TEST REPORT

Report Number: 102374971MPK-008
Project Number: G102374971
March 29, 2016

Testing performed on the
IQ Panel 2 Home Security Panel
Models: IQPANEL2, IQPANEL2-ZW, IQPANEL2-ZB, IQPANEL2-ZZ
FCC ID: 2AAJXQS-IQPANEL2
IC: 11205A-QSIQPANEL

To

FCC Part 15, Subpart E
RSS-247 Issue 1

For

Qolsys, Inc.

Test Performed by:	Test Authorized by:
Intertek	Qolsys, Inc.
1365 Adams Court	1900 The Alameda #420
Menlo Park, CA 94025 USA	San Jose, CA 95126 USA

Prepared by: _____ **Date:** March 29, 2016
Anderson Soungpanya

Reviewed by: _____ **Date:** March 29, 2016
Krishna K Vemuri

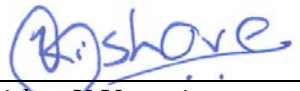
VERIFICATION OF COMPLIANCE
Report No. 102374971MPK-008

Verification is hereby issued to the named APPLICANT and is VALID ONLY for the equipment identified hereon for use under the rules and regulations listed below.

Equipment Under Test:	IQ Panel 2 Home Security Panel
Trade Name:	Qolsys, Inc.
Model No.:	IQPANEL2, IQPANEL2-ZW, IQPANEL2-ZB, IQPANEL2-ZZ
Serial No.:	QV903154300142AA & QV903154300152AA
Applicant:	Qolsys, Inc.
Contact:	Mark Skeen
Address:	1900 The Alameda #420 San Jose, CA 95126
Country	USA
Tel. Number:	(408) 857-8415
Email:	Mark.Skeen@qolsys.com
Applicable Regulation:	FCC Part 15, Subpart E RSS-247 Issue 1
Date of Test:	February 12 – March 7, 2016

We attest to the accuracy of this report:

Anderson Soungpanya
EMC Project Engineer



Krishna K Vemuri
Engineering Team Lead

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1.0 Introduction

1.1 Summary of Tests

Test	Reference FCC	Reference RSS-247	Result
26 dB Emission Band width and 99% Occupied Bandwidth	15.407(a)(1)(2)(3)	RSS-247, 6.2.2	Complies
Conducted Output Power	15.407(a)(1)(2)(3)	RSS-247, 6.2.2	Complies
Peak Power Spectral Density	15.407(a)(1)(2)(3)	RSS-247, 6.2.2	Complies
Undesirable Emissions	15.407(b)(1-8)	RSS-247, 6.2.2	Complies
Transmitter Radiated Emissions	15.407(b)(1-8) 15.209, 15.205	RSS-247, 6.2.2	Complies
Frequency stability	15.407(g)	RSS-Gen	Complies
Transmit power control (TPC)	15.407(h)(1)	RSS-247, 6.2.2	NA, EUT is less 250mW EIRP
Radar Detection Function of Dynamic Frequency Selection (DFS)	15.407(h)(2)	RSS-247, 6.3	Complies
Antenna Requirement	15.203	RSS-Gen	Complies. The EUT uses internal antenna and a unique connector

EUT receive date: January 18, 2016
EUT receive condition: The pre-production version of the EUT was received in good condition with no apparent damage. As declared by the Applicant, it is identical to the production units.
Test start date: February 12, 2016
Test completion date: March 07, 2016
The test results in this report pertain only to the item tested.

2.0 General Description

2.1 Product Description

Qolsys, Inc. supplied the following description of the EUT:

As described by the manufacturer, the EUT is a home security panel with cellular and WiFi/BT connection to the cloud, as well as specific radios for security sensors and automation.

This test report covers only the WiFi radio.

The information about the 5GHz radio, installed in the IQ Panel 2 Home Security Panel, is presented below.

Applicant	Qolsys, Inc.
Model No.	QS9201-1230-840
FCC Identifier	2AAJXQS-IQPANEL2
IC Identifier	11205A-QSIQPANEL2
Use of Product	WIFI Client (Client without radar detection)
Rated RF Output	18.90 dBm
Frequency Range	5250 – 5350 MHz
Type of modulation	OFDM
Antenna(s) & Gain	Internal Antenna, 2.2dBi peak gain
Manufacturer Name & Address	Qolsys, Inc. 1900 The Alameda #420 San Jose, CA 95126 USA

The EUT supports the following configurations:

Number	Frequency, MHz	802.11 a/n/ac 20MHz Channels		802.11 n/ac 40MHz Channels		802.11 ac 80MHz Channels	
52	5260	√	X				
54	5270			√	X		
56	5280	√					
58	5290					√	X
60	5300	√	X				
62	5310			√	X		
64	5320	√	X				

List of channels:
√ - available
X - tested

2.2 Related Submittal(s) Grants

None.

2.3 Test Methodology

Antenna conducted measurements were performed according to the FCC documents “Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E” (789033 D02 General U-NII Test Procedures New Rules).

Both AC mains line-conducted and radiated emissions measurements were performed according to the procedures in ANSI C63.4. Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **"Data Sheet"** of this Application.

All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The test site used to collect the radiated data is site 1 (10-m semi-anechoic chamber). This test facility and site measurement data have been fully placed on file with the FCC, IC and A2LA accredited.

2.5 Measurement Uncertainty

Compliance with the limits was based on the results of the measurements and doesn’t take into account the measurement uncertainty.

Estimated Measurement Uncertainty

Measurement	Expanded Uncertainty (k=2)		
	0.15 MHz – 1 GHz	1 GHz – 6 GHz	> 6 GHz
RF Power and Power Density – antenna conducted	1.1 dB	1.5 dB	–
Unwanted emissions - antenna conducted	1.2 dB	1.7 dB	2.0 dB
Bandwidth – antenna conducted	50 Hz	100 Hz	–
Radiated emissions	4.2 dB	5.4 dB	
AC mains conducted emissions	2.4 dB	-	-

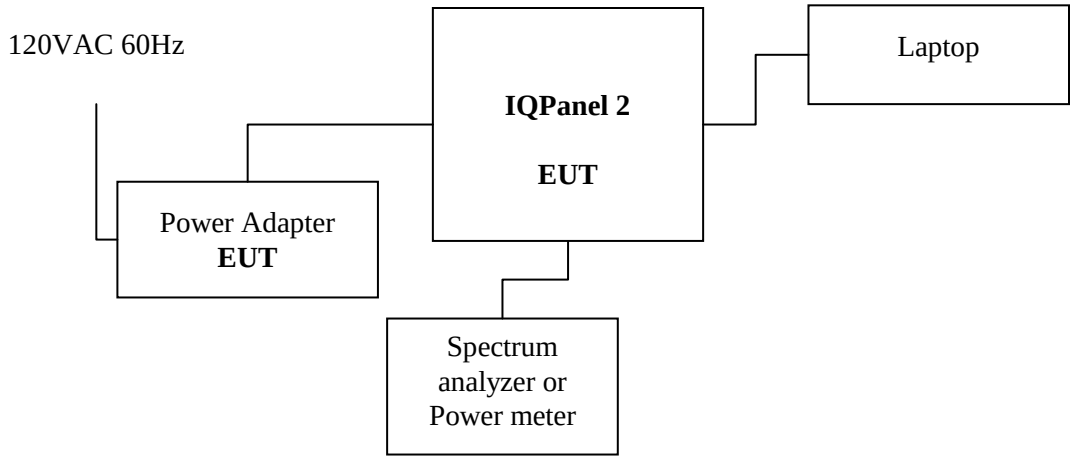
3.0 System Test Configuration

3.1 Support Equipment

Description	Manufacturer	Model No./ Part No.
Laptop	Dell	Inspiron 14

3.2 Block Diagram of Test Setup

Antenna was removed and co-axial connector with a cable was installed for Conducted Measurements.
50Ohm Load was used for Radiated Measurements.



Note: Power Adapter: Manufacturer: Sure Power; Model: SW-050200A

S = Shielded **U** = Unshielded	**F** = With Ferrite **m** = Meter

3.3 Justification

Preliminary testing was performed for all modulation/data rate modes. The following modes, in which the highest power was detected, were selected for final measurements:

OFDM, 6MB/s – for 802.11a
OFDM, MCS0 – for 802.11n/ac 20MHz
OFDM, MCS0 – for 802.11n/ac 40MHz
OFDM, MCS0 – for 802.11ac 80MH

The difference between the models: IQPANEL2, IQPANEL2-ZW, IQPANEL2-ZB, IQPANEL2-ZZ are as below:

Model: IQPANEL2: Home Security Panel consists of WiFi/BT/LTE radios and SRF receiver.
Model: IQPANEL2-ZW: model: IQPANEL2 with approved module having FCC ID: 2AAJXQS-ZWAVE and IC: 11205A-QSZWAVE.
Model: IQPANEL2-ZB: model: IQPANEL2 with approved module having FCC ID: 2AAJXQS-IS and IC: 11205A-QSIS.
Model: IQPANEL2-ZZ: model: IQPANEL2 with approved modules having FCC ID: 2AAJXQS-IS, FCC ID: 2AAJXQS-ZWAVE, IC: 11205A-QSIS and IC: 11205A-QSZWAVE.

All tests were performed on the fully populated Model: IQPANEL2-ZZ. The results in this report are valid for the other models IQPANEL2, IQPANEL2-ZW and IQPANEL2-ZB as well.

3.4 Mode of Operation During Test

During transmitter testing, the transmitter was setup to transmit continuously at maximum RF power on low, middle and high channels.

Frequency (MHz)	Channel	802.11a	802.11n 20 MHz	802.11n 40 MHz	802.11ac 80 MHz
5260	52	19	19	-	-
5270	54	-	-	17	-
5290	58	19	19	-	14
5300	60	-	-	-	-
5310	62	-	-	16	-
5320	54	18	17	-	-

3.5 Modifications required for Compliance

Intertek installed no modifications during compliance testing in order to bring the product into compliance.

3.6 Additions, deviations and exclusions from standards

No additions, deviations or exclusion have been made from standard.

4.0 Measurement Results

4.1 Emission Bandwidth and 99% Occupied Bandwidth

15.407(a)(1)(2)

4.1.1 Procedure

The Procedure, described in the FCC Publication 789033 D02 General U-NII Test Procedures New Rules, was used. Specifically Section C for Emission Bandwidth and Minimum Emission Bandwidth for the band 5.725-5.850 GHz. Section D was used for 99% Occupied Bandwidth.

The antenna port of the EUT was connected to the input of a spectrum analyzer (SA). For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier.

The Occupied bandwidth was measured using the build-in spectrum analyzer facility for 99% power bandwidth measurement.

Tested By:	Anderson Soungpanya
Test Date:	February 18 and 21, 2016

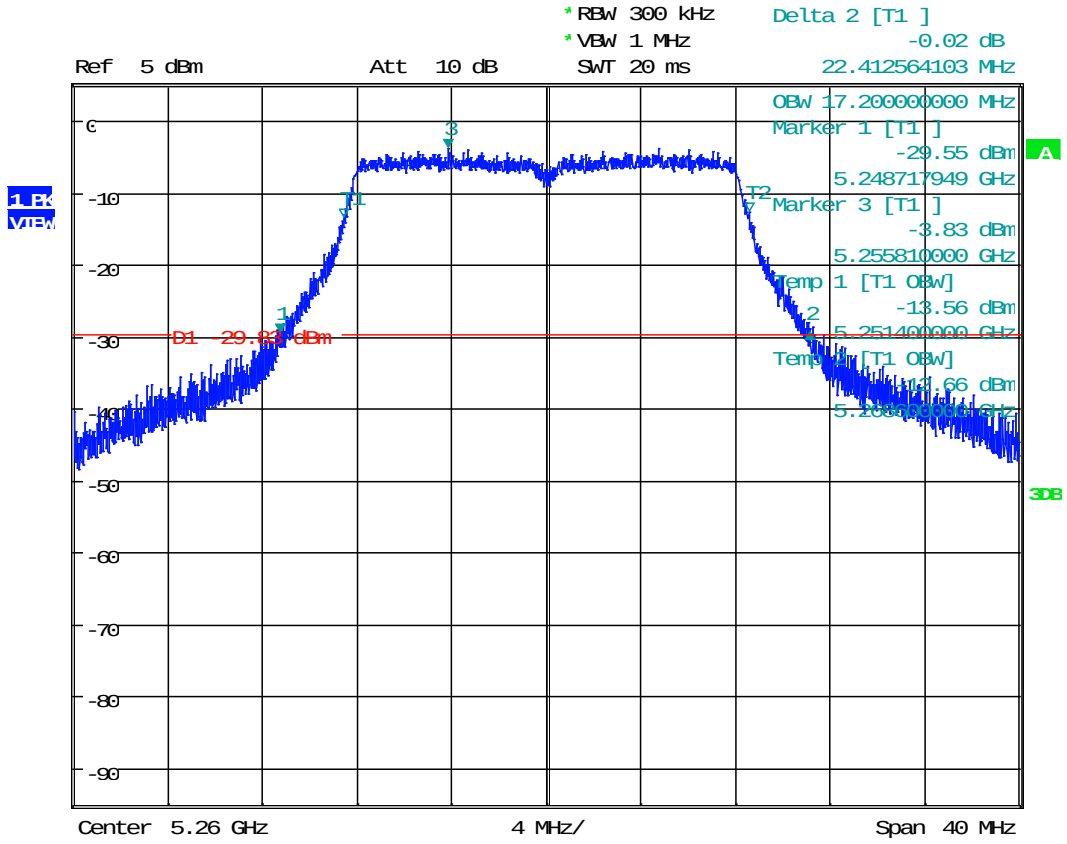
4.1.2 Test Result

Refer to the following plots for the test result:

Mode	Channel	Frequency, MHz	26-dB Bandwidth, MHz	Occupied Bandwidth, MHz	Plot #
802.11a	52	5260	22.259	17.480	1.1
	60	5300	21.859	17.400	1.2
	64	5320	22.051	17.500	1.3
802.11n 20MHz	52	5260	22.026	18.360	1.4
	60	5300	22.060	18.380	1.5
	64	5320	22.051	18.380	1.6
802.11n 40MHz	54	5270	40.593	36.610	1.7
	62	5310	40.606	36.575	1.8
802.11ac 80MHz	58	5290	82.115	75.880	1.9

