

***Electromagnetic Emissions Test Report
and
Application for Grant of Equipment Authorization
pursuant to***

***Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7
FCC Part 15 Subpart C***

***Intel Corporation
Model: 512AN_MMW (MMC)***

UPN: 1000M-512ANM

FCC ID: PD9512ANM PD9LEN512ANMU
PD9512ANMU

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Hillsboro, OR 97124

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TEST DATES: March 14 – June 6, 2008

AUTHORIZED SIGNATORY:


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Testing Cert #2016-01

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REVISION HISTORY

Rev #	Date	Comments	Modified By
1	May 5, 2008	Initial Release	David Guidotti
2	June 11, 2008	Changed Intel contact to Robert Paxman in scope section. Updated results table to evaluate user manual statements. Added UPN to the cover sheet Added test data for the Universe PIFA antenna and included this antenna in the product description section.	Briggs / Guidotti

TABLE OF CONTENTS

COVER PAGE.....	1
REVISION HISTORY	2
TABLE OF CONTENTS	3
SCOPE.....	5
OBJECTIVE.....	5
STATEMENT OF COMPLIANCE.....	6
TEST RESULTS SUMMARY	7
DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHZ)	7
DIGITAL TRANSMISSION SYSTEMS (5725 –5850 MHZ)	8
GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS	9
MEASUREMENT UNCERTAINTIES.....	9
EQUIPMENT UNDER TEST (EUT) DETAILS.....	10
GENERAL.....	10
ANTENNA SYSTEM	10
ENCLOSURE.....	10
MODIFICATIONS.....	11
SUPPORT EQUIPMENT.....	11
EUT INTERFACE PORTS	11
EUT OPERATION	11
TEST SITE.....	12
GENERAL INFORMATION.....	12
CONDUCTED EMISSIONS CONSIDERATIONS.....	12
RADIATED EMISSIONS CONSIDERATIONS	12
MEASUREMENT INSTRUMENTATION.....	13
RECEIVER SYSTEM	13
INSTRUMENT CONTROL COMPUTER	13
LINE IMPEDANCE STABILIZATION NETWORK (LISN)	13
FILTERS/ATTENUATORS	14
ANTENNAS.....	14
ANTENNA MAST AND EQUIPMENT TURNTABLE.....	14
INSTRUMENT CALIBRATION.....	14

TABLE OF CONTENTS (Continued)

TEST PROCEDURES	15
EUT AND CABLE PLACEMENT	15
CONDUCTED EMISSIONS.....	15
RADIATED EMISSIONS	15
RADIATED EMISSIONS.....	16
BANDWIDTH MEASUREMENTS	18
SPECIFICATION LIMITS AND SAMPLE CALCULATIONS MAY 28	19
GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS	19
RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS	20
OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS	20
TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS AND DTS SYSTEMS.....	20
SAMPLE CALCULATIONS - CONDUCTED EMISSIONS	21
SAMPLE CALCULATIONS - RADIATED EMISSIONS	22
SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION	23
EXHIBIT 1: Test Equipment Calibration Data.....	1
EXHIBIT 2: Test Measurement Data.....	2

SCOPE

An electromagnetic emissions test has been performed on the Intel Corporation model 512AN_MMW (MMC) pursuant to the following rules:

Industry Canada RSS-Gen Issue 2
RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
FCC Part 15 Subpart C

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in Elliott Laboratories test procedures:

ANSI C63.4:2003

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.

The test results recorded herein are based on a single type test of the Intel Corporation model 512AN_MMW (MMC) and therefore apply only to the tested sample. The sample was selected and prepared under the authority of Robert Paxman of Intel.

OBJECTIVE

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

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

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

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

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

STATEMENT OF COMPLIANCE

The tested sample of Intel Corporation model 512AN_MMW (MMC) complied with the requirements of the following regulations:

Industry Canada RSS-Gen Issue 2
RSS 210 Issue 7 "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 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.).

TEST RESULTS SUMMARY**DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz)**

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM / DSSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	b: 9.8 MHz g: 16.6 MHz n20: 17.1 MHz n40: 36.0 MHz	>500kHz	Complies
	RSP100	99% Bandwidth	b: 13.8 MHz g: 17.1 MHz n20: 18.3 MHz n40: 36.6 MHz	Information only	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	b: 19.6 dBm (0.091 W) g: 17.0 dBm n20: 16.2 dBm n40: 15.6 dBm EIRP = 0.19 W ^{Note1}	1 Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	b: -3.2dBm/3kHz g: -7.3dBm/3kHz n20: -6.3dBm/3kHz n40: -9.7 dBm/3kHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All spurious emissions < -30dBc	< -30dBc ^{Note 2}	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 1000MHz – 25 GHz Note 3	53.0 dBuV/m @ 2483.6 MHz (802.11b Ethernet Antenna)	15.207 in restricted bands, all others <-30dBc ^{Note 2}	Complies (-1.0dB)

Note 1: EIRP calculated using antenna gain of 3.2 dBi and is calculated for the highest power of all modes.

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst) / RMS averaging over a time interval, as permitted under RSS 210 section A8.4(4).

Note 3: Spurious emissions below 1GHz were independent of operating channel and operating mode (transmit versus receive). Measurements for radiated emissions below 1GHz are therefore reported for receive mode only.

DIGITAL TRANSMISSION SYSTEMS (5725 –5850 MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM / DSSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	a: 16.7 MHz n20: 17.6 MHz n40: 35.3 MHz	>500kHz	Complies
	RSP100	99% Bandwidth	a: 17.1 MHz n20: 18.3 MHz n40: 36.6 MHz	Information only	Complies
15.247 (b) (3) 15.247		Output Power (multipoint systems)	a: 11.7dBm n20: 12.6dBm n40: 13.2dBm (0.021 W) EIRP = 0.07 W ^{Note1}	1 Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	a: -12dBm/3kHz n20: -11dBm/3kHz n40: -16dBm/3kHz	Maximum permitted is 8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions – 30MHz – 40 GHz	All spurious emissions < -30dBc	< -30dBc ^{Note 2}	Complies
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 1000MHz – 40 GHz Note 3	53.1dBμV/m @ 11489.8MHz (802.11a, Universe PIFA antenna)	15.207 in restricted bands, all others <-30dBc ^{Note 2}	Complies (-0.9dB)

Note 1: EIRP calculated using antenna gain of 5 dBi and is calculated for the highest power of all modes.

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst) / RMS averaging over a time interval, as permitted under RSS 210 section A8.4(4).

Note 3: Spurious emissions below 1GHz were independent of operating channel and operating mode (transmit versus receive). Measurements for radiated emissions below 1GHz are therefore reported for receive mode only.

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Module uses a unique connector	Unique connector	Complies
-	RSS GEN 7.2.3	Receiver spurious emissions 30MHz – 18 GHz	43.4dB μ V/m @ 108.287MHz Note 1	RSS GEN Table 1	Complies (-0.1dB)
15.207	RSS GEN Table 2	AC Conducted Emissions	21.4dB μ V @ 24.000MHz	Refer to standard	Complies (-28.6dB)
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to separate MPE calculations, RSS 102 declaration and User Manual statements	Refer to OET 65, FCC Part 1 and RSS 102	Complies
	RSP 100 RSS GEN 7.1.5	User Manual	Statements are included	Statement required regarding non-interference	Complies
	RSP 100 RSS GEN 7.1.5	User Manual	Not applicable, module will be used in host systems that use integral, non-detachable antennas	Statement required regarding detachable antenna	N/A

Note 1: Spurious emissions below 1GHz were independent of operating mode and dominated by emissions from the test fixture. The highest emission above 1GHz in receive mode was 50.5dB μ V/m @ 3000.3MHz (3.5dB below the limit).

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	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	0.015 to 30	± 3.0
Radiated Emissions	30 to 1000	± 3.6
Radiated Emissions	1000 to 40000	± 6.0

EQUIPMENT UNDER TEST (EUT) DETAILS**GENERAL**

The Intel Corporation model 512AN_MMW is a 2x1 MISO 802.11abgn radio module that is designed to be installed in laptops. The module supports 802.11b, 802.11g and 802.11n protocols in the 2400 – 2483.5 MHz band and 802.11a and 802.11n in the 5150 – 5250 MHz, 5250 – 5350 MHz, 5470 – 5725 MHz and 5725 – 5850 MHz bands. In 802.11n mode it supports both 20-MHz and 40-MHz channels. It can operate in SISO (1x1) and MISO (2x1) configurations.

For testing purposes, and in accordance with requirements for evaluating a device for modular approvals, the EUT was installed onto an extender card that was connected into a PC. The EUT was outside of the PC's enclosure. The electrical rating of the EUT is 3.3 Volts DC, 0.5 Amps.

The sample was received on March 14, 2008, configured with the Ethertronics magnetic dipole antenna and tested on March 14, March 17, March 18, March 24, April 8, April 10, April 11, April 14, April 16 and April 21, 2008. Additional testing was performed on May 28, May 29, May 30 and June 6, 2008 with the device configured with the Universe PIFA antenna.

The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
Intel Corporation	512AN_MMW	802.11abgn 1x2 MISO module	-	PD9512ANH

ANTENNA SYSTEM

The antenna connects to the EUT via a non-standard U.FL antenna connector, thereby meeting the requirements of FCC 15.203. The EUT was evaluated with each transceiver chain connected to the following antennas:

- Ethertronics MPCI-8 Module antenna which is based on a magnetic dipole design. The nominal antenna gain is 3dBi in the 2.4GHz band and 5dBi in the 5GHz bands
- Universe Technology antenna which is based on a PIFA design. The nominal antenna gain is 3.2 dBi in the 2.4GHz band, 3.6dBi in the 5150-5250 MHz band, 3.7dBi in 5250-5350MHz band, 4.8dBi in the 5470 – 5725 MHz band and 5dBi in the 5725 – 5850MHz band.

ENCLOSURE

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

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with emissions specifications.

SUPPORT EQUIPMENT

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

Manufacturer	Model	Description	Serial Number	FCC ID
Dell	-	Laptop PC	Prototype	-

No remote support equipment was used during emissions testing.

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
DC power port	DC power source	Multi connect	Unshielded	0.3
PCI Extender	Laptop	Multi connect	Unshielded	0.3
Antenna port 1	Antenna	u.FL	Shielded	0.2
Antenna port 2	Antenna	u.FL	Shielded	0.2

EUT OPERATION

During transmitter-related testing the EUT was configured to transmit continuously in each of the various modulation modes (802.11a, 802.11b, 802.11g and 802.11n). Preliminary testing determined the data rates with the highest power and power spectral density to be evaluated for the formal testing, as detailed in the table below.

Mode \ Active Chains	1 Chain	2 Chains
802.11b	1Mb/s	Not applicable, second chain is receive only
802.11g	6 MBs	
802.11n (20MHz channel)	HT 0 (6Mbps)	
802.11n (40MHz channel)	HT 0 (15Mbps)	

Spurious receiver emissions were measured with the device tuned to the center channel in each operating band. Measurements were made on both single chain modes (SISO modes with one, then the other chain active) and in MISO mode (with both chains active simultaneously).

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on March 14, March 17, March 18, March 24, April 8, April 10, April 11, April 14, April 16, April 21, May 28, May 29, May 30 and June 6, 2008 at the Elliott Laboratories semi anechoic chambers 3, 4 and 5 located at 41039 Boyce Road, Fremont, California 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.

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003.

CONDUCTED EMISSIONS CONSIDERATIONS

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

RADIATED EMISSIONS CONSIDERATIONS

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

MEASUREMENT INSTRUMENTATION**RECEIVER SYSTEM**

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

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

INSTRUMENT CONTROL COMPUTER

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

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

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

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

FILTERS/ATTENUATORS

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

ANTENNAS

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

ANTENNA MAST AND EQUIPMENT TURNTABLE

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

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

INSTRUMENT CALIBRATION

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

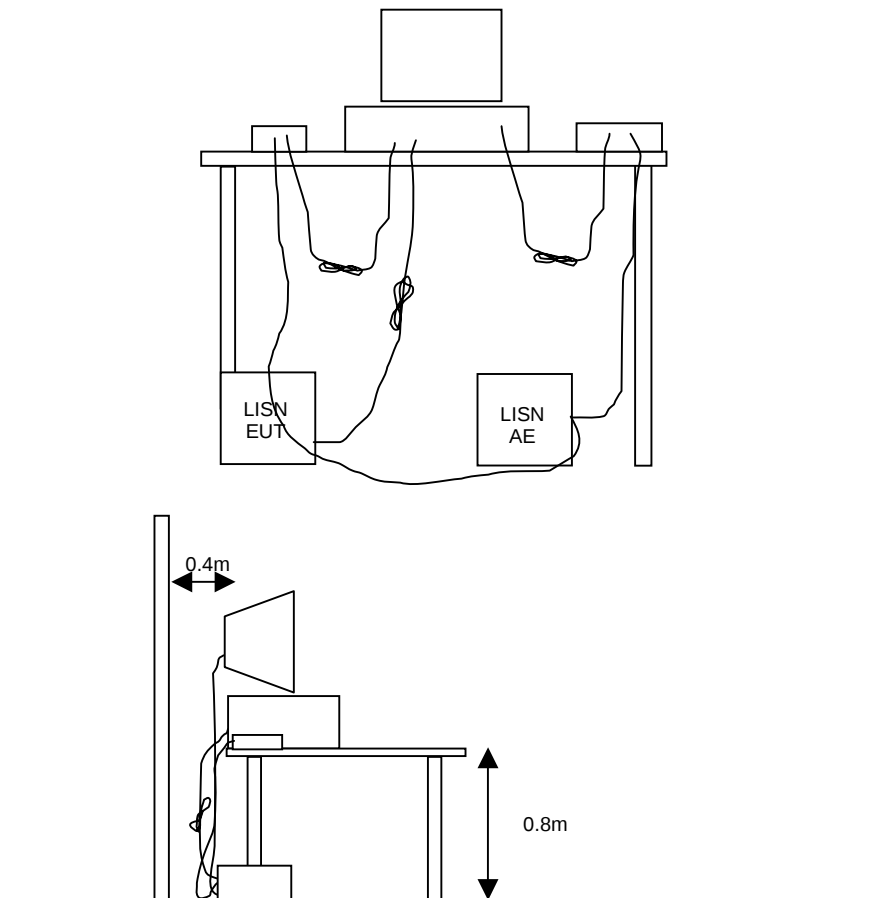
TEST PROCEDURES

EUT AND CABLE PLACEMENT

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

CONDUCTED EMISSIONS

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



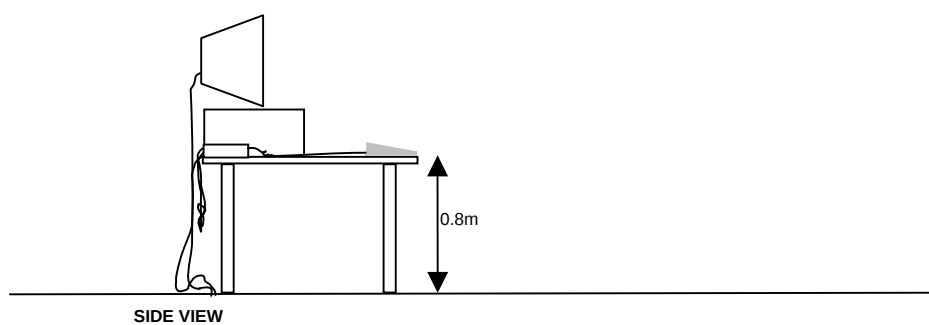
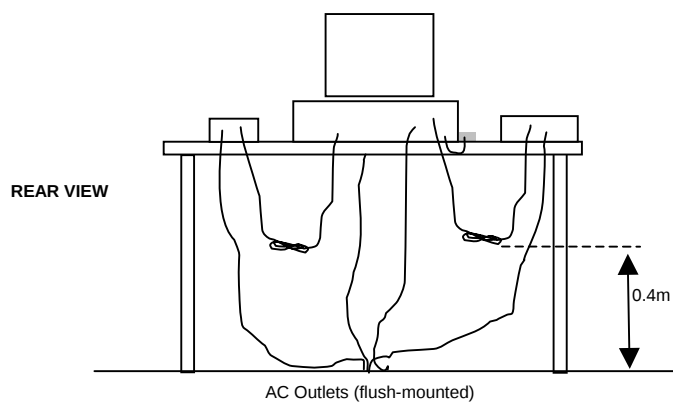
RADIATED EMISSIONS

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

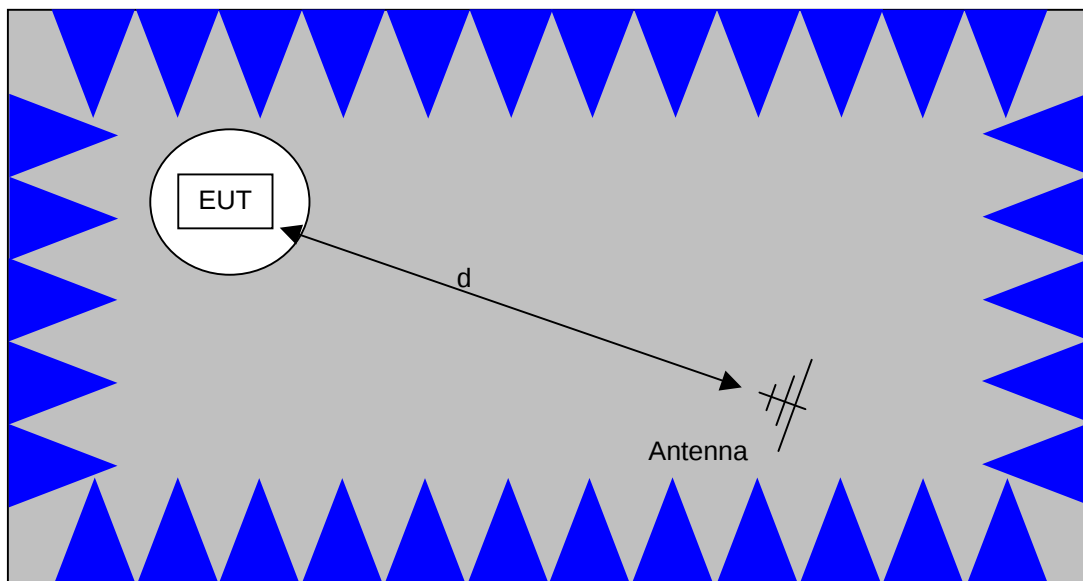
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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

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

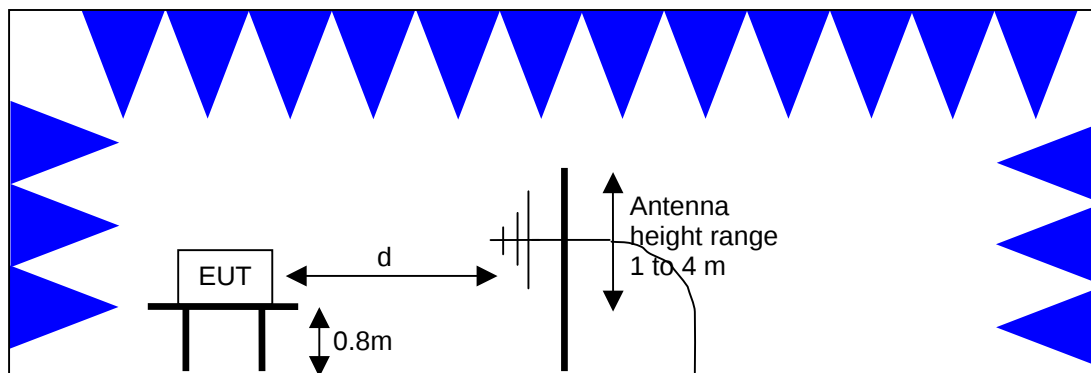


Typical Test Configuration for Radiated Field Strength Measurements



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

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



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

BANDWIDTH MEASUREMENTS

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

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS May 28

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:

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

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

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

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

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

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

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

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

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

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

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

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

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

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_T - S = M$$

where:

R_T = 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:

$$F_d = 20 * \text{LOG}_{10} (D_m/D_s)$$

where:

$$F_d = \text{Distance Factor in dB}$$

$$D_m = \text{Measurement Distance in meters}$$

$$D_s = \text{Specification Distance in meters}$$

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:

$$F_d = 40 * \text{LOG}_{10} (D_m/D_s)$$

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:

$$R_r = \text{Receiver Reading in dBuV/m}$$

$$F_d = \text{Distance Factor in dB}$$

$$R_c = \text{Corrected Reading in dBuV/m}$$

$$L_s = \text{Specification Limit in dBuV/m}$$

$$M = \text{Margin in dB Relative to Spec}$$

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 3m from the equipment under test:

$$E = \frac{1000000 \sqrt{30 P}}{3} \text{ microvolts per meter}$$

where P is the eirp (Watts)

EXHIBIT 1: Test Equipment Calibration Data

3 Pages

Radiated Emissions, 1000 - 18,000 MHz, 10-Apr-08**Engineer: Joseph Cadigal**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	16-Apr-08
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-May-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	17-Dec-08

Radiated Emissions, 30 - 26,500 MHz, 16-Apr-08**Engineer: jcaizzi**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	11-Jul-08
Hewlett Packard	Spectrum Analyzer 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	15-Jan-09
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

Radiated Emissions, 30 - 26,500 MHz, 17-Apr-08**Engineer: bjing**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	11-Jul-08
Hewlett Packard	Spectrum Analyzer 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	15-Jan-09
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

Conducted Emissions - AC Power Ports, 21-Apr-08**Engineer: Peter Sales**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	LISN, 10 kHz-100 MHz	3825/2	1292	22-Feb-09
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	15-Feb-09
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1593	11-May-08
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	04-Dec-08

Radiated Emissions, 30 - 1,000 MHz, 21-Apr-08**Engineer: Peter Sales**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103	1543	12-Nov-08
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	23-May-09
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	04-Dec-08

Radiated Emissions, 30 - 6,500 MHz (Band-edge), 29-May-08**Engineer: Ben Jing**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	Spectrum Analyzer 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	15-Jan-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

Radiated Emissions, 1000 - 26,500 MHz, 30-May-08**Engineer: Ben Jing**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
EMCO	Antenna, Horn, 18-26.5 GHz (SA40-Blue)	3160-09 (84125C)	1387	18-Feb-09
Hewlett Packard	Spectrum Analyzer 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	15-Jan-09
Hewlett Packard	Head (Inc W1-W4, 1742 , 1743) Blue	84125C	1620	22-Feb-09
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1731	17-Oct-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

Radiated Emissions, 30 - 26,500 MHz, 30-May-08**Engineer: jcaizzi**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	Spectrum Analyzer 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	15-Jan-09
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1728	17-Oct-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

, 31-May-08**Engineer: Ben Jing**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	Spectrum Analyzer 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	15-Jan-09
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1728	17-Oct-08
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	17-Oct-08

, 31-May-08**Engineer: Ben Jing**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
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Radiated Emissions, 30 - 18,000 MHz, 31-May-08**Engineer: Rafael Varelas**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	Spectrum Analyzer 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	15-Jan-09
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1728	17-Oct-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

Radiated Emissions, 30 - 18,000 MHz, 31-May-08**Engineer: bjing**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	Spectrum Analyzer 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	15-Jan-09
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

Radiated Emissions, 1000 - 18,000 MHz, 06-Jun-08**Engineer: Ben Jing**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	28-May-09
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jul-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	17-Dec-08

Radio Antenna Port (Power and Spurious Emissions), 11-Apr-08**Engineer: jcaizzi**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	12-Jul-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	17-Dec-08
Rohde & Schwarz	Power Sensor, 1 uW-100 mW, DC-18 GHz, 50ohms	NRV-Z51	1797	21-Aug-08

Radio Antenna Port (Power and Spurious Emissions), 14-Apr-08**Engineer: Suhaila Khushzad**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	12-Jul-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	17-Dec-08

EXHIBIT 2: Test Measurement Data

T71036 (DTS rf port measurements)	66 Pages
T71040 (Radiated measurements with Ethertronics antenna, AC conducted emissions)	79 Pages
T71831 (Radiated measurements with Universe antenna)	31 Pages



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
		Account Manager:	Dean Eriksen
Contact:	Robert Paxman		-
Emissions Standard(s):	FCC 15.247 / RSS -210 RF Port	Class:	DTS
Immunity Standard(s):	-	Environment:	-

EMC Test Data - RF Port DTS Measurements

For The

Intel

Model

512AN_MMW, 512BG_MMW

Date of Last Test: 4/14/2008

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
	Account Manager: Dean Eriksen

RSS 210 and FCC 15.247 Power Measurement Summary

The table below compares the measured output power (measured using the UNII test method) with the power measured using an average power meter and is for reference purposes.

802.11b

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Average Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
20.5	2412, Chain A	19.6	91.2	3.2	Pass	22.8	0.191	19.1	81.3
18	2437, Chain A	17.4	55.0	3.2	Pass	20.6	0.115	16.8	47.9
22.5	2462, Chain A	19.6	91.2	3.2	Pass	22.8	0.191	19.5	89.1

802.11g

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Average Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
20	2412, Chain A	14.1	25.7	3.2	Pass	17.3	0.054	14.5	28.2
23	2437, Chain A	17.0	49.8	3.2	Pass	20.2	0.104	17.0	50.1
20.5	2462, Chain A	13.3	21.4	3.2	Pass	16.5	0.045	14.0	25.1

802.11n20 (2.4GHz)

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Average Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
18	2412, Chain A	12.2	16.6	3.2	Pass	15.4	0.035	13.1	20.4
23	2437, Chain A	16.2	41.2	3.2	Pass	19.4	0.086	17.0	50.1
20.5	2462, Chain A	12.6	18.0	3.2	Pass	15.8	0.038	14.0	25.1

802.11n40 (2.4GHz)

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Average Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
14.5	2422, Chain A	9.6	9.0	3.2	Pass	12.8	0.019	10.1	10.2
21.5	2437, Chain A	15.6	36.6	3.2	Pass	18.8	0.076	16.5	44.7
20	2452, Chain A	13.3	21.3	3.2	Pass	16.5	0.044	14.1	25.7

802.11a

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Average Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
26.5	5745, Chain A	11.7	14.8	5.0	Pass	16.7	0.047	16.5	44.7
27	5785, Chain A	11.6	14.6	5.0	Pass	16.6	0.046	16.5	44.7
28	5825, Chain A	11.2	13.2	5.0	Pass	16.2	0.042	16.5	44.7

802.11n20 (5.7GHz)

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Average Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
27.5	5745, Chain A	12.6	18.2	5.0	Pass	17.6	0.058	16.5	44.7
28.5	5785, Chain A	12.4	17.4	5.0	Pass	17.4	0.055	16.5	44.7
29.5	5825, Chain A	12.3	17.0	5.0	Pass	17.3	0.054	16.5	44.7

802.11n40 (5.7GHz)

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Average Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
27.5	5755, Chain A	13.2	20.9	5.0	Pass	18.2	0.066	16.5	44.7
28.5	5795, Chain A	12.8	19.1	5.0	Pass	17.8	0.060	16.5	44.7

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, PSD, Bandwidth and Spurious - 802.11b

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: 4/11/2008	Config. Used: 1
Test Engineer: John Caizzi & Joseph Cadigal	Config Change: None
Test Location: FTEMC2	EUT Voltage:

General Test Configuration

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

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

Ambient Conditions:	Temperature:	25 °C
	Rel. Humidity:	30 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	19.6 dBm
2	Power spectral Density (PSD)	15.247(d)	Pass	-3.2 dBm/3kHz / 11.2 dB
3	6dB Bandwidth	15.247(a)	Pass	9.75 MHz
3	99% Bandwidth	RSS GEN	-	13.8MHz
4	Spurious Emissions	15.247	Pass	< -30dBc

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

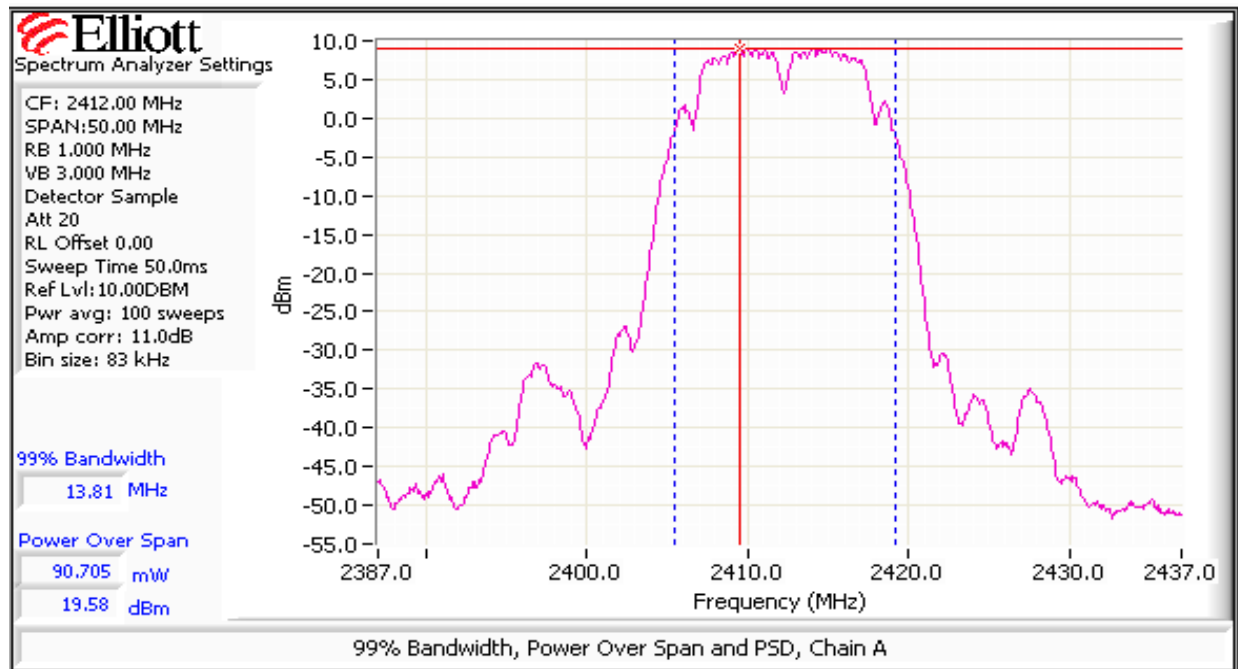
No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #1: Output Power

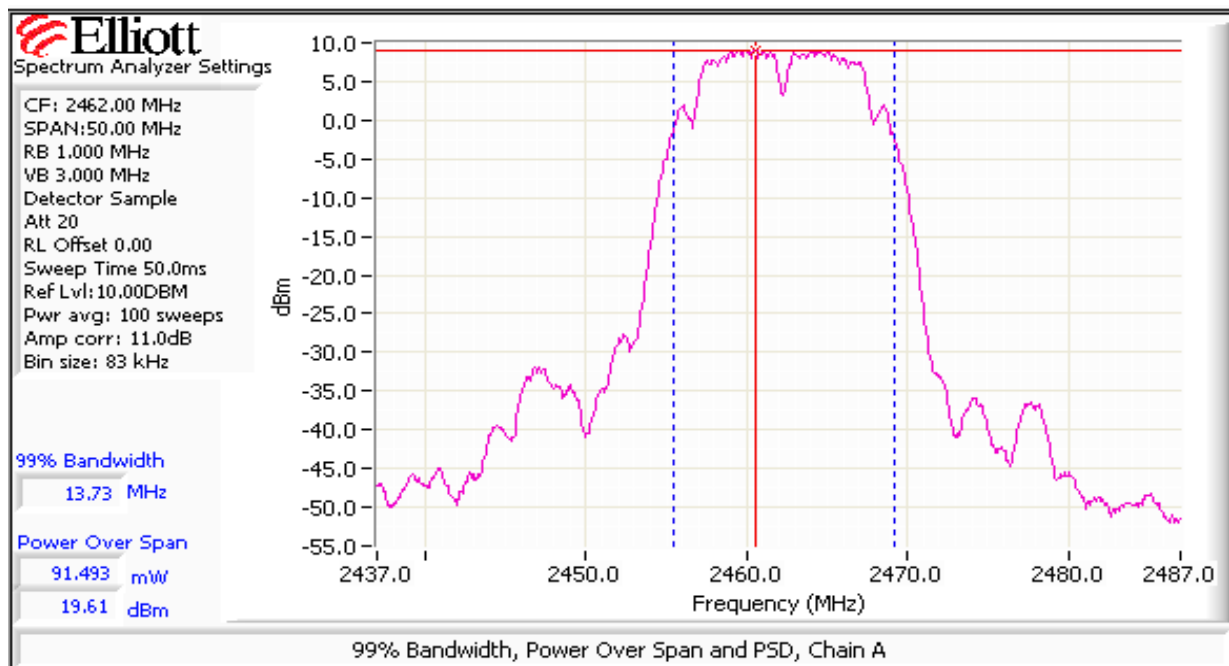
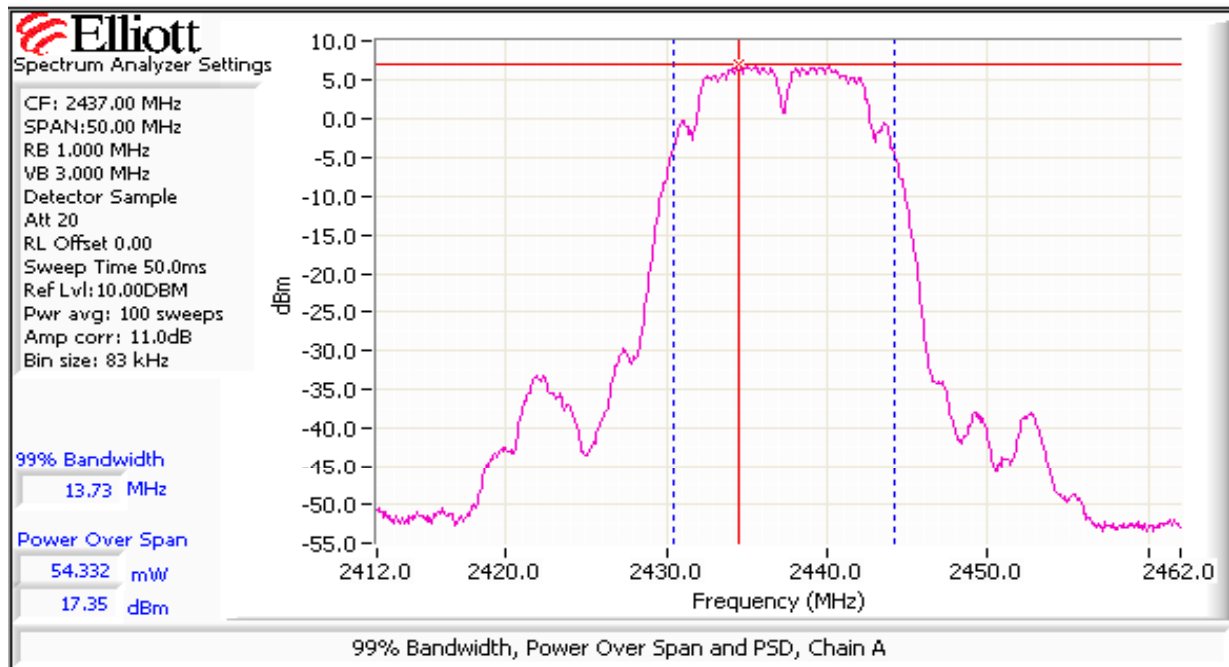
Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Output Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
20.5	2412, Chain A	19.6	91.2	3.2	Pass	22.8	0.191	19.1	81.3
18	2437, Chain A	17.4	55.0	3.2	Pass	20.6	0.115	16.8	47.9
22.5	2462, Chain A	19.6	91.2	3.2	Pass	22.8	0.191	19.5	89.1

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz. Spurious limit is -30dBc because this method was used. The output power limit is 30dBm.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power sensor and is included for manufacturer's reference only.



Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #1: Output Power



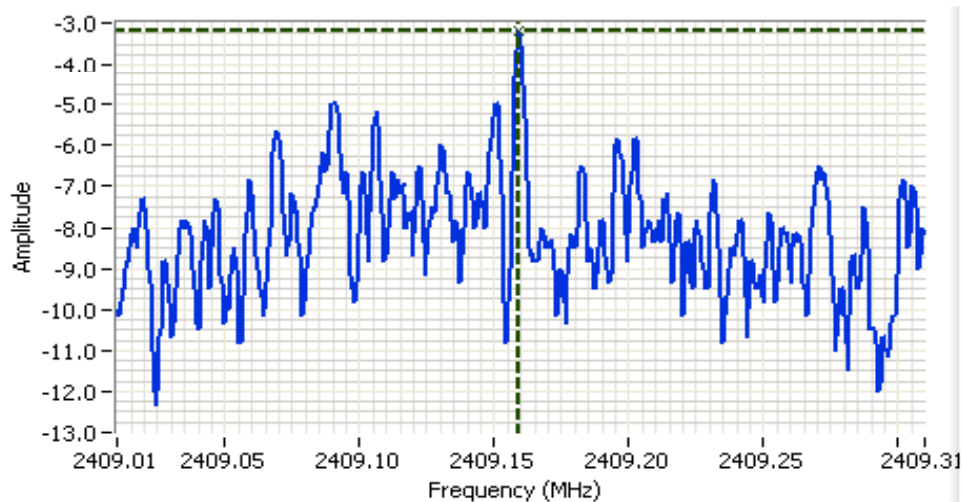
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit dBm/3kHz	Result
		(dBm/3kHz) Note 1		
20.5	2412, Chain A	-3.2	8.0	Pass
18	2437, Chain A	-7.0	8.0	Pass
22.5	2462, Chain A	-5.3	8.0	Pass

Note 1:

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



Analyzer Settings

HP8564E,EMI
CF: 2409.16 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:21.00DBM

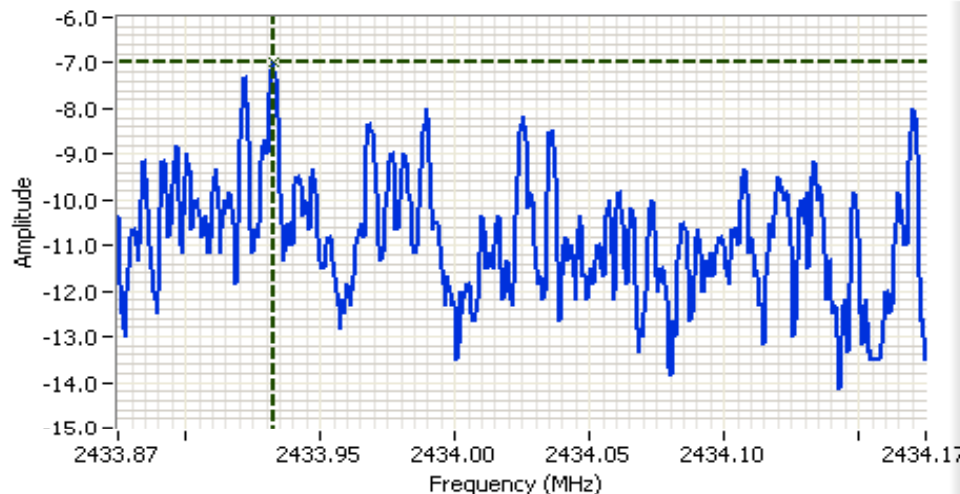
Comments

PSD: -3.17 dBm/3 kHz
2412 MHz
802.11b

Cursor 1	2409.1594	-3.17		
	0.0000	0.00		

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #2: Power spectral Density



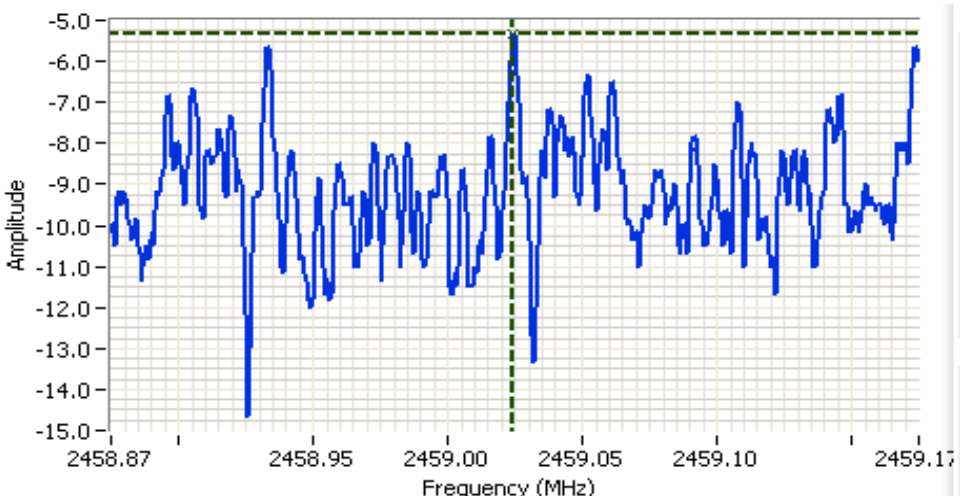
Analyzer Settings

HP8564E,EMI
CF: 2434.02 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:21.00DBM

Comments

PSD: -7.00 dBm/3kHz
2437 MHz
8U2.11b

Cursor 1 2433.9324 -7.00
0.0000 0.00



Analyzer Settings

HP8564E,EMI
CF: 2459.02 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:21.00DBM

Comments

PSD: -5.33 dBm/3kHz
2462 MHz
802.11b

Cursor 1 2459.0244 -5.33
0.0000 0.00

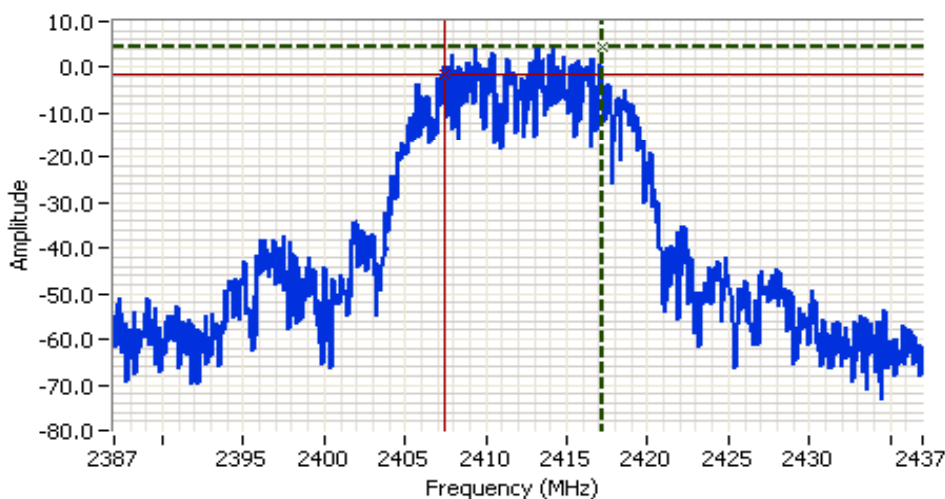


Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
20.5	2412, Chain A	100 kHz	9.75	13.8
18	2437, Chain A	100 kHz	11	13.7
22.5	2462, Chain A	100 kHz	9.92	13.7

- Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB
- Note 2: Center channel of Chains B and C measured to verify no significant difference in signal bandwidth from Chain A.



Analyzer Settings

HP8564E,EMI
 CF: 2412.00 MHz
 SPAN:50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector Sample
 Att 20
 RL Offset 11.00
 Sweep Time 50.0ms
 Ref Lvl:21.00DBM

Comments

6dB Bandwidth: 9.750 MHz
 2412 MHz
 802.11b

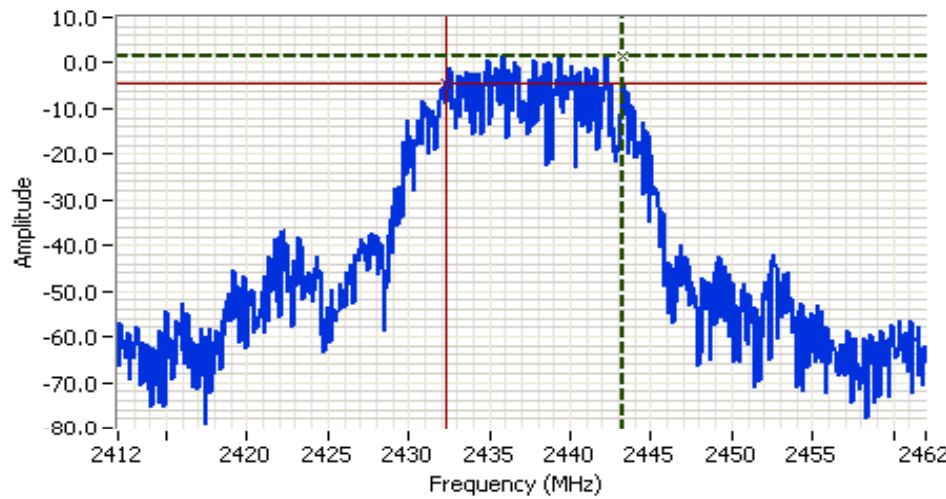
Cursor 1	2417.1667	4.67	
Cursor 2	2407.4167	-1.33	

Delta Freq. 9.750

Delta Amplitude 6.00

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth



Analyzer Settings

HP8564E,EMI
CF: 2437.00 MHz
SPAN:50.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

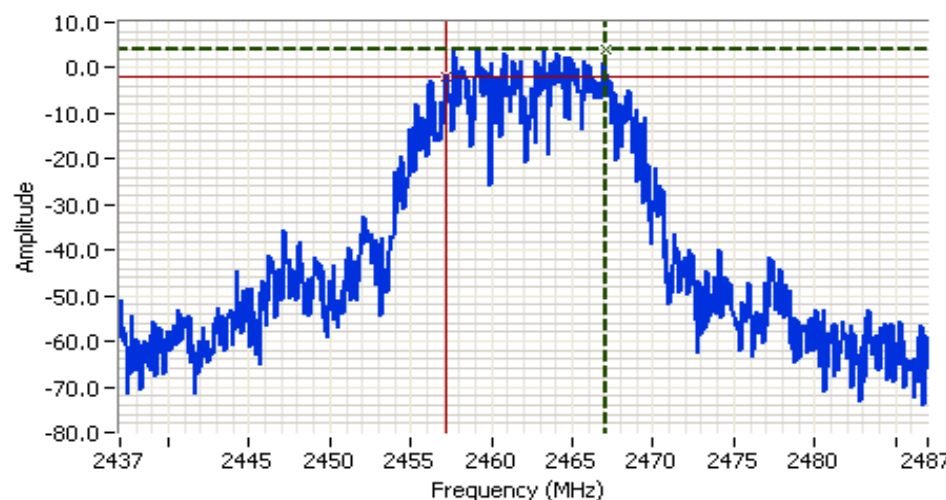
Comments

6dB Bandwidth: 11.000
MHz
2437 MHz
802.11b

Cursor 1 2443.2500 1.50
Cursor 2 2432.2500 -4.50

Delta Freq. 11.000

Delta Amplitude 6.00



Analyzer Settings

HP8564E,EMI
CF: 2462.00 MHz
SPAN:50.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

Comments

6dB BW: 9.917 MHz
802.11b
Chain A

Cursor 1 2467.0833 4.17
Cursor 2 2457.1667 -1.83

Delta Freq. 9.917

Delta Amplitude 6.00



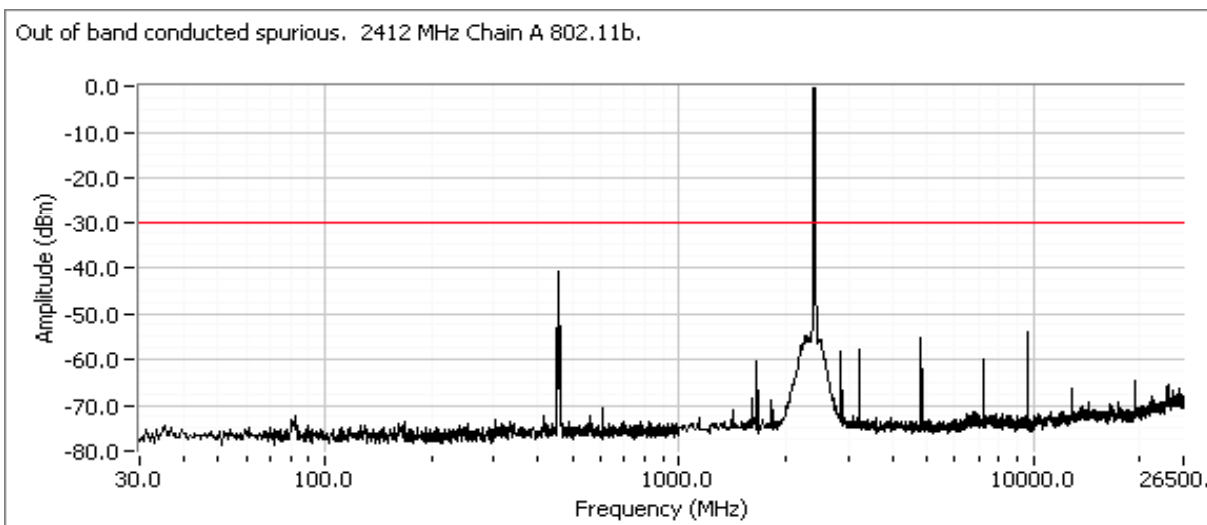
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

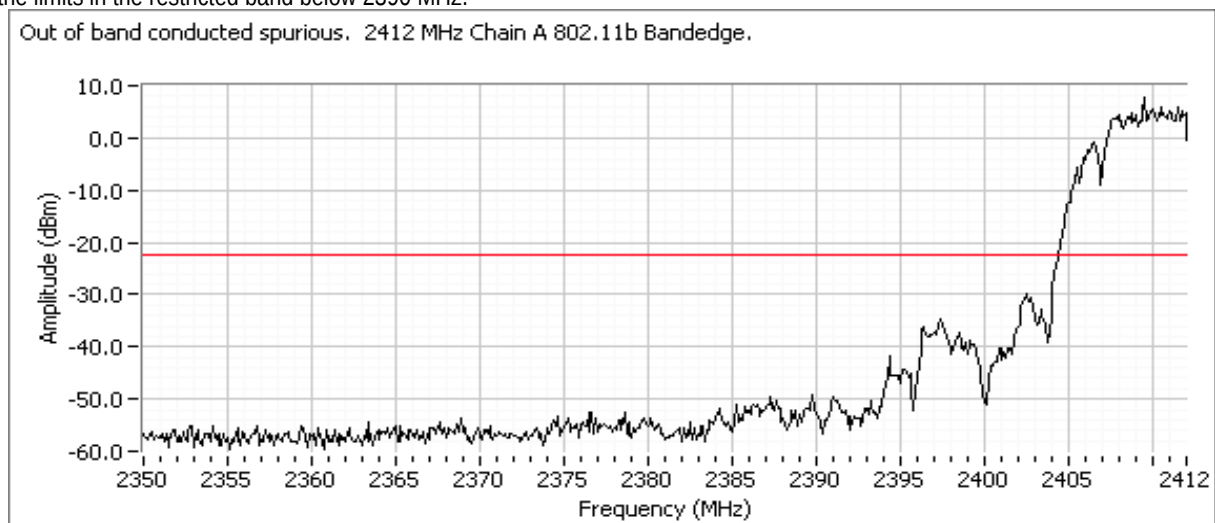
All measured using RB = 100kHz, VB = 300kHz.

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

Plot for low channel, Chain A power setting = 20.5



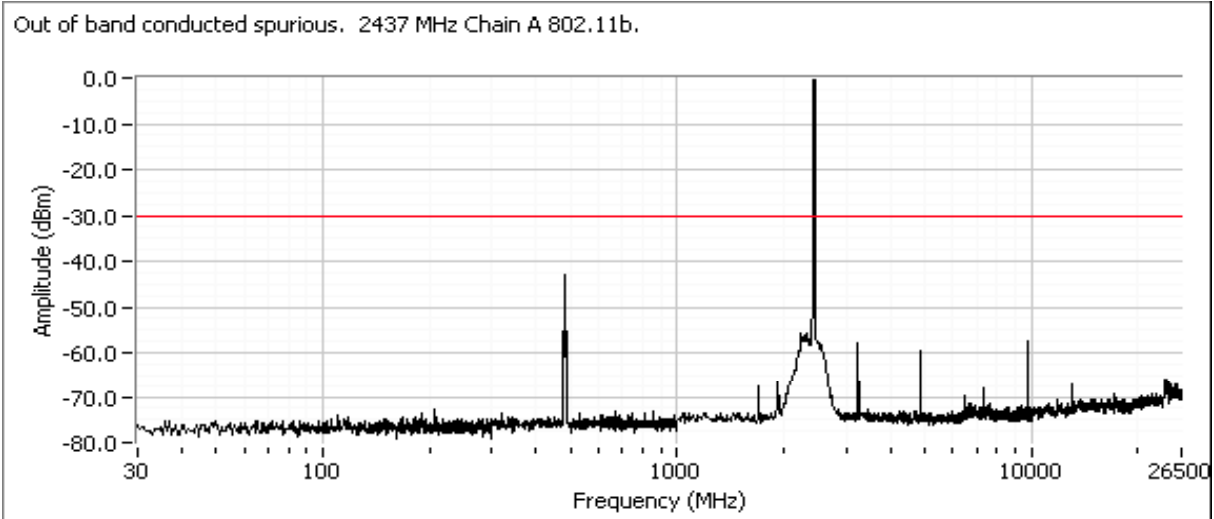
Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



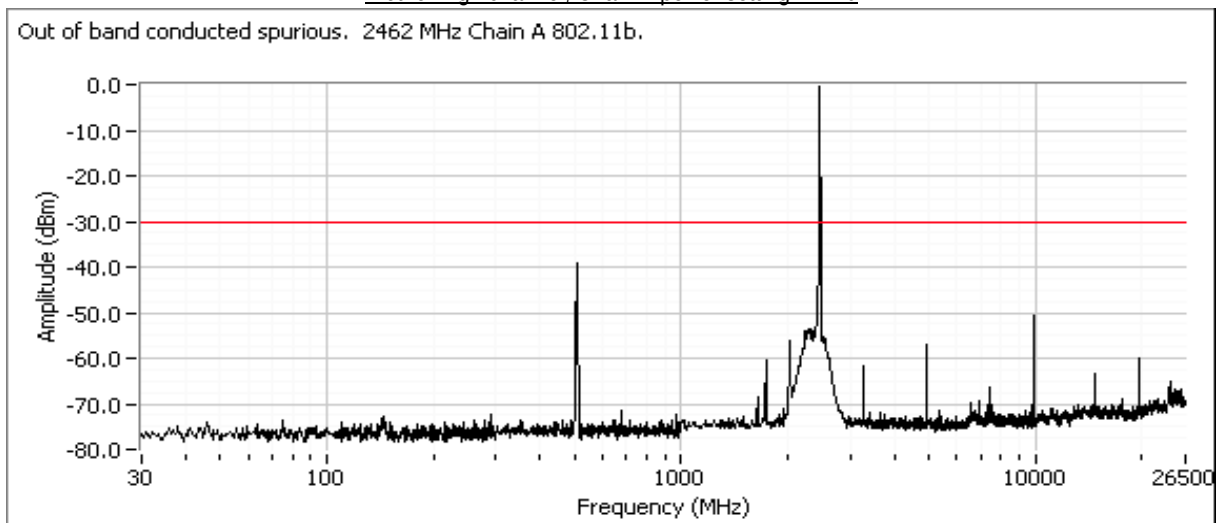
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

Plot for center channel, Chain A power setting = 18.0



Plot for high channel, Chain A power setting = 22.0



Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, PSD, Bandwidth and Spurious - 802.11g

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: 4/14/2008

Config. Used: 1

Test Engineer: Suhaila Khushzad & John Caizzi

Config Change: None

Test Location: FT Lab #1

EUT Voltage: Powered From Host System

General Test Configuration

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

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

Ambient Conditions: Temperature: 21 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	17dBm(49.8mW)
2	Power spectral Density (PSD)	15.247(d)	Pass	-7.3 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	16.6 MHz
3	99% Bandwidth	RSS GEN	-	17.1 MHz
4	Antenna Conducted - Out of Band Spurious	15.247(b)	Pass	All emissions below the -30dBc limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

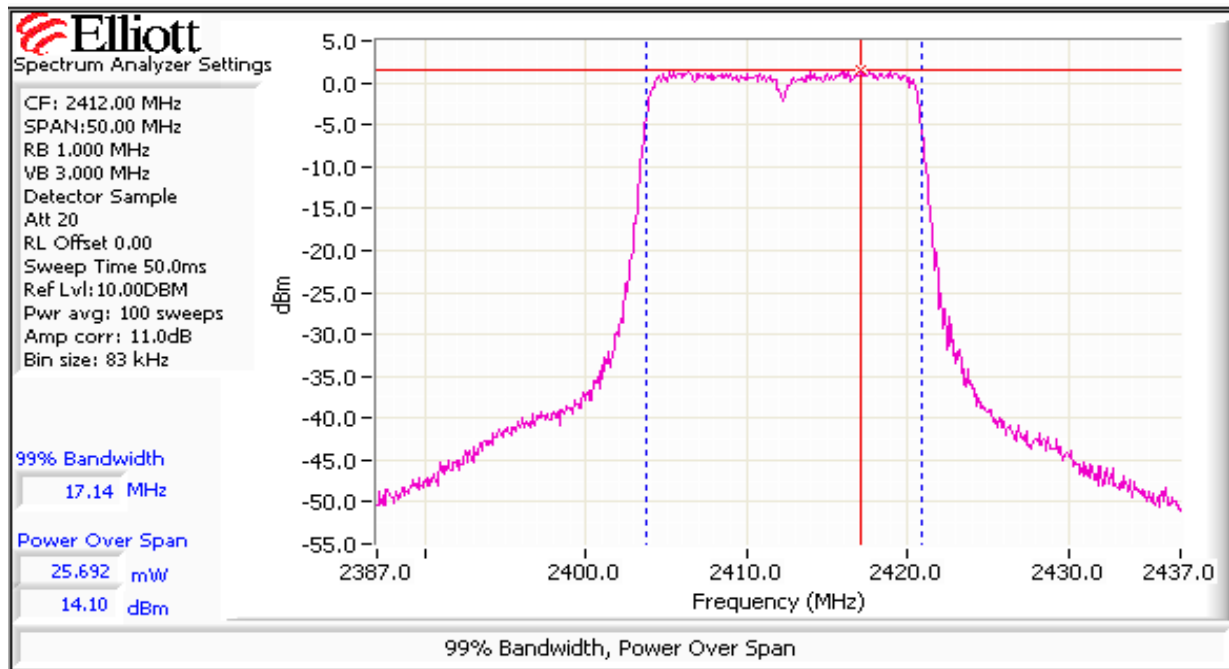
No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #1: Output Power

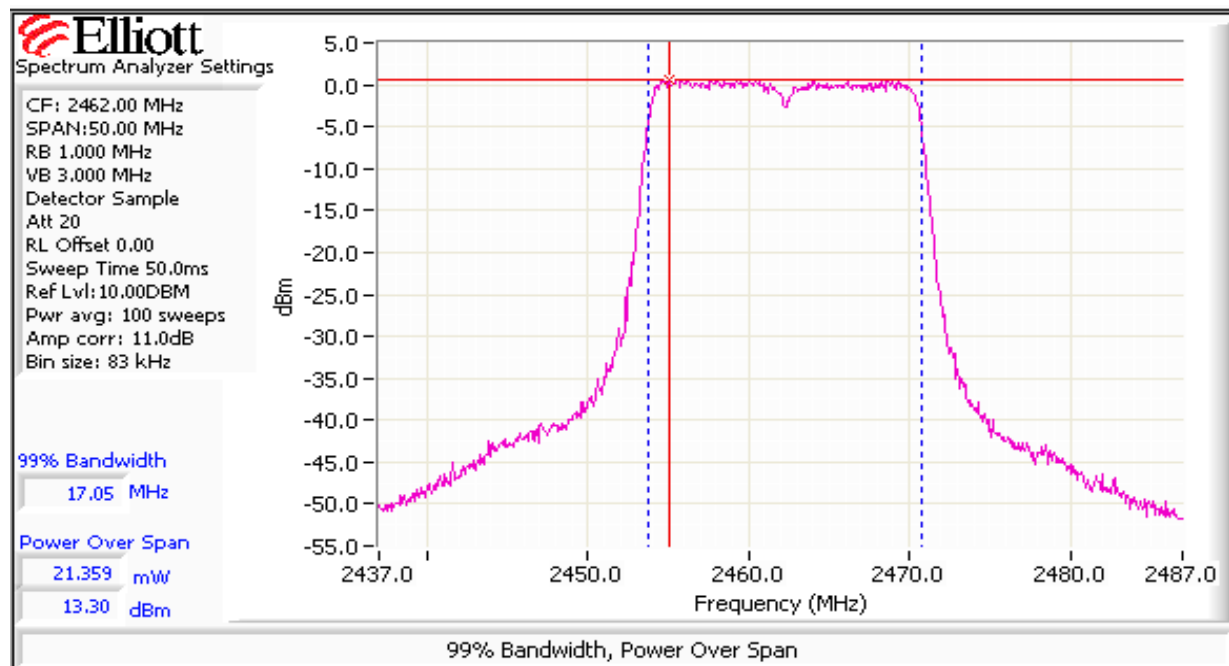
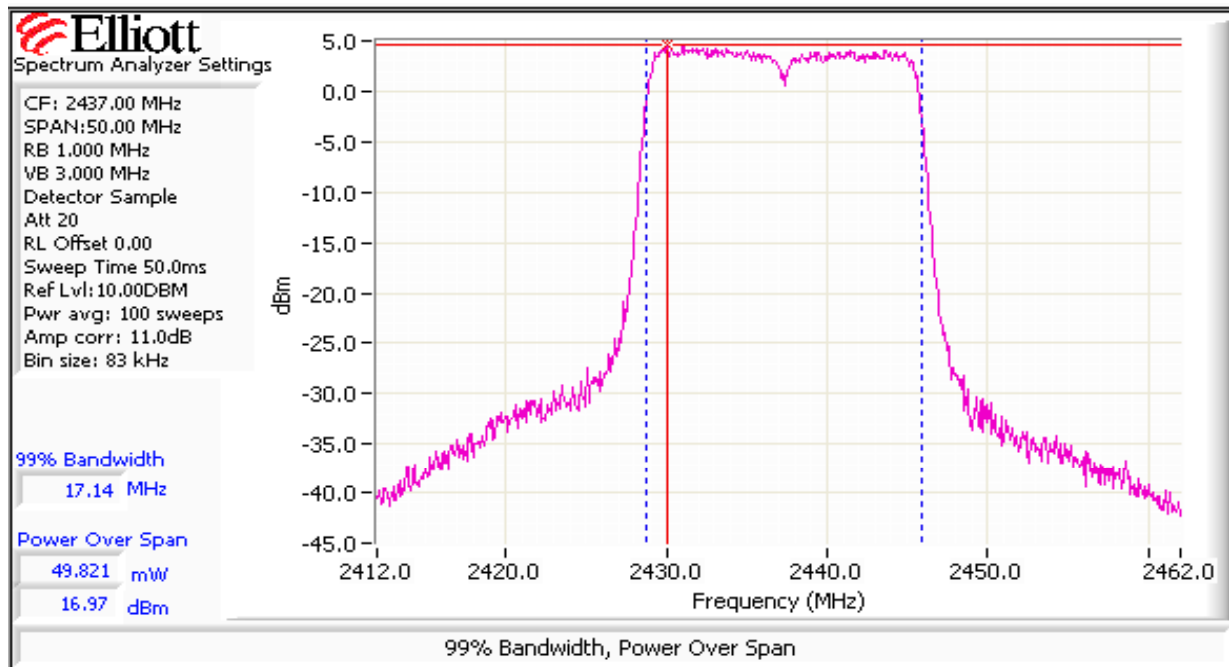
Power Setting ²	Frequency (MHz)	Output Power (dBm) ¹	mW	Antenna Gain (dBi)	Result	EIRP ^{Note 2} dBm	W	Output Power (dBm) ³	mW
20	2412, Chain A	14.1	25.7	3.2	Pass	17.3	0.054	14.5	28.2
23	2437, Chain A	17.0	49.8	3.2	Pass	20.2	0.104	17.0	50.1
20.5	2462, Chain A	13.3	21.4	3.2	Pass	16.5	0.045	14.0	25.1

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz. Spurious limit is -30dBc because this method was used. The output power limit is 30dBm.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power sensor and is included for manufacturer's reference only.



Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #1: Output Power



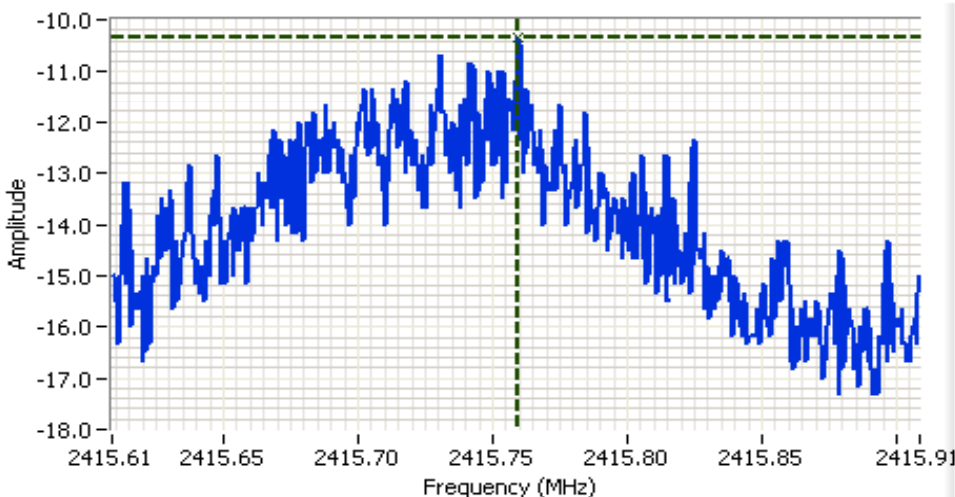
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit dBm/3kHz	Result
		(dBm/3kHz) Note 1		
20	2412, Chain A	-7.3	8.0	Pass
23	2437, Chain A	-7.3	8.0	Pass
20.5	2462, Chain A	-11.2	8.0	Pass

Note 1:

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


Analyzer Settings

HP8564E,EMI
 CF: 2415.76 MHz
 SPAN:300 kHz
 RB 3.00 kHz
 VB 10.00 kHz
 Detector POS
 Att 20
 RL Offset 11.00
 Sweep Time 100.0s
 Ref Lvl:21.00DBM

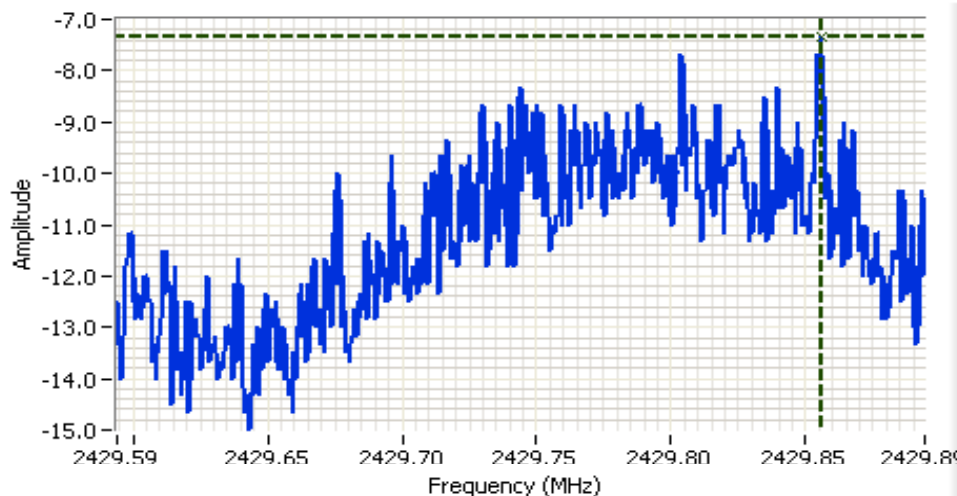
Comments

PSD: -7.33dBm/3kHz
 2412 MHz
 g Mode

Cursor 1	2415.7595	-10.33			
	0.0000	0.00			

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #2: Power spectral Density



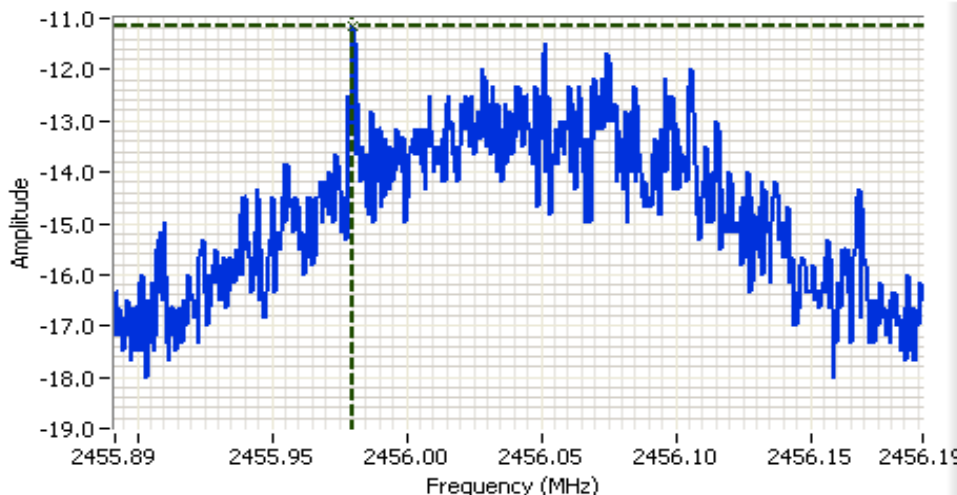
Analyzer Settings

HP8564E,EMI
CF: 2429.74 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:21.00DBM

Comments

PSD: -7.33dBm/3kHz
2437 MHz
g Mode

Cursor 1 2429.8556 -7.33
0.0000 0.00



Analyzer Settings

HP8564E,EMI
CF: 2456.04 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:21.00DBM

Comments

PSD: -11.17 dBm/3kHz
2462 MHz
g Mode

Cursor 1 2455.9802 -11.17
0.0000 0.00

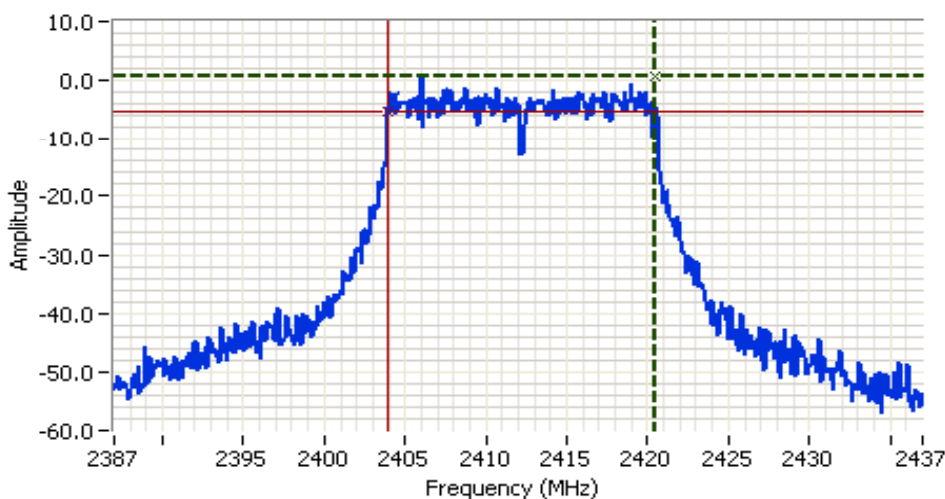


Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
20	2412, Chain A	100kHz	16.6	17.1
23	2437, Chain A	100kHz	16.5	17.1
20.5	2462, Chain A	100kHz	16.6	17.1

- Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB
- Note 2: Center channel of Chains B and C measured to verify no significant difference in signal bandwidth from Chain A.



Analyzer Settings

HP8564E,EMI
 CF: 2412.00 MHz
 SPAN:50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector Sample
 Att 20
 RL Offset 11.00
 Sweep Time 50.0ms
 Ref Lvl:21.00DBM

Comments

6dB Bandwidth:
 16.58 MHz
 g Mode

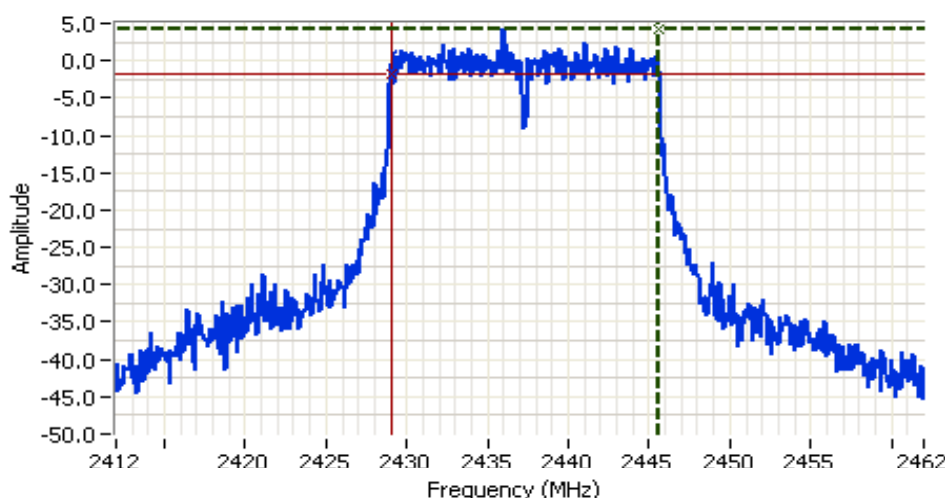
Cursor 1	2420.5000	0.67	
Cursor 2	2403.9167	-5.33	

Delta Freq. 16.58

Delta Amplitude 6.00

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth



Analyzer Settings

HP8564E,EMI
CF: 2437.00 MHz
SPAN:50.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

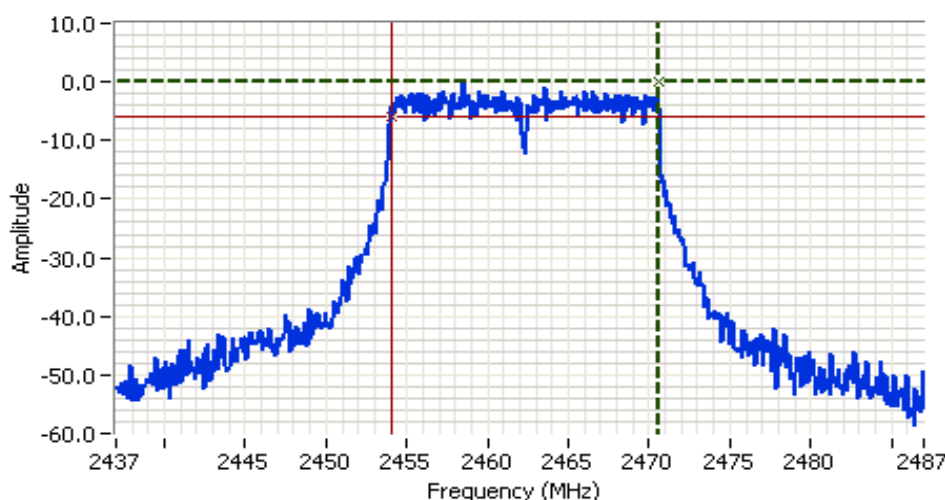
Comments

6dB Bandwidth:
16.50 MHz
g Mode

Cursor 1 2445.5833 4.33
Cursor 2 2429.0833 -1.67

Delta Freq. 16.50

Delta Amplitude 6.00



Analyzer Settings

HP8564E,EMI
CF: 2462.00 MHz
SPAN:50.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

Comments

6dB Bandwidth:
16.58 MHz
g Mode

Cursor 1 2470.5833 0.00
Cursor 2 2454.0000 -6.00

Delta Freq. 16.58

Delta Amplitude 6.00



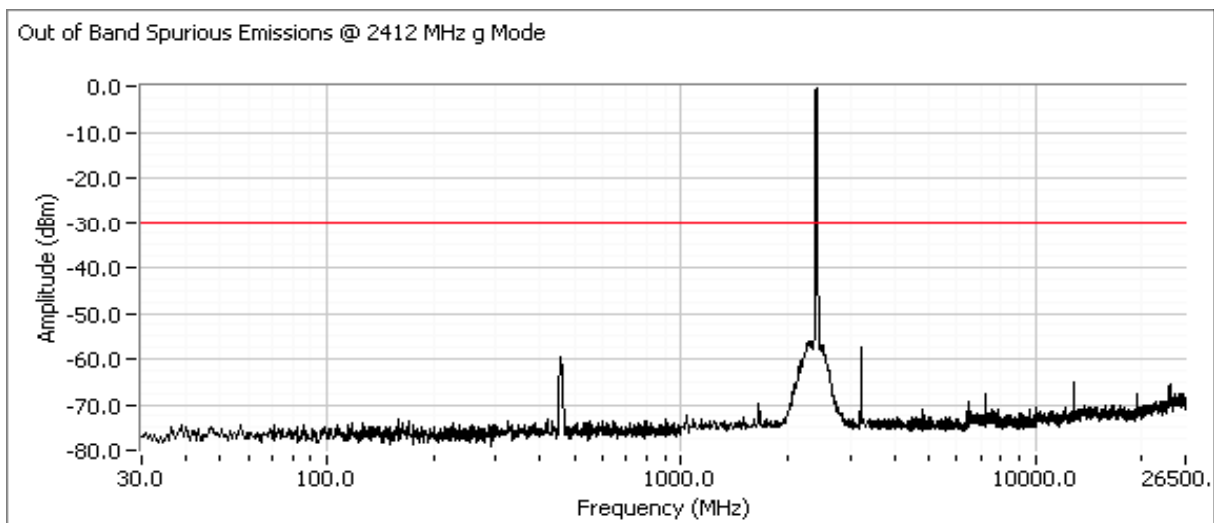
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

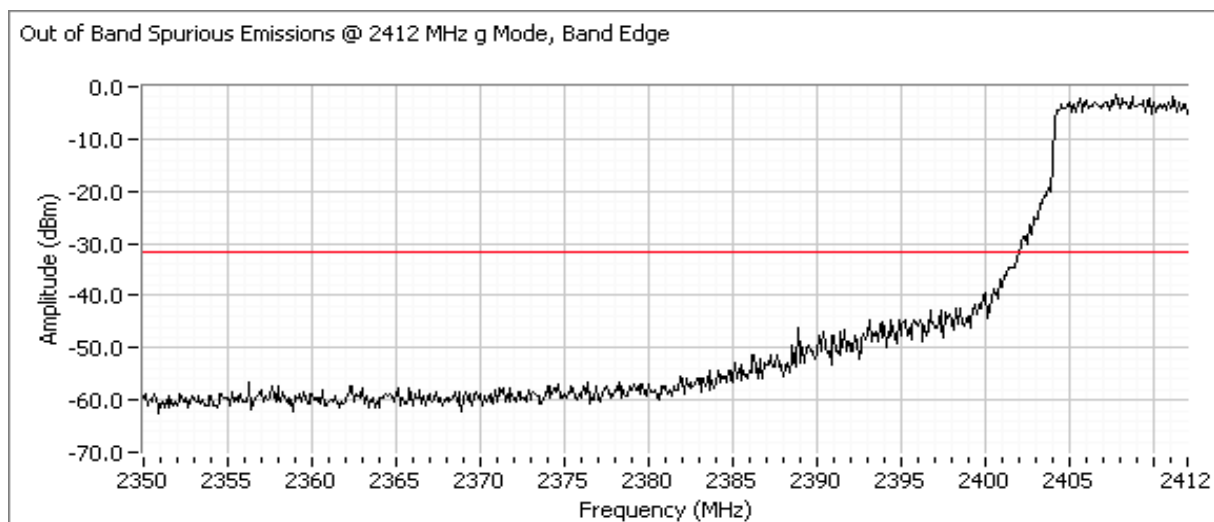
All measured using RB = 100kHz, VB = 300kHz.

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

Plots for low channel, Chain A power setting(s) = 20



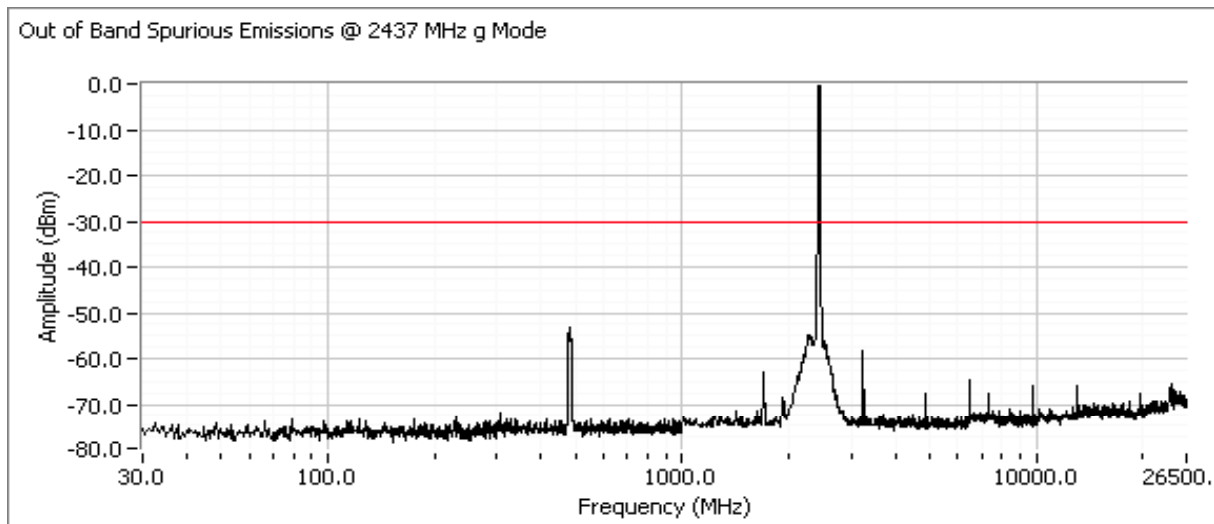
Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



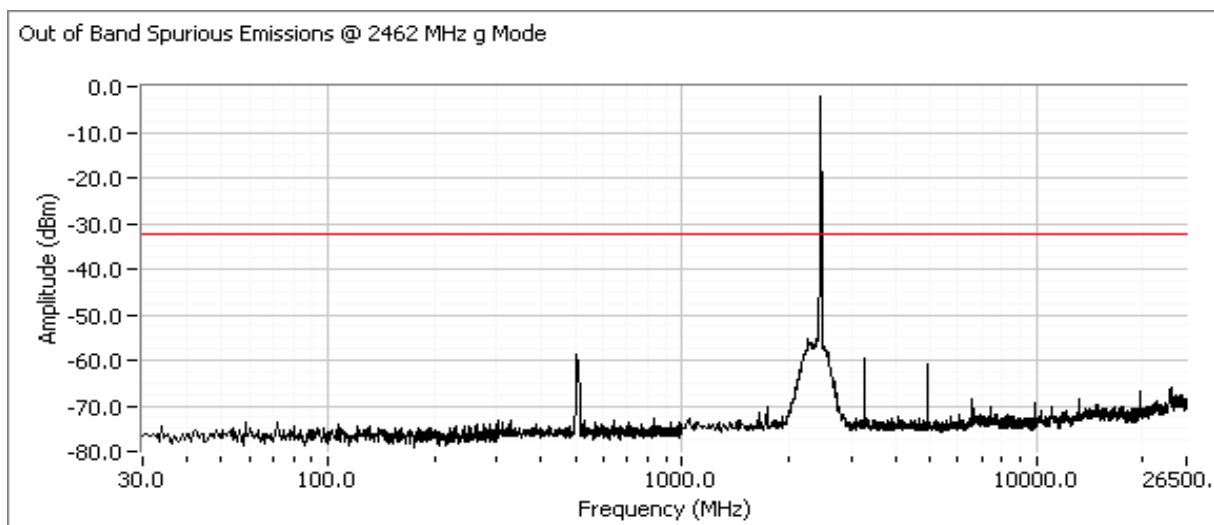
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

Plots for center channel, Chain A power setting(s) = 23



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



Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

Power, PSD, Bandwidth and Spurious - 802.11n 20MHz

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: 4/14/2008

Config. Used: 1

Test Engineer: Suhaila Khushzad & John Caizzi

Config Change: None

Test Location: FT Lab #1

EUT Voltage: Powered From Host System

General Test Configuration

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

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

Ambient Conditions:

Temperature:	21 °C
Rel. Humidity:	40 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	16.2 dBm(41.2mW)
2	Power spectral Density (PSD)	15.247(d)	Pass	-6.3 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	17.1 MHz
3	99% Bandwidth	RSS GEN	-	18.3 MHz
4	Antenna Conducted - Out of Band Spurious	15.247(b)	Pass	All emissions below the -30dBc limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

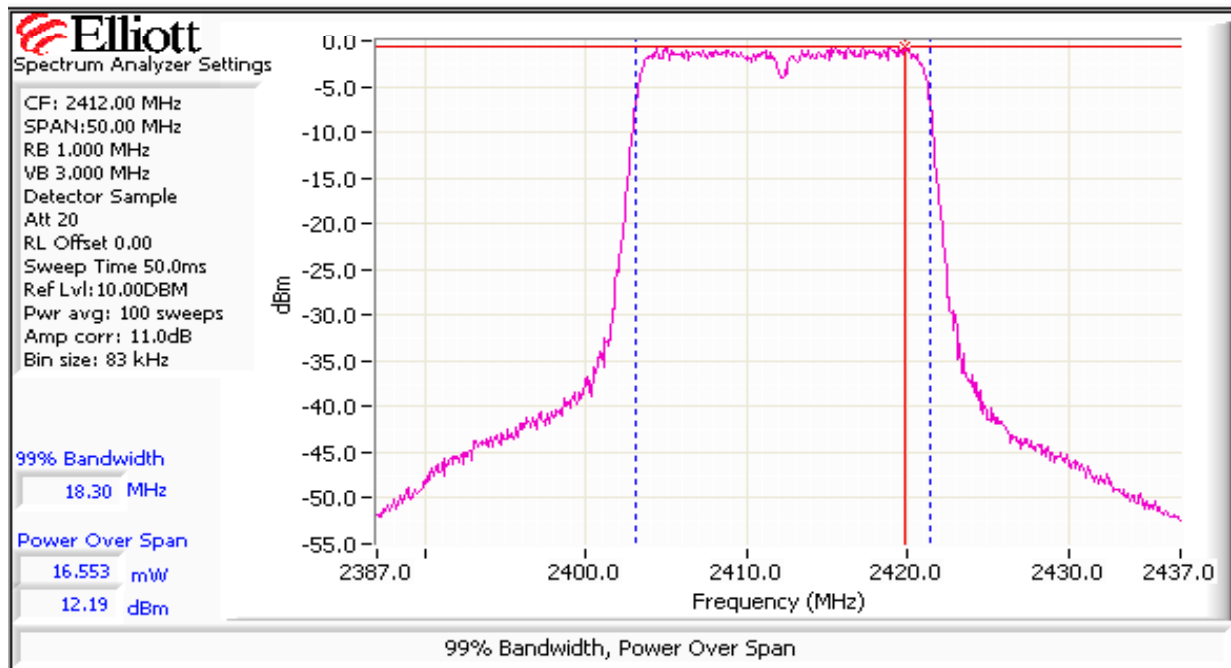
No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #1: Output Power

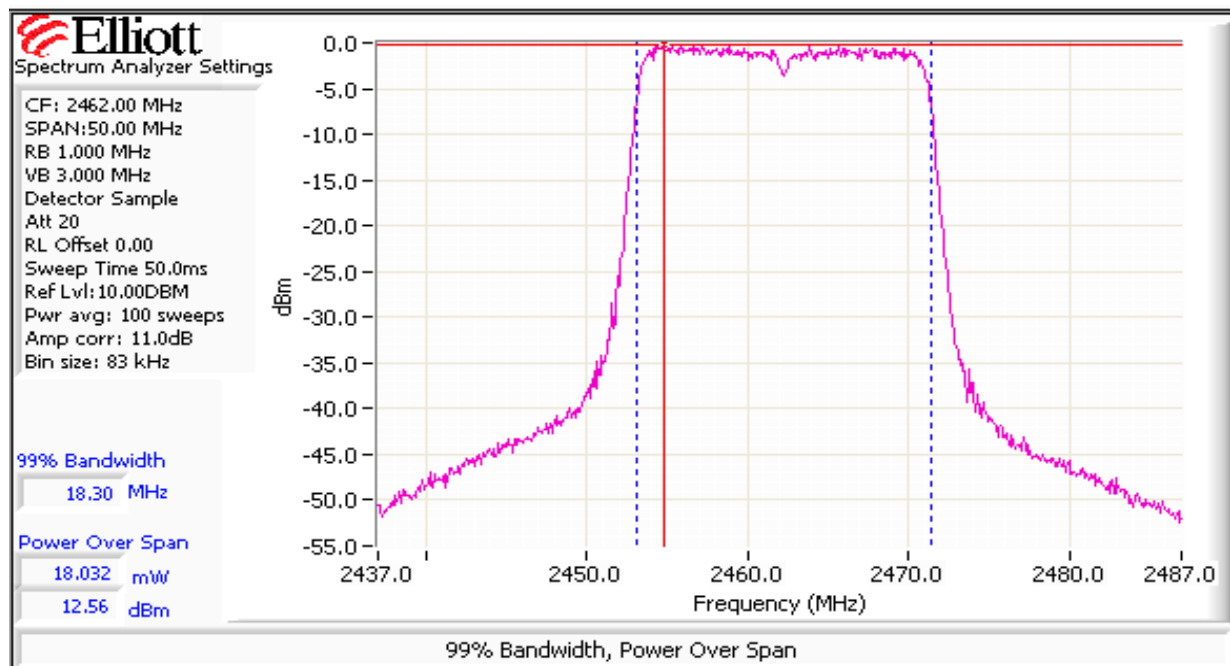
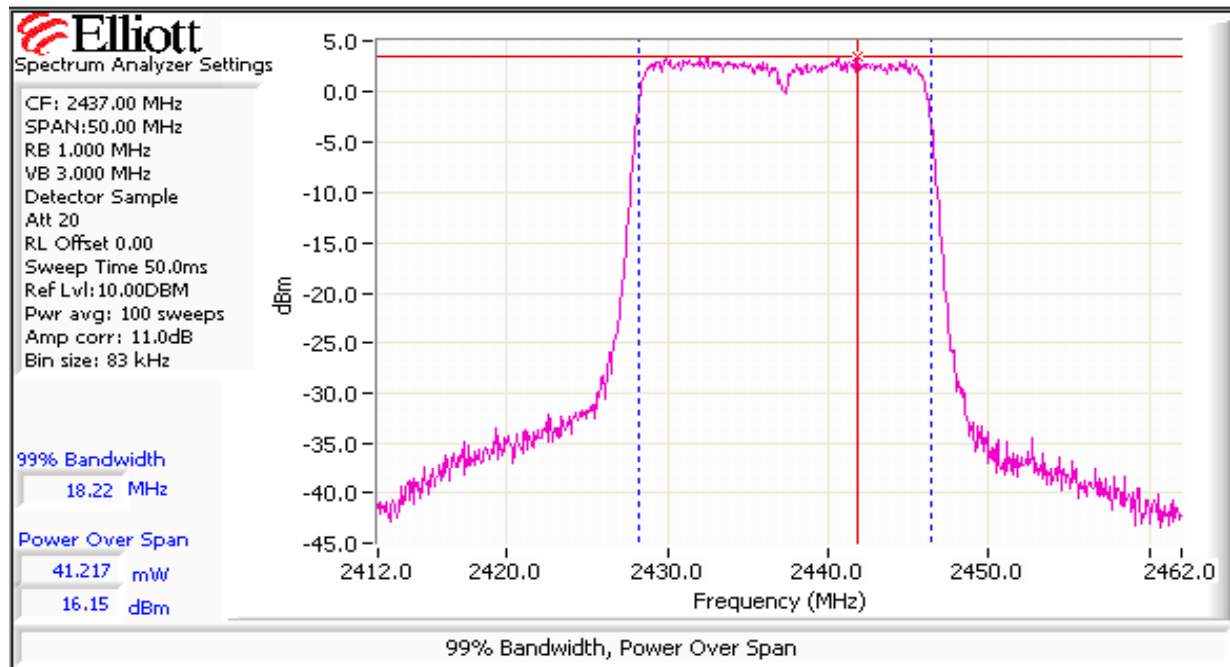
Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Output Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
18	2412, Chain A	12.2	16.6	3.2	Pass	15.4	0.035	13.1	20.4
23	2437, Chain A	16.2	41.2	3.2	Pass	19.4	0.086	17.0	50.1
20.5	2462, Chain A	12.6	18.0	3.2	Pass	15.8	0.038	14.0	25.1

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz. Spurious limit is -30dBc because this method was used. The output power limit is 30dBm.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power sensor and is included for manufacturer's reference only.



Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #1: Output Power



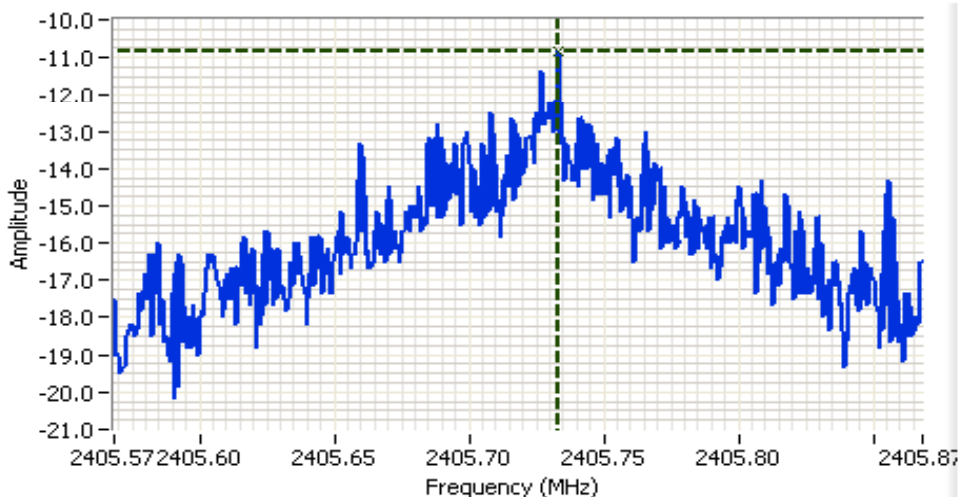
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit dBm/3kHz	Result
		(dBm/3kHz) Note 1		
18	2412, Chain A	-10.8	8.0	Pass
23	2437, Chain A	-6.3	8.0	Pass
20.5	2462, Chain A	-11.8	8.0	Pass

Note 1:

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


Analyzer Settings

HP8564E,EMI
CF: 2405.72 MHz
SPAN: 300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl: 21.00DBM

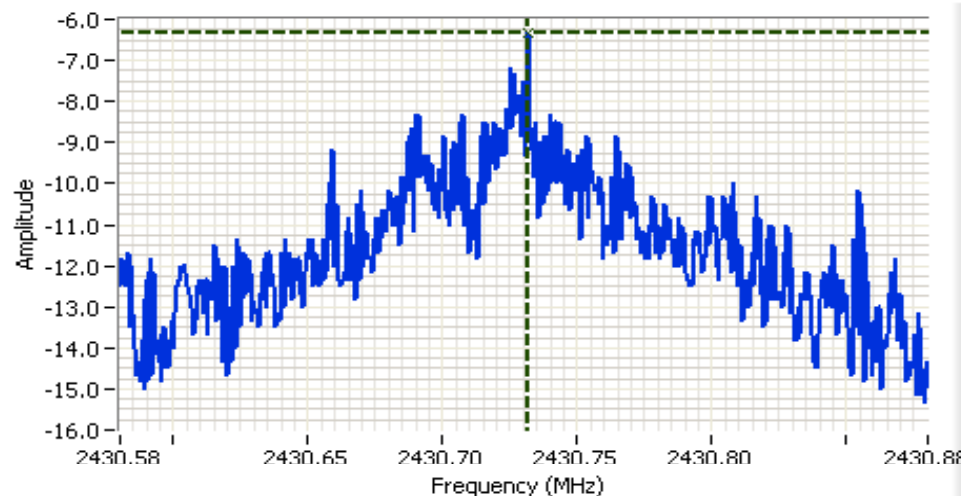
Comments

PSD: -10.83 dBm/3kHz
2412 MHz
n20 Mode

Cursor 1	2405.7328	-10.83			
	0.0000	0.00			

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #2: Power spectral Density

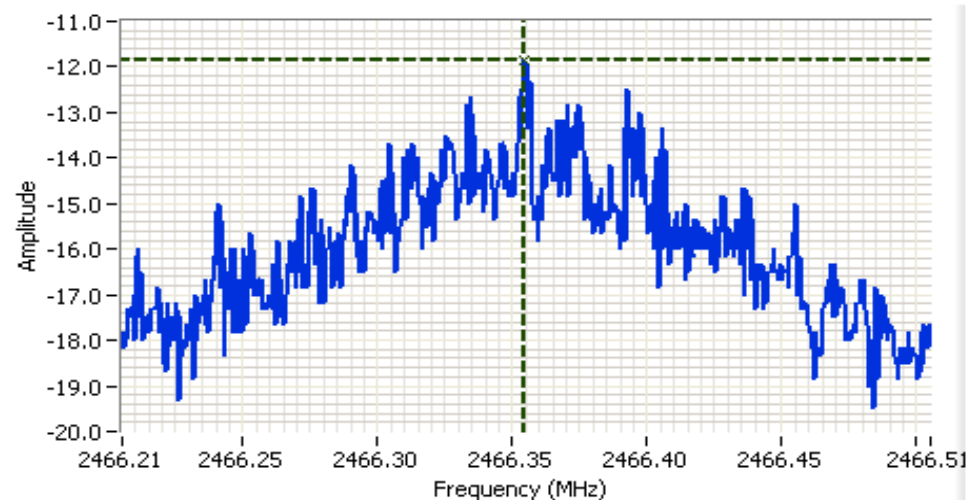


Analyzer Settings

HP8564E,EMI
 CF: 2430.73 MHz
 SPAN:300 kHz
 RB 3.00 kHz
 VB 10.00 kHz
 Detector POS
 Att 20
 RL Offset 11.00
 Sweep Time 100.0s
 Ref Lvl:21.00DBM

Comments

PSD: -6.33 dBm/3kHz
 2437 MHz
 n20 Mode



Analyzer Settings

HP8564E,EMI
 CF: 2466.36 MHz
 SPAN:300 kHz
 RB 3.00 kHz
 VB 10.00 kHz
 Detector POS
 Att 20
 RL Offset 11.00
 Sweep Time 100.0s
 Ref Lvl:21.00DBM

Comments

PSD: -11.83 dBm/3kHz
 2462 MHz
 n Mode

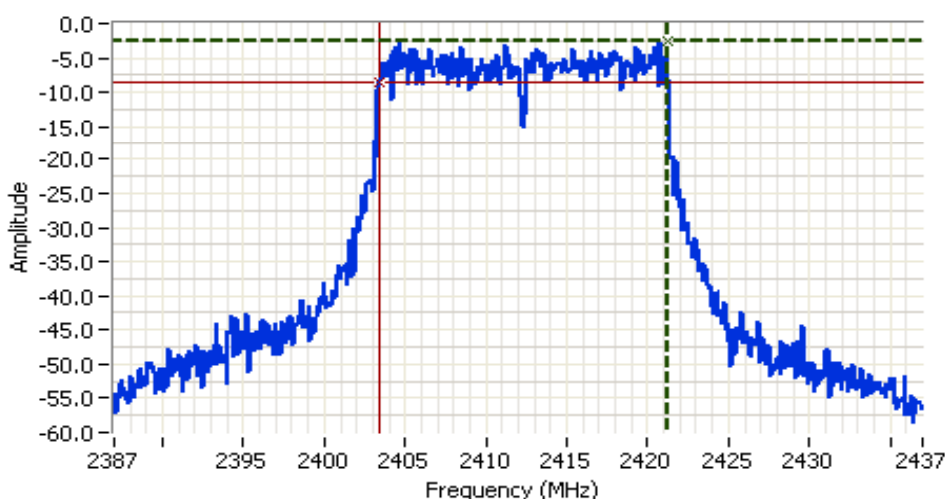
Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
18.0	2412, Chain A	100 kHz	17.8	18.3
23.0	2437, Chain A	100 kHz	17.8	18.2
20.5	2462, Chain A	100 kHz	17.1	18.3

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

Note 2: Center channel of Chains B and C measured to verify no significant difference in signal bandwidth from Chain A.



Analyzer Settings

HP8564E,EMI
CF: 2412.00 MHz
SPAN:50.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

Comments

6dB Bandwidth:
17.83 MHz
2412MHz
n20MHz

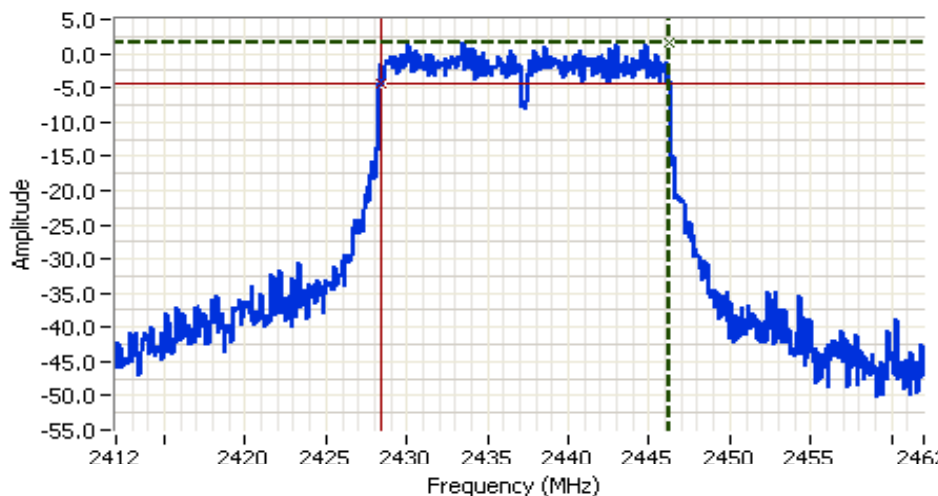
Cursor 1	2421.2500	-2.67	
Cursor 2	2403.4167	-8.67	

Delta Freq. 17.83

Delta Amplitude 6.00

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth



Analyzer Settings

HP8564E,EMI
CF: 2437.00 MHz
SPAN:50.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

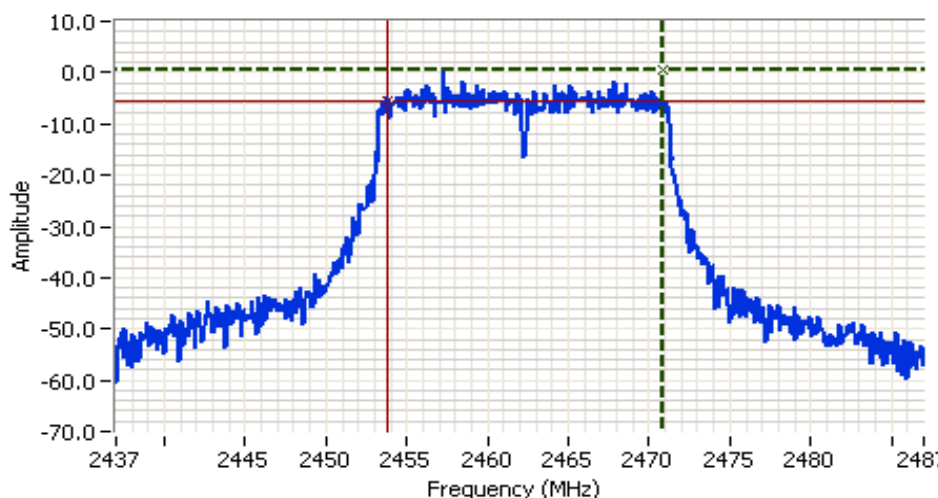
Comments

6dB Bandwidth:
17.83 MHz
2437MHz
n20MHz

Cursor 1 2446.2500 1.67
Cursor 2 2428.4167 -4.33

Delta Freq. 17.83

Delta Amplitude 6.00



Analyzer Settings

HP8564E,EMI
CF: 2462.00 MHz
SPAN:50.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

Comments

6dB Bandwidth:
17.08 MHz
2462MHz
n20MHz

Cursor 1 2470.8333 0.50
Cursor 2 2453.7500 -5.50

Delta Freq. 17.08

Delta Amplitude 6.00



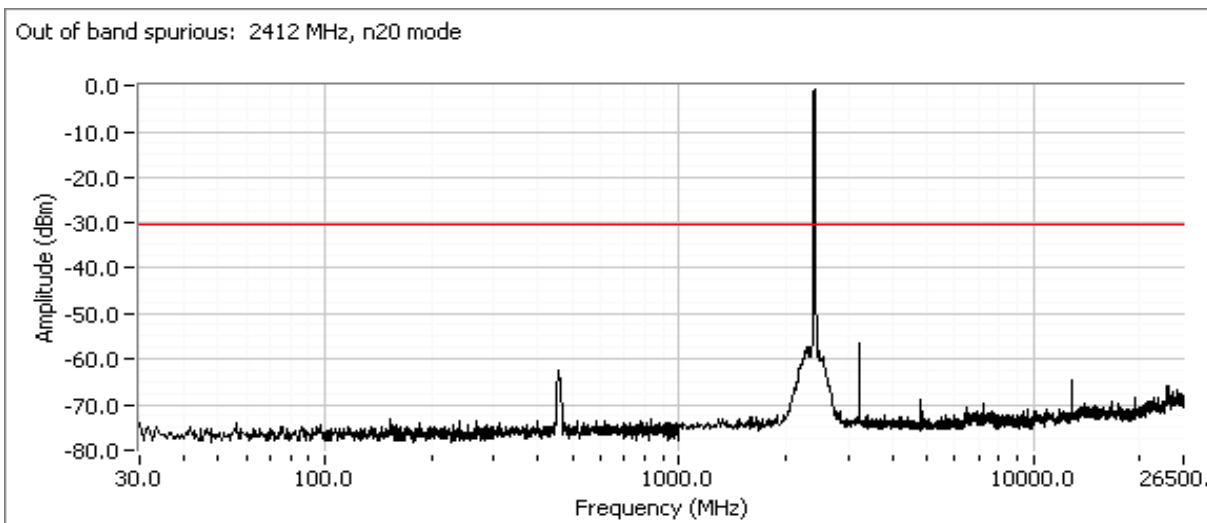
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

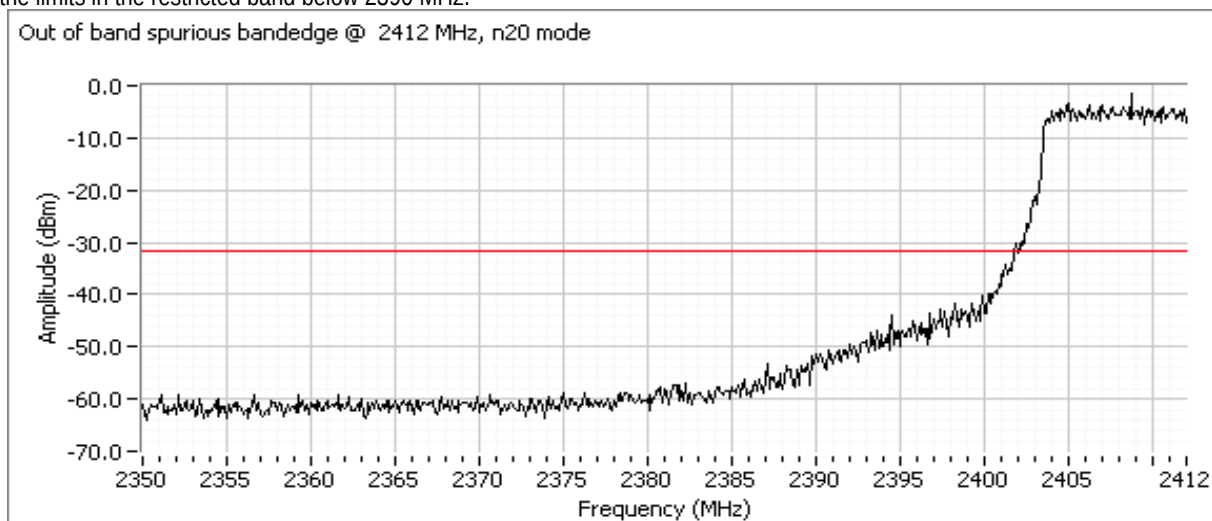
All measured using RB = 100kHz, VB = 300kHz.

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

Plots for low channel, Chain A power setting(s) = 18



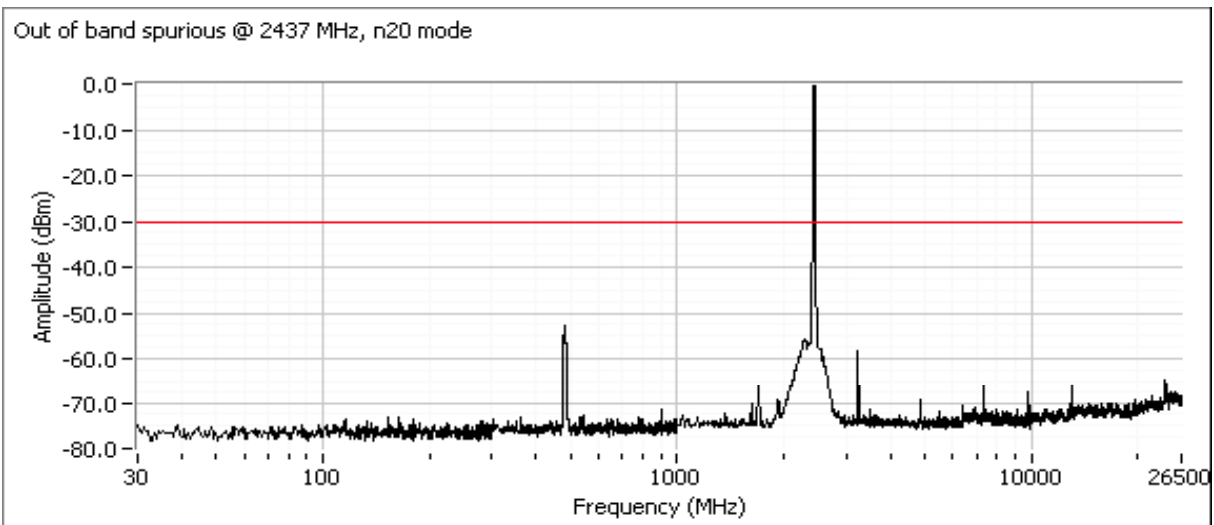
Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



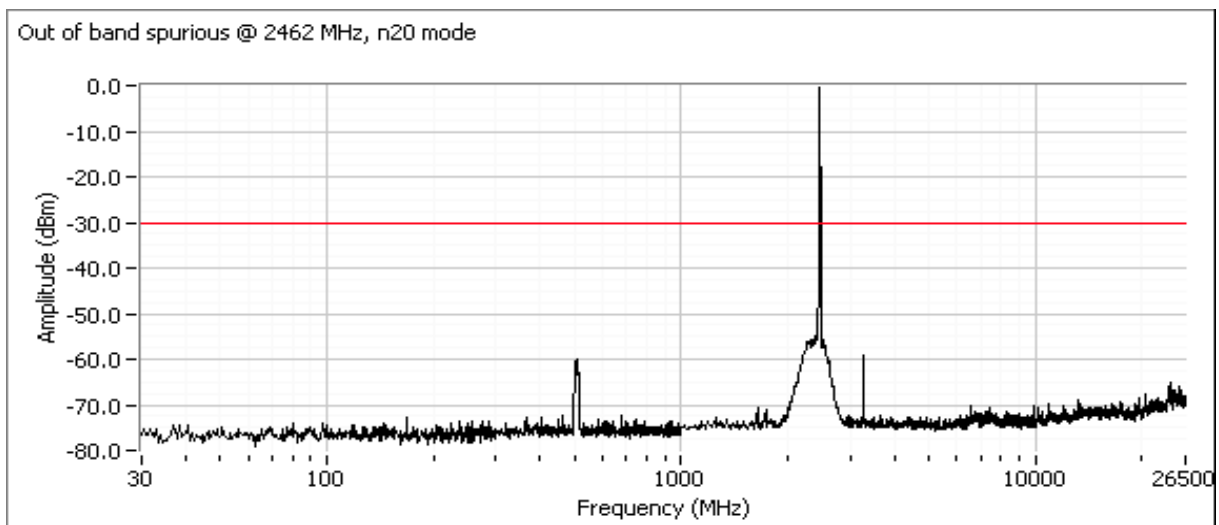
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

Plots for center channel, Chain A power setting(s) = 23



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



Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, PSD, Bandwidth and Spurious - 802.11n 40MHz

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: 4/14/2008

Config. Used: 1

Test Engineer: Suhaila Khushzad & John Caizzi

Config Change: None

Test Location: FT Lab #1

EUT Voltage: Powered From Host System

General Test Configuration

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

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

Ambient Conditions: Temperature: 23 °C
Rel. Humidity: 35 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	15.6 dBm(36.6mW)
2	Power spectral Density (PSD)	15.247(d)	Pass	-9.7 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	36.0 MHz
3	99% Bandwidth	RSS GEN	-	36.6 MHz
4	Antenna Conducted - Out of Band Spurious	15.247(b)	Pass	All emissions below the -30dBc limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

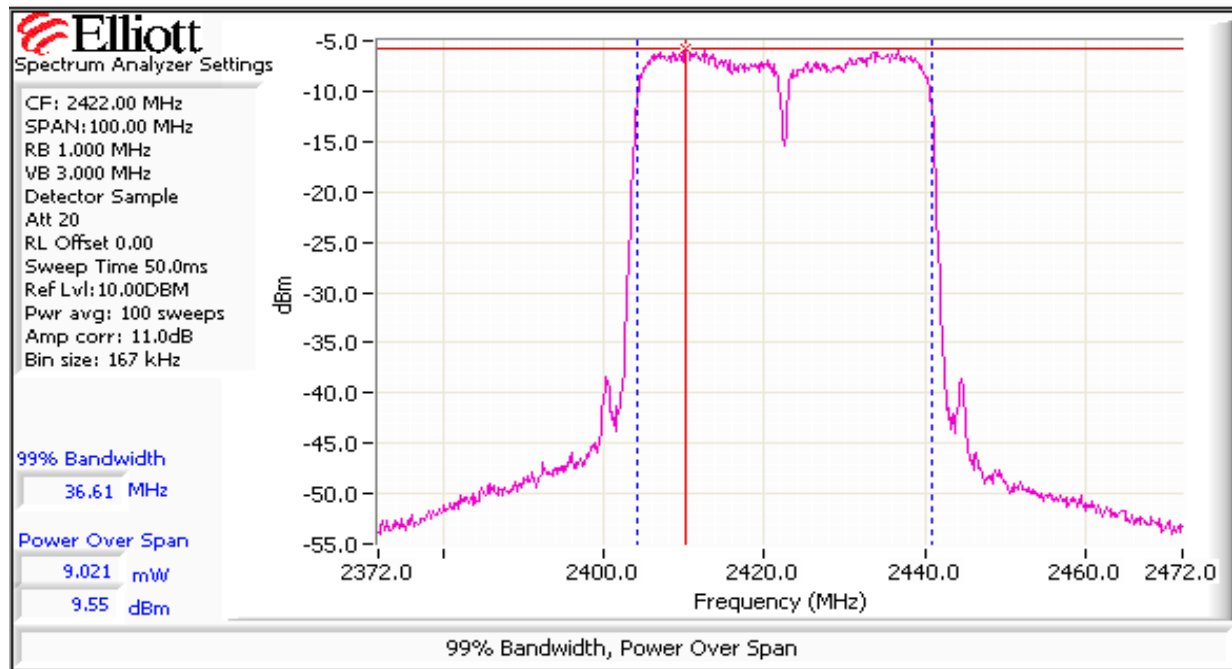
No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #1: Output Power

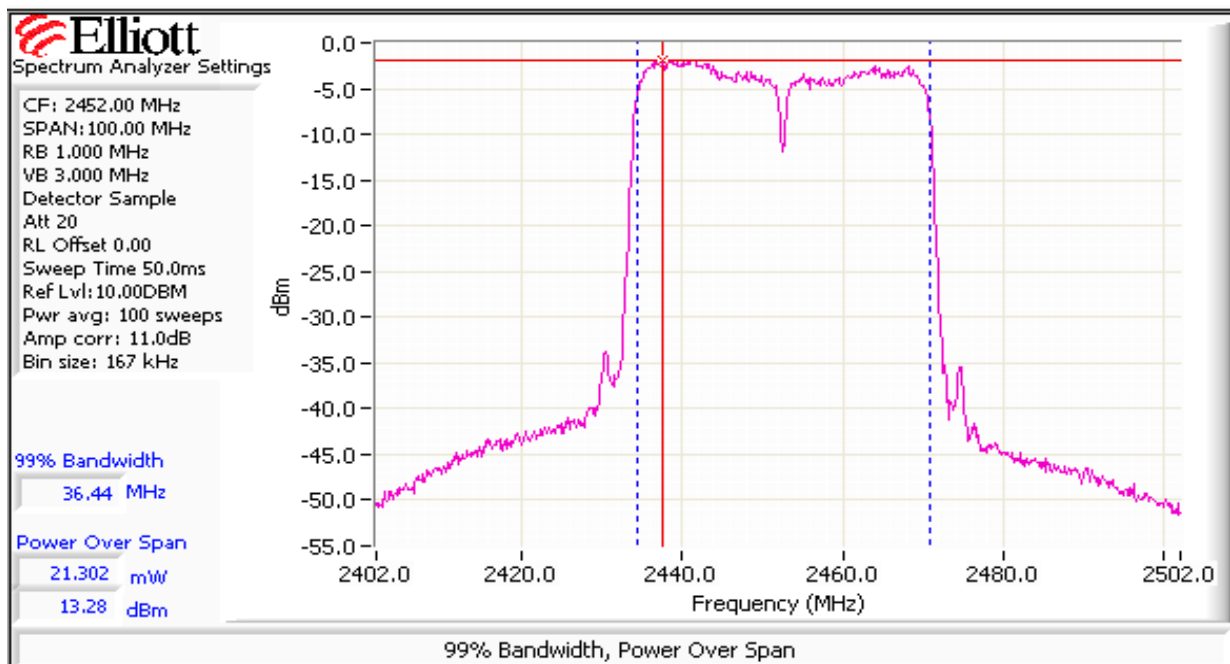
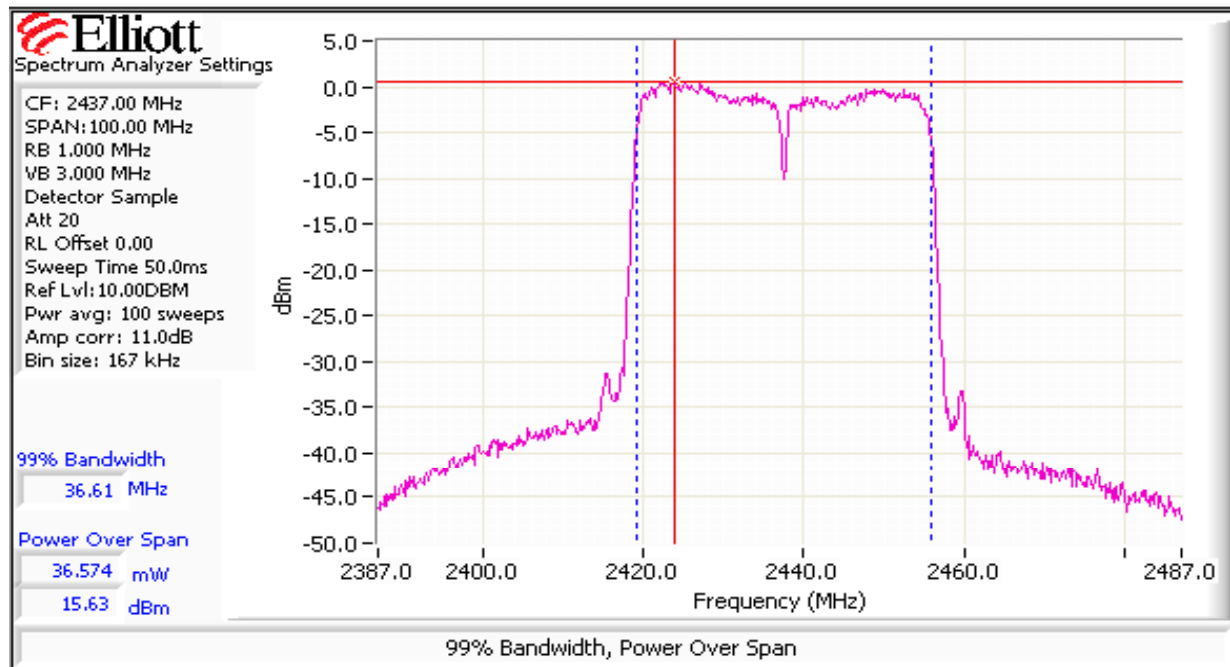
Power Setting ²	Frequency (MHz)	Output Power (dBm) ¹	mW	Antenna Gain (dBi)	Result	EIRP ^{Note 2} dBm	W	Output Power (dBm) ³	mW
14.5	2422, Chain A	9.6	9.0	3.2	Pass	12.8	0.019	10.1	10.2
21.5	2437, Chain A	15.6	36.6	3.2	Pass	18.8	0.076	16.5	44.7
20	2452, Chain A	13.3	21.3	3.2	Pass	16.5	0.044	14.1	25.7

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 100 MHz. Spurious limit is -30dBc because this method was used. The output power limit is 30dBm.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power sensor and is included for manufacturer's reference only.



Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #1: Output Power



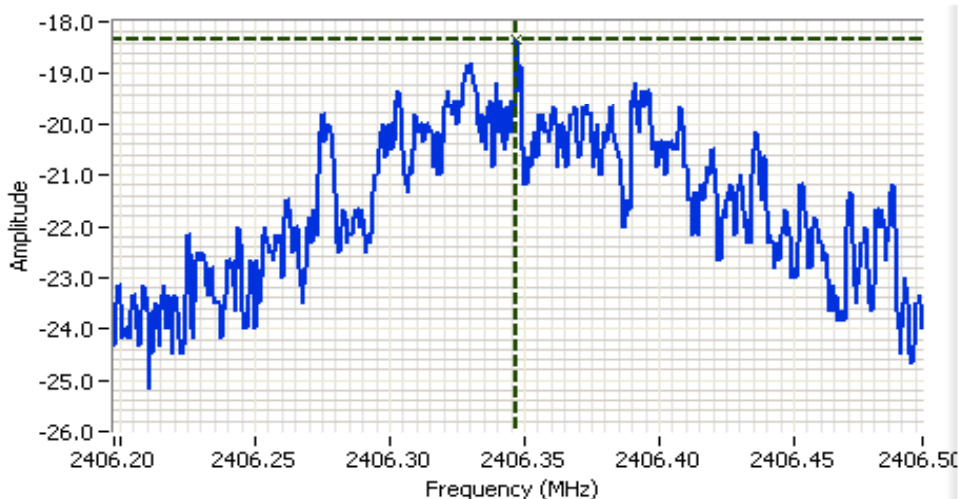
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit dBm/3kHz	Result
		(dBm/3kHz) Note 1		
14.5	2422, Chain A	-18.3	8.0	Pass
21.5	2437, Chain A	-9.7	8.0	Pass
20	2452, Chain A	-12.0	8.0	Pass

Note 1:

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



Analyzer Settings

HP8564E,EMI
CF: 2406.35 MHz
SPAN: 300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl: 21.00DBM

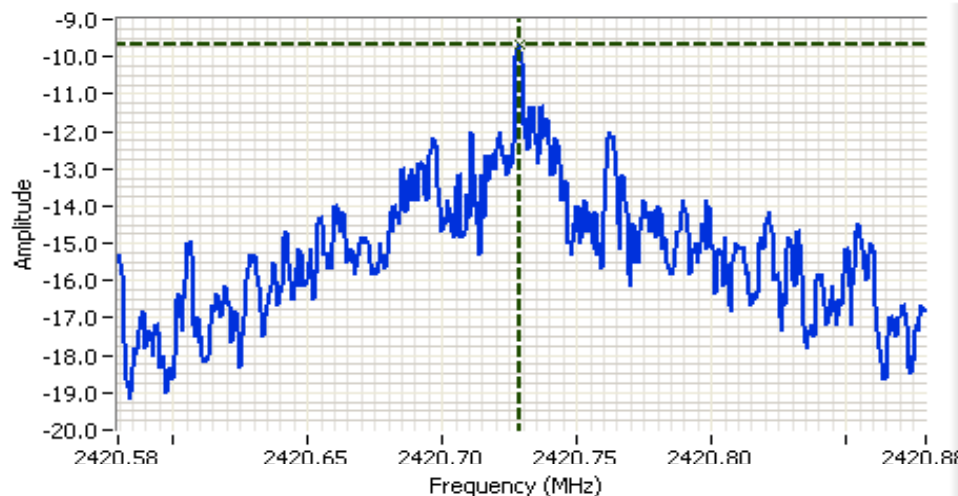
Comments

PSD: -18.33 dBm/3kHz
2422 MHz
n40 Mode

Cursor 1	2406.3472	-18.33			
	0.0000	0.00			

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #2: Power spectral Density



Cursor 1 2420.7285 -9.67

0.0000 0.00



Cursor 1 2435.7283 -12.00

0.0000 0.00

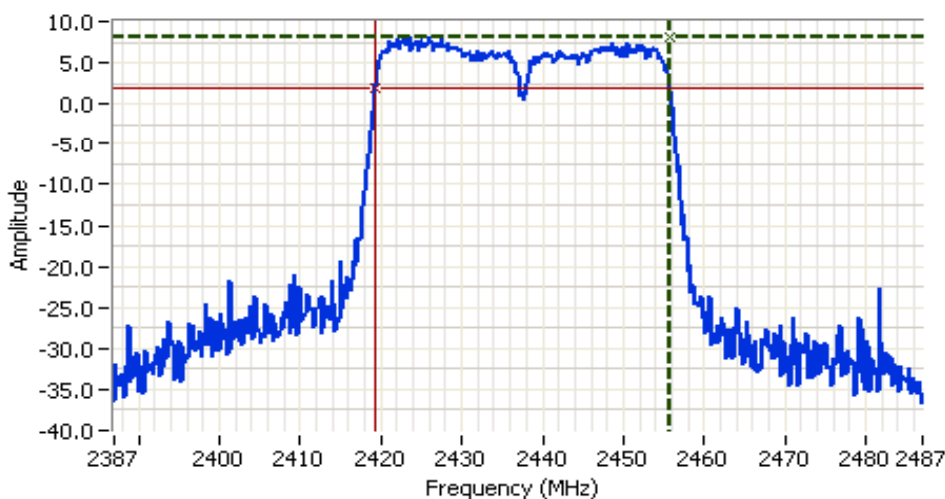


Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
14.5	2422, Chain A	100kHz	36.0	36.6
21.5	2437, Chain A	100kHz	36.3	36.6
20	2452, Chain A	100kHz	36.3	36.4

- Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB
- Note 2: Center channel of Chains B and C measured to verify no significant difference in signal bandwidth from Chain A.



