MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*

914 WEST PATAPSCO AVENUE ● BALTIMORE, MARYLAND 21230-3432 ● PHONE (410) 354-3300 ● FAX (410) 354-3313
33439 WESTERN AVENUE ● UNION CITY, CALIFORNIA 94587 ● PHONE (510) 489-6300 ● FAX (510) 489-6372
3162 BELICK STREET ● SANTA CLARA, CALIFORNIA 95054 ● PHONE (408) 748-3585 ● FAX (510) 489-6372
13301 MCCALLEN PASS ● AUSTIN, TX 78753 ● PHONE (512) 287-2500 ● FAX (512) 287-2513

February 18, 2015

Meru Networks, Inc.
894 Ross Dr.
Sunnyvale, CA 94089

Dear Rajendran Chary,

Enclosed is the EMC Wireless test report for compliance testing of the Meru Networks, Inc., OAP832e as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Title 47 of the CFR, Part 15, Subpart B for Unintentional Radiators and Part 15.407, Subpart E (UNII 1 and 3) for Intentional Radiators.

Thank you for using the services of MET Laboratories, Inc. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
MET LABORATORIES, INC.

Jennifer Warnell
Documentation Department

Reference: (\Meru Networks, Inc.\ EMCS84286-FCC407 UNII 1 and 3 Rev. 1)

MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*

914 WEST PATAPSCO AVENUE ● BALTIMORE, MARYLAND 21230-3432 ● PHONE (410) 354-3300 ● FAX (410) 354-3313
33439 WESTERN AVENUE ● UNION CITY, CALIFORNIA 94587 ● PHONE (510) 489-6300 ● FAX (510) 489-6372
3162 BELICK STREET ● SANTA CLARA, CALIFORNIA 95054 ● PHONE (408) 748-3585 ● FAX (510) 489-6372
13301 MCCALLEN PASS ● AUSTIN, TX 78753 ● PHONE (512) 287-2500 ● FAX (512) 287-2513

Electromagnetic Compatibility Criteria
Test Report

for the

Meru Networks, Inc.
Model OAP832e

Tested under
The FCC Certification Rules
contained in
Title 47 of the CFR, Parts 15 Subpart B
for Class B Digital Devices
&
FCC Part 15.407 for Intentional Radiators

MET Report: EMCS84286-FCC407 UNII 1 and 3 Rev. 1

February 18, 2015

Prepared For:

Meru Networks, Inc.
894 Ross Dr.
Sunnyvale, CA 94089

Prepared By:
MET Laboratories, Inc.
914 W. Patapsco Ave.
Baltimore, MD 21230

Electromagnetic Compatibility Criteria
Test Report

for the

Meru Networks, Inc.
Model OAP832e

Tested under
The FCC Certification Rules
contained in
Title 47 of the CFR, Parts 15 Subpart B for Class B Digital Devices
&
FCC Part 15.407 for Intentional Radiators

Andy Shen, Project Engineer
Electromagnetic Compatibility Lab

Jennifer Warnell
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Parts 15B, 15.407, of the FCC Rules under normal use and maintenance.

Asad Bajwa,
Director, Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
∅	February 6, 2015	Initial Issue.
1	February 18, 2015	Revised to reflect engineer corrections.

Table of Contents

List of Tables

List of Figures

List of Plots

List of Terms and Abbreviations

AC	**A**lternating **C**urrent
ACF	**A**ntenna **C**orrection **F**actor
Cal	**Cal**ibration
d	**M**easurement **D**istance
dB	**D**eci**b**els
dBµA	**D**eci**b**els above one **micro**amp
dBµV	**D**eci**b**els above one **micro**volt
dBµA/m	**D**eci**b**els above one **micro**amp **per m**eter
dBµV/m	**D**eci**b**els above one **micro**volt **per m**eter
DC	**D**irect **C**urrent
E	**E**lectric Field
DSL	**D**igital **S**ubscriber **L**ine
ESD	**E**lectro**s**tatic **D**ischarge
EUT	**E**quipment **U**nder **T**est
f	**F**requency
FCC	**F**ederal **C**ommunications **C**ommission
GRP	**G**round **R**eference **P**lane
H	Magnetic Field
HCP	**H**orizontal **C**oupling **P**lane
Hz	**H**ert**z**
IEC	**I**nternational **E**lectrotechnical **C**ommission
kHz	**K**ilo**h**ert**z**
kPa	**K**ilo**pa**scal
kV	**K**ilo**v**olt
LISN	**L**ine **I**mpedance **S**tabilization **N**etwork
MHz	**M**ega**h**ertz
µH	**Microh**enry
µ	**Microf**arad
µs	**Micros**econds
PRF	**P**ulse **R**epetition **F**requency
RF	**R**adio **F**requency
RMS	**R**oot-**M**ean-**S**quare
TWT	**T**raveling **W**ave **T**ube
V/m	**V**olts **per m**eter
VCP	**V**ertical **C**oupling **P**lane

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Meru Networks, Inc. OAP832e, with the requirements of Part 15, §15.407. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the OAP832e. Meru Networks, Inc. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the OAP832e, has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, §15.407, in accordance with Meru Networks, Inc., purchase order number 107413. All tests were conducted using measurement procedure ANSI C63.4-2003.

FCC Reference	Description	Results
§15.107	Conducted Emissions	Compliant
§15.109	Radiated Emissions	Compliant
§15.203	Antenna Requirements	Compliant
§15.207	AC Conducted Emissions 150KHz – 30MHz	Compliant
§15.403 (i)	26dB Occupied Bandwidth	Compliant
§15.407 (a)(1)(ii)	Conducted Transmitter Output Power	Compliant
§15.407 (a)(1)(ii)	Power Spectral Density	Compliant
§15.407 (b)(1), (6), (7)	Undesirable Emissions (15.205/15.209 - General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Compliant
§15.407(f)	RF Exposure	Compliant

Table 1. Executive Summary of EMC Part 15.407 ComplianceTesting

II. Equipment Configuration

A. Overview

MET Laboratories, Inc. was contracted by Meru Networks, Inc. to perform testing on the OAP832e, under Meru Networks, Inc.'s purchase order number 107413.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Meru Networks, Inc. OAP832e.

The results obtained relate only to the item(s) tested.

Model(s) Tested:	OAP832e	
Model(s) Covered:	OAP832e	
EUT Specifications:	Primary Power: 120 VAC, 60 Hz	
	FCC ID: RE7-OAP832E	
	Type of Modulations:	CCK, BPSK, QPSK, 16-QAM, 64-QAM and 256-QAM
	Equipment Code:	NII
	Peak RF Output Power:	UNII1: 18.29 dBm, UNII 3: 24.30 dBm
	EUT Frequency Ranges:	5.180 to 5.240 GHz, 5.745 to 5.825 GHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35º C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Andy Shen	
Report Date(s):	February 18, 2015	

Table 2. EUT Summary

B. References

CFR 47, Part 15, Subpart B	Electromagnetic Compatibility: Criteria for Radio Frequency Devices
CFR 47, Part 15, Subpart E	Unlicensed National Information Infrastructure Devices (UNII)
ANSI C63.4:2003	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2005	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2009	American National Standard for Testing Unlicensed Wireless Devices

Table 3. References

C. Test Site

All testing was performed at MET Laboratories, Inc., 3162 Belick St., Santa Clara, CA 95054. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a 3 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

D. Description of Test Sample

The Meru Networks, Inc. OAP832e, Equipment Under Test (EUT), is an 802.11AC Outdoor wireless access point (WAP) that allows wireless devices to connect to a wired network using Wi-Fi, standard. The WAP usually connects to a router (via a wired network), and can relay data between the wireless devices (such as computers or printers) and wired devices on the network.

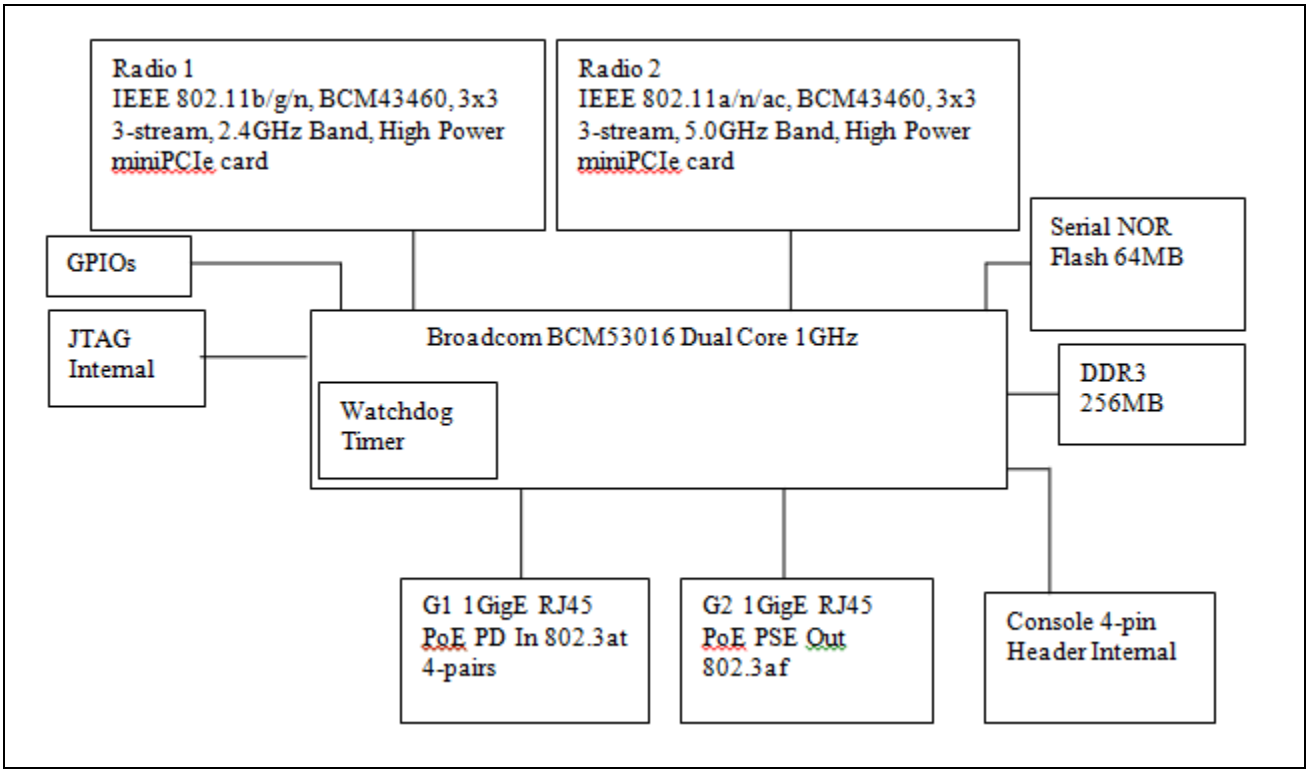


Figure 1. Block Diagram of Test Configuration

E. Equipment Configuration

The EUT was set up as outlined in Figure 1, Block Diagram of Test Setup. All cards, racks, etc., incorporated as part of the EUT is included in the following list.

Name / Description	Model Number	Part Number	Serial Number	Revision
Dual Band Radio Access Point	OAP832e	--	4514OAP8321726E2	1.0

Table 4. Equipment Configuration

F. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Ref. ID	Name / Description	Manufacturer	Model Number
1	PoE	Power Design	9001
2	Outdoor PoE	Power Design	9501GO
3	PoE	FSOP Groups	9NA0666400

Table 5. Support Equipment

SN	Antenna Type	Meru Model Number	Gain (dBi)		Beam Width (degree)	
			2.4GHz	5.0GHz	Horizontal	Vertical
1	Outdoor Dual band Omni directional Antenna	ANT-O6ABGN-0606-O	6.0	6.0	360˚	40˚
2	Wall mount Patch Antenna	ANT-O6ABGN-0607-PT	6.0	7.0	72˚ @ 2.4GHz and 82˚ at 5.0GHz	60˚ @ 2.4GHz and 75˚ at 5.0GHz
3	Directional MIMO Panel Antenna	ANT-O6ABGN-1211-PA	12.5	11.5	27˚ @ 2.4GHz and 30˚ at 5.0GHz	48˚ @ 2.4GHz and 40˚ at 5.0GHz
4	Outdoor Omni Directional Antenna	ANT-BG080-NM	8.0		360˚	15˚
5	Outdoor Omni Directional Antenna	ANT-BG080-NM1		8.0 (5.15-5.35 GHz)	360˚	12˚
6	Outdoor Omni Directional Antenna	ANT-BG080-NM2		8.0 (5.47-5.85 GHz)	360˚	12˚
7	Outdoor Rubber Duck Antenna	ANT-01BGN-05-O	5.0		360˚	40˚
8	Outdoor Rubber Duck Antenna	ANT-01ANA-07-O		7.0	360˚	40˚

Table 6. Antenna List

G. Ports and Cabling Information

Ref. ID	Port Name on EUT	Cable Description	Qty.	Length (m)	Shielded (Y/N)	Termination Point
1	Data	RG59 Coax	1	15	Yes	B. TX
2	AC Input	3 conductor, 18 awg	1	2	No	(230v/50hz)

Table 7. Ports and Cabling Information

H. Mode of Operation

During the normal operation the configuration is controlled by the Meru controller which sets the country code, ESSID, Operating frequency band and Channel etc. The device can handle up to 1.3Gbps data rates.

I. Method of Monitoring EUT Operation

During the normal operation Green or Blue LED indication on the Access point indicate the normal operation of the Access point. A Red LED indicates a failure of hardware or software settings.

J. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

K. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Meru Networks, Inc. upon completion of testing.

III. Electromagnetic Compatibility Criteria for Unintentional Radiators

Electromagnetic Compatibility Criteria

§ 15.107 Conducted Emissions Limits

Test Requirement(s):

15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in Table 8. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

15.107 (b) For a Class A digital device that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in Table 8. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals. The lower limit applies at the band edges.

Frequency range (MHz)	Class A Conducted Limits (dBµV)		*Class B Conducted Limits (dBµV)	
	Quasi-Peak	Average	Quasi-Peak	Average
* 0.15- 0.45	79	66	66 - 56	56 - 46
0.45 - 0.5	79	66	56	46
0.5 - 30	73	60	60	50
Note 1 — The lower limit shall apply at the transition frequencies. Note 2 — The limit decreases linearly with the logarithm if the frequency in the range 0.15 MHz to 0.5 MHz.				

Table 8. Conducted Limits for Radio Frequency Devices calculated from FCC Part 15 Subsections 15.107(a) (b)

Test Procedures: The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. The method of testing, test conditions, and test procedures of ANSI C63.4 were used. The EUT was powered through a 50Ω/50µH LISN. An EMI receiver, connected to the measurement port of the LISN, scanned the frequency range from 150 kHz to 30 MHz in order to find the peak conducted emissions. All peak emissions within 6 dB of the limit were re-measured using a quasi-peak and/or average detector as appropriate.

Test Results: The EUT was compliant with the Class B requirement(s) of this section. Measured emissions were below applicable limits.

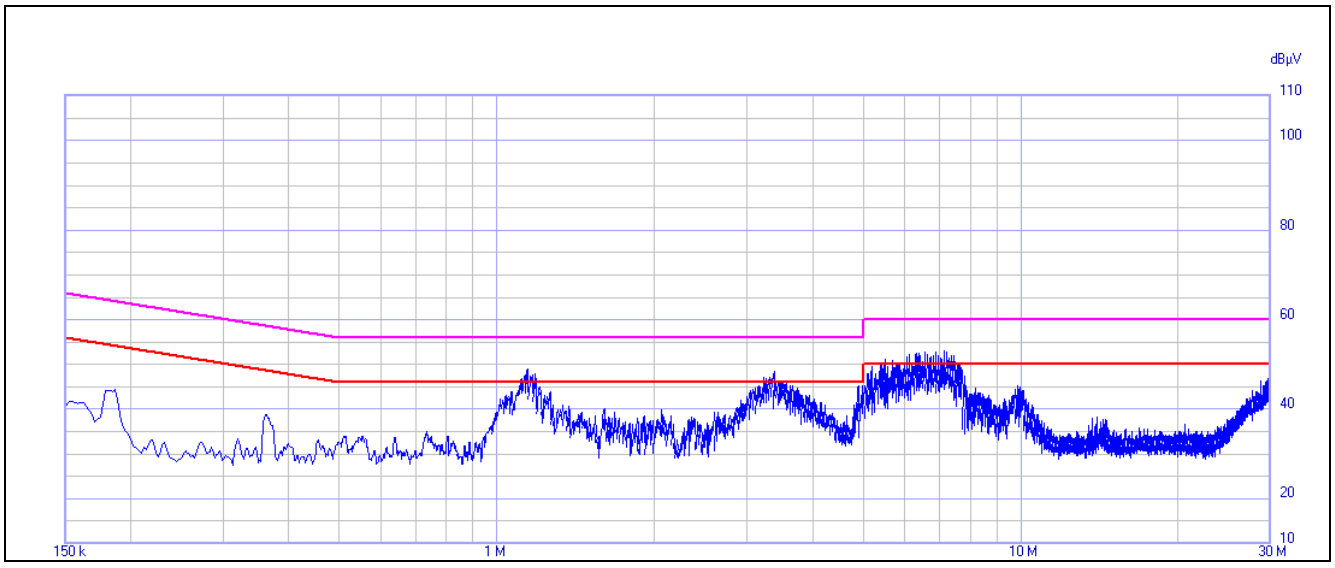
Test Engineer(s): Dan Phan

Test Date(s): 12/05/14

Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz)

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
PowerDsine 9501GO - Line 120VAC	1.146	40.48	56	-15.52	Pass	24.72	46	-21.28	Pass
PowerDsine 9501GO - Line 120VAC	5.19	42.5	60	-17.5	Pass	29.39	50	-20.61	Pass
PowerDsine 9501GO - Line 120VAC	5.51	43.7	60	-16.3	Pass	31.41	50	-18.59	Pass
PowerDsine 9501GO - Line 120VAC	6.34	46.04	60	-13.96	Pass	34.86	50	-15.14	Pass
PowerDsine 9501GO - Line 120VAC	7.138	47.66	60	-12.34	Pass	34.38	50	-15.62	Pass
PowerDsine 9501GO - Line 120VAC	29.927	42.29	60	-17.71	Pass	36.4	50	-13.6	Pass

Table 9. Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), with PowerDsine9501GO

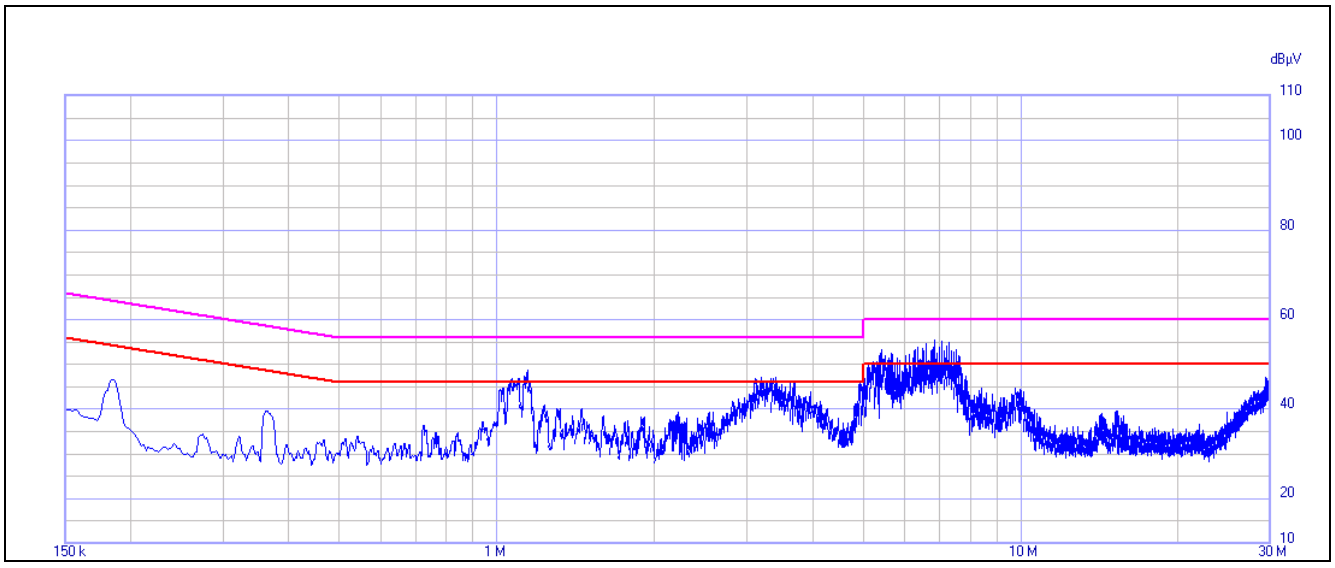


Plot 1. Conducted Emission, Phase Line Plot, with PowerDsine9501GO

Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz)

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
PowerDsine 9501GO - Neutral 120VAC	1.146	40.5	56	-15.5	Pass	24.92	46	-21.08	Pass
PowerDsine 9501GO - Neutral 120VAC	3.397	42.33	56	-13.67	Pass	30.56	46	-15.44	Pass
PowerDsine 9501GO - Neutral 120VAC	5.408	44.13	60	-15.87	Pass	31.08	50	-18.92	Pass
PowerDsine 9501GO - Neutral 120VAC	6.79	48.65	60	-11.35	Pass	36.48	50	-13.52	Pass
PowerDsine 9501GO - Neutral 120VAC	29.817	41.89	60	-18.11	Pass	36.12	50	-13.88	Pass
PowerDsine 9501GO - Neutral 120VAC	7.528	45.19	60	-14.81	Pass	33.25	50	-16.75	Pass

Table 10. Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), with PowerDsine9501GO

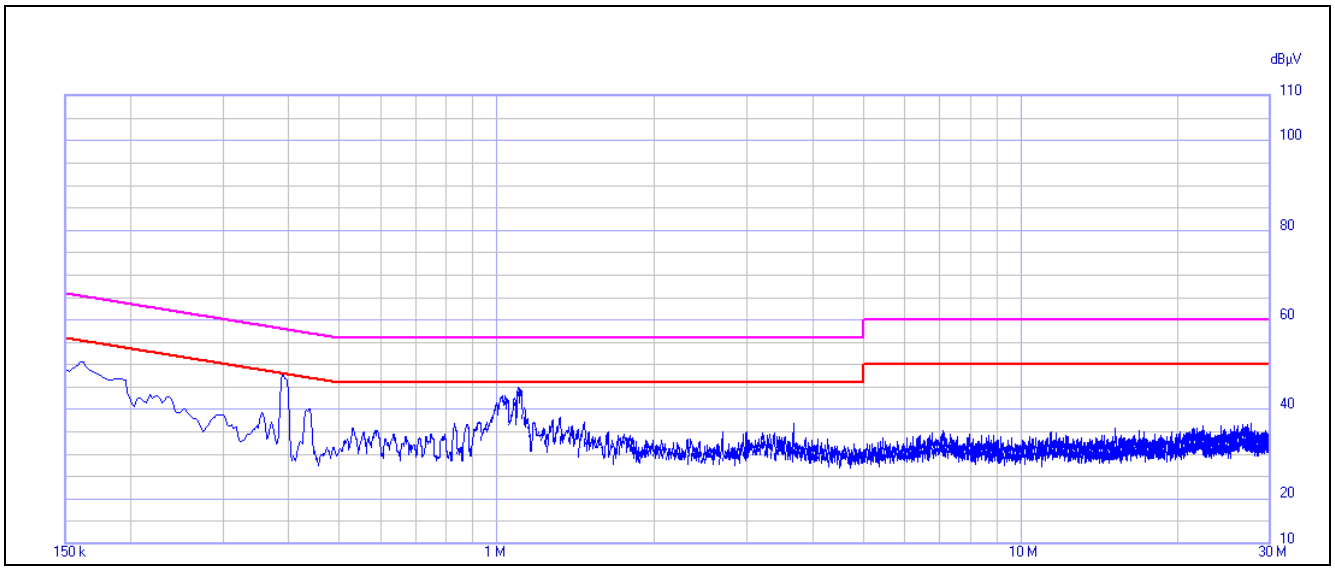


Plot 2. Conducted Emission, Neutral Line Plot, with PowerDsine9501GO

Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz)

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
FSP PS - Line	0.15	44.98	66	-21.02	Pass	28.71	56	-27.29	Pass
FSP PS - Line	0.162	44.81	65.363	-20.553	Pass	36.11	55.363	-19.253	Pass
FSP PS - Line	0.389	44.68	58.107	-13.427	Pass	35.88	48.107	-12.227	Pass
FSP PS - Line	1.025	36.08	56	-19.92	Pass	26.4	46	-19.6	Pass
FSP PS - Line	1.08	37.77	56	-18.23	Pass	24.05	46	-21.95	Pass
FSP PS - Line	1.107	40.48	56	-15.52	Pass	34.79	46	-11.21	Pass

Table 11. Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), with FSP Power Supply

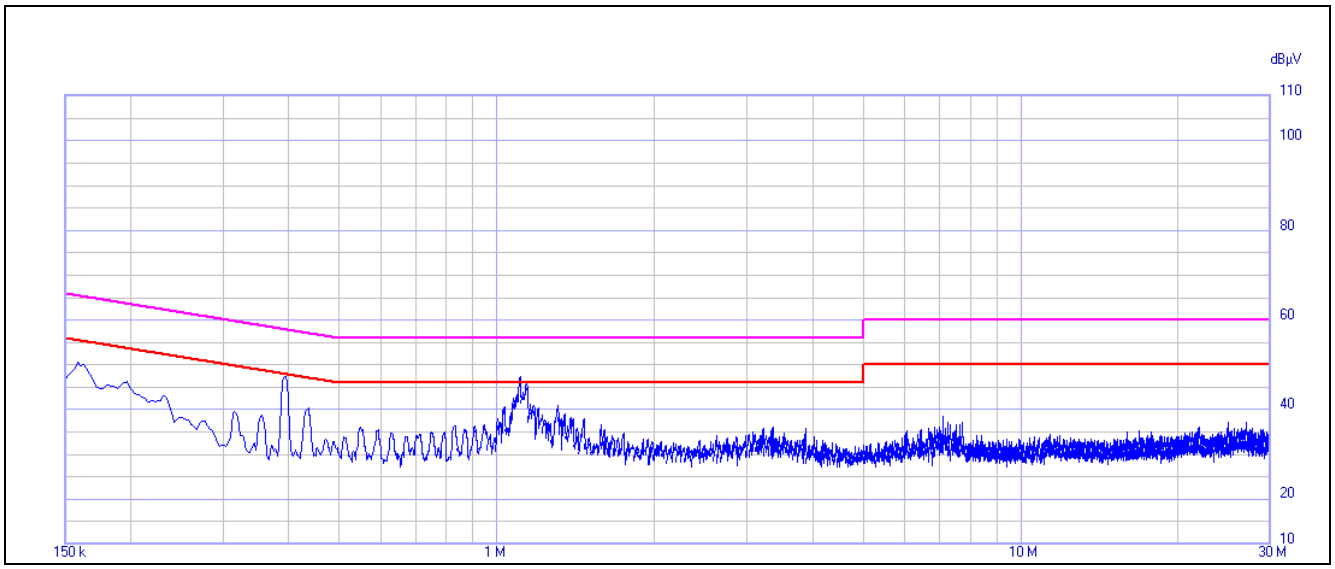


Plot 3. Conducted Emission, Phase Line Plot, with FSP Power Supply

Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz)

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
FSP PS - Neutral	0.152	45.21	65.89	-20.68	Pass	31.13	55.89	-24.76	Pass
FSP PS - Neutral	0.158	46.14	65.57	-19.43	Pass	39.5	55.57	-16.07	Pass
FSP PS - Neutral	0.393	46.05	58.022	-11.972	Pass	45.07	48.022	-2.952	Pass
FSP PS - Neutral	8.512	36.98	60	-23.02	Pass	25.36	50	-24.64	Pass
FSP PS - Neutral	1.08	38.39	56	-17.61	Pass	23.77	46	-22.23	Pass
FSP PS - Neutral	1.109	39.85	56	-16.15	Pass	34.2	46	-11.8	Pass

Table 12. Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), with FSP Power Supply



Plot 4. Conducted Emission, Neutral Line Plot, with FSP Power Supply

Radiated Emission Limits

§ 15.109 Radiated Emissions Limits

Test Requirement(s): **15.109 (a)** Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the Class B limits expressed in Table 13.

15.109 (b) The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the Class A limits expressed in Table 13.

Frequency (MHz)	Field Strength (dBµV/m)	
	§15.109 (b), Class A Limit (dBµV) @ 10m	§15.109 (a),Class B Limit (dBµV) @ 3m
30 – 88	39.00	40.00
88 - 216	43.50	43.50
216 - 960	46.40	46.00
Above 960	49.50	54.00

Table 13. Radiated Emissions Limits calculated from FCC Part 15, §15.109 (a) (b)

Test Procedures: The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. The method of testing and test conditions of ANSI C63.4 were used. An antenna was located 3 m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. Unless otherwise specified, measurements were made using a quasi-peak detector with a 120 kHz bandwidth for frequencies between 30MHz to 1GHz. For frequencies between 1GHz and 6GHz, an average detector with a 1MHz bandwidth was used.

Test Results: The EUT was compliant with the Class B requirement(s) of this section. Measured emissions were below applicable limits.

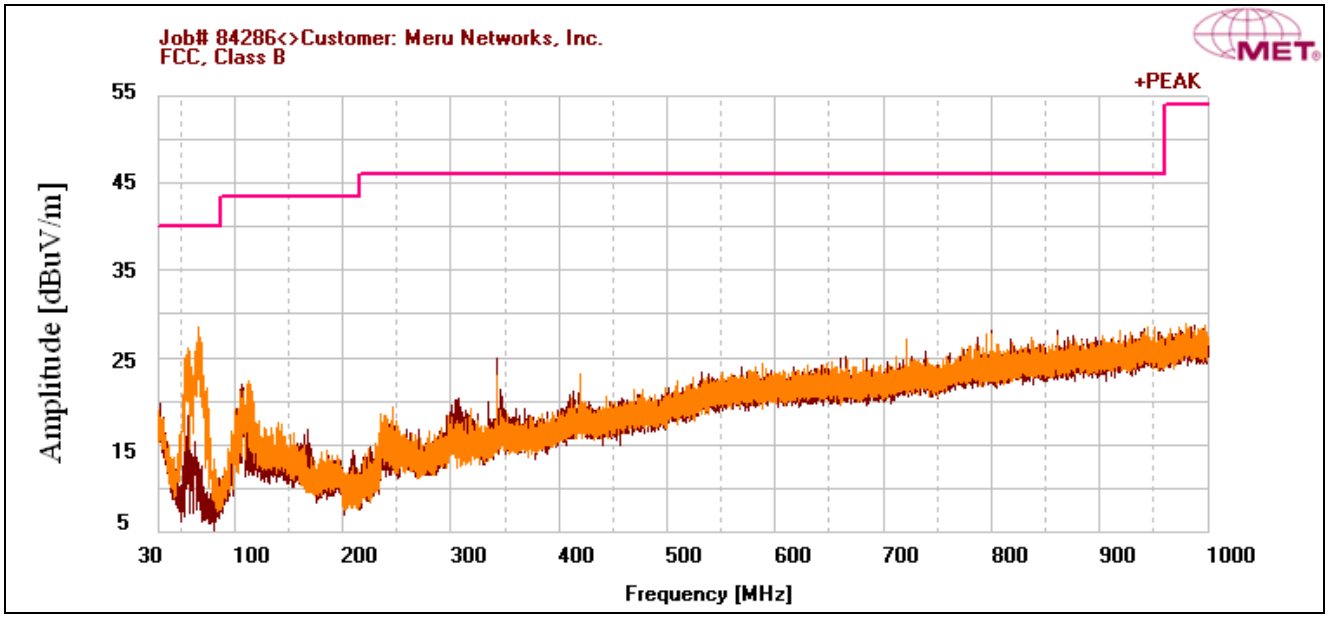
Test Engineer(s): Cliff DePuy

Test Date(s): 12/04/14

Radiated Emissions Limits Test Results, Class B

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected Amplitude (dBµV)	ACF (dB/m)	Pre Amp Gain (dB)	CBL (dB)	DCF (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
57.25	V	264	100	18.25	6.897	0	1.322	0	26.469	40	-13.531
66.4	V	280	100	16.3	6.661	0	1.428	0	24.389	40	-15.611
104.68	H	200	283.05	7.5	11.676	0	1.775	0	20.951	43.5	-22.549
113.24	V	215	100	5.2	12.515	0	1.854	0	19.569	43.5	-23.931
343.16	H	85	220.35	2.7	14.073	0	3.337	0	20.11	46	-25.89
418.92	V	0	100	0.8	16.358	0	3.68	0	20.838	46	-25.162

Table 14. Radiated Emissions Limits, Test Results, 30 MHz – 1 GHz

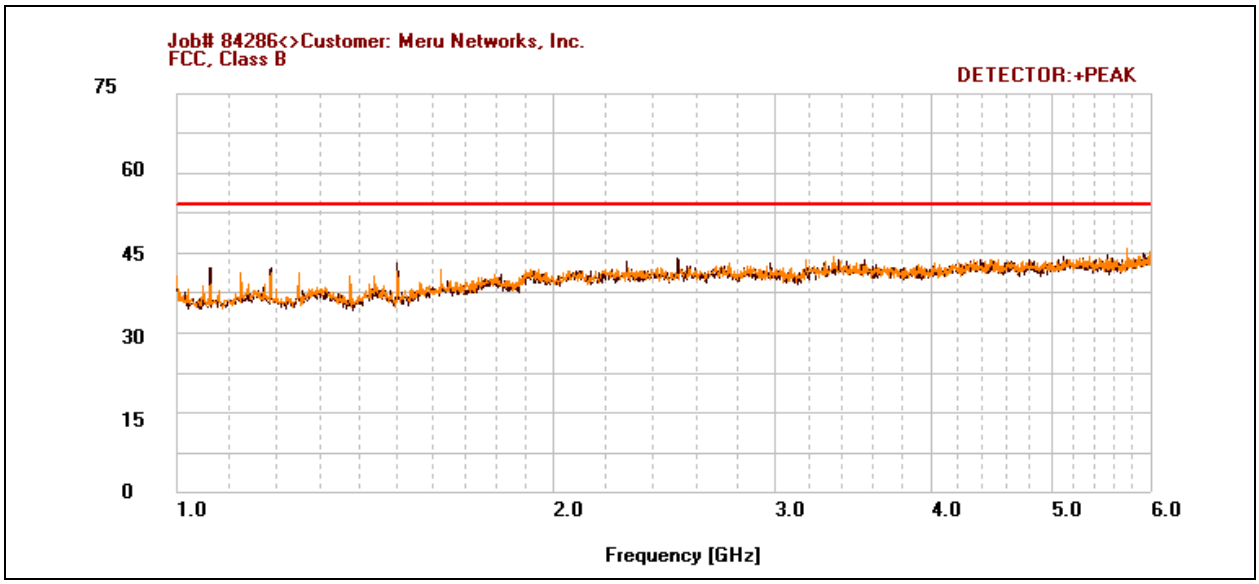


Plot 5. Radiated Emissions, 30 MHz – 1 GHz

Radiated Emissions Limits Test Results, Class B

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected Amplitude (dBµV)	ACF (dB/m)	Pre Amp Gain (dB)	CBL (dB)	DCF (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1062	H	30	100	43.76	27.898	33.524	0	0	38.134	50	-11.866
1187	H	4	127.6	42.87	28.498	33.471	0	0	37.897	50	-12.103
1125	V	6	198.5	40.03	28.2	33.497	0	0	34.733	50	-15.267
1500	H	79	100	46.83	28.2	33.34	0	0	41.69	50	-8.31
1625	V	83	174.35	42.59	29.2	33.288	0	0	38.502	50	-11.498
2506	H	0	100	31.42	32.71	34.223	0	0	29.907	50	-20.093

Table 15. Radiated Emissions Limits, Test Results, 1 GHz – 6 GHz



Plot 6. Radiated Emissions, 1 GHz – 6 GHz

IV. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.203 Antenna Requirement

Test Requirement: **§ 15.203:** An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

a.) Antenna must be permanently attached to the unit.

b.) Antenna must use a unique type of connector to attach to the EUT.

c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Results: The EUT as tested is compliant the criteria of §15.203. The EUT is professionally installed.