Plot 1. 1

802.11a 5260MHz



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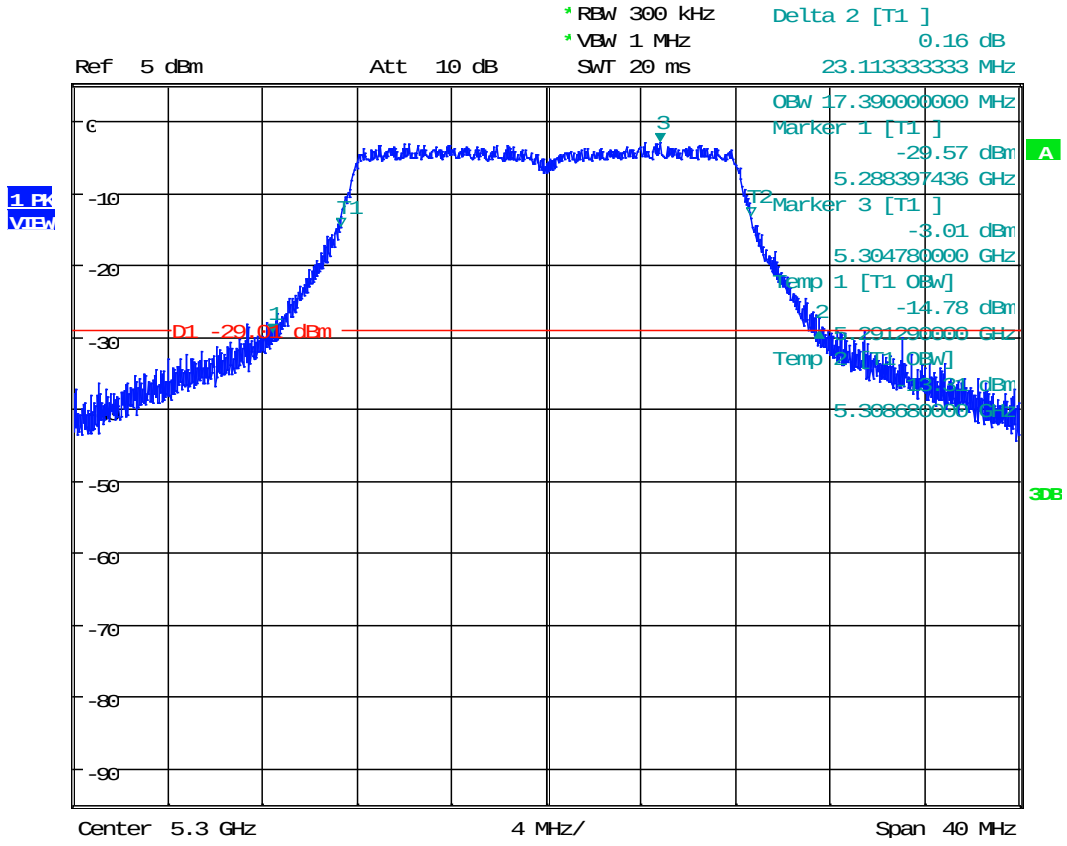
Plot 1. 2

802.11a 5300MHz



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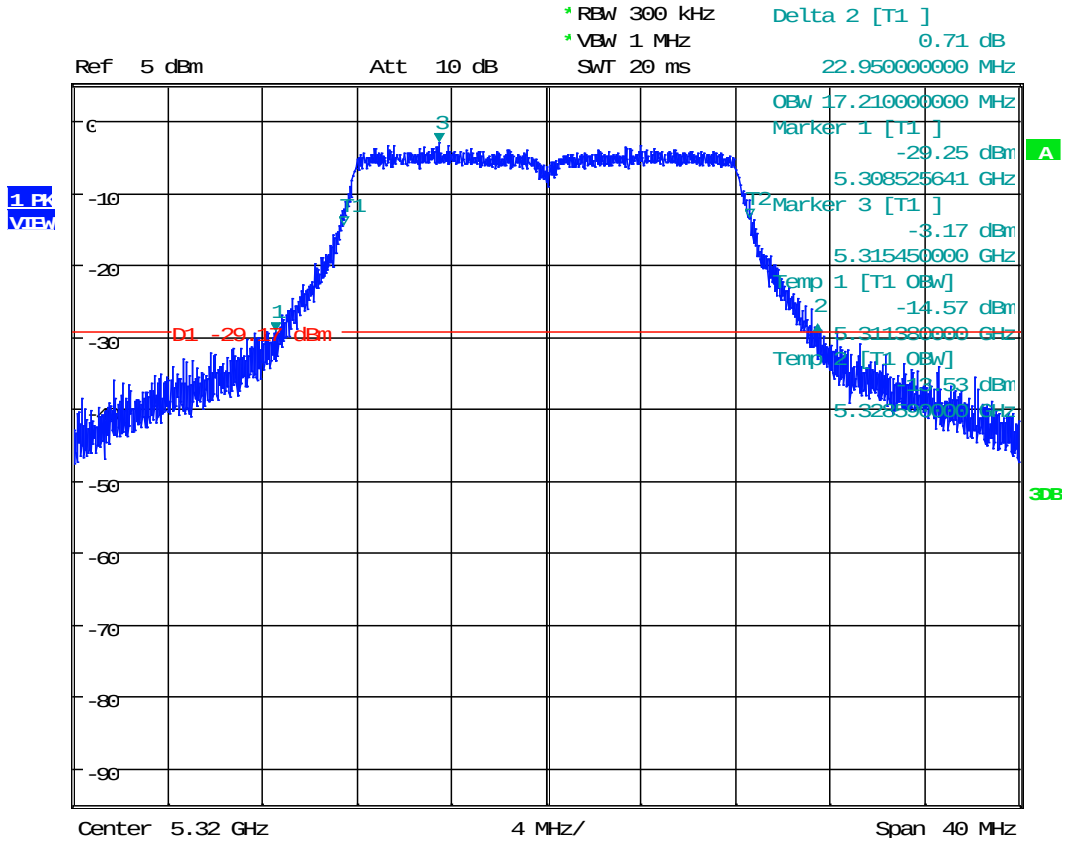
Plot 1. 3

802.11a 5320MHz



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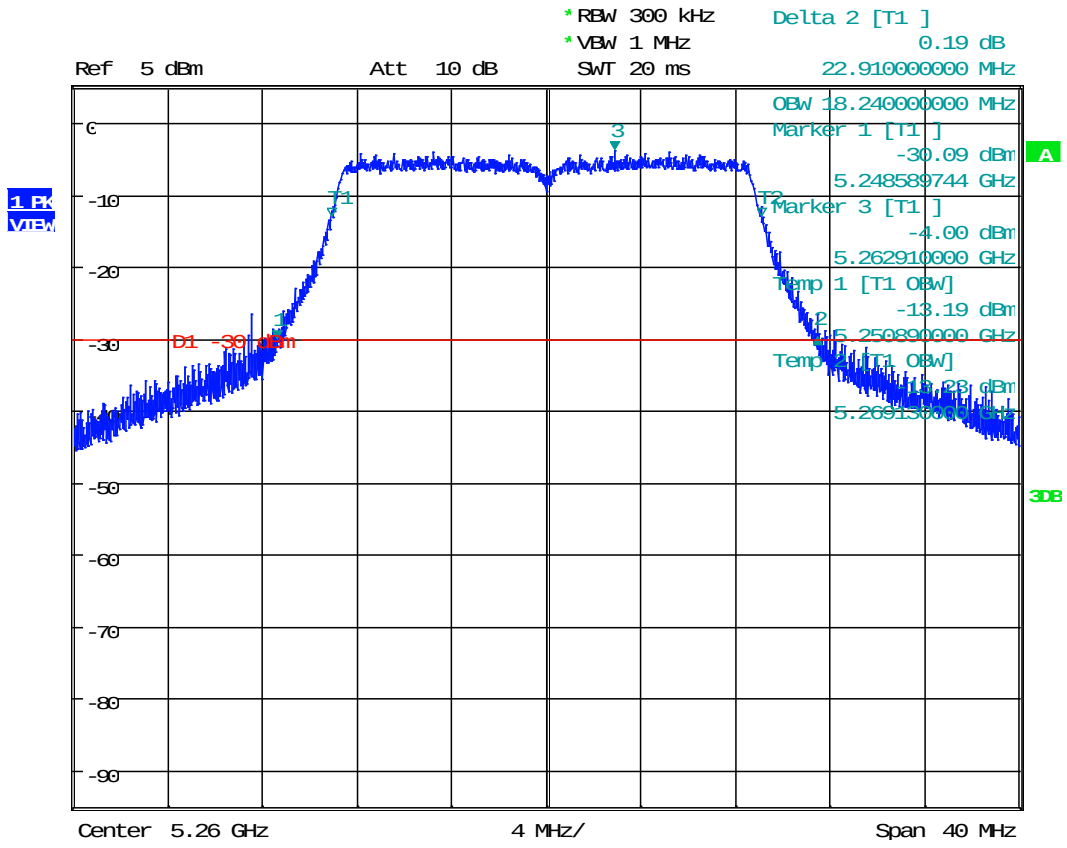
Plot 1. 4

802.11n 20MHz, 5260MHz



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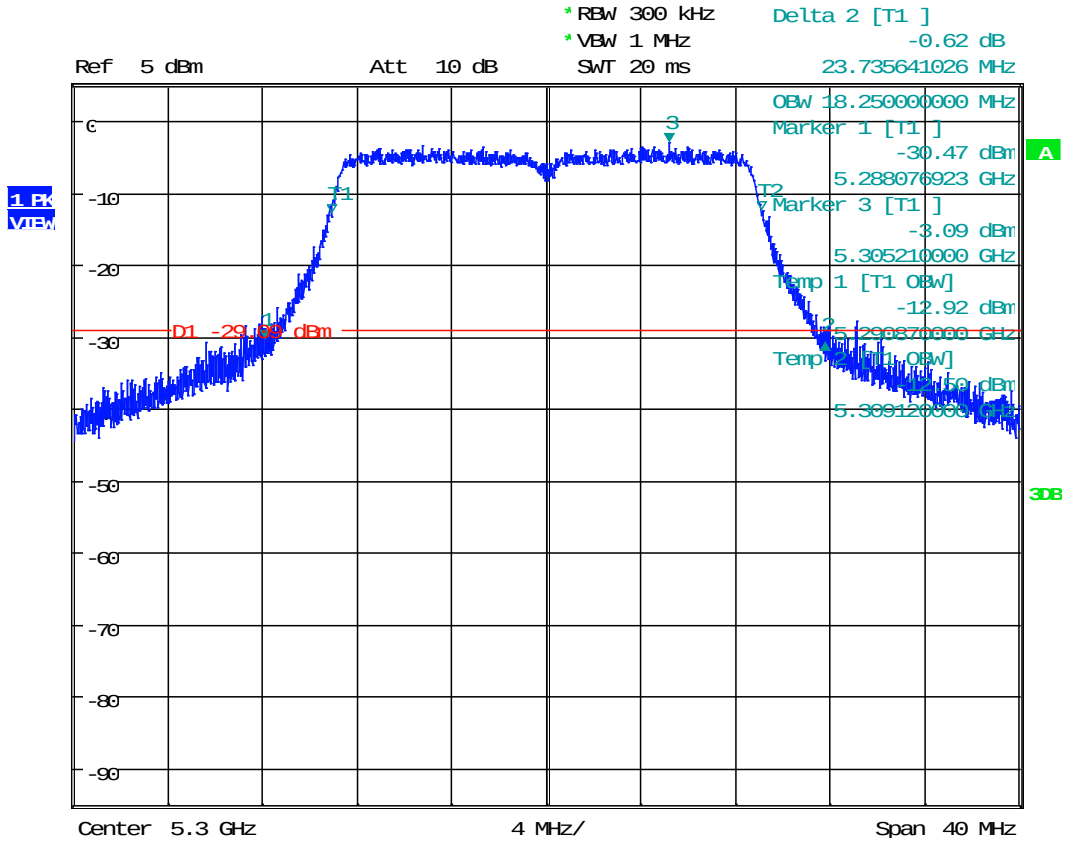
Plot 1. 5

802.11n 20MHz, 5300MHz



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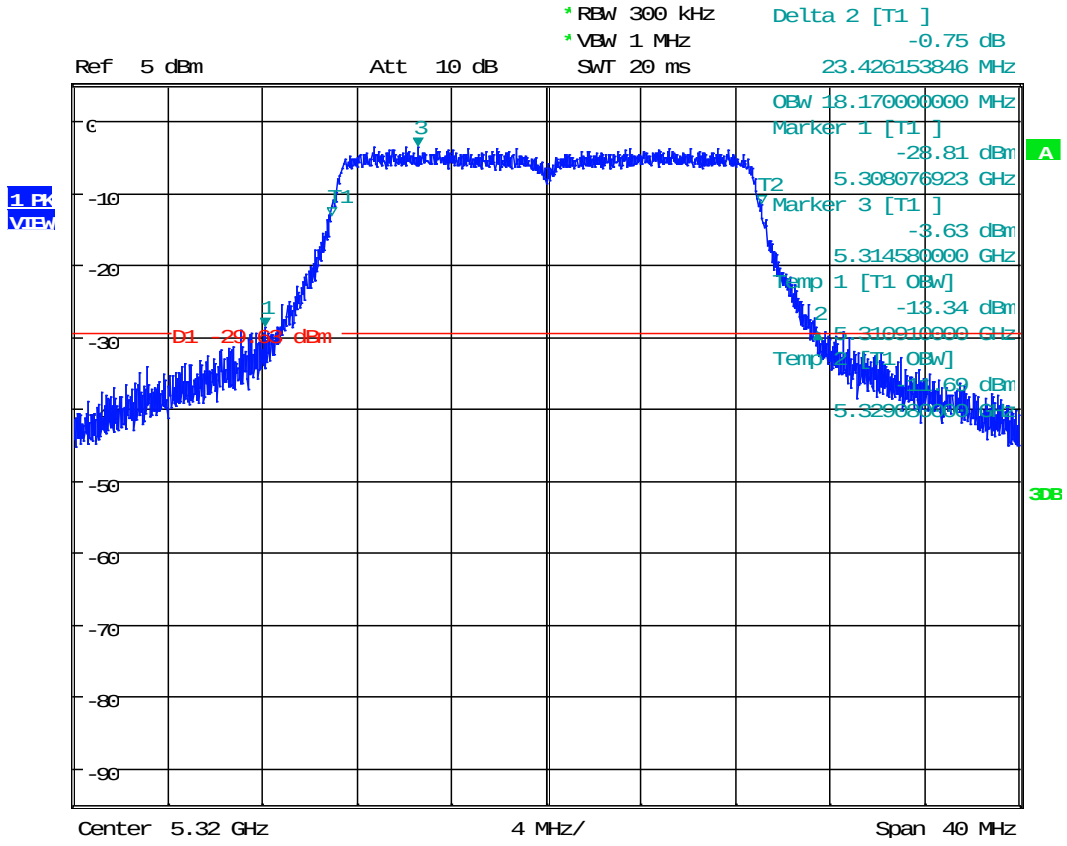
Plot 1. 6

802.11n 20MHz, 5320MHz



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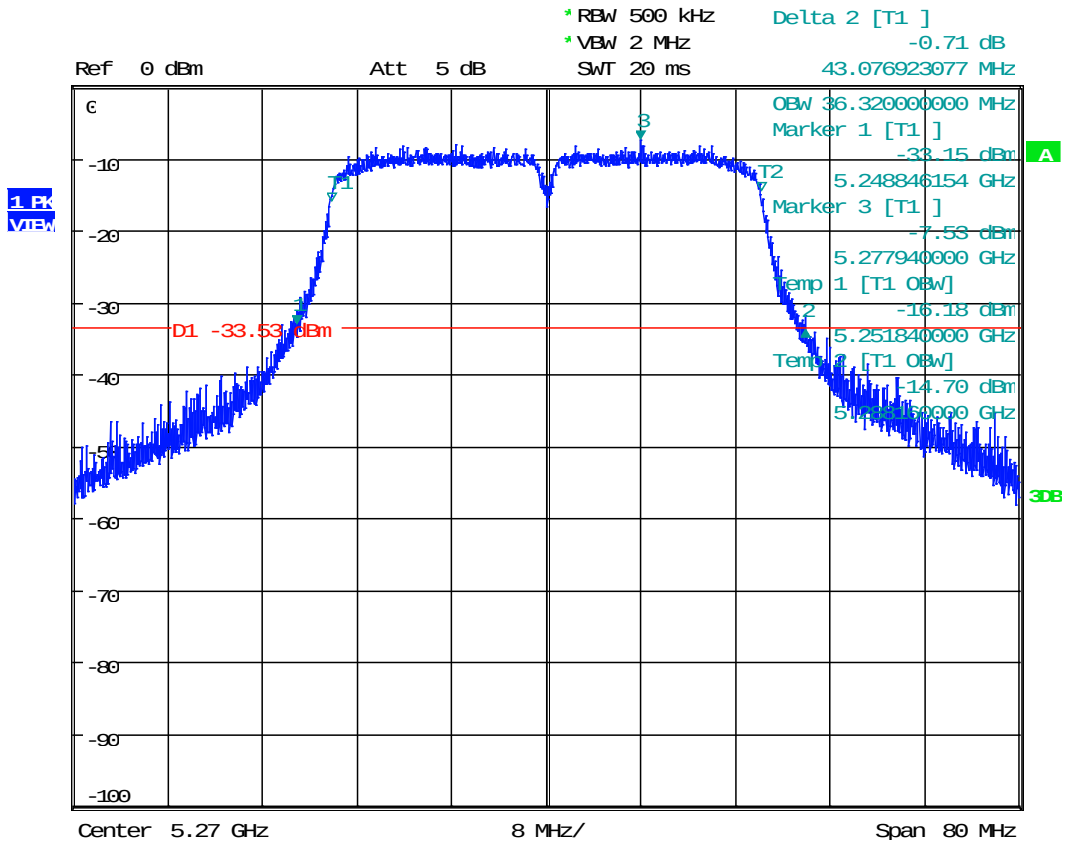
Plot 1. 7

