TEST REPORT

Product Name:	Streaming Media Player
Trade Mark:	EPSON
Model No.:	DTP9757
Report Number:	2212173258RFC-4
Test Standards:	FCC 47 CFR Part 15 Subpart E
FCC ID:	BKMAE-DTP9757
Test Result:	PASS
Date of Issue:	March 3, 2023

Prepared for:

Seiko Epson Corporation
3-3-5 Owa Suwa-shi Nagano-Ken 392-8502, Japan

Prepared by:

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Approved by:	Kevin Liang Assistant Manager	Date:	March 3, 2023

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Version

Version No.	Date	Description
V1.0	March 3, 2023	Original

CONTENTS

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Seiko Epson Corporation
Address of Applicant:	3-3-5 Owa Suwa-shi Nagano-Ken 392-8502, Japan
Manufacturer:	Shenzhen Jiuzhou Electric Co., Ltd
Address of Manufacturer:	6F, Jiuzhou Electric Building, Southern No. 12 Rd., High-tech Industrial Park, Nanshan District, Shenzhen, China

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Streaming Media Player		
Model No.:	DTP9757		
Trade Mark:	EPSON		
DUT Stage:	Identical Prototype		
EUT Supports Function: (Provided by the customer)	2.4 GHz ISM Band:	IEEE 802.11b/g/n/ax	
		Bluetooth 5.1	
	U-NII 5 GHz Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac/ax
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac/ax
		5 725 MHz to 5 850 MHz	IEEE 802.11a/n/ac/ax
Software Version:	001 (Provided by the customer)		
Hardware Version:	V1.4 (Provided by the customer)		
Sample Received Date:	January 5, 2023		
Sample Tested Date:	January 5, 2023 to February 3, 2023		
Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.			

1.2.2 Description of Accessories

None.

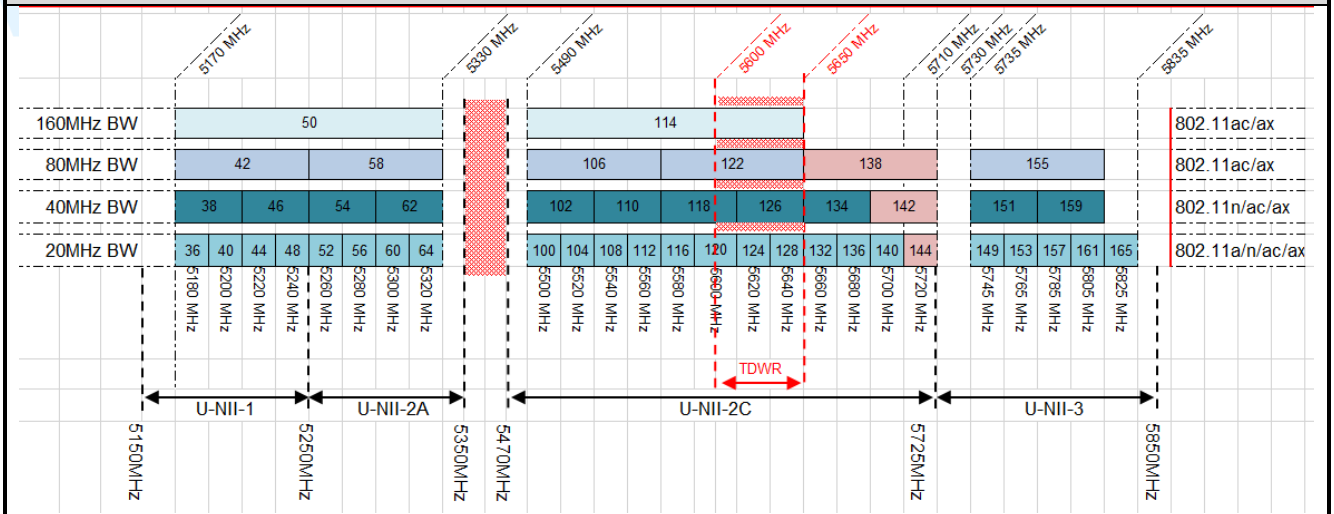
1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Frequency Bands:	5150 MHz to 5250 MHz (U-NII-1)
	5250 MHz to 5350 MHz (U-NII-2A)
	5725 MHz to 5850 MHz (U-NII-3)
Frequency Ranges:	5180 MHz to 5240 MHz
	5260 MHz to 5320 MHz
	5745 MHz to 5825 MHz
Support Standards:	IEEE 802.11a/n/ac/ax
TPC Function:	Not Support
DFS Operational mode:	Slave without radar Interference detection function
Type of Modulation:	IEEE 802.11a/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
	IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
	IEEE 802.11ax: ☑ OFDM (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK) ☑ OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Channel Spacing:	IEEE 802.11a/n-HT20/ac-VHT20/ax-HE20: 20 MHz
	IEEE 802.11n-HT40/ac-VHT40/ax-HE40: 40 MHz
	IEEE 802.11ac-VHT80/ax-HE80: 80 MHz

Data Rate:	IEEE 802.11a: Up to 54 Mbps			
	IEEE 802.11n: Up to MCS15			
	IEEE 802.11ac-VHT20: Up to MCS8			
	IEEE 802.11ac-VHT40/VHT80: Up to MCS9			
	IEEE 802.11ax-HE20/HE40/HE80: Up to MCS11			
Number of Channels:	5150 MHz to 5350 MHz: 8 for 802.11a/n-HT20/ac-VHT20/ax-HE20 4 for 802.11n-HT40)/ac-VHT40/ax-HE40 2 for 802.11ac-VHT80/ax-HE80			
	5725 MHz to 5850 MHz: 5 for IEEE 802.11a/n-HT20/ac-VHT20/ax-HE20 2 for IEEE 802.11n-HT40/ac-VHT40/ax-HE40 1 for IEEE 802.11ac-VHT80/ax-HE80			
Antenna Type: (Provided by the customer)	Antenna 1:	Metal Antenna		
	Antenna 2:	Metal Antenna		
Antenna Gain (dBi): (Provided by the customer)	**Antenna**	**U-NII-1**	**U-NII-2A**	**U-NII-3**
	Antenna 1:	2.99	3.08	3.63
	Antenna 2:	2.80	2.21	3.60
Maximum conducted output power (dBm):	**Mode**	**U-NII-1**	**U-NII-2A**	**U-NII-3**
	IEEE 802.11a:	14.83	13.11	13.49
	IEEE 802.11n-HT20:	11.23	15.66	16.45
	IEEE 802.11n-HT40:	15.41	15.85	16.58
	IEEE 802.11ac-VHT20	11.06	14.62	15.62
	IEEE 802.11ac-VHT40	14.94	14.70	15.71
	IEEE 802.11ac-VHT80:	14.60	14.45	15.40
	IEEE 802.11ax-HE20:	14.57	14.86	15.82
	IEEE 802.11ax-HE40:	16.12	15.82	15.81
	IEEE 802.11ax-HE80:	15.45	15.27	15.62
Normal Test Voltage:	5 Vdc			

1.4 OTHER INFORMATION

Operation Frequency Each of Channel



1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.
1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	FCC ID	Supplied by
Notebook	DELL	Inspiron 5409	N/A	N/A	Notebook
Mouse	DELL	MS111	CN-011D3V-738	N/A	UnionTrust
Wireless Home Router	SAGEMCOM	FAST5280	253703944	VW3FAST5280	UnionTrust
Key-Press Attenuator	Huaxin	KT2.5-90/1S-2S	N/A	N/A	UnionTrust
4 Way Divider	WOKEN	0120A040560002D	N/A	N/A	UnionTrust
Adaptor	BULL	GNV-AU1652	N/A	N/A	UnionTrust
Monitor	AOC	24B2X	AVLN51A000121 6K	N/A	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable*2	SMA	0.1 Meter	Applicant
2	USB Micro-B Plug Cable	USB Micro-B	0.8 Meter	Applicant
3	USB Type-A Plug Cable	USB Type-A	0.8 Meter	Applicant

1.6 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China, China 518109
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.7 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories
CAB identifier: CN0032

FCC Accredited Lab.
Designation Number: CN1194
Test Firm Registration Number: 259480

1.8 DEVIATION FROM STANDARDS

None.

1.9 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.10 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.11 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9kHz-150kHz	±3.2 dB
2	Conducted emission 150kHz-30MHz	±2.7 dB
3	Radiated emission 9kHz-30MHz	± 4.7 dB
4	Radiated emission 30MHz-1GHz	± 4.9 dB
5	Radiated emission 1GHz-18GHz	± 4.8 dB
6	Radiated emission 18GHz-26GHz	± 5.1 dB
7	Radiated emission 26GHz-40GHz	± 5.1 dB
8	Conducted spurious emissions	± 2.7 dB
9	RF Power, Conducted	± 0.68 dB
10	Occupied Bandwidth	± 1.86 %
11	Radio Frequency	5.6 GHz: ± 6.4 x 10^{-8}
12	Transmission Time	± 0.19 %

2. TEST SUMMARY

FCC 47 CFR Part 15 Subpart E Test Cases			
Test Item	**Test Requirement**	**Test Method**	**Result**
Antenna Requirement	FCC 47 CFR Part 15 Subpart C Section 15.203 FCC 47 CFR Part 15 Subpart E Section 15.407(a)(1) (2)	N/A	PASS
26 dB emission bandwidth	FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(2)(5)	KDB 789033 D02 v02r01 Section C.1	PASS
6 dB bandwidth	FCC 47 CFR Part 15 Subpart E Section 15.407 (e)	KDB 789033 D02 v02r01 Section C.2	PASS
Maximum conducted output power	FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)	KDB 789033 D02 v02r01 Section E.3.a (Method PM)	PASS
Power Spectral Density	FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)	KDB 789033 D02 v02r01 Section F	PASS
Radiated Emissions and Band Edge Measurement	FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(1)(2)(3)(4)(6) FCC 47 CFR Part 15 Subpart C Section 15.209/205	KDB 789033 D02 v02r01 Section G.3, G.4, G.5, and G.6	PASS
Dynamic Frequency Selection	FCC 47 CFR Part 15 Subpart E Section 15.407 (h)	KDB 905462 D03 Client Without DFS New Rules v01r02	PASS
AC Power Line Conducted Emission	FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(6) FCC 47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013, Section 6.2.	PASS

For Dynamic Frequency Selection

Test Case	Result
Channel Availability Check Time	N/A[1]
U-NII Detection Bandwidth	N/A[1]
Channel Closing Transmission Time	PASS
Channel Move Time	PASS
DFS Detection Threshold	N/A[1]
Non- Occupancy Period	N/A[1]
Note: 1) The EUT is slave, NA In this whole report not applicable.	

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☑	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	Euroshiedpn-CT001270-1317	22-Jan-2021	21-Jan-2024
☑	Receiver	R&S	ESIB26	100114	3-Nov-2022	2-Nov-2023
☑	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	15-Apr-2022	14-Apr-2023
☑	Loop Antenna	ETS-LINDGREN	6502	00202525	11-Nov-2021	10-Nov-2023
☑	Broadband Antenna	ETS-LINDGREN	3142E	00201566	11-Nov-2021	10-Nov-2023
☑	6dB Attenuator	Talent	RA6A5-N-18	18103001	11-Nov-2021	10-Nov-2023
☑	Preamplifier	HP	8447F	2805A02960	1-Nov-2022	31-Oct-2023
☑	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	17-Apr-2022	16-Apr-2024
☑	Pre-amplifier	ETS-LINDGREN	00118385	00201874	1-Nov-2022	31-Oct-2023
☑	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	21-Nov-2022	20-Nov-2023
☑	Pre-amplifier	ETS-LINDGREN	00118384	00202652	21-Nov-2022	20-Nov-2023
☑	Band Rejection Filter (5150MHz~5880MHz)	Micro-Tronics	BRM50716	G186	2-Nov-2022	1-Nov-2023
☑	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☑	Test Software	Audix	e3	Software Version: 9.160323		

Conducted Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	Receiver	R&S	ESR7	101181	1-Nov-2022	31-Oct-2023
☒	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	1-Nov-2022	31-Oct-2023
☒	LISN	R&S	ESH2-Z5	860014/024	1-Nov-2022	31-Oct-2023
☒	LISN	ETS-Lindgren	3816/2SH	00201088	1-Nov-2022	31-Oct-2023
☒	Shielding room	ETS-Lindgren	843	Euroshiedpn-CT001270-1246	5-Nov-2021	4-Nov-2024
☒	Test Software	Audix	e3	Software Version: 9.160323		

Conducted RF test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	15-Apr-2022	14-Apr-2023
☒	EXA Spectrum Analyzer	KEYSIGHT	N9020A	MY51286807	1-Nov-2022	31-Oct-2023
☒	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430035	3-Nov-2022	2-Nov-2023
☐	EXG-B RF Analog Signal Generator	KEYSIGHT	N5171B	MY53051777	1-Nov-2022	31-Oct-2023
☒	MXG X-Series RF Vector Signal Generator	KEYSIGHT	N5182B	MY51350267	1-Nov-2022	31-Oct-2023

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
NT/NV	+15 to +35	5	20 to 75

Remark:
1) NV: Normal Voltage; NT: Normal Temperature

4.1.2 Record of Normal Environment and Test Sample

Test Item	Temp. (°C)	Relative Humidity (%)	Pressure (kPa)	Sample No.	Tested by
AC Power Line Conducted Emission	23.4	46	100.5	S20221217949-ZJC40/50	Lucas Ouyang
26 dB emission bandwidth	22.4	50.2	100.7	S20221217949-ZJC41/50	Rain Wang
Maximum conducted output power					
Peak Power Spectral Density					
6 dB bandwidth					
Dynamic Frequency Selection					
Radiated Emissions and Band Edge Measurement	20.9	38.9	100.7	S20221217949-ZJC40/50	Andy Lin

4.2 TEST CHANNELS

Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
IEEE 802.11a IEEE 802.11n-HT20 IEEE 802.11ac-VHT20 IEEE 802.11ax-HE20	5150 - 5250 MHz	Channel 36	Channel 44	Channel 48
		5180 MHz	5220 MHz	5240 MHz
	5250 - 5350 MHz	Channel 52	Channel 60	Channel 64
		5260 MHz	5300 MHz	5320 MHz
	5725 - 5850 MHz	Channel 149	Channel 157	Channel 165
		5745 MHz	5785 MHz	5825 MHz
IEEE 802.11n-HT40 IEEE 802.11ac-VHT40 IEEE 802.11ax-HE40	5150 - 5250 MHz	Channel 38	--	Channel 46
		5190 MHz	--	5230 MHz
	5250 - 5350 MHz	Channel 54	--	Channel 62
		5270 MHz	--	5310 MHz
	5725 - 5850 MHz	Channel 151	--	Channel 159
		5755 MHz	--	5795 MHz
IEEE 802.11ac-VHT80 IEEE 802.11ax-HE80	5150 - 5250 MHz	--	Channel 42	--
		--	5210 MHz	--
	5250 - 5350 MHz	--	Channel 58	--
		--	5290 MHz	--
	5725 - 5850 MHz	--	Channel 155	--

		--	5775 MHz	--

4.3 EUT TEST STATUS

Mode	Tx/Rx Function	Description
IEEE 802.11a	1Tx/1Rx	1. Keep the EUT in continuously transmitting or receiving with modulation and data rates test single. 2. Keep the equipment in normal operation and achieve a certain throughput.
IEEE 802.11n IEEE 802.11ac IEEE 802.11ax	2Tx/2Rx	

Power Setting (Provided by the customer)						
Mode	U-NII-1		U-NII-2A		U-NII-3	
	Ant.1	Ant.2	Ant.1	Ant.2	Ant.1	Ant.2
IEEE 802.11a	14	13	13	11	15	15
IEEE 802.11n-HT20	7	7	11	11	15	15
IEEE 802.11n-HT40	12	12	13	13	16	16
IEEE 802.11ax-VHT20	7	7	10	10	14	14
IEEE 802.11ax-VHT40	12	12	12	12	15	15
IEEE 802.11ax-VHT80	12	12	12	12	15	15
IEEE 802.11ax-HE20 (26RU)	-1	-1	7	7	13	13
IEEE 802.11ax-HE20 (52RU)	2	2	9	9	13	13
IEEE 802.11ax-HE20 (106RU)	7	7	9	9	13	13
IEEE 802.11ax-HE20 (SU)	9	9	10	10	14	14
IEEE 802.11ax-HE40 (SU)	11	11	11	11	14	14
IEEE 802.11ax-HE80 (SU)	11	11	11	11	14	14

Test Software (Provided by the customer)
Test software name: ADB commands;

4.4 PRE-SCAN

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate. Following data rate was (were) selected for the final test as listed below

Mode	Worst-case data rates
IEEE 802.11a	6 Mbps
IEEE 802.11n-HT20	MCS8
IEEE 802.11n-HT40	MCS8
IEEE 802.11ac-VHT20	MCS0
IEEE 802.11ac-VHT40	MCS0
IEEE 802.11ac-VHT80	MCS0
IEEE 802.11ax-HE20	MCS0
IEEE 802.11ax-HE40	MCS0
IEEE 802.11ax-HE80	MCS0

4.5 TEST SETUP

4.5.1 For Radiated Emissions test setup

Figure 1. Below 30MHz

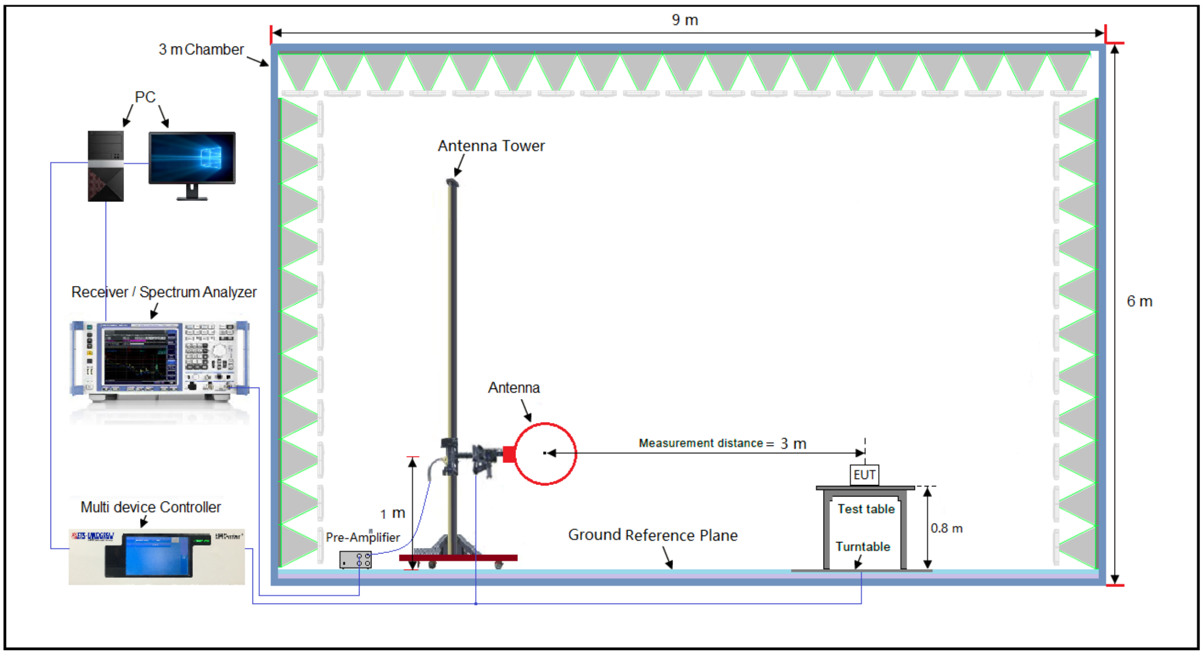


Figure 2. 30MHz to 1GHz

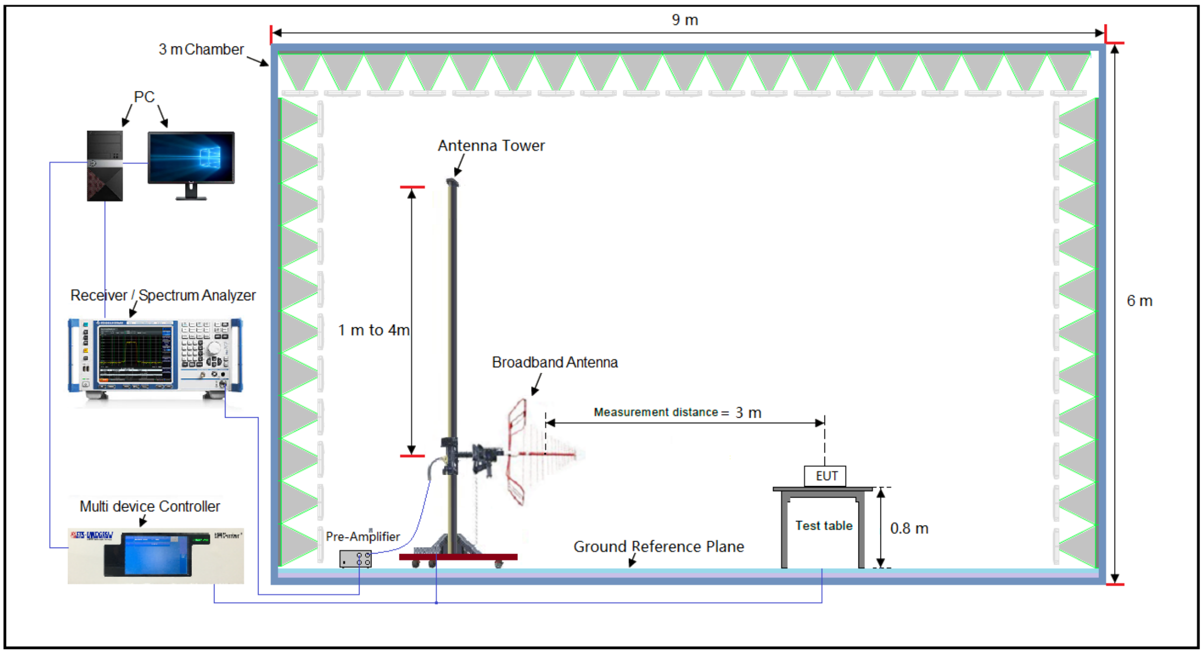
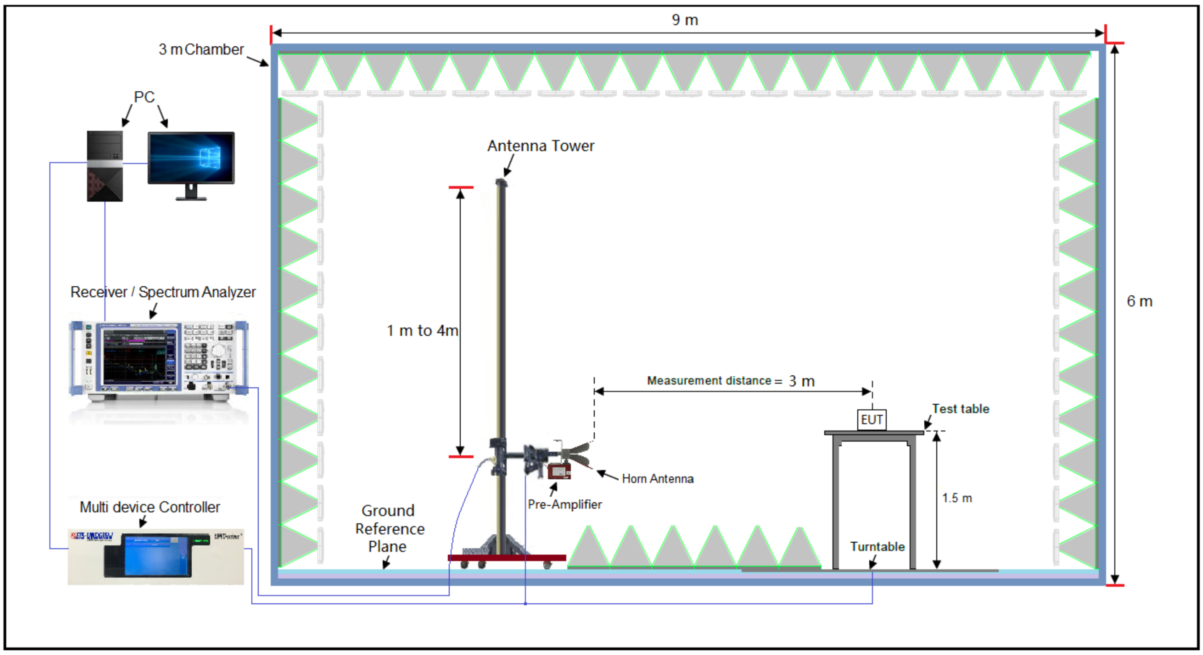
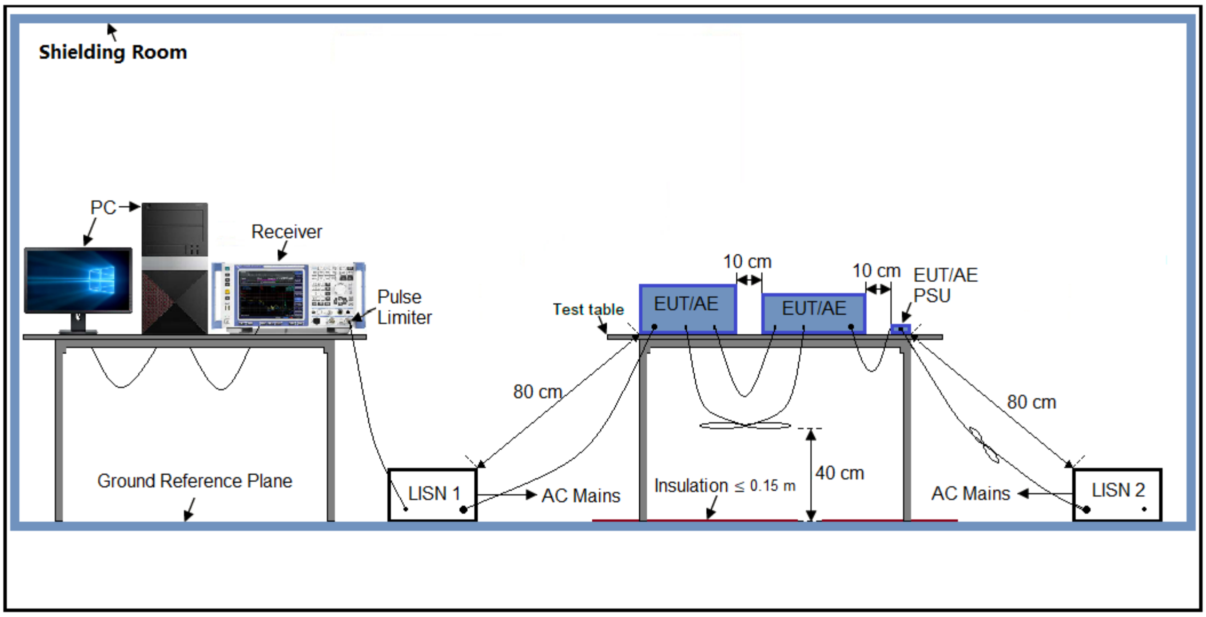


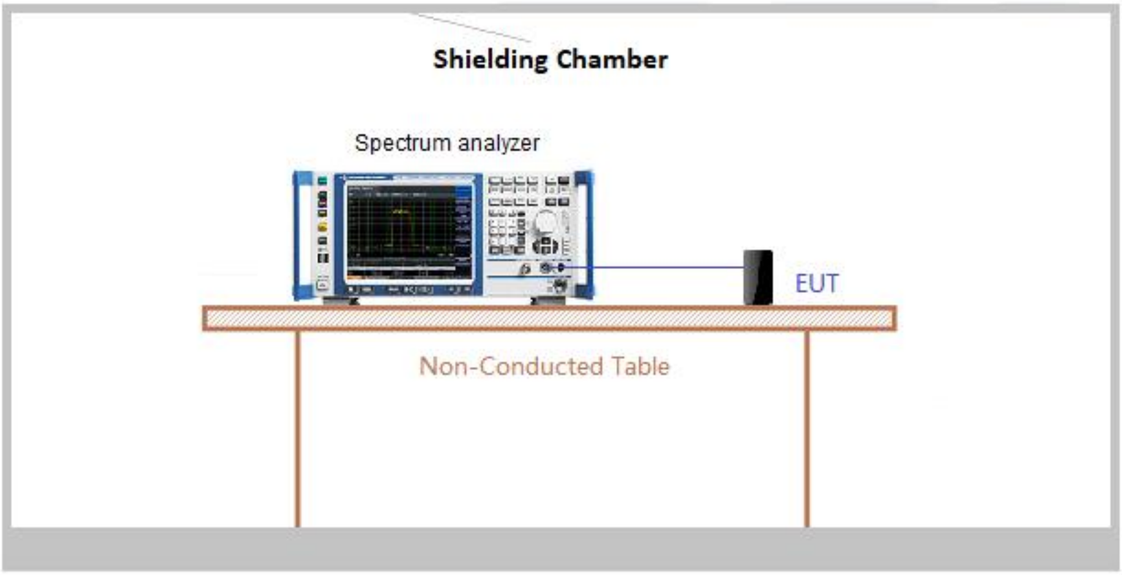
Figure 3. Above 1GHz



4.5.2 For Conducted Emissions test setup



4.5.3 For Conducted RF test setup



Normal Environment

4.6 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. Only the worst case data were recorded in this test report.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Therefore, all final radiated testing was performed with the EUT in orientation.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.7 DUTY CYCLE

Test Procedure: ANSI C63.10-2013 Clause 12.2.

Test Results

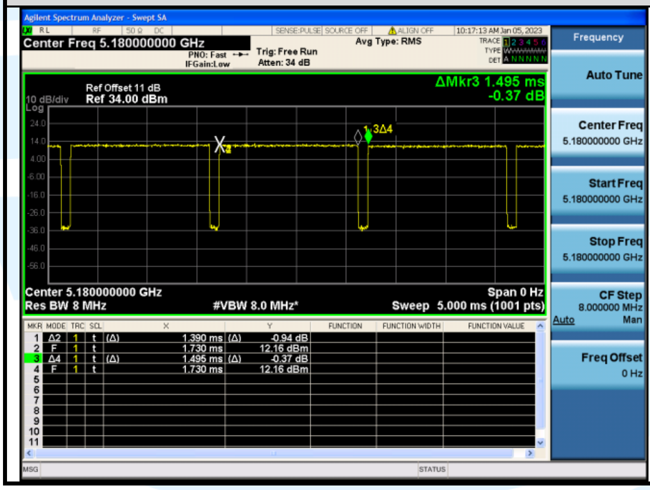
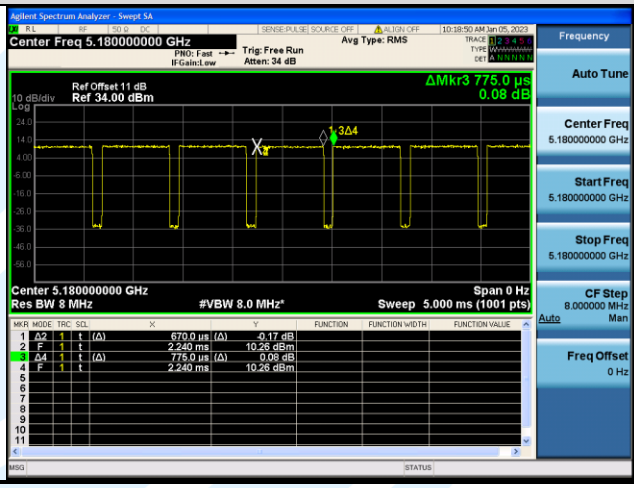
Mode	RU	Data Rates	On Time (msec)	Period (msec)	Duty Cycle (linear)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/T Minimum VBW (kHz)
IEEE 802.11a	N/A	6 Mbps	1.390	1.495	0.93	92.98	0.32	0.72
IEEE 802.11n-HT20	N/A	MCS 8	0.670	0.775	0.86	86.45	0.63	1.49
IEEE 802.11n-HT40	N/A	MCS 8	0.345	0.455	0.76	75.82	1.20	2.90
IEEE 802.11ac-VHT20	N/A	MCS 0	1.920	1.960	0.98	97.96	0.09	0.52
IEEE 802.11ac-VHT40	N/A	MCS 0	1.506	1.566	0.96	96.17	0.17	0.66
IEEE 802.11ac-VHT80	N/A	MCS 0	2.190	2.260	0.97	96.90	0.14	0.46
IEEE 802.11ax-HE20	26RU0	MCS 0	5.115	5.205	0.98	98.27	0.00	0.01
IEEE 802.11ax-HE20	52RU37	MCS 0	2.610	2.685	0.97	97.21	0.12	0.38
IEEE 802.11ax-HE20	106RU53	MCS 0	0.320	0.475	0.67	67.37	1.72	3.13
IEEE 802.11ax-HE20	SU	MCS 0	1.470	1.520	0.97	96.71	0.15	0.68
IEEE 802.11ax-HE40	SU	MCS 0	0.728	0.792	0.92	91.92	0.37	1.37
IEEE 802.11ax-HE80	SU	MCS 0	0.396	0.429	0.92	92.31	0.35	2.53

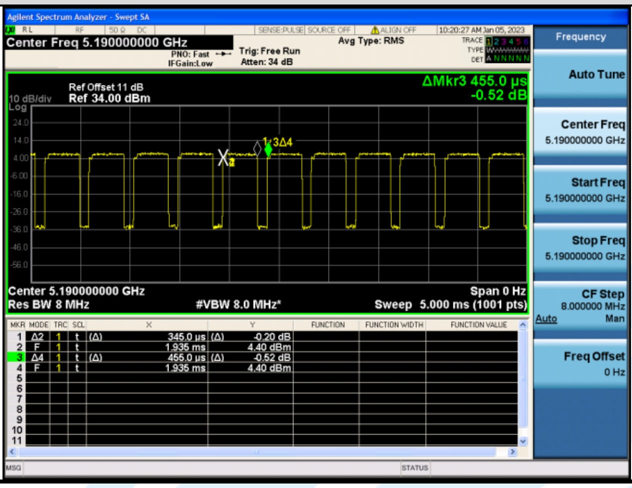
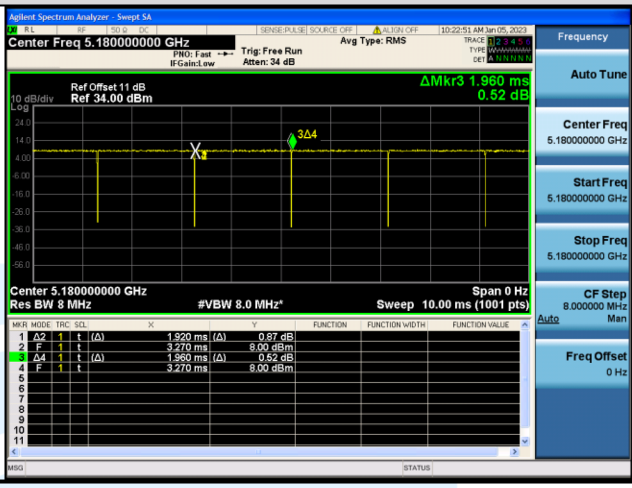
Remark:

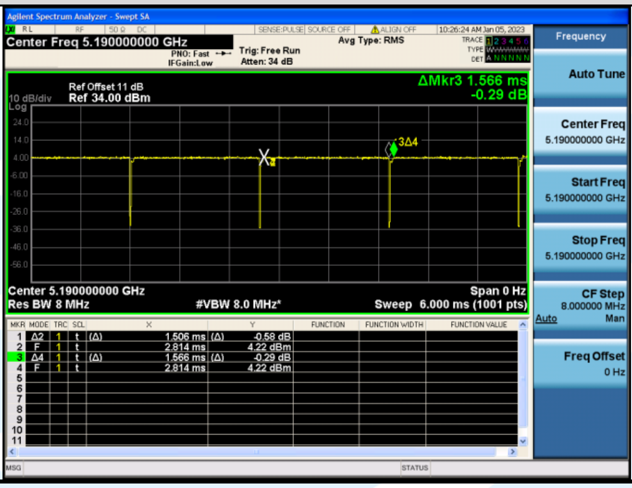
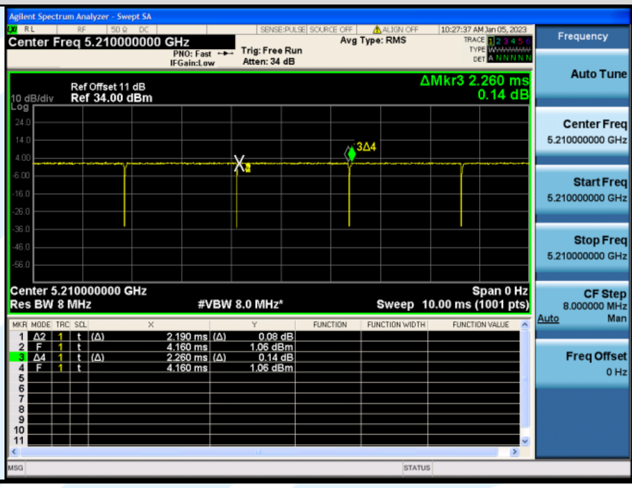
1) Duty cycle= On Time/ Period;

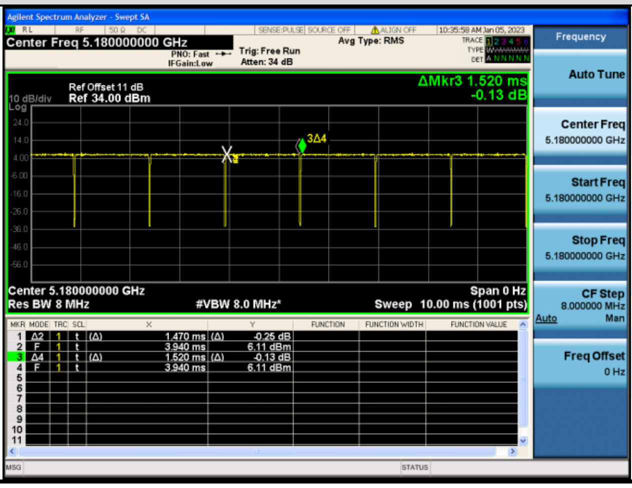
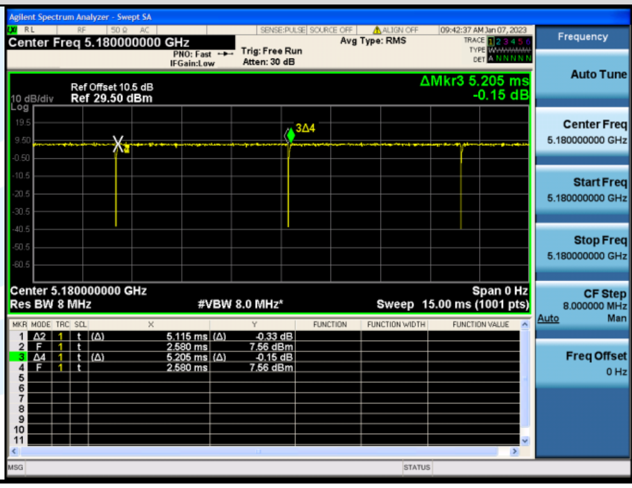
2) Duty Cycle factor = 10 * log(1/ Duty cycle)

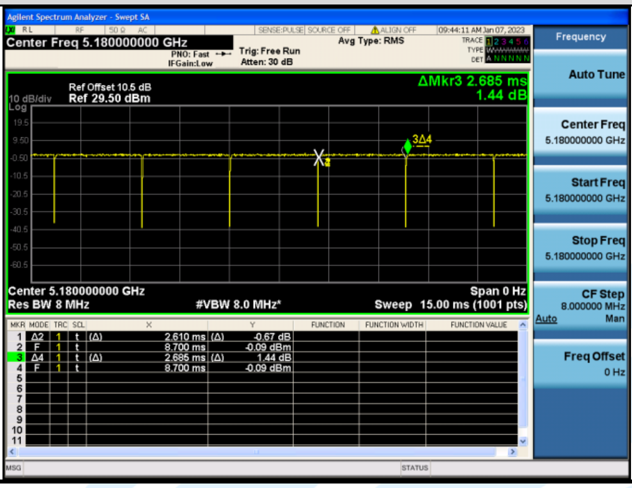
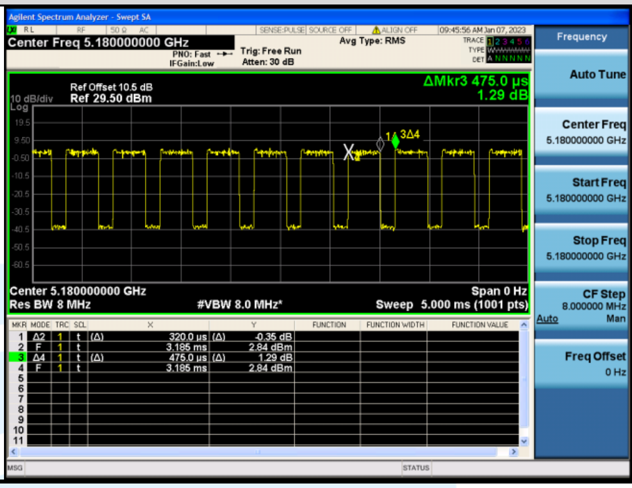
The test plots as follows

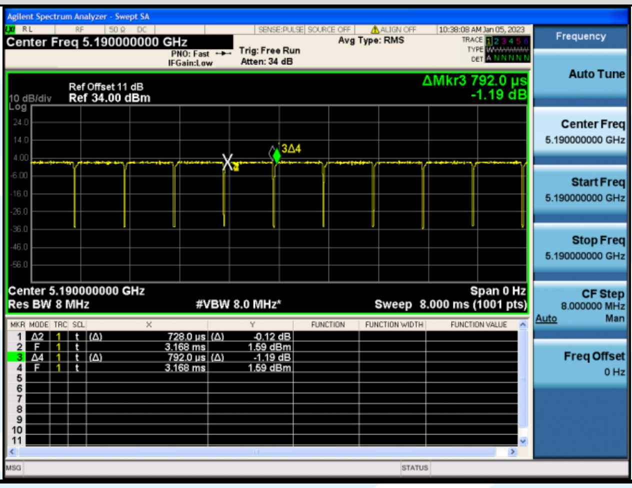
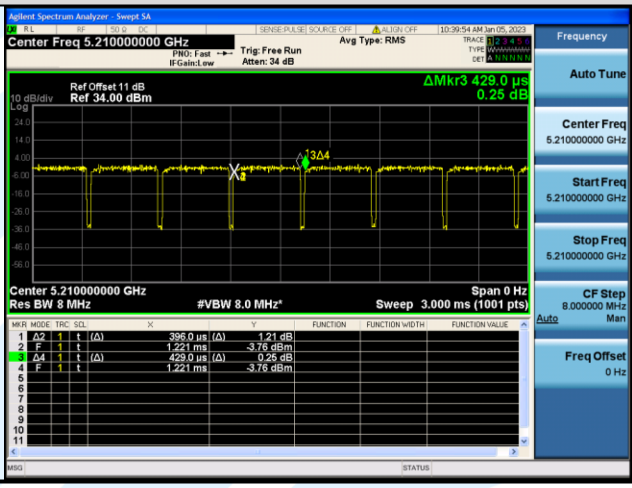
IEEE 802.11a	IEEE 802.11n-HT20
	

IEEE 802.11n-HT40	IEEE 802.11ac-VHT20
	

IEEE 802.11ac-VHT40	IEEE 802.11ac-VHT80
	

IEEE 802.11ax-HE20_SU	IEEE 802.11ax-HE20_26RU
	

IEEE 802.11ax-HE20_52RU	IEEE 802.11ax-HE20_106RU
	

IEEE 802.11ax-HE40_SU	IEEE 802.11ax-HE80_SU
	

5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 15	Radio Frequency Devices
3	ANSI C63.10-2013	American National Standard for Testing Unlicesed Wireless Devices
4	KDB 789033 D02 General UNII Test Procedures New Rules v02r01	Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) device part 15, subpart E
5	KDB 905462 D06 802.11 Channel Plans New Rules v02	Operation in U-NII bands -802.11 channel PLAN(§15.407)
6	KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02	Compliance measurement procedures for Unlicensed –National Information Infrastructure devices operates in the frequency bands 5250 MHz to 5350 MHz and 5470 MHz to 5725 MHz bands incorporating dynamic frequency selection
7	KDB 905462 D03 Client Without DFS New Rules v01r02	U-NII client devices without radar detection capability
8	KDB 662911 D01 Multiple Transmitter Output v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band

5.2 ANTENNA REQUIREMENT

Standard Requirement
15.203 requirement: 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, 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. **15.407(a)(1) (2) requirement:** The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
EUT Antenna:
Both antenna in the interior of the equipment and no consideration of replacement. The transmit signals are correlated with each other and the antenna gain of both chains is no consistent, the best case directional gain of the antenna is 6.63 dBi.

5.3 26 DB BANDWIDTH

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (a) (2)(5)
Test Method: KDB 789033 D02 v02r01 Section C.1
Limit: None; for reporting purposes only.

Test Procedure:

The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum analyzer.

Spectrum analyzer according to the following Settings:
a) Set RBW = approximately 1 % of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.
Instruments Used: Refer to section 3 for details
Test Mode: Transmitter mode
Test Results: Pass
Test Results: **Please refer to Appendix A**

5.4 6 DB BANDWIDTH

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.407 (e)

Test Method: KDB 789033 D02 v02r01Section C.2

Limit: Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure:

The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum Analyzer.

Spectrum analyzer according to the following Settings:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 * RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: Pass

Test Results: **Please refer to Appendix A**

5.5 MAXIMUM CONDUCTED OUTPUT POWER

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)

Test Method: KDB 789033 D02 v02r01 Section E.3.a(Method PM)

Limits:

1. For the band 5.15-5.25 GHz.

   (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. 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).

   (ii) For an indoor 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. 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.

   (iii) For fixed point-to-point access points 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. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.

   (iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

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. 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:

1. Connected the EUT's antenna port to measure device by 10dB attenuator.
2. Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of Tx on burst.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: Pass

Test Data:

Directional gain and the maximum output power limit.

Frequency (MHz)	Antenna Gain (dBi)		Correlated Directional gain (dBi)		Limit	
	Ant .1	Ant .2	Power	PSD	Power (dBm)	PSD (dBm/MHz or dBm/500kHz)
U-NII-1	2.99	2.80	5.91	5.91	24	11
U-NII-2A	3.08	2.21	5.68	5.68	24	11
U-NII-3	3.63	3.60	6.63	6.63	29.37	29.37

For CDD transmissions, directional gain is calculated as follows. In all formulas,

N_{ANT} = number of transmit antennas and

N_{SS} = number of spatial streams. (Assume N_{SS} = 1 unless you have specific information to the contrary.)

If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

For power measurements on IEEE 802.11 devices, 1,2

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \le 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\ge$ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \ge 5$.

