



TEST REPORT

Applicant: GUANGZHOU CHANGJIA ELECTRONIC CO., LTD.
Address of Applicant: No.139,Zhouxing Street, Dongchong Town, Nansha District, Guangzhou, China
Manufacturer: GUANGZHOU CHANGJIA ELECTRONIC CO., LTD.
Address of Manufacturer: No.139,Zhouxing Street, Dongchong Town, Nansha District, Guangzhou, China
Product Name: smart screen
Model No.: JM32A2,JM32B2,JM32C2,JM27A2,JM27B2,JM27C2,JM24B2,JM24C2,JM32D2,JM27D2
Trade Mark: jigu
FCC ID: 2BVF5-JM32A2
Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of Test: Jan.13, 2026-Mar.30, 2026
Date of report issued: Apr.08, 2026

Remark:

The results shown in this test report refer only to the sample(s) tested , this test report cannot be reproduced, except in full without prior written permission of the company.

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

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Report Revision History		
Report No.	Description	Issue Date
ET-26010190E03	Original	Mar.31, 2026
ET-26010190E03-1	Revise the product name from samart screen to smart screen	Apr.08, 2026

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1 Test Summary

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

1.1 Measurement Uncertainty

Test Item	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	0.72%	(1)
RF output power, conducted	±0.67 dB	(1)
Power Spectral Density, conducted	±0.51 dB	(1)
Unwanted Emissions, conducted	±0.64 dB	(1)
AC Power Line Conducted Emission	± 3.38 dB	(1)
Radiated emissions 9K-30MHz	±4.26 dB	(1)
Radiated emissions 30M- 1GHz	±4.88 dB	(1)
Radiated emissions 1GHz-18GHz	± 4.16 dB	(1)
Radiated emissions 18GHz-40GHz	±4.14 dB	(1)
Frequency error	Uc=6X10 ⁻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:	smart screen
Model No.:	JM32A2,JM32B2,JM32C2,JM27A2,JM27B2,JM27C2,JM24B2,JM24C2,JM32D2,JM27D2
Difference of model(s)	Except for the model name, color, and sales area, all models have the same circuit and RF module
Test Model:	JM32A2
Hardware Version:	N/A
Software Version:	N/A
Sample(s) Status:	Engineer sample
Operation Frequency:	☒ 5180-5240MHz for 802.11a/n(HT20)/ac20(VHT20); 5190-5230MHz for 802.11n(HT40)/ac40(VHT40); 5210MHz for 802.11 ac80(VHT80); ☒ 5745-5825 MHz for 802.11a/n(HT20)/ac20(VHT20); 5755-5795 MHz for 802.11n(HT40)/ac40(VHT40); 5775MHz for 802.11 ac80(VHT80);
Channel numbers:	☒ 4 channels for 802.11a/n20(HT20)/ac20(VHT20) in the 5180-5240MHz band; 2 channels for 802.11 n40(HT40)/ac40(VHT40) in the 5190-5230MHz band ; 1 channels for 802.11 ac80(VHT80) in the 5210MHz band ; ☒ 5 channels for 802.11802.11a/n20(HT20)/ac20(VHT20) in the 5745-5825MHz band ; 2 channels for 802.11 n40(HT40)/ac40(VHT40) in the 5755-5795MHz band ; 1 channels for 802.11 ac80(VHT80) in the 5775MHz band
Channel bandwidth:	802.11a/802.11n(HT20)/ 802.11ac(VHT20): 20MHz 802.11n(HT40)/ 802.11ac(VHT40) : 40MHz 802.11ac(VHT80) : 80MHz
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20/40/80):NSS1, MCS0-MCS9
Modulation technology:	Orthogonal Frequency Division Multiplexing (OFDM) with BPSK/QPSK/16QAM/64QAM/256QAM
Antenna Type:	PCB Antenna
Antenna gain:	2.74 dBi(Declare by applicant) Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.
Battery	DC 11.1V 10Ah
Power supply:	DC 11.1V From Battery or DC 13.5V From Adapter
Adapter Model:	Model: JFY96W-135600A1 Input: 100-240V~50/60Hz 2.0A MAOutput: 13.5V=6A

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 /n(HT20)/ac(VHT20)	802.11 n(HT40)/ac(VHT40)	802.11ac(VHT80)
Lowest channel	5180	5190	5210
Middle channel	5200	X	
Highest channel	5240		

Test channel	Frequency (MHz)		
	802.11 a /n(HT20)/ac(VHT20)	802.11 n(HT40)/ac(VHT40)	802.11ac(VHT80)
Lowest channel	5745	5755	5775
Middle channel	5785	X	
Highest channel	5825		

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
<i>Remark: For battery operated equipment, the EUT was performed using a new DC 11.1V battery</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 20 CH36/ CH40/ CH 48 802.11a /n 20/ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40/ac 40 CH38/ CH 46 802.11n 40/ac 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	/
Mode 5	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/ ac 20 CH36/ CH40/ CH 48 802.11a /n 20/ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40/ac 40 CH38/ CH 46 802.11n 40/ac 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	/

Note:

(1) 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
/	/	/	/	/
/	/	/	/	/

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	Engineering mode
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	102696	2026.3.05	2027.3.04
2	Artificial power network	schwarabeck	NSLK8127	8127483	2026.3.05	2027.3.04
3	Artificial power network	ETS	3186/2NM	1132	2026.3.05	2027.3.04
4	10dB attenuator	HUBER+SUHNER	10dB	/	2026.3.05	2027.3.04
5	Cable 4	HUBER SUNNER	3M	/	2026.3.05	2027.3.04
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	2026.3.05	2027.3.04
2	Broadband antenna	schwarabeck	VULB9168	1064	2026.3.11	2028.3.10
3	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2026.3.08	2028.3.07
4	Amplifier	EMtrace	RP01A	50117	2026.3.05	2027.3.04
5	Amplifier	Space-Dtronics	EWLAN0118G-P40	19113001	2026.3.05	2027.3.04
6	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2026.3.05	2027.3.04
7	Power detector meter	MWRFtest	MW100-PSB	MW201020JYT	2026.3.05	2027.3.04
8	Signal generator	Agilent	N5182A	MY49060455	2026.3.05	2027.3.04
9	Spectrum analyzer	Rohde&schwarz	FSV-40N	101321	2026.3.05	2027.3.04
10	Amplifier	SKET	LNPA_1840-50	SK2019040302	2026.3.05	2027.3.04
11	Horn antenna	schwarabeck	BBHA 9170	946	2026.3.08	2028.3.07
12	Loop antenna	schwarabeck	FMZB 1519 B	1519	2026.3.08	2028.3.07
13	Cable 6	HUBER SUNNER	0.5M	/	2026.3.05	2027.3.04
14	Cable7	HUBER SUNNER	2.0M	/	2026.3.05	2027.3.04
15	Cable8	HUBER SUNNER	6.0M	/	2026.3.05	2027.3.04
16	Filter	Xin bo	XBLBQ-GTA29	210410-3-2	2026.3.05	2027.3.04
17	Power Sensor	Keysight	U2021XA	MY54111006	2026.3.05	2027.3.04
18	Temp. & Humidity Chamber	Jiecheng Instrument	QA-LP-80	20160705001	2026/3/06	2027/3/05

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

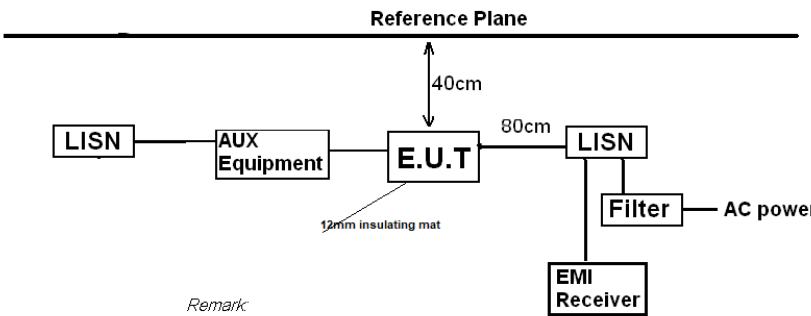
Software Name	Manufacturer	Model	Version
RF test software	MWRFtest	MTS 8310	V2.0.0.0
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4 Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:	47CFR Part 15.203
<i>15.203 requirement:</i> <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>	
E.U.T Antenna:	
The antenna is PCB antenna, the best case gain of the antenna is 2.74 dBi, reference to the appendix II for details..	

4.2 Conducted Emissions

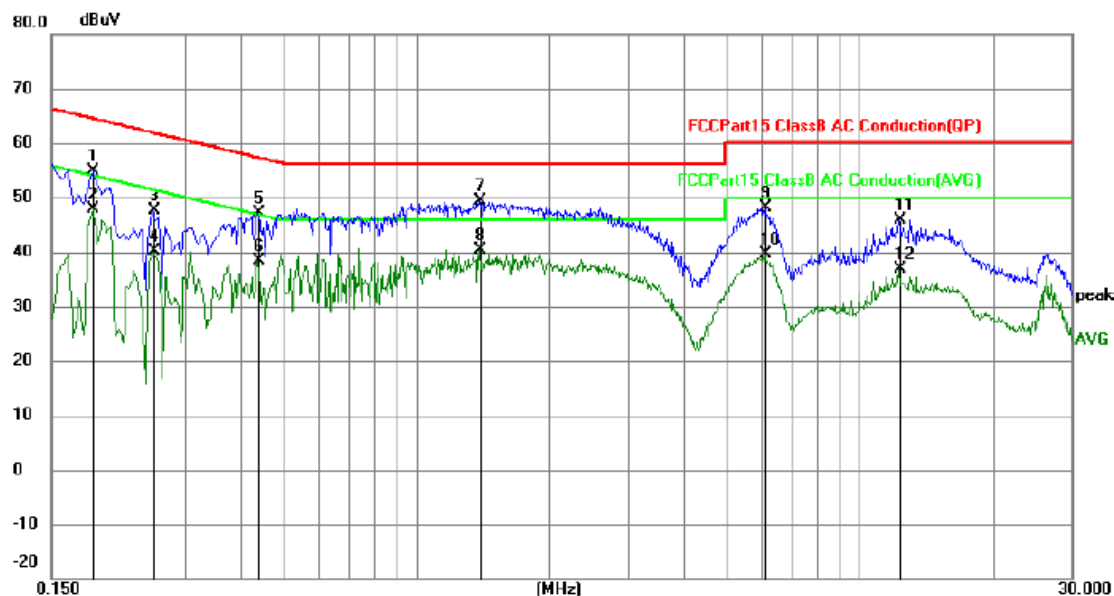
Test Requirement:	47CFR Part 15.207					
Test Method:	ANSI C63.10-2020 §6.2					
Test Frequency Range:	150KHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto					
Limit:	Frequency range (MHz)		Limit (dBuV)			
			Quasi-peak		Average	
	0.15-0.5		66 to 56*		56 to 46*	
	0.5-5		56		46	
	5-30		60		50	
* Decreases with the logarithm of the frequency.						
Test setup:	Reference Plane  Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network					
Test procedure:	1. EUT is placed on a plane 12mm above the ground through an insulated bracket, 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.:	23.4°C	Humid.:	53%	Press.:	1012mbar
Test voltage:	AC 120V 60Hz					
Test results:	Pass					

Remark:

- Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.
- All mode have been tested, the report only shows the worst mode (802.11n20 5200MHz)