802.11n 40MHz, 5270MHz



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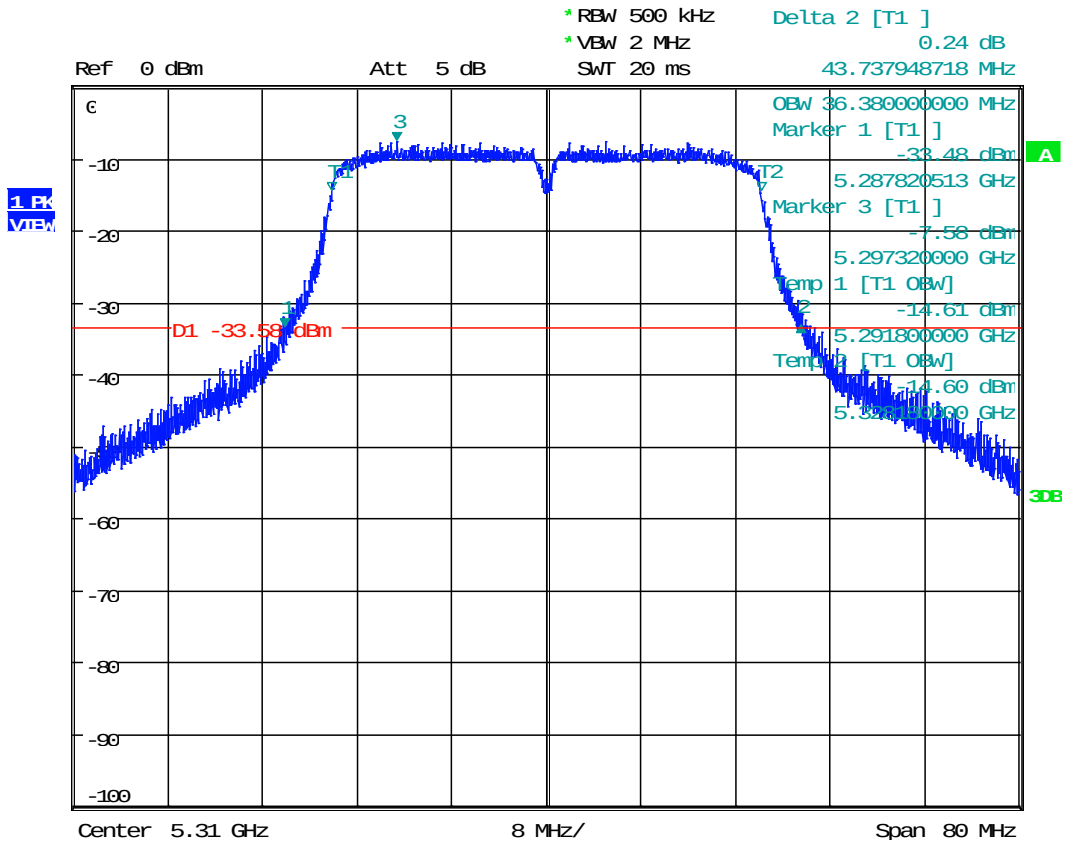
Plot 1. 8

802.11n 40MHz, 5310MHz



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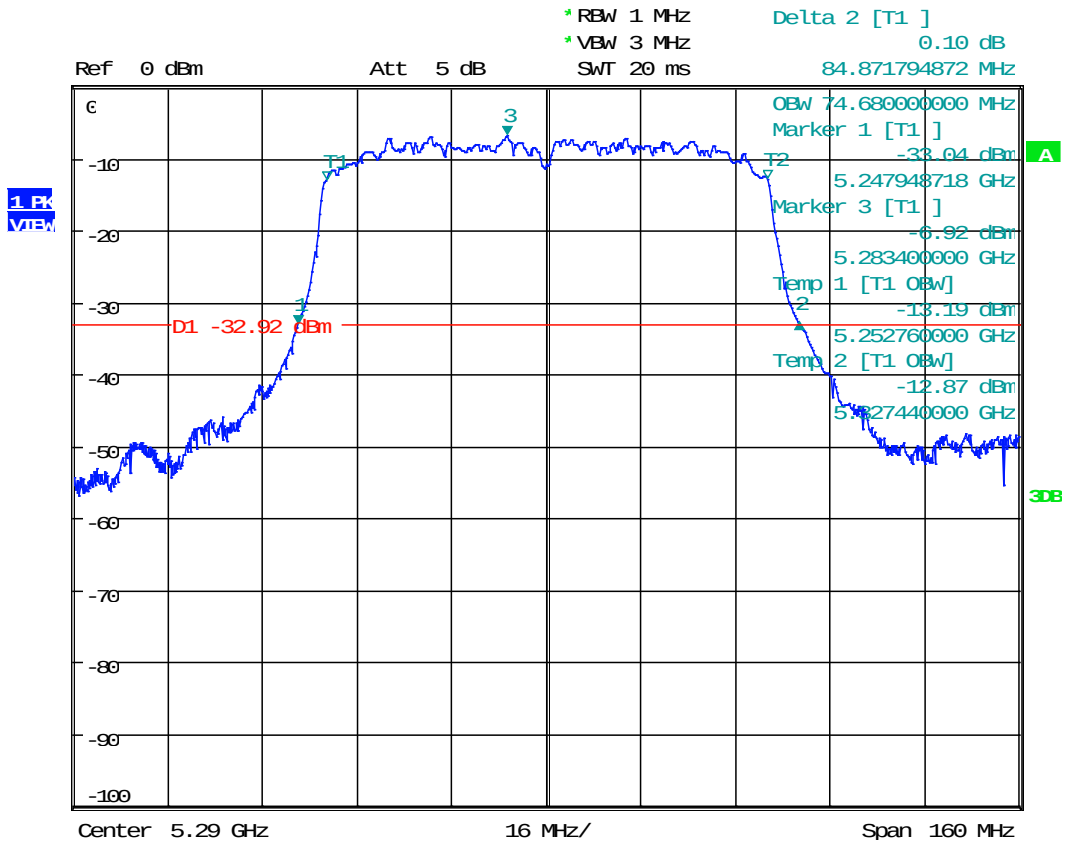
Plot 1. 9

802.11ac 80MHz, 5290MHz



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4.2 Maximum Conducted Output Power
FCC Rule 15.407(a)(1)(iv)

4.2.1 Requirement

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.2.2 Procedure

The Procedure, described in the FCC Publication 789033 D02 General U-NII Test Procedures New Rules, was used. Specifically Section E (2) (b) Method SA-1 for Maximum Conducted Output Power.

The antenna port output of the EUT was connected to the input of a spectrum analyzer to measure the Maximum Conducted Transmitter Output Power.

Tested By:	Anderson Soungpanya
Test Date:	February 22-23, 2016

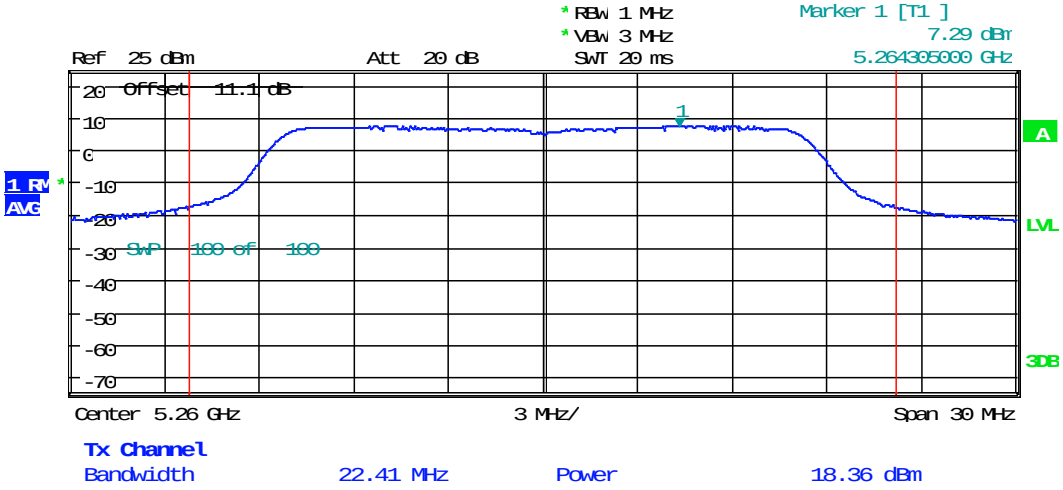
4.2.3 Test Results

Refer to the following plots for the test result:

Mode	Channel	Frequency, MHz	Conducted power (average) dBm	Conducted power Limit dBm	Plot #
802.11a	52	5260	18.36	24	2.1
	60	5300	18.89	24	2.2
	64	5320	18.06	24	2.3
802.11n 20MHz	52	5260	18.35	24	2.4
	60	5300	18.90	24	2.5
	64	5320	17.15	24	2.6
802.11n 40MHz	54	5270	15.00	24	2.7
	62	5310	14.51	24	2.8
802.11ac 80MHz	58	5290	12.37	24	2.9

Plot 2. 1

802.11a, 5260MHz



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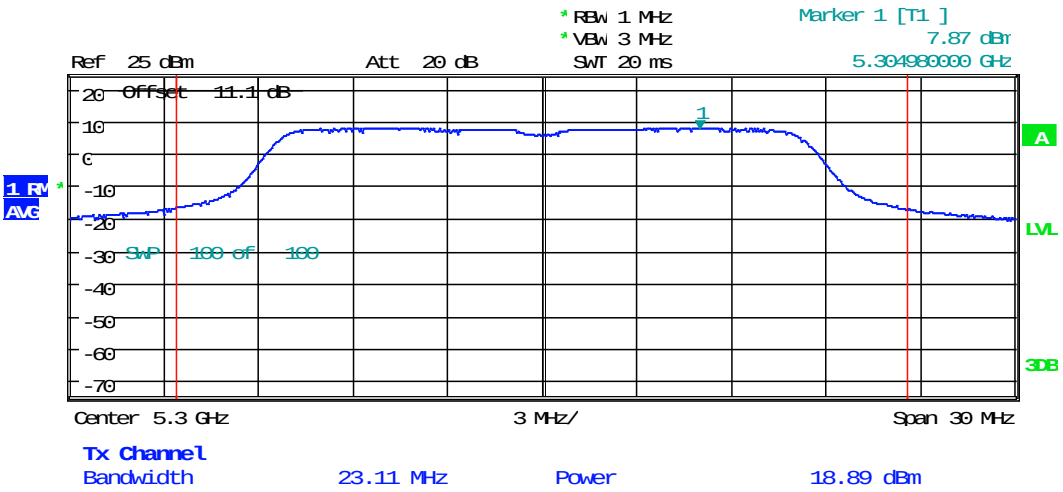
Plot 2. 2

802.11a, 5300MHz



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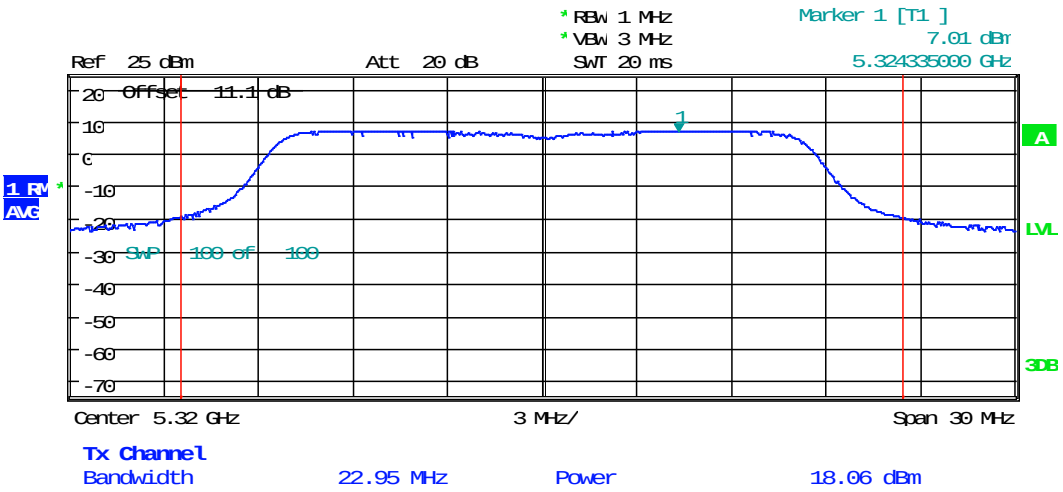
Plot 2. 3

802.11a, 5320MHz



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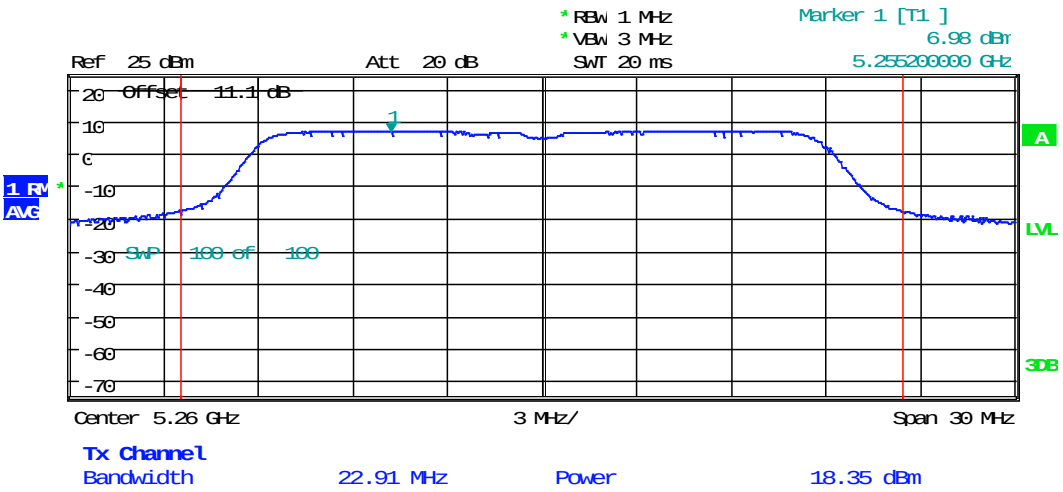
Plot 2. 4