For Uncorrelated transmissions, directional gain is calculated as follows. In all formulas:

Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2$ /NANT] dBi [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

For U-NII-2A Band:

IEEE 802.11a/n-HT20/ac-VHT20/ax-HE20: the minimum 26 dB emission bandwidth is 18.20 MHz

11 dBm + $10\log_{10}$ (18.20) = 23.6 dBm < 24 dBm (200mW)

So the 23.60 dB limit applicable

IEEE 802.11n-HT40/ac-VHT40/ac-VHT80/ax-HE40/ac-HE80: the minimum 26 dB emission bandwidth is 38.34 MHz

11 dBm + $10\log_{10}$ (38.34) = 26.84 dBm > 24 dBm (200mW)

So the 24 dB limit applicable

Maximum output power

Mode	Band	Ch.	Freq. (MHz)	CONDUCTED AVG POWER						
				Meas Value (dBm)		Corr'd Value (dBm)			Limit (dBm)	Result
				Ant. 1	Ant. 2	Ant. 1	Ant. 2	Total		
IEEE 802.11a	U-NII-1	36	5180	14.03	14.34	14.35	14.66	N/A	24	Pass
		44	5220	14.08	14.48	14.40	14.80		24	Pass
		48	5240	14.24	14.51	14.56	14.83		24	Pass
	U-NII-2A	52	5260	12.68	12.58	13.00	12.90		24	Pass
		60	5300	12.69	12.77	13.01	13.09		24	Pass
		64	5320	12.71	12.79	13.03	13.11		24	Pass
	U-NII-3	149	5745	12.64	13.17	12.96	13.49		30	Pass
		157	5785	12.71	13.01	13.03	13.33		30	Pass
		165	5825	12.63	12.75	12.95	13.07		30	Pass
IEEE 802.11n-HT20	U-NII-1	36	5180	5.80	8.08	6.43	8.71	10.73	24	Pass
		44	5220	6.18	8.10	6.81	8.73	10.89	24	Pass
		48	5240	6.44	8.50	7.07	9.13	11.23	24	Pass
	U-NII-2A	52	5260	10.41	12.71	11.04	13.34	15.35	23.6	Pass
		60	5300	10.48	12.85	11.11	13.48	15.47	23.6	Pass
		64	5320	10.87	12.92	11.50	13.55	15.66	23.6	Pass
	U-NII-3	149	5745	12.66	12.85	13.29	13.48	16.40	29.37	Pass
		157	5785	12.82	12.53	13.45	13.16	16.32	29.37	Pass
		165	5825	13.09	12.51	13.72	13.14	16.45	29.37	Pass
IEEE 802.11n-HT40	U-NII-1	38	5190	10.02	11.64	11.22	12.84	15.12	24	Pass
		46	5230	10.16	12.03	11.36	13.23	15.41	24	Pass
	U-NII-2A	54	5270	10.28	12.62	11.48	13.82	15.82	24	Pass
		62	5310	10.42	12.59	11.62	13.79	15.85	24	Pass
	U-NII-3	151	5755	12.04	12.68	13.24	13.88	16.58	29.37	Pass
		159	5795	12.18	12.46	13.38	13.66	16.53	29.37	Pass
IEEE 802.11ac-VHT20	U-NII-1	36	5180	6.22	8.51	6.31	8.60	10.61	24	Pass
		44	5220	6.73	8.61	6.82	8.70	10.87	24	Pass
		48	5240	6.75	8.91	6.84	9.00	11.06	24	Pass
	U-NII-2A	52	5260	10.43	12.39	10.52	12.48	14.62	23.6	Pass
		60	5300	10.14	12.55	10.23	12.64	14.61	23.6	Pass
		64	5320	9.83	12.52	9.92	12.61	14.48	23.6	Pass
	U-NII-3	149	5745	12.39	12.65	12.48	12.74	15.62	29.37	Pass
		157	5785	12.36	12.42	12.45	12.51	15.49	29.37	Pass
		165	5825	12.65	12.38	12.74	12.47	15.62	29.37	Pass
IEEE 802.11ac-VHT40	U-NII-1	38	5190	10.59	12.44	10.76	12.61	14.79	24	Pass
		46	5230	10.58	12.69	10.75	12.86	14.94	24	Pass
	U-NII-2A	54	5270	10.07	12.48	10.24	12.65	14.62	24	Pass
		62	5310	10.29	12.47	10.46	12.64	14.70	24	Pass
	U-NII-3	151	5755	12.14	12.89	12.31	13.06	15.71	29.37	Pass
		159	5795	12.26	12.68	12.43	12.85	15.66	29.37	Pass
IEEE 802.11ac-VHT80	U-NII-1	42	5210	10.44	12.28	10.58	12.42	14.60	24	Pass
	U-NII-2A	58	5290	10.02	12.29	10.16	12.43	14.45	24	Pass
	U-NII-3	155	5775	11.81	12.66	11.95	12.80	15.40	29.37	Pass

Mode	Band	Freq. (MHz)	RU	CONDUCTED AVG POWER					Limit (dBm)	Result
				Meas Value (dBm)		Corr'd Value (dBm)				
				Ant. 1	Ant. 2	Ant. 1	Ant. 2	Total		
IEEE 802.11ax -HE20	U-NII-1	5180	26RU0	0.04	1.17	0.04	1.17	3.65	24	Pass
			52RU37	1.80	3.81	1.92	3.93	6.05	24	Pass
			106RU53	5.78	7.56	7.50	9.28	11.49	24	Pass
			SU	10.04	11.97	10.19	12.12	14.27	24	Pass
		5220	26RU4	-0.08	1.90	-0.08	1.90	4.03	24	Pass
			52RU39	2.09	4.24	2.21	4.36	6.43	24	Pass
			106RU53	5.91	7.43	7.63	9.15	11.46	24	Pass
			SU	10.16	12.24	10.31	12.39	14.48	24	Pass
		5240	26RU8	-0.07	1.86	-0.07	1.86	4.01	24	Pass
			52RU40	2.28	4.27	2.40	4.39	6.52	24	Pass
			106RU54	6.00	7.77	7.72	9.49	11.70	24	Pass
			SU	10.22	12.35	10.37	12.50	14.57	24	Pass
	U-NII-2A	5260	26RU0	6.89	8.94	6.89	8.94	11.05	23.6	Pass
			52RU37	10.11	11.85	10.23	11.97	14.20	23.6	Pass
			106RU53	8.13	9.99	9.85	11.71	13.88	23.6	Pass
			SU	10.07	12.56	10.22	12.71	14.65	23.6	Pass
		5300	26RU4	7.04	9.36	7.04	9.36	11.36	23.6	Pass
			52RU39	10.46	12.28	10.58	12.40	14.60	23.6	Pass
			106RU53	8.27	10.13	9.99	11.85	14.02	23.6	Pass
			SU	10.08	12.69	10.23	12.84	14.73	23.6	Pass
		5320	26RU8	6.87	9.26	6.87	9.26	11.24	23.6	Pass
			52RU40	10.43	12.43	10.55	12.55	14.68	23.6	Pass
			106RU54	8.34	10.38	10.06	12.10	14.20	23.6	Pass
			SU	10.21	12.81	10.36	12.96	14.86	23.6	Pass
	U-NII-3	5745	26RU0	11.71	11.77	11.71	11.77	14.75	29.37	Pass
			52RU37	11.82	11.87	11.94	11.99	14.98	29.37	Pass
			106RU53	10.08	10.15	11.80	11.87	14.84	29.37	Pass
			SU	12.51	12.82	12.66	12.97	15.82	29.37	Pass
		5785	26RU4	11.98	11.83	11.98	11.83	14.92	29.37	Pass
			52RU39	11.88	11.92	12.00	12.04	15.03	29.37	Pass
			106RU53	10.24	9.92	11.96	11.64	14.81	29.37	Pass
			SU	12.38	12.56	12.53	12.71	15.63	29.37	Pass
		5825	26RU8	11.97	11.59	11.97	11.59	14.79	29.37	Pass
			52RU40	11.55	11.62	11.67	11.74	14.72	29.37	Pass
			106RU54	10.25	10.07	11.97	11.79	14.89	29.37	Pass
			SU	12.62	12.48	12.77	12.63	15.71	29.37	Pass
IEEE 802.11ax -HE40	U-NII-1	5190	SU	11.41	13.23	11.78	13.60	15.79	24	Pass
		5230	SU	11.56	13.68	11.93	14.05	16.12	24	Pass
	U-NII-2A	5270	SU	11.14	13.27	11.51	13.64	15.71	24	Pass
		5310	SU	11.24	13.38	11.61	13.75	15.82	24	Pass
	U-NII-3	5755	SU	11.75	12.78	12.12	13.15	15.67	29.37	Pass
		5795	SU	12.02	12.81	12.39	13.18	15.81	29.37	Pass
IEEE 802.11ax -HE80	U-NII-1	5210	SU	11.18	12.85	11.53	13.20	15.45	24	Pass
	U-NII-2A	5290	SU	10.71	12.86	11.06	13.21	15.27	24	Pass
	U-NII-3	5775	SU	12.06	12.46	12.41	12.81	15.62	29.37	Pass

Note:
Pre-scan all RUs at 20MHz bandwidth to find the worst case mode selection report, the full RU is the worst case mode.
For 40 and 80MHz bandwidths, only the worst full RU mode is shown in the report.

5.6 POWER SPECTRAL DENSITY

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)

Test Method: KDB 789033 D02 v02r01 Section F

Limits:

1. For the band 5.15-5.25 GHz.
   (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. 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).

   (ii) For an indoor 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. 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.

   (iii) For fixed point-to-point access points 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. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.

   (iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

Spectrum analyzer according to the following Settings:

1. For U-NII-1, U-NII-2A band:

Using method SA-2

a) Set span to encompass the entire emission bandwidth (EBW) of the signal.
b) Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
c) Sweep time = auto, trigger set to “free run”.
d) Trace average at least 100 traces in power averaging mode.
e) Record the max value and add 10 log (1/duty cycle)

2. For U-NII-3 band:

a) Set span to encompass the entire emission bandwidth (EBW) of the signal.
b) Set RBW = 500 kHz, Set VBW ≥ 3 RBW, Detector = RMS
c) Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
d) Sweep time = auto, trigger set to “free run”.
e) Trace average at least 100 traces in power averaging mode.
f) Record the max value and add 10 log (1/duty cycle)

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: **Please refer to Appendix A**

Directional gain and the maximum power spectral density limit.

Frequency (MHz)	Antenna Gain (dBi)		Correlated Directional gain (dBi)		Limit	
	Ant .1	Ant .2	Power	PSD	Power (dBm)	PSD (dBm/MHz or dBm/500kHz)
U-NII-1	2.99	2.80	5.91	5.91	24	11
U-NII-2A	3.08	2.21	5.68	5.68	24	11
U-NII-3	3.63	3.60	6.63	6.63	29.37	29.37

For CDD transmissions, directional gain is calculated as follows. In all formulas,

N_{ANT} = number of transmit antennas and
N_{SS} = number of spatial streams. (Assume N_{SS} = 1 unless you have specific information to the contrary.)

If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

For power measurements on IEEE 802.11 devices, 1,2

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

For Uncorrelated transmissions, directional gain is calculated as follows. In all formulas:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / NANT]$ dBi [Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

5.7 RADIATED EMISSIONS AND BAND EDGE MEASUREMENT

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(1)(2)(3)(4)(6)
FCC 47 CFR Part 15 Subpart C Section 15.209/205

Test Method: KDB 789033 D02 v02r01 Section G.3, G.4, G.5, and G.6

Receiver Setup:

Frequency	RBW
0.009 MHz-0.150 MHz	200/300 kHz
0.150 MHz -30 MHz	9/10 kHz
30 MHz-1 GHz	100/120 kHz
Above 1 GHz	1 MHz

Limits:

1. Limits of Radiated Emission and Band edge Measurement

Radiated emissions that fall in the restricted bands must comply with the general emissions limits in 15.209(a) as below table. Other emissions shall be at least 20 dB below the highest level of the desired power.

Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009 MHz-0.490 MHz	2400/F(kHz)	--	--	300
0.490 MHz-1.705 MHz	24000/F(kHz)	--	--	30
1.705 MHz-30 MHz	30	--	--	30
30 MHz-88 MHz	100	40.0	Quasi-peak	3
88 MHz-216 MHz	150	43.5	Quasi-peak	3
216 MHz-960 MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1 GHz	500	54.0	Average	3

Remark:

a. The lower limit shall apply at the transition frequencies.

b. Emission level (dBuV/m) = 20 log Emission level (uV/m).

c. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

2. Limits of Unwanted Emission Out of the Restricted Bands

<table>
<tr><th>Applicable To</th><th colspan="2">Limit</th></tr>
<tr><th rowspan="2">789033 D02 General U-NII Test Procedures New Rules v01r04</th><th colspan="2">Field Strength at 3 m</th></tr>
<tr><th>PK: 74 (dBμV/m)</th><th>AV: 54 (dBμV/m)</th></tr>
<tr><td>Applicable To</td><td>EIRP Limit</td><td>Equivalent Field Strength at 3 m</td></tr>
<tr><td>FCC Part 15.407 (b)(1)</td><td>PK: -27 (dBm/MHz)</td><td>PK: 74 (dBμV/m)</td></tr>
<tr><td>FCC Part 15.407 (b)(2)</td><td>PK: -27 (dBm/MHz)</td><td>PK: 74 (dBμV/m)</td></tr>
<tr><td>FCC Part 15.407 (b)(3)</td><td>PK: -27 (dBm/MHz)</td><td>PK: 68.2 (dBμV/m)</td></tr>
<tr><td rowspan="3">FCC Part 15.407 (b)(4)</td><td>27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;</td><td rowspan="3">PK: 68.2 (dBμV/m)</td></tr>
<tr><td>15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;</td></tr>
<tr><td>10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges;</td></tr>
</table>

	-27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.	

Test Setup: Refer to section 4.5.1 for details.

Test Procedures:

1. The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
6. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Remark:

a) The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
b) The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
c) The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for RMS Average (Duty cycle < 98 %) for Average detection (AV) at frequency above 1 GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
d) The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz (Duty cycle ≥ 98 %) or ≥ 1/T(duty cycle is < 98%) for Average detection (AV) at frequency above 1 GHz.
e) All modes of operation were investigated and the worst-case emissions are reported.

Equipment Used: Refer to section 3 for details.

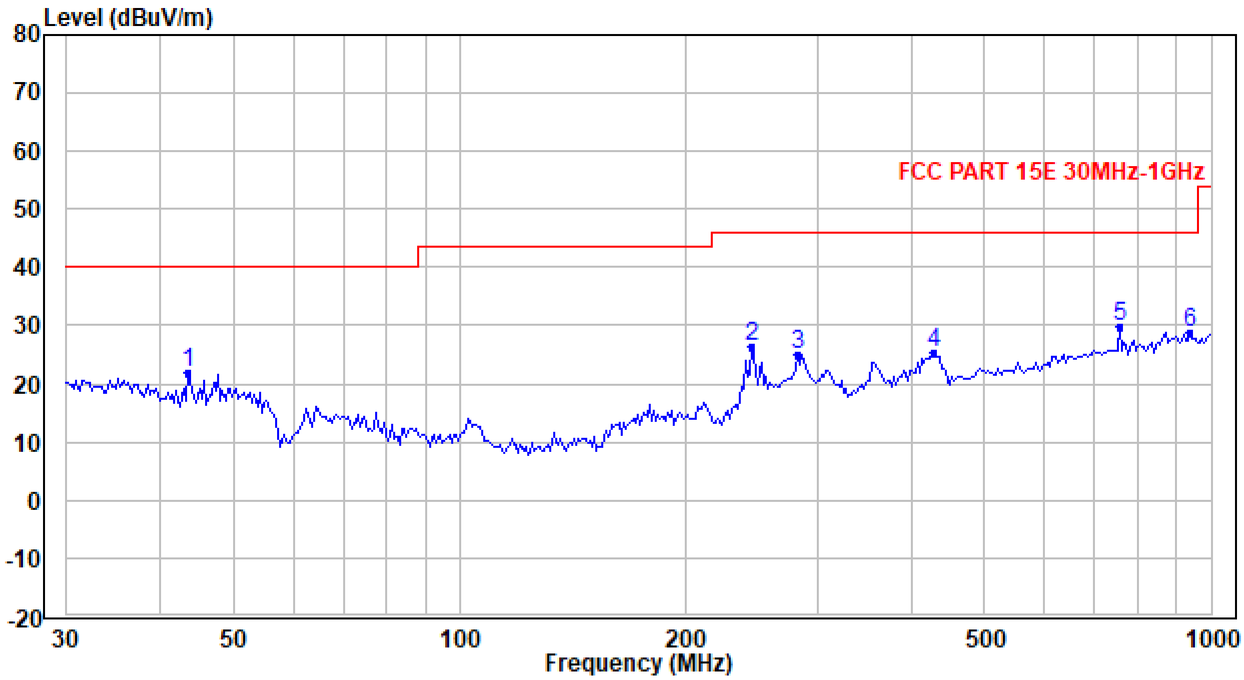
Test Result: Pass

The measurement data as follows:

Radiated Emission Test Data (9 KHz ~ 30 MHz):
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

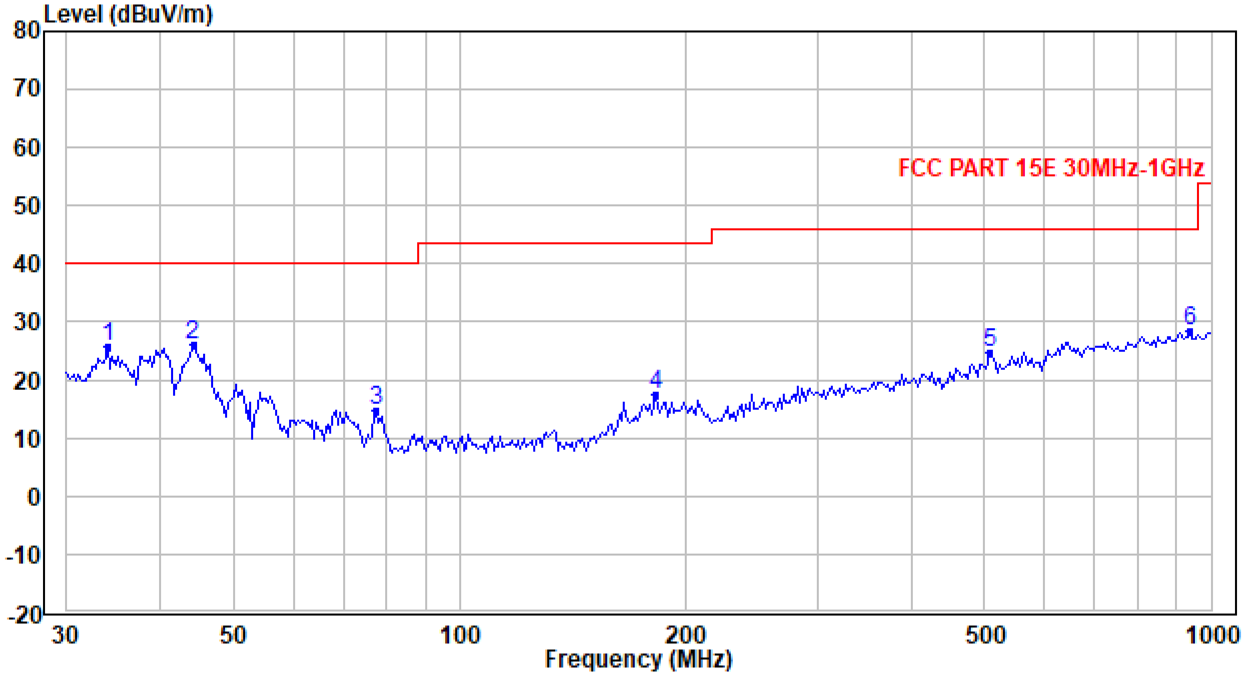
Radiated Emission Test Data (30 MHz ~ 1 GHz):
Worst-Case Configuration(MIMO_ Ant. 1+2_IEEE 802.11n-HT40_Channel 151)

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	43.538	32.13	-10.12	22.01	40.00	-17.99	QP
2	245.261	35.28	-8.79	26.49	46.00	-19.51	QP
3	282.270	32.37	-7.26	25.11	46.00	-20.89	QP
4	427.292	29.52	-4.23	25.29	46.00	-20.71	QP
5	754.963	28.20	1.71	29.91	46.00	-16.09	QP
6	938.714	24.33	4.57	28.90	46.00	-17.10	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1*	34.045	30.56	-4.95	25.61	40.00	-14.39	QP
2	44.154	36.61	-10.66	25.95	40.00	-14.05	QP
3	77.468	32.07	-17.33	14.74	40.00	-25.26	QP
4	182.578	27.69	-10.20	17.49	43.50	-26.01	QP
5	509.356	27.20	-2.44	24.76	46.00	-21.24	QP
6	938.714	23.85	4.57	28.42	46.00	-17.58	QP

Radiated Emission Test Data (Above 1GHz):								
No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO_ Ant. 1_IEEE 802.11a_Channel 36								
1	10360	38.1	6.2	44.3	68.2	-23.9	Peak	Horizontal
2	10360	25.9	6.2	32.1	54	-21.9	Average	Horizontal
3	15540	35.5	11.7	47.2	74	-26.8	Peak	Horizontal
4	15540	23.3	11.7	34.9	54	-19.1	Average	Horizontal
5	10360	38.0	6.2	44.1	68.2	-24.1	Peak	Vertical
6	10360	26.3	6.2	32.4	54	-21.6	Average	Vertical
7	15540	36.4	11.7	48.0	74	-26.0	Peak	Vertical
8	15540	23.4	11.7	35.0	54	-19.0	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 44								
1	10440	37.3	6.3	43.6	68.2	-24.6	Peak	Horizontal
2	10440	25.5	6.3	31.8	54	-22.2	Average	Horizontal
3	15660	35.5	11.7	47.2	74	-26.8	Peak	Horizontal
4	15660	23.5	11.7	35.3	54	-18.7	Average	Horizontal
5	10440	36.2	6.3	42.5	68.2	-25.7	Peak	Vertical
6	10440	25.9	6.3	32.1	54	-21.9	Average	Vertical
7	15660	34.1	11.7	45.9	74	-28.1	Peak	Vertical
8	15660	23.7	11.7	35.5	54	-18.5	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 48								
1	10480	36.3	6.3	42.6	68.2	-25.6	Peak	Horizontal
2	10480	24.9	6.3	31.2	54	-22.8	Average	Horizontal
3	15720	34.5	11.8	46.3	74	-27.7	Peak	Horizontal
4	15720	22.8	11.8	34.6	54	-19.4	Average	Horizontal
5	10480	36.2	6.3	42.6	68.2	-25.6	Peak	Vertical
6	10480	25.1	6.3	31.4	54	-22.6	Average	Vertical
7	15720	34.5	11.8	46.3	74	-27.7	Peak	Vertical
8	15720	22.9	11.8	34.7	54	-19.3	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 52								
1	10520	34.8	6.3	41.1	68.2	-27.1	Peak	Horizontal
2	10520	34.9	6.3	31.3	54	-22.7	Average	Horizontal
3	15780	35.0	11.8	46.8	74	-27.2	Peak	Horizontal
4	15780	22.9	11.8	34.7	54	-19.3	Average	Horizontal
5	10520	35.9	6.3	42.3	68.2	-25.9	Peak	Vertical
6	10520	25.0	6.3	31.4	54	-22.6	Average	Vertical
7	15780	33.7	11.8	45.5	74	-28.5	Peak	Vertical
8	15780	22.9	11.8	34.7	54	-19.3	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO_ Ant. 1_IEEE 802.11a_Channel 60								
1	10600	36.1	6.3	42.5	74	-31.5	Peak	Horizontal
2	10600	24.8	6.3	31.1	54	-22.9	Average	Horizontal
3	15900	33.6	12.0	45.5	74	-28.5	Peak	Horizontal
4	15900	23.2	12.0	35.1	54	-18.9	Average	Horizontal
5	10600	36.1	6.3	42.4	74	-31.6	Peak	Vertical
6	10600	25.2	6.3	31.5	54	-22.5	Average	Vertical
7	15900	34.6	12.0	46.6	74	-27.4	Peak	Vertical
8	15900	23.4	12.0	35.3	54	-18.7	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 64								
1	10640	35.7	6.3	42.0	74	-32.0	Peak	Horizontal
2	10640	24.6	6.3	30.9	54	-23.1	Average	Horizontal
3	15960	34.9	12.0	46.8	74	-27.2	Peak	Horizontal
4	15960	23.0	12.0	35.0	54	-19.0	Average	Horizontal
5	10640	37.8	6.3	44.1	74	-29.9	Peak	Vertical
6	10640	24.9	6.3	31.3	54	-22.8	Average	Vertical
7	15960	34.1	12.0	46.1	74	-27.9	Peak	Vertical
8	15960	23.2	12.0	35.2	54	-18.8	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 149								
1	11490	35.9	6.9	42.8	74	-31.2	Peak	Horizontal
2	11490	24.4	6.9	31.3	54	-22.7	Average	Horizontal
3	17235	34.8	13.7	48.5	68.2	-19.7	Peak	Horizontal
4	17235	22.9	13.7	36.6	54	-17.4	Average	Horizontal
5	11490	36.2	6.9	43.1	74	-30.9	Peak	Vertical
6	11490	24.7	6.9	31.6	54	-22.5	Average	Vertical
7	17235	35.6	13.7	49.4	68.2	-18.8	Peak	Vertical
8	17235	23.0	13.7	36.7	54	-17.3	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 157								
1	11570	35.4	7.1	42.4	74	-31.6	Peak	Horizontal
2	11570	24.5	7.1	31.6	54	-22.5	Average	Horizontal
3	17355	35.2	14.1	49.4	68.2	-18.8	Peak	Horizontal
4	17355	23.2	14.1	37.4	54	-16.7	Average	Horizontal
5	11570	36.0	7.1	43.1	74	-30.9	Peak	Vertical
6	11570	24.7	7.1	31.7	54	-22.3	Average	Vertical
7	17355	34.4	14.1	48.5	68.2	-19.7	Peak	Vertical
8	17355	23.2	14.1	37.4	54	-16.7	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO_ Ant. 1_IEEE 802.11a_Channel 165								
1	11650	37.4	7.3	44.6	74	-29.4	Peak	Horizontal
2	11650	25.5	7.3	32.8	54	-21.2	Average	Horizontal
3	17475	35.5	14.5	50.0	68.2	-18.2	Peak	Horizontal
4	17475	22.6	14.5	37.2	54	-16.9	Average	Horizontal
5	11650	37.0	7.3	44.3	74	-29.7	Peak	Vertical
6	11650	25.7	7.3	32.9	54	-21.1	Average	Vertical
7	17475	33.8	14.5	48.3	68.2	-19.9	Peak	Vertical
8	17475	22.8	14.5	37.3	54	-16.7	Average	Vertical
SISO_ Ant. 2_IEEE 802.11a_Channel 36								
1	10360	36.2	6.2	42.3	68.2	-25.9	Peak	Horizontal
2	10360	25.9	6.2	32.1	54	-21.9	Average	Horizontal
3	15540	34.8	11.7	46.4	74	-27.6	Peak	Horizontal
4	15540	24.1	11.7	35.8	54	-18.3	Average	Horizontal
5	10360	37.4	6.2	43.5	68.2	-24.7	Peak	Vertical
6	10360	25.8	6.2	32.0	54	-22.0	Average	Vertical
7	15540	36.2	11.7	47.8	74	-26.2	Peak	Vertical
8	15540	24.0	11.7	35.7	54	-18.3	Average	Vertical
SISO_ Ant. 2_IEEE 802.11a_Channel 44								
1	10440	37.1	6.3	43.4	68.2	-24.8	Peak	Horizontal
2	10440	25.9	6.3	32.1	54	-21.9	Average	Horizontal
3	15660	35.7	11.7	47.5	74	-26.5	Peak	Horizontal
4	15660	24.0	11.7	35.7	54	-18.3	Average	Horizontal
5	10440	36.2	6.3	42.5	68.2	-25.7	Peak	Vertical
6	10440	25.9	6.3	32.1	54	-21.9	Average	Vertical
7	15660	35.8	11.7	47.6	74	-26.4	Peak	Vertical
8	15660	24.0	11.7	35.7	54	-18.3	Average	Vertical
SISO_ Ant. 2_IEEE 802.11a_Channel 48								
1	10480	36.4	6.3	42.7	68.2	-25.5	Peak	Horizontal
2	10480	25.1	6.3	31.5	54	-22.6	Average	Horizontal
3	15720	35.4	11.8	47.2	74	-26.8	Peak	Horizontal
4	15720	23.4	11.8	35.2	54	-18.9	Average	Horizontal
5	10480	35.7	6.3	42.0	68.2	-26.2	Peak	Vertical
6	10480	25.2	6.3	31.5	54	-22.5	Average	Vertical
7	15720	34.7	11.8	46.5	74	-27.5	Peak	Vertical
8	15720	23.4	11.8	35.2	54	-18.9	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO_ Ant. 2_IEEE 802.11a_Channel 52								
1	10520	35.9	6.3	42.3	68.2	-25.9	Peak	Horizontal
2	10520	25.5	6.3	31.8	54	-22.2	Average	Horizontal
3	15780	33.8	11.8	45.6	74	-28.4	Peak	Horizontal
4	15780	23.3	11.8	35.2	54	-18.9	Average	Horizontal
5	10520	35.7	6.3	42.1	68.2	-26.1	Peak	Vertical
6	10520	25.4	6.3	31.7	54	-22.3	Average	Vertical
7	15780	34.5	11.8	46.3	74	-27.7	Peak	Vertical
8	15780	23.3	11.8	35.2	54	-18.9	Average	Vertical
SISO_ Ant. 2_IEEE 802.11a_Channel 60								
1	10600	35.8	6.3	42.1	74	-31.9	Peak	Horizontal
2	10600	25.1	6.3	31.4	54	-22.6	Average	Horizontal
3	15900	34.2	12.0	46.2	74	-27.8	Peak	Horizontal
4	15900	23.6	12.0	35.6	54	-18.4	Average	Horizontal
5	10600	36.3	6.3	42.6	74	-31.4	Peak	Vertical
6	10600	25.1	6.3	31.4	54	-22.6	Average	Vertical
7	15900	34.1	12.0	46.1	74	-27.9	Peak	Vertical
8	15900	23.7	11.9	35.6	54	-18.4	Average	Vertical
SISO_ Ant. 2_IEEE 802.11a_Channel 64								
1	10640	36.0	6.3	42.3	74	-31.7	Peak	Horizontal
2	10640	24.7	6.3	31.0	54	-23.0	Average	Horizontal
3	15960	34.6	12.0	46.6	74	-27.4	Peak	Horizontal
4	15960	23.1	12.0	35.1	54	-18.9	Average	Horizontal
5	10640	37.2	6.3	43.5	74	-30.5	Peak	Vertical
6	10640	25.0	6.3	31.3	54	-22.7	Average	Vertical
7	15960	35.7	12.0	47.7	74	-26.3	Peak	Vertical
8	15960	23.2	12.0	35.2	54	-18.8	Average	Vertical
SISO_ Ant. 2_IEEE 802.11a_Channel 149								
1	11490	35.2	6.9	42.1	74	-31.9	Peak	Horizontal
2	11490	24.6	6.9	31.5	54	-22.5	Average	Horizontal
3	17235	34.1	13.7	47.9	68.2	-20.3	Peak	Horizontal
4	17235	23.0	13.7	36.7	54	-17.3	Average	Horizontal
5	11490	36.3	6.9	43.2	74	-30.8	Peak	Vertical
6	11490	24.7	6.9	31.6	54	-22.5	Average	Vertical
7	17235	33.9	13.7	47.6	68.2	-20.6	Peak	Vertical
8	17235	22.9	13.7	36.6	54	-17.4	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO_ Ant. 2_IEEE 802.11a_Channel 157								
1	11570	36.7	7.1	43.7	74	-30.3	Peak	Horizontal
2	11570	24.6	7.1	31.6	54	-22.4	Average	Horizontal
3	17355	34.6	14.1	48.7	68.2	-19.5	Peak	Horizontal
4	17355	23.2	14.1	37.4	54	-16.7	Average	Horizontal
5	11570	36.0	7.1	43.0	74	-31.0	Peak	Vertical
6	11570	24.7	7.1	31.7	54	-22.3	Average	Vertical
7	17355	35.0	14.1	49.1	68.2	-19.1	Peak	Vertical
8	17355	23.3	14.1	37.5	54	-16.6	Average	Vertical
SISO_ Ant. 2_IEEE 802.11a_Channel 165								
1	11650	35.7	7.3	43.0	74	-31.0	Peak	Horizontal
2	11650	25.6	7.3	32.9	54	-21.1	Average	Horizontal
3	17475	33.0	14.5	47.5	68.2	-20.7	Peak	Horizontal
4	17475	22.8	14.5	37.3	54	-16.7	Average	Horizontal
5	11650	36.7	7.3	44.0	74	-30.0	Peak	Vertical
6	11650	25.8	7.3	33.0	54	-21.0	Average	Vertical
7	17475	33.9	14.5	48.4	68.2	-19.8	Peak	Vertical
8	17475	22.8	14.5	37.3	54	-16.7	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_IEEE 802.11n-HT20_Channel 36								
1	10360	37.3	6.2	43.4	68.2	-24.8	Peak	Horizontal
2	10360	25.9	6.2	32.1	54	-21.9	Average	Horizontal
3	15540	34.9	11.7	46.6	74	-27.4	Peak	Horizontal
4	15540	24.0	11.7	35.7	54	-18.3	Average	Horizontal
5	10360	37.7	6.2	43.8	68.2	-24.4	Peak	Vertical
6	10360	25.9	6.2	32.1	54	-21.9	Average	Vertical
7	15540	35.4	11.7	47.0	74	-27.0	Peak	Vertical
8	15540	23.9	11.7	35.6	54	-18.4	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT20_Channel 44								
1	10440	36.5	6.3	42.7	68.2	-25.5	Peak	Horizontal
2	10440	25.8	6.3	32.1	54	-21.9	Average	Horizontal
3	15660	35.4	11.7	47.1	74	-26.9	Peak	Horizontal
4	15660	24.0	11.7	35.7	54	-18.3	Average	Horizontal
5	10440	36.7	6.3	43.0	68.2	-25.2	Peak	Vertical
6	10440	25.9	6.3	32.2	54	-21.8	Average	Vertical
7	15660	35.2	11.7	46.9	74	-27.1	Peak	Vertical
8	15660	24.0	11.7	35.7	54	-18.3	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_IEEE 802.11n-HT20_Channel 48								
1	10480	36.2	6.3	42.5	68.2	-25.7	Peak	Horizontal
2	10480	25.1	6.3	31.5	54	-22.6	Average	Horizontal
3	15720	35.1	11.8	46.9	74	-27.1	Peak	Horizontal
4	15720	23.3	11.8	35.1	54	-19.0	Average	Horizontal
5	10480	36.0	6.3	42.4	68.2	-25.8	Peak	Vertical
6	10480	25.3	6.3	31.6	54	-22.4	Average	Vertical
7	15720	35.1	11.8	46.9	74	-27.1	Peak	Vertical
8	15720	23.4	11.8	35.2	54	-18.9	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT20_Channel 52								
1	10520	35.0	6.3	41.4	68.2	-26.8	Peak	Horizontal
2	10520	25.1	6.3	31.5	54	-22.6	Average	Horizontal
3	15780	34.4	11.8	46.3	74	-27.7	Peak	Horizontal
4	15780	23.2	11.8	35.1	54	-19.0	Average	Horizontal
5	10520	37.1	6.3	43.5	68.2	-24.7	Peak	Vertical
6	10520	25.4	6.3	31.7	54	-22.3	Average	Vertical
7	15780	34.2	11.8	46.0	74	-28.0	Peak	Vertical
8	15780	23.2	11.8	35.1	54	-19.0	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT20_Channel 60								
1	10600	36.3	6.3	42.7	74	-31.3	Peak	Horizontal
2	10600	25.0	6.3	31.3	54	-22.7	Average	Horizontal
3	15900	36.8	12.0	48.7	74	-25.3	Peak	Horizontal
4	15900	23.6	12.0	35.5	54	-18.5	Average	Horizontal
5	10600	36.2	6.3	42.6	74	-31.4	Peak	Vertical
6	10600	25.1	6.3	31.4	54	-22.6	Average	Vertical
7	15900	34.5	12.0	46.4	74	-27.6	Peak	Vertical
8	15900	23.6	12.0	35.5	54	-18.5	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT20_Channel 64								
1	10640	35.9	6.3	42.3	74	-31.7	Peak	Horizontal
2	10640	25.0	6.3	31.3	54	-22.7	Average	Horizontal
3	15960	33.4	12.0	45.4	74	-28.6	Peak	Horizontal
4	15960	23.5	12.0	35.5	54	-18.5	Average	Horizontal
5	10640	36.2	6.3	42.6	74	-31.4	Peak	Vertical
6	10640	25.1	6.3	31.4	54	-22.6	Average	Vertical
7	15960	34.8	12.0	46.8	74	-27.2	Peak	Vertical
8	15960	23.6	12.0	35.6	54	-18.4	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_IEEE 802.11n-HT20_Channel 149								
1	11490	36.2	6.9	43.1	74	-30.9	Peak	Horizontal
2	11490	24.7	6.9	31.6	54	-22.5	Average	Horizontal
3	17235	34.6	13.7	48.3	68.2	-19.9	Peak	Horizontal
4	17235	23.1	13.7	36.8	54	-17.2	Average	Horizontal
5	11490	37.5	6.9	44.4	74	-29.6	Peak	Vertical
6	11490	24.9	6.9	31.7	54	-22.3	Average	Vertical
7	17235	33.6	13.7	47.3	68.2	-20.9	Peak	Vertical
8	17235	23.1	13.7	36.8	54	-17.2	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT20_Channel 157								
1	11570	36.0	7.1	43.1	74	-30.9	Peak	Horizontal
2	11570	24.8	7.1	31.9	54	-22.1	Average	Horizontal
3	17355	34.1	14.1	48.3	68.2	-19.9	Peak	Horizontal
4	17355	23.3	14.1	37.5	54	-16.6	Average	Horizontal
5	11570	35.8	7.1	42.8	74	-31.2	Peak	Vertical
6	11570	24.8	7.1	31.9	54	-22.1	Average	Vertical
7	17355	33.9	14.1	48.0	68.2	-20.2	Peak	Vertical
8	17355	23.4	14.1	37.6	54	-16.5	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT20_Channel 165								
1	11650	36.0	7.3	43.3	74	-30.7	Peak	Horizontal
2	11650	25.8	7.3	33.1	54	-20.9	Average	Horizontal
3	17475	33.5	14.5	48.0	68.2	-20.2	Peak	Horizontal
4	17475	22.8	14.5	37.3	54	-16.7	Average	Horizontal
5	11650	37.0	7.3	44.2	74	-29.8	Peak	Vertical
6	11650	25.8	7.3	33.1	54	-20.9	Average	Vertical
7	17475	34.1	14.5	48.6	68.2	-19.6	Peak	Vertical
8	17475	22.8	14.5	37.3	54	-16.7	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_IEEE 802.11n-HT40_Channel 38								
1	10380	36.7	6.2	42.9	68.2	-25.3	Peak	Horizontal
2	10380	25.8	6.2	32.0	54	-22.0	Average	Horizontal
3	15570	35.1	11.7	46.8	74	-27.2	Peak	Horizontal
4	15570	24.0	11.7	35.7	54	-18.3	Average	Horizontal
5	10380	35.4	6.2	41.5	68.2	-26.7	Peak	Vertical
6	10380	25.8	6.2	32.0	54	-22.0	Average	Vertical
7	15570	34.2	11.7	45.9	74	-28.1	Peak	Vertical
8	15570	23.9	11.7	35.6	54	-18.4	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT40_Channel 46								
1	10460	36.2	6.3	42.5	68.2	-25.7	Peak	Horizontal
2	10460	25.9	6.3	32.1	54	-21.9	Average	Horizontal
3	15960	34.9	12.0	46.9	74	-27.1	Peak	Horizontal
4	15960	23.6	12.0	35.6	54	-18.4	Average	Horizontal
5	10460	36.2	6.3	42.5	68.2	-25.7	Peak	Vertical
6	10460	25.8	6.3	32.1	54	-21.9	Average	Vertical
7	15960	34.6	12.0	46.6	74	-27.4	Peak	Vertical
8	15960	23.6	12.0	35.6	54	-18.4	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT40_Channel 54								
1	10540	33.9	6.3	40.3	68.2	-27.9	Peak	Horizontal
2	10540	22.8	6.3	29.2	54	-24.9	Average	Horizontal
3	15810	33.7	11.9	45.6	74	-28.4	Peak	Horizontal
4	15810	23.4	11.9	35.2	54	-18.8	Average	Horizontal
5	10540	33.1	6.3	39.4	68.2	-28.8	Peak	Vertical
6	10540	22.6	6.3	28.9	54	-25.1	Average	Vertical
7	15810	35.6	11.9	47.5	74	-26.5	Peak	Vertical
8	15810	23.5	11.9	35.3	54	-18.7	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT40_Channel 62								
1	10620	36.6	6.3	42.9	74	-31.1	Peak	Horizontal
2	10620	24.9	6.3	31.3	54	-22.8	Average	Horizontal
3	15930	36.0	12.0	47.9	74	-26.1	Peak	Horizontal
4	15930	23.6	12.0	35.6	54	-18.4	Average	Horizontal
5	10620	36.2	6.3	42.5	74	-31.5	Peak	Vertical
6	10620	24.9	6.3	31.3	54	-22.8	Average	Vertical
7	15930	34.6	12.0	46.5	74	-27.5	Peak	Vertical
8	15930	23.6	12.0	35.6	54	-18.4	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_IEEE 802.11n-HT40_Channel 151								
1	11510	35.5	6.9	42.4	74	-31.6	Peak	Horizontal
2	11510	24.7	6.9	31.6	54	-22.4	Average	Horizontal
3	17265	34.2	13.8	48.0	68.2	-20.2	Peak	Horizontal
4	17265	23.0	13.8	36.8	54	-17.2	Average	Horizontal
5	11510	34.8	6.9	41.7	74	-32.3	Peak	Vertical
6	11510	24.7	6.9	31.6	54	-22.4	Average	Vertical
7	17265	33.5	13.8	47.4	68.2	-20.8	Peak	Vertical
8	17265	23.2	13.8	37.0	54	-17.0	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11n-HT40_Channel 159								
1	11590	36.4	7.1	43.5	74	-30.5	Peak	Horizontal
2	11590	24.8	7.1	31.9	54	-22.1	Average	Horizontal
3	17385	34.5	14.2	48.7	68.2	-19.5	Peak	Horizontal
4	17385	23.3	14.2	37.6	54	-16.5	Average	Horizontal
5	11590	35.3	7.1	42.5	74	-31.5	Peak	Vertical
6	11590	24.9	7.1	32.0	54	-22.0	Average	Vertical
7	17385	33.9	14.2	48.1	68.2	-20.1	Peak	Vertical
8	17385	23.4	14.2	37.7	54	-16.4	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_IEEE 802.11ac-VHT80_Channel 42								
1	10420	36.8	6.2	43.0	68.2	-25.2	Peak	Horizontal
2	10420	25.8	6.2	32.1	54	-21.9	Average	Horizontal
3	15630	35.0	11.7	46.7	74	-27.3	Peak	Horizontal
4	15630	24.0	11.7	35.7	54	-18.3	Average	Horizontal
5	10420	37.3	6.2	43.5	68.2	-24.7	Peak	Vertical
6	10420	25.9	6.2	32.1	54	-21.9	Average	Vertical
7	15630	35.7	11.7	47.5	74	-26.5	Peak	Vertical
8	15630	24.2	11.7	35.9	54	-18.1	Average	Vertical
MIMO_ Ant. 1+2_IEEE 802.11ac-VHT80_Channel 58								
1	10580	34.9	6.3	41.2	68.2	-27.0	Peak	Horizontal
2	10580	22.8	6.3	29.2	54	-24.9	Average	Horizontal
3	15870	35.9	11.9	47.8	74	-26.2	Peak	Horizontal
4	15870	23.4	11.9	35.3	54	-18.7	Average	Horizontal
5	10580	33.8	6.3	40.1	68.2	-28.1	Peak	Vertical
6	10580	22.7	6.3	29.0	54	-25.0	Average	Vertical
7	15870	35.6	11.9	47.5	74	-26.5	Peak	Vertical
8	15870	23.3	11.9	35.2	54	-18.8	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_IEEE 802.11ac-VHT80_Channel 155								
1	11550	36.7	7.0	43.7	74	-30.3	Peak	Horizontal
2	11550	24.6	7.0	31.6	54	-22.4	Average	Horizontal
3	17325	34.3	14.0	48.3	68.2	-19.9	Peak	Horizontal
4	17325	22.8	14.0	36.8	54	-17.2	Average	Horizontal
5	11550	36.6	7.0	43.6	74	-30.4	Peak	Vertical
6	11550	24.7	7.0	31.7	54	-22.3	Average	Vertical
7	17325	35.7	14.0	49.7	68.2	-18.5	Peak	Vertical
8	17325	23.0	14.0	37.0	54	-17.0	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_ 26RU0 _Channel 36								
1	10360	37.2	6.2	43.4	68.2	-24.8	Peak	Horizontal
2	10360	25.8	6.2	32.0	54	-22.0	Average	Horizontal
3	15540	35.7	11.7	47.3	74	-26.7	Peak	Horizontal
4	15540	24.0	11.7	35.7	54	-18.3	Average	Horizontal
5	10360	37.4	6.2	43.5	68.2	-24.7	Peak	Vertical
6	10360	25.8	6.2	32.0	54	-22.0	Average	Vertical
7	15540	35.4	11.7	47.1	74	-26.9	Peak	Vertical
8	15540	24.0	11.7	35.7	54	-18.3	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_26RU0 _Channel 44								
1	10440	38.3	6.3	44.6	68.2	-23.6	Peak	Horizontal
2	10440	25.9	6.3	32.1	54	-21.9	Average	Horizontal
3	15660	36.4	11.7	48.1	74	-25.9	Peak	Horizontal
4	15660	24.1	11.7	35.8	54	-18.2	Average	Horizontal
5	10440	36.0	6.3	42.3	68.2	-25.9	Peak	Vertical
6	10440	25.9	6.3	32.1	54	-21.9	Average	Vertical
7	15660	34.8	11.7	46.6	74	-27.5	Peak	Vertical
8	15660	24.1	11.7	35.8	54	-18.2	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_26RU0 _Channel 48								
1	10480	35.8	6.3	42.1	68.2	-26.1	Peak	Horizontal
2	10480	25.2	6.3	31.5	54	-22.5	Average	Horizontal
3	15720	34.5	11.8	46.3	74	-27.7	Peak	Horizontal
4	15720	23.4	11.8	35.2	54	-18.9	Average	Horizontal
5	10480	35.6	6.3	41.9	68.2	-26.3	Peak	Vertical
6	10480	25.1	6.3	31.5	54	-22.6	Average	Vertical
7	15720	34.7	11.8	46.5	74	-27.5	Peak	Vertical
8	15720	23.5	11.8	35.3	54	-18.8	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_26RU0 _Channel 52								
1	10520	36.5	6.3	42.9	68.2	-25.3	Peak	Horizontal
2	10520	25.3	6.3	31.6	54	-22.4	Average	Horizontal
3	15780	34.4	11.8	46.3	74	-27.7	Peak	Horizontal
4	15780	23.2	11.8	35.1	54	-19.0	Average	Horizontal
5	10520	36.0	6.3	42.4	68.2	-25.9	Peak	Vertical
6	10520	25.2	6.3	31.5	54	-22.5	Average	Vertical
7	15780	34.9	11.8	46.7	74	-27.3	Peak	Vertical
8	15780	23.4	11.8	35.3	54	-18.8	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_26RU0 _Channel 60								
1	10600	36.1	6.3	42.4	74	-31.6	Peak	Horizontal
2	10600	25.0	6.3	31.3	54	-22.7	Average	Horizontal
3	15900	34.2	12.0	46.2	74	-27.8	Peak	Horizontal
4	15900	23.6	12.0	35.6	54	-18.4	Average	Horizontal
5	10600	36.4	6.3	42.7	74	-31.3	Peak	Vertical
6	10600	25.1	6.3	31.4	54	-22.6	Average	Vertical
7	15900	34.9	12.0	46.9	74	-27.1	Peak	Vertical
8	15900	23.6	12.0	35.6	54	-18.4	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_26RU0 _Channel 64								
1	10640	37.1	6.3	43.4	74	-30.6	Peak	Horizontal
2	10640	25.0	6.3	31.3	54	-22.7	Average	Horizontal
3	15960	35.7	12.0	47.7	74	-26.3	Peak	Horizontal
4	15960	23.6	12.0	35.6	54	-18.4	Average	Horizontal
5	10640	37.5	6.3	43.8	74	-30.2	Peak	Vertical
6	10640	25.0	6.3	31.3	54	-22.7	Average	Vertical
7	15960	35.5	12.0	47.5	74	-26.5	Peak	Vertical
8	15960	23.7	12.0	35.7	54	-18.3	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_26RU0 _Channel 149								
1	11490	36.0	6.9	42.8	74	-31.2	Peak	Horizontal
2	11490	24.9	6.9	31.7	54	-22.3	Average	Horizontal
3	17235	35.2	13.7	49.0	68.2	-19.2	Peak	Horizontal
4	17235	23.2	13.7	36.9	54	-17.1	Average	Horizontal
5	11490	37.0	6.9	43.8	74	-30.2	Peak	Vertical
6	11490	24.9	6.9	31.7	54	-22.3	Average	Vertical
7	17235	34.0	13.7	47.7	68.2	-20.5	Peak	Vertical
8	17235	23.2	13.7	36.9	54	-17.1	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_26RU0_Channel 157								
1	11570	35.7	7.1	42.8	74	-31.3	Peak	Horizontal
2	11570	24.8	7.1	31.9	54	-22.1	Average	Horizontal
3	17355	34.1	14.1	48.3	68.2	-19.9	Peak	Horizontal
4	17355	23.4	14.1	37.6	54	-16.5	Average	Horizontal
5	11570	36.5	7.1	43.6	74	-30.4	Peak	Vertical
6	11570	25.0	7.1	32.1	54	-22.0	Average	Vertical
7	17355	35.6	14.1	49.7	68.2	-18.5	Peak	Vertical
8	17355	23.5	14.1	37.7	54	-16.4	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_26RU0_Channel 165								
1	11650	36.6	7.3	43.9	74	-30.1	Peak	Horizontal
2	11650	25.9	7.3	33.2	54	-20.8	Average	Horizontal
3	17475	33.5	14.5	48.0	68.2	-20.2	Peak	Horizontal
4	17475	22.9	14.5	37.4	54	-16.6	Average	Horizontal
5	11650	36.8	7.3	44.1	74	-29.9	Peak	Vertical
6	11650	25.8	7.3	33.1	54	-20.9	Average	Vertical
7	17475	34.6	14.5	49.1	68.2	-19.1	Peak	Vertical
8	17475	22.8	14.5	37.3	54	-16.7	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_52RU37_Channel 36								
1	10360	37.9	6.2	44.0	68.2	-24.2	Peak	Horizontal
2	10360	25.9	6.2	32.1	54	-21.9	Average	Horizontal
3	15540	35.0	11.7	46.7	74	-27.3	Peak	Horizontal
4	15540	24.1	11.7	35.8	54	-18.3	Average	Horizontal
5	10360	36.6	6.2	42.8	68.2	-25.5	Peak	Vertical
6	10360	25.9	6.2	32.1	54	-21.9	Average	Vertical
7	15540	35.8	11.7	47.5	74	-26.6	Peak	Vertical
8	15540	24.1	11.7	35.8	54	-18.3	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_52RU37 _Channel 44								
1	10440	36.8	6.3	43.1	68.2	-25.1	Peak	Horizontal
2	10440	25.9	6.3	32.1	54	-21.9	Average	Horizontal
3	15660	35.5	11.7	47.3	74	-26.7	Peak	Horizontal
4	15660	24.0	11.7	35.7	54	-18.3	Average	Horizontal
5	10440	36.6	6.3	42.8	68.2	-25.4	Peak	Vertical
6	10440	25.9	6.3	32.2	54	-21.8	Average	Vertical
7	15660	35.4	11.7	47.1	74	-26.9	Peak	Vertical
8	15660	24.2	11.7	35.9	54	-18.1	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_52RU37_Channel 48								
1	10480	35.8	6.3	42.1	68.2	-26.1	Peak	Horizontal
2	10480	25.3	6.3	31.6	54	-22.4	Average	Horizontal
3	15720	34.8	11.8	46.6	74	-27.4	Peak	Horizontal
4	15720	23.5	11.8	35.3	54	-18.8	Average	Horizontal
5	10480	34.7	6.3	41.0	68.2	-27.2	Peak	Vertical
6	10480	25.3	6.3	31.6	54	-22.4	Average	Vertical
7	15720	33.8	11.8	45.6	74	-28.4	Peak	Vertical
8	15720	23.4	11.8	35.2	54	-18.9	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_52RU37_Channel 52								
1	10520	36.8	6.3	43.2	68.2	-25.0	Peak	Horizontal
2	10520	25.2	6.3	31.5	54	-22.5	Average	Horizontal
3	15780	34.6	11.8	46.4	74	-27.6	Peak	Horizontal
4	15780	23.3	11.8	35.2	54	-18.9	Average	Horizontal
5	10520	36.4	6.3	42.7	68.2	-25.5	Peak	Vertical
6	10520	25.3	6.3	31.6	54	-22.4	Average	Vertical
7	15780	35.4	11.8	47.3	74	-26.7	Peak	Vertical
8	15780	23.4	11.8	35.3	54	-18.8	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_52RU37_Channel 60								
1	10600	36.7	6.3	43.0	74	-31.0	Peak	Horizontal
2	10600	25.0	6.3	31.3	54	-22.7	Average	Horizontal
3	15900	35.1	12.0	47.0	74	-27.0	Peak	Horizontal
4	15900	23.6	12.0	35.5	54	-18.5	Average	Horizontal
5	10600	38.0	6.3	44.3	74	-29.7	Peak	Vertical
6	10600	25.2	6.3	31.5	54	-22.5	Average	Vertical
7	15900	35.0	12.0	47.0	74	-27.0	Peak	Vertical
8	15900	23.7	12.0	35.7	54	-18.3	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_52RU37 _Channel 64								
1	10640	37.2	6.3	43.5	74	-30.5	Peak	Horizontal
2	10640	25.2	6.3	31.5	54	-22.5	Average	Horizontal
3	15960	35.5	12.0	47.5	74	-26.5	Peak	Horizontal
4	15960	23.7	12.0	35.7	54	-18.3	Average	Horizontal
5	10640	35.9	6.3	42.2	74	-31.8	Peak	Vertical
6	10640	25.0	6.3	31.3	54	-22.7	Average	Vertical
7	15960	34.9	12.0	46.9	74	-27.1	Peak	Vertical
8	15960	23.6	12.0	35.7	54	-18.3	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_52RU37 _Channel 149								
1	11490	36.0	6.9	42.9	74	-31.1	Peak	Horizontal
2	11490	24.9	6.9	31.7	54	-22.3	Average	Horizontal
3	17235	35.2	13.7	48.9	68.2	-19.3	Peak	Horizontal
4	17235	23.2	13.7	36.9	54	-17.1	Average	Horizontal
5	11490	37.0	6.9	43.8	74	-30.2	Peak	Vertical
6	11490	24.9	6.9	31.7	54	-22.3	Average	Vertical
7	17235	34.4	13.7	48.1	68.2	-20.1	Peak	Vertical
8	17235	23.4	13.7	37.1	54	-16.9	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_52RU37 _Channel 157								
1	11570	36.7	7.1	43.8	74	-30.2	Peak	Horizontal
2	11570	25.0	7.1	32.1	54	-22.0	Average	Horizontal
3	17355	34.5	14.1	48.6	68.2	-19.6	Peak	Horizontal
4	17355	23.5	14.1	37.7	54	-16.4	Average	Horizontal
5	11570	36.8	7.1	43.9	74	-30.1	Peak	Vertical
6	11570	24.9	7.1	32.0	54	-22.0	Average	Vertical
7	17355	35.2	14.1	49.3	68.2	-18.9	Peak	Vertical
8	17355	23.5	14.1	37.7	54	-16.4	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_52RU37_Channel 165								
1	11650	38.2	7.3	45.5	74	-28.5	Peak	Horizontal
2	11650	25.9	7.3	33.2	54	-20.8	Average	Horizontal
3	17475	33.8	14.5	48.4	68.2	-19.9	Peak	Horizontal
4	17475	22.8	14.5	37.3	54	-16.7	Average	Horizontal
5	11650	36.9	7.3	44.2	74	-29.8	Peak	Vertical
6	11650	26.0	7.3	33.2	54	-20.8	Average	Vertical
7	17475	33.8	14.5	48.3	68.2	-19.9	Peak	Vertical
8	17475	23.0	14.5	37.5	54	-16.5	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_106RU53_Channel 36								
1	10360	38.0	6.2	44.1	68.2	-24.1	Peak	Horizontal
2	10360	25.7	6.2	31.8	54	-22.2	Average	Horizontal
3	15540	35.3	11.7	47.0	74	-27.0	Peak	Horizontal
4	15540	23.6	11.7	35.3	54	-18.7	Average	Horizontal
5	10360	36.2	6.2	42.4	68.2	-25.9	Peak	Vertical
6	10360	25.7	6.2	31.8	54	-22.2	Average	Vertical
7	15540	35.6	11.7	47.2	74	-26.8	Peak	Vertical
8	15540	23.6	11.7	35.3	54	-18.7	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_106RU53_Channel 44								
1	10440	37.2	6.3	43.5	68.2	-24.7	Peak	Horizontal
2	10440	25.6	6.3	31.8	54	-22.2	Average	Horizontal
3	15660	35.2	11.7	46.9	74	-27.1	Peak	Horizontal
4	15660	23.7	11.7	35.5	54	-18.5	Average	Horizontal
5	10440	39.8	6.3	46.0	68.2	-22.2	Peak	Vertical
6	10440	25.9	6.3	32.2	54	-21.8	Average	Vertical
7	15660	35.3	11.7	47.0	74	-27.0	Peak	Vertical
8	15660	23.7	11.7	35.5	54	-18.5	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_106RU53_Channel 48								
1	10480	35.4	6.3	41.8	68.2	-26.4	Peak	Horizontal
2	10480	25.0	6.3	31.3	54	-22.7	Average	Horizontal
3	15780	33.4	11.8	45.2	74	-28.8	Peak	Horizontal
4	15720	23.1	11.8	34.9	54	-19.2	Average	Horizontal
5	10480	36.6	6.3	43.0	68.2	-25.3	Peak	Vertical
6	10480	24.7	6.3	31.0	54	-23.0	Average	Vertical
7	15720	35.1	11.8	46.9	74	-27.1	Peak	Vertical
8	15720	22.7	11.8	34.5	54	-19.5	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_106RU53_Channel 52								
1	10520	35.6	6.3	41.9	68.2	-26.3	Peak	Horizontal
2	10520	24.8	6.3	31.1	54	-22.9	Average	Horizontal
3	15780	34.0	11.8	45.8	74	-28.2	Peak	Horizontal
4	15780	22.8	11.8	34.6	54	-19.4	Average	Horizontal
5	10520	36.1	6.3	42.4	68.2	-25.8	Peak	Vertical
6	10520	24.9	6.3	31.3	54	-22.7	Average	Vertical
7	15780	35.1	11.8	46.9	74	-27.1	Peak	Vertical
8	15780	22.9	11.8	34.7	54	-19.3	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_106RU53_Channel 60								
1	10600	36.6	6.3	42.9	74	-31.1	Peak	Horizontal
2	10600	24.8	6.3	31.1	54	-22.9	Average	Horizontal
3	15900	34.6	12.0	46.5	74	-27.5	Peak	Horizontal
4	15900	23.2	12.0	35.1	54	-18.9	Average	Horizontal
5	10600	37.3	6.3	43.6	74	-30.4	Peak	Vertical
6	10600	24.9	6.3	31.2	54	-22.8	Average	Vertical
7	15900	35.3	12.0	47.3	74	-26.7	Peak	Vertical
8	15900	23.1	12.0	35.0	54	-19.0	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_106RU53 _Channel 64								
1	10640	35.1	6.3	41.4	74	-32.6	Peak	Horizontal
2	10640	24.8	6.3	31.1	54	-22.9	Average	Horizontal
3	15960	34.9	12.0	46.9	74	-27.1	Peak	Horizontal
4	15960	22.9	12.0	34.9	54	-19.1	Average	Horizontal
5	10640	36.6	6.3	42.9	74	-31.1	Peak	Vertical
6	10640	24.8	6.3	31.1	54	-22.9	Average	Vertical
7	15960	34.6	12.0	46.6	74	-27.4	Peak	Vertical
8	15960	23.1	12.0	35.1	54	-18.9	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_106RU53_Channel 149								
1	11490	36.2	6.9	43.0	74	-31.0	Peak	Horizontal
2	11490	24.4	6.9	31.3	54	-22.7	Average	Horizontal
3	17235	33.9	13.7	47.6	68.2	-20.6	Peak	Horizontal
4	17235	22.4	13.7	36.2	54	-17.8	Average	Horizontal
5	11490	36.4	6.9	43.3	74	-30.7	Peak	Vertical
6	11490	24.4	6.9	31.3	54	-22.7	Average	Vertical
7	17235	35.0	13.7	48.7	68.2	-19.5	Peak	Vertical
8	17235	22.6	13.7	36.3	54	-17.7	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_106RU53 _Channel 157								
1	11570	36.7	7.1	43.8	74	-30.2	Peak	Horizontal
2	11570	24.7	7.1	31.8	54	-22.2	Average	Horizontal
3	17355	34.4	14.1	48.5	68.2	-19.7	Peak	Horizontal
4	17355	23.0	14.1	37.1	54	-16.9	Average	Horizontal
5	11570	36.5	7.1	43.6	74	-30.4	Peak	Vertical
6	11570	24.6	7.1	31.6	54	-22.4	Average	Vertical
7	17355	35.2	14.1	49.4	68.2	-18.8	Peak	Vertical
8	17355	23.0	14.1	37.1	54	-16.9	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_106RU53 _Channel 165								
1	11650	35.9	7.3	43.1	74	-30.9	Peak	Horizontal
2	11650	25.4	7.3	32.6	54	-21.4	Average	Horizontal
3	17475	33.4	14.5	47.9	68.2	-20.3	Peak	Horizontal
4	17475	22.2	14.5	36.7	54	-17.3	Average	Horizontal
5	11650	36.6	7.3	43.9	74	-30.1	Peak	Vertical
6	11650	25.4	7.3	32.6	54	-21.4	Average	Vertical
7	17475	33.4	14.5	47.9	68.2	-20.3	Peak	Vertical
8	17475	22.0	14.5	36.5	54	-17.5	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_SU _Channel 36								
1	10360	37.3	6.2	43.4	68.2	-24.8	Peak	Horizontal
2	10360	24.9	6.2	31.0	54	-23.0	Average	Horizontal
3	15540	35.5	11.7	47.1	74	-26.9	Peak	Horizontal
4	15540	22.8	11.7	34.5	54	-19.5	Average	Horizontal
5	10360	36.0	6.2	42.2	68.2	-26.0	Peak	Vertical
6	10360	24.9	6.2	31.0	54	-23.0	Average	Vertical
7	15540	35.4	11.7	47.0	74	-27.0	Peak	Vertical
8	15540	22.9	11.7	34.6	54	-19.4	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_SU _Channel 44								
1	10440	36.7	6.3	43.0	68.2	-25.2	Peak	Horizontal
2	10440	24.8	6.3	31.0	54	-23.0	Average	Horizontal
3	15660	34.7	11.7	46.4	74	-27.6	Peak	Horizontal
4	15660	23.0	11.7	34.8	54	-19.2	Average	Horizontal
5	10440	36.9	6.3	43.2	68.2	-25.0	Peak	Vertical
6	10440	24.8	6.3	31.0	54	-23.0	Average	Vertical
7	15660	34.3	11.7	46.1	74	-27.9	Peak	Vertical
8	15660	22.9	11.7	34.7	54	-19.3	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_SU _Channel 48								
1	10480	36.0	6.3	42.3	68.2	-25.9	Peak	Horizontal
2	10480	24.1	6.3	30.4	54	-23.6	Average	Horizontal
3	15720	35.0	11.8	46.8	74	-27.2	Peak	Horizontal
4	15720	22.5	11.8	34.3	54	-19.7	Average	Horizontal
5	10480	35.8	6.3	42.1	68.2	-26.1	Peak	Vertical
6	10480	24.1	6.3	30.4	54	-23.6	Average	Vertical
7	15720	33.8	11.8	45.6	74	-28.4	Peak	Vertical
8	15720	22.4	11.8	34.2	54	-19.8	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_SU _Channel 52								
1	10520	36.2	6.3	42.6	68.2	-25.6	Peak	Horizontal
2	10520	24.0	6.3	30.3	54	-23.7	Average	Horizontal
3	15780	34.3	11.8	46.1	74	-27.9	Peak	Horizontal
4	15780	22.4	11.8	34.2	54	-19.8	Average	Horizontal
5	10520	35.9	6.3	42.2	68.2	-26.0	Peak	Vertical
6	10520	24.2	6.3	30.5	54	-23.5	Average	Vertical
7	15780	33.6	11.8	45.4	74	-28.6	Peak	Vertical
8	15780	22.5	11.8	34.3	54	-19.7	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_SU _Channel 60								
1	10600	36.0	6.3	42.3	74	-31.7	Peak	Horizontal
2	10600	24.2	6.3	30.5	54	-23.5	Average	Horizontal
3	15900	33.5	12.0	45.5	74	-28.5	Peak	Horizontal
4	15900	22.5	12.0	34.5	54	-19.5	Average	Horizontal
5	10600	35.0	6.3	41.3	74	-32.7	Peak	Vertical
6	10600	24.2	6.3	30.5	54	-23.5	Average	Vertical
7	15900	34.7	12.0	46.7	74	-27.4	Peak	Vertical
8	15900	22.6	12.0	34.6	54	-19.4	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_SU _Channel 64								
1	10640	35.7	6.3	42.0	74	-32.0	Peak	Horizontal
2	10640	24.3	6.3	30.6	54	-23.4	Average	Horizontal
3	15960	33.1	12.0	45.1	74	-28.9	Peak	Horizontal
4	15960	22.5	12.0	34.5	54	-19.5	Average	Horizontal
5	10640	37.1	6.3	43.4	74	-30.6	Peak	Vertical
6	10640	24.1	6.3	30.4	54	-23.6	Average	Vertical
7	15960	34.0	12.0	46.0	74	-28.0	Peak	Vertical
8	15960	22.4	12.0	34.4	54	-19.6	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_SU _Channel 149								
1	11490	36.1	6.9	43.0	74	-31.1	Peak	Horizontal
2	11490	23.5	6.9	30.4	54	-23.6	Average	Horizontal
3	17235	33.3	13.7	47.1	68.2	-21.1	Peak	Horizontal
4	17235	22.0	13.7	35.7	54	-18.3	Average	Horizontal
5	11490	35.2	6.9	42.1	74	-31.9	Peak	Vertical
6	11490	23.7	6.9	30.6	54	-23.4	Average	Vertical
7	17235	33.4	13.7	47.1	68.2	-21.1	Peak	Vertical
8	17235	22.1	13.7	35.8	54	-18.2	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_SU _Channel 157								
1	11570	36.9	7.1	44.0	74	-30.0	Peak	Horizontal
2	11570	23.9	7.1	30.9	54	-23.1	Average	Horizontal
3	17355	33.6	14.1	47.7	68.2	-20.5	Peak	Horizontal
4	17355	22.5	14.1	36.6	54	-17.4	Average	Horizontal
5	11570	35.2	7.1	42.3	74	-31.8	Peak	Vertical
6	11570	23.8	7.1	30.8	54	-23.2	Average	Vertical
7	17355	34.4	14.1	48.5	68.2	-19.7	Peak	Vertical
8	17355	22.5	14.1	36.6	54	-17.4	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE20_SU _Channel 165								
1	11650	36.7	7.3	44.0	74	-30.0	Peak	Horizontal
2	11650	24.9	7.3	32.1	54	-21.9	Average	Horizontal
3	17475	33.3	14.5	47.8	68.2	-20.4	Peak	Horizontal
4	17475	21.9	14.5	36.4	54	-17.6	Average	Horizontal
5	11650	35.8	7.3	43.0	74	-31.0	Peak	Vertical
6	11650	24.8	7.3	32.1	54	-21.9	Average	Vertical
7	17475	33.1	14.5	47.6	68.2	-20.6	Peak	Vertical
8	17475	21.7	14.5	36.3	54	-17.8	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE40_SU _Channel 38								
1	10380	37.1	6.2	43.3	68.2	-25.0	Peak	Horizontal
2	10380	25.3	6.2	31.5	54	-22.6	Average	Horizontal
3	15570	34.5	11.7	46.1	74	-27.9	Peak	Horizontal
4	15570	23.2	11.7	34.9	54	-19.1	Average	Horizontal
5	10380	37.5	6.2	43.7	68.2	-24.6	Peak	Vertical
6	10380	25.2	6.2	31.4	54	-22.6	Average	Vertical
7	15570	36.2	11.7	47.8	74	-26.2	Peak	Vertical
8	15570	23.1	11.7	34.8	54	-19.2	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE40_SU _Channel 46								
1	10460	38.1	6.3	44.4	68.2	-23.8	Peak	Horizontal
2	10460	25.2	6.3	31.5	54	-22.6	Average	Horizontal
3	15690	33.9	11.8	45.7	74	-28.3	Peak	Horizontal
4	15690	23.4	11.8	35.2	54	-18.8	Average	Horizontal
5	10460	35.5	6.3	41.8	68.2	-26.4	Peak	Vertical
6	10460	25.2	6.3	31.5	54	-22.6	Average	Vertical
7	15690	33.4	11.8	45.2	74	-28.8	Peak	Vertical
8	15690	23.3	11.8	35.1	54	-18.9	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE40_SU _Channel 54								
1	10540	34.6	6.3	41.0	68.2	-27.2	Peak	Horizontal
2	10540	22.3	6.3	28.6	54	-25.4	Average	Horizontal
3	15810	34.3	11.9	46.1	74	-27.9	Peak	Horizontal
4	15810	22.7	11.9	34.6	54	-19.4	Average	Horizontal
5	10540	34.0	6.3	40.3	68.2	-27.9	Peak	Vertical
6	10540	22.2	6.3	28.5	54	-25.5	Average	Vertical
7	15810	36.3	11.9	48.1	74	-25.9	Peak	Vertical
8	15810	22.6	11.9	34.5	54	-19.5	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE40_SU _Channel 62								
1	10620	36.8	6.3	43.1	74	-30.9	Peak	Horizontal
2	10620	24.6	6.3	30.9	54	-23.1	Average	Horizontal
3	15930	34.0	12.0	46.0	74	-28.0	Peak	Horizontal
4	15930	22.9	12.0	34.9	54	-19.1	Average	Horizontal
5	10620	36.8	6.3	43.1	74	-30.9	Peak	Vertical
6	10620	24.6	6.3	30.9	54	-23.1	Average	Vertical
7	15930	34.9	12.0	46.9	74	-27.1	Peak	Vertical
8	15930	23.0	12.0	35.0	54	-19.0	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE40_SU _Channel 151								
1	11510	36.3	6.9	43.2	74	-30.8	Peak	Horizontal
2	11510	24.2	6.9	31.1	54	-22.9	Average	Horizontal
3	17265	34.2	13.8	48.1	68.2	-20.1	Peak	Horizontal
4	17265	22.5	13.8	36.3	54	-17.7	Average	Horizontal
5	11510	35.5	6.9	42.4	74	-31.6	Peak	Vertical
6	11510	24.1	6.9	31.0	54	-23.0	Average	Vertical
7	17265	33.5	13.8	47.4	68.2	-20.8	Peak	Vertical
8	17265	22.3	13.8	36.2	54	-17.8	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE40_SU _Channel 159								
1	11590	36.6	7.1	43.7	74	-30.3	Peak	Horizontal
2	11590	24.4	7.1	31.5	54	-22.5	Average	Horizontal
3	17385	33.7	14.2	47.9	68.2	-20.3	Peak	Horizontal
4	17385	22.8	14.2	37.0	54	-17.0	Average	Horizontal
5	11590	35.8	7.1	42.9	74	-31.1	Peak	Vertical
6	11590	24.4	7.1	31.5	54	-22.5	Average	Vertical
7	17385	33.8	14.2	48.0	68.2	-20.2	Peak	Vertical
8	17385	22.8	14.2	37.0	54	-17.0	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE80_SU _Channel 42								
1	10420	36.2	6.2	42.4	68.2	-25.8	Peak	Horizontal
2	10420	25.5	6.2	31.7	54	-22.3	Average	Horizontal
3	15630	35.9	11.7	47.6	74	-26.4	Peak	Horizontal
4	15630	23.5	11.7	35.2	54	-18.8	Average	Horizontal
5	10420	35.4	6.2	41.7	68.2	-26.5	Peak	Vertical
6	10420	25.5	6.2	31.7	54	-22.3	Average	Vertical
7	15630	33.2	11.7	44.9	74	-29.1	Peak	Vertical
8	15630	23.6	11.7	35.3	54	-18.7	Average	Vertical