Test Engineer(s): Andy Shen

Test Date(s): 12/13/14

SN	Antenna Type	Meru Model Number	Gain (dBi)		Beam Width (degree)	
			2.4GHz	5.0GHz	Horizontal	Vertical
1	Outdoor Dual band Omni directional Antenna	ANT-O6ABGN-0606-O	6.0	6.0	360˚	40˚
2	Wall mount Patch Antenna	ANT-O6ABGN-0607-PT	6.0	7.0	72˚ @ 2.4GHz and 82˚ at 5.0GHz	60˚ @ 2.4GHz and 75˚ at 5.0GHz
3	Directional MIMO Panel Antenna	ANT-O6ABGN-1211-PA	12.5	11.5	27˚ @ 2.4GHz and 30˚ at 5.0GHz	48˚ @ 2.4GHz and 40˚ at 5.0GHz
4	Outdoor Omni Directional Antenna	ANT-BG080-NM	8.0		360˚	15˚
5	Outdoor Omni Directional Antenna	ANT-BG080-NM1		8.0 (5.15-5.35 GHz)	360˚	12˚
6	Outdoor Omni Directional Antenna	ANT-BG080-NM2		8.0 (5.47-5.85 GHz)	360˚	12˚
7	Outdoor Rubber Duck Antenna	ANT-01BGN-05-O	5.0		360˚	40˚
8	Outdoor Rubber Duck Antenna	ANT-01ANA-07-O		7.0	360˚	40˚

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.207(a) Conducted Emissions Limits

Test Requirement(s): **§ 15.207 (a):** For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 Σ line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency range (MHz)	§ 15.207(a), Conducted Limit (dBμV)	
	Quasi-Peak	Average
* 0.15- 0.45	66 – 56	56 - 46
0.45 - 0.5	56	46
0.5 - 30	60	50

Table 16. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)

Test Procedure: The EUT was placed on a 0.8 m-high wooden table inside a screen room. The EUT was situated such that the back of the EUT was 0.4 m from one wall of the vertical ground plane, and the remaining sides of the EUT were no closer than 0.8 m from any other conductive surface. The EUT was powered from a 50 Ω/50 μH Line Impedance Stabilization Network (LISN). The EMC receiver scanned the frequency range from 150 kHz to 30 MHz. Conducted Emissions measurements were made in accordance with *ANSI C63.4-2003 "Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz"*. The measurements were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω/50 μH LISN as the input transducer to an EMC/field intensity meter. For the purpose of this testing, the transmitter was turned on. Scans were performed with the transmitter on.

Test Results: The EUT was compliant with this requirement.

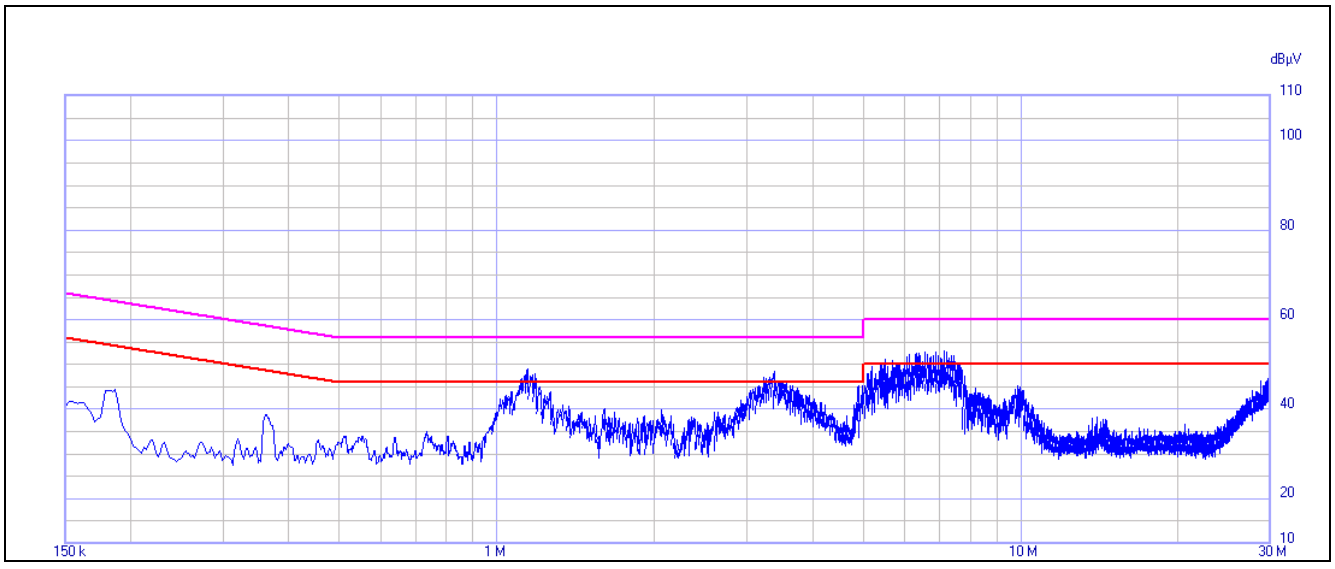
Test Engineer(s): Dan Phan

Test Date(s): 12/05/14

15.207(a) Conducted Emissions Test Results

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
PowerDsine 9501GO - Line 120VAC	1.146	40.48	56	-15.52	Pass	24.72	46	-21.28	Pass
PowerDsine 9501GO - Line 120VAC	5.19	42.5	60	-17.5	Pass	29.39	50	-20.61	Pass
PowerDsine 9501GO - Line 120VAC	5.51	43.7	60	-16.3	Pass	31.41	50	-18.59	Pass
PowerDsine 9501GO - Line 120VAC	6.34	46.04	60	-13.96	Pass	34.86	50	-15.14	Pass
PowerDsine 9501GO - Line 120VAC	7.138	47.66	60	-12.34	Pass	34.38	50	-15.62	Pass
PowerDsine 9501GO - Line 120VAC	29.927	42.29	60	-17.71	Pass	36.4	50	-13.6	Pass

Table 17. Conducted Emissions, 15.207(a), Phase Line, Test Results, with PowerDsine9501GO

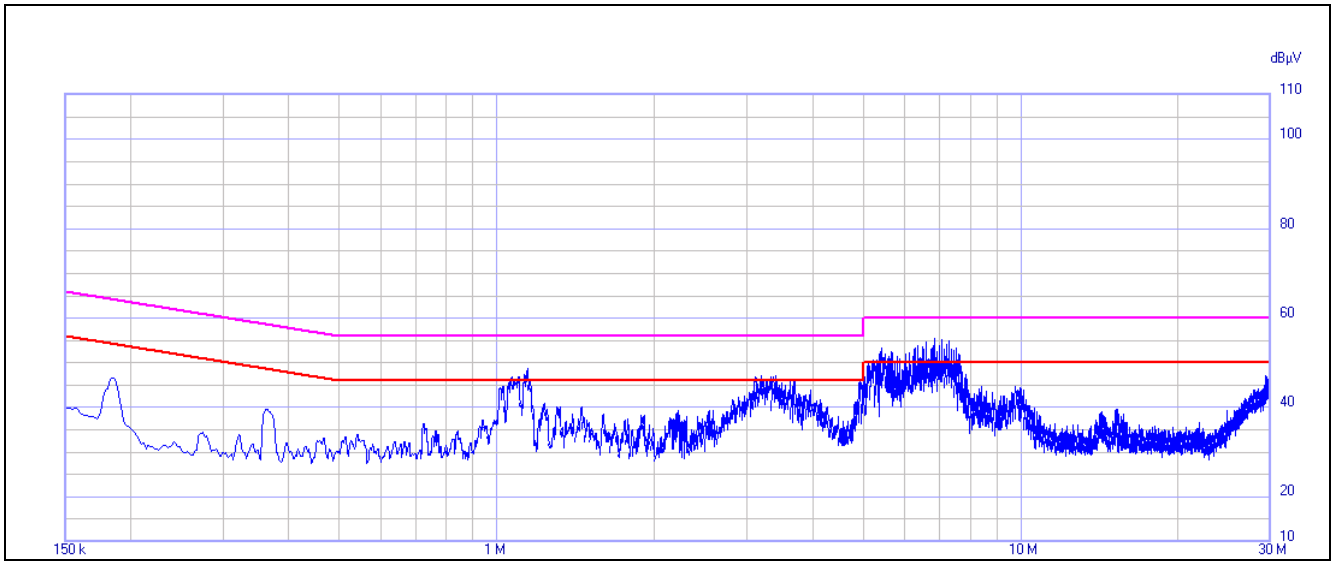


Plot 7. Conducted Emissions, 15.207(a), Phase Line, with PowerDsine9501GO

15.207(a) Conducted Emissions Test Results

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
PowerDsine 9501GO - Neutral 120VAC	1.146	40.5	56	-15.5	Pass	24.92	46	-21.08	Pass
PowerDsine 9501GO - Neutral 120VAC	3.397	42.33	56	-13.67	Pass	30.56	46	-15.44	Pass
PowerDsine 9501GO - Neutral 120VAC	5.408	44.13	60	-15.87	Pass	31.08	50	-18.92	Pass
PowerDsine 9501GO - Neutral 120VAC	6.79	48.65	60	-11.35	Pass	36.48	50	-13.52	Pass
PowerDsine 9501GO - Neutral 120VAC	29.817	41.89	60	-18.11	Pass	36.12	50	-13.88	Pass
PowerDsine 9501GO - Neutral 120VAC	7.528	45.19	60	-14.81	Pass	33.25	50	-16.75	Pass

Table 18. Conducted Emissions, 15.207(a), Neutral Line, Test Results, with PowerDsine9501GO

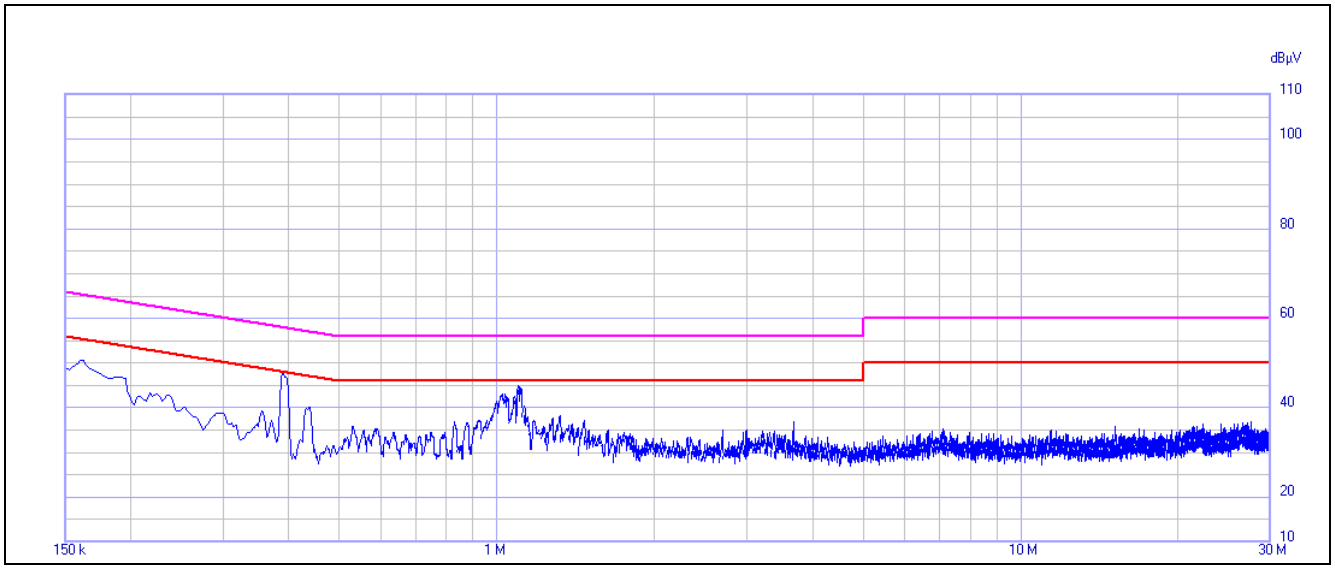


Plot 8. Conducted Emissions, 15.207(a), Neutral Line, with PowerDsine9501GO

15.207(a) Conducted Emissions Test Results

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
FSP PS - Line	0.15	44.98	66	-21.02	Pass	28.71	56	-27.29	Pass
FSP PS - Line	0.162	44.81	65.363	-20.553	Pass	36.11	55.363	-19.253	Pass
FSP PS - Line	0.389	44.68	58.107	-13.427	Pass	35.88	48.107	-12.227	Pass
FSP PS - Line	1.025	36.08	56	-19.92	Pass	26.4	46	-19.6	Pass
FSP PS - Line	1.08	37.77	56	-18.23	Pass	24.05	46	-21.95	Pass
FSP PS - Line	1.107	40.48	56	-15.52	Pass	34.79	46	-11.21	Pass

Table 19. Conducted Emissions, 15.207(a), Phase Line, Test Results, with FSP Power Supply

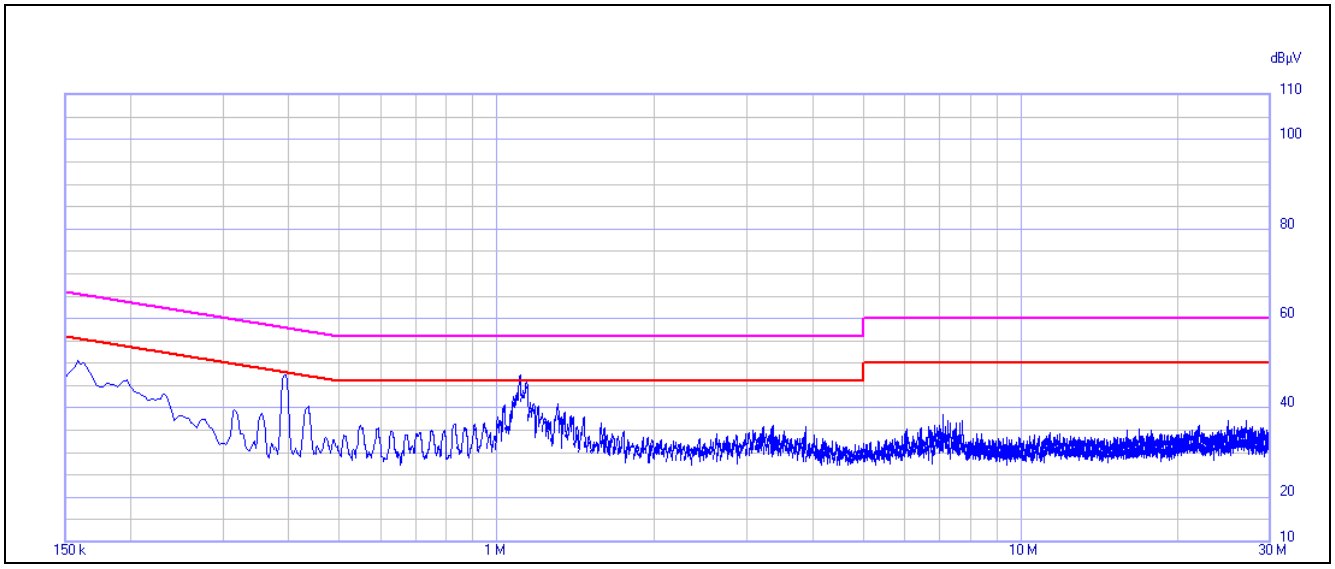


Plot 9. Conducted Emissions, 15.207(a), Phase Line, with FSP Power Supply

15.207(a) Conducted Emissions Test Results

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
FSP PS - Neutral	0.152	45.21	65.89	-20.68	Pass	31.13	55.89	-24.76	Pass
FSP PS - Neutral	0.158	46.14	65.57	-19.43	Pass	39.5	55.57	-16.07	Pass
FSP PS - Neutral	0.393	46.05	58.022	-11.972	Pass	45.07	48.022	-2.952	Pass
FSP PS - Neutral	8.512	36.98	60	-23.02	Pass	25.36	50	-24.64	Pass
FSP PS - Neutral	1.08	38.39	56	-17.61	Pass	23.77	46	-22.23	Pass
FSP PS - Neutral	1.109	39.85	56	-16.15	Pass	34.2	46	-11.8	Pass

Table 20. Conducted Emissions, 15.207(a), Neutral Line, Test Results, with FSP Power Supply



Plot 10. Conducted Emissions, 15.207(a), Neutral Line, with FSP Power Supply

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15. 403(i) 26dB Bandwidth

Test Requirements: **§ 15.403 (i):** For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

Test Procedure: The transmitter was set to low, mid, and high operating frequencies at the highest output power and connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately equal to 1% of the total emission bandwidth, VBW > RBW. The 26 dB Bandwidth was measured and recorded.

Test Results The 26 dB Bandwidth was compliant with the requirements of this section and was determined from the plots on the following pages.

Test Engineer(s): Kaushani Dasgupta

Test Date(s): 12/12/14

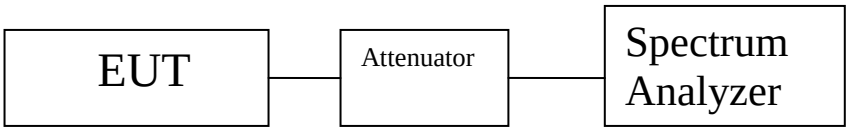


Figure 2. Occupied Bandwidth, Test Setup

Occupied Bandwidth Test Results

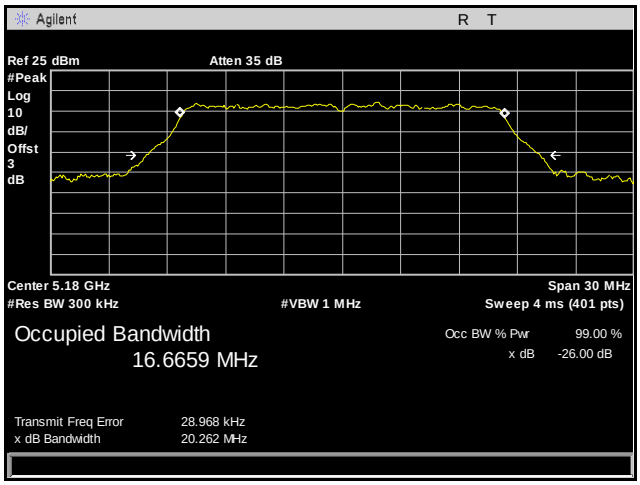
26dB Occupied Bandwidth, 5GHz, U-NII-1			
	Carrier Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
802.11a_20MHz Port 5GHz-L	Low	5180	20.262
	Mid	5200	20.214
	High	5240	20.310
802.11n 20 MHz Port 5GHz-L	Low	5180	20.405
	Mid	5200	20.466
	High	5240	20.551
802.11n 20 MHz Port 5GHz-R	Low	5180	20.555
	Mid	5200	20.311
	High	5240	20.205
802.11n 20MHz Port 5GHz-M	Low	5180	20.670
	Mid	5200	20.493
	High	5240	20.524
802.11n 40MHz Port 5GHz-L	Low	5190	39.314
	High	5230	39.469
802.11n 40 MHz Port 5GHz-R	Low	5190	39.581
	High	5230	39.533
802.11n 40 MHz Port 5GHz-M	Low	5190	39.097
	High	5230	39.585
802.11ac 20 MHz Port 5GHz-L	Low	5180	20.552
	Mid	5200	20.409
	High	5240	20.633
802.11ac 20 MHz Port 5GHz-R	Low	5180	20.672
	Mid	5200	20.658
	High	5240	20.628
802.11ac 20MHz Port 5GHz-M	Low	5180	20.326
	Mid	5200	20.456
	High	5240	20.697
802.11ac 40MHz Port 5GHz-L	Low	5190	39.312
	High	5230	39.341
802.11ac 40 MHz Port 5GHz-R	Low	5190	29.161
	High	5230	39.459
802.11ac 40 MHz Port 5GHz-M	Low	5190	39.339
	High	5230	39.354
802.11ac 80MHz Port 5GHz-L		5210	81.676
802.11ac 80MHz Port 5GHz-R		5210	81.593
802.11ac 80MHz Port 5GHz-M		5210	81.217

Table 21. 26 dB Occupied Bandwidth, Test Results, UNII 1

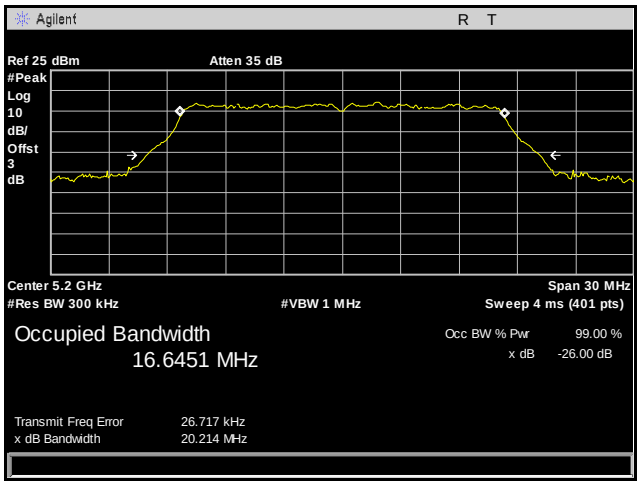
26dB Occupied Bandwidth, 5GHz, U-NII-3			
	Carrier Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
802.11a_20MHz Port 5GHz-L	Low	5745	20.422
	Mid	5785	20.504
	High	5825	20.449
802.11n 20 MHz Port 5GHz-L	Low	5745	20.432
	Mid	5785	20.414
	High	5825	20.314
802.11n 20 MHz Port 5GHz-R	Low	5745	20.554
	Mid	5785	20.497
	High	5825	20.329
802.11n 20MHz Port 5GHz-M	Low	5745	20.605
	Mid	5785	20.333
	High	5825	20.331
802.11n 40MHz Port 5GHz-L	Low	5755	39.558
	High	5795	39.428
802.11n 40 MHz Port 5GHz-R	Low	5755	39.933
	High	5795	39.373
802.11n 40 MHz Port 5GHz-M	Low	5755	39.596
	High	5795	39.675
802.11ac 20 MHz Port 5GHz-L	Low	5745	20.237
	Mid	5785	20.244
	High	5825	20.396
802.11ac 20 MHz Port 5GHz-R	Low	5745	20.327
	Mid	5785	20.245
	High	5825	20.529
802.11ac 20MHz Port 5GHz-M	Low	5745	20.582
	Mid	5785	20.452
	High	5825	20.431
802.11ac 40MHz Port 5GHz-L	Low	5755	39.569
	High	5795	39.693
802.11ac 40 MHz Port 5GHz-R	Low	5755	39.425
	High	5795	39.366
802.11ac 40 MHz Port 5GHz-M	Low	5755	39.407
	High	5795	39.444
802.11ac 80MHz Port 5GHz-L		5775	82.043
802.11ac 80MHz Port 5GHz-R		5775	82.251
802.11ac 80MHz Port 5GHz-M		5775	82.059

Table 22. 26 dB Occupied Bandwidth, Test Results, UNII 3

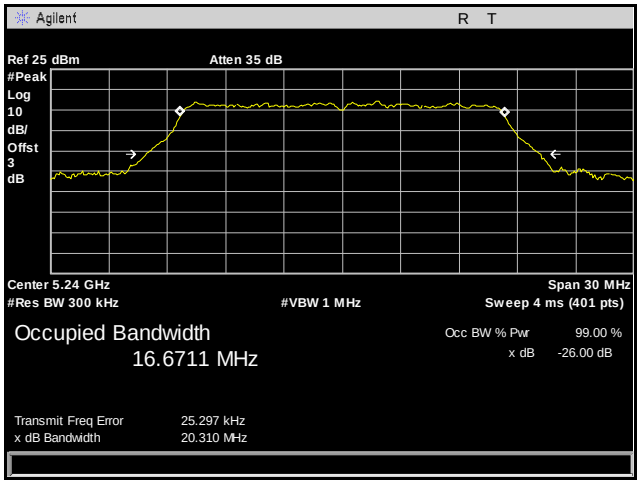
26 dB Occupied Bandwidth Test Results, 802.11a 20 MHz, Port L, UNII 1



Plot 11. 26 dB Occupied Bandwidth, Low Channel, 802.11a 20 MHz, Port L, UNII 1

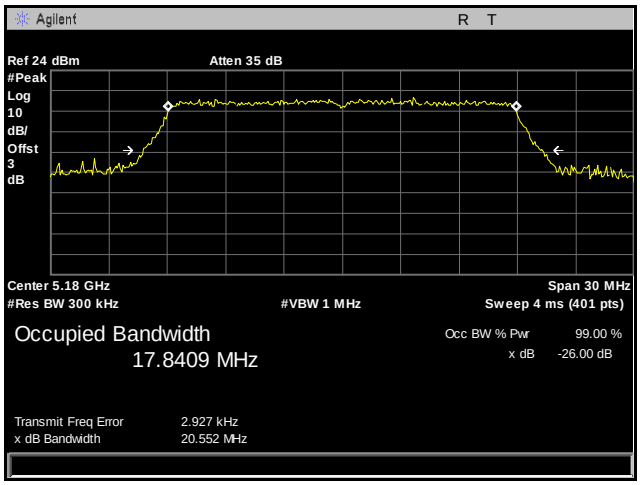


Plot 12. 26 dB Occupied Bandwidth, Mid Channel, 802.11a 20 MHz, UNII 1

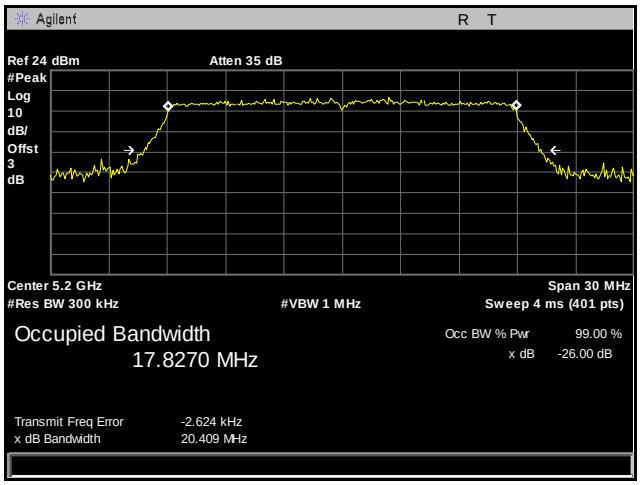


Plot 13. 26 dB Occupied Bandwidth, High Channel, 802.11a 20 MHz, UNII 1

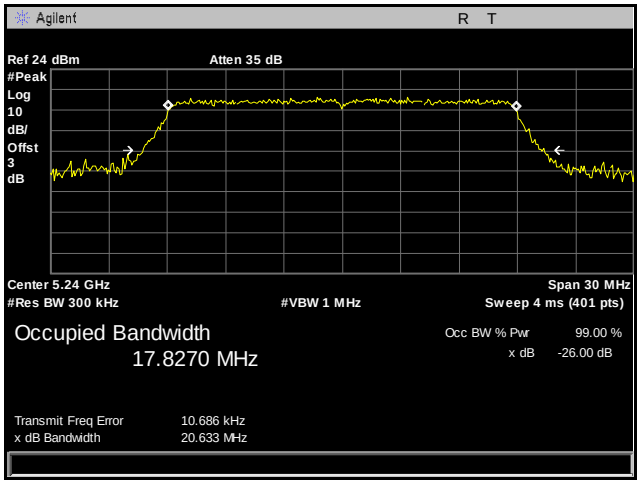
26 dB Occupied Bandwidth Test Results, 802.11ac 20 MHz, Port L, UNII 1



Plot 14. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Port L, UNII 1

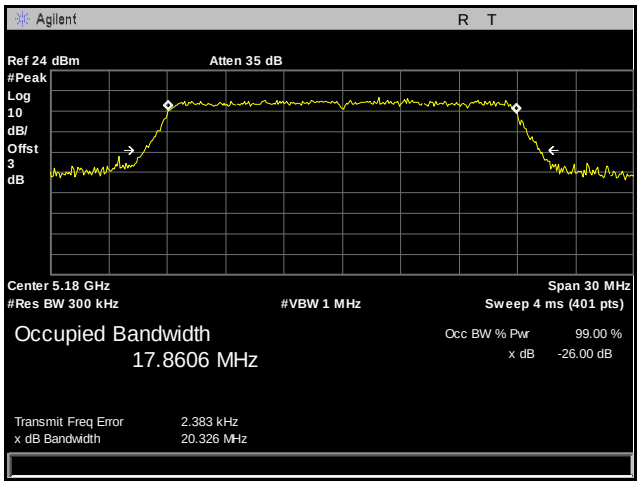


Plot 15. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Port L, UNII 1

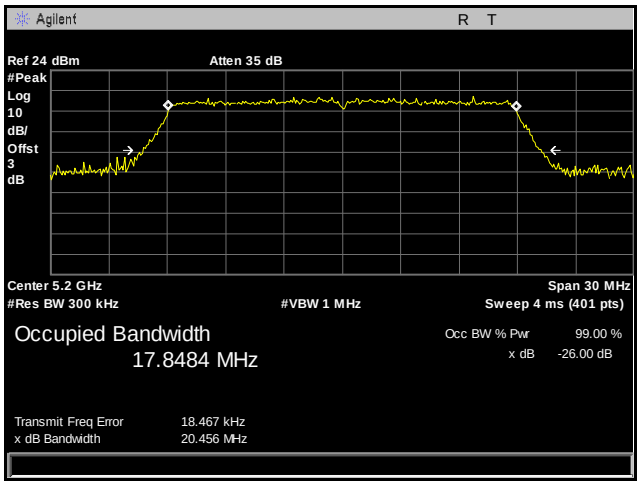


Plot 16. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Port L, UNII 1

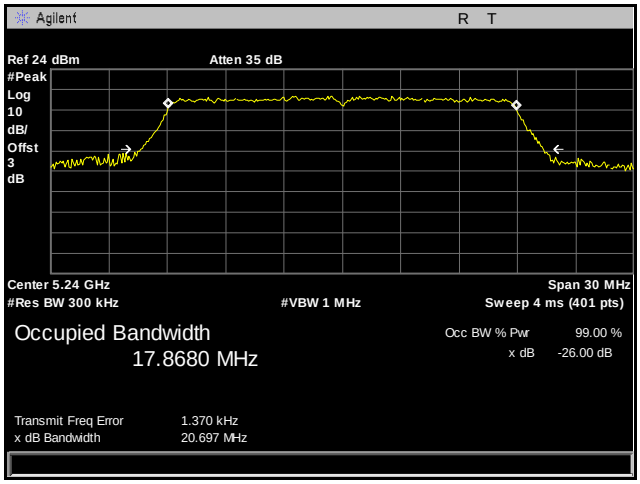
26 dB Occupied Bandwidth Test Results, 802.11ac 20 MHz, Port M, UNII 1



Plot 17. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Port M, UNII 1

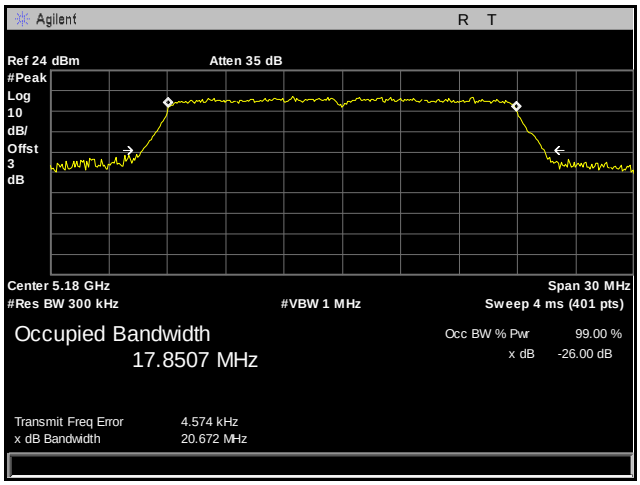


Plot 18. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Port M, UNII 1

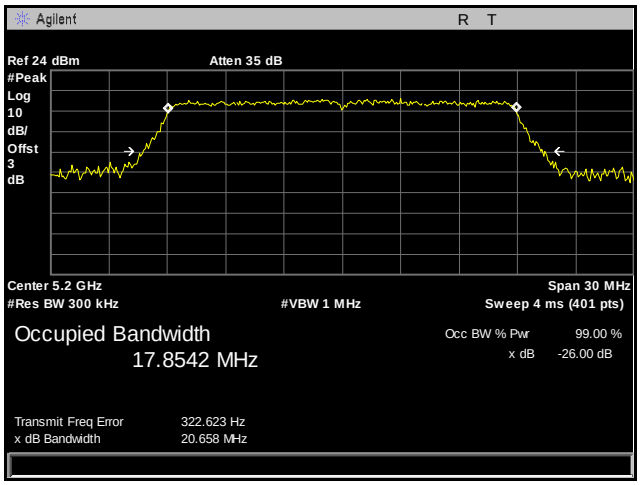


Plot 19. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Port M, UNII 1

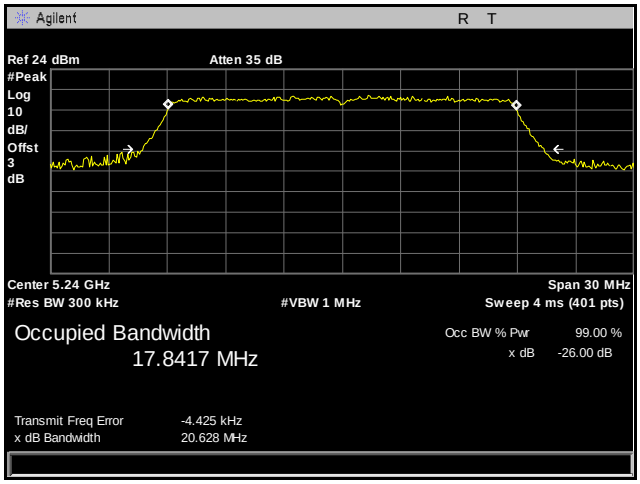
26 dB Occupied Bandwidth Test Results, 802.11ac 20 MHz, Port R, UNII 1



Plot 20. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Port R, UNII 1

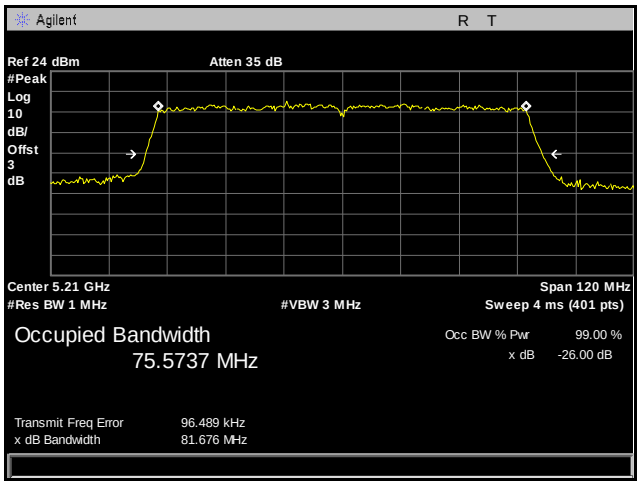


Plot 21. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Port R, UNII 1

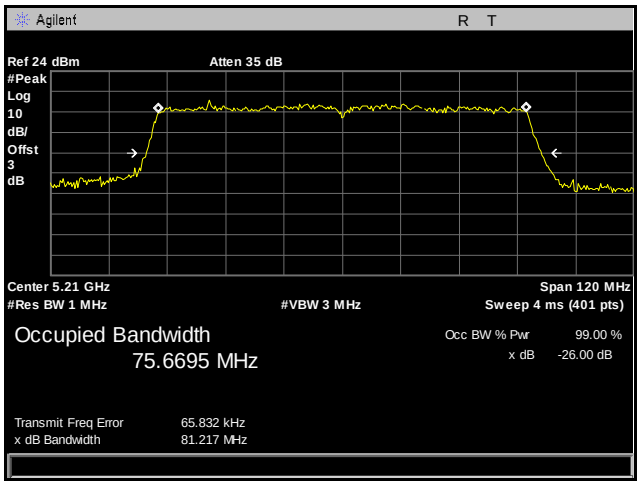


Plot 22. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Port R, UNII 1

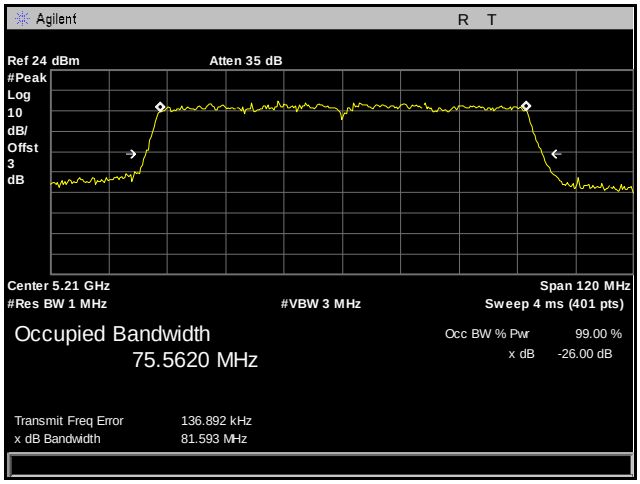
26 dB Occupied Bandwidth Test Results, 802.11ac 80 MHz, UNII 1



