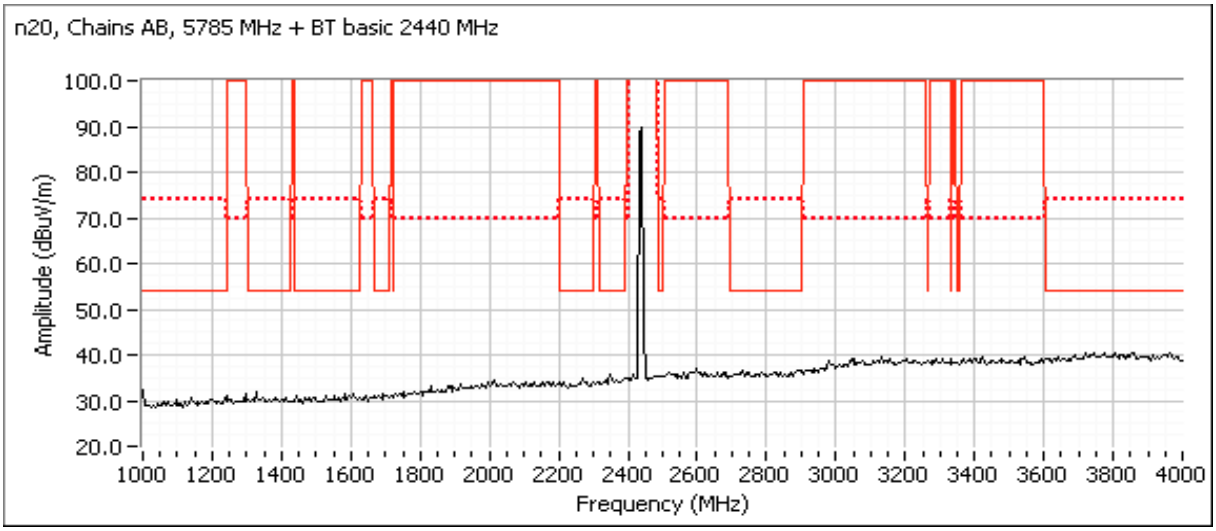
Spurious Radiated Emissions, 1 - 15 GHz:

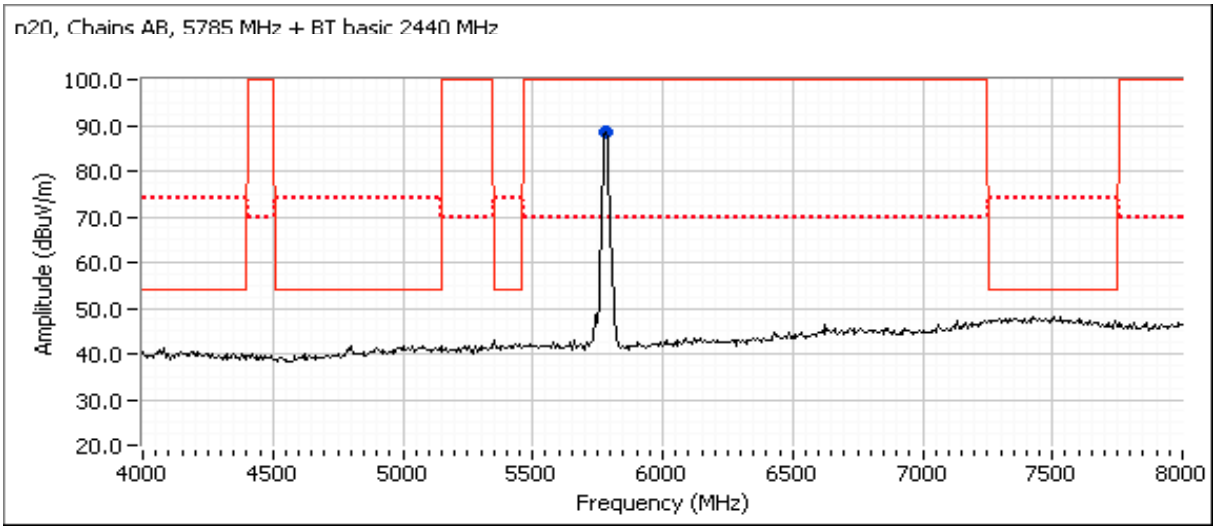


Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz (Scans from 1 - 4GHz and 4 - 8GHz)

Preliminary Scans at ~ 30cm from the product (card and antenna) to identify potential signals (Peak versus average limit)





