EMC Test Report
Application for Grant of Equipment Authorization
Class II Permissive Change/Reassessment
pursuant to
FCC Part 15, Subpart E

Model: PROXMB82

FCC ID:	HZB-PROXMB82
APPLICANT:	Proxim Wireless Corporation 1561 Buckeye Dr. Milpitas, CA 95035
TEST SITE(S):	Elliott Laboratories 41039 Boyce Road. Fremont, CA. 94538-2435
REPORT DATE:	January 26, 2010
FINAL TEST DATES:	August 24, August 25, August 26, August 27, August 28, September 4 and September 8, 2009

AUTHORIZED SIGNATORY:

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ACCREDITED

Testing Cert #2016-01

REVISION HISTORY

Rev#	Date	Comments	Modified By
	January 26, 2010	First Release	

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SCOPE

An electromagnetic emissions test has been performed on the Proxim Wireless Corporation model PROXMB82, pursuant to the following rules:

> FCC Part 15, Subpart E requirements for UNII Devices (using FCC DA 02-2138, August 30, 2002)

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
> FCC UNII test procedure 2002-08 DA-02-2138, August 2002

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

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

OBJECTIVE

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

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

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

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

STATEMENT OF COMPLIANCE

The tested sample of Proxim Wireless Corporation model PROXMB82 complied with the requirements of the following regulations:

FCC Part 15, Subpart E requirements for UNII Devices

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

The test results recorded herein are based on a single type test of Proxim Wireless Corporation model PROXMB82 and therefore apply only to the tested sample. The sample was selected and prepared by Ivaylo Tankov of Proxim Wireless Corporation.

DEVIATIONS FROM THE STANDARDS

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

TEST RESULTS SUMMARY

UNII / LELAN DEVICES

Operation in the 5.15 – 5.25 GHz Band
The maximum power rating of the module remains unchanged from the originally reported values: 802.11a: 10.98 dBm (0.013W); HT20: 15.01dBm (32mW); HT4 16.93 dBm (49 mW). Host devices using the high gain panel and sector antennas may only be used outdoors. Host systems intended for use with the sector and panel antennas are restricted to outdoor use only and are factory-configured by Proxim to ensure they will not operate in the 5150 – 5250 MHz sub band.

Operation in the 5.25 – 5.35 GHz Band
Note: Host devices using the high gain panel and sector antennas may only be used outdoors, therefore the spectral density of spurious emissions in the 5.15 – 5.25 GHz band were limited to the -27dBm/MHz limit for the assessment of the module with these sector and panel antennas.

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a) (2)		26dB Bandwidth	> 20dB (Note 1)	N/A – limits output power if < 20MHz	N/A
15.407(a) (2)	A9.2(2)	Maximum Output Power, Sector and Panel Antennas Note 2	**Sector (≤17dBi)**: 802.11a: 8.6 dBm HT20: 12.3 dBm HT40: 0.2 dBm *(eirp < 29.3dBm)* **Sector (≤20dBi)**: 802.11a: 8.6 dBm HT20: 9.2 dBm HT40: 0.2 dBm *(eirp < 29.2dBm)* **Panel (≤30dBi)**: 802.11a: -3.4 dBm HT20: -0.7 dBm HT40: -1.4 dBm *(eirp < 29.3dBm)*	24 dBm / 250mW (eirp < 30dBm)	Complies
15.407(a) (2))		Power Spectral Density (Sector and Panel Antennas)	16.9dBm/MHz eirp	11 dBm/MHz 17dBm/MHz eirp	Complies
	A9.2(2) / A9.5 (2)				Complies
15.407(b) (5) / 15.209	A9.3	Spurious Emissions below 1GHz	Not evaluated, Note 1		
15.407(b) (2)	A9.3	Spurious Emissions above 1GHz	68.2dBµV/m @ 5250.0MHz (-0.1dB)	54dBuV/m in restricted bands 68.3dBuV/m all other frequencies	Complies
15.407(a)(6)	-	Peak Excursion Ratio	Not evaluated, Note 3		

Note 1: The 26dB bandwidth and peak excursion ratio were not measured. The proposed change to add high gain panel and sector antennas does not affect the values of these parameters from those detailed in the original certification documents for this device.
Note 2: The maximum power rating of the module remains unchanged from the originally reported values of: 802.11a 18.0dBm (0.064W); HT20 21.71dBm (0.156W) and HT40 22.0dBm (0.159W). However, when using high gain antennas the output power has to be reduced to comply with eirp and spurious emissions requirements. The maximum output powers listed here are for when the module is used with a panel or sector antenna.

Operation in the 5.47 – 5.725 GHz Band

The maximum power rating of the module remains unchanged from the originally reported values 802.11a / HT20: 49mW and HT40: 191mW.) However, when using high gain antennas the output power has to be reduced to comply with eirp and spurious emissions requirements. Host devices using the high gain panel and sector antennas may only be used outdoors. Host systems intended for use with the sector and panel antennas are restricted to outdoor use only and are factory-configured by Proxim to ensure they will not operate in the 5470 – 5725 MHz sub band.

Requirements for all U-NII/LELAN bands

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407	A9.5a	Modulation	Note 1		
15.407 (c)	A9.5(4)	Operation in the absence of information to transmit	Note 1-		
15.407 (g)	A9.5 (5)	Frequency Stability	Note 1-		
15.407 (h1)	A9.4	Transmit Power Control	Note 1-		
15.407 (h2)	A9.4	Dynamic frequency Selection (device with radar detection)	Note 1		
15.207	RSS GEN Table 2	AC Conducted Emissions	Note 1		
Note 1 Not evaluated, the proposed change to add high gain panel and sector antennas does not affect the values of these parameters from those detailed in the original certification documents for this device. DFS is not affected because the new antennas are of higher gain than the original antennas evaluated for DFS.					

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	High gain panel and sector antennas use standard N-type connectors. Host systems using these antennas must require professional installation.	Unique connector or professional installation	Complies
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations, original RSS 102 declaration remains valid.	Refer to OET 65, FCC Part 1 and RSS 102	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	0.15 to 30	± 2.4
Radiated Emissions	0.015 to 30	± 3.0
Radiated Emissions	30 to 1000	± 3.6
Radiated Emissions	1000 to 40000	± 6.0

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Proxim Wireless Corporation model PROXMB82 is an 802.11abgn module that is designed to operate in the 2400-2483.5MHz, 5150-5250 MHz, 5250-5350 MHz, 5470 - 5725 MHz and 5725-5850 MHz bands. The scope of testing was to add some new, high gain antennas for use with outdoor Access Points, therefore the frequency bands 5150-5250MHz and 5470 – 5725 MHz, as they are for indoor use only, were excluded from the scope of testing.

For testing purposes the module was installed into the mini PCI slot of a host system. The enclosure of the host system was removed to expose the module on all sides as required for modular testing.

The sample was received on July 2, 2009 and tested on August 24, August 25, August 26, August 27, August 28, September 4 and September 8, 2009. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Proxim Corporation	PROXMB82	802.11abgn Module	none	HZB-PROXMB82

ANTENNA SYSTEM

The antenna connects to the EUT via a standard coaxial N-connector. The antennas evaluated were a high gain panel and a high gain sector antenna for 2.4GHz operation and a high gain panel and a high gain sector antenna for 5GHz operation. Host systems using these antennas will require professional installation, therefore the use of standard connectors is permitted.

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

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

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Proxim	-	Access Point	-	-
Sony	VAIO	Laptpop	-	DoC

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
AP ethernet	Laptop	Cat 5	Unshielded	3
AP mini PCI	EUT	-	Direct connection	-
EUT port A	Antenna 1	Coaxial	-	3
EUT Port B	Antenna 2	Coaxial	-	3
EUT Port C	Antenna 3	Coaxial	-	3

EUT OPERATION

During testing, the EUT was configured in a continuous transmit or receive mode using the ART software utility to control the radio.

When the module is used with high gain antennas the operating firmware will allow the selection of output power levels below 0dBm. As the ART utility used during testing does not have the dynamic range to allow out put power to be set below 0dBm, an external 10dB or 20dB attenuator was used between antenna port and antenna to simulate the lower power levels that can be achieved by the operating software. Proxim justified the use of the approach based on the fact that the signal spectrum at the higher output powers from the module under ART software control would be more distorted (wider skirts and higher spurious emissions) than if the output power were at the lower rf signal level.

All power measurements were made at the far end of the attenuator.

TEST SITE

GENERAL INFORMATION

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

Site	Registration Numbers		Location
	FCC	Canada	
Chamber 3	769238	2845B-3	41039 Boyce Road Fremont, CA 94538-2435
Chamber 4	211948	2845B-4	
Chamber 5	211948	2845B-5	

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

CONDUCTED EMISSIONS CONSIDERATIONS

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

RADIATED EMISSIONS CONSIDERATIONS

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

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

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

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

INSTRUMENT CONTROL COMPUTER

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

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

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

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

FILTERS/ATTENUATORS

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

ANTENNAS

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

ANTENNA MAST AND EQUIPMENT TURNTABLE

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

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

INSTRUMENT CALIBRATION

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

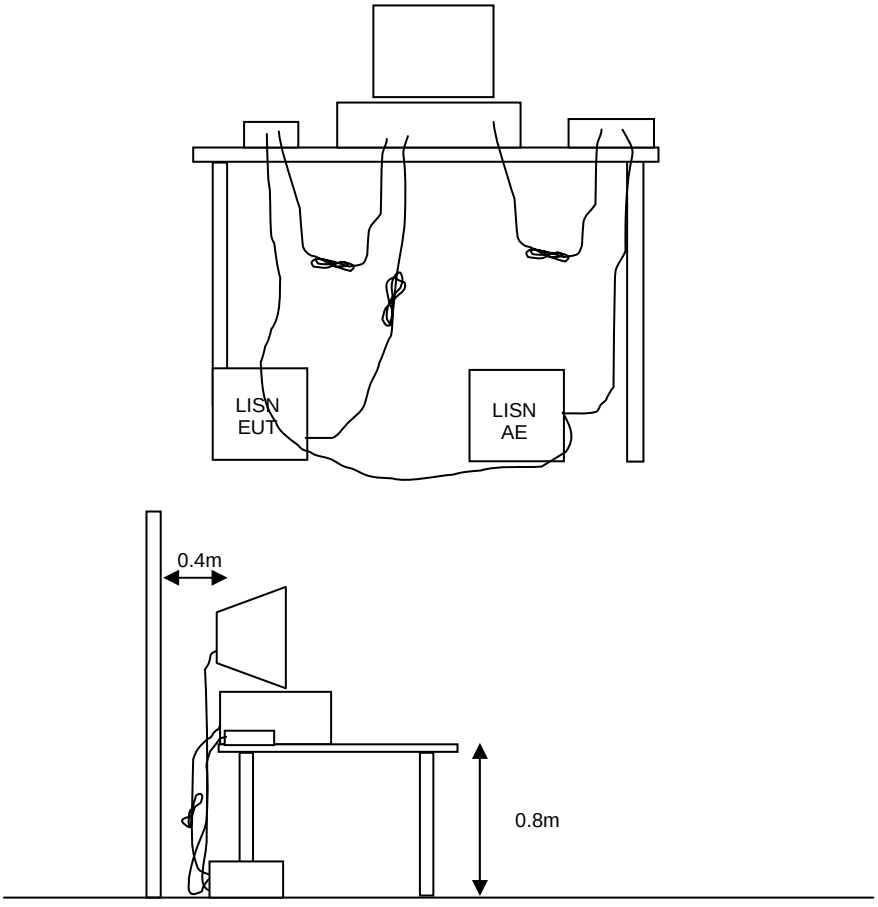
TEST PROCEDURES

EUT AND CABLE PLACEMENT

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

CONDUCTED EMISSIONS

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



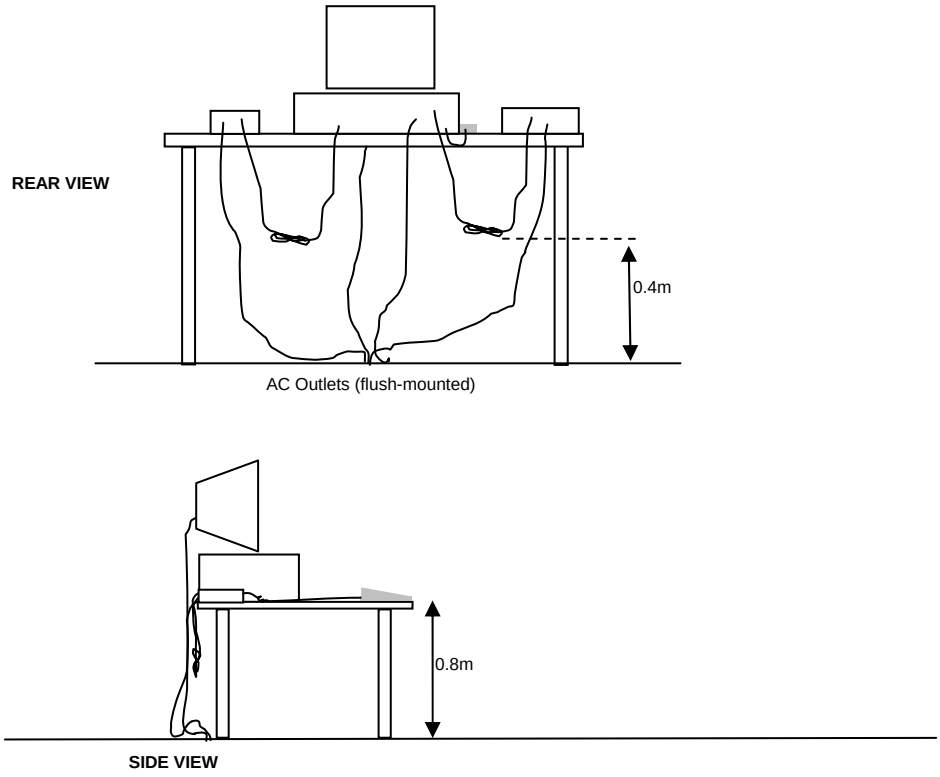
RADIATED EMISSIONS

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

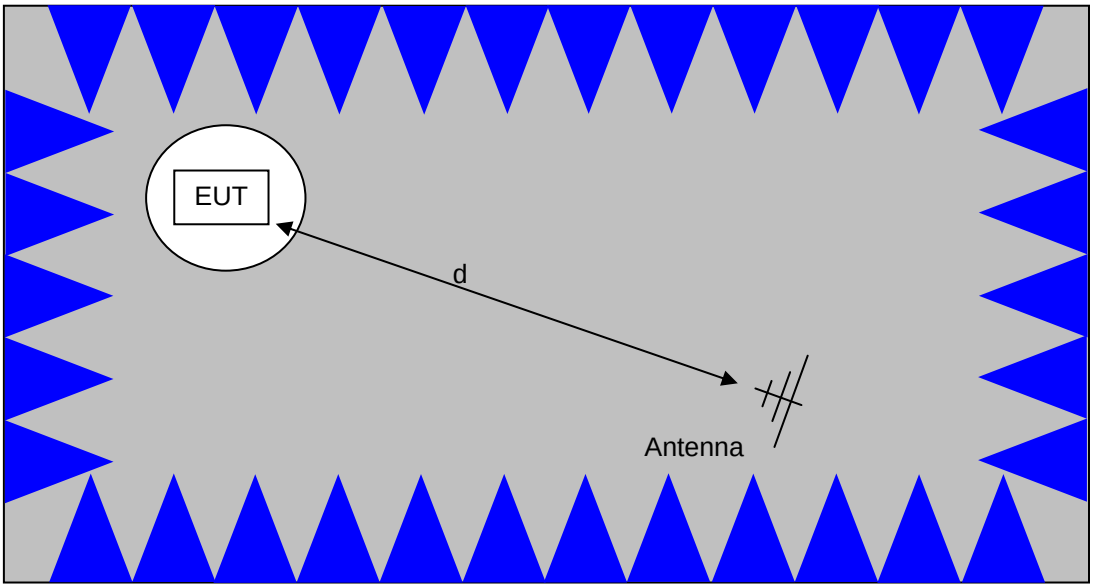
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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