Plot 23. 26 dB Occupied Bandwidth, High Channel, 802.11ac 80 MHz, Port L, UNII 1

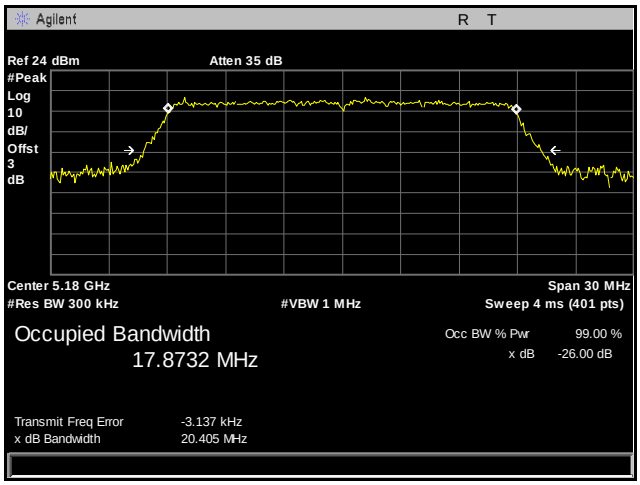


Plot 24. 26 dB Occupied Bandwidth, High Channel, 802.11ac 80 MHz, Port M, UNII 1

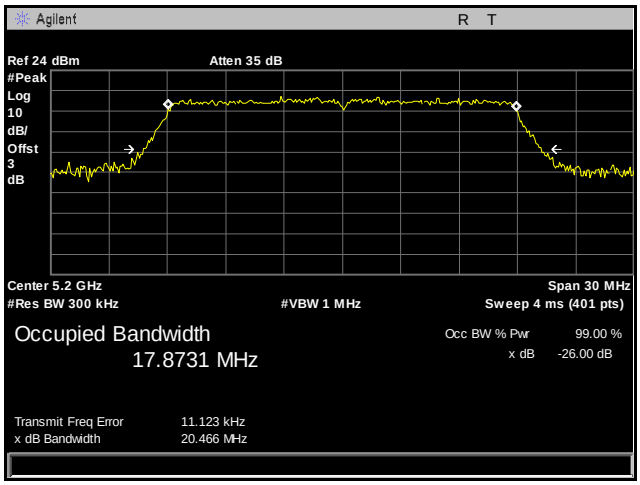


Plot 25. 26 dB Occupied Bandwidth, High Channel, 802.11ac 80 MHz, Port R, UNII 1

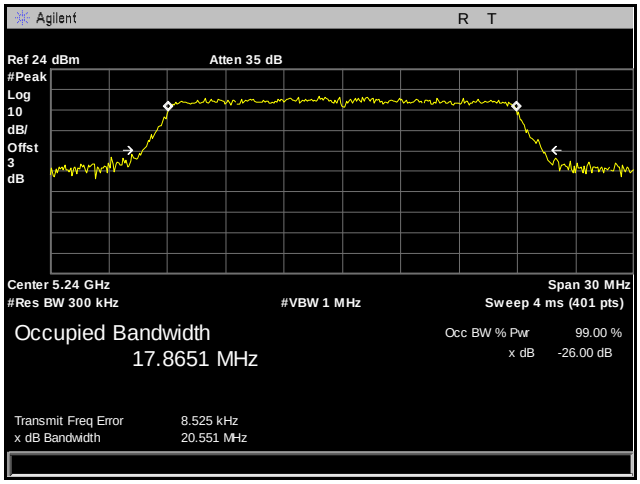
26 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port L, UNII 1



Plot 26. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Port L, UNII 1

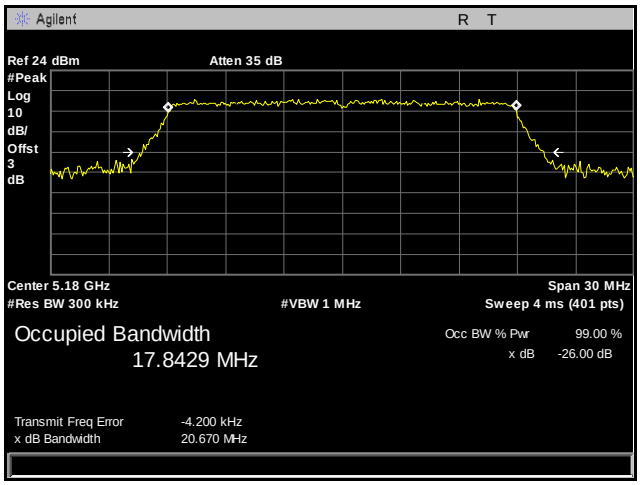


Plot 27. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Port L, UNII 1

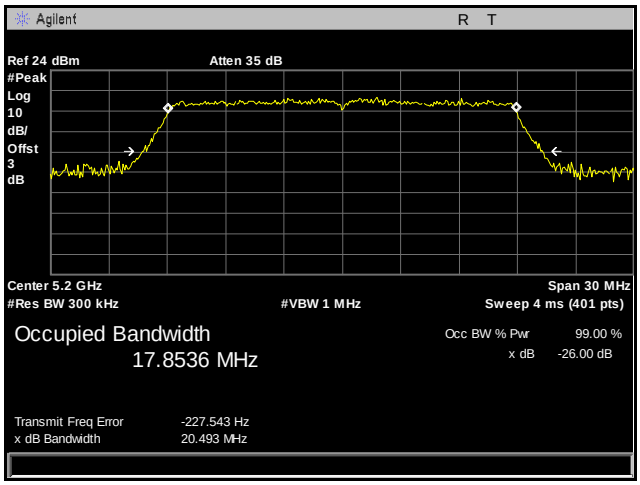


Plot 28. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, Port L, UNII 1

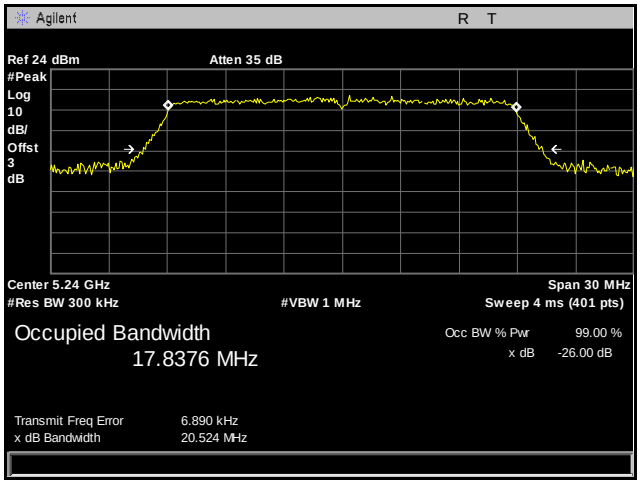
26 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port M, UNII 1



Plot 29. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Port M, UNII 1

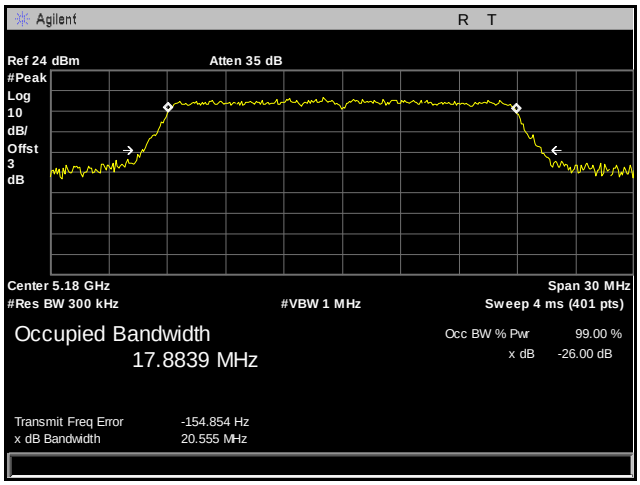


Plot 30. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Port M, UNII 1

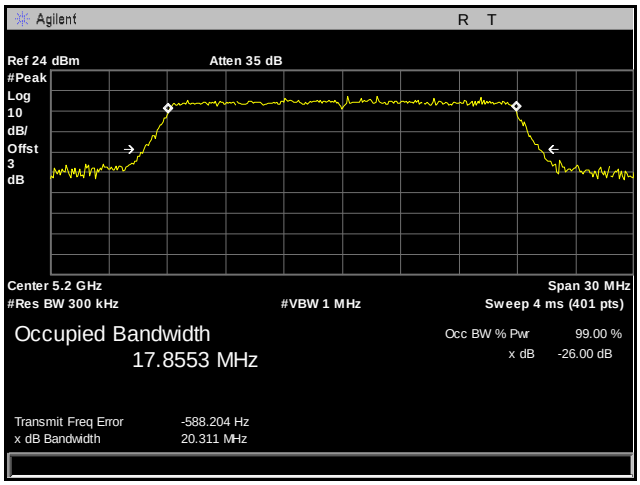


Plot 31. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, Port M, UNII 1

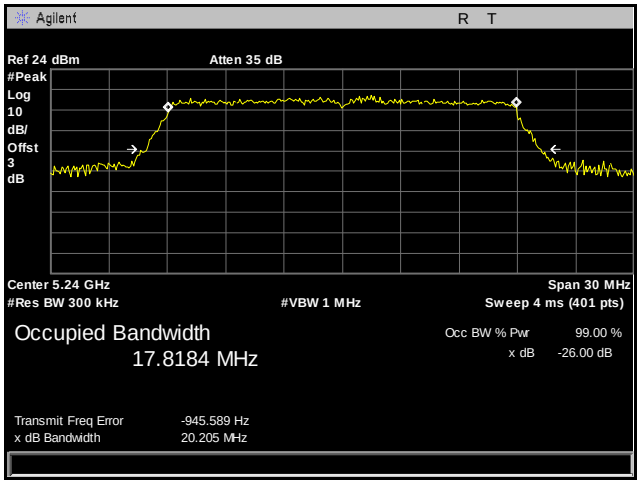
26 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port R, UNII 1



Plot 32. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Port R, UNII 1

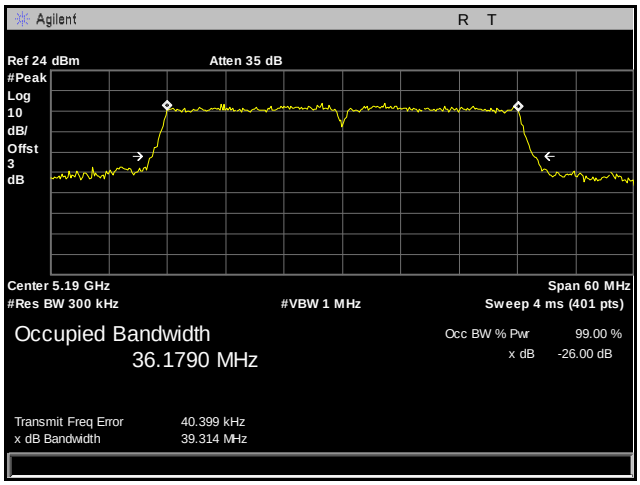


Plot 33. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Port R, UNII 1

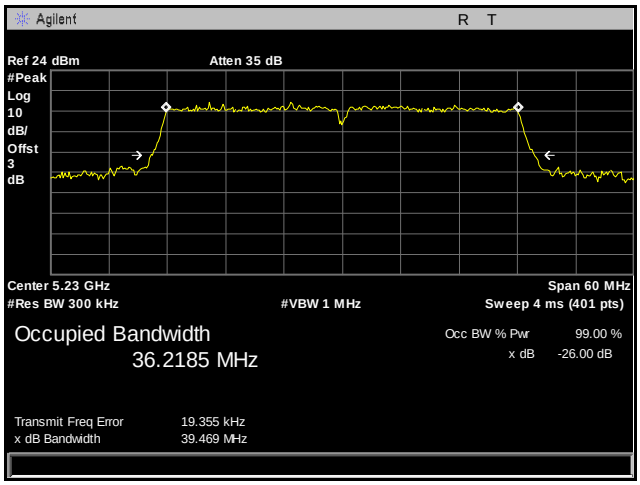


Plot 34. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, Port R, UNII 1

26 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port L, UNII 1

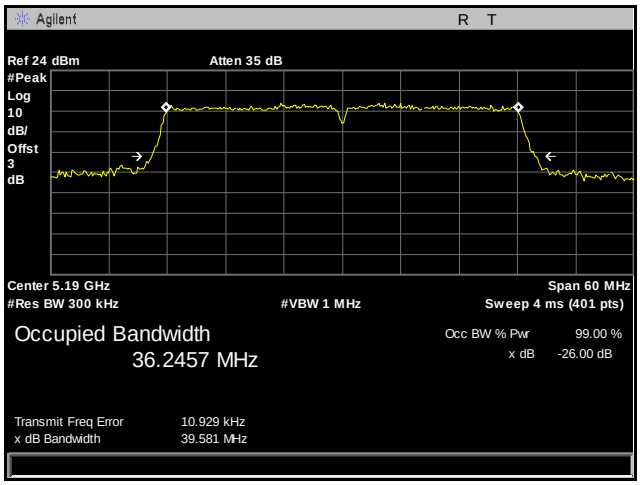


Plot 35. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Port L, UNII 1

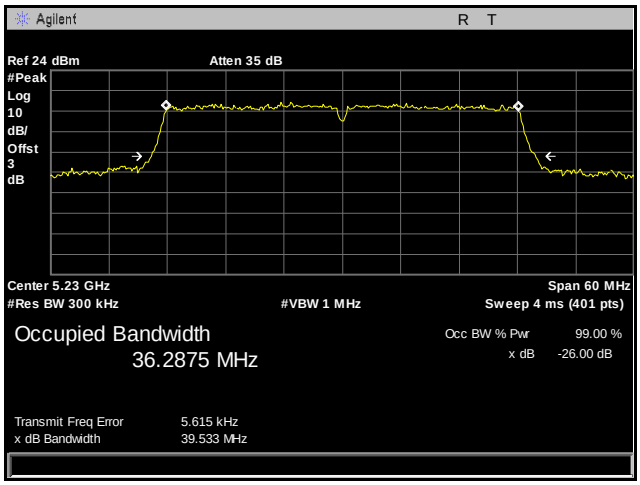


Plot 36. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, Port L, UNII 1

26 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port M, UNII 1

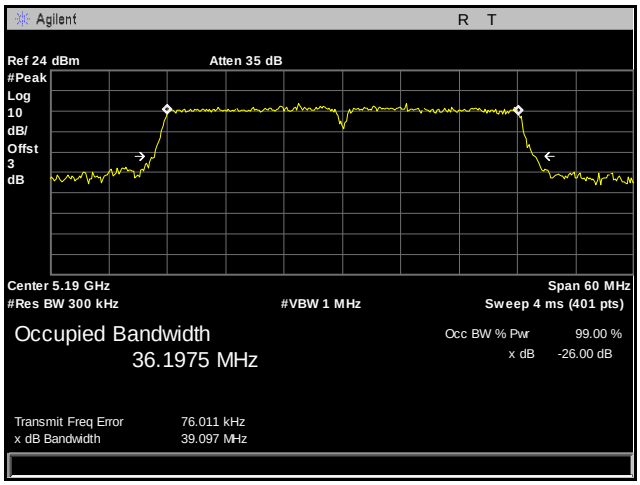


Plot 37. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Port M, UNII 1

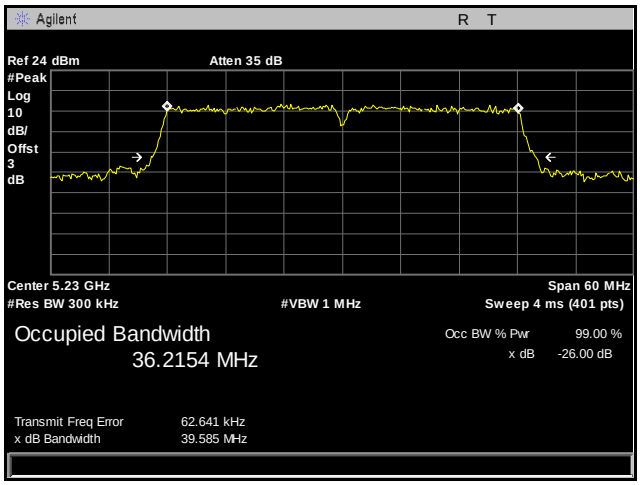


Plot 38. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, Port M, UNII 1

26 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port R, UNII 1

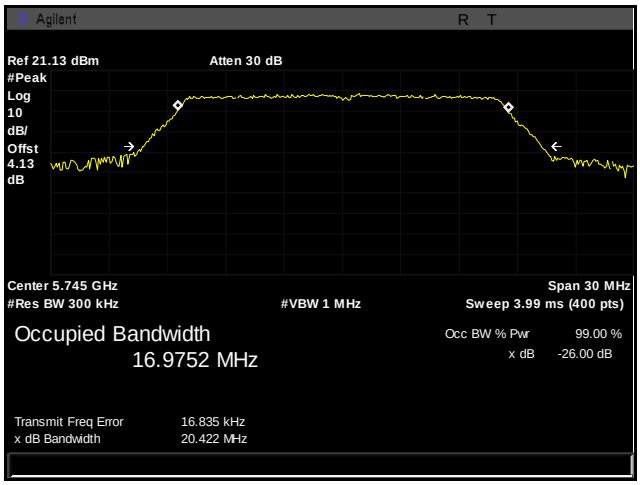


Plot 39. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Port R, UNII 1

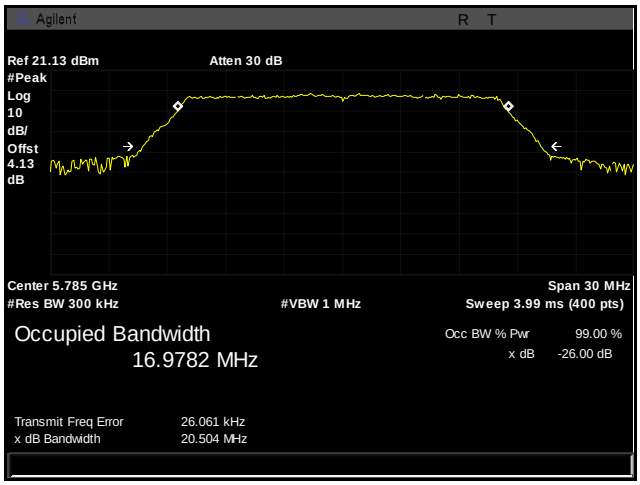


Plot 40. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, Port R, UNII 1

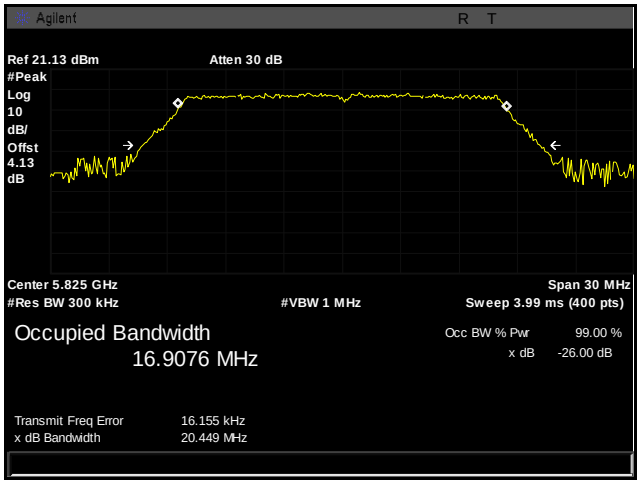
26 dB Occupied Bandwidth Test Results, 802.11a 20 MHz, Port L, UNII 3



Plot 41. 26 dB Occupied Bandwidth, Low Channel, 802.11a 20 MHz, Port L, UNII 3

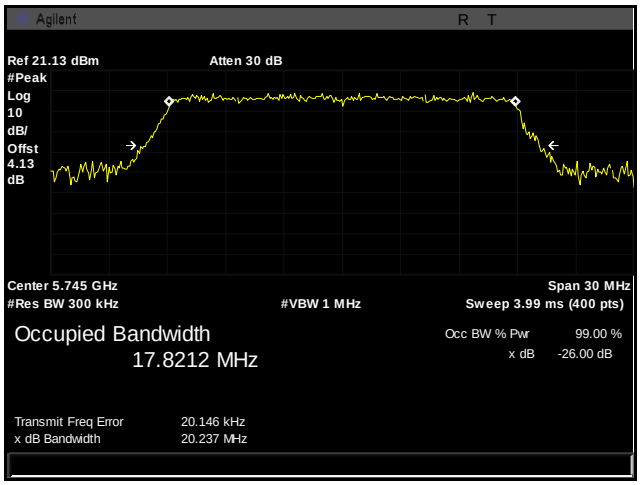


Plot 42. 26 dB Occupied Bandwidth, Mid Channel, 802.11a 20 MHz, Port L, UNII 3

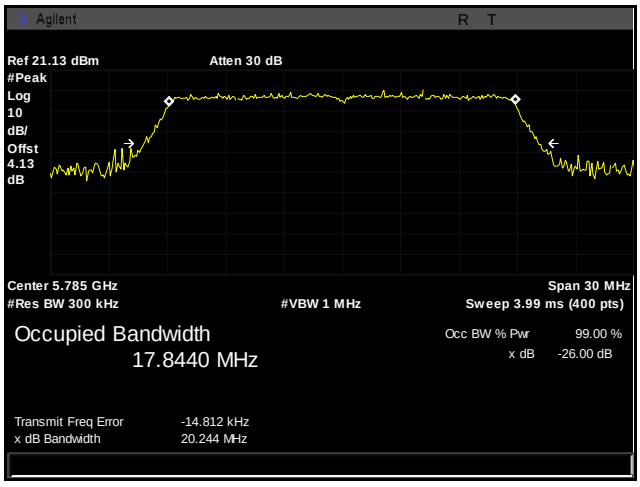


Plot 43. 26 dB Occupied Bandwidth, High Channel, 802.11a 20 MHz, Port L, UNII 3

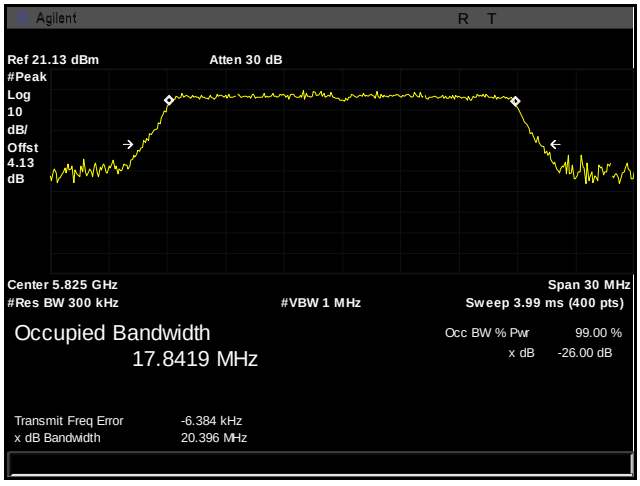
26 dB Occupied Bandwidth Test Results, 802.11ac 20 MHz, Port L, UNII 3



Plot 44. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Port L, UNII 3

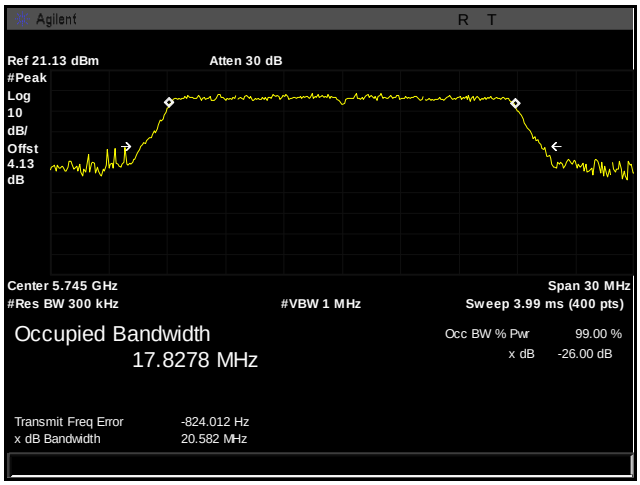


Plot 45. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Port L, UNII 3

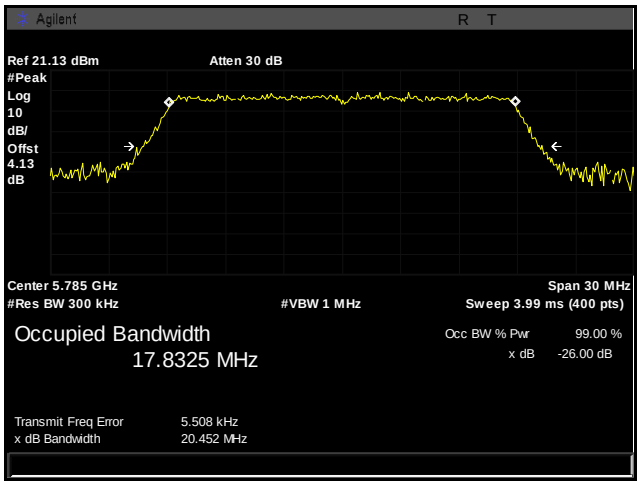


Plot 46. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Port L, UNII 3

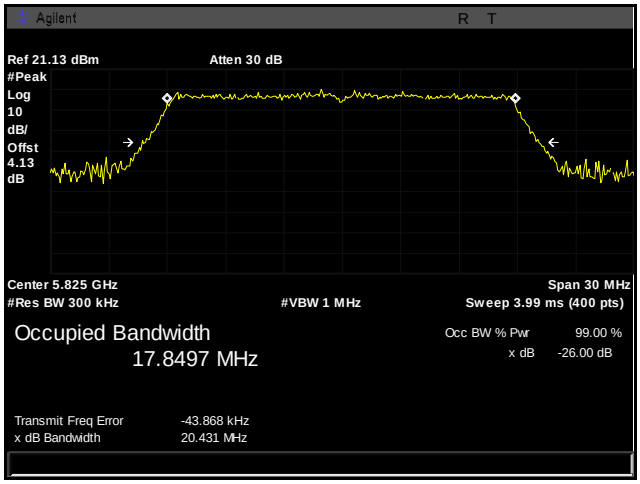
26 dB Occupied Bandwidth Test Results, 802.11ac 20 MHz, Port M, UNII 3



Plot 47. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Port M, UNII 3

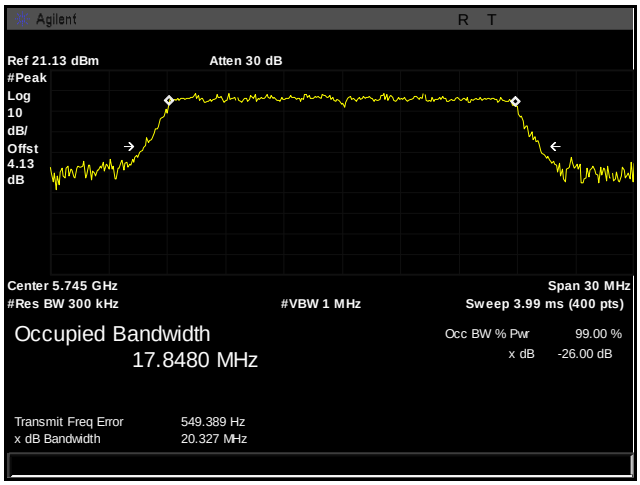


Plot 48. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Port M, UNII 3

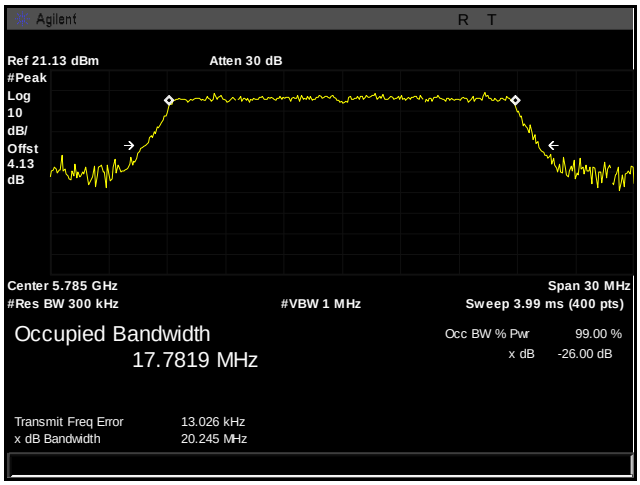


Plot 49. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Port M, UNII 3

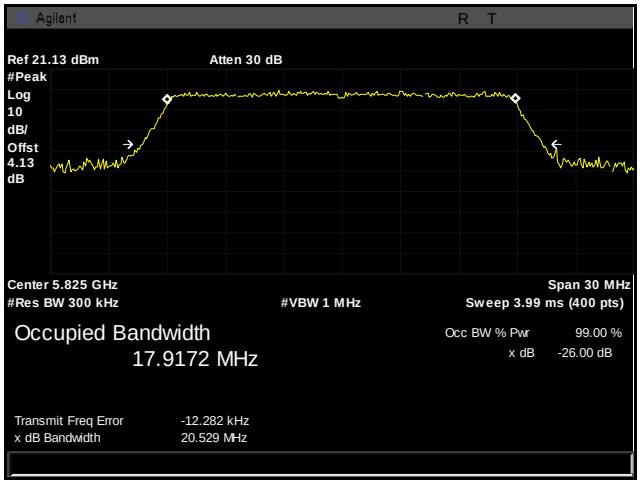
26 dB Occupied Bandwidth Test Results, 802.11ac 20 MHz, Port R, UNII 3



Plot 50. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Port R, UNII 3

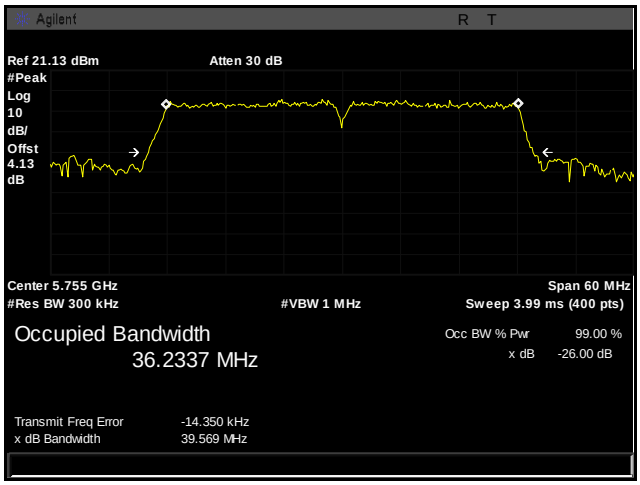


Plot 51. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Port R, UNII 3

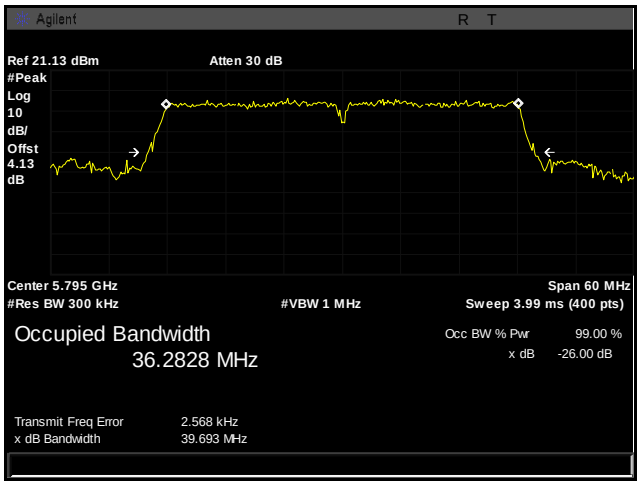


Plot 52. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Port R, UNII 3

26 dB Occupied Bandwidth Test Results, 802.11ac 40 MHz, Port L, UNII 3

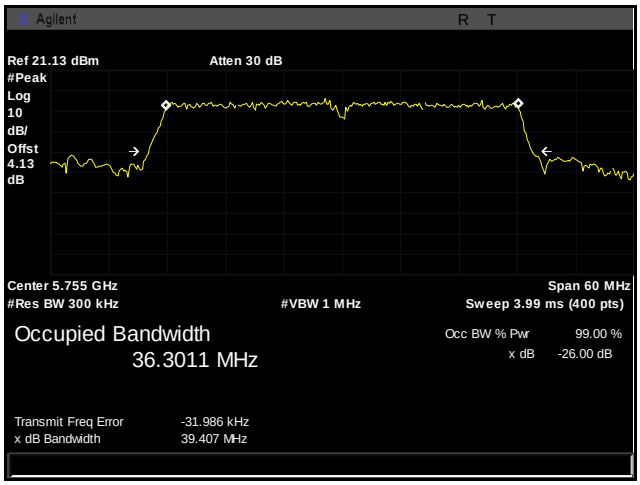


Plot 53. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 40 MHz, Port L, UNII 3

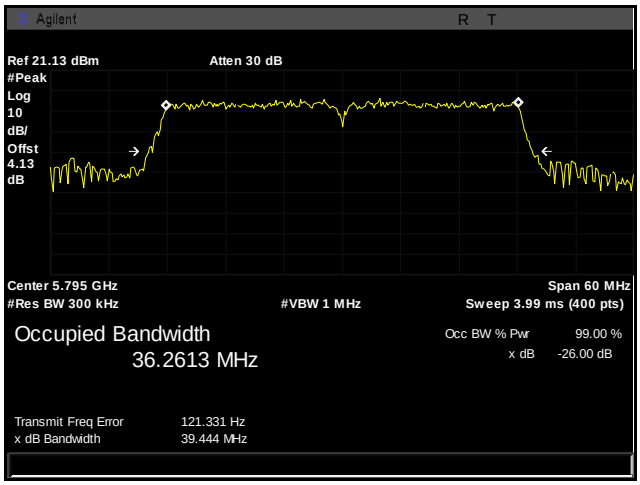


Plot 54. 26 dB Occupied Bandwidth, High Channel, 802.11ac 40 MHz, Port L, UNII 3

26 dB Occupied Bandwidth Test Results, 802.11ac 40 MHz, Port M, UNII 3

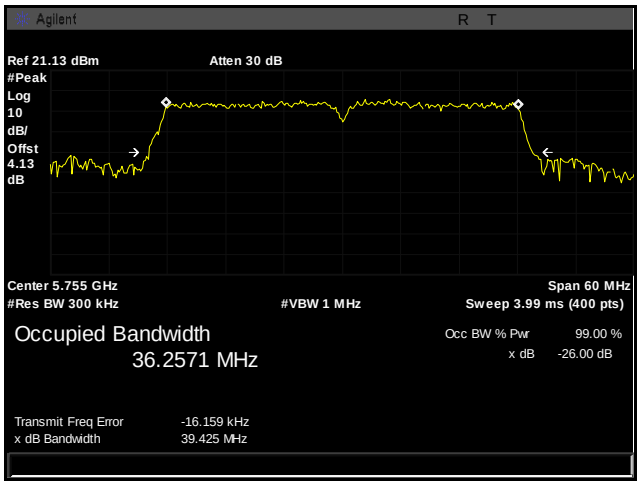


Plot 55. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 40 MHz, Port M, UNII 3

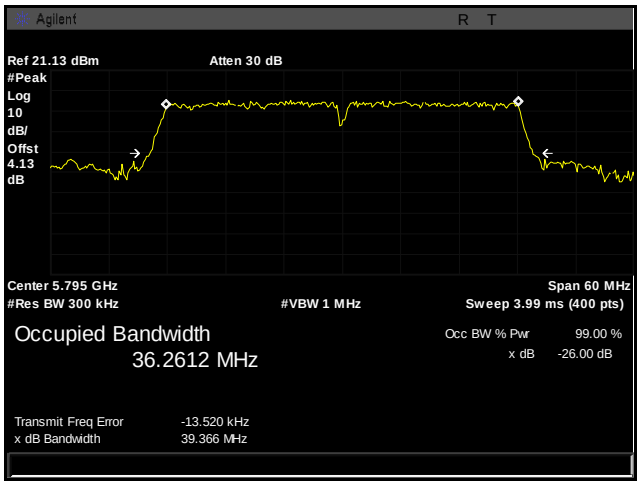


Plot 56. 26 dB Occupied Bandwidth, High Channel, 802.11ac 40 MHz, Port M, UNII 3

26 dB Occupied Bandwidth Test Results, 802.11ac 40 MHz, Port R, UNII 3

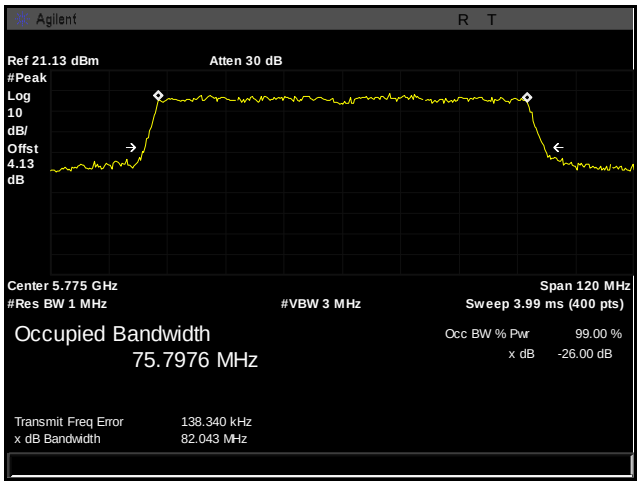


Plot 57. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 40 MHz, Port R, UNII 3

