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EMC Test Report

Application for Grant of Equipment Authorization

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

Model: 3160NGW

IC CERTIFICATION #: FCC ID:	1000M-3160NG PD93160NG and PD93160NGU
APPLICANT:	Intel Mobile Communications 100 Center Point Circle, Suite 200 Columbia, SC 29210, USA
TEST SITE(S):	National Technical Systems - Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
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REVISION HISTORY

Rev#	Date	Comments	Modified By
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SCOPE

An electromagnetic emissions test has been performed on the Intel Mobile Communications models 3160NGW, pursuant to the following rules:

Industry Canada RSS-Gen Issue 3

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

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

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

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

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

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

OBJECTIVE

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

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

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

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

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

STATEMENT OF COMPLIANCE

The tested sample(s) of Intel Mobile Communications model 3160NGW complied with the requirements of the following regulations:

Industry Canada RSS-Gen Issue 3

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

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

The test results recorded herein are based on a single type test of Intel Mobile Communications models 3160NGW and therefore apply only to the tested sample(s). The sample(s) were selected and prepared by Stephen Hackett of Intel Mobile Communications.

DEVIATIONS FROM THE STANDARDS

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

TEST RESULTS SUMMARY

FCC	RSS	Description	Measured Value /	Limit / Requirement	Result
Rule Part	Rule Part	Description	Comments	Emilt / Requirement	Result
			Basic Rate: 0.960	Channel snacing >	
15.247	RSS 210	20dB Bandwidth	MHz	2/3rds of 20dB	Complies
(a) (1)	A8.1 (1)		EDR: 1.48 MHz	2/3108 01 200D	
		Channel Separation	1.0 MHz	Danuwiuun	Complies
15 247	DCC 210	Channel Dwell Time	< 0.4 second within a	< 0.4 second within a	
15.247	KSS 210	(average time of	period of 0.4 x	period of 0.4 x	Complies
(a)(1)(11)	A8.1 (4)	occupancy)	number of channels	number of channels	-
15.247	RSS 210	Number of Channels	Min: 20	15	Comulias
(a) (1) (iii)	A8.1 (4)	Number of Channels	Max: 79	15 of more	Complies
			The system uses the		
15 247	DCC 210		BlueTooth algorithm	All channels shall,	
15.24/	KSS 210	Channel Utilization	and, therefore, meets	on average, be used	Complies
(a) (1)	A8.1 (1)		all requirements for	equally	1
			channel utilization.	1 5	
			Basic rate: 6.7 dBm	0.125Watt	
15.247 (b)	RSS 210	Output Power	EDR: 0.0 dBm	0.125 Wall,	Constitut
(3)	A8.4 (2)	(multipoint systems)		EIRP limited to 0.5	Complies
			$EIRP = 0.0097 W^{Note 1}$	watts	
15.247(a)	RSS 210	Spurious Emissions –	All spurious	< 20 dD a	Complian
13.247(0)	A8.5	30MHz – 25GHz	emissions < -20dBc	< -200bc	Complies
15.247(a)	RSS 210	Radiated Spurious	47.7 dBµV/m @	15.209 in restricted	
15.24/(c)/	A8.5	Emissions 30MHz -	4960.0 MHz	bands, all others	Complies
13.209	Table 2, 3	25GHz	(-6.3 dB)	< -20dBc	_
15.247	RSS 210	Dessiver has dest 141	Refer to operational	Shall match the	Complice
(a) (1)	A8.1(2)	Receiver bandwidth	description, Page 2	channel bandwidth	Complies
Note 1: EIRP	calculated usin	g antenna gain of 3.2 dBi		•	

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

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Not applicable as antennas are integral in host systems	Unique or integral antenna required	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	50.6 dBµV @ 0.208 MHz (-12.7 dB)	Refer to page 18	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	Refer to User Manual for details	Statement required regarding non- interference	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	No detachable antenna	Statement for products with detachable antenna	Complies
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	Basic Rate: 889 kHz EDR: 1.363 MHz	Information only	N/A

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

ADDITIONAL MEASUREMENTS

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

DTS (Wi-Fi in 2.4GHz and 5.8GHz bands) and Bluetooth					
FCC Rule	RSS	Description	Measured Value /	Limit / Requirement	Result
Part	Rule part	Description	Comments	Linit / Kequitement	(margin)
			52.9 dBµV/m @	15.209 in restricted	
15.209	RSS 210	Spurious emissions	4823.9 MHz	bands, all others	Complies
			(-1.1 dB)	< -20dBc	

LELAN/NII (Wi-Fi in 5150-5350/5470-5725MHz bands) and Bluetooth						
FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)	
15.209	RSS 210	Spurious emissions	50.8 dBµV/m @ 4960.0 MHz (-3.2 dB)	15.209 in restricted bands, all others < -20dBc	Complies	
Note: Highest observed emissions above were actually second harmonic of 802.11 signal and not an inter- modulation product, but this was the highest level signal observed with both Bluetooth and Wi-Fi transmitters operational simultaneously.						

MEASUREMENT UNCERTAINTIES

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

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF power, conducted (power meter)	dBm	25 to 7000 MHz	$\pm 0.52 \text{ dB}$
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	$\pm 2.5 \text{ dB}$
Radiated emission (field strength)	dBµV/m	25 to 1000 MHz 1000 to 40000 MHz	$\frac{\pm 3.6 \text{ dB}}{\pm 6.0 \text{ dB}}$
Conducted Emissions (AC Power)	dBµV	0.15 to 30 MHz	± 2.4 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Intel Mobile Communications model 3160NGW is M.2 (Next Generation Form Factor) IEEE 802.11a/b/g/n/ac wireless network adapter module that supports 1x1 (SISO) operation and Bluetooth operation in Basic Rate, Enhanced Data Rate and Low Energy modes.

The card is sold under two different FCC ID numbers (see table below). The ID ending in "U" is intended to allow user install conditions and host systems must be provided with a BIOS lock feature that prevents installation of unauthorized devices.

For radio testing purposes the card was installed in a test fixture that exposed all sides of the card. For digital device testing for certification under equipment code JBP the card was installed in a test fixture external to the PC.

The samples were received on May 20, 2013 and tested on May 30, 31, June 1, 2, 3, 4 and 5, 2013. The samples tested are as follows:

Company	Model	Description	Serial Number	FCC ID
Intel Mobile Communications	3160NGW	Bluetooth / IEEE 802.11a/b/g/n wireless network adapter module	BD5C22 or BD5C54	PD93160NG PD93160NGU 1000M-3160NG

ANTENNA SYSTEM

The EUT antenna is a two-antenna PIFA antenna system – Shanghai Universe Communication Electron Co., Ltd. One antenna is used for WiFi operation and one for Bluetooth operation.

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

ENCLOSURE

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

MODIFICATIONS

No modifications were made to the EUT during the time the product was at National Technical Systems - Silicon Valley.

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Intel Mobile Communications	HMC-NGFF Extension REV.01	Extender board	-	N/A
Dell	Latitude D520	Laptop PC	HM9383J	N/A
		or		
Dell	Latitude E5400	Laptop PC	GFZW54J	N/A

EUT INTERFACE PORTS

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

Dert	Composted To	Cable(s)		
Роп	Connected 10	Description	Shielded or Unshielded	Length(m)
Laptop Mini PCIe slot	Extender Board PCle	Ribbon	Unshielded	0.8

EUT OPERATION

The EUT was installed into a test fixture that exposed all sides of the card. The test fixture interfaced to a laptop computer for power and control. The laptop computer was used to configure the EUT to continuously transmit at a specified output power on the channel specified in the test data. For transmit mode measurements the system was configured to operate in each of the available operating modes – 802.11b, 802.11g, 802.11n (20 MHz and 40 MHz channel bandwidths), 802.11ac (20, 40 and 80 MHz channel bandwidths), Bluetooth 1Mb/s and Bluetooth 3Mb/s. In addition radiated spurious tests were repeated with the device operating in both Bluetooth and 802.11 modes to determine if any spurious emissions due to intermodulation products were created.

The data rates used for all tests were the lowest data rates for each 802.11 mode – 1Mb/s for 802.11b, 6Mb/s for 802.11a and 802.11g, 6.5MB/s for 802.11n20, and 13 Mb/s for 802.11n40 except 802.11ac80 mode was tested at 390Mb/s. The device operates at its maximum output power at the lowest data rate except for 802.11ac80 mode (this was confirmed through separate measurements – refer to test data for actual measurements). Bluetooth operation was evaluated at both 1Mb/s and 3Mb/s data rates. 2Mb/s data rate was found, through preliminary testing, to produce emissions similar to those for 3Mb/s. The PC was using the Intel test utility DRTU Version 1.6.1-628 and the device driver was version 16.0.0.49.

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.

Cito	Registratio	Location	
Sile	FCC	Canada	Location
Chamber 4	211948	2845B-4	41039 Boyce Road
Chamber 7	A2LA accreditation	2845B-7	Fremont, CA 94538-2435

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

CONDUCTED EMISSIONS CONSIDERATIONS

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

RADIATED EMISSIONS CONSIDERATIONS

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

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

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

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

INSTRUMENT CONTROL COMPUTER

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

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

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

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

FILTERS/ATTENUATORS

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

ANTENNAS

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

ANTENNA MAST AND EQUIPMENT TURNTABLE

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

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

INSTRUMENT CALIBRATION

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

TEST PROCEDURES

EUT AND CABLE PLACEMENT

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

CONDUCTED EMISSIONS

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



Figure 1 Typical Conducted Emissions Test Configuration

RADIATED EMISSIONS

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

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

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

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



Typical Test Configuration for Radiated Field Strength Measurements



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

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



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

CONDUCTED EMISSIONS FROM ANTENNA PORT

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



Test Configuration for Antenna Port Measurements

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

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

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

BANDWIDTH MEASUREMENTS

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

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

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

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

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

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

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

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands¹ (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

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

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

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

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

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

OUTPUT POWER LIMITS - FHSS SYSTEMS

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

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

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

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

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

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

 $R_r =$ Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

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

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

where P is the eirp (Watts)

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

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

Manufacturer Radiated Emissions, 1	Description 000 - 40,000 MHz, 30-May-13	Model	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	263	3/27/2014
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	8/23/2014
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/9/2014
Hewlett Packard	Head (Inc flex cable, (1742 1743) Blue)	84125C	1620	5/15/2014
Hewlett Packard	High Pass filter, 8.2 GHz (Purple System)	P/N 84300-80039	1767	12/5/2013
A. H. Systems Micro-Tronics	Spare System Horn, 18-40GHz Band Reject Filter, 2400-2500 MHz	SAS-574, p/n: 2581 BRM50702-02	2162 2249	6/8/2013 10/11/2013
Radiated Emissions, 1	000 - 25,000 MHz, 31-May-13			
Hewlett Packard	Microwave Preamplifier, 1- 26 5GHz	8449B	263	3/27/2014
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	8/23/2014
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/9/2014
Rohde & Schwarz Hewlett Packard	EMI Test Receiver, 20 Hz-7 GHz Head (Inc flex cable, (1742 1743) Blue)	ESIB7 84125C	1538 1620	12/12/2013 5/15/2014
Hewlett Packard	High Pass filter, 8.2 GHz (Purple System)	P/N 84300-80039	1767	12/5/2013
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	6/8/2013
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2013
Radiated Emissions, 1	,000 - 26,000 MHz, 01-Jun-13			
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	263	3/27/2014
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	8/23/2014
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/9/2014
Rohde & Schwarz Micro-Tronics	EMI Test Receiver, 20 Hz-7 GHz Band Reject Filter, 5470-5725	ESIB7 BRC50704-02	1538 1681	12/12/2013 8/31/2013
Micro-Tronics	Band Reject Filter, 5725-5875	BRC50705-02	1682	3/13/2014
Hewlett Packard	High Pass filter, 8.2 GHz (Purple System)	P/N 84300-80039	1767	12/5/2013
Micro-Tronics	Band Reject Filter, 5150-5350	BRC50703-02	2239	10/4/2013
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2013

Appendix A Test Equipment Calibration Data

		Re	port Date: Ji	ine 17, 2013
Manufacturer	Description	Model	<u>Asset #</u>	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-	8449B	263	3/27/2014
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	8/23/2014
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/9/2014
Rohde & Schwarz Micro-Tronics	EMI Test Receiver, 20 Hz-7 GHz Band Reject Filter, 5470-5725 MHz	ESIB7 BRC50704-02	1538 1681	12/12/2013 8/31/2013
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	3/13/2014
Hewlett Packard	High Pass filter, 8.2 GHz (Purple System)	P/N 84300-80039	1767	12/5/2013
Micro-Tronics	Band Reject Filter, 5150-5350	BRC50703-02	2239	10/4/2013
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2013
Radiated Emissions.	30 - 1.000 MHz. 02-Jun-13			
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/12/2013
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	8/9/2014
Com-Power	Preamplifier, 30-1000 MHz	PA-103A	2359	2/20/2014
Radiated Emissions, ²	1,000 - 26,000 MHz, 03-Jun-13			
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	263	3/27/2014
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	8/23/2014
Hewlett Packard	ŠpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/9/2014
Rohde & Schwarz	ÈMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/12/2013
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1681	8/31/2013
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	3/13/2014
Hewlett Packard	High Pass filter, 8.2 GHz (Purple System)	P/N 84300-80039	1767	12/5/2013
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	10/4/2013
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2013
Radio Antenna Port (F	Power and Spurious Emissions). (04-Jun-13		
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1422	1/3/2014
Rohde & Schwarz	Power Sensor 100 uW - 2 Watts (w/ 20 dB pad, SN BJ5155)	NRV-Z32	1536	12/12/2013
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	3/7/2014
Agilent Technologies	USB Average Power Sensor	U2001A	2442	12/17/2013
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	1/28/2014

Test Report Report Date: June 17, 2013

			Report Date: June 17, 2013		
Manufacturer	Description	Model	<u>Asset #</u>	Cal Due	
Conducted Emission	s - AC Power Ports, 05-Jun-13				
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	2/14/2014	
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/12/2013	
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1594	5/15/2014	

Appendix B Test Data

T92301 Pages 26 - 102



Client:	Intel	Job Number:	J91968
Model:	Intel Model 3160NGW Wireless Network Adapter	T-Log Number:	J92301
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Emissions Standard(s):	FCC 15 B, 15.247, RSS 210	Class:	В
Immunity Standard(s):	-	Environment:	-
Emissions Standard(s): Immunity Standard(s):	FCC 15 B, 15.247, RSS 210 -	Class: Environment:	B -

EMC Test Data

For The

Intel

Model

Intel Model 3160NGW Wireless Network Adapter

Date of Last Test: 6/10/2013



Client:	Intel	Job Number:	J91968
Model: Intel Model 3160NGW Wireless Network Adapter		T-Log Number:	J92301
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

FCC 15.247 FHSS - Power, Bandwidth and Conducted Spurious Emissions

Test Specific Details

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

General Test Configuration

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

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

Ambient Conditions:	Temperature:	20.5 °C
	Rel. Humidity:	36 %

Summary of Results

BT MAC Address: 001500BD5C54 DRTU Tool Version 1.6.1-628 Driver version 16.0.0.49

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Dace	Basic Rate: 6.65 dBm (0.0046W)
Ι	Odiput i owei	13.247(0)	F d S S	EDR: 0.8 dBm (0.0012W)
2	20dB Bandwidth	$15.247(_{2})$	Deee	Basic Rate: 960 kHz
Z		Banuwiutin 15.247(a)		EDR: 1480 kHz
n	00% handwidth	15.247(a)	Docc	Basic Rate: 889 kHz
Z	99% banuwiutii	10.247(d)	Pass	EDR: 1363 kHz
3	Channel Spacing	15.247(a)	Pass	1 MHz
3	Channel Occupancy	15.247(a)	Pass	Device complies with the Bluetooth
2	Number of Channels	1E 047(a)	Dees	specifications with a minimum of 20
3	Number of Charmers	15.247(a)	Pass	hopping channels
4	Conducted Spurious Emissions	15.247(a)	Pass	All emissions more than 20dB below the highest in-band signal level.

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.

