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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_HMW

- UPN: 1000M-512ANH 1514B-512ANHMW
- FCC ID: PD9512ANH E2K512ANHMW
- **GRANTEE**: Intel Corporation 2111 N.E. 25th Ave. Hillsboro, OR 97124
- TEST SITE: Elliott Laboratories, Inc. 684 W. Maude Ave Sunnyvale, CA 94086
- **REPORT DATE:** March 20, 2008
- **REISSUE DATE:** June 12, 2008

FINAL TEST DATES:

February 13 to March 15, 2007 May 29 to June 2, 2008

AUTHORIZED SIGNATORY:

Mark Briggs Principal Engineer



Testing Cert #2016-01

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REVISION HISTORY

Rev #	Date	Comments	Modified By
1	4/28/08	Initial Release	David Guidotti
2	6/12/08	Changed contact information in the scope section of the report to Robert Paxman. Updated the information in the results table related to content of user manual (previously stated "Not evaluated at this time" Updated cover page with UPN and FCC ID (previously stated "not yet available") Updated results table and test data with new power measurement for n40 mode, center channel (previously 13.5dBm, now 15.8dBm). Updated test report with test data for a second antenna (Universe PIFA antenna)	Mark Briggs

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SCOPE

An electromagnetic emissions test has been performed on the Intel Corporation model 512AN HMW 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_HMW 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_HMW 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: 10.3 MHz g: 16.5 MHz n20: 17.75 MHz n40: 35.7 MHz	>500kHz	Complies
	RSP100	99% Bandwidth	b: 13.8 MHz g: 17.1 MHz n20: 18.3 MHz n40: 36.7 MHz	Information only	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	b: 18.6dBm (0.072 W) g: 18.2 dBm n20: 16.1dBm n40: 15.8 dBm EIRP = 0.15W ^{Note1}	1 Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	b: -5.1dBm/3kHz g: -6.0 dBm/3kHz n20: -7.5 dBm/3kHz n40:-14dBm/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	52.7dBµV/m @ 2389.8MHz (802.11n 40 MHz Ethertronics Antenna)	15.207 in restricted bands, all others <-30dBc ^{Note 2}	Complies (-1.3dB)

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.

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: 16.3 MHz n20: 17.6 MHz n40: 35.0 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: 15.3 dBm n20: 15.1 dBm n40: 17.9 dBm (0.062 W) EIRP = 0.195 W _{Note1}	1 Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	a: -9.6 dBm/3kHz n20: -9.0 dBm/3kHz n40: -10 dBm/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	51.9dBµV/m @ 11652.1MHz (802.11a mode, Universe PIFA Antenna)	15.207 in restricted bands, all others <-30dBc ^{Note 2}	Complies (-2.1dB)

DIGITAL TRANSMISSION SYSTEMS (5725 - 5850 MHz)

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	52.2dBµV/m @ 3000.3MHz Universe Antenna	RSS GEN Table 1	Complies (-1.8dB)
15.207	RSS GEN Table 2	AC Conducted Emissions	23.0dBµV @ 11.069MHz	Refer to standard	Complies (-27.0dB)
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 included	Statement required regarding non- interference	Complies
	RSP 100 RSS GEN 7.1.5	User Manual	Not applicable, antenna will be integrated into the host device.	Statement required regarding detachable antenna	Complies

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 Radiated Emissions Radiated Emissions Radiated Emissions	0.15 to 30 0.015 to 30 30 to 1000 1000 to 40000	$\pm 2.4 \\ \pm 3.0 \\ \pm 3.6 \\ \pm 6.0$

EQUIPMENT UNDER TEST (EUT) DETAILS

The Intel Corporation model $512AN_HMW$ 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 February 9, 2008 and tested between February 13 and March 16, 2008. Additional measurements were made with the Universe PIFA antenna on May 29, May 30, May 31, June 1 and June 2, 2008. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
Intel	512AN_HMW	Wireless LAN		PD9512ANH
Corporation		Card		

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	Prototype	Laptop PC	Prototype	-
No remote support equipment was used during emissions testing				

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)			
Folt	Connected 10	Description	Shielded or Unshielded	Length(m)	
PC	Board	PCI-Express	-	0.2	
		extender			
Antennas(2)	Antennas(2)	Coax(2)	Shielded	0.3	
DC Power	Board	3.3V dc	Unshielded	0.3	

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.

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

Spurious emissions at frequencies removed by more than 50MHz from the band edges for 802.11n 20MHz and 40MHz channels were made on the 20MHz channel mode as this mode had the higher power spectral density of the two modes.

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 chains active simultaneously).

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on February 13, February 14, February 20, February 27, March 3, March 6, March 7, March 11, March 12, March 13, March 15, May 29, May 30, May 31, June 1 and June 2, 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 nonconductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

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

INSTRUMENT CALIBRATION

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

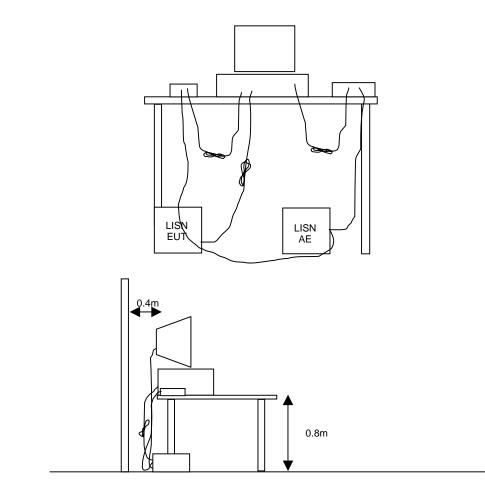
TEST PROCEDURES

EUT AND CABLE PLACEMENT

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

CONDUCTED EMISSIONS

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



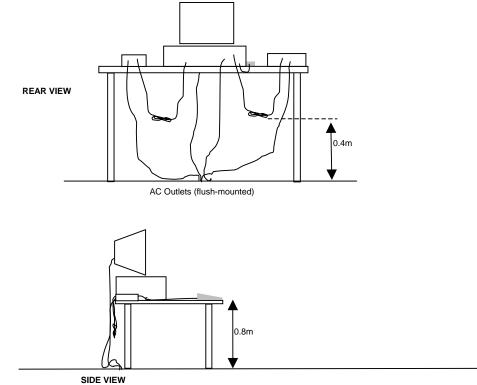
RADIATED EMISSIONS

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

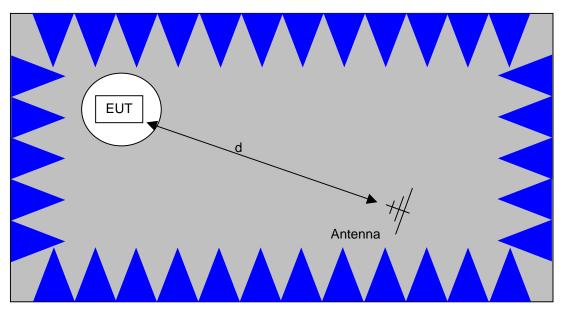
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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

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

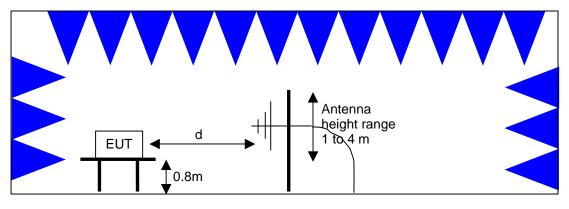


Typical Test Configuration for Radiated Field Strength Measurements



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

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



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

BANDWIDTH MEASUREMENTS

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

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

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

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

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

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

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

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

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

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

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

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

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

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

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

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

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

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

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

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

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

 $R_r = Receiver Reading in dBuV$

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

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

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

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

where:

 F_d = Distance Factor in dB D_m = Measurement Distance in meters D_s = Specification Distance in meters

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

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

 R_r = Receiver Reading in dBuV/m

- F_d = Distance Factor in dB
- R_c = Corrected Reading in dBuV/m
- L_S = Specification Limit in dBuV/m
- M = Margin in dB Relative to Spec

EXHIBIT 1: Test Equipment Calibration Data

<u>Manufacturer</u>	Description	<u>Model #</u>	<u>Asset #</u>	Cal Due
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	263	16-May- 08
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	785	29-May- 08
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	11-Jun- 08
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun- 08
Hewlett Packard	Spectrum Ánalyzer 30 Hz - 40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug- 08
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	19-Feb- 09
Rohde & Schwarz	Test Receiver, 0.009-30 MHz	ESH3	1316	24-Oct- 08
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz - 22 GHz	8593EM	1319	18-May- 08
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
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	15-May- 08
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-May- 08
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	1594	11-May- 08
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103	1632	25-May- 08
Micro-Tronics	Band Reject Filter, 2400- 2500 MHz	BRM50702- 02	1731	17-Oct- 08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	17-Dec- 08
Hewlett Packard	Head (Inc W1-W4, 1946, 1947) Purple	84125C	1772	20-Dec- 08
EMCO	Antenna, Horn, 18-26.5 GHz (SA40-Purple)	3160-09 (84125C)	1773	19-Dec- 08
EMCO	Antenna, Horn, 26.5-40 GHz (SA40-Purple)	3160-10 (84125C)	1774	19-Dec- 08
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN- 50-25-2-09	2000	12-Oct- 08

For tests performed with Universe Antenna

Manufacturer	Description	Model #	Asset #	<u>Cal Due</u>
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	263	16-Jun- 08
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	785	27-May- 09
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
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1534	05-Mar- 09
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1555	15-Jan- 09
Rohde & Schwarz	Attenuator, 20 dB , 50 ohm, 10W, DC-18 GHz	20dB, 10W, Type N	1556	15-Jan- 09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun- 08
Micro-Tronics	Band Reject Filter, 2400- 2500 MHz	BRM50702- 02	1731	17-Oct- 08
Hewlett Packard	Test Sys (SA40, 9kHz - 40GHz) Purple	84125C	1770	06-Nov- 08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	17-Dec- 08
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	1780	06-Nov- 08

EXHIBIT 2: Test Measurement Data

T71375 (rf port measurements)	65 Pages
T71373 (AC conducted emissions measurements,	34 Pages
radiated emissions with Ethertronics antenna)	
T71846 (Radiated emissions with Universe antenna)	28 Pages

Е	i	O	tt

EMC Test Data

Client:	Intel Corporation	Job Number:	J70762
Model:	512AN_HMW(Formal)	T-Log Number:	T71375
		Account Manager:	Richard Gencev
Contact:	Robert Paxman		-
Emissions Standard(s):	FCC	Class:	В
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Intel Corporation

Model

512AN_HMW(Formal)

Date of Last Test: 3/15/2008

Elliott

EMC Test Data

Client: Intel

Job Number: J70979

Model: 512-agn MMW

T-Log Number: T71036

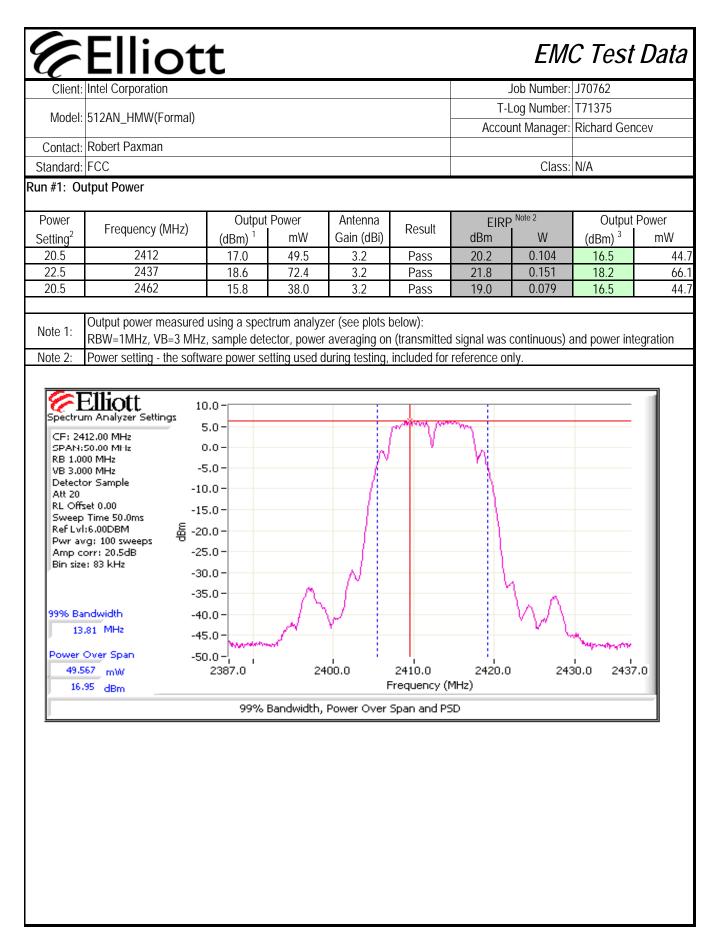
Account Manager: Dean Eriksen

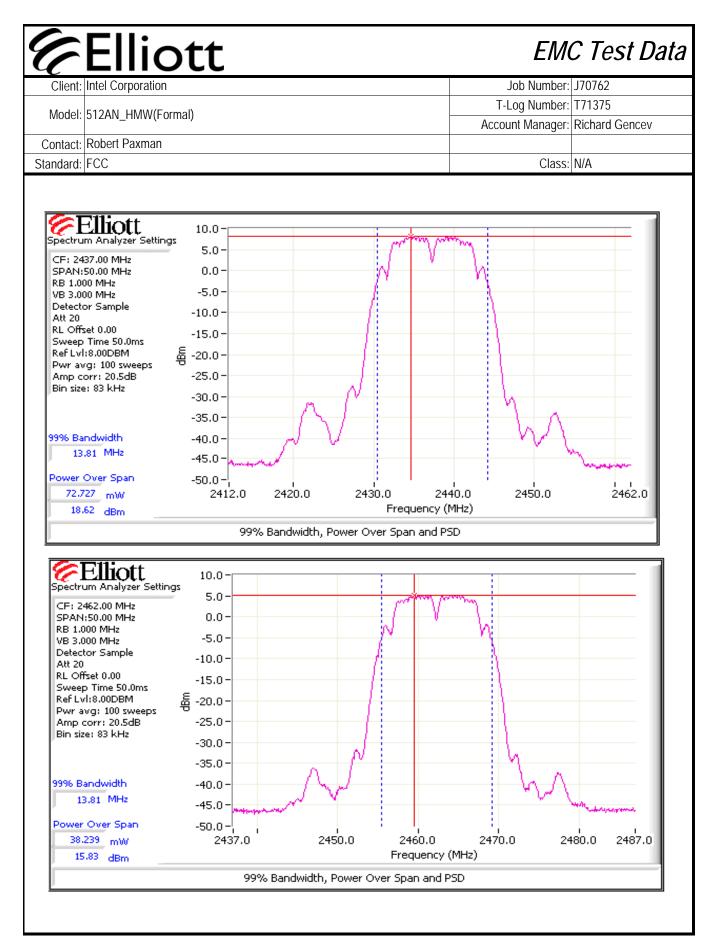
RSS 210 and FCC 15.247 Power Measurement Summary

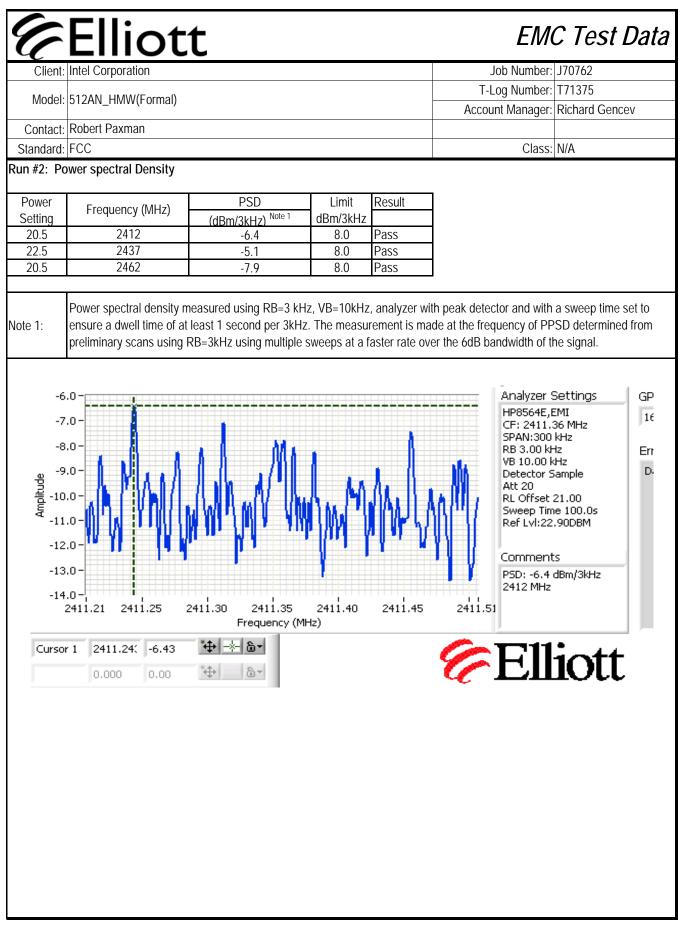
The table below compares the measured output power (measured using the UNII test method) with the power measured using an average power meter and is for reference purposes.

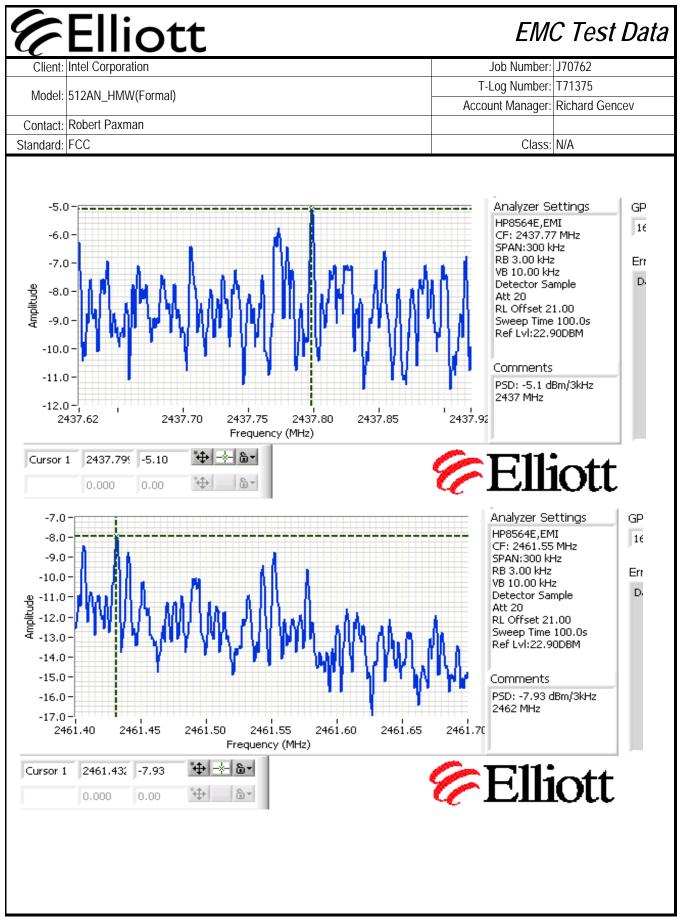
<i>802.11b</i> Power		Output	Power	Antenna	Decult	EIRP Note 2		Average	e Power
Setting ²	Frequency (MHz)	(dBm) ¹	mW	Gain (dBi)	Result	dBm	W	(dBm) ³	mW
20.5	2412	17.0	49.5	3.2	Pass	20.2	0.104	16.5	44.7
22.5	2437	18.6	72.4	3.2	Pass	21.8	0.151	18.2	66.1
20.5	2462	15.8	38.0	3.2	Pass	19.0	0.079	16.5	44.7
802.11g								-	
Power		Output	Power	Antenna	Decult	EIRP	Note 2	Average	e Power
Setting ²	Frequency (MHz)	(dBm) ¹	mW	Gain (dBi)	Result	dBm	W	(dBm) ³	mW
21.5	2412	13.2	20.8	3.2	Pass	16.4	0.044	13.9	24.5
26.5	2437	18.2	65.8	3.2	Pass	21.4	0.137	17.8	60.3
23.5	2462	14.4	27.4	3.2	Pass	17.6	0.057	15.4	34.7
802.11n20 (.	2.4GHz)								
Power		Output	Power	Antenna	Desult	EIRP	Note 2	Average	e Power
Setting ²	Frequency (MHz)	(dBm) ¹	mW	Gain (dBi)	Result	dBm	W	(dBm) ³	mW
22	2412	12.3	17.0	3.2	Pass	15.5	0.036	14.0	25.1
26	2437	16.1	40.8	3.2	Pass	19.3	0.085	16.5	44.7
22.5	2462	12.9	19.4	3.2	Pass	16.1	0.041	14.3	26.9
802.11n40 (.	2.4GHz)			-					
Power		Output	Power	Antenna	Decell	EIRP	Note 2	Average	e Power
Setting ²	Frequency (MHz)	(dBm) ¹	mW	Gain (dBi)	Result	dBm	W	(dBm) ³	mW
18.5	2422	9.3	8.5	3.2	Pass	12.5	0.018	8.8	7.6
24.0	2437	15.8	38.0	3.2	Pass	19.0	0.079	16.5	44.7
18.5	2452	9.1	8.1	3.2	Pass	12.3	0.017	9.8	9.5
802.11a									
Power		Output	Power	Antenna	Desult	EIRP Note 2		Average Power	
Setting ²	Frequency (MHz)	(dBm) ¹	mW	Gain (dBi)	Result	dBm	W	(dBm) ³	mW
26.5	5745	14.7	29.2	3.2	Pass	17.9	0.061	17.5	56.2
28	5785	15.3	34.0	3.2	Pass	18.5	0.071	17.8	60.3
26.5	5825	13.3	21.5	3.2	Pass	16.5	0.045	17.3	53.7
802.11n20 (5.7GHz)		-					-	
Power		Output	Power	Antenna	Decult	EIRP	Note 2	Average	e Power
Setting ²	Frequency (MHz)	(dBm) ¹	mW	Gain (dBi)	Result	dBm	W	(dBm) ³	mW
26.5	5745	14.7	29.2	5.0	Pass	19.7	0.092	16.5	44.7
28	5785	15.1	32.4	5.0	Pass	20.1	0.102	16.5	44.7
26.5	5825	13.3	21.4	5.0	Pass	18.3	0.068	16.5	44.7
802.11n40 (5.7GHz)								
Power	•	Output	Power	Antenna	Decoll	EIRP	Note 2	Average	e Power
Setting ²	Frequency (MHz)	(dBm) ¹	mW	Gain (dBi)	Result	dBm	W	(dBm) ³	mW
28	5755	15.9	38.9	5.0	Pass	20.9	0.123	16.5	44.7
31	5795	17.9	61.5	5.0	Pass	22.9	0.195	16.5	44.7

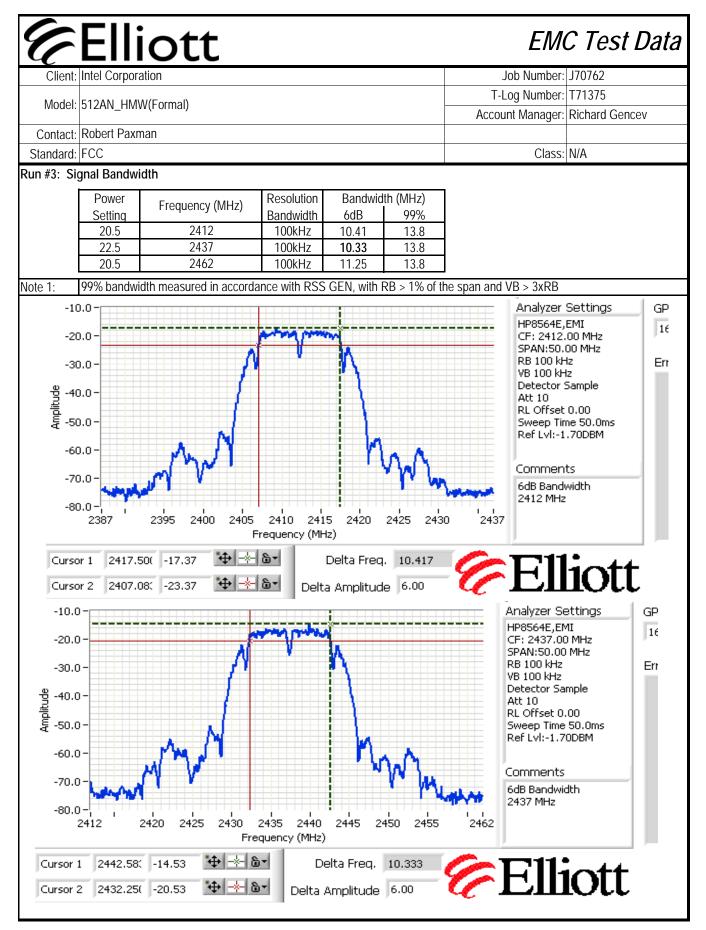
	iott			EMC Test
Client: Intel Corpor				Job Number: J70762
Model: 512AN_HM	W(Formal)			og Number: T71375
Contact: Robert Paxi	nan		ACCOU	Int Manager: Richard Ge
Standard: FCC				Class: N/A
	210 and FCC 15.247 (D PSD, Bandwidth and Spu	•		
Objective:	The chieve of this test section is to a	erform final qualifica	tion testing of th	ne EUT with respect to the
	3/6/2008 Rafael Varelas Fremont Chamber #4	Config. Use Config Chang EUT Voltag	ge: None	om Host System
General Test Confi The EUT was connected chain.	guration to the spectrum analyzer or power meter	er via a suitable atter	nuator. All mea:	surements were made or
All measurements have	been corrected to allow for the external a	attenuators used.		
Ambient Condition	s: Temperature: Rel. Humidity:	18.7 °C 42 %		
Summary of Resul	S			
Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	18.6 dBm(72.4mW)
.)	Power spectral Density (PSD) 6dB Bandwidth	15.247(d) 15.247(a)	Pass Pass	-5.1 dBm/3kHz 10.3 MHz
2	99% Bandwidth	RSS GEN	-	13.8 MHz
3		15.247(b)	Pass	All emissions below the -30dBc limit
	99% Bandwidth		- Dass	All emissions below th

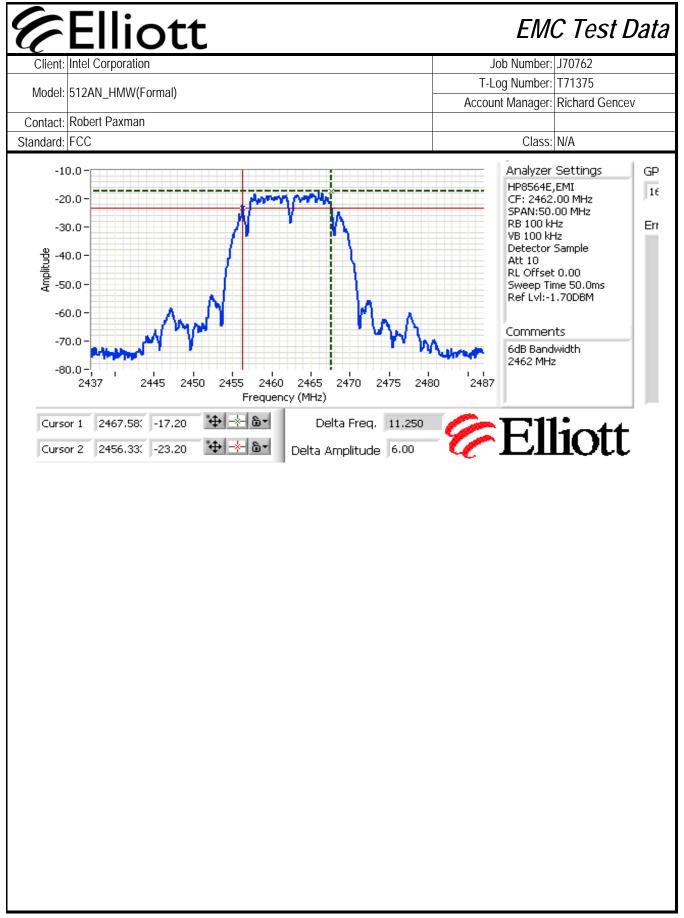


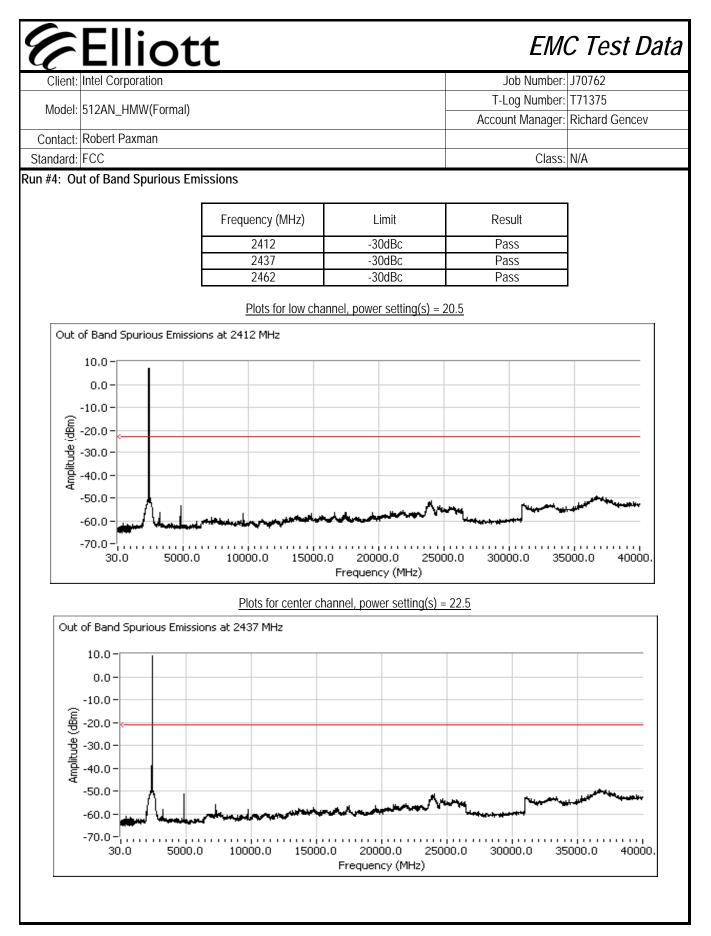


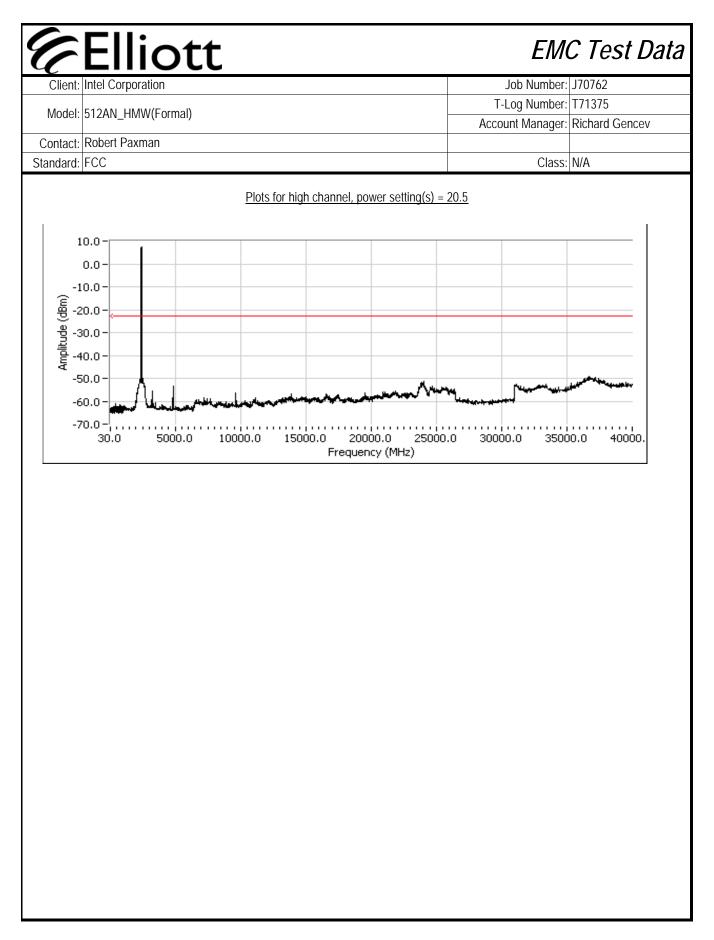




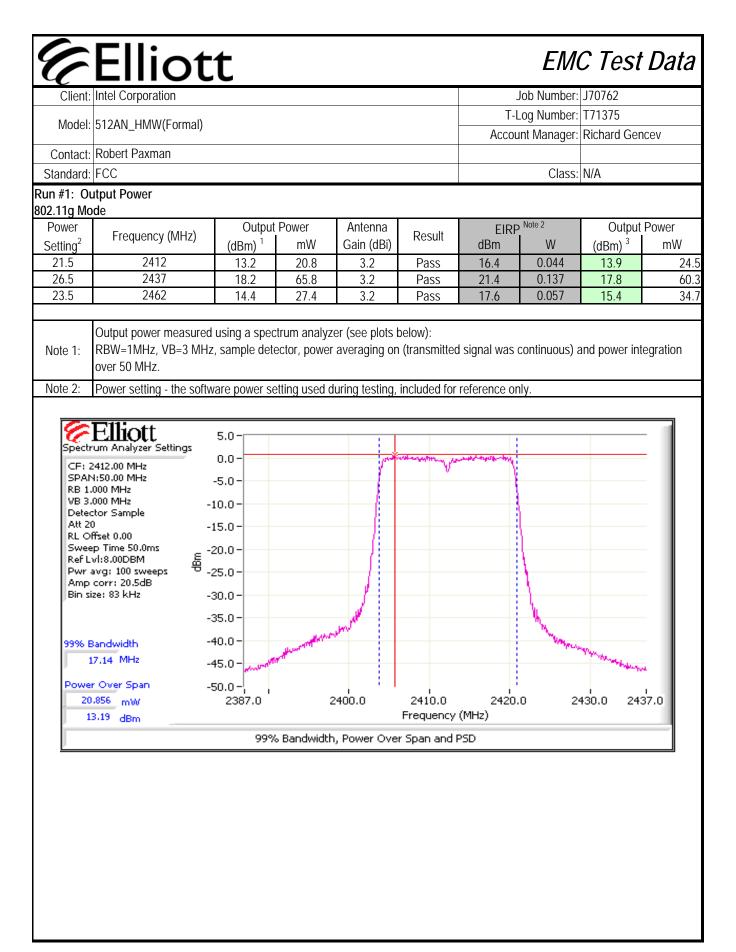


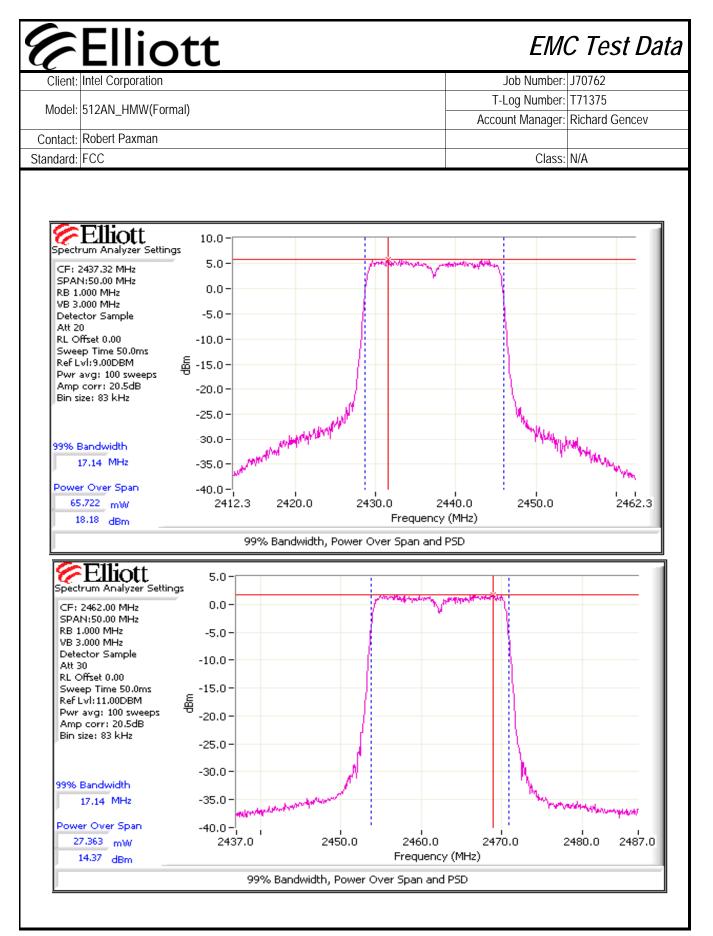


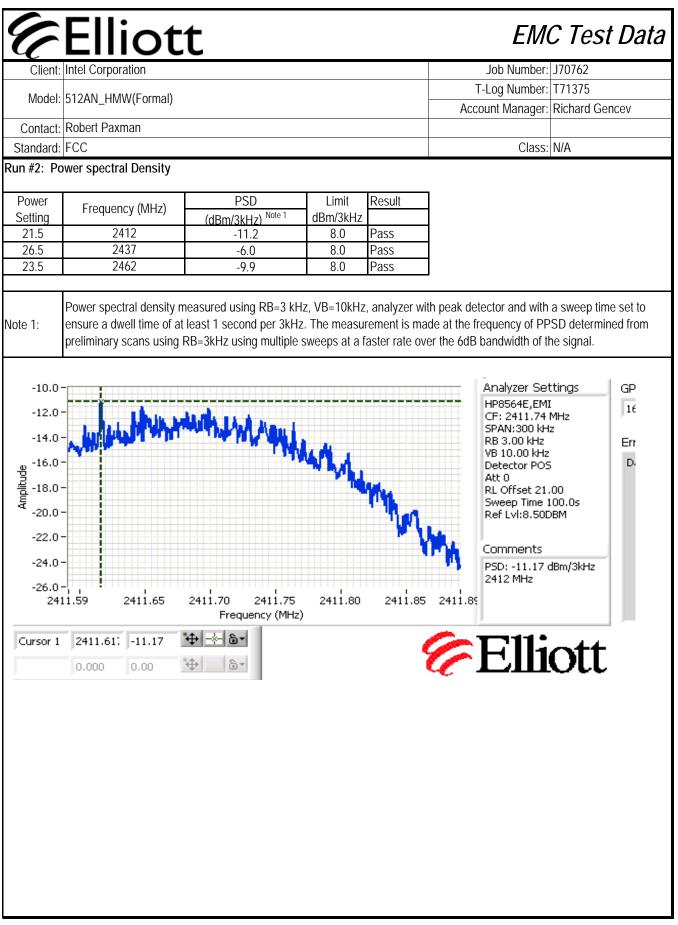


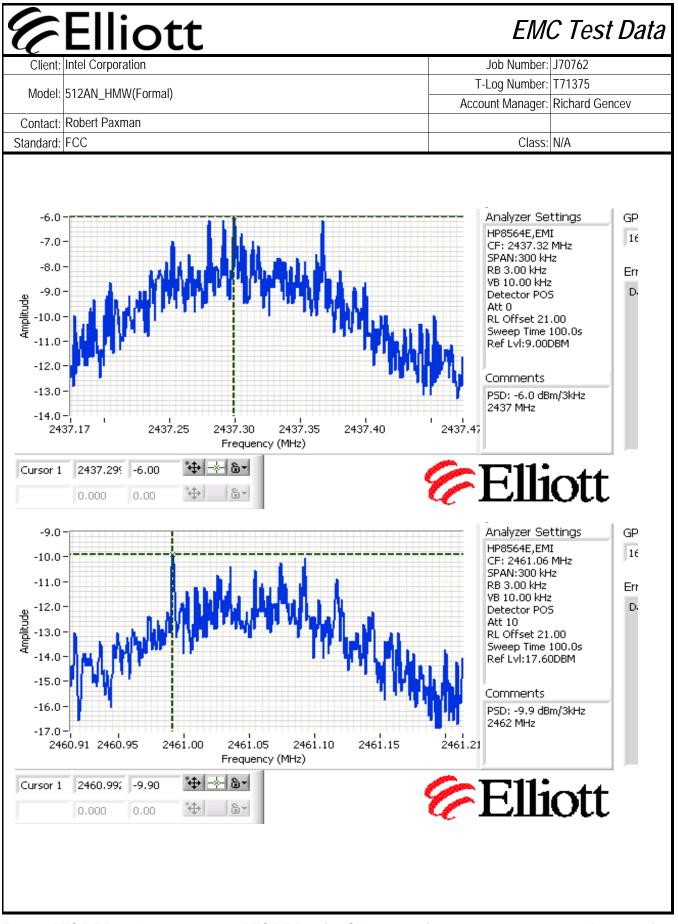


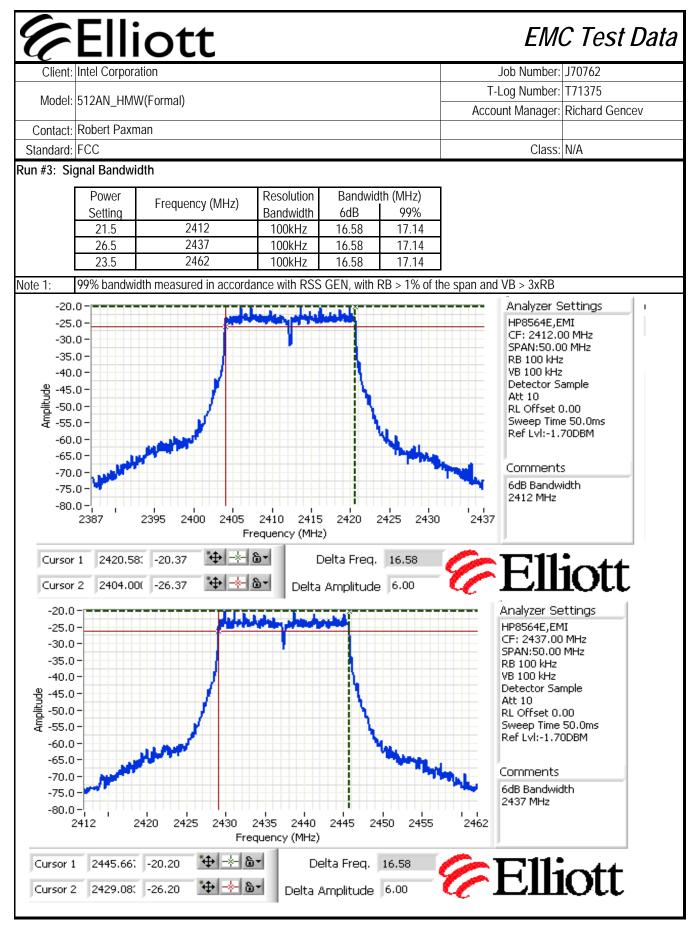
6 Elli	ott			EMC Test Da
Client: Intel Corpora				Job Number: J70762
Model: 512AN_HMV	V(Formal)			og Number: T71375
			Accou	Int Manager: Richard Gencev
Contact: Robert Paxm Standard: FCC	Idli			Class: N/A
	10 and FCC 15.247 (D PSD, Bandwidth and Spu	•		
	S The objective of this test session is to p specification listed above.	perform final qualifica	tion testing of th	e EUT with respect to the
Date of Test: Test Engineer:	3/6/2008	Config. Use Config Chang EUT Voltag	ge: None	om Host System
chain.	juration to the spectrum analyzer or power met een corrected to allow for the external		nuator. All mea	surements were made on a sing
Ambient Conditions Summary of Result	Rel. Humidity:	18.7 °C 42 %		
Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass / Fail	18.2 dBm(65.8mW)
2	Power spectral Density (PSD)	15.247(d)	Pass	-6.0 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	16.58 MHz
3 4	99% Bandwidth Spurious emissions	RSS GEN 15.247(b)	- Pass	17.14 MHz All emissions below the -30dBc limit
Modifications Made No modifications were ma Deviations From Th	During Testing ade to the EUT during testing		r'ass	-30dBc limit

