FCC TEST REPORT

Product Name:	Hyebrid Full-Touch Handheld Computer
Trade Mark:	BLUEBIRD
Model No.:	HF550X
Add. Model No.:	N/A
Report Number:	2304244979RFC-4
Test Standards:	FCC 47 CFR Part 15 Subpart E
FCC ID:	SS4HF550XR
Test Result:	PASS
Date of Issue:	October 7, 2023

Prepared for:

Bluebird Inc.
3F, 115, Irwon-ro, Gangnam-gu, Seoul, Republic of Korea

Prepared by:

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Prepared by:	Kieron Luo Project Engineer	Reviewed by:	Henry Lu Assistant Manager
Approved by:	Kevin Liang Assistant Manager	Date:	October 7, 2023

Version

Version No.	Date	Description
V1.0	October 7, 2023	Original

CONTENTS

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Bluebird Inc.
Address of Applicant:	3F, 115, Irwon-ro, Gangnam-gu, Seoul, Republic of Korea
Manufacturer:	Bluebird Inc.
Address of Manufacturer:	3F, 115, Irwon-ro, Gangnam-gu, Seoul, Republic of Korea

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Hyebrid Full-Touch Handheld Computer		
Model No.:	HF550X		
Add. Model No.:	N/A		
Trade Mark:	BLUEBIRD		
DUT Stage:	Identical Prototype		
EUT Supports Function: (Provided by the customer)	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth 5.0	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n/ac
		5 725 MHz to 5 850 MHz	IEEE 802.11a/n/ac
	NFC:	13.553 MHz to 13.567 MHz	
	RFID:	902 MHz to 928 MHz	
Software Version:	R1.0 (Provided by the customer)		
Hardware Version:	REV0.8 (Provided by the customer)		
Sample Received Date:	April 13, 2023		
Sample Tested Date:	April 27, 2023 to May 31, 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

Adapter	
Model No.:	KSA29B0500200D5
Input:	100-240 V~50/60 Hz 0.5A
Output:	5.0 V ⎓ 2.0A
AC Cable:	N/A
DC Cable:	N/A

Battery	
Model No.:	BAT-400001
Battery Type:	Lithium-ion Rechargeable Battery
Rated Voltage:	3.85 Vdc
Limited Charge Voltage:	4.4 Vdc
Rated Capacity:	4000 mAh

Cable	
Description:	USB Type-C Plug Cable
Connector:	USB Type-C / USB 3.0 Type A
Cable Type:	Shielded without ferrite
Length:	1 Meter

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)	
	5470 MHz to 5725 MHz (U-NII-2C)	
	5 725 MHz to 5 850 MHz (U-NII-3)	
Frequency Ranges:	5180 MHz to 5240 MHz	
	5260 MHz to 5320 MHz	
	5500 MHz to 5700 MHz	
	5 745 MHz to 5 825 MHz	
Support Standards:	IEEE 802.11a/n/ac	
TPC Function:	Not Support	
DFS Operational mode:	Slave without radar Interference detection function	
Type of Modulation:	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK)	
	IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK)	
	IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)	
Channel Spacing:	IEEE 802.11a/n-HT20/ac-VHT20: 20 MHz	
	IEEE 802.11n-HT40/ac-VHT40: 40 MHz	
	IEEE 802.11ac-VHT80: 80 MHz	
Data Rate:	IEEE 802.11a: Up to 54 Mbps	
	IEEE 802.11n-HT20: Up to MCS15	
	IEEE 802.11n-HT40: Up to MCS15	
	IEEE 802.11ac-VHT20: Up to MCS8	
	IEEE 802.11ac-VHT40: Up to MCS9	
	IEEE 802.11ac-VHT80: Up to MCS9	
Number of Channels:	5150 MHz to 5250 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40)/ac-VHT40 1 for IEEE 802.11acVHT80	
	5250 MHz to 5350 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40)/ac-VHT40 1 for IEEE 802.11acVHT80	
	5470 MHz to 5725 MHz: 11 for IEEE 802.11a/n-HT20/ac-VHT20 5 for IEEE 802.11n-HT40/ac-VHT40 2 for IEEE 802.11ac-VHT80	
	5725 MHz to 5850 MHz: 5 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40 1 for IEEE 802.11ac-VHT80	
Antenna Type:	Ant. 0	PIFA Antenna
	Ant. 1	PIFA Antenna
Antenna Gain: (Provided by the customer)	Ant. 0	5150 MHz to 5350 MHz: 0.32 dBi
		5470 MHz to 5725 MHz: 1.46 dBi
		5725 MHz to 5850 MHz: -0.25 dBi
	Ant. 1	5150 MHz to 5350 MHz: 0.435 dBi
		5470 MHz to 5725 MHz: 2.18 dBi
		5725 MHz to 5850 MHz: -0.08 dBi

Max. Conducted Avg. Power (dBm):	**SISO_Ant. 0**	**U-NII-1**	**U-NII-2A**	**U-NII-2C**	**U-NII-3**
	IEEE 802.11a:	16.77	16.37	15.88	15.22
	SISO_Ant. 1	**U-NII-1**	**U-NII-2A**	**U-NII-2C**	**U-NII-3**
	IEEE 802.11a:	15.82	15.72	15.75	15.96
	MIMO_Ant. 0+1	**U-NII-1**	**U-NII-2A**	**U-NII-2C**	**U-NII-3**
	IEEE 802.11n-HT20:	15.37	15.15	14.62	14.50
	IEEE 802.11n-HT40:	14.58	14.41	14.24	13.86
	IEEE 802.11ac-VHT20:	15.32	15.17	14.61	14.49
	IEEE 802.11ac-VHT40:	14.72	14.49	14.26	13.84
	IEEE 802.11ac-VHT80:	14.05	13.68	13.58	14.49
Normal Test Voltage:	3.85 Vdc and/or 120 Vac				

1.4 OTHER INFORMATION

None.

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	UnionTrust
Wireless Home Router	SAGEMCOM	FAST5280	N/A	VW3FAST5280	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.3 Meter	UnionTrust

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	±4.6 dB
5	Radiated emission 1GHz-18GHz	±4.4 dB
6	Radiated emission 18GHz-40GHz	±4.6 dB

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 C 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
Peak 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	14-Apr-2023	13-Apr-2024
☒	Loop Antenna	ETS-LINDGREN	6502	00202525	21-Nov-2022	20-Nov-2023
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	13-Dec-2022	12-Dec-2023
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	13-Dec-2022	12-Dec-2023
☒	Preamplifier	HP	8447F	2805A02960	1-Nov-2022	31-Oct-2023
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	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
☒	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
☒	Test Software	Audix	e3	Software Version: 9 20151119i		

RF Conducted Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date**	**Cal. Due date**
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	14-Apr-2023	13-Apr-2024
☒	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	Relative Humidity (%)
NT/NV	+15 to +35	120V~60Hz or 240V~50Hz	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	25.3	57	100.6	S20234131355-ZJA03/5	Lucas Ouyang
26 dB emission bandwidth	24.8	52.4	98.8	S20234131355-ZJA05/5	Allen Zhou
Maximum conducted output power					
Peak Power Spectral Density					
6 dB bandwidth					
Dynamic Frequency Selection					
Radiated Emissions and Band Edge Measurement	24.1	61.3	99.8	S20234131355-ZJA03/5	Fire Huo

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	5150 MHz to 5250 MHz	Channel 36	Channel 44	Channel 48
		5180 MHz	5220 MHz	5240 MHz
	5250 MHz to 5350 MHz	Channel 52	Channel 60	Channel 64
		5260 MHz	5300 MHz	5320 MHz
	5470 MHz to 5725 MHz	Channel 100	Channel 120	Channel 140
		5500 MHz	5600 MHz	5700 MHz
	5725 MHz to 5850 MHz	Channel 149	Channel 157	Channel 165
		5745 MHz	5785 MHz	5825 MHz
IEEE 802.11n-HT40 IEEE 802.11ac-VHT40	5150 MHz to 5250 MHz	Channel 38	--	Channel 46
		5190 MHz	--	5230 MHz
	5250 MHz to 5350 MHz	Channel 54	--	Channel 62
		5270 MHz	--	5310 MHz
	5470 MHz to 5725 MHz	Channel 102	Channel 118	Channel 134
		5510 MHz	5590 MHz	5670 MHz
	5725 MHz to 5850 MHz	Channel 151	--	Channel 159
		5755 MHz	--	5795 MHz
IEEE 802.11ac-VHT80	5150 MHz to 5250 MHz	--	Channel 42	--
		--	5210 MHz	--
	5250 MHz to 5350 MHz	--	Channel 58	--
		--	5290 MHz	--
	5470 MHz to 5725 MHz	Channel 106	--	Channel 122
		5530 MHz	--	5610 MHz
	5725 MHz to 5850 MHz	--	Channel 155	--
		--	5775 MHz	--

4.3 EUT TEST STATUS

Mode	Tx/Rx Function	Description
IEEE 802.11a/n/ac	1Tx/1Rx or 2Tx/2Rx	1. Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.

Power Setting (Provided by the customer)						
Mode	U-NII-1/ U-NII-2A		U-NII-2C		U-NII-3	
	Antenna 0	Antenna 1	Antenna 0	Antenna 1	Antenna 0	Antenna 1
IEEE 802.11a	15	15	15	15	15	15
IEEE 802.11n-HT20 IEEE 802.11ac-VHT20	11	11	11	11	11	11
IEEE 802.11n-HT40 IEEE 802.11ac-VHT40	10	10	10	10	10	10
IEEE 802.11ac-VHT80	10	10	10	10	10	10

Test Software (Provided by the customer)
Test software name: QRCT V4.0

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	MCS0
IEEE 802.11n-HT40	MCS0
IEEE 802.11ac-VHT20	MCS0
IEEE 802.11ac-VHT40	MCS0
IEEE 802.11ac-VHT80	MCS0