FCC DA 00-705 Measurements Guidelines



N N	E ENGINEER	SUCCESS						
Client:	Intel				J	ob Number:	J91968	
Model	Intel Model 3160NGW Wireless Network Adapter			T-L	og Number:	J92301		
				I	Accou	nt Manager:	Christine Kre	bill
Contact:	Steve Hacke	ett						
Standard:	FCC 15 B, 1	5.247, RSS 210				Class:	N/A	
Run #1: Ou	Itput Power			—				
[Te	Date of Test: 6/4/2013Test Location: FT Lab 4BTest Engineer: Rafael Varelas							
For freque is 0.125 v	ency hopping vatts.	systems in the 2400-24	483.5 MHz ba	and employing less than	75 channels t	he maximun	n allowed outp	out power
N	laximum ante	enna gain: 3.2	dBi					
Mode	Channel	Frequency (MHz)	Res BW	Output Power (dBm) ¹	Output Po	ower (W)	EIRP (W) ²	
	Low	2402	1 MHz	5.18	0.00)33	0.0069	
Basic Rate	Mid	2441	1 MHz	6.12	0.00)41	0.0086	
	High	2480	1 MHz	6.65	0.00)46	0.0097	
	Low	2402	1 MHz	-0.75	0.00	800	0.0018	
EDR	Mid	2441	1 MHz	-0.02	0.00)10	0.0021	
	High	2480	1 MHz	0.80	0.00	012	0.0025	
Mal. 4	O la l		-1		D .			
Note 1:	Output powe	er measured using a pe	ак power me	ter, spurious limit is -20d	BC.		!! 4	
Note 2:	Calculated fr	om the sum of the pow	er and anten	na gain in dB. May not ex	ceed the de-	TACTO FIRD I	imit.	
µΩ. Do	aduulath Ch		a alman amad Nu	umber of Channels				
run #2: Bal	Data of Tast	anner Occupancy, Sp	acing and N		ET Lah AD			
L To	st Enginoor	0/4/2013 Dafaol Varolas		TEST LUCATION:	FT LAD 4B			
re	st Engineer:	raidei vaielas						
Mode	Channel	Frequency (MHz)	Resolution Bandwidth	20dB Bandwidth (kHz)	Resolution Bandwidth	99% Band	width (kHz)	
	Low	2402	30 kHz	960	30 kHz	8	74	
Basic Rate	Mid	2441	30 kHz	945	30 kHz	8	89	
	High	2480	30 kHz	960	30 kHz	8	84	
	Low	2402	30 kHz	1480	30 kHz	13	363	
EDR	Mid	2441	30 kHz	1480	30 kHz	13	353	
	High	2480	30 kHz	1470	30 kHz	13	863	
Note 1:	20dB bandw	idth measured using R	B = 30kHz, V	B = 100kHz (VB > RB)				
Note 2:	99% bandwi	dth measured using RE	3 = 30kHz, VE	3 = 100kHz VB >=3RB)				







Run #3: Channel Occupancy and Number of Channels

Requirement: Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. (Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.)

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

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

Channel Spacing

Channel Spacing: 1000 kHz 20dB Bandwidth:

1480 kHz

The channel spacing was measured in Basic rate mode with hopping enabled - see plot below showing channel spacing: The channel spacing shall be greater than 2/3 Times the widest 20dB bandwidth as the ouput power is <0.125W.

Number of channels: 79 Max 20 Min (AFH enabled)

The number of channels was measured in Basic rate mode with hopping enabled with both the maximum (all) channels enabled and with the minimum number of channels enabled. The system shall employ a minimum of 15 hopping channels.







	E ENGINEER DOGGEDD		
Client:	Intel	Job Number:	J91968
Model:	Intel Model 3160NGW Wireless Network Adapter	T-Log Number:	J92301
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

Run #4: Antenna Conducted Spurious Emissions, 30 - 25,000 MHz.

Date of Test: 6/4/2013Test Location: FT Lab 4BTest Engineer: Rafael Varelas

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

Low channel -Basic Rate



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







High channel - Basic Rate



	NTS	EMO	C Test Data
Client:	Intel	Job Number:	J91968
Model:	Intel Model 3160NGW Wireless Network Adapter	T-Log Number:	J92301
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

Additional plot showing compliance with -20dBc limit from 2483.5 MHz to 2500 MHz. Radiated measurements used to show compliance with the limits in the restricted band Above 2483.5MHz.



Additional plots with the **hopping feature enabled** to show compliance with the -20dBc requirement at the allocated band edge. The spectrum analyzer is left in max hold mode until the trace stabilizes.

Low channel, hopping enabled - Basic Rate







Low channel - EDR (3Mb/s)




EMC Test Data

Client:	Intel	Job Number:	J91968
Model:	Intel Model 2160NCW/Wireless Network Adaptor	T-Log Number:	J92301
	Intel Nodel STOONGW WIEless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

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



Center channel - EDR (3Mb/s)





High channel - EDR (3Mb/s)



Additional plot showing compliance with -20dBc limit from 2483.5 MHz to 2500 MHz. Radiated measurements used to show compliance with the limits in the restricted band Above 2483.5MHz.





Client:	Intel	Job Number:	J91968
Model:	Intel Madel 2160NCW/ Wireless Network Adaptor	T-Log Number:	J92301
		Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

Additional plots with the **hopping feature enabled** to show compliance with the -20dBc requirement at the allocated band edge. The spectrum analyzer is left in max hold mode until the trace stabilizes.

Low channel, hopping enabled - EDR (3Mb/s)



High channel, hopping enabled - EDR (3Mb/s)





Client:	Intel	Job Number:	J91968
Model	Intel Medel 2160NGW Wireless Network Adaptor	T-Log Number:	J92301
MOUEI.	Inter Model 510010GW WIFeless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (FHSS) Radiated Spurious Emissions (Bluetooth FHSS)

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.

Ambient Conditions:	Temperature:	21.4 °C
	Rel. Humidity:	36 %

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.

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

Target power for Bluetooth is max power without exceeding 8 dBm

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
MAC Addre	ess: 001500F	3D5C22 DR	TU Tool Ver	sion 1.6.1-6.	28 Driver version 16.0.0	.49	
	<u>г</u>		0		Restricted Band Edge	FCC Part 15.209 /	40.9 dBµV/m @ 2322.0
12	'	2402	٥ 		(2390 MHz)	15.247(c)	MHz (-13.1 dB)
la	'	2402	Q	['	Radiated Emissions,	FCC Part 15.209 /	44.5 dBµV/m @ 4804.0
	j '		ð		1 -25 GHz	15.247(c)	MHz (-9.5 dB)
1h	Basic rate	2441	g		Radiated Emissions,	FCC Part 15.209 /	45.3 dBµV/m @ 4882.0
u	1Mb/s	Z44 I	0		1 - 25 GHz	15.247(c)	MHz (-8.7 dB)
	'		g		Restricted Band Edge	FCC Part 15.209 /	34.2 dBµV/m @ 2485.0
10	'	2/180	0		(2483.5 MHz)	15.247(c)	MHz (-19.8 dB)
16	'	2400	Q	ſ'	Radiated Emissions,	FCC Part 15.209 /	47.7 dBµV/m @ 4960.0
	<u> </u>		0	-	1 -25 GHz	15.247(c)	MHz (-6.3 dB)
	ſ '		Q	ſ'	Restricted Band Edge	FCC Part 15.209 /	36.6 dBµV/m @ 2322.0
22	'	2402	0	-	(2390 MHz)	15.247(c)	MHz (-17.4 dB)
Ζα	'	2402	Q	ſ'	Radiated Emissions,	FCC Part 15.209 /	38.0 dBµV/m @ 4803.9
L	j '	['	0	· · ·	1 -25 GHz	15.247(c)	MHz (-16.0 dB)
2h	EDR	2441	g	ſ <u></u> '	Radiated Emissions,	FCC Part 15.209 /	40.5 dBµV/m @ 4882.0
ZIJ	3Mb/s	2441	0	'	1 -25 GHz	15.247(c)	MHz (-13.5 dB)
	'		Q	['	Restricted Band Edge	FCC Part 15.209 /	33.5 dBµV/m @ 2483.5
20	'	2480	0	'	(2483.5 MHz)	15.247(c)	MHz (-20.5 dB)
20	'	2400	Q	['	Radiated Emissions,	FCC Part 15.209 /	36.4 dBµV/m @ 4960.0
	<u> </u>		0		1 -25 GHz	15.247(c)	MHz (-17.6 dB)
1							I

		SUCCESS						ЕМ	C Test	Data
Client:	Intel							Job Number:	J91968	
Modol	Intol Model (liroloce Notu	ork Adaptor			T-!	Log Number:	J92301	
WOUCI.						I	Αссοι	unt Manager:	Christine Kreb	oill
Contact:	Steve Hacke	ett	210					Class	ΝΙ/Λ	
Stanuaru.	FUU ID D, I	5.247, KSS	210					U1033.	N/A	
Basic										
Tx Duty Cyc	le	Period	Tx off		Duty Cycle	e Factor				
82%		3.68	0.65		1.7 dB					
EDR										
Tx Duty Cyc	le	Period	Tx off		Duty Cycle	· Factor				
82%		3.61	0.64		1.7 dB					
D #1 D			1000	25 000 MIL	2					
Run #1: Ka	idiated Spur	ious Emissi	ions, 1000 -	25,000 MHz	Operating N	lode:Basic	rate, 1Mb/s	5		
	Jale of Test:	5/30/2013	1		Ie	St Location:	FT Champ	er #4		
It	st Engineer.	Ratael vare	las							
Dun #1a⊶ I	ow Channel	_ താ / റാ MH	1-							
Rand Edge	Signal Field	© 2402 № 1 I Strenath -	Direct meas	urement of	field strenat!	h				
Frequency		Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Gommerine		
2322.020	40.9	Н	54.0	-13.1	AVG	129	1.0	POS; RB 1 I	MHz; VB: 10 H	Z
2342.220	44.8	Н	74.0	-29.2	PK	129	1.0	POS; RB 1 M	MHz; VB: 3 MF	Ηz
2322.020	38.2	V	54.0	-15.8	AVG	118	1.0	POS; RB1	MHz; <u>VB: 10 H</u>	Z
2322.020	44.1	V	74.0	-29.9	PK	118	1.0	POS; RB 1	MHz; VB: 3 MH	Ηz
RB 1	MHz; VB 10	Hz Avg (Bla	ck Trace); R	B 1MHz VB 3	3MHz Peak (Bl	ue Trace); ł	Н			
	80.0-									
	70.0-									=
i m										
렬	60.0-									-
e ()										_
ļi trīc	50.0-									-
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	40.0-	www.wthe of	- WWWWWWW	Waterganger	- Walkall March	Wenneder Unit	V VMAHA	where the second	handlight	<u>~</u>
		— <u> </u>		/	Δ		Δ			
	30.0-	/ \ · · · · ·	<u>^</u>		<u> </u>		<u> </u>			~
	2310 23	315 2320 2	2325 2330	2335 2340) 2345 2350	2355 236	50 2365 2	370 2375 2	2380 2385 2	390
					Frequency	(MHz)				
_										



Client: Intel Jot Model: Intel Model 3160NGW Wireless Network Adapter T-Log Account Contact: Steve Hackett Standard: FCC 15 B, 15.247, RSS 210 Other Spurious Emissions Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Co MHZ dBµV/m v/h Limit Margin Pk/OP/Avg degrees meters 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 Ri 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 Ri 1194.990 60.0 V 74.0 -28.8 PK 351 1.2 Ri 1599.420 45.2 V 74.0 -28.8 PK 351 1.2 Ri Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 0.0 -0.0 -0.0 -0.0 -0.0	ob Number: J91968 og Number: J92301 nt Manager: Christine Krebill
Model: Intel Model 3160NGW Wireless Network Adapter T-Loc Account Contact: Steve Hackett	og Number: J92301 nt Manager: Christine Krebill
Model Intel Model 3 formed Willerss Network Adapter Account Contact: Steve Hackett	nt Manager: Christine Krebill
Contact: Steve Hackett Standard: FCC 15 B, 15.247, RSS 210 Other Spurious Emissions Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Co MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters R 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 R 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 R 1194.990 60.0 V 74.0 -25.8 PK 206 1.0 R 1194.990 60.0 V 74.0 -28.8 PK 351 1.2 R 1599.420 45.2 V 74.0 -28.8 PK 351 1.2 R Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to 1 0.0 - - <	-
Standard: FCC 15 B, 15.247, RSS 210 Other Spurious Emissions Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Cr. MHz dBµV/m v/h Limit Margin Pk/QP/Arg degrees meters R 4803.960 48.2 V 54.0 -9.5 AVG 206 1.0 Rt 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 Rt 1194.990 60.0 V 74.0 -28.8 PK 351 1.2 Rt 1599.420 45.2 V 74.0 -28.8 PK 351 1.2 Rt Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Other Spurious Emissions Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Cd 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 Ri 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 Ri 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 Ri 1194.990 60.0 V 74.0 -124.1 AVG 351 1.2 Ri 1598.170 29.9 V 54.0 -24.1 AVG 351 1.2 Ri Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Class: N/A
Other Spurious Emissions Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Cd 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 Ri 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 Ri 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 Ri 1194.990 60.0 V 74.0 -18.6 AVG 185 1.3 Ri 1598.170 29.9 V 54.0 -24.1 AVG 351 1.2 Ri 1599.420 45.2 V 74.0 -28.8 PK 351 1.2 Ri Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 <td></td>	
Other Spurious Emissions Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Cr 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 Ri 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 Ri 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 Ri 1194.990 60.0 V 74.0 -14.0 PK 185 1.3 Ri 1598.170 29.9 V 54.0 -24.1 AVG 351 1.2 Ri Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t Note 2: 0.0	
Grine optimicus consolo Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Cr MHz dBµV/m V/h Limit Margin Pk/OP/Avg degrees meters Image: colspan="2">Meters 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 Ri 4803.960 48.2 V 74.0 -25.8 PK 206 1.0 Ri 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 Ri 1194.990 60.0 V 74.0 -14.0 PK 185 1.3 Ri 1598.170 29.9 V 54.0 -24.1 AVG 351 1.2 Ri Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t Mode 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	
MHz dBµV/m V/h Limit Margin PK/QP/Avg degrees meters 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 RI 4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 RI 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 RI 1194.990 60.0 V 74.0 -14.0 PK 185 1.3 RI 1598.170 29.9 V 54.0 -24.1 AVG 351 1.2 RI 1599.420 45.2 V 74.0 -28.8 PK 351 1.2 RI Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 0.0 -	Comments
4803.970 44.5 V 54.0 -9.5 AVG 206 1.0 RI 4803.960 48.2 V 74.0 -25.8 PK 206 1.0 RI 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 RI 1194.990 60.0 V 74.0 -14.0 PK 185 1.3 RI 1194.990 60.0 V 74.0 -14.0 PK 185 1.3 RI 1598.170 29.9 V 54.0 -24.1 AVG 351 1.2 RI 1599.420 45.2 V 74.0 -28.8 PK 351 1.2 RI Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 9 60.0 -	
4803.960 48.2 V 74.0 -25.8 PK 206 1.0 Ri 1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 Ri 1195.430 35.4 V 54.0 -14.0 PK 185 1.3 Ri 1194.990 60.0 V 74.0 -14.0 PK 185 1.3 Ri 1598.170 29.9 V 54.0 -24.1 AVG 351 1.2 Ri 1599.420 45.2 V 74.0 -28.8 PK 351 1.2 Ri Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 1599.00	RB 1 MHz;VB 10 Hz;Peak
1195.430 35.4 V 54.0 -18.6 AVG 185 1.3 RI 1194.990 60.0 V 74.0 -14.0 PK 185 1.3 RI 1598.170 29.9 V 54.0 -24.1 AVG 351 1.2 RI 1599.420 45.2 V 74.0 -28.8 PK 351 1.2 RI Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 9 60.0 -	RB 1 MHz;VB 3 MHz;Peak
1194.990 60.0 V 74.0 -14.0 PK 185 1.3 RI 1598.170 29.9 V 54.0 -24.1 AVG 351 1.2 RI 1599.420 45.2 V 74.0 -28.8 PK 351 1.2 RI Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 90 60.0 6	RB 1 MHz;VB 10 Hz;Peak
1598.17029.9V54.0-24.1AVG3511.2RI1599.42045.2V74.0-28.8PK3511.2RINote 1:For emissions in restricted bands, the limit of 15.209 was used.Note 2:Emissions not in restricted bands are measured as antenna conducted and compared to tNote 2:60.0 $0.0 - 0.0 $	RB 1 MHz;VB 3 MHz;Peak
1599.420 45.2 V 74.0 -28.8 PK 351 1.2 RI Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 80.0 - 70.0 - 70.0 - 70.0 - 60.0 - 7	RB 1 MHz;VB 10 Hz;Peak
Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 80.0 70.0 70.0 60.0 90 90 90 90 90 90 90 90 90 9	RB 1 MHz;VB 3 MHz;Peak
Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t 80.0 70.0 60.0 90 90 90 90 90 90 90 90 90 9	
Note 2: Emissions not in restricted bands are measured as antenna conducted and compared to t	
80.0 70.0 70.0 60.0 50.0 40.0 30.0 25.0 1000 Erequency (MHz)	o the out of band power limit.



