



TEST REPORT

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Manufacturer: Shenzhen Qunman Technology Co.,Ltd
Address of Manufacturer: Building 101, Unit 14, No. 121, Xikeng Road, Xikeng Community, Fucheng Subdistrict, Longhua District, Shenzhen, China
Product Name: MINI SMART PROJECTOR
Model No.: A1,A101AF,A101EU,A101AS,A101OA,A101NA,A101SA,A101AF,A101EU,A101AS,A101OA,A101NA,A101SA
Trade Mark: QUNMAN
FCC ID: 2BS35-A1
Applicable standards: CFR Title 47 Part 15.407
Date of Test: Sep.02, 2025-Oct.14, 2025
Date of report issued: Oct.15, 2025

Remark:

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The report would be invalid without specific stamp of test institute and the signatures of compiler and approver

Prepared By

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1 Test Summary

Test Item	Section	Result	Test by
Antenna requirement	47CRF part 15.203	Pass	/
AC Power Line Conducted Emission	47CRF part 15.207	Pass	Jason Huang
Conducted Output Power	47CRF part 15.407 (a)(1)/(a)(3)	Pass	Kara Wu
26dB Bandwidth and 99% Occupied Bandwidth	47CRF part 15.407 (a)(12)	Pass	Kara Wu
6dB Bandwidth	47CRF part 15.407 (e)	Pass	Kara Wu
Power Spectral Density	47CRF part 15.407(a)(1)/(a)(3)	Pass	Kara Wu
Band Edge	47CRF part 15.407(b)(1)/(b)(4)	Pass	Kara Wu
Spurious Emission	47CRF part 15.205/15.209 47CRF part 15.407(b)(1)/(b)(4)/(b)(8)	Pass	Jason Huang
Frequency Stability	47CRF part 15.407(g)	Pass	Kara Wu

Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10-2020 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.
3. Note: Compliance determination rules
 - 1).The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacturer. If measurement uncertainty is taken into account, the applicant/manufacturer will bear all possible risks of non-compliance.
 - 2).The measurement uncertainty please refer to each test result in the "Measurement Uncertainty"

Measurement Uncertainty

Test Item	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	0.55%	(1)
RF output power, conducted	±0.57 dB	(1)
Power Spectral Density, conducted	±0.61 dB	(1)
Unwanted Emissions, conducted	±0.64 dB	(1)
AC Power Line Conducted Emission	± 2.55 dB	(1)
Radiated emissions 9K-30MHz	±3.79 dB	(1)
Radiated emissions 30M- 1GHz	± 4.24 dB	(1)
Radiated emissions 1GHz-18GHz	± 4.26 dB	(1)
Radiated emissions 18GHz-40GHz	±4.17 dB	(1)
Frequency error	Uc=1X10-7	(1)
Duty Cycle	0.03%	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

2 General Information

2.1 General Description of EUT

Product Name:	MINI SMART PROJECTOR
Model No.:	A1,A101AF,A101EU,A101AS,A101OA,A101NA,A101SA,A101AF,A101EU,A101AS,A101OA,A101NA,A101SA
Difference of model(s)	All models have the same circuit and RF module, except for the model name and color
Test Model:	A1
Hardware Version:	N/A
Software Version:	N/A
Sample(s) Status:	Engineer sample
Operation Frequency:	☒ 5180-5240MHz for 802.11a/n20/ac20; 5190-5230MHz for 802.11n40/ac40; ☒ 5745-5825 MHz for 802.11a/n20/ac20; 5755-5795 MHz for 802.11n40)ac40;
Channel numbers:	☒ 4 channels for 802.11a/n20/ac20 in the 5180-5240MHz band; 2 channels for 802.11 n40/ac40 in the 5190-5230MHz band ; ☒ 5 channels for 802.11a/n20/ac20 in the 5745-5825MHz band ; 2 channels for 802.11 n40/ac40 in the 5755-5795MHz band ;
Channel bandwidth:	802.11a/802.11n20/ 802.11ac20/ : 20MHz 802.11n(HT40)/ 802.11ac40 : 40MHz
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(20/40):MCS0-MCS15; 802.11ac(20/40):NSS1, MCS0-MCS9
Modulation technology:	Orthogonal Frequency Division Multiplexing (OFDM) with BPSK/QPSK/16QAM/64QAM/
Antenna Type:	FPC antenna
Antenna gain:	3.84 dBi(Declare by applicant) Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.
Power supply:	AC 100-240V 50/60Hz 1A
Battery	N/A
Adapter Model:	N/A

For more details, refer to the user's manual of the EUT.

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190MHz	40	5200MHz	42	5210MHz
44	5220MHz	46	5230MHz	48	5240MHz	/	/
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	151	5755MHz	153	5765MHz	155	5775MHz
157	5785MHz	159	5795MHz	161	5805MHz	/	/
165	5825MHz	/					

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)		
	802.11 a /n20/ac20/	802.11 n40/ac40/	/
Lowest channel	5180	5190	/
Middle channel	5200	X	X
Highest channel	5240		

Test channel	Frequency (MHz)		
	802.11 a /n20/ac20	802.11 n40/ac40	/
Lowest channel	5745	5755	/
Middle channel	5785	X	X
Highest channel	5825		

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pretest Mode	Description
Mode 1	802.11a / n 20/ac 20CH36/CH40/CH48 802.11a / n 20/ac 20CH149/CH157/CH165
Mode 2	802.11n40/CH38/CH46 802.11n 40CH 151/CH159
Mode 3	/
Mode 4	Link Mode

Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a/n 20/ac20CH36/ CH40/ CH 48 802.11a/n 20/ac 20CH149/ CH157/ CH165
Mode 2	802.11n40CH38/ CH46 802.11n40CH 151/CH159
Mode 3	/

Note: The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

2.3 Description of Support Units

No.	Description	Manufacturer	Model	Serial Number
1	Earphone	Feilida	i6	/
2	Notebook computer	DELL	Vostro 3520	/

2.4 Test Facility

Test laboratory:	Shenzhen ETR Standard Technology Co., Ltd.
CNAS Registration Number:	L11864
A2LA Certificate Number:	6640.01
FCC Designation Number:	CN1326
FCC Test Firm Registration:	183064
IC Company Number:	28440
IC CAB identifier:	CN0132
Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

2.5 Additional Instructions

Test Software	Manufacturer's special orders
Power level setup	Default



3 Test Instruments list

Conducted Emission

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI3	100605	2025.3.06	2026.3.05
2	Artificial power network	schwarabeck	NSLK8127	8127483	2025.3.06	2026.3.05
3	Artificial power network	ETS	3186/2NM	1132	2025.3.06	2026.3.05
4	10dB attenuator	HUBER+SUHNER	10dB	/	2025.3.06	2026.3.05
5	Cable 4	HUBER SUNNER	3M	/	2025.3.06	2026.3.05
6	Absorbing Clamp	schwarabeck	MDS21	D69250	2025.3.06	2026.3.05

Radiated Emission &RF Conducted test:

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101032	2025.3.06	2026.3.05
2	Broadband antenna	schwarabeck	VULB9168	1064	2024.3.26	2026.3.25
3	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2024.3.22	2026.3.21
4	Amplifier	EMtrace	RP01A	50117	2025.3.06	2026.3.05
5	Amplifier	Space-Dtronic	EWLAN0118G-P40	19113001	2025.3.06	2026.3.05
6	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2025.3.06	2026.3.05
7	Power detector meter	MWRFTest	MW100-PSB	MW201020JYT	2025.3.06	2026.3.05
8	Signal generator	Agilent	N5182A	MY49060455	2025.3.06	2026.3.05
9	Spectrum analyzer	Rohde&schwarz	FSV-40N	101321	2025.3.06	2026.3.05
10	Amplifier	SKET	LNPA_1840-50	SK2019040302	2025.3.06	2026.3.05
11	Horn antenna	schwarabeck	BBHA 9170	946	2024.3.22	2026.3.21
12	Loop antenna	schwarabeck	FMZB 1519 B	1519	2024.3.22	2026.3.21
13	Cable 6	HUBER SUNNER	0.5M	/	2025.3.06	2026.3.05
14	Cable7	HUBER SUNNER	2.0M	/	2025.3.06	2026.3.05
15	Cable8	HUBER SUNNER	6.0M	/	2025.3.06	2026.3.05
16	Filter	Xin bo	XBLBQ-GTA29	210410-3-2	2025.3.06	2026.3.05
17	Power Sensor	Keysight	U2021XA	MY54111006	2025.3.06	2026.3.05
18	Temp. & Humidity Chamber	Jiecheng Instrument	QA-LP-80	20160705001	2025/3/07	2026/3/06

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

Software Name	Manufacturer	Model	Version
RF test software	MWRFTest	MTS 8310	V2.0.0.0
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4 Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:	47CRF Part 15.203
15.203 requirement: <i>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.</i>	
EUT Antenna:	
The antenna is FPC antenna, the best case gain of the is 3.84dBi, reference to the Internal photos for details.	

4.2 Conducted Emissions

Test Requirement:	47CRF Part 15.207						
Test Method:	ANSI C63.10-2020						
Test Frequency Range:	150KHz to 30MHz						
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto						
Limit:	Frequency range (MHz)		Limit (dBuV)				
			Quasi-peak		Average		
	0.15-0.5		66 to 56*		56 to 46*		
	0.5-5		56		46		
	5-30		60		50		
* Decreases with the logarithm of the frequency.							
Test setup:	Reference Plane 40cm LISN AUX Equipment E.U.T Test table/Insulation plane 80cm LISN Filter EMI Receiver AC power Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m						
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10-2020 on conducted measurement.						
Test Instruments:	Refer to section 3.0 for details						
Test mode:	Refer to section 2.2 for details						
Test environment:	Temp.:	24.1°C	Humid.:	50%	Press.:	1012mbar	
Test voltage:	AC 120V 60Hz						
Test results:	Pass						

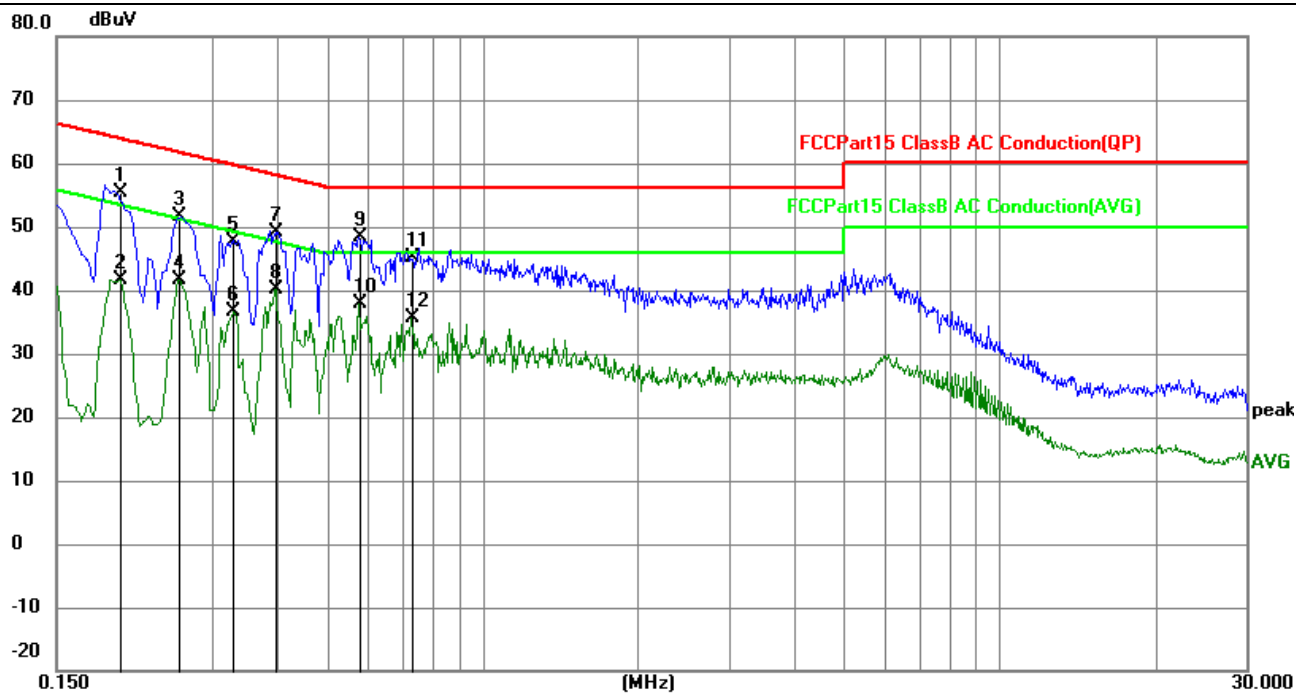
Remark:

1. Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.

