

EMC Test Report

*Application for Grant of Equipment Authorization
and Reassessment*

*Industry Canada RSS-Gen Issue 3 / RSS 210 Issue 8
FCC Part 15, Subpart E*

Model: NanoStationM5

IC CERTIFICATION #: 6545A-M5N
FCC ID: SWX-N5M5D

APPLICANT: Ubiquiti Networks
91 E. Tasman Drive
San Jose, CA 95134

TEST SITE(S): Elliott Laboratories
41039 Boyce Road.
Fremont, CA. 94538-2435

IC SITE REGISTRATION #: 2845B-3; 2845B-4, 2845B-5, 2845B-7

REPORT DATE: February 21, 2012

FINAL TEST DATES: December 20, 2011 and January 9, 10, 12, 13,
16, 17, 18 and 19, 2012

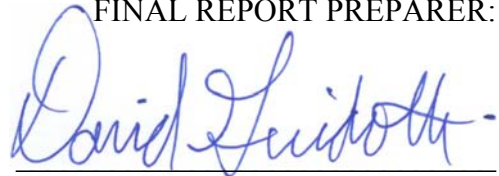
TOTAL NUMBER OF PAGES: 151

PROGRAM MGR /
TECHNICAL REVIEWER:



David W. Bare
Chief Engineer

QUALITY ASSURANCE DELEGATE /
FINAL REPORT PREPARER:



David Guidotti
Senior Technical Writer



Elliott Laboratories is accredited by the A2LA, certificate number 0214.26, to perform the test(s) listed in this report, except where noted otherwise. This report and the information contained herein represent the results of testing test articles identified and selected by the client performed to specifications and/or procedures selected by the client. National Technical Systems (NTS) makes no representations, expressed or implied, that such testing is adequate (or inadequate) to demonstrate efficiency, performance, reliability, or any other characteristic of the articles being tested, or similar products. This report should not be relied upon as an endorsement or certification by NTS of the equipment tested, nor does it represent any statement whatsoever as to its merchantability or fitness of the test article, or similar products, for a particular purpose. This report shall not be reproduced except in full

REVISION HISTORY

Rev#	Date	Comments	Modified By
-	02-21-2012	First release	

TABLE OF CONTENTS

REVISION HISTORY	2
TABLE OF CONTENTS	3
SCOPE.....	4
OBJECTIVE	4
STATEMENT OF COMPLIANCE.....	5
DEVIATIONS FROM THE STANDARDS.....	5
TEST RESULTS SUMMARY	6
UNII / LELAN DEVICES	6
GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS.....	7
MEASUREMENT UNCERTAINTIES.....	8
EQUIPMENT UNDER TEST (EUT) DETAILS.....	9
GENERAL.....	9
ANTENNA SYSTEM	9
ENCLOSURE.....	9
MODIFICATIONS.....	9
SUPPORT EQUIPMENT.....	9
EUT INTERFACE PORTS	10
EUT OPERATION	10
TEST SITE.....	11
GENERAL INFORMATION.....	11
CONDUCTED EMISSIONS CONSIDERATIONS	11
RADIATED EMISSIONS CONSIDERATIONS	11
MEASUREMENT INSTRUMENTATION	12
RECEIVER SYSTEM	12
INSTRUMENT CONTROL COMPUTER	12
LINE IMPEDANCE STABILIZATION NETWORK (LISN).....	12
FILTERS/ATTENUATORS	13
ANTENNAS.....	13
ANTENNA MAST AND EQUIPMENT TURNTABLE.....	13
INSTRUMENT CALIBRATION.....	13
TEST PROCEDURES	14
EUT AND CABLE PLACEMENT	14
CONDUCTED EMISSIONS.....	14
RADIATED EMISSIONS.....	15
CONDUCTED EMISSIONS FROM ANTENNA PORT	17
BANDWIDTH MEASUREMENTS	17
SPECIFICATION LIMITS AND SAMPLE CALCULATIONS.....	18
CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; FCC 15.107(A), RSS GEN	18
GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS	19
RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS	19
FCC 15.407 (A) OUTPUT POWER LIMITS.....	20
OUTPUT POWER LIMITS –LELAN DEVICES.....	20
SPURIOUS EMISSIONS LIMITS –UNII AND LELAN DEVICES	21
SAMPLE CALCULATIONS - CONDUCTED EMISSIONS	21
SAMPLE CALCULATIONS - RADIATED EMISSIONS.....	21
SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION.....	22
APPENDIX A TEST EQUIPMENT CALIBRATION DATA	23
APPENDIX B TEST DATA	25
END OF REPORT	151

SCOPE

An electromagnetic emissions test has been performed on the Ubiquiti Networks model NanoStationM5, pursuant to the following rules:

Industry Canada RSS-Gen Issue 3

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

FCC Part 15, Subpart 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

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

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

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

OBJECTIVE

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

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

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

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

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

STATEMENT OF COMPLIANCE

The tested sample of Ubiquiti Networks model NanoStationM5 complied with the requirements of the following regulations:

RSS 210 Issue 8 “Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment”
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 Ubiquiti Networks model NanoStationM5 and therefore apply only to the tested sample. The sample was selected and prepared by Jennifer Sanchez of Ubiquiti Networks.

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 5.25 – 5.35 GHz Band**

Note: The device may 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.

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a)(2)		26dB Bandwidth	HT5: 8.5 MHz HT20: 24.8 MHz HT40: 50.9 MHz	N/A – limits output power if < 20MHz	N/A
15.407(a)(2)	A9.2(2)	Output Power	HT5: 0.002 W HT20: 0.011 W HT40: 0.011 W (Max eirp: 0.886 W)	7.5 dBm ¹ 11dBm 11 dBm	Complies
15.407(a)(2)	-	Power Spectral Density	-2.4 dBm/MHz (mode HT20)	-2.0 dBm/MHz	Complies
-	A9.2(2) / A9.5 (2)	Power Spectral Density		-2.0 dBm / MHz ²	Complies

Operation in the 5.47 – 5.725 GHz Band

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a)(2)		26dB Bandwidth	HT5: 8.5 MHz HT20: 24.8 MHz HT40: 50.9 MHz	N/A – limits output power if < 20MHz	N/A
15.407(a)(2)	A9.2(2)	Output Power	HT5: 0.003 W HT20: 0.012 W HT40: 0.012 W (Max eirp: 0.886 W)	24 dBm / 250mW (eirp < 30dBm)	Complies
15.407(a)(2)		Power Spectral Density	-2.3 dBm/MHz (mode HT5)	-2.0 dBm/MHz	Complies
	A9.2(2) / A9.5 (2)	Power Spectral Density		-2.0 dBm / MHz ³	Complies
KDB 443999	A9	Non-operation in 5600 – 5650 MHz sub band	Device cannot operate in the 5600 – 5650 MHz band –refer to Operational Description		Complies

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	OFDM	Digital modulation is required	Complies
15.407(b)(5) / 15.209	A9.3	Spurious Emissions below 1GHz	38.7dBμV/m @ 780.00MHz (-7.3dB)	Refer to page 21	Complies
15.407(b)(5) / 15.209	A9.3	Spurious Emissions above 1GHz	53.7dBμV/m @ 5350.2MHz (-0.3dB)		Complies
15.407(a)(6)	-	Peak Excursion Ratio	12.6 dB (Mode HT20)	< 13dB	Complies
	A9.5 (3)	Channel Selection	Spurious emissions tested at outermost channels in each band	Device was tested on the top, bottom and center channels in each band	N/A
15			Measurements on three channels in each band		

¹ Reduced by antenna gain and 26 dB bandwidth in the case of HT5 mode.

² Reduced from 11dBm because highest value exceeded the average value by more than 3dB

³ Reduced from 11dBm because highest value exceeded the average value by more than 3dB

15.407 (c)	A9.5(4)	Operation in the absence of information to transmit	Operation is discontinued in the absence of information (Refer to Operational Description)	Device shall automatically discontinue operation in the absence of information to transmit	Complies
15.407 (g)	A9.5 (5)	Frequency Stability	Frequency stability is better than 10ppm (Refer to Operational Description)	Signal shall remain within the allocated band	Complies
15.407 (h1)	A9.4	Transmit Power Control	TCP mechanism is discussed in the Operational Description	The U-NII device shall have the capability to operate with a mean EIRP value lower than 24dBm (250mW)	Complies
15.407 (h2)	A9.4	Dynamic frequency Selection (device with radar detection)	Refer to separate test report, reference R86293	Threshold -64dBm Channel Availability Check > 60s Channel closing transmission time < 260ms Channel move time < 10s Non occupancy period > 30minutes	Complies
	A9.9g	User Manual information	Refer to User manual for details	Warning regarding interference from Satellite Systems	Complies

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Integral antenna	Unique or integral antenna required	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	39.5dB μ V @ 0.418MHz (-8.0dB)	Refer to page 18	Complies (- ?? dB)
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	38.4dB μ V/m @ 780.00MHz (-7.6dB)	Refer to page 19	Complies (- ?? dB)
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in separate exhibit, 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	Refer to User's manual	Statement required regarding non-interference	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	Refer to User's manual	Statement for products with detachable antenna	Complies
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	HT5: 5.2 MHz HT20: 18.6 MHz HT40: 36.5 MHz	Information only	N/A

MEASUREMENT UNCERTAINTIES

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

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

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

The Ubiquiti Networks model NanoStationM5 is a proprietary Access Point which is designed to provide wireless communications links using MIMO technology with bandwidths of between 5 and 40 MHz. It can also be configured as a station.

Since the EUT would normally be pole mounted during operation, the EUT was located on a pole at a height of approximately 0.8m to 1.0m above the ground plane. The device is designed to be powered via Power-over-Ethernet and the PoE adapter used during testing was rated at 100-240 Volts, 50-60 Hz, 0.3 Amps.

The sample was received on December 20, 2011 and tested on December 20, 2011 and January 9, 10, 12, 13, 16, 17, 18 and 19, 2012. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Ubiquiti Networks	NanoStationM5 (Master)	Access Point	None (WLAN MAC: 00:27:22:10:FB)	SWX-M5N

ANTENNA SYSTEM

The antenna system consists of an integral 16dBi cross polarized MIMO antenna.

ENCLOSURE

The EUT enclosure measures approximately 7 by 28 by 8.5 centimeters. It is primarily constructed of uncoated coated plastic.

MODIFICATIONS

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

SUPPORT EQUIPMENT

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

Manufacturer	Model	Description	Serial Number	FCC ID
DELL	Vostro 1520	Laptop	43469242957	DoC
Ubiquiti	UBI-POE-24-5	PoE	1005-0089358	-

The italicized device was the client device.

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length (m)
EUT (LAN)	PoE	UTP (Cat 5)	Shielded	10.0
PoE (LAN)	Laptop	UTP (Cat 5)	Unshielded	1.0
PoE Injector	AC-DC adapter	2-wire	Unshielded	1.0

EUT OPERATION

During testing, the EUT was configured via the ART test utility to either transmit continuously or be in a continuous receive mode. The transmit mode measurements were made with each of the modes supported at the lowest data rate in that mode (the highest power in each mode is achieved at the lowest data rate). There are 3 different MIMO modes supporting bandwidths of 5 MHz, 20MHz and 40MHz.

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	
Chamber 7	A2LA accreditation	2845B-7	

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.

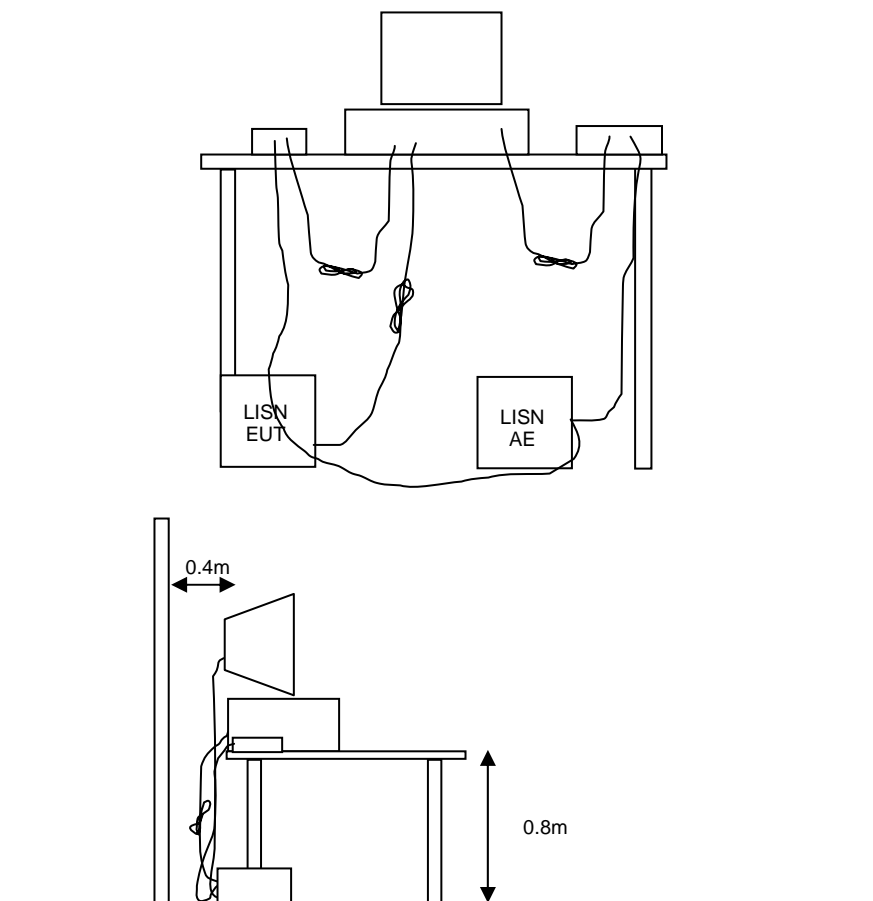


Figure 1 Typical Conducted Emissions Test Configuration

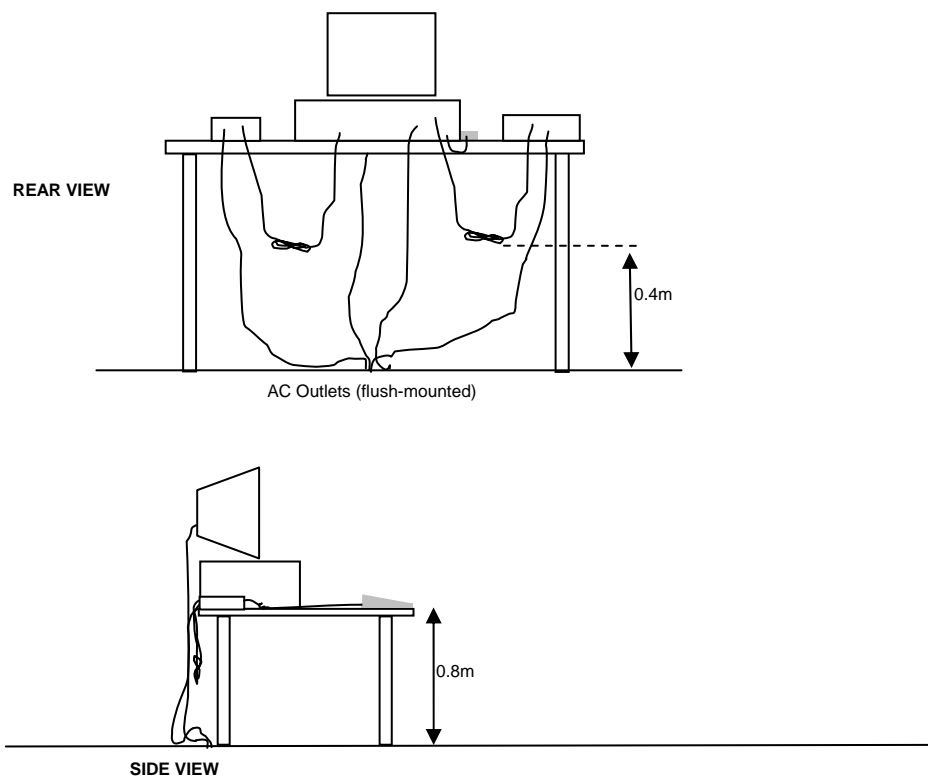
RADIATED EMISSIONS

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

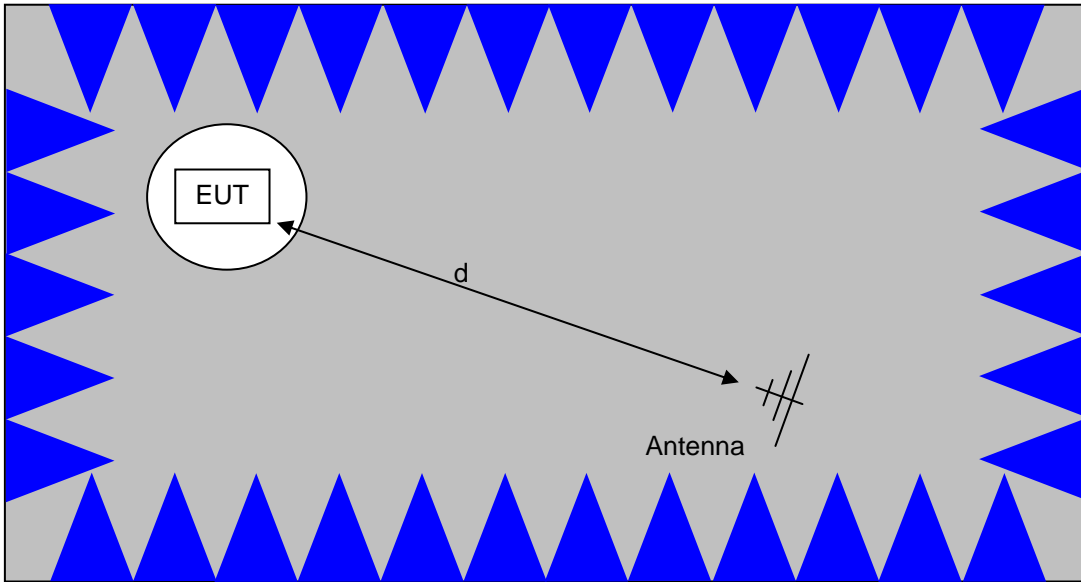
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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

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

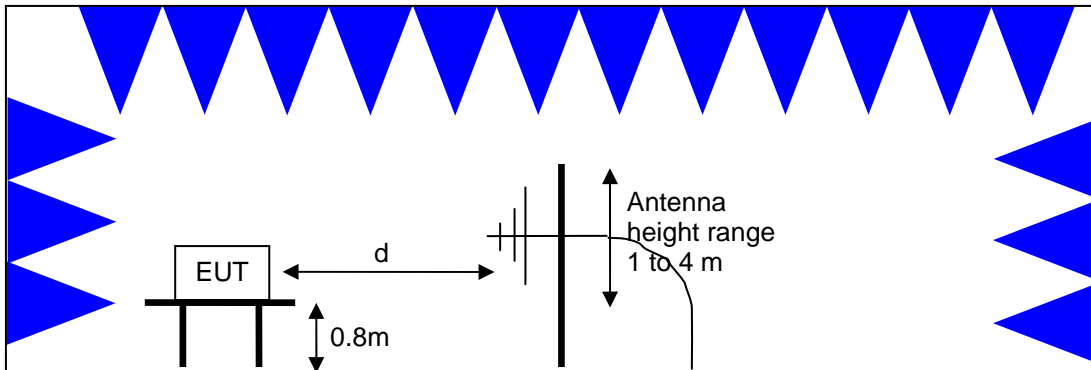


Typical Test Configuration for Radiated Field Strength Measurements



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

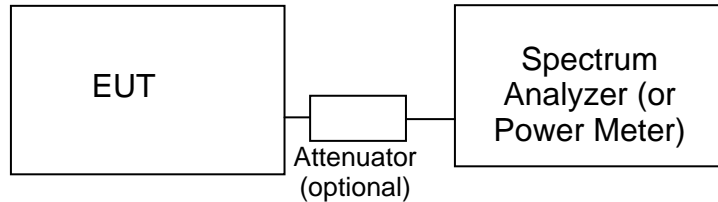
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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 bands⁴ (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

⁴ The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

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.

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) ⁵ 1W (30dBm) eirp	11 dBm/MHz
5470 – 5725	250 mW (24 dBm) ⁶ 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 $10\log(\text{EBW})$ 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.

⁵ If EIRP exceeds 500mW the device must employ TPC

⁶ If EIRP exceeds 500mW the device must employ TPC

SPURIOUS EMISSIONS 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 (88.3dBuV/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.

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:

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

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:

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

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

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

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

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

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

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

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

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

where P is the eirp (Watts)

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

Appendix A Test Equipment Calibration Data**Radio Antenna Port (Power and Spurious Emissions), 20-Dec-11**

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	4/13/2012

Radio Antenna Port (Power and Spurious Emissions), 09-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	8/15/2012

Radio Antenna Port (Power and Spurious Emissions), 10-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Agilent	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	1/26/2012

Radio Antenna Port (Power and Spurious Emissions), 12-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Agilent	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	1/26/2012

Radiated Emissions, 1000 - 10,000 MHz, 13-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	5/18/2012
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	8/2/2012
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	8/9/2012
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	10/4/2012

Radiated Emissions, 1000- 40,000 MHz, 16-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1156	6/24/2012
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/22/2012
Hewlett Packard	Head (Inc W1-W4, 1946, 1947) Purple	84125C	1772	4/28/2012
A.H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	3/3/2012
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	2/23/2012
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	10/4/2012
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	7/28/2012

Radiated Emissions, 1000- 40,000 MHz, 17-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1156	6/24/2012
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/22/2012
Hewlett Packard	Head (Inc W1-W4, 1946, 1947) Purple	84125C	1772	4/28/2012
A.H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	3/3/2012
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	2199	2/23/2012
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	10/4/2012
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	7/28/2012

Conducted Emissions - AC Power Ports, 17-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	3/1/2012
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1594	5/17/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	12/9/2012

Radiated Emissions, 30 - 1,000 MHz, 18-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103	1632	4/29/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	4/6/2012
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	2197	1/28/2012

Radio Antenna Port (Power and Spurious Emissions), 19-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	8/15/2012
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	4/13/2012

DFS, 27-Jan-12

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/8/2012
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz- 26.5 GHz	8593EM	1141	12/14/2012
EMCO	Antenna, Horn, 1-18 GHz	3117	1662	5/4/2012
Agilent	PSG Vector Signal Generator (250kHz - 20GHz)	E8267C	1877	3/30/2012
Tektronix	500MHz, 2CH, 5GS/s Scope	TDS5052B	2118	10/7/2012

Appendix B Test Data

T85881 Pages 26 - 150



EMC Test Data

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		-
Emissions Standard(s):	RSS 210, FCC 15E	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Ubiquiti Networks

Model

NanoStation M5

Date of Last Test: 2/15/2012

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A

**RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions**

Test Specific Details

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

Date of Test: 1/12/2012
Test Engineer: Jack Liu / R. Varelas
Test Location: FT Lab #4

Config. Used: 2
Config Change: None
EUT Voltage: POE

Ambient Conditions:
Temperature: 15-20 °C
Rel. Humidity: 30-40 %

Modifications Made During Testing

No modifications were made to the EUT during testing
Sample SN:1142k002722B0828E "2011-2412" for 5250~5350 MHz Band
Sample SN:1142k002722B08277 "2011-2413" for 5470~5725MHz Band

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Summary of Results (HT5)

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	3.6dBm
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	0.5dBm/MHz
1	Max EIRP 5250 - 5350MHz	TPC required if EIRP ≥ 500mW (27dBm) EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm	Pass	EIRP = 22.6 dBm
1	Power, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	3.1dBm
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	-2.3 dBm/MHz
1	Max EIRP 5470 - 5725MHz	TPC required if EIRP ≥ 500mW (27dBm) EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm	-	EIRP = 23.7dBm
1	26dB Bandwidth	15.407 (Determines max power)	-	9.0MHz
1	99% Bandwidth	RSS 210	N/A	5.2MHz
2	Peak Excursion Envelope	15.407(a) (6) 13dB	Pass	12.08
3	Antenna Conducted Out of Band Spurious	15.407(b) -27dBm/MHz	Pass	All emissions below the -27dBm/MHz limit

General Test Configuration

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

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #1: Bandwidth, Output Power and Power Spectral Density - MIMO Systems

Note 1:	Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 20 MHz (method 1 of DA-02-2138A1).
Note 2:	Measured using the same analyzer settings used for output power. PSD is highest value on the plot.
Note 3:	For RSS-210 the limits are corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated from the sum of the powers of the individual chains

MIMO Device - 5250-5350 MHz Band

	Chain 1	Chain 2	Chain 3	Coherent	Effective ⁵	EIRP (mW)	EIRP (dBm)
Antenna Gain (dBi):	16	16		Yes	19.0	180.4	22.6

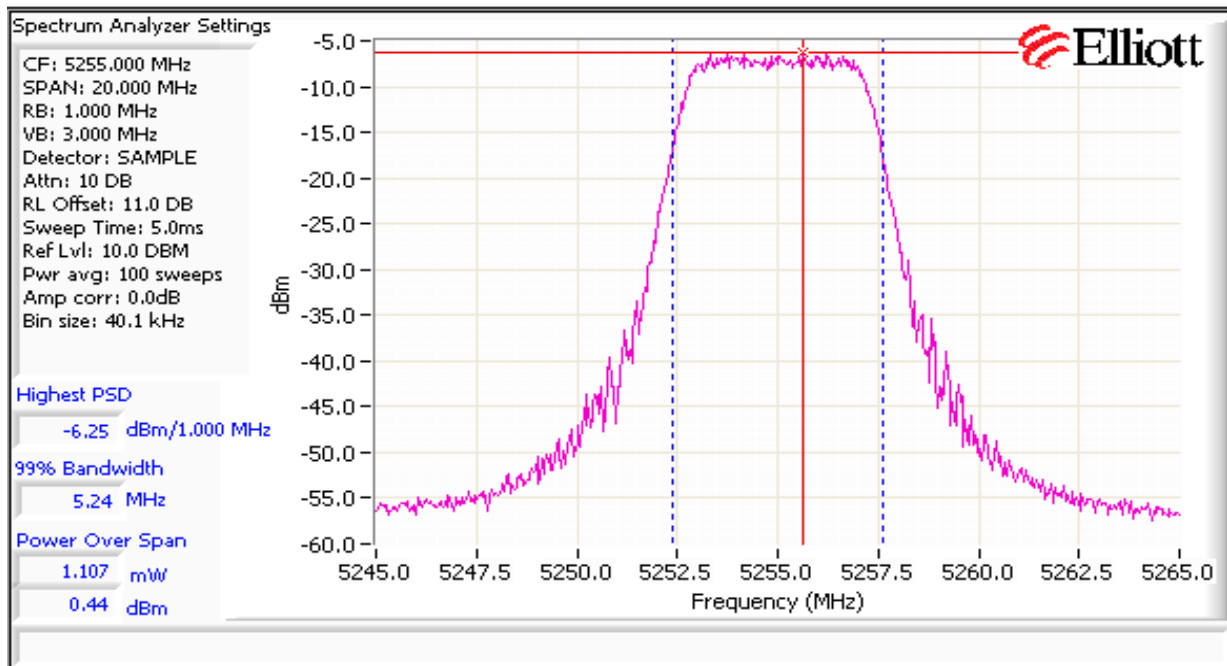
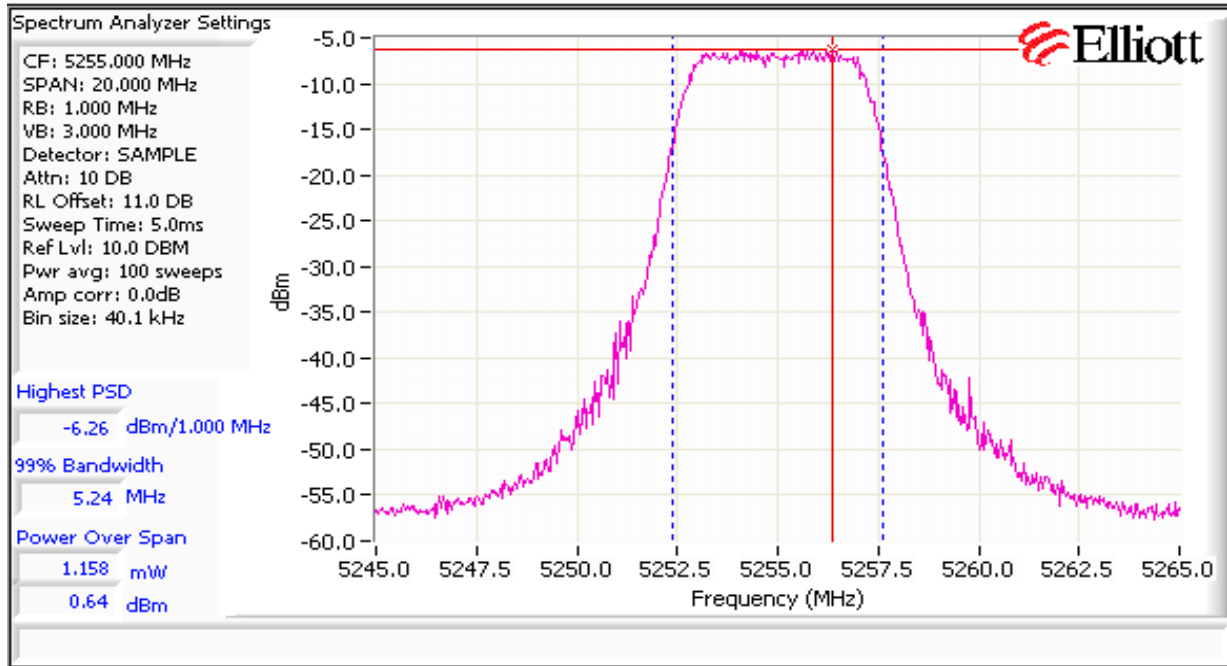
Power

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			
5255	4.0	8.5	0.6	0.4		2.3	3.6	7.3	0.002	PASS
5295	4.0	9.0	0.4	-0.2		2.1	3.1	7.5		PASS
5340	4.0	8.7	-0.1	0.0		2.0	3.0	7.4		PASS

PSD

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	
5255	5.2	3.6	-6.3	-6.3		0.5	-3.2	-2.0	-2.0	PASS
5295	5.2	3.1	-6.2	-6.8		0.5	-3.5	-2.0	-2.0	PASS
5340	5.2	3.0	-7.0	-6.8		0.4	-3.9	-2.0	-2.0	PASS

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

MIMO Device - 5470-5725 MHz Band

	Chain 1	Chain 2	Chain 3	Coherent	Effective ⁵	EIRP (mW)	EIRP (dBm)
Antenna Gain (dBi):	16	16		Yes	19.0	234.0	23.7

Power

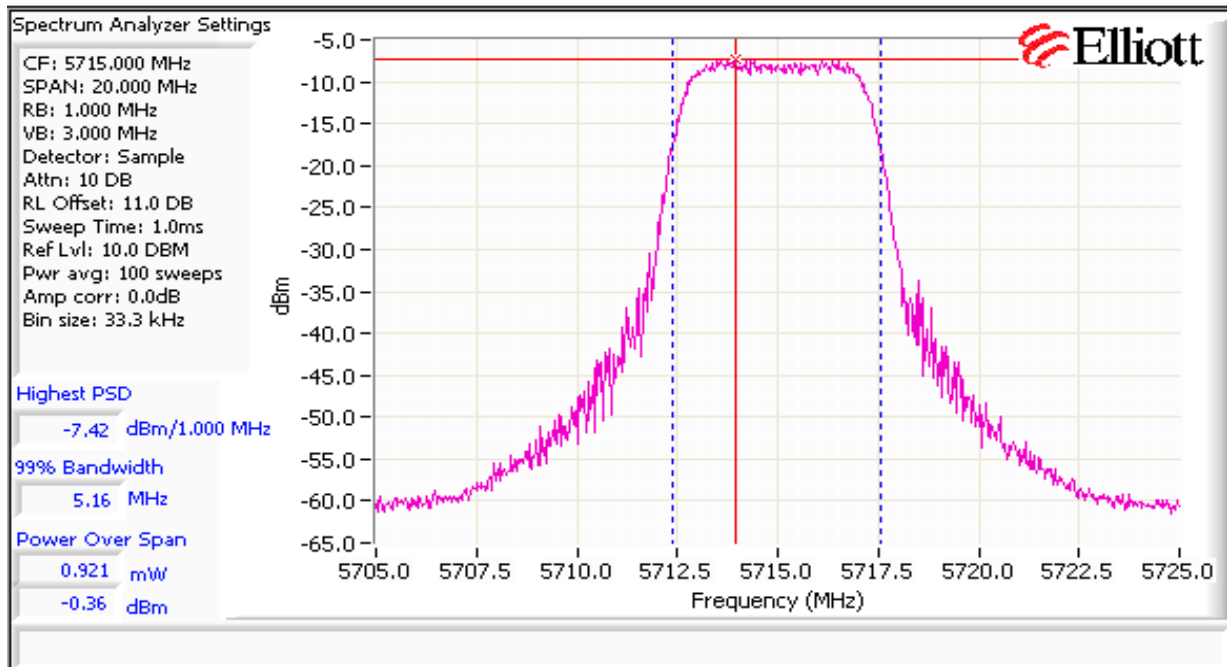
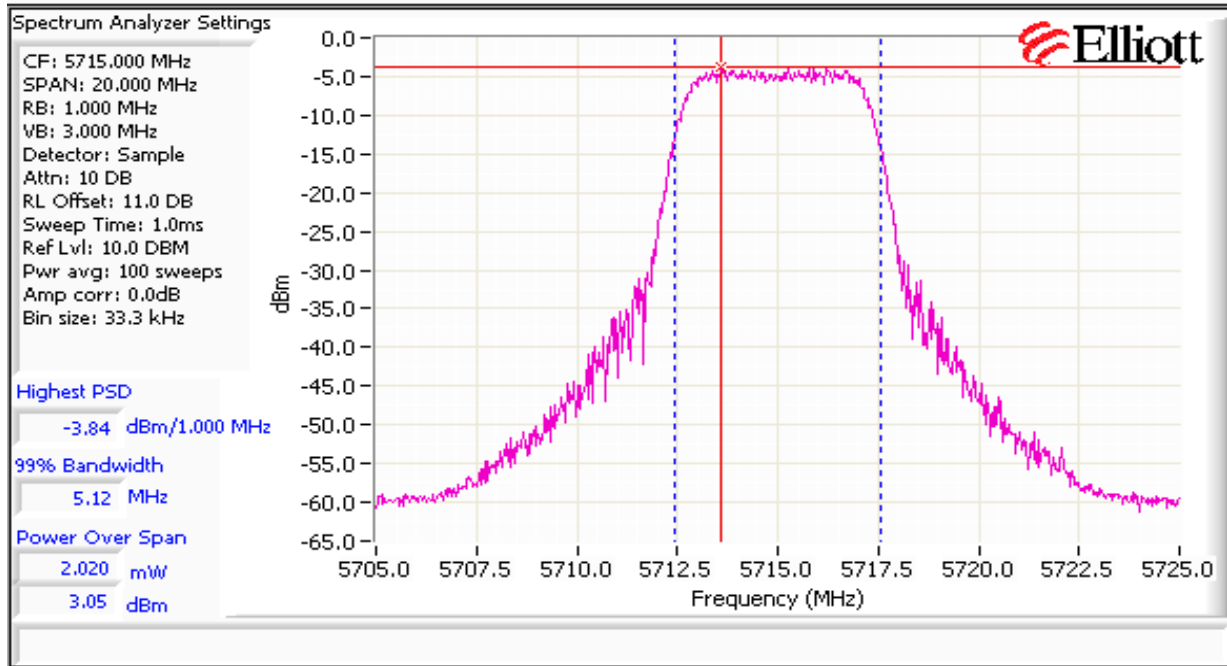
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power ¹ dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5475	3.0	9.0	-0.3	-5.1		1.2	0.9	7.5	0.003	PASS
5475	3.5	9.0	1.9	-0.5		2.4	3.9	7.5		PASS
5595	3.5	8.6	0.3	1.4		2.5	3.9	7.3		PASS
5715	1.5	9.0	-0.4	3.1		2.9	4.7	7.5		PASS

PSD

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	
5475	5.1	0.9	-7.0	-10.9		0.3	-5.5	-2.0	11.0	PASS
5475	5.2	3.9	-4.8	-7.4		0.5	-2.9	-2.0	11.0	PASS
5595	5.2	3.9	-6.6	-5.5		0.5	-3.0	-2.0	11.0	PASS
5715	5.2	4.7	-7.4	-3.8		0.6	-2.3	-2.0	11.0	PASS

Power was lowered to comply with the -27dBm/MHz power limit

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #2: Peak Excursion Measurement

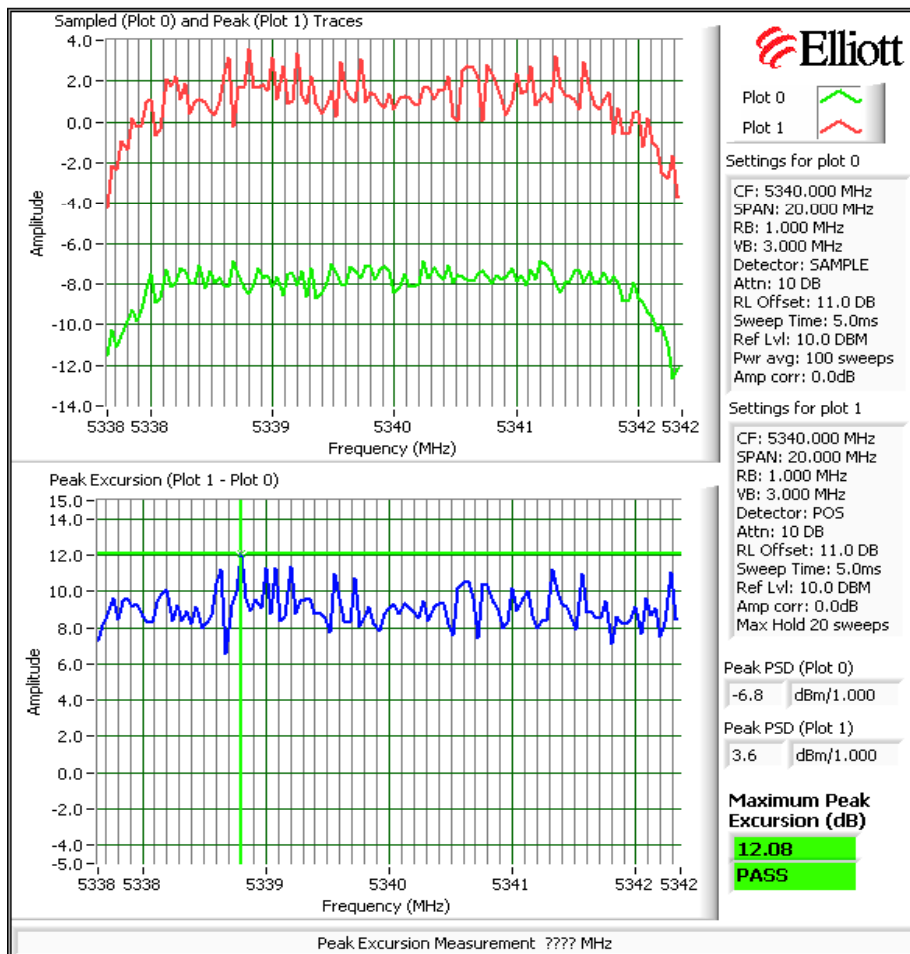
HT 5 Device meets the requirement for the peak excursion

Freq (MHz)	Peak Excursion(dB) Value	Peak Excursion(dB) Limit	Freq (MHz)	Peak Excursion(dB) Value	Peak Excursion(dB) Limit
5255	10.3/11.05	13.0	5475	9.62/9.49	13.0
5295	10.78/10.66	13.0	5595	9.28/10.29	13.0
5340	11.02/12.08	13.0	5715	8.95/9.62	13.0

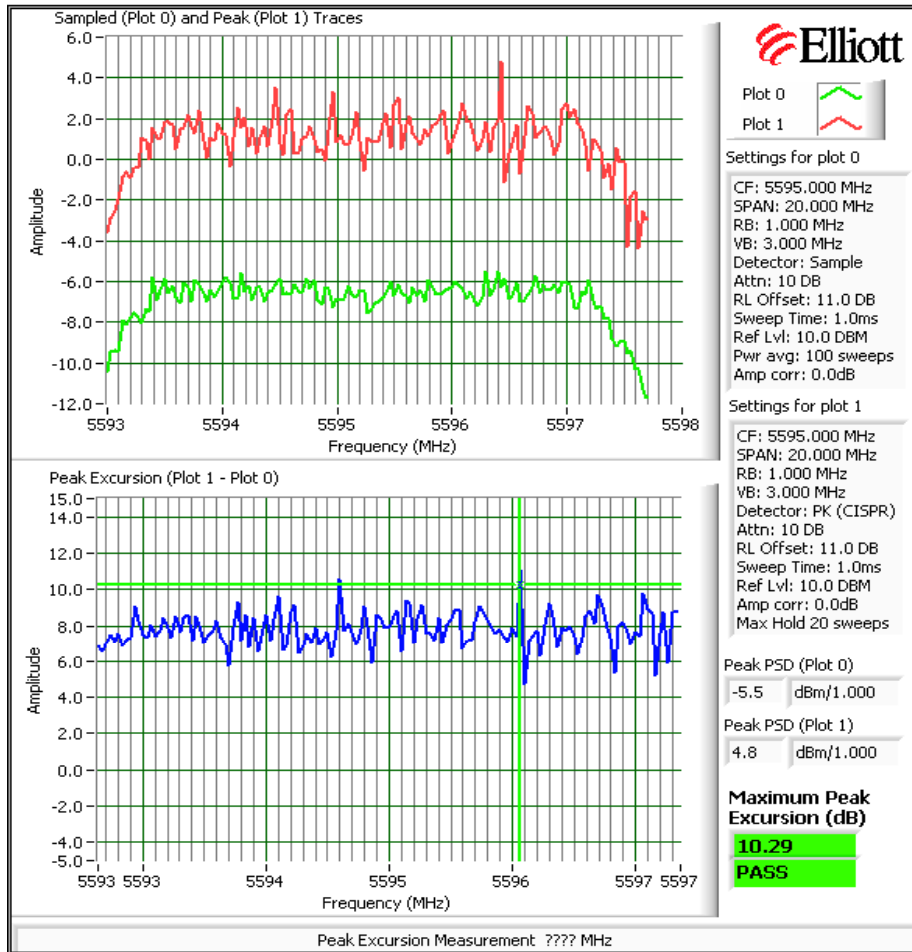
Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

MIMO Devices: Antenna gain used is the individual antenna antenna gain (the spurious emissions at the band edges are not considered)

Number of transmit chains: 2
 Maximum Antenna Gain: 16.0 dBi
 Spurious Limit: -27.0 dBm/MHz eirp
 Adjustment for 2 chains: -3.0 dB adjustment for multiple chains.
 Limit Used On Plots ^{Note 1}: -46.0 dBm/MHz Average Limit (RB=1MHz, VB=10Hz)

- Note 1: The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into
- Note 2: All spurious signals below 1GHz are measured during digital device radiated emissions test.
- Note 3: Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
- Note 4: If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
- Note 5: Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

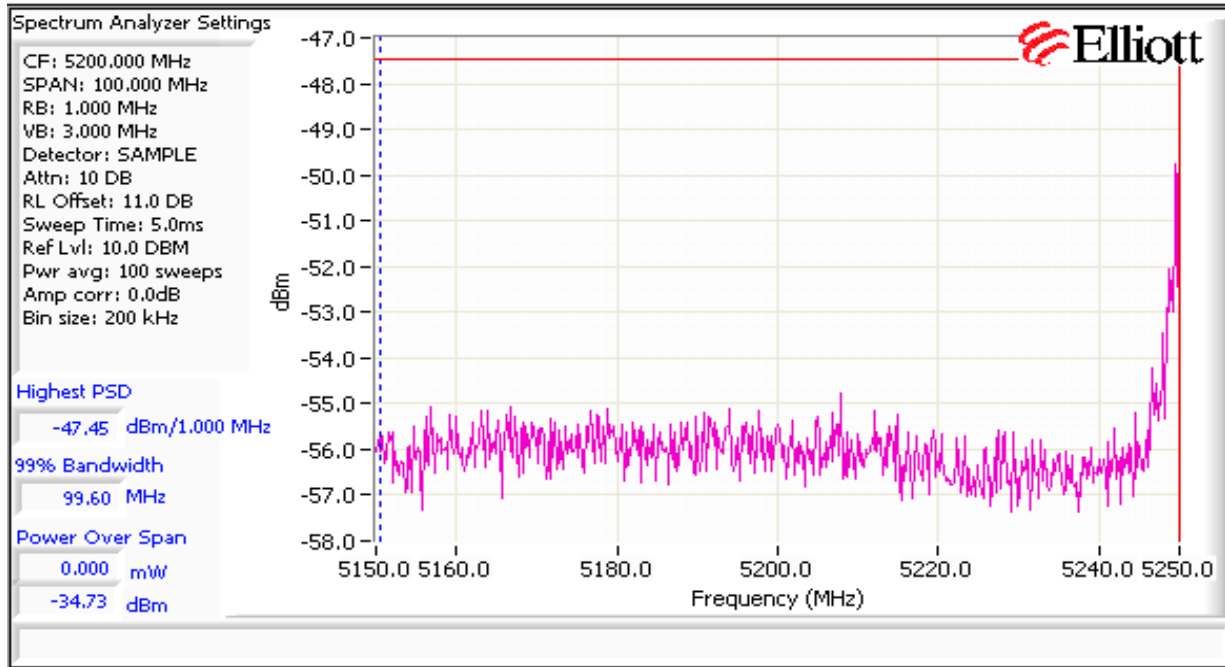
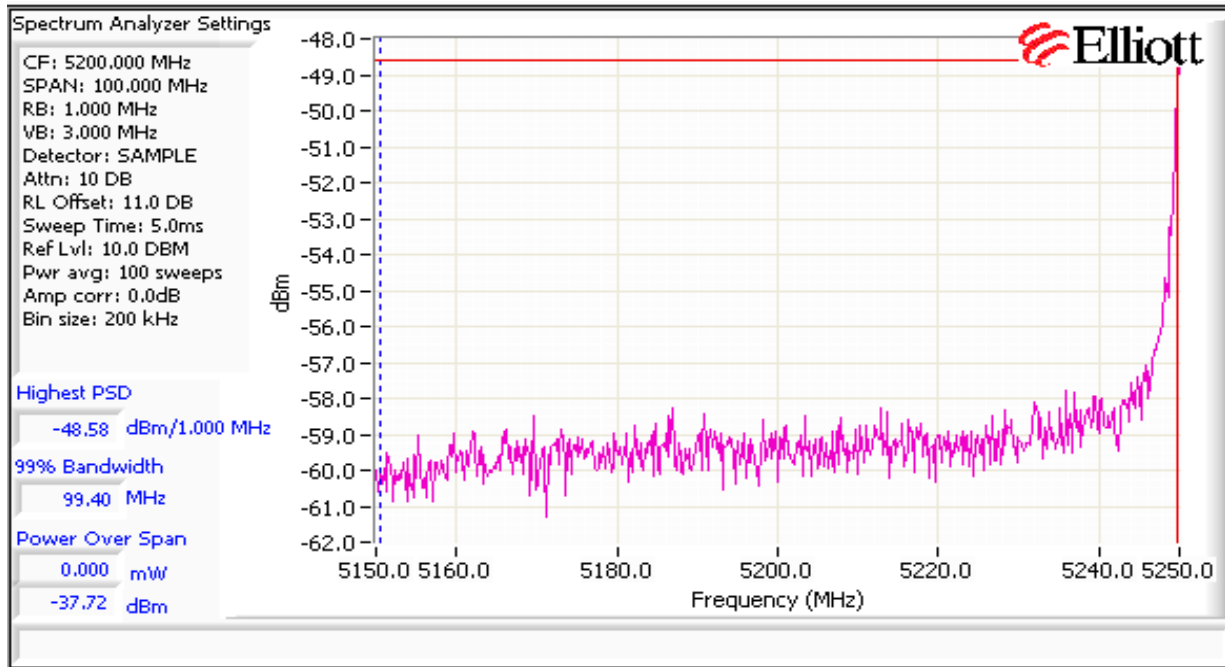
Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Low channel, 5250 - 5350 MHz Band

Plots for each chain showing compliance with the -27dBm/MHz limit in the 5150 - 5250 MHz band. Start and stop frequencies set to

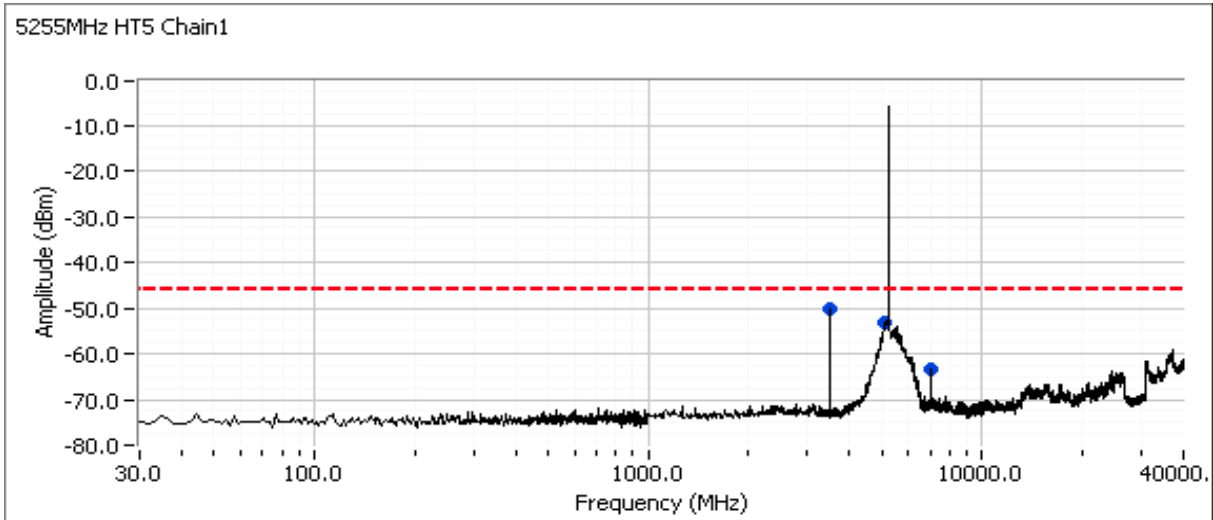
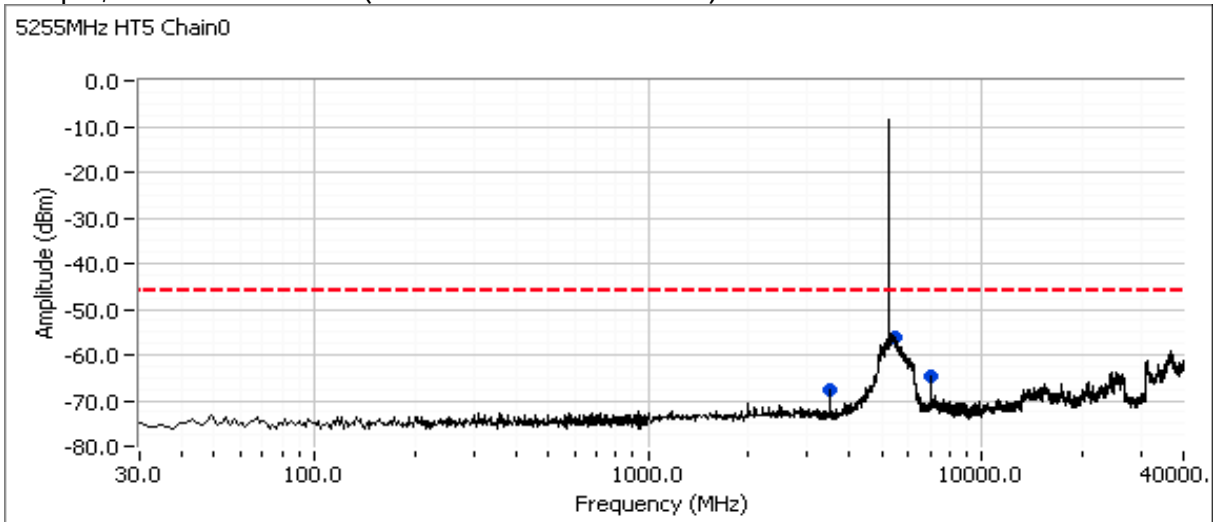
	Power Setting	Band edge Level		Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
		dBm/MHz	mW/MHz		mW/MHz	dBm/MHz			
Chain 1	4	-48.6	0.00001	16.0	0.0005521	-32.6	-29.0	-27	PASS
Chain 2		-47.5	0.00002	16.0	0.0007161	-31.5			

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Wide-band plot, RB=300kHz VB=100kHz (Peak measurements versus limit).



