Regulatory Test Report

Prepared for Harman International

This report presents detailed information on

INFO3.7-3.8 CSM

Automotive Infotainment Unit.

Prepared by

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Engineer II

Approved by

Jason Kanakry

General Manager

Issue date: 09/01/2021

Report No: AH20110901-HAR-279-TR2 v4

Contents

- # Test Request Information

Test Request #:	7700040166
Test Requested By:	Mark Bowman Harman International Industries, Inc. 30001 Cabot Drive, Novi, MI 48377
Test item Description:	INFO3.7-3.8 CSM (Automotive Infotainment Unit with Bluetooth/WLAN)
Part Number:	84375197
DUT Sample Number:	AH20110901-HAR-279-08, AH20110901-HAR-279-10
Hardware Version of DUT:	PV
Software Version of DUT:	W156
Component Category of DUT:	N/A
FCC ID:	2AHPN-BE2854
IC:	6434C-BE2854
Type of Test:	FCC/ISED Certification
Test Method:	CFR Title 47 FCC Part 15.407, ISED Canada RSS-247 Issue 2, ISED Canada RSS-Gen Issue 5, FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 and ANSI C63.10-2013
Deviations from standard:	None
Approved Test Plan Number:	N/A
Test Plan Revision:	N/A
Date test sample received:	01/14/2021
Date test started:	02/05/2021
Date test finished:	08/25/2021

- # Test Laboratory Information

Location of Test Lab:	The radiated and conducted emissions test sites are located at Bureau Veritas 815 N. Opdyke Rd #100, Auburn Hills, MI 48326, Phone: +1-248-836-4700
Key Contact:	Jason Kanakry (General Manager) Jason.Kanakry@BureauVeritas.com Phone: +1-248-836-4747
Laboratory Accreditations:	BUREAU VERITAS CONSUMER PRODUCTS SERVICES, INC is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.
ISO/IEC 17025:2017:	5678.01
FCC Test Site Number:	US1278 (242530)
IC Test Site Number:	US0229 (26240)

- **Statement of Conformity**

RSS-GEN	RSS 247	Part 15	Comments
6.4		15.15(b)	There are no controls accessible to the user that varies the output power to operate in violation of the regulatory requirements.
		15.19	The label is shown in the label exhibit.
		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
3.2		15.31	The EUT was tested in accordance with the measurement standards in this section.
6.13.2		15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
6.13.1		15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
6.8		15.203	EUT employs a non-detachable internal PCB trace antenna with 4.6dBi & 5.00dBi gain.
8.10		15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209 or RSS-Gen as applicable
8.8		15.207	N/A. EUT is vehicle battery powered only.

CFR Title 47 FCC Part 15.407, ISED Canada RSS-247 Issue 2

- Conducted Testing

Test Summary

This test report supports an application for certification of a transmitter operating pursuant to:
CFR Title 47 FCC Part 15.407, ISED Canada RSS-247 Issue 2, ISED Canada RSS-Gen Issue 5, FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 and ANSI C63.10-2013

The product is the INFO3.7-3.8 CSM. It is a transmitter that operates in the following bands:
UNII-1: 5.15GHz – 5.25GHz
UNII-3: 5.725GHz – 5.85GHz

Details	Description
Frequency Range (MHz)	UNII-1 (5.15GHz – 5.25GHz) UNII-3 (5.725GHz – 5.85GHz)
Tested Modes	802.11a 802.11n(HT20, HT40) 802.11ac (VHT20, VHT40, VHT80).
Tested Channels	UNII-1 (36-48) UNII-3 (149-165)
DUT Antenna Type	Non-detachable internal PCB trace
DUT Antenna Gain	4.6dBi (UNII-1) 5.00dBi (UNII-3)

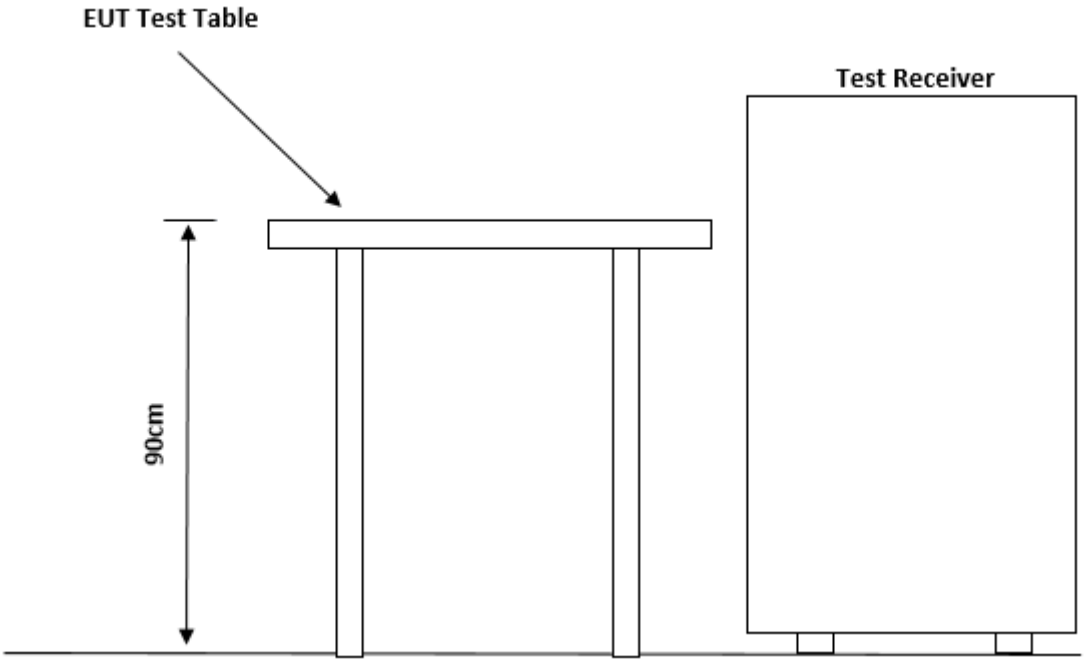
We found that the product met the above requirements with modification.
Modifications: Power reduced for 802.11a, 802.11n and 802.11ac modes for all channel bandwidths from 14 to 12 in UNII-1 band.
Test samples were received in good condition.

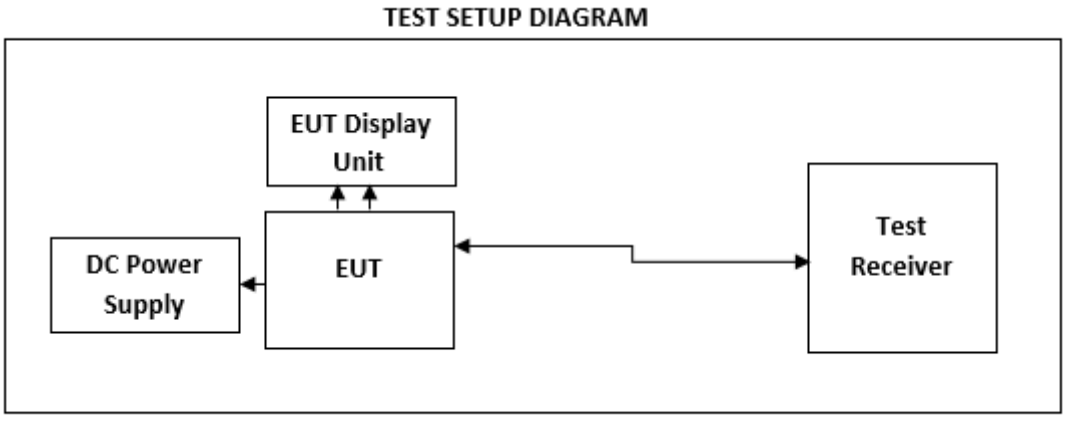
Test Item	Sample #	Result
FCC 15.407 UNII-1	AH20110901-HAR-279-10	Meets Requirements
FCC 15.407 UNII-3	AH20110901-HAR-279-10	Meets Requirements

Test Setup

Conducted Test Site Description

The site is accommodated to test tabletop and floor standing test equipment.





Test Equipment Used

ID #	Equipment	Manufacturer	Model #	Serial #	Cal Due
BVD0226	Spectrum Analyzer 10Hz-44GHz	Rohde & Schwarz	FSV3044	101018	1/14/2022
BVD0227	8 port switch unit for Wireless Test system	Rohde & Schwarz	OSP150	101100	N/A
BVD0228	8 port switch unit for Wireless Test system	Rohde & Schwarz	OSP220	101632	N/A
BVD0224	Signal Generator 100kHz-40GHz	Rohde & Schwarz	SMB100A	181741	11/19/2021
BVD0225	Signal Generator 100k-6GHz with GPS simulator	Rohde & Schwarz	SMW200A	107664	11/18/2021
BVD0250	Wireless Connectivity Tester 70M-6GHz	Rohde & Schwarz	CMW270	102113	11/18/2021
BVD0343	DC Regulated Power Supply	Circuit Specialists, INC	CSI3020X	595215	N/A
BVD0321	Fixed Attenuator 2W 20dB - 40GHz	Mini-Circuits	BW-K20-2W44+	2103	N/A
BVD0477	10db Attenuator -18GHz	Mouser	BW-S10W2+	2043	N/A
BVD0229	Temp and Humidity Meter	Fluke	971	12001009	3/26/2022

Customer Supplied Equipment

ID #	Equipment	Manufacturer	Model	Serial #	Version No.
N/A	DUT Display	Harman	N/A	2133	N/A
N/A	Display Harness	Harman	N/A	N/A	N/A
N/A	Blue Molex Connector Harness	Harman	N/A	N/A	N/A
N/A	DUT 1M Harness	Harman	N/A	N/A	N/A
N/A	USB to DUT Harness	Harman	N/A	102161025	N/A

Equipment List (Software)

ID #	Equipment	Manufacturer	Model	Version No.	
N/A	EMC Test Software	Rodhe & Schwarz	EMC32	11.20.00	N/A

FCC 15.407 UNII-1

DUT Information

Model:	INFO3.7-3.8 CSM
Manufacturer:	Harman International Industries, Inc.
Serial Number:	AH20110901-HAR-279-10

Mode	Channel	Frequency
802.11a 802.11n(HT20) 802.11ac(VHT20)	36	5180
802.11n(HT40) 802.11ac(VHT40)	38	5190
802.11a 802.11n(HT20) 802.11ac(VHT20)	40	5200
802.11ac(VHT80)	42	5210
802.11n(HT40) 802.11ac(VHT40)	46	5230
802.11a 802.11n(HT20) 802.11ac(VHT20)	48	5240

Notes

1. Channels and modes above were tested.

2. Output power measurements were performed at the lowest and highest data rate of each supported 802.11 mode.

Antenna Gain	4.6 dBi
Number of transmit chains	1
Equipment Type	Unlicensed National Information Infrastructure Device

Power settings

802.11a		802.11n (HT20)		802.11ac (VHT20)	
Channel	Power Setting	Channel	Power Setting	Channel	Power Setting
36	12	36	12	36	12
40	12	40	12	40	12
48	12	48	12	48	12

802.11n (HT40)		802.11ac (VHT40)	
Channel	Power Setting	Channel	Power Setting
38	12	38	12
46	12	46	12

802.11ac (VHT80)	
Channel	Power Setting
42	12

Test Results Summary

Test	Frequency (MHz)	802.11a	802.11n(HT20)	802.11ac (VHT20)
Average Output Power	5180/5200/5240	PASS	PASS	PASS
Power Spectral Density	5180/5200/5240	PASS	PASS	PASS
DTS Bandwidth (6dB)	5180/5200/5240	PASS	PASS	PASS
Occupied Channel Bandwidth 99%	5180/5200/5240	PASS	PASS	PASS
		802.11n(HT40)		802.11ac(VHT40)
Average Output Power	5190/5230	PASS		PASS
Power Spectral Density	5190/5230	PASS		PASS
DTS Bandwidth (6dB)	5190/5230	PASS		PASS
Occupied Channel Bandwidth 99%	5190/5230	PASS		PASS
		802.11ac(VHT80)		
Average Output Power	5210	PASS		
Power Spectral Density	5210	PASS		
DTS Bandwidth (6dB)	5210	PASS		
Occupied Channel Bandwidth 99%	5210	PASS		

RF output power and Duty Cycle

FCC

Test according to FCC title 47 part 15 §15.407(a), KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 II.E and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Combined Uncertainty of absolute Level Measurement (K=2) < 1 dB

Device has both client and access point modes and has identical RF characteristics and settings for both Limits are as follows:

15.407(a)(1)(i): 1W (30dBm) for outdoor access points with antenna gains less than 6dBi.

15.407(a)(1)(iv): 250mW (23.9dBm) for client devices with antenna gains less than 6dBi.

Since client devices are subject to more stringent limits, unit was tested against the limits for a client device.

802.11a

Data Rate	Gated RMS (dBm) 5180 MHz	Gated RMS (dBm) 5200 MHz	Gated RMS (dBm) 5240 MHz	Limit (dBm)	Duty Cycle (%)
6 Mbps	7.782	7.493	8.000	23.9	96.299
54 Mbps	7.308	7.208	7.550	23.9	76.268

802.11n (HT20)

Data Rate	Gated RMS (dBm) 5180 MHz	Gated RMS (dBm) 5200 MHz	Gated RMS (dBm) 5240 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	7.514	7.890	7.840	23.9	96.088
MCS7	7.158	7.209	7.458	23.9	74.671

802.11ac (VHT20)

Data Rate	Gated RMS (dBm) 5180 MHz	Gated RMS (dBm) 5200 MHz	Gated RMS (dBm) 5240 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	7.655	7.318	7.848	23.9	96.111
MCS8	7.097	7.175	7.295	23.9	72.184

802.11n (HT40)

Data Rate	Gated RMS (dBm) 5190 MHz	Gated RMS (dBm) 5230 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	7.165	7.072	23.9	97.169
MCS7	6.824	6.955	23.9	82.611

802.11ac (VHT40)

Data Rate	Gated RMS (dBm) 5190 MHz	Gated RMS (dBm) 5230 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	6.835	7.338	23.9	97.194
MCS9	6.820	6.895	23.9	80.727

802.11ac (VHT80)

Data Rate	Gated RMS (dBm) 5210 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	6.471	23.9	94.421
MCS9	6.100	23.9	73.457

RSS-247

Per RSS-247 Issue 2 Section 6.2.1.1, limit for OEM devices installed in vehicles: Maximum EIRP shall not exceed 30mW or 1.76+10*log B, dBm, whichever is less (where B is 99% OBW in MHz).

In addition devices must be capable of reducing power by a least 3dB below the maximum permitted EIRP of 30mW, which is 11.77dBm.

For modulations with less than 20MHz 99% OBW; 802.11a, 802.11n (HT20) and 802.11ac (VHT20), worst case 99% OBW of 16MHz is assumed with resulting conservative limit of 13.8dBm.

For modulations with more than 20MHz 99% OBW; 802.11n (HT40), 802.11ac (VHT40) and 802.11ac (VHT80), the limit is 30mW (14.77dBm)

802.11a

Data Rate	Gated RMS (dBm) 5180MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
6 Mbps	7.782	4.6	12.382	13.8	N/A	N/A	N/A
54 Mbps	7.308	4.6	11.908	13.8	N/A	N/A	N/A
Data Rate	**Gated RMS (dBm) 5200MHz**	**Antenna Gain(dBi)**	**EIRP (dBm)**	**Limit (dBm)**	**Gated RMS (dBm) With TPC**	**Difference**	**Power Setting with TPC**
6 Mbps	7.493	4.6	12.093	13.8	N/A	N/A	N/A
54 Mbps	7.208	4.6	11.808	13.8	N/A	N/A	N/A
Data Rate	**Gated RMS (dBm) 5240MHz**	**Antenna Gain(dBi)**	**EIRP (dBm)**	**Limit (dBm)**	**Gated RMS (dBm) With TPC**	**Difference**	**Power Setting with TPC**
6 Mbps	8.000	4.6	12.6	13.8	N/A	N/A	N/A
54 Mbps	7.550	4.6	12.15	13.8	N/A	N/A	N/A

802.11n (HT20)

Data Rate	Gated RMS (dBm) 5180MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	7.514	4.6	12.114	13.8	N/A	N/A	N/A
MCS7	7.158	4.6	11.758	13.8	N/A	N/A	N/A
Data Rate	Gated RMS (dBm) 5200MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	7.890	4.6	12.49	13.8	N/A	N/A	N/A
MCS7	7.209	4.6	11.809	13.8	N/A	N/A	N/A
Data Rate	Gated RMS (dBm) 5240MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	7.840	4.6	12.44	13.8	N/A	N/A	N/A
MCS7	7.458	4.6	12.058	13.8	N/A	N/A	N/A

802.11ac (VHT20)

Data Rate	Gated RMS (dBm) 5180MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	7.655	4.6	12.255	13.8	N/A	N/A	N/A
MCS8	7.097	4.6	11.697	13.8	N/A	N/A	N/A
Data Rate	Gated RMS (dBm) 5200MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	7.318	4.6	11.918	13.8	N/A	N/A	N/A
MCS8	7.175	4.6	11.775	13.8	N/A	N/A	N/A
Data Rate	Gated RMS (dBm) 5240MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	7.848	4.6	12.448	13.8	N/A	N/A	N/A
MCS8	7.295	4.6	11.895	13.8	N/A	N/A	N/A

802.11n (HT40)

Data Rate	Gated RMS (dBm) 5190MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	7.165	4.6	11.765	13.8	N/A	N/A	N/A
MCS7	6.824	4.6	11.424	13.8	N/A	N/A	N/A
Data Rate	Gated RMS (dBm) 5230MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	7.072	4.6	11.672	13.8	N/A	N/A	N/A
MCS7	6.955	4.6	11.555	13.8	N/A	N/A	N/A

802.11ac (VHT40)

Data Rate	Gated RMS (dBm) 5190MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	6.835	4.6	11.435	13.8	N/A	N/A	N/A
MCS9	6.820	4.6	11.42	13.8	N/A	N/A	N/A
Data Rate	Gated RMS (dBm) 5230MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	7.338	4.6	11.938	13.8	N/A	N/A	N/A
MCS9	6.895	4.6	11.495	13.8	N/A	N/A	N/A

802.11ac (VHT80)

Data Rate	Gated RMS (dBm) 5210MHz	Antenna Gain(dBi)	EIRP (dBm)	Limit (dBm)	Gated RMS (dBm) With TPC	Difference	Power Setting with TPC
MCS0	6.471	4.6	11.071	13.8	N/A	N/A	N/A
MCS9	6.100	4.6	10.7	13.8	N/A	N/A	N/A

Power Spectral Density

Test according to FCC title 47 part 15 §15.407(a), KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 II.F and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 1.3 dB

FCC

Device has both client and access point modes and has identical RF characteristics and settings for both Limits are as follows:

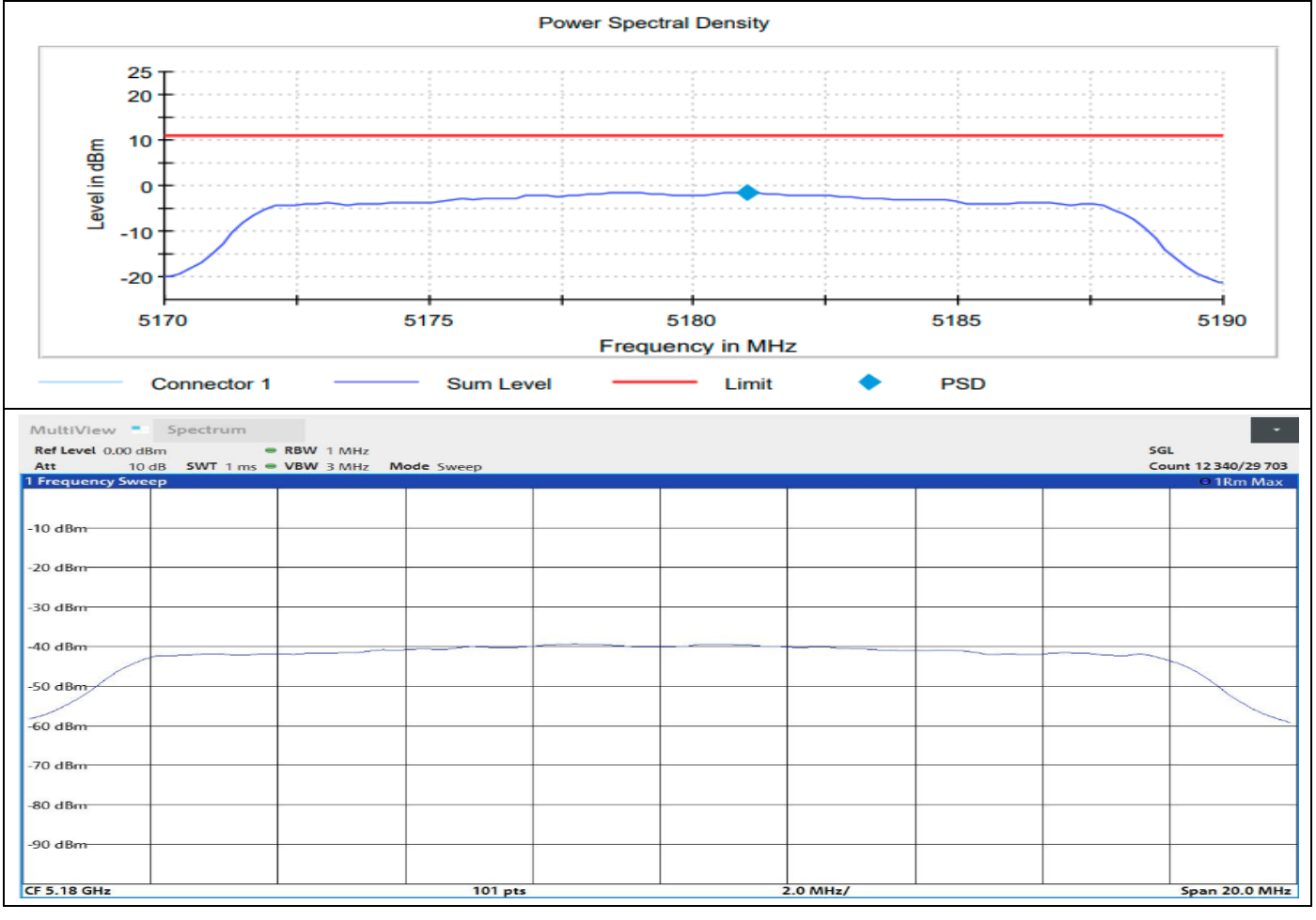
15.407(a)(1)(i): 17dBm for outdoor access points with antenna gains less than 6dBi.

15.407(a)(1)(iv):11dBm for client devices with antenna gains less than 6dBi.

Since client devices are subject to more stringent limits, unit was tested against the limits for a client device.

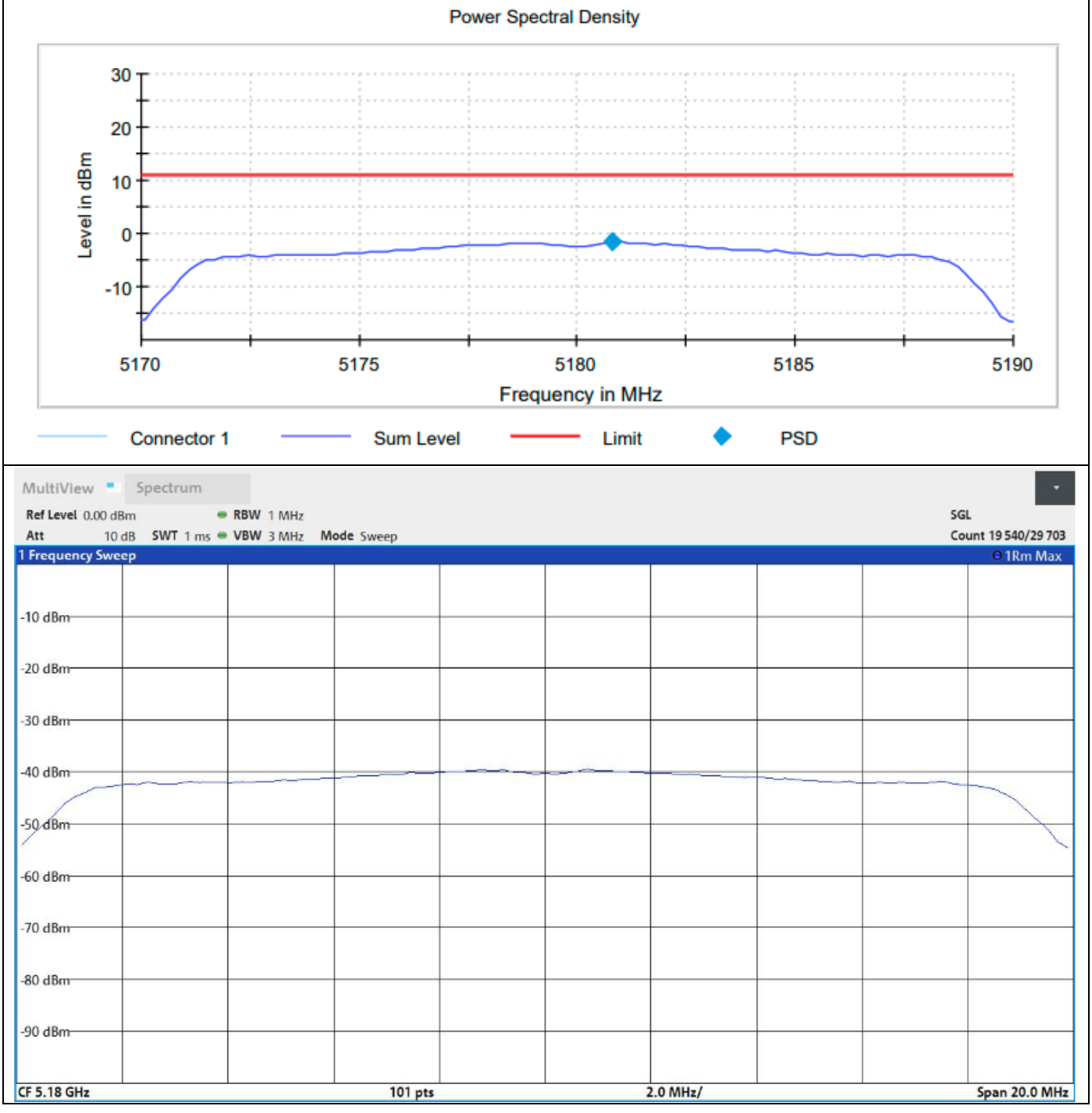
Mode	Data Rate	PSD (dBm) 5180 MHz	PSD (dBm) 5200 MHz	PSD (dBm) 5240 MHz	Limit (dBm)
802.11a	6Mbps	-1.444	-1.827	-1.376	11.0
	54Mbps	-2.368	-2.366	-2.289	11.0

802.11a 5180 MHz 6Mbps



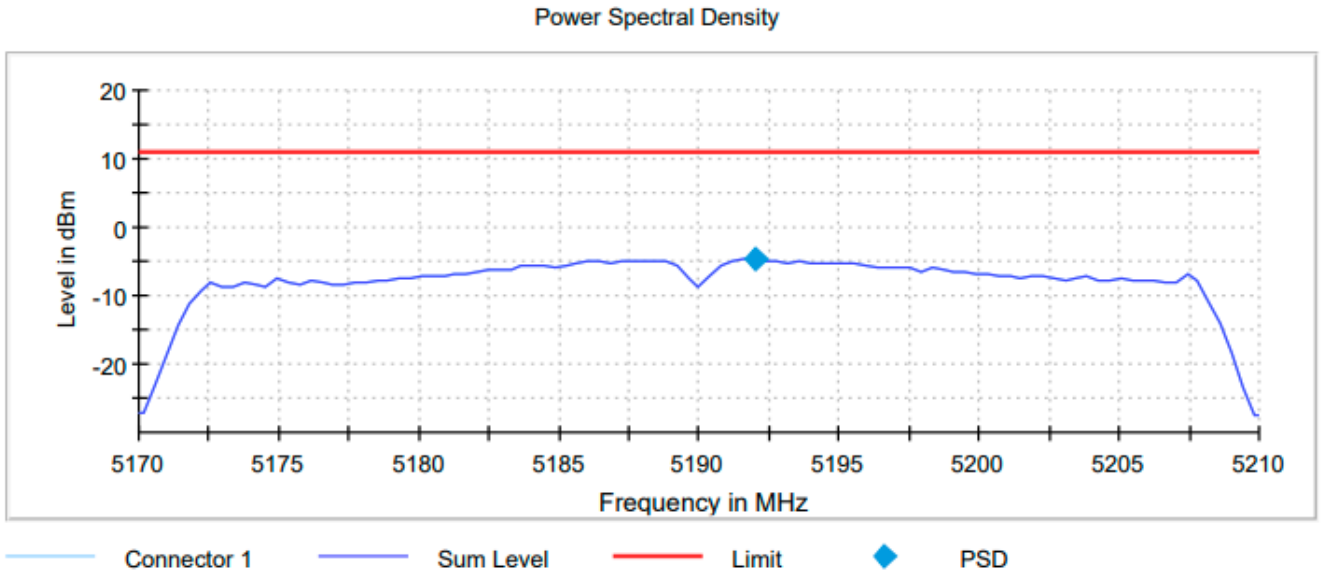
Mode	Data Rate	PSD (dBm) 5180 MHz	PSD (dBm) 5200 MHz	PSD (dBm) 5240 MHz	Limit (dBm)
802.11n (HT20)	MCS0	-1.597	-1.530	-1.582	11.0
	MCS7	-1.957	-1.890	-1.703	11.0

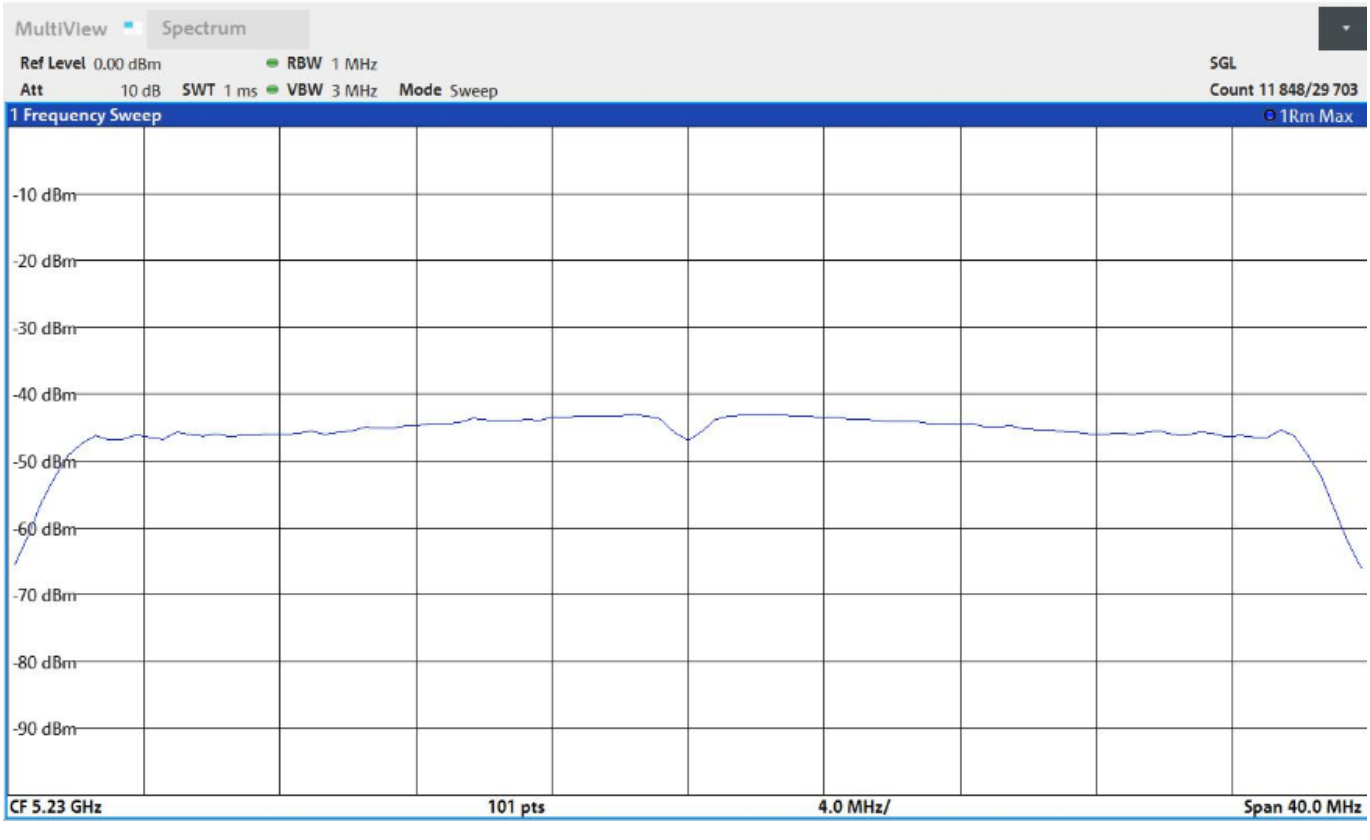
802.11n (HT20) 5180 MHz MCS0



Mode	Data Rate	PSD (dBm) 5190 MHz	PSD (dBm) 5230 MHz	Limit (dBm)
802.11n (HT40)	MCS0	-4.601	-4.946	11.0
	MCS7	-3.970	-3.888	11.0

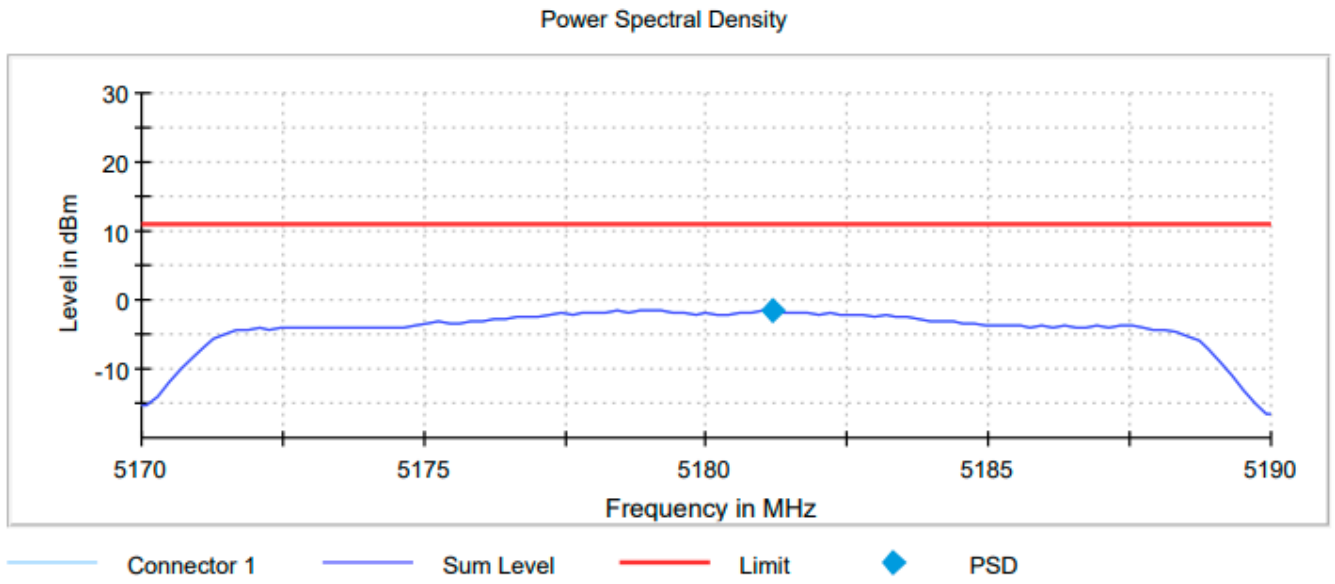
802.11n (HT40) 5190 MHz MCS0

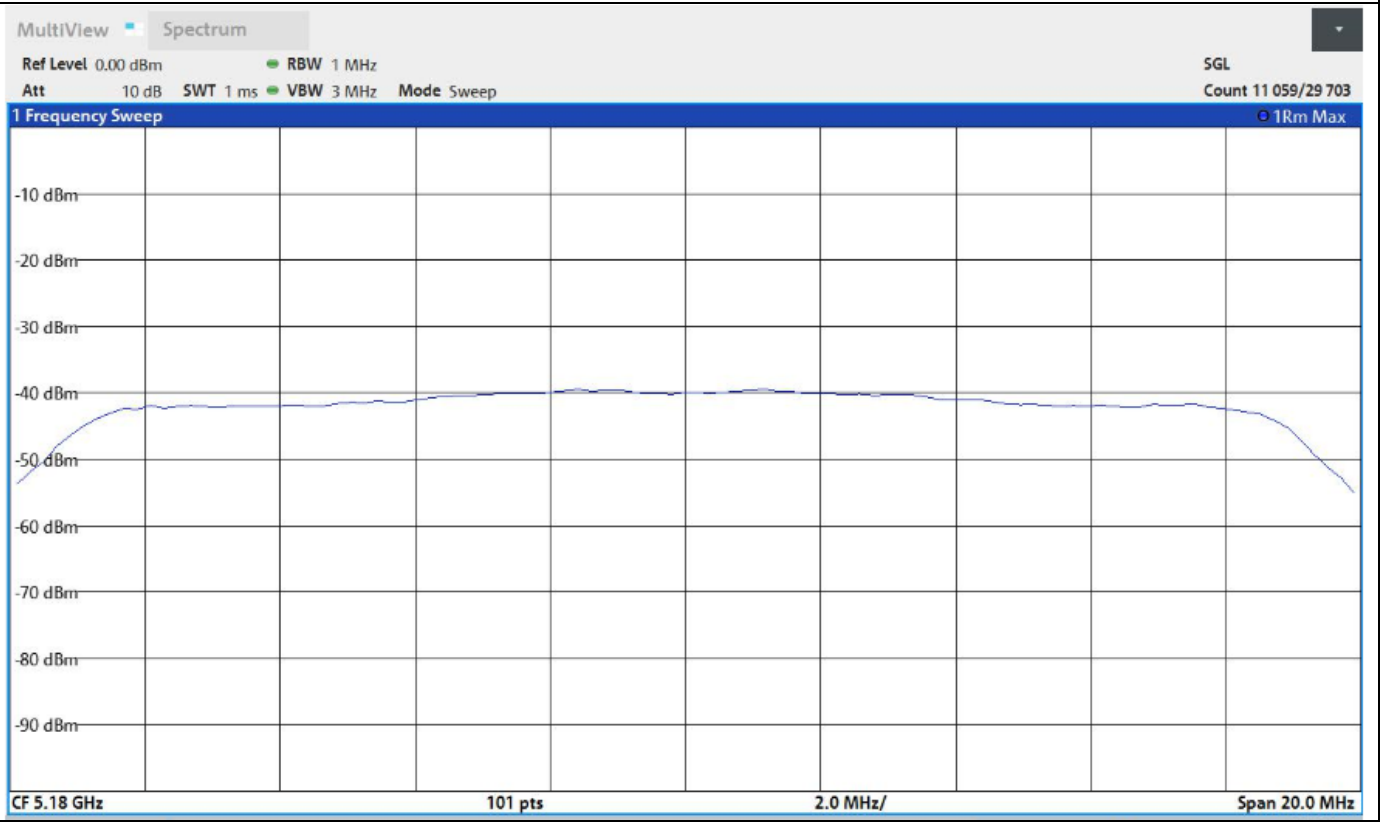




Mode	Data Rate	PSD (dBm) 5180 MHz	PSD (dBm) 5200 MHz	PSD (dBm) 5240 MHz	Limit (dBm)
802.11ac (VHT20)	MCS0	-1.570	-2.021	-1.468	11.0
	MCS8	-2.078	-2.010	-1.931	11.0

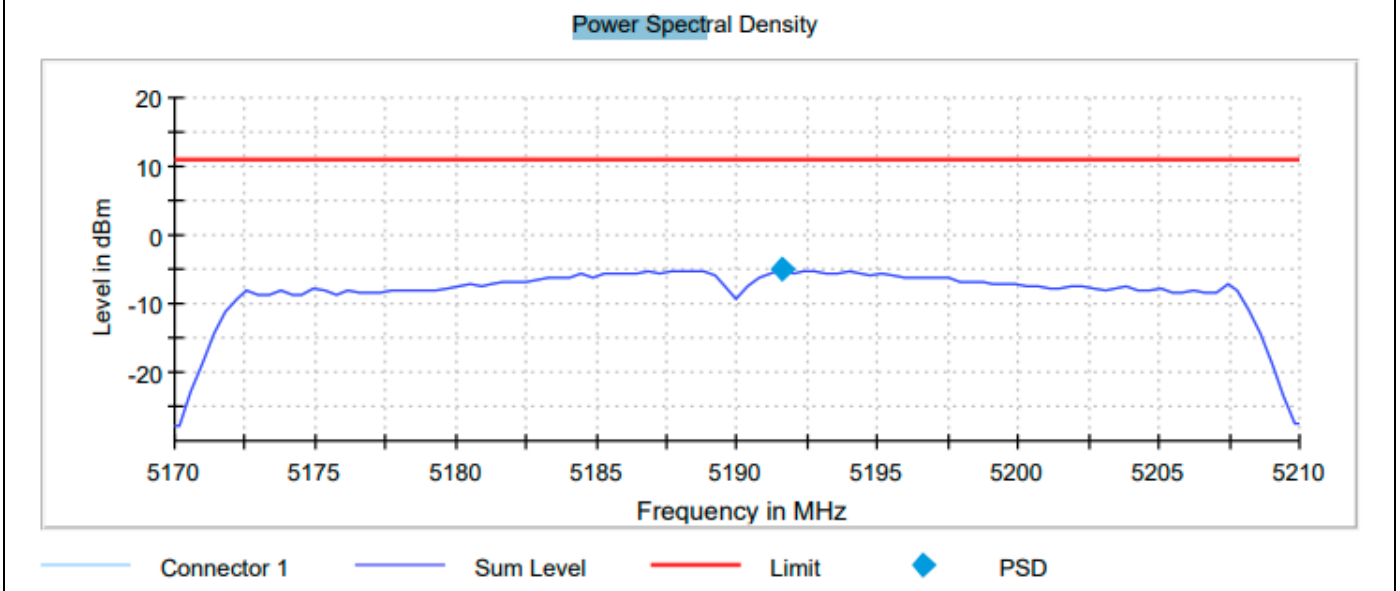
802.11ac (VHT20) 5180 MHz MCS0

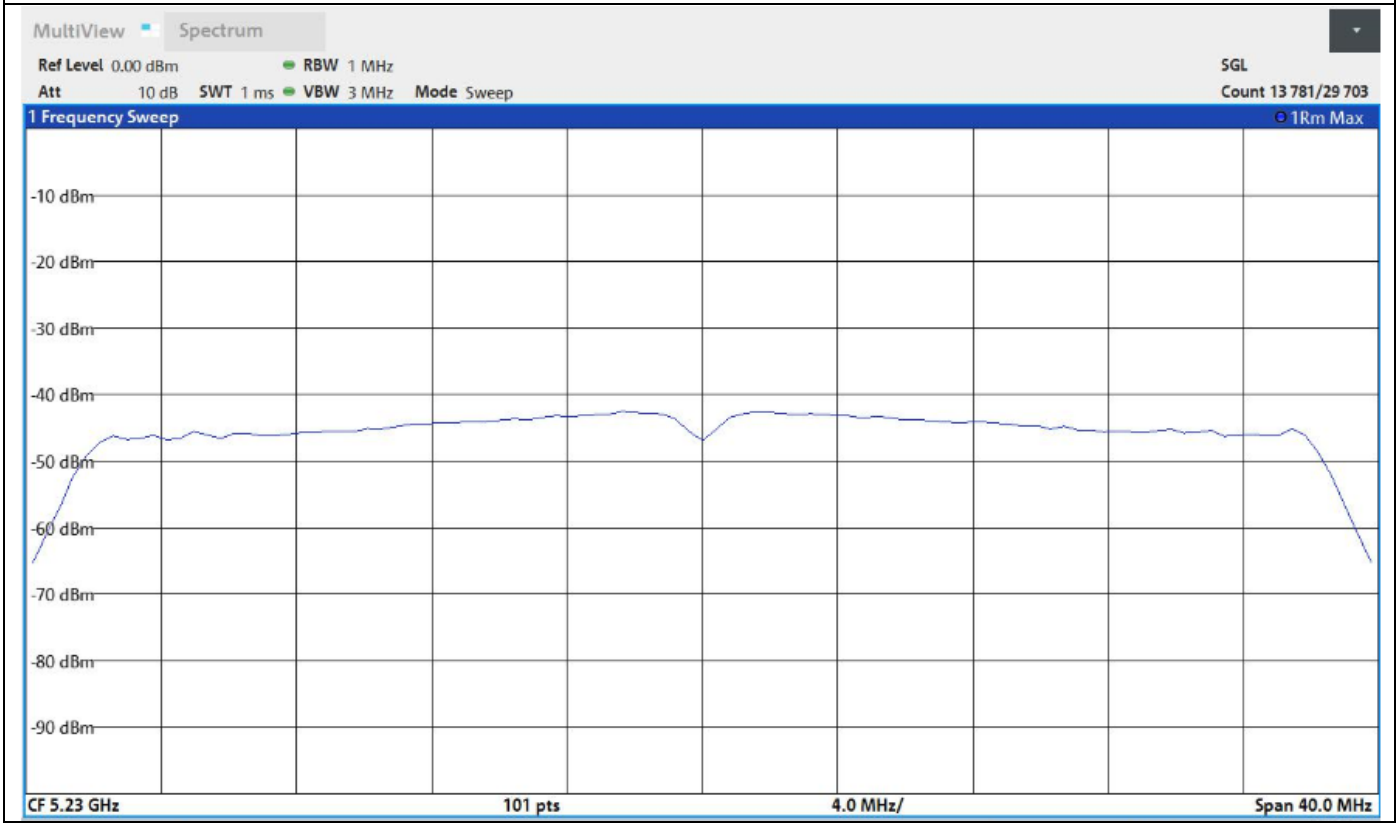




Mode	Data Rate	PSD (dBm) 5190 MHz	PSD (dBm) 5230 MHz	Limit (dBm)
802.11ac (VHT40)	MCS0	-5.121	-4.519	11.0
	MCS9	-3.771	-3.800	11.0