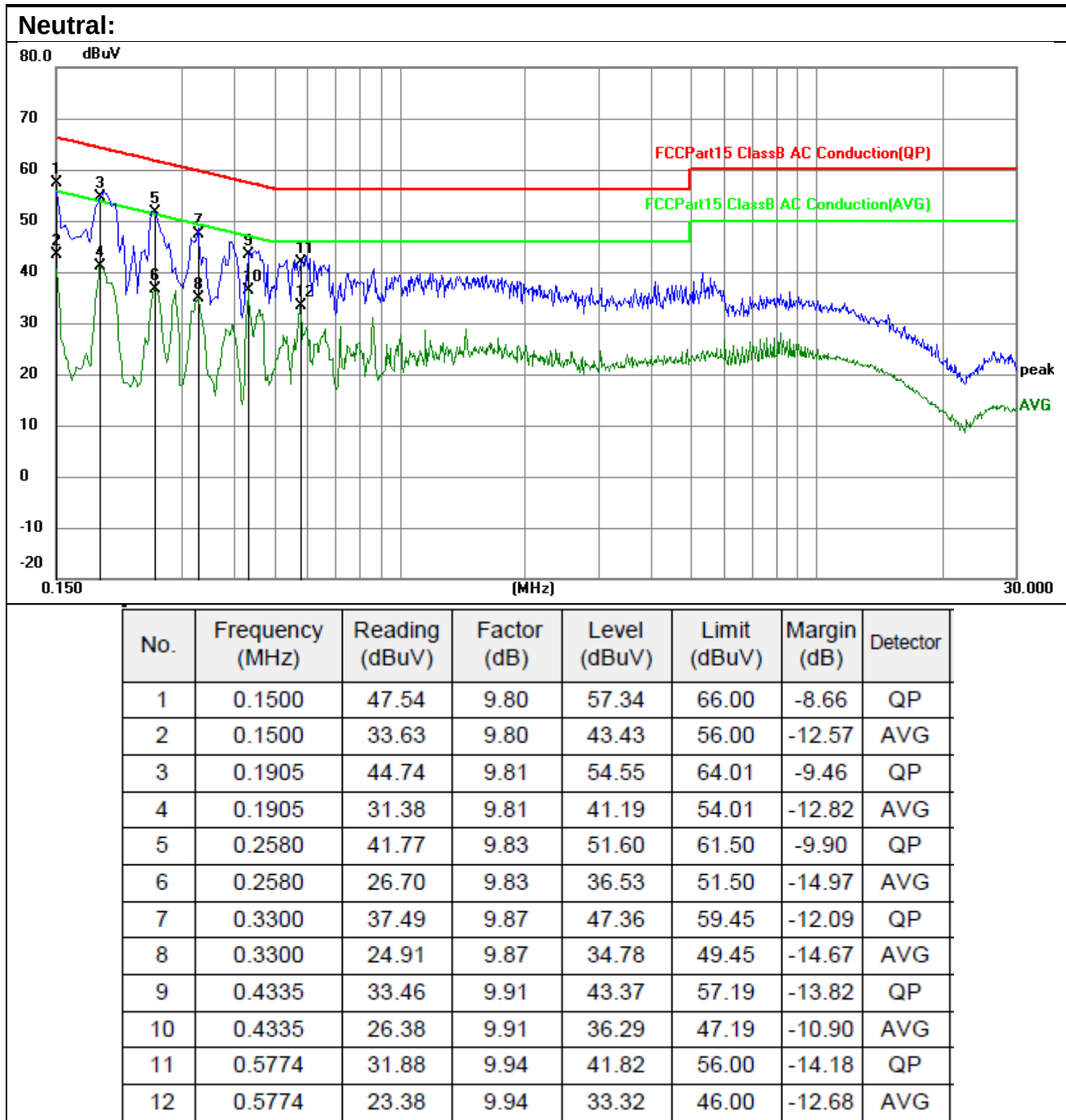
2. All mode have been tested, the report only shows the worst mode (802.11a 5200MHz)

Measurement Result

Line:



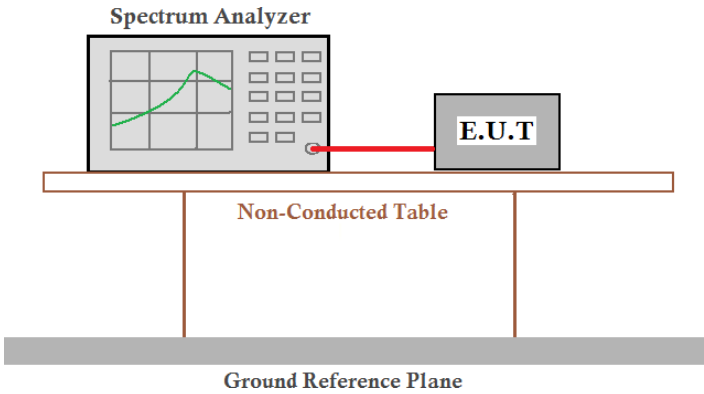
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1995	45.48	9.81	55.29	63.63	-8.34	QP
2	0.1995	31.89	9.81	41.70	53.63	-11.93	AVG
3	0.2580	41.78	9.83	51.61	61.50	-9.89	QP
4	0.2580	31.89	9.83	41.72	51.50	-9.78	AVG
5	0.3300	37.88	9.87	47.75	59.45	-11.70	QP
6	0.3300	26.82	9.87	36.69	49.45	-12.76	AVG
7	0.3975	39.30	9.90	49.20	57.91	-8.71	QP
8	0.3975	30.31	9.90	40.21	47.91	-7.70	AVG
9	0.5774	38.47	9.94	48.41	56.00	-7.59	QP
10	0.5774	28.05	9.94	37.99	46.00	-8.01	AVG
11	0.7304	35.26	9.94	45.20	56.00	-10.80	QP
12	0.7304	25.75	9.94	35.69	46.00	-10.31	AVG



Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

4.3 Duty cycle

Test Method :	ANSI C63.10-2020	
Limit:	/	
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 27.0°C	Humid.: 64%RH
Test voltage:	AC 120V/60Hz	
Test results:	Pass	



Measurement Result

5180-5240MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	97.62	0.10
TX 802.11n20 Mode	97.46	0.11
TX 802.11ac20 Mode	97.37	0.12
TX 802.11n40 Mode	91.03	0.41
TX 802.11a40 Mode	91.12	0.40

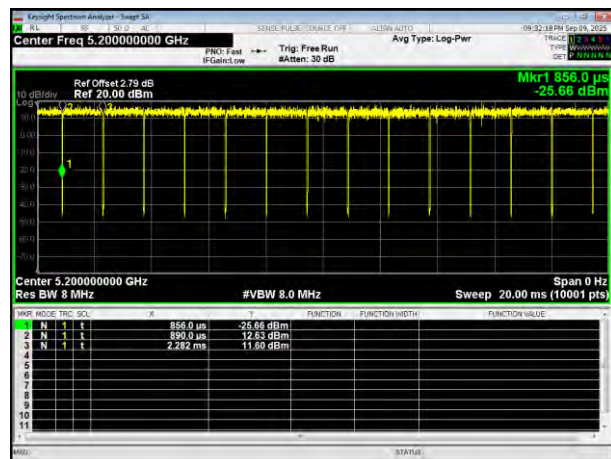
5745-5825 MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	97.18	0.12
TX 802.11n20 Mode	96.99	0.13
TX 802.11ac20 Mode	97.74	0.10
TX 802.11n40 Mode	94.12	0.26
TX 802.11ac40 Mode	97.1	0.13