Wide-band result RB=1MHz VB=3MHz (Peak measurements versus limit).

Frequency MHz	Level dBm	Port	FCC 15 E / RSS 210		Detector	Comment				
			Limit	Margin		channel	mode/Chain	Ant. gain	Setting	Note
3503.400	-64.0	RF Port	-46.0	-18.0	PK	5255MHz	HT5/0	16	4.0	Note1
5431.960	-47.5	RF Port	-	-	PK	5255MHz	HT5/0	16	4.0	Note2
7006.680	-59.9	RF Port	-46.0	-13.9	PK	5255MHz	HT5/0	16	4.0	Note1
3503.290	-48.2	RF Port	-46.0	-2.2	PK	5255MHz	HT5/1	16	4.0	Note1
5137.500	-44.1	RF Port	-	-	PK	5255MHz	HT5/1	16	4.0	Note2
7006.900	-59.1	RF Port	-46.0	-13.1	PK	5255MHz	HT5/1	16	4.0	Note1

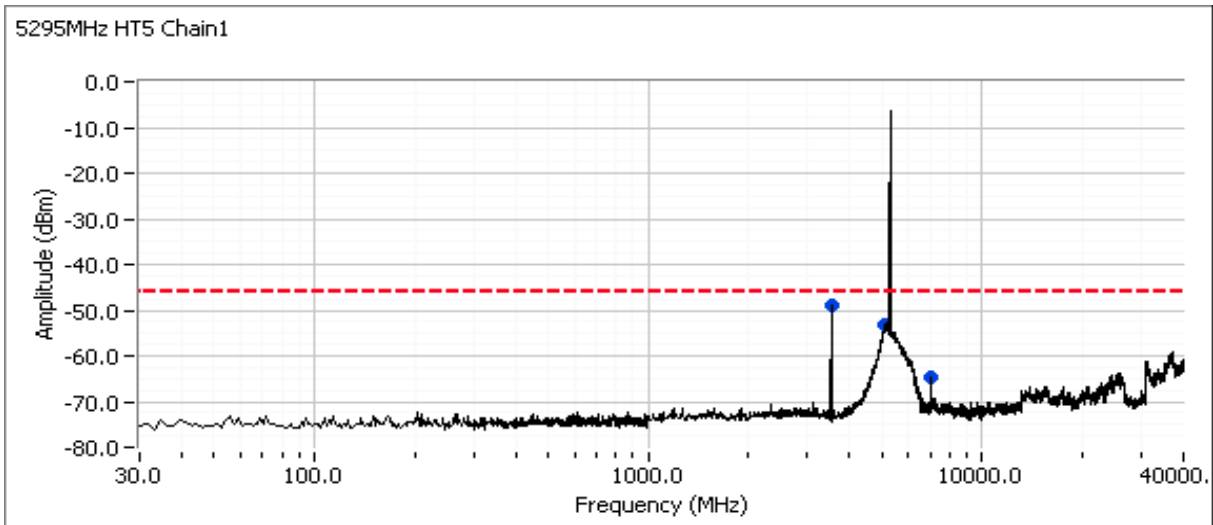
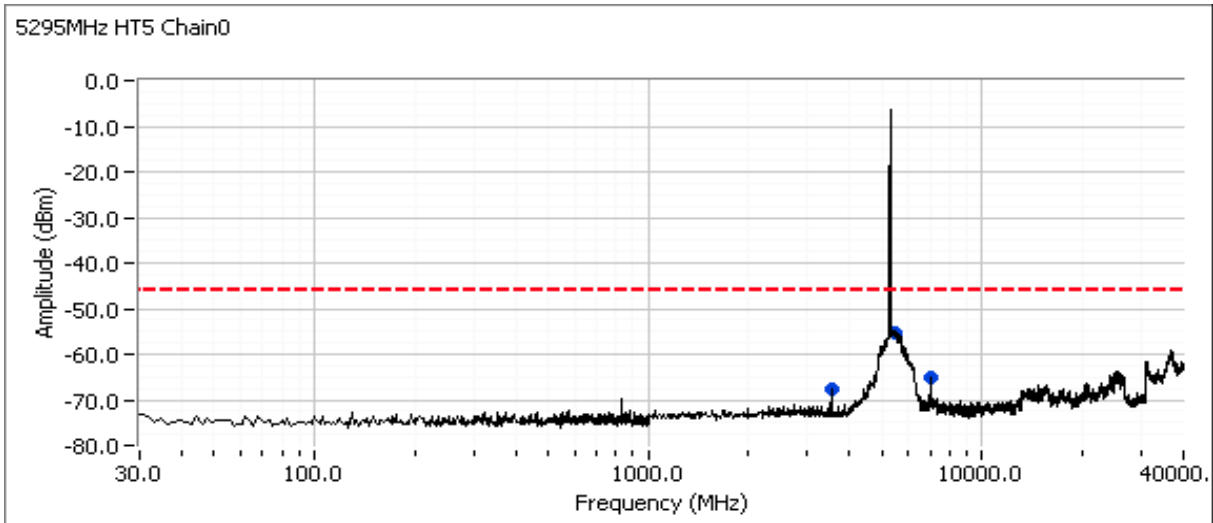
Note 1 Un-restricted signal

Note 2 Restricted band signal. Refer to the radiated spurious emissions results.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Center channel, 5250 - 5350 MHz Band

Wide-band plot, RB=300kHz VB=100kHz (Peak measurements versus limit).



continues on the next page

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A

Wide-band result RB=1MHz VB=3MHz (Peak measurements versus limit).

Frequency MHz	Level dBm	Port	FCC 15 E / RSS 210		Detector Pk/QP/Avg	Comment				
			Limit	Margin		channel	mode/Chain	Ant. gain	Setting	Note
3529.970	-62.4	RF Port	-46.0	-16.4	PK	5295MHz	HT5/0	16	4.0	Note1
5463.440	-46.2	RF Port	-	-	PK	5295MHz	HT5/0	16	4.0	Note2
7060.010	-60.2	RF Port	-46.0	-14.2	PK	5295MHz	HT5/0	16	4.0	Note1
3529.980	-47.3	RF Port	-46.0	-1.3	PK	5295MHz	HT5/1	16	4.0	Note1
5133.560	-44.9	RF Port	-	-	PK	5295MHz	HT5/1	16	4.0	Note2
7060.000	-59.7	RF Port	-46.0	-13.7	PK	5295MHz	HT5/1	16	4.0	Note1

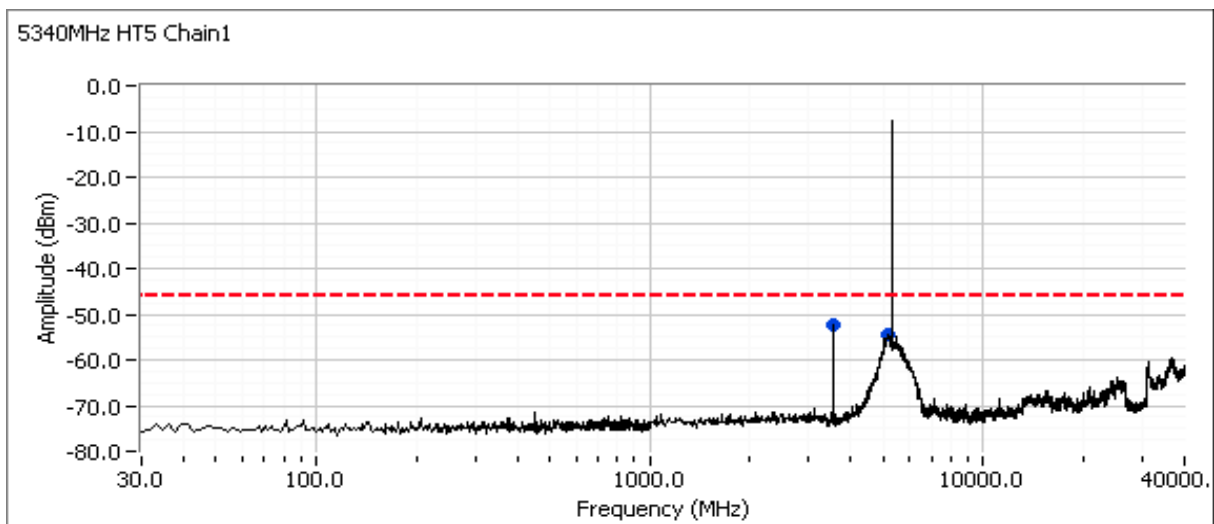
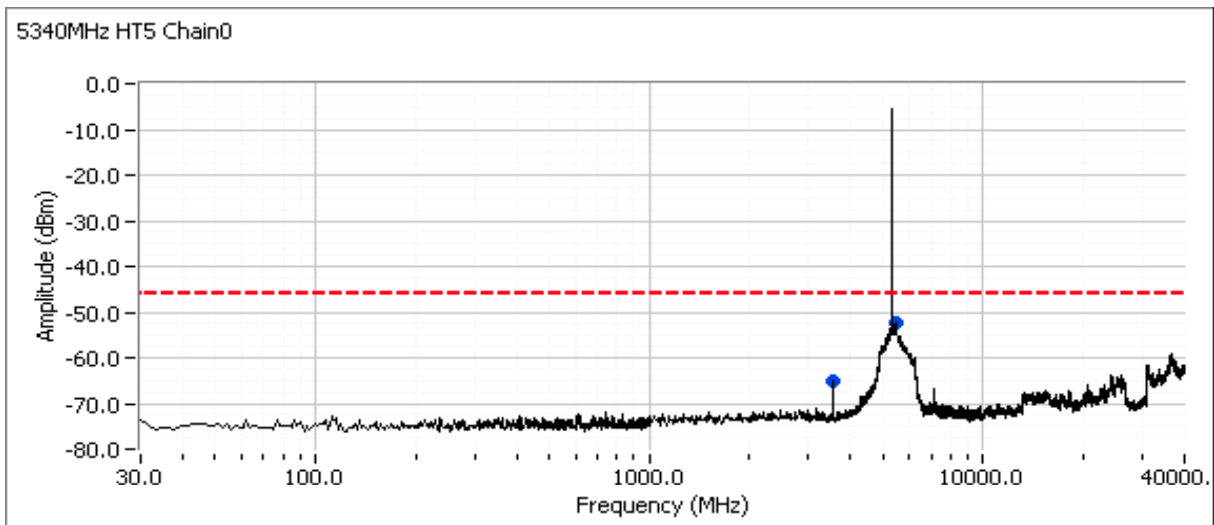
Note 1 | Un-restricted signal

Note 2 | Restricted band signal. Refer to the radiated spurious emissions results.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

High channel, 5250 - 5350 MHz Band

Wide-band plot, RB=300kHz VB=100kHz (Peak measurements versus limit).



continues on the next page

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Note - compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated

Wide-band result RB=1MHz VB=3MHz (Peak measurements versus limit).

Frequency MHz	Level dBm	Port	FCC 15 E / RSS 210		Detector Pk/QP/Avg	Comment				
			Limit	Margin		channel	mode/Chain	Ant. gain	Setting	Note
3559.760	-64.3	RF Port	-46.0	-18.3	PK	5340MHz	HT5/0	16	4.0	Note1
5468.370	-46.5	RF Port	-46.0	-0.5	PK	5340MHz	HT5/0	16	4.0	Note1
3560.110	-49.4	RF Port	-46.0	-3.4	PK	5340MHz	HT5/1	16	4.0	Note1
5170.190	-45.2	RF Port	-	-	PK	5340MHz	HT5/1	16	4.0	Note3

Note 1 | Un-restricted signal

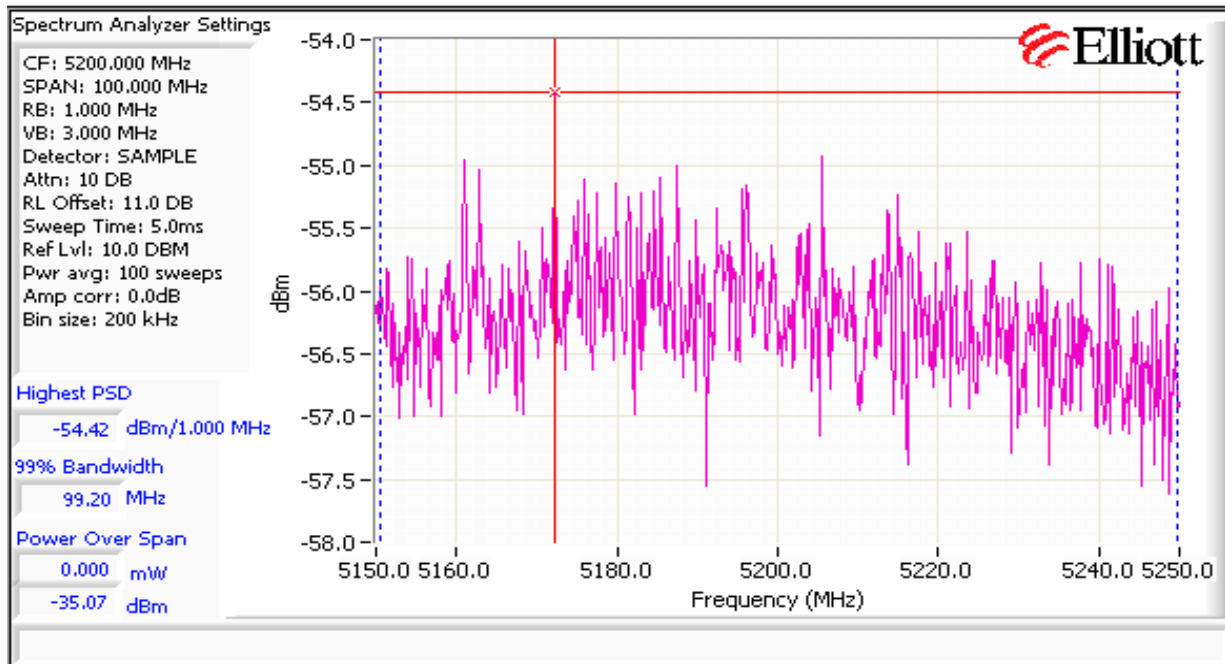
Note 2 | Restricted band signal. Refer to the radiated spurious emissions results.

Note 3 | Final measurements performed using 100sweep sample detector method. See below for final results.

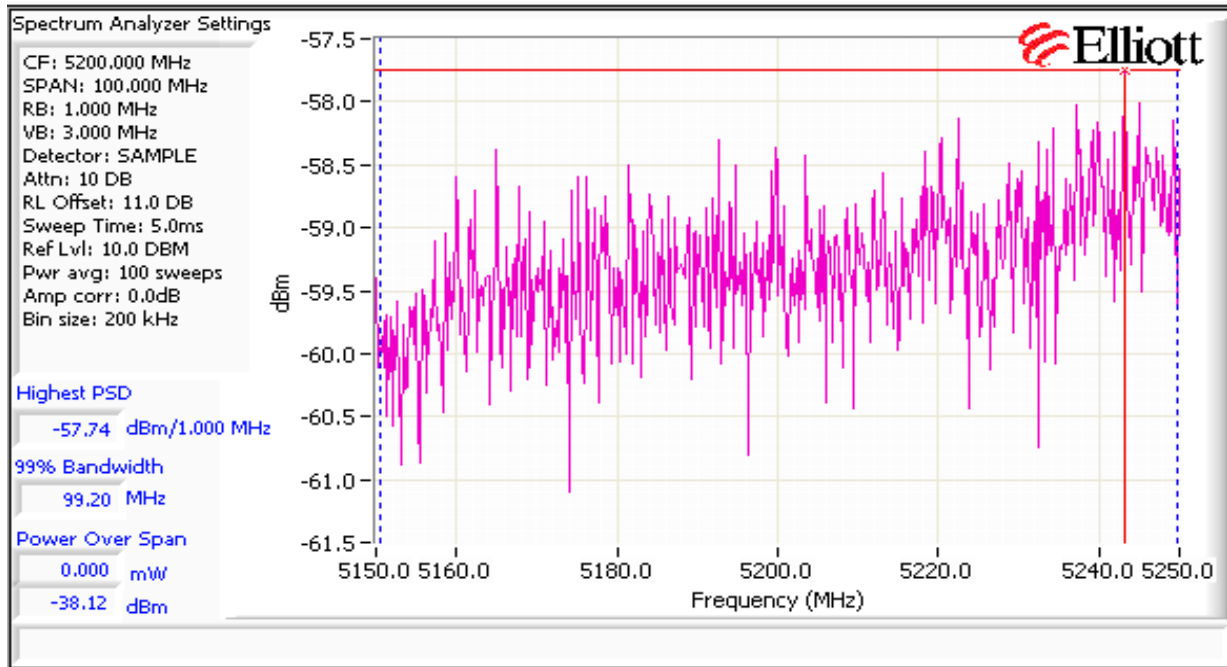
5340MHz HT5

Eval 5170MHz using 100Sweep tech

	Power Setting	Band edge Level		Antenna Gain (dBi)	EIRP		Total EIRP	Limit	Result
		dBm/MHz	mW/MHz		mW/MHz	dBm/MHz	dBm/MHz	dBm/MHz	
Chain 1	4	-57.7	0.00000	16.0	6.699E-05	-41.7	-36.8	-27	PASS
Chain 2		-54.4	0.00000	16.0	0.0001439	-38.4			



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

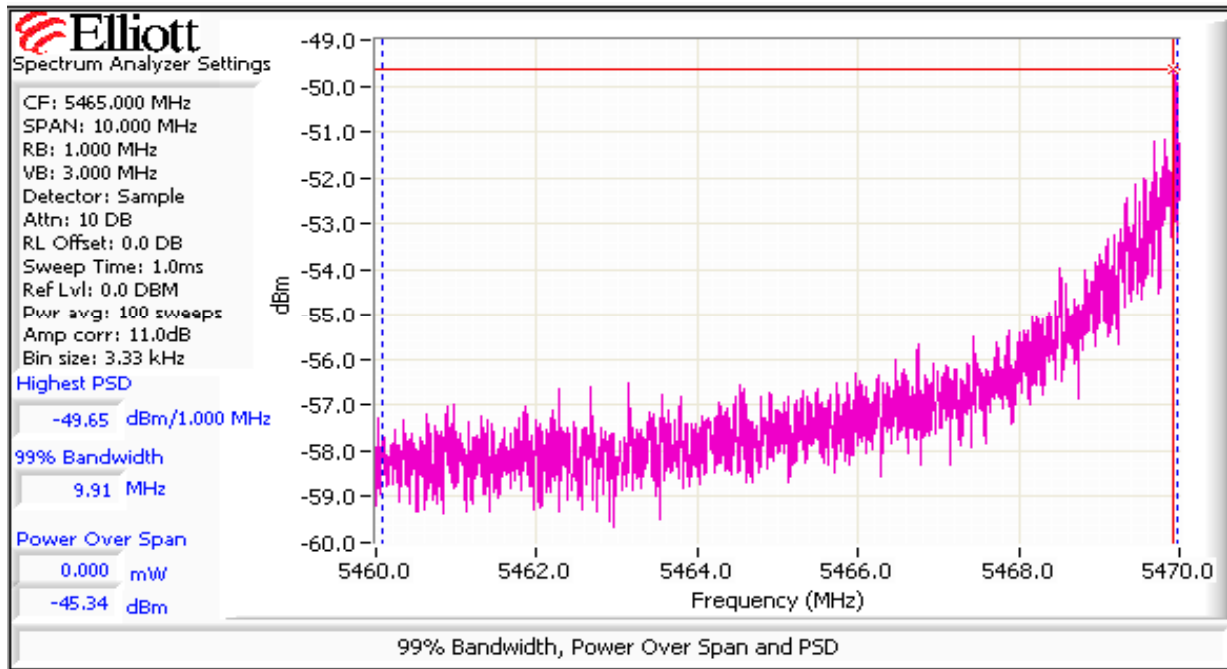


Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

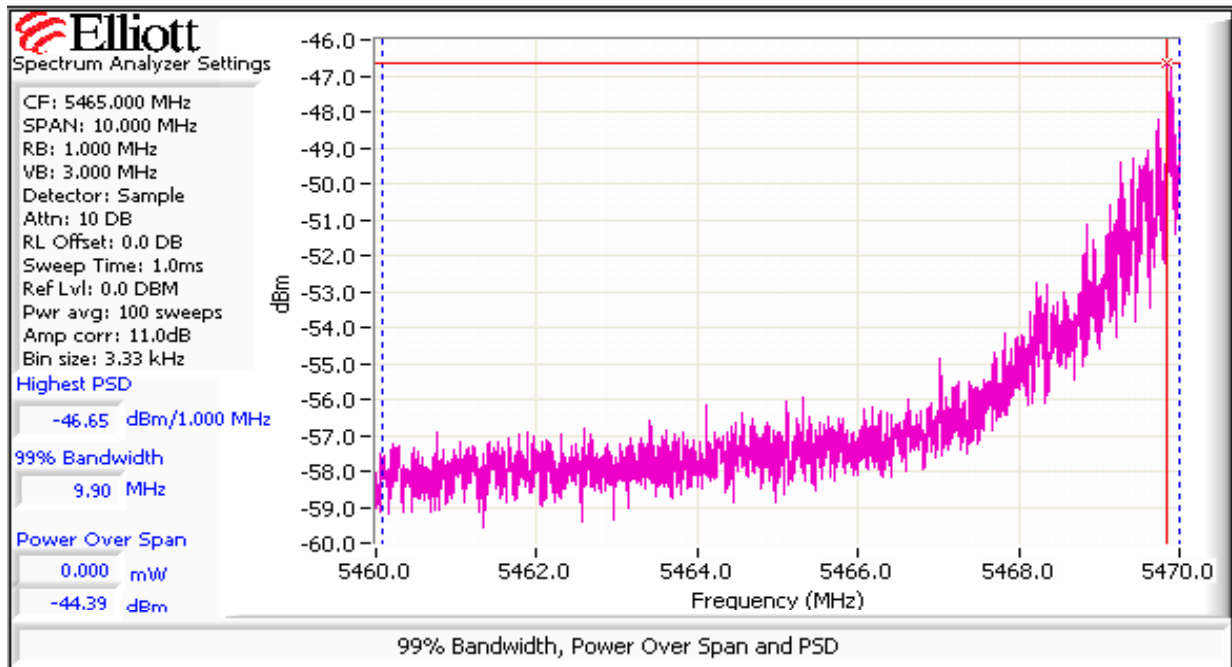
Low channel, 5470 - 5725 MHz Band

Plots for each chain showing compliance with the -27dBm/MHz limit for the 5460 - 5470 MHz band edge. Start and stop frequencies set to

	Power Setting	Band edge Level dBm/MHz	mW/MHz	Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
Chain 0	3	-46.7	0.00002	16.0	0.000861	-30.7	-28.9	-27	PASS
Chain 1		-49.7	0.00001	16.0	0.0004315	-33.7			

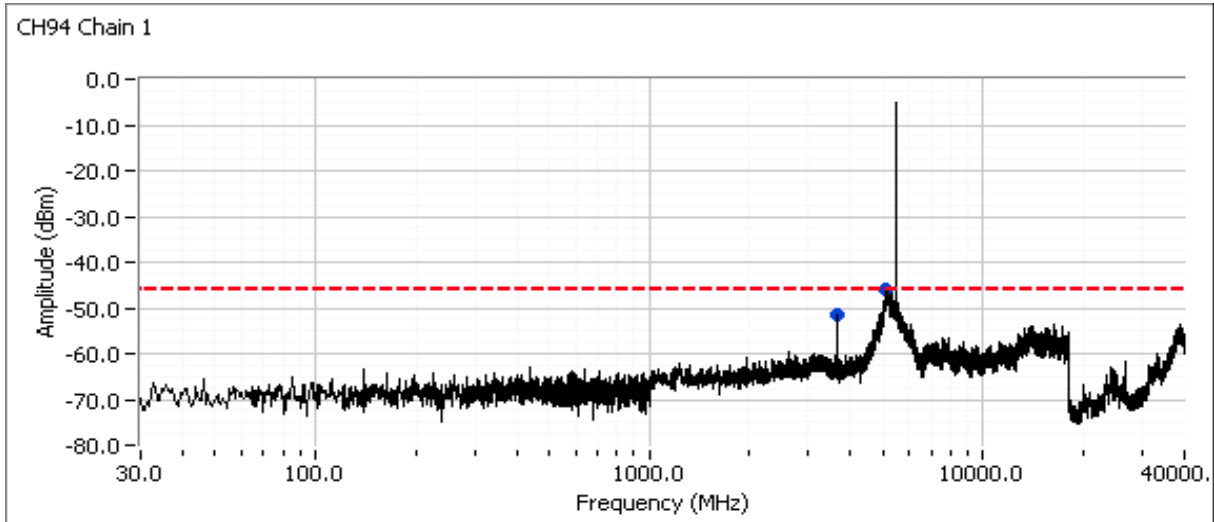
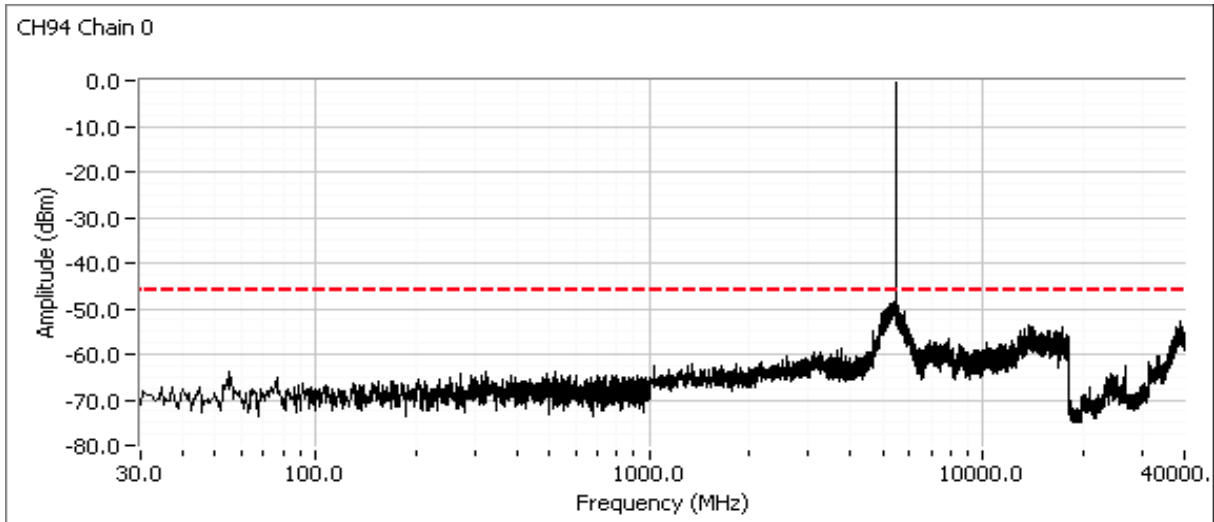


Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



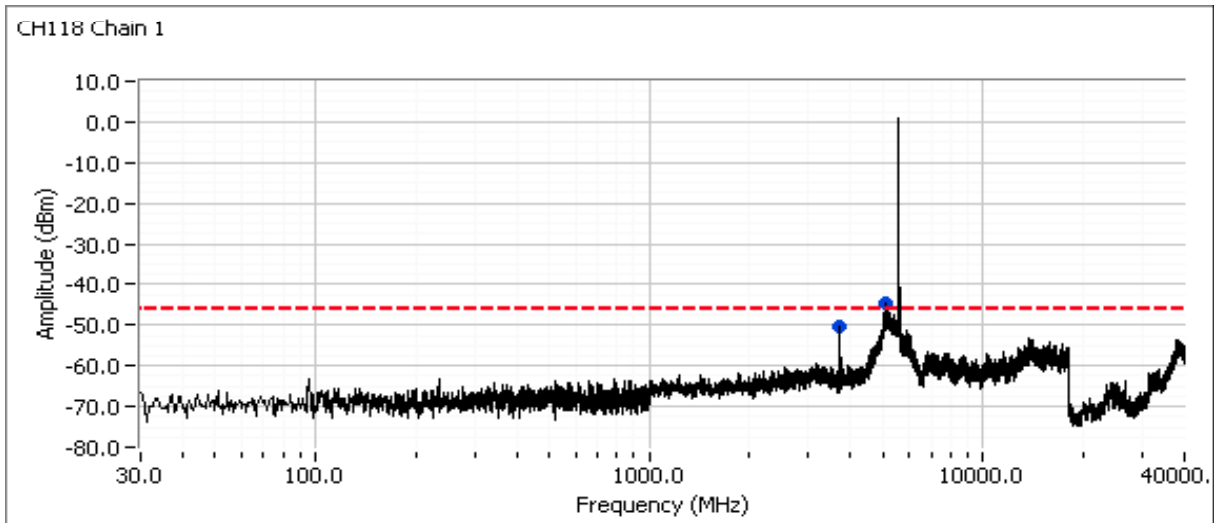
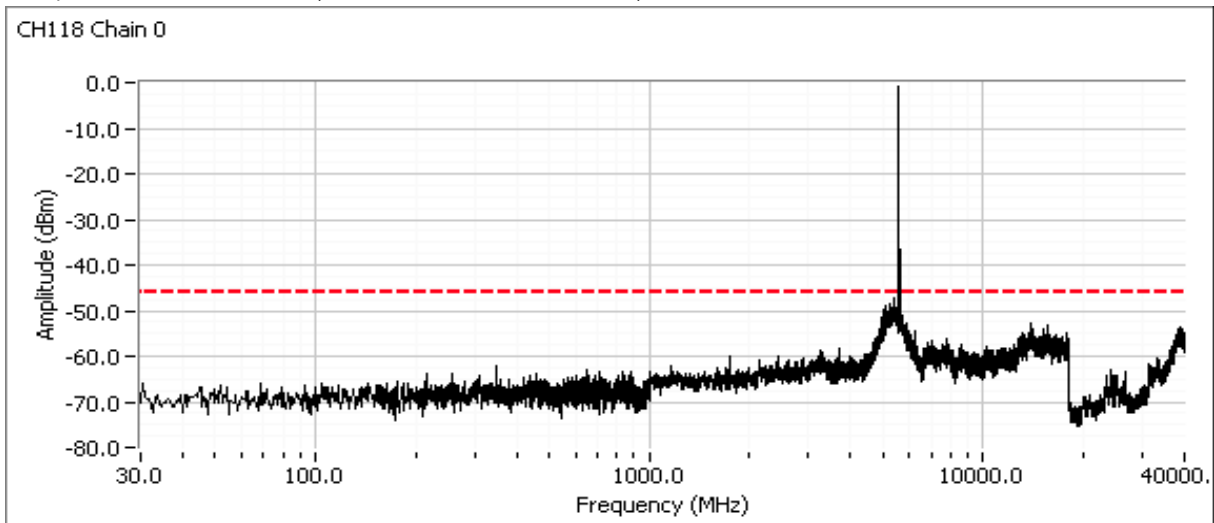
Frequency MHz	Level dBm	Pol v/h	FCC 15 E / RSS 210		Detector Pk/QP/Avg	Comment
			Limit	Margin		
5129.380	-46.0	-	-	-	Peak	CH94, Chain 1, note 1
3649.880	-51.5	-	-46.0	-5.5	Peak	CH94, Chain 1

Note 1 As frequency is within a restricted band, radiated tests were used to determine compliance.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Center channel, 5470 - 5725 MHz Band

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).

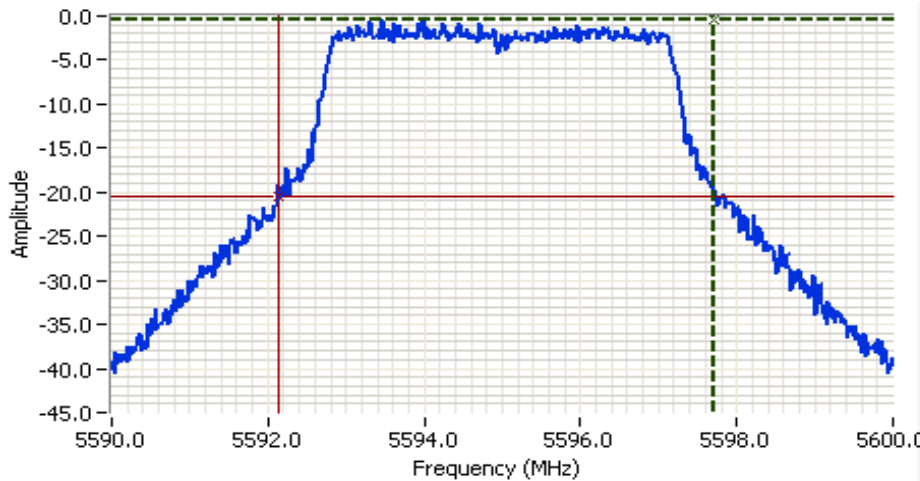


Frequency	Level	Pol	FCC 15 E / RSS 210		Detector	Comment
MHz	dBm	v/h	Limit	Margin	Pk/QP/Avg	
3730.910	-50.1	-	-46.0	-4.1	Peak	CH118, Chain 1
5132.380	-44.5	-	-	-	Peak	CH118, Chain 1, note 1

Note 1 | As frequency is within a restricted band, radiated tests were used to determine compliance.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

For master devices - This plot is showing that the 20dB bandwidth of the channel closest to 5600 MHz does not spill into the 5600-5650



Analyzer Settings

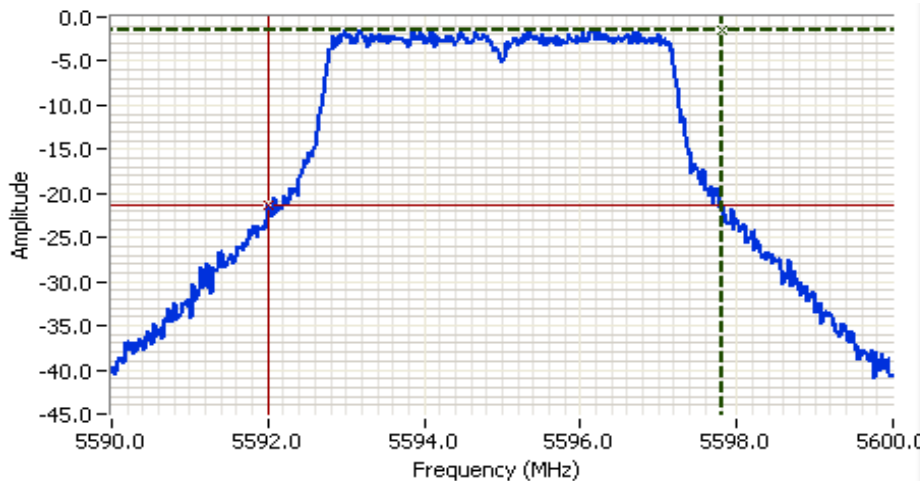
Rohde&Schwarz,ESI
CF: 5595.000 MHz
SPAN: 10.000 MHz
RB: 100 kHz
VB: 300 kHz
Detector: POS
Attn: 10 DB
RL Offset: 11.0 DB
Sweep Time: 50.0ms
Ref Lvl: 11.0 DBM

Comments

20dB BW: 5.591 MHz
FH:5597.72MHz
Chain 0

Cursor 1	5597.7154	-0.46	
Cursor 2	5592.1242	-20.46	

Delta Freq. 5.591
Delta Amplitude 20.00



Analyzer Settings

Rohde&Schwarz,ESI
CF: 5595.000 MHz
SPAN: 10.000 MHz
RB: 100 kHz
VB: 300 kHz
Detector: POS
Attn: 10 DB
RL Offset: 11.0 DB
Sweep Time: 50.0ms
Ref Lvl: 11.0 DBM

Comments

20dB BW: 5.812 MHz
FH:5597.82MHz
Chain 1

Cursor 1	5597.8156	-1.42	
Cursor 2	5592.0040	-21.42	

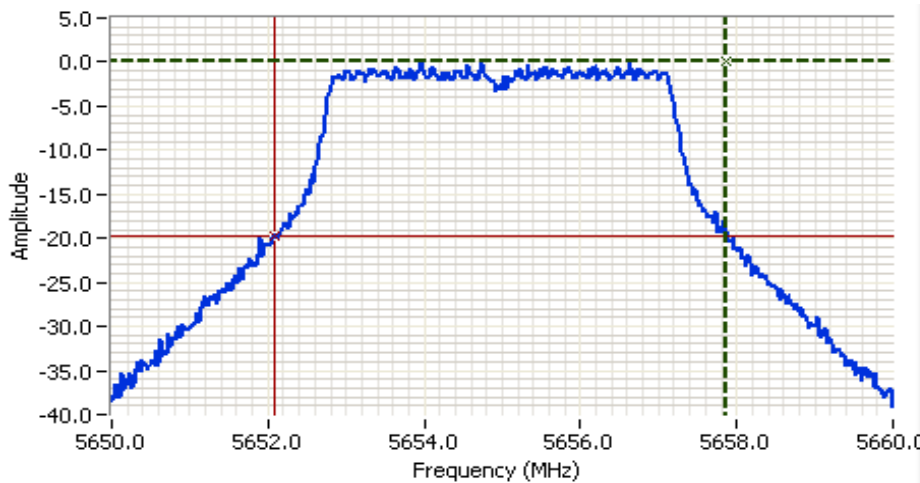
Delta Freq. 5.812
Delta Amplitude 20.00



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Channel adjacent to 5650 MHz

Plots showing that the 20dB bandwidth of the channel closest to 5650 MHz does not spill into the 5600-5650 MHz band. RB > 1% of



Analyzer Settings

Rohde&Schwarz, ESI
CF: 5655.000 MHz
SPAN: 10.000 MHz
RB: 100 kHz
VB: 300 kHz
Detector: POS
Attn: 10 DB
RL Offset: 11.0 DB
Sweep Time: 50.0ms
Ref Lvl: 11.0 DBM

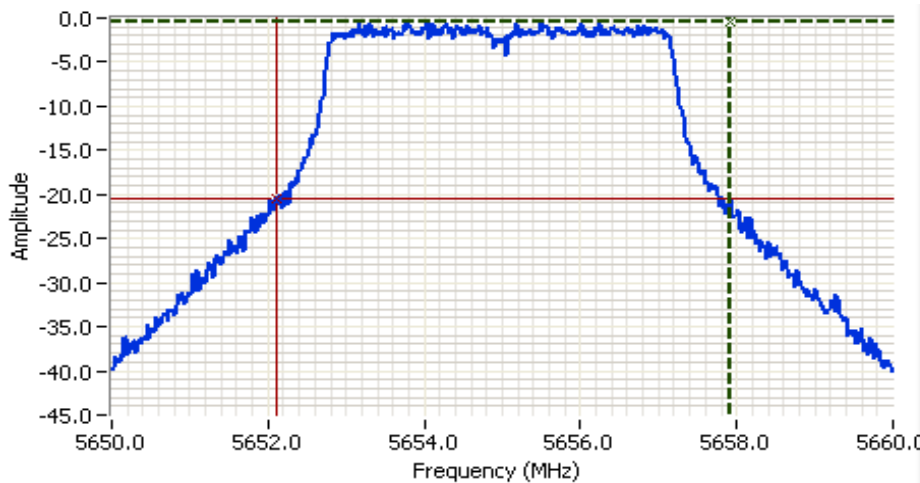
Comments

20dB BW: 5.792 MHz
FL: 5657.88MHz
Chain0

Cursor 1	5657.8758	0.16	
Cursor 2	5652.0842	-19.84	

Delta Freq. 5.792

Delta Amplitude 20.00



Analyzer Settings

Rohde&Schwarz, ESI
CF: 5655.000 MHz
SPAN: 10.000 MHz
RB: 100 kHz
VB: 300 kHz
Detector: POS
Attn: 10 DB
RL Offset: 11.0 DB
Sweep Time: 50.0ms
Ref Lvl: 11.0 DBM

Comments

20dB BW: 5.812 MHz
FL: 5657.92MHz
Chain1

Cursor 1	5657.9158	-0.42	
Cursor 2	5652.1042	-20.42	

Delta Freq. 5.812

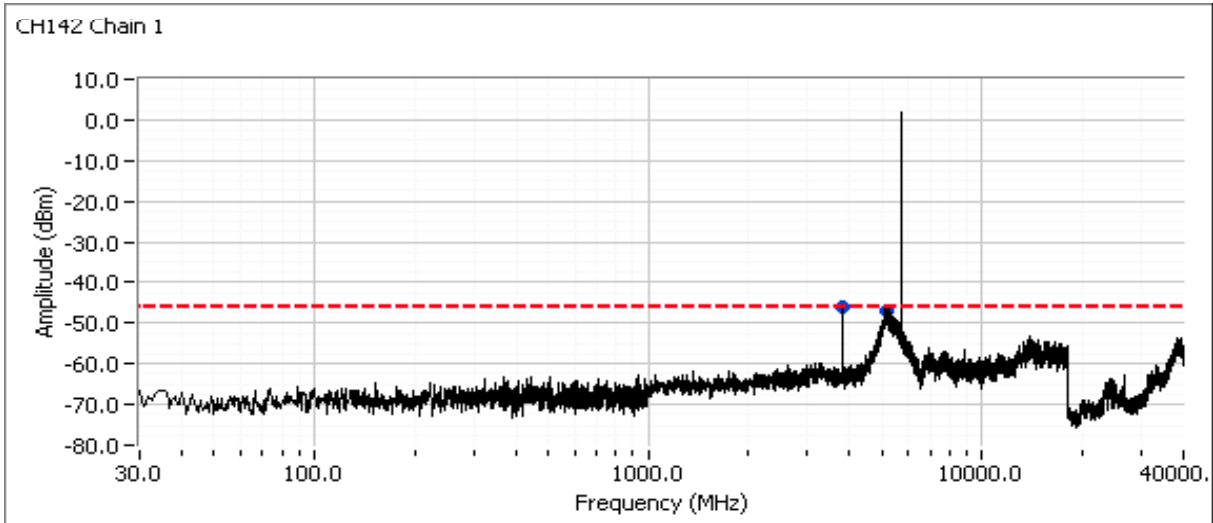
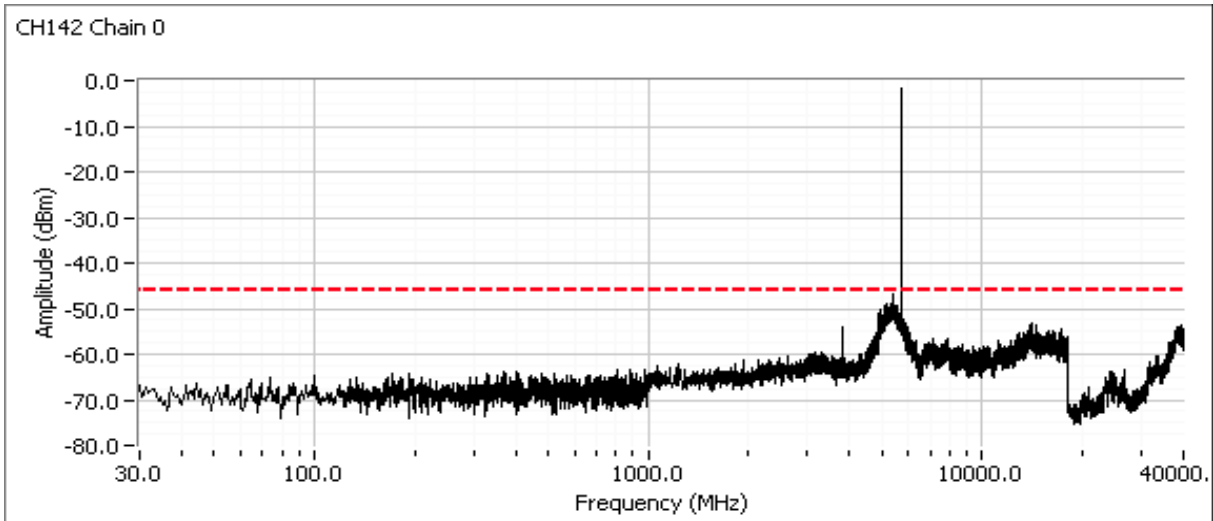
Delta Amplitude 20.00



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

High channel, 5470 - 5725 MHz Band

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).