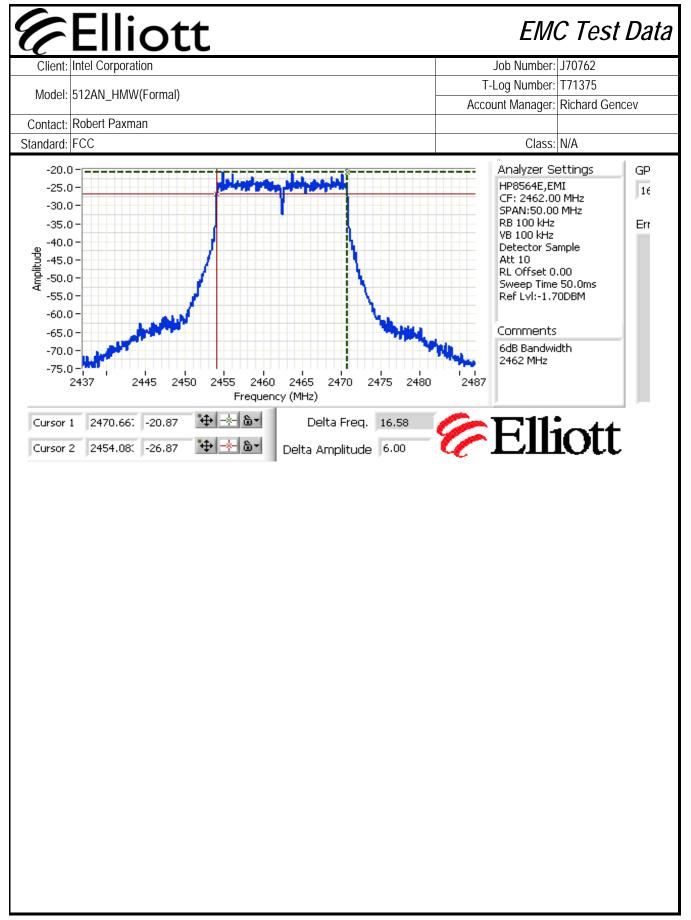


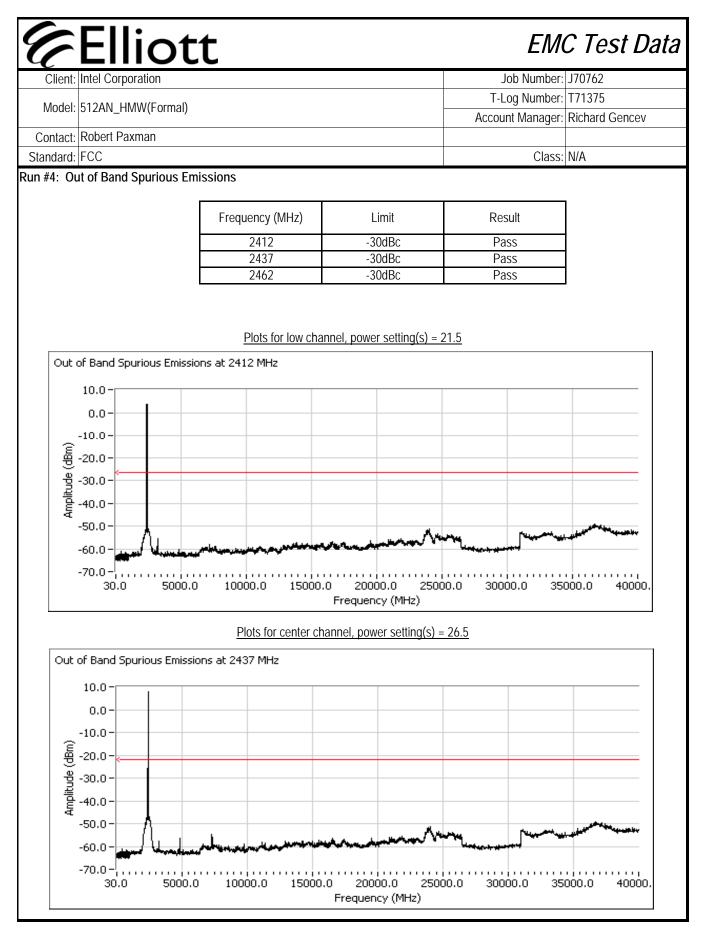


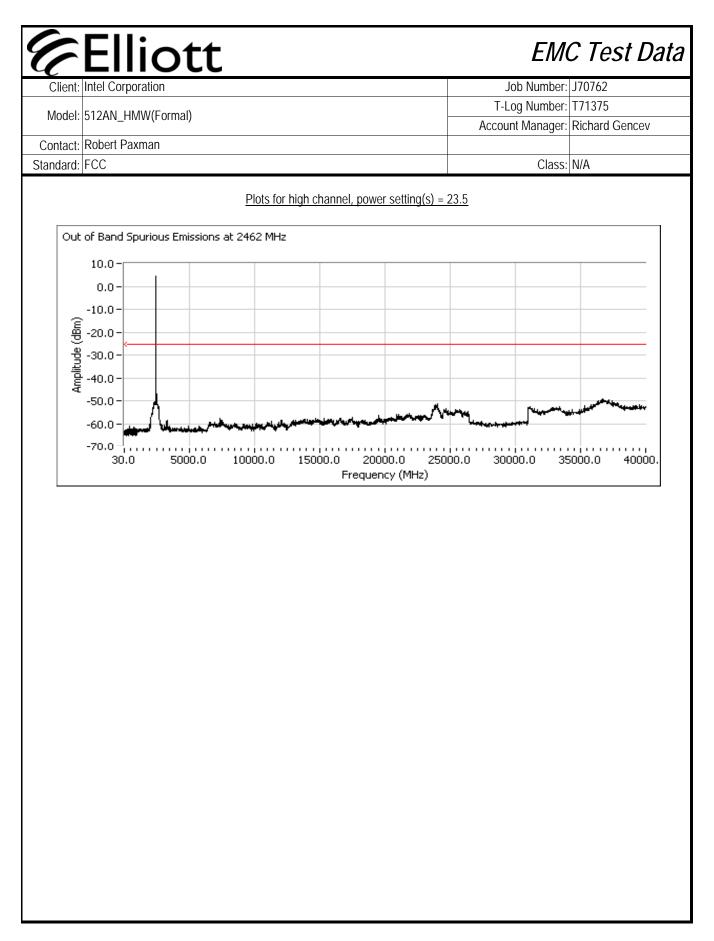




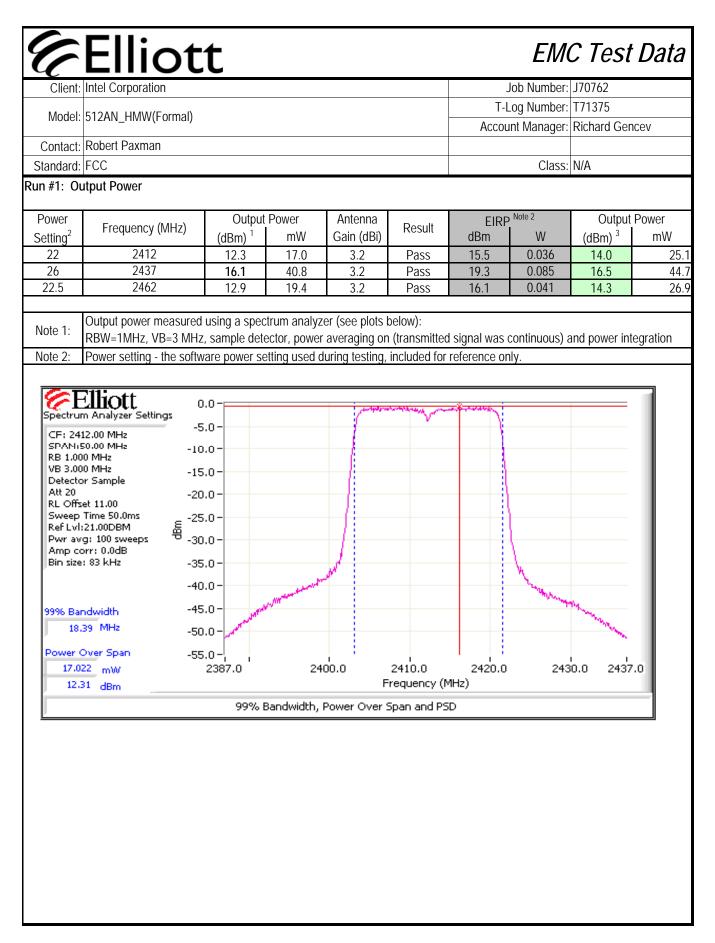


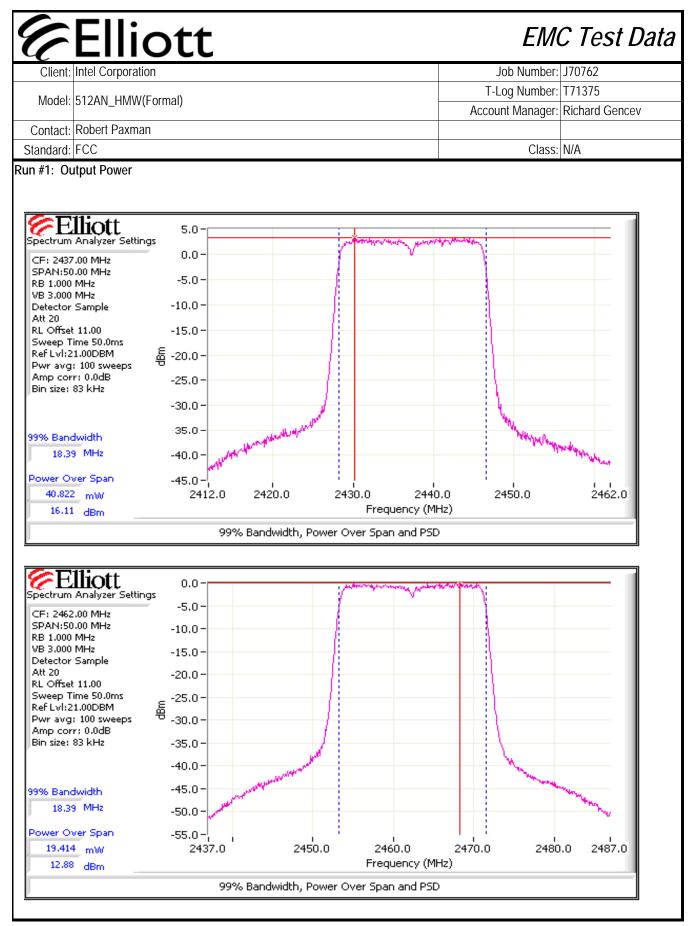


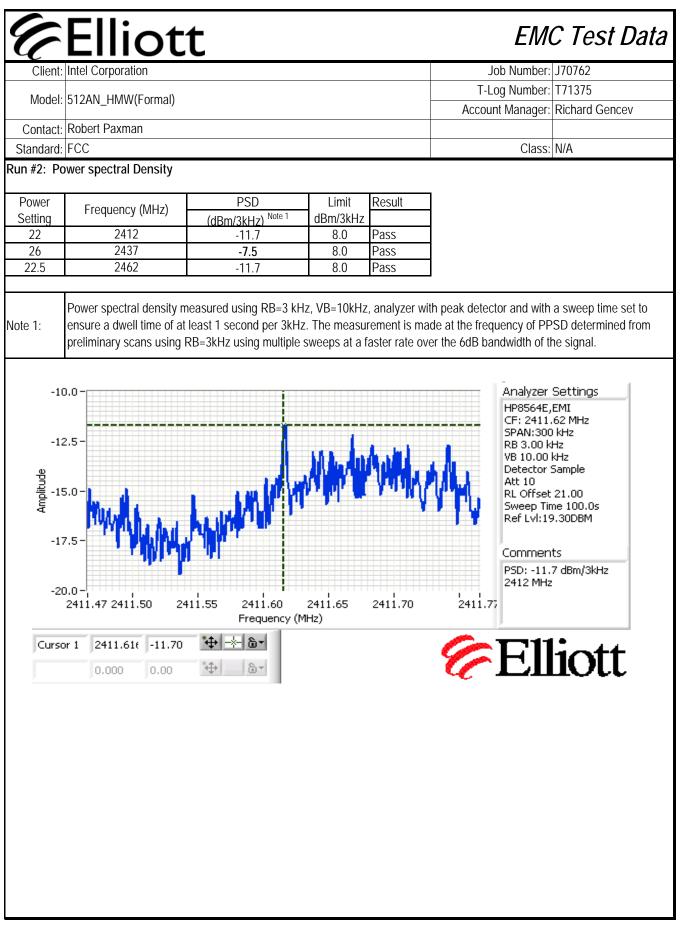


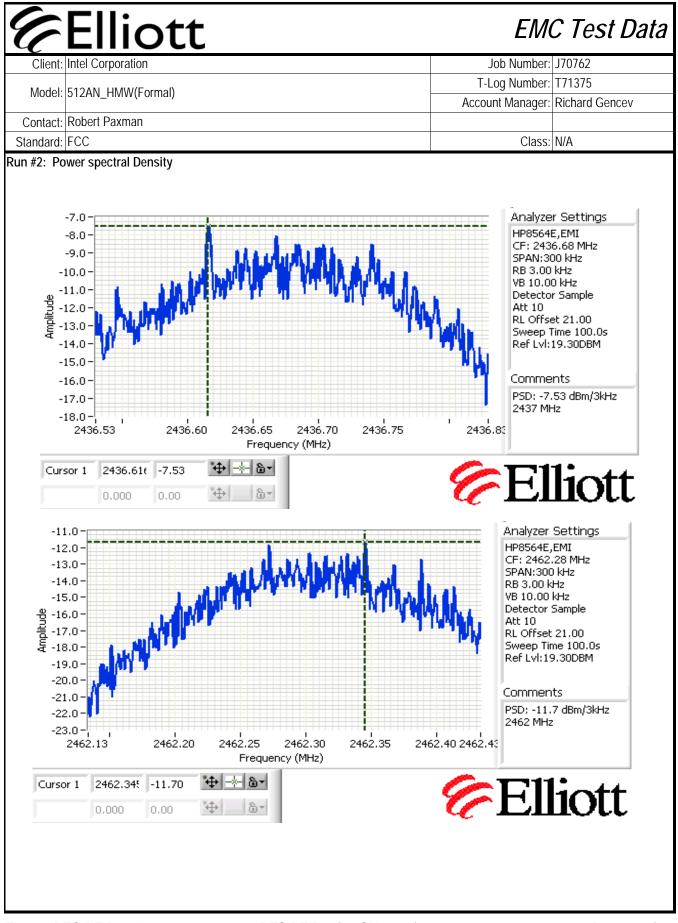


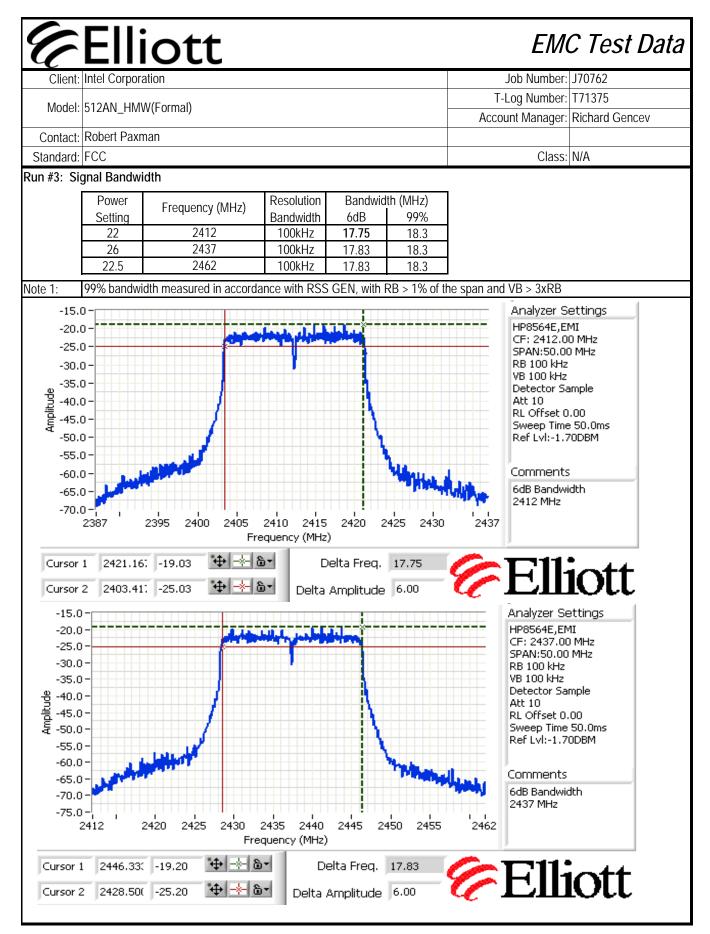
Ell	iott			EMC Test
Client: Intel Corpor				Job Number: J70762
Model: 512AN_HM	W(Formal)			_og Number: T71375
Contact: Robert Paxi			Accou	Int Manager: Richard Geno
itandard: FCC	lidii			Class: N/A
st Specific Detai Objective: Date of Test: Test Engineer: Test Location: eneral Test Confi	The objective of this test session is to p specification listed above. 3/7/2008 Joseph Cadigal Fremont Chamber #5	perform final qualifica Config. Use Config Chang EUT Voltag	tion testing of th ed: 1 ge: None ge: Powered Fr	ne EUT with respect to the om Host System
measurements have	been corrected to allow for the external S: Temperature: Rel. Humidity:	attenuators used. 18.7 °C 42 %		
mmary of Resul				
Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	16.1dBm(40.8mW)
2 3	Power spectral Density (PSD) 6dB Bandwidth	15.247(d) 15.247(a)	Pass Pass	-7.5dBm/3kHz 17.83 MHz
3	99% Bandwidth	RSS GEN		17.83 MHZ 18.4 MHz
4	Spurious emissions	15.247(b)	Pass	All emissions below the -30dBc limit
	e During Testing hade to the EUT during testing he Standard e from the requirements of the standard	L		

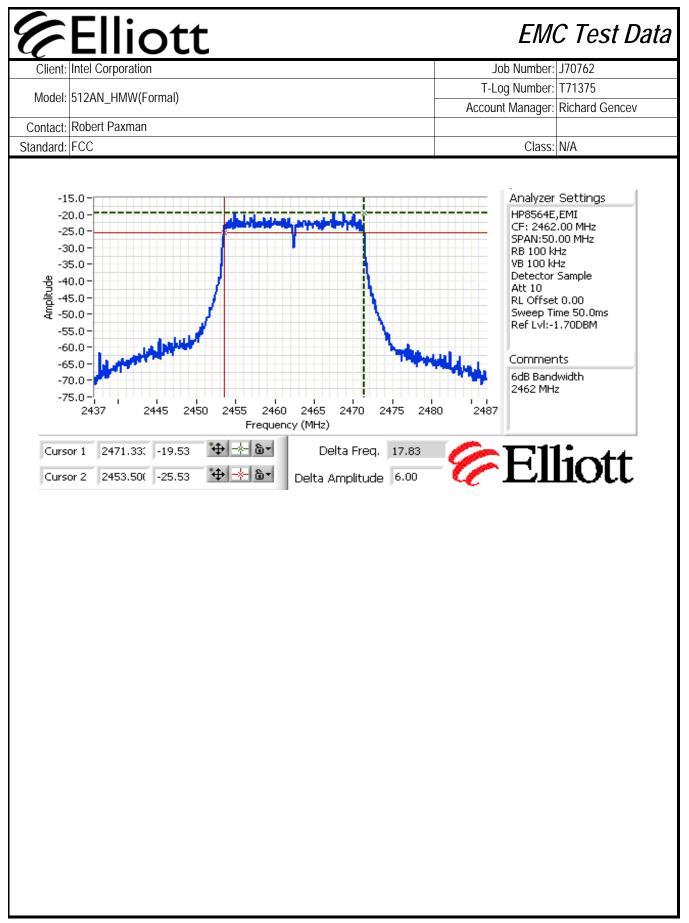


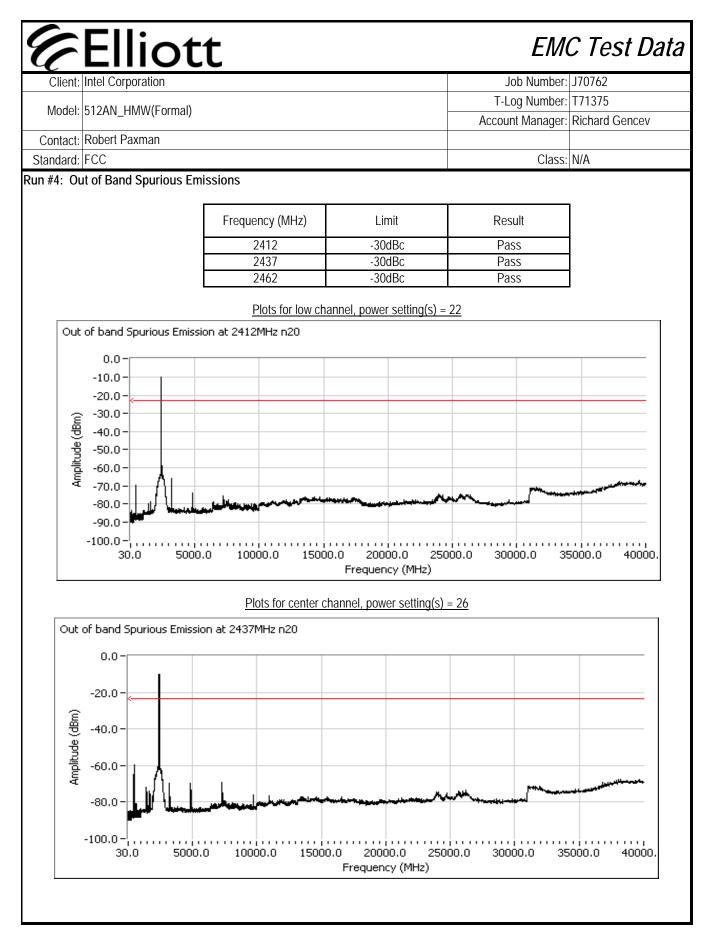


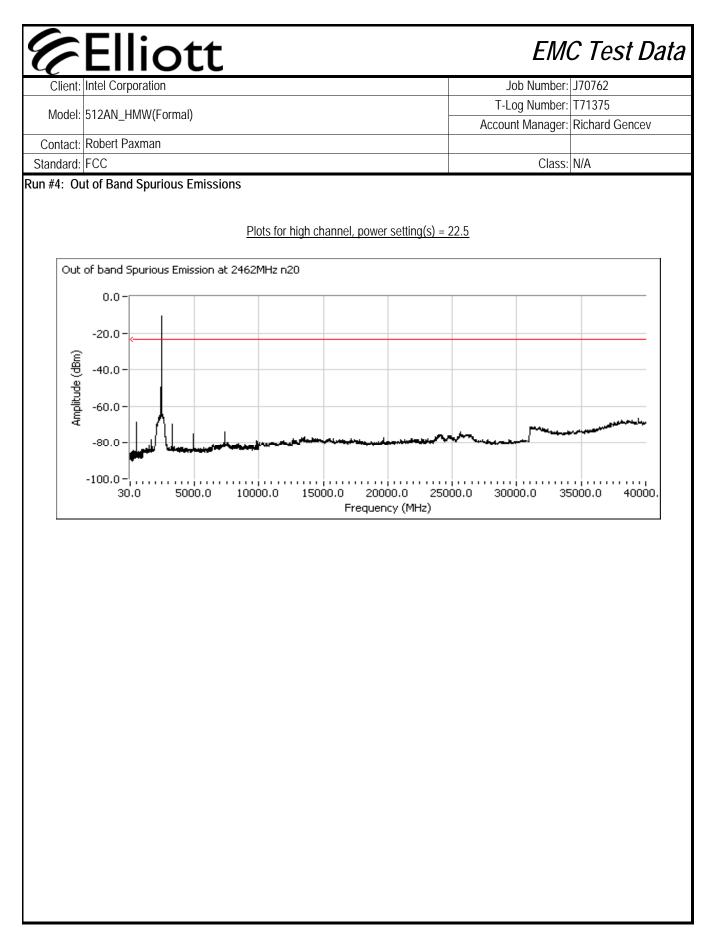




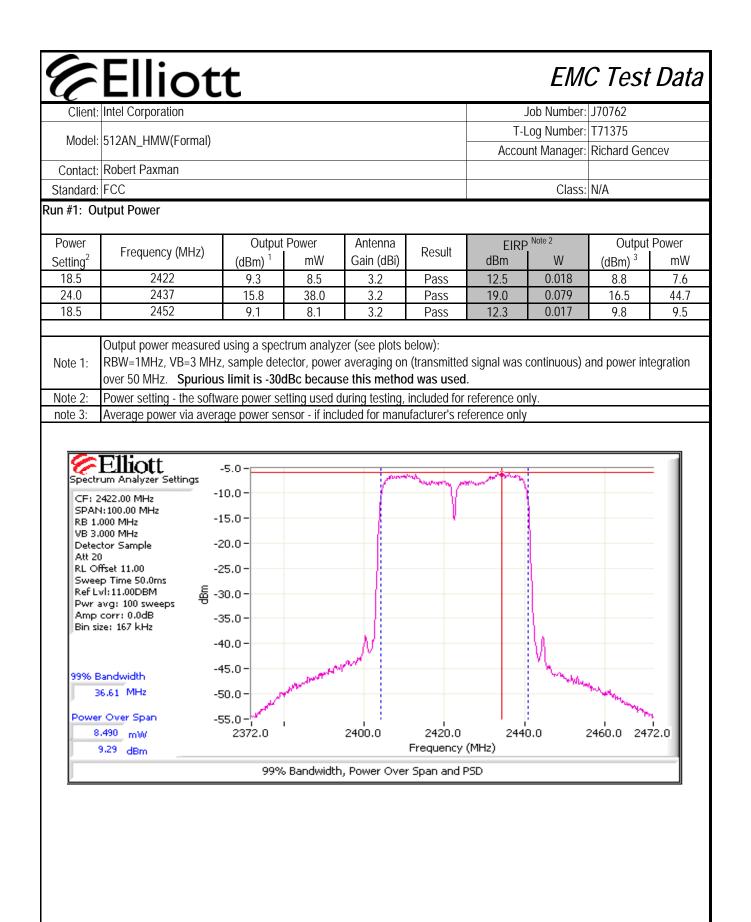


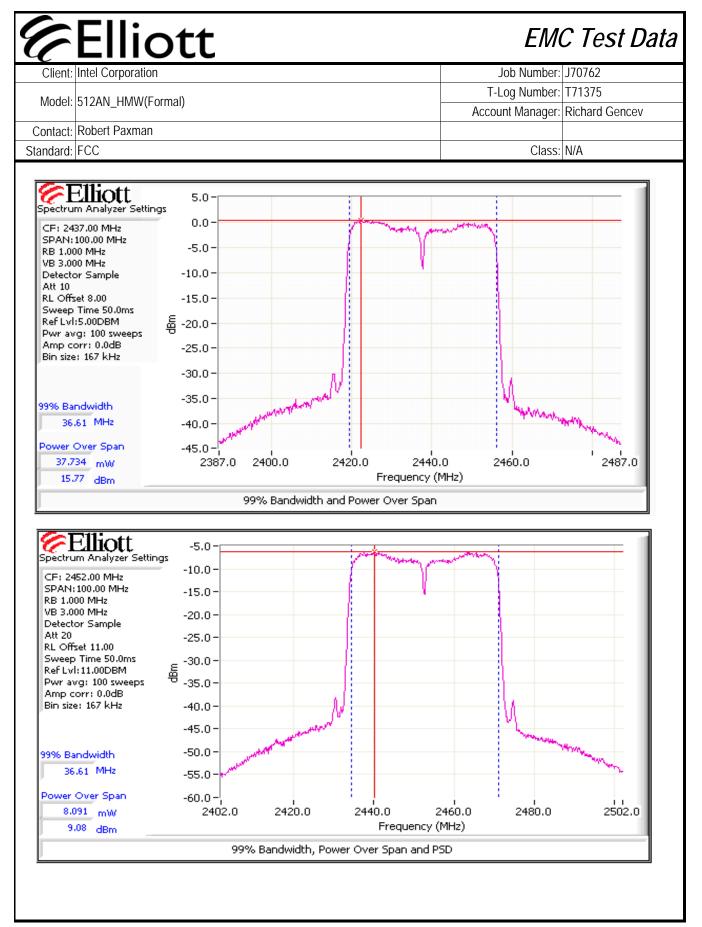


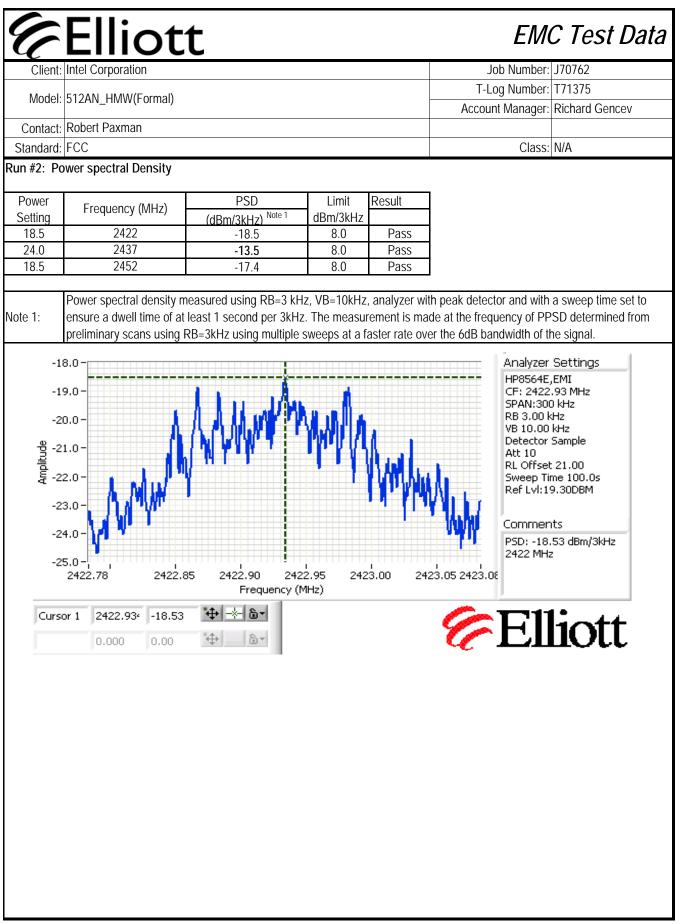


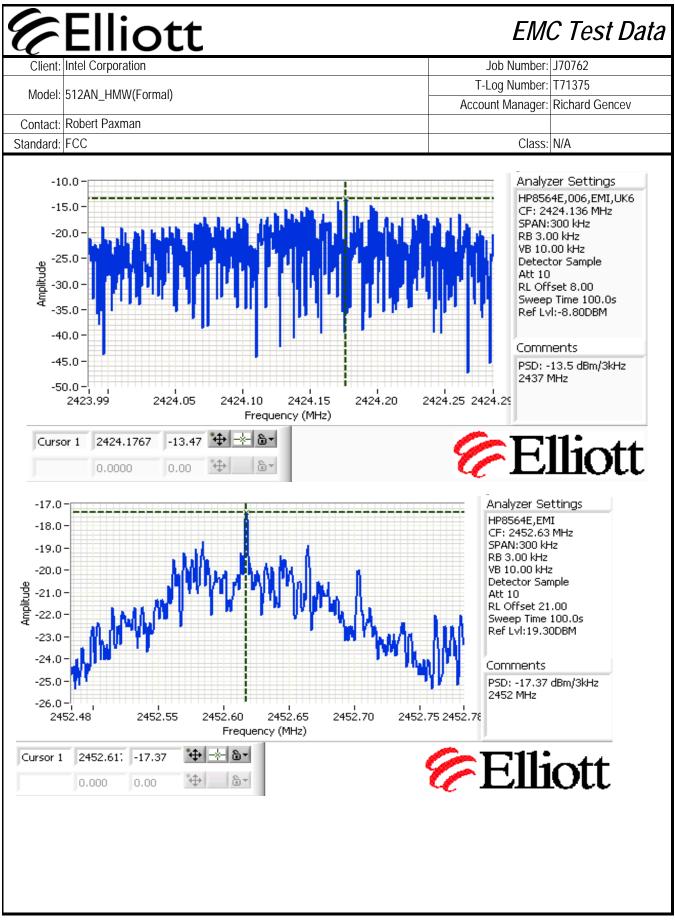


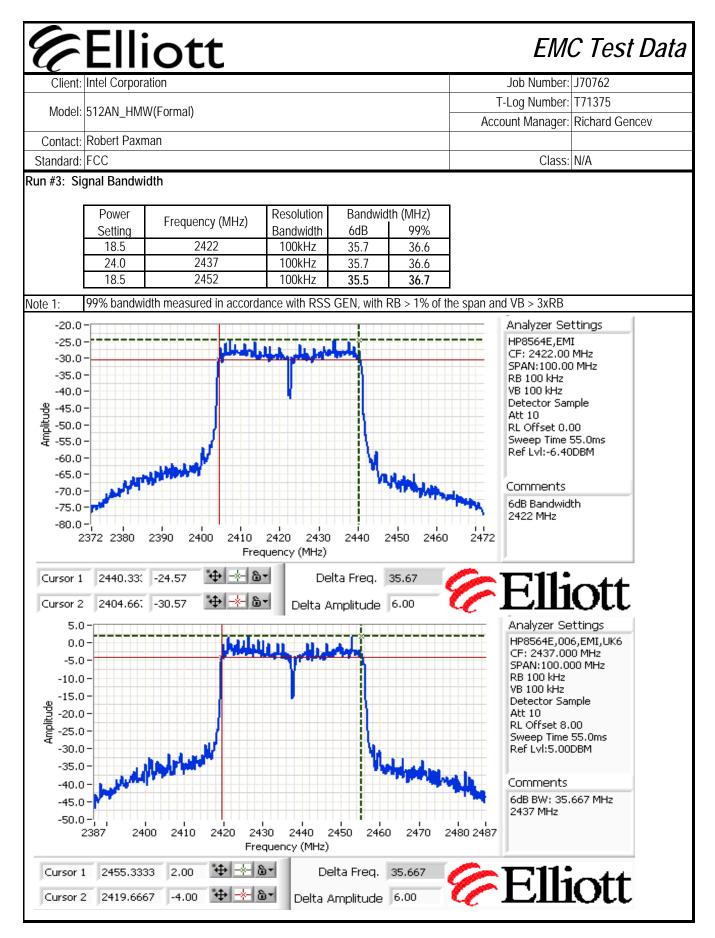
~ -	iott			EMC Test Da
Client: Intel Corpo				Number: J70762
Model: 512AN_HI	MW(Formal)			Number: T71375
Contact: Robert Pa	xman		Account	Manager: Richard Gencev
Standard: FCC				Class: N/A
Power, PS	210 and FCC 15.247 (D SD, Bandwidth and Spurior	•		
est Specific Deta	The chieve of this test section is to a	erform final qualifica	ation testing of the E	EUT with respect to the
•	t: 3/7/2008 r: Joseph Cadigal n: Fremont Chamber #5	Config. Us Config Chan EUT Volta		Host System
hain.	figuration ed to the spectrum analyzer or power meter e been corrected to allow for the external a		nuator. All measur	ements were made on a singl
Ambient Conditio	ns: Temperature: Rel. Humidity:	18.7 °C 42 %		
Summary of Resu	lts			
	Test Performed	Limit	Pass / Fail	Result / Margin
Run #	Output Power Power spectral Density (PSD)	15.247(b)	Pass	15.8 dBm (38.0mW)
1		15.247(d)	Pass Pass	-13.5dBm/3kHz 35.5 MHz
1 2		[5.247(a)	1 455	
1	6dB Bandwidth 99% Bandwidth	15.247(a) RSS GEN	-	36.7 MHz
1 2 3	6dB Bandwidth		Pass	36.7 MHz All emissions below the -30dBc limit