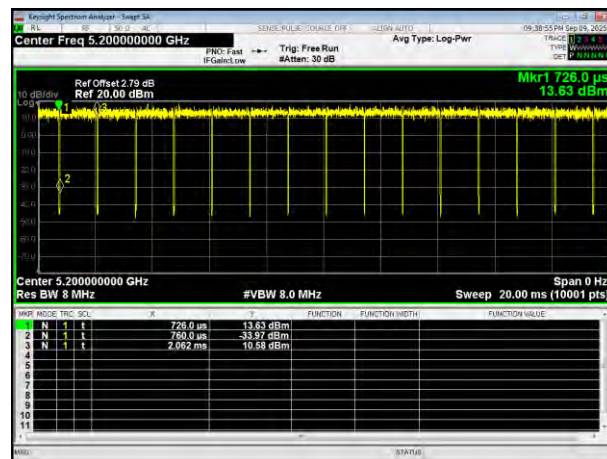
Test plot

5180-5240MHz

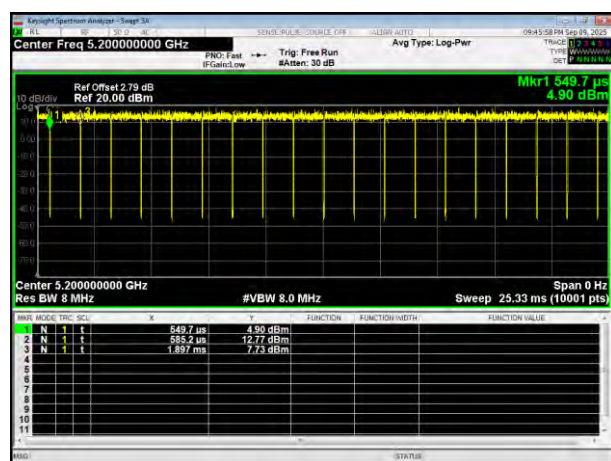
(802.11a) plot



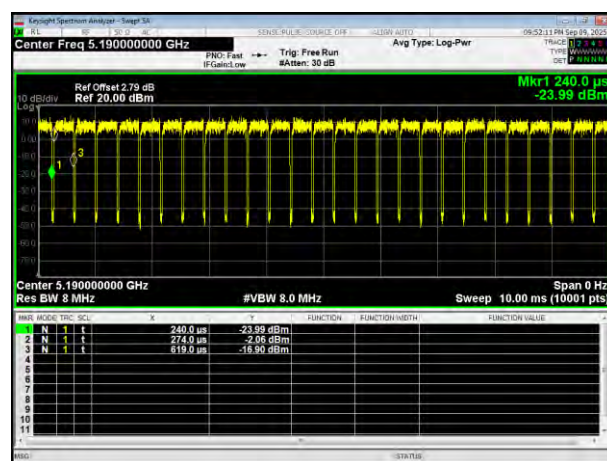
(802.11 n20) plot



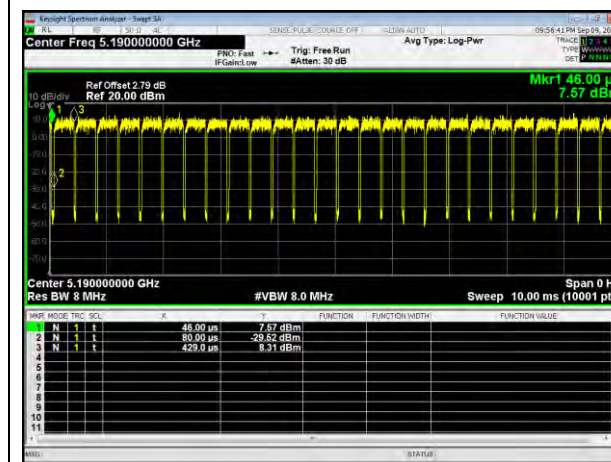
(802.11 ac20) plot



(802.11 n40) plot



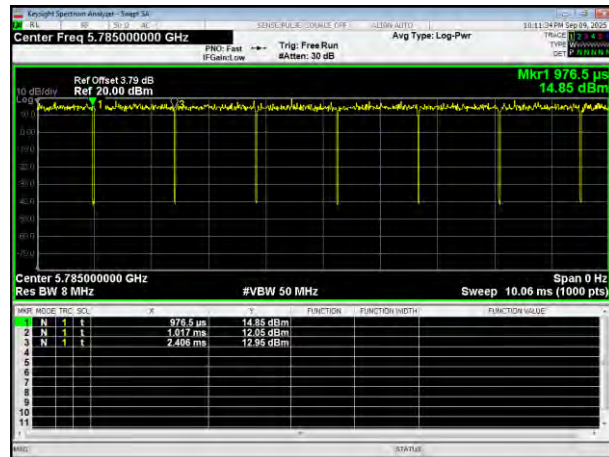
(802.11 ac40) plot



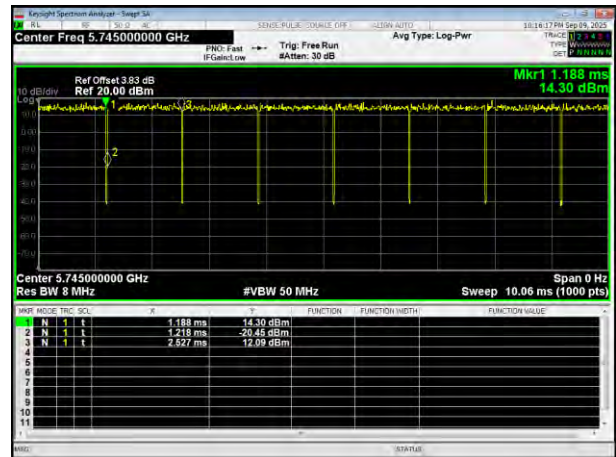
/

5745-5825 MHz

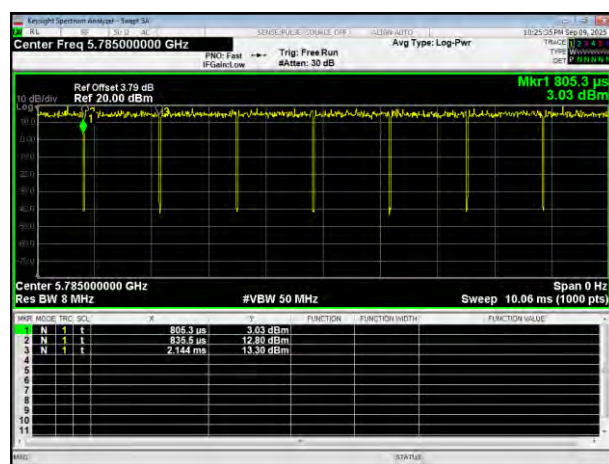
(802.11a) plot



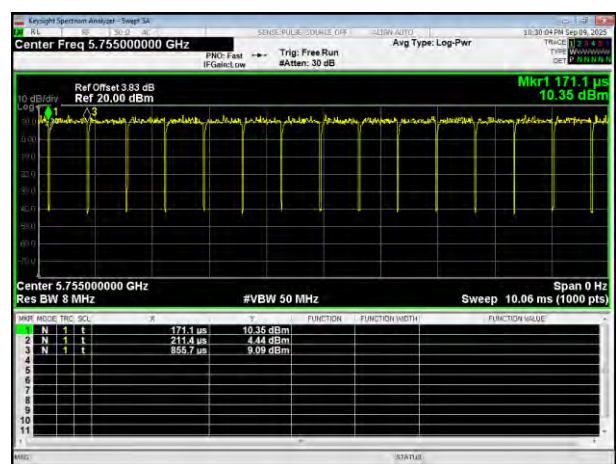
(802.11 n20) plot



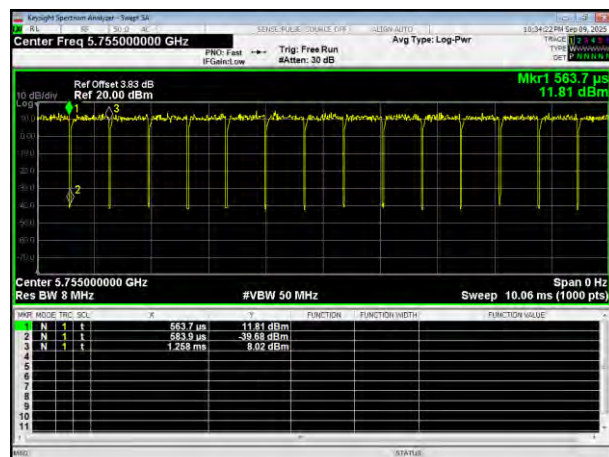
(802.11ac20) plot



(802.11 n40) plot



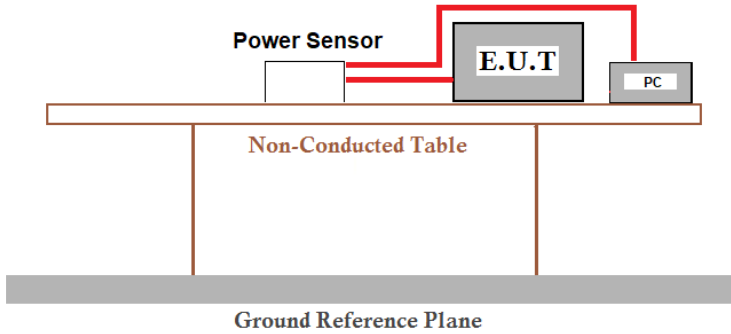
(802.11 ac40) plot



/

/

4.4 Conducted Output Power

Test Requirement:	47CFR Part 15.407 (a)(1)/(a)(3)	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 ANSI C63.10-2020 § 12.4	
Limit:	5150-5250MHz : 250mW 5725~5850MHz : 1W	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.6°C	Humid.: 63%RH
Test voltage:	AC 120V 60Hz	
Test results:	Pass	



Measurement Result

5180-5240MHz

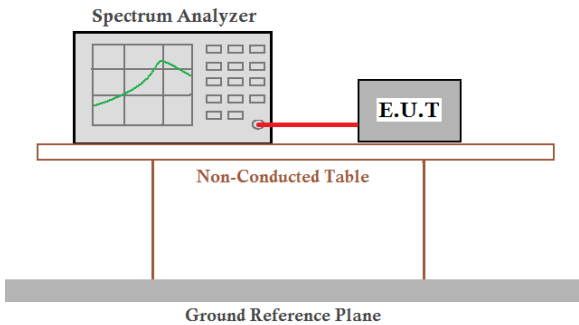
Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	0.10	14.35	14.45	23.98	Pass
CH40	5200	0.10	14.89	14.99	23.98	Pass
CH48	5240	0.10	14.48	14.58	23.98	Pass
TX 802.11 n20 Mode						
CH36	5180	0.11	14.23	14.34	23.98	Pass
CH40	5200	0.11	14.67	14.78	23.98	Pass
CH48	5240	0.11	14.51	14.62	23.98	Pass
TX 802.11 ac20 Mode						
CH36	5180	0.12	14.26	14.38	23.98	Pass
CH40	5200	0.12	14.86	14.98	23.98	Pass
CH48	5240	0.12	14.49	14.61	23.98	Pass
TX 802.11 n40 Mode						
CH38	5190	0.41	13.65	14.06	23.98	Pass
CH46	5230	0.41	13.97	14.38	23.98	Pass
TX 802.11 ac40 Mode						
CH38	5190	0.40	13.72	14.12	23.98	Pass
CH46	5230	0.40	14.13	14.53	23.98	Pass

5745-5825 MHz

CH 149 5745 MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	Limit	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH149	5745	0.12	14.55	14.67	30	Pass
CH157	5785	0.12	14.47	14.59	30	Pass
CH165	5825	0.12	14.46	14.58	30	Pass
TX 802.11 n20 Mode						
CH149	5745	0.13	14.34	14.47	30	Pass
CH157	5785	0.13	14.82	14.95	30	Pass
CH165	5825	0.13	14.41	14.54	30	Pass
TX 802.11 ac20 Mode						
CH149	5745	0.10	14.25	14.35	30	Pass
CH157	5785	0.10	14.78	14.88	30	Pass
CH165	5825	0.10	14.53	14.63	30	Pass
TX 802.11 n40 Mode						
CH151	5755	0.26	13.88	14.14	30	Pass
CH159	5795	0.26	13.59	13.85	30	Pass
TX 802.11 ac40 Mode						
CH151	5755	0.13	13.73	13.86	30	Pass
CH159	5795	0.13	13.52	13.65	30	Pass

4.5 Bandwidth

Test Requirement:	47CFR Part 15.407(a)(12)&15.407(e),	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, ANSI C63.10-2020§12.5	
Limit:	Measurements in the 5.725-5.85 GHz band, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.6°C	Humid.: 63%RH
Test voltage:	AC 120V 60Hz	
Test results:	Pass	

Measurement Result

5180-5240MHz

Test CH	-26dB Channel Bandwidth (MHz)						Result
	802.11a	802.11n20	802.11ac20	802.11n40	802.11ac40	802.11ac80	
Lowest	19.728	19.959	20.136	40.194	39.959	--	Pass
Middle	19.585	20.637	19.853	--	--	--	
Highest	19.607	19.958	19.738	39.68	39.583	--	

Remark: "---"is not applicable

(802.11a) plot on channel 36



(802.11 n20) plot on channel 36



(802.11a) plot on channel 40



(802.11 n20) plot on channel 40



(802.11a) plot on channel 48



(802.11 n20) plot on channel 48



(802.11ac20) plot on channel 36



(802.11n40) plot on channel 38



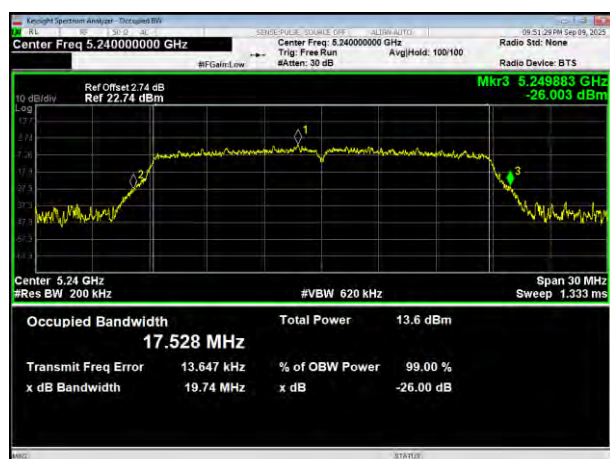
(802.11ac20) plot on channel 40



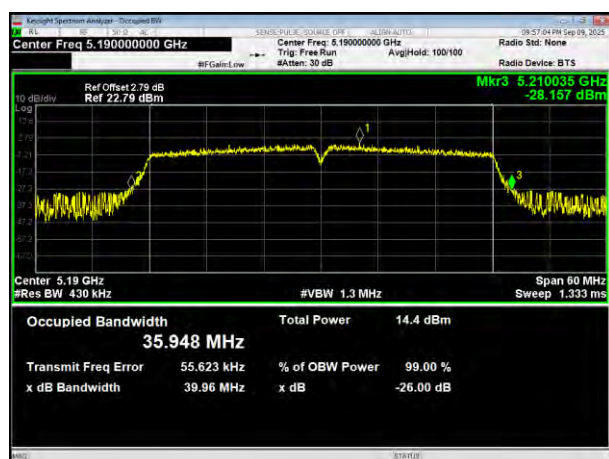
(802.11n40) plot on channel 46



(802.11ac20) plot on channel 48



(802.11ac40) plot on channel 38







5745-5825MHz

Test CH	-6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n 20	802.11ac 20	802.11n 40	802.11ac 40	802.11ac 80		
Lowest	13.16	15.07	15.44	35.06	35.00	--	>500	Pass
Middle	15.04	13.87	14.16			--		
Highest	15.54	13.88	12.64	33.82	33.88	--		