Client:	Intel							Job Number:	J91968
Model	Intol Madal (iroloce Noter	T-l	og Number:	J92301			
wodel:	Intel Model 3	SIGUNGW W	Ireless Netw	ork Adapter			Accou	int Manager:	Christine Krebill
Contact:	Steve Hacke	ett							
Standard:	FCC 15 B, 1	5.247, RSS 2	210					Class:	N/A
		·							
Run #1b: C	Center Chanr	nel @ 2441 N	ЛНz						
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
4881.980	45.3	V	54.0	-8.7	AVG	255	2.0	RB 1 MHz;V	/B 10 Hz;Peak
4882.340	49.6	V	/4.0	-24.4	PK	255	2.0	RB 1 MHZ;V	/B 3 MHz;Peak
1106.610	36. I	V	54.0	-17.9	AVG	177	1.3		/B TU HZ;Peak
1507.000	00.4 21.1	V	74.0 54.0	-13.0		201	1.3		/B 3 MHZ;Peak /B 10 Hz·Doak
1596 150	53.7	V	74.0	-20.3	PK	201	1.0	RB 1 MHz·V	/B 3 MHz Peak
10701100	0011	-	7 110	2010		201			
Note 1:	For emissior	ns in restricte	d bands, the	e limit of 15.2	109 was used.				
Note 2:	Emissions n	ot in restricte	d bands are	measured a	s antenna coi	nducted and	compared t	to the out of l	band power limit.
Note 3:	Scans made	between 18	- 25 GHz wi	th the measu	urement anter	nna moved a	round the c	ard and its a	ntennas 20-50 cm from
	the device ir	idicated there	e were no sig	gnifcant emis	ssions in this f	requency rai	nge.		
Amplitude (dBuV/m)	80.0 - 70.0 - 60.0 - 50.0 - 40.0 - 40.0 - 30.0 - 25.0 - 1000	Mway	harmhri		Frequency	(MHz)		10000	18000



Client:	Intel	Job Number:	J91968
Model:	Intal Madel 2160NCW Wireless Natwork Adaptor	T-Log Number:	J92301
	inter model stooling wireless network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

Run #1c: High Channel @ 2480 MHz

Band Edge Signal Field Strength - Direct measurement of field strength												
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments				
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters					
2485.020	34.2	Н	54.0	-19.8	AVG	69	1.0	POS; RB 1 MHz; VB: 10 Hz				
2484.990	53.6	Н	74.0	-20.4	PK	69	1.0	POS; RB 1 MHz; VB: 3 MHz				
2485.020	33.8	V	54.0	-20.2	AVG	79	1.0	POS; RB 1 MHz; VB: 10 Hz				
2484.860	44.1	V	74.0	-29.9	PK	79	1.0	POS; RB 1 MHz; VB: 3 MHz				





Client:	ent: Intel							Iob Number:	191968
onorm					og Number:	J92301			
Model:	Intel Model 3	3160NGW W	ireless Netw	Account Manager: Christine Krebil		Christine Krehill			
Contact:	Steve Hacke	tt			710000				
Standard:		5 217 DSS	210					Class	ΝΙ/Λ
Stariuaru.	1 CC 15 D, 1	J.Z47, NJJ.	210					Ciass.	IN/A
Other Sp	urious Emis	sions							
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
4959.960	47.7	Н	54.0	-6.3	AVG	123	1.1	RB 1 MHz;\	/B 10 Hz;Peak
4959.630	52.4	Н	74.0	-21.6	PK	123	1.1	RB 1 MHz;\	/B 3 MHz;Peak
1198.370	35.6	V	54.0	-18.4	AVG	210	1.3	RB 1 MHz;\	/B 10 Hz;Peak
1199.240	58.0	V	74.0	-16.0	PK	210	1.3	RB 1 MHz;\	/B 3 MHz;Peak
1594.190	28.9	V	54.0	-25.1	AVG	348	2.0	RB 1 MHz;\	/B 10 Hz;Peak
1594.150	44.2	V	/4.0	-29.8	PK	348	2.0	RB 1 MHz;\	/B 3 MHz;Peak
Noto 1	Eor omissio	no in roctricto	d hands the	limit of 15 (
Note 1: Note 2:	FUL EITIISSIUL	ot in restricte	ad bands are	moasurod a	209 Was useu.	nducted and	compared	to the out of	hand nower limit
				incasurcu a			comparcu		
Amplitude (dBuV/m)	80.0 - 70.0 - 60.0 - 50.0 - 40.0 - 30.0 - 25.0 - 1000	Mumuj	hand		Frequency	(MHz)		10000	18000



Class: N/A

POS; RB 1 MHz; VB: 3 MHz RB 1 MHz; VB 10 Hz Avg (Black Trace); RB 1MHz VB 3MHz Peak (Blue Trace); H 80.0 70.0 4mplitude (dBuV/m) 60.0 50.0 40.0 Frequency (MHz)



	E ENGINEER SUCCESS		
Client:	Intel	Job Number:	J91968
Model	Intal Madal 2160NCW Wiralass Natwork Adaptar	T-Log Number:	J92301
MUUUEI.	Intel woder 3 roomdaw wireless network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

Other Spurious Emissions

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4803.920	38.0	Н	54.0	-16.0	AVG	142	1.1	RB 1 MHz;VB 10 Hz;Peak
4804.540	45.9	Н	74.0	-28.1	PK	142	1.1	RB 1 MHz;VB 3 MHz;Peak
1197.620	31.6	V	54.0	-22.4	AVG	64	1.0	RB 1 MHz;VB 10 Hz;Peak
1195.400	57.1	V	74.0	-16.9	PK	64	1.0	RB 1 MHz;VB 3 MHz;Peak
1599.100	31.3	V	54.0	-22.7	AVG	211	1.0	RB 1 MHz;VB 10 Hz;Peak
1598.490	54.3	V	74.0	-19.7	PK	211	1.0	RB 1 MHz;VB 3 MHz;Peak





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Client:	Intel							Job Number:	J91968	
Madal	listel Medal (Casless Natur	auli Aslandau			T-Log Number: J92301			
wodel:	Intel Wodel .	3160NGW W	Ireless Netwo	ork Adapter	Αссоι	unt Manager:	Christine Krebill			
Contact	Steve Hacke	tt						5		_
Standard	FCC 15 B 1	5 2/7 RSS	210				Class	ΝΙ/Δ		
Stanuaru.		J.247, NJJ.	210				01033.		_	
Dup #2h. (Contor Chan	nol@21111								
Rui #20. (Othor Sp	urique Emis	cione	VINZ							
Eroquoney		Dol	15 200	/ 15 2/7	Dotoctor	Azimuth	Hoight	Commonts		
MH ₇		r Ui v/h	l imit	Margin		dogroos	motors	Comments		
/882.010	<u>μομν/π</u> 10.5	V	54.0	-13.5	AVG	150 uegrees	1.0	RB 1 MHz·\	/R 10 Hz·Peak	
4002.010	40.J /7.Q	V	74.0	-13.5	PK	159	1.0	RB 1 MHz·\	/B 3 MHz·Peak	
1196 120	33.0	V	54.0	-20.1	AVG	169	1.0	RB 1 MHz·\	/B 10 Hz·Peak	
1195 580	52.2	V	74.0	-21.0	PK	169	1.2	RB 1 MHz·\	/B 3 MHz·Peak	
1597 960	32.2	V	54.0	-21.0	AVG	61	1.2	RB 1 MHz·\	/B 10 Hz·Peak	
1598 280	52.4	V	74.0	-21.6	PK	61	1.3	RB 1 MHz·\	/B 3 MHz·Peak	
1070.200	02.1	v	7 1.0	21.0	ΪŔ	01	1.0			
Note 1 [.]	For emission	ns in restricte	d bands the	limit of 15.2	209 was used					
Note 2:	Emissions n	ot in restricte	ed bands are	measured a	antenna co	nducted and	compared	to the out of I	pand power limit.	_
	Scans made	e between 18	- 25 GHz wi	th the meas	urement anter	nna moved a	round the c	ard and its a	ntennas 20-50 cm from	1
Note 3:	the device ir	ndicated ther	e were no sic	nifcant emi	ssions in this f	frequency rai	nae.			
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	25.0-			· · ·						
	1000				F	(64) I=1		10000	18000	
					Frequency	(MHZ)				



Client:	Intel	Job Number:	J91968
Model:	Intel Medel 2160NCW Wireless Network Adaptor	T-Log Number:	J92301
	Intel Model 310010GW WIEless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

Run #2c: High Channel @ 2480 MHz

Band Edge Signal Field Strength - Direct measurement of field strength										
Frequency	Level	Pol	15.209	15.209 / 15.247		Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
2483.500	33.5	Н	54.0	-20.5	AVG	84	1.0	POS; RB 1 MHz; VB: 10 Hz		
2484.460	50.3	Н	74.0	-23.7	PK	84	1.0	POS; RB 1 MHz; VB: 3 MHz		
2483.500	33.4	V	54.0	-20.6	AVG	66	1.0	POS; RB 1 MHz; VB: 10 Hz		
2488.760	48.7	V	74.0	-25.3	PK	66	1.0	POS; RB 1 MHz; VB: 3 MHz		





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1.0.00									
Client:	Intel							Job Number:	J91968
Modal	Intol Model 3		liroloss Notw	ork Adaptor			T-	Log Number:	J92301
wouer.				urk Auapter	Αссοι	unt Manager:	Christine Krebill		
Contact:	Steve Hacke	ett							
Standard:	FCC 15 B, 1	5.247, RSS	210					Class:	N/A
									I
Other Sp	urious Emis	sions							
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
4959.970	36.4	V	54.0	-17.6	AVG	113	1.0	RB 1 MHz;\	/B 10 Hz;Peak
4959.980	45.6	V	74.0	-28.4	PK	113	1.0	RB 1 MHz;\	/B 3 MHz;Peak
1194.670	32.0	V	54.0	-22.0	AVG	168	1.2	RB 1 MHz;\	/B 10 Hz;Peak
1195.210	50.6	V	/4.0	-23.4	PK	168	1.2	RB 1 MHz;\	/B 3 MHz;Peak
3740.200	31.3	H	54.0	-22.7	AVG	163	1.0	RB 1 MHZ;\	/B 10 Hz;Peak
3/40.950	49.5	H	/4.0	-24.5	PK	163	1.0	RB 1 MHZ;\	/B 3 MHZ;Peak
1596.200	32.9 E0.E	V	54.0	-21.1	AVG	62	1.3		/B TU HZ;Peak
1597.340	50.5	V	74.0	-23.5	PK	02	1.3	RB I WHZ;\	/B 3 MHZ;Peak
Noto 1:	Eor omission	ne in restricte	d hands the	limit of 15	00 was usod				
Note 2.	Ful enlissions n	ot in restricte	ad hands are	measured a	s antenna co	nducted and	compared	to the out of I	hand nower limit
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	70.0-			11. 1					
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	30.0-	(AND N. AND	And the second						
	25.0-								
	1000							10000	18000
					Frequency	(MHz)			



~	VE ENGINEEF	SUCCESS					
Client:	Intel			Job Number:	J91968		
Madal		21/01/01/14	Produce Nicks			T-Log Number:	J92301
Model:	Intel Model	3160NGW W	/ireless Netw	ork Adapter	-	Account Manager:	Christine Krebill
Contact:	Steve Hacke	ett					
Standard:	FCC 15 B, 1	5.247, RSS	210			Class:	N/A
	,						
	R	SS 210 a	and FCC	15.247 ([DTS) Radiated Sp	urious Emissior	IS
Test Spec	cific Detai	ls					
-	Objective:	The objective	ve of this test	session is to	perform final qualification	testing of the EUT with	respect to the
		specification					
General T The EUT an	est Config d all local su	guration pport equipn	nent were loc	ated on the t	urntable for radiated spuri	ous emissions testing.	
For radiated	emissions te	esting the me	easurement a	antenna was	located 3 meters from the	EUT.	
Ambient	Condition	S:	Т	emperature:	21.4 °C		
			R	el. Humidity:	36 %		
_							
Summary	of Result	S					
For Wi-Fi, C	Chain A is us	ed for Tx and	d Rx. For Blu	ietooth, chai	in B is used for Tx and Rx		
	ldrass: 0015	00805022		Version 1.6	1-628 Driver version 16	0 0 / 0	
	MAC Address: 001500BD5C22 DRTU Too					0.0.47	
Run #	Mode	Channel	Setting	Power	Test Performed	Limit	Result / Margin
1	BT Basic	2402MHz	8 dBm	-		FCC Part 15.209 /	52.9 dBµV/m @ 4823.9
	802.11b	2412MHz	20.5	16.5		15.247(c)	MHz (-1.1 dB)
ſ	BT Basic	2480MHz	8 dBm	-		FCC Part 15.209 /	50.3 dBµV/m @ 2499.9
Z	802.11b	2462MHz	21	16.5	Radiated Emissions,	15.247(c)	MHz (-3.7 dB)
2	BT Basic	2402MHz	8 dBm	-	1 - 10 GHz	FCC Part 15.209 /	49.1 dBµV/m @ 4804.0
3	802.11g	2412MHz	22.5	16.6		15.247(c)	MHz (-4.9 dB)
Λ	BT Basic	2480MHz	8 dBm	-		FCC Part 15.209 /	44.7 dBµV/m @ 4960.0
4	802.11g	2462MHz	22.5	16.4		15.247(c)	MHz (-9.3 dB)
Wi-Fi mode	for the follow	ing runs bas	sed on the wo	orst case moo	de from runs 1 through 4		
F	BT Basic	2402MHz	8 dBm	-		FCC Part 15.209 /	47.8 dBµV/m @ 4874.0
Э	802.11b	2437MHz	20.5	16.4		15.247(c)	MHz (-6.2 dB)
,	BT Basic	2441MHz	8 dBm	-		FCC Part 15.209 /	52.6 dBµV/m @ 2383.0
0	802.11b	2412MHz	20.0	16.3	- FCC Part 1 5.3 Radiated Emissions, 15.247(MHz (-1.4 dB)
7	BT Basic	1b 2412MHz 20.0 16.3 Radiated Emis asic 2441MHz 8 dBm - 1 - 10 GH		1 - 10 GHz	FCC Part 15.209 /	46.5 dBµV/m @ 4924.0	
/	802.11b	2462MHz	21	16.5		15.247(c)	MHz (-7.5 dB)
â	BT Basic	2480MHz	8 dBm	-		FCC Part 15.209 /	51.0 dBµV/m @ 4959.9
8	802.11b	2437MHz	20.5	16.4		15.247(c)	MHz (-3.0 dB)
		•	•	•		· ·	