802.11n 20MHz, 5260MHz



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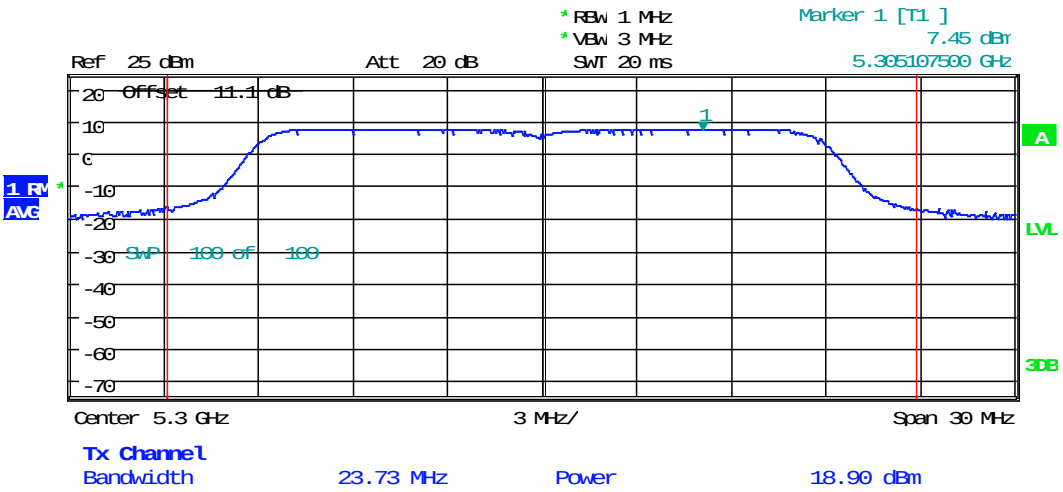
Plot 2. 5

H802.11n 20MHz, 5300MHz



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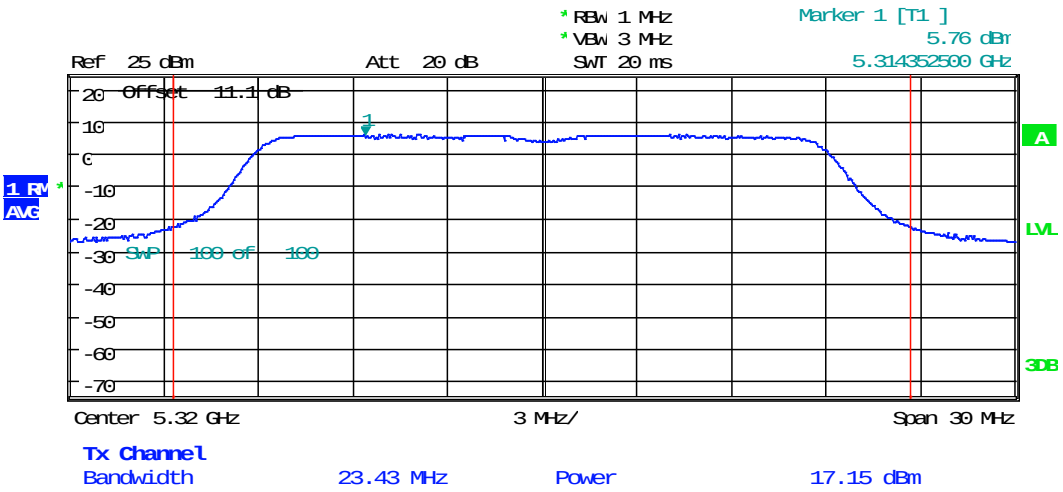
Plot 2. 6

802.11n 20MHz, 5320MHz



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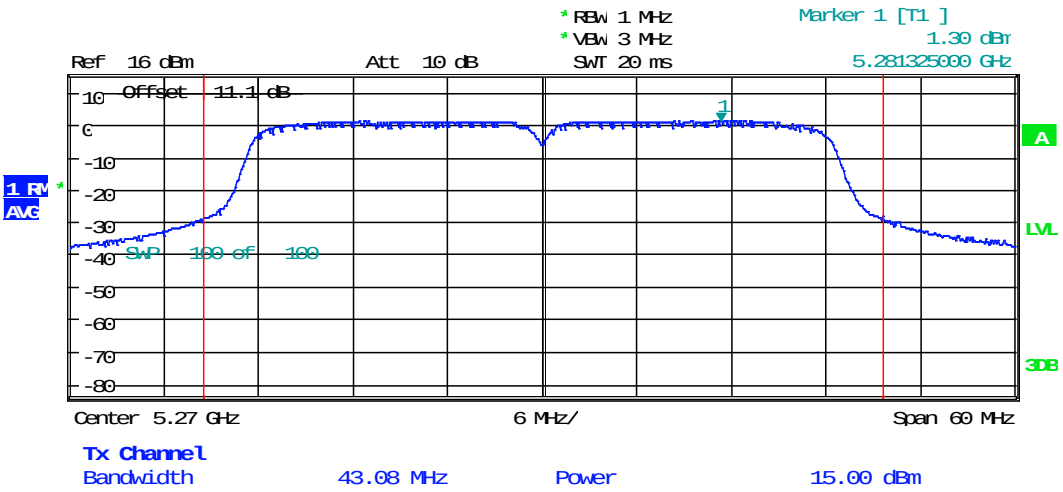
Plot 2. 7

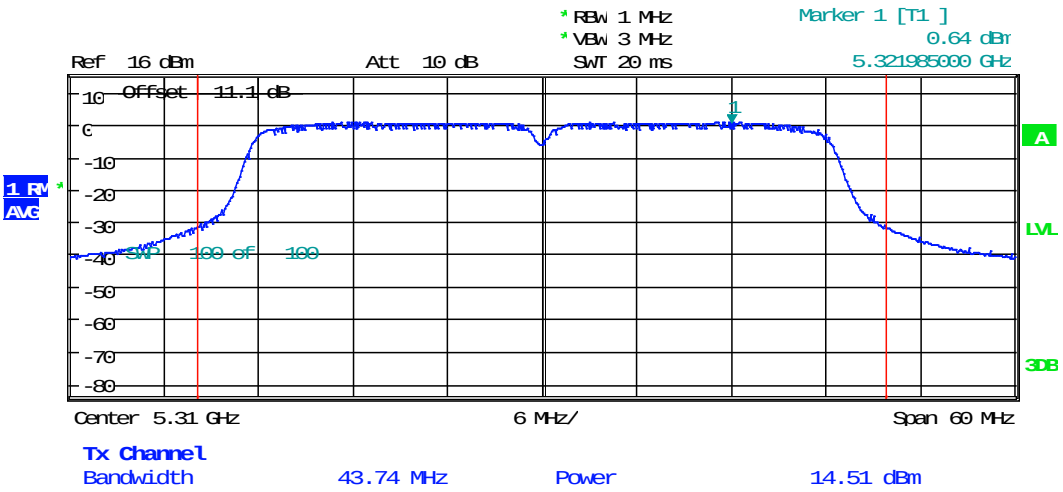
802.11n 40MHz, 5270MHz



Date: 23.FEB.2016 09:48:40

Plot 2. 8

802.11n 40MHz, 5310MHz



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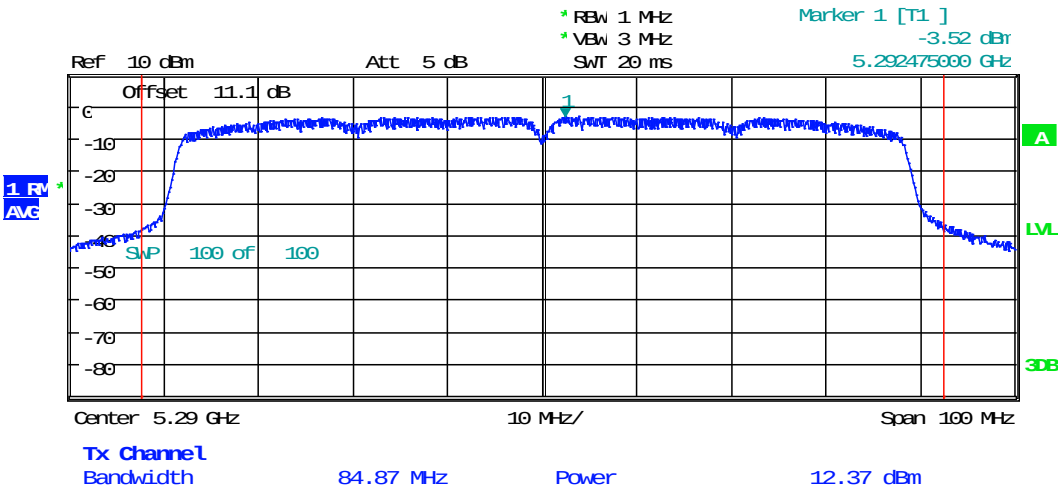
Plot 2. 9

H802.11ac 80MHz, 5290MHz



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4.3 Peak Power Spectral Density
FCC Rule 15.407(a)(1)(iv)

4.3.1 Requirement

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.3.2 Procedure

Each antenna port of the EUT was connected to the input of a spectrum analyzer to measure the Peak Power Spectral Density (PPSD) and recorded.

The Procedure, described in the FCC Publication 789033 D02 General U-NII Test Procedures New Rules, was used. Specifically procedure from Section F was utilized for Maximum Power Spectral Density (PSD).

Tested By:	Anderson Soungpanya
Test Date:	February 22-23, 2016

4.3.3 Test Result

Refer to the following plots located in section 4.2 for the test result:

Mode	Channel	Frequency, MHz	PSD(Peak) dBm	PSD Limit dBm	Plot #
802.11a	52	5260	7.29	11	2.1
	60	5300	7.87	11	2.2
	64	5320	7.01	11	2.3
802.11n 20MHz	52	5260	6.98	11	2.4
	60	5300	7.45	11	2.5
	64	5320	5.76	11	2.6
802.11n 40MHz	54	5270	1.30	11	2.7
	62	5310	0.64	11	2.8
802.11ac 80MHz	58	5290	-3.52	11	2.9

4.4 Frequency stability
FCC 15.407(g)

4.4.1 Requirement

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

4.4.2 Procedure

The EUT was placed in a temperature chamber and setup to transmit. Procedures for frequency stability in ANSIC63.10:2013 section 6.8 was utilized.

The carrier frequency was measured with the spectrum analyzer with resolution bandwidth of 1 kHz. The temperature was varied from -10^{0}C to 55^{0}C, as stated in the user manual.

The radio module in this report is powered by 120VAC which was varied to 85% and 115% for testing. Testing was performed at a temperature of 20^0 C.

After the temperature stabilized for approximately 20 minutes, the transmitting frequency was measured.

Tested By:	Anderson Soungpanya
Test Date:	February 16, 2016

4.4.3 Result

Temperature, ^{0}C	Frequency at nominal voltage, (GHz)	Maximum deviation from frequency at 20°C, ppm
Nominal Frequency: 5260 MHz		
55	5259.988675	0.587
50	5259.989115	0.503
40	5259.990150	0.307
30	5259.990170	0.303
20	5259.991763	0.000
10	5260.004510	2.423
0	5260.015445	4.502
-10	5260.031246	7.506
Voltage at 20^{0}C	**Frequency at nominal voltage, (GHz)**	**Maximum deviation from frequency at 20°C, ppm**
120VAC – 15%	5259.992014	0.048
120VAC + 15%	5259.992102	0.064

Temperature, ^{0}C	Frequency at nominal voltage, (GHz)	Maximum deviation from frequency at 20°C, ppm
Nominal Frequency: 5320 MHz		
55	5319.988670	0.564
50	5319.988964	0.509
40	5319.990014	0.312
30	5319.990111	0.294
20	5319.991673	0.000
10	5319.999498	1.471
0	5320.002115	1.963
-10	5320.031649	7.514
Voltage at 20^{0}C	**Frequency at nominal voltage, (GHz)**	**Maximum deviation from frequency at 20°C, ppm**
120VAC – 15%	5319.992155	0.091
120VAC + 15%	5319.992314	0.120

4.5 Transmitter Radiated Emissions
FCC Rule 15.407(b) (1-8) 15.209, 15.205

4.5.1 Requirement

(b) Undesirable emission limits. Except as shown in paragraph (b) (7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

Emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.

Note: This corresponds to the field strength level of 68.3 dB(μV/m) at 3 m distance when measure with 1 MHz resolution bandwidth.

4.5.2 Procedure

Radiated emission measurements were performed from 30 MHz to 40 GHz according to the procedure described in ANSI C64.10. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater for frequencies 30 MHz to 1000 MHz, 1 MHz for frequencies above 1000 MHz. Above 1000 MHz Peak and Average measurements were performed.

The EUT is placed on a plastic turntable that is 80 cm in height for below 1000MHz and 1.5m in height for above 1GHz. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). During testing, all cables were manipulated to produce worst-case emissions. The signal is maximized through rotation. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at 3 meters for frequencies above 1 GHz and at 10 meters for frequencies below 1 GHz.

Measurements made from 30 MHz to 40 GHz were measured with 50 ohm terminator on the output of the EUT RF port. A preamp was used from 30MHz to 40GHz.

All measurements were made with a Peak Detector and compared to QP limits for 30MHz – 1GHz and Average limits for 1GHz – 40 GHz.

Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels).

4.5.3 Field Strength Calculation

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF – AG; if measurement is performed at a distance other than specified in the rule, a Distance Correction Factor (DCF) shall be added.

Where FS = Field Strength in dB(μV/m)
RA = Receiver Amplitude (including preamplifier) in dB(μV); AF = Antenna Factor in dB(1/m)
CF = Cable Attenuation Factor in dB; AG = Amplifier Gain in dB

Assume a receiver reading of 52.0 dB(μV) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of 32 dB(μV/m). This value in dB(μV/m) was converted to its corresponding level in μV/m.
RA = 52.0 dB(μV)
AF = 7.4 dB(1/m)
CF = 1.6 dB
AG = 29.0 dB
FS = 52.0+7.4+1.6-29.0 = 32 dB(μV/m).
Level in μV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m.

4.5.4 Antenna-port conducted measurements

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

4.5.6 General Procedure for conducted measurements in restricted bands

a) Measure the conducted output power (in dBm) using the detector specified for determining quasi-peak, peak, and average conducted output power, respectively.

b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)

c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).

d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (*e.g.*, Watts, mW).

e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:
E = EIRP – 20log D + 104.8
where:
E = electric field strength in dBμV/m,
EIRP = equivalent isotropic radiated power in dBm
D = specified measurement distance in meters.
f) Compare the resultant electric field strength level to the applicable limit.
g) Perform radiated spurious emission test

4.5.7 Test Results

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance where emissions are within 3dB of the limit.

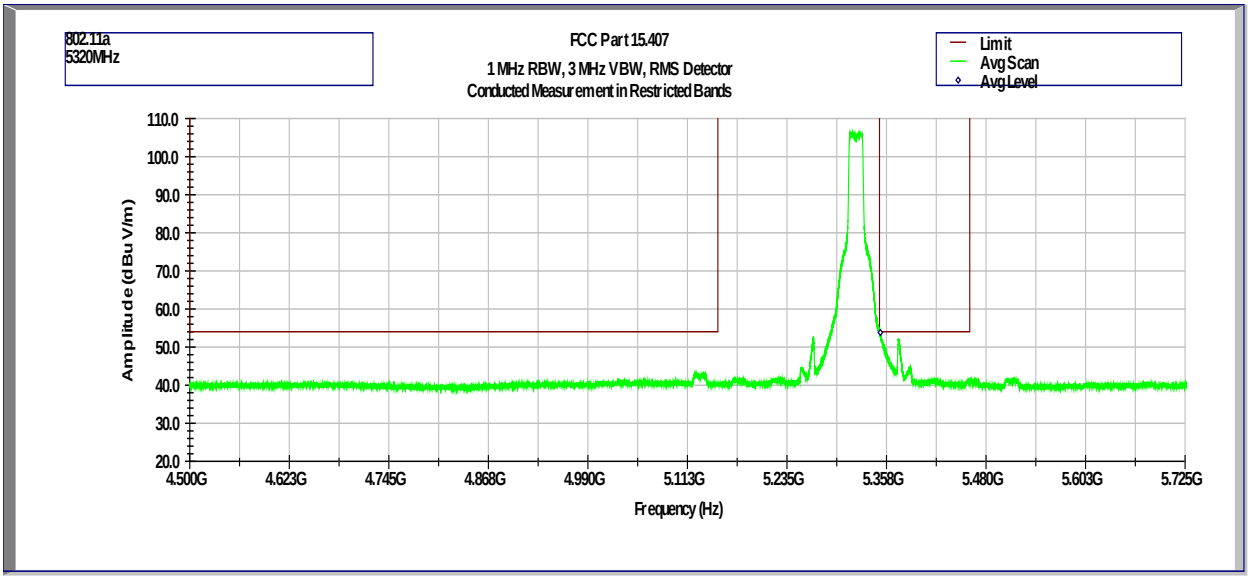
All conducted antenna port plots are corrected with the consideration of a 4.51 dBi Antenna Gain.

