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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: 3160SDW

IC CERTIFICATION #:	1000M-3160SD
FCC ID:	PD93160SD
APPLICANT:	Intel Mobile Communications 100 Center Point Circle Suite 200 Columbia, SC 29210
TEST SITE(S):	National Technical Systems - Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-3; 2845B-4, 2845B-5, 2845B-7
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REVISION HISTORY

Rev#	Date	Comments	Modified By
-	1-23-2014	First release	

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SCOPE

An electromagnetic emissions test has been performed on the Intel Mobile Communications model 3160SDW, 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 C63.10-2009
FHSS test procedure DA 00-0705A1

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

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

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

OBJECTIVE

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

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

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

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

manufactured.

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

STATEMENT OF COMPLIANCE

The tested sample of Intel Mobile Communications model 3160SDW 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 model 3160SDW and therefore apply only to the tested sample. The sample was selected and prepared by Steve 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

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

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247 (a) (1)	RSS 210 A8.1 (1)	20dB Bandwidth	Basic Rate: 950 kHz EDR: 1475 kHz	Channel spacing > 2/3rds 20dB BW	Complies
		Channel Separation	1 MHz		Complies
15.247 (a) (1) (ii)	RSS 210 A8.1 (4)	Number of Channels	Min: 20 Max: 79	15 or more	Complies
15.247 (a) (1) (ii)	RSS 210 A8.1 (4)	Channel Dwell Time (*average time of occupancy)*	<0.4 second within a period of 0.4 x number of channels	<0.4 second within a period of 0.4 x number of channels	Complies
15.247 (a) (1)	RSS 210 A8.1 (1)	Channel Utilization	The system uses the Bluetooth algorithm and, therefore, meets all requirements for channel utilization.	All channels shall, on average, be used equally	Complies
15.247 (b) (3)	RSS 210 A8.4 (2)	Output Power	Basic Rate: 6.32 dBm EDR: -0.76 dBm EIRP = 0.009 W Note 1	0.125 Watts (EIRP < 0.5 Watts)	Complies
15.247(c)	RSS 210 A8.5	Spurious Emissions – 30MHz – 25GHz	All spurious emissions < -20dBc	< -20dBc	Complies
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 30MHz – 25GHz	50.7 dBµV/m @ 4804.0 MHz (-3.3 dB)	15.207 in restricted bands, all others < -20dBc	Complies
15.247 (a) (1)	RSS 210 A8.1(2)	Receiver bandwidth	Refer to operational description	Shall match the channel bandwidth	Complies
Note 1: EIRP calculated using antenna gain of 3.2 dBi					

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	EUT uses IPEX-4 RF ports	Unique or integral antenna required	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	45.7 dBµV @ 0.398 MHz (-2.2 dB)	Refer to page 17	Complies
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to SAR report and RSS 102 declaration	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	Refer to User Manual for details	Statement required regarding non-interference	Complies
-	RSP 100 RSS GEN 7.1.3	User Manual	Refer to User Manual for details	Statement for products with detachable antenna	Complies
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	Basic: 890kHz EDR: 1348kHz	Information only	N/A

MEASUREMENT UNCERTAINTIES

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

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF power, conducted (power meter)	dBm	25 to 7000 MHz	± 0.52 dB
RF power, conducted (Spectrum analyzer)	dBm	25 to 7000 MHz	± 0.7 dB
Conducted emission of transmitter	dBm	25 to 26500 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 26500 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Radiated emission (field strength)	dBµV/m	25 to 1000 MHz	± 3.6 dB
		1000 to 40000 MHz	± 6.0 dB
Conducted Emissions (AC Power)	dBµV	0.15 to 30 MHz	± 2.4 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Intel Mobile Communications model 3160SDW is an IEEE 802.11a/b/g/n/ac wireless network adapter that supports 1x1 (SISO) operation and Bluetooth in Basic Rate, Enhanced Data Rate, and Low Energy modes. It is designed to be soldered down in host devices.

The sample was received on December 30, 2013 and tested on January 6 - 11, and 14, 2014. The EUT consisted of the following component(s):

Company	Model	Description	MAC Address:	FCC ID
Intel Mobile Communications	3160SDW	Wireless Network Adapter	001500E60B22	PD93160SD 1000m-3160SD

OTHER EUT DETAILS

802.11abgn + ac80, 1x1, module
Bluetooth 4.0
Supports simultaneous transmission
No transmit/receive diversity

ANTENNA SYSTEM

The EUT antenna is a two-antenna PIFA antenna system – SkyCross, Inc. One antenna is used for WiFi operation and one for Bluetooth operation. For Bluetooth: transmit is chain B, receive is chain B. For WiFi, only Chain A is used for transmit and receive.

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

Band (MHz)	Antenna Gain
2400-2483.5	3.2 dBi
5150-5250	3.6 dBi
5250-5350	3.7 dBi
5470-5725	4.8 dBi
5725-5850	5.0 dBi

ENCLOSURE

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

MODIFICATIONS

No modifications were made to the EUT during the time the product was at NTS Silicon Valley.

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Dell	Latitude E5400	Laptop	Unmarked	N/A
Dell	LA90PS3-00	AC/DC Adapter	CN-0FR613-71615-7CO-0058	N/A
Intel	-	Test Fixture	-	-

EUT INTERFACE PORTS

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

Port		Cable(s)		
From	To	Description	Shielded/Unshielded	Length(m)
DC power (laptop)	External power supply	2 wire	Unshielded	2
AC input (power supply)	AC mains	2 wire	Unshielded	2
PCIe Internal Port	Test Fixture	Ribbon Cable	Unshielded (Shielded for radiated emissions)	0.8
EUT – RF ports (x2)	Antenna Fixture	coaxial (x2)	Shielded	0.2

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 1.7.4-855 and the device driver was version 16.8.0.3.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken at the test sites listed below. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission and with industry Canada.

Site	Registration Numbers		Location
	FCC	Canada	
Chamber 4	211948	2845B-4	41039 Boyce Road Fremont, CA 94538-2435
Chamber 7	A2LA accreditation	2845B-7	

ANSI C63.4 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.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.10. 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 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

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

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

INSTRUMENT CONTROL COMPUTER

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

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

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

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

FILTERS/ATTENUATORS

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

ANTENNAS

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

ANTENNA MAST AND EQUIPMENT TURNTABLE

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

ANSI C63.10 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 as specified in ANSI C63.4. 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 C63.10, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS

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

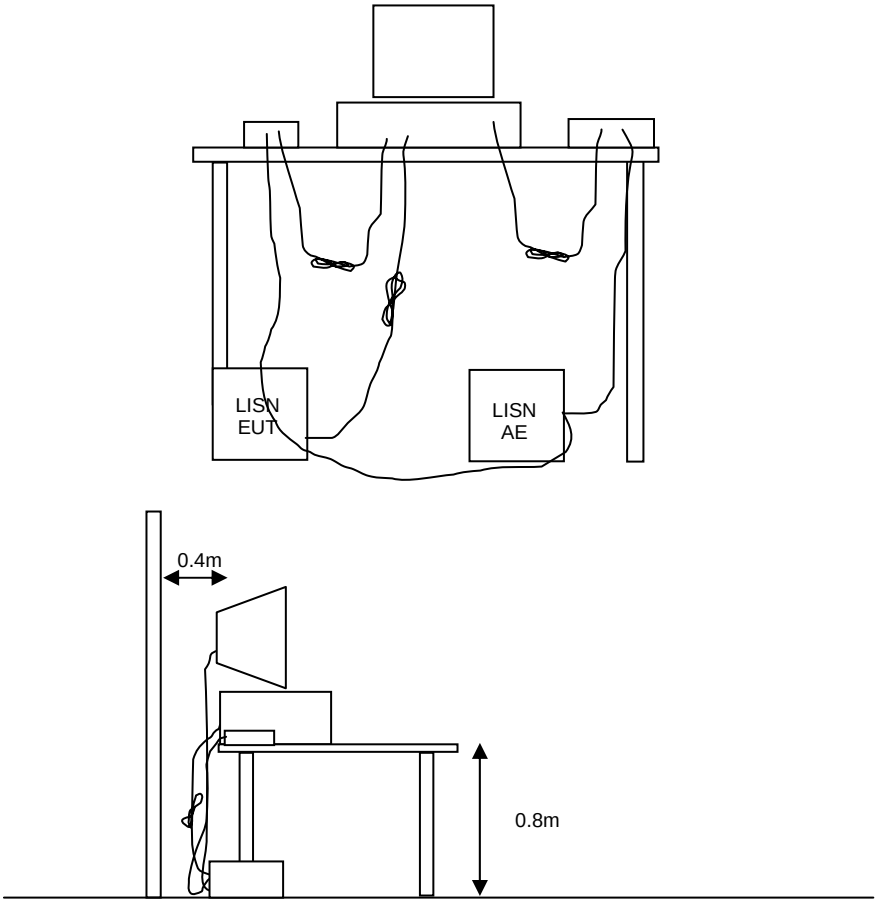


Figure 1 Typical Conducted Emissions Test Configuration

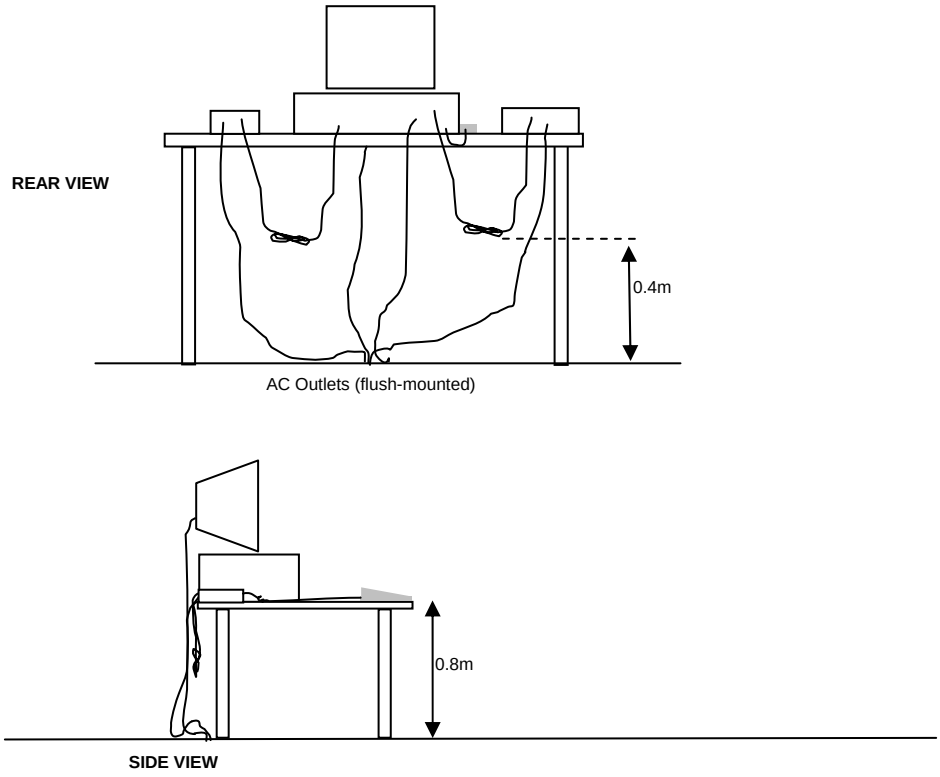
RADIATED EMISSIONS

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

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

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

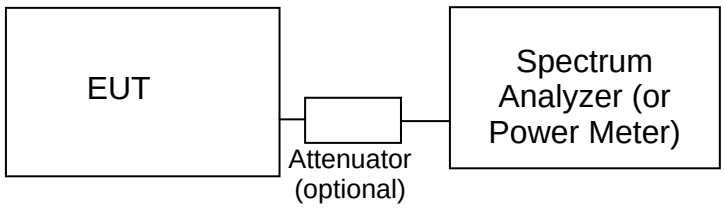
When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



Typical Test Configuration for Radiated Field Strength Measurements

CONDUCTED EMISSIONS FROM ANTENNA PORT

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



Test Configuration for Antenna Port Measurements

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

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

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

BANDWIDTH MEASUREMENTS

The 6dB, 20dB, 26dB and/or 99% signal bandwidth are measured using the bandwidths recommended by ANSI C63.10 and RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

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

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

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

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

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

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands[1] (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

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

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).

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

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40*LOG_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_S = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

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

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

where P is the eirp (Watts)

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

Appendix A Test Equipment Calibration Data

Manufacturer	Description	Model	Asset #	Cal Due
Radio Antenna Port, 30-Dec-13				
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	4/25/2014
Agilent Technologies	USB Average Power Sensor	U2001A	2442	12/19/2014
Radiated Emissions, 1,000 - 6,500 MHz, 30-Dec-13				
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	7/12/2014
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	1/18/2014
Radiated Spurious Emissions, 1000 - 25,000 MHz, 31-Dec-13				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	7/19/2014
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/9/2014
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	11/26/2014
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/3/2014
Radiated Spurious Emissions, 1000 - 40,000 MHz, 02-Jan-14				
EMCO	Antenna, Horn, 1-18 GHz	3115	487	7/19/2014
Narda West	High Pass Filter, 8 GHz	HPF 180	821	3/13/2014
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	Microwave Preamplifier, 1-26.5GHz	8449B	1780	11/26/2014
A. H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	6/28/2014
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/3/2014
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	3/13/2014
Radio Antenna Port (Power and Spurious Emissions), 03-Jan-14				
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	1/28/2014
Radio Antenna Port (Power and Spurious Emissions), 03-Jan-14				
Rohde & Schwarz	Power Sensor 100 uW - 2 Watts use with 20dB attenuator sn:1031.6959.00 only	NRV-Z32	1423	9/17/2014
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1539	8/30/2014
Agilent Technologies	USB Average Power Sensor	U2001A	2442	12/19/2014
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	1/28/2014
Radiated Emissions, 1000 - 26,500 MHz, 07-Jan-14				
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	8/2/2014
Hewlett Packard	Head (Inc W1-W4, 1946 , 1947) Purple	84125C	1772	6/18/2014
A. H. Systems	Red System Horn, 18-40GHz	SAS-574, p/n: 2581	2161	6/10/2014
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	2/19/2014

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	8/24/2014
Radiated Spurious Emissions, 1000 - 25,000 MHz, 07-Jan-14				
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/19/2014
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	7/12/2014
Hewlett Packard	Head (Inc W1-W4, 1946 , 1947) Purple	84125C	1772	6/18/2014
A. H. Systems	Red System Horn, 18-40GHz	SAS-574, p/n: 2581	2161	6/10/2014
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	2/19/2014
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2238	9/18/2014
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	8/24/2014
Radiated Spurious Emissions, 1000 - 15,000 MHz, 08-Jan-14				
Narda West	High Pass Filter, 8 GHz	HPF 180	821	3/13/2014
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	Microwave Preamplifier, 1-26.5GHz	8449B	1780	11/26/2014
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	9/18/2014
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	9/18/2014
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	2241	9/18/2014
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/3/2014
Radiated Emissions, 1000 - 15,000 MHz, 09-Jan-14				
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	7/12/2014
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	3/13/2014
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	8/2/2014
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	8/2/2014
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	2/19/2014
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/3/2014
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	8/24/2014
Radio Antenna Port (Power and Spurious Emissions), 09-Jan-14				
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	3/7/2014
Radiated Emissions, 30 - 1,000 MHz, 10-Jan-14				
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	8/9/2014
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/8/2014
Com-Power	Preamplifier, 1-1000 MHz	PAM-103	2885	11/1/2014

Manufacturer	Description	Model	Asset #	Cal Due
Conducted Emissions - AC Power Ports, 10-Jan-14				
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	2/14/2014
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	5/15/2014
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/8/2014
Conducted Emissions - AC Power Ports, 13-Jan-14				
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	5/15/2014
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/8/2014
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2001	4/4/2014
Radiated Emissions, 30 - 1,000 MHz, 13-Jan-14				
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	8/9/2014
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/8/2014
Com-Power	Preamplifier, 1-1000 MHz	PAM-103	2885	11/1/2014
Radio Antenna Port (Power and Spurious Emissions), 14-Jan-14				
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	1/28/2014
Radio Antenna Port (Power and Spurious Emissions), 15-Jan-14				
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	12/10/2014
Rohde & Schwarz	Power Sensor 100 uW - 2 Watts use with 20dB attenuator sn:1031.6959.00 only	NRV-Z32	1423	9/17/2014
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	1/28/2014

Appendix B Test Data

T94177 Pages 25 – 115

Client:	Intel Mobile Communications	Job Number:	J94122
Product	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Emissions Standard(s):	FCC Part 15, RSS-210	Class:	B
Immunity Standard(s):	-	Environment:	Radio

EMC Test Data

For The

Intel Mobile Communications

Product

3160SDW

Date of Last Test: 1/16/2014

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Power vs. Data Rate

In normal operating modes the card uses power settings stored on EEPROM to set the output power. For a given nominal output power the actual transmit power normally is redcued as the data rate increases, therefore testing was performed at the data rate in the mode wiht highest power to determine compliance with the requirements.
The following power measurements were made using a GATED average power meter and with the device configured in a continuous transmit mode on Chain 1(Port 2) at the various data rates in each mode to verify the highest power mode:

Sample Notes

MAC Address: 001500E60B22 DRTU Tool Version 1.7.4-845 Driver version 16.8.0.3

Date of Test: 12/30/2013
Test Engineer: Jack Liu
Test Location: FT Lab6

Mode	Data Rate	Power (dBm)	Power setting
802.11b	1	**16.6**	20.0
	2	16.5	
	5.5	16.4	
	11	16.4	
802.11g	6	**15.2**	20.0
	9	15.1	
	12	15.1	
	18	15.1	
	24	15.0	
	36	14.9	
	48	14.8	
	54	14.8	

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Mode	Data Rate	Power (dBm)	Power setting	
802.11n/ac 20MHz	6.5	**11.6**	20.0	
	13	11.2		
	19.5	11.0		
	26	10.8		
	39	10.6		
	52	10.4		
	58.5	10.4		
	65	10.4		
	78	10.1		<<-11ac mode only
802.11n/ac 40MHz	13.5	**10.5**	20.0	
	27	10.4		
	40.5	10.3		
	54	10.2		
	81	10.1		
	108	10.0		
	121.5	10.0		
	135	10.0		
	162	9.9		<<-11ac mode only
	180	9.9		<<-11ac mode only
802.11ac 80MHz	29.3	**10.1**	20.0	
	58.5	10.0		
	87.8	9.9		
	117	9.8		
	175.5	9.7		
	234	9.6		
	266.3	9.5		
	292.5	9.4		
	351	9.4		
	390	9.4		

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

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

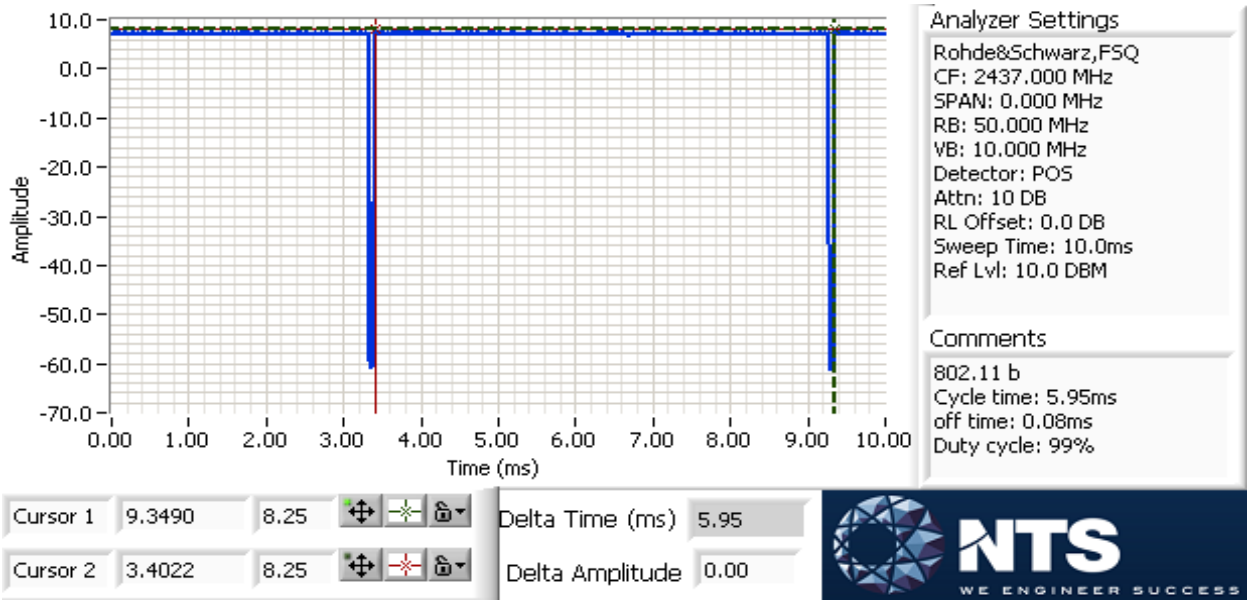
Duty Cycle

Date of Test: 12/30/2013
Test Engineer: Jack Liu
Test Location: FT Lab6

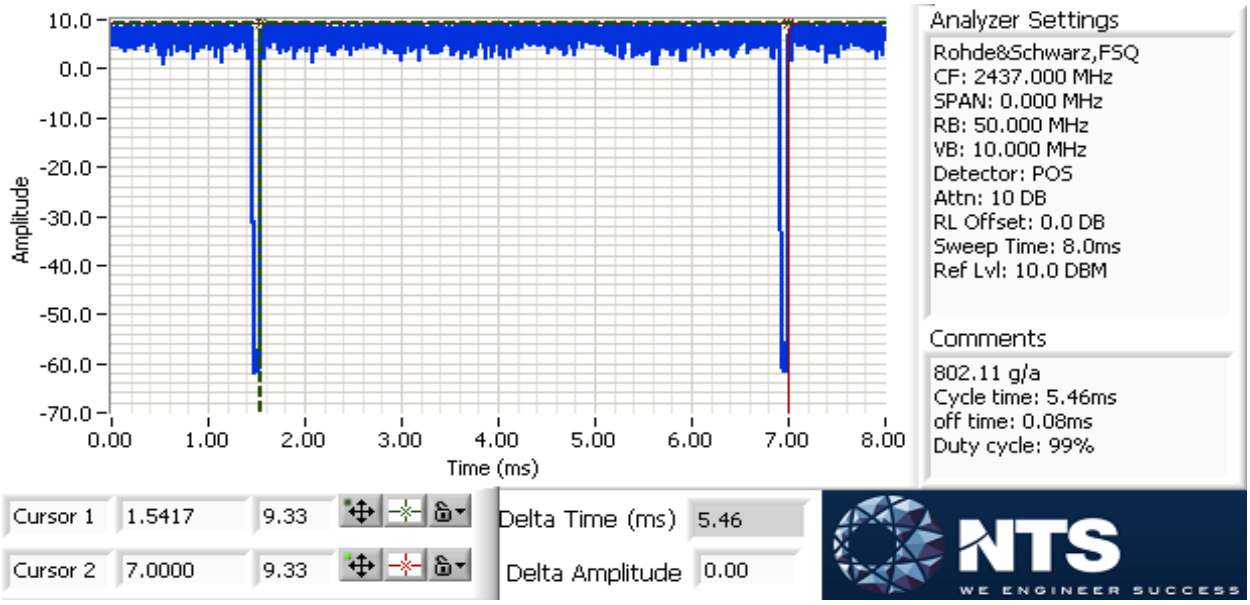
Duty cycle measurements performed on the worse case data rate for power.
Notes: Measurements taken with maximum RBW/VBW settings allowed.

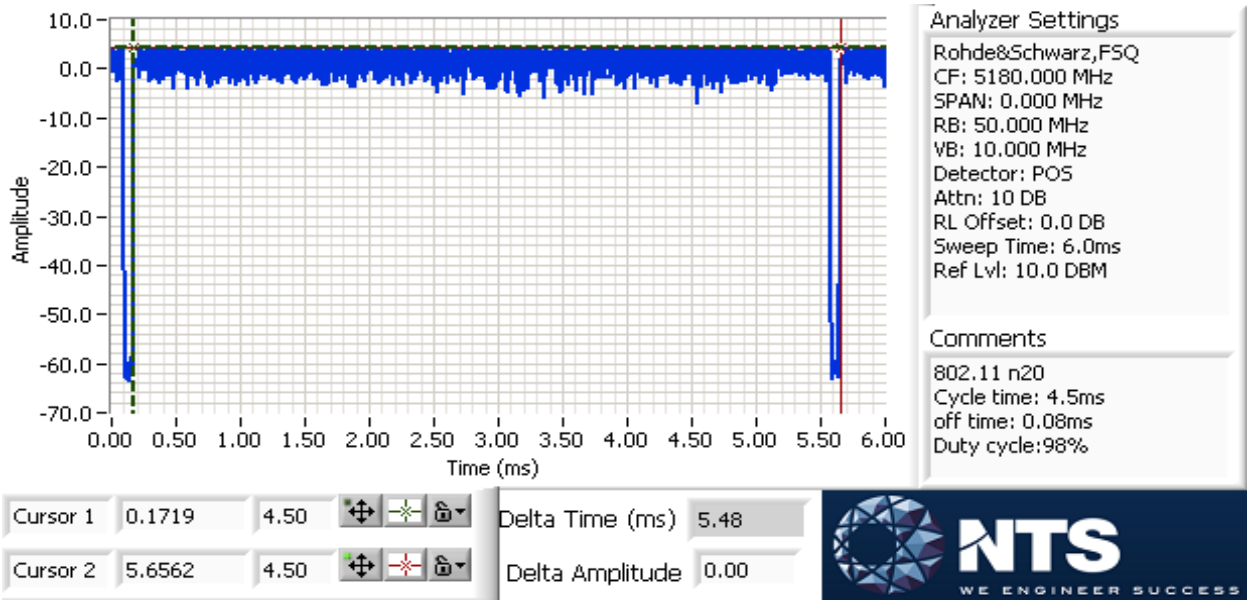
Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11b	1Mb/s	0.99	Yes	10	0	0	100
11g	6Mb/s	0.99	Yes	8	0	0	125
11a	6Mb/s	0.99	Yes	8	0	0	125
n20	HT0	0.98	Yes	6	0	0	166.67
n40	HT0	0.97	Yes	5	0.12	0.24	200
ac80	VHT0	0.94	Yes	2	0.26	0.51	500
BLE	-	0.63	Yes	0.4	1.97	3.95	2500

* Correction factor when using RMS/Power averaging - 10*log(1/x)
** Correction factor when using linear voltage average - 20*log(1/x)
T = Minimum transmission duration

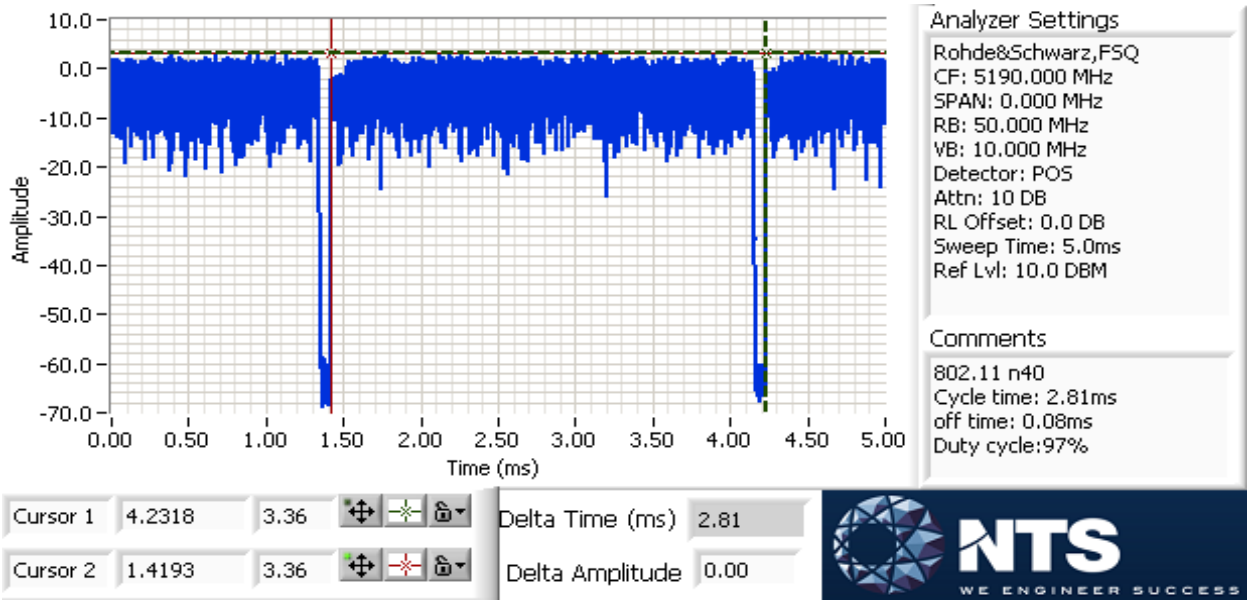


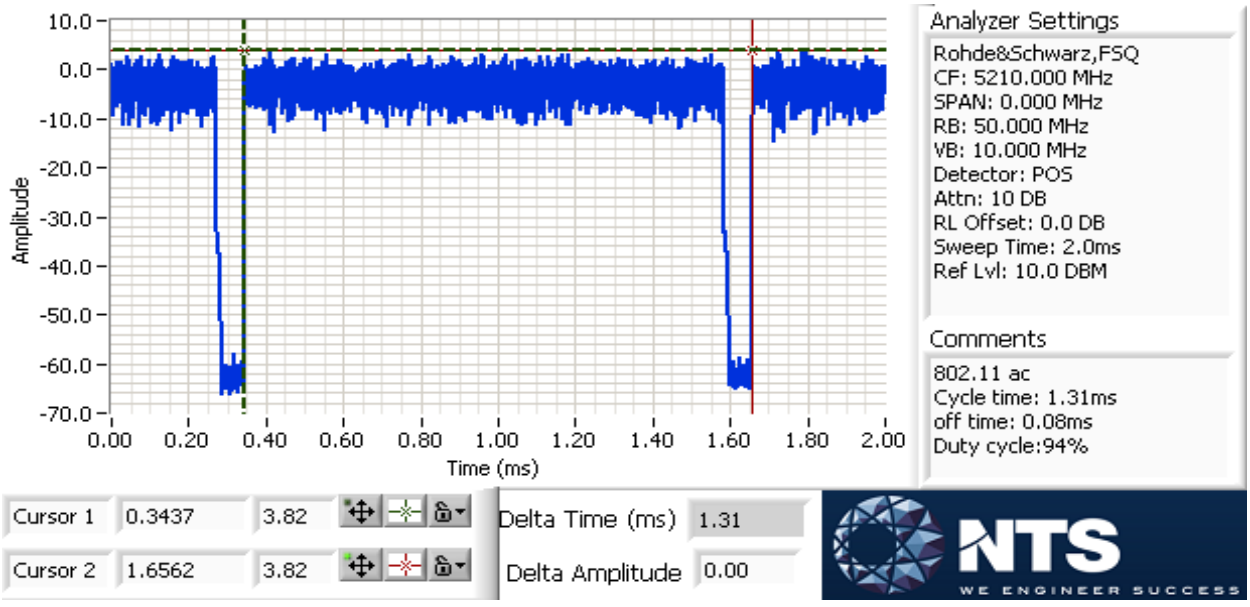
Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A