A N	TE ENGINEER	SUCCESS					
Client:	Intel				Job Number:	J91968	
Madal			l'estado Natu			T-Log Number:	J92301
Model:	Inter woder 3	3160INGW W	Ireless Netwo	ork Adapter		Account Manager:	Christine Krebill
Contact:	Steve Hacke	ett					
Standard:	FCC 15 B, 1	5.247, RSS (210			Class:	N/A
Ni-Fi mode	and channel	and Bluetoo	t <mark>h channel fo</mark>	i <mark>r the followin</mark>	ig run based on the worst	case mode from runs 1	through 8
Q	BT EDR	2402MHz	8 dBm	-	Radiated Emissions,	FCC Part 15.209 /	44.6 dBµV/m @ 4874.0
7	802.11b	2437MHz	20.5	16.4	1 - 10 GHz	15.247(c)	MHz (-9.4 dB)
10	BT EDR	2441MHz	8dBm	<u> </u>	Radiated Emissions,	FCC Part 15.209 /	48.7 dBµV/m @ 4824.0
10	802.11b	2412MHz	20.5	16.5	1 - 10 GHz	15.247(c)	MHz (-5.3 dB)
Bluetooth m	ode based or	<mark>n worst case</mark>	mode from r	uns 1 throug	h 10 combined with 802.1	1n20 mode at center ch	annel in each 5 GHz
band							
11 BT Basic		2402MHz	8 dBm	-	Radiated Emissions,	FCC Part 15.209 /	50.5 dBµV/m @ 2790.9
11	802.11n20	5200MHz	29.5	16.6	1 - 15 GHz	15.247(c) / 15.407	MHz (-3.5 dB)
10	BT Basic 2441MHz 8dBm - Radiated Emil 802.11n20 5200MHz 29.5 16.6 1 - 15 G		Radiated Emissions,	FCC Part 15.209 /	49.7 dBµV/m @ 2751.8		
IZ	802.11n20	2.11n20 5200MHz 29.5 16.6 1 - 15 GHz		1 - 15 GHz	15.247(c) / 15.407	MHz (-4.3 dB)	
10	BT Basic	2480MHz	8dBm	-	Radiated Emissions,	FCC Part 15.209 /	50.7 dBµV/m @ 4960.1
13	802.11n20	5200MHz	29.5	16.6	1 - 15 GHz	15.247(c) / 15.407	MHz (-3.3 dB)
Bluetooth m	ode based or	n worst case	mode from r	uns 11 and 1	3 combined with 802.11r	120 mode at center chan	nel in each 5 GHz band
	BT Basic	2402MHz	8 dBm		Radiated Emissions,	FCC Part 15.209 /	53.8 dBµV/m @ 2512.9
14	802.11n20	5300MHz	28.5	16.5	1 - 15 GHz	15.247(c) / 15.407	MHz (-14.5 dB)
15	BT Basic	2402MHz	8 dBm	-	Radiated Emissions,	FCC Part 15.209 /	54.9 dBµV/m @ 2522.0
15	802.11n20	5580MHz	33	16.5	1 - 15 GHz	15.247(c) / 15.407	MHz (-13.4 dB)
14	BT Basic	2402MHz	8 dBm	-	Radiated Emissions,	FCC Part 15.209 /	45.2 dBµV/m @ 2522.0
10	802.11n20	5785MHz	34.5	16.5	1 - 15 GHz	15.2 <u>47(c) / 15</u> .407	MHz (-8.8 dB)
17	BT Basic	2480MHz	8 dBm	-	Radiated Emissions,	FCC Part 15.209 /	50.8 dBµV/m @ 4960.0
17	802.11n20	5300MHz	28.5	16.5	1 - 15 GHz	15.247(c) / 15.407	MHz (-3.2 dB)
10	BT Basic	2480MHz	8 dBm	-	Radiated Emissions,	FCC Part 15.209 /	50.5 dBµV/m @ 4960.0
١ð	802.11n20	5580MHz	33.0	16.5	1 - 15 GHz	15.247(c) / 15.407	MHz (-3.5 dB)
10	BT Basic	2480MHz	8 dBm		Radiated Emissions,	FCC Part 15.209 /	50.5 dBµV/m @ 4960.1
19	802 11n20	5785MHz	34 5	16.5	1 - 15 GHz	15 247(c) / 15 407	MHz (-3.5 dB)

Modifications Made During Testing No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Test Notes

Scans in the near field performed without the external preamplifier and band reject filter



v v	VE ENGINEER	SUCCESS				
Client:	Intel				Job Number:	J91968
Model [.]	Intel Model '	3160NGW Wire	eless Network Adapter	T-Log Number:	J92301	
MOUCI.				Account Manager:	Christine Krebill	
Contact:	Steve Hacke	ett				
Standard:	FCC 15 B, 1	5.247, RSS 21	0	Class:	N/A	
Ran #1: Ra	idiated Spur	ious Emissior	ns, 1-10GHz. Operating	g Mode: 802.11b @ 2412	2, BT Basic @ 2402 MH	Z
L	Date of Test:	5/31/2013				
Te	est Location	Jack Liu / K. v FT Chamber#	areias A			
	53t LUGation.		4			
				Power Settings		1
			Target (dBm)	Measured (dBm)	Software Setting	
		Chain A	16.5	16.5	20.5	
		Chain B	8.0	-	8dBm	J
[
	80.0-				11 111	
			{}{			
	70.0-	11			1 11	
- E	60.0-					
- Appendix						
<u> </u>	50.0-	1				
bit.	40.0-	տի 📍	1	h 1		$\sim \sim \sim$
Am A	40.0- LM	MAA	and all all and a second	Wind have for the Mine	applied a low with the particular	
	30.0-	ላጉ ለእግሞ ነ	Mar Marin			
	20.0-¦ 1000			' i i		10000
				Frequency (MHz)		



RB 1 MHz; VB 3 MHz; Peak

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Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1240.000	49.1	V	54.0	-4.9	Peak	112	1.0	
1493.330	42.0	V	54.0	-12.0	Peak	205	1.6	
3740.000	43.8	V	54.0	-10.2	Peak	185	1.3	
4820.000	54.6	Н	54.0	0.6	Peak	155	1.3	
1000.000	43.3	V	54.0	-10.7	Peak	205	1.0	
	uramanta at							
Final measu	urements at	3m						1
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4823.930	52.9	Н	54.0	-1.1	AVG	155	1.3	RB 1 MHz;VB 10 Hz;Peak
4824.000	55.8	H	74.0	-18.2	PK	155	1.3	RB 1 MHz;VB 3 MHz;Peak
1245.670	31.7	V	100.0	-68.3	AVG	112	1.0	RB 1 MHz;VB 10 Hz;Peak
1249.400	56.9	V	70.0	-13.1	PK	112	1.0	RB 1 MHz;VB 3 MHz;Peak
1487.660	29.1	V	54.0	-24.9	AVG	206	1.5	RB 1 MHz;VB 10 Hz;Peak
1483.460	54.2	V	74.0	-19.8	PK	206	1.5	RB 1 MHz;VB 3 MHz;Peak
3747.870	32.5	V	54.0	-21.5	AVG	188	1.3	RB 1 MHz;VB 10 Hz;Peak
3747.600	58.1	V	74.0	-15.9	PK	188	1.3	RB 1 MHz;VB 3 MHz;Peak
1011 550	25.0	V	54.0	-29.0	AVG	295	15	RB 1 MHz·VB 10 Hz·Peak

Spurious Radiated Emissions, 2 - 3GHz

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1010.950

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

-33.5

Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)

74.0

emma j												
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments				
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters					
2343.330	41.6	Н	54.0	-12.4	Peak	180	1.0					
2446.670	59.7	Н	120.0	-60.3	Peak	180	1.0					
2485.000	44.9	Н	54.0	-9.1	Peak	180	1.0					
2505.000	47.2	Н	70.0	-22.8	Peak	180	1.0					
2525.000	48.2	Н	70.0	-21.8	Peak	180	1.0					

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	VE ENGINEER	SUCCESS								
Client:	Intel							Job Number:	J91968	
Madal			Seeless Netwo	auli Adautau			T-I	Log Number:	J92301	
wodel:	Intel Model 3	STOUNGW W	Ireless Netwo	ork Adapter			Αссοι	unt Manager:	Christine Krebill	
Contact:	Steve Hacke	ett								-
Standard:	FCC 15 B, 1	5.247, RSS 2	210					Class:	N/A	
									I	
Final measu	urements at	3m								
Frequency	Level	Pol	15.209/	15.247	Azimuth	Height	Comments			
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
2342.050	42.5	Н	54.0	-11.5	AVG	292	1.0	POS; RB 1	MHz; VB: 10 Hz	
2344.490	53.7	Н	74.0	-20.3	PK	292	1.0	POS; RB 1	MHz; VB: 3 MHz	
2484.220	41.9	Н	54.0	-12.1	AVG	75	1.0	POS; RB 1	MHz; VB: 10 Hz	
2486.260	53.5	Н	74.0	-20.5	PK	75	1.0	POS; RB 1	MHz; VB: 3 MHz	
2484.150	41.9	V	54.0	-12.1	AVG	83	1.0	POS; RB 1	MHz; VB: 10 Hz	
2487.940	54.4	V	74.0	-19.6	PK	83	1.0	POS; RB 1	MHz; VB: 3 MHz	
2338.410	42.6	V	54.0	-11.4	AVG	359	1.0	POS; RB 1	MHz; VB: 10 Hz	
2343.080	54.3	V	74.0	-19.7	PK	359	1.0	POS; RB 1	MHz; VB: 3 MHz	
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	25.0-									
	2000	2100	2200 ;	2300 24	400 2500	0 2600	2700	2800	2900 3000	

Frequency (MHz)





Client:	Intel	Job Number:	J91968
Model:	Intal Madal 2160NCW Wiralass Natwork Adaptor	T-Log Number:	J92301
	Intel woder 3 toolog wireless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

#### Final measurements at 3m

Frequency	Level	Pol	15.209	15.209 / 15.247		Azimuth	Height	Comments			
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters				
4924.030	49.6	Н	54.0	-4.4	AVG	157	1.7	RB 1 MHz;VB 10 Hz;Peak			
4924.030	53.3	Н	74.0	-20.7	PK	157	1.7	RB 1 MHz;VB 3 MHz;Peak			
4960.030	47.4	V	54.0	-6.6	AVG	166	1.2	RB 1 MHz;VB 10 Hz;Peak			
4960.010	52.7	V	74.0	-21.3	PK	166	1.2	RB 1 MHz;VB 3 MHz;Peak			
1247.270	31.6	V	54.0	-22.4	AVG	103	0.9	Note 1			
1249.400	55.5	V	74.0	-18.5	PK	103	0.9	Note 1			
1001.600	31.0	V	54.0	-23.0	AVG	202	0.9	RB 1 MHz;VB 10 Hz;Peak			
1031.470	50.4	V	74.0	-23.6	PK	202	0.9	RB 1 MHz;VB 3 MHz;Peak			
3727.200	31.2	V	54.0	-22.8	AVG	321	0.9	RB 1 MHz;VB 10 Hz;Peak			
3729.200	43.3	V	74.0	-30.7	PK	321	0.9	RB 1 MHz;VB 3 MHz;Peak			

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



Client:	Intel	Job Number:	J91968
Model:	Intel Model 2160NCW Wireless Network Adaptor	T-Log Number:	J92301
	Intel Model Stool/GW Wileless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

Spurious Radiated Emissions, 2 - 3GHz

Preliminary	' Scan at ~ 30	Ocm from th	ne product to	o identify p	otential signa	als (Peak ve	rsus avera	ige limit)	
Preliminary	Spurious Er	missions at	30cm from	2-3 GHz (P€	ak versus a	/erage limit)	1		
Frequency	Level	Pol	15.209/	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2498.330	<i>52.1</i>	Н	54.0	-1.9	Peak	180	1.0		
2641.670	45.4	Н	70.0	-24.6	Peak	180	1.0		
2621.670	43.8	Н	70.0	-26.2	Peak	180	1.0		
Final measu	urements at	3m							
Frequency	Level	Pol	15.209/	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2499.870	50.3	V	54.0	-3.7	AVG	88	0.9	POS; RB 1 MHz; VB: 10 Hz	
2496.530	58.8	V	74.0	-15.2	PK	88	0.9	POS; RB 1 MHz; VB: 3 MHz	
2496.400	50.2	Н	54.0	-3.8	AVG	180	1.0	POS; RB 1 MHz; VB: 10 Hz	
2497.880	59.0	Н	74.0	-15.0	PK	180	1.0	POS; RB 1 MHz; VB: 3 MHz	
Amplitude (dBuV/m)	100.0- (U) 75.0- 50.0- 50.0- 25.0- 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 Exercised (MMz)								



#### Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1199.190	49.3	V	54.0	-4.7	Peak	209	1.3	
1592.860	43.6	V	54.0	-10.4	Peak	73	1.3	
4803.750	53.1	Н	54.0	-0.9	Peak	157	1.0	
4824.040	48.1	Н	54.0	-5.9	Peak	163	1.3	



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Client:	Intel	Job Number:	J91968
Model:	Intal Madal 2160NCW Wiralass Natwork Adaptar	T-Log Number:	J92301
	Intel woder 3 roomdaw wireless network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

#### Final measurements at 3m

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
4803.990	49.1	Н	54.0	-4.9	AVG	159	0.9	RB 1 MHz;VB 10 Hz;Peak		
4803.650	53.7	Н	74.0	-20.3	PK	159	0.9	RB 1 MHz;VB 3 MHz;Peak		
1198.570	36.7	V	54.0	-17.3	AVG	207	1.3	RB 1 MHz;VB 10 Hz;Peak		
1198.110	59.4	V	74.0	-14.6	PK	207	1.3	RB 1 MHz;VB 3 MHz;Peak		
4824.420	40.6	Н	54.0	-13.4	AVG	152	1.2	RB 1 MHz;VB 10 Hz;Peak		
4823.710	53.7	Н	74.0	-20.3	PK	152	1.2	RB 1 MHz;VB 3 MHz;Peak		
1594.040	30.6	V	54.0	-23.4	AVG	71	0.9	RB 1 MHz;VB 10 Hz;Peak		
1594.140	50.9	V	74.0	-23.1	PK	71	0.9	RB 1 MHz;VB 3 MHz;Peak		

#### Spurious Radiated Emissions, 2 - 3GHz

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

Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)

						<u> </u>		
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2505.000	46.0	Н	70.0	-24.0	Peak	180	1.0	
2525.000	45.9	Н	70.0	-24.1	Peak	180	1.0	

![](_page_59_Figure_9.jpeg)

![](_page_60_Picture_0.jpeg)

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Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments				
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters					
1193.330	47.5	V	54.0	-6.5	Peak	67	1.0					
1240.000	47.6	V	54.0	-6.4	Peak	108	1.0					
1586.670	41.8	V	54.0	-12.2	Peak	174	1.0					
4953.330	50.4	V	54.0	-3.6	Peak	118	2.2					
4913.330	44.3	V	54.0	-9.7	Peak	261	1.9					

![](_page_61_Picture_0.jpeg)

Client:	Intel	Job Number:	J91968
Model:	Intal Madal 2160NCW Wiralass Natwork Adaptor	T-Log Number:	J92301
	Intel woder 3 toolog wireless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

#### Final measurements at 3m

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Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
4960.000	44.7	V	54.0	-9.3	AVG	116	2.4	RB 1 MHz;VB 10 Hz;Peak		
4960.400	50.6	V	74.0	-23.4	PK	116	2.4	RB 1 MHz;VB 3 MHz;Peak		
1197.460	33.9	V	54.0	-20.1	AVG	57	1.0	RB 1 MHz;VB 10 Hz;Peak		
1198.730	56.8	V	74.0	-17.2	PK	57	1.0	RB 1 MHz;VB 3 MHz;Peak		
1230.270	31.2	V	54.0	-22.8	AVG	73	0.9	RB 1 MHz;VB 10 Hz;Peak		
1222.270	51.0	V	74.0	-23.0	PK	73	0.9	RB 1 MHz;VB 3 MHz;Peak		
1597.270	32.4	V	54.0	-21.6	AVG	172	0.9	RB 1 MHz;VB 10 Hz;Peak		
1598.070	54.4	V	74.0	-19.6	PK	172	0.9	RB 1 MHz;VB 3 MHz;Peak		
4923.600	37.7	V	54.0	-16.3	AVG	261	1.3	RB 1 MHz;VB 10 Hz;Peak		
4921.000	51.3	V	74.0	-22.7	PK	261	1.3	RB 1 MHz;VB 3 MHz;Peak		

Spurious Radiated Emissions, 2 - 3GHz

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

#### Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2601.670	44.4	Н	70.0	-25.6	Peak	180	1.0	
2621.670	45.3	Н	70.0	-24.7	Peak	180	1.0	
2641.670	45.2	Н	70.0	-24.8	Peak	180	1.0	

![](_page_61_Figure_9.jpeg)

![](_page_62_Picture_0.jpeg)

### Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1193.330	48.2	V	54.0	-5.8	Peak	202	1.3	
1593.330	43.1	V	54.0	-10.9	Peak	176	1.0	
4800.000	48.6	V	54.0	-5.4	Peak	197	1.9	
4873.330	51.4	V	54.0	-2.6	Peak	121	1.3	

![](_page_63_Picture_0.jpeg)