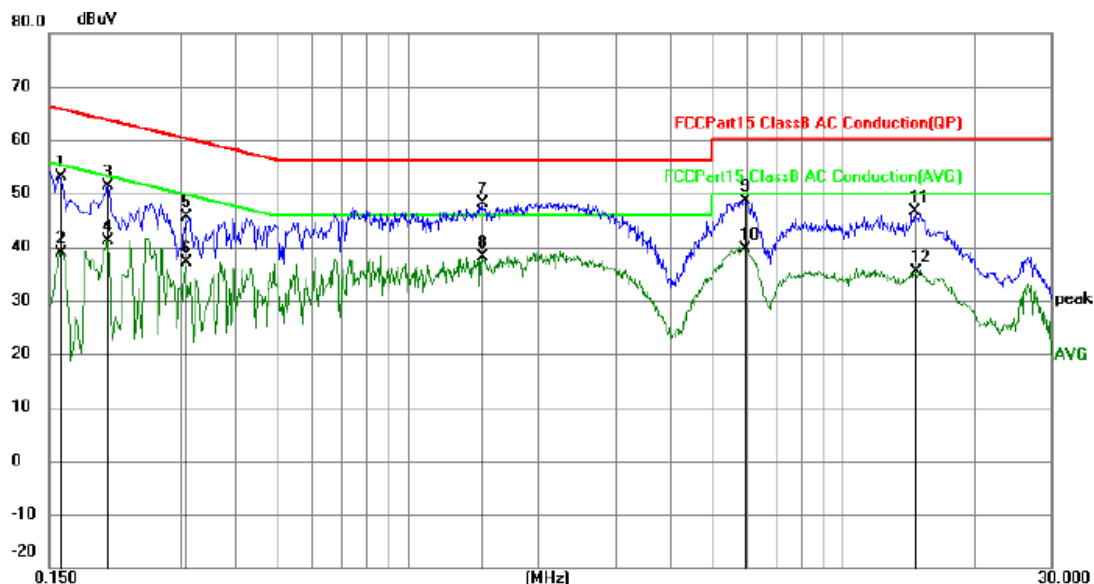
Measurement Result

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1859	45.17	9.71	54.88	64.22	-9.34	QP
2	0.1859	38.18	9.71	47.89	54.22	-6.33	AVG
3	0.2535	38.04	9.71	47.75	61.64	-13.89	QP
4	0.2535	30.38	9.71	40.09	51.64	-11.55	AVG
5	0.4380	37.49	9.74	47.23	57.10	-9.87	QP
6	0.4380	28.72	9.74	38.46	47.10	-8.64	AVG
7	1.3871	39.65	9.75	49.40	56.00	-6.60	QP
8	1.3871	30.54	9.75	40.29	46.00	-5.71	AVG
9	6.1349	38.43	9.66	48.09	60.00	-11.91	QP
10	6.1349	29.92	9.66	39.58	50.00	-10.42	AVG
11	12.2910	36.43	9.46	45.89	60.00	-14.11	QP
12	12.2910	27.33	9.46	36.79	50.00	-13.21	AVG

Neutral:

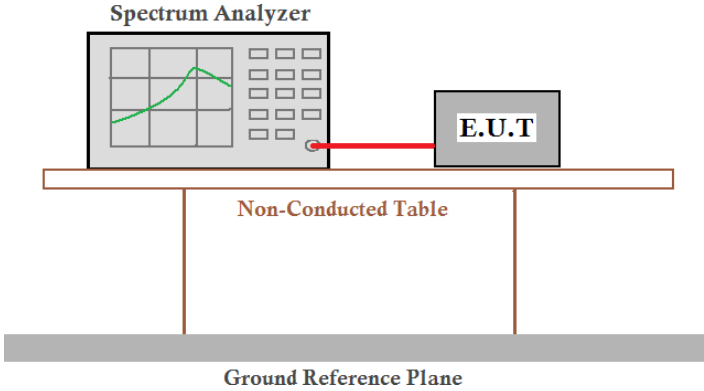


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1590	43.42	9.70	53.12	65.52	-12.40	QP
2	0.1590	29.08	9.70	38.78	55.52	-16.74	AVG
3	0.2038	41.68	9.71	51.39	63.45	-12.06	QP
4	0.2038	31.48	9.71	41.19	53.45	-12.26	AVG
5	0.3082	35.96	9.73	45.69	60.02	-14.33	QP
6	0.3082	27.46	9.73	37.19	50.02	-12.83	AVG
7	1.4818	38.38	9.75	48.13	56.00	-7.87	QP
8	1.4818	28.48	9.75	38.23	46.00	-7.77	AVG
9	5.9458	39.19	9.54	48.73	60.00	-11.27	QP
10	5.9458	30.21	9.54	39.75	50.00	-10.25	AVG
11	14.5950	37.27	9.36	46.63	60.00	-13.37	QP
12	14.6850	25.95	9.36	35.31	50.00	-14.69	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§11.6	
Limit:	/	
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. 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 Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.2°C	Humid.: 65%RH
Test voltage:	DC 11.1V	
Test results:	Pass	

Measurement Result

5180-5240MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	100.00	0.00
TX 802.11n20 Mode	100.00	0.00
TX 802.11ac20 Mode	100.00	0.00
TX 802.11n40 Mode	100.00	0.00
TX 802.11a40 Mode	100.00	0.00
TX 802.11ac80 Mode	100.00	0.00

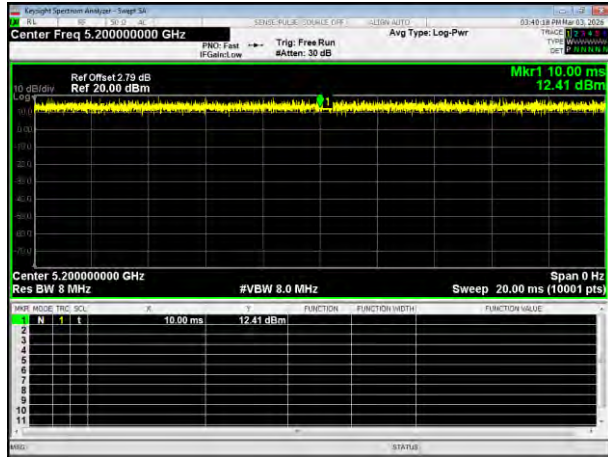
5745-5825 MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	100.00	0.00
TX 802.11n20 Mode	100.00	0.00
TX 802.11ac20 Mode	100.00	0.00
TX 802.11n40 Mode	100.00	0.00
TX 802.11a40 Mode	100.00	0.00
TX 802.11ac80 Mode	100.00	0.00