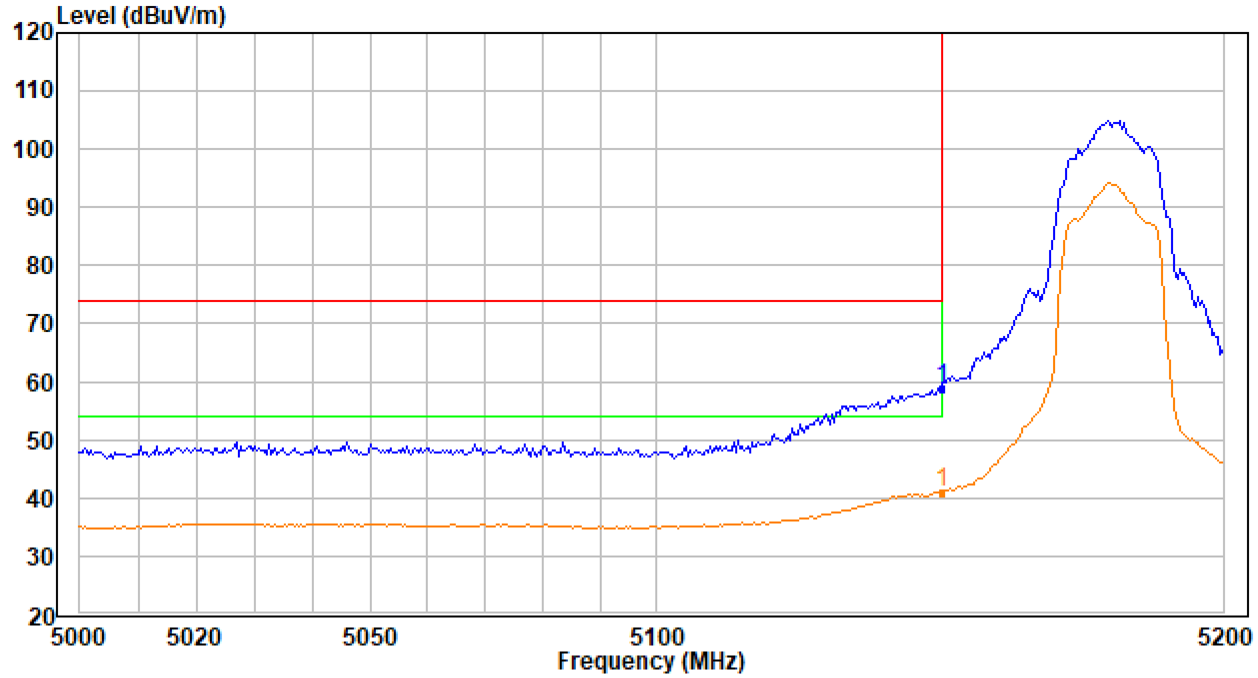
No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE80_SU _Channel 58								
1	10580	35.1	6.3	41.4	68.2	-26.8	Peak	Horizontal
2	10580	22.3	6.3	28.6	54	-25.4	Average	Horizontal
3	15870	35.2	11.9	47.2	74	-26.8	Peak	Horizontal
4	15870	22.7	11.9	34.6	54	-19.4	Average	Horizontal
5	10580	35.5	6.3	41.8	68.2	-26.4	Peak	Vertical
6	10580	22.2	6.3	28.5	54	-25.5	Average	Vertical
7	15870	34.7	11.9	46.6	74	-27.4	Peak	Vertical
8	15870	22.8	11.9	34.7	54	-19.3	Average	Vertical
MIMO_ Ant. 1+2_ IEEE 802.11ax-HE80_SU _Channel 155								
1	11550	35.7	7.0	42.7	74	-31.3	Peak	Horizontal
2	11550	24.0	7.0	31.0	54	-23.0	Average	Horizontal
3	17325	34.5	14.0	48.6	68.2	-19.7	Peak	Horizontal
4	17325	22.4	14.0	36.4	54	-17.6	Average	Horizontal
5	11550	36.2	7.0	43.2	74	-30.8	Peak	Vertical
6	11550	24.2	7.0	31.2	54	-22.8	Average	Vertical
7	17325	33.5	14.0	47.6	68.2	-20.7	Peak	Vertical
8	17325	22.4	14.0	36.0	54	-18.0	Average	Vertical

Remark:
1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result – Limit

Band Edge Measurements (Radiated)

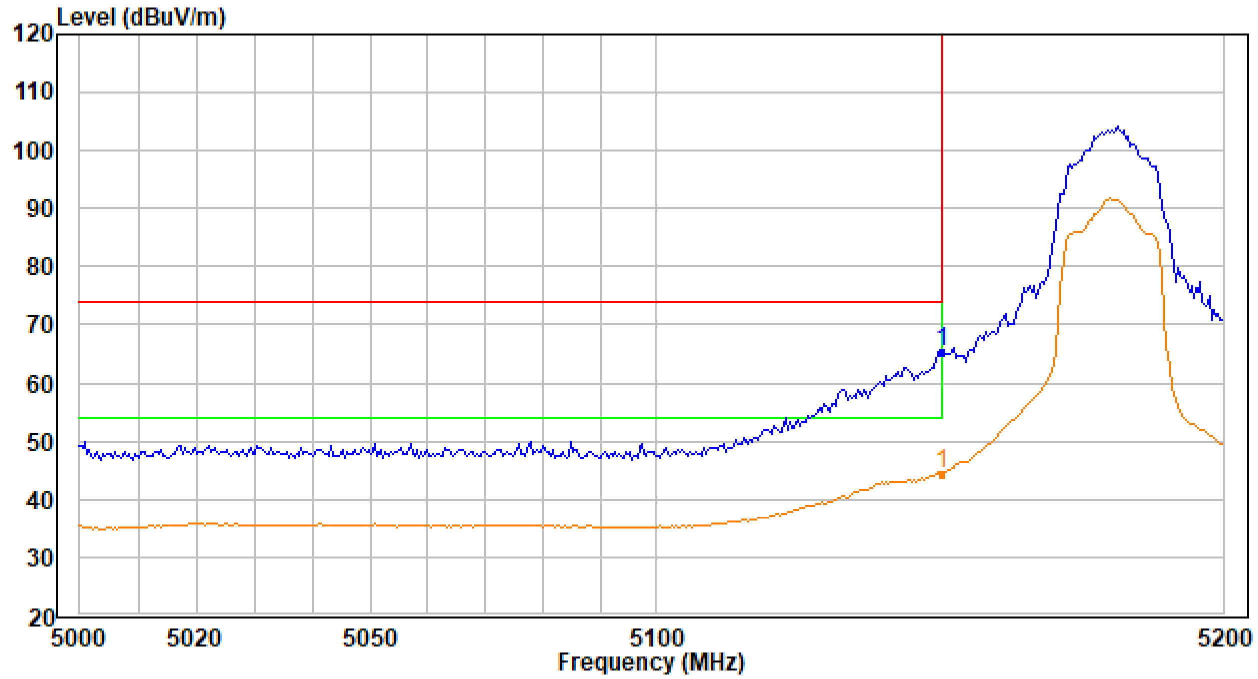
Ant. 1_IEEE 802.11a

Test Channel:	Channel 36	Ant. Polar. :	Horizontal



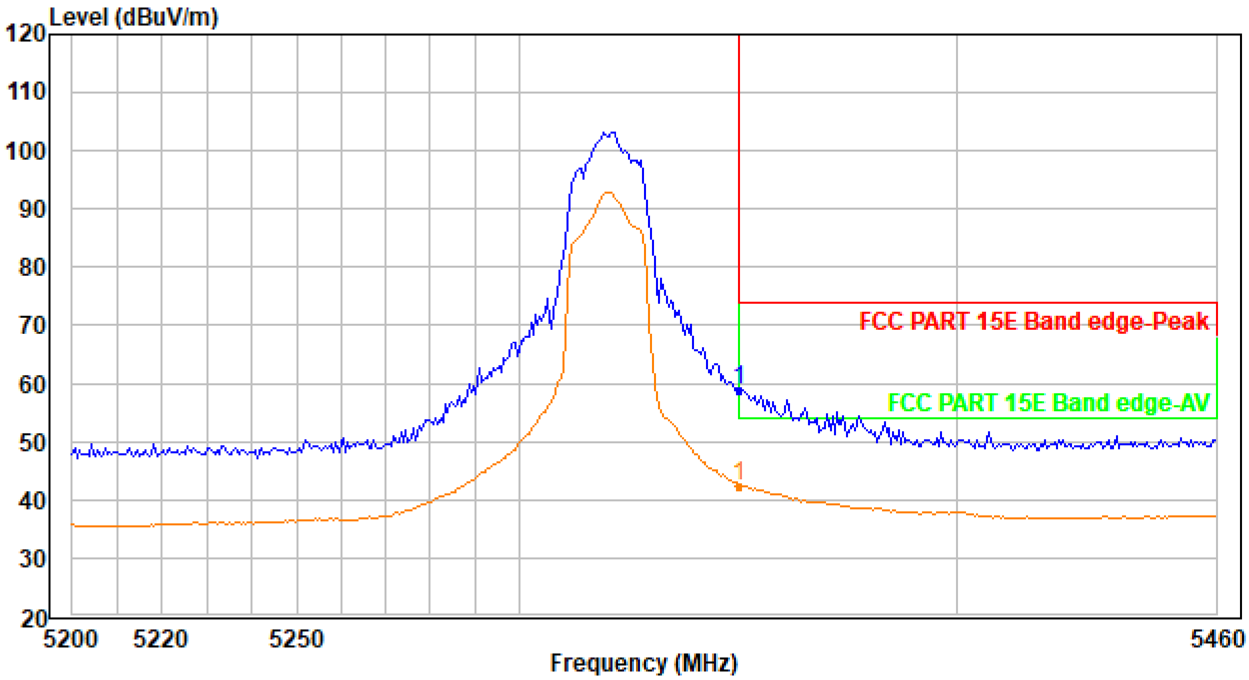
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	58.82	74.00	41.04	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical



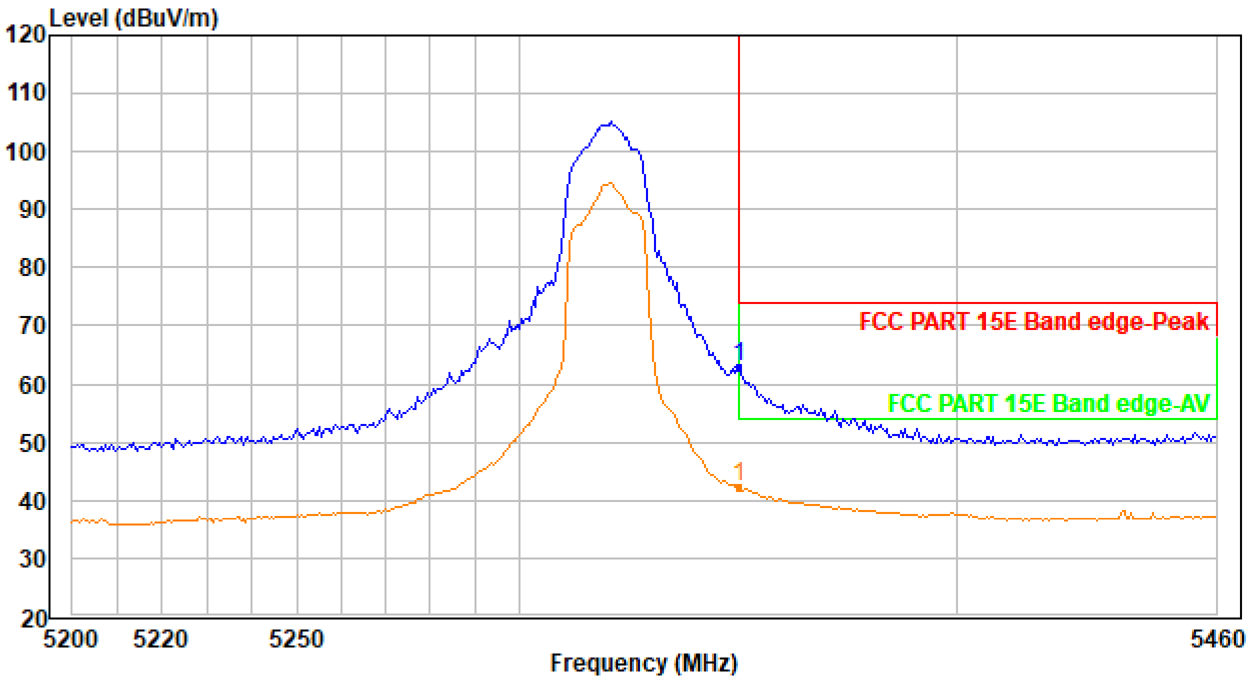
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	65.26	74.00	44.54	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Horizontal



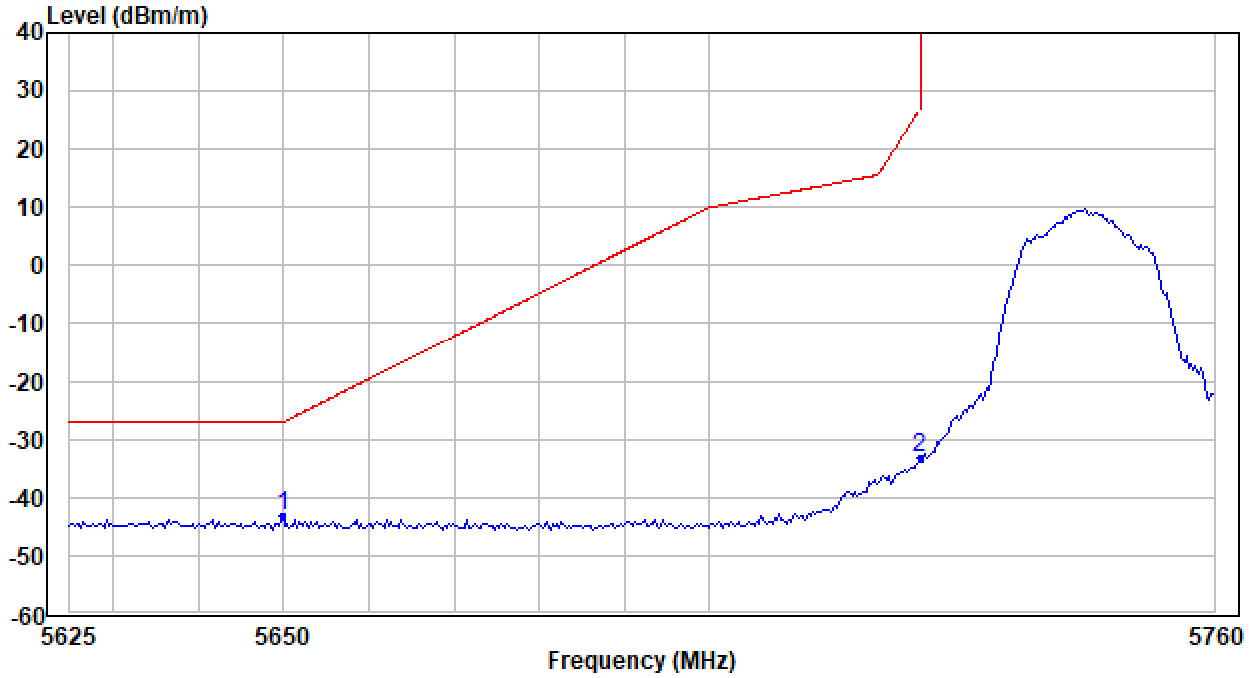
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	58.88	74.00	42.48	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Vertical



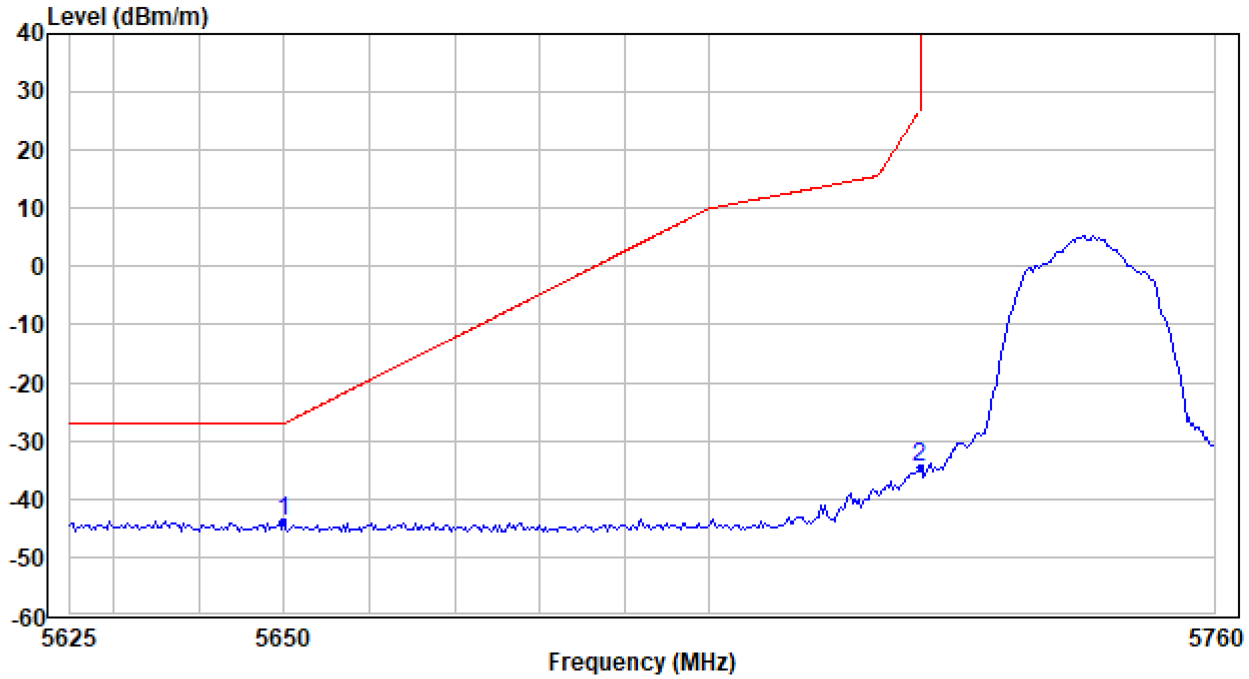
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	62.85	74.00	42.22	54.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Horizontal



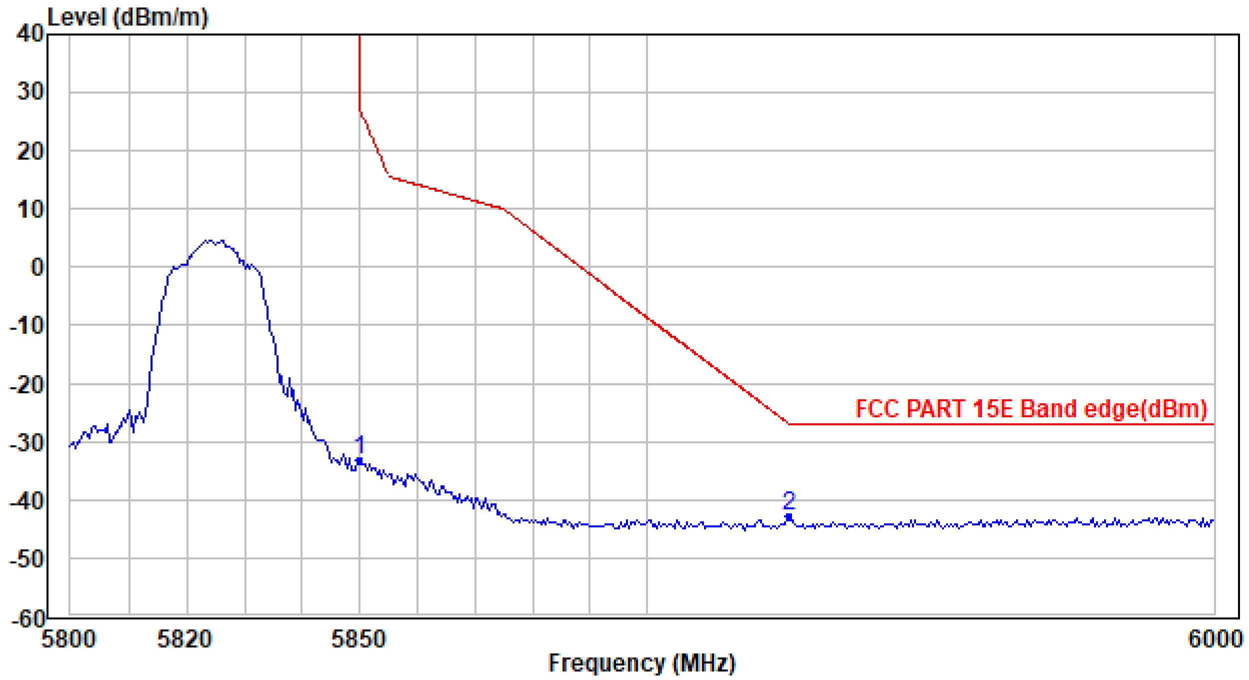
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-43.32	-27.00	Pass
5725.0000	-33.31	27.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Vertical



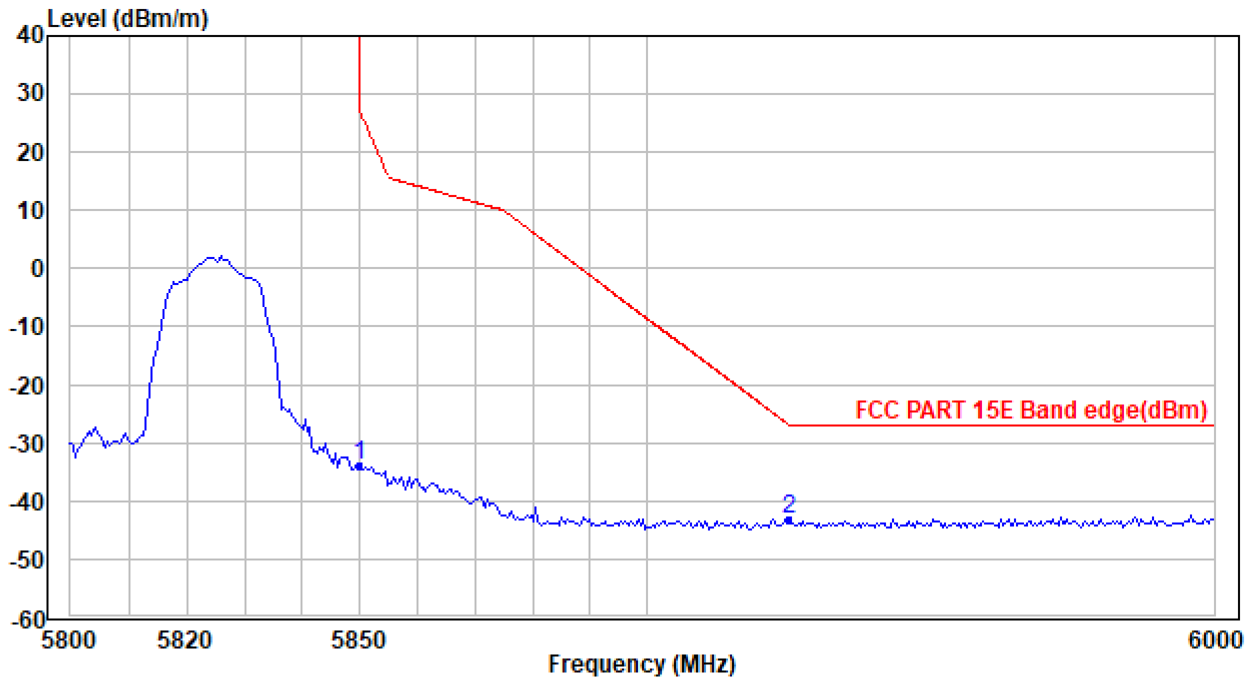
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-43.93	-27.00	Pass
5725.0000	-34.51	27.00	Pass

Test Channel:	Channel 165	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-33.21	27.00	Pass
5925.0000	-42.80	-27.00	Pass