Analyzer Settings

HP8564E,EMI
 CF: 2437.00 MHz
 SPAN:100.00 MHz
 RB 1.000 MHz
 VB 3.000 MHz
 Detector Sample
 Att 20
 RL Offset 11.00
 Sweep Time 50.0ms
 Ref Lvl:21.00DBM

Comments

6dB Bandwidth:
 36.33 MHz
 2437MHz
 n40MHz

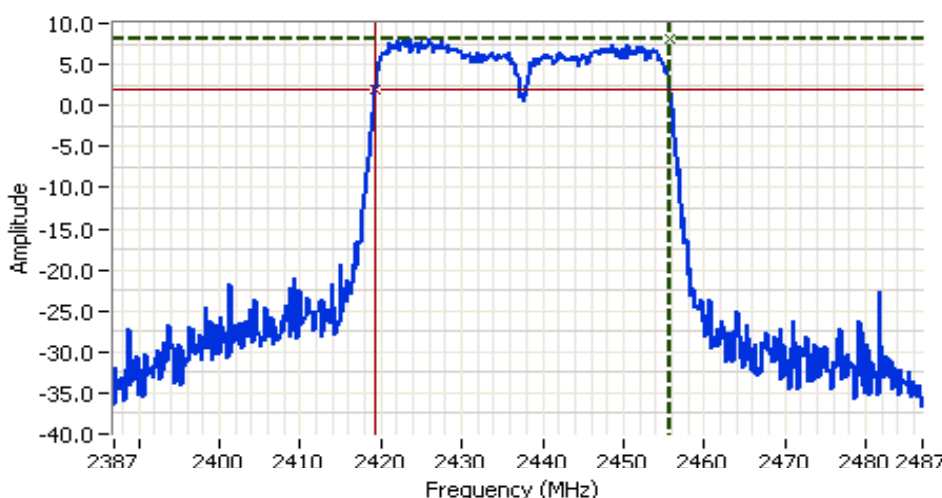
Cursor 1	2455.6667	8.00	
Cursor 2	2419.3333	2.00	

Delta Freq. 36.33

Delta Amplitude 6.00

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth



Analyzer Settings

HP8564E,EMI
CF: 2437.00 MHz
SPAN:100.00 MHz
RB 1.000 MHz
VB 3.000 MHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

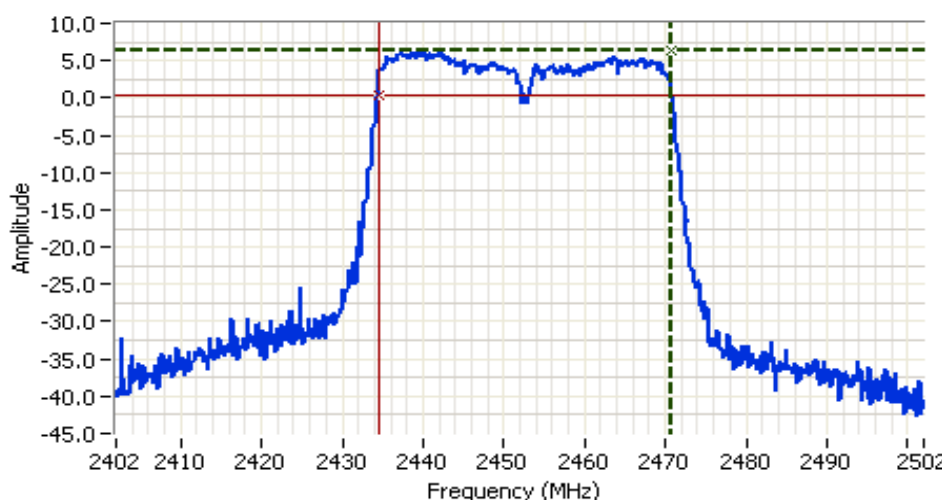
Comments

6dB Bandwidth:
36.33 MHz
2437MHz
n10MHz

Cursor 1 2455.6667 8.00
Cursor 2 2419.3333 2.00

Delta Freq. 36.33

Delta Amplitude 6.00



Analyzer Settings

HP8564E,EMI
CF: 2452.00 MHz
SPAN:100.00 MHz
RB 1.000 MHz
VB 3.000 MHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

Comments

6dB Bandwidth:
36.33 MHz
2452MHz
n40MHz

Cursor 1 2470.8333 6.33
Cursor 2 2434.5000 0.33

Delta Freq. 36.33

Delta Amplitude 6.00



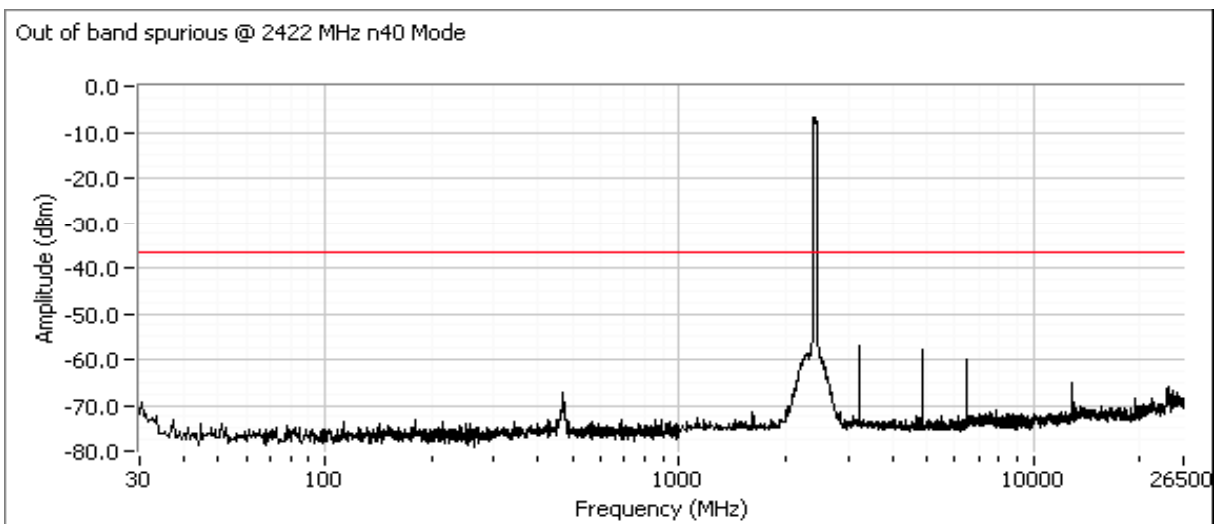
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

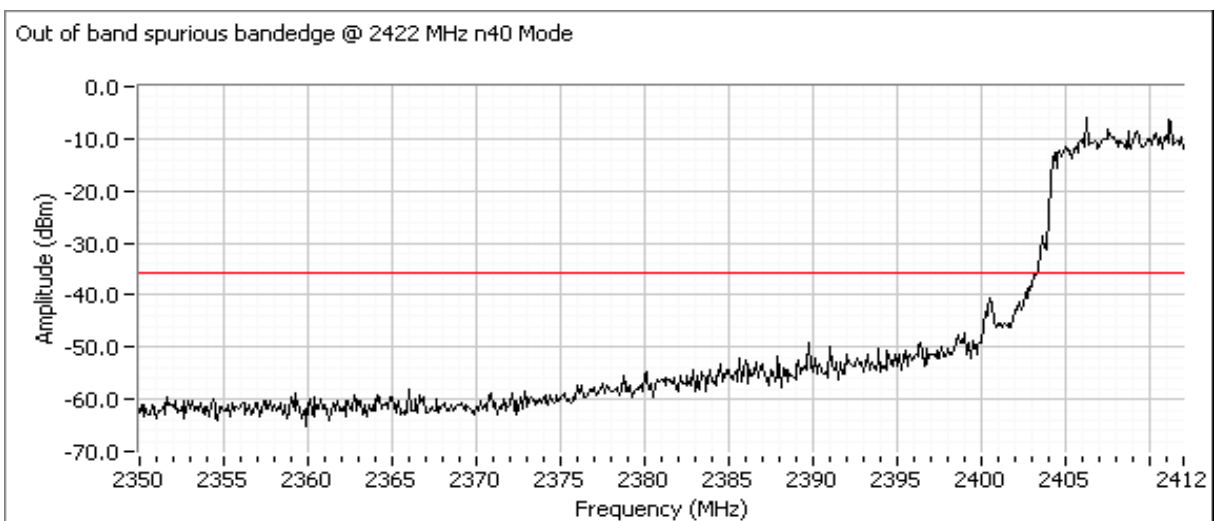
All measured using RB = 100kHz, VB = 300kHz.

Frequency (MHz)	Limit	Result
2422, Chain A	-30dBc	Pass
2437, Chain A	-30dBc	Pass
2452, Chain A	-30dBc	Pass

Plots for low channel, Chain A power setting(s) = 14.5



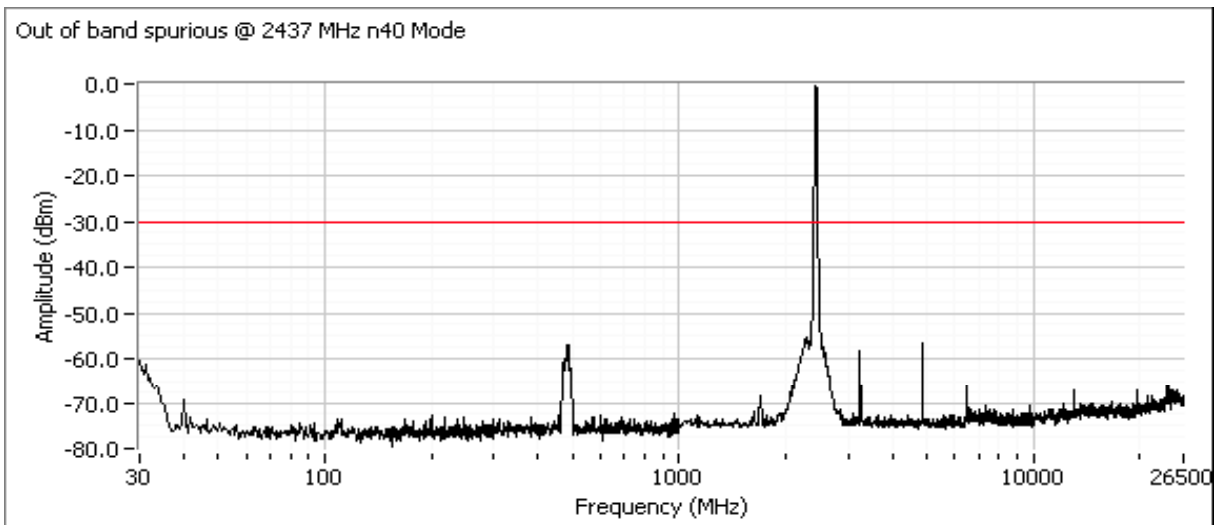
Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



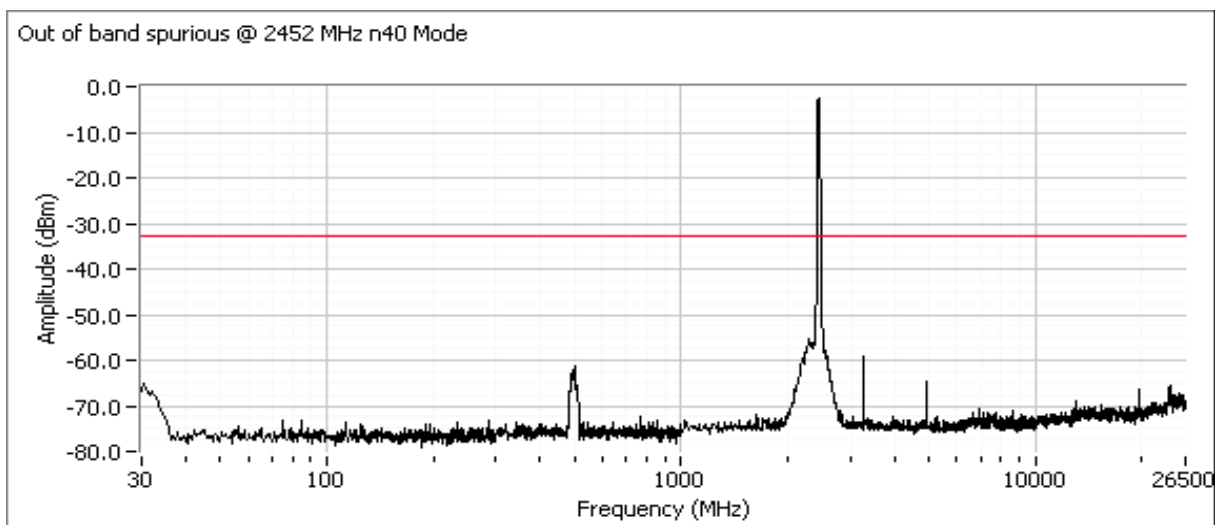
Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #4: Out of Band Spurious Emissions

Plots for center channel, Chain A power setting(s) = 21.5



Plots for high channel, Chain A power setting(s) = 20



Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, PSD, Bandwidth and Spurious - 802.11a

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: 4/14/2008

Config. Used: 1

Test Engineer: Suhaila Khushzad & John Caizzi

Config Change: None

Test Location: FT Lab #1

EUT Voltage: Powered From Host System

General Test Configuration

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

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

Ambient Conditions:

Temperature: 22 °C

Rel. Humidity: 35 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	11.7 dBm(14.8mW)
2	Power spectral Density (PSD)	15.247(d)	Pass	-12.2 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	16.7 MHz
3	99% Bandwidth	RSS GEN	-	17.1 MHz
4	Antenna Conducted - Out of Band Spurious	15.247(b)	Pass	All emissions below the -30dBc limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

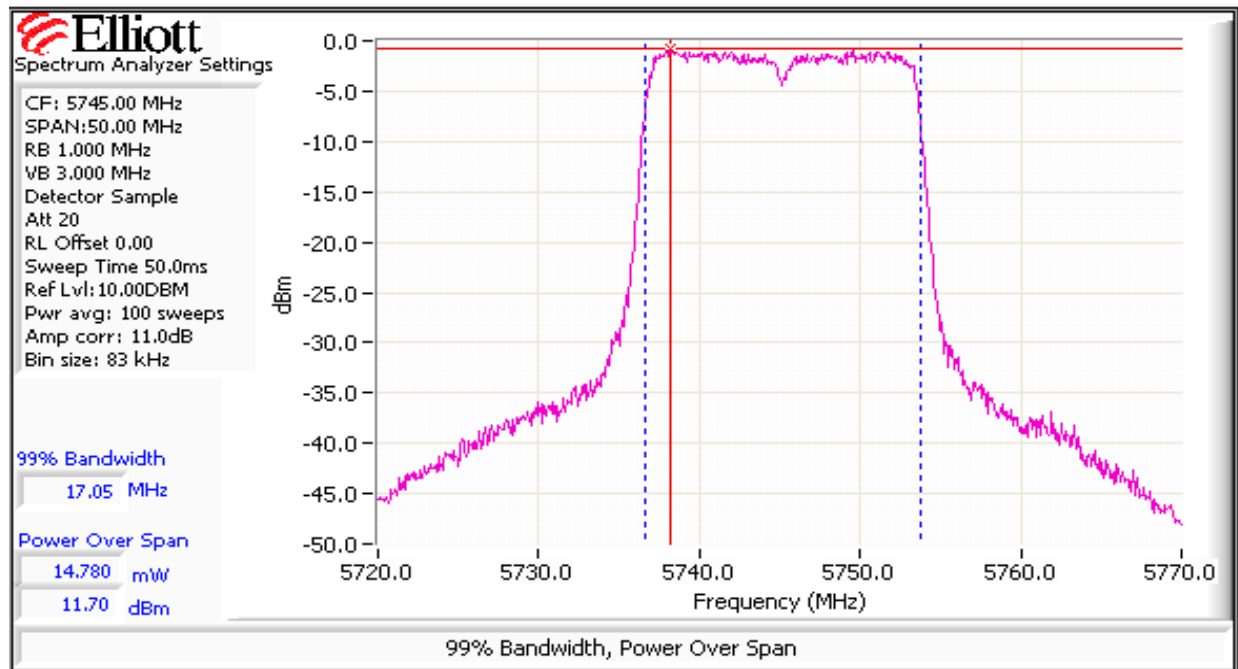
No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #1: Output Power

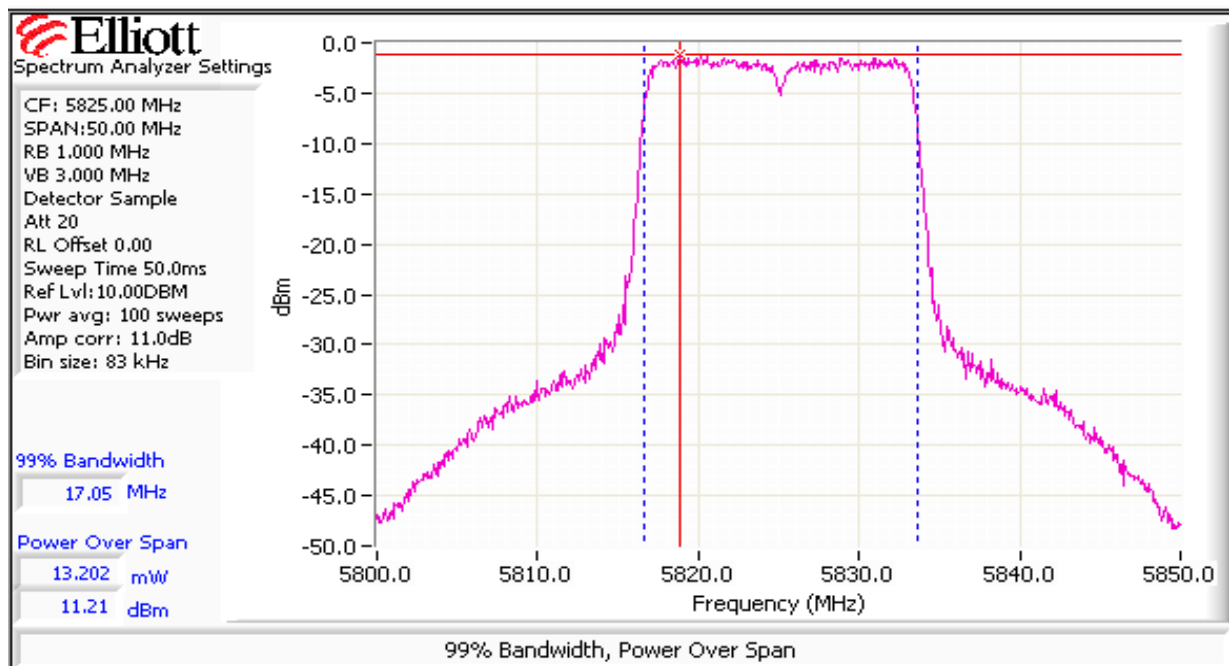
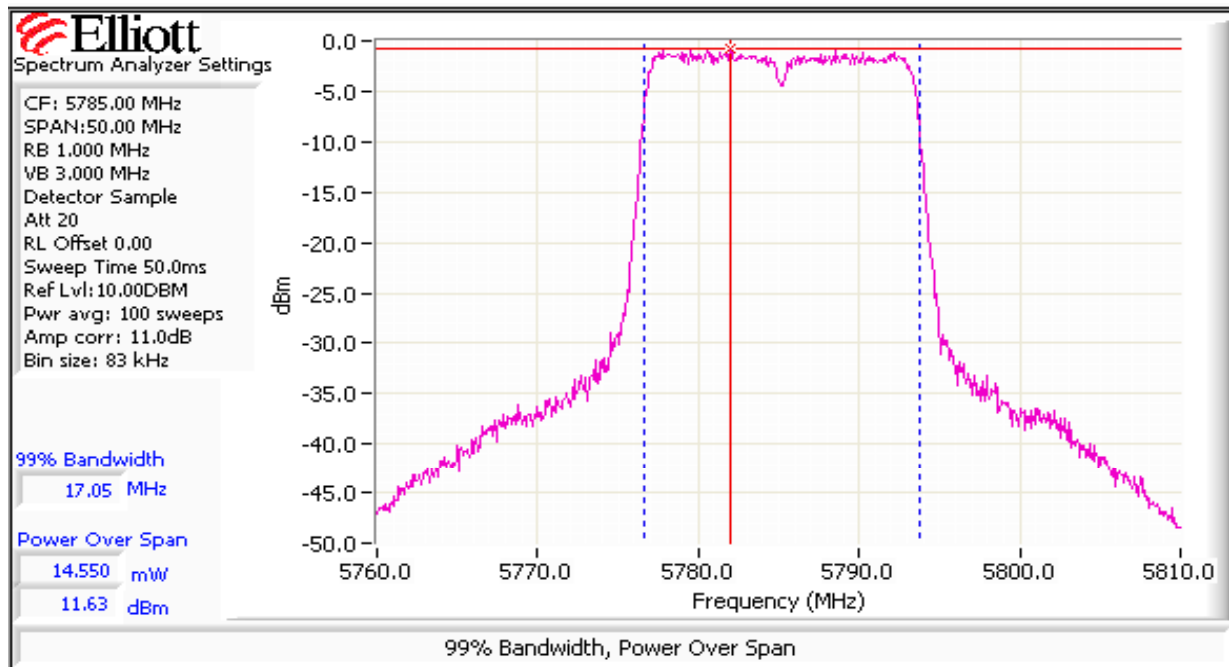
Power Setting ²	Frequency (MHz)	Output Power (dBm) ¹	mW	Antenna Gain (dBi)	Result	EIRP ^{Note 2} dBm	W	Output Power (dBm) ³	mW
26.5	5745, Chain A	11.7	14.8	5.0	Pass	16.7	0.047	16.5	44.7
27	5785, Chain A	11.6	14.6	5.0	Pass	16.6	0.046	16.5	44.7
28	5825, Chain A	11.2	13.2	5.0	Pass	16.2	0.042	16.5	44.7

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz. Spurious limit is -30dBc because this method was used. The output power limit is 30dBm.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power sensor and is included for manufacturer's reference only.



Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #1: Output Power



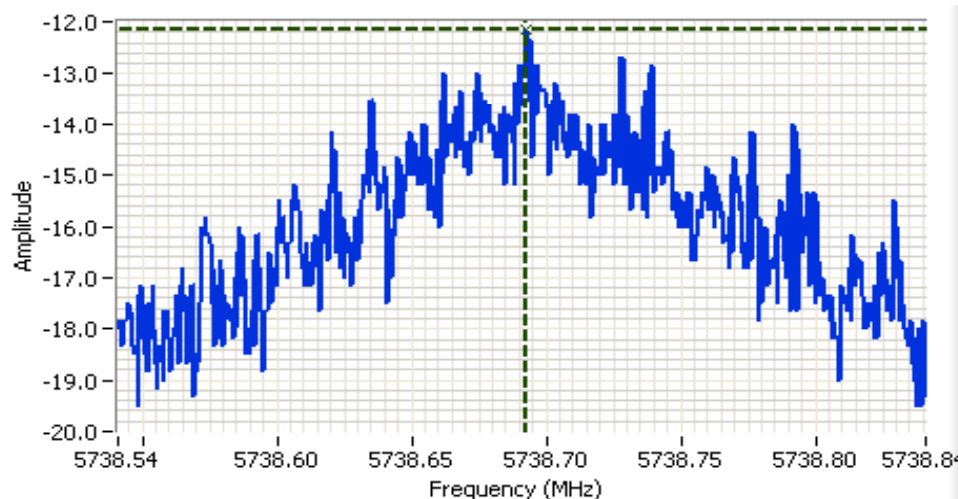
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit dBm/3kHz	Result
		(dBm/3kHz) Note 1		
26.5	5745, Chain A	-12.2	8.0	Pass
27	5785, Chain A	-12.2	8.0	Pass
28	5825, Chain A	-12.5	8.0	Pass

Note 1:

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



Analyzer Settings

HP8564E,EMI
CF: 5738.69 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:21.00DBM

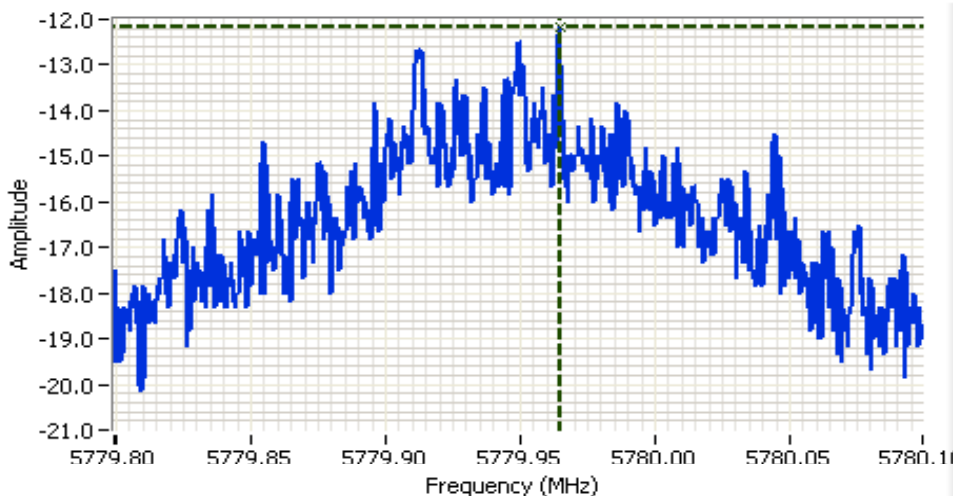
Comments

PSD: -12.17 dBm/3kHz
5745 MHz
a Mode

Cursor 1	5738.6924	-12.17			
	0.0000	0.00			

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #2: Power spectral Density



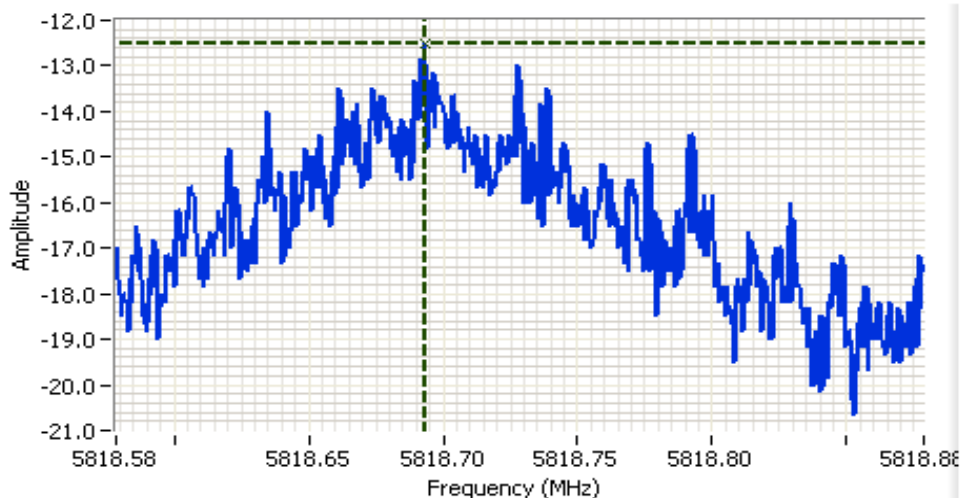
Analyzer Settings

HP8564E,EMI
CF: 5779.95 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:21.00DBM

Comments

PSD: -12.17 dBm/3kHz
5785 MHz
a Mode

Cursor 1 5779.9647 -12.17



Analyzer Settings

HP8564E,EMI
CF: 5818.73 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:21.00DBM

Comments

PSD: -12.50 dBm/3kHz
5785 MHz
a Mode

Cursor 1 5818.6930 -12.50

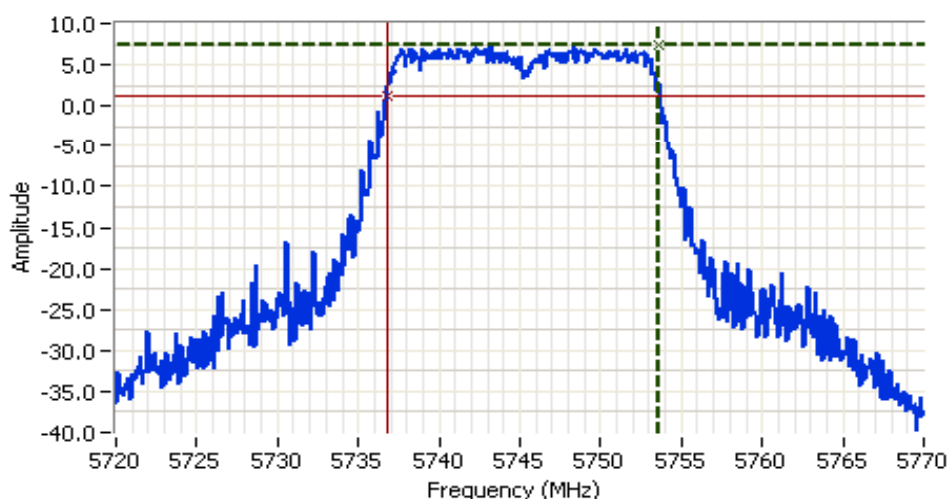


Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
26.5	5745, Chain A	100kHz	16.8	17.1
27	5785, Chain A	100kHz	16.7	17.1
28	5825, Chain A	100kHz	16.8	17.1

- Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB
- Note 2: Center channel of Chains B and C measured to verify no significant difference in signal bandwidth from Chain A.



Analyzer Settings

HP8564E,EMI
 CF: 5745.00 MHz
 SPAN:50.00 MHz
 RB 1.000 MHz
 VB 3.000 MHz
 Detector Sample
 Att 20
 RL Offset 11.00
 Sweep Time 50.0ms
 Ref Lvl:21.00DBM

Comments

6dB Bandwidth:
 16.75 MHz
 a Mode

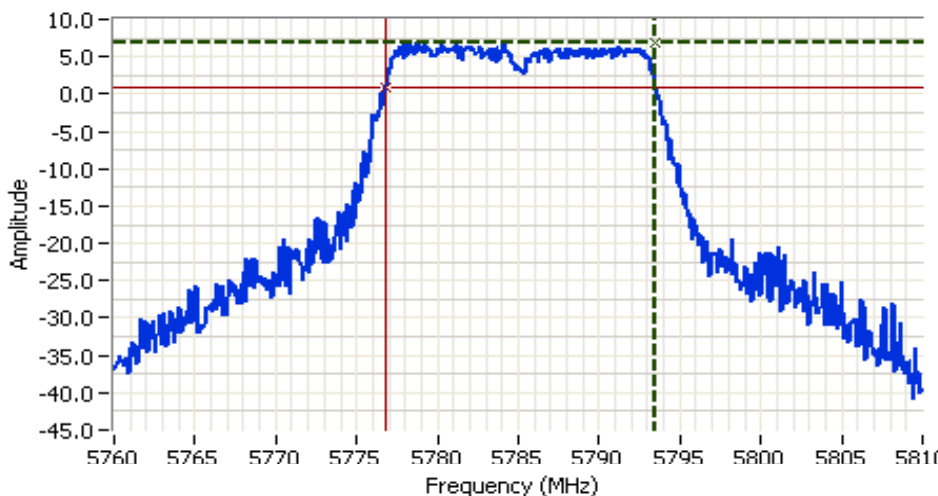
Cursor 1	5753.5833	7.33	
Cursor 2	5736.8333	1.33	

Delta Freq. 16.75

Delta Amplitude 6.00

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth



Analyzer Settings

HP8564E,EMI
CF: 5785.00 MHz
SPAN:50.00 MHz
RB 1.000 MHz
VB 3.000 MHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

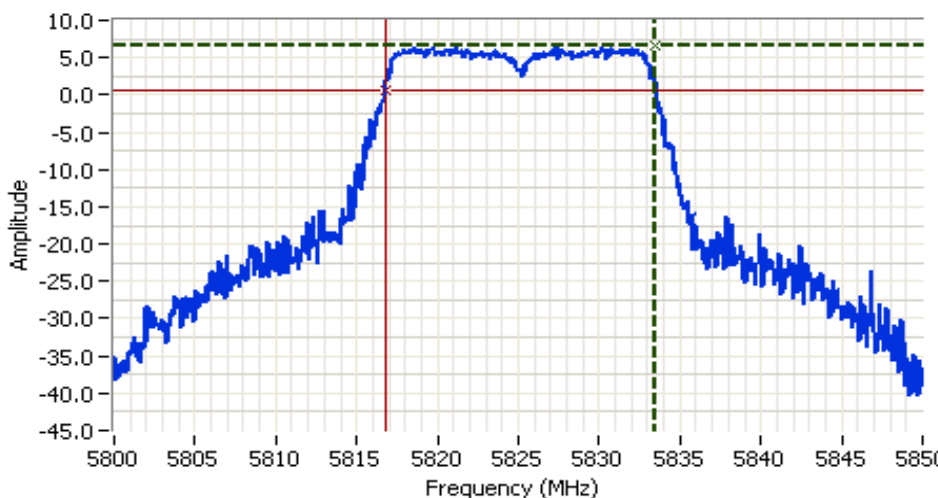
Comments

6dB Bandwidth:
16.67 MHz
a Mode

Cursor 1 5793.5000 6.83
Cursor 2 5776.8333 0.83

Delta Freq. 16.67

Delta Amplitude 6.00



Analyzer Settings

HP8564E,EMI
CF: 5825.00 MHz
SPAN:50.00 MHz
RB 1.000 MHz
VB 3.000 MHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:21.00DBM

Comments

6dB Bandwidth:
16.75 MHz
a Mode

Cursor 1 5833.5000 6.50
Cursor 2 5816.7500 0.50

Delta Freq. 16.75

Delta Amplitude 6.00



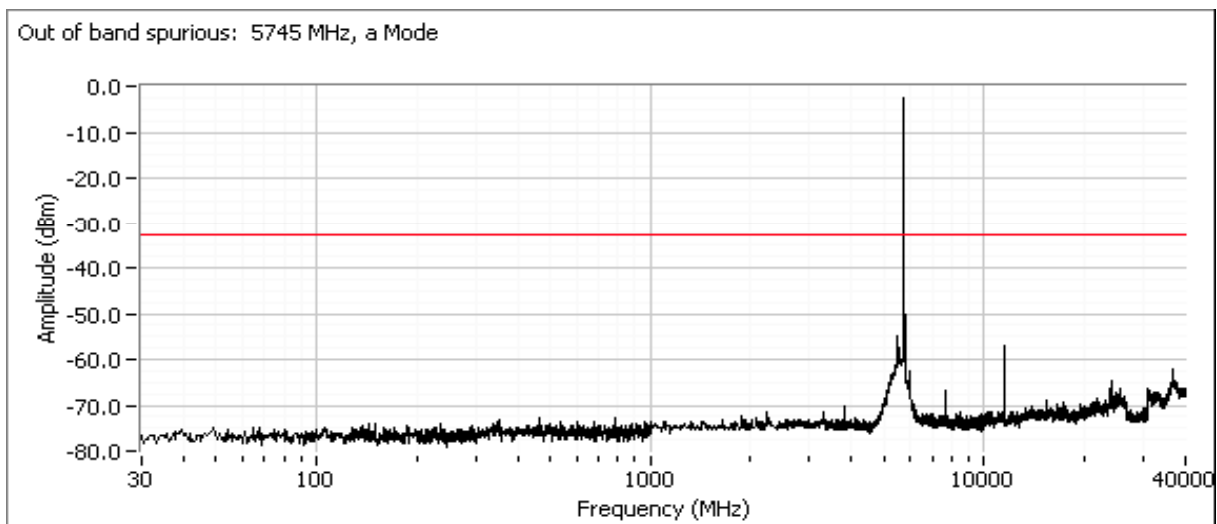
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

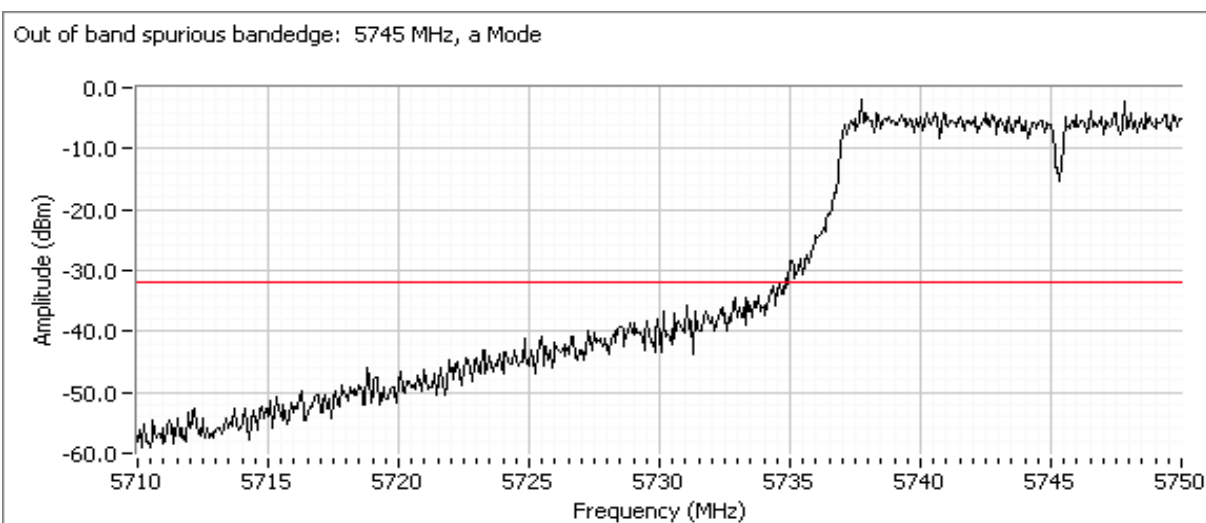
All measured using RB = 100kHz, VB = 300kHz.

Frequency (MHz)	Limit	Result
5745, Chain A	-30dBc	Pass
5785, Chain A	-30dBc	Pass
5825, Chain A	-30dBc	Pass

Plots for low channel, Chain A power setting = 26.5



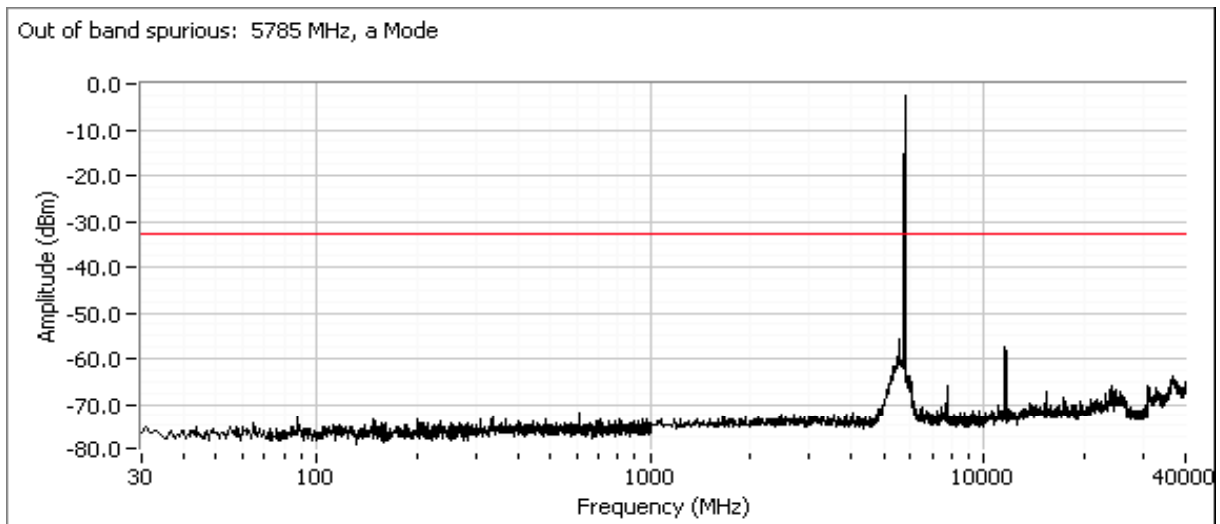
Additional plot from 5715 - 5755 MHz showing compliance with -30dBc at the band edge.



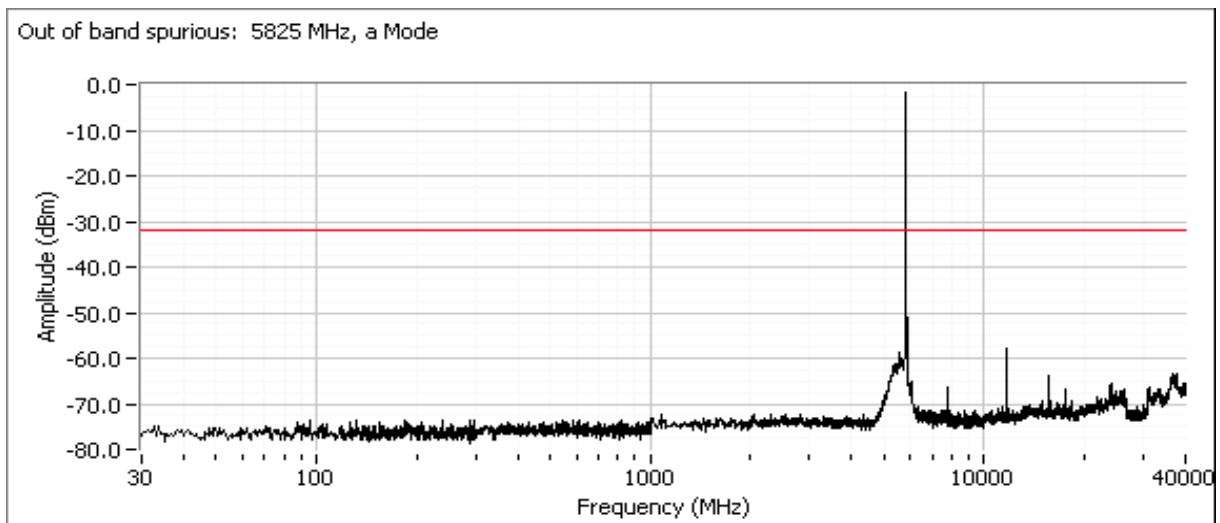
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

Plots for center channel, Chain A power setting = 27.0



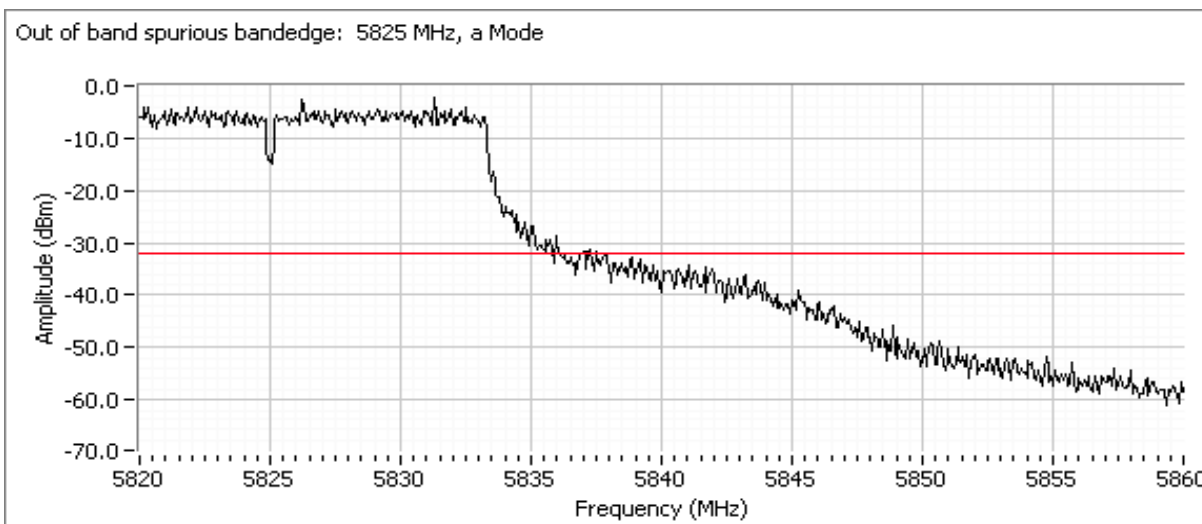
Plots for high channel, Chain A power setting = 28.0



Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #4: Out of Band Spurious Emissions

Additional plot from 5820 - 5860 MHz showing compliance with -30dBc at the band edge.



Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, PSD, Bandwidth and Spurious - 802.11n 20MHz

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: 4/14/2008
Test Engineer: Rafael Varelas
Test Location: FT Lab #1

Config. Used: 1
Config Change: None
EUT Voltage: Powered From Host System

General Test Configuration

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

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

Ambient Conditions:
Temperature: 22.5 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	12.6 dBm (18.2 mW)
2	Power spectral Density (PSD)	15.247(d)	Pass	-11.7 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	17.6 MHz
3	99% Bandwidth	RSS GEN	-	18.3 MHz
4	Antenna Conducted - Out of Band Spurious	15.247(b)	Pass	All emissions below the -30dBc limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

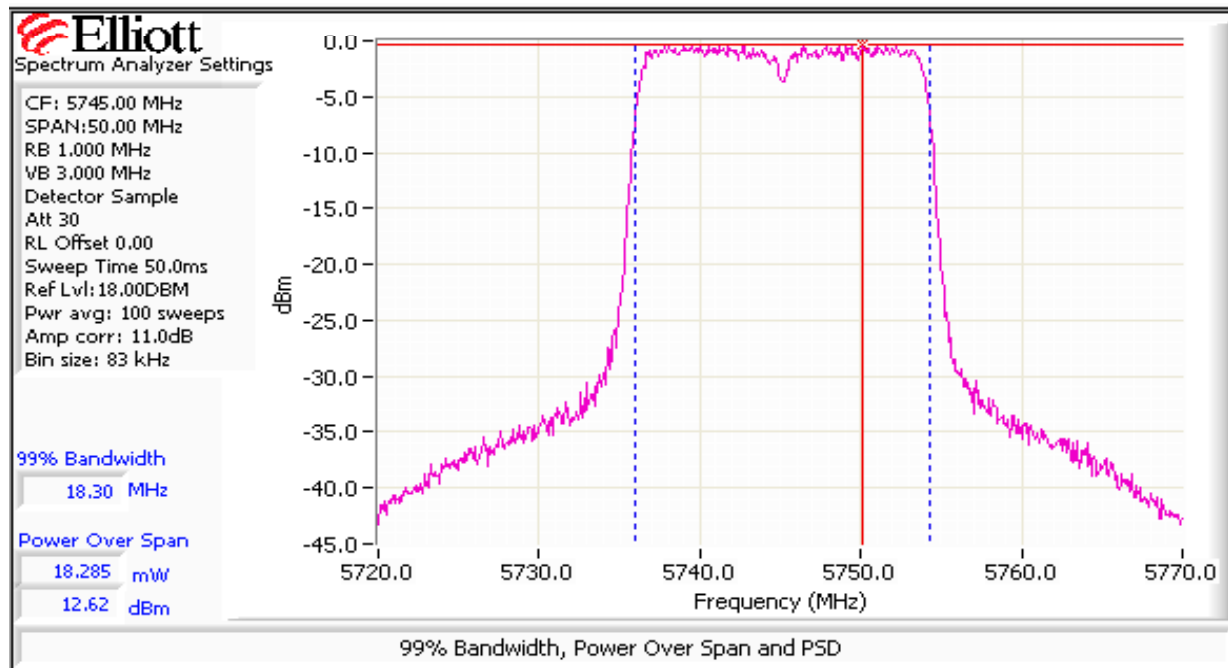
No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

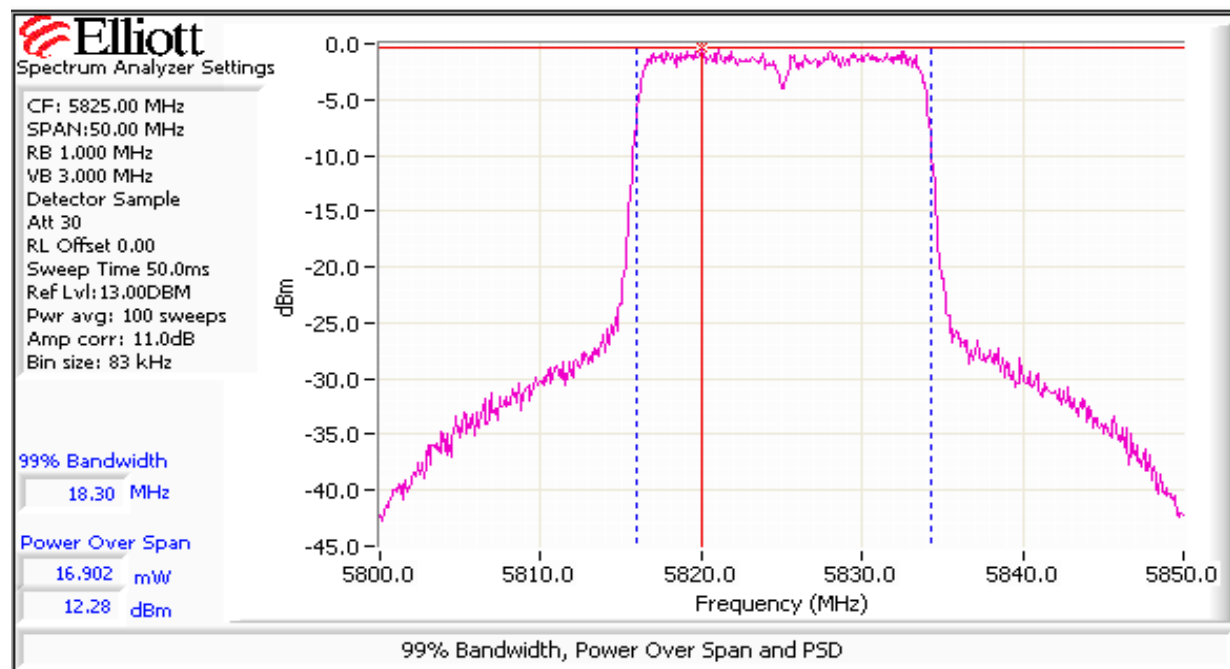
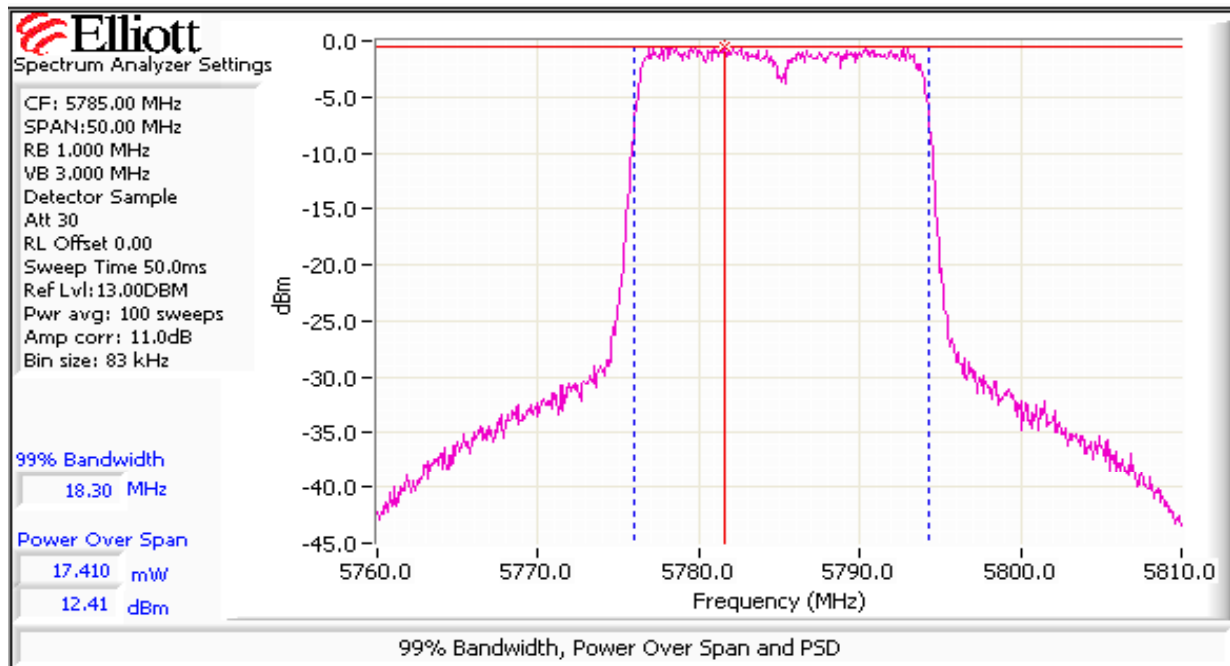
Run #1: Output Power

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Output Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
27.5	5745, Chain A	12.6	18.2	5.0	Pass	17.6	0.058	16.5	44.7
28.5	5785, Chain A	12.4	17.4	5.0	Pass	17.4	0.055	16.5	44.7
29.5	5825, Chain A	12.3	17.0	5.0	Pass	17.3	0.054	16.5	44.7

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz. Spurious limit is -30dBc because this method was used. The output power limit is 30dBm.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power sensor and is included for manufacturer's reference only.



Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A



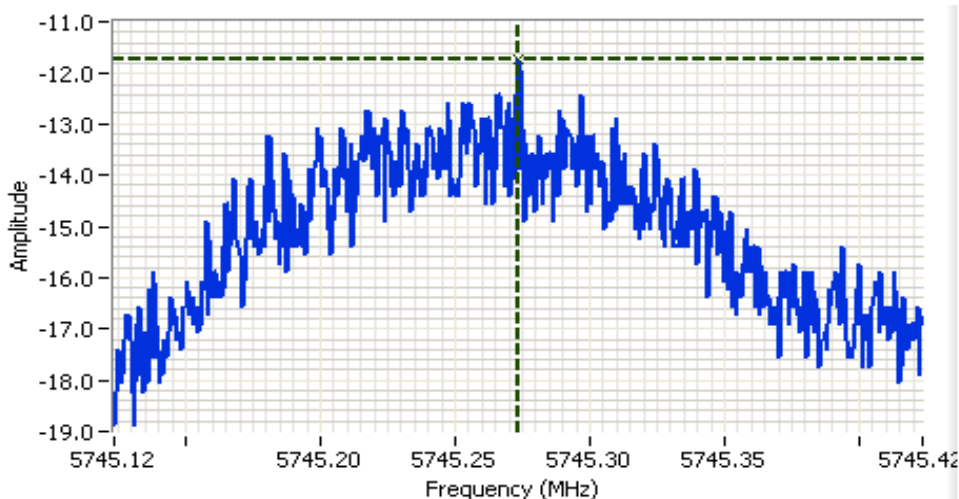
Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit dBm/3kHz	Result
		(dBm/3kHz) Note 1		
27.5	5745, Chain A	-11.7	8.0	Pass
28.5	5785, Chain A	-12.8	8.0	Pass
29.5	5825, Chain A	-13.2	8.0	Pass

Note 1:

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



Analyzer Settings

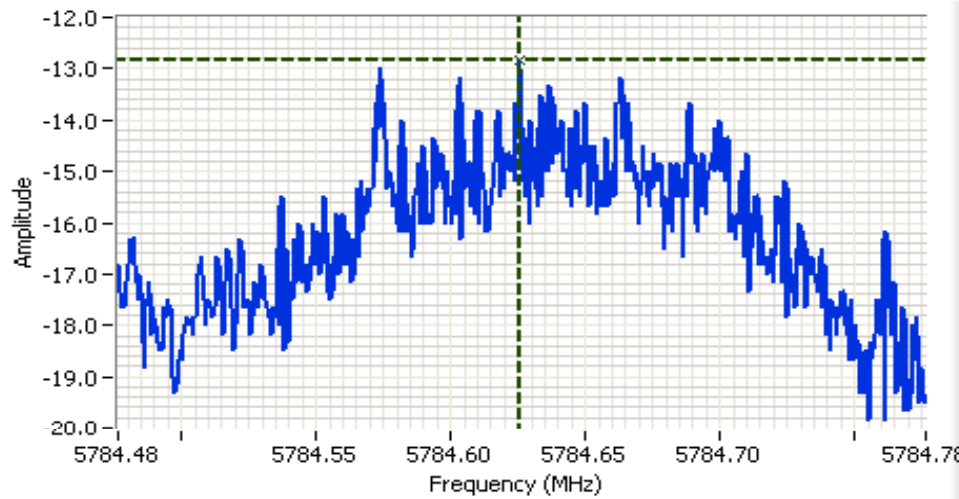
HP8564E,EMI
CF: 5745.27 MHz
SPAN: 300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector Sample
Att 30
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl: 22.60 DBM

Comments

PSD: -11.73 dBm/3kHz
Chain A

Cursor 1	5745.2734	-11.73			
	0.0000	0.00			

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A



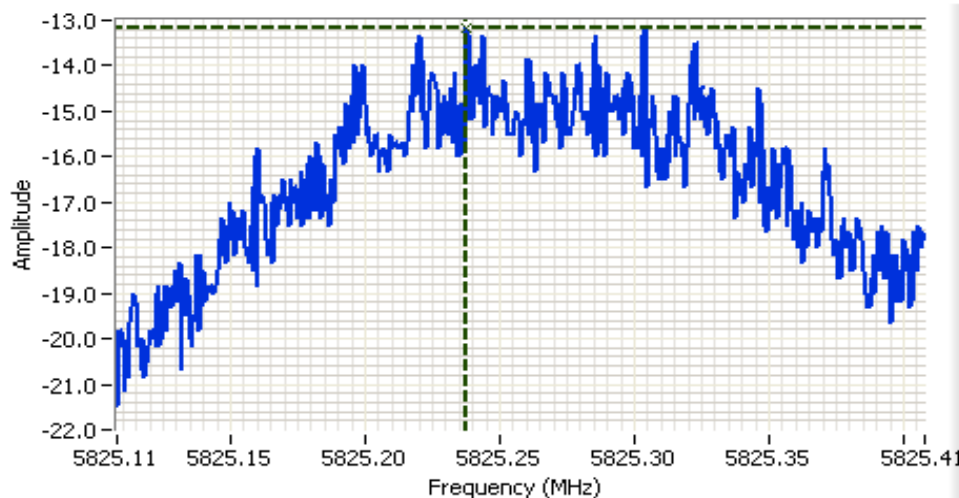
Analyzer Settings

HP8564E,EMI
CF: 5784.63 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector Sample
Att 30
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:24.00DBM

Comments

PSD: -12.83 dBm/3kHz

Cursor 1 5784.6255 -12.83



Analyzer Settings

HP8564E,EMI
CF: 5825.26 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector Sample
Att 30
RL Offset 11.00
Sweep Time 99.0s
Ref Lvl:24.00DBM

Comments

PSD: -13.17 dBm/3kHz

Cursor 1 5825.2378 -13.17

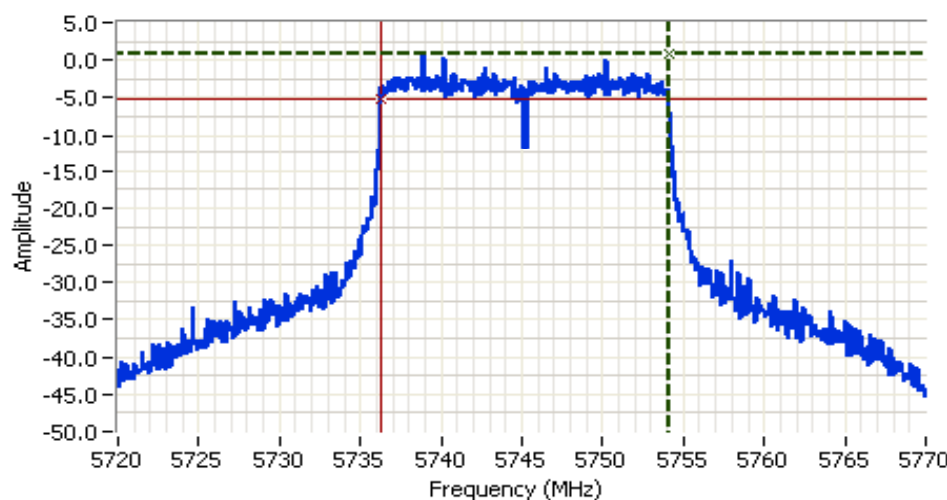


Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
27.5	5745, Chain A	100kHz	17.8	18.3
28.5	5785, Chain A	100kHz	17.7	18.3
29.5	5825, Chain A	100kHz	17.6	18.3

- Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB
- Note 2: Center channel of Chains B and C measured to verify no significant difference in signal bandwidth from Chain A.