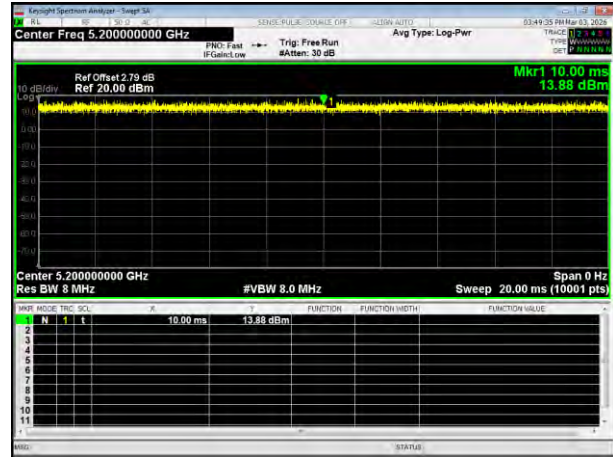
Test plot

5180-5240MHz

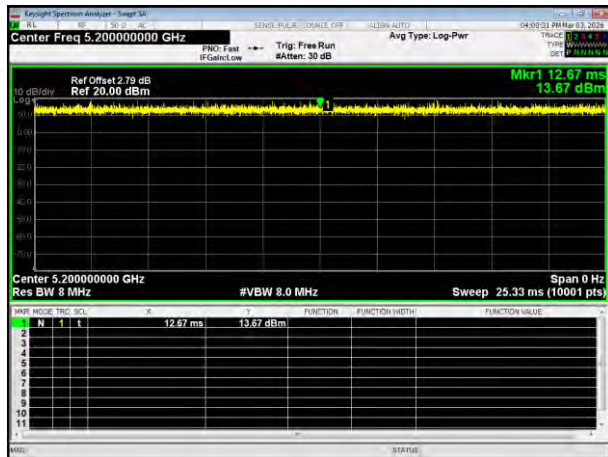
(802.11a) plot



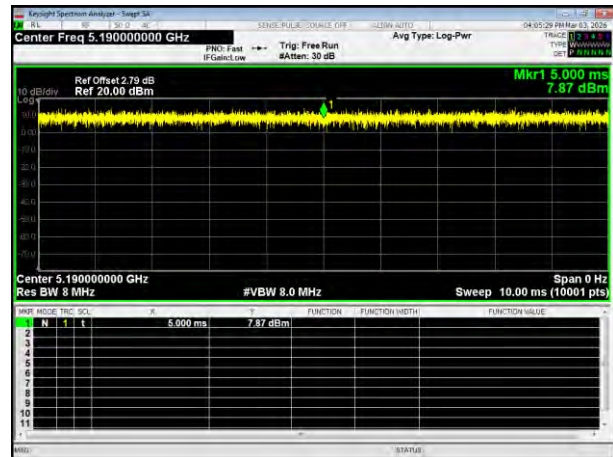
(802.11 n20) plot



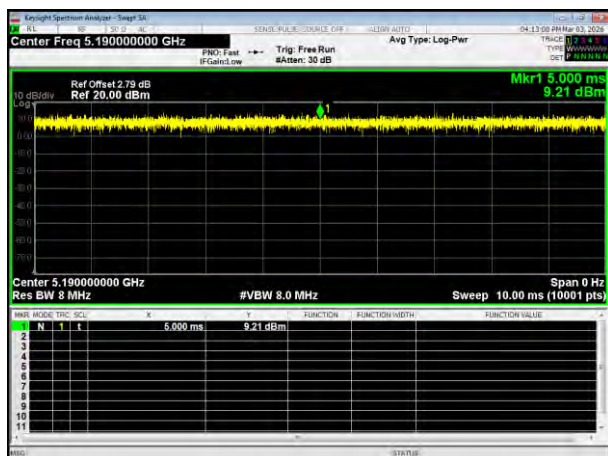
(802.11ac20) plot



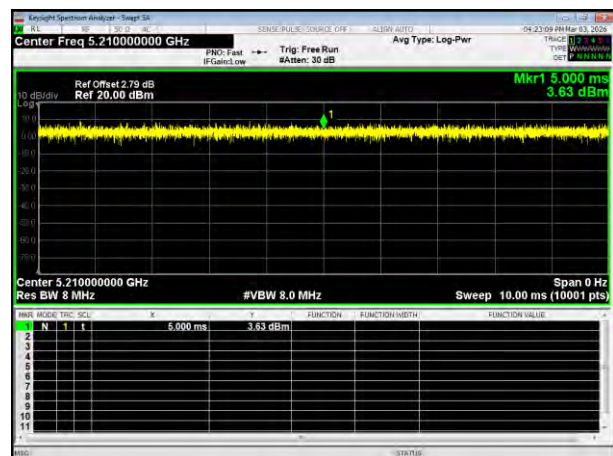
(802.11 n40) plot



(802.11ac40) plot



(802.11ac80) plot



5745-5825 MHz

(802.11a) plot



(802.11 n20) plot



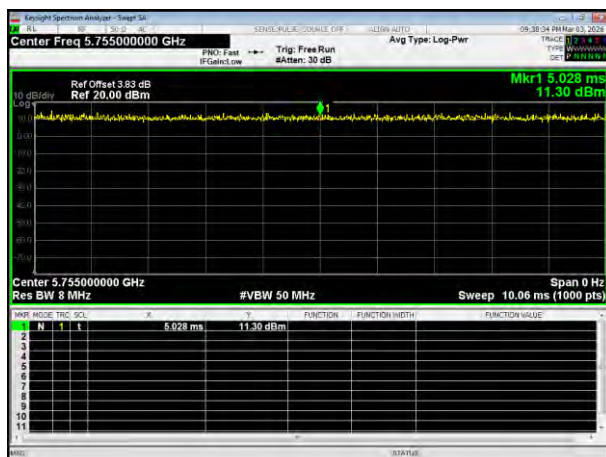
(802.11ac20) plot



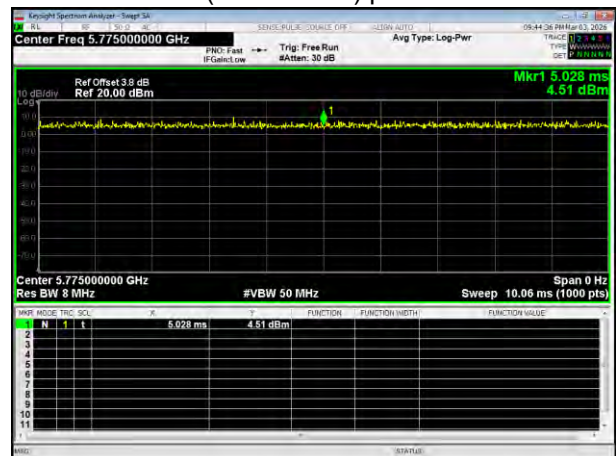
(802.11 n40) plot



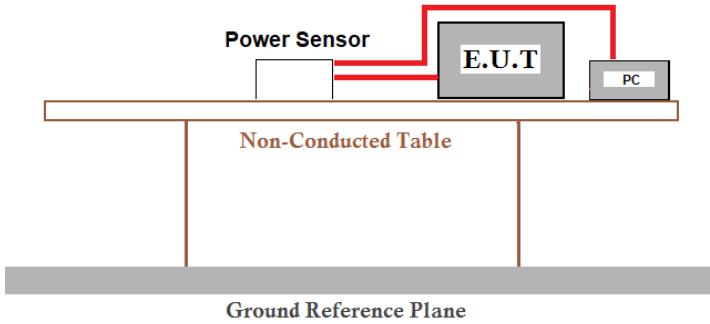
(802.11ac40) plot



(802.11ac80) 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.: 22.2°C	Humid.: 65%RH
Test voltage:	DC 11.1V	
Test results:	Pass	

Measurement Result

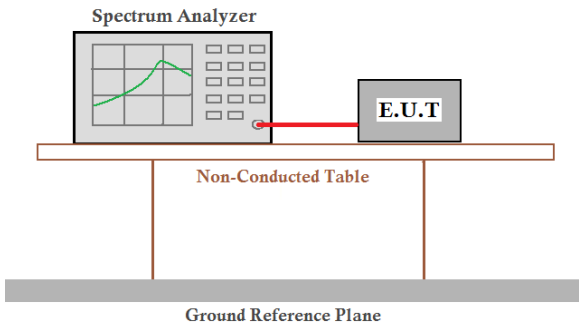
5180-5240MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	0.00	14.31	14.31	24	Pass
CH40	5200	0.00	14.31	14.31	24	Pass
CH48	5240	0.00	14.00	14.00	24	Pass
TX 802.11 n20 Mode						
CH36	5180	0.00	14.07	14.07	24	Pass
CH40	5200	0.00	14.05	14.05	24	Pass
CH48	5240	0.00	14.12	14.12	24	Pass
TX 802.11 ac20 Mode						
CH36	5180	0.00	14.18	14.18	24	Pass
CH40	5200	0.00	14.05	14.05	24	Pass
CH48	5240	0.00	14.06	14.06	24	Pass
TX 802.11 n40 Mode						
CH38	5190	0.00	13.82	13.82	24	Pass
CH46	5230	0.00	13.04	13.04	24	Pass
TX 802.11 ac40 Mode						
CH38	5190	0.00	13.20	13.20	24	Pass
CH46	5230	0.00	13.45	13.45	24	Pass
TX 802.11 ac80 Mode						
CH42	5210	0.00	12.44	12.44	24	Pass

5745-5825 MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH149	5745	0.00	14.58	14.58	30	Pass
CH157	5785	0.00	14.61	14.61	30	Pass
CH165	5825	0.00	14.40	14.40	30	Pass
TX 802.11 n20 Mode						
CH149	5745	0.00	14.46	14.46	30	Pass
CH157	5785	0.00	14.61	14.61	30	Pass
CH165	5825	0.00	14.36	14.36	30	Pass
TX 802.11 ac20 Mode						
CH149	5745	0.00	14.45	14.45	30	Pass
CH157	5785	0.00	14.14	14.14	30	Pass
CH165	5825	0.00	14.30	14.30	30	Pass
TX 802.11 n40 Mode						
CH151	5755	0.00	13.35	13.35	30	Pass
CH159	5795	0.00	13.81	13.81	30	Pass
TX 802.11 ac40 Mode						
CH151	5755	0.00	13.47	13.47	30	Pass
CH159	5795	0.00	13.37	13.37	30	Pass
TX 802.11 ac80 Mode						
CH155	5775	0.00	12.52	12.52	30	Pass

4.5 Bandwidth &99% Occupy 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.: 22.2°C	Humid.: 65%RH
Test voltage:	DC 11.1V	
Test results:	Pass	

Measurement Result

5180-5240MHz

Test CH	-26dB Channel Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (VHT20)	802.11n (HT40)	802.11ac (VHT40)	802.11ac (VHT80)	
Lowest	19.74	19.92	19.97	40.27	40.21	--	Pass
Middle	19.55	19.95	20.08	--	--	79.76	
Highest	19.58	19.95	19.98	40.17	40.24	--	

(802.11a) plot on channel 36



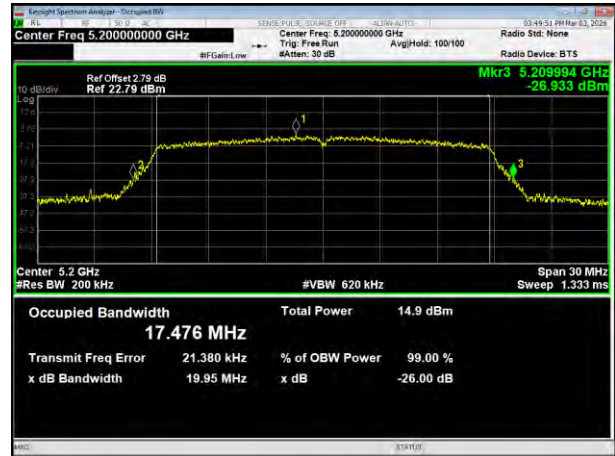
(802.11 n20) plot on channel 36



(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



Test plot

(802.11ac20) plot on channel 36



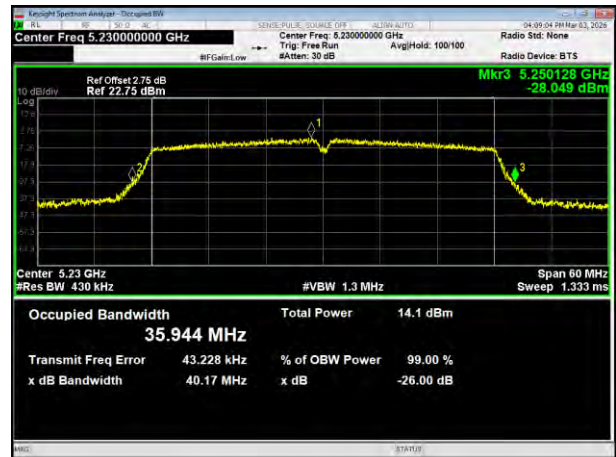
(802.11 n40) plot on channel 38



(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46



(802.11ac20) plot on channel 48



Test plot

(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46



5745-5825MHz

Test CH	-6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (VHT20)	802.11n (HT40)	802.11ac (VHT40)	802.11ac (VHT80)		
Lowest	15.13	17.16	15.79	35.31	36.06	--	>500	Pass
Middle	15.78	16.88	16.02	--	--	76.46		
Highest	15.77	16.91	16.51	34.49	36.04	--		

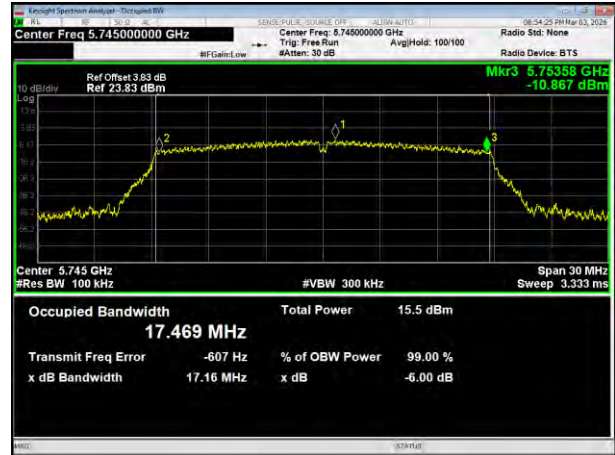
Remark: "---" is not applicable

Test plot

(802.11a) plot on channel 149



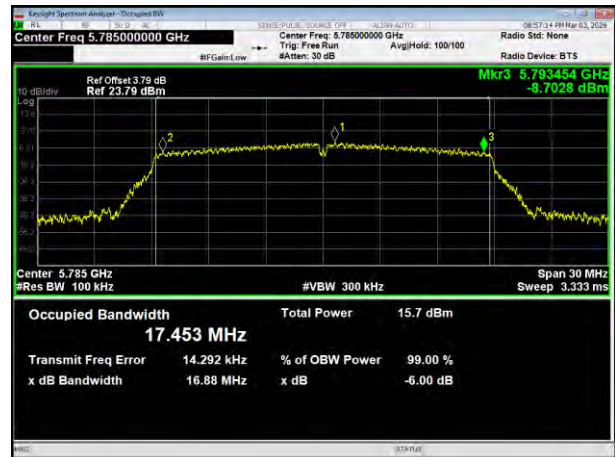
(802.11 n20) plot on channel 149



(802.11a) plot on channel 157



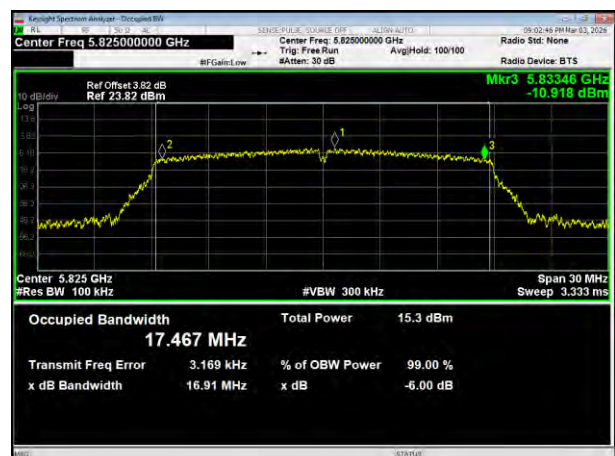
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165



