

### EMC Test Report

#### FCC Part 15 Subpart C

# Model: Intel Centrino Wireless-N + WiMAX 6150, Model: 612BNXHMW

FCC ID: PD9612BNXH and PD9612BNXHU

APPLICANT: Intel Corporation

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TEST SITE(S): Elliott Laboratories

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IC SITE REGISTRATION #: 2845B-3; 2845B-4, 2845B-5, 2845B-7

REPORT DATE: September 17, 2010

FINAL TEST DATES: August 25, 26, 30 and September 9, 2010

**AUTHORIZED SIGNATORY:** 

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Testing Cert #2016.01

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Test Report Report Date: September 21, 2010

### REVISION HISTORY

Rev#	Date	Comments	Modified By
1	09-21-2010	First release	

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#### **SCOPE**

An electromagnetic emissions test has been performed on the Intel Corporation model Intel Centrino Wireless-N + WiMAX 6150, Model: 612BNXHMW, pursuant to 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 ANSI C63.4:2003, FCC DTS Measurement Procedure KDB558074, March 2005 and as outlined in Elliott Laboratories test procedures:

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.

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.).

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#### STATEMENT OF COMPLIANCE

The tested sample of Intel Corporation model Intel Centrino Wireless-N + WiMAX 6150, Model: 612BNXHMW complied with the requirements of 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 model Intel Centrino Wireless-N + WiMAX 6150, Model: 612BNXHMW 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.

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#### TEST RESULTS SUMMARY

#### DIGITAL TRANSMISSION SYSTEMS (2400 - 2483.5MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM / DSSS techniques	System must utilize digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	11.5MHz	>500kHz	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	802.11b: 0.060 W 802.11g: 0.048 W n20MHz: 0.051 W n40MHz: 0.059 W EIRP < 0.126 W	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	-6.1 dBm / 3kHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All emissions more than 30dB below inband signal level.	<-30dBc Note 2	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	50.2dBµV/m @ 2390.0MHz (-3.8dB) Note 3	15.207 in restricted bands, all others <-30dBc Note 2	Complies

Note 1: EIRP calculated using antenna gain of 3.7 dBi for the highest EIRP system.

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst).

Note 3: Radiated spurious emissions form the module in the frequency range 30Mhz – 1GHz were for the digital circuitry and are covered under the test report and certification documentation under product code JBP.

#### 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	Unique connector or integral antenna	Complies
15.109		Receiver spurious emissions	Device operates above 960 MHz	Refer to page 17	N/A
15.207		AC Conducted Emissions	22.6dBμV @ 9.900MHz (-27.4dB)	Refer to page 16	Complies
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in Exhibit 11, and User Manual statements.	Refer to OET 65, FCC Part 1	Complies

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#### **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	$\pm 0.7 \text{ dB}$
Conducted emission of transmitter	dBm	25 to 26500 MHz	$\pm 0.7 \text{ dB}$
Conducted emission of receiver	dBm	25 to 26500 MHz	$\pm 0.7 \text{ dB}$
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Radiated emission (field strength)	dBμV/m	25 to 1000 MHz 1000 to 40000 MHz	± 3.6 dB ± 6.0 dB
Conducted Emissions (AC Power)	dBμV	0.15 to 30 MHz	± 2.4 dB

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### EQUIPMENT UNDER TEST (EUT) DETAILS

#### **GENERAL**

The Intel Corporation model Intel Centrino Wireless-N + WiMAX 6150, Model: 612BNXHMW is an IEEE 802.16e and 802.11b/g/n wireless multi-band network adapter. This module, available in the PCIe Half MiniCard form factor, delivers up to 20 Mbps+ downlink, up to 6 Mbps+ uplink performance over WiMAX, and up to 300 Mbps Tx/Rx1 over Wi-Fi. Both WiFi and WiMax support MISO 1x2 with either or both ports active in receive mode. WiMax operation supports antenna diversity to allow transmission on either of the two antenna ports but WiFi operation only supports transmission on antenna port 1 (Port A).

The device is sold under two different FCC IDs. FCC ID PD9612BNXH is a module intended for installation by the host system manufacturer only. FCC ID PD9612BNXHU is a module intended for installation by the host integrator and also by the end user. As the module has transmitter capabilities under Part 15 of the FCC rules user-installed versions require the use of a BiOS Lock mechanism to ensure the module is only installed into the appropriate host devices.

As the device is being approved using the FCC's modular approval procedures the card was installed onto a test fixture to expose the card on all sides for testing. In normal use the card would be installed inside a host system.

The sample was received on August 15, 2010 and tested on August 25, 26, 30 and September 9, 2010. The EUT consisted of the following component(s):

Company	Model	Description	MAC address	FCC ID
Intel Corporation	612BNXHMW		4025C20027A4 and 4025C20027AC	PD9612BNXH PD9612BNXHU

#### ANTENNA SYSTEM

The antenna system used during the evaluation of the module was PIFA antenna. The specifications for this antenna are provided with the Operational Description documentation.

#### **ENCLOSURE**

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

#### **MODIFICATIONS**

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

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#### SUPPORT EQUIPMENT

Company	Model	Description	Serial Number	FCC ID
Intel	-	Antenna test fixture	2010-1434	-
Intel	-	Shiloh Motherboard Extender (module test fixture)	2010-1430	-
Dell	-	Laptop	Prototype	-

#### **EUT INTERFACE PORTS**

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

Port	Connected	Cable(s)		
Poit	То	Description	Shielded or Unshielded	Length(m)
Test Fixture PCIe	Laptop PCIe	Ribbon	-	1
Test fixture DC power	DC supply	2-wire	Unshielded	0.5

#### **EUT OPERATION**

During testing, the EUT was configured to operate in a continuous transmit mode on the top, bottom and center channels for each operating mode (802.11b, 802.11g, 802.11n 20MHz and 802.11n 40MHz) using the Intel DRTU test utility running the laptop PC. The tool configured the card to operate at the lowest data rate for each mode (1Mb/s for 802.11b, 6Mb/s for 802.11g, 6.5Mb/s for 802.11n 20Mhz and 13Mb/s for 802.11n 40MHz) as the output power from the device, when operating as intended, is reduced as data rate is increased.

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#### 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	Registratio	Location	
Site	FCC	Canada	Location
Chamber 3	769238	2845B-3	
Chamber 4	211948	2845B-4	41039 Boyce Road
Chamber 5	211948	2845B-5	Fremont,
Chamber 7	A2LA	2845B-7	CA 94538-2435
Chambel /	accreditation	2043D-/	

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.

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#### **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.

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#### 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.

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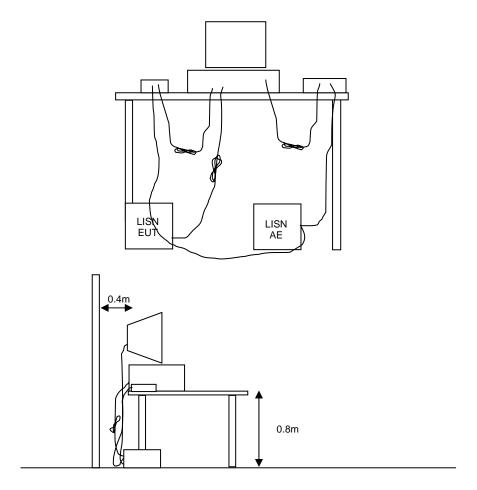
#### TEST PROCEDURES

#### 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.



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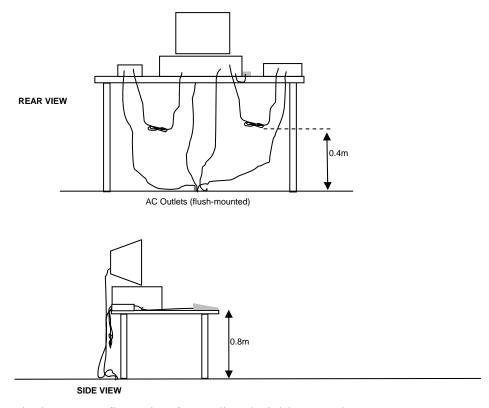
#### RADIATED EMISSIONS

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.

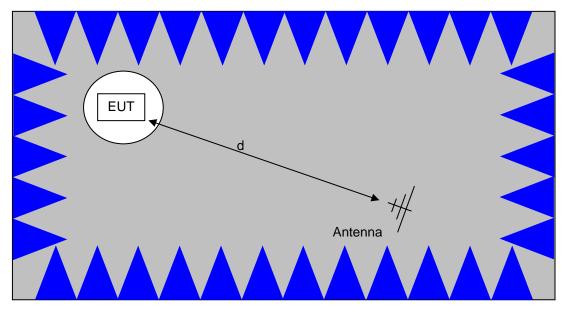
Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna 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.



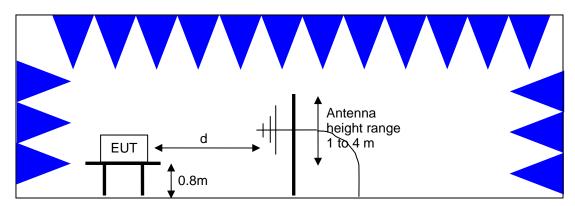
Typical Test Configuration for Radiated Field Strength Measurements

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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.



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

#### **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.

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#### 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

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#### GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands<sup>1</sup> (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 <sub>KHz</sub> @ 300m	67.6-20*log <sub>10</sub> (F <sub>KHz</sub> ) @ 300m
0.490-1.705	24000/F <sub>KHz</sub> @ 30m	87.6-20*log <sub>10</sub> (F <sub>KHz</sub> ) @ 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

<sup>&</sup>lt;sup>1</sup> The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

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#### **OUTPUT POWER LIMITS - DIGITAL TRANSMISSION SYSTEMS**

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

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

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

#### TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS - FHSS and DTS SYSTEMS

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

#### SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

 $R_r$  = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

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#### 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

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### Appendix A Test Equipment Calibration Data

Radio (Fundamental a	and BE), 25-Aug-10			
<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	Asset #	Cal Due
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	7/12/2011
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	10/22/2010
EMCO	Antenna, Horn, 1-18 GHz	3115	1386	9/2/2010
Rohde & Schwarz	(SA40-Blu) Power Sensor 100 uW - 10	NRV-Z53	1555	2/5/2011
	Watts			
Rohde & Schwarz	Attenuator, 20 dB , 50 ohm, 10W, DC-18 GHz	20dB, 10W, Type N	1556	2/5/2011
Radio (Fundamental a	ind BE), 27-Aug-10			
<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	Asset #	Cal Due
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	10/22/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/14/2011
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1555	2/5/2011
Rohde & Schwarz	Attenuator, 20 dB , 50 ohm, 10W, DC-18 GHz	20dB, 10W, Type N	1556	2/5/2011
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/22/2012
TX Spurious, 30-Aug-	10			
<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	785	5/26/2011
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	7/12/2011
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	6/4/2011
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/22/2012
Hewlett Packard	Preamplifier, 100 kHz - 1.3 GHz	8447E	1606	4/29/2011
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	8/10/2011
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	3/31/2011
Radio Antenna Port (F	Power). 9-10-Sep-10			
Manufacturer	Description	<u>Model</u>	Asset #	Cal Due
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	10/22/2010
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1555	2/5/2011
Rohde & Schwarz	Attenuator, 20 dB , 50 ohm, 10W, DC-18 GHz	20dB, 10W, Type N	1556	2/5/2011
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	8/26/2011
0	•			
	s - AC Power Ports, 13-Sep-10	Madal	A = = + #	Cal Desa
Manufacturer EMCO	<u>Description</u> LISN, 10 kHz-100 MHz	Model 3825/2	Asset # 1292	<u>Cal Due</u> 3/12/2011
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	4/20/2011
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	3/16/2011
Fischer Custom	LISN, 25A, 150kHz to 30MHz,	FCC-LISN-50-25-2-	2001	10/21/2010
Comm	25 Amp,	09	2001	.0/21/2010
-	T 7	-		

File: R80565 Appendix Page 1 of 2

### Appendix B Test Data

T80291 54 Pages

File: R80565 Appendix Page 2 of 2

<b>Ellio</b>	tt Frompany	El	MC Test Data
Client:	Intel Corporation	Job Number:	J80165
Model:	Intel Centrino Wireless-N + WiMAX 6150,	T-Log Number:	T80291
	612BNXHMW	Account Manager:	Christine Krebill
Contact:	Steve Hackett		-
Emissions Standard(s):	FCC	Class:	В
Immunity Standard(s):	-	Environment:	Radio

### **EMC Test Data**

For The

# **Intel Corporation**

Model

Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW

Date of Last Test: 9/16/2010

Elliott An AZAS company	EMC	Test Data
Client: Intel Corporation	Job Number: J8	0165
Model: Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number: T8	30291
IVIOUEI. IIILEI CEITLIIIO VVIIEIESS-IN + VVIIVIAA 0130, 012DINAAIVIVV	Account Manager: Ch	nristine Krebill

### RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Class: N/A

#### Summary of Results

Contact: Steve Hackett

Standard: FCC

MAC Address: 4025C20027AC DRTU Tool Version 1.2.2-0177 Driver version 14.0.0.39

Run#	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run # 1	802.11b	#1 2412MHz	16.5	16.9	Restricted Band Edge at 2400 MHz	15.209	38.2dBµV/m @ 2390.0MHz (-15.8dB)
Kull# I	Chain A	#11 2462MHz	16.5	16.7	Restricted Band Edge at 2483.5 MHz	15.209	35.7dBµV/m @ 2483.5MHz (-18.3dB)

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

#### Ambient Conditions:

Rel. Humidity: 15 - 55 % Temperature: 18 - 25 °C

#### 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 test fixture were located on the turntable for radiated spurious emissions testing. All other support equipment was located on the floor or as close to the floor as cabling would permit.

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

#### Ambient Conditions:

Temperature: 22.4 °C Rel. Humidity: 39 %

#### Modifications Made During Testing, Deviations From The Standard

No modifications were made to the EUT during testing

No deviations were made from the requirements of the standard.

<b>E</b> EI	liott
	An ATAT company

### **EMC Test Data**

	An Z(ZE) company		
Client:	Intel Corporation	Job Number:	J80165
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
Model.	III(el Cell(IIII) WIIeless-IN + WIIVIAA 0130, 012BINAHIVIW	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

Run # 1, Band Edge Field Strength - 802.11b, Chain A Date of Test: 8/25/2010 Test Location: FT Chamber#5 Test Engineer: Joseph Cadigal Config Change: none

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

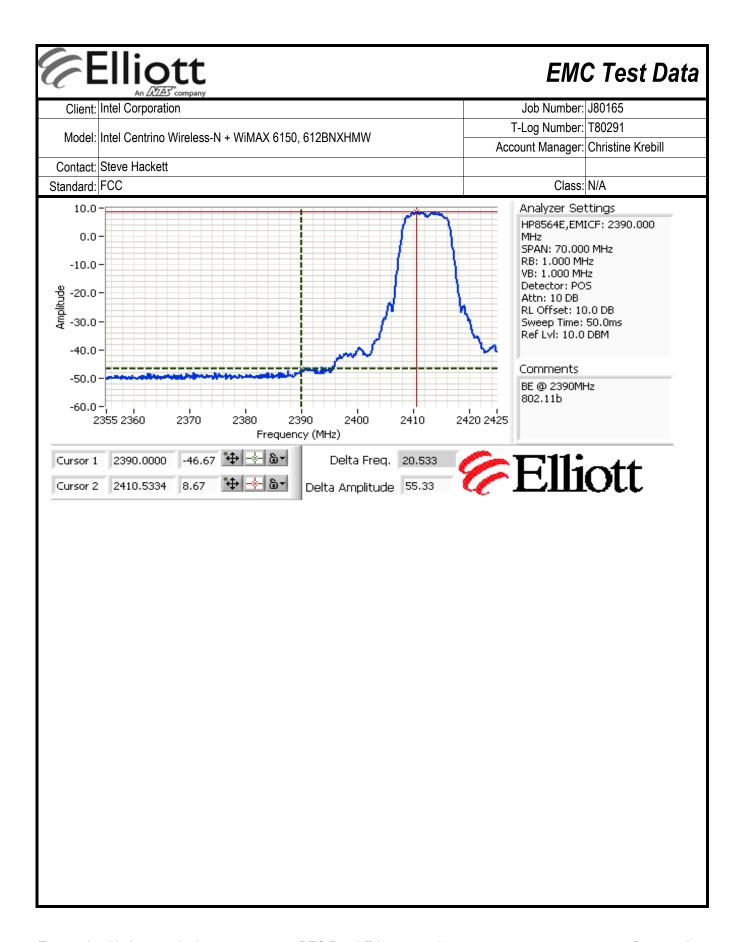
	Power Settings							
	Target (dBm)	Measured (dBm)	Software Setting					
Chain A	16.5	16.9	20.0					

Fundamental Signal Field Strength

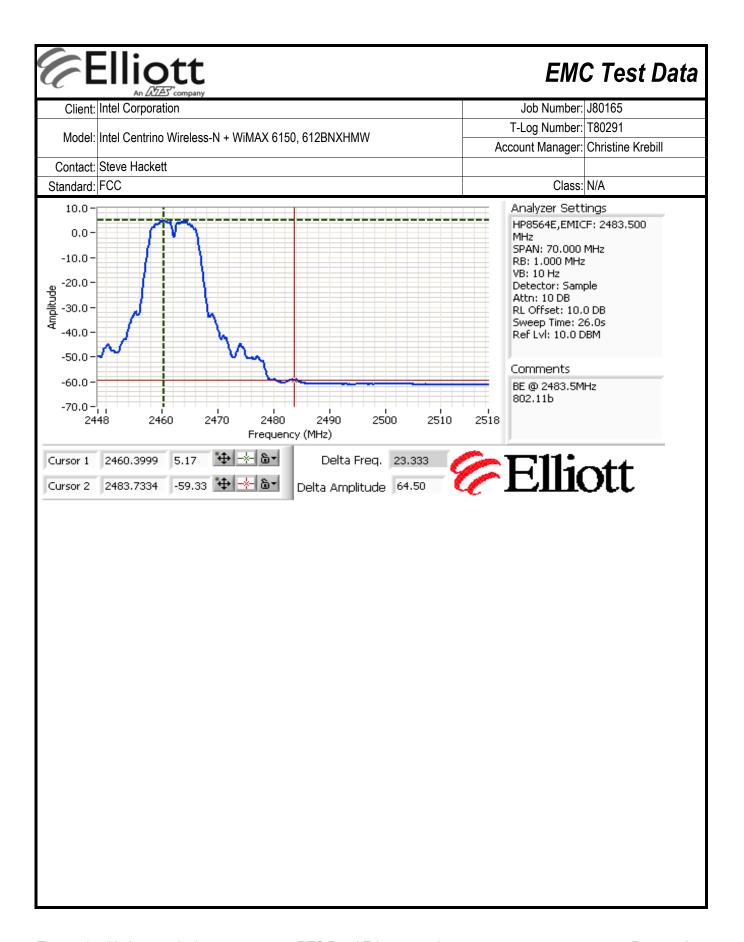
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2413.800	100.5	V	•	-	AVG	172	1.0	RB 1 MHz;VB 10 Hz;Pk
2413.270	103.3	V	•	-	PK	172	1.0	RB 1 MHz;VB 3 MHz;Pk
2414.000	102.4	Н	-	-	AVG	346	1.0	RB 1 MHz;VB 10 Hz;Pk
2413.270	105.6	Н	-	-	PK	346	1.0	RB 1 MHz;VB 3 MHz;Pk