Analyzer Settings

HP8564E,EMI
 CF: 5745.00 MHz
 SPAN:50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector Sample
 Att 30
 RL Offset 11.00
 Sweep Time 50.0ms
 Ref Lvl:22.60DBM

Comments

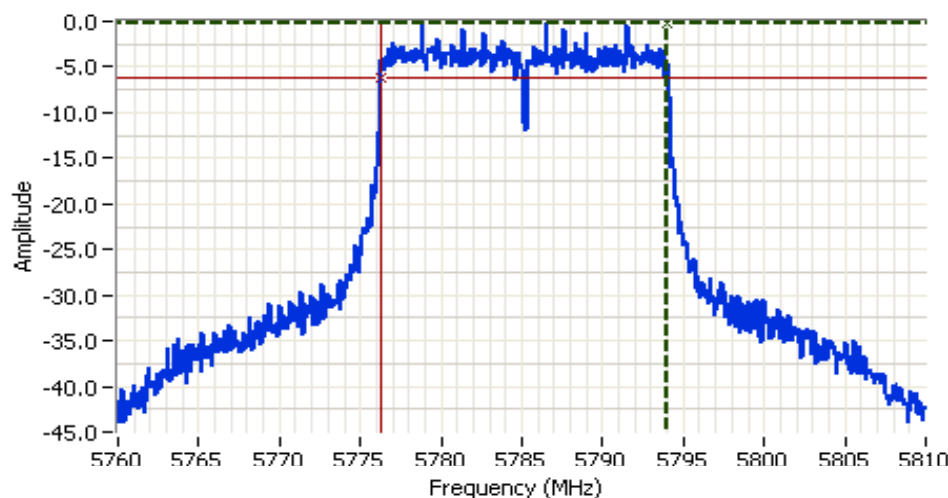
6dB Bandwidth:
 17.75 MHz

Chain A

Cursor 1	5754.0833	0.77	
Cursor 2	5736.3333	-5.23	

Delta Freq. 17.75
 Delta Amplitude 6.00

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A



Analyzer Settings

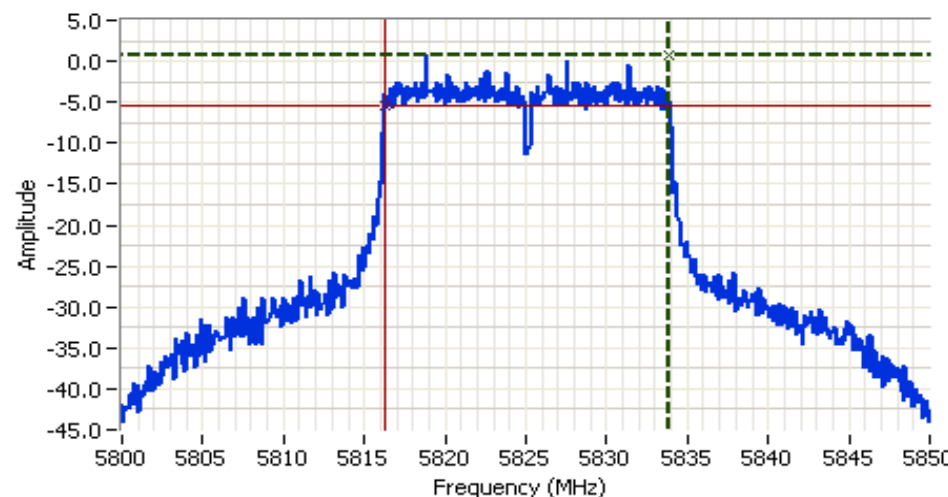
HP8564E,EMI
CF: 5785.00 MHz
SPAN:50.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 30
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:24.00DBM

Comments

6dB Bandwidth:
17.67 MHz

Cursor 1 5794.0000 -0.17
Cursor 2 5776.3333 -6.17

Delta Freq. 17.67
Delta Amplitude 6.00



Analyzer Settings

HP8564E,EMI
CF: 5825.00 MHz
SPAN:50.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 30
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:24.00DBM

Comments

6dB Bandwidth:
17.58 MHz

Cursor 1 5833.9167 0.67
Cursor 2 5816.3333 -5.33

Delta Freq. 17.58
Delta Amplitude 6.00



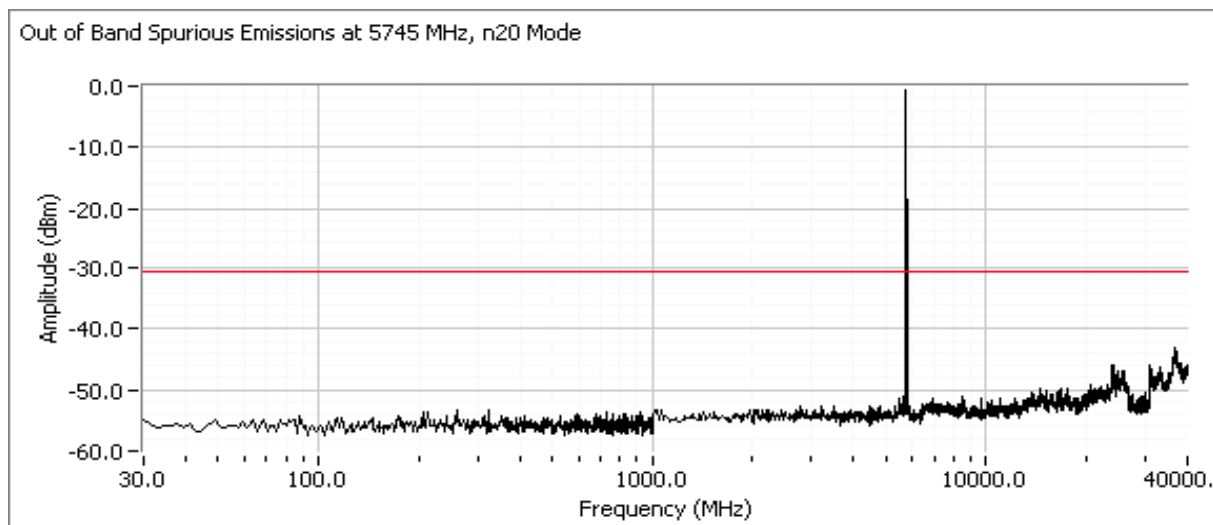
Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #4: Out of Band Spurious Emissions

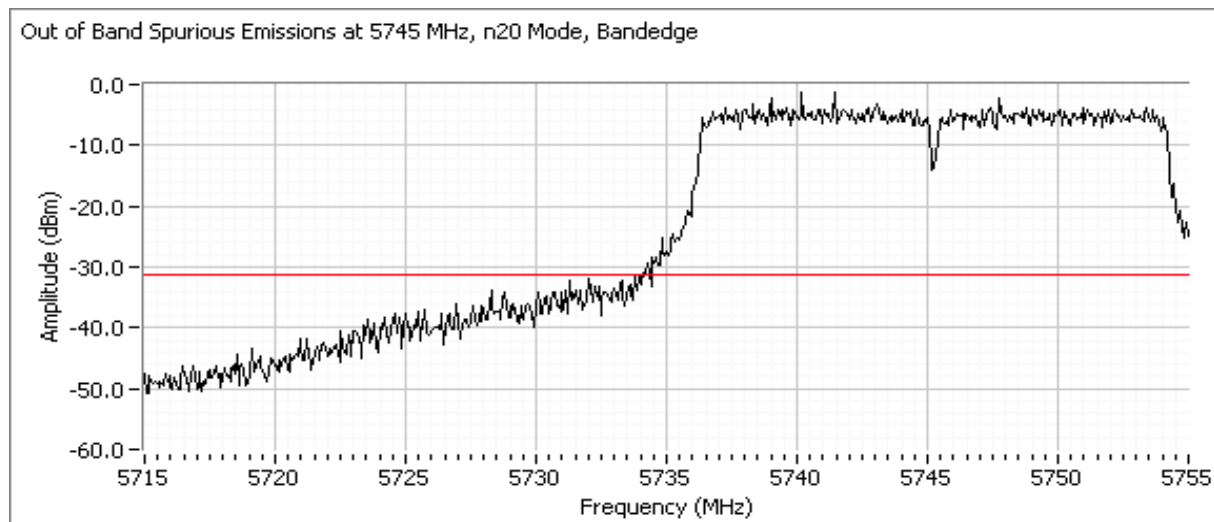
All measured using RB = 100kHz, VB = 300kHz.

Frequency (MHz)	Limit	Result
5745, Chain A	-30dBc	Pass
5785, Chain A	-30dBc	Pass
5825, Chain A	-30dBc	Pass

Plots for low channel, Chain A power setting(s) = 27.5

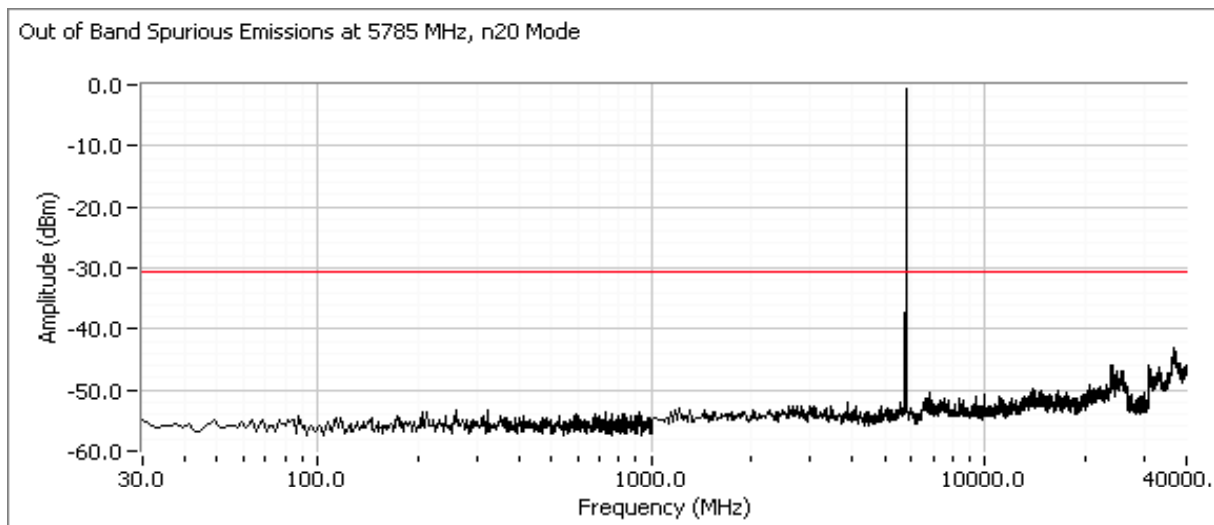


Additional plot from 5715 - 5755 MHz showing compliance with -30dBc at the band edge.

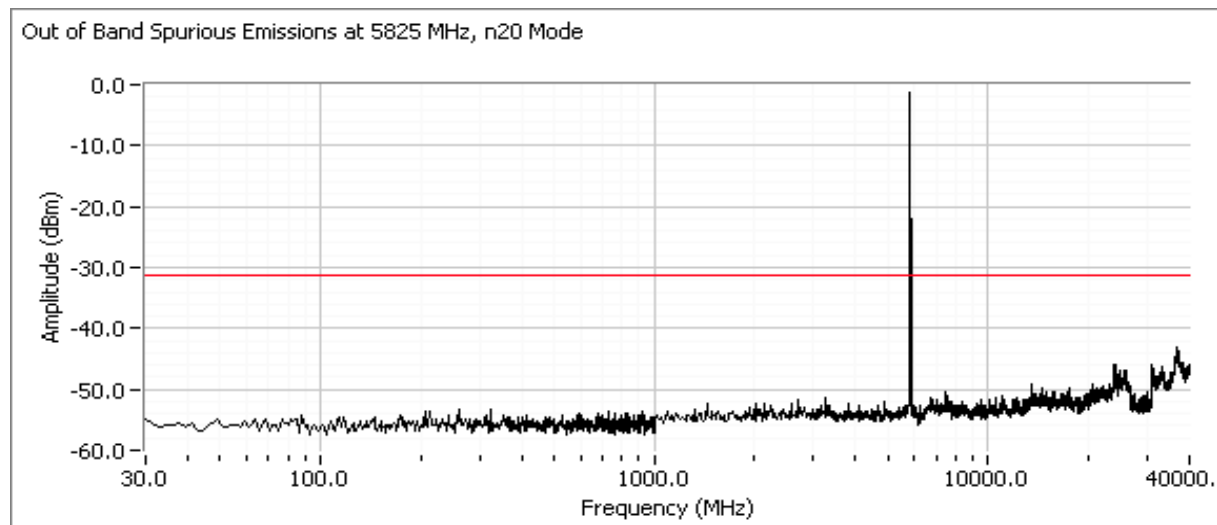


Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Plots for center channel, Chain A power setting(s) = 28.5

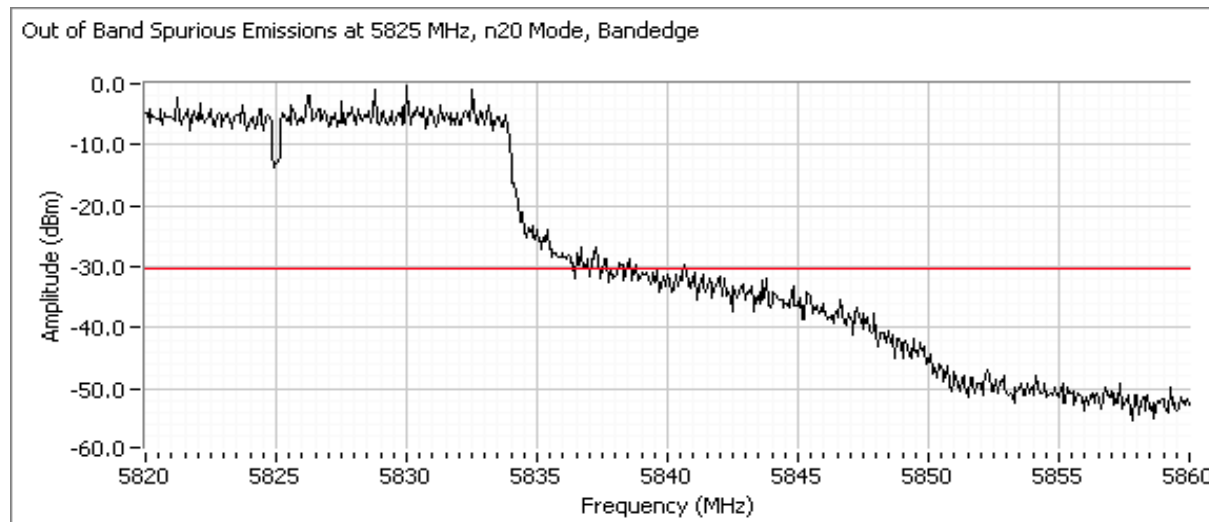


Plots for high channel, Chain A power setting(s) = 29.5



Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Additional plot from 5820 - 5860 MHz showing compliance with -30dBc at the band edge.



Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, PSD, Bandwidth and Spurious - 802.11n 40MHz

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: 4/14/2008
Test Engineer: Rafael Varelas
Test Location: FT Lab #1

Config. Used: 1
Config Change: None
EUT Voltage: Powered From Host System

General Test Configuration

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

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

Ambient Conditions:
Temperature: 22.5 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	13.2 dBm (20.9mW)
2	Power spectral Density (PSD)	15.247(d)	Pass	-16.3 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	35.3 MHz
3	99% Bandwidth	RSS GEN	-	36.6 MHz
4	Antenna Conducted - Out of Band Spurious	15.247(b)	Pass	All emissions below the -30dBc limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

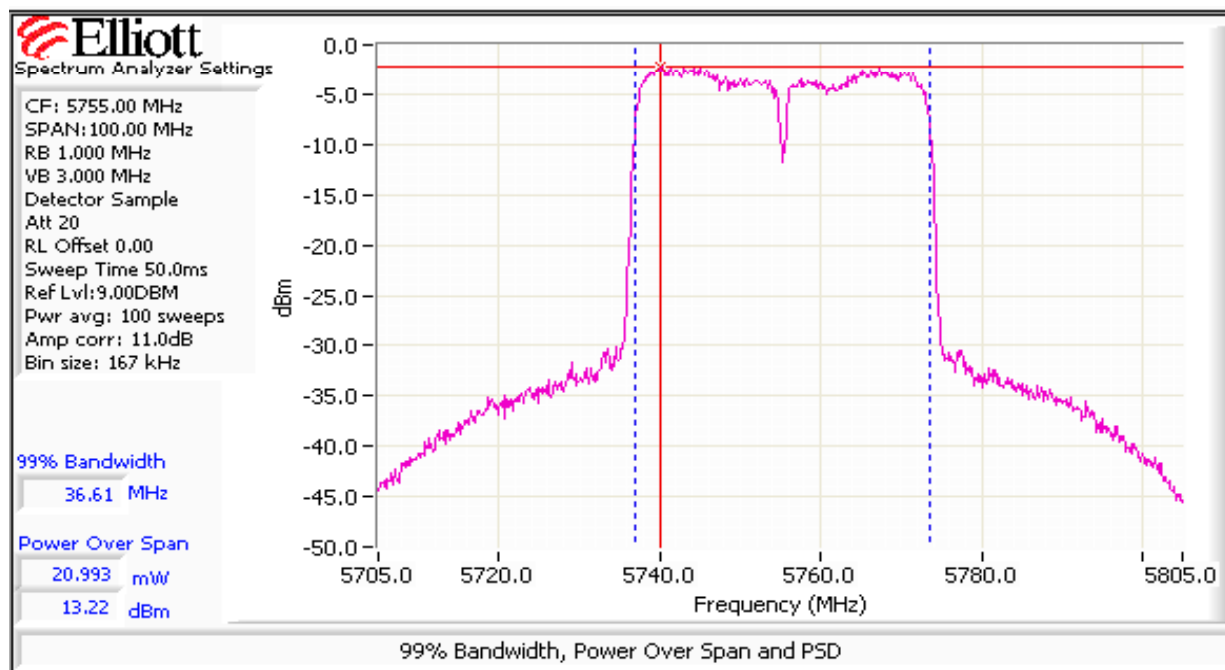
No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

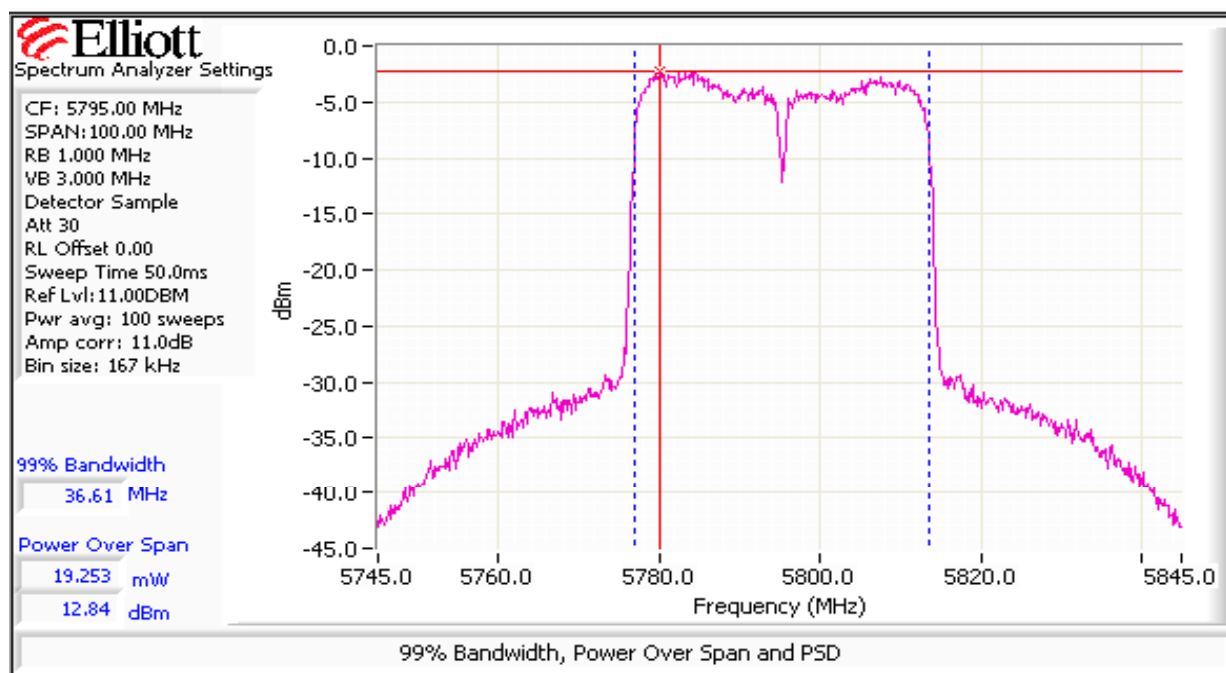
Run #1: Output Power

Power Setting ²	Frequency (MHz)	Output Power (dBm) ¹	mW	Antenna Gain (dBi)	Result	EIRP ^{Note 2} dBm	W	Output Power (dBm) ³	mW
27.5	5755, Chain A	13.2	20.9	5.0	Pass	18.2	0.066	16.5	44.7
28.5	5795, Chain A	12.8	19.1	5.0	Pass	17.8	0.060	16.5	44.7

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz. Spurious limit is -30dBc because this method was used. The output power limit is 30dBm.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power sensor and is included for manufacturer's reference only.



Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

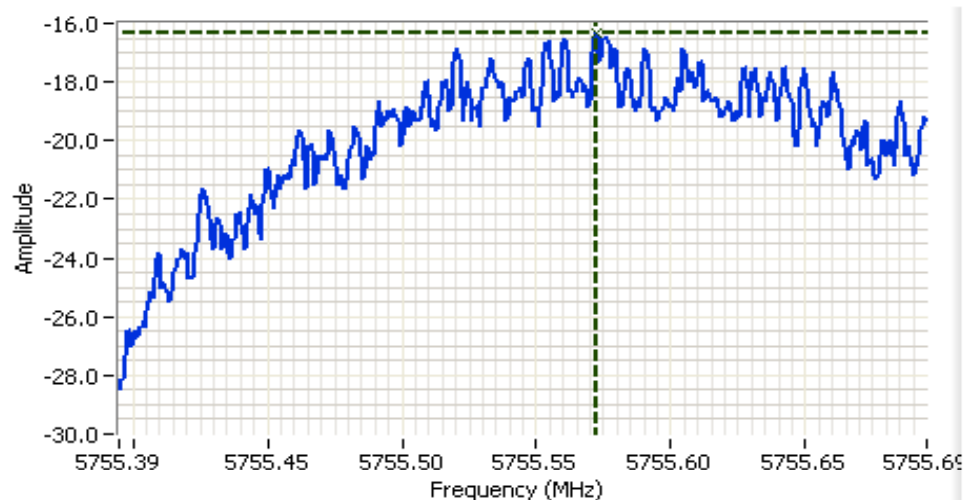


Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) ^{Note 1}	Limit dBm/3kHz	Result
27.5	5755, Chain A	-16.3	8.0	Pass
28.5	5795, Chain A	-16.5	8.0	Pass

Note 1:	Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.
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Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

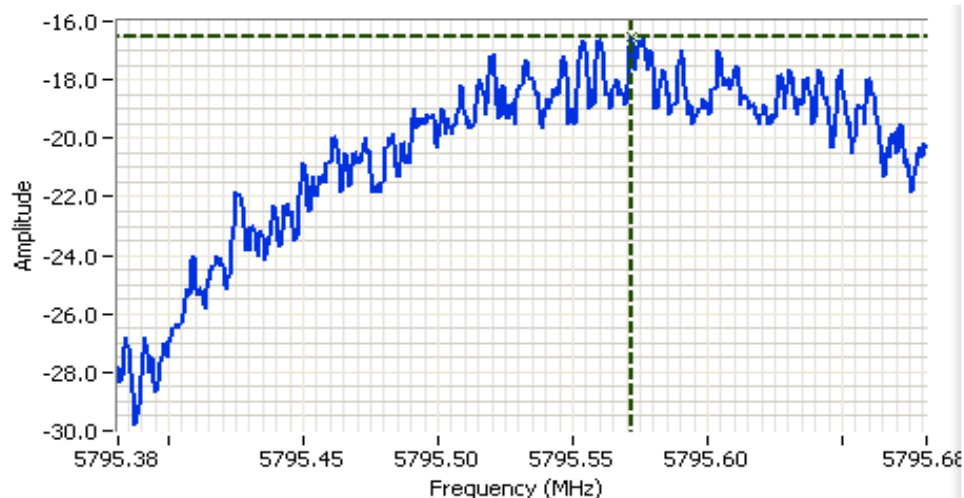
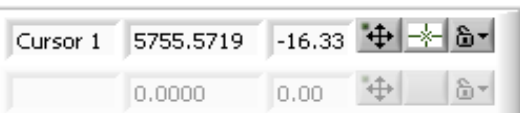


Analyzer Settings

HP8564E,EMI
CF: 5755.54 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:20.00DBM

Comments

PSD: -16.33 dBm/kHz

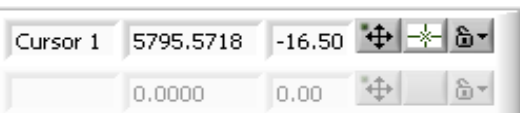


Analyzer Settings

HP8564E,EMI
CF: 5795.53 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector Sample
Att 30
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:22.00DBM

Comments

PSD: -16.5 dBm/3kHz

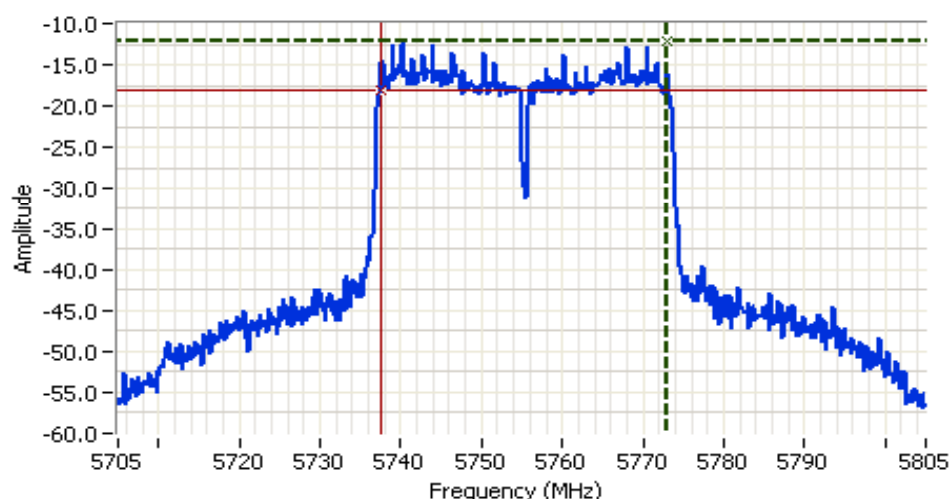


Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
27.5	5755, Chain A	100kHz	35.33	36.6
28.5	5795, Chain A	100kHz	36.2	36.6

- Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB
- Note 2: Center channel of Chains B and C measured to verify no significant difference in signal bandwidth from Chain A.



Analyzer Settings

HP8564E,EMI
 CF: 5755.00 MHz
 SPAN: 100.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector Sample
 Att 20
 RL Offset 0.00
 Sweep Time 55.0ms
 Ref Lvl:9.00DBM

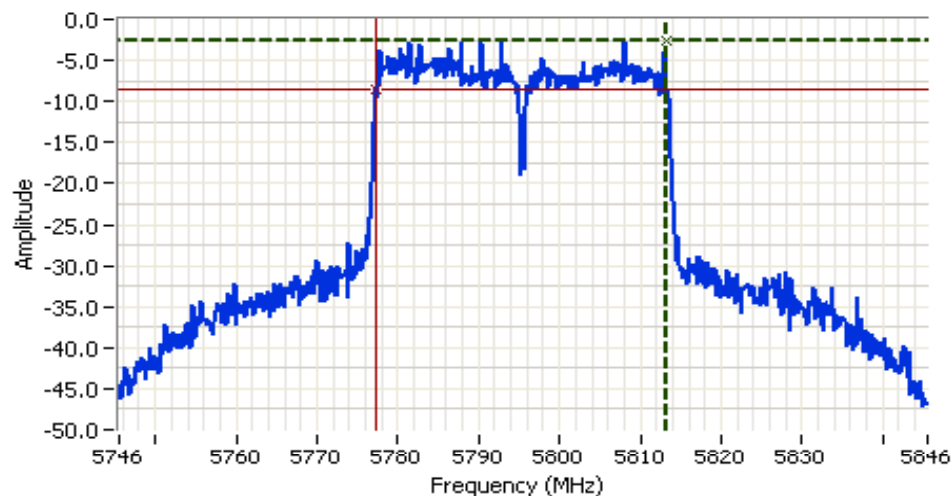
Comments

6dB Bandwidth:
 35.33 MHz

Cursor 1	5773.0000	-12.17	
Cursor 2	5737.6667	-18.17	

Delta Freq. 35.33
 Delta Amplitude 6.00

Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A



Analyzer Settings
HP8564E,EMI
CF: 5795.53 MHz
SPAN:100.00 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 55.0ms
Ref Lvl:19.70DBM
Comments
6dB Bandwidth: 36.17 MHz

Cursor 1	5813.3646	-2.63	
Cursor 2	5777.1979	-8.63	

Delta Freq.	36.17
Delta Amplitude	6.00



Run #4: Out of Band Spurious Emissions

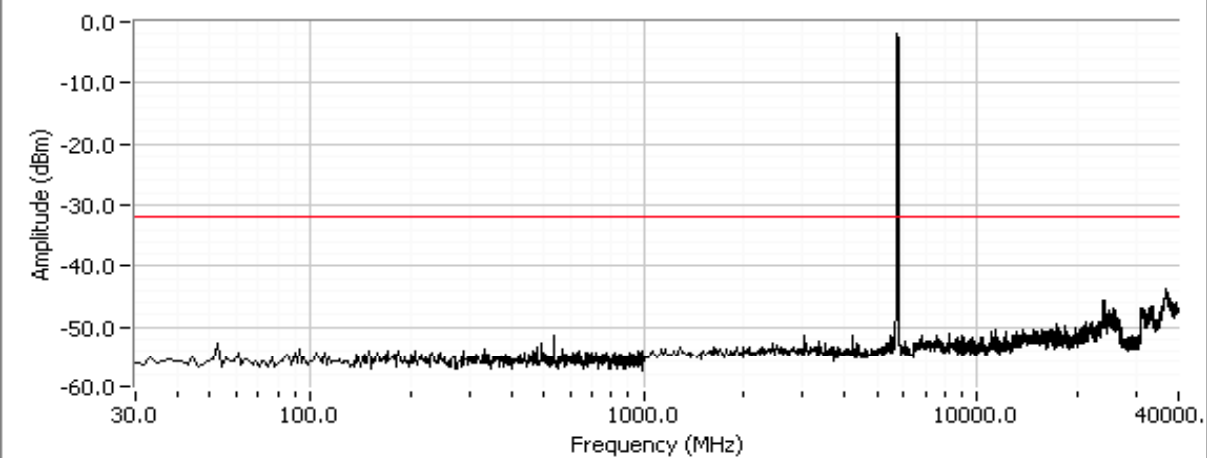
All measured using RB = 100kHz, VB = 300kHz.

Frequency (MHz)	Limit	Result
5755, Chain A	-30dBc	Pass
5795, Chain A	-30dBc	Pass

Client: Intel	Job Number: J70979
Model: 512AN_MMW, 512BG_MMW	T-Log Number: T71036
Contact: Robert Paxman	Account Manager: Dean Eriksen
Standard: FCC 15.247 / RSS -210 RF Port	Class: N/A

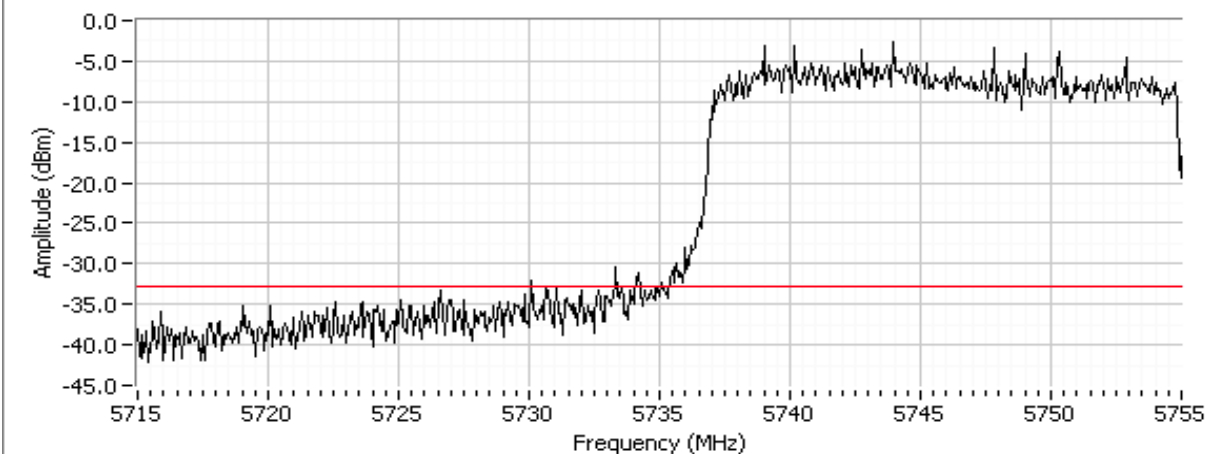
Plots for low channel, Chain A power setting(s) = 27.5

Out of Band Spurious Emissions at 5755 MHz, n40 Mode



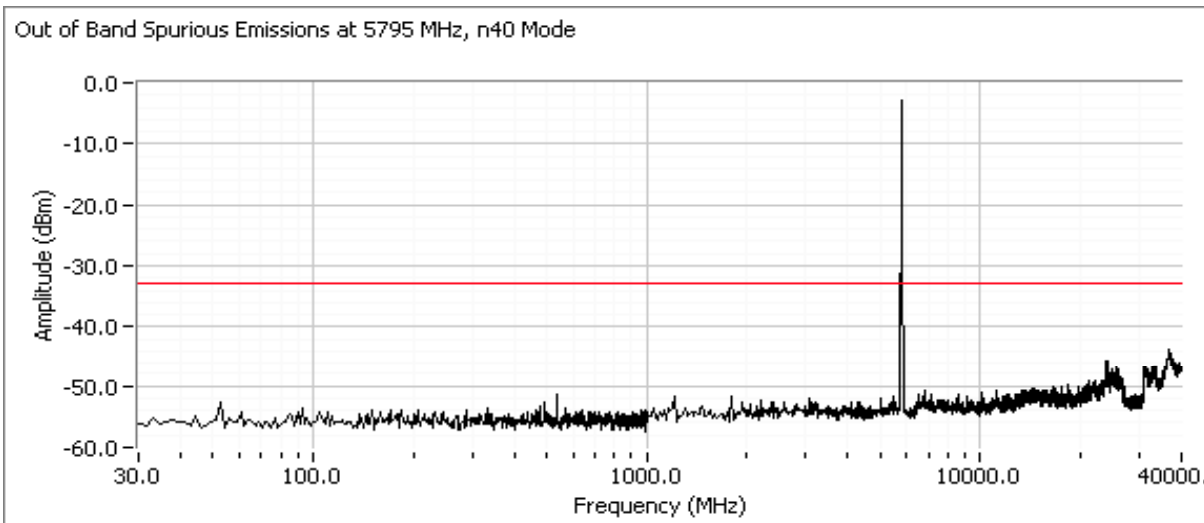
Additional plot from 5715 - 5755 MHz showing compliance with -30dBc at the band edge.

Out of Band Spurious Emissions at 5755 MHz, n40 Mode, Bandedge

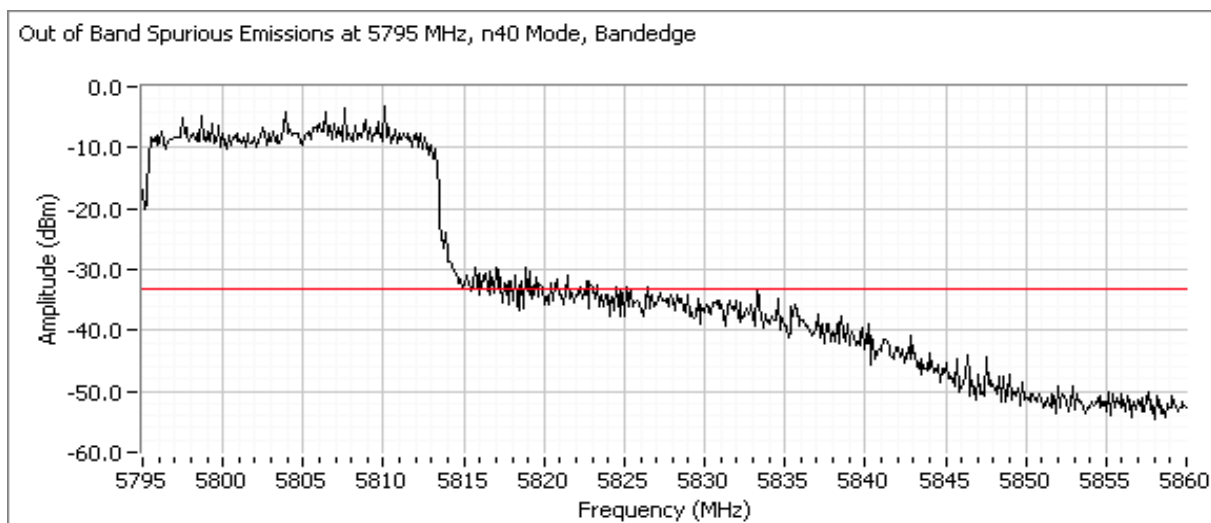


Client:	Intel	Job Number:	J70979
Model:	512AN_MMW, 512BG_MMW	T-Log Number:	T71036
Contact:	Robert Paxman	Account Manager:	Dean Eriksen
Standard:	FCC 15.247 / RSS -210 RF Port	Class:	N/A

Plots for high channel, Chain A power setting(s) = 28.5



Additional plot from 5820 - 5860 MHz showing compliance with -30dBc at the band edge.





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
		Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		-
Emissions Standard(s):	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS
Immunity Standard(s):	-	Environment:	-

EMC Test Data - DTS Radiated Emissions and AC Conducted Emissions

For The

Intel

Model

512an MMW

Date of Last Test: 4/21/2008

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Conducted Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

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

Date of Test: 4/21/2008
Test Engineer: Peter Sales
Test Location: Fremont Chamber #5

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

General Test Configuration

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

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 37 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 120V/60Hz	FCC 15.109 / FCC 15.209 / RSS 210	Pass	21.4dBμV @ 24.000MHz (-28.6dB)

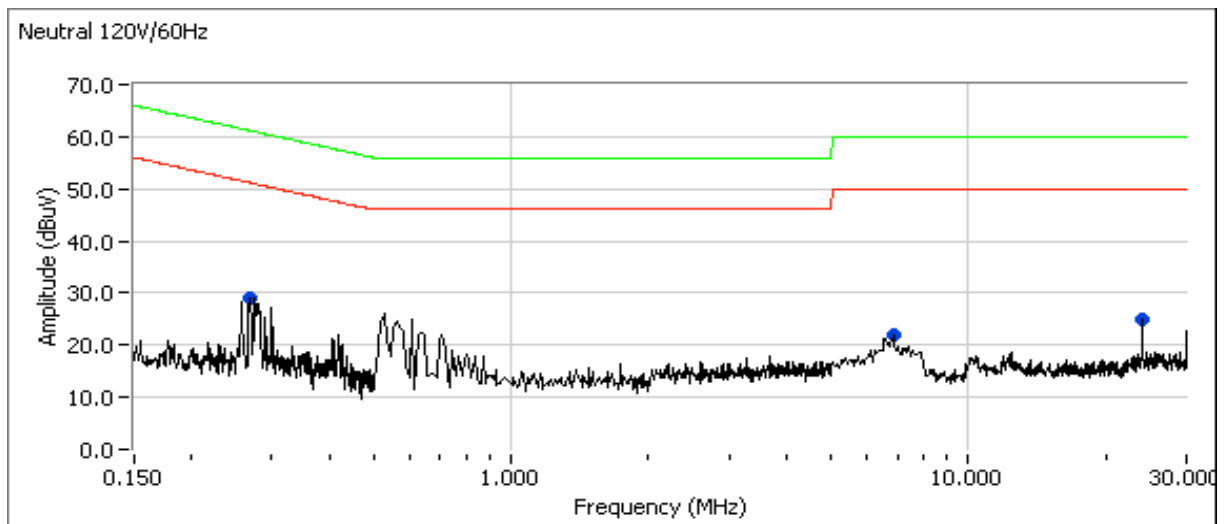
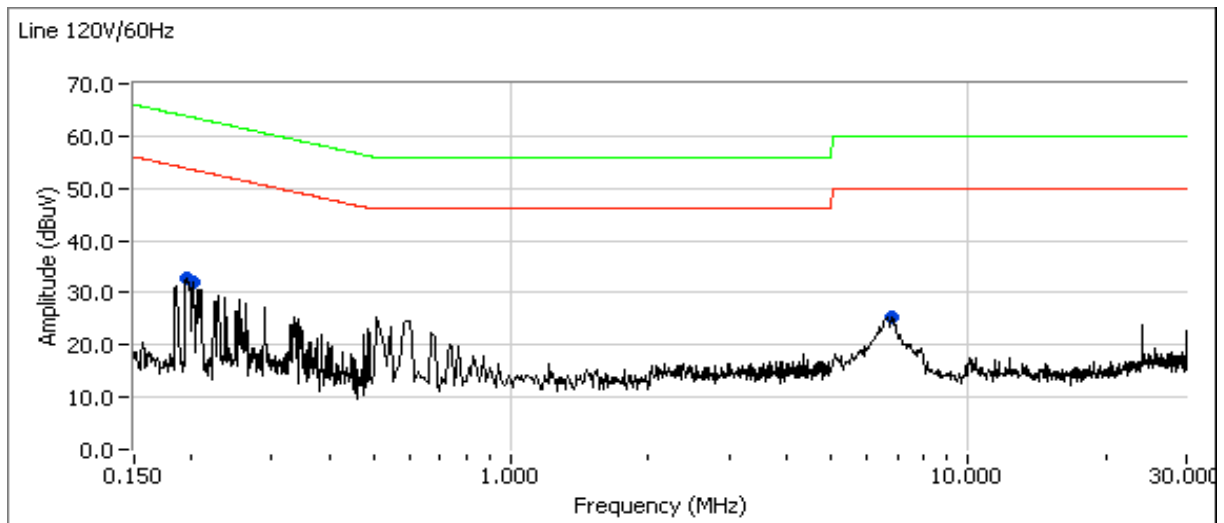
Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: DTS

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

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



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

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

Frequency MHz	Level dB μ V	AC Line	FCC 15.109/15.209 Limit	Margin	Detector QP/Ave	Comments
0.195	32.9	Line 1	53.8	-20.9	Peak	
0.201	31.9	Line 1	53.5	-21.6	Peak	
0.269	29.0	Neutral	51.2	-22.2	Peak	
6.801	25.5	Line 1	50.0	-24.5	Peak	
24.000	24.9	Neutral	50.0	-25.1	Peak	
6.826	21.9	Neutral	50.0	-28.1	Peak	

Final quasi-peak and average readings

Frequency MHz	Level dB μ V	AC Line	FCC 15.109/15.209 Limit	Margin	Detector QP/Ave	Comments
24.000	21.4	Neutral	50.0	-28.6	AVG	
6.801	16.7	Line 1	50.0	-33.3	AVG	
24.000	23.4	Neutral	60.0	-36.6	QP	
0.195	26.0	Line 1	63.8	-37.8	QP	
6.801	22.2	Line 1	60.0	-37.8	QP	
0.201	25.4	Line 1	63.6	-38.2	QP	
6.826	10.5	Neutral	50.0	-39.5	AVG	
0.269	21.0	Neutral	61.1	-40.1	QP	
0.269	10.5	Neutral	51.1	-40.6	AVG	
0.195	10.9	Line 1	53.8	-42.9	AVG	
0.201	10.7	Line 1	53.6	-42.9	AVG	
6.826	15.4	Neutral	60.0	-44.6	QP	



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Transmitter/Receiver Radiated Spurious Emissions, 30 - 1000 MHz Receiver Spurious Emissions, 1 - 18 GHz

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: 4/16/2008
Test Engineer: John Caizzi & Ben Jing
Test Location: FT#3

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

General Test Configuration

The EUT and all 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: 20 °C
Rel. Humidity: 37 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1 Receiver/Transmitter	30 - 1000MHz, Preliminary - Tx/Rx Modes	RSS GEN / FCC 15.107	Pass	43.4dBμV/m @ 108.287MHz (-0.1dB)
2	RE, 30 - 1000MHz, Maximized Emissions	RSS GEN / FCC 15.107	Pass	43.4dBμV/m @ 108.287MHz (-0.1dB)
3 - Single Receiver chain	RE, 1000 - 18000 MHz, Maximized Emissions	RSS GEN	Pass	50.3dBμV/m @ 3000.3MHz (-3.7dB)
4 - All Receiver chains	RE, 1000 - 18000 MHz, Maximized Emissions	RSS GEN	Pass	50.5dBμV/m @ 3000.3MHz (-3.5dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

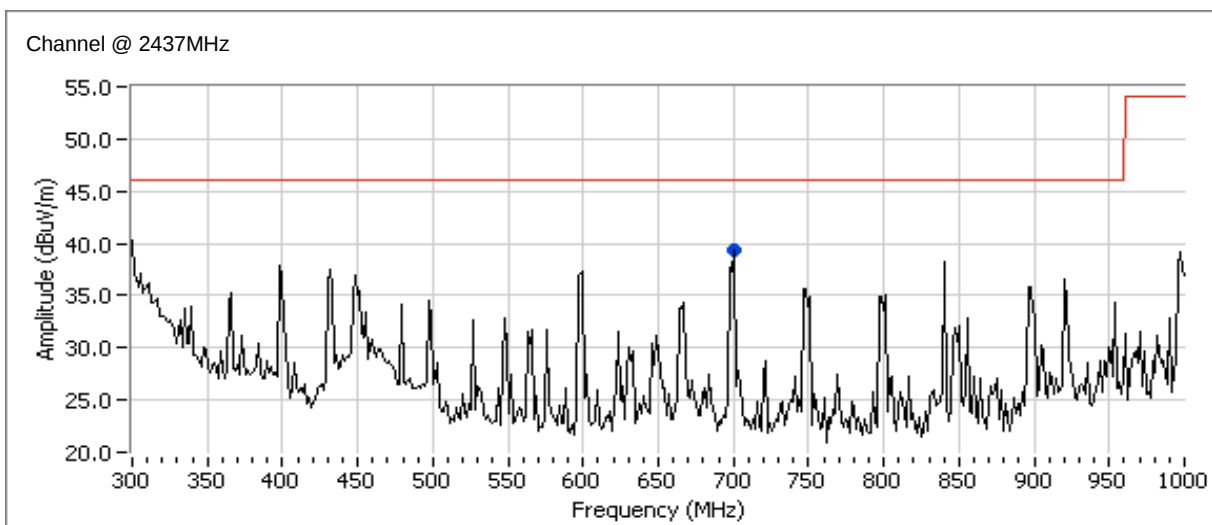
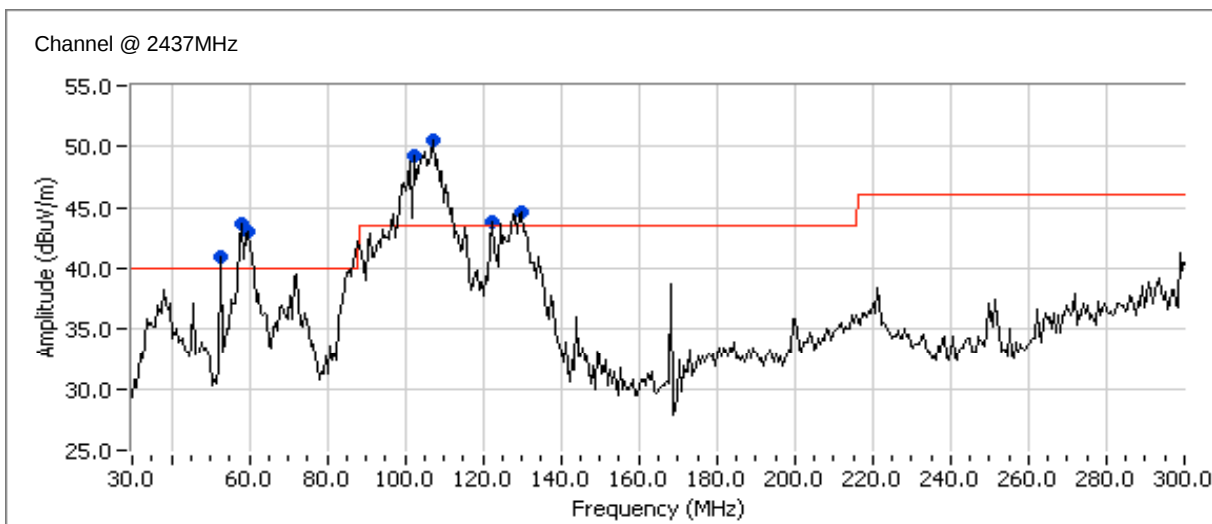


EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

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

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
30 - 1000 MHz	3	3	0.0





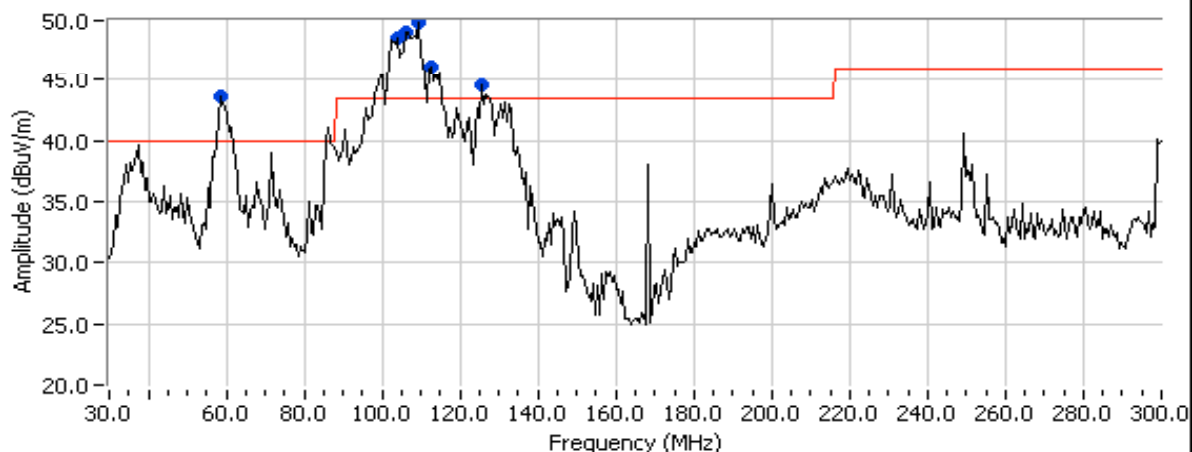
EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

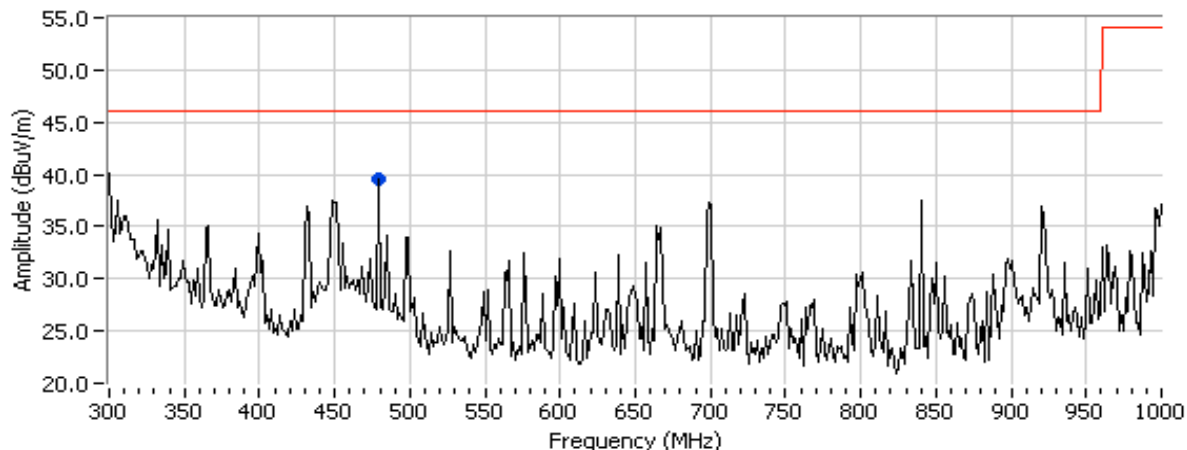
Run #1a Receiver tuned to 2437 MHz, all chains active

Frequency	Level	Pol	FCC 15.209/RSS 210		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
108.287	43.4	H	43.5	-0.1	QP	24	2.5	
101.489	39.9	H	43.5	-3.6	QP	38	3.0	
58.620	36.4	V	40.0	-3.6	QP	129	2.5	
58.789	34.1	V	40.0	-5.9	QP	274	1.0	
128.792	37.0	H	43.5	-6.5	QP	166	2.5	
123.411	35.4	H	43.5	-8.1	QP	129	2.5	
698.557	33.3	H	46.0	-12.7	QP	116	1.5	
53.878	21.9	V	40.0	-18.1	QP	292	2.0	

Channel @ 5785MHz



Channel @ 5785MHz





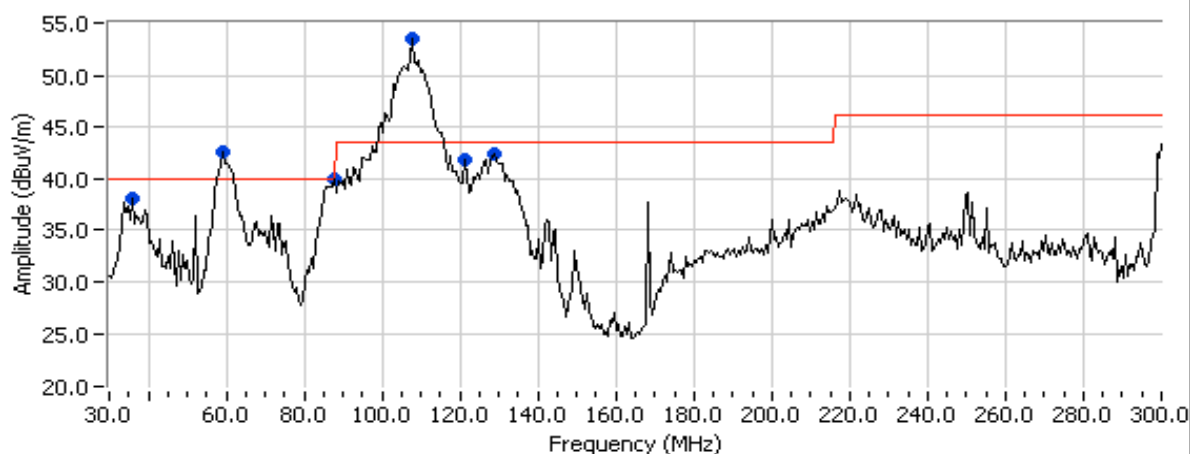
EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

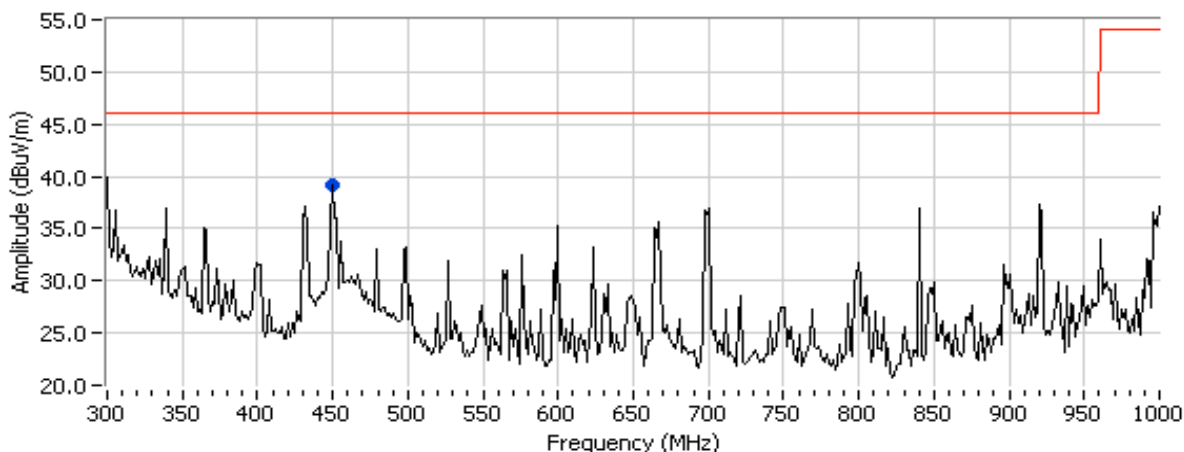
Run #1b Receiver tuned to 5785 MHz, all chains active

Frequency	Level	Pol	FCC 15.209/RSS 210		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
104.631	42.8	H	43.5	-0.7	QP	22	2.5	
107.984	42.1	H	43.5	-1.4	QP	227	2.5	
107.692	41.3	H	43.5	-2.2	QP	222	3.5	
58.992	37.6	H	40.0	-2.4	QP	194	3.5	
112.043	39.4	H	43.5	-4.1	QP	209	3.5	
126.749	36.6	H	43.5	-6.9	QP	141	1.5	
480.005	29.8	H	46.0	-16.2	QP	163	2.5	

Channel @ 2437MHz



Channel @ 2437MHz





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Run #1c Transmitter tuned to 2437 MHz, 802.11b mode

Frequency	Level	Pol	FCC 15.209/RSS 210		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
107.030	41.7	H	43.5	-1.8	QP	7	3.0	
59.474	31.8	H	40.0	-8.2	QP	211	3.0	
130.034	35.2	V	43.5	-8.3	QP	120	1.5	
87.308	29.3	H	40.0	-10.7	QP	16	2.5	
34.981	29.3	V	40.0	-10.7	QP	38	1.0	
449.923	33.2	H	46.0	-12.8	QP	205	1.0	
122.018	29.3	V	43.5	-14.2	QP	268	1.0	

Note 1:	Scans demonstrate that the emissions below 1GHz independent of the transmitter's operating frequency and mode (tx, Rx, modulation)
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Run #2: Maximized Readings From Run #1

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
30 - 1000 MHz	3	3	0.0

Frequency	Level	Pol	FCC 15.209/RSS 210		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
58.620	36.4	V	40.0	-3.6	QP	129	2.5	
58.789	34.1	V	40.0	-5.9	QP	274	1.0	
101.489	39.9	H	43.5	-3.6	QP	38	3.0	
108.287	43.4	H	43.5	-0.1	QP	24	2.5	
123.411	35.4	H	43.5	-8.1	QP	129	2.5	
128.792	37.0	H	43.5	-6.5	QP	166	2.5	



EMC Test Data

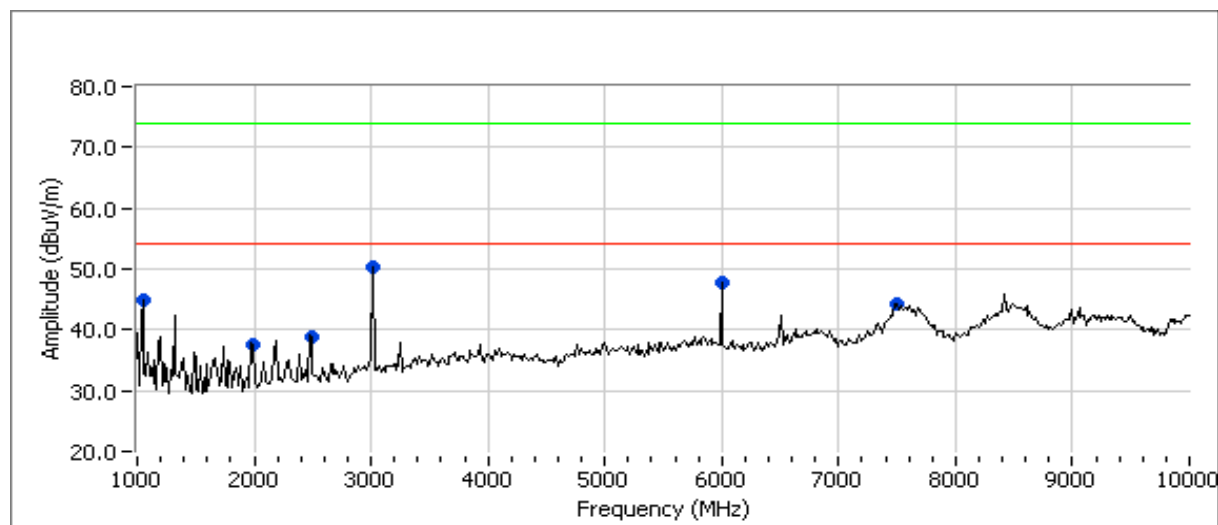
Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Run #3: Maximized readings, 1000 - 8000 MHz, Single Receiver Active

Receiver Tuned to 2437 MHz - Single chain active

Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1047.520	27.6	V	54.0	-26.4	AVG	205	1.3	
1991.590	29.8	V	54.0	-24.2	AVG	212	1.3	
2490.190	33.5	V	54.0	-20.5	AVG	179	1.0	
3000.310	50.1	V	54.0	-3.9	AVG	202	1.0	
6000.750	43.7	V	54.0	-10.3	AVG	246	1.6	
7566.920	37.8	H	54.0	-16.2	AVG	318	1.0	
1047.520	44.6	V	74.0	-29.4	PK	205	1.3	
1991.590	45.3	V	74.0	-28.7	PK	212	1.3	
2490.190	50.3	V	74.0	-23.7	PK	179	1.0	
3000.310	54.5	V	74.0	-19.5	PK	202	1.0	
6000.750	49.6	V	74.0	-24.4	PK	246	1.6	
7566.920	49.2	H	74.0	-24.8	PK	318	1.0	

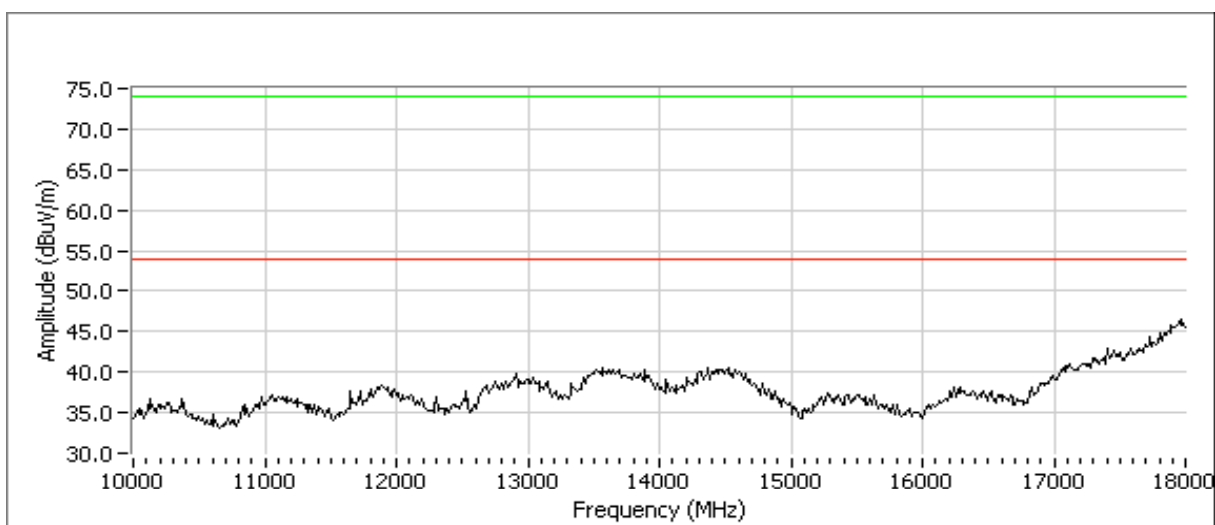
Note 1: Above 1 GHz, the limit is for an average measurement. In addition, the peak value of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS



Receiver Tuned to 5785 MHz - Single chain active

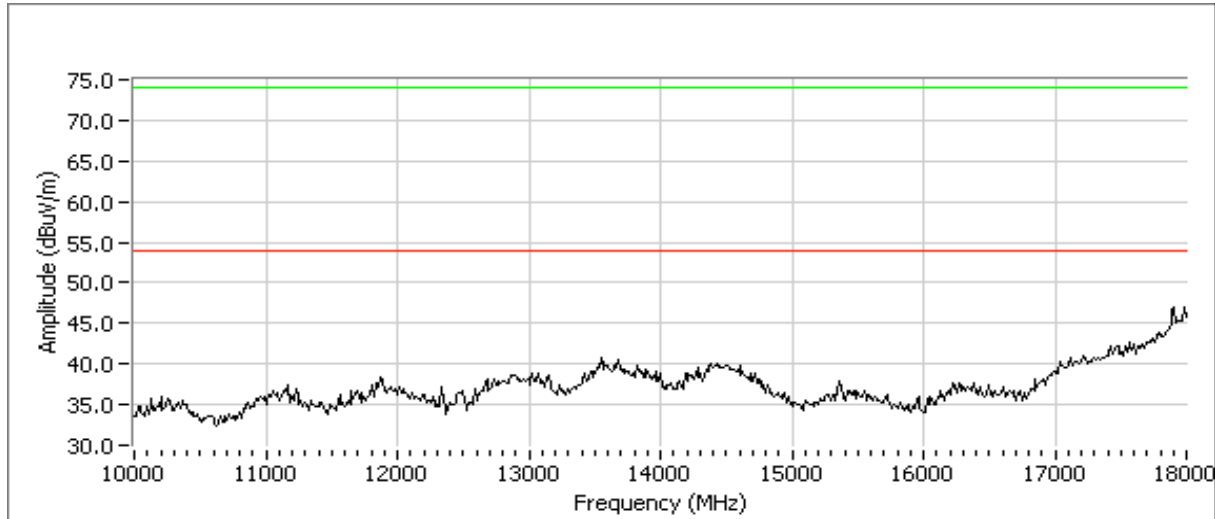
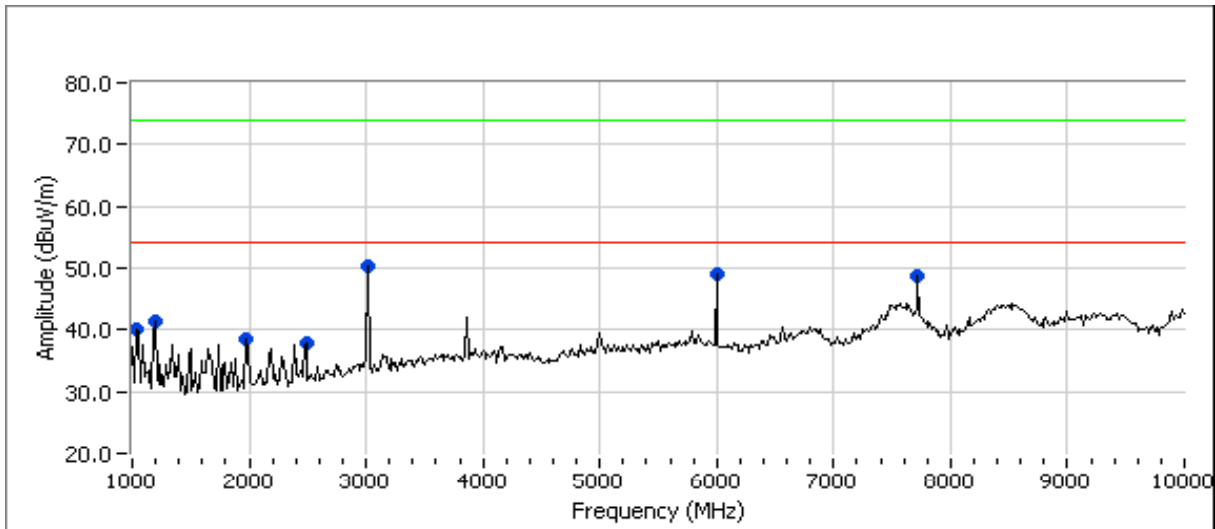
Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1196.260	31.2	V	54.0	-22.8	AVG	243	1.0	
3000.260	50.3	V	54.0	-3.7	AVG	200	1.0	
7713.440	39.4	V	54.0	-14.6	AVG	238	1.3	
1046.234	43.2	V	54.0	-10.8	Peak	217	1.3	Pk Reading average limit
1990.580	41.4	V	54.0	-12.6	Peak	0	1.0	Pk Reading average limit
2489.010	43.2	V	54.0	-10.8	Peak	164	1.0	Pk Reading average limit
6000.010	47.2	V	54.0	-6.8	Peak	224	1.0	Pk Reading average limit
1196.260	47.5	V	74.0	-26.5	PK	243	1.0	
3000.260	53.6	V	74.0	-20.4	PK	200	1.0	
7713.440	50.0	V	74.0	-24.0	PK	238	1.3	