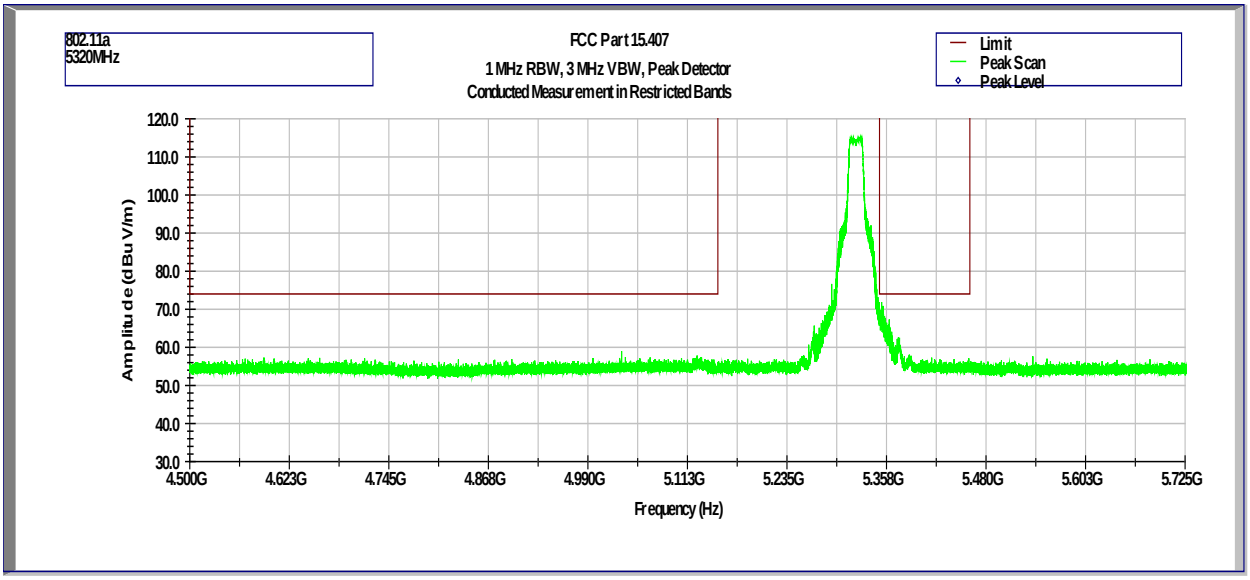
Radiated emission measurements were performed up to 40GHz. No Emissions were identified when scanned from 18-40 GHz.

Test Results: 15.209/15.205 Restricted Band Emissions at Antenna Port

Tested By:	Anderson Soungpanya
Test Date:	February 18-19, 2016

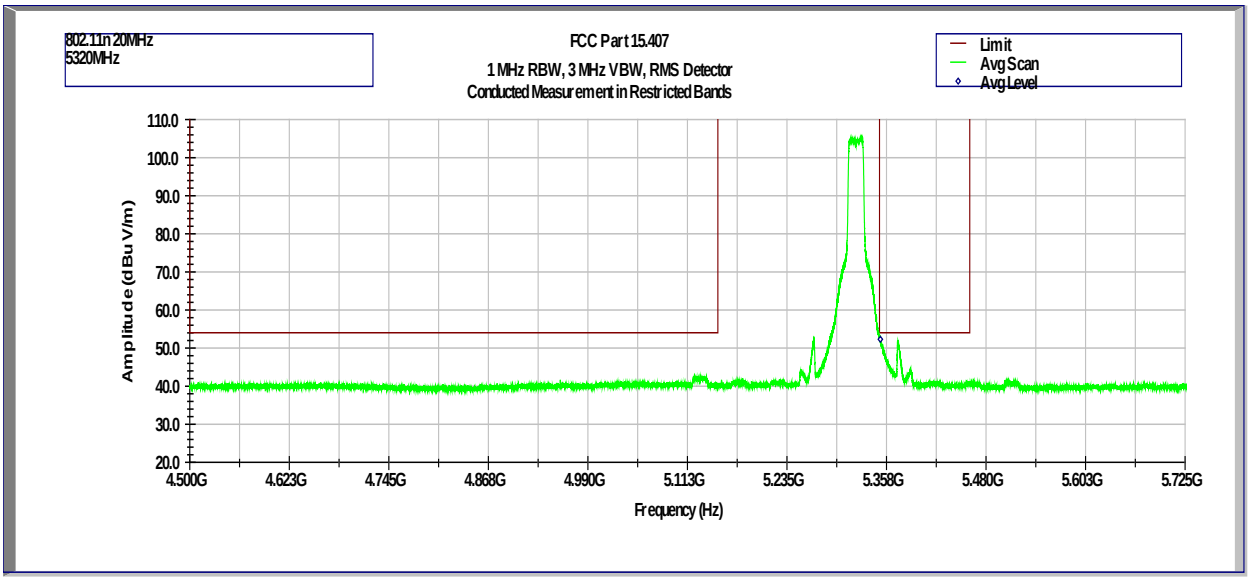
Out-of-Band Spurious Emissions at the Band Edge - 802.11a, 5320 MHz

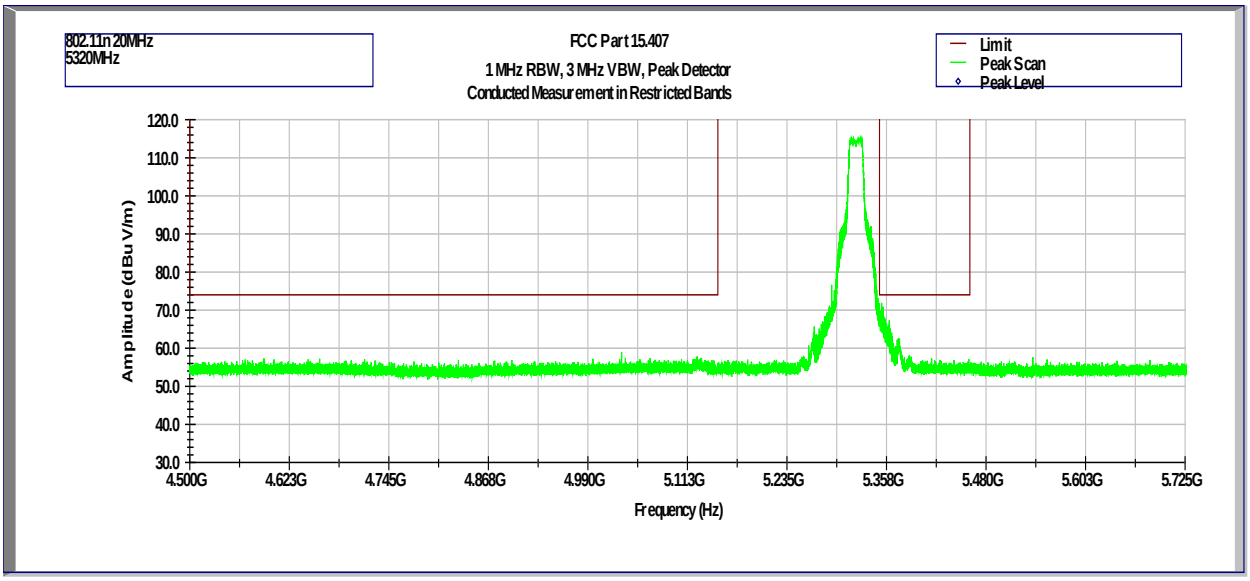




Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
5.350	53.8	54	-0.2	Avg	Pass

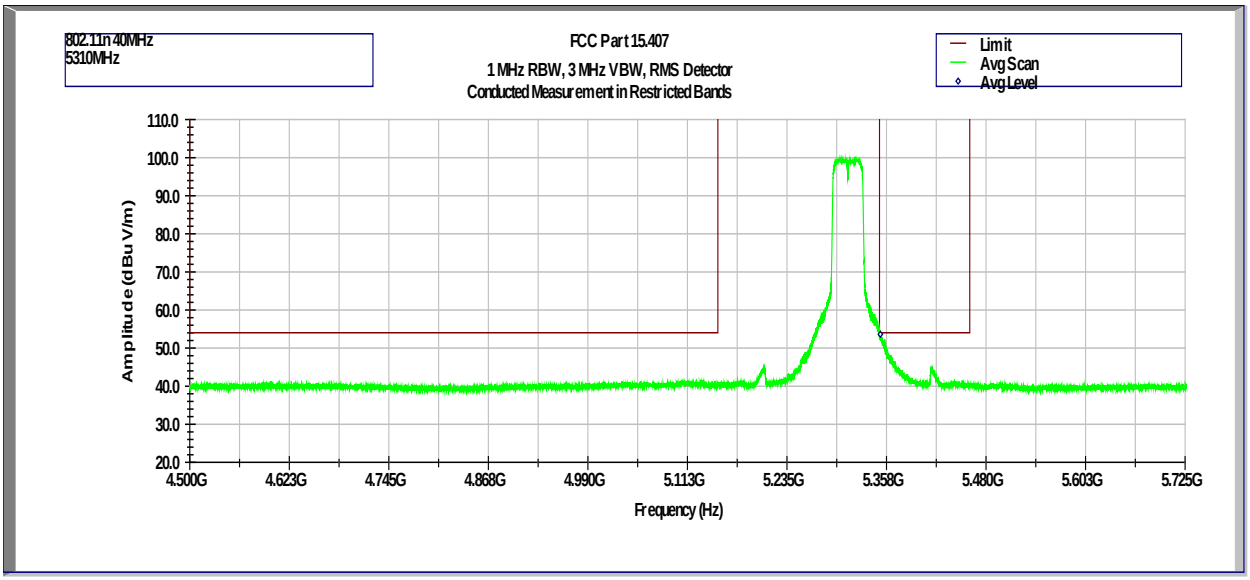
Out-of-Band Spurious Emissions at the Band Edge - 802.11n 20MHz, 5320 MHz

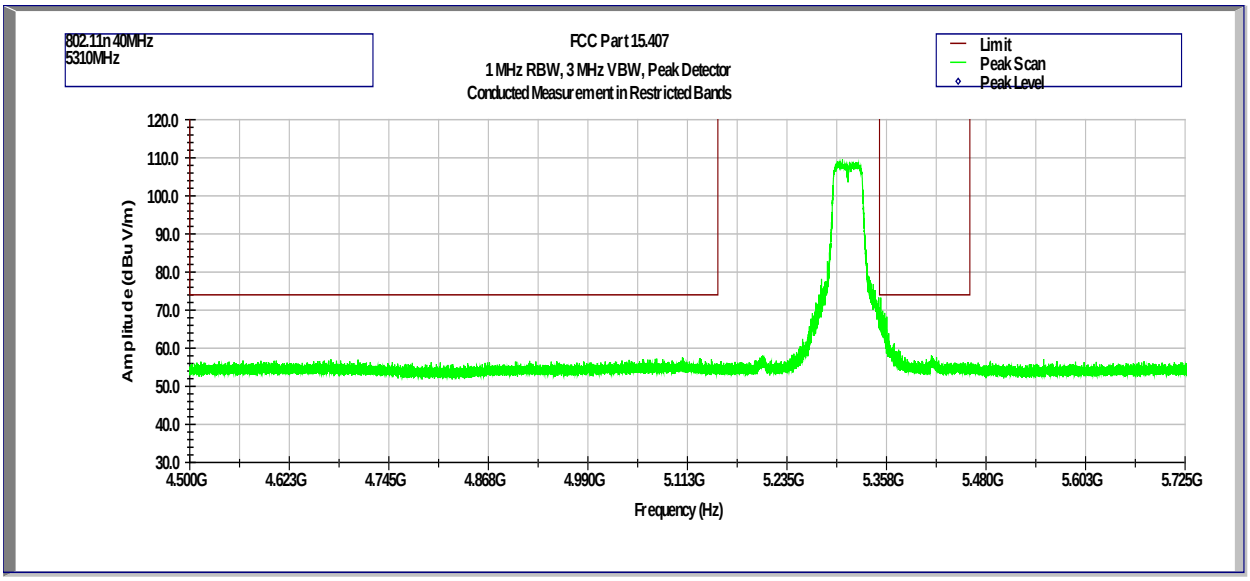




Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
5.350	52.3	54	-1.7	Avg	Pass

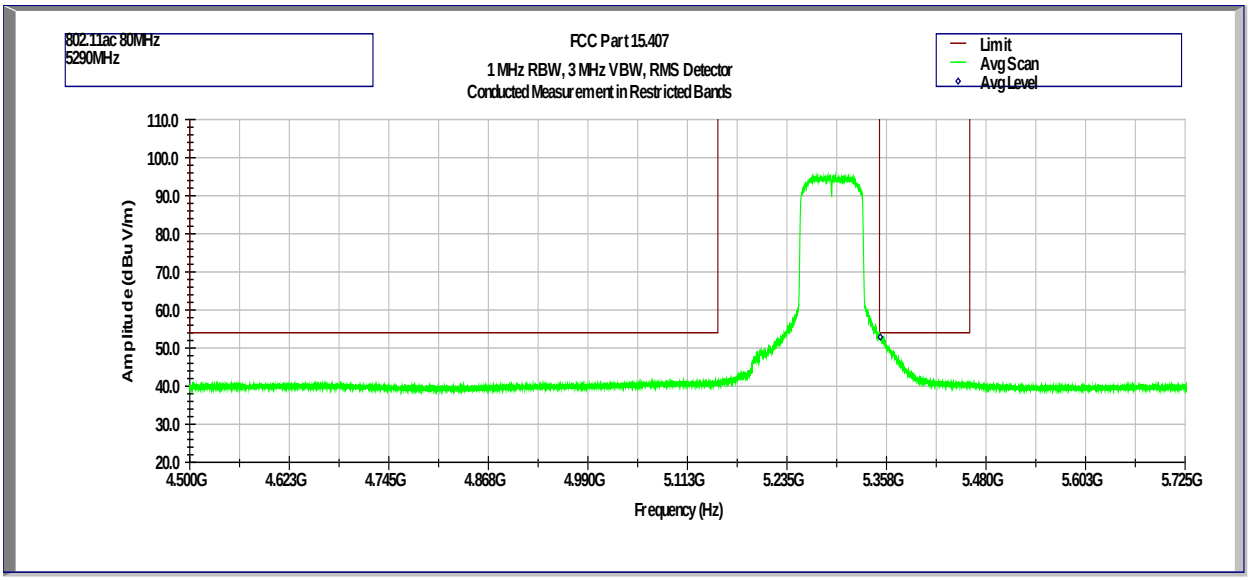
Out-of-Band Spurious Emissions at the Band Edge - 802.11n 40MHz, 5310 MHz