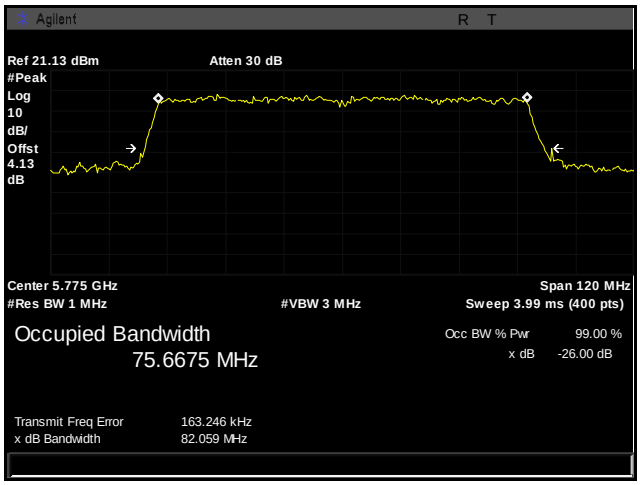


Plot 58. 26 dB Occupied Bandwidth, High Channel, 802.11ac 40 MHz, Port R, UNII 3

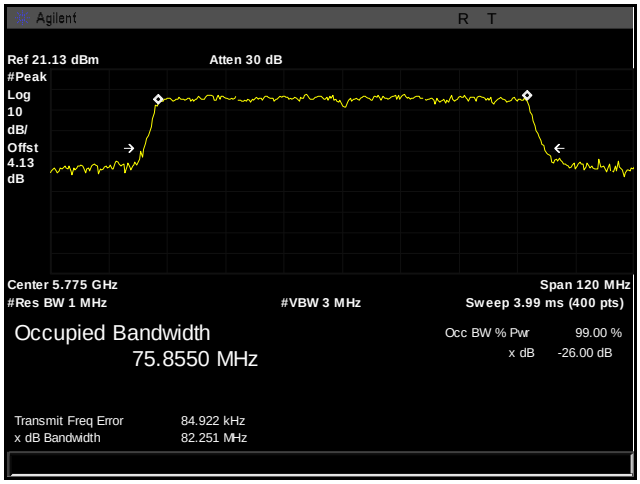
26 dB Occupied Bandwidth Test Results, 802.11ac 80 MHz, UNII 3



Plot 59. 26 dB Occupied Bandwidth, 802.11ac 80 MHz, Port L, UNII 3

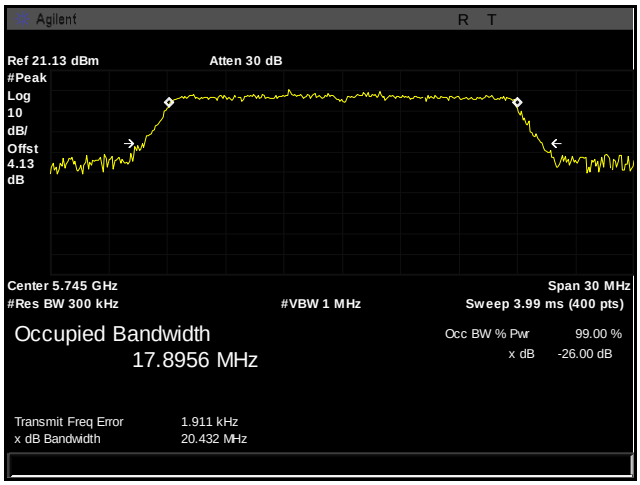


Plot 60. 26 dB Occupied Bandwidth, 802.11ac 80 MHz, Port M, UNII 3

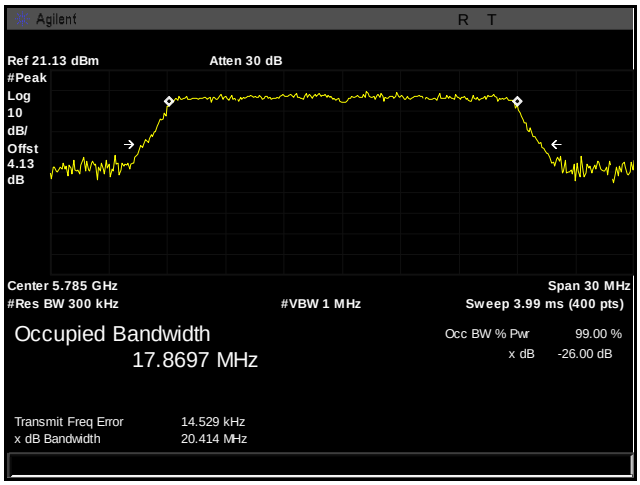


Plot 61. 26 dB Occupied Bandwidth, 802.11ac 80 MHz, Port R, UNII 3

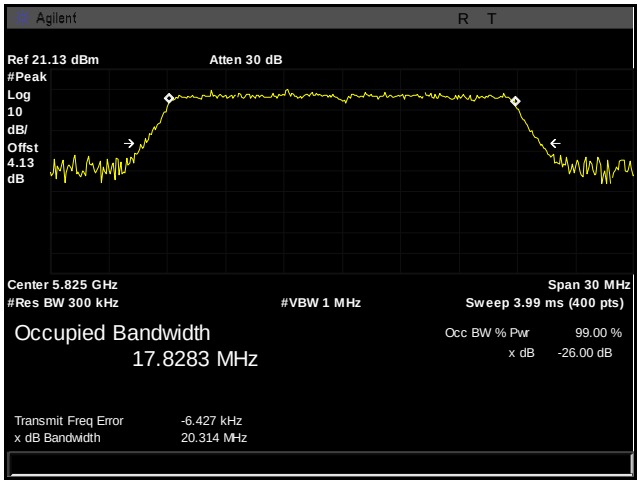
26 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port L, UNII 3



Plot 62. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Port L, UNII 3

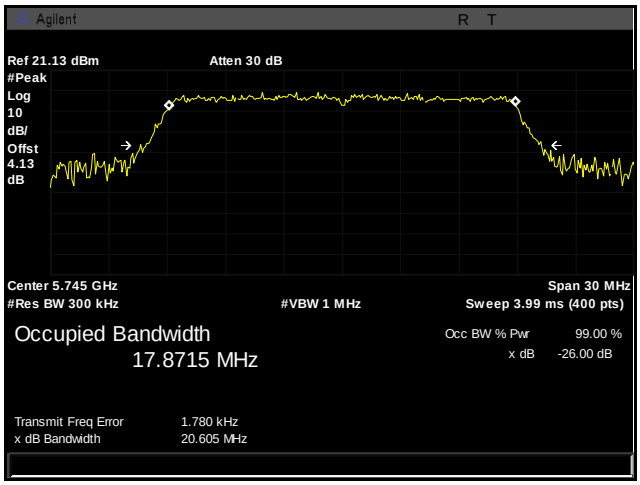


Plot 63. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Port L, UNII 3

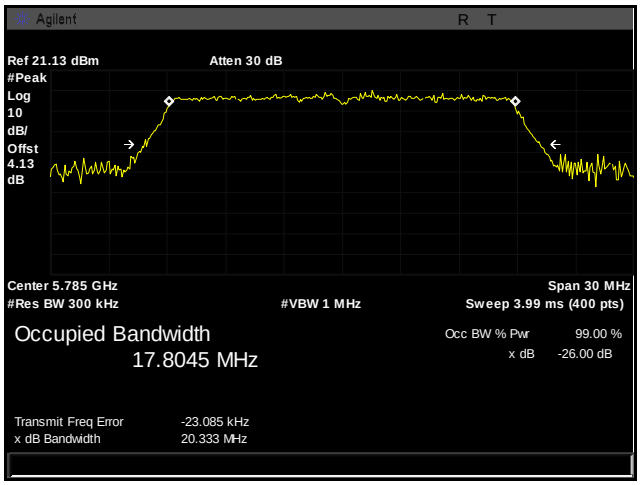


Plot 64. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, Port L, UNII 3

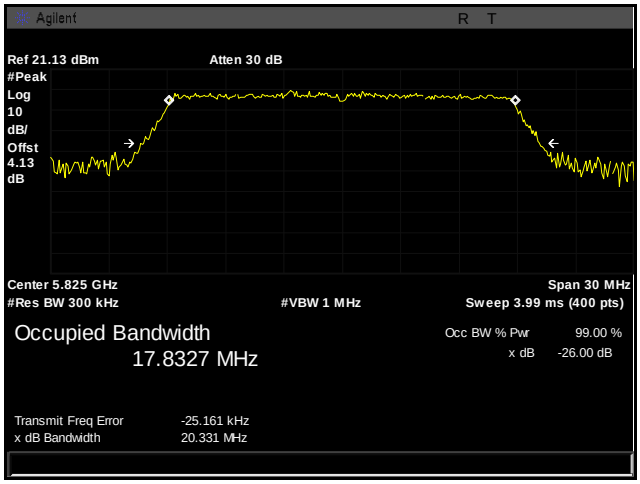
26 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port M, UNII 3



Plot 65. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Port M, UNII 3

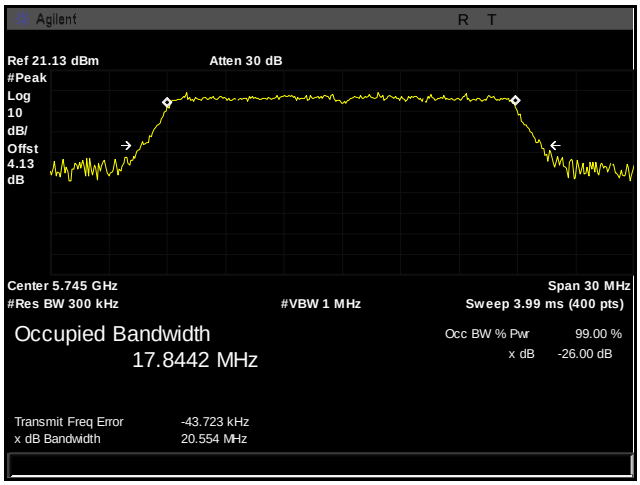


Plot 66. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Port M, UNII 3

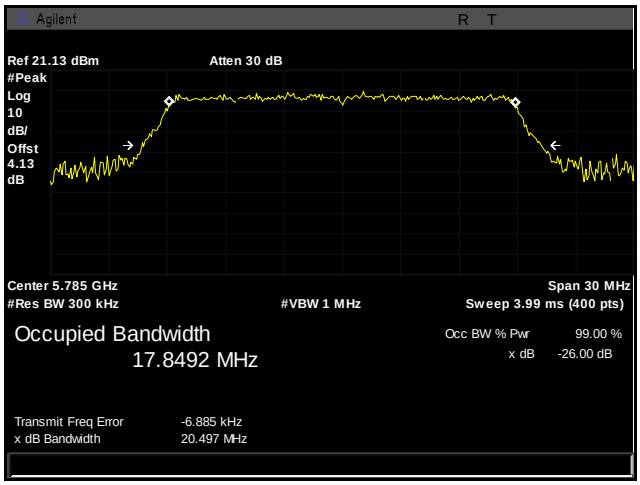


Plot 67. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, Port M, UNII 3

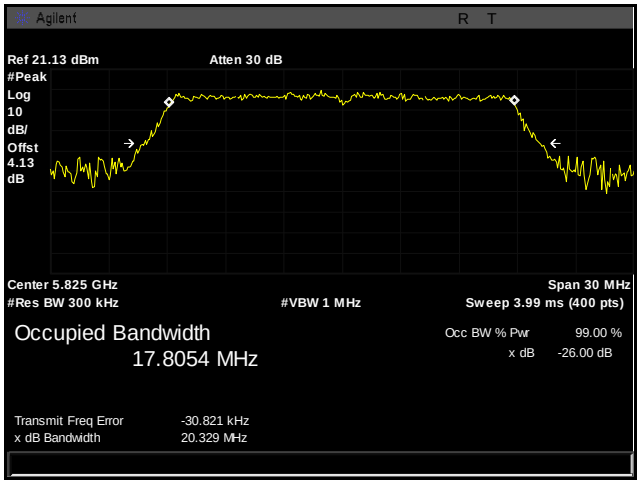
26 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port R, UNII 3



Plot 68. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Port R, UNII 3

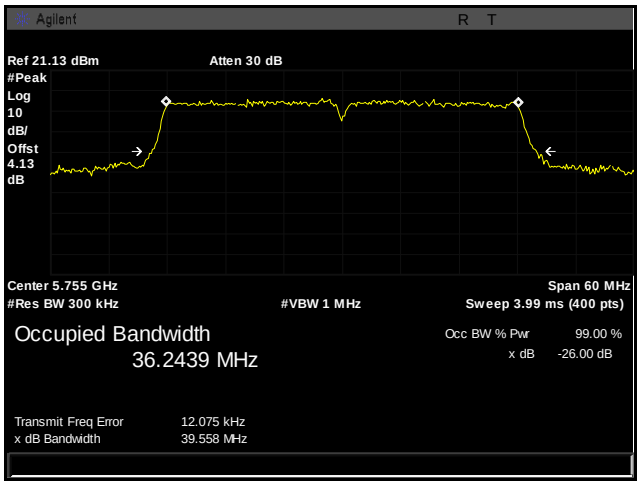


Plot 69. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Port R, UNII 3

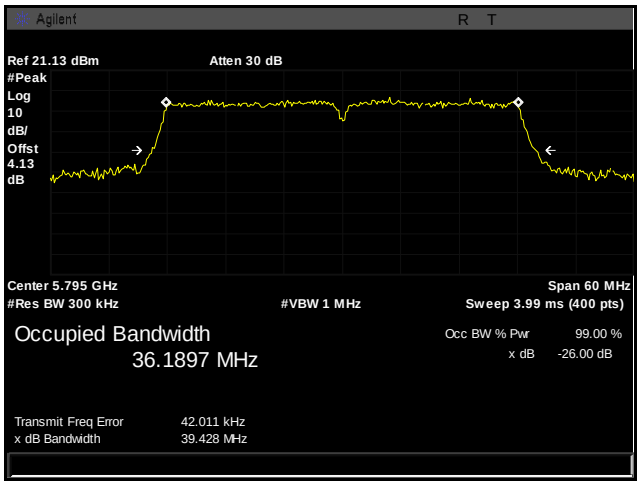


Plot 70. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, Port R, UNII 3

26 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port L, UNII 3

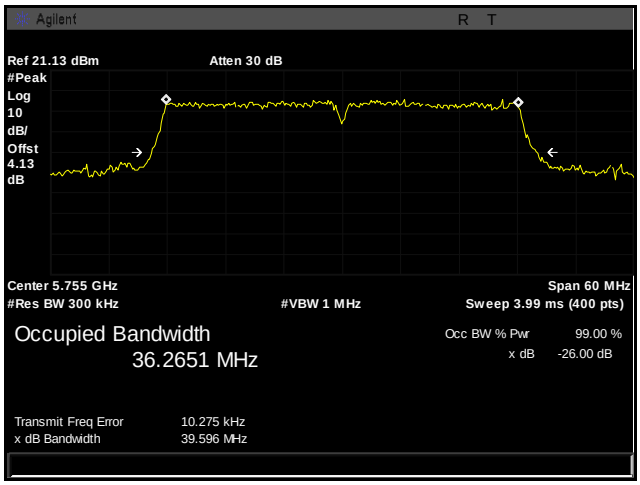


Plot 71. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Port L, UNII 3

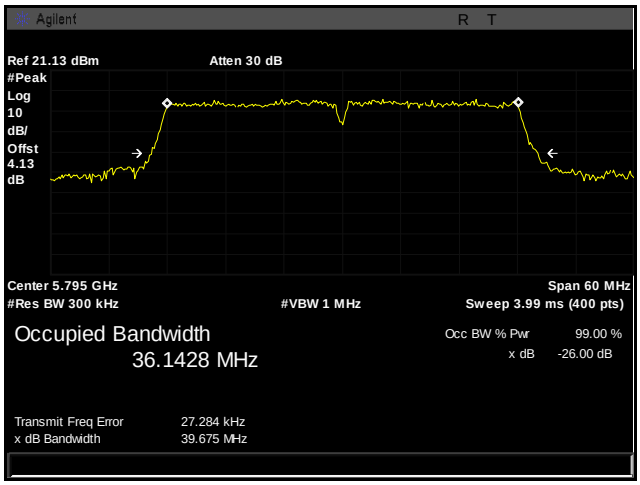


Plot 72. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, Port L, UNII 3

26 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port M, UNII 3

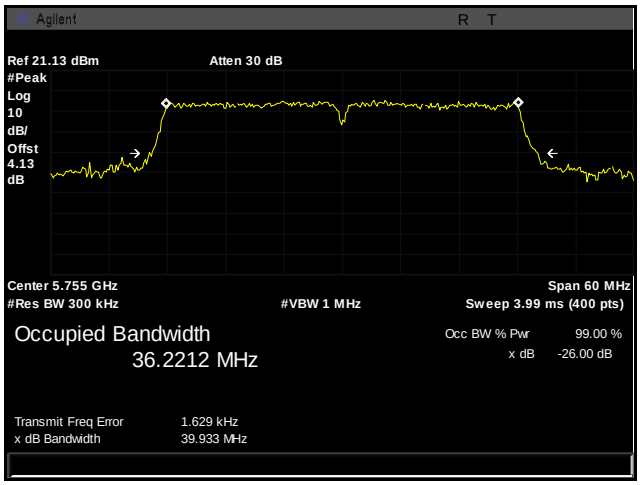


Plot 73. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Port M, UNII 3

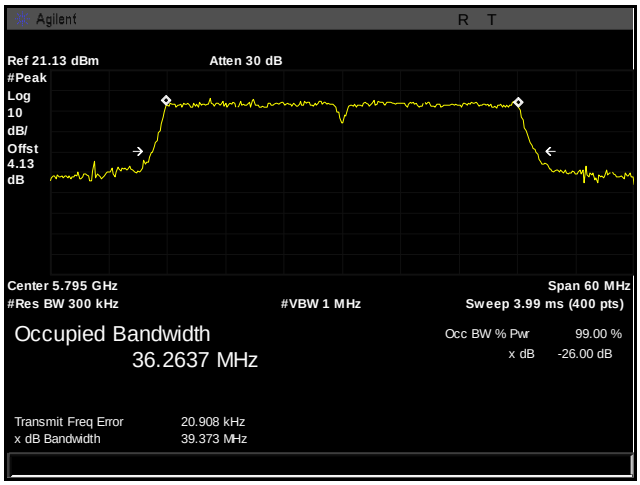


Plot 74. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, Port M, UNII 3

26 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port R, UNII 3



Plot 75. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Port R, UNII 3



Plot 76. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, Port R, UNII 3

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15. 407(a)(1)(i) & §15.407(a)(3) RF Power Output

Test Requirements: **§15.407(a)(1)(i):** For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

§15.407(a)(3): For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

Test Procedure: The EUT was connected to a spectrum analyzer through an attenuator and set to transmit continuously on the low, mid, and high channels. Its power was measured according to measurement method SA-1, as described in 789033 D02 General UNII Test Procedures New Rule v01. Plots were corrected for attenuator and cable loss. Power levels shown in tables below are the maximum that will be used for each type of antenna in 15.203.

Test Results: Equipment was compliant with the Peak Power Output limits of §15.401(a)(1)(i) and §15.407(a)(3).

Test Engineer(s): Andy Shen

Test Date(s): 02/22/15

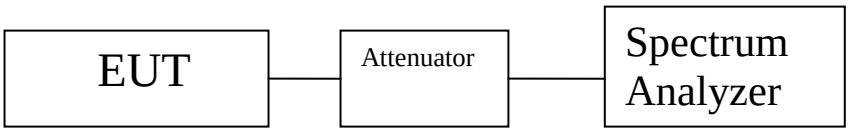


Figure 3. Power Output Test Setup

Peak Power Output Test Results, UNII 1

Peak Conducted Output Power – Directional MIMO Panel Antenna			
	Carrier Channel	Frequency (MHz)	Measured Peak Output Power dBm
802.11a Port 5 GHz-L	Low	5180	11.36
	Mid	5200	13.67
	High	5240	13.49
802.11n 20 MHz Port 5 GHz-L	Low	5180	6.06
	Mid	5200	6.12
	High	5240	5.88
802.11n 20 MHz Port 5 GHz-R	Low	5180	6.13
	Mid	5200	5.96
	High	5240	5.87
802.11n 20MHz Port 5 GHz-M	Low	5180	6.22
	Mid	5200	6.17
	High	5240	6.21
802.11n 40MHz Port 5 GHz-L	Low	5190	8.67
	High	5230	8.72
802.11n 40 MHz Port 5 GHz-R	Low	5190	8.71
	High	5230	8.55
802.11n 40 MHz Port 5 GHz-M	Low	5190	8.71
	High	5230	8.83
802.11ac 20 MHz Port 5 GHz-L	Low	5180	5.32
	Mid	5200	5.47
	High	5240	5.28
802.11ac 20 MHz Port 5 GHz-R	Low	5180	5.25
	Mid	5200	5.12
	High	5240	5.44
802.11ac 20MHz Port 5 GHz-M	Low	5180	5.47
	Mid	5200	5.30
	High	5240	5.21
802.11ac 40MHz Port 5 GHz-L	Low	5190	8.61
	High	5230	8.77
802.11ac 40 MHz Port 5 GHz-R	Low	5190	8.52
	High	5230	8.45
802.11ac 40 MHz Port 5 GHz-M	Low	5190	8.82
	High	5230	8.74
802.11ac 80MHz Port 5 GHz-L		5210	9.88
802.11ac 80MHz Port 5 GHz-R		5210	9.44
802.11ac 80MHz Port 5 GHz-M		5210	9.91

Table 23. Peak Power Output, Test Results, UNII 1, 11.5 dBi Panel Antenna

Summed Peak Conducted Output Power – Directional MIMO Panel Antenna			
	Carrier Channel	**Frequency (MHz)**	**Measured Peak Output Power dBm**
802.11n 20 MHz Summed	Low	5180	10.96
	Mid	5200	10.86
	High	5240	10.76
802.11n 40 MHz Summed	Low	5190	11.95
	High	5230	13.47
802.11ac 20MHz Summed	Low	5180	10.12
	Mid	5200	10.07
	High	5240	10.08
802.11ac 40MHz Summed	Low	5190	13.42
	High	5230	13.43
802.11ac 80MHz Summed	N/A	5210	14.52

Table 24. Peak Power Output, Test Results, UNII 1, 11.5 dBi Panel Antenna, Summed

Note 1: 5GHz effective antenna Gain for Directional MIMO Panel Antenna 1211-PA = 11.5dBi + 10 log (3) = 16.27 dBi
802.11n 20/40MHz Peak Output Power limit per port = 1000mW / 3 ports = 333.333 mW per port
Convert 333.333 mW to dBm = 10 log (333.333mW) = 25.23 dBm per port
802.11n mode 40MHz/20MHz Limit per port = 25.23 dBm - (16.27 dBi - 6dBi) = 14.95 dBm
6 dBi is reference antenna gain for 1W limit

Note 2: 802.11a mode limit per port = 30dBm - (11.5 dBi - 6 dBi) = 24.5 dBm

Peak Conducted Output Power – Directional MIMO Panel Antenna			
	Carrier Channel	**Frequency (MHz)**	**Measured Peak Output Power dBm**
802.11a Port 5 GHz-L	Low	5180	11.36
	Mid	5200	16.66
	High	5240	16.65
802.11n 20 MHz Port 5 GHz-L	Low	5180	7.43
	Mid	5200	7.43
	High	5240	8.14
802.11n 20 MHz Port 5 GHz-R	Low	5180	7.31
	Mid	5200	7.29
	High	5240	7.84
802.11n 20MHz Port 5 GHz-M	Low	5180	7.43
	Mid	5200	7.46
	High	5240	7.89
802.11n 40MHz Port 5 GHz-L	Low	5190	10.85
	High	5230	11.78
802.11n 40 MHz Port 5 GHz-R	Low	5190	10.22
	High	5230	11.21
802.11n 40 MHz Port 5 GHz-M	Low	5190	10.67
	High	5230	11.44
802.11ac 20 MHz Port 5 GHz-L	Low	5180	7.79
	Mid	5200	7.46
	High	5240	7.45
802.11ac 20 MHz Port 5 GHz-R	Low	5180	7.71
	Mid	5200	7.67
	High	5240	7.52
802.11ac 20MHz Port 5 GHz-M	Low	5180	7.88
	Mid	5200	7.71
	High	5240	7.65
802.11ac 40MHz Port 5 GHz-L	Low	5190	10.69
	High	5230	11.13
802.11ac 40 MHz Port 5 GHz-R	Low	5190	11.19
	High	5230	11.02
802.11ac 40 MHz Port 5 GHz-M	Low	5190	11.18
	High	5230	10.93
802.11ac 80MHz Port 5 GHz-L		5210	13.65
802.11ac 80MHz Port 5 GHz-R		5210	13.50
802.11ac 80MHz Port 5 GHz-M		5210	13.41

Table 25. Peak Power Output, Test Results, UNII 1, 8 dBi Omni Antenna

Summed Peak Conducted Output Power – Out Door Omni Directional Antenna			
	Carrier Channel	**Frequency (MHz)**	**Measured Peak Output Power dBm**
802.11n 20 MHz Summed	Low	5180	12.16
	Mid	5200	12.17
	High	5240	12.73
802.11n 40 MHz Summed	Low	5190	13.63
	High	5230	16.25
802.11ac 20MHz Summed	Low	5180	12.57
	Mid	5200	12.39
	High	5240	12.31
802.11ac 40MHz Summed	Low	5190	13.76
	High	5230	15.80
802.11ac 80MHz Summed	N/A	5210	18.29

Table 26. Peak Power Output, Test Results, UNII 1, 8 dBi Omni Antenna, Summed

Note 1: GHz effective antenna Gain for Directional MIMO Panel Antenna 1211-PA = 8 dBi + 10 log (3) = 12.77 dBi
802.11n 20/40MHz Peak Output Power limit per port = 1000mW / 3 ports = 333.333 mW per port
Convert 333.333 mW to dBm = 10 log (333.333mW) = 25.23 dBm per port
802.11n mode 40MHz/20MHz Limit per port = 25.23 dBm - (12.77 dBi - 6dBi) = 18.45 dBm
6dBi is reference antenna gain for 1W limit

Note 2: 802.11a mode limit per port = 30dBm - (8 dBi - 6 dBi) = 28 dBm

Peak Power Output Test Results, UNII 3

Peak Conducted Output Power – Directional MIMO Panel Antenna			
	Carrier Channel	**Frequency (MHz)**	**Measured Peak Output Power dBm**
802.11a Port 5GHz-L	Low	5745	20.79
	Mid	5785	23.81
	High	5825	24.30
802.11n 20 MHz Port 5GHz-L	Low	5745	14.33
	Mid	5785	14.27
	High	5825	14.35
802.11n 20 MHz Port 5GHz-R	Low	5745	14.25
	Mid	5785	14.35
	High	5825	14.36
802.11n 20MHz Port 5GHz-M	Low	5745	14.28
	Mid	5785	14.31
	High	5825	14.36
802.11n 40MHz Port 5 GHz-L	Low	5755	14.65
	High	5795	14.49
802.11n 40 MHz Port 5 GHz-R	Low	5755	14.62
	High	5795	14.41
802.11n 40 MHz Port 5 GHz-M	Low	5755	14.63
	High	5795	14.42
802.11ac 20 MHz Port 5GHz-L	Low	5745	14.42
	Mid	5785	14.31
	High	5825	14.55
802.11ac 20 MHz Port 5GHz-R	Low	5745	14.56
	Mid	5785	14.51
	High	5825	14.63
802.11ac 20MHz Port 5GHz-M	Low	5745	14.36
	Mid	5785	14.53
	High	5825	14.33
802.11ac 40MHz Port 5 GHz-L	Low	5755	14.43
	High	5795	14.12
802.11ac 40 MHz Port 5 GHz-R	Low	5755	14.25
	High	5795	14.43
802.11ac 40 MHz Port 5 GHz-M	Low	5755	14.45
	High	5795	14.35
802.11ac 80MHz Port 5 GHz-L		5775	14.77
802.11ac 80MHz Port 5 GHz-R		5775	14.71
802.11ac 80MHz Port 5 GHz-M		5775	14.81

Table 27. Peak Power Output, Test Results, UNII 3, 11.5 dBi MIMO Panel Antenna

Summed Peak Conducted Output Power – Directional MIMO Panel Antenna			
	Carrier Channel	**Frequency (MHz)**	**Measured Peak Output Power dBm**
802.11n 20 MHz Summed	Low	5745	19.06
	Mid	5785	19.08
	High	5825	19.13
802.11n 40 MHz Summed	Low	5755	19.40
	High	5795	19.21
802.11ac 20MHz Summed	Low	5745	19.22
	Mid	5785	19.22
	High	5825	19.28
802.11ac 40MHz Summed	Low	5755	19.15
	High	5795	19.07
802.11ac 80MHz Summed	N/A	5775	19.53

Table 28. Peak Power Output, Test Results, UNII 3, 11.5 dBi MIMO Panel Antenna, Summed

Note 1: 5GHz effective antenna Gain for Directional MIMO Panel Antenna 1211-PA = 11.5 dBi + 10 log (3) = 16.27 dBi
802.11n 20/40MHz Peak Output Power limit per port = 1000mW / 3 ports = 333.333 mW per port
Convert 333.333 mW to dBm = 10 log (333.333mW) = 25.23 dBm per port
802.11n mode 40MHz/20MHz Limit per port = 25.23 dBm - (16.27 dBi - 6dBi) = 14.95 dBm
6 dBi is reference antenna gain for 1W limit

Note 2: 802.11a mode limit per port = 30dBm - (11.5 dBi - 6 dBi) = 24.5 dBm

Peak Conducted Output Power – Directional MIMO Panel Antenna			
	Carrier Channel	**Frequency (MHz)**	**Measured Peak Output Power dBm**
802.11a Port 5 GHz-L	Low	5745	12.45
	Mid	5785	23.46
	High	5825	11.54
802.11n 20 MHz Port 5 GHz-L	Low	5745	12.38
	Mid	5785	18.28
	High	5825	10.53
802.11n 20 MHz Port 5 GHz-R	Low	5745	12.37
	Mid	5785	18.31
	High	5825	10.51
802.11n 20MHz Port 5 GHz-M	Low	5745	12.26
	Mid	5785	10.61
	High	5825	12.88
802.11n 40MHz Port 5 GHz-L	Low	5755	14.64
	High	5795	14.36
802.11n 40 MHz Port 5 GHz-R	Low	5755	14.41
	High	5795	14.21
802.11n 40 MHz Port 5 GHz-M	Low	5755	14.35
	High	5795	14.22
802.11ac 20 MHz Port 5 GHz-L	Low	5745	12.02
	Mid	5785	18.29
	High	5825	10.75
802.11ac 20 MHz Port 5 GHz-R	Low	5745	12.12
	Mid	5785	18.32
	High	5825	10.91
802.11ac 20MHz Port 5 GHz-M	Low	5745	12.23
	Mid	5785	18.34
	High	5825	10.21
802.11ac 40MHz Port 5 GHz-L	Low	5510	13.77
	High	5670	13.49
802.11ac 40 MHz Port 5 GHz-R	Low	5755	13.72
	High	5795	13.41
802.11ac 40 MHz Port 5 GHz-M	Low	5755	13.78
	High	5795	13.45
802.11ac 80MHz Port 5 GHz-L		5775	12.63
802.11ac 80MHz Port 5 GHz-R		5775	12.67
802.11ac 80MHz Port 5 GHz-M		5775	12.69

Table 29. Peak Power Output, Test Results, UNII 3, 8 dBi Omni Antenna

Summed Peak Conducted Output Power – Out Door Omni Directional Antenna			
	Carrier Channel	**Frequency (MHz)**	**Measured Peak Output Power dBm**
802.11n 20 MHz Summed	Low	5745	17.11
	Mid	5785	21.66
	High	5825	16.23
802.11n 40 MHz Summed	Low	5510	19.24
	High	5670	19.04
802.11ac 20MHz Summed	Low	5745	16.90
	Mid	5785	23.09
	High	5825	15.40
802.11ac 40MHz Summed	Low	5510	18.53
	High	5670	18.22
802.11 ac 80 MHz Summed	N/A	5755	17.43

Table 30. Peak Power Output, Test Results, UNII 3, 8 dBi Omni Antenna, Summed

Note 1: GHz effective antenna Gain for Directional MIMO Panel Antenna 1211-PA = 8 dBi + 10 log (3) = 12.77 dBi
802.11n 20/40MHz Peak Output Power limit per port = 1000mW / 3 ports = 333.333 mW per port
Convert 333.333 mW to dBm = 10 log (333.333mW) = 25.23 dBm per port
802.11n mode 40MHz/20MHz Limit per port = 25.23 dBm - (12.77 dBi - 6dBi) = 18.45 dBm
6dBi is reference antenna gain for 1W limit

Note 2: 802.11a mode limit per port = 30dBm - (8 dBi - 6 dBi) = 28 dBm

Electromagnetic Compatibility Criteria for Intentional Radiators

§15.407(a)(1)(i) & §15.407(a)(3) Peak Power Spectral Density

Test Requirements:

§ 15.407(a)(1)(i): In addition, the maximum power spectral density shall not exceed 17 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

§15.407(a)(3): In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure: The transmitter was connected directly to a Spectrum Analyzer through an attenuator. The power level was set to the maximum level on the EUT. The RBW was set to 1MHz and the VBW was set to 3MHz. The method of measurement used was method SA-1 from 789033 D02 General UNII Test Procedures New Rule v01. Plots are correct for attenuators and cable loss.

Test Results: Equipment was compliant with the peak power spectral density limits of §15.407 (a)(1)(i) and §15.407(a)(3) The peak power spectral density was determined from plots on the following page(s).

Test Engineer(s): Andy Shen and Ajaz Khan

Test Date(s): 1/22/15

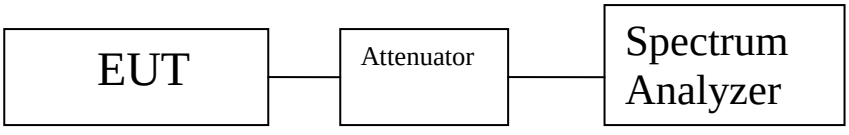


Figure 4. Power Spectral Density Test Setup

U-nii 1								
Frequency (MHz)	Mode	Port 5GHz-L (dBm)	Port 5GHz-M (dBm)	Port 5GHz-R (dBm)	Summed PSD (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
5180	802.11a 20MHz	10.55			10.55	11.50	11.50	-0.95
5200	802.11a 20MHz	10.56			10.56	11.50	11.50	-0.94
5240	802.11a 20MHz	10.70			10.70	11.50	11.50	-0.80
5180	802.11n 20MHz	1.42	1.52	1.32	6.19	16.27	6.73	-0.54
5200	802.11n 20MHz	1.25	1.37	1.41	6.12	16.27	6.73	-0.61
5240	802.11n 20MHz	1.29	1.33	0.98	5.97	16.27	6.73	-0.76
5190	802.11n 40MHz	1.02	0.83	1.12	5.76	16.27	6.73	-0.97
5230	802.11n 40MHz	0.97	0.99	1.21	5.83	16.27	6.73	-0.90
5180	802.11ac 20MHz	1.17	1.29	1.18	5.98	16.27	6.73	-0.75
5200	802.11ac 20MHz	1.13	1.41	1.36	6.07	16.27	6.73	-0.66
5240	802.11ac 20MHz	1.56	1.21	1.15	6.08	16.27	6.73	-0.65
5190	802.11ac 40MHz	0.89	1.12	1.31	5.88	16.27	6.73	-0.85
5230	802.11ac 40MHz	1.28	1.56	1.12	6.10	16.27	6.73	-0.63
5210	802.11ac 80MHz	1.14	1.25	1.16	5.95	16.27	6.73	-0.78

Table 31. Peak Power Spectral Density, Test Results, UNII 1, 11.5 dBi Panel Antenna

Note: The effective antenna gain for MIMO mode = 11.5 dBi + 10 log (3) = 16.27 dBi
The peak power spectral density limit = 17dBm – (Antenna Gain – 6 dB)

U-nii 3								
Frequency (MHz)	Mode	Port 5GHz-L (dBm)	Port 5GHz-M (dBm)	Port 5GHz-R (dBm)	Summed PSD (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
5745	802.11a 20MHz	14.91			14.91	11.50	24.50	-9.59
5785	802.11a 20MHz	19.06			19.06	11.50	24.50	-5.44
5825	802.11a 20MHz	19.61			19.61	11.50	24.50	-4.89
5745	802.11n 20MHz	8.07	8.23	8.15	12.92	16.27	19.73	-6.81
5785	802.11n 20MHz	10.31	9.25	9.11	14.36	16.27	19.73	-5.37
5825	802.11n 20MHz	9.28	8.75	9.18	13.85	16.27	19.73	-5.88
5755	802.11n 40MHz	5.54	5.34	5.13	10.11	16.27	19.73	-9.62
5795	802.11n 40MHz	5.80	5.85	5.74	10.57	16.27	19.73	-9.16
5745	802.11ac 20MHz	9.36	8.36	8.87	13.65	16.27	19.73	-6.08
5785	802.11ac 20MHz	8.36	8.54	8.22	13.15	16.27	19.73	-6.58
5825	802.11ac 20MHz	9.23	9.65	9.34	14.18	16.27	19.73	-5.55
5755	802.11ac 40MHz	5.21	5.16	5.34	10.01	16.27	19.73	-9.72
5795	802.11ac 40MHz	5.63	5.74	5.34	10.34	16.27	19.73	-9.39
5775	802.11ac 80MHz	2.02	2.29	2.33	6.99	16.27	19.73	-12.74

Table 32. Peak Power Spectral Density, Test Results, UNII 3, 11.5 dBi Panel Antenna

Note: The effective antenna gain for MIMO mode = 11.5 dBi + 10 log (3) = 16.27 dBi
The peak power spectral density limit = 30dBm – (Antenna Gain – 6 dB)

U-nii 1								
Frequency (MHz)	Mode	Port 5GHz-L (dBm)	Port 5GHz-M (dBm)	Port 5GHz-R (dBm)	Summed PSD (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
5180	802.11a 20MHz	13.84			13.84	8.00	15.00	-1.16
5200	802.11a 20MHz	13.75			13.75	8.00	15.00	-1.25
5240	802.11a 20MHz	13.68			13.68	8.00	15.00	-1.32
5180	802.11n 20MHz	4.54	4.49	3.89	9.09	12.77	10.23	-1.14
5200	802.11n 20MHz	5.08	5.00	5.41	9.94	12.77	10.23	-0.29
5240	802.11n 20MHz	4.75	4.63	4.62	9.43	12.77	10.23	-0.80
5190	802.11n 40MHz	5.04	5.10	4.68	9.72	12.77	10.23	-0.51
5230	802.11n 40MHz	4.71	4.96	4.70	9.56	12.77	10.23	-0.67
5180	802.11ac 20MHz	4.92	4.96	3.92	9.39	12.77	10.23	-0.84
5200	802.11ac 20MHz	4.99	4.13	4.03	9.18	12.77	10.23	-1.05
5240	802.11ac 20MHz	4.71	4.56	4.69	9.43	12.77	10.23	-0.80
5190	802.11ac 40MHz	4.31	4.34	4.29	9.08	12.77	10.23	-1.15
5230	802.11ac 40MHz	4.25	4.30	4.46	9.11	12.77	10.23	-1.12
5210	802.11ac 80MHz	4.58	4.72	4.53	9.38	12.77	10.23	-0.85

Table 33. Peak Power Spectral Density, Test Results, UNII 1, 8 dBi Omni Directional Antenna

Note: the effective antenna gain for MIMO mode = 8 dBi + 10 log (3) = 12.77 dBi
The peak power spectral density limit = 17dBm – (Antenna Gain – 6 dB)

U-nii 3								
Frequency (MHz)	Mode	Port 5GHz-L (dBm)	Port 5GHz-M (dBm)	Port 5GHz-R (dBm)	Summed PSD (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
5745	802.11a 20MHz	7.06			7.06	8.00	28.00	-20.94
5785	802.11a 20MHz	13.00			13.00	8.00	28.00	-15.00
5825	802.11a 20MHz	5.18			5.18	8.00	28.00	-22.82
5745	802.11n 20MHz	8.07	7.20	6.36	12.04	12.77	23.23	-11.19
5785	802.11n 20MHz	14.04	12.57	12.99	18.02	12.77	23.23	-5.21
5825	802.11n 20MHz	5.49	6.61	5.74	10.74	12.77	23.23	-12.49
5755	802.11n 40MHz	4.96	4.97	4.09	9.46	12.77	23.23	-13.77
5795	802.11n 40MHz	5.72	5.12	5.15	10.11	12.77	23.23	-13.12
5745	802.11ac 20MHz	8.21	7.71	6.63	12.34	12.77	23.23	-10.89
5785	802.11ac 20MHz	13.35	14.21	12.98	18.32	12.77	23.23	-4.91
5825	802.11ac 20MHz	6.12	6.44	6.21	11.03	12.77	23.23	-12.20
5755	802.11ac 40MHz	4.78	4.96	4.87	9.64	12.77	23.23	-13.59
5795	802.11ac 40MHz	5.32	5.43	5.21	10.09	12.77	23.23	-13.14
5775	802.11ac 80MHz	-0.4	-0.49	0.35	4.61	12.77	23.23	-18.62

Table 34. Peak Power Spectral Density, Test Results, UNII 3, 8 dBi Omni Directional Antenna

Note: the effective antenna gain for MIMO mode = 8 dBi + 10 log (3) = 12.77 dBi
The peak power spectral density limit = 30dBm – (Antenna Gain – 6 dB)

Electromagnetic Compatibility Criteria for Intentional Radiators

§15.407(b)(1), §15.407(b)(6), & §15.407(b)(7) Undesirable Emissions

Test Requirements: **§15.407(b)(1), § 15.407(b)(6), § 15.407(b)(7); §15.205:** Emissions outside the frequency band.