Client:	Intel	Job Number:	J91968
Model	Intal Madal 2160NCW Wiralass Natwork Adaptor	T-Log Number:	J92301
wouer.	Intel woder 3 toolog wireless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

#### Final measurements at 3m

		•						
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4873.980	47.8	V	54.0	-6.2	AVG	115	1.1	RB 1 MHz;VB 10 Hz;Peak
4874.150	51.5	V	74.0	-22.5	PK	115	1.1	RB 1 MHz;VB 3 MHz;Peak
1598.670	31.2	V	54.0	-22.8	AVG	178	0.9	RB 1 MHz;VB 10 Hz;Peak
1596.470	53.8	V	74.0	-20.2	PK	178	0.9	RB 1 MHz;VB 3 MHz;Peak
4803.970	44.2	V	54.0	-9.8	AVG	209	1.3	RB 1 MHz;VB 10 Hz;Peak
4803.650	48.9	V	74.0	-25.1	PK	209	1.3	RB 1 MHz;VB 3 MHz;Peak
1197.320	34.5	V	54.0	-19.5	AVG	200	1.4	RB 1 MHz;VB 10 Hz;Peak
1196.900	58.3	V	74.0	-15.7	PK	200	1.4	RB 1 MHz;VB 3 MHz;Peak

### Spurious Radiated Emissions, 2 - 3GHz

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

#### Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)

						<u> </u>		
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2322.650	37.2	Н	54.0	-16.8	Peak	179	1.0	
2472.950	48.2	Н	120.0	-71.8	Peak	179	1.0	
2480.960	45.1	Н	120.0	-74.9	Peak	179	1.0	
2502.000	43.7	H	70.0	-26.3	Peak	179	1.0	

#### Final measurements at 3m

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2321.960	43.2	Н	54.0	-10.8	AVG	360	1.0	POS; RB 1 MHz; VB: 10 Hz
2324.080	55.4	Н	74.0	-18.6	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz
2322.000	43.3	V	54.0	-10.7	AVG	170	1.0	POS; RB 1 MHz; VB: 10 Hz
2320.600	54.4	V	74.0	-19.6	PK	170	1.0	POS; RB 1 MHz; VB: 3 MHz

![](_page_64_Figure_0.jpeg)

![](_page_65_Picture_0.jpeg)

### Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1196.770	49.3	V	54.0	-4.7	Peak	209	1.3	
1599.430	44.4	V	54.0	-9.6	Peak	27	1.3	
4824.040	55.6	Н	54.0	1.6	Peak	159	1.3	
4882.060	50.4	V	54.0	-3.6	Peak	165	1.9	

![](_page_66_Picture_0.jpeg)

RB 1 MHz;VB 3 MHz;Peak

RB 1 MHz;VB 10 Hz;Peak

RB 1 MHz;VB 3 MHz;Peak

	E ENGINEER	SUCCESS											
Client:	Intel							Job Number:	J91968				
Madal	Intal Madal (		liroloco Notw	ork Adoptor			T-Log Number		J92301				
woder:		STOUNGW W	II eless ivelw	ork Adapter			Accou	int Manager:	Christine Krebill				
Contact:	Steve Hacke	Steve Hackett											
Standard:	FCC 15 B, 1	CC 15 B, 15.247, RSS 210 Class: N/A											
inal measu	urements at	3m											
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments					
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters						
4823.980	52.5	Н	54.0	-1.5	AVG	151	0.9	RB 1 MHz;V	B 10 Hz;Peak				
4824.040	54.1	Н	74.0	-19.9	151	0.9	RB 1 MHz;V	B 3 MHz;Peak					
1598.780	29.4	V	54.0	-24.6	28	1.2	RB 1 MHz;V	B 10 Hz;Peak					
1598.930	51.2	V	74.0	-22.8	PK	28	1.2	RB 1 MHz;V	B 3 MHz;Peak				
4881.970	45.2	V	54.0	-8.8	AVG	172	1.0	RB 1 MHz;V	B 10 Hz;Peak				

ΡK

AVG

ΡK

172

211

211

1.0

1.2

1.2

#### Spurious Radiated Emissions, 2 - 3GHz

49.6

37.6

58.5

V

V

V

74.0

54.0

74.0

Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit) Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)

-24.4

-16.4

-15.5

r rennnar y	Tomminal y opunous emissions at boom nom 2 o one (r bak voisus avoinge mint)											
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments				
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters					
2382.770	49.1	Н	54.0	-4.9	Peak	179	1.0					
2501.000	41.3	Н	70.0	<i>-28.</i> 7	Peak	179	1.0					
2541.080	42.2	Н	70.0	-27.8	Peak	179	1.0					

#### Final measurements at 3m

4881.770

1195.810

1197.680

		-						
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2383.030	52.6	Н	54.0	-1.4	AVG	249	1.0	
2383.030	59.7	Н	74.0	-14.3	PK	249	1.0	
2383.030	50.3	V	54.0	-3.7	AVG	292	1.1	
2383.210	58.7	V	74.0	-15.3	PK	292	1.1	

![](_page_66_Figure_8.jpeg)

![](_page_67_Picture_0.jpeg)

### Final measurements at 3m

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4924.020	46.5	V	54.0	-7.5	AVG	298	1.3	RB 1 MHz;VB 10 Hz;Peak
4923.960	50.2	V	74.0	-23.8	PK	298	1.3	RB 1 MHz;VB 3 MHz;Peak
4881.950	45.6	Н	54.0	-8.4	AVG	166	1.0	RB 1 MHz;VB 10 Hz;Peak
4882.080	49.8	Н	74.0	-24.2	PK	166	1.0	RB 1 MHz;VB 3 MHz;Peak
1197.280	37.3	V	54.0	-16.7	AVG	196	1.4	RB 1 MHz;VB 10 Hz;Peak
1198.060	59.7	V	74.0	-14.3	PK	196	1.4	RB 1 MHz;VB 3 MHz;Peak
1593.100	31.2	V	54.0	-22.8	AVG	219	1.0	RB 1 MHz;VB 10 Hz;Peak
1593.250	54.7	V	74.0	-19.3	PK	219	1.0	RB 1 MHz;VB 3 MHz;Peak

![](_page_68_Picture_0.jpeg)

	VE ENGINEER	SUCCESS												
Client:	Intel							Job Number:	J91968					
Model	Intol Model		liroloss Notw	ork Adaptor			T-	Log Number:	J92301					
wouer.				UIK AUAPIEI			Acco	unt Manager:	Christine Krebill					
Contact:	Steve Hacke	ckett       Class: N/A         issions, 2 - 3GHz       Class: N/A         - 30cm from the product to identify potential signals (Peak versus average limit)         Emissions at 30cm from 2-3 GHz (Peak versus average limit)         Pol       15.209 / 15.247         Detector       Azimuth         H       54.0         H       70.0         -24.3       Peak         H       70.0         -27.5       Peak         179       1.0         H       70.0         -27.5       Peak         179       1.0         H       70.0         -27.5       Peak         179       1.0												
Standard:	FCC 15 B, 1	5.247, RSS	210					Class:	N/A					
Spurious R	adiated Emi	ssions, 2 - 3	BGHz											
Preliminary	/ Scan at ~ 3	Ocm from th	he product t	o identify p	otential sign	als (Peak ve	ersus avera	age limit)						
Preliminary	Spurious E	missions at	30cm from	2-3 GHz (Pe	eak versus av	verage limit								
Frequency	Level	POI	15.209	/ 15.24/	Detector	Azimuth	Height	Comments						
MHZ	dBμV/m	V/n	LIMIT	Margin	PK/QP/AVg	degrees	meters							
2340.080	37.1	H	54.0	-10.9	Peak	179	1.0							
2521.040	45.7 42 E	H	70.0	-24.3 27.5	Peak	179	1.0							
2341.080	42.3	Π	70.0	-27.3	Peak	1/9	1.0							
Final meas	urements at	3m												
Frequency	l evel	Pol	15.209	/ 15.247	Detector	Azimuth	Heiaht	Comments						
MHz	dBuV/m	v/h	Limit	Margin	Pk/OP/Ava	degrees	meters	o o nini o nic						
2340.990	44.3	H	54.0	-9.7	AVG	355	0.9	POS; RB 1	MHz; VB: 10 Hz					
2341.130	54.6	Н	74.0	-19.4	PK	355	0.9	POS; RB 1	MHz; VB: 3 MHz					
2341.110	43.0	V	54.0	-11.0	AVG	310	1.0	POS; RB 1	MHz; VB: 10 Hz					
2343.260	54.9	V	74.0	-19.1	PK	310	1.0	POS; RB 1	MHz; VB: 3 MHz					
Amplitude (dBuV/m)	100.0 - 90.0 - 80.0 - 70.0 - 60.0 - 50.0 - 40.0 - 30.0 - 20.0 - 2000	*~~~ 2100		www.k	400 250 Frequency		yluduuyuu. 2700	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2900 3000					

![](_page_69_Picture_0.jpeg)

### Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1196.750	50.3	V	54.0	-3.7	Peak	187	1.3	
1592.660	43.3	V	54.0	-10.7	Peak	222	1.0	
4874.020	51.2	Н	54.0	-2.8	Peak	153	1.0	
4959.760	51.4	V	54.0	-2.6	Peak	154	1.6	

![](_page_70_Picture_0.jpeg)

Client:	Intol									
	IIIIEI				Job Number: J91968					
M I . I		1/01/01/14	Parlana Nata	T-Log Number: J92301 Account Manager: Christine Krebill						
wodel:	Intel Wodel 3	160INGW W	reless netw							
Contact:	Steve Hacke	tt								
Standard:	FCC 15 B. 15	5.247. RSS	210	Class: N/A						
otanuaru			2.0							
Final meas	urements at 3	3m								
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
4959.940	51.0	V	54.0	-3.0	AVG	141	1.0	RB 1 MHz;VB 10 Hz;Peak		
4960.300	55.6	V	74.0	-18.4	PK	141	1.0	RB 1 MHz;VB 3 MHz;Peak		
4874.000	48.3	Н	54.0	-5.7	AVG	147	1.1	RB 1 MHz;VB 10 Hz;Peak		
4874.020	51.8	Н	74.0	-22.2	PK	147	1.1	RB 1 MHz;VB 3 MHz;Peak		
1196.260	34.7	V	54.0	-19.3	AVG	188	1.2	RB 1 MHz;VB 10 Hz;Peak		
1195.650	58.8	V	74.0	-15.2	PK	188	1.2	RB 1 MHz;VB 3 MHz;Peak		
		M	54.0	-21.9	AVG	223	0.9	RB 1 MHz;VB 10 Hz;Peak		
1593.090	32.1	V	0110					RB 1 MHz;VB 3 MHz;Peak		
1593.090 1593.150 Spurious R Preliminary Preliminary	32.1 52.7 adiated Emis <i>/ Scan at ~ 30</i> / Spurious Er	V Sisions, 2 - 3 Ocm from tan nissions at	74.0 3GHz <i>the product to</i> 30cm from	-21.3 o identify p 2-3 GHz (Pe	PK otential signa eak versus av	223 als (Peak ve verage limit)	0.9 Prsus avera	RB T MHZ;VB 3 MHZ;Peak		
1593.090 1593.150 Spurious R Preliminary Preliminary Frequency MHz	32.1 52.7 adiated Emis <i>Scan at ~ 30</i> Spurious Er Level dBuV/m	V V Docm from ti nissions at Pol v/h	74.0 3GHz the product to 30cm from 15.209 Limit	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin	PK otential sign. eak versus av Detector Pk/QP/Avg	223 als (Peak ve verage limit) Azimuth degrees	0.9 ersus avera Height meters	RB T MHZ;VB 3 MHZ;Peak age limit) Comments		
1593.090 1593.150 Spurious R Preliminary Preliminary Frequency MHz 2392.790	32.1 52.7 adiated Emis <i>c Scan at ~ 30</i> Spurious Er Level dBμV/m 54.8	V V Sissions, 2 - 3 Ocm from ta nissions at Pol V/h H	74.0 3GHz <i>be product to</i> 30cm from 15.209 Limit 70.0	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin -15.2	PK otential sign eak versus av Detector Pk/QP/Avg Peak	223 als (Peak ve verage limit) Azimuth degrees 179	0.9 Prsus avera Height Meters 1.0	RB T MHZ;VB 3 MHZ;Peak age limit) Comments		
1593.090 1593.150 Spurious R Preliminary Preliminary Frequency MHz 2392.790 2488.980	32.1 52.7 adiated Emis <i>/ Scan at ~ 30</i> / Spurious Er Level dBμV/m 54.8 47.7	V V Sesions, 2 - 3 Dom from tr nissions at Pol V/h H H	74.0 BGHz the product to 30cm from 15.209 / Limit 70.0 54.0	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin -15.2 -6.3	PK otential signa eak versus av Detector Pk/QP/Avg Peak Peak	223 als (Peak ve verage limit) Azimuth degrees 179 179	0.9 ersus avera Height meters 1.0 1.0	RB T MHZ;VB 3 MHZ;Peak age limit) Comments		
1593.090 1593.150 Spurious R Preliminary Preliminary Frequency MHz 2392.790 2488.980 2523.050	32.1 52.7 adiated Emis <i>/ Scan at ~ 30</i> <i>/ Spurious Er</i> Level dBμV/m <i>54.8</i> <i>47.7</i> <i>49.5</i>	V V Ocm from tinissions al Pol V/h H H H	74.0           3GHz <i>he product to</i> 30cm from           15.209           Limit           70.0           54.0           70.0	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin -15.2 -6.3 -20.5	PK otential signa eak versus av Detector Pk/QP/Avg Peak Peak Peak	223 als (Peak ve verage limit) Azimuth degrees 179 179 179	0.9 ersus avera Height meters 1.0 1.0 1.0	RB T MHZ;VB 3 MHZ;Peak age limit) Comments		
1593.090 1593.150 Spurious R Preliminary Preliminary Frequency MHz 2392.790 2488.980 2523.050 Final measu	32.1 52.7 adiated Emis <i>scan at ~ 30</i> Spurious Er Level dBμV/m 54.8 47.7 49.5	V V Sisions, 2 - 3 Ocm from ti nissions al Pol V/h H H H H H	74.0           3GHz           he product to           30cm from           15.209           Limit           70.0           54.0           70.0	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin -15.2 -6.3 -20.5	PK otential sign eak versus av Detector Pk/QP/Avg Peak Peak Peak	223 als (Peak ve verage limit) Azimuth degrees 179 179 179	0.9 ersus avera Height meters 1.0 1.0 1.0	RB T MHZ;VB 3 MHZ;Peak age limit) Comments		
1593.090 1593.150 Spurious R Preliminary Preliminary Prequency MHz 2392.790 2488.980 2523.050 Final measu Frequency	32.1 52.7 adiated Emis <i>y Scan at ~ 30</i> y Spurious Er Level dBμV/m 54.8 47.7 49.5 urements at 3 Level	V V Secions, 2 - 3 Ocm from tu nissions at Pol V/h H H H H Sm Pol	74.0         3GHz         he product to         30cm from         15.209         Limit         70.0         54.0         70.0         15.209         15.209	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin -15.2 -6.3 -20.5	PK otential signa eak versus av Detector Pk/QP/Avg Peak Peak Peak Peak	223 als (Peak ve verage limit) Azimuth degrees 179 179 179 179	0.9 Prsus avera Height neters 1.0 1.0 Height	RB T MHZ;VB 3 MHZ;Peak  age limit)  Comments  Comments  Comments		
1593.090 1593.150 Spurious R Preliminary Preliminary Frequency MHz 2392.790 2488.980 2523.050 Final measu Frequency MHz	32.1 52.7 adiated Emis <i>Scan at ~ 30</i> Spurious Er Level dBµV/m 54.8 47.7 49.5 urements at 3 Level dBµV/m	V V Ocm from ti nissions al Pol V/h H H H 3m Pol V/h	74.0 3GHz <i>he product to</i> 30cm from 15.209 Limit 70.0 54.0 70.0 15.209 Limit Limit	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin - <i>15.2</i> -6.3 -20.5 / 15.247 Margin	PK otential signa eak versus av Detector Pk/QP/Avg Peak Peak Peak Detector Pk/QP/Avg	223 als (Peak ve verage limit) Azimuth degrees 179 179 179 179 Azimuth degrees	0.9 Prsus avera Height meters 1.0 1.0 1.0 Height meters	RB T MHZ;VB 3 MHZ;Peak  age limit)  Comments  Comments  Comments		
1593.090 1593.150 Spurious R Preliminary Preliminary Frequency MHz 2392.790 2488.980 2523.050 Final measu Frequency MHz 2488.030	32.1 52.7 adiated Emis <i>/ Scan at ~ 30</i> <i>/ Spurious Er</i> <i>Level</i> <i>dBµV/m</i> <i>54.8</i> <i>47.7</i> <i>49.5</i> urements at <i>Level</i> <i>dBµV/m</i> <i>46.9</i>	V Sisions, 2 - 3 Ocm from ti nissions al Pol V/h H H H 3m Pol V/h H	74.0           3GHz           he product to           30cm from           15.209           Limit           70.0           54.0           70.0           15.209	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin -15.2 -6.3 -20.5 / 15.247 Margin -7.1	PK otential signa eak versus av Detector Pk/QP/Avg Peak Peak Peak Detector Pk/QP/Avg AVG	223 als (Peak ve verage limit) Azimuth degrees 179 179 179 179 Azimuth degrees 155	0.9 Prsus avera Height meters 1.0 1.0 Height Height meters 1.0	RB T MHZ;VB 3 MHZ;Peak age limit) Comments Comments POS; RB 1 MHz; VB: 10 Hz		
1593.090 1593.150 Spurious R Preliminary Preliminary Preliminary MHz 2392.790 2488.980 2523.050 Final measu Frequency MHz 2488.030 2486.710	32.1 52.7 adiated Emis <i>/ Scan at ~ 30</i> <i>/ Spurious Er</i> Level dBµV/m 54.8 47.7 49.5 urements at 3 Level dBµV/m 46.9 56.5	v           V           Ssions, 2 - 3           Ocm from tinnssions all           Pol           v/h           H           H           Bm           Pol           v/h           H           H           H           H           H           H           H           H           H           H           H           H           H	74.0           3GHz           he product to           30cm from           15.209           Limit           70.0           54.0           70.0           Limit           70.0           54.0           74.0	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin -15.2 -6.3 -20.5 / 15.247 Margin -7.1 -7.1 -17.5	PK otential sign eak versus av Detector Pk/QP/Avg Peak Peak Peak Detector Pk/QP/Avg AVG PK	223 als (Peak ve verage limit) Azimuth degrees 179 179 179 179 179 179 175 155	0.9 Prsus avera Height meters 1.0 1.0 1.0 Height meters 1.0 1.0 1.0	RB T MHZ;VB 3 MHZ;Peak         age limit)         Comments		
1593.090 1593.150 Spurious R Preliminary Preliminary Prequency MHz 2392.790 2488.980 2523.050 Sinal measu Frequency MHz 2488.030 2488.030	32.1 52.7 adiated Emis <i>y Scan at ~ 30</i> y Spurious Er Level dBµV/m 54.8 47.7 49.5 urements at 3 Level dBµV/m 46.9 56.5 46.8	v           V           Ssions, 2 - 3           Ocm from to           nissions at           Pol           v/h           H           H           H           H           H           H           V/h	74.0         3GHz         he product to         15.209         Limit         70.0         54.0         70.0         15.209         Limit         70.0         54.0         70.0         54.0         74.0         54.0         74.0         54.0	-21.3 o identify p 2-3 GHz (Pe / 15.247 Margin - <i>15.2</i> -6.3 -20.5 / 15.247 Margin -7.1 -17.5 -7.2	PK otential signa eak versus av Detector Pk/QP/Avg <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>Peak</i> <i>AVG</i>	223 als (Peak ve verage limit) Azimuth degrees 179 179 179 179 179 179 175 155 155 218	0.9 Prsus avera Height meters 1.0 1.0 Height meters 1.0 1.0 1.0 1.5	Comments POS; RB 1 MHz; VB: 10 Hz POS; RB 1 MHz; VB: 3 MHz POS; RB 1 MHz; VB: 10 Hz POS; RB 1 MHz; VB: 10 Hz		