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

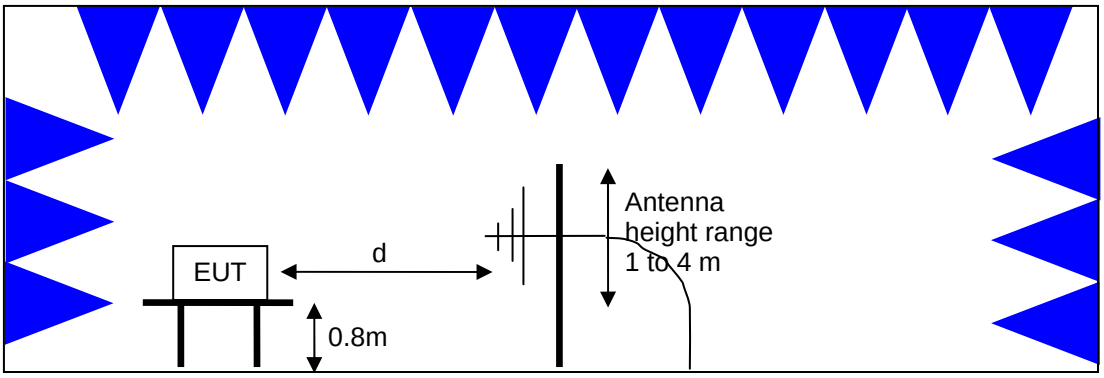


Typical Test Configuration for Radiated Field Strength Measurements



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

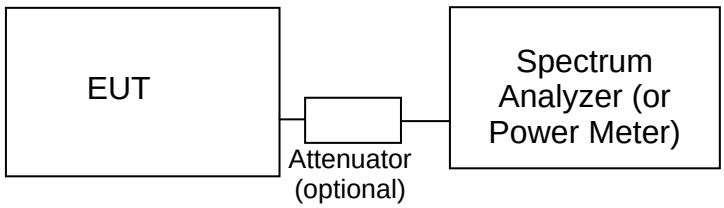
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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

CONDUCTED EMISSIONS FROM ANTENNA PORT

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



Test Configuration for Antenna Port Measurements

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

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

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

BANDWIDTH MEASUREMENTS

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

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

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

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

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

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

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

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

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

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

FCC 15.407 (a) OUTPUT POWER LIMITS

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
5150 - 5250	50mW (17 dBm)	4 dBm/MHz
5250 - 5350	250 mW (24 dBm)	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm)	17 dBm/MHz

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

The peak excursion envelope is limited to 13dB.

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

OUTPUT POWER LIMITS –LELAN DEVICES

The table below shows the limits for output power and output power density defined by RSS 210. 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
5150 - 5250	200mW (23 dBm) eirp	10 dBm/MHz eirp
5250 - 5350	250 mW (24 dBm)[2] 1W (30dBm) eirp	11 dBm/MHz
5470 - 5725	250 mW (24 dBm)[3] 1W (30dBm) eirp	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm) 4W eirp	17 dBm/MHz

In addition, the power spectral density limit shall be reduced by 1dB for every dB the highest power spectral density exceeds the "average" power spectral density) by more than 3dB. The "average" power spectral density is determined by dividing the output power by 10log(EBW) where EBW is the 99% power bandwidth.

Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

OUTPUT POWER AND SPURIOUS LIMITS –UNII and LELAN DEVICES

The spurious emissions limits for signals below 1GHz are the FCC/RSS-GEN general limits. For emissions above 1GHz, signals in restricted bands are subject to the FCC/RSS GEN general limits. All other signals have a limit of –27dBm/MHz, which is a field strength of 68.3dBuV/m/MHz at a distance of 3m. This is an average limit so the peak value of the emission may not exceed –7dBm/MHz (68.3dBuV/m/MHz at a distance of 3m). For devices operating in the 5725-5850Mhz bands under the LELAN/UNII rules, the limit within 10Mhz of the allocated band is increased to –17dBm/MHz.

[2] If EIRP exceeds 500mW the device must employ TPC
[3] If EIRP exceeds 500mW the device must employ TPC

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

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

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

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

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

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

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of 3m from the equipment under test:

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

where P is the eirp (Watts)

Appendix A Test Equipment Calibration Data

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	09-Oct-09
EMCO	Antenna, Horn, 1-18 GHz	3115	786	06-Dec-09
EMCO	Antenna, Horn, 1-18GHz	3115	868	10-Jun-10
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	02-Sep-10
Hewlett Packard	SpectAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	10-Apr-10
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	07-Oct-09
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	07-Oct-09
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	20-Oct-09
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	05-Mar-10
Agilent	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	30-Dec-09
A.H. Systems	Blue System Horn, 18-40GHz	SAS-574, p/n: 2581	2159	17-Mar-10
A.H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	17-Mar-10

Appendix B Test Data

T75951 36 Pages

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		-
Emissions Standard(s):	FCC Part 15 Subpart E, RSS 210	Class:	N/A
Immunity Standard(s):	N/A	Environment:	N/A

EMC Test Data

For The

Proxim Corporation

Model

PROXMB82 802.11abgn miniPCI module (3x3)

Date of Last Test: 9/23/2009

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements - Power, PSD

Test Specific Details

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

Date of Test: 9/4/2009 and 9/8/2009
Test Engineer: Rafael Varelas and Mehran Birgani
Test Location: SV Radio Lab
Config. Used: 1
Config Change: -
Host Unit Voltage 120V/60Hz

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
Output power for use with the highest gain sector antenna (20dBi)				
1,2,3	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	802.11a: 8.6 dBm (7.2mW) HT20: 9.2 dBm (8mW) HT40: 0.2 dBm (1mW)
Maximum output power for use with sector antennas (maximum gain at the maximum power is listed in [])				
1,2,3	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	802.11a: 8.6 dBm [20dBi] HT20: 12.3 dBm [17dBi] HT40: 0.2 dBm [20dBi]
Output power for use with the highest gain panel antenna (30dBi)				
1,2,3	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	802.11a: -3.4 dBm (0.5mW) HT20: -0.7 dBm (0.9mW) HT40: -1.4 dBm (0.7mW)
Maximum output power for use with panel antennas (maximum gain at the maximum power is listed in [])				
1,2,3	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	802.11a: -3.4 dBm [30dBi] HT20: -0.7 dBm [30dBi] HT40: -1.4 dBm [30dBi]

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

The highest power settings per channel meeting spurious (band edge and other) with the 20dBi sector antennas and 30dBi Panel antennas are listed below for reference. In some cases these power settings exceed the maximum permitted eirp of 1Watt when used with the highest gain Sector and/or Panel antennas, in which case the maximum gain of antenna at that power setting is determined and the power setting for the highest gain antenna is also measured. When installed the system's output power is set by the professional installer to ensure the maximum eirp is not violated. The power cannot exceed the highest power level listed.

Operating frequency (MHz) [HT40 mode]	20dBi Sector			30dBi Panel		
	a	HT20	HT40	a	HT20	HT40
5260 [5270]	20 + 16.0 BE:10+ 16	20 + 12.5	20 + 16.5	20 + 12.5	20 + 7.0	20 + 15.0
5300 [-]	10 + 19.0	10 + 19.0	-	20 + 18.0	20 + 18.0	-
5320 [5310]	10 + 19.0 BE:10+22	10 + 16.0	20 + 17.0	20 + 18.0	20 + 17.5	20 + 15.5

General Test Configuration

All measurements made with a 20dB or 10dB pad between analyzer and rf port. No correction made for the attenuator as it simulates the cables losses. The pad is also used because the rf control utility for testing cannot set the power below 0dBm so the attenuator adjusts for this fact. The actual drivers used in normal operation can set power below 0dBm.

Note 1:	Output power measured using a spectrum analyzer (refer to sample plots embedded in the test data): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over **>=40** MHz for 802.11a/HT20 modes and >=80MHz for HT40 mode.
Note 2:	Measured using the same analyzer settings used for output power.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB. The 26dB bandwidth for all modes was determined to exceed 20 MHz during the original modular approval tests, therefore the 26dB bandwidth was not re-measured. If the bandwidth is less than 20MHz then the output power limits are reduced.
Note 5:	For MIMO systems the total output power and total PSD are calculated form the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain.

Ambient Conditions:

Temperature: 21.4 °C
Rel. Humidity: 39 %

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

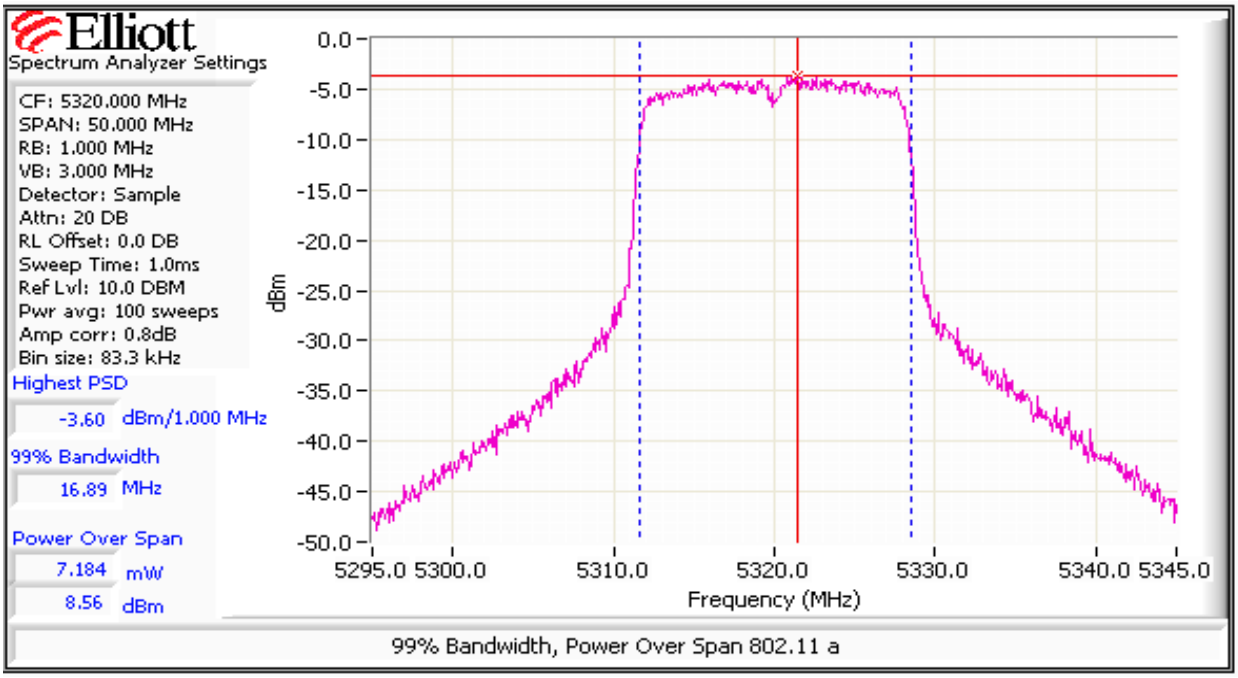
Run #1: Bandwidth, Output Power and Power spectral Density
802.11a Mode - Sector Antenna

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	20			N/A	20.0

Limit in the 5250-5350 MHz band for a maximum antenna gain of 20dBi is **10dBm.**

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5260	20/16.0		-5.2			0.3	-5.2	10.0	0.007	PASS
5300	10/19.0		7.9			6.2	7.9	10.0		PASS
5320	10/19.0		8.6			**7.2**	**8.6**	10.0		PASS

Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5260	16.8	-5.2	-17.3			0.0	-17.3	-3.0	11.0	PASS
5300	17.3	7.9	-4.5			0.4	-4.5	-3.0	11.0	PASS
5320	16.9	8.6	-3.6			0.4	-3.6	-3.0	11.0	PASS



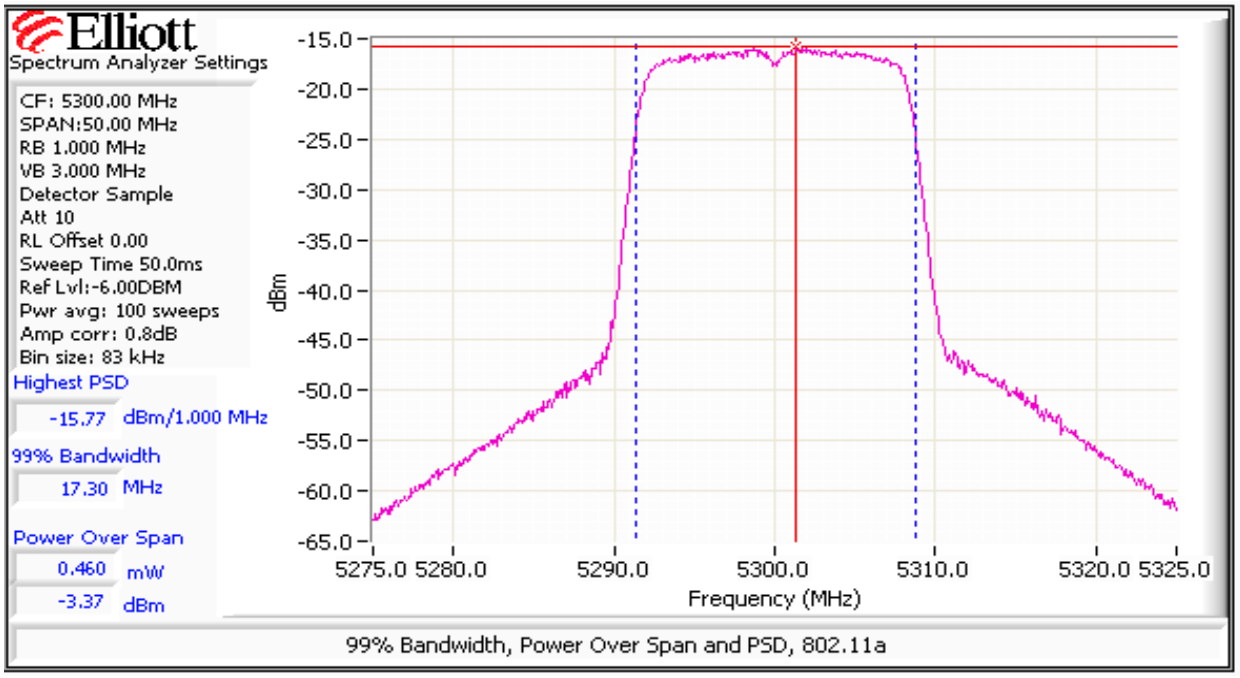
Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

802.11a Mode - Panel Antenna, 30dBi Gain

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	30			N/A	30.0

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5260	20/12.5		-9.1			0.1	-9.1	0.0	0.0005	PASS
5300	20/18.0		-3.4			**0.5**	**-3.4**	0.0		PASS
5320	20/18.0		-3.5			0.4	-3.5	0.0		PASS

Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5260	17.2	-9.1	-21.6			0.0	-21.6	-13.0	11.0	PASS
5300	17.3	-3.4	-15.8			0.0	**-15.8**	-13.0	11.0	PASS
5320	17.3	-3.5	-16.0			0.0	-16.0	-13.0	11.0	PASS



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

802.11n 20MHz (HT20) Mode - Sector Antenna

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	20	20	20	No	20.0

The power level at **5300MHz** was reduced from the power settings used for radiated emissions tests to comply with eirp limits. The power level used during radiated emissions tests is shown in the 2nd set of tables.