Client:	Intel Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preliminary measurements at ~ 30cm, RB=1MHz, VB=100kHz

Frequency	Level	Pol	15.209/15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5780.000	*88.5*	*V*	*-*	*-*	*Peak*	*247*	*1.0*	

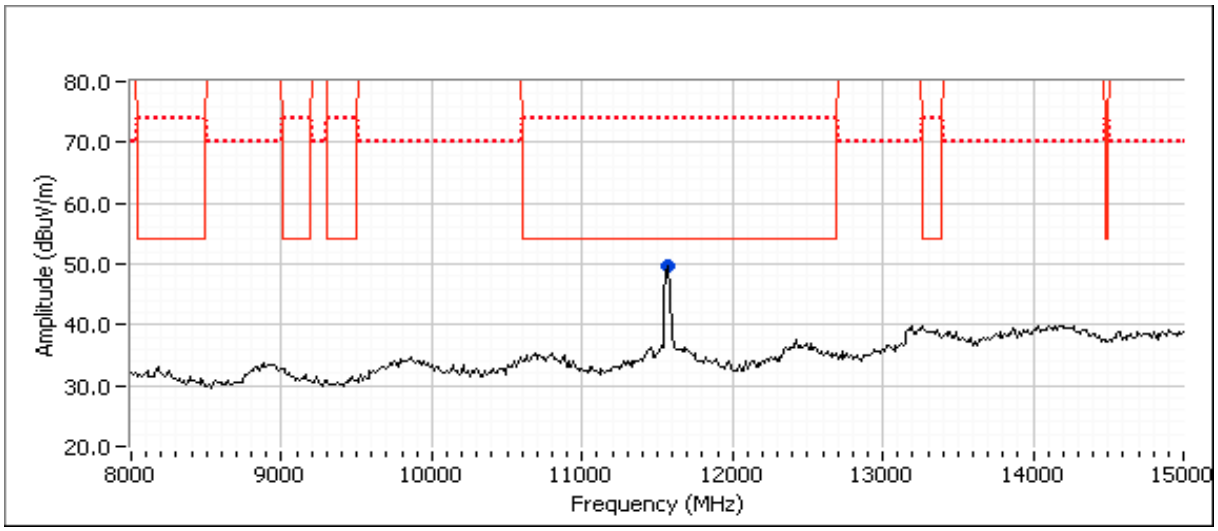
Final measurements at 3m

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

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 Corporation	Job Number:	J87129
Model:	Intel® Centrino® Advanced-N 6235	T-Log Number:	T87211
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15.247, 15.407	Class:	N/A

Preamplifier and high pass filter used for this scan.



Preliminary Measurements (Peak versus average limit)

Frequency	Level	Pol	15.209/15.247/15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11561.530	53.7	V	54.0	-0.3	Peak	96	2.5	Note 1
4880.000	40.0	H	54.0	-14.0	Peak	100	1.5	
3850.360	39.2	V	54.0	-14.8	Peak	123	1.0	
1327.140	44.7	V	54.0	-9.3	Peak	145	1.0	
3000.290	46.0	H	70.0	-24.0	Peak	200	1.0	
1661.070	46.1	V	54.0	-7.9	Peak	206	1.0	

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	
4880.000	34.1	H	54.0	-19.9	AVG	107	1.5	RB 1 MHz;VB 10 Hz;Peak
1661.810	32.9	V	54.0	-21.1	AVG	207	1.0	RB 1 MHz;VB 10 Hz;Peak
1328.560	31.9	V	54.0	-22.1	AVG	144	1.0	RB 1 MHz;VB 10 Hz;Peak
1327.800	49.7	V	74.0	-24.3	PK	144	1.0	RB 1 MHz;VB 3 MHz;Peak
1660.670	49.0	V	74.0	-25.0	PK	207	1.0	RB 1 MHz;VB 3 MHz;Peak
3850.470	28.4	V	54.0	-25.6	AVG	123	1.0	RB 1 MHz;VB 10 Hz;Peak
4880.290	42.0	H	74.0	-32.0	PK	107	1.5	RB 1 MHz;VB 3 MHz;Peak
3851.510	39.3	V	74.0	-34.7	PK	123	1.0	RB 1 MHz;VB 3 MHz;Peak
3000.190	48.5	H	68.3	-19.8	PK	203	1.0	RB 1 MHz;VB 3 MHz;Peak

Note 1	Not an intermodulation product. 2nd harmonic of WiFi fundamental.

End of Report

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