(802.11 n20) plot on channel 165



Test plot

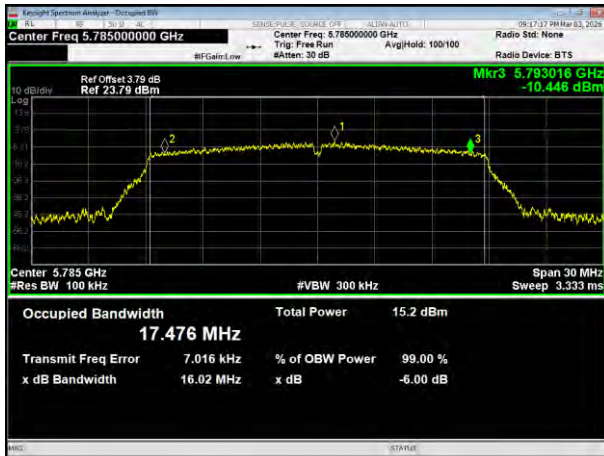
(802.11ac20) plot on channel 149



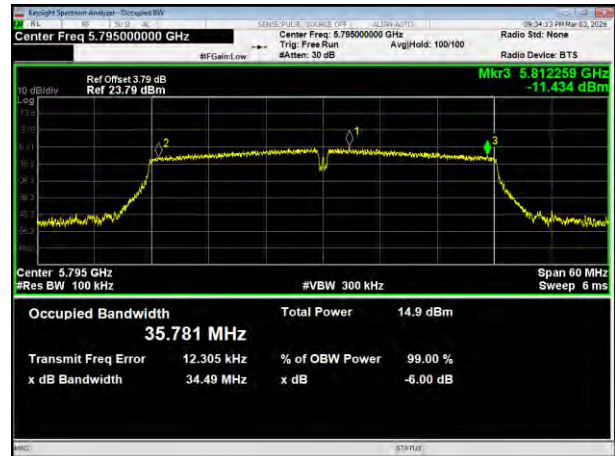
(802.11 n40) plot on channel 151



(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

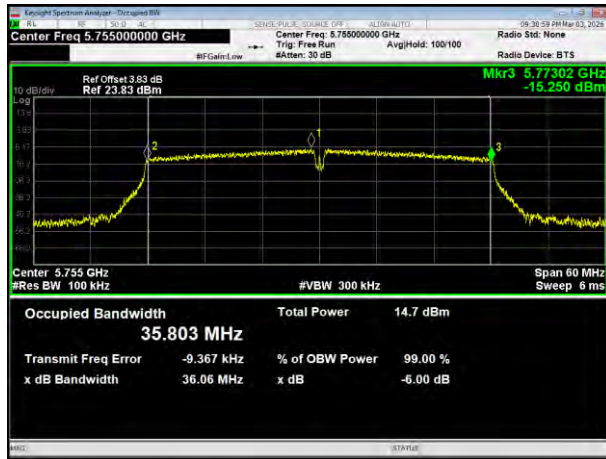


(802.11ac20) plot on channel 165

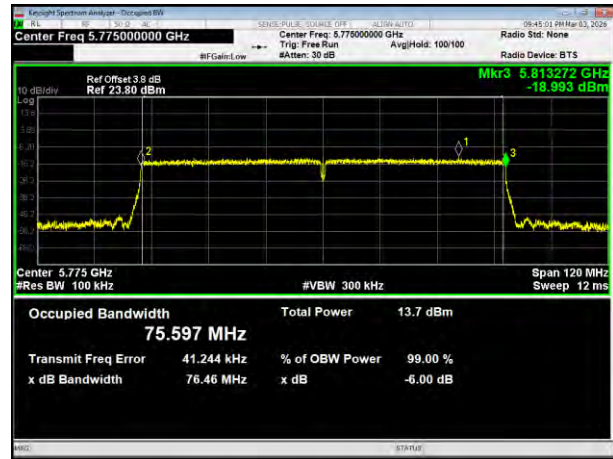


Test plot

(802.11 ac40) plot on channel 151



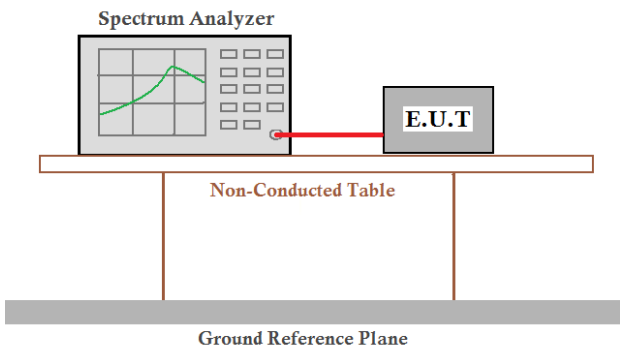
(802.11 ac80) plot on channel 155



(802.11 ac40) plot on channel 159



4.6 Power Spectral Density

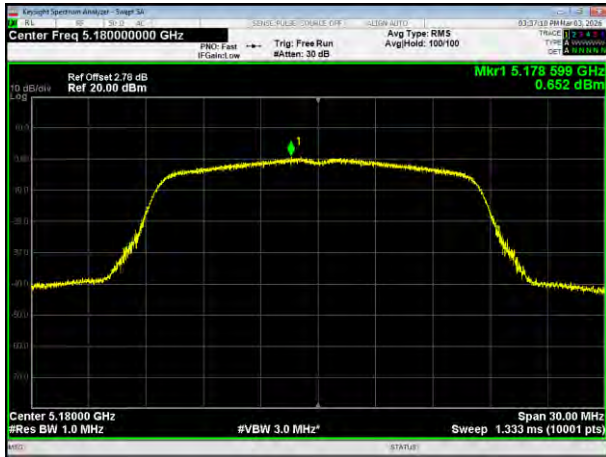
Test Requirement:	47CFR Part 15.407(a)(1)/ (a)(3)	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, ANSI C63.10-2020§12.6	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm/1MHz for master device
		≤11dBm/1MHz for client device
	5250-5350	≤11dBm/1MHz for client device
	5470-5725	≤11dBm/1MHz for client device
	5725-5850	≤30dBm/500kHz
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.2°C	Humid.: 65%RH
Test voltage:	DC 11.1V	
Test results:	Pass	

Measurement Result

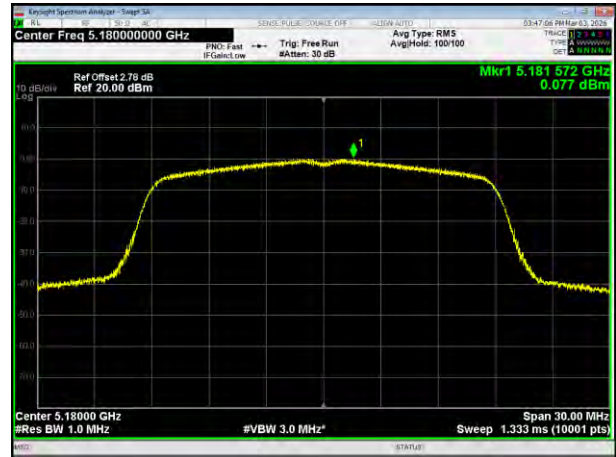
5180-5240MHz

Mode	Frequency	Measured Power Density (dBm/MHz)	Correction Factor (dB)	Total Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	0.652	0.00	0.652	11
	5200 MHz	0.434	0.00	0.434	11
	5240 MHz	0.148	0.00	0.148	11
802.11 n20	5180 MHz	0.077	0.00	0.077	11
	5200 MHz	0.04	0.00	0.04	11
	5240 MHz	0.145	0.00	0.145	11
802.11 ac20	5180 MHz	0.4	0.00	0.4	11
	5200 MHz	0.211	0.00	0.211	11
	5240 MHz	0.102	0.00	0.102	11
802.11 n40	5190 MHz	-3.223	0.00	-3.223	11
	5230 MHz	-3.987	0.00	-3.987	11
802.11 ac40	5190 MHz	-3.808	0.00	-3.808	11
	5230 MHz	-3.66	0.00	-3.66	11
802.11 ac80	5210 MHz	-9.244	0.00	-9.244	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



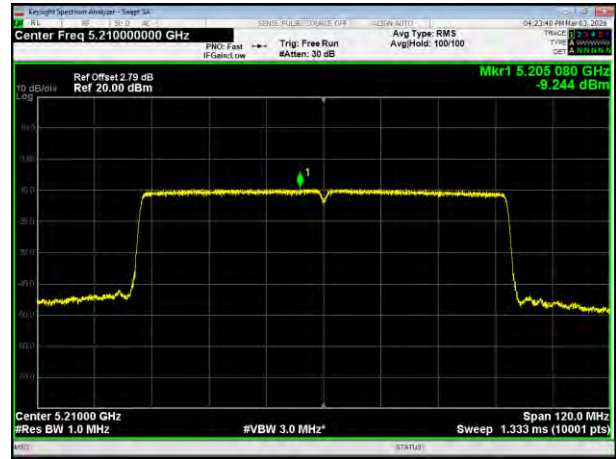
(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



(802.11ac40) PSD plot on channel 46



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	-1.87	-1.956	0.00	-1.956	30
	5785 MHz	-2.017	-2.103	0.00	-2.103	30
	5825 MHz	-2.218	-2.304	0.00	-2.304	30
802.11 n20	5745 MHz	-2.078	-2.164	0.00	-2.164	30
	5785 MHz	-2.234	-2.32	0.00	-2.32	30
	5825 MHz	-2.416	-2.502	0.00	-2.502	30
802.11ac20	5745 MHz	-2.443	-2.529	0.00	-2.529	30
	5785 MHz	-2.542	-2.628	0.00	-2.628	30
	5825 MHz	-2.179	-2.265	0.00	-2.265	30
802.11 n40	5755 MHz	-6.555	-6.641	0.00	-6.641	30
	5795 MHz	-6.228	-6.314	0.00	-6.314	30
802.11ac40	5755 MHz	-6.561	-6.647	0.00	-6.647	30
	5795 MHz	-6.64	-6.726	0.00	-6.726	30
802.11ac80	5775 MHz	-12.368	-12.454	0.00	-12.454	30

Note:

1. Correction Factor (dB) = duty cycle factor
2. RBW Factor (dB) = $10 \cdot \log(500/510) = -0.086$
3. Measured PSD (dBm/500kHz) = Measured PSD (dBm/510kHz) + RBW Factor (dB)
4. Total Measured Power Density (dBm/500KHz) = Measured PSD (dBm/500kHz) + Correction Factor (dB)

(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



(802.11ac80) PSD plot on channel 155

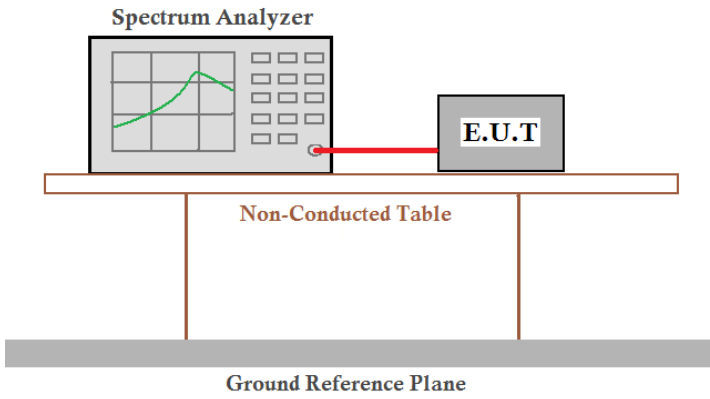


(802.11ac40) PSD plot on channel 159



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:	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, which is supported by a Ground Reference Plane.	
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.: 22.2°C	Humid.: 65%RH
Test voltage:	DC 11.1V	
Test results:	Pass	

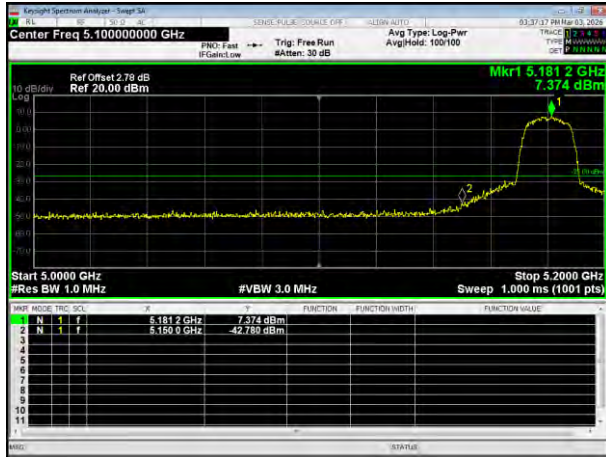


Measurement Data:

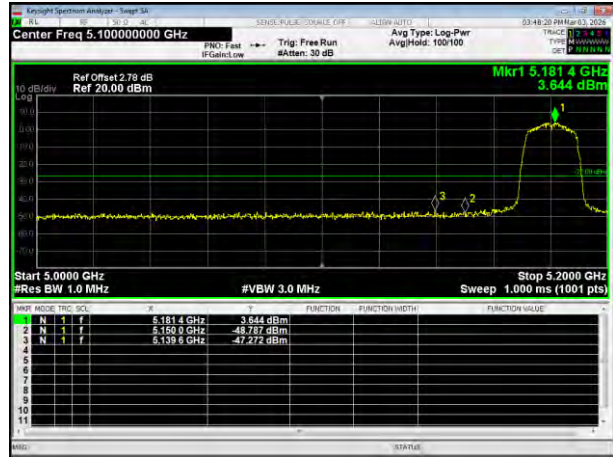
Condition	Mode	Frequenc y (MHz)	Antenna	Max Value (dBm)	Antenna(dBi)	Max Value (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	-42.77	2.74	-40.03	-27	Pass
NVNT	a	5240	Ant1	-46.49	2.74	-43.75	-27	Pass
NVNT	n20	5180	Ant1	-47.27	2.74	-44.53	-27	Pass
NVNT	n20	5240	Ant1	-47.59	2.74	-44.85	-27	Pass
NVNT	n40	5190	Ant1	-46.31	2.74	-43.57	-27	Pass
NVNT	n40	5230	Ant1	-47.73	2.74	-44.99	-27	Pass
NVNT	ac20	5180	Ant1	-46.66	2.74	-43.92	-27	Pass
NVNT	ac20	5240	Ant1	-47.42	2.74	-44.68	-27	Pass
NVNT	ac40	5190	Ant1	-46.72	2.74	-43.98	-27	Pass
NVNT	ac40	5230	Ant1	-47.95	2.74	-45.21	-27	Pass
NVNT	ac80	5210	Ant1	-45.21	2.74	-42.47	-27	Pass

5.180~5.240 GHz

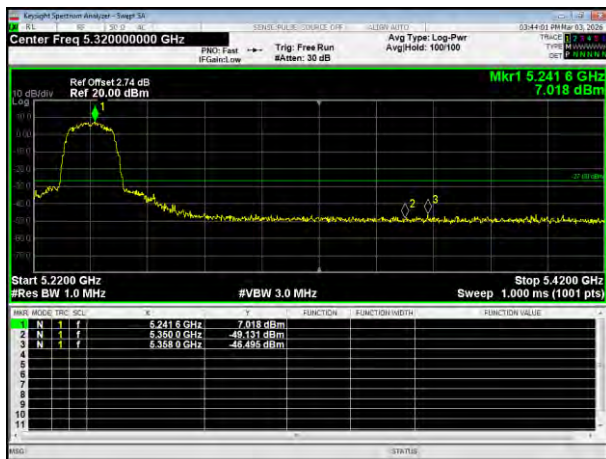
(802.11a) Band Edge, Left Side



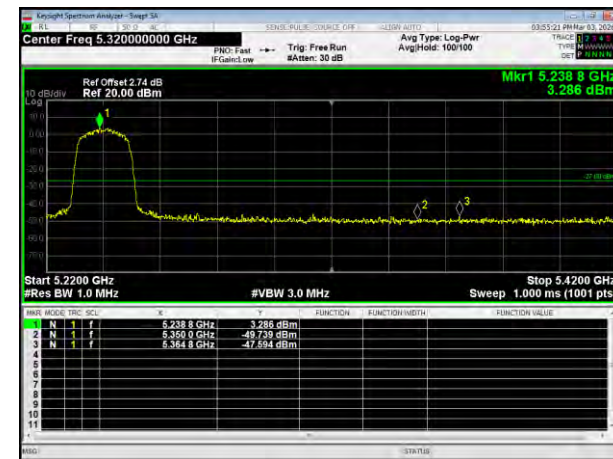
(802.11n20) Band Edge, Left Side



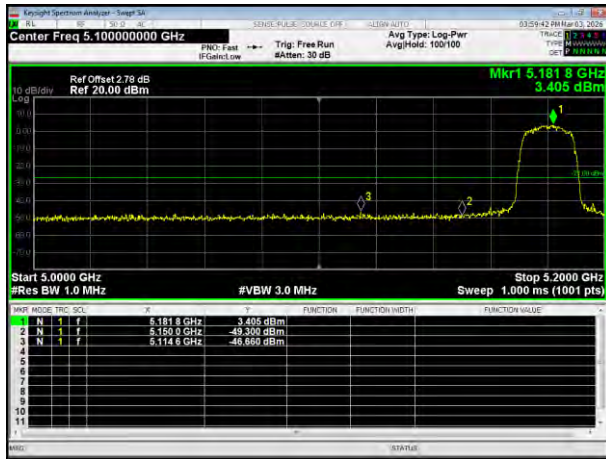
(802.11a) Band Edge, Right Side



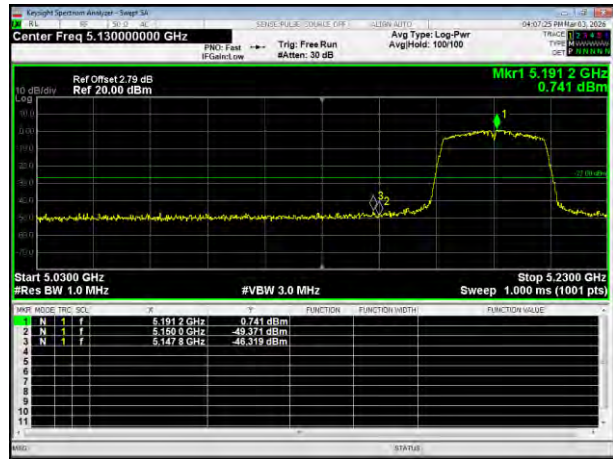
(802.11n20) Band Edge, Right Side



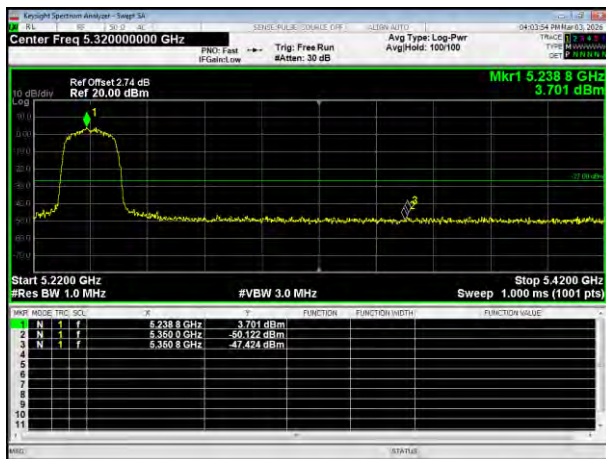
(802.11ac20) Band Edge, Left Side



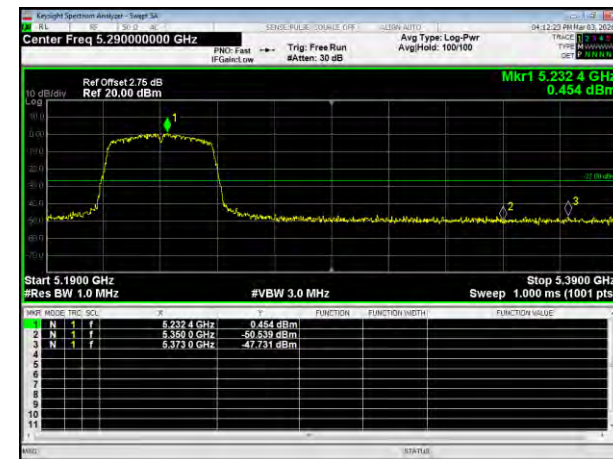
(802.11n40) Band Edge, Left Side



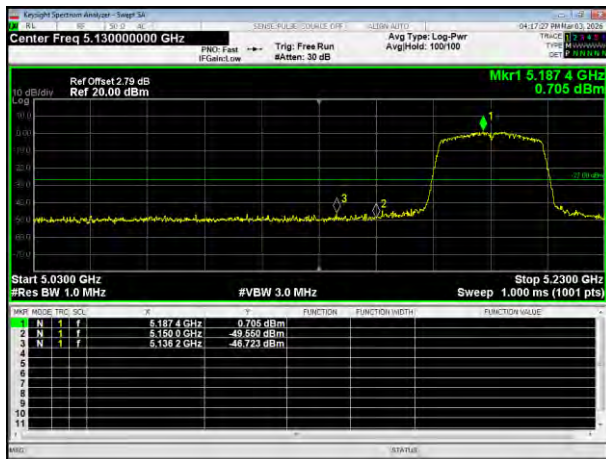
(802.11ac20) Band Edge, Right Side



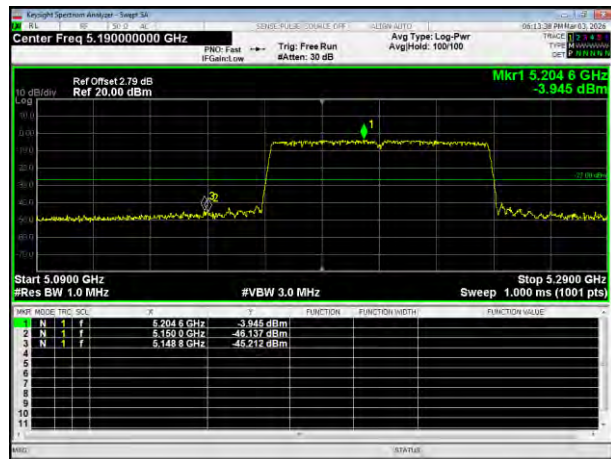
(802.11n40) Band Edge, Right Side



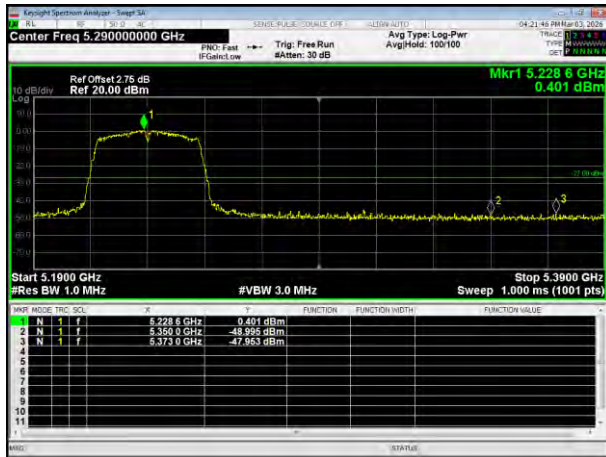
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