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5260	20/12.5		-9.3	-10.3	-10.1	0.3	-5.1	10.0	0.008	PASS
5300	**10/16.0**		5.0	4.0	2.4	7.4	8.7	10.0		PASS
5320	10/16.0		4.6	4.1	4.7	8.4	**9.2**	10.0		PASS

Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5260	18.3	-5.1	-22.0	-23.2	-22.9	0.0	-17.9	-3.0	11.0	PASS
5300	18.3	8.7	-7.7	-8.8	-10.3	0.4	**-4.0**	-3.0	11.0	PASS
5320	18.4	9.2	-8.1	-8.8	-8.1	0.4	-3.5	-3.0	11.0	PASS

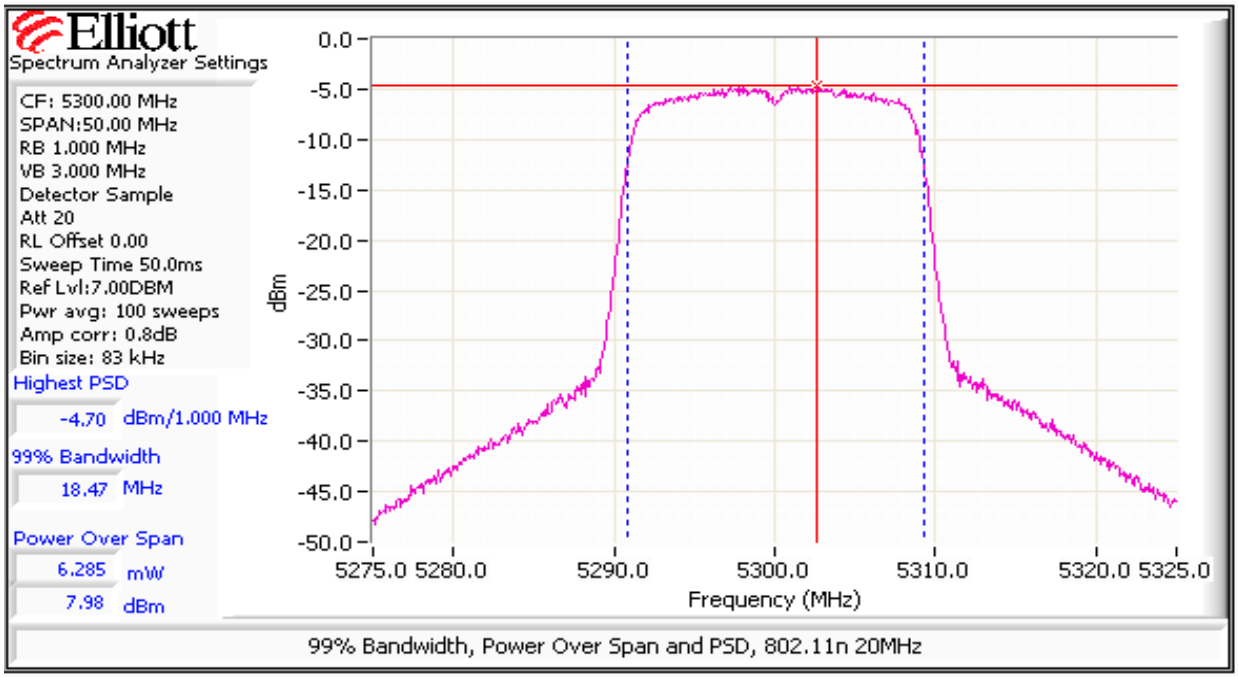
Maximum Output Power with Sector Antenna with Gain not exceeding 17dBi (5250-5350 MHz).

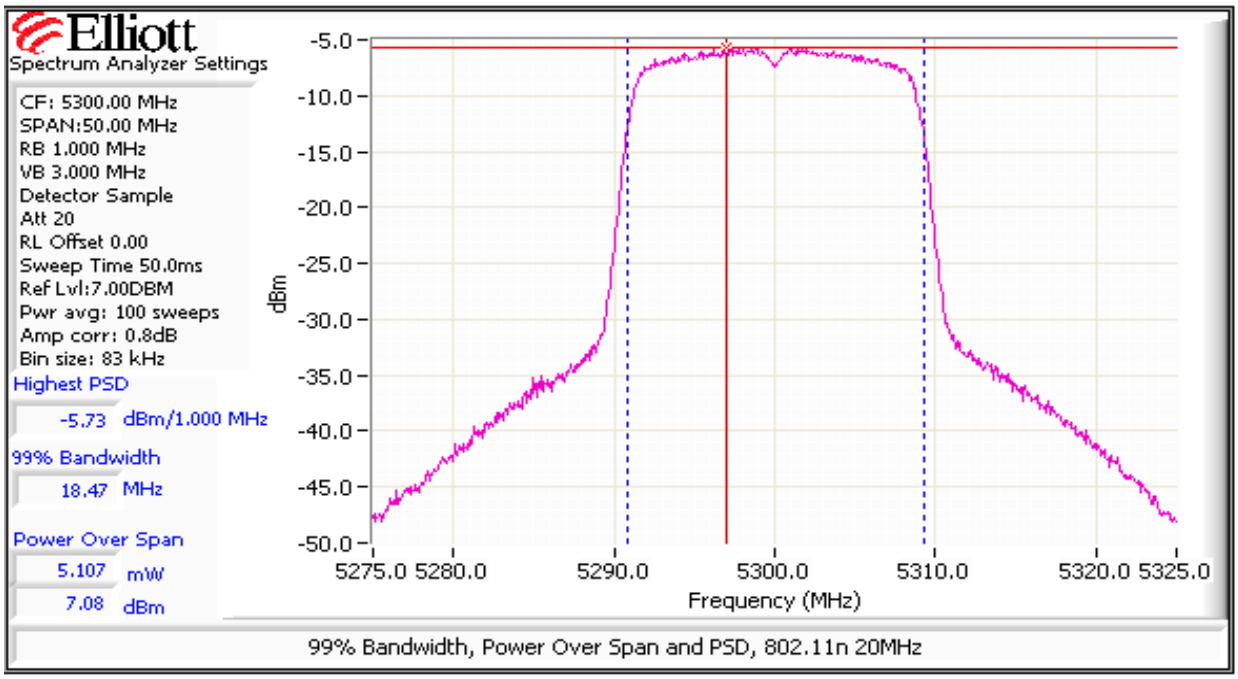
	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	17	17	17	No	17.0

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5260	20/12.5		-9.3	-10.3	-10.1	0.3	-5.1	13.0	0.017	PASS
5300	10/19.0		8.0	7.1	7.5	17.0	**12.3**	13.0		PASS
5320	10/16.0		4.6	4.1	4.7	8.4	9.2	13.0		PASS

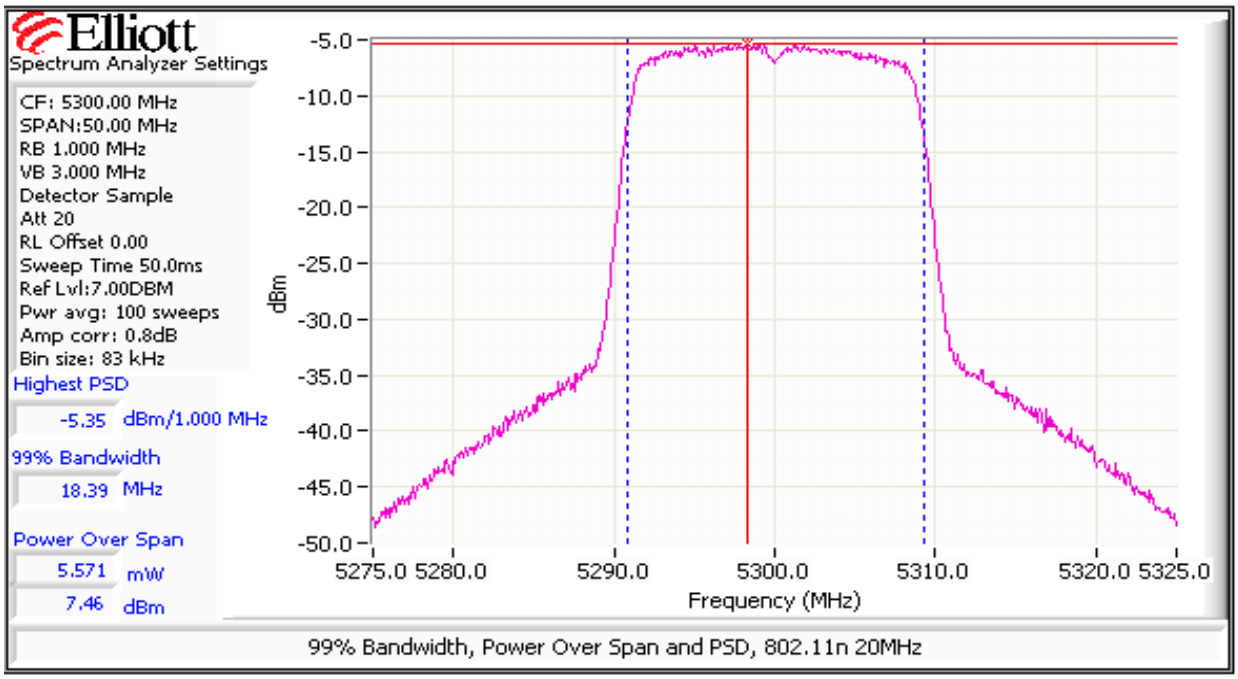
Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5260	18.3	-5.1	-22.0	-23.2	-22.9	0.0	-17.9	0.0	11.0	PASS
5300	18.5	12.3	-4.7	-5.7	-5.4	0.9	-0.5	0.0	11.0	PASS
5320	18.4	9.2	-4.3	-5.6	-4.8	1.0	**-0.1**	0.0	10.7	PASS

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A





Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

802.11n 20MHz (HT20) Mode - Panel Antenna

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	30	30	30	No	30.0

Limit in the 5250-5350 MHz band for a maximum antenna gain of 30dBi is 0dBm

The power level at **5300MHz** and **5320MH**z was reduced from the power settings used for radiated emissions tests to comply with eirp limits. The power level used during radiated emissions tests is shown in the 2nd set of tables.

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5260	20/7.0		-14.4	-15.6	-15.2	0.1	-10.2	0.0	0.0009	PASS
5300	**20/16.5**		-6.0	-5.7	-5.1	0.8	-0.8	0.0		PASS
5320	**20/16.5**		-5.2	-5.8	-5.3	0.9	**-0.7**	0.0		PASS

Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5260	18.4	-10.2	-27.1	-28.5	-28.0	0.0	-23.0	-13.0	11.0	PASS
5300	18.4	-0.8	-17.7	-18.6	-17.7	0.0	**-13.2**	-13.0	11.0	PASS
5320	18.4	-0.7	-18.1	-18.5	-18.0	0.0	-13.4	-13.0	11.0	PASS

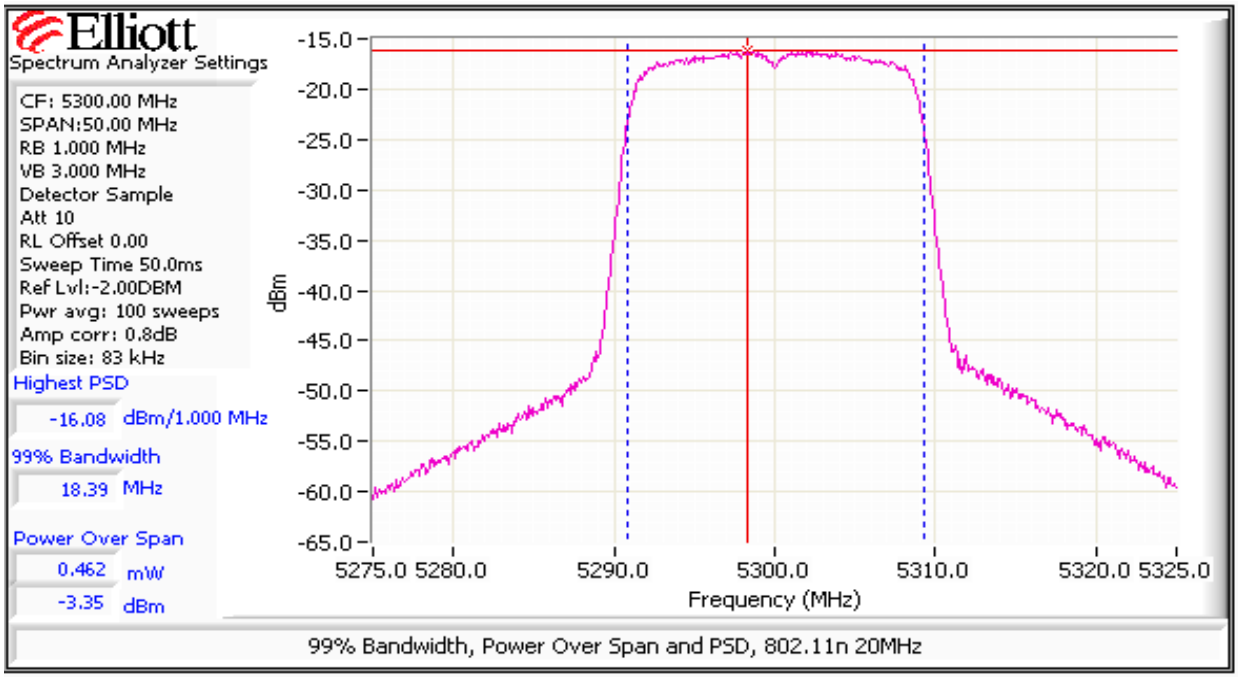
Maximum Output Power for use with Panel Antennas - Gain not exceeding 28dBi (5250 - 5350 MHz)

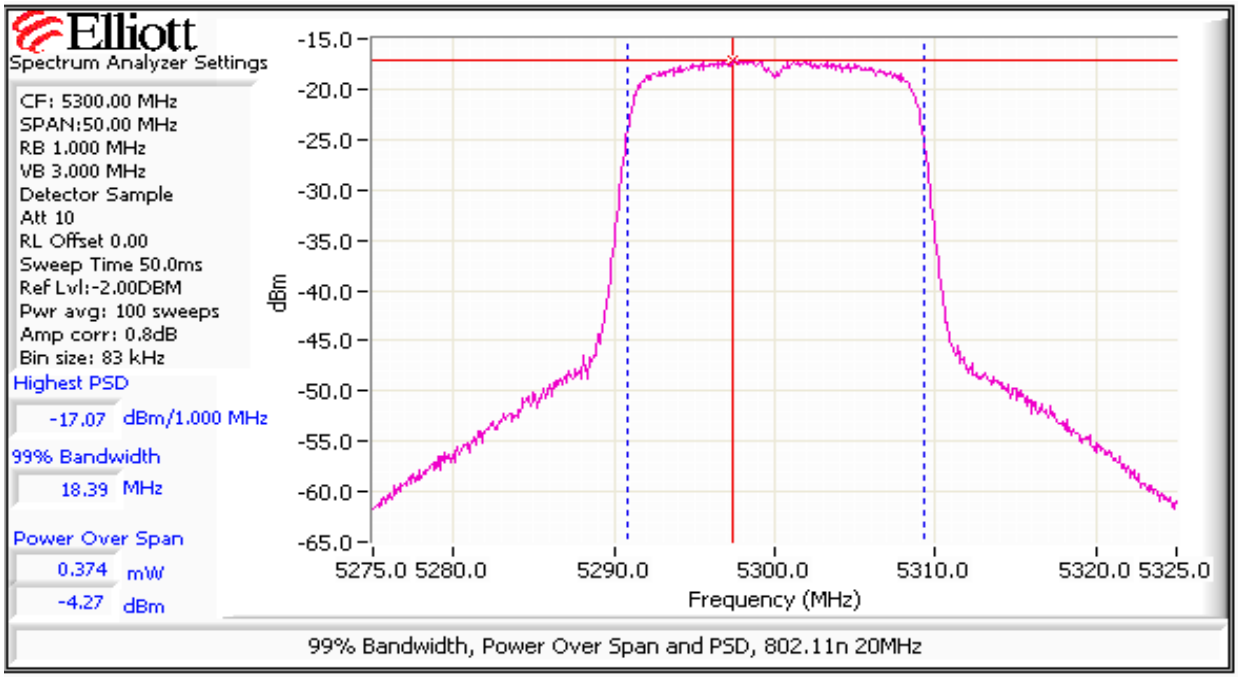
	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	28	28	28	No	28.0