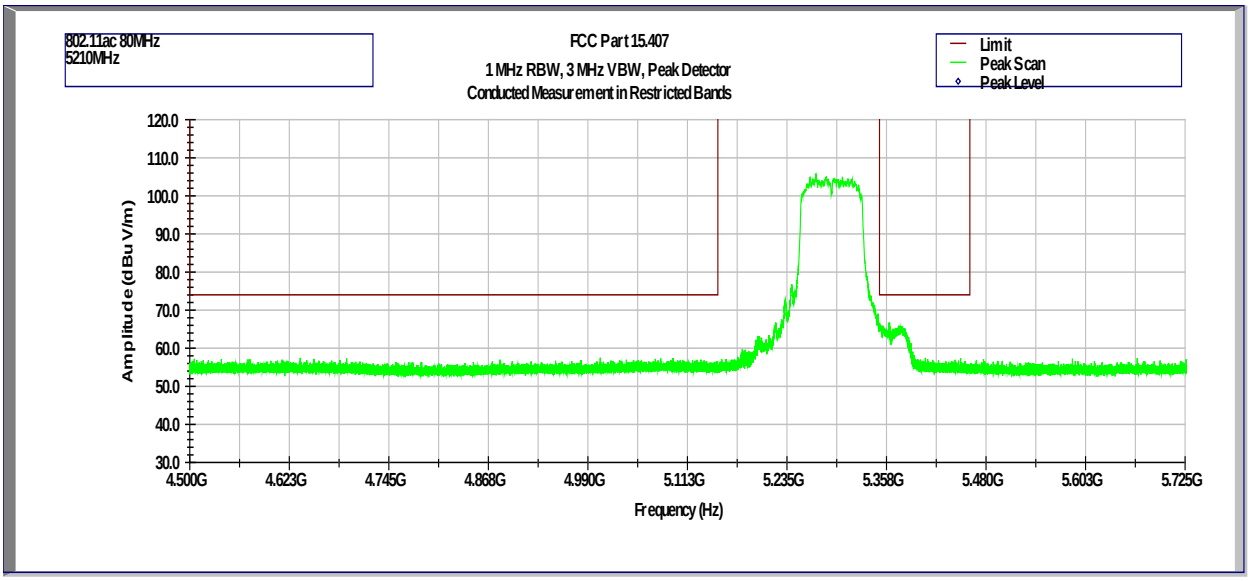




Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
5.350	53.6	54	-0.4	Avg	Pass

Out-of-Band Spurious Emissions at the Band Edge - 802.11ac 80MHz, 5290 MHz



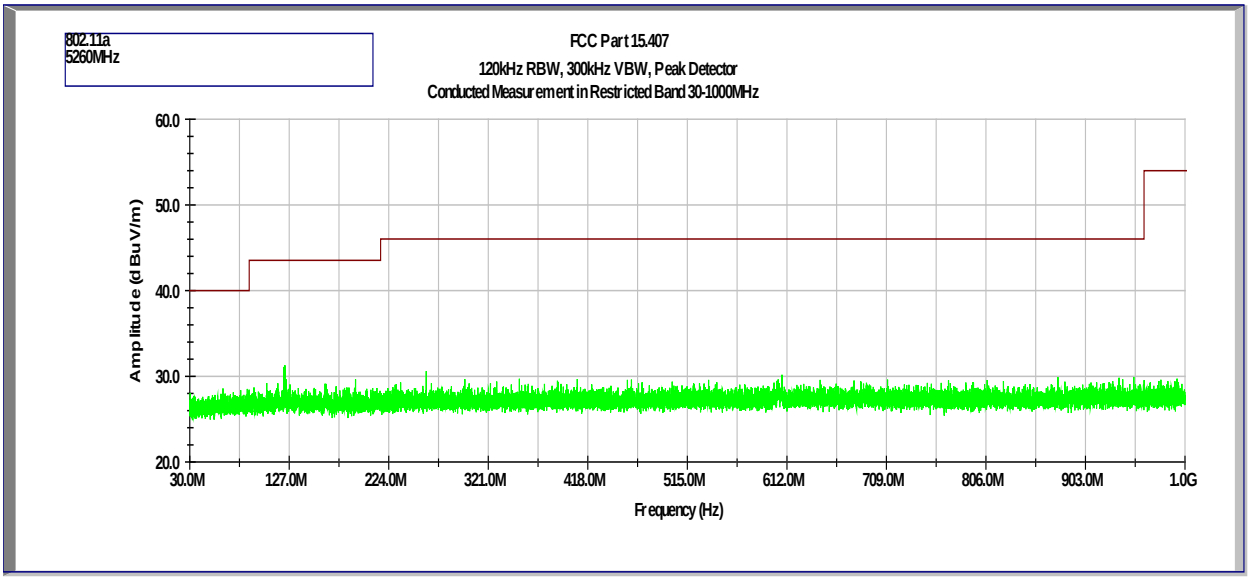


Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
5.350	52.9	54	-1.1	Avg	Pass

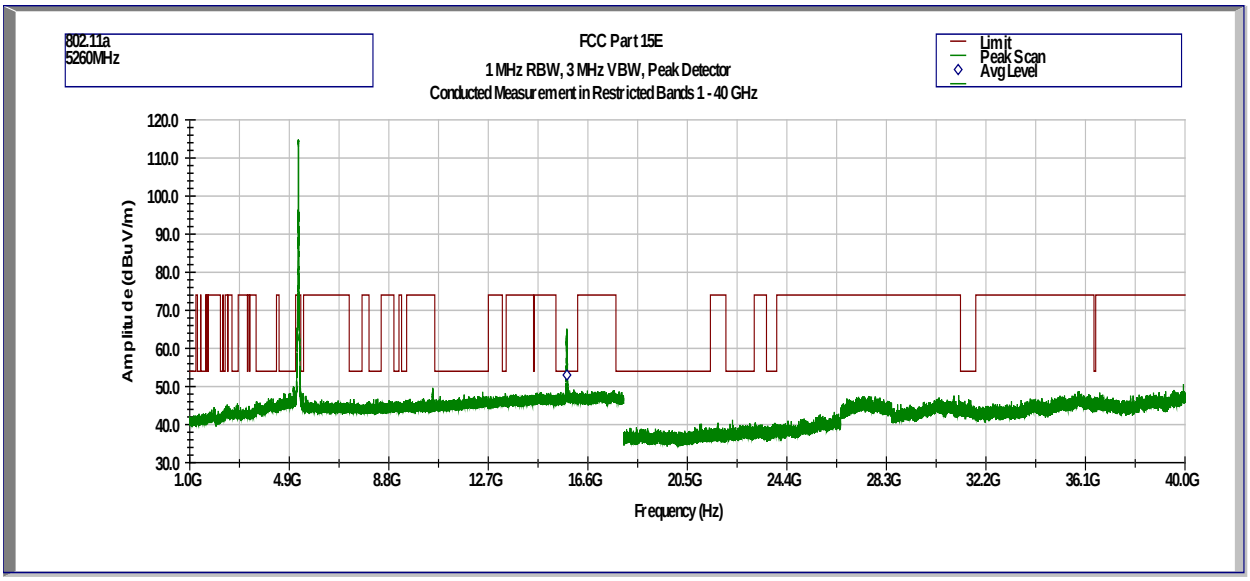
Out-of-Band Conducted Spurious Emissions (at Antenna Port)

Tx @ 5260MHz 802.11a

Out-of-Band Spurious Emissions at Antenna Port - 30 MHz to 1 GHz



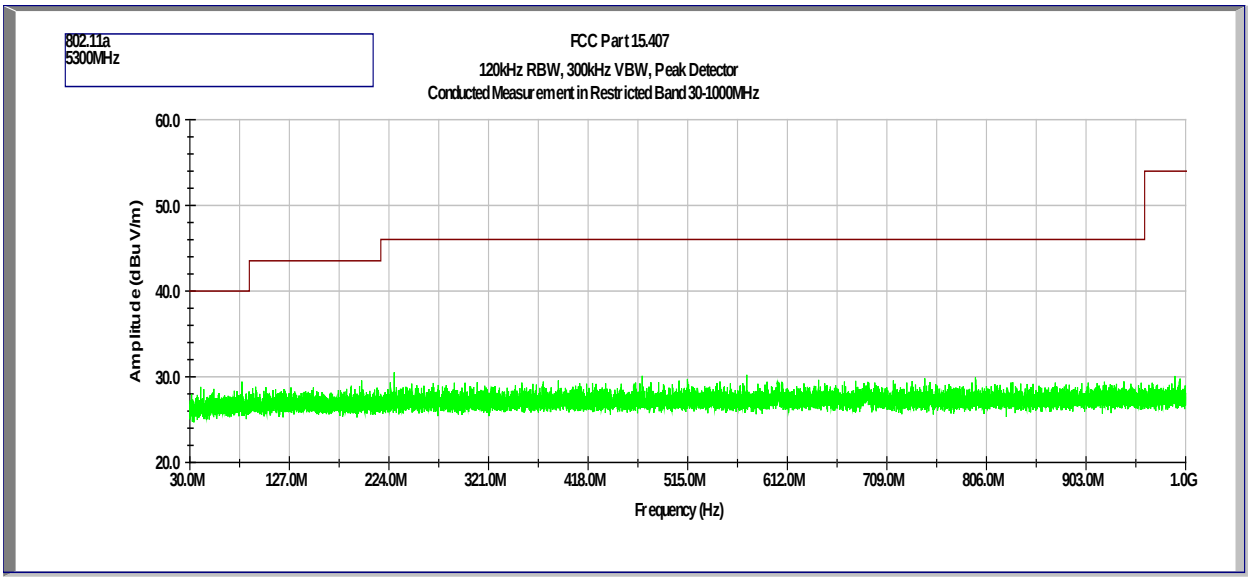
Out-of-Band Spurious Emissions at Antenna Port - 1 GHz to 40 GHz



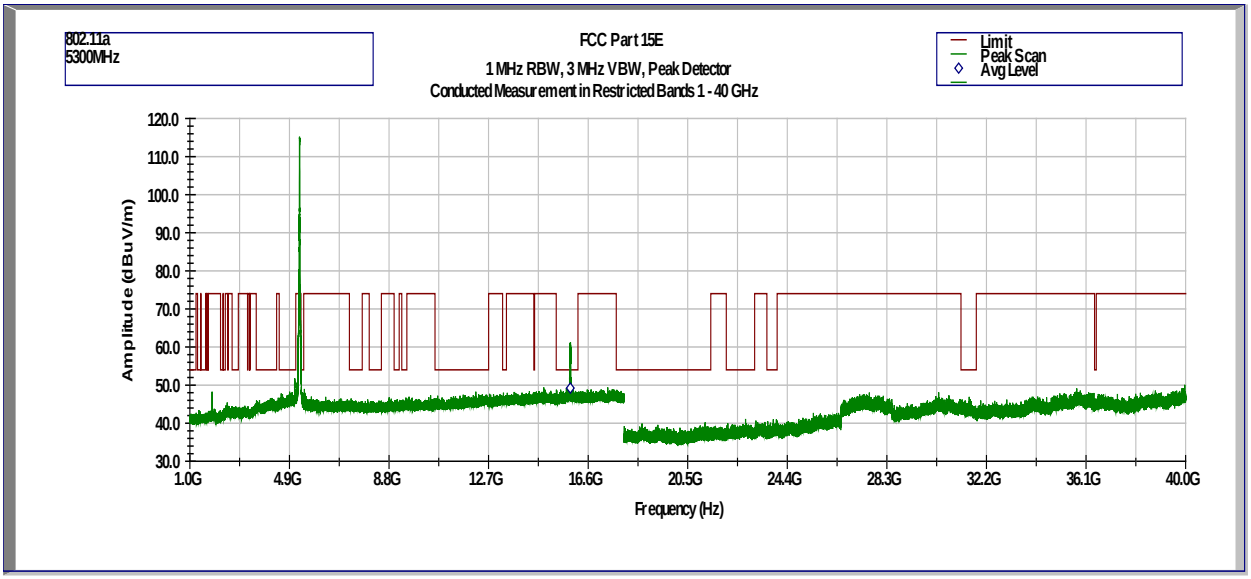
Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
15.780	53.0	54	-1.0	Avg	Pass

Tx @ 5300MHz 802.11a

Out-of-Band Spurious Emissions at Antenna Port - 30 MHz to 1 GHz



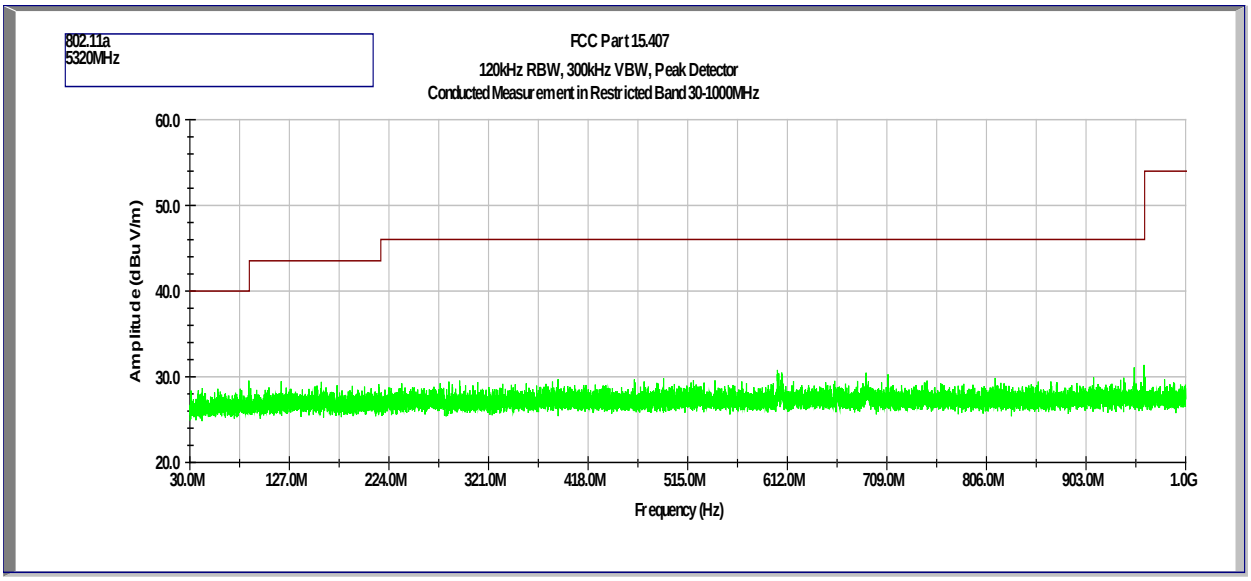
Out-of-Band Spurious Emissions at Antenna Port - 1 GHz to 40 GHz