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Frequency (MHz)

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2300

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![](_page_71_Picture_0.jpeg)

	VE ENGINEER	SUCCESS							
Client:	Intel				Job Number: J91968				
Ma dal			Parlana Mata		T-Log Number: J92301				
Model:	INIODEI: INTEL MODEL 316UNGW WIRELESS NETWORK Adapter							ccount Manager: Christine Krebill	
Contact:	Steve Hacke	ett						0	
Standard	FCC 15 B 1	5 247 RSS	210			Class [,]	N/Δ		
Dup #0, Dr	diated Spur		one 1 10CL	11h @ 010	7 MU7 DT E	01033.	MLI-7		
KUI1#9: Kč	Jata of Toot		011S, 1-10GF	iz. Operatin	g wode: 802	.110 @ 2437		DR @ 2402	INITIZ
L To	Jale ULTESI.	5/31/2013	Varalas						
Te Te	st Location	Jack Liu / R.	vareias r# 4						
			1# 4						
					Power S	ettings			
	Target (dBm) Measured (dBm					d (dBm)	Software	e Setting	
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		Chain B	8	.0	-		8dBm		
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					Frequency	(MHz)			
Preliminary	Spurious E	missions ex	cluding allo	cated band	(Peak versu	s average li	imit)		
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
1194.860	48.5	V	54.0	-5.5	Peak	186	1.3		
1593.170	43.0	V	54.0	-11.0	Peak	215	1.0		
4804.190	41.4	H	54.0	-12.6	Peak	1/0	2.5		
4874.020	49.9	V	54.0	-4.1	Реак	125	1.6		
Einal maaa	uromonte at	2m							
			15 200	/ 15 2/7	Dotoctor	Azimuth	Hoight	Commonts	
МН7		r Ui v/h	l imit	Margin		dearees	meters	COMMENIS	
4874 030	Δ <u>μ</u> ν/ΠΙ ΔΔ 6	V	54.0	_0 <u>/</u>	ΔVG	103	0.0	RB 1 MHz·\	/R 10 Hz·Peak
4873 900	49.4	v \/	74 0	-24.6	PK	103	0.7	RB 1 MHz·W	/B 3 MHz Peak
1593 140	30.6	V	54.0	-23.4	AVG	213	0.9	RB 1 MHz·V	/B 10 Hz:Peak
1593,180	54.0	V	74.0	-20.0	PK	213	0.9	RB 1 MHz·V	/B 3 MHz:Peak
1194.690	33.9	V	54.0	-20.1	AVG	184	1.3	RB 1 MHz:V	/B 10 Hz:Peak
1195.520	60.3	V	74.0	-13.7	PK	184	1.3	RB 1 MHz:V	/B 3 MHz;Peak
4803.960	40.6	Н	54.0	-13.4	AVG	153	1.1	RB 1 MHz;V	/B 10 Hz;Peak
	10.5		74.0	05.5	DI	150			


Client, Intel         Job Nutlice, 37406           Modet:         Intel Model 3160NGW Wireless Network Adapter         T-Log Number:         192301           Contact:         Steve Hackett         Christine Krebill         Account Manager:         Christine Krebill           Standard:         FCC 15 B, 15.247, RSS 210         Class:         N/A           Spurious Radiated Emissions, 2 - 3GHz         Preliminary Scan at - 30cm from the product to identify potential signals (Peak versus average limit)         Preliminary Spurious Emissions at 30cm from 2.3 GHz (Peak versus average limit)           Preliminary Spurious Emissions at 30cm from 2.3 GHz (Peak versus average limit)         Prequency         Level         Pol         15.209/15.247         Delector         Azimuth         Height         Comments           MHz         dB _µ U/m         vh         Limit         Margin         Pk/OP/Avg         degrees         meters           2392.790         39.7         H         70.0         -32.7         Peak         17.9         1.0           Frequency         Level         Pol         15.209/15.247         Delector         Azimuth         Height         Comments           MHz         dB _µ U/m         vh         Limit         Margin         Pk/OP/Avg         degrees         meters         - <td< th=""><th>Client</th><th>Intol</th><th></th><th></th><th></th><th></th><th></th><th></th><th>Job Numbor</th><th>101040</th><th></th></td<>	Client	Intol							Job Numbor	101040	
Model:         Intel Model 3160NGW Wireless Network Adapter         Intel Model 3160NGW Wireless Network Adapter           Contact:         Steve Hackett         Christine Krebill           Standard:         FCC 15 B, 15.247, RSS 210         Class:         N/A           Spurious Radiated Emissions, 2 - 3GHz         Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)         Frequency         Level         Pol         15.209/15.247         Detector         Azimuth         Height         Comments           MHz         dBµ//m         v/h         Limit         Margin         Pk/QM/Qk         degrees         meters           Frequency         Level         Pol         15.209/15.247         Detector         Azimuth         Height         Comments           2392.790         39.7         H         70.0         -30.9         Peak         179         1.0           2561.120         37.9         H         70.0         -32.1         Peak         179         1.0           Frequency         Level         Pol         15.209/15.247         Detector         Azimuth         Height         Comments           MHz         dBµ//m         v/h         Limit         Margin         Pk/OP/Avg         degrees         meters <td>Client:</td> <td>Inter</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>J91908</td> <td></td>	Client:	Inter								J91908	
Account Manager:       Christine Krebili         Contact:       Steve Hackett       Class:         Standard:       FCC 15 B, 15.247, RSS 210       Class:         Spurious Radiated Emissions, 2 - 3GHz       Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)         Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)         Frequency       Level       Pol         MHz       dBµU/m       v/h       Limit         MHz       37.9       H       70.0       -32.1         Frequency       Level       Pol       15.209/15.247       Detector       Azimuth         Height       Comments	Model:	Intel Model	3160NGW W	'ireless Netw	ork Adapter				Log Number:	J92301	
Contact:         Steve Hackett         Class:         N/A           Standard:         FCC 15 B, 15.247, RSS 210         Class:         N/A           Spurious Radiated Emissions, 2 · 3GHz         Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)         Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)           Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)         Evel         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           2392.790         39.1         H         70.0         -32.9         Peak         179         1.0           Efficiency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         V/h         Limit         Margin         Pk/OP/Avg         degrees         meters           -         -         -         -         -         -         -					I			Acco	unt Manager:	Christine I	Krebill
Standard: FCC 15 B, 15.247, RSS 210         Class: IV/A           Spurious Radiated Emissions, 2 - 3GHz           Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)           Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)           Frequency           Level Pol           Pol           15.209 / 15.247           Detector           Azimuth           MHz           dBµV/m           Wh           230.7.9           MHz           Detector           Azimuth           Height Comments           2561.120           37.9           H           Tequency           Level Pol           15.209 / 15.247           Detector           Azimuth           Height Comments           MHz           MHz           0           0           0 <t< td=""><td>Contact:</td><td>Steve Hack</td><td>ætt</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Contact:	Steve Hack	ætt								
Spurious Radiated Emissions, 2 - 3GHz Preliminary Scan at - 30cm from the product to identify potential signals (Peak versus average limit) Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit) Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit) Prequency Level Pol 15.209/15.247 Detector Azimuth Height Comments MHz dB _µ V/m v/h Limit Margin Pk/OP/Avg degrees meters 2392.790 39.7 H 70.0 -32.7 Peak 179 1.0 Frequency Level Pol 15.209/15.247 Detector Azimuth Height Comments MHz dB _µ V/m v/h Limit Margin Pk/OP/Avg degrees meters 	Standard:	FCC 15 B,	15.247, RSS	210					Class:	N/A	
MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           2392.790         39.1         H         70.0         -30.9         Peak         179         1.0           2561.120         37.9         H         70.0         -32.1         Peak         179         1.0           Final measurements at 3m         Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHZ         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           -         -         -         -         -         -         -         -           MHZ         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           -         -         -         -         -         -         -         -         -           90.0         -         -         -         -         -         -         -         -         -           90.0         -         -         -         -         -         -         -         -	Spurious R Preliminary Preliminary Frequency	adiated Em y <i>Scan at ~</i> y Spurious I Level	iissions, 2 - 3 30cm from th Emissions at Pol	GHz <i>ne product to</i> 30cm from 15.209	<i>o identify p</i> <u>2-3 GHz (P</u> / 15.247	ootential signa eak versus av Detector	als (Peak ve verage limit) Azimuth	ersus avera	age limit)		
2392.790       39.1       H       70.0       -30.9       Peak       179       1.0         2561.120       37.9       H       70.0       -32.1       Peak       179       1.0         Final measurements at 3m         Frequency       Level       Pol       15.209 / 15.247       Detector       Azimuth       Height       Comments         MHz       dBµV/m       v/h       Limit       Margin       Pk/QP/Avg       degrees       meters         -       -       -       -       -       -       -       -       -         100.0       -       -       -       -       -       -       -       -       -         90.0       -       -       -       -       -       -       -       -       -       -         90.0       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -<	MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
2561.120         37.9         H         70.0         -32.1         Peak         179         1.0           Final measurements at 3m         Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         PK/OP/Avg         degrees         meters           -         -         -         -         -         -         -         -           90.0         -         -         -         -         -         -         -         -           90.0         -         -         -         -         -         -         -         -         -           90.0         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -	2392.790	39.1	Н	70.0	-30.9	Peak	179	1.0			
Final measurements at 3m           Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/OP/Avg         degrees         meters           -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -         -         -           -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         <	2561.120	37.9	Н	70.0	-32.1	Peak	179	1.0			
·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·	Final meas Frequency MHz	urements a Level dBuV/m	t 3m Pol v/h	15.209 Limit	/ 15.247 Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments		
100.0- 90.0- 80.0- 70.0- 60.0- 90.0- 90.0- 60.0- 90.0- 60.0- 90.0- 60.0- 90.0- 60.0- 90.0- 60.0- 90.0- 60.0- 90.0- 60.0- 90.0- 60.0- 90.0- 60.0- 90.0- 60.0- 90.0- 80.0- 70.0- 60.0- 70.0- 80.0- 70.0- 80.0- 70.0- 80.0- 70.0- 80.0- 70.0- 80.0- 70.0- 80.0- 70.0- 80.0- 70.0- 80.0- 70.0- 80.0- 70.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.0- 80.00	-	-	-	-	-	-	-	-	-	-	-
	Amplitude (dBuV/m)	80.0 - 70.0 - 60.0 - 50.0 - 40.0 - 30.0 - 20.0 - , 2000	мл-Марилици ' '	~~~~	Munu-19 2300 2	2400 2500	۸۸۰ 2600 (MHz)	v ¹	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	· 2900	~~~ ` ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;



#### Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1199.580	45.7	V	54.0	-8.3	Peak	174	1.6	
1596.270	42.9	V	54.0	-11.1	Peak	78	1.3	
2779.340	45.0	Н	54.0	-9.0	Peak	158	1.0	
4824.030	52.1	V	54.0	-1.9	Peak	247	1.3	
4882.360	42.6	Н	54.0	-11.4	Peak	165	1.6	



Client:	Intel	Job Number:	J91968
Model	Intel Medal 2160NCW Wireless Natwork Adaptor	T-Log Number:	J92301
MOUEI.	Intel Model 3 roomGW Wileless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

#### Final measurements at 3m

		-						
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4823.980	48.7	V	54.0	-5.3	AVG	247	1.3	RB 1 MHz;VB 10 Hz;Peak
4823.950	51.3	V	74.0	-22.7	PK	247	1.3	RB 1 MHz;VB 3 MHz;Peak
1200.060	34.4	V	54.0	-19.6	AVG	174	1.3	RB 1 MHz;VB 10 Hz;Peak
1199.230	56.7	V	74.0	-17.3	PK	174	1.3	RB 1 MHz;VB 3 MHz;Peak
4882.000	40.0	Н	54.0	-14.0	AVG	155	1.2	RB 1 MHz;VB 10 Hz;Peak
4881.790	47.7	Н	74.0	-26.3	PK	155	1.2	RB 1 MHz;VB 3 MHz;Peak
2776.460	36.1	Н	54.0	-17.9	AVG	152	1.0	RB 1 MHz;VB 10 Hz;Peak
2783.270	48.2	Н	74.0	-25.8	PK	152	1.0	RB 1 MHz;VB 3 MHz;Peak

#### Spurious Radiated Emissions, 2 - 3GHz

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

#### Preliminary Spurious Emissions at 30cm from 2-3 GHz (Peak versus average limit)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2385.000	45.2	V	54.0	-8.8	Peak	180	1.0	
2523.330	39.7	V	70.0	-30.3	Peak	180	1.0	
2791.670	39.5	V	54.0	-14.5	Peak	180	1.0	