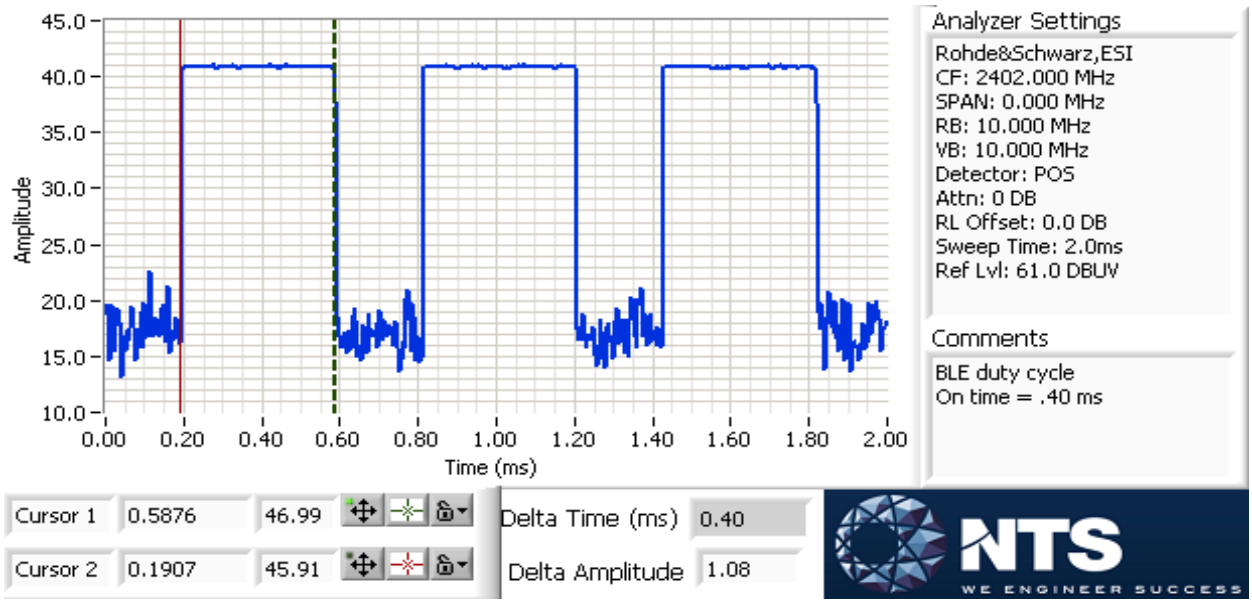


Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A





Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.
For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:

Temperature: 20 °C
Rel. Humidity: 31 %

Summary of Results

For Wi-Fi, Chain A (2) is used for Tx and Rx. For Bluetooth, chain B (1) is used for Tx and Rx.
MAC Address: 001500E60B22 DRTU Tool Version 1.7.4-855 Driver version 16.8.0.3

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	BT Basic 11b	2402MHz 2412MHz	9 21.0	-	Radiated Emissions, 1 - 10 GHz	FCC Part 15.209 / 15.247(c)	48.8 dBµV/m @ 4804.0 MHz (-5.2 dB)
2	BT Basic 11b	2480MHz 2462MHz	9 22.0	-			42.6 dBµV/m @ 4960.0 MHz (-11.4 dB)
3	BT Basic 11g	2402MHz 2412MHz	9 22.5	-			49.0 dBµV/m @ 4804.1 MHz (-5.0 dB)
4	BT Basic 11g	2480MHz 2462MHz	9 22.5	-			42.9 dBµV/m @ 4960.0 MHz (-11.1 dB)
Wi-Fi mode for the following runs based on the worst case mode from runs 1 through 4							
5	BT Basic 11g	2402MHz 2437MHz	9 22.5	-	Radiated Emissions, 1 - 10 GHz	FCC Part 15.209 / 15.247(c)	44.9 dBµV/m @ 4804.0 MHz (-9.1 dB)
6		2441MHz 2412MHz	9 22.5	-			42.8 dBµV/m @ 4882.0 MHz (-11.2 dB)
7		2441MHz 2462MHz	9 22	-			41.7 dBµV/m @ 4882.0 MHz (-12.3 dB)
8		2480MHz 2437MHz	9 22.5	-			40.6 dBµV/m @ 4960.0 MHz (-13.4 dB)

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Wi-Fi mode and channel and Bluetooth channel for the following runs based on the worst case mode from runs 1 through 8

9	BT EDR 11g	2402MHz 2412MHz	1 22.5	-	Radiated Emissions, 1 - 10 GHz	FCC Part 15.209 / 15.247(c)	56.3 dBµV/m @ 1244.7 MHz (-17.7 dB)
10		2402MHz 2437MHz	1 22.5	-			56.2 dBµV/m @ 1245.9 MHz (-17.8 dB)

Bluetooth mode for the following runs based on worst case mode from runs 1 through 10 combined with n20 mode at center channel in each 5 GHz band

11	BT Basic n20	2402MHz 5200MHz	9 29	-	Radiated Emissions, 1 - 15 GHz	FCC Part 15.209 / 15.247(c) / 15.407	48.5 dBµV/m @ 4804.0 MHz (-5.5 dB)
12		2441MHz 5200MHz	9 29	-			46.3 dBµV/m @ 4882.0 MHz (-7.7 dB)
13		2480MHz 5200MHz	9 29	-			43.9 dBµV/m @ 4960.0 MHz (-10.1 dB)
14		2402MHz 5300MHz	9 28.5	-			49.3 dBµV/m @ 4804.0 MHz (-4.7 dB)
15		2402MHz 5580MHz	9 30.5	-			47.1 dBµV/m @ 4804.1 MHz (-6.9 dB)
16		2402MHz 5785MHz	9 31.5	-			49.7 dBµV/m @ 4804.0 MHz (-4.3 dB)
17		2480MHz 5300MHz	9 28.5	-			57.5 dBµV/m @ 1198.8 MHz (-16.5 dB)
18		2480MHz 5580MHz	9 30.5	-			No measurable emission.
19		2480MHz 5785MHz	9 31.5	-			No measurable emission.

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

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #1: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11b @ 2412, BT Basic @ 2402 MHz

Date of Test: 1/7/2014
Test Engineer: John Caizzi
Test Location: Chamber 7

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5		21.0
BT	7.0	-	9.0

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

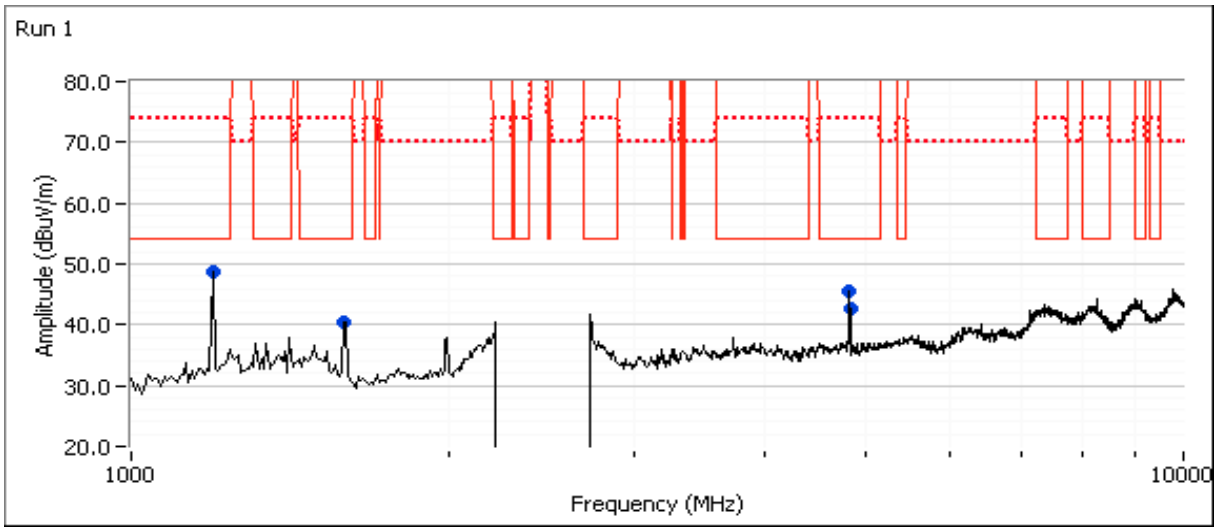
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1195.000	48.6	V	54.0	-5.4	Peak	178	1.5	Note 1
1592.500	40.4	V	54.0	-13.6	Peak	2	2.0	Note 1
4810.000	45.5	V	54.0	-8.5	Peak	213	1.0	
4825.000	42.8	V	54.0	-11.2	Peak	173	1.5	

Final measurements at 3m

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4804.030	48.8	V	54.0	-5.2	AVG	209	1.26	
4824.020	41.5	V	54.0	-12.5	AVG	233	1.54	
4804.080	50.9	V	74.0	-23.1	PK	209	1.26	
4824.000	46.5	V	74.0	-27.5	PK	233	1.54	

Note 1:	Emission from host laptop.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 2 - 3GHz

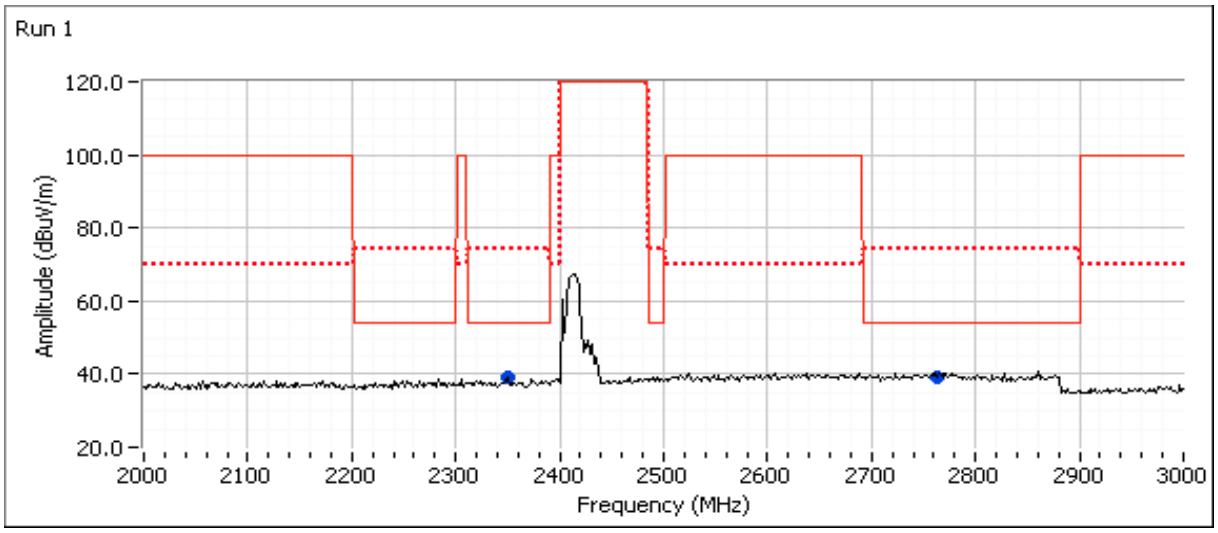
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2351.300	39.1	V	54.0	-14.9	Peak	360	1.0	noise floor
2772.810	39.2	V	54.0	-14.8	Peak	360	1.0	noise floor

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	
2352.150	30.5	V	54.0	-23.5	AVG	360	1.0	noise floor
2351.030	41.6	V	74.0	-32.4	PK	360	1.0	noise floor
2774.140	32.1	V	54.0	-21.9	AVG	360	1.0	noise floor
2771.650	43.6	V	74.0	-30.4	PK	360	1.0	noise floor
2350.880	30.4	H	54.0	-23.6	AVG	0	1.0	noise floor
2350.810	41.2	H	74.0	-32.8	PK	0	1.0	noise floor
2773.410	32.3	H	54.0	-21.7	AVG	0	1.0	noise floor
2771.480	43.7	H	74.0	-30.3	PK	0	1.0	noise floor



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #2: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11b @ 2462, BT Basic @ 2480 MHz

Date of Test: 1/7/2014
Test Engineer: John Caizzi
Test Location: Chamber 7

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5		22.0
BT	7.0	-	9.0

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

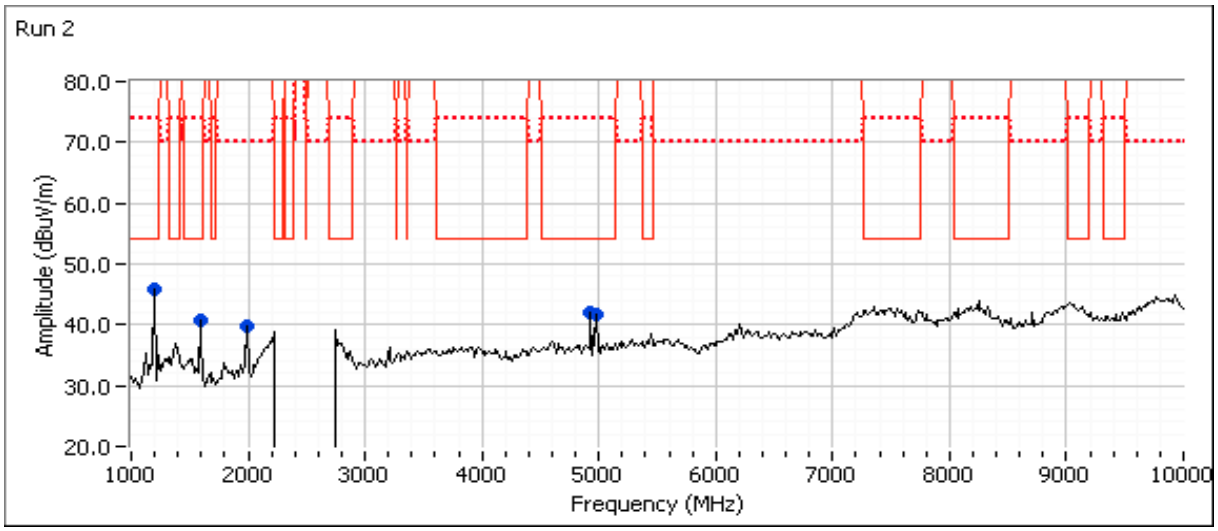
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1195.000	45.9	V	54.0	-8.1	Peak	30	1.0	Note 1
1585.000	40.8	V	54.0	-13.2	Peak	250	1.0	Note 1
1990.000	39.9	V	70.0	-30.1	Peak	360	1.0	Note 1
4930.000	42.1	V	54.0	-11.9	Peak	210	1.0	
4975.000	41.6	V	54.0	-12.4	Peak	210	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	
4960.000	42.6	V	54.0	-11.4	AVG	214	1.40	
4923.980	41.5	V	54.0	-12.5	AVG	214	1.00	
4960.370	46.4	V	74.0	-27.6	PK	214	1.40	
4924.100	46.3	V	74.0	-27.7	PK	214	1.00	

Note 1:	Emission from host laptop.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 2 - 3GHz

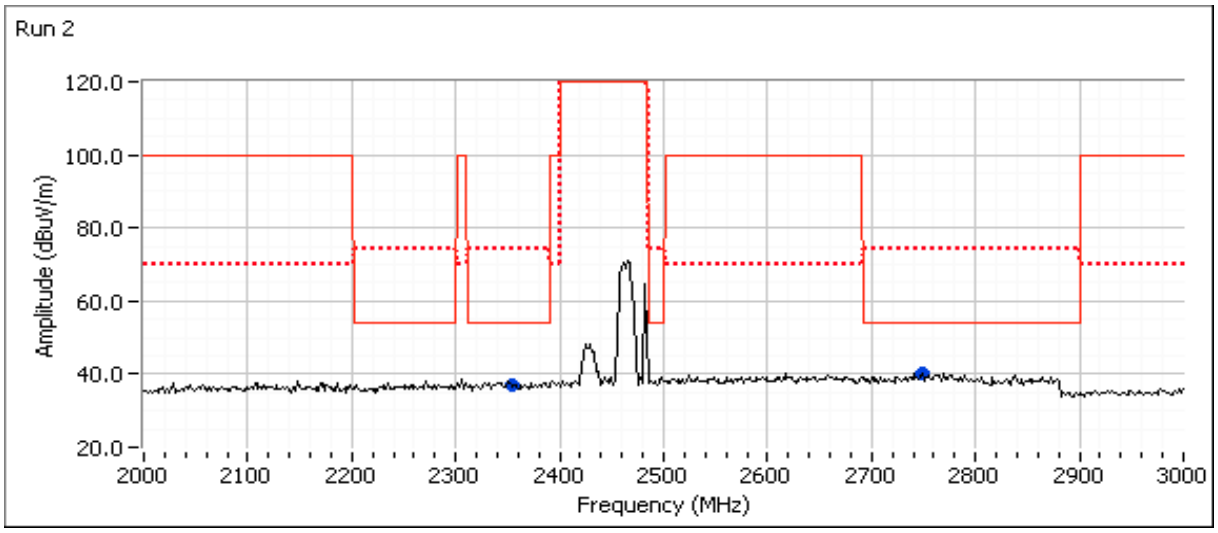
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2740.990	40.0	V	54.0	-14.0	Peak	360	1.0	noise floor
2342.750	36.8	V	54.0	-17.2	Peak	360	1.0	noise floor

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	
2742.450	32.1	V	54.0	-21.9	AVG	360	1.0	noise floor
2740.170	43.2	V	74.0	-30.8	PK	360	1.0	noise floor
2341.560	30.4	V	54.0	-23.6	AVG	360	1.0	noise floor
2342.010	41.9	V	74.0	-32.1	PK	360	1.0	noise floor
2740.330	32.2	H	54.0	-21.8	AVG	0	1.0	noise floor
2739.780	43.2	H	74.0	-30.8	PK	0	1.0	noise floor
2342.530	30.4	H	54.0	-23.6	AVG	0	1.0	noise floor
2342.970	41.8	H	74.0	-32.2	PK	0	1.0	noise floor



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #3: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11g @ 2412, BT Basic @ 2402 MHz

Date of Test: 1/7/2014
Test Engineer: John Caizzi
Test Location: Chamber 7

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5		22.5
BT	7.0	-	9.0

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

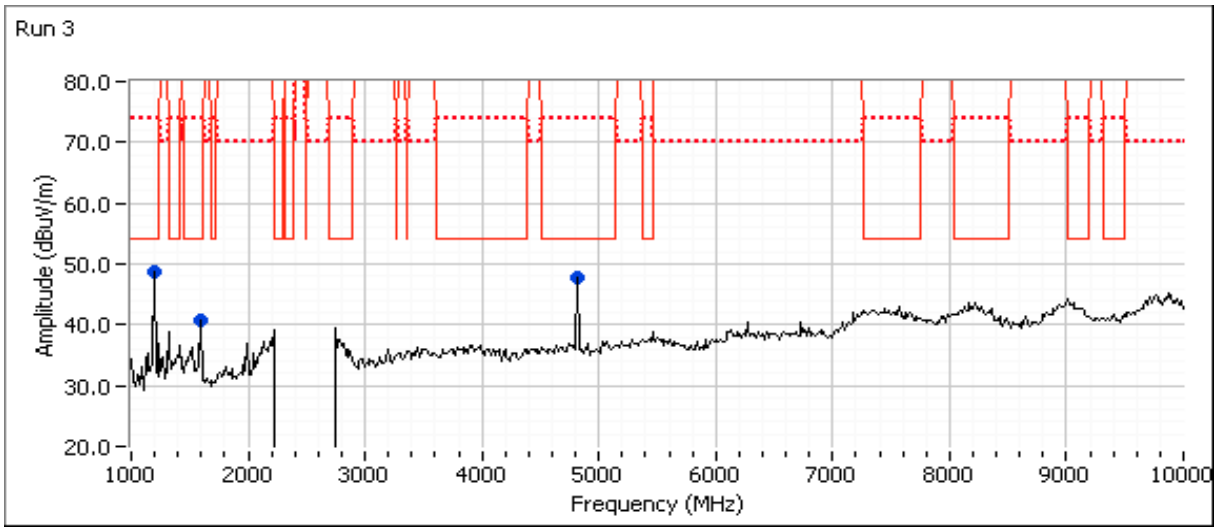
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1195.000	48.6	V	54.0	-5.4	Peak	201	1.5	Note 1
1585.000	40.8	V	54.0	-13.2	Peak	250	1.0	Note 1
4810.000	47.7	V	54.0	-6.3	Peak	206	1.0	

Final measurements at 3m

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4804.050	49.0	V	54.0	-5.0	AVG	210	1.30	
4823.930	33.2	V	54.0	-20.8	AVG	162	1.07	
4803.800	50.8	V	74.0	-23.2	PK	210	1.30	
4832.300	45.5	V	74.0	-28.5	PK	162	1.07	

Note 1:	Emission from host laptop.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 2 - 3GHz

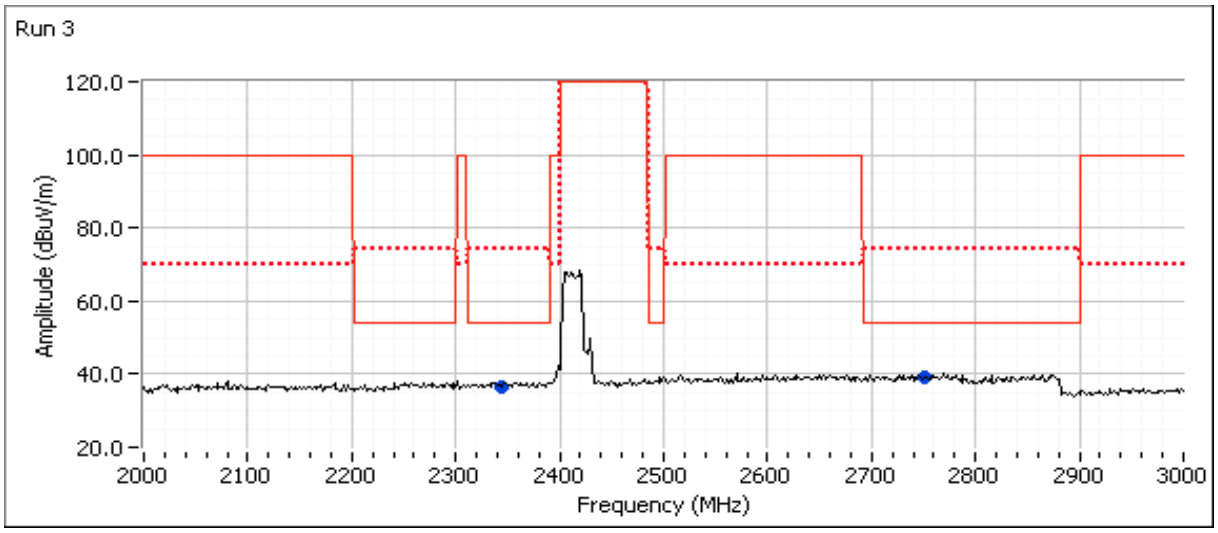
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2760.460	39.4	V	54.0	-14.6	Peak	360	1.0	noise floor
2343.000	36.6	V	54.0	-17.4	Peak	360	1.0	noise floor

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	
2759.710	32.3	V	54.0	-21.7	AVG	360	1.0	noise floor
2761.660	42.9	V	74.0	-31.1	PK	360	1.0	noise floor
2760.000	32.3	V	54.0	-21.7	AVG	360	1.0	noise floor
2759.830	43.4	V	74.0	-30.6	PK	360	1.0	noise floor
2759.920	32.4	H	54.0	-21.6	AVG	0	1.0	noise floor
2760.130	43.6	H	74.0	-30.4	PK	0	1.0	noise floor
2759.450	32.4	H	54.0	-21.6	AVG	0	1.0	noise floor
2760.580	43.9	H	74.0	-30.1	PK	0	1.0	noise floor



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #4: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11g @ 2462, BT Basic @ 2480 MHz

Date of Test: 1/7/2014
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#7

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5		22.5
BT	8.0	-	9.0

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

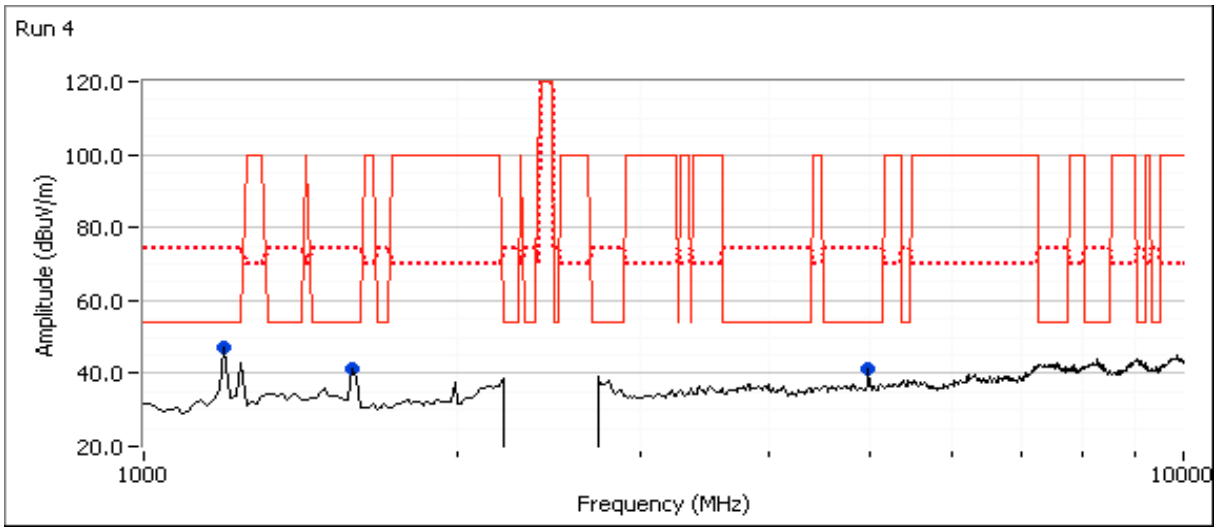
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1194.700	47.2	V	54.0	-6.8	Peak	44	1.0	
1598.030	41.3	V	54.0	-12.7	Peak	123	2.0	
4960.020	41.1	V	54.0	-12.9	Peak	214	1.0	

Final measurements at 3m

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4960.040	42.9	V	54.0	-11.1	AVG	214	1.0	RB 1 MHz;VB 10 Hz;Peak
4960.070	47.1	V	74.0	-26.9	PK	214	1.0	RB 1 MHz;VB 3 MHz;Peak
1196.200	33.7	V	54.0	-20.3	AVG	44	1.0	note 1
1195.270	55.9	V	74.0	-18.1	PK	44	1.0	note 1
1599.090	30.3	V	54.0	-23.7	AVG	123	2.0	note 1
1598.800	47.5	V	74.0	-26.5	PK	123	2.0	note 1

Note 1:	Emission from host laptop.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 2 - 3GHz

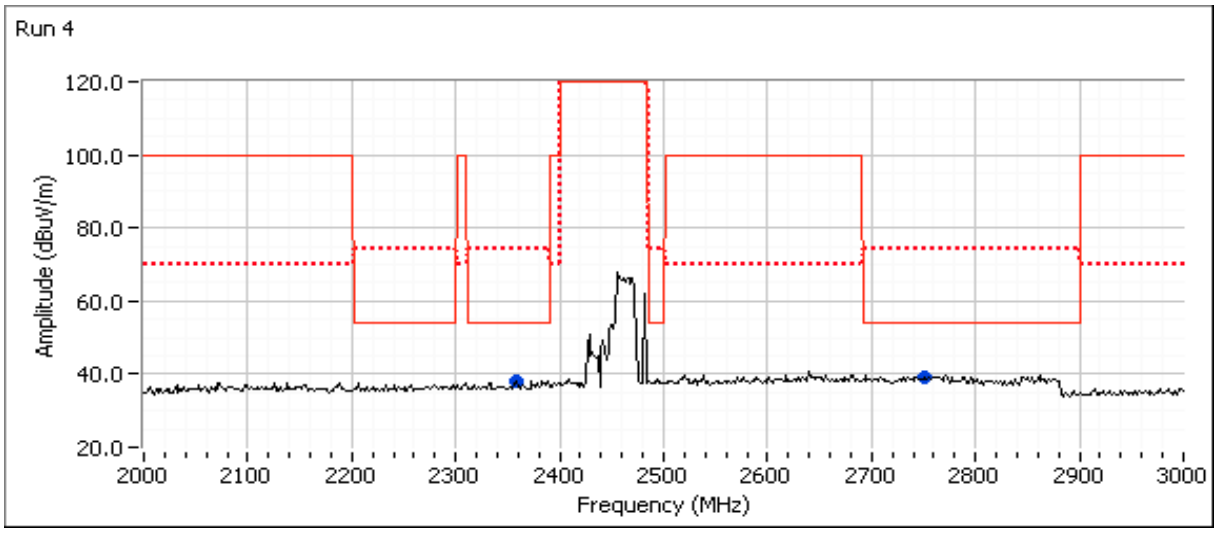
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2348.350	38.0	V	54.0	-16.0	Peak	360	1.0	noise floor
2744.630	39.4	V	54.0	-14.6	Peak	360	1.0	noise floor

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	
2349.550	30.3	V	54.0	-23.7	AVG	360	1.0	noise floor
2346.930	41.2	V	74.0	-32.8	PK	360	1.0	noise floor
2744.350	32.2	V	54.0	-21.8	AVG	360	1.0	noise floor
2744.540	43.7	V	74.0	-30.3	PK	360	1.0	noise floor
2348.420	30.4	H	54.0	-23.6	AVG	0	1.0	noise floor
2348.640	41.7	H	74.0	-32.3	PK	0	1.0	noise floor
2743.320	32.3	H	54.0	-21.7	AVG	0	1.0	noise floor
2743.180	44.1	H	74.0	-29.9	PK	0	1.0	noise floor



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #5: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11g @ 2437 MHz, BT Basic @ 2402 MHz

Date of Test: 1/8/2014
Test Engineer: John Caizzi
Test Location: Chamber 7

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.4	22.5
BT	7.0	-	9.0

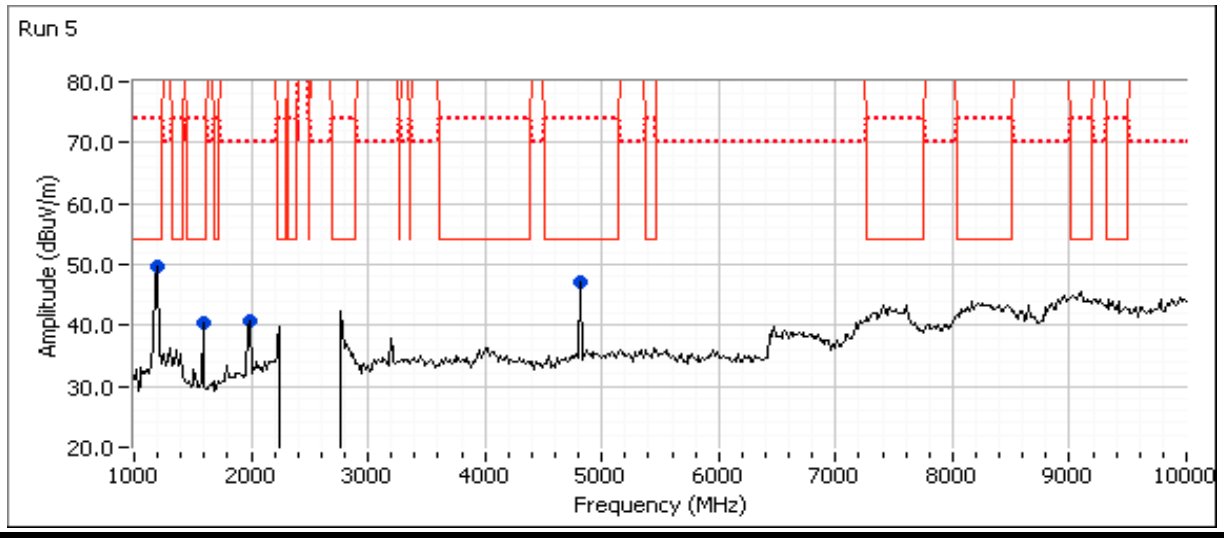
Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1195.000	*49.6*	*V*	*54.0*	*-4.4*	*Peak*	*198*	*1.5*	*Note 1*
1585.000	*40.4*	*H*	*54.0*	*-13.6*	*Peak*	*128*	*1.5*	*Note 1*
1990.000	*40.7*	*V*	*70.0*	*-29.3*	*Peak*	*178*	*1.0*	*Note 1*
4810.000	*47.0*	*V*	*54.0*	*-7.0*	*Peak*	*218*	*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	
4804.020	44.9	V	54.0	-9.1	AVG	210	1.00	
4804.200	47.9	V	74.0	-26.1	PK	210	1.00	

Note 1:	Emission from host laptop.