4.5 TEST SETUP

4.5.1 For Radiated Emissions test setup

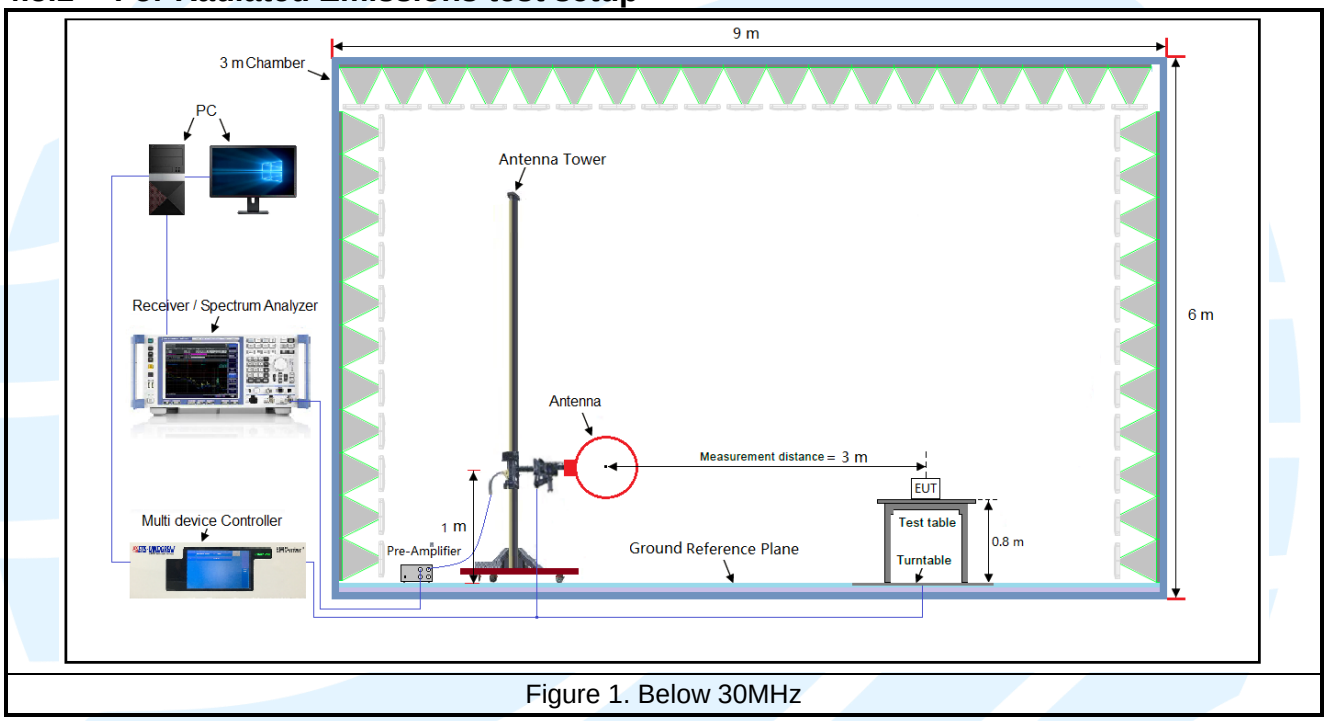


Figure 1. Below 30MHz

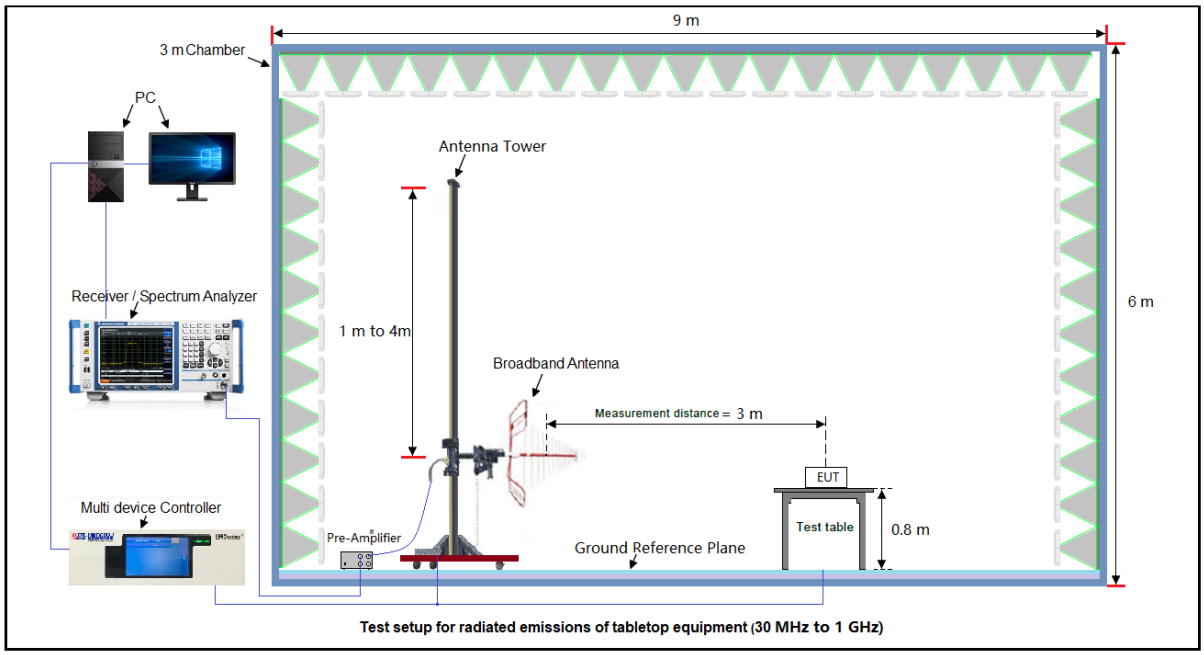


Figure 2. 30MHz to 1GHz

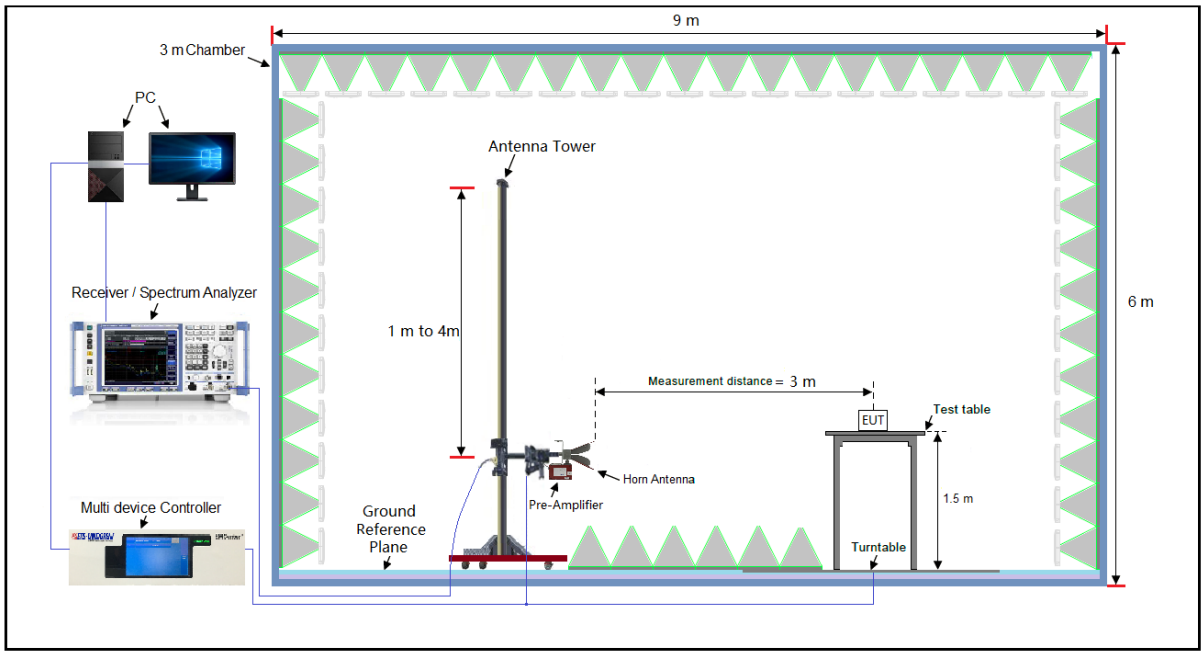
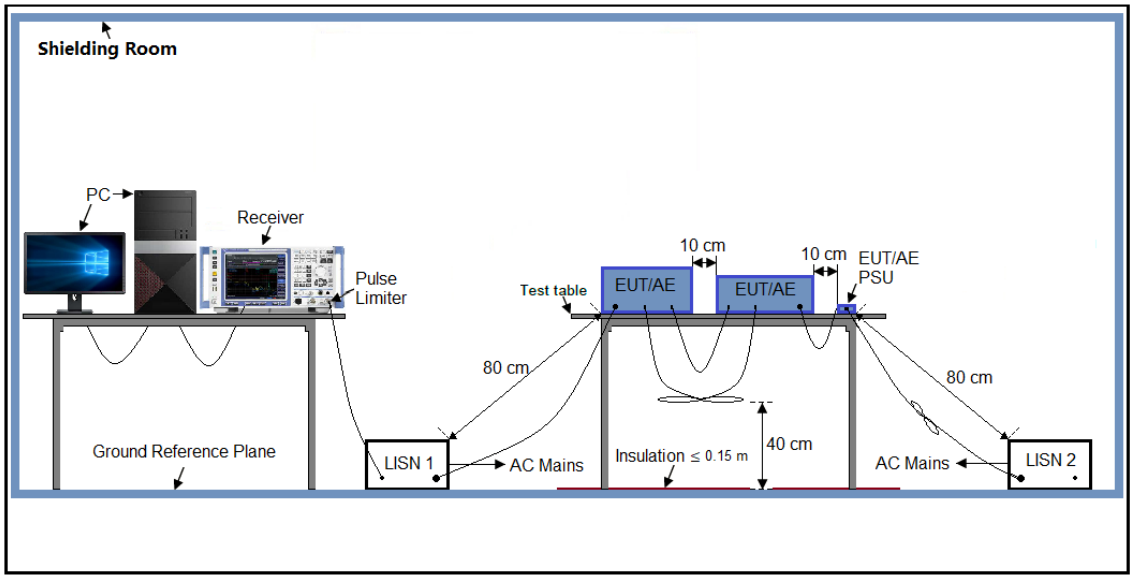
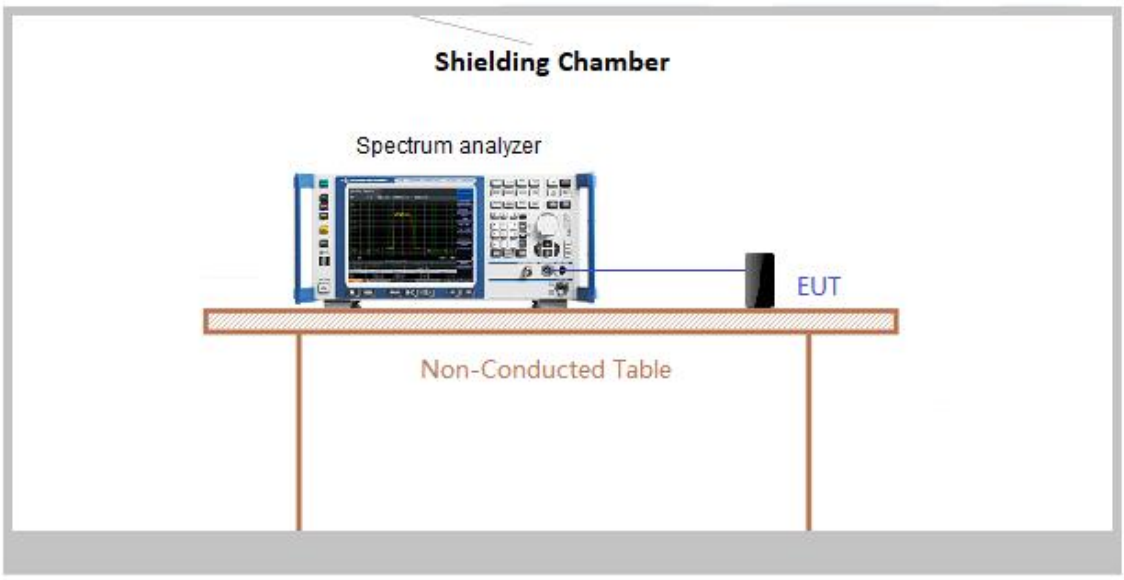


Figure 3. Above 1GHz

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. It was powered by 3.85V Battery. 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	Data Rates	On Time (msec)	Period (msec)	Duty Cycle (linear)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/T Minimum VBW (kHz)
IEEE 802.11a	6 Mbps	2.061	2.101	0.98	98.10	0.00	0.01
IEEE 802.11n-HT20	MCS 0	1.920	1.963	0.98	97.81	0.10	0.52
IEEE 802.11n-HT40	MCS 0	0.947	0.985	0.96	96.11	0.17	1.06
IEEE 802.11ac-VHT20	MCS 0	1.927	1.970	0.98	97.82	0.10	0.52
IEEE 802.11ac-VHT40	MCS 0	0.950	0.988	0.96	96.12	0.17	1.05
IEEE 802.11ac-VHT80	MCS 0	0.463	0.501	0.92	92.42	0.34	2.16

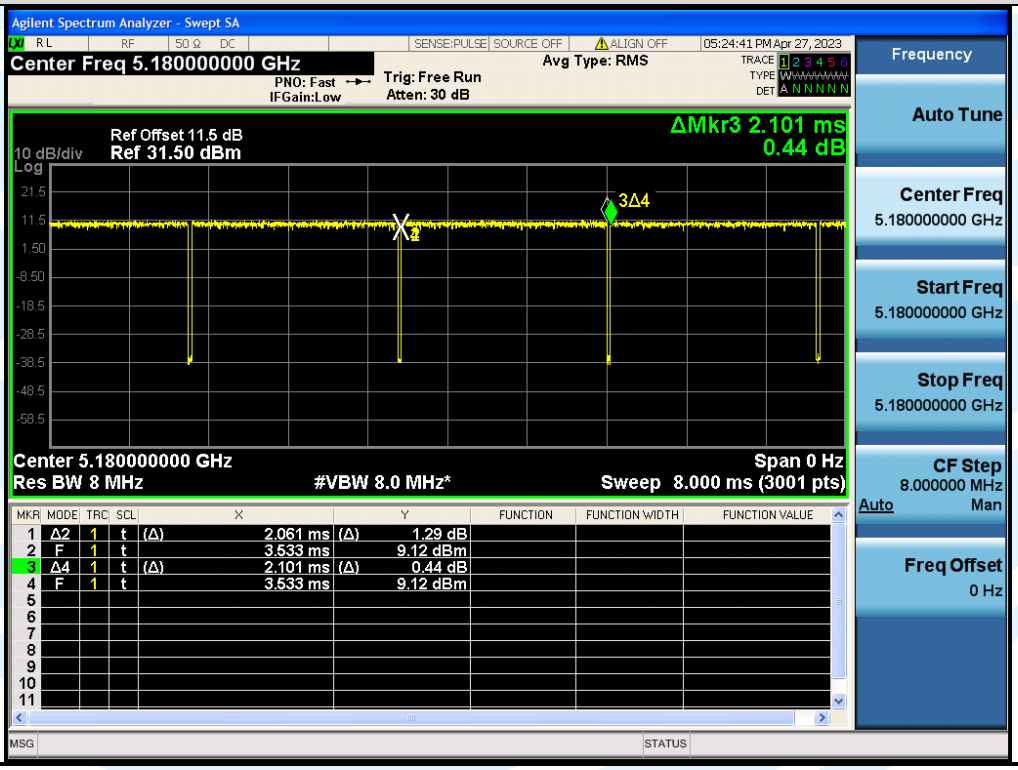
Remark:

1) Duty cycle= On Time/ Period;

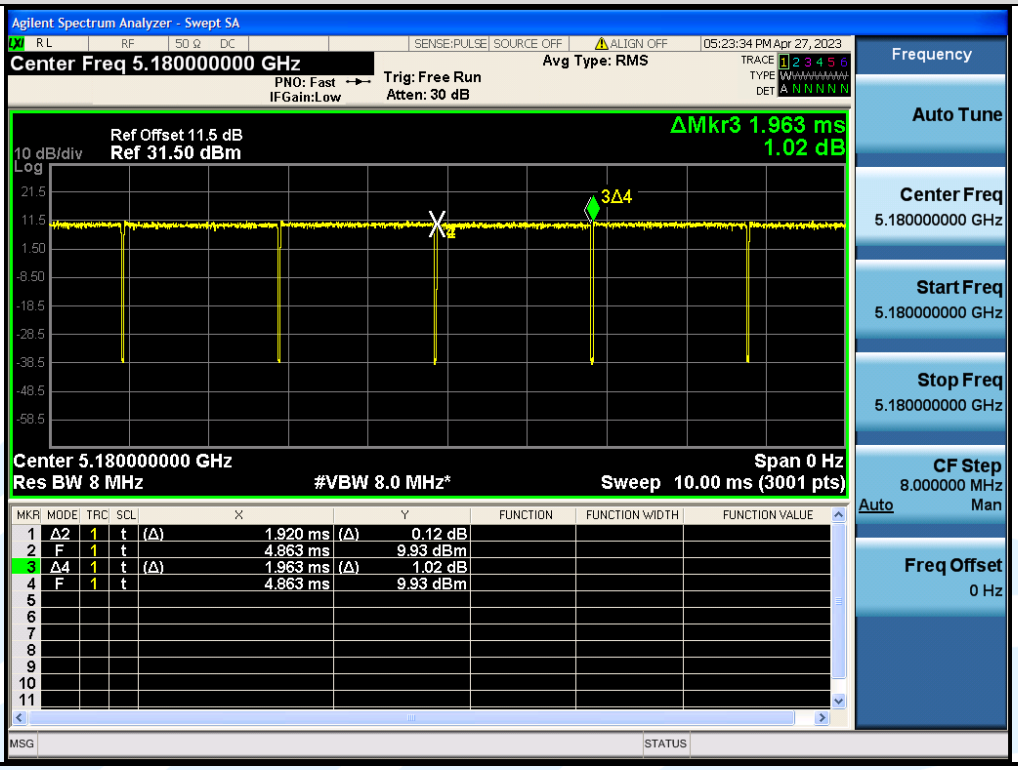
2) Duty Cycle factor = 10 * log(1/ Duty cycle)