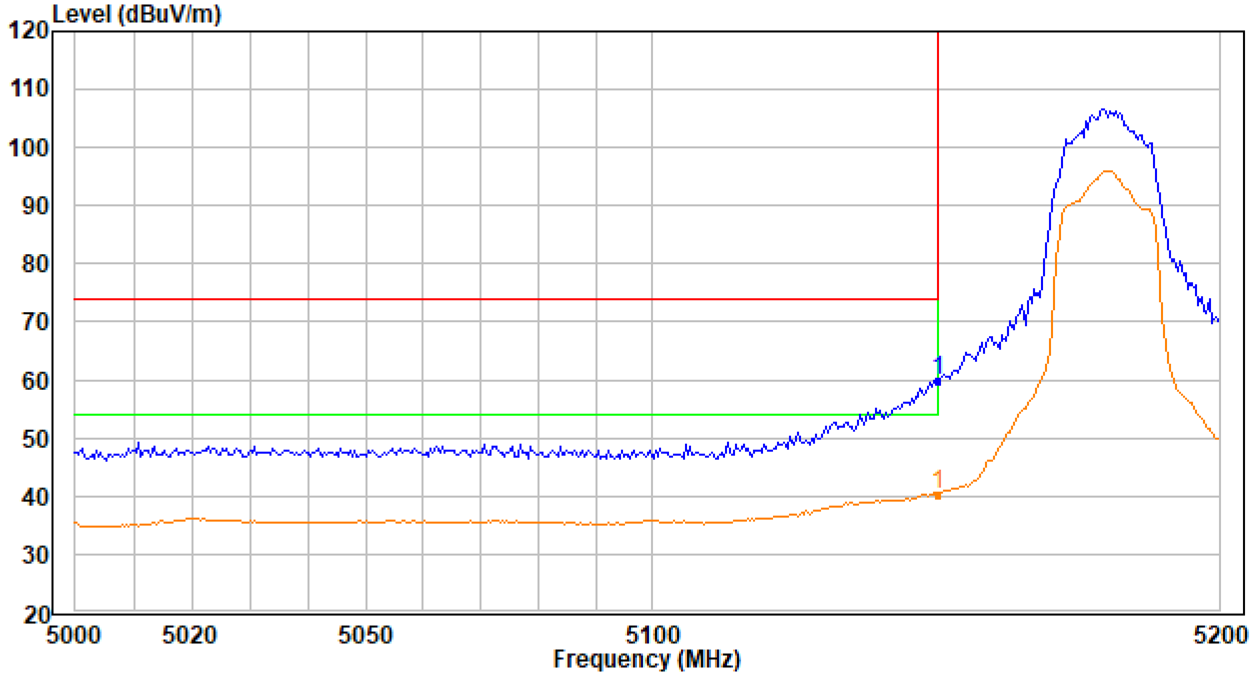
Test Channel:	Channel 165	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-34.00	27.00	Pass
5925.0000	-43.16	-27.00	Pass

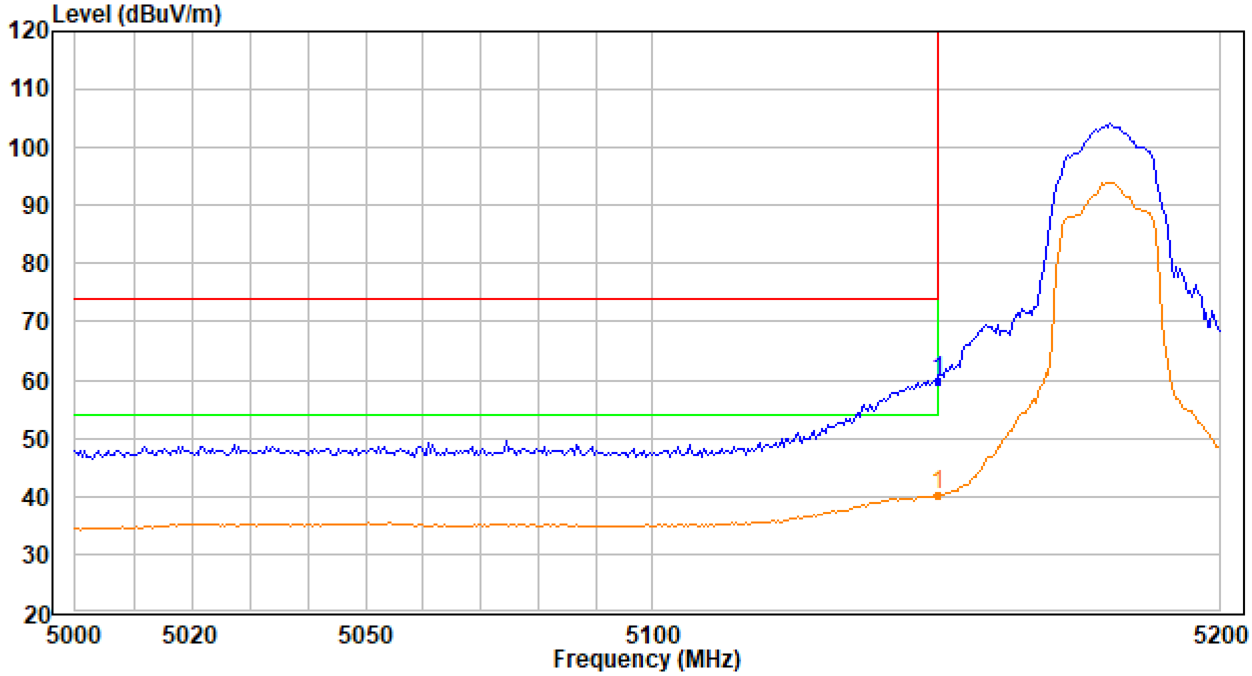
Ant. 2_IEEE 802.11a

Test Channel:	Channel 36	Ant. Polar. :	Horizontal



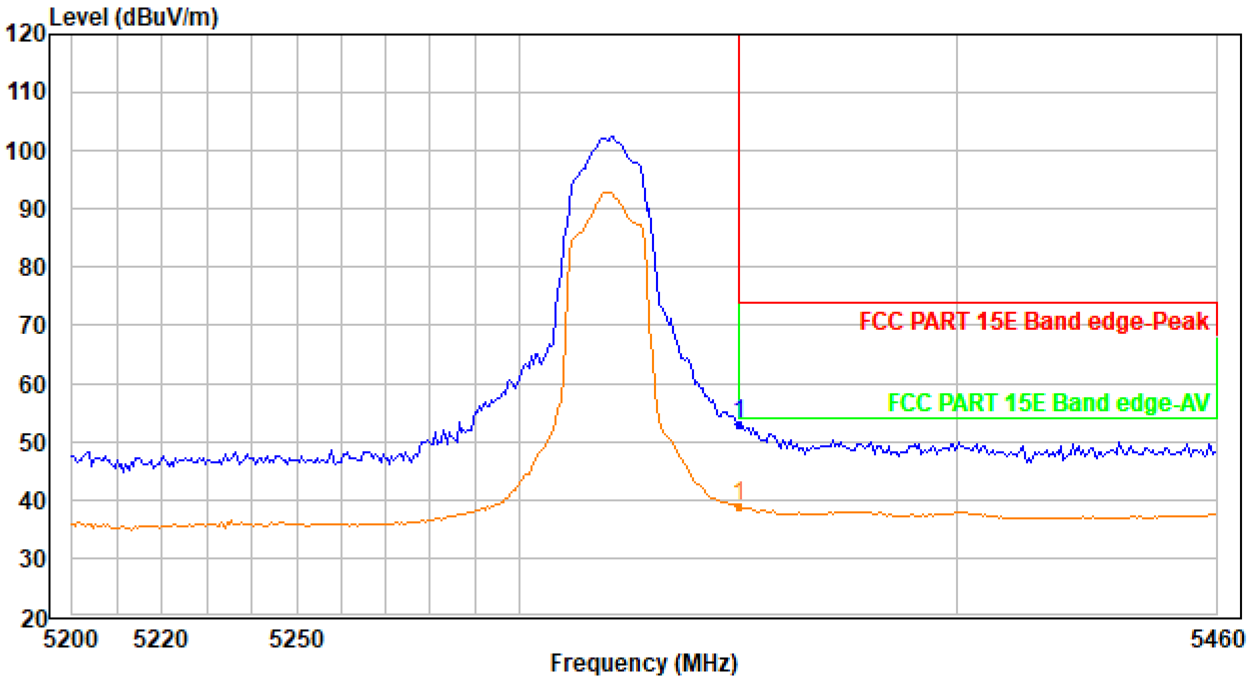
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	60.03	74.00	40.39	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical



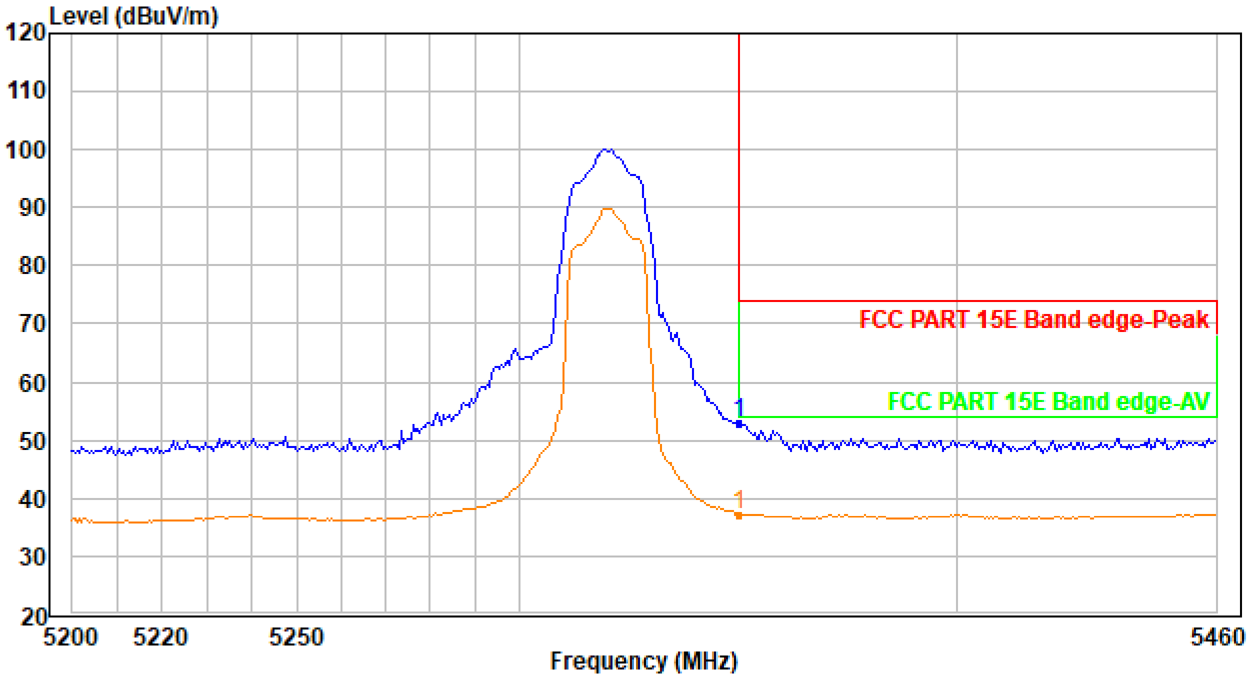
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	59.82	74.00	40.15	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Horizontal



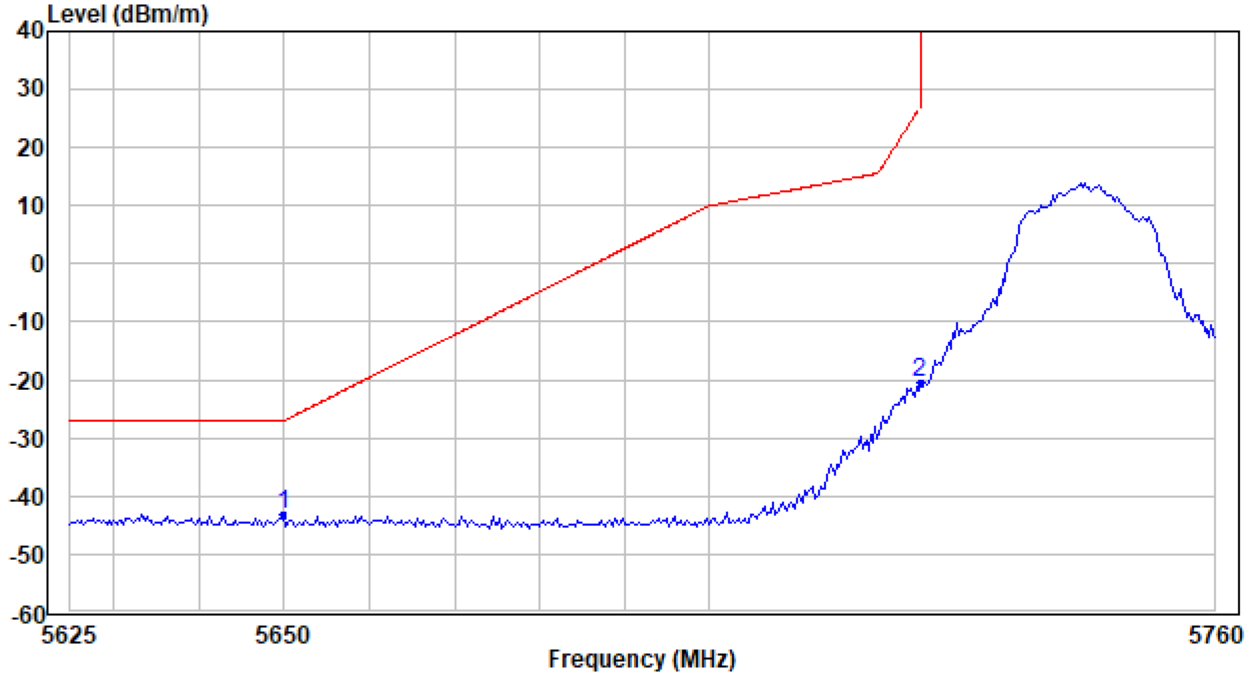
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	53.07	74.00	38.76	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Vertical



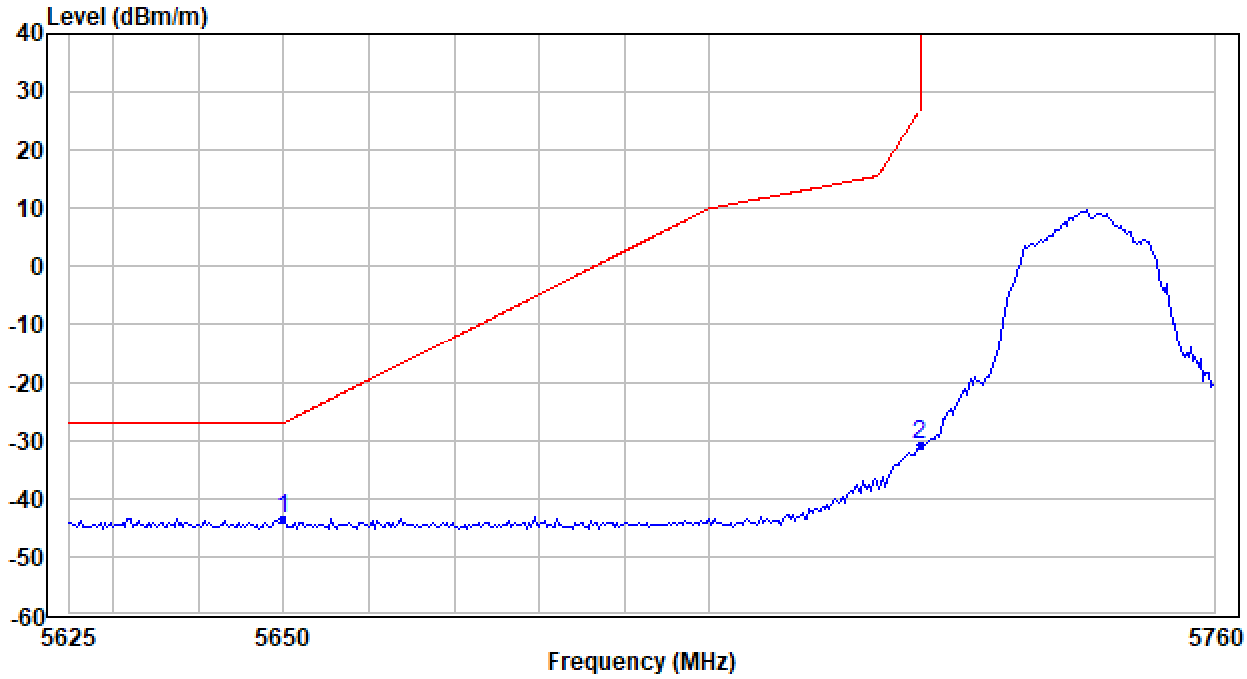
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	53.03	74.00	37.33	54.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Horizontal



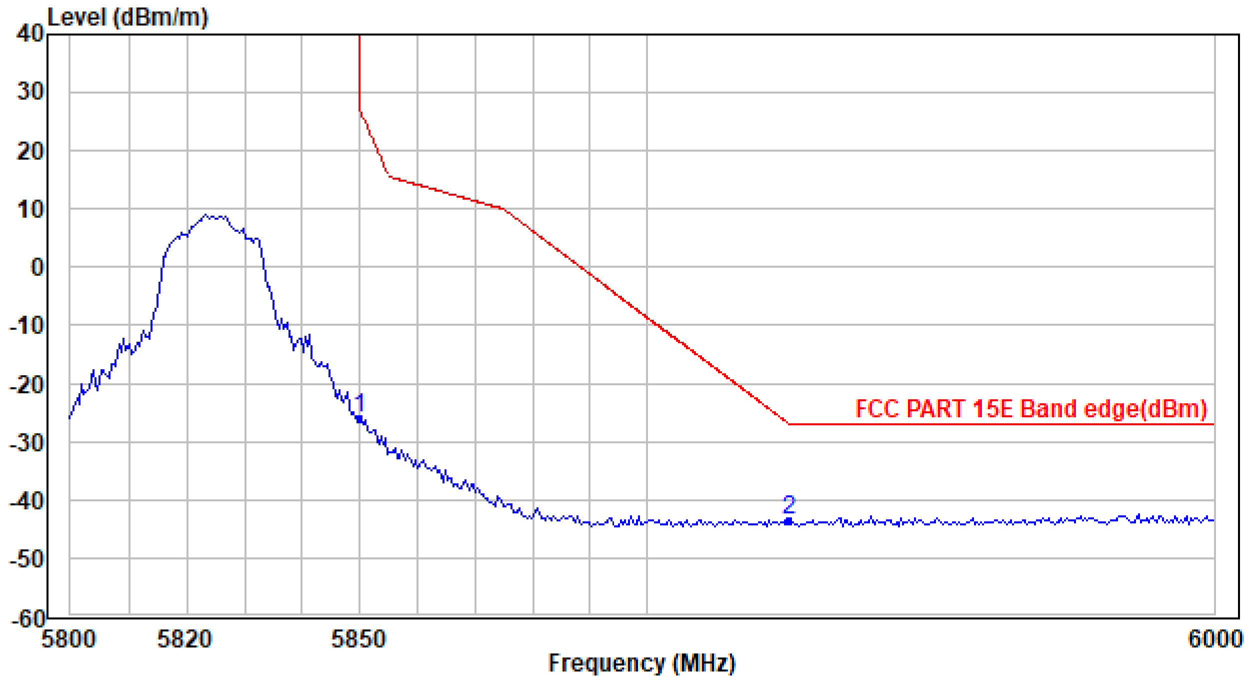
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-43.24	-27.00	Pass
5725.0000	-20.61	27.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Vertical



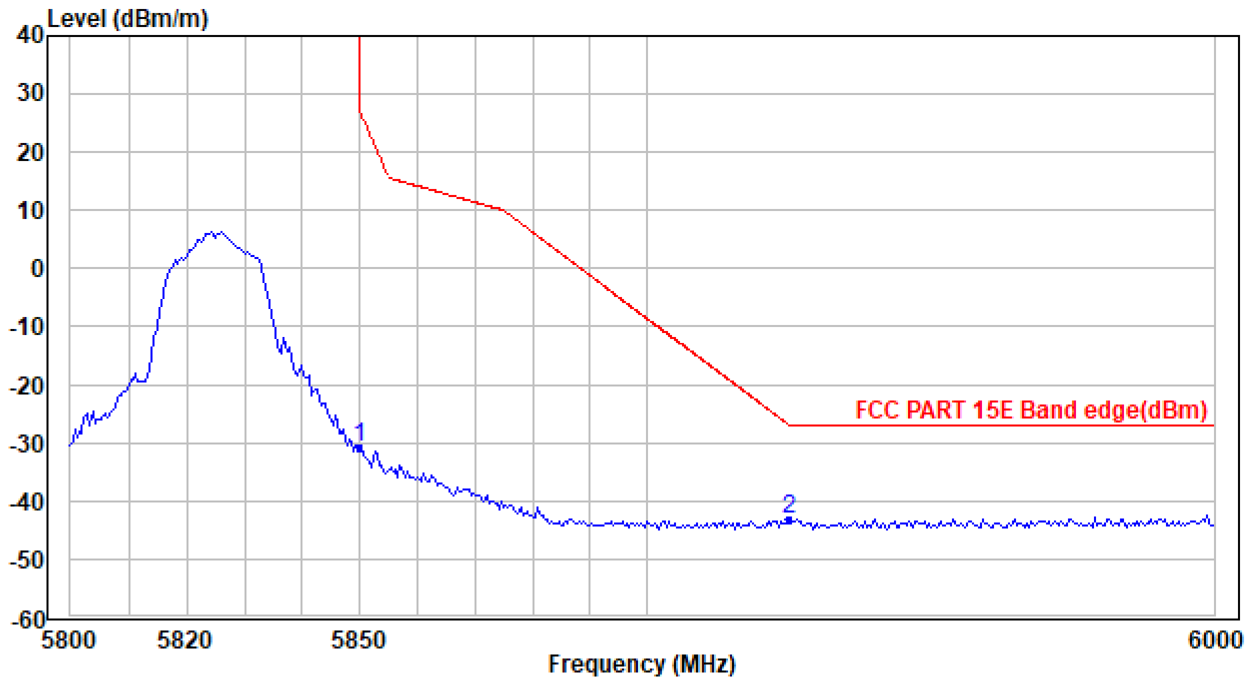
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-43.61	-27.00	Pass
5725.0000	-30.83	27.00	Pass

Test Channel:	Channel 165	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-25.85	27.00	Pass
5925.0000	-43.38	-27.00	Pass

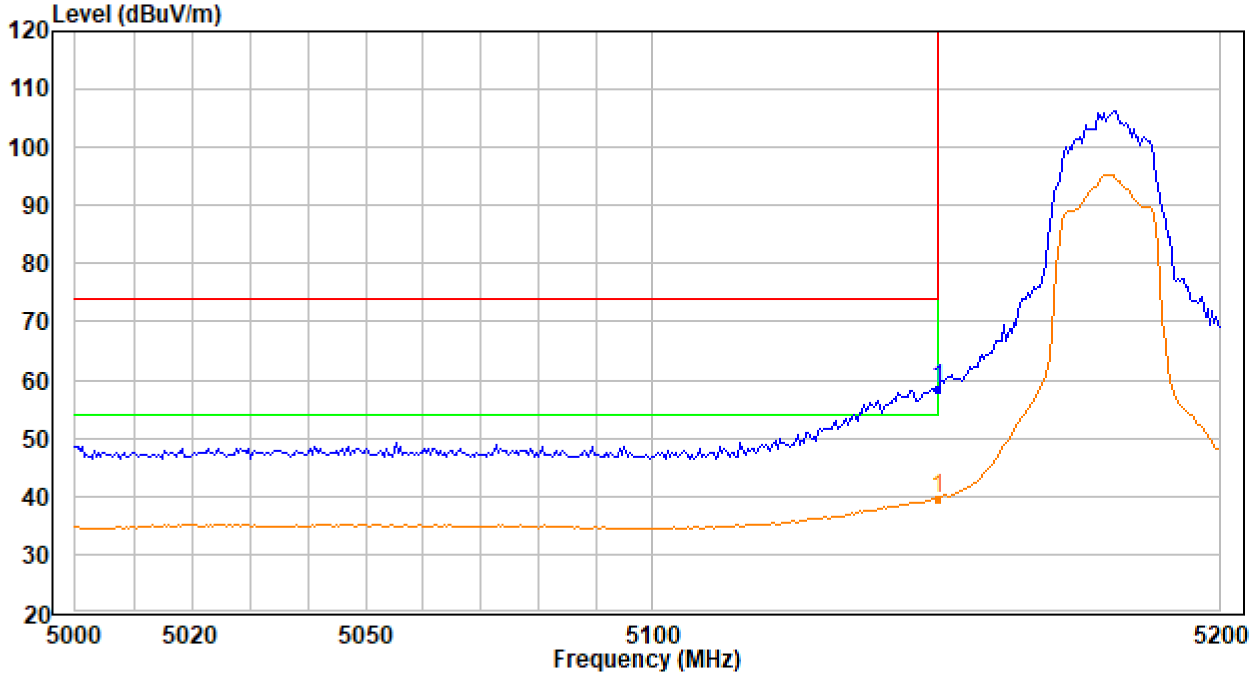
Test Channel:	Channel 165	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-30.87	27.00	Pass
5925.0000	-43.04	-27.00	Pass

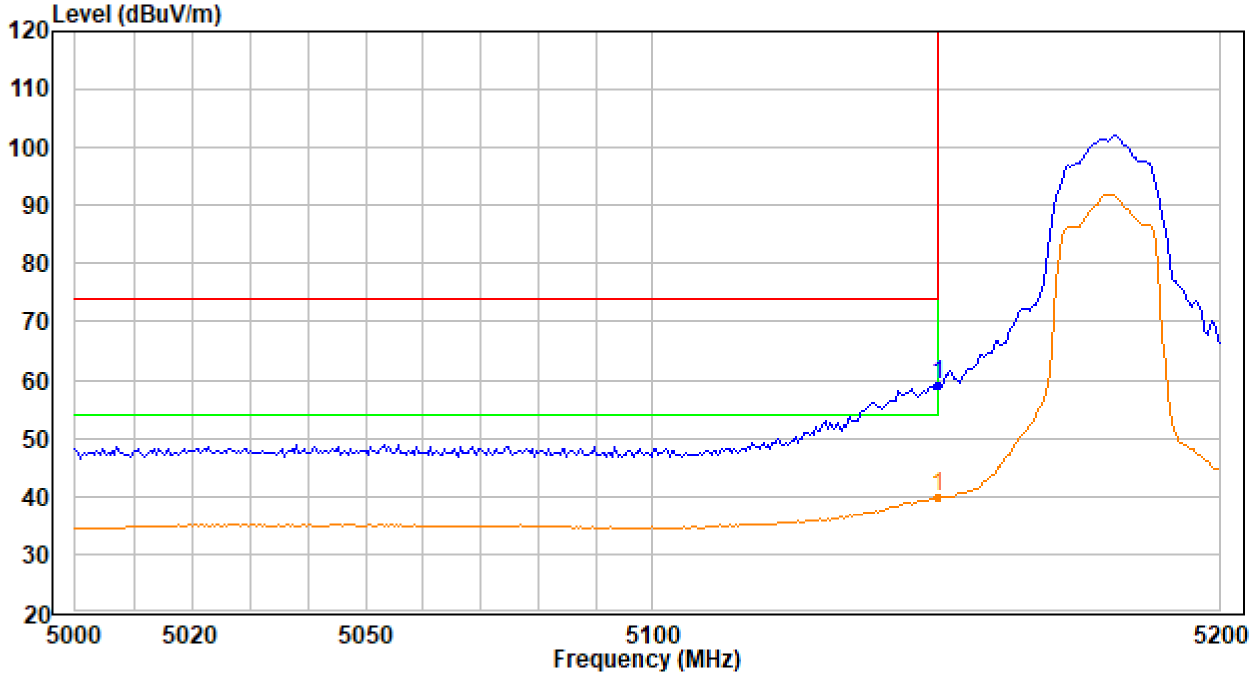
MIMO_Ant. 0+1_IEEE 802.11n-HT20

Test Channel:	Channel 36	Ant. Polar. :	Horizontal



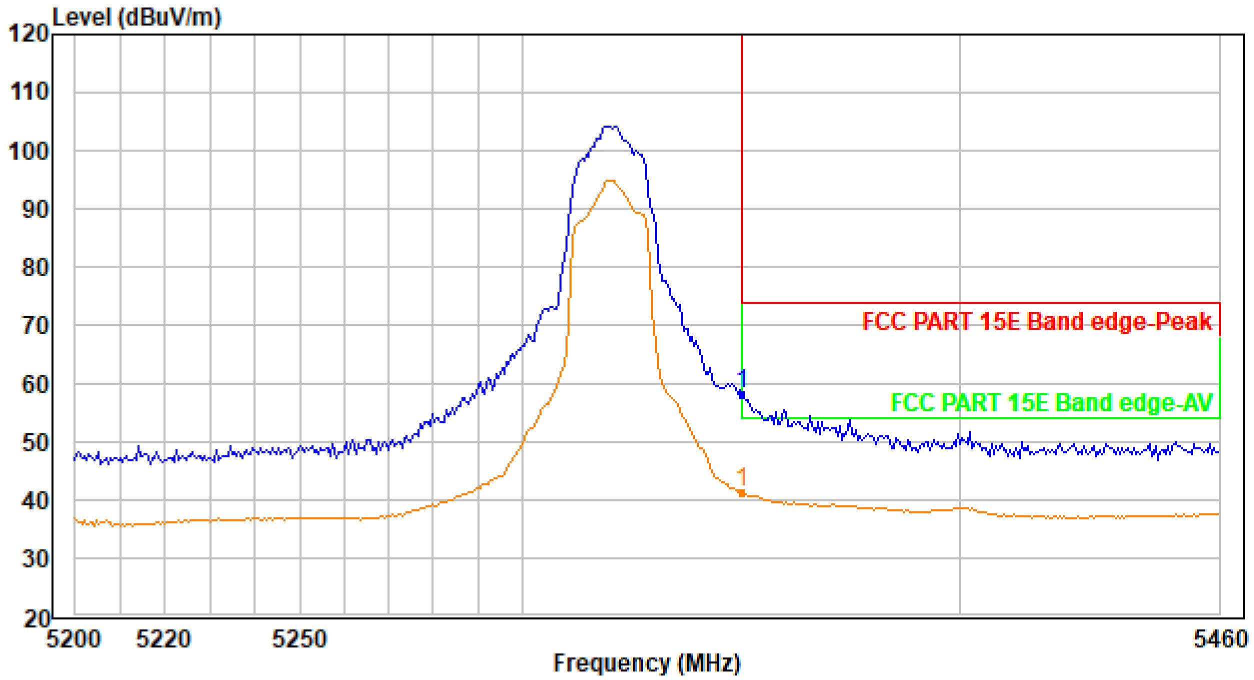
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	58.62	74.00	39.65	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical



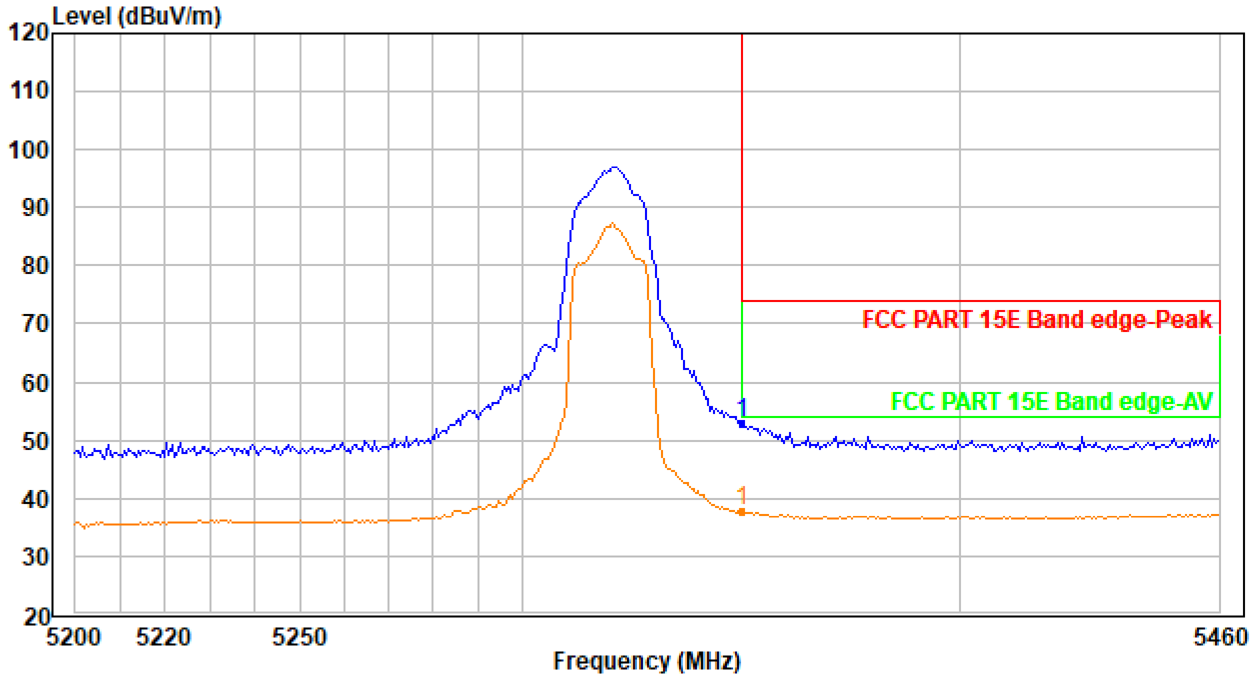
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	59.22	74.00	39.80	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Horizontal



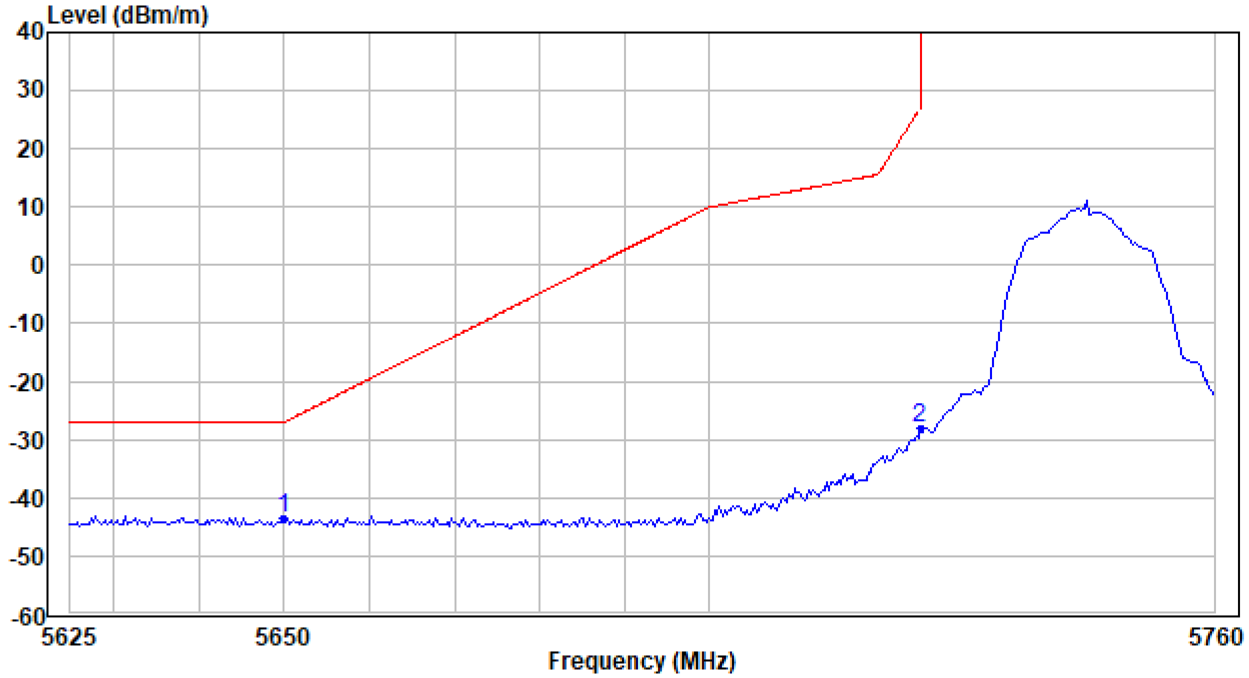
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	58.22	74.00	41.23	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Vertical



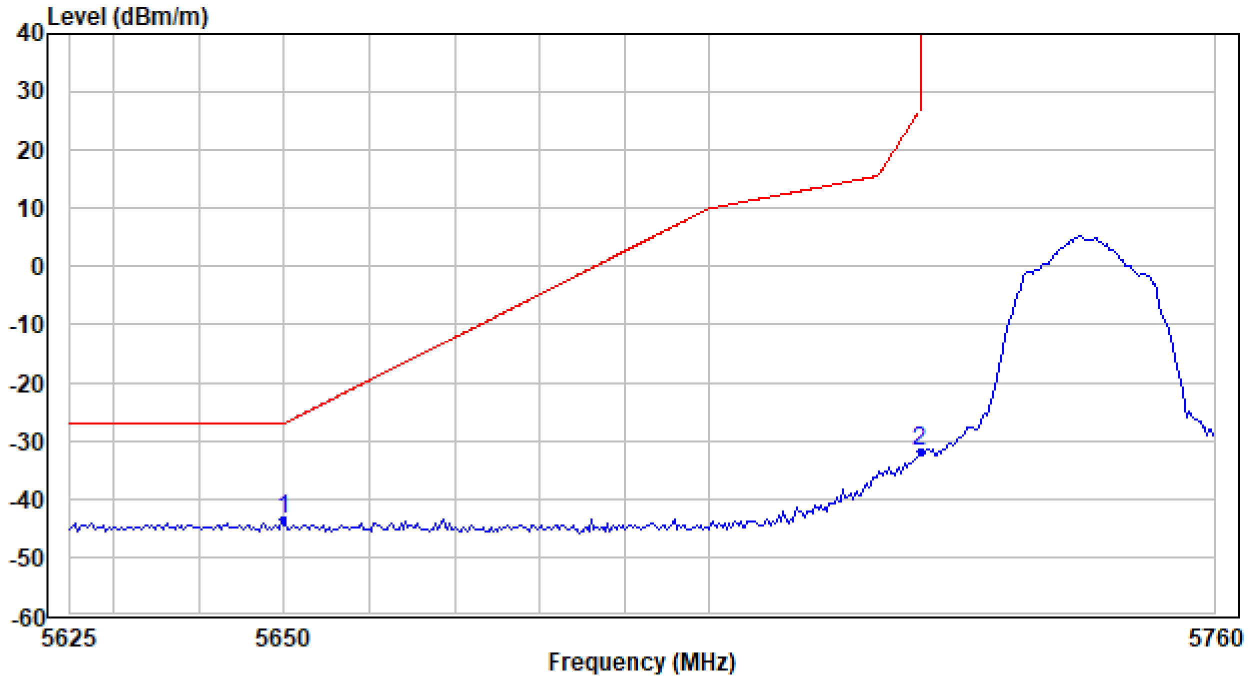
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	52.91	74.00	37.98	54.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Horizontal



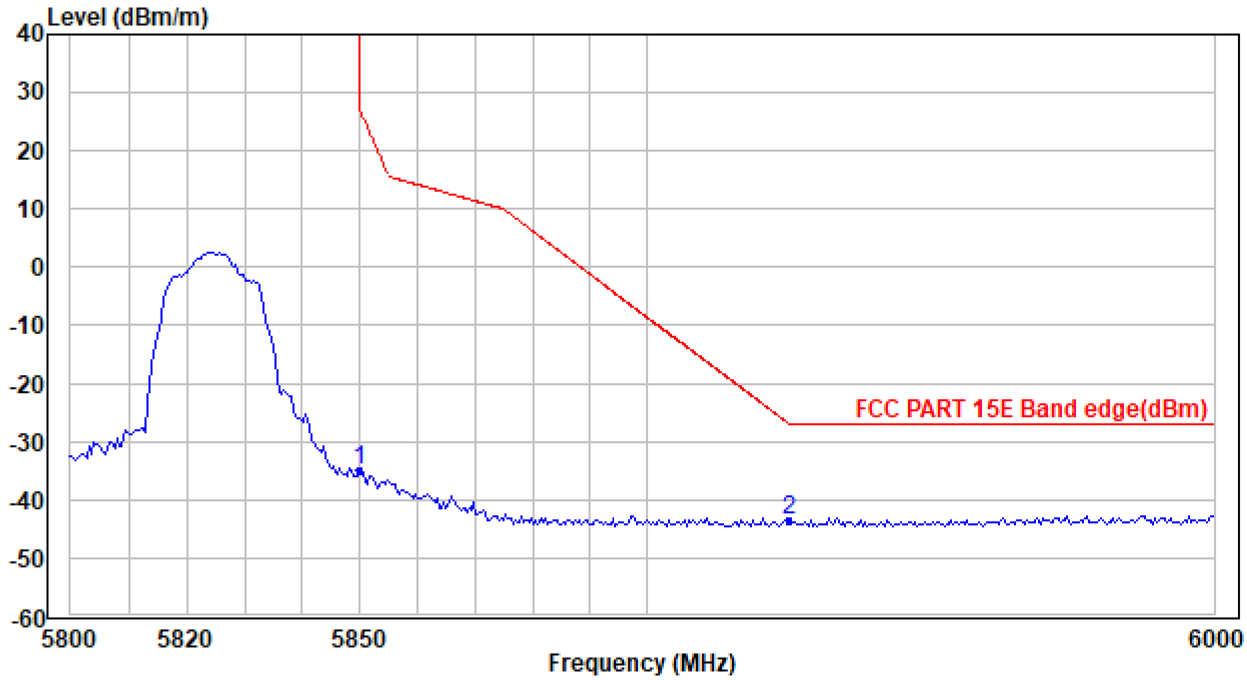
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-43.51	-27.00	Pass
5725.0000	-28.04	26.97	Pass

Test Channel:	Channel 149	Ant. Polar. :	Vertical



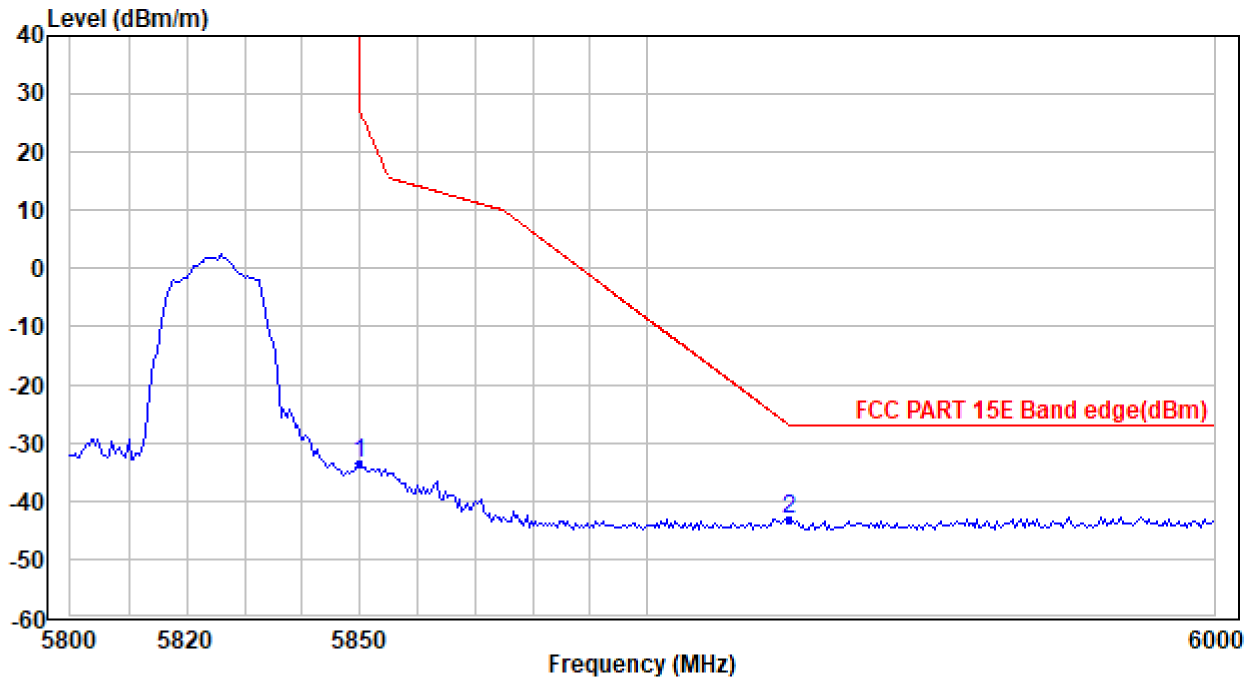
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-43.42	-27.00	Pass
5725.0000	-31.87	26.97	Pass

Test Channel:	Channel 165	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-34.90	26.94	Pass
5925.0000	-43.36	-27.00	Pass

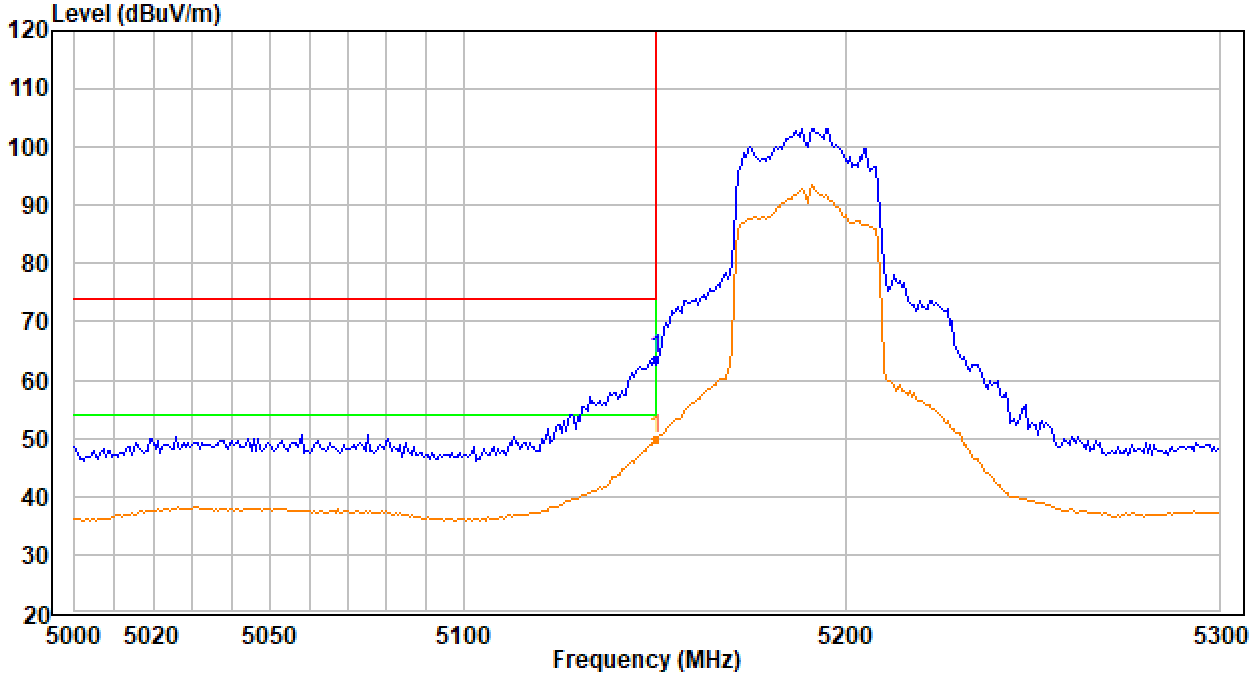
Test Channel:	Channel 165	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-33.45	26.94	Pass
5925.0000	-43.27	-27.00	Pass