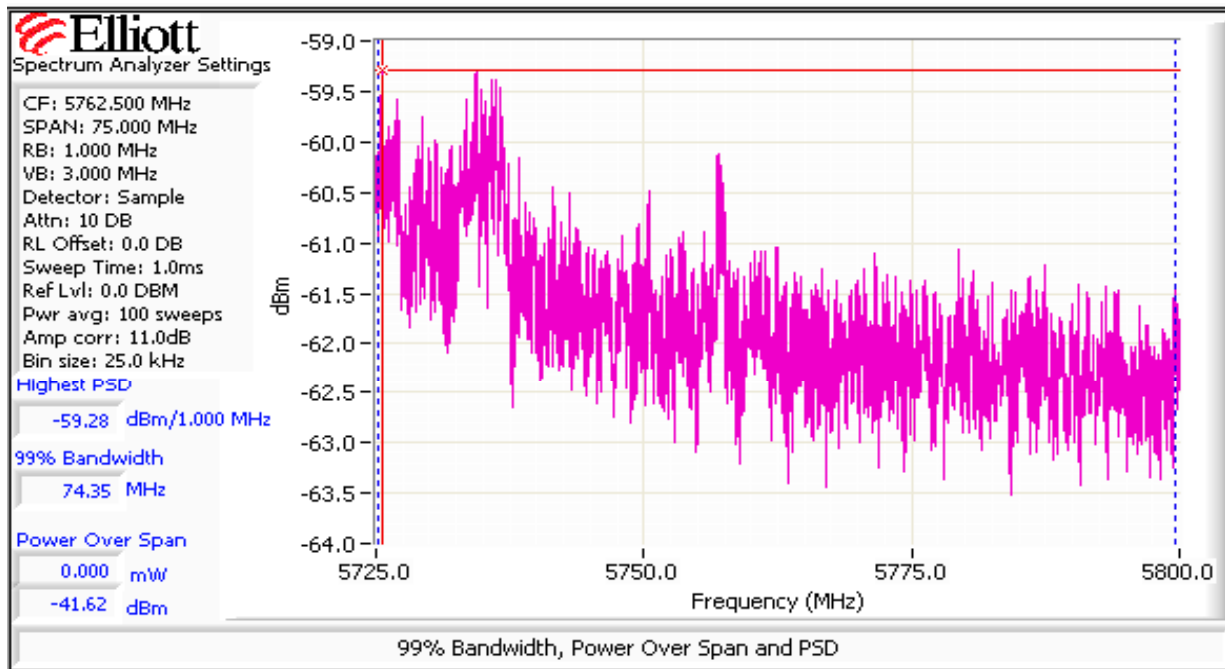


Frequency MHz	Level dBm	Pol v/h	FCC 15 E / RSS 210		Detector Pk/QP/Avg	Comment
			Limit	Margin		
3808.940	-46.0	-	-46.0	0.0	Peak	CH142, Chain 1
5159.390	-47.1	-	-46.0	-1.1	Peak	CH142, Chain 1

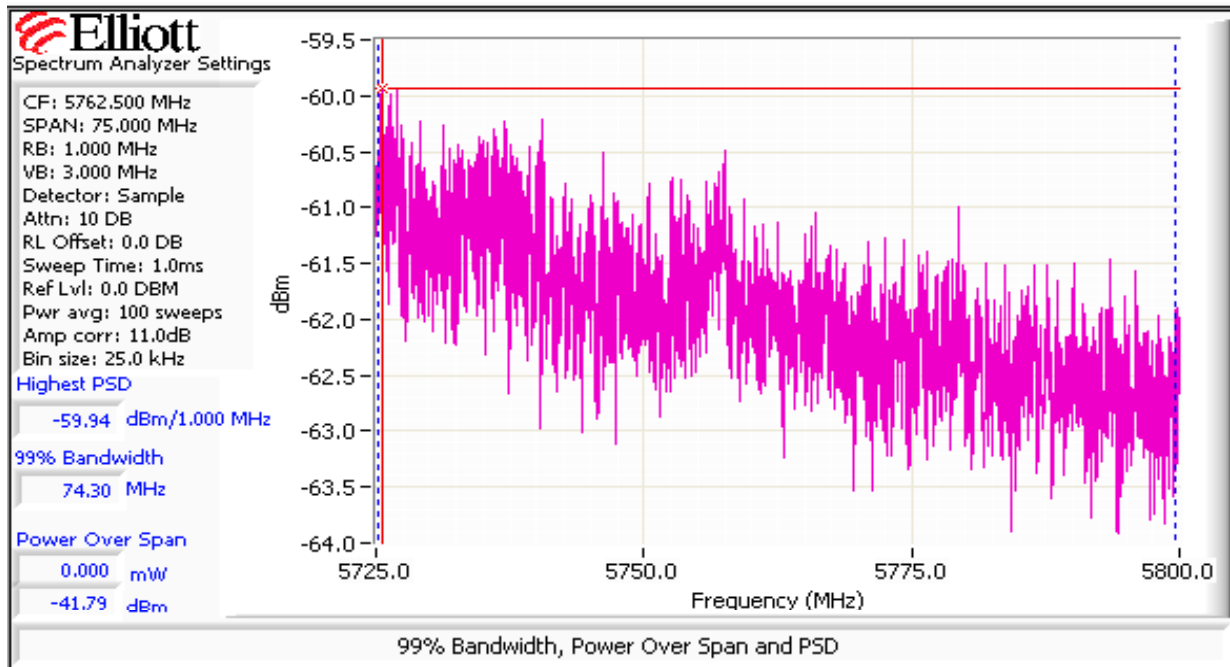
Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Plots for each chain showing compliance with the -27dBm/MHz limit above the 5725MHz band edge. Start and stop frequencies set to

	Power Setting	Band edge Level dBm/MHz	mW/MHz	Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
					mW/MHz	dBm/MHz			
Chain 1	1.5	-59.9	0.00000	16.0	4.074E-05	-43.9	-40.6	-27	PASS
Chain 2		-59.3	0.00000	16.0	4.677E-05	-43.3			



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A

**RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions**

Test Specific Details

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

Date of Test: 12/20/2011, 1/9-10/12
Test Engineer: Jack Liu & John Caizzi
Test Location: FT#3& 4, FT Lab 4

Config. Used: Sample SN:1142K002722B08277-"2011-2413"
Config Change: None
EUT Voltage: POE

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	10.3 dBm (-.7 dB)
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	-2.4 dBm/MHz (-.4 dB)
1	Max EIRP 5250 - 5350MHz	TPC required if EIRP ≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm	-	29.3dBm
1	Power, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	10.6 dBm (-.4 dB)
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	-2.4 dBm/MHz (-.4 dB)
1	Max EIRP 5470 - 5725MHz	TPC required if EIRP ≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold	-	29.7dBm
1	26dB Bandwidth	15.407 (Determines max power)	NA	24.6 MHz
1	99% Bandwidth	RSS 210	NA	18.6 MHz
2	Peak Excursion Envelope	15.407(a) (6) 13dB	Pass	12.6 dB (-.4 dB)
3	Antenna Conducted - Out of Band Spurious	15.407(b) -27dBm/MHz	-	All emissions below the -27dBm/MHz limit

General Test Configuration

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

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Standard:	RSS 210, FCC 15E	Class:	N/A

Ambient Conditions:

Temperature: 20 °C
Rel. Humidity: 35 %

Modifications Made During Testing

No modifications were made to the EUT during testing
Sample SN:1142k002722B08277 "2011-2413"

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #1: Bandwidth, Output Power and Power Spectral Density - MIMO Systems

Note 1:	Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 40 MHz (method 1 of DA-02-2138A1).
Note 2:	Measured using the same analyzer settings used for output power. PSD is highest value on the plot.
Note 3:	For RSS-210 the limits are corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated from 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. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

MIMO Device - 5250-5350 MHz Band

	Chain 0	Chain 1	Chain 3	Coherent	Effective ⁵	EIRP (mW)	EIRP (dBm)
Antenna Gain (dBi):	16	16		Yes	19.0	858.0	29.3

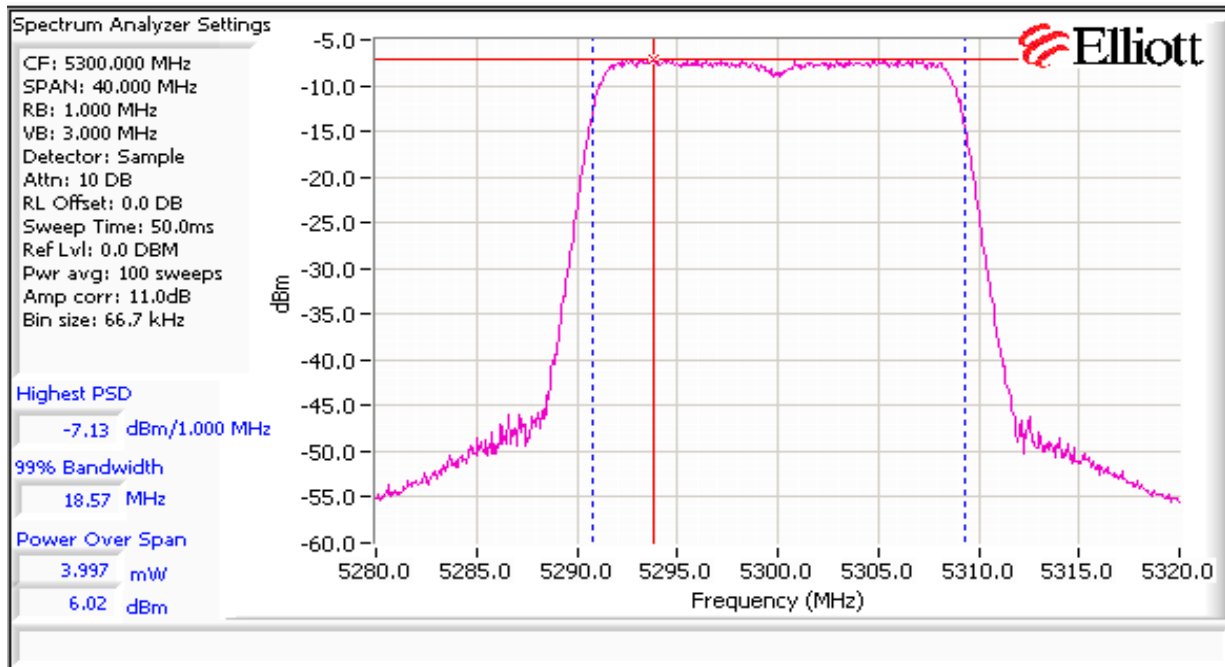
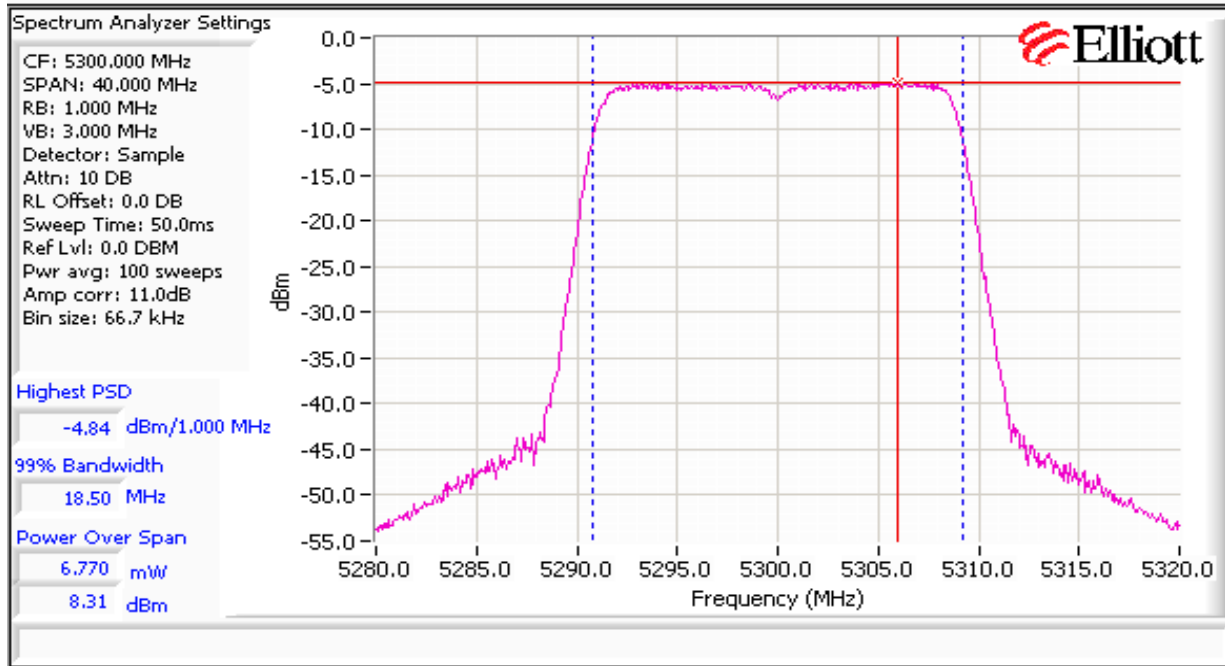
Power

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power ¹ dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 0	Chain 1	Chain 3	mW	dBm			
5265	6.5	24.8	8.1	6.2		10.6	10.3	11.0	PASS	
5270	6.5	27.3	7.8	6.5		10.6	10.2		PASS	
5300	6.5	25.0	8.3	6.0		10.8	10.3		PASS	
5320	6.5	27.8	7.5	6.5		10.1	10.1		PASS	

PSD

Frequency (MHz)	99% ⁴ BW	Total Power	PSD ² dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 0	Chain 1	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 ³	
5265	18.5	10.3	-4.9	-6.9		0.5	-2.8	-2.0	-2.0	PASS
5270	18.2	10.2	-4.9	-6.0		0.6	-2.4	-2.0	-2.0	PASS
5300	18.6	10.3	-4.8	-7.1		0.5	-2.8	-2.0	-2.0	PASS
5320	18.2	10.1	-5.1	-5.9		0.6	-2.4	-2.0	-2.0	PASS

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

MIMO Device - 5470-5725 MHz Band

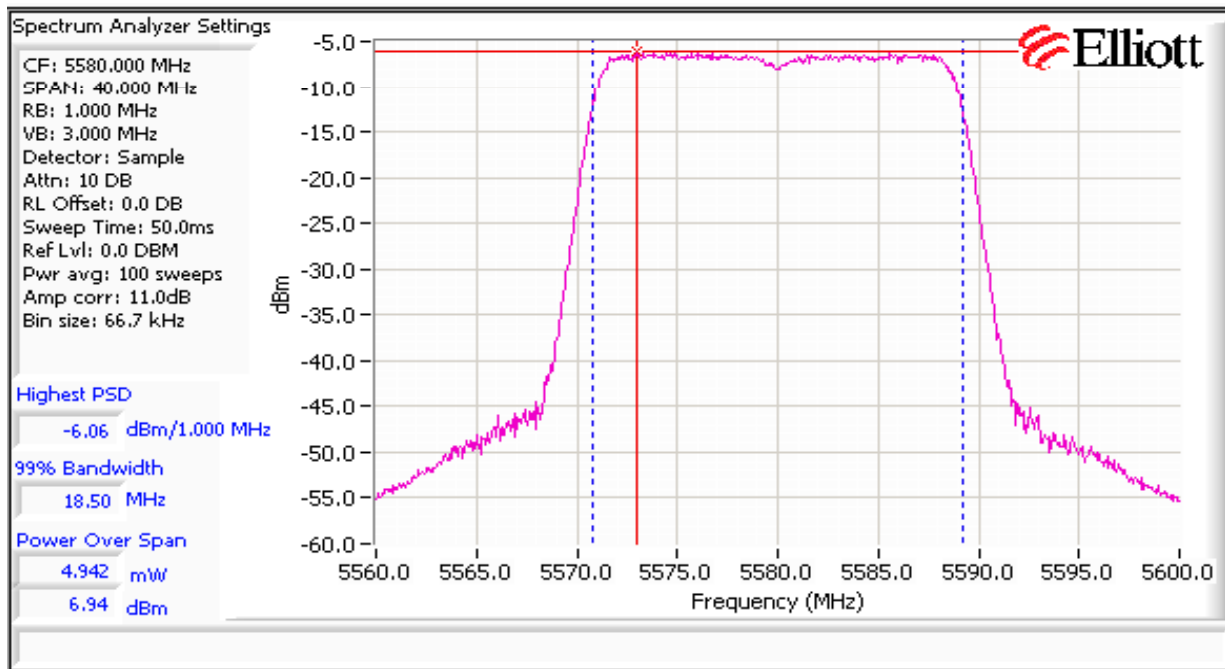
	Chain 0	Chain 1	Chain 3	Coherent	Effective ⁵	EIRP (mW)	EIRP (dBm)
Antenna Gain (dBi):	16	16		Yes	19.0	923.3	29.7

Power

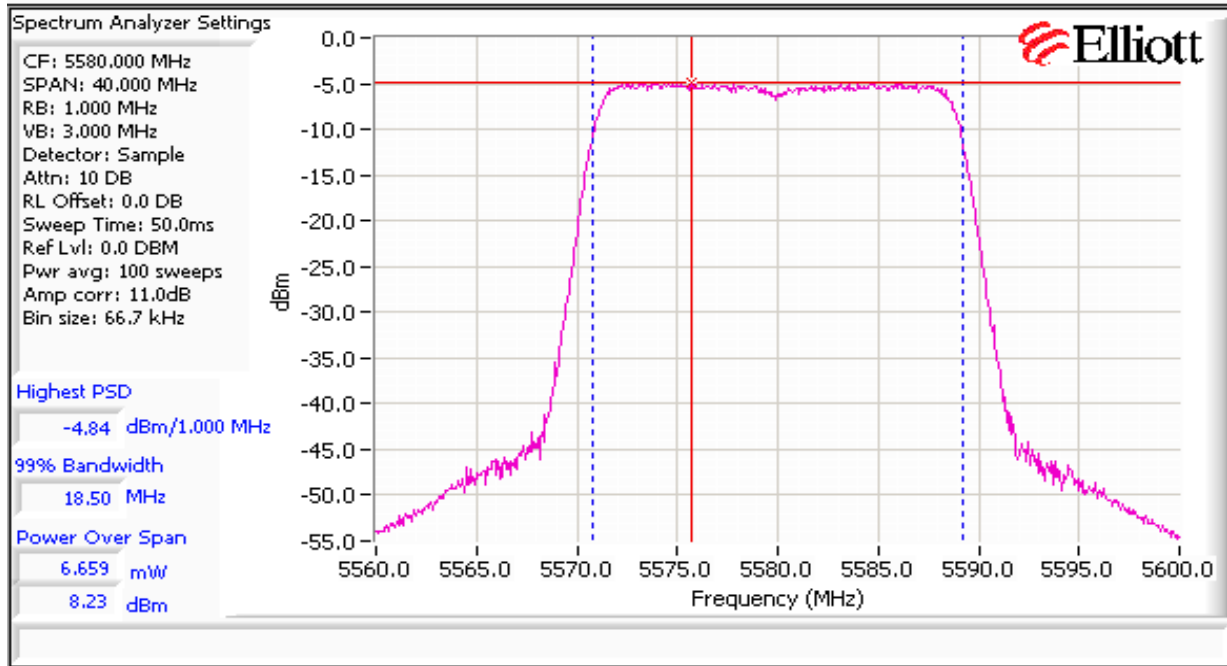
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power ¹ dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 0	Chain 1	Chain 3	mW	dBm			
5500	6.0	24.7	7.3	7.3		10.7	10.3	11.0	0.012	PASS
5580	6.5	25.4	6.9	8.2		11.6	10.6			PASS
5700	6.0	24.6	6.8	8.1		11.3	10.5			PASS

PSD

Frequency (MHz)	99% ⁴ BW	Total Power	PSD ² dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 0	Chain 1	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 ³	
5500	18.6	10.3	-5.8	-5.9		0.5	-2.8	-2.0	-2.0	PASS
5580	18.5	10.6	-6.1	-4.8		0.6	-2.4	-2.0	-2.0	PASS
5700	18.6	10.5	-6.2	-5.1		0.6	-2.6	-2.0	-2.0	PASS



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #2: Peak Excursion Measurement

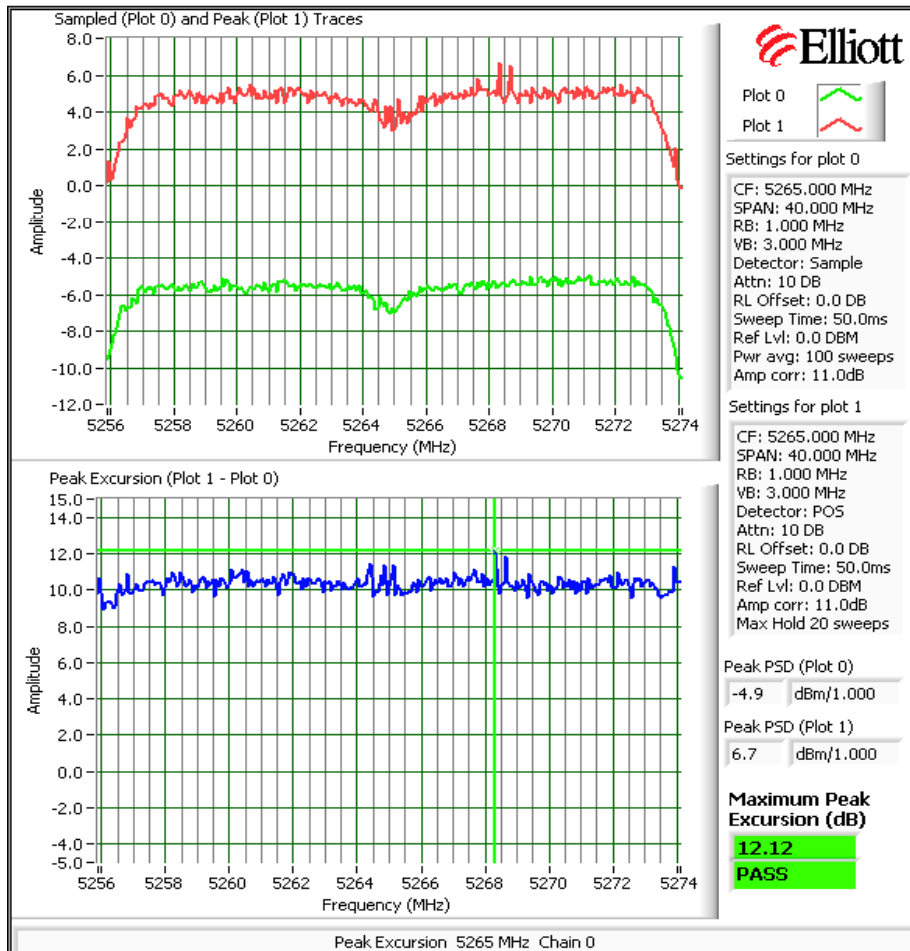
HT20 Device meets the requirement for the peak excursion

Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)	
(MHz)	Value	Limit	(MHz)	Value	Limit
5265	12.1 / 11.6	13.0	5500	11.7 / 12.2	13.0
5300	11.7 / 11.3	13.0	5580	11.4 / 12.0	13.0
5320	9.34 / 9.53	13.0	5700	12.2 / 12.6	13.0

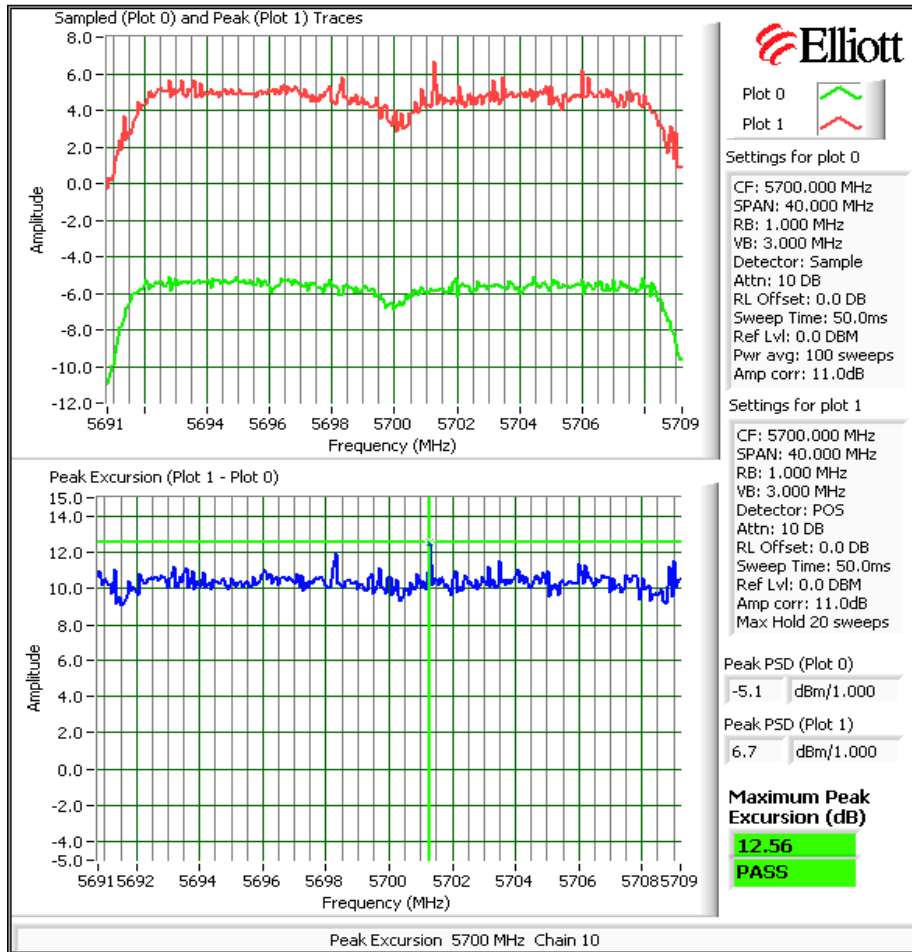
Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

MIMO Devices: Antenna gain used is the individual antenna antenna gain (the spurious emissions at the band edges are not considered to be coherent between chains and spurious removed from the band edges are evaluated as radiated emissions if close to the

Number of transmit chains: 2
 Maximum Antenna Gain: 16.0 dBi
 Spurious Limit: -27.0 dBm/MHz eirp
 Adjustment for 2 chains: -3.0 dB adjustment for multiple chains.
 Limit Used On Plots ^{Note 1}: -46.0 dBm/MHz Average Limit (RB=1MHz, VB=10Hz)

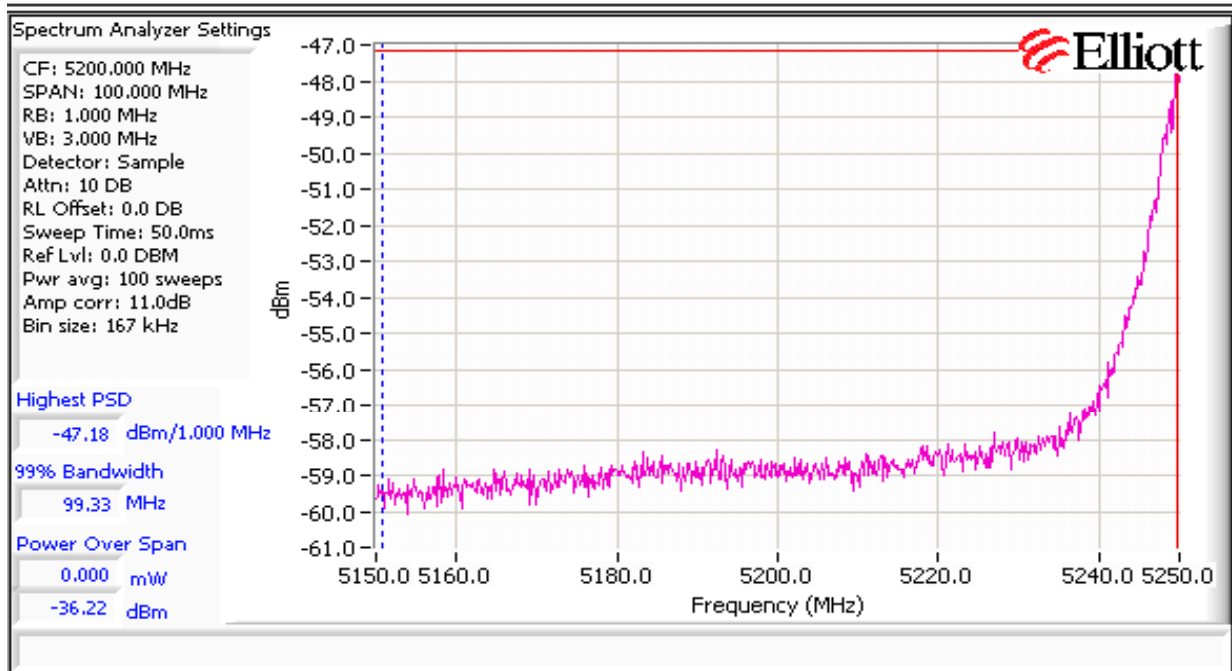
Note 1:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain and number of transmitters (limit = -27dBm - antenna gain - 10Log[N]). Radiated field strength measu
Note 2:	All spurious signals below 1GHz are measured during digital device radiated emissions test.
Note 3:	Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
Note 4:	If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
Note 5:	Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

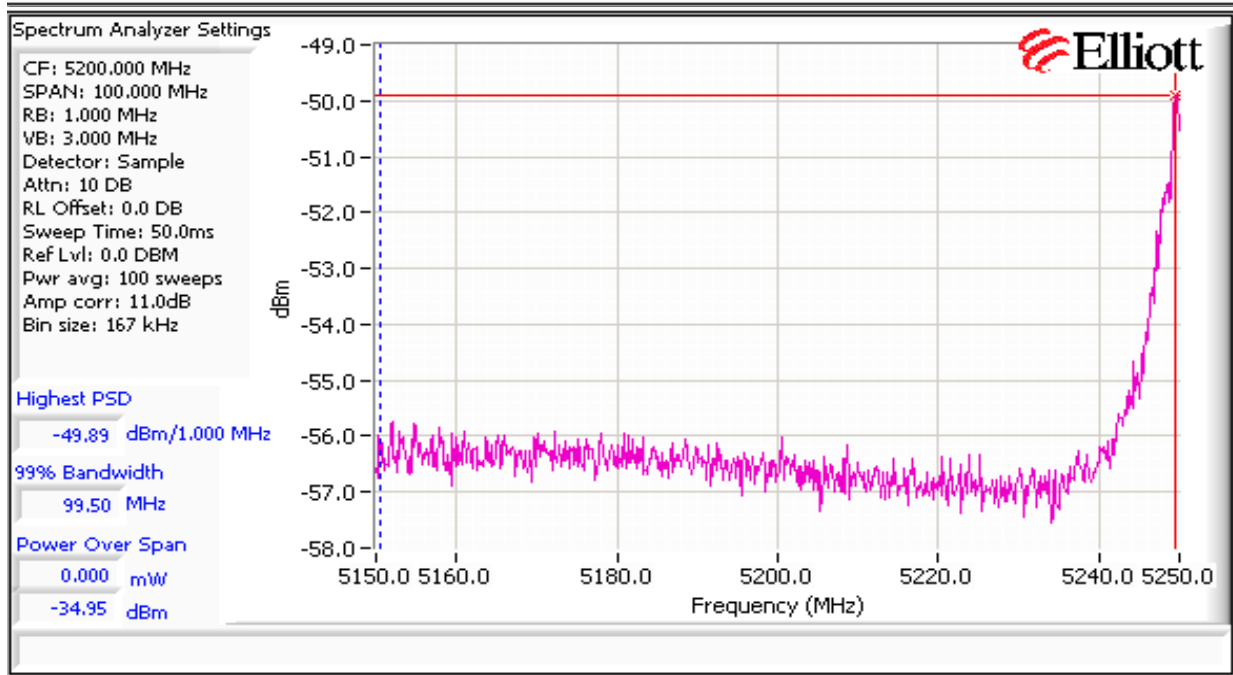
Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Low channel, 5250 - 5350 MHz Band

Plots for each chain showing compliance with the -27dBm/MHz limit in the 5150 - 5250 MHz band. Start and stop frequencies set to 5150-5250 MHz, RB=1MHz, VB=3MHz, power averaging enabled (100 traces) [OR use power plot if it clearly shows level at/below 5250 MHz and level is dropping]



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

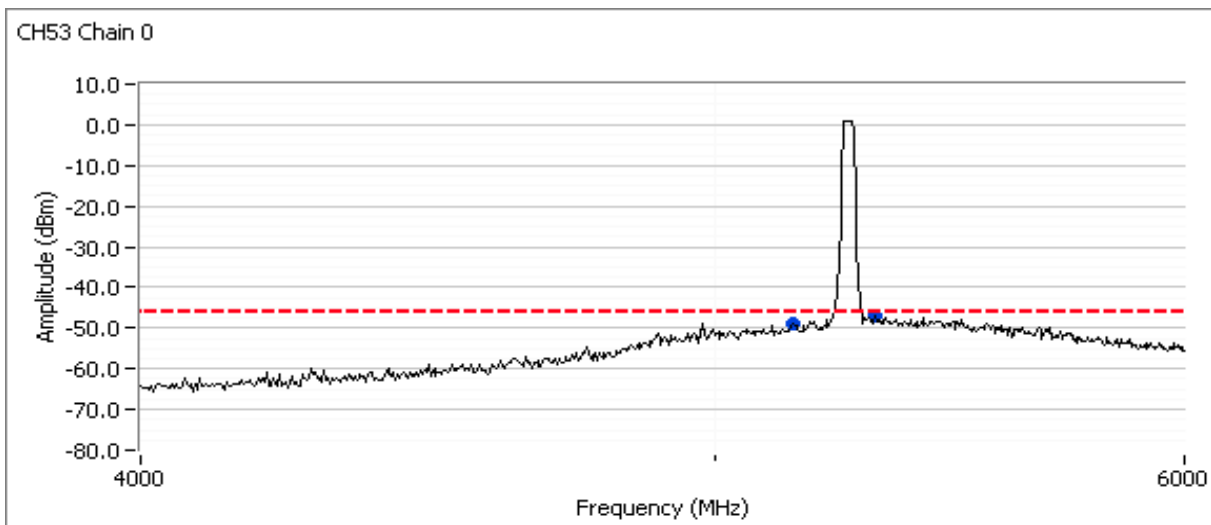
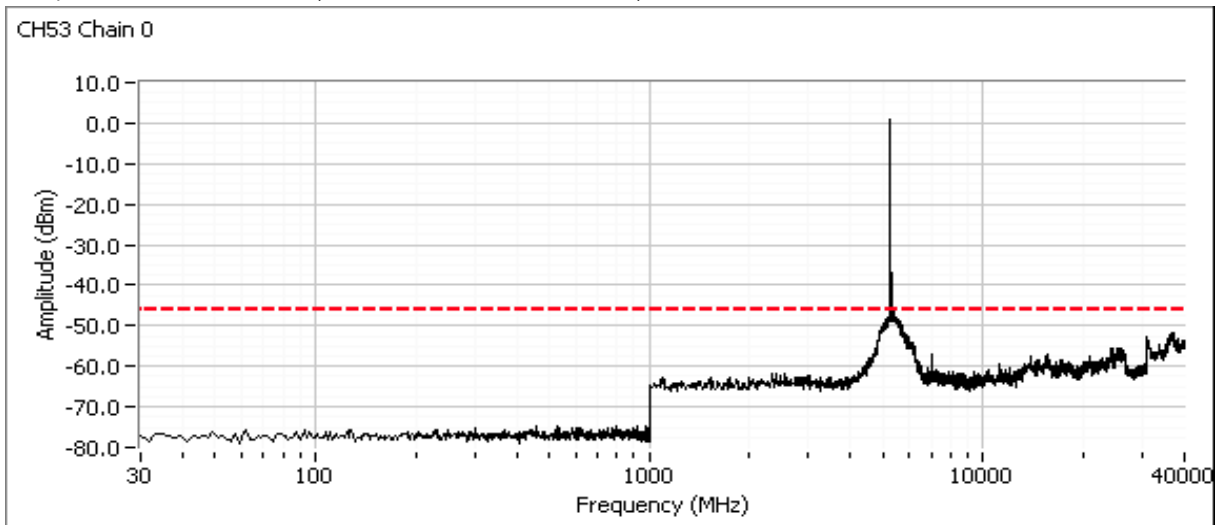


5265 MHz

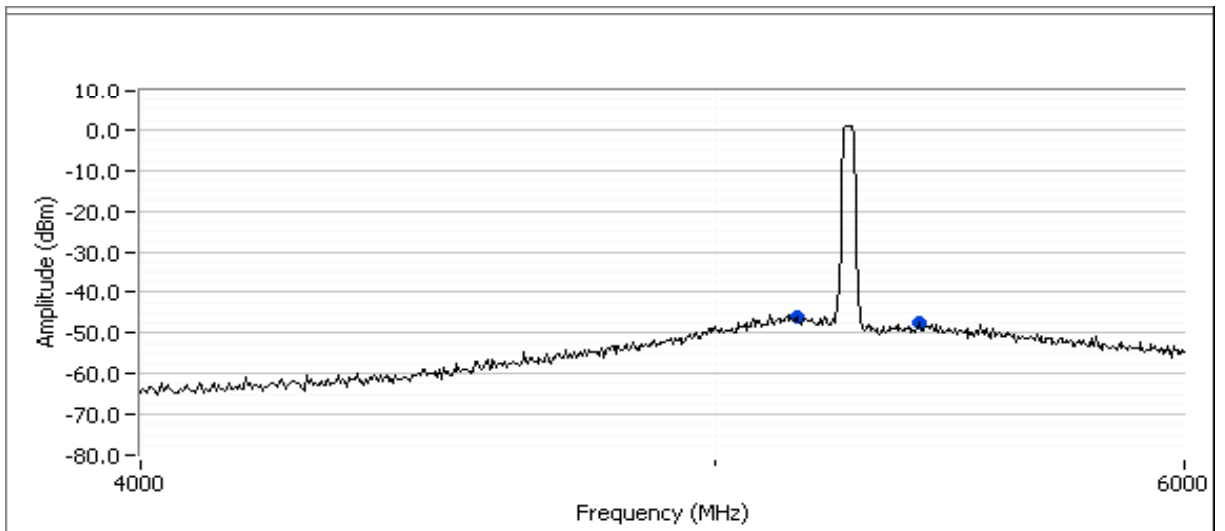
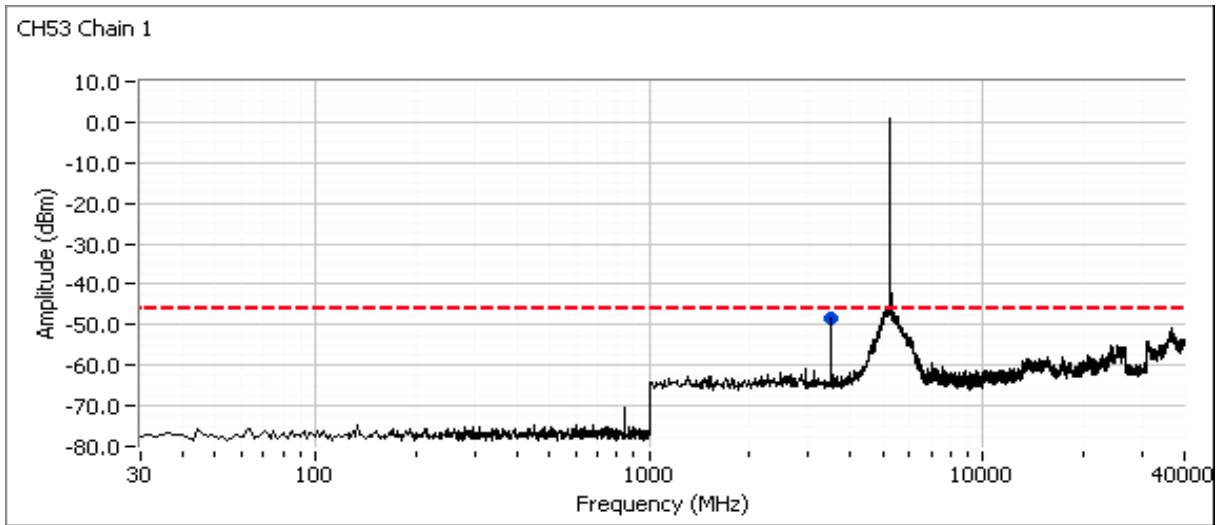
	Power Setting	Band edge Level		Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
		dBm/MHz	mW/MHz		mW/MHz	dBm/MHz			
Chain 0	6.5	-47.2	0.00002	16.0	0.0007621	-31.2	-29.3	-27	PASS
Chain 1		-49.9	0.00001	16.0	0.0004074	-33.9			

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

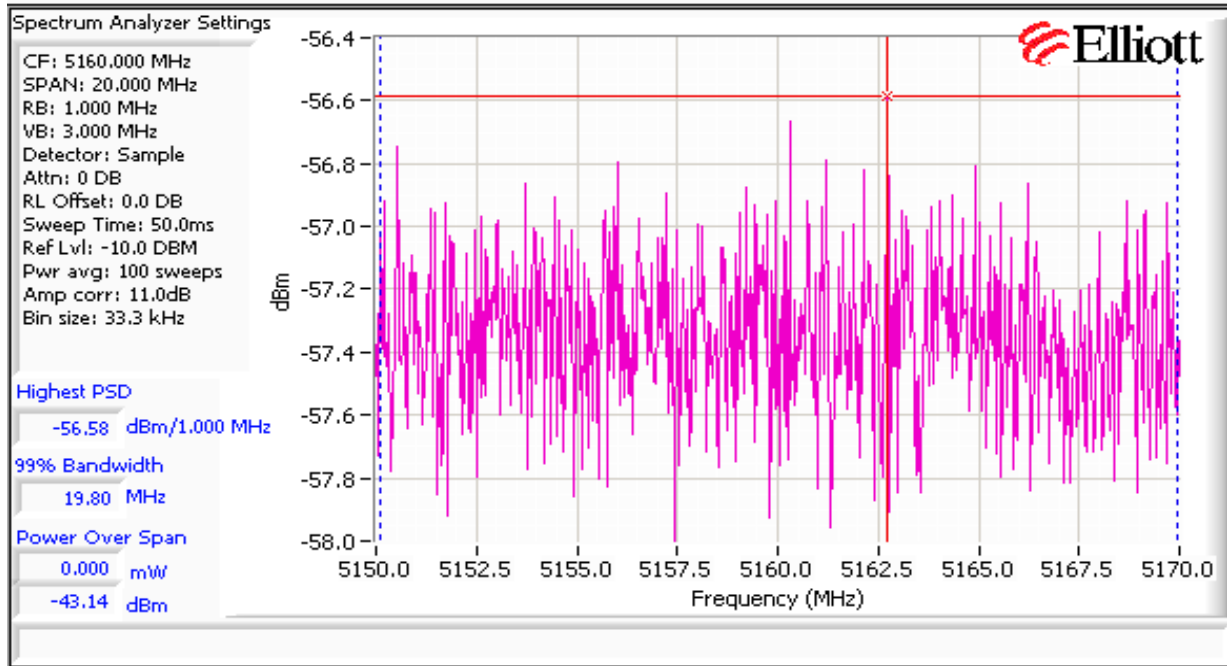
Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



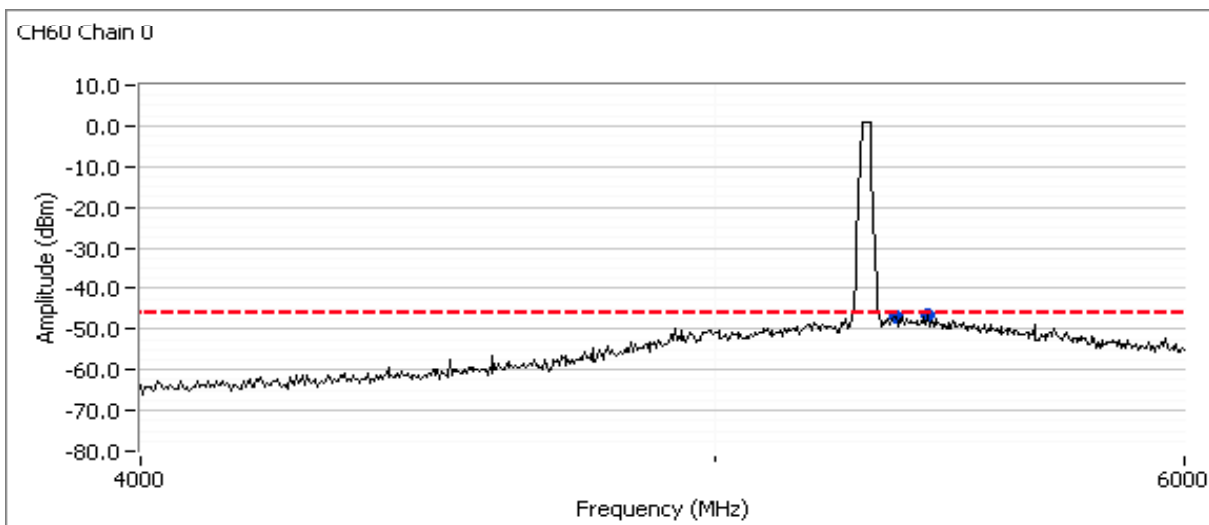
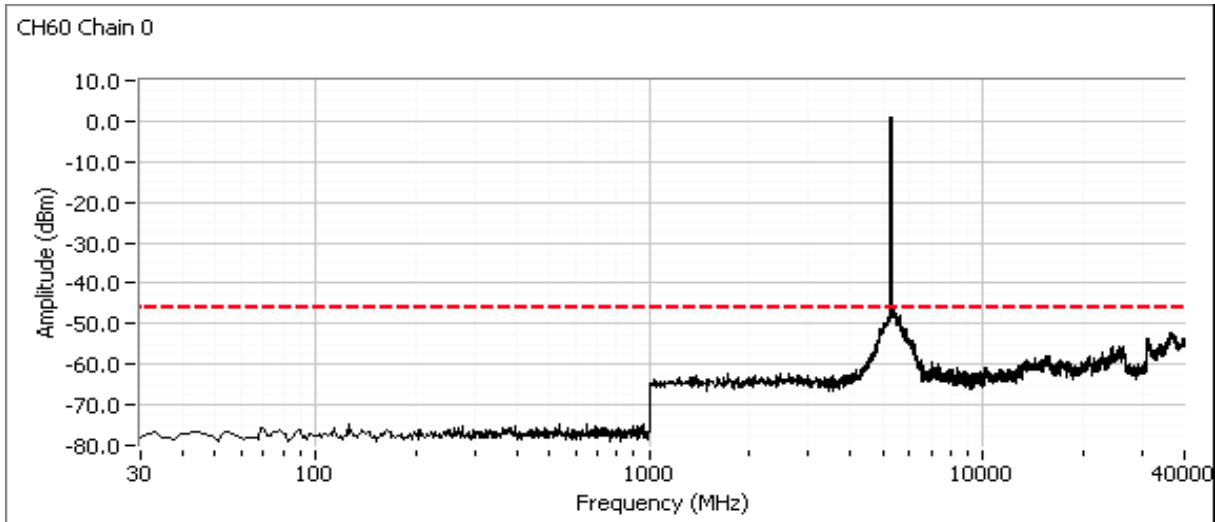
Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



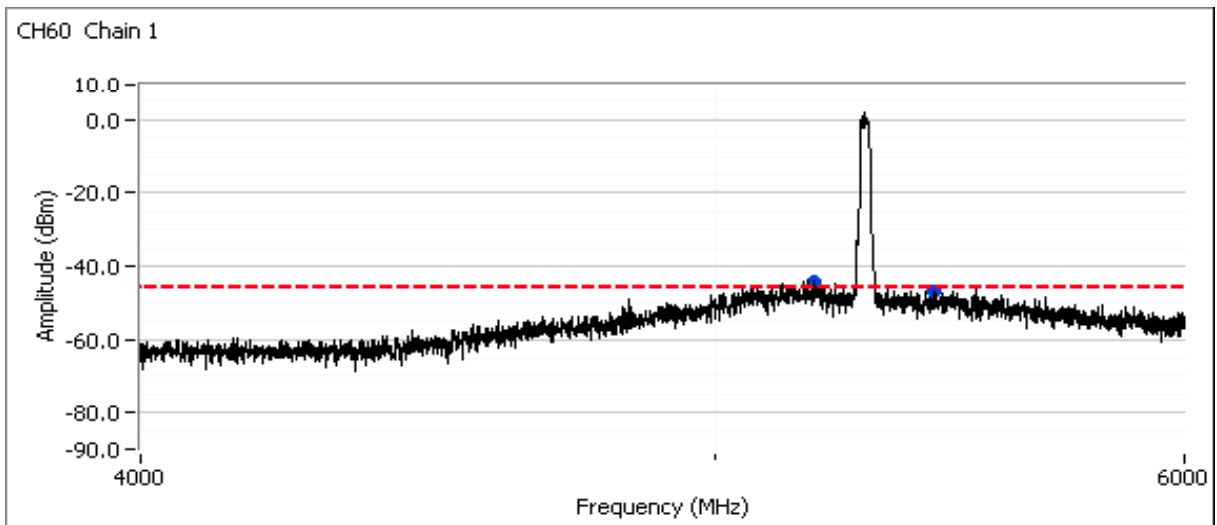
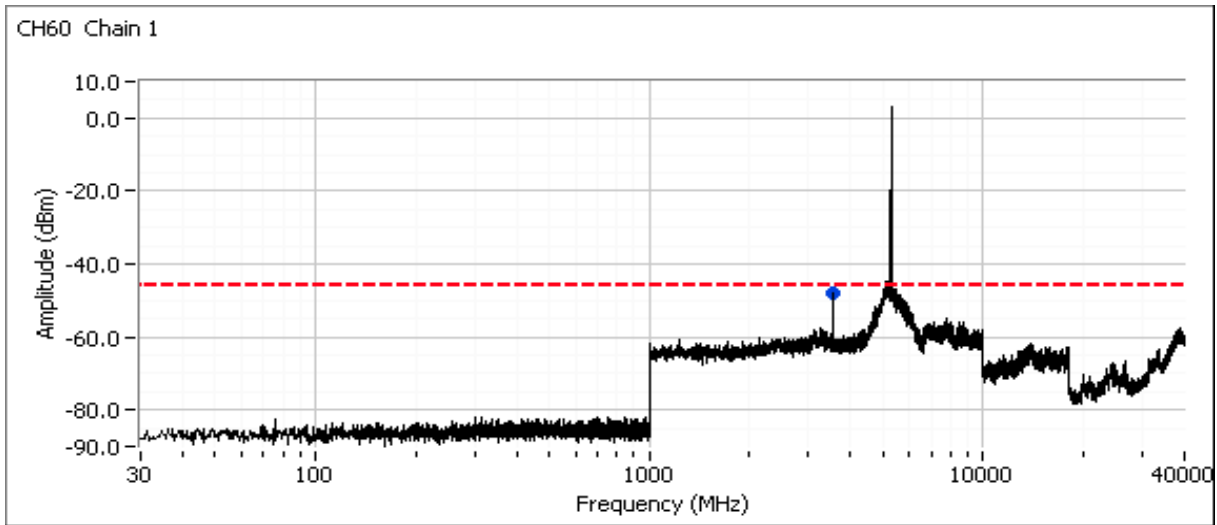
Frequency	Level	Pol	FCC 15 E / RSS 210		Detector	Comment
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	
5320.000	-46.8	Chain 0	-46.0	-0.8	Peak	
5153.330	-48.8	Chain 0	-46.0	-2.8	Peak	
3502.500	-48.2	Chain 1	-46.0	-2.2	Peak	
5160.000	-46.0	Chain 1	-	-	Peak	
5160.000	-56.6	Chain 1	-46.0	-10.6	Sample	100 sample average
5413.330	-47.5	Chain 1	-	-	Peak	Restricted band, see radiated measurements.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

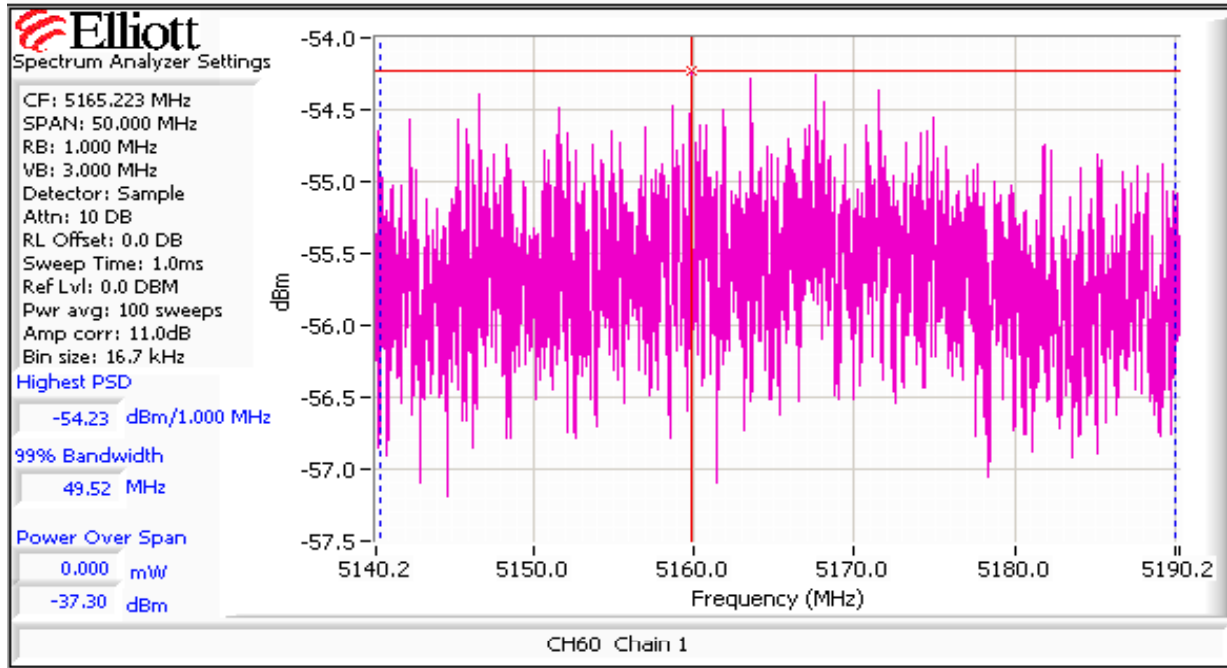
Center channel, 5250 - 5350 MHz Band
Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