Remark: "---" is not applicable

Test plot -6dB Channel Bandwidth

(802.11a) plot on channel 149



(802.11 n20) plot on channel 149



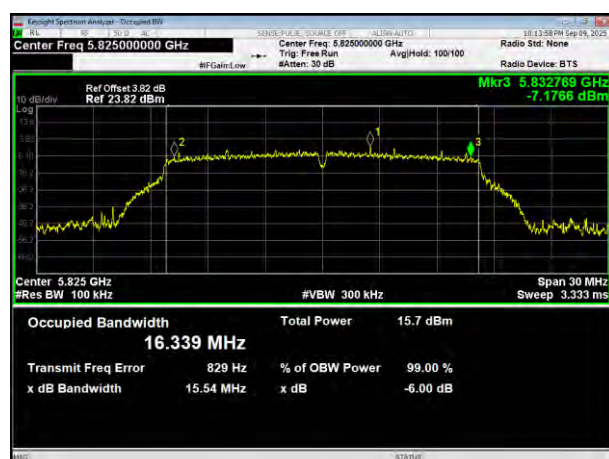
(802.11a) plot on channel 157



(802.11 n20) plot on channel 157



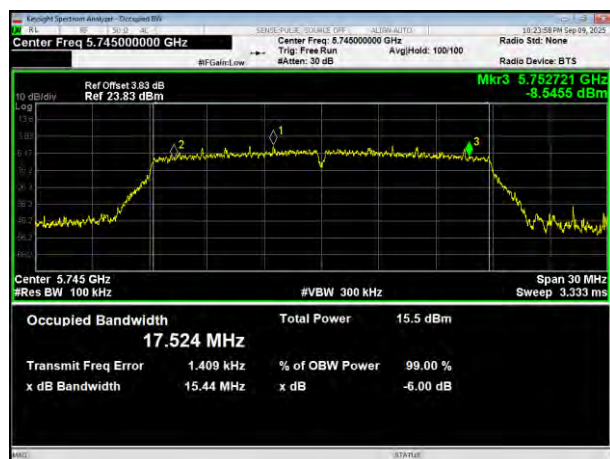
(802.11a) plot on channel 165



(802.11 n20) plot on channel 165



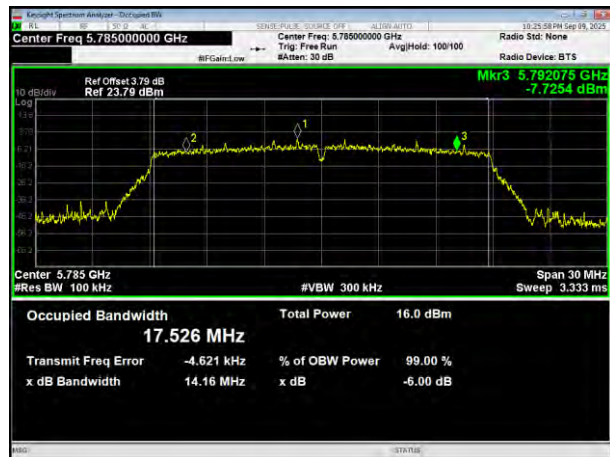
(802.11ac20) plot on channel 149



(802.11 n40) plot on channel 151



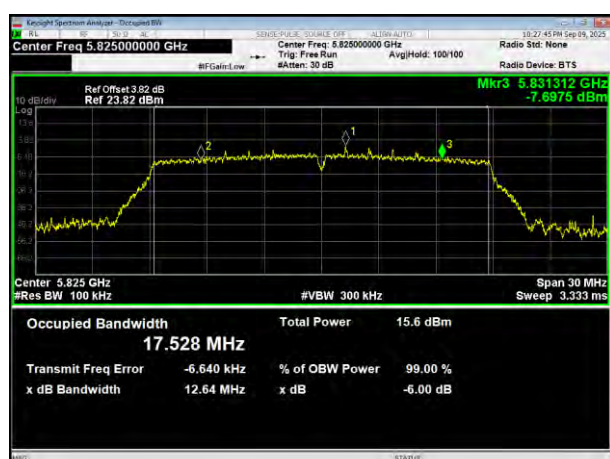
(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

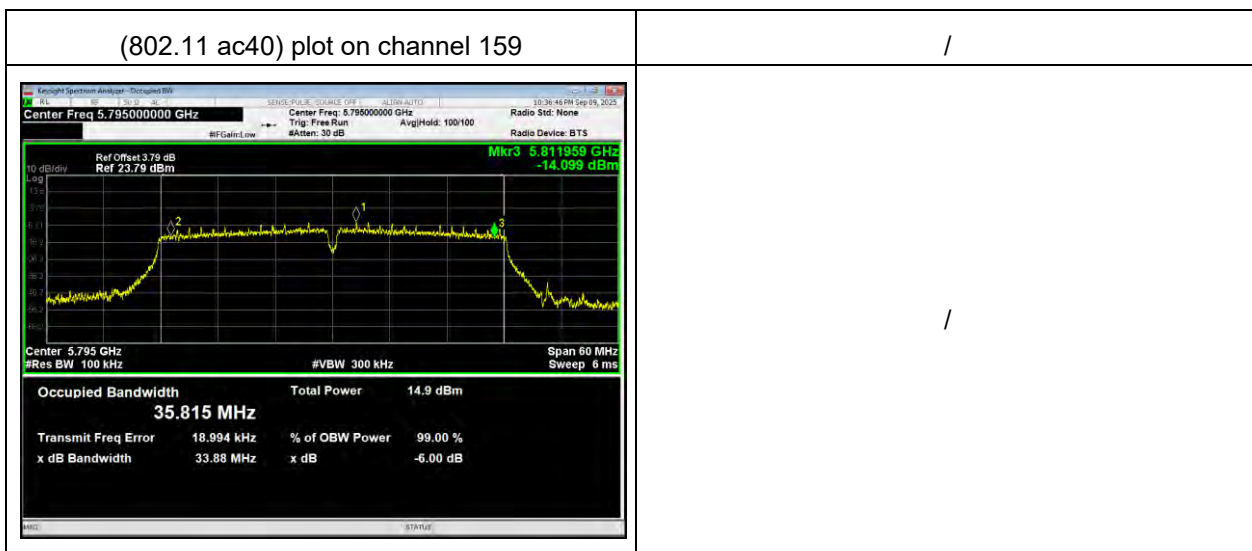


(802.11ac20) plot on channel 165

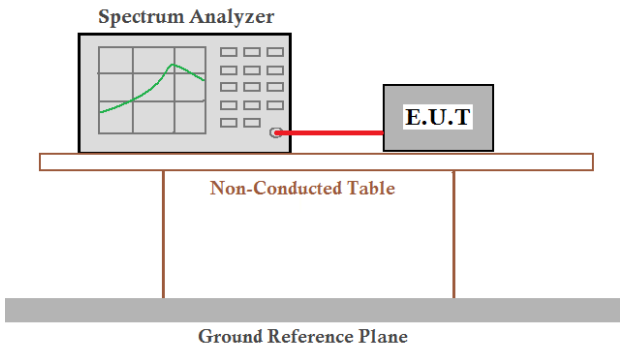


(802.11 ac40) plot on channel 151





4.6 Power Spectral Density

Test Requirement:	47CFR Part 15.407(a)(1)/ (a)(3)	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, ANSI C63.10-2020§12.6	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm/1MHz for master device
		≤11dBm/1MHz for client device
	5250-5350	≤11dBm/1MHz for client device
	5470-5725	≤11dBm/1MHz for client device
	5725-5850	≤30dBm/500kHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.6°C	Humid.: 63%RH
Test voltage:	AC 120V 60Hz	
Test results:	Pass	

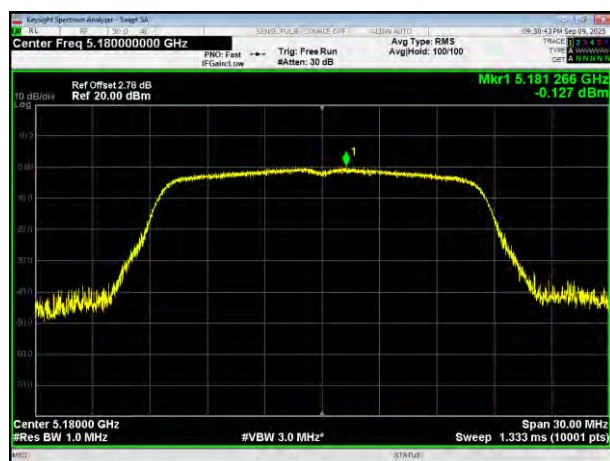
Measurement Result See next page



5180-5240MHz

Mode	Frequency	Measured Power Density (dBm/MHz)	Correction Factor (dB)	Total Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	-0.127	0.10	-0.03	11
	5200 MHz	0.625	0.10	0.73	11
	5240 MHz	0.155	0.10	0.26	11
802.11 n20	5180 MHz	-0.454	0.11	-0.34	11
	5200 MHz	0.293	0.11	0.40	11
	5240 MHz	0.123	0.11	0.23	11
802.11 ac20	5180 MHz	0.042	0.12	0.16	11
	5200 MHz	0.523	0.12	0.64	11
	5240 MHz	0.156	0.12	0.28	11
802.11 n40	5190 MHz	-4.122	0.41	-3.71	11
	5230 MHz	-4	0.41	-3.59	11
802.11 ac40	5190 MHz	-4.163	0.40	-3.76	11
	5230 MHz	-3.53	0.40	-3.13	11