The test plots as follows

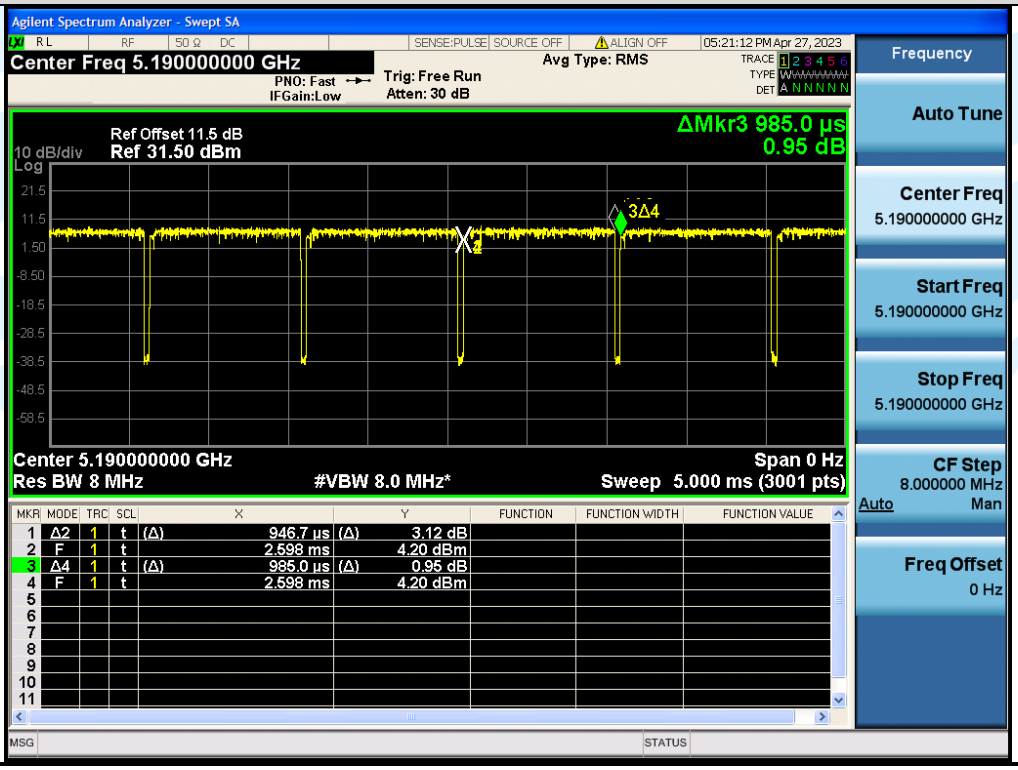
IEEE 802.11a



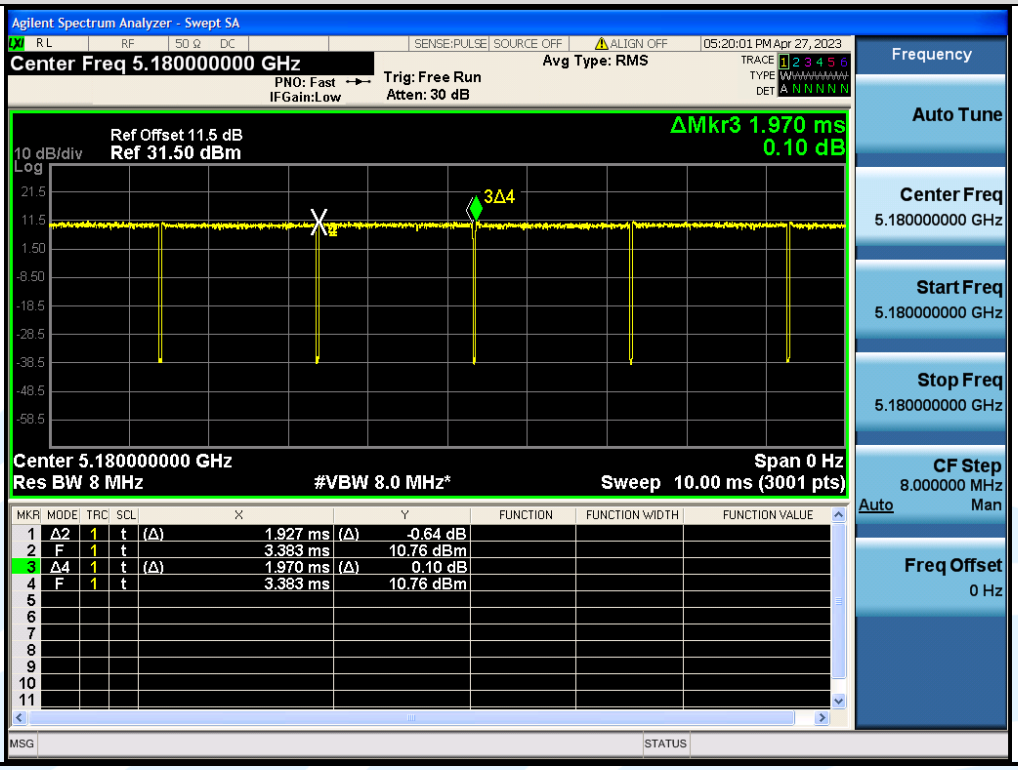
IEEE 802.11n-HT20



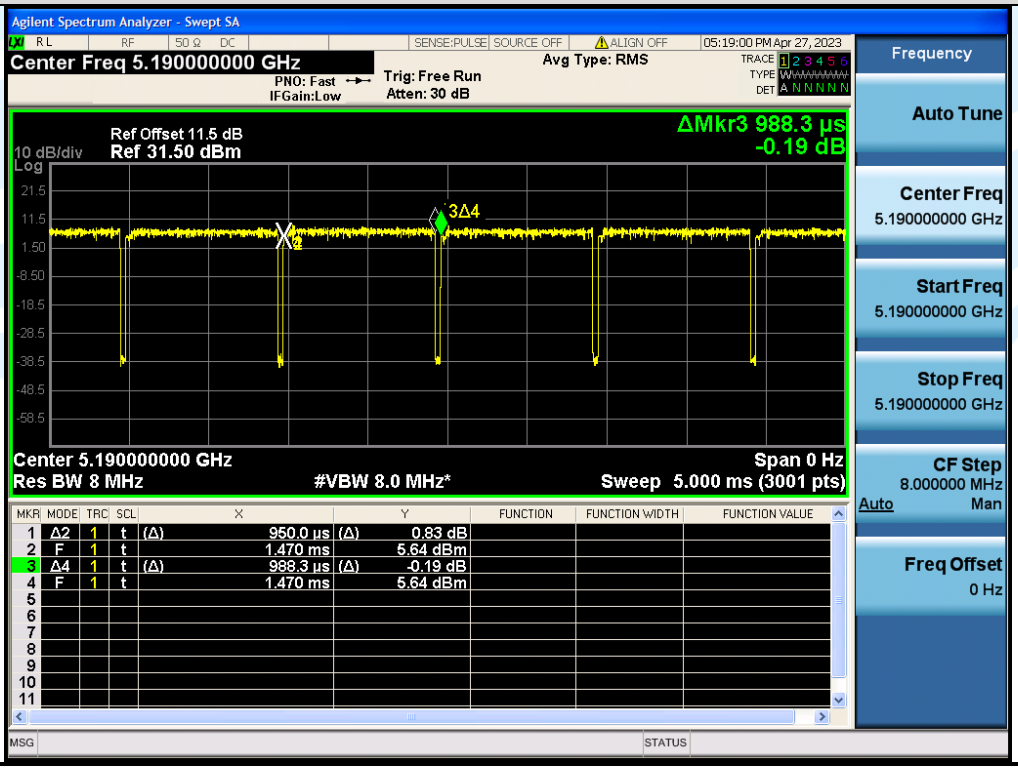
IEEE 802.11n-HT40



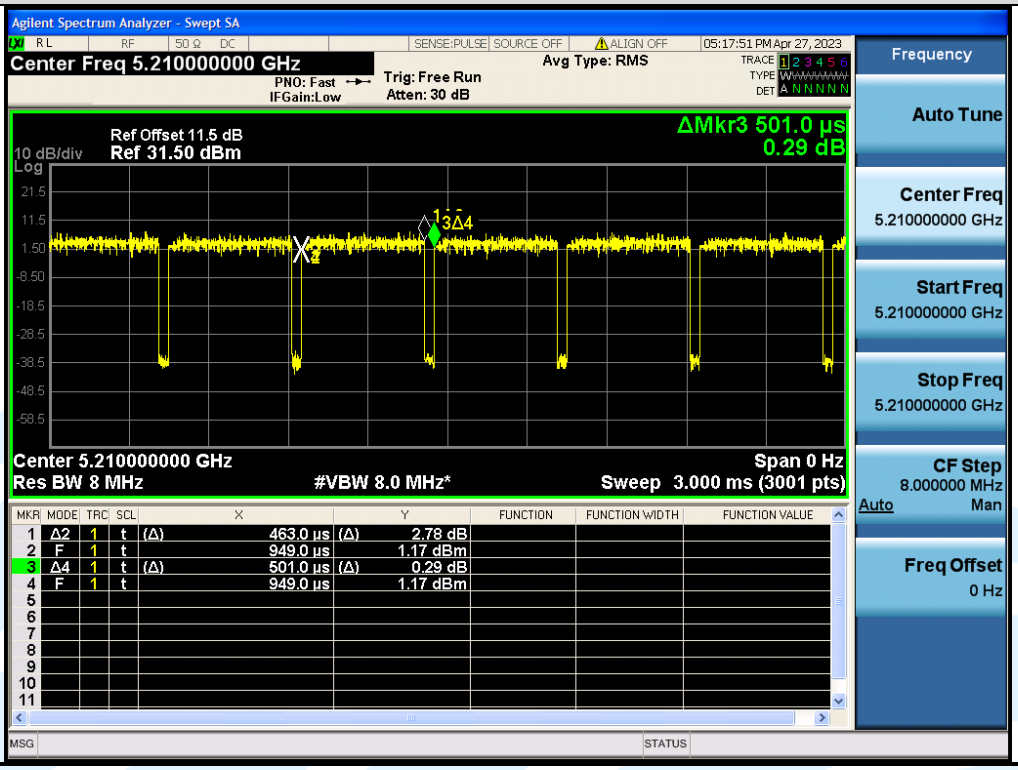
IEEE 802.11ac-VHT20



IEEE 802.11ac-VHT40



IEEE 802.11ac-VHT80



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 completely consistent, the best case directional gain of the antenna is 1.83 dBi (See section 5.5).

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 Mode: Link mode

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

5.46 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: Link mode

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)		Uncorrelated Directional gain (dBi)	Correlated Directional gain (dBi)	Limit	
	Ant .0	Ant .1	Power	PSD	Power (dBm)	PSD (dBm/ MHz or 500kHz)
U-NII-1	0.32	0.44	0.38	3.39	24	11
U-NII-2A	0.32	0.44	0.38	3.39	24	11
U-NII-2C	1.46	2.18	1.83	4.84	24	11
U-NII-3	-0.25	-0.08	-0.17	2.84	30	30

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 $\geq$ 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.]

For U-NII-2A, U-NII-2C Band:

IEEE 802.11a/n /ac: the minimum 26 dB emission bandwidth is 21.94 MHz

11 dBm + $10\log_{10}$ (21.94) = 24.41 dBm > 24 dBm (200mW)

So the 24 dBm limit applicable

Mode	Band	Ch.	Freq. (MHz)	CONDUCTED AVG POWER						
				Meas Value (dBm)		Corr'd Value (dBm)			Limit (dBm)	Result
				Ant. 0	Ant. 1	Ant. 0	Ant. 1	Total		
IEEE 802.11a	U-NII-1	36	5180	16.28	15.53	16.28	15.53	N/A	24	Pass
		44	5220	16.77	15.56	16.77	15.56		24	Pass
		48	5240	16.61	15.82	16.61	15.82		24	Pass
	U-NII-2A	52	5260	16.27	15.72	16.27	15.72		24	Pass
		60	5300	16.37	15.55	16.37	15.55		24	Pass
		64	5320	15.98	15.67	15.98	15.67		24	Pass
	U-NII-2C	100	5500	15.21	15.68	15.21	15.68		24	Pass
		120	5600	15.88	15.44	15.88	15.44		24	Pass
		140	5700	15.38	15.75	15.38	15.75		24	Pass
	U-NII-3	149	5745	15.22	15.96	15.22	15.96		30	Pass
		157	5785	14.92	15.62	14.92	15.62		30	Pass
		165	5825	14.98	15.28	14.98	15.28		30	Pass
IEEE 802.11n-HT20	U-NII-1	36	5180	12.21	11.36	12.31	11.46	14.92	24	Pass
		44	5220	12.81	11.64	12.91	11.74	15.37	24	Pass
		48	5240	12.68	11.59	12.78	11.69	15.28	24	Pass
	U-NII-2A	52	5260	12.26	11.71	12.36	11.81	15.10	24	Pass
		60	5300	12.43	11.61	12.53	11.71	15.15	24	Pass
		64	5320	11.89	11.54	11.99	11.64	14.83	24	Pass
	U-NII-2C	100	5500	11.15	11.42	11.25	11.52	14.40	24	Pass
		120	5600	11.84	11.16	11.94	11.26	14.62	24	Pass
		140	5700	11.43	11.51	11.53	11.61	14.58	24	Pass
	U-NII-3	149	5745	11.14	11.62	11.24	11.72	14.50	30	Pass
		157	5785	11.08	11.39	11.18	11.49	14.35	30	Pass
		165	5825	11.13	11.32	11.23	11.42	14.34	30	Pass
IEEE 802.11n-HT40	U-NII-1	38	5190	11.54	10.65	11.71	10.82	14.30	24	Pass
		46	5230	12.02	10.68	12.19	10.85	14.58	24	Pass
	U-NII-2A	54	5270	11.48	10.84	11.65	11.01	14.35	24	Pass
		62	5310	11.51	10.94	11.68	11.11	14.41	24	Pass
	U-NII-2C	102	5510	10.54	10.79	10.71	10.96	13.85	24	Pass
		118	5590	11.03	10.73	11.2	10.9	14.06	24	Pass
		134	5670	10.84	11.26	11.01	11.43	14.24	24	Pass
	U-NII-3	151	5755	10.38	10.96	10.55	11.13	13.86	30	Pass
		159	5795	10.38	10.88	10.55	11.05	13.82	30	Pass
IEEE 802.11ac-VHT20	U-NII-1	36	5180	12.22	11.32	12.32	11.42	14.90	24	Pass
		44	5220	12.85	11.47	12.95	11.57	15.32	24	Pass
		48	5240	12.71	11.57	12.81	11.67	15.29	24	Pass
	U-NII-2A	52	5260	12.26	11.85	12.36	11.95	15.17	24	Pass
		60	5300	12.43	11.55	12.53	11.65	15.12	24	Pass
		64	5320	11.87	11.54	11.97	11.64	14.82	24	Pass
	U-NII-2C	100	5500	11.27	11.51	11.37	11.61	14.50	24	Pass
		120	5600	11.82	11.15	11.92	11.25	14.61	24	Pass
		140	5700	11.47	11.47	11.57	11.57	14.58	24	Pass
	U-NII-3	149	5745	11.27	11.48	11.37	11.58	14.49	30	Pass
		157	5785	10.96	11.65	11.06	11.75	14.43	30	Pass
		165	5825	11.15	11.26	11.25	11.36	14.32	30	Pass

Mode	Band	Ch.	Freq. (MHz)	CONDUCTED AVG POWER						
				Meas Value (dBm)		Corr'd Value (dBm)			Limit (dBm)	Result
				Ant. 0	Ant. 1	Ant. 0	Ant. 1	Total		
IEEE 802.11ac-VHT40	U-NII-1	38	5190	11.56	10.67	11.73	10.84	14.32	24	Pass
		46	5230	12.13	10.86	12.3	11.03	14.72	24	Pass
	U-NII-2A	54	5270	11.58	11.03	11.75	11.2	14.49	24	Pass
		62	5310	11.45	10.89	11.62	11.06	14.36	24	Pass
	U-NII-2C	102	5510	10.55	10.84	10.72	11.01	13.88	24	Pass
		118	5590	10.99	10.71	11.16	10.88	14.03	24	Pass
		134	5670	10.85	11.29	11.02	11.46	14.26	24	Pass
	U-NII-3	151	5755	10.39	10.92	10.56	11.09	13.84	30	Pass
		159	5795	10.41	10.75	10.58	10.92	13.76	30	Pass
IEEE 802.11ac-VHT80	U-NII-1	42	5210	11.18	10.16	11.52	10.5	14.05	24	Pass
	U-NII-2A	58	5290	10.78	9.83	11.12	10.17	13.68	24	Pass
	U-NII-2C	106	5530	10.41	10.04	10.75	10.38	13.58	24	Pass
		122	5610	9.41	9.57	9.75	9.91	12.84	24	Pass
	U-NII-3	155	5775	11.56	10.67	11.9	11.01	14.49	30	Pass

Remark:
1. Corr'd Power = Meas Power + Duty Cycle Factor
2. Total (Ant. 0+1) = $10*\log[(10^{Ant.\ 0/10})+(10^{Ant.\ 1/10})]$

5.6 PEAK 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, U-NII-2C 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: Link mode
Test Results: **Please refer to Appendix A**

Directional gain and the maximum output power limit.