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5260	20/7.0		-14.4	-15.6	-15.2	0.1	-10.2	2.0	0.0013	PASS
5300	20/18.0		-3.4	-4.3	-3.6	1.3	**1.0**	2.0		PASS
5320	20/17.5		-4.1	-4.5	-4.2	1.1	0.5	2.0		PASS

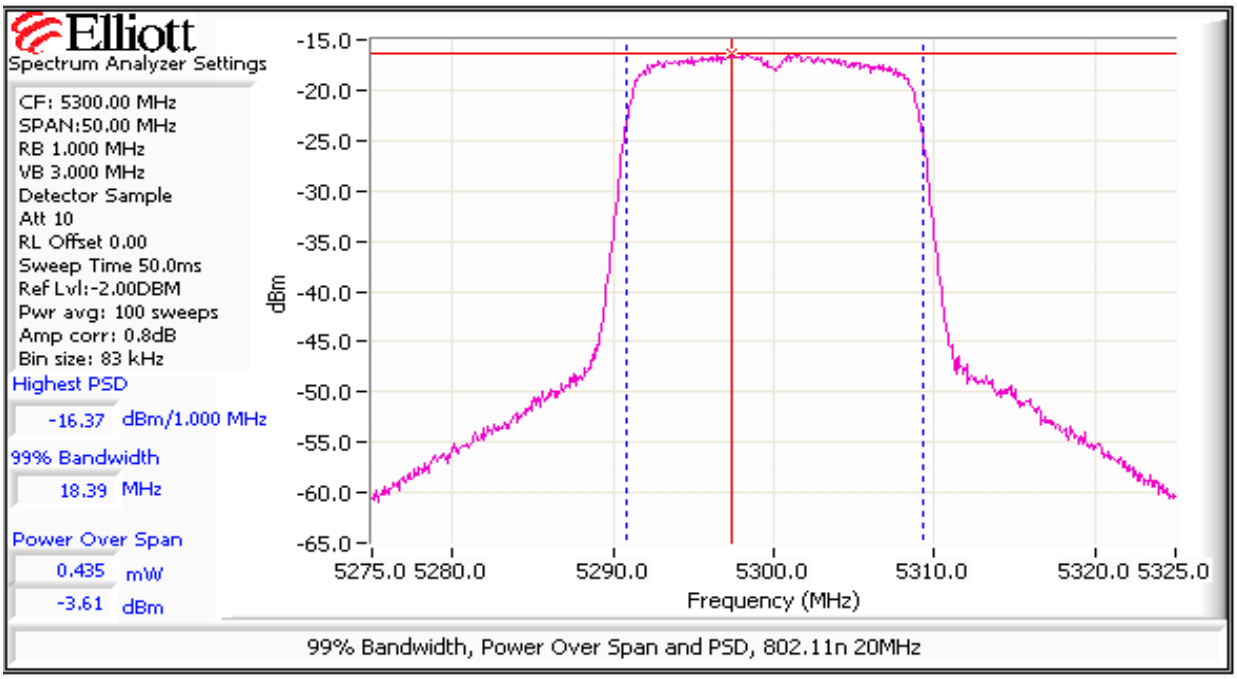
Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5260	18.4	-10.2	-27.1	-28.5	-28.0	0.0	-23.0	-11.0	11.0	PASS
5300	18.4	1.0	-16.1	-17.1	-16.4	0.1	**-11.7**	-11.0	11.0	PASS
5320	18.5	0.5	-16.6	-17.4	-17.1	0.1	-12.2	-11.0	11.0	PASS

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A





Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

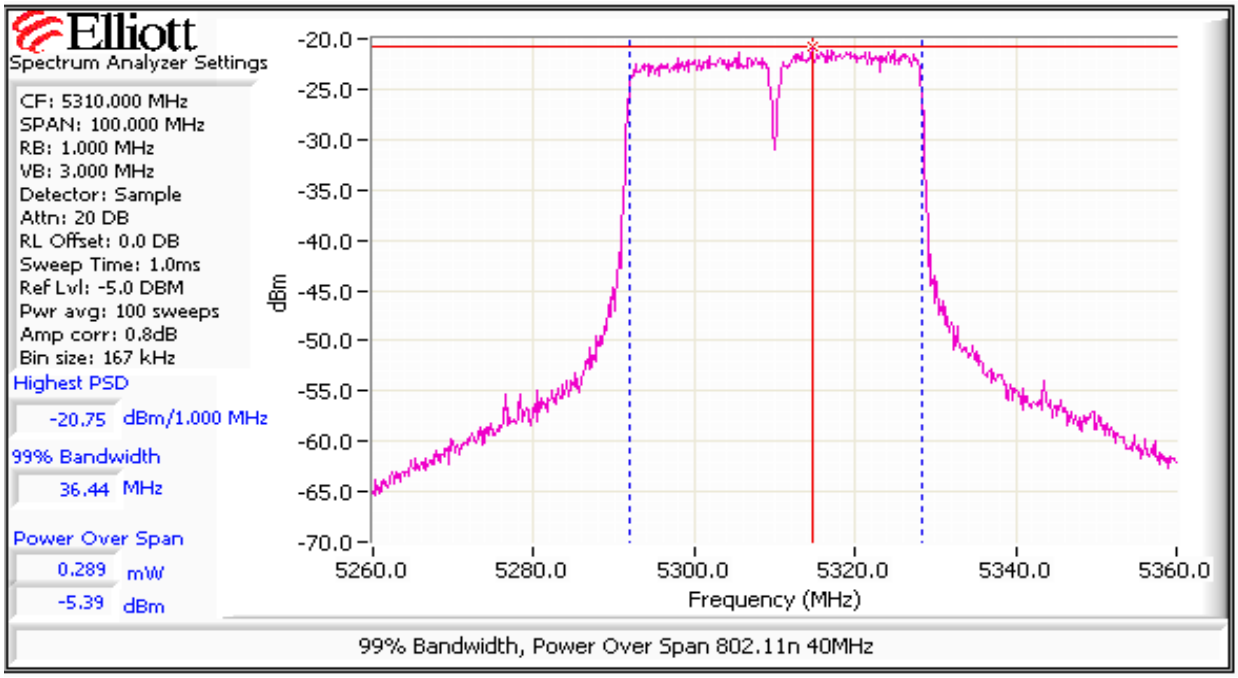
802.11n 40MHz (HT40) Mode - Sector Antenna

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	20	20	20	No	20.0

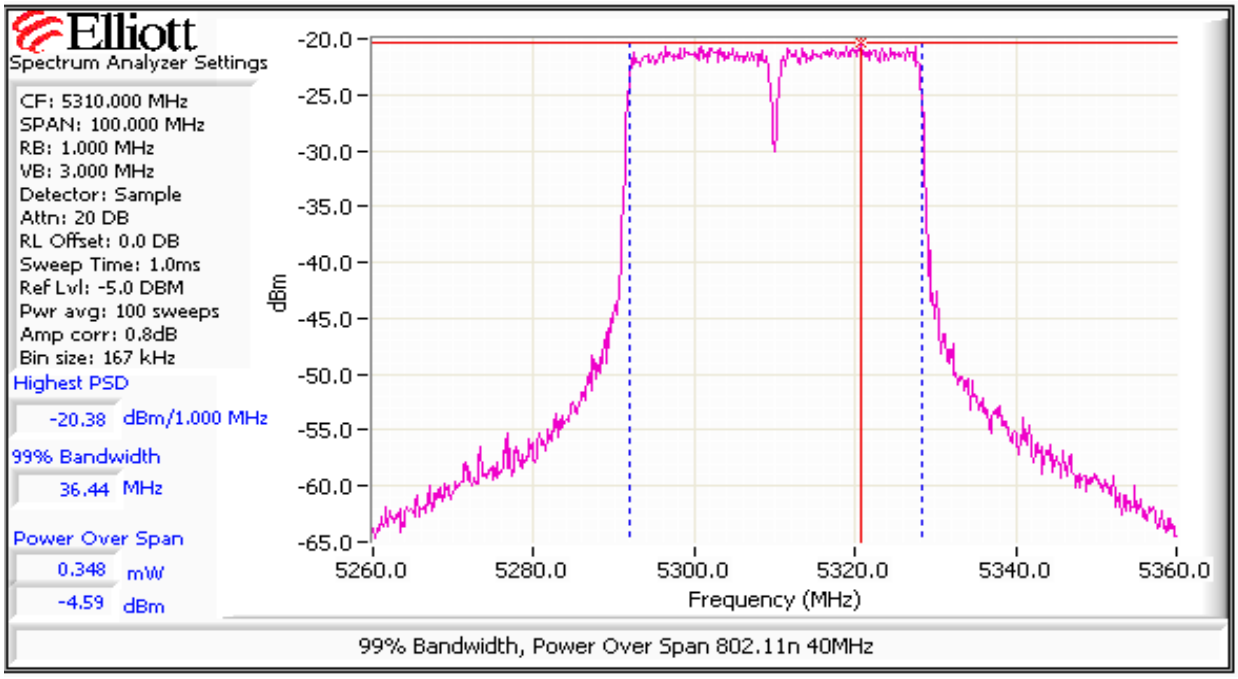
Limit in the 5250-5350 MHz band for a maximum antenna gain of 20dBi is 10dBm.

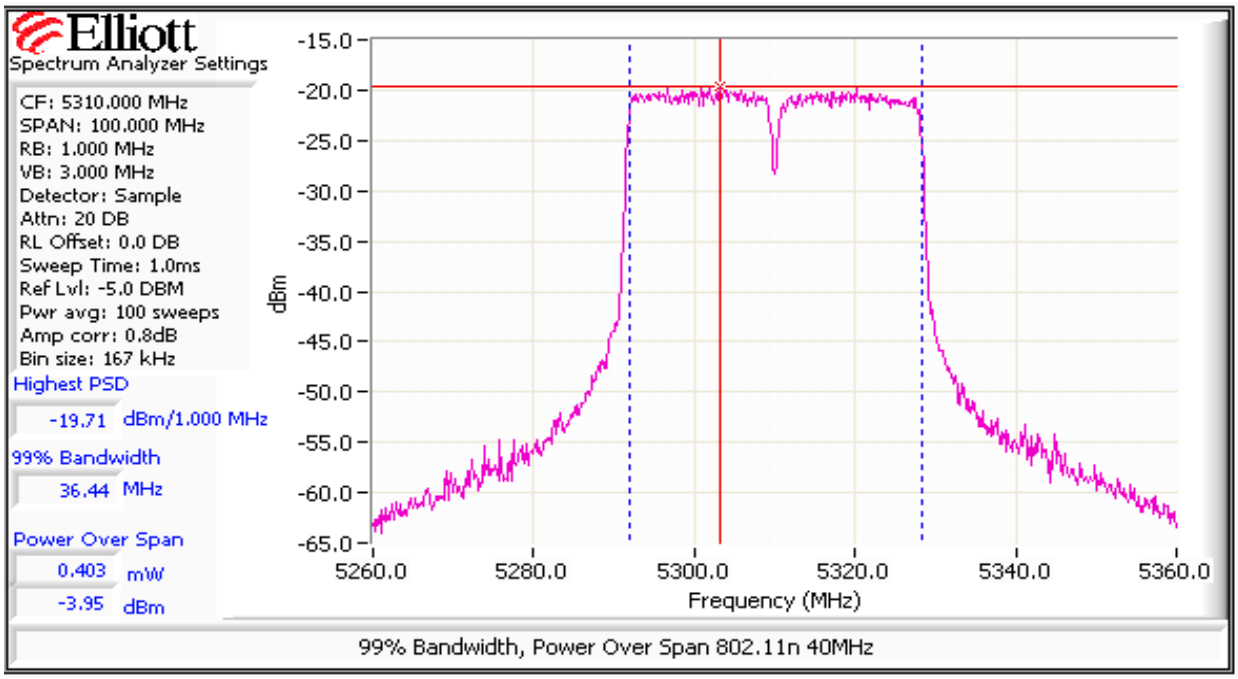
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5270	20/16.5		-6.3	-5.9	-4.9	0.8	-0.9	10.0	0.001	PASS
5310	20/17.0		-5.4	-4.6	-4.0	1.0	**0.2**	10.0		PASS

Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5270	36.6	-0.9	-22.0	-21.9	-20.6	0.0	-16.7	-3.0	11.0	PASS
5310	36.4	0.2	-20.8	-20.4	-19.7	0.0	**-15.5**	-3.0	11.0	PASS



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A





Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

802.11n 40MHz (HT40) Mode - Panel Antenna

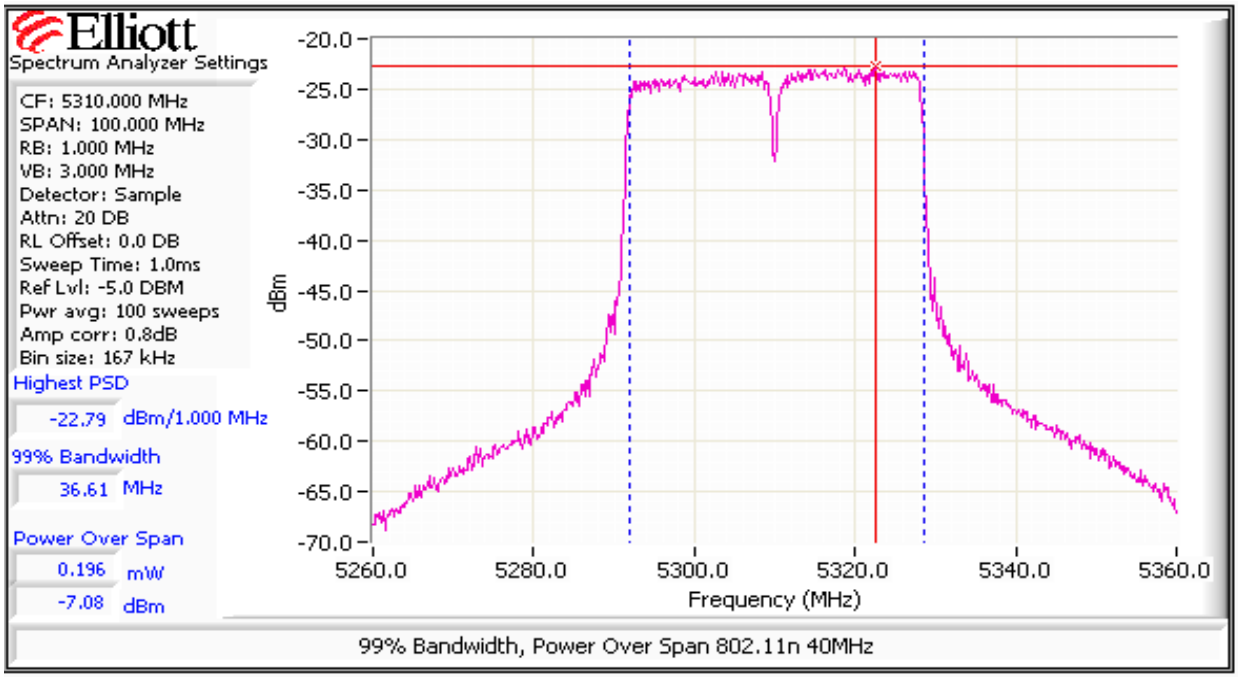
Limit in both 5250-5350 MHz and 5470 - 5725 MHz bands for a maximum antenna gain of 30dBi is 0dBm