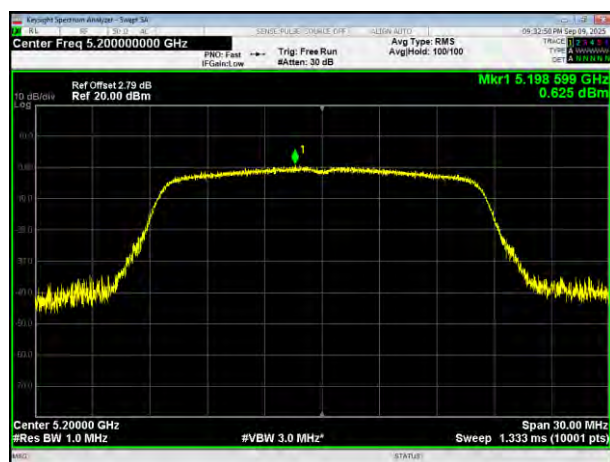
(802.11a) PSD plot on channel 36



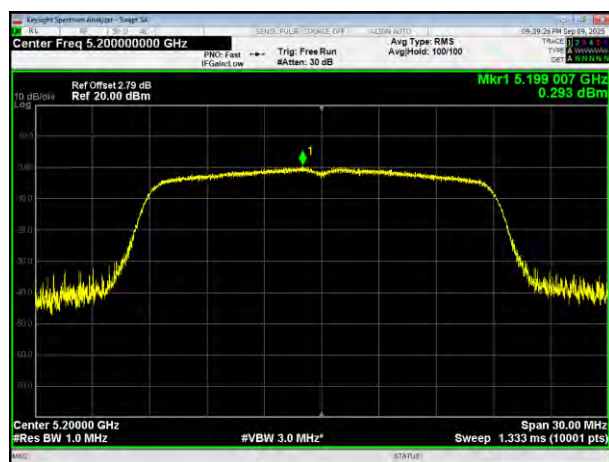
(802.11n20) PSD plot on channel 36



(802.11a) PSD plot on channel 40



(802.11n20) PSD plot on channel 40



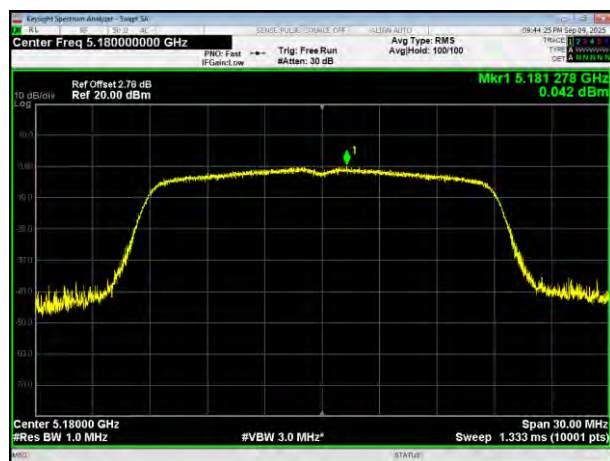
(802.11a) PSD plot on channel 48



(802.11n20) PSD plot on channel 48



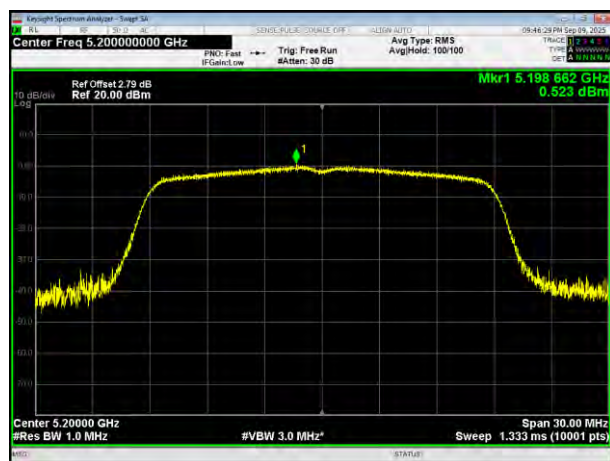
(802.11ac20) PSD plot on channel 36



(802.11n40) PSD plot on channel 38



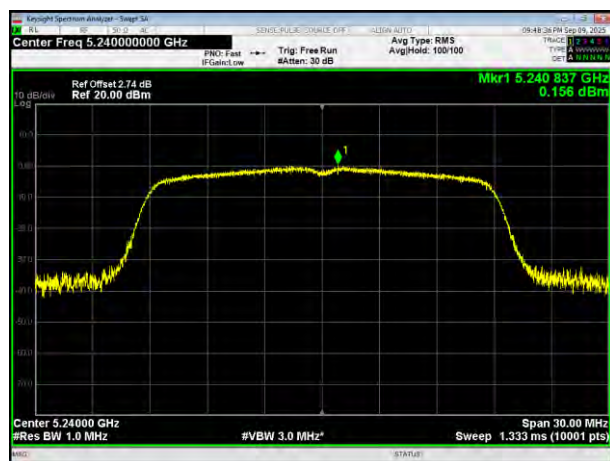
(802.11ac20) PSD plot on channel 40



(802.11n40) PSD plot on channel 46

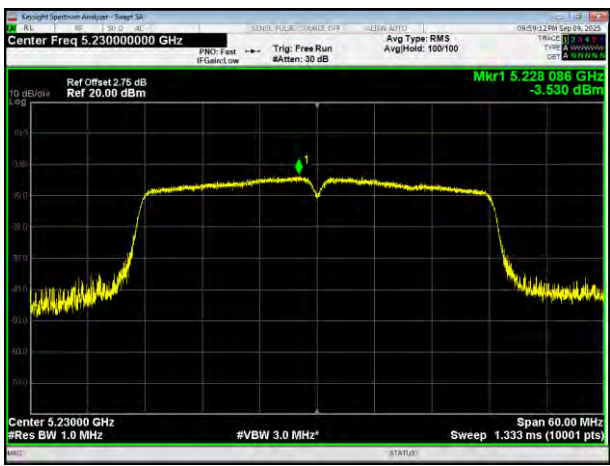


(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38



(802.11ac40) PSD plot on channel 46	/
 The image shows a Power Spectral Density (PSD) plot from a Keysight Spectrum Analyzer. The plot displays a signal spectrum with a prominent peak at 5.228 GHz, labeled 'Mkr1 5.228 GHz -3.530 dBm'. The y-axis represents power in dBm, ranging from -70.0 to 10.0. The x-axis represents frequency in GHz, with a center frequency of 5.23000 GHz and a span of 60.00 MHz. The resolution bandwidth (Res BW) is 1.0 MHz, and the video bandwidth (VBW) is 3.0 MHz. The sweep time is 1.333 ms (10001 pts). The plot shows a signal with a flat top and sharp edges, characteristic of a channelized signal.	/



5745-5825MHz

Mode	Frequency	Measured Power Density (dBm/510KHz)	Measured Power Density (dBm/500KHz)	Correction Factor (dB)	Total Measured Power Density (dBm/500KHz)	Limit (dBm/500KHz)
802.11 a	5745 MHz	-2.755	-2.841	0.120	-2.721	30
	5785 MHz	-2.888	-2.974	0.120	-2.854	30
	5825 MHz	-2.701	-2.787	0.120	-2.667	30
802.11 n20	5745 MHz	-3.088	-3.174	0.130	-3.044	30
	5785 MHz	-2.537	-2.623	0.130	-2.493	30
	5825 MHz	-2.966	-3.052	0.130	-2.922	30
802.11ac20	5745 MHz	-3.234	-3.320	0.100	-3.220	30
	5785 MHz	-2.672	-2.758	0.100	-2.658	30
	5825 MHz	-3.111	-3.197	0.100	-3.097	30
802.11 n40	5755 MHz	-6.575	-6.661	0.260	-6.401	30
	5795 MHz	-7.034	-7.120	0.260	-6.860	30
802.11ac40	5755 MHz	-6.838	-6.924	0.130	-6.794	30
	5795 MHz	-6.912	-6.998	0.130	-6.868	30

- Note: 1. Total Measured Power Density (dBm/500KHz)=dbm/510KHz-(10*log(510/500))+Duty cycle factor.
2. Correction Factor (dB)= duty cycle factor, RB Factor=10*log(510KHz/500KHz).
3. Offset= cable loss

(802.11a) PSD plot on channel 149



(802.11n20) PSD plot on channel 149



(802.11a) PSD plot on channel 157



(802.11n20) PSD plot on channel 157



(802.11a) PSD plot on channel 165



(802.11n20) PSD plot on channel 165



(802.11ac20) PSD plot on channel 149



(802.11n40) PSD plot on channel 151



(802.11ac20) PSD plot on channel 157



(802.11n40) PSD plot on channel 159



(802.11ac20) PSD plot on channel 165



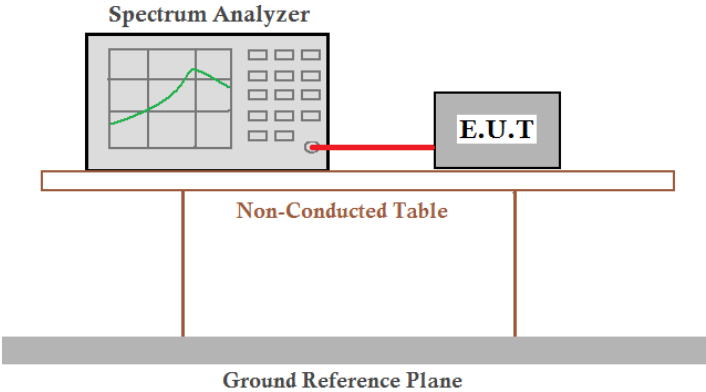
(802.11ac40) PSD plot on channel 151





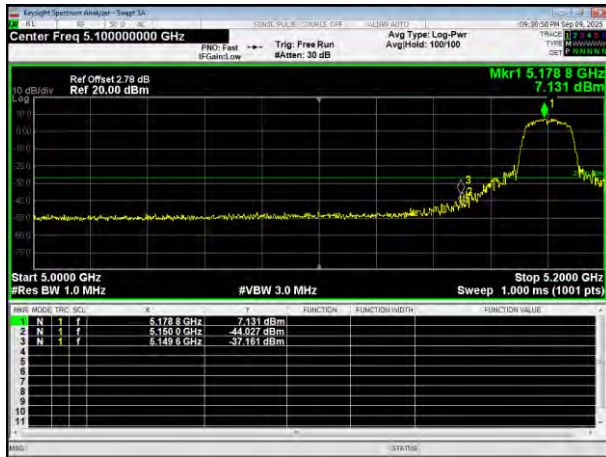
4.7 Band edge

4.7.1 Conducted test Method

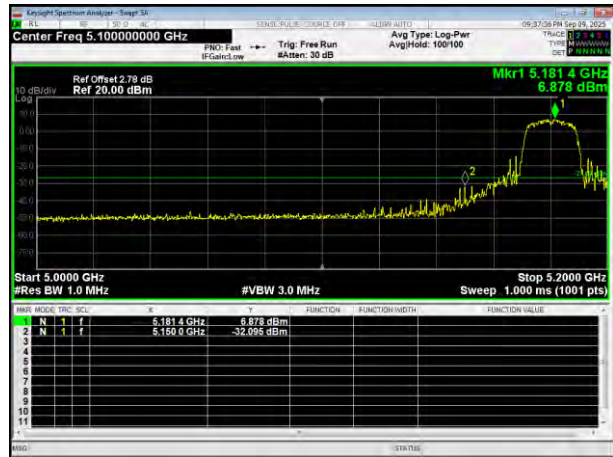
Test Requirement:	47CFR Part 15.209 and 15.205	
Test Method:	ANSI C63.10-2020 § 6.10	
Limit:	5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table. The table is supported by two vertical legs and sits on a Ground Reference Plane, which is represented by a thick grey bar at the bottom.	
Test Procedure:	1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. 2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range. 3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span. 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. 5. Repeat above procedures until all measured frequencies were complete..	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.6°C	Humid.: 63%RH
Test voltage:	AC 120V 60Hz	
Test results:	Pass	

5.180~5.240 GHz

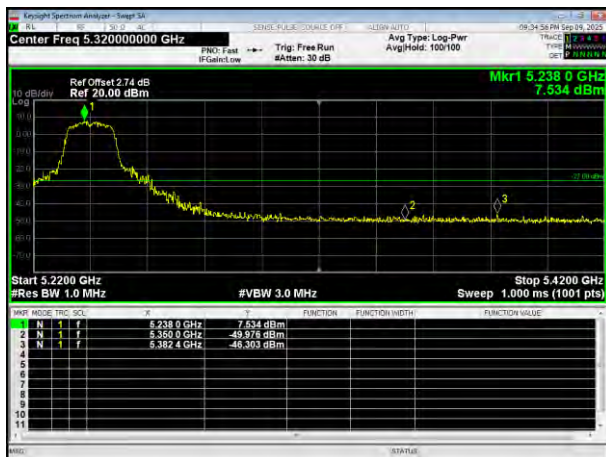
(802.11a) Band Edge, Left Side



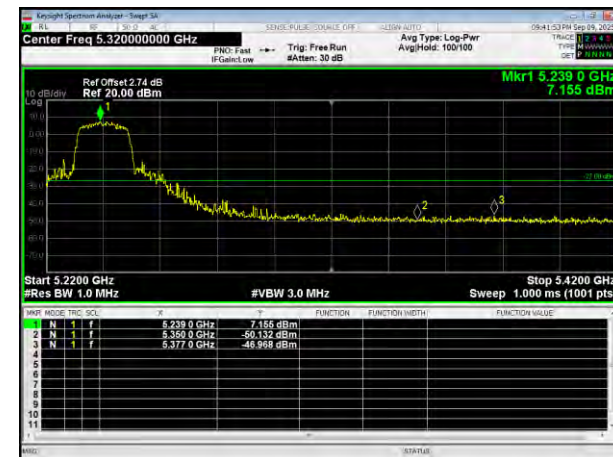
(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

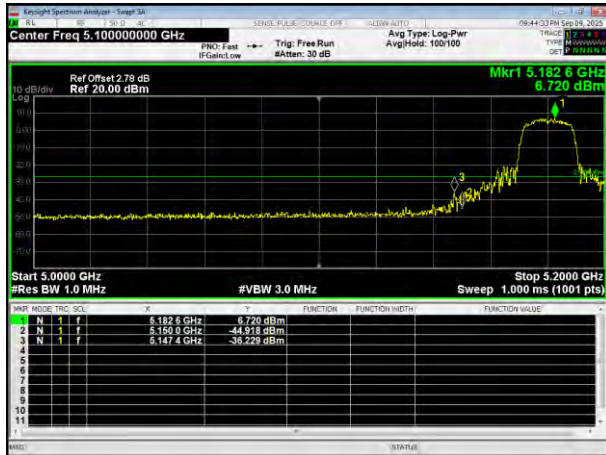


(802.11n20) Band Edge, Right Side

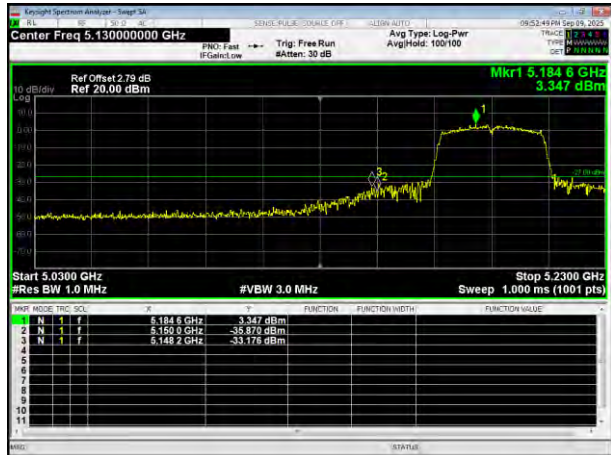


Remark: The test data did not compensate for the antenna gain, and the margin value of the edge test is greater than the sum of the antenna gain and cable loss, so the test meets the requirements