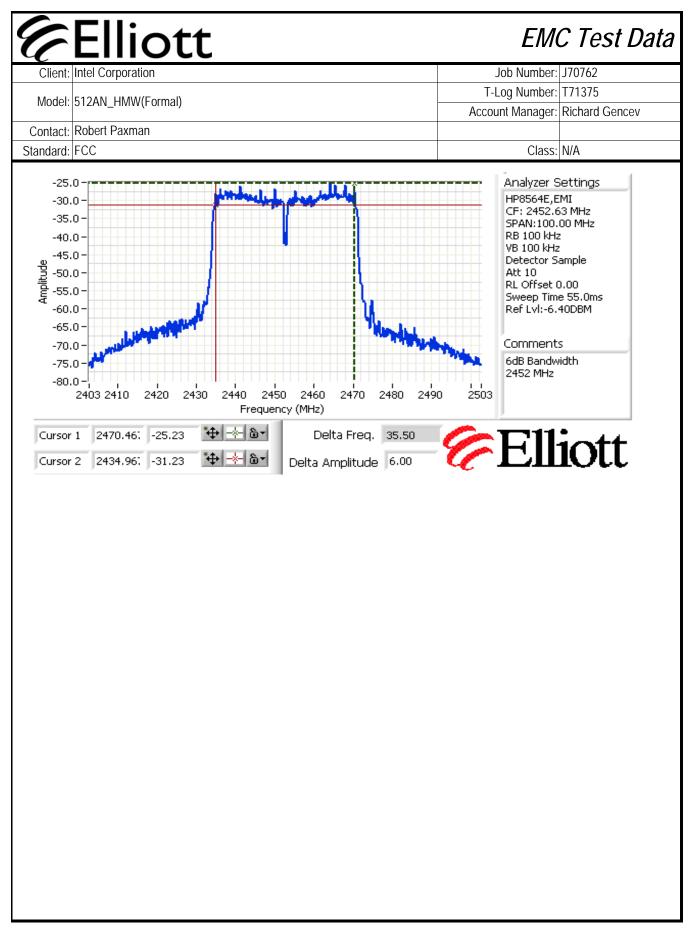


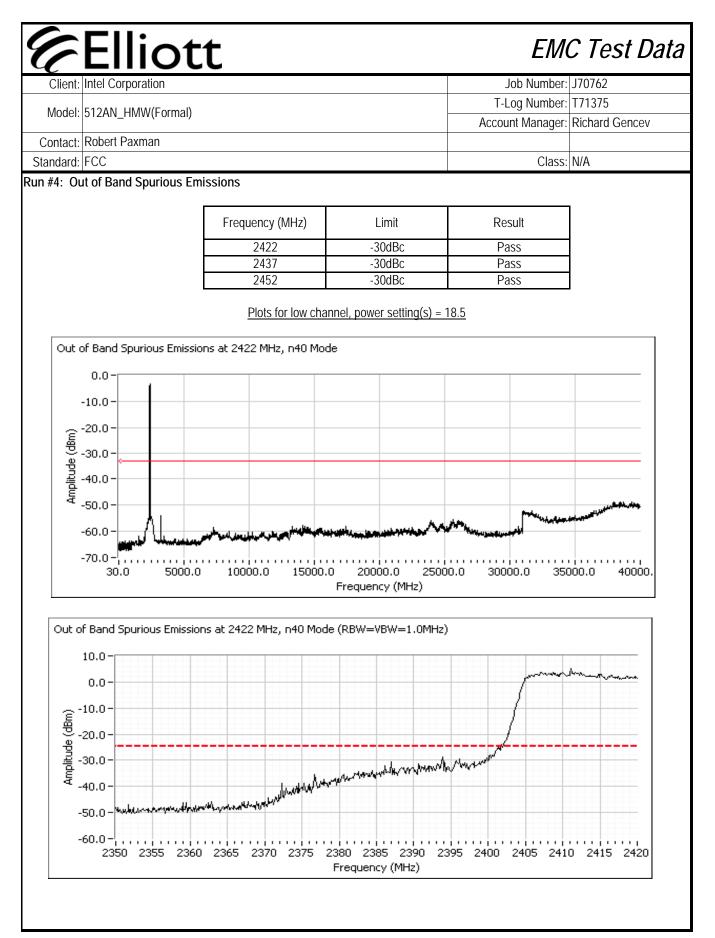


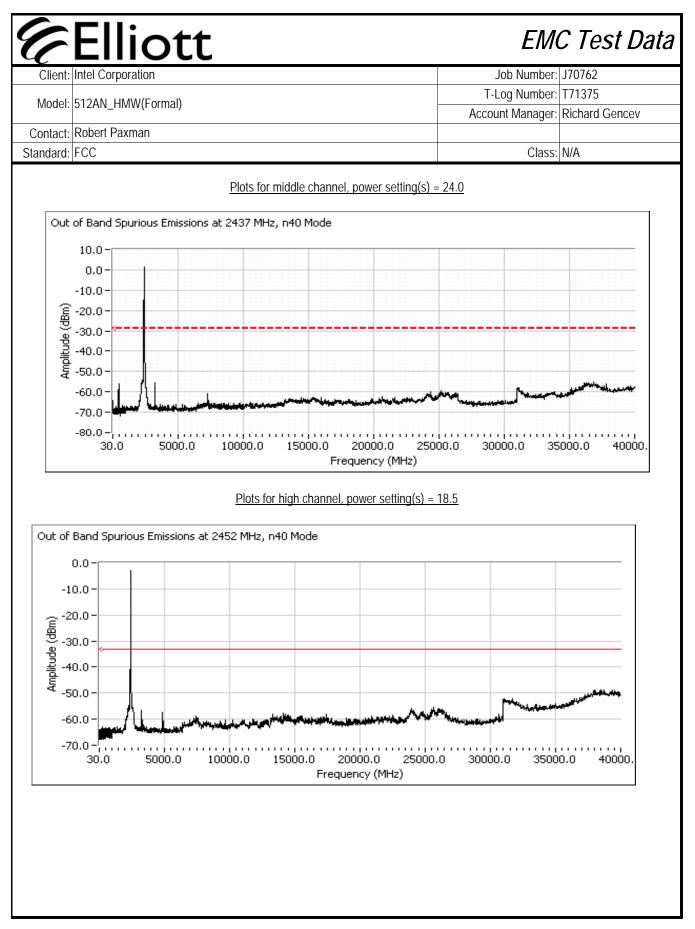




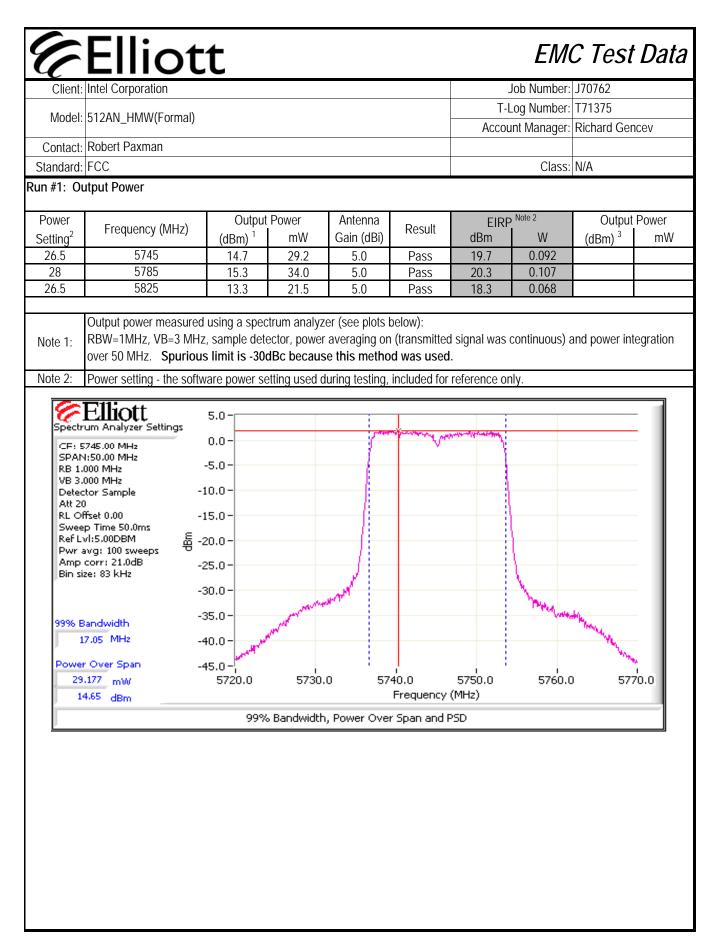


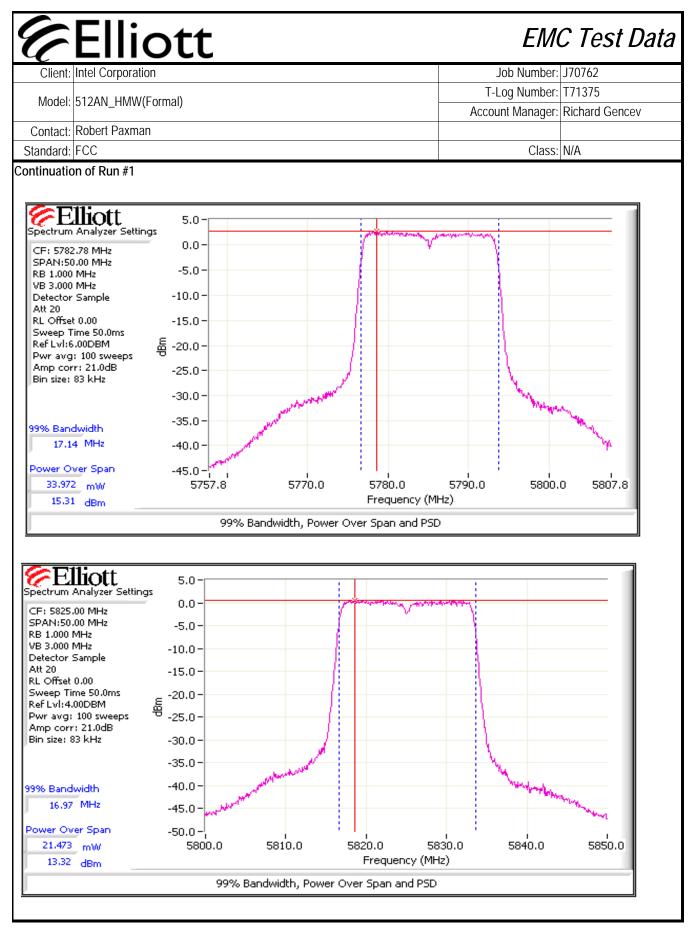


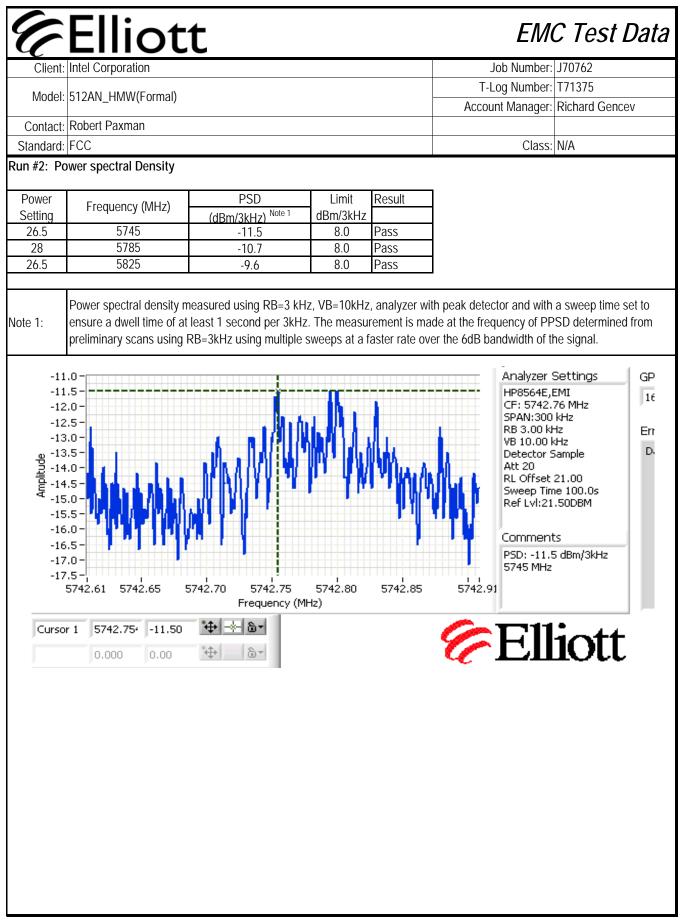


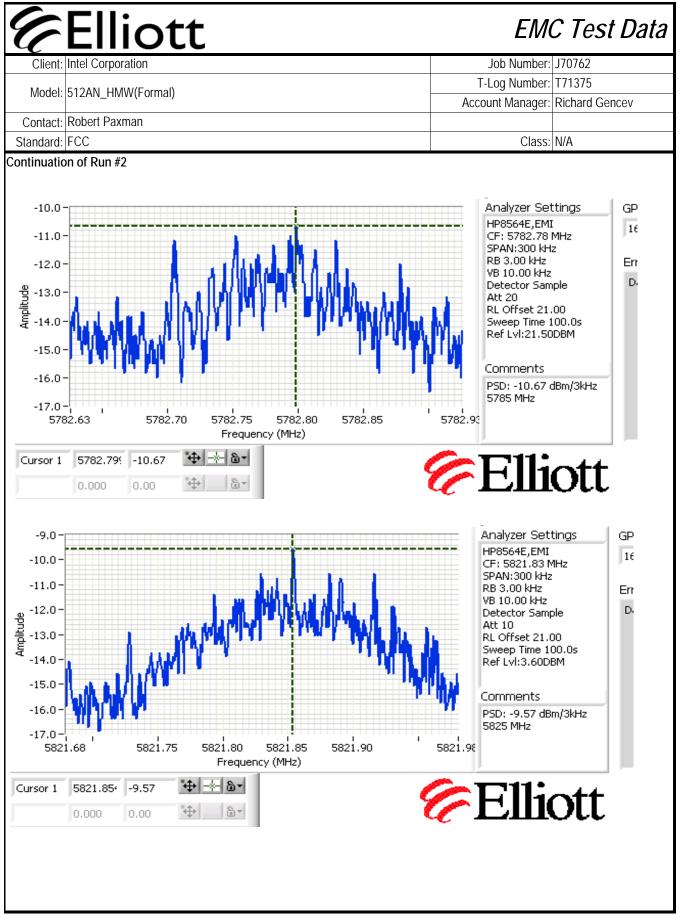


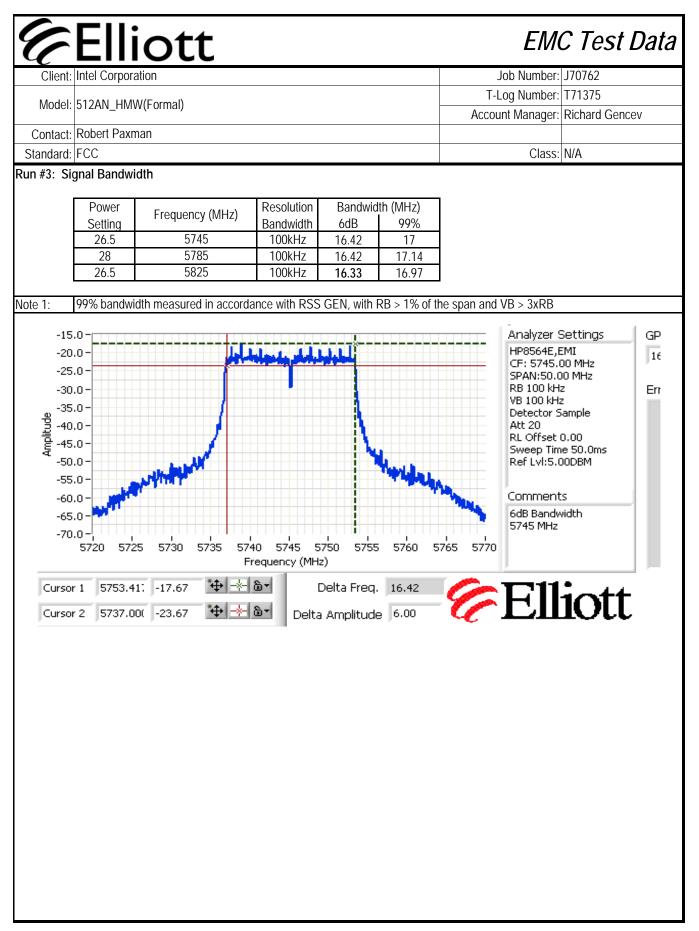
	iott			EMC Test
Client: Intel Corpo				Job Number: J70762
			T-	Log Number: T71375
Model: 512AN_HN			Acco	unt Manager: Richard Gei
Contact: Robert Pay	man			
Standard: FCC				Class: N/A
	210 and FCC 15.247 (D SD, Bandwidth and Spurio			
Test Specific Deta	ils			
Objective	The objective of this test session is to p specification listed above.	perform final qualifica	tion testing of t	he EUT with respect to the
Date of Test:3/11/2008Config. UsedTest Engineer:Vishal NarayanConfig Change				
Test Engineer Test Location General Test Conf	: Vishal Narayan : Fremont Chamber #3	Config Chang EUT Voltag	ge: None ge: Powered Fr	rom Host System asurements were made on
Test Engineer Test Location General Test Conf The EUT was connecte chain.	 Vishal Narayan Fremont Chamber #3 iguration d to the spectrum analyzer or power met been corrected to allow for the external 	Config Chang EUT Voltag er via a suitable atter	ge: None ge: Powered Fr	,
Test Engineer Test Location General Test Conf The EUT was connecte chain. All measurements have	 Vishal Narayan Fremont Chamber #3 iguration d to the spectrum analyzer or power met been corrected to allow for the external 	Config Chang EUT Voltag er via a suitable atter attenuators used.	ge: None ge: Powered Fr	,
Test Engineer Test Location General Test Conf The EUT was connecte chain. All measurements have Ambient Condition	 Vishal Narayan Fremont Chamber #3 iguration d to the spectrum analyzer or power met been corrected to allow for the external Temperature:	Config Chang EUT Voltag er via a suitable atter attenuators used. 20 °C	ge: None ge: Powered Fr	,
Test Engineer Test Location General Test Conf The EUT was connecte thain. All measurements have Ambient Condition	 Vishal Narayan Fremont Chamber #3 iguration d to the spectrum analyzer or power met been corrected to allow for the external Temperature:	Config Chang EUT Voltag er via a suitable atter attenuators used. 20 °C	ge: None ge: Powered Fr	asurements were made on
Test Engineer Test Location General Test Conf The EUT was connecte hain. Il measurements have Ambient Condition Summary of Resu Run # 1	 Vishal Narayan Fremont Chamber #3 iguration d to the spectrum analyzer or power met been corrected to allow for the external ns: Temperature:	Config Chang EUT Voltag er via a suitable atter attenuators used. 20 °C 43 % Limit 15.247(b)	ge: None ge: Powered Fr huator. All mea	Result / Margin 15.3 dBm(34mW)
Test Engineer Test Location General Test Conf he EUT was connecte hain. Il measurements have Ambient Condition Gummary of Resu Run # 1 2	 Vishal Narayan Fremont Chamber #3 iguration d to the spectrum analyzer or power met been corrected to allow for the external ns: Temperature:	Config Chang EUT Voltag er via a suitable atter attenuators used. 20 °C 43 % Limit 15.247(b) 15.247(d)	ge: None ge: Powered Fr huator. All mea Pass / Fail Pass Pass	Result / Margin 15.3 dBm(34mW) -9.6 dBm/3kHz
Test Engineer Test Location General Test Conf The EUT was connecte chain. All measurements have Ambient Condition Summary of Resu Run # 1	 Vishal Narayan Fremont Chamber #3 iguration d to the spectrum analyzer or power met been corrected to allow for the external ns: Temperature:	Config Chang EUT Voltag er via a suitable atter attenuators used. 20 °C 43 % Limit 15.247(b)	ge: None ge: Powered Fr nuator. All mea <u>Pass / Fail</u> Pass	Result / Margin 15.3 dBm(34mW)

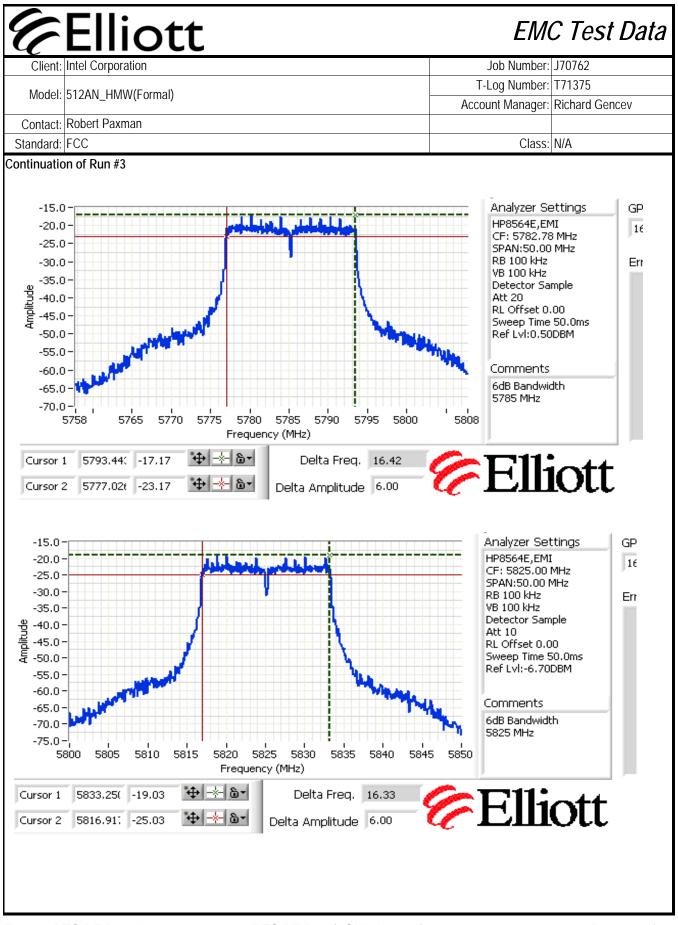


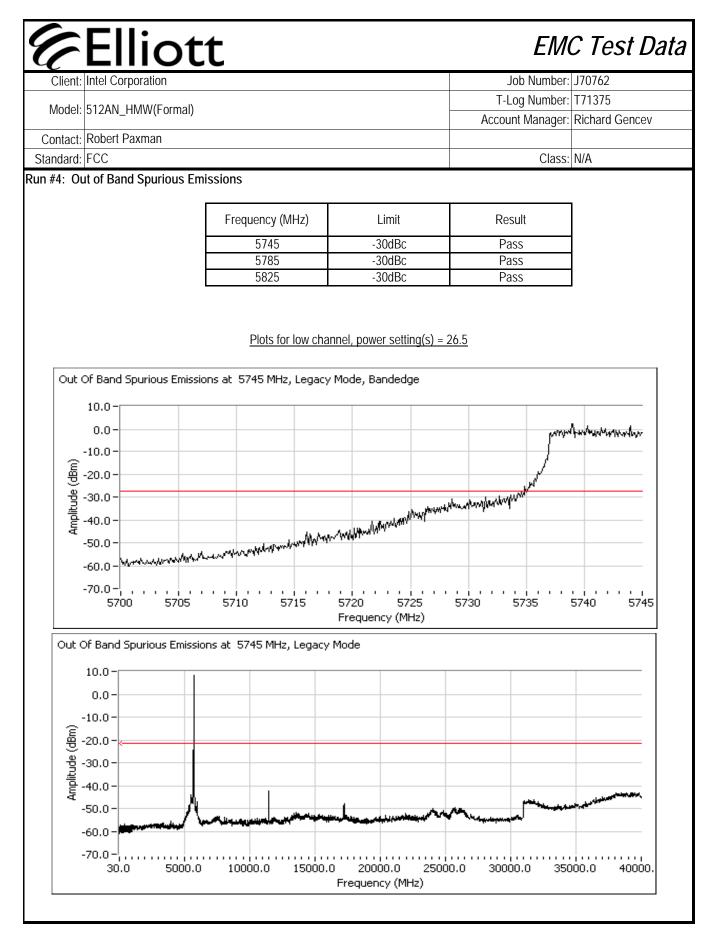


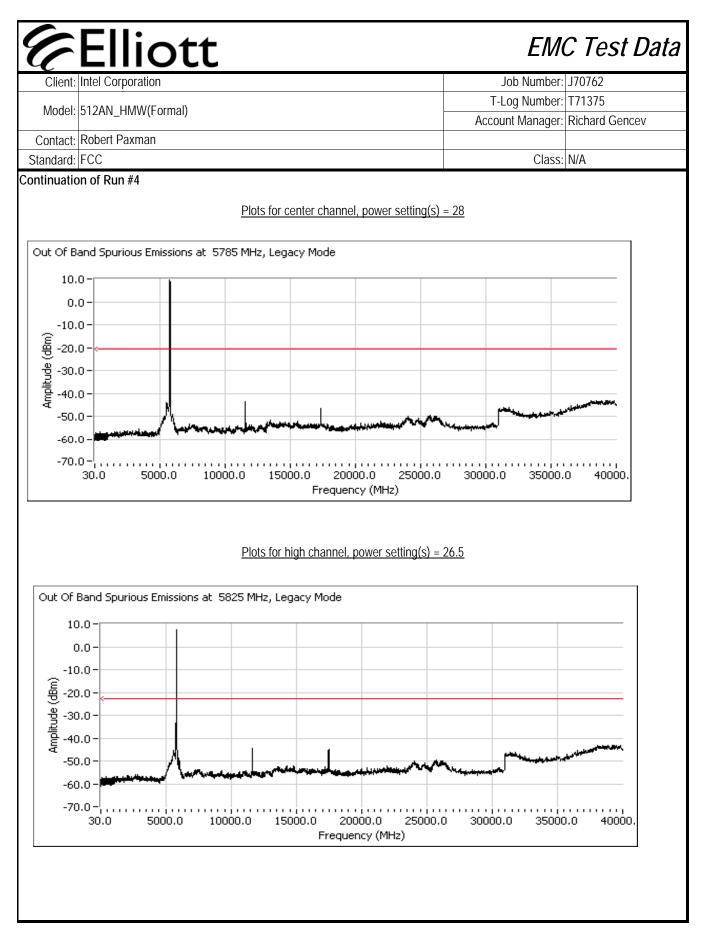


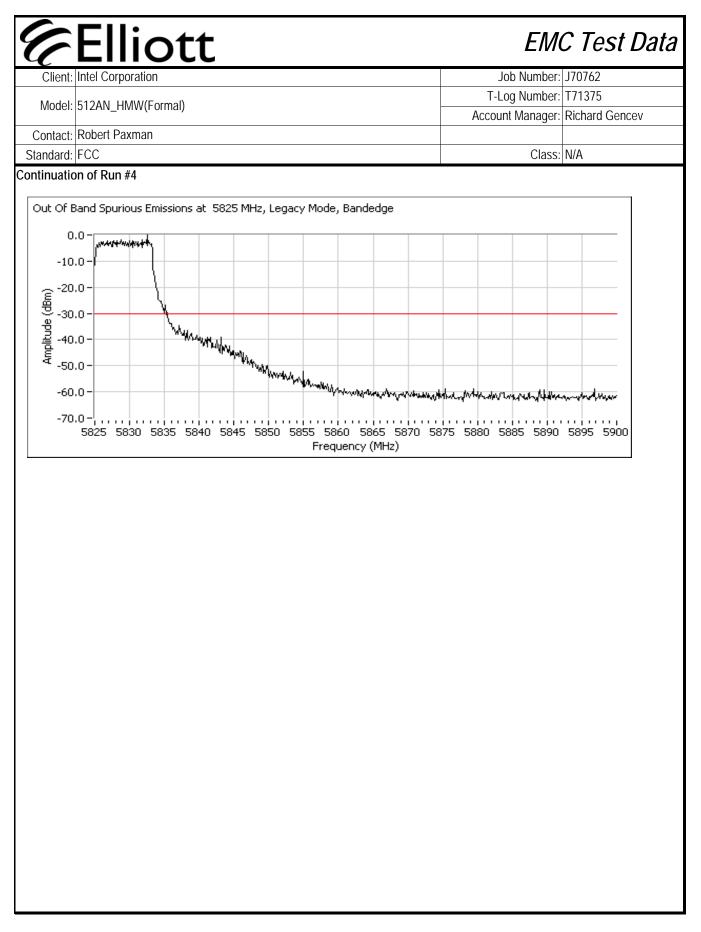




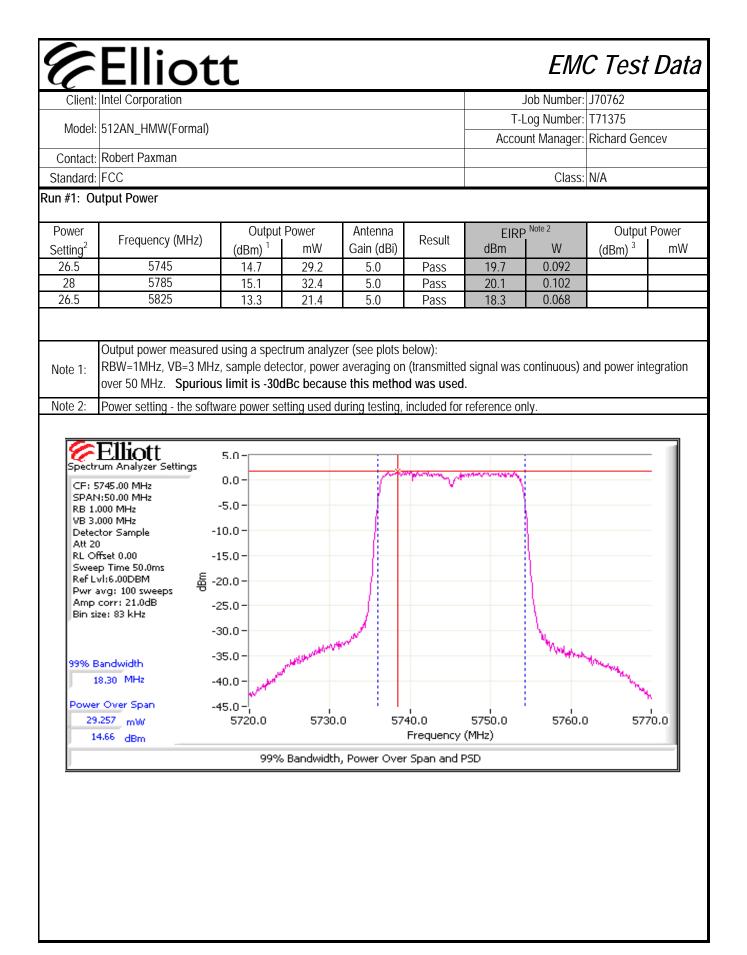


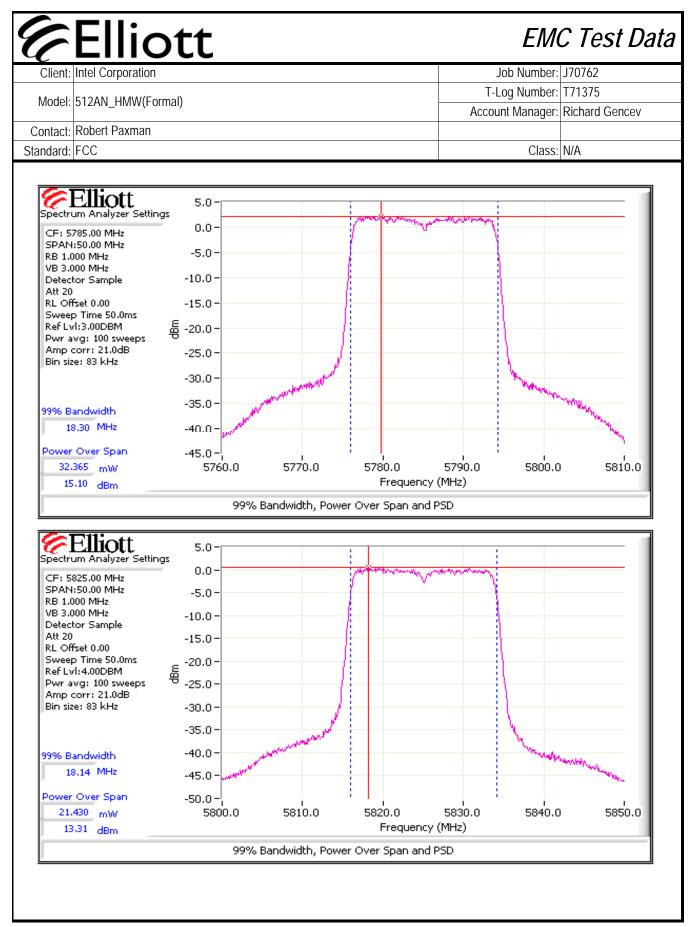


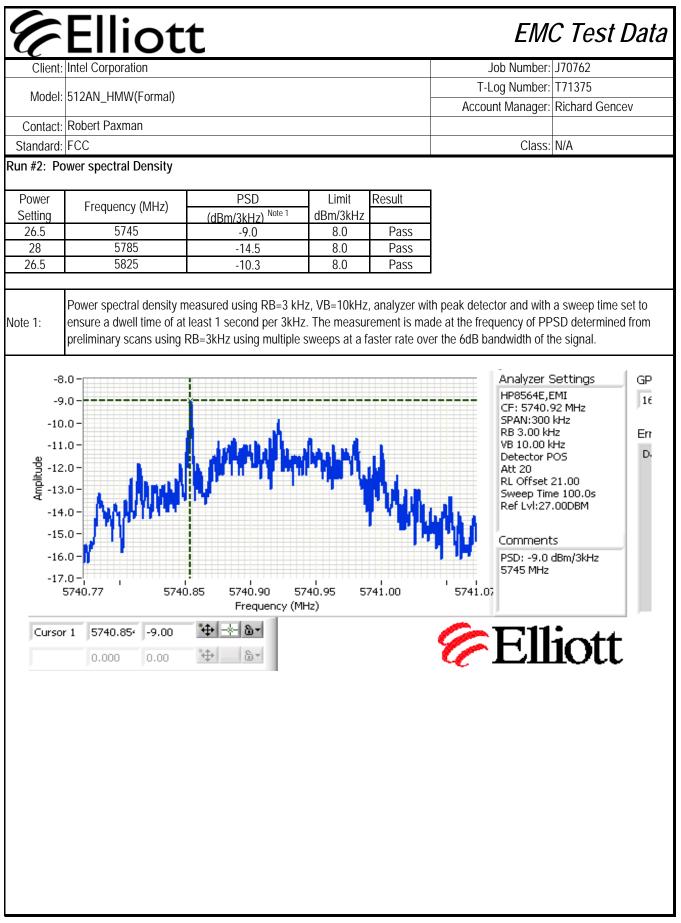


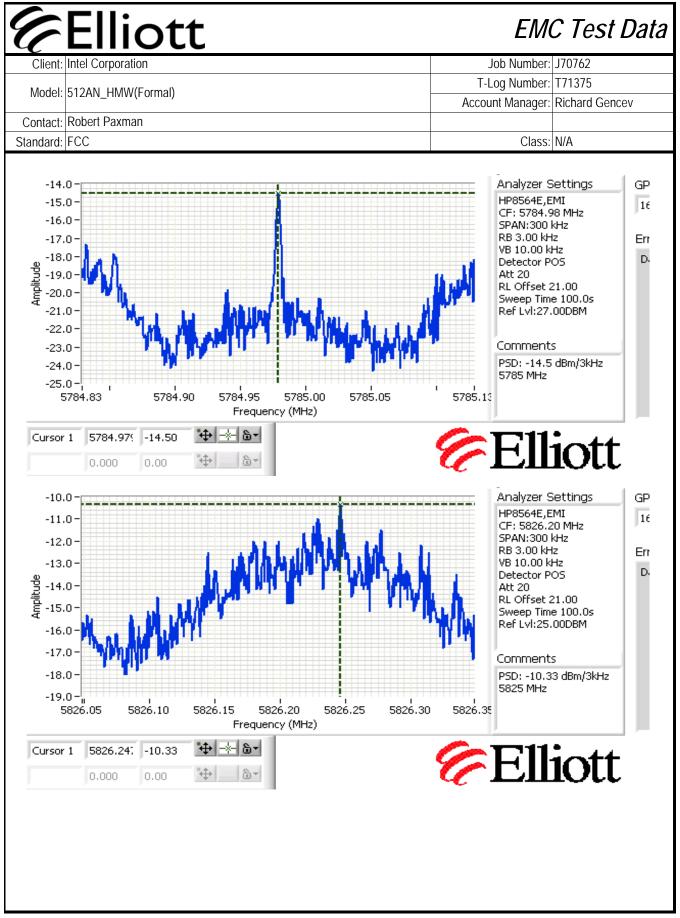


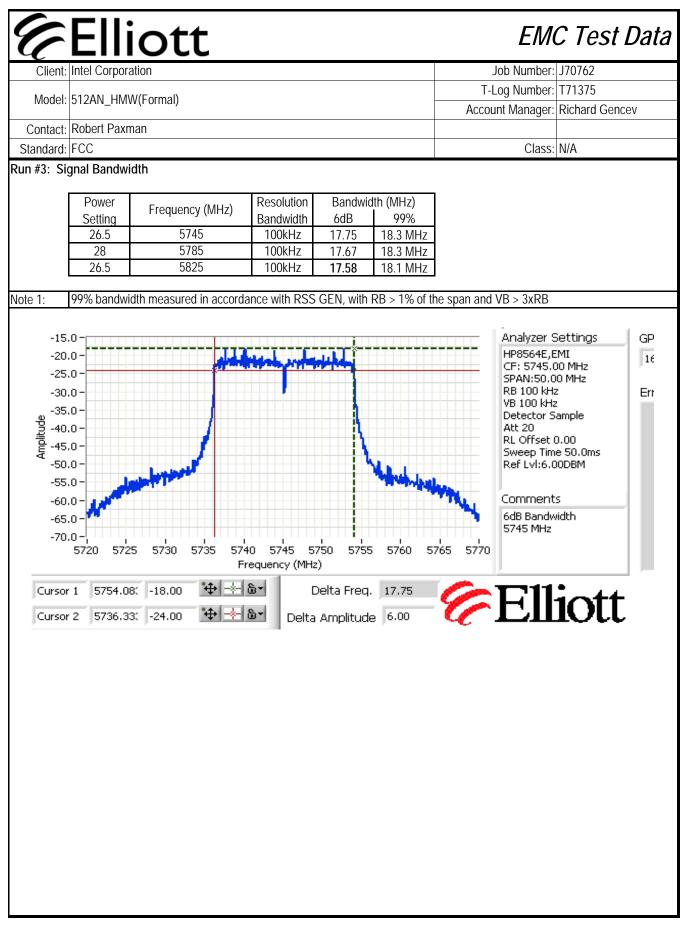
6 Elli	ott			EM	C Test D
Client: Intel Corpora				Job Number:	J70762
Model: 512AN_HMW	/(Formal)			og Number:	
Contact: Robert Paxm			Accou	int Manager:	Richard Gencev
Standard: FCC	80			Class:	NI/Δ
	IO and FCC 15.247 (D Bandwidth and Spurious				
	S The objective of this test session is to p specification listed above.	erform final qualifica	tion testing of th	ne EUT with r	respect to the
Date of Test: 3 Test Engineer: F Test Location: F		Config. Use Config Chang EUT Voltag		Host Unit	
chain. All measurements have be Ambient Conditions	een corrected to allow for the external a Temperature: Rel. Humidity:	attenuators used. 20 °C 43 %			
Summary of Results	;				
Run #	Test Performed	Limit	Pass / Fail		' Margin
1	Output Power	15.247(b)	Pass	15.1 dBm	. /
2 3	Power spectral Density (PSD) 6dB Bandwidth	15.247(d) 15.247(a)	Pass Pass		m/3kHz MHz
3	99% Bandwidth	RSS GEN	Pass	18.3	MHz
4	Spurious emissions	15.247(b)	Pass		ns below the sc limit
Deviations From The	de to the EUT during testing				