Frequency (MHz)	Antenna Gain (dBi)		Uncorrelated Directional gain (dBi)	Correlated Directional gain (dBi)	Limit	
	Ant .0	Ant .1	Power	PSD	Power (dBm)	PSD (dBm/ MHz or 500kHz)
U-NII-1	0.32	0.44	0.38	3.39	24	11
U-NII-2A	0.32	0.44	0.38	3.39	24	11
U-NII-2C	1.46	2.18	1.83	4.84	24	11
U-NII-3	-0.25	-0.08	-0.17	2.84	30	30

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

Applicable To	Limit	
789033 D02 General U-NII Test Procedures New Rules v01r04	Field Strength at 3 m	
	EIRP Limit	Equivalent Field Strength at 3 m
Applicable To	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
FCC Part 15.407 (b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
FCC Part 15.407 (b)(2)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
FCC Part 15.407 (b)(3)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
FCC Part 15.407 (b)(4)	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;	PK: 68.2 (dBμV/m)
	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;	
	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;	
	-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

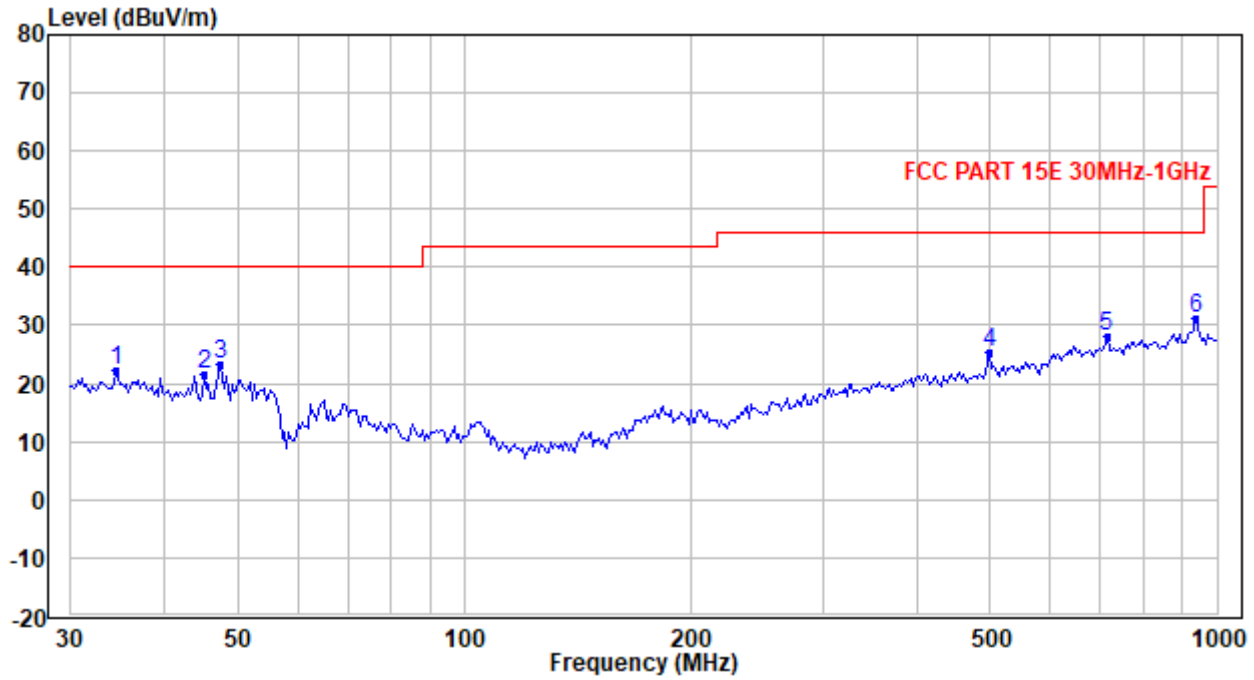
The measurement data as follows:

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):

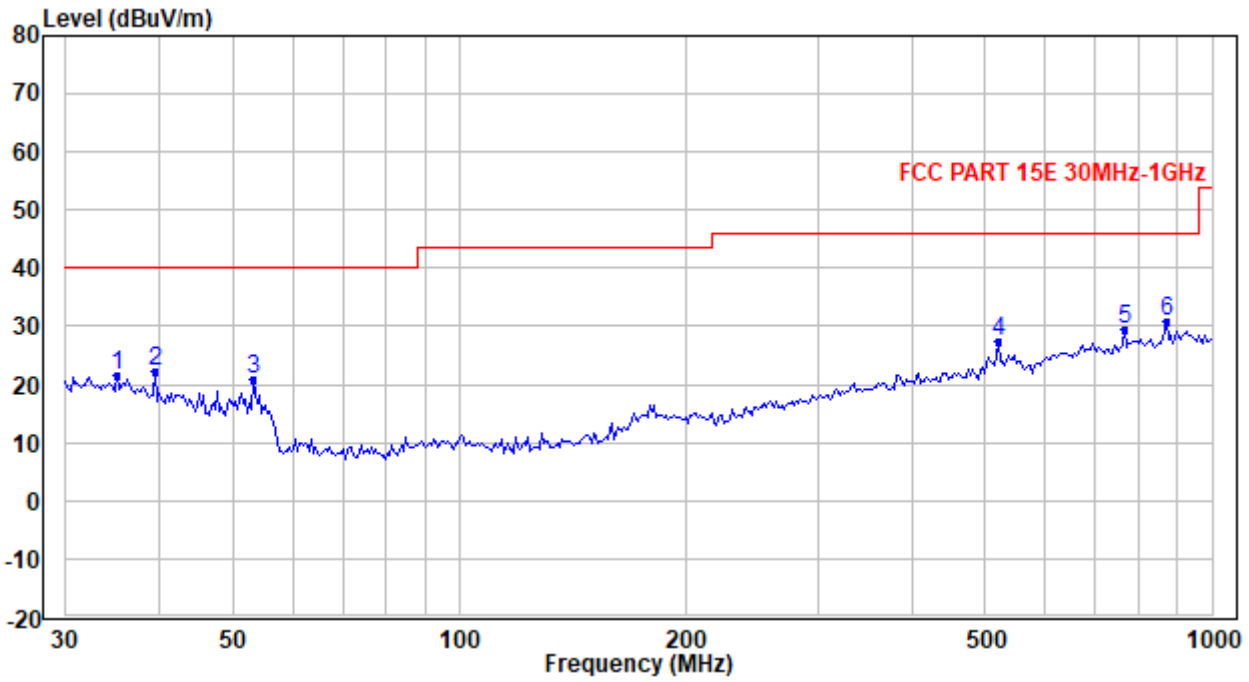
Worst-Case Configuration

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	34.527	27.8	-5.5	22.3	40.0	-17.7	QP
2	45.095	33.3	-11.5	21.7	40.0	-18.3	QP
3	47.369	36.3	-12.9	23.4	40.0	-16.7	QP
4	498.73	27.8	-2.5	25.3	46.0	-20.7	QP
5	713.692	26.7	1.2	28.0	46.0	-18.0	QP
6	938.714	26.4	4.8	31.2	46.0	-14.8	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	35.016	27.1	-5.6	21.5	40.0	-18.5	QP
2	39.459	30.0	-7.7	22.3	40.0	-17.7	QP
3	53.379	37.2	-16.2	21.0	40.0	-19.1	QP
4	520.208	29.5	-2.1	27.4	46.0	-18.6	QP
5	765.648	27.0	2.4	29.3	46.0	-16.7	QP
6	868.886	27.2	3.7	30.9	46.0	-15.1	QP