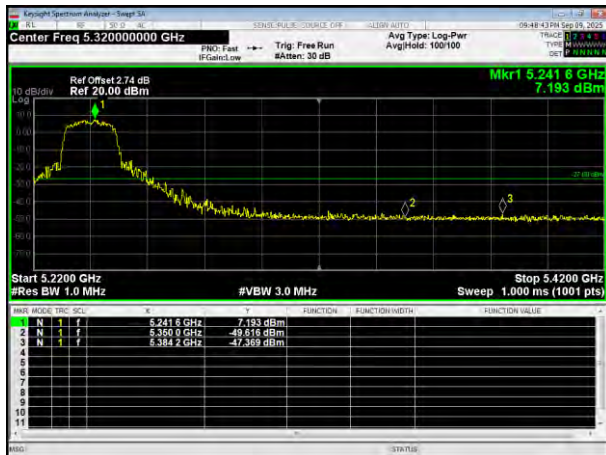
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



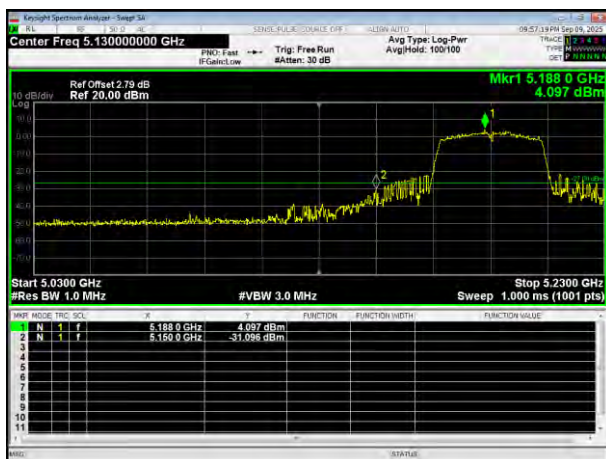
(802.11ac20) Band Edge, Right Side



(802.11n40) Band Edge, Right Side



(802.11ac40) Band Edge, Left Side



(802.11ac40) Band Edge, Right Side

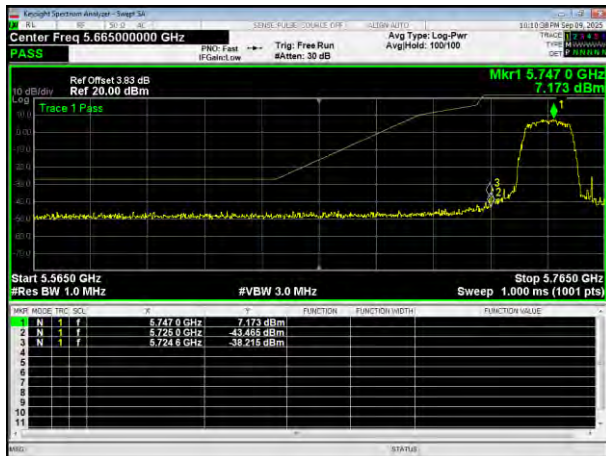


Remark: The test data did not compensate for the antenna gain, and the margin value of the edge test is greater than the sum of the antenna gain and cable loss, so the test meets the requirements



5.745~5.825 GHz

(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side



(802.11n20) Band Edge, Right Side

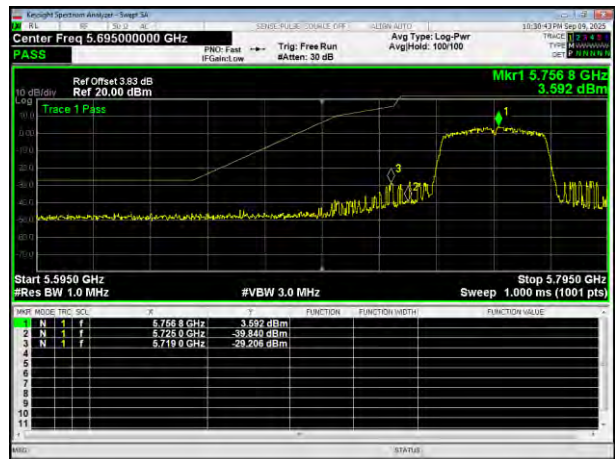


Remark: The test data did not compensate for the antenna gain, and the margin value of the edge test is greater than the sum of the antenna gain and cable loss, so the test meets the requirements

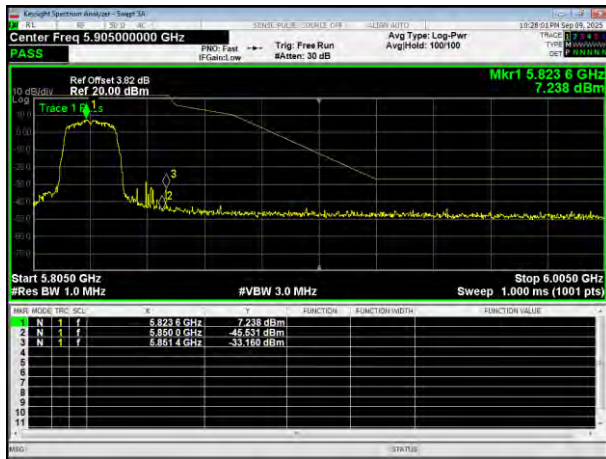
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

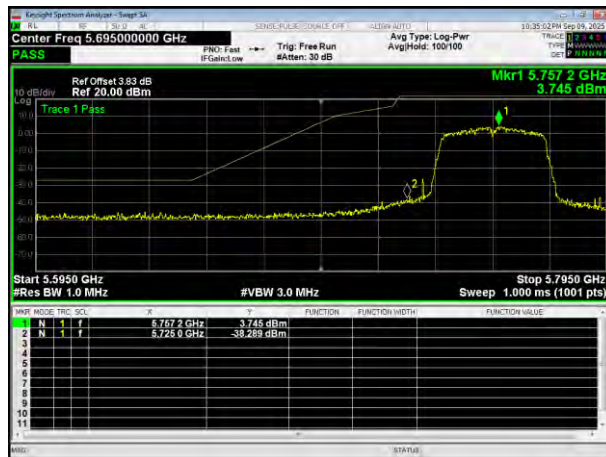


(802.11n40) Band Edge, Right Side



Remark: The test data did not compensate for the antenna gain, and the margin value of the edge test is greater than the sum of the antenna gain and cable loss, so the test meets the requirements

(802.11ac40) Band Edge, Left Side



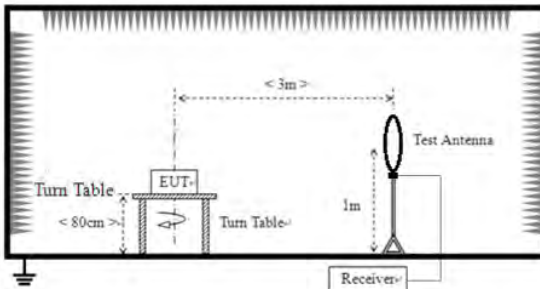
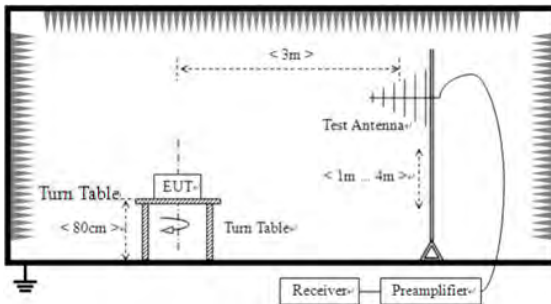
(802.11ac40) Band Edge, Right Side

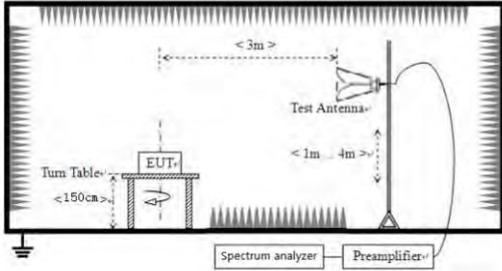


Remark: The test data did not compensate for the antenna gain, and the margin value of the edge test is greater than the sum of the antenna gain and cable loss, so the test meets the requirements

4.8 Spurious Emission

4.8.1 Radiated Emission Method

Test Requirement:	47CFR Part 15.209, Part 15E Section 15.407(b)(4)				
Test Method:	ANSI C63.10-2020§6.4&6.5&6.6				
Test Frequency Range:	9kHz to 40GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9kHz-150KHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		AV	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (uV/m)	Value	Measurement Distance	
	0.009MHz-0.490MHz	2400/F(KHz)	QP	300m	
	0.490MHz-1.705MHz	24000/F(KHz)	QP	300m	
	1.705MHz-30MHz	30	QP	30m	
	30MHz-88MHz	100	QP	3m	
	88MHz-216MHz	150	QP		
	216MHz-960MHz	200	QP		
	960MHz-1GHz	500	QP		
	Frequency	Limit (dBm/MHz)	Remark		
	Above 1GHz	-27.0	Peak Value		
Test setup:	For radiated emissions from 9kHz to 30MHz				
					
Test setup:	For radiated emissions from 30MHz to 1GHz				
					

	For radiated emissions above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. 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 antenna height 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Remarks:

1. The report only shows the worst mode.
2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

Measurement Data:

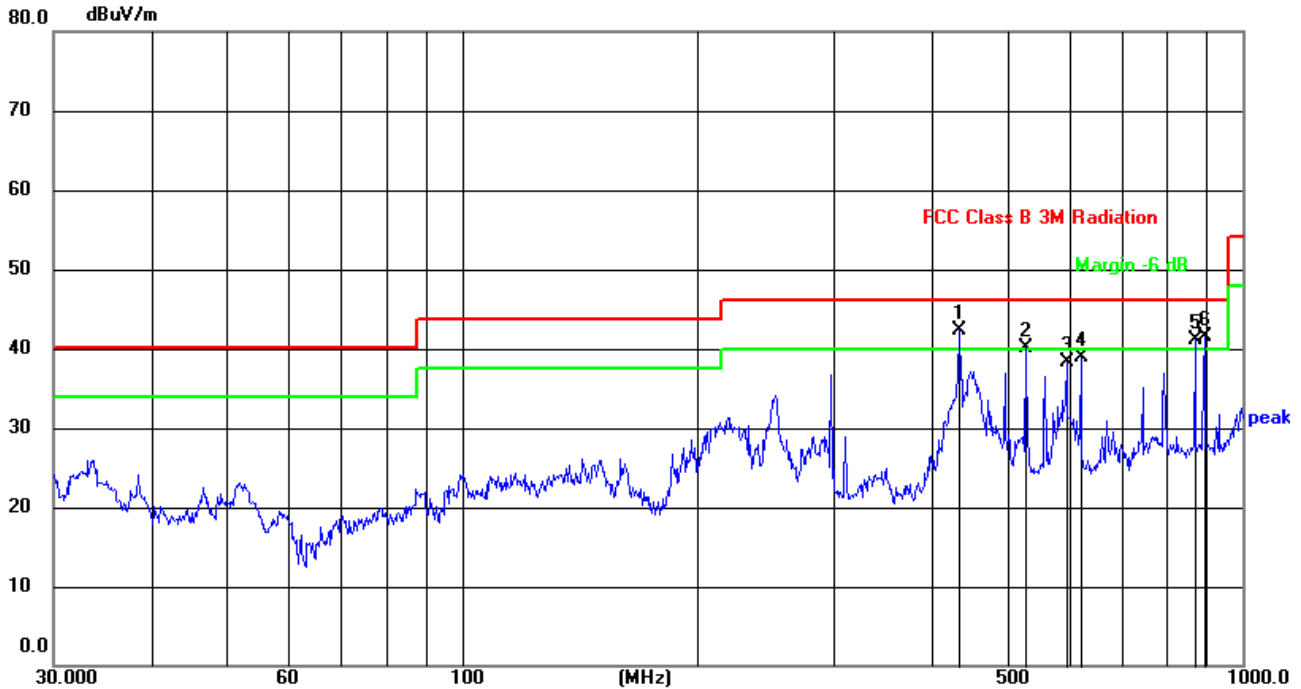
9 kHz ~ 30 MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