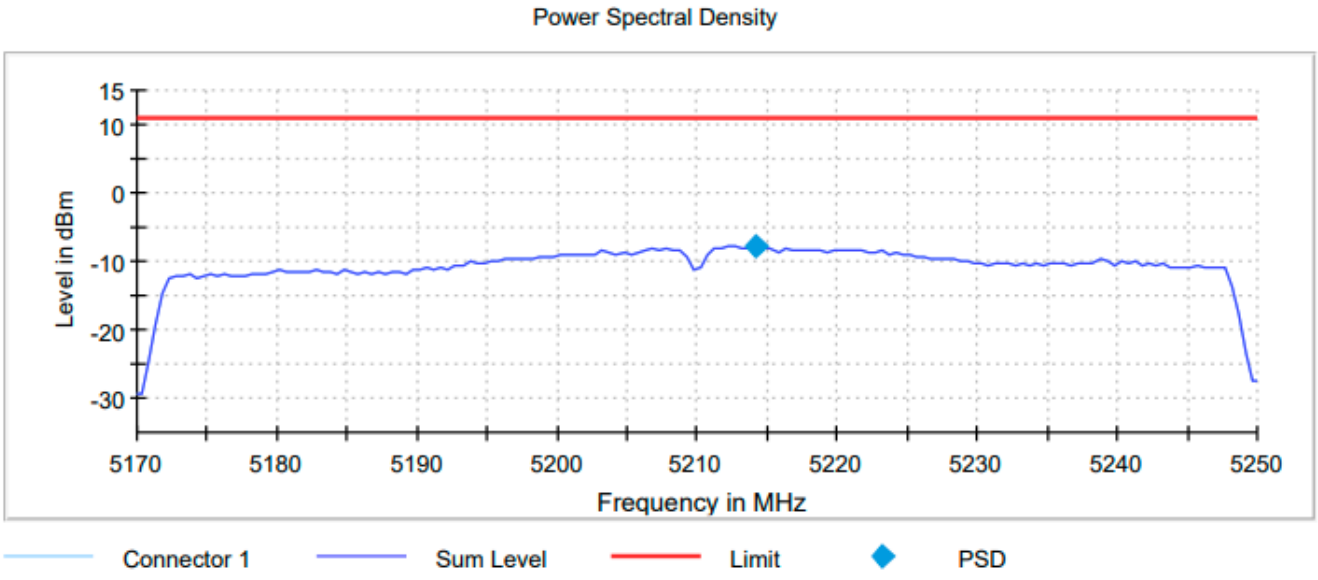
802.11ac (VHT40) 5190 MHz MCS0

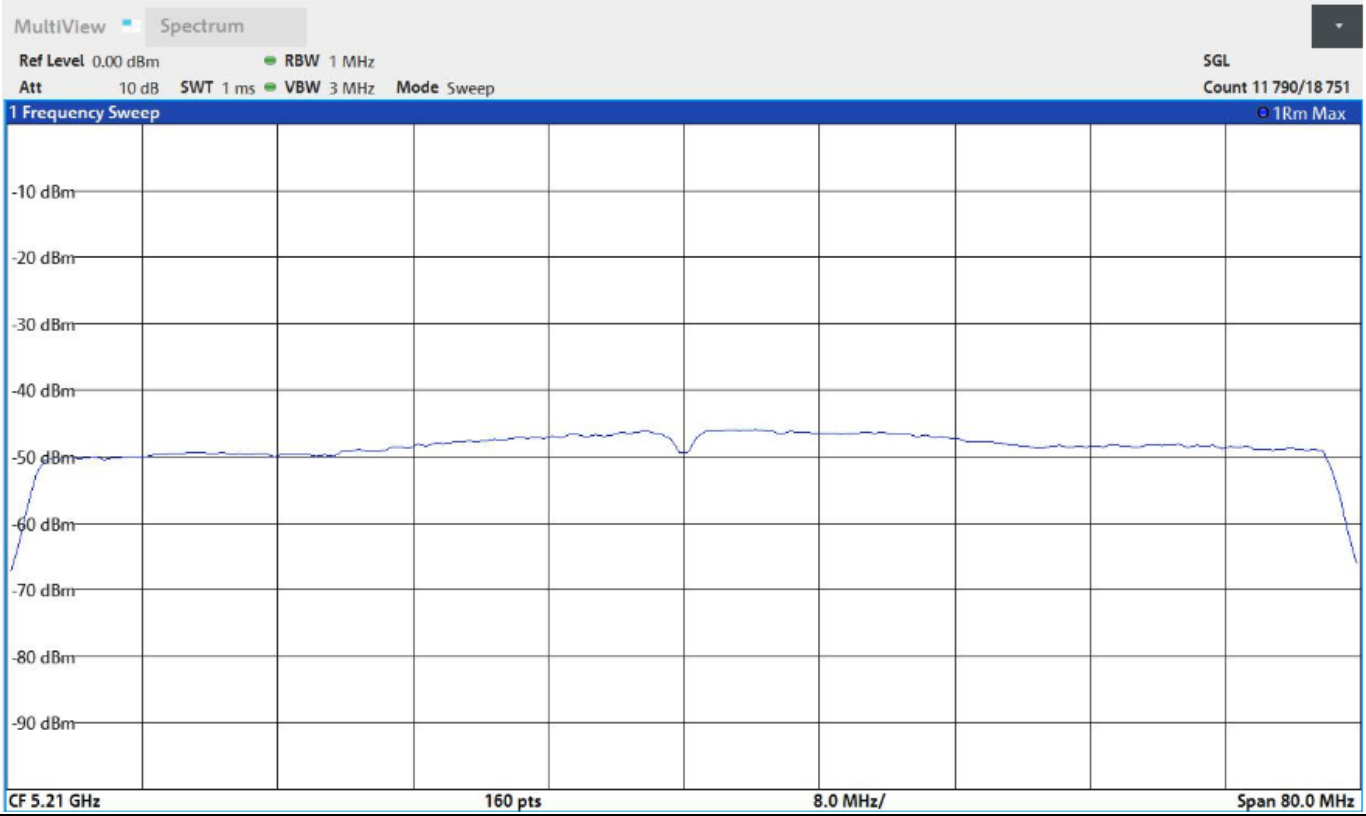




Mode	Data Rate	PSD (dBm) 5210 MHz	Limit (dBm)
802.11ac (VHT80)	MCS0	-7.948	11.0
	MCS9	-7.761	11.0

802.11ac (VHT80) 5210 MHz MCS0





RSS-247

802.11a

Data Rate	PSD(dBm) 5180MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
6 Mbps	-1.444	4.6	3.156	10.0
54 Mbps	-2.368	4.6	2.232	10.0
Data Rate	PSD(dBm) 5200MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
6 Mbps	-1.827	4.6	2.773	10.0
54 Mbps	-2.368	4.6	2.232	10.0
Data Rate	PSD(dBm) 5240MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
6 Mbps	-1.376	4.6	3.224	10.0
54 Mbps	-2.289	4.6	2.311	10.0

802.11n (HT20)

Data Rate	PSD(dBm) 5180MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-1.597	4.6	3.003	10.0
MCS7	-1.957	4.6	2.643	10.0
Data Rate	PSD(dBm) 5200MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-1.530	4.6	3.07	10.0
MCS7	-1.890	4.6	2.71	10.0
Data Rate	PSD(dBm) 5240MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-1.582	4.6	3.018	10.0
MCS7	-1.703	4.6	2.897	10.0

802.11n (HT40)

Data Rate	PSD(dBm) 5190MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-4.601	4.6	-0.001	10.0
MCS7	-3.970	4.6	0.63	10.0
Data Rate	PSD(dBm) 5230MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-4.946	4.6	-0.346	10.0
MCS7	-3.888	4.6	0.712	10.0

802.11ac (VHT20)

Data Rate	PSD(dBm) 5180MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-1.570	4.6	3.03	10.0
MCS8	-2.078	4.6	2.522	10.0
Data Rate	PSD(dBm) 5200MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-2.021	4.6	2.579	10.0
MCS8	-2.010	4.6	2.59	10.0
Data Rate	PSD(dBm) 5240MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-1.468	4.6	3.132	10.0
MCS8	-1.931	4.6	2.669	10.0

802.11ac (VHT40)

Data Rate	PSD(dBm) 5190MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-5.121	4.6	-0.521	10.0
MCS9	-3.771	4.6	0.829	10.0
Data Rate	PSD(dBm) 5230MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-4.519	4.6	0.081	10.0
MCS9	-3.800	4.6	0.8	10.0

802.11ac (VHT80)

Data Rate	PSD(dBm) 5190MHz	Antenna Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)
MCS0	-7.948	4.6	-3.348	10.0
MCS9	-7.761	4.6	-3.161	10.0

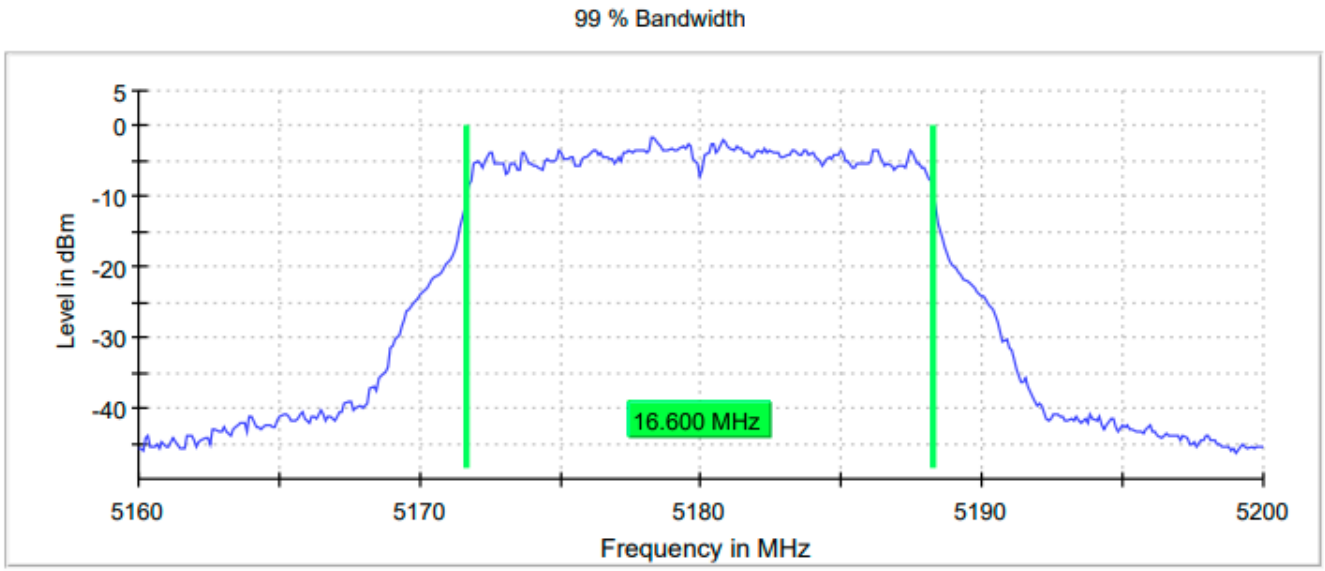
Occupied Channel Bandwidth

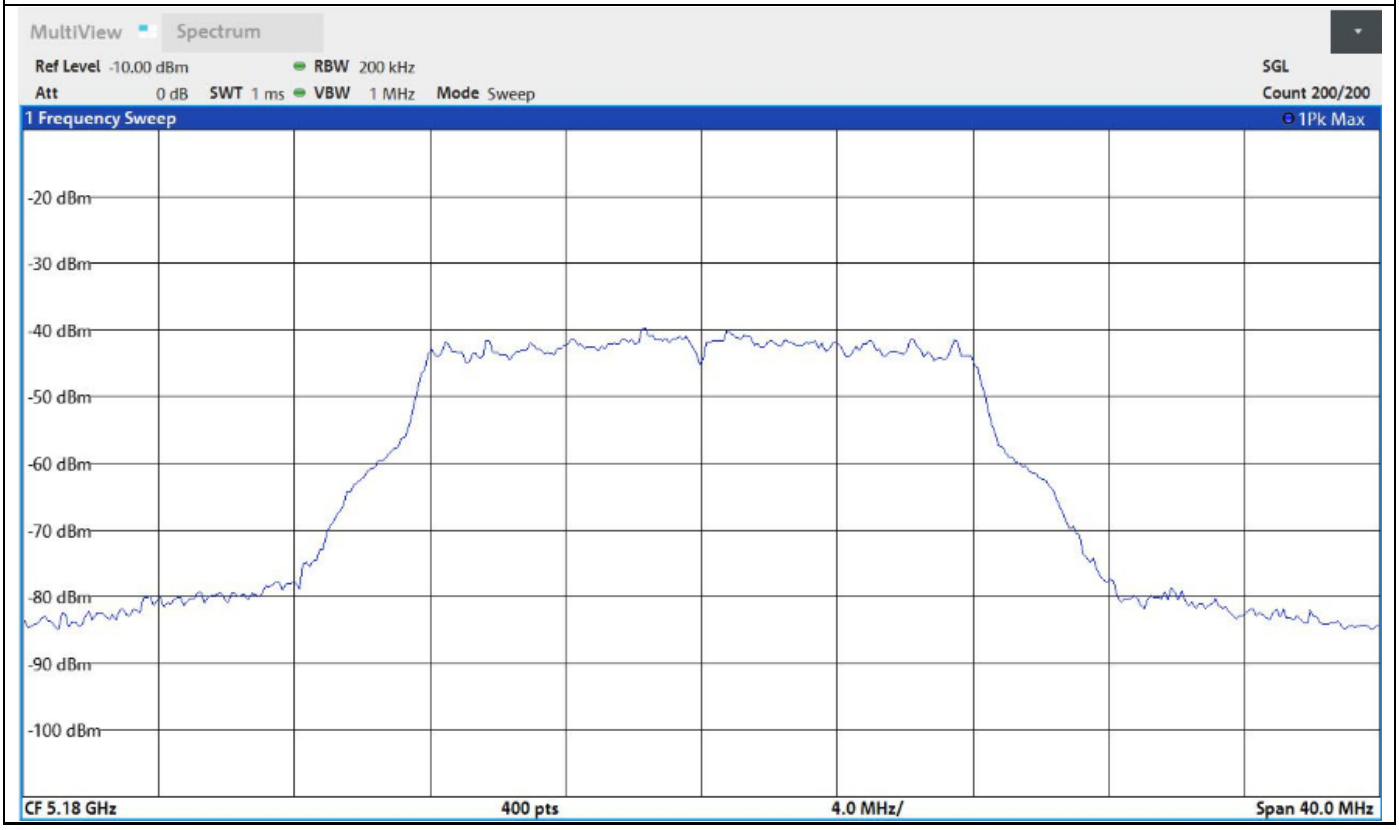
Test according to FCC title 47 part 15 §15.407(a),(e), KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 D and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 2%

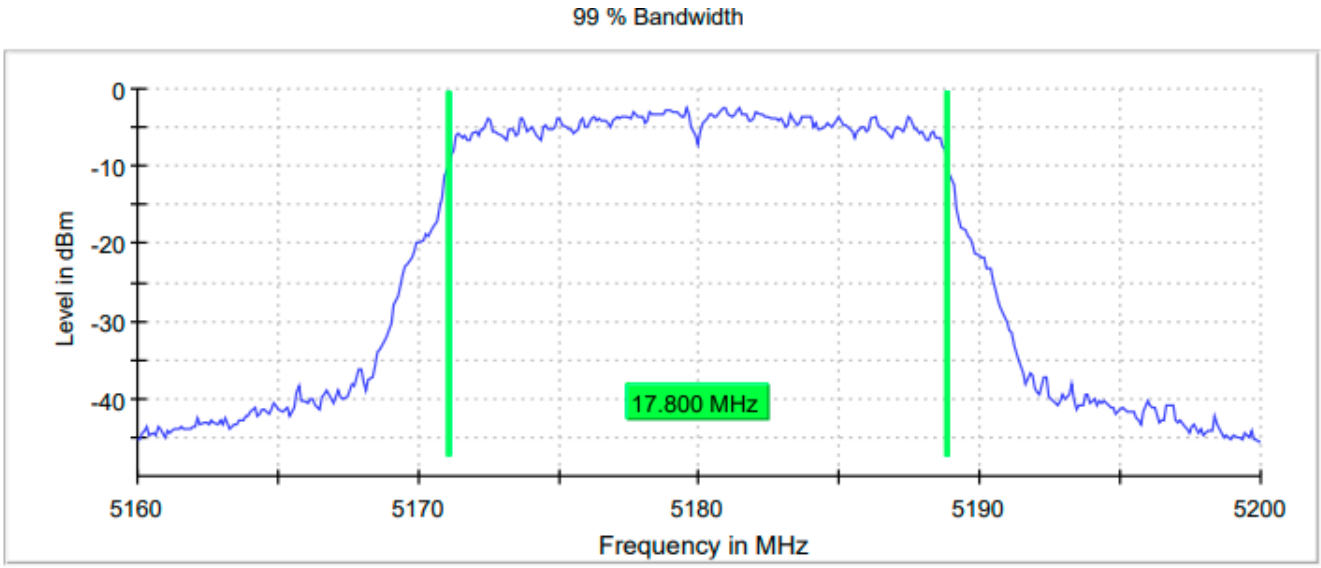
Data Rate	DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Band Limit (MHz)
802.11a 6Mbps	5180.000	16.600000	5171.650000	5188.250000	5150-5250
802.11n (HT20) MCS0	5180.000	17.800000	5171.050000	5188.850000	5150-5250
802.11ac (VHT20) MCS0	5180.000	17.800000	5171.050000	5188.850000	5150-5250
802.11n (HT40) MCS0	5190.000	36.250000	5171.875000	5208.125000	5150-5250
802.11ac (VHT40) MCS0	5190.000	36.250000	5171.875000	5208.125000	5150-5250
802.11ac (VHT80) MCS0	5210.000	76.000000	5172.250000	5248.250000	5150-5250
802.11a 6Mbps	5200.000	16.600000	5191.650000	5208.250000	5150-5250
802.11n (HT20) MCS0	5200.000	17.900000	5191.050000	5208.950000	5150-5250
802.11ac (VHT20) MCS0	5200.000	17.900000	5191.050000	5208.950000	5150-5250
802.11n (HT40) MCS0	5230.000	36.500000	5211.875000	5248.375000	5150-5250
802.11ac (VHT40) MCS0	5230.000	36.250000	5211.875000	5248.125000	5150-5250
802.11a 6Mbps	5240.000	16.700000	5231.650000	5248.350000	5150-5250
802.11n (HT20) MCS0	5240.000	17.900000	5231.050000	5248.950000	5150-5250
802.11ac (VHT20) MCS0	5240.000	17.900000	5231.050000	5248.950000	5150-5250

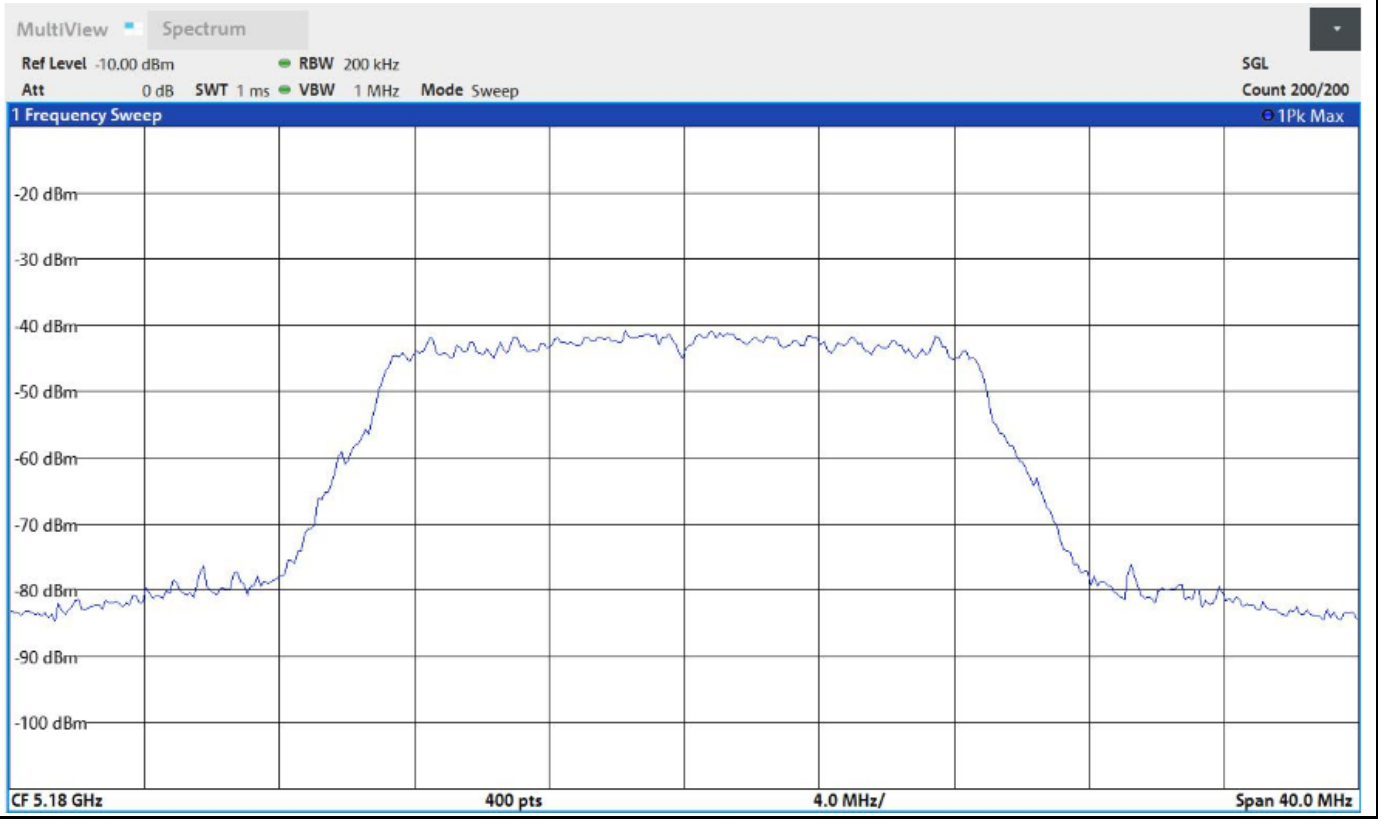
802.11a 5180MHz 6Mbps



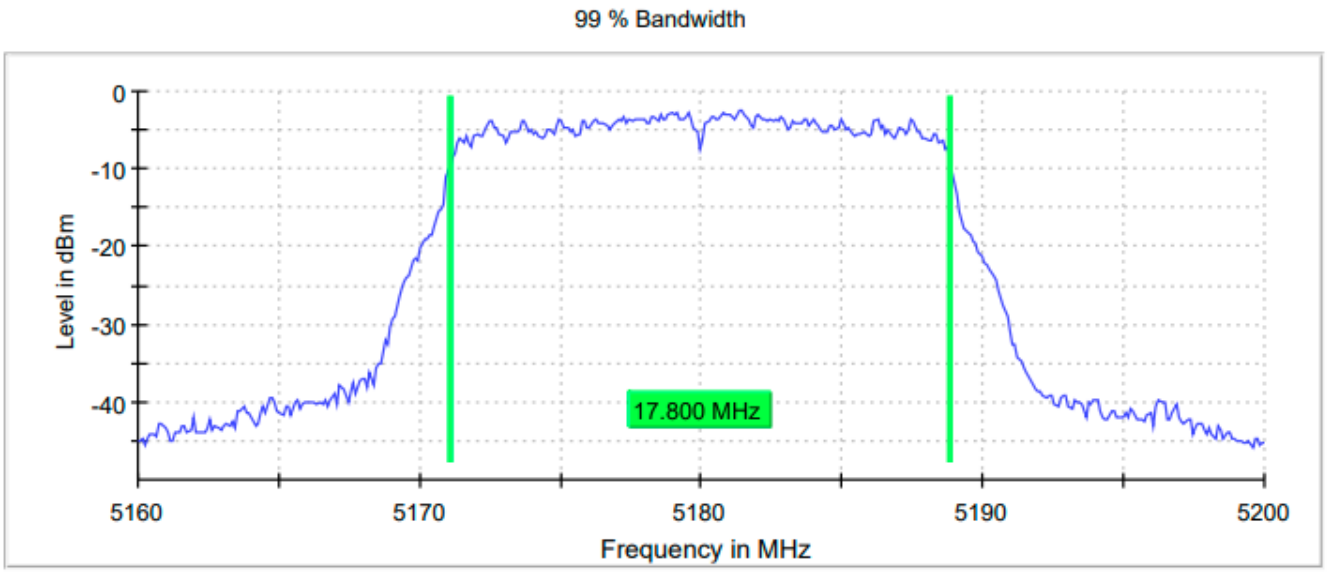


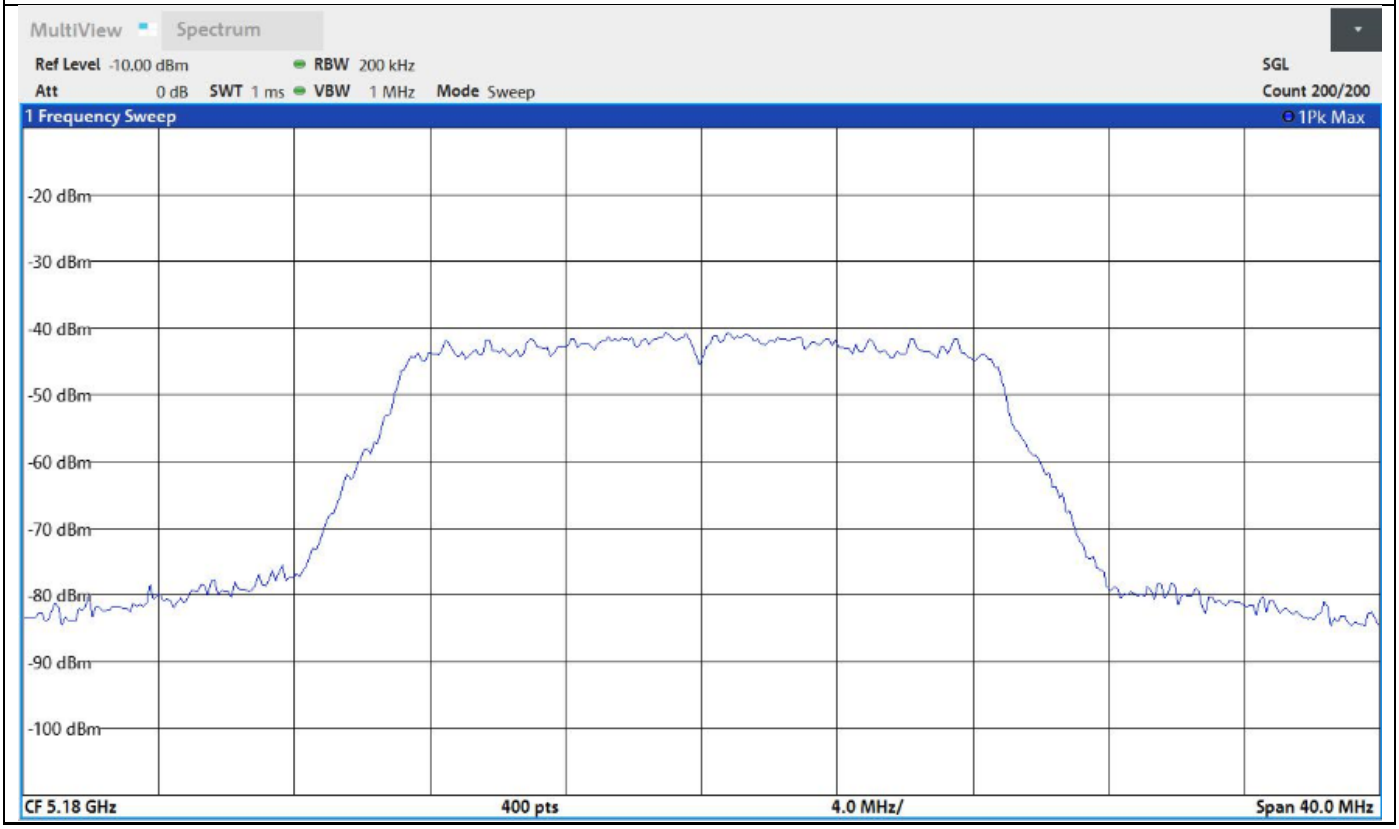
802.11n (HT20) 5180MHz MCS0





802.11ac (VHT20) 5180MHz MCS0





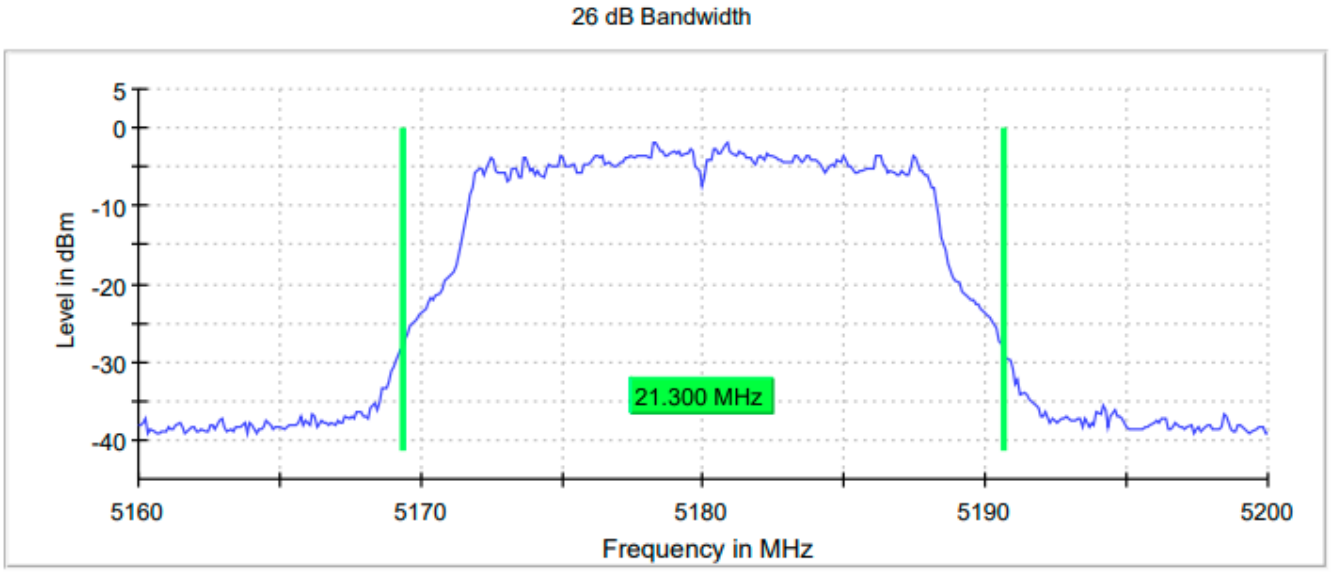
Emission Bandwidth 26 dB

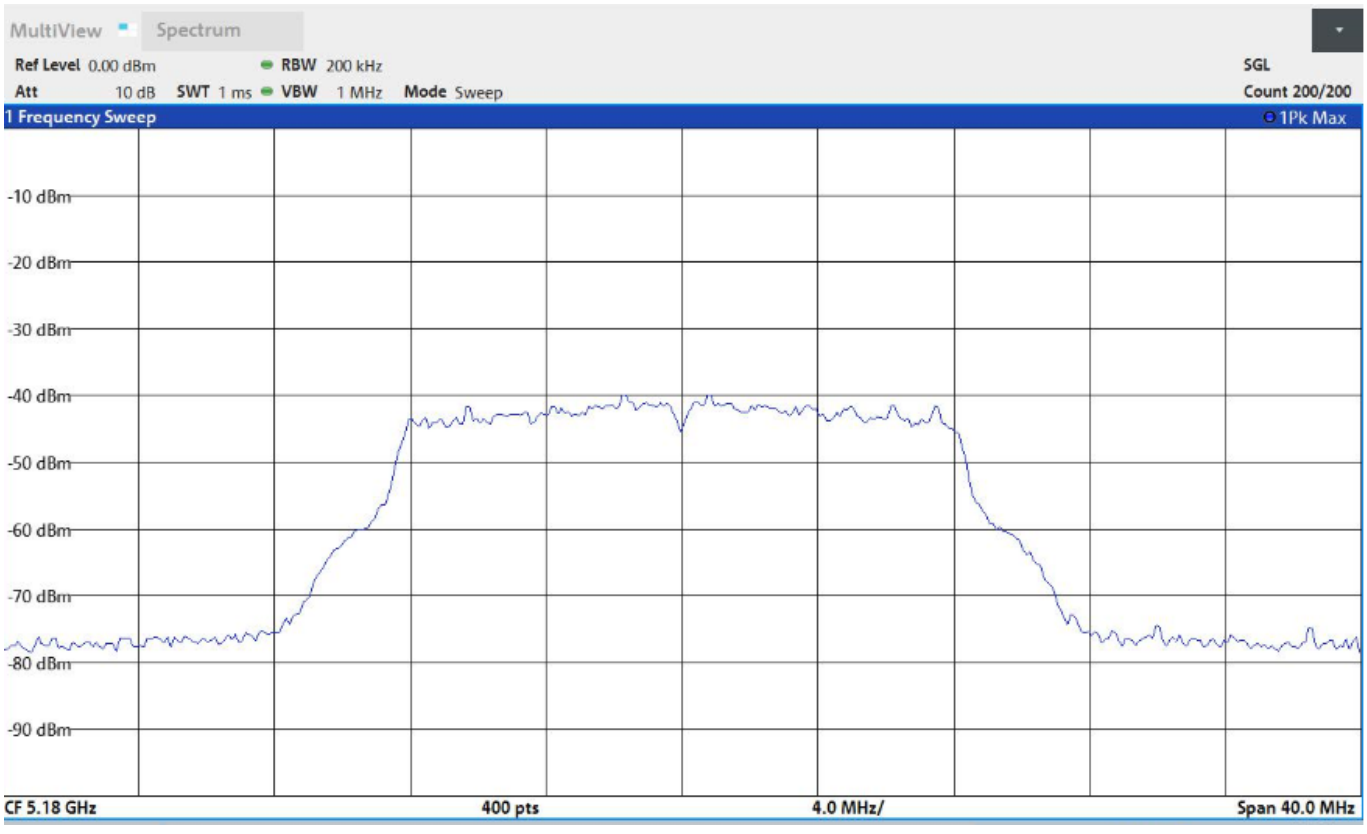
Test according to FCC title 47 part 15 §15.407(a),(e), KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 D and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 2%

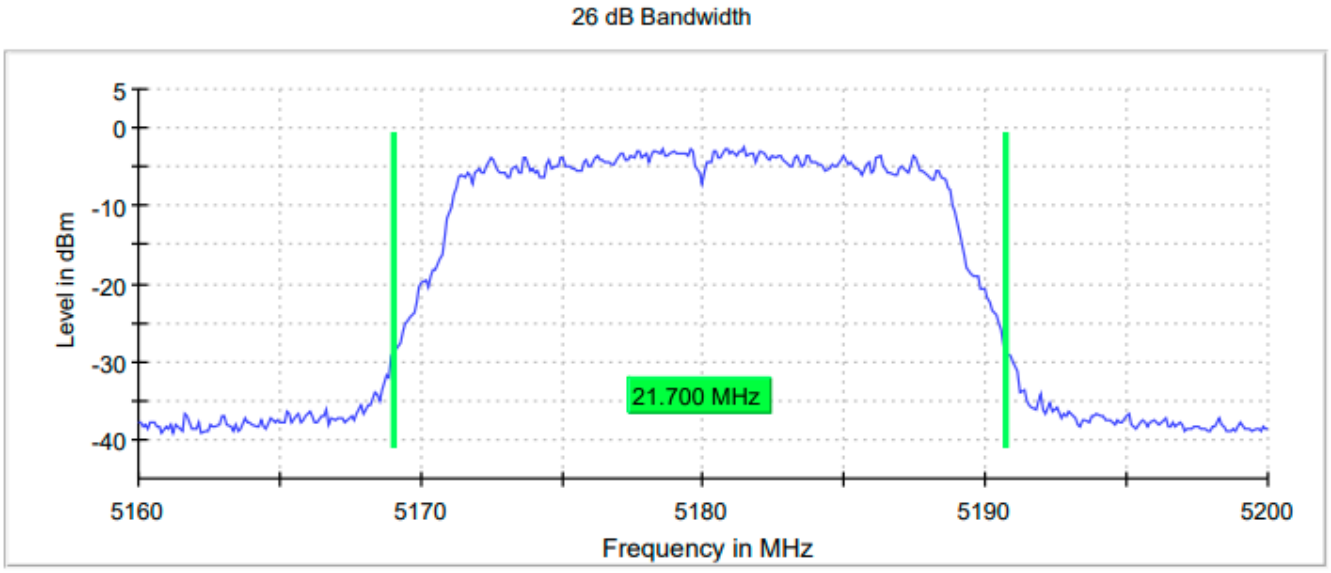
Data Rate	DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
802.11a 6Mbps	5180.000	21.300000	5169.350000	5190.650000
802.11n (HT20) MCS0	5180.000	21.700000	5169.050000	5190.750000
802.11ac (VHT20) MCS0	5180.000	21.900000	5168.950000	5190.850000
802.11n (HT40) MCS0	5190.000	39.774860	5170.037523	5209.812383
802.11ac (VHT40) MCS0	5190.000	39.624766	5170.187617	5209.812383
802.11ac (VHT80) MCS0	5210.000	83.000000	5168.750000	5251.750000
802.11a 6Mbps	5200.000	21.200000	5189.350000	5210.550000
802.11n (HT20) MCS0	5200.000	21.700000	5189.050000	5210.750000
802.11ac (VHT20) MCS0	5200.000	21.700000	5189.150000	5210.850000
802.11n (HT40) MCS0	5230.000	39.924954	5210.037523	5249.962477
802.11ac (VHT40) MCS0	5230.000	39.774860	5210.187617	5249.962477
802.11a 6Mbps	5240.000	21.200000	5229.350000	5250.550000
802.11n (HT20) MCS0	5240.000	21.600000	5229.150000	5250.750000
802.11ac (VHT20) MCS0	5240.000	21.800000	5229.050000	5250.850000

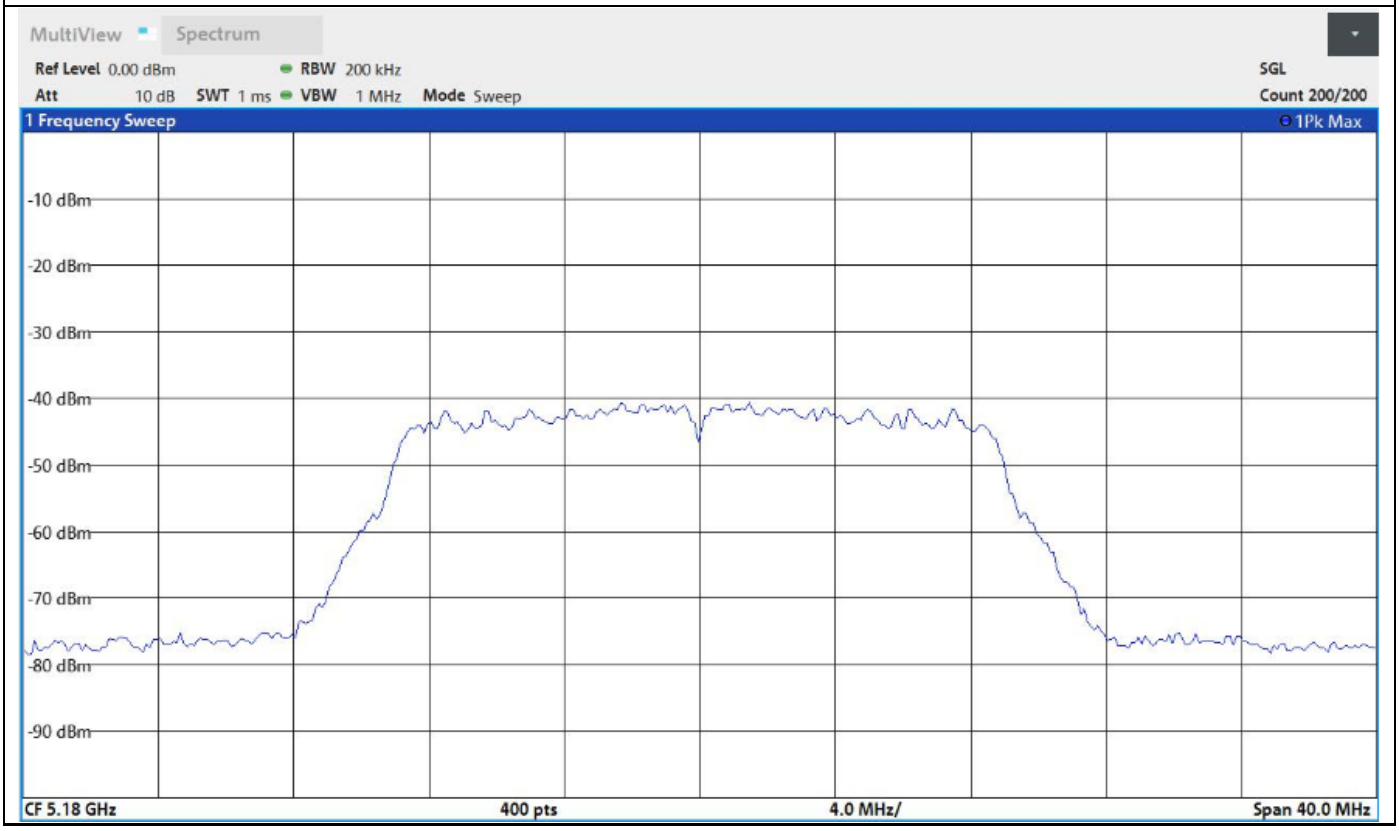
802.11a 5180MHz 6Mbps



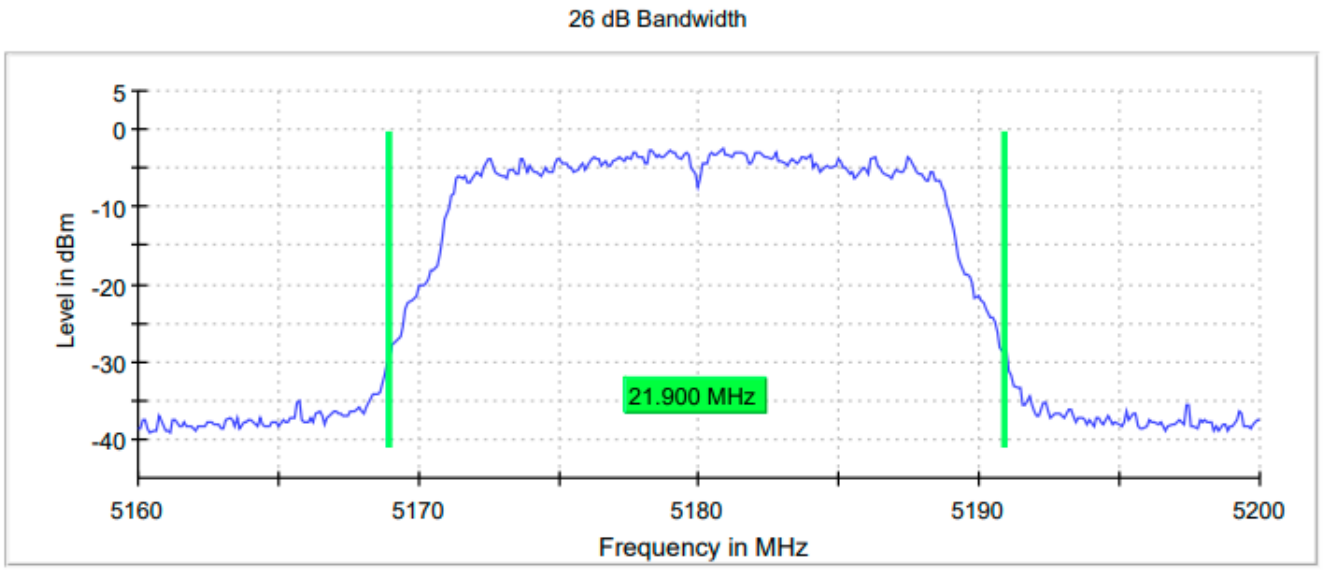


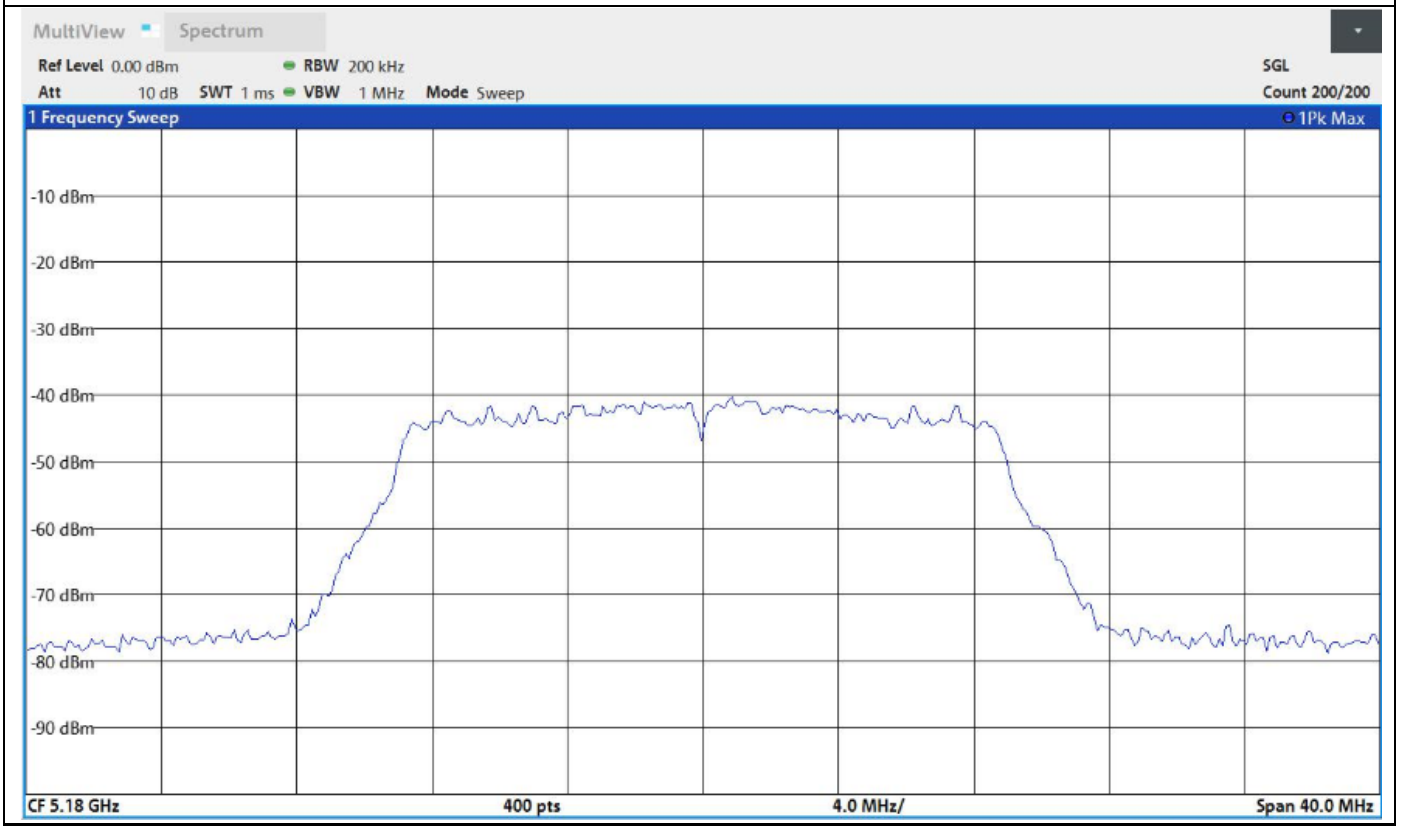
802.11n (HT20) 5180MHz MCS0





802.11ac (VHT20) 5180MHz MCS0





FCC 15.407 UNII-3

DUT Information:

Model:	INFO3.7-3.8 CSM
Manufacturer:	Harman International Industries, Inc.
Serial Number:	AH20110901-HAR-279-10