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2382.990	47.0	Н	54.0	-7.0	AVG	250	1.0	POS; RB 1 MHz; VB: 10 Hz
2382.400	57.8	Н	74.0	-16.2	PK	250	1.0	POS; RB 1 MHz; VB: 3 MHz
2789.760	42.5	Н	54.0	-11.5	AVG	154	1.0	POS; RB 1 MHz; VB: 10 Hz
2795.230	53.6	Н	74.0	-20.4	PK	154	1.0	POS; RB 1 MHz; VB: 3 MHz
2789.720	41.9	V	54.0	-12.1	AVG	186	1.0	POS; RB 1 MHz; VB: 10 Hz
2790.440	53.3	V	74.0	-20.7	PK	186	1.0	POS; RB 1 MHz; VB: 3 MHz
2383.050	46.7	V	54.0	-7.3	AVG	288	1.1	POS; RB 1 MHz; VB: 10 Hz
2385.090	56.9	V	74.0	-17.1	PK	288	1.1	POS; RB 1 MHz; VB: 3 MHz





### ENAC Tost Data

		R SUCCESS						EIVIO	z Test Dala
Client:	Intel							Job Number:	J91968
Madel	Intol Madel		linalaan Natur	orle Adamter			T-	Log Number:	J92301
Model:	Intel Model	3 TOUNGW W	vireiess Netw	ork Adapter			Αссоι	unt Manager:	Christine Krebill
Contact:	Steve Hacke	ett							
Standard:	FCC 15 B, 1	5.247, RSS	210					Class:	N/A
Run #11: R [ Te Te	Radiated Spu Date of Test: Ist Engineer: Past Location:	urious Emiss 6/1/2013 Jack Liu FT Chambe	sions, 1-15 ( r #4	GHz. Operat	ing Mode: 80	)2.11n20 @	5200 MHz,	BT Basic @	2402 MHz
					Power S	Settings			
			Target	(dBm)	Measure	d (dBm)	Softwa	re Setting	
		Chain A	16	b.5	16	.6	2	9.5	
		Chain B	8	.0		-	80	dBm	
Spurious R (///mgp) aphylitude	adiated Emi 80.0 - 70.0 - 60.0 - 50.0 - 40.0 - 30.0 - 7000	ssions, 7 - 1	5GHz		10000 Frequency	(MHz)	~~~~****1 	Winawa Maria	15000
Droliminary	Sourious E	missions of	cluding allo	catod band	(Doak vorsu	s avorago li	imit)		
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Heiaht	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Ava	degrees	meters	Sommonito	
-	-	-	-	-	-	-	-	1	
Final meas	urements at	3m			-			-	
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
-	-	-	-	-	-	_	-		



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



#### Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

					<b>3 1</b>			
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2520.000	43.2	V	68.3	-25.1	Peak	228	1.0	
2800.000	45.8	V	54.0	-8.2	Peak	240	1.0	
4800.000	43.4	V	54.0	-10.6	Peak	260	1.0	

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2790.870	50.5	Н	54.0	-3.5	AVG	158	1.0	POS; RB 1 MHz; VB: 10 Hz
2793.700	62.3	Н	74.0	-11.7	PK	158	1.0	POS; RB 1 MHz; VB: 3 MHz
2790.990	46.6	V	54.0	-7.4	AVG	183	1.0	POS; RB 1 MHz; VB: 10 Hz
2792.290	57.6	V	74.0	-16.4	PK	183	1.0	POS; RB 1 MHz; VB: 3 MHz



1.2 1.2 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.			
Client:	Intel	Job Number:	J91968
Model	Intel Medel 2160NCW Wireless Network Adaptor	T-Log Number:	J92301
MOUEI.	Intel Model 3100103W Wileless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

#### Run #12: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: 802.11n20 @ 5200 MHz, BT Basic @ 2441 MHz Date of Test: 6/3/2013

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

		Power Settings						
Target (dBm) Measured (dBm) Software Set								
Chain A	16.5	16.6	29.5					
Chain B	8.0	-	8dBm					

#### Spurious Radiated Emissions, 7 - 15GHz



#### Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

							-7			
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
-	-	-	-	-	-	-	-	-	-	-

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



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



#### Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

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Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2510.000	45.7	V	70.0	-24.3	Peak	180	1.0	
2760.000	50.1	V	54.0	-3.9	Peak	180	1.0	

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2751.790	49.7	H	54.0	-4.3	AVG	157	1.0	POS; RB 1 MHz; VB: 10 Hz
2752.440	60.5	H	74.0	-13.5	PK	157	1.0	POS; RB 1 MHz; VB: 3 MHz
2760.260	46.9	V	54.0	-7.1	AVG	184	1.0	POS; RB 1 MHz; VB: 10 Hz
2761.660	57.7	V	74.0	-16.3	PK	184	1.0	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel	Job Number:	J91968
Model	Intel Medel 2160NCW Wireless Network Adaptor	T-Log Number:	J92301
MUUUEI.	Intel Model 3100103W Wileless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

#### Run #13: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: 802.11n20 @ 5200 MHz, BT Basic @ 2480 MHz Date of Test: 6/3/2013

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

	Power Settings									
	Target (dBm)	Measured (dBm)	Software Setting							
Chain A	16.5	16.6	29.5							
Chain B	8.0	-	8dBm							

#### Spurious Radiated Emissions, 7 - 15GHz



#### Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

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

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



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



#### Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2710.000	46.9	V	54.0	-7.1	Peak	180	1.0	13
4960.000	48.1	V	54.0	-5.9	Peak	180	1.0	13

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4960.050	50.7	V	54.0	-3.3	AVG	161	1.5	POS; RB 1 MHz; VB: 10 Hz
4959.830	59.6	V	74.0	-14.4	PK	161	1.5	POS; RB 1 MHz; VB: 3 MHz
4960.030	50.4	Н	54.0	-3.6	AVG	117	1.1	POS; RB 1 MHz; VB: 10 Hz
4959.530	59.7	Н	74.0	-14.3	PK	117	1.1	POS; RB 1 MHz; VB: 3 MHz
2712.980	48.2	Н	54.0	-5.8	AVG	156	1.0	POS; RB 1 MHz; VB: 10 Hz
2715.300	58.6	Н	74.0	-15.4	PK	156	1.0	POS; RB 1 MHz; VB: 3 MHz
2715.990	44.9	V	54.0	-9.1	AVG	186	1.0	POS; RB 1 MHz; VB: 10 Hz
2720.280	56.9	V	74.0	-17.1	PK	186	1.0	POS; RB 1 MHz; VB: 3 MHz



		SUCCESS								
Client: I	ntel							Job Number:	J91968	
Madal	ntol Madel		lizalaac Natur	orly Adamter			T-I	Log Number:	J92301	
iviodei: I	ntel Wodel	3 IOUNGW W	nieless Netw	ork Adapter			Αссоι	unt Manager:	Christine Krebill	
Contact: S	Steve Hack	ett						-		
Standard: F	FCC 15 B, 1	5.247, RSS	210					Class: N/A		
un #14: Ra Da Tes Tes	adiated Spu ate of Test: st Engineer: st Location:	urious Emiss 6/1/2013 Jack Liu FT Chambe	sions, 1-15 ( r #4	GHz. Operat	ing Mode: 8	02.11n20 @	5300 MHz,	BT Basic @	2440 MHz	
					Dowor	Sottings			1	
			Target	(dBm)	Measure	ed (dBm)	Softwar	re Settina		
		Chain A	16	6.5	16	b.5	2	8.5		
		Chain B 8.0 -					80	dBm		
Amplitude (dBuv/m) 4 5 0 2	0.0 -		Land Contraction of the second s		j wanton wasaya		water			
3	10 0 -						ليبي	Munit		
	7000			ı	10000 Frequency	/ (MHz)			15000	
liminary	Sourious E	missions		acatod band	l (Dook vorei	is avorage l	imit)			
	l evel	Pol	15 209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Ava	degrees	meters	Johnnonts		
-	-	-	-	-	-	-	-			
al measu	rements at	3m			-		-			
equency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			



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



#### Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

e		r												
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments						
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters							
2510.000	42.7	V	68.3	-25.6	Peak	227	1.0							

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2512.860	53.8	V	68.3	-14.5	PK	278	1.0	POS; RB 1 MHz; VB: 3 MHz



		R SUCCESS						<b>E</b> IVIO	L IESI Dala
Client:	Intel							Job Number:	J91968
N.41 - 1			Guala ar Nist	مساد ۸ ما ۱۰			T-I	Log Number:	J92301
wodel:	Intel Model	3 TOUNGW W	vireless Netw	ork Adapter			Αссοι	unt Manager:	Christine Krebill
Contact:	Steve Hack	ett							
Standard:	FCC 15 B, 1	5.247, RSS	210					Class:	N/A
Run #15: R [ Te Te	<b>Padiated Spu</b> Date of Test: st Engineer: est Location:	urious Emis 6/1/2013 Jack Liu FT Chambe	<b>sions</b> , 1-15 ( r #4	GHz. Operat	ing Mode: 80	)2.11n20 @	5580 MHz,	BT Basic @	2440 MHz
					Dowor S	ottings			1
			Target	(dBm)	Measure	ed (dBm)	Softwar	re Settina	
		Chain A	16	b.5	16	0.5	3	3.0	
		Chain B	8	.0		-	80	dBm	]
Amplitude (dBuV/m)	80.0 - 70.0 - 60.0 - 50.0 - 40.0 -	nor and	Jerennese	 		illing and the set	. preduce rise of the land		
	30.0 -'i 7000			·	i 10000 Frequency	(MHz)			15000
reliminarv	Sourious F	missions ex	cluding allo	ncated band	(Peak versu	is average l	imit)		
requency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
-	-	-	-	-	-	-	-		
	<u>.</u>	•							
nal measu	urements at	3m Dol	15 200	15 217	Dotostar	۸ جامع، بلم	l lo¦abt	Commonte	
MH ₇		P01	10.209 Limit	Margin		AZIIIIUUII	metors	Comments	
	udµv/III	V/11		ivialyIII	TNUTAVY	ucylees	11101013	1	

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



#### Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

i i omnar j	opunous E											
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments				
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters					
2520.000	42.5	V	68.3	-25.8	Peak	230	1.3					

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2522.010	54.9	V	68.3	-13.4	PK	91	1.0	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel	Job Number:	J91968
Model:	Intal Madal 2140NCW Wiralass Natwork Adaptar	T-Log Number:	J92301
	Intel Model 3 roomGw Wileless Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A

#### Run #16: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: 802.11n20 @ 5785 MHz, BT Basic @ 2441 MHz Date of Test: 6/1/2013

Test Engineer: Jack Liu Test Location: FT Chamber #4

	Power Settings							
	Target (dBm)	Measured (dBm)	Software Setting					
Chain A	16.5	16.5	34.5					
Chain B	8.0	-	8dBm					

#### Spurious Radiated Emissions, 7 - 15GHz



#### Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

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

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

	NTS	EMC Test Data			
Client:	Intel	Job Number:	J91968		
Madal	Intal Madal 2160NCW Wiralass Natwork Adaptar	T-Log Number:	J92301		
would.	Intel Model 3 roomGw Wileless Network Adapter	Account Manager:	Christine Krebill		
Contact:	Steve Hackett				
Standard:	FCC 15 B, 15.247, RSS 210	Class:	N/A		

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



#### Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

· · · · · · · · · · · · · · · · · · ·												
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments				
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters					
2520.000	42.0	V	70.0	-28.0	Peak	224	1.0					

#### Final measurements at 3m

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2522.030	45.2	V	54.0	-8.8	AVG	93	1.0	Note 1
2521.830	55.4	V	74.0	-18.6	PK	93	1.0	Note 1

Note 1: Emission is not in the restricted band, restricted band limit was used



Class: N/A

Job Number: J91968

Account Manager: Christine Krebill

T-Log Number:

EMC Test Data

J92301

Run #17: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: 802.11n20 @ 5300 MHz, BT Basic @ 2480 MHz

Test Engineer: Rafael Varelas

Test Location: FT Chamber #7

	Power Settings							
	Target (dBm)	Measured (dBm)	Software Setting					
Chain A	16.5	16.5	28.5					
Chain B	8.0	-	8dBm					

#### Spurious Radiated Emissions, 7 - 15GHz



#### Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

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

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



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



#### Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1910.000	50.5	V	68.3	-17.8	Peak	180	1.0	
2820.000	40.1	V	54.0	-13.9	Peak	180	1.0	
4950.000	46.1	V	54.0	-7.9	Peak	180	1.0	

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4960.030	50.8	Н	54.0	-3.2	AVG	119	1.0	POS; RB 1 MHz; VB: 10 Hz
4960.350	58.9	Н	74.0	-15.1	PK	119	1.0	POS; RB 1 MHz; VB: 3 MHz
4960.030	50.6	V	54.0	-3.4	AVG	162	1.2	POS; RB 1 MHz; VB: 10 Hz
4959.870	60.4	V	74.0	-13.6	PK	162	1.2	POS; RB 1 MHz; VB: 3 MHz
1909.070	50.2	V	68.3	-18.1	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz
1911.370	49.5	Н	68.3	-18.8	PK	174	1.0	POS; RB 1 MHz; VB: 3 MHz





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



#### Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

J							r	
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1910.000	47.6	V	68.3	-20.7	Peak	180	1.0	
4950.000	46.2	V	54.0	-7.8	Peak	180	1.0	

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4960.040	50.5	Н	54.0	-3.5	AVG	118	1.0	POS; RB 1 MHz; VB: 10 Hz
4960.490	59.8	Н	74.0	-14.2	PK	118	1.0	POS; RB 1 MHz; VB: 3 MHz
4960.070	50.1	V	54.0	-3.9	AVG	162	1.2	POS; RB 1 MHz; VB: 10 Hz
4960.290	59.5	V	74.0	-14.5	PK	162	1.2	POS; RB 1 MHz; VB: 3 MHz
1919.800	50.0	V	68.3	-18.3	PK	22	1.0	POS; RB 1 MHz; VB: 3 MHz
1918.680	49.5	Н	68.3	-18.8	PK	96	1.0	POS; RB 1 MHz; VB: 3 MHz





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



#### Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

,						<u> </u>		
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1910.000	51.3	V	70.0	-18.7	Peak	180	1.0	
4960.000	45.9	V	54.0	-8.1	Peak	180	1.0	

#### Final measurements at 3m

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4960.050	50.5	V	54.0	-3.5	AVG	163	1.2	POS; RB 1 MHz; VB: 10 Hz
4960.450	59.3	V	74.0	-14.7	PK	163	1.2	POS; RB 1 MHz; VB: 3 MHz
4960.030	50.2	Н	54.0	-3.8	AVG	118	1.0	POS; RB 1 MHz; VB: 10 Hz
4959.850	59.4	Н	74.0	-14.6	PK	118	1.0	POS; RB 1 MHz; VB: 3 MHz
1914.740	37.8	Н	54.0	-16.2	AVG	146	1.0	Note 1
1907.610	48.7	Н	74.0	-25.3	PK	146	1.0	Note 1
1920.000	38.4	V	54.0	-15.6	AVG	360	1.0	Note 1
1907.370	49.1	V	74.0	-24.9	PK	360	1.0	Note 1