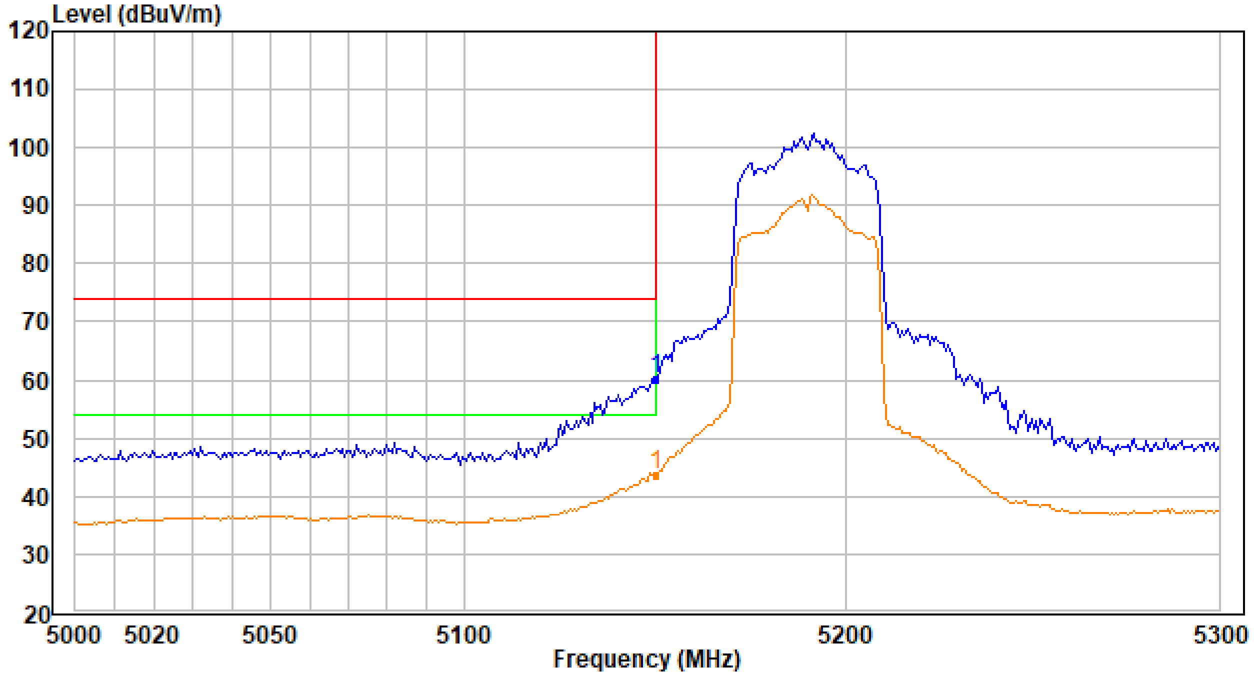
MIMO_Ant. 0+1_IEEE 802.11n-HT40

Test Channel:	Channel 38	Ant. Polar. :	Horizontal



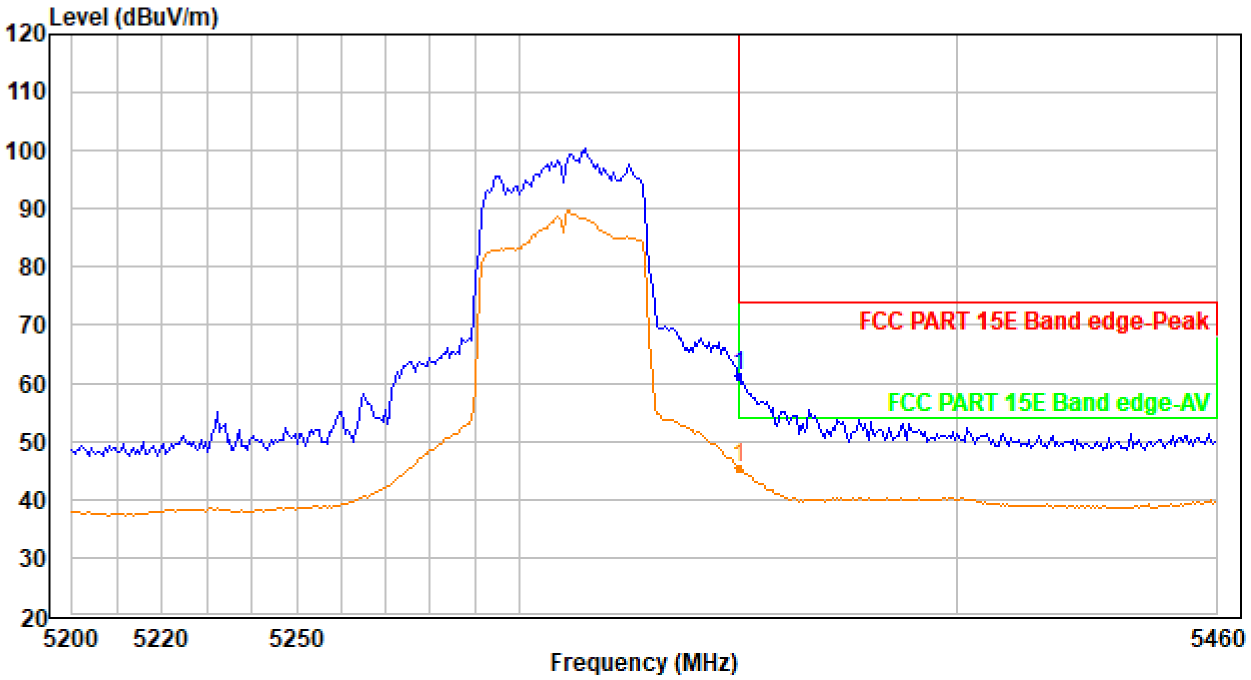
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	63.72	74.00	49.88	54.00	Pass

Test Channel:	Channel 38	Ant. Polar. :	Vertical



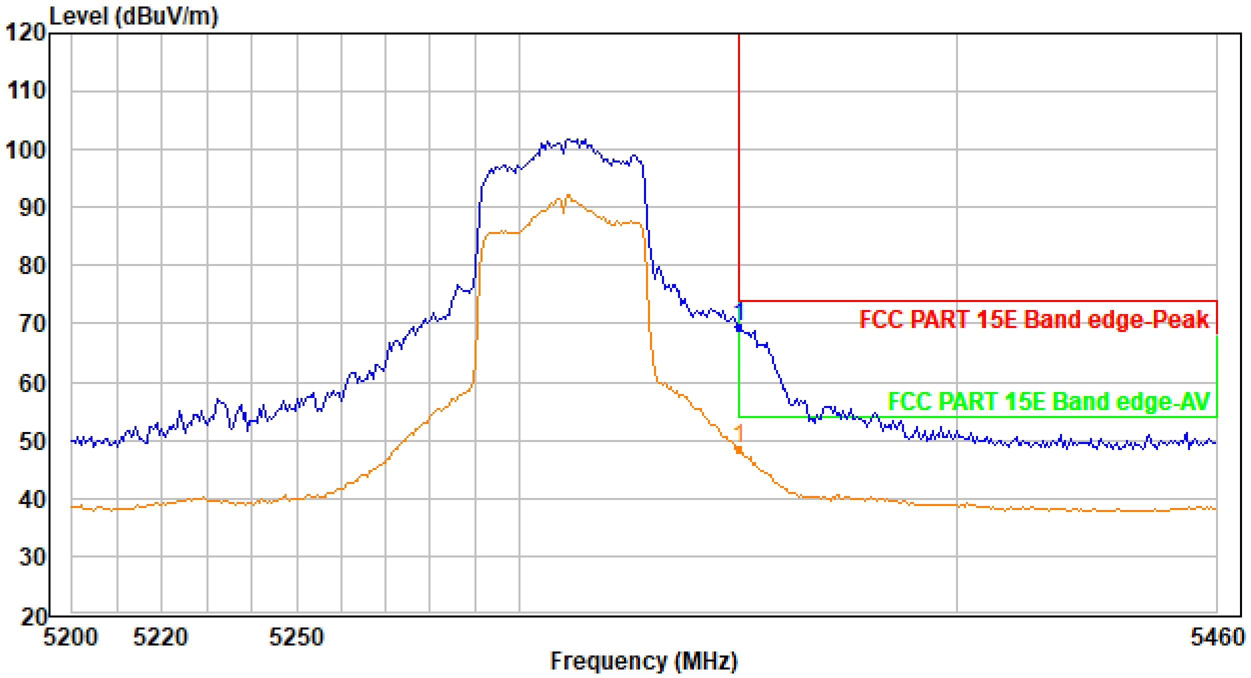
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	60.08	74.00	43.84	54.00	Pass

Test Channel:	Channel 62	Ant. Polar. :	Horizontal



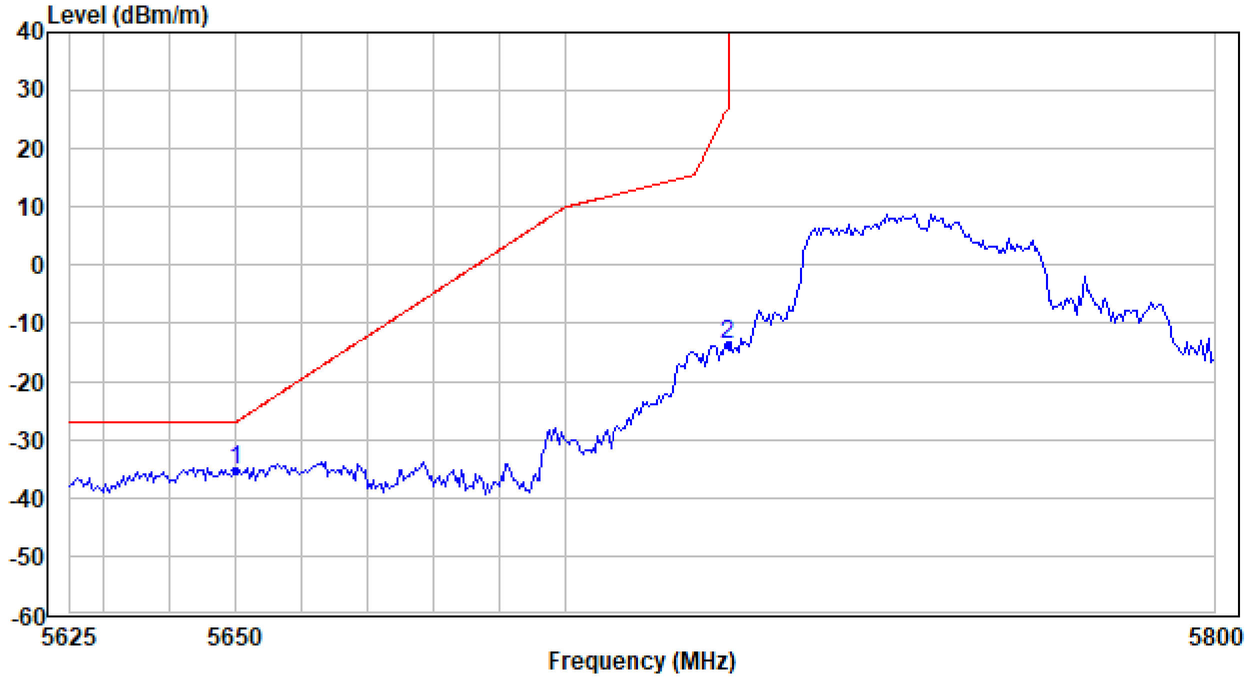
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	61.09	74.00	45.44	54.00	Pass

Test Channel:	Channel 62	Ant. Polar. :	Vertical



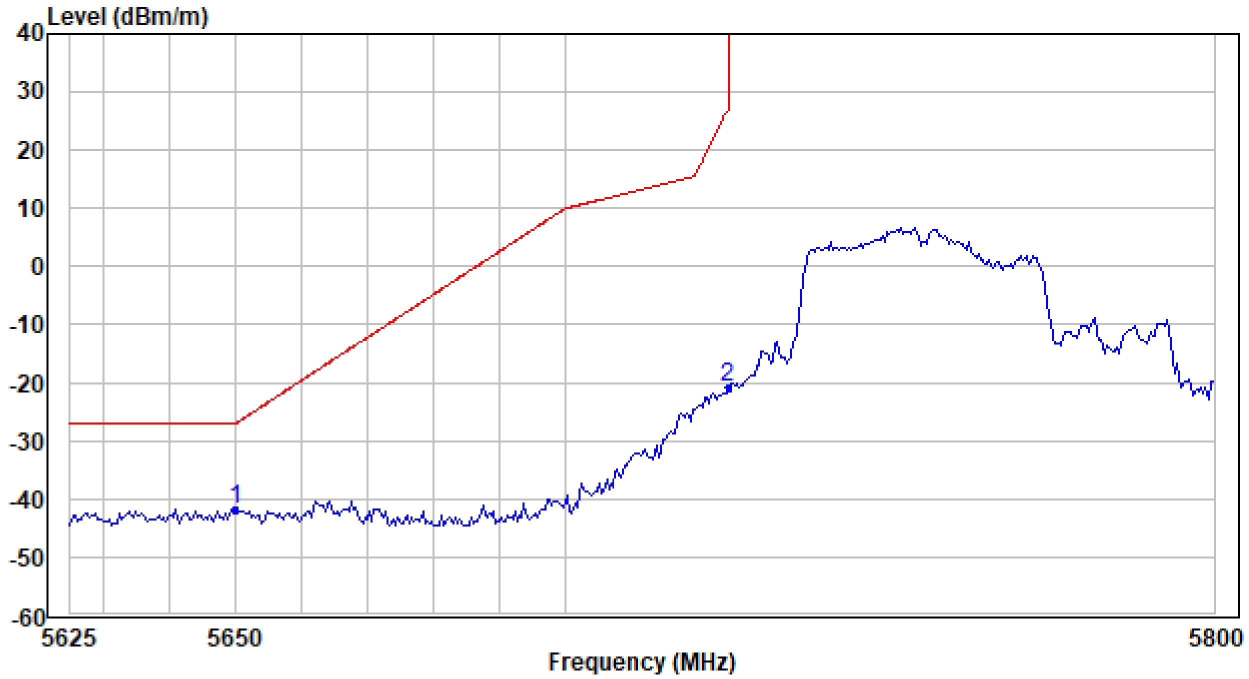
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	69.57	74.00	48.45	54.00	Pass

Test Channel:	Channel 151	Ant. Polar. :	Horizontal



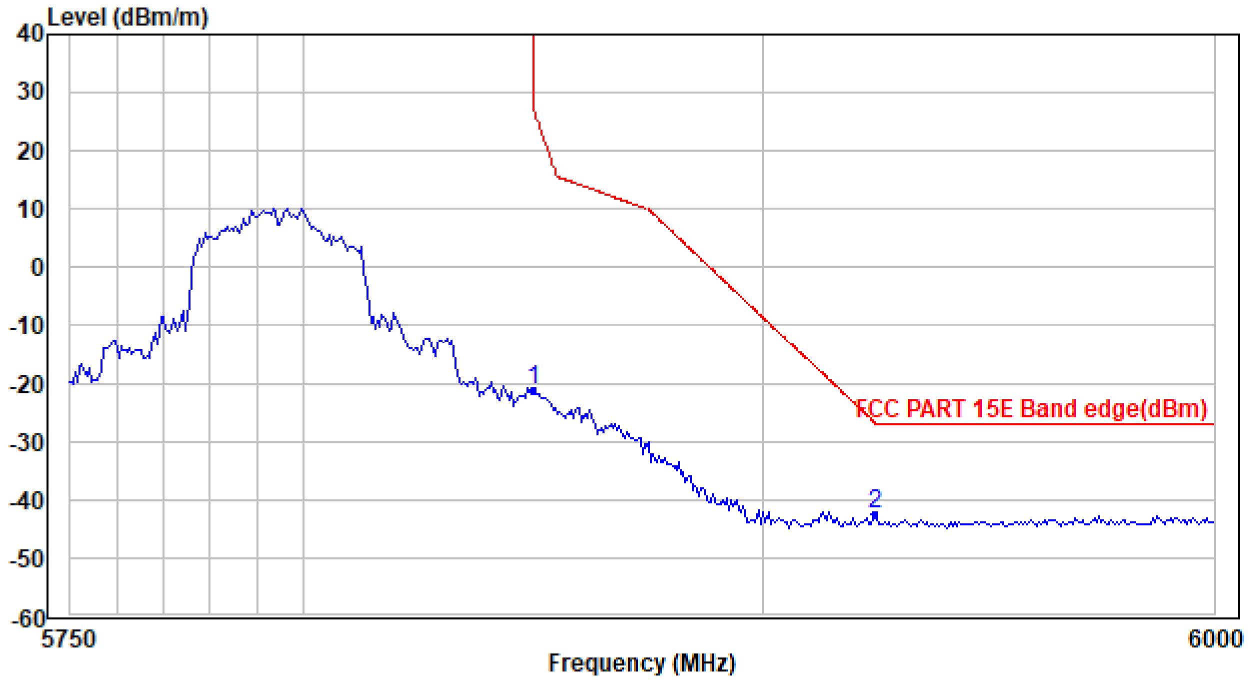
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-35.31	-27.00	Pass
5725.0000	-13.56	26.97	Pass

Test Channel:	Channel 151	Ant. Polar. :	Vertical



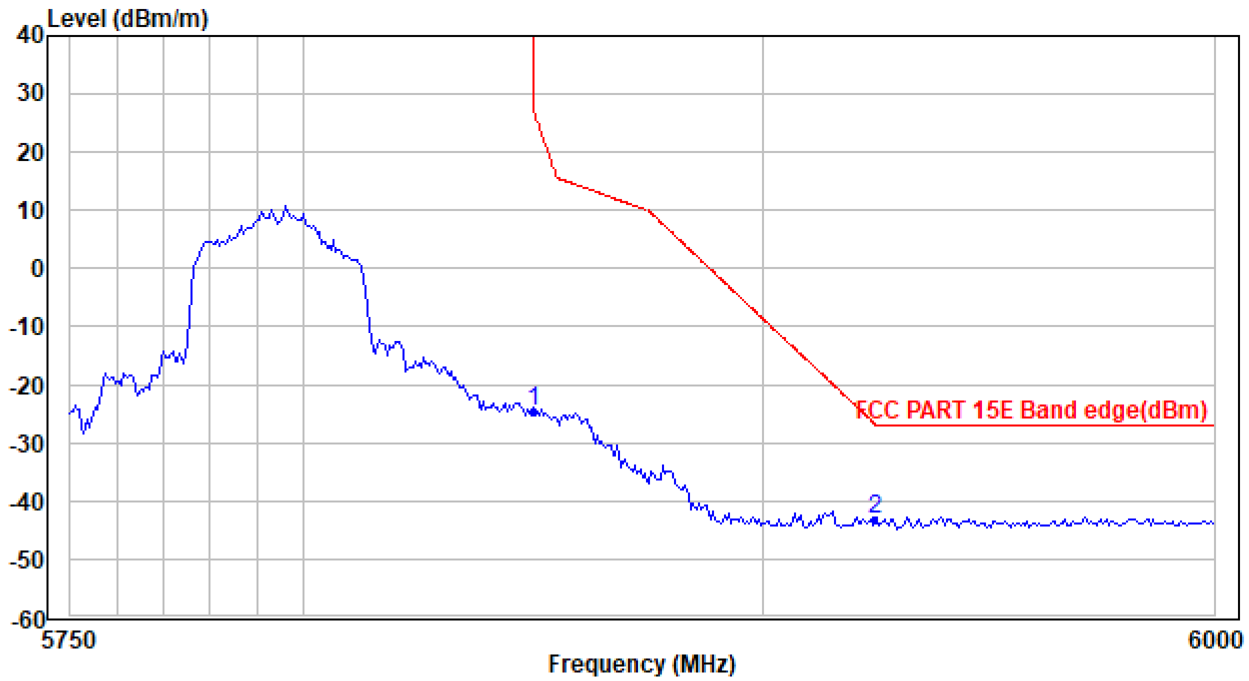
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-41.82	-27.00	Pass
5725.0000	-20.93	26.97	Pass

Test Channel:	Channel 159	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.00	-21.31	26.94	Pass
5925.00	-42.62	-27.00	Pass

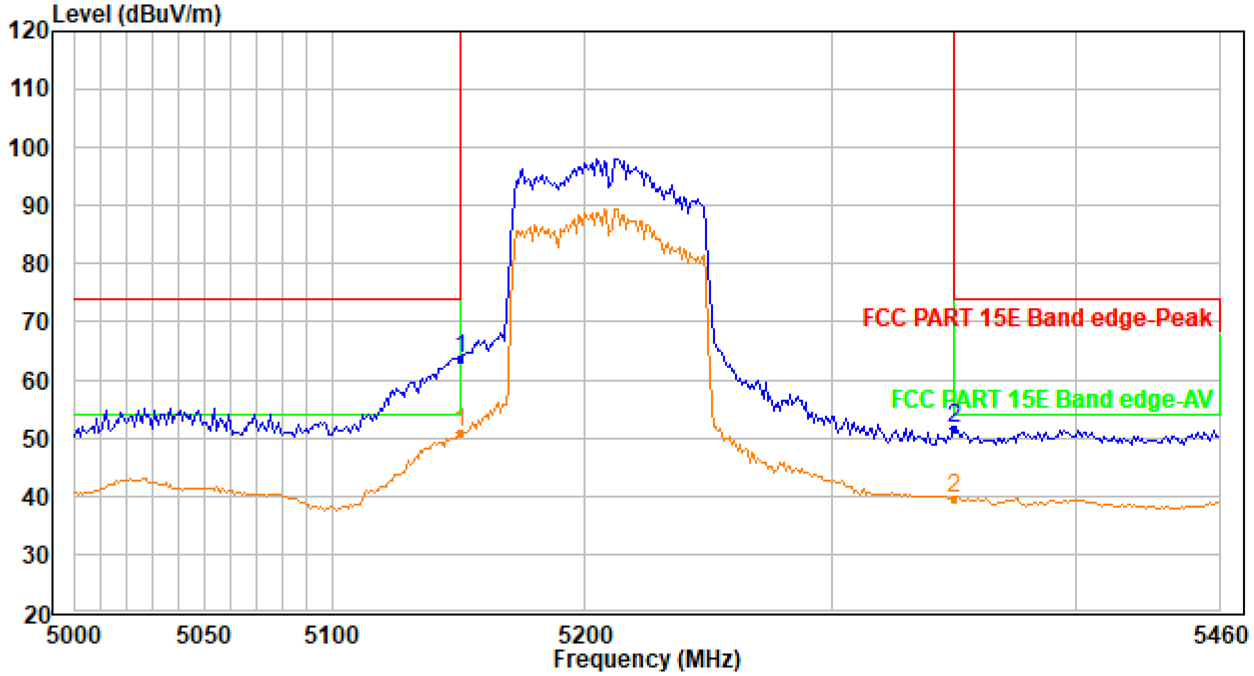
Test Channel:	Channel 159	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.00	-24.68	26.94	Pass
5925.00	-43.10	-27.00	Pass

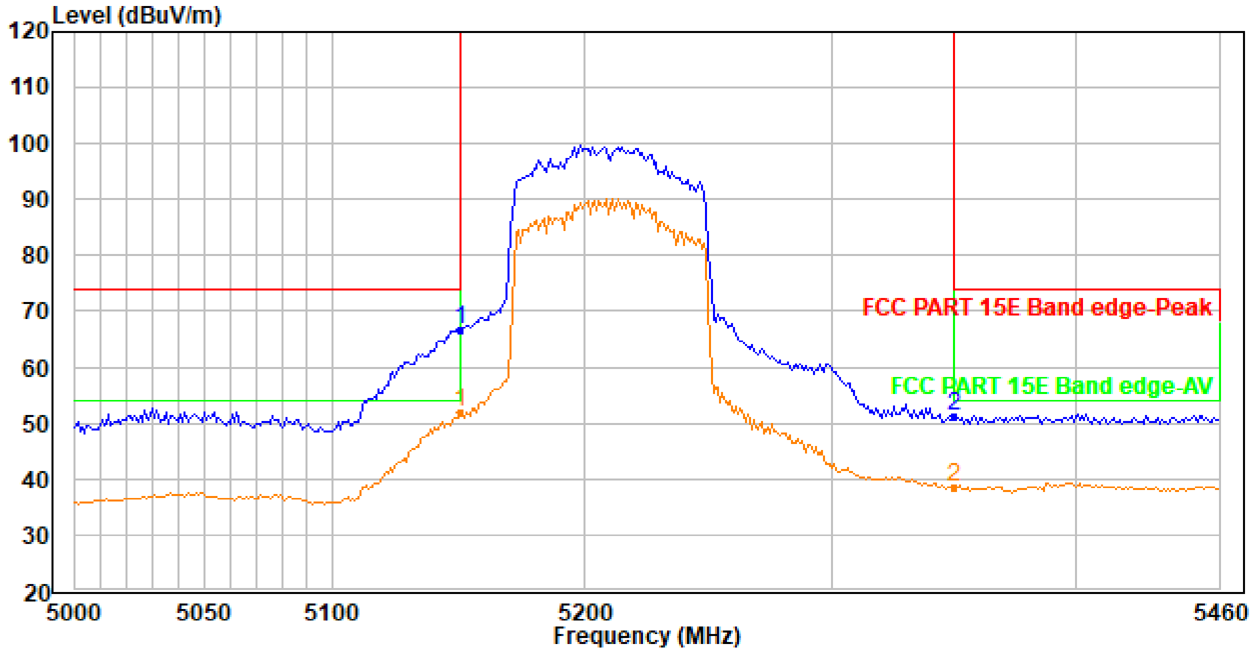
MIMO_Ant. 0+1_IEEE 802.11ac-VHT80

Test Channel:	Channel 42	Ant. Polar. :	Horizontal



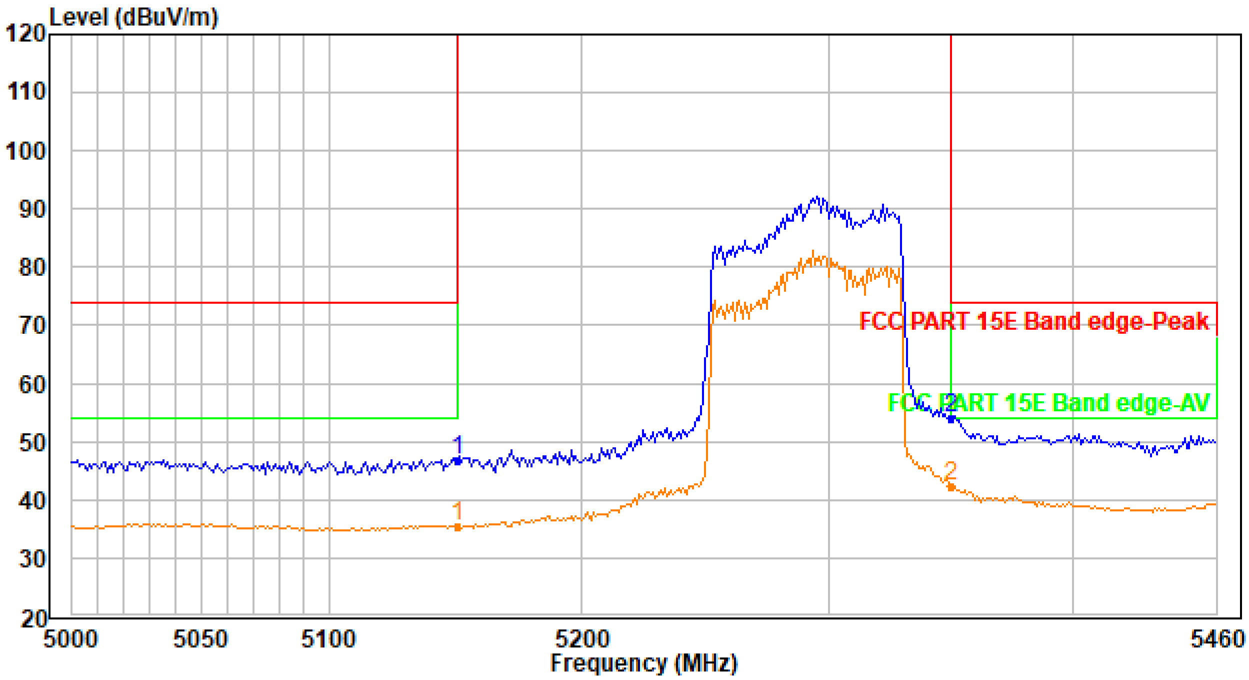
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	63.71	74.00	51.04	54.00	Pass
5350.0000	51.53	74.00	39.55	54.00	Pass

Test Channel:	Channel 42	Ant. Polar. :	Vertical



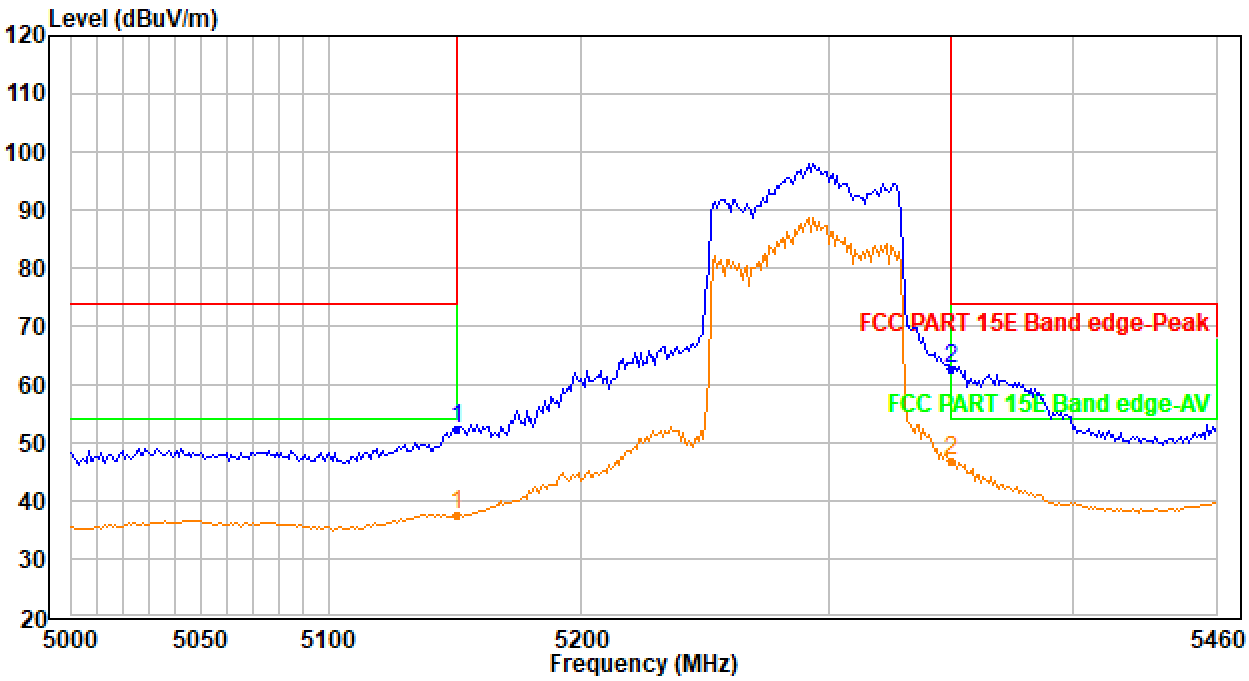
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	66.77	74.00	51.84	54.00	Pass
5350.0000	51.26	74.00	38.45	54.00	Pass

Test Channel:	Channel 58	Ant. Polar. :	Horizontal



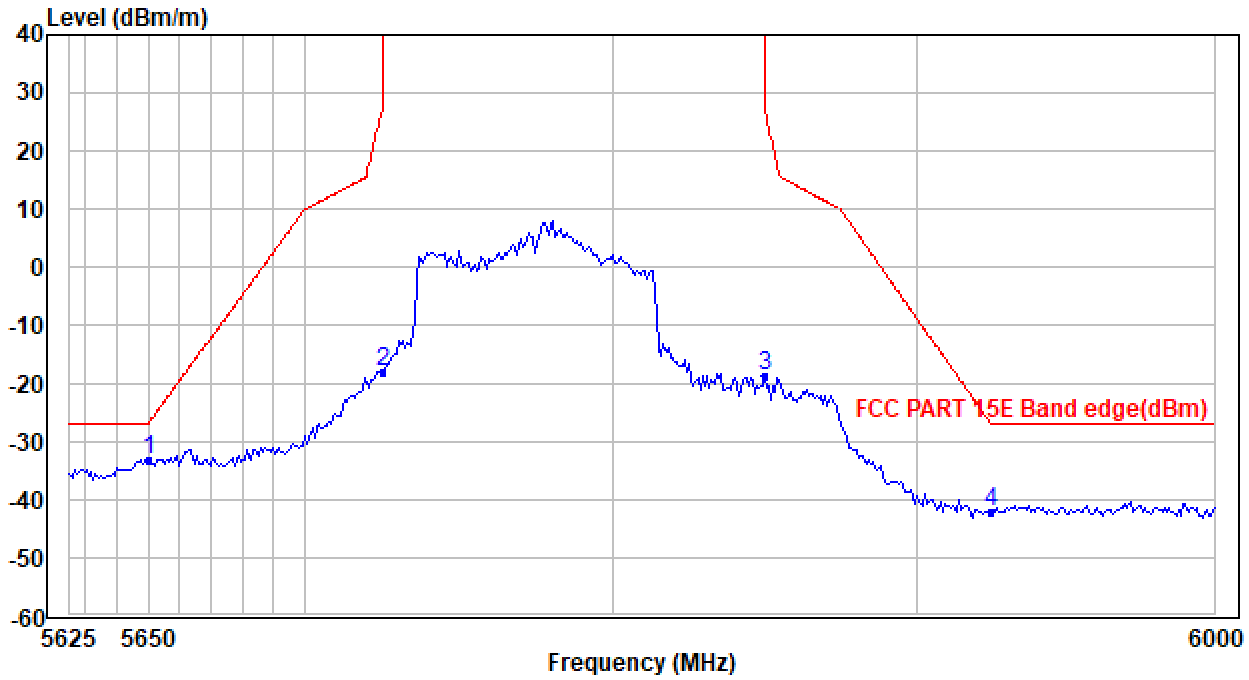
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	46.95	74.00	35.30	54.00	Pass
5350.0000	54.12	74.00	42.39	54.00	Pass

Test Channel:	Channel 58	Ant. Polar. :	Vertical



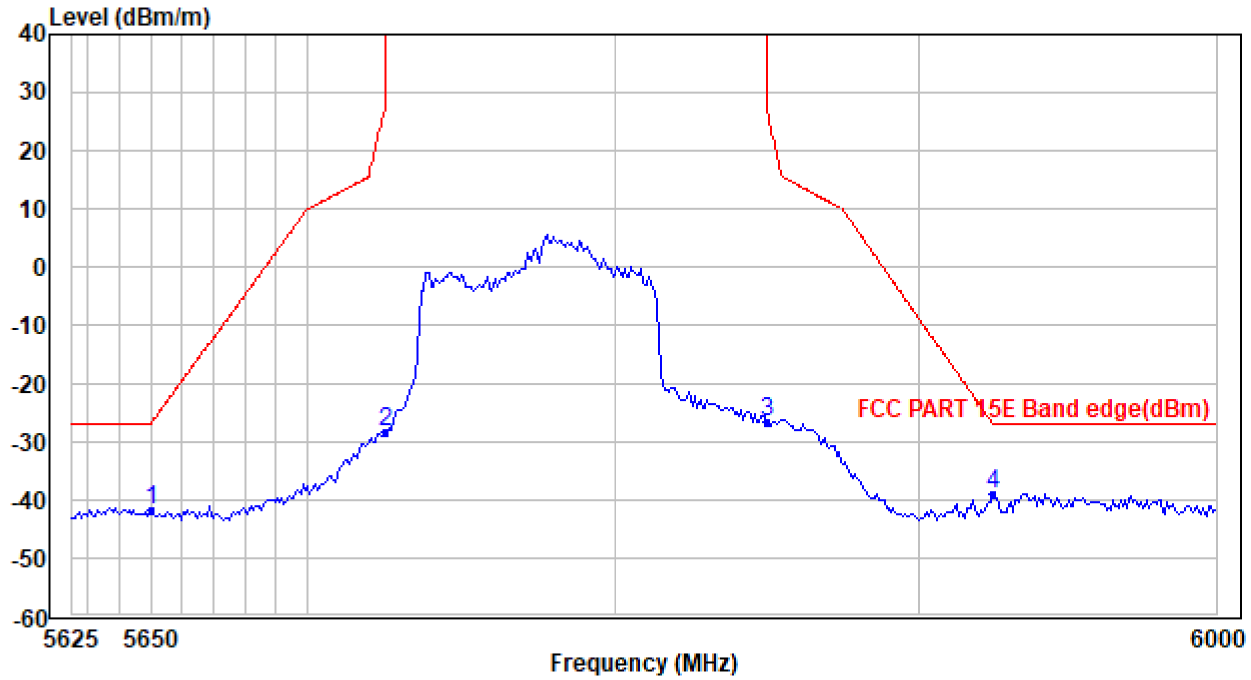
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	52.43	74.00	37.49	54.00	Pass
5350.0000	62.74	74.00	46.92	54.00	Pass

Test Channel:	Channel 155	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-33.11	-27.00	Pass
5725.0000	-17.95	26.97	Pass
5850.0000	-18.63	26.94	Pass
5925.0000	-42.03	-27.00	Pass

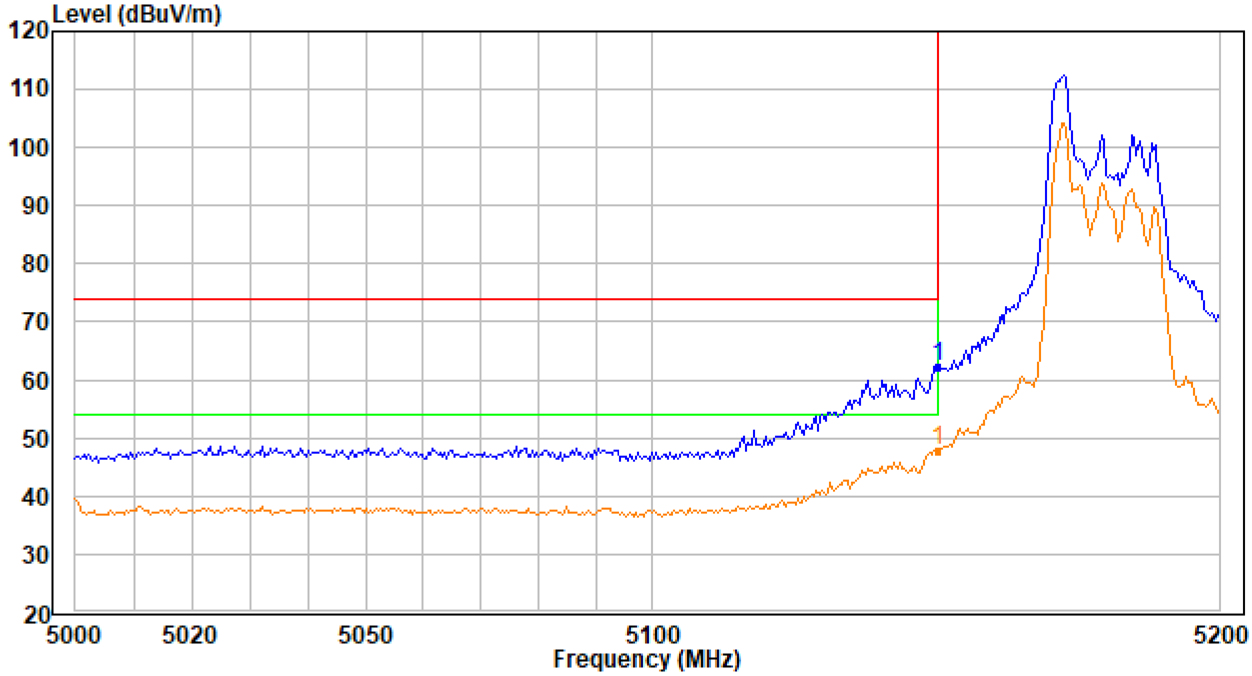
Test Channel:	Channel 155	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-41.82	-27.00	Pass
5725.0000	-28.44	26.97	Pass
5850.0000	-26.59	26.94	Pass
5925.0000	-38.99	-27.00	Pass

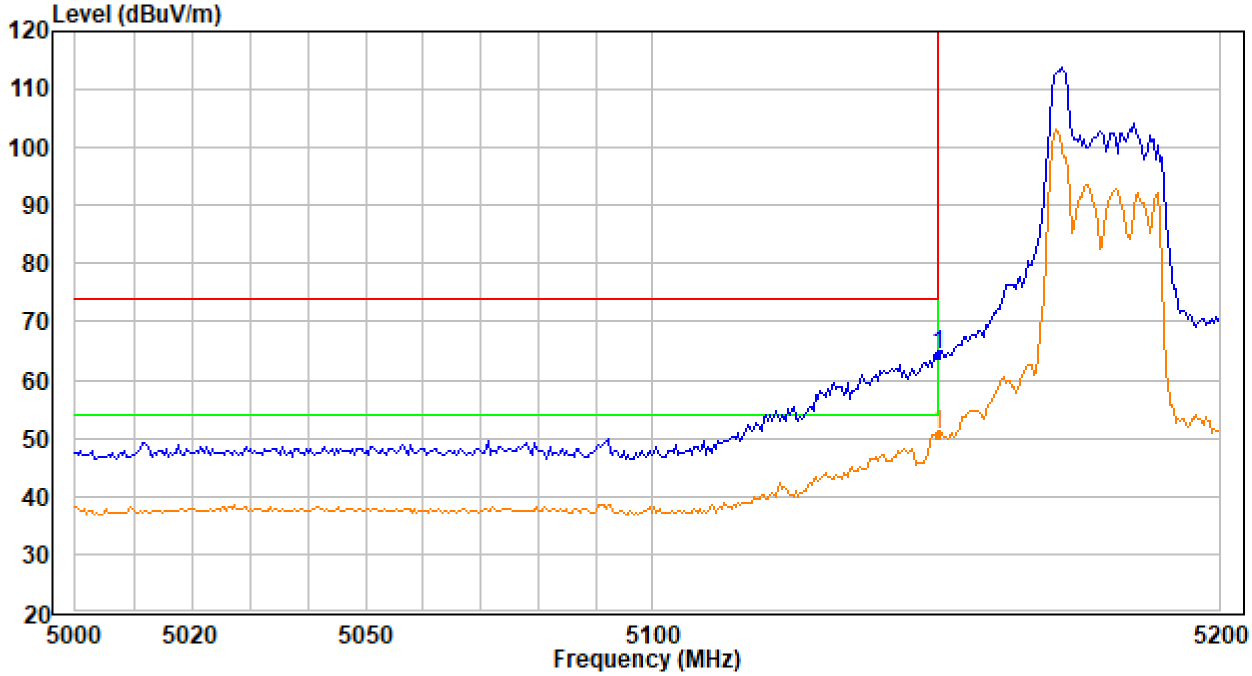
MIMO_Ant. 0+1_IEEE 802.11ax-HE20_26RU

Test Channel:	Channel 36	Ant. Polar. :	Horizontal



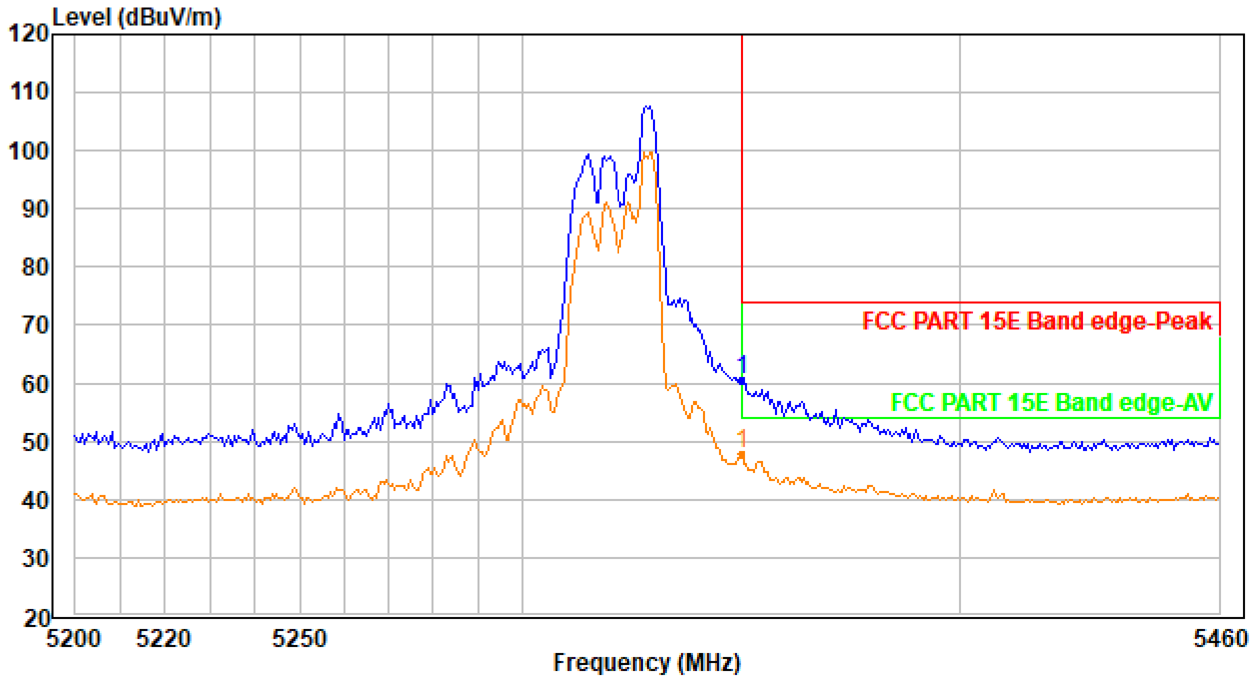
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	62.20	74.00	47.99	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical



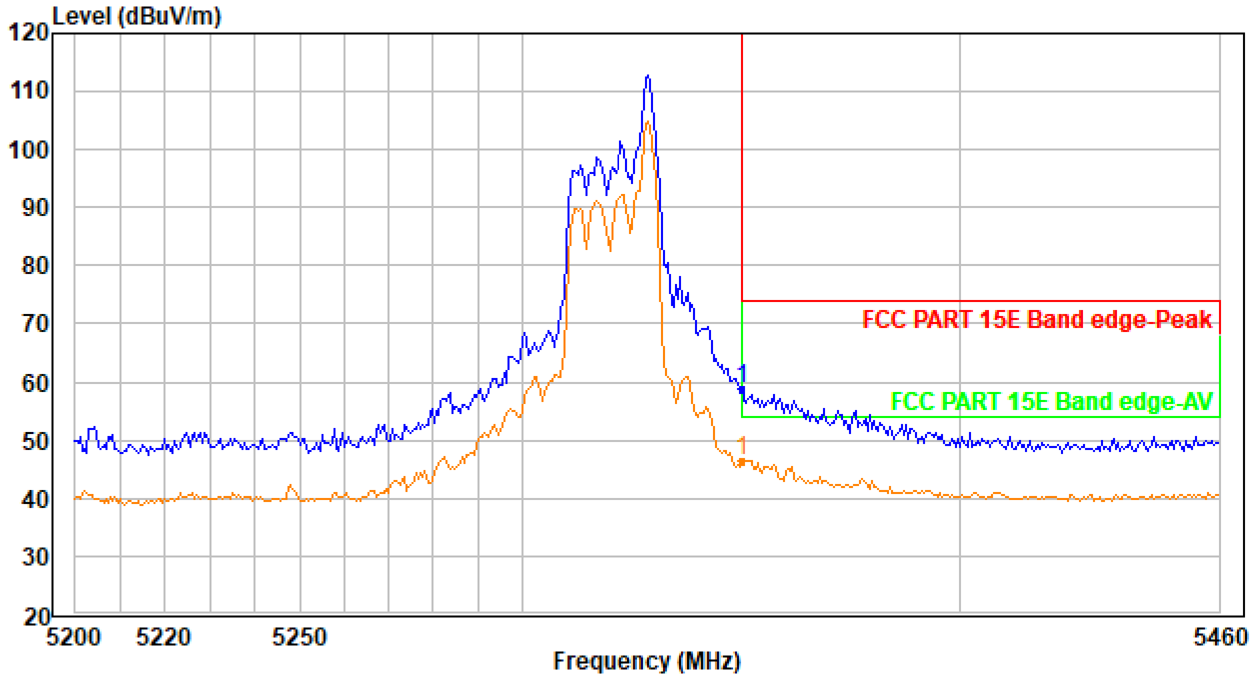
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	64.19	74.00	50.57	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Horizontal