UNII-3		
Mode	**Channel**	**Frequency**
802.11a **802.11n(HT20)** **802.11ac(VHT20)**	149	5745
802.11n(HT40) **802.11ac(VHT40)**	151	5755
802.11ac(VHT80)	155	5775
802.11a **802.11n(HT20)** **802.11ac(VHT20)**	157	5785
802.11n(HT40) **802.11ac(VHT40)**	159	5795
802.11a **802.11n(HT20)** **802.11ac(VHT20)**	165	5825

Notes

1. Channels and modes above were tested.

2. Output power measurements were performed at the lowest and highest data rate of each supported 802.11 mode.

Antenna Gain	4.6 dBi
Number of transmit chains	1
Equipment Type	Unlicensed National Information Infrastructure Device

Test Equipment Used

ID #	Equipment	Manufacturer	Model #	Serial #	Cal Due
BVD0226	Spectrum Analyzer 10Hz-44GHz	Rohde & Schwarz	FSV3044	101018	1/14/2022
BVD0227	8 port switch unit for Wireless Test system	Rohde & Schwarz	OSP150	101100	N/A
BVD0228	8 port switch unit for Wireless Test system	Rohde & Schwarz	OSP220	101632	N/A
BVD0224	Signal Generator 100kHz-40GHz	Rohde & Schwarz	SMB100A	181741	11/19/2021
BVD0225	Signal Generator 100k-6GHz with GPS simulator	Rohde & Schwarz	SMW200A	107664	11/18/2021
BVD0250	Wireless Connectivity Tester 70M-6GHz	Rohde & Schwarz	CMW270	102113	11/18/2021
BVD0343	DC Regulated Power Supply	Circuit Specialists, INC	CSI3020X	595215	N/A
BVD0321	Fixed Attenuator 2W 20dB - 40GHz	Mini-Circuits	BW-K20-2W44+	2103	N/A
BVD0477	10db Attenuator -18GHz	Mouser	BW-S10W2+	2043	N/A
BVD0229	Temp and Humidity Meter	Fluke	971	12001009	3/26/2022

Power Settings

802.11a		802.11n (HT20)		802.11ac (VHT20)	
Channel	**Power Setting**	**Channel**	**Power Setting**	**Channel**	**Power Setting**
149	Default	**149**	Default	**149**	Default
157	Default	**157**	Default	**157**	Default
165	Default	**165**	Default	**165**	Default

802.11n (HT40)		802.11ac (VHT40)	
Channel	**Power Setting**	**Channel**	**Power Setting**
151	Default	**151**	Default
159	Default	**159**	Default

802.11ac (VHT80)	
Channel	**Power Setting**
155	Default

Test Results Summary

Test	Frequency (MHz)	802.11a	802.11n(HT20)	802.11ac (VHT20)
Average Output Power	5745/5785/5825	PASS	PASS	PASS
Power Spectral Density	5745/5785/5825	PASS	PASS	PASS
DTS Bandwidth (6dB)	5745/5785/5825	PASS	PASS	PASS
Occupied Channel Bandwidth 99%	5745/5785/5825	PASS	PASS	PASS
		802.11n(HT40)		802.11ac(VHT40)
Average Output Power	5755/5795	PASS		PASS
Power Spectral Density	5755/5795	PASS		PASS
DTS Bandwidth (6dB)	5755/5795	PASS		PASS
Occupied Channel Bandwidth 99%	5755/5795	PASS		PASS
		802.11ac(VHT80)		
Average Output Power	5775	PASS		
Power Spectral Density	5775	PASS		
DTS Bandwidth (6dB)	5775	PASS		
Occupied Channel Bandwidth 99%	5775	PASS		

RF output power and Duty-Cycle

FCC and RSS-247

Test according to FCC title 47 part 15 §15.407(a), KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 II.E and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Combined Uncertainty of absolute Level Measurement (K=2) < 1 dB

802.11a

Data Rate	Gated RMS (dBm) 5745 MHz	Gated RMS (dBm) 5785 MHz	Gated RMS (dBm) 5825 MHz	Limit (dBm)	Duty Cycle (%)
6 Mbps	9.281	10.207	10.708	30	96.351
54 Mbps	9.462	9.904	10.297	30	76.263

802.11n (HT20)

Data Rate	Gated RMS (dBm) 5745 MHz	Gated RMS (dBm) 5785 MHz	Gated RMS (dBm) 5825 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	9.815	10.233	10.599	30	96.087
MCS7	9.452	10.056	10.276	30	74.713

802.11ac (VHT20)

Data Rate	Gated RMS (dBm) 5745 MHz	Gated RMS (dBm) 5785 MHz	Gated RMS (dBm) 5825 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	9.551	9.950	10.091	30	96.109
MCS8	9.424	9.903	10.270	30	72.200

802.11n (HT40)

Data Rate	Gated RMS (dBm) 5755 MHz	Gated RMS (dBm) 5795 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	9.574	9.894	30	97.160
MCS7	9.259	9.657	30	82.650

802.11ac (VHT40)

Data Rate	Gated RMS (dBm) 5755 MHz	Gated RMS (dBm) 5795 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	9.466	9.815	30	97.196
MCS9	9.115	9.611	30	80.691

802.11ac (VHT80)

Data Rate	Gated RMS (dBm) 5775 MHz	Limit (dBm)	Duty Cycle (%)
MCS0	8.938	30	94.451
MCS9	8.544	30	73.495

Power Spectral Density

FCC and RSS-247

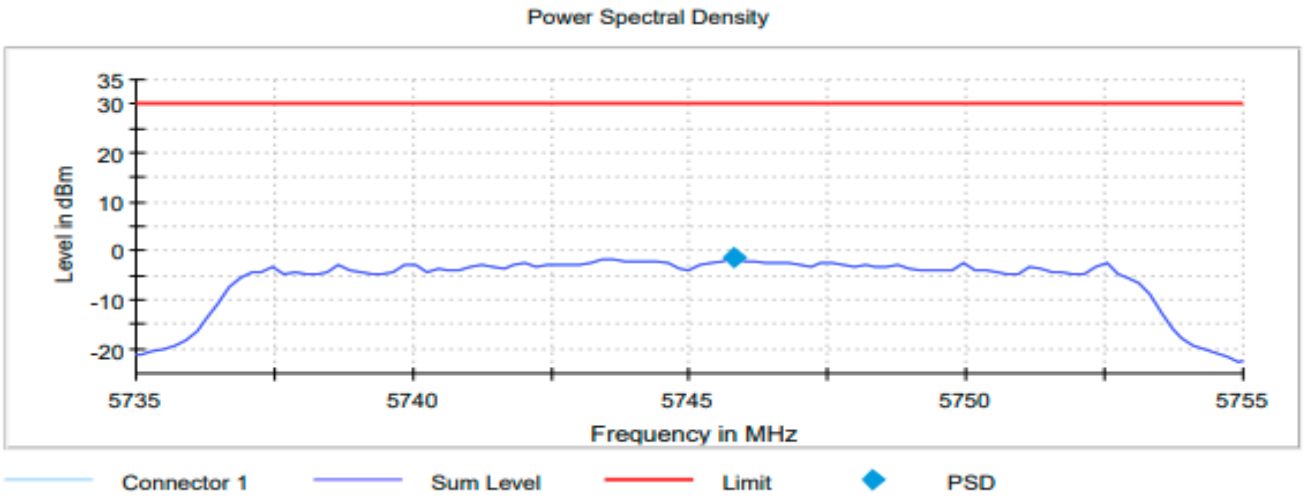
Test according to FCC title 47 part 15 §15.407(a), KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 II.F and ANSI C63.10-2013

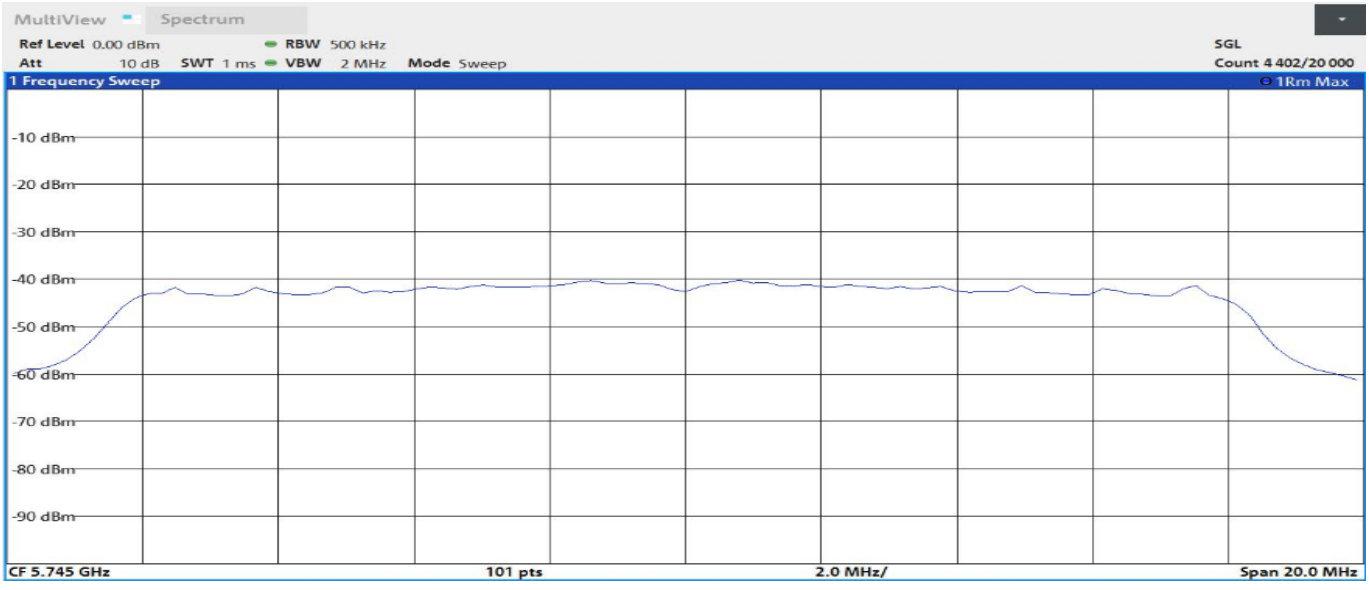
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 1.3 dB

802.11a

Data Rate	PSD (dBm) 5745 MHz	PSD (dBm) 5785 MHz	PSD (dBm) 5825 MHz	Limit (dBm)
6Mbps	-1.554	-0.756	-0.678	30
54Mbps	-2.066	1.678	-1.689	30

802.11a 5745 MHz 6Mbps





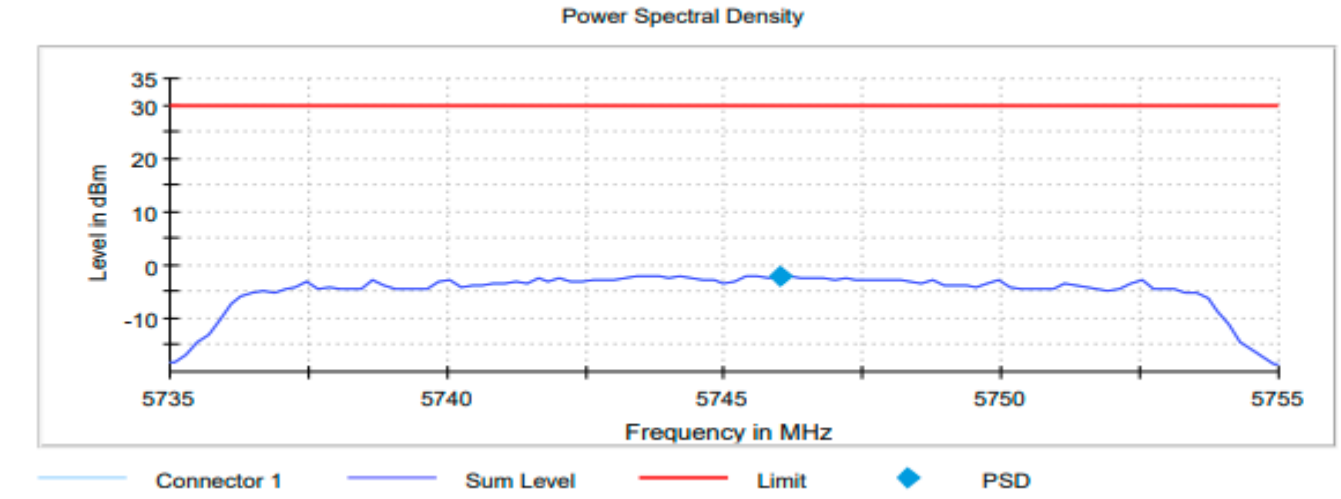
802.11n (HT20)

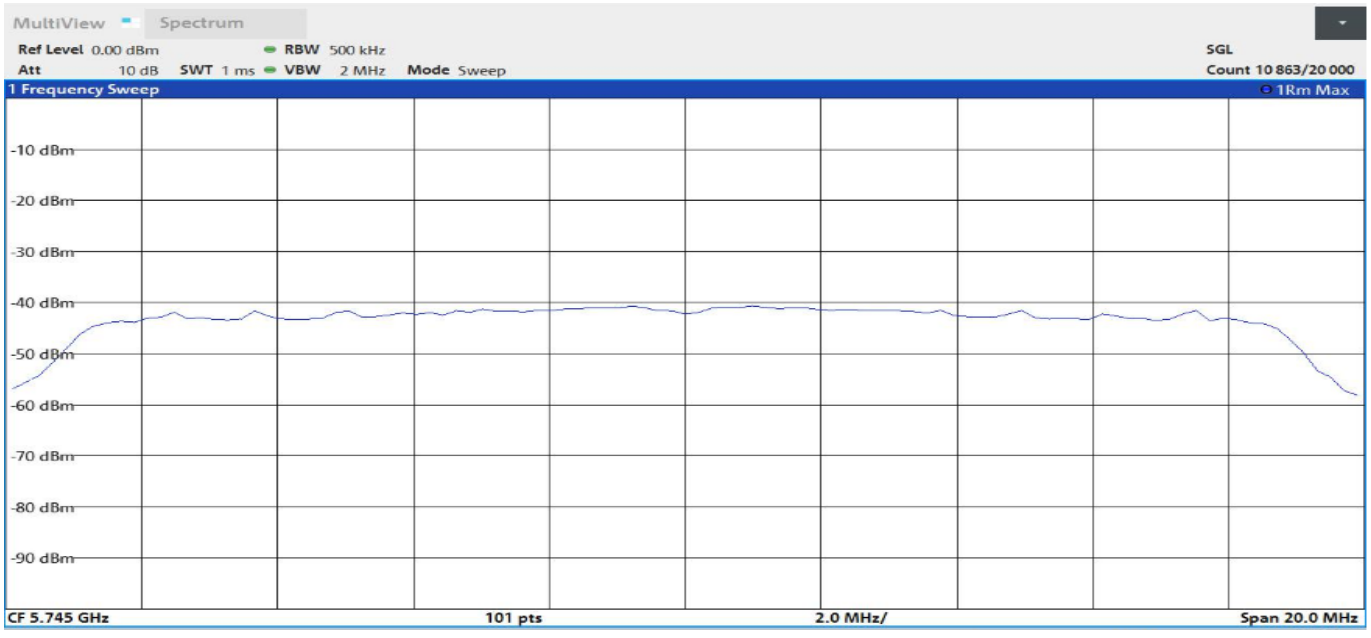
Data Rate	PSD (dBm) 5745 MHz	PSD (dBm) 5785 MHz	PSD (dBm) 5825 MHz	Limit (dBm)
MCS0	-1.966	-0.875	-0.901	30
MCS7	-1.360	-1.278	-0.954	30

802.11n (HT40)

Data Rate	PSD (dBm) 5755 MHz	PSD (dBm) 5795 MHz	Limit (dBm)
MCS0	-3.407	-3.145	30
MCS7	-2.576	-2.165	30

802.11n (HT20) 5745 MHz MCS0





802.11ac (VHT20)

Data Rate	PSD (dBm) 5745 MHz	PSD (dBm) 5785 MHz	PSD (dBm) 5825 MHz	Limit (dBm)
MCS0	-1.946	-1.261	-1.270	30
MCS8	-1.264	-1.429	-1.156	30

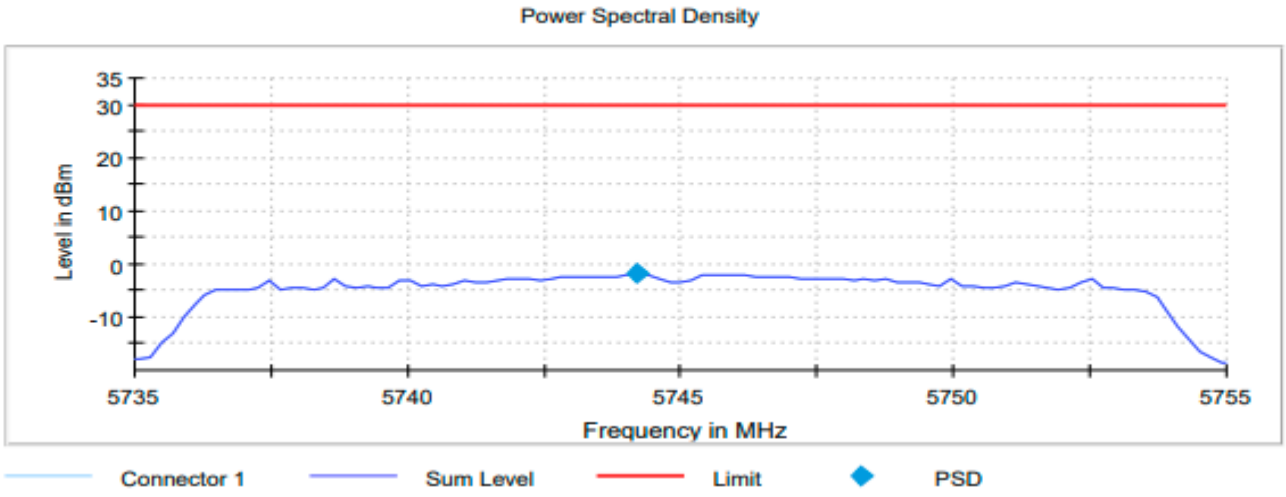
802.11ac (VHT40)

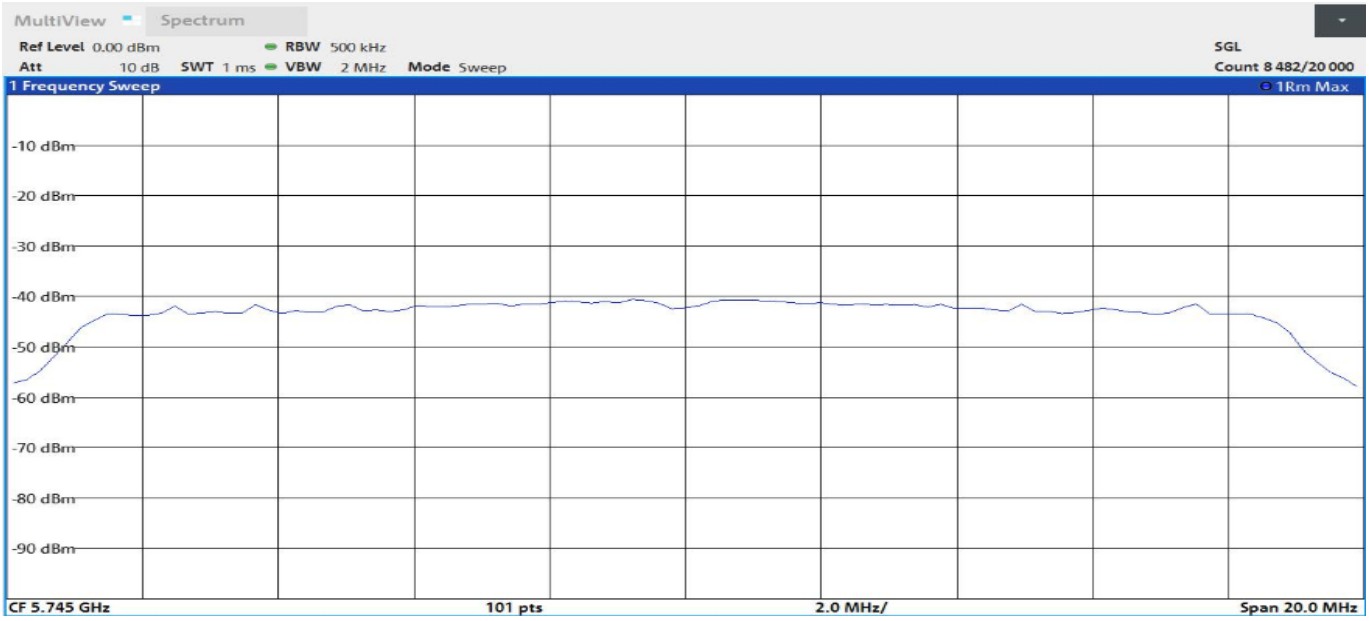
Data Rate	PSD (dBm) 5755 MHz	PSD (dBm) 5795 MHz	Limit (dBm)
MCS0	3.257	-3.275	30
MCS9	-1.634	-1.323	30

802.11ac (VHT80)

Data Rate	PSD (dBm) 5775 MHz	Limit (dBm)
MCS0	-5.390	30
MCS9	-5.617	30

802.11a (VHT20) 5745 MHz MCS0





DTS Bandwidth 6dB

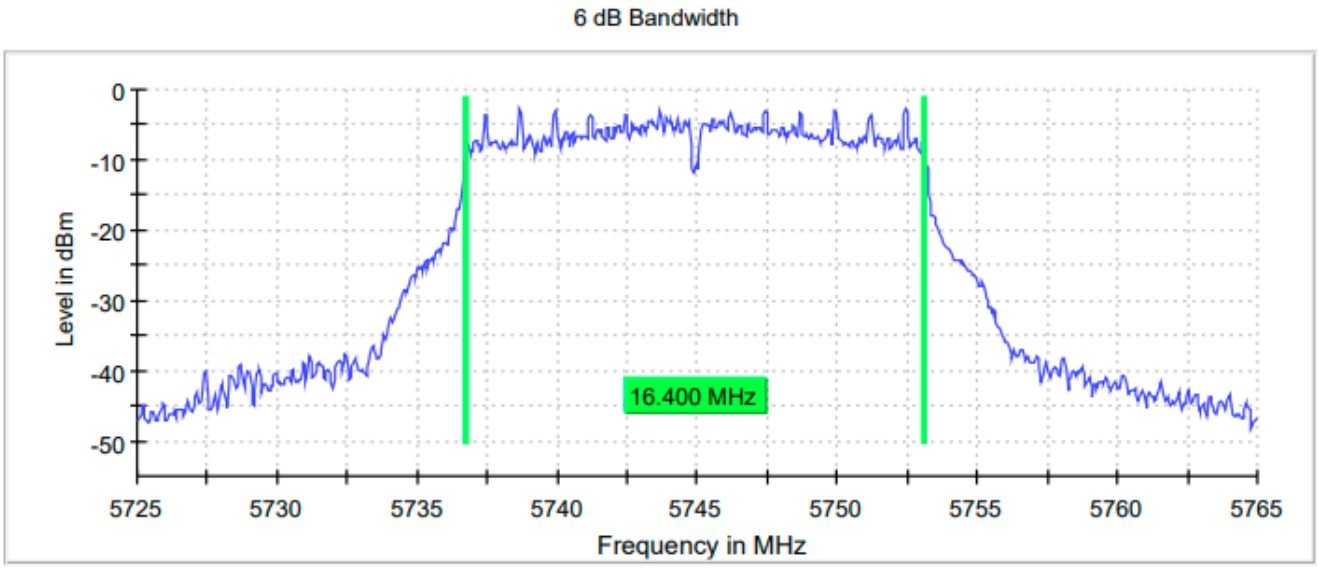
FCC and RSS-247

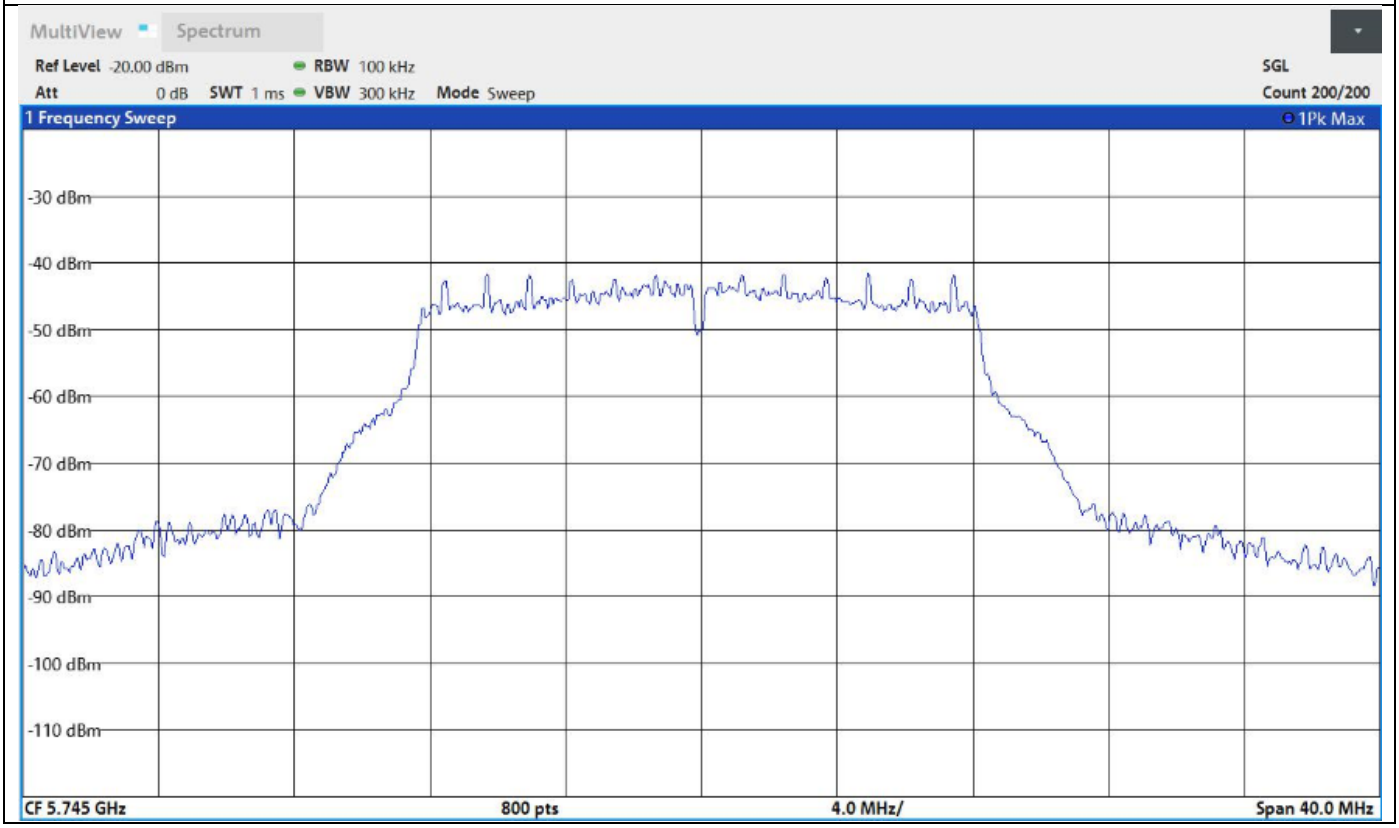
Test according to FCC title 47 part 15 §15.407(a),(e), KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 D and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 2%

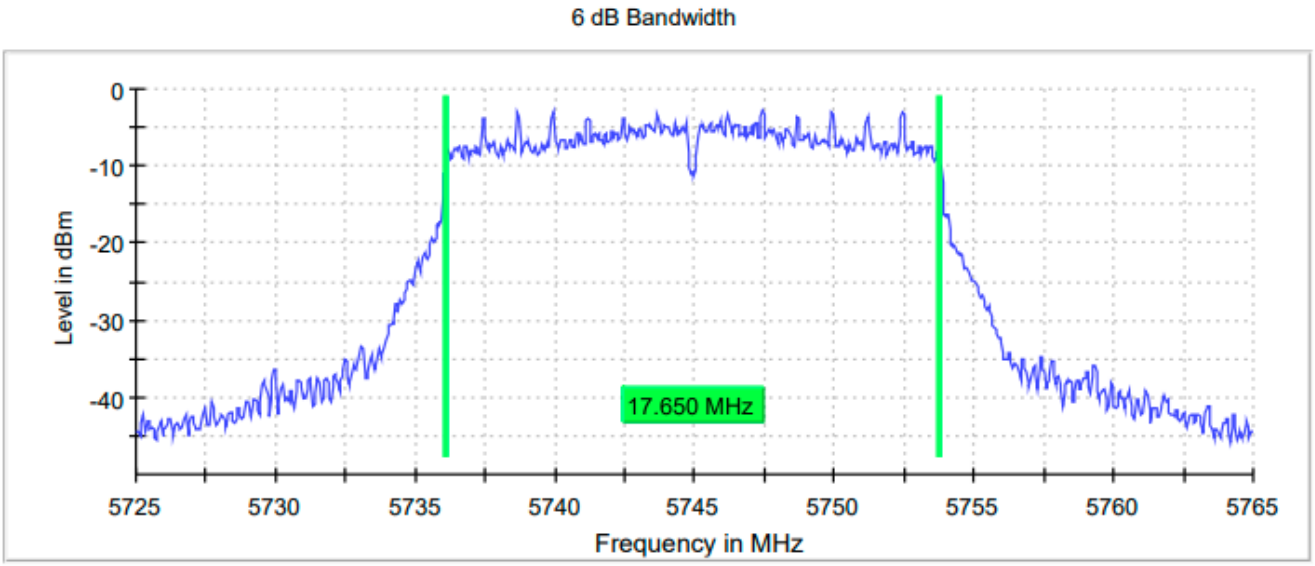
Data Rate	DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Minimum Band Limit (MHz)
802.11a 6Mbps	5745.000	16.400000	5736.725000	5753.125000	0.500000
802.11n (HT20) MCS0	5745.000	17.650000	5736.125000	5753.775000	0.500000
802.11ac (VHT20) MCS0	5745.000	17.700000	5736.075000	5753.775000	0.500000
802.11n (HT40) MCS0	5755.000	35.750000	5737.175000	5772.925000	0.500000
802.11ac (VHT40) MCS0	5755.000	35.900000	5737.025000	5772.925000	0.500000
802.11ac (VHT80) MCS0	5775.000	75.550000	5737.375000	5812.925000	0.500000
802.11a 6Mbps	5785.000	16.450000	5776.725000	5793.175000	0.500000
802.11n (HT20) MCS0	5785.000	17.650000	5776.125000	5793.775000	0.500000
802.11ac (VHT20) MCS0	5785.000	17.650000	5776.125000	5793.775000	0.500000
802.11n (HT40) MCS0	5795.000	35.900000	5777.025000	5812.925000	0.500000
802.11ac (VHT40) MCS0	5795.000	35.750000	5777.175000	5812.925000	0.500000
802.11a 6Mbps	5825.000	16.450000	5816.725000	5833.175000	0.500000
802.11n (HT20) MCS0	5825.000	17.650000	5816.125000	5833.775000	0.500000
802.11ac (VHT20) MCS0	5825.000	17.650000	5816.125000	5833.775000	0.500000

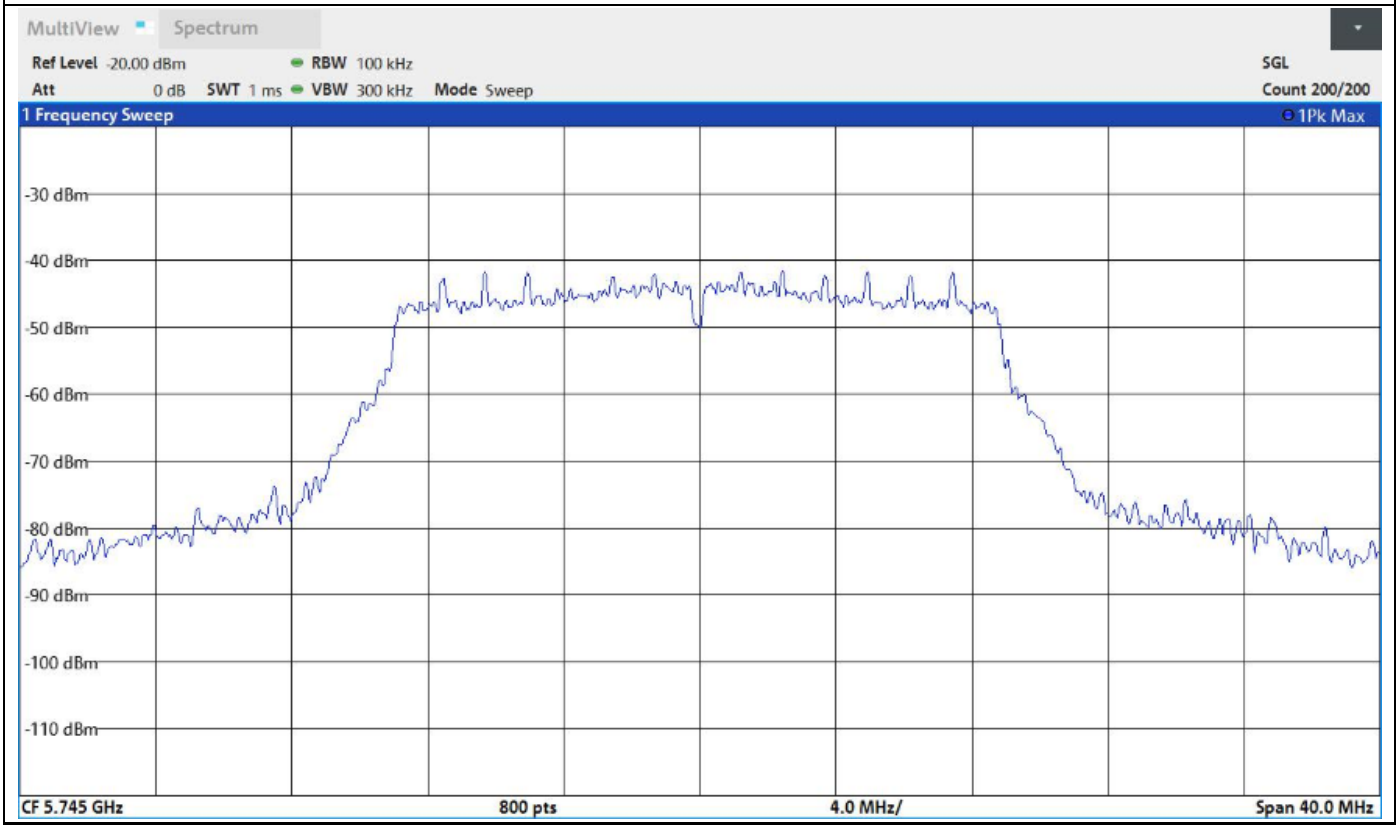
802.11a 5745MHz 6Mbps



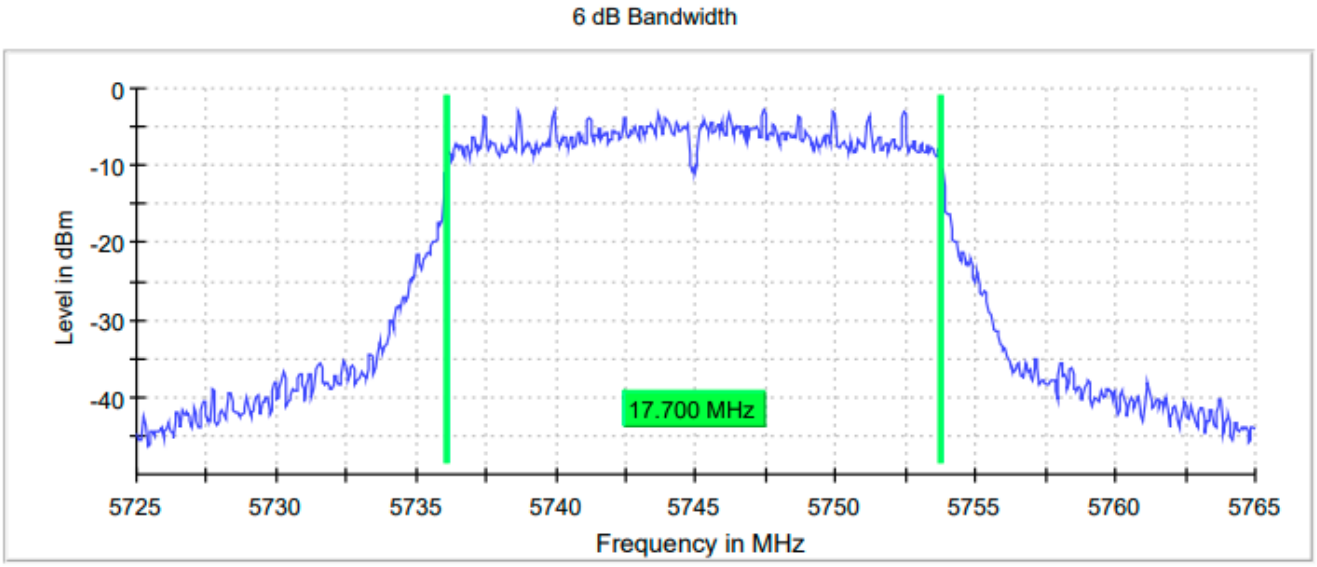


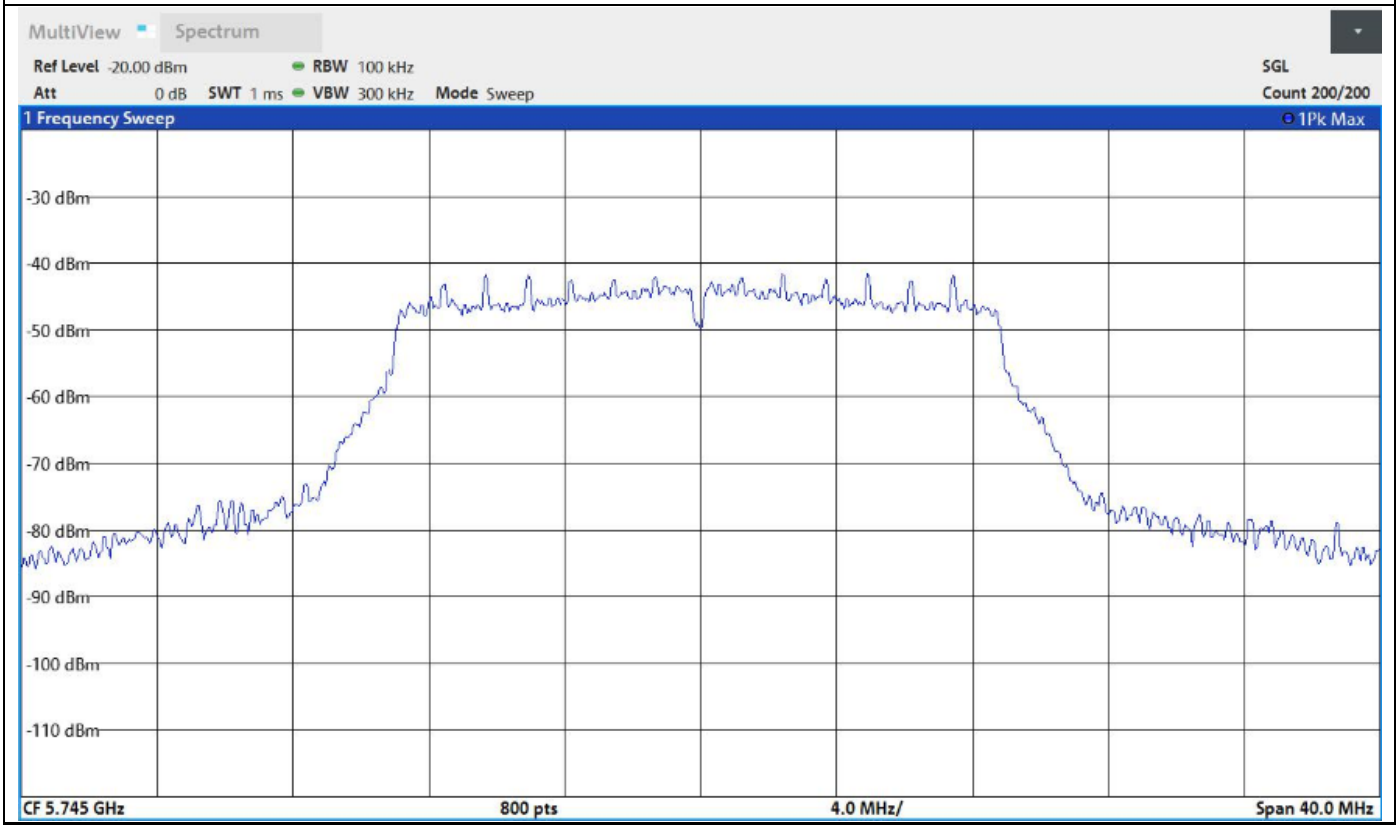
802.11n (HT20) 5745MHz MCS0





802.11ac (VHT20) 5745MHz MCS0





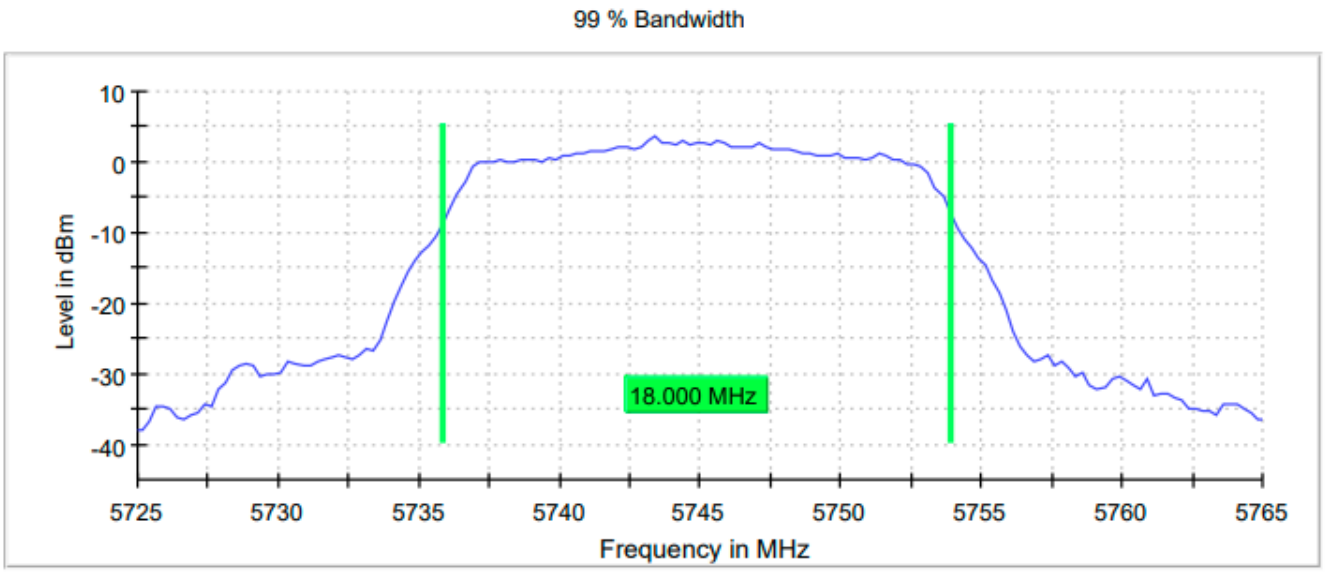
Occupied Channel Bandwidth

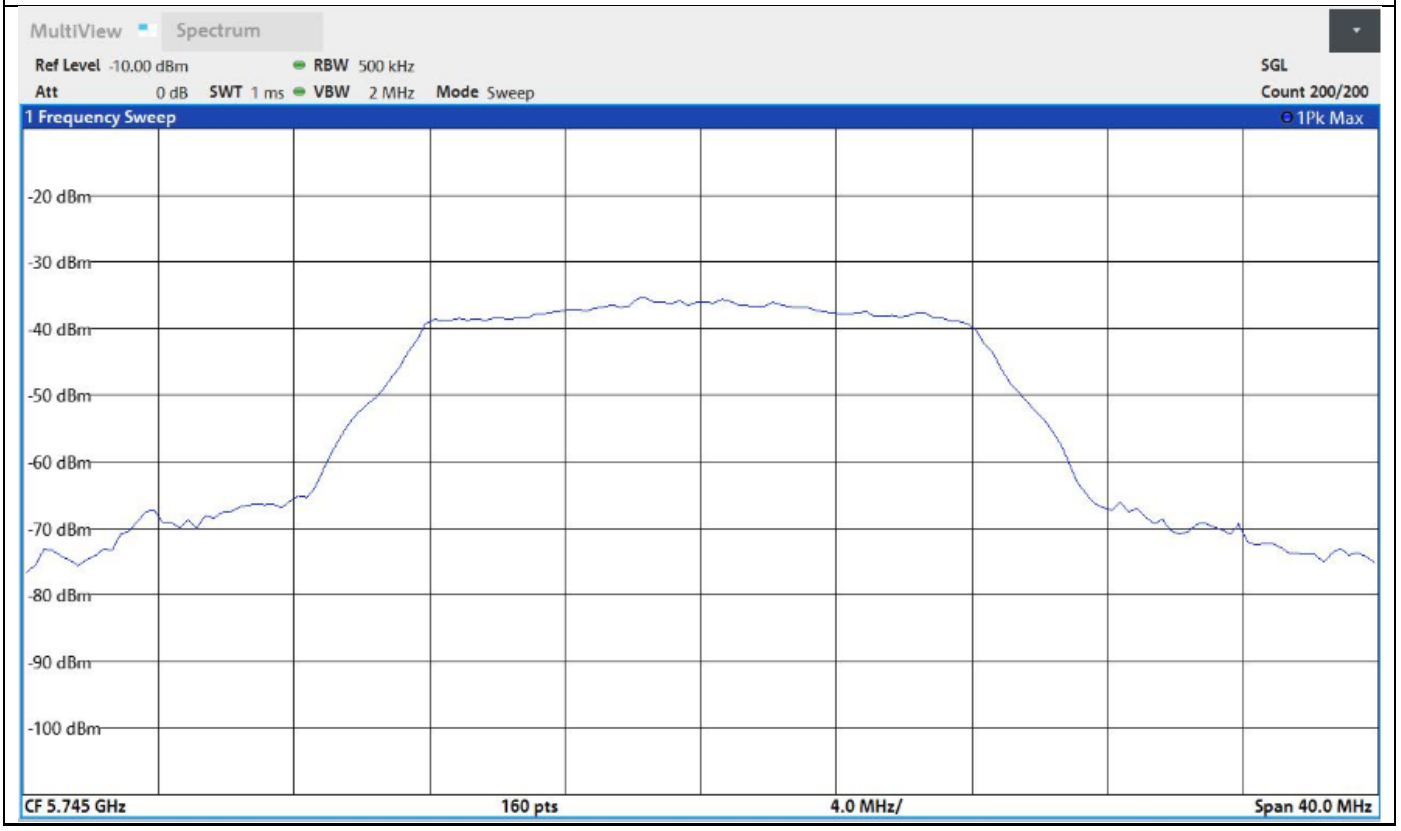
Test according to FCC title 47 part 15 §15.407(a),(e), KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 D and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 2%