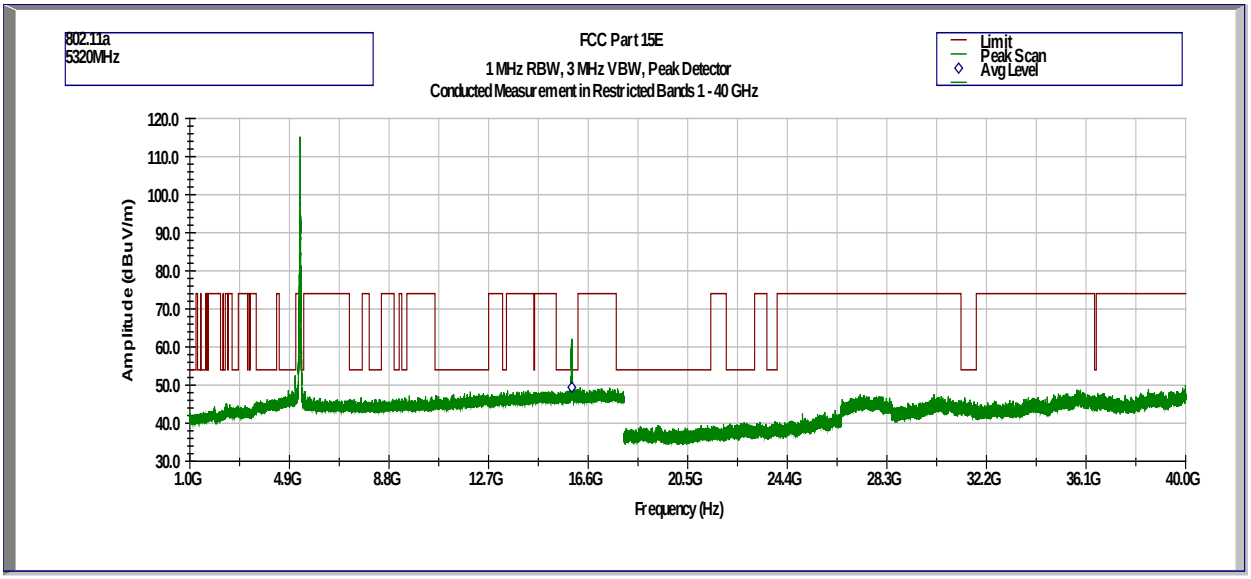
Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
15.900	49.2	54	-4.8	Avg	Pass

Tx @ 5320MHz 802.11a

Out-of-Band Spurious Emissions at Antenna Port - 30 MHz to 1 GHz



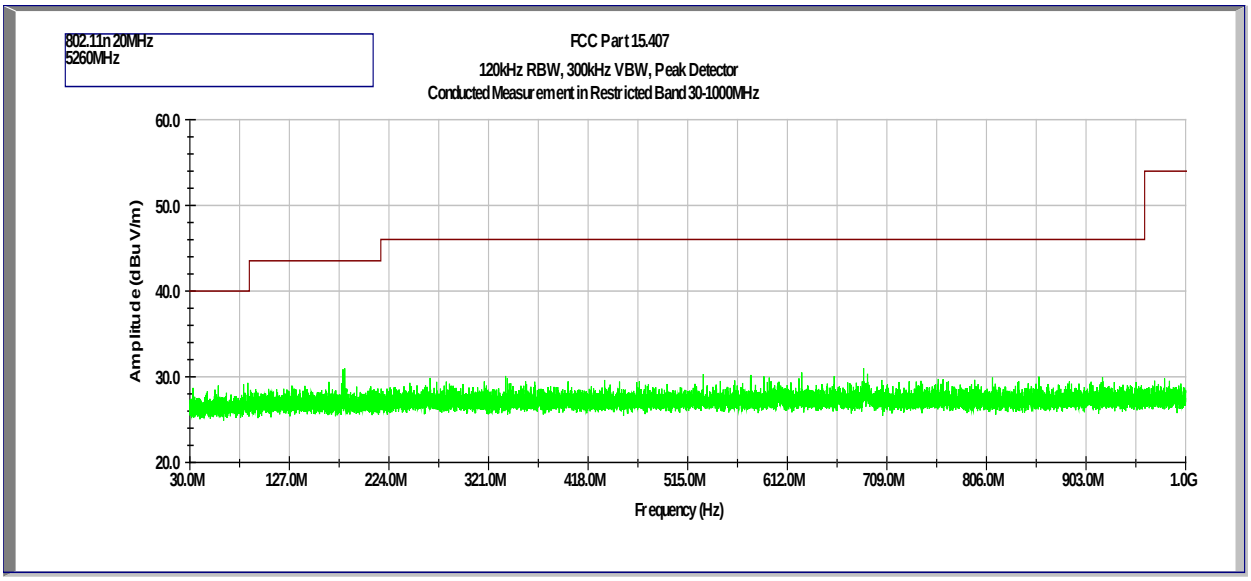
Out-of-Band Spurious Emissions at Antenna Port - 1 GHz to 40 GHz



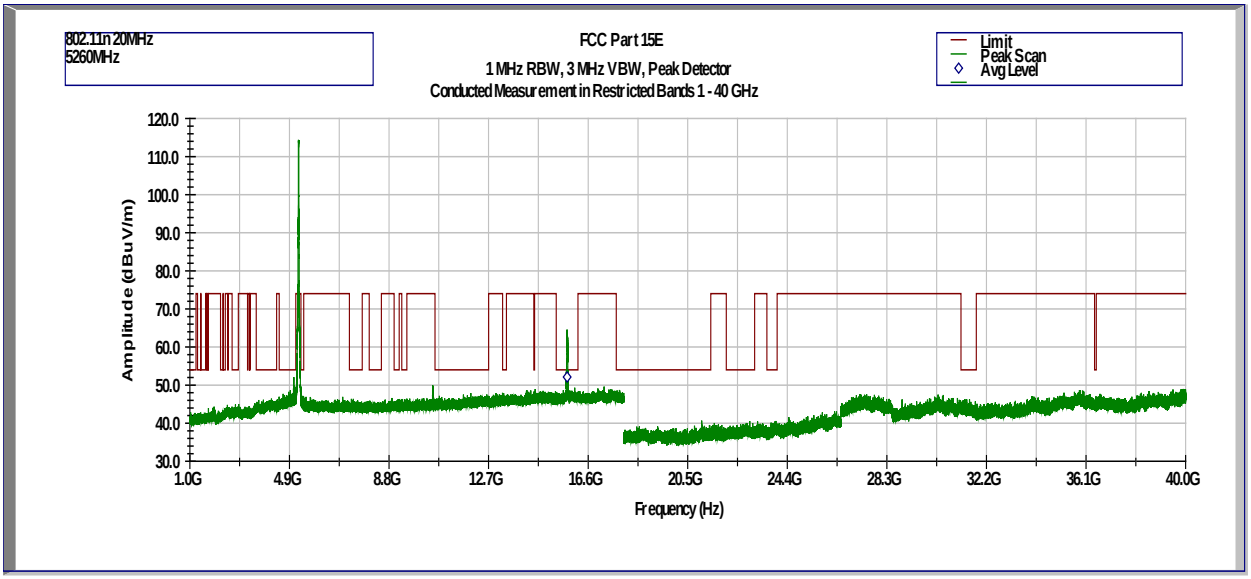
Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
15.960	49.4	54	-4.6	Avg	Pass

Tx @ 5260MHz 802.11n 20MHz

Out-of-Band Spurious Emissions at Antenna Port - 30 MHz to 1 GHz



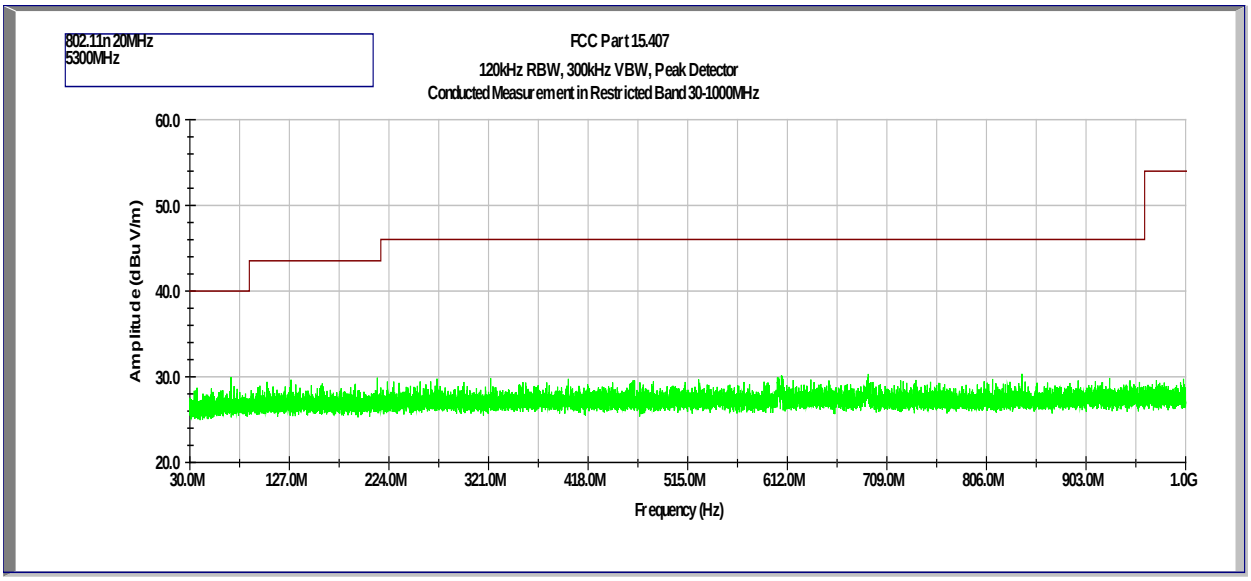
Out-of-Band Spurious Emissions at Antenna Port - 1 GHz to 40 GHz



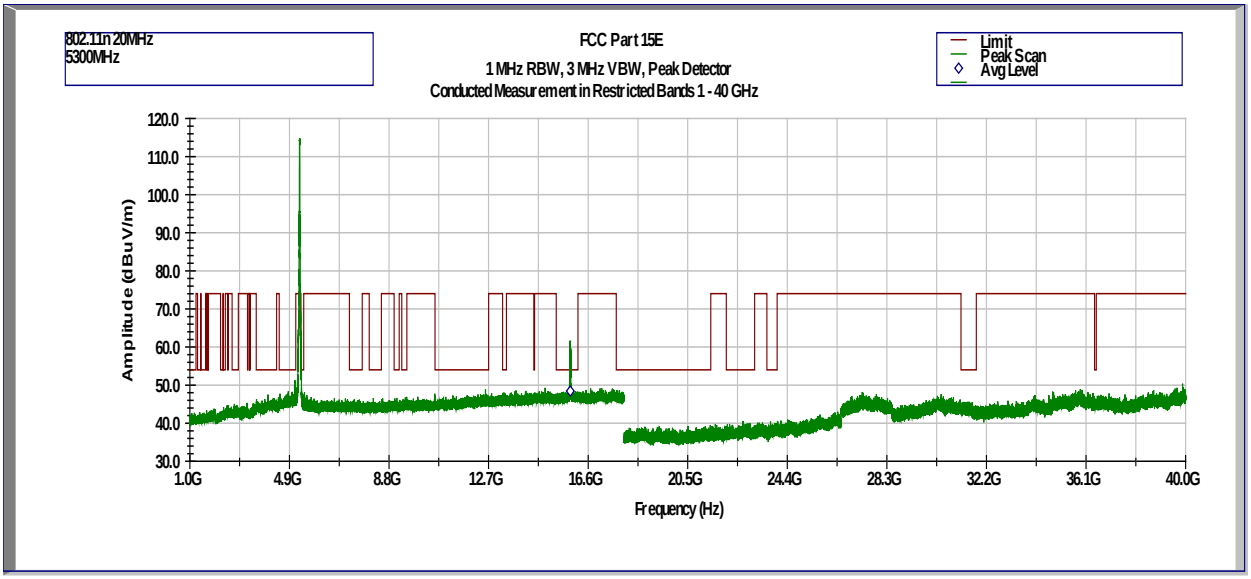
Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
15.778	52.1	54	-1.9	Avg	Pass

Tx @ 5300MHz 802.11n 20MHz

Out-of-Band Spurious Emissions at Antenna Port - 30 MHz to 1 GHz



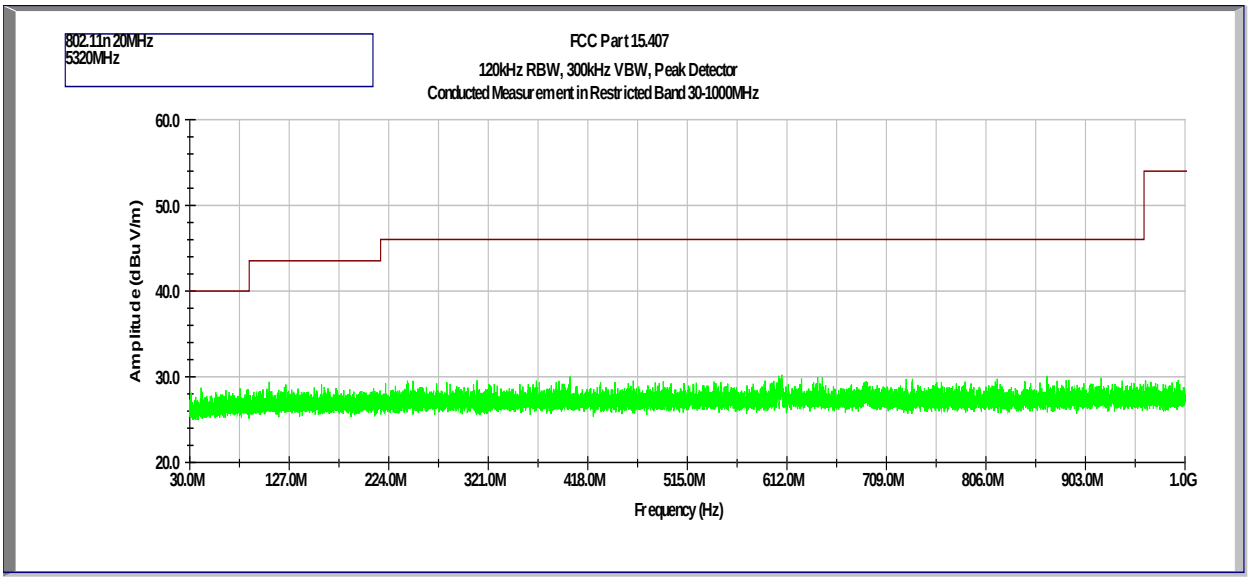
Out-of-Band Spurious Emissions at Antenna Port - 1 GHz to 40 GHz



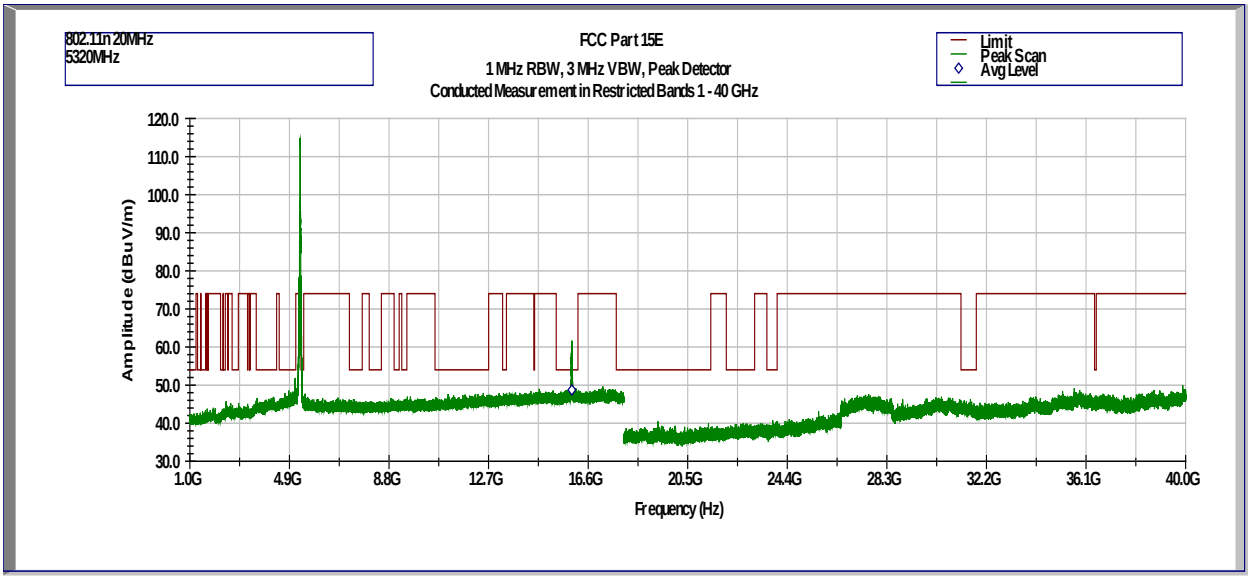
Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
15.900	48.4	54	-5.6	Avg	Pass