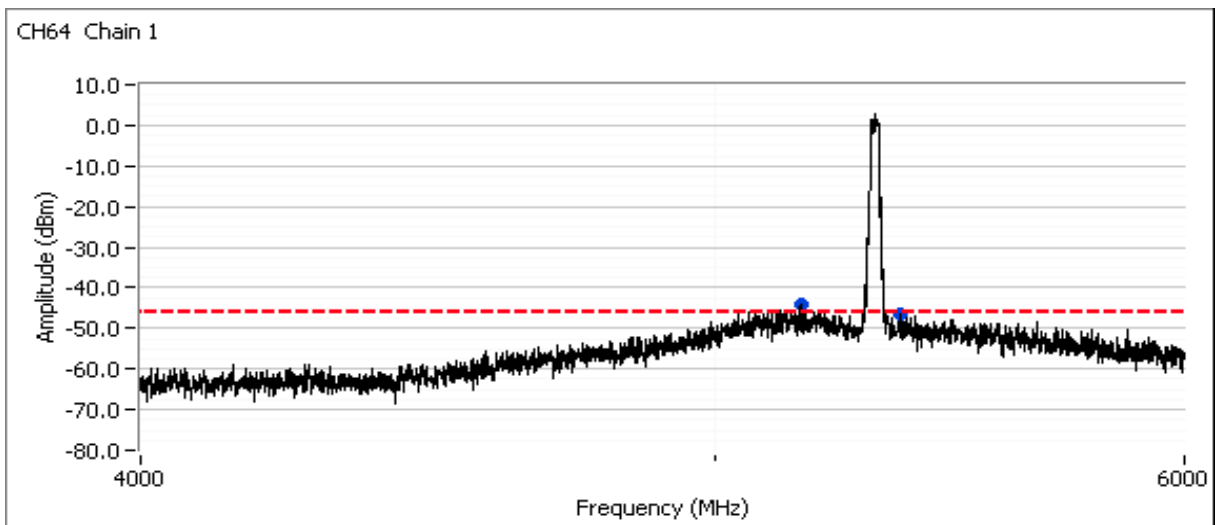
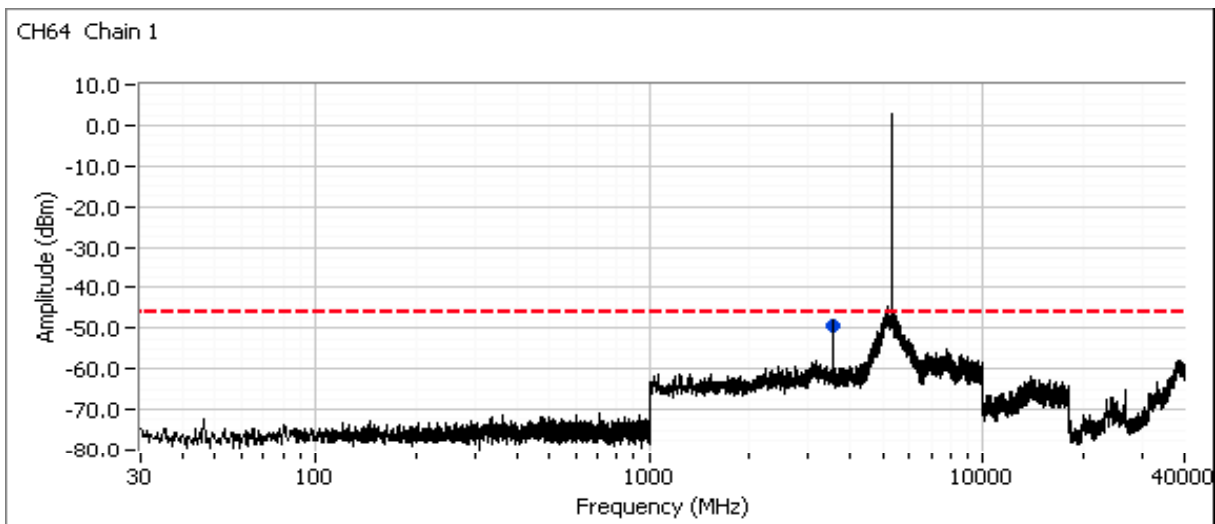
Frequency	Level	Pol	FCC 15 E / RSS 210		Detector	Comment
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	
5363.330	-47.0	Chain 0	-	-	Peak	Restricted band, see radiated measurements.
5430.000	-46.7	Chain 0	-	-	Peak	Restricted band, see radiated measurements.
5197.070	-44.1	Chain 1	-	-	Peak	
5159.850	-54.2	Chain 1	-46.0	-8.2	Sample	100 sample average
5443.810	-46.9	Chain 1	-	-	Peak	Restricted band, see radiated measurements.
3532.840	-47.8	Chain 1	-46.0	-1.8	Peak	

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

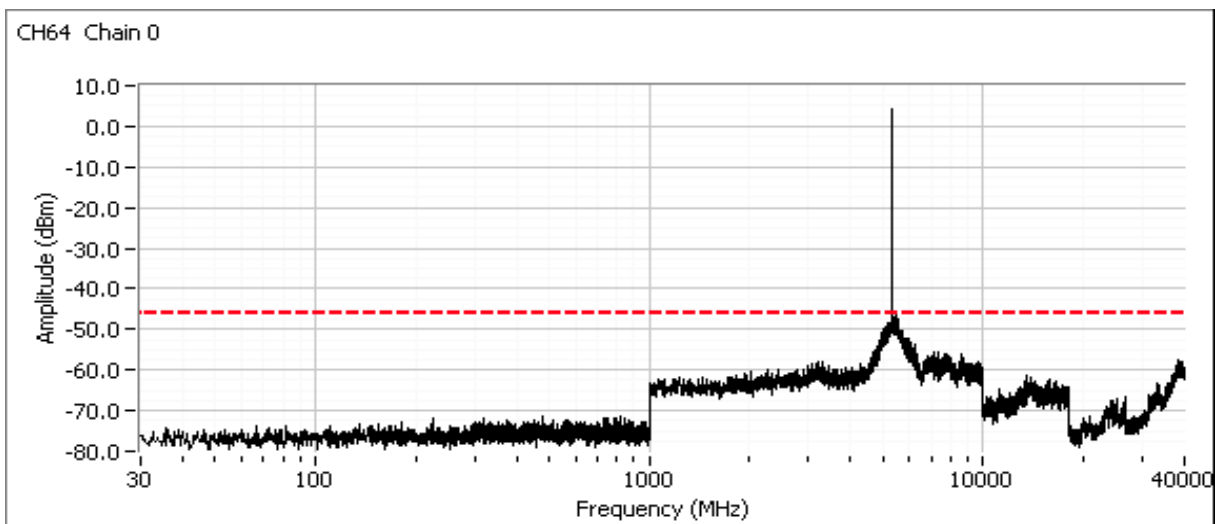
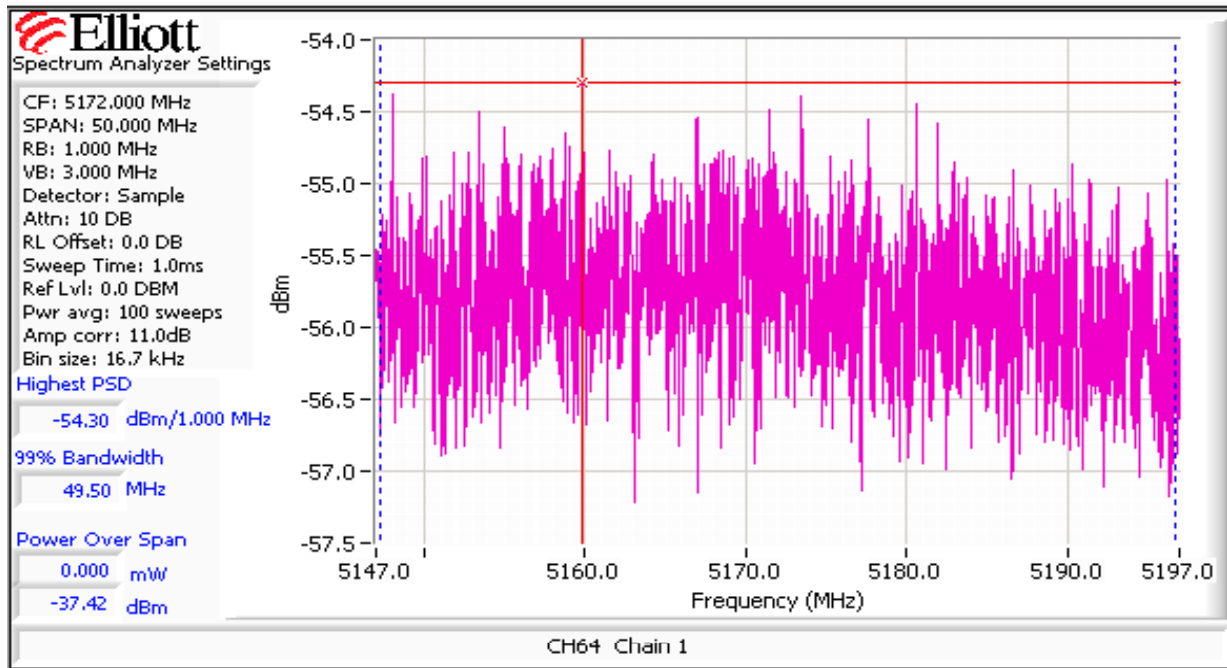
High channel, 5250 - 5350 MHz Band

Note - compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.

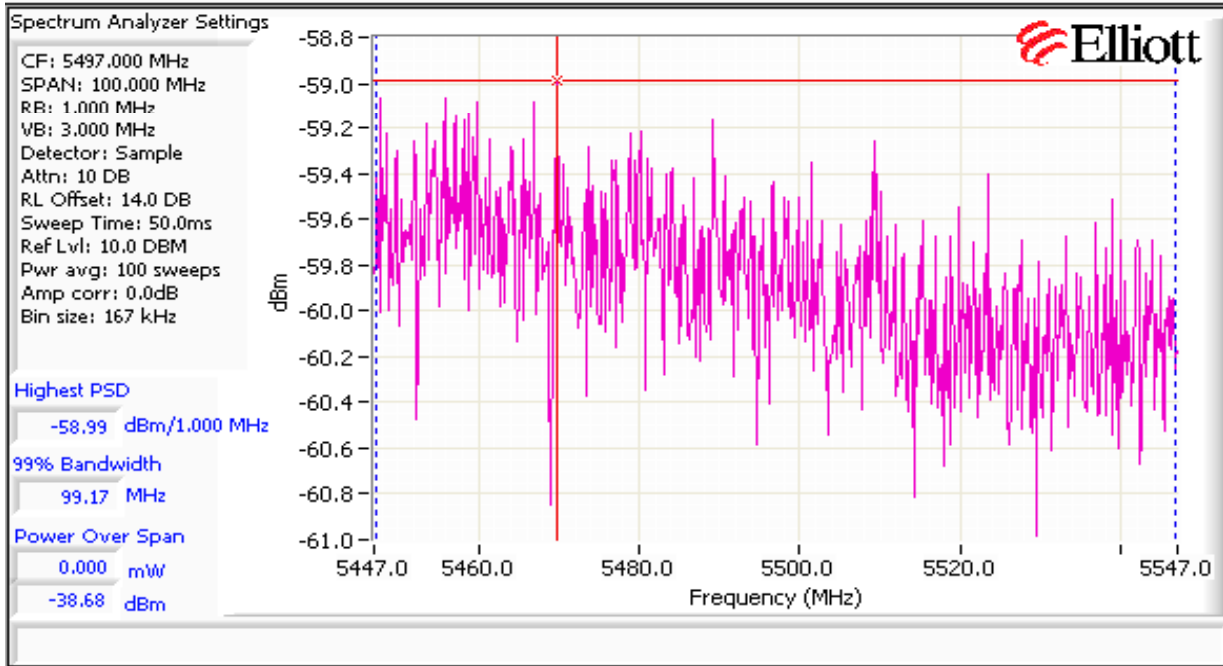
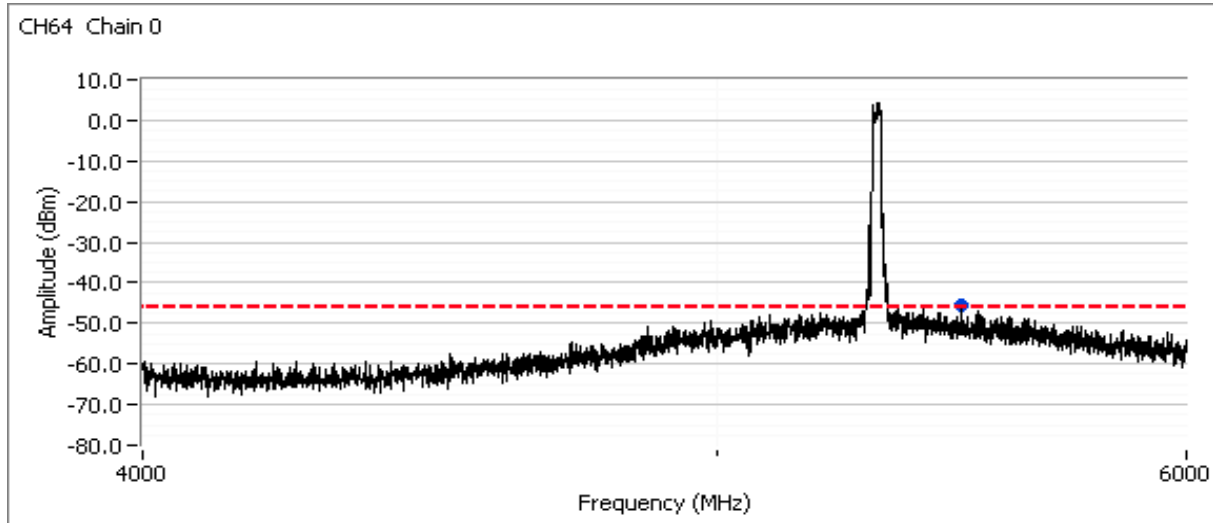
Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Frequency MHz	Level dBμV/m	Pol v/h	FCC 15 E / RSS 210		Detector Pk/QP/Avg	Comment
			Limit	Margin		
5172.390	-44.2	Chain 1	-	-	Peak	
5159.790	-54.3	Chain 1	-46.0	-8.3	Sample	100 sample average
5371.790	-46.3	Chain 1	-	-	Peak	Restricted band, see radiated measurements.
3544.850	-49.3	Chain 1	-46.0	-3.3	Peak	
5497.170	-45.4	Chain 0	-	-	Peak	

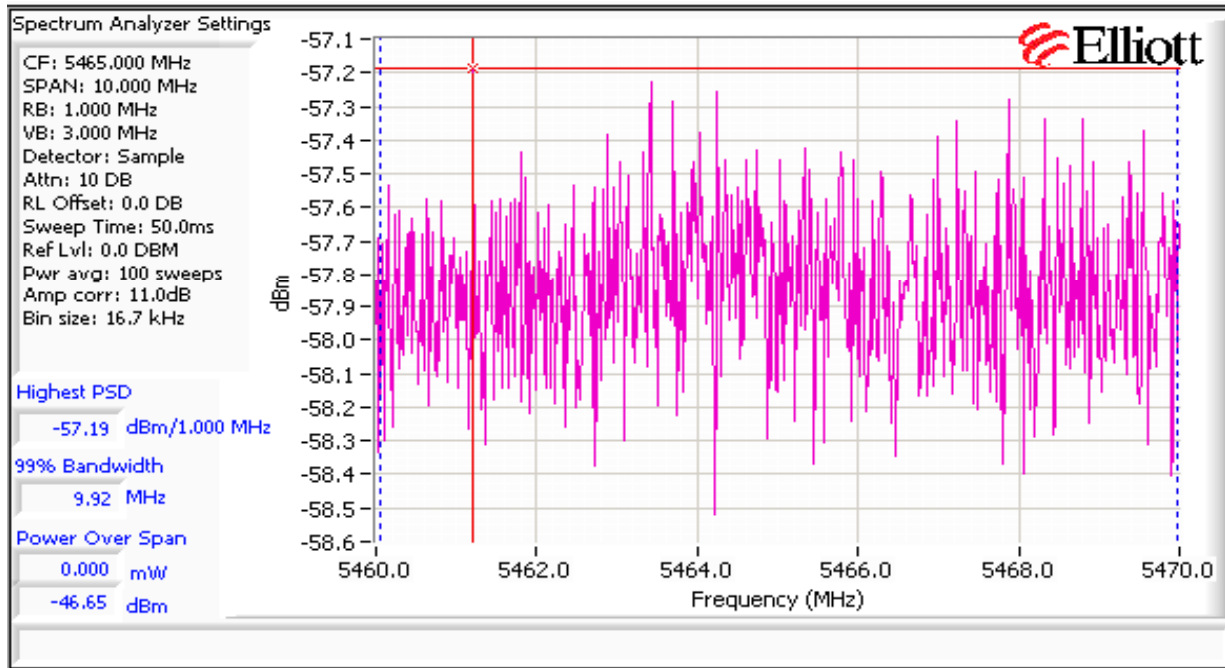
Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

5497.170	-59.0	Chain 0	-46.0	-13.0	Sample	100 sample average
----------	-------	---------	-------	-------	--------	--------------------

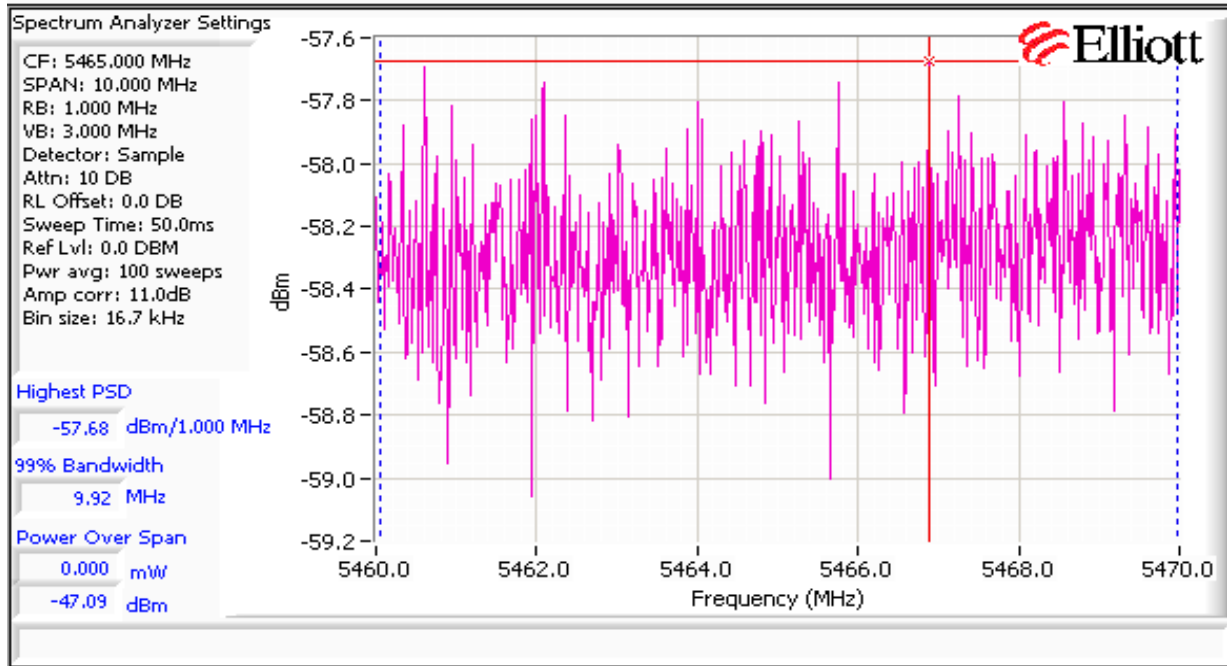
Low channel, 5470 - 5725 MHz Band

Plots for each chain showing compliance with the -27dBm/MHz limit for the 5460 - 5470 MHz band edge. Start and stop frequencies set to 5460-5470 MHz, RB=1MHz, VB=3MHz, power averaging enabled (100 traces). Note - compliance with the radiated limits for the restricted band immediately below 5460MHz is demonstrated through the radiated emissions tests.

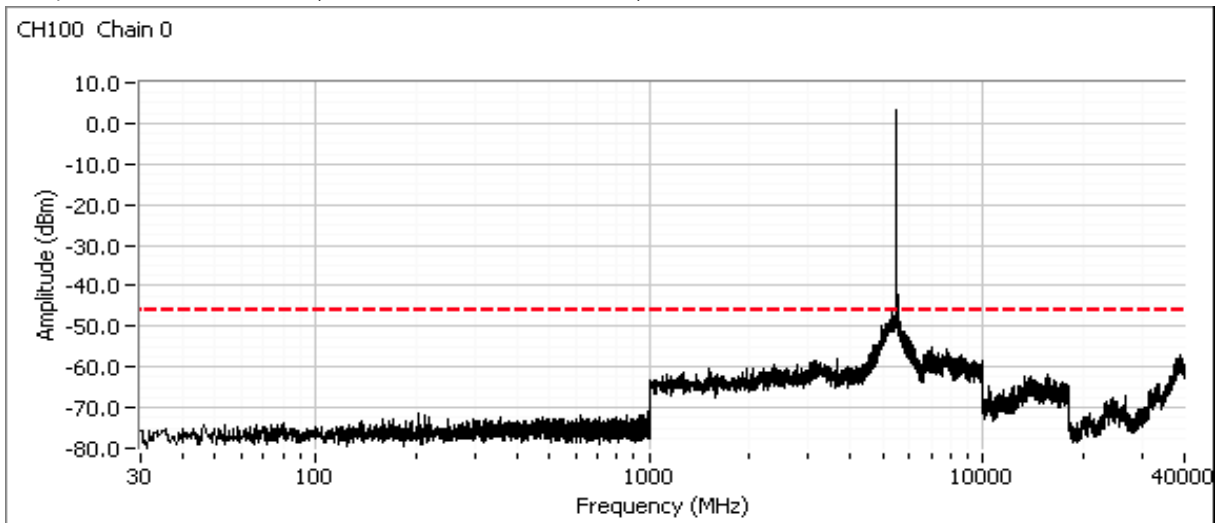
	Power Setting	Band edge Level dBm/MHz	mW/MHz	Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
					mW/MHz	dBm/MHz			
Chain 0	6	-57.2	0.00000	16.0	7.603E-05	-41.2	-38.4	-27	PASS
Chain 1		-57.7	0.00000	16.0	6.792E-05	-41.7			



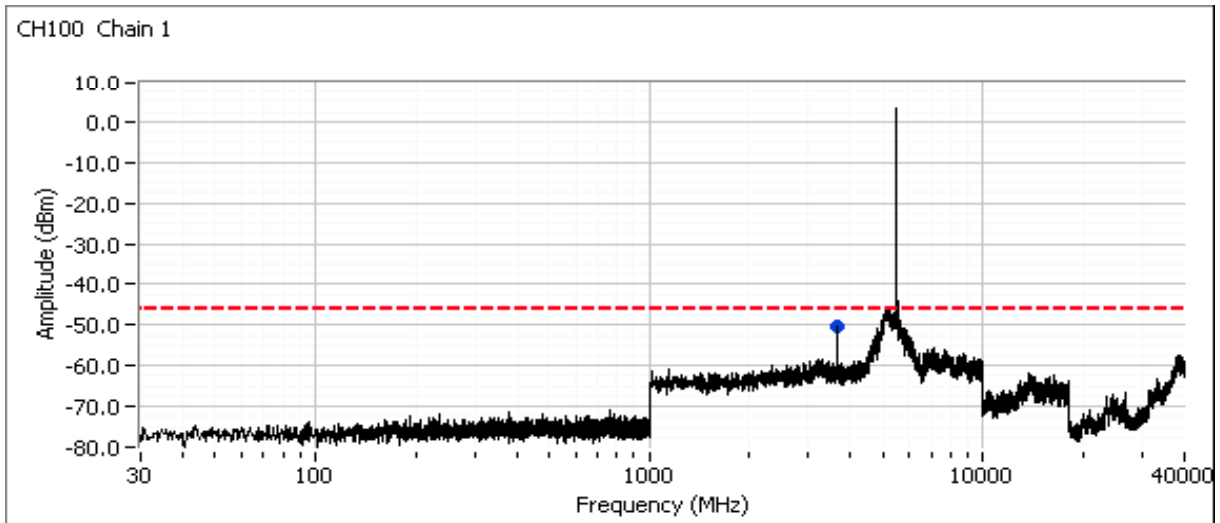
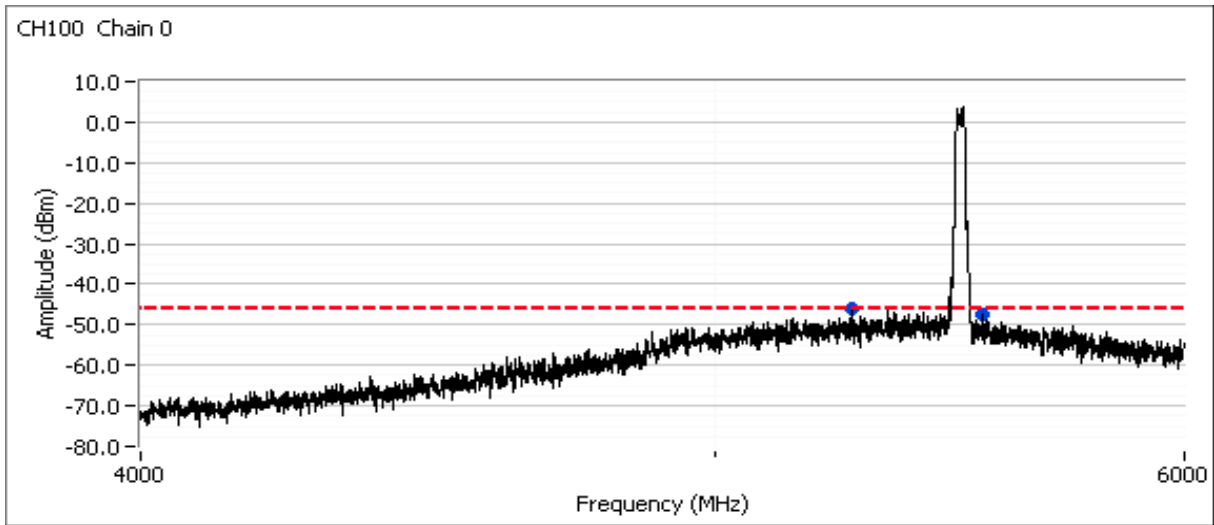
Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



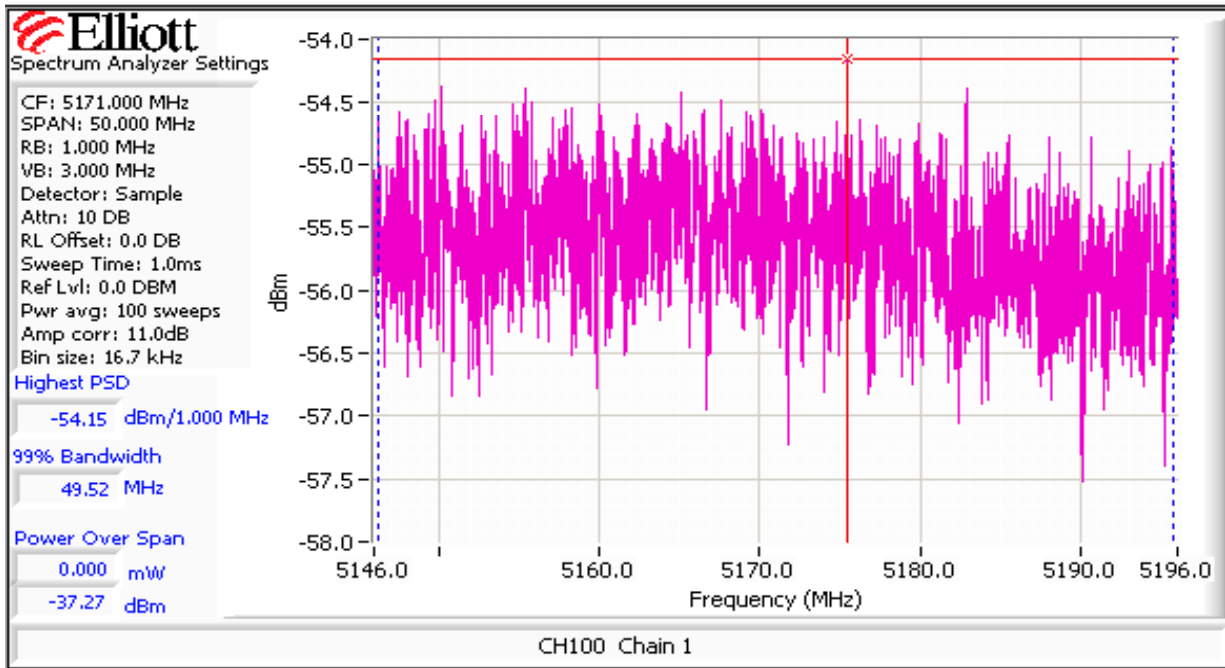
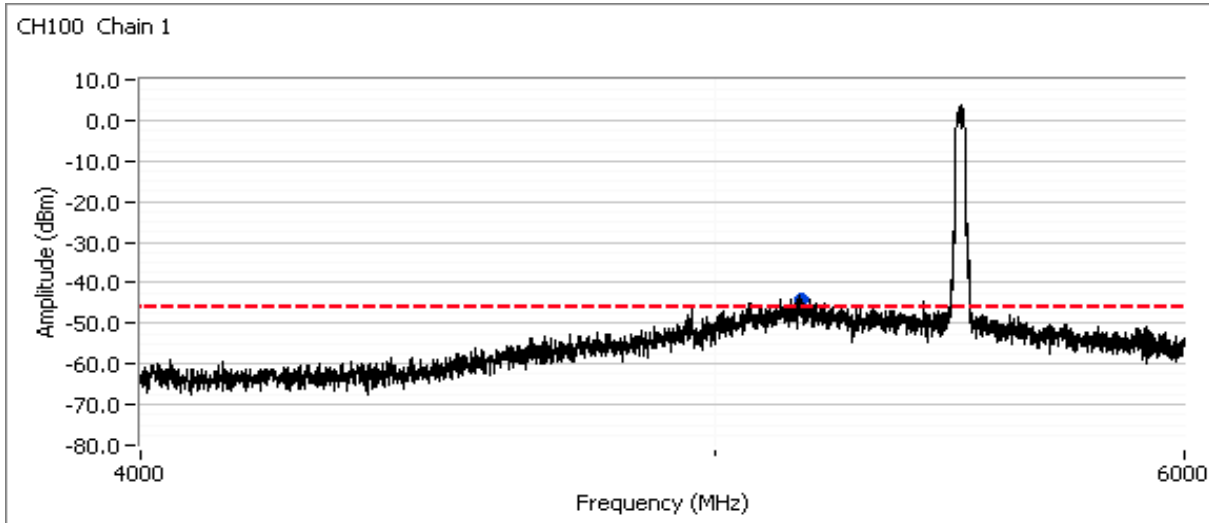
Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

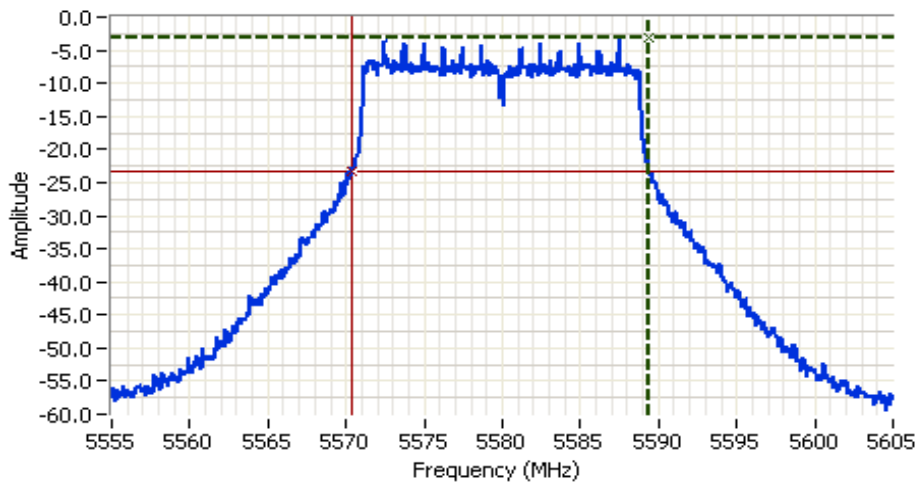


Frequency MHz	Level dB μ V/m	Pol v/h	FCC 15 E / RSS 210		Detector Pk/QP/Avg	Comment
			Limit	Margin		
5353.780	-46.3	Chain 0	-	-	Peak	Restricted band, see radiated measurements.
3667.890	-50.3	Chain 1	-46.0	-4.3	Peak	
5171.060	-43.9	Chain 1	-	-	Peak	
5175.480	-54.2	Chain 1	-46.0	-8.2	Sample	100 sample average

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Center channel, 5470 - 5725 MHz Band

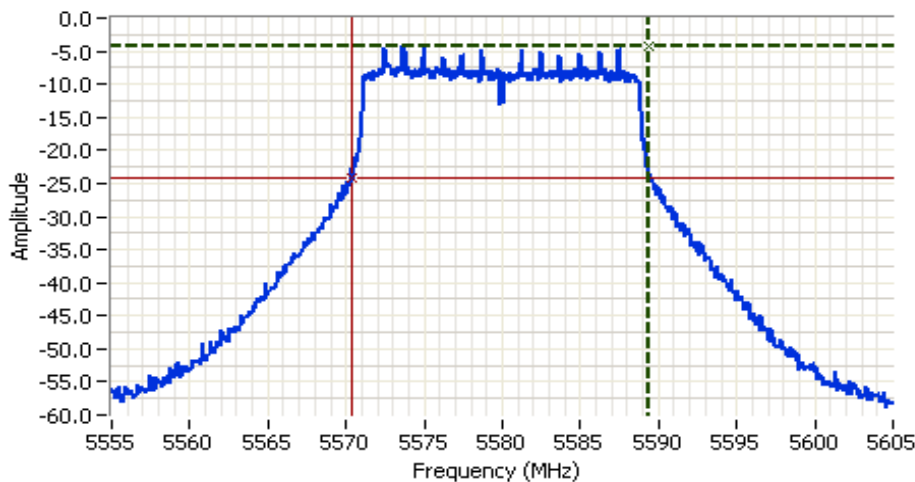
For master devices - This plot is showing that the 20dB bandwidth of the channel closest to 5600 MHz does not spill into the 5600-5650 MHz band. RB > 1% of span.



Analyzer Settings
 Agilent Technologies, E4446A
 CF: 5580.000 MHz
 SPAN: 50.000 MHz
 RB: 100 kHz
 VB: 300 kHz
 Detector: POS
 Attn: 10 DB
 RL Offset: 11.0 DB
 Sweep Time: 50.0ms
 Ref Lvl: 10.0 DBM

Comments
 20dB BW: 19.000 MHz
 FH: 5589.42 MHz
 Chain0

Cursor 1 5589.4167 -3.23
 Cursor 2 5570.4167 -23.23
 Delta Freq. 19.000
 Delta Amplitude 20.00



Analyzer Settings
 Agilent Technologies, E4446A
 CF: 5580.000 MHz
 SPAN: 50.000 MHz
 RB: 100 kHz
 VB: 300 kHz
 Detector: POS
 Attn: 10 DB
 RL Offset: 11.0 DB
 Sweep Time: 50.0ms
 Ref Lvl: 10.0 DBM

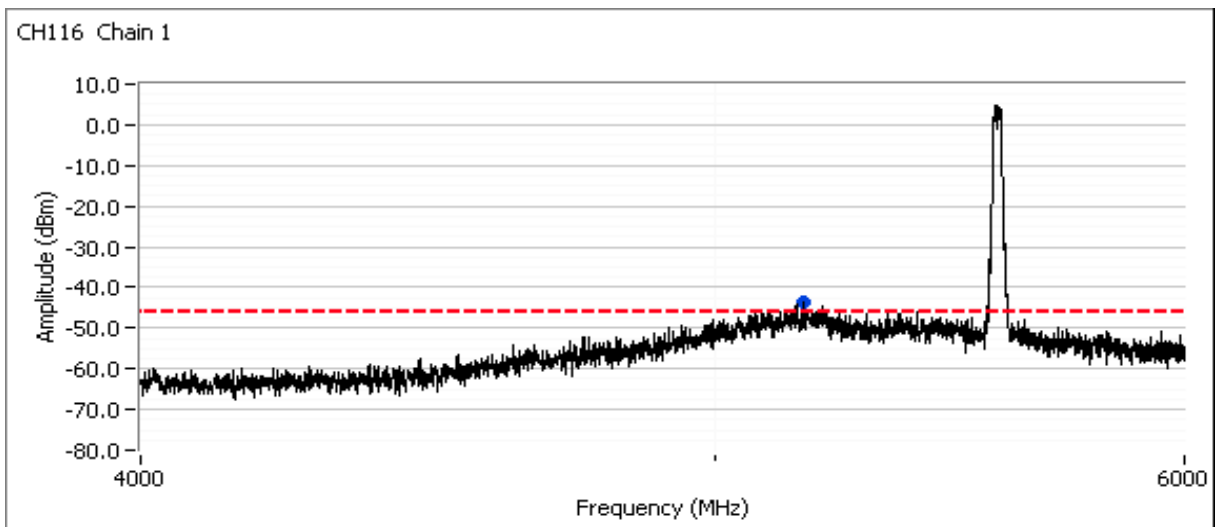
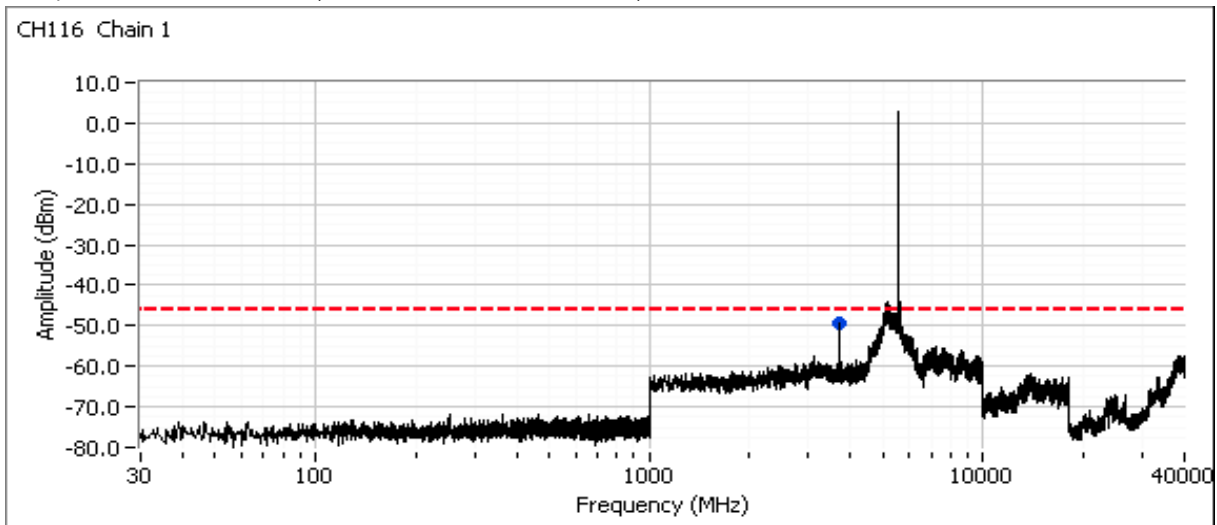
Comments
 20dB BW: 19.083 MHz
 FH: 5589.42 MHz
 Chain0

Cursor 1 5589.4167 -4.17
 Cursor 2 5570.3333 -24.17
 Delta Freq. 19.083
 Delta Amplitude 20.00

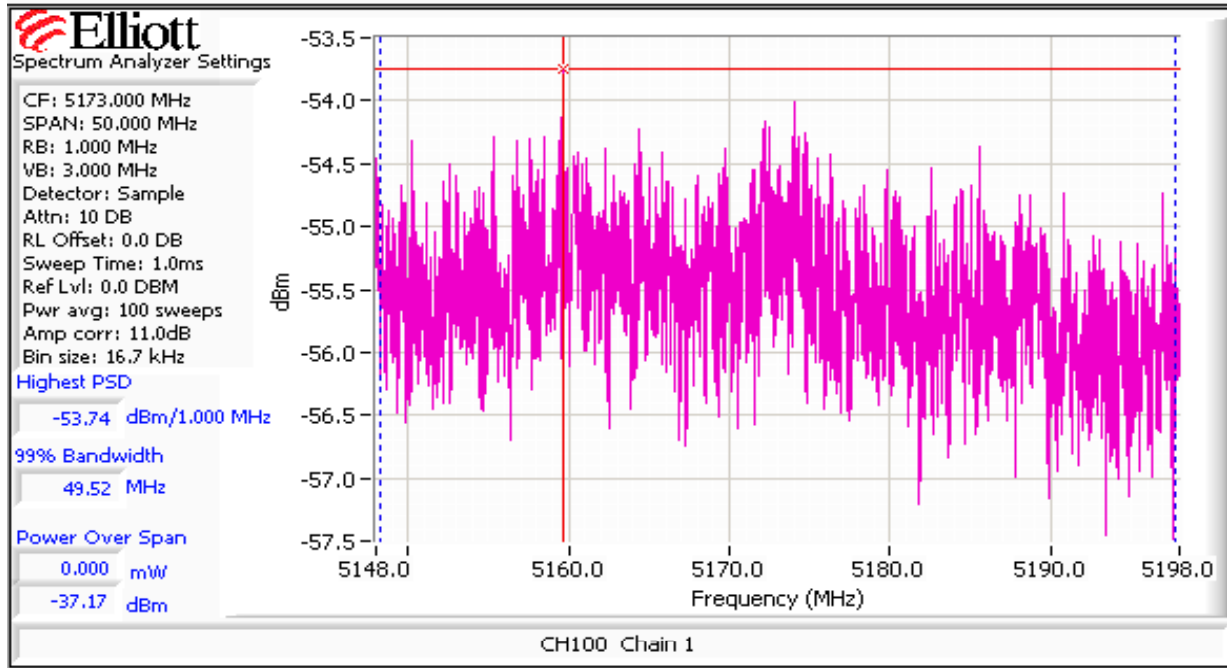


Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

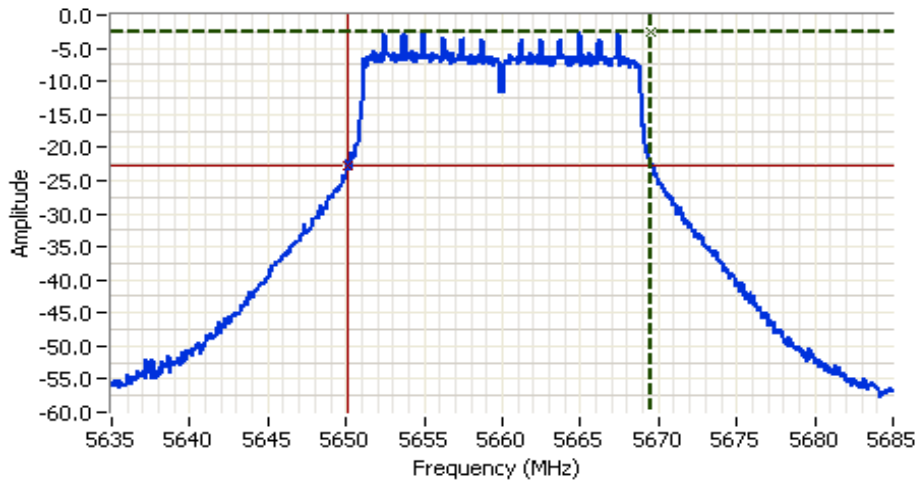


Frequency	Level	Pol	FCC 15 E / RSS 210		Detector	Comment
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	
5159.620	-43.6	Chain 1	-	-	Peak	
5159.620	-53.7	Chain 1	-46.0	-7.7	Sample	100 sample average
3718.910	-49.4	Chain 1	-46.0	-3.4	Peak	

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Channel adjacent to 5650 MHz

Plots showing that the 20dB bandwidth of the channel closest to 5650 MHz does not spill into the 5600-5650 MHz band. RB > 1% of span.