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 2 - 3GHz

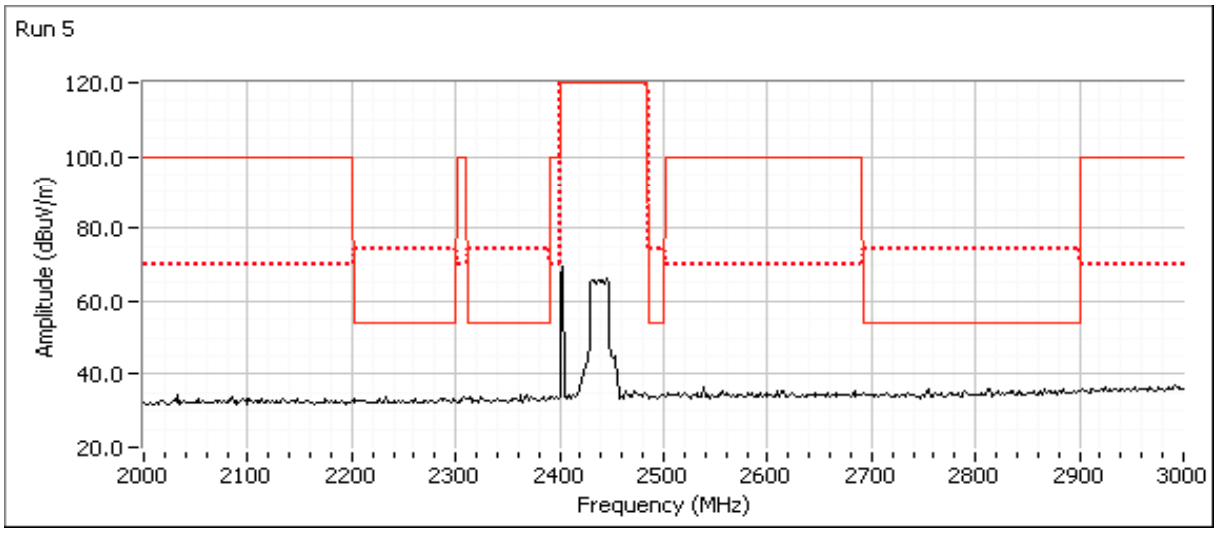
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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

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

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #6: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11g @ 2412 MHz, BT Basic @ 2441 MHz

Date of Test: 1/7/2014
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#7

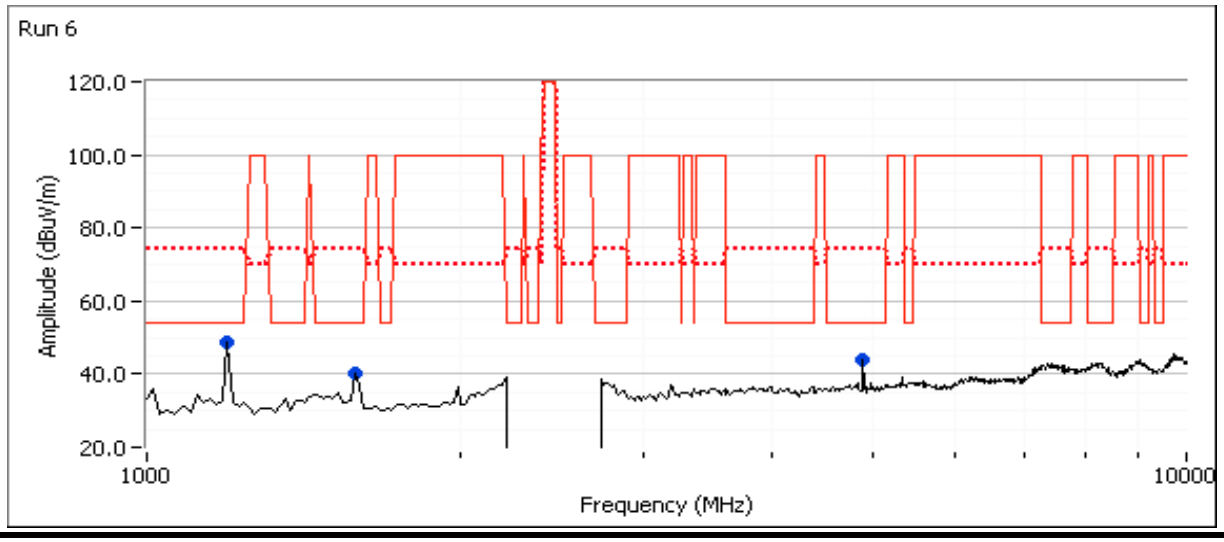
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5		22.5
BT	8.0	-	9.0

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	
1593.040	40.4	V	54.0	-13.6	Peak	137	2.5	
4881.810	44.0	V	54.0	-10.0	Peak	173	1.5	
1195.800	48.9	V	54.0	-5.1	Peak	199	1.5	

Final measurements at 3m

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4882.020	42.8	V	54.0	-11.2	AVG	173	1.5	RB 1 MHz;VB 10 Hz;Peak
4881.560	46.8	V	74.0	-27.2	PK	173	1.5	RB 1 MHz;VB 3 MHz;Peak
1593.310	30.0	V	54.0	-24.0	AVG	137	2.5	RB 1 MHz;VB 10 Hz;Peak
1594.030	45.6	V	74.0	-28.4	PK	137	2.5	RB 1 MHz;VB 3 MHz;Peak
1194.800	33.5	V	54.0	-20.5	AVG	199	1.5	RB 1 MHz;VB 10 Hz;Peak
1195.860	57.0	V	74.0	-17.0	PK	199	1.5	RB 1 MHz;VB 3 MHz;Peak



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 2 - 3GHz

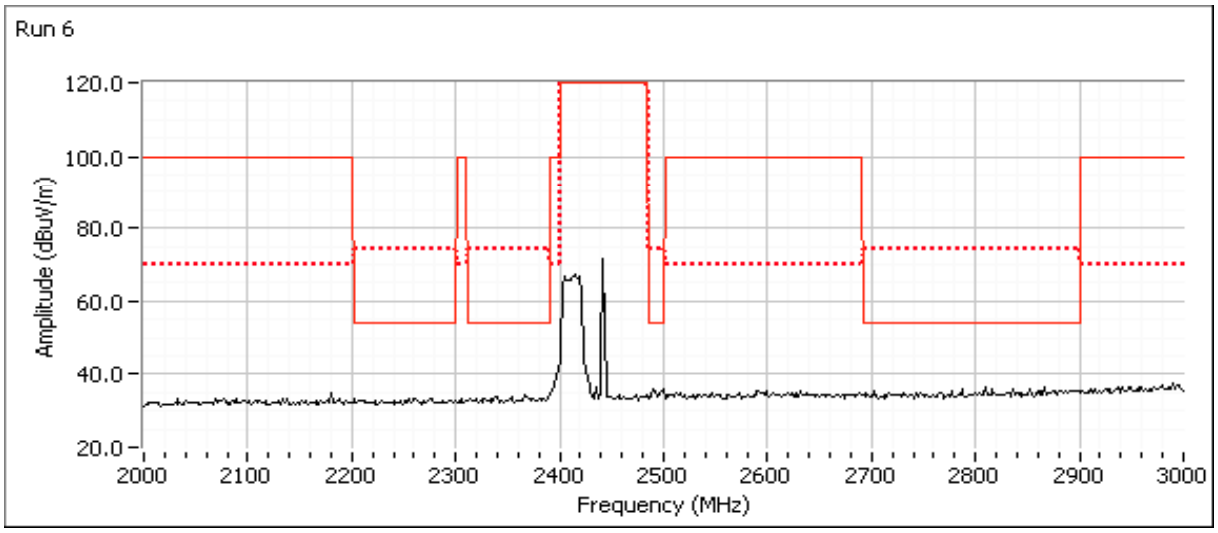
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
			0.0	0.0				

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	
			0.0	0.0				



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #7: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11g @ 2462 MHz, BT Basic @ 2440 MHz

Date of Test: 1/7/2014
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#7

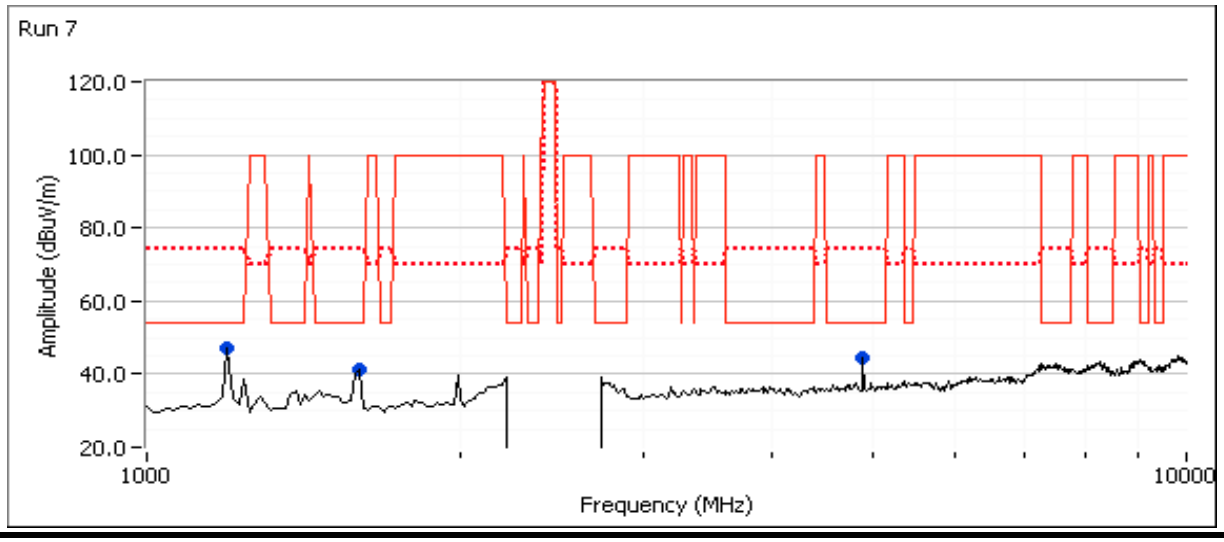
	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5		22.0
BT	8.0	-	9.0

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	
4882.200	44.5	V	54.0	-9.5	Peak	156	1.0	
1198.590	47.2	V	54.0	-6.8	Peak	181	1.0	
1596.860	41.5	V	54.0	-12.5	Peak	360	2.0	

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	
4882.040	41.7	V	54.0	-12.3	AVG	156	1.0	RB 1 MHz;VB 10 Hz;Peak
4881.550	46.7	V	74.0	-27.3	PK	156	1.0	RB 1 MHz;VB 3 MHz;Peak
1197.350	31.4	V	54.0	-22.6	AVG	181	1.0	RB 1 MHz;VB 10 Hz;Peak
1199.760	55.3	V	74.0	-18.7	PK	181	1.0	RB 1 MHz;VB 3 MHz;Peak
1596.230	29.4	V	54.0	-24.6	AVG	360	2.0	RB 1 MHz;VB 10 Hz;Peak
1596.460	42.5	V	74.0	-31.5	PK	360	2.0	RB 1 MHz;VB 3 MHz;Peak



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 2 - 3GHz

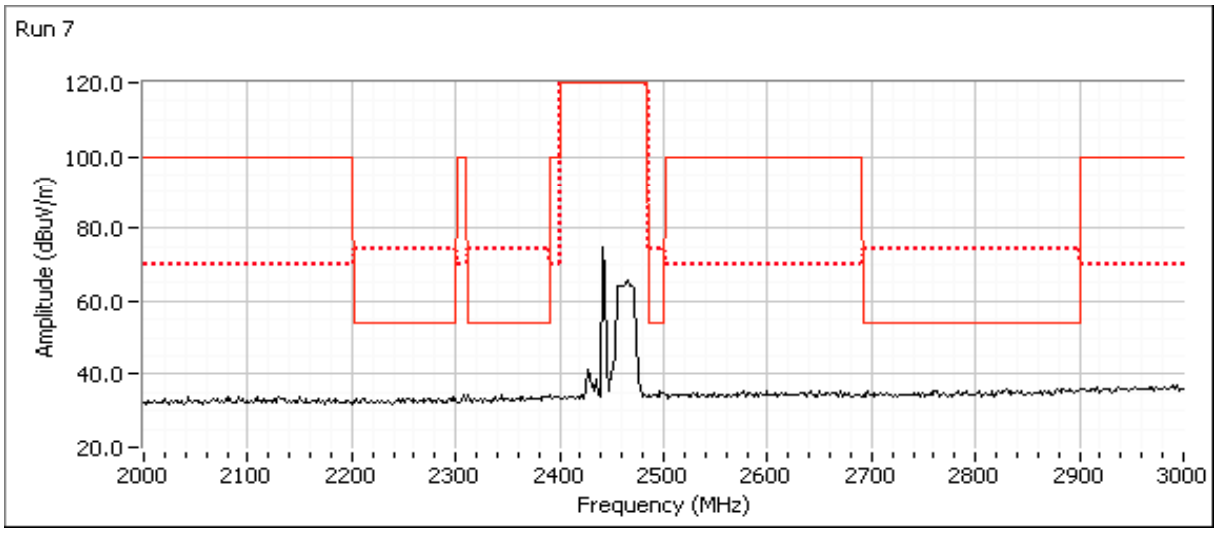
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
			0.0	0.0				

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	
			0.0	0.0				



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #8: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11g @ 2437 MHz, BT Basic @ 2480 MHz

Date of Test: 1/8/2014
Test Engineer: John Caizzi
Test Location: Chamber 7

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.4	22.5
BT	7.0	-	9.0

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

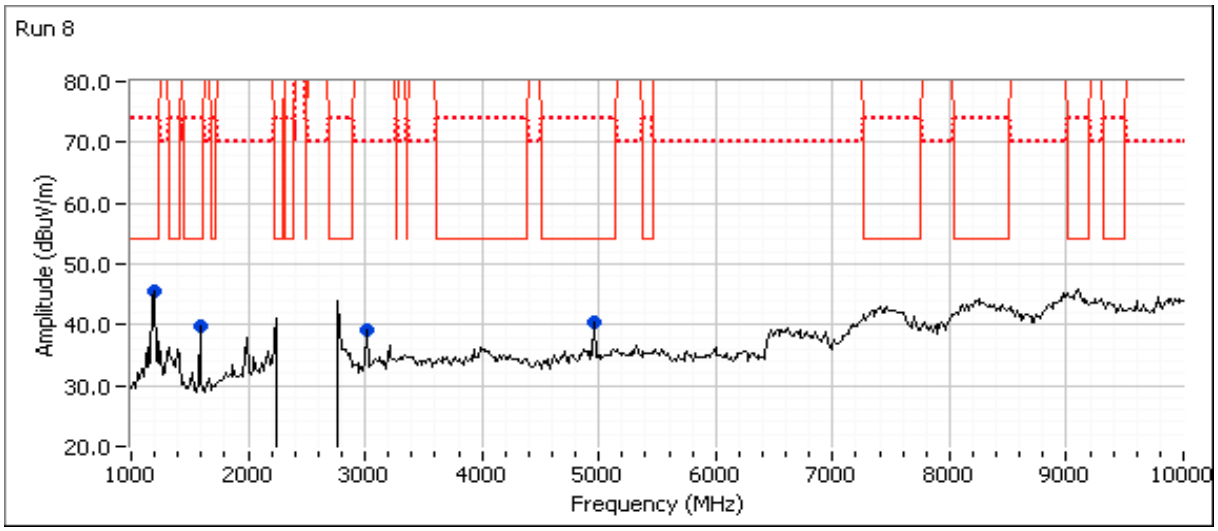
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1195.000	45.4	V	54.0	-8.6	Peak	360	1.0	Note 1
1585.000	39.8	V	54.0	-14.2	Peak	202	1.5	Note 1
4960.000	40.4	V	54.0	-13.6	Peak	299	1.5	
3010.000	39.2	V	70.0	-30.8	Peak	164	1.0	

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	
4960.000	40.6	V	54.0	-13.4	AVG	292	1.64	
4960.380	45.4	V	74.0	-28.6	PK	292	1.64	
2991.730	28.2	V	54.0	-25.8	AVG	172	1.00	Note 2
2987.270	39.6	V	74.0	-34.4	PK	172	1.00	Note 2

Note 1:	Emission from host laptop.
Note 2:	Emission in non-restricted band, but limit of 15.209 used.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 2 - 3GHz

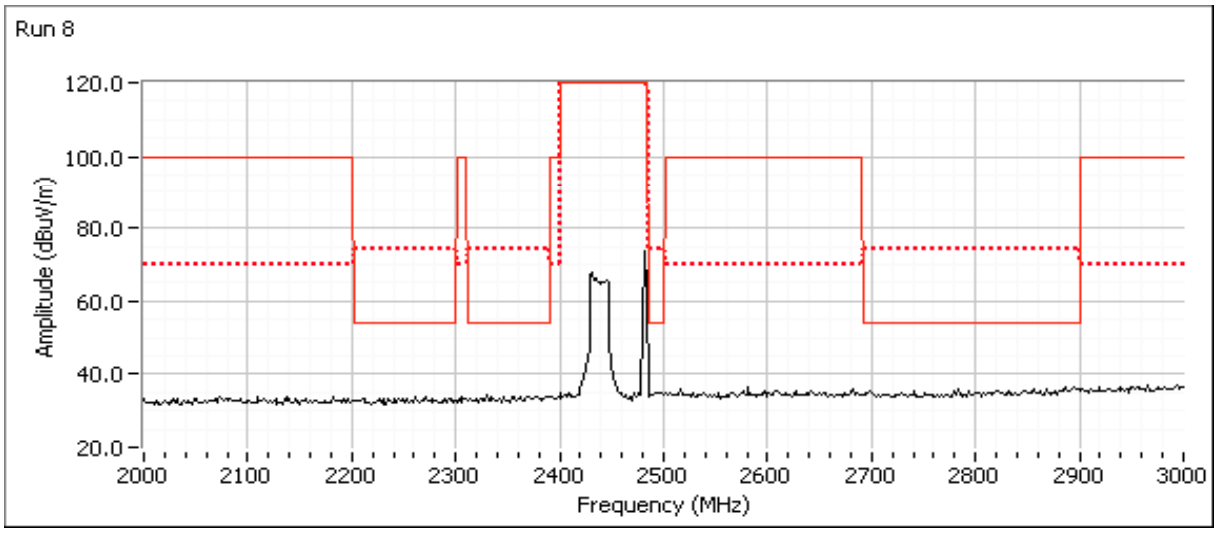
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
			0.0	0.0				

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	
			0.0	0.0				



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #9: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11g @ 2412 MHz, BT EDR @ 2402 MHz

Date of Test: 1/8/2014
Test Engineer: John Caizzi
Test Location: Chamber 7

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5		22.5
BT	1.0	-	1.0

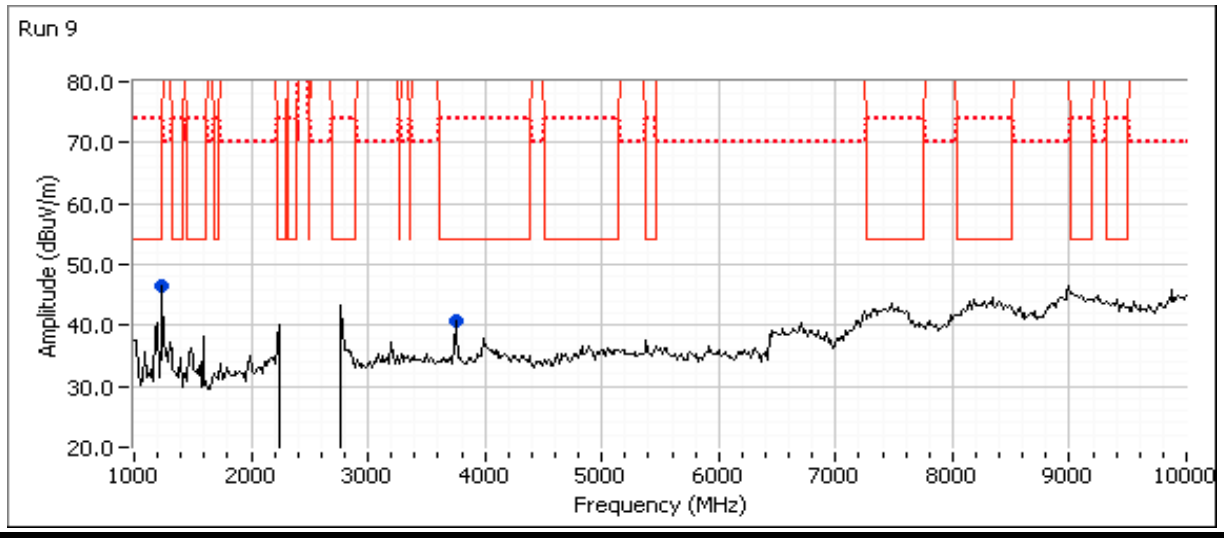
Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

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	46.6	H	54.0	-7.4	Peak	205	1.0	
3745.000	40.7	V	54.0	-13.3	Peak	194	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	
1247.870	33.7	H	54.0	-20.3	AVG	226	1.00	Note 2
1244.670	56.3	H	74.0	-17.7	PK	226	1.00	Note 2
3748.000	31.1	V	54.0	-22.9	AVG	194	1.00	
3740.400	53.3	V	74.0	-20.7	PK	194	1.00	

Note 2:	Emission in non-restricted band, but limit of 15.209 used.



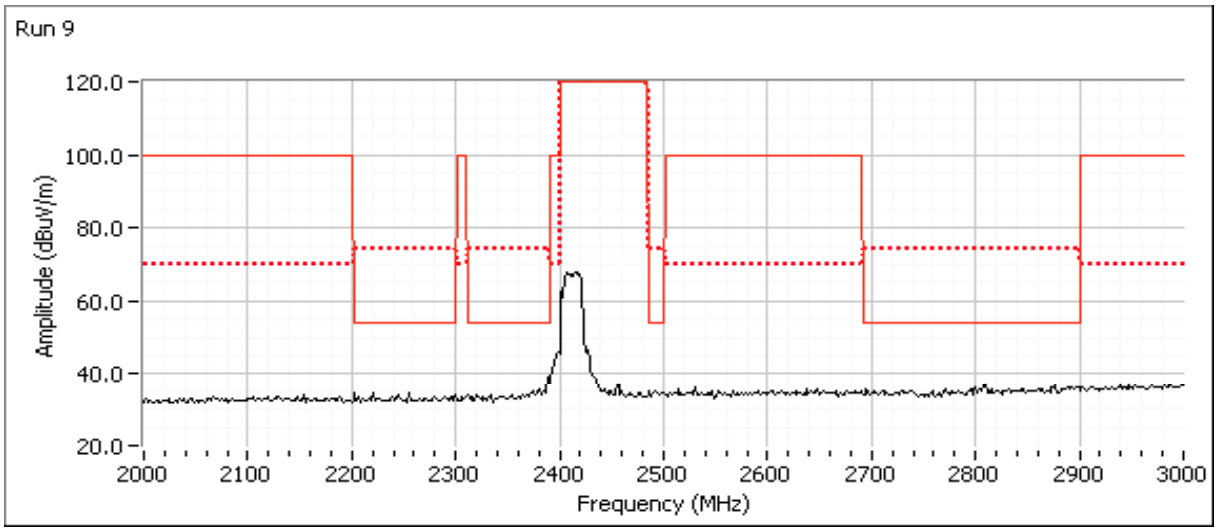
Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

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)

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #10: Radiated Spurious Emissions, 1-10GHz. Operating Mode: 11g @ 2372 MHz, BT EDR @ 2402 MHz

Date of Test: 1/8/2014
Test Engineer: John Caizzi
Test Location: Chamber 7

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.4	22.5
BT	1.0	-	1.0

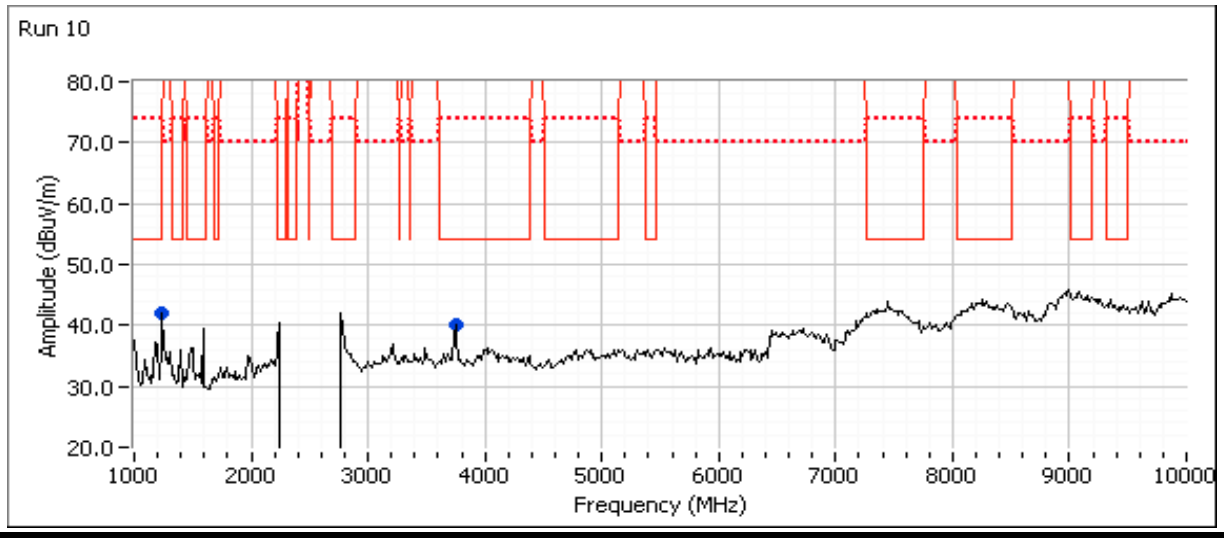
Preliminary Spurious Emissions excluding allocated band (Peak versus average limit)

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	42.1	H	54.0	-11.9	Peak	238	1.0	
3745.000	40.1	V	54.0	-13.9	Peak	160	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	
1248.200	33.9	H	54.0	-20.1	AVG	230	1.00	Note 2
1245.930	56.2	H	74.0	-17.8	PK	230	1.00	Note 2
3747.470	31.4	V	54.0	-22.6	AVG	198	1.00	
3747.070	53.6	V	74.0	-20.4	PK	198	1.00	

Note 2:	Emission in non-restricted band, but limit of 15.209 used.