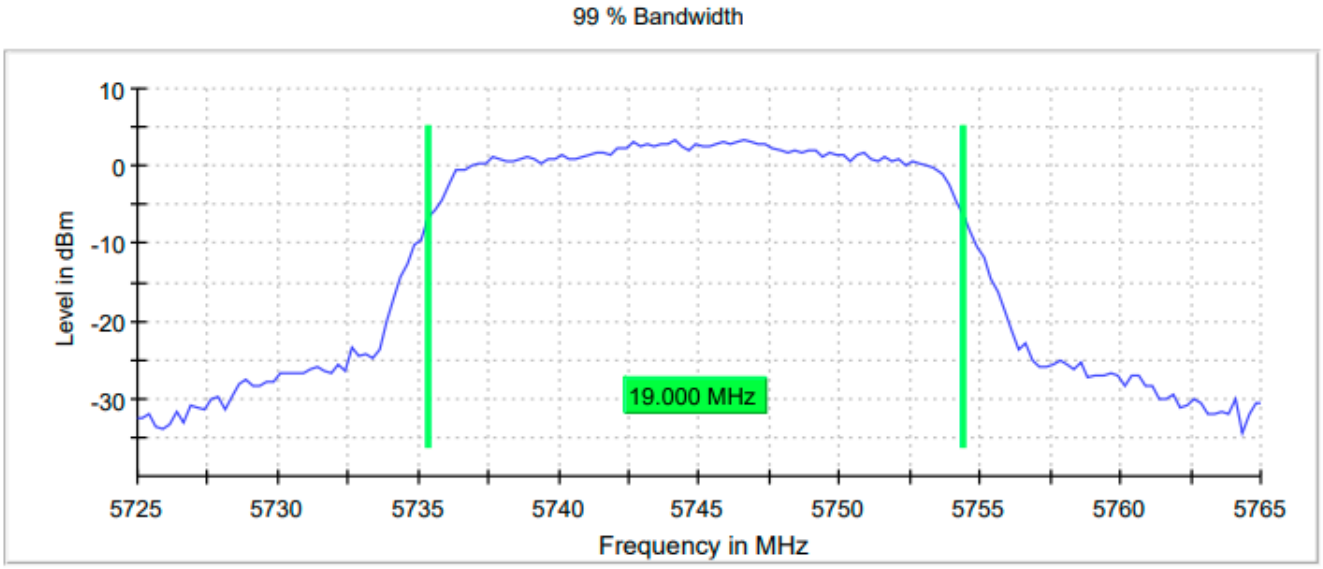
Data Rate	DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Band Limit (MHz)
802.11a 6Mbps	5745.000	18.000000	5735.875000	5753.875000	5725-5850
802.11n (HT20) MCS0	5745.000	19.000000	5735.375000	5754.375000	5725-5850
802.11ac (VHT20) MCS0	5745.000	19.000000	5735.375000	5754.375000	5725-5850
802.11n (HT40) MCS0	5755.000	37.500000	5736.250000	5773.750000	5725-5850
802.11ac (VHT40) MCS0	5755.000	37.000000	5736.750000	5773.750000	5725-5850
802.11ac (VHT80) MCS0	5775.000	77.000000	5736.500000	5813.500000	5725-5850
802.11a 6Mbps	5785.000	18.000000	5775.875000	5793.875000	5725-5850
802.11n (HT20) MCS0	5785.000	19.000000	5775.375000	5794.375000	5725-5850
802.11ac (VHT20) MCS0	5785.000	19.000000	5775.375000	5794.375000	5725-5850
802.11n (HT40) MCS0	5795.000	37.500000	5776.250000	5813.750000	5725-5850
802.11ac (VHT40) MCS0	5795.000	37.000000	5776.250000	5813.250000	5725-5850
802.11a 6Mbps	5825.000	17.750000	5816.125000	5833.875000	5725-5850
802.11n (HT20) MCS0	5825.000	19.000000	5815.625000	5834.625000	5725-5850
802.11ac (VHT20) MCS0	5825.000	18.750000	5815.625000	5834.375000	5725-5850

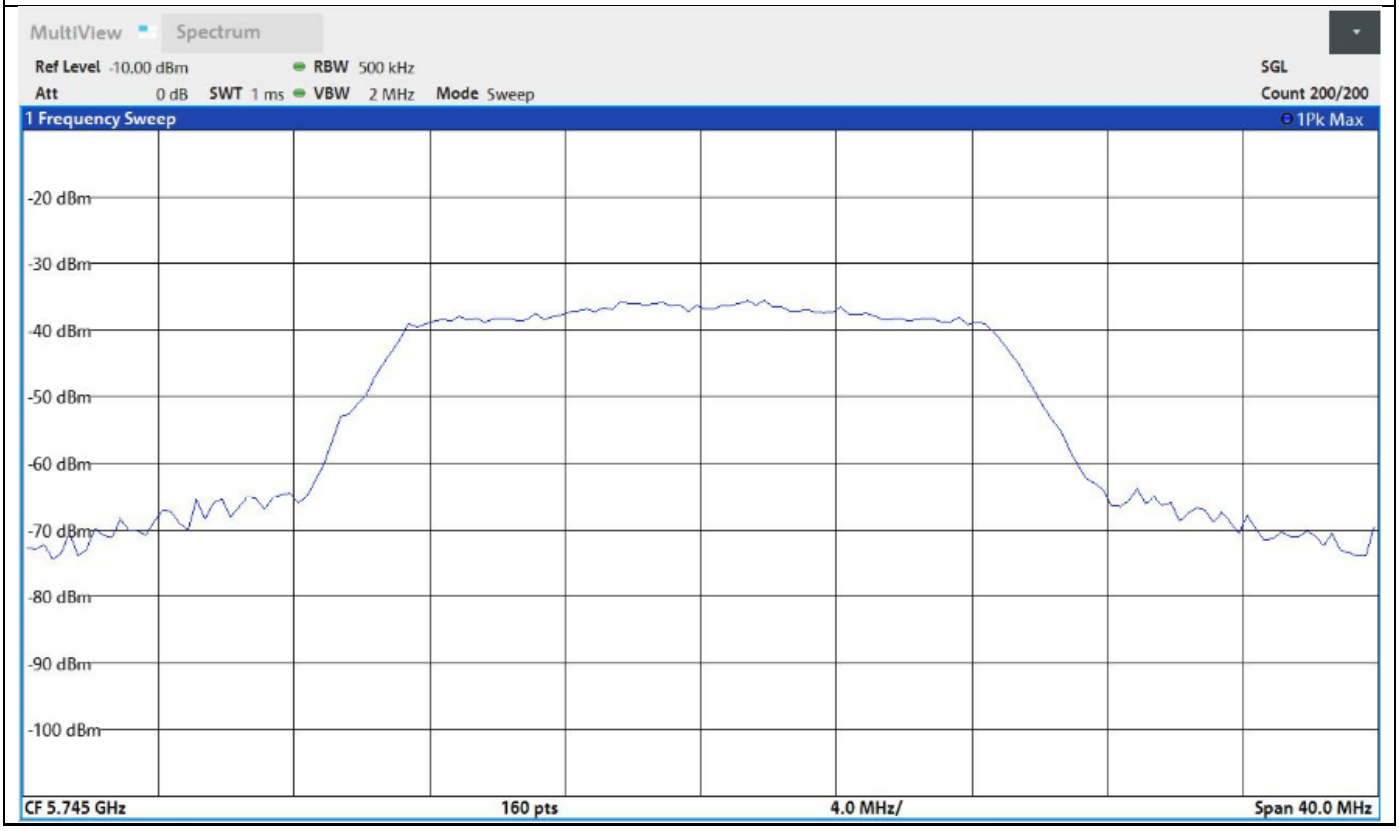
802.11a 5745MHz 6Mbps



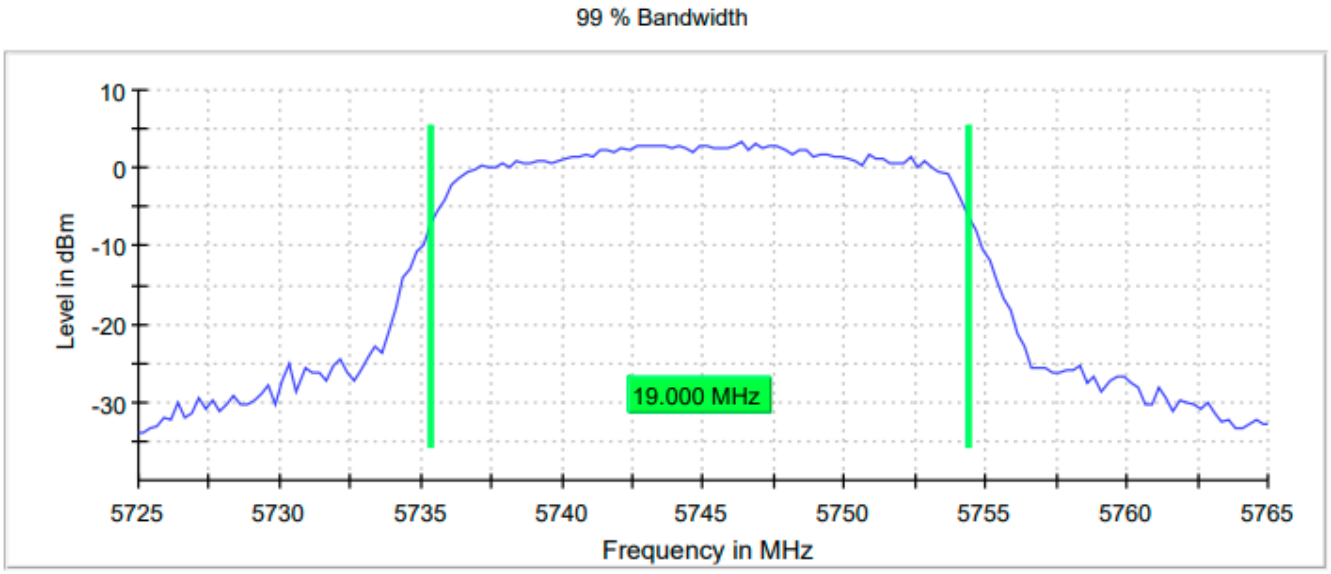


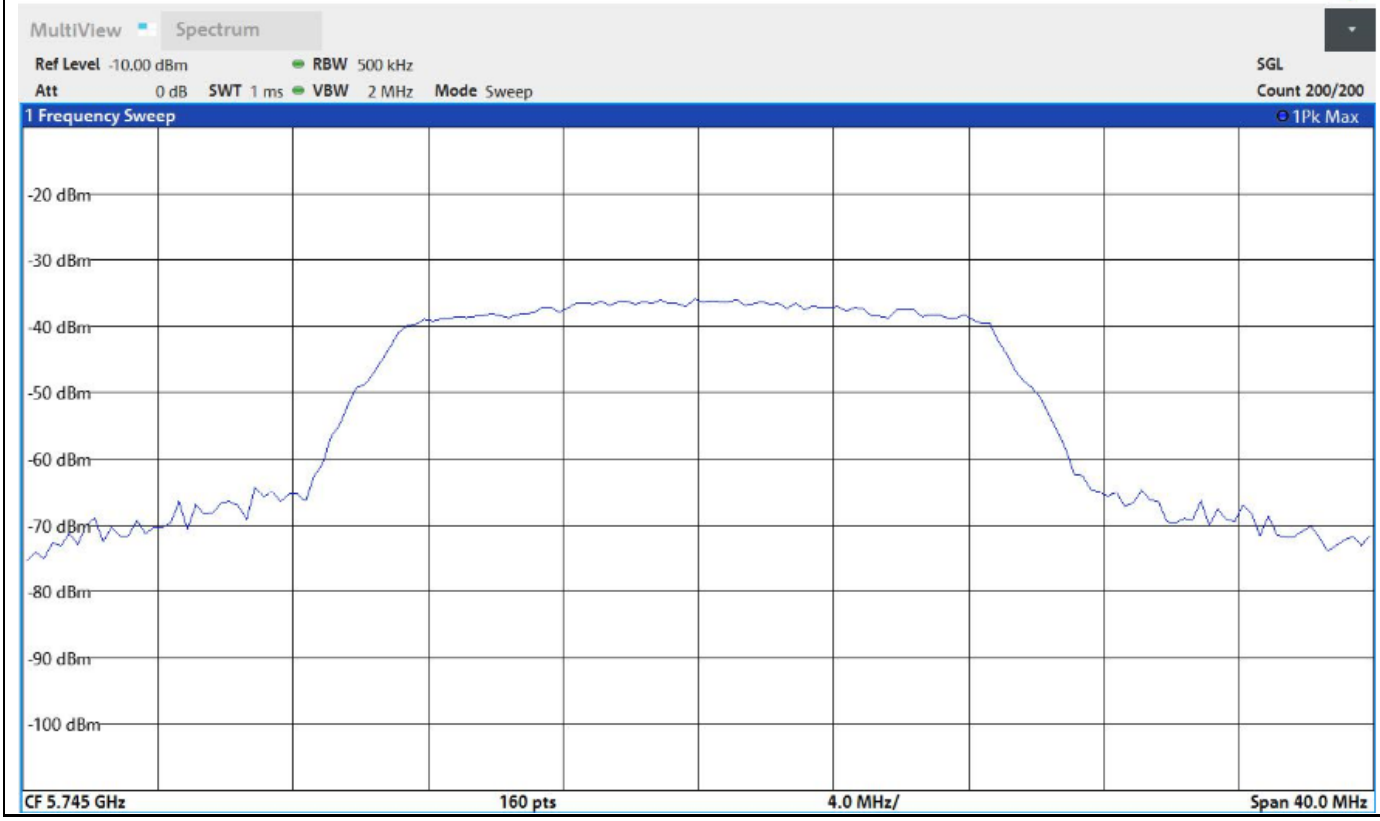
802.11n (HT20) 5745MHz MCS0





802.11ac (VHT20) 5745MHz MCS0





- **Radiated Testing**

Test Summary

Start: 8/6/2021	End: 8/25/2021	Temperature: 24°C Humidity: 48%	Initials: RP

DUT S/N	AH20110901-HAR-279-08		DUT Operating Mode		WLAN 5GHz
Comment					
Antenna	Frequency Range	Polarization	Result Over/Under Limit		Notes
Loop	9kHz-30MHz	Parallel	☐Over	☒Under	√
		Perpendicular	☐Over	☒Under	√
		Ground-Parallel	☐Over	☒Under	√
Log Periodic	30MHz-1GHz	Horizontal	☐Over	☒Under	√
		Vertical	☐Over	☒Under	√
Horn	1GHz-18GHz	Horizontal	☐Over	☒Under	√
		Vertical	☐Over	☒Under	√
Horn	18GHz-40GHz	Horizontal	☐Over	☒Under	√
		Vertical	☐Over	☒Under	√

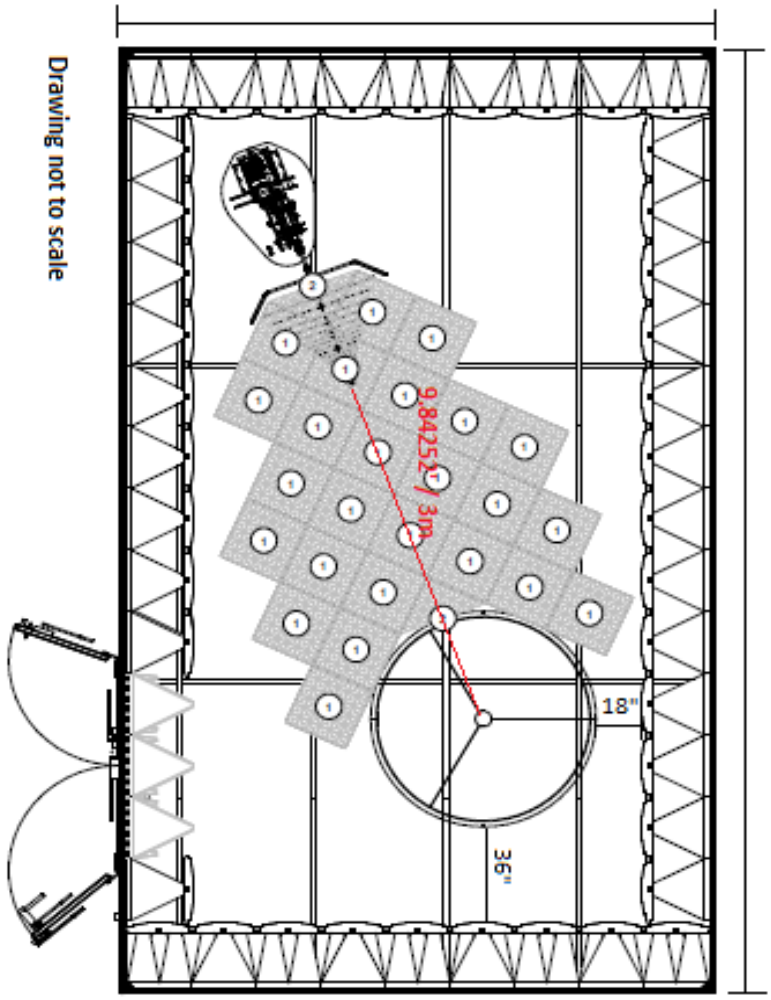
Notes: √ meets the requirements of the acceptance criteria.

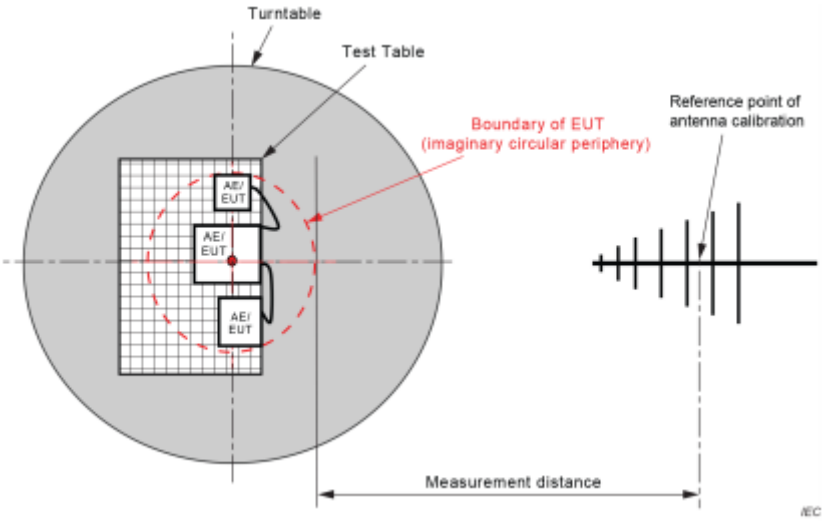
Test Setup

Semi-Anechoic Chamber Test Site-3 meter

Chamber Location	815 N Opdyke Rd Auburn Hills, Michigan 48326
Chamber Manufacturer:	ETS-Lindgren
Chamber Type	Semi-Anechoic
Model	FACT™ 3-2.0 Plus
Chamber Dimensions (L x W x H)	18'x18'x30'
Quiet Zone Diameter	2.0 meters
Quiet Zone Test Heights	1 & 2 meters (front only)
Test Distance	3.0 meters
Test Frequency Range	1-40 GHz
Measured Performance	4.87 dB Site *s*VSWR
Test Completion	December 18th, 2019

Chamber Dimensions




Turntable
Test Table
Boundary of EUT
(imaginary circular periphery)
Reference point of
antenna calibration
AE/
EUT
AE/
EUT
AE/
EUT
Measurement distance
IEC

Test Equipment Used

ID #	Equipment	Manufacturer	Model	Serial #	Cal Due
BVD0011	Loop Antenna 9kHz-30MHz	Rohde & Schwarz	FMZB1519B	145	3/23/2022
BVD0021	UltraLog Antenna 30-6000 MHz	Rohde & Schwarz	HL562E	101113	7/22/2021
BVD0069	Bore Sight Tower	ETS	2171B	226732	N/A
BVD0111	3 Meter Anechoic Chamber	ETS	N/A	N/A	10/16/2022
BVD0118	Antenna Mast Position Controller	ETS	7006-001	00214778/ 00214648	N/A
BVD0165	Multimeter	Fluke	287	46320228	2/26/2022
BVD0184	Preamplifier 29dB 1-18GHz	Rohde & Schwarz	TS-PR18	101646	4/26/2022
BVD0185	Preamplifier 45dB 18-40GHz	Rohde & Schwarz	TS-PR1840	100064	3/2/2022
BVD0190	Preamplifier 25dB 30MHz-8GHz	Rohde & Schwarz	TS-PR8	102351	3/5/2022
BVD0218	Receiver 2Hz-44GHz	Rohde & Schwarz	ESW44	101870	9/25/2021
BVD0247	Turn Table	ETS	920250	N/A	N/A
BVD0258	Optima 12V Blue top Marine battery	Optima	D34M	N/A	N/A
BVD0267	Double Ridge Waveguide 800MHz-18GHz	Rohde & Schwarz	HF907	102832	8/28/2021
BVD0307	Optima 12V Blue top Marine battery	Optima	D34M	N/A	N/A
BVD0320	18-40GHz Horn Antenna	L3 Narda ATM	PNR 180-442-KF	136164-01	3/8/2022
BVD0323	Foam Test Table For 3 Meter Chamber	ETS-Lindgren	LDT-1.5	N/A	N/A
BVD0394	Double Shielded N-Type Cable 6.9 Meter	Rohde & Schwarz	N-Type	N/A	12/29/2022
BVD0398	Double Shielded N-Type Cable 2 Meter	Rohde & Schwarz	N-Type	N/A	12/29/2022
BVD0407	Double Shielded N-Type Cable 410mm (For PreAmp)	Rohde & Schwarz	N-Type	N/A	8/5/2022
BVD0480	Band Reject Filter 50dB from 2400 to 2500MHz	Micro-Tronics	BRM50702	G482	N/A
BVD0481	Band Reject Filter 40dB from 5150 to 5880MHz	Micro-Tronics	BRM50716	G336	N/A
N/A	Support Laptop	Lenovo	E560	LW10USA UH01ABU D	N/A

Equipment List (Software)

Equipment	Manufacturer	Model	Version No.
EMC Test Software	Nexio	BAT-EMC	3.20.0.21

Customer Supplied Equipment

ID #	Equipment	Manufacturer	Model	Serial #	Version No.
N/A	Display	Harman	N/A	1683	N/A
N/A	Display Harness	Harman	N/A	N/A	N/A
N/A	Bluetooth LAN	Harman	N/A	84375197	N/A
N/A	Antenna	Harman	N/A	20072	N/A
N/A	Blue Molex Connector Harness	Harman	N/A	N/A	N/A
N/A	DUT 1M Harness	Harman	N/A	N/A	N/A
N/A	USB to DUT Harness	Harman	N/A	102161025	N/A

Radiated Emissions

Radiated emissions were maximized by rotating the EUT and its external antenna around Horizontal and vertical Polarizations.

Test Plots

Uncertainty

Radiated Emissions (30MHz to 18GHz)

Test Engineer: Ryan Phillips

The test is to measure the radiated emissions of the EUT. Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- NSA Calibration
- Etc., details see the below table

30MHz to 1GHZ

Source of Uncertainty	Value(dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
Antenna Factor	0.65	Normal	2	1	0.325
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch Filter - Receiver	0.25	U-Shape	2.449	1	0.1768033
NSA Calibration	4.0	Triangular	1.414	1	1.633332
ETS Foam Table (LDT-1.5)	1.8	Rectangular	1.732	1	1.039261
Combined Standard Uncertainty (square root of the sum of the squares)					2.113781
Expanded Uncertainty (K=2)					**4.227562**

The total derived measurement uncertainty is +/- 4.228 dB

1GHz to 40GHz

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105000
Filter Insertion Loss	0.25	Normal	2	1	0.125000
Antenna Factor	0.65	Normal	2	1	0.325000
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.866051
PRF Response	1.5	Rectangular	1.732	1	0.866051
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.176803
VSWR Calibration	2.0	Triangular	2.449	1	0.816659
ETS Foam Table (LDT-1.5)	1.8	Rectangular	1.732	1	1.039261
Combined Standard Uncertainty (square root of the sum of the squares)					1.869213
Expanded Uncertainty (K=2)					**3.738426**

The total derived measurement uncertainty is +/- 3.738 dB.

Remarks:

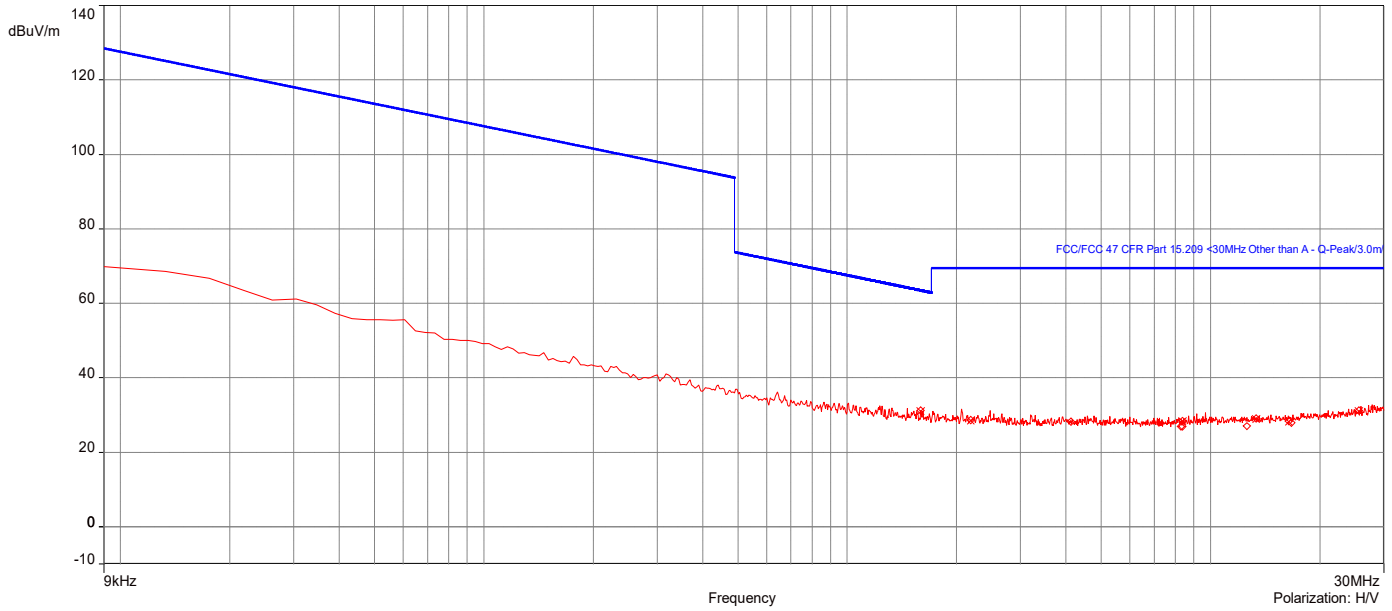
1. Raw Peak Level (dBuV/m) = Level Peak Reading - Correction Factor
2. Correction Factor (dB) = Antenna Factor + Cable Loss – Preamplifier Gain
3. Margin = Level – Limit

AH20110901-HAR-279-08_5G UNII-1_802.11a_Ch 36_9kHz-30MHz_Ground-Parallel

8/25/2021 18:54:40

No	Frequency	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBuV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	1.594465MHz	31.24	19.14	63.55	-32.31	1.00	316.10	H/V	Passed
2.	2.190086MHz	28.64	19.10	69.54	-40.90	1.00	144.60	H/V	Passed
3.	8.38197MHz	28.49	19.14	69.54	-41.06	1.00	25.00	H/V	Passed
4.	13.361187MHz	29.11	19.61	69.54	-40.43	1.00	316.10	H/V	Passed
5.	16.420706MHz	28.36	19.70	69.54	-41.18	1.00	351.30	H/V	Passed
6.	25.599263MHz	31.23	20.70	69.54	-38.32	1.00	220.00	H/V	Passed

Overall Graphs:

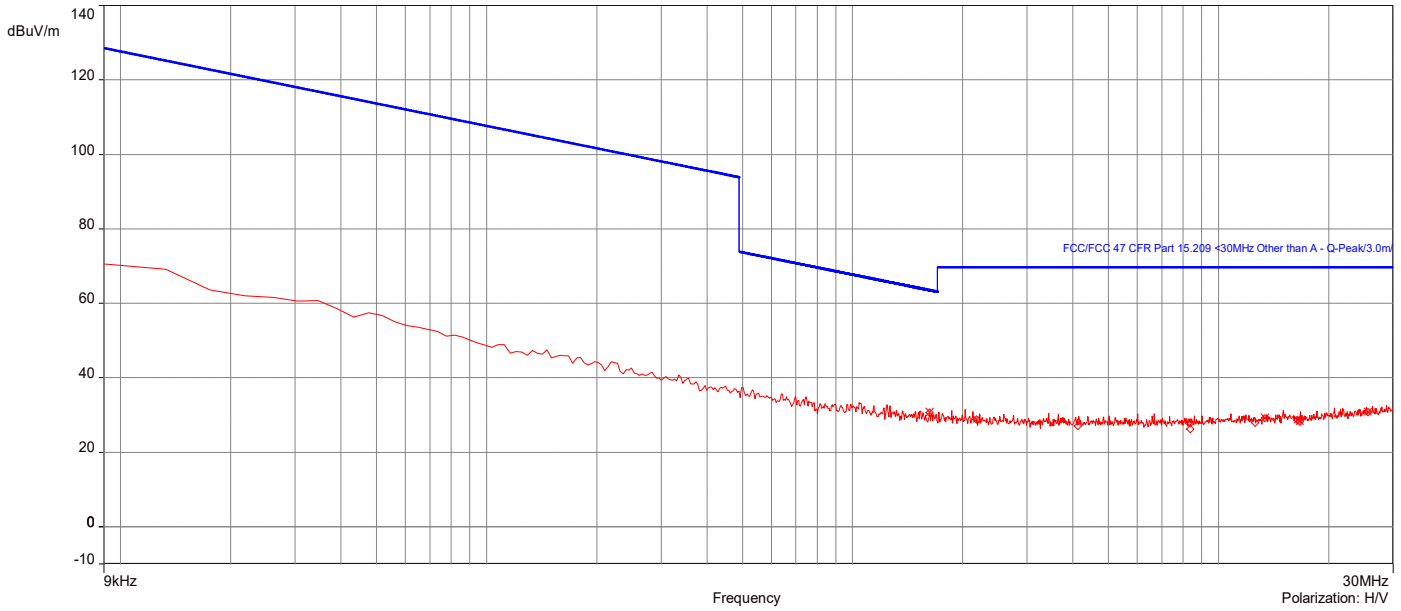


AH20110901-HAR-279-08_5G UNII-1_802.11a_Ch 36_9kHz-30MHz_Parallel

8/25/2021 18:52:39

No	Frequency	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBuV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	1.62446MHz	30.69	19.13	63.39	-32.70	1.00	97.30	H/V	Passed
2.	2.181516MHz	28.76	19.10	69.54	-40.79	1.00	130.10	H/V	Passed
3.	13.408322MHz	29.21	19.62	69.54	-40.33	1.00	41.00	H/V	Passed
4.	16.420706MHz	28.68	19.70	69.54	-40.86	1.00	329.40	H/V	Passed
5.	16.694949MHz	28.16	19.70	69.54	-41.38	1.00	52.70	H/V	Passed
6.	25.612118MHz	30.85	20.70	69.54	-38.69	1.00	264.70	H/V	Passed

Overall Graphs:

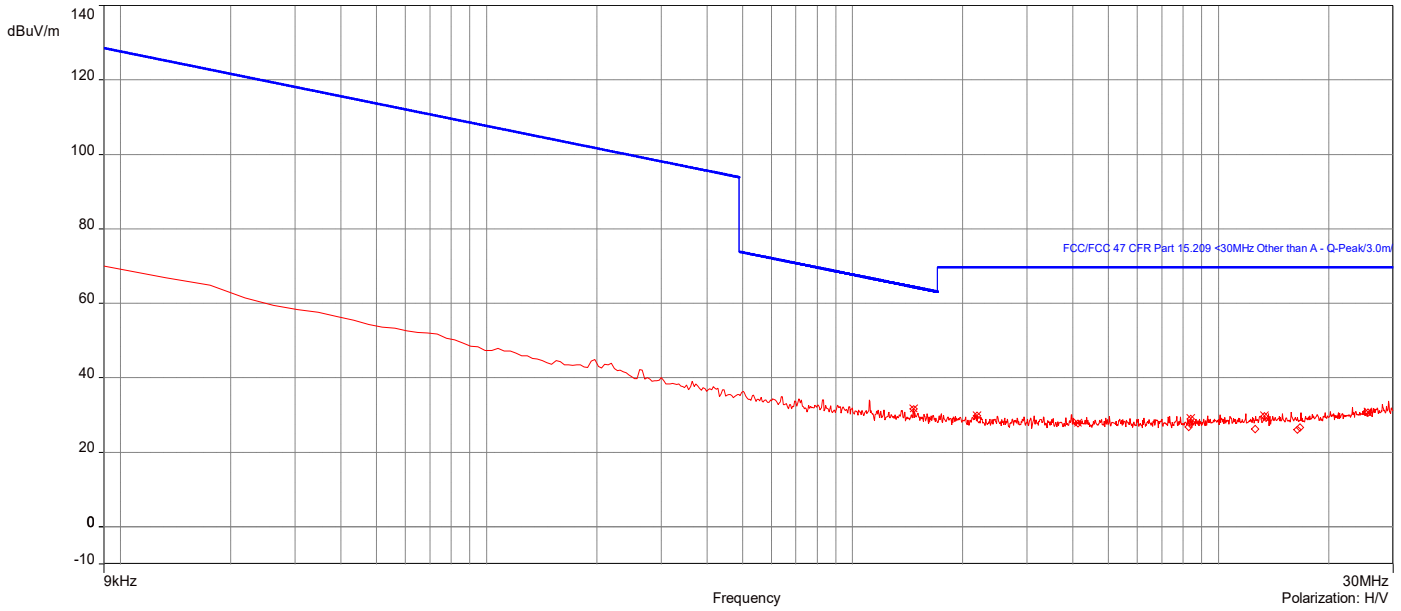


AH20110901-HAR-279-08_5G UNII-1_802.11a_Ch 36_9kHz-30MHz_Perpendicular

8/25/2021 18:57:19

No	Frequency	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBuV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	1.470199MHz	31.63	19.15	64.26	-32.63	1.00	317.10	H/V	Passed
2.	2.190086MHz	29.78	19.10	69.54	-39.76	1.00	150.50	H/V	Passed
3.	4.126924MHz	27.79	19.21	69.54	-41.75	1.00	3.00	H/V	Passed
4.	8.386255MHz	28.99	19.14	69.54	-40.55	1.00	296.50	H/V	Passed
5.	13.361187MHz	29.58	19.61	69.54	-39.96	1.00	257.40	H/V	Passed
6.	25.582123MHz	30.63	20.70	69.54	-38.91	1.00	60.80	H/V	Passed

Overall Graphs:

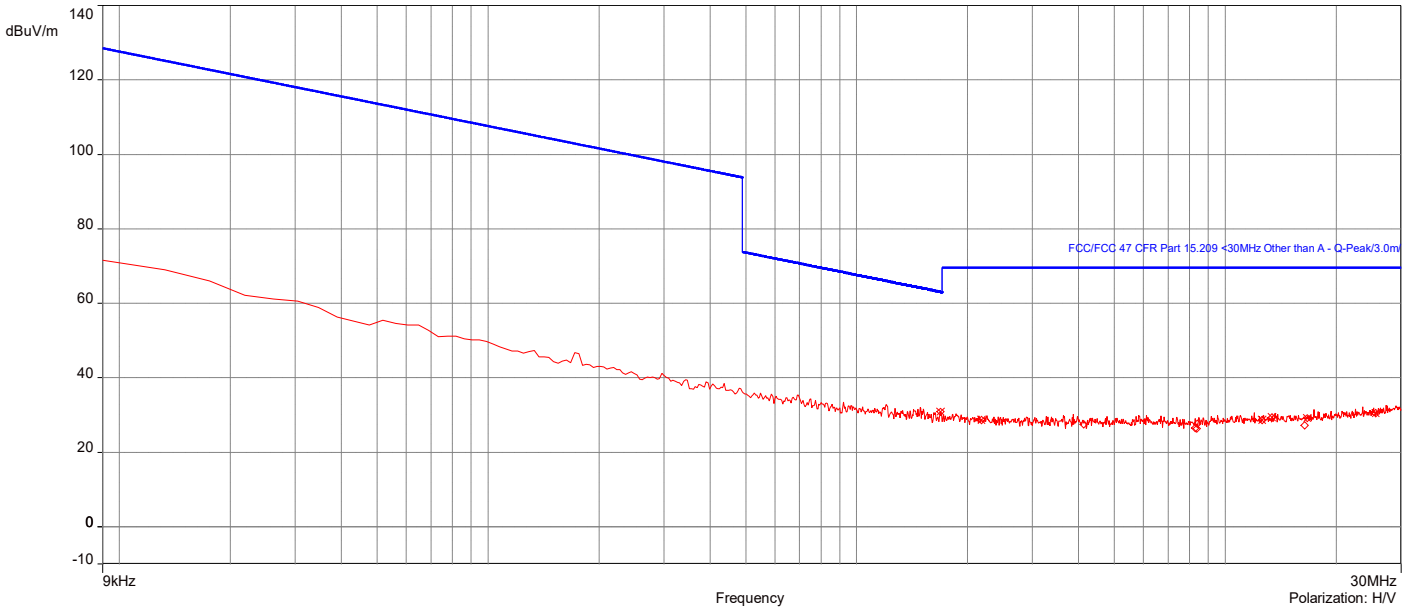


AH20110901-HAR-279-08_5G UNII-3_802.11a_Ch 157_9kHz-30MHz_Ground-Parallel

8/25/2021 21:38:09

No	Frequency	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBuV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	1.688736MHz	30.98	19.13	63.05	-32.07	1.00	42.40	H/V	Passed
2.	2.181516MHz	28.65	19.10	69.54	-40.89	1.00	204.00	H/V	Passed
3.	12.577024MHz	28.71	19.57	69.54	-40.83	1.00	33.90	H/V	Passed
4.	13.395467MHz	29.32	19.62	69.54	-40.23	1.00	61.20	H/V	Passed
5.	16.694949MHz	29.22	19.70	69.54	-40.32	1.00	61.20	H/V	Passed
6.	25.560698MHz	30.49	20.69	69.54	-39.05	1.00	275.60	H/V	Passed

Overall Graphs:

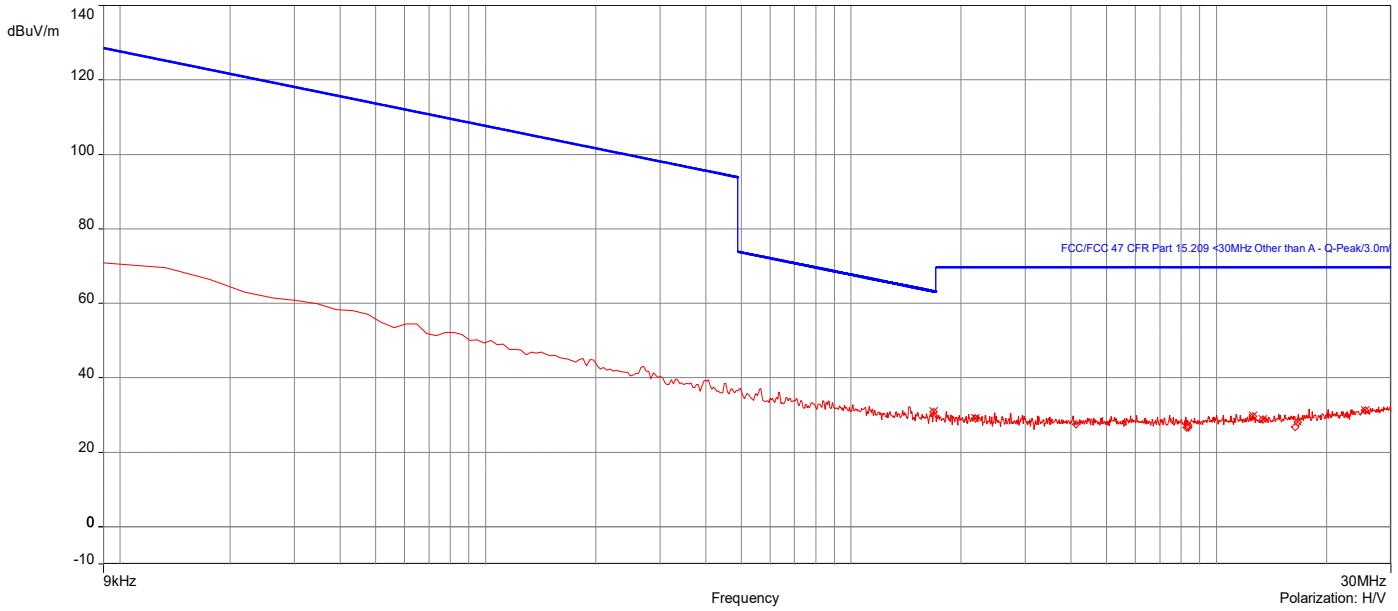


AH20110901-HAR-279-08_5G UNII-3_802.11a_Ch 157_9kHz-30MHz_Parallel

8/25/2021 21:36:10

No	Frequency	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBuV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	1.684451MHz	30.95	19.13	63.07	-32.13	1.00	345.00	H/V	Passed
2.	2.190086MHz	29.13	19.10	69.54	-40.41	1.00	30.20	H/V	Passed
3.	12.577024MHz	29.64	19.57	69.54	-39.91	1.00	285.10	H/V	Passed
4.	13.382612MHz	28.74	19.61	69.54	-40.80	1.00	294.00	H/V	Passed
5.	16.694949MHz	28.10	19.70	69.54	-41.45	1.00	249.20	H/V	Passed
6.	25.530703MHz	31.26	20.69	69.54	-38.28	1.00	237.00	H/V	Passed

Overall Graphs:

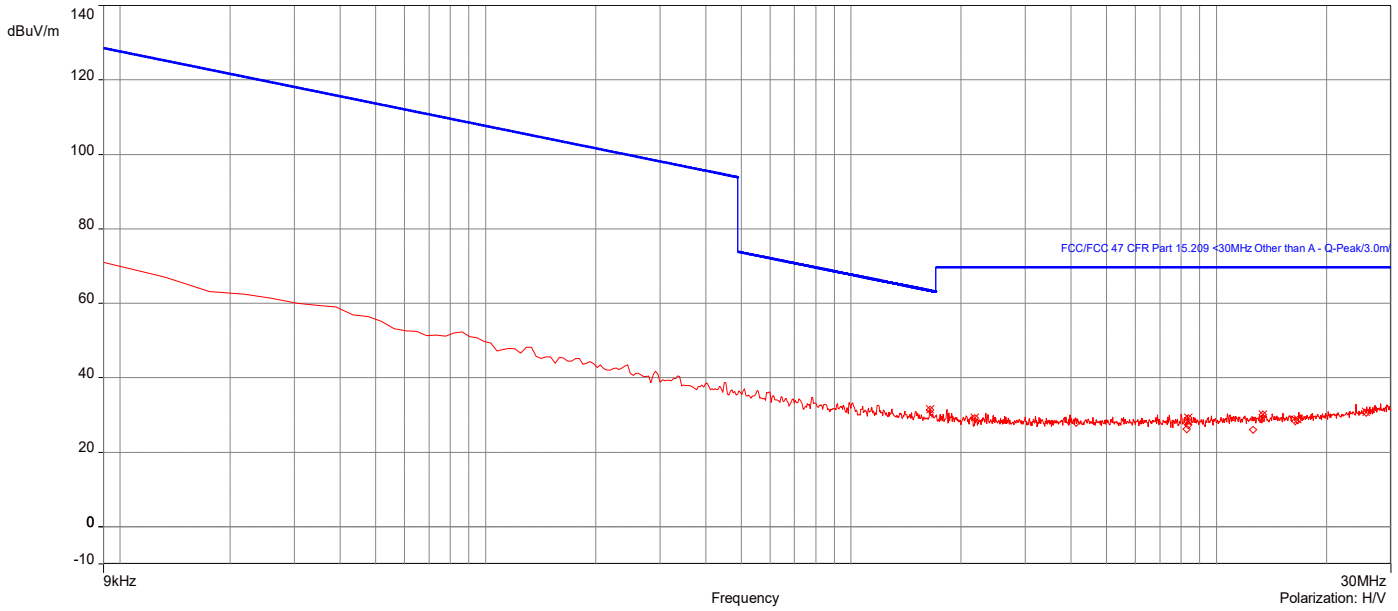


AH20110901-HAR-279-08_5G UNII-3_802.11a_Ch 157_9kHz-30MHz_Perpendicular

8/25/2021 21:40:42

No	Frequency	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBuV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	1.645886MHz	31.36	19.13	63.28	-31.92	1.00	232.60	H/V	Passed
2.	2.177231MHz	29.22	19.10	69.54	-40.32	1.00	321.60	H/V	Passed
3.	8.364829MHz	29.21	19.14	69.54	-40.33	1.00	356.80	H/V	Passed
4.	13.399752MHz	30.15	19.62	69.54	-39.39	1.00	166.20	H/V	Passed
5.	16.694949MHz	28.68	19.70	69.54	-40.87	1.00	328.20	H/V	Passed
6.	25.642114MHz	30.71	20.70	69.54	-38.83	1.00	358.90	H/V	Passed

Overall Graphs:

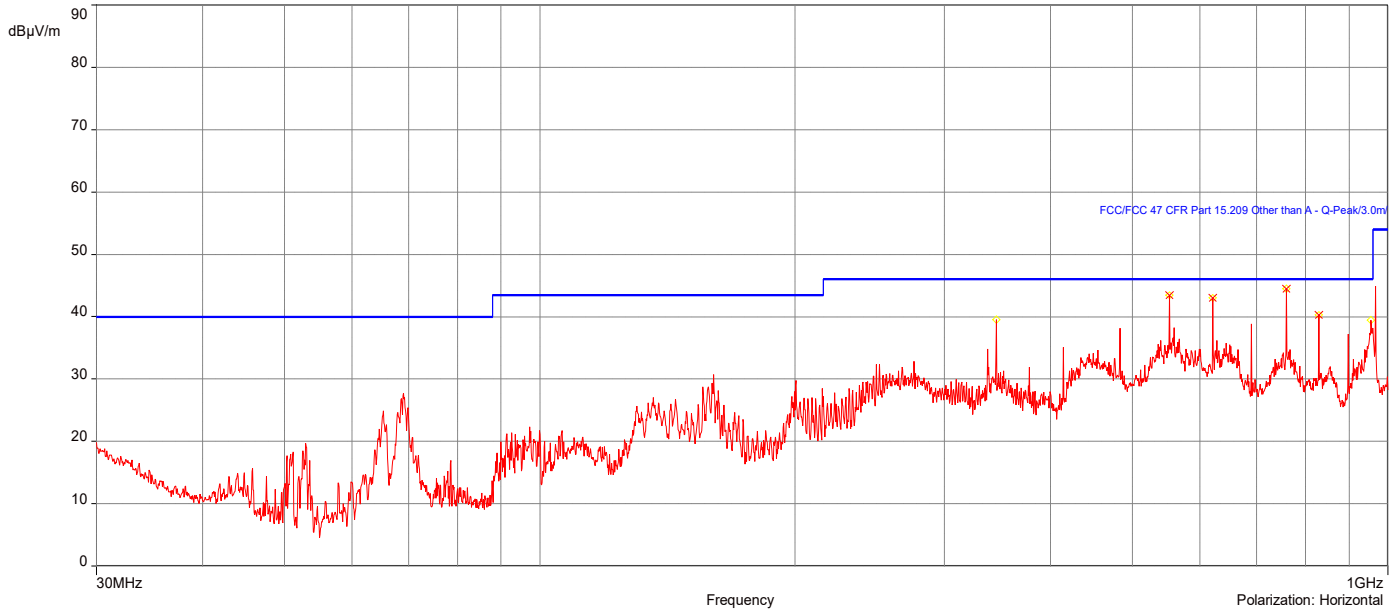


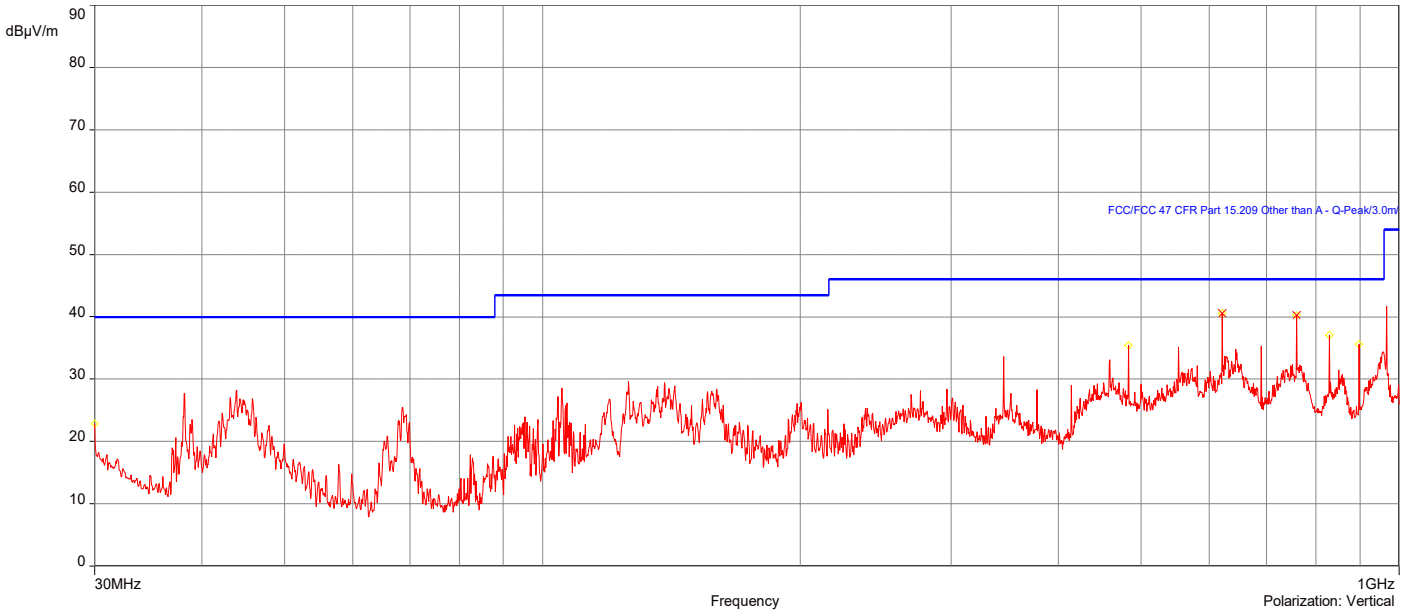
AH20110901-HAR-279-08_5G UNII-1 802.11ac(VHT20)_Ch 36_30MHz-1GHz

8/20/2021 14:25:51

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
7.	759.59704MHz	44.50	-1.84	46.00	-1.50	2.50	335.00	Horizontal	Passed
8.	552.40426MHz	43.43	-5.30	46.00	-2.57	2.00	0.10	Horizontal	Passed
9.	621.4495MHz	43.06	-3.74	46.00	-2.94	2.00	212.40	Horizontal	Passed
10.	621.50656MHz	40.58	-4.78	46.00	-5.42	2.00	333.00	Vertical	Passed
11.	759.59704MHz	40.32	-2.94	46.00	-5.68	1.50	350.40	Vertical	Passed
12.	828.64227MHz	40.29	-0.51	46.00	-5.71	1.50	169.10	Horizontal	Passed

Overall Graphs:



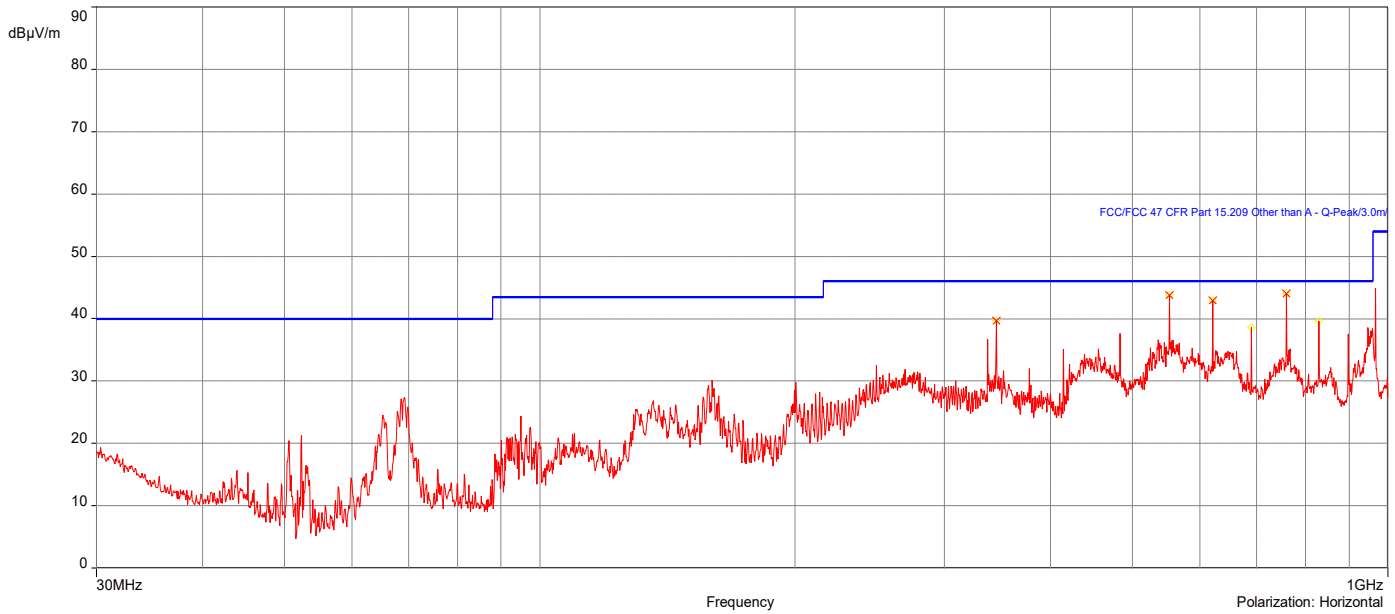

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
1GHz
Frequency
Polarization: Vertical

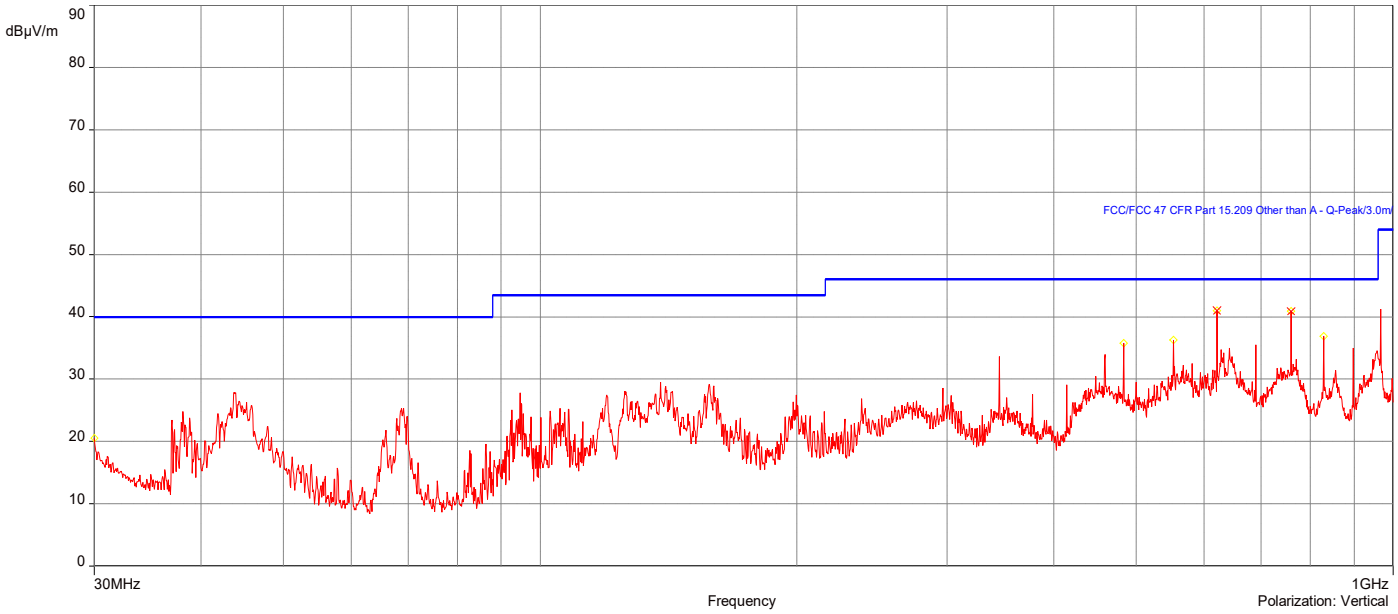
AH20110901-HAR-279-08_5G UNII-1 802.11ac(VHT20)_Ch 40_30MHz-1GHz

8/20/2021 14:46:01

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	44.09	-1.84	46.00	-1.91	2.50	336.90	Horizontal	Passed
2.	552.40426MHz	43.81	-5.30	46.00	-2.19	2.00	357.30	Horizontal	Passed
3.	621.50656MHz	42.99	-3.73	46.00	-3.01	2.00	210.20	Horizontal	Passed
4.	621.4495MHz	40.96	-4.78	46.00	-5.04	2.00	329.50	Vertical	Passed
5.	759.59704MHz	40.88	-2.94	46.00	-5.12	1.50	340.40	Vertical	Passed
6.	345.26855MHz	39.69	-9.74	46.00	-6.31	1.00	14.80	Horizontal	Passed

Overall Graphs:



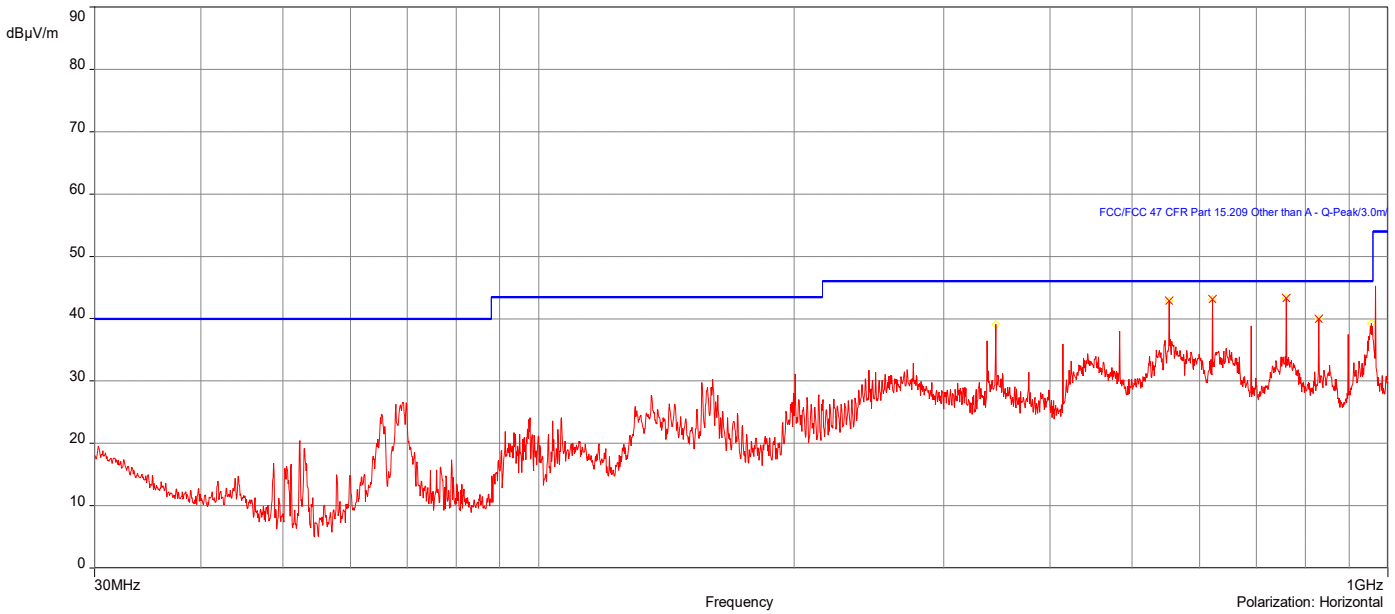

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
Frequency
1GHz
Polarization: Vertical

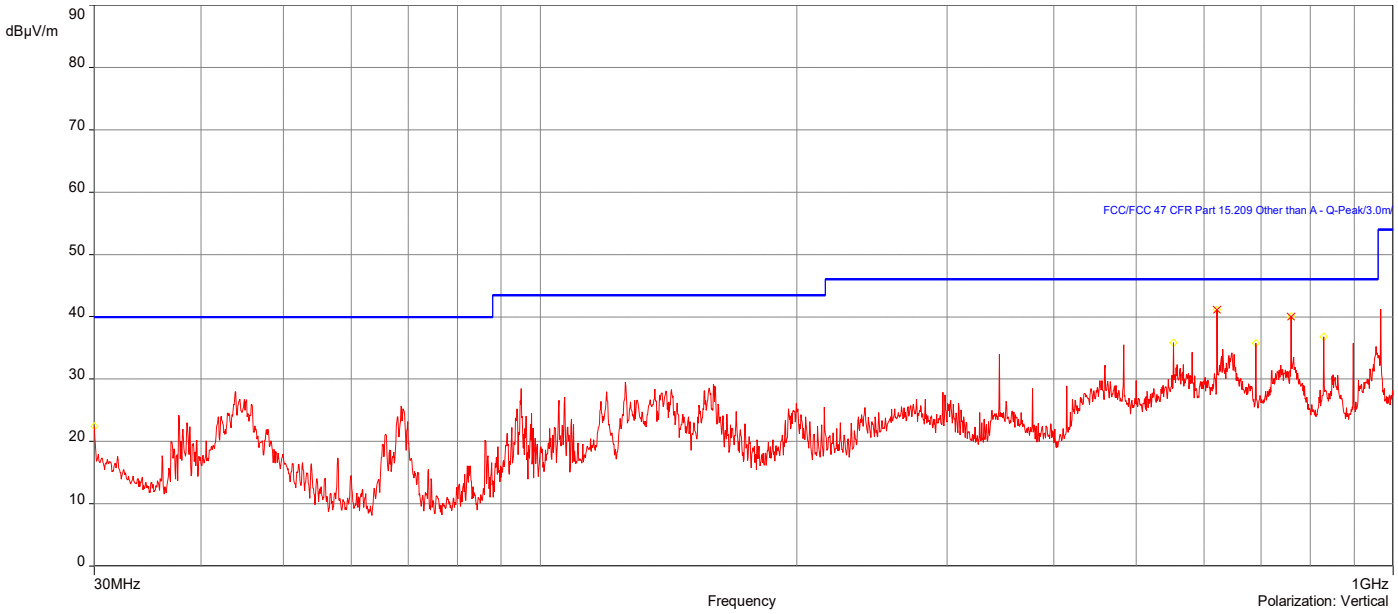
AH20110901-HAR-279-08_5G UNII-1 802.11ac(VHT20)_Ch 48_30MHz-1GHz

8/20/2021 15:09:16

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	43.27	-1.84	46.00	-2.73	2.50	333.80	Horizontal	Passed
2.	621.50656MHz	43.13	-3.73	46.00	-2.87	2.00	206.20	Horizontal	Passed
3.	552.40426MHz	42.83	-5.30	46.00	-3.17	2.00	0.10	Horizontal	Passed
4.	621.50656MHz	41.12	-4.78	46.00	-4.88	2.00	337.30	Vertical	Passed
5.	759.59704MHz	40.06	-2.94	46.00	-5.94	1.50	350.20	Vertical	Passed
6.	828.64227MHz	39.94	-0.51	46.00	-6.06	1.50	100.90	Horizontal	Passed

Overall Graphs:



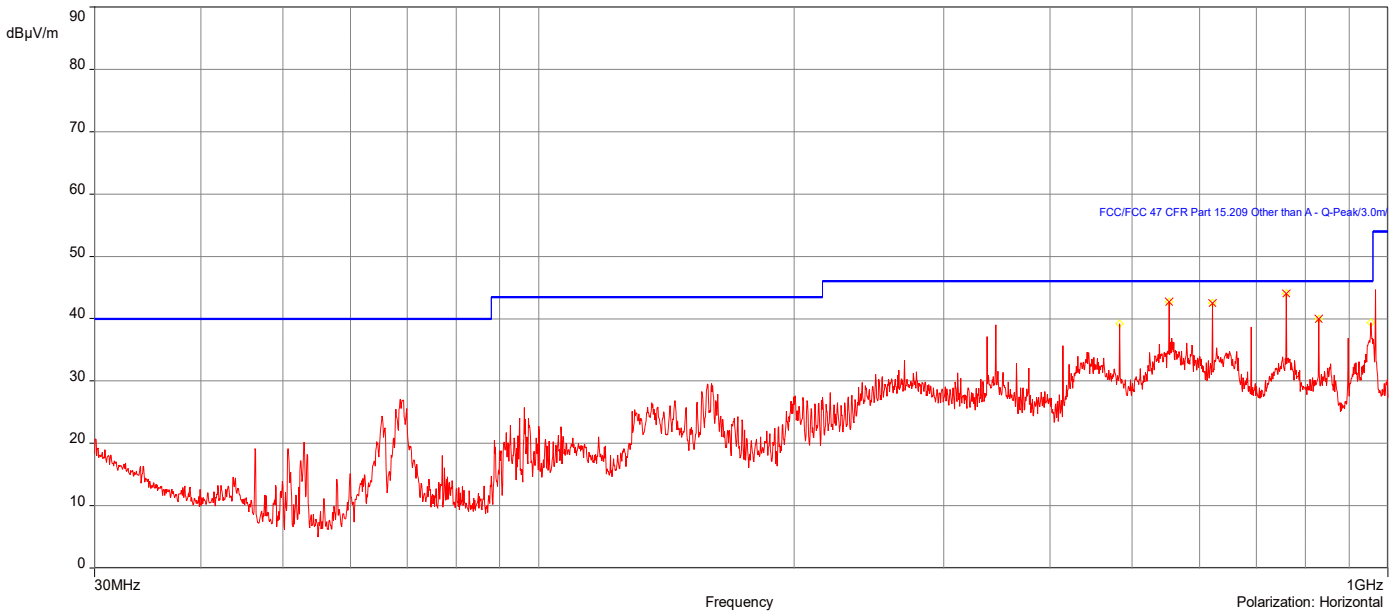

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
Frequency
1GHz
Polarization: Vertical

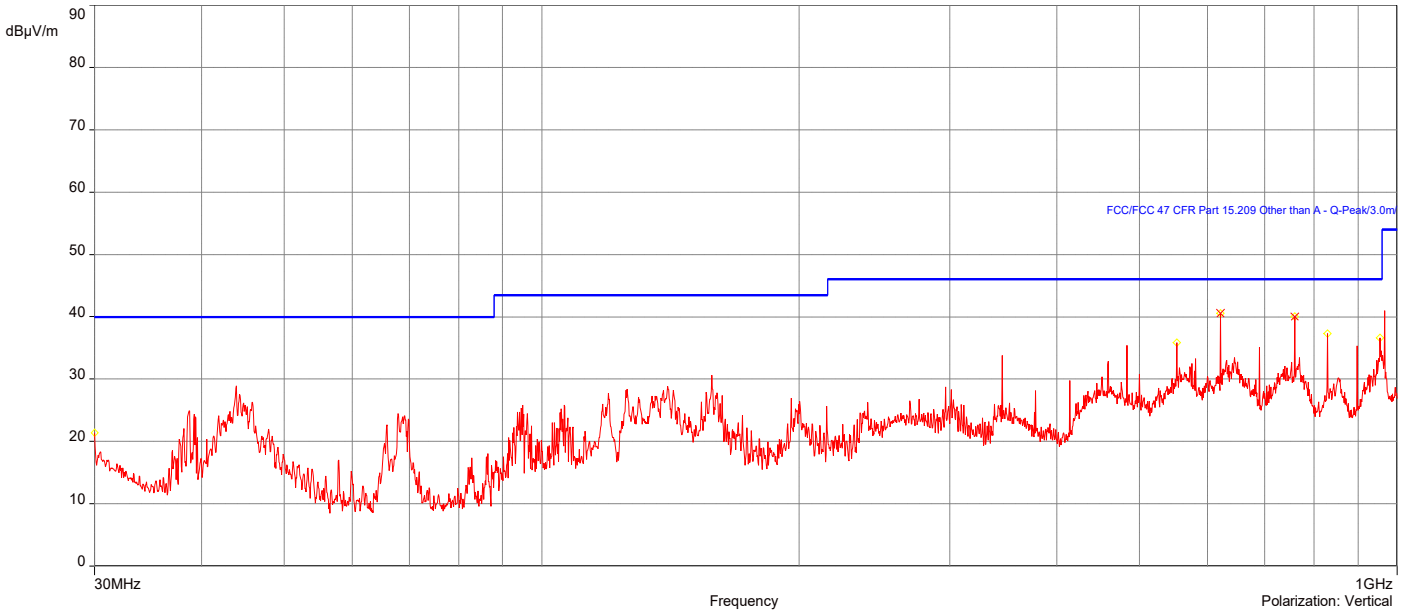
AH20110901-HAR-279-08_5G UNII-1 802.11ac(VHT40)_Ch 38_30MHz-1GHz

8/20/2021 15:26:26

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	44.05	-1.84	46.00	-1.95	2.50	335.40	Horizontal	Passed
2.	552.40426MHz	42.66	-5.30	46.00	-3.34	2.00	0.10	Horizontal	Passed
3.	621.4495MHz	42.51	-3.74	46.00	-3.49	2.00	212.90	Horizontal	Passed
4.	621.4495MHz	40.58	-4.78	46.00	-5.42	2.00	341.60	Vertical	Passed
5.	759.59704MHz	40.07	-2.94	46.00	-5.93	3.00	358.90	Vertical	Passed
6.	828.64227MHz	39.93	-0.51	46.00	-6.07	1.50	98.90	Horizontal	Passed

Overall Graphs:



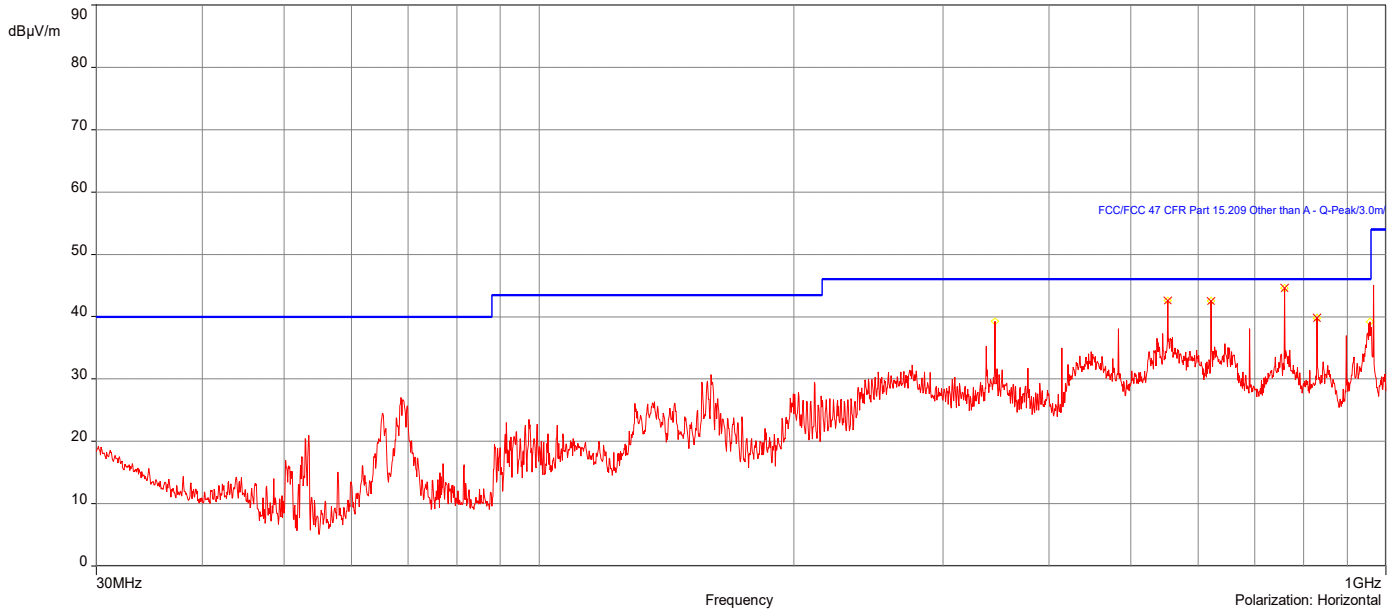

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
1GHz
Frequency
Polarization: Vertical

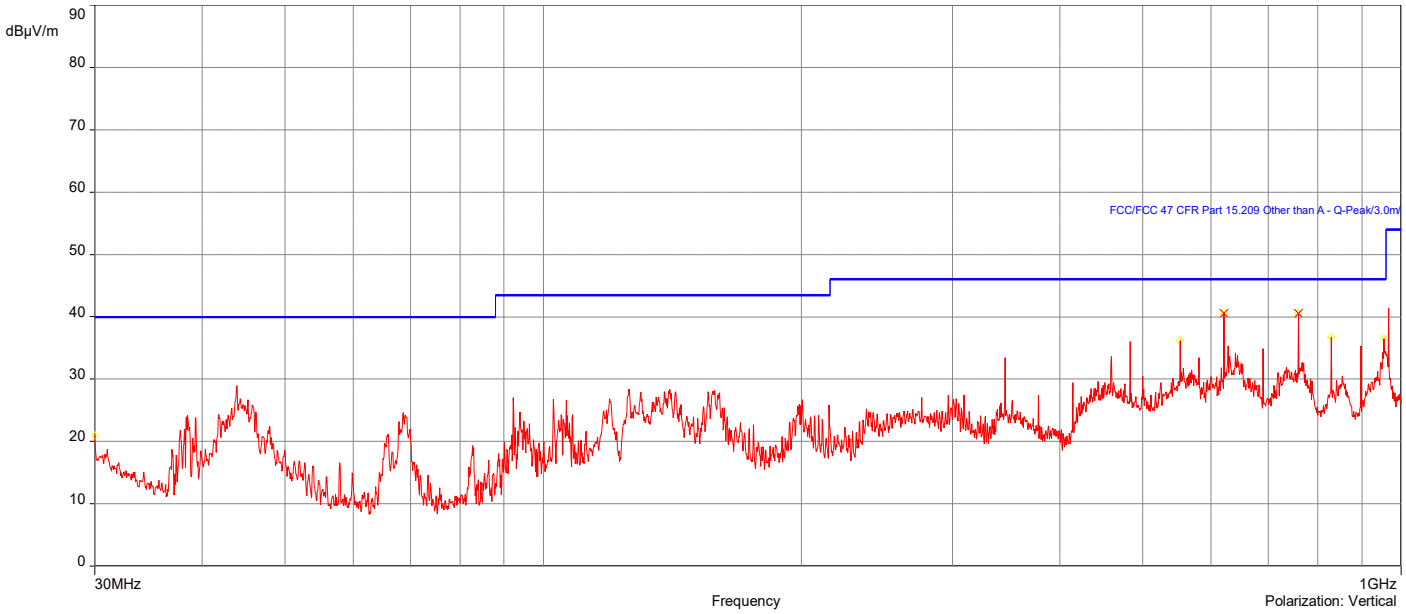
AH20110901-HAR-279-08_5G UNII-1 802.11ac(VHT40)_Ch 46_30MHz-1GHz

8/20/2021 15:44:20

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	44.59	-1.84	46.00	-1.41	2.50	329.60	Horizontal	Passed
2.	552.40426MHz	42.60	-5.30	46.00	-3.40	2.00	358.30	Horizontal	Passed
3.	621.4495MHz	42.56	-3.74	46.00	-3.44	2.00	218.10	Horizontal	Passed
4.	621.4495MHz	40.59	-4.78	46.00	-5.41	2.00	343.20	Vertical	Passed
5.	759.59704MHz	40.59	-2.94	46.00	-5.41	1.50	344.20	Vertical	Passed
6.	828.64227MHz	39.79	-0.51	46.00	-6.21	1.50	102.20	Horizontal	Passed

Overall Graphs:



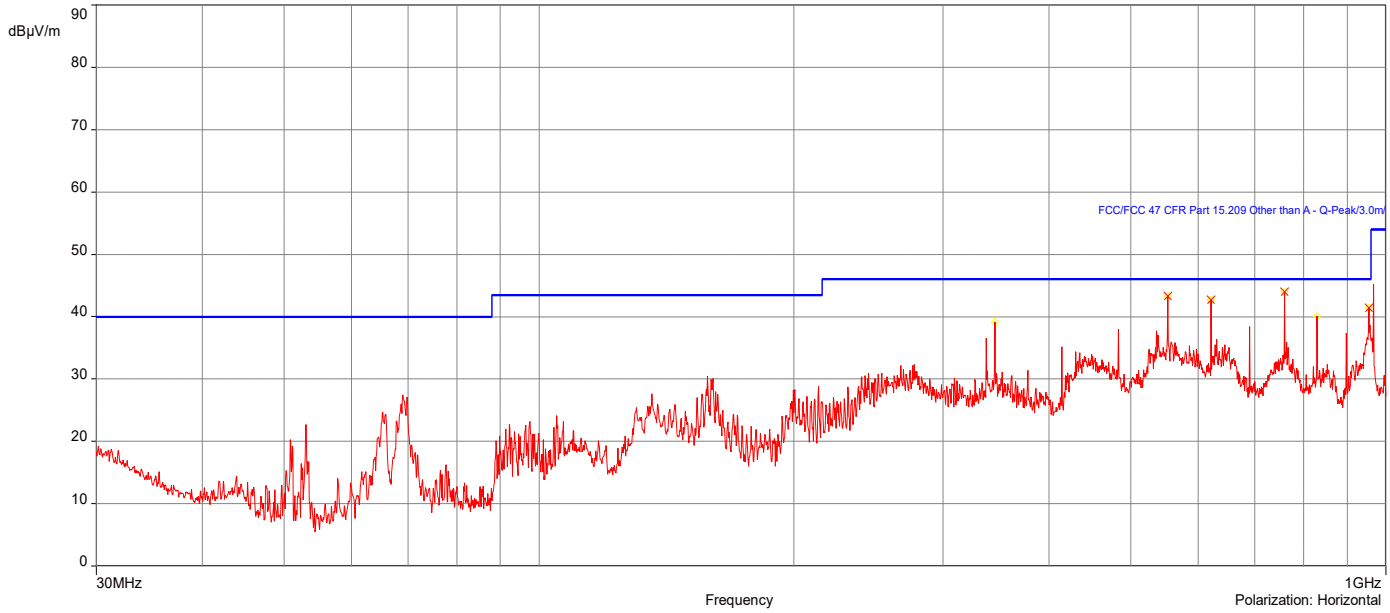

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
1GHz
Frequency
Polarization: Vertical

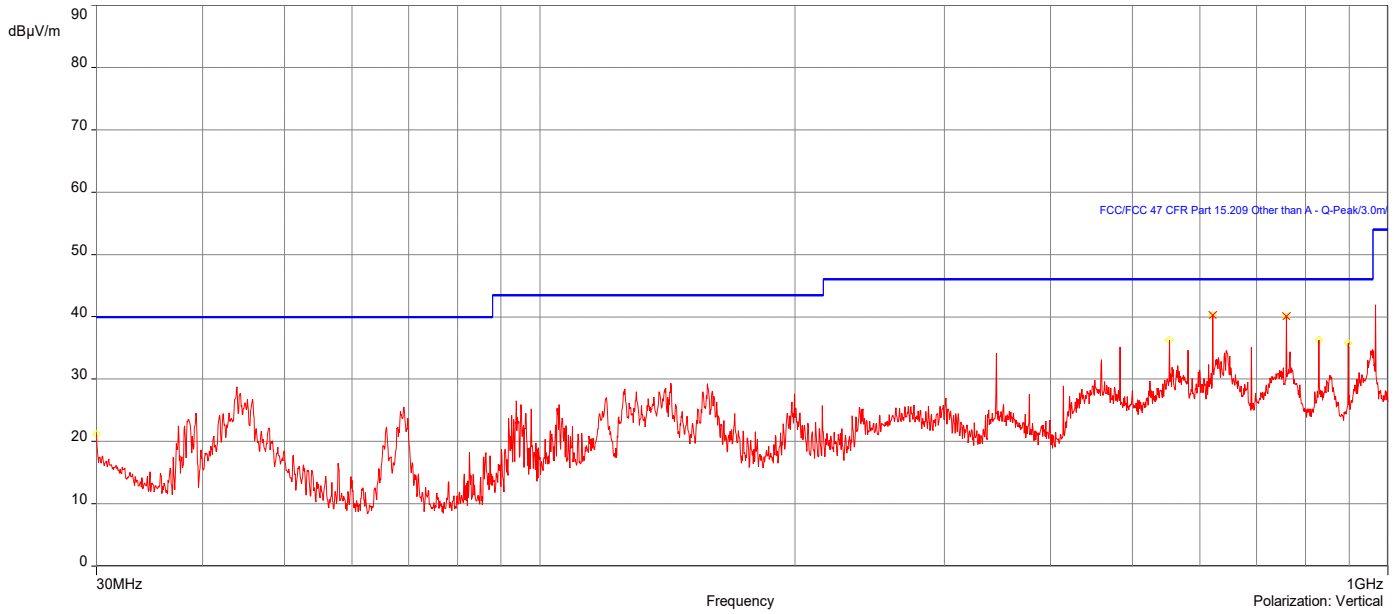
AH20110901-HAR-279-08_5G UNII-1 802.11ac(VHT80)_Ch 42_30MHz-1GHz

8/20/2021 16:00:41

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	43.98	-1.84	46.00	-2.02	2.50	333.70	Horizontal	Passed
2.	552.40426MHz	43.33	-5.30	46.00	-2.67	2.00	0.10	Horizontal	Passed
3.	621.50656MHz	42.67	-3.73	46.00	-3.33	2.00	212.70	Horizontal	Passed
4.	955.54856MHz	41.40	0.65	46.00	-4.60	1.00	317.00	Horizontal	Passed
5.	621.4495MHz	40.28	-4.78	46.00	-5.72	2.00	342.30	Vertical	Passed
6.	759.59704MHz	40.16	-2.94	46.00	-5.84	1.50	355.70	Vertical	Passed

Overall Graphs:



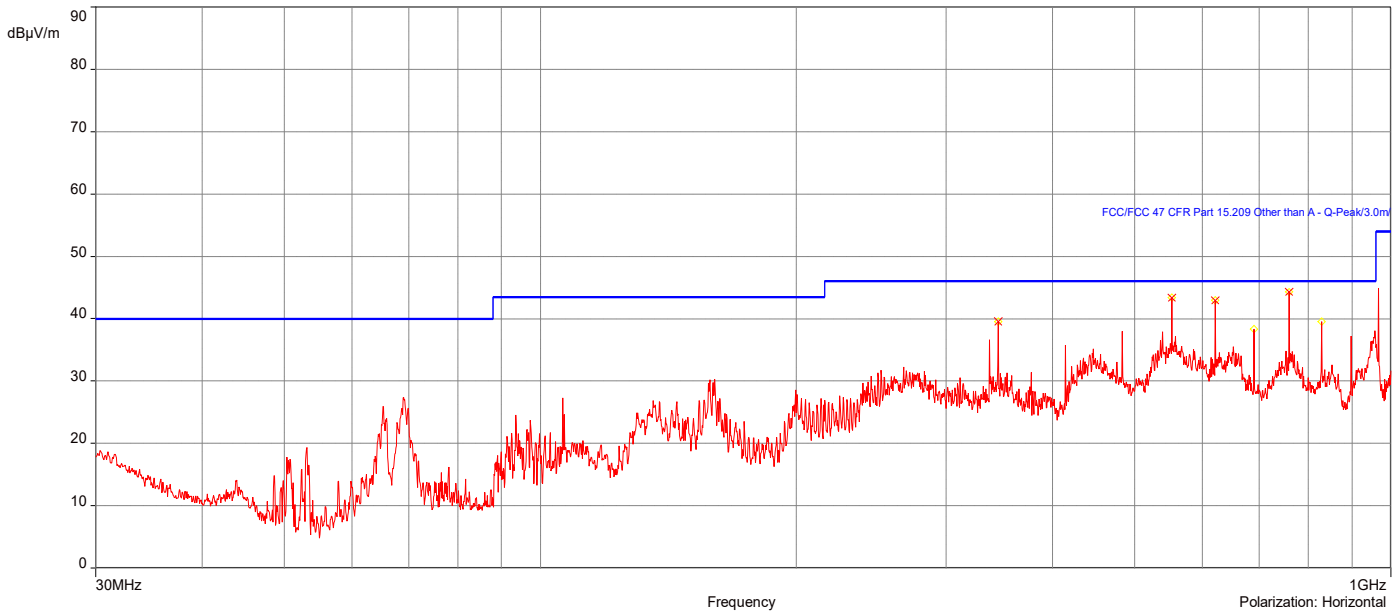

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
Frequency
1GHz
Polarization: Vertical

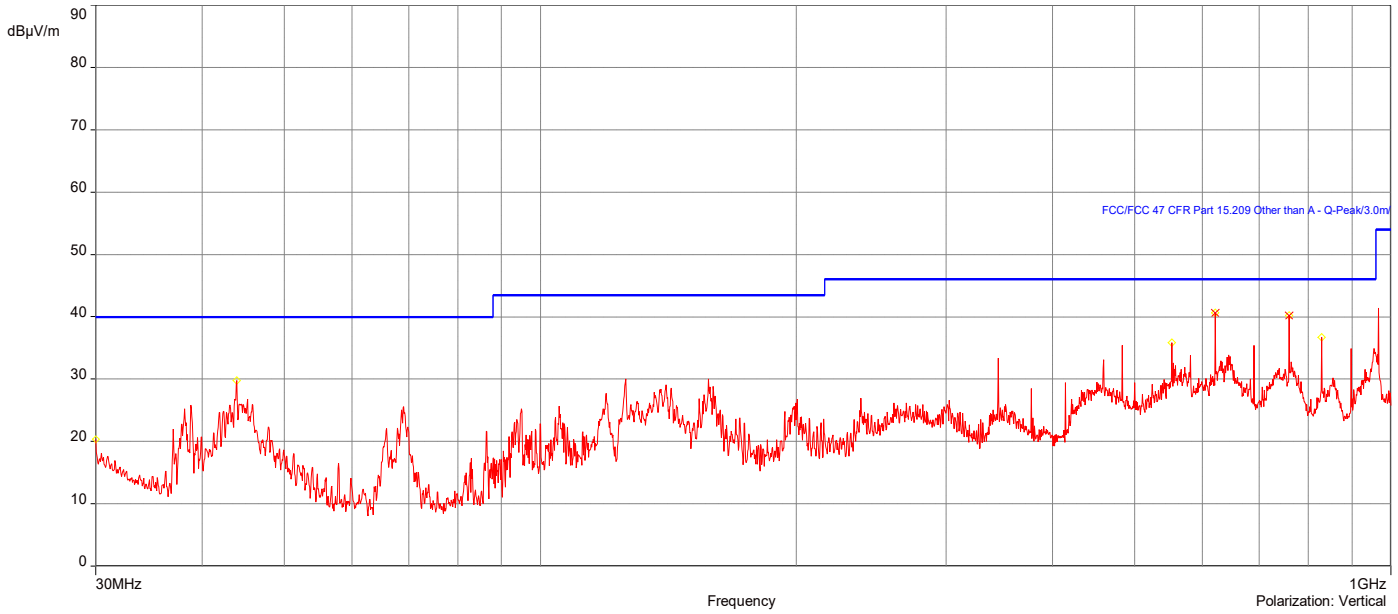
AH20110901-HAR-279-08_5G UNII-3 802.11ac(VHT20)_Ch 149_30MHz-1GHz

8/20/2021 18:27:54

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	44.34	-1.84	46.00	-1.66	2.50	333.40	Horizontal	Passed
2.	552.40426MHz	43.36	-5.30	46.00	-2.64	2.00	0.10	Horizontal	Passed
3.	621.4495MHz	42.92	-3.74	46.00	-3.08	2.00	216.80	Horizontal	Passed
4.	621.4495MHz	40.61	-4.78	46.00	-5.39	2.00	334.30	Vertical	Passed
5.	759.59704MHz	40.19	-2.94	46.00	-5.81	3.00	1.50	Vertical	Passed
6.	345.26855MHz	39.57	-9.74	46.00	-6.43	1.00	21.90	Horizontal	Passed

Overall Graphs:



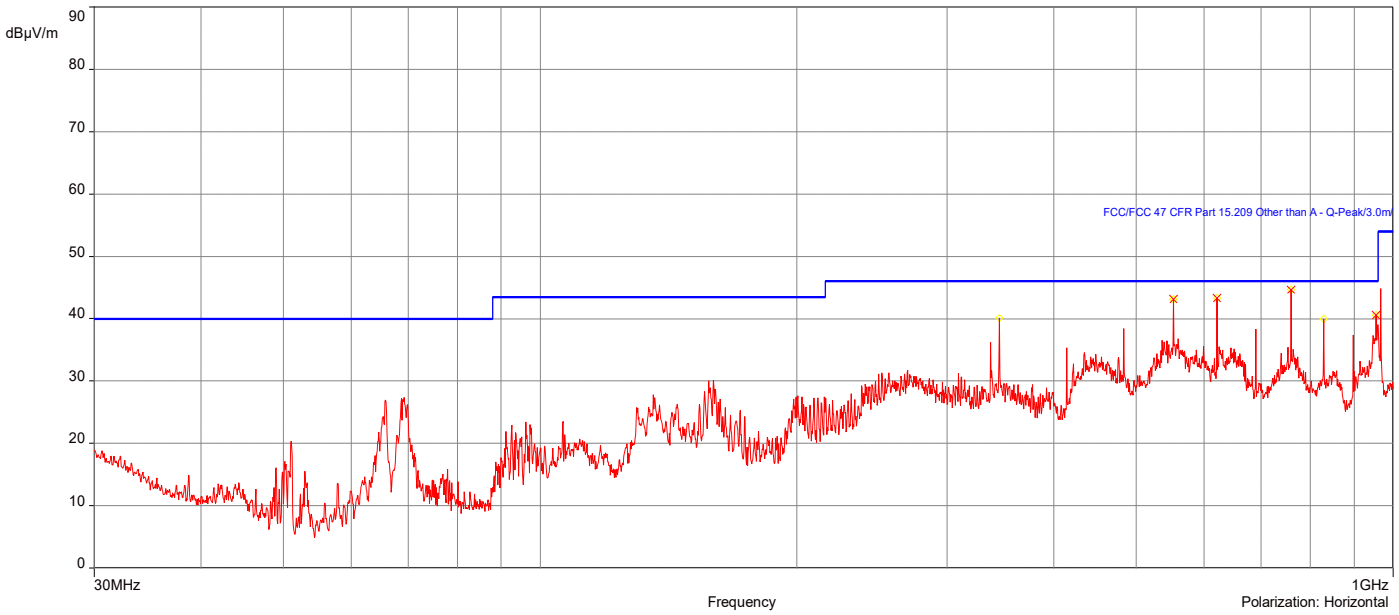

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
1GHz
Frequency
Polarization: Vertical

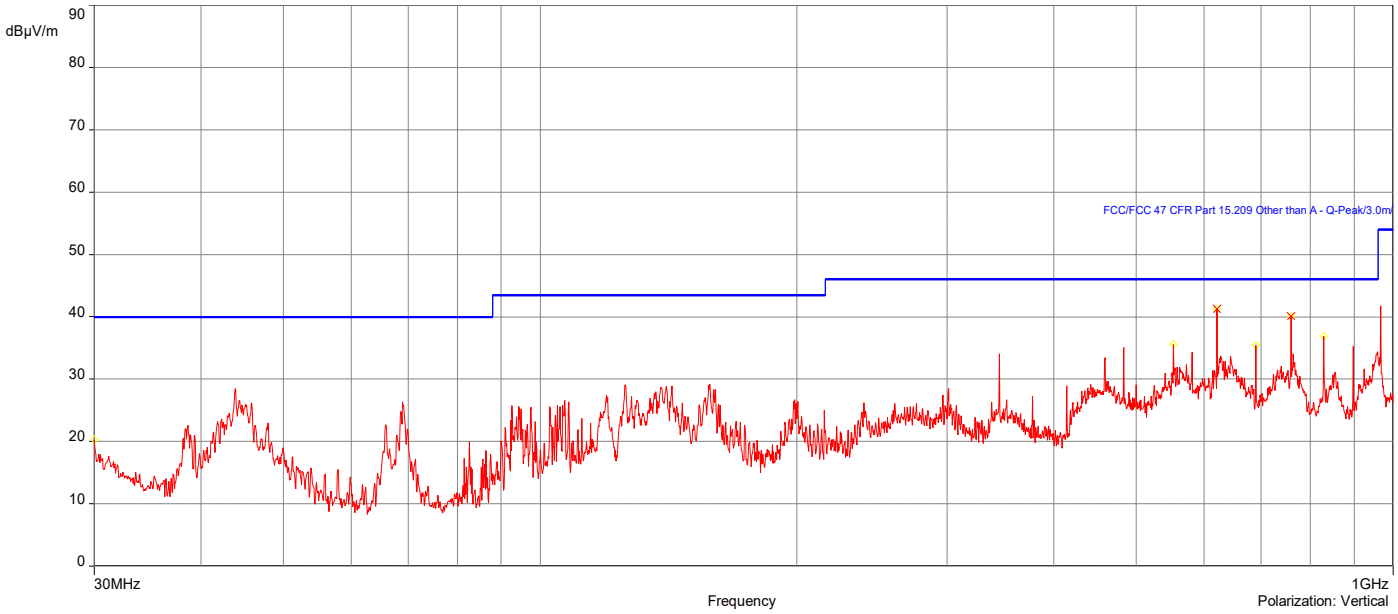
AH20110901-HAR-279-08_5G UNII-3 802.11ac(VHT20)_Ch 157_30MHz-1GHz