2390 MHz Band Edge Signal Radiated Field Strength - Marker Delta

ana Lago o	igiiai itaaiat	ou i ioiu ou	ongan man	tor Borta					
				Н	V				
undamental	emission lev	/el @ 3m in	1MHz RBW:	105.6	103.3	Peak Measi	urement (RB=	=VB=1MHz)	
Fundamental emission level @ 3m in 1MHz RBW:					100.5	Average Me	Average Measurement (RB=1MHz, VB=10Hz)		
Delta Marker - 100kHz					dB	<- this can only be used if band edge signal is			signal is
Calcula	ted Band-Ed	ge Measurer	ment (Peak):	41.4	dBuV/m	highest with	in 2MHz of b	and edge.	
Calcul	ated Band-E	dge Measure	ement (Avg):	38.2	dBuV/m	Margin	Level	Limit	Detector
	Deli	ta Marker - 1	MHz/1MHz:	55.3	dB	-15.8	38.2	54	Avg
	De	lta Marker - 1	1MHz/10Hz:	64.2	dB	-32.6	41.4	74	Pk
					dBuV/m	Using 100kHz delta value			
Calcul	ated Band-E	dge Measure	ement (Avg):	38.2	dBuV/m	Using 1MHz	z delta value		
						-			
Level	Pol	FCC <sup>2</sup>	15.209	Detector	Azimuth	Height	Comments		
dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
38.2	-	54.0	-15.8	Avg	-	-	Using 1MHz	delta value	
	Calcula Calcula Calcula Calcula Calcula Calcula Calcula	Calculated Band-Ed Calculated Band-E  Calculated Band-E  Calculated Band-E  Calculated Band-E  Calculated Band-Ed  Calculated Band-Ed  Calculated Band-Ed  Calculated Band-Ed  Calculated Band-Ed  Calculated Band-Ed	Fundamental emission level @ 3m in Fundamental emission level @ 3m in Delta Marke  Calculated Band-Edge Measurer  Calculated Band-Edge Measurer  Delta Marker - 1  Delta Marker - 2  Calculated Band-Edge Measurer  Level Pol FCC 2  dBµV/m v/h Limit	Fundamental emission level @ 3m in 1MHz RBW: Fundamental emission level @ 3m in 1MHz RBW:  Delta Marker - 100kHz  Calculated Band-Edge Measurement (Peak):  Delta Marker - 1MHz/1MHz:  Delta Marker - 1MHz/10Hz:  Calculated Band-Edge Measurement (Peak):  Calculated Band-Edge Measurement (Peak):  Calculated Band-Edge Measurement (Avg):  Level Pol FCC 15.209  dBµV/m v/h Limit Margin	Fundamental emission level @ 3m in 1MHz RBW: 105.6 Fundamental emission level @ 3m in 1MHz RBW: 102.4  Delta Marker - 100kHz 64.2  Calculated Band-Edge Measurement (Peak): 41.4  Calculated Band-Edge Measurement (Avg): 38.2  Delta Marker - 1MHz/1MHz: 55.3  Delta Marker - 1MHz/10Hz: 64.2  Calculated Band-Edge Measurement (Peak): 50.3  Calculated Band-Edge Measurement (Avg): 38.2  Level Pol FCC 15.209 Detector dBμV/m v/h Limit Margin Pk/QP/Avg	H V  Fundamental emission level @ 3m in 1MHz RBW: 105.6 103.3  Fundamental emission level @ 3m in 1MHz RBW: 102.4 100.5   Delta Marker - 100kHz 64.2 dB  Calculated Band-Edge Measurement (Peak): 41.4 dBuV/m  Calculated Band-Edge Measurement (Avg): 38.2 dBuV/m  Delta Marker - 1MHz/1MHz: 55.3 dB  Delta Marker - 1MHz/10Hz: 64.2 dB  Calculated Band-Edge Measurement (Peak): 50.3 dBuV/m  Calculated Band-Edge Measurement (Peak): 38.2 dBuV/m  Calculated Band-Edge Measurement (Avg): 38.2 dBuV/m  Level Pol FCC 15.209 Detector Azimuth dBμV/m v/h Limit Margin Pk/QP/Avg degrees	H V  Fundamental emission level @ 3m in 1MHz RBW: 105.6 103.3 Peak Measing and the mission level @ 3m in 1MHz RBW: 102.4 100.5 Average Measurement (Peak): 102.4 100.5 Average Measurement (Peak): 41.4 dBuV/m highest with Calculated Band-Edge Measurement (Avg): 38.2 dBuV/m Margin Delta Marker - 1MHz/1MHz: 55.3 dB -15.8 Delta Marker - 1MHz/10Hz: 64.2 dB -32.6 Calculated Band-Edge Measurement (Peak): 50.3 dBuV/m Using 100k Calculated Band-Edge Measurement (Avg): 38.2 dBuV/m Using 1MHz  Level Pol FCC 15.209 Detector Azimuth Height dBμV/m V/h Limit Margin Pk/QP/Avg degrees meters	H V  Fundamental emission level @ 3m in 1MHz RBW: 105.6 103.3 Peak Measurement (RB- Fundamental emission level @ 3m in 1MHz RBW: 102.4 100.5 Average Measurement (I  Delta Marker - 100kHz 64.2 dB <- this can only be used highest within 2MHz of b  Calculated Band-Edge Measurement (Avg): 38.2 dBuV/m Margin Level  Delta Marker - 1MHz/1MHz: 55.3 dB -15.8 38.2  Delta Marker - 1MHz/10Hz: 64.2 dB -32.6 41.4  Calculated Band-Edge Measurement (Peak): 50.3 dBuV/m Using 100kHz delta value  Calculated Band-Edge Measurement (Avg): 38.2 dBuV/m Using 1MHz delta value  Level Pol FCC 15.209 Detector Azimuth Height Comments dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters	H V  Fundamental emission level @ 3m in 1MHz RBW: 105.6 103.3 Peak Measurement (RB=VB=1MHz)  Fundamental emission level @ 3m in 1MHz RBW: 102.4 100.5 Average Measurement (RB=1MHz, V    Delta Marker - 100kHz   64.2 dB



	Intel Corpora	ott Zer company ation						Job Number:		
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW							Log Number:		
0 1 1	Chara Hagint							unt Manager:	Christine Kre	ebill
Standard:	tt. Steve Hackett							Class:	NI/A	
Standard.	FUU							Class.	IN/A	
un # 2b. F	UT on Chan	nel #11 246	2MHz - 802.1	11b. Chain A	1					
// LD, L		1101 11 11 240		rio, Onani	Power S	Settings				
				t (dBm)	Measure	ed (dBm)	Softwar	e Setting		
		Chain A	16	5.5	16	5.7	2	0.0		
undamoni	al Signal Fie	old Stronath								
requency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
2460.470	99.8	V	-	-	AVG	182	1.7	RB 1 MHz;V	'B 10 Hz;Pk	
2460.870	102.6	V	-	-	PK	182	1.7	RB 1 MHz;V	B 3 MHz;Pk	
2460.680	100.2	Н	-	_	AVG	341	1.0	RB 1 MHz;V	'B 10 Hz·Pk	
						•				
2460.530	103.7	Н	-	-	PK	341	1.0	RB 1 MHz;V		
483.5 MHz	Band Edge	Signal Radi			PK arker Delta H	341 V	1.0	RB 1 MHz;V	B 3 MHz;Pk	
483.5 MHz	<b>Band Edge</b> Fundamental	Signal Radi	vel @ 3m in	1MHz RBW:	PK  arker Delta  H  103.7	341 V 102.6	1.0 Peak Meas	RB 1 MHz;V	B 3 MHz;Pk  VB=1MHz)	
483.5 MHz	Band Edge	Signal Radi	vel @ 3m in vel	1MHz RBW: 1MHz RBW:	PK  arker Delta  H  103.7  100.2	V 102.6 99.8	1.0 Peak Meas Average Me	RB 1 MHz;V urement (RB= easurement (F	B 3 MHz;Pk =VB=1MHz) RB=1MHz, VI	
483.5 MHz	Band Edge Fundamental Fundamental	Signal Radi	vel @ 3m in vel @ 3m in Delta Mark	1MHz RBW: 1MHz RBW: cer - 100kHz	PK  arker Delta  H  103.7  100.2  63.5	341 V 102.6 99.8 dB	1.0 Peak Meas Average Me	RB 1 MHz;V urement (RB= easurement (Fonly be used in	B 3 MHz;Pk =VB=1MHz) RB=1MHz, VI	
483.5 MHz	Fundamental Fundamental Calcula	Signal Radi	vel @ 3m in vel @ 3m in vel @ 3m in vel @ 3m in vel and velta Mark	1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak):	PK  arker Delta  H 103.7 100.2 63.5 40.2	V 102.6 99.8 dB dBuV/m	Peak Meas Average Me - this can o	RB 1 MHz;V urement (RB= easurement (F only be used in nin 2MHz of b	B 3 MHz;Pk  =VB=1MHz) RB=1MHz, VI If band edge and edge.	signal is
483.5 MHz	Fundamental Fundamental Calcula	Signal Radi emission level emission level ted Band-Edated Band-Edated Band-Edated	vel @ 3m in vel @ 3m in Delta Mark ge Measurer dge Measurer	1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg):	PK  arker Delta  H  103.7  100.2  63.5  40.2  36.7	V 102.6 99.8 dB dBuV/m dBuV/m	1.0 Peak Meas Average Me - this can of highest with Margin	urement (RB= easurement (F only be used in 2MHz of but Level	B 3 MHz;Pk  =VB=1MHz) RB=1MHz, VI If band edge and edge. Limit	signal is
483.5 MHz	Fundamental Fundamental Calcula	Signal Radi  emission lev  emission lev  ted Band-Ed ated Band-E	vel @ 3m in vel @ 3m in Delta Mark ge Measurer dge Measure ta Marker - 1	1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): MHz/1MHz:	PK  arker Delta  H  103.7  100.2  63.5  40.2  36.7  57.0	V 102.6 99.8 dB dBuV/m dBuV/m	Peak Meas Average Me - this can e highest with Margin -18.3	urement (RB=easurement (FBonly be used in 2MHz of bull Level 35.7	EVB=1MHz) RB=1MHz, VI of band edge: and edge. Limit 54	signal is Detec Avg
483.5 MHz	Fundamental Fundamental Calcula Calcul	Signal Radion leving ted Band-Ed ated Band-Ed Deli	vel @ 3m in vel @ 3m in Delta Mark ge Measurer dge Measure ta Marker - 1 Ita Marker -	1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): MHz/1MHz: 1MHz/10Hz:	PK  arker Delta  H 103.7 100.2 63.5 40.2 36.7 57.0 64.5	V 102.6 99.8 dB dBuV/m dBuV/m dB	Peak Meas Average Me - this can of highest with Margin -18.3 -33.8	urement (RB=easurement (Ronly be used in 2MHz of bull Level 35.7	EVB=1MHz) RB=1MHz, VI of band edge and edge. Limit 54 74	signal is
483.5 MHz	Fundamental Fundamental Calcula Calcul	Signal Radi  emission level emission em	vel @ 3m in vel @	1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): MHz/1MHz: 1MHz/10Hz: ment (Peak):	PK  arker Delta  H 103.7 100.2 63.5 40.2 36.7 57.0 64.5 46.7	V 102.6 99.8 dB dBuV/m dBuV/m dB dB dBuV/m	Peak Meas Average Me - this can of highest with Margin -18.3 -33.8 Using 100k	urement (RB=easurement (RBonly be used in 2MHz of bull Level 35.7 40.2	EVB=1MHz) RB=1MHz, VI of band edge and edge. Limit 54 74	signal is  Detect  Avg
	Fundamental Fundamental Calcula Calcul	Signal Radion leving ted Band-Ed ated Band-Ed Delivers	vel @ 3m in vel @	1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): MHz/1MHz: 1MHz/10Hz: ment (Peak):	PK  arker Delta  H 103.7 100.2 63.5 40.2 36.7 57.0 64.5 46.7	V 102.6 99.8 dB dBuV/m dBuV/m dB	Peak Meas Average Me - this can of highest with Margin -18.3 -33.8 Using 100k	urement (RB=easurement (Ronly be used in 2MHz of bull Level 35.7	EVB=1MHz) RB=1MHz, VI of band edge and edge. Limit 54 74	signal is  Detect  Avg
483.5 MHz	Fundamental Fundamental Calcula Calcul	Signal Radi  emission level emission em	vel @ 3m in vel @	1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): MHz/1MHz: 1MHz/10Hz: ment (Peak):	PK  arker Delta  H  103.7  100.2  63.5  40.2  36.7  57.0  64.5  46.7  35.7	V 102.6 99.8 dB dBuV/m dBuV/m dB dB dBuV/m	Peak Meas Average Me - this can of highest with Margin -18.3 -33.8 Using 100k Using 1MH	urement (RB=easurement (Rbonly be used in 2MHz of bonly be used in 2MHz	EVB=1MHz) RB=1MHz, VI of band edge and edge. Limit 54 74	signal is Detect Avg
483.5 MHz	Fundamental Fundamental Calcula Calcul Calcula Calcula	Signal Radi  emission level emission level emission level ted Band-Edel ated Band-Edel	vel @ 3m in vel @	1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): MHz/1MHz: 1MHz/10Hz: ment (Peak): ement (Avg):	PK  arker Delta  H 103.7 100.2 63.5 40.2 36.7 57.0 64.5 46.7	V 102.6 99.8 dB dBuV/m dBuV/m dB dBuV/m dBuV/m	Peak Meas Average Me - this can of highest with Margin -18.3 -33.8 Using 100k	urement (RB=easurement (RBonly be used in 2MHz of bull Level 35.7 40.2	EVB=1MHz) RB=1MHz, VI of band edge and edge. Limit 54 74	signal is Detect Avg



	Elliott An WAS company	EMO	C Test Data
Client:	Intel Corporation	Job Number:	J80165
Model	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
Model.	IIIILEI CETILITIO WITEIESS-IN + WIIVIAA 0130, 012DINAHIVIW	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

## RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Summary of Results

<b>-</b>	OI I (OO GII	<u> </u>					
Run#	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
MAC 40250	20027A4, D	RTU Tool 1.	2.2-0177	•			
Run # 1	n40	#3 2422MHz	13.5	13.7	Restricted Band Edge at 2400 MHz	15.209	50.2dBµV/m @ 2390.0MHz (-3.8dB)
Rull#1	Chain A	#9 2452MHz	11.5	11.7	Restricted Band Edge at 2483.5 MHz	15.209	49.8dBµV/m @ 2484.2MHz (-4.2dB)
Run # 2	n40	#4 2427MHz	15.0	15.2	Restricted Band Edge at 2400 MHz	15.209	50.7dBµV/m @ 2389.8MHz (-3.3dB)
Rull#2	Chain A	#8 2447MHz	12.5	12.7	Restricted Band Edge at 2483.5 MHz	15.209	49.3dBµV/m @ 2483.5MHz (-4.7dB)
MAC 40250	20027A4, D	RTU Tool 1.	2.2-0177 for	field streng	th, 1.2.10-0194 for marke	er delta, Driver 14.0.0.39	
Run # 3	n20 Chain A	#1 2412MHz	16.5	16.7	Restricted Band Edge at 2483.5 MHz	15.209	49.0dBµV/m @ 2389.4MHz (-5.0dB)
Rull#3	n20 Chain A	#11 2462MHz	14.5	14.7	Restricted Band Edge at 2483.5 MHz	15.209	50.2dBµV/m @ 2483.7MHz (-3.8dB)
Run # 4	802.11g	#1 2412MHz	16.5	16.6	Restricted Band Edge at 2483.5 MHz	15.209	45.0dBµV/m @ 2390.0MHz (-9.0dB)
Null#4	Chain A	#11 2462MHz	15.0	15.2	Restricted Band Edge at 2483.5 MHz	15.209	47.9dBµV/m @ 2483.5MHz (-6.1dB)

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

#### **Ambient Conditions:**

Rel. Humidity: 15 - 55 % Temperature: 18 - 25 °C

#### **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 test fixture were located on the turntable for radiated spurious emissions testing. For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

<b>EI</b>	liott
	An AZAS company

### **EMC Test Data**

	An 2(22) company		
Client:	Intel Corporation	Job Number:	J80165
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
Model.	III (tel Cell (III)) VVII eless-14 + VVIIVIAA 0130, 012 bivAl IIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

#### Ambient Conditions:

Temperature: 21.7 °C Rel. Humidity: 41 %

### Modifications Made During Testing

No modifications were made to the EUT during testing

#### Deviations From The Standard

No deviations were made from the requirements of the standard.