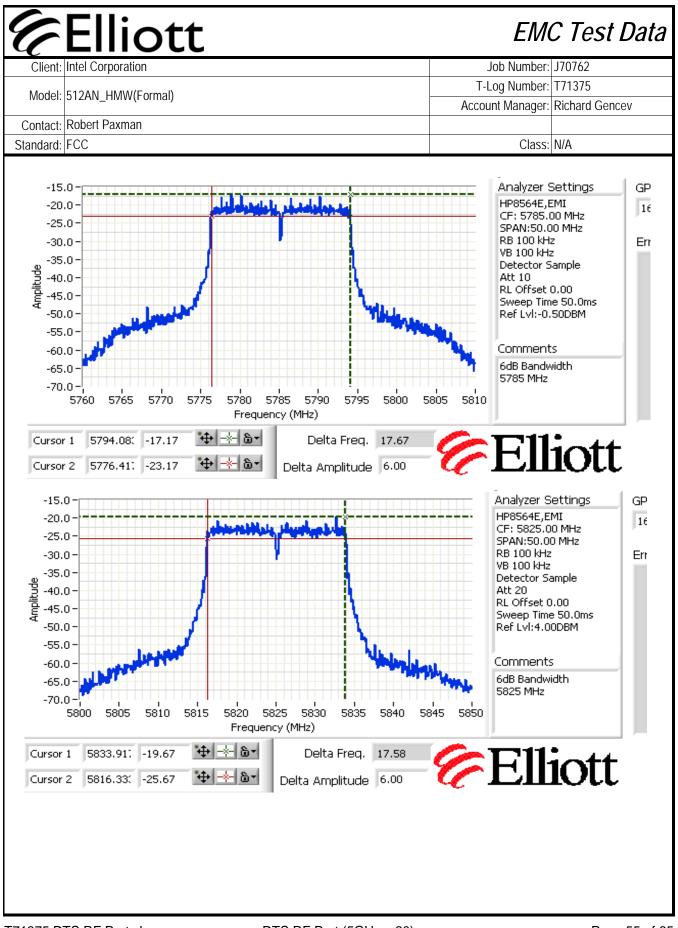


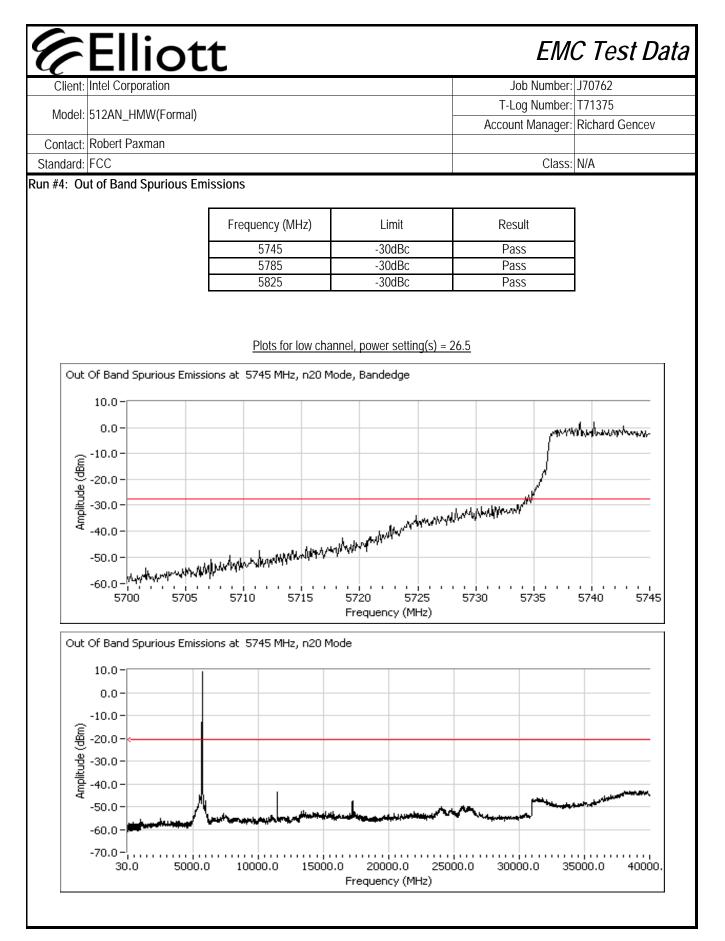


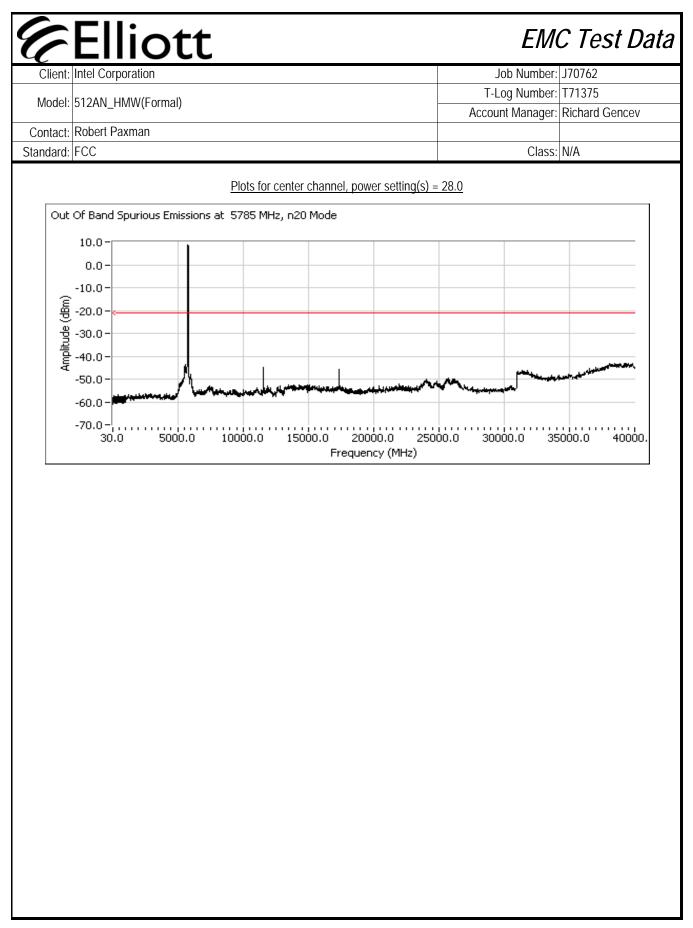


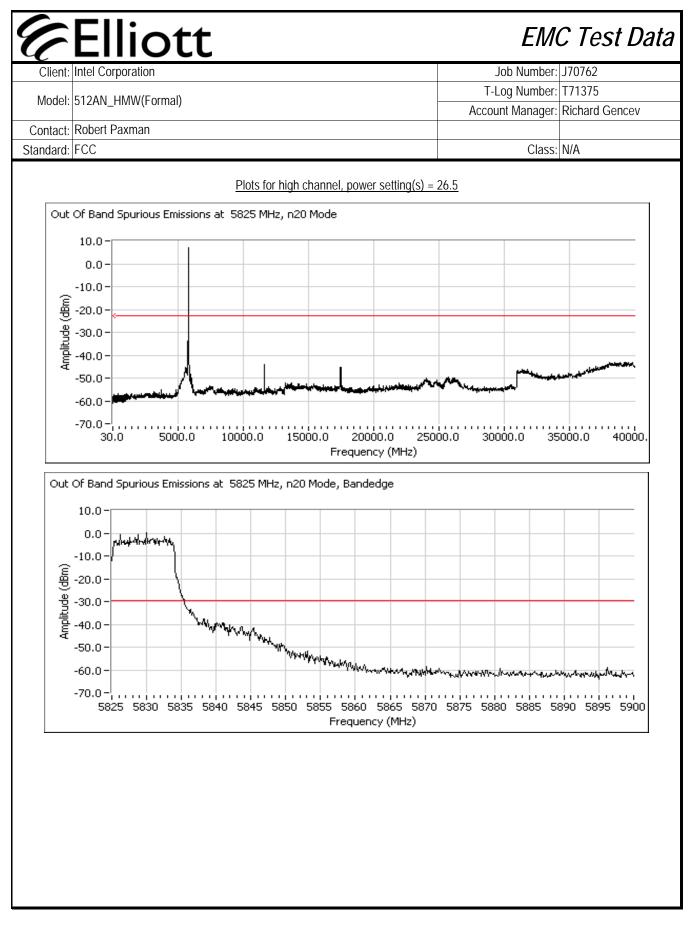




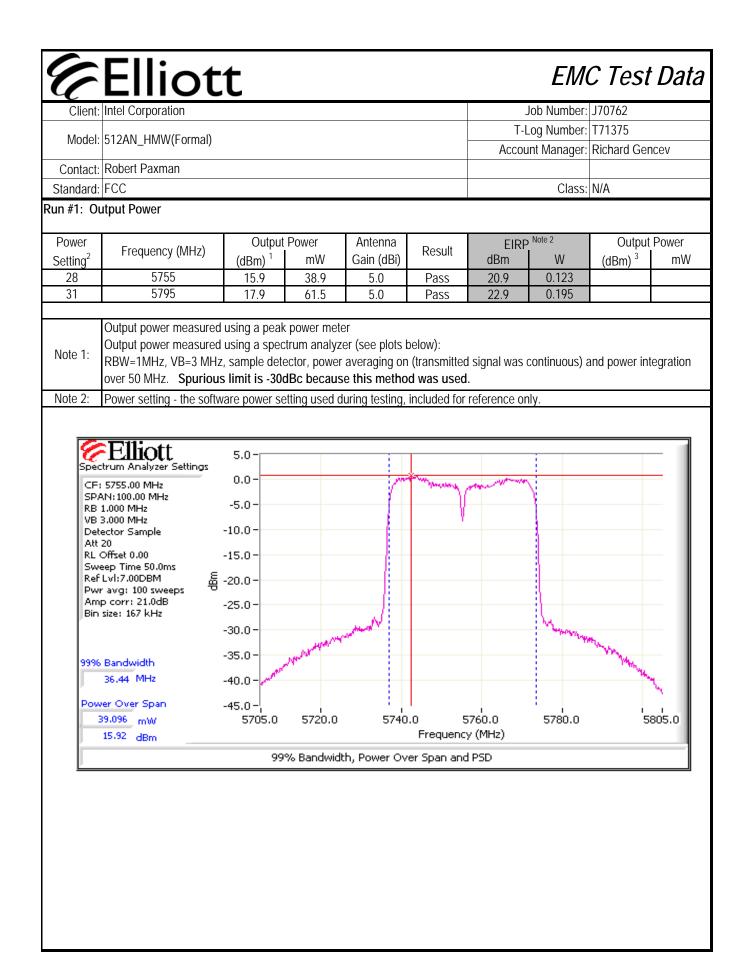


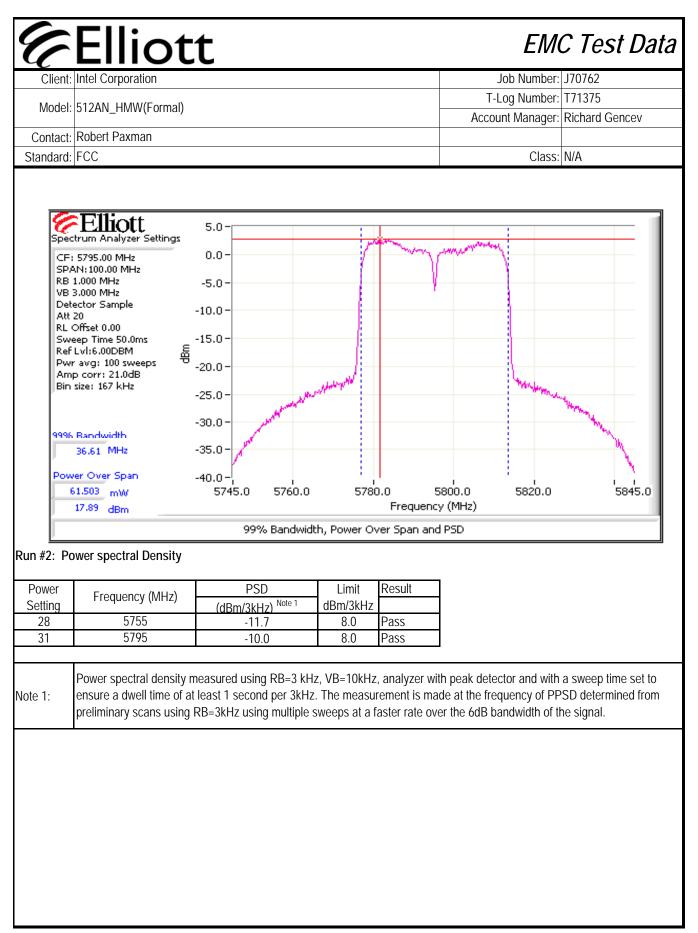


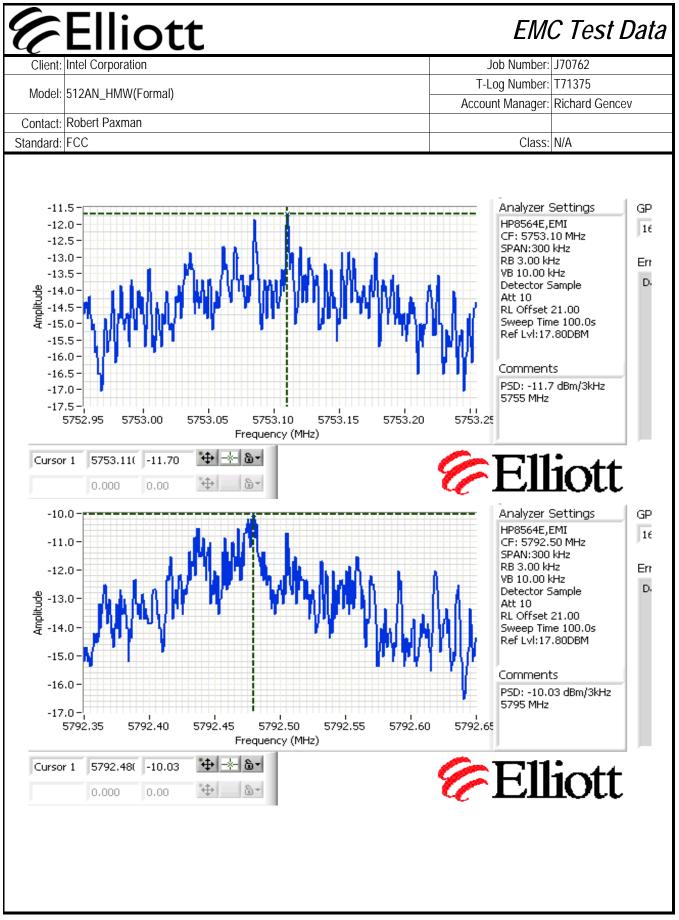


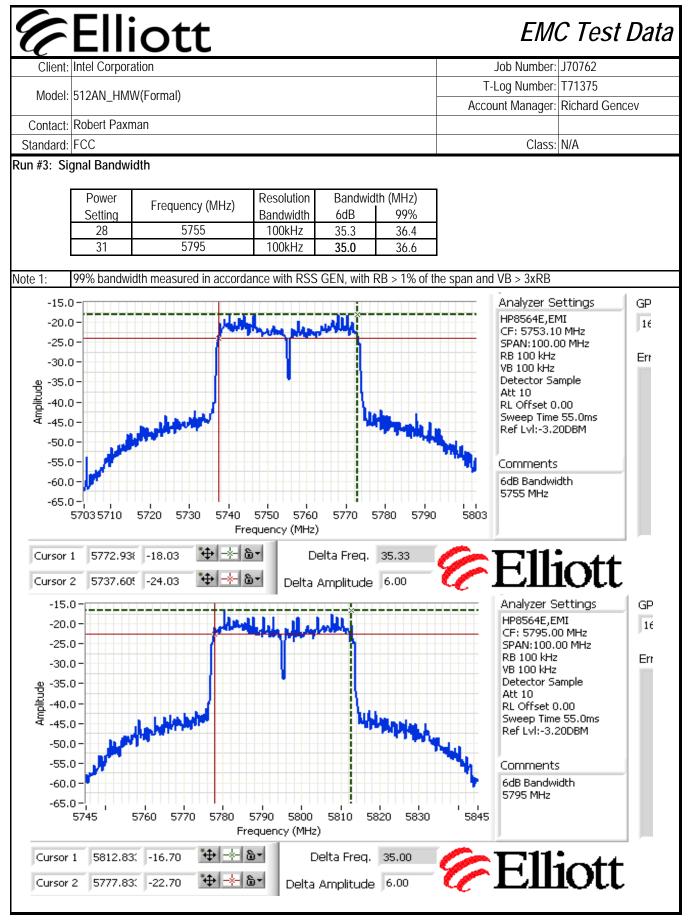


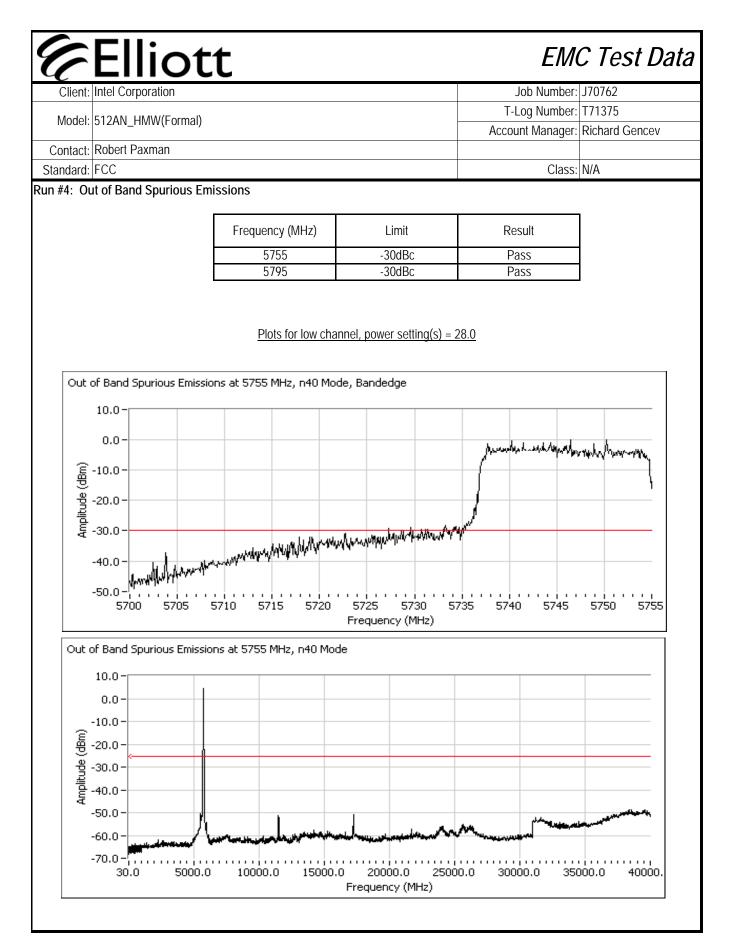
Client: Intel Corpo	iott			Job Number: J70762
				_og Number: T71375
Model: 512AN_H	MW(Formal)			unt Manager: Richard Ge
Contact: Robert Pa	xman			
Standard: FCC				Class: N/A
	210 and FCC 15.247 (D , Bandwidth and Spurious	•		
est Specific Deta	iils			
Objective	The objective of this test session is to per specification listed above.	erform final qualifica	tion testing of th	ne EUT with respect to th
Test Enginee	t: 3/12/2008 r: Rafael Varelas n: Fremont Chamber #3	Config. Use Config Chang EUT Voltag		Host Unit
nain. Il measurements have A mbient Conditio	e been corrected to allow for the external a ns: Temperature:	ttenuators used. 19.1 °C		
	Rel. Humidity:	42 %		
ummary of Resu	lts 19	94.98446		
Run #	Test Performed	Limit	Pass / Fail	Result / Margin
	Output Power	15.247(b)	Pass	17.9 dBm(61.5mW)
1	Power spectral Density (PSD)	15.247(d)	Pass	-10.0 dBm/3kHz
2		15.247(a)	Pass	35.0 MHz 36.6 MHz
•	6dB Bandwidth 99% Bandwidth	RSS GEN		

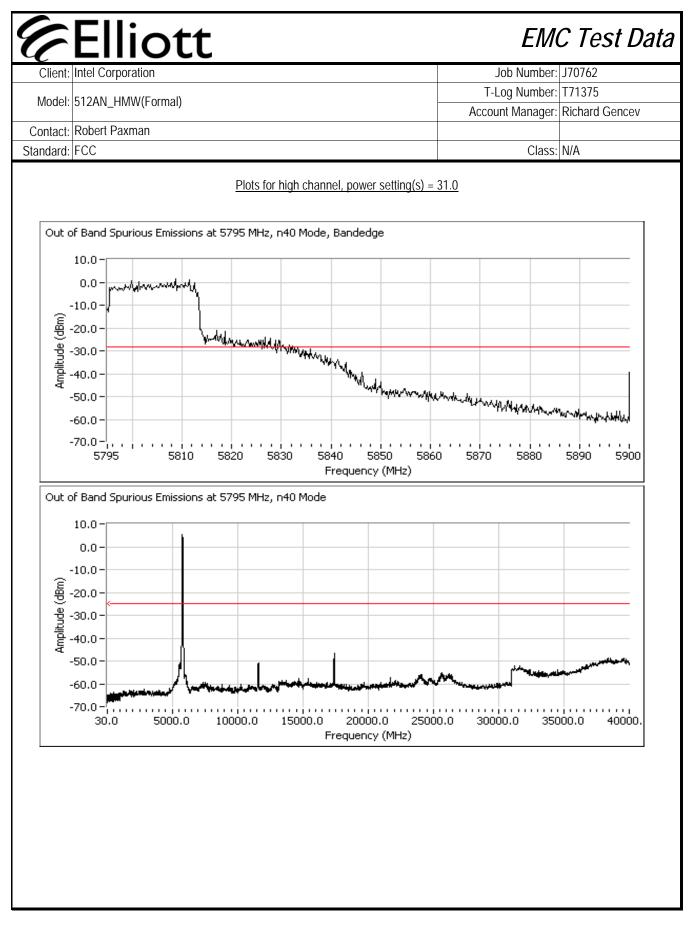












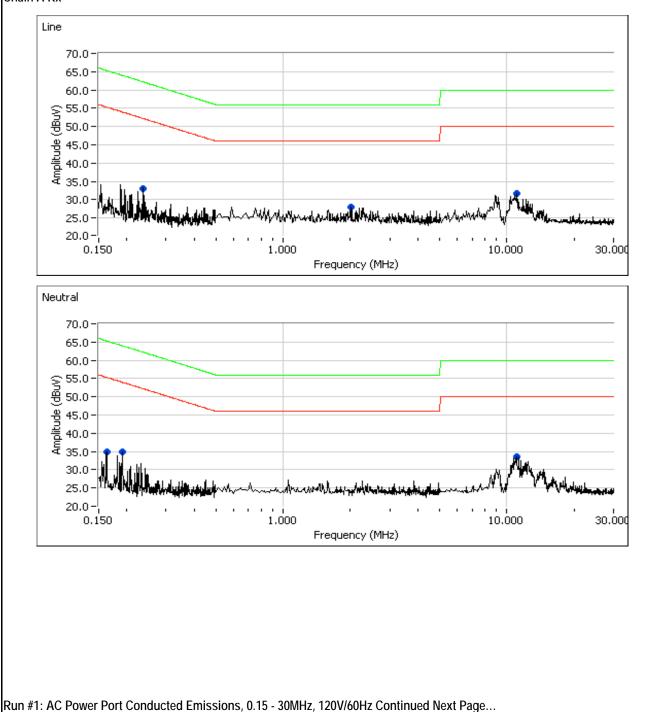
Elliott	EN	MC Test Data
Client: Intel Model: 512an HMW	Job Number: T-Log Number:	
	Account Manager:	
Contact: Robert Paxman	, looo unt managon	-
Emissions Standard(s): RSS 210 / FCC 15.407 UNII (Radiated)	Class:	
Immunity Standard(s): -	Environment:	-
EMC Test Data - DTS Radia and AC Conducted E		ons
For The		
Intel		
Model		
512an HMW		
Date of Last Test: 5/30/20	08	

Client: Intel Model: 512an HMW	ott				C Test
Model: 512an HMW				Job Number:	
1				og Number:	T71373 Briggs / Erikse
Contact: Robert Paxm	nan		ALLUL	ini wanayer.	DIIYYS / EIIKSE
	CC 15.407 UNII (Radiated)			Class:	DTS
	Condu (Elliott Laboratories Freme	cted Emissions		hamber)	
est Specific Details	S				
Objective:	The objective of this test session is t specification listed above.	to perform final qualification	n testing of th	ne EUT with r	respect to the
Date of Test: Test Engineer: Test Location:		Config. Used: Config Change: EUT Voltage:	None		
	clamp upon exiting the chamber.		uteu tinougi	i metai conut	uit and when po
	clamp upon exiting the chamber.	20 °C		i metai conut	uit and when po
bassed through a ferrite c	clamp upon exiting the chamber. Temperature Rel. Humidity	20 °C	alea iniougi	nnetal condi	uit and when p
bassed through a ferrite c	clamp upon exiting the chamber. Temperature Rel. Humidity	20 °C	Result	Ма	rgin BuV @

EMC Test Data

4			
Client:	Intel	Job Number:	J70762
Modol	512an HMW	T-Log Number:	T71373
MUUCI.	512011 111/1/1/	Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	DTS

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



EMC Test Data

U								
Client:	Intel						Job Number:	J70762
Ma dal		,					T-Log Number:	T71373
wodel:	512an HMW	I					Account Manager:	Briggs / Eriksen
Contact:	Robert Paxr	man						
Standard:	RSS 210 / F	CC 15.407 L	JNII (Radiate	ed)			Class:	DTS
Preliminary	v peak readii	ngs captured	d during pre	e-scan (peak	readings v	s. average lin	nit)	
Frequency	Level	AC	RSS GE	N/15.207	Detector	Comments		
MHz	dBµV	Line	Limit	Margin	QP/Ave			
11.069	33.5	Neutral	50.0	-16.5	Peak			
2.011	28.1	Line 1	46.0	-17.9	Peak			
11.121	31.8	Line 1	50.0	-18.2	Peak			
0.191	34.9	Neutral	54.0	-19.1	Peak			
0.237	33.1	Line 1	52.2	-19.1	Peak			
0.163	35.0	Neutral	55.3	-20.3	Peak			
		verage readi						
Frequency	Level	AC		N/15.207	Detector	Comments		
MHz	dBµV	Line	Limit	Margin	QP/Ave			
11.069	23.0	Neutral	50.0	-27.0	AVG			
11.121	21.5	Line 1	50.0	-28.5	AVG			
11.069	29.3	Neutral	60.0	-30.7	QP			
11.121	25.2	Line 1	60.0	-34.8	QP			
0.163	29.1	Neutral	65.3	-36.2	QP			
0.191	26.9	Neutral	64.0	-37.1	QP			
0.237	24.1	Line 1	62.2	-38.1	QP			
2.011	7.7	Line 1	46.0	-38.3	AVG			
0.237	9.2	Line 1	52.2	-43.0	AVG			
0.191	10.0	Neutral	54.0	-44.0	AVG			
0.163	10.7	Neutral	55.3	-44.6	AVG			
0.103	9.5		56.0		QP			

<u>Elliott</u>

EMC Test Data

V			
Client:	Intel	Job Number:	J70762
Madal	512an HMW	T-Log Number:	T71373
would.		Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	DTS

Receiver Radiated Emissions

Test Specific Details

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

General Test Configuration

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

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, <u>and</u> manipulation of the EUT's interface cables.

Ambient Conditions:	Temperature:	15-25 °C
	Rel. Humidity:	35-55 %

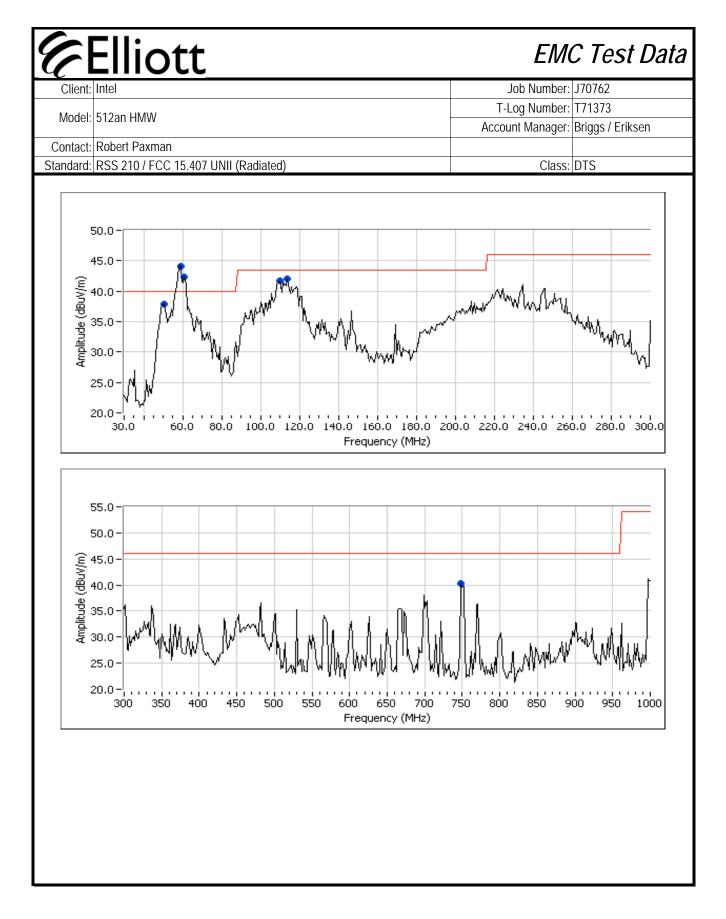
Summary of Results

Run #	Channel	Chain	Test Performed	Limit	Result	Margin
1			RE, 30 - 1000MHz, Maximized	RSS GEN / FCC 15.107	Pass	36.1dBµV/m @
I	-	-	Emissions	K35 GEN7T CC 15.107	F 833	58.328MHz (-3.9dB)
2a	2437 MHz	А	RE, 1000 - 7500 MHz, Maximized	RSS GEN	Pass	50.4dBµV/m @
20	2437 101112	7	Emissions	N35 OEN	1 033	3000.3MHz (-3.6dB)
2b	5785 MHz	А	RE, 1000 - 18000 MHz, Maximized	RSS GEN	Pass	52.0dBµV/m @
20	3703 WI 12	7	Emissions	N35 OEN	1 033	3000.3MHz (-2.0dB)
2c	2437 MHz	В	RE, 1000 - 7500 MHz, Maximized	RSS GEN	Pass	51.9dBµV/m @
20	2437 101112	D	Emissions	N35 OEN	1 033	3000.4MHz (-2.1dB)
2d	5785 MHz	В	RE, 1000 - 18000 MHz, Maximized	RSS GEN	Pass	52.2dBµV/m @
20	3703 WI 12	D	Emissions	NOO GEN	1 033	3000.3MHz (-1.8dB)
3a	2437 MHz	A+B	RE, 1000 - 7500 MHz, Maximized	RSS GEN	Pass	51.4dBµV/m @
30	ZHJ7 IVITIZ	ΛŤD	Emissions	NOO OEN	1 033	3000.4MHz (-2.6dB)
3b	5785 MHz	A+B	RE, 1000 - 18000 MHz, Maximized	RSS GEN	Pass	52.0dBµV/m @
30	JT UJ IVITIZ	ΛŤD	Emissions	NOO OEN	1 435	3000.3MHz (-2.0dB)

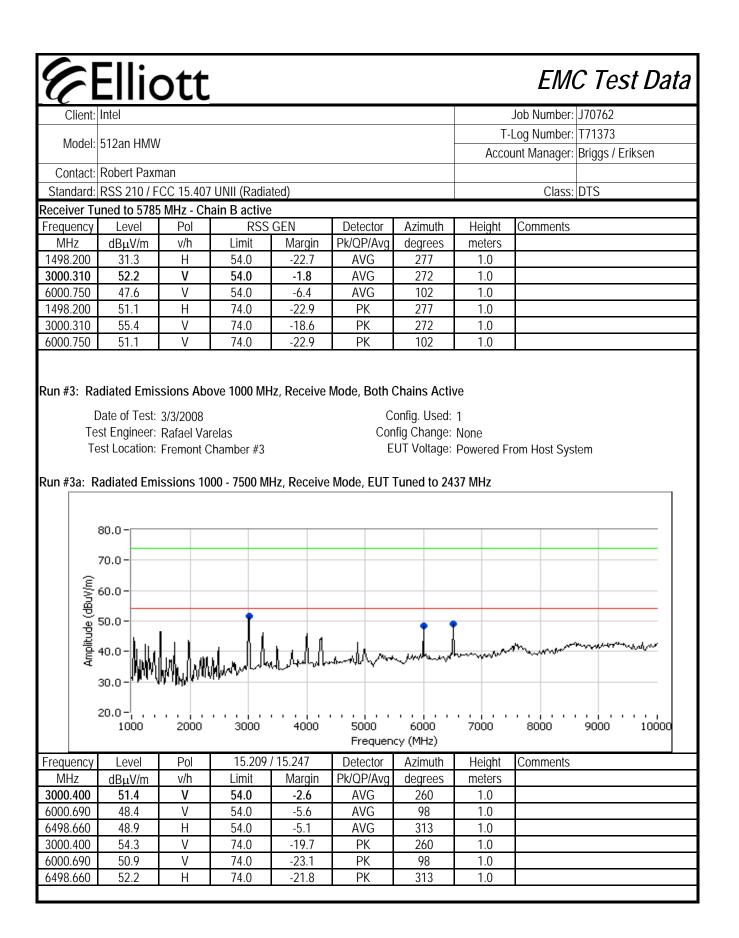
Modifications Made During Testing

No modifications were made to the EUT during testing

Elliott EMC Test Data Job Number: J70762 Client[.] Intel T-Log Number: T71373 Model: 512an HMW Account Manager: Briggs / Eriksen Contact: Robert Paxman Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: DTS Deviations From The Standard No deviations were made from the requirements of the standard. Run #1: Preliminary Radiated Emissions, 30-1000 MHz Date of Test: 3/7/2008 Config. Used: #1 Config Change: -Test Engineer: Peter Sales Host Unit Voltage 120V/60Hz Test Location: Fremont Chamber #3 Scans indicated no significant difference in the emissions from 30 - 1000 MHz for transmit mode versus receive mode and were independent of channel of operation. Final measurements performed in receive mode with Chain A active and tuned to 2437 MHz as rperesenting the worst-case. **Frequency Range** Test Distance Limit Distance Extrapolation Factor 30 - 1000 MHz 3 3 0.0 Preliminary peak readings captured during pre-scan FCC 15.109/15.209 Frequency Level Pol Detector Azimuth Height Comments dBµV/m MHz v/h Limit Margin Pk/QP/Avg degrees meters 58.328 44.1 Н 40.0 4.1 Peak 168 3.5 62.656 42.3 Н 40.0 2.3 Peak 176 2.5 113.538 42.0 43.5 -1.5 43 2.5 Н Peak 111.660 41.7 Η 43.5 -1.8 Peak 351 2.0 48.452 37.8 V 40.0 -2.2 Peak 201 1.0 40.2 Н 748.786 46.0 -5.8 Peak 212 1.0 Preliminary quasi-peak readings (no manipulation of EUT interface cables) Frequency Level Pol FCC B Detector Azimuth Height Comments MHz Pk/QP/Avg dBuV/m v/h Limit Margin degrees meters 58.328 Н 40.0 -3.9 QP 3.5 36.1 168 62.656 35.2 Н 40.0 -4.8 OP 176 2.5 48.452 31.0 V 40.0 -9.0 QP 201 1.0 32.4 Η 43.5 -11.1 QP 2.0 111.660 351 212 748.786 32.4 Н 46.0 -13.6 OP 1.0 113.538 29.1 Н 43.5 -14.4 QP 42 2.5 Maximized quasi-peak readings (includes manipulation of EUT interface cables) FCC B Frequency Level Pol Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 31.0 V 40.0 -9.0 QP 201 1.0 48.452 58.328 36.1 Н 40.0 -3.9 OP 168 3.5 40.0 QP 2.5 62.656 35.2 Н -4.8 176 32.4 Н 43.5 -11.1 OP 351 111.660 2.0 QP 113.538 29.1 Η 43.5 -14.4 42 2.5 748.786 32.4 Н 46.0 -13.6 OP 212 1.0



6	Ellic	ott	I					EMO	C Test D
Client								Job Number:	J70762
							T-	Log Number:	T71373
Model	512an HMW	/						•	Briggs / Eriksen
Contact	Robert Paxn	nan						5	
	: RSS 210 / F		/ I INII (Radia	uted)				Class:	DTS
	<u>.</u>			,	eceiver Activ			01033.	015
		U I		iz, single it					
	Date of Test:					onfig. Used:			
	est Engineer:					fig Change:			
I	est Location:	Fremont	Chamber #3		E	UT vollage:	Powered F	rom Host Sys	tem
	Ero	augney Do	nao	Tost F	Distance	Limit D	istanco	Extranolat	ion Factor
		quency Ra 0 - 18000 I		TESLL	3	LIIIII D			.0
	100	0 100001	VII 12	1	0		,	0	.0
Receiver T	uned to 2437	/ MHz - Ch	ain A active	9					
Frequency		Pol		GEN	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
3000.320	50.4	V	54.0	-3.6	AVG	281	1.0		
5999.880	44.7	V	54.0	-9.3	AVG	210	1.0		
6498.560	44.6	V	54.0	-9.4	AVG	109	1.0		
3000.320	53.6	V	74.0	-20.4	PK	281	1.0		
5999.880	50.9	V	74.0	-23.1	PK	210	1.0		
6498.560	48.9	V	74.0	-25.1	PK	109	1.0		
	upod to E70E		oin A octive						
Frequency	uned to 5785 Level	Pol		GEN	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	COMMENTS	
1494.330	32.8	V	54.0	-21.2	AVG	181	1.0		
3000.340	52.0	v	54.0	-2.0	AVG	273	1.0		
6000.750	47.3	V	54.0	-6.7	AVG	101	1.0		
7713.270	44.3	V	54.0	-9.7	AVG	191	1.0		
1494.330	51.8	V	74.0	-22.2	PK	181	1.0		
3000.340	55.4	V	74.0	-18.6	PK	273	1.0		
6000.750	51.0	V	74.0	-23.0	PK	101	1.0		
7713.270	51.1	V	74.0	-22.9	PK	191	1.0		
7710.270									
	upod to 2127		ain B active						
Receiver T			RSS	GEN	Detector	Azimuth	Height	Comments	
Receiver T Frequency	Level	Pol				aparoos	meters	1	
Receiver T Frequency MHz	Level dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees			
Receiver T Frequency MHz 1494.250	Level dBµV/m 31.2	v/h V	Limit 54.0	-22.8	AVG	190	1.0		
Receiver T Frequency MHz 1494.250 3000.430	Level dBµV/m 31.2 51.9	v/h V V	Limit 54.0 54.0	-22.8 -2.1	AVG AVG	190 271	1.0 1.0		
Receiver T Frequency MHz 1494.250 3000.430 6000.790	Level dBμV/m 31.2 51.9 47.7	v/h V V V	Limit 54.0 54.0 54.0	-22.8 -2.1 -6.3	AVG AVG AVG	190 271 104	1.0 1.0 1.0		
Receiver T Frequency MHz 1494.250 3000.430	Level dBµV/m 31.2 51.9	v/h V V	Limit 54.0 54.0	-22.8 -2.1	AVG AVG	190 271	1.0 1.0		



6	Ellic	ott						EM	C Test Data
Client:								Job Number:	J70762
Madal		I					T-	Log Number:	T71373
Model:	512an HMW	1					Ассо	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxn	nan							
Standard:	RSS 210 / F	CC 15.407	UNII (Radia	ited)				Class:	DTS
Receiver Tu	ined to 5785	5 MHz - All	chains acti	ve					
Frequency	Level	Pol	RSS	GEN	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
3000.330	52.0	V	54.0	-2.0	AVG	264	1.0		
3799.970	47.5	V	54.0	-6.5	AVG	176	1.3		
6000.780	48.4	V	54.0	-5.6	AVG	102	1.0		
7599.970	48.0	V	54.0	-6.0	AVG	143	1.3		
3000.330	54.9	V	74.0	-19.1	PK	264	1.0		
3799.970	49.6	V	74.0	-24.4	PK	176	1.3		
6000.780	51.3	V	74.0	-22.7	PK	102	1.0		
7599.970	51.6	V	74.0	-22.4	PK	143	1.3		

Elliott EMC Test Data Job Number: J70762 Client: Intel T-Log Number: T71373 Model: 512an HMW Account Manager: Briggs / Eriksen Contact: Robert Paxman Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - Band Edge 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. Config. Used: 1 Date of Test: 2/13/2008 Config Change: None Test Engineer: Suhaila Khushzad Test Location: Fremont Chamber #3 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: 43 % Summary of Results Measured Power Test Performed Run # Mode Channel Limit Result / Margin Setting Power FCC Part 15.209 / 50.5dBµV/m@ Band Edge radiated 1 1a 802.11b 20.5 16.5

field strength

Band Edge radiated

field strength

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

802.11b

1b

No deviations were made from the requirements of the standard.