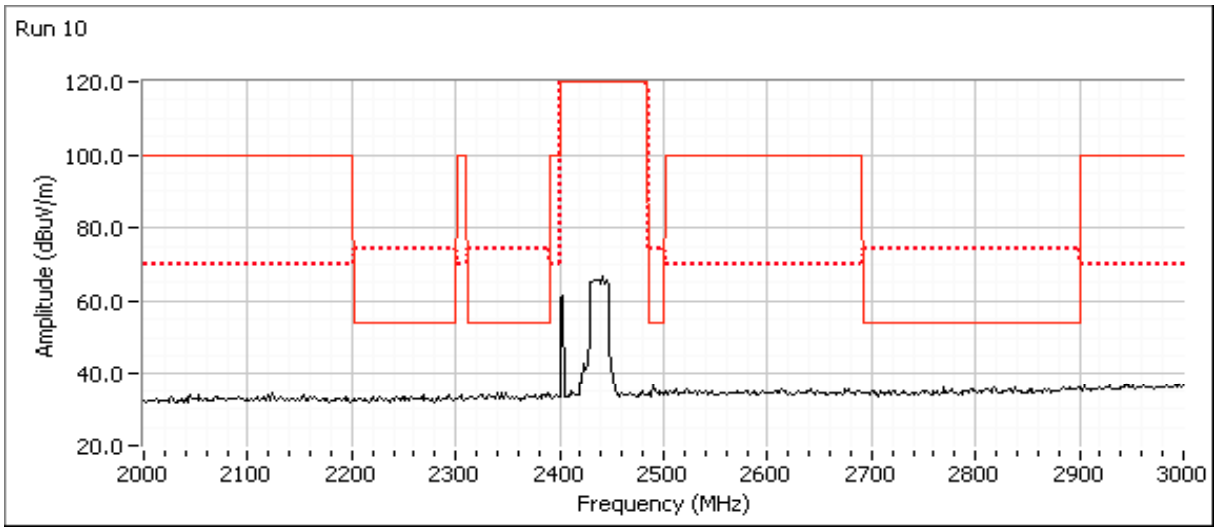
Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

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)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
			0.0	0.0				



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #11: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: n20 @ 5200 MHz, BT Basic @ 2402 MHz

Date of Test: 1/8/2014 & 1/9/14
Test Engineer: J.Cadigal & J.Caizzi
Test Location: Chambers 7 & 4

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.6	29.0
BT	7.0	-	9.0

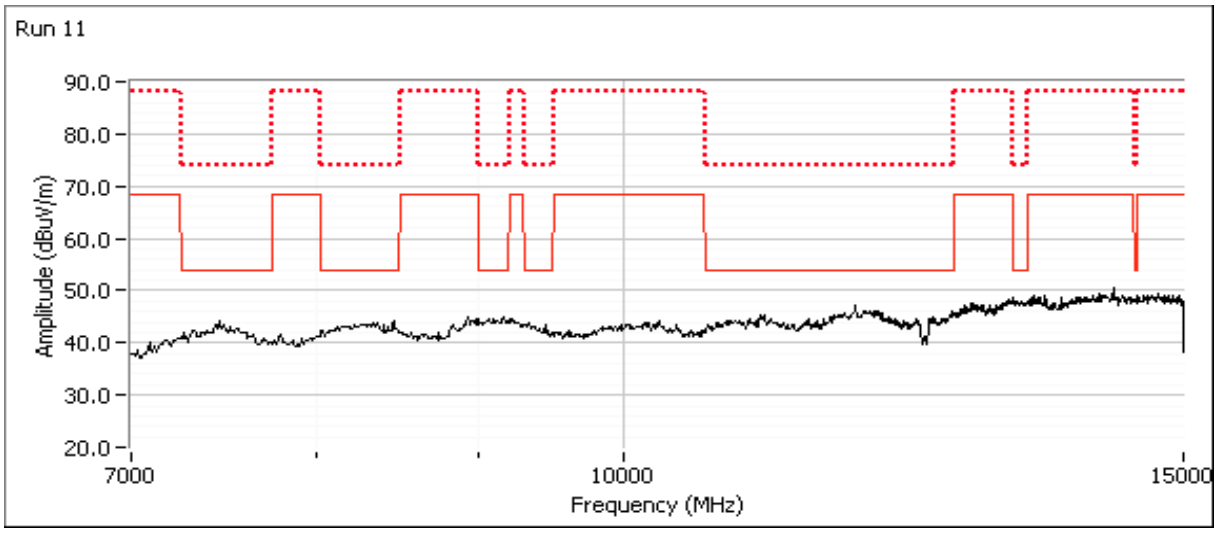
Spurious Radiated Emissions, 7 - 15GHz

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	

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz

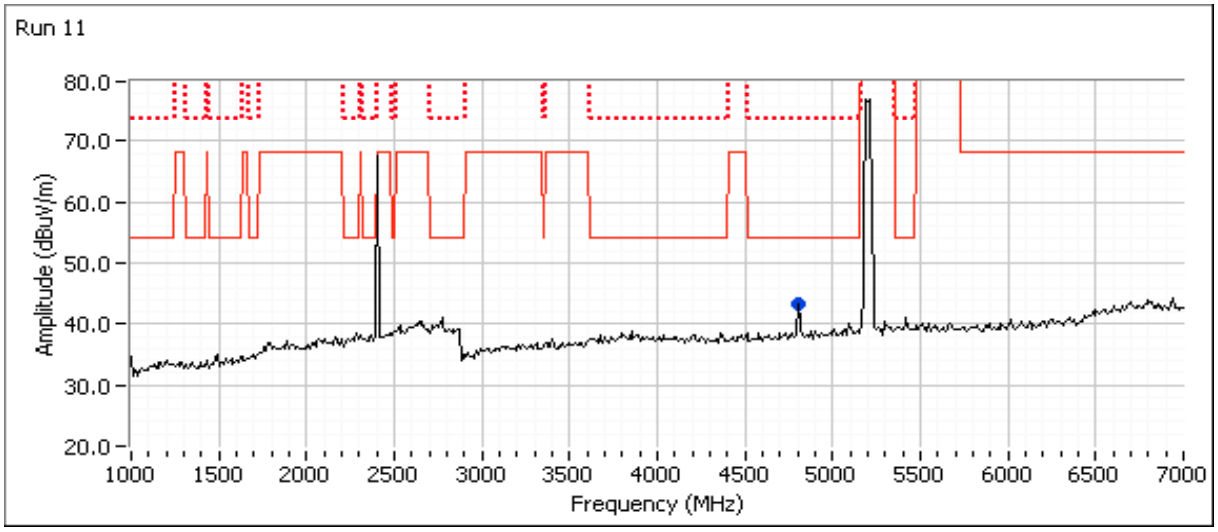
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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	
4800.000	43.4	V	54.0	-10.6	Peak	0	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	
4804.030	48.5	V	54.0	-5.5	AVG	203	1.75	
4804.180	50.8	V	74.0	-23.2	PK	203	1.75	
4803.970	46.8	H	54.0	-7.2	AVG	158	1.63	
4804.280	49.5	H	74.0	-24.5	PK	158	1.63	



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #12: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: n20 @ 5200 MHz, BT Basic @ 2441 MHz

Date of Test: 1/8/2014 & 1/9/14
Test Engineer: J.Cadigal & J.Caizzi
Test Location: Chambers 7 & 4

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.6	29.0
BT	7.0	-	9.0

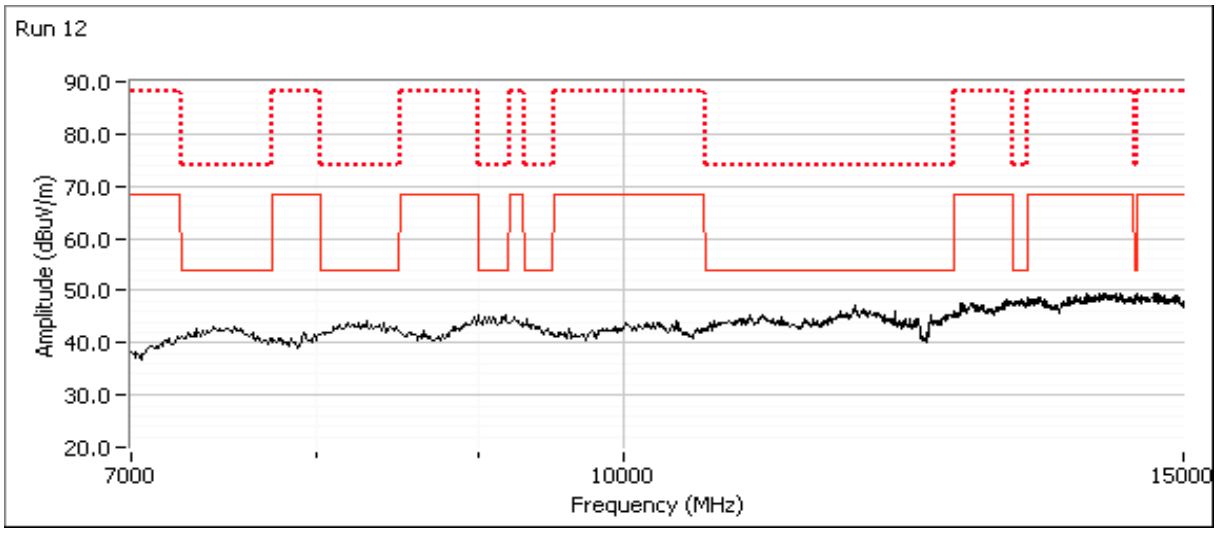
Spurious Radiated Emissions, 7 - 15GHz

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	

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz

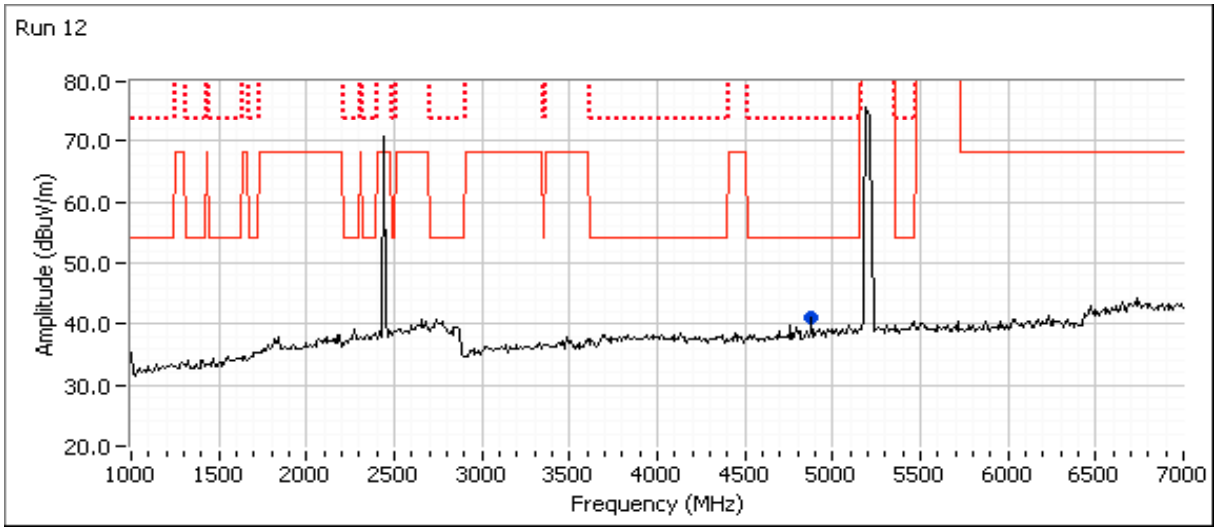
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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	
4880.000	41.2	V	54.0	-12.8	Peak	0	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	
4882.000	46.3	V	54.0	-7.7	AVG	212	1.07	
4882.400	50.1	V	74.0	-23.9	PK	212	1.07	
4882.000	46.0	H	54.0	-8.0	AVG	153	1.48	
4881.780	49.3	H	74.0	-24.7	PK	153	1.48	



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #13: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: n20 @ 5200 MHz, BT Basic @ 2480 MHz

Date of Test: 1/8/2014 & 1/9/14
Test Engineer: J.Cadigal & J.Caizzi
Test Location: Chambers 7 & 4

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.6	29.0
BT	7.0	-	9.0

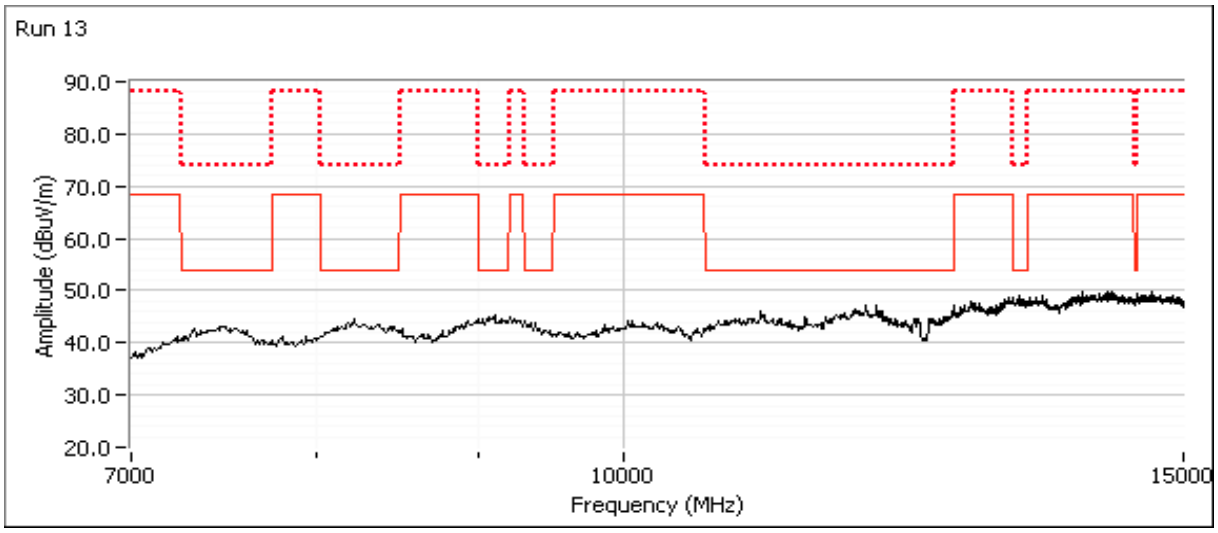
Spurious Radiated Emissions, 7 - 15GHz

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	

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz

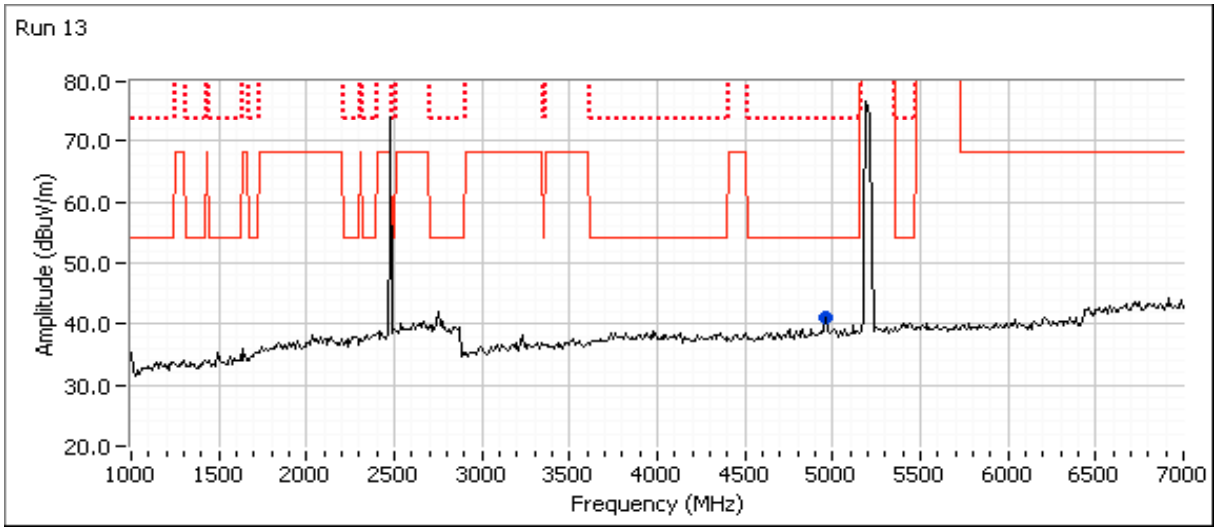
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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	
4960.000	41.1	V	54.0	-12.9	Peak	0	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	
4960.000	43.9	H	54.0	-10.1	AVG	151	1.75	
4960.700	48.2	H	74.0	-25.8	PK	151	1.75	
4959.970	42.8	V	54.0	-11.2	AVG	204	1.48	
4959.850	47.9	V	74.0	-26.1	PK	204	1.48	



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #14: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: n20 @ 5300 MHz, BT Basic @ 2402 MHz

Date of Test: 1/8/2014 & 1/9/14
Test Engineer: J.Cadigal & J.Caizzi
Test Location: Chambers 7 & 4

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.5	28.5
BT	7.0	-	9.0

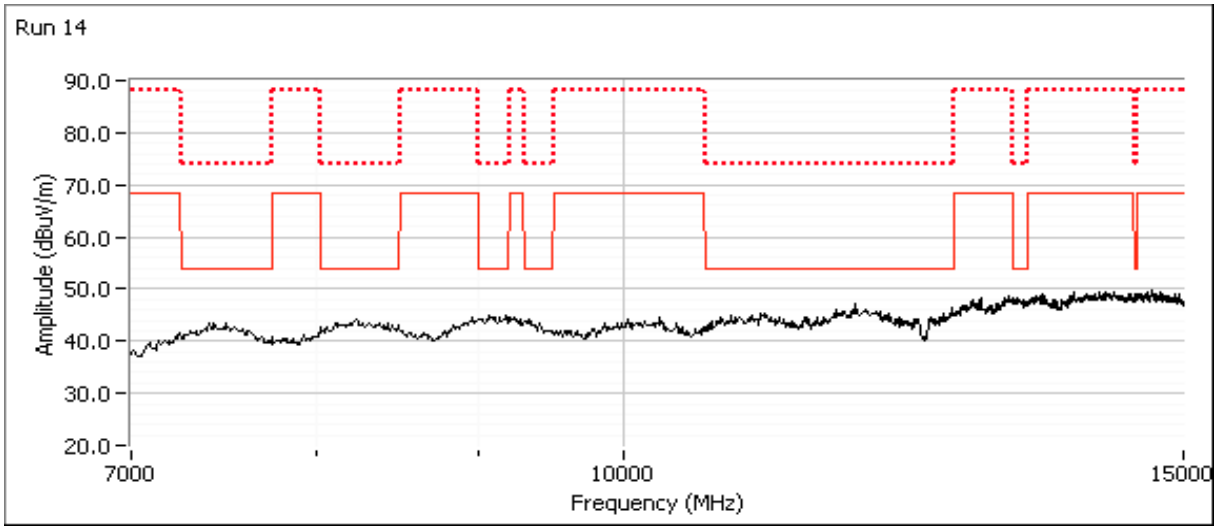
Spurious Radiated Emissions, 7 - 15GHz

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	

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz

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

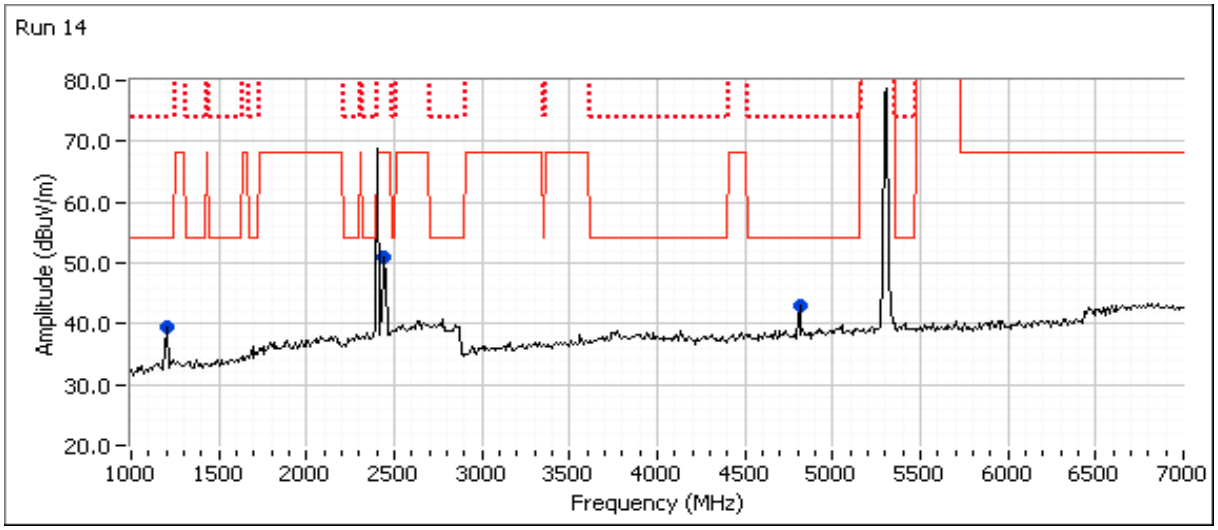
Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4810.000	43.1	V	54.0	-10.9	Peak	0	1.0	
1200.000	39.4	V	54.0	-14.6	Peak	0	1.0	
2440.000	51.0	V	68.3	-17.3	Peak	0	1.0	Note 3

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	
4803.980	49.3	V	54.0	-4.7	AVG	201	1.72	
4804.070	51.2	V	74.0	-22.8	PK	201	1.72	
4804.030	47.3	H	54.0	-6.7	AVG	158	1.77	
4804.200	49.9	H	74.0	-24.1	PK	158	1.77	
1197.930	31.9	V	54.0	-22.1	AVG	141	1.68	
1198.470	57.2	V	74.0	-16.8	PK	141	1.68	
1195.800	32.6	H	54.0	-21.4	AVG	136	1.89	
1198.800	57.5	H	74.0	-16.5	PK	136	1.89	

Note 3:	NTS WiFi leakage from opening chamber door.



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #15: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: n20 @ 5580 MHz, BT Basic @ 2402 MHz

Date of Test: 1/8/2014 & 1/9/14
Test Engineer: J.Cadigal & J.Caizzi
Test Location: Chambers 7 & 4

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.6	30.5
BT	7.0	-	9.0

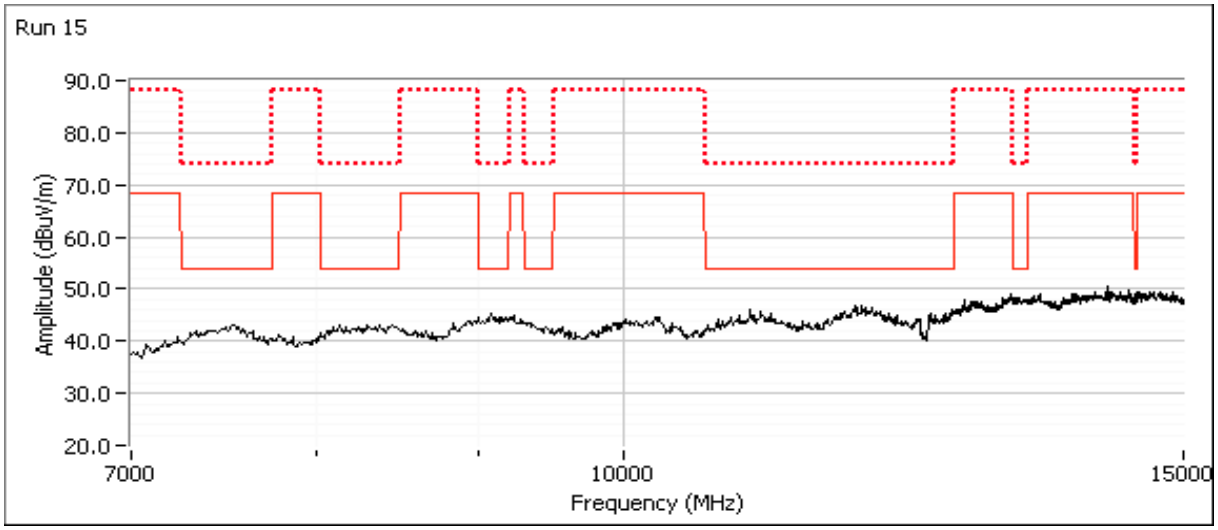
Spurious Radiated Emissions, 7 - 15GHz

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	

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz

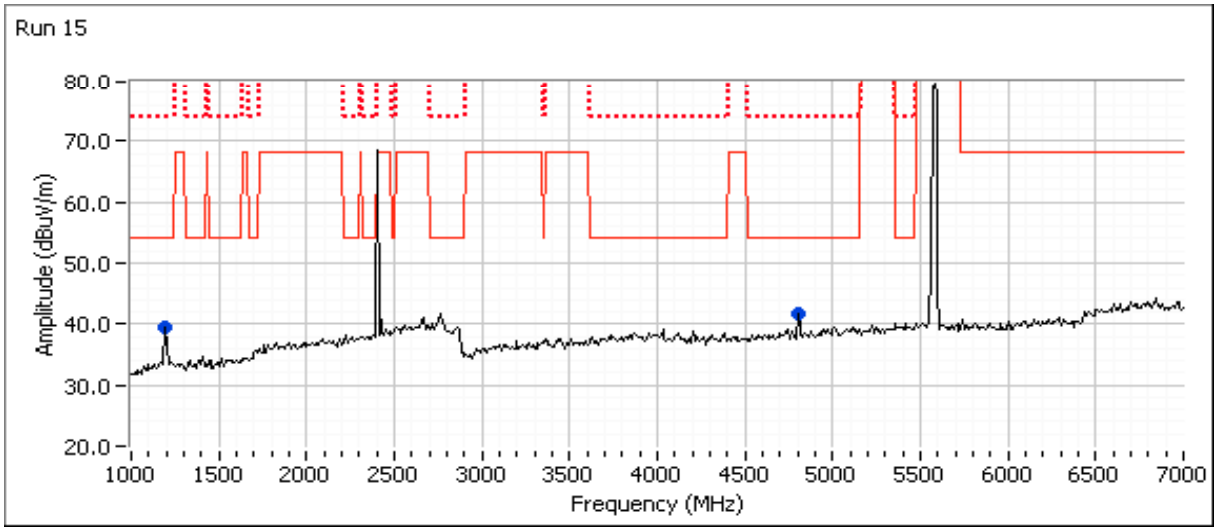
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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	
1190.000	39.5	V	54.0	-14.5	Peak	0	1.0	Measured in run 14.
4800.000	41.6	V	54.0	-12.4	Peak	0	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	
4804.050	47.1	H	54.0	-6.9	AVG	152	1.44	
4803.720	49.8	H	74.0	-24.2	PK	152	1.44	
4803.930	47.1	V	54.0	-6.9	AVG	204	1.71	
4803.820	49.8	V	74.0	-24.2	PK	204	1.71	



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #16: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: n20 @ 5785 MHz, BT Basic @ 2402 MHz

Date of Test: 1/8/2014 & 1/9/14
Test Engineer: J.Cadigal & J.Caizzi
Test Location: Chambers 7 & 4

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.6	31.5
BT	7.0	-	9.0

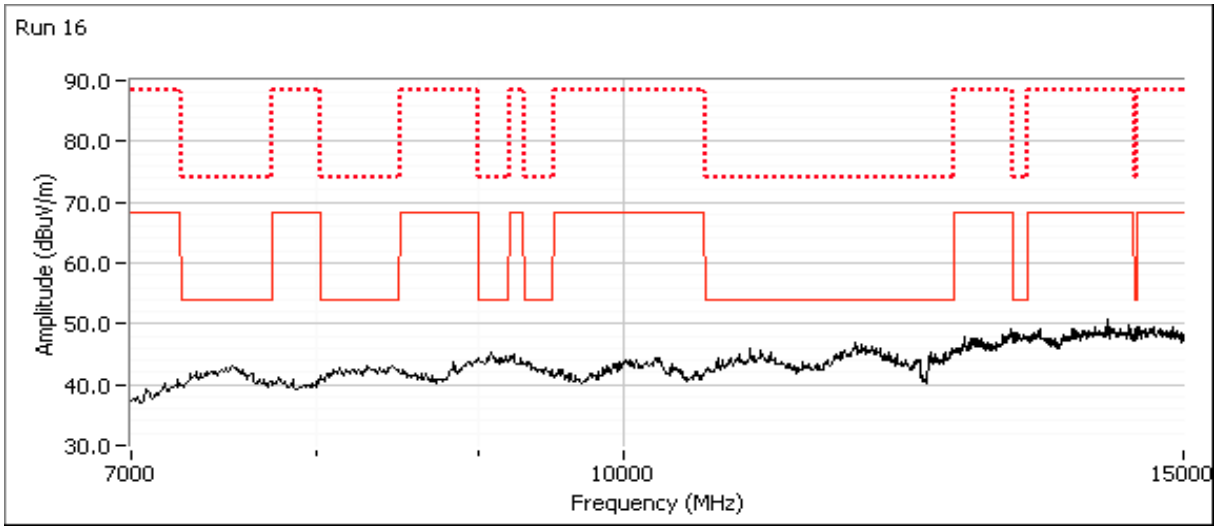
Spurious Radiated Emissions, 7 - 15GHz

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	

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz

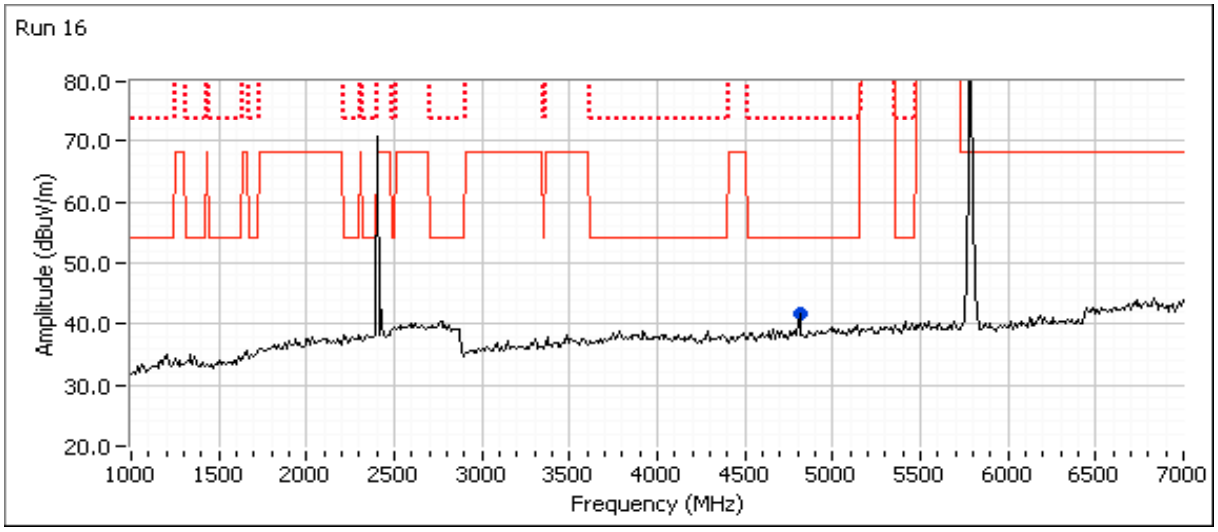
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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	
4810.000	41.8	V	54.0	-12.2	Peak	0	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	
4804.030	49.7	V	54.0	-4.3	AVG	201	1.71	
4803.930	51.7	V	74.0	-22.3	PK	201	1.71	
4803.980	47.3	H	54.0	-6.7	AVG	157	1.55	
4803.900	49.9	H	74.0	-24.1	PK	157	1.55	