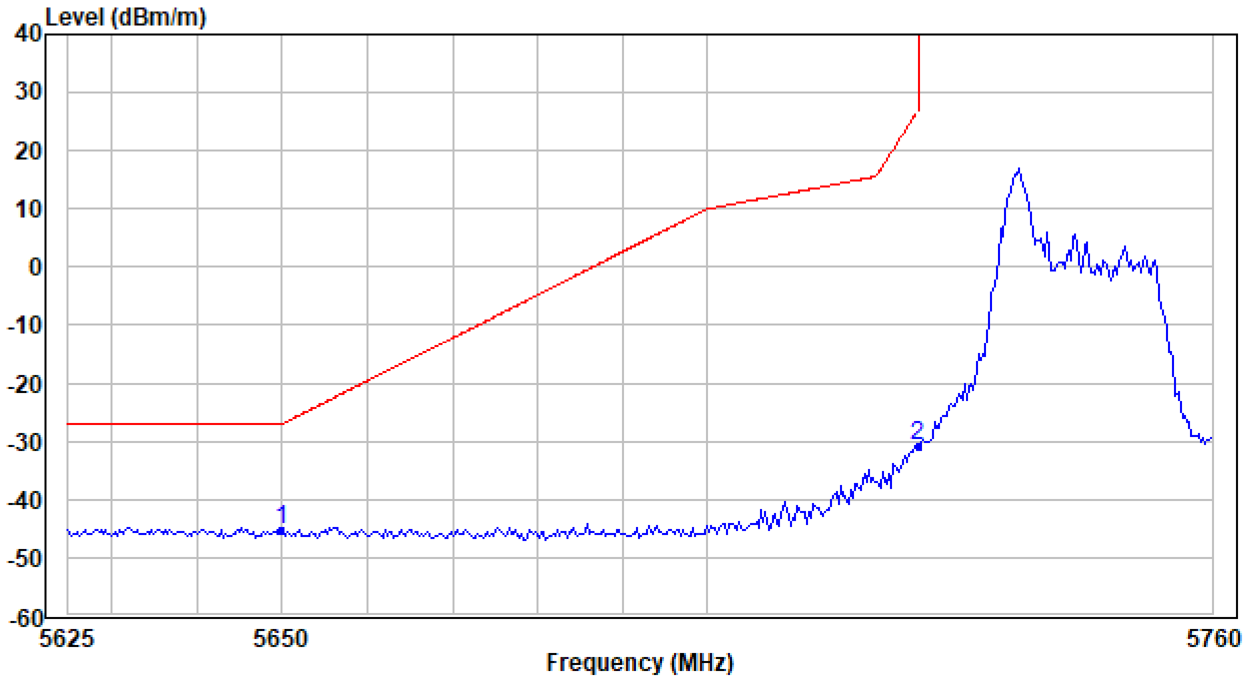
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	60.58	74.00	47.74	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Vertical



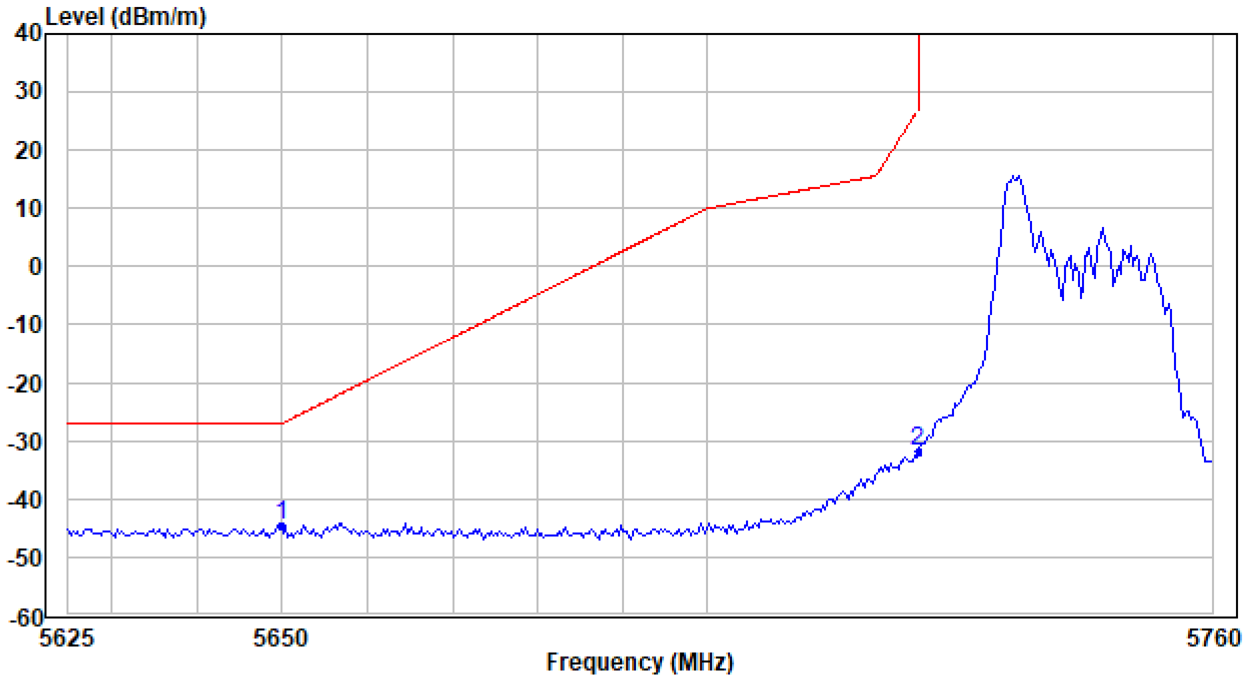
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	58.94	74.00	46.55	54.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Horizontal



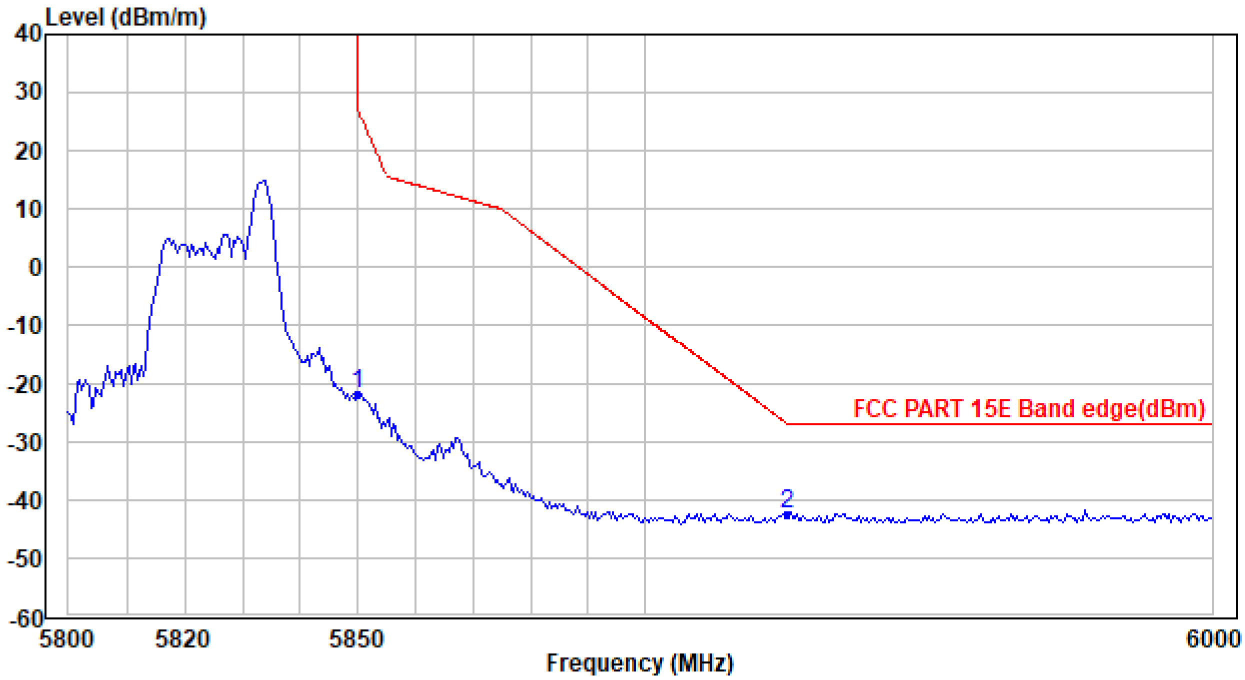
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-44.41	-27.00	Pass
5725.0000	-31.90	26.97	Pass

Test Channel:	Channel 149	Ant. Polar. :	Vertical



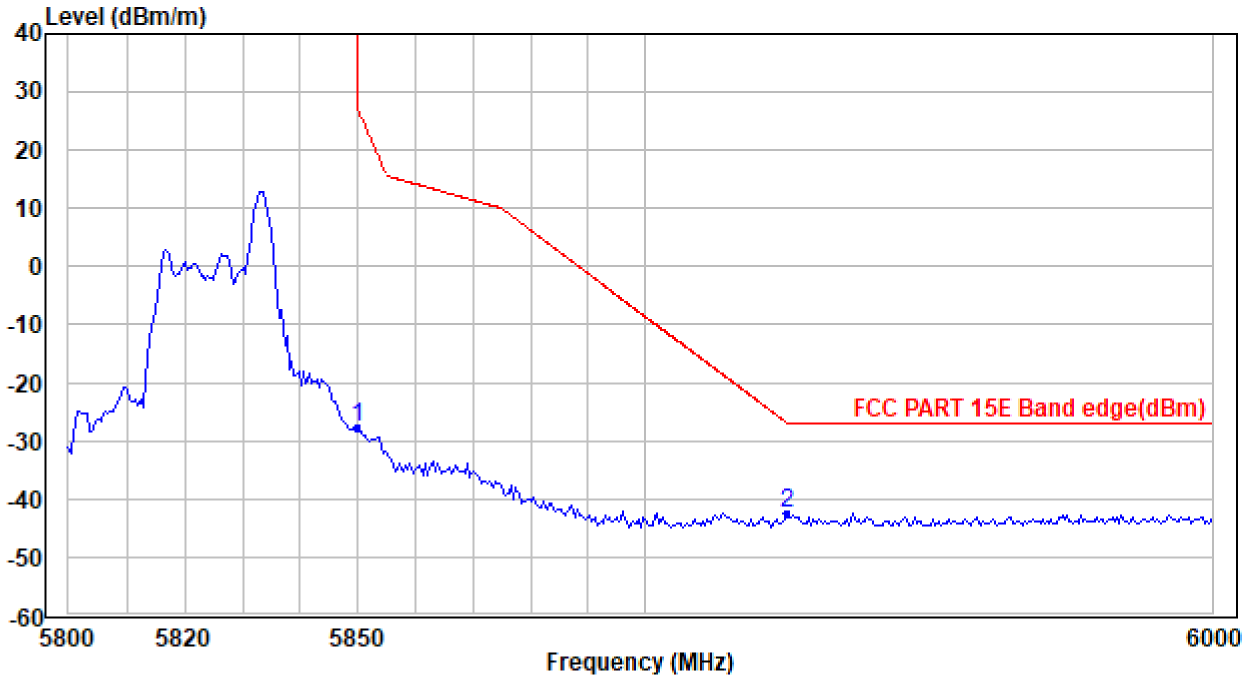
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-45.30	-27.00	Pass
5725.0000	-30.81	26.97	Pass

Test Channel:	Channel 165	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-21.73	26.94	Pass
5925.0000	-42.42	-27.00	Pass

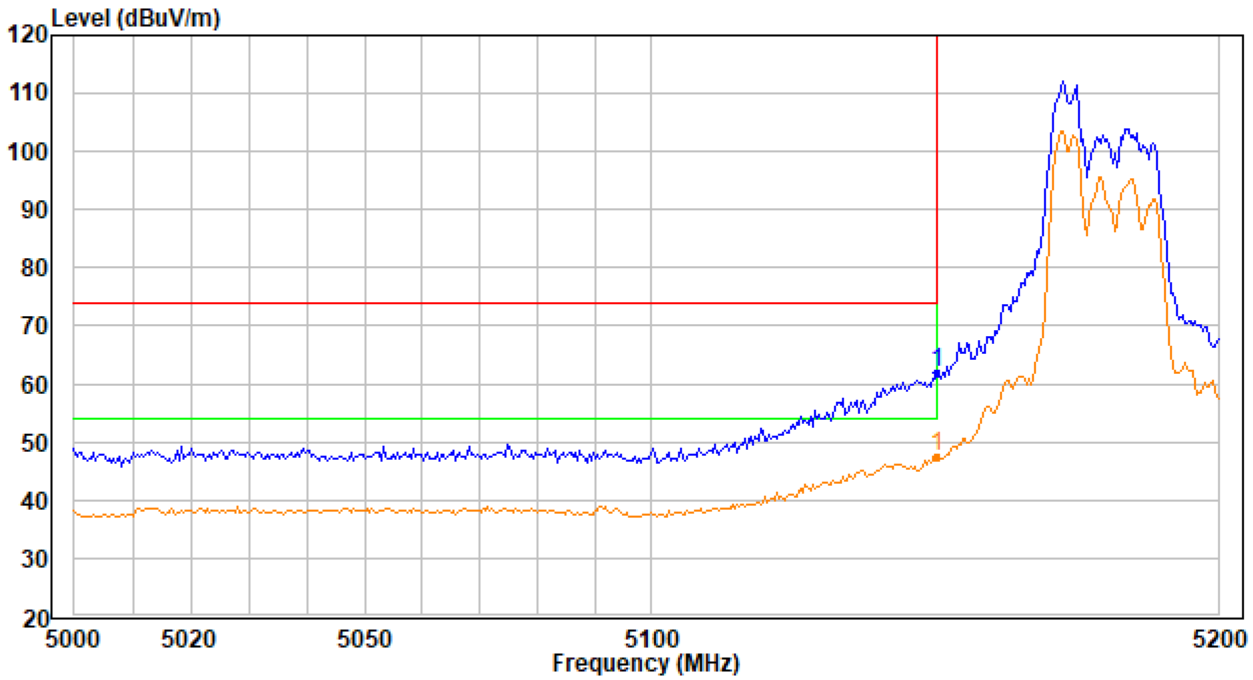
Test Channel:	Channel 165	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-27.57	26.94	Pass
5925.0000	-42.30	-27.00	Pass

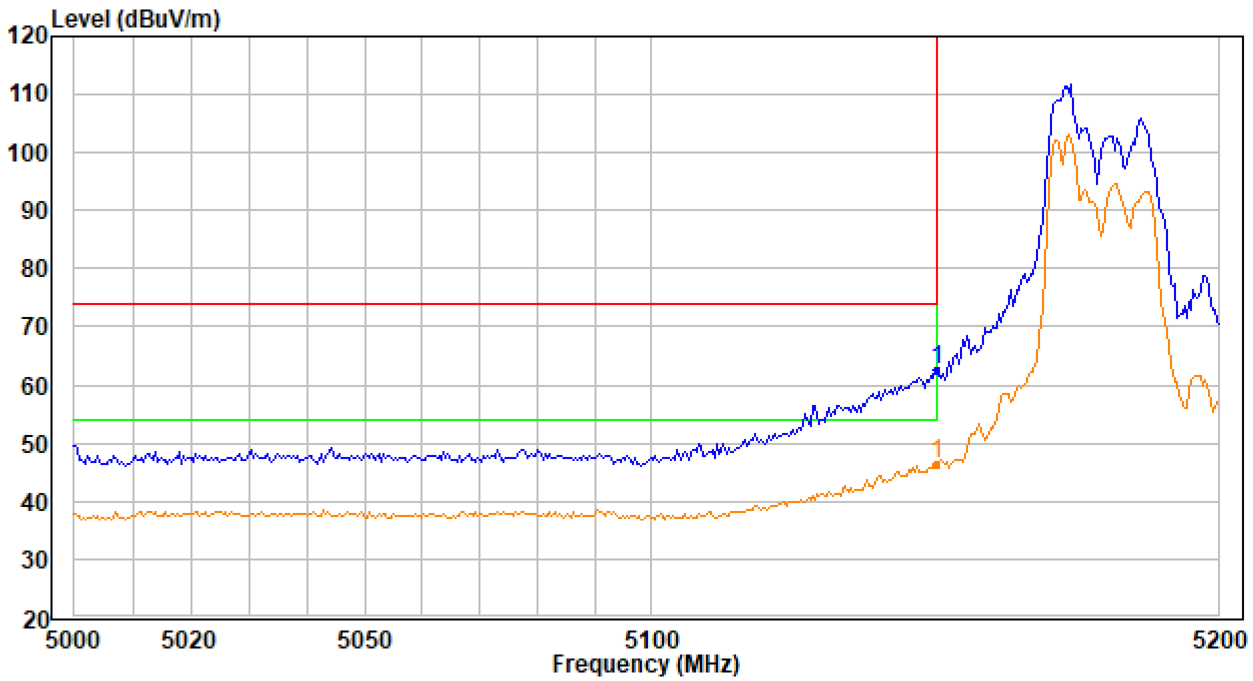
MIMO_Ant. 0+1_IEEE 802.11ax-HE20_52RU

Test Channel:	Channel 36	Ant. Polar. :	Horizontal



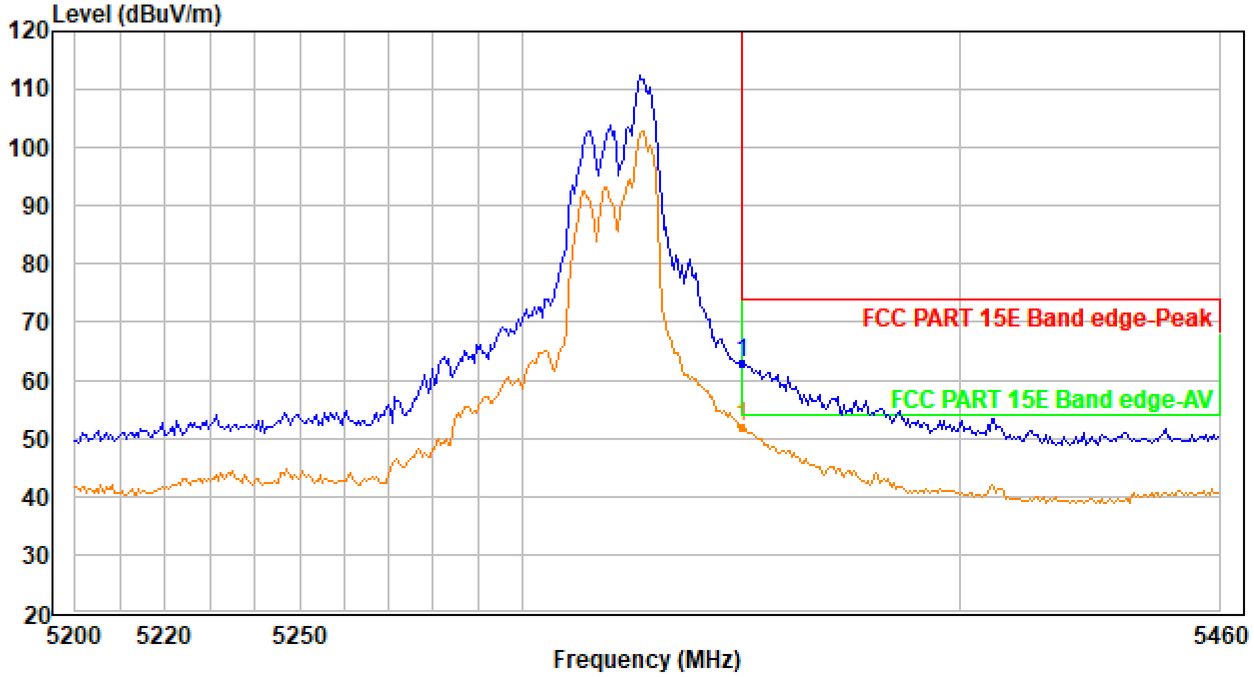
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	62.00	74.00	47.58	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical



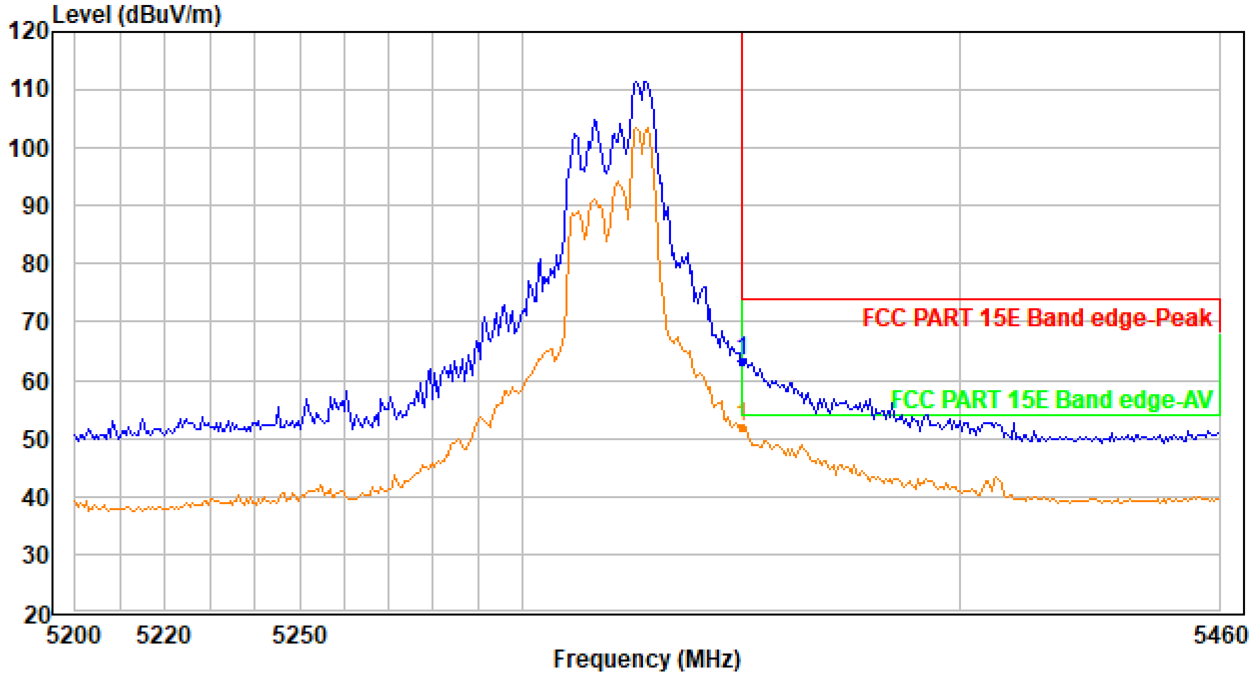
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	62.58	74.00	46.31	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Horizontal



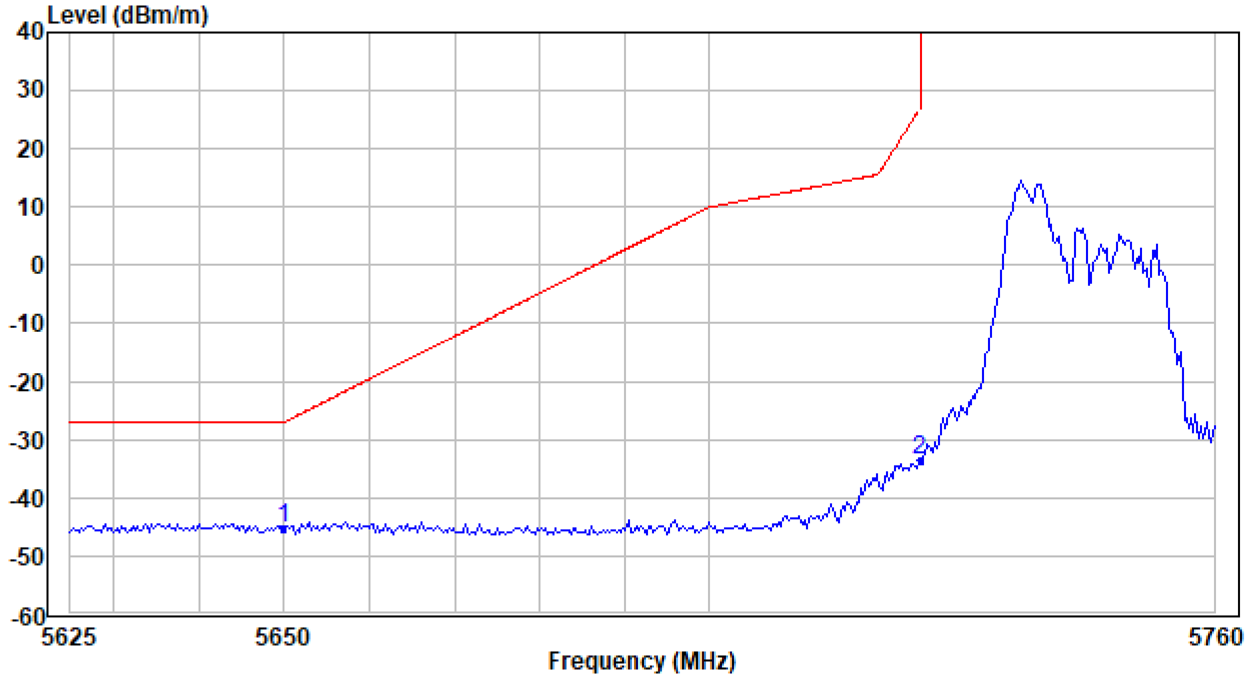
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	62.86	74.00	51.81	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Vertical



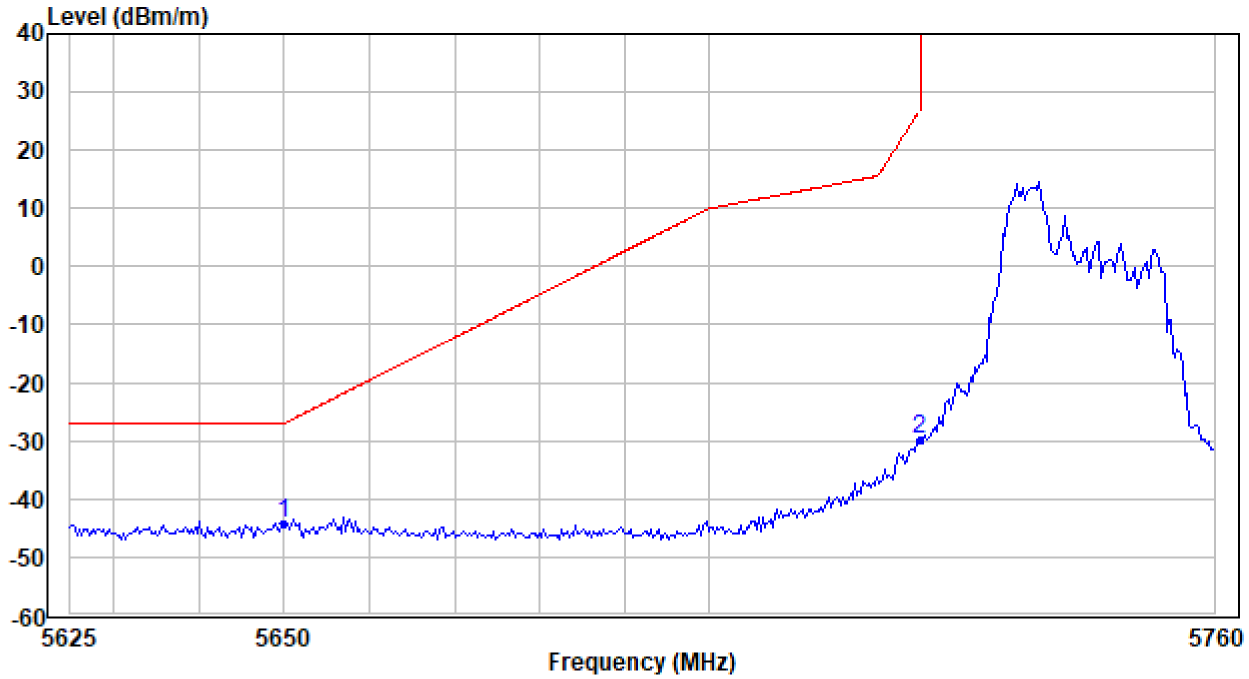
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	63.36	74.00	52.04	54.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Horizontal



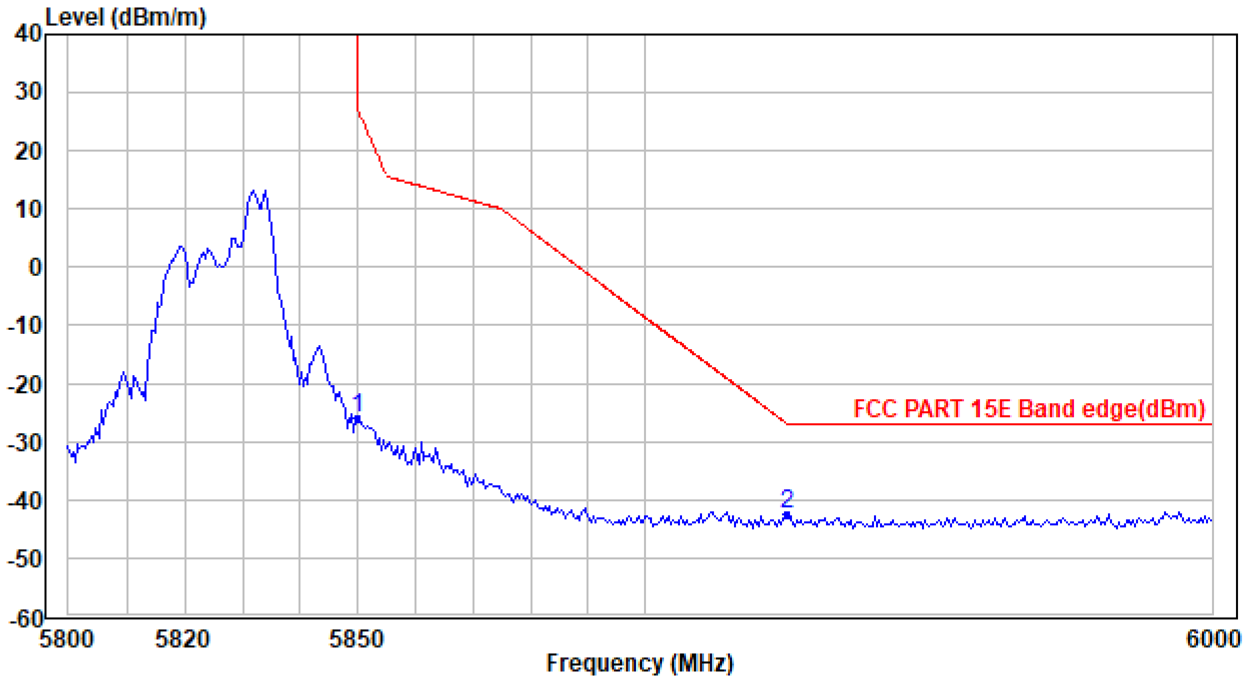
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-44.09	-27.00	Pass
5725.0000	-29.86	26.97	Pass

Test Channel:	Channel 149	Ant. Polar. :	Vertical



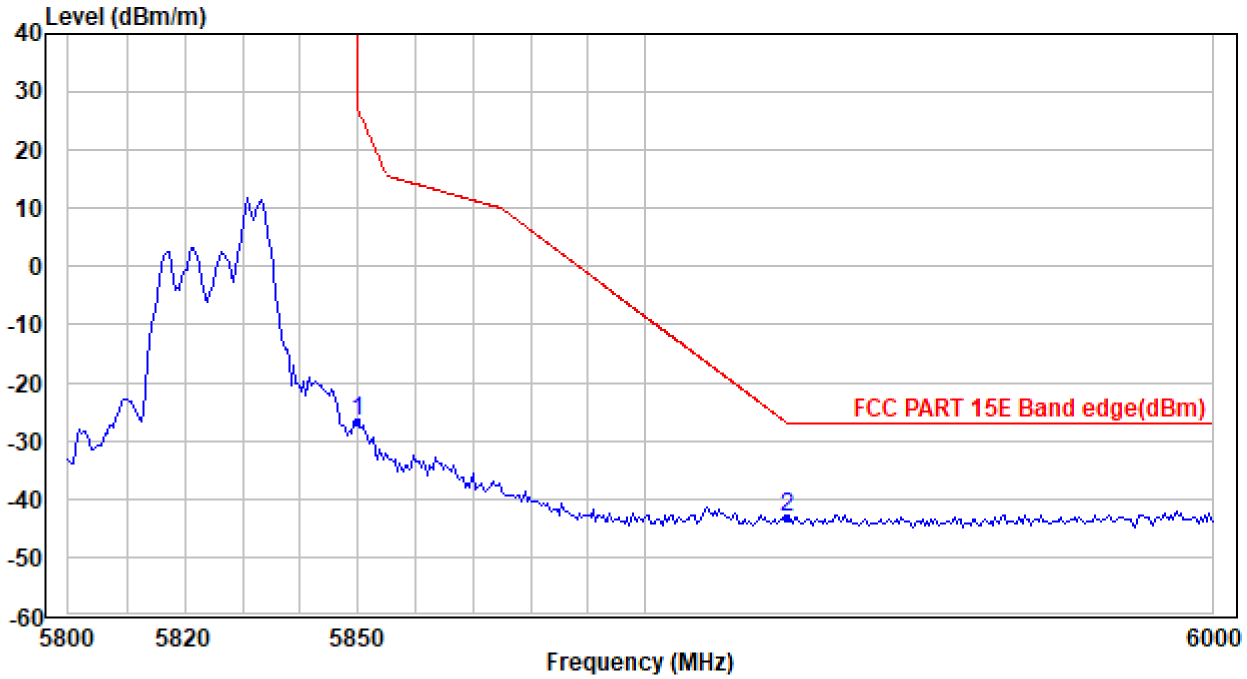
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-45.14	-27.00	Pass
5725.0000	-33.70	26.97	Pass

Test Channel:	Channel 165	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-25.99	26.94	Pass
5925.0000	-42.58	-27.00	Pass

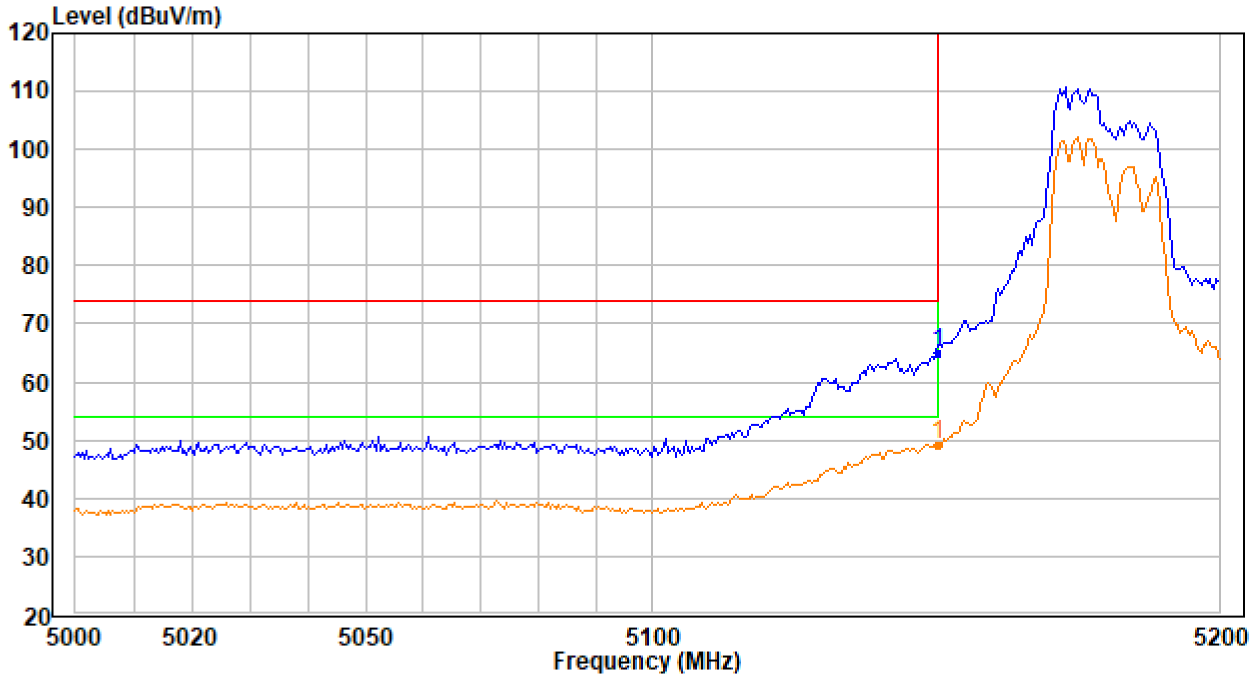
Test Channel:	Channel 165	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-26.59	26.94	Pass
5925.0000	-43.08	-27.00	Pass

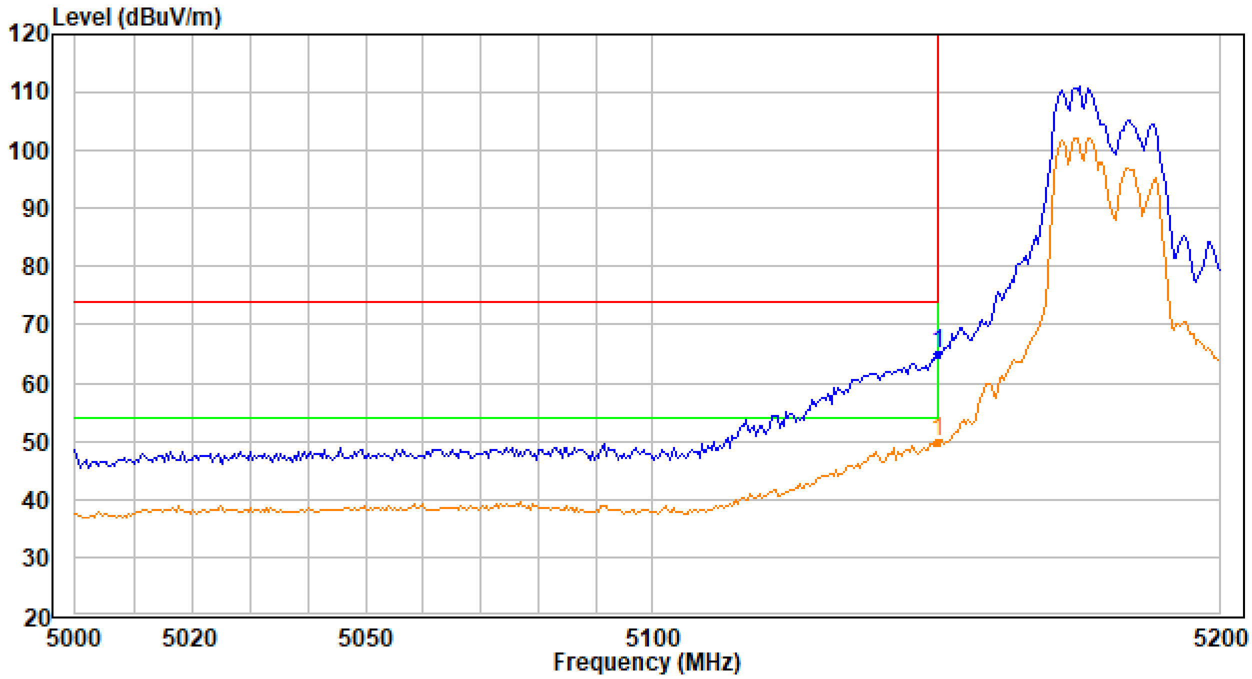
MIMO_Ant. 0+1_IEEE 802.11ax-HE20_106RU

Test Channel:	Channel 36	Ant. Polar. :	Horizontal



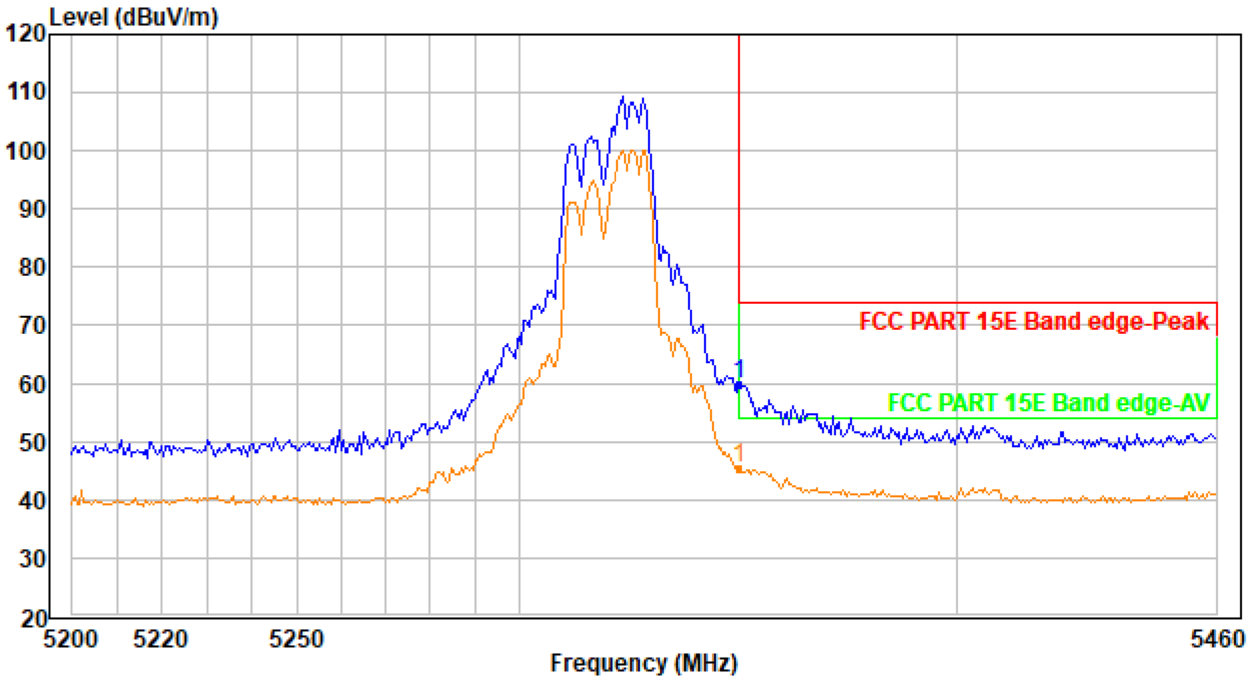
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	64.88	74.00	49.37	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical



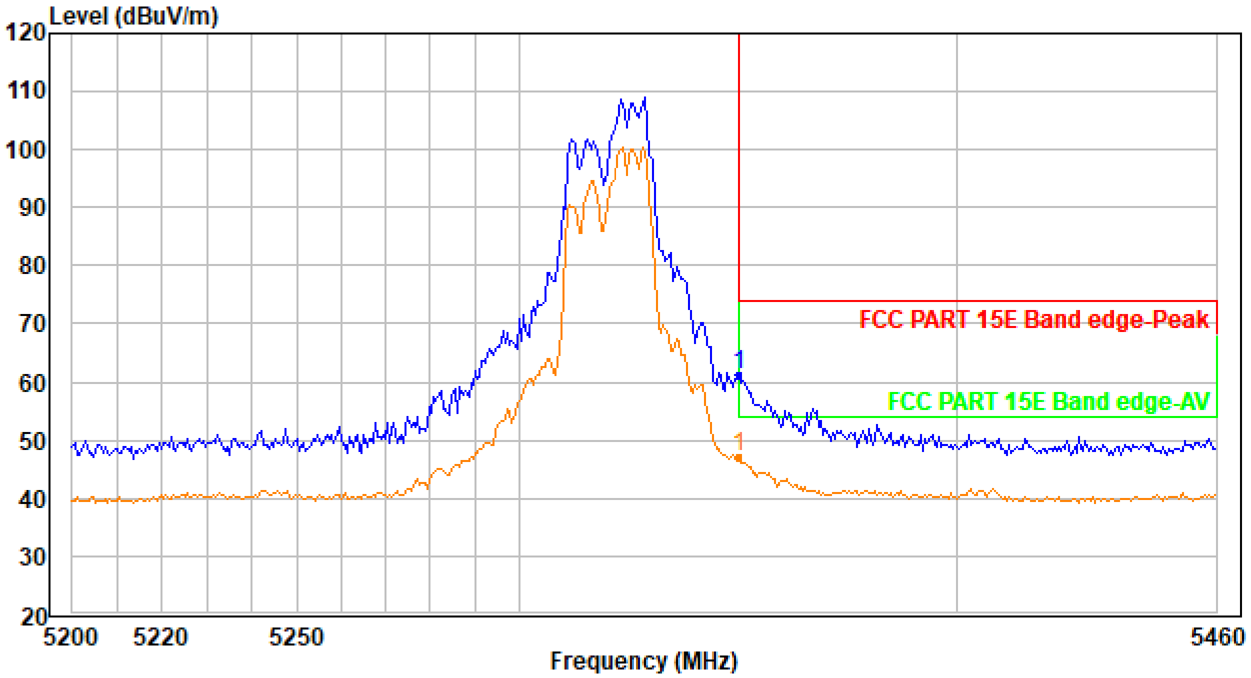
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	65.08	74.00	49.89	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Horizontal



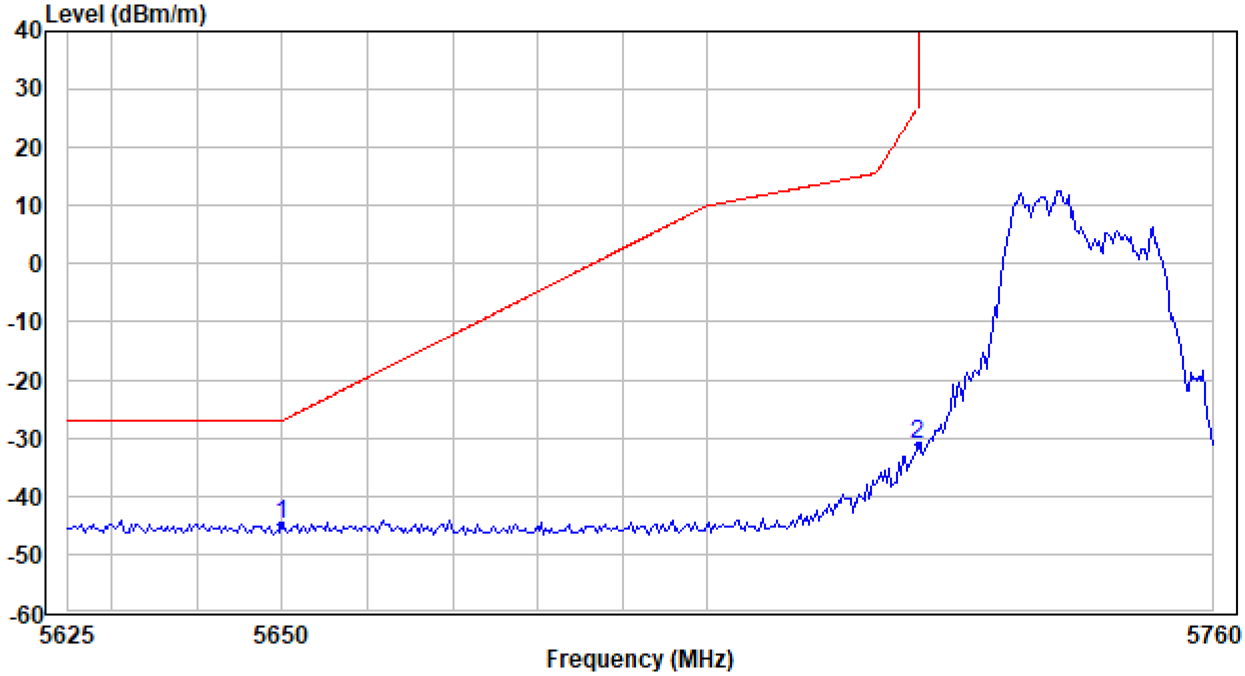
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	59.89	74.00	45.56	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Vertical