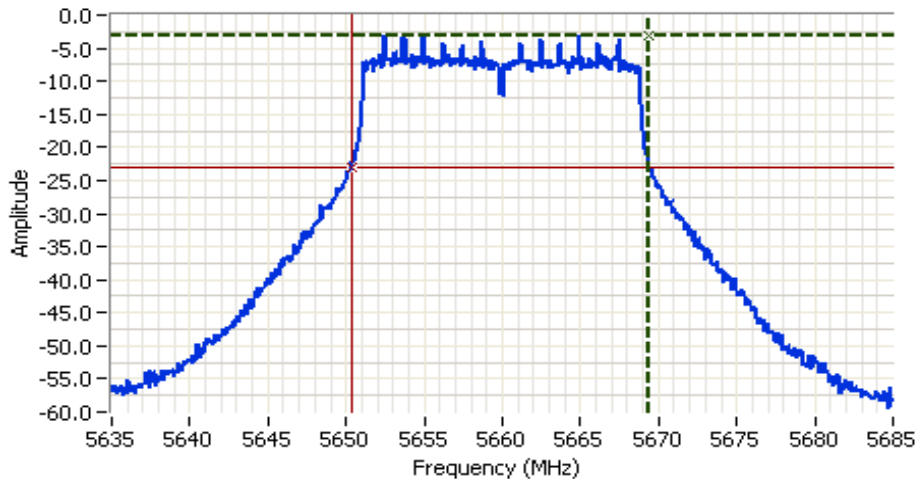


Analyzer Settings
 Agilent Technologies, E4446A
 CF: 5660.000 MHz
 SPAN: 50.000 MHz
 RB: 100 kHz
 VB: 300 kHz
 Detector: POS
 Attn: 10 DB
 RL Offset: 11.0 DB
 Sweep Time: 50.0ms
 Ref Lvl: 10.0 DBM

Comments
 20dB BW: 19.333 MHz
 FL: 5650.17MHz
 Chain 0

Cursor 1 5669.5000 -2.66
 Cursor 2 5650.1667 -22.66

Delta Freq. 19.333
 Delta Amplitude 20.00



Analyzer Settings
 Agilent Technologies, E4446A
 CF: 5660.000 MHz
 SPAN: 50.000 MHz
 RB: 100 kHz
 VB: 300 kHz
 Detector: POS
 Attn: 10 DB
 RL Offset: 11.0 DB
 Sweep Time: 50.0ms
 Ref Lvl: 10.0 DBM

Comments
 20dB BW: 19.083 MHz
 FL: 5650.33MHz
 Chain 1

Cursor 1 5669.4167 -3.12
 Cursor 2 5650.3333 -23.12

Delta Freq. 19.083
 Delta Amplitude 20.00

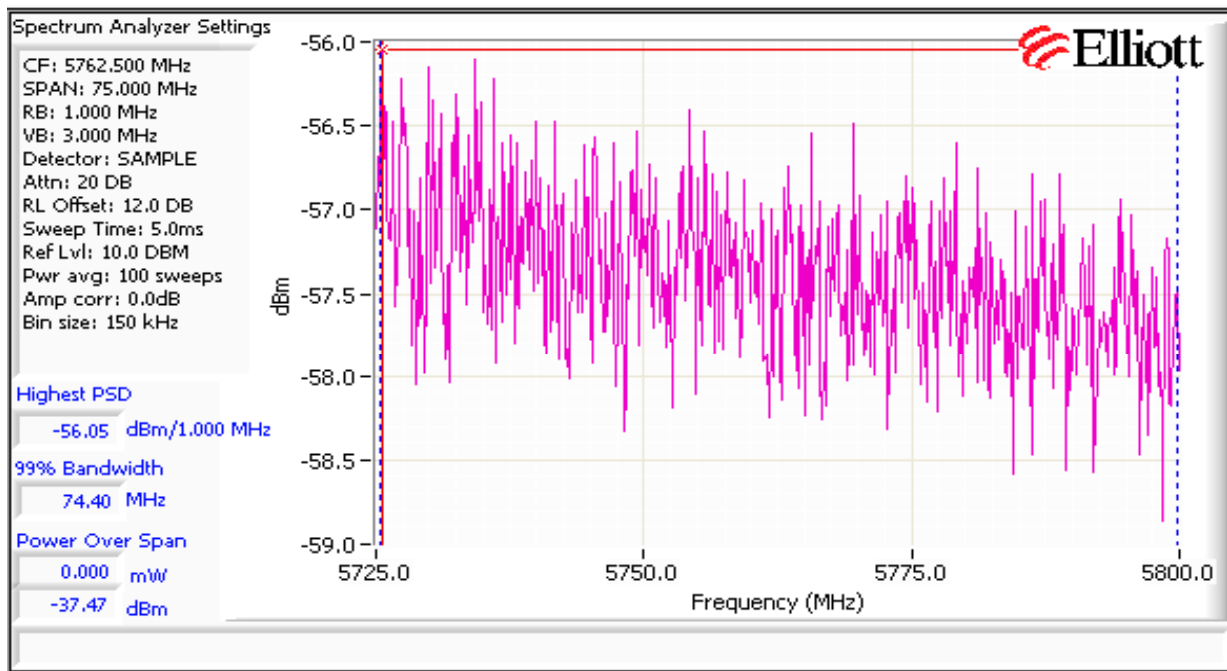


Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

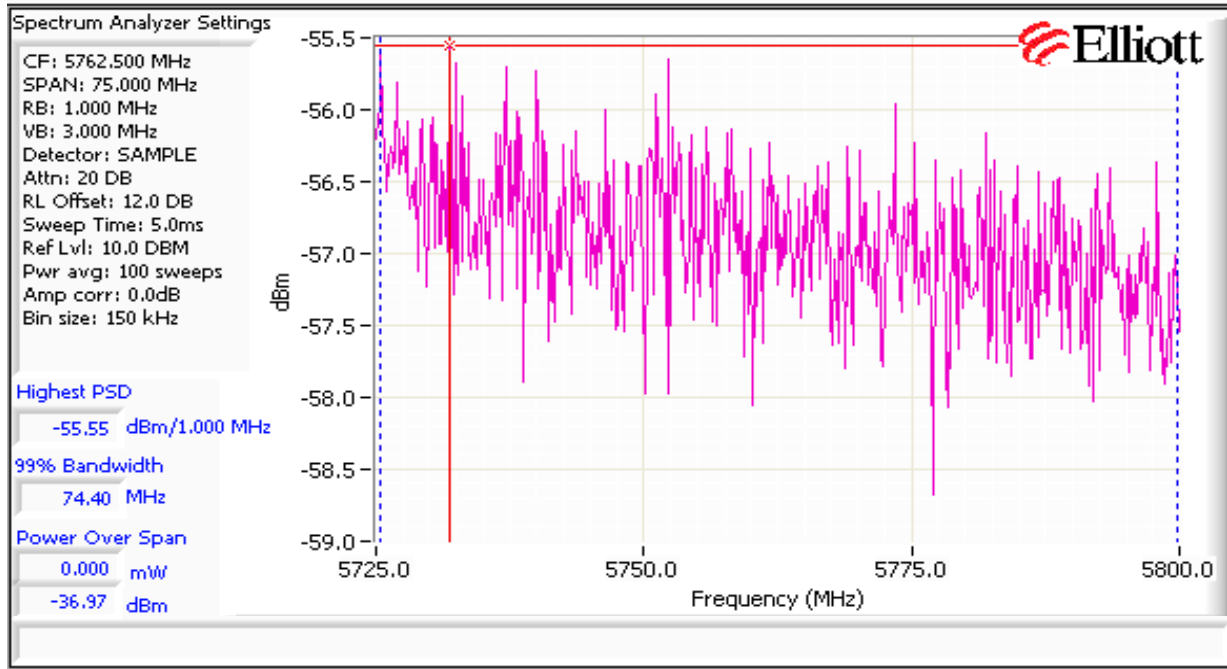
High channel, 5470 - 5725 MHz Band

Plots for each chain showing compliance with the -27dBm/MHz limit above the 5725MHz band edge. Start and stop frequencies set to 5725-5800 MHz, RB=1MHz, VB=3MHz, power averaging enabled (100 traces):

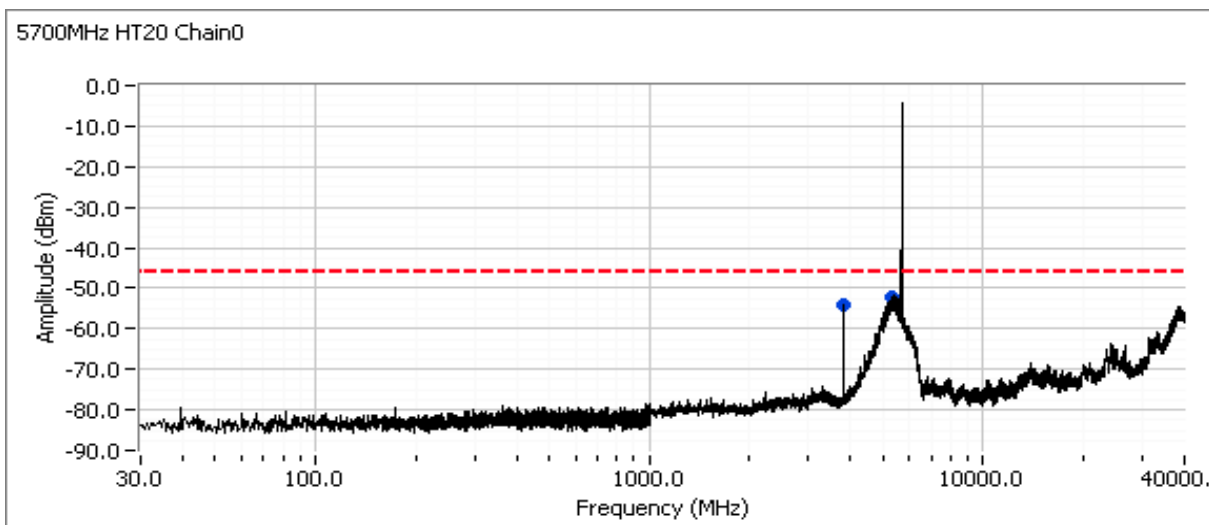
	Power Setting	Band edge Level dBm/MHz	mW/MHz	Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
					mW/MHz	dBm/MHz			
Chain 1	6	-56.1	0.00000	16.0	9.886E-05	-40.1	-36.8	-27	PASS
Chain 2		-55.6	0.00000	16.0	0.0001109	-39.6			



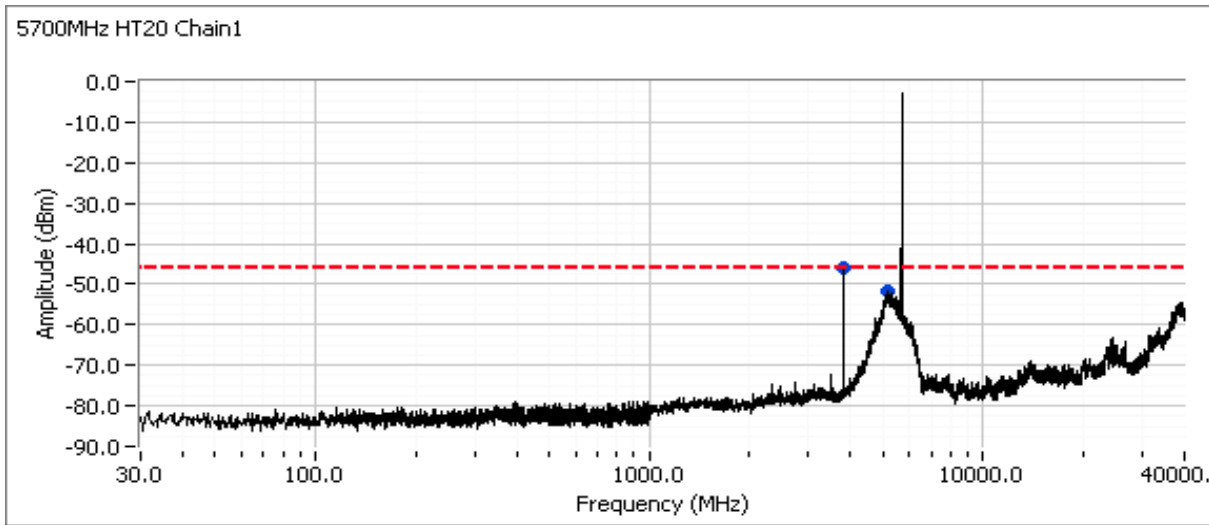
Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Wide-band plot, RB=300kHz VB=100kHz (Peak measurements versus limit).



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Wide-band result RB=1MHz VB=3MHz (Peak measurements versus limit).

Frequency MHz	Level dBm	Port	FCC 15 E / RSS 210		Detector	Comment				
			Limit	Margin		channel	mode/Chain	Ant. gain	Setting	Note
3799.980	-54.4	RF Port	-	-	PK	5700	HT20/0	16	6.0	Note2
5281.030	-48.9	RF Port	-	-	PK	5700	HT20/0	16	6.0	Note3
5210.670	-45.3	RF Port	-	-	PK	5700	HT20/1	16	6.0	Note3
3800.010	-45.8	RF Port	-	-	PK	5700	HT20/1	16	6.0	Note2

Note 1	Un-restricted signal
Note 2	Restricted band signal. Refer to the radiated spurious emissions results.
Note 3	Final measurements performed using 100sweep sample detector method. See below for final results.

5700MHz HT20

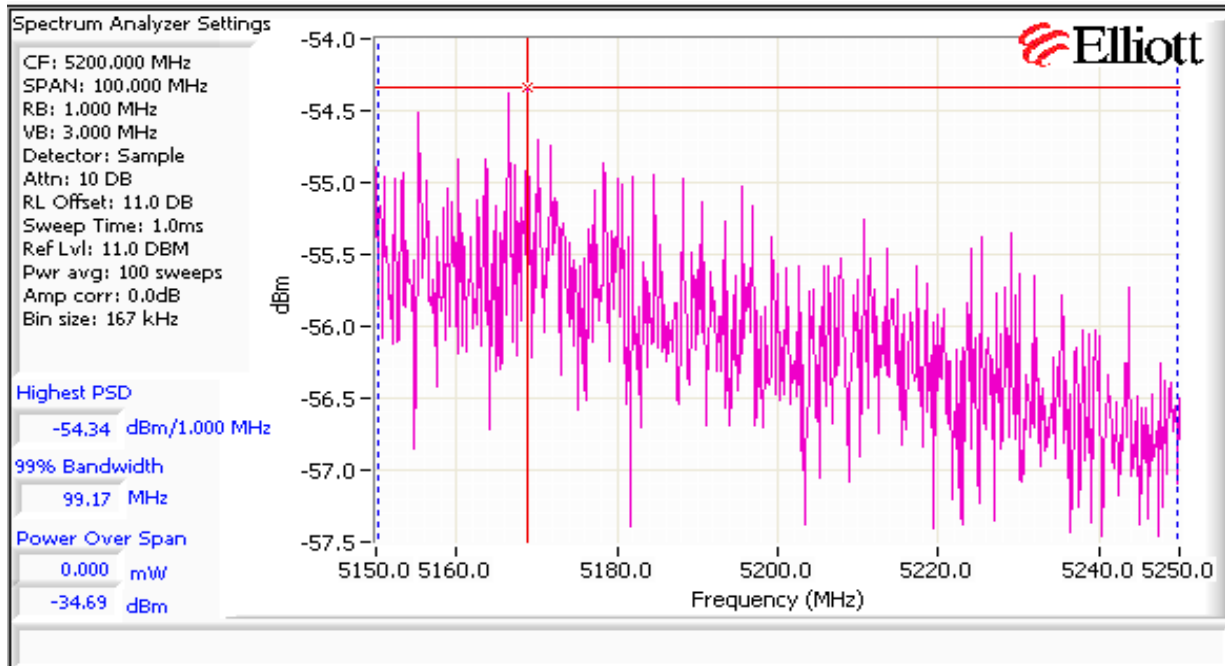
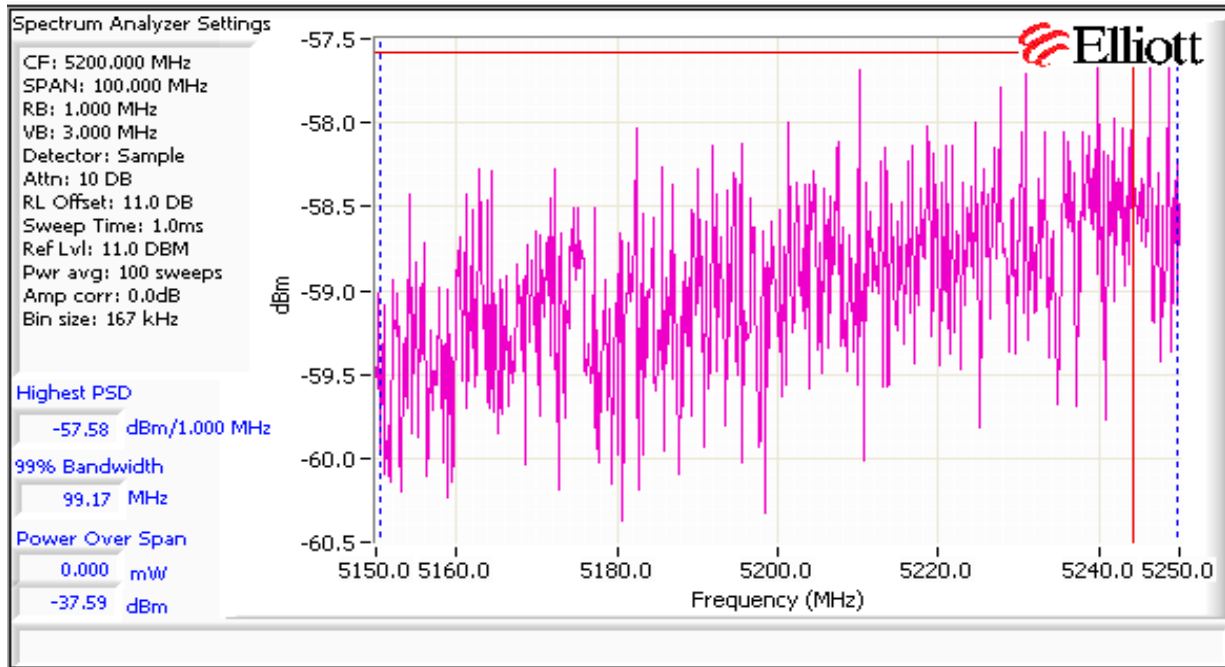
Eval 5210MHz using 100Sweep tech

	Power Setting	Band edge Level		Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
		dBm/MHz	mW/MHz		mW/MHz	dBm/MHz			
Chain 1	6	-57.6	0.00000	16.0	6.95E-05	-41.6	-36.7	-27	PASS
Chain 2		-54.3	0.00000	16.0	0.0001466	-38.3			

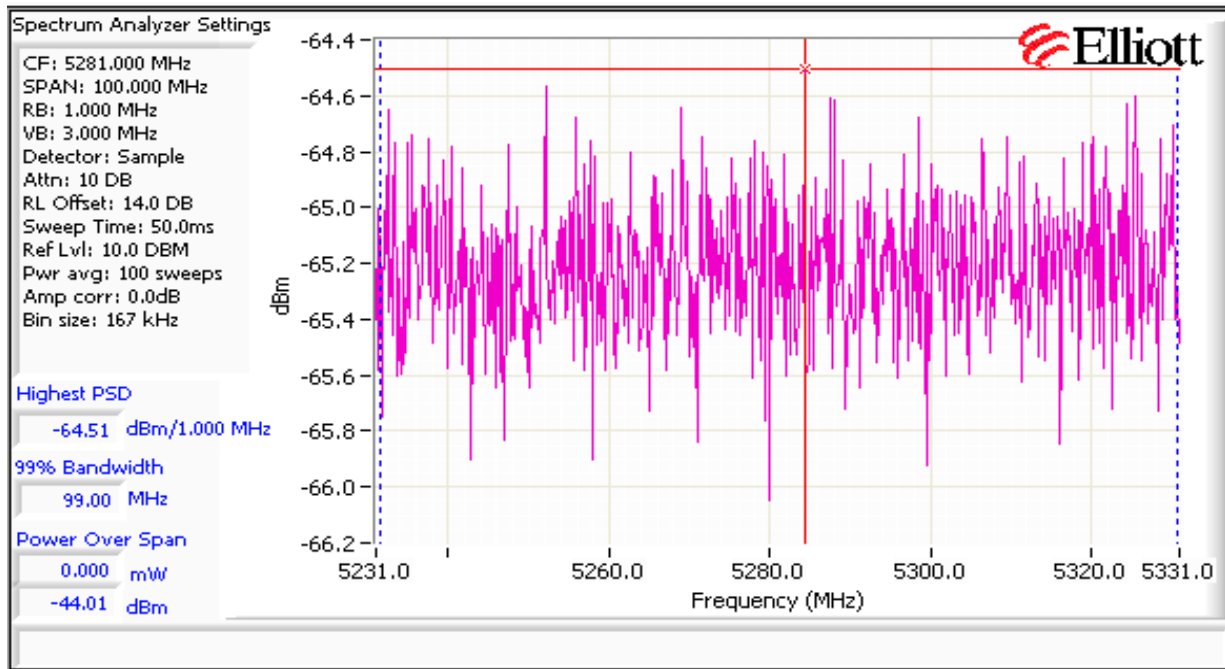
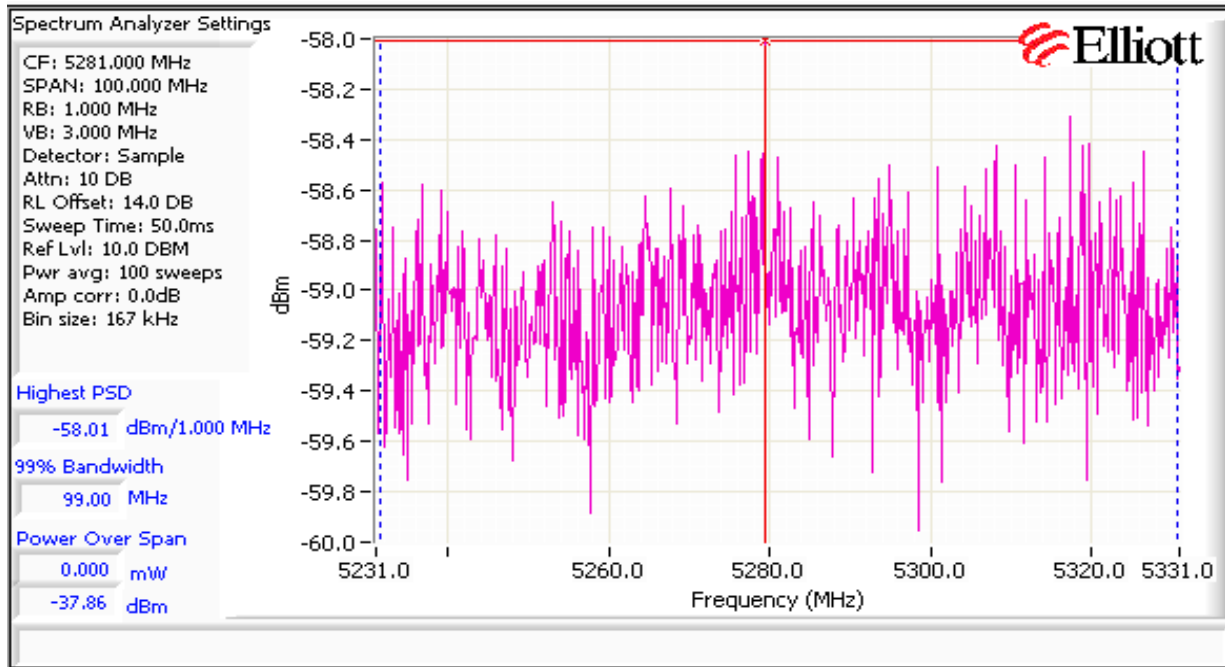
Eval 5281MHz using 100Sweep tech

	Power Setting	Band edge Level		Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
		dBm/MHz	mW/MHz		mW/MHz	dBm/MHz			
Chain 1	6	-58.0	0.00000	16.0	6.295E-05	-42.0	-41.1	-27	PASS
Chain 2		-64.5	0.00000	16.0	1.409E-05	-48.5			

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A

RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions

Test Specific Details

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

Date of Test: 1/12/2012
 Test Engineer: Rafael Varelas
 Test Location: FT Lab #4

Config. Used: Sample SN:1142K002722B08277-"2011-2413"
 Config Change: None
 EUT Voltage: POE

Ambient Conditions:

Temperature:	15-20 °C
Rel. Humidity:	30-40 %

Modifications Made During Testing

No modifications were made to the EUT during testing
 Sample SN:1142k002722B08277 "2011-2413"

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Summary of Results (HT40)

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	11.2 mW
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	-9.1 dBm/MHz
1	Max EIRP 5250 - 5350MHz	TPC required if EIRP ≥ 500mW (27dBm) EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm	Pass	EIRP = 29.5 dBm (885.9 mW)
1	Power, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	12.3 mW
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	-4.9 dBm/MHz
1	Max EIRP 5470 - 5725MHz	TPC required if EIRP ≥ 500mW (27dBm) EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm	Pass	EIRP = 29.9 dBm (984.2 mW)
1	26dB Bandwidth	15.407 (Determines max power)	-	51.6 MHz
1	99% Bandwidth	RSS 210	N/A	36.5 MHz
2	Peak Excursion Envelope	15.407(a) (6) 13dB	Pass	11.8 dB
3	Antenna Conducted Out of Band Spurious	15.407(b) -27dBm/MHz	Pass	All emissions below the -27dBm/MHz limit

General Test Configuration

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

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #1: Bandwidth, Output Power and Power Spectral Density - MIMO Systems

Note 1:	Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz (method 1 of DA-02-2138A1).
Note 2:	Measured using the same analyzer settings used for output power. PSD is highest value on the plot.
Note 3:	For RSS-210 the limits are corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated from 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 or the antennas are cross polarized 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. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

MIMO Device - 5250-5350 MHz Band

	Chain 1	Chain 2	Chain 3	Coherent	Effective ⁵	EIRP (mW)	EIRP (dBm)
Antenna Gain (dBi):	16	16		Yes	19.0	885.9	29.5

Power

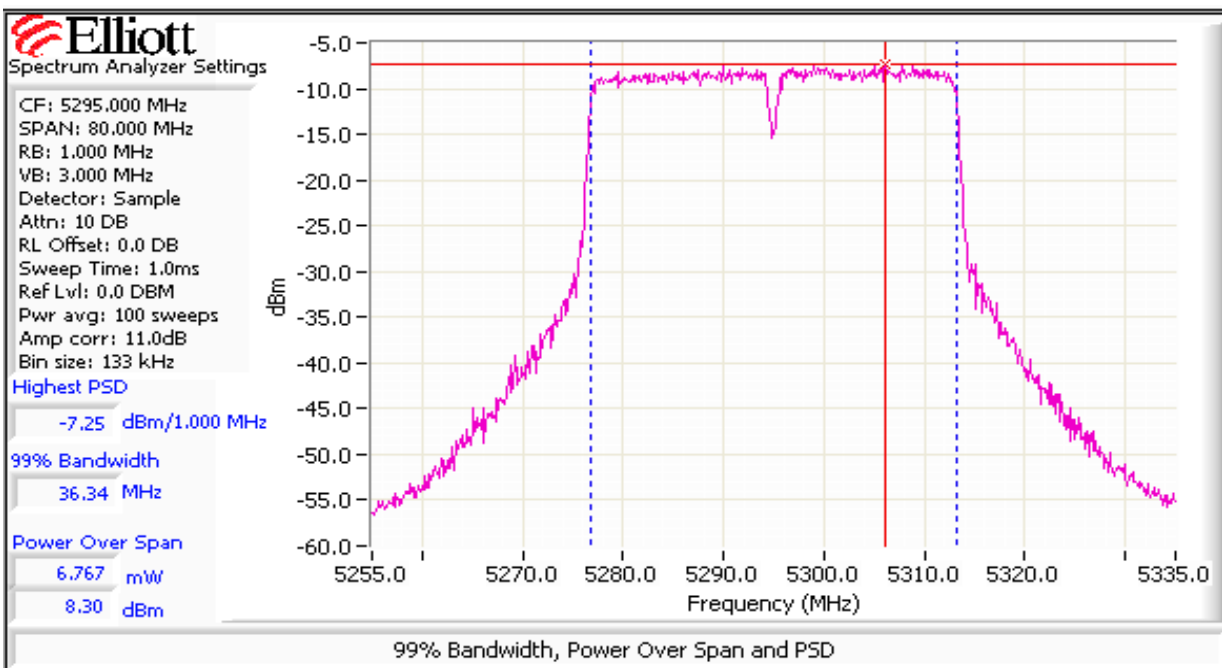
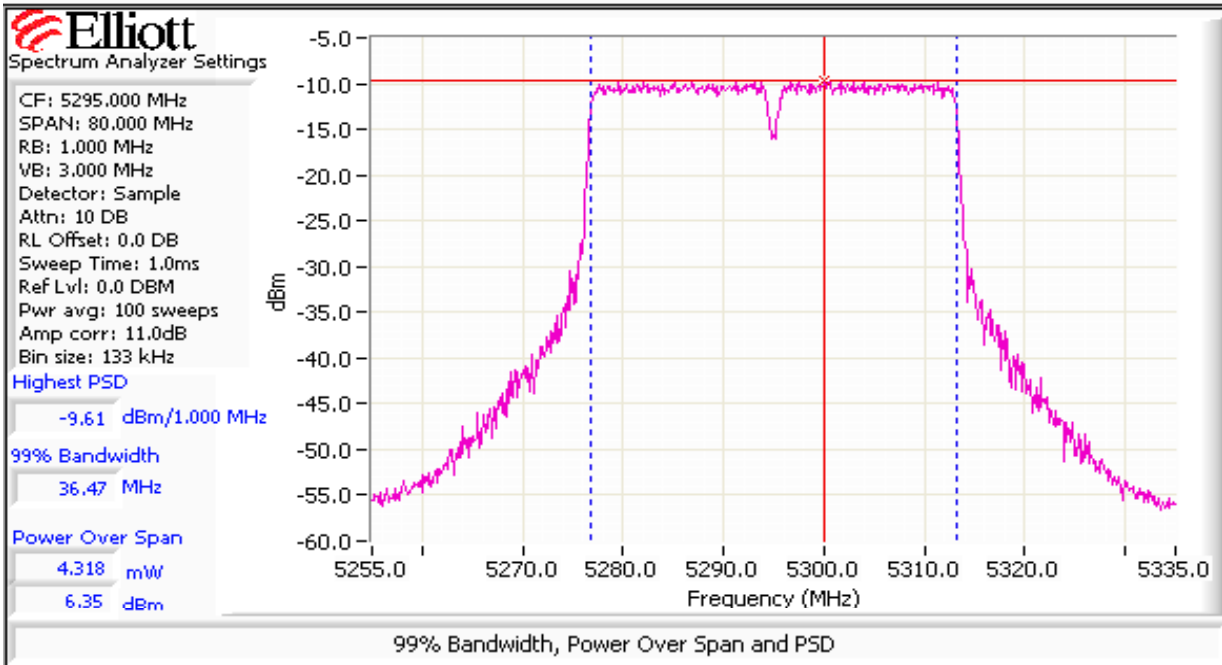
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power ¹ dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5275	1.5	50.9	4.3	-8.9		2.8	4.5	11.0	PASS	
5275	5.5	50.9	8.2	6.3		10.9	10.4		PASS	
5295	5.5	50.9	8.3	6.4		11.1	10.5		PASS	
5310	5.5	51.6	7.9	6.5		10.7	10.3		PASS	

PSD

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	
5275	36.2	4.5	-11.4	-13.0		0.1	-9.1	-2.0	-2.0	PASS
5275	36.5	10.4	-7.5	-9.1		0.3	-5.2	-2.0	-2.0	PASS
5295	36.5	10.5	-7.3	-9.6		0.3	-5.3	-2.0	-2.0	PASS
5310	36.5	10.3	-7.8	-9.4		0.3	-5.5	-2.0	-2.0	PASS

Note: Power was lowered to comply with the -27dBm/MHz power limit

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

MIMO Device - 5470-5725 MHz Band

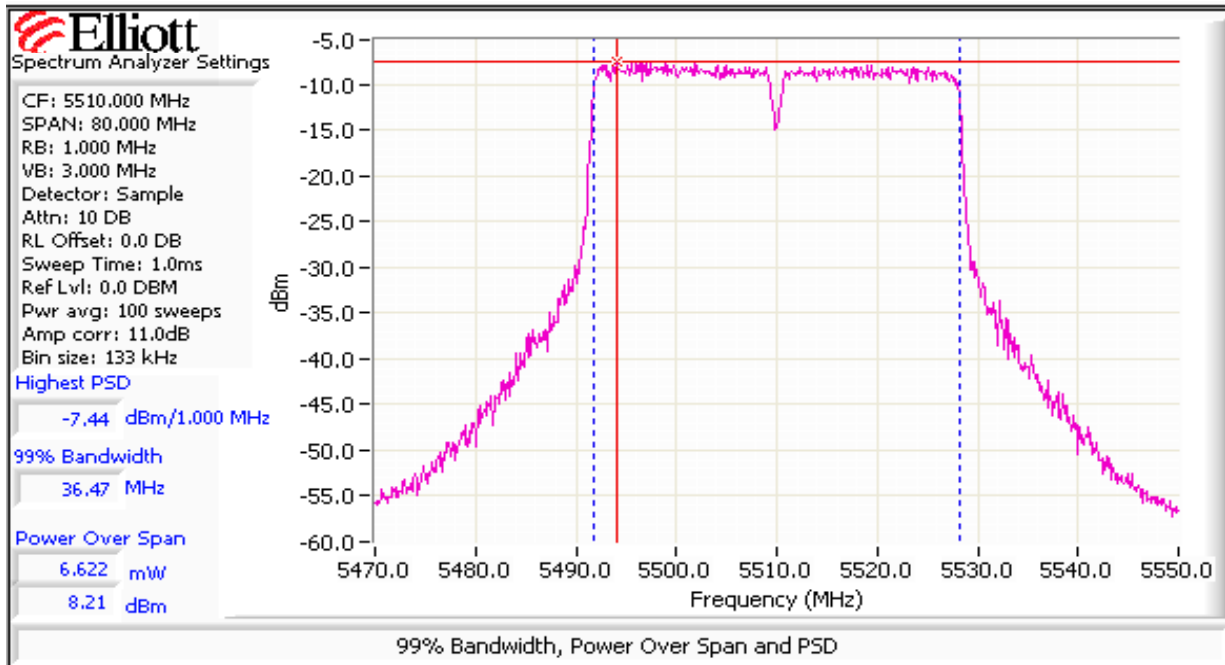
	Chain 1	Chain 2	Chain 3	Coherent	Effective ⁵	EIRP (mW)	EIRP (dBm)
Antenna Gain (dBi):	16	16		Yes	19.0	984.2	29.9

Power

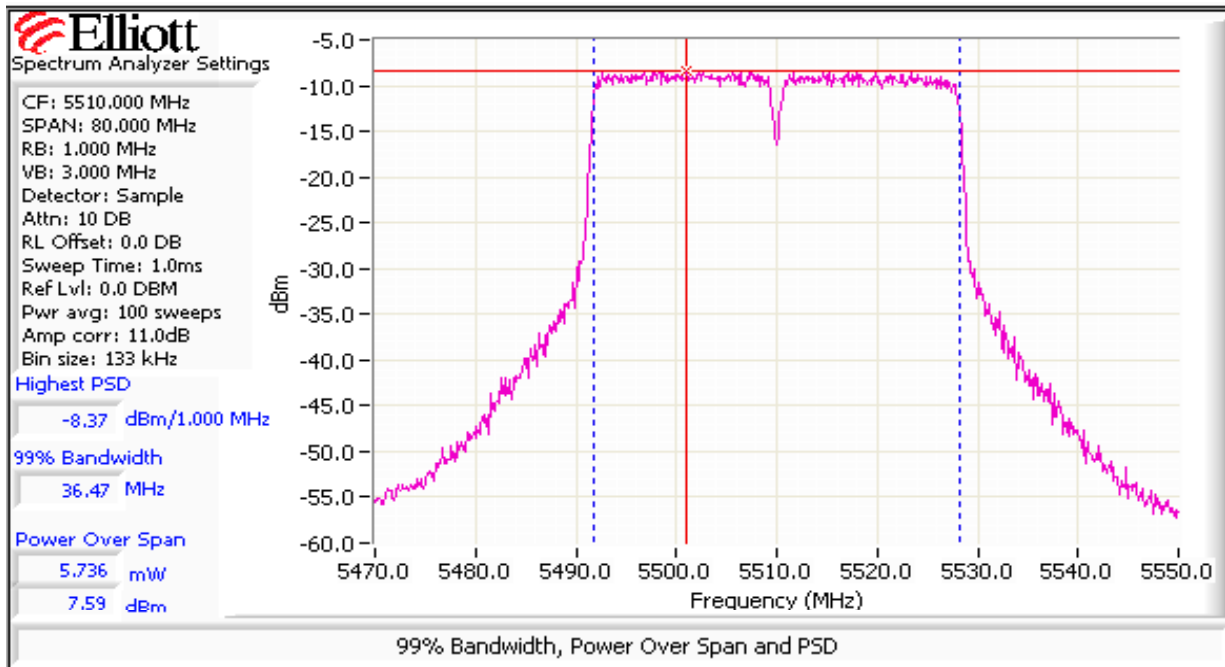
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power ¹ dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5510	5.5	47.9	7.6	8.2		12.4	10.9	11.0	0.012	PASS
5550	5.0	50.0	7.3	7.8		11.4	10.6	11.0		PASS
5670	5.0	50.0	6.8	8.0		11.1	10.5	11.0		PASS

PSD

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	
5510	36.5	10.9	-8.4	-7.4		0.3	-4.9	-2.0	-2.0	PASS
5550	36.5	10.6	-8.6	-8.4		0.3	-5.5	-2.0	-2.0	PASS
5670	36.5	10.5	-9.0	-7.7		0.3	-5.3	-2.0	-2.0	PASS



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Run #2: Peak Excursion Measurement

HT 40 Device meets the requirement for the peak excursion

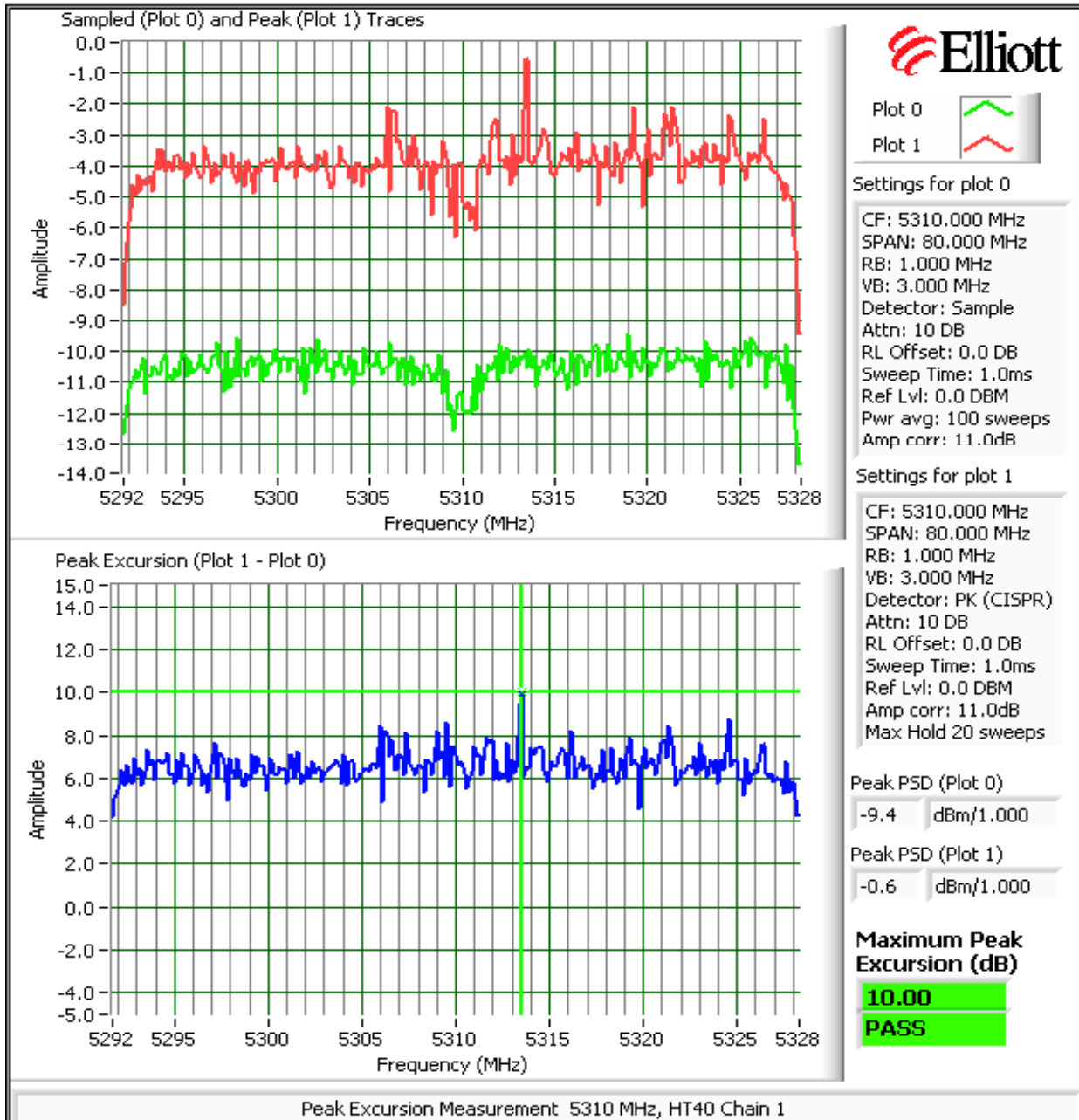
Freq		Peak Excursion(dB)		Freq		Peak Excursion(dB)	
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value
5275	11.5/8.97	13.0	5510	10.6/9.7	13.0		
5295	9.5/10.4	13.0	5550	9.8/9.2	13.0		
5310	11.8/10.0	13.0	5670	10.6/11.0	13.0		

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

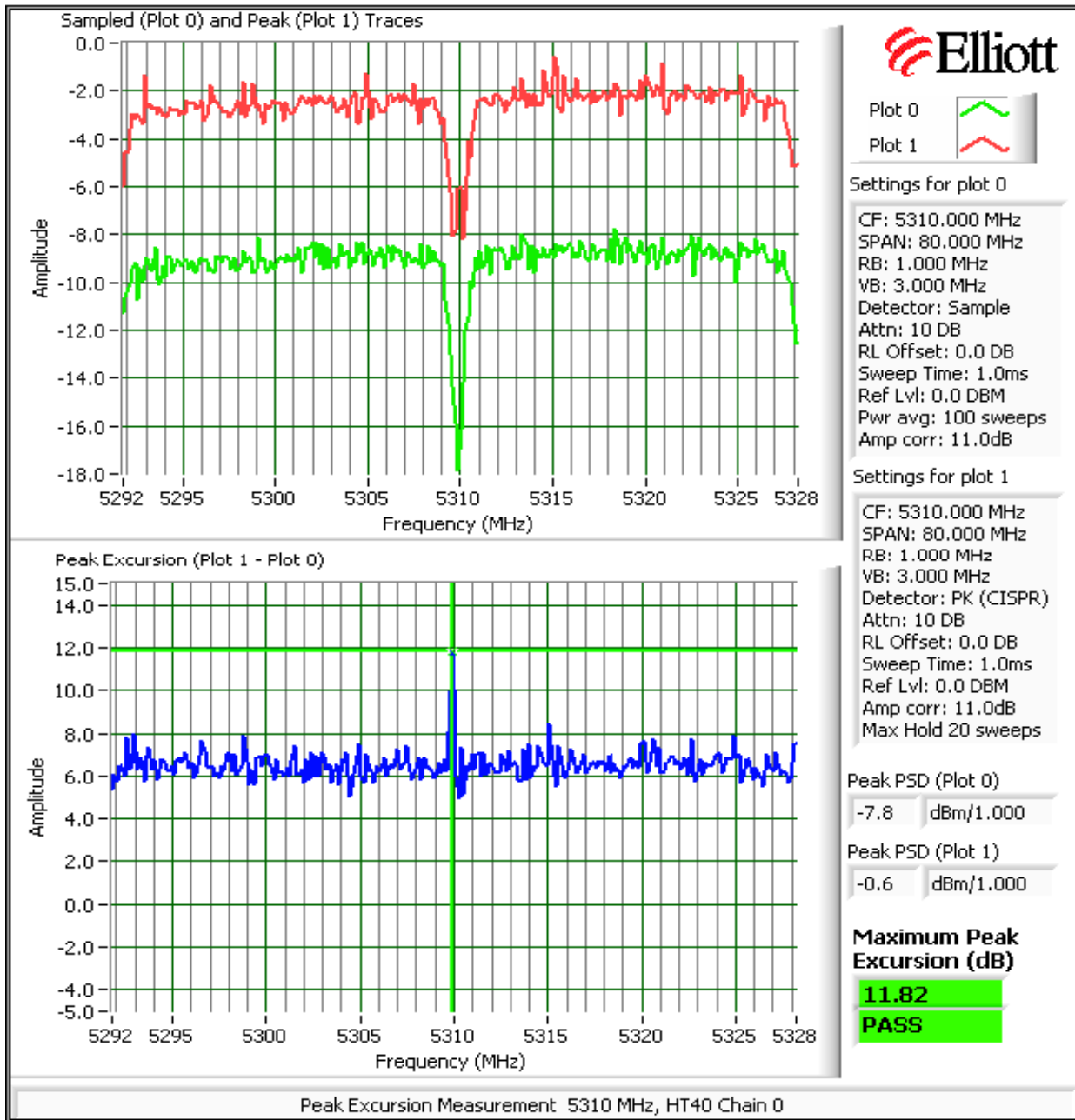
Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

MIMO Devices: Antenna gain used is the individual antenna antenna gain (the spurious emissions at the band edges are not considered to be coherent between chains and spurious removed from the band edges are evaluated as radiated emissions if close to the limit). The plots were obtained for each chain individually and the limit was adjusted to account for all chains transmitting simultaneously

Number of transmit chains: 2
 Maximum Antenna Gain: 16.0 dBi
 Spurious Limit: -27.0 dBm/MHz eirp
 Adjustment for 2 chains: -3.0 dB adjustment for multiple chains.
 Limit Used On Plots ^{Note 1}: -46.0 dBm/MHz Average Limit (RB=1MHz, VB=10Hz)

Note 1:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain and number of transmitters (limit = -27dBm - antenna gain - 10Log[N]). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
Note 2:	All spurious signals below 1GHz are measured during digital device radiated emissions test.
Note 3:	Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
Note 4:	If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
Note 5:	Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

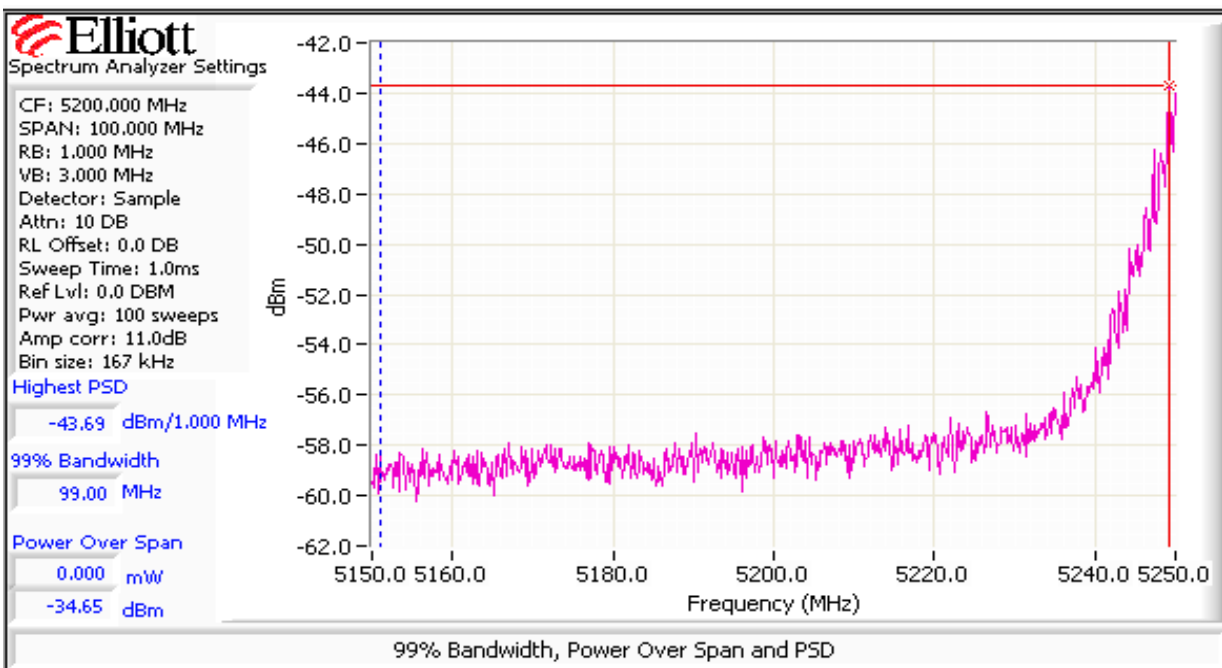
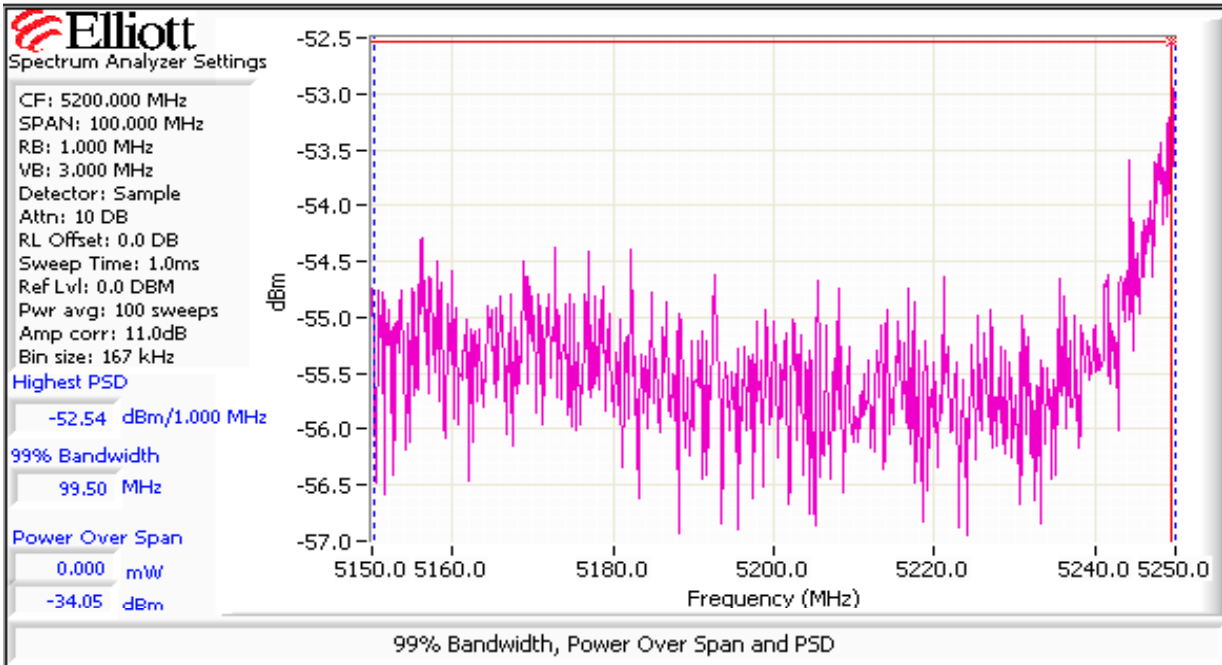
Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Low channel, 5250 - 5350 MHz Band

Plots for each chain showing compliance with the -27dBm/MHz limit in the 5150 - 5250 MHz band. Start and stop frequencies set to 5150-5250 MHz, RB=1MHz, VB=3MHz, peak

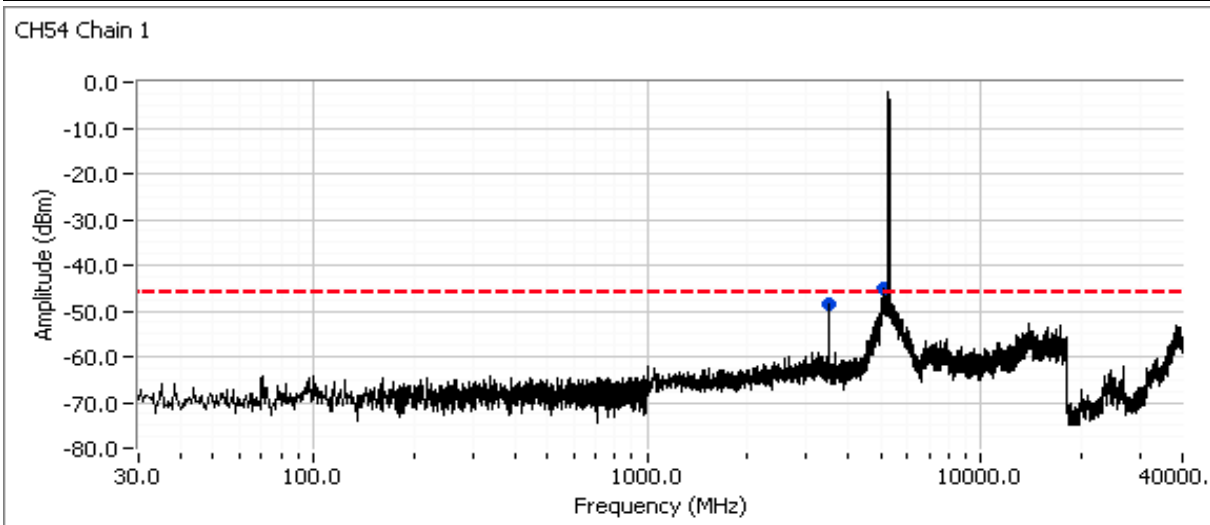
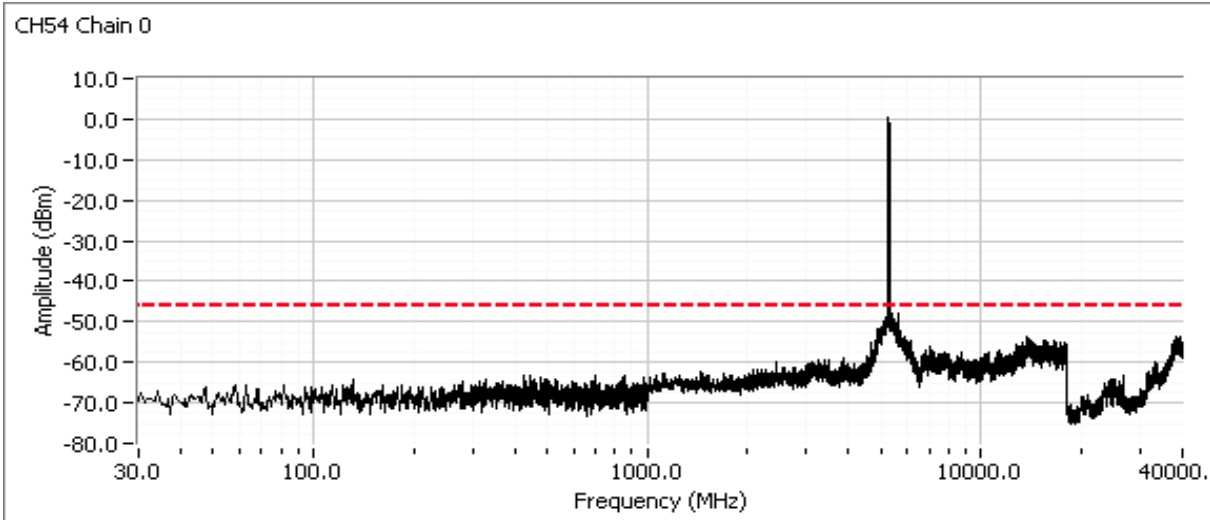
	Power Setting	Band edge Level		Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
		dBm/MHz	mW/MHz		mW/MHz	dBm/MHz			
Chain 1	1.5	-43.7	0.00004	16.0	0.0017022	-27.7	-27.2	-27.0	PASS
Chain 2		-52.5	0.00001	16.0	0.0002239	-36.5			