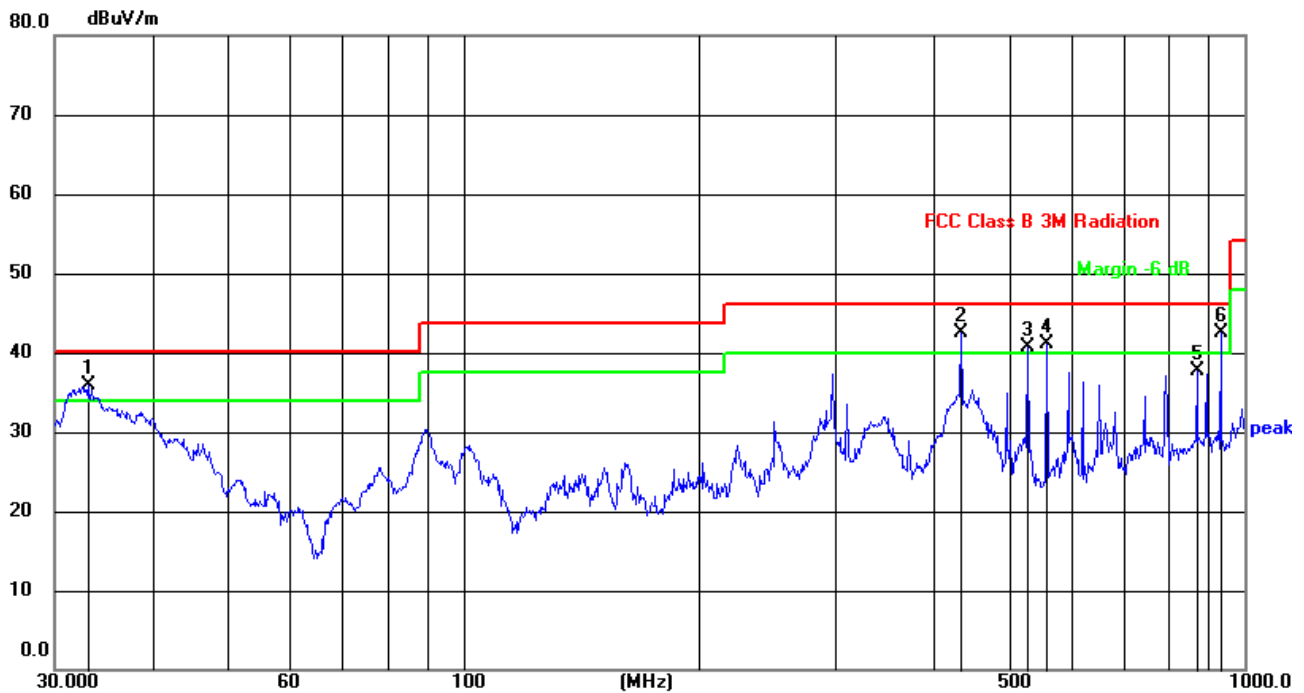
Temperature:	23.3℃	Relative Humidity:	60%RH
Pressure:	101.2kPa	Test Voltage :	AC 120V 60Hz
Test Mode :	TX- 802.11a (5200MHz)		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	434.0649	57.79	-15.40	42.39	46.00	-3.61	QP
2	528.2458	53.14	-13.08	40.06	46.00	-5.94	QP
3	595.1326	49.65	-11.36	38.29	46.00	-7.71	QP
4	620.7096	49.50	-10.69	38.81	46.00	-7.19	QP
5	869.1300	47.56	-6.41	41.15	46.00	-4.85	QP
6	893.8564	47.58	-6.00	41.58	46.00	-4.42	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.0949	57.22	-21.41	35.81	40.00	-4.19	QP
2	434.0649	57.94	-15.40	42.54	46.00	-3.46	QP
3	528.2458	53.87	-13.08	40.79	46.00	-5.21	QP
4	558.7300	53.47	-12.32	41.15	46.00	-4.85	QP
5	869.1300	44.10	-6.41	37.69	46.00	-8.31	QP
6	932.2712	47.85	-5.31	42.54	46.00	-3.46	QP

Remarks:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The test data shows only the worst case 802.11n20 mode.



Above 1GHz:

Remark: The test data shows only the worst case 802.11a mode.

Temperature:	23.3℃	Relative Humidity:	60%RH
Pressure:	101.2kPa	Test Voltage :	AC 120V 60Hz
Test Mode :	5.2G TX- 802.11a		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Low Channel:5180MHz							
V	10360.00	42.43	1.77	44.20	68.20	-24.00	PK
V	10360.00	37.58	1.77	39.35	54.00	-14.65	AV
V	15540.00	44.84	7.72	52.56	74.00	-21.44	PK
V	15540.00	33.69	7.72	41.41	54.00	-12.59	AV
V	20720.00	49.39	-5.73	43.66	68.20	-24.54	PK
V	20720.00	43.82	-5.73	38.09	54.00	-15.91	AV
V	25900.00	46.51	-2.89	43.62	68.20	-24.58	PK
V	25900.00	41.65	-2.89	38.76	54.00	-15.24	AV
V	31080.00	48.11	1.66	49.77	68.20	-18.43	PK
V	31080.00	42.09	1.66	43.75	54.00	-10.25	AV
V	36260.00	45.08	4.63	49.71	68.20	-18.49	PK
V	36260.00	38.99	4.63	43.62	54.00	-10.38	AV
H	10360.00	42.74	1.77	44.51	68.20	-23.69	PK
H	10360.00	37.74	1.77	39.51	54.00	-14.49	AV
H	15540.00	44.24	7.72	51.96	74.00	-22.04	PK
H	15540.00	33.81	7.72	41.53	54.00	-12.47	AV
H	20720.00	48.51	-5.73	42.78	68.20	-25.42	PK
H	20720.00	42.58	-5.73	36.85	54.00	-17.15	AV
H	25900.00	46.48	-2.89	43.59	68.20	-24.61	PK
H	25900.00	40.88	-2.89	37.99	54.00	-16.01	AV
H	31080.00	47.14	1.66	48.80	68.20	-19.40	PK
H	31080.00	41.70	1.66	43.36	54.00	-10.64	AV
H	36260.00	44.62	4.63	49.25	68.20	-18.95	PK
H	36260.00	39.39	4.63	44.02	54.00	-9.98	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=Antenna Factor + Cable Loss – Pre-amplifier
Margin= Emission Level – Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Middle Channel:5200Hz							
V	10400.00	42.38	1.85	44.23	68.20	-23.97	PK
V	10400.00	37.57	1.85	39.42	54.00	-14.58	AV
V	15600.00	44.21	7.64	51.85	74.00	-22.15	PK
V	15600.00	33.06	7.64	40.70	54.00	-13.30	AV
V	20800.00	52.69	-5.67	47.02	68.20	-21.18	PK
V	20800.00	48.08	-5.67	42.41	54.00	-11.59	AV
V	26000.00	46.97	-2.85	44.12	68.20	-24.08	PK
V	26000.00	41.73	-2.85	38.88	54.00	-15.12	AV
V	31200.00	45.64	1.57	47.21	68.20	-20.99	PK
V	31200.00	41.75	1.57	43.32	54.00	-10.68	AV
V	36400.00	45.26	4.93	50.19	68.20	-18.01	PK
V	36400.00	40.25	4.93	45.18	54.00	-8.82	AV
H	10400.00	42.55	1.85	44.40	68.20	-23.80	PK
H	10400.00	37.98	1.85	39.83	54.00	-14.17	AV
H	15600.00	44.03	7.64	51.67	74.00	-22.33	PK
H	15600.00	33.28	7.64	40.92	54.00	-13.08	AV
H	20800.00	49.42	-5.67	43.75	68.20	-24.45	PK
H	20800.00	44.58	-5.67	38.91	54.00	-15.09	AV
H	26000.00	48.59	-2.85	45.74	68.20	-22.46	PK
H	26000.00	43.60	-2.85	40.75	54.00	-13.25	AV
H	31200.00	47.43	1.57	49.00	68.20	-19.20	PK
H	31200.00	41.92	1.57	43.49	54.00	-10.51	AV
H	36400.00	44.71	4.93	49.64	68.20	-18.56	PK
H	36400.00	40.09	4.93	45.02	54.00	-8.98	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=Antenna Factor + Cable Loss – Pre-amplifier
Margin= Emission Level – Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
High Channel:5240MHz							
V	10480.00	40.28	2.02	42.30	68.20	-25.90	PK
V	10480.00	35.20	2.02	37.22	54.00	-16.78	AV
V	15720.00	40.68	7.46	48.14	74.00	-25.86	PK
V	15720.00	30.85	7.46	38.31	54.00	-15.69	AV
V	20960.00	46.30	-5.56	40.74	68.20	-27.46	PK
V	20960.00	41.57	-5.56	36.01	54.00	-17.99	AV
V	26200.00	44.04	-2.50	41.54	68.20	-26.66	PK
V	26200.00	39.92	-2.50	37.42	54.00	-16.58	AV
V	31440.00	45.26	1.39	46.65	68.20	-21.55	PK
V	31440.00	40.72	1.39	42.11	54.00	-11.89	AV
V	36680.00	41.52	5.25	46.77	68.20	-21.43	PK
V	36680.00	37.28	5.25	42.53	54.00	-11.47	AV
H	10480.00	40.67	2.02	42.69	68.20	-25.51	PK
H	10480.00	36.07	2.02	38.09	54.00	-15.91	AV
H	15720.00	40.96	7.46	48.42	74.00	-25.58	PK
H	15720.00	30.90	7.46	38.36	54.00	-15.64	AV
H	20960.00	46.10	-5.56	40.54	68.20	-27.66	PK
H	20960.00	41.67	-5.56	36.11	54.00	-17.89	AV
H	26200.00	45.99	-2.50	43.49	68.20	-24.71	PK
H	26200.00	42.76	-2.50	40.26	54.00	-13.74	AV
H	31440.00	44.64	1.39	46.03	68.20	-22.17	PK
H	31440.00	40.01	1.39	41.40	54.00	-12.60	AV
H	36680.00	41.78	5.15	46.93	68.20	-21.27	PK
H	36680.00	37.00	5.15	42.15	54.00	-11.85	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=Antenna Factor + Cable Loss – Pre-amplifier
Margin= Emission Level – Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Temperature:	23.3℃	Relative Humidity:	60%RH
Pressure:	101.2kPa	Test Voltage :	AC 120V 60Hz
Test Mode :	5.8G TX- 802.11n20		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Low Channel:5745MHz							
V	11490.00	48.38	3.31	51.69	74.00	-22.31	PK
V	11490.00	38.05	3.31	41.36	54.00	-12.64	AV
V	17235.00	37.35	10.10	47.45	68.20	-20.75	PK
V	17235.00	32.20	10.10	42.30	54.00	-11.71	AV
V	22980.00	55.23	-4.61	50.62	74.00	-23.39	PK
V	22980.00	44.02	-4.61	39.41	54.00	-14.59	AV
V	28725.00	45.65	0.87	46.52	68.20	-21.68	PK
V	28725.00	41.16	0.87	42.03	54.00	-11.97	AV
V	34470.00	46.21	3.82	50.03	68.20	-18.17	PK
V	34470.00	40.70	3.82	44.52	54.00	-9.48	AV
H	11490.00	49.06	3.31	52.37	74.00	-21.63	PK
H	11490.00	38.25	3.31	41.56	54.00	-12.44	AV
H	17235.00	36.43	10.10	46.53	68.20	-21.67	PK
H	17235.00	31.43	10.10	41.53	54.00	-12.47	AV
H	22980.00	54.79	-4.61	50.18	74.00	-23.82	PK
H	22980.00	43.79	-4.61	39.18	54.00	-14.82	AV
H	28725.00	48.02	0.87	48.89	68.20	-19.31	PK
H	28725.00	43.65	0.87	44.52	54.00	-9.48	AV
H	34470.00	46.73	3.82	50.55	68.20	-17.65	PK
H	34470.00	42.05	3.82	45.87	54.00	-8.13	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=Antenna Factor + Cable Loss – Pre-amplifier
Margin= Emission Level – Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Low Channel:5785MHz							
V	11570.00	47.69	3.34	51.03	74.00	-22.97	PK
V	11570.00	37.31	3.34	40.65	54.00	-13.35	AV
V	17355.00	35.53	10.52	46.05	68.20	-22.15	PK
V	17355.00	30.77	10.52	41.29	54.00	-12.71	AV
V	23140.00	54.34	-4.66	49.68	74.00	-24.32	PK
V	23140.00	43.94	-4.66	39.28	54.00	-14.72	AV
V	28925.00	47.07	1.36	48.43	68.20	-19.77	PK
V	28925.00	42.07	1.36	43.43	54.00	-10.58	AV
V	34710.00	46.62	3.95	50.57	68.20	-17.63	PK
V	34710.00	41.27	3.95	45.22	54.00	-8.78	AV
H	11570.00	48.76	3.34	52.10	74.00	-21.90	PK
H	11570.00	38.38	3.34	41.72	54.00	-12.28	AV
H	17355.00	34.66	10.52	45.18	68.20	-23.02	PK
H	17355.00	31.12	10.52	41.64	54.00	-12.36	AV
H	23140.00	54.91	-4.66	50.25	74.00	-23.75	PK
H	23140.00	43.79	-4.66	39.13	54.00	-14.87	AV
H	28925.00	47.86	1.36	49.22	68.20	-18.98	PK
H	28925.00	43.38	1.36	44.74	54.00	-9.26	AV
H	34710.00	47.23	3.95	51.18	68.20	-17.02	PK
H	34710.00	41.62	3.95	45.57	54.00	-8.43	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=Antenna Factor + Cable Loss – Pre-amplifier
Margin= Emission Level – Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