8/20/2021 18:45:34

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	44.62	-1.84	46.00	-1.38	2.50	336.80	Horizontal	Passed
2.	621.50656MHz	43.31	-3.73	46.00	-2.69	2.00	213.80	Horizontal	Passed
3.	552.40426MHz	43.15	-5.30	46.00	-2.85	2.00	0.10	Horizontal	Passed
4.	621.4495MHz	41.26	-4.78	46.00	-4.74	2.00	338.60	Vertical	Passed
5.	955.54856MHz	40.54	0.65	46.00	-5.46	1.00	320.00	Horizontal	Passed
6.	759.59704MHz	40.17	-2.94	46.00	-5.83	1.50	352.70	Vertical	Passed

Overall Graphs:



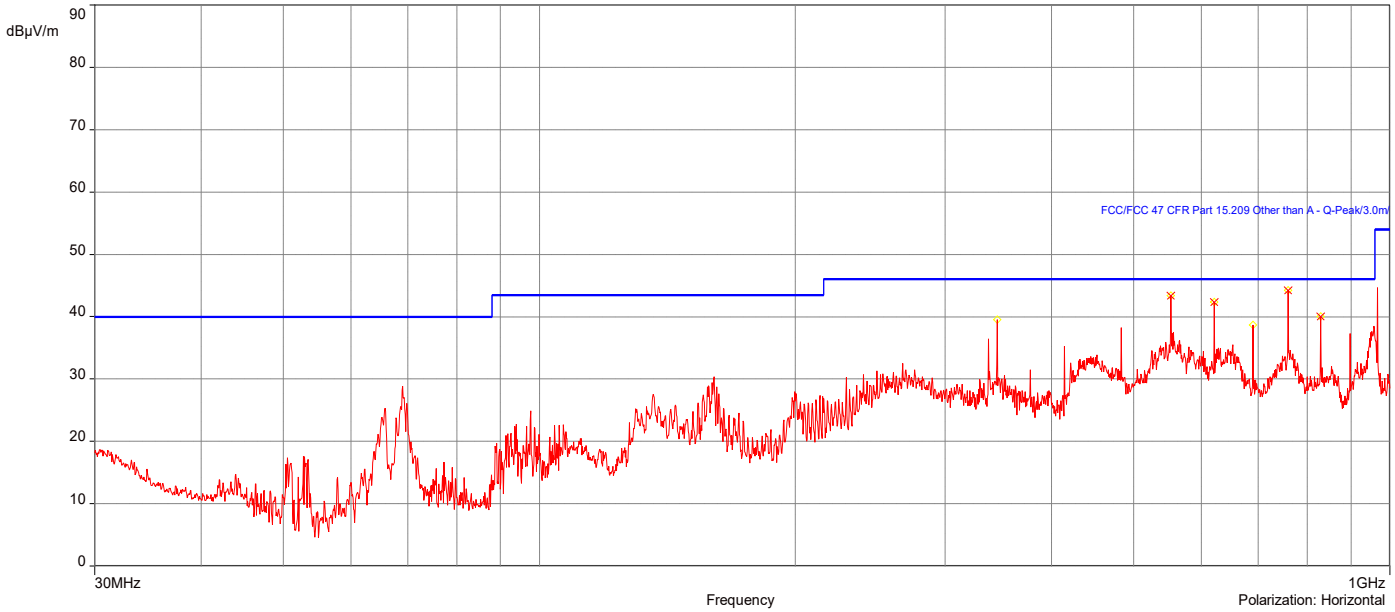

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
Frequency
1GHz
Polarization: Vertical

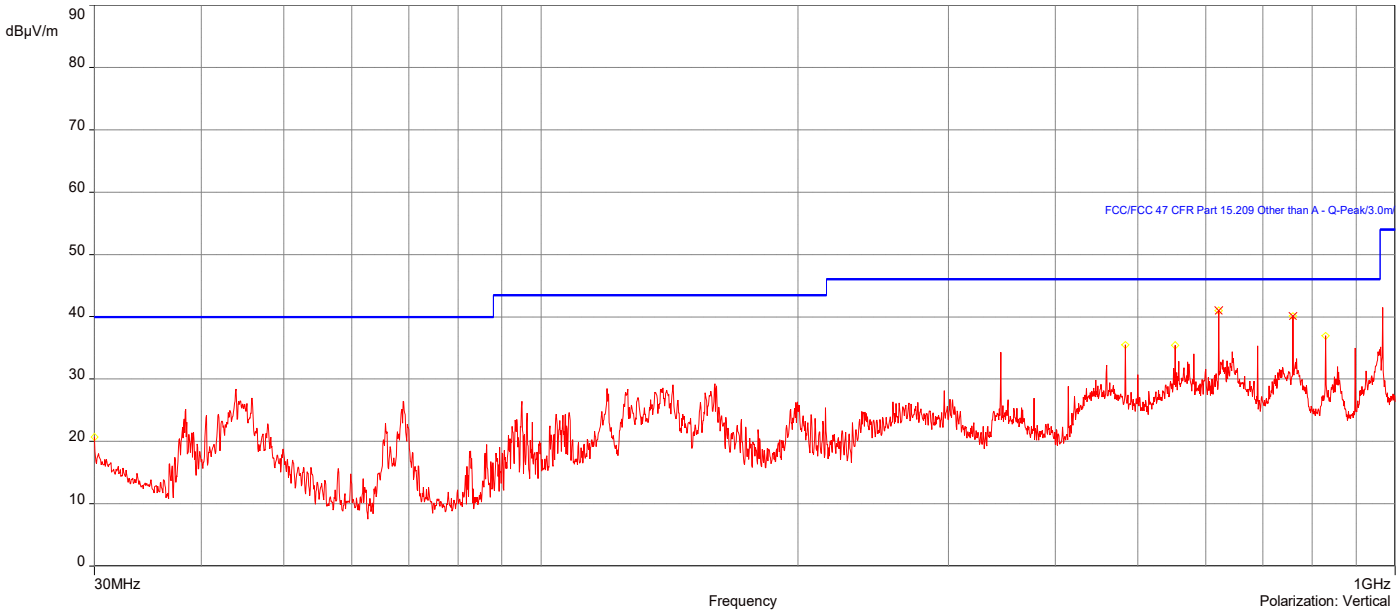
AH20110901-HAR-279-08_5G UNII-3 802.11ac(VHT20)_Ch 165_30MHz-1GHz

8/20/2021 19:01:43

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	44.23	-1.84	46.00	-1.77	2.50	334.50	Horizontal	Passed
2.	552.40426MHz	43.41	-5.30	46.00	-2.59	2.00	357.50	Horizontal	Passed
3.	621.50656MHz	42.37	-3.73	46.00	-3.63	2.00	211.00	Horizontal	Passed
4.	621.4495MHz	40.99	-4.78	46.00	-5.01	2.00	325.40	Vertical	Passed
5.	759.59704MHz	40.16	-2.94	46.00	-5.84	3.00	358.90	Vertical	Passed
6.	828.64227MHz	40.01	-0.51	46.00	-5.99	1.50	100.00	Horizontal	Passed

Overall Graphs:



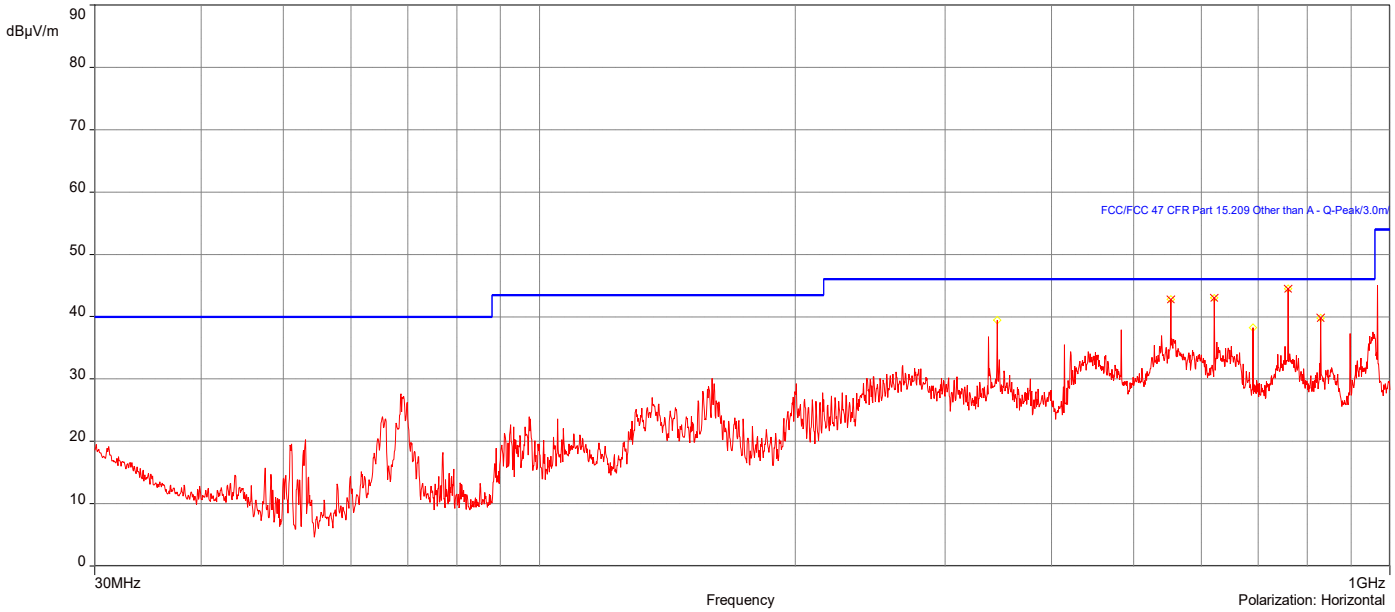

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
1GHz
Frequency
Polarization: Vertical

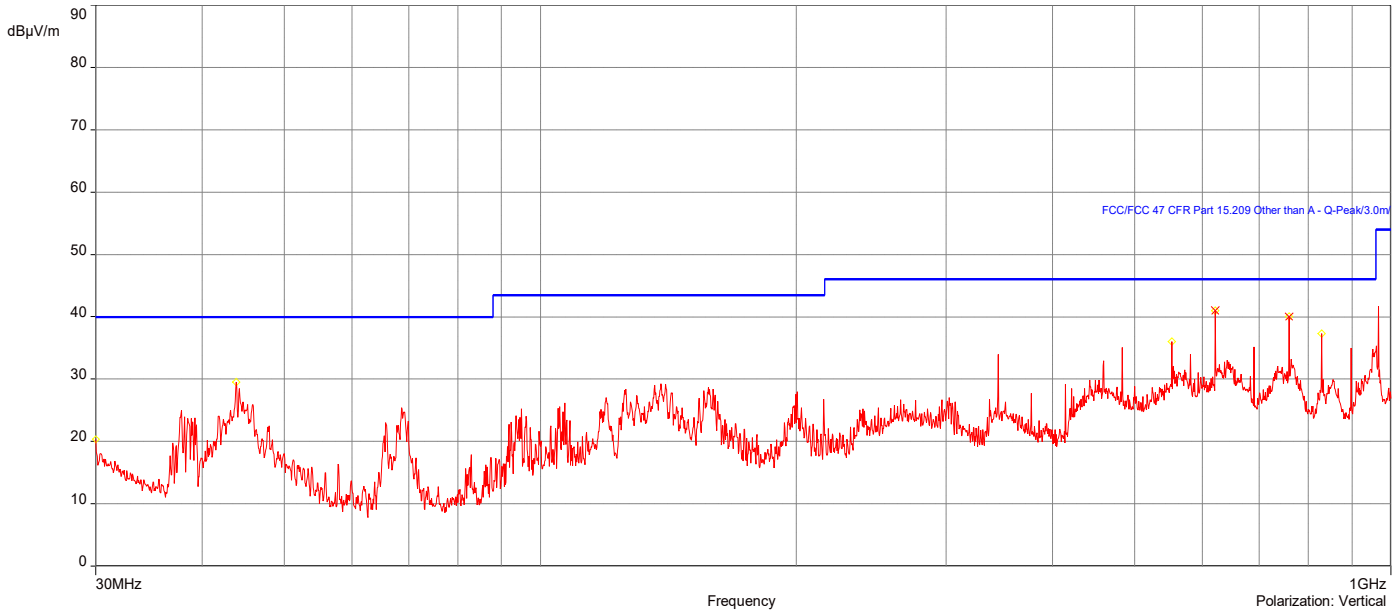
AH20110901-HAR-279-08_5G UNII-3 802.11ac(VHT40)_Ch 151_30MHz-1GHz

8/20/2021 19:22:19

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	44.51	-1.84	46.00	-1.49	2.50	337.60	Horizontal	Passed
2.	621.4495MHz	43.08	-3.74	46.00	-2.92	2.00	213.10	Horizontal	Passed
3.	552.40426MHz	42.80	-5.30	46.00	-3.20	2.00	357.00	Horizontal	Passed
4.	621.4495MHz	41.03	-4.78	46.00	-4.97	2.00	339.80	Vertical	Passed
5.	759.59704MHz	40.02	-2.94	46.00	-5.98	1.50	338.00	Vertical	Passed
6.	828.64227MHz	39.76	-0.51	46.00	-6.24	1.50	97.50	Horizontal	Passed

Overall Graphs:



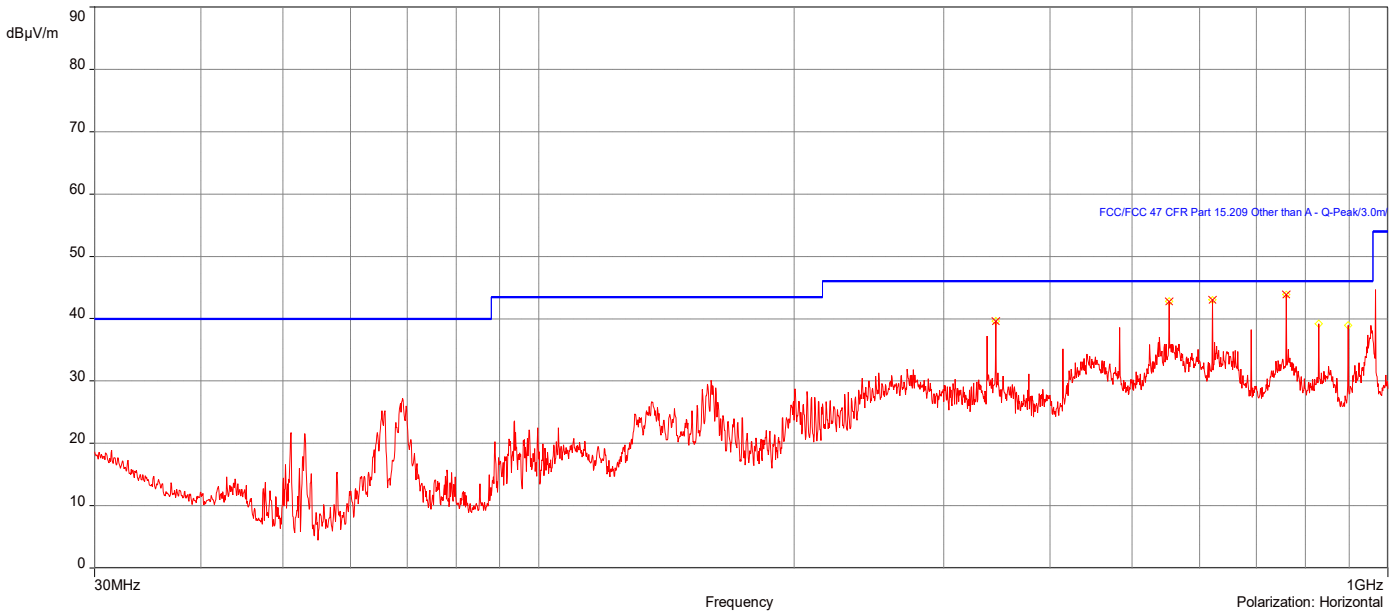

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
1GHz
Frequency
Polarization: Vertical

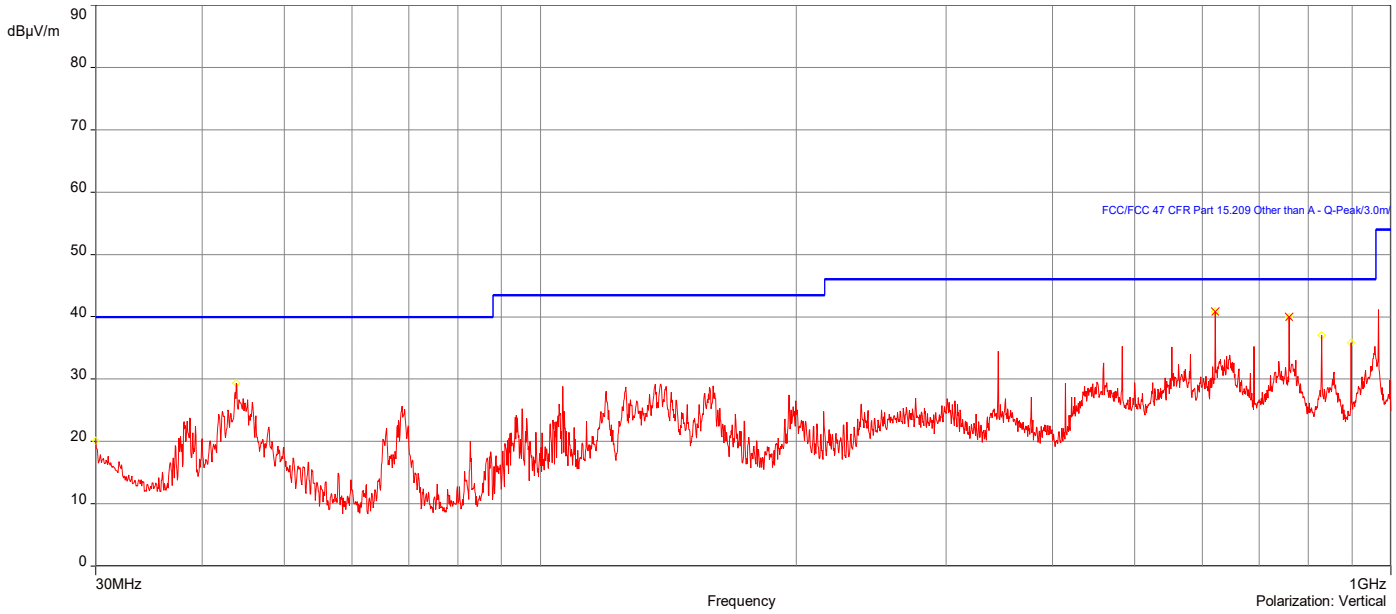
AH20110901-HAR-279-08_5G UNII-3 802.11ac(VHT40)_Ch 159_30MHz-1GHz

8/20/2021 19:39:51

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	43.91	-1.84	46.00	-2.09	2.50	333.10	Horizontal	Passed
2.	621.50656MHz	43.00	-3.73	46.00	-3.00	2.00	207.30	Horizontal	Passed
3.	552.40426MHz	42.78	-5.30	46.00	-3.22	2.00	353.10	Horizontal	Passed
4.	621.50656MHz	40.85	-4.78	46.00	-5.15	2.00	330.60	Vertical	Passed
5.	759.59704MHz	39.92	-2.94	46.00	-6.08	1.50	346.50	Vertical	Passed
6.	345.26855MHz	39.58	-9.74	46.00	-6.42	1.00	18.20	Horizontal	Passed

Overall Graphs:



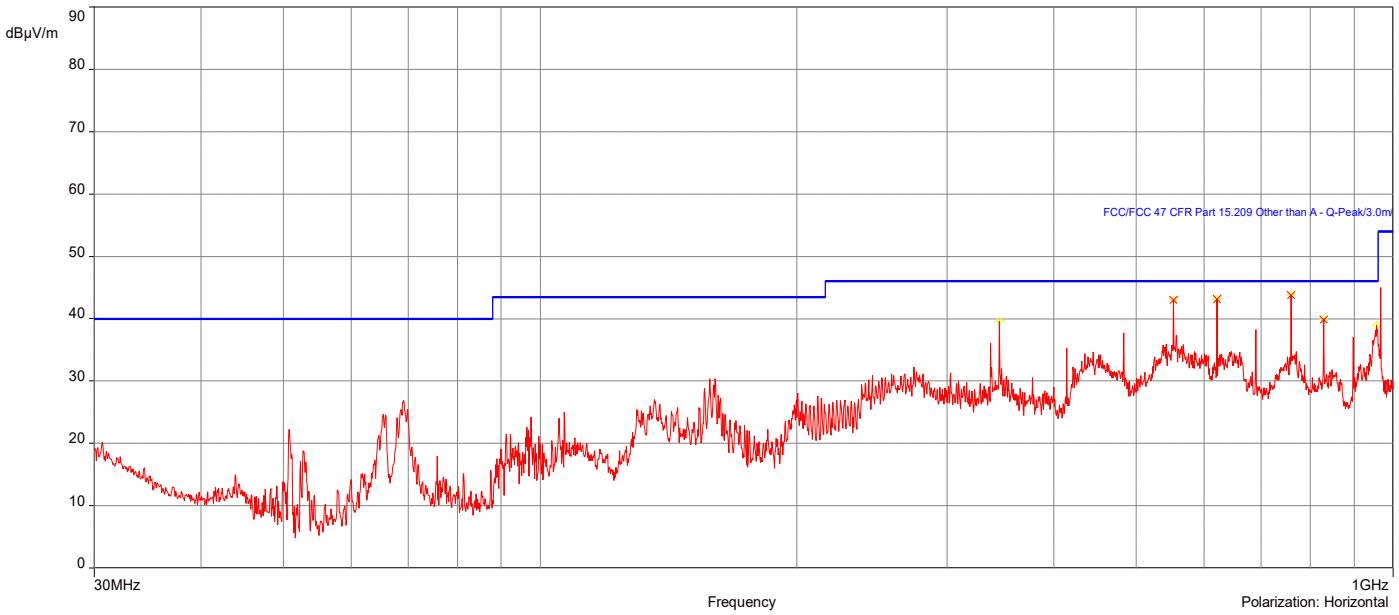

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
1GHz
Frequency
Polarization: Vertical

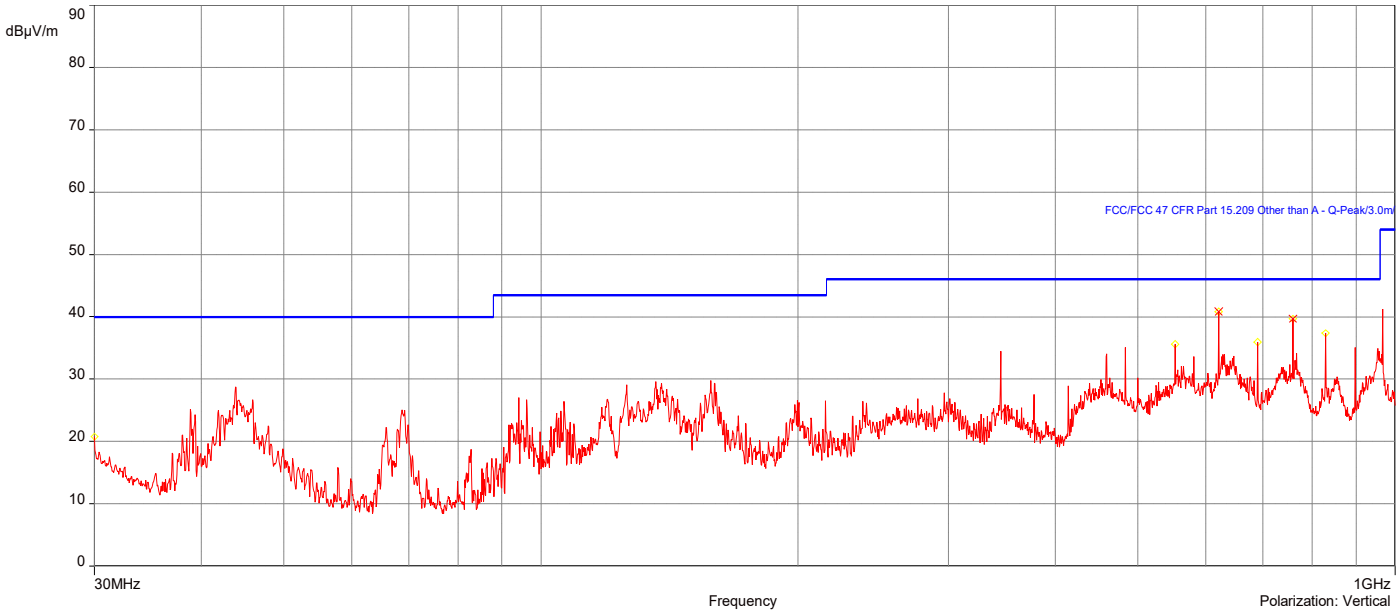
AH20110901-HAR-279-08_5G UNII-3 802.11ac(VHT80)_Ch 155_30MHz-1GHz

8/20/2021 19:59:23

No	Frequency	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	43.81	-1.84	46.00	-2.19	2.50	335.90	Horizontal	Passed
2.	621.4495MHz	43.10	-3.74	46.00	-2.90	2.00	213.60	Horizontal	Passed
3.	552.40426MHz	43.01	-5.30	46.00	-2.99	2.00	0.10	Horizontal	Passed
4.	621.4495MHz	40.79	-4.78	46.00	-5.21	2.00	336.30	Vertical	Passed
5.	828.64227MHz	39.85	-0.51	46.00	-6.15	1.50	100.50	Horizontal	Passed
6.	759.59704MHz	39.72	-2.94	46.00	-6.28	1.50	355.70	Vertical	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Q-Peak/3.0m
30MHz
Frequency
1GHz
Polarization: Vertical

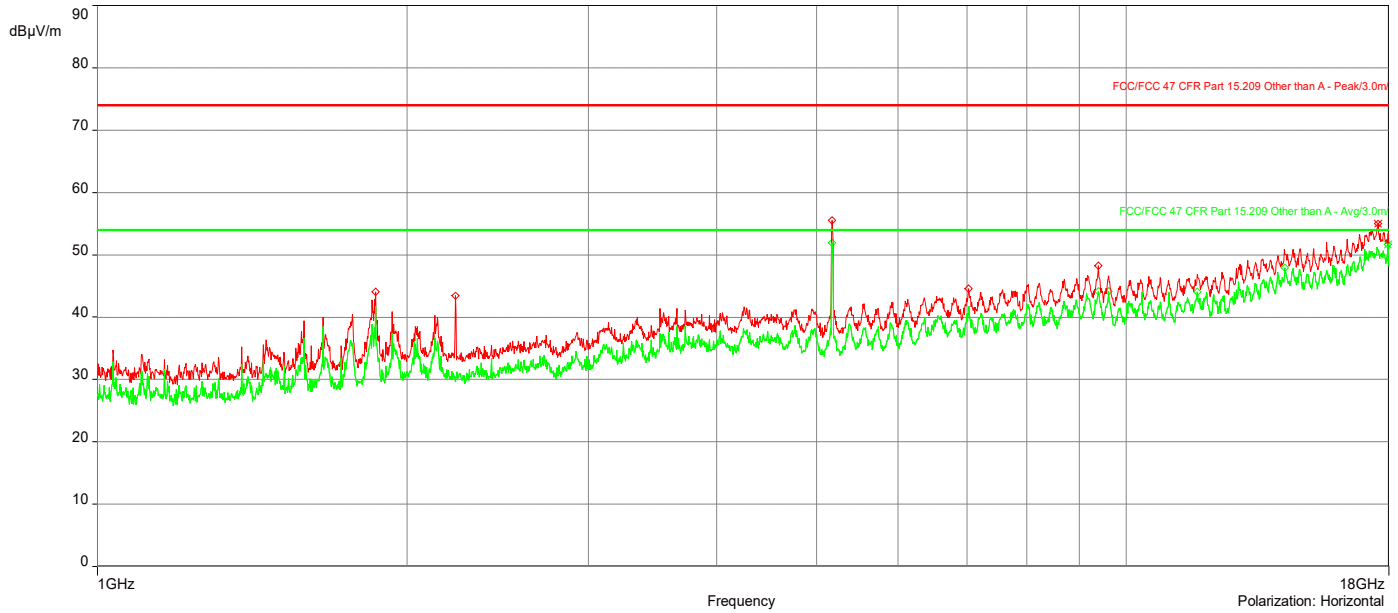
AH20110901-HAR-279-08_5G UNII-1_802.11a_Ch 36_1-18GHz

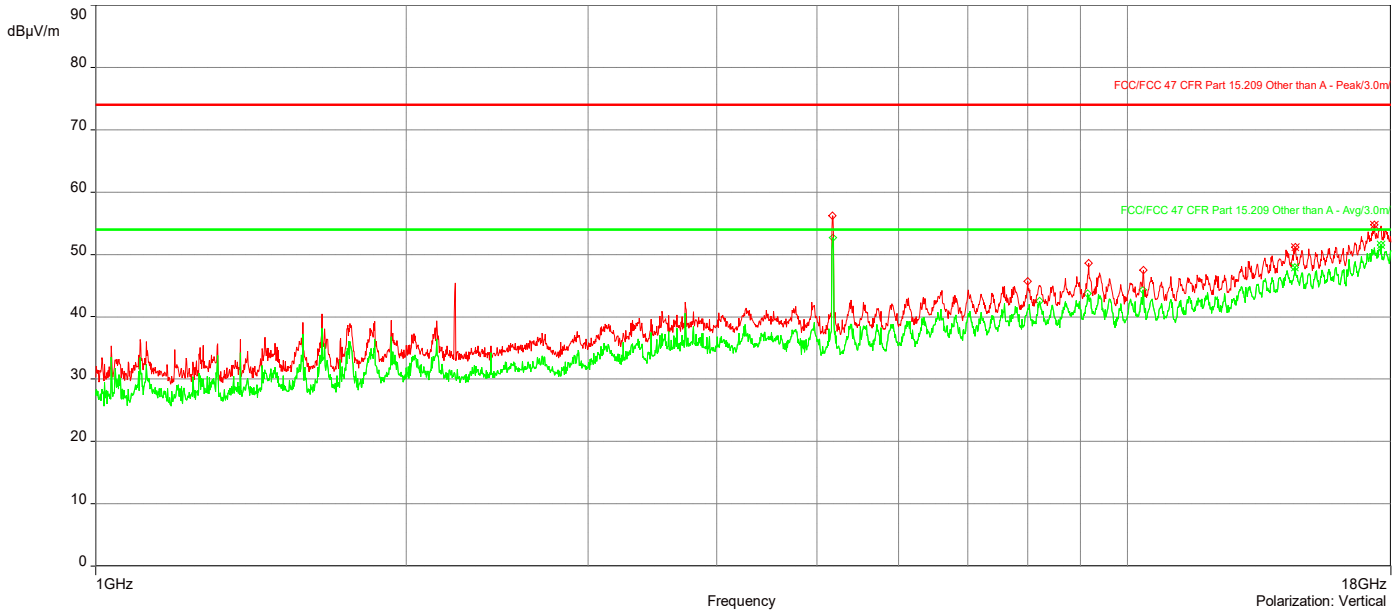
8/13/2021 09:22:13

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	14.535898GHz	51.21	15.43	74.00	-22.79	4.00	258.20	Vertical	Passed
2.	17.341981GHz	54.79	19.12	74.00	-19.21	3.00	356.20	Vertical	Passed
3.	17.562487GHz	55.04	19.57	74.00	-18.96	2.00	122.50	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	14.528398GHz	47.95	15.43	54.00	-6.05	1.00	287.80	Vertical	Passed
2.	17.614489GHz	51.54	19.59	54.00	-2.46	2.00	280.10	Vertical	Passed
3.	17.962499GHz	51.68	19.76	54.00	-2.32	2.50	347.60	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
1GHz
Frequency
18GHz
Polarization: Vertical

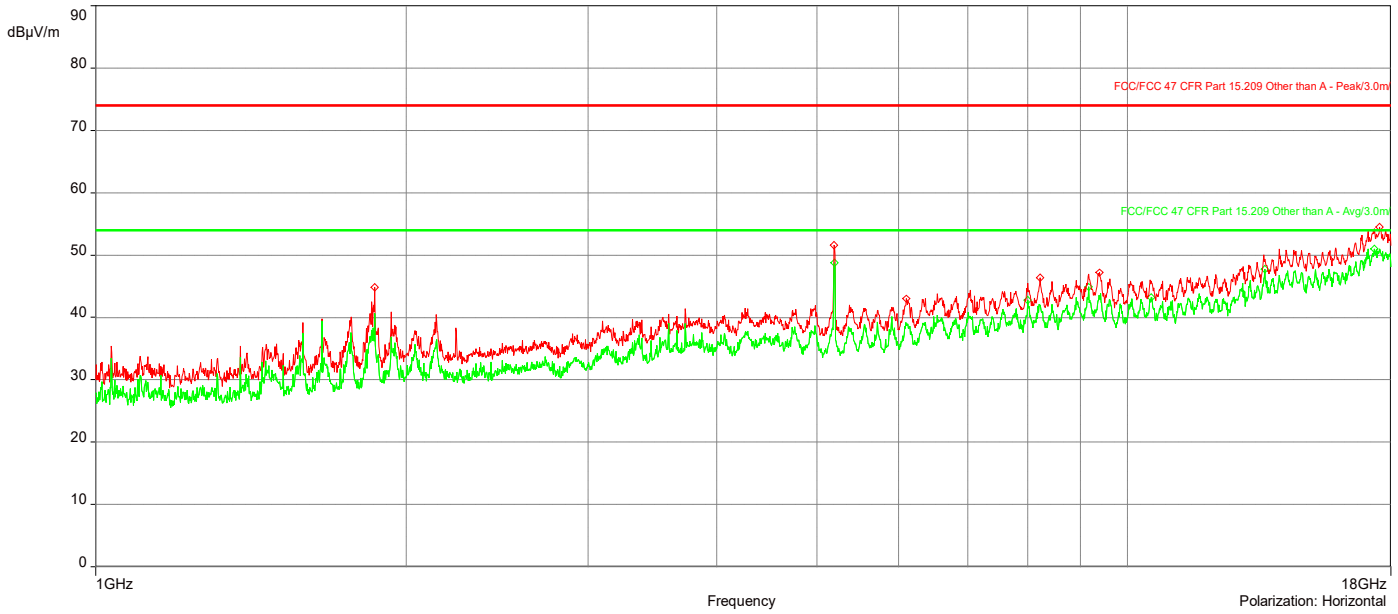
AH20110901-HAR-279-08_5G UNII-1_802.11a_Ch 40_1-18GHz

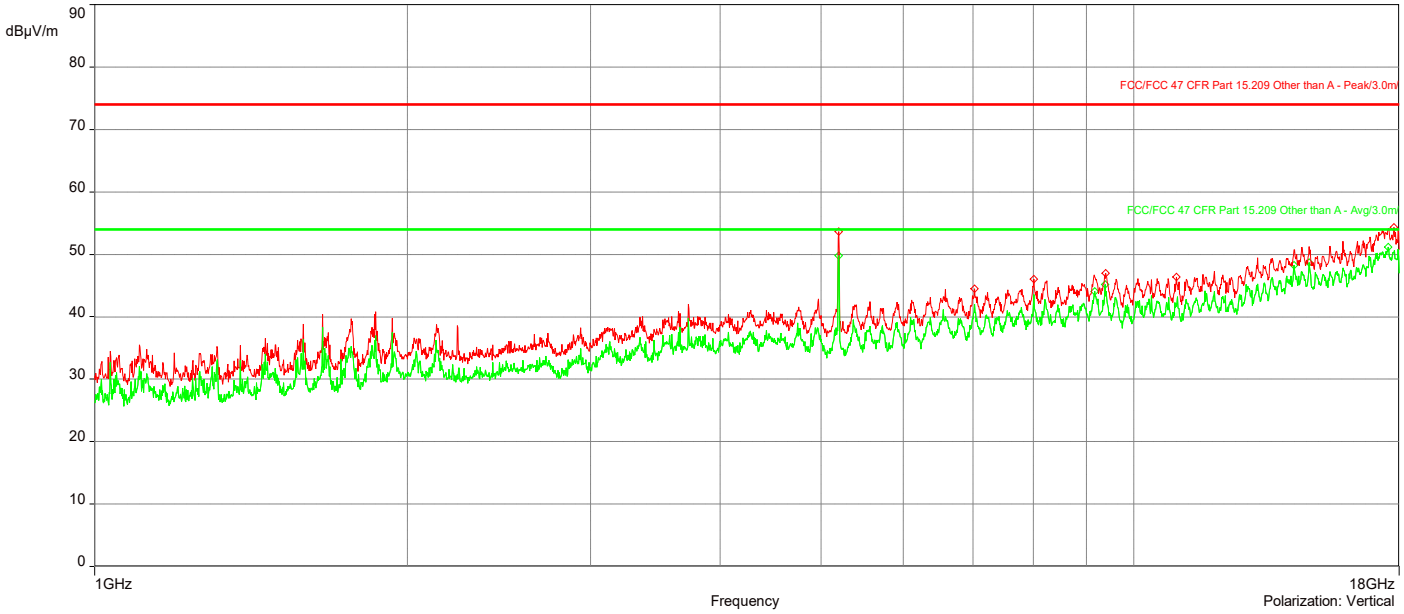
8/13/2021 10:01:45

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	5.2001235GHz	53.67	4.65	74.00	-20.33	1.00	7.90	Vertical	Passed
2.	17.789494GHz	54.35	19.56	74.00	-19.65	2.50	108.00	Vertical	Passed
3.	17.550487GHz	54.48	19.58	74.00	-19.52	3.50	304.80	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	5.1981235GHz	49.81	4.66	54.00	-4.19	1.00	345.00	Vertical	Passed
2.	17.579988GHz	51.16	19.55	54.00	-2.84	2.00	79.60	Vertical	Passed
3.	17.343481GHz	51.04	19.13	54.00	-2.96	1.50	134.60	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
1GHz
18GHz
Frequency
Polarization: Vertical

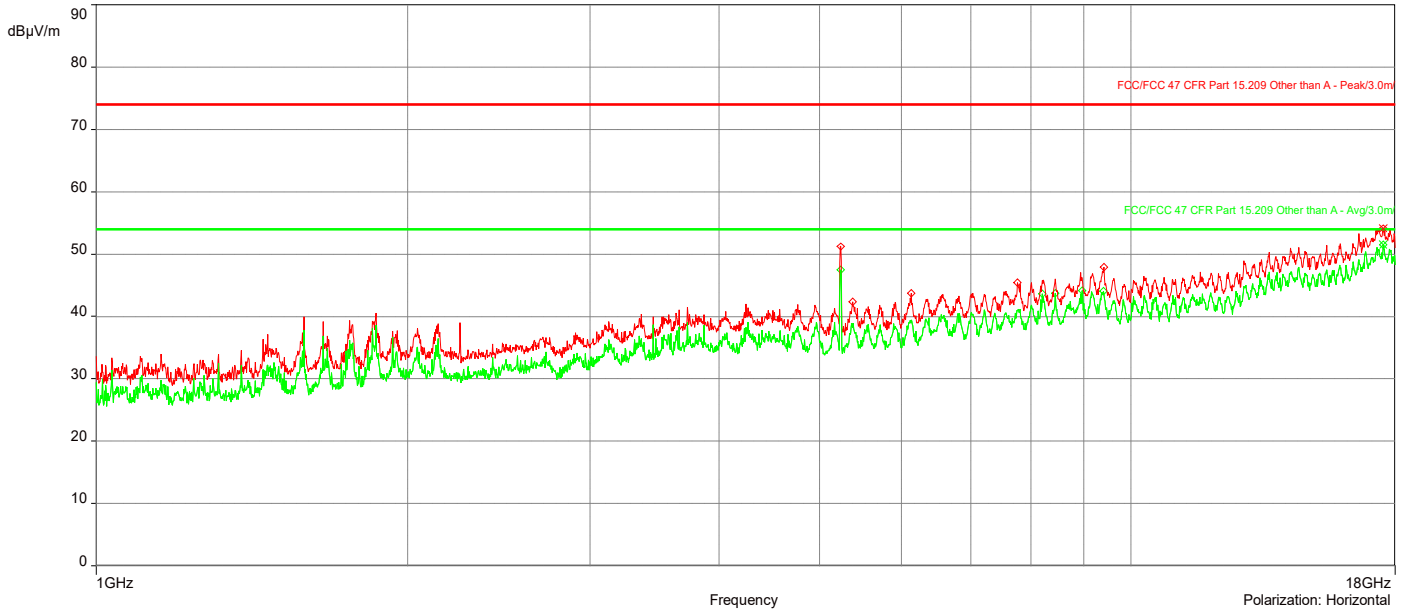
AH20110901-HAR-279-08_5G UNII-1_802.11a_Ch 48_1-18GHz

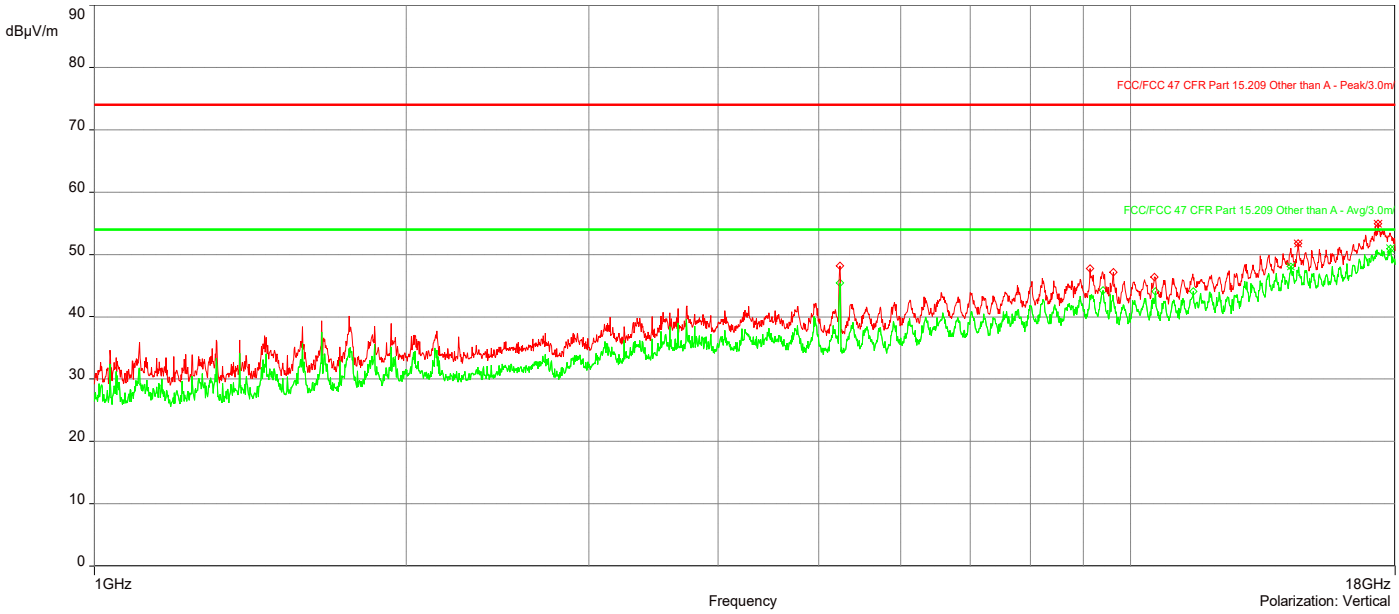
8/16/2021 07:01:51

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	14.509897GHz	51.76	15.43	74.00	-22.24	2.50	340.20	Vertical	Passed
2.	17.32848GHz	54.91	19.06	74.00	-19.09	2.50	328.30	Vertical	Passed
3.	17.521486GHz	54.13	19.52	74.00	-19.87	4.00	249.10	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
4.	14.27039GHz	48.09	14.89	54.00	-5.91	3.00	102.40	Vertical	Passed
5.	17.811494GHz	50.89	19.57	54.00	-3.11	1.00	215.20	Vertical	Passed
6.	17.535986GHz	51.52	19.55	54.00	-2.48	1.00	242.50	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
1GHz
18GHz
Frequency
Polarization: Vertical

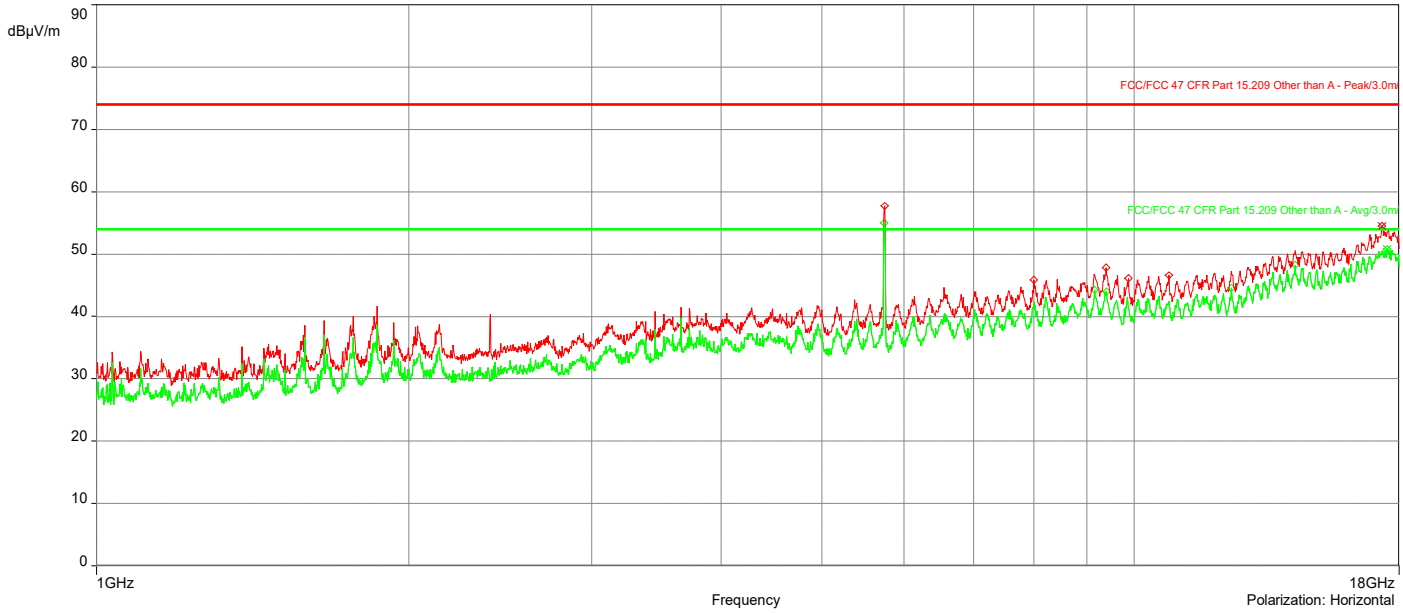
AH20110901-HAR-279-08_5G UNII-3_802.11a_Ch 149_1-18GHz