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	30	30	30	No	30.0

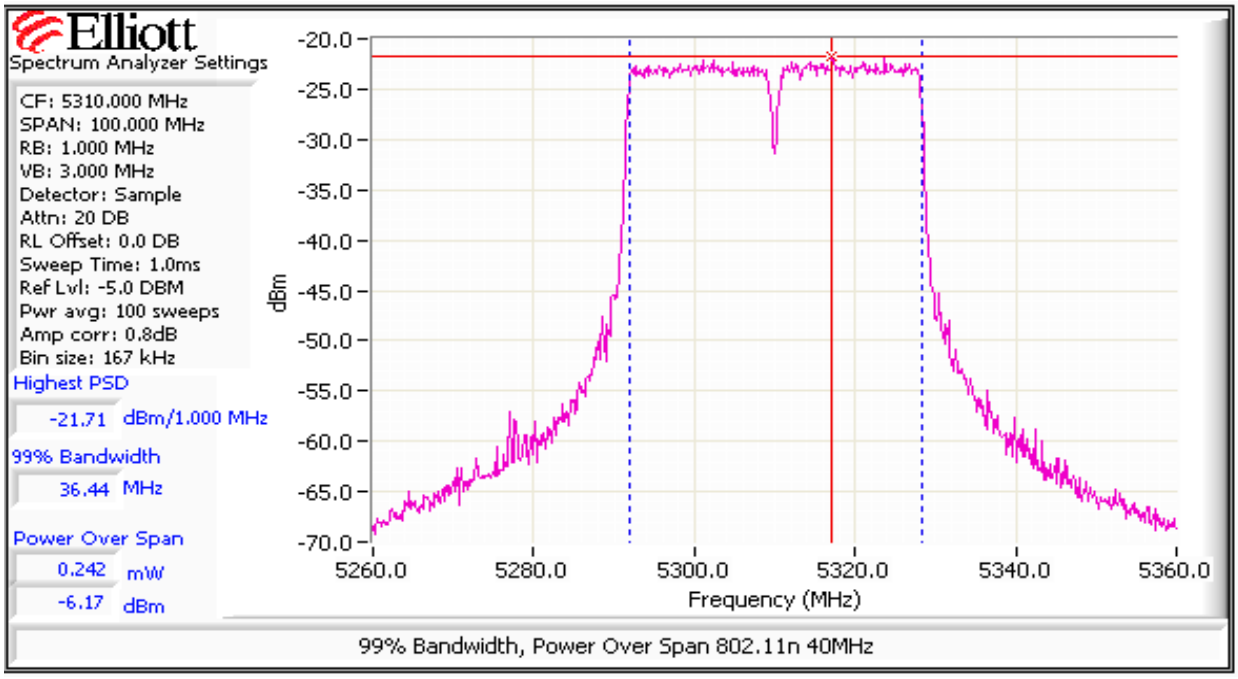
The power level for all channels in the **5470-5725MHz** was reduced from the power settings used for radiated emissions tests to comply with eirp limits. The power level used during radiated emissions tests is shown in the 2nd set of tables.

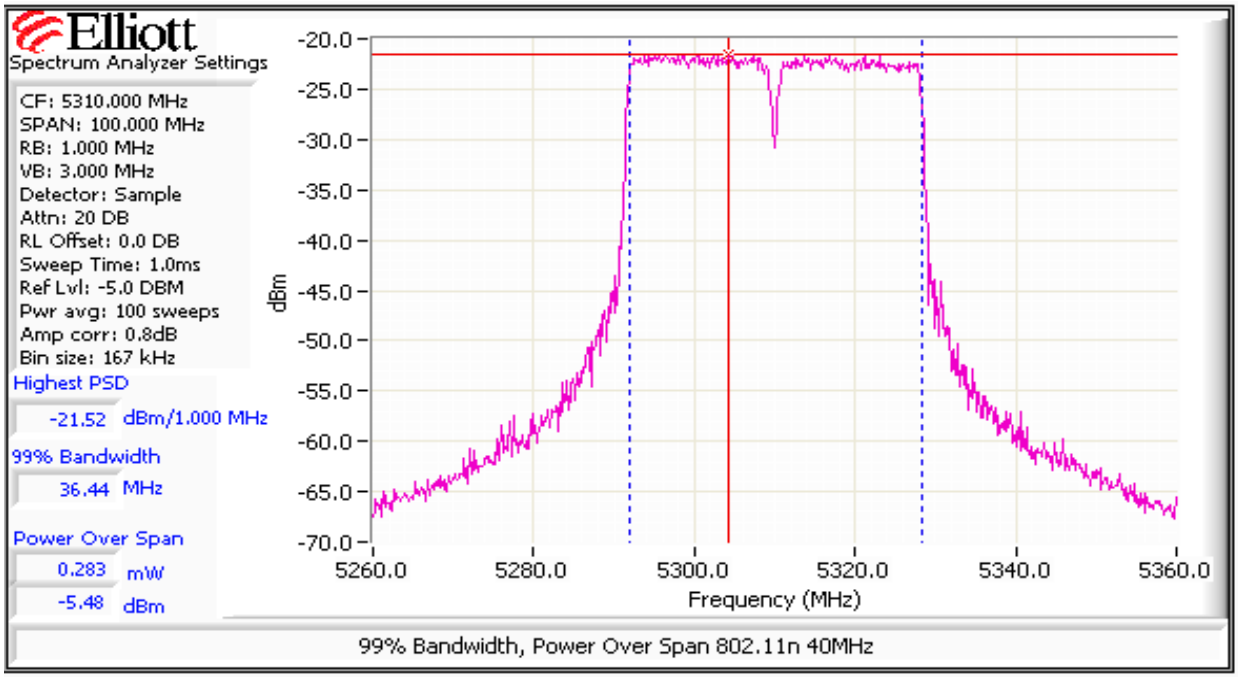
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5270	20/15.0		-8.1	-7.1	-6.9	0.6	-2.6	0.0	0.0007	PASS
5310	20/15.5		-7.1	-6.2	-5.5	0.7	**-1.4**	0.0		PASS

Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5270	36.6	-2.6	-23.9	-23.1	-22.6	0.0	-18.4	-13.0	11.0	PASS
5310	**36.6**	-1.4	-22.8	-21.7	-21.5	0.0	**-17.2**	-13.0	11.0	PASS



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A





Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

RSS 210, FCC 15.407(NII) Band Edge Field Strength - Sector Antenna

Test Specific Details

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

General Test Configuration

The EUT was installed into a test fixture such that the EUT was exposed (i.e. outside of a host system).

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

Ambient Conditions:

Rel. Humidity:	39 %
Temperature:	18.6 °C

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Summary of Results

Run #	Mode	Channel	Attenuator (dB)	Power Setting	Test Performed	Limit	Result / Margin
Run #1	802.11a Chain A	5260 MHz (#52)	10.0	18.0 dBm	Band Edge at 5250MHz	15 E	86.9dBµV/m @ 5250.0MHz (-1.4dB)
		5320 MHz (#64)	10.0	22.0 dBm	Restricted Band Edge at 5350 MHz	15.209	69.7dBµV/m @ 5351.9MHz (-4.3dB)
Run #2	802.11n 20MHz Chain A+B+C	5260 MHz (#52)	20.0	12.5 dBm	Band Edge at 5250MHz	15 E	**67.9dBµV/m @ 5250.0MHz (-0.4dB)**
		5320 MHz (#64)	10.0	16.0 dBm	Restricted Band Edge at 5350 MHz	15.209	51.7dBµV/m @ 5350.1MHz (-2.3dB)
Run #3	802.11n 40MHz Chain A+B+C	5270 MHz (#54)	20.0	16.5 dBm	Band Edge at 5250MHz	15 E	65.3dBµV/m @ 5250.0MHz (-3.0dB)
		5310 MHz (#62)	20.0	17.0dBm	Restricted Band Edge at 5350 MHz	15.209	51.0dBµV/m @ 5350.1MHz (-3.0dB)

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #1, Band Edge Field Strength - 802.11a

Date of Test: 8/26/2009 Test Location: FT Chamber #4

Test Engineer: Joseph Cadigal Config Change: None

Run #1a, EUT on Channel 5260 MHz (#52) - 802.11a

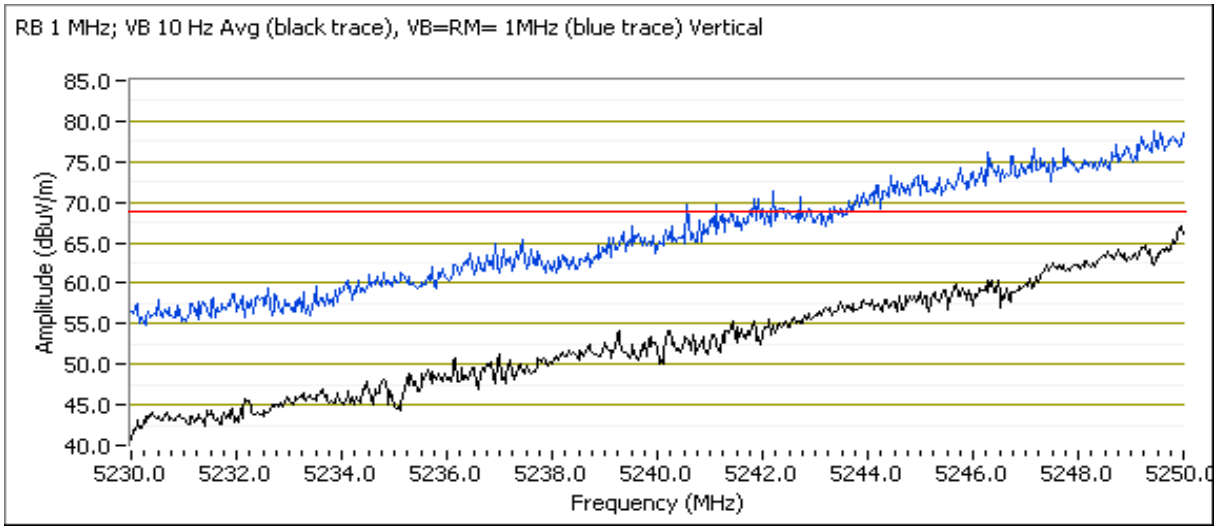
Chain	Power Settings		
	Target (dBm)	Attenuator (dB)	Software Setting
A		10.0	18.0

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5262.230	98.2	V	-	-	AVG	350	1.4	
5256.970	108.0	V	-	-	PK	350	1.4	
5262.270	84.7	H	-	-	AVG	135	1.0	
5262.700	94.9	H	-	-	PK	135	1.0	

Band Edge (5250MHz, limit is -27dBm eirp, 68.3dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5249.830	66.7	V	68.3	-1.6	Avg	350	1.40	
5250.000	54.7	H	68.3	-13.6	Avg	135	1.00	
5248.730	70.1	H	88.3	-18.2	Pk	135	1.00	
5250.000	**86.9**	**V**	**88.3**	**-1.4**	Pk	350	1.40	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #1b, EUT on Channel 5320 MHz (#64) - 802.11a

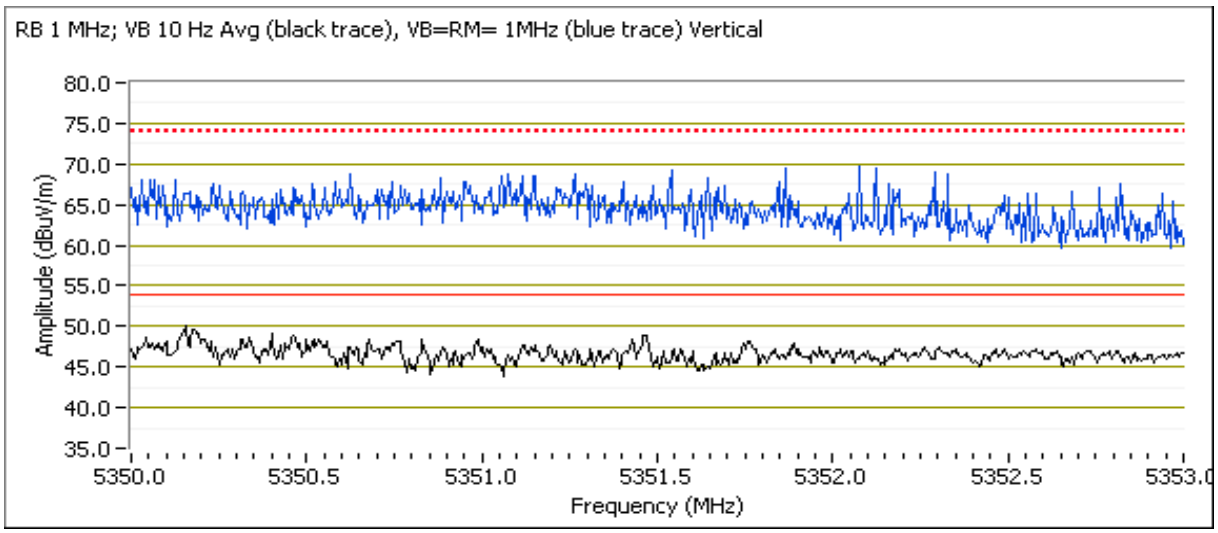
Chain	Power Settings		
	Target (dBm)	Attenuator (dB)	Software Setting
A		10.0	18.0

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5317.830	98.7	V	-	-	AVG	342	1.3	
5317.570	108.1	V	-	-	PK	342	1.3	
5317.130	87.8	H	-	-	AVG	116	1.0	
5322.000	98.7	H	-	-	PK	116	1.0	

5350 MHz Band Edge Signal Radiated Field Strength (Restricted band limit =54dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.170	49.5	V	54.0	-4.5	Avg	342	1.0	
5350.460	42.7	H	54.0	-11.3	AVG	360	1.0	
5350.310	57.3	H	74.0	-16.7	PK	360	1.0	
5351.860	**69.7**	**V**	**74.0**	**-4.3**	Pk	342	1.0	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #2, Band Edge Field Strength - 802.11n 20MHz

Date of Test: 8/27/2009 Test Location: Chamber #3

Test Engineer: Mehran Birgani Config Change: None

Run #2a, EUT on Channel 5260 MHz (#52) - 802.11n 20MHz

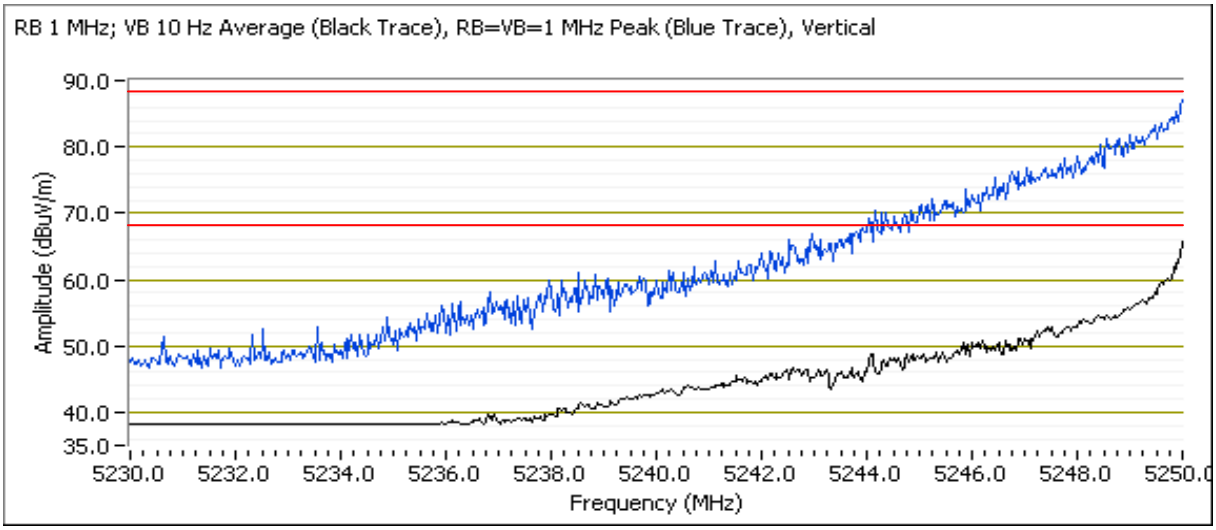
Chain	Power Settings		
	Target (dBm)	Attenuator (dB)	Software Setting
A+B+C		20.0	12.5