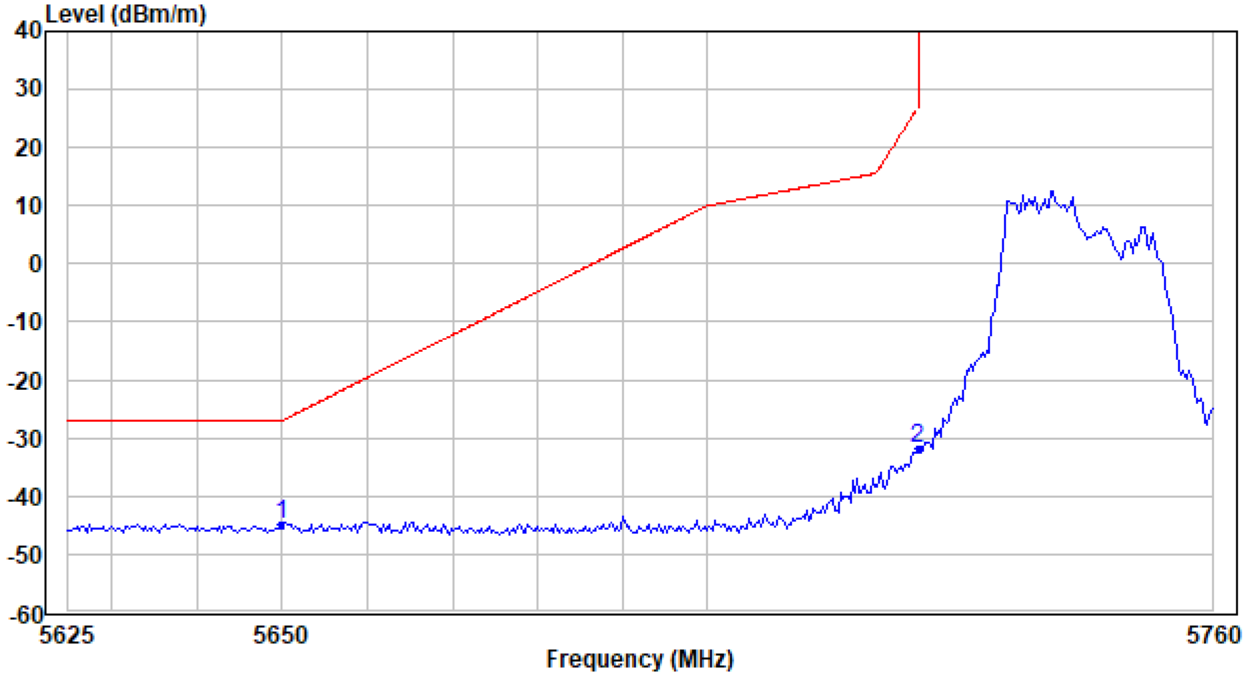
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	61.09	74.00	47.11	54.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Horizontal



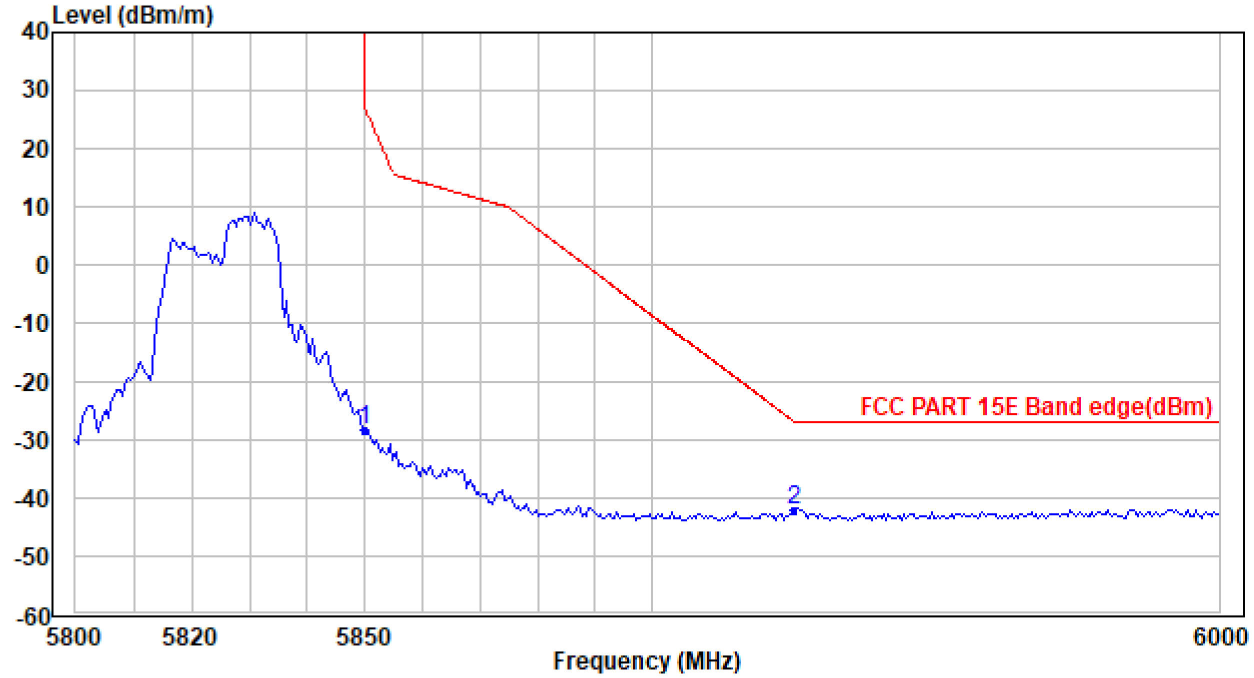
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-45.00	-27.00	Pass
5725.0000	-31.19	26.97	Pass

Test Channel:	Channel 149	Ant. Polar. :	Vertical



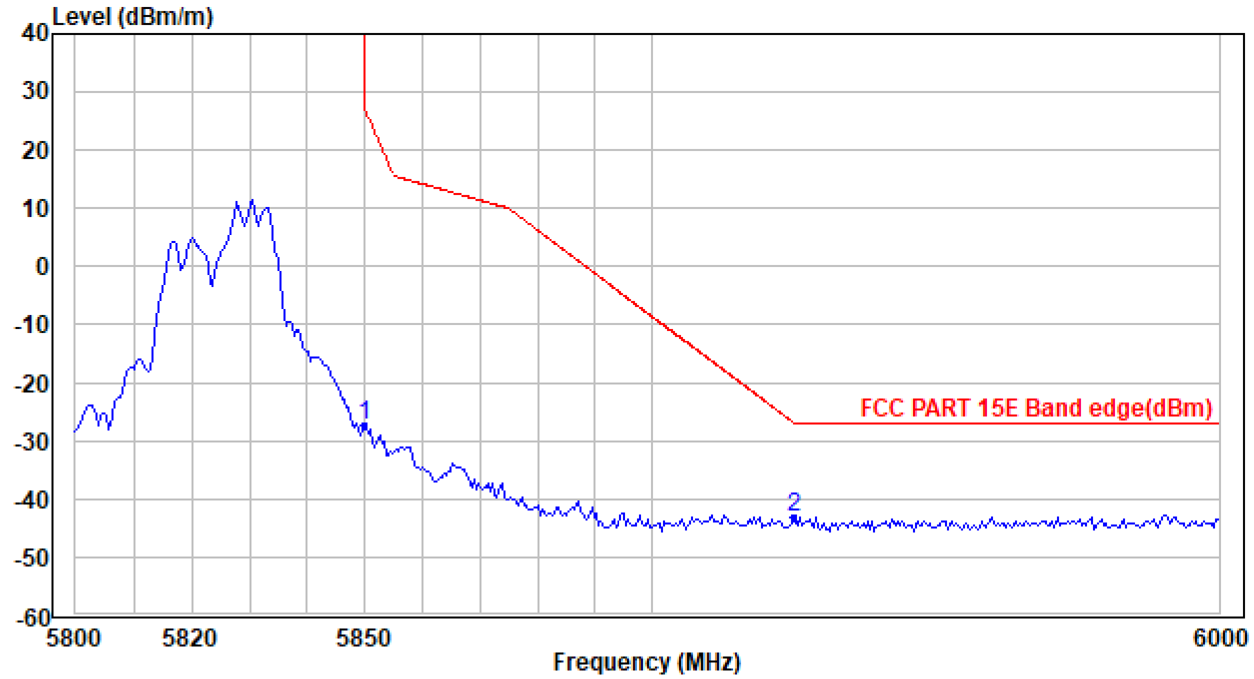
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-44.98	-27.00	Pass
5725.0000	-31.98	26.97	Pass

Test Channel:	Channel 165	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-28.45	26.94	Pass
5925.0000	-42.21	-27.00	Pass

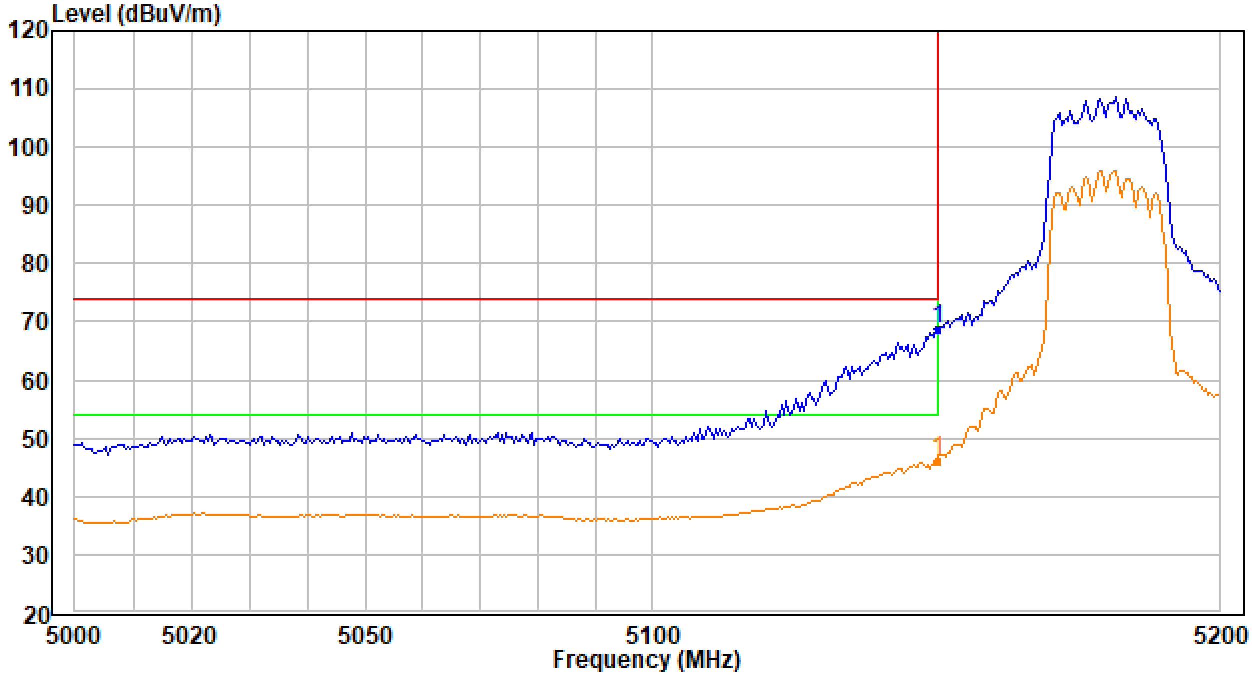
Test Channel:	Channel 165	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-27.36	26.94	Pass
5925.0000	-43.01	-27.00	Pass

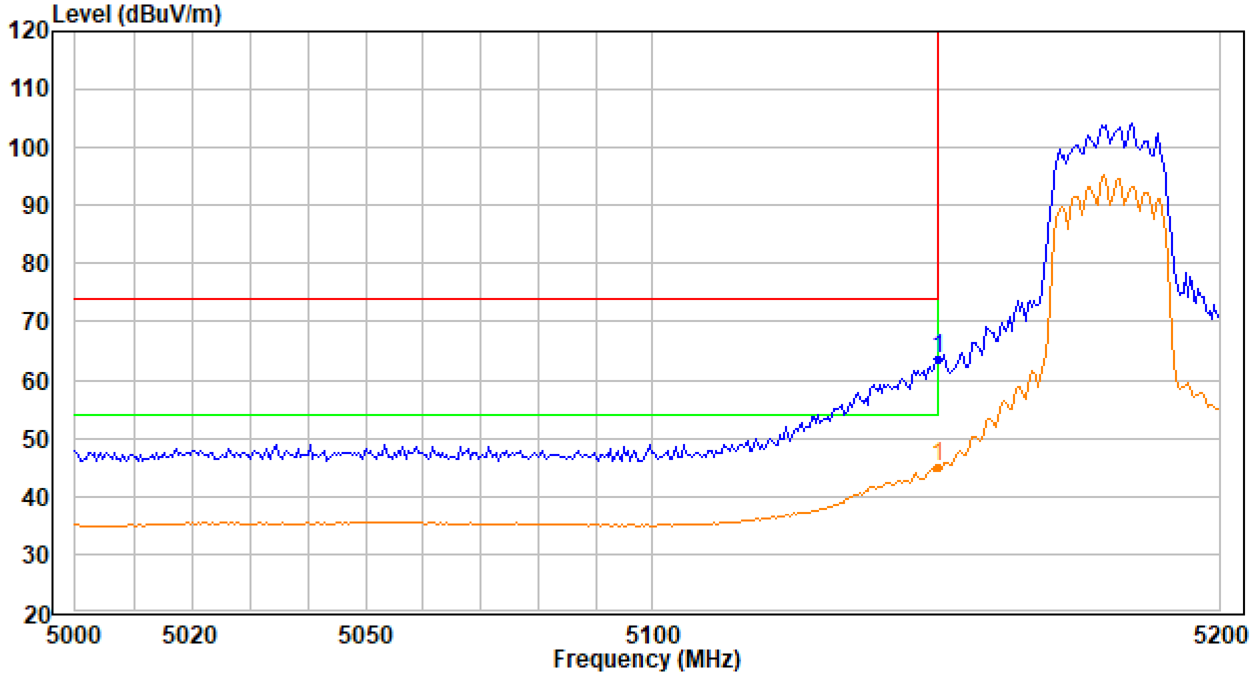
MIMO_Ant. 0+1_ IEEE 802.11ax-HE20_SU

Test Channel:	Channel 36	Ant. Polar. :	Horizontal



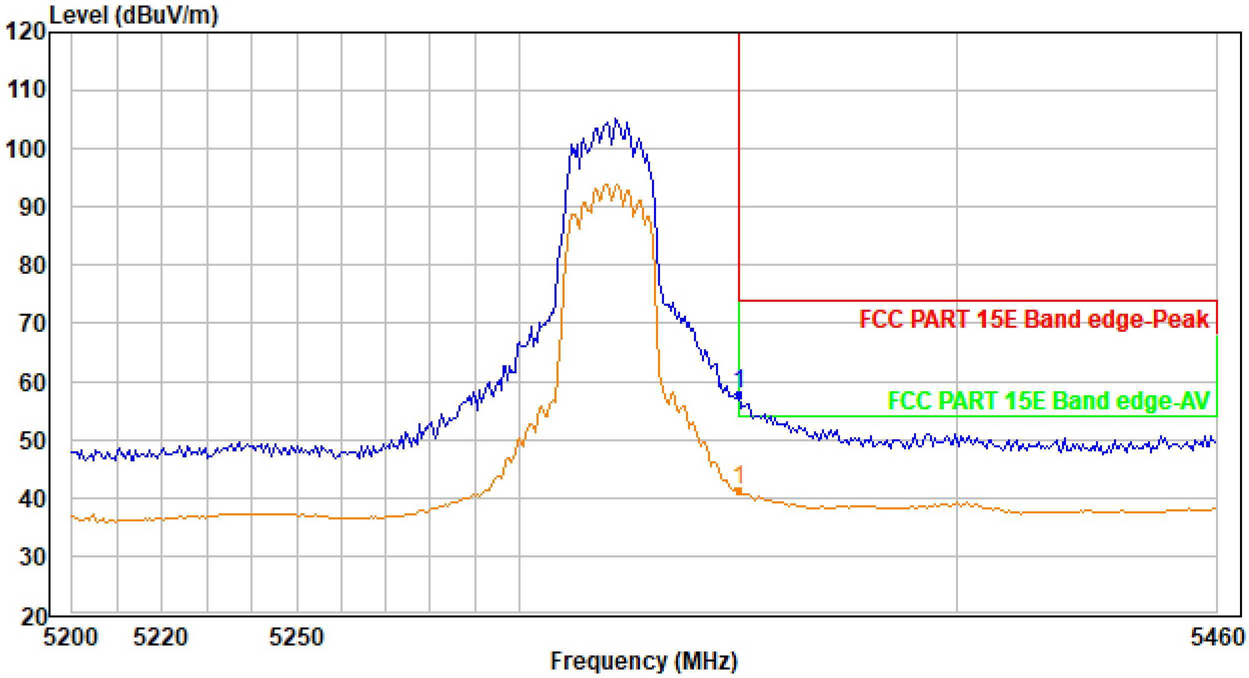
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	68.86	74.00	46.13	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical



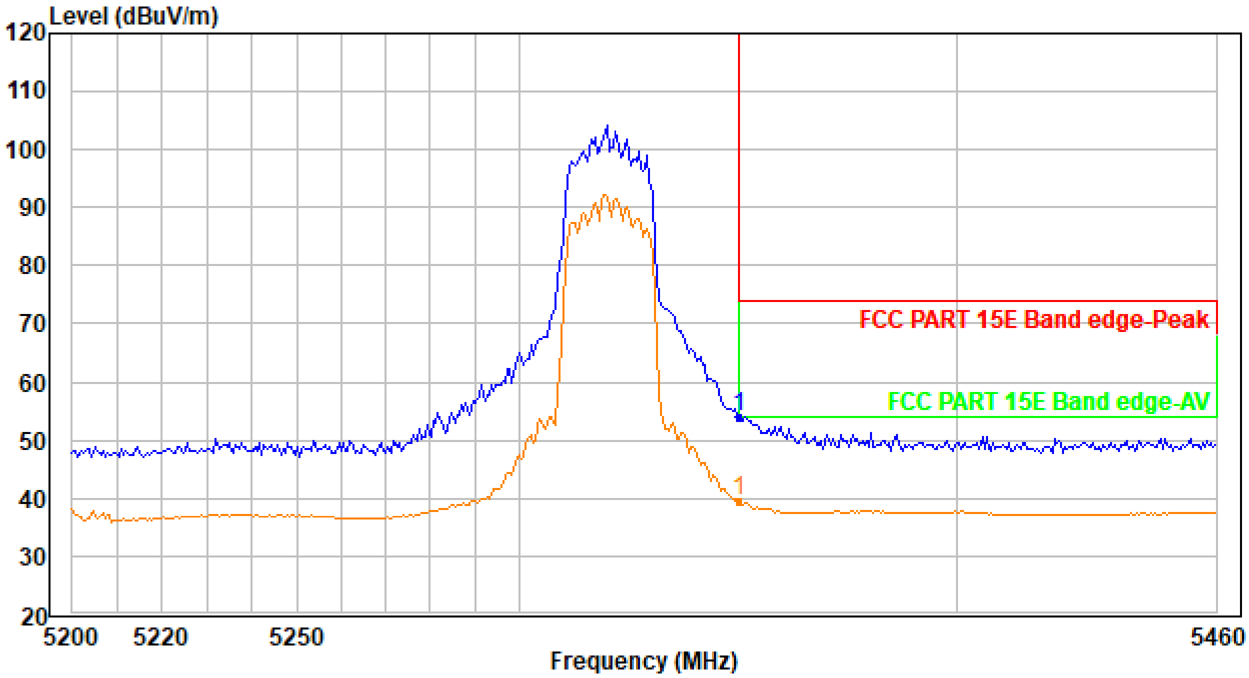
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	63.61	74.00	44.98	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Horizontal



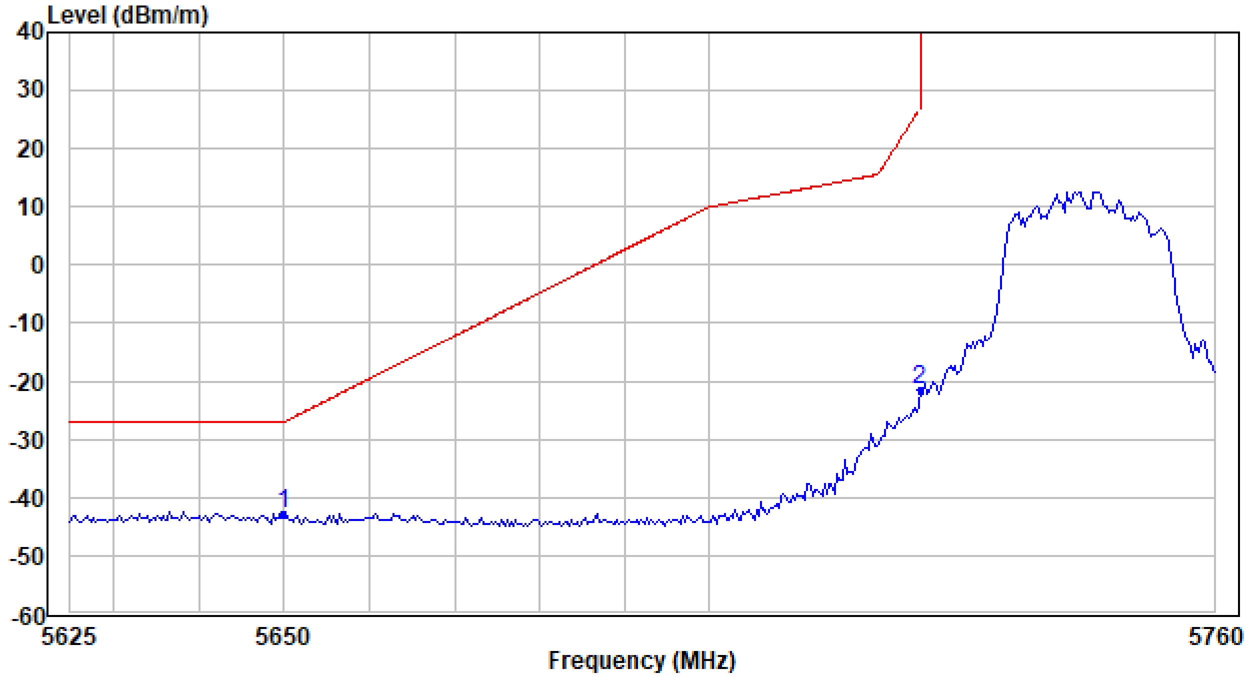
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	57.64	74.00	41.21	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Vertical



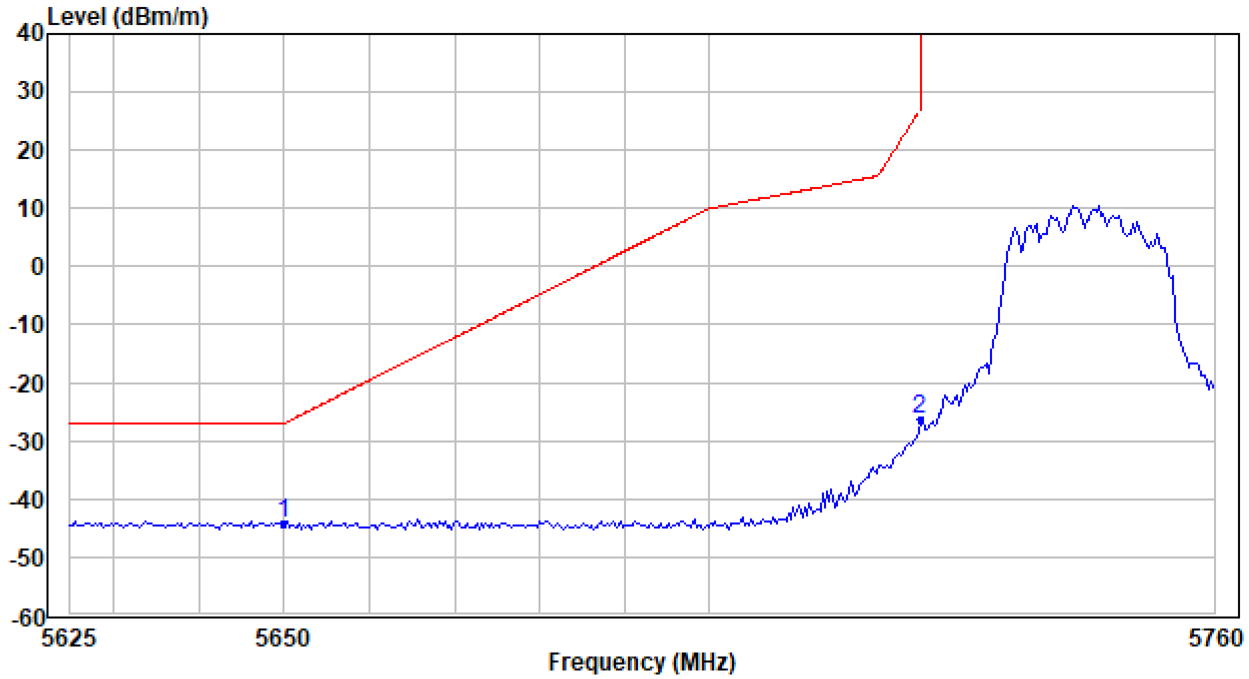
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	53.93	74.00	39.61	54.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Horizontal



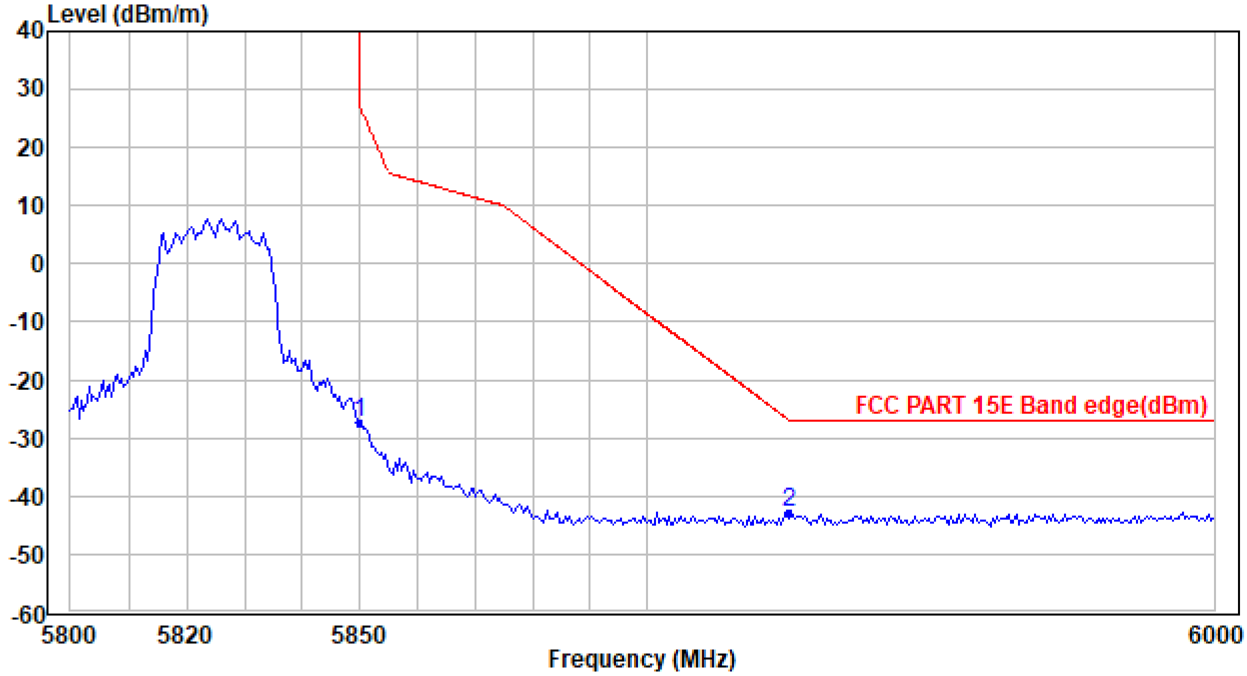
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-42.90	-27.00	Pass
5725.0000	-21.36	26.97	Pass

Test Channel:	Channel 149	Ant. Polar. :	Vertical



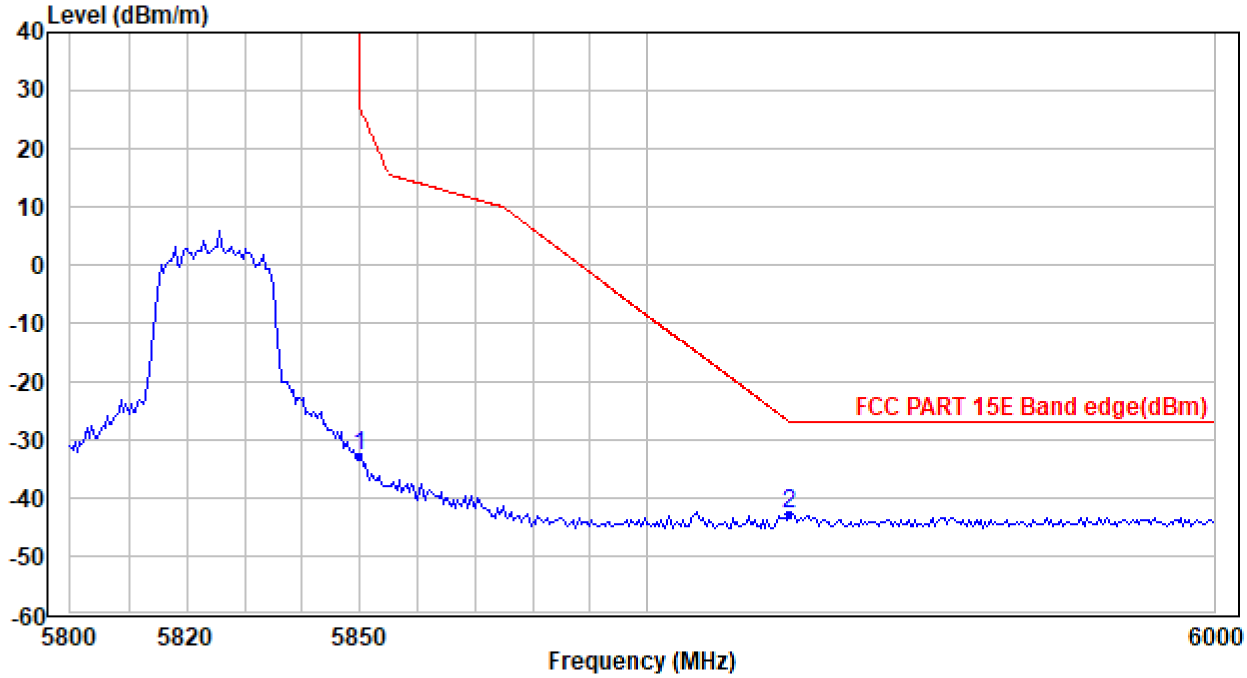
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-44.09	-27.00	Pass
5725.0000	-26.31	26.97	Pass

Test Channel:	Channel 165	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-27.36	26.94	Pass
5925.0000	-42.72	-27.00	Pass

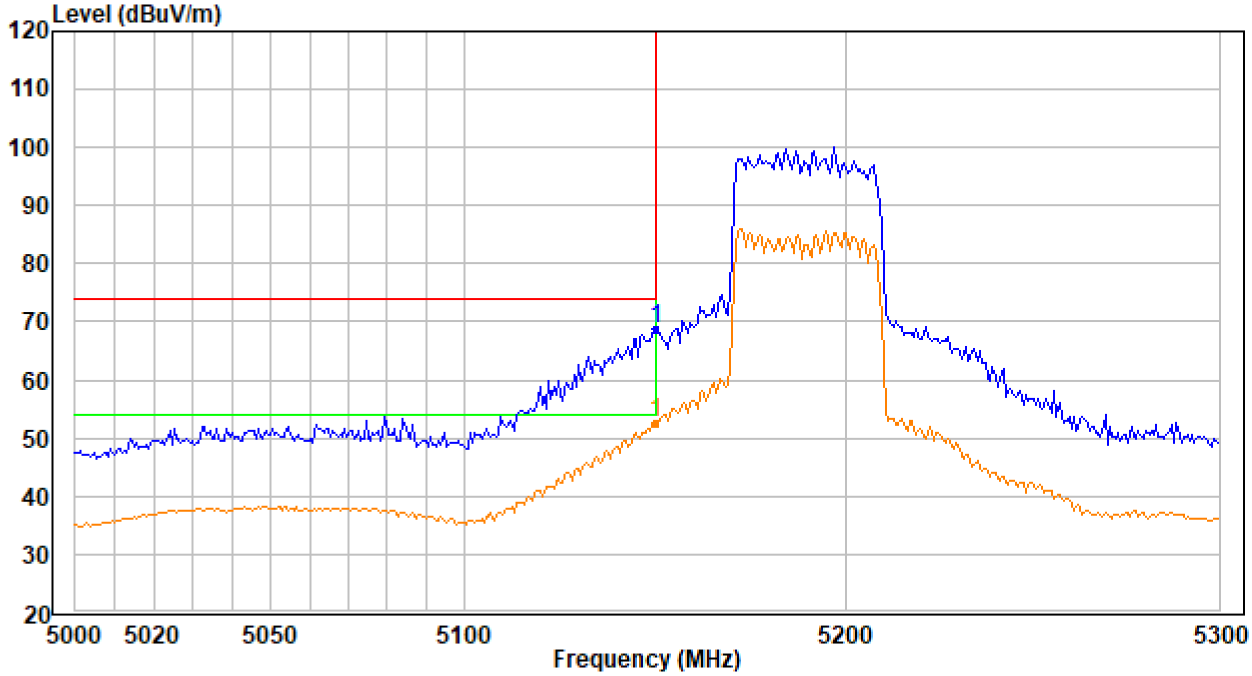
Test Channel:	Channel 165	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-32.83	26.94	Pass
5925.0000	-42.84	-27.00	Pass

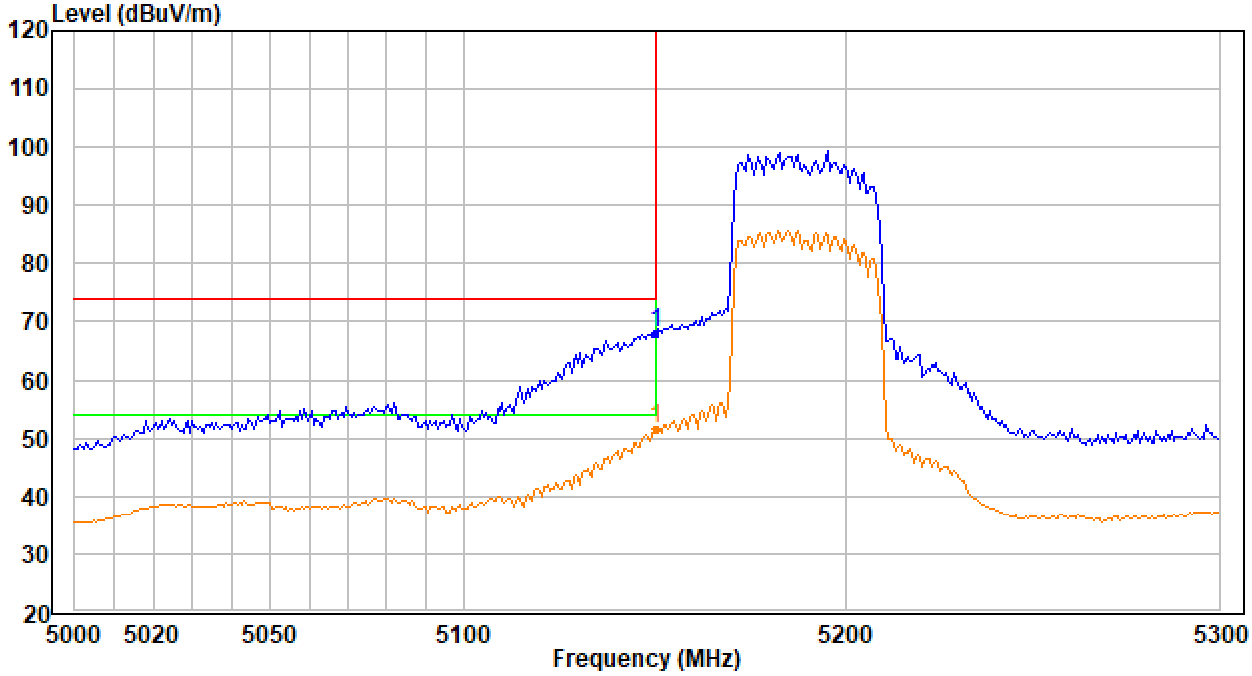
MIMO_Ant. 0+1_ IEEE 802.11ax-HE40_SU

Test Channel:	Channel 38	Ant. Polar. :	Horizontal



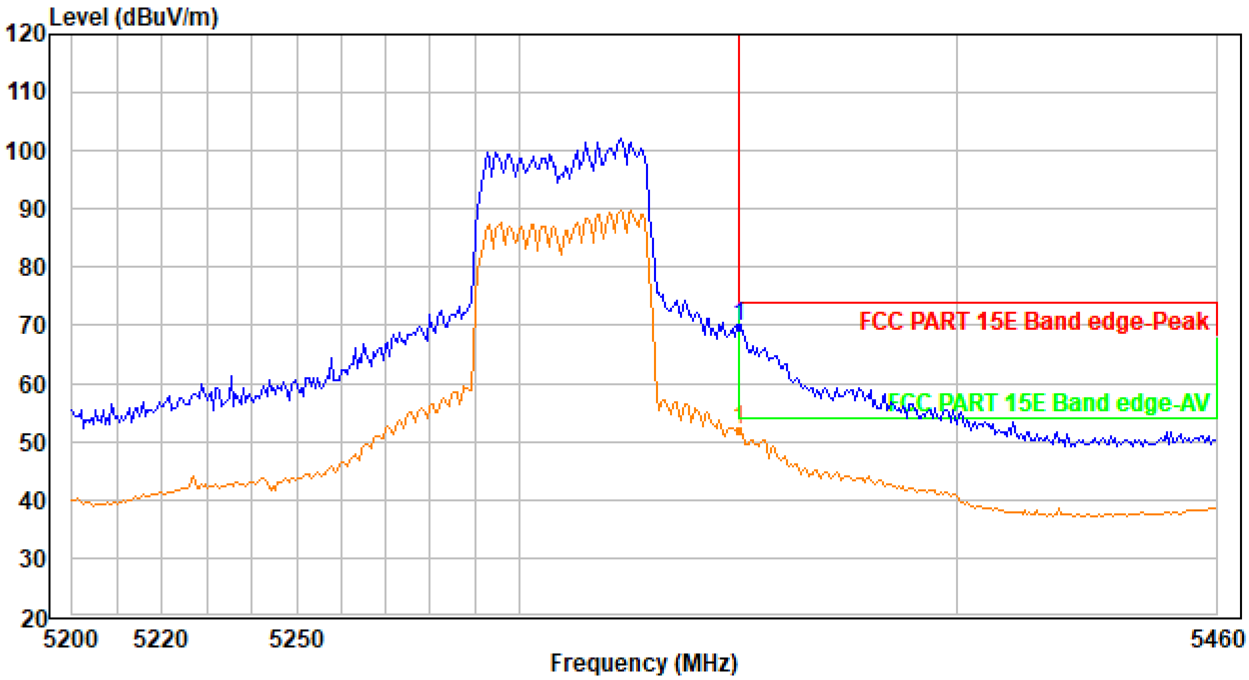
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	68.94	74.00	52.76	54.00	Pass

Test Channel:	Channel 38	Ant. Polar. :	Vertical



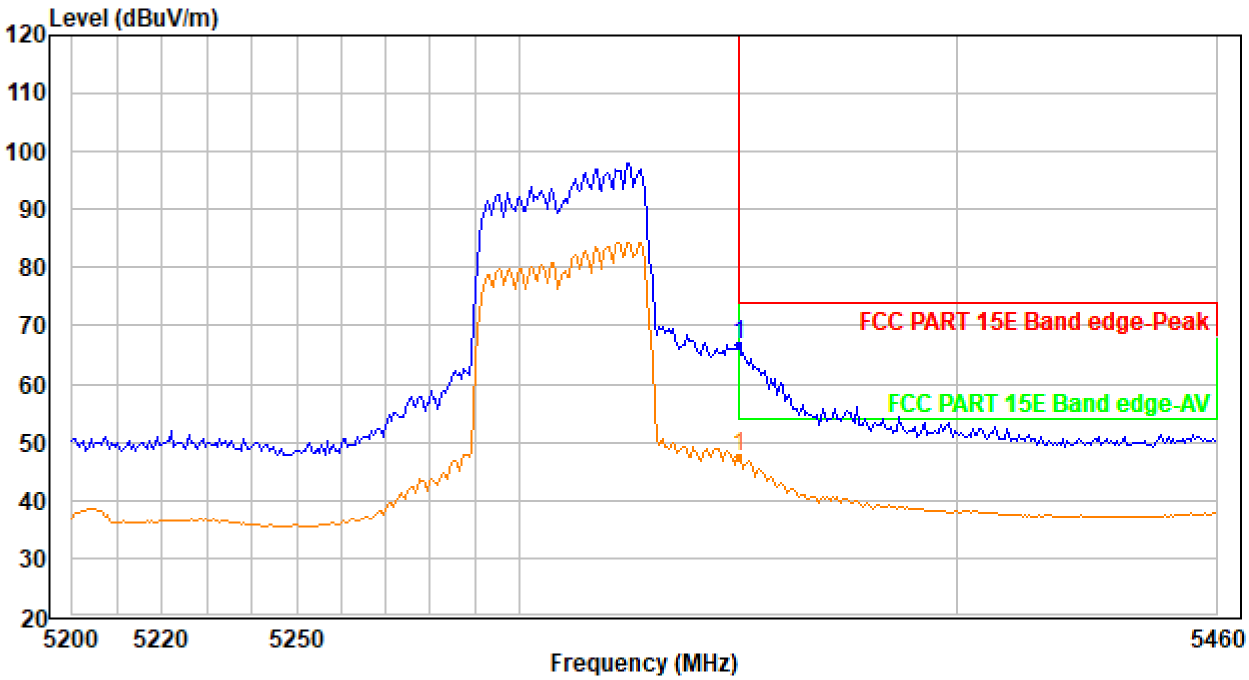
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	68.20	74.00	51.49	54.00	Pass

Test Channel:	Channel 62	Ant. Polar. :	Horizontal



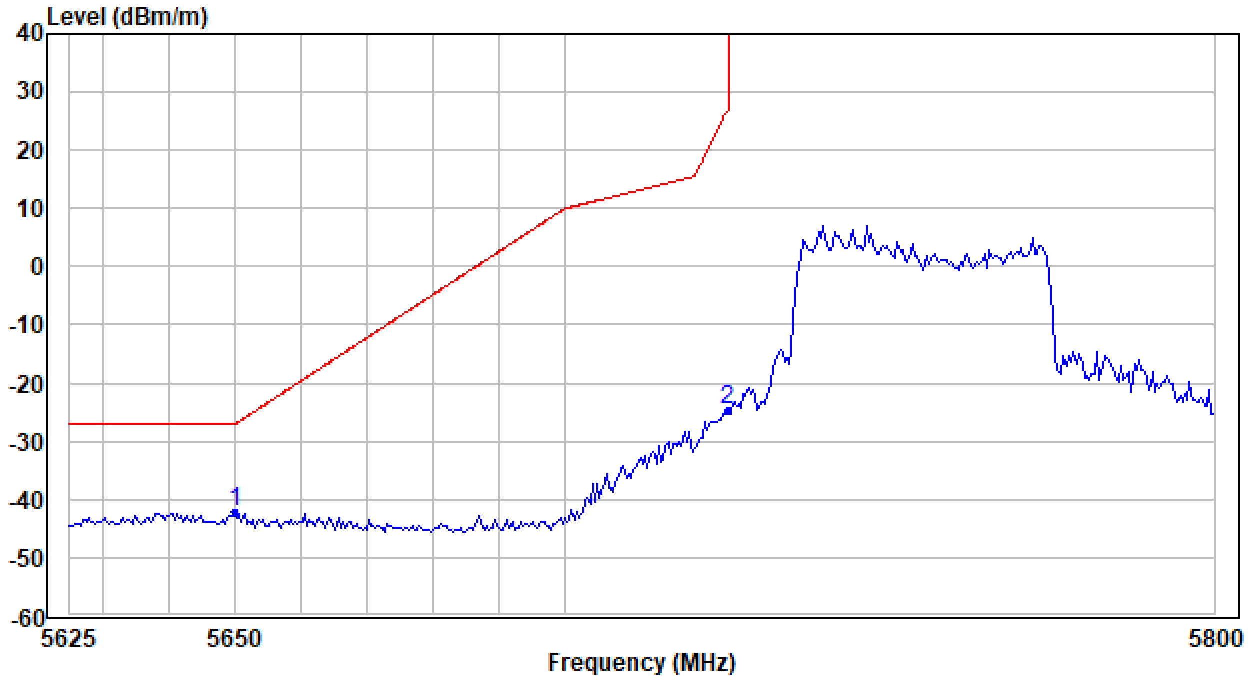
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	69.93	74.00	51.93	54.00	Pass

Test Channel:	Channel 62	Ant. Polar. :	Vertical



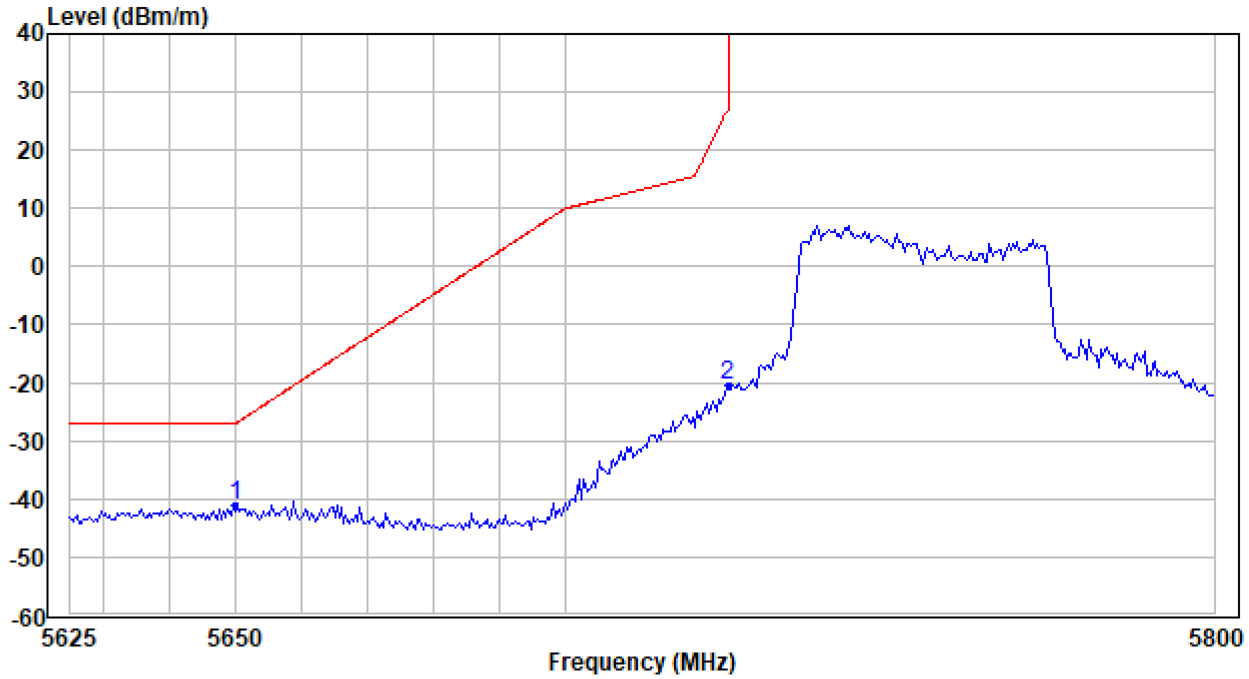
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	66.58	74.00	47.62	54.00	Pass