2412MHz

11

2462MHz

20.5

16.5

2320.0MHz (-3.5dB)

48.8dBµV/m @

2486.3MHz (-5.2dB)

15.247(c) FCC Part 15.209 /

15.247(c)

EMC Test Data

	Intel							Job Number:	J70762
Madal		I					T-	Log Number:	T71373
wodel:	512an HMW	1					Acco	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxn	nan						-	
Standard:	RSS 210 / F	CC 15.407 L	JNII (Radiate	d)				Class:	N/A
Run #1: Ra	diated Spur	ious Emissi	ons, Band E	dges. Oper	ating Mode:	802.11b - Cl	hain A		
	ow Channel			5 1	5				
Po	wer Setting:	20.5	Ave	rage power:	16.5	(for referenc	e purposes))	
Fundament	al Signal Fie	eld Strength			n 100kHz				
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2412.560	104.3	V	-	-	PK	97	1.0	RB = VB = 1	100KHz
2411.020	102.8	Н	-	-	PK	35	1.0	RB = VB = 1	I00KHz
Band Edge	Signal Field	Strength							
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2319.990	50.5	Н	54.0	-3.5	AVG	244	1.0		
2387.040	50.2	Н	54.0	-3.8	AVG	244	1.0		
2387.180	47.5	V	54.0	-6.5	AVG	247	1.0		
2319.990	61.1	Н	74.0	-12.9	PK	244	1.0		
2387.040	61.2	Н	74.0	-12.8	PK	244	1.0		
2387.040 2387.180	61.2 58.0	H V	74.0 74.0	-12.8 -16.0	PK PK	244 247	1.0 1.0		
2387.180	58.0	V	74.0						
2387.180 Run #1b: H	58.0 igh Channel	V @ 2462 MH	74.0						
2387.180 Run #1b: H Pc	58.0 igh Channel ower Setting:	V @ 2462 MH 20.5	74.0 z Ave	-16.0 rage power:	РК 16.5		1.0		
2387.180 Run #1b: H Pc Fundament	58.0 igh Channel wer Setting: al Signal Fie	V @ 2462 MH 20.5 eld Strength	74.0 z Ave : Peak value	-16.0 rage power: measured ir	PK 16.5 100kHz	247 (for referenc	1.0 e purposes)		
2387.180 Run #1b: H Pc Fundament Frequency	58.0 igh Channel wer Setting: al Signal Fie Level	V @ 2462 MH 20.5 eld Strength Pol	74.0 z : Peak value 15.209	-16.0 rage power: measured ir / 15.247	PK 16.5 100kHz Detector	247 (for referenc Azimuth	1.0 e purposes) Height	Comments	
2387.180 Run #1b: H Pc Fundament Frequency MHz	58.0 igh Channel wer Setting: al Signal Fie Level dBµV/m	V @ 2462 MH 20.5 eld Strength Pol v/h	74.0 z Ave : Peak value	-16.0 rage power: measured ir	PK 16.5 100kHz Detector Pk/QP/Avg	247 (for referenc Azimuth degrees	1.0 e purposes) Height meters	Comments	
2387.180 Run #1b: H Po Fundament Frequency MHz 2463.430	58.0 igh Channel ower Setting: al Signal Fie Level dBµV/m 104.2	V @ 2462 MH 20.5 eld Strength Pol V/h V	74.0 z : Peak value 15.209	-16.0 rage power: measured ir / 15.247	PK 16.5 100kHz Detector Pk/QP/Avg PK	247 (for referenc Azimuth degrees 107	1.0 e purposes) Height meters 1.0	Comments RB = VB = 1	
2387.180 Run #1b: H Pc Fundament Frequency MHz 2463.430 2462.520	58.0 igh Channel ower Setting: al Signal Fie Level dBμV/m 104.2 106.9	V @ 2462 MH 20.5 eld Strength Pol v/h V H	74.0 z : Peak value 15.209	-16.0 rage power: measured ir / 15.247	PK 16.5 100kHz Detector Pk/QP/Avg	247 (for referenc Azimuth degrees	1.0 e purposes) Height meters	Comments	
2387.180 Run #1b: H Pc Fundament Frequency MHz 2463.430 2462.520 Band Edge	58.0 igh Channel wer Setting: al Signal Fie Level dBµV/m 104.2 106.9 Signal Field	V @ 2462 MH 20.5 eld Strength Pol V/h V H Strength	74.0 z : Peak value 15.209 Limit - -	-16.0 rage power: measured ir / 15.247 Margin - -	PK 16.5 100kHz Detector Pk/QP/Avg PK PK	247 (for referenc Azimuth degrees 107 91	1.0 e purposes) Height meters 1.0 1.0	Comments RB = VB = ² RB = VB = ²	
2387.180 Run #1b: H Pc Fundament Frequency MHz 2463.430 2462.520 Band Edge Frequency	58.0 igh Channel wer Setting: al Signal Fie dBµV/m 104.2 106.9 Signal Field Level	V @ 2462 MH 20.5 eld Strength Pol V/h V H I Strength Pol	74.0 z Ave : Peak value 15.209 J Limit - - 15.209 J	-16.0 rage power: measured ir / 15.247 Margin - - / 15.247	PK 16.5 100kHz Detector Pk/QP/Avg PK PK Detector	247 (for referenc Azimuth degrees 107 91 Azimuth	1.0 e purposes) Height meters 1.0 1.0 Height	Comments RB = VB = 1	
2387.180 Run #1b: H Po Fundament Frequency MHz 2463.430 2462.520 Band Edge Frequency MHz	58.0 igh Channel ower Setting: al Signal Fie dBµV/m 104.2 106.9 Signal Field Level dBµV/m	V @ 2462 MH 20.5 eld Strength Pol V H Strength Pol v/h	74.0 z Ave : Peak value 15.209 J Limit - - 15.209 J Limit	-16.0 rage power: measured ir / 15.247 Margin - / 15.247 Margin	PK 16.5 100kHz Detector Pk/QP/Avg PK Detector Pk/QP/Avg	247 (for referenc Azimuth degrees 107 91 Azimuth degrees	1.0 e purposes) Height meters 1.0 1.0 Height meters	Comments RB = VB = ² RB = VB = ²	
2387.180 Run #1b: H Pc Fundament Frequency MHz 2463.430 2462.520 Band Edge Frequency MHz 2485.720	58.0 igh Channel wer Setting: al Signal Fie dBµV/m 104.2 106.9 Signal Field Level	V @ 2462 MH 20.5 eld Strength Pol V/h V H Strength Pol V/h V	74.0 z Ave : Peak value 15.209 J Limit - 15.209 J Limit 54.0	-16.0 rage power: measured ir / 15.247 Margin - / 15.247 Margin -6.0	PK 16.5 100kHz Detector Pk/QP/Avg PK Detector Pk/QP/Avg AVG	247 (for referenc Azimuth degrees 107 91 Azimuth degrees 268	1.0 e purposes) Height meters 1.0 1.0 Height meters 1.0	Comments RB = VB = ² RB = VB = ²	
2387.180 Run #1b: H Pc Fundament Frequency MHz 2463.430 2462.520 Band Edge Frequency MHz 2485.720 2486.310	58.0 igh Channel ower Setting: al Signal Fiel dBμV/m 104.2 106.9 Signal Field Level dBμV/m 48.0 48.8	V @ 2462 MH 20.5 eld Strength Pol V/h V H Strength Pol V/h V H H	74.0 z Ave : Peak value 15.209 J Limit - 15.209 J Limit 54.0 54.0 54.0	-16.0 rage power: measured ir / 15.247 Margin - / 15.247 Margin -6.0 - 5.2	PK 16.5 100kHz Detector PK/QP/Avg PK Detector Pk/QP/Avg AVG AVG	247 (for reference) Azimuth degrees 107 91 Azimuth degrees 268 244	1.0 e purposes) Height meters 1.0 1.0 Height meters 1.0 1.0	Comments RB = VB = ² RB = VB = ²	
2387.180 Run #1b: H Pc Fundament Frequency MHz 2463.430 2462.520 Band Edge Frequency MHz 2485.720	58.0 igh Channel ower Setting: al Signal Fie dBμV/m 104.2 106.9 Signal Field Level dBμV/m 48.0	V @ 2462 MH 20.5 eld Strength Pol V/h V H Strength Pol V/h V	74.0 z Ave : Peak value 15.209 J Limit - 15.209 J Limit 54.0	-16.0 rage power: measured ir / 15.247 Margin - / 15.247 Margin -6.0	PK 16.5 100kHz Detector Pk/QP/Avg PK Detector Pk/QP/Avg AVG	247 (for referenc Azimuth degrees 107 91 Azimuth degrees 268	1.0 e purposes) Height meters 1.0 1.0 Height meters 1.0	Comments RB = VB = ² RB = VB = ²	

Elliott EMC Test Data Job Number: J70762 Client: Intel T-Log Number: T71373 Model: 512an HMW Account Manager: Briggs / Eriksen Contact: Robert Paxman Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) **Radiated Spurious Emissions - 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: 2/27/2008 Config. Used: 1 Config Change: None Test Engineer: Ben Jina Test Location: Fremont Chamber #4 EUT Voltage: 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: 18 °C Rel. Humidity: 44 %

Summary of Results

Note - 802.11b mode had higher spurious emissions than 802.11g mode and was tested as worst case of the legacy modes.

	Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
ſ	1a	802.11b	1 (2412)	20.5	16.5	Radiated Emissions,	FCC Part 15.209 /	48.0dBµV/m @
	Id	Chain A	1 (2412)	20.0	10.5	1 - 26 GHz	15.247(c)	4824.0MHz (-6.0dB)
	1b	802.11b	6 (2437)	22.5	18.2	Radiated Emissions,	FCC Part 15.209 /	46.9dBµV/m @
	IJ	Chain A	0 (2437)	22.0	10.2	1 - 26 GHz	15.247(c)	7311.9MHz (-7.1dB)
ſ	1c	802.11b	11 (2462)	20.5	16.5	Radiated Emissions,	FCC Part 15.209 /	52.3dBµV/m @
	IC.	Chain A	11 (2402)	20.0	10.0	1 - 26 GHz	15.247(c)	4924.0MHz (-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.

EMC Test Data

Client:	Intel							Job Number:	J70762
Model	512an HMW	I					T-	Log Number:	T71373
MOUCI.	512011111111						Αссοι	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxn	nan							
Standard:	RSS 210 / F	CC 15.407 L	INII (Radiate	d)				Class:	N/A
Run #1: Ra	diated Spur	ious Emissi	ons, 1000 - 1	26000 MHz.	Operating N	lode: 802.11	b Chain A		
	ow Channel				1 5				
Fundament	al Signal Fie	eld Strength			n 100kHz				
Frequency	Level	Pol	15.209		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2412.560	104.3	V	-	-	PK	97	1.0	RB = VB = 2	
2411.020	102.8	Н	-	-	PK	35	1.0	$RB = VB = \hat{A}$	100KHz
Fi	undamental e	emission leve	el @ 3m in 10	0kHz RBW:	104.3	dBµV/m			
	Limit for e	emissions ou	tside of restr	icted bands:		dBµV/m	Limit is -300	dBc (UNII pov	ver measurement)
Spurious E	missions						-		
Frequency	Level	Pol	15.209		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
4824.020	48.0	V	54.0	-6.0	AVG	38	1.0		
7238.870	44.0	Н	54.0	-10.0	AVG	96	1.0		
9647.960	59.7	Н	82.8	-23.1	AVG	64	1.5	Note 2	
	50.5	V	74.0	-23.5	PK	38	1.0		
4824.020			74.0				1 ()		
7238.870	51.5	Н	74.0	-22.5	PK	96	1.0		
7238.870 9647.960	51.5 60.9 For emissior	H	74.0 ed bands, the	-13.1 limit of 15.2	PK 09 was used.	64	1.5	, the limit was	s set 30dB below the
7238.870	51.5 60.9 For emissior	H ns in restricte fundamental	74.0 ed bands, the	-13.1 limit of 15.2	PK 09 was used.	64	1.5	, the limit was	s set 30dB below the
7238.870 9647.960 Note 1: Note 2: Run #1b: C	51.5 60.9 For emissior level of the f Not in a rest Center Chann	H ns in restricte undamental ricted band. nel @ 2437 I	74.0 ed bands, the and measure MHz	-13.1 limit of 15.2 d in 100kHz	PK 09 was used.	64	1.5	, the limit was	s set 30dB below the
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament	51.5 60.9 For emissior level of the f Not in a rest Center Chann cal Signal Fie	H Ins in restricte Tundamental ricted band. nel @ 2437 I eld Strength	74.0 ed bands, the and measure MHz : Peak value	-13.1 limit of 15.2 d in 100kHz measured ir	PK 09 was used. 100kHz	64 For all othe	1.5 er emissions		s set 30dB below the
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency	51.5 60.9 For emissior level of the f Not in a rest Center Chanr cal Signal Fie Level	H Ins in restricter Indamental ricted band. nel @ 2437 f eld Strength Pol	74.0 ed bands, the and measure MHz : Peak value 15.209	-13.1 limit of 15.2 ed in 100kHz <u>measured ir</u> / 15.247	PK 09 was used 100kHz Detector	64 For all othe Azimuth	1.5 er emissions Height	, the limit was	s set 30dB below the
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz	51.5 60.9 For emissior level of the f Not in a rest Center Chan al Signal Fie Level dBµV/m	H iundamental ricted band. nel @ 2437 I eld Strength Pol v/h	74.0 ed bands, the and measure MHz : Peak value 15.209 / Limit	-13.1 limit of 15.2 d in 100kHz measured ir	PK 09 was used. 100kHz Detector Pk/QP/Avg	64 For all other Azimuth degrees	1.5 er emissions Height meters	Comments	
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500	51.5 60.9 For emissior level of the f Not in a rest Center Chann cal Signal Fie Level dBµV/m 104.1	H ins in restricter undamental ricted band. nel @ 2437 I eld Strength Pol V/h V	74.0 ed bands, the and measure MHz : Peak value 15.209	-13.1 limit of 15.2 ed in 100kHz <u>measured ir</u> / 15.247	PK 09 was used. 100kHz Detector Pk/QP/Avg PK	64 For all othe Azimuth degrees 89	1.5 er emissions Height meters 1.0	Comments RB = VB = 2	100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780	51.5 60.9 For emissior level of the f Not in a rest Center Chan al Signal Fie Level dBµV/m 104.1 105.8	H ns in restricte undamental ricted band. nel @ 2437 I eld Strength Pol V/h V H	74.0 ed bands, the and measure MHz : Peak value 15.209 / Limit -	-13.1 limit of 15.2 ed in 100kHz measured ir / 15.247 Margin -	PK 09 was used. 100kHz Detector Pk/QP/Avg PK PK	64 For all other Azimuth degrees 89 58	1.5 er emissions Height meters	Comments	100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780	51.5 60.9 For emissior level of the f Not in a rest Center Chann cal Signal Fie Level dBμV/m 104.1 105.8 undamental e	H ins in restricter undamental ricted band. nel @ 2437 I eld Strength Pol v/h V H emission leve	74.0 ed bands, the and measure MHz : Peak value 15.209 / Limit - - -	-13.1 limit of 15.2 ed in 100kHz measured ir / 15.247 Margin - - - 00kHz RBW:	PK 09 was used. 100kHz Detector Pk/QP/Avg PK PK 105.8	64 For all othe Azimuth degrees 89 58 dBµV/m	1.5 er emissions Height meters 1.0 1.0	Comments RB = VB = 7 RB = VB = 7	100KHz 100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780	51.5 60.9 For emissior level of the f Not in a rest Center Chann cal Signal Fie Level dBµV/m 104.1 105.8 undamental e Limit for e	H ns in restricte undamental ricted band. nel @ 2437 I eld Strength Pol V/h V H	74.0 ed bands, the and measure MHz : Peak value 15.209 / Limit - - -	-13.1 limit of 15.2 ed in 100kHz measured ir / 15.247 Margin - - - 00kHz RBW:	PK 09 was used. 100kHz Detector Pk/QP/Avg PK PK 105.8	64 For all other Azimuth degrees 89 58	1.5 er emissions Height meters 1.0 1.0	Comments RB = VB = 7 RB = VB = 7	100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780 Fu Spurious E	51.5 60.9 For emissior level of the f Not in a rest Center Chann al Signal Fie Level dBµV/m 104.1 105.8 undamental e Limit for e missions	H Ins in restricter Findamental ricted band. nel @ 2437 f eld Strength Pol V/h V H emission leve emissions ou	74.0 ed bands, the and measure MHz : Peak value 15.209, Limit - - el @ 3m in 10 tside of restr	-13.1 limit of 15.2 d in 100kHz measured ir / 15.247 Margin - - 00kHz RBW: icted bands:	PK 09 was used 100kHz Detector Pk/QP/Avg PK PK 105.8 75.8	64 For all othe Azimuth degrees 89 58 dBμV/m dBμV/m	1.5 er emissions Height meters 1.0 1.0 Limit is -300	Comments RB = VB = 7 RB = VB = 7 dBc (UNII pov	100KHz 100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780 Fu Spurious E Frequency	51.5 60.9 For emissior level of the f Not in a rest Center Chan al Signal Fie Level dBµV/m 104.1 105.8 undamental e Limit for e missions Level	H Ins in restricter Findamental ricted band. nel @ 2437 f eld Strength Pol V/h V H emission leve emissions ou	74.0 ed bands, the and measure MHz : Peak value 15.209 / Limit - el @ 3m in 10 tside of restr	-13.1 limit of 15.2 d in 100kHz measured ir / 15.247 Margin - - 00kHz RBW: icted bands: / 15.247	PK 09 was used 100kHz Detector Pk/QP/Avg PK PK 105.8 75.8 Detector	64 For all othe Azimuth degrees 89 58 dBμV/m dBμV/m Azimuth	1.5 er emissions Height meters 1.0 1.0 Limit is -300 Height	Comments RB = VB = 7 RB = VB = 7	100KHz 100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780 Fu Spurious E Frequency MHz	51.5 60.9 For emissior level of the f Not in a rest Center Chan al Signal Fie Level dBµV/m 104.1 105.8 undamental e Limit for e missions Level dBµV/m	H Ins in restricter undamental ricted band. nel @ 2437 f eld Strength Pol V/h V H emission leve emissions ou Pol V/h	74.0 ed bands, the and measure MHz : Peak value 15.209 / Limit - el @ 3m in 10 tside of restr 15.209 / Limit	-13.1 limit of 15.2 ed in 100kHz measured ir / 15.247 Margin - - 00kHz RBW: icted bands: / 15.247 Margin	PK 09 was used 100kHz Detector Pk/QP/Avg PK 105.8 75.8 Detector Pk/QP/Avg	64 For all othe Azimuth degrees 89 58 dBμV/m dBμV/m Azimuth degrees	1.5 er emissions Height meters 1.0 1.0 Limit is -300 Height meters	Comments RB = VB = 7 RB = VB = 7 dBc (UNII pov	100KHz 100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780 Fu Spurious E Frequency MHz 4873.920	51.5 60.9 For emissior level of the f Not in a rest Center Chann cal Signal Fie Level dBμV/m 104.1 105.8 undamental e Limit for e missions Level dBμV/m 45.9	H Ins in restricter Findamental ricted band. nel @ 2437 f eld Strength Pol V/h V H emission leve emissions ou	74.0 ed bands, the and measure MHz : Peak value 15.209 Limit - el @ 3m in 10 tside of restr 15.209 Limit 54.0	-13.1 limit of 15.2 ed in 100kHz measured ir / 15.247 Margin - 00kHz RBW: icted bands: / 15.247 Margin -8.1	PK 09 was used. 100kHz Detector Pk/QP/Avg PK 105.8 75.8 Detector Pk/QP/Avg AVG	64 For all othe Azimuth degrees 89 58 dBμV/m dBμV/m Azimuth degrees 74	1.5 er emissions Height meters 1.0 1.0 Limit is -300 Height meters 1.5	Comments RB = VB = 7 RB = VB = 7 dBc (UNII pov	100KHz 100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780 Frequency Bpurious E Frequency MHz 4873.920 7311.890	51.5 60.9 For emission level of the f Not in a rest Center Chann cal Signal Fie Level dBµV/m 104.1 105.8 undamental e Limit for e missions Level dBµV/m 45.9 46.9	H ins in restricter fundamental ricted band. nel @ 2437 f eld Strength Pol V/h V H emission leve emissions ou Pol V/h V	74.0 ed bands, the and measure MHz : Peak value 15.209 Limit - el @ 3m in 10 tside of restr 15.209 Limit 54.0 54.0 54.0	-13.1 limit of 15.2 ed in 100kHz measured ir / 15.247 Margin - - 00kHz RBW: icted bands: / 15.247 Margin -8.1 - 7.1	PK 09 was used. 100kHz Detector Pk/QP/Avg PK PK 105.8 75.8 Detector Pk/QP/Avg AVG AVG	64 For all othe Azimuth degrees 89 58 dBµV/m dBµV/m Azimuth degrees 74 31	1.5 er emissions Height meters 1.0 1.0 Limit is -300 Height meters 1.5 1.0	Comments RB = VB = 7 RB = VB = 7 dBc (UNII pov	100KHz 100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780 Fu Spurious E Frequency MHz 4873.920	51.5 60.9 For emissior level of the f Not in a rest Center Chann cal Signal Fie Level dBμV/m 104.1 105.8 undamental e Limit for e missions Level dBμV/m 45.9	H ns in restricted undamental ricted band. nel @ 2437 I eld Strength Pol v/h V H emission leve emissions ou Pol v/h V V	74.0 ed bands, the and measure MHz : Peak value 15.209 Limit - el @ 3m in 10 tside of restr 15.209 Limit 54.0	-13.1 limit of 15.2 ed in 100kHz measured ir / 15.247 Margin - - 00kHz RBW: icted bands: / 15.247 Margin -8.1 -7.1 -25.1	PK 09 was used. 100kHz Detector Pk/QP/Avg PK 105.8 75.8 Detector Pk/QP/Avg AVG	64 For all othe Azimuth degrees 89 58 dBμV/m dBμV/m Azimuth degrees 74	1.5 er emissions Height meters 1.0 1.0 Limit is -300 Height meters 1.5	Comments RB = VB = 7 RB = VB = 7 dBc (UNII pov	100KHz 100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780 Fu Spurious E Frequency MHz 4873.920 7311.890 4873.920	51.5 60.9 For emissior level of the f Not in a rest Center Chann al Signal Fie Level dBµV/m 104.1 105.8 Undamental e Limit for e missions Level dBµV/m 45.9 46.9 48.9	H ns in restricter ricted band. nel @ 2437 f eld Strength Pol v/h V H emission leve emissions ou Pol v/h V V V V V V	74.0 ed bands, the and measure //Hz : Peak value 15.209 / Limit - el @ 3m in 10 tside of restr 15.209 / Limit 54.0 54.0 74.0	-13.1 limit of 15.2 ed in 100kHz measured ir / 15.247 Margin - - 00kHz RBW: icted bands: / 15.247 Margin -8.1 - 7.1	PK 09 was used 100kHz Detector Pk/QP/Avg PK PK 105.8 75.8 Detector Pk/QP/Avg AVG AVG PK	64 For all othe Azimuth degrees 89 58 dBμV/m dBμV/m Azimuth degrees 74 31 74	1.5 er emissions Height neters 1.0 1.0 Limit is -300 Height neters 1.5 1.0 1.5	Comments RB = VB = 7 RB = VB = 7 dBc (UNII pov	100KHz 100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780 Fu 2437.780 Fu Spurious E Frequency MHz 4873.920 7311.890	51.5 60.9 For emission level of the f Not in a rest Center Chann al Signal Fie Level dBµV/m 104.1 105.8 Undamental e Limit for e missions Level dBµV/m 45.9 46.9 48.9 52.4	H ins in restricter ricted band. ricted band. nel @ 2437 I eld Strength Pol v/h V H emission leve emissions ou Pol v/h V V V V V	74.0 ed bands, the and measure MHz : Peak value 15.209, Limit - el @ 3m in 10 tside of restr 15.209, Limit 54.0 54.0 74.0 74.0 74.0	-13.1 limit of 15.2 ed in 100kHz measured ir / 15.247 Margin - - 00kHz RBW: icted bands: / 15.247 Margin -8.1 -7.1 -25.1 -21.6	PK 09 was used 100kHz Detector Pk/QP/Avg PK PK 105.8 75.8 Detector Pk/QP/Avg AVG AVG PK PK	64 For all othe Azimuth degrees 89 58 dBμV/m dBμV/m Azimuth degrees 74 31 74 31	1.5 er emissions Height meters 1.0 1.0 Limit is -300 Height meters 1.5 1.0 1.5 1.0	Comments RB = VB = 7 RB = VB = 7 dBc (UNII powents	100KHz 100KHz
7238.870 9647.960 Note 1: Note 2: Run #1b: C Fundament Frequency MHz 2437.500 2437.780 Fu Spurious E Frequency MHz 4873.920 7311.890 9748.090	51.5 60.9 For emission level of the f Not in a rest Center Channel cal Signal Field Level dB μ V/m 104.1 105.8 undamental e Limit for emissions Level dB μ V/m 45.9 46.9 48.9 52.4 62.7	H ns in restricter fundamental ricted band. nel @ 2437 I eld Strength Pol v/h V H emission leve emissions ou Pol v/h V V V V V V V	74.0 ed bands, the and measure MHz : Peak value 15.209 / Limit - el @ 3m in 10 tside of restr 15.209 / Limit 54.0 54.0 74.0 74.0 74.0 75.8	-13.1 limit of 15.2 ed in 100kHz d in 100kHz d in 100kHz margin - - - - - - - - - - - - - - - - - - -	PK 09 was used. 100kHz Detector Pk/QP/Avg PK PK 105.8 75.8 Detector Pk/QP/Avg AVG AVG AVG PK PK PK PK	64 For all othe Azimuth degrees 89 58 dBμV/m dBμV/m dBμV/m Azimuth degrees 74 31 74 31 74 31 158	1.5 er emissions Height meters 1.0 1.0 Limit is -300 Height meters 1.5 1.0 1.5 1.0 1.5 1.0 1.5	Comments RB = VB = 7 RB = VB = 7 dBc (UNII powers) Comments Note 2	100KHz 100KHz
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			4924.000 7383.520 9848.010 lote 1:	54.0 53.9 63.7 For emissior level of the f	V H H ns in restricte undamental	74.0 74.0 76.9 ed bands, the	-20.1 -13.2	PK PK 09 was used.	102 170	1.0 1.0	•	et 30dB below t
			4924.000 7383.520 9848.010 Note 1:	54.0 53.9 63.7 For emissior level of the f	V H H ns in restricte undamental	74.0 74.0 76.9 ed bands, the	-20.1 -13.2	PK PK 09 was used.	102 170	1.0 1.0	•	et 30dB below

Elliott EMC Test Data Job Number: J70762 Client: Intel T-Log Number: T71373 Model: 512an HMW Account Manager: Briggs / Eriksen Contact: Robert Paxman Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - Band Edge 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. Config. Used: 1 Date of Test: 2/13/2008 Config Change: None Test Engineer: Suhaila Khushzad Host Unit Voltage 120V/60Hz Test Location: Fremont Chamber #3 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: 20 °C Temperature: Rel. Humidity: 43 % Summary of Results Measured Power Mode Test Performed Run # Channel Limit Result / Margin Setting Power FCC Part 15.209 / 802.11g Band Edge radiated 72.6dBµV/m@ 1 21.5 1a 13.9 Chain A 2412MHz field strength 2389.1MHz (-1.4dB) 15.247(c) FCC Part 15.209 / 71.7dBµV/m @ 802.11g Band Edge radiated 11 1b 23.5 15.4 Chain A 2462MHz field strength 15.247(c) 2484.7MHz (-2.3dB)

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.

F	EII	iot	t					EM	C Test L
Client:								Job Number:	J70762
							T-	Log Number:	T71373
Model:	512an HMW							5	Briggs / Erikser
Contact:	Robert Paxn	nan						5	
	RSS 210 / F		INII (Radiate	ed)				Class:	N/A
Run #1a: L Po	ow Channel	@ 2412 MH 22 eld Strength	lz :: Peak and a	13.9 average valu	rating Mode:	(for reference in 1 MHz, ar	e purposes	ie measured i	n 100kHz
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	<u> </u>	meters		
2413.260	97.7	V	-	-	AVG	252	1.4	RB = 1MHz	
2413.260	105.8	V	-	-	PK	252	1.4	RB = VB = 1	
2413.500	101.4	Н	-	-	AVG	231	1.4	RB = 1MHz	
2413.500	109.7	Н	-	-	PK	231	1.4	RB = VB = 1	IMHz
*	Signal Field		45.000	145.047					
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2389.890	50.9	H	54.0	-3.1	AVG	232	1.4		
2389.970	47.5	V	54.0	-6.5	Avg	252	1.4		
2389.050 2389.140	67.0 72.6	V H	74.0 74.0	-7.0 -1.4	Pk PK	252 232	1.4 1.4		
Po	igh Channel ower Setting: tal Signal Fie	23.5	Ave	erage power:	: 15.4	(for reference	e purposes)	
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2463.060	99.3	Н	-	-	AVG	292	1.0	RB = 1MHz	
2463.060	107.3	Н	-	-	PK	292	1.0	$RB = VB = \hat{1}$	
2463.170	98.9	V	-	-	AVG	250	1.0	RB = 1MHz	
2463.170	107.1	V	-	-	PK	250	1.0	$RB = VB = \hat{1}$	IMHz
<u> </u>	Signal Field	¥			1				
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
	50.5	H	54.0	-3.5	Avg	292	1.0		
2483.500	50.4	V	54.0	-3.6	Avg	249	1.0		
2483.500 2483.510		\ ·	- · · ·	c c					
2483.500	71.1 71.7	V H	74.0 74.0	-2.9 -2.3	Pk Pk	249 292	1.0 1.0		

Elliott EMC Test Data Job Number: J70762 Client: Intel T-Log Number: T71373 Model: 512an HMW Account Manager: Briggs / Eriksen Contact: Robert Paxman Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) **Radiated Spurious Emissions - 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 Config. Used: 1 Test Engineer: Ben Jina 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 Power Measured Mode Channel Test Performed Limit Result / Margin Run # Settina Power

			J 1				
1a	802.11g	1 (2412)	21.5	13.9	Radiated Emissions,	FCC Part 15.209 /	54.4dBµV/m @
Id	Chain A	1 (2412)	21.0	13.9	1 - 26 GHz	15.247(c)	3000.4MHz (-10.7dB)
1b	802.11g	6 (2437)	26.5	17.8	Radiated Emissions,	FCC Part 15.209 /	69.7dBµV/m @
u	Chain A	0 (2437)	20.0	17.0	1 - 26 GHz	15.247(c)	9748.5MHz (-3.7dB)
1c	802.11g	11 (2462)	23.5	15.4	Radiated Emissions,	FCC Part 15.209 /	54.6dBµV/m @
ΤC	Chain A	11 (2402)	23.0	10.4	1 - 26 GHz	15.247(c)	3000.3MHz (-9.2dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

Elliott EMC Test Data Job Number: J70762 Client: Intel T-Log Number: T71373 Model: 512an HMW Account Manager: Briggs / Eriksen Contact: Robert Paxman Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A Run #1: Radiated Spurious Emissions, 1000 - 26000 MHz. Operating Mode: 802.11g Chain A Run #1a: Low Channel @ 2412 MHz Config. Used: 1 Date of Test: 04/17/2008 Test Engineer: Ben Jina Config Change: None Host Unit Voltage 120V/60Hz Test Location: FT Chamber # 4 Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz 15.209 / 15.247 Frequency Level Pol Detector Azimuth Height Comments Limit Margin Pk/QP/Avg meters MHz dBµV/m v/h degrees RB = VB = 100 kHz2413.300 95.1 V РΚ 277 1.0 2413.330 96.1 Н ΡK 187 1.0 RB = VB = 100 kHzFundamental emission level @ 3m in 100kHz RBW: 95.1 dBµV/m Limit for emissions outside of restricted bands: 65.1 dBµV/m Limit is -30dBc (UNII power measurement) Spurious Emissions 15.209 / 15.247 Detector Azimuth Frequency Level Pol Height Comments Pk/QP/Avg MHz dBµV/m v/h Limit Margin degrees meters 1199.380 V 54.0 -25.2 AVG 1.0 28.8 262 1743.750 V 54.0 -27.3 AVG 26.7 205 1.0 1199.380 V 74.0 -29.2 ΡK 262 44.8 1.0 1743.750 45.7 V 74.0 -28.3 ΡK 205 1.0 3000.390 54.4 V 65.1 -10.7 ΡK 274 1.0 -11.3 53.8 V ΡK 270 1.5 6000.730 65.1 For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the Note 1: level of the fundamental and measured in 100kHz. Note 2: Power setting is same as band-edge testing : GC = 21.5 AP = 13.9

T	EII	io	t					EM	C Test Dat
Client:								Job Number:	J70762
								Log Number:	
Model:	512an HMW	1						5	Briggs / Eriksen
Contact	Robert Paxn	nan					71000	ant managon	
	RSS 210 / F		INII (Radiate	d)				Class:	Ν/Δ
	Center Chan		-	uj				01035.	
	Date of Test:		VINZ		C	onfig. Used:	1		
	est Engineer:					fig Change:			
	est Location:		amber #4			UT Voltage:	None		
	tal Signal Fie			measured i		<u>j</u>			
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2435.760	100.6	V	-	-	PK	90	1.0	RB = VB = 1	
2435.750	103.4	Н	-	-	PK	60	1.0	RB = VB = 1	100kHz
		<u> </u>					1		
ŀ	undamental e					dBµV/m			1)
		emissions ou	tside of restr	icted bands:	/3.4	dBµV/m	Limit is -300	arc (nnii bor	ver measurement)
Spurious E		Pol	15 200	/ 15.247	Detector	Azimuth	Hoight	Comments	
Frequency MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	Height meters	Comments	
	<u>ивµv/ш</u> 43.2	V	54.0	-10.8	AVG	262	1.5		
6000 700			54.0	-4.3	AVG	97	1.0		
6000.700		Н			7.00	,,			
7310.390	49.7	H			PK	262	1.5		
7310.390 6000.700	49.7 49.6	V	74.0	-24.4	PK PK	262 97	1.5 1.0		
7310.390	49.7				PK PK PK	262 97 249	1.5 1.0 1.0	Note 2	RB=1MHz