Note 1: Above 1 GHz, the limit is for an average measurement. In addition, the peak value of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS





EMC Test Data

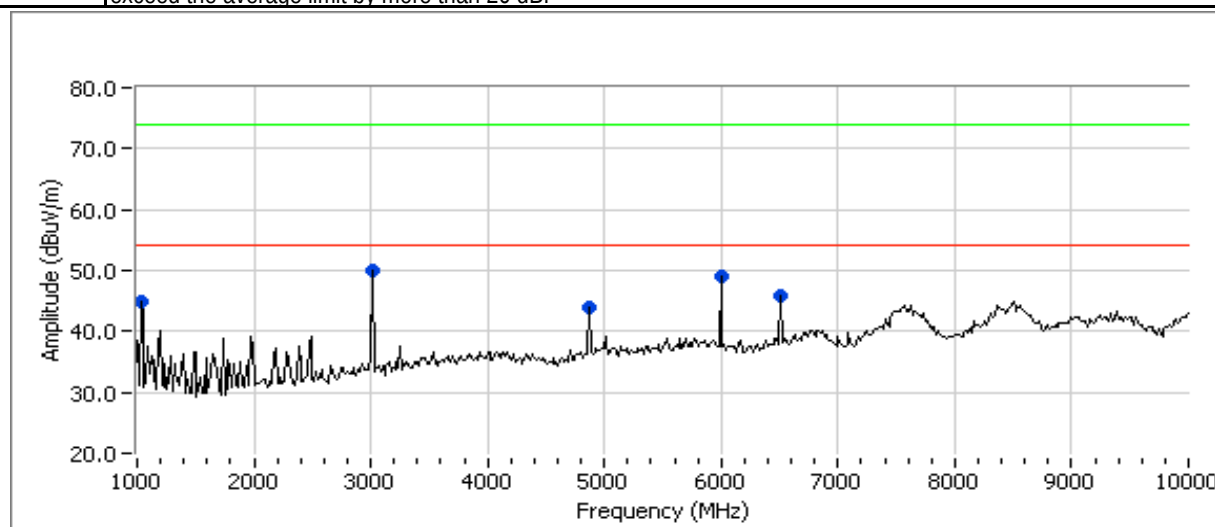
Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Run #4: Maximized readings, 1000 - 18000 MHz, All Receivers Active

Receiver Tuned to 2437 MHz - All chains active

Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1056.082	29.2	H	54.0	-24.8	AVG	297	1.0	
3000.330	50.5	V	54.0	-3.5	AVG	270	1.0	
4873.980	44.1	V	54.0	-9.9	AVG	153	1.5	
6000.700	48.6	V	54.0	-5.4	AVG	263	1.5	
6498.670	45.8	V	54.0	-8.2	AVG	193	1.0	
12997.200	42.6	V	54.0	-11.4	AVG	177	1.0	
1056.082	38.1	H	74.0	-35.9	PK	297	1.0	
3000.330	53.8	V	74.0	-20.2	PK	270	1.0	
4873.980	47.8	V	74.0	-26.2	PK	153	1.5	
6000.700	52.9	V	74.0	-21.1	PK	263	1.5	
6498.670	49.8	V	74.0	-24.2	PK	193	1.0	
12997.200	47.7	V	74.0	-26.3	PK	177	1.0	

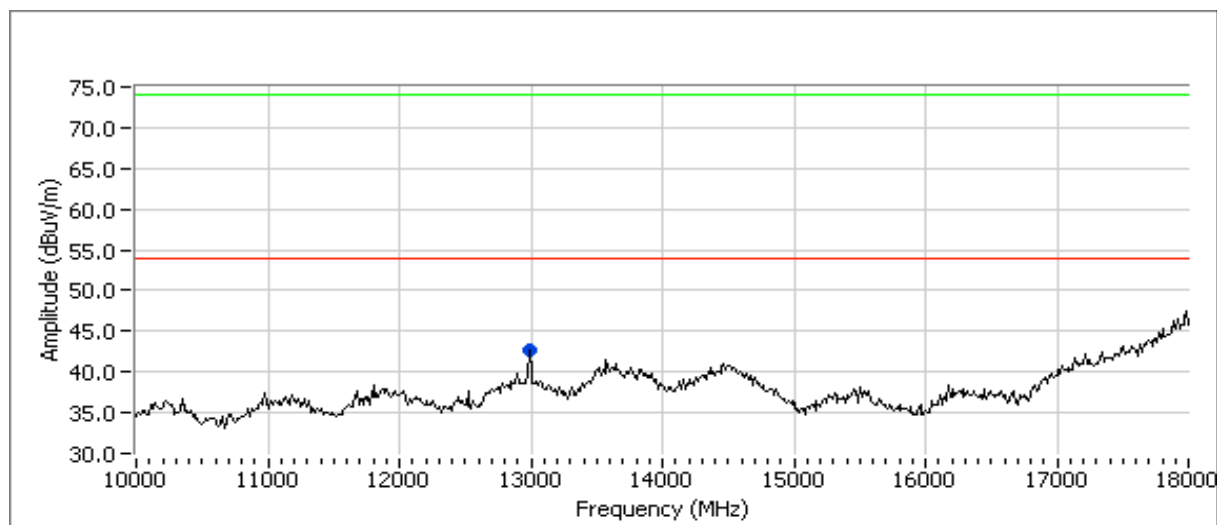
Note 1: Above 1 GHz, the limit is for an average measurement. In addition, the peak value of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS



Receiver Tuned to 5785 MHz - All chains active

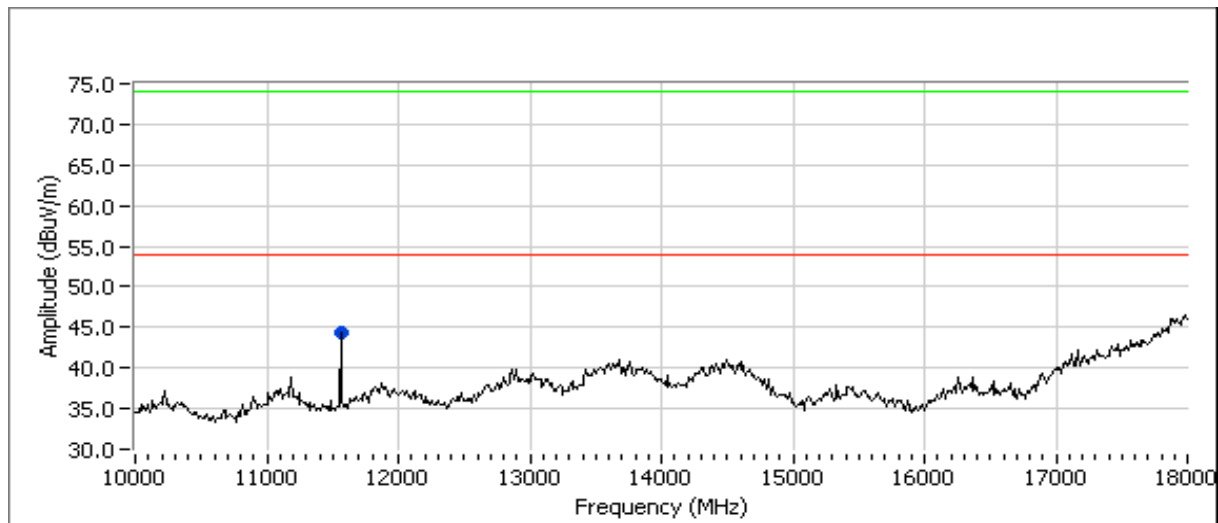
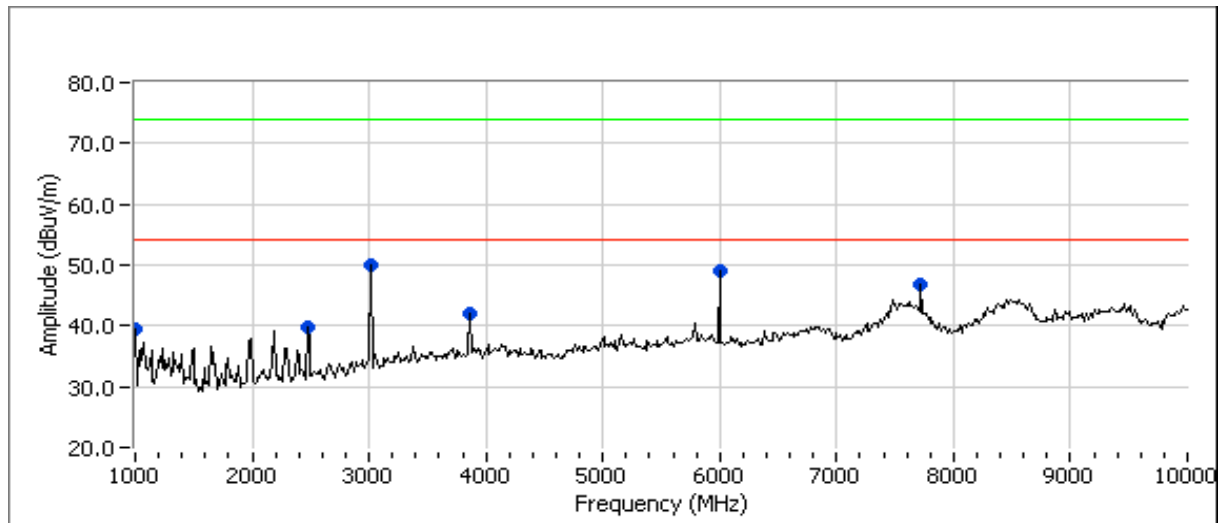
Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2490.010	28.6	V	54.0	-25.4	AVG	165	1.5	
3000.340	50.3	V	54.0	-3.7	AVG	266	1.0	
3856.630	40.3	V	54.0	-13.7	AVG	130	1.0	
6000.670	48.9	V	54.0	-5.1	AVG	268	1.5	
7713.290	46.2	V	54.0	-7.8	AVG	148	1.5	
11569.890	44.6	V	54.0	-9.4	AVG	264	1.0	
2490.010	47.4	V	74.0	-26.6	PK	165	1.5	
3000.340	54.0	V	74.0	-20.0	PK	266	1.0	
3856.630	46.0	V	74.0	-28.0	PK	130	1.0	
6000.670	52.7	V	74.0	-21.3	PK	268	1.5	
7713.290	51.9	V	74.0	-22.1	PK	148	1.5	
11569.890	47.6	V	74.0	-26.4	PK	264	1.0	

Note 1: Above 1 GHz, the limit is for an average measurement. In addition, the peak value of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - Band Edge 802.11b Mode

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.

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:

Temperature:	19 °C
Rel. Humidity:	40 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11b Chain A	1 2412MHz	GC = 20.5	18.8 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	51.6 dBuV/m @ 2389.2 MHz (-2.4dB)
1b	802.11b Chain A	11 2462MHz	GC = 22.5	19.6 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	53.0 dBuV/m @ 2483.6 MHz (-1.0dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11b - Chain A

Date of Test: 3/14/2008
 Test Engineer: Ben Jing
 Test Location: FT Chamber # 4

Run #1a: Low Channel @ 2412 MHz

Power Setting: GC = 20.5 Average power: 18.8 dBm (for reference purposes)

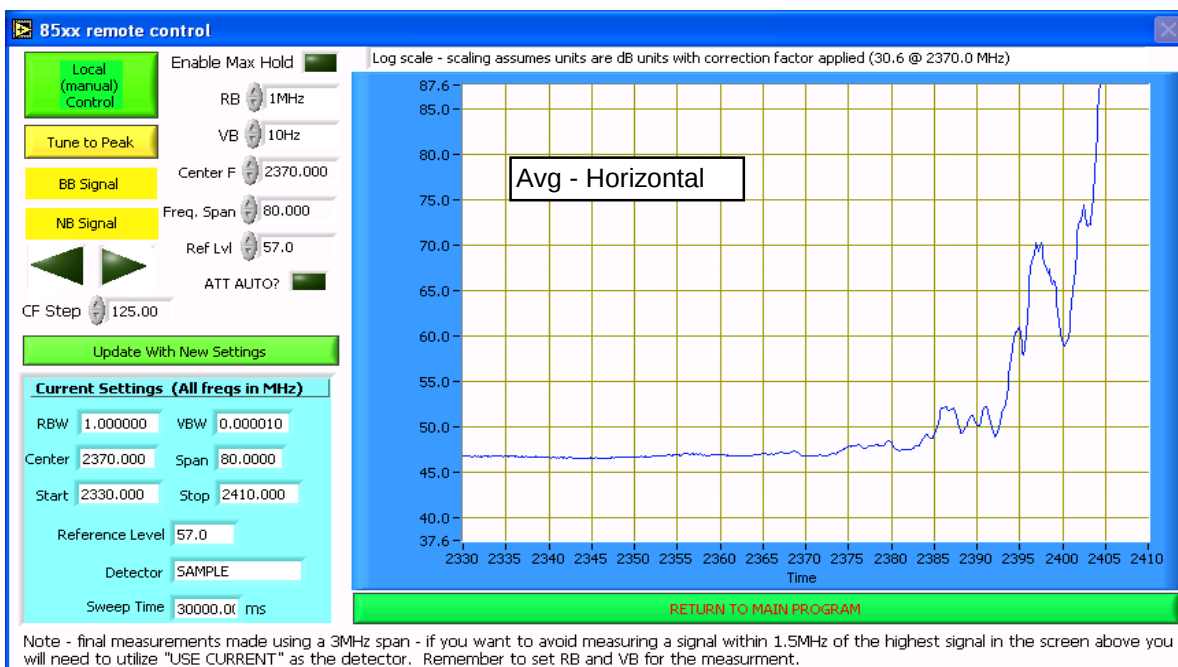
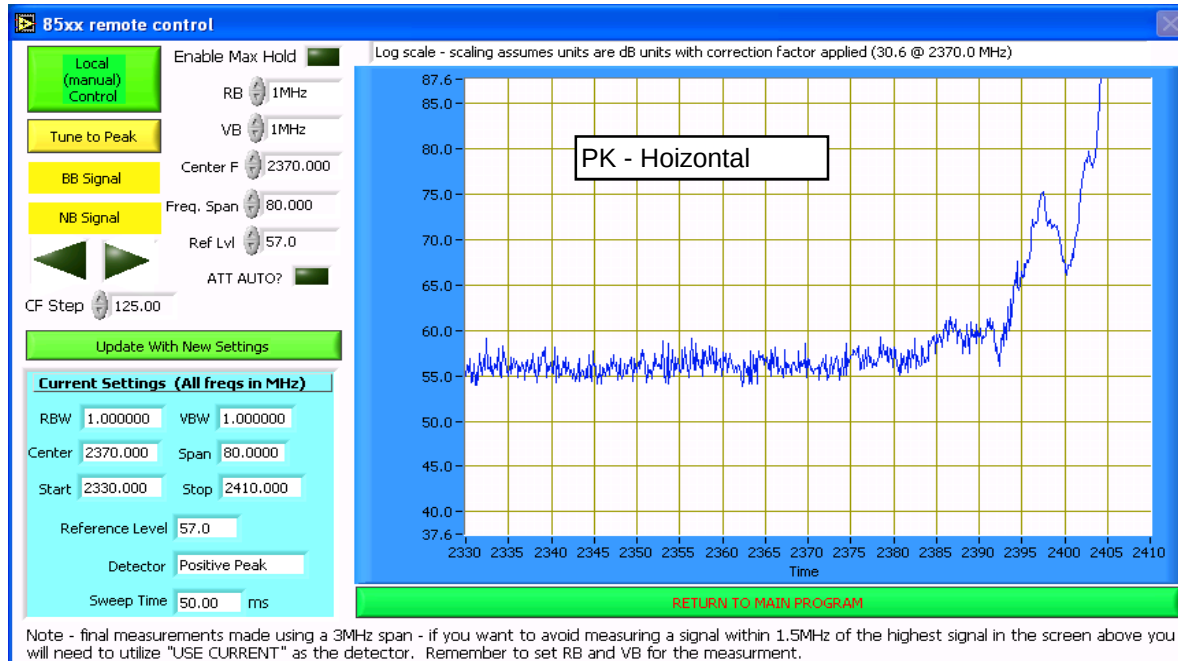
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2410.590	100.7	V	-	-	AVG	161	1.0	RB = 1MHz, VB = 10Hz
2410.590	103.7	V	-	-	PK	161	1.0	RB = VB = 1MHz
2411.490	109.8	H	-	-	AVG	248	1.0	RB = 1MHz, VB = 10Hz
2411.490	112.8	H	-	-	PK	248	1.0	RB = VB = 1MHz

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.450	62.8	H	74.0	-11.2	PK	249	1.0	GC = 20.5 , AP = 18.8
2389.220	51.6	H	54.0	-2.4	AVG	249	1.0	GC = 20.5 , AP = 18.8
Measurements below for reference only								
2389.450	60.5	H	74.0	-13.5	PK	247	1.0	GC = 17.5 , AP = 16.7
2389.750	48.0	H	54.0	-6.0	AVG	247	1.0	GC = 17.5 , AP = 16.7
2389.950	61.5	H	74.0	-12.5	PK	244	1.0	GC = 19.5 , AP = 18.3
2389.300	49.4	H	54.0	-4.6	AVG	249	1.0	GC = 19.5 , AP = 18.3
2389.300	63.1	H	74.0	-10.9	PK	249	1.0	GC = 21 , AP = 19.4
2389.170	53.4	H	54.0	-0.6	AVG	249	1.0	GC = 21 , AP = 19.4

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: High Channel @ 2462 MHz

Power Setting: GC = 22.5

Average power: 19.6 dBm (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2463.130	109.0	H	-	-	AVG	246	1.0	RB = 1MHz, VB = 10Hz
2463.130	112.0	H	-	-	PK	246	1.0	RB = VB = 1MHz
2461.190	103.3	V	-	-	AVG	213	1.0	RB = 1MHz, VB = 10Hz
2461.190	106.2	V	-	-	PK	213	1.0	RB = VB = 1MHz

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	63.4	H	74.0	-10.6	PK	245	1.0	GC = 22.5 , AP = 19.6
2483.650	53.0	H	54.0	-1.0	AVG	245	1.0	GC = 22.5 , AP = 19.6
Measurements below for reference only								
2483.520	60.6	H	74.0	-13.4	PK	244	1.0	GC = 18.5 , AP = 16.5
2483.550	47.3	H	54.0	-6.7	AVG	247	1.0	GC = 18.5 , AP = 16.5
2483.650	61.4	H	74.0	-12.6	PK	245	1.0	GC = 20.5 , AP = 17.9
2483.510	48.3	H	54.0	-5.7	AVG	245	1.0	GC = 20.5 , AP = 17.9

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions, 1 - 26GHz 802.11b Mode

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: 03/18/2008

Config. Used: 1

Test Engineer: Ben Jing

Config Change: None

Test Location: FT Chamber # 4

Host Unit Voltage 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:

Temperature: 20 °C

Rel. Humidity: 39 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11b Chain A	1 (2412)	GC = 20.5	AP = 18.8	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.6dBμV/m @ 3000.3MHz (-24.5dB)
1b	802.11b Chain A	6 (2437)	GC = 18.5	AP = 16.7	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.2dBμV/m @ 6498.8MHz (-20.5dB)
1c	802.11b Chain A	11 (2462)	GC = 22.5	AP = 19.6	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.0dBμV/m @ 3000.4MHz (-23.8dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 26000 MHz. Operating Mode: 802.11b Chain A
Run #1a: Low Channel @ 2412 MHz
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2411.230	101.6	V	-	-	Pk	88	1.0	RB = VB = 100kHz
2411.000	108.1	H	-	-	Pk	245	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	108.1	dB μ V/m	
Limit for emissions outside of restricted bands:	78.1	dB μ V/m	Limit is -30dBc (UNII power measurement)

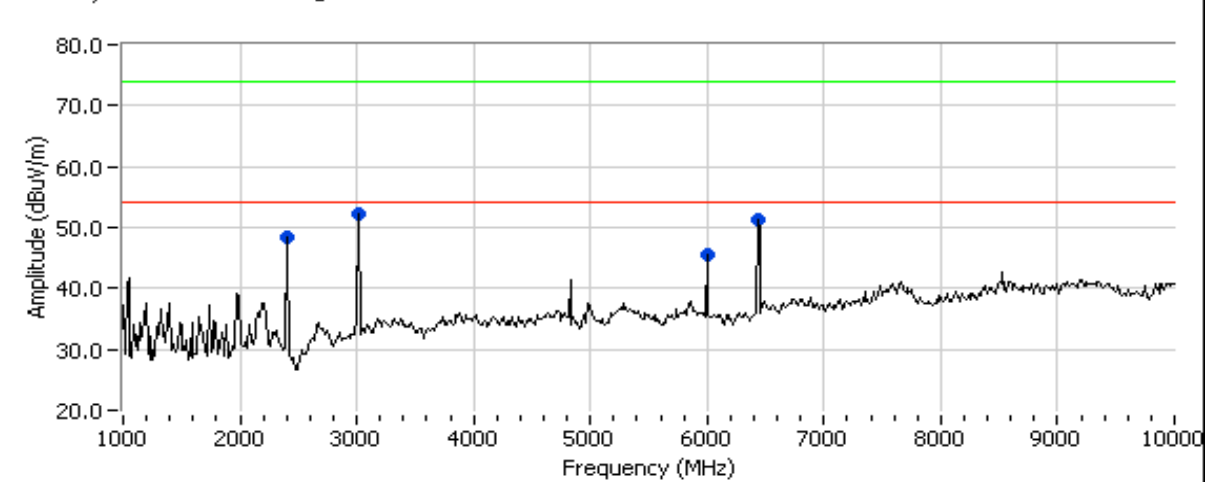
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.340	53.6	V	78.1	-24.5	PK	279	1.0	Note 2
6000.750	50.6	V	78.1	-27.5	PK	163	1.0	Note 2
6432.110	52.7	V	78.1	-25.4	PK	167	1.0	Note 2
12863.990	49.0	V	78.1	-29.1	PK	191	1.0	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

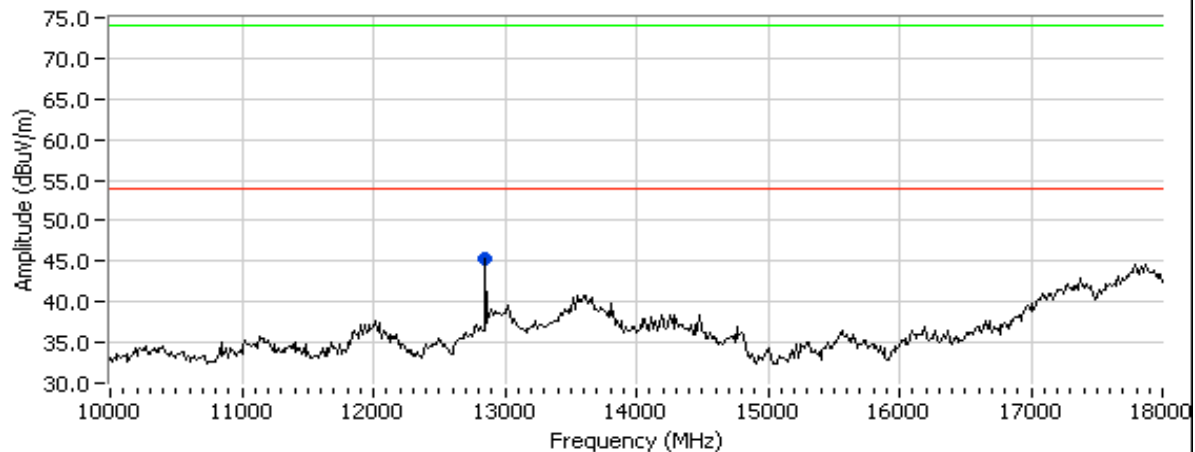
Note 2: Signal is not in a restricted band.

Chain A , 802.11b Channel @ 2412 MHz

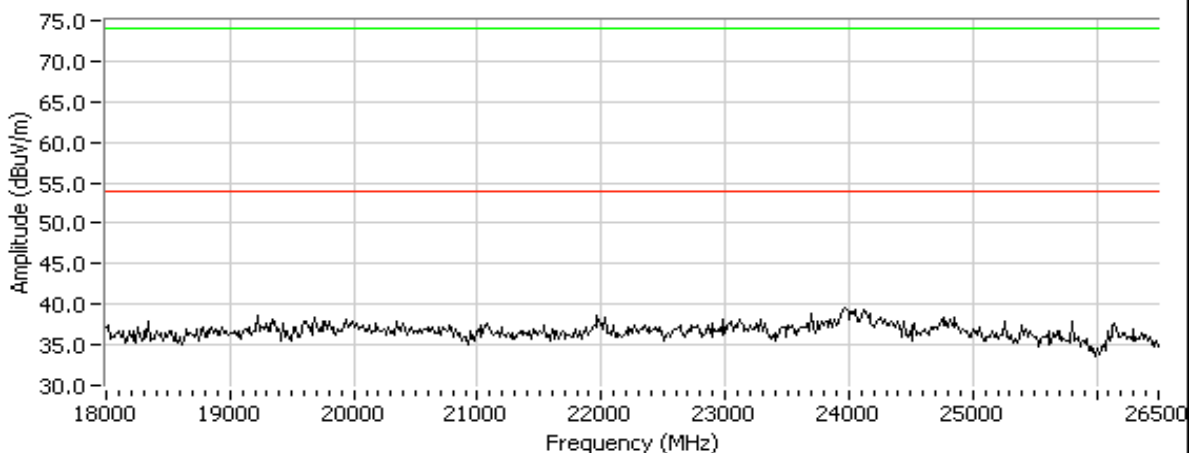


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Chain A , 802.11b Channel @ 2412 MHz



Chain A , 802.11b Channel @ 2412 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: Center Channel @ 2437 MHz
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2436.530	101.4	V	-	-	Pk	230	1.0	RB = VB = 100kHz
2437.520	103.7	H	-	-	Pk	254	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	103.7	dB μ V/m	
Limit for emissions outside of restricted bands:	73.7	dB μ V/m	Limit is -30dBc (UNII power measurement)

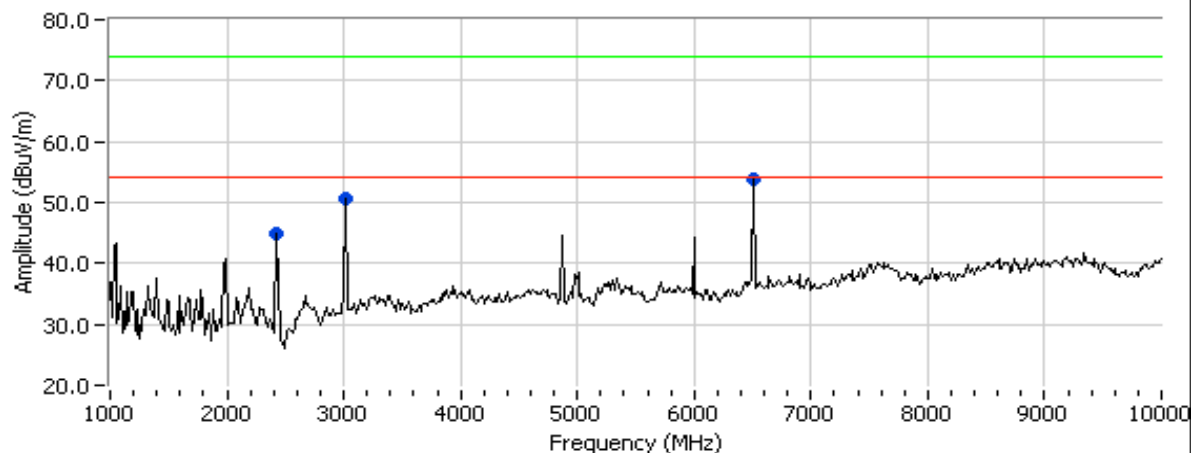
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.350	52.9	V	73.7	-20.8	PK	276	1.0	Note 2
6498.790	53.2	V	73.7	-20.5	PK	126	1.0	Note 2
12997.330	46.8	V	73.7	-26.9	PK	205	1.0	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

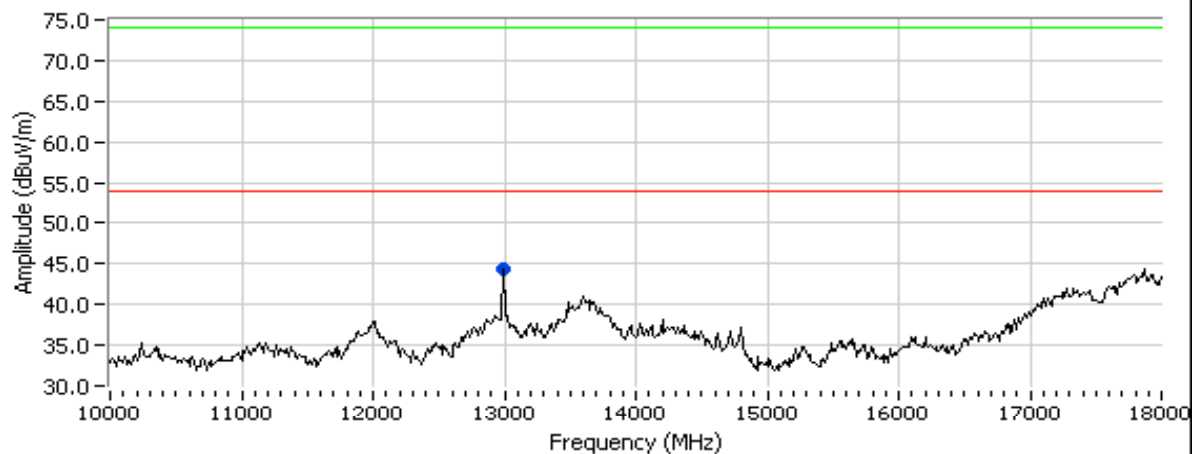
Note 2: Signal is not in a restricted band.

Chain A , 802.11b Channel @ 2437 MHz

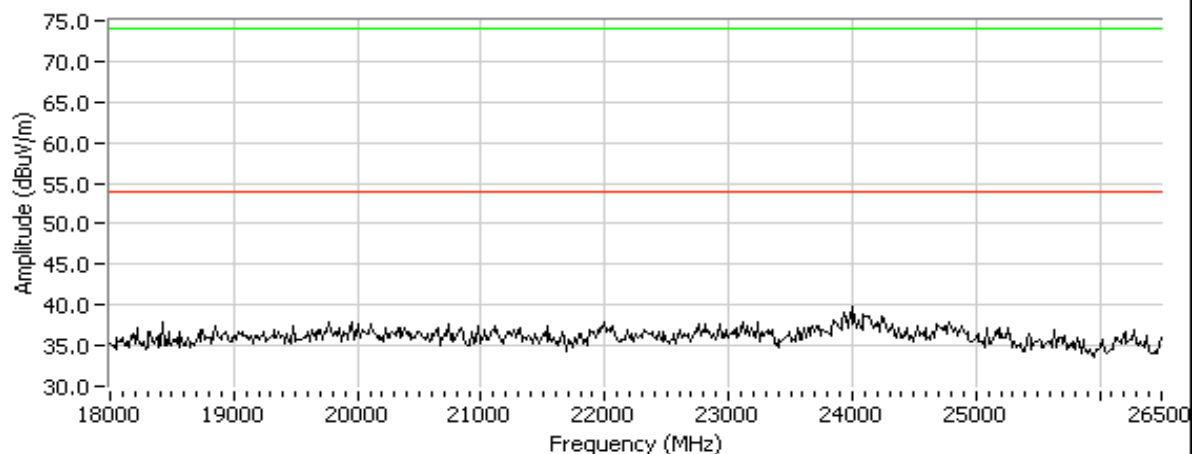


Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Chain A, 802.11b Channel @ 2437 MHz



Chain A, 802.11b Channel @ 2437 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1c: High Channel @ 2462 MHz
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2460.980	101.2	V	-	-	Pk	93	1.0	RB = VB = 100kHz
2462.510	106.8	H	-	-	Pk	237	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	106.8	dB μ V/m	
Limit for emissions outside of restricted bands:	76.8	dB μ V/m	Limit is -30dBc (UNII power measurement)

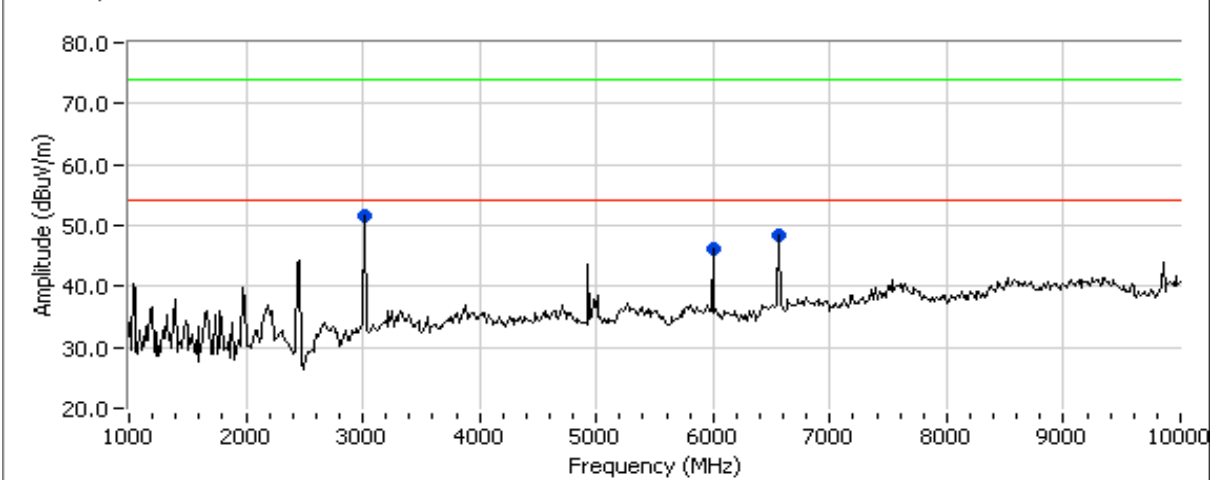
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.380	53.0	V	76.8	-23.8	PK	280	1.0	Note 2
6000.720	51.2	V	76.8	-25.6	PK	272	1.3	Note 2
6565.300	50.8	V	76.8	-26.0	PK	173	1.0	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

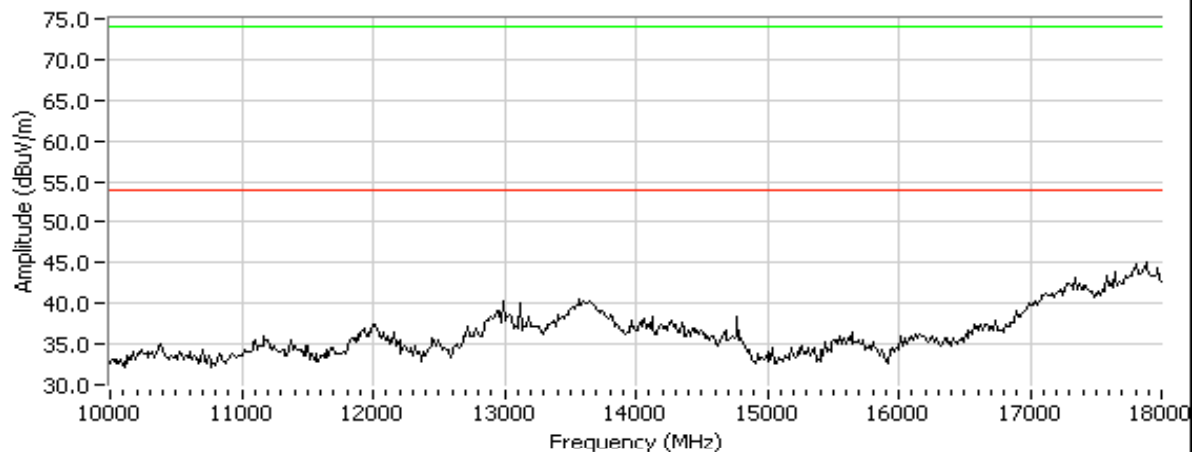
Note 2: Signal is not in a restricted band.

Chain A , 802.11b Channel @ 2462 MHz

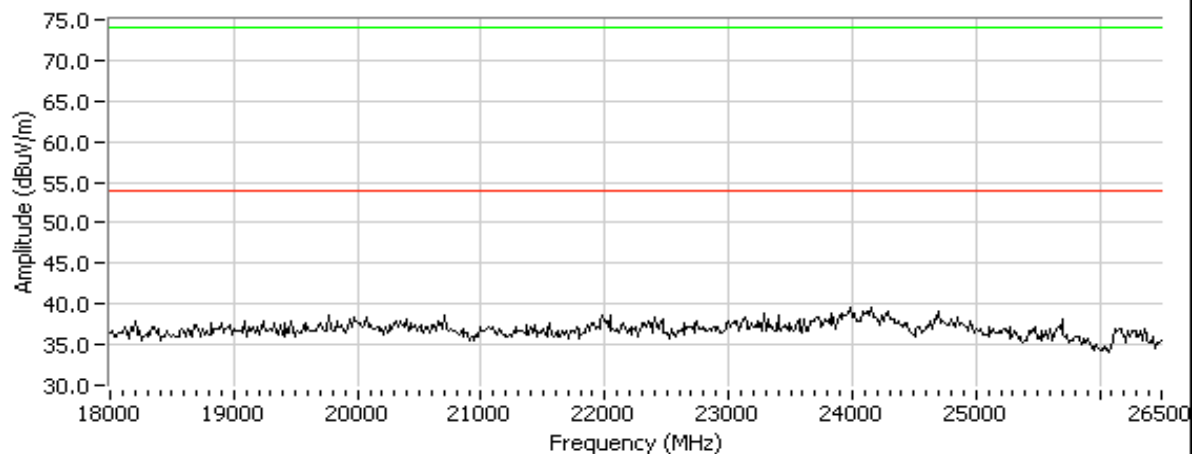


Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Chain A, 802.11b Channel @ 2462 MHz



Chain A, 802.11b Channel @ 2462 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - Band Edge 802.11g Mode

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: 3/14/2008
Test Engineer: Ben Jing
Test Location: FT Chamber # 4

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:
Temperature: 19 °C
Rel. Humidity: 40 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11g Chain A	1 2412MHz	GC = 20	14.5 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	52.5 dBuV/m @ 2389.9 MHz (-1.5dB)
1b	802.11g Chain A	11 2462MHz	GC = 20.5	14 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	70.2 dBuV/m @ 2483.6 MHz (-3.8dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11g - Chain A

Run #1a: Low Channel @ 2412 MHz

Power Setting: GC = 20 Average power: 14.5 dBm (for reference purposes)

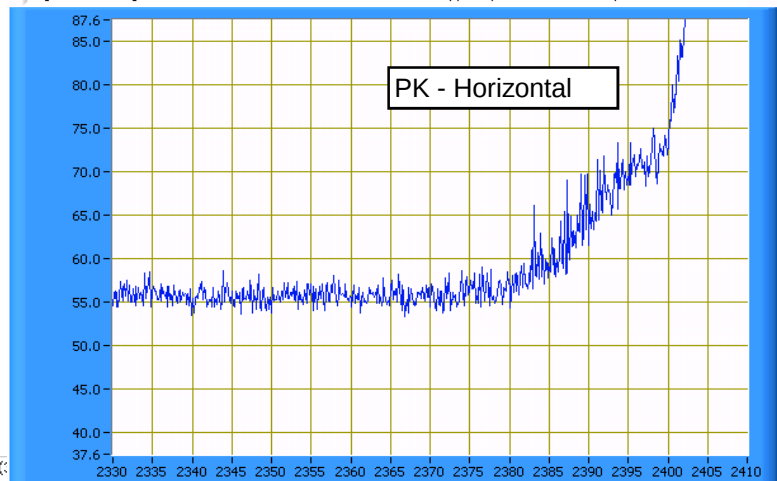
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2413.160	105.4	H	54.0	51.4	AVG	249	1.0	RB = 1MHz, VB = 10Hz
2413.160	113.8	H	74.0	39.8	PK	249	1.0	RB = VB = 1MHz
2410.980	98.8	V	54.0	44.8	AVG	157	1.0	RB = 1MHz, VB = 10Hz
2410.980	106.9	V	74.0	32.9	PK	157	1.0	RB = VB = 1MHz

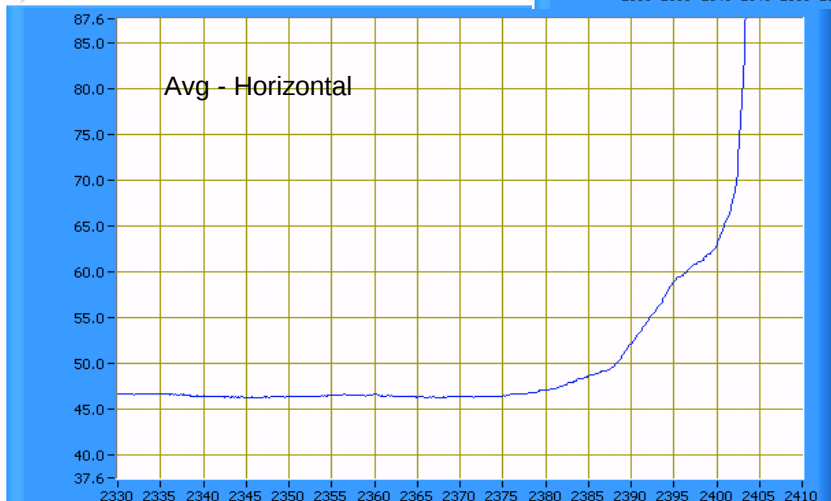
Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2389.980	72.0	H	74.0	-2.0	PK	248	1.0	GC = 20.0 , AP = 14.5
2389.950	52.5	H	54.0	-1.5	AVG	248	1.0	GC = 20.0 , AP = 14.5

Log scale - scaling assumes units are dB units with correction factor applied (30.6 @ 2370.0 MHz)



Log scale - scaling assumes units are dB units with correction factor applied (



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: High Channel @ 2462 MHz

Power Setting: GC = 20.5 Average power: 14 dBm (for reference purposes)

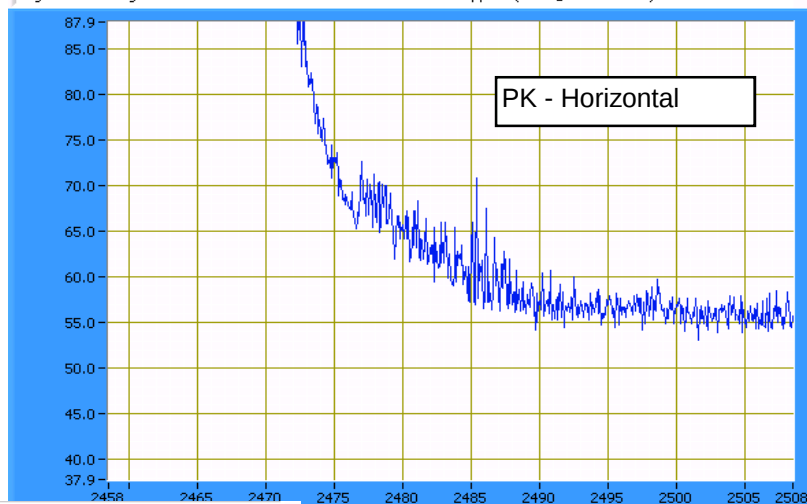
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2463.480	105.2	H	54.0	51.2	AVG	250	1.0	RB = 1MHz, VB = 10Hz
2463.480	113.1	H	74.0	39.1	PK	250	1.0	RB = VB = 1MHz
2460.700	99.0	V	54.0	45.0	AVG	213	1.0	RB = 1MHz, VB = 10Hz
2460.700	107.5	V	74.0	33.5	PK	213	1.0	RB = VB = 1MHz

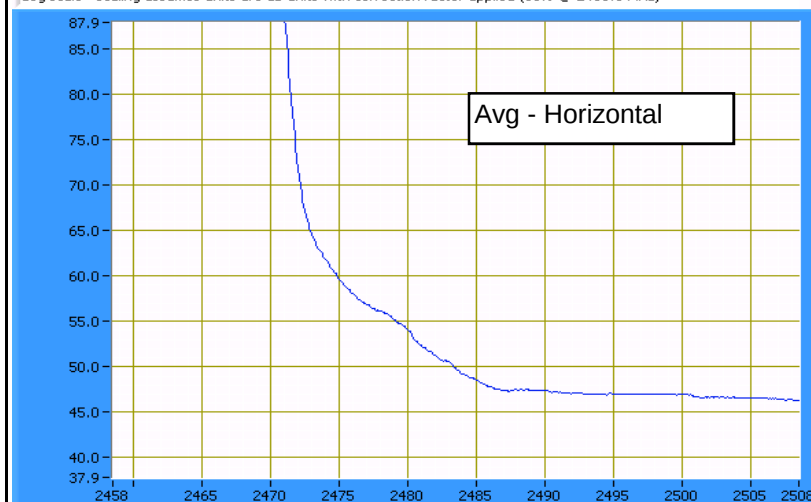
Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2483.690	70.2	H	74.0	-3.8	PK	251	1.0	GC = 20.5 , AP = 14
2483.560	49.7	H	54.0	-4.3	AVG	251	1.0	GC = 20.5 , AP = 14

Log scale - scaling assumes units are dB units with correction factor applied (30.9 @ 2483.5 MHz)



Log scale - scaling assumes units are dB units with correction factor applied (30.9 @ 2483.5 MHz)



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions, 1 - 26GHz 802.11g Mode

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: 03/18/2008
Test Engineer: Ben Jing
Test Location: FT Chamber # 4

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 39 %

Summary of Results

Note - center channel measurements on 802.11n mode had similar but slightly higher emissions (-18.0dB) than 802.11g mode so top/bottom channels for 802.11g mode were not performed and measurements were made on 802.11n 20 MHz mode top/bottom channels.

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1b	802.11g Chain A	6 (2437)	GC = 23	AP = 16.7	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	54.5dBμV/m @ 6498.7MHz (-18.2dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 26000 MHz. Operating Mode: 802.11g Chain A

Run #1a and 1c (Low- and high-channel) were not performed, 802.11n was worst case based on center channel measurements

Run #1b: Center Channel @ 2437 MHz

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2435.740	99.3	V	-	-	Pk	123	1.0	RB = VB = 100kHz
2438.260	102.7	H	-	-	Pk	250	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	102.7	dB μ V/m
Limit for emissions outside of restricted bands:	72.7	dB μ V/m

Limit is -30dBc (UNII power measurement)

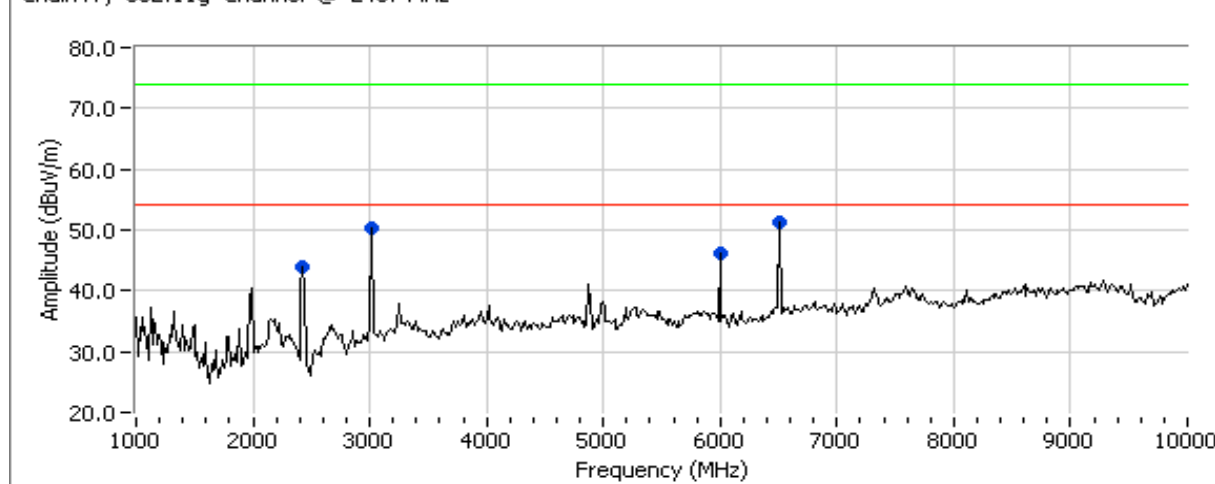
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.370	53.3	V	72.7	-19.4	PK	280	1.0	Note 2
6000.810	50.3	V	72.7	-22.4	PK	162	1.0	Note 2
6498.650	54.5	V	72.7	-18.2	PK	346	1.3	Note 2
12997.360	48.0	V	72.7	-24.7	PK	188	1.0	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

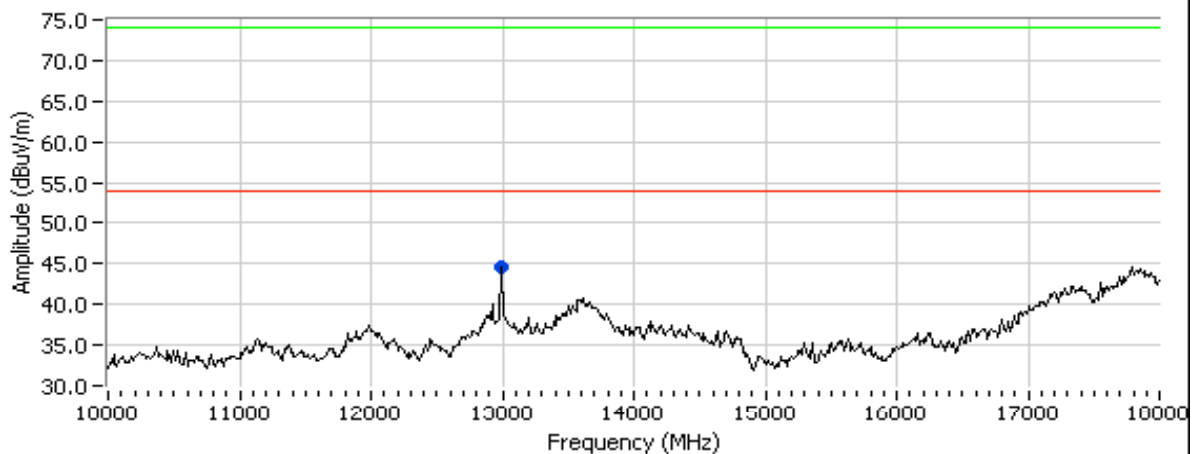
Note 2: Signal is in a restricted band.

Chain A, 802.11g Channel @ 2437 MHz

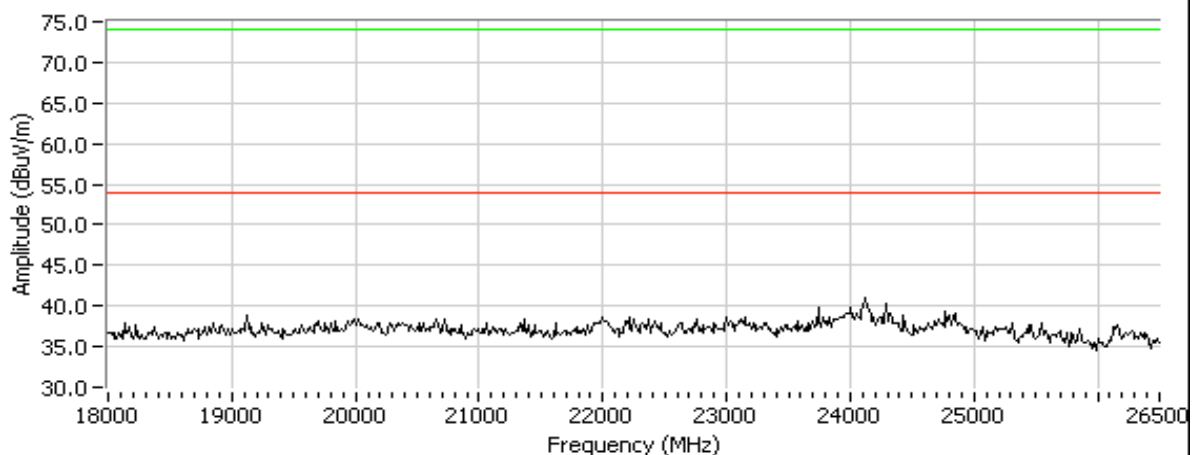


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Chain A , 802.11g Channel @ 2437 MHz



Chain A , 802.11g Channel @ 2437 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - Band Edge 802.11n (20 MHz Channel) Mode

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: 3/14/2008

Config. Used: 1

Test Engineer: Ben Jing

Config Change: None

Test Location: FT Chamber # 4

Host Unit Voltage 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:

Temperature: 19 °C

Rel. Humidity: 40 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n20 Chain A	1 2412MHz	GC = 18	13.1 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	73.0 dBuV/m @ 2389.8 MHz (-1.0dB)
1b	802.11n20 Chain A	11 2462MHz	GC = 20.5	14 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	71.0 dBuV/m @ 2483.5 MHz (-3.0dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11n (20 MHz Channel) - Chain A
Run #1a: Low Channel @ 2412 MHz

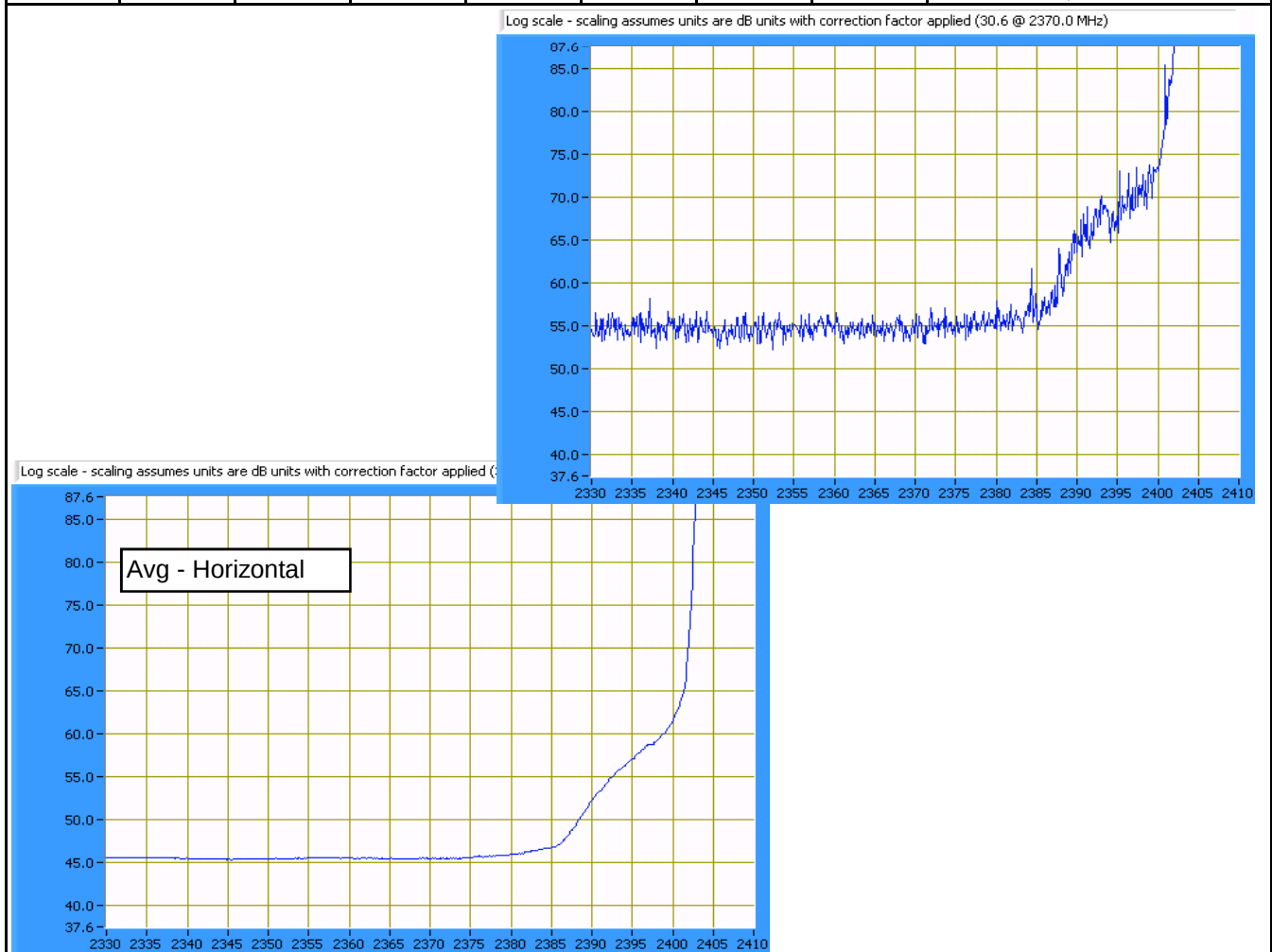
Power Setting: GC = 18 Average power: 13.1 dBm (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2413.200	105.2	H	-	-	AVG	249	1.0	RB = 1MHz, VB = 10Hz
2413.200	113.3	H	-	-	PK	249	1.0	RB = VB = 1MHz
2413.360	98.8	V	-	-	AVG	163	1.0	RB = 1MHz, VB = 10Hz
2413.360	106.9	V	-	-	PK	163	1.0	RB = VB = 1MHz

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2389.830	73.0	H	74.0	-1.0	PK	244	1.0	GC = 18.0 , AP = 13.1
2389.940	52.9	H	54.0	-1.1	AVG	244	1.0	GC = 18.0 , AP = 13.1



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: High Channel @ 2462 MHz

Power Setting: GC = 20.5 Average power: 14 dBm (for reference purposes)

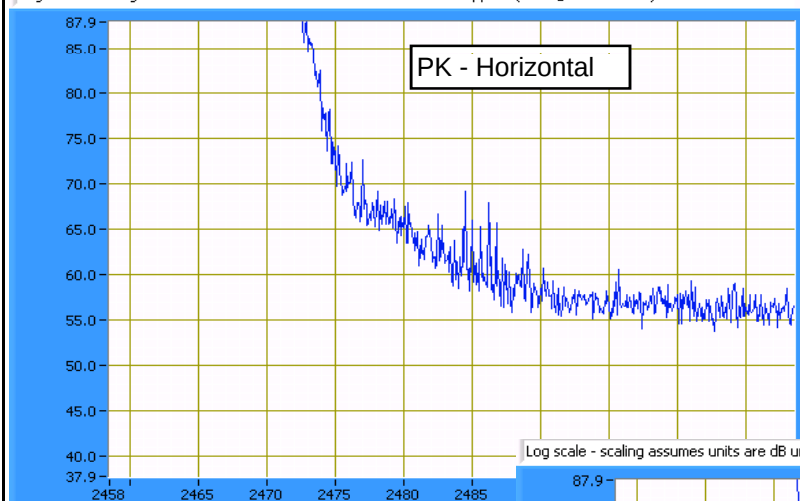
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2460.820	98.8	V	54.0	44.8	AVG	213	1.0	RB = 1MHz, VB = 10Hz
2460.820	107.2	V	74.0	33.2	PK	213	1.0	RB = VB = 1MHz
2463.180	104.9	H	54.0	50.9	AVG	249	1.0	RB = 1MHz, VB = 10Hz
2463.180	113.2	H	74.0	39.2	PK	249	1.0	RB = VB = 1MHz

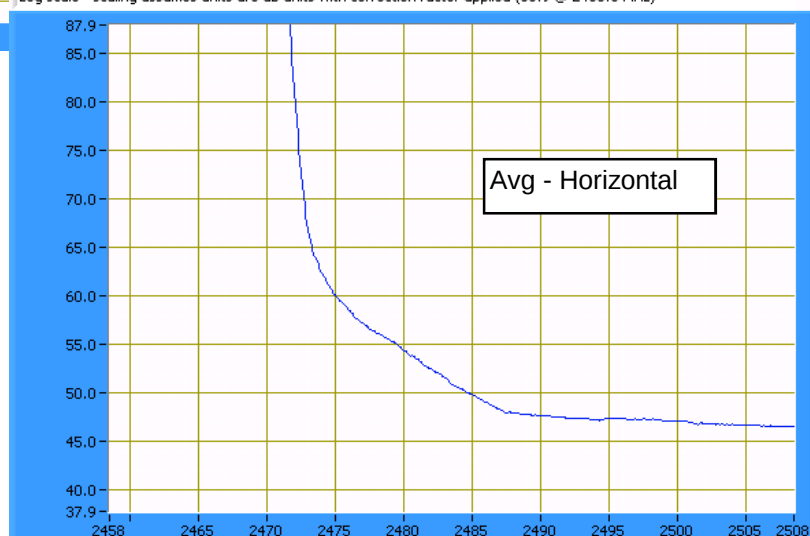
Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	71.0	H	74.0	-3.0	PK	247	1.0	GC = 20.5 , AP = 14
2483.530	50.9	H	54.0	-3.1	AVG	250	1.0	GC = 20.5 , AP = 14

Log scale - scaling assumes units are dB units with correction factor applied (30.9 @ 2483.5 MHz)



Log scale - scaling assumes units are dB units with correction factor applied (30.9 @ 2483.5 MHz)



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions, 1 - 26GHz 802.11n 20MHz Mode

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: 03/18/2008
Test Engineer: Ben Jing
Test Location: FT Chamber # 4

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n20 Chain A	1 (2412)	GC = 18	AP = 13.1	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.8dBμV/m @ 6432.0MHz (-15.7dB)
1b	802.11n20 Chain A	6 (2437)	GC = 23	AP = 16.5	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	54.6dBμV/m @ 3000.4MHz (-18.0dB)
1c	802.11n20 Chain A	11 (2462)	GC = 20.5	AP = 14	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.4dBμV/m @ 3000.4MHz (-16.1dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 26000 MHz. Operating Mode: 802.11n 20MHz Chain A
Run #1a: Low Channel @ 2412 MHz
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2410.750	94.5	V	-	-	Pk	225	1.0	RB = VB = 100kHz
2413.340	99.5	H	-	-	Pk	240	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	99.5	dB μ V/m
Limit for emissions outside of restricted bands:	69.5	dB μ V/m

Limit is -30dBc (UNII power measurement)

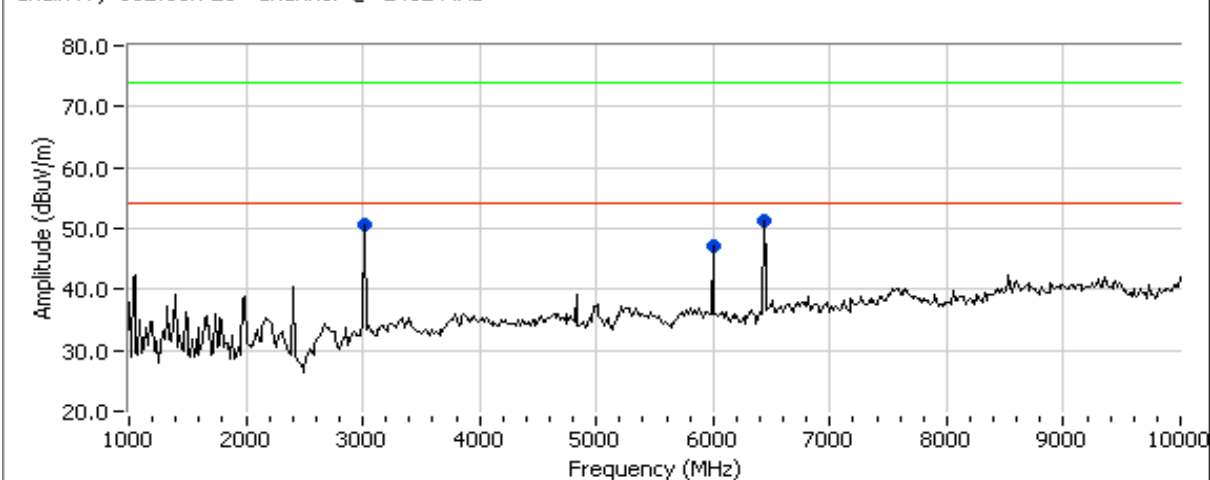
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.390	53.5	V	69.5	-16.0	PK	277	1.0	Note 2
6000.710	50.6	V	69.5	-18.9	PK	266	1.3	Note 2
6431.970	53.8	V	69.5	-15.7	PK	171	1.2	Note 2
12863.980	49.6	V	69.5	-19.9	PK	182	1.0	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

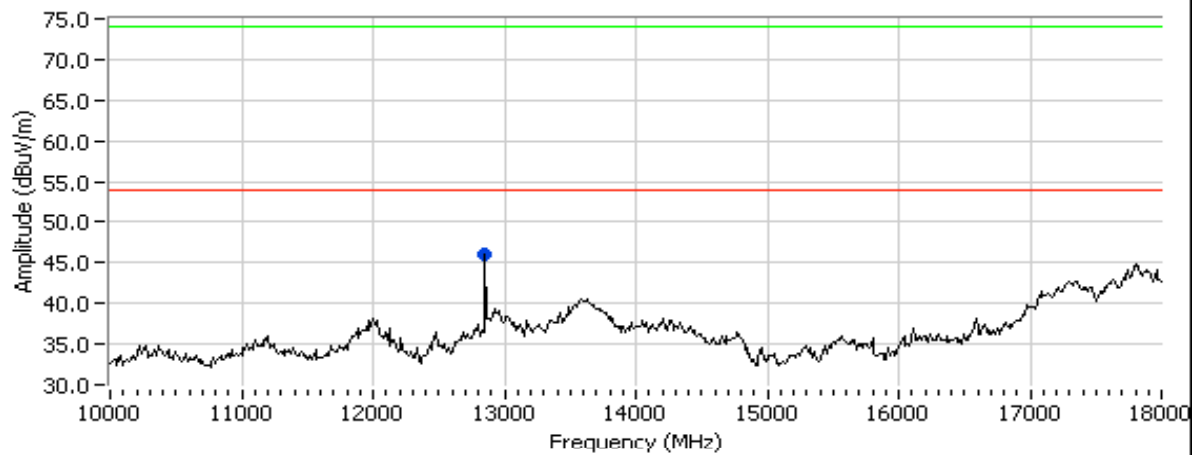
Note 2: Signal is in a restricted band.