#### Run # 1, Band Edge Field Strength - n40, Chain A

Date of Test: 8/26/2010 Test Location: FT Chamber #7

Test Engineer: Rafael Varelas Config Change: none

Run # 1a, EUT on Channel #3 2422MHz - n40, Chain A

		Power Settings	
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	13.5	13.7	23.0

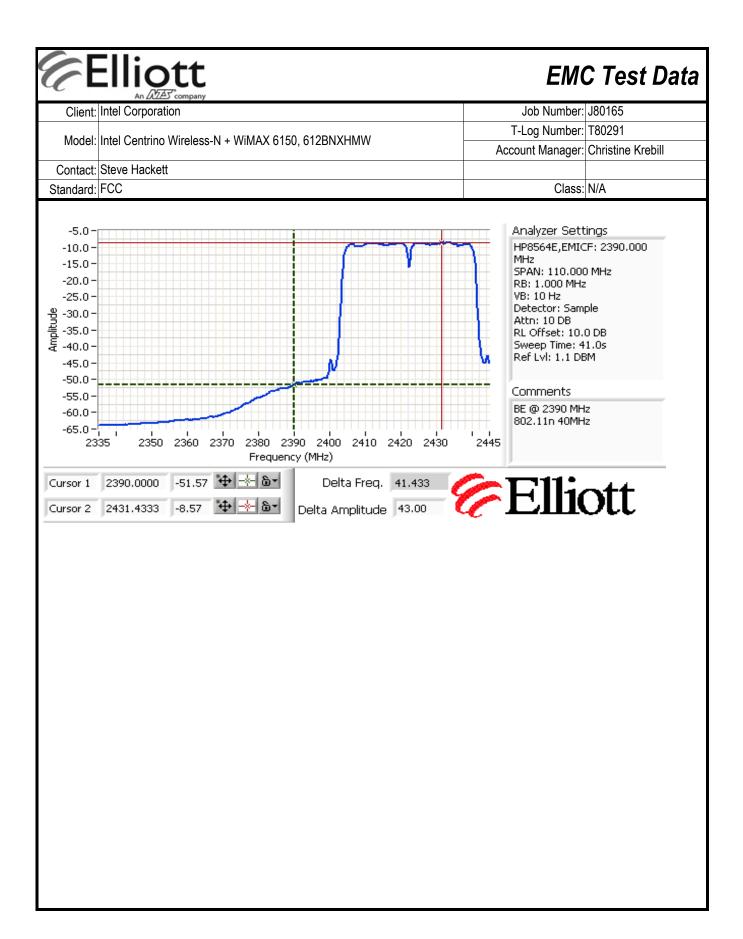
Fundamental Signal Field Strength

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2418.870	91.3	V	-	-	AVG	354	1.0	RB 1 MHz;VB 10 Hz;Pk
2419.930	99.9	V	-	-	PK	354	1.0	RB 1 MHz;VB 3 MHz;Pk
2418.930	93.2	Н	-	-	AVG	24	1.6	RB 1 MHz;VB 10 Hz;Pk
2420.200	101.9	Н	-	-	PK	24	1.6	RB 1 MHz;VB 3 MHz;Pk

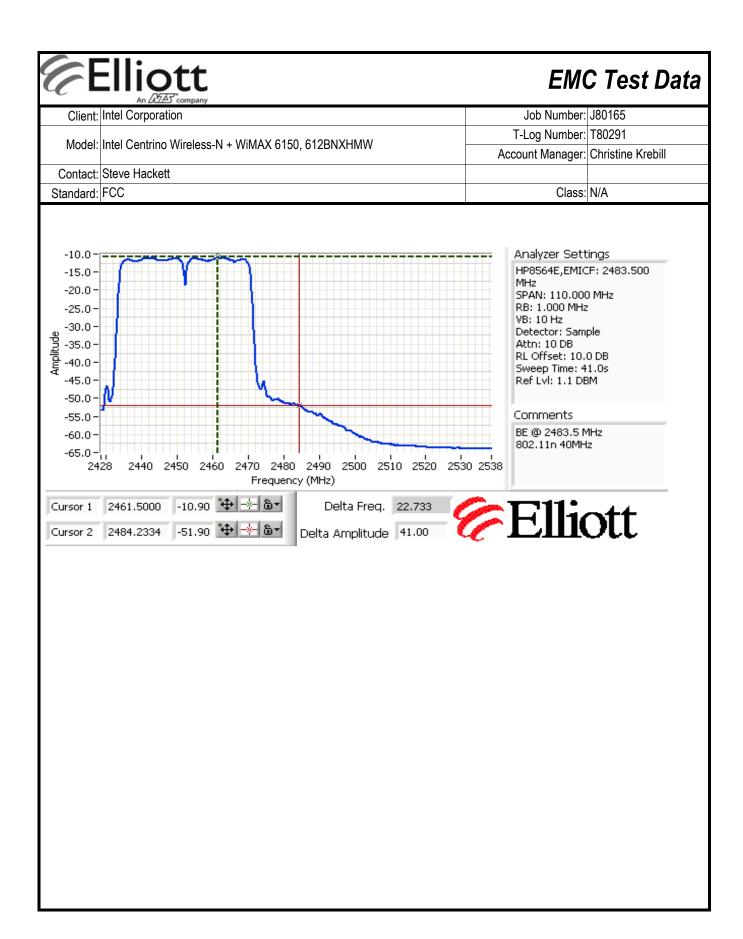
2390 MHz Band Edge Signal Radiated Field Strength - Marker Delta

2390 Miliz Balla Luge Signal Radiated Fleid Streligth - Mark	ter Derta		_			
	Η	V				
Fundamental emission level @ 3m in 1MHz RBW:	101.9	99.9	Peak Measu	rement (RB=	VB=1MHz)	
Fundamental emission level @ 3m in 1MHz RBW:	93.2	91.3	Average Me	asurement (F	RB=1MHz, V	B=10Hz)
Delta Marker - 100kHz	42.5	dB	<- this can o	nly be used i	f band edge	signal is
Calculated Band-Edge Measurement (Peak):	59.4	dBuV/m	highest with	in 2MHz of b	and edge.	
Calculated Band-Edge Measurement (Avg):	50.7	dBuV/m	Margin	Level	Limit	Detector
Delta Marker - 1MHz/1MHz:	39.3	dB	-3.8	50.2	54	Avg
Delta Marker - 1MHz/10Hz:	43.0	dB	-14.6	59.4	74	Pk
Calculated Band-Edge Measurement (Peak):	62.6	dBuV/m	Using 100kh	Iz delta value	9	
Calculated Band-Edge Measurement (Avg):	50.2	dBuV/m	Using 1MHz	delta value		
			-			

Frequency	Level	Pol	FCC '	15.209	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	50.2	-	54.0	-3.8	Avg	-	-	Using 1MHz delta value



Contact: S							-	Job Number:		
	ntel Centrino	Wireless-N	+ WiMAX 6	150, 612BN	KHMW			Log Number: unt Manager:		ahill
	Steve Hacke	<del>II</del>					ACCO	unt Manayer.	Chilistine Ki	epili
Standard: F								Class:	N/A	
Run # 1b, EU		nel #9 2452N	//Hz - n40. (	Chain A						
•			,		Power	Settings	_			
				t (dBm)	Measure	, ,		e Setting		
	L	Chain A	1	1.5	11	.7	2	1.0	]	
undamental	l Signal Fie	ld Strenath								
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
2448.870	89.9	V			AVG	354	1.0		/B 10 Hz;Pk	
2449.330	98.4	V			PK	354	1.0		/B 3 MHz;Pk	
2442.400	90.8	Н			AVG	253	1.0		/B 10 Hz;Pk	
2442.130	99.2	Н			PK	253	1.0	RB 1 MHz;\	/B 3 MHz;Pk	
483 5 MHz F	Band Edge	Sional Radia	ated Field S	Strength - Ma	arker Delta					
400.0 MITTE E	Juna Lago	orginar readit	1100 1 1010 0	ou ongur me	Н	V	1			
Fı	undamental	emission lev	el @ 3m in	1MHz RBW:	99.2	98.4	Peak Meas	urement (RB:	=VB=1MHz)	
Fu	undamental	emission lev	el @ 3m in	1MHz RBW:	90.8	89.9	Average Mo	easurement (	RB=1MHz, V	'B=10Hz)
			Delta Mark	er - 100kHz	39.2	dB	<- this can	only be used	if band edge	signal is
		ed Band-Edg			60.0	dBuV/m	highest with	nin 2MHz of b	and edge.	
	Calcula	ited Band-Ed	<u> </u>	( 0)		dBuV/m	Margin	Level	Limit	Detect
	Galloaid				20.2	dВ	-4.2	49.8	54	Avg
	Garoure		a Marker - 1		39.2					
		Delt	ta Marker -	1MHz/10Hz:	41.0	dB	-14.0	60.0	74	Pk
	Calculat	Deli ed Band-Edg	ta Marker - ge Measurer	1MHz/10Hz: ment (Peak):	<b>41.0</b> 60.0	<i>dB</i> dBuV/m	-14.0 Using 1MH	z delta value	74	
	Calculat	Delt	ta Marker - ge Measurer	1MHz/10Hz: ment (Peak):	<b>41.0</b> 60.0	dB	-14.0 Using 1MH		74	
Frequency	Calculat Calcula	Deli ed Band-Edg ated Band-Ed	ta Marker - ge Measurer Ige Measure	1MHz/10Hz: ment (Peak): ement (Avg):	<b>41.0</b> 60.0 49.8	dB dBuV/m dBuV/m	-14.0 Using 1MH Using 1MH	z delta value z delta value	74	
Frequency MHz	Calculat	Deli ed Band-Edg	ta Marker - ge Measurer Ige Measure	1MHz/10Hz: ment (Peak):	<b>41.0</b> 60.0	<i>dB</i> dBuV/m	-14.0 Using 1MH	z delta value	74	



	Ellic	company							C Test	Data
Client:	Intel Corpora	ation						Job Number:	J80165	
Madali	Indal Candrin	a Winalaga N	. \\!\\\\\	4E0 640DNIX	Z1 18 4\ A /		T-	Log Number:	T80291	
wodei.	inter Centrin	o Wireless-N	+ VVIIVIAX O	100, 012611/	VIIIVIVV		Accou	unt Manager:	Christine Kr	ebill
Contact:	Steve Hacke	ett								
Standard:	FCC							Class:	N/A	
Run # 2. Ba	nd Edge Fie	eld Strength	- n40. Chair	ı A					J.	
. [	Date of Test:	•	·			est Location: ofig Change:	FT Chambe	r #7		
	•	Rafael Varel I <b>nel #4 2427</b>		hain A	Cor	ilig Change.	none			
Kuli # Za, E	OT ON Chan	inei #4 24271	VINZ - 1140, C	main A						
					Power	Settings				
			Target	t (dBm)	Measure	•	Softwar	e Setting		
		Chain A		5.0	15	, ,		4.5		
Fundament	al Signal Fie	eld Strength								
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
2443.800	92.3	V	-	-	AVG	352	1.0	RB 1 MHz;V		
2443.730	100.3	V	-	-	PK	352	1.0	RB 1 MHz;V		
2417.330	94.9	Н	-	-	AVG	21	1.3	RB 1 MHz;V		
2417.070	103.1	Н	-	-	PK	21	1.3	RB 1 MHz;V	B 3 MHz;Pk	-
2390 MHz F	Sand Edge S	ignal Radiat	ed Field Str	enath - Mar	ker Delta					
	una Lago o	-igiiai itaaiat		ongui man	Н	V	1			
	Fundamenta	l emission lev	/el @ 3m in	1MHz RBW:	103.1	100.3	Peak Measi	urement (RB=	=VB=1MHz)	
		l emission lev			94.9	92.3		easurement (F	,	B=10Hz)
			Delta Mark	er - 100kHz	42.2	dB	<- this can d	only be used	if band edge	signal is
	Calcula	ted Band-Ed	ge Measurer	ment (Peak):	60.9	dBuV/m	highest with	in 2MHz of b	and edge.	
	Calcul	ated Band-E	dge Measure	ement (Avg):	52.7	dBuV/m	Margin	Level	Limit	Detector
		Delt	ta Marker - 1	MHz/1MHz:	40.7	dB	-3.3	50.7	54	Avg
				1MHz/10Hz:	44.2	dB	-13.1	60.9	74	Pk
		ted Band-Ed			62.4	dBuV/m	Using 100kl	Hz delta value	e	_
	Calcul	ated Band-E	dge Measure	ement (Avg):	50.7	dBuV/m	Using 1MHz	z delta value		
		· · · · · · · · · · · · · · · · · · ·			I '		T	T		
Frequency	Level	Pol		15.209	Detector	Azimuth	Height	Comments		
$N / \square \rightarrow$	dDu\//m	v/h	Limit	Margin	DI/OD/Ava	dograce	motors	1		