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5257.730	92.8	V	-	-	AVG	359	1.2	
5257.100	101.7	V	-	-	PK	359	1.2	
5261.600	80.3	H	-	-	AVG	114	1.0	
5261.900	90.0	H	-	-	PK	114	1.0	

Band Edge (5250MHz, limit is -27dBm eirp, 68.3dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5250.000	**67.9**	**V**	**68.3**	**-0.4**	AVG	359	1.2	
5250.000	56.4	H	68.3	-11.9	AVG	114	1.0	
5249.830	86.0	V	88.3	-2.3	PK	359	1.2	
5249.970	74.5	H	88.3	-13.8	PK	114	1.0	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #2b, EUT on Channel 5320 MHz (#64) - 802.11n 20MHz

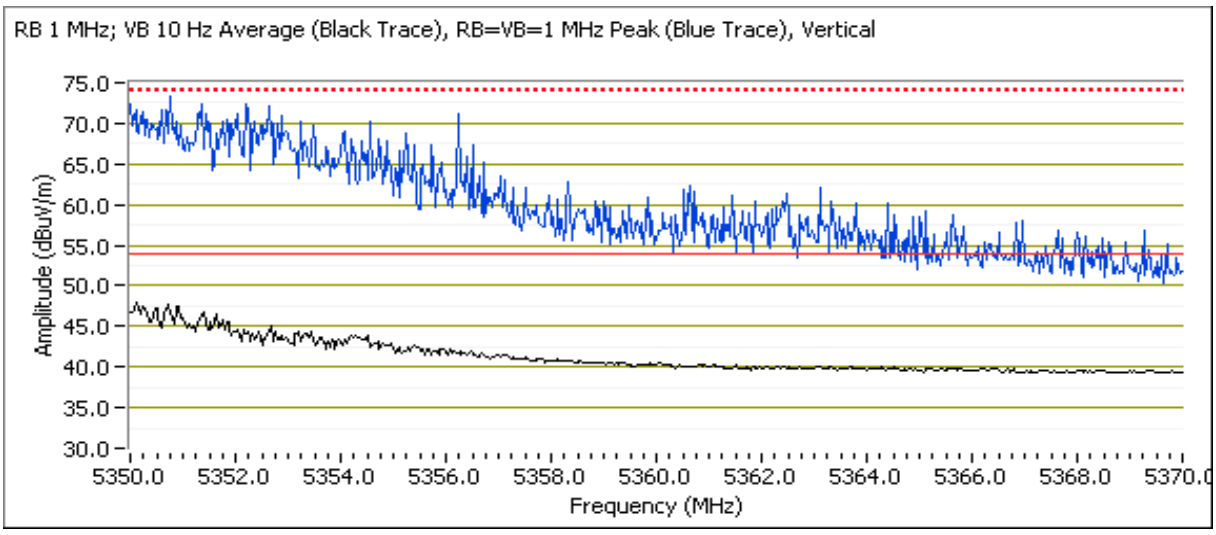
Chain	Power Settings		
	Target (dBm)	Attenuator (dB)	Software Setting
A+B+C		10.0	16.0

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5322.470	105.6	V	-	-	AVG	346	1.2	
5321.470	115.9	V	-	-	PK	346	1.2	
5321.530	88.2	H	-	-	AVG	349	1.1	
5321.200	98.7	H	-	-	PK	349	1.1	

5350 MHz Band Edge Signal Radiated Field Strength (Restricted band limit =54dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.130	**51.7**	**V**	**54.0**	**-2.3**	AVG	346	1.2	
5350.130	38.1	H	54.0	-15.9	AVG	349	1.1	
5350.900	71.7	V	74.0	-2.3	PK	346	1.2	
5352.770	52.5	H	74.0	-21.5	PK	349	1.1	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #3, Band Edge Field Strength - 802.11n 40MHz

Date of Test: 8/27/2009 Test Location: FT Chamber #3

Test Engineer: Joseph Cadigal Config Change: None

Run #3a, EUT on Channel 5270 MHz (#54) - 802.11n 40MHz

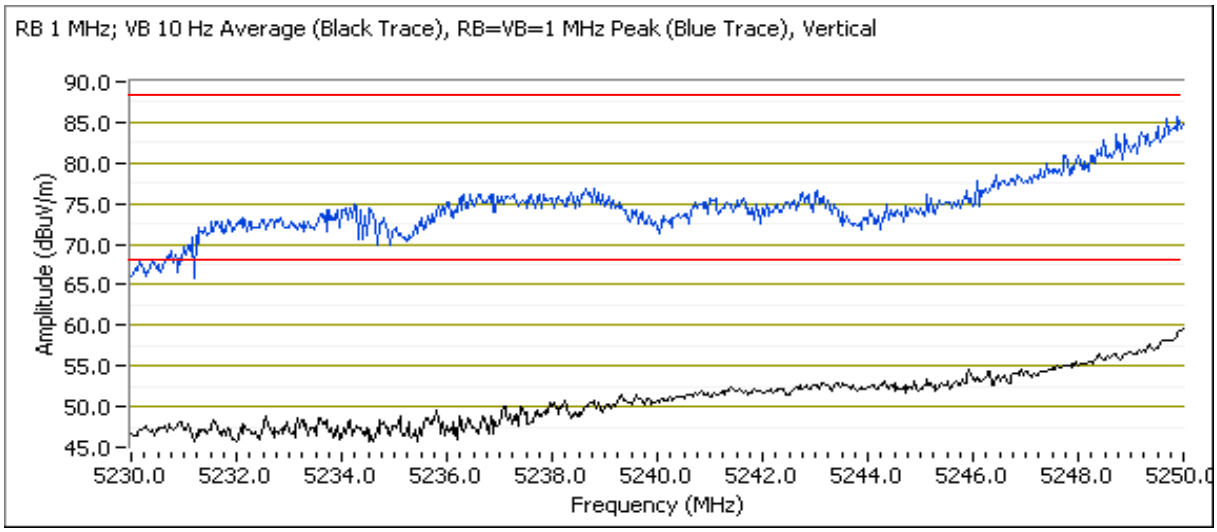
Chain	Power Settings		
	Target (dBm)	Attenuator (dB)	Software Setting
A+B+C		20.0	16.5

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5275.130	91.9	V	-	-	AVG	344	1.2	
5278.730	102.4	V	-	-	PK	344	1.2	
5268.520	76.8	H	-	-	AVG	341	1.2	
5268.580	87.5	H	-	-	PK	341	1.2	

Band Edge (5250MHz, limit is -27dBm eirp, 68.3dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5249.900	50.9	H	68.3	-17.4	AVG	341	1.2	
5249.970	**65.3**	**V**	**68.3**	**-3.0**	AVG	344	1.2	
5249.830	84.0	V	88.3	-4.3	PK	344	1.2	
5250.000	69.6	H	88.3	-18.7	PK	341	1.2	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #3b, EUT on Channel 5310 MHz (#62) - 802.11n 40MHz

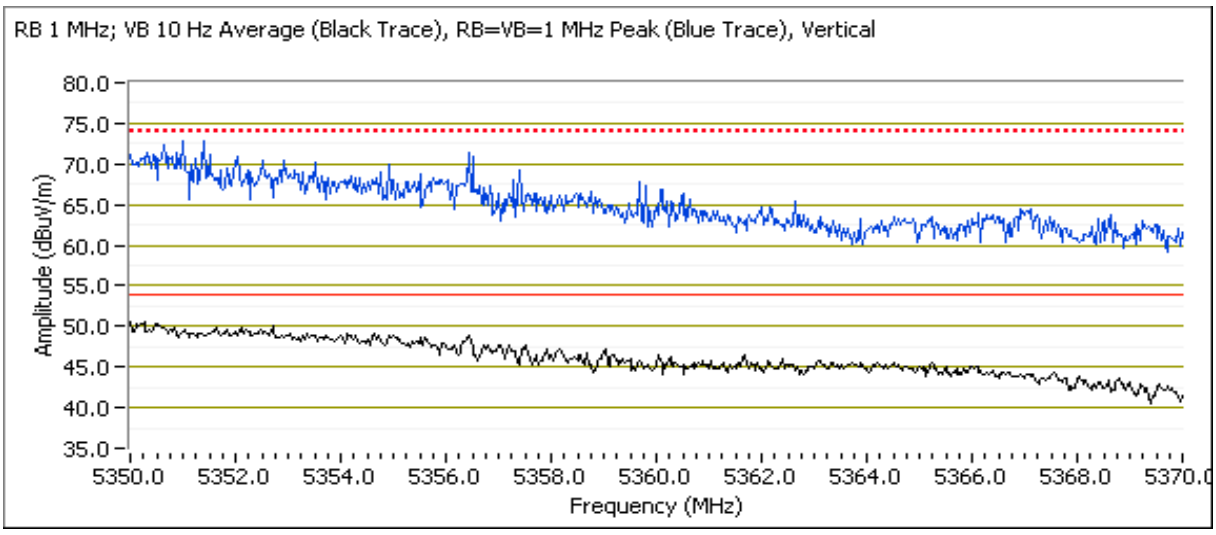
Chain	Power Settings		
	Target (dBm)	Attenuator (dB)	Software Setting
A+B+C		20.0	17.0

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5319.870	92.2	V	-	-	AVG	0	1.1	
5321.330	102.5	V	-	-	PK	0	1.1	
5295.400	78.4	H	-	-	AVG	34	1.0	RB 1 MHz; VB: 10 Hz
5296.530	89.6	H	-	-	PK	34	1.0	RB 1 MHz; VB: 1 MHz

5350 MHz Band Edge Signal Radiated Field Strength (Restricted band limit =54dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.070	**51.0**	**V**	**54.0**	**-3.0**	Avg	0	1.1	
5350.830	71.0	V	74.0	-3.0	Pk	0	1.1	
5352.420	38.8	H	54.0	-15.2	AVG	0	1.1	
5351.150	53.6	H	74.0	-20.4	PK	0	1.1	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

RSS 210, FCC 15.407(NII) Band Edge Field Strength - Panel Antenna

Test Specific Details

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

General Test Configuration

The EUT was installed into a test fixture such that the EUT was exposed (i.e. outside of a host system).

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

Ambient Conditions:

Rel. Humidity: 25-40 %
Temperature: 18-26 °C

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Summary of Results

Run #	Mode	Channel	Attenuator (dB)	Power Setting	Test Performed	Limit	Result / Margin
Run #1	802.11a 20MHz Chain A	5260 MHz (#52)	20.0	12.5	Band Edge at 5250MHz	15 E	87.6dBµV/m @ 5249.6MHz (-0.7dB)
		5320 MHz (#64)	20.0	18.0	Restricted Band Edge at 5350 MHz	15.209	53.7dBµV/m @ 5350.0MHz (-0.3dB)
Run #2	802.11n 20MHz Chain A+B+C	5260 MHz (#52)	20.0	7.0	Band Edge at 5250MHz	15 E	67.1dBµV/m @ 5250.0MHz (-1.2dB)
		5320 MHz (#64)	20.0	17.5	Restricted Band Edge at 5350 MHz	15.209	52.8dBµV/m @ 5350.0MHz (-1.2dB)
Run #3	802.11n 40MHz Chain A+B+C	5270 MHz (#54)	20.0	15.0	Band Edge at 5250MHz	15 E	**68.2dBµV/m @ 5250.0MHz (-0.1dB)**
		5310 MHz (#62)	20.0	15.5	Restricted Band Edge at 5350 MHz	15.209	51.8dBµV/m @ 5350.0MHz (-2.2dB)

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #1, Band Edge Field Strength - 802.11a Chain A

Date of Test: 8/24/2009 Test Location: Chamber #5

Test Engineer: Joseph Cadigal Config Change: None

Run #1a, EUT on Channel 5260 MHz (#52) - 802.11n 20MHz, Chain A

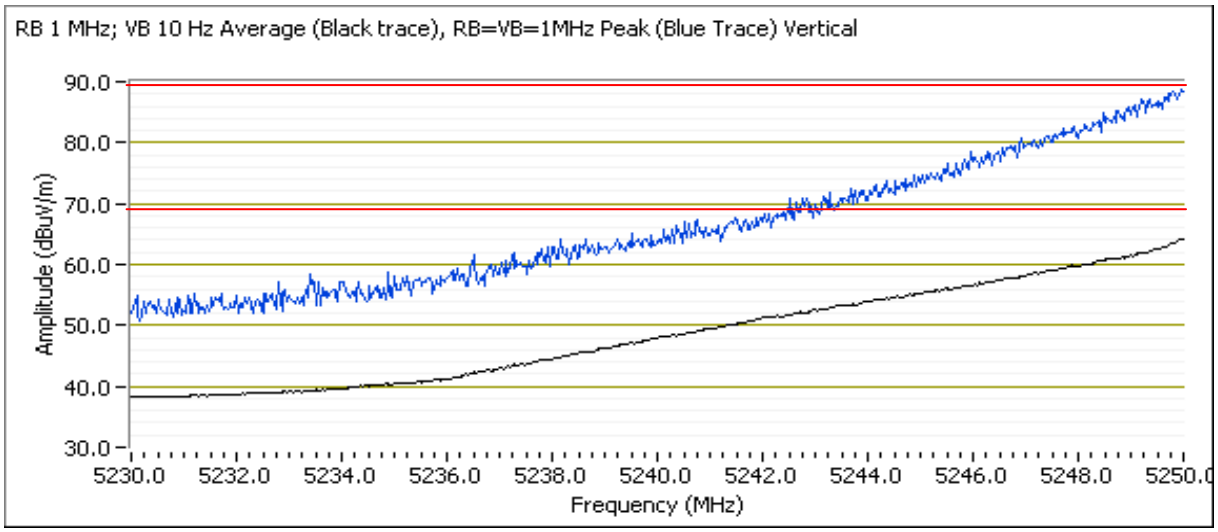
Chain	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	-	-	12.5

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5261.100	97.2	V	-	-	AVG	15	1.0	
5257.770	105.2	V	-	-	PK	15	1.0	
5259.020	79.3	H	-	-	AVG	31	1.0	
5258.710	89.1	H	-	-	PK	31	1.0	

Band Edge (5250MHz, limit is -27dBm eirp, 68.3dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5249.970	49.8	H	68.3	-18.5	Avg	33	1.0	
5250.000	64.4	V	68.3	-3.9	Avg	14	1.0	
5249.600	**87.6**	**V**	**88.3**	**-0.7**	PK	14	1.0	
5249.600	68.2	H	88.3	-20.1	PK	33	1.0	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #1b, EUT on Channel 5320 MHz (#64) - 802.11a, , Chain A