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

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

Date of Test: 1/8/2014 & 1/9/14
Test Engineer: J.Cadigal & J.Caizzi
Test Location: Chambers 7 & 4

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.5	28.5
BT	7.0	-	9.0

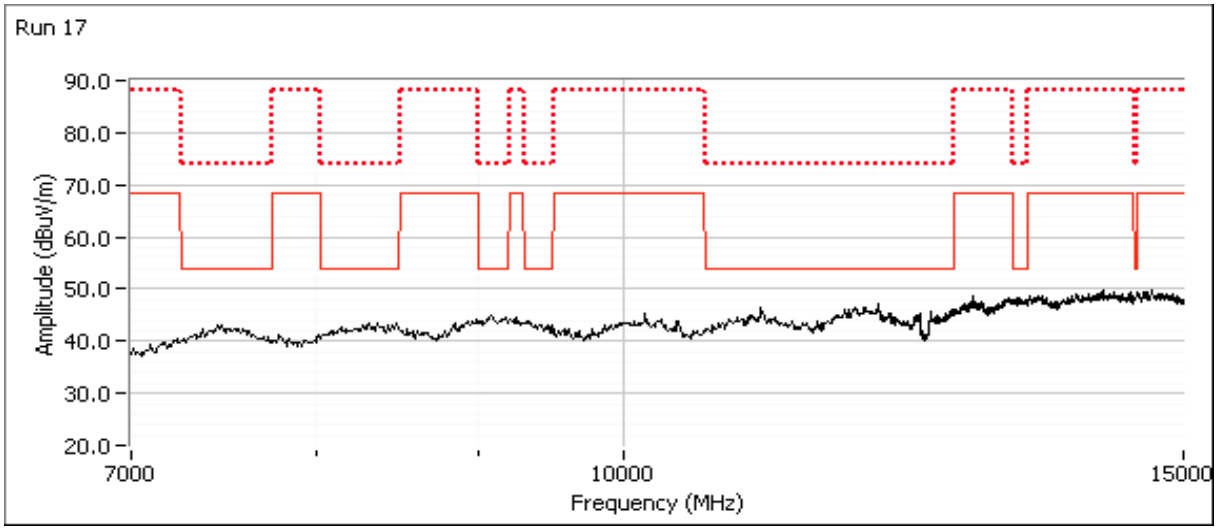
Spurious Radiated Emissions, 7 - 15GHz

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	

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz

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

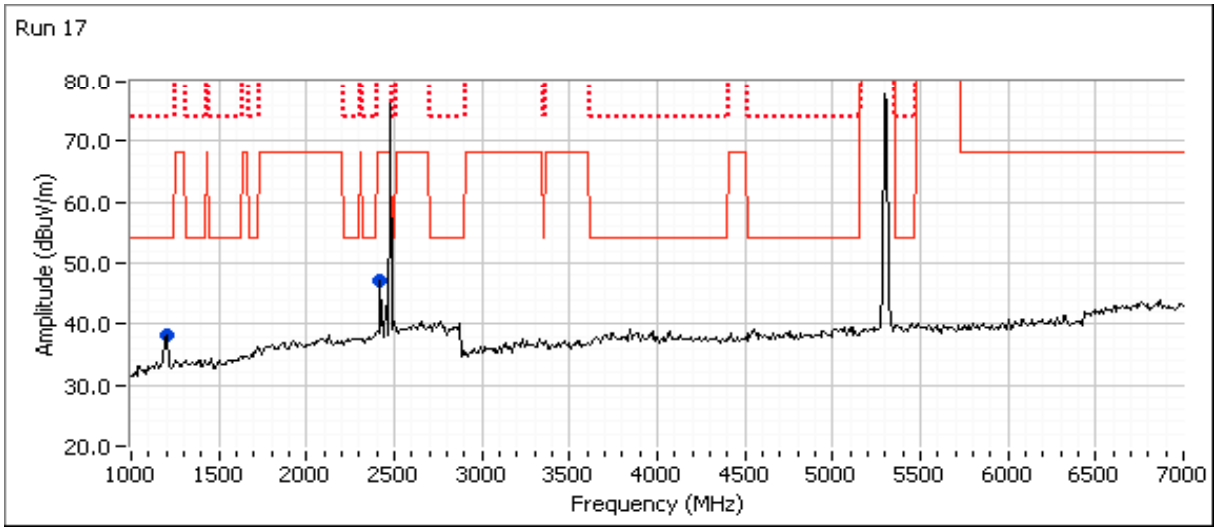
Preliminary Spurious Emissions at 30cm from 1-7 GHz (Peak versus average limit)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2420.000	47.1	V	68.3	-21.2	Peak	0	1.0	Note 3
1200.000	38.1	V	54.0	-15.9	Peak	0	1.0	Measured in run 14.

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	
1195.800	32.6	H	54.0	-21.4	AVG	136	1.89	From run 4.
1198.800	57.5	H	74.0	-16.5	PK	136	1.89	From run 4.

Note 3:	NTS WiFi leakage from opening chamber door.



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #18: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: n20 @ 5580 MHz, BT Basic @ 2480 MHz

Date of Test: 1/8/2014 & 1/9/14
Test Engineer: J.Cadigal & J.Caizzi
Test Location: Chambers 7 & 4

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.6	30.5
BT	7.0	-	9.0

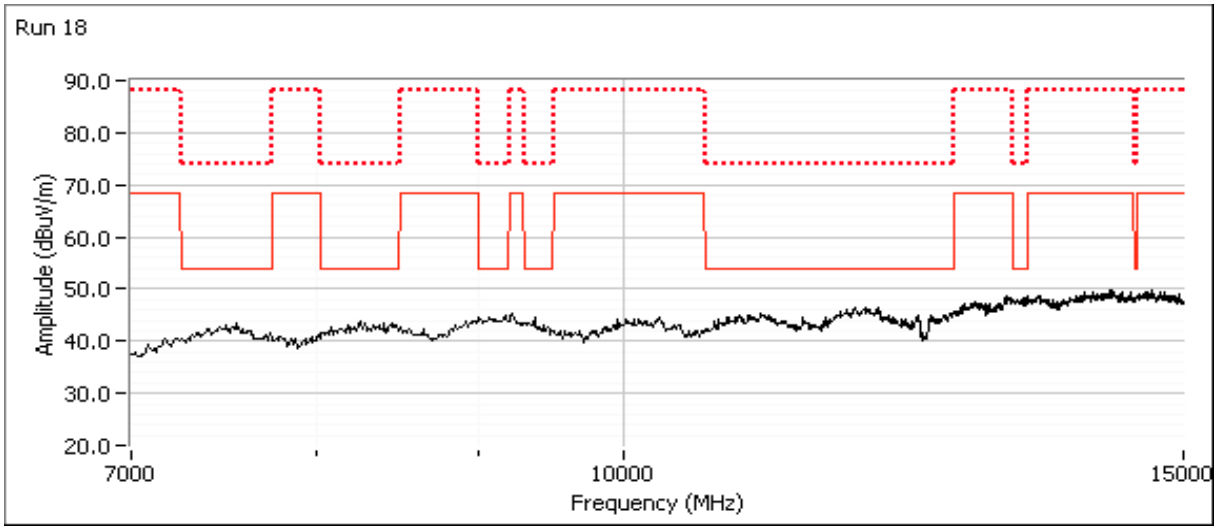
Spurious Radiated Emissions, 7 - 15GHz

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	

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz

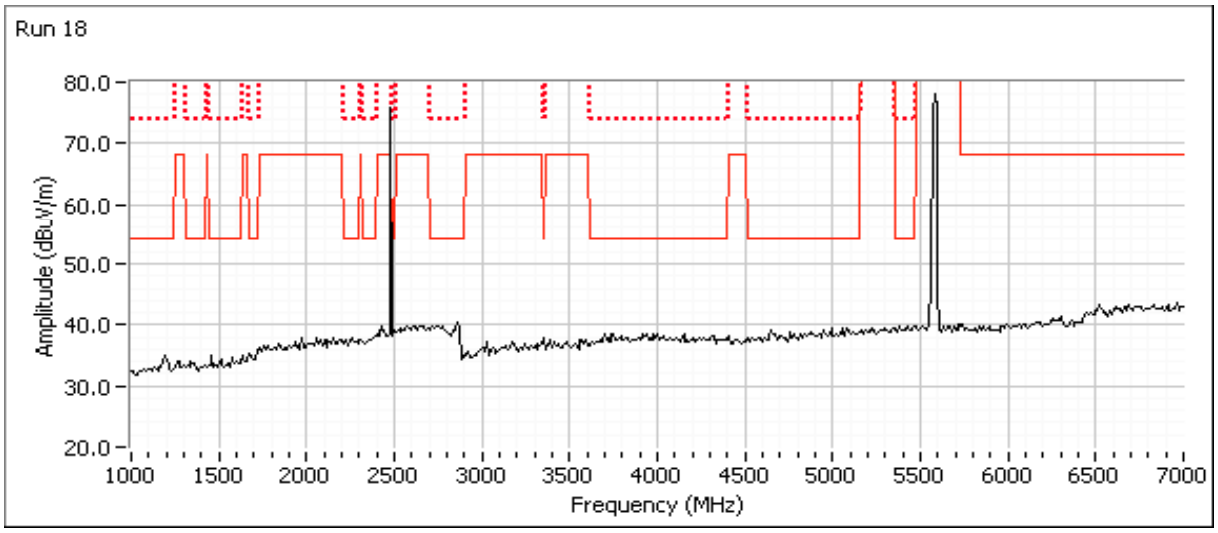
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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	
			0.0	0.0				

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	
			0.0	0.0				



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #19: Radiated Spurious Emissions, 1-15 GHz. Operating Mode: n20 @ 5785 MHz, BT Basic @ 2480 MHz

Date of Test: 1/8/2014 & 1/9/14
Test Engineer: J.Cadigal & J.Caizzi
Test Location: Chambers 7 & 4

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
WiFi	16.5	16.6	31.5
BT	7.0	-	9.0

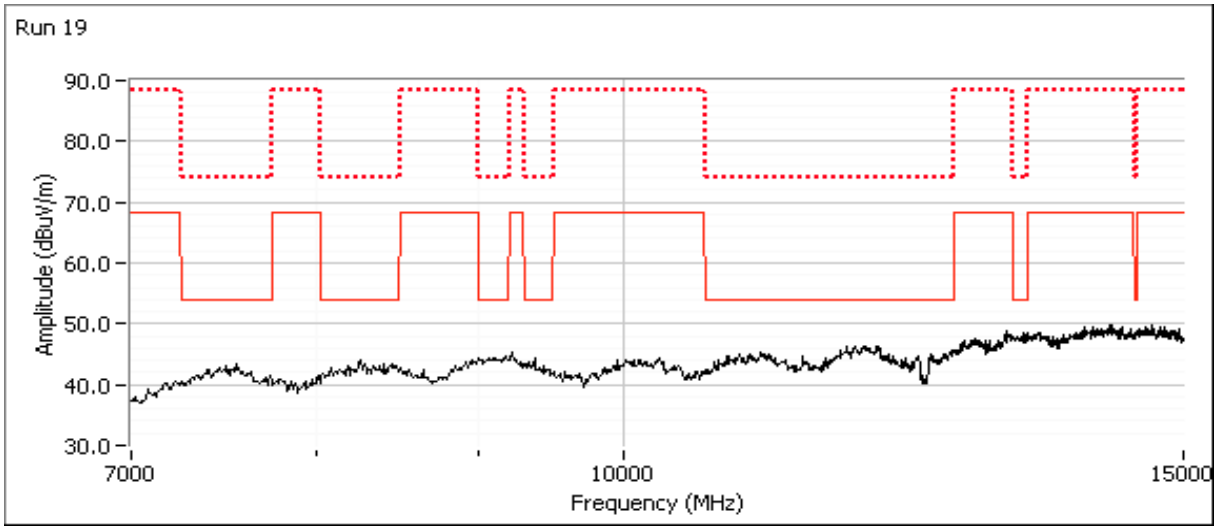
Spurious Radiated Emissions, 7 - 15GHz

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	

Final measurements at 3m

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Spurious Radiated Emissions, 1 - 7GHz

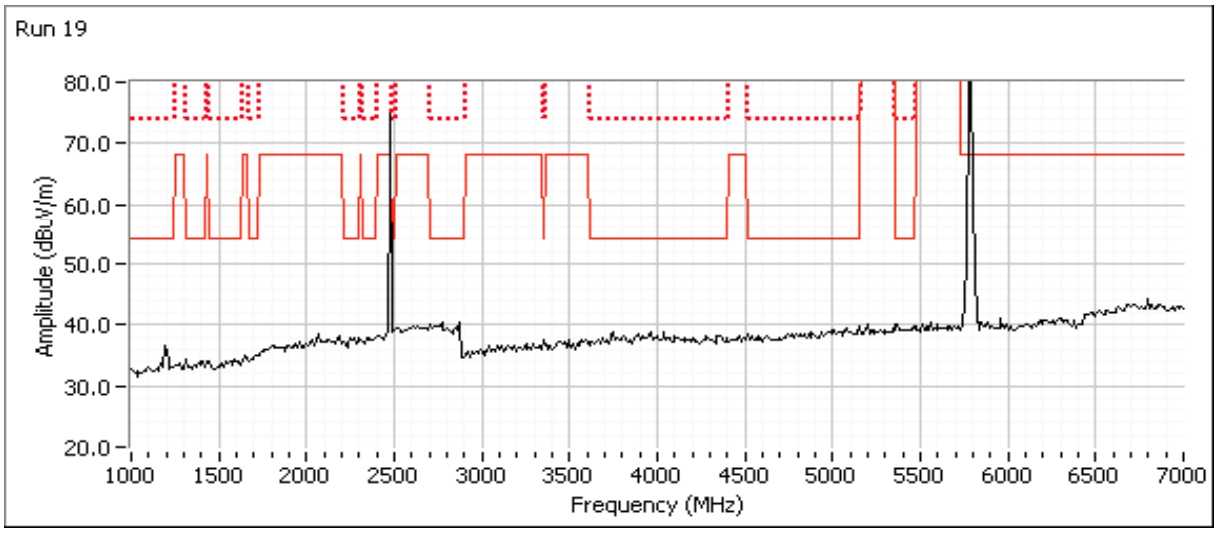
Preliminary Scan at ~ 30cm from the product to identify potential signals (Peak versus average limit)

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	
			0.0	0.0				

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	
			0.0	0.0				



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

FCC 15.247 FHSS - Power, Bandwidth and Spurious Emissions

Test Specific Details

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

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 °C
Rel. Humidity: 38 %

Summary of Results

MAC Address: 001500E6085C DRTU Tool Version 1.7.4-855 Driver version 16.8.0.3

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	Basic Rate: 6.32 dBm (0.0043W) EDR: -0.76 dBm (0.00084W)
2	20dB Bandwidth	15.247(a)	Pass	Basic Rate: 950 kHz EDR: 1475 kHz
2	Channel Occupancy	15.247(a)	Pass	Device complies with the Bluetooth specifications with a minimum of 20 hopping channels
2	Number of Channels	15.247(a)	Pass	
4	30 - 25,000 MHz - Transmitter Conducted Spurious Emissions	15.247(c)	Pass	All emissions < -20dBc

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

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
Basic	Basic	0.77	Yes	10.42	1.1	2.3	96.0
EDR	EDR	0.73	Yes	9.92	1.4	2.7	100.8

Run #1: Output Power

Date of Test: 1/14/2014
Test Engineer: Jack Liu
Test Location: FT Lab #4a

Config. Used: 1
Config Change: none
EUT Voltage: Powered by host ; Host use 120V/60Hz

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

Maximum antenna gain: 3.2 dBi

Setting[2]	Mode	Channel	Frequency (MHz)	Res BW	Output Power (dBm)	Output Power (W)	EIRP (W)
9	Basic Rate (DH5)	Low	2402	-	5.47	0.0035	0.0074
9		Mid	2440	-	5.90	0.0039	0.0081
9		High	2480	-	6.32	0.0043	0.0090
1	EDR (3-DH5)	Low	2402	-	-1.62	0.0007	0.0014
1		Mid	2440	-	-1.20	0.0008	0.0016
1		High	2480	-	-0.76	0.0008	0.0018

Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc.
Note 2:	Calculated from the sum of the power and antenna gain in dB. May not exceed the de-facto EIRP limit.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #2: Bandwidth, Channel Occupancy, Spacing and Number of Channels

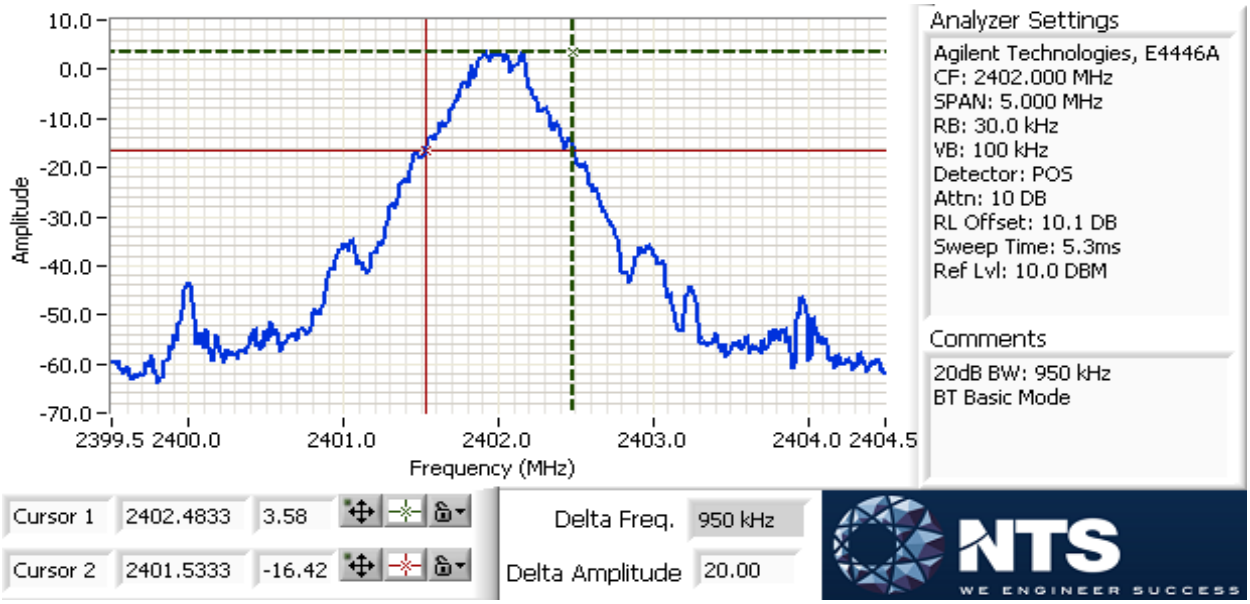
Date of Test: 1/14/2014 Config. Used: 1

Test Engineer: Jack Liu Config Change: none

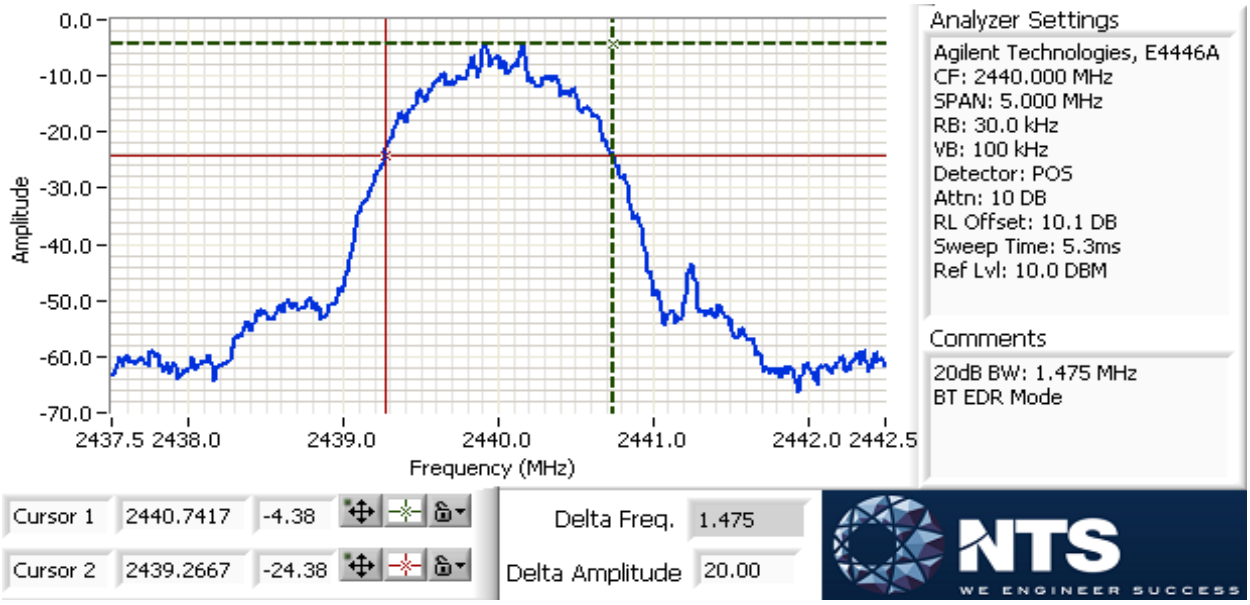
Test Location: FT Lab #4a EUT Voltage: Powered by host ; Host use 120V/60Hz

Mode	Setting	Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
Basic Rate (DH5)	9	Low	2402	30	950	882
	9	Mid	2440	30	958	890
	9	High	2480	30	958	874
EDR (3-DH5)	1	Low	2402	30	1483	1348
	1	Mid	2440	30	1475	1348
	1	High	2480	30	1483	1348

Note 1:	20dB bandwidth measured using RB = 30 kHz, VB = 100 kHz (VB > RB)
Note 1:	99% bandwidth measured using RB = 30 kHz, VB = 100 kHz (VB > RB)



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Requirment: 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 mutliplied by the number of channels being used.

Channel Spacing: 1000 kHz
20dB Bandwidth: 950 kHz

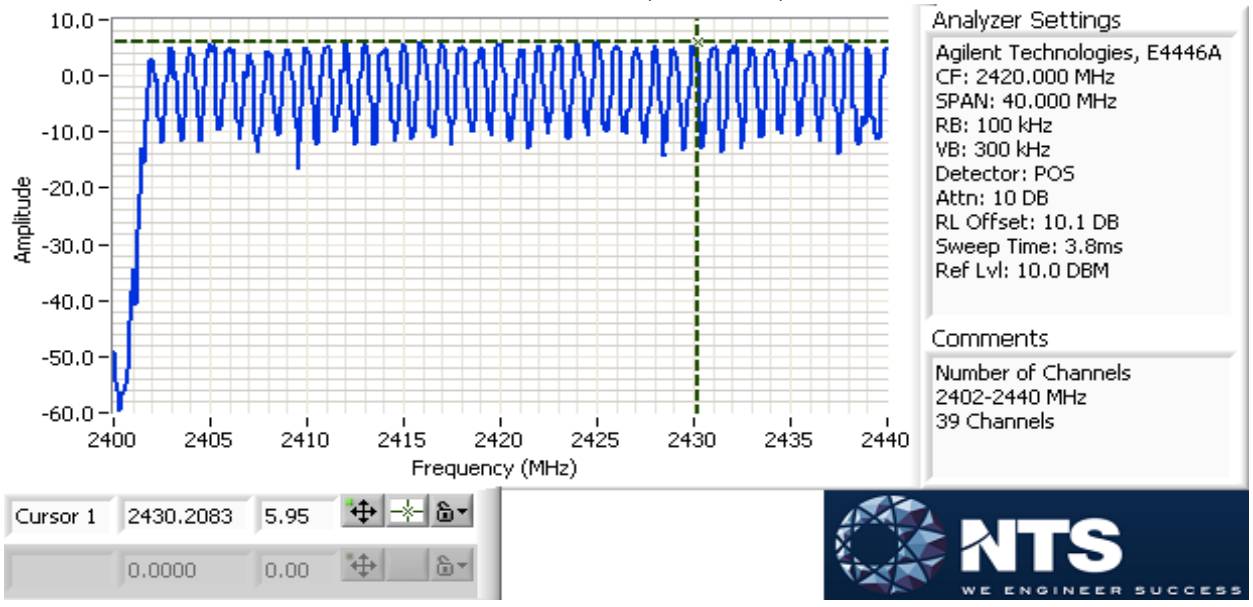
The channel spacing was measured in Basic rate mode with hopping enabled - see plot below showing channel spacing.

Requirement: The channel spacing shall be greater than 2/3 of the highest 20dB bandwidth as the ouput power is < 0.125 W.

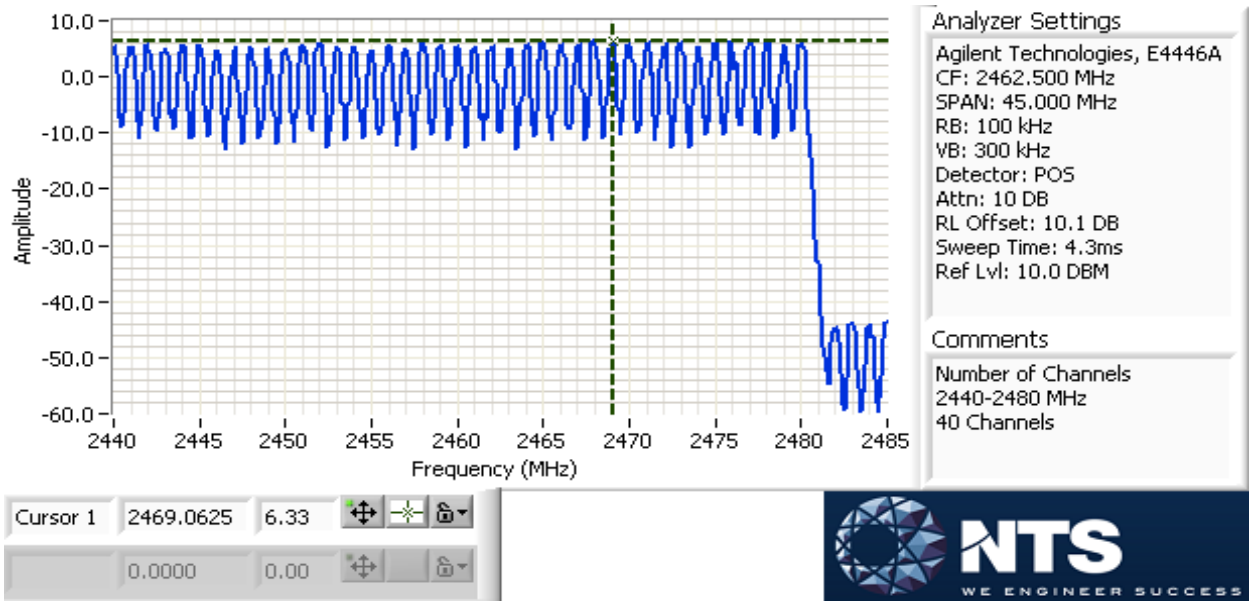
The number of channels was measured in Basic rate mode with hopping enabled with both the maximum (all) channels enabled and with the minimum number of channels enabled. The system shall employ a minimum of 15 hopping channels.

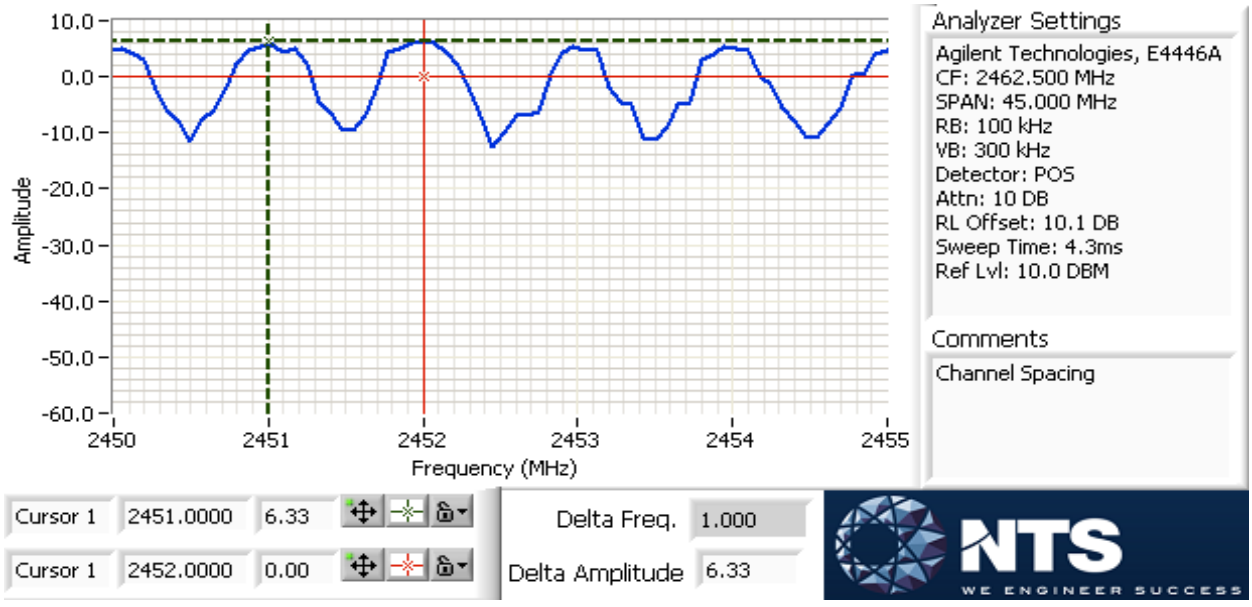
Requirement: The system shall employ a minimum of 15 hopping channels.