 $dB\mu V/m$ 

50.7

v/h

Limit

54.0

MHz

2389.800

Pk/QP/Avg

Avg

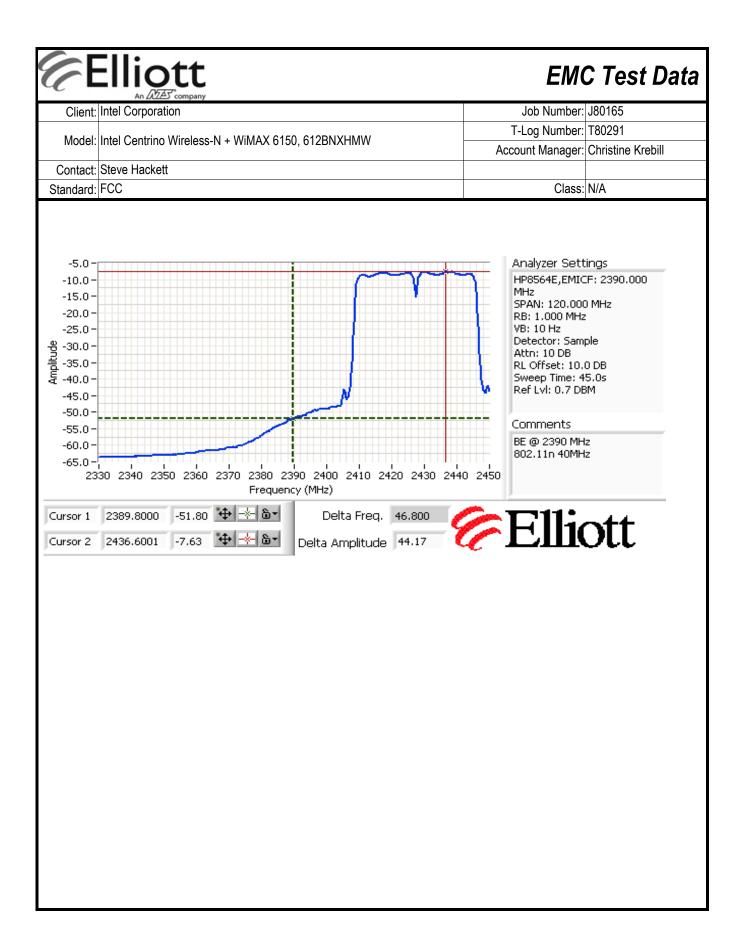
degrees

meters

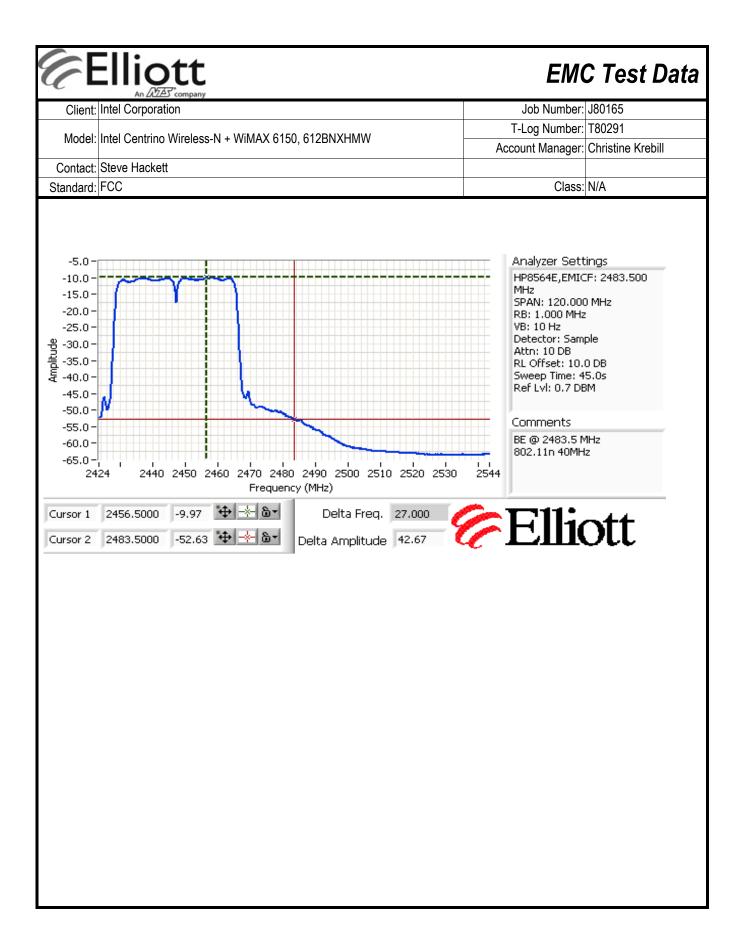
Using 1MHz delta value

Margin

-3.3



	Intel Corpora	ation						Job Number:	J80165	
							T-	Log Number:	T80291	
Model:	Intel Centrino	o Wireless-N	+ WiMAX 6	150, 612BN	KHMW			unt Manager:		ebill
Contact:	Steve Hacke	ett								
Standard:	FCC							Class:	N/A	
Run # 2b, E	UT on Chan	nel #8 2447N	1Hz - n40, C	Chain A			"			
						Settings	-			
				t (dBm)	Measure	, ,		e Setting		
		Chain A	12	2.5	12	2.7	2	2.5		
undament	tal Signal Fie	ld Strenath								
requency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
2450.270	90.5	V	120.0	-29.5	AVG	354	1.0	RB 1 MHz;V		
2457.600	98.8	V	120.0	-21.2	PK	354	1.0	RB 1 MHz;V		
2457.470 <b>483.5 MHz</b>	92.0 100.5 Band Edge				Н	22 22 V	1.0 1.0	RB 1 MHz;V	B 3 MHz;Pk	
	100.5  Band Edge	H Signal Radia	120.0 ated Field S	-19.5 <b>Strength - Ma</b>	PK arker Delta H	22 V	1.0	RB 1 MHz;V	B 3 MHz;Pk	
2457.470 <b>483.5 MHz</b>	100.5  Band Edge  Fundamental	H Signal Radia emission leve	120.0  ated Field S  el @ 3m in	-19.5 Strength - Ma 1MHz RBW:	PK  arker Delta  H  100.5	V 98.8	1.0 Peak Meas	RB 1 MHz;V	B 3 MHz;Pk =VB=1MHz)	R=10Hz)
2457.470 <b>483.5 MHz</b>	100.5  Band Edge	H Signal Radia emission leve	120.0  ated Field S  el @ 3m in el @ 3m in el	-19.5 Strength - Ma 1MHz RBW: 1MHz RBW:	PK  arker Delta  H  100.5  92.0	V 98.8 90.5	1.0 Peak Meas Average Me	RB 1 MHz;V urement (RB= easurement (F	B 3 MHz;Pk =VB=1MHz) RB=1MHz, V	
2457.470 <b>483.5 MHz</b>	100.5  Band Edge  Fundamental  Fundamental	H Signal Radia emission leve	120.0  ated Field S  el @ 3m in e	-19.5  Strength - Ma  1MHz RBW: 1MHz RBW:  ter - 100kHz	PK  arker Delta  H  100.5  92.0  40.0	V 98.8 90.5	1.0 Peak Meas Average Me	RB 1 MHz;V	B 3 MHz;Pk VB=1MHz) RB=1MHz, V f band edge	
2457.470 <b>483.5 MHz</b>	100.5  Fundamental Fundamental  Calculat	H Signal Radia emission leve	120.0  ated Field S  el @ 3m in  el @ 3m in  Delta Mark el Measurer	-19.5  Strength - Ma  1MHz RBW: 1MHz RBW: ver - 100kHz ment (Peak):	PK  arker Delta  H  100.5  92.0  40.0  60.5	22 V 98.8 90.5	1.0 Peak Meas Average Me	RB 1 MHz;V urement (RB= easurement (F	B 3 MHz;Pk VB=1MHz) RB=1MHz, V f band edge	signal is
2457.470 <b>483.5 MHz</b>	100.5  Fundamental Fundamental  Calculat	H Signal Radia emission leve emission leve ded Band-Edg ated Band-Ed Delta	ated Field S el @ 3m in el @ 3m in Delta Mark e Measurer ge Measure a Marker - 1	-19.5  Strength - Ma  1MHz RBW: 1MHz RBW:  ter - 100kHz ment (Peak): ement (Avg): MHz/1MHz:	PK  arker Delta  H  100.5  92.0  40.0  60.5  52.0  39.0	V 98.8 90.5 dB dBuV/m dBuV/m	Peak Meas Average Me - this can o	urement (RB=easurement (FBonly be used in 2MHz of balance) Level 49.3	EVB=1MHz) RB=1MHz, V f band edge and edge. Limit 54	signal is
2457.470 <b>483.5 MHz</b>	100.5  Fundamental Fundamental  Calculat  Calculat	H Signal Radia emission leve emission leve ed Band-Edg ated Band-Ed Delta Delta	120.0  ated Field S  el @ 3m in  el @ 3m in  Delta Mark  el Measurer  ge Measurer  a Marker - 1  a Marker	-19.5  Strength - Ma  1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): MHz/1MHz: 1MHz/10Hz:	PK  arker Delta  H 100.5 92.0 40.0 60.5 52.0 39.0 42.7	V 98.8 90.5 dB dBuV/m dBuV/m	Peak Meas Average Me this can o highest with Margin -4.7 -13.5	urement (RB= easurement (R only be used in 2MHz of both Level 49.3 60.5	EVB=1MHz) RB=1MHz, V f band edge and edge. Limit 54 74	signal is  Detector
2457.470 <b>483.5 MHz</b>	Fundamental Calculat Calculat	H Signal Radia emission leve emission leve ed Band-Edg ated Band-Ed Delta Delta ted Band-Edg	ated Field S el @ 3m in el @ 3m in Delta Mark el Measurer ge Measurer a Marker - 1 a Marker -	-19.5  Strength - Ma  1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): 1MHz/1MHz: 1MHz/10Hz: ment (Peak):	PK  arker Delta  H  100.5  92.0  40.0  60.5  52.0  39.0  42.7  61.5	V 98.8 90.5 dB dBuV/m dBuV/m dB dB	Peak Meas Average Me - this can of highest with Margin -4.7 -13.5 Using 100k	urement (RB=easurement (Fonly be used in 2MHz of be 49.3 60.5	EVB=1MHz) RB=1MHz, V f band edge and edge. Limit 54 74	signal is  Detector  Avg
2457.470 <b>483.5 MHz</b>	Fundamental Calculat Calculat	H Signal Radia emission leve emission leve ed Band-Edg ated Band-Ed Delta Delta	ated Field S el @ 3m in el @ 3m in Delta Mark el Measurer ge Measurer a Marker - 1 a Marker -	-19.5  Strength - Ma  1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): 1MHz/1MHz: 1MHz/10Hz: ment (Peak):	PK  arker Delta  H  100.5  92.0  40.0  60.5  52.0  39.0  42.7  61.5	V 98.8 90.5 dB dBuV/m dBuV/m	Peak Meas Average Me - this can of highest with Margin -4.7 -13.5 Using 100k	urement (RB= easurement (R only be used in 2MHz of both Level 49.3 60.5	EVB=1MHz) RB=1MHz, V f band edge and edge. Limit 54 74	signal is  Detector  Avg
2457.470 <b>483.5 MHz</b>	Fundamental Calculat Calculat	H Signal Radia emission leve emission leve ed Band-Edg ated Band-Ed Delta Delta ted Band-Edg	ated Field S el @ 3m in el @ 3m in Delta Mark e Measurer ge Measurer a Marker - 1 fa Marker - 2 ge Measurer ge Measurer	-19.5  Strength - Ma  1MHz RBW: 1MHz RBW: ter - 100kHz ment (Peak): ement (Avg): 1MHz/1MHz: 1MHz/10Hz: ment (Peak):	PK  arker Delta  H  100.5  92.0  40.0  60.5  52.0  39.0  42.7  61.5	V 98.8 90.5 dB dBuV/m dBuV/m dB dB	Peak Meas Average Me - this can of highest with Margin -4.7 -13.5 Using 100k	urement (RB=easurement (Fonly be used in 2MHz of be 49.3 60.5	EVB=1MHz) RB=1MHz, V f band edge and edge. Limit 54 74	signal is  Detector  Avg
2457.470 <b>483.5 MHz</b>	Fundamental Fundamental Calculat Calculat Calculat	H Signal Radia emission leve emission leve ded Band-Edg ated Band-Ed Delta Delta ded Band-Edg ated Band-Edg ated Band-Edg ated Band-Edg	ated Field S el @ 3m in el @ 3m in Delta Mark e Measurer ge Measurer a Marker - 1 fa Marker - 2 ge Measurer ge Measurer	-19.5  Strength - Ma  1MHz RBW: 1MHz RBW: Mer - 100kHz ment (Peak): ement (Avg): MHz/1MHz: 1MHz/10Hz: ment (Peak): ement (Avg):	PK  arker Delta  H 100.5 92.0 40.0 60.5 52.0 39.0 42.7 61.5 49.3	V 98.8 90.5 dB dBuV/m dBuV/m dB dB dBuV/m dBuV/m	Peak Meas Average Me this can of highest with Margin4.713.5 Using 100k Using 1MHz	urement (RB= easurement (FB= poly be used in 2MHz of be Level 49.3 60.5 Hz delta value	EVB=1MHz) RB=1MHz, V f band edge and edge. Limit 54 74	signal is  Detector  Avg



#### **Elliott EMC Test Data** Client: Intel Corporation Job Number: J80165 T-Log Number: T80291 Model: Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW Account Manager: Christine Krebill Contact: Steve Hackett Standard: FCC Class: N/A Run # 3, Band Edge Field Strength - n20, Chain A Date of Test: 8/26/2010 Test Location: FT Chamber #7 Test Engineer: Rafael Varelas Config Change: none Run # 3a, EUT on Channel #1 2412MHz - n20, Chain A Power Settings Target (dBm) Measured (dBm) Software Setting 16.7 Chain A 16.5 26.5 Fundamental Signal Field Strength 15.209 / 15.247 Level Pol Detector Azimuth Comments Frequency Height Margin MHz dBμV/m Limit Pk/QP/Avg v/h degrees meters 2415.230 AVG RB 1 MHz;VB 10 Hz;Pk 98.1 ٧ 355 1.0 2415.270 106.3 ٧ PK 355 1.0 RB 1 MHz;VB 3 MHz;Pk 2415.270 100.2 Н AVG 22 RB 1 MHz;VB 10 Hz;Pk 1.6 2416.800 108.5 Н PΚ 22 1.6 RB 1 MHz;VB 3 MHz;Pk 2390 MHz Band Edge Signal Radiated Field Strength - Marker Delta ٧ Fundamental emission level @ 3m in 1MHz RBW: 108.5 106.3 Peak Measurement (RB=VB=1MHz) Fundamental emission level @ 3m in 1MHz RBW: 100.2 98.1 Average Measurement (RB=1MHz, VB=10Hz) <- this can only be used if band edge signal is Delta Marker - 100kHz 51.0 dB Calculated Band-Edge Measurement (Peak): 57.5 dBuV/m highest within 2MHz of band edge. Calculated Band-Edge Measurement (Avg): 49.2 dBuV/m Margin Level Limit Detector Delta Marker - 1MHz/1MHz: 45.2 dB -5.0 49.0 54 Avg Delta Marker - 1MHz/10Hz: **51.2** dB -16.5 57.5 74 Pk Calculated Band-Edge Measurement (Peak) 63.3 dBuV/m Using 100kHz delta value Calculated Band-Edge Measurement (Avg): 49.0 dBuV/m Using 1MHz delta value

Level

dBμV/m

49.0

Frequency

MHz

2389.416

Pol

v/h

Detector

Pk/QP/Avg

Avg

Azimuth

degrees

FCC 15.209

Margin

-5.0

Limit

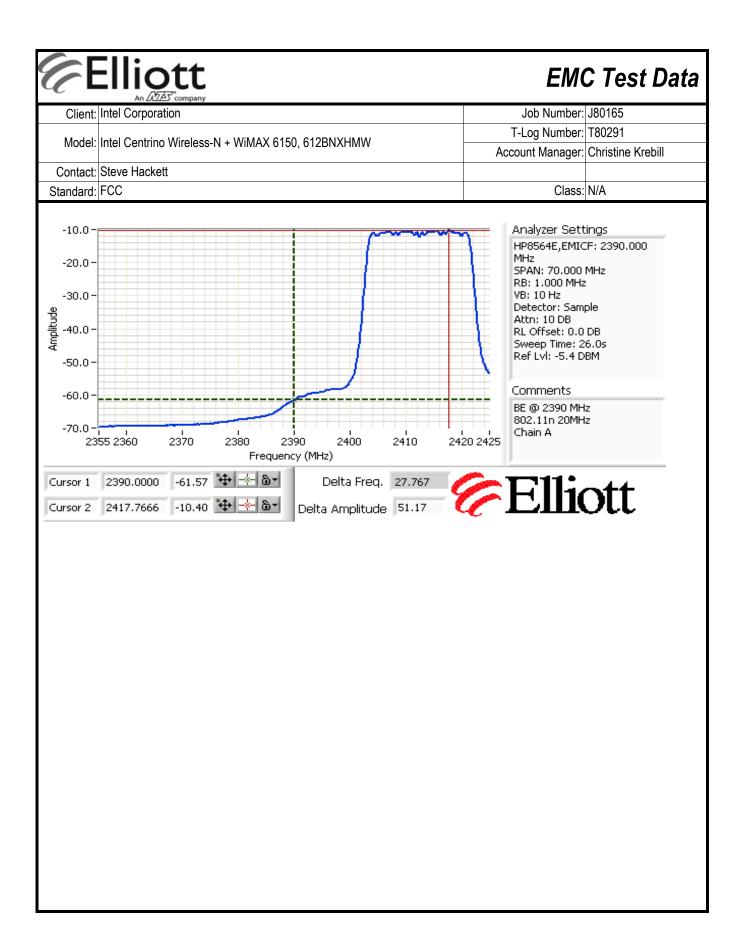
54.0

Comments

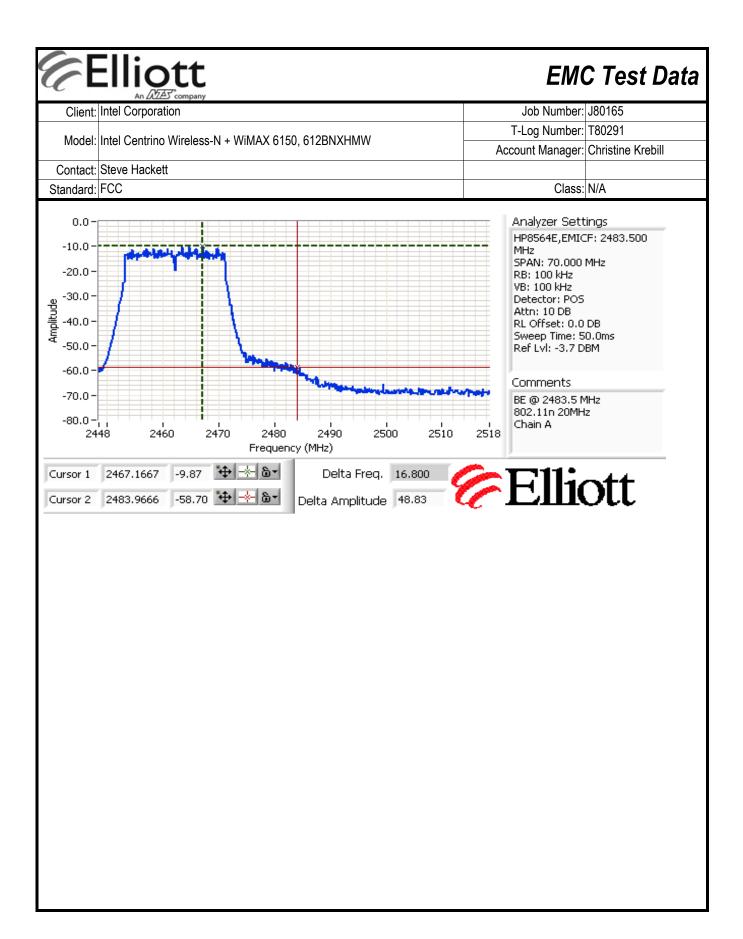
Using 1MHz delta value

Height

meters



E E	Ellic	ott						ЕМО	C Test	Data
Client:	Intel Corpora	ation					,	Job Number:	J80165	
							T-I	Log Number:	T80291	
Model:	Intel Centrin	o Wireless-N	+ WiMAX 6	150, 612BN	KHMW			unt Manager:		ebill
Contact:	Steve Hacke	ett								
Standard:								Class:	N/A	
	ate of Test:			Chain A		est Location: nfig Change:	FT Chambe			
			Target	(dBm)	Power S Measure	Settings ed (dBm)	Softwar	e Setting		
		Chain A	14	1.5	14	1.7	24	4.5		
Fundament	al Signal Fie	eld Strength								
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
2457.870	95.9	V	-	-	AVG	353	1.0	RB 1 MHz;V	'B 10 Hz;Pk	
2459.100	104.5	V	-	-	PK	353	1.0	RB 1 MHz;V	B 3 MHz;Pk	
2458.730	99.0	Н	-	-	AVG	4	1.3	RB 1 MHz;V	'B 10 Hz;Pk	
2459.000	107.4	Н	-	-	PK	4	1.3	RB 1 MHz;V	B 3 MHz;Pk	
2483.5 MHz	Band Edge	Signal Radi	ated Field S	trenath - Ma	arker Delta					
	<b>g</b> ·	0.9		u ongur m	Н	V				
F	undamental	l emission lev	/el @ 3m in	1MHz RBW:	107.4	104.5	Peak Measurement (RB=VB=1MHz)			
F	undamental	l emission lev	/el @ 3m in '	1MHz RBW:	99.0	95.9	Average Me	asurement (F	RB=1MHz, V	B=10Hz)
			Delta Mark	er - 100kHz	48.8	dB	<- this can o	only be used i	f band edge	signal is
		ted Band-Ed			58.6	dBuV/m	highest with	in 2MHz of b	and edge.	
	Calcul	ated Band-E	dge Measure	ement (Avg):	50.2	dBuV/m	Margin	Level	Limit	Detector
			a Marker - 1		43.5		-3.8	50.2	54	Avg
Delta Marker - 1MHz/10Hz:					48.8		-15.4	58.6	74	Pk
Calculated Band-Edge Measurement (Peak):  Calculated Band-Edge Measurement (Avg):						dBuV/m dBuV/m		Hz delta value z delta value	e	
Frequency	Level	Pol	FCC <sup>2</sup>	15.209	Detector	Azimuth	Height	Comments		
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
2483.733	50.2	-	54.0	-3.8	Avg	-	-	Using 1MHz	delta value	



E E	Elliott An WIAS company
Client:	Intel Corporation

## **EMC Test Data**

An ZCZES company								
Client:	Intel Corporation	Job Number:	J80165					
Madal	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291					
Model.	III (tel Cell (III)) VVII eless-14 + VVIIVIAA 0130, 012 bivAl IIVIVV	Account Manager:	Christine Krebill					
Contact:	Steve Hackett							
Standard:	FCC	Class:	N/A					

## Run # 4, Band Edge Field Strength - 802.11g, Chain A Date of Test: 8/26/2010

Test Location: FT Chamber #7 Test Engineer: Rafael Varelas

Config Change: none

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

	Power Settings							
	Target (dBm)	Measured (dBm)	Software Setting					
Chain A	16.5	16.6	26.0					

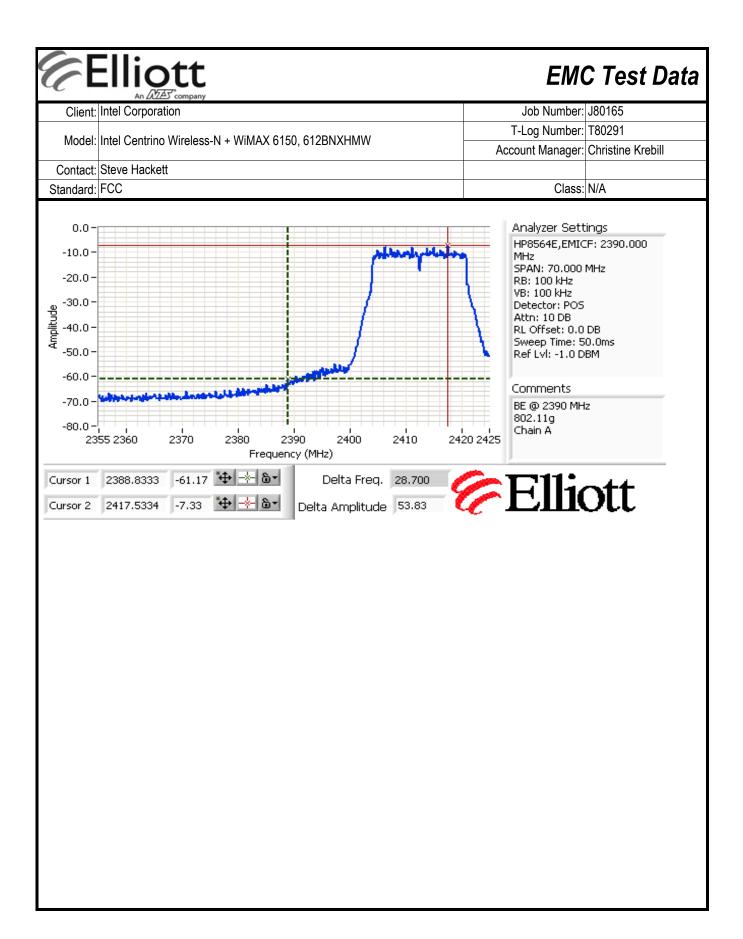
Fundamental Signal Field Strength

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2415.930	97.8	V	-	-	AVG	356	1.0	RB 1 MHz;VB 10 Hz;Pk
2416.200	105.8	V	-	-	PK	356	1.0	RB 1 MHz;VB 3 MHz;Pk
2415.930	98.8	Н	-	-	AVG	251	1.0	RB 1 MHz;VB 10 Hz;Pk
2415.370	106.9	Н	-	-	PK	251	1.0	RB 1 MHz;VB 3 MHz;Pk