(802.11ac40) Band Edge, Right Side

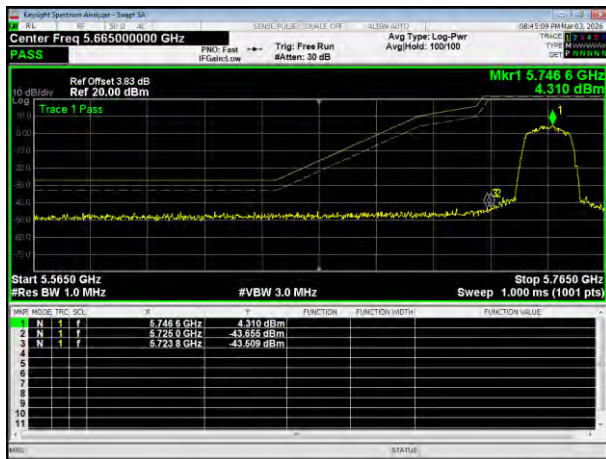


5.745~5.825 GHz

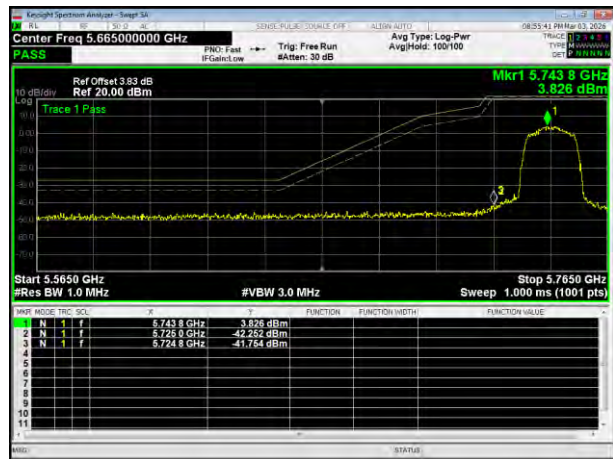
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBm)	Antenna (dBi)	Max Value (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	Ant1	-43.50	2.74	-40.76	-27	Pass
NVNT	a	5825	Ant1	-44.50	2.74	-41.76	-27	Pass
NVNT	n20	5745	Ant1	-41.75	2.74	-39.01	-27	Pass
NVNT	n20	5825	Ant1	-44.63	2.74	-41.89	-27	Pass
NVNT	n40	5755	Ant1	-40.32	2.74	-37.58	-27	Pass
NVNT	n40	5795	Ant1	-44.30	2.74	-41.56	-27	Pass
NVNT	ac20	5745	Ant1	-38.03	2.74	-35.29	-27	Pass
NVNT	ac20	5825	Ant1	-43.62	2.74	-40.88	-27	Pass
NVNT	ac40	5755	Ant1	-39.28	2.74	-36.54	-27	Pass
NVNT	ac40	5795	Ant1	-44.00	2.74	-41.26	-27	Pass
NVNT	ac80	5775	Ant1	-39.77	2.74	-37.03	-27	Pass

Note: The calculated value of Max Value+Antenna meets the requirement of meeting the minimum limit of -27dBm/MHz, while also meeting the requirements of other limits

(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

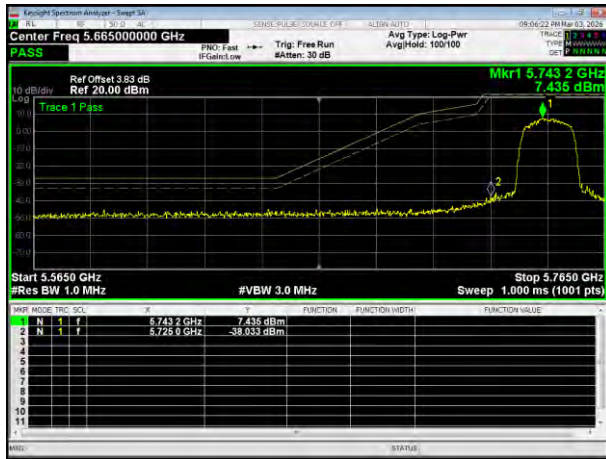


(802.11n20) Band Edge, Right Side

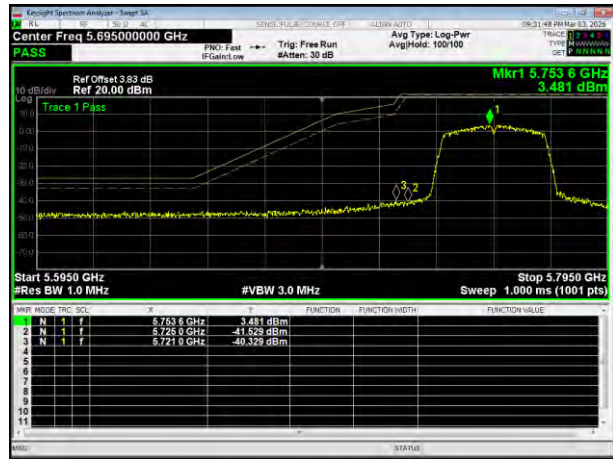


Remark: Antenna gain and cable loss data included in Offset.

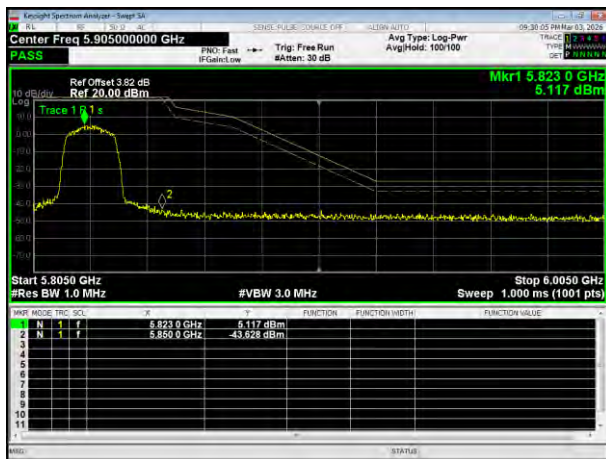
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side



(802.11n40) Band Edge, Right Side



Remark: Antenna gain and cable loss data included in Offset.

(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



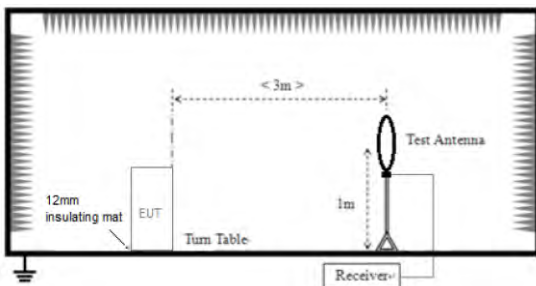
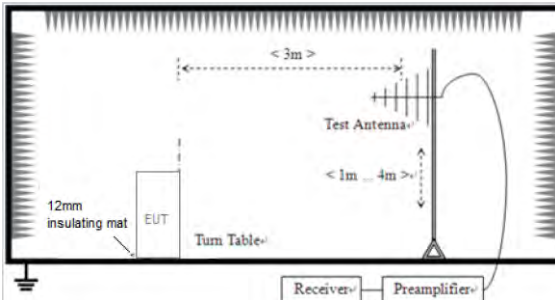
(802.11ac40) Band Edge, Right Side

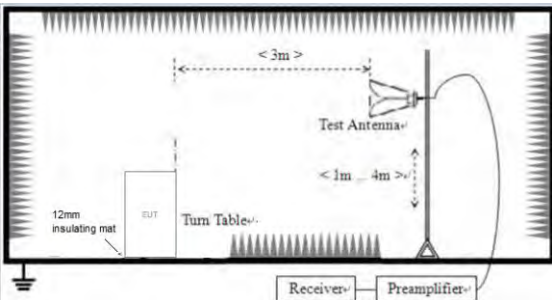


Remark: Antenna gain and cable loss data included in Offset.

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				
						
		For radiated emissions from 30MHz to 1GHz				
						
	For radiated emissions above 1GHz					

	
Test Procedure:	1. Place the EUT on a 12mm insulation pad at the top of the rotating table above the ground. Rotate the table 360 degrees to determine the position of the highest radiation. For the Above 1GHz test, the EUT transmitting antenna is located at 1.5m. 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

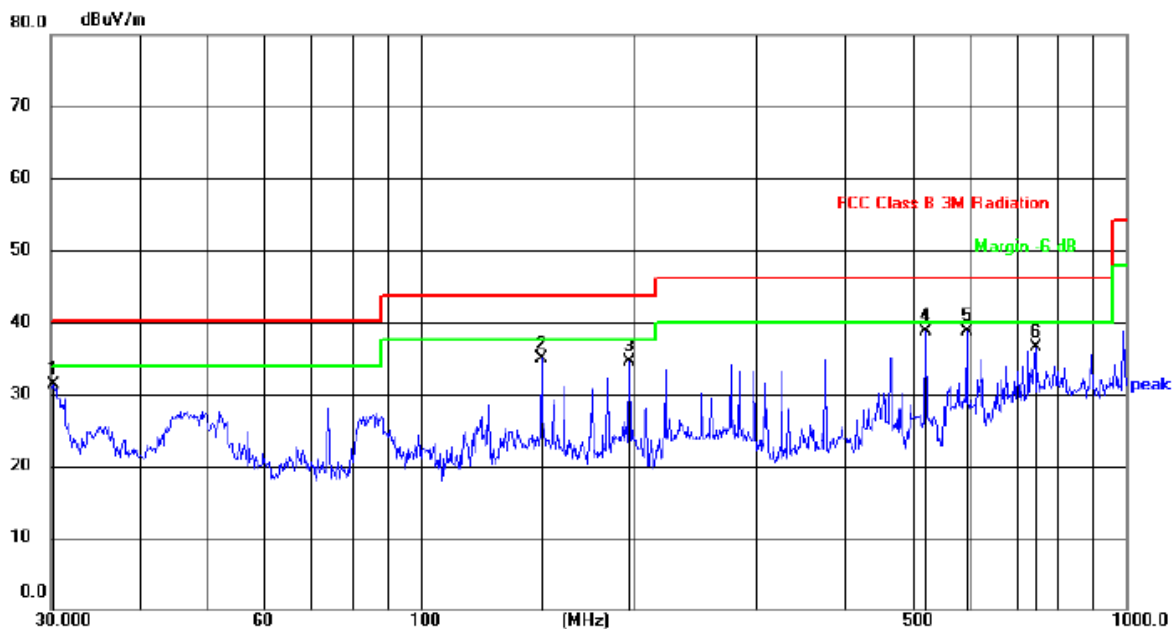
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

Remark: The test data shows only the worst case 802.11n20 mode.