Radiated Emission Test Data (Above 1GHz): Worst-Case Configuration								
No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO_ Ant. 0_IEEE 802.11a_Channel 36								
1	10360	40.8	6.2	47.0	68.2	-21.2	Peak	Horizontal
2	10360	28.7	6.2	34.8	54	-19.2	Average	Horizontal
3	15540	37.3	11.5	48.9	74	-25.1	Peak	Horizontal
4	15540	24.0	11.5	35.6	54	-18.4	Average	Horizontal
5	10360	39.9	6.2	46.0	68.2	-22.2	Peak	Vertical
6	10360	28.7	6.2	34.8	54	-19.2	Average	Vertical
7	15540	37.1	11.5	48.6	74	-25.4	Peak	Vertical
8	15540	24.9	11.5	36.5	54	-17.5	Average	Vertical
SISO_ Ant. 0_IEEE 802.11a_Channel 44								
1	10440	39.7	6.3	46.0	68.2	-22.2	Peak	Horizontal
2	10440	28.5	6.3	34.8	54	-19.2	Average	Horizontal
3	15660	36.8	11.6	48.4	74	-25.6	Peak	Horizontal
4	15660	24.5	11.6	36.1	54	-17.9	Average	Horizontal
5	10440	39.4	6.3	45.7	68.2	-22.5	Peak	Vertical
6	10440	26.5	6.3	32.8	54	-21.2	Average	Vertical
7	15660	35.3	11.6	46.9	74	-27.1	Peak	Vertical
8	15660	24.4	11.6	36.1	54	-17.9	Average	Vertical
SISO_ Ant. 0_IEEE 802.11a_Channel 48								
1	10480	39.1	6.3	45.4	68.2	-22.8	Peak	Horizontal
2	10480	28.3	6.3	34.6	54	-19.4	Average	Horizontal
3	15720	36.5	11.7	48.2	74	-25.8	Peak	Horizontal
4	15720	24.9	11.7	36.6	54	-17.4	Average	Horizontal
5	10480	39.5	6.3	45.9	68.2	-22.3	Peak	Vertical
6	10480	28.2	6.3	34.5	54	-19.5	Average	Vertical
7	15720	35.6	11.7	47.2	74	-26.8	Peak	Vertical
8	15720	23.7	11.7	35.4	54	-18.6	Average	Vertical
SISO_ Ant. 0_IEEE 802.11a_Channel 52								
1	10520	39.1	6.4	45.5	68.2	-22.7	Peak	Horizontal
2	10520	28.2	6.4	34.6	54	-19.4	Average	Horizontal
3	15780	36.1	11.7	47.7	74	-26.3	Peak	Horizontal
4	15780	24.9	11.7	36.6	54	-17.4	Average	Horizontal
5	10520	39.3	6.4	45.7	68.2	-22.5	Peak	Vertical
6	10520	28.1	6.4	34.5	54	-19.5	Average	Vertical
7	15780	37.2	11.7	48.9	74	-25.1	Peak	Vertical
8	15780	24.8	11.7	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
SISO_ Ant. 0_IEEE 802.11a_Channel 60								
1	10600	40.2	6.6	46.8	74	-27.2	Peak	Horizontal
2	10600	28.3	6.6	34.9	54	-19.1	Average	Horizontal
3	15900	37.0	11.8	48.8	74	-25.2	Peak	Horizontal
4	15900	25.3	11.8	37.1	54	-16.9	Average	Horizontal
5	10600	40.4	6.6	47.0	74	-27.0	Peak	Vertical
6	10600	28.3	6.6	34.9	54	-19.1	Average	Vertical
7	15900	37.5	11.8	49.3	74	-24.7	Peak	Vertical
8	15900	25.3	11.8	37.0	54	-17.0	Average	Vertical
SISO_ Ant. 0_IEEE 802.11a_Channel 64								
1	10640	39.7	6.7	46.4	74	-27.6	Peak	Horizontal
2	10640	28.2	6.7	34.8	54	-19.2	Average	Horizontal
3	15960	36.7	11.8	48.5	74	-25.5	Peak	Horizontal
4	15960	23.3	11.8	35.1	54	-18.9	Average	Horizontal
5	10640	39.4	6.7	46.1	74	-27.9	Peak	Vertical
6	10640	28.2	6.7	43.8	54	-10.2	Average	Vertical
7	15960	35.2	11.8	47.0	74	-27.0	Peak	Vertical
8	15960	23.3	11.8	35.1	54	-18.9	Average	Vertical
SISO_ Ant. 0_IEEE 802.11a_Channel 100								
1	11000	38.6	7.5	46.1	74	-27.9	Peak	Horizontal
2	11000	27.0	7.5	34.6	54	-19.4	Average	Horizontal
3	16500	36.8	12.3	49.1	68.2	-19.1	Peak	Horizontal
4	16500	23.8	12.3	36.1	54	-17.9	Average	Horizontal
5	11000	38.7	7.5	46.2	74	-27.8	Peak	Vertical
6	11000	27.2	7.5	34.7	54	-19.3	Average	Vertical
7	16500	35.6	12.3	47.8	68.2	-20.4	Peak	Vertical
8	16500	23.7	12.3	36.0	54	-18.0	Average	Vertical
SISO_ Ant. 0_IEEE 802.11a_Channel 120								
1	11200	39.5	7.4	46.8	74	-27.2	Peak	Horizontal
2	11200	28.0	7.4	35.3	54	-18.7	Average	Horizontal
3	16800	36.6	12.5	49.1	68.2	-19.1	Peak	Horizontal
4	16800	23.6	12.5	36.1	54	-17.9	Average	Horizontal
5	11200	40.1	7.4	47.5	74	-26.5	Peak	Vertical
6	11200	27.9	7.4	35.2	54	-18.8	Average	Vertical
7	16800	36.8	12.5	49.3	68.2	-18.9	Peak	Vertical
8	16800	23.4	12.5	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
SISO_ Ant. 0_IEEE 802.11a_Channel 140								
1	11400	38.4	7.2	45.6	74	-28.4	Peak	Horizontal
2	11400	26.5	7.2	33.7	54	-20.3	Average	Horizontal
3	17100	36.7	12.9	49.6	68.2	-18.6	Peak	Horizontal
4	17100	23.3	12.9	36.2	54	-17.8	Average	Horizontal
5	11400	39.4	7.2	46.5	74	-27.5	Peak	Vertical
6	11400	27.4	7.2	34.6	54	-19.4	Average	Vertical
7	17100	34.9	12.9	47.8	68.2	-20.4	Peak	Vertical
8	17100	23.2	12.9	36.1	54	-17.9	Average	Vertical
SISO_ Ant. 0_IEEE 802.11a_Channel 149								
1	11490	39.8	7.1	46.9	74	-27.1	Peak	Horizontal
2	11490	27.2	7.1	34.3	54	-19.7	Average	Horizontal
3	17235	36.3	13.2	49.4	68.2	-18.8	Peak	Horizontal
4	17235	22.5	13.2	35.7	54	-18.3	Average	Horizontal
5	11490	38.7	7.1	45.8	74	-28.2	Peak	Vertical
6	11490	27.3	7.1	34.4	54	-19.6	Average	Vertical
7	17235	36.2	13.2	49.4	68.2	-18.8	Peak	Vertical
8	17235	22.4	13.2	35.5	54	-18.5	Average	Vertical
SISO_ Ant. 0_IEEE 802.11a_Channel 157								
1	11570	38.9	7.2	46.1	74	-27.9	Peak	Horizontal
2	11570	27.0	7.2	34.2	54	-19.8	Average	Horizontal
3	17355	35.9	13.4	49.3	68.2	-18.9	Peak	Horizontal
4	17355	23.0	13.4	36.4	54	-17.6	Average	Horizontal
5	11570	39.3	7.2	46.5	74	-27.5	Peak	Vertical
6	11570	27.1	7.2	34.3	54	-19.7	Average	Vertical
7	17355	36.8	13.4	50.2	68.2	-18.0	Peak	Vertical
8	17355	22.9	13.4	36.3	54	-17.7	Average	Vertical
SISO_ Ant. 0_IEEE 802.11a_Channel 165								
1	11650	38.0	7.3	45.3	74	-28.7	Peak	Horizontal
2	11650	26.0	7.3	33.3	54	-20.7	Average	Horizontal
3	17475	36.1	13.6	49.8	68.2	-18.4	Peak	Horizontal
4	17475	22.8	13.6	36.5	54	-17.5	Average	Horizontal
5	11650	38.7	7.3	46.0	74	-28.0	Peak	Vertical
6	11650	28.0	7.3	35.3	54	-18.7	Average	Vertical
7	17475	35.7	13.6	49.4	68.2	-18.8	Peak	Vertical
8	17475	22.7	13.6	36.4	54	-17.6	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 36								
1	10360	41.3	6.2	47.5	68.2	-20.7	Peak	Horizontal
2	10360	28.6	6.2	34.7	54	-19.3	Average	Horizontal
3	15540	36.7	11.5	48.3	74	-25.7	Peak	Horizontal
4	15540	24.9	11.5	36.5	54	-17.5	Average	Horizontal
5	10360	39.5	6.2	45.7	68.2	-22.5	Peak	Vertical
6	10360	28.6	6.2	34.8	54	-19.2	Average	Vertical
7	15540	37.3	11.5	48.8	74	-25.2	Peak	Vertical
8	15540	24.1	11.5	35.6	54	-18.4	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 44								
1	10440	39.4	6.3	45.7	68.2	-22.5	Peak	Horizontal
2	10440	28.4	6.3	34.6	54	-19.4	Average	Horizontal
3	15660	35.8	11.6	47.4	74	-26.6	Peak	Horizontal
4	15660	24.6	11.6	36.2	54	-17.8	Average	Horizontal
5	10440	40.2	6.3	46.4	68.2	-21.8	Peak	Vertical
6	10440	28.4	6.3	34.6	54	-19.4	Average	Vertical
7	15660	36.0	11.6	47.6	74	-26.4	Peak	Vertical
8	15660	24.6	11.6	36.2	54	-17.8	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 48								
1	10480	39.8	6.3	46.1	68.2	-22.1	Peak	Horizontal
2	10480	28.2	6.3	34.5	54	-19.5	Average	Horizontal
3	15720	35.2	11.7	46.8	74	-27.2	Peak	Horizontal
4	15720	25.0	11.7	36.7	54	-17.3	Average	Horizontal
5	10480	39.9	6.3	46.2	68.2	-22.0	Peak	Vertical
6	10480	28.3	6.3	34.6	54	-19.4	Average	Vertical
7	15720	36.3	11.7	48.0	74	-26.0	Peak	Vertical
8	15720	24.9	11.7	36.6	54	-17.4	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 52								
1	10520	39.2	6.4	45.6	68.2	-22.6	Peak	Horizontal
2	10520	28.9	6.4	35.3	54	-18.7	Average	Horizontal
3	15780	36.9	11.7	48.6	74	-25.4	Peak	Horizontal
4	15780	24.1	11.7	35.8	54	-18.2	Average	Horizontal
5	10520	39.4	6.4	45.8	68.2	-22.4	Peak	Vertical
6	10520	28.1	6.4	34.5	54	-19.5	Average	Vertical
7	15780	35.7	11.7	47.4	74	-26.6	Peak	Vertical
8	15780	25.8	11.7	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
SISO_ Ant. 1_IEEE 802.11a_Channel 60								
1	10600	41.0	6.6	47.5	74	-26.5	Peak	Horizontal
2	10600	28.4	6.6	35.0	54	-19.0	Average	Horizontal
3	15900	38.8	11.8	50.6	74	-23.4	Peak	Horizontal
4	15900	23.5	11.8	35.3	54	-18.7	Average	Horizontal
5	10600	39.5	6.6	46.1	74	-27.9	Peak	Vertical
6	10600	28.3	6.6	34.9	54	-19.1	Average	Vertical
7	15900	37.6	11.8	49.4	74	-24.6	Peak	Vertical
8	15900	23.4	11.8	35.2	54	-18.8	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 64								
1	10640	39.4	6.7	46.1	74	-27.9	Peak	Horizontal
2	10640	27.2	6.7	33.9	54	-20.1	Average	Horizontal
3	15960	33.9	11.8	45.7	74	-28.3	Peak	Horizontal
4	15960	23.4	11.8	35.2	54	-18.8	Average	Horizontal
5	10640	38.6	6.7	45.3	74	-28.7	Peak	Vertical
6	10640	27.4	6.7	34.1	54	-19.9	Average	Vertical
7	15960	36.6	11.8	48.4	74	-25.6	Peak	Vertical
8	15960	23.4	11.8	35.2	54	-18.8	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 100								
1	11000	38.2	7.5	45.7	74	-28.3	Peak	Horizontal
2	11000	27.1	7.5	34.6	54	-19.4	Average	Horizontal
3	16500	36.0	12.3	48.2	68.2	-20.0	Peak	Horizontal
4	16500	23.9	12.3	36.2	54	-17.8	Average	Horizontal
5	11000	38.8	7.5	46.3	74	-27.7	Peak	Vertical
6	11000	27.2	7.5	34.7	54	-19.3	Average	Vertical
7	16500	35.4	12.3	47.6	68.2	-20.6	Peak	Vertical
8	16500	23.9	12.3	36.2	54	-17.8	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 120								
1	11200	39.5	7.4	46.9	74	-27.1	Peak	Horizontal
2	11200	28.1	7.4	35.4	54	-18.6	Average	Horizontal
3	16800	36.7	12.5	49.2	68.2	-19.0	Peak	Horizontal
4	16800	23.8	12.5	36.3	54	-17.7	Average	Horizontal
5	11200	39.8	7.4	47.1	74	-26.9	Peak	Vertical
6	11200	28.1	7.4	35.4	54	-18.6	Average	Vertical
7	16800	36.9	12.5	49.4	68.2	-18.8	Peak	Vertical
8	16800	23.7	12.5	36.2	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
SISO_ Ant. 1_IEEE 802.11a_Channel 140								
1	11400	38.8	7.2	46.0	74	-28.0	Peak	Horizontal
2	11400	33.8	7.2	33.8	54	-20.2	Average	Horizontal
3	17100	37.3	12.9	50.2	68.2	-18.0	Peak	Horizontal
4	17100	36.2	12.9	36.2	54	-17.8	Average	Horizontal
5	11400	38.7	7.2	45.9	74	-28.1	Peak	Vertical
6	11400	26.6	7.2	33.8	54	-20.2	Average	Vertical
7	17100	36.5	12.9	49.4	68.2	-18.8	Peak	Vertical
8	17100	23.3	12.9	36.2	54	-17.8	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 149								
1	11490	39.0	7.1	46.1	74	-27.9	Peak	Horizontal
2	11490	27.1	7.1	34.2	54	-19.8	Average	Horizontal
3	17235	34.8	13.2	48.0	68.2	-20.2	Peak	Horizontal
4	17235	22.7	13.2	35.9	54	-18.1	Average	Horizontal
5	11490	39.2	7.1	46.3	74	-27.7	Peak	Vertical
6	11490	27.3	7.1	34.4	54	-19.6	Average	Vertical
7	17235	34.6	13.2	47.7	68.2	-20.5	Peak	Vertical
8	17235	23.6	13.2	36.8	54	-17.2	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 157								
1	11570	39.2	7.2	46.4	74	-27.6	Peak	Horizontal
2	11570	26.1	7.2	33.3	54	-20.7	Average	Horizontal
3	17355	36.3	13.4	49.7	68.2	-18.5	Peak	Horizontal
4	17355	22.9	13.4	36.3	54	-17.7	Average	Horizontal
5	11570	38.1	7.2	45.3	74	-28.7	Peak	Vertical
6	11570	27.0	7.2	34.2	54	-19.8	Average	Vertical
7	17355	35.4	13.4	48.8	68.2	-19.4	Peak	Vertical
8	17355	22.9	13.4	36.3	54	-17.7	Average	Vertical
SISO_ Ant. 1_IEEE 802.11a_Channel 165								
1	11650	39.6	7.3	46.9	74	-27.1	Peak	Horizontal
2	11650	26.0	7.3	33.3	54	-20.7	Average	Horizontal
3	17475	36.0	13.6	49.6	68.2	-18.6	Peak	Horizontal
4	17475	22.8	13.6	36.5	54	-17.5	Average	Horizontal
5	11650	39.3	7.3	46.7	74	-27.3	Peak	Vertical
6	11650	25.9	7.3	33.2	54	-20.8	Average	Vertical
7	17475	36.1	13.6	49.7	68.2	-18.5	Peak	Vertical
8	17475	22.8	13.6	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. 0+1_IEEE 802.11n-HT20_Channel 36								
1	10360	39.1	6.2	45.3	68.2	-22.9	Peak	Horizontal
2	10360	28.6	6.2	34.7	54	-19.3	Average	Horizontal
3	15540	34.6	11.5	46.1	74	-27.9	Peak	Horizontal
4	15540	24.1	11.5	35.6	54	-18.4	Average	Horizontal
5	10360	40.6	6.2	46.8	68.2	-21.4	Peak	Vertical
6	10360	27.6	6.2	33.8	54	-20.2	Average	Vertical
7	15540	35.3	11.5	46.8	74	-27.2	Peak	Vertical
8	15540	25.0	11.5	36.6	54	-17.4	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 44								
1	10440	40.6	6.3	46.9	68.2	-21.3	Peak	Horizontal
2	10440	26.3	6.3	32.6	54	-21.4	Average	Horizontal
3	15660	37.3	11.6	48.9	74	-25.1	Peak	Horizontal
4	15660	24.5	11.6	36.1	54	-17.9	Average	Horizontal
5	10440	40.0	6.3	46.2	68.2	-22.0	Peak	Vertical
6	10440	27.4	6.3	33.7	54	-20.3	Average	Vertical
7	15660	35.8	11.6	47.4	74	-26.6	Peak	Vertical
8	15660	24.5	11.6	36.1	54	-17.9	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 48								
1	10480	39.9	6.3	46.3	68.2	-21.9	Peak	Horizontal
2	10480	28.2	6.3	34.5	54	-19.5	Average	Horizontal
3	15720	36.4	11.7	48.0	74	-26.0	Peak	Horizontal
4	15720	24.0	11.7	35.7	54	-18.3	Average	Horizontal
5	10480	39.3	6.3	45.6	68.2	-22.6	Peak	Vertical
6	10480	28.3	6.3	34.6	54	-19.4	Average	Vertical
7	15720	35.1	11.7	46.8	74	-27.2	Peak	Vertical
8	15720	23.9	11.7	35.6	54	-18.4	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 52								
1	10520	40.2	6.4	46.6	68.2	-21.6	Peak	Horizontal
2	10520	28.9	6.4	35.3	54	-18.7	Average	Horizontal
3	15780	37.3	11.7	49.0	74	-25.0	Peak	Horizontal
4	15780	26.1	11.7	37.8	54	-16.2	Average	Horizontal
5	10520	41.0	6.4	47.4	68.2	-20.8	Peak	Vertical
6	10520	28.1	6.4	34.5	54	-19.5	Average	Vertical
7	15780	37.5	11.7	49.2	74	-24.8	Peak	Vertical
8	15780	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. 0+1_IEEE 802.11n-HT20_Channel 60								
1	10600	38.6	6.6	45.2	74	-28.8	Peak	Horizontal
2	10600	28.3	6.6	34.9	54	-19.1	Average	Horizontal
3	15900	36.3	11.8	48.1	74	-25.9	Peak	Horizontal
4	15900	23.5	11.8	35.3	54	-18.7	Average	Horizontal
5	10600	40.6	6.6	47.2	74	-26.8	Peak	Vertical
6	10600	28.4	6.6	35.0	54	-19.0	Average	Vertical
7	15900	38.0	11.8	49.8	74	-24.2	Peak	Vertical
8	15900	23.4	11.8	35.2	54	-18.8	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 64								
1	10640	39.4	6.7	46.1	74	-27.9	Peak	Horizontal
2	10640	28.2	6.7	34.8	54	-19.2	Average	Horizontal
3	15960	35.8	11.8	47.6	74	-26.4	Peak	Horizontal
4	15960	23.4	11.8	35.2	54	-18.8	Average	Horizontal
5	10640	39.4	6.7	46.1	74	-27.9	Peak	Vertical
6	10640	28.2	6.7	34.9	54	-19.1	Average	Vertical
7	15960	36.7	11.8	48.5	74	-25.5	Peak	Vertical
8	15960	23.3	11.8	35.1	54	-18.9	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 100								
1	11000	38.1	7.5	45.7	74	-28.3	Peak	Horizontal
2	11000	27.0	7.5	34.6	54	-19.4	Average	Horizontal
3	16500	35.8	12.3	48.1	68.2	-20.1	Peak	Horizontal
4	16500	23.9	12.3	36.2	54	-17.8	Average	Horizontal
5	11000	39.0	7.5	46.5	74	-27.5	Peak	Vertical
6	11000	27.2	7.5	34.7	54	-19.3	Average	Vertical
7	16500	35.8	12.3	48.0	68.2	-20.2	Peak	Vertical
8	16500	23.8	12.3	36.1	54	-17.9	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 120								
1	11200	39.3	7.4	46.7	74	-27.3	Peak	Horizontal
2	11200	28.0	7.4	35.4	54	-18.6	Average	Horizontal
3	16800	36.7	12.5	49.2	68.2	-19.0	Peak	Horizontal
4	16800	23.6	12.5	36.1	54	-17.9	Average	Horizontal
5	11200	39.6	7.4	46.9	74	-27.1	Peak	Vertical
6	11200	28.0	7.4	35.4	54	-18.6	Average	Vertical
7	16800	36.0	12.5	48.5	68.2	-19.7	Peak	Vertical
8	16800	23.6	12.5	36.1	54	-17.9	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 140								
1	11400	38.7	7.2	45.9	74	-28.1	Peak	Horizontal
2	11400	27.5	7.2	34.7	54	-19.3	Average	Horizontal
3	17100	35.5	12.9	48.4	68.2	-19.8	Peak	Horizontal
4	17100	23.3	12.9	36.2	54	-17.8	Average	Horizontal
5	11400	38.3	7.2	45.5	74	-28.5	Peak	Vertical
6	11400	26.5	7.2	33.7	54	-20.3	Average	Vertical
7	17100	34.1	12.9	47.0	68.2	-21.2	Peak	Vertical
8	17100	23.3	12.9	36.2	54	-17.8	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 149								
1	11490	38.5	7.1	45.6	74	-28.4	Peak	Horizontal
2	11490	27.2	7.1	34.3	54	-19.7	Average	Horizontal
3	17235	36.5	13.2	49.6	68.2	-18.6	Peak	Horizontal
4	17235	22.7	13.2	35.9	54	-18.1	Average	Horizontal
5	11490	39.3	7.1	46.4	74	-27.6	Peak	Vertical
6	11490	27.2	7.1	34.3	54	-19.7	Average	Vertical
7	17235	36.5	13.2	49.7	68.2	-18.5	Peak	Vertical
8	17235	23.6	13.2	36.8	54	-17.2	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 157								
1	11570	37.7	7.2	44.9	74	-29.1	Peak	Horizontal
2	11570	27.1	7.2	34.3	54	-19.7	Average	Horizontal
3	17355	35.4	13.4	48.8	68.2	-19.4	Peak	Horizontal
4	17355	23.1	13.4	36.5	54	-17.5	Average	Horizontal
5	11570	38.4	7.2	45.6	74	-28.4	Peak	Vertical
6	11570	27.1	7.2	34.3	54	-19.7	Average	Vertical
7	17355	34.9	13.4	48.3	68.2	-19.9	Peak	Vertical
8	17355	23.0	13.4	36.4	54	-17.6	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT20_Channel 165								
1	11650	38.7	7.3	46.0	74	-28.0	Peak	Horizontal
2	11650	26.0	7.3	33.3	54	-20.7	Average	Horizontal
3	17475	35.8	13.6	49.4	68.2	-18.8	Peak	Horizontal
4	17475	22.8	13.6	36.5	54	-17.5	Average	Horizontal
5	11650	38.5	7.3	45.8	74	-28.2	Peak	Vertical
6	11650	26.0	7.3	33.3	54	-20.7	Average	Vertical
7	17475	35.9	13.6	49.5	68.2	-18.7	Peak	Vertical
8	17475	22.7	13.6	36.4	54	-17.6	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 0+1_IEEE 802.11n-HT40_Channel 38								
1	10380	39.5	6.2	45.7	68.2	-22.5	Peak	Horizontal
2	10380	28.5	6.2	34.7	54	-19.3	Average	Horizontal
3	15570	37.8	11.6	49.3	74	-24.7	Peak	Horizontal
4	15570	25.1	11.6	36.6	54	-17.4	Average	Horizontal
5	10380	40.7	6.2	46.9	68.2	-21.3	Peak	Vertical
6	10380	28.5	6.2	24.7	54	-29.3	Average	Vertical
7	15570	37.1	11.6	48.6	74	-25.4	Peak	Vertical
8	15570	24.0	11.6	35.6	54	-18.4	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT40_Channel 46								
1	10460	40.0	6.3	46.2	68.2	-22.0	Peak	Horizontal
2	10460	28.3	6.3	34.6	54	-19.4	Average	Horizontal
3	15690	36.2	11.6	47.8	74	-26.2	Peak	Horizontal
4	15690	24.5	11.6	36.1	54	-17.9	Average	Horizontal
5	10460	40.4	6.3	46.7	68.2	-21.5	Peak	Vertical
6	10460	28.4	6.3	34.6	54	-19.4	Average	Vertical
7	15690	35.0	11.6	46.6	74	-27.4	Peak	Vertical
8	15690	24.6	11.6	36.2	54	-17.8	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT40_Channel 54								
1	10540	40.2	6.4	46.6	68.2	-21.6	Peak	Horizontal
2	10540	28.0	6.4	34.4	54	-19.6	Average	Horizontal
3	15810	35.0	11.7	46.7	74	-27.3	Peak	Horizontal
4	15810	23.5	11.7	35.3	54	-18.7	Average	Horizontal
5	10540	40.1	6.4	46.5	68.2	-21.7	Peak	Vertical
6	10540	28.0	6.4	34.4	54	-19.6	Average	Vertical
7	15810	37.4	11.7	49.1	74	-24.9	Peak	Vertical
8	15810	23.4	11.7	35.2	54	-18.8	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT40_Channel 62								
1	10620	40.5	6.6	47.2	74	-26.8	Peak	Horizontal
2	10620	28.2	6.6	34.8	54	-19.2	Average	Horizontal
3	15930	35.7	11.8	47.5	74	-26.5	Peak	Horizontal
4	15930	23.4	11.8	35.2	54	-18.8	Average	Horizontal
5	10620	40.7	6.6	47.4	74	-26.6	Peak	Vertical
6	10620	28.2	6.6	34.8	54	-19.2	Average	Vertical
7	15930	34.9	11.8	46.7	74	-27.3	Peak	Vertical
8	15930	23.4	11.8	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. 0+1_IEEE 802.11n-HT40_Channel 102								
1	11020	39.2	7.5	46.7	74	-27.3	Peak	Horizontal
2	11020	27.1	7.5	34.6	54	-19.4	Average	Horizontal
3	16530	36.0	12.3	48.3	68.2	-19.9	Peak	Horizontal
4	16530	24.0	12.3	36.3	54	-17.7	Average	Horizontal
5	11020	38.7	7.5	46.2	74	-27.8	Peak	Vertical
6	11020	27.1	7.5	34.6	54	-19.4	Average	Vertical
7	16530	37.0	12.3	49.3	68.2	-18.9	Peak	Vertical
8	16530	23.8	12.3	36.1	54	-17.9	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT40_Channel 118								
1	11180	39.0	7.4	46.3	74	-27.7	Peak	Horizontal
2	11180	27.9	7.4	35.3	54	-18.7	Average	Horizontal
3	16770	34.7	12.5	47.2	68.2	-21.0	Peak	Horizontal
4	16770	23.6	12.5	36.1	54	-17.9	Average	Horizontal
5	11180	39.0	7.4	46.4	74	-27.6	Peak	Vertical
6	11180	27.9	7.4	35.3	54	-18.7	Average	Vertical
7	16770	34.6	12.5	47.1	68.2	-21.1	Peak	Vertical
8	16770	23.7	12.5	36.2	54	-17.8	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT40_Channel 134								
1	11340	39.7	7.2	47.0	74	-27.0	Peak	Horizontal
2	11340	26.8	7.2	34.0	54	-20.0	Average	Horizontal
3	17010	34.6	12.7	47.3	68.2	-20.9	Peak	Horizontal
4	17010	23.2	12.7	35.9	54	-18.1	Average	Horizontal
5	11340	39.5	7.2	46.7	74	-27.3	Peak	Vertical
6	11340	26.9	7.2	34.1	54	-19.9	Average	Vertical
7	17010	36.3	12.7	49.0	68.2	-19.2	Peak	Vertical
8	17010	23.4	12.7	36.1	54	-17.9	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11n-HT40_Channel 151								
1	11510	39.2	7.1	46.3	74	-27.7	Peak	Horizontal
2	11510	27.2	7.1	34.3	54	-19.7	Average	Horizontal
3	17265	34.7	13.2	48.0	68.2	-20.2	Peak	Horizontal
4	17265	22.5	13.2	35.8	54	-18.2	Average	Horizontal
5	11510	39.2	7.1	46.3	74	-27.7	Peak	Vertical
6	11510	27.2	7.1	34.3	54	-19.7	Average	Vertical
7	17265	34.3	13.2	47.5	68.2	-20.7	Peak	Vertical
8	17265	22.5	13.2	35.8	54	-18.2	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 0+1_IEEE 802.11n-HT40_Channel 159								
1	11590	39.3	7.2	46.5	74	-27.5	Peak	Horizontal
2	11590	26.9	7.2	34.2	54	-19.8	Average	Horizontal
3	17385	34.2	13.5	47.6	68.2	-20.6	Peak	Horizontal
4	17385	22.8	13.5	36.3	54	-17.7	Average	Horizontal
5	11590	38.4	7.2	45.7	74	-28.3	Peak	Vertical
6	11590	26.9	7.2	34.2	54	-19.8	Average	Vertical
7	17385	35.0	13.5	48.5	68.2	-19.7	Peak	Vertical
8	17385	22.8	13.5	36.3	54	-17.7	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 0+1_IEEE 802.11ac-VHT80_Channel 42								
1	10420	40.2	6.3	46.5	68.2	-21.7	Peak	Horizontal
2	10420	28.2	6.3	34.5	54	-19.5	Average	Horizontal
3	15630	36.5	11.6	48.1	74	-25.9	Peak	Horizontal
4	15630	24.6	11.6	36.2	54	-17.8	Average	Horizontal
5	10420	40.2	6.3	46.5	68.2	-21.7	Peak	Vertical
6	10420	28.3	6.3	34.6	54	-19.4	Average	Vertical
7	15630	38.0	11.6	49.6	74	-24.4	Peak	Vertical
8	15630	24.6	11.6	36.2	54	-17.8	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11ac-VHT80_Channel 58								
1	10580	39.2	6.5	45.7	68.2	-22.5	Peak	Horizontal
2	10580	22.8	6.5	29.3	54	-24.7	Average	Horizontal
3	15870	35.5	11.8	47.2	74	-26.8	Peak	Horizontal
4	15870	23.4	11.8	35.2	54	-18.8	Average	Horizontal
5	10580	40.2	6.5	46.7	68.2	-21.5	Peak	Vertical
6	10580	26.9	6.5	33.4	54	-20.6	Average	Vertical
7	15870	34.9	11.8	46.7	74	-27.3	Peak	Vertical
8	15870	23.6	11.8	35.4	54	-18.6	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11ac-VHT80_Channel 106								
1	11060	39.8	7.5	47.3	74	-26.7	Peak	Horizontal
2	11060	28.8	7.5	36.3	54	-17.7	Average	Horizontal
3	16590	36.6	12.3	48.9	68.2	-19.3	Peak	Horizontal
4	16590	24.1	12.3	36.4	54	-17.6	Average	Horizontal
5	11060	39.8	7.5	47.3	74	-26.7	Peak	Vertical
6	11060	28.9	7.5	36.4	54	-17.6	Average	Vertical
7	16590	38.4	12.3	50.8	68.2	-17.4	Peak	Vertical
8	16590	24.1	12.3	36.4	54	-17.6	Average	Vertical