2390 MHz Band Edge Signal Radiated Field Strength - Marker Delta

0			_			
	Н	V				
Fundamental emission level @ 3m in 1MHz RBW:	106.9	105.8	Peak Measu	rement (RB=	=VB=1MHz)	
Fundamental emission level @ 3m in 1MHz RBW:	98.8	97.8	Average Me	asurement (F	RB=1MHz, V	B=10Hz)
Delta Marker - 100kHz	53.8	dB	<- this can only be used if band edge signal is			
Calculated Band-Edge Measurement (Peak):	53.1	dBuV/m	highest within 2MHz of band edge.			
Calculated Band-Edge Measurement (Avg):	45.0	dBuV/m	Margin	Level	Limit	Detector
Delta Marker - 1MHz/1MHz:	48.0	48.0 dB		45.0	54	Avg
Delta Marker - 1MHz/10Hz:	53.2	dB	-20.9	53.1	74	Pk
Calculated Band-Edge Measurement (Peak):	58.9	dBuV/m	Using 100kHz delta value			
Calculated Band-Edge Measurement (Avg):	45.6	dBuV/m	Using 100kHz delta value			
			_			ļ

Frequency	Level	Pol	FCC '	15.209	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	45.0	-	54.0	-9.0	Avg	-	-	Using 100kHz delta value



#### **Elliott EMC Test Data** Client: Intel Corporation Job Number: J80165 T-Log Number: T80291 Model: Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW Account Manager: Christine Krebill Contact: Steve Hackett Standard: FCC Class: N/A Run # 4b, EUT on Channel #11 2462MHz - 802.11g, Chain A Date of Test: 8/26/2010 Test Location: FT Chamber #7 Test Engineer: Rafael Varelas Config Change: none Power Settings Target (dBm) Measured (dBm) Software Setting 15.2 24.5 Chain A 15.0 Fundamental Signal Field Strength 15.209 / 15.247 Frequency Level Pol Detector Azimuth Comments Height MHz dBμV/m Limit Margin Pk/QP/Avg v/h degrees meters 2457.930 ٧ AVG RB 1 MHz;VB 10 Hz;Pk 96.3 352 1.0 2458.230 104.5 ٧ PK 352 1.0 RB 1 MHz;VB 3 MHz;Pk 2466.570 99.2 Н AVG 1.3 RB 1 MHz;VB 10 Hz;Pk 4 4 2465.270 107.8 Н PΚ 1.3 RB 1 MHz;VB 3 MHz;Pk 2483.5 MHz Band Edge Signal Radiated Field Strength - Marker Delta ٧ Fundamental emission level @ 3m in 1MHz RBW: 107.8 104.5 Peak Measurement (RB=VB=1MHz) Fundamental emission level @ 3m in 1MHz RBW: 99.2 96.5 Average Measurement (RB=1MHz, VB=10Hz) <- this can only be used if band edge signal is Delta Marker - 100kHz **51.3** dB Calculated Band-Edge Measurement (Peak): 56.5 dBuV/m highest within 2MHz of band edge. Calculated Band-Edge Measurement (Avg): 47.9 dBuV/m Margin Level Limit Detector 46.2 dB Delta Marker - 1MHz/1MHz: -6.1 47.9 54 Avg Delta Marker - 1MHz/10Hz: 50.3 dB -17.5 56.5 74 Pk Calculated Band-Edge Measurement (Peak) Using 100kHz delta value 61.6 dBuV/m Calculated Band-Edge Measurement (Avg): 48.9 dBuV/m Using 100kHz delta value

Level

dBμV/m

47.9

Frequency

MHz

2483.500

Pol

v/h

FCC 15.209

Limit

54.0

Margin

-6.1

Detector

Pk/QP/Avg

Avg

Azimuth

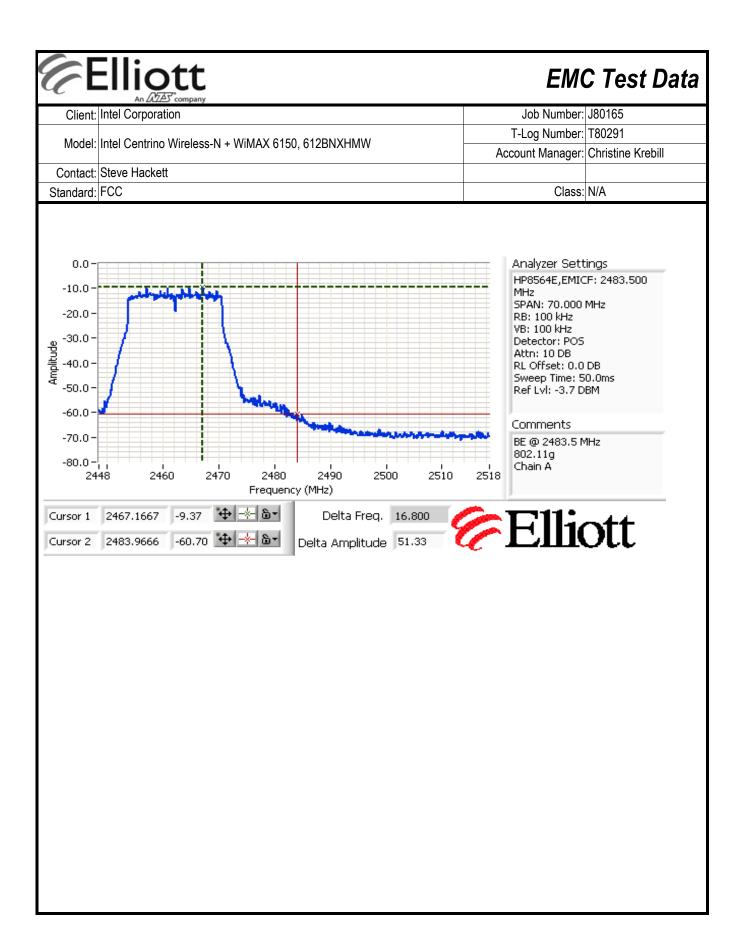
degrees

Comments

Using 100kHz delta value

Height

meters



	Elliott An AZES company	EM	EMC Test Data		
Client:	Intel Corporation	Job Number:	J80165		
Madalı	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291		
Model.	IIILEI CEIILIIIO WIIEIESS-IN + WIIWIAX 0150, 012BINARIWW	Account Manager:	Christine Krebill		
Contact:	Steve Hackett				
Standard:	FCC	Class:	N/A		

### RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Before disconnecting the power meter, EUT antennas or spectrum analyzer from the device please click on **Power Down** to stop the transmitter. Once the rf port is connected back up to the antenna, power meter or analyzer click on "**Start TX**". This prevents the feedback circuit on the EUT from dropping power while there is nothing connected and then ramping it back up when it sees a load.

Use the **Gain Control** mode of adjusting power. Set power to within +/-0.2dB of target.

#### Summary of Results

MAC Address: 4025C20027AC DRTU Tool Version 1.2.2-0177 Driver version 14.0.0.39

Note - scans of emissions in the 30 - 1000MHz indicated that there were no emissions below 1GHz related directly to the transceiver

circuitry. Radiated emissions below 1GHz are, therefore, covered by the PC-peripheral tests for the digital device.

					, , ,					
Run#	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin			
		#1 2412MHz	16.5	16.9		FCC 15.209 / 15.247	54.7dBµV/m @ 3000.1MHz (-15.3dB)			
Run #1	802.11b Chain A	#6 2437MHz	16.5	16.8	Radiated Emissions, 1 - 26 GHz		53.4dBµV/m @ 3000.2MHz (-16.6dB)			
		#11 2462MHz	16.5	16.7			51.5dBµV/m @ 6000.7MHz (-18.5dB)			
Run #2 to d	Run #2 to determine worst case OFDM mode:									
	802.11g	#6 2437MHz	16.5	16.8	Radiated Emissions, 1 - 26 GHz		54.5dBµV/m @ 3000.4MHz (-15.5dB)			
Run # 2	802.11n20	#6 2437MHz	16.5	16.8		FCC 15.209 / 15.247	51.9dBµV/m @ 6000.6MHz (-18.1dB)			
	802.11n40	#6 2437MHz	16.5	16.9			37.1dBµV/m @ 1593.6MHz (-16.9dB)			
Run #3 - to	p and botton	n channels i	in the worst	case OFDM	mode:					
Dup # 3	802.11g Chain A	#1 2412MHz	16.5	16.6	Radiated Emissions,	FCC 15.209 / 15.247	56.4dBµV/m @ 3000.4MHz (-13.6dB)			
Run # 3		#11 2462MHz	16.5	16.6	1 - 26 GHz		56.2dBµV/m @ 3000.2MHz (-13.8dB)			

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

Ell	iott

### **EMC Test Data**

An ZCZES company								
Client:	Intel Corporation	Job Number:	J80165					
Madal	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291					
Model.	III (tel Cell (III)) VVII eless-14 + VVIIVIAA 0130, 012 bivAl IIVIVV	Account Manager:	Christine Krebill					
Contact:	Steve Hackett							
Standard:	FCC	Class:	N/A					

#### Ambient Conditions:

Rel. Humidity: 15 - 55 % Temperature: 18 - 25 °C

#### 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 test fixture were located on the turntable for radiated spurious emissions testing. All other support equipment was located on the floor or as close to the floor as cabling would permit.

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

#### Ambient Conditions:

Temperature: 15 - 55 °C 18 - 25 % Rel. Humidity:

#### 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.

### **EMC Test Data**

	An ZAZZZ Company		
Client:	Intel Corporation	Job Number:	J80165
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
	IIILEI CEITIIIIO WITEIESS-N + WIWAA 0130, 012BNAFIWW	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

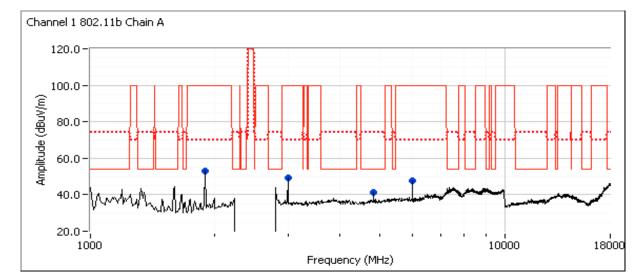
#### Run #1, Radiated Spurious Emissions, 1-26GHz, 802.11b, Chain A

Date of Test: 8/25/2010 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

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

	Power Settings							
	Target (dBm)	Measured (dBm)	Software Setting					
Chain A	16.5	16.9	20.0					



#### Spurious Radiated Emissions:

Frequency	Level	Pol	15.209	/15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.140	54.7	V	70.0	-15.3	PK	134	1.0	RB 1 MHz;VB 3 MHz;Pk
6000.850	52.5	V	70.0	-17.5	PK	307	1.0	RB 1 MHz;VB 3 MHz;Pk
4818.190	31.5	V	54.0	-22.5	AVG	170	1.0	RB 1 MHz;VB 10 Hz;Pk
1894.580	39.2	V	70.0	-30.8	PK	328	1.3	RB 1 MHz;VB 3 MHz;Pk
4816.160	42.8	٧	74.0	-31.2	PK	170	1.0	RB 1 MHz;VB 3 MHz;Pk

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak

Note 1: measurements in a measurement bandwidth of 100kHz (although measurements above were made with the peak detector and bandiwdth set to 1MHz which would give a measurement larger than if a 100kHz bandwidth were used).

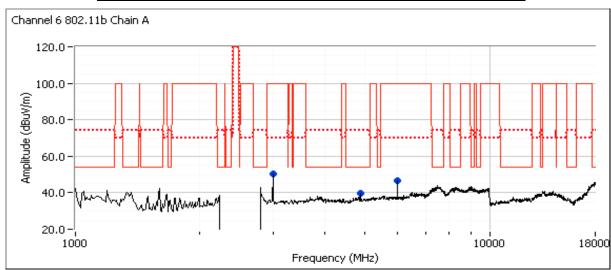
Note 2: No emissions observed above from 18 - 26GHz.

## **EMC Test Data**

	All Date Company		
Client:	Intel Corporation	Job Number:	J80165
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
	IIILEI CEITIIIIO VVIIEIESS-IV + VVIIVIAA 0130, 012BIVAI IIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

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

	Power Settings							
	Target (dBm)	Measured (dBm)	Software Setting					
Chain A	16.5	16.8	20.0					



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209	/15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.200	53.4	V	70.0	-16.6	PK	138	1.0	RB 1 MHz;VB 3 MHz;Pk
6000.790	51.2	V	70.0	-18.8	PK	302	1.0	RB 1 MHz;VB 3 MHz;Pk
4866.950	30.7	V	54.0	-23.3	AVG	130	2.2	RB 1 MHz;VB 10 Hz;Pk
4868.020	41.8	V	74.0	-32.2	PK	130	2.2	RB 1 MHz;VB 3 MHz;Pk

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak

Note 1: measurements in a measurement bandwidth of 100kHz (although measurements above were made with the peak detector and bandiwdth set to 1MHz which would give a measurement larger than if a 100kHz bandwidth were used).

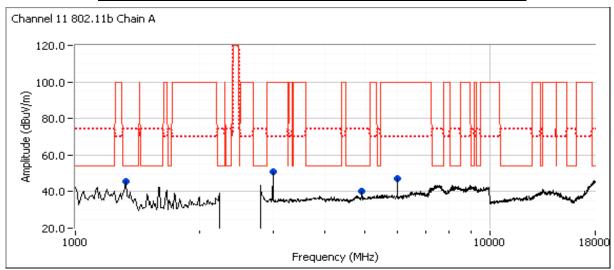
Note 2: No emissions observed above the noise floor when using measurement antenna within 20cm of the device from 18 - 26GHz.

## **EMC Test Data**

1	All Diggs Company		
Client:	Intel Corporation	Job Number:	J80165
Madal	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
Model.	IIILEI CEITIIIIO VVIIEIESS-IV + VVIIVIAA 0130, 012BIVAI IIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

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

	Power Settings							
	Target (dBm)	Measured (dBm)	Software Setting					
Chain A	16.5	16.7	20.0					



#### Spurious Radiated Emissions:

opulious it									
Frequency	Level	Pol	15.209	/15.247	Detector	Azimuth	Height	Comments	
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
6000.660	51.5	V	70.0	-18.5	PK	304	1.0	RB 1 MHz;VB 3 MHz;Pk	
1320.660	35.4	V	54.0	-18.6	AVG	135	1.3	RB 1 MHz;VB 10 Hz;Pk	
3000.410	50.0	V	70.0	-20.0	PK	141	1.0	RB 1 MHz;VB 3 MHz;Pk	
4929.940	30.5	V	54.0	-23.5	AVG	141	1.6	RB 1 MHz;VB 10 Hz;Pk	
1321.350	45.9	V	70.0	-24.1	PK	135	1.3	RB 1 MHz;VB 3 MHz;Pk	
4931.580	41.3	V	70.0	-28.7	PK	141	1.6	RB 1 MHz;VB 3 MHz;Pk	

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak

Note 1: measurements in a measurement bandwidth of 100kHz (although measurements above were made with the peak detector and bandiwdth set to 1MHz which would give a measurement larger than if a 100kHz bandwidth were used).

Note 2: No emissions observed above from 18 - 26GHz.

### **EMC Test Data**

	All DOZES Company		
Client:	Intel Corporation	Job Number:	J80165
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
	III (tel Cell (III)) VVII eless-14 + VVIIVIAA 0130, 012 bivAl IIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

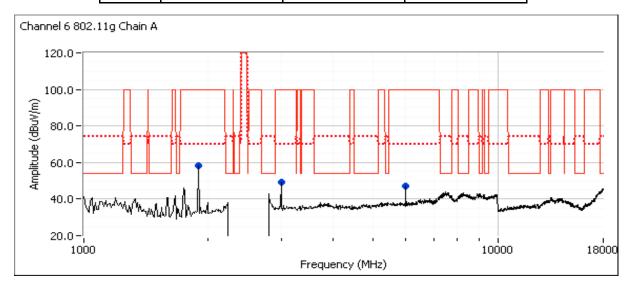
#### Run # 2, Radiated Spurious Emissions, 1-26GHz, 802.11bg and 802.11n, Chain A, Center Channel

Date of Test: 8/25/2010 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

Run # 2a, EUT on Channel #6 2437MHz - 802.11g, Chain A

••••	//	002g, 0						
			Power Settings					
		Target (dBm)	Measured (dBm)	Software Setting				
	Chain A	16.5	16.8	27.0				



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209	/15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.360	54.5	V	70.0	-15.5	PK	136	1.0	RB 1 MHz;VB 3 MHz;Pk
6000.620	51.6	V	70.0	-18.4	PK	302	1.0	RB 1 MHz;VB 3 MHz;Pk
1895.240	43.5	V	70.0	-26.5	PK	145	1.0	RB 1 MHz;VB 3 MHz;Pk

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak

Note 1: measurements in a measurement bandwidth of 100kHz (although measurements above were made with the peak detector and bandiwdth set to 1MHz which would give a measurement larger than if a 100kHz bandwidth were used).

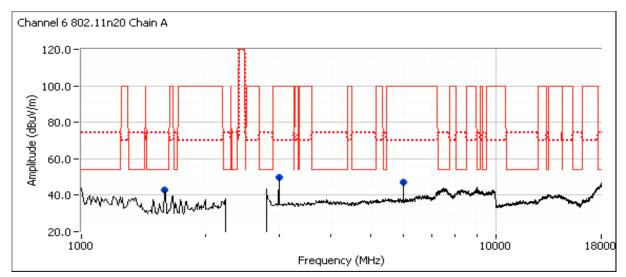
Note 2: No emissions observed above the noise floor when using measurement antenna within 20cm of the device from 18 - 26GHz.

## **EMC Test Data**

	All Bazz Stormpuny		
Client:	Intel Corporation	Job Number:	J80165
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
	IIILEI CEITIIIIO VVIIEIESS-IV + VVIIVIAA 0130, 012BIVAI IIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

#### Run # 2b: , EUT on Channel #6 2437MHz - 802.11n 20MHz, Chain A

		Power Settings	
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.8	27.5



#### Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/	15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
6000.550	51.9	V	70.0	-18.1	PK	306	1.0	RB 1 MHz;VB 3 MHz;Pk
1593.700	32.9	Н	54.0	-21.1	AVG	142	1.9	RB 1 MHz;VB 10 Hz;Pk
3000.110	47.9	V	70.0	-22.1	PK	142	1.0	RB 1 MHz;VB 3 MHz;Pk
1594.190	46.2	Н	74.0	-27.8	PK	142	1.9	RB 1 MHz;VB 3 MHz;Pk

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak

Note 1: measurements in a measurement bandwidth of 100kHz (although measurements above were made with the peak detector and bandiwdth set to 1MHz which would give a measurement larger than if a 100kHz bandwidth were used).

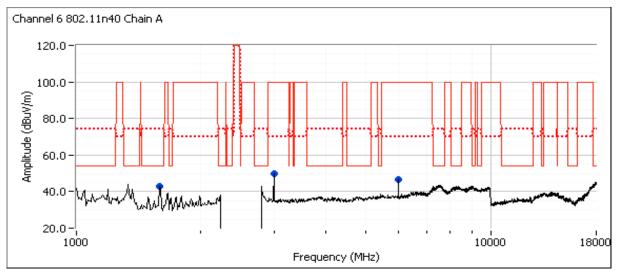
Note 2: No emissions observed above from 18 - 26GHz.