Client: Intel Job Number: J70762 Model: 512an HMW T-Log Number: T71373 Account Manager: Briggs / E Contact: Robert Paxman Class: N/A Run #1c: High Channel @ 2462 MHz Class: N/A Date of Test: 0/17/2008 Config. Used: 1 Test Engineer: Ben Jing Config. Change: None Test Engineer: Standard: Ying Paie of Test: 0/17/2008 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/OP/Avg degrees meters 2463.370 93.8 V - PK 96 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz
Model: 512an HMW Account Manager: Briggs / B Contact: Robert Paxman Image: Briggs / B Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A Run #1c: High Channel @ 2462 MHz Config. Used: 1 Date of Test: 04/17/2008 Config Change: None Test Engineer: Ben Jing Config Change: None Test Location: FT Chamber # 4 Host Unit Voltage 120V/60Hz Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHZ dBµV/m V/h Limit Margin PK/QP/Avg degrees meters 2463.370 93.8 V - - PK 96 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz Spurious Emissions Emissions outside of restricted bands: 63.8 dBµV/m Limit is -30dBc (UNII power measu MHZ
Contact: Robert Paxman O O Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A Run #1c: High Channel @ 2462 MHz Date of Test: 0.4/17/2008 Config. Used: 1 Test Engineer: Ben Jing Config Change: None Test Engineer: For Additional Config Change: None Test Location: FT Chamber # 4 Host Unit Voltage 120V/60Hz For Additional Config Change: None Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHZ dBµV/m V/h Limit Margin PK/QP/Avg degrees meters 2463.370 93.8 V - - PK 96 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz Spurious Emissions Einit for emissions outside of restricted bands: 63.8 dBµV/m Limit is -30dBc (UNII power measu MHZ dBµV/m V/h Limit Margin Pk/QP/Avg
Standard:Class:N/AStandard:Class:N/ARun #1c: High Channel @ 2462 MHzDate of Test: 04/17/2008Config. Used: 1Test Engineer: Ben JingConfig Change: NoneTest Location: FT Chamber # 4Host Unit Voltage 120V/60HzFundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHzFrequencyLevelPol15.209 / 15.247DetectorAzimuthHeightCommentsMHzdBµV/mV/hLimitMargin Pk/QP/AvgdegreesmetersFrequencyLevelPol15.209 / 15.247DetectorAzimuthHeightCommentsMHzdBµV/mV/hLimitMargin Pk/QP/AvgdegreesmetersTerduamental emission level @ 3m in 100kHz RBW:93.8dBµV/mLimit for emissions outside of restricted bands:63.8dBµV/mVIII (Margin Pk/QP/AvgdegreesmetersFrequencyLevelPol15.209 / 15.247
Run #1c: High Channel @ 2462 MHz Date of Test: 04/17/2008 Config. Used: 1 Test Engineer: Ben Jing Test Engineer: Ben Jing Test Location: FT Chamber # 4 Host Unit Voltage 120V/60Hz 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 2463.370 93.8 V - - PK 96 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz Fundamental emission level @ 3m in 100kHz RBW: 93.8 dBµV/m Limit is -30dBc (UNII power measu Spurious Emissions Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit
Date of Test: 04/17/2008 Config. Used: 1 Test Engineer: Ben Jing Config Change: None Test Location: FT Chamber # 4 Host Unit Voltage 120V/60Hz 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 2463.370 93.8 V - - PK 96 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB was bestown and b
Config Change: None Host Unit Voltage 120V/60HzFundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHzFrequencyLevelPol15.209 / 15.247DetectorAzimuthHeightCommentsMHzdB μ V/mv/hLimitMarginPk/QP/Avgdegreesmeters2463.37093.8VPK961.0RB = VB = 100kHz2463.31097.2HPK2531.0RB = VB = 100kHzFundamental emission level @ 3m in 100kHz RBW:93.8dB μ V/mdB μ V/mLimit for emissions outside of restricted bands:63.8 dB μ V/mLimit is -30dBc (UNII power measuMHzdB μ V/mLimit MarginPk/QP/AvgdegreesmetersFrequencyLevelPol15.209 / 15.247DetectorAzimuthHeightCommentsMHzdB μ V/mLimitMarginPk/QP/AvgdegreesMHzdB μ V/mV/hLimitMarginPk/QP/Avgdegrees1494.33030.6V54.0-23.4AVG01.01742.93030.2V54.0-23.8AVG1601.01494.33050.1V74.0-24.6PK1601.01742.93049.4V63.8
Test Location: FT Chamber # 4Host Unit Voltage 120V/60HzFundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHzFrequencyLevelPol15.209 / 15.247DetectorAzimuthHeightCommentsMHzdB μ V/mv/hLimitMarginPk/QP/Avgdegreesmeters2463.37093.8VPK961.0RB = VB = 100kHz2463.31097.2HPK2531.0RB = VB = 100kHzFundamental emission level @ 3m in 100kHz RBW:93.8dB μ V/mLimit for emissions outside of restricted bands:63.8 dB μ V/mLimit is -30dBc (UNII power measured in 1.00kHz RBW:93.8dB μ V/mLimit for emission level @ 3m in 100kHz RBW:93.8dB μ V/mLimit for emissions outside of restricted bands:63.8 dB μ V/mLimit is -30dBc (UNII power measured in 1.00kHz RBW:93.8dB μ V/mLimit for emissions outside of restricted bands:63.8 dB μ V/mLimit is -30dBc (UNII power measured in 1.00kHz RBW:93.8dB μ V/mLimit for emissions outside of restricted bands:63.8 dB μ V/mLimit MarginPK/QP/Avgdegreesmeters1494.33030.6V54.0-23.4AVG
Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/OP/Avg degrees meters 2463.370 93.8 V - - PK 96 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz 5 Frequency Limit for emissions outside of restricted bands: 63.8 dBµV/m Limit is -30dEc (UNII power measu MHz dBµV/m <t< td=""></t<>
MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 2463.370 93.8 V - - PK 96 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz Fundamental emission level @ 3m in 100kHz RBW: 93.8 dBµV/m dBµV/m Limit is -30dBc (UNII power measu Spurious Emissions Keyel Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m V/h Limit Margin Pk/QP/Avg degrees meters 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1742.930 30.2 V 54.0 -23.8 AVG 160 1.0 1742.930 49.4 V 74
2463.370 93.8 V - - PK 96 1.0 RB = VB = 100kHz 2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz Fundamental emission level @ 3m in 100kHz RBW: 93.8 dBµV/m Limit for emissions outside of restricted bands: 63.8 dBµV/m Limit is -30dBc (UNII power measu 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 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1742.930 30.2 V 54.0 -23.8 AVG 160 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 1.0
2463.310 97.2 H - - PK 253 1.0 RB = VB = 100kHz Fundamental emission level @ 3m in 100kHz RBW: 93.8 dBμV/m Limit for emissions outside of restricted bands: 63.8 dBμV/m Limit is -30dBc (UNII power measu 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 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1742.930 30.2 V 54.0 -23.9 PK 0 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1494.330 50.1 V 74.0 -24.6 PK 160 1.0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 1.0
Fundamental emission level @ 3m in 100kHz RBW: 93.8 dBμV/m Limit for emissions outside of restricted bands: 63.8 dBμV/m Limit is -30dBc (UNII power measu Spurious Emissions Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBμV/m V/h Limit Margin Pk/QP/Avg degrees meters 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1742.930 30.2 V 54.0 -23.9 PK 0 1.0 1742.930 49.4 V 74.0 -23.9 PK 0 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0
Limit for emissions outside of restricted bands: 63.8 dB _μ V/m Limit is -30dBc (UNII power measurements) 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 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1.0 1494.330 30.2 V 54.0 -23.8 AVG 160 1.0 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0 1.0
Limit for emissions outside of restricted bands: 63.8 dB _μ V/m Limit is -30dBc (UNII power measurements) 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 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1.0 1494.330 30.2 V 54.0 -23.8 AVG 160 1.0 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0 1.0
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 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1742.930 30.2 V 54.0 -23.8 AVG 160 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0
Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1742.930 30.2 V 54.0 -23.8 AVG 160 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1494.330 50.4 V 74.0 -23.9 PK 0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0
Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1742.930 30.2 V 54.0 -23.8 AVG 160 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1492.930 49.4 V 74.0 -23.9 PK 0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0
MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 1494.330 30.6 V 54.0 -23.4 AVG 0 1.0 1742.930 30.2 V 54.0 -23.8 AVG 160 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0
1742.930 30.2 V 54.0 -23.8 AVG 160 1.0 1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0
1494.330 50.1 V 74.0 -23.9 PK 0 1.0 1742.930 49.4 V 74.0 -24.6 PK 160 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0
1742.930 49.4 V 74.0 -24.6 PK 160 1.0 3000.330 54.6 V 63.8 -9.2 PK 272 1.0
3000.330 54.6 V 63.8 -9.2 PK 272 1.0
0000.770 55.7 V 05.0 -10.1 FK 207 1.5
For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB
Note 1: level of the fundamental and measured in 100kHz.
Note 2: Power setting is same as band-edge testing : GC = 23.5 , AP = 15.4

EMC Test Data

Intel	Job Number:	J70762
512an HMM	T-Log Number:	T71373
5120111111111	Account Manager:	Briggs / Eriksen
Robert Paxman		
RSS 210 / FCC 15.407 UNII (Radiated)	Class:	N/A
	512an HMW Robert Paxman	512an HMW T-Log Number: Robert Paxman Account Manager:

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

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. 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:	15-25 °C
	Rel. Humidity:	35-55 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n20 Chain A	1 2412MHz	22.0	14.0	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	52.2dBµV/m @ 2390.0MHz (-1.8dB)
1b	802.11n20 Chain A	11 2462MHz	22.5	14.3	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	70.5dBµV/m @ 2485.4MHz (-3.5dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

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		ott	1					EMC Test I	
Client:			,					Job Number: J70762	
							T-	Log Number: T71373	
Model:	512an HMW	V					Account Manager: Briggs / Eriksen		
Contact:	Robert Paxr	man							
Standard:	RSS 210 / F	CC 15.407 L	JNII (Radiate	d)				Class: N/A	
ו דנ un #1a: L פנ	Date of Test: est Engineer: est Location: ow Channe ower Setting: tal Signal Fignal Fignal	2/14/2008 Suhaila Khu Fremont Ch I @ 2412 MH 22.0	shzad amber #3 Iz Ave : Peak and a	rage power:		(for reference		nel) - Chain A	
							× ×	Comments	
MHz 2413.500	dBµV/m 99.4	v/h V	Limit	Margin	Pk/QP/Avg	degrees	meters		
2413.500	99.4 107.5	V	-	-	AVG PK	247 247	1.6 1.6	RB = 1MHz, $VB = 10HzRB = VB = 1MHz$	
		V H	-	-					
2411.010	98.9		-	-	AVG	289	1.0	RB = 1MHz, $VB = 10Hz$	
2411.010	107.8	Н	-	-	PK	289	1.0	RB = VB = 1MHz	
	Signal Field								
requency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
389.950	52.2	V	54.0	-1.8	AVG	247	1.6		
2389.970	51.7	Н	54.0	-2.3	AVG	289	1.0	GC=22, AP=14	
2389.430	68.7	Н	74.0	-5.3	PK	289	1.0	GC=22, AP=14	
2389.980	71.9	V	74.0	-2.1	PK	247	1.5		
Po	ower Setting: tal Signal Fig		Ave Peak and a:		14.3 es measured Detector Pk/QP/Avg	-) le measured in 100kHz Comments	
2468.500	98.8	V	54.0			255	1.0	RB = 1MHz, VB = 10Hz	
2468.500	107.4	V	74.0	_	-	255	1.0	RB = VB = 1MHz	
2461.030	99.2	H	54.0	-	-	286	1.0	RB = 1MHz, $VB = 10Hz$	
2461.030	107.8	H	74.0	-	-	286	1.0	RB = VB = 1MHz	
. 101.030	107.0		<i>i</i> 1.∪		_	200	1.0		
	Signal Field		45.000	45.047					
requency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
		Н	54.0	-4.2	AVG	286	1.0		
2483.500	49.8				· · · -				
2483.500 2483.520	49.5	V	54.0	-4.5	AVG	255	1.0		
2483.500				-4.5 -3.8 -3.5	AVG PK PK	255 286 255	1.0 1.0 1.0		

EMC Test Data

Client:	Intel	Job Number:	J70762
Model	512an HMW	T-Log Number:	T71373
MUUEI.		Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	N/A

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

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. 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:	42 %

Summary of Results

Run a	#	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a		802.11n40 Chain A	1 2422MHz	18.5	8.8	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	52.7dBµV/m @ 2389.8MHz (-1.3dB)
1b		802.11n40 Chain A	11 2452MHz	18.5	9.8	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	52.1dBµV/m @ 2483.5MHz (-1.9dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

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FIAC Test Data

Client:	Intel							Job Number:	J70762
	540 100	,					T-	Log Number:	T71373
Model:	512an HMW	I							Briggs / Erikse
Contact:	Robert Paxr	nan						5	
	RSS 210 / F		INII (Radiate	d)				Class:	N/A
otaridardi			in (nadiato	u)				010001	
un #1: Ra	adiated Spur	ious Emissi	ons. Band F	daes. Oper	ating Mode:	802.11n (40	MHz Chan	nel) - Chain J	А
	•				<u>-</u> g			,	
	Date of Test:								
	est Engineer: est Location:								
Run #1a: L	ow Channel	@ 2422 MH	Z						
	ower Setting:	18.5		rage power:	8.8	(for reference	e purposes)	
	•			• •		-		, Je measured i	n 100kHz
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2437.670	97.9	Н	-	-	AVG	253	1.0	RB = 1MHz	
2437.670	106.4	Н	-	-	PK	253	1.0	RB = VB = 1	
2423.380	90.0	V	-	-	AVG	202	1.2	RB = 1MHz	
2423.380	98.4	V	-	-	PK	202	1.2	RB = VB = 1	IMHz
	Signal Field		15 000	15 047	Delivit	A _!	11.2.10	Correct	
-requency		Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2389.840	52.7	H	54.0	-1.3	Avg	254	1.0		
2389.960	48.3 66.6	V H	54.0 74.0	-5.7 -7.4	Avg PK	204 249	1.3		
2387.160 2388.960	62.6	V	74.0	-7.4	PK PK	249 204	1.0 1.3		
2300.700	02.0	V	74.0	-11.4	ΪŇ	204	1.5		
≀un #1b: H	ligh Channel	@ 2452 MH	Z						
	ower Setting:			rage power:	AP = 9.8	(for reference	e purposes)	
undamen	tal Signal Fie	eld Strength	: Peak and a	iverage valu	es measured	in 1 MHz, ar	nd peak valu	Je measured i	n 100kHz
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2463.200	92.6	V	-	-	AVG	277	1.0	RB = 1MHz	, VB = 10Hz
2463.200	101.8	V	-	-	PK	277	1.0	RB = VB = 1	
2438.930	98.3	Н	-	-	AVG	253	1.0	RB = 1MHz	
2438.930	106.9	Н	-	-	PK	253	1.0	RB = VB = 1	IMHz
	o								
	Signal Field	Strength							
Band Edge	Louis	Del	15 200	15 017	Datastar	ما بد مراج	المادة الم	Commercial	
U	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
Band Edge		v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
Frequency MHz	dBµV/m	11		-1.9	Avg	251	1.0		
Frequency MHz 2483.510	dBμV/m 52.1	H	54.0		Λ	777		-	
Frequency MHz 2483.510 2483.560	dBμV/m 52.1 48.4	V	54.0	-5.6	Avg	273	1.0		
Frequency MHz 2483.510	dBμV/m 52.1				Avg PK PK	273 251 272	1.0 1.0 1.0		

EMC Test Data

Client:	Intel	Job Number:	J70762
Model	512an HMW	T-Log Number:	T71373
wouer.		Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	N/A

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

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. 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:	°C
	Rel. Humidity:	%

Summary of Results

Measurements for n modes performed with the device operating in 20MHz mode as this produced higher emissions than 40MHz mode.

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n20	1	22.0	14.0	Radiated Emissions,	FCC Part 15.209 /	47.6dBµV/m @
Id	Chain A	2412MHz	22.0	14.0	1 - 26 GHz	15.247(c)	3000.4MHz (-6.4dB)
1b	802.11n20	6	25.0	16.5	Radiated Emissions,	FCC Part 15.209 /	54.6dBµV/m @
U U	Chain A	2437MHz	25.0	10.5	1 - 26 GHz	15.247(c)	3000.4MHz (-13.0dB)
1c	802.11n20	11	22.5	14.3	Radiated Emissions,	FCC Part 15.209 /	46.4dBµV/m @
	Chain A	2462MHz	22.0	14.5	1 - 26 GHz	15.247(c)	3000.4MHz (-7.6dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

Client:	Intel							Job Number:	J70762
Madal		I					T-	Log Number:	T71373
wodel:	512an HMW	I						÷	Briggs / Eriksen
Contact:	Robert Paxn	nan							
Standard:	RSS 210 / F	CC 15.407 L	JNII (Radiate	ed)				Class:	N/A
Run #1: Ra	adiated Spur	ious Emissi	ions. 1000 -	26000 MHz.	Operating M	lode: 802.11	n 20MHz C	hain A	I
	ow Channel								
r	Date of Test:	2/11/2000			C	onfig. Used:			
	est Engineer:		hrad			fig Change:			
	est Location:					Jnit Voltage			
		Tremont on			11051	onic vonago			
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
1747.630	34.9	V	54.0	-19.1	AVG	198	1.0		
3000.390	47.6	V	54.0	-6.4	AVG	167	1.0		
1747.630	53.7	V	74.0	-20.3	PK	198	1.0		
3000.390	51.6	V	74.0	-22.4	PK	167	1.0		
lote 1:						For all othe	er emissions	, the limit was	s set 30dB below the
		undamental							
lata 2:	Not in a roct	ictod hand k	nut moro ctriv	agant 16 000					
2un #1b: C	Center Chan i Date of Test:	nel @ 2437 04/17/2008		ngent 15.209	C	onfig. Used:			
Run #1b: C [Te	Center Chan i Date of Test: est Engineer:	nel @ 2437 04/17/2008 Ben Jing	MHz	ngent 15.209	Ci Con	ifig Change:	None		
Run #1b: C [Te T€	Center Chani Date of Test: est Engineer: est Location:	nel @ 2437 04/17/2008 Ben Jing FT Chambe	MHz r # 4		C Con Host I		None		
Run #1b: C [Te Te Fundament	Center Chani Date of Test: est Engineer: est Location: tal Signal Fie	nel @ 2437 04/17/2008 Ben Jing FT Chambe	MHz r # 4 i: Peak value		C Con Host I	ifig Change:	None	Comments	
Run #1b: C [Te [Fundament Frequency] MHz	Center Chani Date of Test: Est Engineer: est Location: tal Signal Fie Level dBµV/m	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h	MHz r # 4 i: Peak value	e measured i	C Con Host I n 100kHz Detector Pk/QP/Avg	ifig Change: Unit Voltage	None 120V/60Hz	Comments	
Run #1b: C E Te Te Gundament Frequency MHz 2439.520	Center Chan Date of Test: Est Engineer: est Location: tal Signal Fie Level dBµV/m 97.6	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol V/h V	MHz r # 4 :: Peak value 15.209	e measured i / 15.247	C Con Host I n 100kHz Detector Pk/QP/Avg PK	fig Change: Jnit Voltage Azimuth degrees 268	None 120V/60Hz Height meters 1.0	Comments RB = VB = 1	
Run #1b: C E Te Te Gundament Frequency MHz 2439.520	Center Chani Date of Test: Est Engineer: est Location: tal Signal Fie Level dBµV/m	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h	MHz r # 4 :: Peak value 15.209	e measured i / 15.247	C Con Host I n 100kHz Detector Pk/QP/Avg	fig Change: Jnit Voltage Azimuth degrees	None 120V/60Hz Height meters	Comments	
Run #1b: C Te Te Fundament Frequency MHz 2439.520 2439.590	Center Chani Date of Test: est Engineer: est Location: tal Signal Fie Level dBµV/m 97.6 100.5	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol V/h V H	MHz r # 4 <u>: Peak value</u> 15.209 Limit - -	e measured i / 15.247 Margin - -	C Con Host I n 100kHz Detector Pk/QP/Avg PK PK	fig Change: Jnit Voltage Azimuth degrees 268 190	None 120V/60Hz Height meters 1.0	Comments RB = VB = 1	
Run #1b: C E Te Te Gundament Frequency MHz 2439.520 2439.590	Center Chani Date of Test: est Engineer: est Location: tal Signal Fie Level dBµV/m 97.6 100.5	nel @ 2437 l 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h V H emission leve	MHz r # 4 :: Peak value 15.209 Limit - - el @ 3m in 10	e measured i / 15.247 Margin - - 00kHz RBW:	C Con Host n 100kHz Detector Pk/QP/Avg PK PK 97.6	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m	None 120V/60Hz Height meters 1.0 1.0	Comments RB = VB = 7 RB = VB = 7	00kHz
Run #1b: C Te Te <u>Fundament</u> Frequency MHz 2439.520 2439.590	Center Chani Date of Test: est Engineer: est Location: tal Signal Fie Level dBµV/m 97.6 100.5 undamental e Limit for e	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol V/h V H	MHz r # 4 :: Peak value 15.209 Limit - - el @ 3m in 10	e measured i / 15.247 Margin - - 00kHz RBW:	C Con Host n 100kHz Detector Pk/QP/Avg PK PK 97.6	fig Change: Jnit Voltage Azimuth degrees 268 190	None 120V/60Hz Height meters 1.0 1.0	Comments RB = VB = 7 RB = VB = 7	
Run #1b: C Te Te Fundament Frequency MHz 2439.520 2439.590 Ft Spurious E	Center Chani Date of Test: est Engineer: est Location: tal Signal Fie Level dBµV/m 97.6 100.5 undamental e Limit for e missions	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h V H emission leve emissions ou	MHz r # 4 : Peak value 15.209 Limit - - el @ 3m in 10 itside of restr	e measured i / 15.247 Margin - - 00kHz RBW:	C Con Host Detector Pk/QP/Avg PK PK 97.6 67.6	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m	None 120V/60Hz Height meters 1.0 1.0 Limit is -300	Comments RB = VB = 1 RB = VB = 1 dBc (UNII pov	00kHz
Run #1b: C Te Te Fundament Frequency MHz 2439.520 2439.590 Ft Spurious E	Center Chan Date of Test: est Engineer: est Location: tal Signal Fie Level dBµV/m 97.6 100.5 undamental e Limit for e missions Level	nel @ 2437 l 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h V H emission leve	MHz r # 4 : Peak value 15.209 Limit - - el @ 3m in 10 itside of restr	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands:	C Con Host n 100kHz Detector Pk/QP/Avg PK PK 97.6	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m	None 120V/60Hz Height meters 1.0 1.0	Comments RB = VB = 7 RB = VB = 7	00kHz
Run #1b: C Te Te Fundament Frequency MHz 2439.520 2439.590 Fu Spurious E Frequency	Center Chani Date of Test: est Engineer: est Location: tal Signal Fie Level dBµV/m 97.6 100.5 undamental e Limit for e missions	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h V H emission leve emissions ou Pol	MHz r # 4 : Peak value 15.209 Limit - - el @ 3m in 10 itside of resti	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands: / 15.247	C Con Host I n 100kHz Detector Pk/QP/Avg PK PK 97.6 67.6 Detector	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m Azimuth	None 120V/60Hz Height neters 1.0 1.0 Limit is -300 Height	Comments RB = VB = 1 RB = VB = 1 dBc (UNII pov	00kHz
Run #1b: C Te Te Te Te Te Te Te Te Te Te	Center Chani Date of Test: est Engineer: est Location: tal Signal Fie Level dBµV/m 97.6 100.5 undamental e Limit for e missions Level dBµV/m 30.5 31.4	nel @ 2437 l 04/17/2008 Ben Jing FT Chambe eld Strength Pol V/h V H emission leve emissions ou Pol V/h V V	MHz r # 4 :: Peak value 15.209 Limit - el @ 3m in 10 itside of restu 15.209 Limit 54.0 54.0	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands: / 15.247 Margin -23.5 -22.6	C Con Host I Detector Pk/QP/Avg PK PK 97.6 67.6 0etector Pk/QP/Avg AVG AVG	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m Azimuth degrees	None 120V/60Hz Height neters 1.0 1.0 Limit is -300 Height meters 1.5 1.0	Comments RB = VB = 1 RB = VB = 1 dBc (UNII pov	00kHz
Run #1b: C Te Te Frequency MHz 2439.520 2439.590 2439.590 Frequency MHz 1498.030 1743.100 1498.030	Center Chann Date of Test: est Engineer: est Location: tal Signal Fie dBµV/m 97.6 100.5 undamental e Limit for e missions Level dBµV/m 30.5 31.4 52.3	nel @ 2437 l 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h V H emission leve emissions ou Pol v/h V V V	MHz r # 4 : Peak value 15.209 Limit - el @ 3m in 10 rtside of restr 15.209 Limit 54.0 54.0 74.0	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands: / 15.247 Margin -23.5	C Con Host I Detector PK/QP/Avg PK PK 97.6 67.6 0 C Detector Pk/QP/Avg AVG AVG PK	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m Azimuth degrees 141 112 141	None 120V/60Hz Height neters 1.0 1.0 Limit is -300 Height neters 1.5 1.0 1.5	Comments RB = VB = 1 RB = VB = 1 dBc (UNII pov	00kHz
Run #1b: C [Te Te Frequency MHz 2439.520 2439.590 2439.590 2439.590 Frequency MHz 1498.030 1743.100 1743.100	Center Chan Date of Test: Est Engineer: est Location: tal Signal Fie dBµV/m 97.6 100.5 undamental e Limit for e missions Level dBµV/m 30.5 31.4 52.3 49.9	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h V H emission leve emissions ou Pol v/h V V V V V	MHz r # 4 : Peak value 15.209 Limit - - el @ 3m in 10 ttside of resti 15.209 Limit 54.0 54.0 74.0 74.0	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands: / 15.247 Margin -23.5 -22.6 -21.7 -24.1	C Con Host I Detector Pk/QP/Avg PK 97.6 67.6 0etector Pk/QP/Avg AVG AVG PK PK	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m Azimuth degrees 141 112 141 112	None 120V/60Hz Height meters 1.0 1.0 Limit is -300 Height meters 1.5 1.0 1.5 1.0	Comments RB = VB = 1 RB = VB = 1 dBc (UNII pov	00kHz
Run #1b: C Te Te Te Frequency MHz 2439.520 2439.590 2439.590 Frequency MHz 1498.030 1743.100 1498.030 1743.100 3000.390	Center Chann Date of Test: est Engineer: est Location: tal Signal Fie dBµV/m 97.6 100.5 undamental e Limit for e missions Level dBµV/m 30.5 31.4 52.3 49.9 54.6	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol V/h V H emission leve emissions ou Pol V/h V V V V V V	MHz r # 4 : Peak value 15.209 Limit - - el @ 3m in 10 tside of restu 15.209 Limit 54.0 54.0 74.0 74.0 67.6	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands: / 15.247 Margin -23.5 -22.6 -21.7 -24.1 -13.0	C Con Host Detector PK/QP/Avg PK PK 97.6 67.6 97.6 67.6 0 Etector PK/QP/Avg AVG AVG AVG PK PK PK PK	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m Azimuth degrees 141 112 141 112 272	None 120V/60Hz Height neters 1.0 1.0 Limit is -300 Height meters 1.5 1.0 1.5 1.0 1.5 1.0	Comments RB = VB = 1 RB = VB = 1 dBc (UNII pov	00kHz
Run #1b: C [Te Te Frequency MHz 2439.520 2439.590 2439.590 2439.590 Frequency MHz 1498.030 1743.100 1743.100	Center Chan Date of Test: Est Engineer: est Location: tal Signal Fie dBµV/m 97.6 100.5 undamental e Limit for e missions Level dBµV/m 30.5 31.4 52.3 49.9	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h V H emission leve emissions ou Pol v/h V V V V V	MHz r # 4 : Peak value 15.209 Limit - - el @ 3m in 10 ttside of resti 15.209 Limit 54.0 54.0 74.0 74.0	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands: / 15.247 Margin -23.5 -22.6 -21.7 -24.1	C Con Host I Detector Pk/QP/Avg PK 97.6 67.6 0etector Pk/QP/Avg AVG AVG PK PK	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m Azimuth degrees 141 112 141 112	None 120V/60Hz Height meters 1.0 1.0 Limit is -300 Height meters 1.5 1.0 1.5 1.0	Comments RB = VB = 1 RB = VB = 1 dBc (UNII pov	00kHz
[Te Te Frequency MHz 2439.520 2439.520 2439.520 2439.590 Frequency MHz 1498.030 1743.100 1498.030 1743.100 3000.390	Center Chan Date of Test: est Engineer: est Location: tal Signal Fie dBµV/m 97.6 100.5 undamental e Limit for e missions Level dBµV/m 30.5 31.4 52.3 49.9 54.6 54.3	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol V/h V H emission leve emissions ou Pol V/h V V V V V V V V	MHz r # 4 : Peak value 15.209 Limit - el @ 3m in 10 itside of restr 15.209 Limit 54.0 54.0 74.0 74.0 67.6 67.6	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands: / 15.247 Margin -23.5 -22.6 -21.7 -24.1 -13.0 -13.3	C Con Host Detector Pk/QP/Avg PK PK 97.6 67.6 67.6 0 Etector Pk/QP/Avg AVG AVG AVG AVG PK PK PK PK PK	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m Azimuth degrees 141 112 141 112 272 267	None 120V/60Hz Height neters 1.0 1.0 Limit is -300 Height meters 1.5 1.0 1.5 1.0 1.5 1.0 1.5	Comments RB = VB = ^ RB = VB = ^ dBc (UNII pow Comments	i00kHz ver measurement)
Run #1b: C Te Te Te Frequency MHz 2439.520 2439.590 Frequency AHZ 1498.030 1743.100 1498.030 1743.100 3000.390 6000.740	Center Chan Date of Test: est Engineer: est Location: tal Signal Fie dBµV/m 97.6 100.5 undamental e Limit for e missions Level dBµV/m 30.5 31.4 52.3 49.9 54.6 54.3	nel @ 2437 l 04/17/2008 Ben Jing FT Chambe eld Strength Pol v/h V H emission leve emissions ou Pol v/h V V V V V V V V V	MHz r # 4 : Peak value 15.209 Limit - el @ 3m in 10 itside of restu 15.209 Limit 54.0 54.0 54.0 74.0 67.6 67.6 ed bands, the	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands: / 15.247 Margin -23.5 -22.6 -21.7 -24.1 -13.0 -13.3 e limit of 15.2	C Con Host I Detector PK/QP/Avg PK PK 97.6 67.6 67.6 0 PK PK PK PK PK PK PK PK PK PK 09 was used.	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m Azimuth degrees 141 112 141 112 272 267	None 120V/60Hz Height neters 1.0 1.0 Limit is -300 Height meters 1.5 1.0 1.5 1.0 1.5 1.0 1.5	Comments RB = VB = ^ RB = VB = ^ dBc (UNII pow Comments	00kHz
Run #1b: C Te Te Frequency MHz 2439.520 2439.590 Frequency AHZ 1498.030 1743.100 1498.030 1743.100 3000.390	Center Chan Date of Test: est Engineer: est Location: tal Signal Fie dBµV/m 97.6 100.5 undamental e Limit for e missions Level dBµV/m 30.5 31.4 52.3 49.9 54.6 54.3	nel @ 2437 I 04/17/2008 Ben Jing FT Chambe eld Strength Pol V/h V H emission leve emissions ou Pol V/h V V V V V V V V	MHz r # 4 : Peak value 15.209 Limit - el @ 3m in 10 itside of restu 15.209 Limit 54.0 54.0 54.0 74.0 67.6 67.6 ed bands, the	e measured i / 15.247 Margin - - 00kHz RBW: ricted bands: / 15.247 Margin -23.5 -22.6 -21.7 -24.1 -13.0 -13.3 e limit of 15.2	C Con Host I Detector PK/QP/Avg PK PK 97.6 67.6 67.6 0 PK PK PK PK PK PK PK PK PK PK 09 was used.	fig Change: Jnit Voltage Azimuth degrees 268 190 dBµV/m dBµV/m Azimuth degrees 141 112 141 112 272 267	None 120V/60Hz Height neters 1.0 1.0 Limit is -300 Height meters 1.5 1.0 1.5 1.0 1.5 1.0 1.5	Comments RB = VB = ^ RB = VB = ^ dBc (UNII pow Comments	i00kHz ver measurement)

Client:								Job Number:	J70762
							Log Number:		
Model:	512an HMW						•	Briggs / Eriksen	
Contact:	t: Robert Paxman								33
andard:	RSS 210 / F	CC 15.407 L	JNII (Radiate	ed)				Class:	N/A
	igh Channel		,	,					
1	Date of Test:	2/1//2008			C	onfig. Used:			
	st Engineer:		ishzad			ifig Change:			
	est Location:					Unit Voltage			
						-			
quency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz 43.180	dBµV/m 34.9	v/h H	Limit 54.0	Margin -19.1	Pk/QP/Avg AVG	degrees 154	meters 1.3	Note 2	
0.400	34.9 46.4	н V	54.0 54.0	-19.1	AVG	154	1.0	Note 2	
3.180	55.7	H	74.0	-18.3	PK	154	1.3	Note 2	
0.400	50.9	V	74.0	-23.1	PK	155	1.0	Note 2	
	For emission	ns in restricte	ed bands the	limit of 15.2	09 was used	For all othe	remissions	the limit was	s set 30dB below
	For emission level of the f Not in a rest	undamental	and measure	ed in 100kHz		For all othe	r emissions	s, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	s, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	s, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	s, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	s, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
e 1: e 2:	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all other	r emissions	, the limit was	s set 30dB below
	level of the f	undamental	and measure	ed in 100kHz		For all othe	r emissions	a, the limit was	s set 30dB below

EMC Test Data

Client:	Intel	Job Number:	J70762
Model	512an HMW	T-Log Number:	T71373
MOUEI.	512411 111111	Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 5725 - 5850 MHz) Radiated Spurious Emissions - 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.

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:	15-25 °C
	Rel. Humidity:	35-55 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	802.11a Chain A	5745 MHz 5785 MHz 5825 MHz	26.5 28.0 26.5	17.5 17.8 17.3	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	50.1dBµV/m @ 3000.4MHz (-3.9dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

6	Elli	ott						EIV/	C Test D
Client:								Job Number:	J70762
		,						Log Number:	
Model:	512an HMW	I						ů.	Briggs / Eriksen
Contact:	Robert Paxr	nan							
Standard:	RSS 210 / F	CC 15.407 L	JNII (Radiate	ed)				Class:	N/A
Dun #1∙ Da	diated Sour	ious Emissi	ons 1000 -	18000 MH7	Operating N	lada: 802 11	a Chain A		
	Date of Test:		0113, 1000 -	10000 10112.		onfig. Used:			
	est Engineer:		20			fig Change:			
	est Location:							om Host Syst	om
					L	or voltage.	r uweieu in	uni nosi Sysi	CIII
Note 1:						For all othe	er emissions	, the limit was	s set 30dB below t
		undamental							
Note 2:	Signal is not	in a restricte	ed band but t	he more stri	ngent restricte	ed band limit	was used.		
Run #1a: T	ow Channel	@ 5745 MH	Z						
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
3000.330	48.0	V	54.0	-6.0	AVG	251	1.0	Note 2	
11488.020	43.1	V	54.0	-10.9	AVG	232	1.0		
22979.580	39.5	V	54.0	-14.5	AVG	317	1.0		
3000.330	51.6	V	74.0	-22.4	PK	251	1.0	Note 2	
11488.020	54.3	V	74.0	-19.7	PK	232	1.0		
22979.580	52.2	V	74.0	-21.8	PK	317	1.0		
Run #1h∙ (Center Chan	nel @ 5785 l	MH7						
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
3000.420	50.1	V	54.0	-3.9	AVG	270	1.0	Note 2	
5563.280	43.0	V	54.0	-11.0	AVG	149	1.0	Note 2	
11650.130		V	54.0	-13.4	AVG	316	1.0		
3000.420	53.3	V	74.0	-20.7	PK	270	1.0	Note 2	
5563.280	54.5	V	74.0	-19.5	PK	149	1.0	Note 2	
11650.130	52.7	V	74.0	-21.3	PK	316	1.0		
Run #1c· H	igh Channel	@ 5825 MH	7						
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
3000.360	42.8	V	54.0	-11.2	AVG	302	1.0	Note 2	
5578.220	41.8	V	54.0	-12.2	AVG	155	1.0	Note 2	
11652.980	40.2	V	54.0	-13.8	AVG	324	1.0		
3000.360	48.2	V	74.0	-25.8	PK	302	1.0	Note 2	
5578.220	54.8	V	74.0	-19.2	PK	155	1.0	Note 2	
11652.980	52.2	V	74.0	-21.8	PK	324	1.0		

EMC Test Data

Client:	Intel	Job Number:	J70762
Model	512an HMW	T-Log Number:	T71373
MOUEI.	512411 111111	Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	N/A

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

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. 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:	15-25 °C
	Rel. Humidity:	35-55 %

Summary of Results

Measurements for n modes performed with the device operating in 20MHz mode as this produced higher emissions than 40MHz mode.

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n-20	5745	26.5	16.5	Radiated Emissions,	FCC Part 15.209 /	55.6dBµV/m @
Id	Chain A	5745	20.0	10.0	1 - 40 GHz	15.247(c)	3000.4MHz (-6.4dB)
1b	802.11n-20	5785	27.5	16.5	Radiated Emissions,	FCC Part 15.209 /	55.7dBµV/m @
U	Chain A	5765	27.3	10.0	1 - 40 GHz	15.247(c)	3000.3MHz (-8.2dB)
1c	802.11n-20	5825	28.5	16.5	Radiated Emissions,	FCC Part 15.209 /	46.0dBµV/m @
IC.	Chain A	5625	20.0	10.0	1 - 40 GHz	15.247(c)	11650.6MHz (-8.0dB)

Modifications Made During Testing

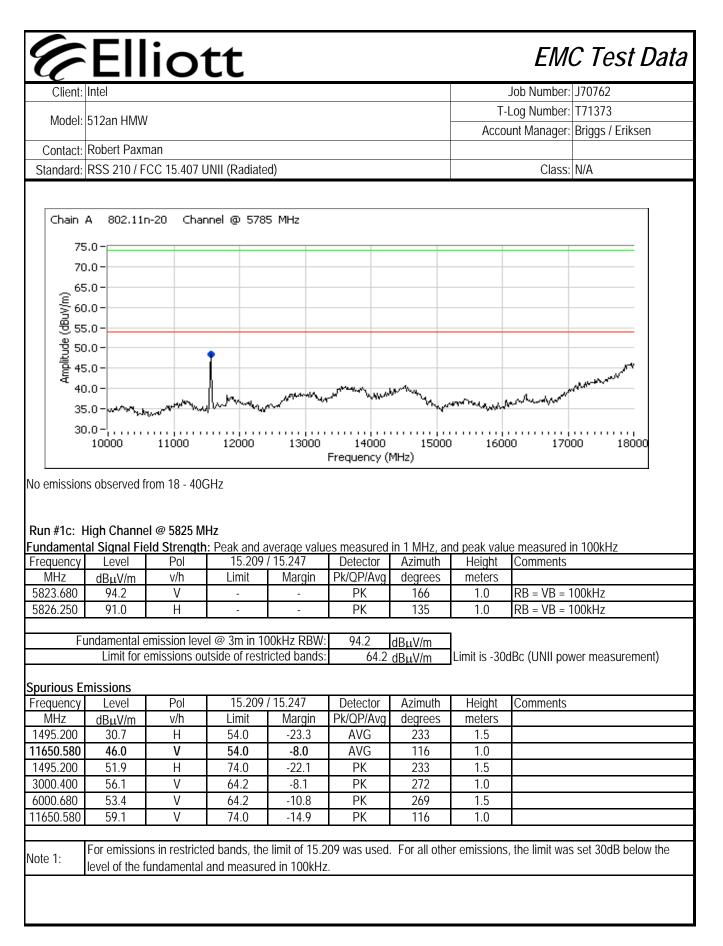
No modifications were made to the EUT during testing

Deviations From The Standard

Client: Intel

Client			נד						
Clicht.	Intel							Job Number:	J70762
Madal	512an HMW	I					T-	Log Number:	T71373
wouer.							Accou	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxr	nan							
Standard:	RSS 210 / F	CC 15.407 L	JNII (Radiate	d)				Class:	N/A
I T€ T≬	Date of Test: est Engineer: est Location:	04/17/2008 Ben Jing FT Chambe	r # 4	40000 MHz.	Operating M	lode: 802.11	la Chain A		
	Low Channe					¦n 1 MI I≂ os	مط محماد برمان	a maaaurad i	n 100// In
		Pol		/ 15.247	Detector	Azimuth	Height	e measured i Comments	
Frequency MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
5746.290	92.0	V	-	-	PK	172	1.0	RB = VB = 1	100kHz
5743.690	87.4	H	-	-	PK	172	1.0	RB = VB = 1	
07 10:070	07.1					120	110		
F	undamental e Limit for e	emission leve emissions ou				dBµV/m dBµV/m	Limit is -300	dBc (UNII pov	ver measurement)
					•		-	, i ⁻	7
Spurious E	missions								
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
1494.480	32.0	H	54.0	-22.0	AVG	249	1.0		
1747.820	30.8	V	54.0	-23.2	AVG	108	1.5		
	40.6	V	54.0	-13.4	AVG	324	1.5		
7659.930	40 7	V	54.0	-13.3	AVG	231	1.0		
11489.770	40.7			-24.1	PK	249	1.0 1.5		
11489.770 1494.480	49.9	Н	74.0						
11489.770 1494.480 1747.820	49.9 51.1	H V	74.0	-22.9	PK	108		Nata 0	
11489.770 1494.480 1747.820 3000.360	49.9 51.1 55.6	H V V	74.0 62.0	-22.9 -6.4	PK	272	1.0	Note 2	
11489.770 1494.480 1747.820 3000.360 6000.740	49.9 51.1 55.6 53.6	H V V V	74.0 62.0 62.0	-22.9 -6.4 -8.4	PK PK	272 268	1.0 1.5	Note 2 Note 2	
11489.770 1494.480 1747.820 3000.360 6000.740 7659.930	49.9 51.1 55.6 53.6 49.2	H V V V V	74.0 62.0 62.0 74.0	-22.9 -6.4 -8.4 -24.8	PK PK PK	272 268 324	1.0 1.5 1.5		
11489.770 1494.480 1747.820 3000.360	49.9 51.1 55.6 53.6 49.2 57.0	H V V V V V	74.0 62.0 62.0 74.0 74.0	-22.9 -6.4 -8.4 -24.8 -17.0	PK PK PK PK	272 268 324 231	1.0 1.5 1.5 1.0	Note 2	
11489.770 1494.480 1747.820 3000.360 6000.740 7659.930	49.9 51.1 55.6 53.6 49.2 57.0	H V V V V V s in restricted	74.0 62.0 62.0 74.0 74.0 ed bands, the	-22.9 -6.4 -8.4 -24.8 -17.0	PK PK PK PK 09 was used.	272 268 324 231	1.0 1.5 1.5 1.0	Note 2	s set 30dB below the

Client:	Intel							Job Number:	J70762
Madal							T-	Log Number:	T71373
wodel:	512an HMW						Acco	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxm	ian							
tandard:	RSS 210 / F(CC 15.407 U	NII (Radiate	d)				Class:	N/A
n #1b: (Center Chani	nel @ 5785 N	ИНz				1		
	al Signal Fie								n 100kHz
quency MHz	Level	Pol	15.209 /		Detector	Azimuth	Height	Comments	
83.700	dBµV/m 93.9	v/h V	Limit	Margin	Pk/QP/Avg PK	degrees 167	meters 1.0	RB = VB = 1	100kHz
83.700	89.1	H	-	-	PK	137	1.0	RB = VB = 1 RB = VB = 1	
55.710	07.1	11	_			157	1.0		TOORTIZ
F	undamental e	mission level	@ 3m in 10	0kHz RBW:	93.9	dBµV/m			
	Limit for e	missions out	side of restr	icted bands:	63.9	dBµV/m	Limit is -300	dBc (UNII pov	ver measurement)
quency	missions Level	Pol	15.209	/ 15 2/7	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
94.720	31.4	H	54.0	-22.6	AVG	248	1.5		
48.040	30.8	V	54.0	-23.2	AVG	112	1.5		
13.290	42.9	V	54.0	-11.1	AVG	144	1.0		
570.050	44.1	V	54.0	-9.9	AVG	204	1.0		
94.720	51.9	Н	74.0	-22.1	PK	248	1.5		
48.040	50.8	V	74.0	-23.2	PK	112	1.5		
00.300	55.7	V	63.9	-8.2	PK	275	1.0		estricted band
00.740	52.4	V	63.9	-11.5	PK	266	1.5	Not in a re	estricted band
13.290	50.6 57.4	V V	74.0 74.0	-23.4	PK PK	144 204	1.0		
570.050	57.4	V	74.0	-16.6	PK	204	1.0		
80 70 (ɯ/ʌnɡe 50 40	level of the function of the f	undamental a		ed in 100kHz		Impression			s set 30dB below th
20	1.0- 1000	2000	3000	4000		, , , , , 000 7 MHz)		000 90	00 10000



Elliott	E	MC Test Dat
Client: Intel	Job Number:	
Model: 512an HMW	T-Log Number:	T71846
	Account Manager:	Briggs / Eriksen
Contact: Robert Paxman		-
Emissions Standard(s): RSS 210 / FCC 15.407 UNII (Radiated)	Class	DTS
Immunity Standard(s): -	Environment	-
EMC Test Data - DTS Radi	ated Emissi	ons
Universe PIFA Ar		
For The		
Intel		
Model		
512an HMW		
Date of Last Test: 6/10/20	008	

EMC Test Data

V			
Client:	Intel	Job Number:	J70762
Model:	512an HMW	T-Log Number:	T71846
		Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	DTS

Radiated Emissions - Receiver Spurious (Universe Antenna)

Test Specific Details

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

General Test Configuration

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

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, <u>and</u> manipulation of the EUT's interface cables.