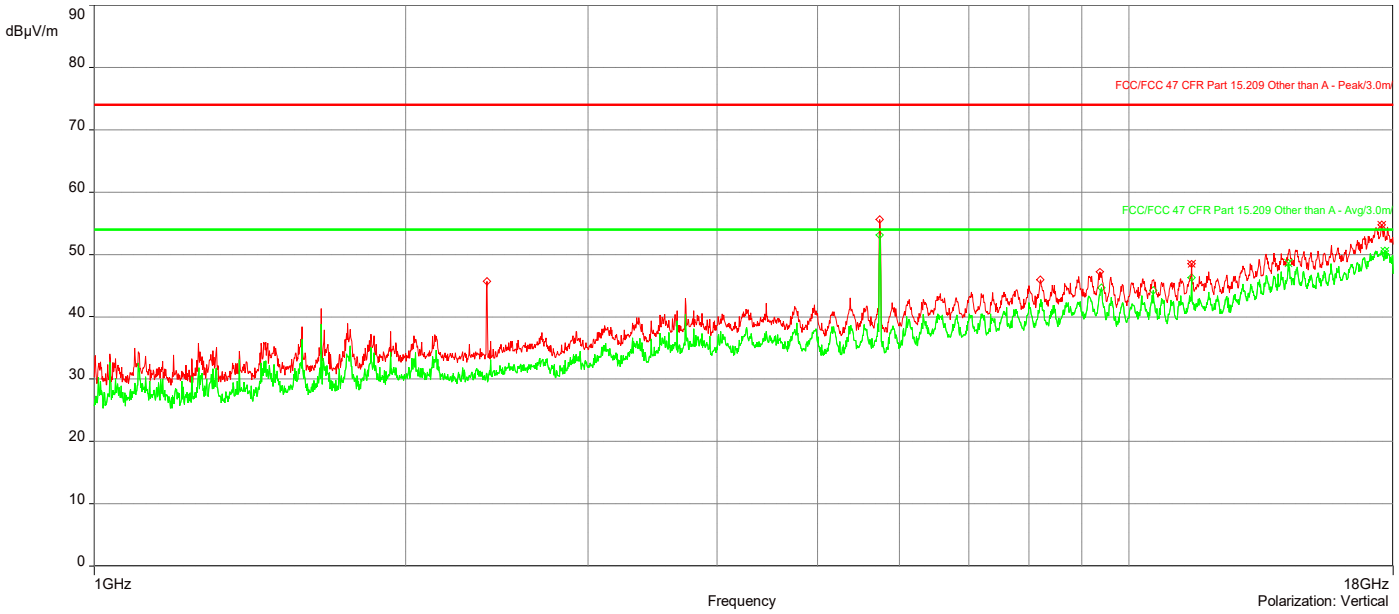
8/16/2021 09:40:01

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	11.489809GHz	48.48	10.88	74.00	-25.52	1.00	253.10	Vertical	Passed
2.	17.550487GHz	54.77	19.58	74.00	-19.23	4.00	240.60	Vertical	Passed
3.	17.33298GHz	54.51	19.08	74.00	-19.49	2.00	286.00	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	14.26739GHz	48.64	14.89	54.00	-5.36	3.00	90.70	Vertical	Passed
2.	17.66599GHz	50.59	19.68	54.00	-3.41	3.50	129.50	Vertical	Passed
3.	17.538986GHz	50.80	19.56	54.00	-3.20	1.50	209.60	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
1GHz
18GHz
Frequency
Polarization: Vertical

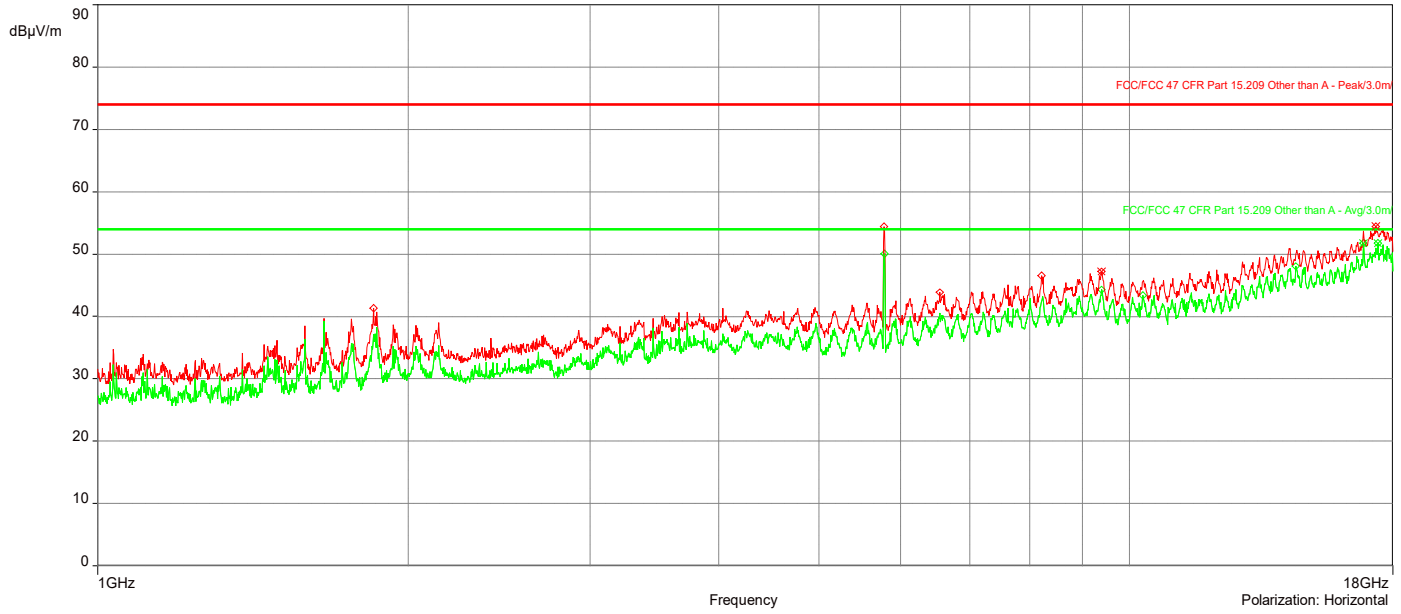
AH20110901-HAR-279-08_5G UNII-3_802.11a_Ch 157_1-18GHz

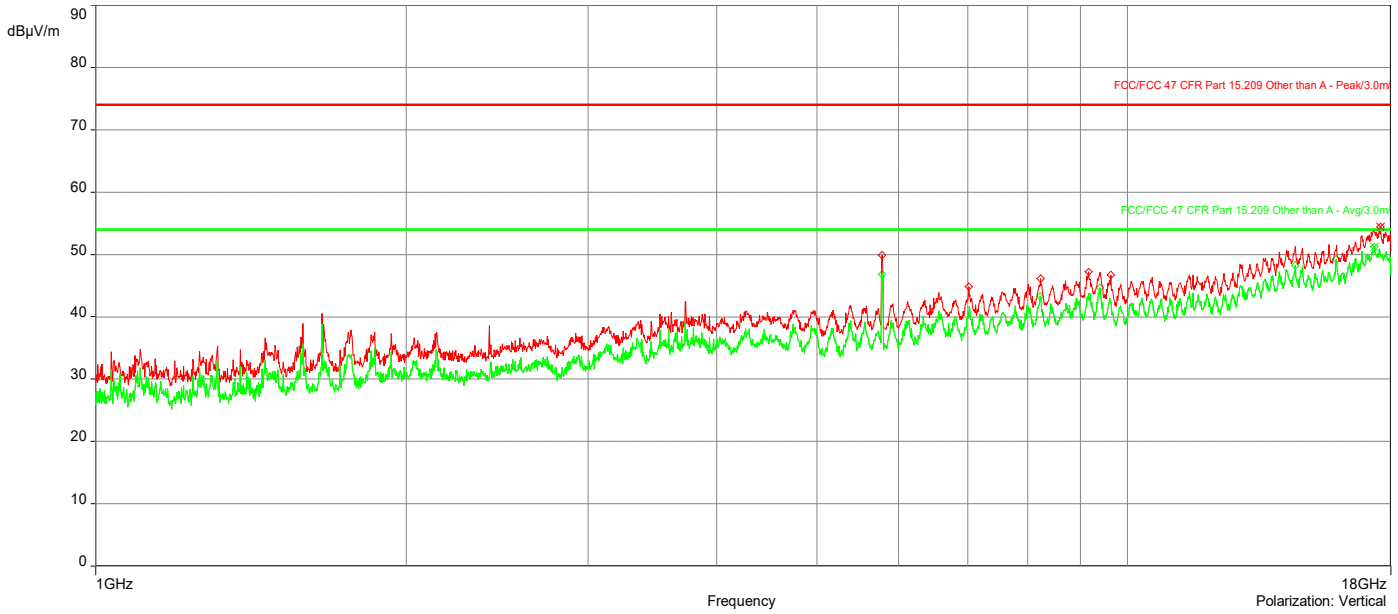
8/16/2021 10:07:07

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	17.595488GHz	54.44	19.53	74.00	-19.56	2.50	237.90	Vertical	Passed
2.	9.3947469GHz	47.25	10.21	74.00	-26.75	3.00	150.80	Horizontal	Passed
3.	17.33598GHz	54.43	19.10	74.00	-19.57	1.00	63.10	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	17.342981GHz	51.23	19.12	54.00	-2.77	2.50	122.70	Vertical	Passed
2.	16.859466GHz	51.73	17.99	54.00	-2.27	2.00	0.10	Horizontal	Passed
3.	17.412483GHz	51.76	19.42	54.00	-2.24	4.00	220.60	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
1GHz
Frequency
18GHz
Polarization: Vertical

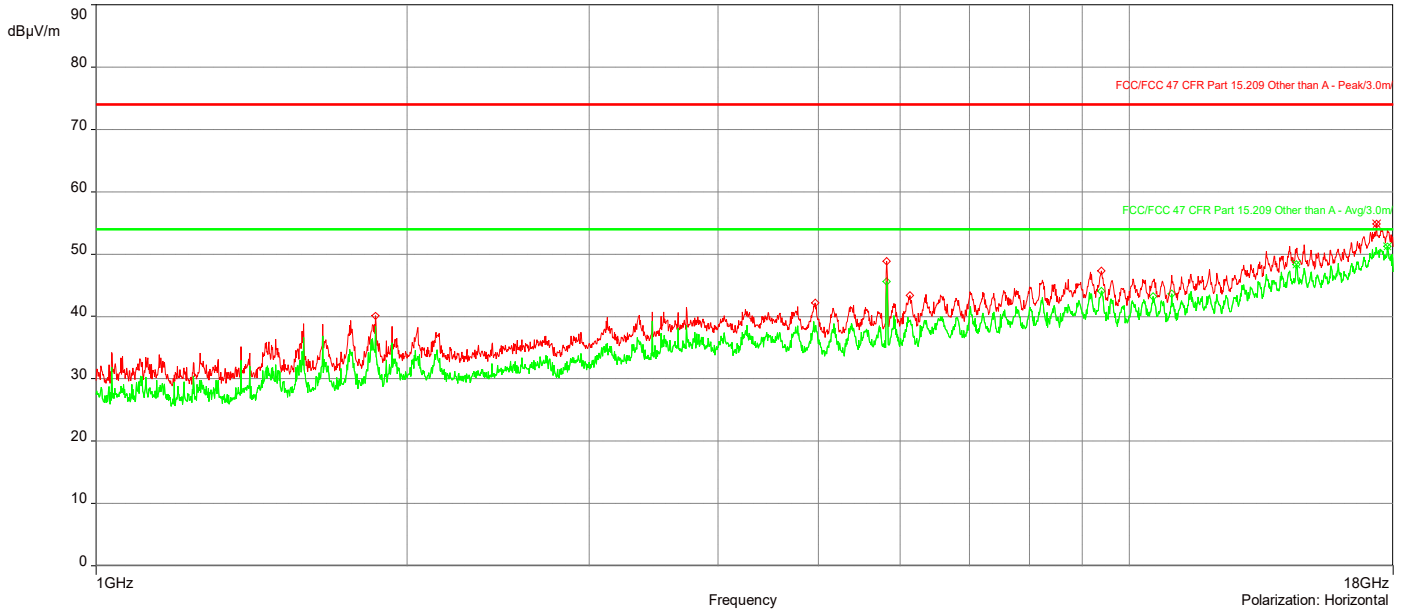
AH20110901-HAR-279-08_5G UNII-3_802.11a_Ch 165_1-18GHz

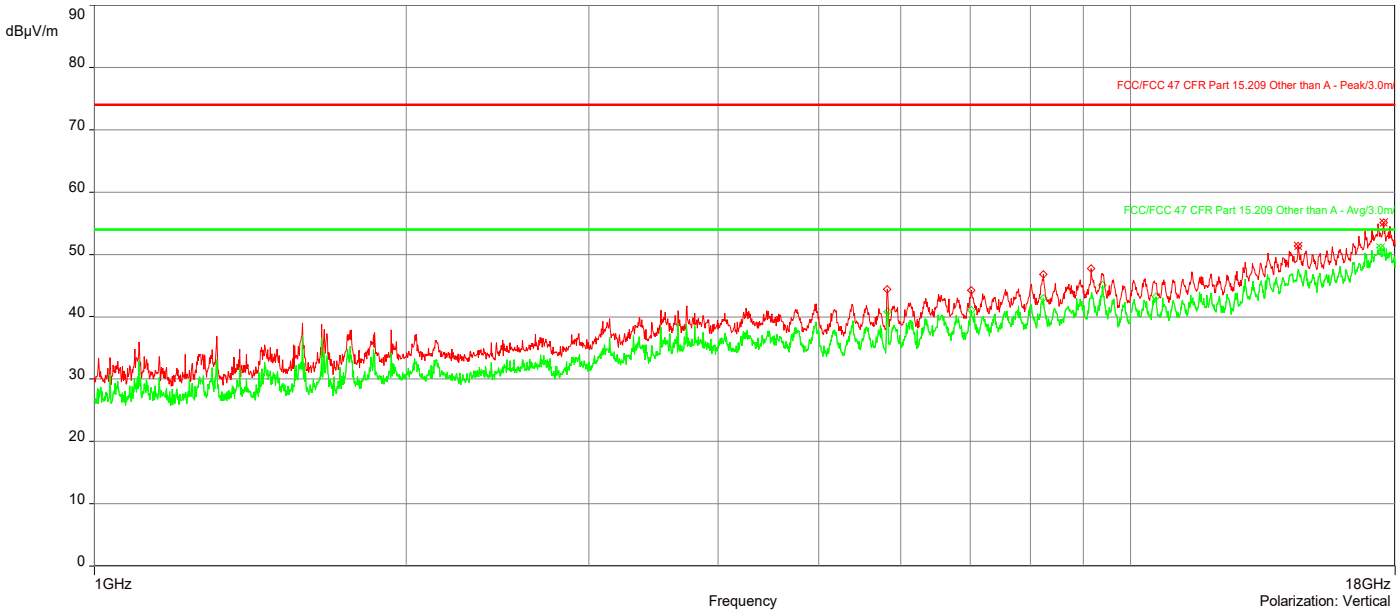
8/16/2021 10:25:41

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	14.509397GHz	51.37	15.43	74.00	-22.63	2.50	286.40	Vertical	Passed
2.	17.551987GHz	55.14	19.58	74.00	-18.86	1.00	161.10	Vertical	Passed
3.	17.348981GHz	54.86	19.15	74.00	-19.14	3.00	103.50	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	17.421983GHz	51.06	19.44	54.00	-2.94	4.00	170.70	Vertical	Passed
2.	14.504897GHz	48.34	15.43	54.00	-5.66	4.00	153.10	Horizontal	Passed
3.	17.773493GHz	51.26	19.55	54.00	-2.74	2.50	349.50	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
1GHz
18GHz
Frequency
Polarization: Vertical

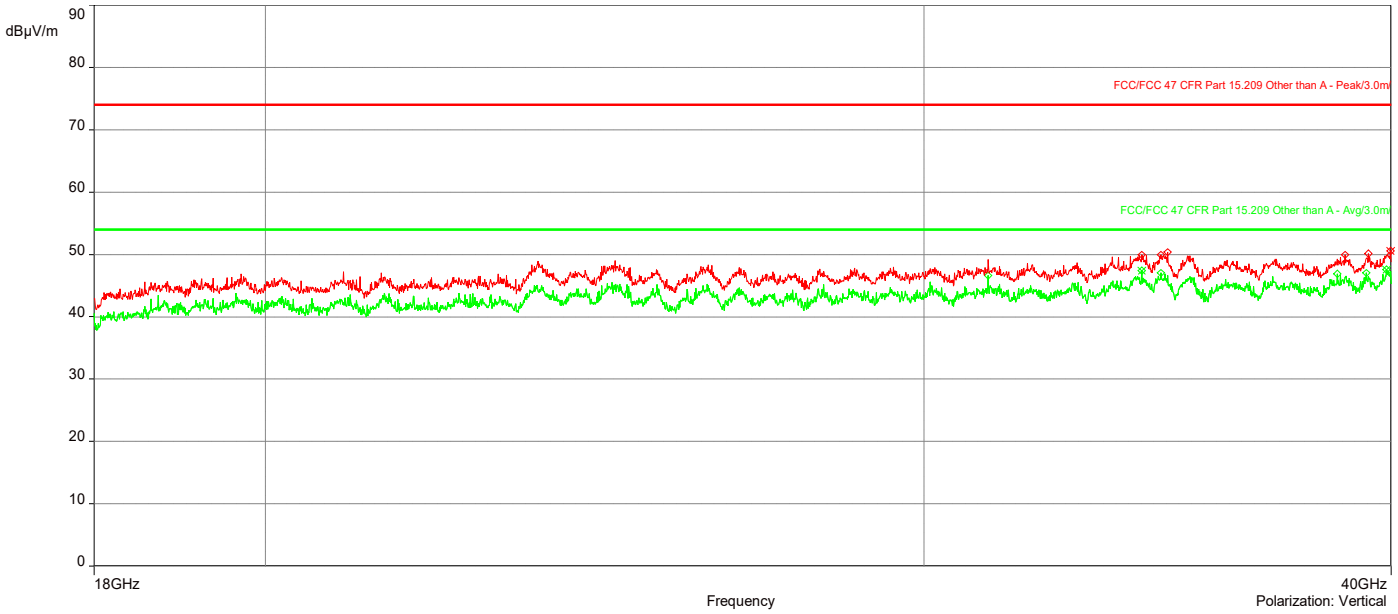
AH20110901-HAR-279-08_5G UNII-1_802.11a_Ch 36_18-40GHz

8/17/2021 14:27:28

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	39.9895GHz	50.61	4.63	74.00	-23.39	1.00	0.10	Vertical	Passed
2.	39.495989GHz	50.75	3.44	74.00	-23.25	3.40	45.00	Horizontal	Passed
3.	39.944499GHz	50.77	4.59	74.00	-23.23	1.45	157.70	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	34.311871GHz	47.40	3.48	54.00	-6.60	1.14	90.10	Vertical	Passed
2.	39.882997GHz	47.59	4.88	54.00	-6.41	1.90	67.70	Vertical	Passed
3.	39.942499GHz	47.33	4.60	54.00	-6.67	3.34	67.70	Horizontal	Passed

Overall Graphs:


dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
18GHz
Frequency
40GHz
Polarization: Vertical

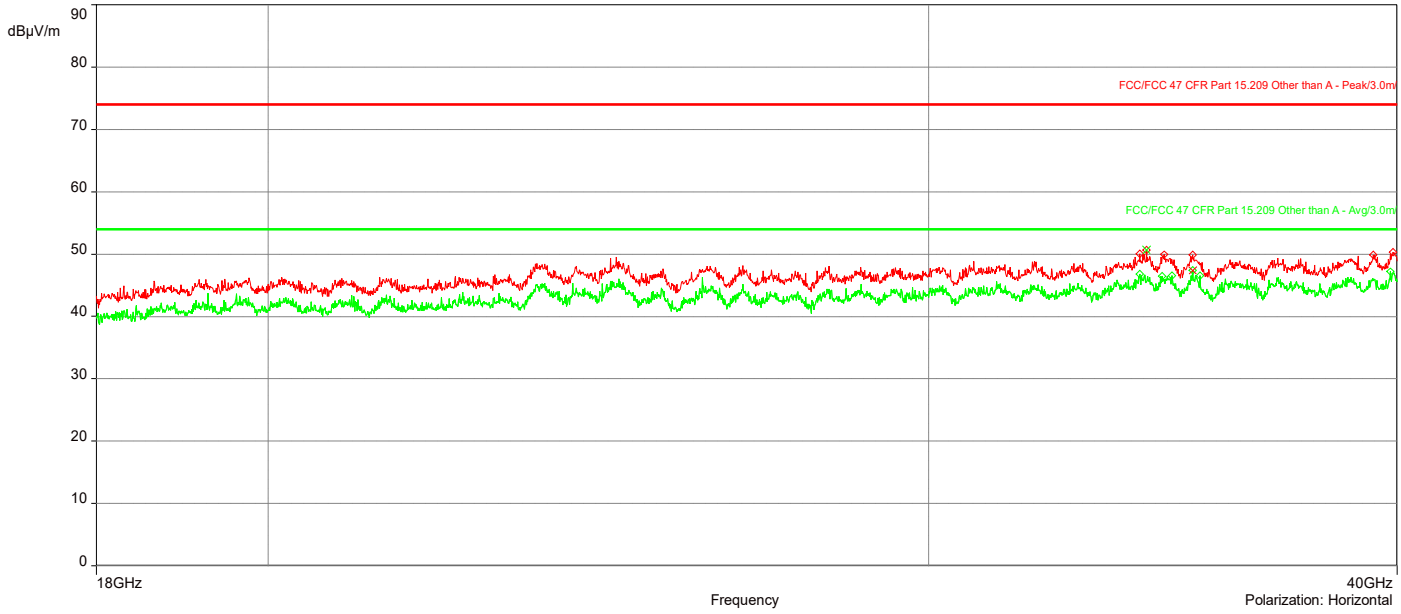
AH20110901-HAR-279-08_5G UNII-1_802.11a_Ch 40_18-40GHz

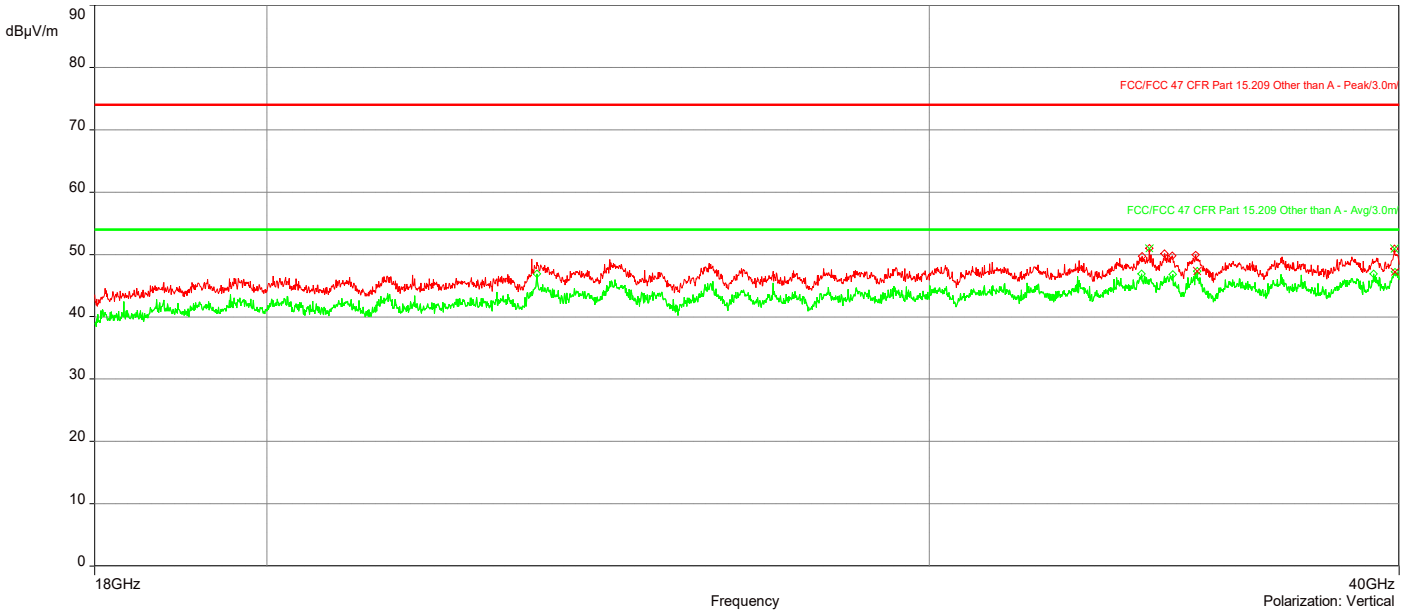
8/17/2021 14:34:57

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	34.333371GHz	50.98	3.43	74.00	-23.02	3.97	67.40	Vertical	Passed
2.	39.889497GHz	50.89	4.90	74.00	-23.11	2.09	179.90	Vertical	Passed
3.	34.29487GHz	50.61	3.64	74.00	-23.39	2.27	22.40	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
4.	35.349394GHz	47.36	3.01	54.00	-6.64	3.33	157.40	Vertical	Passed
5.	39.895498GHz	47.27	4.92	54.00	-6.73	1.72	314.90	Vertical	Passed
6.	35.279393GHz	47.37	3.09	54.00	-6.63	1.56	112.40	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
18GHz
Frequency
40GHz
Polarization: Vertical

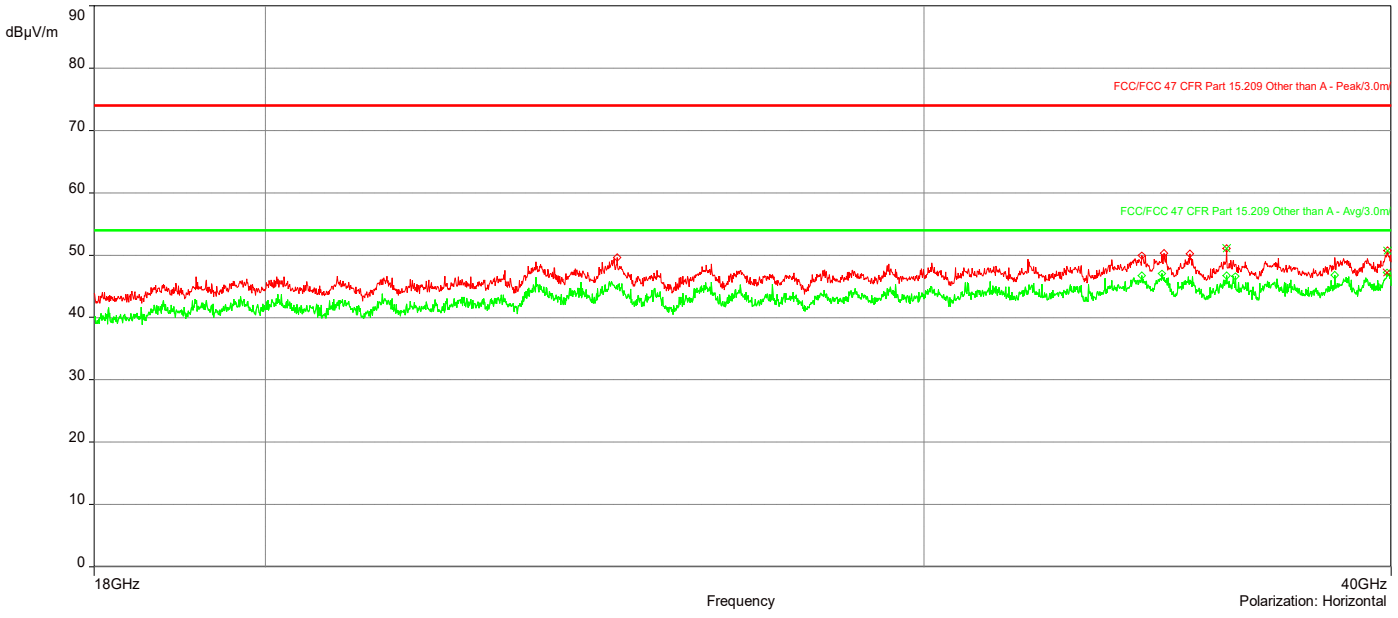
AH20110901-HAR-279-08_5G UNII-1_802.11a_Ch 48_18-40GHz

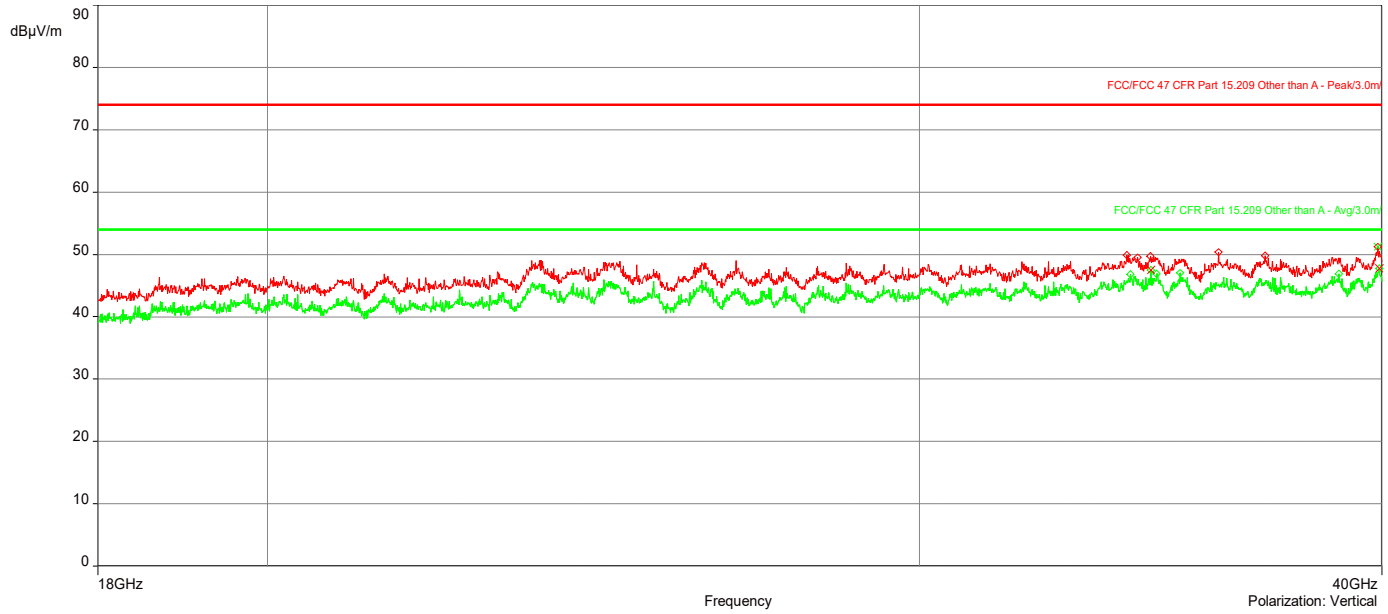
8/17/2021 15:00:56

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	39.894498GHz	51.26	4.91	74.00	-22.74	1.25	0.10	Vertical	Passed
2.	36.148412GHz	51.09	2.82	74.00	-22.91	1.02	135.10	Horizontal	Passed
3.	39.907998GHz	50.73	4.75	74.00	-23.27	3.97	247.60	Horizontal	Passed

1.	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
2.	34.647378GHz	47.48	3.06	54.00	-6.52	1.00	180.00	Vertical	Passed
3.	39.933498GHz	47.74	4.82	54.00	-6.26	2.26	22.50	Vertical	Passed
4.	39.901998GHz	47.26	4.78	54.00	-6.74	1.02	270.10	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
18GHz
Frequency
40GHz
Polarization: Vertical

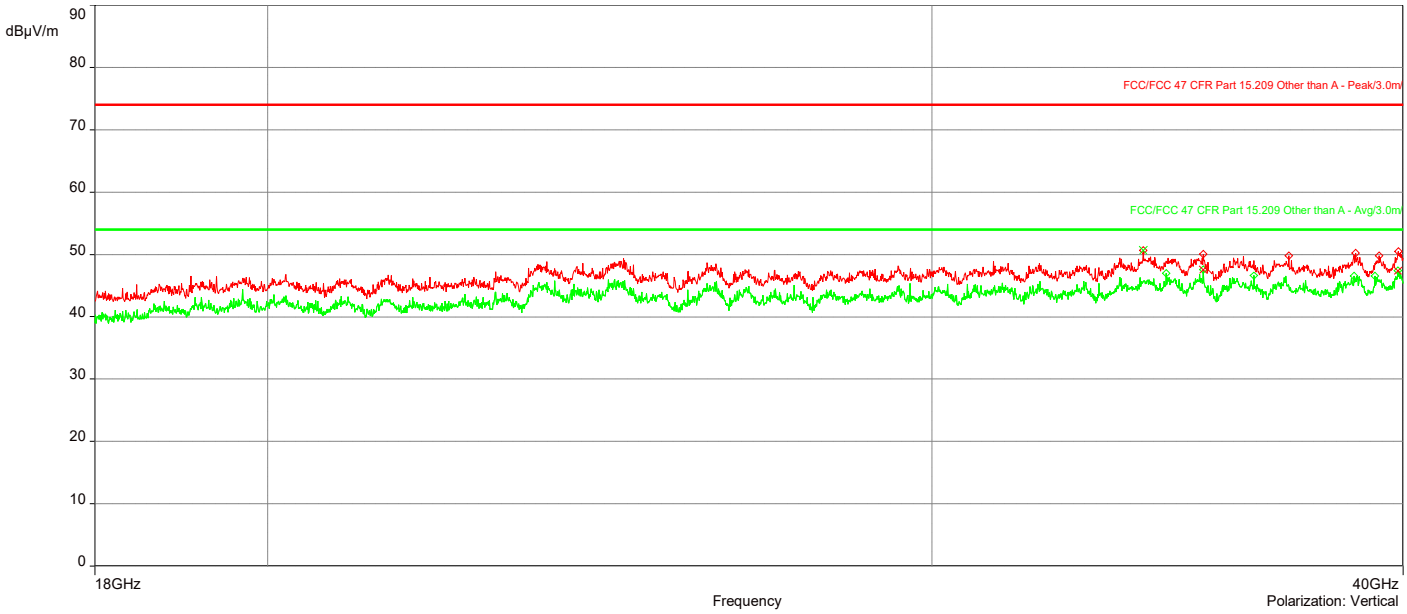
AH20110901-HAR-279-08_5G UNII-3_802.11a_Ch 149_18-40GHz

8/17/2021 20:06:53

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	34.133867GHz	50.69	3.66	74.00	-23.31	1.36	292.60	Vertical	Passed
2.	34.26237GHz	50.69	3.62	74.00	-23.31	3.12	67.60	Horizontal	Passed
3.	39.824496GHz	50.49	4.65	74.00	-23.51	1.74	67.60	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	35.402896GHz	47.59	2.86	54.00	-6.41	1.07	0.20	Vertical	Passed
2.	39.866497GHz	47.36	4.84	54.00	-6.64	4.00	22.50	Vertical	Passed
3.	39.853497GHz	48.07	4.70	54.00	-5.93	1.00	247.60	Horizontal	Passed

Overall Graphs:


dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
18GHz
Frequency
40GHz
Polarization: Vertical

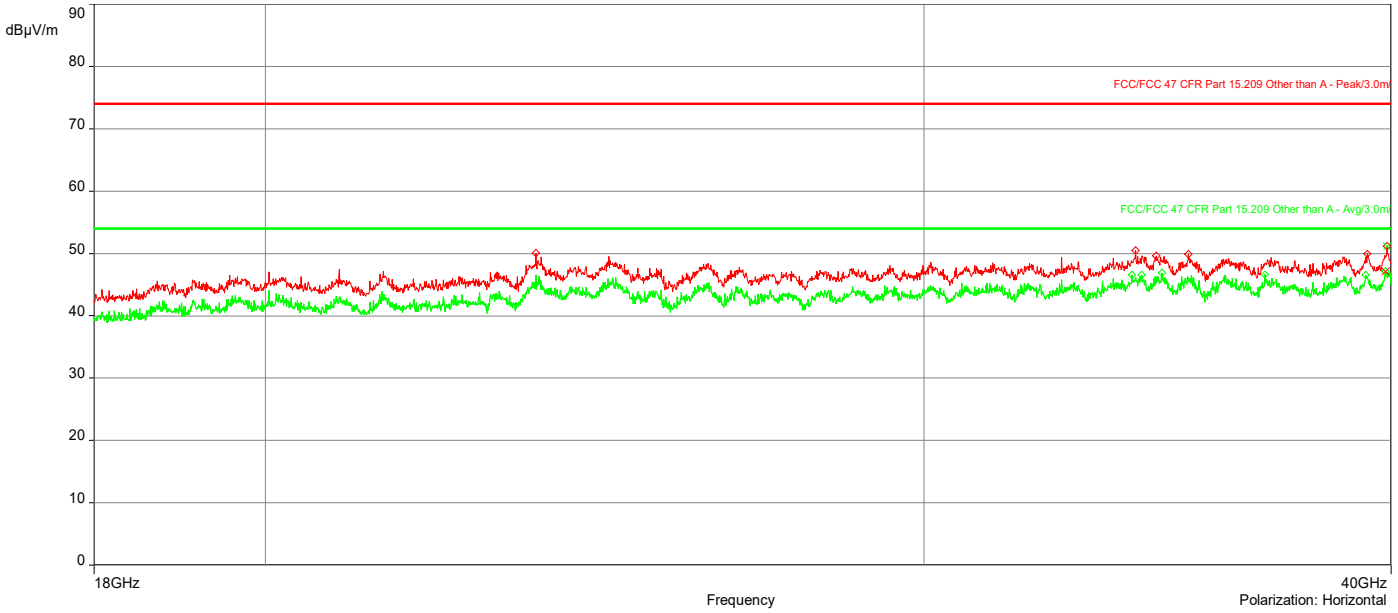
AH20110901-HAR-279-08_5G UNII-3_802.11a_Ch 157_18-40GHz

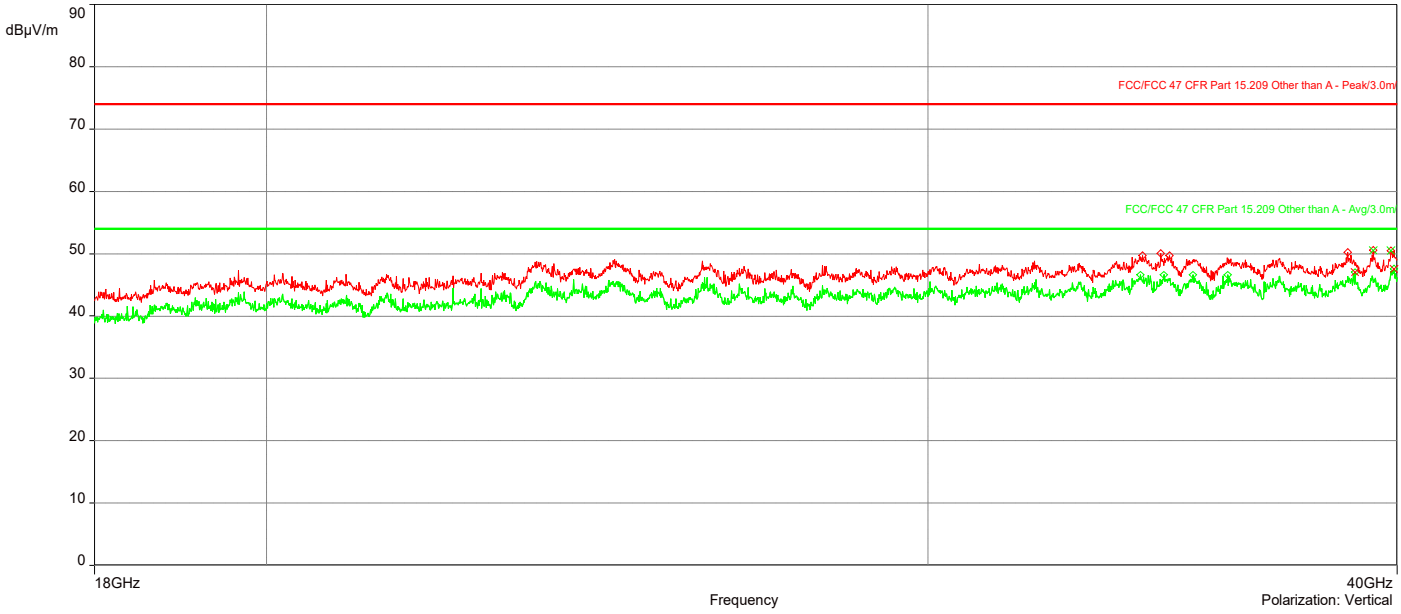
8/17/2021 20:30:15

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	39.420487GHz	50.56	3.47	74.00	-23.44	3.32	292.40	Vertical	Passed
2.	39.851997GHz	50.52	4.80	74.00	-23.48	3.62	179.90	Vertical	Passed
3.	39.901998GHz	51.19	4.78	74.00	-22.81	2.00	179.90	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	38.984977GHz	47.10	3.97	54.00	-6.90	1.02	224.90	Vertical	Passed
2.	39.927498GHz	47.60	4.84	54.00	-6.40	3.32	202.40	Vertical	Passed
3.	39.856997GHz	47.19	4.71	54.00	-6.81	2.64	67.40	Horizontal	Passed

Overall Graphs:





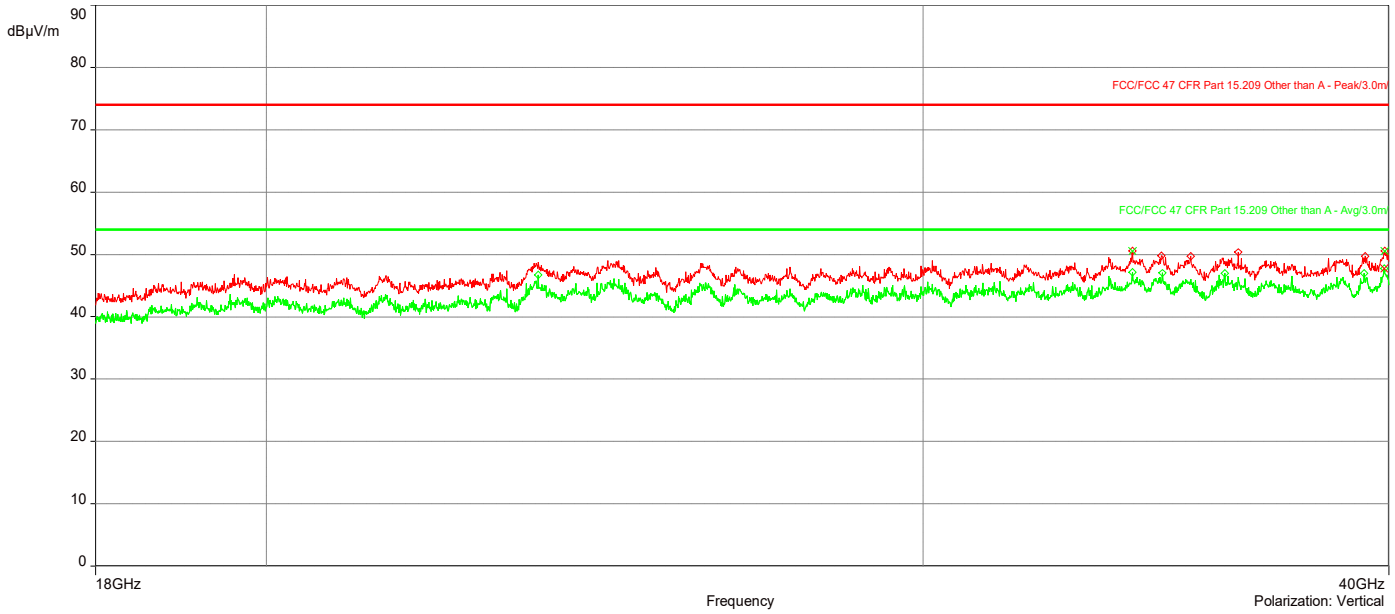
AH20110901-HAR-279-08_5G UNII-3_802.11a_Ch 165_18-40GHz

8/17/2021 20:53:25

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	34.143367GHz	50.58	3.66	74.00	-23.42	3.75	225.10	Vertical	Passed
2.	39.900998GHz	50.57	4.93	74.00	-23.43	3.54	90.00	Vertical	Passed
3.	39.949999GHz	50.67	4.57	74.00	-23.33	3.38	135.20	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
4.	39.889997GHz	47.75	4.90	54.00	-6.25	2.44	22.50	Vertical	Passed
5.	39.395486GHz	47.28	3.40	54.00	-6.72	3.75	247.60	Horizontal	Passed
6.	39.887997GHz	47.39	4.76	54.00	-6.61	2.27	135.20	Horizontal	Passed

Overall Graphs:

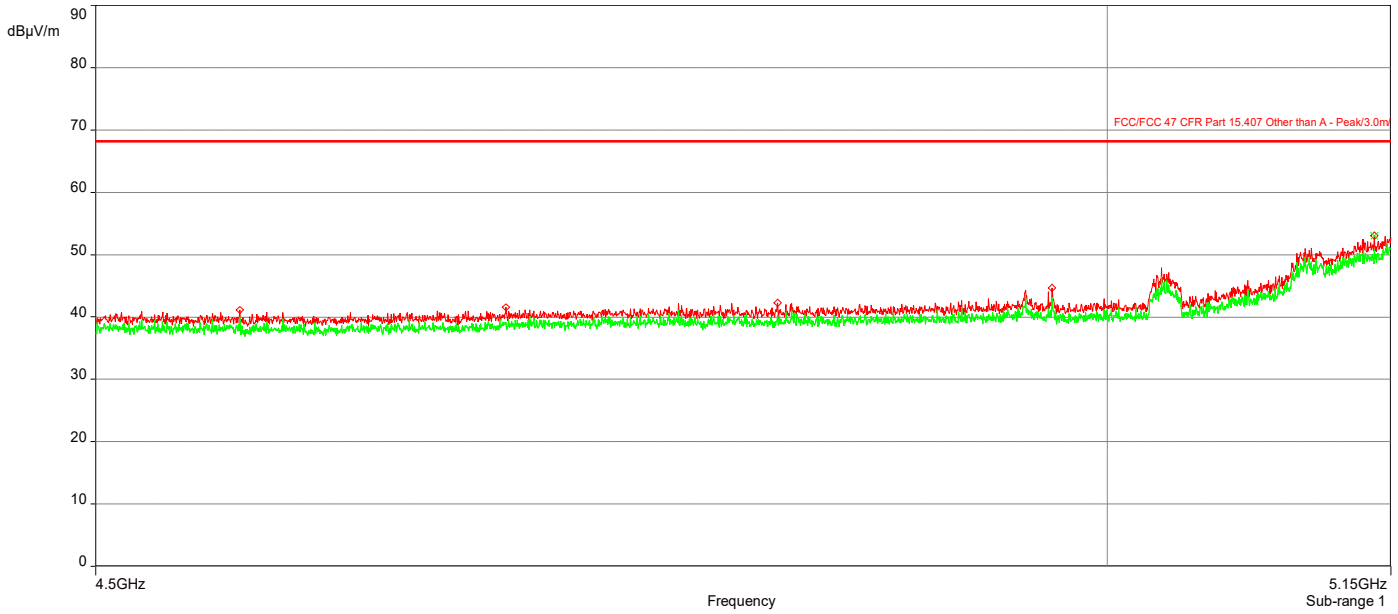

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.209 Other than A - Peak/3.0m
FCC/FCC 47 CFR Part 15.209 Other than A - Avg/3.0m
18GHz
Frequency
40GHz
Polarization: Vertical