Note 1: Emission is not in the restricted band, restricted band limit was used





ntel ntel Model 3 ⁻ teve Hacket CC 15 B, 15	160NGW t 247, RS	Wireless Ne	twork Adapte	r		T- Acco	Job Number: Log Number: unt Manager:	J91968 J92301 Christine Krebill			
ntel Model 3 [°] teve Hacket CC 15 B, 15	160NGW t .247, RS	Wireless Ne	twork Adapte	r		-T Acco	Log Number: unt Manager:	J92301 Christine Krebill			
teve Hacket	t .247, RS	S 210	Intel Model 3160NGW Wireless Network Adapter Steve Hackett ECC 15 B 15 247 PSS 210								
teve Hacket CC 15 B, 15	t .247, RS	S 210									
CC 15 B, 15	.247, RS	S 210									
						Class:	В				
liminary Ra MHz (Wi-Fi) y peak readi	idiated E at 16.5 d ings cap	Imissions, 3 IBm and 244	0 - 1000 MHz 10 MHz (Blue 1 pre-scan	z tooth) at ma	ximum leve	1					
Level	Pol	FCC 15.20	9 / RSS 210	Detector	Azimuth	Height	Comments				
dBµV/m	<u></u>	Limit	Margin	PK/QP/Avg	degrees	meters					
30.5 20.2	<u>H</u>	43.5	-/.U	Peak	229	2.0					
29.3		40.0	-10.7	Peak	215	2.5 1 F					
35.1	<u> </u>	40.U	-12.3	Peak	233 185	1.5					
30.Z 33.1	<u>v</u> Ц	40.0	-7.0	Doak	100	1.0					
33.1	 \/	40.0 46.0	-12.7	r can Peak	200	1.0					
26.0	 凵	54.0	-12.1 10 0	Dook	207	1.0	1				
.0- .0- .0- .0- .0- .0- .0- .0- .0-			· '100.0	Frequence	, , , , , ,	, Imaliana , Imaliana ,	    	hudo hudo dud			
	peak readi         Level         dBµV/m         36.5         29.3         33.7         36.2         33.1         33.9         36.0         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 -         .0 - </td <td>peak readings cap       Level     Pol       dBμV/m     v/h       36.5     H       29.3     V       33.7     H       36.2     V       33.1     H       33.9     V       36.0     H</td> <td>$\begin{array}{c c c c c c c c c c c c c c c c c c c$</td> <td>$\frac{\text{peak readings captured during pre-scan}{\text{Level}}  Pol  FCC 15.209 / RSS 210 \\ \frac{\text{dB}\mu\text{V/m}}{\text{dB}\mu\text{V/m}}  \frac{\text{v/h}}{\text{h}}  \frac{\text{Limit}}{\text{Margin}}  \frac{\text{Margin}}{36.5}  H  43.5  -7.0 \\ 29.3  \text{V}  40.0  -10.7 \\ 33.7  H  46.0  -12.3 \\ 36.2  \text{V}  46.0  -9.8 \\ 33.1  H  46.0  -12.9 \\ 33.9  \text{V}  46.0  -12.1 \\ 36.0  \text{H}  54.0  -18.0 \\ \hline \end{array}$</td> <td>peak readings captured during pre-scan         Level       Pol       FCC 15.209 / RSS 210       Detector         $dB\mu V/m$       v/h       Limit       Margin       Pk/QP/Avg         $36.5$       H       $43.5$       -7.0       Peak         $29.3$       V       $40.0$       -10.7       Peak         $33.7$       H       $46.0$       -12.3       Peak         $36.2$       V       $46.0$       -9.8       Peak         $33.1$       H       $46.0$       -12.9       Peak         $33.9$       V       $46.0$       -12.1       Peak         $36.0$       H       $54.0$       -18.0       Peak</td> <td>peak readings captured during pre-scan           Level         Pol         FCC 15.209 / RSS 210         Detector         Azimuth           dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees           36.5         H         43.5         -7.0         Peak         229           29.3         V         40.0         -10.7         Peak         215           33.7         H         46.0         -12.3         Peak         233           36.2         V         46.0         -12.9         Peak         185           33.1         H         46.0         -12.1         Peak         209           36.0         H         54.0         -18.0         Peak         230</td> <td>peak readings captured during pre-scan         Level       Pol       FCC 15.209 / RSS 210       Detector       Azimuth       Height         $dB_{\mu}V/m$       v/h       Limit       Margin       Pk/QP/Avg       degrees       meters         36.5       H       43.5       -7.0       Peak       229       2.0         29.3       V       40.0       -10.7       Peak       215       2.5         33.7       H       46.0       -12.3       Peak       233       1.5         36.2       V       46.0       -12.9       Peak       185       1.5         33.1       H       46.0       -12.1       Peak       209       1.0         36.0       H       54.0       -18.0       Peak       230       1.0         O         .0       .0       .0       .0       .0       .0       .0       .0         .0.0       .0       .0       .0       .0       .0       .0       .0       .0       .0       .0         .0.0       .0       .0       .0       .0       .0       .0       .0       .0       .0       .0         .0.0</td> <td>peak readings captured during pre-scan         Level       Pol       FCC 15.209 / RSS 210       Detector       Azimuth       Height       Comments         36.5       H       43.5       -7.0       Peak       229       2.0         29.3       V       40.0       -10.7       Peak       215       2.5         33.7       H       46.0       -12.3       Peak       233       1.5         36.2       V       46.0       -12.9       Peak       185       1.5         33.1       H       46.0       -12.9       Peak       192       1.0         33.9       V       46.0       -12.1       Peak       230       1.0         36.0       H       54.0       -18.0       Peak       230       1.0         0      </td>	peak readings cap       Level     Pol       dBμV/m     v/h       36.5     H       29.3     V       33.7     H       36.2     V       33.1     H       33.9     V       36.0     H	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\frac{\text{peak readings captured during pre-scan}{\text{Level}}  Pol  FCC 15.209 / RSS 210 \\ \frac{\text{dB}\mu\text{V/m}}{\text{dB}\mu\text{V/m}}  \frac{\text{v/h}}{\text{h}}  \frac{\text{Limit}}{\text{Margin}}  \frac{\text{Margin}}{36.5}  H  43.5  -7.0 \\ 29.3  \text{V}  40.0  -10.7 \\ 33.7  H  46.0  -12.3 \\ 36.2  \text{V}  46.0  -9.8 \\ 33.1  H  46.0  -12.9 \\ 33.9  \text{V}  46.0  -12.1 \\ 36.0  \text{H}  54.0  -18.0 \\ \hline \end{array}$	peak readings captured during pre-scan         Level       Pol       FCC 15.209 / RSS 210       Detector $dB\mu V/m$ v/h       Limit       Margin       Pk/QP/Avg $36.5$ H $43.5$ -7.0       Peak $29.3$ V $40.0$ -10.7       Peak $33.7$ H $46.0$ -12.3       Peak $36.2$ V $46.0$ -9.8       Peak $33.1$ H $46.0$ -12.9       Peak $33.9$ V $46.0$ -12.1       Peak $36.0$ H $54.0$ -18.0       Peak	peak readings captured during pre-scan           Level         Pol         FCC 15.209 / RSS 210         Detector         Azimuth           dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees           36.5         H         43.5         -7.0         Peak         229           29.3         V         40.0         -10.7         Peak         215           33.7         H         46.0         -12.3         Peak         233           36.2         V         46.0         -12.9         Peak         185           33.1         H         46.0         -12.1         Peak         209           36.0         H         54.0         -18.0         Peak         230	peak readings captured during pre-scan         Level       Pol       FCC 15.209 / RSS 210       Detector       Azimuth       Height $dB_{\mu}V/m$ v/h       Limit       Margin       Pk/QP/Avg       degrees       meters         36.5       H       43.5       -7.0       Peak       229       2.0         29.3       V       40.0       -10.7       Peak       215       2.5         33.7       H       46.0       -12.3       Peak       233       1.5         36.2       V       46.0       -12.9       Peak       185       1.5         33.1       H       46.0       -12.1       Peak       209       1.0         36.0       H       54.0       -18.0       Peak       230       1.0         O         .0       .0       .0       .0       .0       .0       .0       .0         .0.0       .0       .0       .0       .0       .0       .0       .0       .0       .0       .0         .0.0       .0       .0       .0       .0       .0       .0       .0       .0       .0       .0         .0.0	peak readings captured during pre-scan         Level       Pol       FCC 15.209 / RSS 210       Detector       Azimuth       Height       Comments         36.5       H       43.5       -7.0       Peak       229       2.0         29.3       V       40.0       -10.7       Peak       215       2.5         33.7       H       46.0       -12.3       Peak       233       1.5         36.2       V       46.0       -12.9       Peak       185       1.5         33.1       H       46.0       -12.9       Peak       192       1.0         33.9       V       46.0       -12.1       Peak       230       1.0         36.0       H       54.0       -18.0       Peak       230       1.0         0			





	WE ENGINEE	R SUCCESS							
Client:	Intel							Job Number:	J91968
Model:	Intel Model	3160NGW	Wireless Net	twork Adapte	۶r		T-	Log Number:	J92301
model							Ассо	unt Manager:	Christine Krebill
Contact:	Steve Hack		C 010					Class	D
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	20.0- 10.0-, 30.0			· 100.0	~~~w	, ,		1 1 1	
	20.0- 10.0-, 30.0			' '100.0	Frequenc				ioo.d
	20.0 - 10.0 - 30.0			' 100.0	Frequenc	y (MHz)			ioóo.c
un #2: Mi	20.0 - 10.0 - 30.0 aximized Re	eadings Fro	om Run #1	' '100.0	Frequenc	y (MHz)			 1000.0
in #2: Maximize	20.0 - 10.0 - 30.0 aximized Re ed quasi-per	eadings Fro	om Run #1	manipulation	Frequence	erface cable	s)	Commonto	. iooo.d
n #2: Mi Maximize equency MHz	20.0 - 10.0 - 30.0 aximized Re ed quasi-per Level dBuV/m	eadings From the second	om Run #1 s (includes i FCC 15.200	100.0	Frequence n of EUT inter Detector	erface cable	s) Height	Comments	 1000.0
n #2: Ma Maximize equency MHz 25.795	20.0 - 10.0 - 30.0 aximized Re aximized Re ed quasi-pea Level dBµV/m 34.1	eadings From Pol	om Run #1 s (includes i FCC 15.20 Limit 46.0	manipulation 9 / RSS 210 Margin -11.9	Frequence n of EUT inte Detector Pk/QP/Avg QP	erface cable Azimuth degrees 225	s) Height meters 1.5	Comments QP (1.00s)	' ' <u>1000.</u> d
n #2: Maximize equency MHz 225.795 99.945	20.0 - 10.0 - 30.0 aximized Re ed quasi-pea Level dBµV/m 34.1 31.7	eadings From A reading Pol V/h H V	om Run #1 s (includes i FCC 15.20 Limit 46.0 46.0	manipulation 9 / RSS 210 Margin -11.9 -14.3	Frequence n of EUT inte Detector Pk/QP/Avg QP QP	erface cable Azimuth degrees 225 205	s) Height meters 1.5 0.9	Comments QP (1.00s) QP (1.00s)	. iooo.d
n #2: Ma Maximize equency MHz 225.795 39.945 34.327	20.0 - 10.0 - 30.0 aximized Re ed quasi-per dBµV/m 34.1 31.7 31.3	eadings Fro ak reading Pol V/h H V H	om Run #1 s (includes) FCC 15.20 Limit 46.0 43.5	manipulation 9 / RSS 210 Margin -11.9 -14.3 -12.2	Frequence n of EUT inter Detector Pk/QP/Avg QP QP QP	erface cable Azimuth degrees 225 205 223	s) Height meters 1.5 0.9 1.9	Comments QP (1.00s) QP (1.00s) QP (1.00s)	' ' <u>1000.0</u>
n #2: M Maximize equency MHz 225.795 99.945 34.327 56.453	20.0 - 10.0 - 30.0 aximized Re ed quasi-per Level dBµV/m 34.1 31.7 31.3 27.6	eadings From A contract of the second	om Run #1 s (includes   FCC 15.20 Limit 46.0 43.5 40.0	manipulation 9 / RSS 210 Margin -11.9 -14.3 -12.2 -12.4	Frequence n of EUT inte Detector Pk/QP/Avg QP QP QP QP	erface cable Azimuth degrees 225 205 223 202	s) Height meters 1.5 0.9 1.9 1.9	Comments QP (1.00s) QP (1.00s) QP (1.00s) QP (1.00s)	' ' iooo.d
In #2: Ma Maximize equency MHz 225.795 799.945 34.327 56.453 328.280	20.0 - 10.0 - 30.0 aximized Re ed quasi-pea Level dBµV/m 34.1 31.7 31.3 27.6 29.4	eadings From A reading Pole V/h H V H V H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H H V V H V V H V V H V V H V V H V V V V V V V V V V V V V V V V V V V V	om Run #1 s (includes) FCC 15.20 Limit 46.0 46.0 43.5 40.0 46.0	manipulation 9 / RSS 210 Margin -11.9 -14.3 -12.2 -12.4 -16.6	Frequence Frequence Pk/QP/Avg QP QP QP QP QP QP QP QP	erface cable Azimuth degrees 225 205 223 202 214	s) Height meters 1.5 0.9 1.9 1.9 0.9	Comments QP (1.00s) QP (1.00s) QP (1.00s) QP (1.00s) QP (1.00s) QP (1.00s)	
IN #2: Ma Maximize equency MHz 225.795 299.945 34.327 56.453 28.280 99.028 99.028	20.0 - 10.0 - 30.0 aximized Reference of the second sec	eadings From ak reading Pol V/h H V H V H V	om Run #1 s (includes) FCC 15.20 Limit 46.0 46.0 43.5 40.0 46.0 46.0 54.0	manipulation 9 / RSS 210 Margin -11.9 -14.3 -12.2 -12.4 -16.6 -18.3 21.2	Frequence Frequence Pk/QP/Avg QP QP QP QP QP QP QP QP QP QP	erface cable Azimuth degrees 225 205 223 202 214 180 142	s) Height meters 1.5 0.9 1.9 1.9 0.9 1.0 0.9	Comments QP (1.00s) QP (1.00s) QP (1.00s) QP (1.00s) QP (1.00s) QP (1.00s) QP (1.00s)	' ' <u>1000.0</u>

	success			EM	C Test Data
Client: Intel				Job Number:	J91968
Madal: Intal Madal	2160NICW Wireless Network Adapter		T	-Log Number:	J92301
	STOUNGW WITCHESS INCLINUTE AUAPTER		Acco	ount Manager:	Christine Krebill
Contact: Steve Hacke	ett				
Standard: FCC 15 B, 1	5.247, RSS 210			Class:	В
	Conduc (Elliott Laboratories Fremo	cted Emissions ont Facility, Semi-Anec	hoic Cham	ber)	
Test Specific Detai Objective:	<b>S</b> The objective of this test session is to specification listed above.	perform final qualificatio	n testing of	the EUT with	respect to the
Date of Test:	6/5/2013	Config. Used	: 2		
Test Engineer:	Rafael Varelas	Config Change	None		
Test Location:	FI Chamber #4	Host Unit Voltage	e 120V/60Hz	2	
The host system was I from the LISN. Ambient Condition	s: Temperature:	emi-anechoic chamber, · 21.5 °C	40 cm from a	a vertical coup	ling plane and 80cm
	Rel. Humidity:	34 %			
Summary of Result WiFi MAC Address: 007	S I500BD5C54 DRTU Tool Version 1.6	5.1-628 Driver version	16.0.0.49		
Run #	Test Performed	Limit	Result	Margin	
1	CE, AC Power, 120V/60Hz	Class B	Pass	50.6 dBµV	@ 0.208 MHz(-12.7 dB)
1					



	LE ENGINEER BUCCEBB		
Client:	Intel	Job Number:	J91968
Model	Intel Medal 2160NCW Wireless Natwork Adaptor	T-Log Number:	J92301
MUUEI.	Intel Model 3 10010GW WILEIESS Network Adapter	Account Manager:	Christine Krebill
Contact:	Steve Hackett		
Standard:	FCC 15 B, 15.247, RSS 210	Class:	В
Run #1: AC	Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz		

Note: The module was transmitting at 2412 MHz (Wi-Fi) at 16.5 dBm and 2441 MHz (Bluetooth) at maximum level.

#### Final quasi-peak and average readings

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Frequency	Level	AC	Clas	ss B	Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.208	50.6	Neutral	63.3	-12.7	QP	QP (1.00s)
0.254	46.0	Line 1	61.6	-15.6	QP	QP (1.00s)
0.208	33.8	Neutral	53.3	-19.5	AVG	AVG (0.10s)
0.254	29.5	Line 1	51.6	-22.1	AVG	AVG (0.10s)
0.360	34.4	Neutral	58.7	-24.3	QP	QP (1.00s)
0.379	31.2	Line 1	58.3	-27.1	QP	QP (1.00s)
0.619	25.5	Line 1	56.0	-30.5	QP	QP (1.00s)
0.360	17.7	Neutral	48.7	-31.0	AVG	AVG (0.10s)
0.619	14.4	Line 1	46.0	-31.6	AVG	AVG (0.10s)
0.379	16.4	Line 1	48.3	-31.9	AVG	AVG (0.10s)
0.572	22.9	Neutral	56.0	-33.1	QP	QP (1.00s)
0.572	11.9	Neutral	46.0	-34.1	AVG	AVG (0.10s)





### End of Report

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