Ambient Conditions:	Temperature:	15-25 °C
	Rel. Humidity:	35-55 %

Summary of Results

Run #	Channel	Chain	Test Performed	Limit	Result	Margin
1a 2437 N		A, B	RE, 1000 - 7500 MHz, Maximized	RSS GEN	Pass	48.1dBµV/m @
	2437 IVII IZ	А, D	Emissions	N33 OEN	F 033	3000.4MHz (-5.9dB)
1b 5785	5785 MHz	Iz A, B	RE, 1000 - 18000 MHz, Maximized	RSS GEN	Pass	52.2dBµV/m @
U	3763 WITZ		Emissions	K33 GEN	rass	3000.3MHz (-1.8dB)
1c	2437 MHz	A+B	RE, 1000 - 7500 MHz, Maximized	RSS GEN	Pass	49.8dBµV/m @
IC.			Emissions	K33 GEN	rass	3000.3MHz (-4.2dB)
1d	5785 MHz	A+B	RE, 1000 - 18000 MHz, Maximized	RSS GEN	Pass	50.6dBµV/m @
1d		A+D	Emissions	DNS R55 GEN		3000.4MHz (-3.4dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

	Ellio	JLL	I						C Test I
Client:								Job Number:	J70762
Madal		1					Ţ.	Log Number:	T71846
iviodel:	512an HMW	I					Ассо	unt Manager:	Briggs / Erikse
Contact:	Robert Paxr	nan				0			
	RSS 210 / F		7 UNII (Radia	ited)				Class:	DTS
				1	eceiver Active	2			
		0		z, olingio re					
	Date of Test:					onfig. Used:			
	est Engineer:					fig Change:			L
	est Location:	Fremont (namber #4		E	UT Voltage:	Powered F	rom Host Sys	tem
	Ero		nao	Toot F	Distance	Limit D	istanco	Extrancla	tion Eactor
		quency Ra 0 - 18000		Test L	3		istance 3	1	tion Factor .0
	100			1	J		J	0	.0
eceiver T	uned to 2437	7 MHz - Ch	ain A active	<u>)</u>					
Frequency	Level	Pol	-	, GEN	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
3000.410	48.1	V	54.0	-5.9	AVG	261	1.0		
3000.420	44.2	Н	54.0	-9.8	AVG	186	1.0		
6000.750	42.7	V	54.0	-11.3	AVG	255	1.4		
6000.790	42.0	Н	54.0	-12.0	AVG	150	1.1		
6498.610	37.1	Н	54.0	-16.9	AVG	223	1.0		
6498.640	46.5	V	54.0	-7.5	AVG	177	1.1		
3000.410	51.6	V	74.0	-22.4	PK	261	1.0		
3000.420	48.6	Н	74.0	-25.4	PK	186	1.0		
6000.750	47.8	V	74.0	-26.2	PK	255	1.4		
6000.790	47.7	Н	74.0	-26.3	PK	150	1.1		
6498.610	44.8	Н	74.0	-29.2	PK	223	1.0		
6498.640	50.1	V	74.0	-23.9	PK	177	1.1		
、 ·									
	uned to 2437		r		Detector	A inau th	Lloight	Commonto	
Frequency MHz		Pol v/h	Limit	GEN	Detector Pk/QP/Avg	Azimuth degrees	Height	Comments	
3000.350	dBµV/m 46.4	V	54.0	Margin -7.6	AVG	174	meters 1.0		
3000.350	40.4 45.3	V H	54.0 54.0	-7.0	AVG	174	1.0		
6000.680	45.5	V	54.0	-0.7	AVG	102	1.2		
6000.720	44.2	H	54.0	-9.0	AVG	102	1.0		
	50.8	V	74.0	-12.2	PK	149	1.0	<u> </u>	
	49.5	H	74.0	-23.2	PK	174	1.0	1	
3000.350	49 1		1	Î	PK	102	1.2	1	
	49.5	V	74.0	-26.1	PK	107	1.0		

6	Ellic	ott	· •					EM	C Test Da
Client:								Job Number:	J70762
	540 1000					T-	Log Number:	T71846	
Model:	512an HMW	I				3	Briggs / Eriksen		
Contact:	Robert Paxn	nan						5	
			7 UNII (Radia	ited)				Class:	DTS
			nain A active					010001	5.0
Frequency	Level	Pol		GEN	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
1496.370	29.2	V	54.0	-24.8	AVG	141	1.0		
3000.360	46.4	V	54.0	-7.6	AVG	174	1.0		
3000.370	46.0	Н	54.0	-8.0	AVG	182	1.2		
6000.730	45.0	V	54.0	-9.0	AVG	104	1.0		
6000.760	42.0	Н	54.0	-12.0	AVG	150	1.0		
7713.360	34.1	Н	54.0	-19.9	AVG	178	1.0		
1496.370	49.6	V	74.0	-24.4	PK	141	1.0		
3000.360	50.2	V	74.0	-23.8	PK	174	1.0		
3000.370	50.3	Н	74.0	-23.7	PK	182	1.2		
6000.730	48.8	V	74.0	-25.2	PK	104	1.0		
					-				
//13.360	45.9	H	/4.0	-28.1	PK	1/8	1.0		
6000.760 7713.360 Receiver Tu	48.0 45.9 uned to 5785	H	74.0 74.0 nain B active	-26.0 -28.1	РК РК РК	150 178	1.0 1.0 1.0		
requency		Pol		GEN	Detector	Azimuth	Height	(Comments
	dDuV/m	v/h	Limit	Margin	Dk / OD / Ava	dogroos	motors		

Frequency	Level	Pol	RSS	GEN	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3000.310	52.2	٧	54.0	-1.8	AVG	272	1.0	
6000.750	47.6	V	54.0	-6.4	AVG	102	1.0	
3000.310	55.4	V	74.0	-18.6	PK	272	1.0	
6000.750	51.1	V	74.0	-22.9	PK	102	1.0	

EMC Test Data

Client:	Intel							Job Number:	J70762
Maria I.		1					T	Log Number:	T71846
wodei:	512an HMW	1					Ассо	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxn	nan							
Standard:	RSS 210 / F	CC 15.407	⁷ UNII (Radia	ted)				Class:	DTS
un #2: Ra	diated Emis	sions Abo	ove 1000 MH	Iz, Receive	Mode, Both	Chains Activ	/e		
	Date of Test:					onfig. Used:			
	st Engineer:		lenihe			ifig Change:			
	est Location:				F	UT Voltage	Powered F	rom Host Sys	tem
	2004.011	i romoni e			_	e renager	i owered i	rom nost ogs	
eceive Mo	de, EUT Tur	ned to 243	7 MHz - All (chains activ	/e				
requency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	1	
3000.330	49.8	V	54.0	-4.2	AVG	267	1.3		
6000.750	48.4	V	54.0	-5.6	AVG	150	1.0		
6498.600	47.0	V	54.0	-7.0	AVG	162	1.0		
3000.310	46.2	Н	54.0	-7.8	AVG	183	1.0		
6000.820	44.4	Н	54.0	-9.6	AVG	52	1.0		
6498.680	38.1	Н	54.0	-15.9	AVG	204	1.0		
6000.750	53.4	V	74.0	-20.6	PK	150	1.0		
3000.330	52.9	V	74.0	-21.1	PK	267	1.3		
6000.820	51.6	Н	74.0	-22.4	PK	52	1.0		
3000.310	50.7	Н	74.0	-23.3	PK	183	1.0		
6498.600	50.5	V	74.0	-23.5	PK	162	1.0		
6498.680	45.9	Η	74.0	-28.1	PK	204	1.0		
Receiver Tu	uned to 5785	5 MHz - All	chains acti	ve					
Frequency	Level	Pol	RSS	GEN	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
3000.380	50.6	V	54.0	-3.4	AVG	267	1.3		
3000.340	47.9	Н	54.0	-6.1	AVG	184	1.0		
7713.250	47.4	V	54.0	-6.6	AVG	205	2.0		
7713.250	38.9	Н	54.0	-15.1	AVG	136	1.0		
3856.590	36.6	V	54.0	-17.4	AVG	207	1.0		
3856.700	35.5	Н	54.0	-18.5	AVG	131	1.0		
3000.380	53.8	V	74.0	-20.2	PK	267	1.3		
7713.250	53.0	V	74.0	-21.0	PK	205	2.0		
3000.340	52.4	H	74.0	-21.6	PK	184	1.0		
7713.250	48.6	H	74.0	-25.4	PK	136	1.0		
	45.0	V	74.0	-29.0	PK PK	207 131	1.0 1.0		
3856.590 3856.700	44.2	Н	74.0	-29.8					

End Contact: Intel Job Number: J70762 Model: 512an HMW T-Log Number: T71846 Contact: Robert Paxman Account Manager: Briggs / Eriksen Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - 802.11b Universe Antenna

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: 5/29/2008 Test Engineer: Rafael Varelas Test Location: Fremont 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:	19.2 °C
	Rel. Humidity:	41 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11b	1 2412MHz	23.5	16.7	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	46.0dBµV/m @ 2387.0MHz (-8.0dB)
1a	802.11b Chain A	1 (2412)	23.5	16.7	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	44.6dBµV/m @ 4824.0MHz (-9.4dB)
1b	802.11b Chain A	6 (2437)	25.5	18.3	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	63.9dBµV/m @ 9749MHz (-7.2dB)
1c	802.11b	11 2462MHz	24.5	16.8	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	45.8dBµV/m @ 2483.5MHz (-8.2dB)
1c	802.11b Chain A	11 (2462)	24.5	16.8	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	50.1dBµV/m @ 4924MHz (-3.9dB)

Modifications Made During Testing

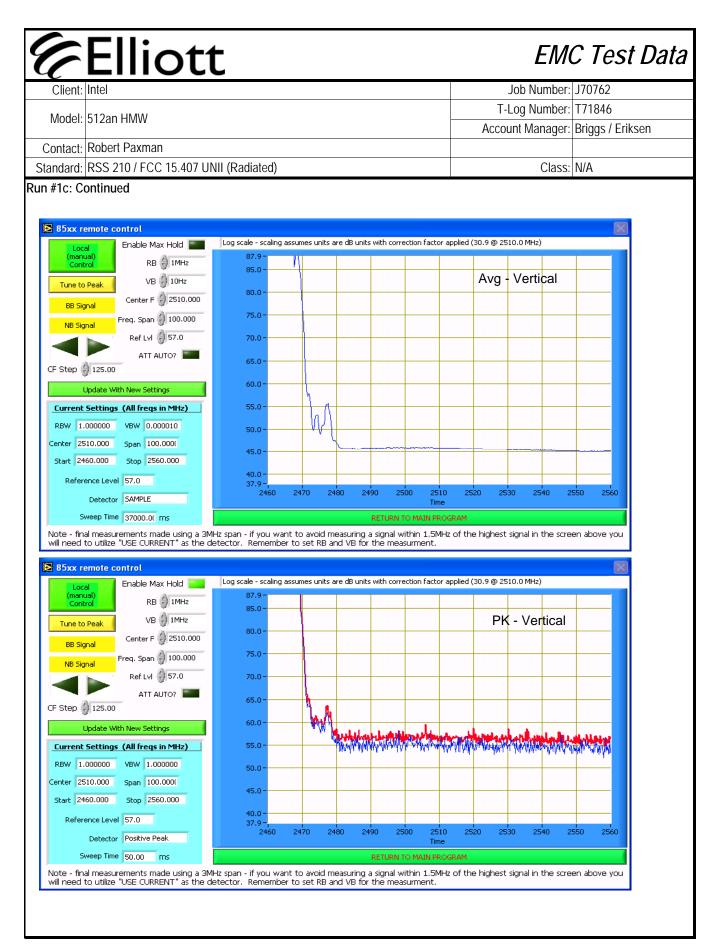
No modifications were made to the EUT during testing

Deviations From The Standard

Client: I Model: !	Intel								
Model: §								Job Number:	J70762
Model:	F40	,					Т	-Log Number:	T71846
	512an HMW	/						U	Briggs / Erikse
Contact [.]	Robert Paxr	nan					7100	sunt managon	Driggo / Erikou
		CC 15.407 L	INII (Padiate	d)				Class:	NI/A
			,	,		000 441 0		Class.	N/A
				dges. Oper	rating Mode:	802.11b - C	hain A		
		@ 2412 MH			1/7	/f		-)	
	wer Setting:	23.5		rage power:		(for reference	ce purposes	5)	
	Level	e ld Strength Pol			Detector	Azimuth	Hoight	Comments	
Frequency MHz		v/h	Limit	Margin	Pk/QP/Avg	degrees	Height meters	Comments	
2409.600	<u>dBμV/m</u> 97.0	V	- LIIIII	iviaryiri	PK	139	1.1	RB = VB = ´	100KHz
2409.000	99.2	H	-	-	PK	254	1.1	RB = VB = T	
Band Edge S			-	-	ΓN	204	1.0	ND = VD =	TUUKITZ
Frequency	Level	Pol	15 209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
2387.000	<u>46.0</u>	H	54.0	-8.0	Avg	254	1.0	1	
2387.020	45.6	V	54.0	-8.4	Avg	139	1.0		
2388.380	58.4	H	74.0	-15.6	PK	254	1.0		
2389.670	58.4	V	74.0	-15.6	PK	139	1.1		
Tune to Pe BB Signa		F 2360.000	80.0				Avg - Hor	izontal	
BB Signa NB Signa CF Step	tettings (All free (All All All All All All All All All All	n () 100.000 A () 57.0 F AUTO?	75.0 70.0 65.0 60.0 55.0 50.0				Avg - Hor		
BB Signa NB Signa CF Step () CF Step () Current Se RBW 1.00	Treq. Spa Ref Lv AT 125.00 date With New Se ettings (All free 00000 VBW 0 0.000 Span 1	n () 100.000 () () 57.0 r AUTO? () ettings gs in MHz) 0.000010	75.0 70.0 65.0 55.0 55.0 50.0				Avg - Hor		
BB Signa NB Signa CF Step () CF Step () Current Se RBW 1.00 Center 2360 Start 2310	req. Spa Ref Lv AT 125.00 date With New Se ettings (All free 00000 VBW 0 0.000 Span 1	n () 100.000 () () 57.0 T AUTO? ettings gs in MHz) 0.000010 1.00.0001	75.0 70.0 65.0 55.0 55.0 45.0 45.0 38.0 -						
BB Signa NB Signa CF Step () CF Step () Current Se RBW 1.00 Center 2360 Start 2310 Reference	a Freq. Spa Ref Lv AT 125.00 date With New Se ettings (All free 0.000 VBW C 0.000 Span 1 0.000 Stop 2	n () 100.000 A () 57.0 T AUTO? ettings as in MHz) 0.000010 1.00.0001 2410.000	75.0 70.0 65.0 55.0 55.0 50.0 45.0	0 2320 2	2330 2340	2350 2360 Time		izontal	00 2410
BB Signa NB Signa CF Step () Current Se RBW 1.00 Center 2360 Start 2310 Reference D	titings (All free boood vew c boood vew c boood span 1 boood stop 2 ce Level 57.0	n () 100.000 () () 57.0 T AUTO? ettings gs in MHz) 0.000010 100.0000 2410.000	75.0 70.0 65.0 55.0 55.0 45.0 45.0 38.0 -	0 2320 2		2350 2360	2370 23		00 2410

	ntel	ot	<u> </u>					Job Number:	J70762
								Log Number:	
Model: !	512an HMW							•	Briggs / Eriksen
Contact:	Robert Paxn	nan						0	
standard:	RSS 210 / F	CC 15.407 U	INII (Radiate	d)				Class:	N/A
n #1a: Co	ontinued								
В 85xx ге	mote control								
Loca		Max Hold 📃		aling assumes uni	ts are dB units with	correction factor	applied (31.0 @ 23	360.0 MHz)	
(manu Contr		RB 💮 1MHz	88.0 - 85.0 -						
Tune to	Peak	VB 🌖 1MHz	80.0-				PK - Ho	rizontal	
BB Sign	Center	F							
NB Sign	Freq. Sp	an 쉬 100.000	75.0-						
	Ref L	vl 👌 57.0	70.0-					<u> </u>	
CF Step 🦂		T AUTO?	65.0-					⊢ ∧	
<u> </u>		ottinge	60.0 -						<u> </u>
	pdate With New S		55.0-	wild get the set		and a state of the	nt the grant with	a start and a	
RBW 1.0	Settings (All fre	1.000000		ih Aldava Neven uddhada	divinitional discontration	whe accessive allowed the	andra a dhen han h	dNe ones hande of the	
Center 236		100.0000	50.0-						
Start 231		2410.000	45.0 -						
		2410.000	40.0-						
			40.0-					+	
	nce Level 57.0		38.0-	10 2320	2330 2340	2350 2360) 2370 23	380 2390 2	2400 2410
	Detector Positiv		38.0-	10 2320		Time		380 2390 2	2400 2410
54	Detector Positiv veep Time 50.00	ms	38.0- 23		RETU	Time JRN TO MAIN PRO	GRAM		
Sw Note - fina	Detector Positiv	ms made using a 3	38.0- 23 MHz span - if you	u want to avoid	RETU	Time JRN TO MAIN PRO hal within 1.5MH	GRAM	t signal in the scre	
Sw Note - fina will need to	Detector Positiv veep Time 50.00 I measurements o utilize "USE Cl	ms made using a 3	38.0 - 23 MHz span - if you detector. Reme	u want to avoid ember to set RB	RETU measuring a sigr and VB for the	Time JRN TO MAIN PRO nal within 1.5MH measurment.	GRAM		
Sw Note - fina will need to	Detector Positiv veep Time 50.00 I measurements o utilize "USE Cl ndamental 6	ms made using a 3 JRRENT" as the	38.0-23 MHz span - if you detector. Reme detector. Reme	u want to avoid ember to set RE DOKHz RBW:	RETL measuring a sigr 3 and VB for the 99.2	Time JRN TO MAIN PRO nal within 1.5MH measurment. dBµV/m	GRAM	t signal in the scre	
Note - fina will need to Fu	Detector Positiv reep Time 50.00 I measurements o utilize "USE CU ndamental e Limit for e	ms made using a 3 JRRENT" as the mission leve	MHz span - if you detector. Rema detector. Rema detector. remains detector. Remains	u want to avoid ember to set RE DOKHZ RBW: icted bands:	RETL measuring a sigr and VB for the 99.2	Time JRN TO MAIN PRO nal within 1.5MH measurment.	GRAM	t signal in the scre dBc (UNII pov	een above you
Note - fina will need to Fu Furious En requency	Detector Positiv reep Time 50.00 I measurements o utilize "USE CU ndamental e Limit for e hissions Level	ms made using a 3 JRRENT" as the mission leve emissions ou Pol	38.0-23 MHz span - if you detector. Reme I @ 3m in 10 tside of restr 15.209	u want to avoid ember to set RE DOKHZ RBW: icted bands: / 15.247	RETL measuring a sign and VB for the 99.2 69.2 Detector	Time JRN TO MAIN PRO nal within 1.5MH measurment. dBµV/m dBµV/m Azimuth	GRAM	t signal in the scre	een above you
Note - fina will need to Fu purious En requency MHz	Detector Positiv reep Time 50.00 I measurements o utilize "USE CU ndamental e Limit for e nissions Level dBµV/m	ms made using a 3 JRREINT" as the emission leve emissions ou Pol V/h	MHz span - if you detector. Reme detector. Reme det	u want to avoid ember to set RE DOKHZ RBW3 icted bands / 15.247 Margin	RETL measuring a sign and VB for the 99.2 69.2 0.2 Detector Pk/QP/Avg	Time JRN TO MAIN PRO hal within 1.5MH measurment. dBµV/m dBµV/m Azimuth degrees	GRAM Iz of the highest Limit is -30 Height meters	t signal in the scre dBc (UNII pov	een above you
Note - fina will need to Fu urious En equency MHz 000.000	Detector Positiv reep Time 50.00 Il measurements o utilize "USE CU ndamental e Limit for e nissions Level dBµV/m 26.2	ms made using a 3 URRENT" as the emission leve emissions ou Pol V/h H	MHz span - if you detector. Remaind el @ 3m in 10 tside of restr 15.209 . Limit 54.0	u want to avoid ember to set RE DOKHZ RBW: icted bands: / 15.247 Margin -27.8	RETL measuring a sign and VB for the 99.2 69.2 69.2 Detector Pk/QP/Avg AVG	Time JRN TO MAIN PRO nal within 1.5MH measurment. dBµV/m dBµV/m Azimuth degrees 170	IGRAM Iz of the highest Limit is -30 Height meters 1.0	t signal in the scre dBc (UNII pov	een above you
Note - fina will need to Fu urious En equency MHz 000.000 824.000	Detector Positiv veep Time 50.00 I measurements o utilize "USE CU ndamental e Limit for e nissions Level dBµV/m 26.2 44.6	ms made using a 3 JRRENT" as the emission leve emissions ou Pol V/h H V	38.0-23 MHz span - If you detector. Rema detector. Rema detector. 10 15.209 Limit 54.0 54.0 54.0	u want to avoid ember to set RE D0kHz RBW: icted bands: / 15.247 Margin -27.8 -9.4	RETL measuring a sign and VB for the 99.2 69.2 Detector Pk/QP/Avg AVG AVG	Time JRN TO MAIN PRO hal within 1.5MH measurment. dBµV/m dBµV/m Azimuth degrees 170 200	Iz of the highest Limit is -30 Height neters 1.0 1.6	t signal in the scre dBc (UNII pow Comments	een above you
Sw Note - fina will need to Fu purious En requency MHz 000.000 824.000 742.500	Detector Positiv reep Time 50.00 I measurements o utilize "USE CU ndamental e Limit for e nissions Level dBµV/m 26.2 44.6 49.2	ms made using a 3 JRRENT" as the mission leve emissions ou Pol V/h H V V	38.0-23 MHz span - if you detector. Remo i @ 3m in 10 tside of restr 15.209 Limit 54.0 54.0 69.2	u want to avoid ember to set RE D0kHz RBW: icted bands: / 15.247 Margin -27.8 -9.4 -20.0	RETL measuring a sign and VB for the 99.2 69.2 Detector Pk/QP/Avg AVG AVG Peak	Time JRN TO MAIN PRO hal within 1.5MH measurment. dBµV/m dBµV/m Azimuth degrees 170 200 238	Limit is -30 Height Meters 1.0 1.6 1.3	dBc (UNII pov Comments	een above you
Note - final will need to Fu Durious En requency MHz 000.000 824.000 742.500 998.330	Petector Positiv reep Time 50.00 I measurements o utilize "USE CU ndamental e Limit for e nissions Level dBµV/m 26.2 44.6 49.2 49.5	ms made using a 3 JRRENT" as the mission leve emissions ou Pol V/h H V V V	38.0-23 MHz span - if you detector. Remo detector. Remo detector. 10 15.209 / Limit 54.0 54.0 69.2 69.2	u want to avoid ember to set RE DOKHZ RBW: icted bands: / 15.247 Margin -27.8 -9.4 -20.0 -19.7	RETL measuring a sign and VB for the 99.2 69.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0	Time JRN TO MAIN PRO hal within 1.5MH measurment. dBµV/m dBµV/m Azimuth degrees 170 200 238 260	Limit is -30 Height neters 1.0 1.6 1.3 1.3	dBc (UNII pov Comments Note 2 Note 2	een above you
Note - fina will need to Fu purious En requency MHz 000.000 824.000 742.500 998.330 235.000	Detector Positiv reep Time 50.00 I measurements o utilize "USE CU ndamental e Limit for e nissions Level dBμV/m 26.2 44.6 49.2 49.5 44.2	ms made using a 3 JRRENT" as the mission leve emissions ou Pol V/h H V V	38.0-23 MHz span - if you detector. Reme detector.	u want to avoid ember to set RE DOkHz RBW: icted bands: / 15.247 Margin -27.8 -9.4 -20.0 -19.7 -25.0	RETL measuring a sign and VB for the 99.2 69.2 Detector Pk/QP/Avg AVG AVG AVG Peak Peak Peak	Time JRN TO MAIN PRO nal within 1.5MH measurment. dBµV/m dBµV/m Azimuth degrees 170 200 238 260 226	GRAM Iz of the highest Limit is -30 Height meters 1.0 1.6 1.3 1.3 1.3 1.9	dBc (UNII pov Comments Note 2 Note 2 Note 2	een above you
Note - fina will need to Fu purious En requency MHz 000.000 824.000 742.500 998.330 235.000 644.170	Petector Positiv reep Time 50.00 I measurements o utilize "USE CU ndamental e Limit for e nissions Level dBµV/m 26.2 44.6 49.2 49.5	ms made using a 3 JRRENT" as the emission level emissions ou Pol V/h H V V V V V	38.0-23 MHz span - if you detector. Remo detector.	u want to avoid ember to set RE DOKHZ RBW: icted bands: / 15.247 Margin -27.8 -9.4 -20.0 -19.7	RETL measuring a sign and VB for the 99.2 69.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0	Time JRN TO MAIN PRO hal within 1.5MH measurment. dBµV/m dBµV/m Azimuth degrees 170 200 238 260	Limit is -30 Height neters 1.0 1.6 1.3 1.3	dBc (UNII pov Comments Note 2 Note 2	een above you
Note - fina will need to Fu purious En requency MHz 000.000 824.000 742.500 998.330 235.000 644.170 000.000	Detector Positiv reep Time 50.00 Il measurements o utilize "USE CU Indamental e Limit for e nissions Level dBµV/m 26.2 44.6 49.2 49.5 44.2 57.2	ms made using a 3 JRRENT" as the emission leve emissions ou Pol V/h H V V V V V V V	38.0-23 MHz span - if you detector. Remain detector. Rema	u want to avoid ember to set RE 00kHz RBW: icted bands: / 15.247 Margin -27.8 -9.4 -20.0 -19.7 -25.0 -12.0	RETL measuring a sign and VB for the 99.2 69.2 Detector Pk/QP/Avg AVG AVG AVG AVG Peak Peak Peak Peak	Time JRN TO MAIN PRO hal within 1.5MH measurment. dBµV/m dBµV/m Azimuth degrees 170 200 238 260 226 202	GRAM Iz of the highest Limit is -30 Height meters 1.0 1.6 1.3 1.3 1.3 1.9 1.6	dBc (UNII pov Comments Note 2 Note 2 Note 2	een above you
Sw Note - fina will need to Fu ourious En requency MHz 000.000 824.000 742.500 998.330 235.000 644.170 000.000 824.000	Detector Positiv reep Time 50.00 I measurements o utilize "USE CU ndamental e Limit for e nissions Level dBμV/m 26.2 44.6 49.2 49.5 44.2 57.2 39.0 48.1	ms made using a 3 JRRENT" as the mission leve emissions ou Pol V/h H V V V V V V V V V V	38.0-23 MHz span - if you detector. Remo detector.	u want to avoid ember to set RE DOKHZ RBW3 icted bands: / 15.247 Margin -27.8 -9.4 -20.0 -19.7 -25.0 -12.0 -35.0 -25.9	RETL measuring a sign and VB for the 99.2 69.2 Detector Pk/QP/Avg AVG AVG AVG Peak Peak Peak Peak Peak Peak Peak Peak	Ime IRN TO MAIN PRO hal within 1.5MH measurment. dBµV/m Azimuth degrees 170 200 238 260 226 202 170 202 170 200	AGRAM Iz of the highest Limit is -30 Height meters 1.0 1.6 1.3 1.3 1.3 1.9 1.6 1.0 1.6	t signal in the scree dBc (UNII pov Comments Note 2 Note 2 Note 2 Note 2 Note 2	wer measurement)
Sw Note - final will need to Fu ourious En requency MHz 000.000 824.000 742.500 998.330 235.000 644.170 000.000 824.000	Detector Positiv reep Time 50.00 Ineasurements outilize "USE CU Indamental e Limit for e hissions Level dBµV/m 26.2 44.6 49.2 49.5 44.2 57.2 39.0 48.1	ms made using a 3 JRRENT" as the emission level emissions ou Pol V/h H V V V V V V V V V V V v s in restricte	38.0-23 MHz span - if you detector. Reme detector.	u want to avoid ember to set RE 200kHz RBW3 icted bands: / 15.247 Margin -27.8 -9.4 -20.0 -19.7 -25.0 -12.0 -35.0 -25.9 e limit of 15.2	RETL measuring a sign and VB for the 99.2 69.2 Detector Pk/QP/Avg AVG AVG AVG Peak Peak Peak Peak Peak Peak Peak Peak	Ime IRN TO MAIN PRO hal within 1.5MH measurment. dBµV/m Azimuth degrees 170 200 238 260 226 202 170 202 170 200	AGRAM Iz of the highest Limit is -30 Height meters 1.0 1.6 1.3 1.3 1.3 1.9 1.6 1.0 1.6	t signal in the scree dBc (UNII pov Comments Note 2 Note 2 Note 2 Note 2 Note 2	een above you
Sw Note - fina will need to Fu Durious En requency MHz 000.000 824.000 742.500 998.330 235.000 644.170 000.000 824.000 644.170 000.000 824.000	Detector Positiv reep Time 50.00 Ineasurements outilize "USE CU Indamental e Limit for e hissions Level dBµV/m 26.2 44.6 49.2 49.5 44.2 57.2 39.0 48.1	ms made using a 3 prRENT" as the mission leve emissions ou Pol V/h H V V V V V V V V V V V v	38.0-23 MHz span - if you detector. Reme detector.	u want to avoid ember to set RE 200kHz RBW3 icted bands: / 15.247 Margin -27.8 -9.4 -20.0 -19.7 -25.0 -12.0 -35.0 -25.9 e limit of 15.2	RETL measuring a sign and VB for the 99.2 69.2 Detector Pk/QP/Avg AVG AVG AVG Peak Peak Peak Peak Peak Peak Peak Peak	Ime IRN TO MAIN PRO hal within 1.5MH measurment. dBµV/m Azimuth degrees 170 200 238 260 226 202 170 202 170 200	AGRAM Iz of the highest Limit is -30 Height meters 1.0 1.6 1.3 1.3 1.3 1.9 1.6 1.0 1.6	t signal in the scree dBc (UNII pov Comments Note 2 Note 2 Note 2 Note 2 Note 2	wer measurement)

	Elli		L						C Test D
Client	Intel							Job Number:	
Model	512an HMW	I					T-	Log Number:	T71846
							Ассо	unt Manager:	Briggs / Eriksen
Contact	Robert Paxr	nan							
Standard	RSS 210 / F	CC 15.407 L	JNII (Radiate	d)				Class:	N/A
Run #1b: (Center Chan	nel @ 2437	MHz						l .
P	ower Setting:	25.5	Ave	erage power:	18.3	(for reference	ce purposes)	
undamen	tal Signal Fie	eld Strength			n 100kHz			-	
Frequency		Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2438.930	98.7	V	-	-	PK	182	1.0	RB = VB = T	
2441.230	101.1	Н	-	-	PK	249	1.0	RB = VB = C	100KHz
F	undamental e	emission leve	el @ 3m in 1(00kHz RBW:	101.1	dBµV/m]		
	Limit for e	emissions ou	Itside of restr	icted bands:	71.1	dBµV/m	Limit is -30	dBc (UNII pov	wer measurement
purious E	missions								
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
1495.150	30.1	H	54.0	-23.9	AVG	226	1.0		
4874.010	46.0	V	54.0	-8.0	AVG	170	1.3		
7310.200	46.2	V	54.0	-7.8	AVG	224	1.9	Nata 2	
1742.500	50.2	H V	71.1	-20.9	Peak	244	1.3	Note 2	
2998.330 9749.170	51.0 63.9	V	71.1 71.1	-20.1 -7.2	Peak Peak	265 148	1.0 1.3	Note 2 Note 2	
1495.150	50.5	U H	74.0	-7.2	Peak	226	1.3	NULE 2	
4874.010	49.3	V	74.0	-24.7	PK	170	1.0		
7310.200	52.3	V	74.0	-21.7	PK	224	1.9		
	0210			2,			,		
1.4.4.1	For emission	ns in restricte	ed bands, the	limit of 15.2	09 was used	. For all othe	er emissions	s, the limit was	s set 30dB below
lote 1:	level of the f	undamental	and measure	ed in 100kHz					
lote 2:	Not in a rest	ricted band.							
	ligh Channel								
	ower Setting:	24.5		erage power:		(for reference	ce purposes)	
	tal Signal Fie	<u> </u>		measured II / 15.247	-	Azimuth	Lloight	Commonto	
Frequency MHz		Pol v/h	Limit		Detector Pk/QP/Avg	Azimuth	Height	Comments	
2466.730	dBμV/m 97.0	VII		Margin	PKOPIAVy	degrees 166	meters 1.0	RB = VB = ²	100KHz
2460.730	97.0	H	-	-	PK	314	1.0	RB = VB = T	
	Signal Field		l	l		T	1.0		
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
MHZ	45.8	V	54.0	-8.2	Avg	166	1.0	1	
MHz 2483.500	45.8	Н	54.0	-8.2	Avg	314	1.0		
2483.500		Н	74.0	-15.7	PK	314	1.0		
MHZ 2483.500 2484.660 2483.550	58.3	П	71.0						



Client:	Intel							Job Number:	J70762
Madal							T-	Log Number:	T71846
wodel:	512an HMW						Accou	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxm	nan							
Standard:	RSS 210 / F	CC 15.407 L	JNII (Radiate	ed)			Class:	N/A	
Run #1c: Co	ontinued								
Fi	undamental e	emission leve	el @ 3m in 10	OokHz RBW:	dBµV/m				
	Limit for e	emissions ou	utside of restr	icted bands:	67	dBµV/m	Limit is -300	dBc (UNII pov	ver measurement)
Spurious E	missions				-		_	-	
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
4923.980	50.1	V	54.0	-3.9	AVG	99	1.3		
7386.690	40.4	V	54.0	-13.6	AVG	218	1.3		
1742.500	51.2	Н	67.0	-15.8	Peak	242	1.3	Note 2	
2998.330	49.5	V	67.0	-17.5	Peak	264	1.3	Note 2	
9848.330	59.1	V	67.0	-7.9	Peak	147	1.3	Note 2	
4923.980	52.1	V	74.0	-21.9	PK	99	1.3		
7386.690	49.0	V	74.0	-25.0	PK	218	1.3		
Note 1:						. For all oth	er emissions	, the limit was	s set 30dB below the
	level of the f		and measure	ed in 100kHz					
Note 2:	Not in a rest	ricted band.							

Elliott EMC Test Data Client: Intel Job Number: J70762 Model: 512an HMW T-Log Number: T71846 Account Manager: Briggs / Eriksen

Contact: Robert Paxman Standard: RSS 210 / FCC 15.407 UNII (Radiated)

Class: N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - 802.11g Universe Antenna

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

Date of Test: 5/29/2008 Test Engineer: Rafael Varelas Test Location: Fremont Chamber #4

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:	19.2 °C
	Rel. Humidity:	41 %

Summary of Results

Spurious measurements on center channel only ... 802.11b mode had higher spurious emissions on top and bottom channels and represents worst case for those channels.