Tx @ 5320MHz 802.11n 20MHz

Out-of-Band Spurious Emissions at Antenna Port - 30 MHz to 1 GHz



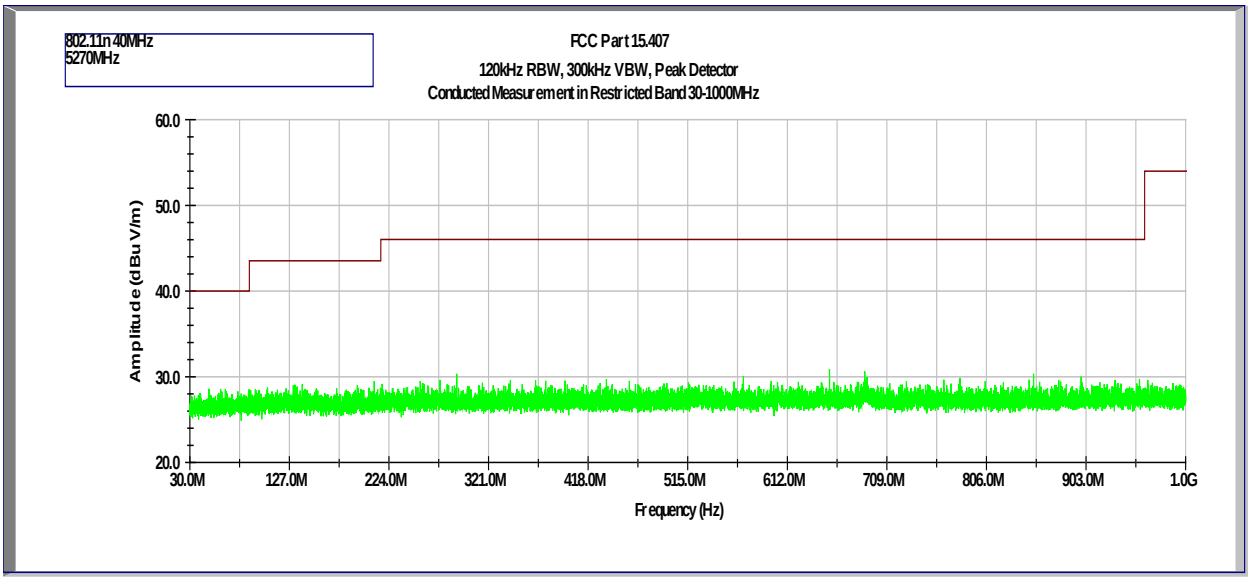
Out-of-Band Spurious Emissions at Antenna Port - 1 GHz to 40 GHz



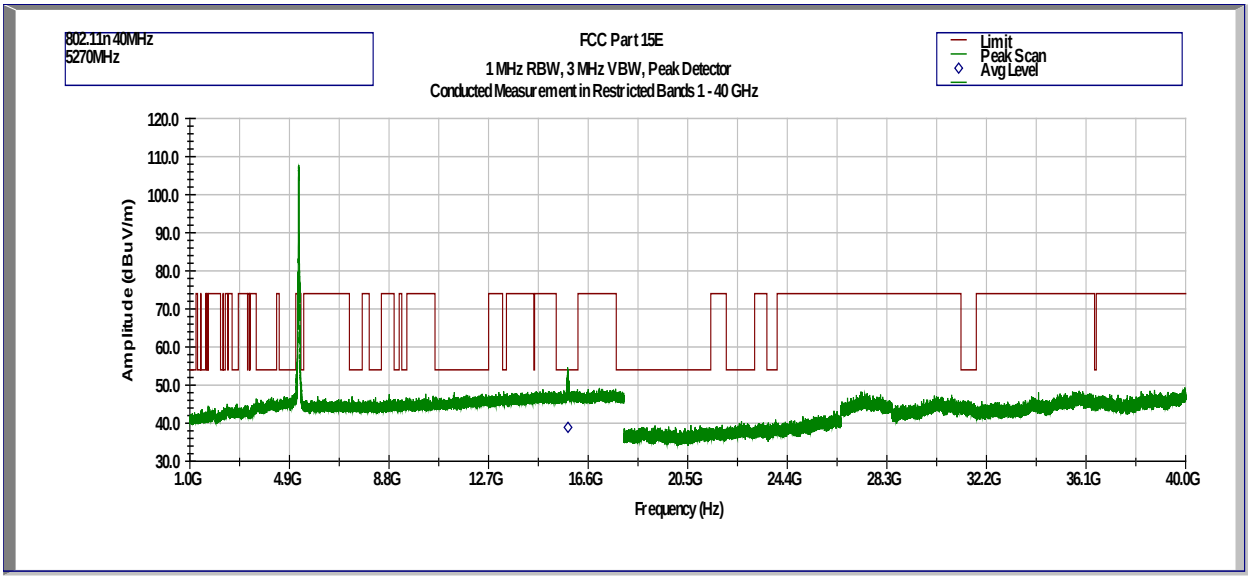
Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
15.960	48.7	54	-5.3	Avg	Pass

Tx @ 5270MHz 802.11n 40MHz

Out-of-Band Spurious Emissions at Antenna Port - 30 MHz to 1 GHz



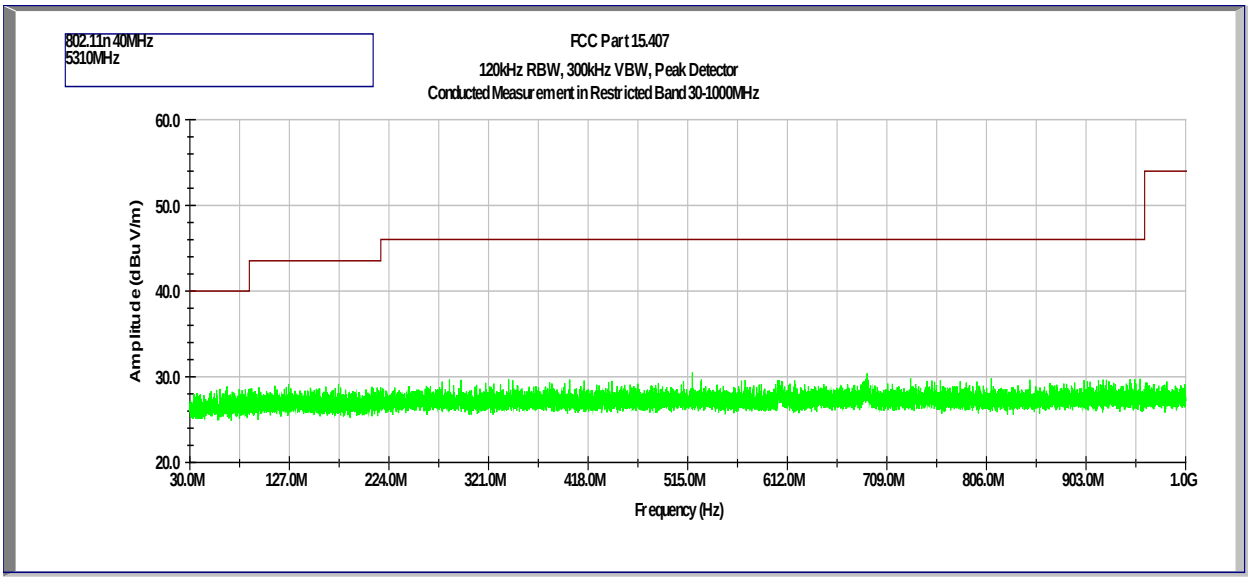
Out-of-Band Spurious Emissions at Antenna Port - 1 GHz to 40 GHz



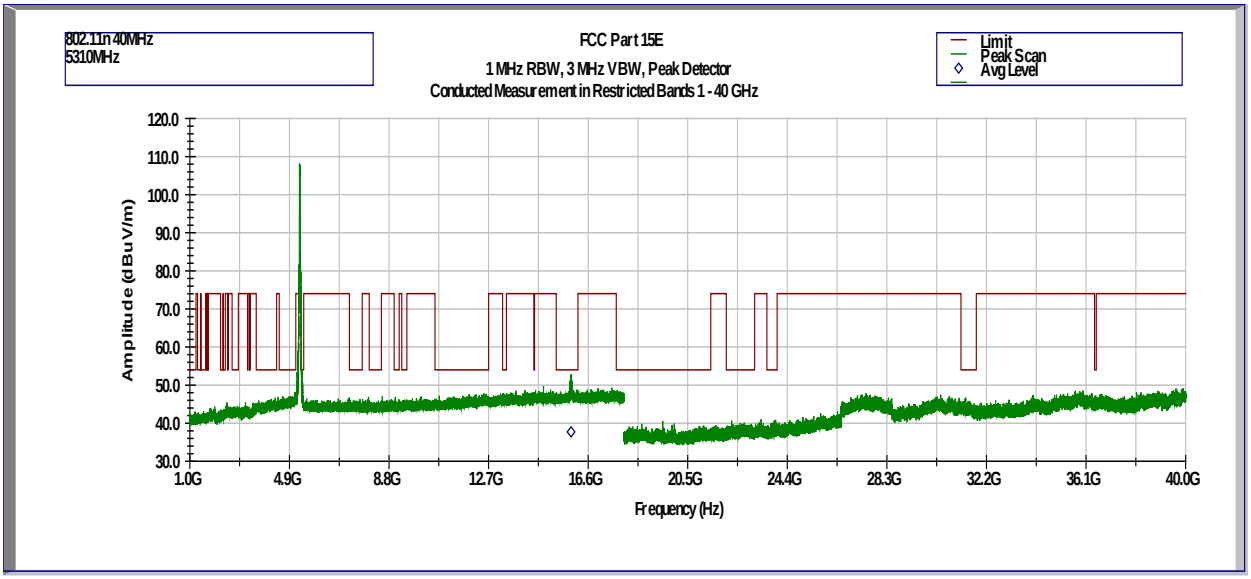
Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
15.810	38.9	54	-15.1	Avg	Pass

Tx @ 5310MHz 802.11n 40MHz

Out-of-Band Spurious Emissions at Antenna Port - 30 MHz to 1 GHz



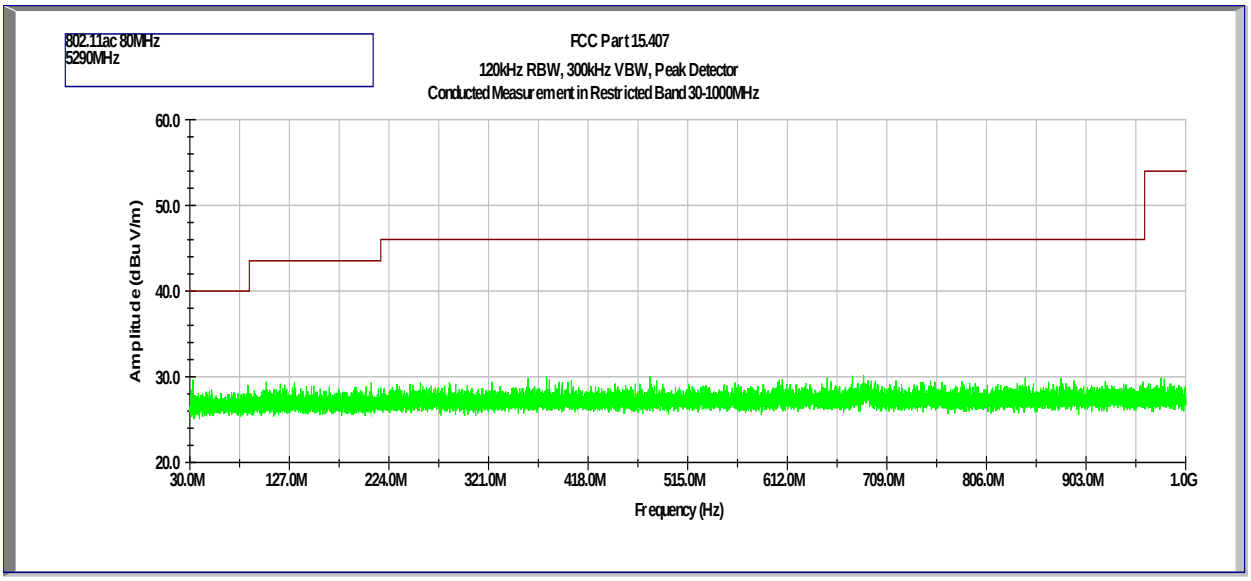
Out-of-Band Spurious Emissions at Antenna Port - 1 GHz to 40 GHz



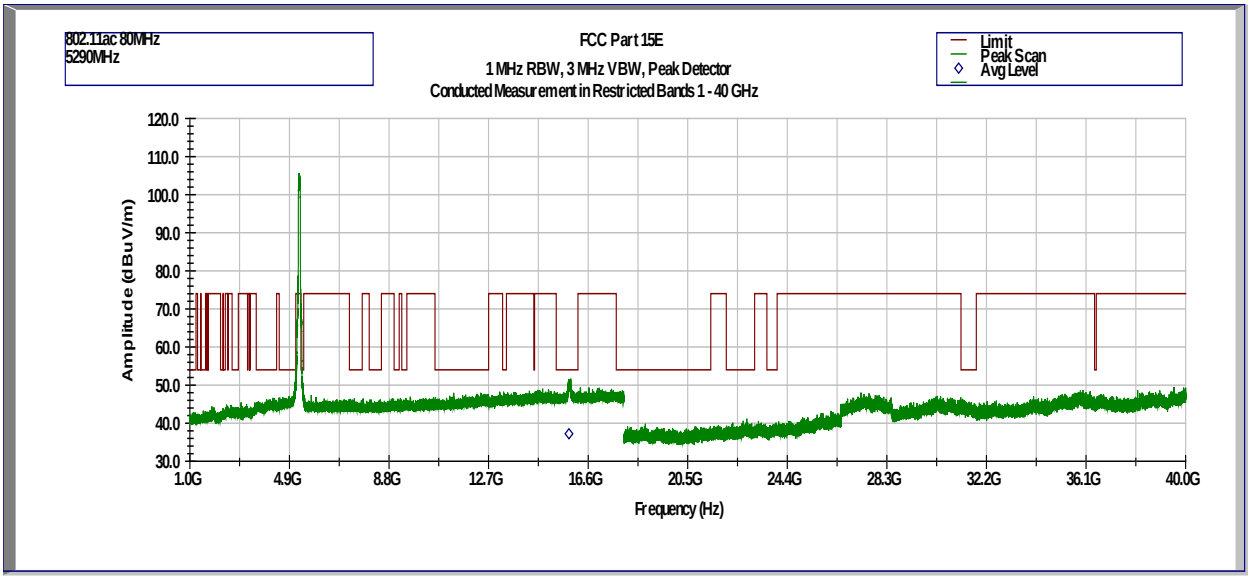
Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
15.930	37.7	54	-16.3	Avg	Pass

Tx @ 5290MHz 802.11ac 80MHz

Out-of-Band Spurious Emissions at Antenna Port - 30 MHz to 1 GHz



Out-of-Band Spurious Emissions at Antenna Port - 1 GHz to 40 GHz



Frequency	Corrected Amplitude	Limit	Margin	Detector	Results
GHz	dBµV/m	dBµV/m	dB		
15.848	37.2	54	-16.8	Avg	Pass