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



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A





Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #4a: Antenna Conducted Spurious Emissions, 30 - 25,000 MHz, Basic Rate

Date of Test: 1/14/2014 0:00 Config. Used: 1

Test Engineer: Rafael Varelas Config Change: none

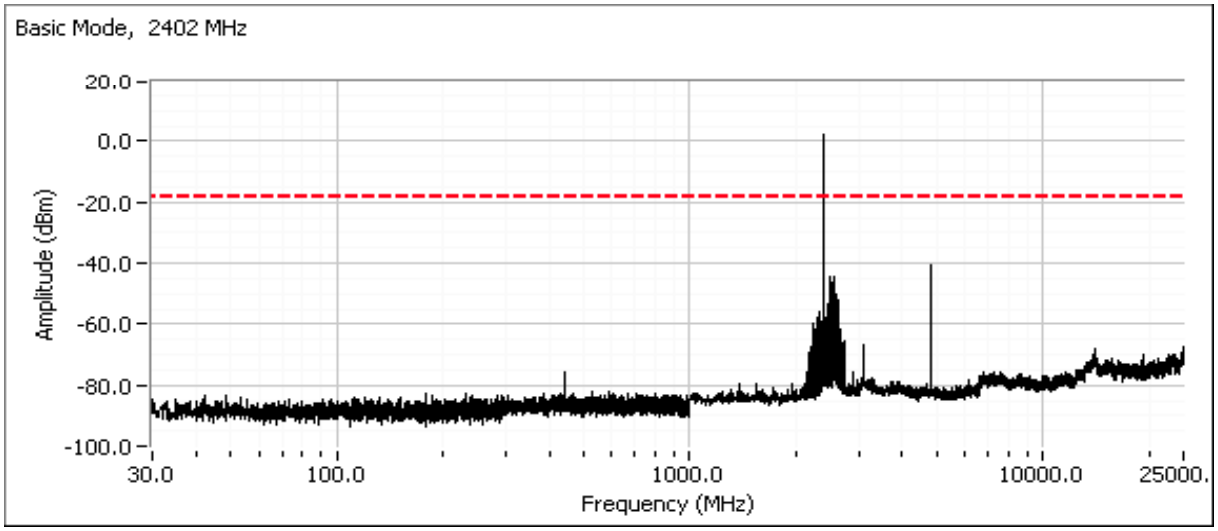
Test Location: FT Lab #4a EUT Voltage: 120V/60Hz from host

Frequency (MHz)	Power Setting	Mode	Limit	Result
2402	9	Basic	-20dBc	Pass
2440	9	Basic	-20dBc	Pass
2480	9	Basic	-20dBc	Pass

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.

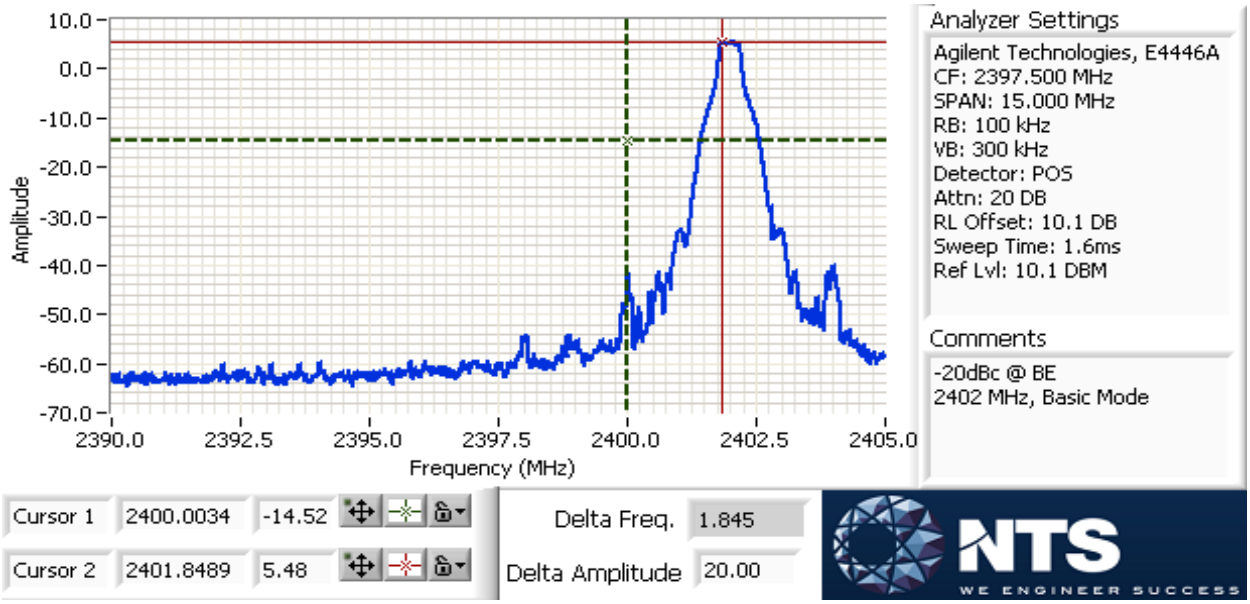
Low channel

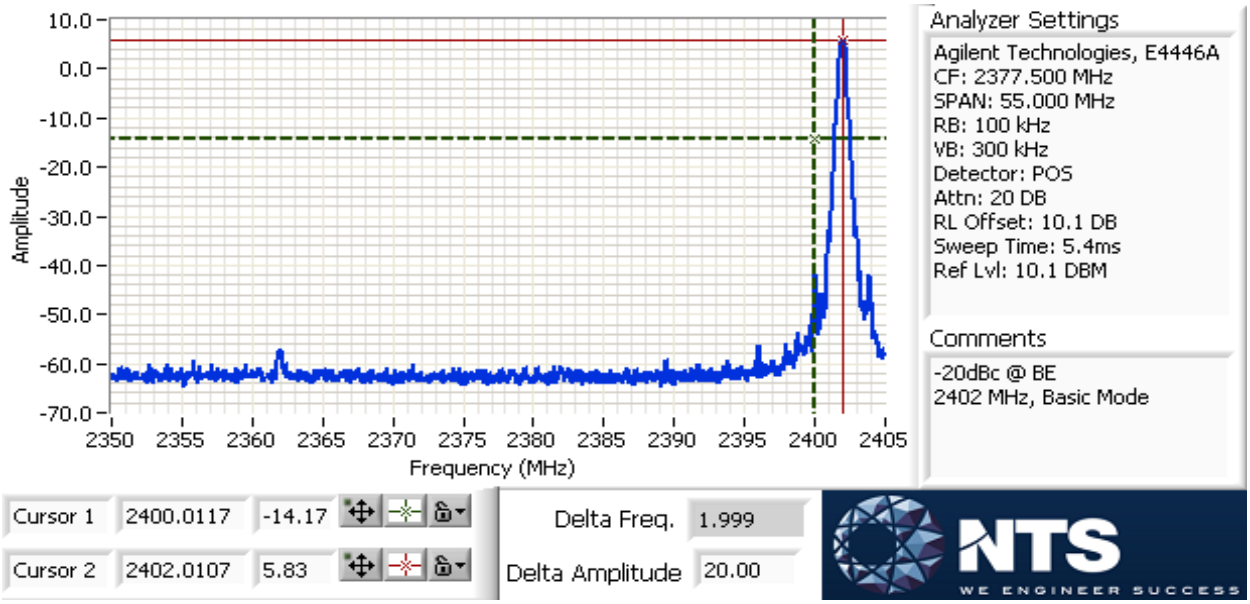
Broadband plot



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

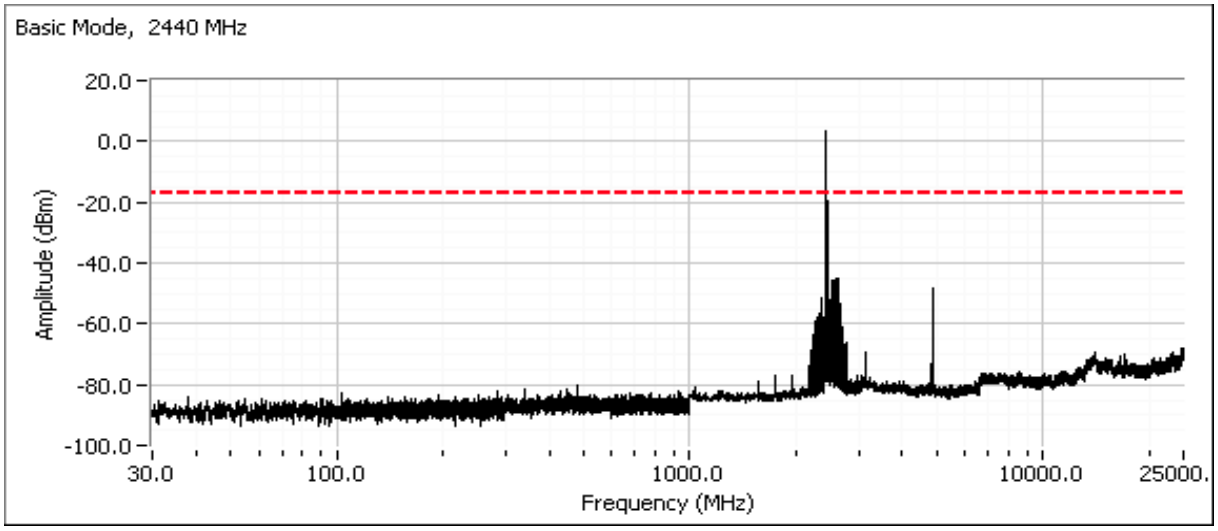
Plot showing -20dBc at the lower band edge



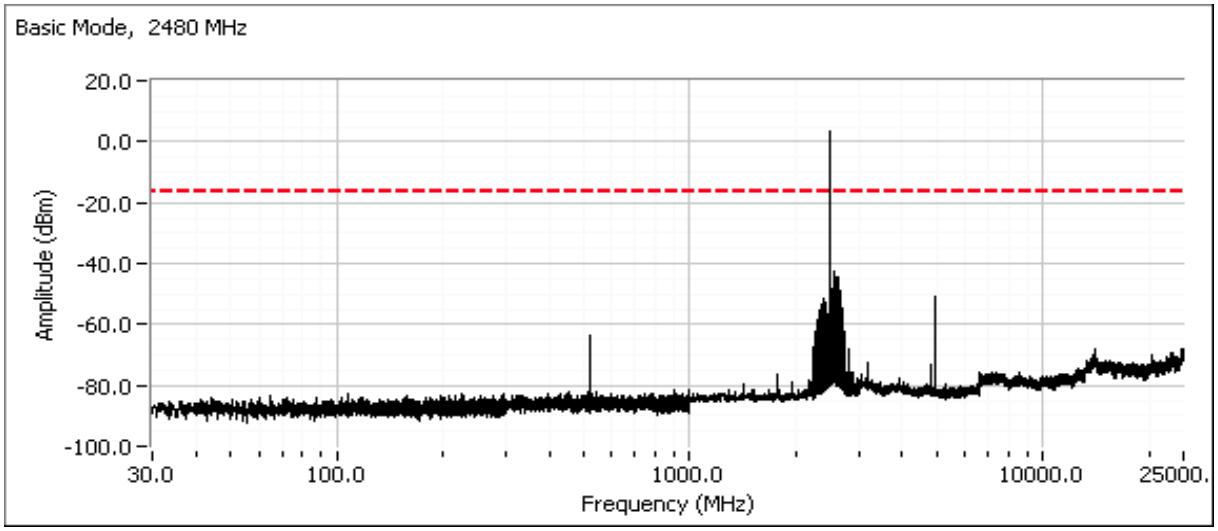


Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Center channel
Broadband plot

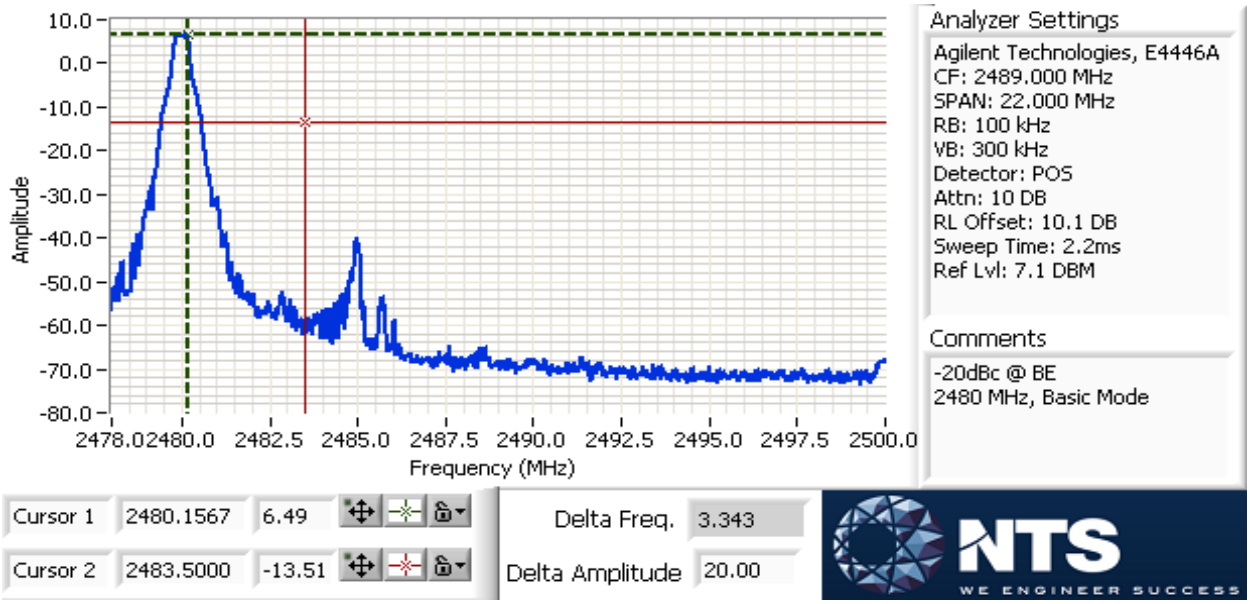


High channel
Broadband plot



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Plot showing -20dBc at the upper band edge

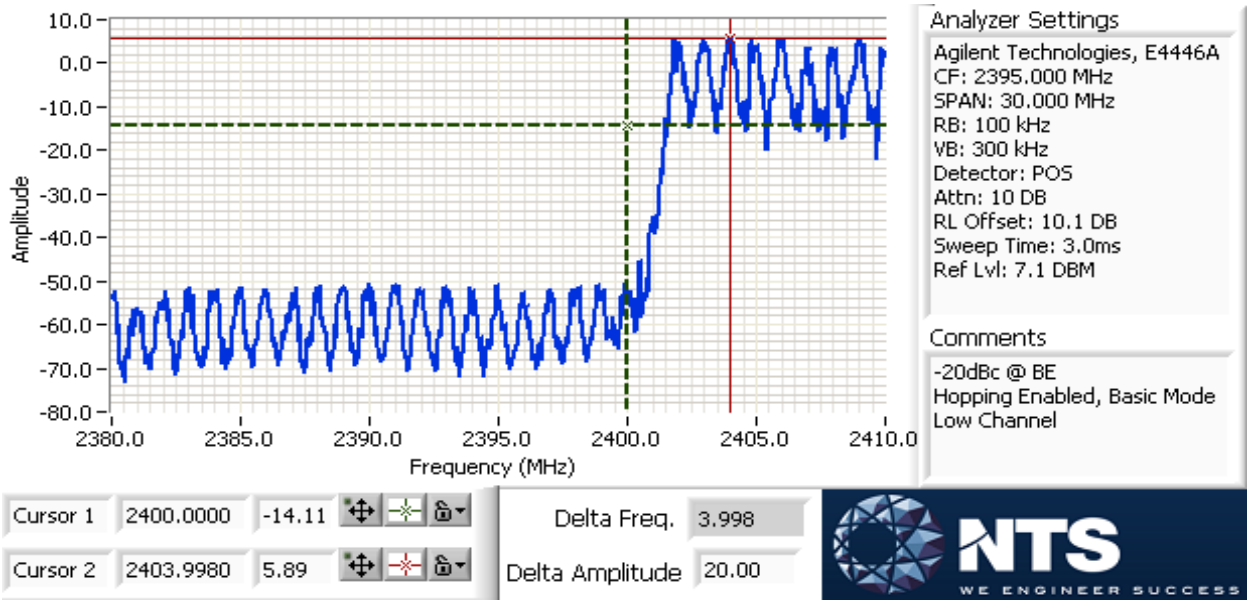


Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

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 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

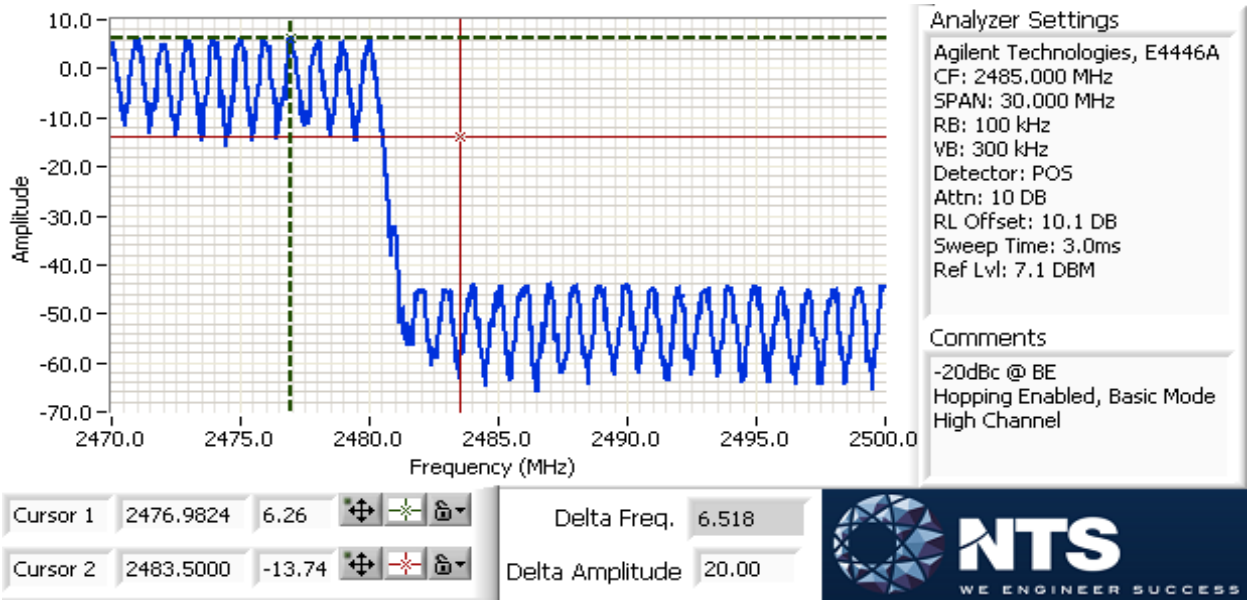
Plot showing -20dBc at the lower band edge



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

High channel, hopping enabled

Plot showing -20dBc at the upper band edge



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

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

Date of Test: 1/14/2014 0:00 Config. Used: 1

Test Engineer: Rafael Varelas Config Change: none

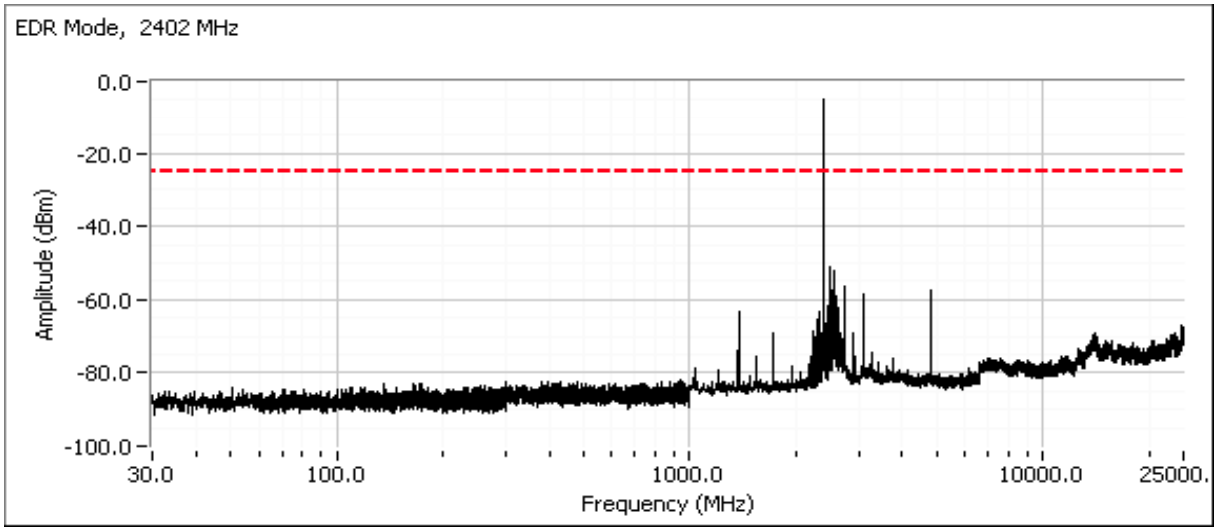
Test Location: FT Lab #4a EUT Voltage: 120V/60Hz from host

Frequency (MHz)	Power Setting	Mode	Limit	Result
2402	1	EDR	-20dBc	Pass
2440	1	EDR	-20dBc	Pass
2480	1	EDR	-20dBc	Pass

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.

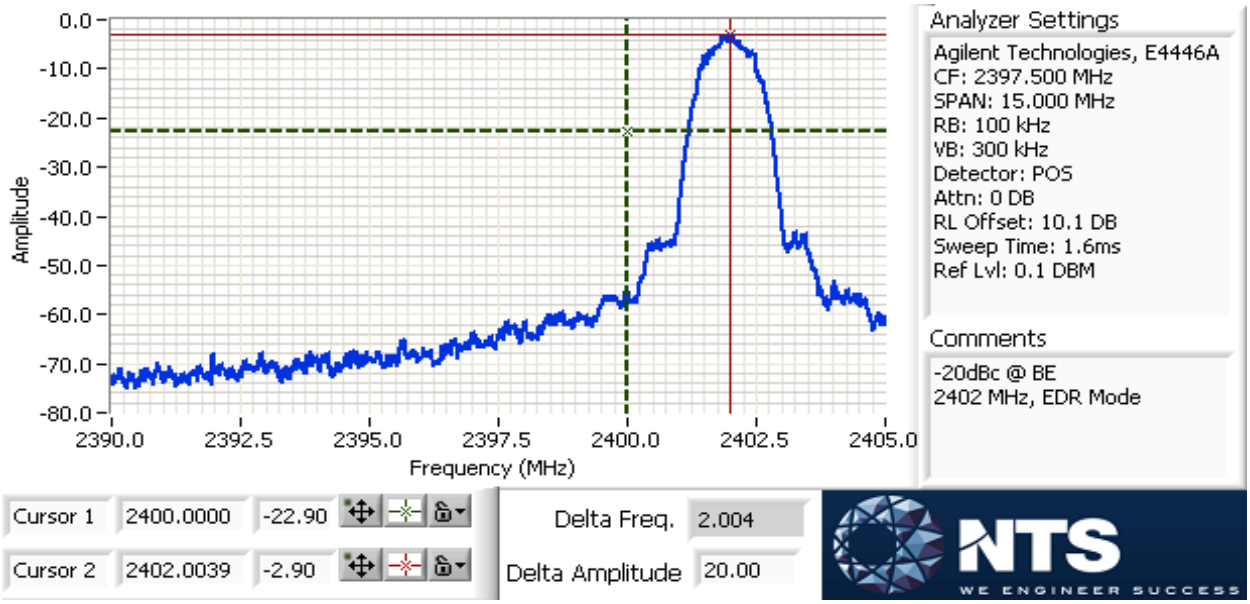
Low channel

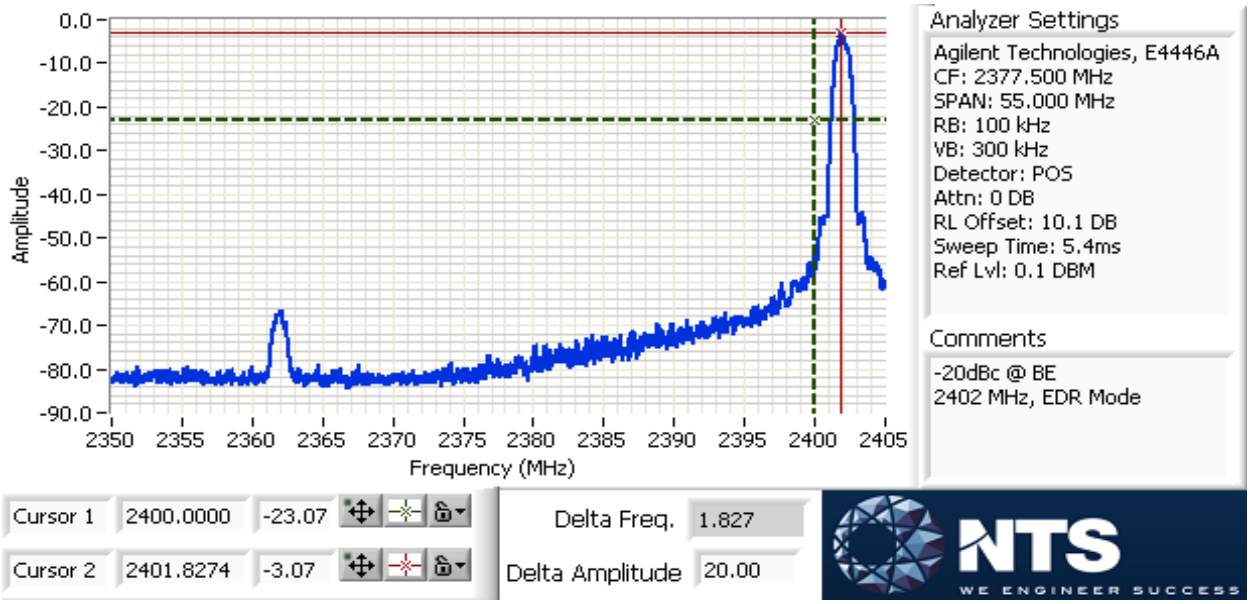
Broadband plot



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Plot showing -20dBc at the lower band edge

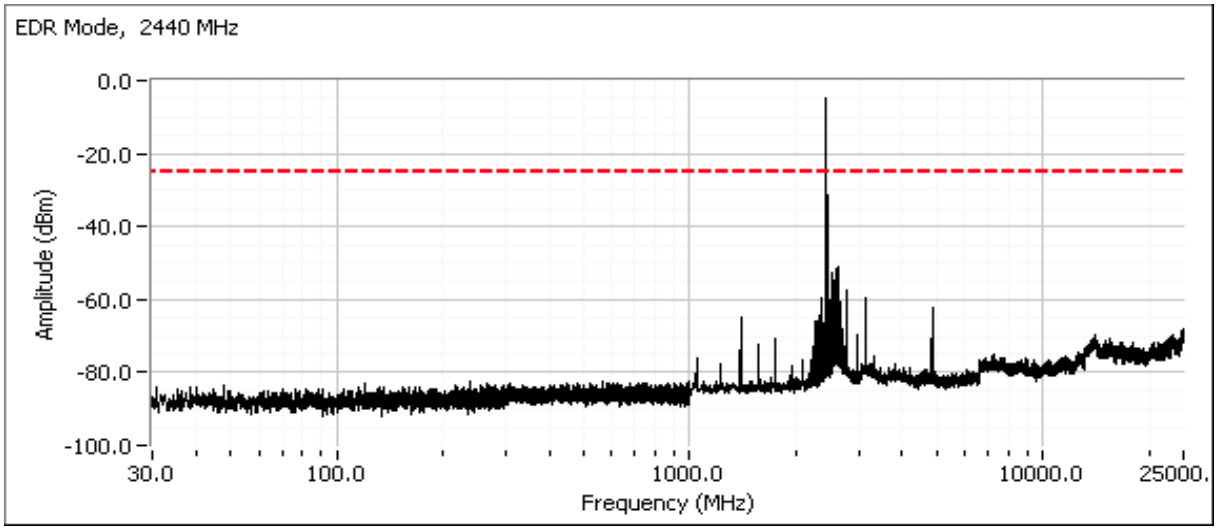




Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

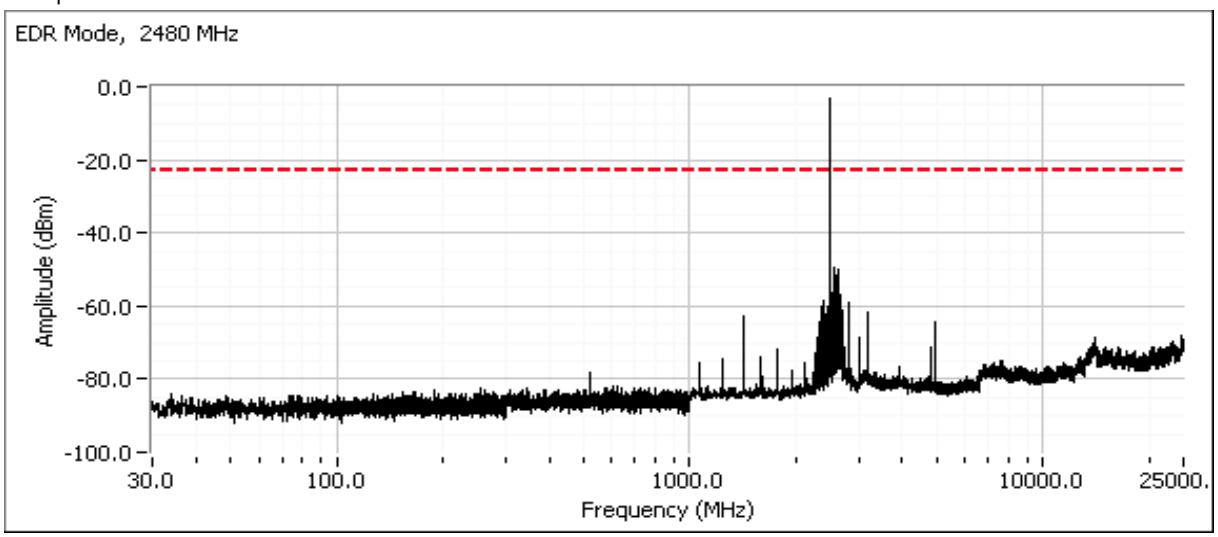
Center channel

Broadband plot



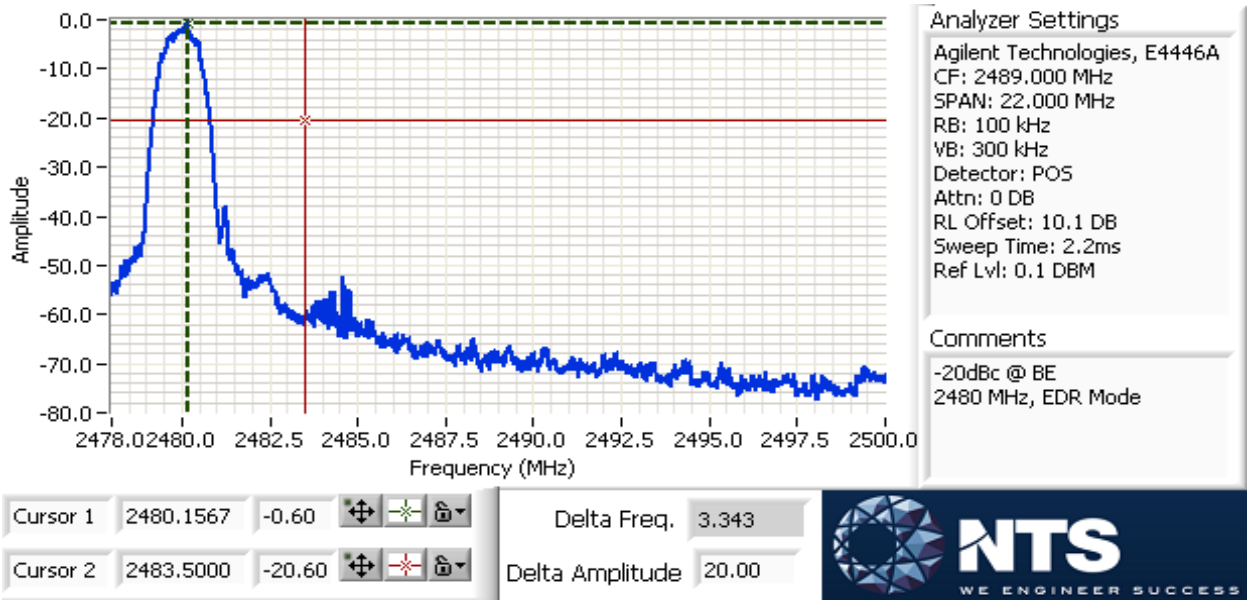
High channel

Broadband plot



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Plot showing -20dBc at the upper band edge