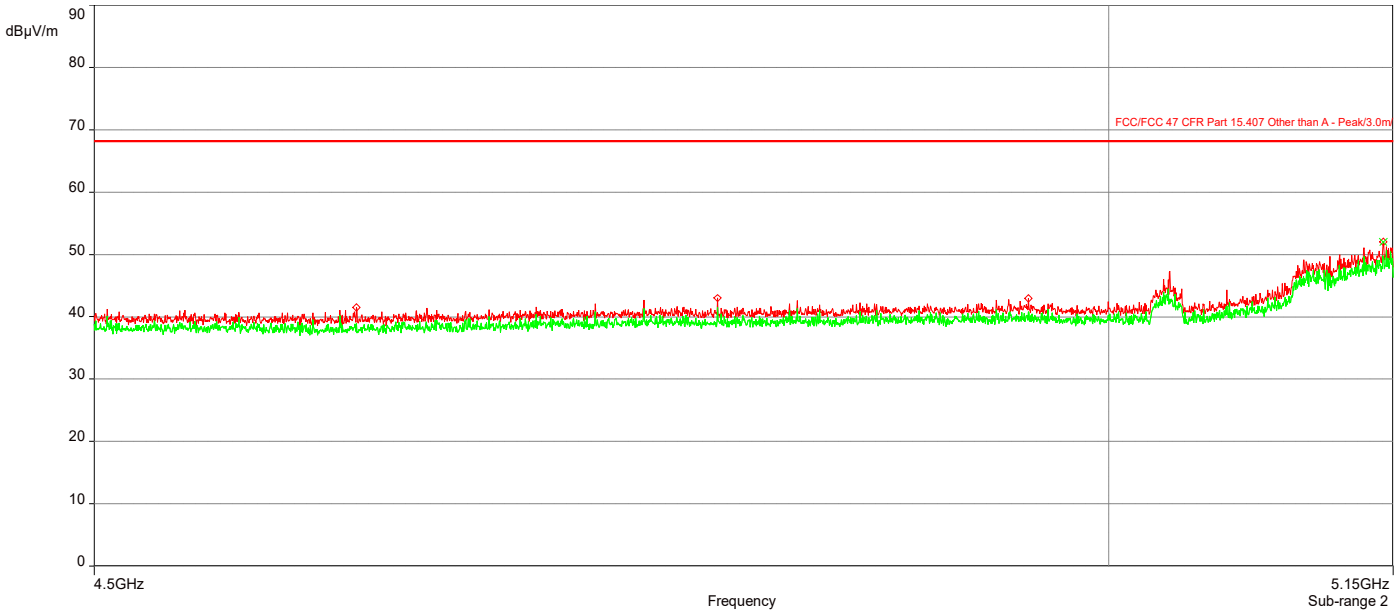
AH20110901-HAR-279-08_Unrestricted Bandedge_5G UNII-1_802.11a_Ch 36

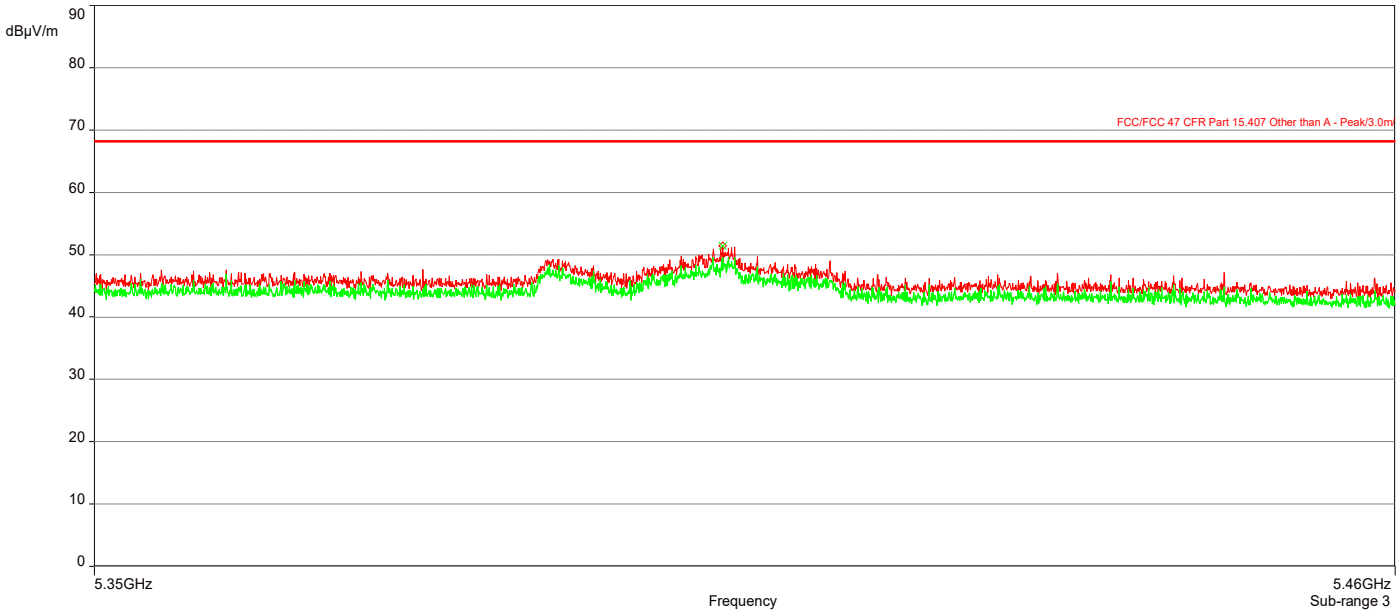
8/6/2021 08:44:30

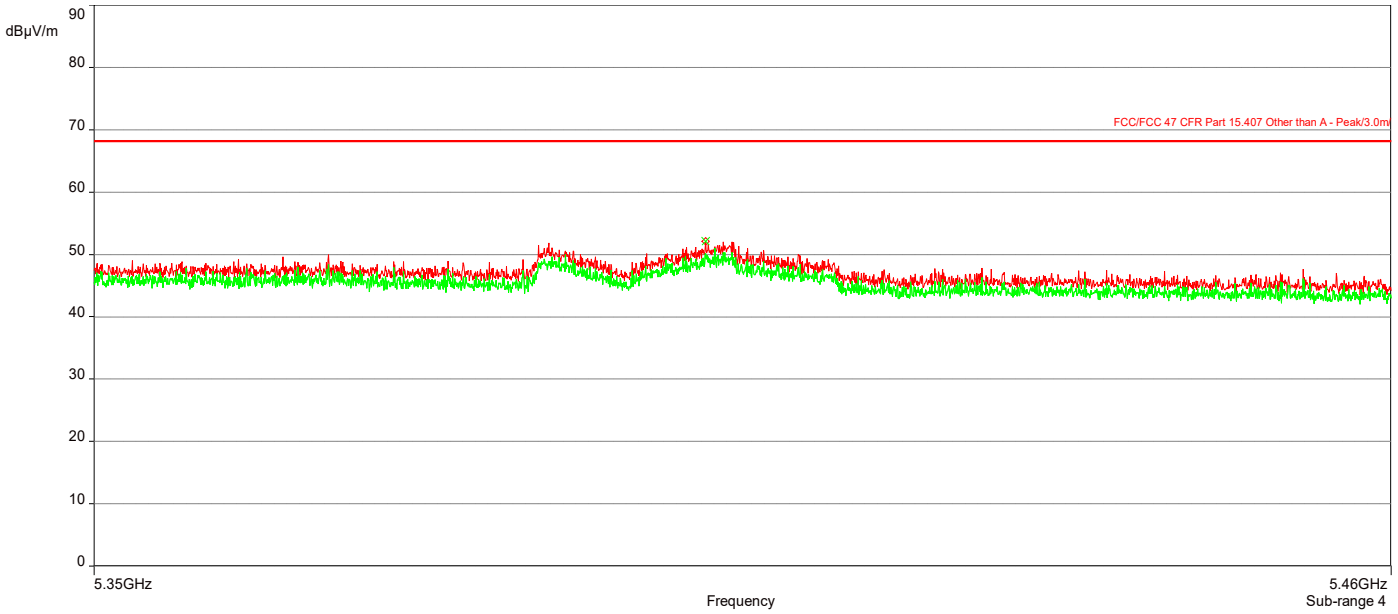
No	Frequency (MHz)	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1	5.1410941GHz	53.01	4.66	68.23	-15.22	1.00	203.50	Horizontal	Passed
2	5.1448645GHz	52.02	4.67	68.23	-16.21	2.00	62.70	Vertical	Passed
3	5.4028603GHz	51.42	5.27	68.23	-16.81	4.00	3.50	Vertical	Passed
4	5.4015842GHz	52.15	5.27	68.23	-16.08	2.00	340.30	Horizontal	Passed

Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
4.5GHz
5.15GHz
Frequency
Sub-range 2


dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
5.46GHz
Frequency
Sub-range 3

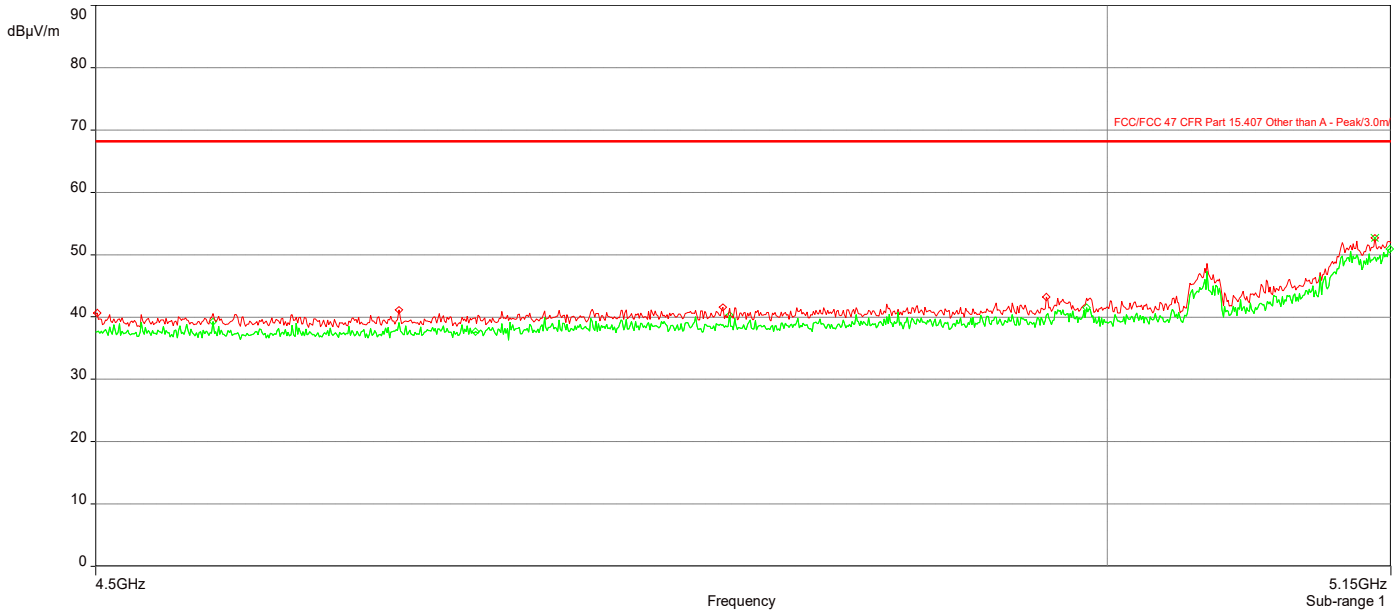

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
Frequency
5.46GHz
Sub-range 4

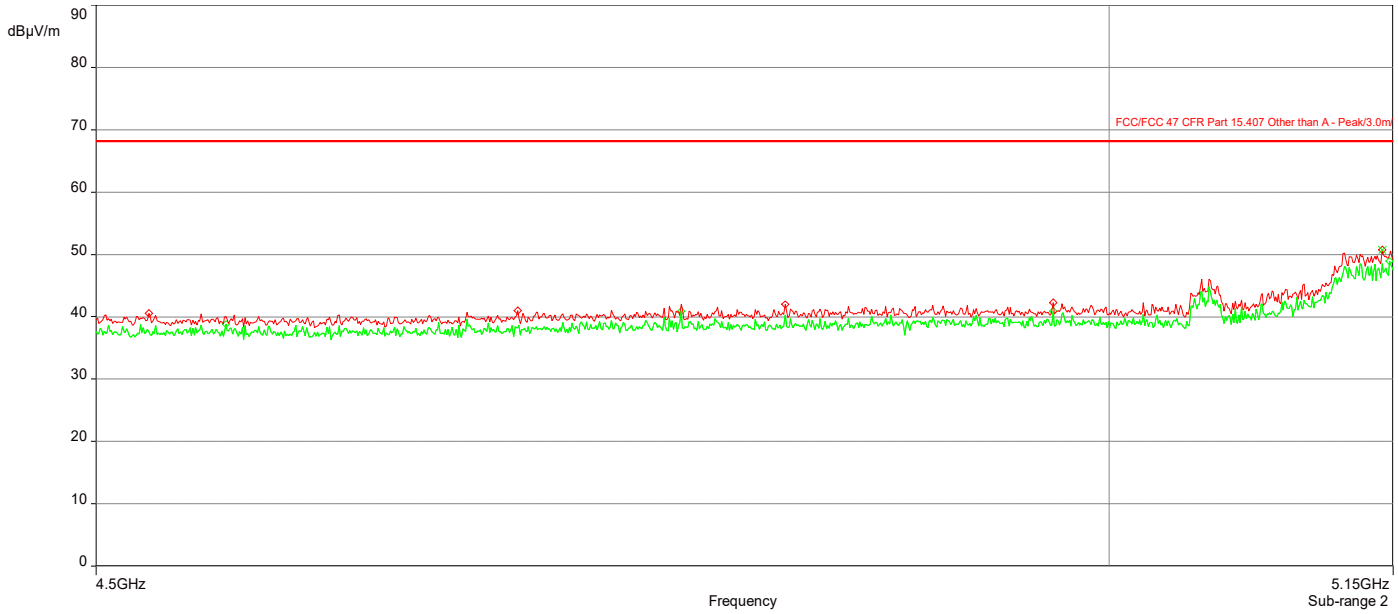
AH20110901-HAR-279-08_Unrestricted Bandedge_5G UNII-1_802.11a_Ch 40

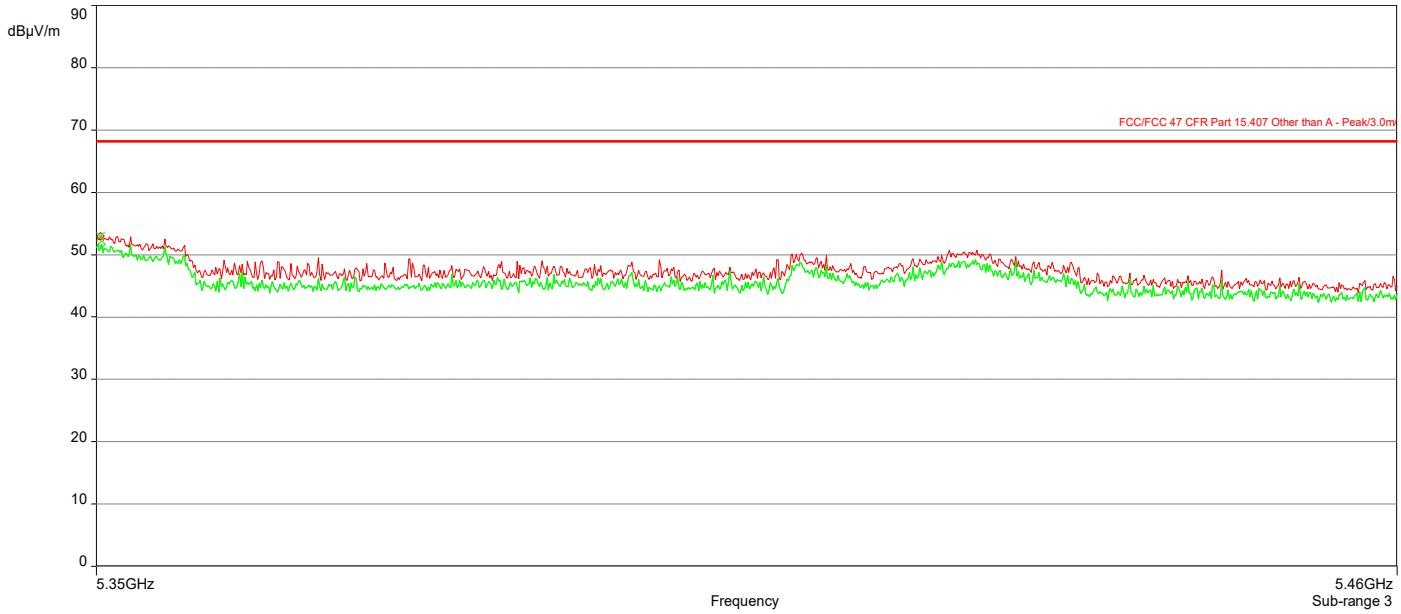
8/6/2021 11:56:24

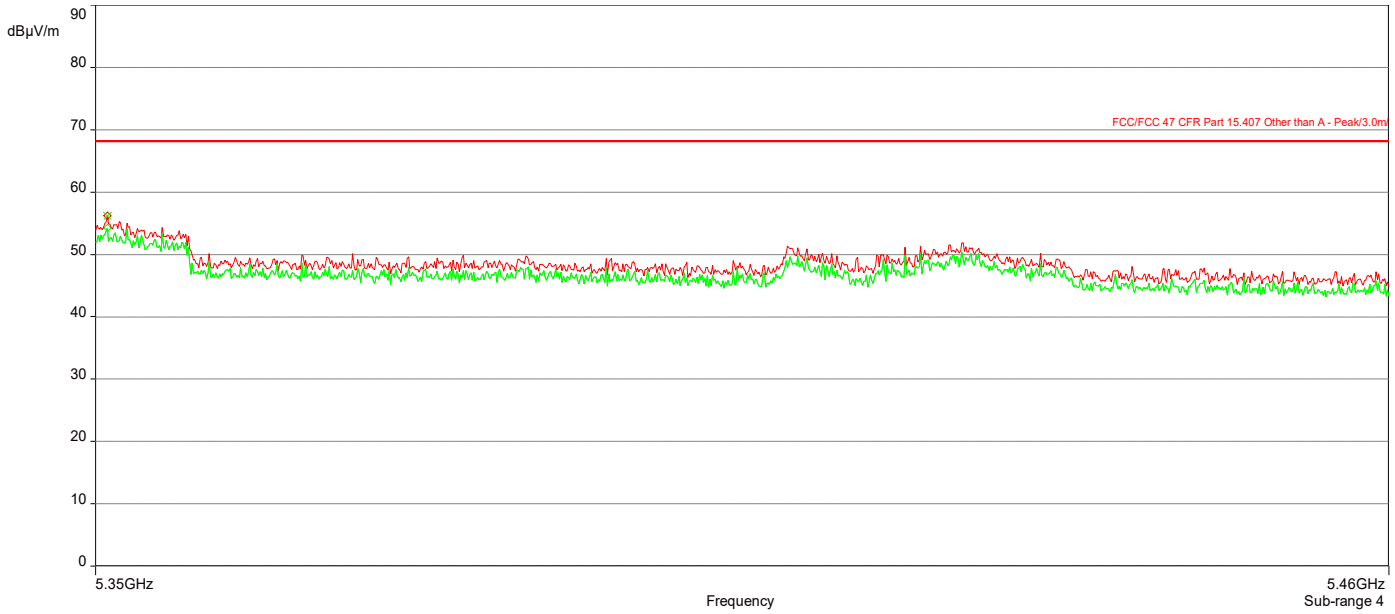
No	Frequency (MHz)	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1	5.1415415GHz	52.75	4.66	68.23	-15.48	1.00	211.20	Horizontal	Passed
2	5.1441441GHz	50.72	4.67	68.23	-17.51	2.00	61.80	Vertical	Passed
3	5.3503303GHz	52.94	5.10	68.23	-15.29	3.50	0.10	Vertical	Passed
4	5.350991GHz	56.17	5.10	68.23	-12.06	2.00	337.60	Horizontal	Passed

Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
4.5GHz
Frequency
5.15GHz
Sub-range 2


dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
Frequency
5.46GHz
Sub-range 3

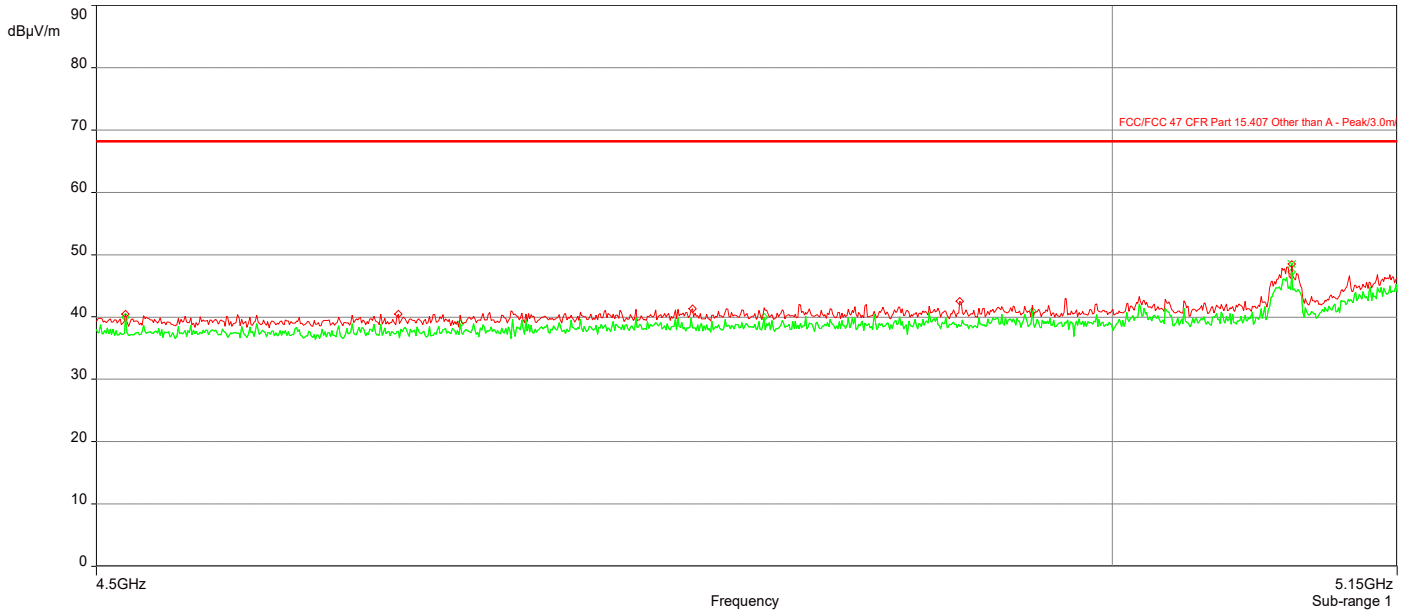

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
Frequency
5.46GHz
Sub-range 4

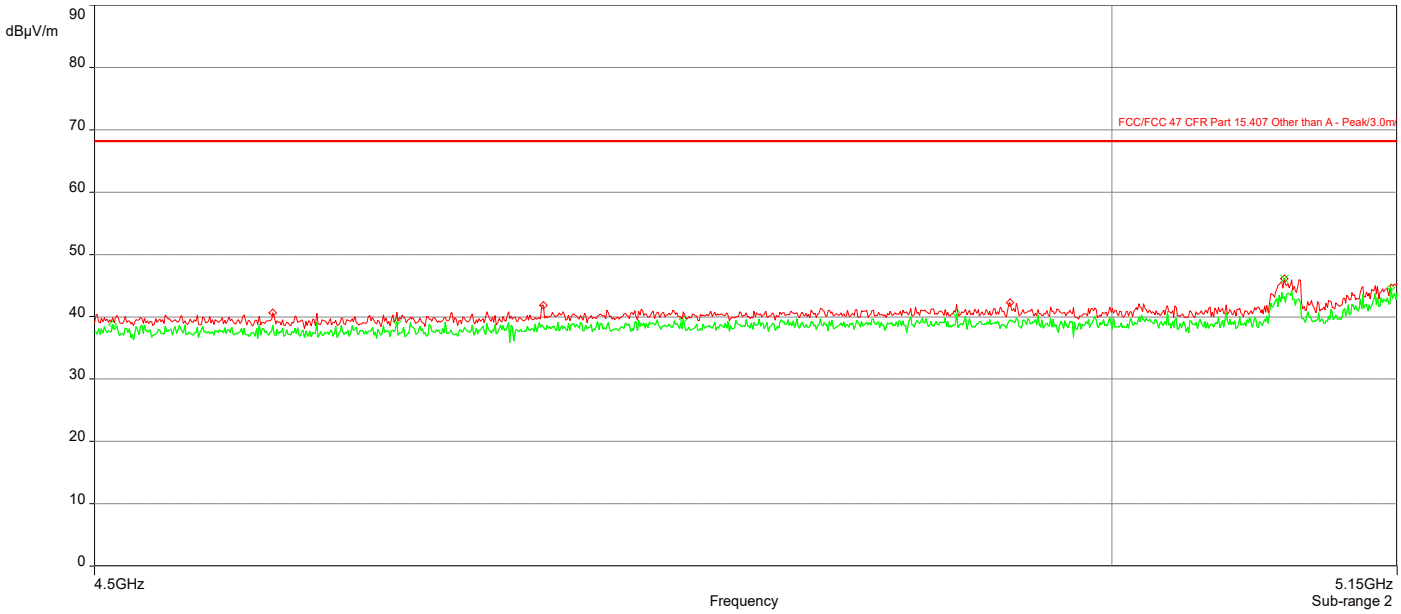
AH20110901-HAR-279-08_Unrestricted Bandedge_5G UNII-1_802.11a_Ch 48

8/6/2021 13:19:44

No	Frequency (MHz)	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1	5.094044GHz	48.54	4.54	68.23	-19.69	1.00	204.20	Horizontal	Passed
2	5.0901401GHz	46.14	4.55	68.23	-22.09	4.00	275.30	Vertical	Passed
3	5.3898599GHz	54.50	5.24	68.23	-13.73	2.50	358.90	Vertical	Passed
4	5.3887588GHz	56.68	5.23	68.23	-11.55	2.50	338.60	Horizontal	Passed

Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
4.5GHz
5.15GHz
Frequency
Sub-range 2


dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
5.46GHz
Frequency
Sub-range 3

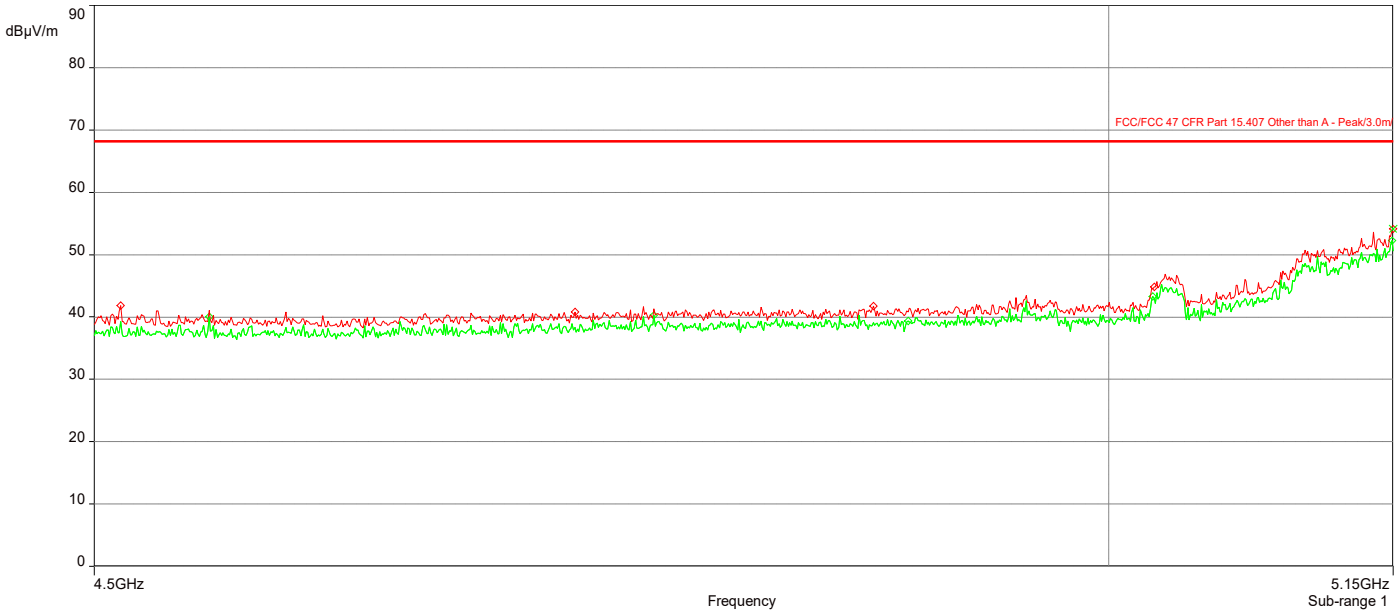

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
Frequency
5.46GHz
Sub-range 4

AH20110901-HAR-279-08_Unrestricted Bandedge_5G UNII-1_802.11n(HT20)_Ch 36

8/6/2021 13:58:10

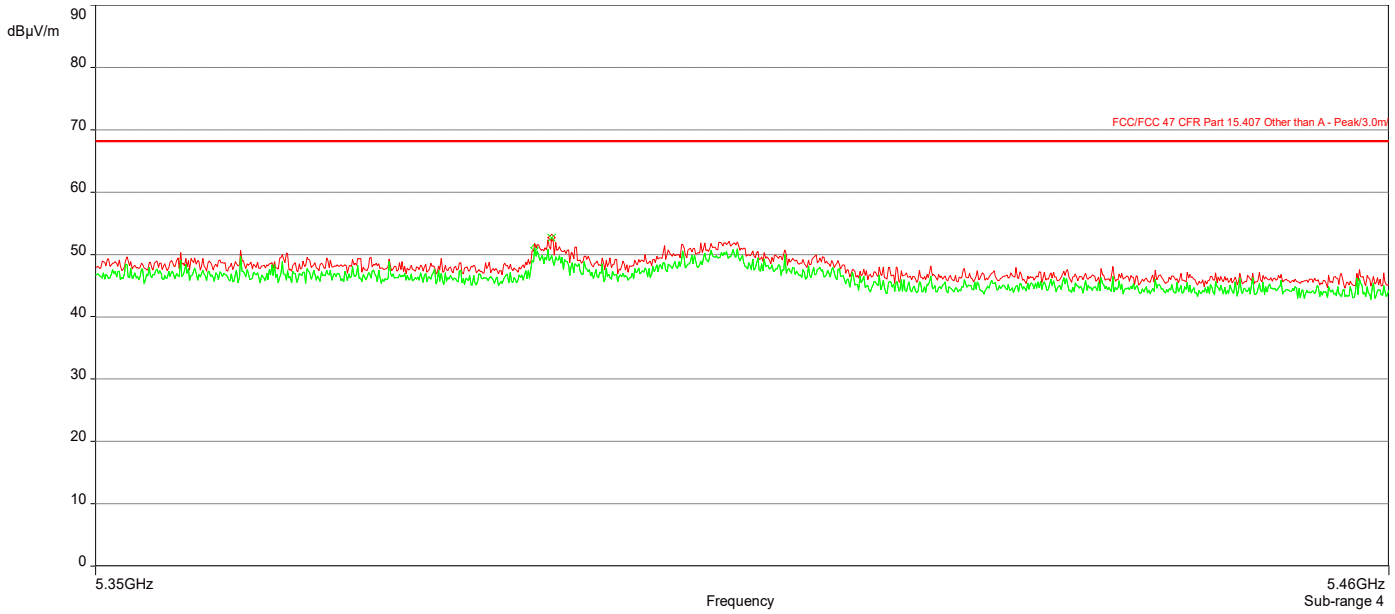
No	Frequency (MHz)	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1	5.15GHz	54.16	4.68	68.23	-14.07	2.00	336.20	Horizontal	Passed
2	5.1493493GHz	51.43	4.68	68.23	-16.80	3.50	4.40	Vertical	Passed
3	5.4035135GHz	51.60	5.27	68.23	-16.63	4.00	4.40	Vertical	Passed
4	5.3885385GHz	52.72	5.23	68.23	-15.51	2.50	341.90	Horizontal	Passed

Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
4.5GHz
Frequency
5.15GHz
Sub-range 2


dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
Frequency
5.46GHz
Sub-range 3

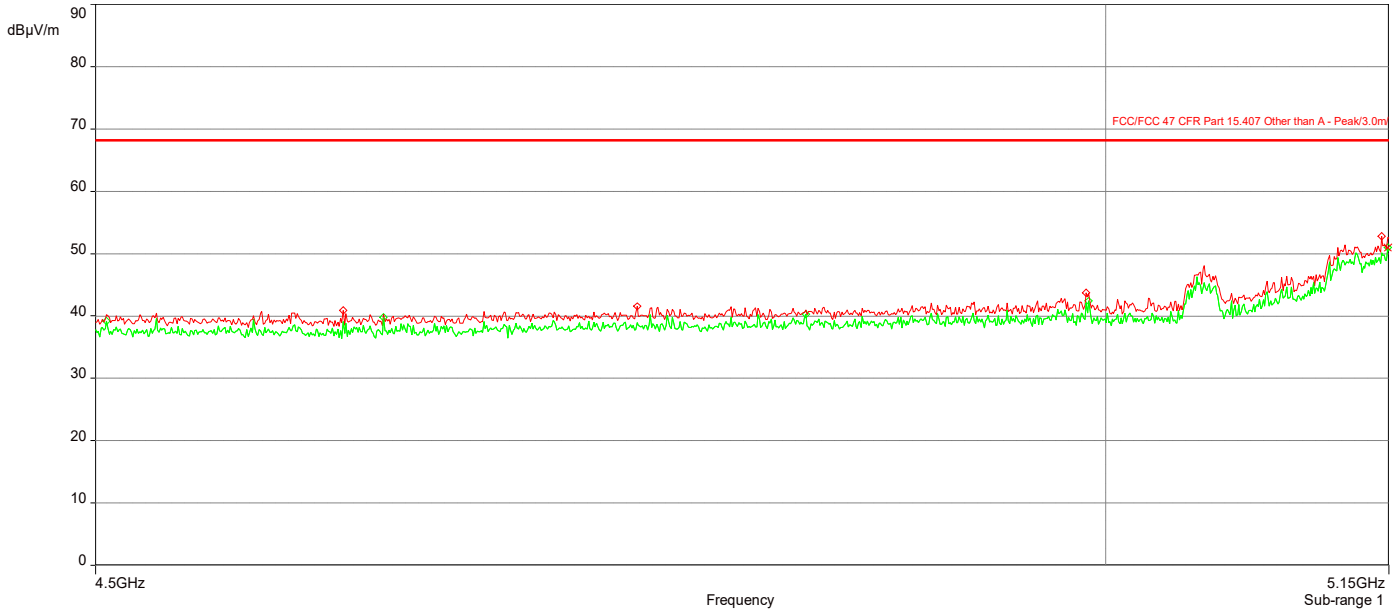

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
Frequency
5.46GHz
Sub-range 4

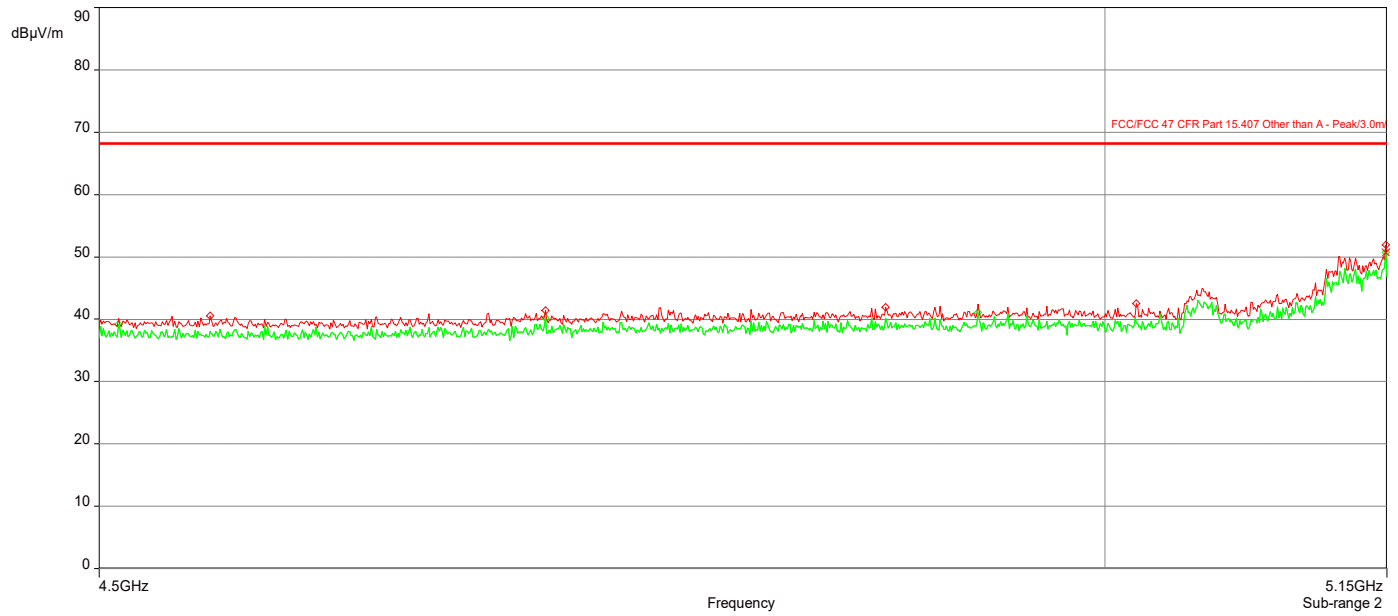
AH20110901-HAR-279-08_Unrestricted Bandedge_5G UNII-1_802.11n(HT20)_Ch 40

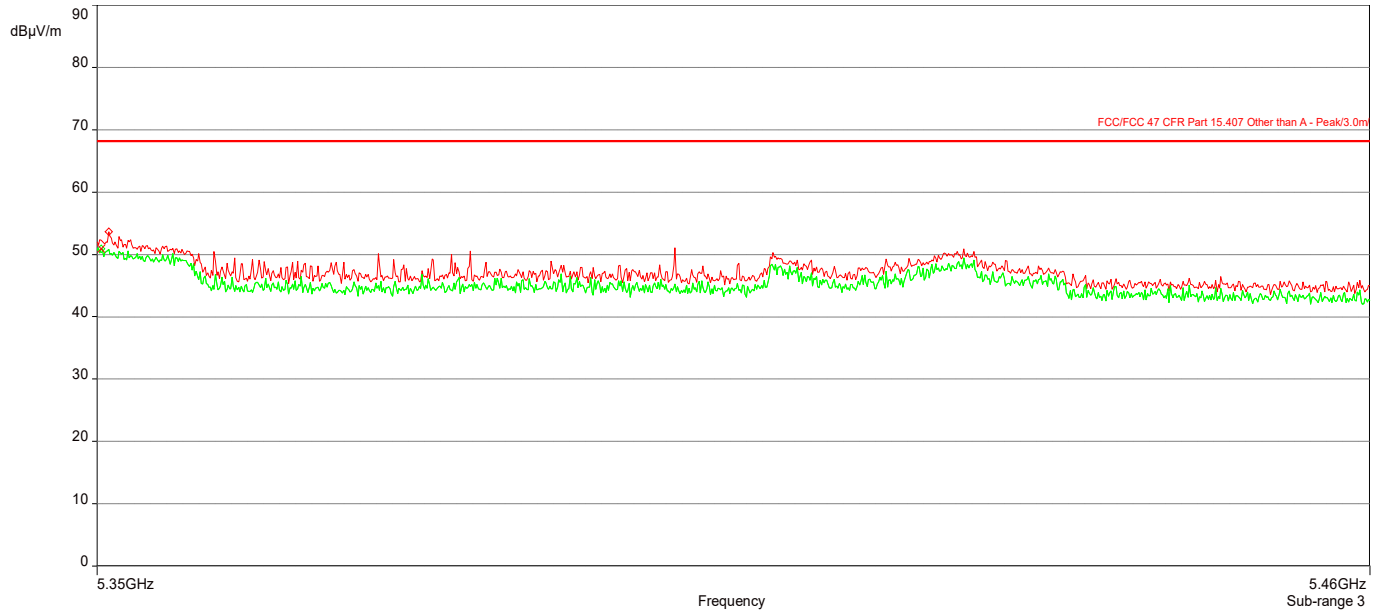
8/6/2021 14:41:04

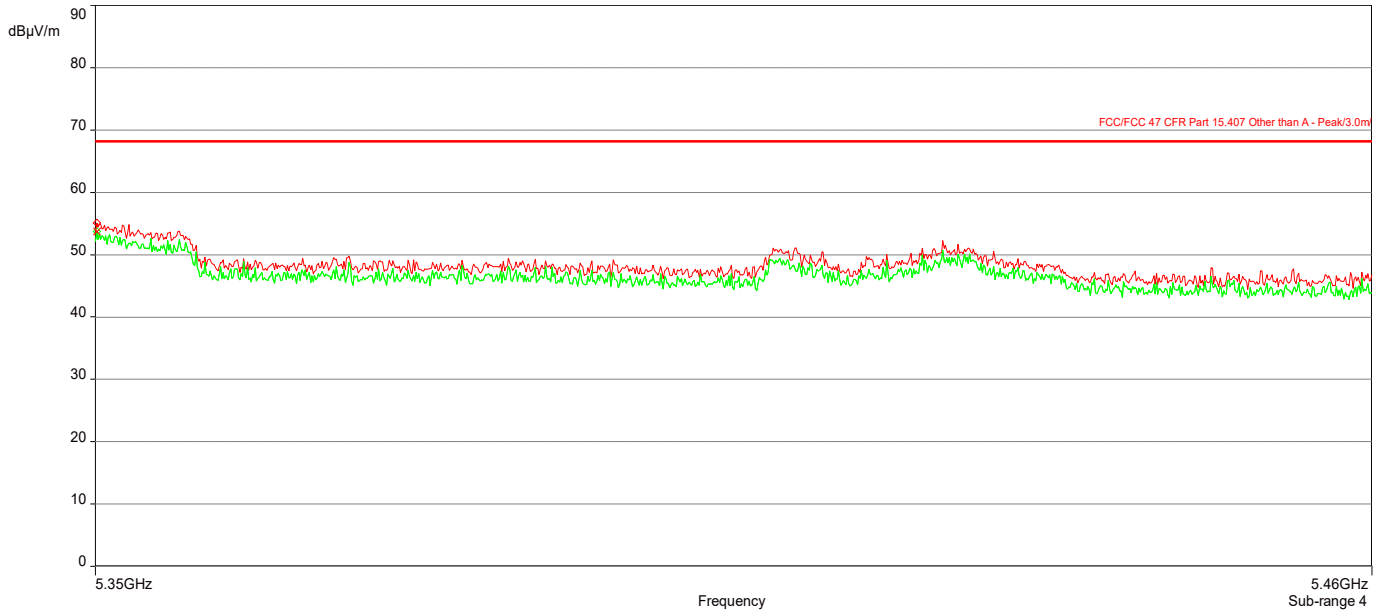
No	Frequency (MHz)	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	5.1460961GHz	52.75	4.67	68.23	-15.48	3.50	329.60	Horizontal	Passed
2.	5.1493493GHz	51.91	4.68	68.23	-16.32	3.50	7.50	Vertical	Passed
3.	5.350991GHz	53.62	5.10	68.23	-14.61	3.50	4.40	Vertical	Passed
4.	5.3501101GHz	55.10	5.10	68.23	-13.13	2.00	340.10	Horizontal	Passed

Graphs:






dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
Frequency
5.46GHz
Sub-range 3

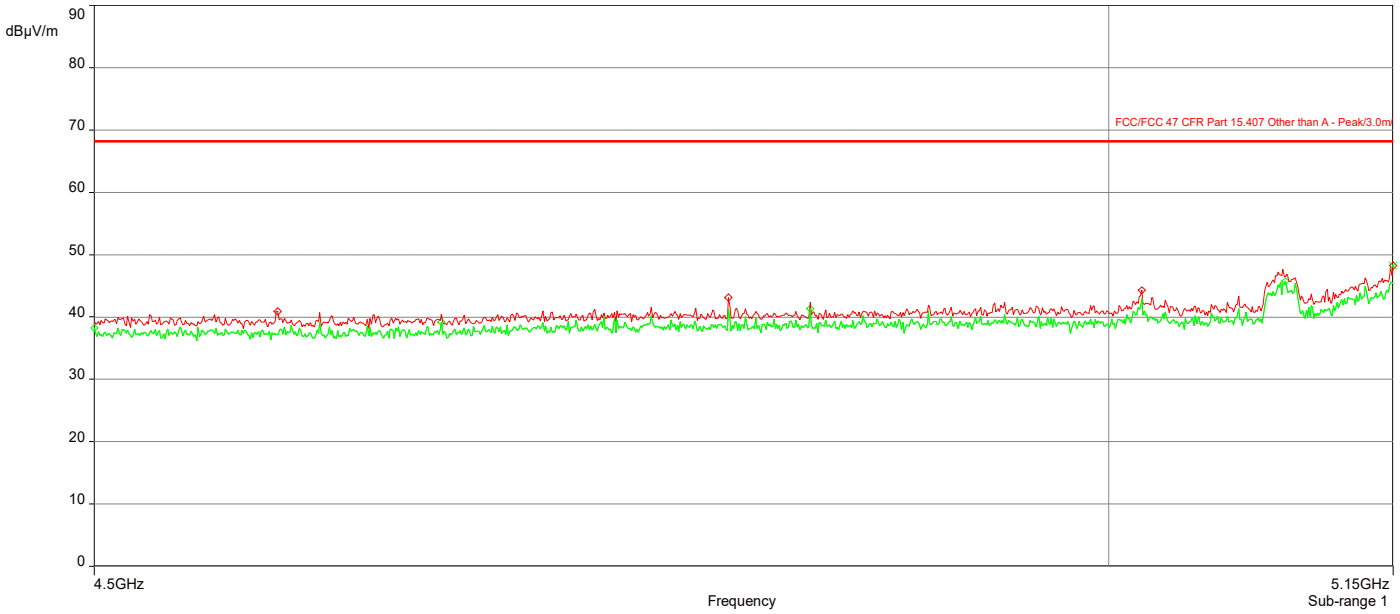

dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
Frequency
5.46GHz
Sub-range 4

AH20110901-HAR-279-08_Unrestricted Bandedge_5G UNII-1_802.11n(HT20)_Ch 48

8/6/2021 15:25:12

No	Frequency (MHz)	Level Peak Reading (dBuV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1	5.15GHz	48.29	4.68	68.23	-19.94	3.00	180.10	Horizontal	Passed
2	5.1486987GHz	46.45	4.68	68.23	-21.78	3.50	244.00	Vertical	Passed
3	5.3901902GHz	53.93	5.24	68.23	-14.30	4.00	0.60	Vertical	Passed
4	5.3904104GHz	55.81	5.24	68.23	-12.42	2.50	345.20	Horizontal	Passed

Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
4.5GHz
Frequency
5.15GHz
Sub-range 2


dBµV/m
90
80
70
60
50
40
30
20
10
0
FCC/FCC 47 CFR Part 15.407 Other than A - Peak/3.0m
5.35GHz
Frequency
5.46GHz
Sub-range 3