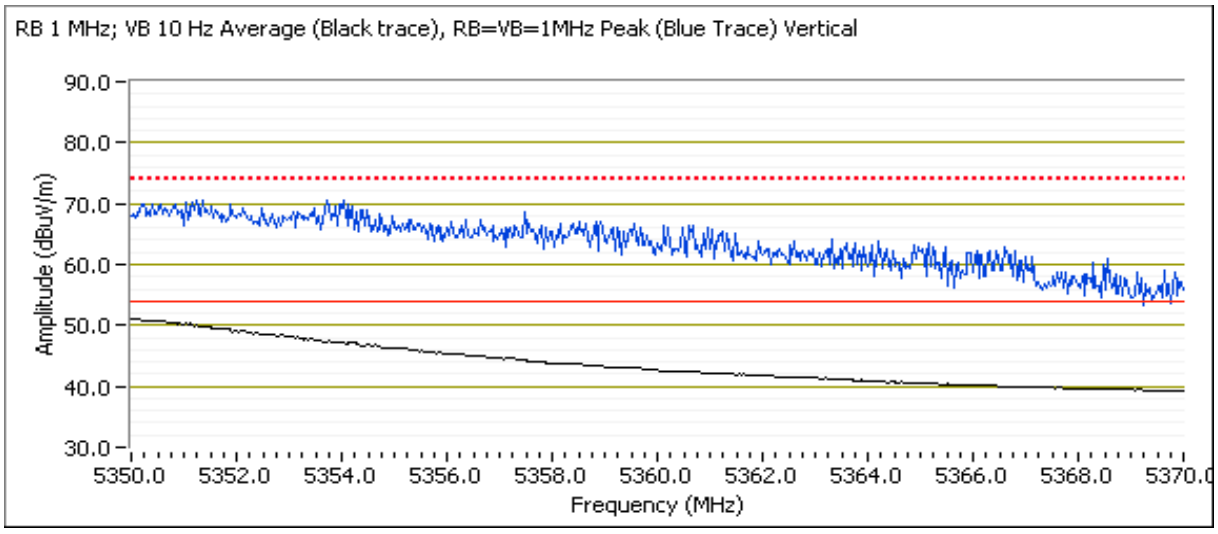
Chain	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A	-	-	18.0

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5322.000	96.0	V	-	-	AVG	346	1.0	
5321.370	105.1	V	-	-	PK	346	1.0	
5318.940	86.7	H	-	-	AVG	42	1.0	
5321.370	96.4	H	-	-	PK	42	1.0	

5350 MHz Band Edge Signal Radiated Field Strength (Restricted band limit =54dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.000	**53.7**	**V**	**54.0**	**-0.3**	AVG	346	1.0	
5350.210	39.2	H	54.0	-14.8	AVG	41	1.0	
5350.870	70.2	V	74.0	-3.8	PK	346	1.0	
5350.960	55.0	H	74.0	-19.0	PK	41	1.0	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #2, Band Edge Field Strength - 802.11n 20MHz Chain A+B+C

Date of Test: 8/25/2009 Test Location: FT Chamber #3

Test Engineer: Mehran Birgani Config Change: None

Run #2a, EUT on Channel 5260 MHz (#52) - 802.11n 20MHz, Chain A+B+C

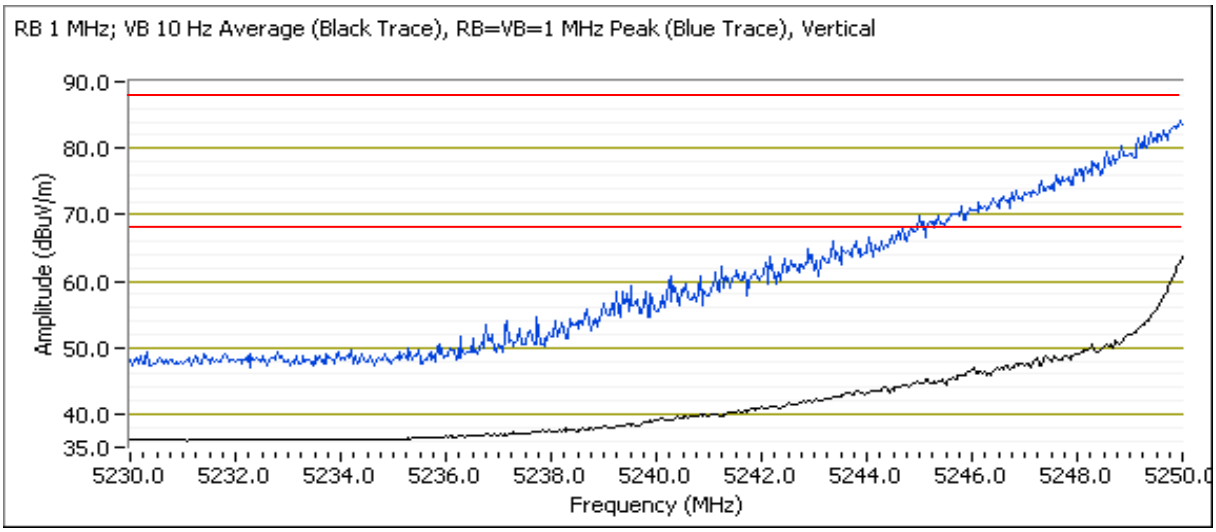
Chain	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
A+B+C			7.0

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5258.170	90.5	V	-	-	AVG	343	1.0	
5258.300	99.8	V	-	-	PK	343	1.0	
5260.500	76.1	H	-	-	AVG	43	1.0	
5258.670	85.6	H	-	-	PK	43	1.0	

Band Edge (5250MHz, limit is -27dBm eirp, 68.3dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5250.000	**67.1**	**V**	**68.3**	**-1.2**	AVG	343	1.0	
5250.000	52.6	H	68.3	-15.7	AVG	43	1.0	
5249.730	82.5	V	88.3	-5.8	PK	343	1.0	
5249.970	69.7	H	88.3	-18.6	PK	43	1.0	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #2b, EUT on Channel 5320 MHz (#64) - 802.11n 20MHz, , Chain A+B+C

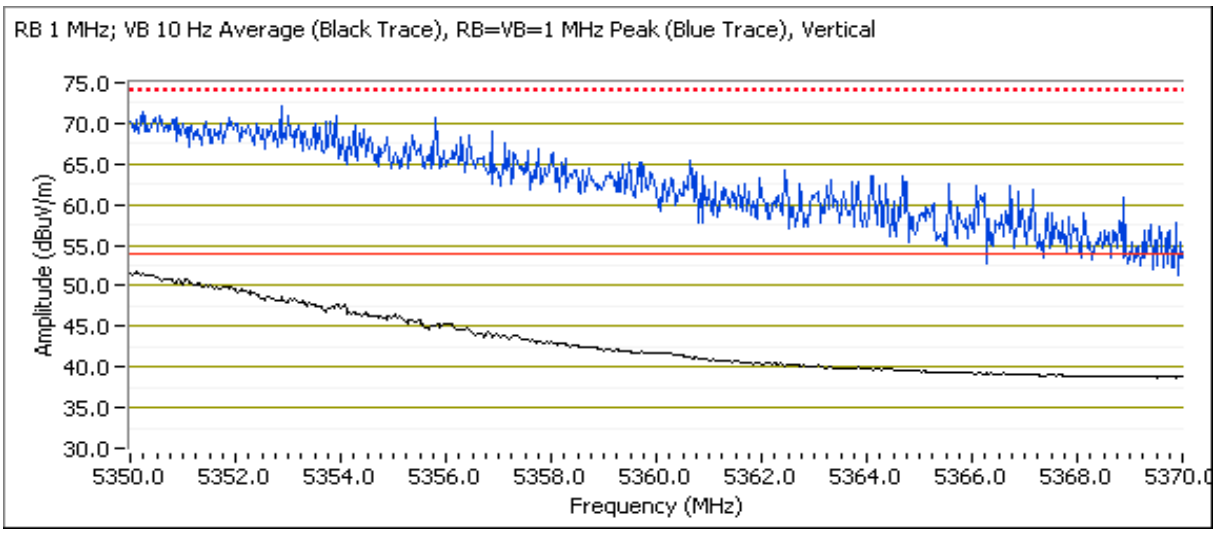
Chain	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
A+B+C			17.5

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5321.970	100.5	V	-	-	AVG	359	1.0	
5323.600	110.5	V	-	-	PK	359	1.0	
5321.100	84.1	H	-	-	AVG	41	1.0	
5324.600	94.4	H	-	-	PK	41	1.0	

5350 MHz Band Edge Signal Radiated Field Strength (Restricted band limit =54dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.030	**52.8**	**V**	**54.0**	**-1.2**	AVG	359	1.0	
5350.170	38.6	H	54.0	-15.4	AVG	41	1.0	
5350.500	53.6	H	74.0	-20.4	PK	41	1.0	
5351.700	70.8	V	74.0	-3.2	PK	359	1.0	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #3, Band Edge Field Strength - 802.11n 40MHz Chain A+B+C

Date of Test: 8/25/2009 Test Location: FT Chamber #3

Test Engineer: Mehran Birgani Config Change: None

Run #3a, EUT on Channel 5270 MHz (#54) - 802.11n 40MHz, Chain A+B+C

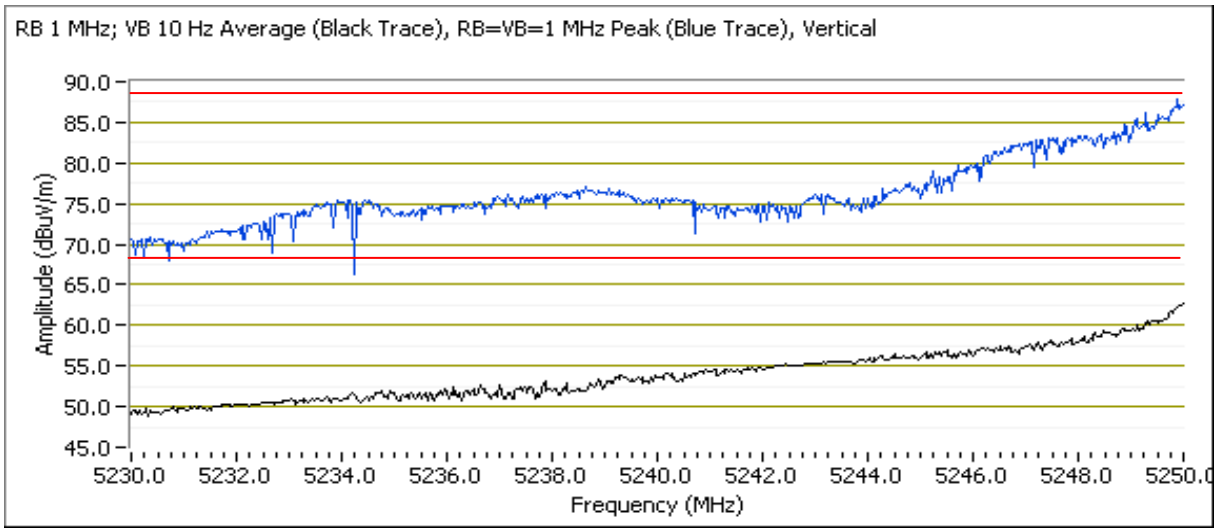
Chain	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
A+B+C			15.0

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5265.270	94.7	V	-	-	AVG	341	1.0	
5256.200	104.3	V	-	-	PK	341	1.0	
5258.000	79.4	H	-	-	AVG	48	1.0	
5274.070	90.1	H	-	-	PK	48	1.0	

Band Edge (5250MHz, limit is -27dBm eirp, 68.3dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5250.000	**68.2**	**V**	**68.3**	**-0.1**	AVG	341	1.0	
5250.000	53.1	H	68.3	-15.2	AVG	48	1.0	
5249.900	86.7	V	88.3	-1.6	PK	341	1.0	
5249.930	72.0	H	88.3	-16.3	PK	48	1.0	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #3b, EUT on Channel 5310 MHz (#62) - 802.11n 40MHz, , Chain A+B+C

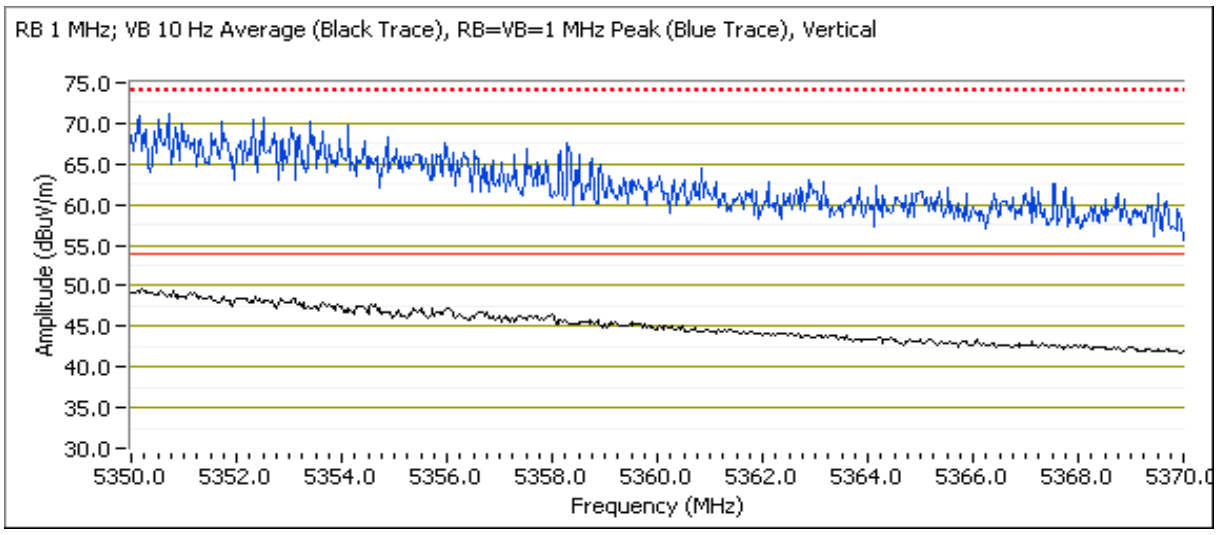
Chain	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
A+B+C			15.5

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5314.730	95.4	V	-	-	AVG	341	1.0	
5301.330	105.1	V	-	-	PK	341	1.0	
5293.070	80.3	H	-	-	AVG	48	1.0	
5303.330	90.2	H	-	-	PK	48	1.0	

5350 MHz Band Edge Signal Radiated Field Strength (Restricted band limit =54dBuV/m)

Frequency	Level	Pol	15 E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.000	**51.8**	**V**	**54.0**	**-2.2**	AVG	341	1.0	
5350.000	38.4	H	54.0	-15.6	AVG	48	1.0	
5350.200	55.6	H	74.0	-18.4	PK	48	1.0	
5352.800	70.1	V	74.0	-3.9	PK	341	1.0	



Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

The EUT was installed into a test fixture such that the EUT was exposed (i.e. outside of a host system).

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

Ambient Conditions:

Temperature: 18-26 °C

Rel. Humidity: 25-35 %

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Summary of Results

Note - the choice of operating modes for radiated spurious emissions was based on test results for the original module. The original results showed that the spurious emissions related to operation in the 5250-5350MHz band were highest in 802.11n 20MHz (HT20) mode with a margin of 4.7dB.