§15.407(b)(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 EIRP of –27 dBm/MHz.

§15.407(b)(1): 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.

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

§15.407(b)(7): The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Test Procedure: The transmitter was placed on an 80cm wooden table inside in a semi-anechoic chamber. Measurements were performed with the EUT rotated 360 degrees and varying the adjustable antenna mast height to determine worst case orientation for maximum emissions. A preamp was used in the range from 7-18GHz to improve noise floor. Plots were corrected for cable loss, antenna, and preamp gain.

For frequencies from 30 MHz to 1 GHz, measurements were made using a quasi-peak detector with a 120 kHz bandwidth. The procedure was used for average.

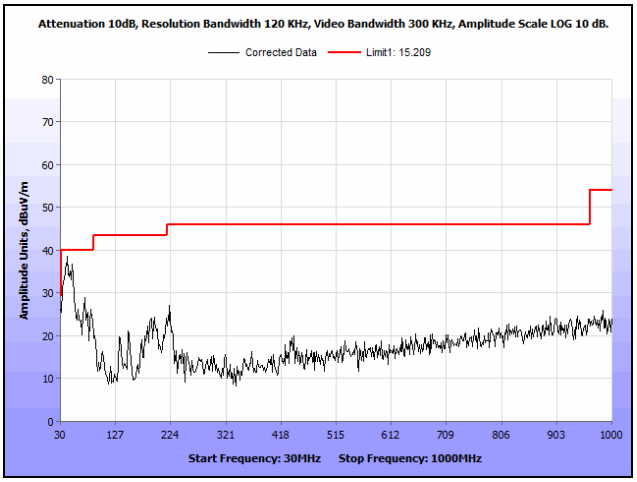
For measurements above 1 GHz, measurements were made with a Peak detector with 1 MHz resolution bandwidth. A notch filter was use to filter out the transmitting channel. Where the spurious emissions fell into a restricted band, measurements were also made with an average detector to make sure they complied with 15.209 limits. Only noise floor was seen above 18 GHz. Worst case emissions shown by antenna.

Test Results: The EUT was compliant with the Radiated Emission limits for Intentional Radiators. See following pages for detailed test results. All emissions above 18 GHz were at the noise floor of the receiver.

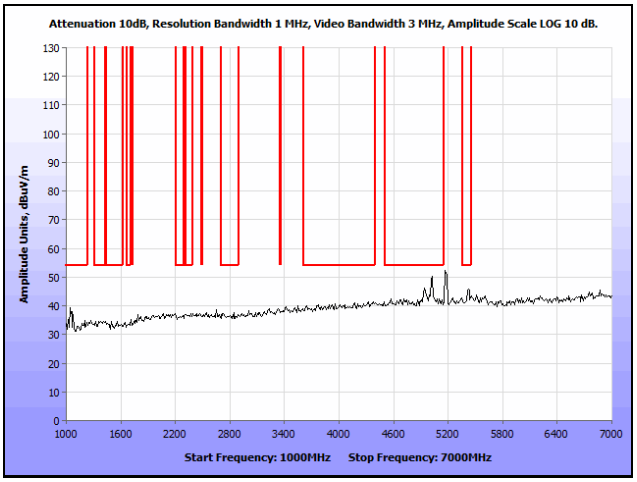
Test Engineer(s): Andy Shen & Ajaz Khan

Test Date(s): 01/22/15

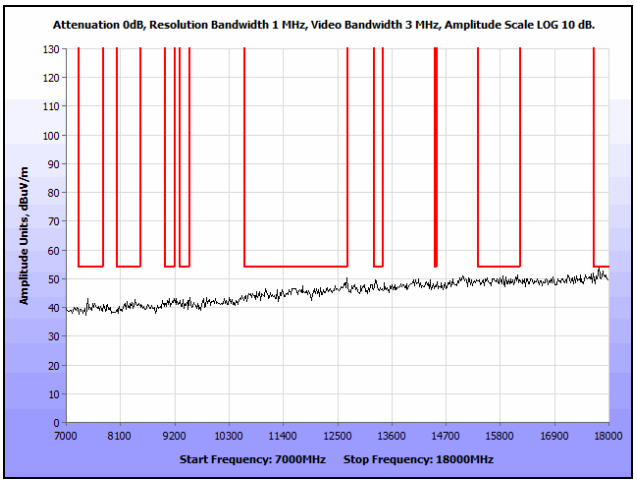
Radiated Spurious Emissions, 802.11a 20 MHz, UNII 1, ANT-O6ABGN-1211-PA, DMPA



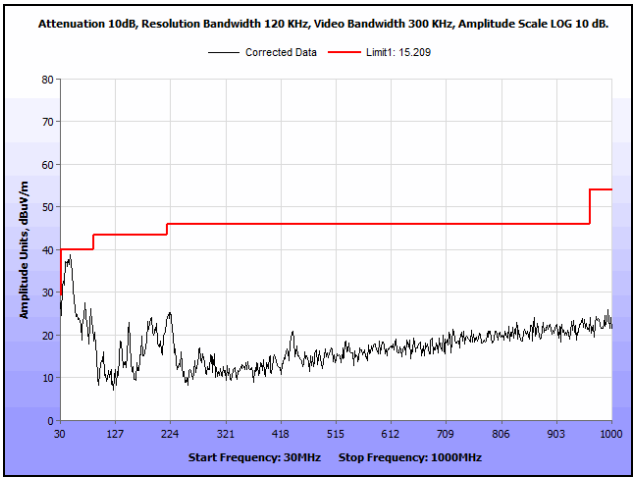
Plot 77. Radiated Spurious Emissions, Low Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



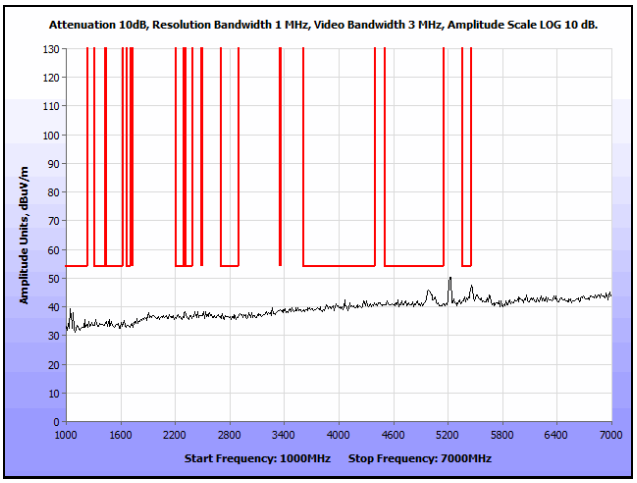
Plot 78. Radiated Spurious Emissions, Low Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, UNII 1, DMPA



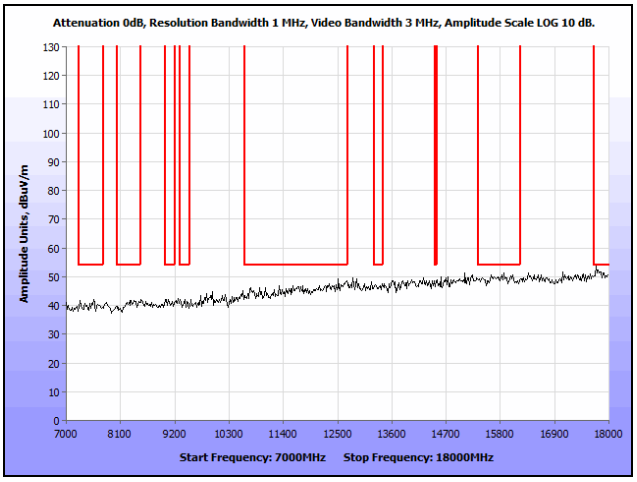
Plot 79. Radiated Spurious Emissions, Low Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA



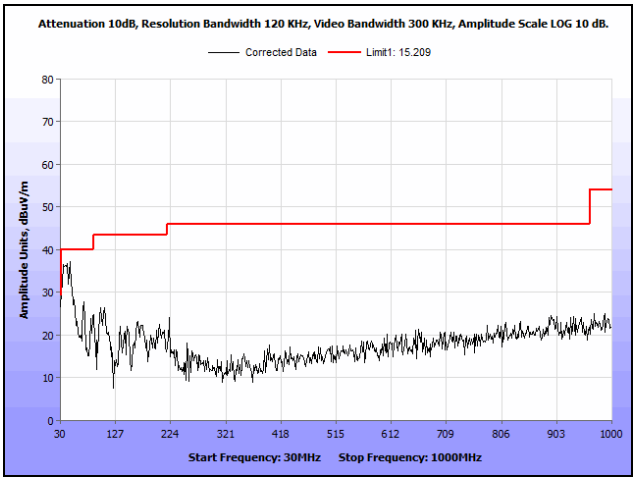
Plot 80. Radiated Spurious Emissions, Mid Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



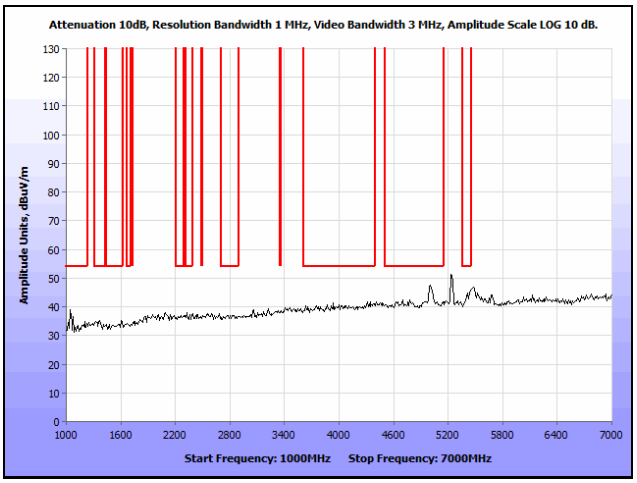
Plot 81. Radiated Spurious Emissions, Mid Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, UNII 1, DMPA



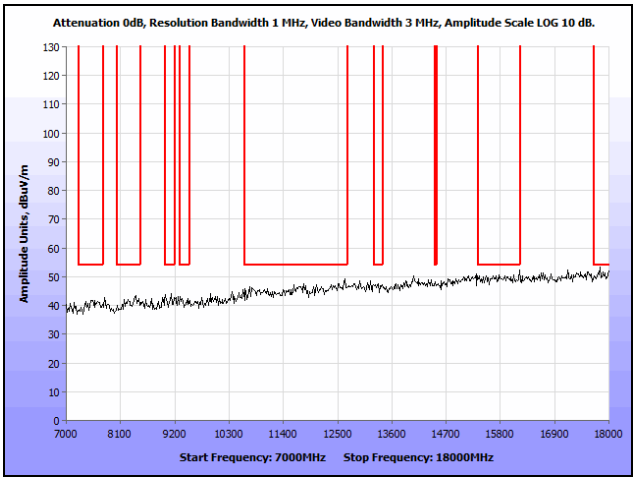
Plot 82. Radiated Spurious Emissions, Mid Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA



Plot 83. Radiated Spurious Emissions, High Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA

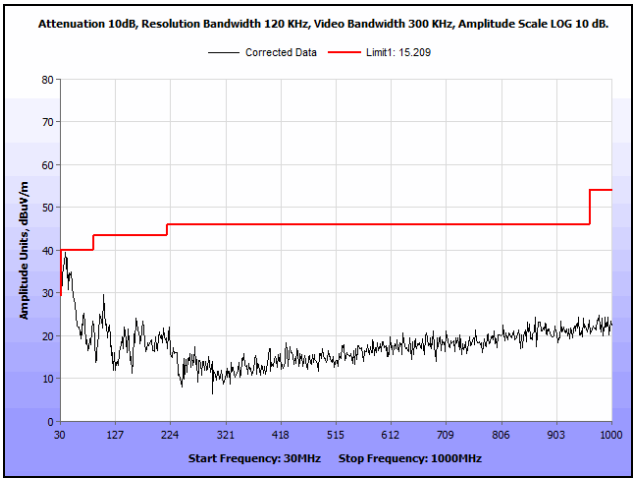


Plot 84. Radiated Spurious Emissions, High Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, UNII 1, DMPA

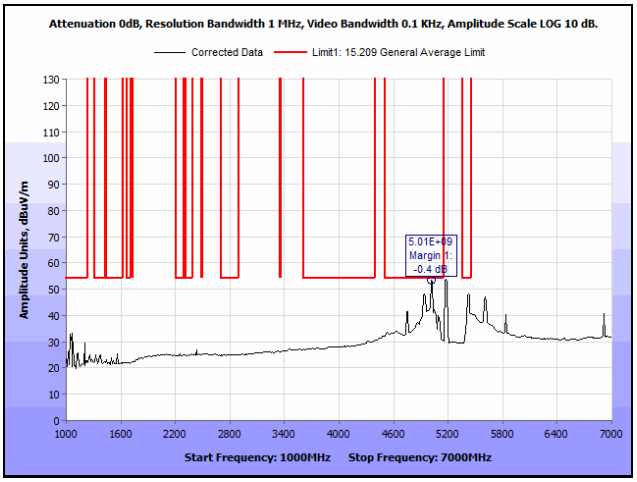


Plot 85. Radiated Spurious Emissions, High Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA

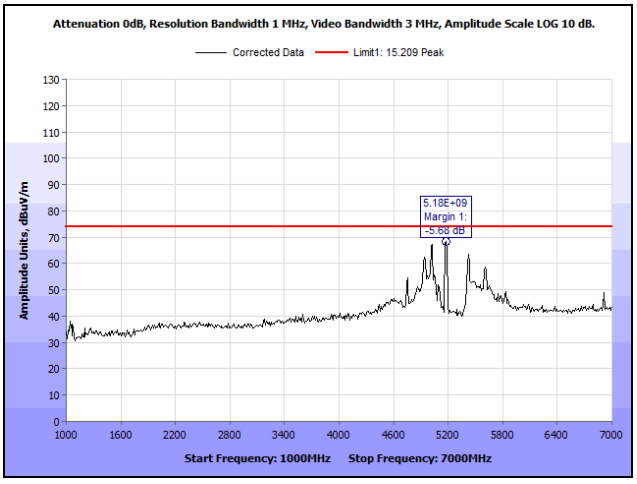
Radiated Spurious Emissions, 802.11ac 20 MHz, UNII 1, ANT-O6ABGN-1211-PA, DMPA



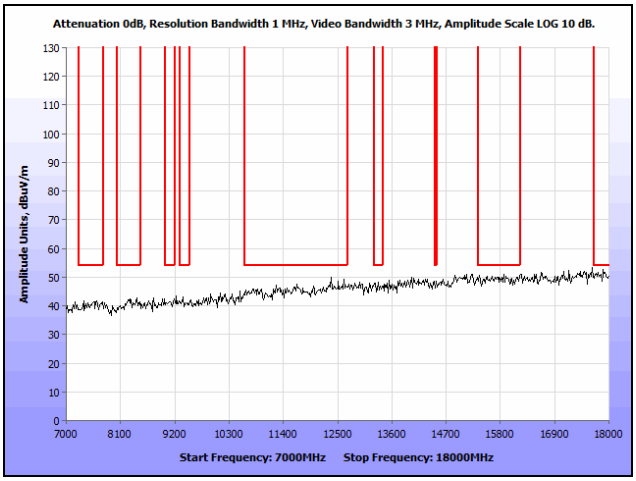
Plot 86. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



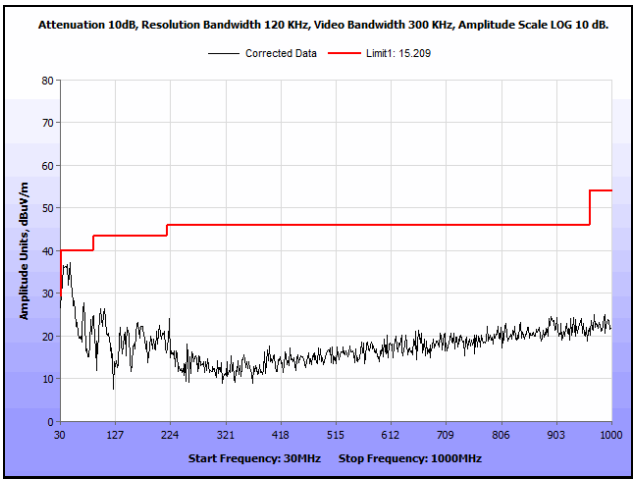
Plot 87. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA



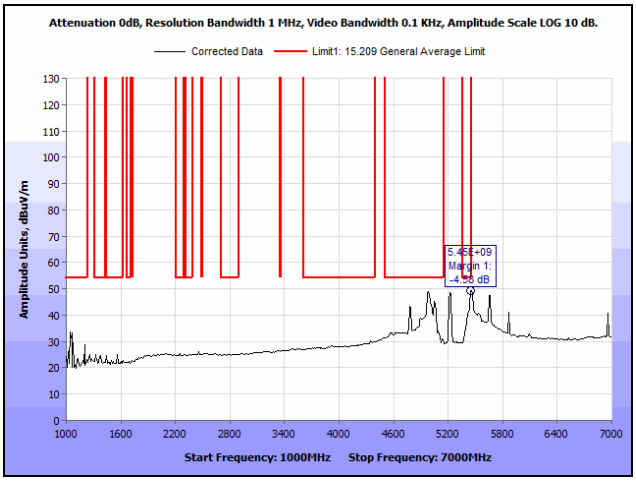
Plot 88. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA



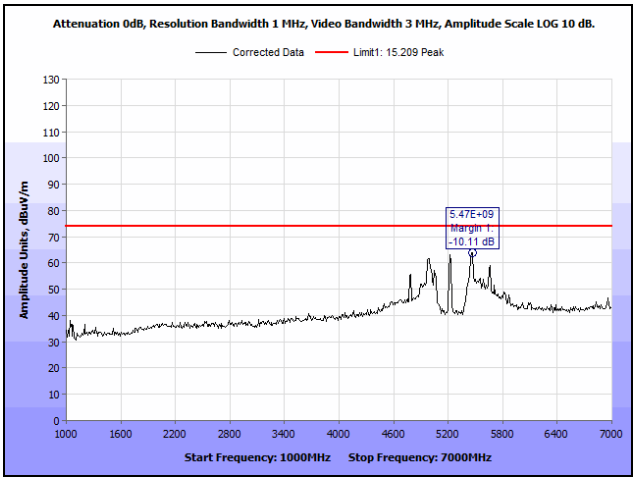
Plot 89. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA



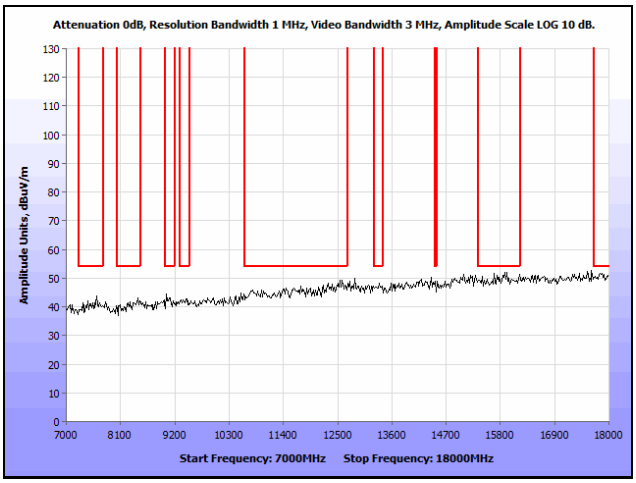
Plot 90. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



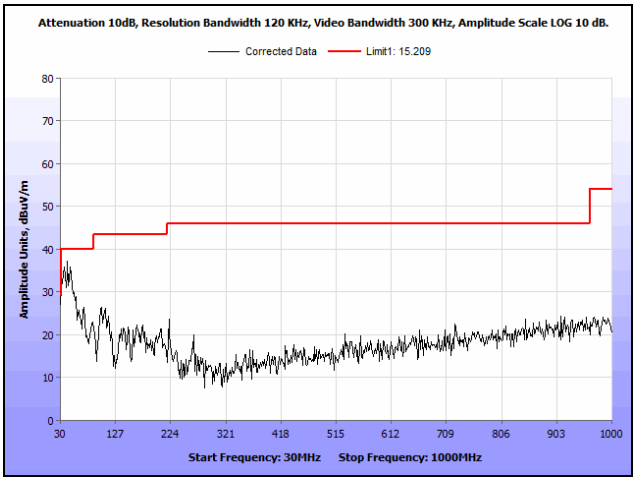
Plot 91. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA



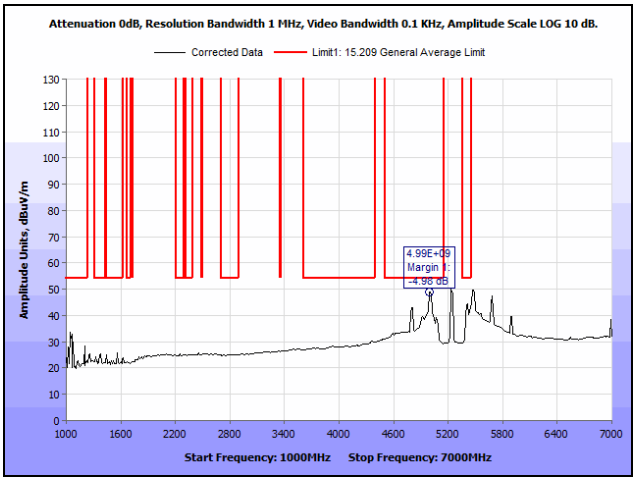
Plot 92. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA



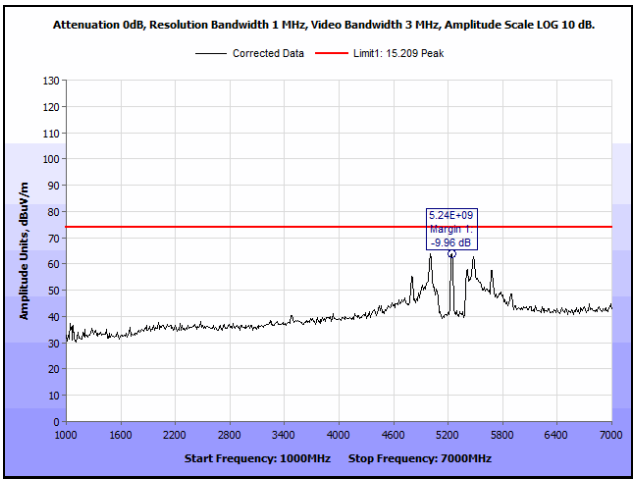
Plot 93. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA



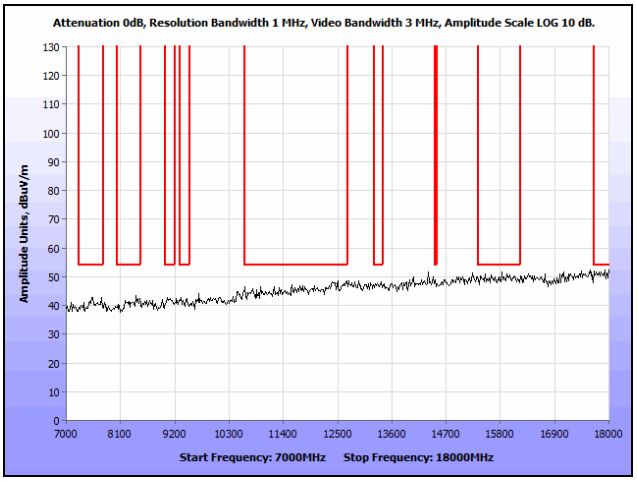
Plot 94. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



Plot 95. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA

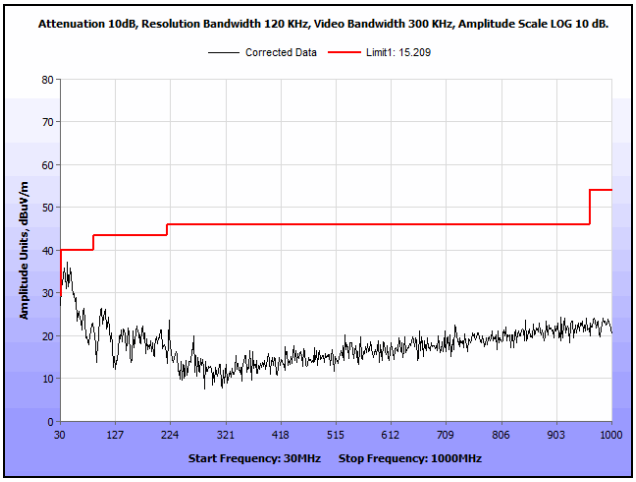


Plot 96. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA

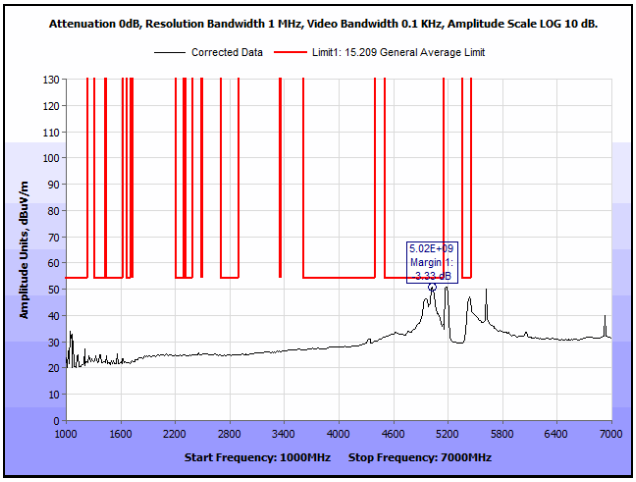


Plot 97. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA

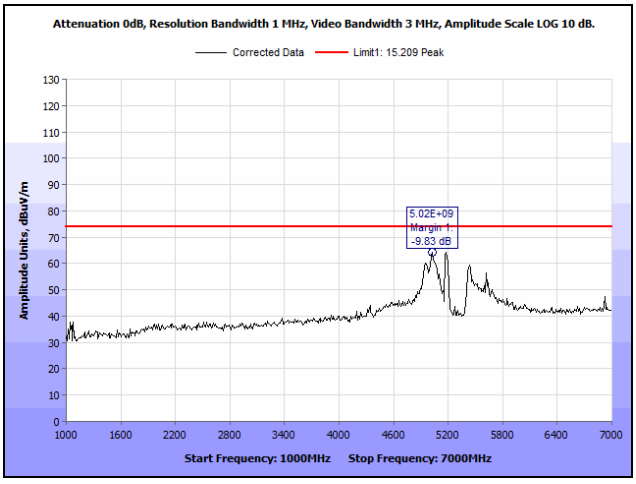
Radiated Spurious Emissions, 802.11ac 40 MHz, UNII 1, ANT-O6ABGN-1211-PA, DMPA



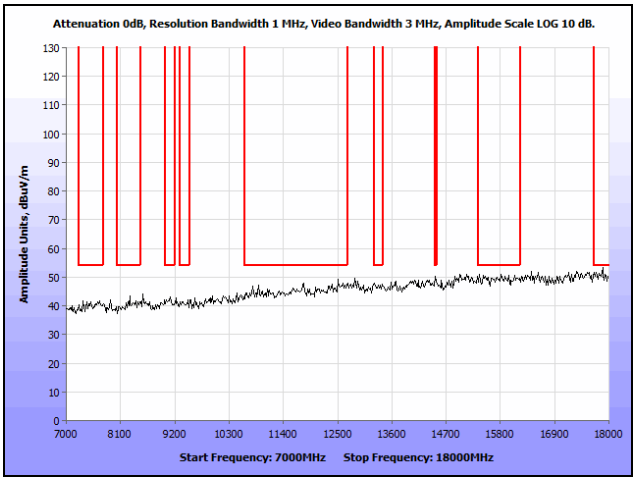
Plot 98. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



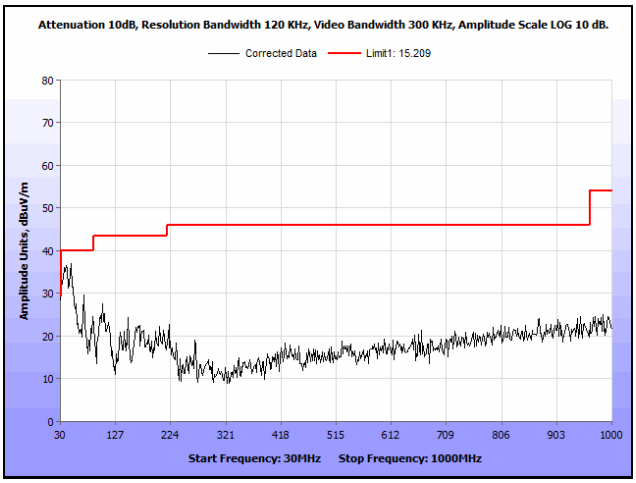
Plot 99. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA



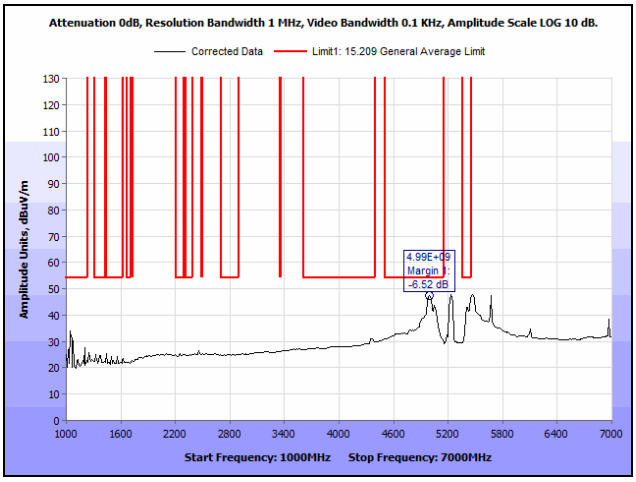
Plot 100. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA



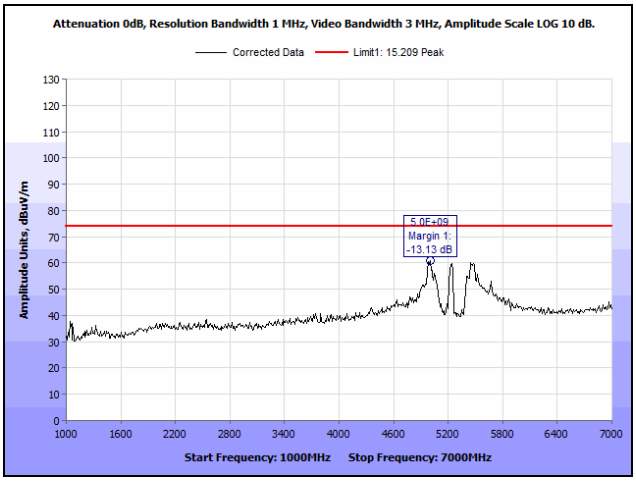
Plot 101. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA



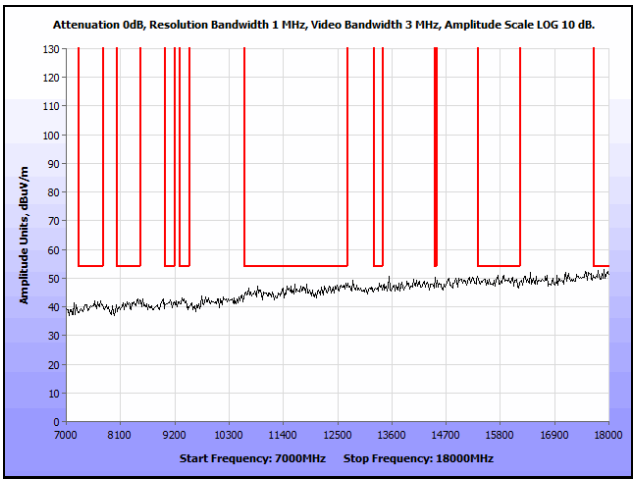
Plot 102. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