No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_ Ant. 0+1_IEEE 802.11ac-VHT80_Channel 122								
1	11220	40.1	7.3	47.5	74	-26.5	Peak	Horizontal
2	11220	28.7	7.3	36.0	54	-18.0	Average	Horizontal
3	16830	37.1	12.5	49.7	68.2	-18.5	Peak	Horizontal
4	16830	25.3	12.5	37.8	54	-16.2	Average	Horizontal
5	11220	41.0	7.3	48.3	74	-25.7	Peak	Vertical
6	11220	26.7	7.3	34.1	54	-19.9	Average	Vertical
7	16830	36.6	12.5	49.2	68.2	-19.0	Peak	Vertical
8	16830	25.3	12.5	37.9	54	-16.1	Average	Vertical
MIMO_ Ant. 0+1_IEEE 802.11ac-VHT80_Channel 155								
1	11550	39.5	7.2	46.6	74	-27.4	Peak	Horizontal
2	11550	28.1	7.2	35.2	54	-18.8	Average	Horizontal
3	17325	37.5	13.3	50.8	68.2	-17.4	Peak	Horizontal
4	17325	23.7	13.3	37.1	54	-16.9	Average	Horizontal
5	11550	39.8	7.2	47.0	74	-27.0	Peak	Vertical
6	11550	28.0	7.2	35.1	54	-18.9	Average	Vertical
7	17325	36.9	13.3	50.3	68.2	-17.9	Peak	Vertical
8	17325	23.6	13.3	37.0	54	-17.0	Average	Vertical

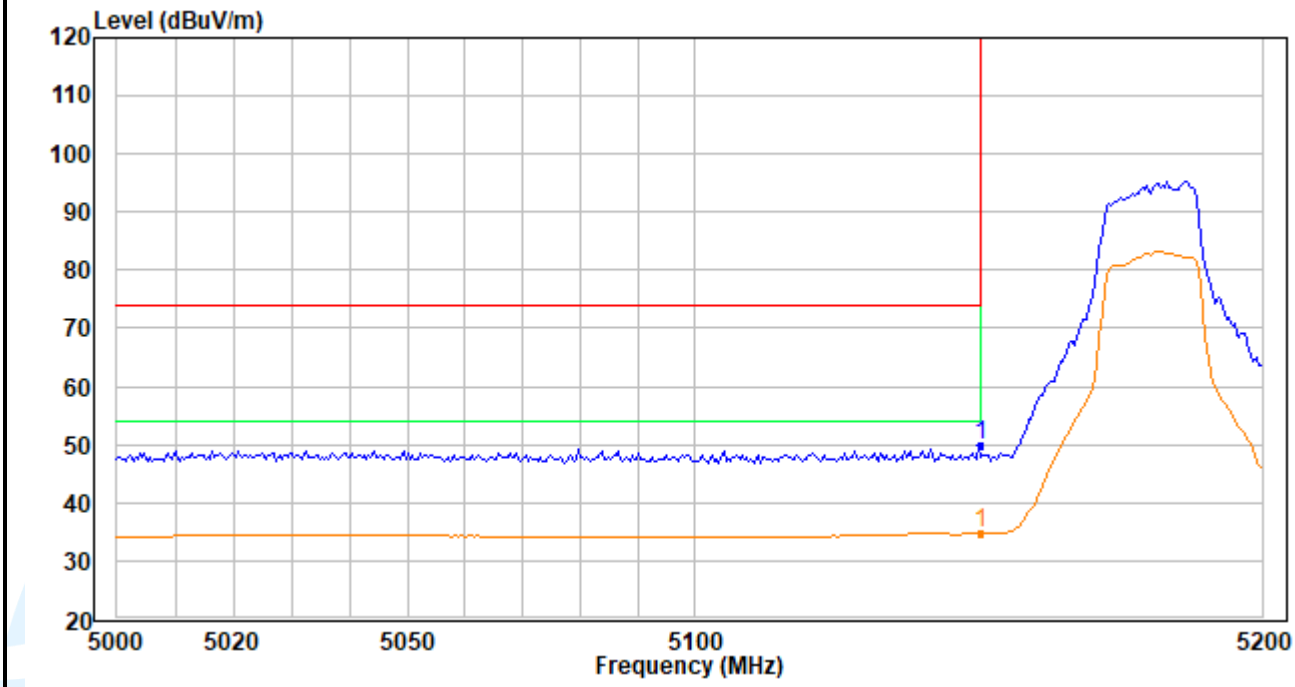
Remark:

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): Worst-Case Configuration

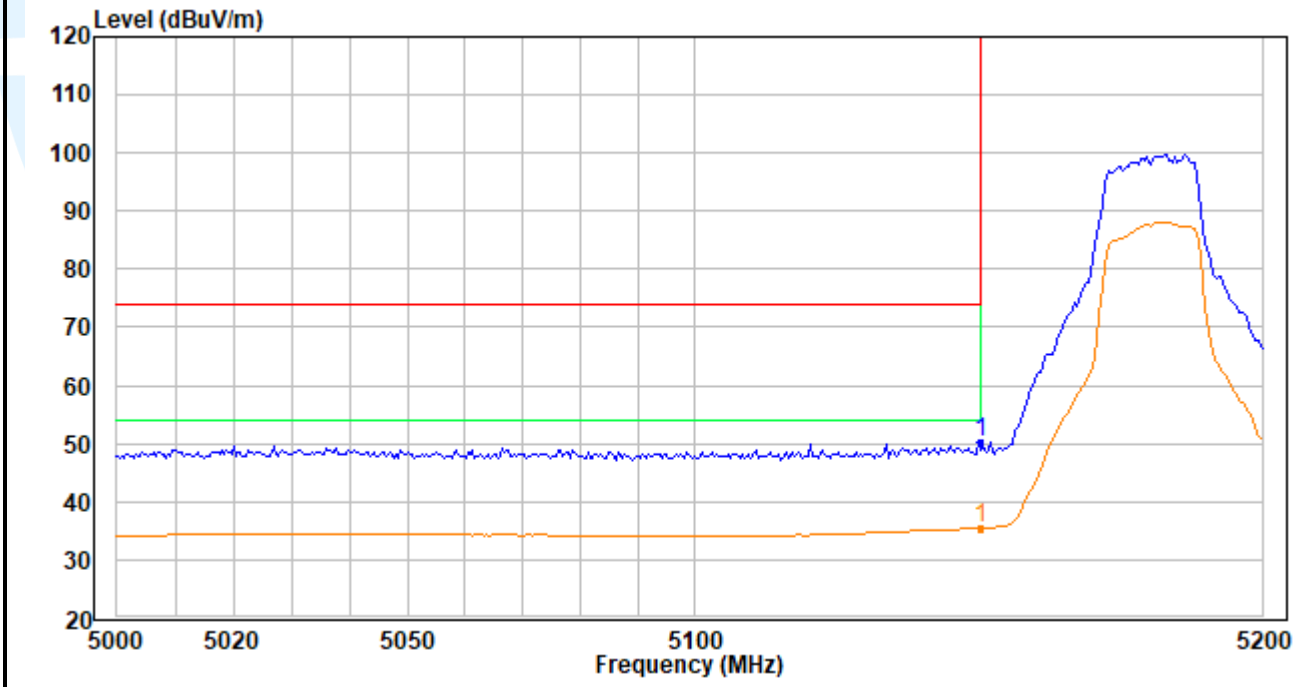
SISO_Ant. 0_IEEE 802.11a

Test Channel:	Channel 36	Ant. Polar. :	Horizontal



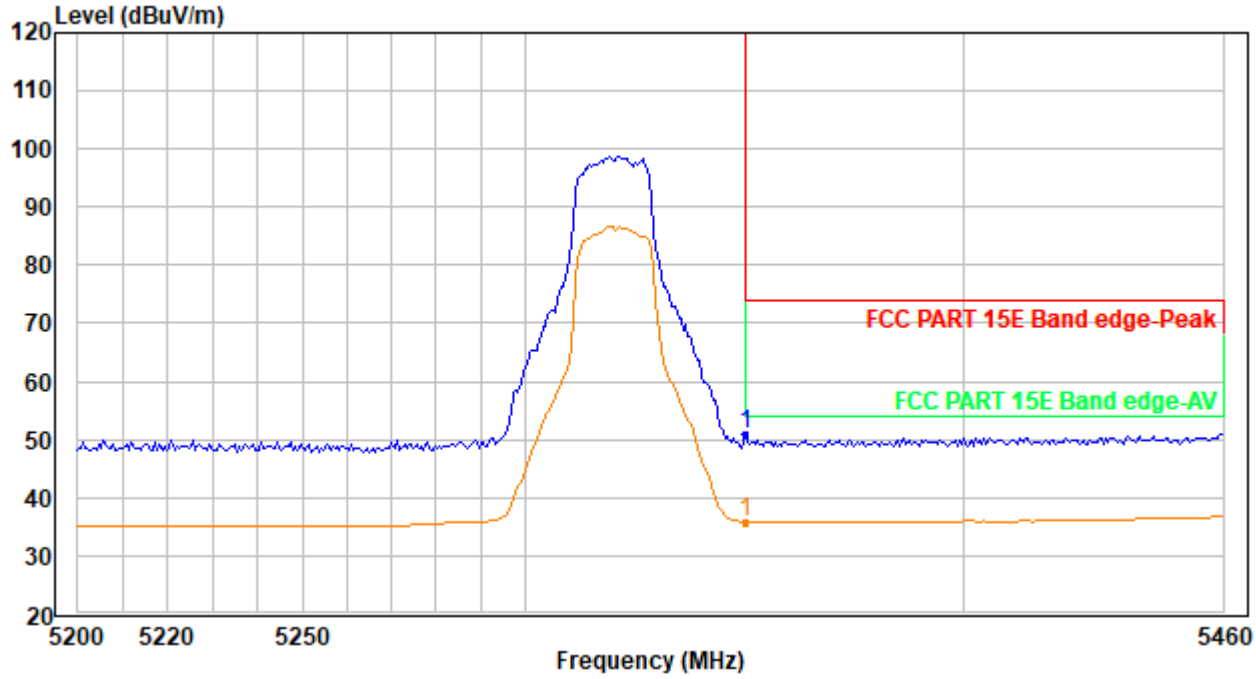
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	49.86	74.00	34.69	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical



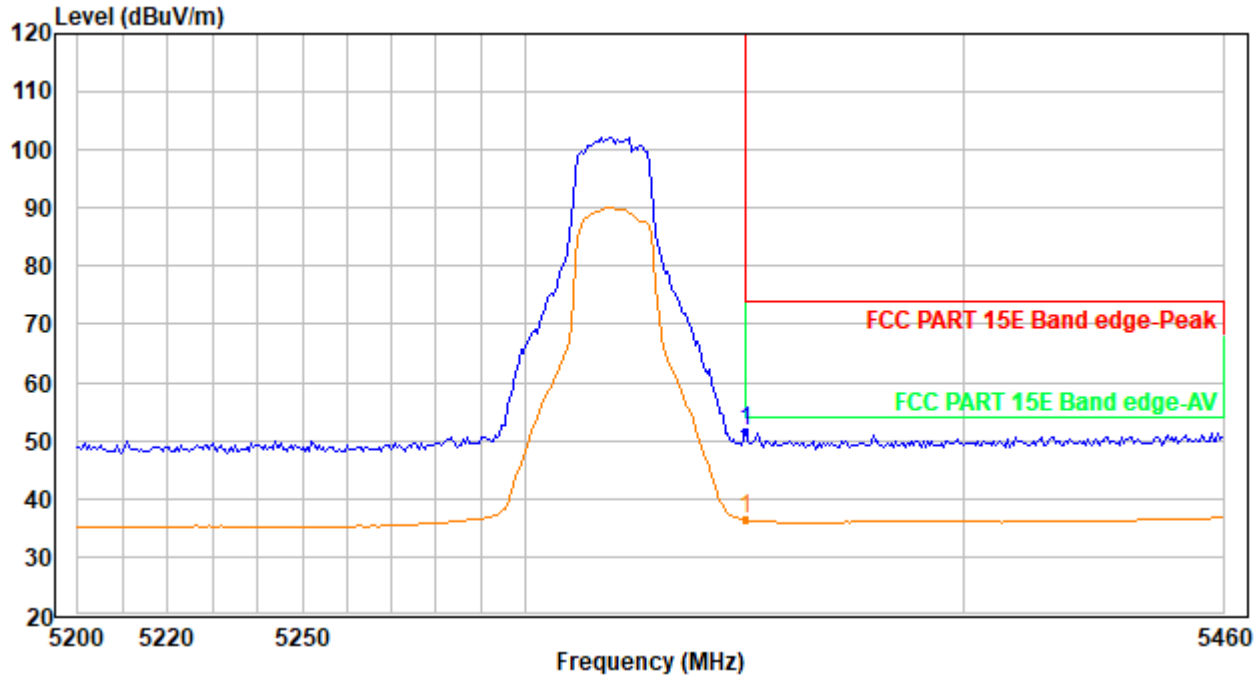
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	50.36	74.00	35.53	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Horizontal



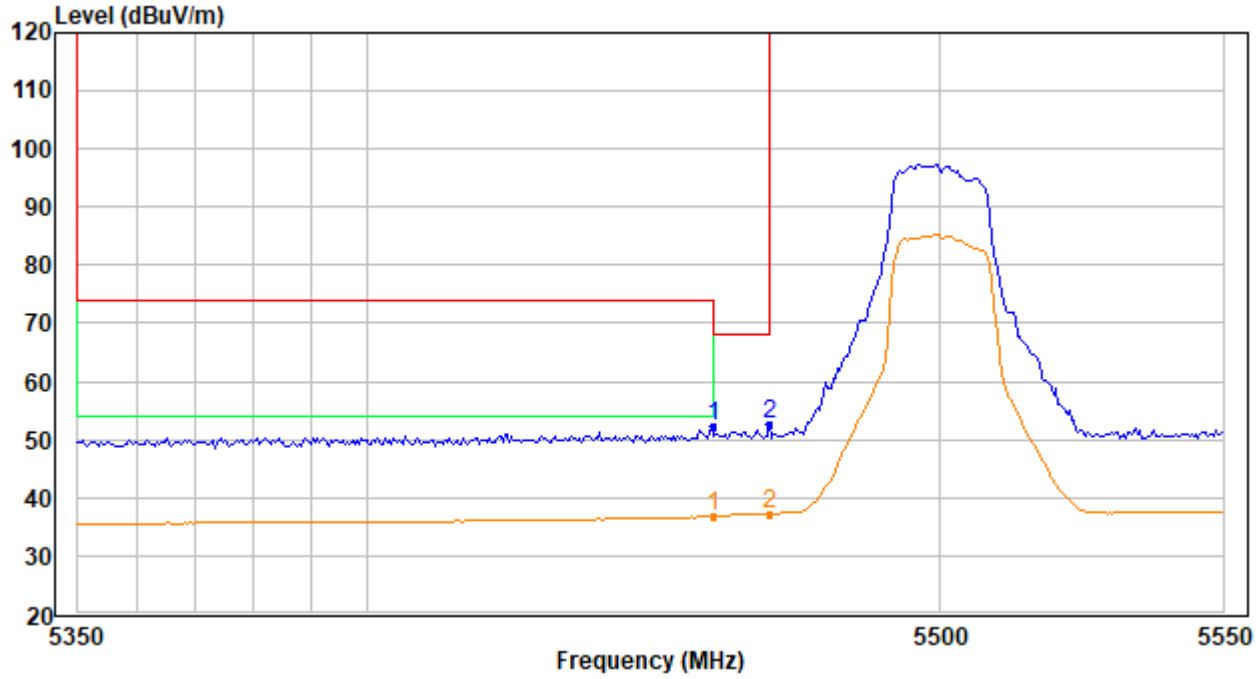
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	51.75	74.00	36.37	54.00	Pass

Test Channel:	Channel 64	Ant. Polar. :	Vertical



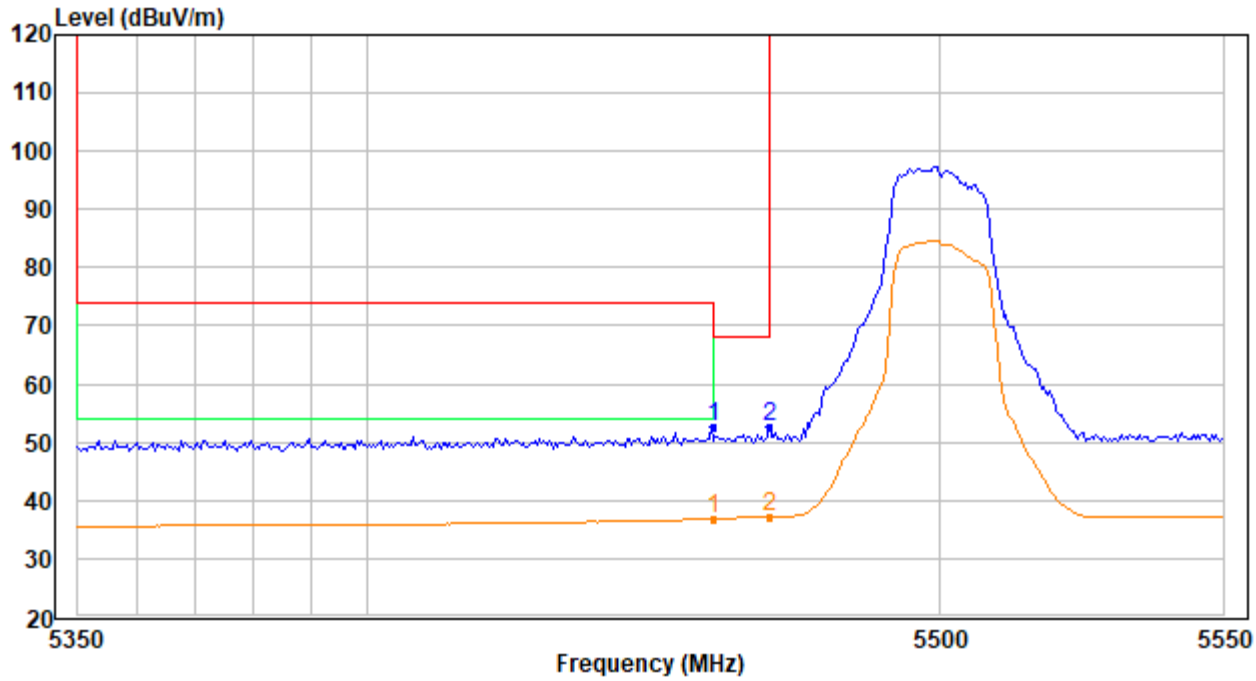
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5350.0000	50.94	74.00	35.88	54.00	Pass

Test Channel:	Channel 100	Ant. Polar. :	Horizontal



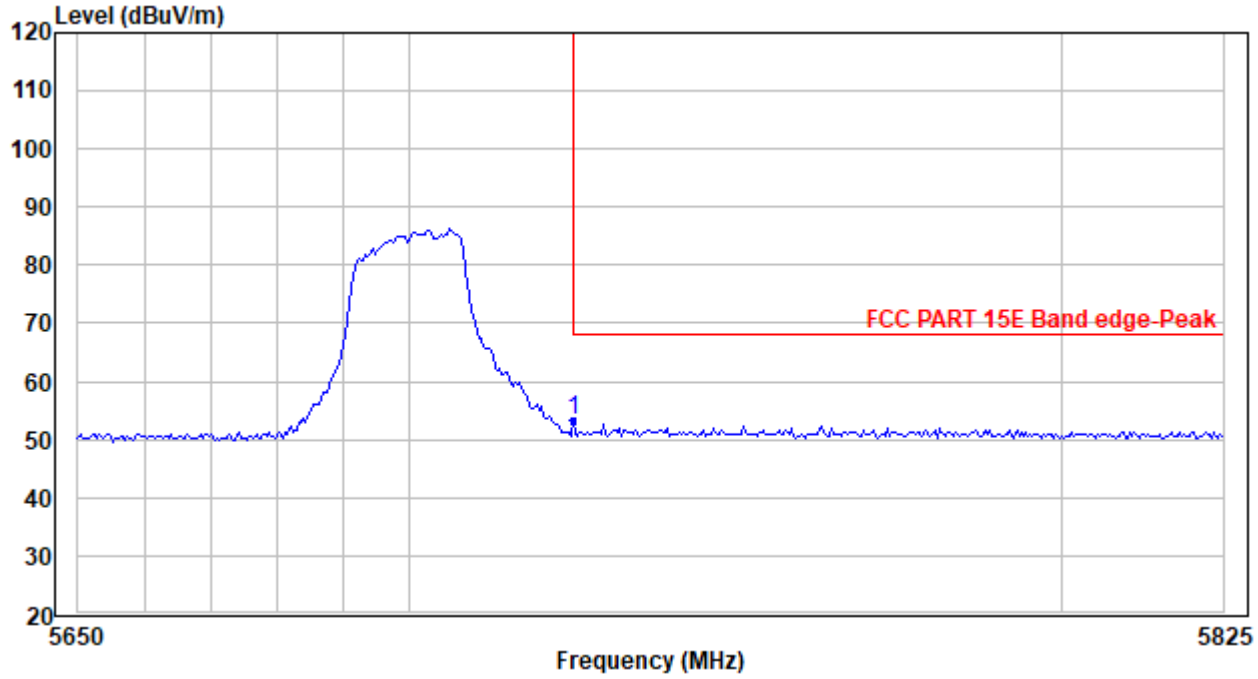
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5460.0000	52.27	68.20	36.86	54.00	Pass
5470.0000	52.64	68.20	37.28	68.20	Pass