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



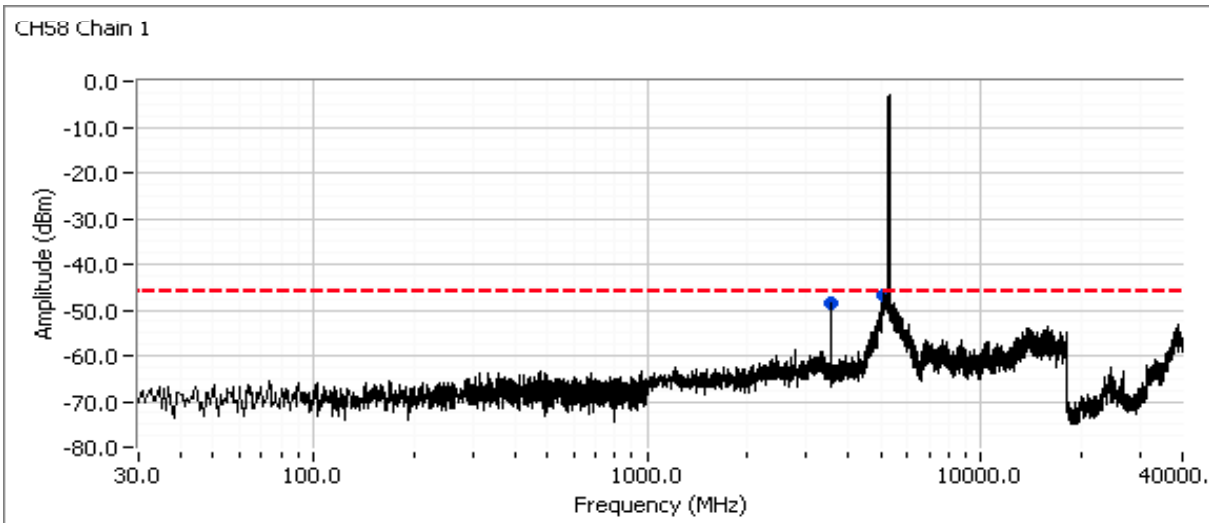
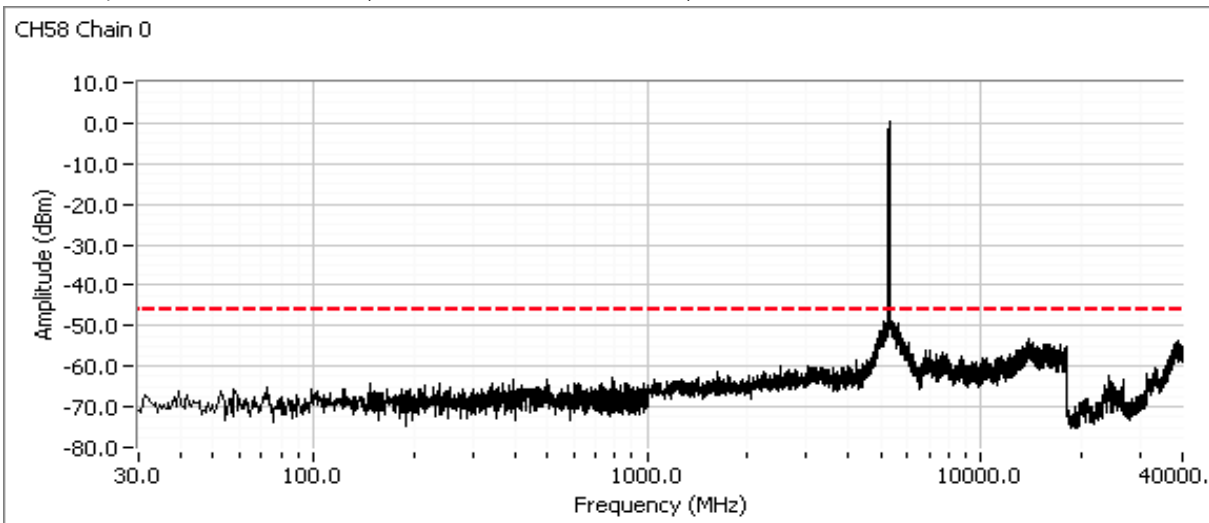
Frequency	Level	Pol	FCC 15 E / RSS 210		Detector	Comment
MHz	dBm	v/h	Limit	Margin	Pk/QP/Avg	
3517.840	-48.3	-	-46.0	-2.3	Peak	CH54 Chain 1
5186.400	-45.6	-	-	-	Peak	CH54 Chain 1, note 1

Note 1 See plot for 5150-5250 MHz for final value to compare to the limit.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Center channel, 5250 - 5350 MHz Band

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



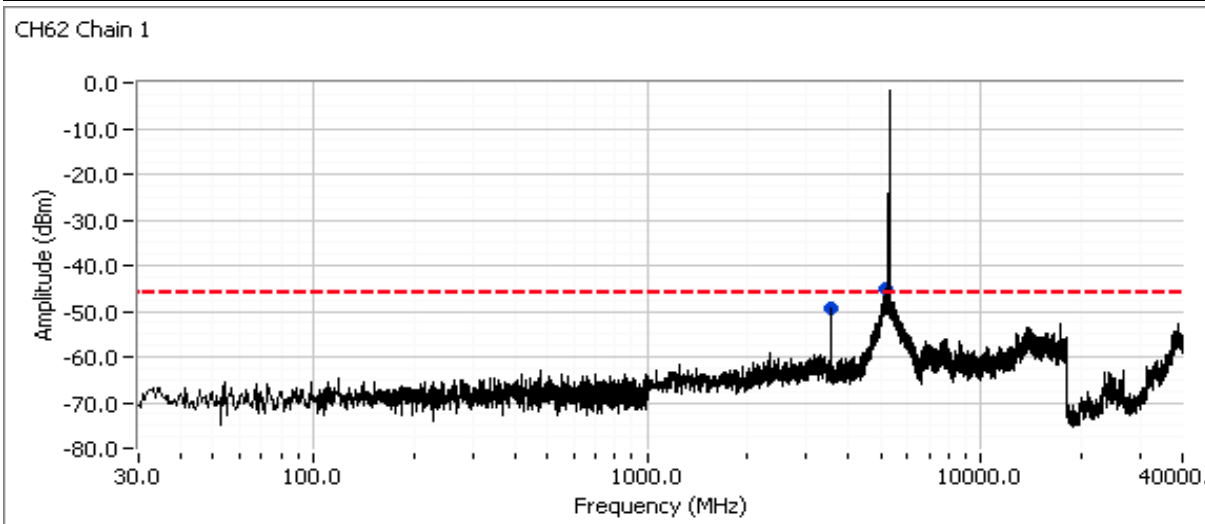
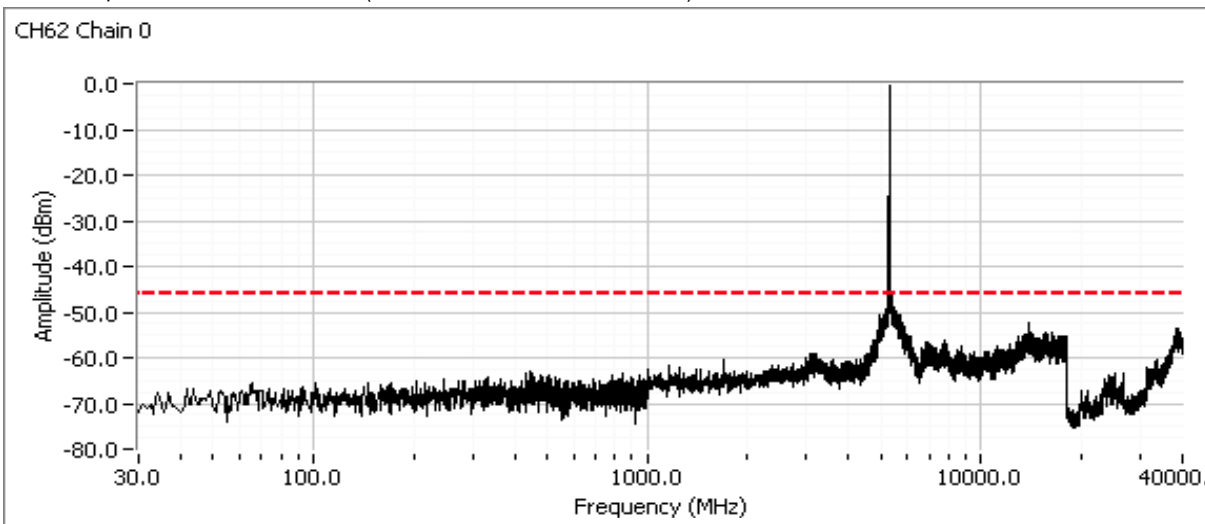
Frequency MHz	Level dBm	Pol v/h	FCC 15 E / RSS 210		Detector Pk/QP/Avg	Comment
			Limit	Margin		
3529.840	-48.6	-	-46.0	-2.6	Peak	CH58 Chain 1
5123.370	-47.0	-	-46.0	-1.0	Peak	CH58 Chain 1

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

High channel, 5250 - 5350 MHz Band

Note - compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



Frequency	Level	Pol	FCC 15 E / RSS 210		Detector	Comment
MHz	dBm	v/h	Limit	Margin	Pk/QP/Avg	
3538.850	-49.2	-	-46.0	-3.2	Peak	CH62 Chain 1
5135.380	-45.3	-	-	-	Peak	CH62 Chain 1, note 1

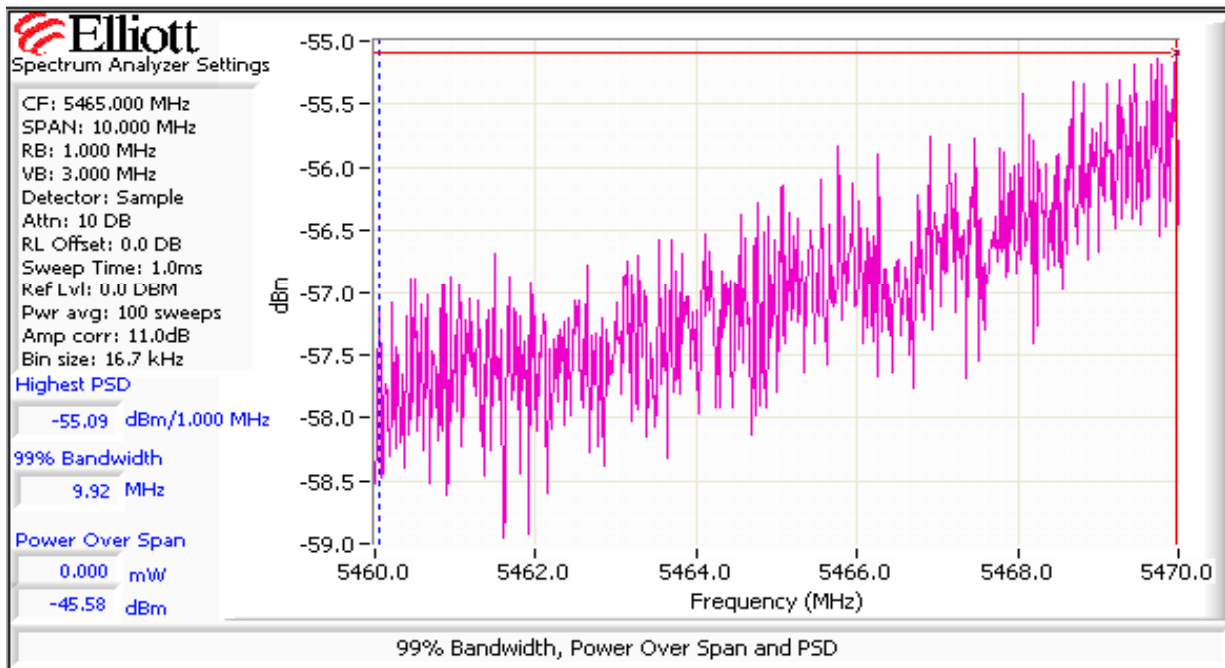
Note 1 | As frequency is within a restricted band, radiated tests were used to determine compliance.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

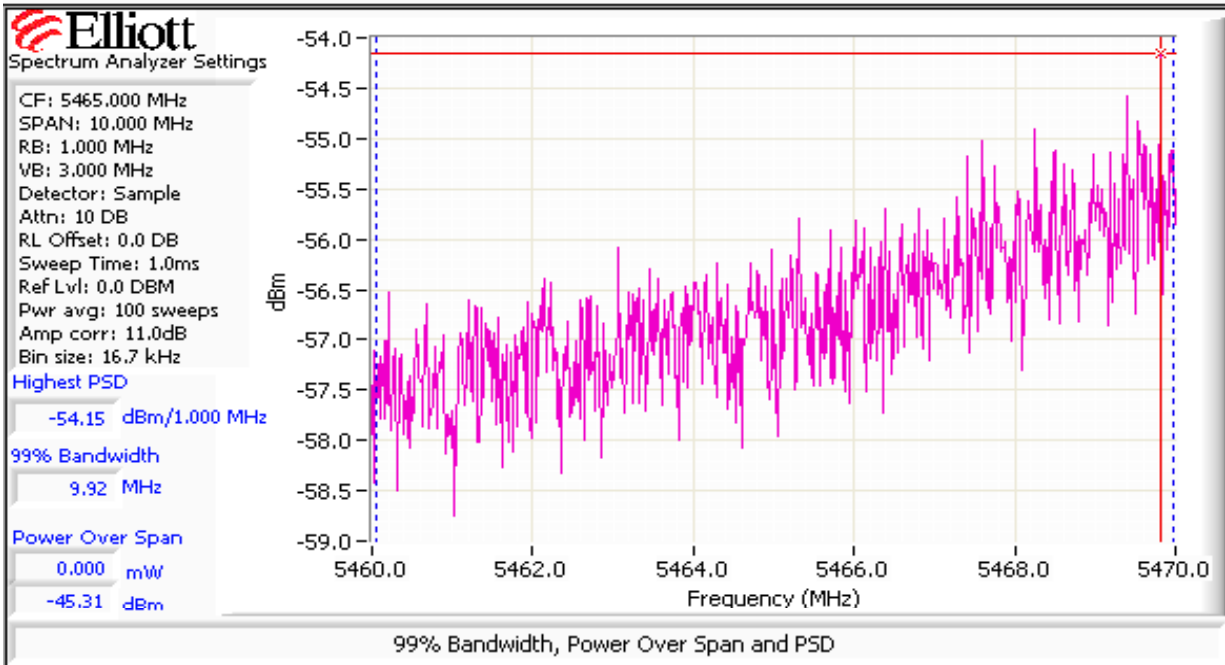
Low channel, 5470 - 5725 MHz Band

Plots for each chain showing compliance with the -27dBm/MHz limit for the 5460 - 5470 MHz band edge. Start and stop frequencies set to 5460-5470 MHz, RB=1MHz, VB=3MHz, power averaging enabled (100 traces). Note - compliance with the radiated limits for the restricted band immediately below 5460MHz is demonstrated through the radiated emissions tests.

	Power Setting	Band edge Level		Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
		dBm/MHz	mW/MHz		mW/MHz	dBm/MHz			
Chain 1	5.5	-54.2	0.00000	16.0	0.0001531	-38.2	-35.6	-27	PASS
Chain 2		-55.1	0.00000	16.0	0.000123	-39.1			

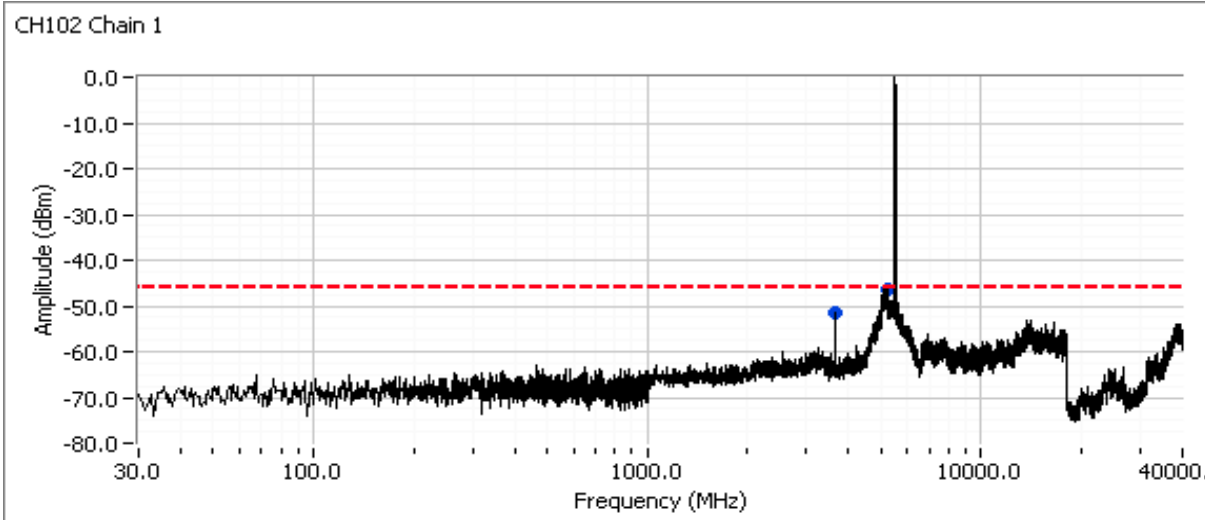
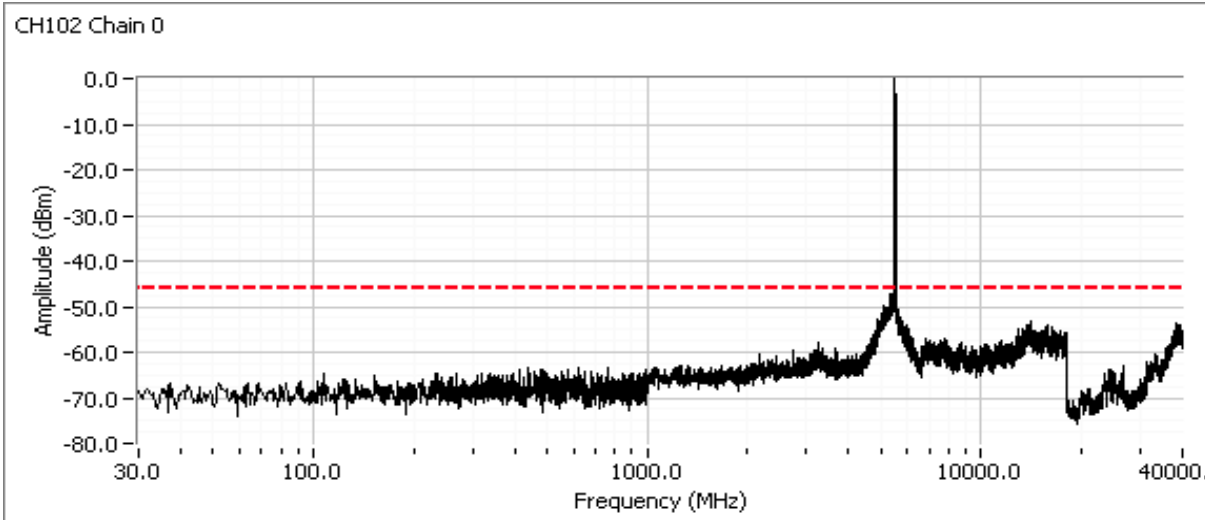


Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



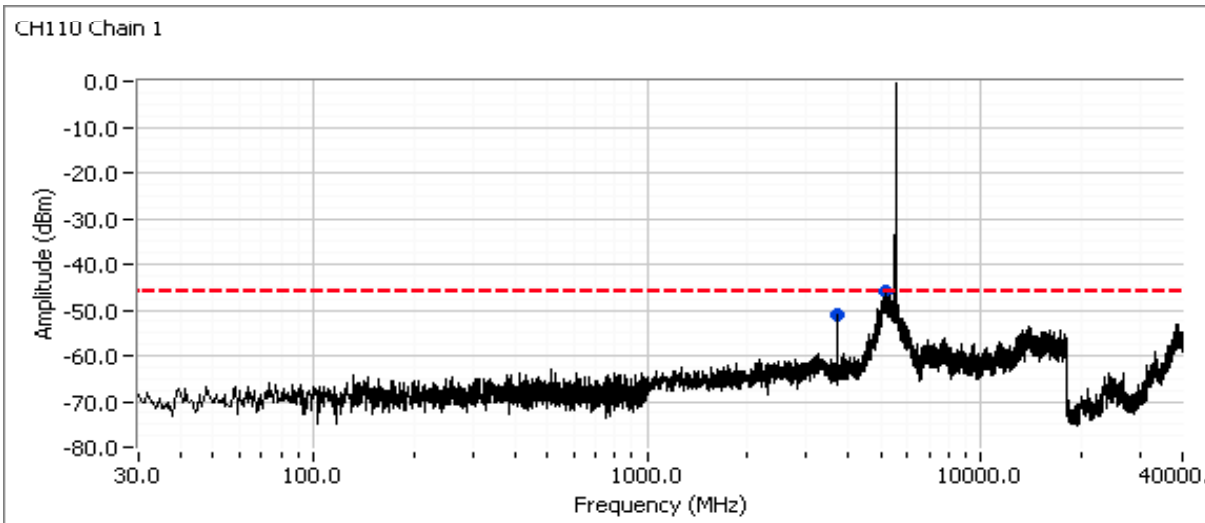
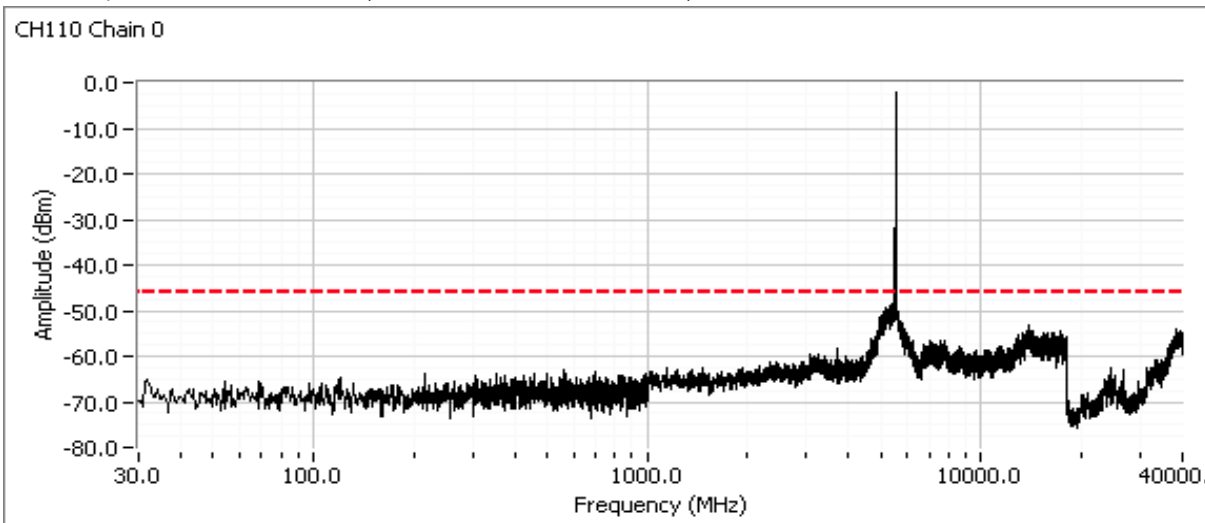
Frequency	Level	Pol	FCC 15 E / RSS 210		Detector	Comment
MHz	dBm	v/h	Limit	Margin	Pk/QP/Avg	
3673.890	-51.7	-	-46.0	-5.7	Peak	CH102 Chain 1
5219.410	-46.2	-	-	-	Peak	CH102 Chain 1, note 1

Note 1 See plot for 5460-5470 MHz for final value to compare to the limit.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

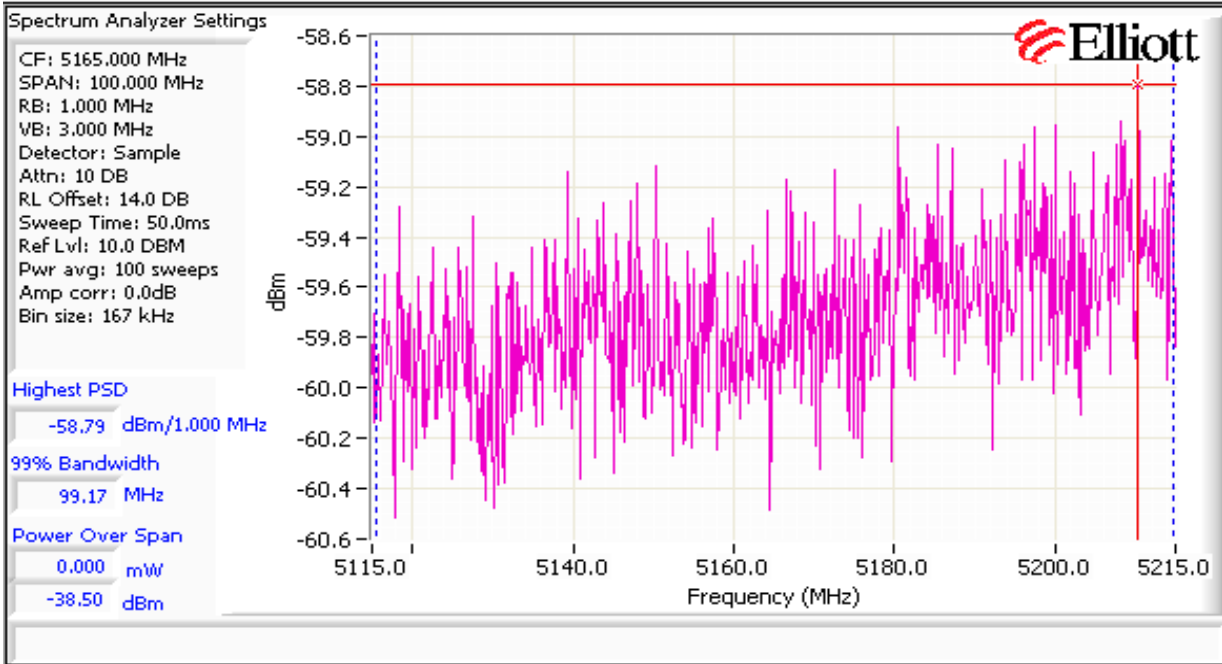
Center channel, 5470 - 5725 MHz Band

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



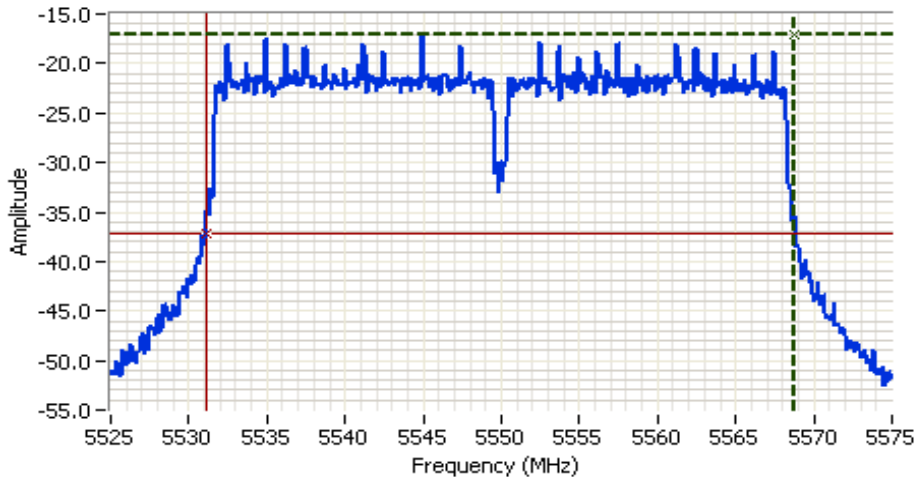
Frequency MHz	Level dBm	Pol v/h	FCC 15 E / RSS 210		Detector Pk/QP/Avg	Comment
			Limit	Margin		
3700.900	-51.0	-	-46.0	-5.0	Peak	CH110 Chain 1
5165.390	-45.9	-	-	-	Peak	CH110 Chain 1
5165.390	-58.8	Chain1	-46.0	-12.8	Sample	100 sample average

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

For master devices - This plot is showing that the 20dB bandwidth of the channel closest to 5600 MHz does not spill into the 5600-5650 MHz band. RB > 1% of span.

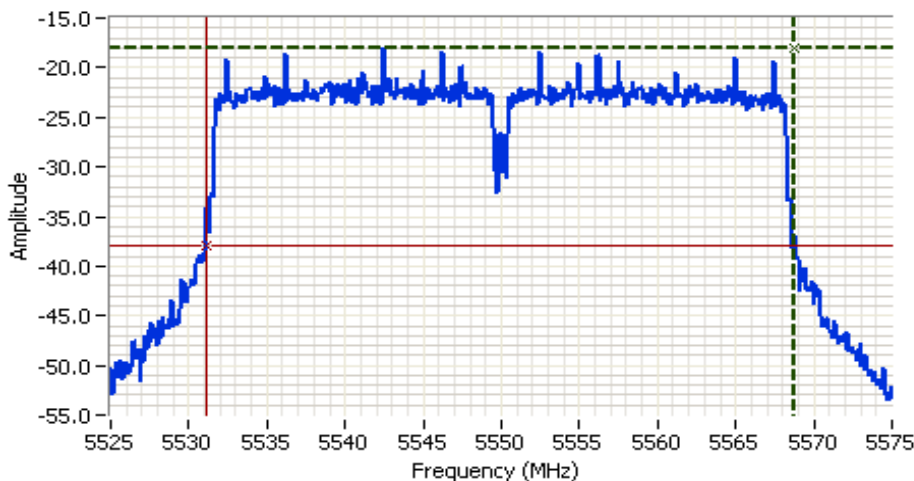


Analyzer Settings
 Agilent Technologies, E4446A
 CF: 5550.000 MHz
 SPAN: 50.000 MHz
 RB: 100 kHz
 VB: 300 kHz
 Detector: POS
 Attn: 10 DB
 RL Offset: 0.0 DB
 Sweep Time: 4.8ms
 Ref Lvl: 0.0 DBM

Comments
 20dB BW: 37.667 MHz
 FH: 5568.7500MHz
 Chain 1

Cursor 1 5568.7500 -17.12
 Cursor 2 5531.0833 -37.12

Delta Freq. 37.667
 Delta Amplitude 20.00



Analyzer Settings
 Agilent Technologies, E4446A
 CF: 5550.000 MHz
 SPAN: 50.000 MHz
 RB: 100 kHz
 VB: 300 kHz
 Detector: POS
 Attn: 10 DB
 RL Offset: 0.0 DB
 Sweep Time: 4.8ms
 Ref Lvl: 0.0 DBM

Comments
 20dB BW: 37.583 MHz
 FH: 5568.7500MHz
 Chain 0

Cursor 1 5568.7500 -17.99
 Cursor 2 5531.1667 -37.99

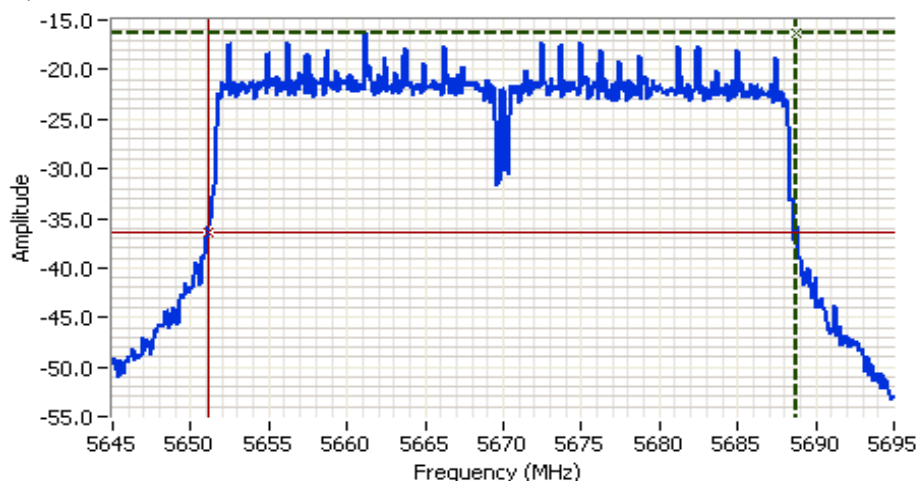
Delta Freq. 37.583
 Delta Amplitude 20.00



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Channel adjacent to 5650 MHz

Plots showing that the 20dB bandwidth of the channel closest to 5650 MHz does not spill into the 5600-5650 MHz band. RB > 1% of span.

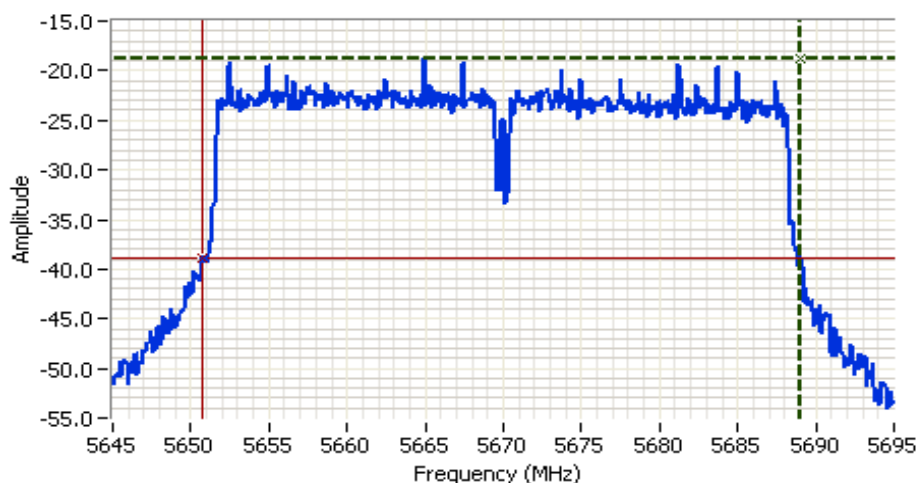


Analyzer Settings
 Agilent Technologies, E4446A
 CF: 5670.000 MHz
 SPAN: 50.000 MHz
 RB: 100 kHz
 VB: 300 kHz
 Detector: POS
 Attn: 10 DB
 RL Offset: 0.0 DB
 Sweep Time: 4.8ms
 Ref Lvl: 0.0 DBM

Comments
 20dB BW: 37.583 MHz
 FL: 5651.1667MHz
 Chain 1

Cursor 1	5688.7500	-16.39	
Cursor 2	5651.1667	-36.39	

Delta Freq. 37.583
 Delta Amplitude 20.00



Analyzer Settings
 Agilent Technologies, E4446A
 CF: 5670.000 MHz
 SPAN: 50.000 MHz
 RB: 100 kHz
 VB: 300 kHz
 Detector: POS
 Attn: 10 DB
 RL Offset: 0.0 DB
 Sweep Time: 4.8ms
 Ref Lvl: 0.0 DBM

Comments
 20dB BW: 38.250 MHz
 FL: 5650.7500MHz
 Chain 0

Cursor 1	5689.0000	-18.84	
Cursor 2	5650.7500	-38.84	

Delta Freq. 38.250
 Delta Amplitude 20.00

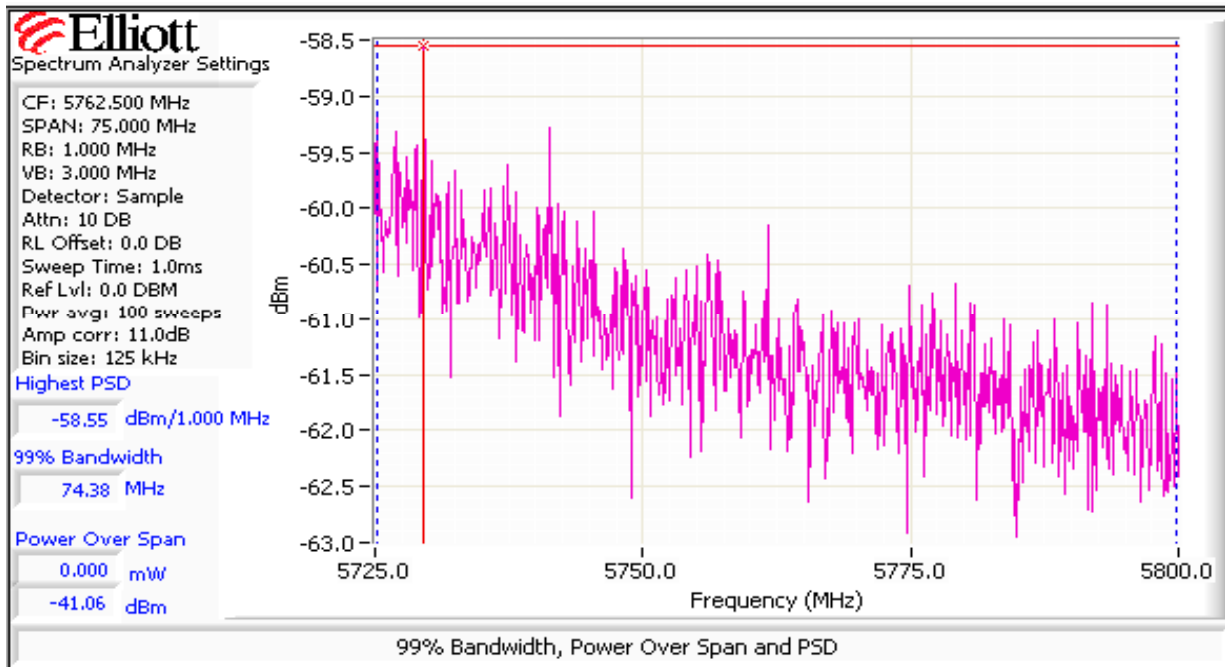


Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

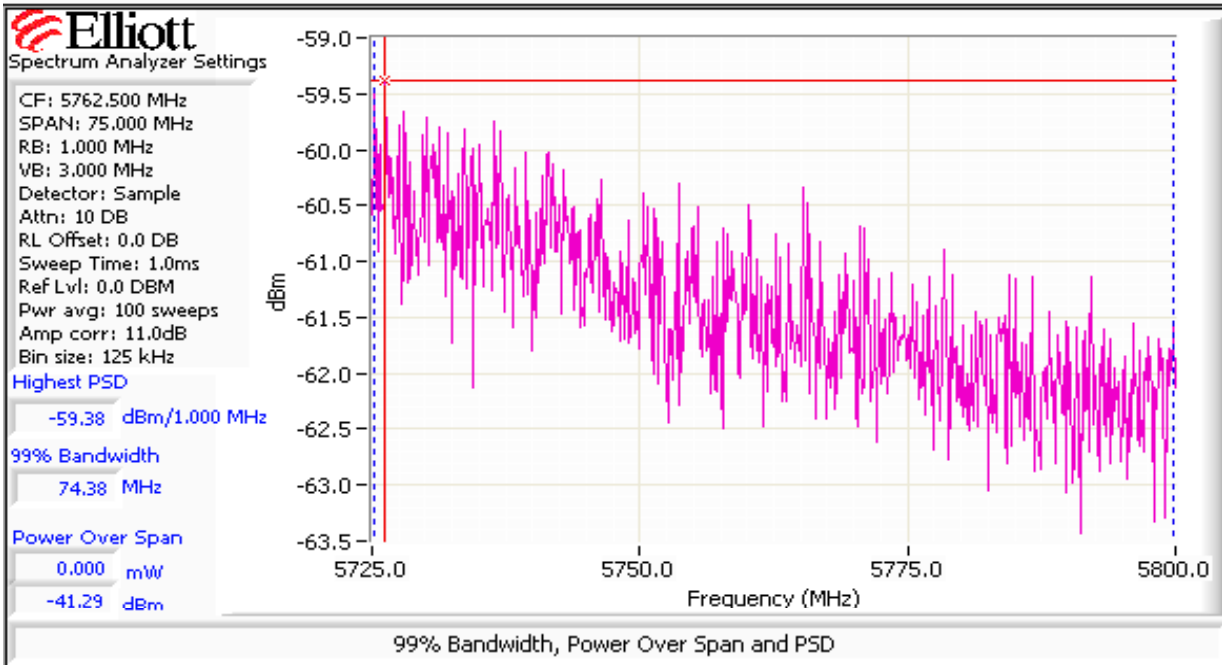
High channel, 5470 - 5725 MHz Band

Plots for each chain showing compliance with the -27dBm/MHz limit above the 5725MHz band edge. Start and stop frequencies set to 5725-5800 MHz, RB=1MHz, VB=3MHz, power averaging enabled (100 traces)

	Power Setting	Band edge Level		Antenna Gain (dBi)	EIRP		Total EIRP dBm/MHz	Limit dBm/MHz	Result
		dBm/MHz	mW/MHz		mW/MHz	dBm/MHz			
Chain 1	5	-59.4	0.00000	16.0	4.592E-05	-43.4	-39.9	-27	PASS
Chain 2		-58.5	0.00000	16.0	5.623E-05	-42.5			

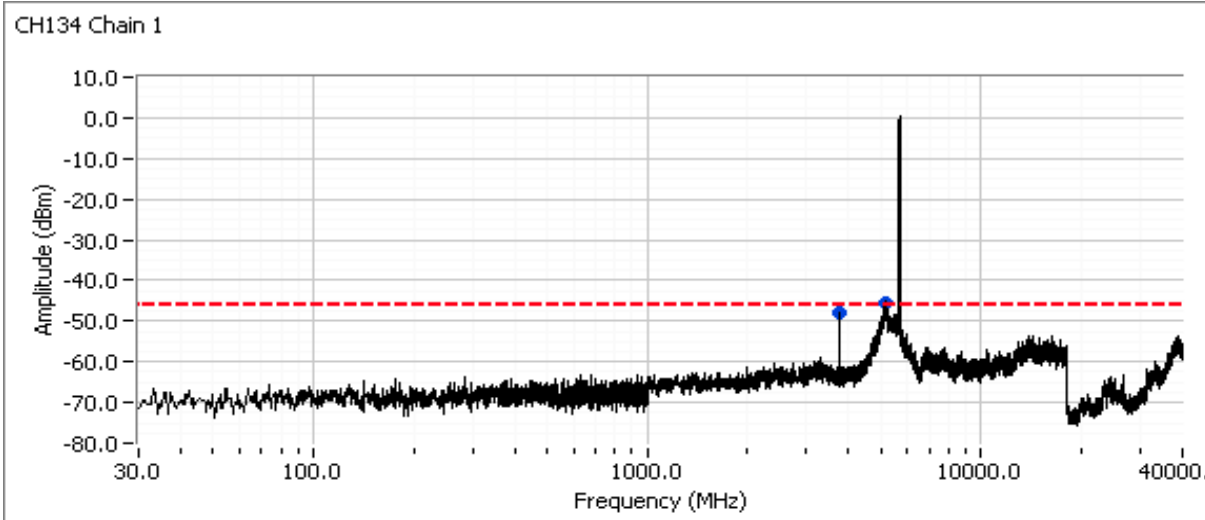
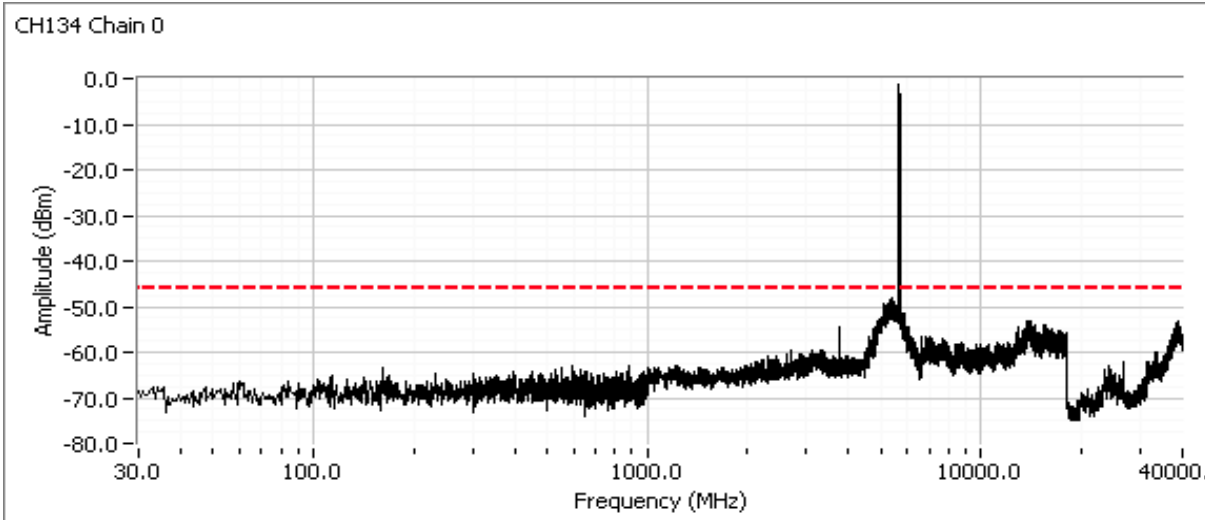


Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A



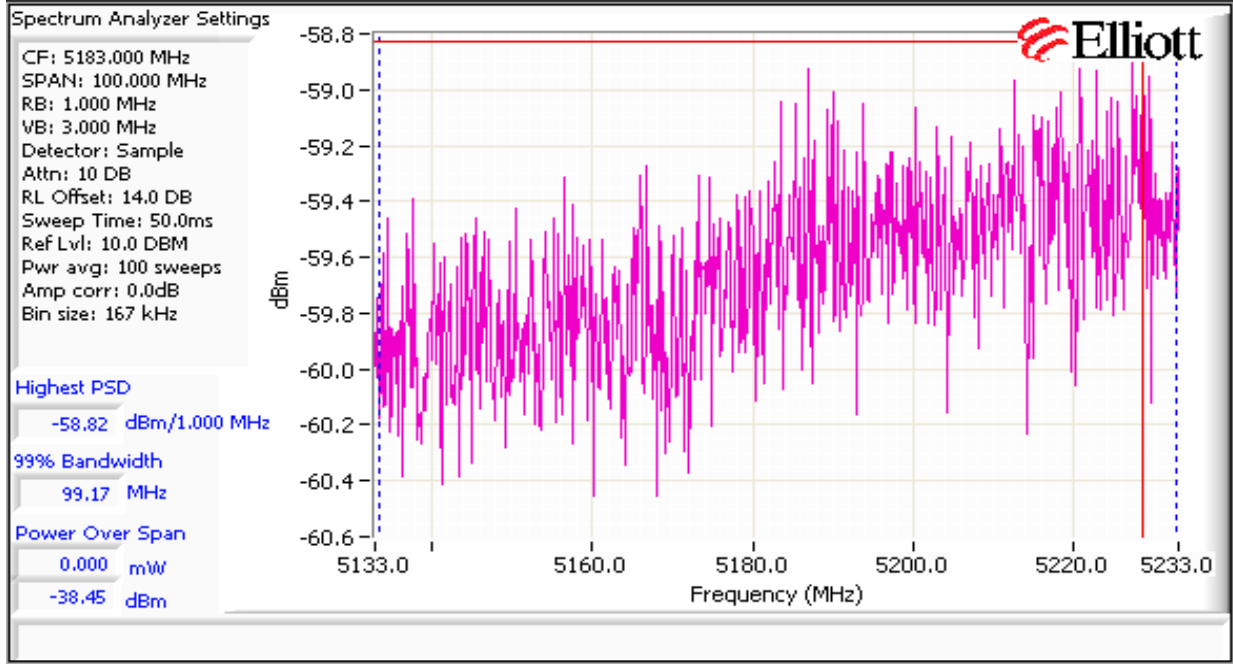
Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Wide-band plot, RB=1MHz VB=3MHz (Peak measurements versus limit).