Plot 103. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA

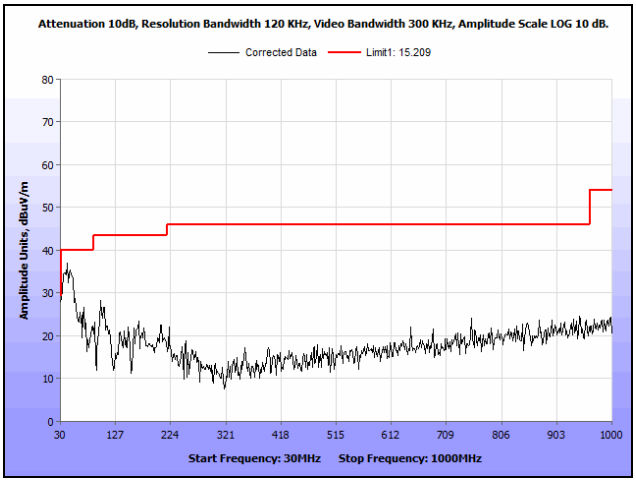


Plot 104. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA

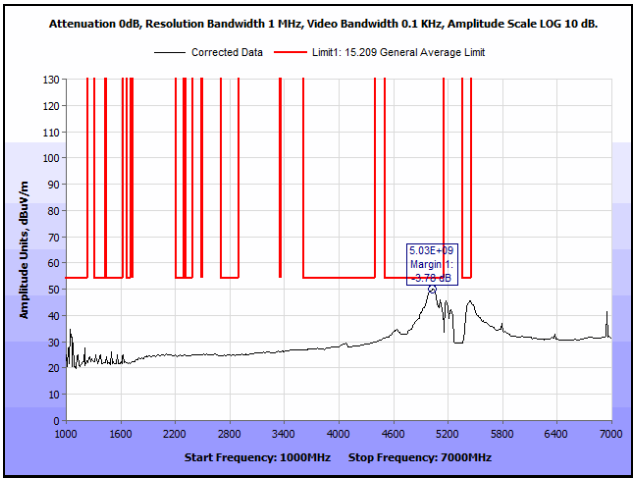


Plot 105. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA

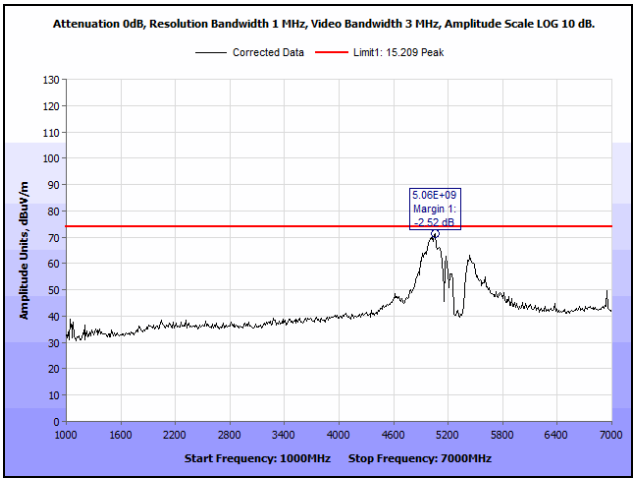
Radiated Spurious Emissions, 802.11ac 80 MHz, UNII 1, ANT-O6ABGN-1211-PA, DMPA



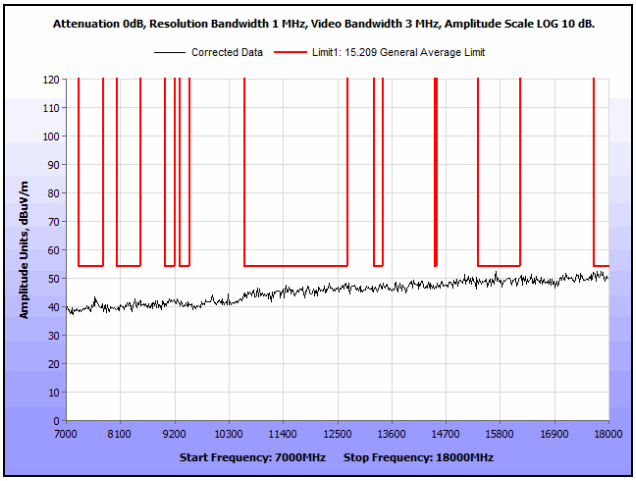
Plot 106. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



Plot 107. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA

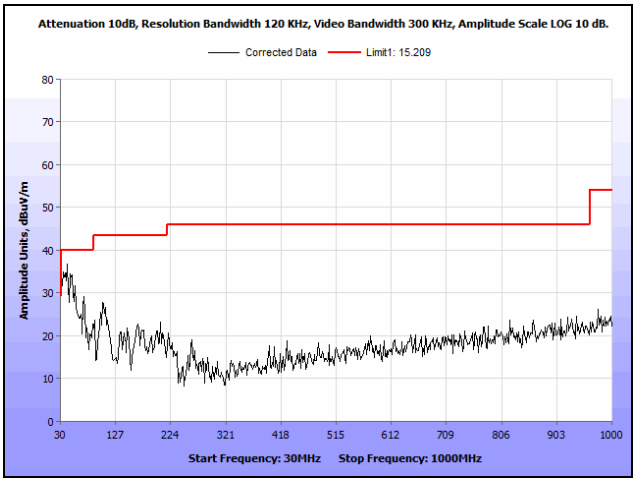


Plot 108. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA

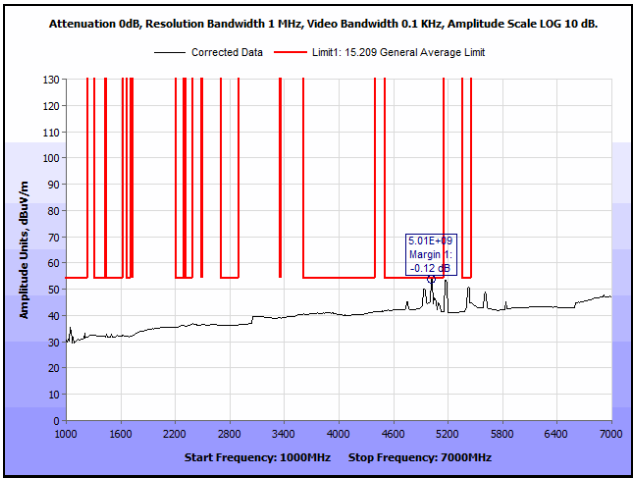


Plot 109. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA

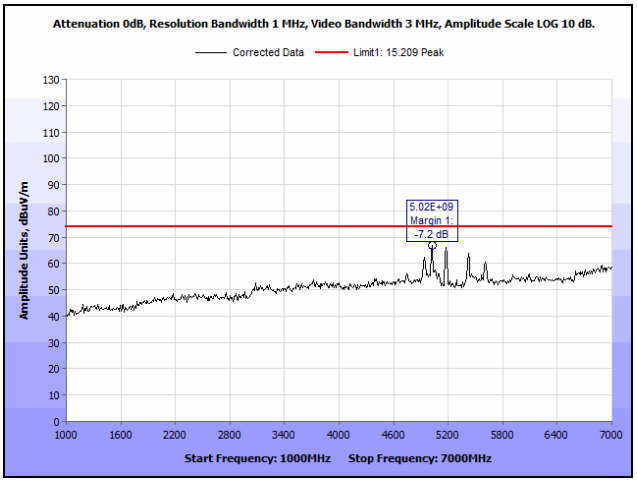
Radiated Spurious Emissions, 802.11n 20 MHz, UNII 1, ANT-O6ABGN-1211-PA, DMPA



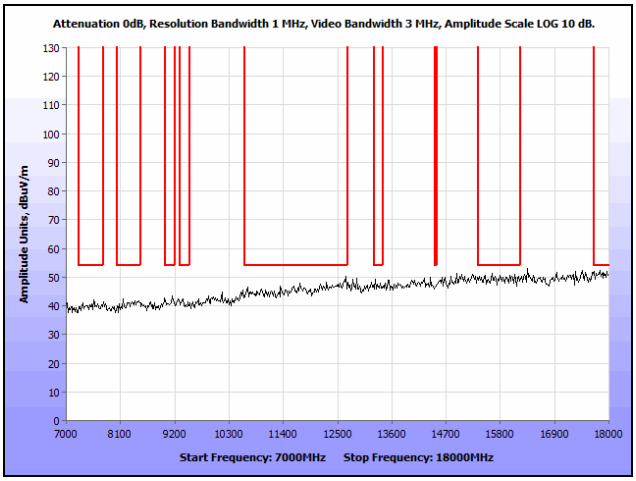
Plot 110. Radiated Spurious Emissions, Low Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



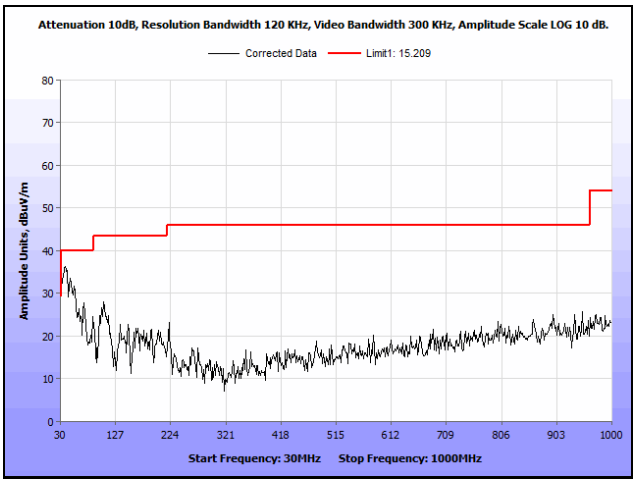
Plot 111. Radiated Spurious Emissions, Low Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA



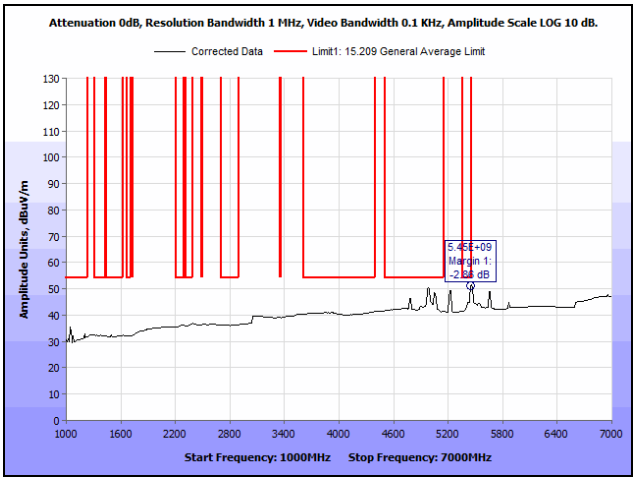
Plot 112. Radiated Spurious Emissions, Low Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA



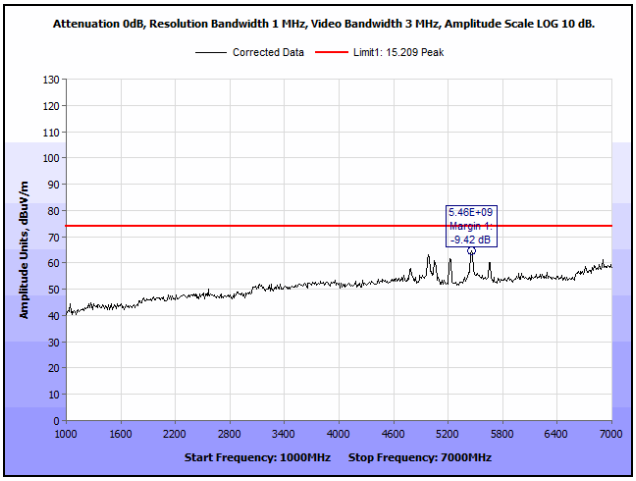
Plot 113. Radiated Spurious Emissions, Low Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA



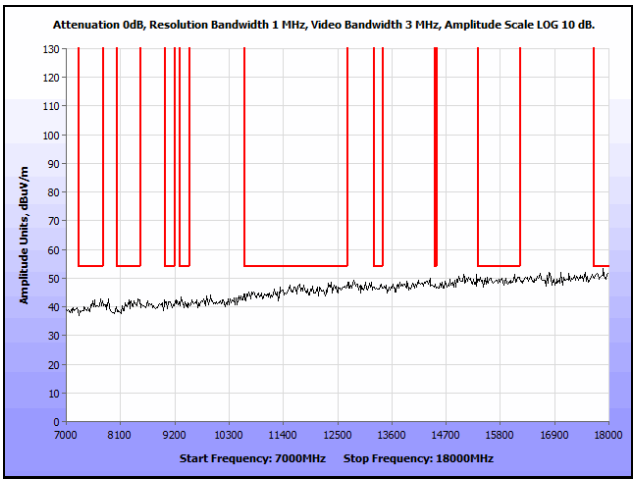
Plot 114. Radiated Spurious Emissions, Mid Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



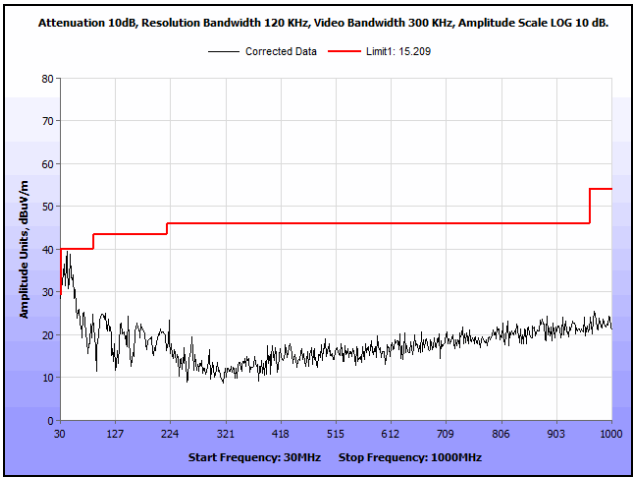
Plot 115. Radiated Spurious Emissions, Mid Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA



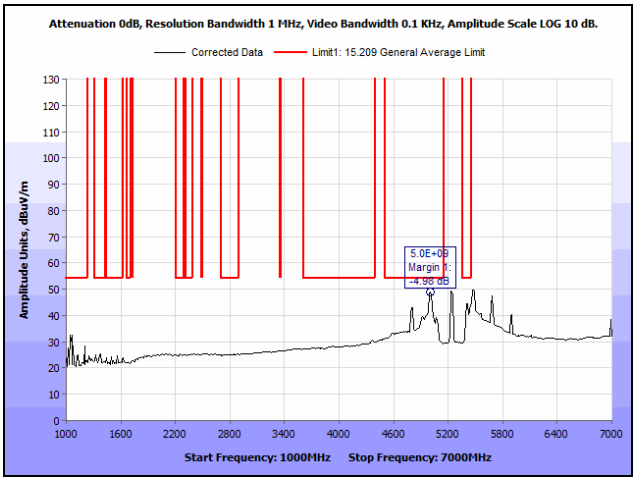
Plot 116. Radiated Spurious Emissions, Mid Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA



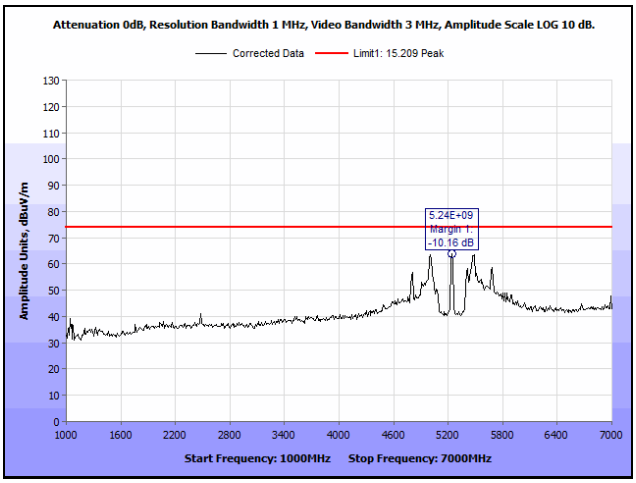
Plot 117. Radiated Spurious Emissions, Mid Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA



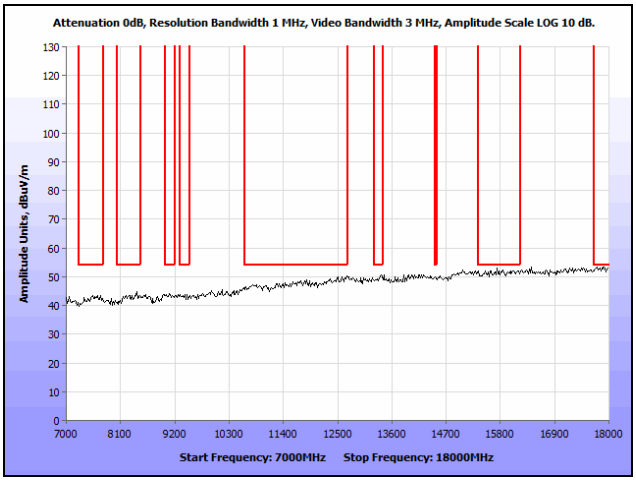
Plot 118. Radiated Spurious Emissions, High Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



Plot 119. Radiated Spurious Emissions, High Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA

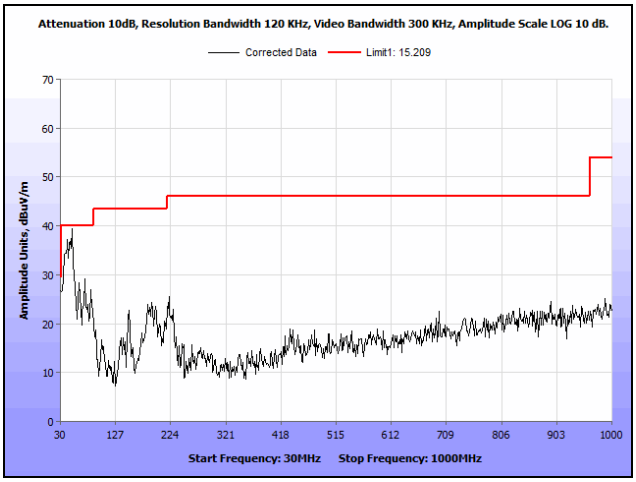


Plot 120. Radiated Spurious Emissions, High Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA

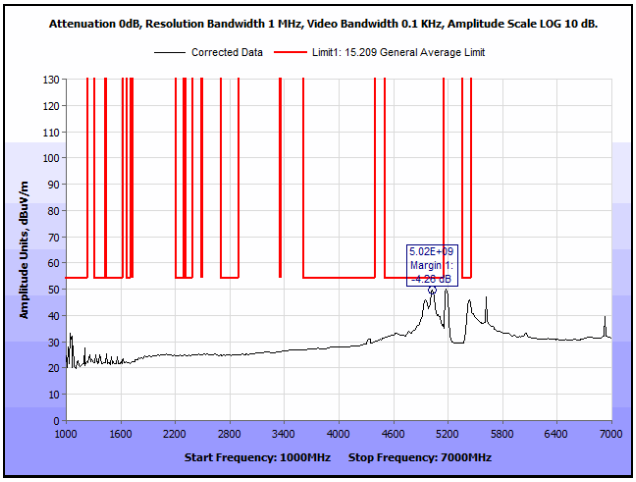


Plot 121. Radiated Spurious Emissions, High Channel, 802.11n 20 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA

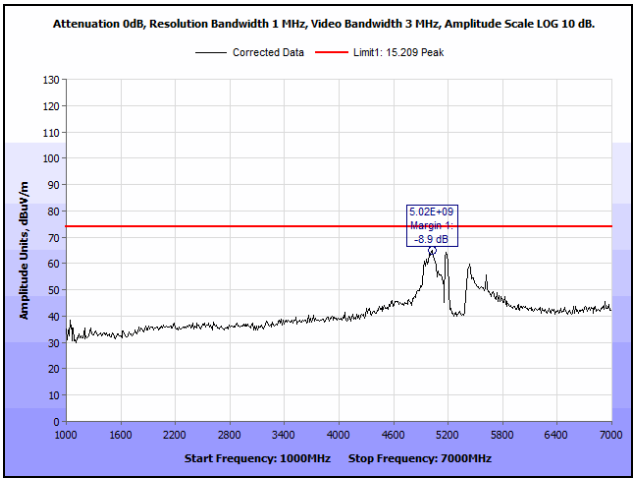
Radiated Spurious Emissions, 802.11n 40 MHz, UNII 1, ANT-O6ABGN-1211-PA, DMPA



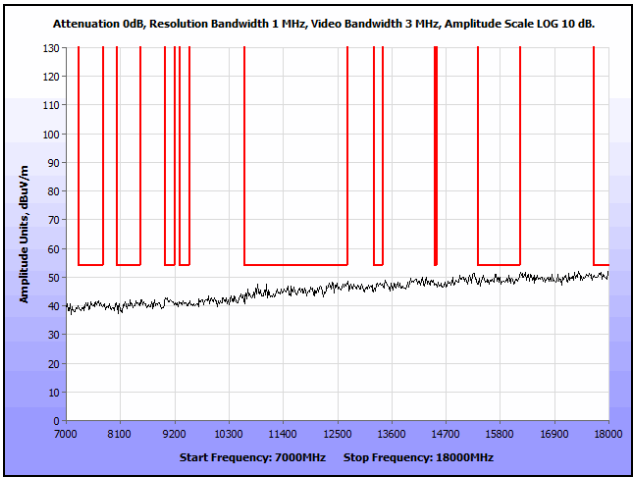
Plot 122. Radiated Spurious Emissions, Low Channel, 802.11n 40 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



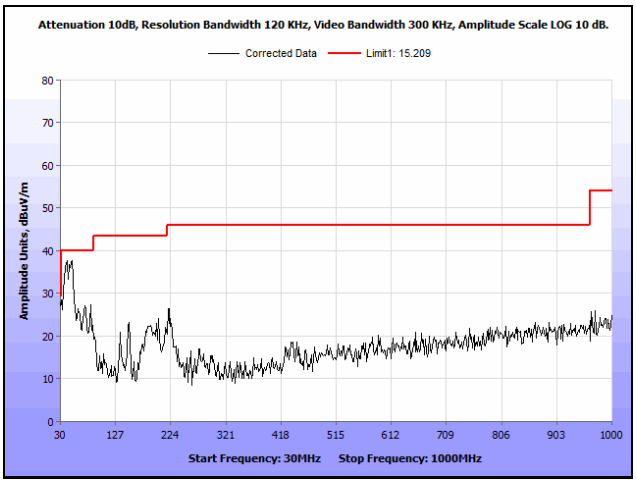
Plot 123. Radiated Spurious Emissions, Low Channel, 802.11n 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA



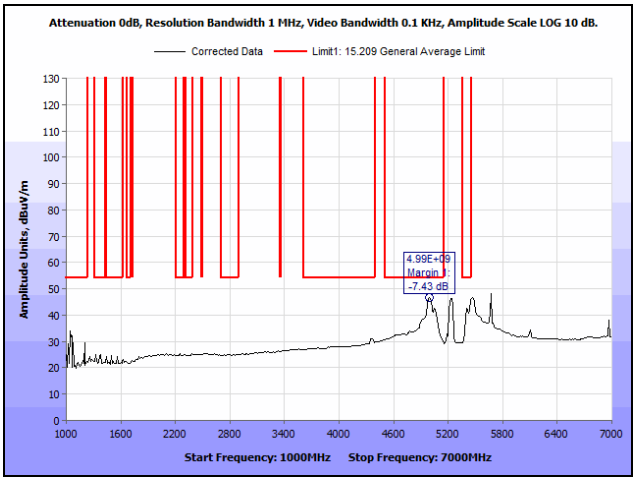
Plot 124. Radiated Spurious Emissions, Low Channel, 802.11n 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA



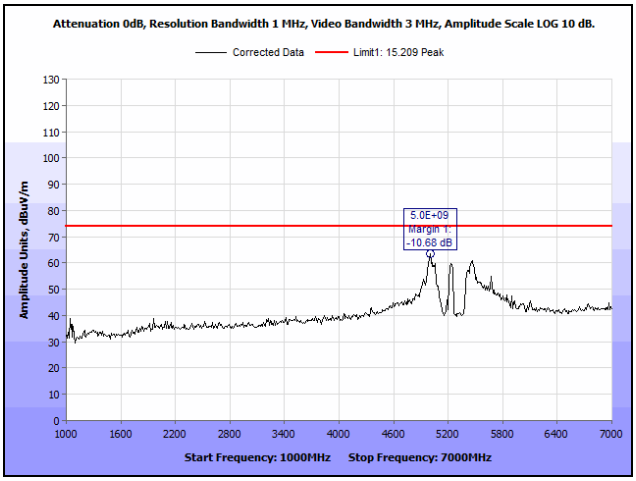
Plot 125. Radiated Spurious Emissions, Low Channel, 802.11n 40 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA



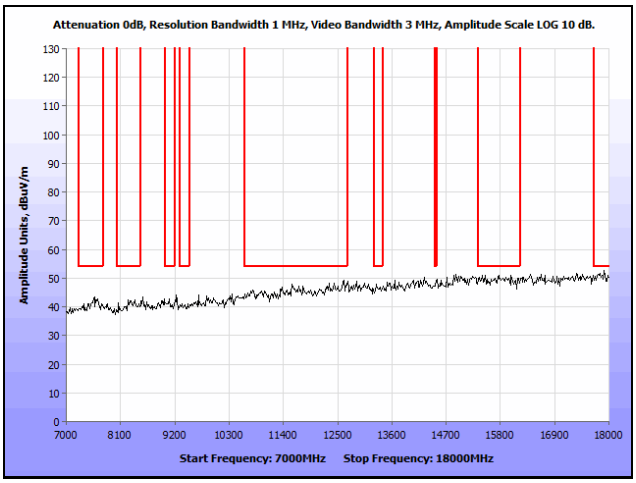
Plot 126. Radiated Spurious Emissions, High Channel, 802.11n 40 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 1, DMPA



Plot 127. Radiated Spurious Emissions, High Channel, 802.11n 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 1, DMPA

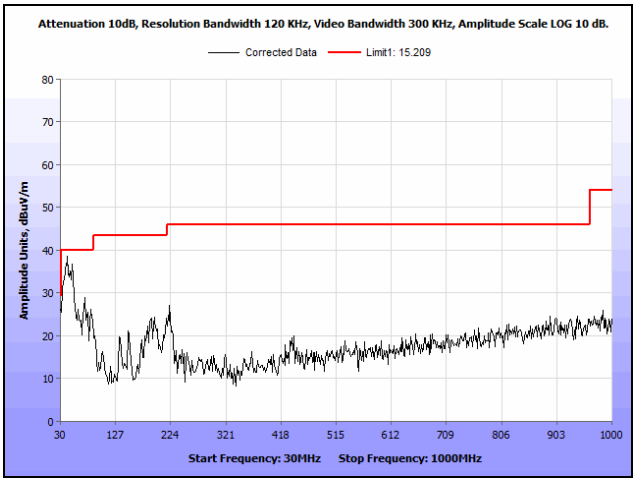


Plot 128. Radiated Spurious Emissions, High Channel, 802.11n 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 1, DMPA

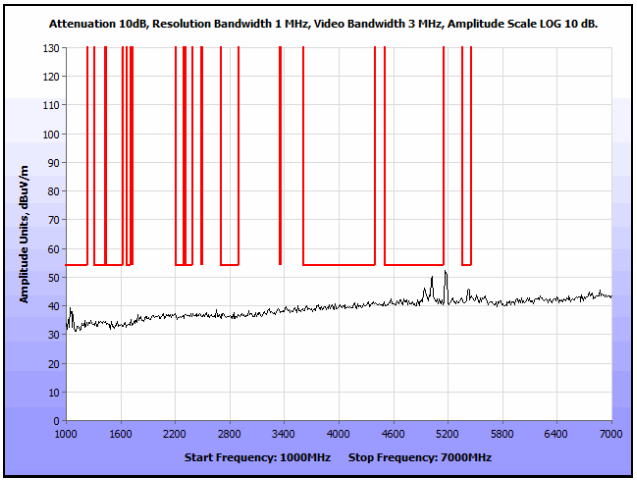


Plot 129. Radiated Spurious Emissions, High Channel, 802.11n 40 MHz, ANT-O6ABGN-1211-PA, 7 GHz – 18 GHz, UNII 1, DMPA

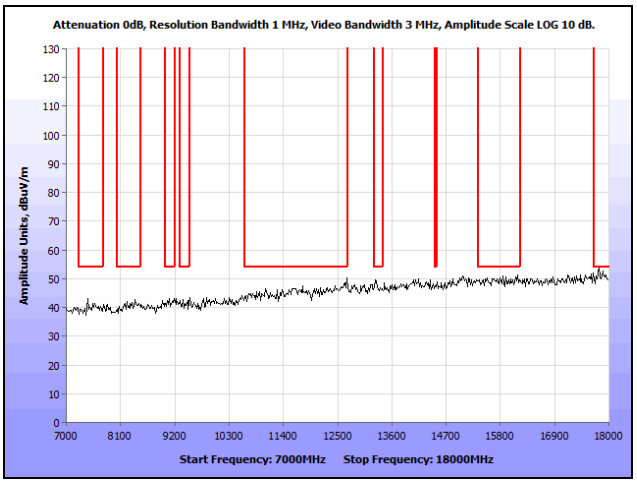
Radiated Spurious Emissions, 802.11a 20 MHz, UNII 1, ANT-BG080-NM, OODA



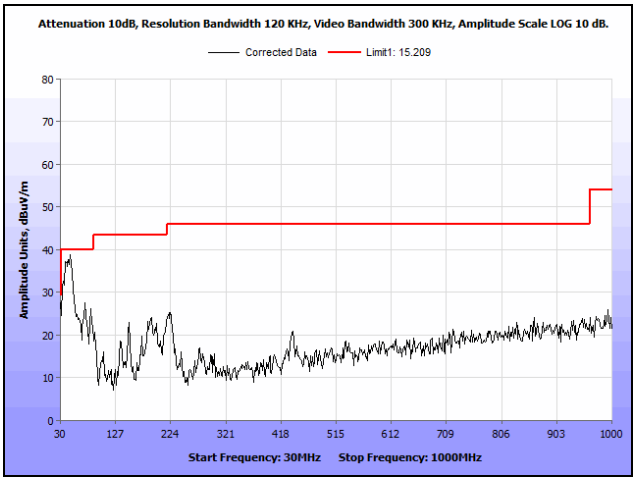
Plot 130. Radiated Spurious Emissions, Low Channel, 802.11a 20 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



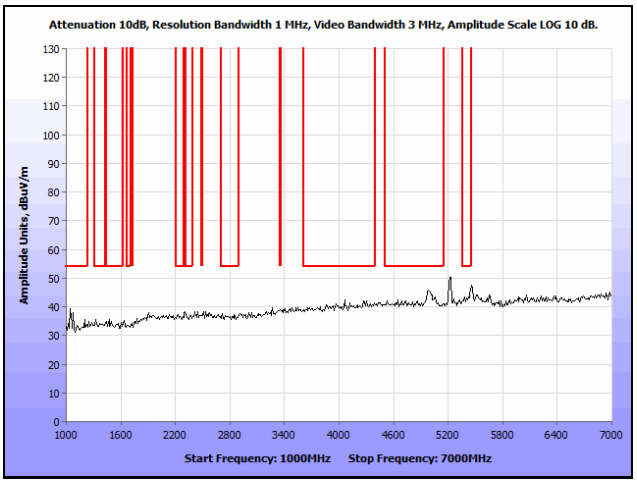
Plot 131. Radiated Spurious Emissions, Low Channel, 802.11a 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, UNII 1, OODA



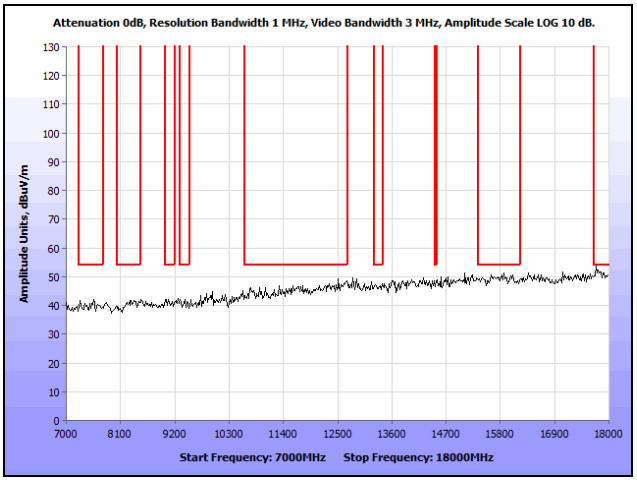
Plot 132. Radiated Spurious Emissions, Low Channel, 802.11a 20 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA



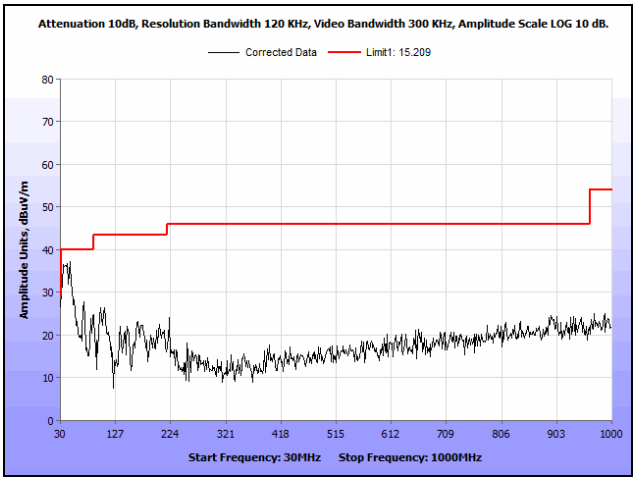
Plot 133. Radiated Spurious Emissions, Mid Channel, 802.11a 20 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



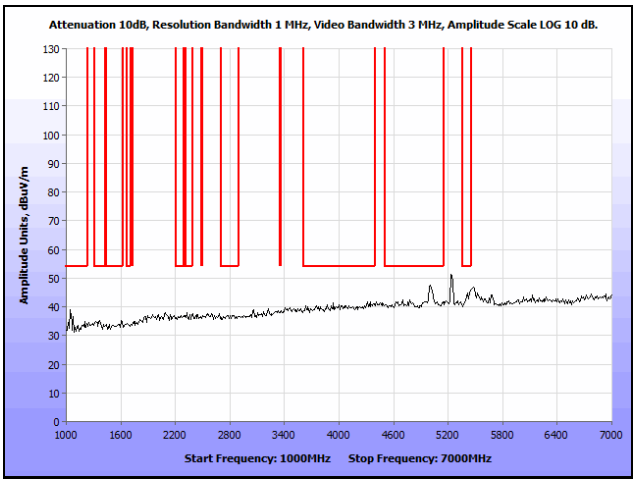
Plot 134. Radiated Spurious Emissions, Mid Channel, 802.11a 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, UNII 1, OODA



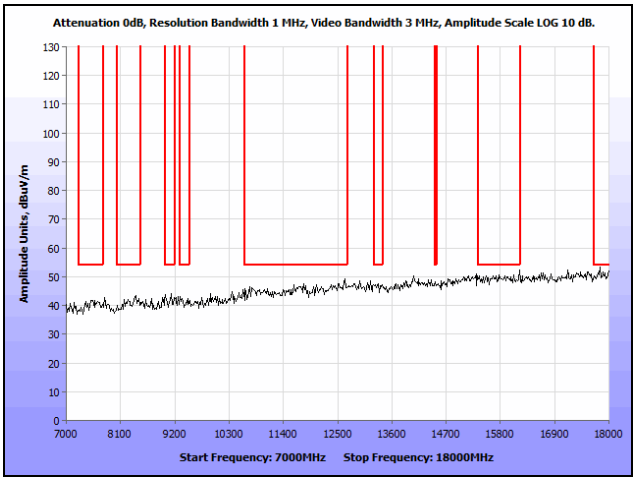
Plot 135. Radiated Spurious Emissions, Mid Channel, 802.11a 20 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA



Plot 136. Radiated Spurious Emissions, High Channel, 802.11a 20 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA

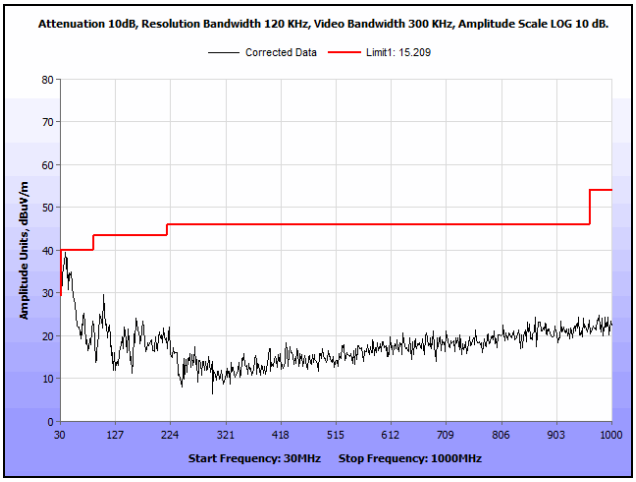


Plot 137. Radiated Spurious Emissions, High Channel, 802.11a 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, UNII 1, OODA

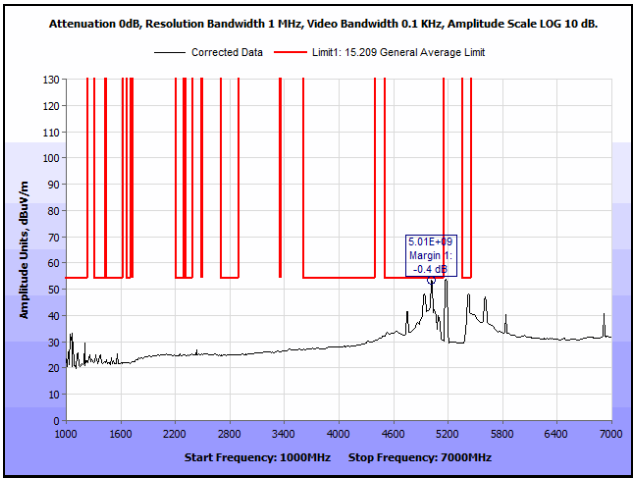


Plot 138. Radiated Spurious Emissions, High Channel, 802.11a 20 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA