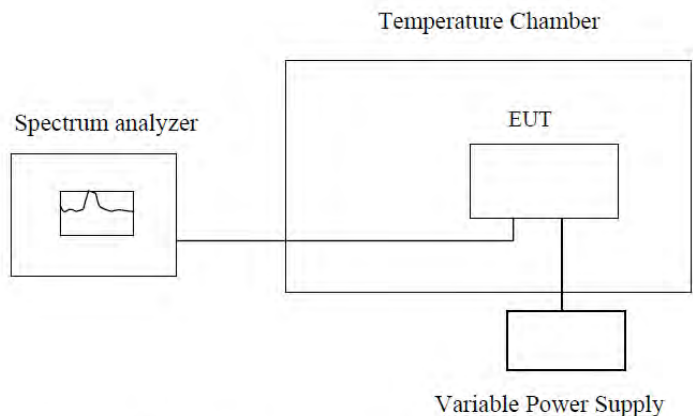


Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Low Channel:5825MHz							
V	11650.00	45.69	3.36	49.05	74.00	-24.95	PK
V	11650.00	35.40	3.36	38.76	54.00	-15.24	AV
V	17475.00	33.45	10.93	44.38	68.20	-23.82	PK
V	17475.00	29.71	10.93	40.64	54.00	-13.36	AV
V	23300.00	47.23	-4.77	42.46	68.20	-25.74	PK
V	23300.00	42.73	-4.77	37.96	54.00	-16.04	AV
V	29125.00	44.84	1.65	46.49	68.20	-21.71	PK
V	29125.00	39.50	1.65	41.15	54.00	-12.85	AV
V	34950.00	43.11	4.09	47.20	68.20	-21.00	PK
V	34950.00	38.85	4.09	42.94	54.00	-11.06	AV
H	11650.00	46.09	3.36	49.45	74.00	-24.55	PK
H	11650.00	35.92	3.36	39.28	54.00	-14.72	AV
H	17475.00	32.84	10.93	43.77	68.20	-24.43	PK
H	17475.00	27.93	10.93	38.86	54.00	-15.14	AV
H	23300.00	46.80	-4.77	42.03	68.20	-26.17	PK
H	23300.00	42.18	-4.77	37.41	54.00	-16.59	AV
H	29125.00	43.71	1.65	45.36	68.20	-22.84	PK
H	29125.00	40.49	1.65	42.14	54.00	-11.86	AV
H	34950.00	44.07	4.09	48.16	68.20	-20.04	PK
H	34950.00	39.04	4.09	43.13	54.00	-10.87	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=Antenna Factor + Cable Loss – Pre-amplifier
Margin= Emission Level – Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

4.9 Frequency stability

Test Requirement:	47CFR Part 15.407(g)
Test Method:	ANSI C63.10-2020§6.8
Limit:	Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified
Test Procedure:	a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minute s. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Remark: Set the EUT transmits at un-modulation mode to test frequency stability.



Measurement data:

Frequency stability versus Temp.					
Power Supply: AC 120V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5180	5179.997	5179.993	5179.996	5179.981
	5190	5189.993	5189.994	5189.987	5190.012
	5200	5199.988	5199.985	5199.995	5200.037
	5220	5219.989	5219.985	5220.008	5220.012
	5230	5229.987	5230.006	5229.986	5230.040
	5240	5240.000	5239.984	5240.004	5240.028
-20	5180	5179.949	5179.993	5179.984	5180.024
	5190	5189.979	5189.994	5189.995	5190.020
	5200	5199.974	5199.985	5199.986	5200.022
	5220	5219.979	5219.985	5219.994	5220.038
	5230	5229.987	5230.006	5230.002	5230.031
	5240	5239.995	5239.984	5239.984	5240.039
-10	5180	5179.987	5179.993	5179.996	5179.988
	5190	5189.988	5189.994	5189.987	5190.019
	5200	5199.979	5199.985	5199.995	5200.024
	5220	5219.979	5219.985	5220.008	5220.019
	5230	5230.000	5230.006	5229.986	5230.027
	5240	5239.978	5239.984	5240.004	5240.035
0	5180	5179.939	5179.996	5180.002	5180.026
	5190	5189.935	5189.992	5189.992	5190.027
	5200	5199.930	5199.987	5200.002	5200.038
	5220	5219.931	5219.998	5219.998	5220.024
	5230	5229.929	5230.002	5230.004	5230.041
	5240	5239.992	5240.002	5240.005	5240.026
10	5180	5179.976	5179.994	5179.996	5180.029
	5190	5189.987	5189.985	5189.987	5190.030
	5200	5199.978	5199.993	5199.995	5200.026
	5220	5219.986	5220.006	5220.008	5220.037
	5230	5229.994	5229.984	5229.986	5230.022
	5240	5239.976	5240.002	5240.004	5240.020
20	5180	5179.997	5179.993	5179.996	5179.981
	5190	5189.993	5189.994	5189.987	5190.012
	5200	5199.988	5199.985	5199.995	5200.037
	5220	5219.989	5219.985	5220.008	5220.012
	5230	5229.987	5230.006	5229.986	5230.040
	5240	5239.960	5239.984	5240.004	5240.028
30	5180	5179.927	5179.991	5179.995	5180.030



	5190	5189.923	5190.005	5189.826	5190.035
	5200	5199.918	5199.988	5199.994	5200.020
	5220	5219.919	5220.006	5219.997	5220.032
	5230	5229.916	5229.999	5229.994	5230.027
	5240	5239.889	5240.007	5239.998	5240.032
40	5180	5179.987	5179.982	5179.996	5180.019
	5190	5189.988	5189.993	5189.987	5190.021
	5200	5199.918	5199.993	5200.004	5200.020
	5220	5219.919	5219.998	5219.997	5220.032
	5230	5230.000	5230.000	5229.986	5230.033
	5240	5239.978	5239.982	5240.004	5240.011
50	5180	5179.949	5179.993	5179.984	5180.034
	5190	5189.979	5189.994	5189.995	5190.020
	5200	5199.994	5199.985	5199.986	5200.032
	5220	5219.919	5220.000	5220.003	5220.033
	5230	5229.916	5230.007	5229.998	5230.031
	5240	5239.989	5240.005	5239.992	5240.032



Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
AC 102V	5180	5179.913	5180.006	5179.994	5180.025
	5190	5189.989	5189.996	5189.995	5190.024
	5200	5199.987	5199.998	5199.996	5200.028
	5220	5220.000	5219.991	5219.996	5220.027
	5230	5229.977	5229.996	5229.995	5300.031
	5240	5239.985	5240.005	5240.004	5240.028
AC 120V	5180	5179.927	5180.001	5179.995	5180.030
	5190	5189.983	5189.995	5189.996	5190.015
	5200	5199.988	5199.983	5199.994	5200.020
	5220	5219.919	5220.006	5219.997	5220.032
	5230	5229.916	5229.998	5229.994	5230.024
	5240	5239.989	5240.005	5239.998	5240.032
AC 138V	5180	5179.997	5180.003	5179.984	5180.008
	5190	5189.993	5189.999	5189.995	5190.020
	5200	5199.988	5199.994	5199.986	5200.010
	5220	5219.989	5219.995	5219.994	5220.019
	5230	5229.987	5229.993	5229.999	5230.042
	5240	5239.990	5239.996	5239.984	5240.009



Frequency stability versus Temp.					
Power Supply: AC 120V					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5745	5744.999	5744.996	5744.996	5745.035
	5755	5754.987	5754.992	5754.999	5755.017
	5785	5784.988	5784.994	5785.003	5785.017
	5795	5794.979	5795.005	5794.986	5795.028
	5825	5824.990	5824.986	5824.982	5825.032
-20	5745	5744.893	5744.976	5744.997	5745.018
	5755	5754.918	5754.992	5754.998	5755.044
	5785	5784.907	5784.994	5784.993	5785.024
	5795	5794.985	5795.005	5794.984	5795.013
	5825	5824.990	5824.986	5824.993	5825.028
-10	5745	5744.979	5744.987	5744.981	5745.032
	5755	5754.986	5754.994	5755.005	5755.027
	5785	5784.970	5784.987	5784.995	5785.032
	5795	5794.977	5794.983	5794.993	5795.035
	5825	5824.986	5824.986	5825.003	5825.037
0	5745	5744.973	5744.986	5744.987	5745.037
	5755	5754.983	5754.993	5754.993	5755.036
	5785	5784.980	5784.977	5784.986	5785.024
	5795	5794.976	5794.984	5794.982	5795.042
	5825	5824.974	5824.993	5824.985	5825.035
10	5745	5744.970	5744.997	5744.981	5745.028
	5755	5754.985	5754.999	5755.005	5755.042
	5785	5784.987	5784.994	5784.995	5785.014
	5795	5794.997	5794.985	5794.993	5795.008
	5825	5824.979	5824.994	5825.003	5825.043
20	5745	5744.990	5744.986	5744.997	5745.017
	5755	5754.992	5755.003	5755.000	5755.036
	5785	5784.976	5784.986	5784.982	5785.043
	5795	5794.970	5795.003	5794.976	5795.035
	5825	5824.996	5825.001	5824.946	5825.045
30	5745	5744.969	5744.997	5744.981	5745.036
	5755	5754.985	5754.999	5755.005	5755.042
	5785	5784.987	5784.994	5784.995	5785.014
	5795	5794.998	5794.985	5794.993	5795.008
	5825	5824.979	5824.994	5825.003	5825.043
40	5745	5744.980	5744.986	5744.981	5745.012
	5755	5754.987	5755.003	5755.005	5755.037
	5785	5784.971	5784.986	5784.995	5785.027
	5795	5794.978	5795.003	5794.993	5795.025
	5825	5824.997	5825.001	5825.003	5825.036
50	5745	5744.974	5744.986	5744.986	5745.018
	5755	5754.999	5755.003	5754.992	5755.025
	5785	5784.989	5784.986	5784.976	5785.018
	5795	5794.987	5795.003	5794.983	5795.014
	5825	5824.997	5825.001	5824.912	5825.018



Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
AC 102V	5745	5744.989	5744.996	5744.997	5745.032
	5755	5754.985	5754.993	5755.002	5755.037
	5785	5784.987	5784.977	5784.985	5785.027
	5795	5794.998	5794.984	5795.003	5795.025
	5825	5824.979	5825.003	5825.000	5825.036
AC 120V	5745	5744.969	5744.997	5744.981	5745.028
	5755	5754.985	5754.999	5755.005	5755.042
	5785	5784.987	5784.994	5784.995	5785.014
	5795	5794.994	5794.985	5794.993	5795.008
	5825	5824.979	5824.994	5825.003	5825.043
AC 138V	5745	5744.899	5744.994	5744.997	5745.045
	5755	5754.986	5755.006	5755.000	5755.033
	5785	5784.998	5785.990	5784.982	5785.039
	5795	5794.997	5794.985	5794.993	5795.008
	5825	5824.979	5824.994	5825.003	5825.043



5 Test Setup Photo

Reference to the file No.: ET-25093254SP for details.

6 EUT Constructional Details

Reference to the file No.: ET-25093254EP and ET-25093254IP for details.

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