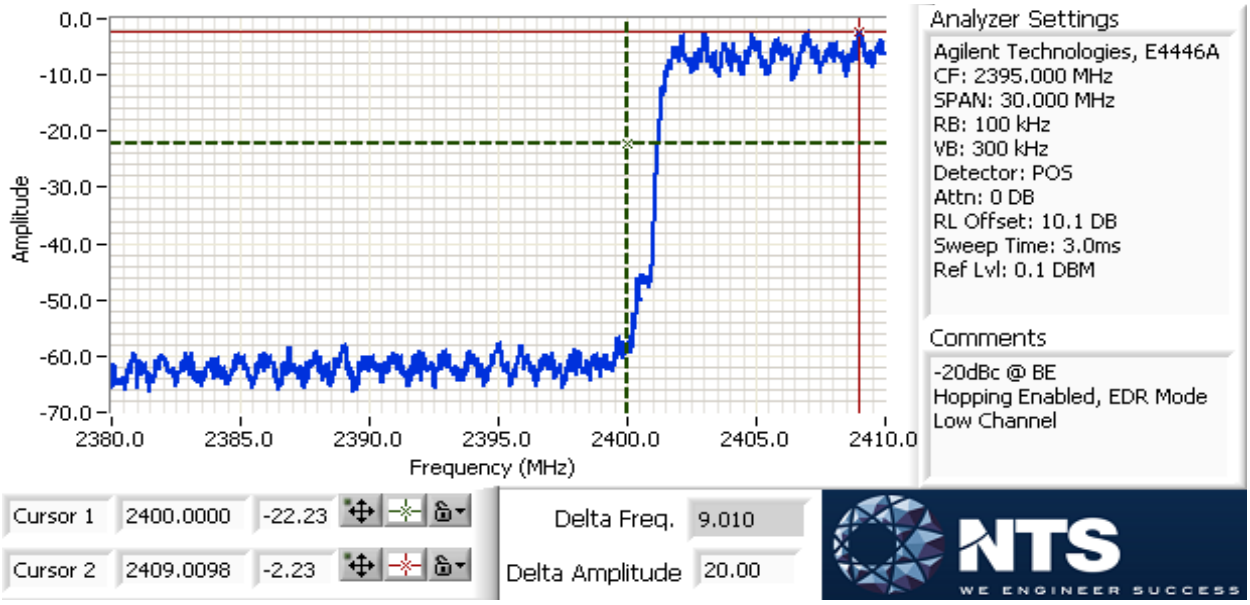


Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

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 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

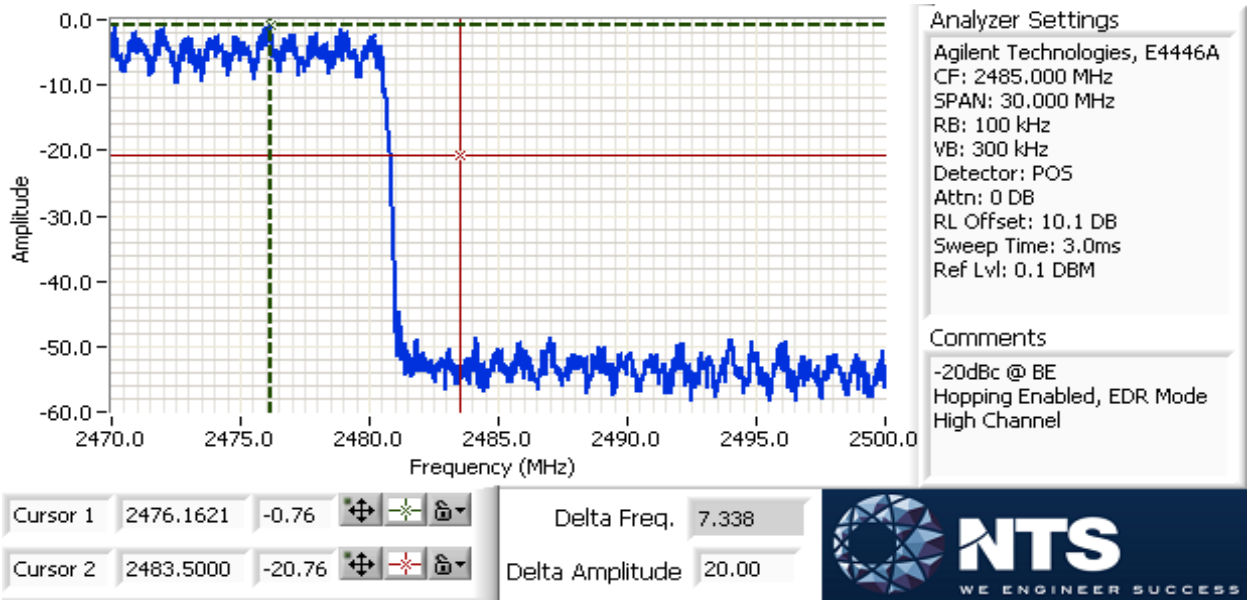
Plot showing -20dBc at the lower band edge



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

High channel, hopping enabled

Plot showing -20dBc at the upper band edge



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.
For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:

Temperature: 18 °C
Rel. Humidity: 30 %

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

MAC Address: 001500E60B22 DRTU Tool Version 1.7.4-855 Driver version 16.8.0.3

Run #	Mode	Channel	Power Setting	-	Test Performed	Limit	Result / Margin
1a	Basic rate 1Mb/s	2402	9	-	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	32.2 dBµV/m @ 2380.7 MHz (-21.8 dB)
			9	-	Radiated Emissions, 1 - 26 GHz		50.7 dBµV/m @ 4804.0 MHz (-3.3 dB)
1b		2441	9	-	Radiated Emissions, 1 - 26 GHz		47.7 dBµV/m @ 4882.0 MHz (-6.3 dB)
1c		2480	9	-	Restricted Band Edge (2483.5 MHz)		33.1 dBµV/m @ 2489.8 MHz (-20.9 dB)
			9	-	Radiated Emissions, 1 - 26 GHz		45.9 dBµV/m @ 4960.0 MHz (-8.1 dB)
2a	EDR 3Mb/s	2402	1	-	Restricted Band Edge (2390 MHz)		32.6 dBµV/m @ 2381.1 MHz (-21.4 dB)
				-	Radiated Emissions, 1 - 26 GHz		55.9 dBµV/m @ 1195.5 MHz (-18.1 dB)
2b		2441		-	Radiated Emissions, 1 - 26 GHz		52.2 dBµV/m @ 1595.8 MHz (-21.8 dB)
2c		2480		-	Restricted Band Edge (2483.5 MHz)		33.5 dBµV/m @ 2490.1 MHz (-20.5 dB)
				-	Radiated Emissions, 1 - 26 GHz		56.4 dBµV/m @ 1247.2 MHz (-17.6 dB)

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
Basic	Basic	0.77	Yes	10.42	1.1	2.3	96.0
EDR	EDR	0.73	Yes	9.92	1.4	2.7	100.8

Measurement Specific Notes:

Note 1:	Emission in non-restricted band, but limit of 15.209 used.
Note 2:	Emission in non-restricted band, the limit was set 20dB below the level of the fundamental and measured in 100kHz.
Note 3:	Emission has duty cycle < 98%, but constant, average measurement performed: RBW=1MHz, VBW=10Hz, peak detector, linear averaging, auto sweep, trace average 100 traces, measurement corrected by Linear Voltage correction factor
Note 6:	Plots of the average bandedge do not account for any duty cycle correction. Refer to the tabluar results for final measurements.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #1: Radiated Spurious Emissions, 1,000 - 25,000 MHz. Operating Mode: Basic Rate

Date of Test: 1/6/2014 0:00 — Config. Used: 1

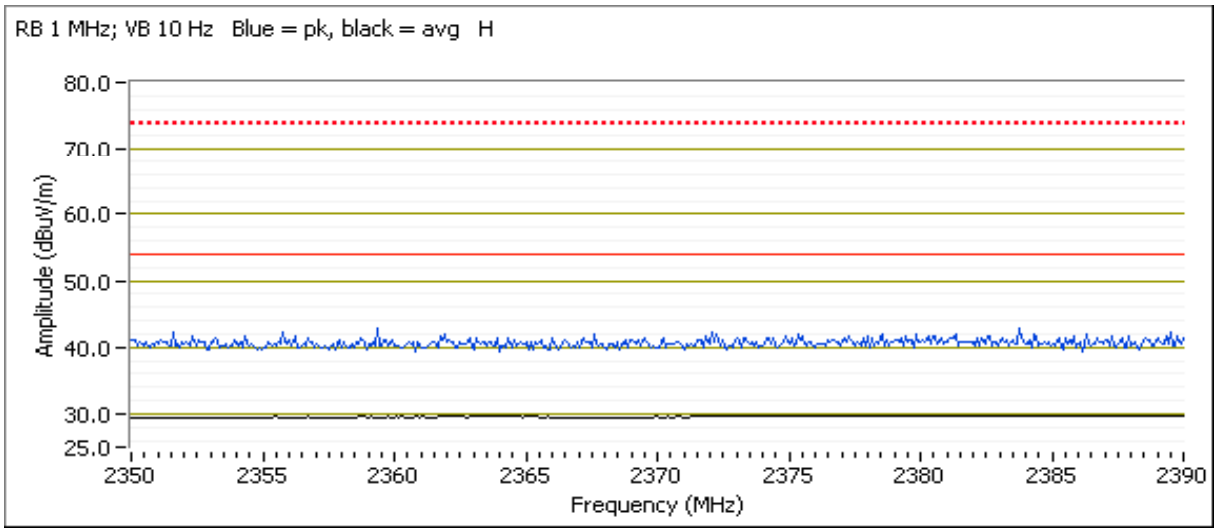
Test Engineer: Joseph Cadigal — Config Change: none

Test Location: FT Chamber#7 — EUT Voltage: 120V/60Hz from host

Run #1a: Low Channel @ 2402 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	
2380.700	32.2	H	54.0	-21.8	AVG	309	1.0	POS; RB 1 MHz; VB: 10 Hz
2382.870	41.9	H	74.0	-32.1	PK	309	1.0	POS; RB 1 MHz; VB: 3 MHz
2381.740	29.9	V	54.0	-24.1	AVG	274	1.2	POS; RB 1 MHz; VB: 10 Hz
2360.900	42.1	V	74.0	-31.9	PK	274	1.2	POS; RB 1 MHz; VB: 3 MHz



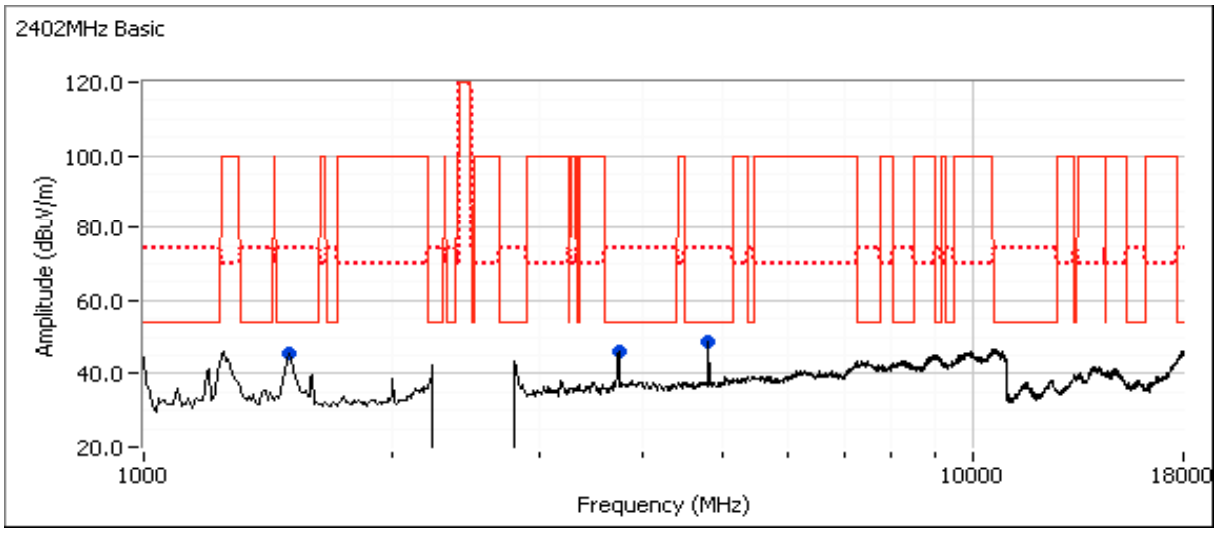
Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Fundamental emission level @ 3m in 100kHz RBW:	74.8	dBµV/m
Limit for emissions outside of restricted bands:	54.8	dBµV/m

Limit is -20dBc (Peak power measurement)

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	
4804.030	50.7	V	54.0	-3.3	AVG	222	1.0	RB 1 MHz;VB 10 Hz;Peak
4804.340	52.2	V	74.0	-21.8	PK	222	1.0	RB 1 MHz;VB 3 MHz;Peak
1497.240	35.8	V	54.0	-18.2	AVG	182	1.0	RB 1 MHz;VB 10 Hz;Peak
1498.600	57.4	V	74.0	-16.6	PK	182	1.0	RB 1 MHz;VB 3 MHz;Peak
3734.300	33.6	V	54.0	-20.4	AVG	200	1.0	RB 1 MHz;VB 10 Hz;Peak
3734.020	56.3	V	74.0	-17.7	PK	200	1.0	RB 1 MHz;VB 3 MHz;Peak



Note:	*Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range*

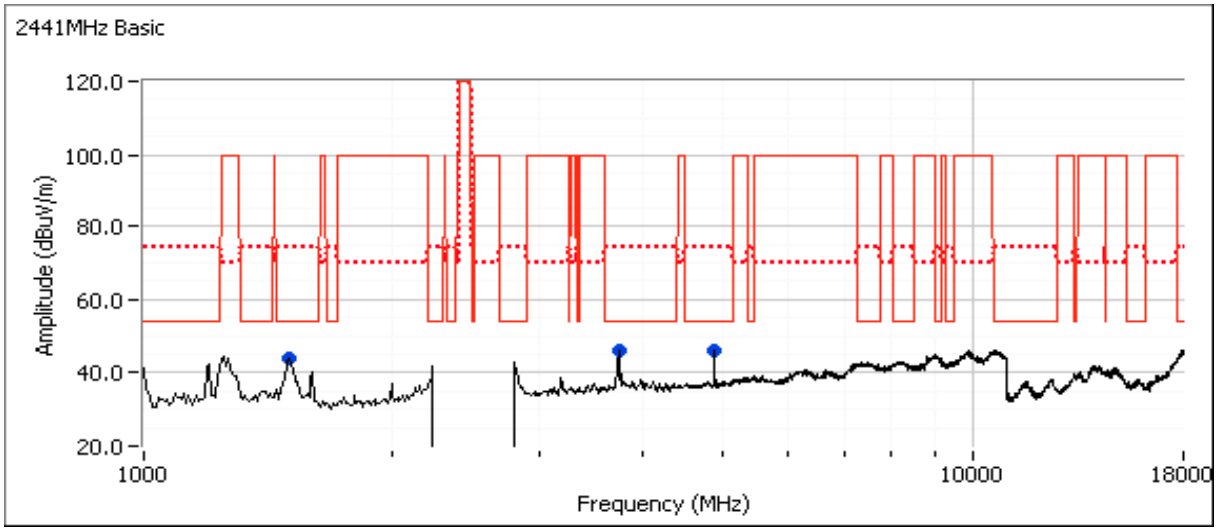
Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run #1b: Center Channel @ 2441 MHz

Fundamental emission level @ 3m in 100kHz RBW:	74.5	dBµV/m
Limit for emissions outside of restricted bands:	54.5	dBµV/m

Limit is -20dBc (Peak power measurement)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4882.000	47.7	V	54.0	-6.3	AVG	224	1.3	RB 1 MHz;VB 10 Hz;Peak
4881.820	50.3	V	74.0	-23.7	PK	224	1.3	RB 1 MHz;VB 3 MHz;Peak
3748.130	32.9	V	54.0	-21.1	AVG	161	1.0	RB 1 MHz;VB 10 Hz;Peak
3747.280	54.4	V	74.0	-19.6	PK	161	1.0	RB 1 MHz;VB 3 MHz;Peak
1497.700	35.5	V	54.0	-18.5	AVG	184	1.0	RB 1 MHz;VB 10 Hz;Peak
1499.320	57.5	V	74.0	-16.5	PK	184	1.0	RB 1 MHz;VB 3 MHz;Peak



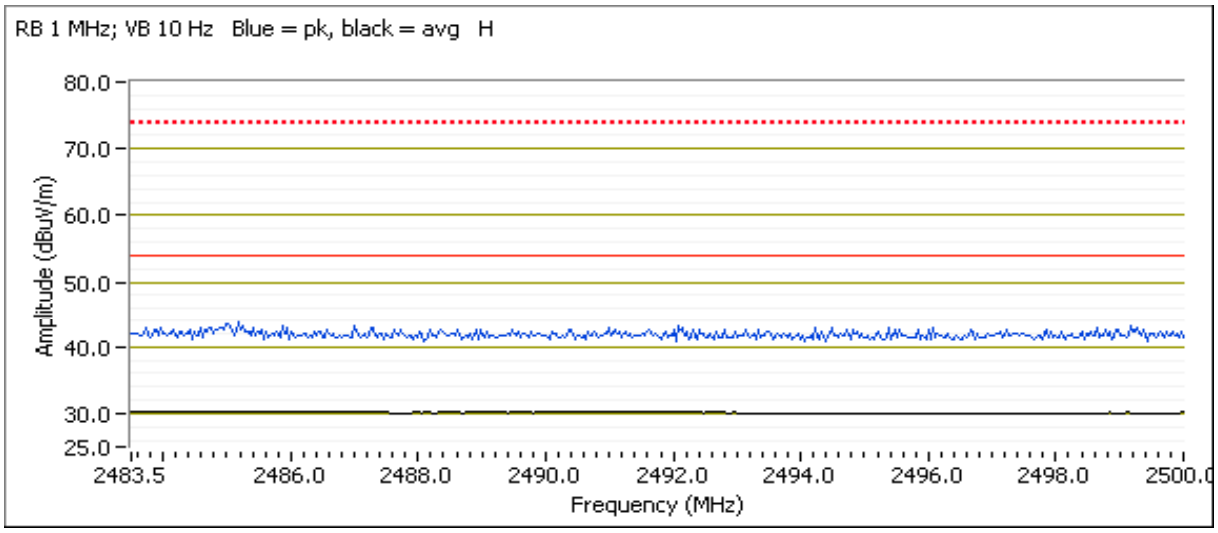
Note:	*Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range*

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, 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	
2489.750	33.1	H	54.0	-20.9	AVG	277	1.0	POS; RB 1 MHz; VB: 10 Hz
2492.060	44.4	H	74.0	-29.6	PK	277	1.0	POS; RB 1 MHz; VB: 3 MHz
2484.890	32.8	V	54.0	-21.2	AVG	307	1.6	POS; RB 1 MHz; VB: 10 Hz
2487.860	42.0	V	74.0	-32.0	PK	307	1.6	POS; RB 1 MHz; VB: 3 MHz



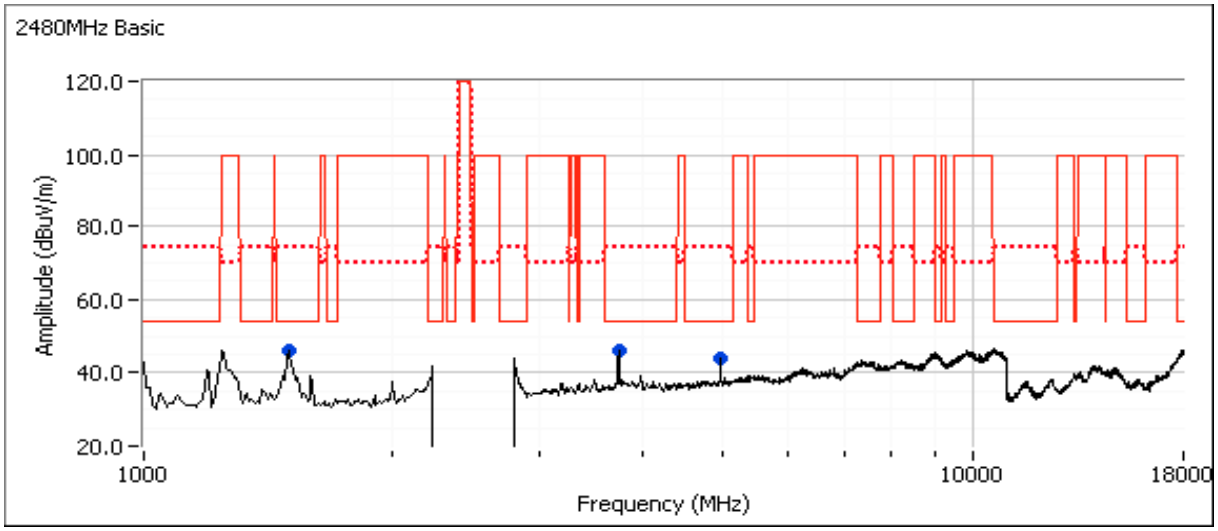
Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Fundamental emission level @ 3m in 100kHz RBW:	77	dBµV/m
Limit for emissions outside of restricted bands:	57	dBµV/m

Limit is -20dBc (Peak power measurement)

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	
4959.960	45.9	V	54.0	-8.1	AVG	211	1.0	RB 1 MHz;VB 10 Hz;Peak
4959.890	48.9	V	74.0	-25.1	PK	211	1.0	RB 1 MHz;VB 3 MHz;Peak
1497.790	34.9	V	54.0	-19.1	AVG	178	1.0	RB 1 MHz;VB 10 Hz;Peak
1496.820	55.2	V	74.0	-18.8	PK	178	1.0	RB 1 MHz;VB 3 MHz;Peak
3734.890	32.9	V	54.0	-21.1	AVG	200	1.0	RB 1 MHz;VB 10 Hz;Peak
3735.170	55.3	V	74.0	-18.7	PK	200	1.0	RB 1 MHz;VB 3 MHz;Peak



Note:	*Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range*

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Run 2: Radiated Spurious Emissions, 1,000 - 25,000 MHz. Operating Mode: EDR

Date of Test: 1/6/2014 0:00 Config. Used: 1

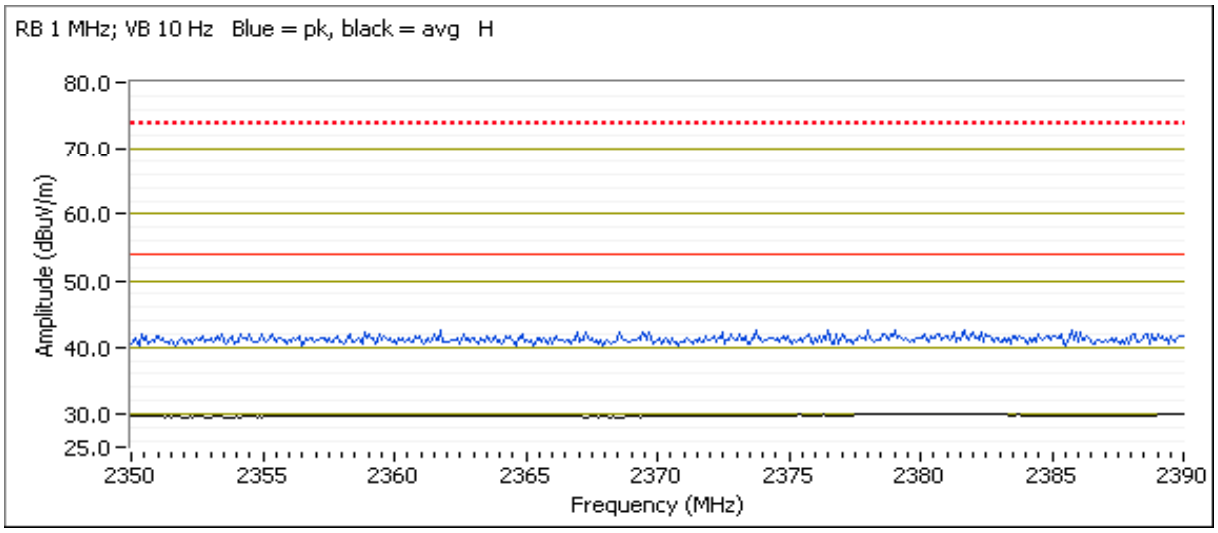
Test Engineer: Joseph Cadigal Config Change: none

Test Location: FT Chamber#7 EUT Voltage: 120V/60Hz from host

Run #2a: Low Channel @ 2402 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	
2381.100	32.6	H	54.0	-21.4	AVG	309	1.0	POS; RB 1 MHz; VB: 10 Hz
2350.800	40.9	H	74.0	-33.1	PK	309	1.0	POS; RB 1 MHz; VB: 3 MHz
2380.940	32.6	V	54.0	-21.4	AVG	237	1.9	POS; RB 1 MHz; VB: 10 Hz
2381.980	41.6	V	74.0	-32.4	PK	237	1.9	POS; RB 1 MHz; VB: 3 MHz



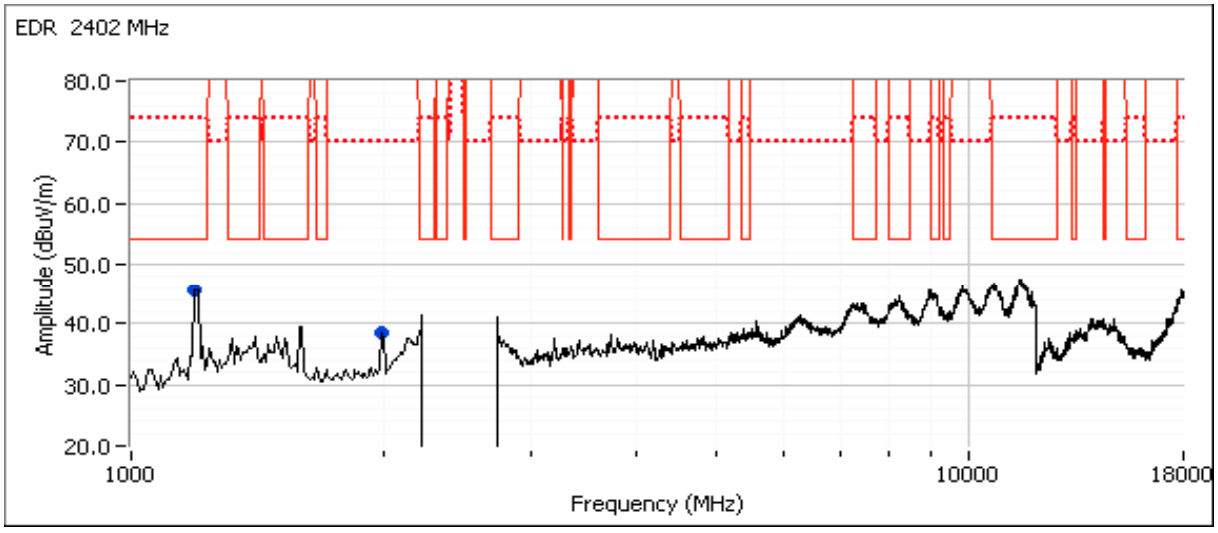
Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

Fundamental emission level @ 3m in 100kHz RBW:	67.4	dBµV/m
Limit for emissions outside of restricted bands:	47.4	dBµV/m

Limit is -20dBc (Peak power measurement)

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	
1995.600	28.5	V	54.0	-25.5	AVG	352	1.00	Note 1
1997.270	48.1	V	74.0	-25.9	PK	352	1.00	Note 1
1196.140	31.5	V	54.0	-22.5	AVG	178	1.14	
1195.540	55.9	V	74.0	-18.1	PK	178	1.14	



Note:	*Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range*

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

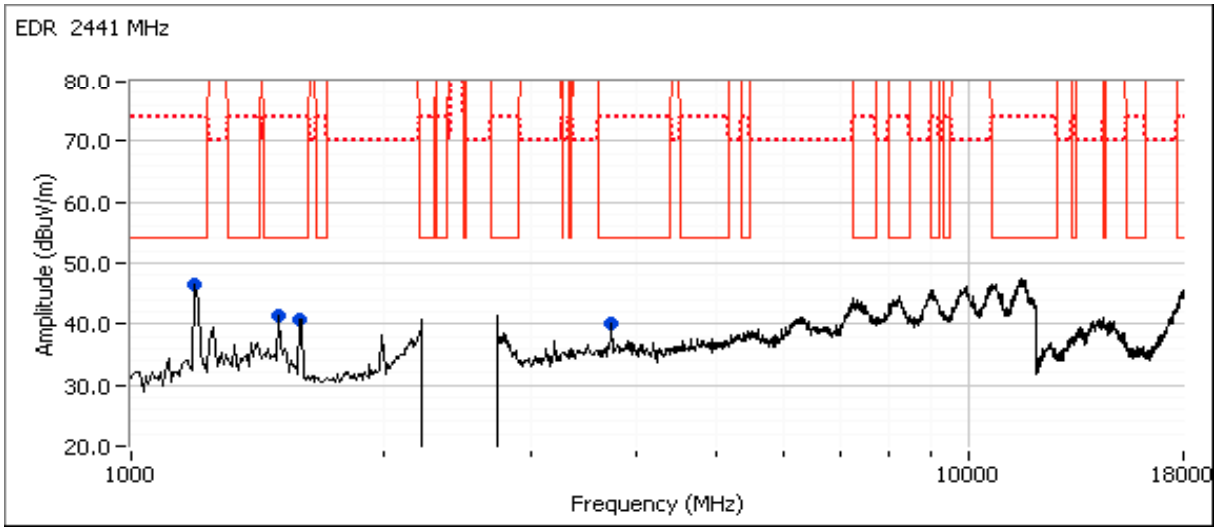
Run #2b: Center Channel @ 2441 MHz

Fundamental emission level @ 3m in 100kHz RBW:		dBµV/m
Limit for emissions outside of restricted bands:	-20	dBµV/m

Limit is -20dBc (Peak power measurement)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1594.600	29.9	H	54.0	-24.1	AVG	303	1.56	
1595.800	52.2	H	74.0	-21.8	PK	303	1.56	
1500.000	*41.5*	*V*	*54.0*	*-12.5*	*Peak*	*170*	*1.0*	*Note 4*
3741.670	*40.2*	*V*	*54.0*	*-13.8*	*Peak*	*187*	*1.0*	*Note 4*
1191.670	*46.4*	*V*	*54.0*	*-7.6*	*Peak*	*192*	*1.0*	*Note 5*

Note 4:	Emission does not change with mode or channel, most likely coming from host laptop. In addition, it was measured in run #1.
Note 5:	Emission does not change with channel, most likely coming from host laptop. In addition, it was measured in run #2a.