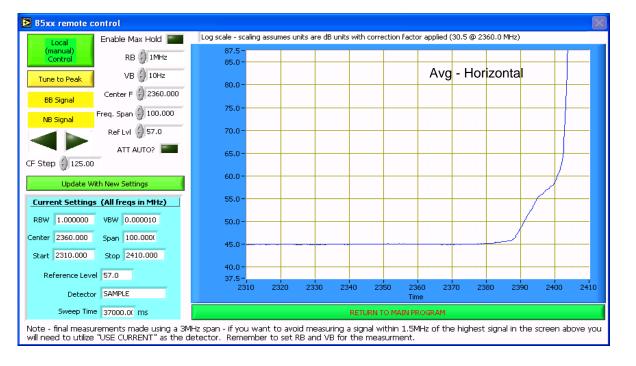
Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11g	1	25.0	14.0	Band Edge radiated	FCC Part 15.209 /	48.7dBµV/m @
Ta	Chain A	2412MHz	25.0	14.0	field strength	15.247(c)	2390.02MHz (-5.3dB)
1b	802.11g	6 (2127)	29.5	17.9	Radiated Emissions,	FCC Part 15.209 /	44.1dBµV/m @
u	Chain A 6 (2437) 20		29.0	17.9	1 - 26 GHz	15.247(c)	7307.19MHz (-9.9dB)
1b	802.11g	11	27.0	15.6	Band Edge radiated	FCC Part 15.209 /	48.9dBµV/m @
u	Chain A	2462MHz	27.0	10.0	field strength	15.247(c)	2483.5MHz (-5.1dB)

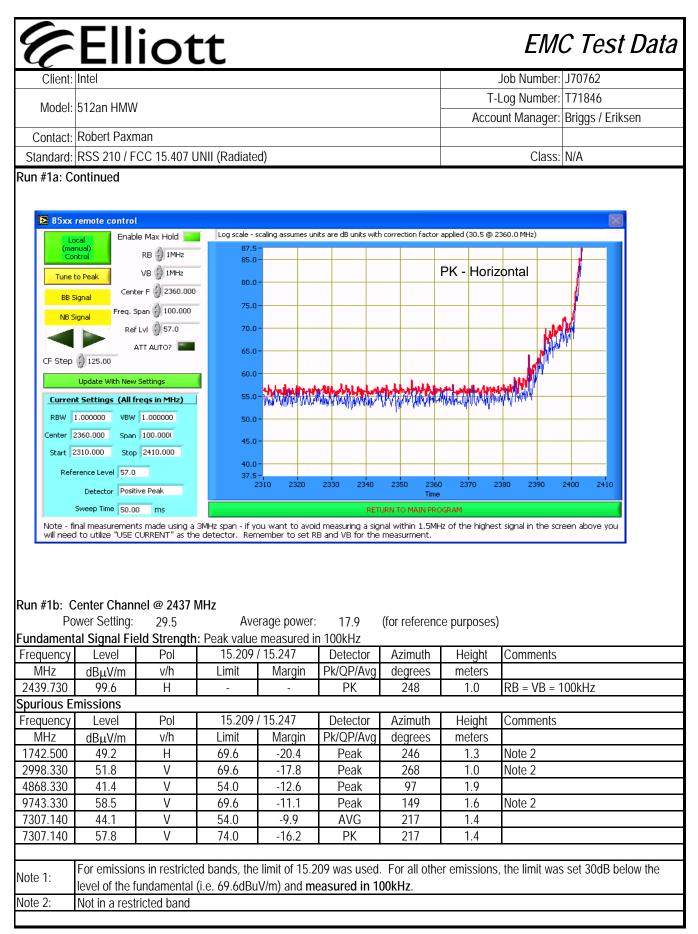
Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

<u> </u>									
Client:	Intel							Job Number:	J70762
Marial		,					T-	Log Number:	T71846
IVIODEI:	512an HMW	I					Acco	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxr	nan						5	
			JNII (Radiate	d)			Class:	N/A	
					ating Mada.	000.11~ 0	hain A	010331	
	ow Channel			ages. Oper	ating Mode:	802.11g - C	nain A		
				rado powori	14.0	lfor reference		N N	
	wer Setting:			rage power:		(for reference	e purposes,)	
			: Peak value			A - line uth	Lloight	Commonto	
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2416.270	91.9	V	-	-	AVG	136	1.0		
2416.270	102.2	V	-	-	PK	136	1.0		00//11-
2416.000	92.1	V	-	-	PK	136	1.0	RB = VB = 1	UUKHZ
2415.270	94.8	Н	-	-	AVG	250	1.0		
2415.270	103.1	Н	-	-	PK	250	1.0		
2410.970	94.9	Н	-	-	PK	250	1.0	RB = VB = 1	00KHz
ž	Signal Field								
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2389.950	46.7	V	54.0	-7.3	Avg	136	1.0		
2389.960	61.5	V	74.0	-12.5	PK	136	1.0		
		Н	54.0	-5.3	Avg	250	1.0		
2389.980	48.7		JT.U	5.5	g		-		





©Elliott FMC Test Data Job Number: J70762 Client: Intel T-Log Number: T71846 Model: 512an HMW Account Manager: Briggs / Eriksen Contact: Robert Paxman Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A Run #1c: High Channel @ 2462 MHz Power Setting: 27.0 Average power: (for reference purposes) 15.6 Fundamental Signal Field Strength: Peak value measured in 100kHz 15.209 / 15.247 Frequency Level Pol Detector Azimuth Heiaht Comments Limit Pk/QP/Avg MHz v/h Margin meters dBµV/m degrees 2468.930 94.7 V -AVG 167 1.0 103.1 V ΡK 1.0 2468.930 167 --94.4 V ΡK RB = VB = 100KHz2459.700 167 1.0 --2455.270 94.8 Η AVG 247 1.2 _ _ 2455.270 103.2 Η PΚ 247 1.2 ΡK 94.3 Η 247 1.2 RB = VB = 100KHz2455.800 --Band Edge Signal Field Strength Frequency Level Pol 15.209 / 15.247 Detector Azimuth Heiaht Comments v/h Limit Margin Pk/QP/Avg degrees meters MHz dB_µV/m

Avg

PΚ

Avq

PΚ

167

167

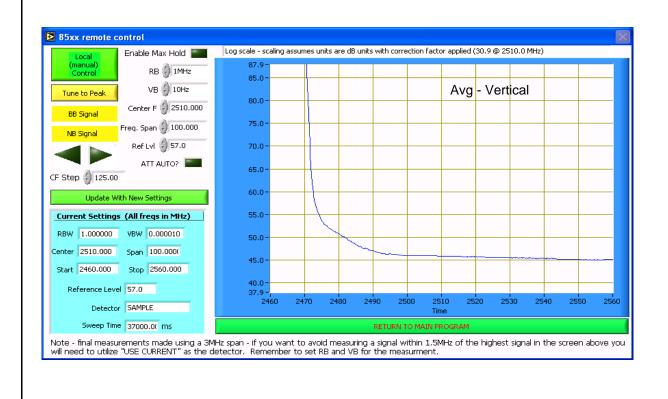
247

247

1.0

1.0

1.2



V

V

Н

Η

54.0

74.0

54.0

74.0

-5.1

-7.6

-5.1

-7.7

2483.500

2483.860

2483.580

2483.590

48.9

66.4

48.9

66.3

Emerge Elliott Emerge Last Client: Intel Job Number: J70762 Model: 512an HMW T-Log Number: T71846 Contact: Robert Paxman Briggs / Eriksen Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - 802.11n 20MHz Universe Antenna

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

Date of Test: 5/29/2008 Test Engineer: Rafael Varelas Test Location: Fremont Chamber #4

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:	19.2 °C
	Rel. Humidity:	41 %

Summary of Results

Spurious measurements are covered by measuremetns made on 802.11b and 802.11g modes as these two modes had higher emissions than both n modes when evaluated with the other antenna.

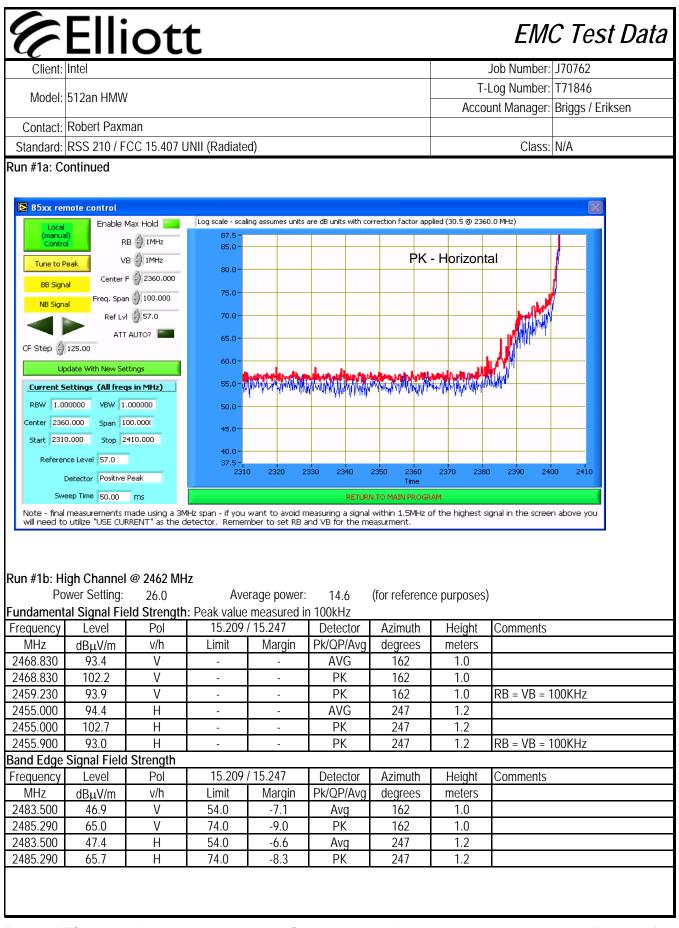
Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11g Chain A	1 2412MHz	25.5	14.3	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	51.2dBµV/m @ 2390.02MHz (-2.8dB)
1b	802.11g Chain A	11 2462MHz	26.0	14.6	Band Edge radiated field strength	FCC Part 15.209 / 15.247(c)	47.4dBµV/m @ 2483.5MHz (-6.6dB)

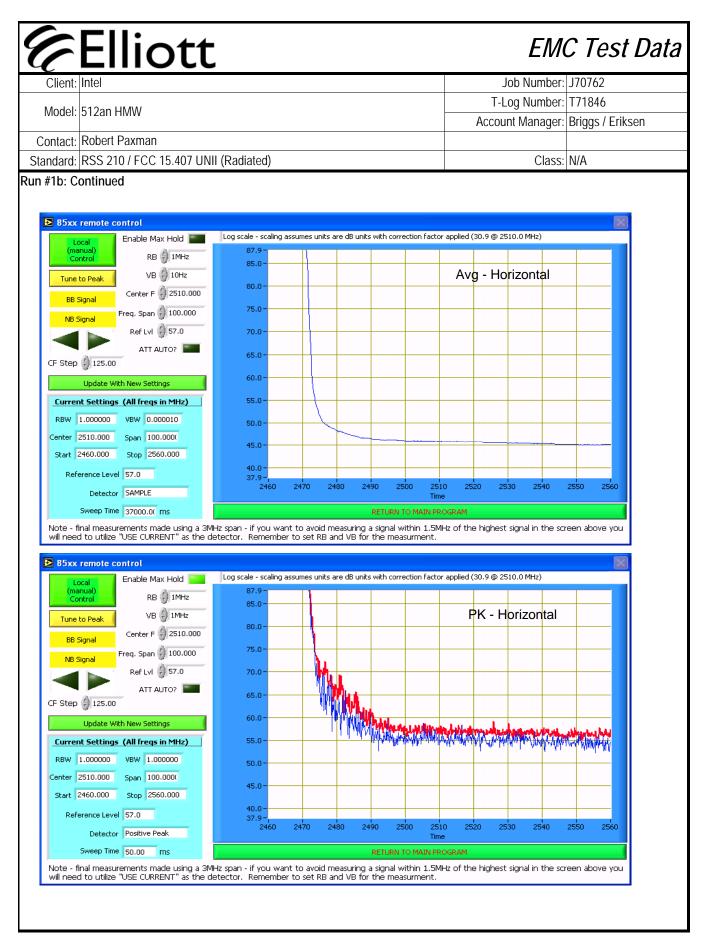
Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

Client:		-							1
-	Intel							Job Number:	J/0/62
Madal	E10on LINANA						T-	Log Number:	T71846
wodel:	512an HMW	I				ŀ	Acco	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxr	nan						<u>v</u>	
			JNII (Radiate	d)				Class:	N/A
					ating Mode:	002 11n 20M	/Uz Chair		
	•	@ 2412 MH		uyes. Oper	ating mode.	002.1111201			
	wer Setting:	25.5		rage power:	14.3	(for referenc	e nurnoses)	
	0		: Peak value	• •			c purposes)	
Frequency	Level	Pol	15.209		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2419.030	91.7	V	-	-	AVG	139	1.1		
2419.030	100.1	V	-	-	PK	139	1.1		
2419.800	90.8	V	-	-	Pk	139	1.1	RB = VB = 1	100KHz
2417.300	94.6	Н	-	-	AVG	247	1.0		
2417.300	103.3	Н	-	-	PK	247	1.0		
2414.070	95.8	Н	-	-	PK	247	1.0	RB = VB =	100KHz
<u>v</u>	Signal Field	<u> </u>	4			n		1-	
Frequency	Level	Pol	15.209		Detector	Azimuth	Height	Comments	
MHz	dBµV/m 48.9	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
	/12/0	V	54.0	-5.1	Avg	139	1.1		
2389.950			740	7 0					
2389.950 2389.960	66.8	V	74.0	-7.2	PK	139	1.1		
2389.950 2389.960 2389.950 2389.850			74.0 54.0 74.0	-7.2 -2.8 -5.0	PK Avg PK	247 247 247	1.1 1.0 1.0		
2389.950 2389.960 2389.950 2389.850	66.8 51.2 69.0 note control	V H H	54.0 74.0	-2.8 -5.0	Avg	247 247	1.0 1.0	0.0 MHz)	
2389.950 2389.960 2389.950 2389.850 2389.850	66.8 51.2 69.0 note control Enable M R	V H H Max Hold	54.0 74.0 Log scale - scalin	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 2389.850 85xx ren Local Contro Tune to P	66.8 51.2 69.0 note control Enable M RI eak	V H H Aax Hold B MHz 3 10Hz	54.0 74.0	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 2389.850	66.8 51.2 69.0 Enable M Ri eak	V H H Max Hold B 1MHz B 10Hz B 2360.000	54.0 74.0	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 2389.850	66.8 51.2 69.0 Enable M RI eak Center F	V H H Max Hold B () 1MHz B () 10Hz C () 2360,000 D () 100.000	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 80.0 - 75.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 2389.850	66.8 51.2 69.0 Enable M R eak VE eak Center F al Freq. Spar Ref Lvl	V H H Aax Hold B () 1MHz B () 10Hz C () 2360.000 C () 57.0	54.0 74.0 Log scale - scalin 87.5 - 85.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 85xx ren Contro Tune to P BB Signa NB Signa	66.8 51.2 69.0 Enable M Ri eak Vi eak Center F al Freq. Spar Ref Lvi ATT	V H H Max Hold B () 1MHz B () 10Hz C () 2360,000 D () 100.000	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 80.0 - 75.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.950 2389.950 2389.850 2389.850	66.8 51.2 69.0 Enable N Ri eak Center F al Freq. Spar Ref Lvl ATT	V H H Aax Hold B 1MHz B 10Hz C 2360.000 C 57.0 AUTO?	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 80.0 - 75.0 - 70.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 2389.850 85xx ren 65xx ren 10x 10x 10x 10x 10x 10x 10x 10x 10x 10x 	66.8 51.2 69.0 Enable M Ru eak VE center F al Freq. Spar Ref Lvi ATT 125.00	V H H Max Hold B 10Hz B 10Hz C 2360.000 D 57.0 AUTO?	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 75.0 - 70.0 - 65.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 2389.850 B5xx ren Coal (manua Contro Tune to P BB Signe CF Step	66.8 51.2 69.0 Enable N R eak Vf sl Center F sl Freq. Spar Ref Lvl ATT 125.00 date With New Set	V H H Max Hold B 1 MHz B 1 10Hz B 1 10Hz B 2360.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO?	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 75.0 - 70.0 - 65.0 - 55.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 2389.850 2389.850 2389.850 2389.850 2389.850 2000 1000 1000 1000 1000 1000 1000 10	66.8 51.2 69.0 Enable N Ri eak Center F Center F Center F Ref Lvi ATT 125.00 date With New Set ettings (All freq 10000 VBW 0.	V H H Aax Hold B 1MHz B 10Hz C 2360.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 C 57.0	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 80.0 - 75.0 - 65.0 - 60.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 2389.850 E 85xx ren Contro Tune to P BB Signa CF Step	66.8 51.2 69.0 Enable M Ri eak Vi eak Center F al Freq. Spar Ref Lvi ATT 125.00 date With New Set ettings (All freq 00000 VBW 0. 0.000 Span 10	V H H Aax Hold B D 10Hz C C C C C C C C C C C C C C C C C C C	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 75.0 - 70.0 - 65.0 - 55.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 2389.850 85xx ren 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000	66.8 51.2 69.0 Enable N R eak VE sl Freq. Spar Ref Lvl ATT 125.00 date With New Set ettings (All freq 00000 VBW 0. 0.000 Span 10 0.000 Stop 2	V H H Aax Hold B 1MHz B 10Hz C 2360.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 AUTO? C 100.000 C 57.0 C 57.0	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 75.0 - 70.0 - 65.0 - 55.0 - 50.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0		
2389.950 2389.960 2389.950 2389.850 85xx ren 85xx ren 85xx ren 85xx ren 85xx ren 6 85xx ren 8 85xx ren 8 8 8 8 8 8 8 8	66.8 51.2 69.0 Particle Control Enable M Ri Center F al Center F al Center F Ref Lvl ATT 125.00 date With New Set ettings (All freq 10000 VBW 0. 0.000 Span 10 0.000 Stop 2- ce Level 57.0	V H H Aax Hold B D 10Hz C C C C C C C C C C C C C C C C C C C	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 75.0 - 70.0 - 65.0 - 55.0 - 50.0 - 45.0 - 45.0 -	-2.8 -5.0	Avg PK	247 247	1.0 1.0 (30.5 @ 2360 g - Horizc	ontal	
2389.950 2389.960 2389.950 2389.850 2389.850 85xx ren 65xx ren 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 100	66.8 51.2 69.0 Enable N Rel Center F Center F Cen	V H H Aax Hold B 1MHz B 1MHz C 2360.000 D 100.000 D 57.0 AUTO? S in MHz C 200010 D 000010 D 000010 D 000010	54.0 74.0 Log scale - scalir 87.5 - 85.0 - - 80.0 - - 75.0 - - 70.0 - - 65.0 - - 55.0 - - 55.0 - - 45.0 -	-2.8 -5.0	Avg PK	247 247 rection factor appl	1.0 1.0	ontal	
2389.950 2389.960 2389.950 2389.850 2389.850 E 85xx ren Cocal (manual Control Tune to P BB Signa CF Step (a) Current 5: RBW 1.00 Center 2360 Start 2310 Referen Center 2360 Start 2310	66.8 51.2 69.0 Enable M R eak VE center F center	V H H H Aax Hold B (10Hz B (10Hz) C ms	54.0 74.0 Log scale - scalin 87.5 - 85.0 - 75.0 - 70.0 - 65.0 - 55.0 - 55.0 - 45.0 - 37.5 - 2310	-2.8 -5.0	Avg PK are dB units with cor	247 247 rection factor appl Av Av	1.0 1.0 1.0 1.0 1.0 230.5 @ 2360 1.0 230 2380 1.0 1.0 1.0 1.0 1.0 1.0 2360	ontal	





EMC Test Data

Client:	Intel	Job Number:	J70762
Model	512an HMW	T-Log Number:	T71846
MOUEI.	512dii Filviw	Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 2400 - 2483.5 MHz) Radiated Spurious Emissions - 802.11n 40 MHz Universe Antenna

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. 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:	42 %

Summary of Results

Spurious measurements are covered by measuremetns made on 802.11b and 802.11g modes as these two modes had higher emissions than both n modes when evaluated with the other antenna.

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n40		18.5	8.9	Band Edge radiated	FCC Part 15.209 /	49.7dBµV/m @
	Chain A	2422MHz			field strength	15.247(c)	2389.9MHz (-4.3dB)
1b	802.11n40	9	18.5	9.8	Band Edge radiated	FCC Part 15.209 /	47.2dBµV/m @
U ID	Chain A	2452MHz	10.0	9.0	field strength	15.247(c)	2483.8MHz (-6.8dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

	510						T-	Log Number:	T71846
Model:	512an HMW	1						÷	Briggs / Eriksen
Contact:	Robert Paxr	man						0	
Standard:	RSS 210 / F	CC 15.407 L	INII (Radiate	d)				Class:	N/A
n #1: Ra	diated Spur	rious Emissi	ons, Band E	dges. Ope	rating Mode:	802.11n (40	MHz Chan	nel) - Chain	A
	Date of Test:			5 1	5				
	est Engineer:		inal						
	est Location:		0						
	ow Channel					<i>(</i> 6 6		,	
	ower Setting:			rage power		(for referenc	e purposes)	
equency	al Signal Fie Level	Pol		<u>measured 1</u> / 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
434.070	86.7	V	-	-	AVG	142	1.0		
434.070	95.4	V	-	-	PK	142	1.0		
433.670	86.3	V	-	-	Pk	142	1.0	RB = VB =	100KHz
409.750	89.5	Н	-	-	AVG	214	1.3		
409.750	99.1	Н	-	-	PK	214	1.3		
421.010	85.8 Signal Field	H	-	-	Pk	214	1.3	RB = VB = 2	IOOKHZ
	Signal Field	Pol	15 200	/ 15.247	Detector	Azimuth	Height	Comments	
requency MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
389.870	49.7	Н	54.0	-4.3	AVG	214	1.0		
389.920	49.0	V	54.0	-5.0	AVG	143	1.0		
2389.870	62.5	Н	74.0	-11.5	PK	214	1.0		
389.920	61.3	V	74.0	-12.7	PK	143	1.0		
8	5xx remote con	trol							
		nable Max Hold	Log scale	e - scaling assume	s units are dB units w	ith correction facto	r applied (30.7 @	2360.0 MHz)	
	(manual) Control	RB 💮 1MHz		7.7 - 5.0 -					
Т	une to Peak	VB 쉬 10Hz	_						
	BB Signal	Center F 🔵 2360.	000	Ho	orizontal -Av	/g			
		eq. Span 💮 100.00	0 7	5.0-					
		Ref Lvl 分 57.0	7	0.0-					
		ATT AUTO? 📕	6	5.0-					
CFS	itep 🏐 125.00		6	0.0-					
		New Settings							
	rrent Settings(5	5.0-					N
		VBW 0.000010	5	0.0-					
Cent		5pan 100.000(Stop 2410.000	4	5.0					
				0.0-					
Sta	Reference Level		3	7.7- <mark>.</mark> 2310 2320	2330 2340			2380 2390	2400 2410
Sta						Tim	e		
Sta	Detector Sweep Time					TURN TO MAIN PR			

	Intel							Job Number:	J70762
Model	512an HMW						T-	Log Number:	T71846
							Ассо	unt Manager:	Briggs / Erikse
Contact:	Robert Paxr	nan							
Standard:	RSS 210 / F	CC 15.407 U	INII (Radiate	ed)				Class:	N/A
≀un #1b: H	igh Channel	@ 2452 MH	Z						
	ower Setting:	18.5			AP = 9.8	(for reference	e purposes)	
		eld Strength	: Peak value	e measured i					
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h V	Limit	Margin	Pk/QP/Avg	degrees	meters		
2441.500 2441.500	85.0 94.4	V	-	-	AVG PK	169 169	1.0 1.0		
2441.500	94.4 82.2	V	-	-	PK PK	169	1.0	RB = VB = C	1001/11-2
2435.030	87.6	V H	-	-	AVG	250	1.0	KD = VD =	ΙΟΟΚΠΖ
2436.500	95.6	H			PK	250	1.0		
2453.270	83.8	H	-	_	PK	250	1.0	RB = VB = ⁻	100KHz
	Signal Field			1		200			
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2483.800	47.2	Н	54.0	-6.8	AVG	251	1.0		
2484.170	47.2	V	54.0	-6.8	AVG	169	1.0		
2484.170	58.4	V	74.0	-15.6	PK	169	1.0		
2483.800	58.1	Н	74.0	-15.9	PK	251	1.0		
	(manual) Control	Enable Max Hold RB 🖗 1MH:	z	ale - scaling assum 88.0 - 85.0 -	es units are dB units	with correction fac	tor applied (31.0 i	@ 2510.0 MHz)	
GF CF Cer	Local (manual) Control Tune to Peak BB Signal NB Signal NB Signal Step () 125.00	Enable Max Hold RB () 10Hz VB () 10Hz Center F () 2510 req. Span () 100.0 Ref LVI () 57.0 ATT AUTO? () New Settings (All freqs in MHz) VBW 0.000010 Span 100.000(Stop 2560.000	2	88.0 - 85.0 - 75.0 - 75.0 - 70.0 - 65.0 - 55.0 - 50.0 - 45.0 - 40.0 -			ntal - Avg	2510.0 MHz)	
CF CF CC CC	Local (manual) Control Tune to Peak BB Signal NB Signal Step () 125.00 Update With Current Settings	Enable Max Hold RB 10Hz VB 10Hz Center F 2510 req. Span 100.0 Ref LV 257.0 ATT AUTO? New Settings (All freqs in MHz) VBW 0.000010 Span 100.0000 Stop 2560.000 57.0	2	88.0 - 85.0 - 75.0 - 75.0 - 70.0 - 65.0 - 55.0 - 50.0 - 45.0 -		Horizor	tal - Avg	© 2510.0 MHz)	2550 2560
CF CF C Cer	Local (manual) Control ITune to Peak BB Signal NB Signal Step () 125.00 Update With Update With Update With Update With Update With Ster 2510.000 Inter 2510.000 Itart 2460.000 Reference Level Detector	Enable Max Hold RB 10Hz VB 10Hz Center F 2510 req. Span 100.0 Ref LVI 57.0 ATT AUTO? New Settings (All freqs in MHz) VBW 0.000010 Span 100.0000 Stop 2560.000 57.0 SAMPLE	2	88.0 - 85.0 - 75.0 - 75.0 - 70.0 - 65.0 - 65.0 - 55.0 - 55.0 - 50.0 - 45.0 - 45.0 -	0 2460 245	Horizor	ntal - Avg		2550 2560
CF Ca Ca S	Local (manual) Control Tune to Peak BB Signal NB Signal Step () 125.00 Update With Current Settings (Current Settings) (Current	Enable Max Hold RB (10Hz) VB (10Hz) Center F (12510 req. Span (100.0 Ref LVI (157.0 ATT AUTO? (157.0 ATT AUTO? (157.0 ATT AUTO? (157.0 ATT AUTO? (157.0 Stop (2560.000) 57.0 5400 (2560.000) 57.0 5400 (157.0 5400 (157.0) 5400		88.0 - 85.0 - 75.0 - 70.0 - 65.0 - 60.0 - 55.0 - 50.0 - 45.0 - 45.0 - 45.0 - 2460 247	0 2460 245	Horizor	ntal - Avg		

Elliott Job Number: J70762 Client: Intel Ν

EMC Test Data

Manager: Briggs / Eriksen

Model	512an HMW	T-Log Number:	T71846
MOUCI.	312011110100	Account Manager:	Briggs /
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 5725 - 5850 MHz) Radiated Spurious Emissions - 802.11a Universe Antenna

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: Peter Sales Test Location: Fremont Chamber #4

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

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:	15-25 °C
	Rel. Humidity:	35-55 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n-20	5745	32.0	17.6	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	47.3dBmV/m @ 15736.3MHz (-6.7dB)
1b	Chain A 802.11n-20	5785	34.0	17.9	Radiated Emissions,	FCC Part 15.209 /	48.3dBmV/m @
	Chain A 802.11n-20	5005		17.4	1 - 40 GHz Radiated Emissions,	15.247(c) FCC Part 15.209 /	11571.0MHz (-5.7dB) 51.9dBµV/m @
1c	Chain A	5825	33.0	17.4	1 - 40 GHz	15.247(c)	11652.1MHz (-2.1dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

Elliott EMC Test Data Job Number: J70762 Client: Intel T-Log Number: T71846 Model: 512an HMW Account Manager: Briggs / Eriksen Contact: Robert Paxman Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A Run #1: Radiated Spurious Emissions, 1000 - 40000 MHz. Operating Mode: 802.11a Chain A For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the Note 1: level of the fundamental and measured in 100kHz. Note 2: Signal is not in a restricted band Run #1a: Low Channel @ 5745 MHz Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz 15.209 / 15.247 Frequency Pol Detector Azimuth Height Comments Level Limit MHz dBµV/m v/h Margin Pk/QP/Avg degrees meters 5752.700 V РΚ 1.6 RB = VB = 100 kHz91.9 123 5751.470 100.1 Н ΡK 257 1.4 RB = VB = 100kHzFundamental emission level @ 3m in 100kHz RBW: 100.1 dBµV/m Limit for emissions outside of restricted bands: Limit is -30dBc (UNII power measurement) 70.1 dB_µV/m

Spurious Emissions

opunious El	113510115							
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11492.080	41.7	V	54.0	-12.3	AVG	244	1.3	
11492.080	55.6	V	74.0	-18.4	PK	244	1.3	
15736.280	47.3	Н	54.0	-6.7	AVG	335	1.3	
15736.280	59.0	Н	74.0	-15.0	PK	335	1.3	
1493.860	40.4	V	54.0	-13.6	Peak	145	1.0	
3000.300	47.6	V	74.0	-26.4	Peak	263	1.0	Note 2

Run #1b: Center Channel @ 5785 MHz

Fundament	al Signal Fi	eld Strength	: Peak and average value	es measured	in 1 MHz, ar	d peak value	e measured in 100kHz

i unuumente								
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5790.170	94.3	V			PK	189	1.1	RB = VB = 100kHz
5781.330	98.7	Н			PK	270	1.3	RB = VB = 100kHz
							-	-
Fu	undamental e	emission leve	el @ 3m in 10	OokHz RBW:	98.7	dBuV/m		
	Limit for e	emissions ou	tside of restr	icted bands:	68.7	dBuV/m	Limit is -30d	IBc (UNII power measurement)
Spurious Er	missions				-		-	
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
N 41 I.—		v/h	Limit	Margin	Pk/QP/Avg	dearees	meters	
MHz	dBµV/m	v/h	LIIIII	iviaryin	FNQFIAVY	ucyices	THELEIS	
7701.030	<u>dBµV/m</u> 44.3	V	54.0	-9.7	Peak	165	1.9	
		V/II V V		- 3	5		1.9	Note 2
7701.030	44.3	V V V H	54.0	-9.7	Peak	165	1.9	Note 2
7701.030 3000.430	44.3 46.4	V V	54.0 74.0	-9.7 -27.6	Peak Peak	165 263	1.9 1.0	Note 2
7701.030 3000.430 1494.540	44.3 46.4 41.6	V V H	54.0 74.0 54.0	-9.7 -27.6 -12.4	Peak Peak Peak	165 263 115	1.9 1.0 1.6	Note 2
7701.030 3000.430 1494.540 16052.430	44.3 46.4 41.6 47.4	V V H H	54.0 74.0 54.0 54.0	-9.7 -27.6 -12.4 -6.6	Peak Peak Peak AVG	165 263 115 28	1.9 1.0 1.6 2.2	Note 2

$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Model: 512an HMW T-Log Number: T7.1 Account Manager: Brig Contact: Robert Paxman Class: N/A Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A Run #1c: High Channel @ 5825 MHz Class: N/A Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 10 Frequency MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5818.830 89.1 V 120.0 -30.9 PK 133 1.0 RB = VB = 100k Stantast MHz 120.0 -20.6 PK 266 1.4 RB = VB = 100k Fundamental emission level @ 3m in 100kHz RBW: 99.4 dBuV/m Limit is -30dBc (UNII power not set set set set set set set set set se	0762
Model:512an HMWAccount Manager:Briggs / EriksenContact:Robert PaxmanClass:N/AStandard:RSS 210 / FCC 15.407 UNII (Radiated)Class:N/Aum #1c:High Channel @ 5825 MHzClass:N/Aundamental Signal Field Strength:Peak and average values measured in 1 MHz, and peak value measured in 100kHzrequencyLevelPol15.209 / 15.247DetectorMHzdBuV/mv/hLimitMarginPk/OP/AvgdegreesS818.83089.1V120.0-30.9PK1331.0RB = VB = 100kHzS818.77099.4H120.0-20.6PK2661.4RB = VB = 100kHzS818.77099.4H120.0-20.6PK2661.4RB = VB = 100kHzFundamental emission level @ 3m in 100kHz RBW:99.4dBuV/mLimit for emissions outside of restricted bands:69.4dBuV/mLimit for emissions outside of restricted bands:69.4dBuV/mLimit is -30dBc (UNII power measuremenPurious EmissionsrequencyLevelPol15.209 / 15.247DetectorAzimuthHeightCommentsMHzdB μ V/mLimitMarginPk/OP/AvgdegreesRequencyLevelPol15.209 / 15.247DetectorAzimuthHeightCommentsMHzdB μ V/mV/mLimitMarginPk/OP/Avgdegrees <t< td=""><td>Model: 512an HMW Account Manager: Brig Contact: Robert Paxman Class: N/A Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A undamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 10 Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBuV/m v/h Limit Margin Pk/OP/Avg degrees meters 5818.830 89.1 V 120.0 -30.9 PK 133 1.0 RB = VB = 100k Stantary 99.4 H 120.0 -20.6 PK 266 1.4 RB = VB = 100k Fundamental emission level @ 3m in 100kHz RBW: 99.4 dBuV/m Limit is -30dBc (UNII power r Standary Limit for emissions outside of restricted bands: 69.4 dBuV/m Limit is -30dBc (UNII power r Standary Limit Margin Pk/QP/Avg degrees meters Info52.090 51.9</td><td></td></t<>	Model: 512an HMW Account Manager: Brig Contact: Robert Paxman Class: N/A Standard: RSS 210 / FCC 15.407 UNII (Radiated) Class: N/A undamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 10 Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBuV/m v/h Limit Margin Pk/OP/Avg degrees meters 5818.830 89.1 V 120.0 -30.9 PK 133 1.0 RB = VB = 100k Stantary 99.4 H 120.0 -20.6 PK 266 1.4 RB = VB = 100k Fundamental emission level @ 3m in 100kHz RBW: 99.4 dBuV/m Limit is -30dBc (UNII power r Standary Limit for emissions outside of restricted bands: 69.4 dBuV/m Limit is -30dBc (UNII power r Standary Limit Margin Pk/QP/Avg degrees meters Info52.090 51.9	
Or O	Contact:Robert PaxmanStandard:RSS 210 / FCC 15.407 UNII (Radiated)Class:N/Aundamental Signal Field Strength:Peak and average values measured in 1 MHz, and peak value measured in 10requencyLevelPol15.209 / 15.247DetectorAzimuthHeightCommentsMHzdBuV/mV/hLimitMarginPK1331.0Fundamental emission level @ 3m in 100kHz RBW:99.4dBuV/mLimit for emissions outside of restricted bands:69.4dBuV/mLimit for emissions outside of restricted bands:69.4dBuV/mMHzdBuV/mLimit for emissions outside of restricted bands:69.4dBuV/mLimit for emissions outside of restricted bands:69.4dBuV/mMHzdBuV/mV5209 / 15.247DetectorAzimuthHeight CommentsFundamental emission level @ 3m in 100kHz RBW:99.4dBuV/mLimit for emissions outside of restricted bands:69.4dBuV/mMHz<	
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194.360 41.6 H 54.0 -12.4 Peak 186 1.6	194.360 41.6 H 54.0 -12.4 Peak 186 1.6	

EMC Test Data

Client:	Intel	Job Number:	J70762
Model	512an HMW	T-Log Number:	T71846
MUUEI.	512di1 Filvilv	Account Manager:	Briggs / Eriksen
Contact:	Robert Paxman		
Standard:	RSS 210 / FCC 15.407 UNII (Radiated)	Class:	N/A

RSS 210 and FCC 15.247 (DTS, 5725 - 5850 MHz) Radiated Spurious Emissions - 802.11n Universe Antenna

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: 5/31/2008 Test Engineer: Peter Sales Test Location: Fremont Chamber #4

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:	15-25 °C
	Rel. Humidity:	35-55 %

Summary of Results

These measurements cover both n20 and n40 operating modes as n20MHz mode had higher emissions than n40MHz mode.

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11n-20 Chain A	5745	29.0	16.6	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	47.9dBmV/m @ 15746.7MHz (-6.1dB)
1b	802.11n-20 Chain A	5785	30.0	16.6	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	47.5dBmV/m @ 15742.9MHz (-6.5dB)
1c	802.11n-20 Chain A	5825	31.5	16.7	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c)	47.9dBmV/m @ 15749.3MHz (-6.1dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

	= _								1707(0
Client:	Intel							Job Number:	
Model [.]	512an HMW	I						Log Number:	
modell	01201111111						Accou	unt Manager:	Briggs / Eriksen
Contact:	Robert Paxn	nan							
Standard:	RSS 210 / F	CC 15.407 L	JNII (Radiate	d)				Class:	N/A
			,	,					
Run #1: Ra	adiated Spur	ious Emissi	ons. 1000 -	40000 MHz.	Operating N	lode: 802.11	In 20MHz C	hain A	
	Low Channe				oporuting i	000100211			
				verage valu	es measured	in 1 MHz, ar	nd peak valu	e measured i	in 100kHz
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5741.330	88.7	V	120.0	-31.3	PK	127	1.0	$RB = VB = \hat{A}$	
5752.770	96.0	Н	120.0	-24.0	PK	256	1.3	$RB = VB = \hat{A}$	100kHz
							1		
Fi	undamental e					dBµV/m		15 / IN III	
о		emissions ou	tside of restr	icted bands:	66	dBµV/m	Limit is -300	dBc (UNII pov	wer measurement)
Spurious E		Pol	15 200	/ 15.247	Detector	A ⇒inouth	Lloight	Commonto	
Frequency MHz	Level	v/h	Limit		Detector Pk/QP/Avg	Azimuth degrees	Height	Comments	
3000.160	<u>dBμV/m</u> 47.7	V	74.0	Margin -26.3	PRIOPIAVy	265	meters 1.0	Note 2	
1494.390	47.7	H	54.0	-20.3	Peak	125	1.0	NULE Z	
3000.160	41.3	V	74.0	-12.7	Peak	265	1.3		
1494.390	47.7	H	54.0	-20.3	Peak	125	1.0		
11490.620	37.8	V	54.0	-12.7	AVG	125	1.0		
11490.620	49.7	V	74.0	-10.2	PK	160	1.0		
15746.720	49.7	H	54.0	-24.5	AVG	340	1.0		
15746.720	47.9 59.4	H	74.0	-14.6	PK	340	1.3		
13740.720	39.4	Π	74.0	-14.0	ΓN	340	1.3		
Run #1h∙	Center Chan	nel @ 5785	MHz						
				werane valu	es measured	in 1 MHz ar	nd neak valu	e measured i	in 100kHz
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5792.670	90.2	V	120.0	-29.8	PK	187	1.4	RB = VB = 1	100kHz
5777.570	94.7	Н	120.0	-25.3	PK	256	1.4	RB = VB = 1	
Fi	undamental e	emission leve	el @ 3m in 1()0kHz RBW:	94.7	dBµV/m			
	Limit for e	emissions ou	tside of restr	icted bands:	64.7	dBµV/m	Limit is -300	dBc (UNII pov	wer measurement)
Spurious E			45.000	45.047					
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
3000.160	47.4	V	74.0	-26.6	Peak	262	1.3	Note 2	
1494.490	41.9	V	54.0	-12.1	Peak	348	1.3		
11570.120	45.7	V	54.0	-8.3	AVG	126	1.0		
11570.120	58.2	V	74.0	-15.8	PK	126	1.0		
15742.940	47.5	V	54.0	-6.5	AVG	260	1.6		
15742.940	59.0	V	74.0	-15.0	PK	260	1.6		
	Ean and and	and the second state of	بالموسطة الأ		00	East all all		the Barthan	
Note 1:						For all othe	eremissions	, the limit was	s set 30dB below the
		undamental		ea in 100kH	Ζ.				
Note 2:	Signal is not	in a restricte	ed band.						

	EII							Job Number	170760
Client:	t: Intel						Job Number: J707		
Model:	512an HMW	Ι					T-Log Number:		
	Dehart Devrees							Account Manager:	
Contact: Robert Paxman								01	
Standard: RSS 210 / FCC 15.407 UNII (Radiated)								Class:	N/A
Dup #1ci	Jigh Channy	ଧ <i>ଭ</i> ୧୦୨೯ M	U-7						
	High Channe al Signal Fie			verane valu	es measured	in 1 MHz a	nd neak valu	ie measured i	in 100kHz
Frequency		Pol	15.209		Detector	Azimuth	Height	Comments	IT TOORTIZ
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5828.870	87.5	V	120.0	-32.5	PK	133	1.0	RB = VB = 1	100kHz
5830.070	93.9	Н	120.0	-26.1	PK	181	1.0	RB = VB = 1	
								•	
F			el @ 3m in 10			dBµV/m]		
						Limit is -30	Limit is -30dBc (UNII power measurement)		
Spurious E		Del	15 200	115 017	Detester	۸	Listaki	Commonto	
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h V	Limit	Margin	Pk/QP/Avg	degrees	meters		
1649.630	47.0		54.0	-7.0	AVG	201	1.3		
1649.630	59.6	V	74.0	-14.4	PK	201	1.3		
5749.290	47.9	V	54.0	-6.1	AVG	242	1.0		
5749.290	59.9	V	74.0	-14.1	PK	242	1.0		
1494.370	40.9	H	54.0	-13.1	Peak	119	1.6	Note 0	
3000.280	48.2	V	74.0	-25.8	Peak	263	1.3	Note 2	
	For omission	ne in rostricto	od hands the	limit of 15.2	hosu sew 00	For all oth	oromissions	the limit was	s sot 20dB bolo
lote 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below level of the fundamental and measured in 100kHz.								
ote 2:					Ζ.				
JIE Z.	Signal is not		eu Dallu.						