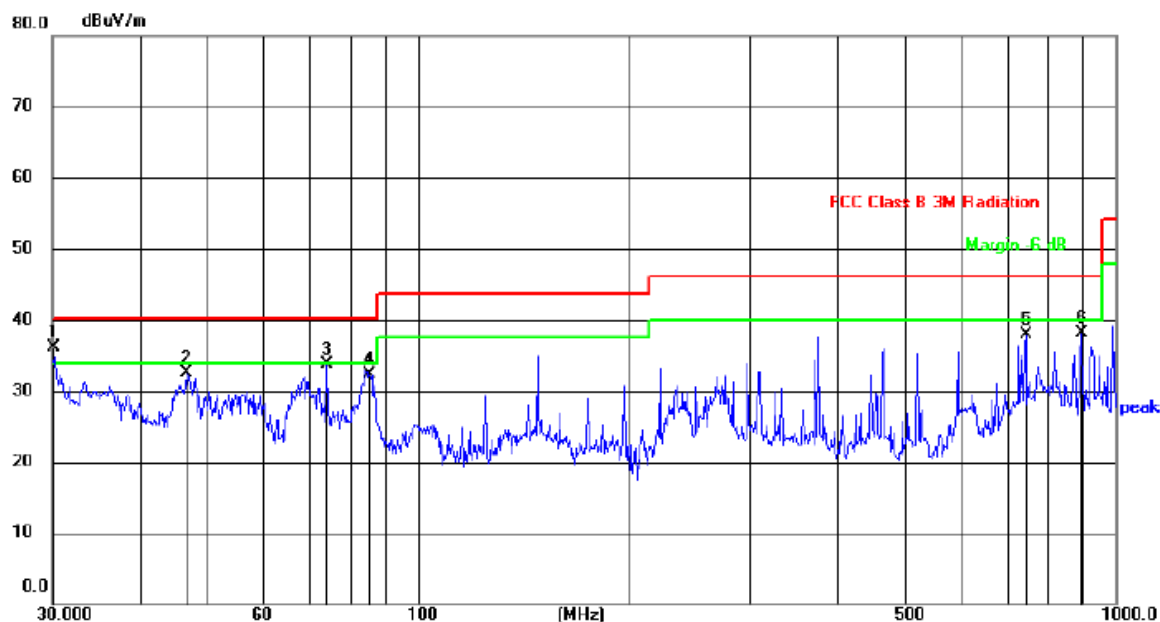
Temperature:	22.2°C	Relative Humidity:	65%
Pressure:	101.2kPa	Test Voltage :	DC 11.1V
Test Mode :	5.2G TX- 802.11n20 (5200MHz)		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.2104	54.04	-22.73	31.31	40.00	-8.69	QP
2	148.4410	55.68	-20.68	35.00	43.50	-8.50	QP
3	197.8925	57.76	-23.33	34.43	43.50	-9.07	QP
4	520.8881	52.26	-13.63	38.63	46.00	-7.37	QP
5	595.1326	50.57	-11.86	38.71	46.00	-7.29	QP
6	744.8659	44.75	-8.21	36.54	46.00	-9.46	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.0000	58.82	-22.77	36.05	40.00	-3.95	QP
2	46.6662	53.89	-21.40	32.49	40.00	-7.51	QP
3	74.1350	58.72	-24.96	33.76	40.00	-6.24	QP
4	85.2980	58.08	-25.72	32.36	40.00	-7.64	QP
5	744.8659	46.10	-8.21	37.89	46.00	-8.11	QP
6	893.8564	43.72	-5.54	38.18	46.00	-7.82	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 802.11a mode

Above 1GHz:

Remark: The test data shows only the worst case 802.11n20 mode.

Temperature:	22.2°C	Relative Humidity:	65%
Pressure:	101.2kPa	Test Voltage :	DC 11.1V
Test Mode :	5.2G 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:5180MHz							
V	10360.00	40.30	1.77	42.07	68.20	-26.13	PK
V	10360.00	35.84	1.77	37.61	54.00	-16.39	AV
V	15540.00	44.73	7.72	52.45	74.00	-21.55	PK
V	15540.00	34.47	7.72	42.19	54.00	-11.81	AV
V	20720.00	50.04	-5.73	44.31	68.20	-23.89	PK
V	20720.00	45.68	-5.73	39.95	54.00	-14.05	AV
V	25900.00	46.80	-2.89	43.91	68.20	-24.29	PK
V	25900.00	41.74	-2.89	38.85	54.00	-15.15	AV
V	31080.00	43.89	1.66	45.55	68.20	-22.65	PK
V	31080.00	39.33	1.66	40.99	54.00	-13.01	AV
V	36260.00	41.07	4.63	45.70	68.20	-22.50	PK
V	36260.00	36.46	4.63	41.09	54.00	-12.91	AV
H	10360.00	39.79	1.77	41.56	68.20	-26.64	PK
H	10360.00	35.35	1.77	37.12	54.00	-16.88	AV
H	15540.00	44.52	7.72	52.24	74.00	-21.76	PK
H	15540.00	34.85	7.72	42.57	54.00	-11.43	AV
H	20720.00	49.82	-5.73	44.09	68.20	-24.11	PK
H	20720.00	44.84	-5.73	39.11	54.00	-14.89	AV
H	25900.00	46.79	-2.89	43.90	68.20	-24.30	PK
H	25900.00	42.12	-2.89	39.23	54.00	-14.77	AV
H	31080.00	43.16	1.66	44.82	68.20	-23.38	PK
H	31080.00	38.21	1.66	39.87	54.00	-14.13	AV
H	36260.00	40.96	4.63	45.59	68.20	-22.61	PK
H	36260.00	36.91	4.63	41.54	54.00	-12.46	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	39.78	1.85	41.63	68.20	-26.57	PK
V	10400.00	35.70	1.85	37.55	54.00	-16.45	AV
V	15600.00	44.25	7.64	51.89	74.00	-22.11	PK
V	15600.00	34.14	7.64	41.78	54.00	-12.22	AV
V	20800.00	49.81	-5.67	44.14	68.20	-24.06	PK
V	20800.00	45.01	-5.67	39.34	54.00	-14.66	AV
V	26000.00	46.94	-2.85	44.09	68.20	-24.11	PK
V	26000.00	41.91	-2.85	39.06	54.00	-14.94	AV
V	31200.00	43.29	1.57	44.86	68.20	-23.34	PK
V	31200.00	38.55	1.57	40.12	54.00	-13.88	AV
V	36400.00	41.07	4.93	46.00	68.20	-22.20	PK
V	36400.00	36.92	4.93	41.85	54.00	-12.15	AV
H	10400.00	40.21	1.85	42.06	68.20	-26.14	PK
H	10400.00	36.36	1.85	38.21	54.00	-15.79	AV
H	15600.00	45.85	7.64	53.49	74.00	-20.51	PK
H	15600.00	35.86	7.64	43.50	54.00	-10.50	AV
H	20800.00	50.76	-5.67	45.09	68.20	-23.11	PK
H	20800.00	45.67	-5.67	40.00	54.00	-14.00	AV
H	26000.00	44.89	-2.85	42.04	68.20	-26.16	PK
H	26000.00	33.03	-2.85	30.18	54.00	-23.82	AV
H	31200.00	43.15	1.57	44.72	68.20	-23.48	PK
H	31200.00	38.19	1.57	39.76	54.00	-14.24	AV
H	36400.00	40.81	4.93	45.74	68.20	-22.46	PK
H	36400.00	36.08	4.93	41.01	54.00	-12.99	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	43.40	2.02	45.42	68.20	-22.78	PK
V	10480.00	38.52	2.02	40.54	54.00	-13.46	AV
V	15720.00	45.55	7.46	53.01	74.00	-20.99	PK
V	15720.00	35.31	7.46	42.77	54.00	-11.23	AV
V	20960.00	52.77	-5.56	47.21	68.20	-20.99	PK
V	20960.00	47.64	-5.56	42.08	54.00	-11.92	AV
V	26200.00	48.58	-2.50	46.08	68.20	-22.12	PK
V	26200.00	44.23	-2.50	41.73	54.00	-12.27	AV
V	31440.00	45.65	1.39	47.04	68.20	-21.16	PK
V	31440.00	40.62	1.39	42.01	54.00	-11.99	AV
V	36680.00	42.58	5.25	47.83	68.20	-20.37	PK
V	36680.00	38.27	5.25	43.52	54.00	-10.48	AV
H	10480.00	42.56	2.02	44.58	68.20	-23.62	PK
H	10480.00	37.54	2.02	39.56	54.00	-14.44	AV
H	15720.00	46.94	7.46	54.40	74.00	-19.60	PK
H	15720.00	36.32	7.46	43.78	54.00	-10.22	AV
H	20960.00	53.53	-5.56	47.97	68.20	-20.23	PK
H	20960.00	47.98	-5.56	42.42	54.00	-11.58	AV
H	26200.00	49.03	-2.50	46.53	68.20	-21.67	PK
H	26200.00	44.94	-2.50	42.44	54.00	-11.56	AV
H	31440.00	45.90	1.39	47.29	68.20	-20.91	PK
H	31440.00	41.69	1.39	43.08	54.00	-10.92	AV
H	36680.00	43.63	5.15	48.78	68.20	-19.42	PK
H	36680.00	43.40	5.15	48.55	54.00	-5.45	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:	22.2°C	Relative Humidity:	65%
Pressure:	101.2kPa	Test Voltage :	DC 11.1V
Test Mode :	5.8G 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:5745MHz							
V	11490.00	46.23	3.31	49.54	74.00	-24.46	PK
V	11490.00	36.74	3.31	40.05	54.00	-13.95	AV
V	17235.00	42.59	10.10	52.69	68.20	-15.51	PK
V	17235.00	37.31	10.10	47.41	54.00	-6.59	AV
V	22980.00	54.67	-4.61	50.06	74.00	-23.94	PK
V	22980.00	45.20	-4.61	40.59	54.00	-13.41	AV
V	28725.00	47.15	0.87	48.02	68.20	-20.18	PK
V	28725.00	41.97	0.87	42.84	54.00	-11.16	AV
V	34470.00	43.27	3.82	47.09	68.20	-21.11	PK
V	34470.00	38.66	3.82	42.48	54.00	-11.52	AV
H	11490.00	46.53	3.31	49.84	74.00	-24.16	PK
H	11490.00	36.07	3.31	39.38	54.00	-14.62	AV
H	17235.00	41.11	10.10	51.21	68.20	-16.99	PK
H	17235.00	35.99	10.10	46.09	54.00	-7.91	AV
H	22980.00	56.96	-4.61	52.35	74.00	-21.65	PK
H	22980.00	46.09	-4.61	41.48	54.00	-12.52	AV
H	28725.00	47.13	0.87	48.00	68.20	-20.20	PK
H	28725.00	42.78	0.87	43.65	54.00	-10.35	AV
H	34470.00	43.66	3.82	47.48	68.20	-20.72	PK
H	34470.00	39.44	3.82	43.26	54.00	-10.74	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	46.91	3.34	50.25	74.00	-23.75	PK
V	11570.00	36.48	3.34	39.82	54.00	-14.18	AV
V	17355.00	42.56	10.52	53.08	68.20	-15.12	PK
V	17355.00	37.90	10.52	48.42	54.00	-5.58	AV
V	23140.00	54.32	-4.66	49.66	74.00	-24.34	PK
V	23140.00	44.52	-4.66	39.86	54.00	-14.14	AV
V	28925.00	46.64	1.36	48.00	68.20	-20.20	PK
V	28925.00	42.90	1.36	44.26	54.00	-9.74	AV
V	34710.00	43.06	3.95	47.01	68.20	-21.19	PK
V	34710.00	38.27	3.95	42.22	54.00	-11.78	AV
H	11570.00	47.70	3.34	51.04	74.00	-22.96	PK
H	11570.00	37.44	3.34	40.78	54.00	-13.22	AV
H	17355.00	40.92	10.52	51.44	68.20	-16.76	PK
H	17355.00	33.95	10.52	44.47	54.00	-9.53	AV
H	23140.00	53.69	-4.66	49.03	74.00	-24.97	PK
H	23140.00	42.38	-4.66	37.72	54.00	-16.28	AV
H	28925.00	52.44	1.36	53.80	68.20	-14.40	PK
H	28925.00	46.93	1.36	48.29	54.00	-5.71	AV
H	34710.00	52.73	3.95	56.68	68.20	-11.52	PK
H	34710.00	41.63	3.95	45.58	54.00	-8.42	AV

Remark:

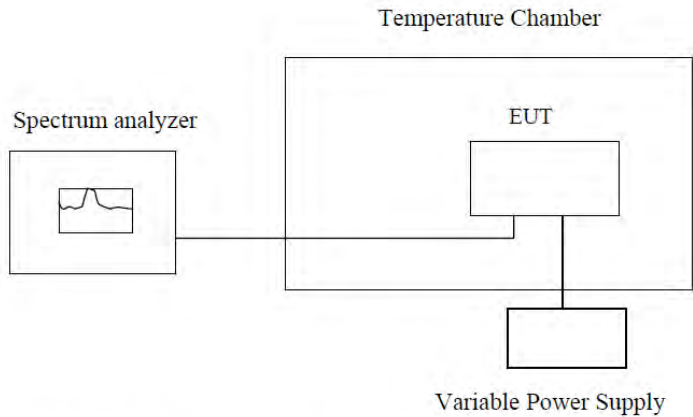
1. Emission Level = Meter Reading + Factor,
Factor=Antenna Factor + Cable Loss – Pre-amplifier
Margin= Emission Level – Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value 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	46.29	3.36	49.65	74.00	-24.35	PK
V	11650.00	36.76	3.36	40.12	54.00	-13.88	AV
V	17475.00	42.85	10.93	53.78	68.20	-14.42	PK
V	17475.00	38.33	10.93	49.26	54.00	-4.74	AV
V	23300.00	53.63	-4.77	48.86	68.20	-19.34	PK
V	23300.00	48.24	-4.77	43.47	54.00	-10.53	AV
V	29125.00	48.15	1.65	49.80	68.20	-18.40	PK
V	29125.00	42.61	1.65	44.26	54.00	-9.74	AV
V	34950.00	42.59	4.09	46.68	68.20	-21.52	PK
V	34950.00	38.82	4.09	42.91	54.00	-11.09	AV
H	11650.00	49.20	3.36	52.56	74.00	-21.44	PK
H	11650.00	38.23	3.36	41.59	54.00	-12.41	AV
H	17475.00	40.98	10.93	51.91	68.20	-16.29	PK
H	17475.00	37.21	10.93	48.14	54.00	-5.86	AV
H	23300.00	52.60	-4.77	47.83	68.20	-20.37	PK
H	23300.00	49.09	-4.77	44.32	54.00	-9.68	AV
H	29125.00	49.03	1.65	50.68	68.20	-17.52	PK
H	29125.00	44.49	1.65	46.14	54.00	-7.86	AV
H	34950.00	46.29	4.09	50.38	68.20	-17.82	PK
H	34950.00	36.76	4.09	40.85	54.00	-13.15	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: DC 11.1V					
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	5179.992	5179.950	5179.982	5179.993
	5190	5189.983	5189.980	5189.983	5189.992
	5200	5199.991	5200.005	5199.974	5199.986
	5210	5209.983	5209.989	5299.982	5209.976
	5220	5220.004	5219.980	5219.974	5219.986
	5230	5229.982	5230.008	5229.995	5299.984
	5240	5240.000	5239.996	5239.973	5239.988
-20	5180	5180.001	5179.988	5179.983	5179.945
	5190	5189.997	5189.989	5189.974	5189.975
	5200	5199.992	5199.980	5199.982	5200.000
	5210	5209.998	5299.988	5209.974	5209.984
	5220	5219.993	5219.980	5219.995	5219.975
	5230	5229.991	5230.001	5229.973	5230.003
	5240	5239.964	5239.979	5239.991	5239.991
-10	5180	5179.953	5179.988	5179.983	5179.993
	5190	5189.983	5189.989	5189.974	5189.989
	5200	5200.008	5199.980	5199.982	5199.984
	5210	5209.992	5299.988	5209.974	5209.990
	5220	5219.983	5219.980	5219.995	5219.985
	5230	5230.011	5230.001	5229.973	5229.983
	5240	5239.999	5239.979	5239.991	5239.956
0	5180	5179.992	5179.950	5179.982	5179.993
	5190	5189.983	5189.980	5189.983	5189.992
	5200	5199.991	5200.005	5199.974	5199.986
	5210	5209.983	5209.989	5299.982	5209.976
	5220	5220.004	5219.980	5219.974	5219.986
	5230	5229.982	5230.008	5229.995	5299.984
	5240	5240.000	5239.996	5239.973	5239.988
10	5180	5179.980	5179.989	5179.983	5179.993
	5190	5189.991	5189.980	5189.974	5179.993
	5200	5199.982	5199.988	5199.982	5189.989
	5210	5209.983	5209.980	5209.974	5199.984
	5220	5219.990	5220.001	5219.995	5209.990
	5230	5230.008	5229.979	5229.973	5219.985
	5240	5239.980	5239.997	5239.991	5229.983
20	5180	5180.001	5179.988	5179.983	5179.945
	5190	5189.997	5189.989	5189.974	5189.975

	5200	5199.992	5199.980	5199.982	5200.000
	5210	5209.998	5299.988	5209.974	5209.984
	5220	5219.993	5219.980	5219.995	5219.975
	5230	5229.991	5230.001	5229.973	5230.003
	5240	5239.964	5239.979	5239.991	5239.991
30	5180	5180.001	5179.988	5179.983	5179.945
	5190	5189.997	5189.989	5189.974	5189.975
	5200	5199.992	5199.980	5199.982	5200.000
	5210	5209.998	5299.988	5209.974	5209.984
	5220	5219.993	5219.980	5219.995	5219.975
	5230	5229.991	5230.001	5229.973	5230.003
	5240	5239.964	5239.979	5239.991	5239.991
40	5180	5179.991	5179.977	5179.983	5179.983
	5190	5189.992	5189.988	5189.974	5189.984
	5200	5199.983	5199.979	5199.982	5199.975
	5210	5299.992	5209.980	5209.974	5299.983
	5220	5219.983	5219.987	5219.995	5219.975
	5230	5230.004	5230.005	5229.973	5229.996
	5240	5239.982	5239.977	5239.991	5239.974
50	5180	5179.953	5179.988	5179.971	5180.108
	5190	5189.983	5189.989	5189.982	5199.983
	5200	5200.008	5199.980	5199.973	5200.008
	5210	5209.992	5299.988	5209.974	5209.986
	5220	5219.983	5219.980	5219.981	5220.001
	5230	5230.011	5230.001	5229.999	5229.994
	5240	5239.999	5239.979	5239.971	5240.002

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
DC 9.44V	5180	5179.986	5179.977	5179.992	5179.989
	5190	5189.980	5189.988	5189.988	5189.975
	5200	5199.993	5199.979	5199.983	5199.976
	5210	5209.997	5209.980	5209.989	5209.998
	5220	5219.983	5219.987	5219.984	5219.984
	5230	5229.976	5230.005	5229.982	5229.994
	5240	5180.116	5179.993	5179.983	5179.972
DC 11.1V	5180	5199.991	5189.987	5189.974	5189.983
	5190	5200.016	5199.987	5199.982	5199.974
	5200	5209.994	5209.999	5209.974	5209.975
	5210	5220.009	5219.990	5219.995	5219.982
	5220	5230.002	5299.993	5229.973	5230.000
	5230	5240.010	5239.990	5239.991	5239.985
	5240	5180.116	5179.993	5179.983	5179.972
DC 12.77V	5180	5180.001	5179.998	5179.971	5179.972
	5190	5189.997	5189.994	5189.982	5189.983
	5200	5199.992	5199.989	5199.973	5199.973
	5210	5209.998	5209.995	5209.974	5209.975
	5220	5219.993	5219.990	5219.981	5219.982
	5230	5229.991	5229.988	5229.999	5230.005
	5240	5239.964	5239.961	5239.971	5239.972

Frequency stability versus Temp.					
Power Supply: DC 11.1V					
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	5745.015	5744.970	5744.603	5744.953
	5755	5744.963	5754.986	5754.987	5754.975
	5775	5754.986	5774.985	5774.988	5774.984
	5785	5774.995	5784.988	5784.991	5784.975
	5795	5784.986	5794.999	5794.974	5794.986
	5825	5794.997	5824.980	5824.970	5824.989
-20	5745	5744.980	5744.970	5744.984	5744.976
	5755	5755.006	5754.986	5754.986	5755.002
	5775	5774.987	5774.985	5774.989	5774.998
	5785	5784.996	5784.988	5784.981	5784.982
	5795	5794.994	5794.999	5794.972	5794.971
	5825	5825.004	5824.980	5824.981	5824.906
-10	5745	5744.985	5744.981	5744.968	5745.040
	5755	5754.993	5754.988	5754.993	5744.605
	5775	5774.985	5775.005	5774.974	5754.989
	5785	5784.977	5784.981	5784.983	5774.990
	5795	5794.984	5794.977	5794.981	5784.993
	5825	5824.913	5824.980	5824.991	5794.976
0	5745	5744.979	5744.980	5744.974	5744.975
	5755	5754.990	5754.987	5754.981	5754.964
	5775	5775.011	5774.979	5774.998	5774.975
	5785	5784.987	5784.971	5784.974	5784.982
	5795	5794.983	5794.978	5794.970	5795.000
	5825	5824.981	5824.907	5824.973	5824.992
10	5745	5744.976	5744.991	5744.968	5744.986
	5755	5754.992	5754.993	5754.993	5755.000
	5775	5774.991	5774.996	5774.974	5774.985
	5785	5784.994	5784.988	5784.983	5784.972
	5795	5795.004	5794.979	5794.981	5794.966
	5825	5824.986	5824.988	5824.991	5825.000
20	5745	5744.996	5745.005	5744.984	5744.975
	5755	5755.011	5754.977	5754.998	5754.994
	5775	5774.996	5775.000	5774.983	5774.974
	5785	5784.983	5785.000	5784.970	5785.001
	5795	5794.977	5794.991	5794.964	5794.993
	5825	5825.011	5825.006	5824.998	5825.002
30	5745	5744.975	5744.991	5744.968	5744.986
	5755	5754.992	5754.993	5754.993	5755.000
	5775	5774.991	5774.996	5774.974	5774.985
	5785	5784.994	5784.988	5784.983	5784.972
	5795	5795.005	5794.979	5794.981	5794.966
	5825	5824.986	5824.988	5824.991	5825.000
40	5745	5744.996	5744.980	5744.968	5744.970
	5755	5754.999	5754.997	5754.993	5754.995
	5775	5775.002	5774.998	5774.974	5774.976
	5785	5784.994	5784.980	5784.983	5784.985

50	5795	5794.985	5794.997	5794.981	5794.983
	5825	5824.994	5824.995	5824.991	5824.993
	5745	5744.980	5744.980	5744.973	5744.976
	5755	5755.006	5754.997	5754.980	5754.983
	5775	5774.987	5774.998	5774.972	5775.000
	5785	5784.996	5784.980	5784.964	5784.976
	5795	5794.994	5794.997	5794.971	5794.972
	5825	5825.004	5824.995	5824.900	5824.975

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
DC 9.44V	5745	5744.975	5744.980	5744.973	5744.970
	5755	5754.992	5754.987	5754.990	5754.995
	5775	5774.991	5774.979	5774.991	5774.976
	5785	5784.994	5784.971	5784.973	5784.985
	5795	5795.005	5794.978	5794.991	5794.983
	5825	5824.986	5824.907	5824.988	5824.993
DC 11.1V	5745	5744.975	5744.991	5744.968	5744.986
	5755	5754.992	5754.993	5754.993	5755.000
	5775	5774.991	5774.996	5774.974	5774.985
	5785	5784.994	5784.988	5784.983	5784.972
	5795	5795.001	5794.979	5794.981	5794.966
	5825	5824.986	5824.988	5824.991	5825.000
DC 12.77V	5745	5744.996	5745.004	5744.984	5744.975
	5755	5755.011	5754.977	5754.998	5754.994
	5775	5774.996	5775.000	5774.983	5774.974
	5785	5784.983	5785.000	5784.970	5785.001
	5795	5794.977	5794.991	5794.964	5794.993
	5825	5825.011	5825.006	5824.998	5825.002

5 Test Setup Photo

Reference to the file No.: ET-26010190SP for details.

6 EUT Constructional Details

Reference to the file No.: ET-26010190EP and ET-26010190IP for details

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