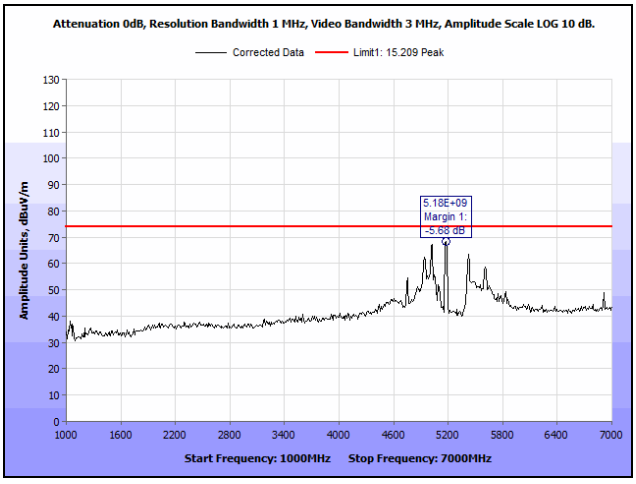
Radiated Spurious Emissions, 802.11ac 20 MHz, UNII 1, ANT-BG080-NM, OODA



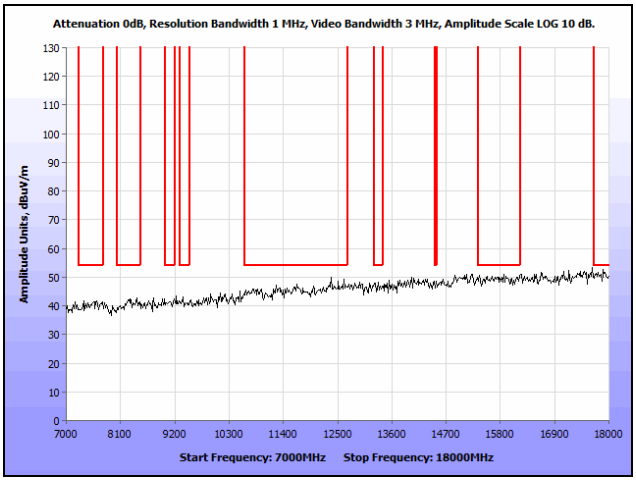
Plot 139. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



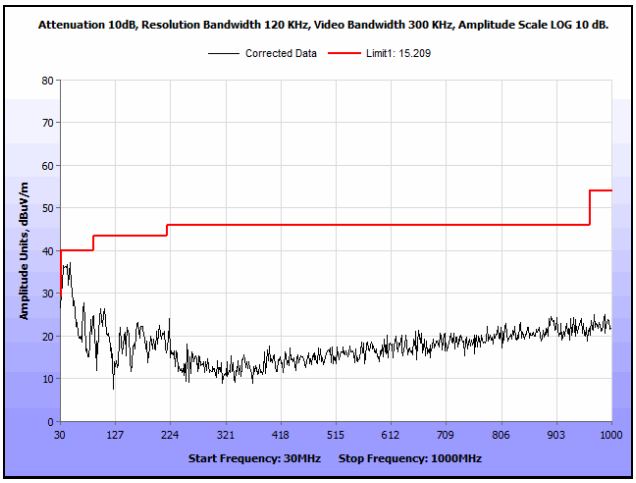
Plot 140. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA



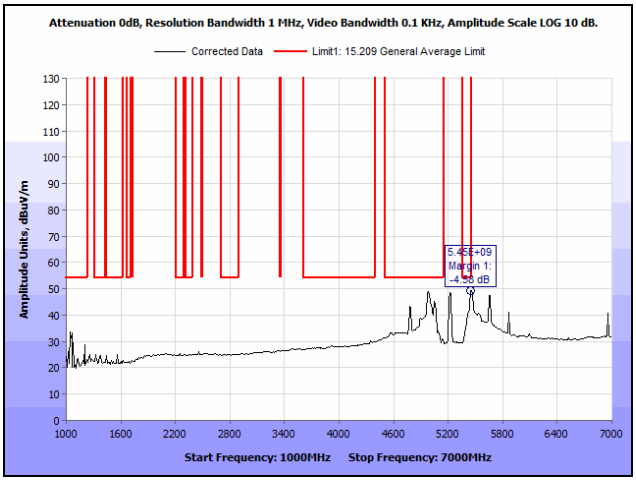
Plot 141. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA



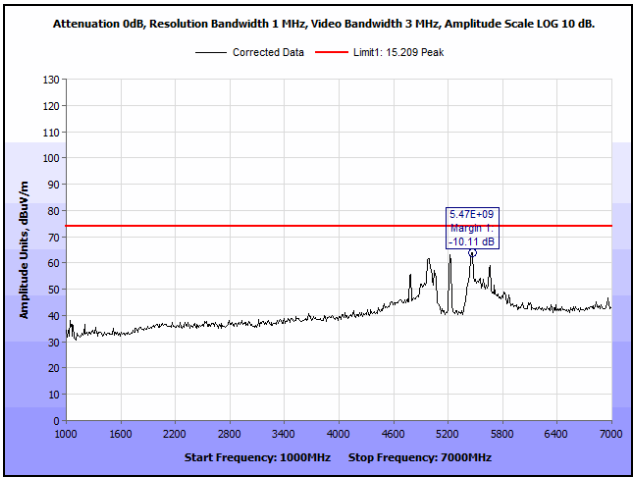
Plot 142. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA



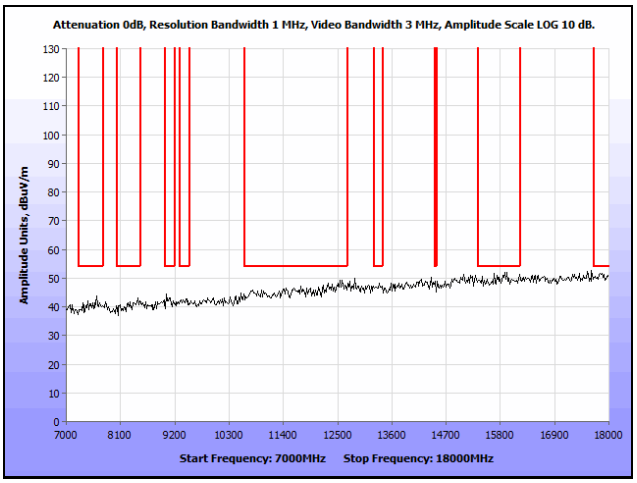
Plot 143. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



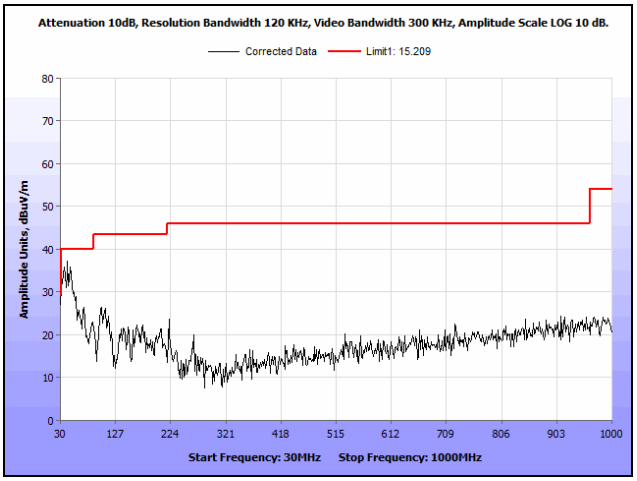
Plot 144. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA



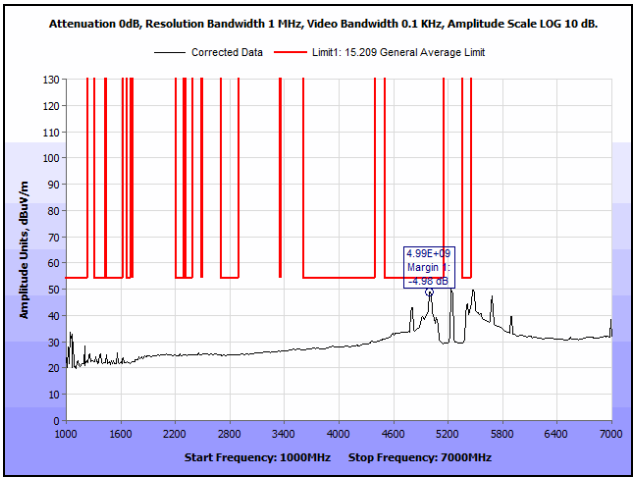
Plot 145. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA



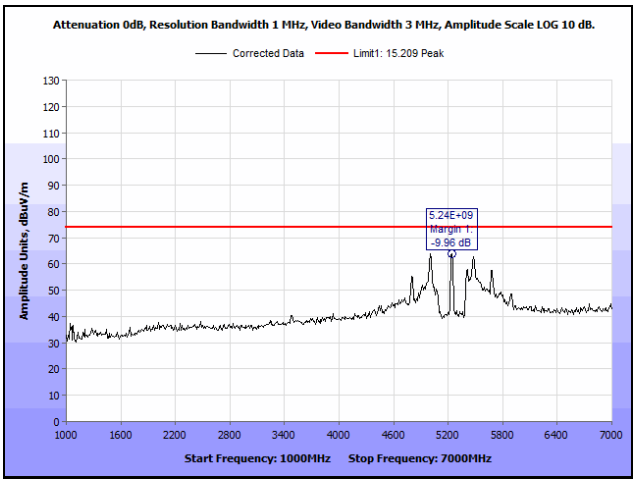
Plot 146. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA



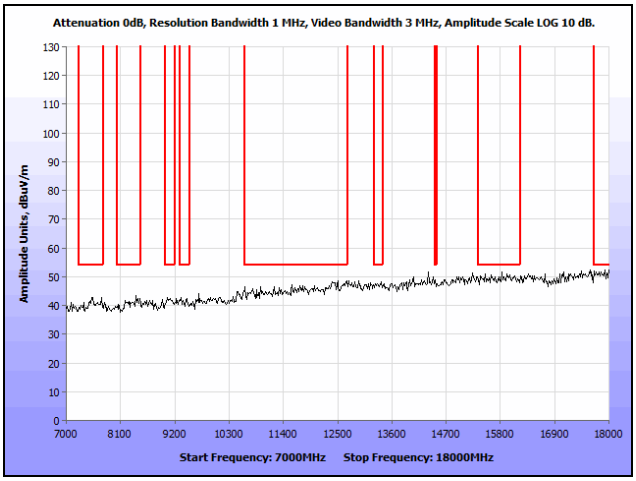
Plot 147. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



Plot 148. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA

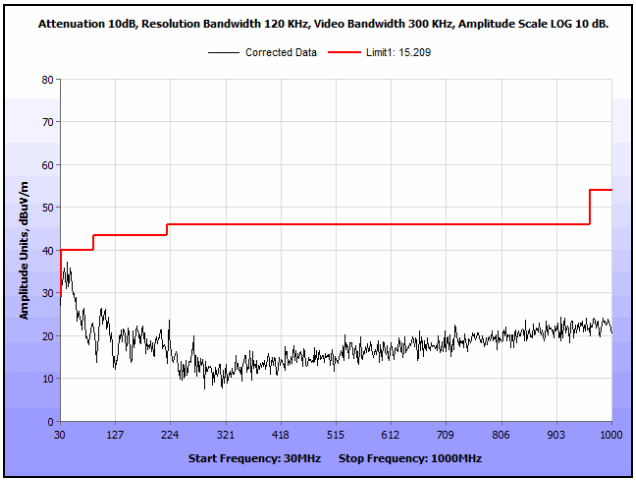


Plot 149. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA

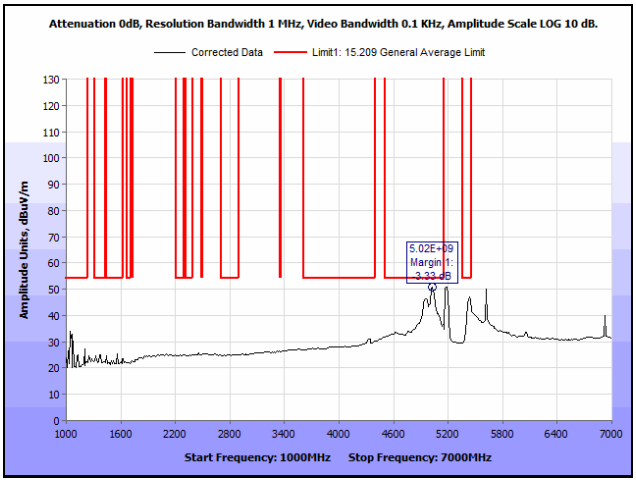


Plot 150. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA

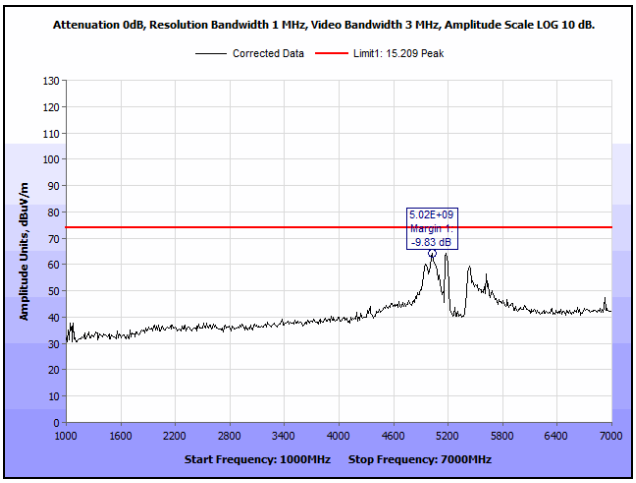
Radiated Spurious Emissions, 802.11ac 40 MHz, UNII 1, ANT-BG080-NM, OODA



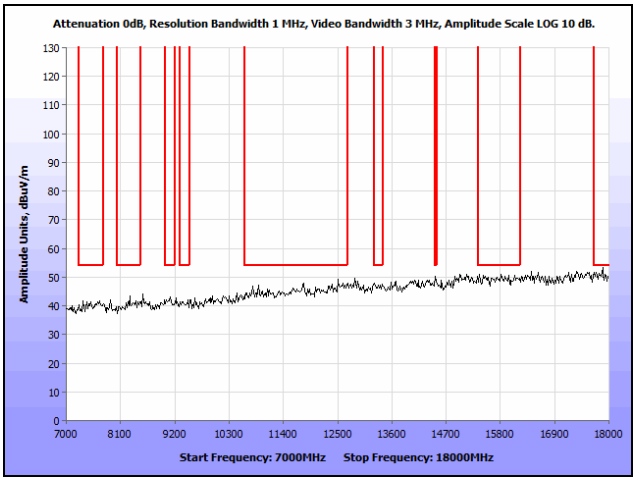
Plot 151. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



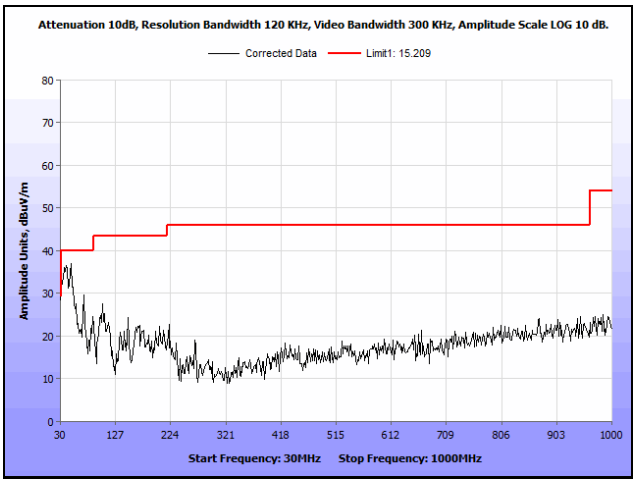
Plot 152. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA



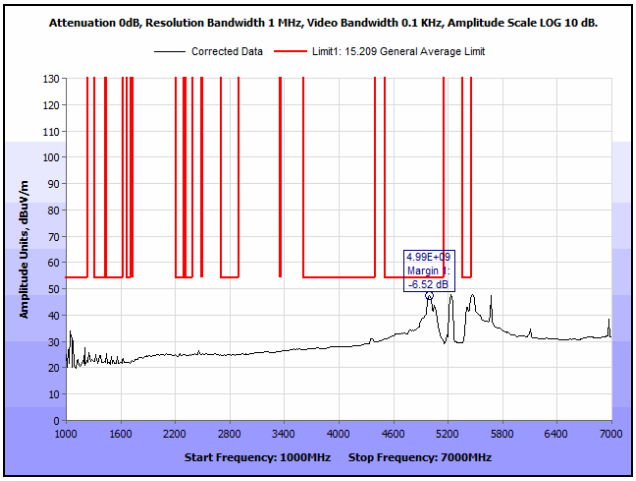
Plot 153. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA



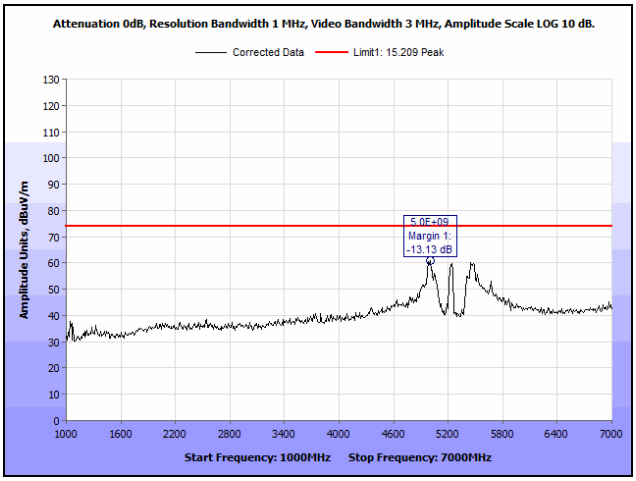
Plot 154. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA



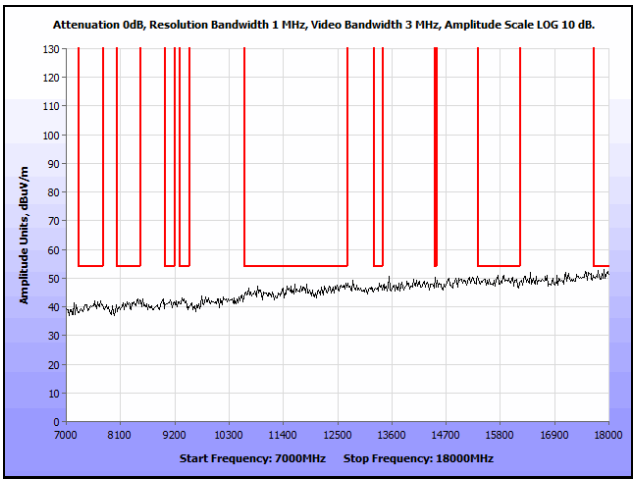
Plot 155. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



Plot 156. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA

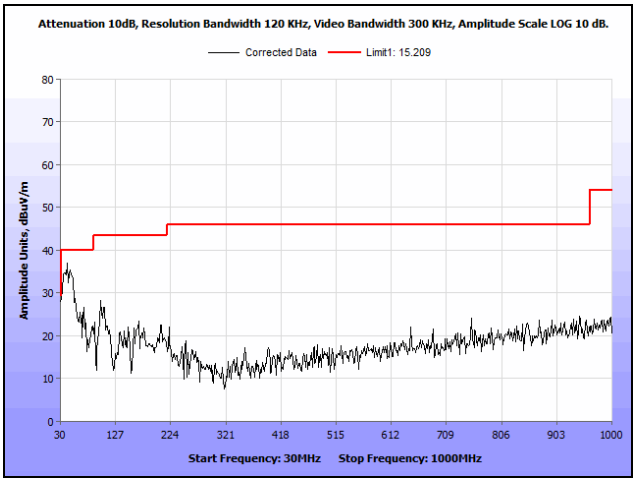


Plot 157. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA

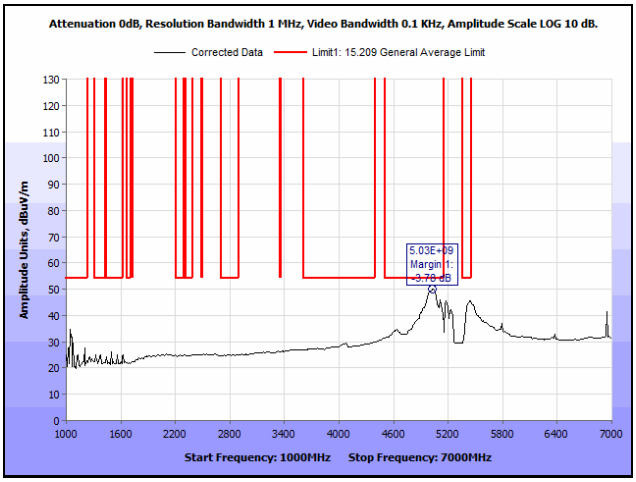


Plot 158. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA

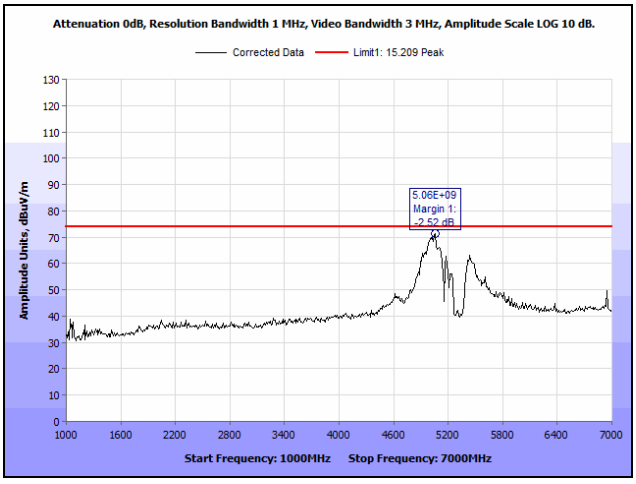
Radiated Spurious Emissions, 802.11ac 80 MHz, UNII 1, ANT-BG080-NM, OODA



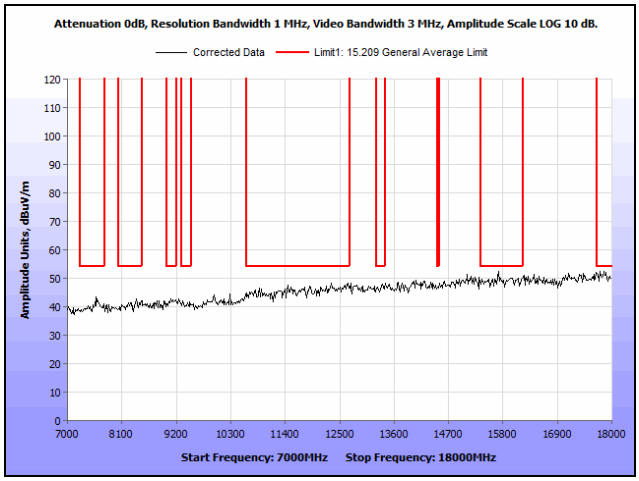
Plot 159. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



Plot 160. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA

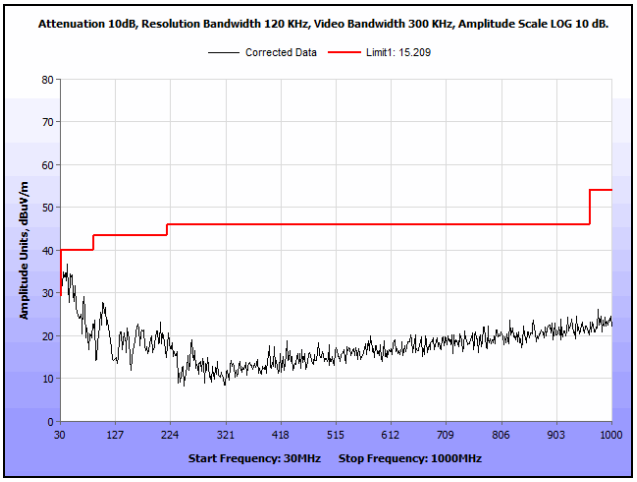


Plot 161. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA

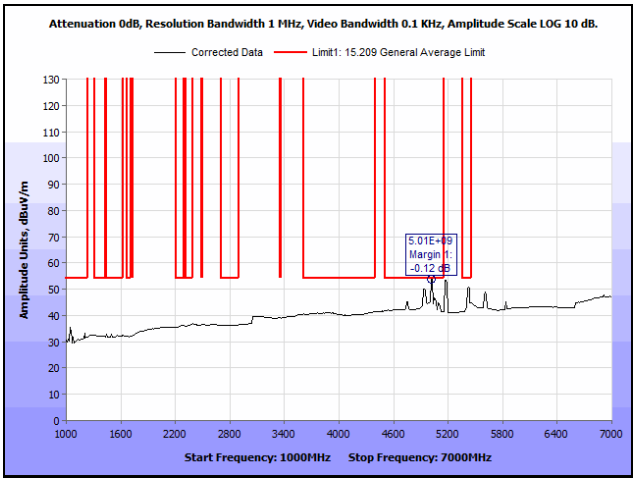


Plot 162. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA

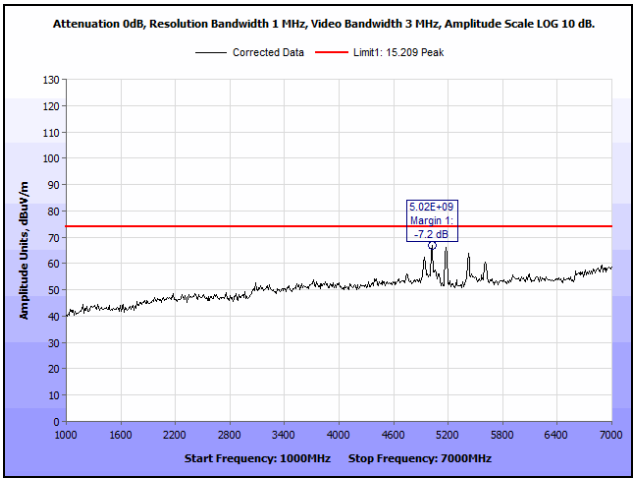
Radiated Spurious Emissions, 802.11n 20 MHz, UNII 1, ANT-BG080-NM, OODA



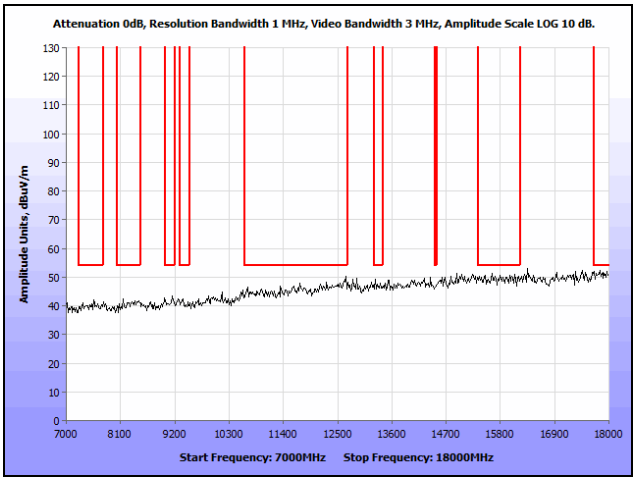
Plot 163. Radiated Spurious Emissions, Low Channel, 802.11n 20 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



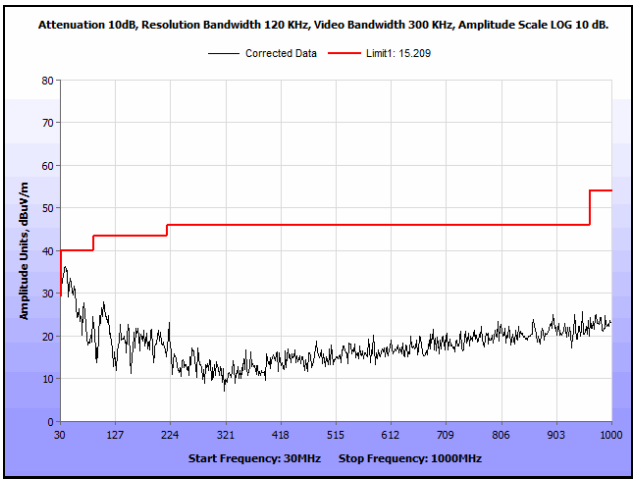
Plot 164. Radiated Spurious Emissions, Low Channel, 802.11n 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA



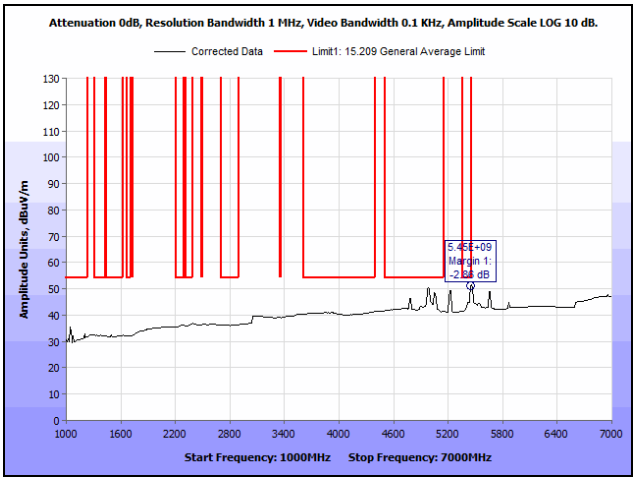
Plot 165. Radiated Spurious Emissions, Low Channel, 802.11n 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA



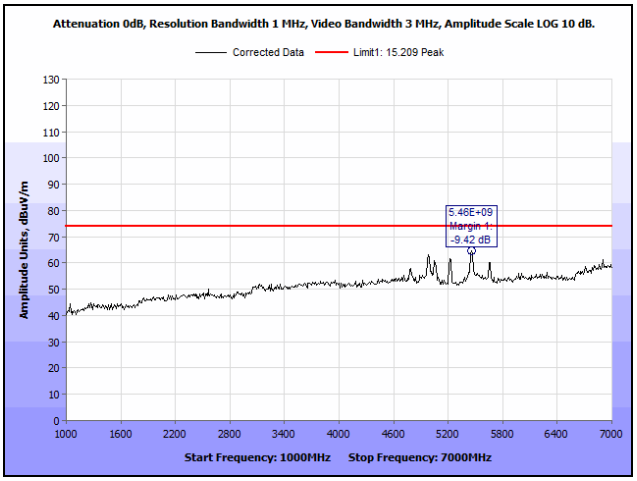
Plot 166. Radiated Spurious Emissions, Low Channel, 802.11n 20 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA



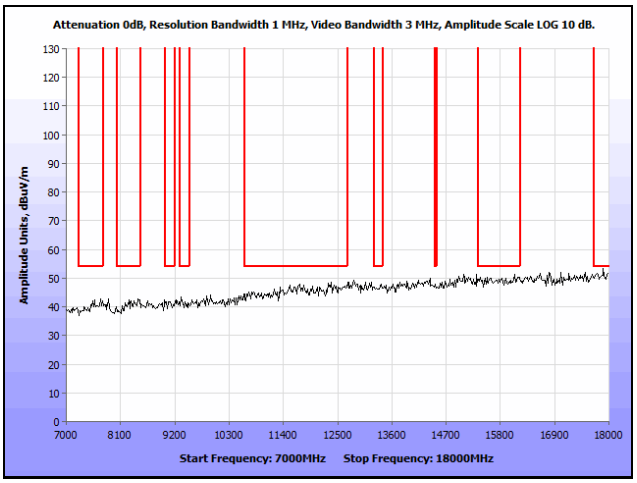
Plot 167. Radiated Spurious Emissions, Mid Channel, 802.11n 20 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



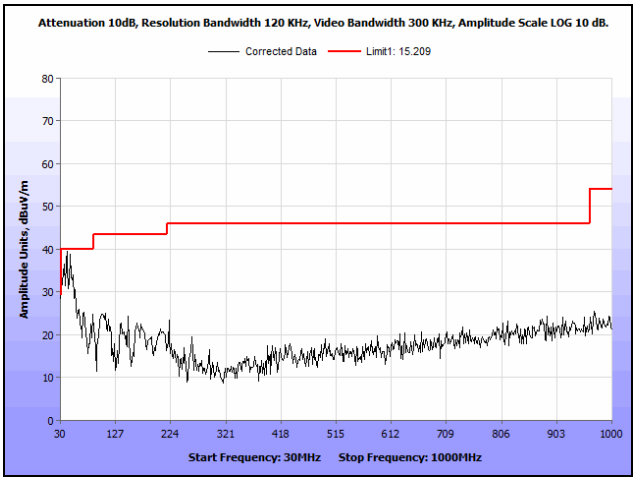
Plot 168. Radiated Spurious Emissions, Mid Channel, 802.11n 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA



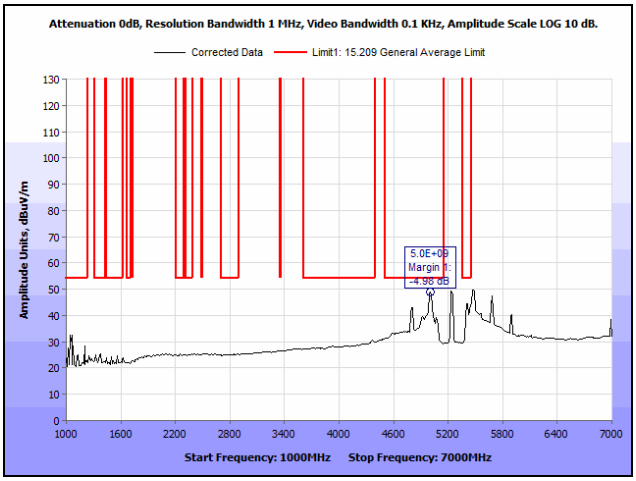
Plot 169. Radiated Spurious Emissions, Mid Channel, 802.11n 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA



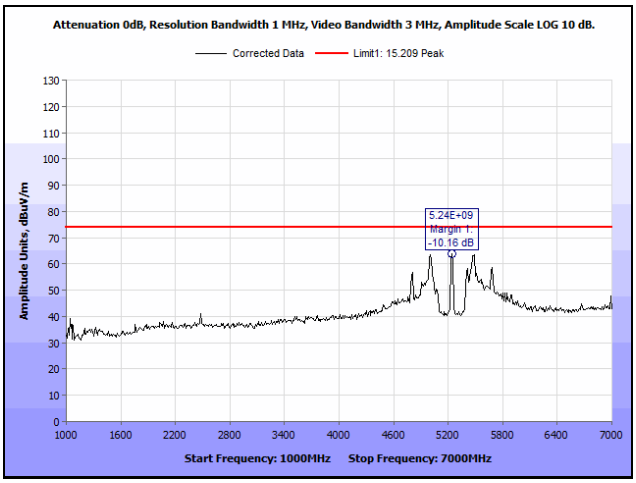
Plot 170. Radiated Spurious Emissions, Mid Channel, 802.11n 20 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA



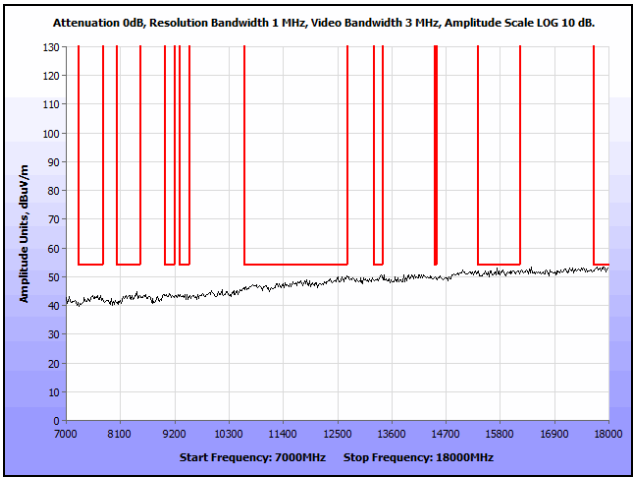
Plot 171. Radiated Spurious Emissions, High Channel, 802.11n 20 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



Plot 172. Radiated Spurious Emissions, High Channel, 802.11n 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA

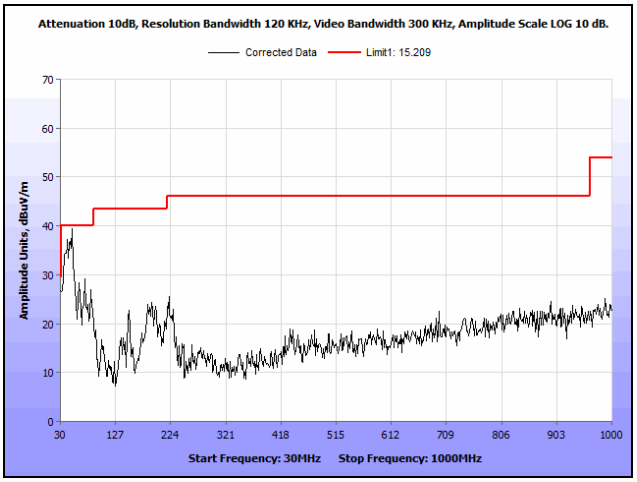


Plot 173. Radiated Spurious Emissions, High Channel, 802.11n 20 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA

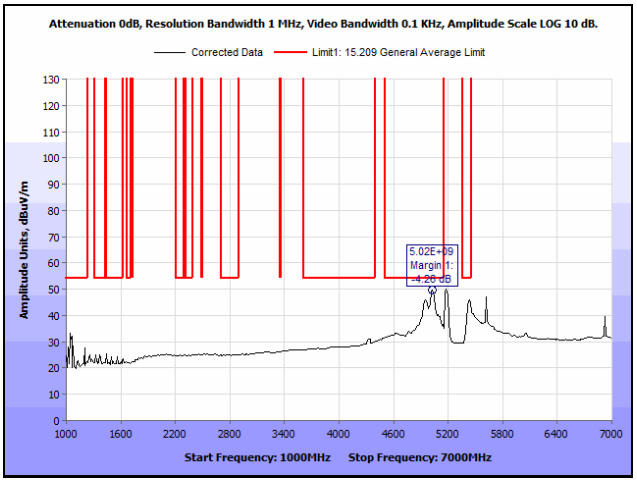


Plot 174. Radiated Spurious Emissions, High Channel, 802.11n 20 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA

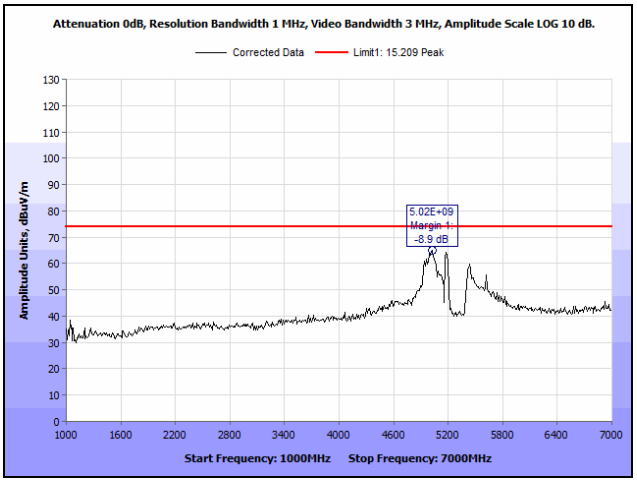
Radiated Spurious Emissions, 802.11n 40 MHz, UNII 1, ANT-BG080-NM, OODA



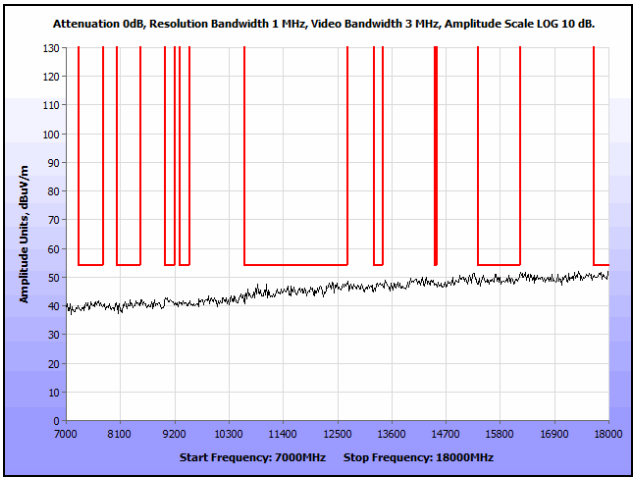
Plot 175. Radiated Spurious Emissions, Low Channel, 802.11n 40 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



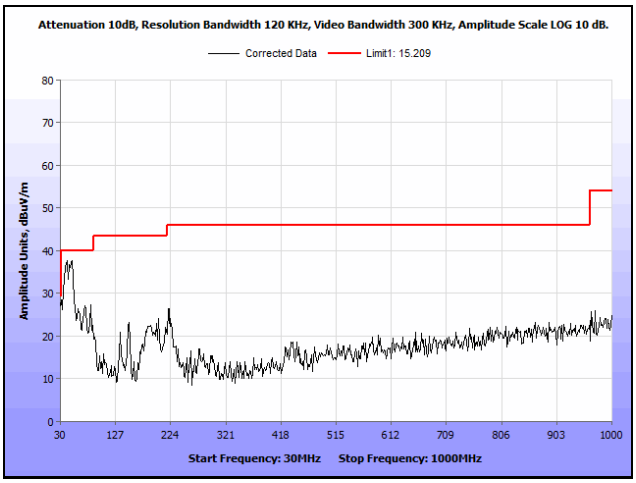
Plot 176. Radiated Spurious Emissions, Low Channel, 802.11n 40 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA



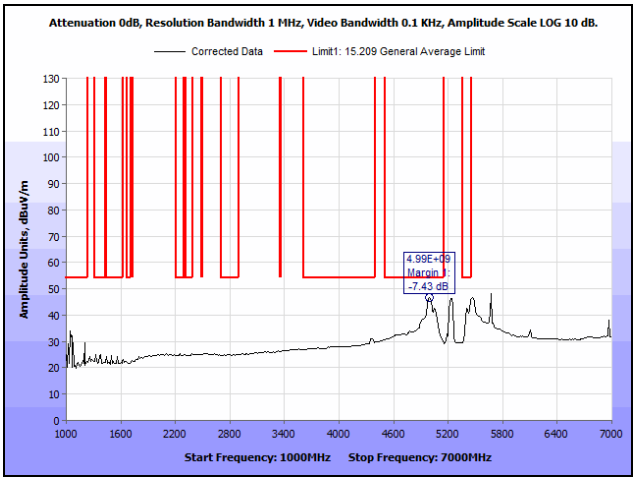
Plot 177. Radiated Spurious Emissions, Low Channel, 802.11n 40 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA



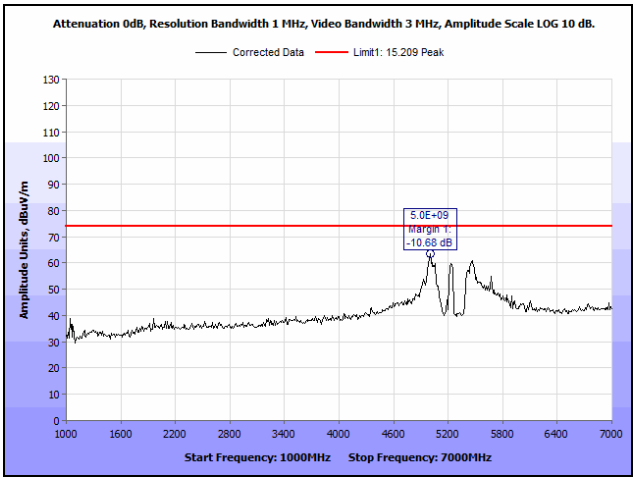
Plot 178. Radiated Spurious Emissions, Low Channel, 802.11n 40 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA



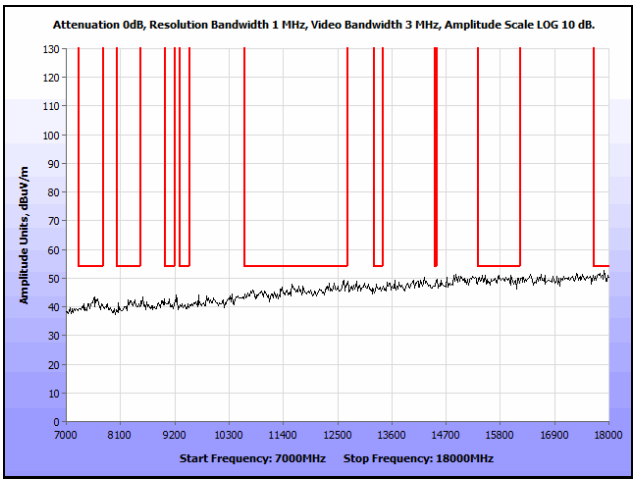
Plot 179. Radiated Spurious Emissions, High Channel, 802.11n 40 MHz, ANT-BG080-NM, 30 MHz – 1 GHz, UNII 1, OODA



Plot 180. Radiated Spurious Emissions, High Channel, 802.11n 40 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Avg., UNII 1, OODA

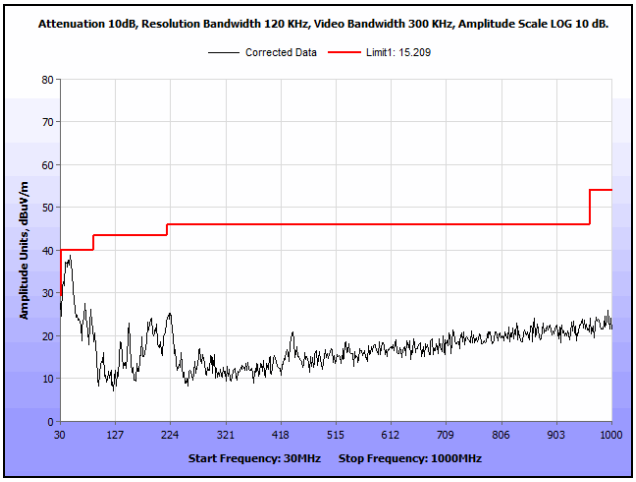


Plot 181. Radiated Spurious Emissions, High Channel, 802.11n 40 MHz, ANT-BG080-NM, 1 GHz – 7 GHz, Peak, UNII 1, OODA

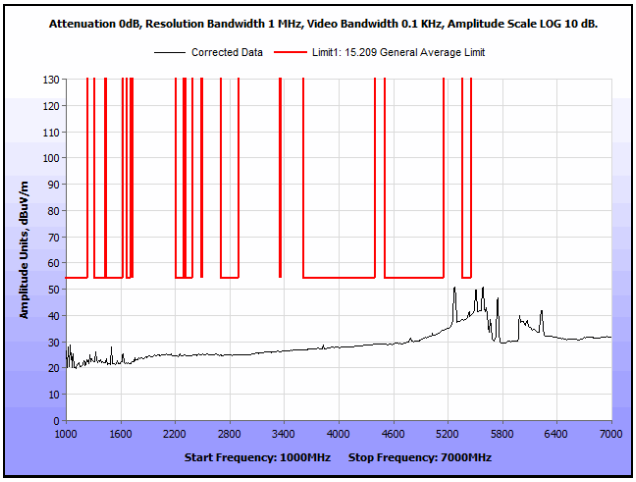


Plot 182. Radiated Spurious Emissions, High Channel, 802.11n 40 MHz, ANT-BG080-NM, 7 GHz – 18 GHz, UNII 1, OODA

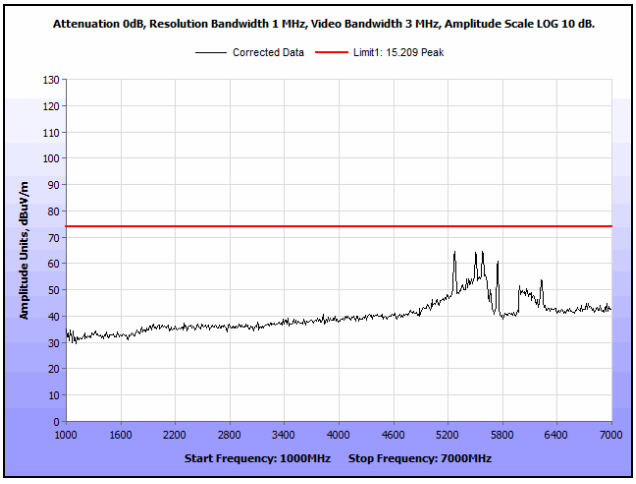
Radiated Spurious Emissions, 802.11a 20 MHz, UNII 3, ANT-O6ABGN-1211-PA, DMPA



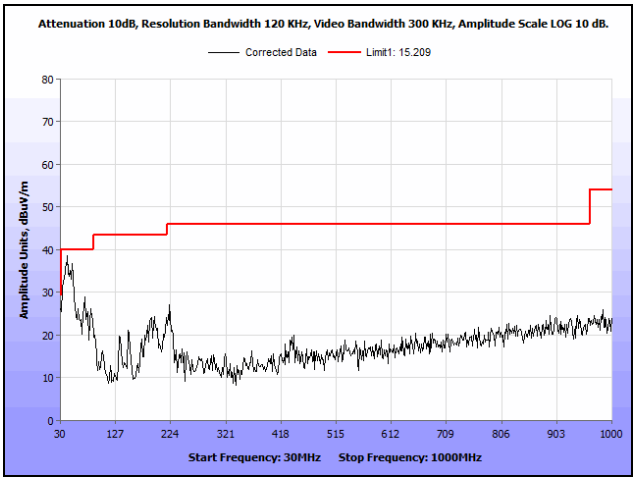
Plot 183. Radiated Spurious Emissions, Low Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 3, DMPA



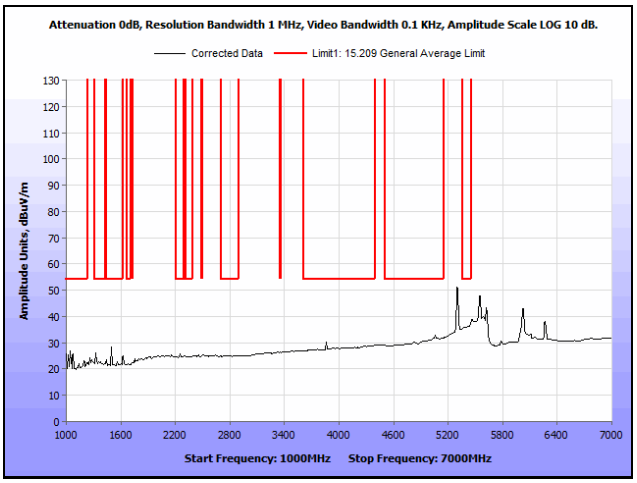
Plot 184. Radiated Spurious Emissions, Low Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 3, DMPA



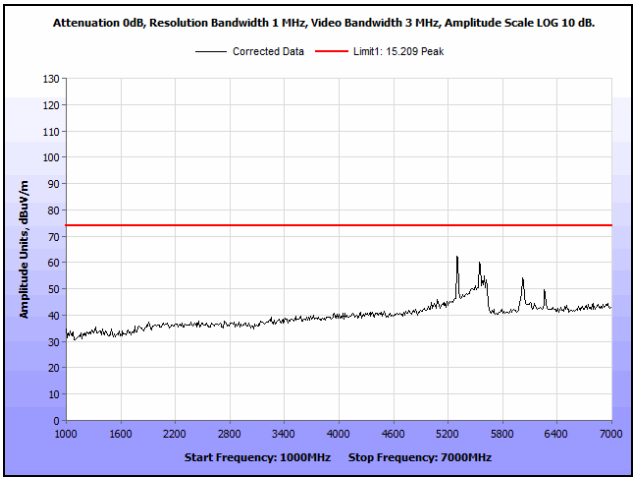
Plot 185. Radiated Spurious Emissions, Low Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 3, DMPA



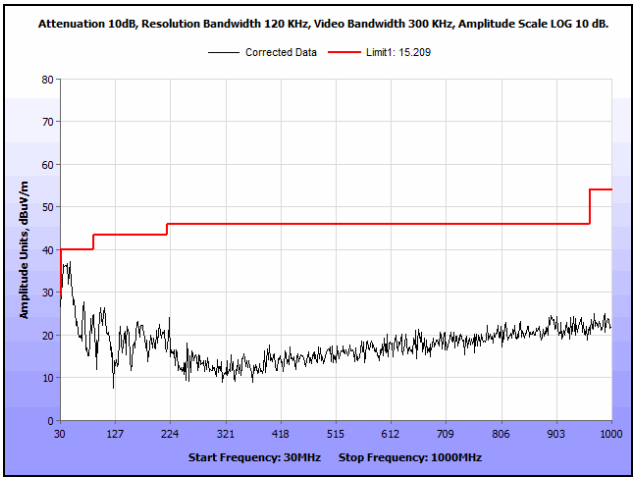
Plot 186. Radiated Spurious Emissions, Mid Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 3, DMPA



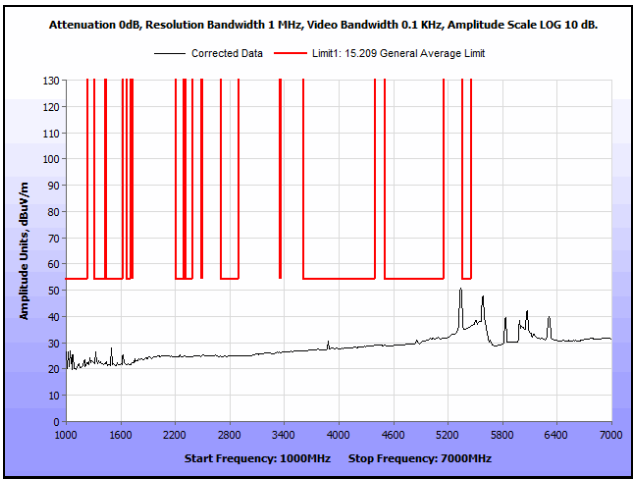
Plot 187. Radiated Spurious Emissions, Mid Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 3, DMPA



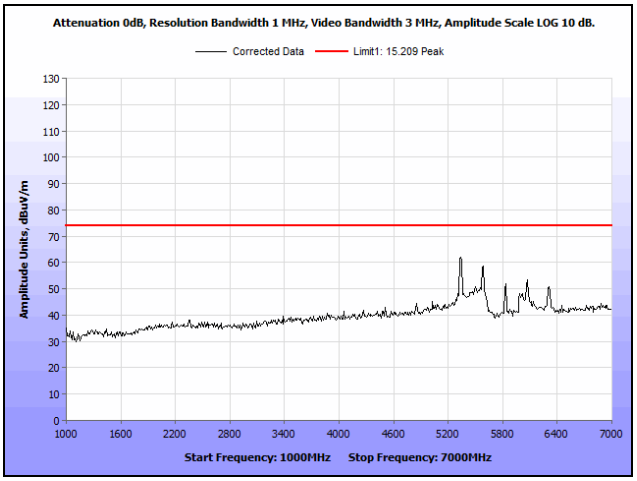
Plot 188. Radiated Spurious Emissions, Mid Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 3, DMPA



Plot 189. Radiated Spurious Emissions, High Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 3, DMPA

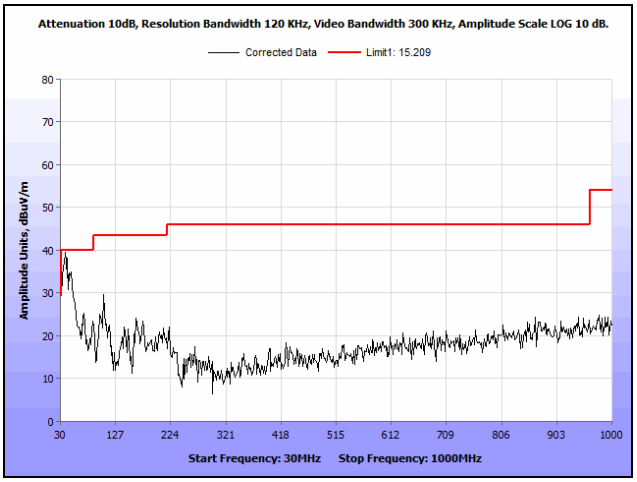


Plot 190. Radiated Spurious Emissions, High Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 3, DMPA

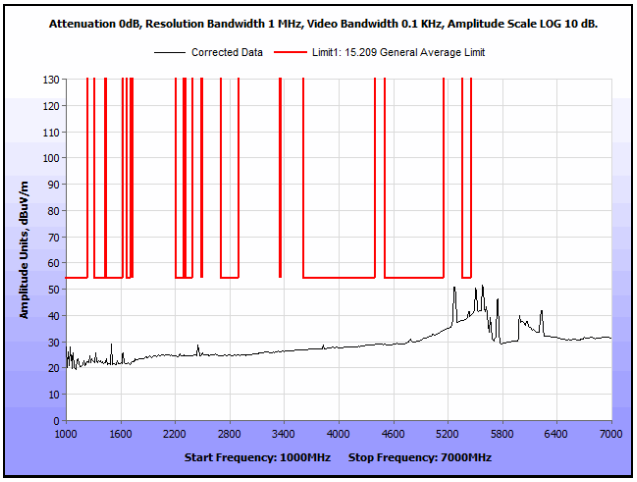


Plot 191. Radiated Spurious Emissions, High Channel, 802.11a 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 3, DMPA

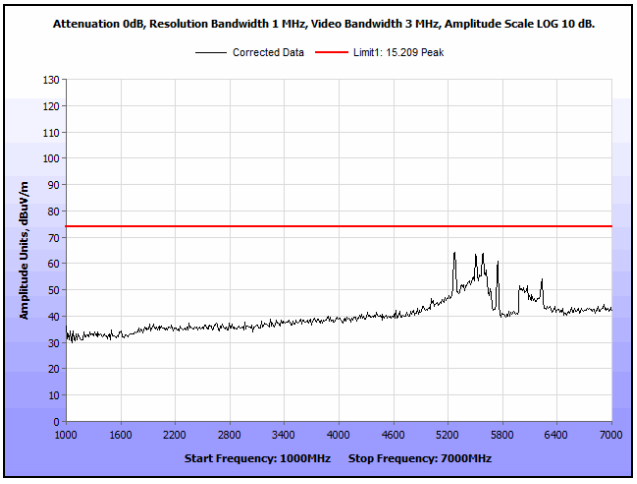
Radiated Spurious Emissions, 802.11ac 20 MHz, UNII 3, ANT-O6ABGN-1211-PA, DMPA



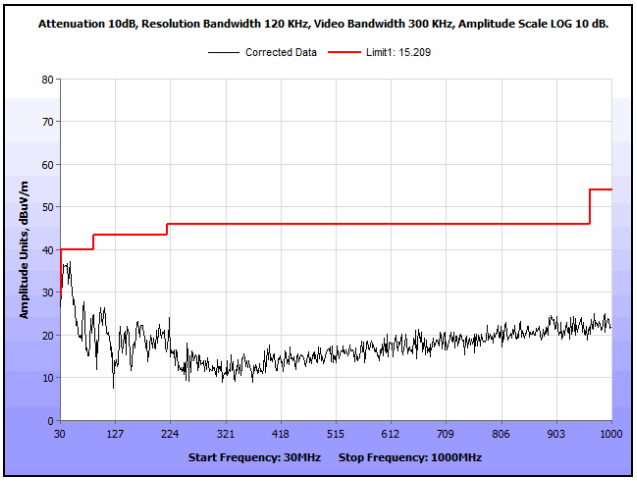
Plot 192. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 3, DMPA



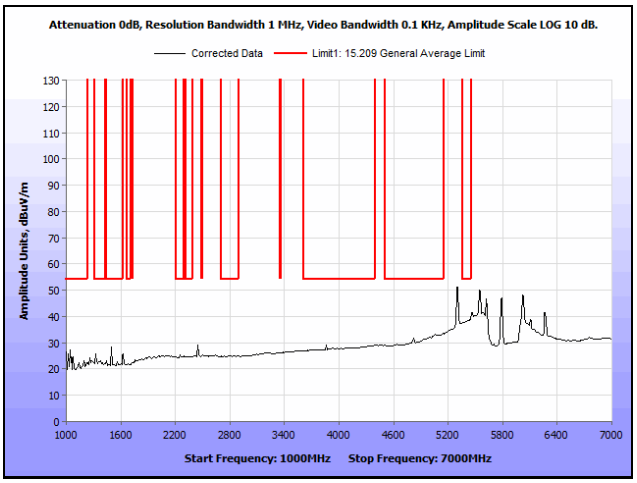
Plot 193. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 3, DMPA



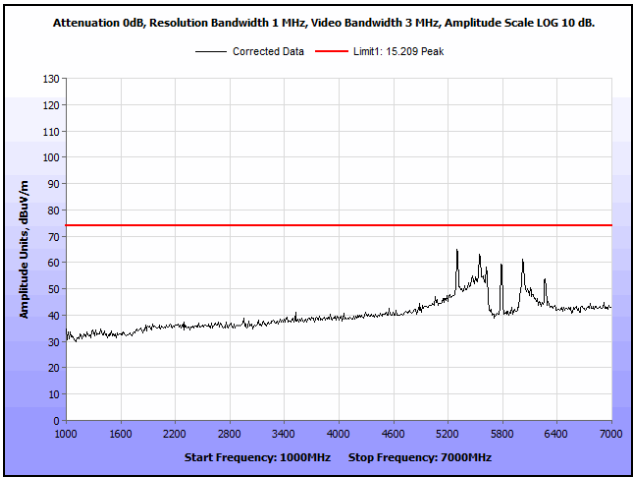
Plot 194. Radiated Spurious Emissions, Low Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 3, DMPA



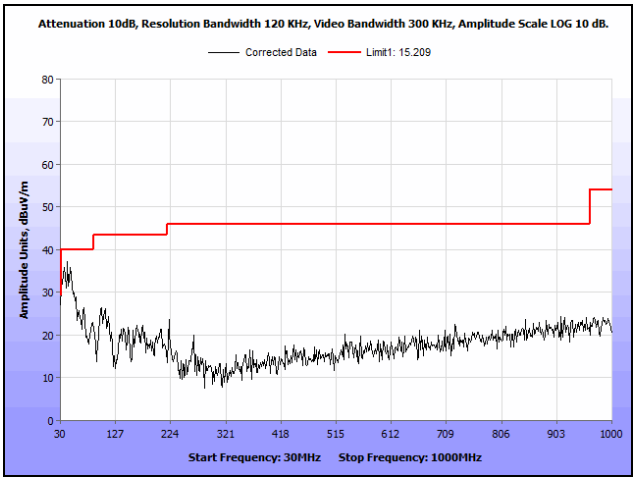
Plot 195. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 3, DMPA



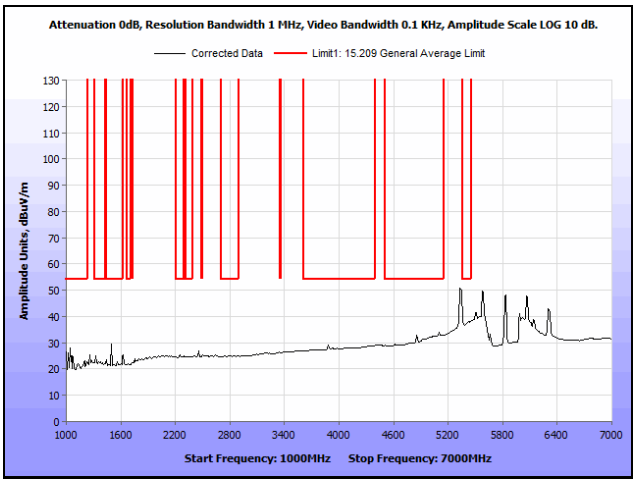
Plot 196. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 3, DMPA



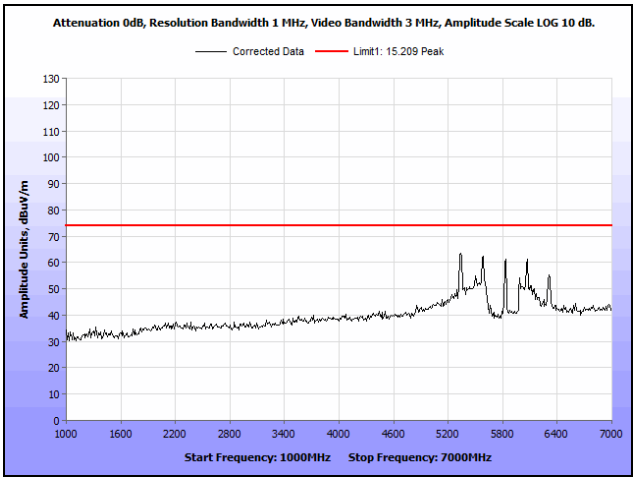
Plot 197. Radiated Spurious Emissions, Mid Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 3, DMPA



Plot 198. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 3, DMPA

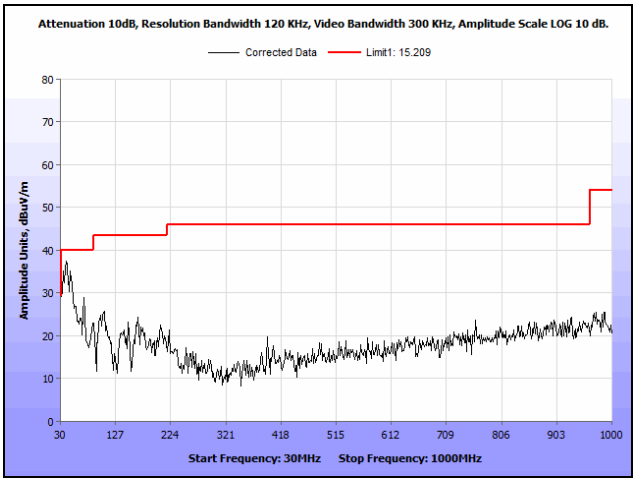


Plot 199. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 3, DMPA

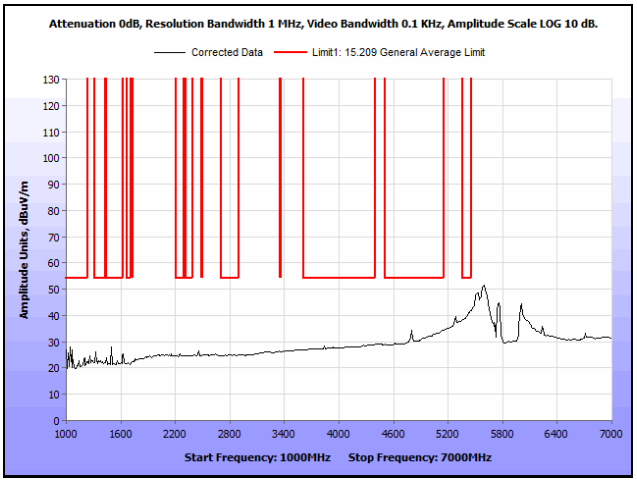


Plot 200. Radiated Spurious Emissions, High Channel, 802.11ac 20 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 3, DMPA

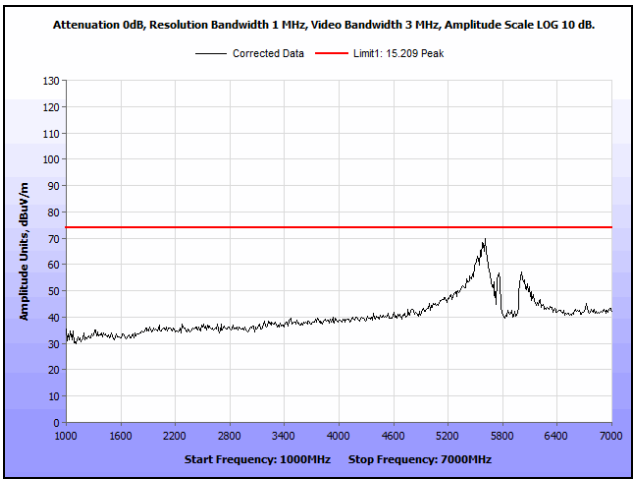
Radiated Spurious Emissions, 802.11ac 40 MHz, UNII 3, ANT-O6ABGN-1211-PA, DMPA



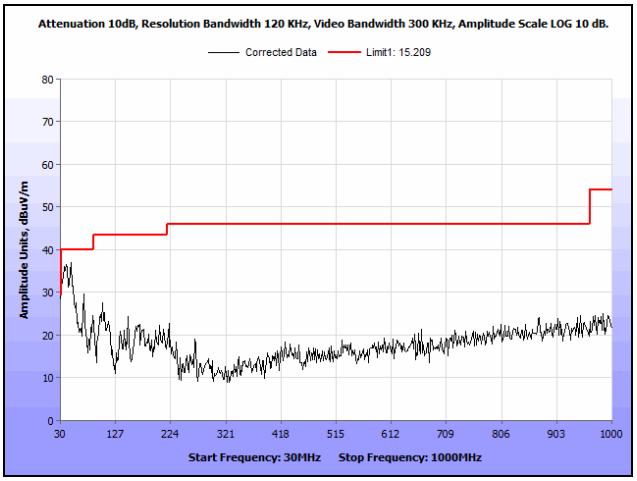
Plot 201. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 3, DMPA



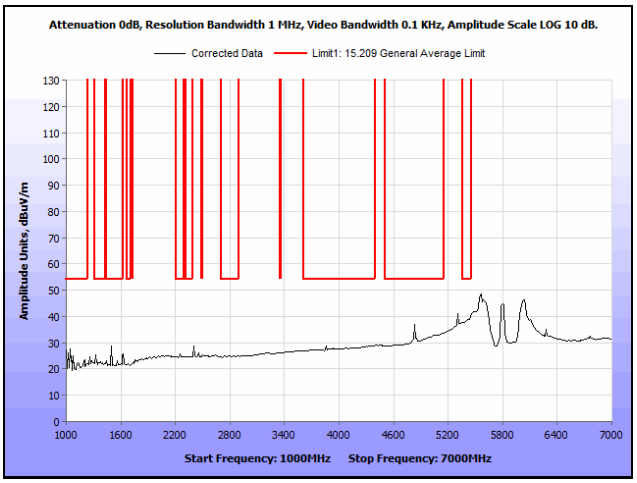
Plot 202. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 3, DMPA



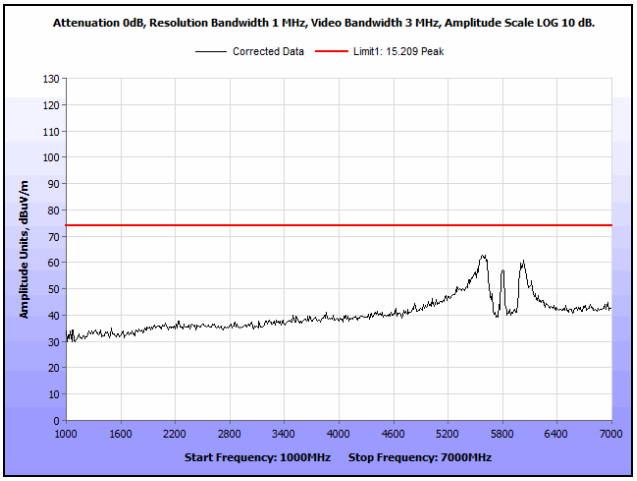
Plot 203. Radiated Spurious Emissions, Low Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 3, DMPA



Plot 204. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 3, DMPA

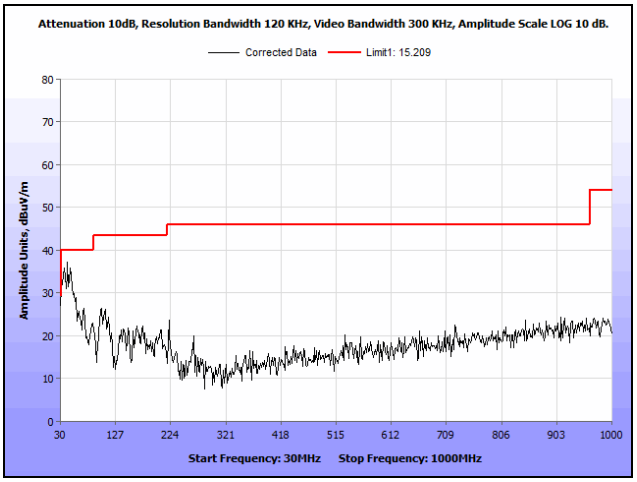


Plot 205. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 3, DMPA

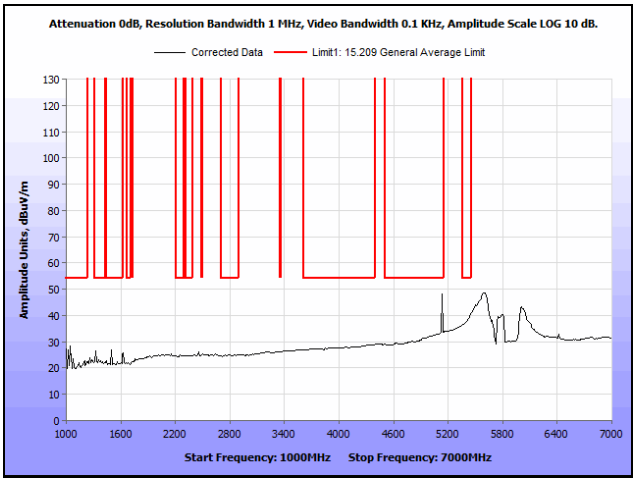


Plot 206. Radiated Spurious Emissions, High Channel, 802.11ac 40 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 3, DMPA

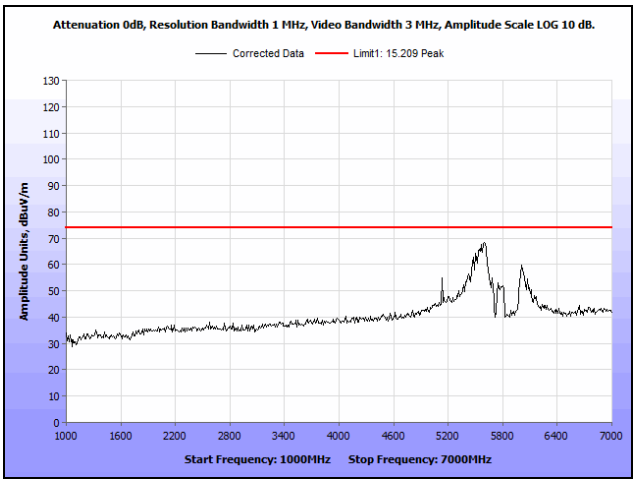
Radiated Spurious Emissions, 802.11ac 80 MHz, UNII 3, ANT-O6ABGN-1211-PA, DMPA



Plot 207. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-O6ABGN-1211-PA, 30 MHz – 1 GHz, UNII 3, DMPA



Plot 208. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Avg., UNII 3, DMPA



Plot 209. Radiated Spurious Emissions, High Channel, 802.11ac 80 MHz, ANT-O6ABGN-1211-PA, 1 GHz – 7 GHz, Peak, UNII 3, DMPA