Chain A , 802.11n-20 Channel @ 2412 MHz

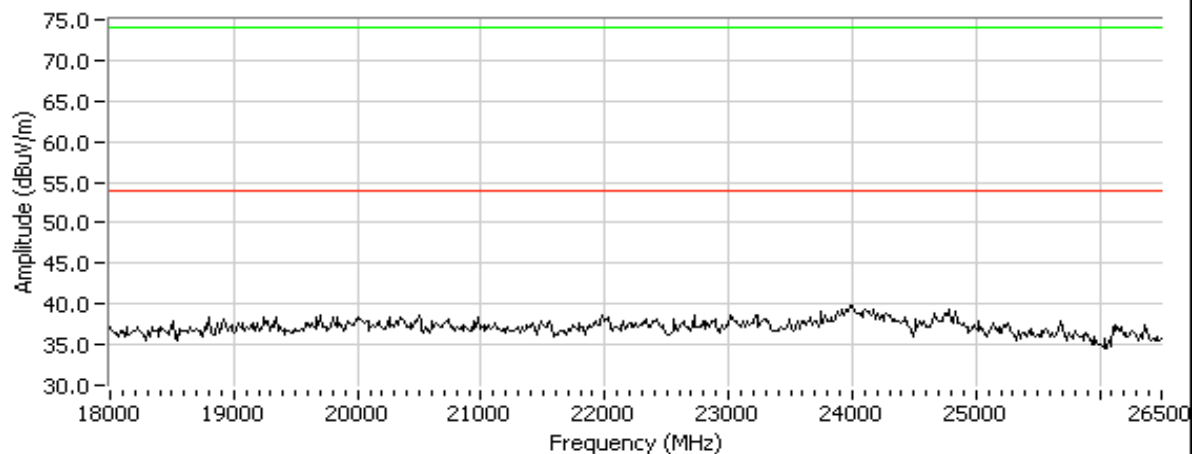


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Chain A , 802.11n-20 Channel @ 2412 MHz



Chain A , 802.11n-20 Channel @ 2412 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: Center Channel @ 2437 MHz
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2435.760	99.0	H	-	-	Pk	85	1.0	RB = VB = 100kHz
2435.750	102.6	H	-	-	Pk	247	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	102.6	dB μ V/m	
Limit for emissions outside of restricted bands:	72.6	dB μ V/m	Limit is -30dBc (UNII power measurement)

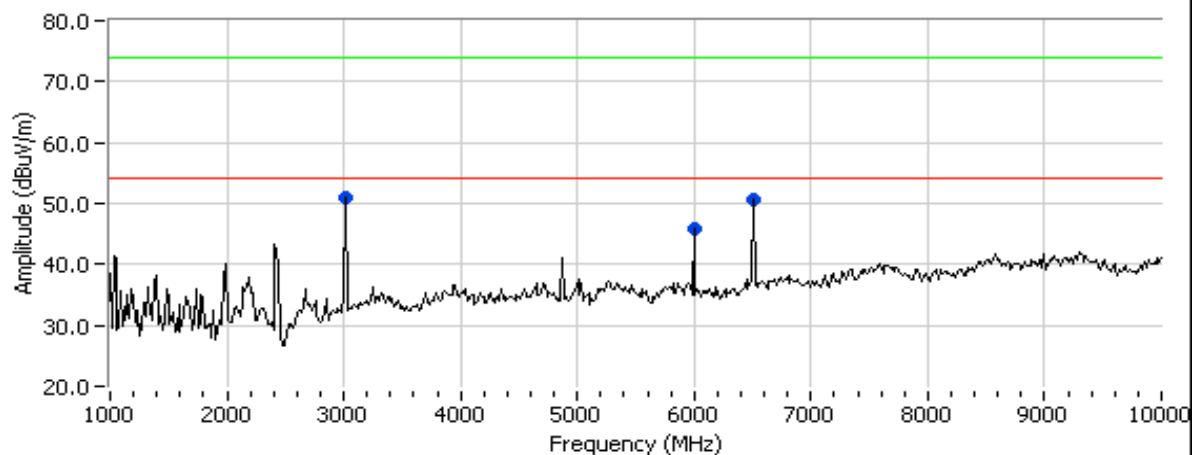
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.350	54.6	V	72.6	-18.0	PK	264	1.0	
6000.790	50.6	V	72.6	-22.0	PK	268	1.3	
6498.710	54.3	V	72.6	-18.3	PK	164	1.0	
12997.330	48.8	V	72.6	-23.8	PK	173	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

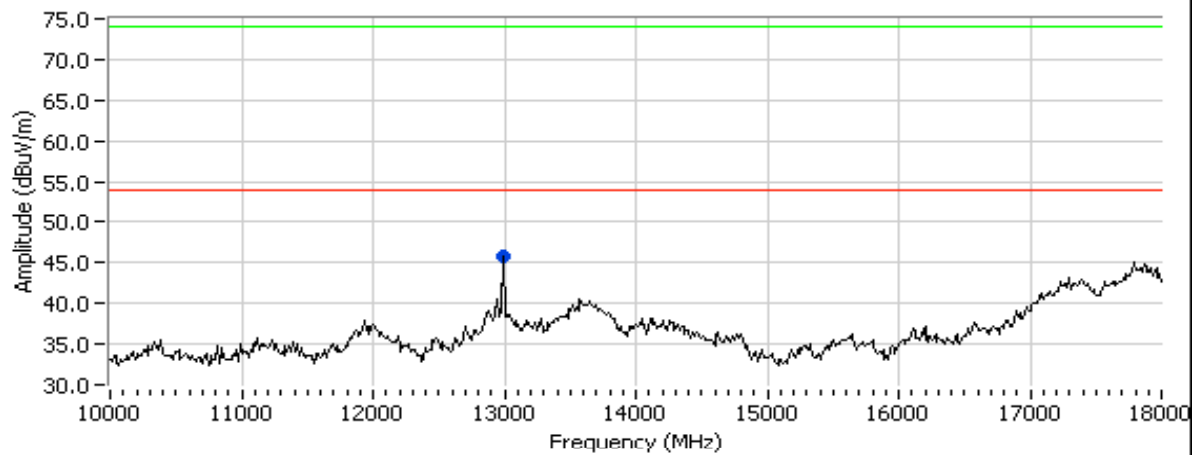
Note 2: Signal is not in a restricted band but the more stringent restricted band limit was used.

Chain A , 802.11n-20 Channel @ 2437 MHz

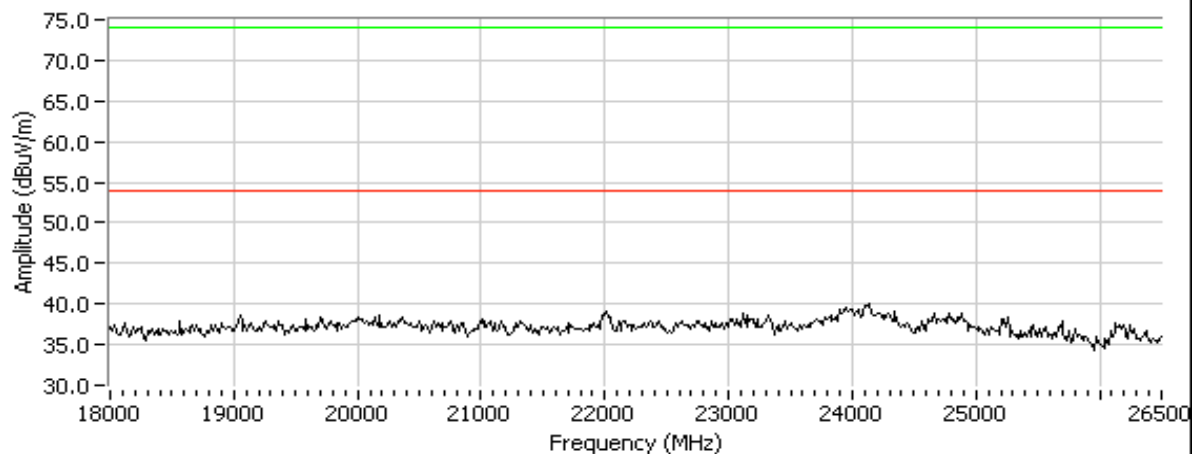


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Chain A , 802.11n-20 Channel @ 2437 MHz



Chain A , 802.11n-20 Channel @ 2437 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1c: High Channel @ 2462 MHz
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2463.290	99.5	H	-	-	Pk	239	1.0	RB = VB = 100kHz
2460.720	94.9	V	-	-	Pk	99	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	99.5	dB μ V/m
Limit for emissions outside of restricted bands:	69.5	dB μ V/m

Limit is -30dBc (UNII power measurement)

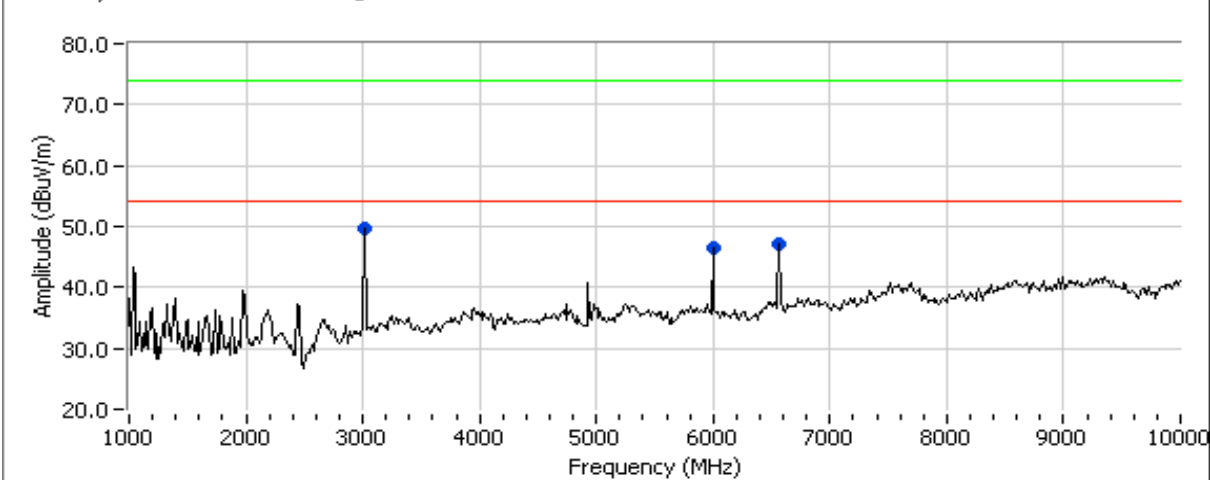
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.360	53.4	V	69.5	-16.1	PK	277	1.0	Note 2
6000.720	50.3	V	69.5	-19.2	PK	265	1.3	Note 2
6565.300	52.6	V	69.5	-16.9	PK	162	1.0	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

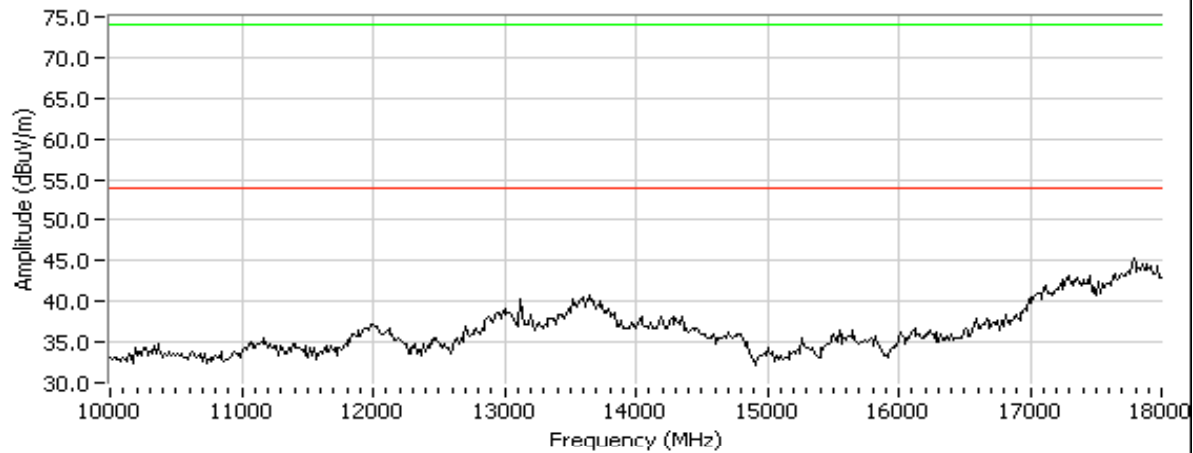
Note 2: Signal is in a restricted band.

Chain A , 802.11n-20 Channel @ 2462 MHz

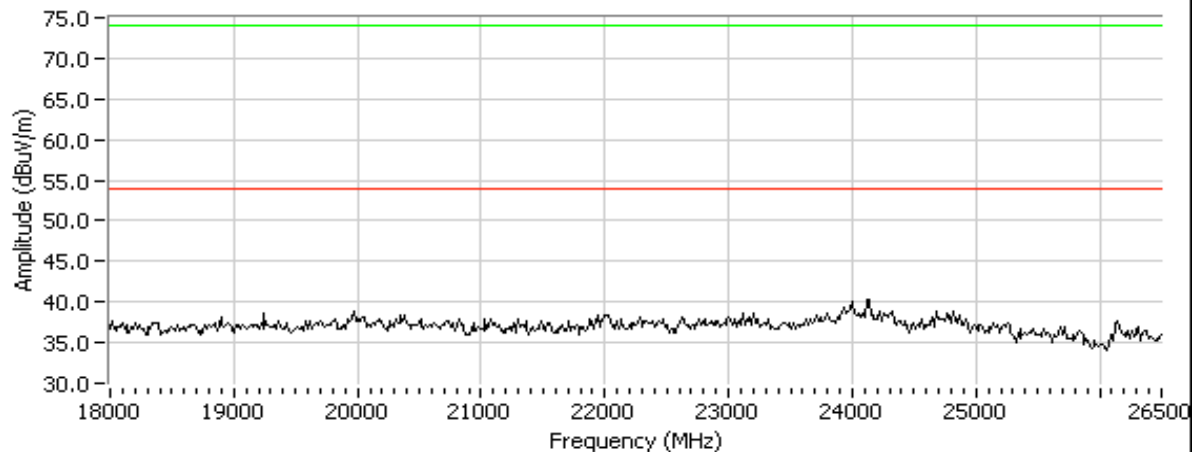


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Chain A , 802.11n-20 Channel @ 2462 MHz



Chain A , 802.11n-20 Channel @ 2462 MHz





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - Band Edge 802.11n (40 MHz Channel) Mode

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: 3/17/2008
Test Engineer: Ben Jing
Test Location: FT Chamber # 4

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n40 Chain A	1 2422MHz	GC = 14.5	AP = 10.1	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	52.3 dBuV/m @ 2389.9 MHz (-1.7dB)
1b	802.11n40 Chain A	11 2452MHz	GC = 20	AP = 14.1	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	52.4 dBuV/m @ 2483.5 MHz (-1.6dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11n (40 MHz Channel) - Chain A

Run #1a: Low Channel @ 2422 MHz

Power Setting: GC = 14.5

Average power: AP = 10.1 (for reference purposes)

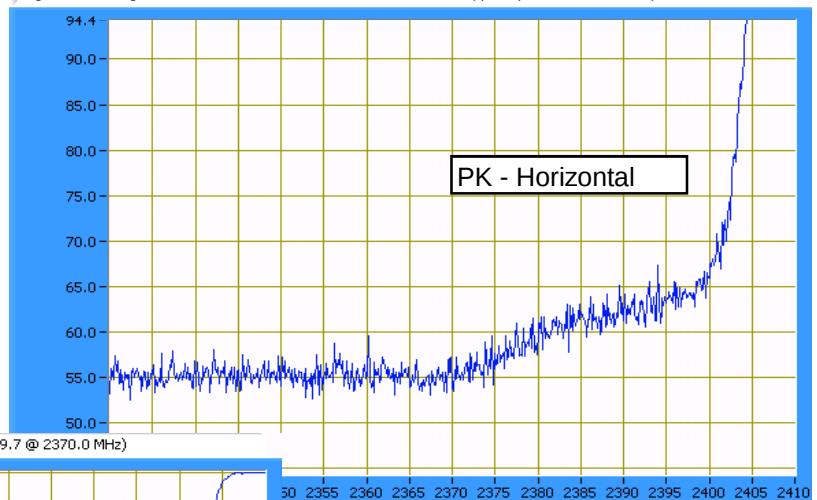
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2420.960	90.6	V	-	-	AVG	225	1.0	RB = 1MHz, VB = 10Hz
2420.960	99.1	V	-	-	PK	225	1.0	RB = VB = 1MHz
2423.480	96.7	H	-	-	AVG	252	1.0	RB = 1MHz, VB = 10Hz
2423.480	105.2	H	-	-	PK	252	1.0	RB = VB = 1MHz

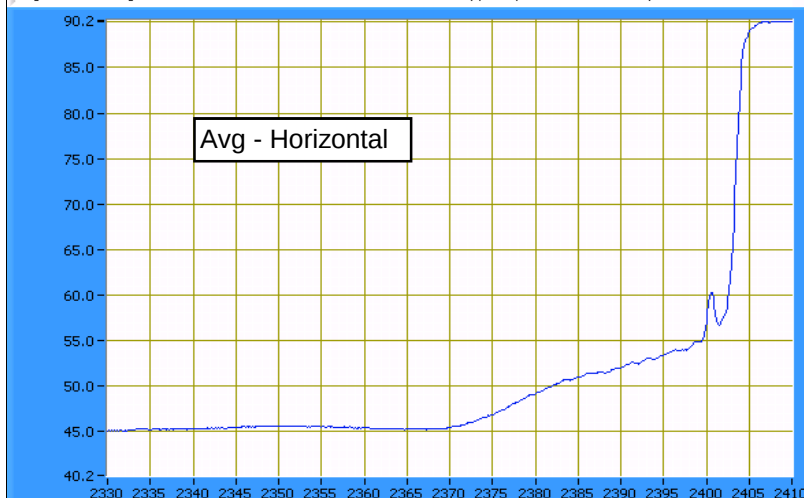
Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2389.870	66.1	H	74.0	-7.9	PK	253	1.0	GC = 14.5 , AP = 10.1
2389.910	52.3	H	54.0	-1.7	AVG	253	1.0	GC = 14.5 , AP = 10.1

Log scale - scaling assumes units are dB units with correction factor applied (29.7 @ 2370.0 MHz)



Log scale - scaling assumes units are dB units with correction factor applied (29.7 @ 2370.0 MHz)



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: High Channel @ 2452 MHz

Power Setting: GC = 20

Average power: AP = 14.1 (for reference purposes)

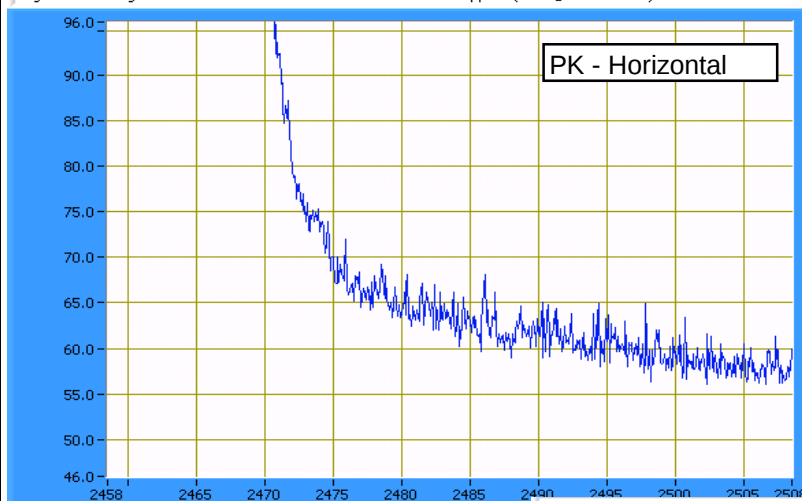
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2451.030	89.9	V	-	-	AVG	85	1.0	RB = 1MHz, VB = 10Hz
2451.030	98.0	V	-	-	PK	85	1.0	RB = VB = 1MHz
2450.800	95.0	H	-	-	AVG	251	1.0	RB = 1MHz, VB = 10Hz
2450.800	103.4	H	-	-	PK	251	1.0	RB = VB = 1MHz

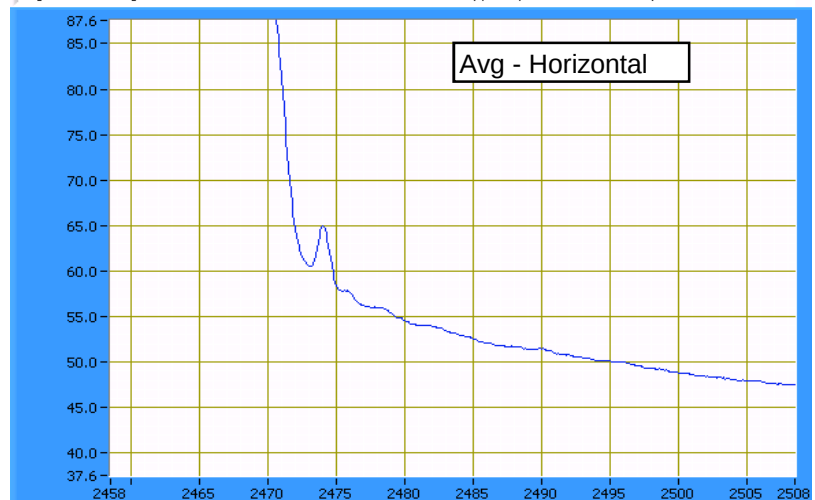
Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2483.500	70.5	H	74.0	-3.5	PK	251	1.0	GC = 20 , AP = 14.1
2483.560	52.4	H	54.0	-1.6	AVG	251	1.0	GC = 20 , AP = 14.1

Log scale - scaling assumes units are dB units with correction factor applied (30.0 @ 2483.5 MHz)



Log scale - scaling assumes units are dB units with correction factor applied (30.6 @ 2483.5 MHz)



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions, 1 - 26GHz 802.11n 40MHz Mode

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.

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n40 Chain A	3 (2422)	14.5	10.1	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	41.4dBμV/m @ 3000.4MHz (-22.1dB)
1b	802.11n40 Chain A	6 (2437)	21.5	16.5	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	32.5dBμV/m @ 4874.0MHz (-21.5dB)
1c	802.11n40 Chain A	9 (2452)	20.0	14.1	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	52.4dBμV/m @ 3000.4MHz (-16.0dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 26000 MHz. Operating Mode: 802.11n 40MHz Chain A

Date of Test: 4/8/2008

Test Engineer: Joseph Cadigal

Test Location: FT Chamber # 4

Run #1a: Low Channel @ 2422 MHz

Power Setting: GC = 14.5

Average power: AP = 10.1 (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

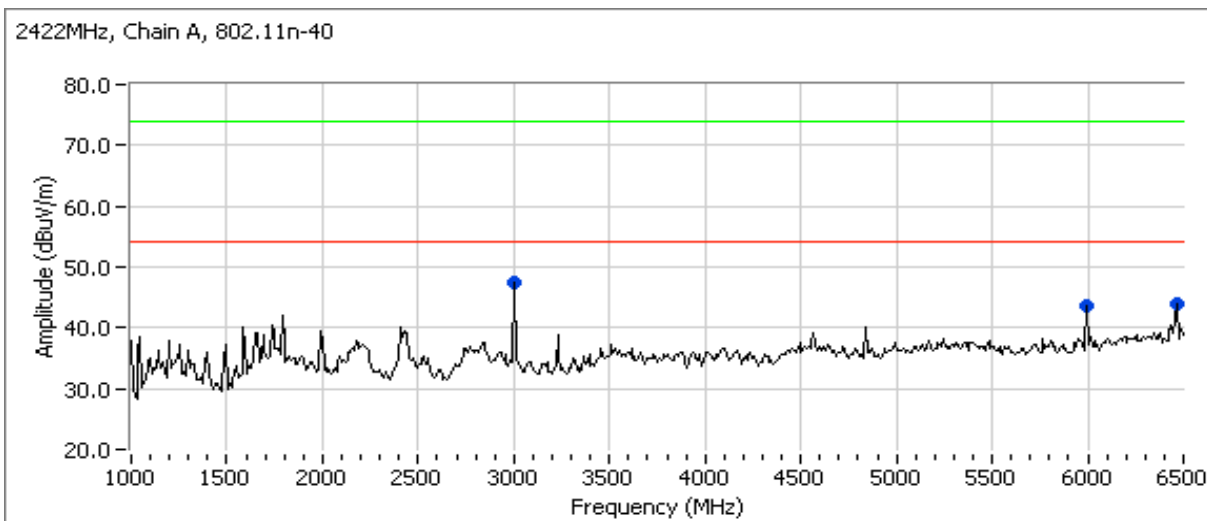
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2420.770	88.6	V	-	-	PK	138	1.0	RB = VB = 100kHz
2423.230	93.5	H	-	-	PK	248	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	93.5	dB μ V/m
Limit for emissions outside of restricted bands:	63.5	dB μ V/m

Limit is -30dBc (UNII power measurement)

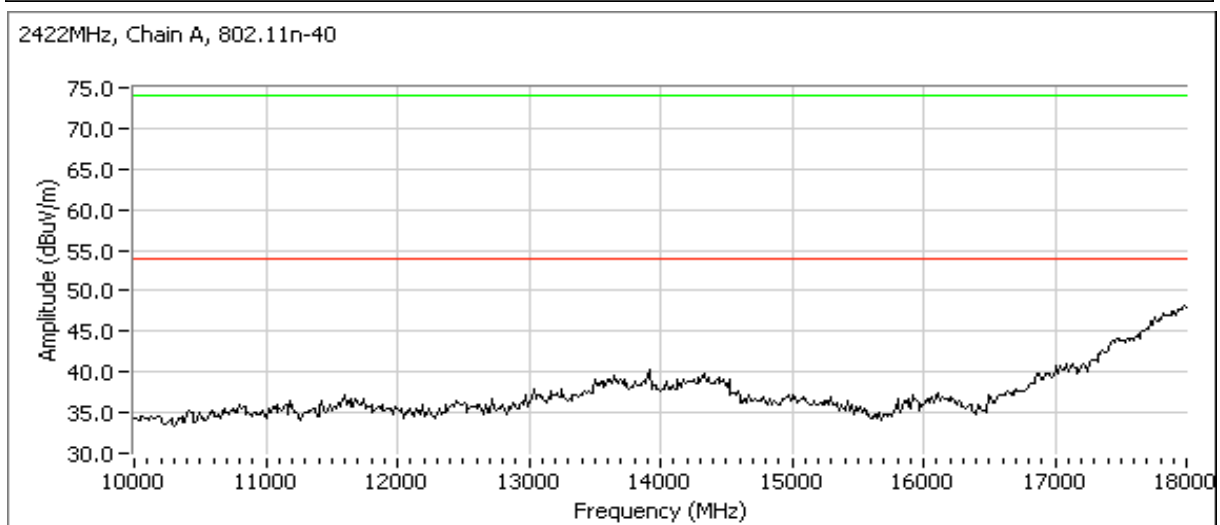
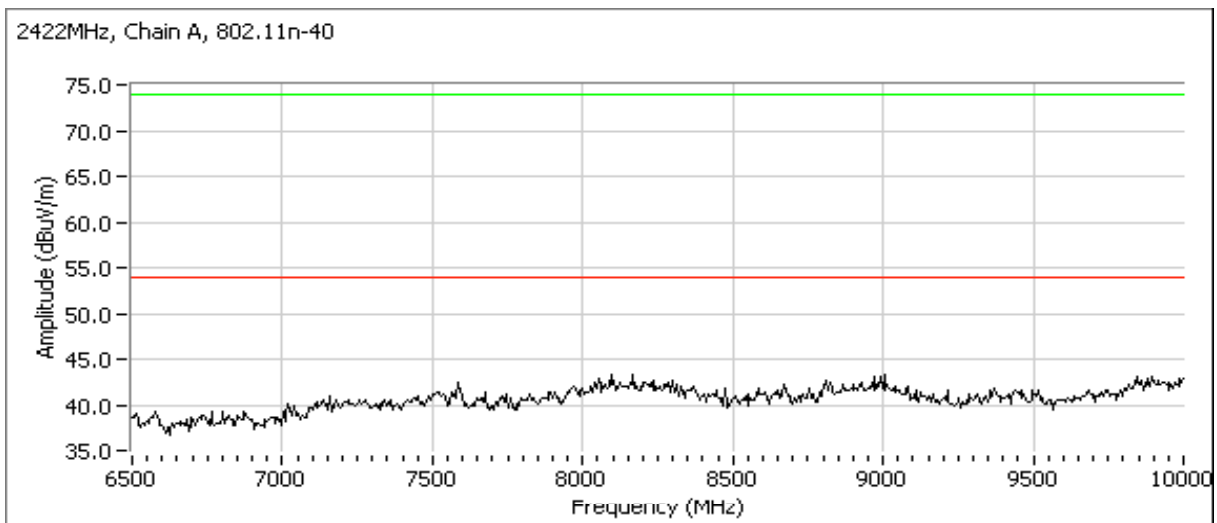
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
3000.350	41.4	V	63.5	-22.1	PK	270	1.6	Not in restricted band
6000.830	36.1	V	63.5	-27.4	PK	275	2.2	Not in restricted band
6458.580	35.4	V	63.5	-28.1	PK	3	1.6	Not in restricted band



Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

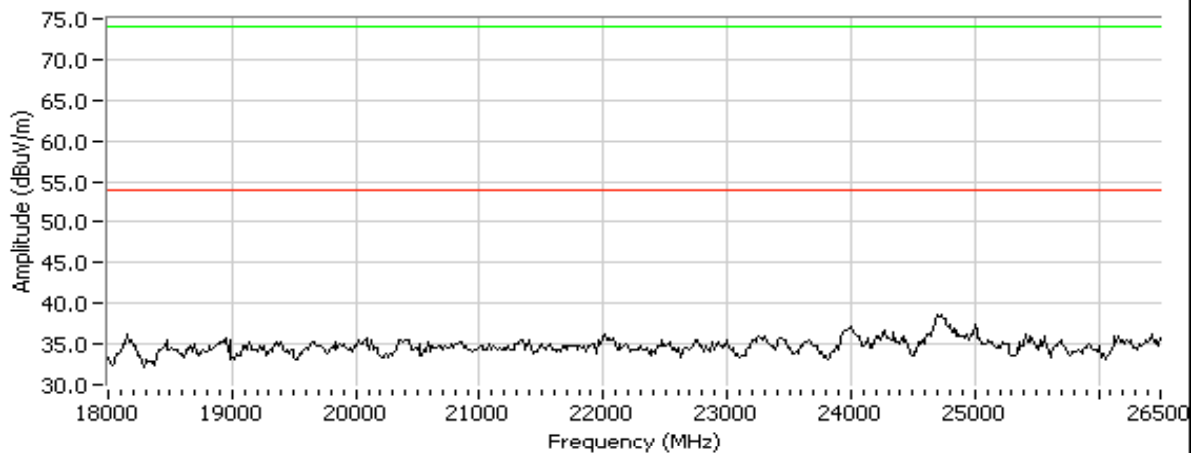
Run #1a: Low Channel @ 2422 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1a: Low Channel @ 2422 MHz

2422MHz Chain A, 802.11n-40



Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 2:	Signal is not in a restricted band but the more stringent restricted band limit was used.

Run #1b: Center Channel @ 2437 MHz

Power Setting: GC = 21.5

Average power: AP = 16.5 (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2438.440	95.2	V	-	-	PK	274	1.0	RB = VB = 100kHz
2438.330	100.1	H	-	-	PK	249	1.2	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	100.1	dBuV/m
Limit for emissions outside of restricted bands:	70.1	dBuV/m

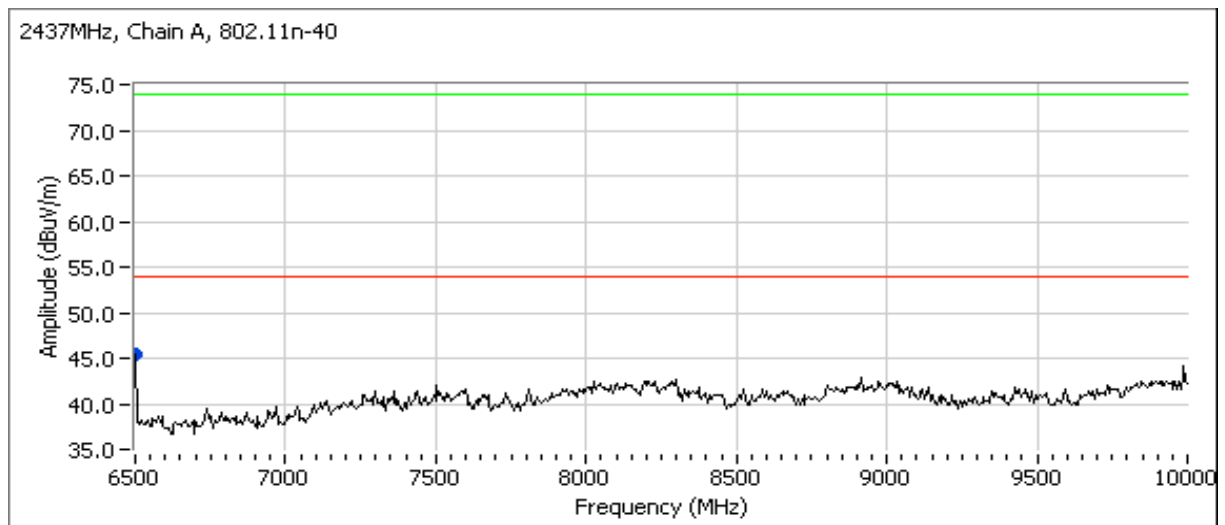
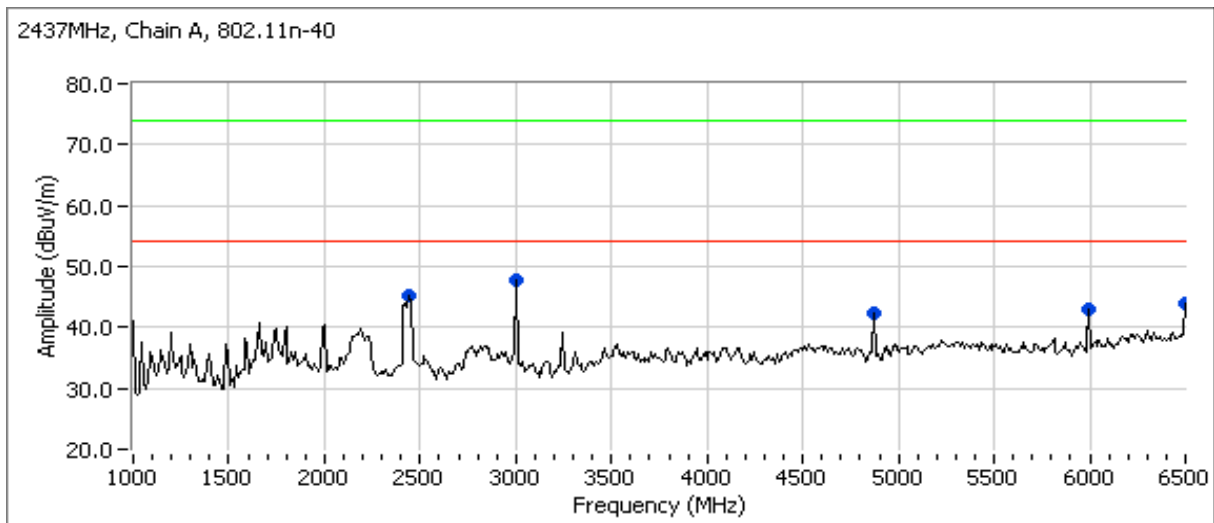
Limit is -30dBc (UNII power measurement)

Spurious Emissions

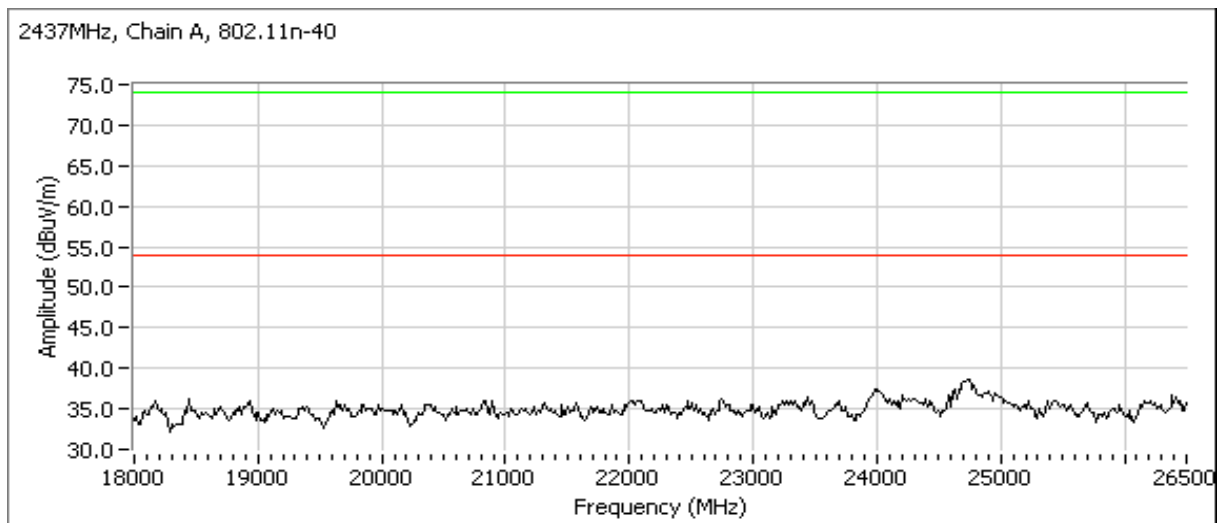
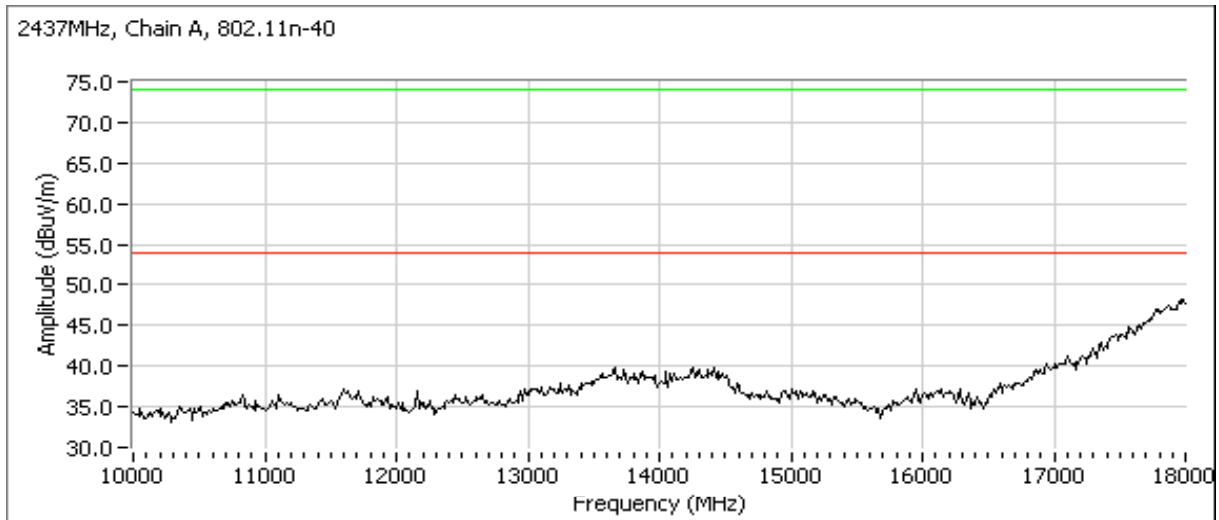
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
4874.030	32.5	V	54.0	-21.5	AVG	172	1.3	
3000.320	42.9	H	70.1	-27.2	PK	172	1.0	Not in restricted band
4874.030	38.3	V	74.0	-35.7	PK	172	1.3	
6000.730	38.0	V	70.1	-32.1	PK	144	1.0	Not in restricted band
6498.600	39.2	V	70.1	-30.9	PK	195	1.0	Not in restricted band

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
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Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Run #1b: Center Channel @ 2437 MHz


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Run #1b: Center Channel @ 2437 MHz


Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1c: High Channel @ 2452 MHz

Power Setting: GC = 20

Average power: AP = 14.1 (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

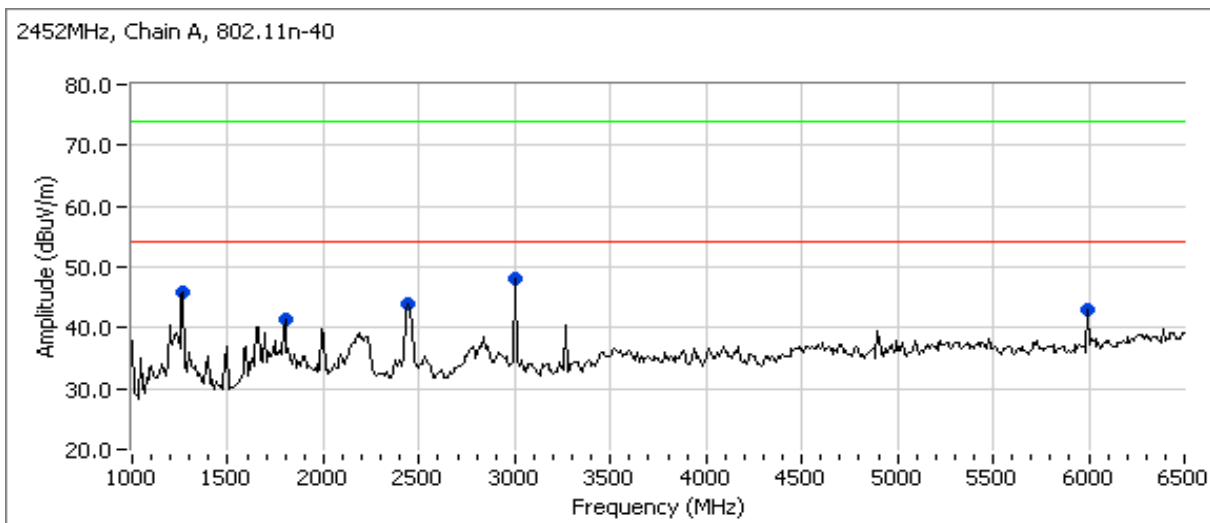
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2451.130	92.0	V	-	-	PK	62	1.0	RB = VB = 100kHz
2450.830	98.4	H	-	-	PK	250	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	98.4	dB μ V/m
Limit for emissions outside of restricted bands:	68.4	dB μ V/m

Limit is -30dBc (UNII power measurement)

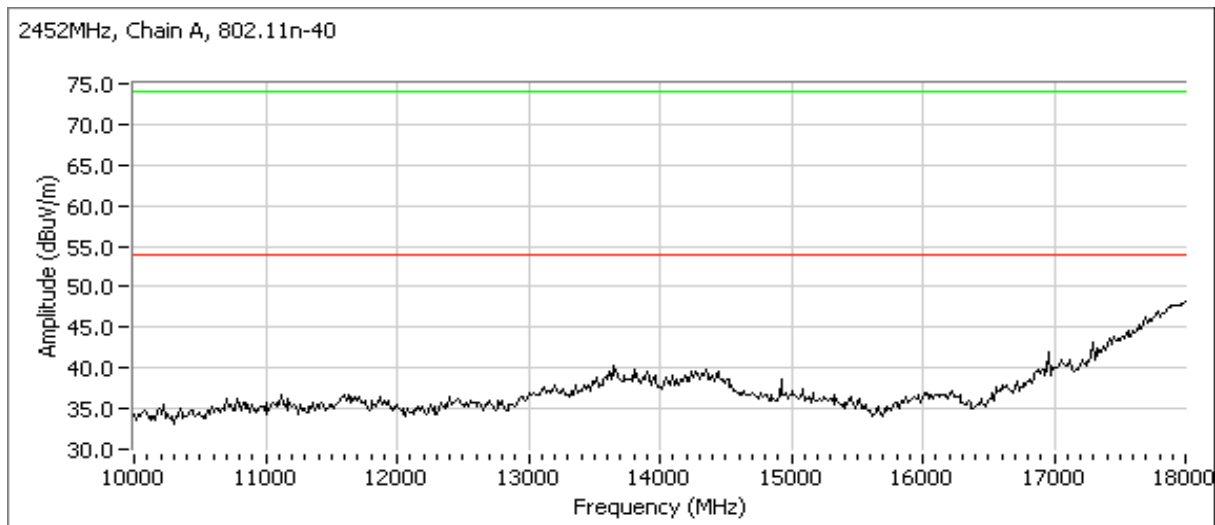
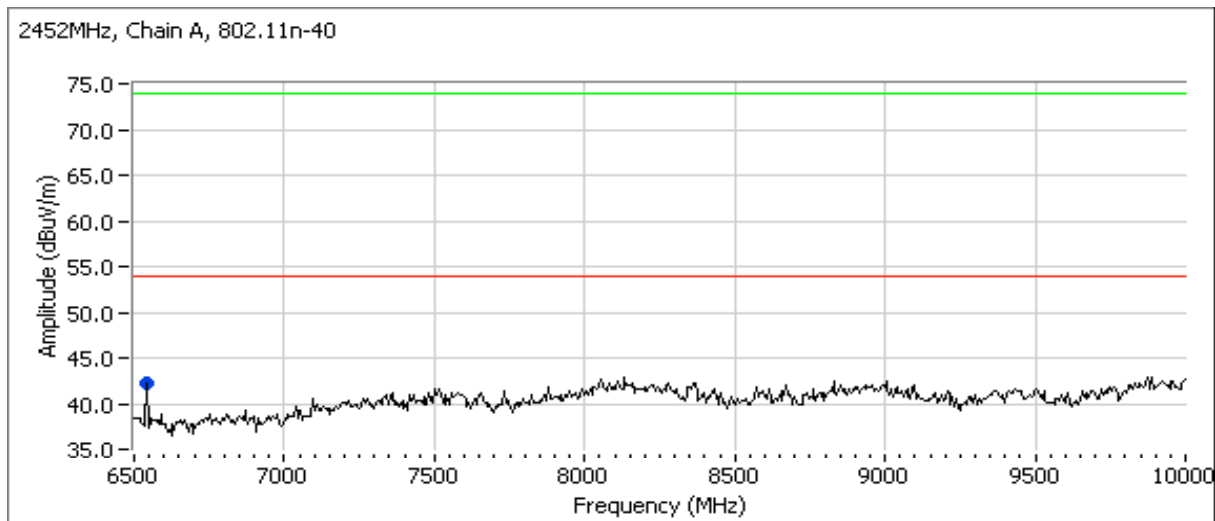
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1252.390	44.5	V	68.4	-23.9	PK	174	1.3	Not in a restricted band
1800.220	45.1	V	68.4	-23.3	PK	181	1.6	Not in a restricted band
3000.350	52.4	V	68.4	-16.0	PK	258	1.3	Not in a restricted band
6000.760	46.3	V	68.4	-22.1	PK	141	1.3	Not in a restricted band
6538.550	47.5	V	68.4	-20.9	PK	217	1.0	Not in a restricted band

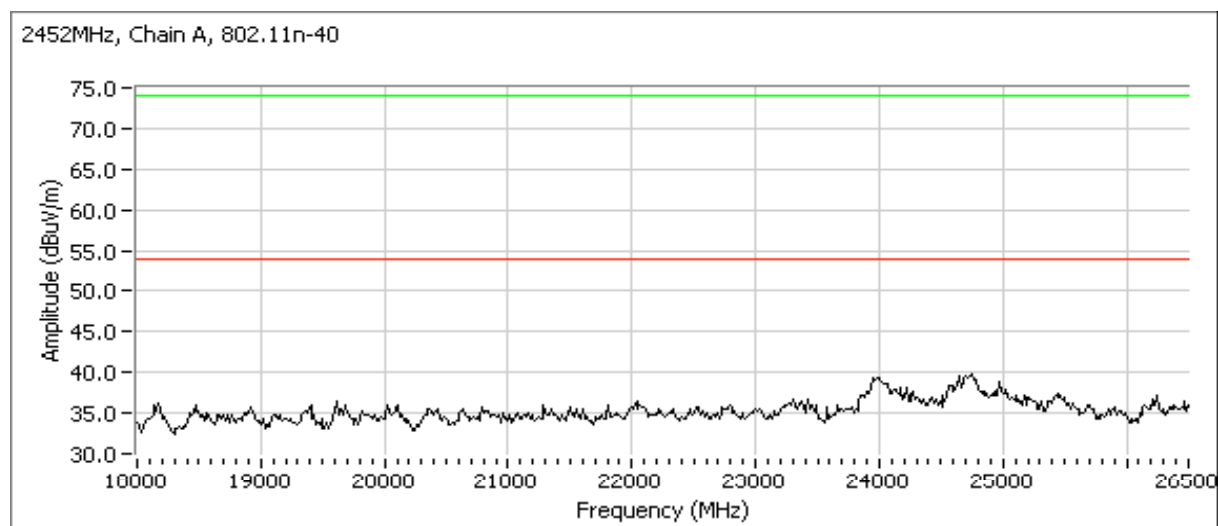


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Run #1c: High Channel @ 2452 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1c: High Channel @ 2452 MHz


Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 5725 - 5850 MHz) Radiated Spurious Emissions, 1 - 40GHz 802.11a Mode

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: 03/24/2008
Test Engineer: Ben Jing
Test Location: FT Chamber # 4

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT for measurements below 18GHz, 1m for scans and 3m for measurements above 18GHz.

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11a Chain A	5745 MHz	26.5	16.5	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	52.9dBμV/m @ 11490.1MHz (-1.1dB)
1b	802.11a Chain A	5785 MHz	27.0	16.5	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	51.2dBμV/m @ 11568.2MHz (-2.8dB)
1c	802.11a Chain A	5825 MHz	28.0	16.5	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	60.1dBμV/m @ 17471.6MHz (-1.3dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 18000 MHz. Operating Mode: 802.11a Chain A

Run #1a: Low Channel @ 5745 MHz

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5743.690	91.0	H	-	-	Pk	100	1.0	RB = VB = 100kHz
5746.240	95.1	V	-	-	Pk	171	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	95.1	dB μ V/m
Limit for emissions outside of restricted bands:	65.1	dB μ V/m

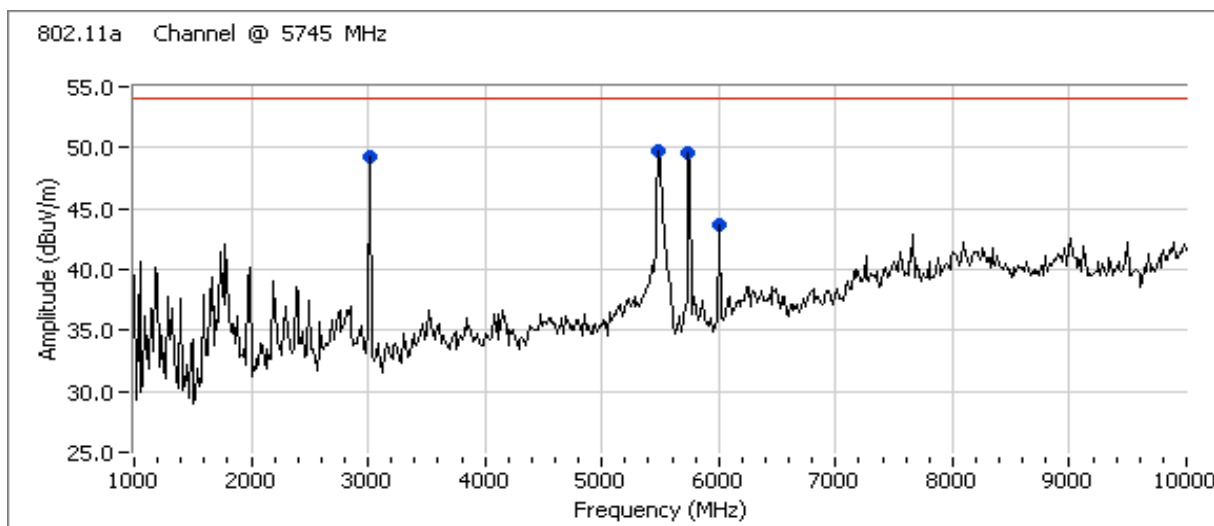
Limit is -30dBc (UNII power measurement)

Spurious Emissions

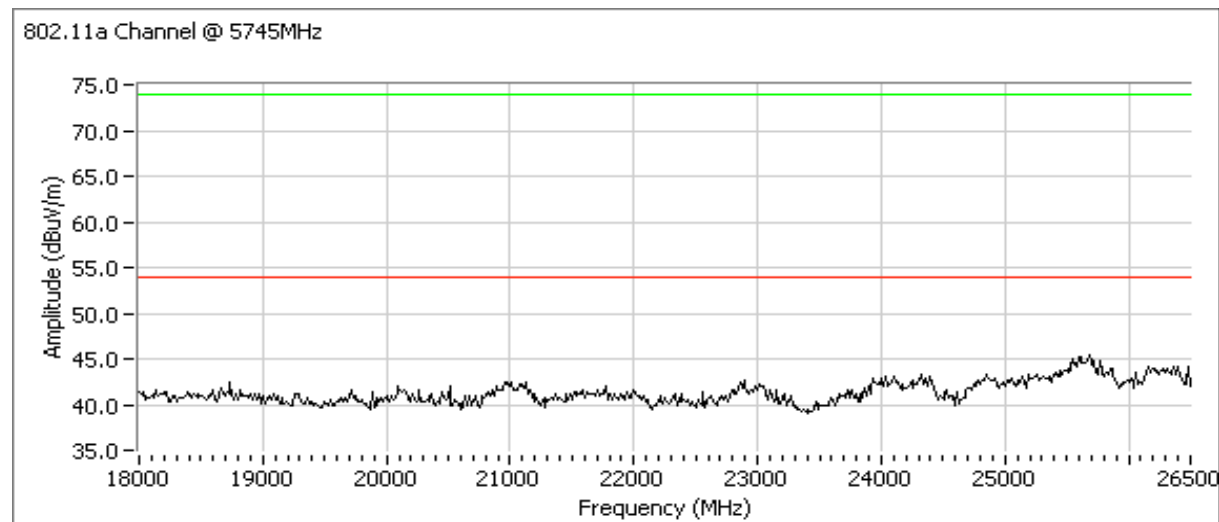
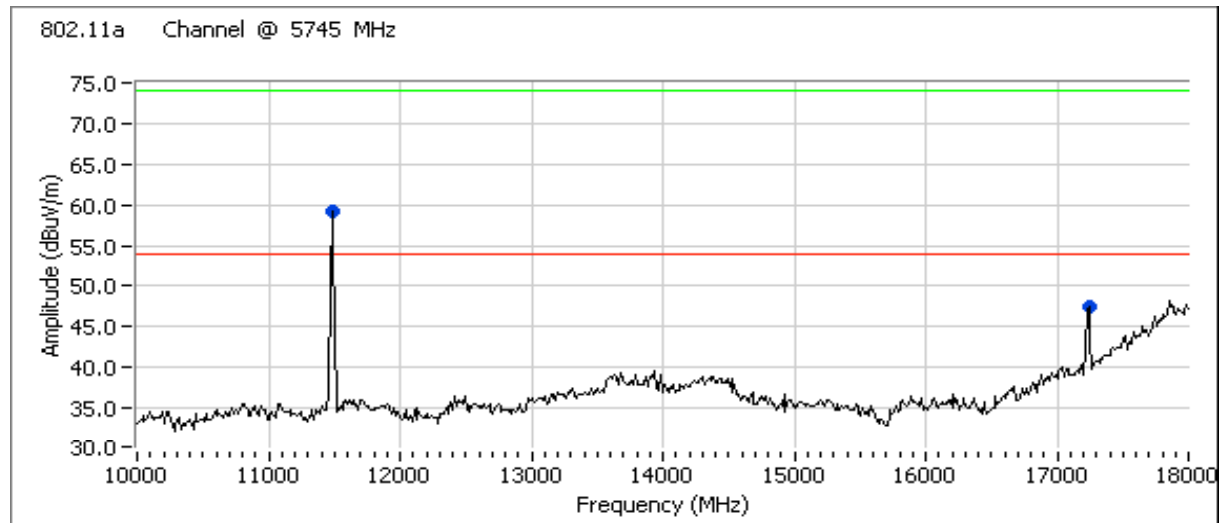
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11490.120	52.9	V	54.0	-1.1	AVG	64	1.0	
3000.340	54.3	V	65.1	-10.8	PK	272	1.0	Note 2
5487.640	57.1	V	65.1	-8.0	PK	147	1.0	Note 2
6000.650	48.3	V	65.1	-16.8	PK	106	1.0	Note 2
11490.120	64.4	V	74.0	-9.6	PK	64	1.0	
17236.880	61.2	H	65.1	-3.9	PK	144	1.0	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

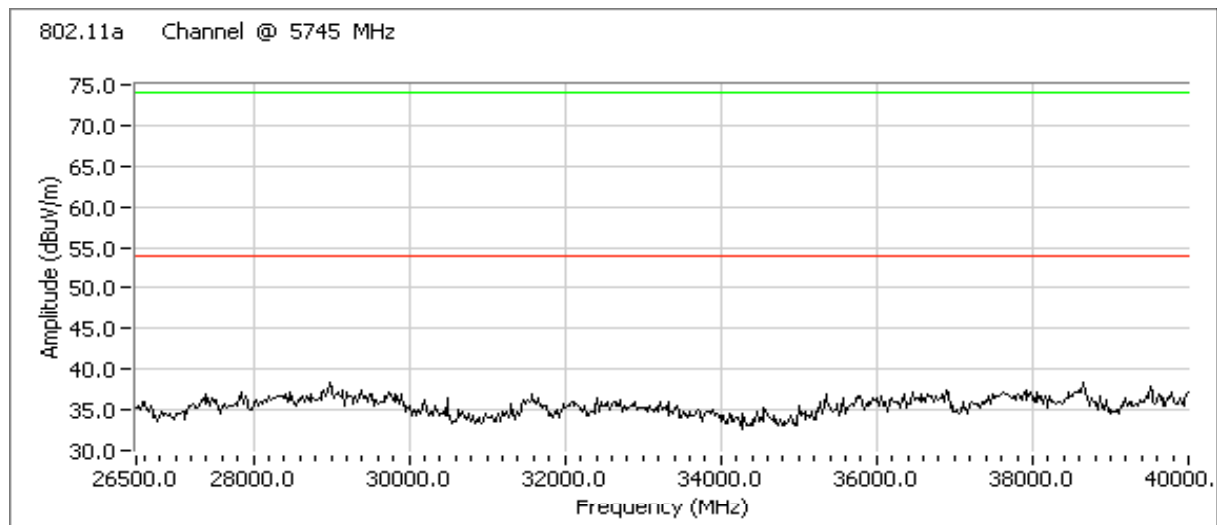
Note 2: Signal is not in a restricted band.



Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A



Run #1b: Center Channel @ 5785 MHz

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5783.680	92.2	V	-	-	Pk	175	1.0	RB = VB = 100kHz
5786.470	88.3	H	-	-	Pk	101	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW: 92.2 dBuV/m

Limit for emissions outside of restricted bands: 62.2 dBuV/m Limit is -30dBc (UNII power measurement)

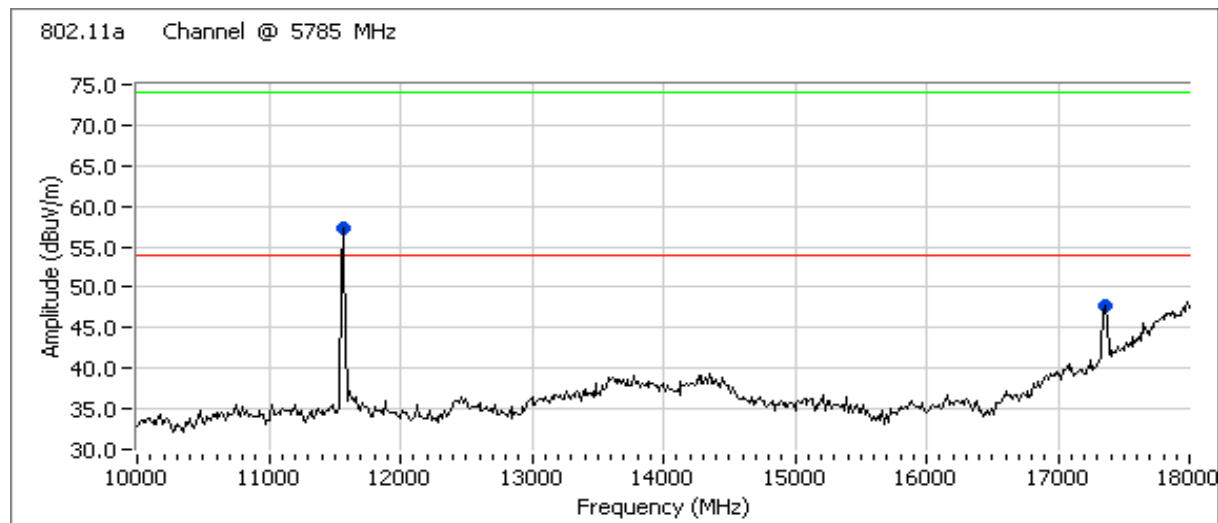
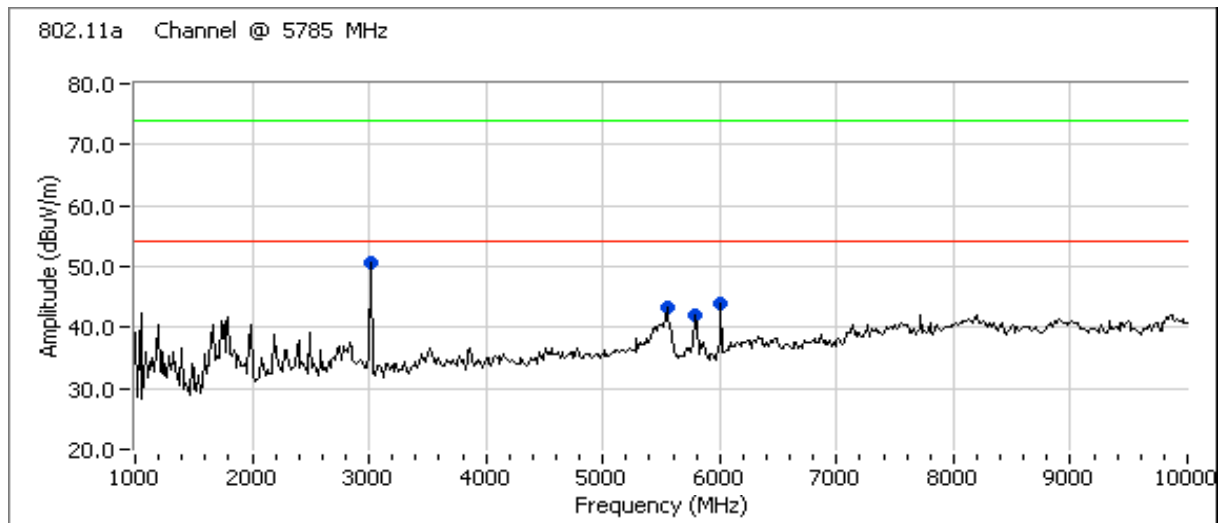
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11568.240	51.2	V	54.0	-2.8	AVG	60	1.0	
3000.340	54.3	V	62.2	-7.9	PK	271	1.0	Note 2
5544.140	49.3	V	62.2	-12.9	PK	186	1.0	Note 2
6000.750	48.2	V	62.2	-14.0	PK	120	1.0	Note 2
11568.240	62.9	V	74.0	-11.1	PK	60	1.0	
17357.760	55.9	H	62.2	-6.3	PK	192	1.0	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

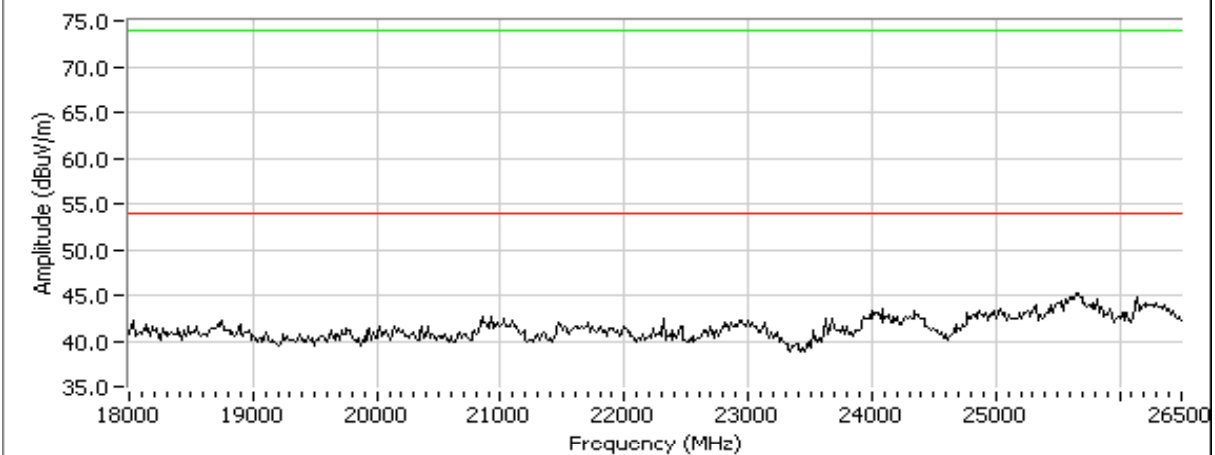
Note 2: Signal is not in a restricted band.

Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

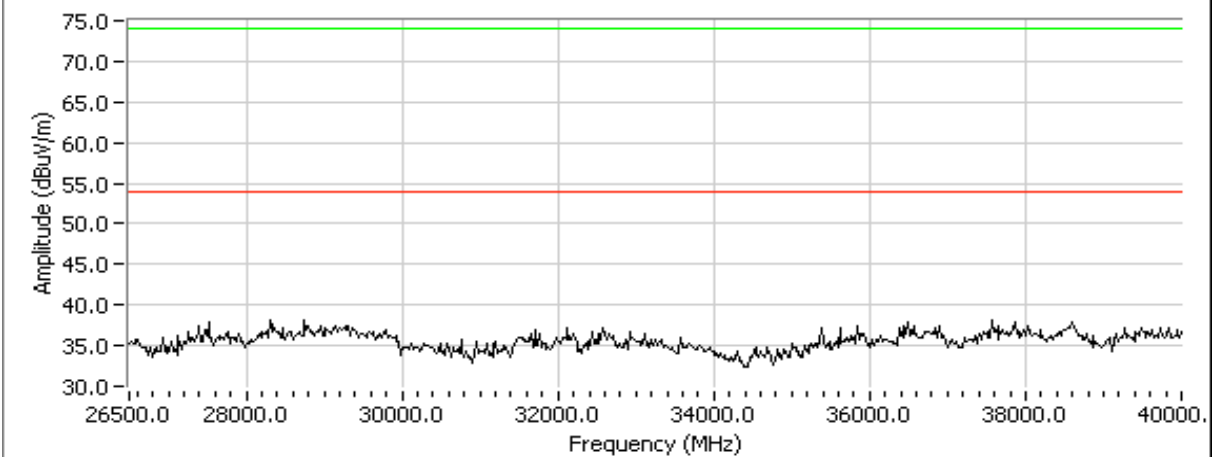


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

802.11a Channel @ 5785MHz



802.11a Channel @ 5785 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1c: High Channel @ 5825 MHz

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5823.690	88.8	H	-	-	Pk	98	1.0	RB = VB = 100kHz
5823.710	91.4	V	-	-	Pk	176	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	91.4	dB μ V/m
Limit for emissions outside of restricted bands:	61.4	dB μ V/m

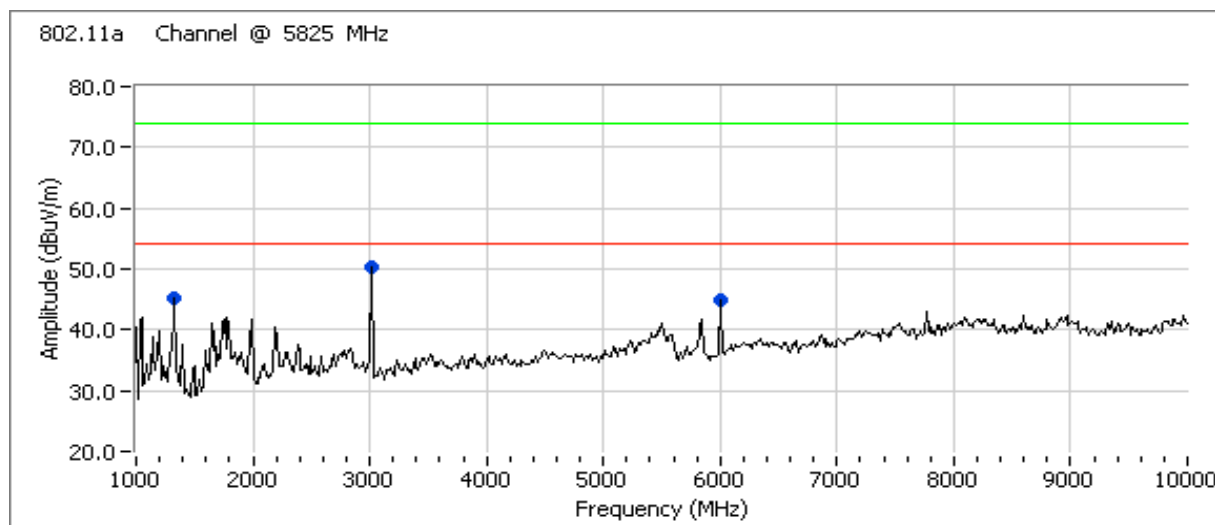
Limit is -30dBc (UNII power measurement)

Spurious Emissions

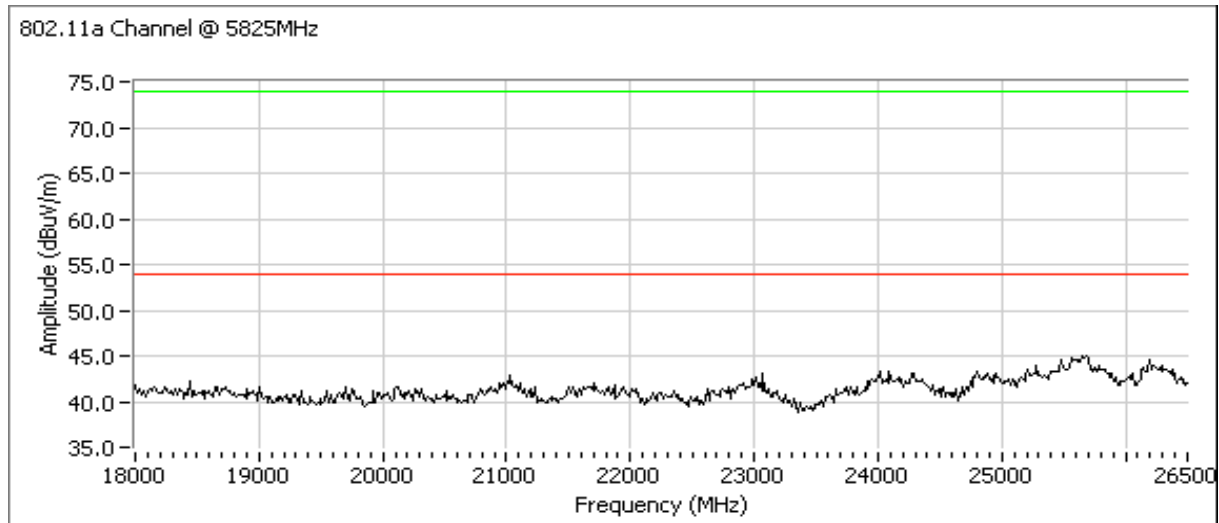
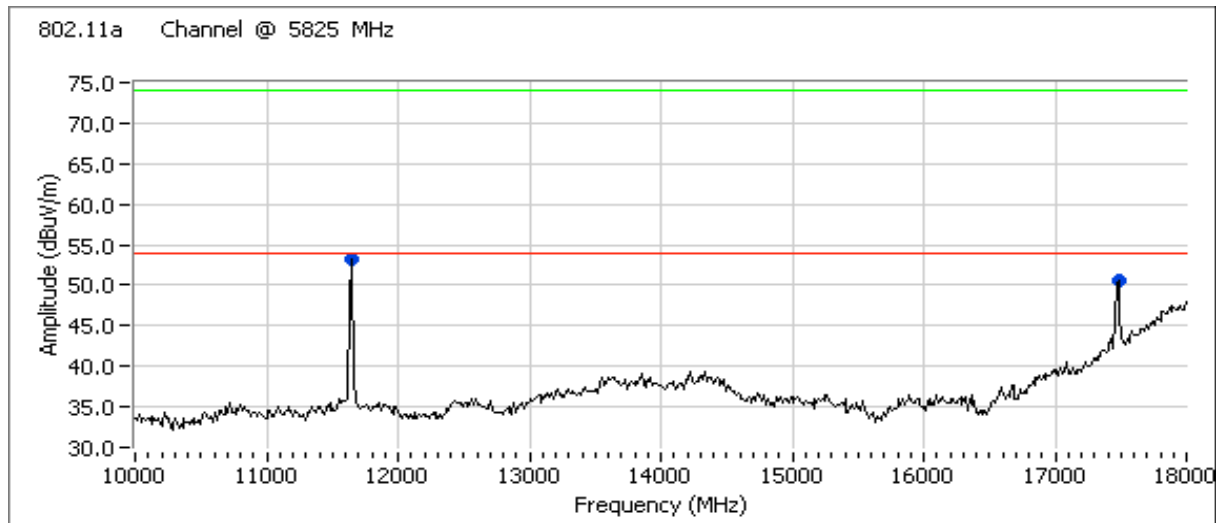
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11649.410	46.3	V	54.0	-7.7	AVG	80	1.0	
3000.420	53.9	V	61.4	-7.5	PK	270	1.0	Note 2
6000.740	49.1	V	61.4	-12.3	PK	275	1.0	Note 2
11649.410	58.4	V	74.0	-15.6	PK	80	1.0	
17471.600	60.1	H	61.4	-1.3	PK	138	1.0	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

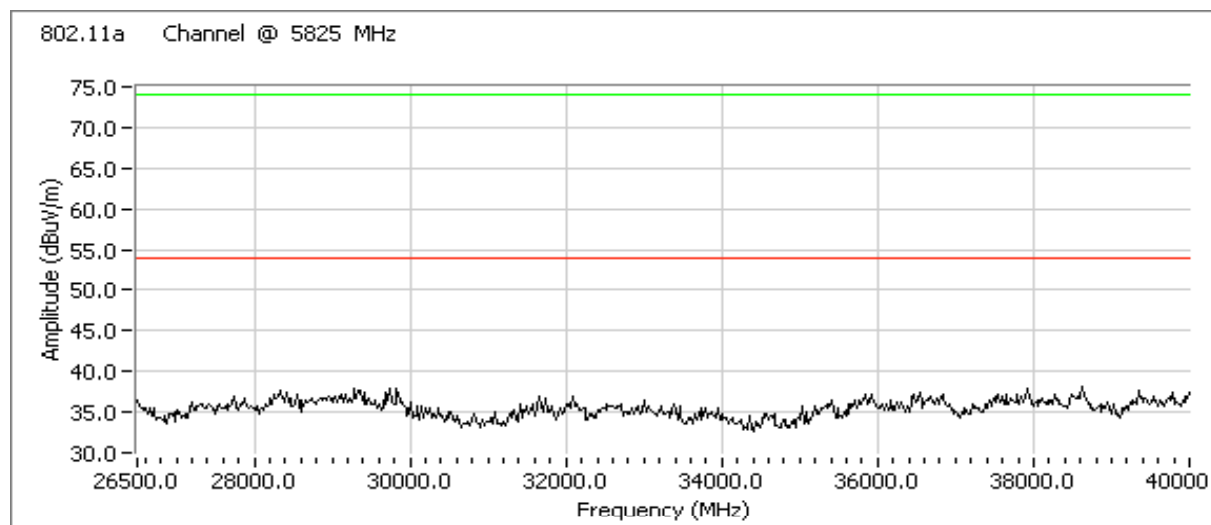
Note 2: Signal is not in a restricted band but the more stringent restricted band limit was used.



Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 5725 - 5850 MHz) Radiated Spurious Emissions, 1 - 40GHz 802.11n (20MHz) Mode

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.

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT for measurements below 18GHz, 1m for scans and 3m for measurements above 18GHz.

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n20 Chain A	5745 MHz	27.5	16.5	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	50.0dBμV/m @ 3000.4MHz (-4.0dB)
1b	802.11n20 Chain A	5785 MHz	28.5	16.5	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	50.8dBμV/m @ 3000.3MHz (-3.2dB)
1c	802.11n20 Chain A	5825 MHz	29.5	16.5	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	52.0dBμV/m @ 3000.3MHz (-2.0dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Run #1: Radiated Spurious Emissions, 1000 - 40000 MHz. Operating Mode: 802.11a Chain A

Date of Test: 4/8/2008

Test Engineer: Joseph Cadigal, Peter Sales

Test Location: FT Chamber # 4

For emissions in restricted bands, the limit of 15.209 was used and measured with a bandwidth of 1MHz. Unless stated otherwise the limit for all other emissions was set 30dB below the level of the fundamental and measured in 100kHz.

Run #1a: Low Channel @ 5745 MHz

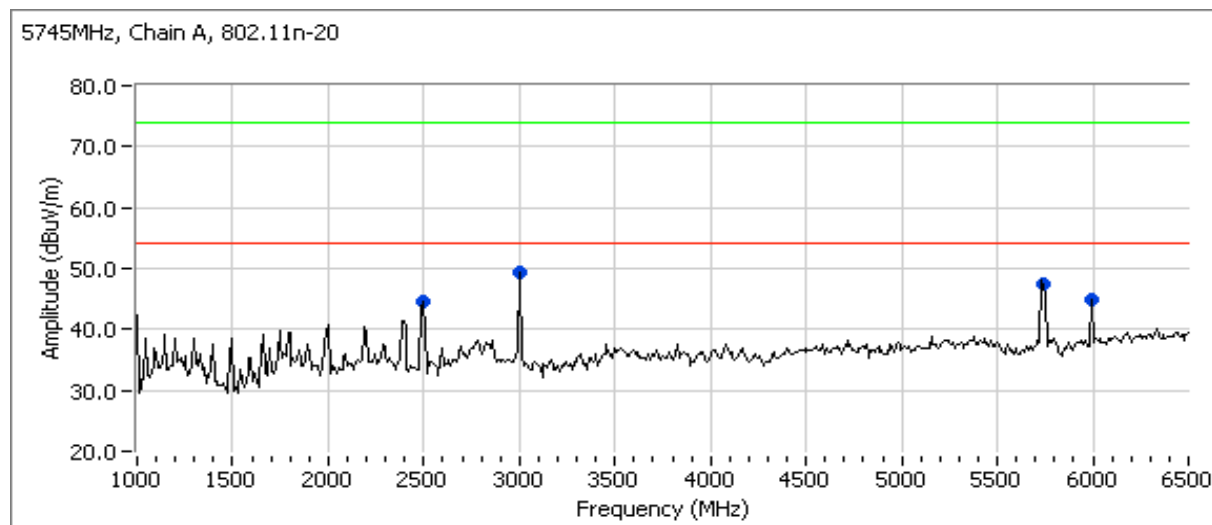
Power Setting: GC = 27.5

Average power: AP = 16.5 (for reference purposes)

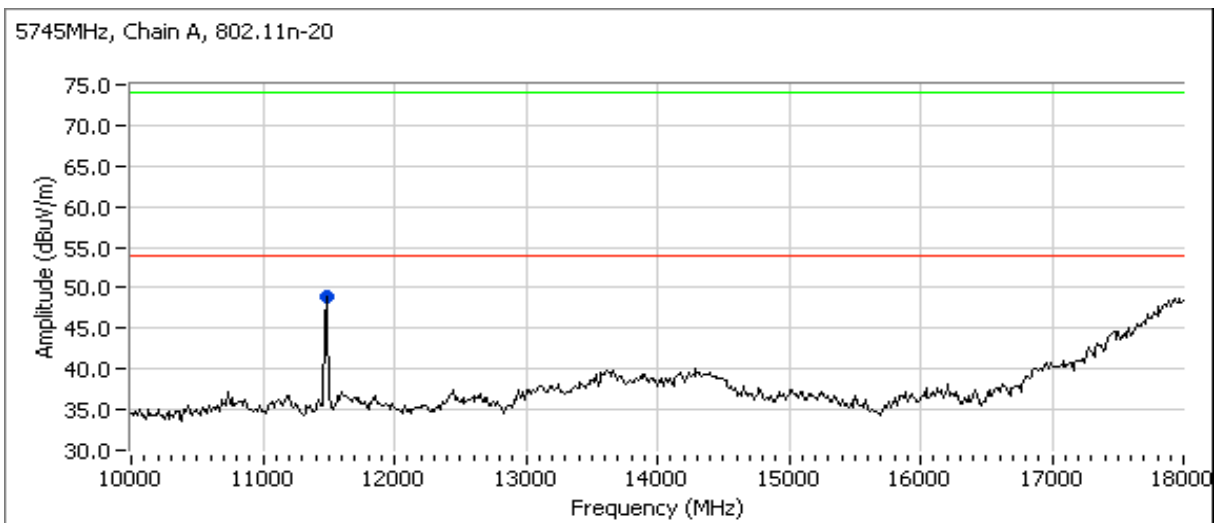
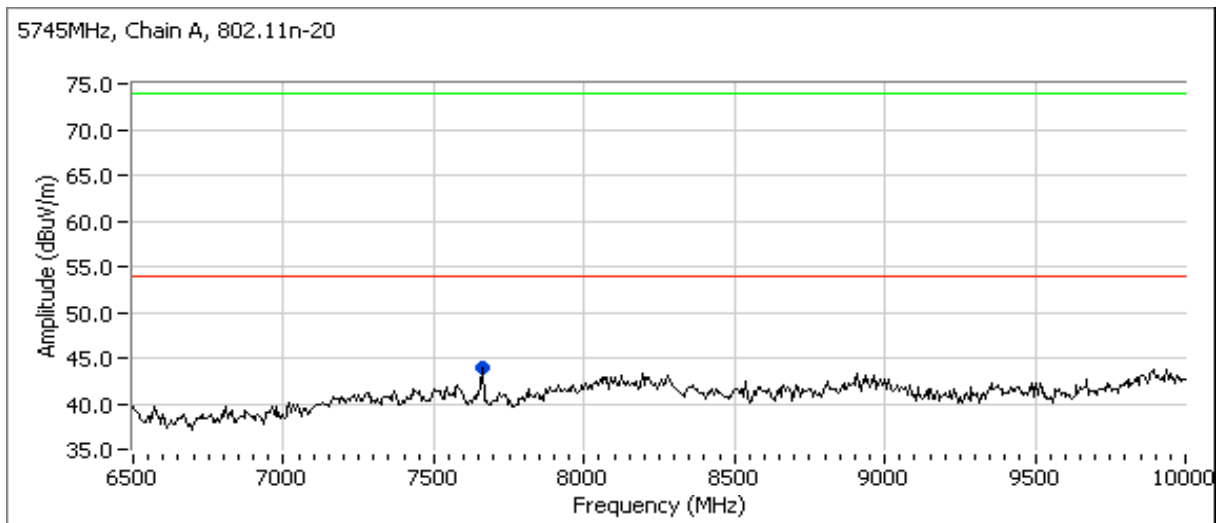
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2492.350	32.0	H	54.0	-22.0	AVG	155	1.6	
3000.380	50.0	V	54.0	-4.0	AVG	266	1.6	
5999.970	45.6	V	54.0	-8.4	AVG	195	1.0	
7659.850	38.5	V	54.0	-15.5	AVG	262	1.3	
11489.460	48.2	V	54.0	-5.8	AVG	224	1.0	
2492.350	49.4	H	74.0	-24.6	PK	155	1.6	
3000.380	54.0	V	74.0	-20.0	PK	266	1.6	Note 2
5999.970	50.7	V	74.0	-23.3	PK	195	1.0	Note 2
7659.850	47.4	V	74.0	-26.6	PK	262	1.3	
11489.460	60.3	V	74.0	-13.7	PK	224	1.0	

Note 2: Although the signal is not in a restricted band, the general limits were applied.

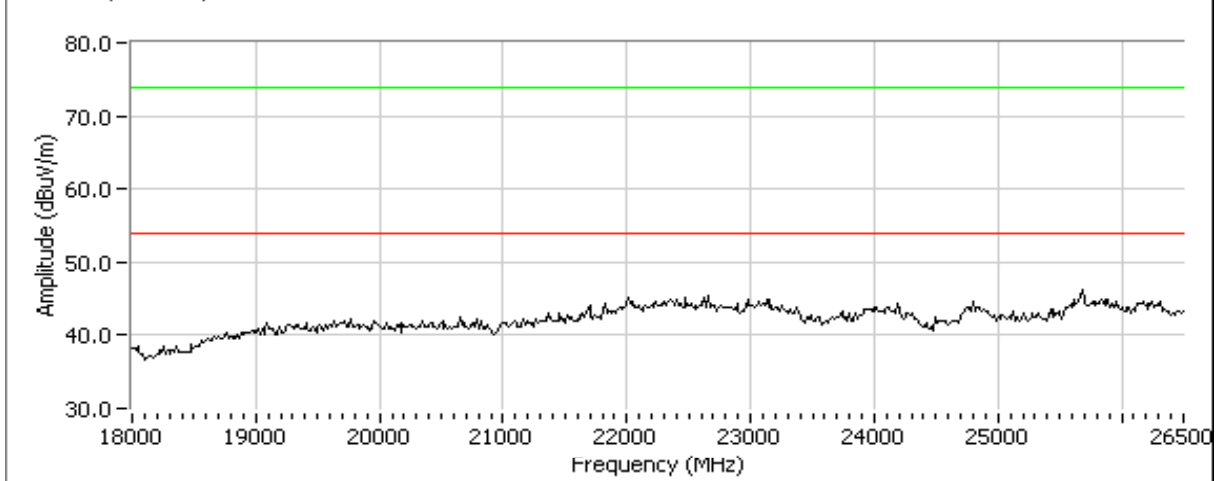


Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

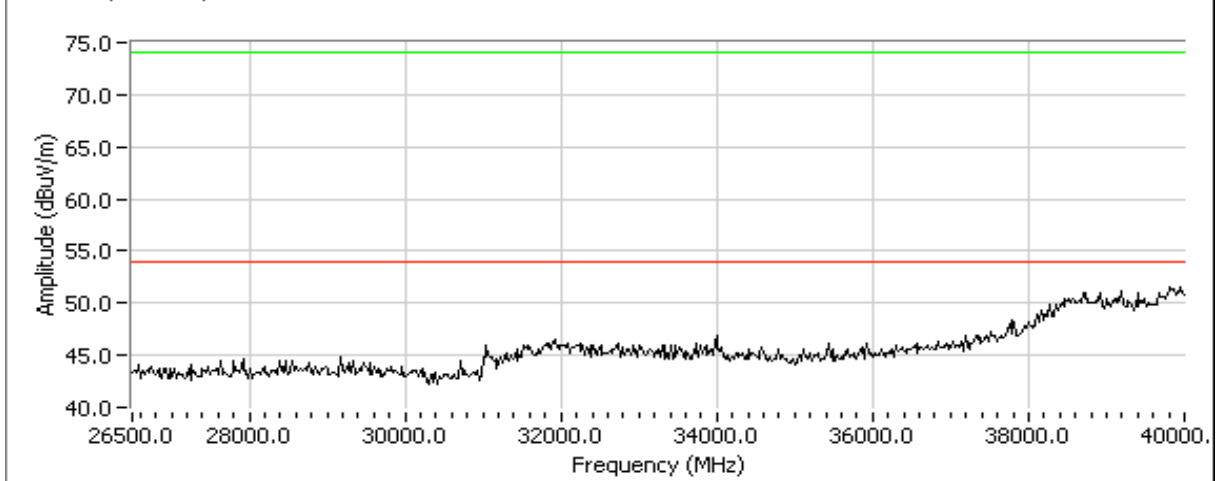


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

5745MHz, Chain A, 802.11n-20



5745MHz, Chain A, 802.11n-20



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: Center Channel @ 5785 MHz

Power Setting: GC = 28.5

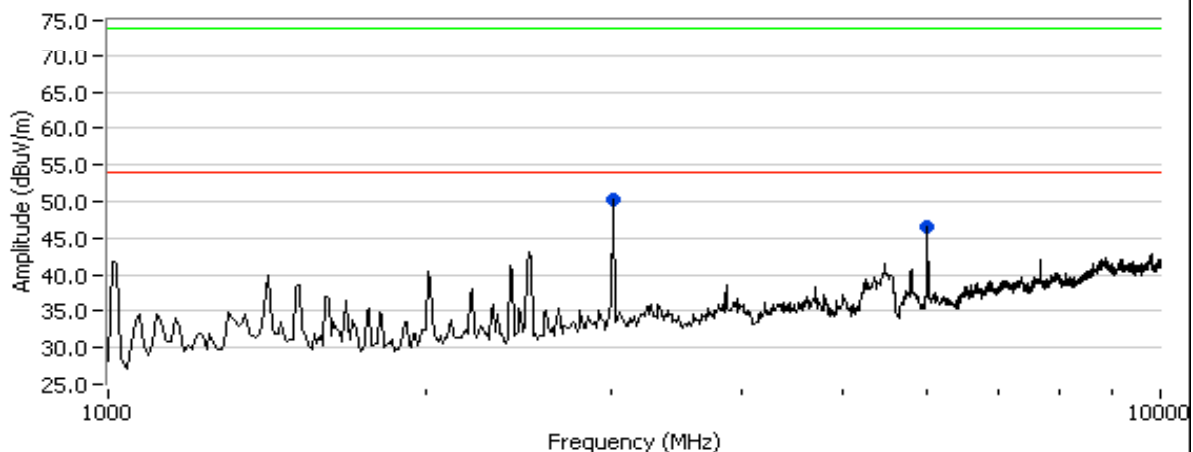
Average power: AP = 16.5 (for reference purposes)

Spurious Emissions

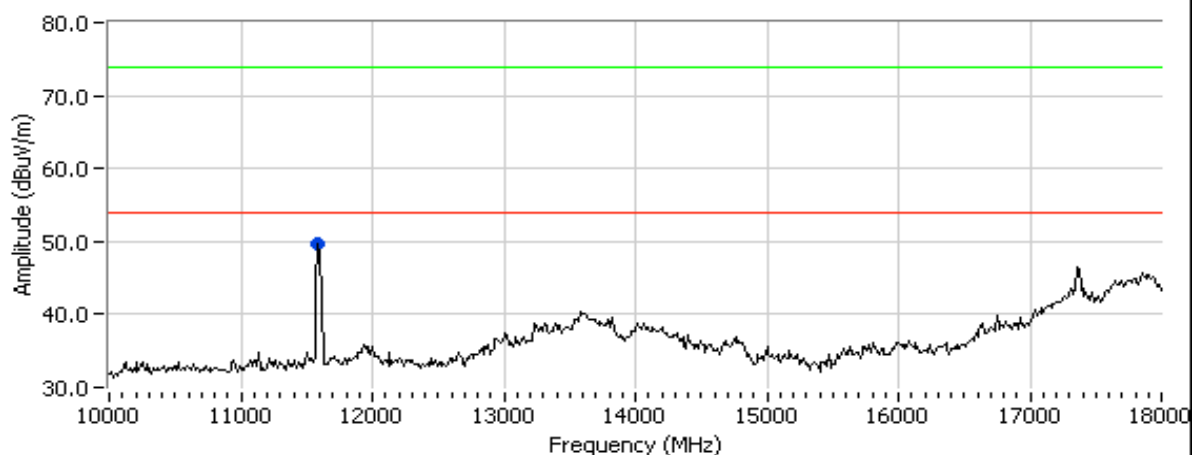
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.320	50.8	V	54.0	-3.2	AVG	270	1.3	Note 2
6000.770	47.5	V	54.0	-6.5	AVG	101	1.0	Note 2
11570.000	45.7	V	54.0	-8.3	AVG	162	1.0	
3000.320	54.9	V	74.0	-19.1	PK	270	1.3	Note 2
6000.770	51.4	V	74.0	-22.6	PK	101	1.0	Note 2
11570.000	58.6	V	74.0	-15.4	PK	162	1.0	

Note 2: Although the signal is not in a restricted band, the general limits were applied.

5785MHz, Chain A, 802.11n-20

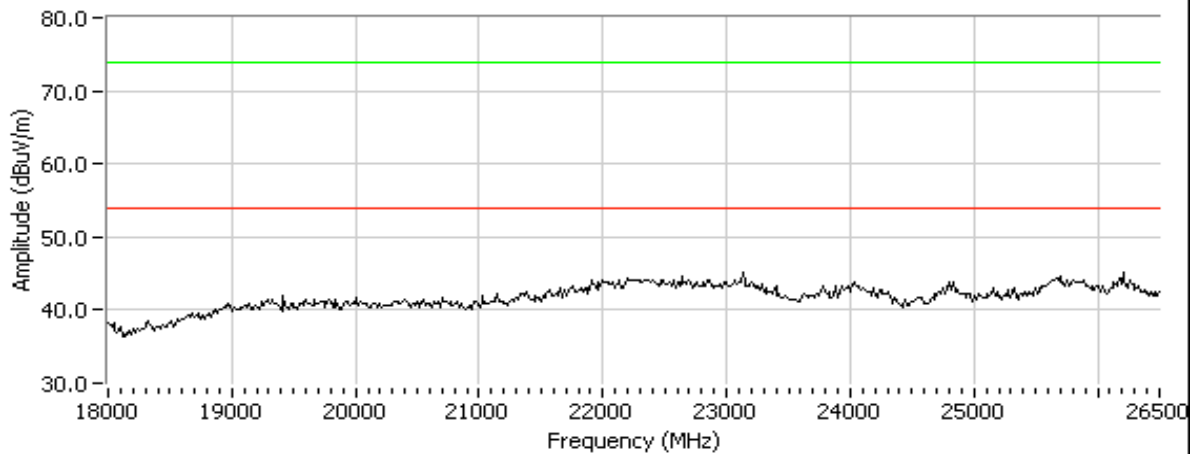


5785MHz, Chain A, 802.11n-20

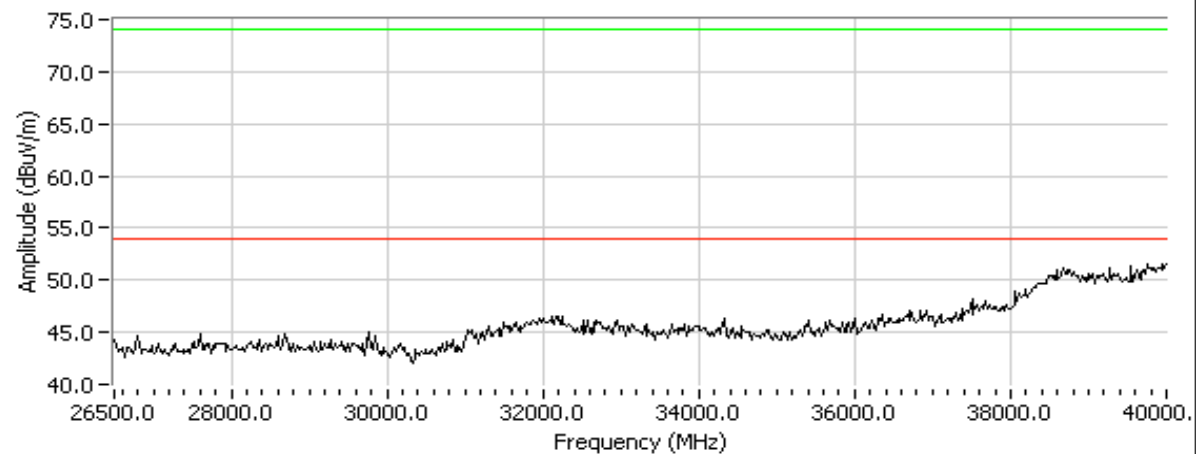


Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

5785MHz, Chain A, 802.11n-20



5785MHz, Chain A, 802.11n-20



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1c: High Channel @ 5825 MHz

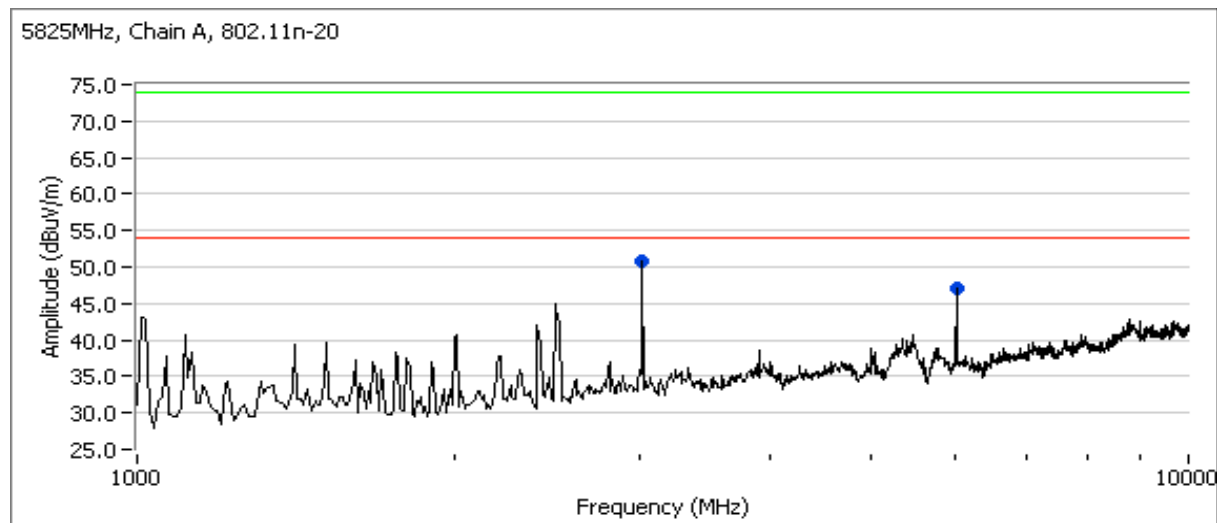
Power Setting: GC = 29.5

Average power: AP = 16.5 (for reference purposes)

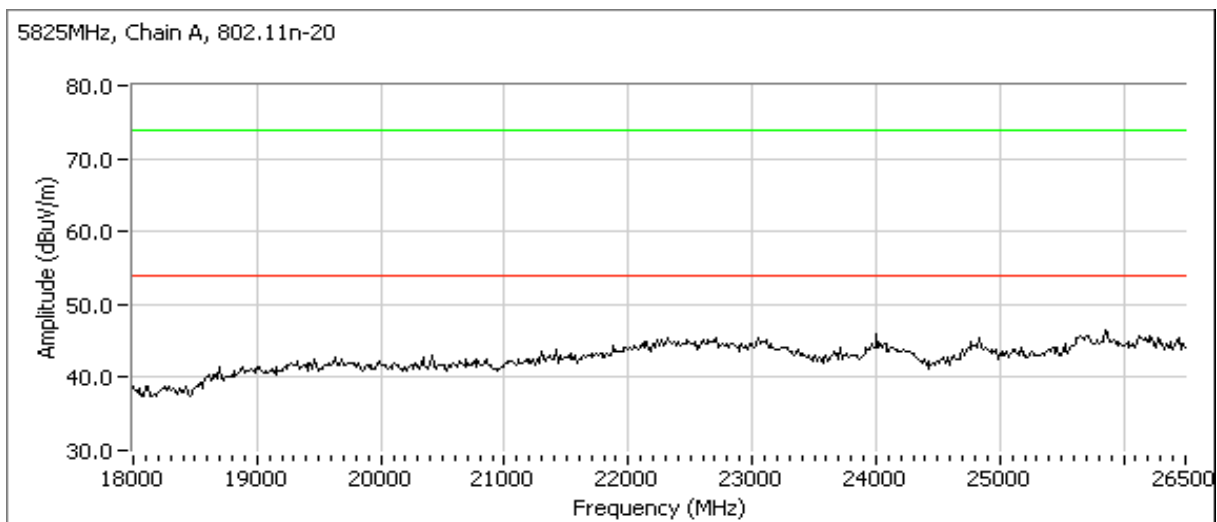
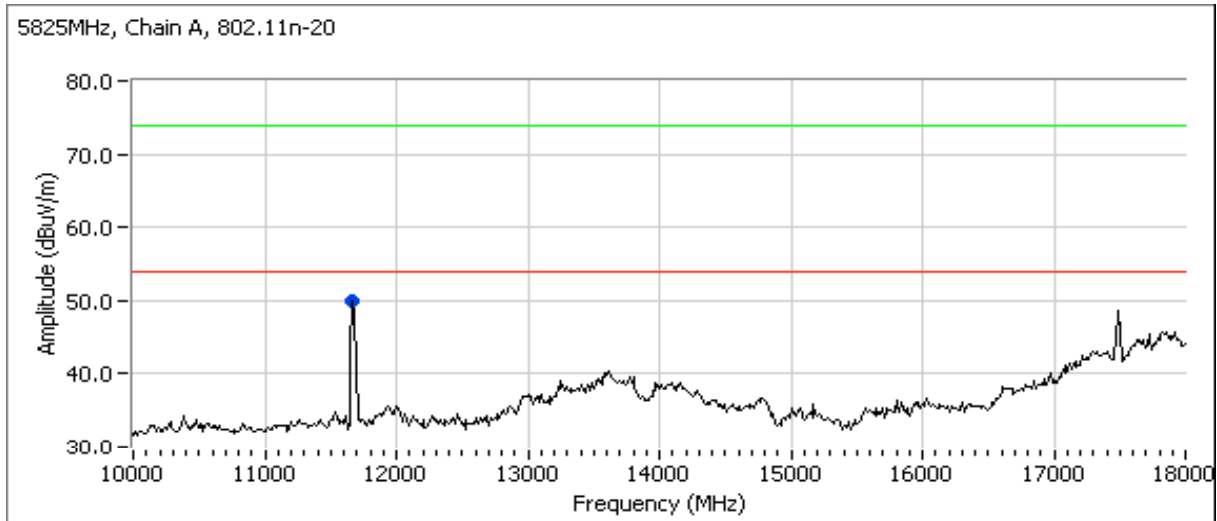
Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.300	52.0	V	54.0	-2.0	AVG	270	1.3	Note 2
6000.670	47.2	V	54.0	-6.8	AVG	104	1.0	Note 2
11648.900	46.7	V	54.0	-7.3	AVG	163	1.0	
39973.150	40.0	V	54.0	-14.0	AVG	215	1.3	Note 2 Noise floor
3000.300	55.7	V	74.0	-18.3	PK	270	1.3	Note 2
6000.670	51.5	V	74.0	-22.5	PK	104	1.0	
11648.900	59.9	V	74.0	-14.1	PK	163	1.0	
39973.150	51.7	V	74.0	-22.3	PK	215	1.3	Note 2 Noise floor

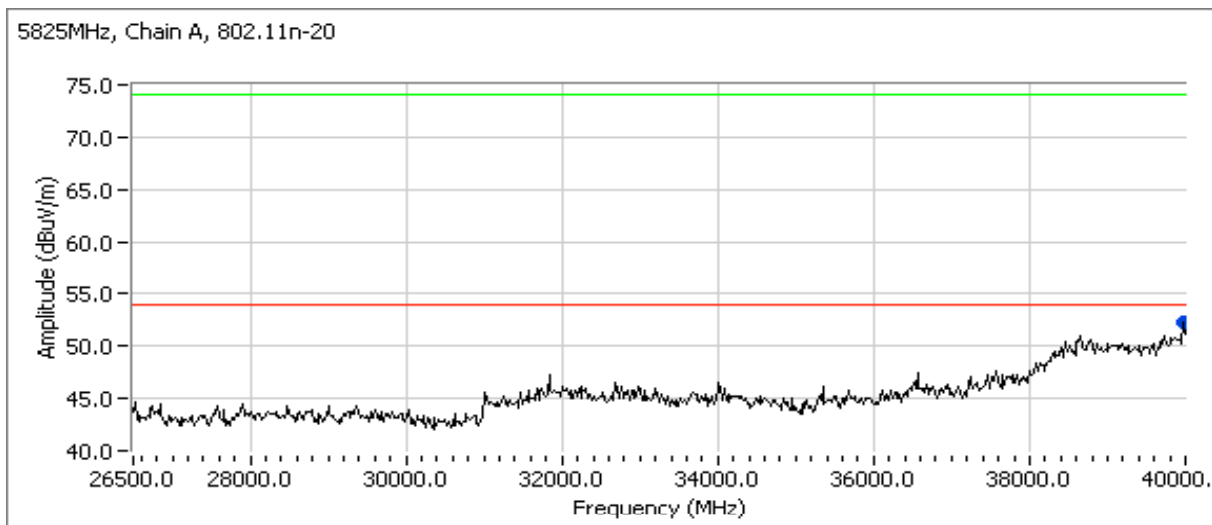
Note 2: Although the signal is not in a restricted band, the general limits were applied.



Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 5725 - 5850 MHz) Radiated Spurious Emissions, 1 - 40GHz 802.11n 40 MHz Mode

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.

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT for measurements below 18GHz, 1m for scans and 3m for measurements above 18GHz.

Ambient Conditions:

Temperature:	20 °C
Rel. Humidity:	39 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	802.11n40 Chain A	5755 MHz	27.5	16.5	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	52.9dBµV/m @ 3000.4MHz (-1.1dB)
1	802.11n40 Chain A	5795 MHz	28.5	16.5	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	52.5dBµV/m @ 3000.3MHz (-1.5dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 40000 MHz. Operating Mode: 802.11n 40 MHz Chain A

Date of Test: 4/10/2008, 4/11/2008

Test Engineer: Joseph Cadigal
Peter Sales

Test Location: FT Chamber # 5

Run #1a: Low Channel @ 5755 MHz

Power Setting: GC = 27.5

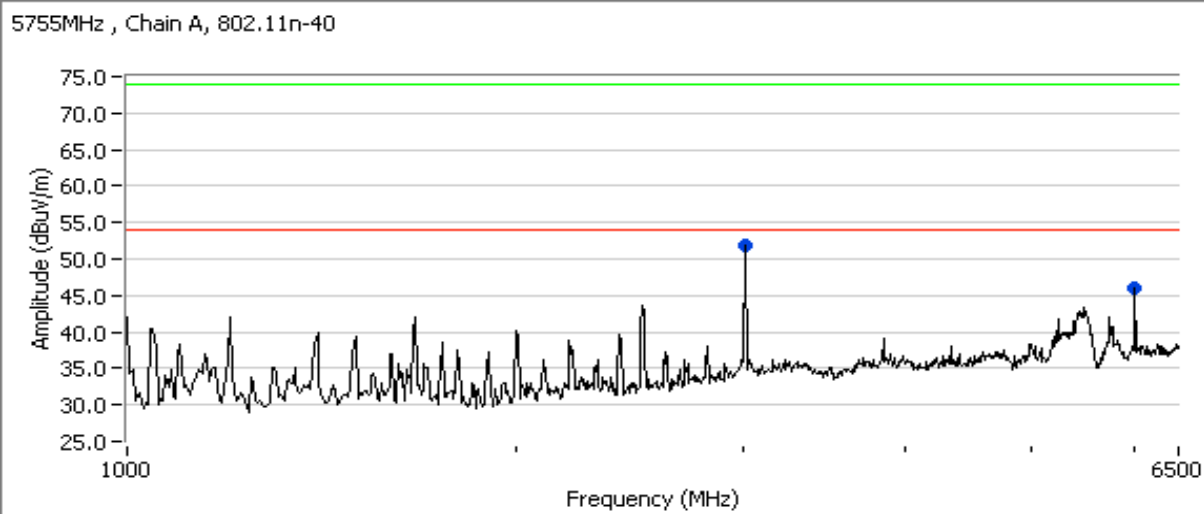
Average power: AP = 16.5 (for reference purposes)

Spurious Emissions

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247 Limit	Margin	Detector PK/QP/Avg	Azimuth degrees	Height meters	Comments
3000.420	52.9	V	54.0	-1.1	AVG	258	1.3	Note 2
6000.650	45.0	V	54.0	-9.0	AVG	274	1.3	Note 2
11502.800	39.6	V	54.0	-14.4	AVG	224	1.0	
3000.420	55.6	V	74.0	-18.4	PK	258	1.3	Note 2
11502.800	50.7	V	74.0	-23.3	PK	224	1.0	
6000.650	50.7	V	74.0	-23.3	PK	274	1.3	Note 2

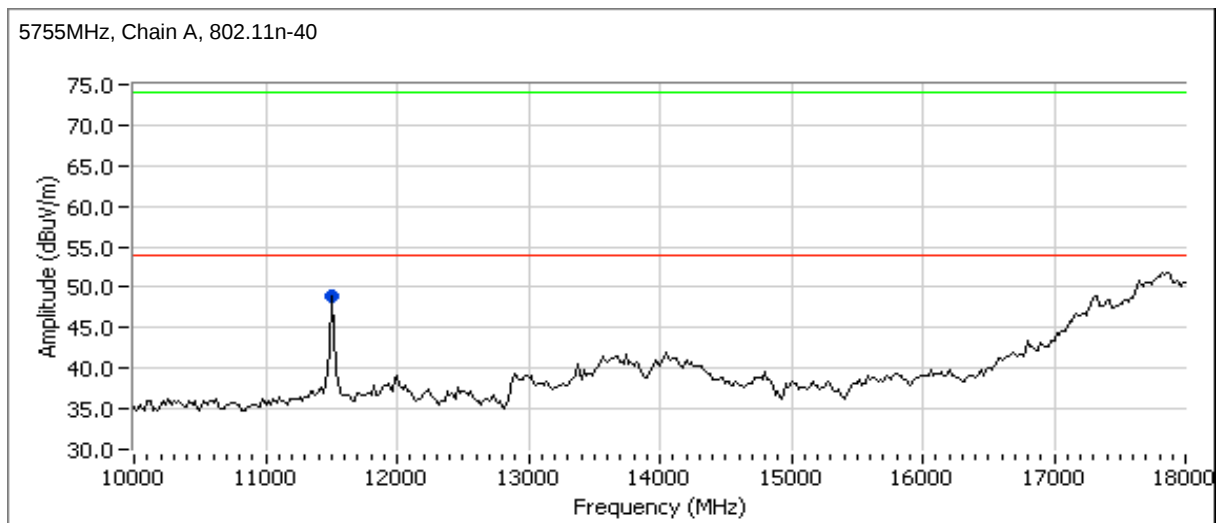
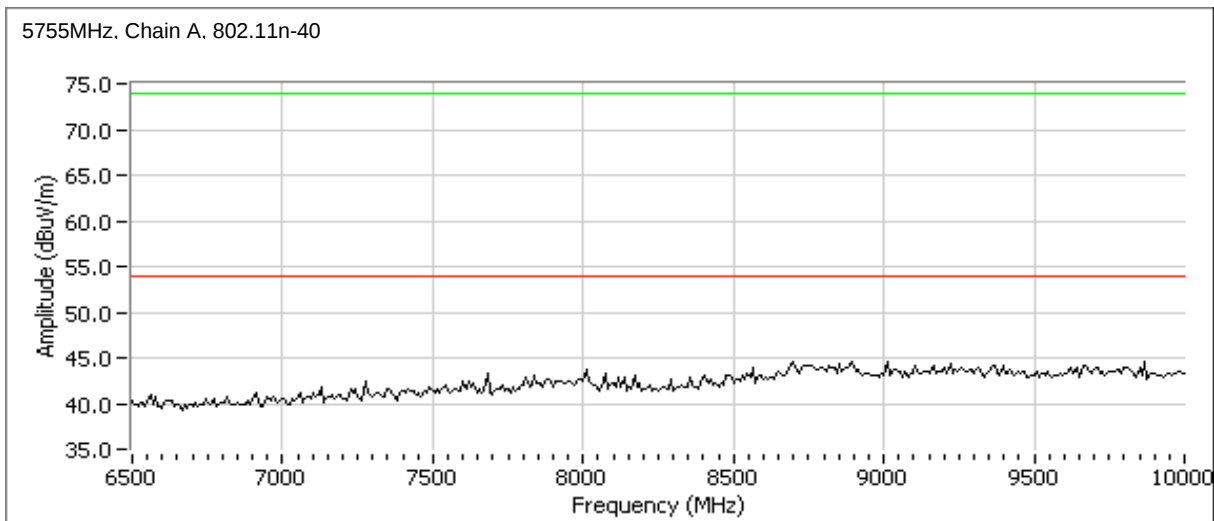
Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band but more stringent 15.209 limit applied.



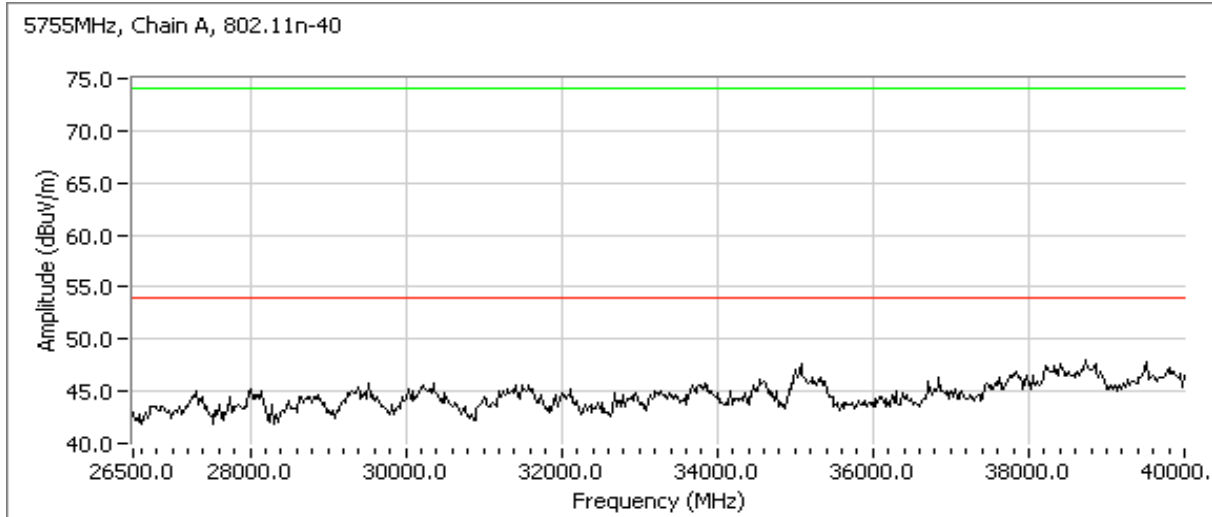
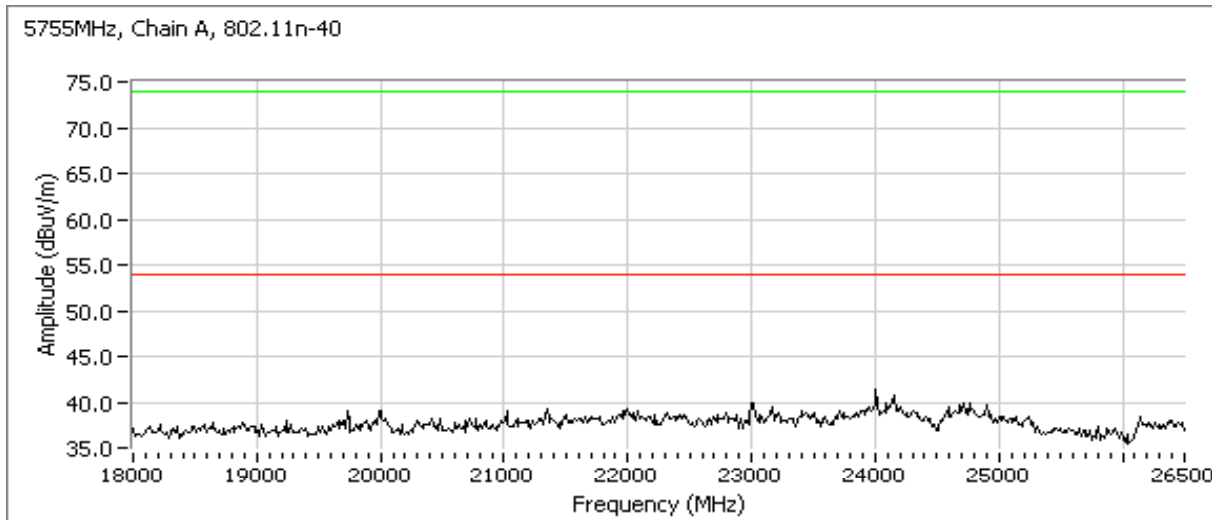
Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 40000 MHz. Operating Mode: 802.11n 40 MHz Chain A



Client: Intel	Job Number: J70979
Model: 512an MMW	T-Log Number: T71040
Contact: Robert Paxman	Account Manager: Briggs / Eriksen
Standard: RSS 210 / FCC 15.247 DTS (Radiated)	Class: N/A

Run #1: Radiated Spurious Emissions, 1000 - 40000 MHz. Operating Mode: 802.11n 40 MHz Chain A



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: High Channel @ 5795 MHz

Power Setting: GC = 28.5

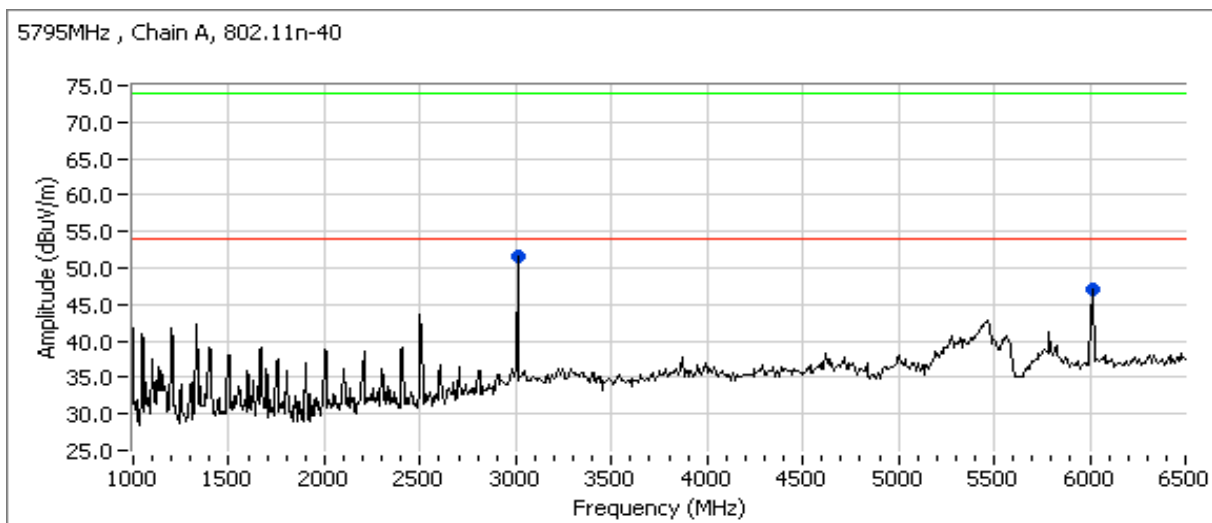
Average power: AP = 16.5 (for reference purposes)

Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.290	52.5	V	54.0	-1.5	AVG	258	1.3	
6000.720	44.9	V	54.0	-9.1	AVG	267	1.0	
11590.500	39.0	V	54.0	-15.0	AVG	168	1.0	
3000.290	55.6	V	74.0	-18.4	PK	258	1.3	
6000.720	50.5	V	74.0	-23.5	PK	267	1.0	
11590.500	49.5	V	74.0	-24.5	PK	168	1.0	

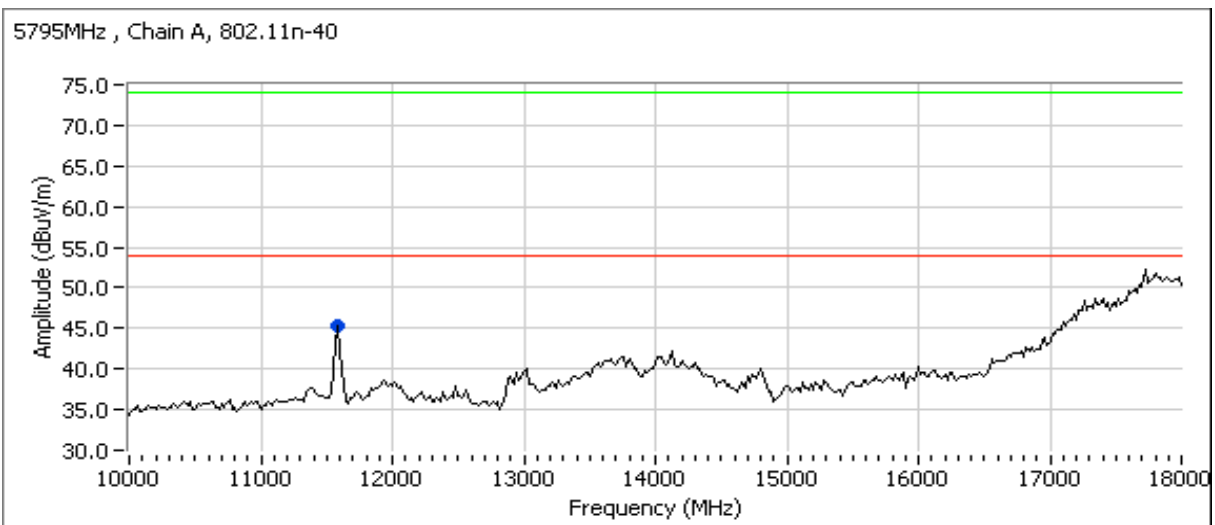
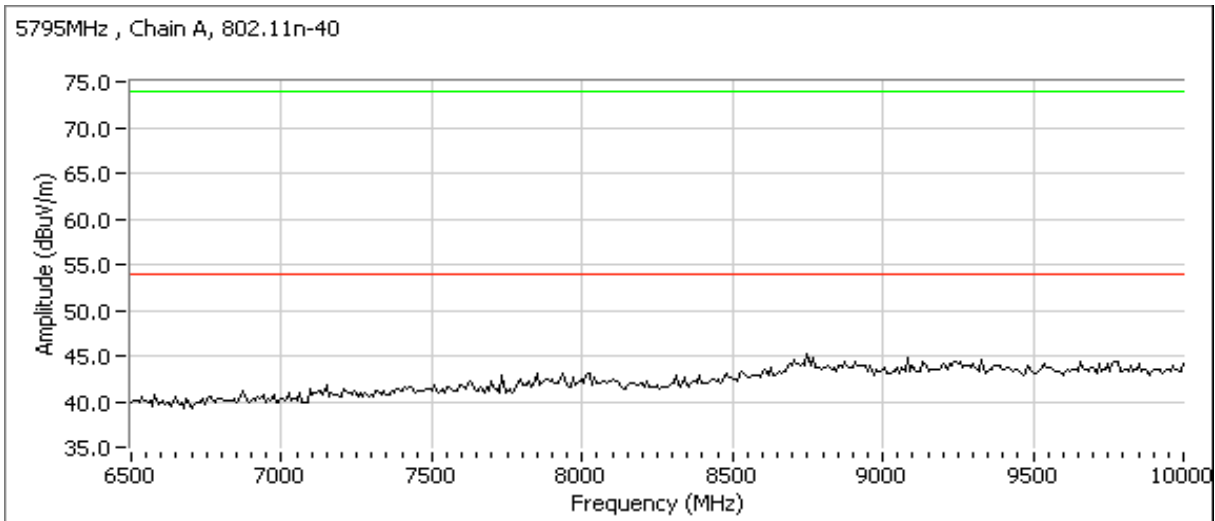
Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band.