Frequency MHz	Level dBm	Pol v/h	FCC 15 E / RSS 210		Detector Pk/QP/Avg	Comment
			Limit	Margin		
3778.930	-48.0	-	-46.0	-2.0	Peak	CH134, Chain 1
5183.390	-45.4	-	-	-	Peak	CH134, Chain 1
5183.390	-58.8	Chain 1	-46.0	-12.8	Sample	100 sample average

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	-

Radiated Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

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

Date of Test: 1/18/2012
 Test Engineer: Jack Liu
 Test Location: Fremont Chamber #7

Config. Used: Sample SN:1142k002722B0828E "2011-2412"
 Config Change: none
 EUT Voltage: POE

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing. Any remote support equipment was located outside the semi-anechoic chamber. Any cables running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, preliminary testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. Maximized testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions:

Temperature: 23 °C
 Rel. Humidity: 40 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	HT5 Radiated Emissions 30 - 1000 MHz, Maximized	15.209	Pass	38.3dBµV/m @ 780.00MHz (-7.7dB)
2	HT20 Radiated Emissions 30 - 1000 MHz, Maximized	15.209	Pass	38.4dBµV/m @ 780.00MHz (-7.6dB)
3	HT40 Radiated Emissions 30 - 1000 MHz, Maximized	15.209	Pass	38.7dBµV/m @ 780.00MHz (-7.3dB)

Modifications Made During Testing

No modifications were made to the EUT during testing
 Sample SN:1142k002722B0828E "2011-2412"

Deviations From The Standard

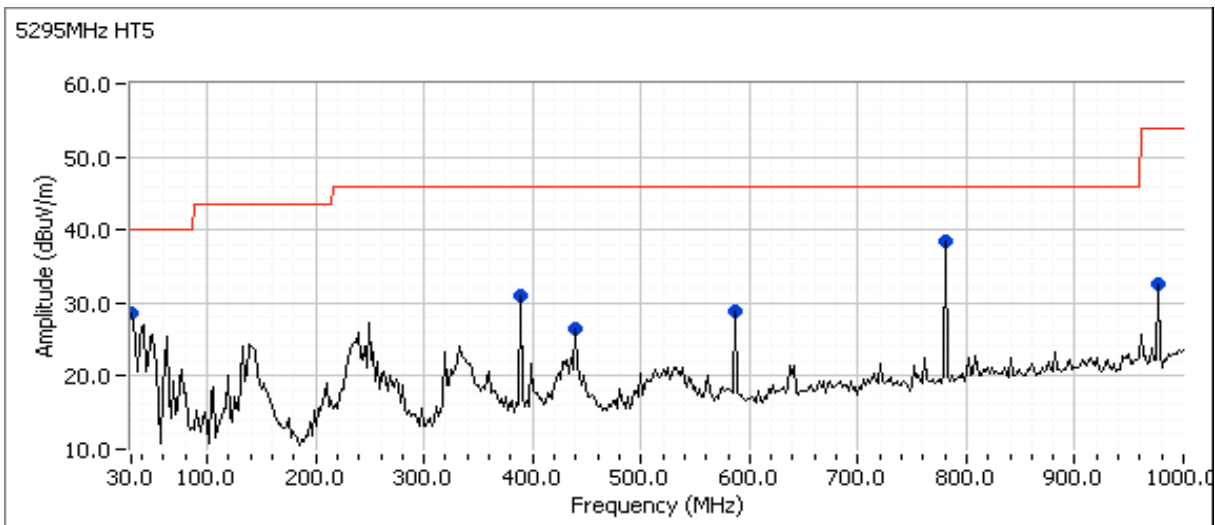
No deviations were made from the requirements of the standard.

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	-

Run #1: Radiated Emissions, 30 - 1000 MHz

5295MHz MIMO HT5 pwr setting 6.5

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



Preliminary peak readings captured during pre-scan

Frequency	Level	Pol	standard(s)	15.209	Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
30.641	28.7	V	40.0	-11.3	Peak	80	1.0	
390.004	30.9	H	46.0	-15.1	Peak	271	1.5	
440.001	26.4	V	46.0	-19.6	Peak	350	1.0	
585.000	29.0	H	46.0	-17.0	Peak	126	1.0	
780.003	38.4	H	46.0	-7.6	Peak	193	2.0	
974.997	32.5	V	54.0	-21.5	Peak	154	2.0	

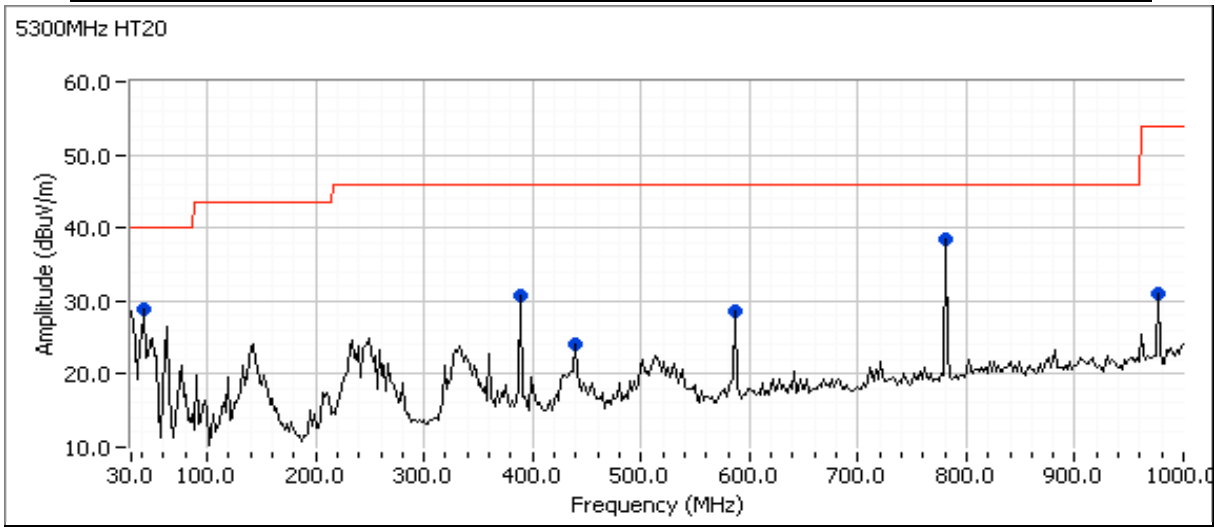
Maximized quasi-peak readings (includes manipulation of EUT interface cables)

Frequency	Level	Pol	standard(s)	15.209	Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
780.003	38.3	H	46.0	-7.7	QP	193	2.0	
30.641	26.4	V	40.0	-13.6	QP	80	1.0	
390.004	30.5	H	46.0	-15.5	QP	271	1.5	
585.000	29.1	H	46.0	-16.9	QP	126	1.0	
974.997	32.0	V	54.0	-22.0	QP	154	2.0	
440.001	23.4	V	46.0	-22.6	QP	317	1.0	

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	-

Run #2: Radiated Emissions, 30 - 1000 MHz
 5300MHz MIMO HT20 pwr setting 7.5

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



Preliminary peak readings captured during pre-scan

Frequency	Level	Pol	standard(s)	15.209	Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
39.995	29.0	V	40.0	-11.0	Peak	300	1.0	
390.004	30.8	H	46.0	-15.2	Peak	236	1.5	
440.008	24.2	V	46.0	-21.8	Peak	191	1.0	
585.007	28.7	H	46.0	-17.3	Peak	11	1.0	
780.003	38.4	H	46.0	-7.6	Peak	167	2.0	
975.005	30.9	V	54.0	-23.1	Peak	155	2.0	

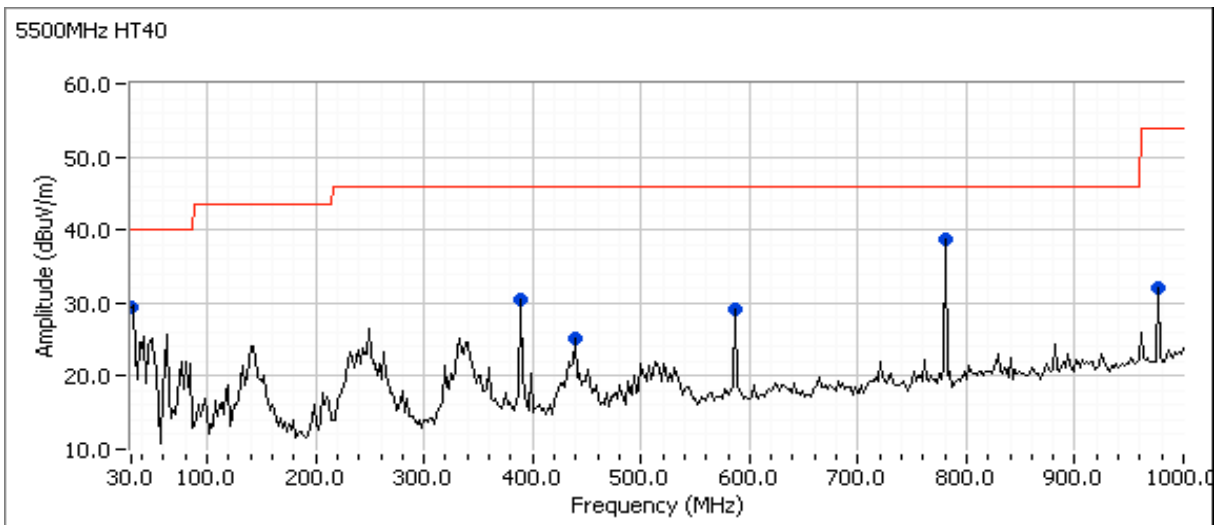
Maximized quasi-peak readings (includes manipulation of EUT interface cables)

Frequency	Level	Pol	standard(s)	15.209	Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
780.003	38.4	H	46.0	-7.6	QP	167	2.0	
390.004	30.8	H	46.0	-15.2	QP	236	1.5	
585.007	28.8	H	46.0	-17.2	QP	11	1.0	
39.995	22.0	V	40.0	-18.0	QP	300	1.0	
440.008	24.5	V	46.0	-21.5	QP	190	1.0	
975.005	32.5	V	54.0	-21.5	QP	155	2.0	

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: -

Run #3: Radiated Emissions, 30 - 1000 MHz
 5550MHz MIMO HT40 pwr setting 7.5

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



Preliminary peak readings captured during pre-scan

Frequency	Level	Pol	standard(s)	15.209	Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
30.641	29.3	V	40.0	-10.7	Peak	70	1.0	
390.004	30.6	H	46.0	-15.4	Peak	264	2.0	
440.008	25.1	V	46.0	-20.9	Peak	169	1.0	
585.007	29.2	H	46.0	-16.8	Peak	107	1.0	
780.003	38.7	H	46.0	-7.3	Peak	179	2.0	
975.005	32.1	V	54.0	-21.9	Peak	148	2.0	

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

Frequency	Level	Pol	standard(s)	15.209	Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
780.003	38.7	H	46.0	-7.3	QP	179	2.0	
30.641	26.8	V	40.0	-13.2	QP	70	1.0	
390.004	30.6	H	46.0	-15.4	QP	264	2.0	
585.007	28.6	H	46.0	-17.4	QP	107	1.0	
975.005	32.6	V	54.0	-21.4	QP	148	2.0	
440.008	24.3	V	46.0	-21.7	QP	169	1.0	



EMC Test Data

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	-

Radiated Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

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

Date of Test: 1/18/2012
 Test Engineer: Jack Liu
 Test Location: Fremont Chamber #7

Config. Used: Sample SN:1142k002722B0828E "2011-2412"
 Config Change: none
 EUT Voltage: POE

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing. Any remote support equipment was located outside the semi-anechoic chamber. Any cables running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, preliminary testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. Maximized testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions:

Temperature: 23 °C
 Rel. Humidity: 40 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	5295MHz Rx Mode Radiated Emissions 30 - 1000 MHz, Maximized	RSS-210	Pass	38.4dBµV/m @ 780.00MHz (-7.6dB)
2	5580MHz Rx Mode Radiated Emissions 30 - 1000 MHz, Maximized	RSS-210	Pass	38.4dBµV/m @ 780.00MHz (-7.6dB)

Modifications Made During Testing

No modifications were made to the EUT during testing
 Sample SN:1142k002722B0828E "2011-2412"

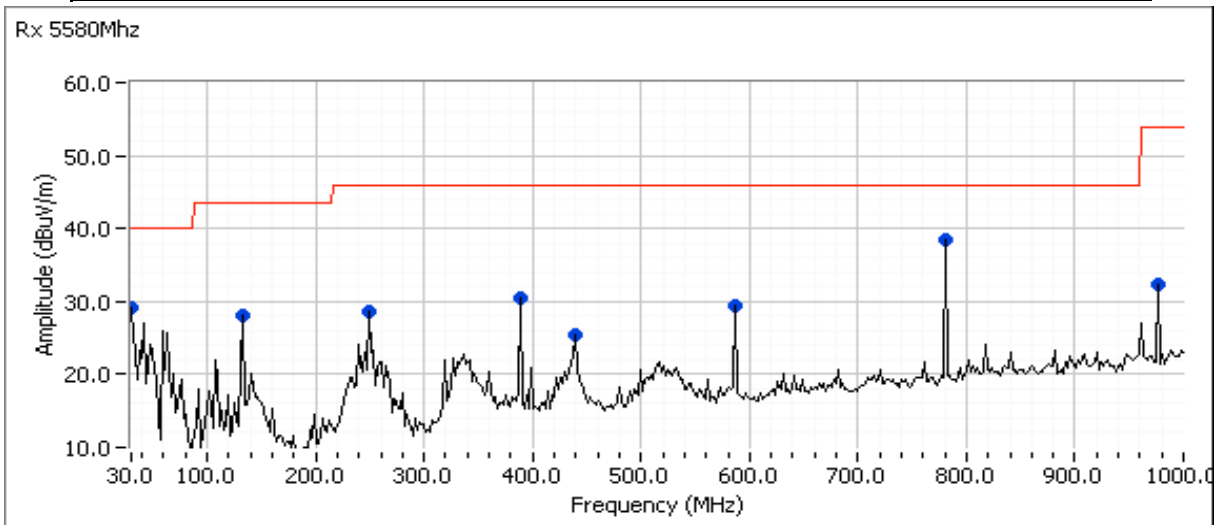
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	-

Run #1: 5295MHz Rx Mode Radiated Emissions, 30 - 1000 MHz

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


Preliminary peak readings captured during pre-scan

Frequency MHz	Level dB μ V/m	Pol v/h	RSS-210		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
30.641	29.2	V	40.0	-10.8	Peak	224	1.0	
141.837	28.1	V	43.5	-15.4	Peak	342	1.0	
249.997	28.7	V	46.0	-17.3	Peak	262	1.5	
390.004	30.6	H	46.0	-15.4	Peak	247	2.0	
440.008	25.3	V	46.0	-20.7	Peak	205	1.0	
585.007	29.4	H	46.0	-16.6	Peak	134	1.0	
780.003	38.5	H	46.0	-7.5	Peak	190	2.0	
975.005	32.3	V	54.0	-21.7	Peak	154	2.0	

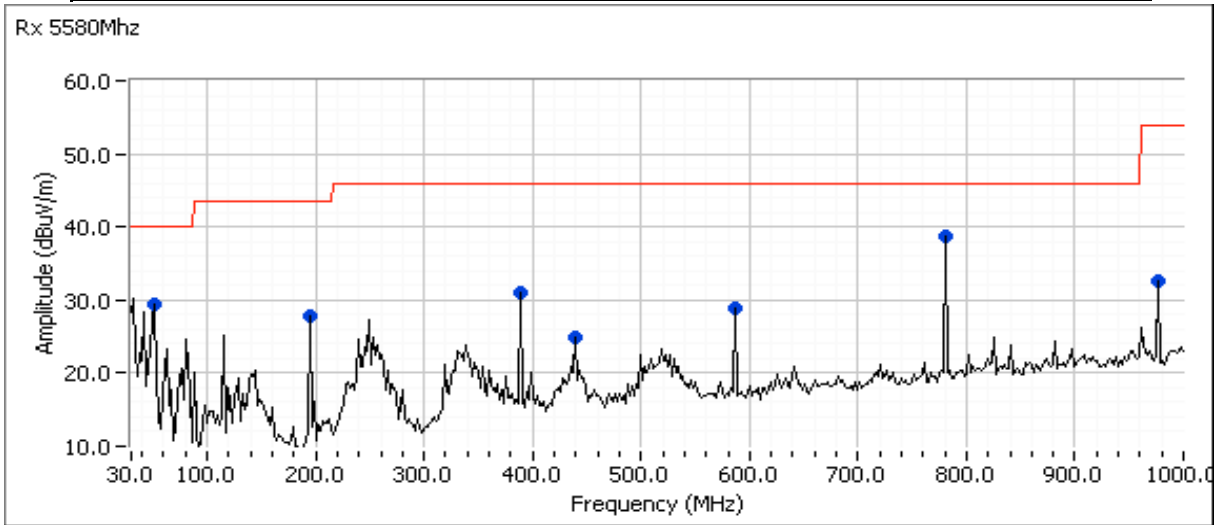
Maximized quasi-peak readings (includes manipulation of EUT interface cables)

Frequency MHz	Level dB μ V/m	Pol v/h	RSS-210		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
780.003	38.4	H	46.0	-7.6	QP	190	2.0	
30.641	26.7	V	40.0	-13.3	QP	224	1.0	
390.004	30.2	H	46.0	-15.8	QP	247	2.0	
585.007	29.3	H	46.0	-16.7	QP	134	1.0	
249.997	27.2	V	46.0	-18.8	QP	262	1.5	
440.008	25.2	V	46.0	-20.8	QP	205	1.0	
975.005	33.0	V	54.0	-21.0	QP	154	2.0	
141.837	14.4	V	43.5	-29.1	QP	202	1.4	

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	-

Run #2: 5580MHz Rx Mode Radiated Emissions, 30 - 1000 MHz

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


Preliminary peak readings captured during pre-scan

Frequency MHz	Level dB μ V/m	Pol v/h	RSS-210		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
49.995	29.3	V	40.0	-10.7	Peak	107	2.5	
195.008	27.7	H	43.5	-15.8	Peak	278	1.0	
390.004	31.0	H	46.0	-15.0	Peak	253	1.5	
440.008	24.9	V	46.0	-21.1	Peak	228	1.0	
585.007	29.0	H	46.0	-17.0	Peak	141	1.0	
780.003	38.8	H	46.0	-7.2	Peak	202	2.0	
975.005	32.5	V	54.0	-21.5	Peak	154	2.0	

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

Frequency MHz	Level dB μ V/m	Pol v/h	RSS-210		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
780.003	38.4	H	46.0	-7.6	QP	202	2.0	
390.004	31.1	H	46.0	-14.9	QP	253	1.5	
585.007	29.2	H	46.0	-16.8	QP	141	1.0	
49.995	21.8	V	40.0	-18.2	QP	107	1.0	
975.005	32.9	V	54.0	-21.1	QP	154	2.0	
440.008	23.6	V	46.0	-22.4	QP	228	1.0	
195.008	17.8	H	43.5	-25.7	QP	278	1.0	

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
		Account Manager:	Susan Pelzi
Contact:	Jennifer Sanchez		
Standard:	RSS 210, FCC 15E	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.

Date of Test: 1/13/2012
 Test Engineer: Jack Liu
 Test Location: FT3

Config. Used: Sample SN:1142k002722B0828E "2011-2412"
 Config Change: None
 EUT 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 outside the chamber with cables routed beneath the floor.

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

Ambient Conditions:

Temperature: 23 °C
 Rel. Humidity: 41 %

Summary of Results

Run #	Mode	Channel	Software Setting	Measured Power	Test Performed	Limit	Result / Margin
Preliminary measurements, center channel in each mode to determine worst-case mode. High and low channels for worst-case mode in each band then evaluated.							
1	Various Chain A+B	5295MHz HT5	6.5	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	No radio emissions
		5300MHz HT20	7.5	-			No radio emissions
		5295MHz HT40	6.5	-			No radio emissions
2	Various Chain A+B	5265MHz HT20	7.5	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	No radio emissions
		5255MHz HT5	6.5	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	No radio emissions
3	Various Chain A+B	5595MHz HT5	4.5	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	50.1dBµV/m @ 3730.0MHz (-3.9dB)
		5580MHz HT20	7.5	-			50.5dBµV/m @ 3720.0MHz (-3.5dB)
		5550MHz HT40	6.5	-			48.5dBµV/m @ 3700.0MHz (-5.5dB)

continues on the next page

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Run #	Mode	Channel	Software Setting	Measured Power	Test Performed	Limit	Result / Margin
Preliminary measurements, center channel in each mode to determine worst-case mode. High and low channels for worst-case mode in each band then evaluated.							
4	Various Chain A+B	5500MHz HT20	7.5	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	47.2dB μ V/m @ 3666.7MHz (-6.8dB)
		5670MHz HT40	6.5	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	51.2dB μ V/m @ 3780.0MHz (-2.8dB)
5	Various Chain A+B	5295MHz	RX Mode	-	Radiated Emissions, 1 - 18 GHz	RSS-GEN	34.6dB μ V/m @ 4997.6MHz (-19.4dB)
		5580MHz	RX Mode	-	Radiated Emissions, 1 - 18 GHz	RSS-GEN	38.9dB μ V/m @ 4290.0MHz (-15.1dB)

Modifications Made During Testing

No modifications were made to the EUT during testing
Sample SN:1142k002722B0828E "2011-2412"

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #1, Radiated Spurious Emissions, 1-40GHz, Various, Chain A+B

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -27dBm eirp (68.3dBuV/m @3m)

Run #1a: EUT on Channel 5295MHz HT5 - Various, Chain A+B

Date of Test: 1/17/2012

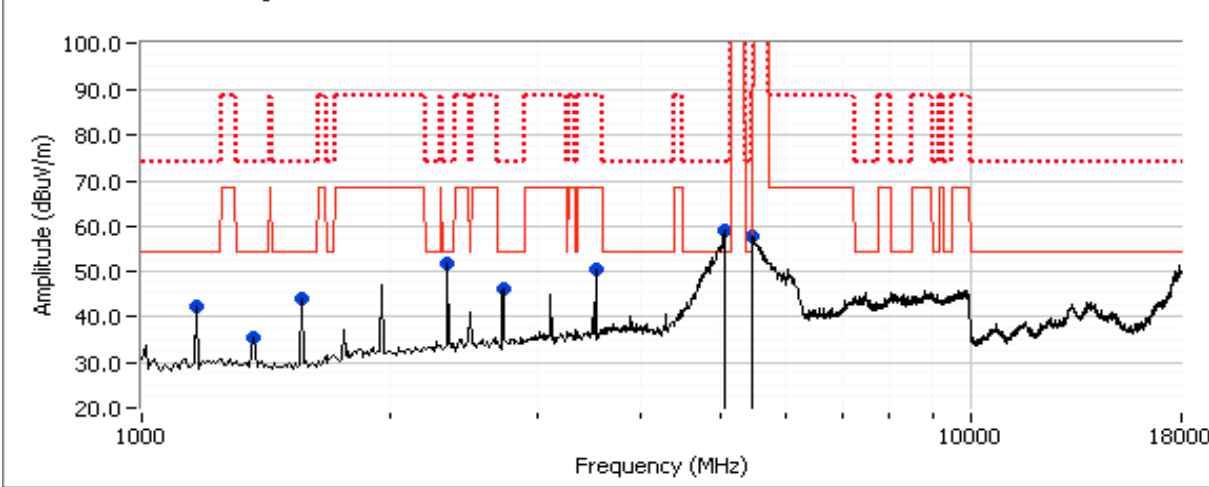
Test Location: FT5

Test Engineer: Jack Liu

Config Change: None

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A+B	-	-	6.5

5295MHz HT5 Pwr setting 6.5



Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4974.820	48.6	V	54.0	-5.4	AVG	10	1.3	Note 3
4975.250	60.7	V	74.0	-13.3	PK	10	1.3	Note 3
5454.070	51.9	V	54.0	-2.1	AVG	357	1.3	Note 3
5451.000	62.9	V	74.0	-11.1	PK	357	1.3	Note 3
3530.060	50.2	V	68.3	-18.1	Peak	2	1.6	Note 2
1560.090	43.9	V	54.0	-10.1	Peak	156	1.0	Note 4
1365.020	35.3	H	54.0	-18.7	Peak	165	1.3	Note 4
2730.120	46.1	H	54.0	-7.9	Peak	174	1.3	Note 4

continues on the next page

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
1170.030	42.1	H	54.0	-11.9	Peak	184	1.3	Note 4
2340.010	51.6	H	54.0	-2.4	Peak	192	1.3	Note 4

- Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
- Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
- Note 3: For any above emissions above the limit in 4500MHz~5150MHz and 5350~5460MHz bands refer to band edge testing result.
- Note 4: Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move

Run #1b: EUT on Channel 5300MHz HT20 - Various, Chain A+B

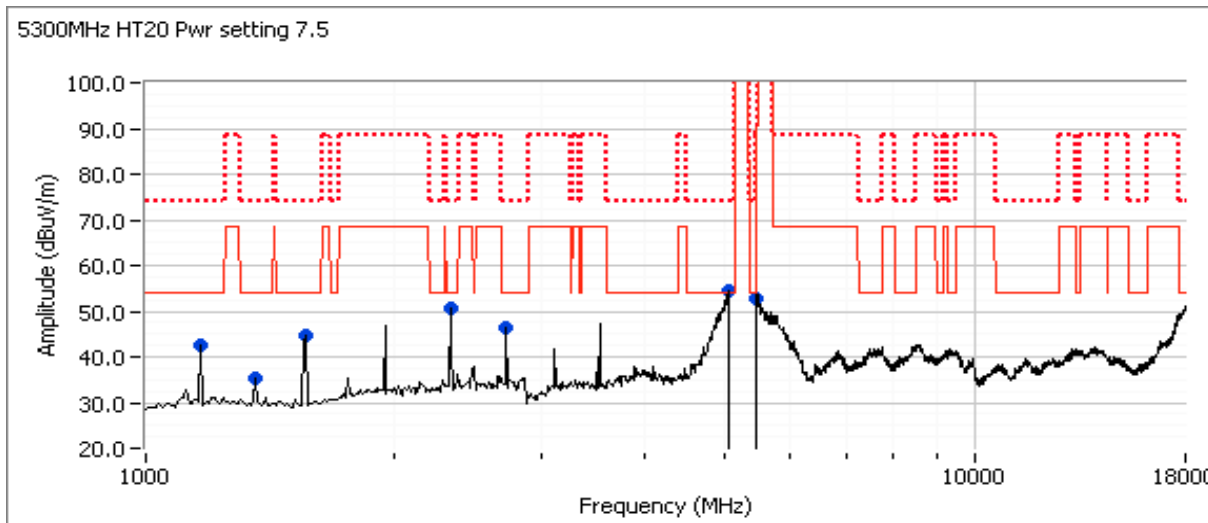
Date of Test: 1/13/2012 & 1/16/2012

Test Location: FT3/ FT5

Test Engineer: Jack Liu

Config Change: None

	Target (dBm)	Power Settings Measured (dBm)	Software Setting
Chain A+B	-	-	7.5



Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5455.970	47.7	H	54.0	-6.3	AVG	0	1.6	Note 3
5455.530	58.7	H	74.0	-15.3	PK	0	1.6	Note 3
4989.200	45.7	V	54.0	-8.3	AVG	19	1.6	Note 3
5013.600	56.7	V	74.0	-17.3	PK	19	1.6	Note 3
1170.050	41.7	H	54.0	-12.3	AVG	146	1.0	Note 4
1169.950	44.2	H	74.0	-29.8	PK	146	1.0	Note 4
2730.060	45.5	H	54.0	-8.5	AVG	165	1.6	Note 4
2730.050	48.3	H	74.0	-25.7	PK	165	1.6	Note 4
1365.020	34.0	H	54.0	-20.0	AVG	173	1.9	Note 4
1365.180	39.5	H	74.0	-34.5	PK	173	1.9	Note 4
1560.010	44.4	H	54.0	-9.6	AVG	173	1.3	Note 4
1559.960	46.3	H	74.0	-27.7	PK	173	1.3	Note 4
2340.020	50.4	H	54.0	-3.6	AVG	204	2.2	Note 4
2340.070	52.2	H	74.0	-21.8	PK	204	2.2	Note 4

- Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
- Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
- Note 3: For any above emissions above the limit in 4500MHz~5150MHz and 5350~5460MHz bands refer to band edge testing result.
- Note 4: Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
	Account Manager: Susan Pelzl
Contact: Jennifer Sanchez	
Standard: RSS 210, FCC 15E	Class: N/A

Run #1c: EUT on Channel 5295MHz HT40 - Various, Chain A+B

Date of Test: 1/13/2012 & 1/16/2012

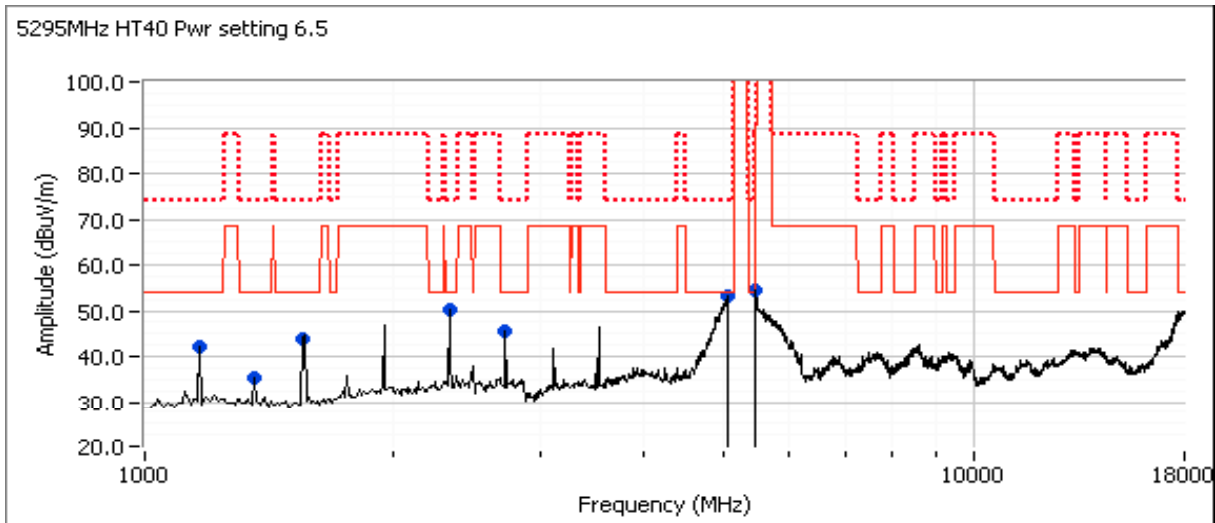
Test Location: FT3/ FT5

Test Engineer: Jack Liu

Config Change: None

	Target (dBm)	Power Settings Measured (dBm)	Software Setting
Chain A+B	-	-	6.5

5295MHz HT40 Pwr setting 6.5



Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5455.780	49.1	H	54.0	-4.9	AVG	5	1.3	Note 3
5458.420	60.1	H	74.0	-13.9	PK	5	1.3	Note 3
4987.920	47.2	H	54.0	-6.8	AVG	13	1.3	Note 3
4995.290	58.9	H	74.0	-15.1	PK	13	1.3	Note 3
1170.060	42.1	H	54.0	-11.9	Peak	129	1.0	Note 4
1559.910	43.9	H	54.0	-10.1	Peak	150	1.3	Note 4
1364.970	35.4	H	54.0	-18.6	Peak	174	2.2	Note 4
2730.350	45.6	H	54.0	-8.4	Peak	178	1.6	Note 4
2339.850	50.1	H	54.0	-3.9	Peak	193	1.3	Note 4

- Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
- Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
- Note 3: For any above emissions above the limit in 4500MHz~5150MHz and 5350~5460MHz bands refer to band edge testing result.
- Note 4: Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move
- Note 5: Scans made between 18 - 40GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #2, Radiated Spurious Emissions, 1-40GHz, Various, Chain A+B

Date of Test: 1/13/2012

Test Location: FT3

Test Engineer: Jack Liu

Config Change: None

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -27dBm eirp (68.3dBuV/m @3m)

Run #2a: EUT on Channel 5265 MHz HT20 - Various, Chain A+B

Date of Test: 1/13/2012 & 1/16/2012

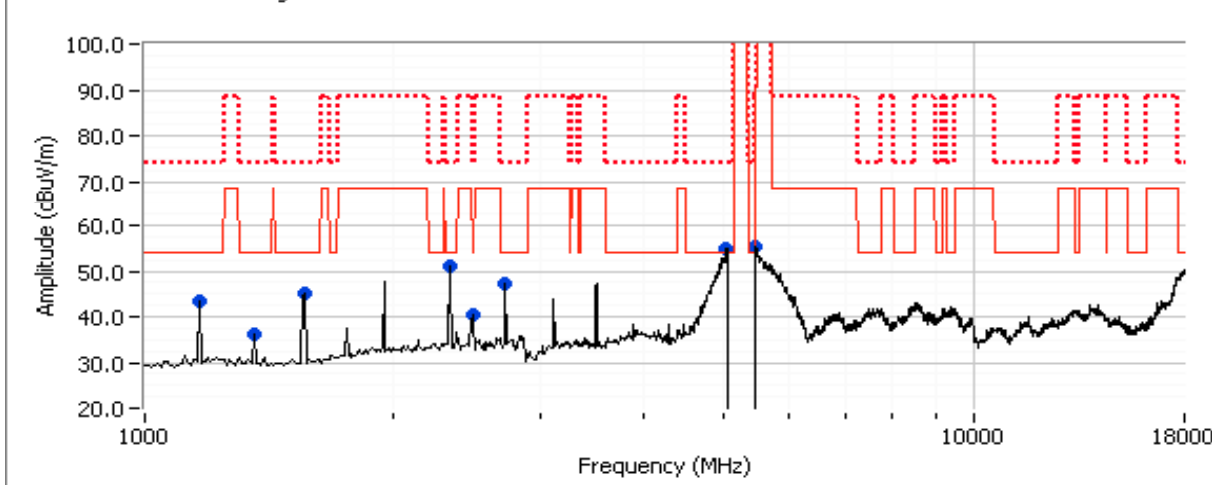
Test Location: FT3/ FT5

Test Engineer: Jack Liu

Config Change: None

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A+B	-	-	7.5

5265MHz HT20 Pwr setting 7.5



Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
1560.020	44.6	H	54.0	-9.4	AVG	150	1.3	Note 4
1559.920	46.9	H	74.0	-27.1	PK	150	1.3	Note 4
2730.080	45.8	H	54.0	-8.2	AVG	160	1.6	Note 4
2730.050	48.4	H	74.0	-25.6	PK	160	1.6	Note 4
1365.030	33.9	H	54.0	-20.1	AVG	161	1.9	Note 4
1364.980	39.7	H	74.0	-34.3	PK	161	1.9	Note 4
1170.030	41.2	H	54.0	-12.8	AVG	163	1.0	Note 4
1169.980	43.7	H	74.0	-30.3	PK	163	1.0	Note 4

continues on the next page

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
2487.650	30.3	H	54.0	-23.7	AVG	174	1.6	Note 4
2488.970	44.6	H	74.0	-29.4	PK	174	1.6	Note 4
2340.050	49.7	H	54.0	-4.3	AVG	204	1.3	Note 4
2339.940	51.5	H	74.0	-22.5	PK	204	1.3	Note 4
5456.020	49.6	H	54.0	-4.4	AVG	358	1.3	Note 3
5455.450	60.5	H	74.0	-13.5	PK	358	1.3	Note 3
4987.520	47.4	H	54.0	-6.6	AVG	8	1.3	Note 3
4983.130	59.3	H	74.0	-14.7	PK	8	1.3	Note 3

- Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
- Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
- Note 3: For any above emissions above the limit in 4500MHz~5150MHz and 5350~5460MHz bands refer to band edge testing result.
- Note 4: Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Run #2b: EUT on Channel 5255 MHz HT5 - Various, Chain A+B

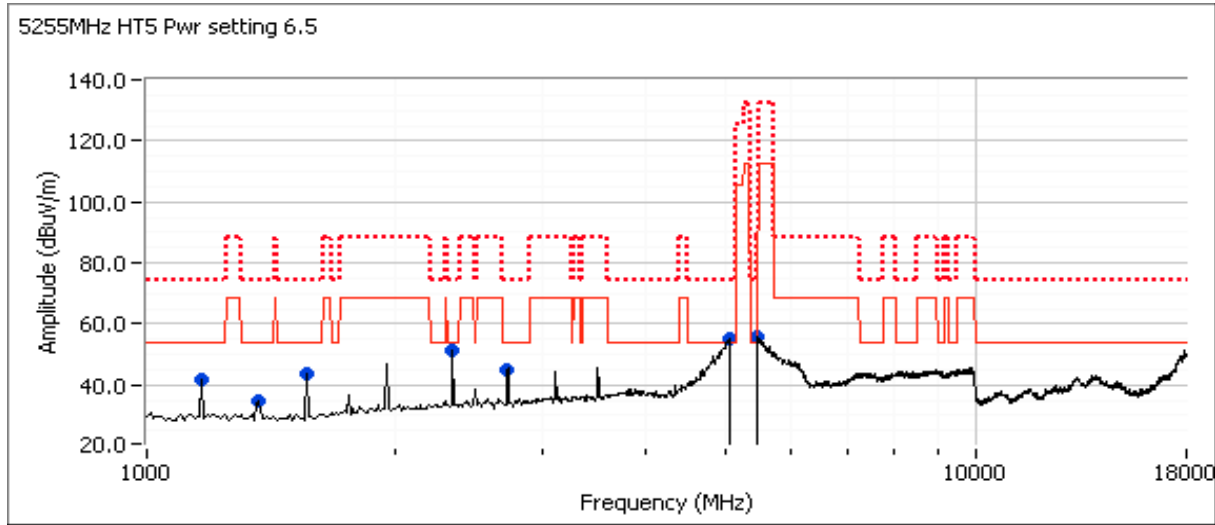
Date of Test: 1/17/2012

Test Location: FT5

Test Engineer: Jack Liu

Config Change: None

	Power Settings		
	Target (dBm)	Measured (dBm)	Software Setting
Chain A+B	-	-	6.5



Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5452.950	51.8	H	54.0	-2.2	AVG	1	1.0	Note 3
5451.730	63.1	H	74.0	-10.9	PK	1	1.0	Note 3
4974.320	48.2	V	54.0	-5.8	AVG	3	1.3	Note 3
4971.450	59.2	V	74.0	-14.8	PK	3	1.3	Note 3
1170.030	41.4	H	54.0	-12.6	Peak	146	1.3	Note 4
1560.090	43.4	V	54.0	-10.6	Peak	162	1.0	Note 4
1365.020	34.8	H	54.0	-19.2	Peak	165	1.3	Note 4
2340.040	51.1	H	54.0	-2.9	Peak	173	1.3	Note 4
2730.190	44.8	H	54.0	-9.2	Peak	199	1.3	Note 4

- Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
- Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
- Note 3: For any above emissions above the limit in 4500MHz~5150MHz and 5350~5460MHz bands refer to band edge testing result.
- Note 4: Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run # 3, Radiated Spurious Emissions, 1-40GHz, Various, Chain A+B

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -27dBm eirp (68.3dBuV/m @3m) peak.

Run # 3a: EUT on Channel 5595MHz HT5 - Various, Chain A+B

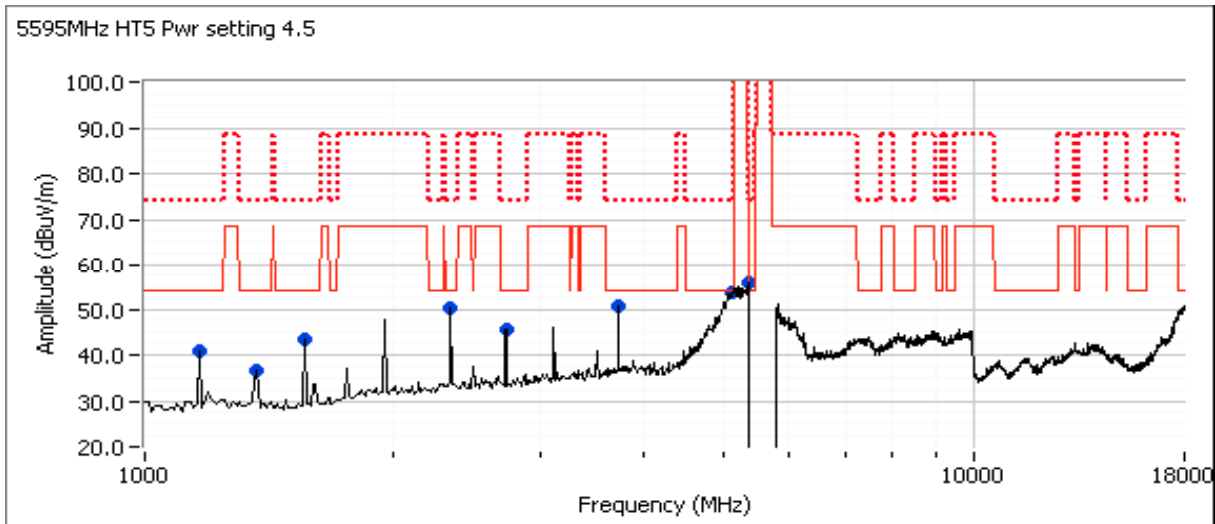
Date of Test: 1/16/2012

Test Location: FT5

Test Engineer: Jack Liu

Config Change: None

	Target (dBm)	Power Settings Measured (dBm)	Software Setting
Chain A+B	-	-	4.5



Spurious Radiated Emissions:

Frequency MHz	Level dBuV/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
3730.010	50.1	V	54.0	-3.9	AVG	359	1.0	
3730.030	52.5	V	74.0	-21.5	PK	359	1.0	
5350.080	50.0	H	54.0	-4.0	AVG	359	1.0	Note 3
5350.900	61.2	H	74.0	-12.8	PK	359	1.0	Note 3
5112.690	50.0	V	54.0	-4.0	AVG	4	1.3	Note 3
5114.470	62.4	V	74.0	-11.6	PK	4	1.3	Note 3
1170.340	40.8	H	54.0	-13.2	Peak	157	1.6	Note 4
1560.240	43.5	V	54.0	-10.5	Peak	167	1.0	Note 4
1364.990	36.4	H	54.0	-17.6	Peak	183	1.0	Note 4

continues on the next page

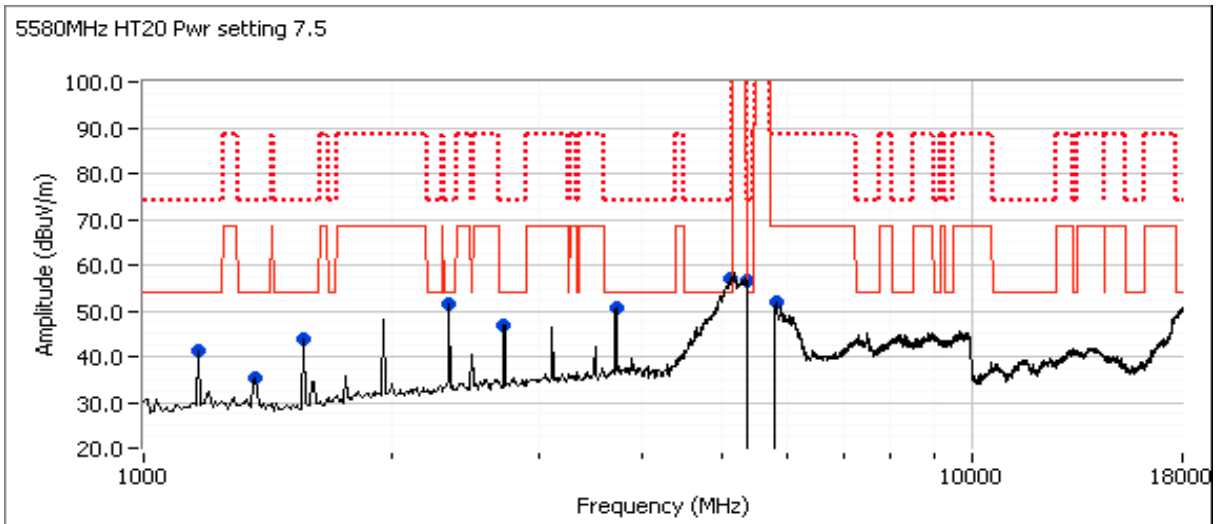
Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
2730.360	45.6	H	54.0	-8.4	Peak	183	1.0	Note 4
2340.010	50.1	H	54.0	-3.9	Peak	200	2.2	Note 4

- Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
- Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
- Note 3: For any above emissions above the limit in 4500MHz~5150MHz and 5350~5460MHz bands refer to band edge testing result.
- Note 4: Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move

Run # 3b: EUT on Channel 5580MHz HT20 - Various, Chain A+B
 Date of Test: 1/16/2012 Test Location: FT5
 Test Engineer: Jack Liu Config Change: None

	Target (dBm)	Power Settings Measured (dBm)	Software Setting
Chain A+B			7.5



Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
3719.990	50.5	V	54.0	-3.5	AVG	351	1.0	
3720.020	52.6	V	74.0	-21.4	PK	351	1.0	
5120.030	55.7	V	54.0	1.7	AVG	4	1.3	Note 3
5129.270	67.2	V	74.0	-6.8	PK	4	1.3	Note 3
5350.120	51.7	H	54.0	-2.3	AVG	4	1.3	Note 3
5350.270	62.5	H	74.0	-11.5	PK	4	1.3	Note 3
1364.990	35.4	H	54.0	-18.6	Peak	156	1.0	Note 4
1170.190	41.3	H	54.0	-12.7	Peak	162	1.6	Note 4
2730.350	46.6	H	54.0	-7.4	Peak	187	1.0	Note 4
1560.090	44.0	V	54.0	-10.0	Peak	188	1.0	Note 4
2340.010	51.7	H	54.0	-2.3	Peak	203	1.3	Note 4
5812.500	52.0	H	68.3	-16.3	Peak	354	1.3	Note 2

Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
Note 3:	For any above emissions above the limit in 4500MHz~5150MHz and 5350~5460MHz bands refer to band edge testing result.
Note 4:	Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run # 3c: EUT on Channel 5550MHz HT40 - Various, Chain A+B

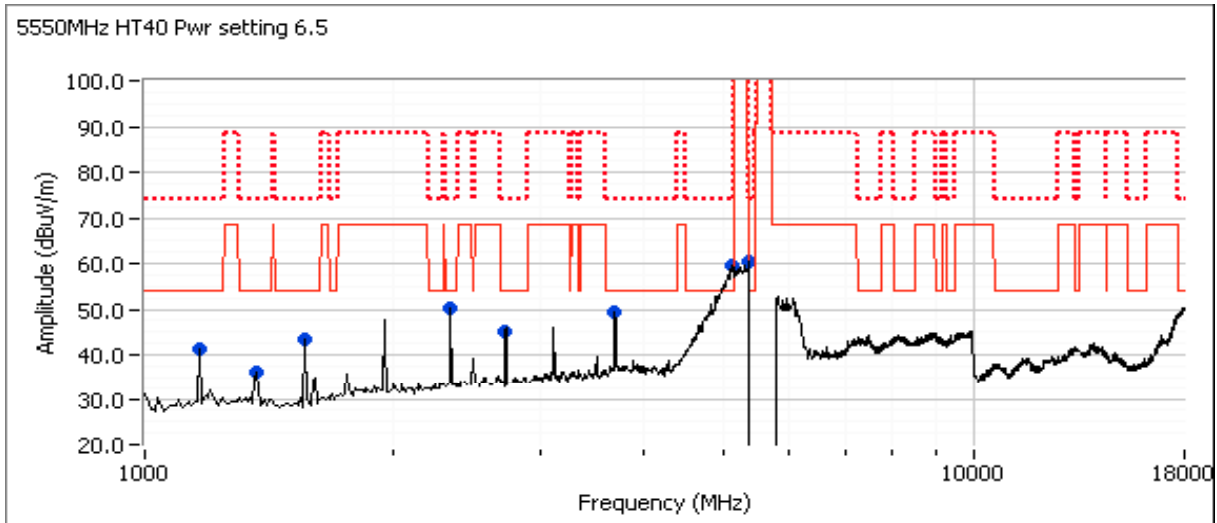
Date of Test: 1/16/2012

Test Location: FT5

Test Engineer: Jack Liu

Config Change: None

	Target (dBm)	Power Settings Measured (dBm)	Software Setting
Chain A+B			6.5



Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
3700.020	48.5	V	54.0	-5.5	AVG	4	1.3	
3700.000	50.8	V	74.0	-23.2	PK	4	1.3	
5350.030	55.7	V	54.0	1.7	AVG	4	1.3	Note 3
5350.220	65.9	V	74.0	-8.1	PK	4	1.3	Note 3
5112.500	55.3	V	54.0	1.3	AVG	354	1.3	Note 3
5121.830	66.6	V	74.0	-7.4	PK	354	1.3	Note 3
1170.190	41.1	H	54.0	-12.9	Peak	160	1.6	Note 4
2730.350	45.1	H	54.0	-8.9	Peak	166	1.0	Note 4
1560.240	43.5	V	54.0	-10.5	Peak	172	1.0	Note 4
1364.990	36.2	H	54.0	-17.8	Peak	197	1.0	Note 4
2340.010	50.2	H	54.0	-3.8	Peak	199	2.2	Note 4

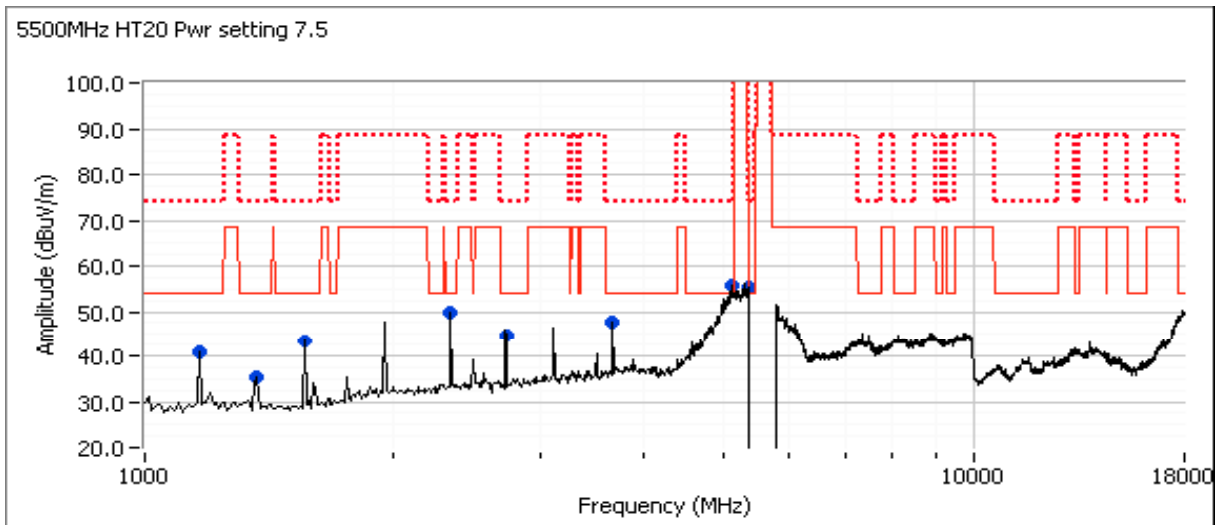
- Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
- Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
- Note 3: For any above emissions above the limit in 4500MHz~5150MHz and 5350~5460MHz bands refer to band edge testing result.
- Note 4: Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move
- Note 5: Scans made between 18 - 40GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #4, Radiated Spurious Emissions, 1-40GHz, Various, Chain A+B
 Date of Test: 1/16/2012 Test Location: FT5
 Test Engineer: Jack Liu Config Change: None