Test Channel:	Channel 151	Ant. Polar. :	Horizontal



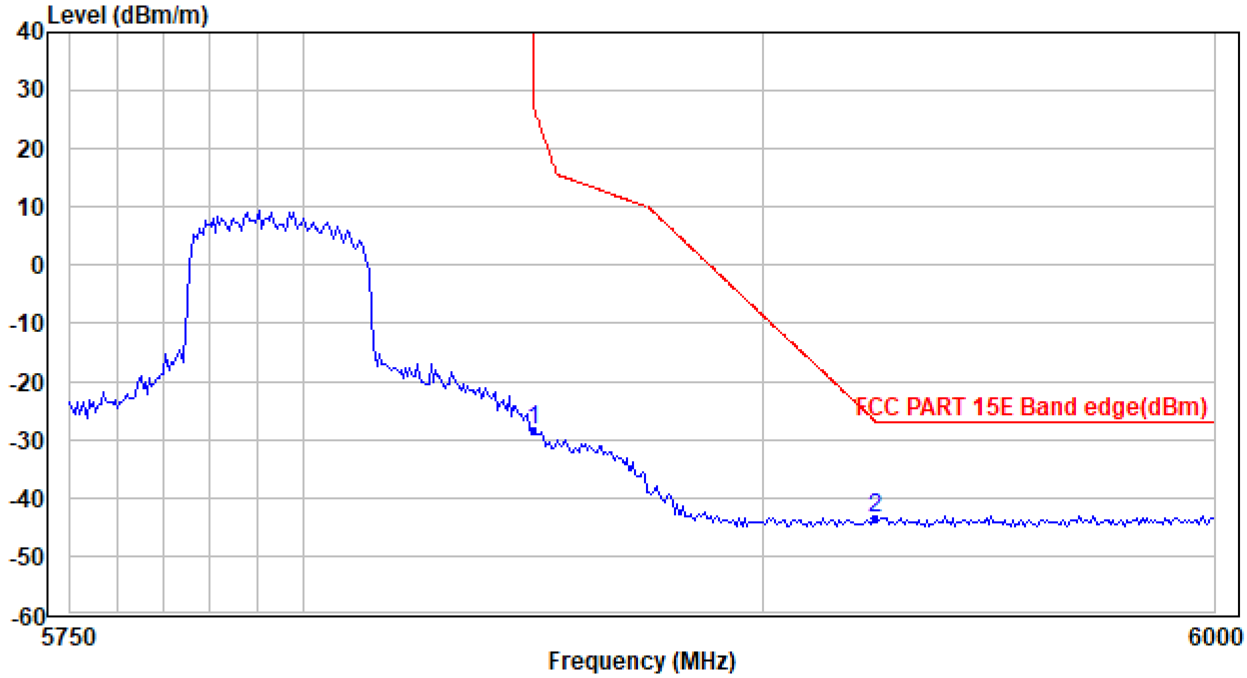
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-42.17	-27.00	Pass
5725.0000	-24.69	26.97	Pass

Test Channel:	Channel 151	Ant. Polar. :	Vertical



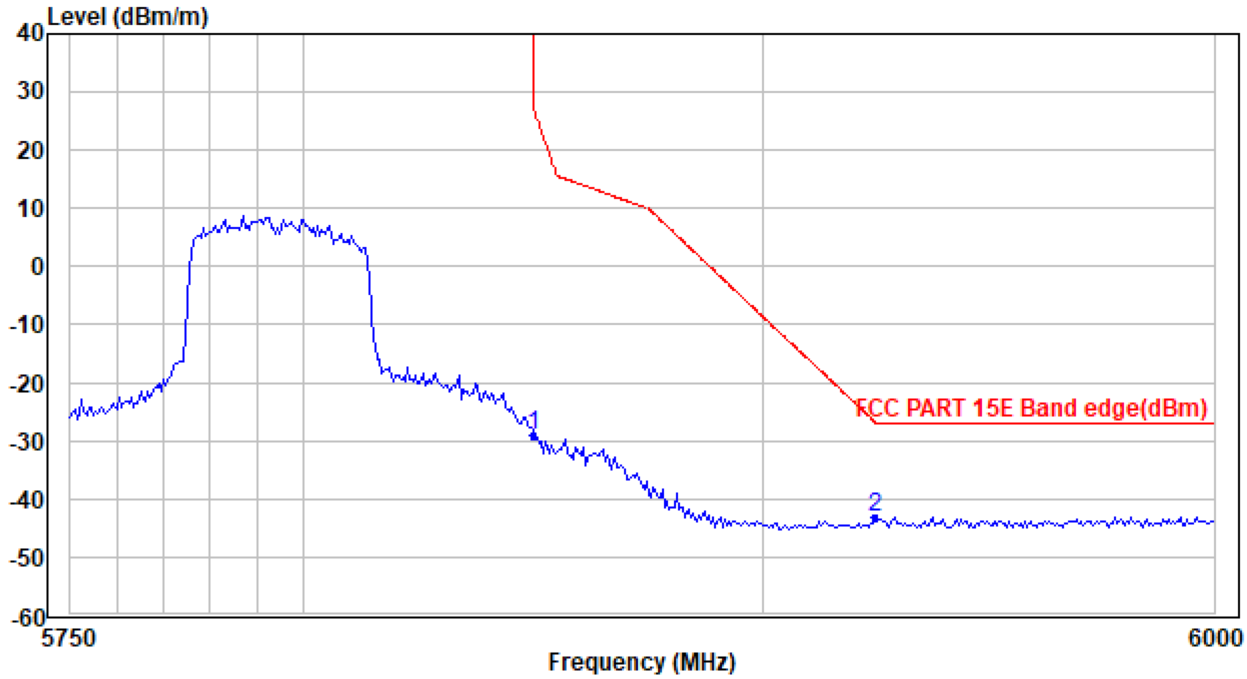
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-40.97	-27.00	Pass
5725.0000	-20.61	26.97	Pass

Test Channel:	Channel 159	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.00	-28.43	26.94	Pass
5925.00	-43.51	-27.00	Pass

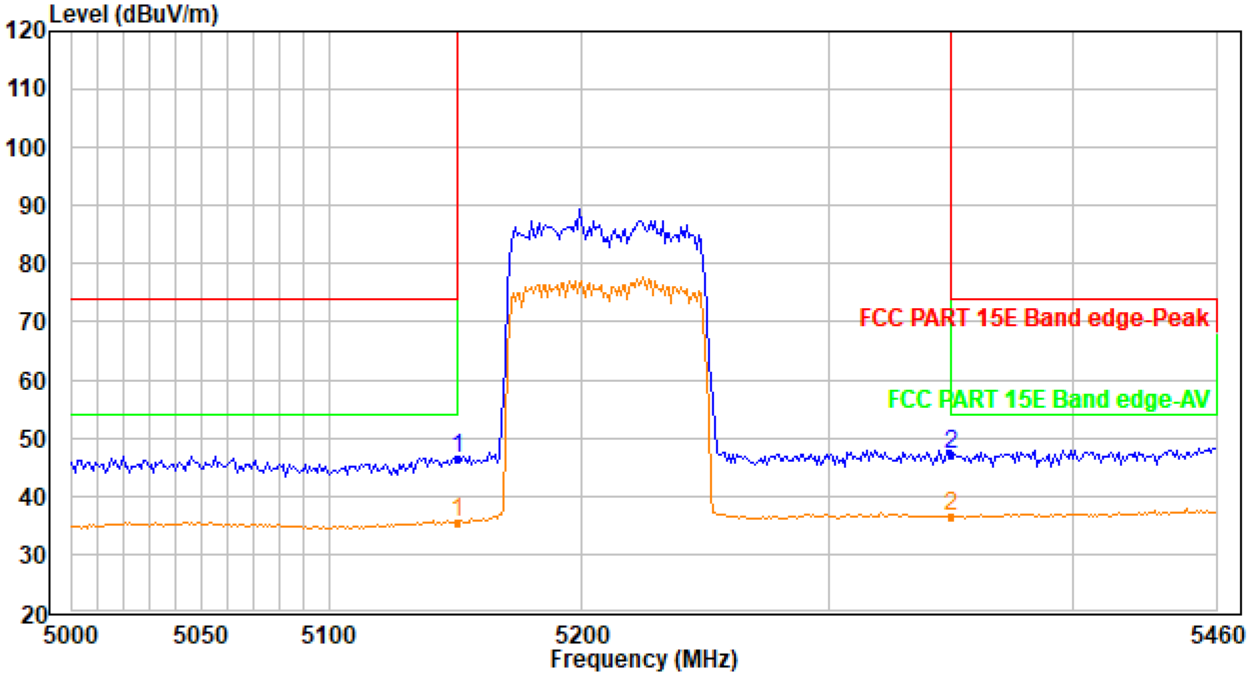
Test Channel:	Channel 159	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.00	-29.05	26.94	Pass
5925.00	-43.15	-27.00	Pass

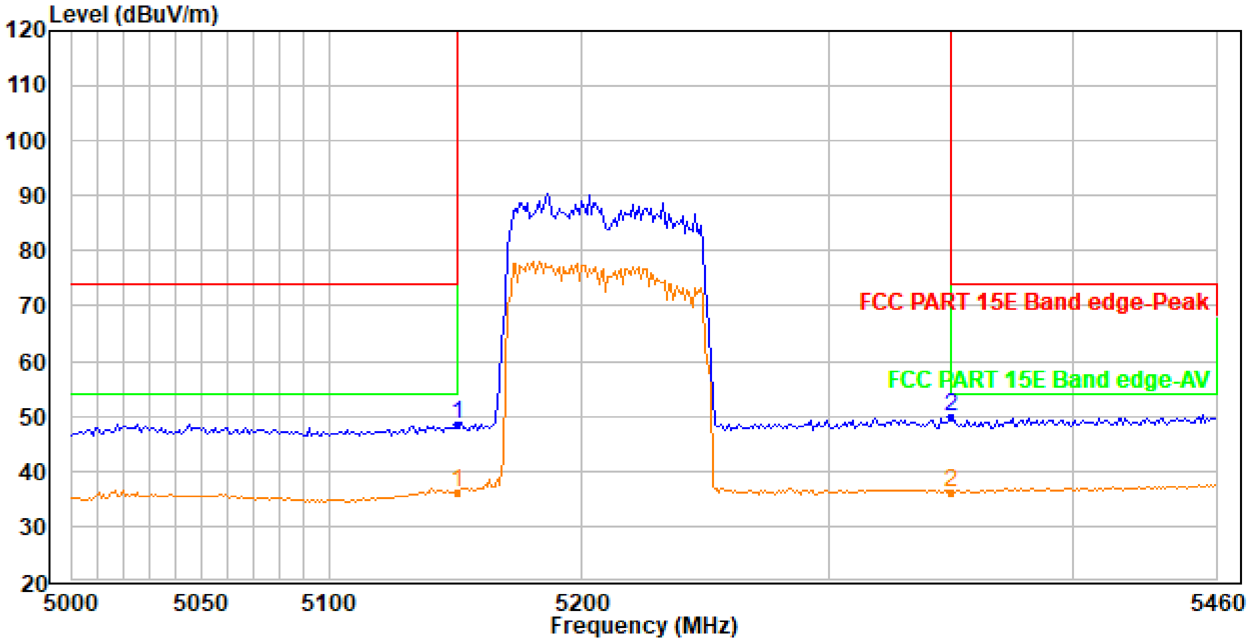
MIMO_Ant. 0+1_ IEEE 802.11ax-HE80_SU

Test Channel:	Channel 42	Ant. Polar. :	Horizontal



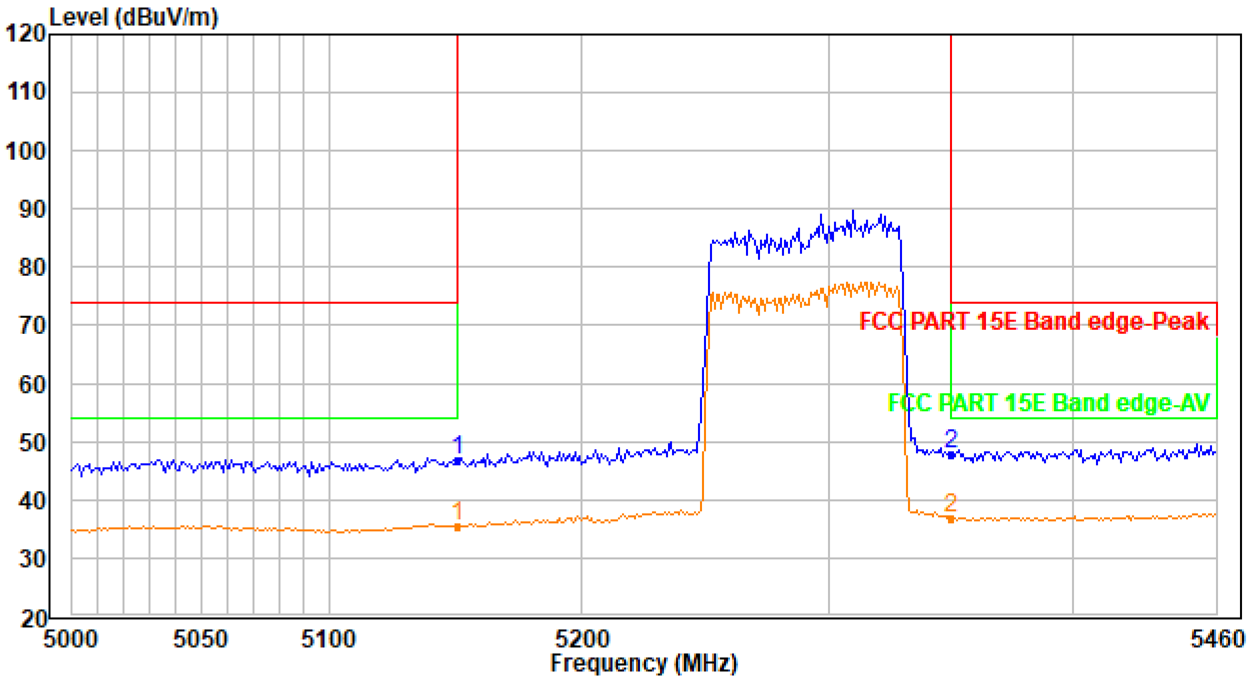
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	46.47	74.00	35.49	54.00	Pass
5350.0000	47.26	74.00	36.54	54.00	Pass

Test Channel:	Channel 42	Ant. Polar. :	Vertical



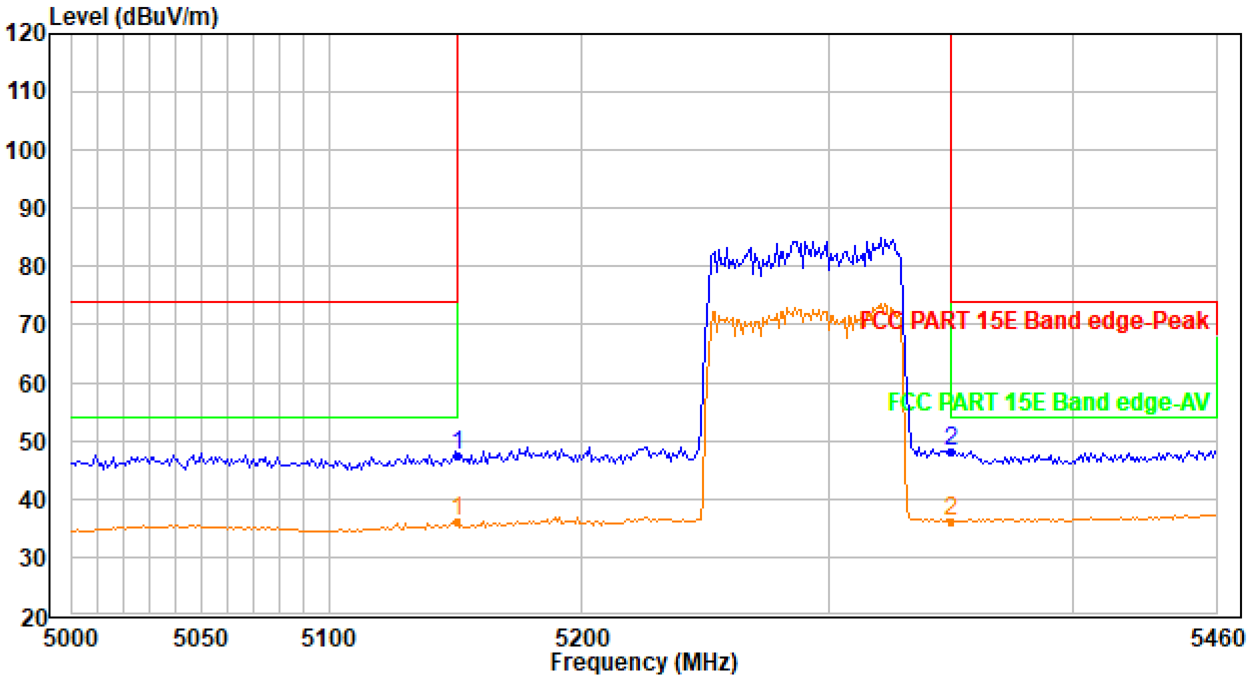
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	48.48	74.00	36.21	54.00	Pass
5350.0000	49.93	74.00	36.29	54.00	Pass

Test Channel:	Channel 58	Ant. Polar. :	Horizontal



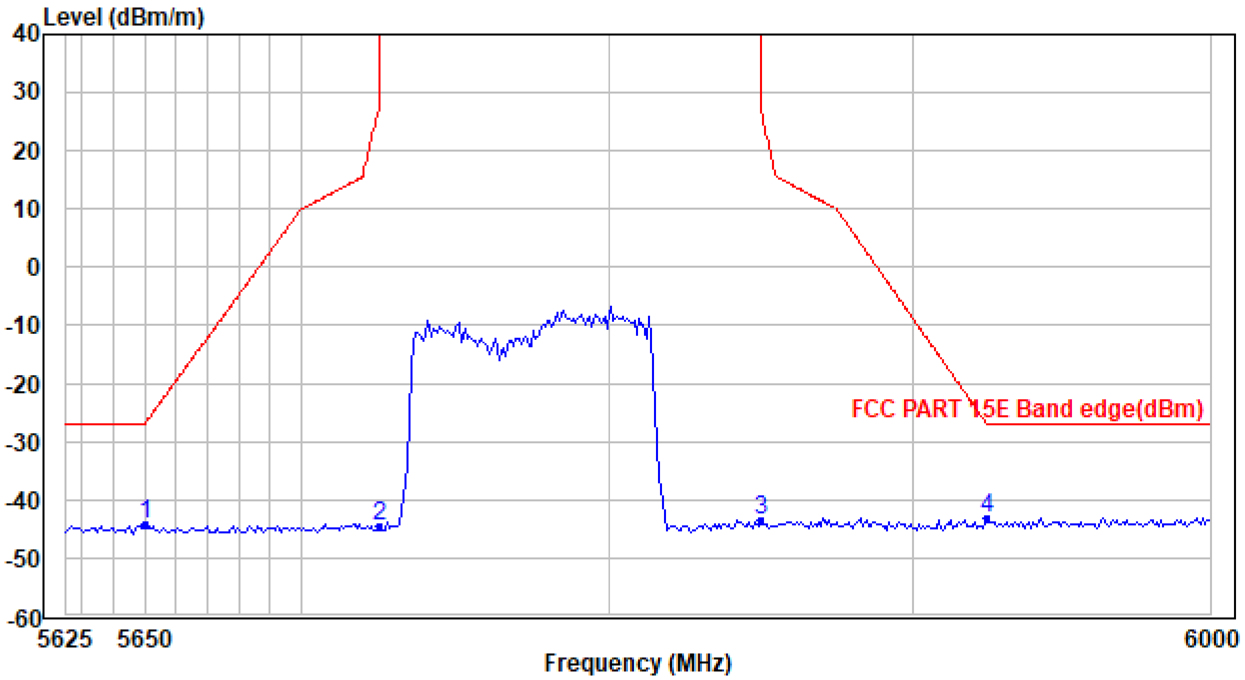
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	46.77	74.00	35.50	54.00	Pass
5350.0000	47.73	74.00	37.01	54.00	Pass

Test Channel:	Channel 58	Ant. Polar. :	Vertical



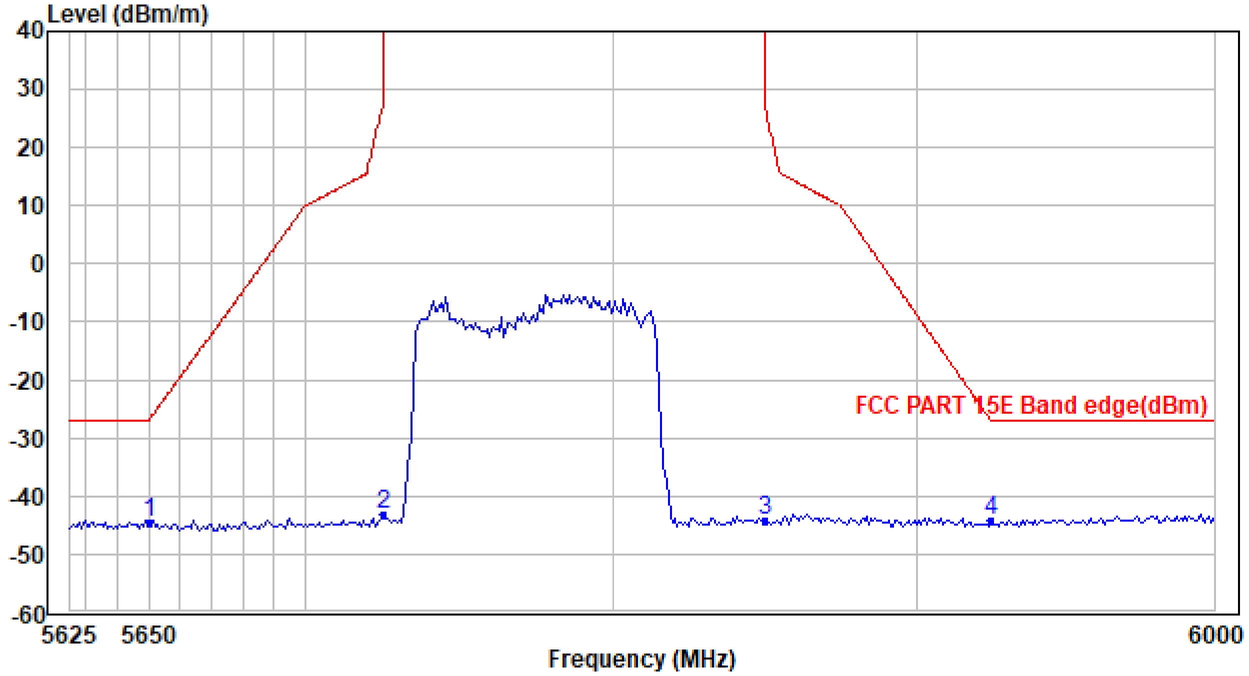
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	47.57	74.00	35.99	54.00	Pass
5350.0000	48.15	74.00	36.12	54.00	Pass

Test Channel:	Channel 155	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-44.12	-27.00	Pass
5725.0000	-46.62	26.97	Pass
5850.0000	-43.55	26.94	Pass
5925.0000	-43.23	-27.00	Pass

Test Channel:	Channel 155	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-44.50	-27.00	Pass
5725.0000	-43.32	26.97	Pass
5850.0000	-44.13	26.94	Pass
5925.0000	-44.06	-27.00	Pass

5.8 DYNAMIC FREQUENCY SELECTION

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (h)

Test Method: KDB 905462 D03 Client Without DFS New Rules v01r02

EUT Operating Mode:

DFS Operational mode	Operating Frequency Range	
	5250 MHz to 5350 MHz	5470 MHz to 5725 MHz
Slave without radar Interference detection function	✓	

Applicability:

The following table from KDB905462 and the lists of the applicable requirements for the DFS testing.

Applicability of DFS Requirements Prior to Use of a Channel:

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	✓	Not required	Yes
DFS Detection Threshold	✓	Not required	Yes
Channel Availability Check Time	✓	Not required	Not required
U-NII Detection Bandwidth	✓	Not required	Yes

Applicability of DFS requirements during normal operation:

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required
Additional requirements for devices with multiple bandwidth modes	**Master Device or Client with Radar Detection**	**Client Without Radar Detection**
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection:

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. **Note 2:** Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. **Note3:** EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

DFS Radar Signal Parameter Values:

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds (See Note 1.)
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. (See Notes 1 and 2.)
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. (See Note 3.)
Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3:** During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

DFS Radar Signal Parameter:

Radar Type 0 was used in the evaluation of the Client device for the purpose of measuring the Channel Move Time and the Channel Closing Transmission Time

Table 1-Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1.	See Note 1.
1	1	Test A Test B	$\text{Roundup}\left\{\dfrac{\left(\frac{1}{360}\right)}{\left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu sec}}\right)}\right\}$	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a
Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A
A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms.
If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4

Table 2-Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 3-Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	0.333	300	70%	30

In-Service Monitoring: Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

Limit of In-Service Monitoring:

Reference to DFS Radar Signal Parameter Values.

Test Procedures:

a) One frequency will be chosen from the Operating Channels of the EUT within the 5250-5350 MHz or 5470-5725 MHz bands. For 802.11 devices, the test frequency must contain control signals. This can be verified by disabling channel loading and monitoring the spectrum analyzer. If no control signals are detected, another frequency must be selected within the emission bandwidth where control signals are detected.

b) In case the EUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will associate with the EUT (Master). For radiated tests, the emissions of the Radar Waveform generator will be directed towards the Master Device. If the Master Device has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing.

c) The TCP protocol unicast data stream was generated by the iperf software command line with at least 17% activity ratio over any 100ms period.

d) Timing plots are reported with calculations demonstrating a minimum channel loading of approximately 17% or greater. For example, channel loading can be estimated by setting the spectrum analyzer for zero span and approximate the Time On/ (Time On + Off Time).

e) At time T0 the Radar Waveform generator sends a Burst of pulses for one of the Short Pulse Radar Types 1-4 at DFS Detection Threshold levels on the Operating Channel. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.

f) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Channel Move Time). Measure and record the Channel Move Time and Channel Closing Transmission Time if radar detection occurs.

g) When operating as a Master Device, monitor the EUT for more than 30 minutes following instant T2 to verify that the EUT does not resume any transmissions on this Channel. Perform this test once and record the measurement result.

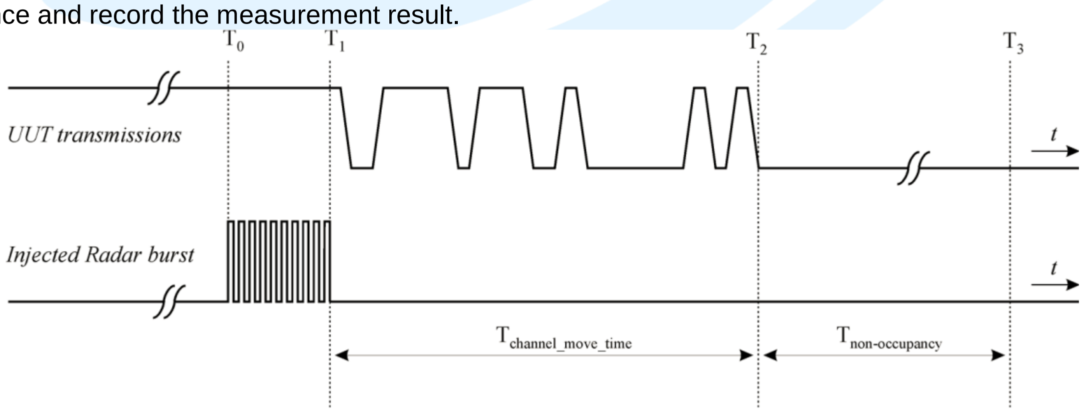
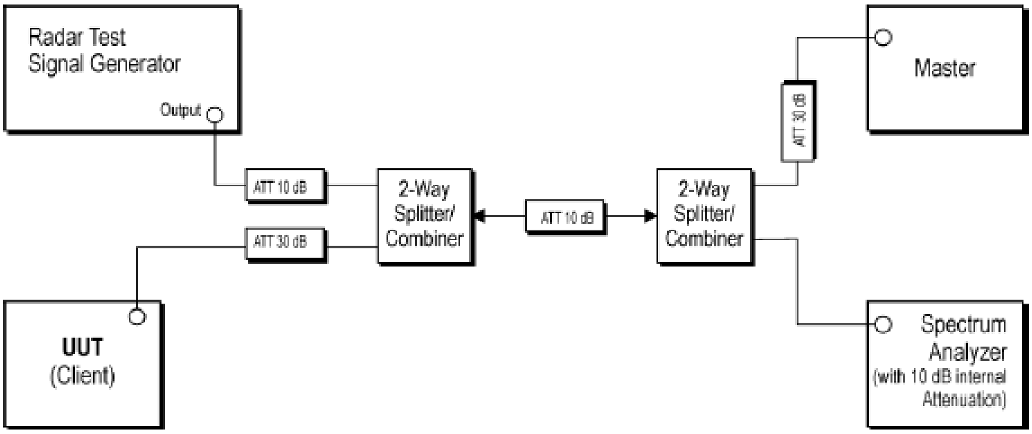


Figure 17: Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period

Conducted test setup



Setup for Client with injection at the Master

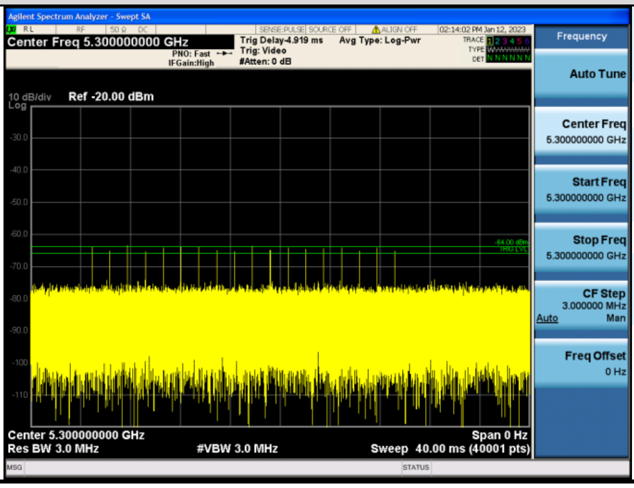
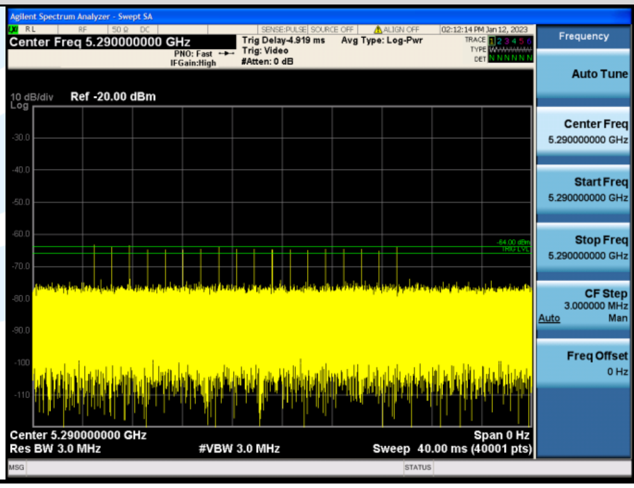
Equipment Used: Refer to section 3 for details.

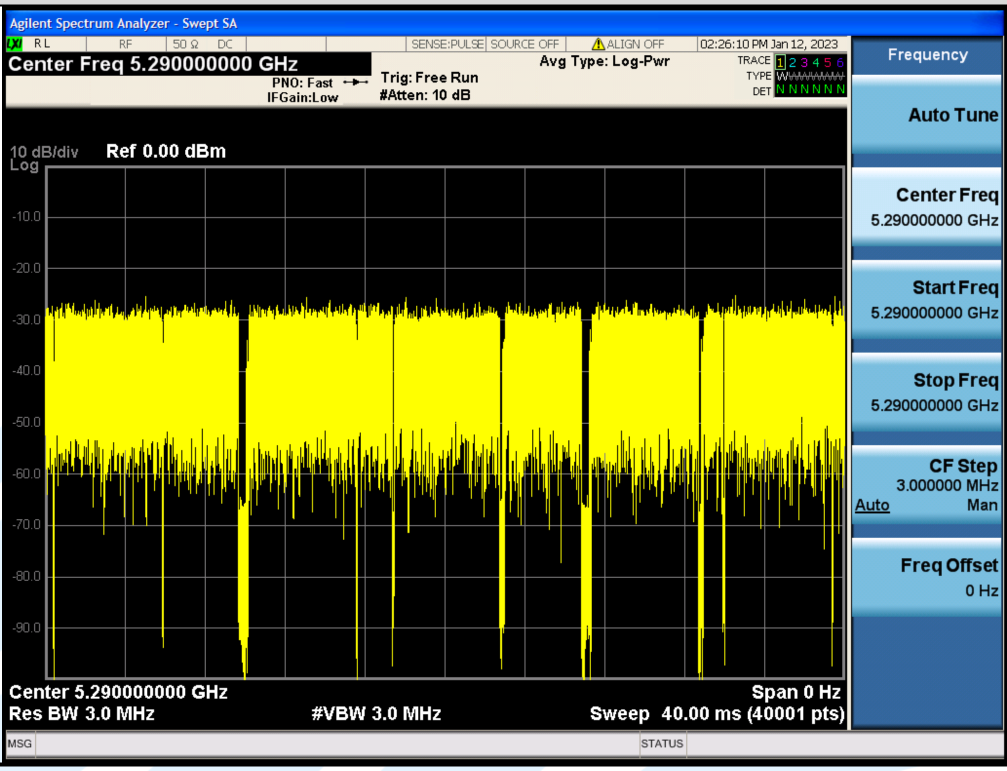
Test Result: Result of Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period for Client Beacon Tes

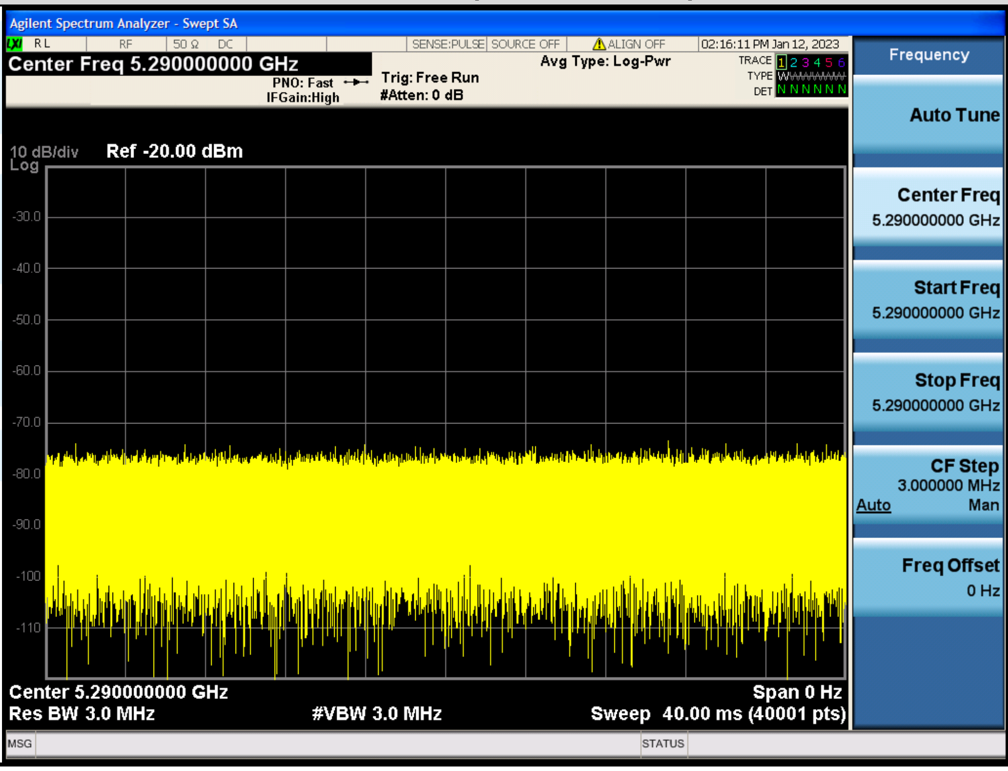
The measurement data as follows:

BW / Channel	Test Item	Test Result	Limit	Pass/Fail
20 MHz / 5300 MHz	Channel Move Time	0.7964 s	< 10s	Pass
	Channel Closing Transmission Time	6.9 ms	< 200+60ms	Pass
	Non-Occupancy Period	No transmission	30 minutes	Pass
80 MHz / 5290 MHz	Channel Move Time	0.8194 s	< 10s	Pass
	Channel Closing Transmission Time	10.2 ms	< 200+60ms	Pass
	Non-Occupancy Period	No transmission	30 minutes	Pass

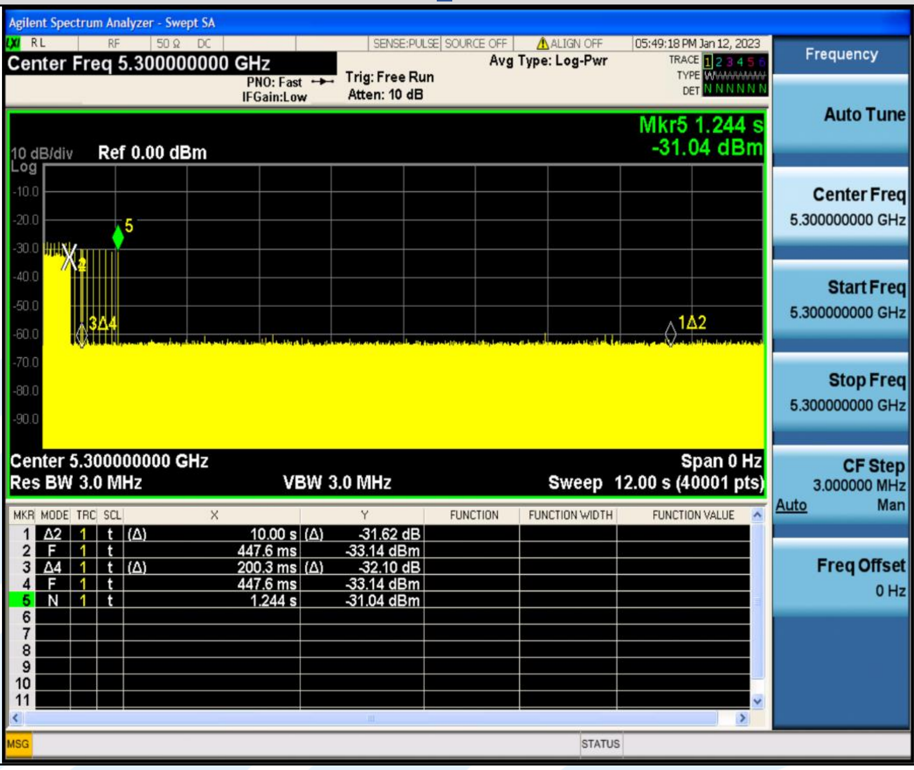
Radar Waveform calibration Plot

Reference DFS test signal	
5300 MHz	5290 MHz
	

Data Traffic Plot


Noise Floor (No transmission)


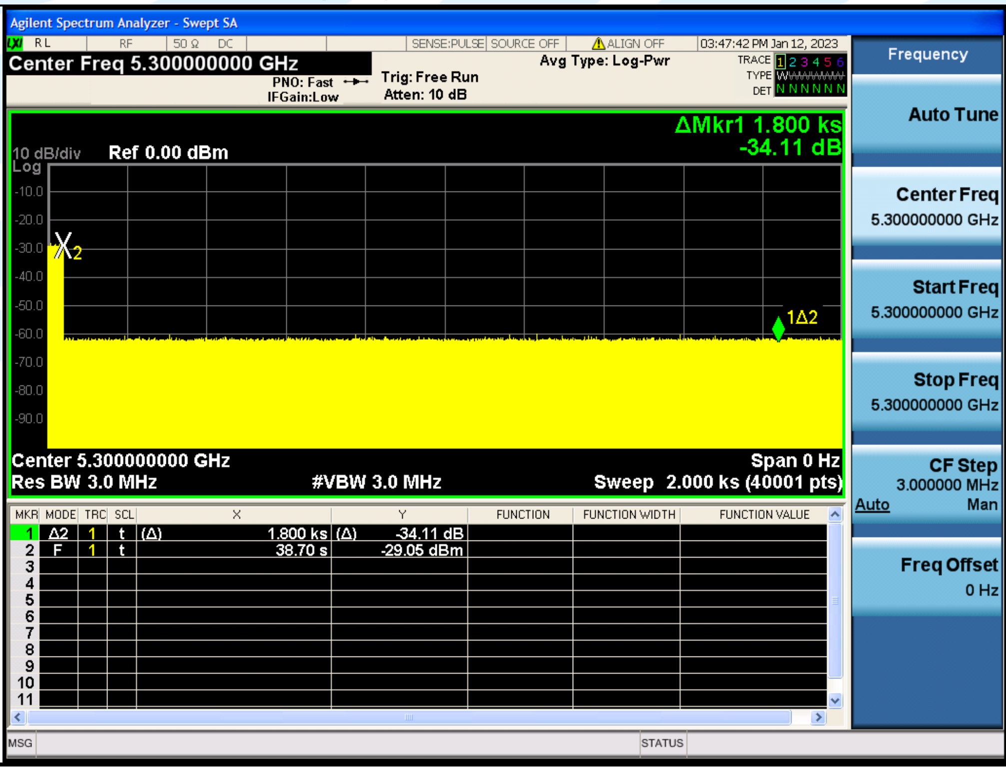
Channel Move Time & Channel Closing Transmission Time
802.11a_5300 MHz



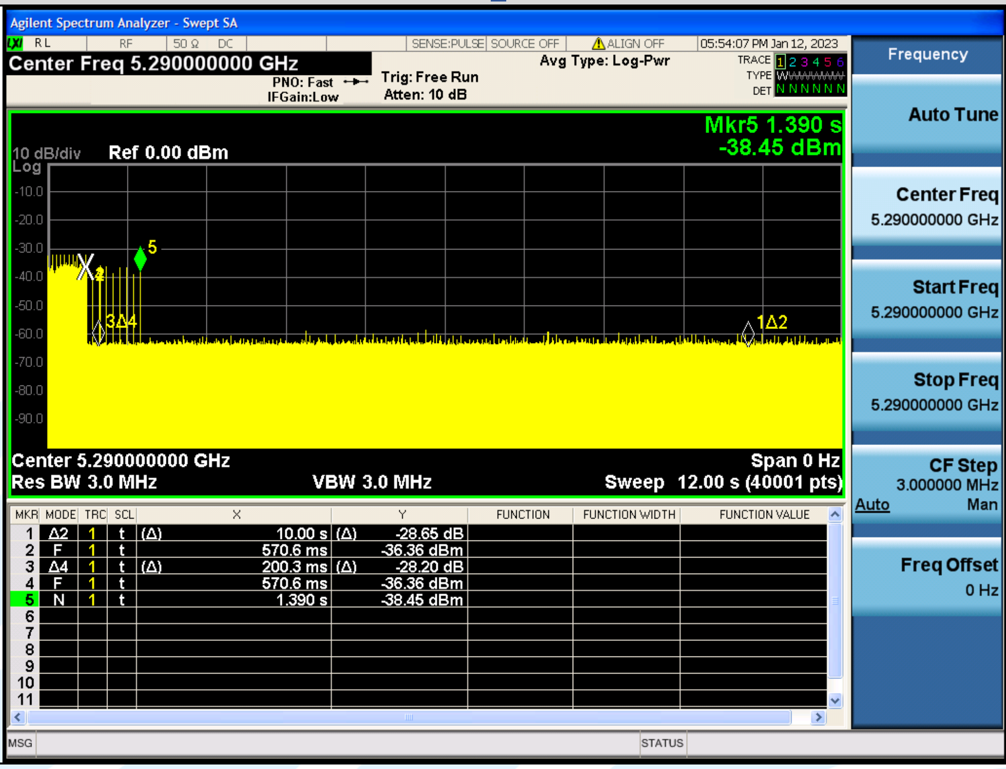
Note:

1) Mark1 Time: 447.6 ms, Mark2 Time: 10447.6 ms,Ontime Points: 23
2) Dwell = S/B = 12000ms/40001 = 0.3 ms, C = N x Dwell = 23 x 0.3 = 6.9 ms
3) CMT = 1.244 s – 0.4476 s = 0.7964s

Non-Occupancy Period_802.11a_CH60_5300 MHz



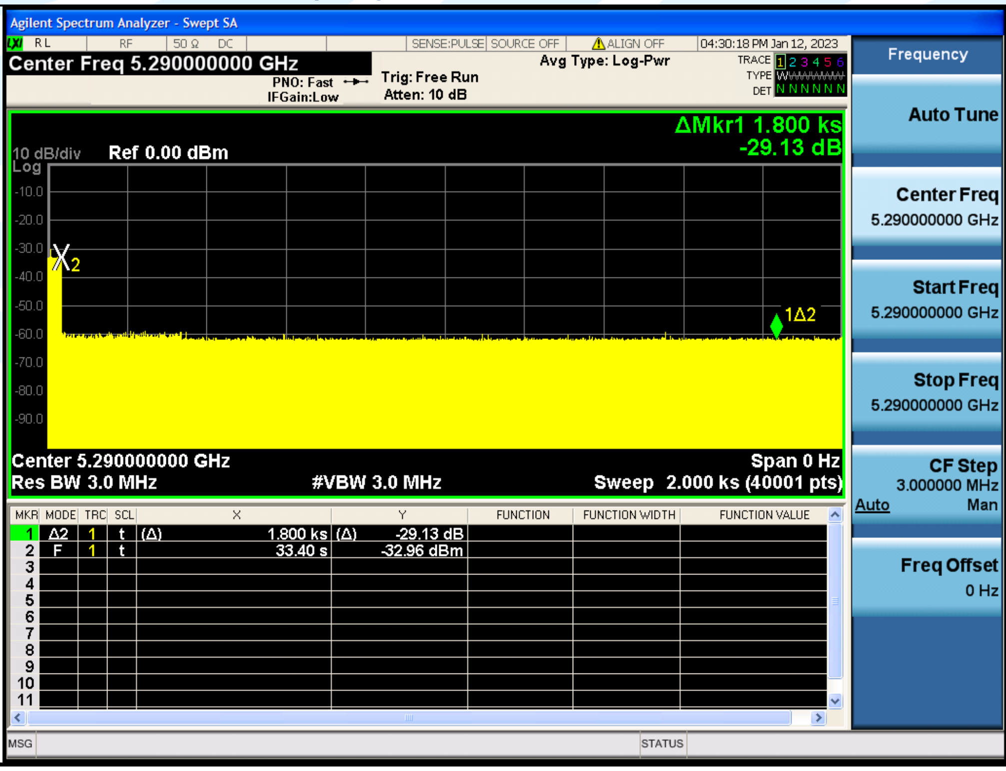
Channel Move Time & Channel Closing Transmission Time
802.11ac_5290 MHz



Note:

4) Mark1 Time: 570.6 ms, Mark2 Time: 10570.6 ms,Ontime Points: 34
5) Dwell = S/B = 12000ms/40001 = 0.3 ms, C = N x Dwell = 34 x 0.3 = 10.2ms
6) CMT = 1.390 s – 0.5706 s = 0.8194s

Non-Occupancy Period_802.11ac_CH58_5290 MHz



5.9 AC POWER LINE CONDUCTED EMISSION

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.207

Test Method: ANSI C63.10-2013 Section 6.2

Limits:

Frequency range (MHz)	Limits (dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Test Setup: Refer to section 4.4.2 for details.

Test Procedures:

Test frequency range :150KHz-30MHz

1) The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Equipment Used: Refer to section 3 for details.

Test Result: Pass