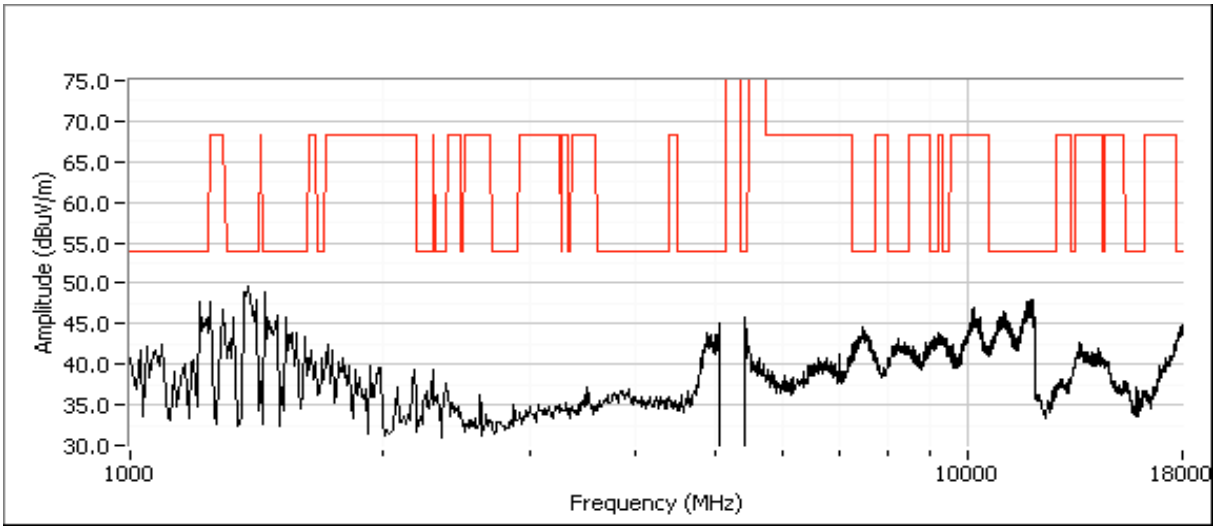
Run #	Mode	Channel	Attenuator (dB)	Power Setting	Test Performed	Limit	Result / Margin
1a	802.11n20 A+B+C Panel Antenna	5260 MHz (#52)	20.0	18.0	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	49.7dBµV/m @ 1385.0MHz (-4.3dB)
1b		5300 MHz (#60)	20.0	18.0	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	49.1dBµV/m @ 1385.0MHz (-4.9dB)
1c		5320MHz (#64)	20.0	18.0	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	51.1dBµV/m @ 1385.0MHz (-2.9dB)
2a	802.11n20 A+B+C Sector Antenna	5260 MHz (#52)	20.0	16.0	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	45.8dBµV/m @ 1376.3MHz (-8.2dB)
2b		5300 MHz (#60)	10.0	19.0	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	58.2dBµV/m @ 1375.3MHz (-15.8dB)
2c		5320MHz (#64)	10.0	19.0	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	59.3dBµV/m @ 1375.2MHz (-14.7dB)

Note: No signal was found above 12GHz.

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #1, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5250 - 5350 MHz and 5470-5725 MHz Bands
Run #1a: 802.11n 20MHz mode, Panel Antennas, All chains active, Channel 52 (5260MHz)

Date of Test: 8/25/2009 Test Location: FT Chamber #3
Test Engineer: Mehran Birgani Config Change: None



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1385.000	49.7	H	54.0	-4.3	Peak	202	1.2	

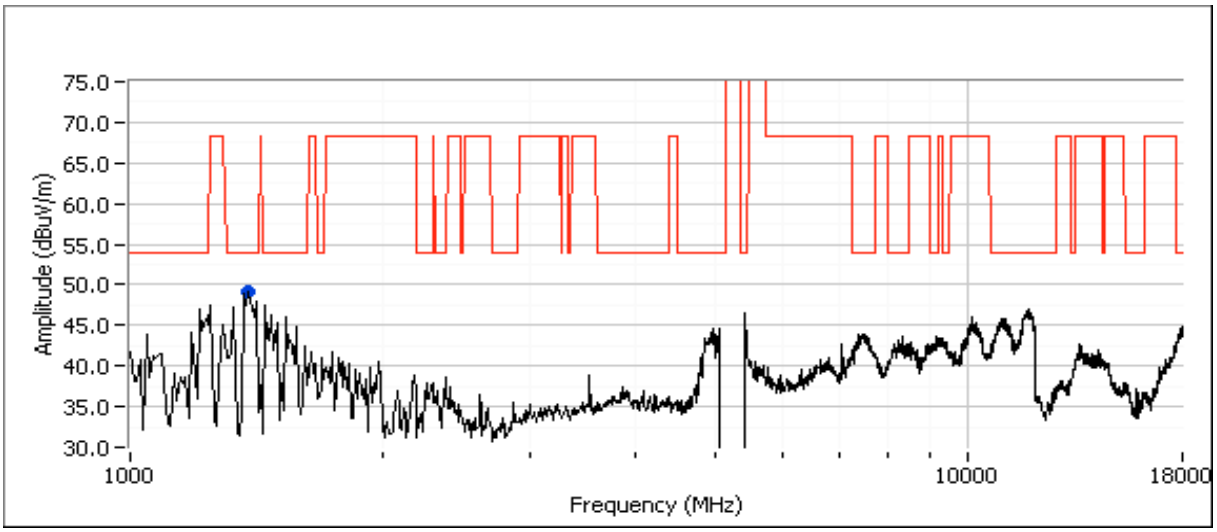
Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #1b: 802.11n 20MHz mode, Panel Antennas, All chains active, Channel 60 (5300MHz)

Date of Test: 8/25/2009 Test Location: FT Chamber #3

Test Engineer: Mehran Birgani Config Change: None



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1385.000	49.1	H	54.0	-4.9	Peak	195	1.2	

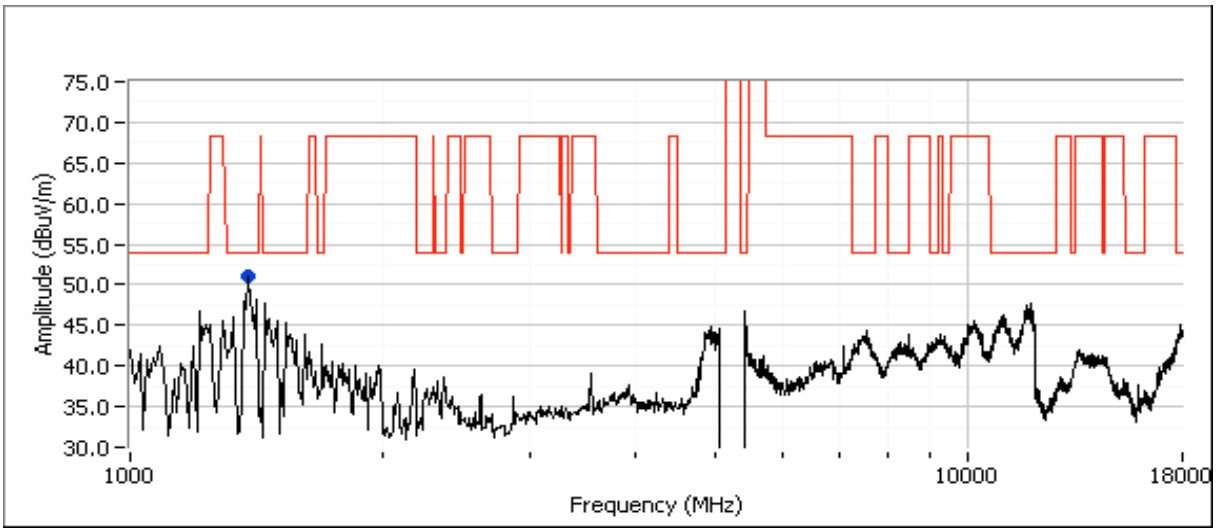
Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #1c: 802.11n 20MHz mode, Panel Antennas, All chains active, Channel 64 (5320MHz)

Date of Test: 8/25/2009 Test Location: FT Chamber #3

Test Engineer: Mehran Birgani Config Change: None



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1385.000	51.1	H	54.0	-2.9	Peak	151	1.2	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

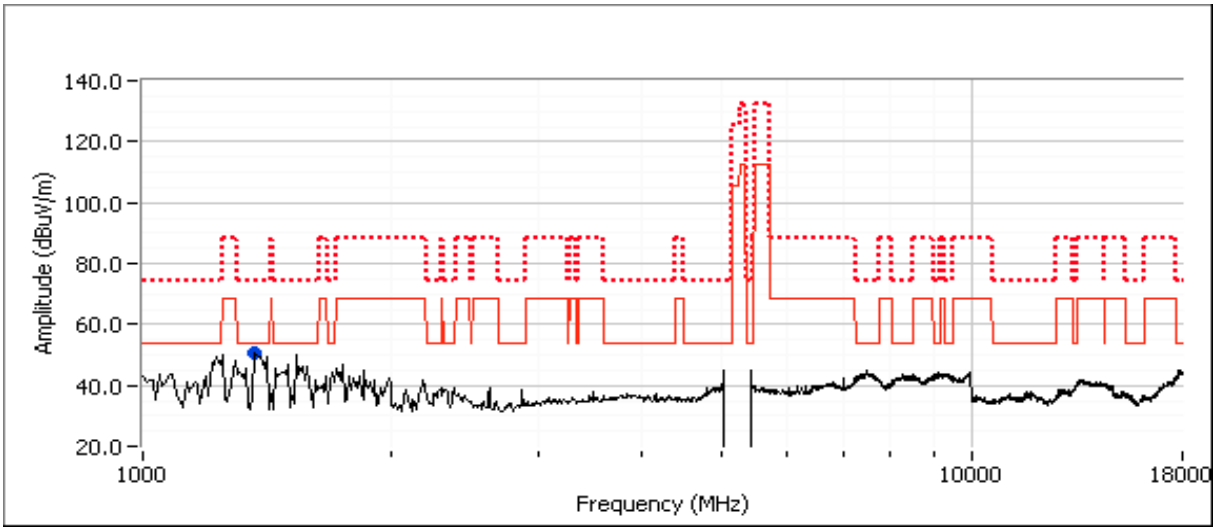
Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #2, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5250 - 5350 MHz and 5470-5725 MHz Bands

Run #2a: 802.11n 20MHz mode, Sector Antennas, All chains active, Channel 52 (5260MHz)

Date of Test: 8/27/2009 Test Location: FT Chamber #3

Test Engineer: Joseph Cadigal Config Change: None



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1376.300	**45.8**	**H**	**54.0**	**-8.2**	AVG	246	1.9	
1374.920	59.1	H	74.0	-14.9	PK	246	1.9	

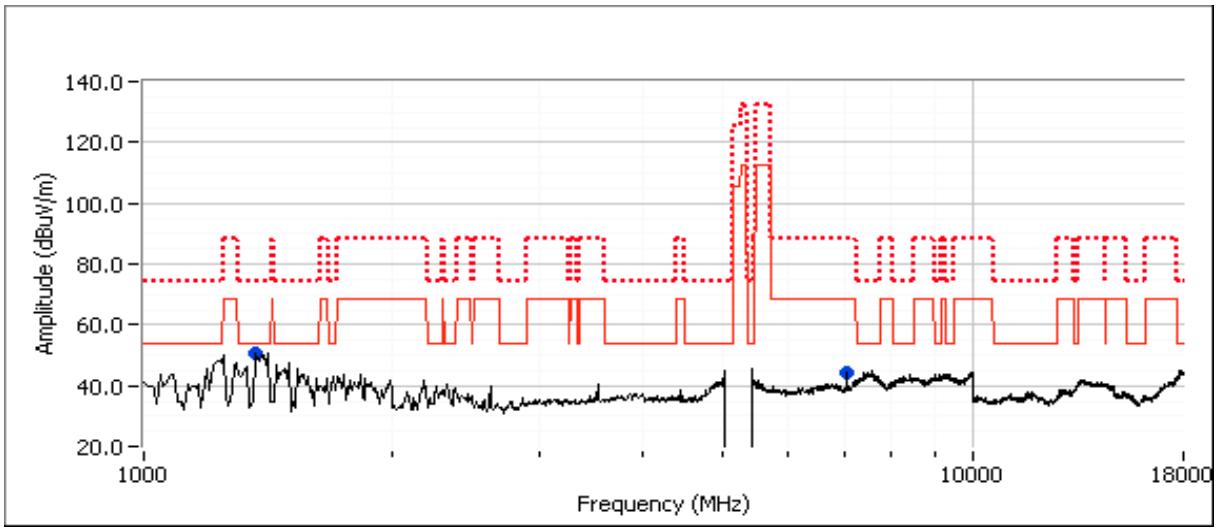
Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #2b: 802.11n 20MHz mode, Sector Antennas, All chains active, Channel 60 (5300MHz)

Date of Test: 8/27/2009 Test Location: FT Chamber #3

Test Engineer: Joseph Cadigal Config Change: None



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1375.100	35.1	H	54.0	-18.9	AVG	246	1.9	
7066.650	41.5	V	68.3	-26.8	AVG	127	1.9	
1375.300	**58.2**	**H**	**74.0**	**-15.8**	PK	246	1.9	
7066.610	48.3	V	88.3	-40.0	PK	127	1.9	

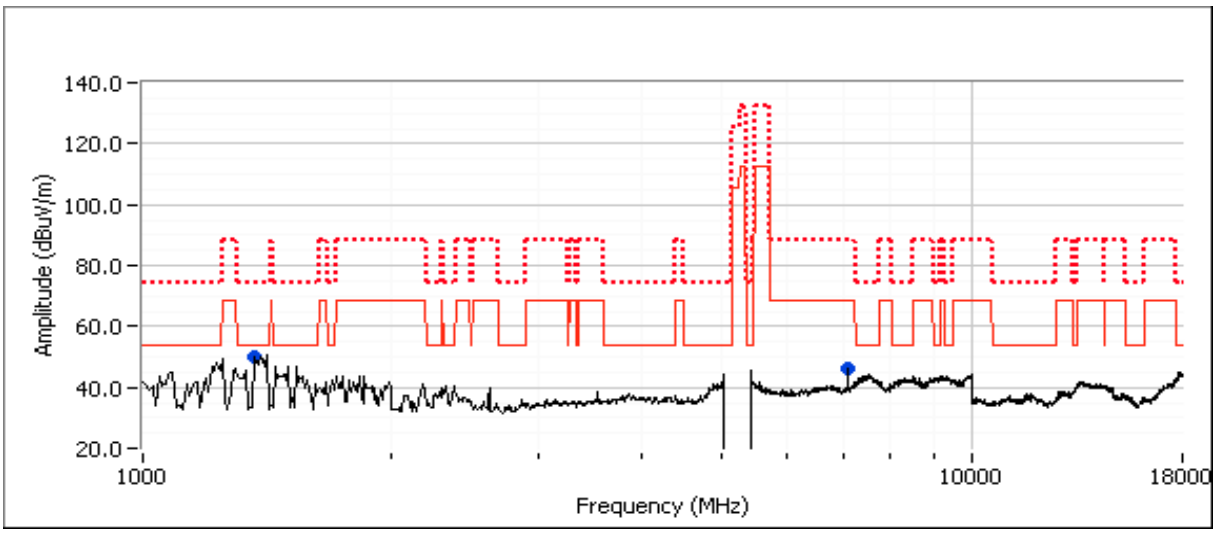
Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

Client:	Proxim Corporation	Job Number:	J75847
Model:	PROXMB82 802.11abgn miniPCI module (3x3)	T-Log Number:	T75950
		Account Manager:	-
Contact:	Ivaylo Tankov		
Standard:	FCC Part 15 Subpart E, RSS 210	Class:	N/A

Run #2c: 802.11n 20MHz mode, Sector Antennas, All chains active, Channel 64 (5320MHz)

Date of Test: 8/27/2009 Test Location: FT Chamber #3

Test Engineer: Joseph Cadigal Config Change: None



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1376.210	35.7	H	54.0	-18.3	AVG	243	1.9	
7093.330	40.0	V	68.3	-28.3	AVG	123	1.9	
1375.170	**59.3**	**H**	**74.0**	**-14.7**	PK	243	1.9	
7093.270	47.7	V	88.3	-40.6	PK	123	1.9	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

Appendix C Submittal Documentation

The following is a list of documents required to support certification of a device under FCC and Industry Canada regulations.

Item	Status
Label & Label Location	Not submitted - no change from original submittal documents.
Detailed Photographs	Not submitted - no change from original submittal documents.
Manual	The Installation manual for a host system that will use the sector and panel antennas described in this filing has been uploaded as a separate document. The installation manual shows the required power setting for professional installers when the module is used in host systems using high-gain antennas.
Block Diagram	Not submitted - no change from original submittal documents.
Schematic Diagrams	Not submitted - no change from original submittal documents.
Theory of Operation	Not submitted - no change from original submittal documents.
Test Configuration Photographs	Submitted as a separate document
MPE Calculation	Submitted as a separate document