Run #4a: EUT on Channel 5500 MHz HT20 - Various, Chain A+B

	Target (dBm)	Power Settings Measured (dBm)	Software Setting
Chain A+B	-	-	7.5



Spurious Radiated Emissions:

Frequency MHz	Level dBuV/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
3666.700	47.2	V	54.0	-6.8	AVG	3	1.3	
3666.670	50.4	V	74.0	-23.6	PK	3	1.3	
5108.020	50.4	V	54.0	-3.6	AVG	355	1.3	Note 3
5102.620	62.4	V	74.0	-11.6	PK	355	1.3	Note 3
5350.010	50.9	H	54.0	-3.1	AVG	355	1.3	Note 3
5351.150	61.8	H	74.0	-12.2	PK	355	1.3	Note 3
1560.240	43.5	V	54.0	-10.5	Peak	154	1.0	Note 4
1170.340	40.8	H	54.0	-13.2	Peak	172	1.6	Note 4
2730.360	44.8	H	54.0	-9.2	Peak	172	1.6	Note 4
2340.010	49.9	H	54.0	-4.1	Peak	197	2.2	Note 4
1365.140	35.4	H	54.0	-18.6	Peak	203	1.0	Note 4

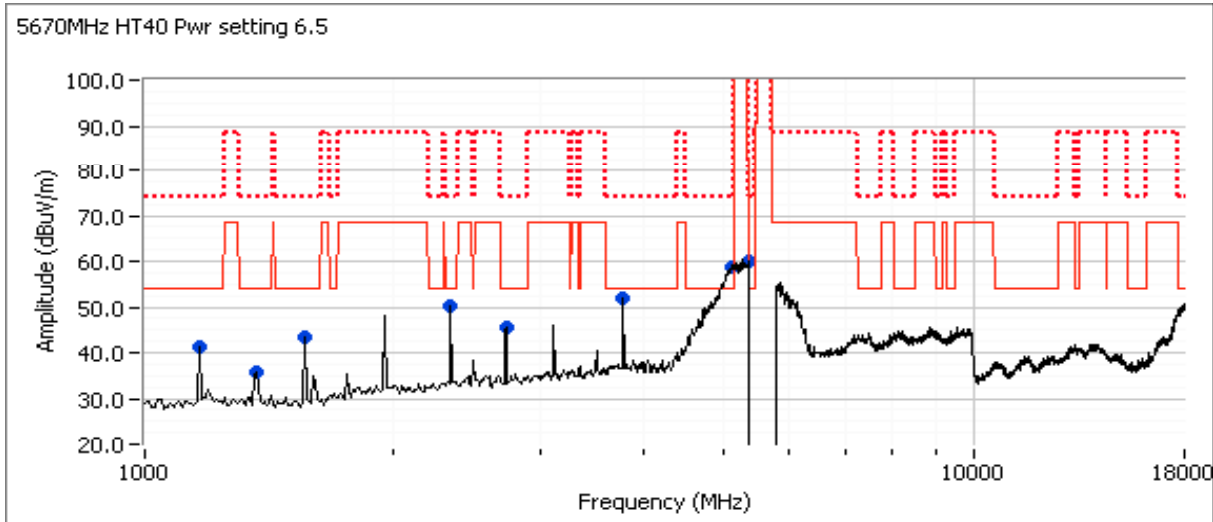
continues on the next page

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

- Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
- Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
- Note 3: For any above emissions failed in 4500MHz~5150MHz and 5350~5460MHz please refer to band Edge testing result.
- Note 4: Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move

Run #4b: EUT on Channel 5670 MHz HT40 - Various, Chain A+B
 Date of Test: 1/16/2012 Test Location: FT5
 Test Engineer: Jack Liu Config Change: None

	Target (dBm)	Power Settings Measured (dBm)	Software Setting
Chain A+B			6.5



Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector PK/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
3780.000	51.2	V	54.0	-2.8	AVG	347	1.0	
3779.890	53.1	V	74.0	-20.9	PK	347	1.0	
5120.210	52.7	V	54.0	-1.3	AVG	358	1.6	Note 3
5141.780	63.7	V	74.0	-10.3	PK	358	1.6	Note 3
5350.070	53.8	V	54.0	-0.2	AVG	339	1.3	Note 3
5354.500	64.4	V	74.0	-9.6	PK	339	1.3	Note 3
1170.340	41.4	H	54.0	-12.6	Peak	156	1.6	Note 4
1364.990	35.9	H	54.0	-18.1	Peak	172	1.0	Note 4
2730.520	45.5	H	54.0	-8.5	Peak	174	1.6	Note 4
1560.090	43.2	V	54.0	-10.8	Peak	175	1.0	Note 4
2340.010	50.4	H	54.0	-3.6	Peak	195	2.2	Note 4

- Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
- Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). Refer to RF port measurements for any significant emissions.
- Note 3: For any above emissions failed in 4500MHz~5150MHz and 5350~5460MHz please refer to band Edge testing result.
- Note 4: Digital signal. 1:Radio off the signal still on. 2: Radio on and Change the channel. The signal didn't change or move

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #5, Radiated Spurious Emissions, 1-18GHz, Various, Receive Mode

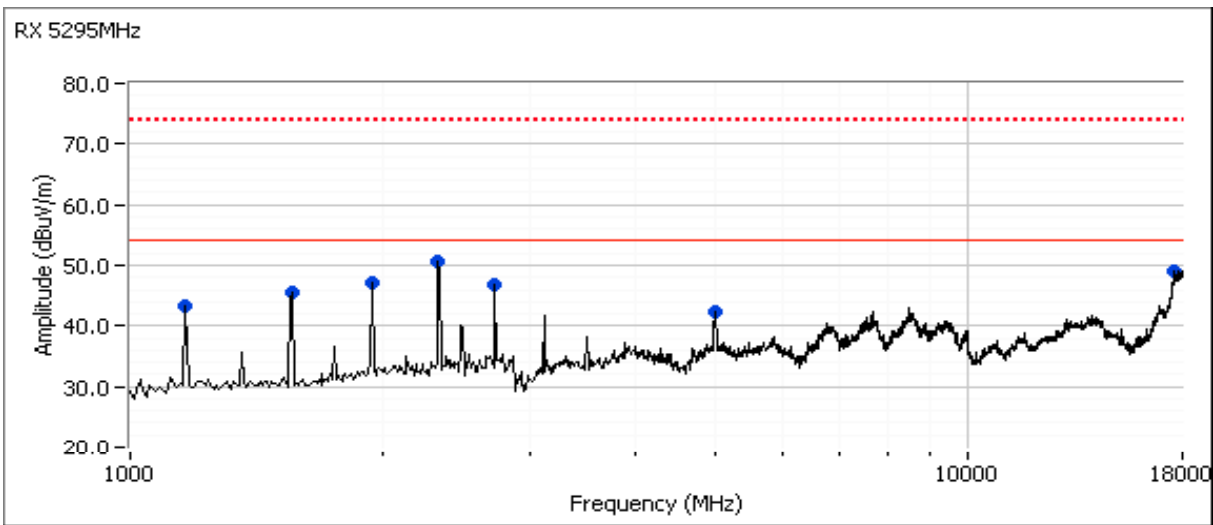
Run #5a: EUT on Channel 5295 MHz, Receive Mode

Date of Test: 1/13/2012 & 1/16/2012

Test Location: FT3/ FT5

Test Engineer: Jack Liu

Config Change: None



Frequency MHz	Level dBuV/m	Pol v/h	RSS-GEN		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4997.590	34.6	V	54.0	-19.4	AVG	169	1.3	
4998.230	50.3	V	74.0	-23.7	PK	169	1.3	
17573.810	39.7	H	54.0	-14.3	AVG	38	1.9	
17573.240	50.8	H	74.0	-23.2	PK	38	1.9	
1170.030	43.2	H	54.0	-10.8	Peak	115	1.0	Note1
2730.350	46.8	V	54.0	-7.2	Peak	176	1.3	Note1
2339.840	50.7	H	54.0	-3.3	Peak	190	1.3	Note1
1559.930	45.6	H	54.0	-8.4	Peak	209	1.0	Note1
1949.970	47.0	H	54.0	-7.0	Peak	222	1.9	Note1

Note 1: Digital signal. (Seen in TX and Stand-by modes)

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

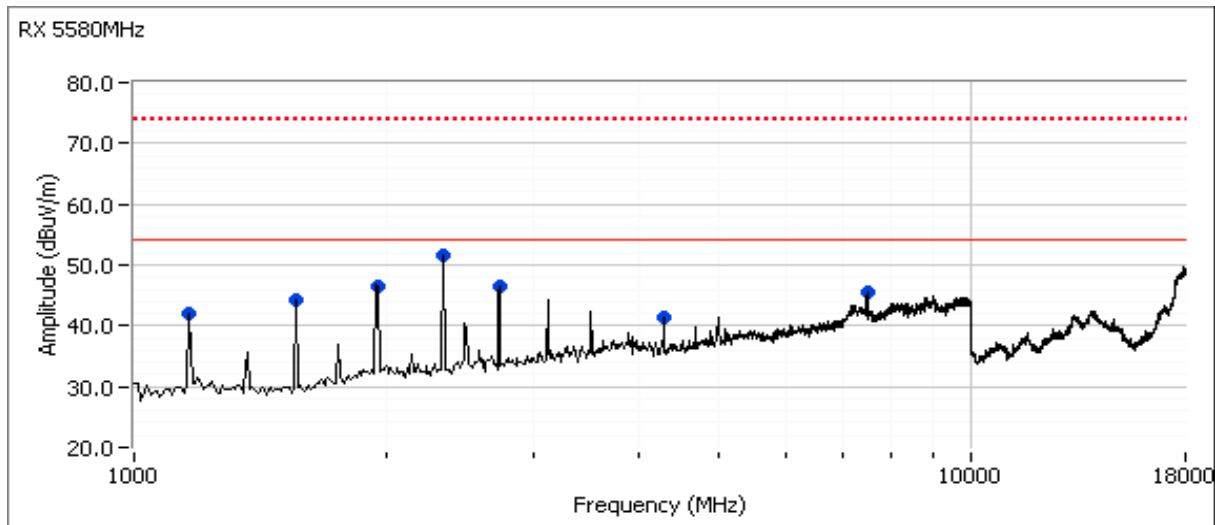
Run #5b: EUT on Channel 5580 MHz, Receive Mode

Date of Test: 1/17/2012

Test Location: FT5

Test Engineer: Jack Liu

Config Change: None



Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	RSS-GEN		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4289.980	38.9	H	54.0	-15.1	AVG	188	1.0	
4289.980	46.0	H	74.0	-28.0	PK	188	1.0	
7495.790	38.1	V	54.0	-15.9	AVG	95	1.0	
7494.450	52.6	V	74.0	-21.4	PK	95	1.0	
2340.010	51.7	H	54.0	-2.3	Peak	191	1.3	Note1
2730.090	46.4	H	54.0	-7.6	Peak	191	1.3	Note1
1950.010	46.4	H	54.0	-7.6	Peak	200	1.6	Note1
1559.990	44.2	V	54.0	-9.8	Peak	150	1.0	Note1
1170.060	42.1	H	54.0	-11.9	Peak	156	1.3	Note1

Note 1: Digital signal. (Seen in TX and Stand-by modes)

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Standard:	RSS 210, FCC 15E	Class:	N/A

RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located outside the chamber with cables routed beneath the floor.

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	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run #1	HT20 Chain A+B	Low Channel			Band Edge at 5250 MHz	15 E	Used conducted measurement
Run #1		5320MHz	7.5	-	Restricted Band Edge at 5350 MHz	15.209	51.2dBµV/m @ 5354.4MHz (-2.8dB)
Run #1		5500MHz	7.5	-	Restricted Band Edge at 5460 MHz	15.209	50.9dBµV/m @ 5456.1MHz (-3.1dB)
					Band Edge at 5470 MHz	15 E	Used conducted measurement
Run #1		High channel			Band Edge at 5725 MHz	15 E	Used conducted measurement
Run #2	HT40 Chain A+B	Low Channel			Band Edge at 5250 MHz	15 E	Used conducted measurement
Run #2		5310MHz	6.5	-	Restricted Band Edge at 5350 MHz	15.209	53.7dBµV/m @ 5350.2MHz (-0.3dB)
Run #2		5510MHz	6.5	-	Restricted Band Edge at 5460 MHz	15.209	51.6dBµV/m @ 5459.2MHz (-2.4dB)
					Band Edge at 5470 MHz	15 E	Used conducted measurement
Run #2		High channel			Band Edge at 5725 MHz	15 E	Used conducted measurement

continues on the next page

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Run #	Mode	Channel	Target Power	Measured Power	Test Performed	Limit	Result / Margin
Run #3	HT5 Chain A+B	Low Channel			Band Edge at 5250 MHz	15 E	Used conducted measurement
Run #3		5340MHz	6.0	-	Restricted Band Edge at 5350 MHz	15.209	52.3dBμV/m @ 5350.1MHz (-1.7dB)
Run #3		5475MHz	6.0	-	Restricted Band Edge at 5460 MHz	15.209	50.6dBμV/m @ 5459.5MHz (-3.4dB)
					Band Edge at 5470 MHz	15 E	Used conducted measurement
Run #3		High channel			Band Edge at 5725 MHz	15 E	Used conducted measurement

Modifications Made During Testing

No modifications were made to the EUT during testing
Sample SN:1142k002722B0828E "2011-2412"

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Run #1, Band Edge Field Strength - HT20, Chain A+B

Run #1a, EUT on Channel 5265MHz - HT20, Chain A+B

Compliance with -27dBm/MHz eirp limit demonstrated through a conducted measurement.

Run #1b, EUT on Channel 5320MHz - HT20, Chain A+B

Date of Test: 1/17/2012

Test Location: FT5

Test Engineer: Jack Liu

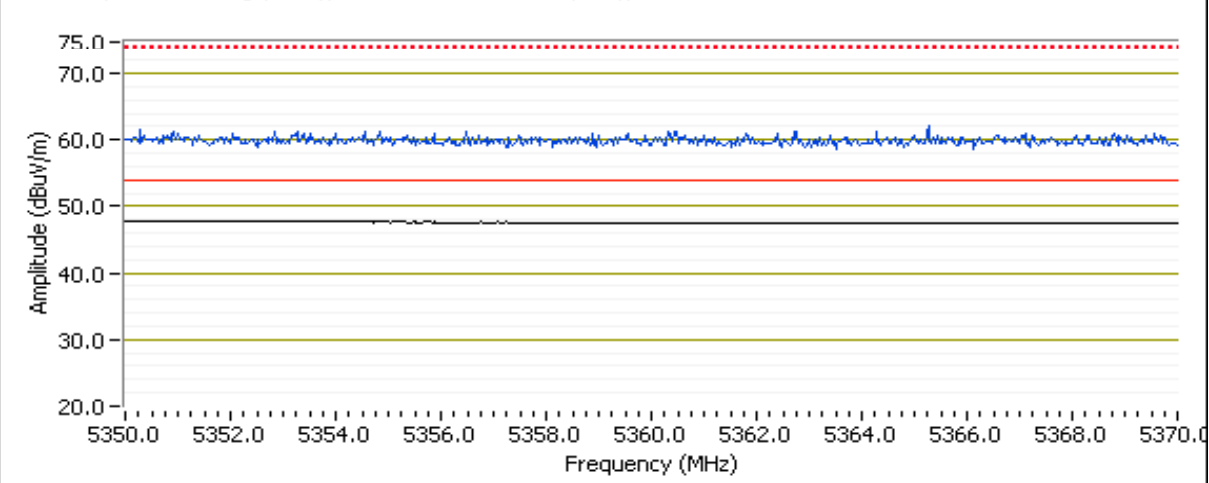
Config Change: None

Power Setting: 7.5

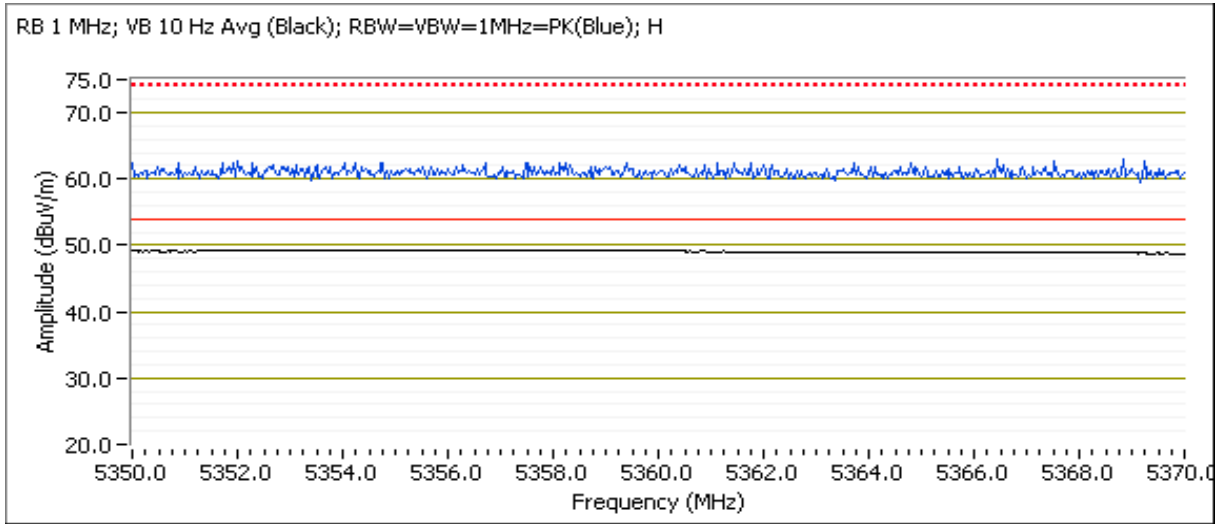
5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.400	49.8	V	54.0	-4.2	AVG	359	1.0	
5352.170	61.0	V	74.0	-13.0	PK	359	1.0	
5354.400	51.2	H	54.0	-2.8	AVG	1	1.1	
5356.400	62.8	H	74.0	-11.2	PK	1	1.1	

RB 1 MHz; VB 10 Hz Avg (Black); RBW=VBW=1MHz=PK(Blue); V



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Run #1c, EUT on Channel 5500MHz - HT20, Chain A+B

Date of Test: 1/17/2012

Test Location: FT5

Test Engineer: Jack Liu

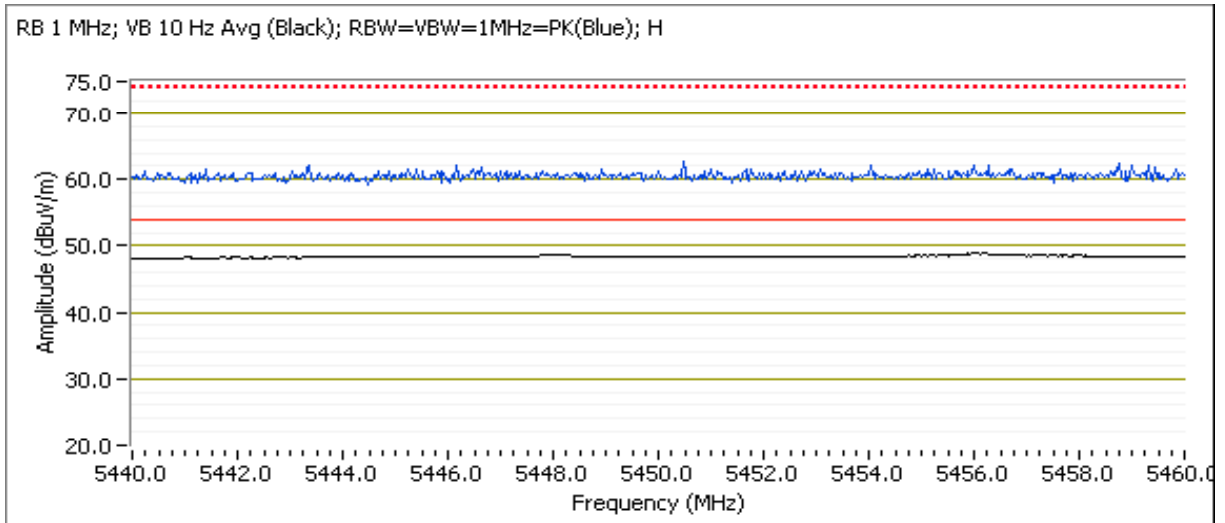
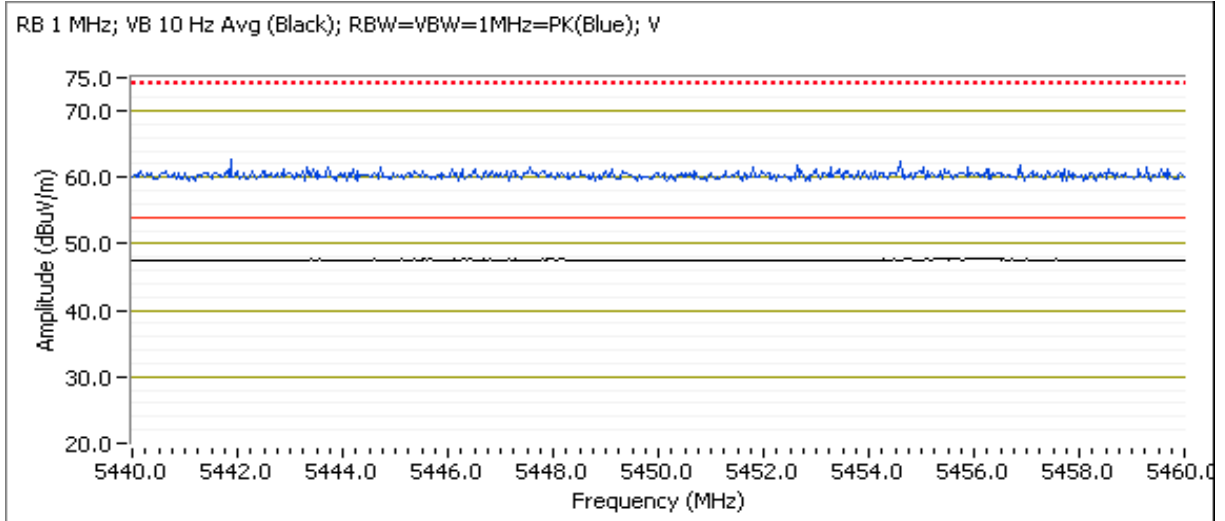
Config Change: None

Power Setting: 7.5

5460 MHz Restricted Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5455.030	49.8	V	54.0	-4.2	AVG	360	1.3	
5440.800	60.9	V	74.0	-13.1	PK	360	1.3	
5456.100	50.9	H	54.0	-3.1	AVG	5	1.2	
5451.870	61.9	H	74.0	-12.1	PK	5	1.2	

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A



Run #1d, 5460-5470 MHz Band Edge Signal Radiated Field Strength
 Compliance with -27dBm/MHz eirp limit demonstrated through a conducted measurement.

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A

Run #2, Band Edge Field Strength - HT40, Chain A+B

Run #2a, EUT on Channel 5275MHz - HT40, Chain A+B

Compliance with -27dBm/MHz eirp limit demonstrated through a conducted measurement.

Run #2b, EUT on Channel 5310MHz - HT40, Chain A+B

Date of Test: 1/17/2012

Test Location: FT5

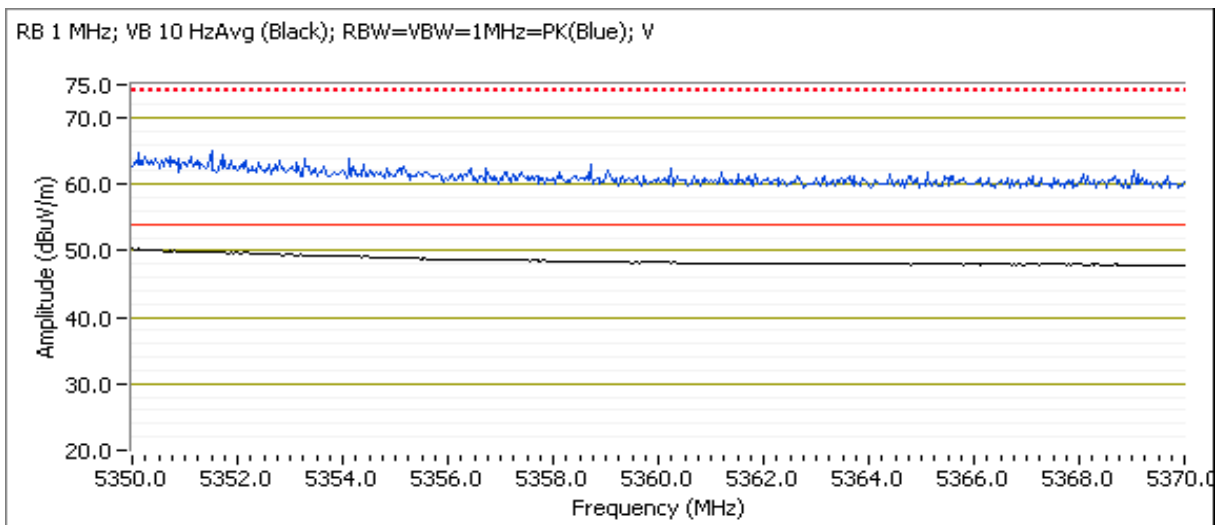
Test Engineer: Jack Liu

Config Change: None

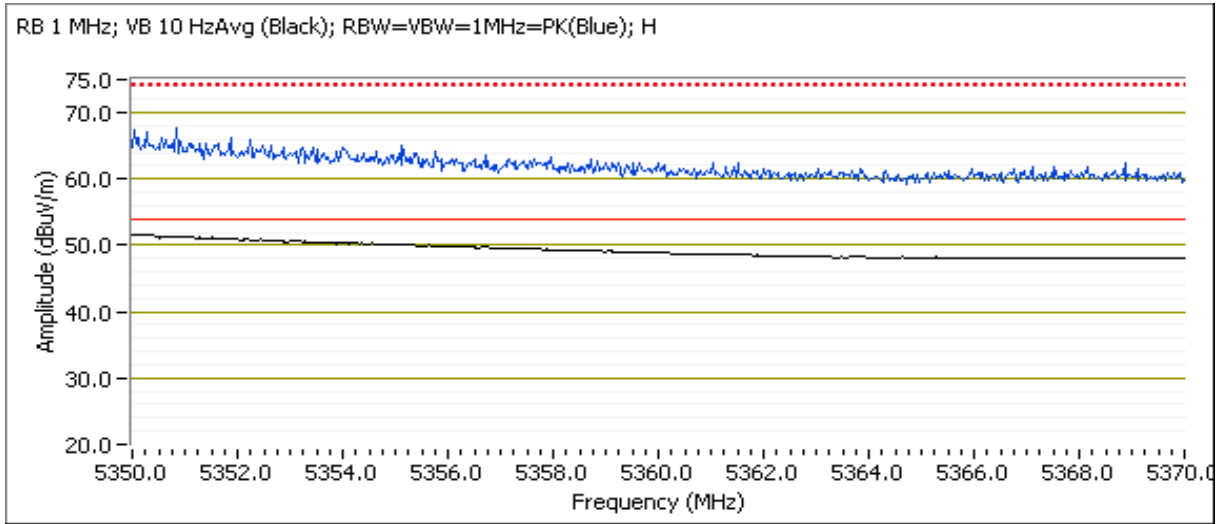
Power Setting: 6.5

5350 MHz Band Edge Signal Radiated Field Strength

Frequency MHz	Level dB μ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5350.000	52.2	V	54.0	-1.8	AVG	358	1.1	Pwr setting 6.5
5352.530	64.2	V	74.0	-9.8	PK	358	1.1	Pwr setting 6.5
5350.200	53.7	H	54.0	-0.3	AVG	0	1.3	Pwr setting 6.5
5350.070	66.0	H	74.0	-8.0	PK	0	1.3	Pwr setting 6.5
5350.030	53.0	V	54.0	-1.0	AVG	358	1.1	Pwr setting 7
5351.800	65.2	V	74.0	-8.8	PK	358	1.1	Pwr setting 7
5350.130	54.8	H	54.0	0.8	AVG	1	1.3	Pwr setting 7
5350.130	67.5	H	74.0	-6.5	PK	1	1.3	Pwr setting 7



Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A



Run #2c, EUT on Channel 5510MHz - HT40, Chain A+B

Date of Test: 1/17/2012

Test Location: FT5

Test Engineer: Jack Liu

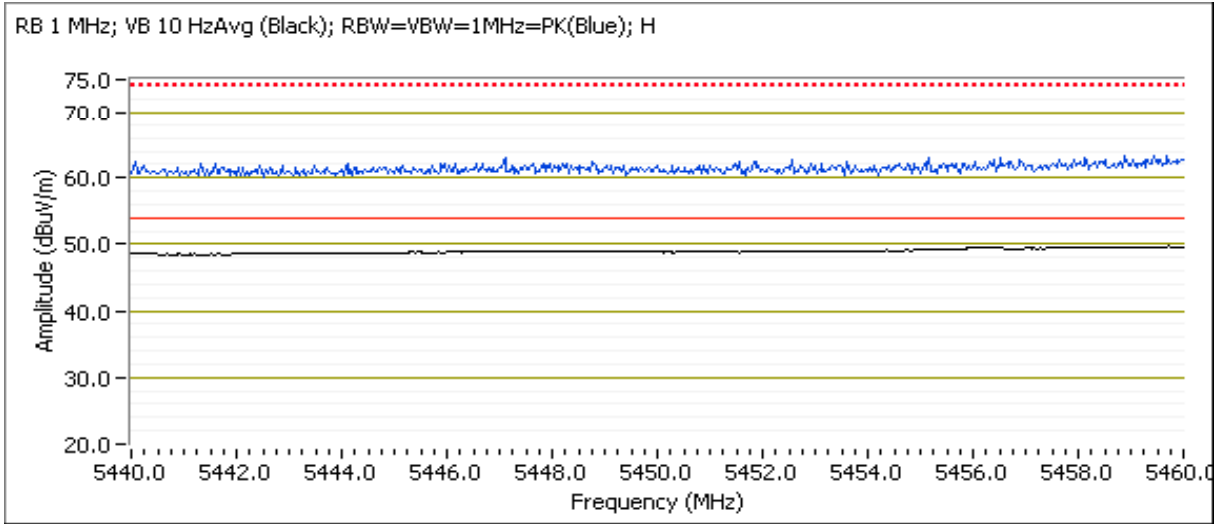
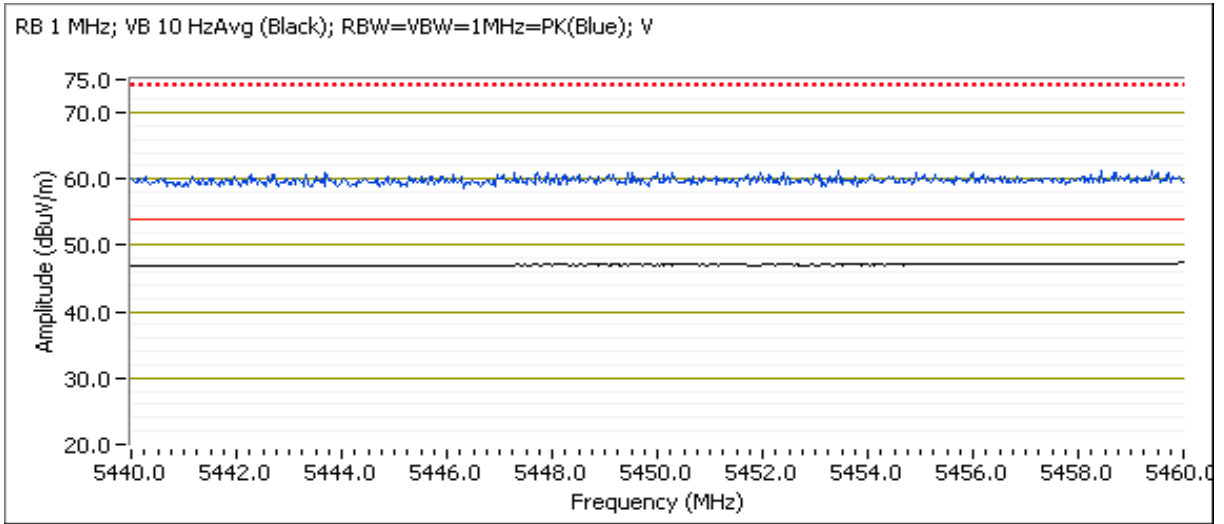
Config Change: None

Power Setting: 6.5

5460 MHz Restricted Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5459.230	49.5	V	54.0	-4.5	AVG	359	1.0	
5448.970	60.9	V	74.0	-13.1	PK	359	1.0	
5459.170	51.6	H	54.0	-2.4	AVG	358	1.2	
5441.970	62.6	H	74.0	-11.4	PK	358	1.2	

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A



Run #2d, 5460-5470 MHz Band Edge Signal Radiated Field Strength
 Compliance with -27dBm/MHz eirp limit demonstrated through a conducted measurement.

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A

Run #3, Band Edge Field Strength - HT5, Chain A+B

Run #3a, EUT on Channel 5255MHz, Chain A+B

Compliance with -27dBm/MHz eirp limit demonstrated through a conducted measurement.

Run #3b, EUT on Channel 5340MHz, Chain A+B

Date of Test: 1/17/2012

Test Location: FT5

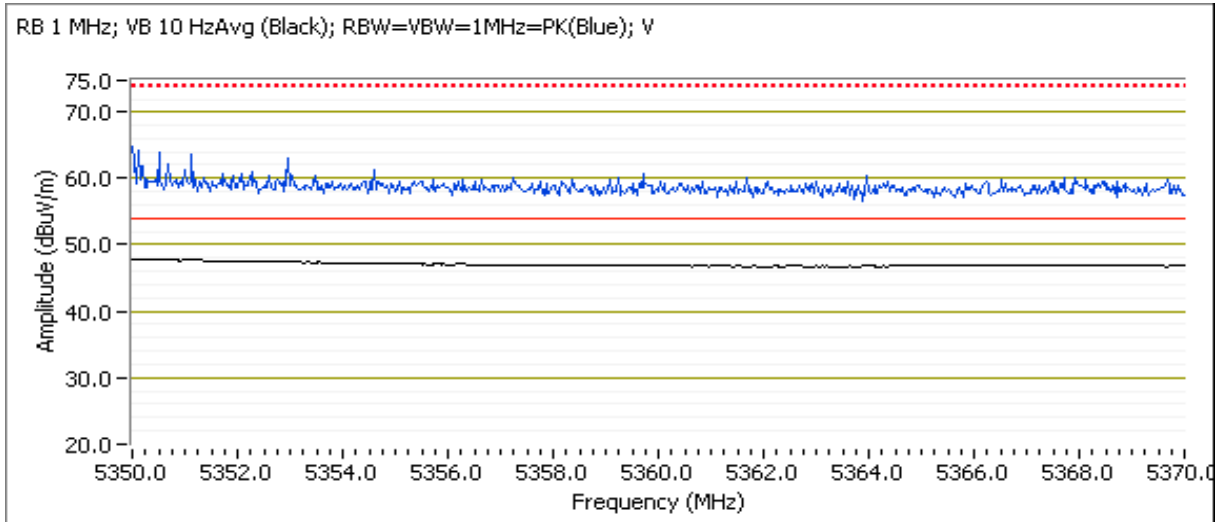
Test Engineer: Jack Liu

Config Change: None

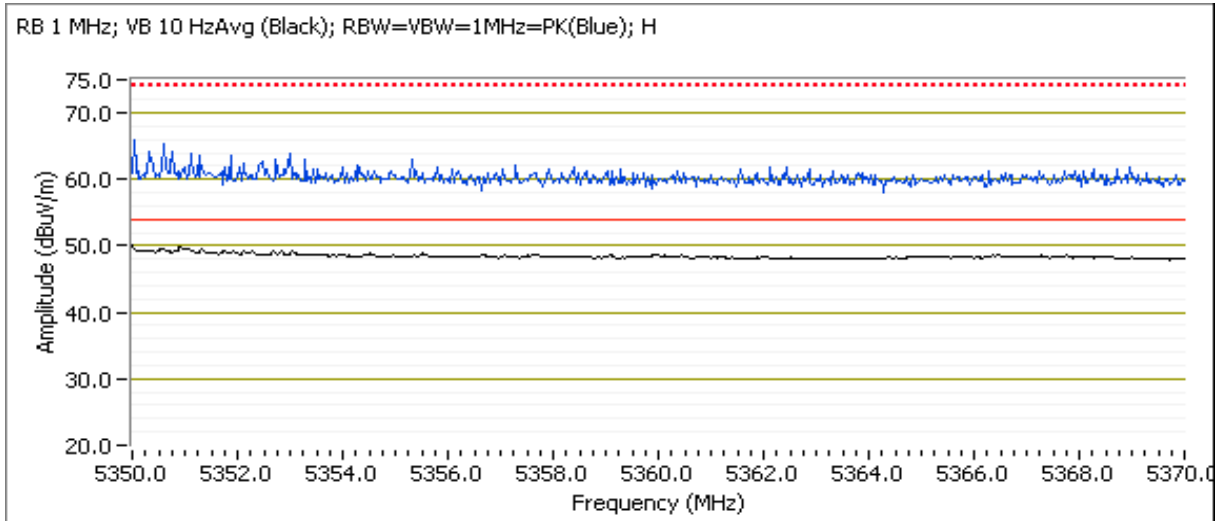
Power Setting: 6.0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.070	52.3	H	54.0	-1.7	AVG	359	1.2	
5350.300	65.4	H	74.0	-8.6	PK	359	1.2	
5350.000	49.7	V	54.0	-4.3	AVG	360	1.1	
5363.370	61.5	V	74.0	-12.5	PK	360	1.1	



Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: N/A



Run #3c, EUT on Channel 5475MHz, Chain A+B

Date of Test: 1/17/2012

Test Location: FT5

Test Engineer: Jack Liu

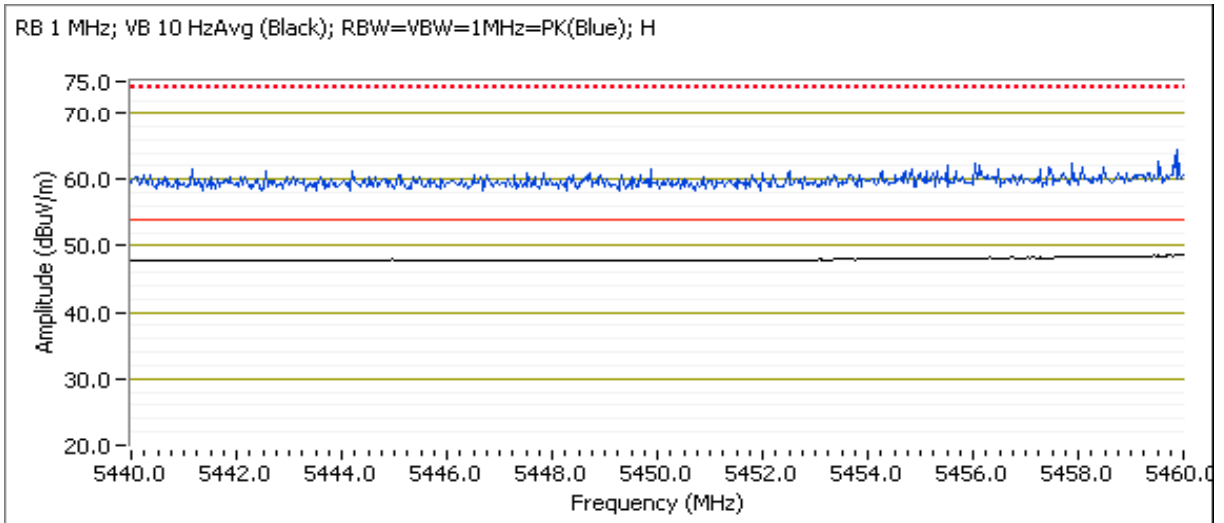
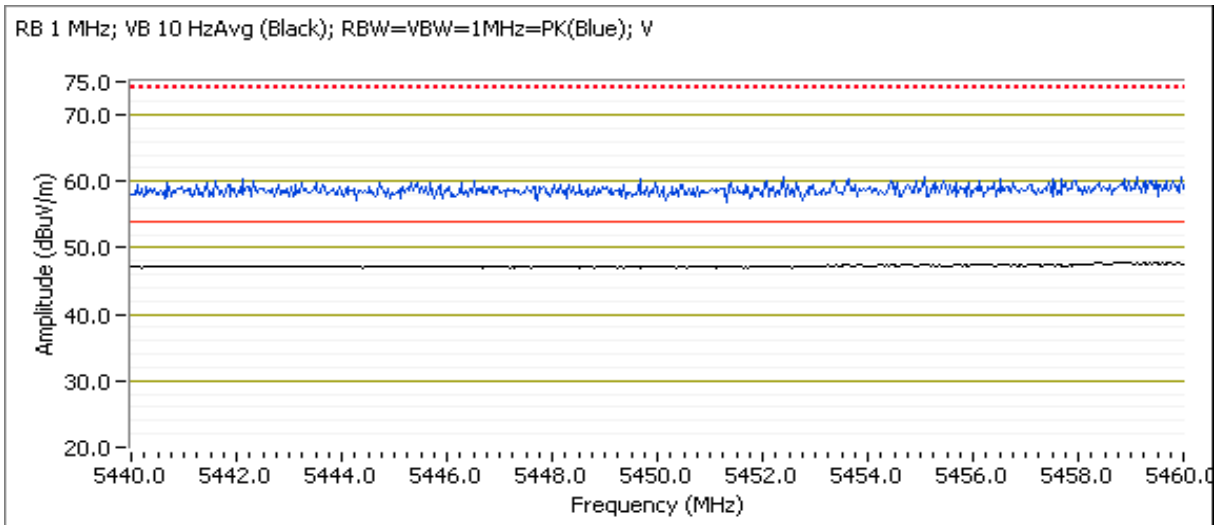
Config Change: None

Power Setting: 6.0

5460 MHz Restricted Band Edge Signal Radiated Field Strength

Frequency MHz	Level dB μ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5459.530	49.9	V	54.0	-4.1	AVG	360	1.3	
5447.470	62.6	V	74.0	-11.4	PK	360	1.3	
5459.470	50.6	H	54.0	-3.4	AVG	0	1.1	
5457.600	63.3	H	74.0	-10.7	PK	0	1.1	

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	N/A



Run #3d, 5460-5470 MHz Band Edge Signal Radiated Field Strength
 Compliance with -27dBm/MHz eirp limit demonstrated through a conducted measurement.

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Standard:	RSS 210, FCC 15E	Class:	-

Conducted Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

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

Date of Test: 1/17/2012	Config. Used: 1
Test Engineer: Jack Liu	Config Change: None
Test Location: Fremont Chamber #5	EUT Voltage: 120V/60Hz

General Test Configuration

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

Ambient Conditions:	Temperature:	22 °C
	Rel. Humidity:	38 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 120V/60Hz	15.207	Pass	39.5dBµV @ 0.418MHz (-8.0dB)

Modifications Made During Testing

No modifications were made to the EUT during testing
Sample SN:1142k002722B0828E "2011-2412" with POE S/N11040068429

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	-

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

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

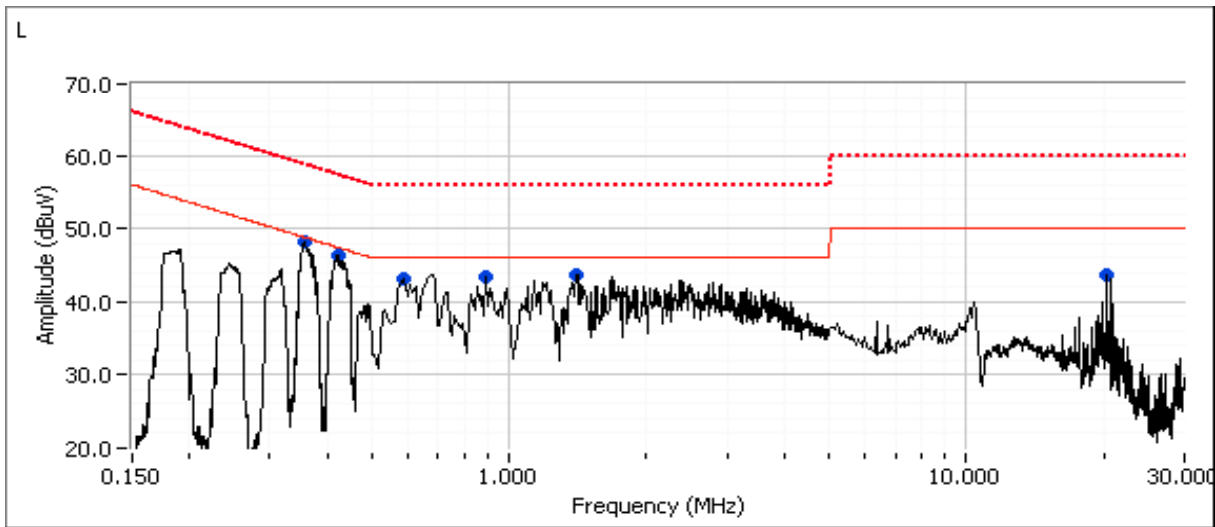
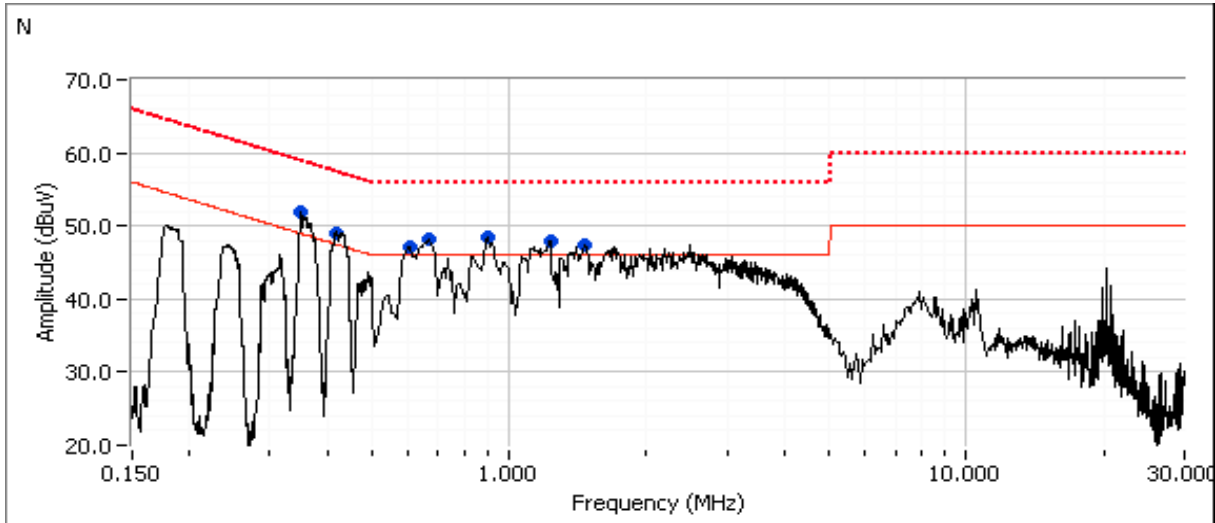
Frequency MHz	Level dB μ V	AC Line	FCC 15.207		Detector QP/Ave	Comments
			Limit	Margin		
0.676	48.2	Neutral	46.0	2.2	Peak	
0.598	47.1	Neutral	46.0	1.1	Peak	
0.897	48.4	Neutral	46.0	2.4	Peak	
1.224	47.9	Neutral	46.0	1.9	Peak	
1.476	47.3	Neutral	46.0	1.3	Peak	
0.354	51.8	Neutral	48.9	2.9	Peak	
0.418	49.1	Neutral	47.4	1.7	Peak	
0.356	48.1	Line	48.8	-0.7	Peak	
0.422	46.2	Line	47.4	-1.2	Peak	
0.599	43.2	Line	46.0	-2.8	Peak	
0.887	43.3	Line	46.0	-2.7	Peak	
1.405	43.7	Line	46.0	-2.3	Peak	
20.289	43.6	Line	50.0	-6.4	Peak	

Client:	Ubiquiti Networks	Job Number:	J82753
Model:	NanoStation M5	T-Log Number:	T85881
Contact:	Jennifer Sanchez	Account Manager:	Susan Pelzl
Standard:	RSS 210, FCC 15E	Class:	-

Final quasi-peak and average readings

Frequency MHz	Level dB μ V	AC Line	FCC 15.207		Detector QP/Ave	Comments
			Limit	Margin		
0.418	39.5	Neutral	47.5	-8.0	AVG	
0.354	50.4	Neutral	58.9	-8.5	QP	
0.598	36.6	Neutral	46.0	-9.4	AVG	
0.418	48.0	Neutral	57.5	-9.5	QP	
0.598	46.2	Neutral	56.0	-9.8	QP	
0.676	46.1	Neutral	56.0	-9.9	QP	
0.676	36.0	Neutral	46.0	-10.0	AVG	
0.897	45.6	Neutral	56.0	-10.4	QP	
0.354	38.3	Neutral	48.9	-10.6	AVG	
20.289	39.1	Line 1	50.0	-10.9	AVG	
0.897	34.1	Neutral	46.0	-11.9	AVG	
1.476	43.9	Neutral	56.0	-12.1	QP	
1.224	43.8	Neutral	56.0	-12.2	QP	
0.356	45.7	Line 1	58.8	-13.1	QP	
0.421	43.8	Line 1	57.4	-13.6	QP	
0.421	33.7	Line 1	47.4	-13.7	AVG	
0.599	41.7	Line 1	56.0	-14.3	QP	
1.476	31.6	Neutral	46.0	-14.4	AVG	
1.224	31.3	Neutral	46.0	-14.7	AVG	
0.356	33.8	Line 1	48.8	-15.0	AVG	
0.887	40.7	Line 1	56.0	-15.3	QP	
0.599	29.2	Line 1	46.0	-16.8	AVG	
20.289	41.6	Line 1	60.0	-18.4	QP	
1.405	37.3	Line 1	56.0	-18.7	QP	
0.887	26.1	Line 1	46.0	-19.9	AVG	
1.405	25.3	Line 1	46.0	-20.7	AVG	

Client: Ubiquiti Networks	Job Number: J82753
Model: NanoStation M5	T-Log Number: T85881
Contact: Jennifer Sanchez	Account Manager: Susan Pelzl
Standard: RSS 210, FCC 15E	Class: -



End of Report

This page is intentionally blank and marks the last page of this test report.