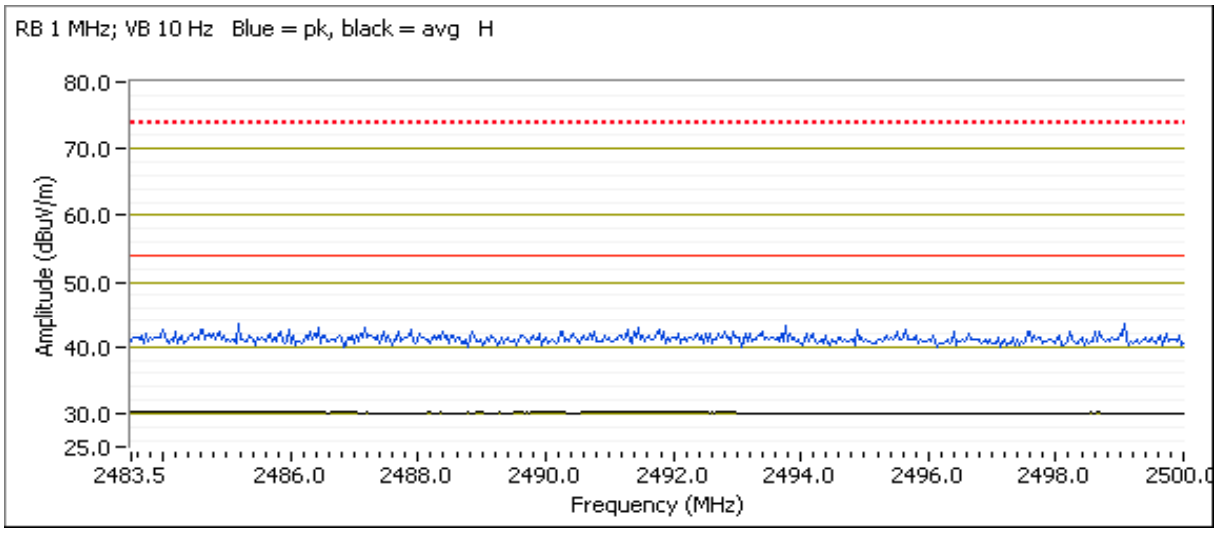
Note:	*Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range*

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, 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 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2490.050	33.5	H	54.0	-20.5	AVG	277	1.1	POS; RB 1 MHz; VB: 10 Hz
2489.190	43.3	H	74.0	-30.7	PK	277	1.1	POS; RB 1 MHz; VB: 3 MHz
2484.230	33.1	V	54.0	-20.9	AVG	308	1.0	POS; RB 1 MHz; VB: 10 Hz
2492.200	42.1	V	74.0	-31.9	PK	308	1.0	POS; RB 1 MHz; VB: 3 MHz



Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	N/A

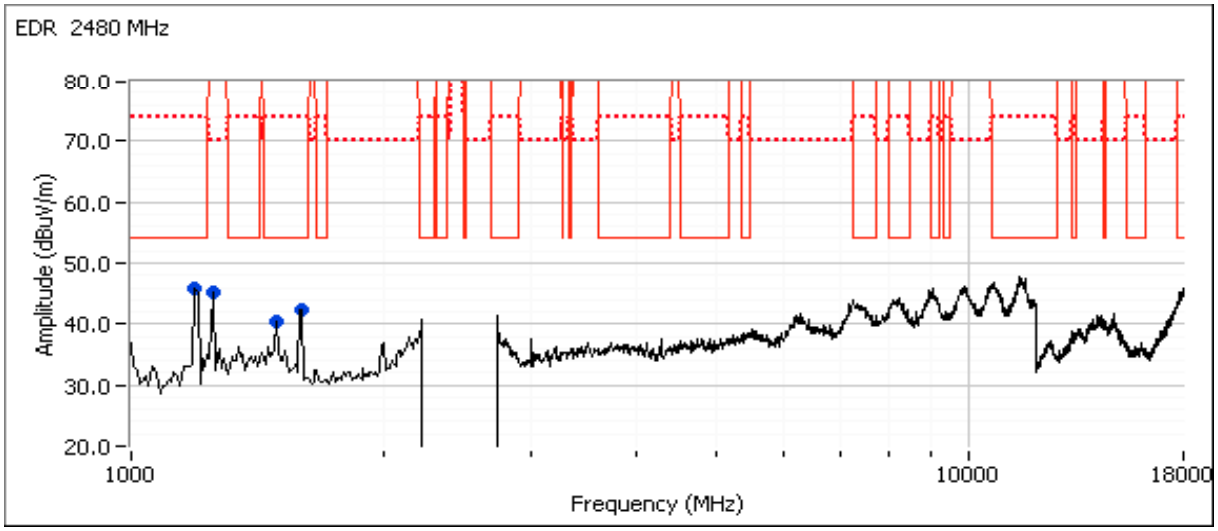
Fundamental emission level @ 3m in 100kHz RBW:	69	dBµV/m
Limit for emissions outside of restricted bands:	49	dBµV/m

Limit is -20dBc (Peak power measurement)

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1191.670	*45.7*	*V*	*54.0*	*-8.3*	*Peak*	*182*	*1.0*	*Note 5*
1248.970	27.2	H	54.0	-26.8	AVG	139	1.00	Note 1
1247.200	56.4	H	74.0	-17.6	PK	139	1.00	Note 1
1600.000	*42.4*	*V*	*54.0*	*-11.6*	*Peak*	*120*	*1.0*	*Note 7*
1491.670	*40.4*	*V*	*54.0*	*-13.6*	*Peak*	*134*	*2.0*	*Note 4*

Note 4:	Emission does not change with mode or channel, most likely coming from host laptop. In addition, it was measured in run #1.
Note 5:	Emission does not change with channel, most likely coming from host laptop. In addition, it was measured in run #2a.
Note 7	Emission does not change with channel, most likely coming from host laptop. In addition, it was measured in run #2b.



Note:	*Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range*

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	B

Radiated Emissions 30-1000 MHz (Transmitter)

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

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

Date of Test: 1/10/2014
Test Engineer: John Caizzi
Test Location: Chamber 4
Config. Used: 1
Config Change: none
Host Voltage: 120V / 60Hz

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing.
The test distance and extrapolation factor (if applicable) are detailed under each run description.
Note, preliminary testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. Maximized testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions:

Temperature: 21 °C
Rel. Humidity: 34 %

Summary of Results

MAC Address: 001500E60B22 DRTU Tool Version 1.7.4-855 Driver version 16.8.0.3

Run #	Test Performed	Limit	Result	Margin
1	Radiated Emissions 30 - 1000 MHz, Preliminary	FCC 15.209 / RSS 210	Eval	32.9 dBµV/m @ 112.19 MHz (-10.6 dB)
2	Radiated Emissions 30 - 1000 MHz, Maximized	FCC 15.209 / RSS 210	Pass	32.9 dBµV/m @ 112.19 MHz (-10.6 dB)
3	Radiated Emissions 30 - 1000 MHz, Preliminary	FCC 15.209 / RSS 210	Eval	28.6 dBµV/m @ 30.04 MHz (-11.4 dB)
4	Radiated Emissions 30 - 1000 MHz, Maximized	FCC 15.209 / RSS 210	Pass	28.6 dBµV/m @ 30.04 MHz (-11.4 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

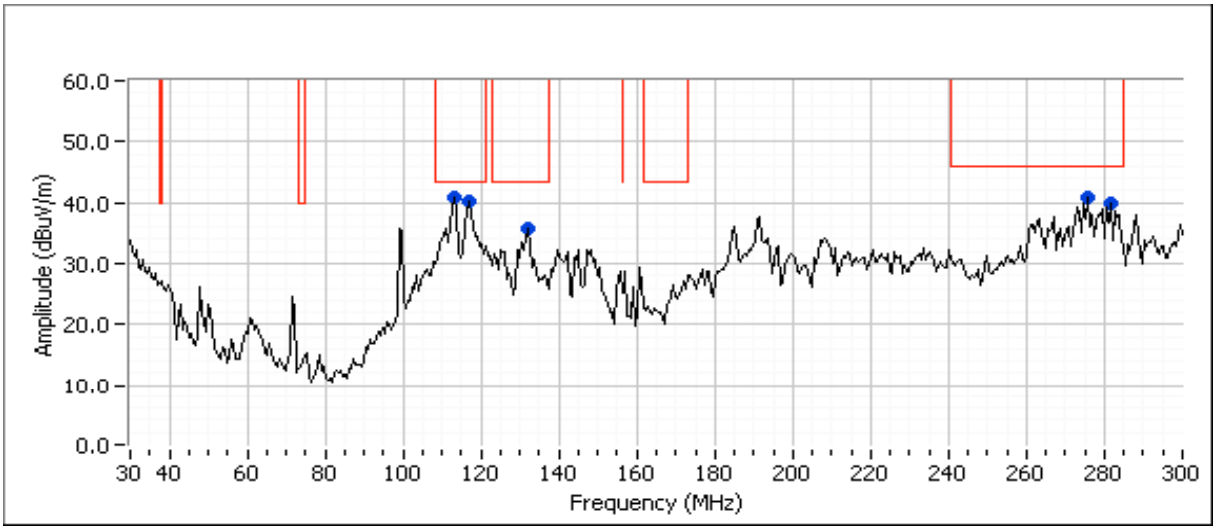
Deviations From The Standard

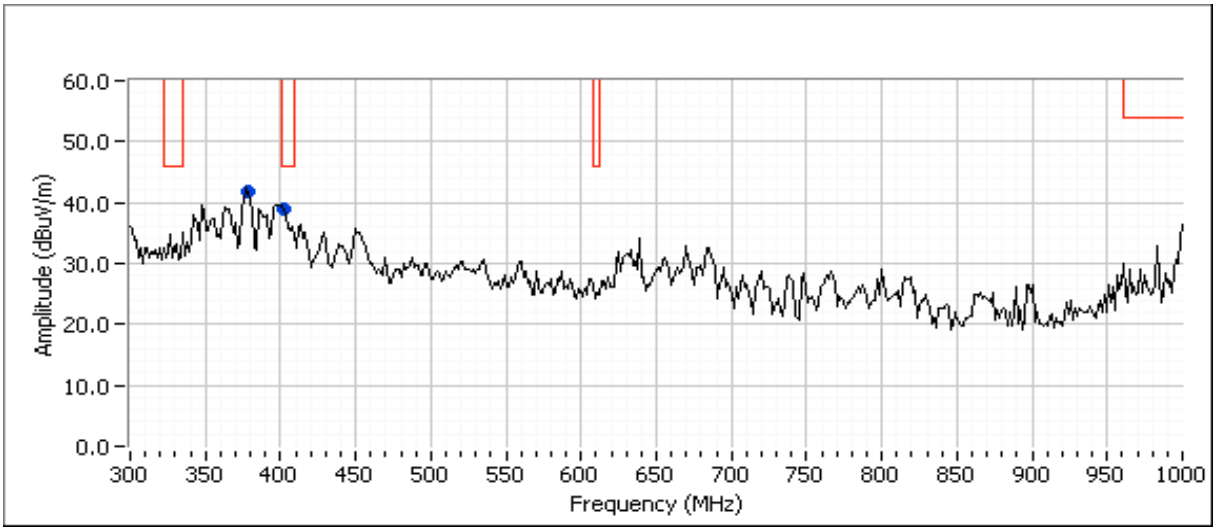
No deviations were made from the requirements of the standard.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	B

Run #1: Preliminary Radiated Emissions, 30 - 1000 MHz
Configured to TX , 802.11b 16.5dBm on chain A (setting 22) on channel 6, BLE chain B (setting Max) on channel 2440MHz.

Test Parameters for Preliminary Scan(s)			
Frequency Range (MHz)	Prescan Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0





Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	B

Preliminary peak readings captured during pre-scan

Frequency	Level	Pol	FCC 15.209 / RSS 210		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
112.185	40.7	V	43.5	-2.8	Peak	285	1.0	
116.275	40.1	V	43.5	-3.4	Peak	231	1.0	
276.109	40.8	H	46.0	-5.2	Peak	178	1.0	
279.509	39.8	H	46.0	-6.2	Peak	347	1.5	
403.050	39.0	H	46.0	-7.0	Peak	209	1.5	
133.439	35.6	V	43.5	-7.9	Peak	102	1.5	
375.754	41.8	H	46.0	-4.2	Peak	211	1.5	Note 1

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

Frequency	Level	Pol	FCC 15.209 / RSS 210		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
279.509	28.7	H	46.0	-17.3	QP	345	1.01	
112.185	32.9	V	43.5	-10.6	QP	171	1.00	
116.275	28.3	V	43.5	-15.2	QP	149	1.00	
375.754	33.3	H	46.0	-12.7	QP	220	1.01	
403.050	32.2	H	46.0	-13.8	QP	205	1.00	
276.109	30.3	H	46.0	-15.7	QP	216	1.00	
133.439	25.5	V	43.5	-18.0	QP	113	1.01	

Note 1:	Emission in non-restricted band, but limit of 15.209 used.

Run #2: Maximized Readings From Run #1

Test Parameters for Maximized Reading(s)			
Frequency Range (MHz)	Test Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0

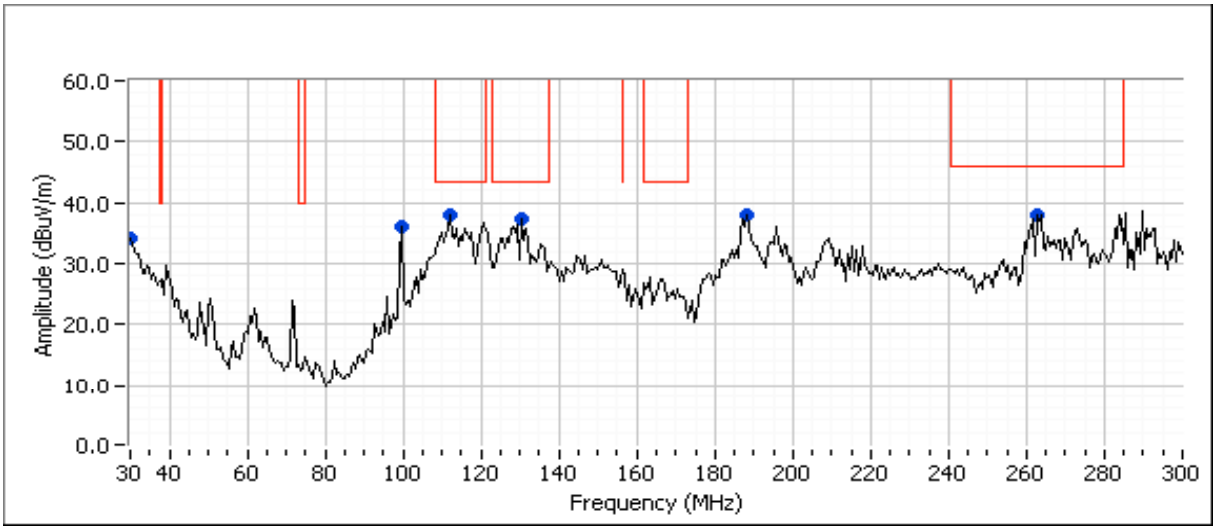
Maximized quasi-peak readings (includes manipulation of EUT interface cables)

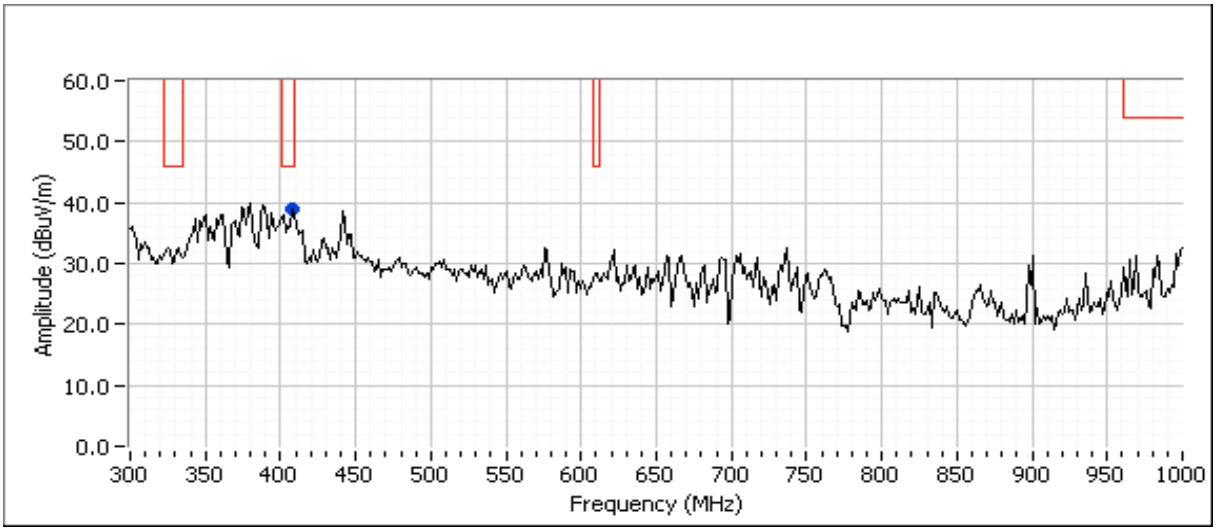
Frequency	Level	Pol	FCC 15.209 / RSS 210		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
279.509	28.7	H	46.0	-17.3	QP	345	1.01	Moving cables lowered reading.
112.185	32.9	V	43.5	-10.6	QP	171	1.00	Moving cables lowered reading.
116.275	28.3	V	43.5	-15.2	QP	149	1.00	Moving cables lowered reading.
375.754	33.3	H	46.0	-12.7	QP	220	1.01	Moving cables lowered reading.
403.050	32.2	H	46.0	-13.8	QP	205	1.00	Moving cables lowered reading.
276.109	30.3	H	46.0	-15.7	QP	216	1.00	Moving cables lowered reading.
133.439	25.5	V	43.5	-18.0	QP	113	1.01	Moving cables lowered reading.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	B

Run #3: Preliminary Radiated Emissions, 30 - 1000 MHz
Configured to TX , 802.11a 16.5dBm on chain A (setting 30) on channel 100, BLE chain B (setting Max) on channel 2480MHz.

Test Parameters for Preliminary Scan(s)			
Frequency Range (MHz)	Prescan Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0





Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	B

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

Frequency	Level	Pol	FCC 15.209 / RSS 210		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
114.078	38.1	V	43.5	-5.4	Peak	140	2.0	
188.629	38.0	H	43.5	-5.5	Peak	175	2.0	Note 1
30.038	34.0	V	40.0	-6.0	Peak	57	1.0	Note 1
130.441	37.4	V	43.5	-6.1	Peak	117	1.0	
403.794	39.0	H	46.0	-7.0	Peak	202	1.0	
99.812	36.1	V	43.5	-7.4	Peak	224	1.5	Note 1
262.665	*37.9*	*H*	*46.0*	*-8.1*	*Peak*	*81*	*2.5*	

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

Frequency	Level	Pol	FCC 15.209 / RSS 210		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
99.812	25.8	V	43.5	-17.7	QP	233	1.68	
403.794	31.5	H	46.0	-14.5	QP	208	1.00	
188.629	26.2	H	43.5	-17.3	QP	153	1.64	
114.078	30.2	V	43.5	-13.3	QP	122	1.01	
130.441	26.0	V	43.5	-17.5	QP	134	1.00	
30.038	28.6	V	40.0	-11.4	QP	31	1.01	

Run #4: Maximized Readings From Run #1

Test Parameters for Maximized Reading(s)			
Frequency Range (MHz)	Test Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0

Maximized quasi-peak readings (includes manipulation of EUT interface cables)

Frequency	Level	Pol	FCC 15.209 / RSS 210		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
99.812	25.8	V	43.5	-17.7	QP	233	1.68	Moving cables lowered reading.
403.794	31.5	H	46.0	-14.5	QP	208	1.00	Moving cables lowered reading.
188.629	26.2	H	43.5	-17.3	QP	153	1.64	Moving cables lowered reading.
114.078	30.2	V	43.5	-13.3	QP	122	1.01	Moving cables lowered reading.
130.441	26.0	V	43.5	-17.5	QP	134	1.00	Moving cables lowered reading.
30.038	28.6	V	40.0	-11.4	QP	31	1.01	Moving cables lowered reading.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	B

Conducted Emissions (Transmitter)

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

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

Date of Test: 1/11/2014
Test Engineer: M. Birgani
Test Location: Chamber #4

Config. Used: 1
Config Change: -
EUT Voltage: 120 V, 60 Hz

General Test Configuration

For tabletop equipment, the EUT host system was located on a wooden table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment. Remote support equipment was located outside of the semi-anechoic chamber. Any cables running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

Ambient Conditions:

Temperature: 15-18 °C
Rel. Humidity: 30-40 %

Summary of Results

MAC Address: 001500E60B22 DRTU Tool Version 1.7.4-855 Driver version 16.8.0.3

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power,120V/60Hz	RSS 210 / 15.207	Pass	45.7 dBµV @ 0.398 MHz (-2.2 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

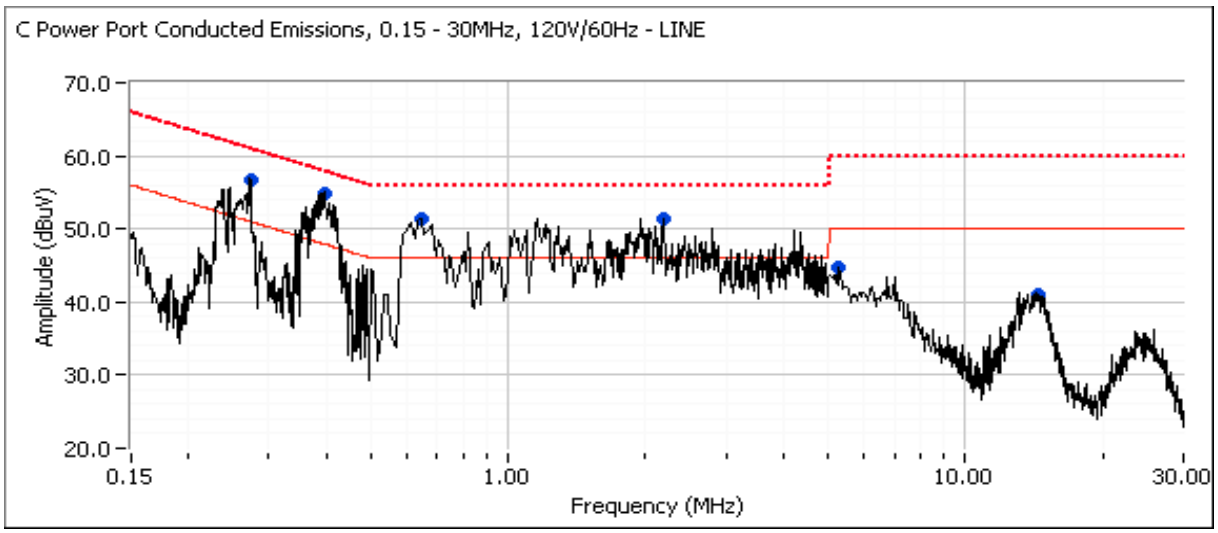
Deviations From The Standard

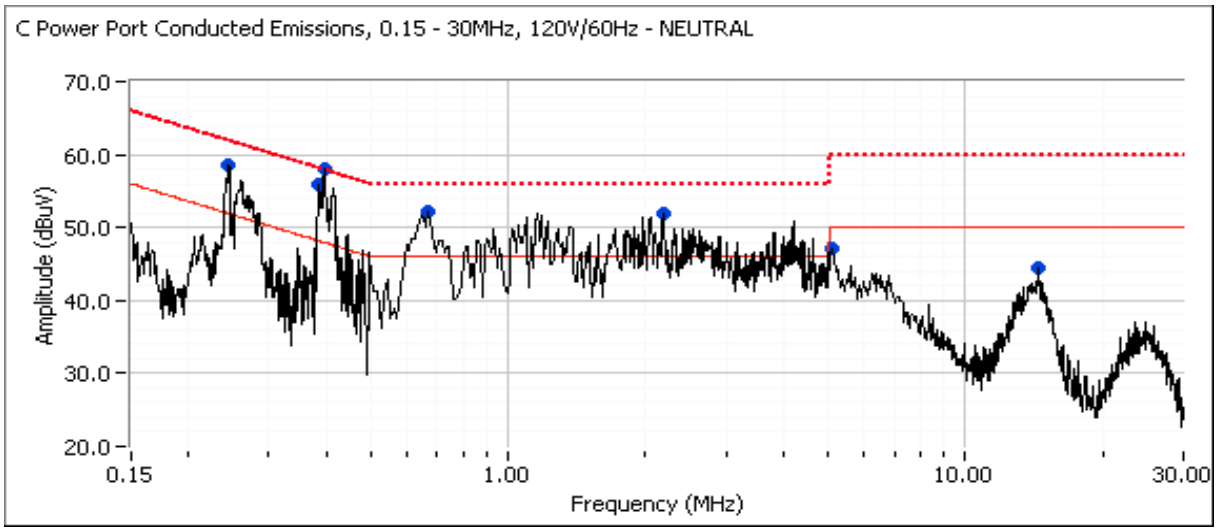
No deviations were made from the requirements of the standard.

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	B

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

Configured to TX , 802.11b 16.5dBm on chain A (setting 22.0) on channel 6, BLE chain B (setting Max) on channel 2440MHz





Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	B

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

Configured to TX , 802.11b 16.5dBm on chain A (setting 22.0) on channel 6, BLE chain B (setting Max) on channel 2440MHz

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

Frequency	Level	AC	RSS 210 / 15.207		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.398	57.9	Neutral	47.9	10.0	Peak	
0.385	55.8	Neutral	48.1	7.7	Peak	
0.394	54.9	Line	47.9	7.0	Peak	
0.244	58.5	Neutral	51.9	6.6	Peak	
0.648	52.1	Neutral	46.0	6.1	Peak	
2.184	51.9	Neutral	46.0	5.9	Peak	
0.275	56.8	Line	51.0	5.8	Peak	
0.656	51.5	Line	46.0	5.5	Peak	
2.178	51.5	Line	46.0	5.5	Peak	
5.008	47.1	Neutral	50.0	-2.9	Peak	
5.129	44.7	Line	50.0	-5.3	Peak	
14.237	44.6	Neutral	50.0	-5.4	Peak	
14.394	41.1	Line	50.0	-8.9	Peak	

Client:	Intel Mobile Communications	Job Number:	J94122
Model:	3160SDW	T-Log Number:	T94177
		Project Manager:	Christine Krebill
Contact:	Steve Hackett	Project Coordinator:	-
Standard:	FCC Part 15, RSS-210	Class:	B

Final quasi-peak and average readings

Frequency	Level	AC	RSS 210 / 15.207		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.398	45.7	Neutral	47.9	-2.2	AVG	AVG (0.10s)
0.385	45.7	Neutral	48.2	-2.5	AVG	AVG (0.10s)
0.398	55.0	Neutral	57.9	-2.9	QP	QP (1.00s)
0.394	45.0	Line	48.0	-3.0	AVG	AVG (0.10s)
0.385	55.2	Neutral	58.2	-3.0	QP	QP (1.00s)
0.394	54.9	Line	58.0	-3.1	QP	QP (1.00s)
0.656	40.7	Line	46.0	-5.3	AVG	AVG (0.10s)
2.184	40.2	Neutral	46.0	-5.8	AVG	AVG (0.10s)
0.656	50.1	Line	56.0	-5.9	QP	QP (1.00s)
0.648	49.9	Neutral	56.0	-6.1	QP	QP (1.00s)
0.243	55.7	Neutral	62.0	-6.3	QP	QP (1.00s)
0.648	39.6	Neutral	46.0	-6.4	AVG	AVG (0.10s)
2.184	49.4	Neutral	56.0	-6.6	QP	QP (1.00s)
2.178	39.1	Line	46.0	-6.9	AVG	AVG (0.10s)
0.275	53.7	Line	61.0	-7.3	QP	QP (1.00s)
0.275	43.1	Line	51.0	-7.9	AVG	AVG (0.10s)
2.178	47.8	Line	56.0	-8.2	QP	QP (1.00s)
0.243	42.6	Neutral	52.0	-9.4	AVG	AVG (0.10s)
14.237	33.4	Neutral	50.0	-16.6	AVG	AVG (0.10s)
5.008	32.6	Neutral	50.0	-17.4	AVG	AVG (0.10s)
14.394	31.4	Line	50.0	-18.6	AVG	AVG (0.10s)
5.008	41.0	Neutral	60.0	-19.0	QP	QP (1.00s)
5.129	30.6	Line	50.0	-19.4	AVG	AVG (0.10s)
14.237	40.1	Neutral	60.0	-19.9	QP	QP (1.00s)
5.129	38.5	Line	60.0	-21.5	QP	QP (1.00s)
14.394	37.4	Line	60.0	-22.6	QP	QP (1.00s)

End of Report

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