## **EMC Test Data**

	All Date Company		
Client:	Intel Corporation	Job Number:	J80165
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
	IIILEI CEITIIIIO VVIIEIESS-IV + VVIIVIAA 0130, 012BIVAI IIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

Run # 2c: , EUT on Channel #6 2437MHz - 802.11n 40MHz, Chain A

	,	Power Settings	
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.9	27.0



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209	/15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1593.590	37.1	V	54.0	-16.9	AVG	131	1.0	RB 1 MHz;VB 10 Hz;Pk
6000.620	51.5	V	70.0	-18.5	PK	303	1.0	RB 1 MHz;VB 3 MHz;Pk
3000.210	51.0	V	70.0	-19.0	PK	140	1.0	RB 1 MHz;VB 3 MHz;Pk
1593.970	51.1	V	74.0	-22.9	PK	131	1.0	RB 1 MHz;VB 3 MHz;Pk

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak

Note 1: measurements in a measurement bandwidth of 100kHz (although measurements above were made with the peak detector and bandiwdth set to 1MHz which would give a measurement larger than if a 100kHz bandwidth were used).

Note 2: No emissions observed above from 18 - 26GHz.

### **EMC Test Data**

	An 2022 Company		
Client:	Intel Corporation	Job Number:	J80165
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
	IIILEI CEITIIIIO WITEIESS-N + WIWAA 0130, 012BNAFIWW	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

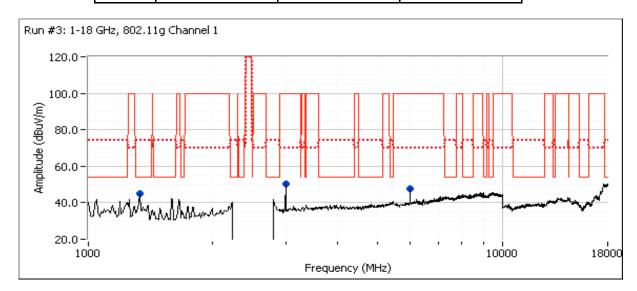
#### Run # 3, Radiated Spurious Emissions, 1-26GHz, 802.11g, Chain A

Date of Test: 8/30/2010 Test Location: FT Chmaber #5

Test Engineer: Mark H Config Change: none

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

• •				
			Power Settings	
		Target (dBm)	Measured (dBm)	Software Setting
	Chain A	16.5	26.0	16.6



#### Spurious Radiated Emissions:

Frequency	Level	Pol	15.209	/15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.410	56.4	V	70.0	-13.6	PK	266	1.3	RB 1 MHz;VB 3 MHz;Pk
1332.830	38.6	V	54.0	-15.4	AVG	243	1.0	RB 1 MHz;VB 10 Hz;Pk
6000.560	52.8	V	70.0	-17.2	PK	149	1.0	RB 1 MHz;VB 3 MHz;Pk
1332.150	53.6	V	74.0	-20.4	PK	243	1.0	RB 1 MHz;VB 3 MHz;Pk

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak

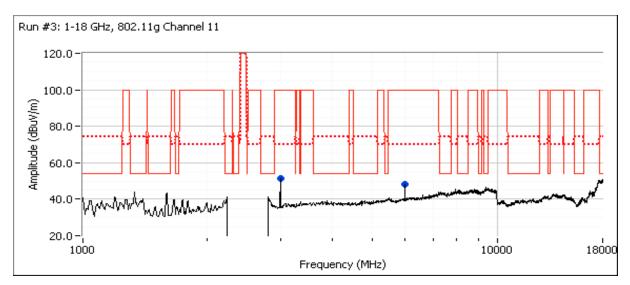
Note 1: measurements in a measurement bandwidth of 100kHz (although measurements above were made with the peak detector
and bandiwdth set to 1MHz which would give a measurement larger than if a 100kHz bandwidth were used).

## **EMC Test Data**

Client:	Intel Corporation	Job Number:	J80165
Model	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
Model.	IIILEI CEITIIIIO VIITEIESS-IN + WIINIAA 0130, 012BINAI IIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

Run # 3b: , EUT on Cha<u>nnel #11 2462MHz - 802.11g, Chain A</u>

		Power Settings	
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	16.5	16.6	26.0



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209	/15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.200	56.2	V	70.0	-13.8	PK	269	1.3	RB 1 MHz;VB 3 MHz;Pk
6000.830	54.0	V	70.0	-16.0	PK	268	1.1	RB 1 MHz;VB 3 MHz;Pk

	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak
Note 1:	measurements in a measurement bandwidth of 100kHz (although measurements above were made with the peak detector
	and bandiwdth set to 1MHz which would give a measurement larger than if a 100kHz bandwidth were used).
Note 2:	No emissions observed above from 18 - 26GHz.

	Elliott An WAS company	EMC Test Data		
Client:	Intel Corporation	Job Number:	J80165	
Model	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291	
Model.		Account Manager:	Christine Krebill	
Contact:	Steve Hackett			
Standard:	FCC	Class:	N/A	

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

#### Test Specific Details

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

Date of Test: 9/9/2010 Config. Used: 1 Test Engineer: Rafael Varelas Config Change: none Test Location: FT Chamber #4 Host Unit Voltage 120V/60Hz

#### **General Test Configuration**

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

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

#### **Ambient Conditions:**

Temperature: 21.4 °C Rel. Humidity: 39 %

#### Summary of Results

MAC Address: 4025C20027A4 DRTU Tool Version 1.12.10-0194 Driver version 14.0.0.39

Run#	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	22	16.7	Output Power	15.247(b)	Pass	802.11b: 17.8 dBm 802.11g: 16.8 dBm n20MHz: 17.1 dBm n40MHz: 17.7 dBm
2	22	16.7	Power spectral Density (PSD)	15.247(d)	Pass	802.11b: -6.1 dBm/3kHz 802.11g: -7.6 dBm/3kHz n20MHz: -6.6 dBm/3kHz n40MHz: -10.1dBm/3kHz
3	21.5	16.7	Minimum 6dB Bandwidth	15.247(a)	Pass	11.5 MHz
3	26.5	16.7	99% Bandwidth	RSS GEN	-	802.11b: 13.7 MHz 802.11g: 17.1 MHz n20MHz: 18.4 MHz n40MHz: 36.7 MHz
4	-	-	Spurious emissions	15.247(b)	Pass	All spurious below -30dBc

	Eliott An AZAS company	EM	C Test Data
	Intel Corporation	Job Number:	J80165
Madal	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
wodei.	IIILEI GERILIIIO VVIIEIESS-IN + VVIIVIAA O 130, O 12BINARIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

#### Modifications Made During Testing

No modifications were made to the EUT during testing

#### Deviations From The Standard

No deviations were made from the requirements of the standard.

#### Run #1: Output Power

802.	1	1	b
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Power Setting    Frequency (MHz)   Output Power (dBm)   mW   Gain (dBi)   Result   dBm   W   (dBm)   mW   Gain (dBi)   Gain (dBi)   MW	802.11b									
Setting	Power	Fraguency (MH=)	Output	Power	Antenna	Dogult	EIRP	Note 2	Output	Power
22   2437   17.8   60.3   3.2   Pass   21.0   0.126   16.7   46.8	Setting <sup>2</sup>		(dBm) <sup>1</sup>	mW	Gain (dBi)	Resuit	dBm	W	(dBm) <sup>3</sup>	mW
Power Setting   Frequency (MHz)   Coutput Power (dBm)   1 mW (dBm)   3 mW	21.5	2412	17.4	55.0	3.2	Pass	20.6	0.115	16.7	46.8
Power Setting  Prequency (MHz)	22		17.8	60.3	3.2	Pass	21.0	0.126	16.7	46.8
Power Setting <sup>2</sup>   Frequency (MHz)   Output Power (dBm)   1 mW (dBm)   Result   MBm   W (dBm)   3 mW (dBm)	21.5	2462	17.3	53.7	3.2	Pass	20.5	0.112	16.5	44.7
Setting   Frequency (MHz)   (dBm)   mW   Gain (dBi)   Result   dBm   W   (dBm)   mW   (dBm)   mW   (25.5   2412   16.8   47.9   3.2   Pass   20.0   0.100   16.6   45.7   (26   2437   16.8   47.9   3.2   Pass   20.0   0.100   16.6   45.7   (24   2462   14.7   29.5   3.2   Pass   17.9   0.062   15.2   33.1   (dBm)   mW   (dBm)	802.11g									
Setting	Power	Fragues av (MUz)	Output	Power	Antenna	Dogult	EIRP	Note 2	Output	Power
25.5   2412   16.8   47.9   3.2   Pass   20.0   0.100   16.6   45.7	Setting <sup>2</sup>	Frequency (IVITZ)	(dBm) <sup>1</sup>	mW	Gain (dBi)	Resuit	dBm	W	(dBm) <sup>3</sup>	mW
24         2462         14.7         29.5         3.2         Pass         17.9         0.062         15.2         33.1           802.11n 20MHz           Power Setting <sup>2</sup> Frequency (MHz)         Output Power (dBm) 1 mW Gain (dBi)         Result Gain (dBi)         EIRP Note 2 dBm W (dBm) 3 mW         Output Power (dBm) 3 mW           25.5         2412         16.6         45.7         3.2         Pass         19.8         0.095         16.6         45.7           26         2437         17.1         51.3         3.2         Pass         20.3         0.107         16.5         44.7           23.5         2462         14.5         28.2         3.2         Pass         17.7         0.059         14.6         28.8           802.11n 40MHz           Power Setting <sup>2</sup> Frequency (MHz)         Output Power (dBm) 1 mW Gain (dBi)         Result Gain (dBi)         EIRP Note 2 Gain (dBm) W (dBm) 3 mW         Output Power (dBm) 3 mW           22.5         2422         14.2         26.3         3.2         Pass         17.4         0.055         13.8         24.0           26.5         2437         17.7         58.9         3.2         Pass         20.9         0.123         16.7	25.5	2412	16.8	47.9	3.2	Pass	20.0	0.100		45.7
Power   Setting    Prequency (MHz)   Output Power   Antenna   Gain (dBi)   Result   EIRP Note 2   Output Power   dBm   W   (dBm) 3   mW   (dBm) 3   mW   (dBm) 4   Max	26	2437	16.8	47.9	3.2	Pass	20.0	0.100	16.6	45.7
Power Setting²         Frequency (MHz)         Output Power (dBm)¹         Antenna Gain (dBi)         Result Result         EIRP Note 2 dBm         Output Power (dBm)³         Power (dBm)³         MW           25.5         2412         16.6         45.7         3.2         Pass         19.8         0.095         16.6         45.7           26         2437         17.1         51.3         3.2         Pass         20.3         0.107         16.5         44.7           23.5         2462         14.5         28.2         3.2         Pass         17.7         0.059         14.6         28.8           802.11n 40MHz           Power Setting²         Frequency (MHz)         Output Power (dBm)¹         Antenna Gain (dBi)         Result GBm         W         (dBm)³         mW           22.5         2422         14.2         26.3         3.2         Pass         17.4         0.055         13.8         24.0           26.5         2437         17.7         58.9         3.2         Pass         20.9         0.123         16.7         46.8	24	2462	14.7	29.5	3.2	Pass	17.9	0.062	15.2	33.1
Setting <sup>2</sup> Frequency (MHz)         (dBm) <sup>1</sup> mW         Gain (dBi)         Result         dBm         W         (dBm) <sup>3</sup> mW           25.5         2412         16.6         45.7         3.2         Pass         19.8         0.095         16.6         45.7           26         2437         17.1         51.3         3.2         Pass         20.3         0.107         16.5         44.7           23.5         2462         14.5         28.2         3.2         Pass         17.7         0.059         14.6         28.8           802.11n 40MHz           Output Power (dBm) <sup>1</sup> mW Gain (dBi)         Result Gain (dBi)         EIRP Note 2 Gain (dBm) <sup>3</sup> mW         Output Power (dBm) <sup>3</sup> mW           Setting <sup>2</sup> 2422         14.2         26.3         3.2         Pass         17.4         0.055         13.8         24.0           26.5         2437         17.7         58.9         3.2         Pass         20.9         0.123         16.7         46.8	802. <u>1</u> 1n 201	ИНz								
Setting <sup>2</sup> Value         (dBm) 1 mW         Gain (dBi)         dBm         W         (dBm) 3 mW           25.5         2412         16.6         45.7         3.2         Pass         19.8         0.095         16.6         45.7           26         2437         17.1         51.3         3.2         Pass         20.3         0.107         16.5         44.7           23.5         2462         14.5         28.2         3.2         Pass         17.7         0.059         14.6         28.8           802.11n 40MHz           Power Setting <sup>2</sup> Frequency (MHz)         Output Power (dBm) 1 mW         Gain (dBi)         Result GBm         W         (dBm) 3 mW         mW           22.5         2422         14.2         26.3         3.2         Pass         17.4         0.055         13.8         24.0           26.5         2437         17.7         58.9         3.2         Pass         20.9         0.123         16.7         46.8	Power	Fragues av (MUz)	Output	Power	Antenna	Depult	EIRF	Note 2	Output	Power
25.5         2412         16.6         45.7         3.2         Pass         19.8         0.095         16.6         45.7           26         2437         17.1         51.3         3.2         Pass         20.3         0.107         16.5         44.7           23.5         2462         14.5         28.2         3.2         Pass         17.7         0.059         14.6         28.8           802.11n 40MHz           Power Setting <sup>2</sup> Frequency (MHz)         Output Power (dBm) 1 mW         Result Gain (dBi)         EIRP Note 2 mW (dBm) 3 mW         Output Power (dBm) 3 mW           22.5         2422         14.2         26.3         3.2         Pass         17.4         0.055         13.8         24.0           26.5         2437         17.7         58.9         3.2         Pass         20.9         0.123         16.7         46.8		Frequency using a	(15.1	m\//	Gain (dBi)	Resuit			(dDm) 3	mW
23.5   2462   14.5   28.2   3.2   Pass   17.7   0.059   14.6   28.8	Setting <sup>2</sup>	. ,	(dBm)	11177	Call (abi)		ubili	V V	(ubili)	·
23.5   2462   14.5   28.2   3.2   Pass   17.7   0.059   14.6   28.8	•	2412			` ′	Pass				45.7
Note   Power   Setting    Prequency (MHz)   Output Power   Antenna   Gain (dBi)   Result   EIRP   Note 2   Output Power   Gain (dBi)   MW   (dBm) 3   mW   Output Power   Antenna   Gain (dBi)   Pass   17.4   0.055   13.8   24.0   26.5   2437   17.7   58.9   3.2   Pass   20.9   0.123   16.7   46.8   Output Power   Antenna   Gain (dBi)   Result   Output Power   Gain (dBi)   MW   (dBm) 3   mW   Output Power   Antenna   Gain (dBi)   MW   Output Power   Gain (dBi)   Output Power   Antenna   Gain (dBi)   Output Power   Antenna   Gain (dBi)   Output Power   Output Power   Gain (dBi)   Output Power   Outpu	25.5	2412 2437	16.6	45.7	3.2		19.8	0.095	16.6	
Setting <sup>2</sup> Frequency (MHZ)         (dBm)         mW         Gain (dBi)         Result         dBm         W         (dBm)         mW           22.5         2422         14.2         26.3         3.2         Pass         17.4         0.055         13.8         24.0           26.5         2437         17.7         58.9         3.2         Pass         20.9         0.123         16.7         46.8	25.5 26	2412 2437	16.6 <b>17.1</b>	45.7 <b>51.3</b>	3.2	Pass	19.8 20.3	0.095 0.107	16.6 16.5	44.7
Setting         MV         Gain (dBI)         dBm         W         (dBm)         mvV           22.5         2422         14.2         26.3         3.2         Pass         17.4         0.055         13.8         24.0           26.5         2437         17.7         58.9         3.2         Pass         20.9         0.123         16.7         46.8	25.5 26 23.5	2412 2437 2462	16.6 <b>17.1</b>	45.7 <b>51.3</b>	3.2	Pass	19.8 20.3 17.7	0.095 0.107 0.059	16.6 16.5	44.7
22.5     2422     14.2     26.3     3.2     Pass     17.4     0.055     13.8     24.0       26.5     2437     17.7     58.9     3.2     Pass     20.9     0.123     16.7     46.8	25.5 26 23.5 <b>802.11n 40</b> N	2412 2437 2462 MHz	16.6 17.1 14.5	45.7 <b>51.3</b> 28.2	3.2 3.2 3.2	Pass Pass	19.8 20.3 17.7	0.095 0.107 0.059	16.6 16.5 14.6 Output	44.7 28.8
	25.5 26 23.5 <b>802.11n 40</b> N Power	2412 2437 2462 MHz	16.6 17.1 14.5 Output	45.7 <b>51.3</b> 28.2 Power	3.2 3.2 3.2 3.2	Pass Pass	19.8 20.3 17.7 EIRF	0.095 0.107 0.059	16.6 16.5 14.6 Output	44.7 28.8 Power
20.5 2452 11.7 14.8 3.2 Pass 14.9 0.031 11.7 14.8	25.5 26 23.5 <b>802.11n 40N</b> Power Setting <sup>2</sup>	2412 2437 2462 <b>MHz</b> Frequency (MHz)	16.6 17.1 14.5 Output (dBm) 1	45.7 <b>51.3</b> 28.2 Power mW	3.2 3.2 3.2 3.2 Antenna Gain (dBi)	Pass Pass Result	19.8 20.3 17.7 EIRF dBm	0.095 0.107 0.059 Note 2	16.6 16.5 14.6 Output (dBm) <sup>3</sup>	28.8 Power mW
	25.5 26 23.5 <b>802.11n 40N</b> Power Setting <sup>2</sup> 22.5	2412 2437 2462 MHz Frequency (MHz)	16.6 17.1 14.5 Output (dBm) <sup>1</sup> 14.2	45.7 <b>51.3</b> 28.2 Power mW 26.3	3.2 3.2 3.2 3.2 Antenna Gain (dBi) 3.2	Pass Pass Result Pass	19.8 20.3 17.7 EIRF dBm 17.4	0.095 0.107 0.059 Note 2 W 0.055	16.6 16.5 14.6 Output (dBm) <sup>3</sup>	28.8 Power mW 24.0
	25.5 26 23.5 <b>802.11n 40N</b> Power Setting <sup>2</sup> 22.5 26.5	2412 2437 2462 <b>MHz</b> Frequency (MHz) 2422 2437	16.6 17.1 14.5 Output (dBm) <sup>1</sup> 14.2 17.7	45.7 51.3 28.2 Power mW 26.3 58.9	3.2 3.2 3.2 3.2 Antenna Gain (dBi) 3.2 3.2	Pass Pass Result Pass Pass	19.8 20.3 17.7 EIRF dBm 17.4 20.9	0.095 0.107 0.059 Note 2 W 0.055 0.123	16.6 16.5 14.6 Output (dBm) <sup>3</sup> 13.8 16.7	44.7 28.8 Power mW 24.0 46.8

limit becomes -30dBc.