Test Channel:	Channel 100	Ant. Polar. :	Vertical



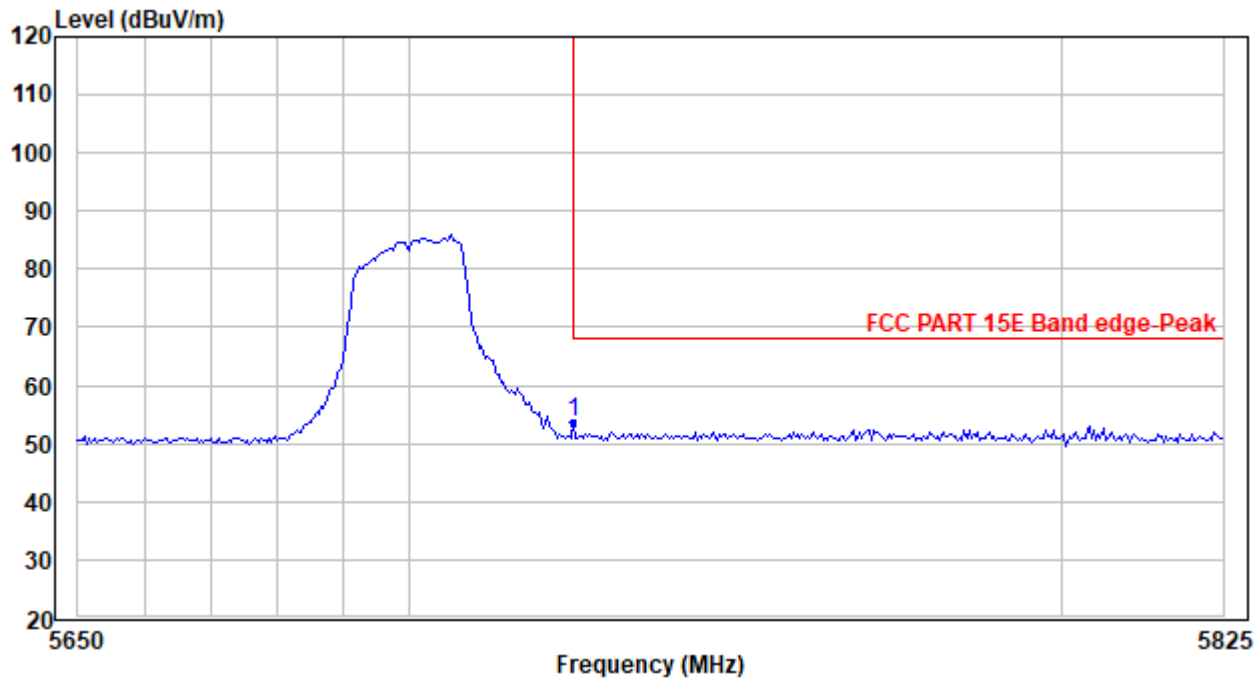
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5460.0000	52.60	68.20	36.83	54.00	Pass
5470.0000	52.65	68.20	37.19	68.20	Pass

Test Channel:	Channel 140	Ant. Polar. :	Horizontal



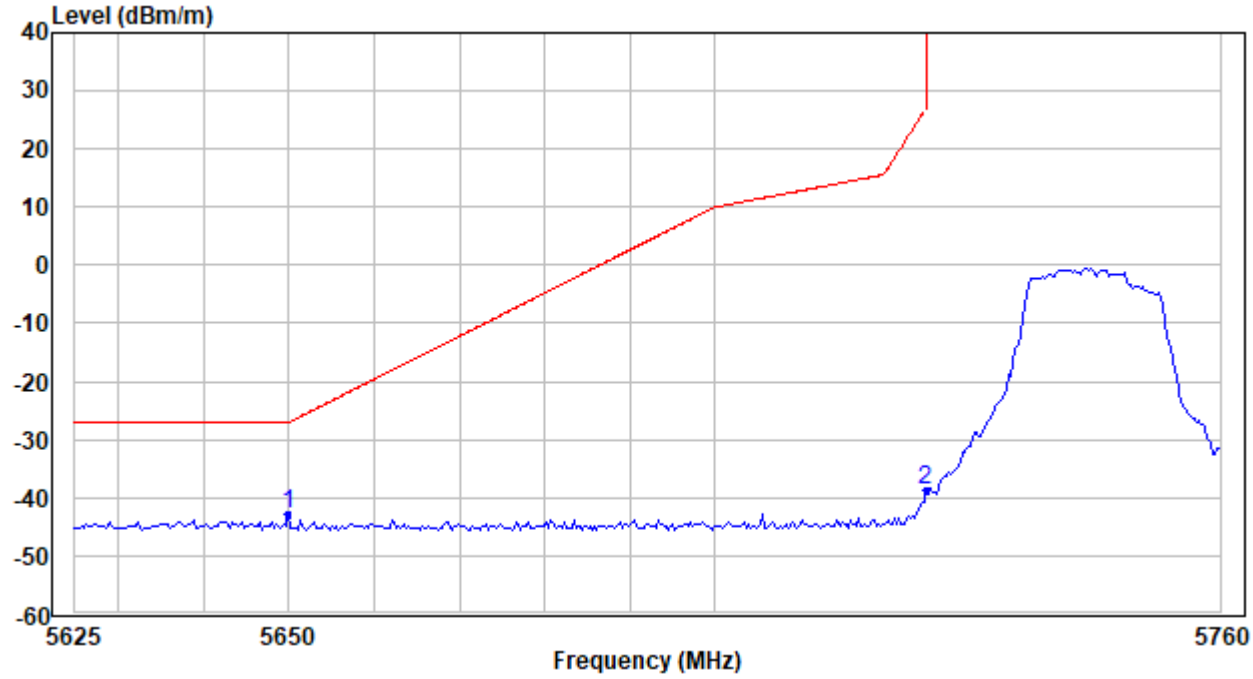
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	Conclusion
5725.0000	53.29	68.20	Pass

Test Channel:	Channel 140	Ant. Polar. :	Vertical



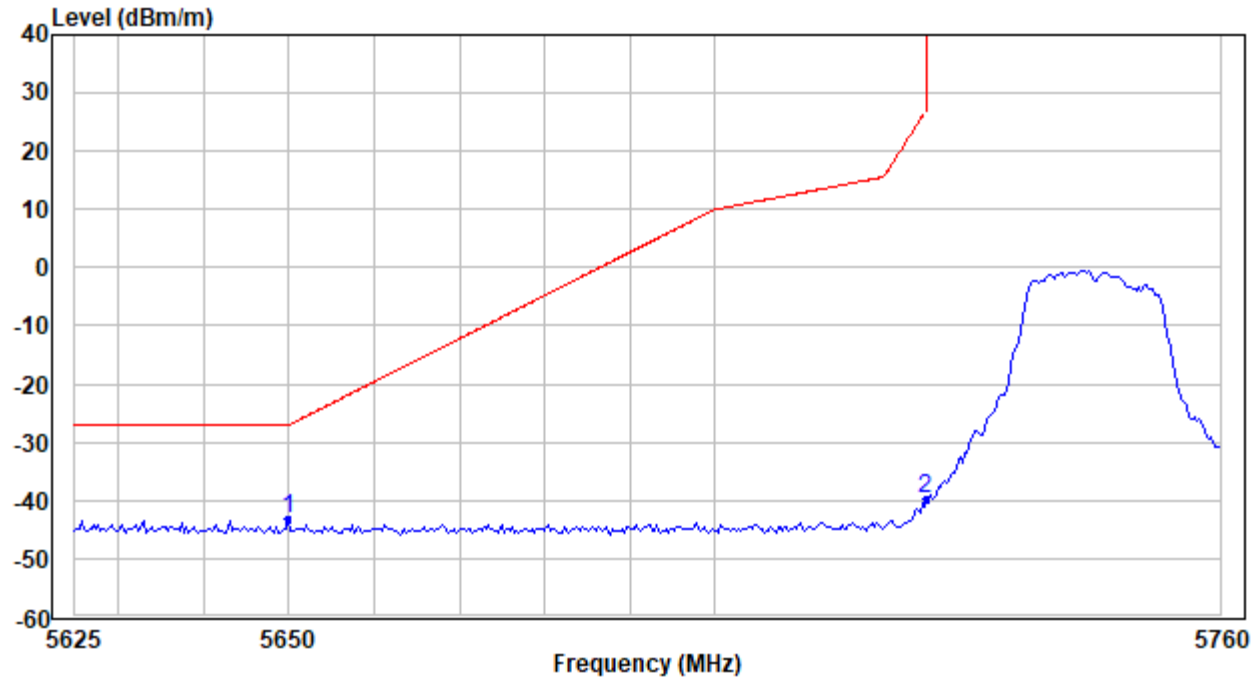
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	Conclusion
5725.0000	53.56	68.20	Pass

Test Channel:	Channel 149	Ant. Polar. :	Horizontal



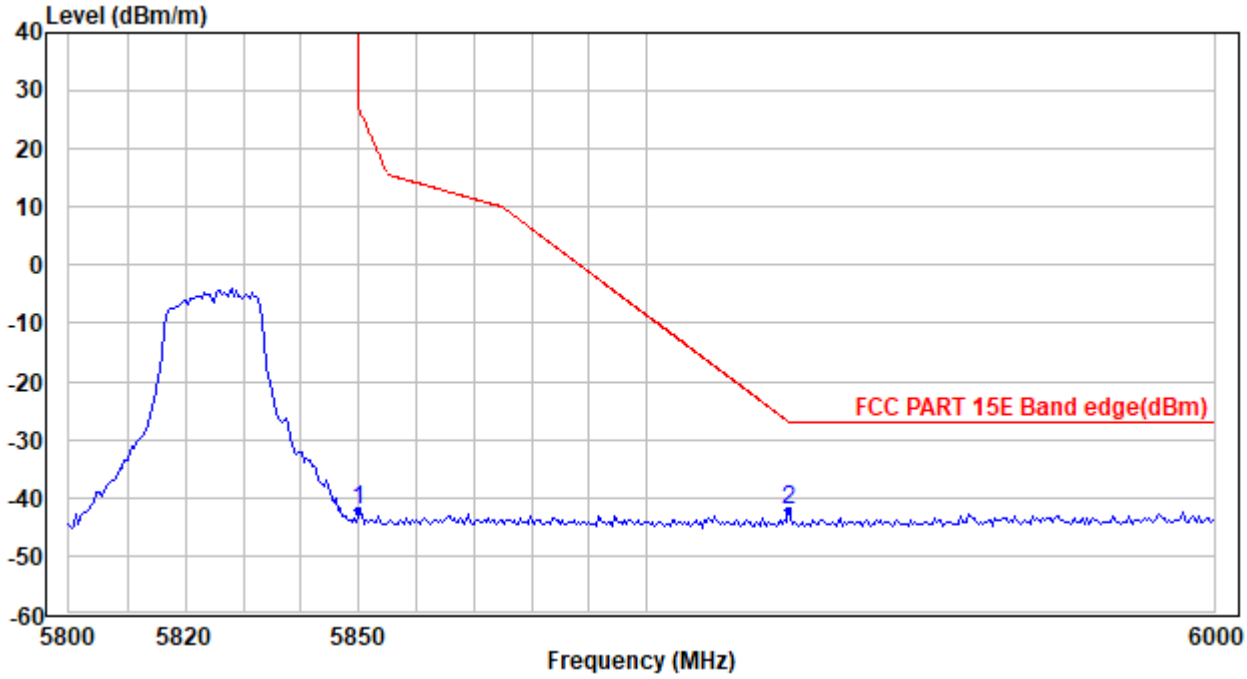
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-42.89	-27.00	Pass
5725.0000	-38.73	-27.00	Pass

Test Channel:	Channel 149	Ant. Polar. :	Vertical



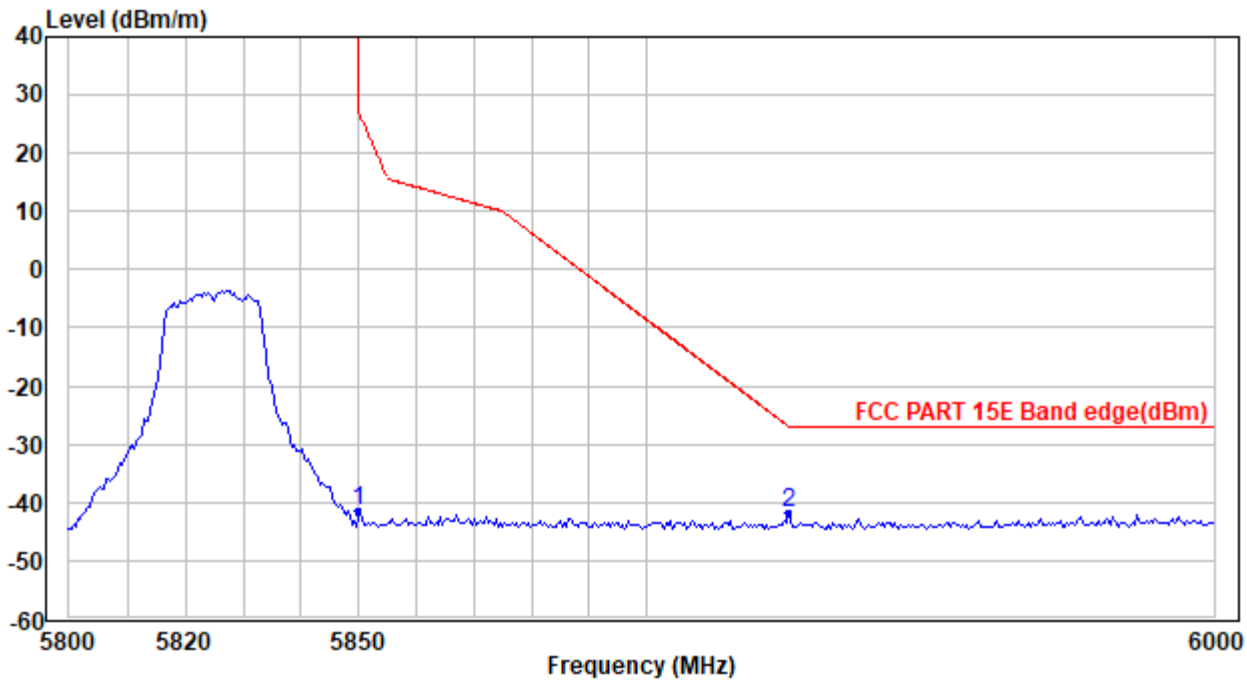
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5650.0000	-43.22	-27.00	Pass
5725.0000	-39.78	-27.00	Pass

Test Channel:	Channel 165	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-42.14	-27.00	Pass
5925.0000	-42.09	-27.00	Pass

Test Channel:	Channel 165	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.0000	-41.42	-27.00	Pass
5925.0000	-41.65	-27.00	Pass