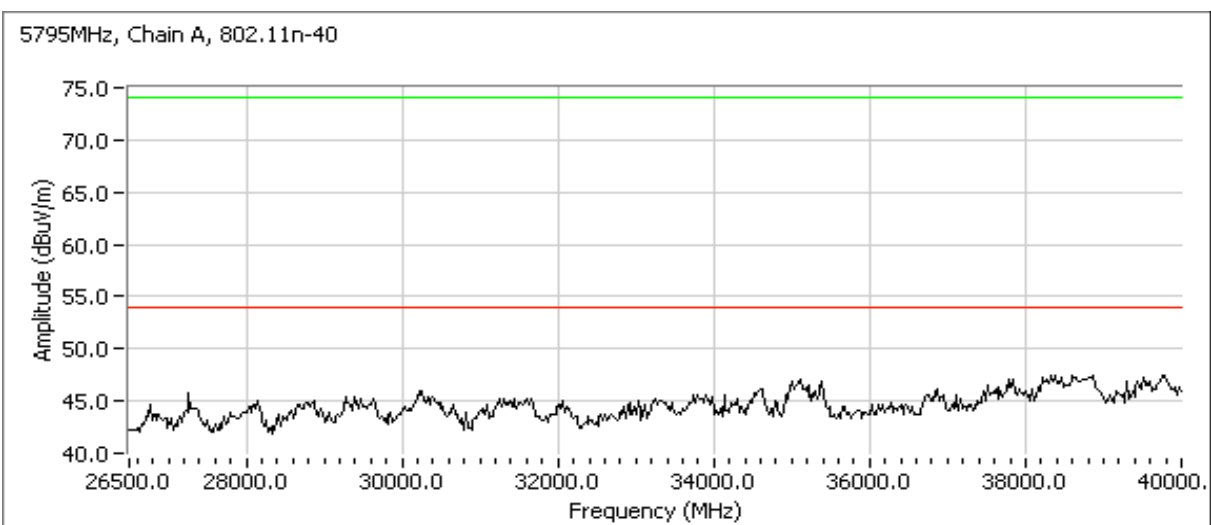
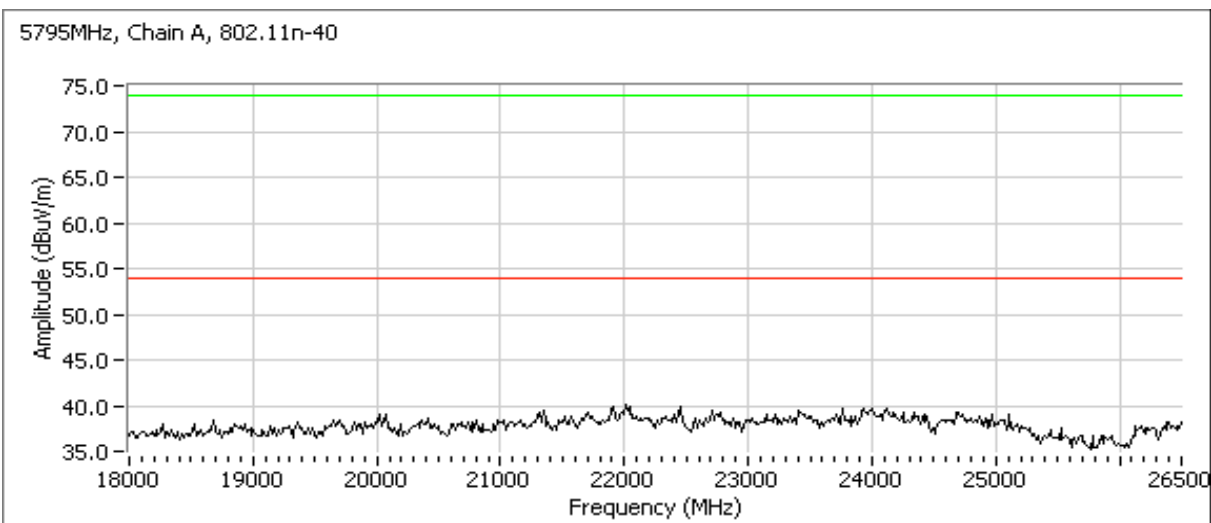
Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: High Channel @ 5795 MHz



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71040
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: High Channel @ 5795 MHz





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
		Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		-
Emissions Standard(s):	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS
Immunity Standard(s):	-	Environment:	-

EMC Test Data - DTS Radiated Emissions Universe Technology PIFA Antenna

For The

Intel

Model

512an MMW

Date of Last Test: 6/10/2008



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Receiver Spurious Emissions, 1 - 18 GHz

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.

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

General Test Configuration

The EUT and all 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: 23 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1a - RX chain A @ 2437 MHz	RE, 1000 - 18000 MHz, Maximized Emissions	RSS GEN	Pass	43.7 dBuV/m @ 6498.7 MHz (-10.3dB)
1b - RX chain A @ 5785 MHz	RE, 1000 - 18000 MHz, Maximized Emissions	RSS GEN	Pass	41.7 dBuV/m @ 7713.2 MHz (-12.3dB)
2a - RX chain B @ 2437 MHz	RE, 1000 - 18000 MHz, Maximized Emissions	RSS GEN	Pass	47.849.2 @ 6498.72490.16 (-6.2dB)
2b - RX chain B @ 5785 MHz	RE, 1000 - 18000 MHz, Maximized Emissions	RSS GEN	Pass	38.3 dBuV/m @ 11569.9 MHz (-15.7dB)
3a - RX chain A + B @ 2437 MHz	RE, 1000 - 18000 MHz, Maximized Emissions	RSS GEN	Pass	45.9 dBuV/m @ 6498.6 MHz (-8.1dB)
3b - RX chain A + B @ 5785 MHz	RE, 1000 - 18000 MHz, Maximized Emissions	RSS GEN	Pass	45.9 dBuV/m @ 6498.6 MHz (-8.1dB)



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

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.

Date of Test: 6/6/2008

Test Engineer: Ben Jing

Test Location: FT Chamber # 5

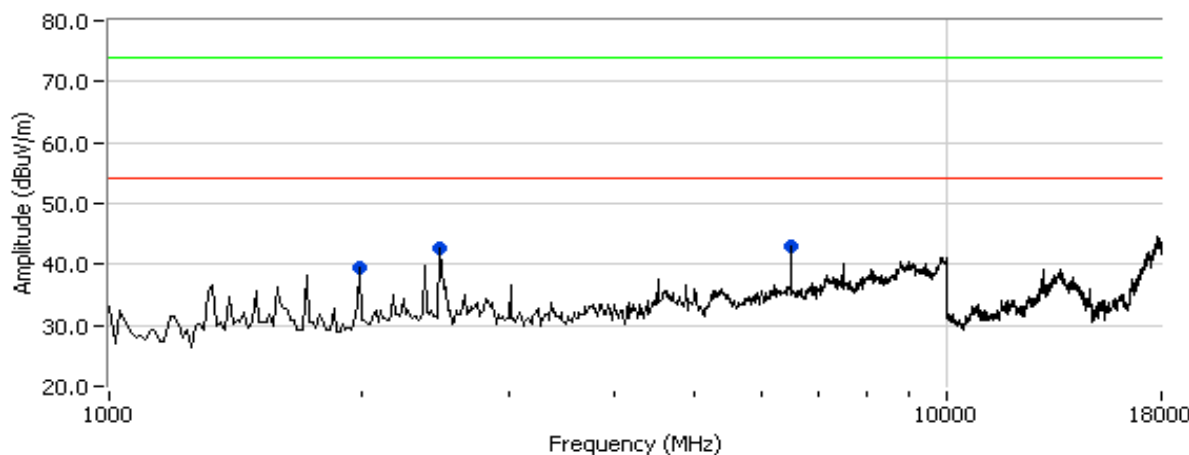
Note 1:	Above 1 GHz, the limit is for an average measurement. In addition, the peak value of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.
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Run #1: Maximized readings, 1000 - 18000 MHz, Receiver single Chain A active

Run # 1a : Receiver Tuned to 2437 MHz -- Chain A active

Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1991.920	30.3	V	54.0	-23.7	AVG	88	1.0	
1991.920	48.6	V	74.0	-25.4	PK	88	1.0	
2490.070	28.3	V	54.0	-25.7	AVG	99	1.6	
2490.070	46.3	V	74.0	-27.7	PK	99	1.6	
6498.670	43.7	V	54.0	-10.3	AVG	201	1.3	
6498.670	47.4	V	74.0	-26.6	PK	201	1.3	

RX Chain A , Channel @ 2437 MHz





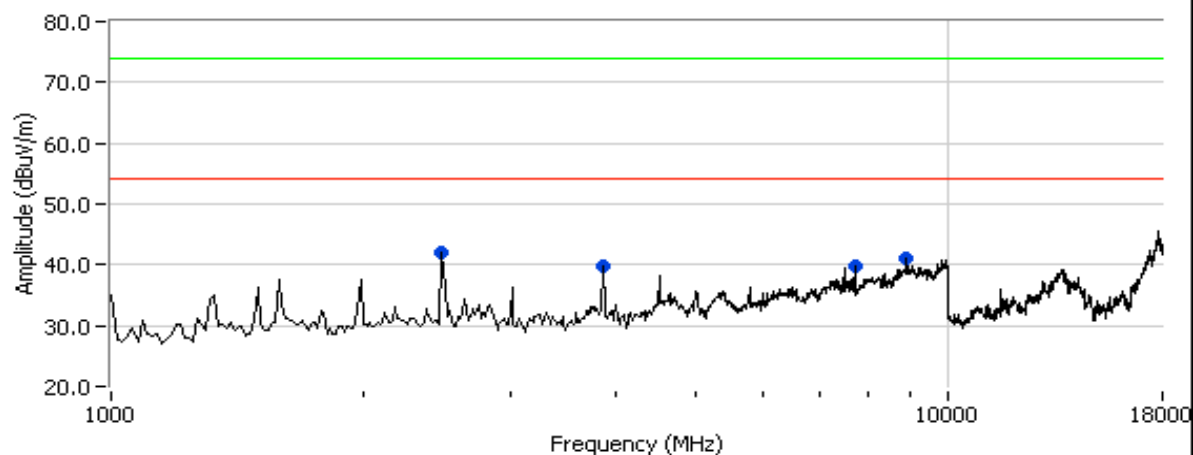
EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Run # 1b : Receiver Tuned to 5785 MHz -- Chain A active

Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2489.980	29.7	V	54.0	-24.3	AVG	80	1.6	
2489.980	49.0	V	74.0	-25.0	PK	80	1.6	
3856.710	39.5	V	54.0	-14.5	AVG	128	1.3	
3856.710	43.9	V	74.0	-30.1	PK	128	1.3	
7713.240	41.7	V	54.0	-12.3	AVG	186	1.3	
7713.240	47.2	V	74.0	-26.8	PK	186	1.3	

RX Chain A , Channel @ 5785 MHz





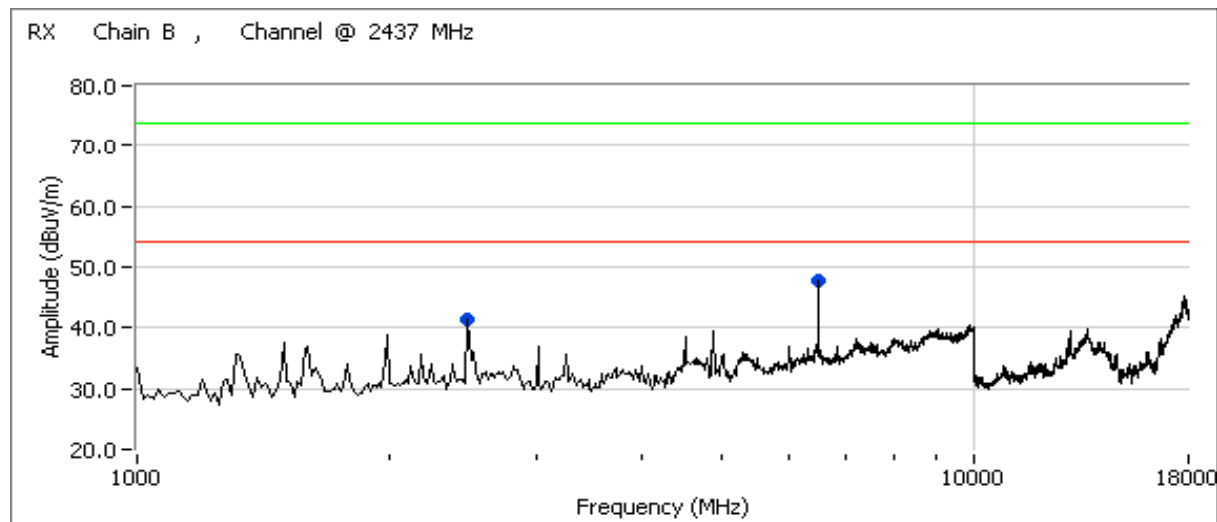
EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Run #2: Maximized readings, 1000 - 18000 MHz, Receiver single Chain B active

Run # 2a : Receiver Tuned to 2437 MHz -- Chain B active

Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2490.160	30.1	V	54.0	-23.9	AVG	77	1.6	
2490.160	49.2	V	74.0	-24.8	PK	77	1.6	
6498.670	47.8	V	54.0	-6.2	AVG	208	1.0	
6498.670	50.7	V	74.0	-23.3	PK	208	1.0	



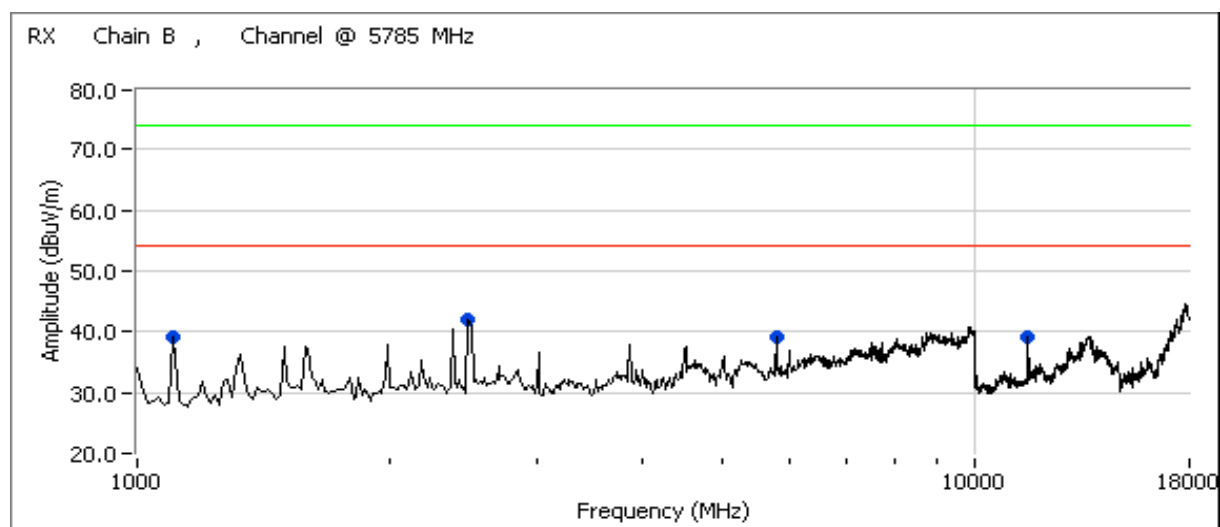


EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Run # 2b : Receiver Tuned to 5785 MHz -- Chain B active

Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2489.630	29.9	V	54.0	-24.1	AVG	83	1.6	
2489.630	49.2	V	74.0	-24.8	PK	83	1.6	
5785.100	36.5	V	54.0	-17.5	AVG	89	1.3	
5785.100	42.8	V	74.0	-31.2	PK	89	1.3	
11569.880	38.3	V	54.0	-15.7	AVG	255	1.0	
11569.880	42.8	V	74.0	-31.2	PK	255	1.0	





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Date of Test: 5/31/2008
 Test Engineer: Ben Jing
 Test Location: FT Chamber # 5

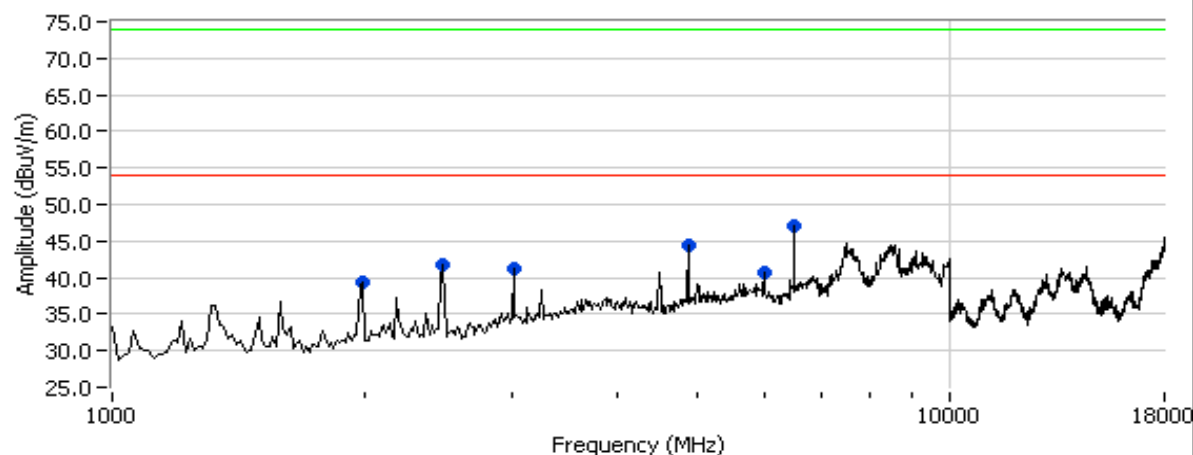
Note 1: Above 1 GHz, the limit is for an average measurement. In addition, the peak value of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Run #3: Maximized readings, 1000 - 18000 MHz, Receiver All Chain Active

Run # 3a : Receiver Tuned to 2437 MHz - Dual Chain A + B active

Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1996.800	34.9	V	54.0	-19.1	AVG	183	1.0	
1996.800	45.2	V	74.0	-28.8	PK	183	1.0	
2490.040	29.9	H	54.0	-24.1	AVG	303	2.0	
2490.040	48.7	H	74.0	-25.3	PK	303	2.0	
3000.060	39.1	V	54.0	-14.9	AVG	261	1.0	
3000.060	44.6	V	74.0	-29.4	PK	261	1.0	
4874.000	44.6	V	54.0	-9.4	AVG	162	1.5	
4874.000	48.3	V	74.0	-25.7	PK	162	1.5	
6000.040	38.8	V	54.0	-15.2	AVG	221	1.0	
6000.040	46.8	V	74.0	-27.2	PK	221	1.0	
6498.580	45.9	V	54.0	-8.1	AVG	124	1.0	
6498.580	49.5	V	74.0	-24.5	PK	124	1.0	

RX Dual Chain A + B , Channel @ 2437 MHz



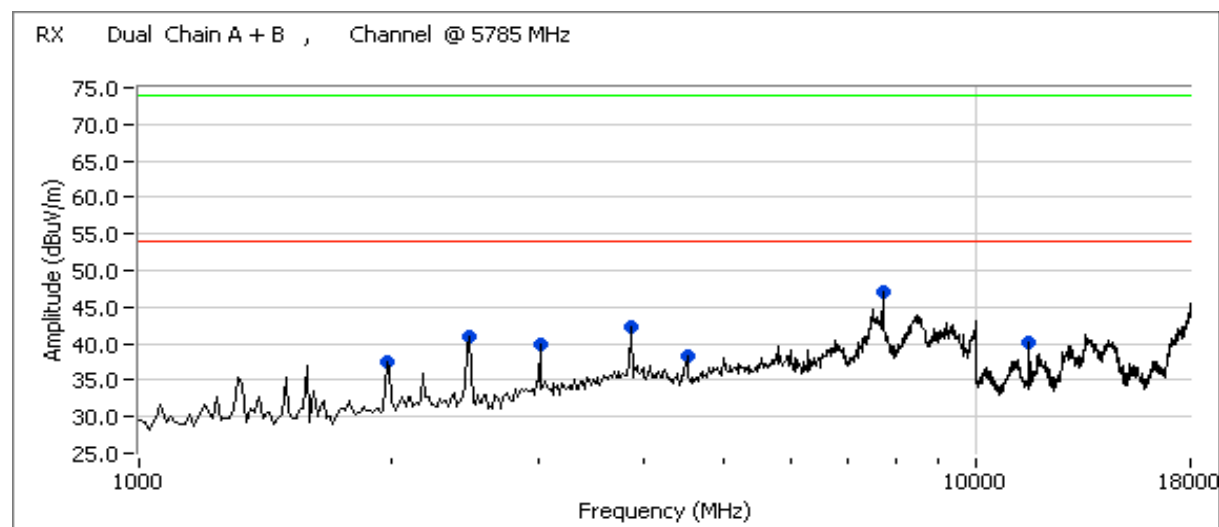


EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	DTS

Run # 3b : Receiver Tuned to 5785 MHz - Dual Chain A + B active

Frequency	Level	Pol	RSS GEN		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1993.240	29.9	V	54.0	-24.1	AVG	255	1.0	
1993.240	45.0	V	74.0	-29.0	PK	255	1.0	
2489.670	29.6	H	54.0	-24.4	AVG	317	2.0	
2489.670	47.7	H	74.0	-26.3	PK	317	2.0	
3000.010	39.6	V	54.0	-14.4	AVG	257	1.0	
3000.010	44.9	V	74.0	-29.1	PK	257	1.0	
3856.680	42.8	V	54.0	-11.2	AVG	230	1.0	
3856.680	47.2	V	74.0	-26.8	PK	230	1.0	
4500.090	34.4	V	54.0	-19.6	AVG	94	1.0	
4500.090	42.4	V	74.0	-31.6	PK	94	1.0	
7713.220	45.2	V	54.0	-8.8	AVG	178	1.0	
7713.220	51.8	V	74.0	-22.2	PK	178	1.0	
11569.930	38.9	V	54.0	-15.1	AVG	276	1.0	
11569.930	44.1	V	74.0	-29.9	PK	276	1.0	



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions 802.11b Mode

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.

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:
Temperature: 22 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11b Chain A	1 2412MHz	21.5	18.8 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	46.5dBμV/m @ 2385.9MHz (-7.5dB)
			21.5		Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	46.1 dBuV/m @ 6431.9 MHz (-7.9dB)
1b	802.11b Chain A	6 2437MHz	19.5	16.7 dBm	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	47.4 dBuV/m @ 6498.6 MHz (-6.6dB)
1c	802.11b Chain A	11 2462MHz	23.0	19.6 dBm (note)	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	46.3dBμV/m @ 2484.8MHz (-7.7dB)
			22.5		Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.0 dBuV/m @ 7388.3 MHz (-1.0dB)

Note : for channel 11 (2462 MHz) radiated emissions test , the power setting GC = 22.5 , measured power AP = 19.2 dBm .

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11b - Chain A

Date of Test: 5/28/2008 and 5/29/2008

Test Engineer: Ben Jing

Test Location: FT Chamber # 5

Run #1a: Low Channel @ 2412 MHz

Power Setting: 21.5

Average power: 18.8 dBm (for reference purposes)

Fundamental Signal Field Strength: Peak value measured in 100kHz

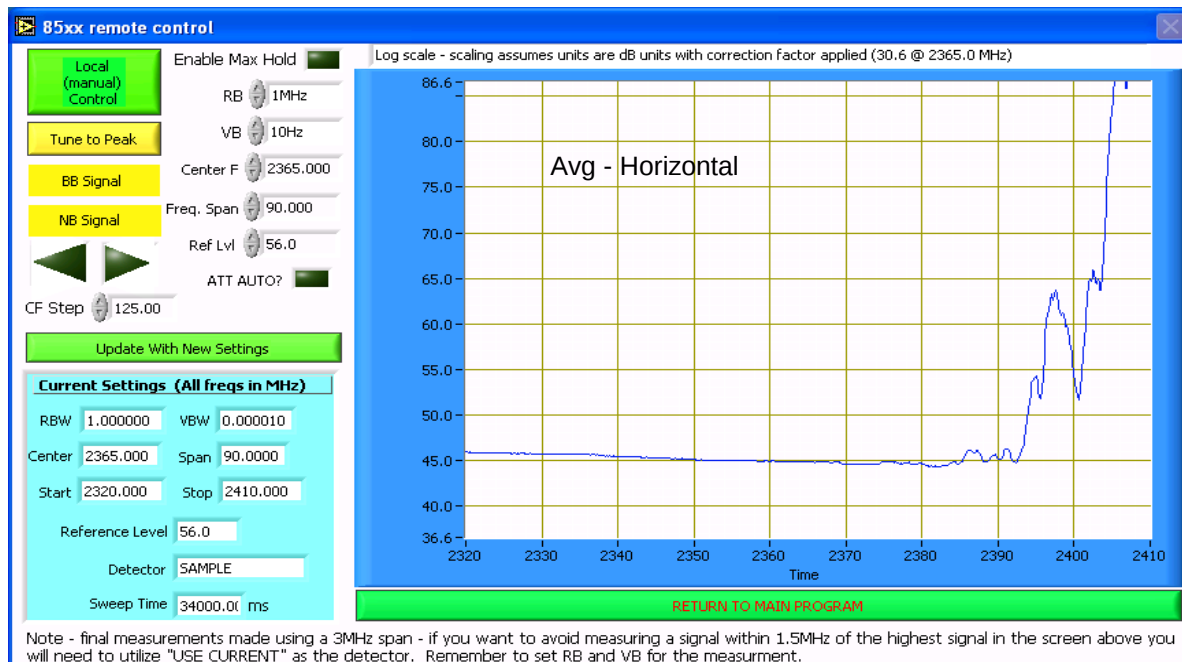
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2410.990	99.4	V	-	-	Pk	164	1.0	
2411.500	98.3	H	-	-	Pk	236	1.0	

Fundamental emission level @ 3m in 100kHz RBW:	99.4	dBμV/m
Limit for emissions outside of restricted bands:	69.4	dBμV/m

Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2385.920	46.5	H	54.0	-7.5	Avg	230	1.0	GC = 21.5
2385.990	45.4	V	54.0	-8.6	Avg	169	1.0	GC = 21.5
2387.150	58.7	H	74.0	-15.3	PK	228	1.0	GC = 21.5
2389.800	57.4	V	74.0	-16.6	Pk	166	1.0	GC = 21.5



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4823.910	43.6	V	54.0	-10.4	AVG	165	1.5	
4823.910	48.3	V	74.0	-25.7	PK	165	1.5	
6431.860	50.1	V	69.4	-19.3	PK	120	1.5	Note 2
7238.730	44.7	V	54.0	-9.3	AVG	56	1.5	
7238.730	51.7	V	74.0	-22.3	PK	56	1.5	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 2:	Signal is not in a restricted band, measurement bandwidth is 100kHz .

Run #1b: Center Channel @ 2437 MHz
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2437.980	96.7	V	-	-	Pk	200	1.0	RB = VB = 100kHz
2436.470	91.5	H	-	-	Pk	6	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW: 96.7 dB μ V/m

Limit for emissions outside of restricted bands: 66.7 dB μ V/m

Limit is -30dBc (UNII power measurement)

Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4873.950	42.2	V	54.0	-11.8	AVG	200	1.0	
4873.950	47.1	V	74.0	-26.9	PK	200	1.0	
6498.610	51.2	V	66.7	-15.5	PK	111	1.5	Note 2
7313.830	46.4	V	54.0	-7.6	AVG	51	1.5	
7313.830	52.8	V	74.0	-21.2	PK	51	1.5	
9747.880	50.3	V	66.7	-16.4	PK	217	2.0	Note 2

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 2:	Signal is not in a restricted band, measurement bandwidth is 100kHz .

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1c: High Channel @ 2462 MHz

Power Setting: 23.0

Average power: 19.6 dBm (for reference purposes)

Fundamental Signal Field Strength: Peak value measured in 100kHz

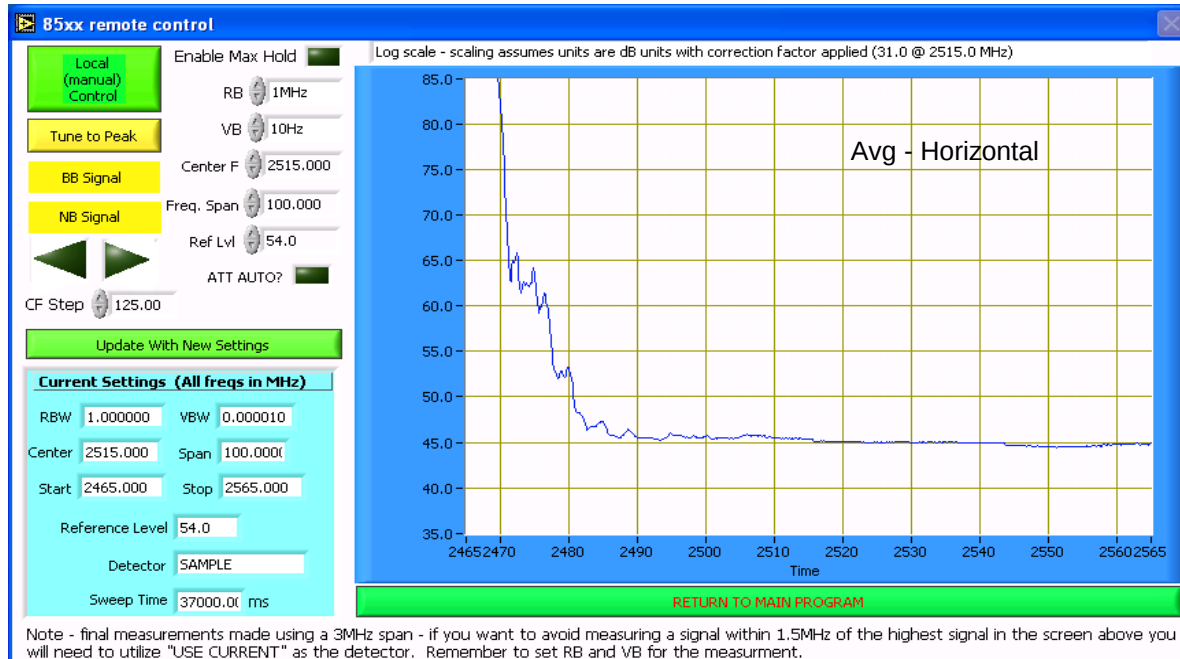
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2461.010	100.0	V	-	-	Pk	179	1.0	
2462.990	101.6	H	-	-	Pk	158	1.0	

Fundamental emission level @ 3m in 100kHz RBW:	101.6	dB μ V/m
Limit for emissions outside of restricted bands:	71.6	dB μ V/m

Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.750	46.3	H	54.0	-7.7	Avg	161	1.0	GC = 23.0
2484.760	45.9	V	54.0	-8.1	Avg	177	1.0	GC = 23.0
2484.830	59.1	H	74.0	-14.9	PK	156	1.0	GC = 23.0
2484.920	57.2	V	74.0	-16.8	PK	145	1.0	GC = 23.0





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Spurious Emissions (GC = 22.5 , AP = 19.2 dBm)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4923.950	43.1	V	54.0	-10.9	AVG	173	1.5	
4923.950	48.4	V	74.0	-25.6	PK	173	1.5	
6565.240	51.2	V	71.6	-20.4	PK	171	1.0	Note 2
7388.310	53.0	V	54.0	-1.0	AVG	264	2.0	
7388.310	58.2	V	74.0	-15.8	PK	264	2.0	
9847.880	54.9	V	71.6	-16.7	PK	83	1.5	Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band, measurement bandwidth is **100kHz**.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - Band Edge 802.11g Mode

Test Specific Details

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

Date of Test: 5/28/2008
Test Engineer: Ben Jing
Test Location: FT Chamber # 5

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:

Temperature: 22 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11g Chain A	1 2412MHz	20 . 5	14.5 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	47.4dBμV/m @ 2389.9MHz (-6.6dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	Covered by n20 mode measurements
1b	802.11g Chain A	6 2437MHz			Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	Covered by n20 mode measurements
1c	802.11g Chain A	11 2462MHz	21 . 5	14 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	45.7dBμV/m @ 2483.6MHz (-8.3dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	Covered by n20 mode measurements

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11g - Chain A

Run #1a: Low Channel @ 2412 MHz

Power Setting: 20.5 Average power: 14.5 dBm (for reference purposes)

Fundamental Signal Field Strength: Peak value measured in 100kHz

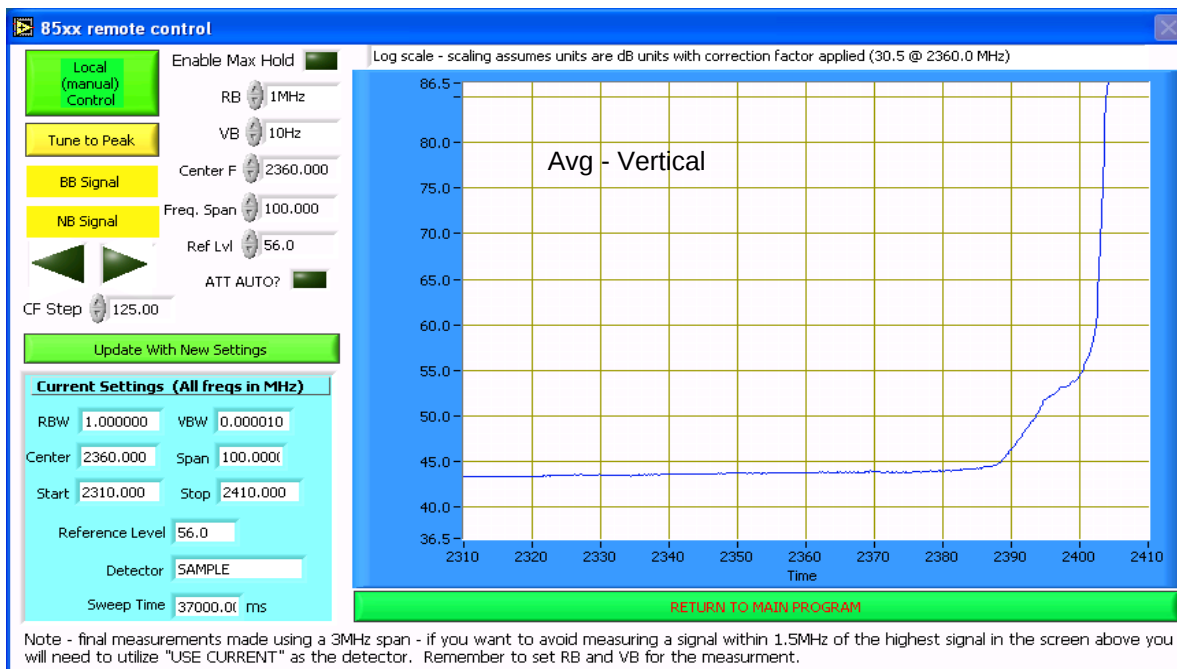
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2410.750	92.9	V	-	-	PK	140	1.0	
2410.730	88.4	H	-	-	PK	295	1.0	

Fundamental emission level @ 3m in 100kHz RBW:	92.9	dB μ V/m
Limit for emissions outside of restricted bands:	62.9	dB μ V/m

Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2389.870	47.4	V	54.0	-6.6	Avg	140	1.0	GC = 20.5
2389.910	45.3	H	54.0	-8.7	Avg	294	1.0	GC = 20.5
2389.660	60.6	H	74.0	-13.4	PK	288	1.0	GC = 20.5
2389.810	65.5	V	74.0	-8.5	PK	140	1.0	GC = 20.5



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: High Channel @ 2462 MHz

Power Setting: 21.5 Average power: 14 dBm (for reference purposes)

Fundamental Signal Field Strength: Peak value measured in 100kHz

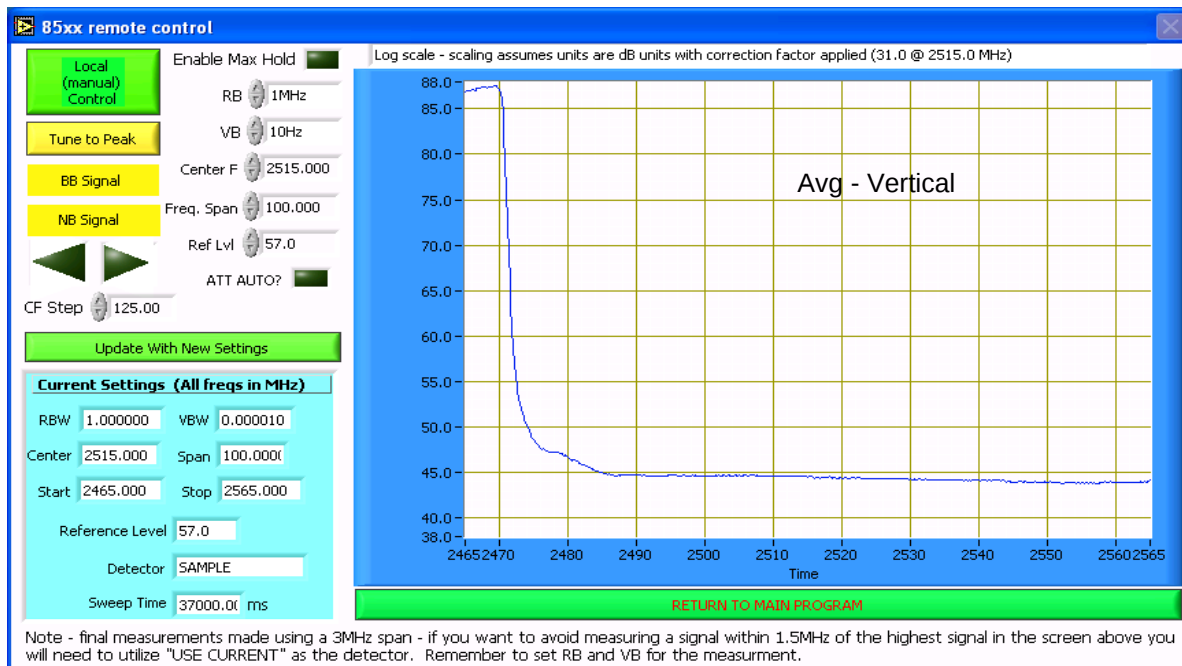
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2460.710	93.5	V	-	-	PK	128	1.0	
2463.280	89.9	H	-	-	PK	152	1.0	

Fundamental emission level @ 3m in 100kHz RBW:	93.5	dB μ V/m
Limit for emissions outside of restricted bands:	63.5	dB μ V/m

Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.550	45.7	H	54.0	-8.3	Avg	157	1.0	GC = 21.5
2483.550	65.0	V	74.0	-9.0	Pk	126	1.0	GC = 21.5
2483.560	45.7	V	54.0	-8.3	Avg	145	1.0	GC = 21.5
2483.580	63.5	H	74.0	-10.5	Pk	159	1.0	GC = 21.5



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - Band Edge 802.11n (20 MHz Channel) Mode

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.

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:

Temperature:	22 °C
Rel. Humidity:	36 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n20 Chain A	1 2412MHz	19.0	13.1 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	46.9dBµV/m @ 2390.0MHz (-7.1dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	52.9dBµV/m @ 6431.9MHz (-5.1dB)
1b	802.11n20 Chain A	6 2437MHz	23.5	16.5 dBm	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	47.6dBµV/m @ 4874.0MHz (-6.4dB)
1c	802.11n20 Chain A	11 2462MHz	21.0	14 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	45.0 dBµV/m @ 2483.7 MHz (-9.0dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	52.3dBµV/m @ 7500.1MHz (-1.7dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11n (20 MHz) - Chain A

Date of Test: 5/29/2008
 Test Engineer: Ben Jing
 Test Location: FT Chamber # 5

Run #1a: Low Channel @ 2412 MHz

Power Setting: 19.0 Average power: 13.1 dBm (for reference purposes)

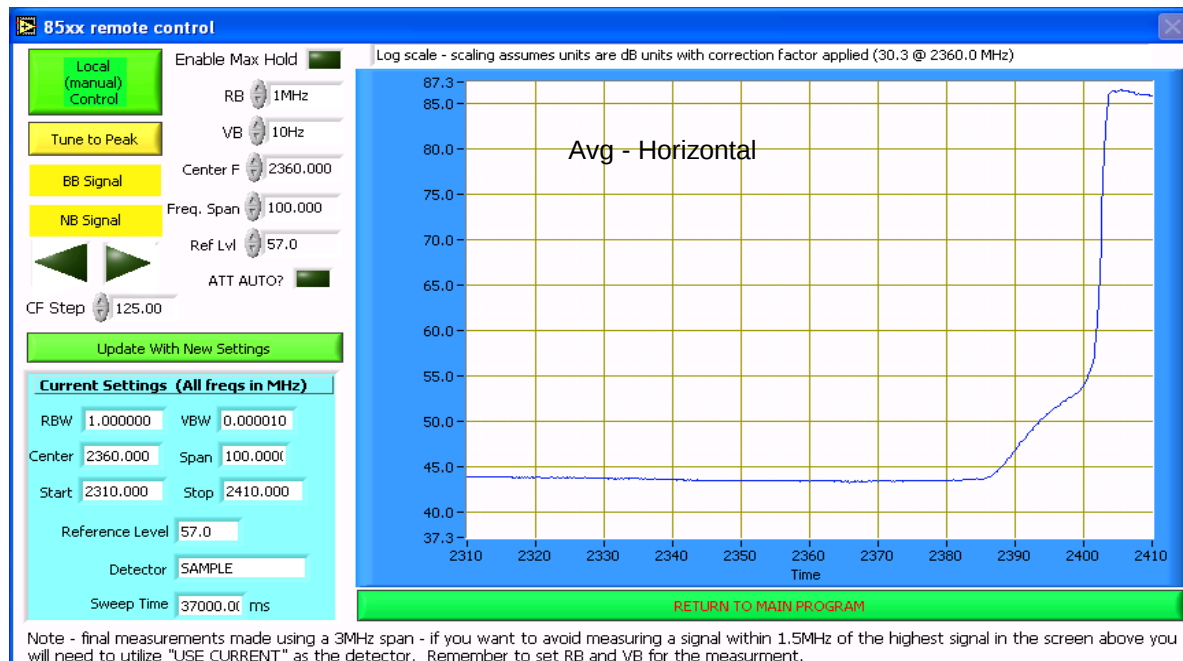
Fundamental Signal Field Strength: Peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2410.700	86.4	V	-	-	PK	152	1.0	RB = VB = 100 KHz
2410.700	88.0	H	-	-	PK	248	1.0	RB = VB = 100 KHz

Fundamental emission level @ 3m in 100kHz RBW:	88	dBμV/m	
Limit for emissions outside of restricted bands:	58	dBμV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.920	45.9	V	54.0	-8.1	Avg	158	1.0	
2389.950	46.9	H	54.0	-7.1	Avg	245	1.0	
2389.690	64.8	H	74.0	-9.2	Pk	244	1.0	
2389.950	62.8	V	74.0	-11.2	Pk	155	1.0	





EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Spurious Emissions 2412 MHz.

Date of Test: 5/30/2008

Test Engineer: John Caizzi

Test Location: FT Chamber # 5

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
6431.940	52.9	V	58.0	-5.1	Pk	349	1.0	Note 2.
7603.010	51.2	H	58.0	-6.8	Peak	320	1.9	Note 3.
2200.830	46.8	H	54.0	-7.2	Peak	23	1.3	Pk reading vs avg limit
7240.830	50.4	H	58.0	-7.6	Peak	284	1.0	Note 3.
1320.830	45.9	V	54.0	-8.1	Peak	178	1.6	Pk reading vs avg limit
9968.170	49.4	V	58.0	-8.6	Peak	172	1.9	Note 3.
4978.120	34.7	V	54.0	-19.3	AVG	142	1.3	
4978.120	51.4	V	74.0	-22.6	PK	142	1.3	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band, measurement bandwidth is **100kHz**.

Note 3: Signal is not in a restricted band, measurement bandwidth is **1 MHz**..



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Date of Test: 5/29/2008 and 5/30/2008

Test Engineer: Ben Jing

Test Location: FT Chamber # 5

Power Setting: **23.5** Average power: 16.5 dBm (for reference purposes)

Fundamental Signal Field Strength: Peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2438.270	91.6	H	-	-	PK	209	1.0	RB=VB=100KHz
2438.280	92.8	V	-	-	PK	219	1.0	RB=VB=100KHz

Fundamental emission level @ 3m in 100kHz RBW:	92.8	dB μ V/m	
Limit for emissions outside of restricted bands:	62.8	dB μ V/m	Limit is -30dBc (UNII power measurement)

Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7312.590	44.5	V	54.0	-9.5	AVG	156	1.5	
2999.920	38.6	V	62.8	-24.2	Peak	281	1.3	Note 2
6498.580	47.5	V	62.8	-15.3	Peak	120	1.6	Note 2
1328.840	45.8	V	54.0	-8.2	PK	233	1.0	Pk reading vs avg limit
1497.690	42.0	H	54.0	-12.0	PK	250	1.0	Pk reading vs avg limit
1594.710	43.2	V	54.0	-10.8	PK	128	1.0	Pk reading vs avg limit
4874.020	47.6	V	54.0	-6.4	PK	160	1.9	Pk reading vs avg limit
7312.590	59.7	V	74.0	-14.3	PK	156	1.5	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band, measurement bandwidth is **100kHz**.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Power Setting: 21.0 Average power: 14.0 dBm (for reference purposes)

Fundamental Signal Field Strength: Peak value measured in 100kHz

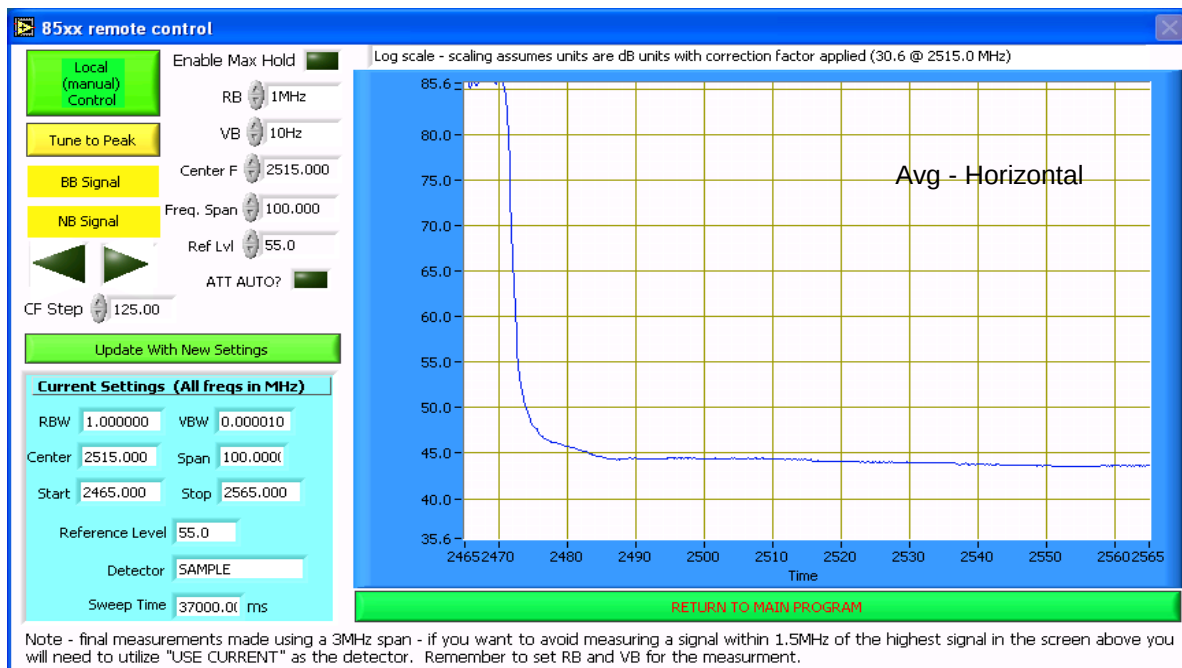
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2460.7	91.3	V	-	-	PK	202.0	1	
2463.3	89.8	H	-	-	PK	155.0	1	

Fundamental emission level @ 3m in 100kHz RBW:	91.3	dB μ V/m
Limit for emissions outside of restricted bands:	61.3	dB μ V/m

Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.660	45.0	H	54.0	-9.0	Avg	149	1.0	
2483.670	44.7	V	54.0	-9.3	Avg	202	1.0	
2483.650	58.7	H	74.0	-15.3	Pk	147	1.0	
2483.710	63.3	V	74.0	-10.7	Pk	200	1.0	





Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 2:	Signal is not in a restricted band, measurement bandwidth is 100kHz .

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - Band Edge 802.11n (40 MHz Channel) Mode

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: 3/17/2008
Test Engineer: Ben Jing
Test Location: FT Chamber # 4

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

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

Ambient Conditions:
Temperature: 22 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n40 Chain A	2422 MHz	15. 5	10.1 dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	45.9 dBuV/m @ 2389.7 MHz (-8.1dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	Covered by n20 mode measurements
1b	802.11n40 Chain A	6 2437MHz			Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	Covered by n20 mode measurements
1c	802.11n40 Chain A	2452MHz	20. 5	14.1dBm	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	46.6 dBuV/m @ 2483.7 MHz (-7.4dB)
					Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	Covered by n20 mode measurements

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11n (40 MHz Channel) - Chain A

Run #1a: Low Channel @ 2422 MHz

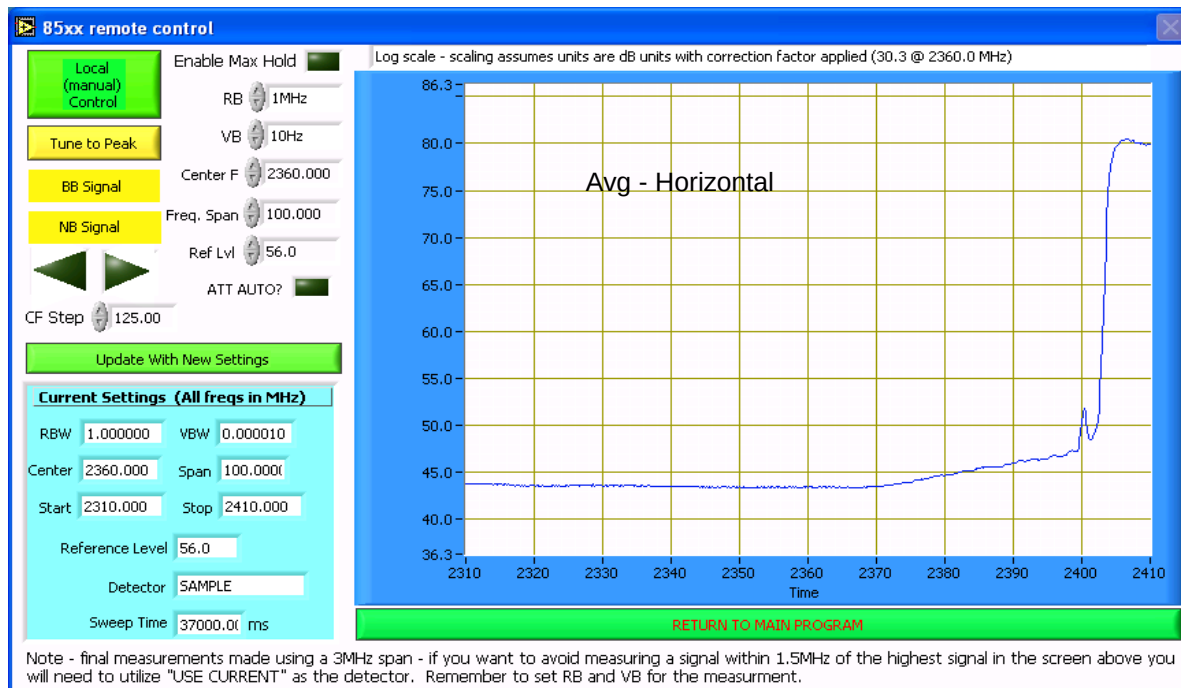
Power Setting: 15.5 Average power: AP = 10.1 (for reference purposes)

Fundamental Signal Field Strength: Peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2423.270	78.3	V	-	-	PK	151	1.0	
2423.020	78.7	H	-	-	PK	244	1.0	

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2389.680	60.2	H	74.0	-13.8	Pk	247	1.0	
2389.650	45.9	H	54.0	-8.1	Avg	247	1.0	
2389.760	58.9	V	74.0	-15.1	Pk	155	1.0	
2389.680	45.1	V	54.0	-8.9	Avg	157	1.0	



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1b: High Channel @ 2452 MHz

Power Setting: 20.5

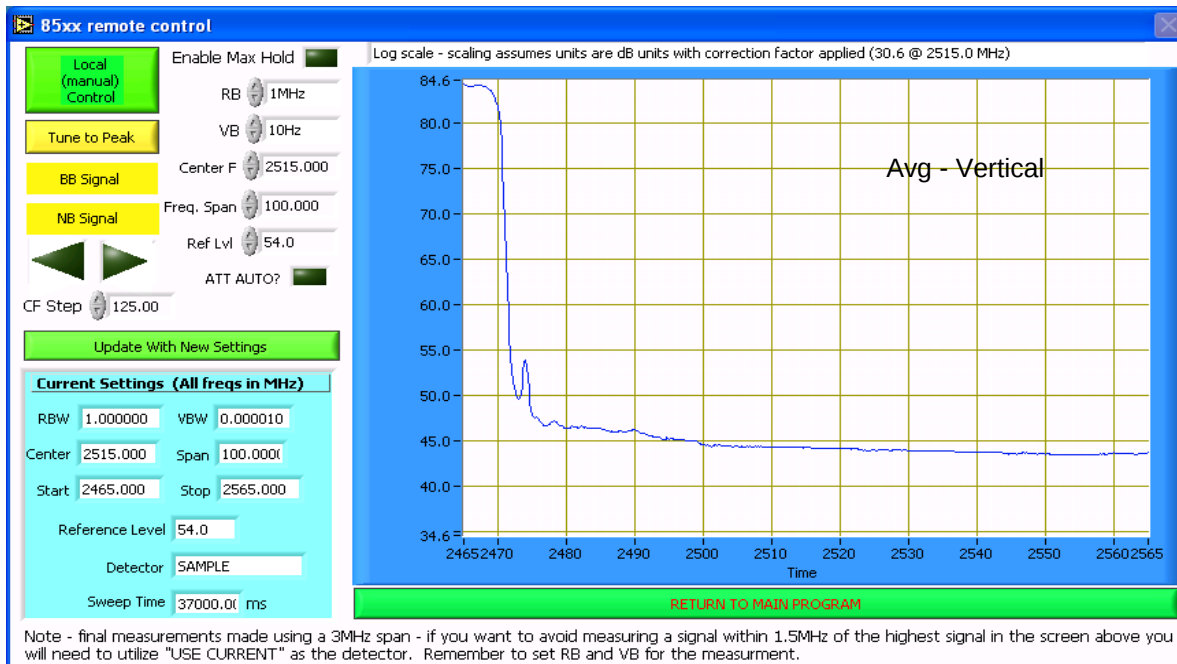
Average power: AP = 14.1 (for reference purposes)

Fundamental Signal Field Strength: Peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2453.020	81.6	H	-	-	PK	245	1.0	
2453.020	84.7	V	-	-	PK	202	1.0	

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.690	62.9	V	74.0	-11.1	Pk	206	1.0	
2483.650	46.6	V	54.0	-7.4	Avg	203	1.0	
2483.690	62.6	H	74.0	-11.4	Pk	227	1.0	
2483.660	45.8	H	54.0	-8.2	Avg	227	1.0	



Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 5725 - 5850 MHz) Radiated Spurious Emissions, 1 - 40GHz 802.11a Mode

Test Specific Details

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

Date of Test: 5/30/2008
Test Engineer: John Caizzi
Test Location: FT Chamber # 5

Config. Used: 1
Config Change: None
Host Unit Voltage 3.3 VDC

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT for measurements below 18GHz, 1m for scans and 3m for measurements above 18GHz.

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11a Chain A	5745 MHz	28	16.5	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.1dBμV/m @ 11489.8MHz (-0.9dB)
1b	802.11a Chain A	5785 MHz	29	16.5	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	50.3dBμV/m @ 2498.6MHz (-3.7dB)
1c	802.11a Chain A	5825 MHz	30	16.5	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	48.0dBμV/m @ 2495.93MHz (-6.0dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 5725 - 5850 MHz) Radiated Spurious Emissions, 1 - 40GHz 802.11n (20MHz) Mode

Test Specific Details

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

Date of Test: 5/30/2008
Test Engineer: Rafael Varelas
Test Location: FT Chamber #3

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT for measurements below 18GHz, 1m for scans and 3m for measurements above 18GHz.

Ambient Conditions:
Temperature: 19.2 °C
Rel. Humidity: 38 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n20 Chain A	5745 MHz	28.5	16.6	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	45.2dBμV/m @ 11489.92MHz (-8.8dB)
1b	802.11n20 Chain A	5785 MHz	30.0	16.6	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	43.9dBμV/m @ 7500.11MHz (-10.1dB)
1c	802.11n20 Chain A	5825 MHz	31.5	16.7	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	46.6dBμV/m @ 11650MHz (-7.4dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 40000 MHz. Operating Mode: 802.11a Chain A

Run #1a: Low Channel @ 5745 MHz

Power Setting: 28.5 Average power: AP = 16.6 (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5738.670	92.3	V			PK	195	1.0	RB = VB = 100kHz
5737.500	93.4	H			PK	108	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	93.4	dBμV/m	
Limit for emissions outside of restricted bands:	63.4	dBμV/m	Limit is -30dBc (UNII power measurement)

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	
7500.050	43.4	V	54.0	-10.6	AVG	251	1.0	
7500.050	51.8	V	74.0	-22.2	PK	251	1.0	
2485.000	42.1	H	54.0	-11.9	Peak	250	1.3	
2998.330	41.8	V	74.0	-32.2	Peak	276	1.3	
11489.900	45.2	V	54.0	-8.8	AVG	128	1.0	
11489.900	58.3	V	74.0	-15.7	PK	128	1.0	

Run #1b: Center Channel @ 5785 MHz

Power Setting: 30.0 Average power: AP = 16.6 (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5778.700	90.3	V			PK	138	1.8	RB = VB = 100kHz
5777.530	91.6	H			PK	111	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	91.6	dBμV/m	
Limit for emissions outside of restricted bands:	61.6	dBμV/m	Limit is -30dBc (UNII power measurement)

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	
11560.070	42.9	V	54.0	-11.1	AVG	130	1.0	
11560.070	55.3	V	74.0	-18.7	PK	130	1.0	
7500.080	43.9	V	54.0	-10.1	AVG	248	1.0	
7500.080	51.4	V	74.0	-22.6	PK	248	1.0	
2494.170	42.7	V	54.0	-11.3	Peak	244	1.3	Pk reading, avg limit

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and **measured in 100kHz**.

Note 2: Signal is not in a restricted band.



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1c: High Channel @ 5825 MHz

Power Setting: 31.5

Average power: AP = 16.7 (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5821.230	92.3	V			PK	141	1.0	RB = VB = 100kHz
5820.000	90.8	H			PK	179	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	92.3	dB μ V/m	
Limit for emissions outside of restricted bands:	62.3	dB μ V/m	Limit is -30dBc (UNII power measurement)

Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7500.060	44.1	V	54.0	-9.9	AVG	247	1.0	
7500.060	51.0	V	74.0	-23.0	PK	247	1.0	
11649.930	46.6	V	54.0	-7.4	AVG	133	1.0	
11649.930	59.9	V	74.0	-14.1	PK	133	1.0	
1980.830	39.6	H	62.3	-22.7	Peak	99	1.3	Note 2
2485.000	41.4	V	62.3	-20.9	Peak	235	1.0	Note 2
17480.000	46.8	V	62.3	-15.5	Peak	192	1.0	Note 2

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz .
Note 2:	Signal is not in a restricted band.

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 5725 - 5850 MHz) Radiated Spurious Emissions, 1 - 40GHz 802.11n 40 MHz Mode

Test Specific Details

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

Date of Test: 5/30/2008
Test Engineer: Rafael Varelas
Test Location: FT Chamber #3

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT for measurements below 18GHz, 1m for scans and 3m for measurements above 18GHz.

Ambient Conditions:
Temperature: 19.2 °C
Rel. Humidity: 38 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	802.11n40 Chain A	5755 MHz	29.0	16.7	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	52.1dBµV/m @ 15743 MHz (-1.9dB)
1	802.11n40 Chain A	5795 MHz	30.0	16.7	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	44.1dBµV/m @ 11590.0MHz (-9.9dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



EMC Test Data

Client:	Intel	Job Number:	J70979
Model:	512an MMW	T-Log Number:	T71831
Contact:	Robert Paxman	Account Manager:	Briggs / Eriksen
Standard:	RSS 210 / FCC 15.247 DTS (Radiated)	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 40000 MHz. Operating Mode: 802.11n 40 MHz Chain A

Run #1a: Low Channel @ 5755 MHz

Power Setting: 29 Average power: AP = 16.7 (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5739.070	90.1	V	120.0	-29.9	PK	194	1.1	RB = VB = 100kHz
5738.730	91.3	H	120.0	-28.7	PK	108	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	91.3	dB μ V/m	Limit is -30dBc (UNII power measurement)
Limit for emissions outside of restricted bands:	61.3	dB μ V/m	

Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7500.020	44.3	V	54.0	-9.7	AVG	249	1.0	
7500.020	53.5	V	74.0	-20.5	PK	249	1.0	
2494.170	44.0	H	54.0	-10.0	Peak	234	1.3	Pk reading, avg limit
3832.500	40.2	V	54.0	-13.8	Peak	154	1.0	Pk reading, avg limit
15743.310	52.1	V	54.0	-1.9	AVG	49	1.3	
15743.310	64.3	V	74.0	-9.7	PK	49	1.3	
11509.330	42.1	V	54.0	-11.9	AVG	205	1.3	
11509.330	53.7	V	74.0	-20.3	PK	205	1.3	

Run #1b: High Channel @ 5795 MHz

Power Setting: 30.0 Average power: AP = 16.7 (for reference purposes)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5780.000	89.9	V	120.0	-30.1	PK	195	1.0	RB = VB = 100kHz
5779.870	90.0	H	120.0	-30.0	PK	97	1.0	RB = VB = 100kHz

Fundamental emission level @ 3m in 100kHz RBW:	90	dB μ V/m	Limit is -30dBc (UNII power measurement)
Limit for emissions outside of restricted bands:	60	dB μ V/m	

Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11590.000	44.1	V	54.0	-9.9	AVG	128	1.0	
11590.000	55.2	V	74.0	-18.8	PK	128	1.0	
2485.000	42.4	H	54.0	-11.6	Peak	245	1.3	Pk reading, avg limit
7500.040	43.6	V	54.0	-10.4	AVG	251	1.0	
7500.040	50.9	V	74.0	-23.1	PK	251	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and **measured in 100kHz**.

Note 2: Signal is not in a restricted band.