Note 1:

Note 2:

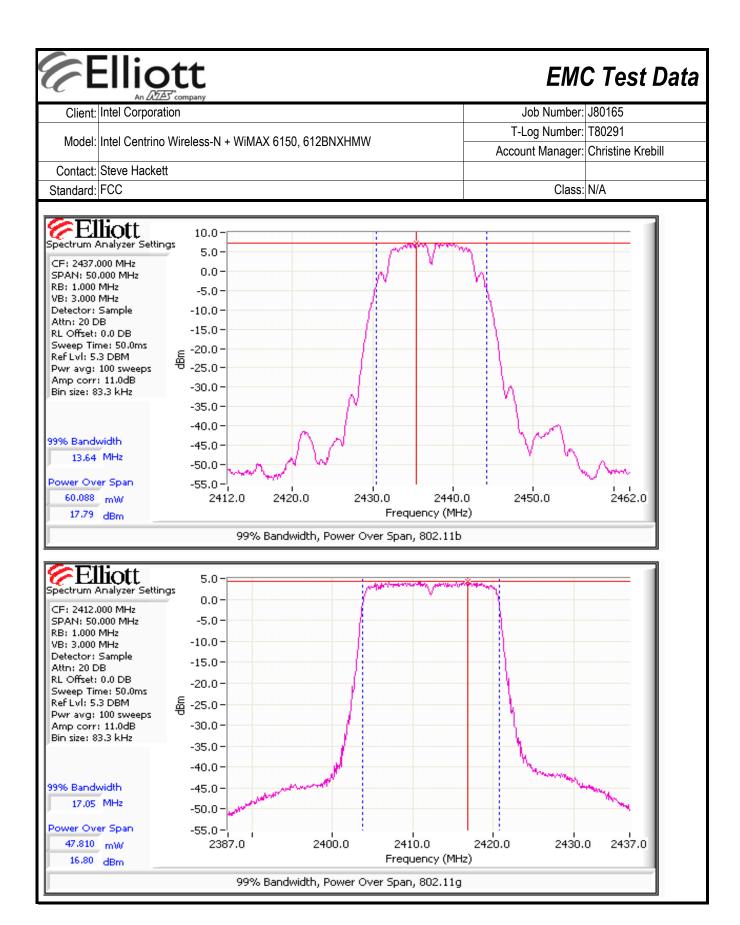
Note 3:

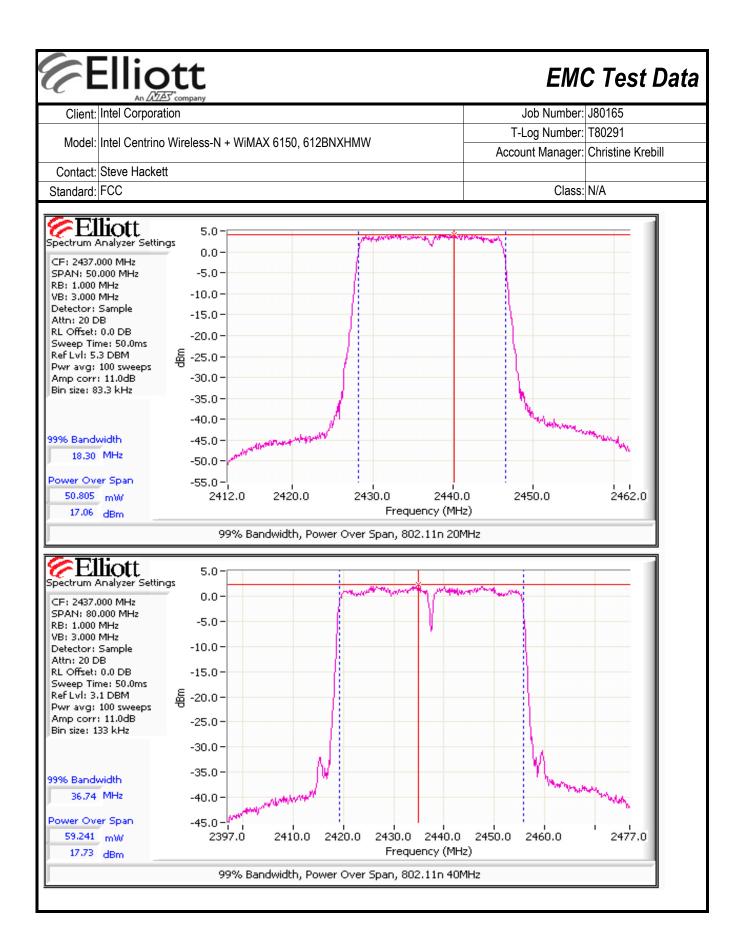
Power setting - the software power setting used during testing, included for reference only.

Power measured using average power meter and is included for reference only

Output power measured using a spectrum analyzer (see plots below) with RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 40 MHz for 20MHz channels and 80 MHz for

40MHz channels (option #2, method 1 in KDB 558074, equivalent to method 1 of DA-02-2138A1 for U-NII devices). Spurious

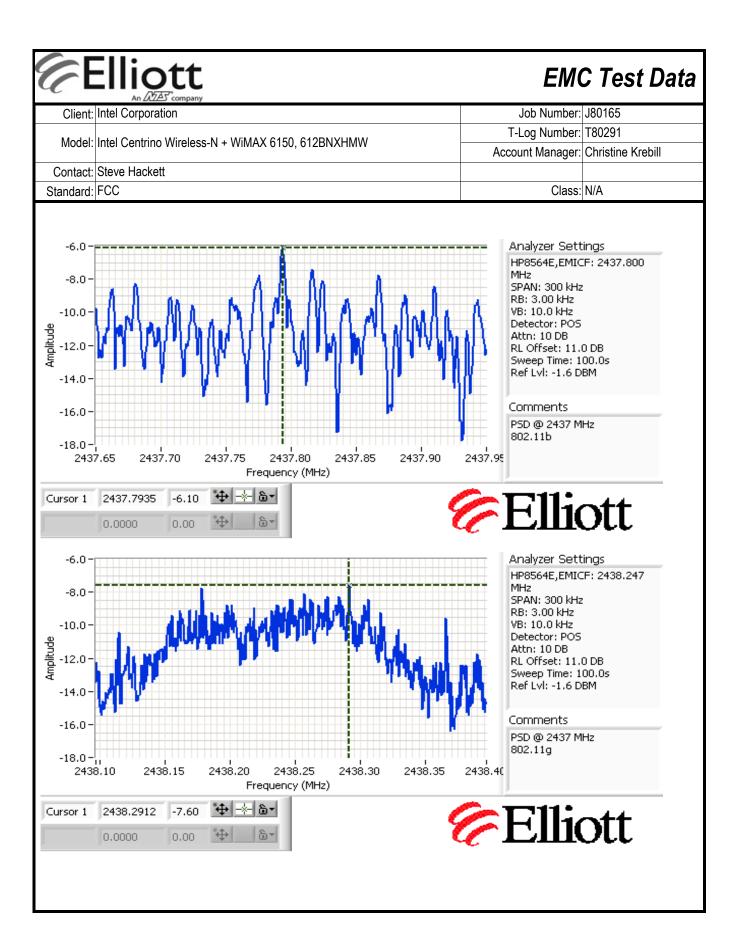


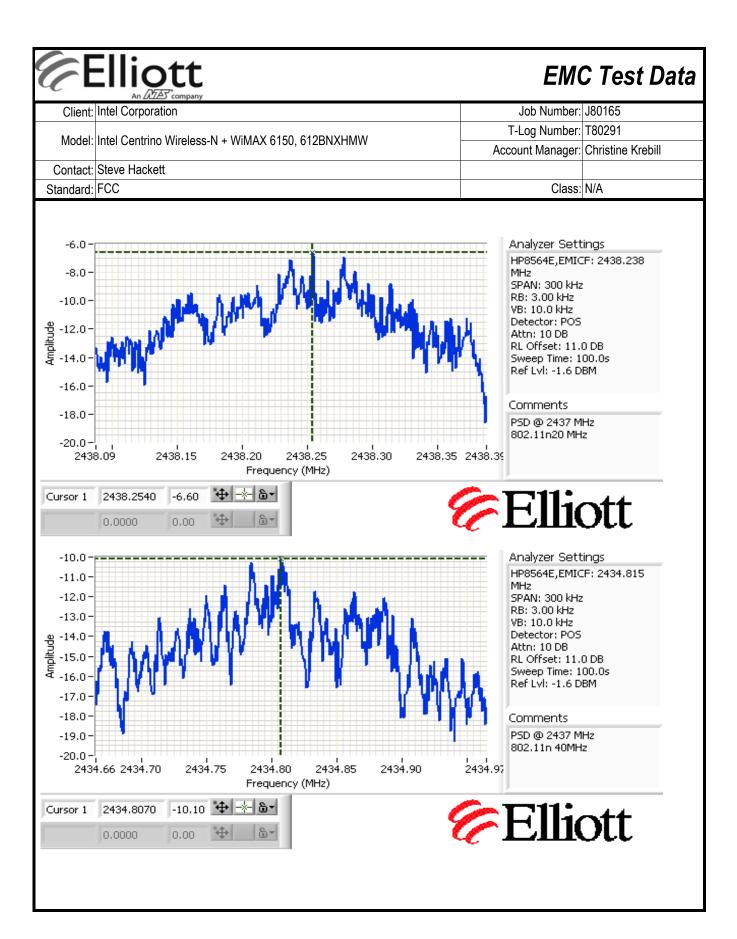


	Elliott An WAS company				EMO	C Test Dat
Client:	Intel Corporation				Job Number:	J80165
					T-Log Number:	T80291
Model:	Intel Centrino Wireless-N	+ WiMAX 6150, 612BN	XHMW		Account Manager:	Christine Krebill
Contact:	Steve Hackett					
Standard:	FCC				Class:	N/A
Run #2: Po 802.11b	wer spectral Density					
Power	Frequency (MHz)	PSD	Limit	Result		
Setting	, , ,	(dBm/3kHz) Note 1	dBm/3kHz			
21.5	2412	-6.6	8.0	Pass		
22	2437	-6.1	8.0	Pass		
21.5	2462	-7.1	8.0	Pass		
302.11g						
Power	Frequency (MHz)	PSD	Limit	Result		
Setting	1 requericy (Wil 12)	(dBm/3kHz) Note 1	dBm/3kHz			
25.5	2412	-7.9	8.0	Pass		
26	2437	-7.6	8.0	Pass		
24	2462	-9.8	8.0	Pass		
302.11n 20l	ИHz					
Power	Frequency (MHz)	PSD	Limit	Result		
Setting	, , ,	(dBm/3kHz) Note 1	dBm/3kHz			
25.5	2412	-9.4	8.0	Pass		
26	2437	-6.6	8.0	Pass		
23.5	2462	-11.6	8.0	Pass		
302.11n 40l	ИHz					
Power	Frequency (MHz)	PSD	Limit	Result		
Setting	, , ,	(dBm/3kHz) Note 1	dBm/3kHz			
22.5	2422	-13.4	8.0	Pass		
26.5	2437	-10.1	8.0	Pass		
20.5	2452	-17.3	8.0	Pass		

Note 1:

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





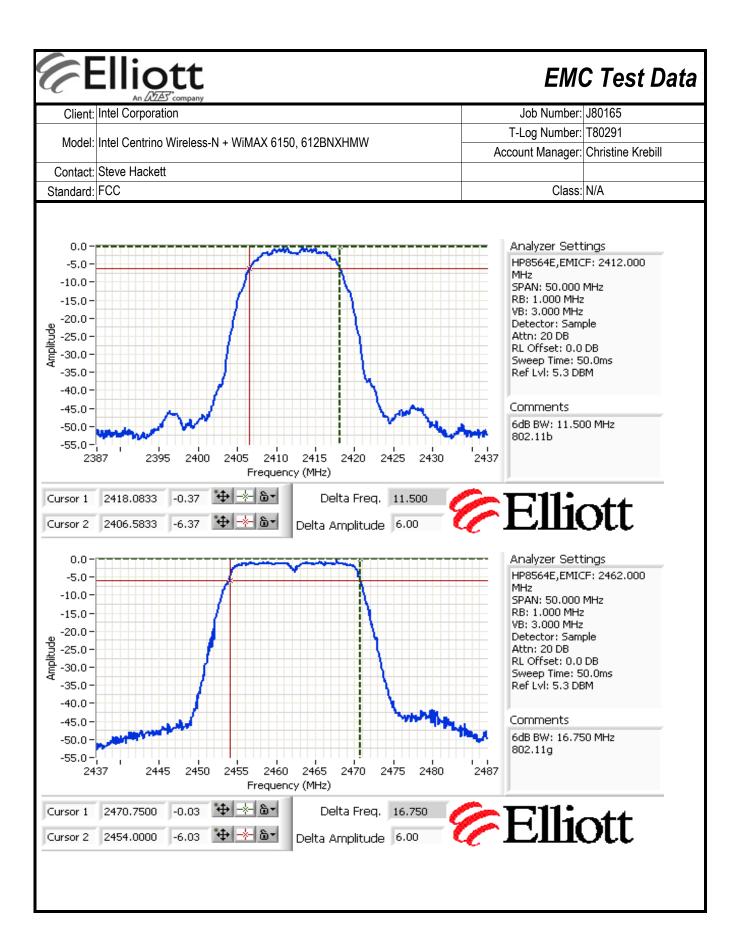
	Eliott An Wies company	ЕМО	C Test Data
Client:	Intel Corporation	Job Number:	J80165
Madal	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
woder.		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

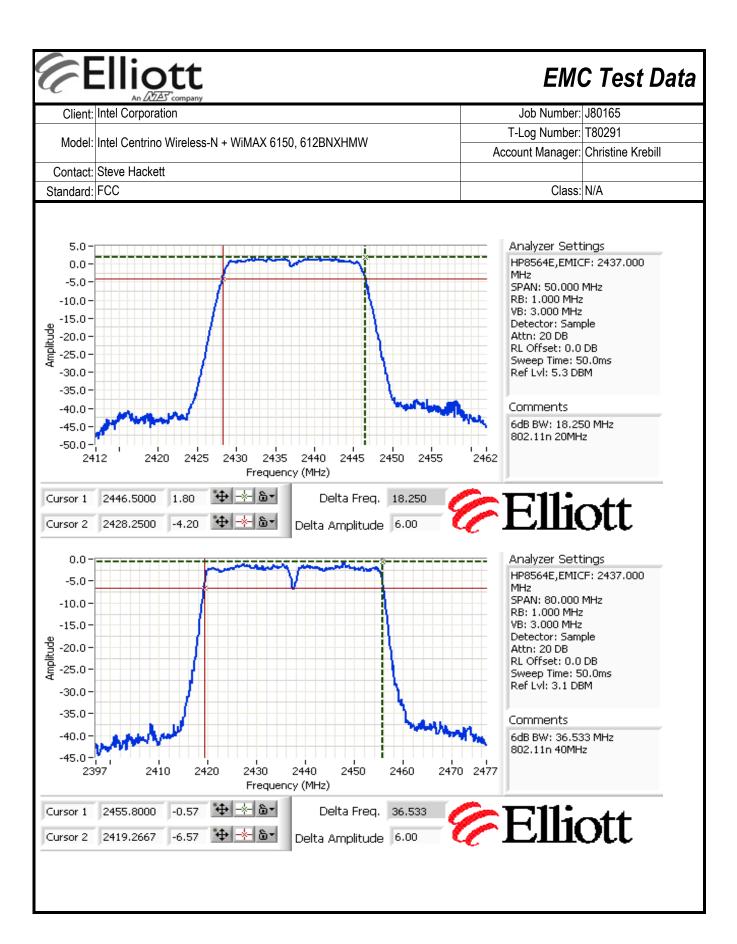
#### Run #3: Signal Bandwidth

Note 1:

Mode	Power	Frequency (MHz)	Resolution	Bandwid	th (MHz)
Mode	Setting	riequency (IVII IZ)	Bandwidth	6dB	99%
802.11b	21.5	2412	100kHz	11.5	13.6
802.11b	22	2437	100kHz	11.7	13.6
802.11b	21.5	2462	100kHz	11.5	13.7
802.11g	25.5	2412	100kHz	17.1	17.1
802.11g	26	2437	100kHz	17	17.1
802.11g	24	2462	100kHz	16.8	17.1
802.11n20	25.5	2412	100kHz	18.3	18.4
802.11n20	26	2437	100kHz	18.3	18.3
802.11n20	23.5	2462	100kHz	18.3	18.4
802.11n40	22.5	2422	100kHz	36.7	36.7
802.11n40	26.5	2437	100kHz	36.5	36.7
802.11n40	20.5	2452	100kHz	36.8	36.7
		Minimum 6d	B bandwidth:	11.5	

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







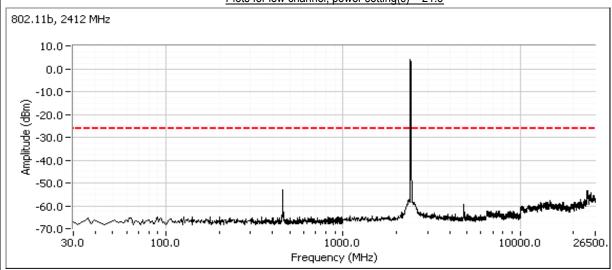
## **EMC Test Data**

Client:	Intel Corporation	Job Number:	J80165
Madal	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
woder.	IIILEI CETILITIO VVIIEIESS-IN + VVIIVIAA 0130, 012BINATIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

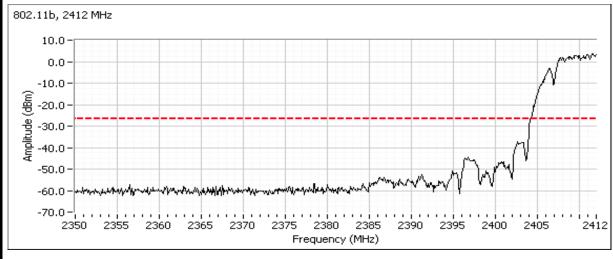
#### Run #4: Out of Band Spurious Emissions

Mode	Frequency (MHz)	Limit	Result
	2412	-30dBc	Pass
802.11b	2437	-30UDC	Pass
	2462		Pass

Plots for low channel, power setting(s) = 21.5

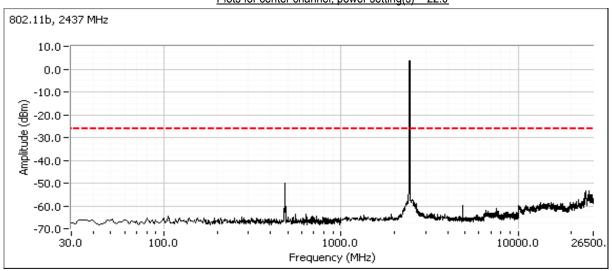


Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

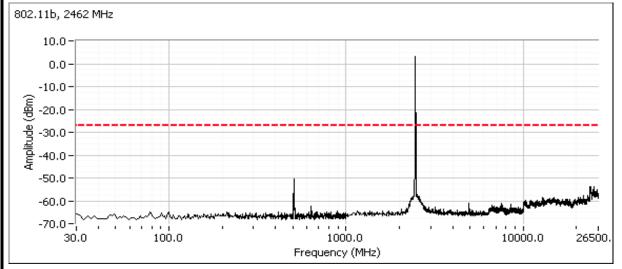


Elliott An WESt company		EMC Test I	
Client:	Intel Corporation	Job Number:	J80165
Model	Intel Centrine Wireless N. WiMAY 6150 612DNYUMW	T-Log Number:	T80291
wodei.	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

#### Plots for center channel, power setting(s) = 22.0



#### Plots for high channel, power setting(s) = 21.5

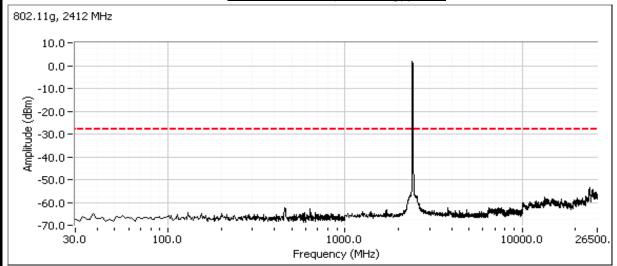


## **EMC Test Data**

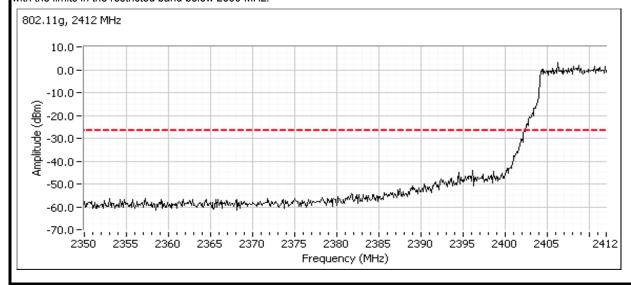
Client:	Intel Corporation	Job Number:	J80165
Model: Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW		T-Log Number:	T80291
Model:	IIIILEI CETILIIIO VVIIEIESS-IV + VVIIVIAA 0130, 012BIVARIIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

Mode	Frequency (MHz)	Limit	Result
	2412	-30dBc	Pass
802.11g	2437	-30UDC	Pass
	2462		Pass

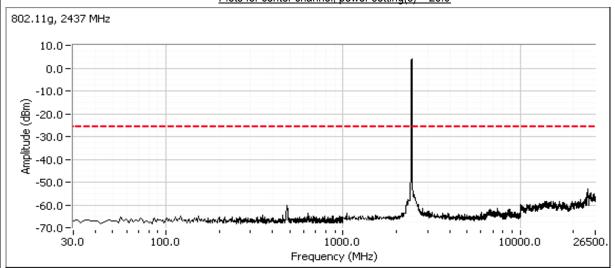
#### Plots for low channel, power setting(s) = 25.5



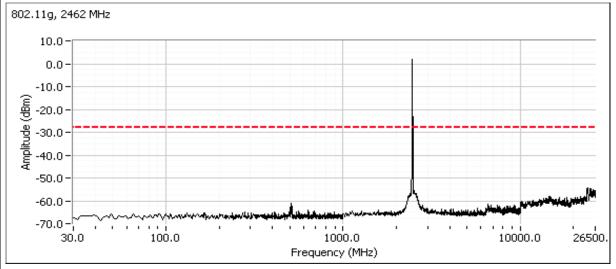
Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



Elliott An AZES company		ЕМО	C Test Data
	Intel Corporation	Job Number:	J80165
Madali	Intel Centrine Windows N WIMAY C450, C40DNVIIMAN	T-Log Number: T80291	T80291
wodei.	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A
	Plots for center channel, power setting(s) =	26.0	



#### Plots for high channel, power setting(s) = 24.0

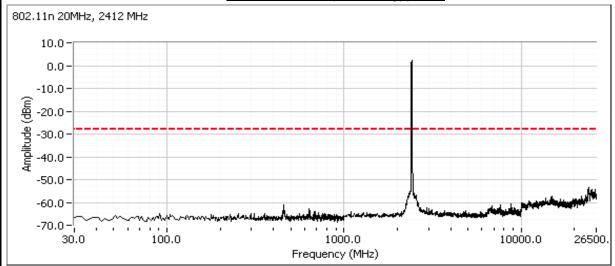


## **EMC Test Data**

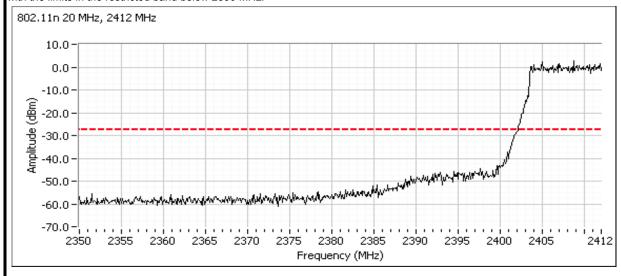
Client:	Intel Corporation	Job Number:	J80165
Model: Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW		T-Log Number:	T80291
Model:	IIIILEI CETILIIIO VVIIEIESS-IV + VVIIVIAA 0130, 012BIVARIIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

Mode	Frequency (MHz)	Limit	Result
802.11n	2412	-30dBc	Pass
20MHz	2437	-30000	Pass
ZUIVI⊓Z	2462		Pass

#### Plots for low channel, power setting(s) = 25.5

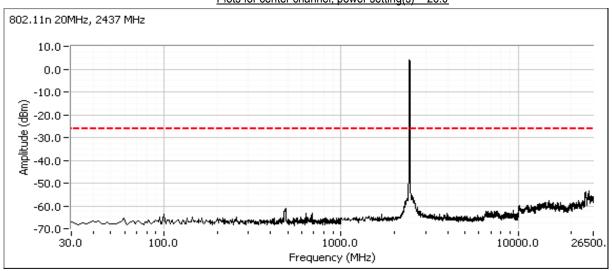


Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

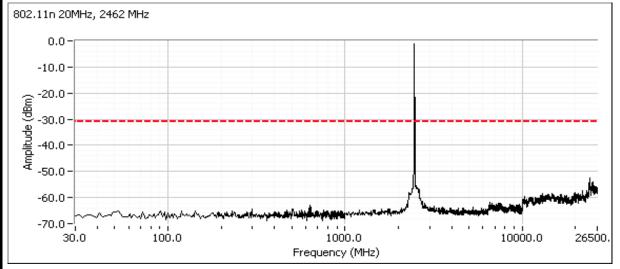


Elliott An WAS company		ЕМО	C Test Data
Client:	Intel Corporation	Job Number:	J80165
Madal	Intel Contrine Mireless N. MIMAY CAFO CARDNY IMM	T-Log Number:	T80291
woder.	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

#### Plots for center channel, power setting(s) = 26.0



#### Plots for high channel, power setting(s) = 23.5

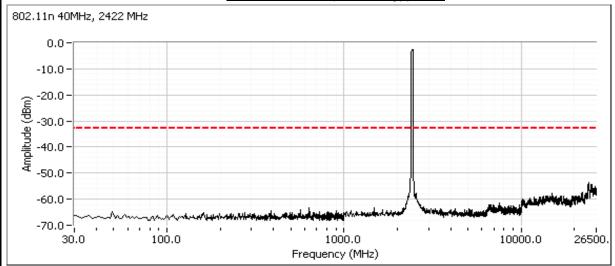


## **EMC Test Data**

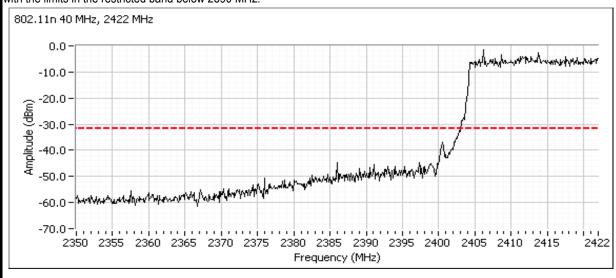
Client:	Intel Corporation	Job Number:	J80165
Model: Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW		T-Log Number:	T80291
Model:	IIIILEI CETILIIIO VVIIEIESS-IV + VVIIVIAX 0130, 012BIVATIIVIVV	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A

Mode	Frequency (MHz)	Limit	Result
802.11n	2422	-30dBc	Pass
40MHz	2437	-30000	Pass
40IVI⊓Z	2452		Pass

#### Plots for low channel, power setting(s) = 22.5

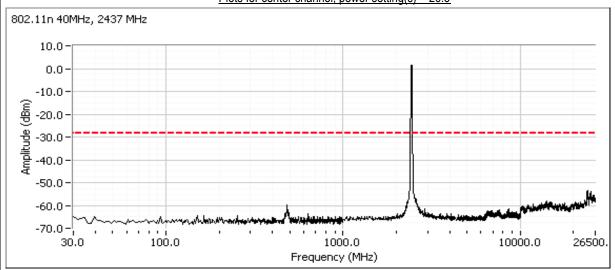


Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

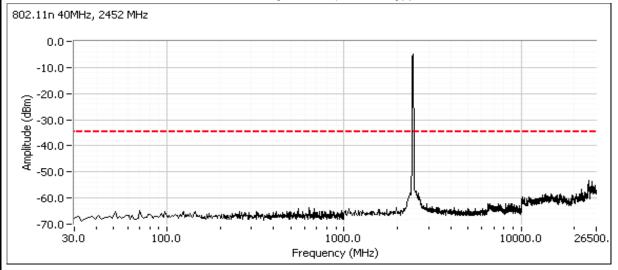


EMC Test		C Test Data	
	Intel Corporation	Job Number:	J80165
Madalı	Intel Centrine Wireless N. WIMAY 6150, 612DNYLIMM	T-Log Number:	T80291
wodei.	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC	Class:	N/A
Standard:	FCC	Class:	N/A

#### Plots for center channel, power setting(s) = 26.5



#### Plots for high channel, power setting(s) = 20.5



Elliott An WIA' company	EMC Test Data
Client: Intel Corporation	Job Number: J80165
Model: Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number: T80291
Model. Ilitel Celitillo Wileless-IN + WIMAX 0130, 012DIXANIMW	Account Manager: Christine Krebill
Contact: Steve Hackett	

### **Conducted Emissions (PC Peripheral)**

Class: B

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

#### **Test Specific Details**

Standard: FCC

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: 9/13/2010 Config. Used: EUT installed in test fixture

Test Engineer: Mehran Birgani Config Change: -

Test Location: Chamber #5 Host Unit Voltage 120V/60Hz

#### **General Test Configuration**

The host system was located on a wooden table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment.

Ambient Conditions: Temperature: 20-25 °C

Rel. Humidity: 30-40 %

#### Summary of Results

MAC Address: 4025C20027A4 DRTU Tool Version 1.12.10-0194 Driver version 14.0.0.39

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power,120V/60Hz	FCC 15.207	PASS	22.6dBµV @ 9.900MHz (-27.4dB)

#### Modifications Made During Testing

No modifications were made to the EUT during testing

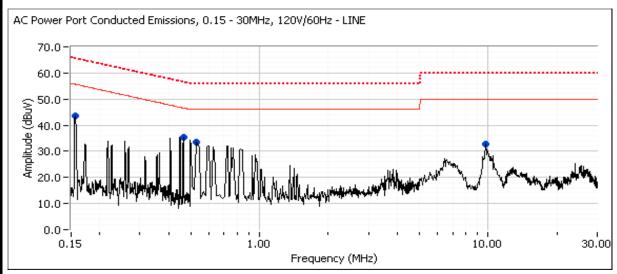
#### **Deviations From The Standard**

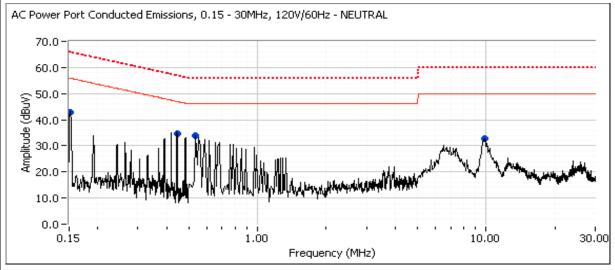
No deviations were made from the requirements of the standard.

EUT was set to transmit with power level of 18.0dBm at center channel.

Elliott An ATAS company		EMC Test Dat	
Client: Intel Corpora		Job Number:	J80165
Madali Intal Cantrina	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW	T-Log Number:	T80291
woder. Inter Centrino		Account Manager:	Christine Krebill
Contact: Steve Hacke	tt		
Standard: FCC		Class:	В

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





Client:	Intel Corpora	ation					Job Number:	J80165
							T-Log Number:	T80291
Model:	Intel Centrino Wireless-N + WiMAX 6150, 612BNXHMW						Account Manager:	
	Steve Hackett							
Standard:	: FCC						Class:	В
un #1: AC	Power Port	Conducted	Emissions,	0.15 - 30MH	z, 120V/60H	z		
reliminary	neak readir	nas capture	d during pre	-scan (peak	readings v	s. average limit	1	
requency	Level	AC		CC 15.207)		Comments		
MHz	dΒμV	Line	Limit	Margin	QP/Ave			
0.499	35.0	Line	46.0	-11.0	Peak			
0.466	35.5	Line	46.6	-11.1	Peak			
0.154	43.4	Line	55.7	-12.3	Peak			
0.520	33.7	Neutral	46.0	-12.3	Peak			
0.446	34.6	Neutral	47.0	-12.4	Peak			
0.532	33.6	Line	46.0	-12.4	Peak			
0.150	43.0	Neutral	55.9	-12.9	Peak			
9.900	32.9	Neutral	50.0	-17.1	Peak			
9.853	32.6	Line	50.0	-17.4	Peak			
inal quasi	-peak and av	verage readi AC		CC 15.207)	Detector	Comments		
				N / i -	QP/Ave			
MHz	dΒμV	Line	Limit	Margin				
MHz 0.150	dΒμV 36.4	Neutral	66.0	-29.6	QP			
MHz 0.150 0.150	dBμV 36.4 13.2		66.0 56.0	-29.6 -42.8	QP AVG			
MHz 0.150 0.150 0.154	dBμV 36.4 13.2 34.8	Neutral	66.0 56.0 65.8	-29.6 -42.8 -31.0	QP AVG QP			
MHz 0.150 0.150 0.154 0.154	dBμV 36.4 13.2 34.8 12.9	Neutral Neutral Line Line	66.0 56.0 65.8 55.8	-29.6 -42.8 -31.0 -42.9	QP AVG QP AVG			
0.150 0.150 0.154 0.154 0.446	dBμV 36.4 13.2 34.8 12.9 28.0	Neutral Neutral Line Line Neutral	66.0 56.0 65.8 55.8 56.9	-29.6 -42.8 -31.0 -42.9 -28.9	QP AVG QP AVG QP			
MHz 0.150 0.150 0.154 0.154 0.446 0.446	dBμV 36.4 13.2 34.8 12.9 28.0 7.8	Neutral Neutral Line Line Neutral Neutral	66.0 56.0 65.8 55.8 56.9 46.9	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1	QP AVG QP AVG QP AVG			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8	Neutral Neutral Line Line Neutral Neutral Line	66.0 56.0 65.8 55.8 56.9 46.9 56.6	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8	QP AVG QP AVG QP AVG QP			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.466	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6	Neutral Neutral Line Line Neutral Neutral Line Line Line	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0	QP AVG QP AVG QP AVG QP AVG AVG			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.466 0.499	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6 27.3	Neutral Neutral Line Line Neutral Neutral Line Line Line Line	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6 56.0	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0 -28.7	QP AVG QP AVG QP AVG QP AVG QP AVG QP			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.466 0.499 0.499	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6 27.3	Neutral Neutral Line Line Neutral Neutral Line Line Line Line Line Line	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6 56.0 46.0	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0 -28.7 -38.9	QP AVG QP AVG QP AVG QP AVG QP AVG AVG			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.466 0.499 0.499	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6 27.3 7.1 26.7	Neutral Neutral Line Line Neutral Neutral Line Line Line Line Line Neutral	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6 56.0 46.0 56.0	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0 -28.7 -38.9 -29.3	QP AVG QP AVG QP AVG QP AVG QP AVG QP AVG QP			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.466 0.499 0.499 0.520 0.520	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6 27.3 7.1 26.7 6.9	Neutral Neutral Line Line Neutral Neutral Line Line Line Line Line Neutral Neutral	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6 56.0 46.0 56.0	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0 -28.7 -38.9 -29.3 -39.1	QP AVG			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.499 0.520 0.520 0.532	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6 27.3 7.1 26.7 6.9 26.7	Neutral Neutral Line Line Neutral Neutral Line Line Line Line Line Neutral Neutral Neutral	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6 56.0 46.0 56.0 46.0	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0 -28.7 -38.9 -29.3 -39.1 -29.3	QP AVG			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.499 0.520 0.520 0.532 0.532	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6 27.3 7.1 26.7 6.9 26.7 6.8	Neutral Neutral Line Line Neutral Neutral Line Line Line Line Line Line Line Neutral Neutral Neutral Neutral Neutral	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6 56.0 46.0 56.0 46.0 56.0	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0 -28.7 -38.9 -29.3 -39.1 -29.3 -39.2	QP AVG			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.499 0.499 0.520 0.520 0.532 0.532 9.853	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6 27.3 7.1 26.7 6.9 26.7 6.8	Neutral Neutral Line Line Neutral Neutral Line Line Line Line Line Line Line Neutral Neutral Neutral Line Line Line	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6 56.0 46.0 56.0 46.0 56.0 46.0	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0 -28.7 -38.9 -29.3 -39.1 -29.3 -39.2 -28.6	QP AVG AVG QP AVG AVG			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.499 0.520 0.520 0.520 0.532 0.532 9.853 9.853	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6 27.3 7.1 26.7 6.9 26.7 6.8 21.4 27.1	Neutral Neutral Line Line Neutral Neutral Line Line Line Line Line Line Line Line	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6 56.0 46.0 56.0 46.0 56.0 60.0	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0 -28.7 -38.9 -29.3 -39.1 -29.3 -39.2 -28.6 -32.9	QP AVG QP			
MHz 0.150 0.150 0.154 0.154 0.446 0.446 0.466 0.499 0.499 0.520 0.520 0.532 0.532 9.853	dBμV 36.4 13.2 34.8 12.9 28.0 7.8 27.8 7.6 27.3 7.1 26.7 6.9 26.7 6.8	Neutral Neutral Line Line Neutral Neutral Line Line Line Line Line Line Line Neutral Neutral Neutral Line Line Line	66.0 56.0 65.8 55.8 56.9 46.9 56.6 46.6 56.0 46.0 56.0 46.0 56.0 46.0	-29.6 -42.8 -31.0 -42.9 -28.9 -39.1 -28.8 -39.0 -28.7 -38.9 -29.3 -39.1 -29.3 -39.2 -28.6	QP AVG AVG QP AVG AVG			