



TEST REPORT

Applicant: AVA SOLUCIONES AUDIOVISUALES SAS
Address of Applicant: CALLE 131A # 55A-26 BLOQUE 4 APTO.202 CITY BOGOTA D.C. , COLOMBIA.
Manufacturer: AVA SOLUCIONES AUDIOVISUALES SAS
Address of Manufacturer: CALLE 131A # 55A-26 BLOQUE 4 APTO.202 CITY BOGOTA D.C. , COLOMBIA.
Product Name: Interactive touch table
Model No.: IS-43TT,IS-32TT,IS-49TT, IS-55TT, IS-65TT
Trade Mark: AVACOM
FCC ID: 2BQYJ-IS43TT
Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of Test: Jul.02, 2025-Jul.16, 2025
Date of report issued: Jul.17, 2025

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

Prepared By

Shenzhen ETR Standard Technology Co., Ltd.

Address: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Compiled by:

Reviewed by:

Approved by:

Project Engineer

Project Manager

Authorized Signature



Report Revision History		
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1 Test Summary

Test Item	Section in CFR 47	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 C63.10:2013 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	0.55%	(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:	Interactive touch table
Model No.:	IS-43TT,IS-32TT, IS-49TT, IS-55TT, IS-65TT
Difference of model(s)	All the model are the same circuit and RF module, except the model names
Test Model:	IS-43TT
Hardware Version:	V1-U1
Software Version:	1.0
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 in the 5210(VHT80)MHz 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 5210(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(VHT/20/40/80):NSS1, MCS0-MCS9
Modulation technology:	Orthogonal Frequency Division Multiplexing (OFDM) with BPSK/QPSK/16QAM/64QAM/256QAM
Antenna Type:	Integrated antenna
Antenna gain:	5.09dBi(Declare by applicant) Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.
Battery	N/A
Power supply:	AC 100-240V 50/60Hz
Adapter Model:	N/A

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: 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 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
1	MOUSE	DELL	MS116	/
2	KEYBOARD	DELL	KB216T	/

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	MP TOOL.EXE (v1.09)
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	XLBQ-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).

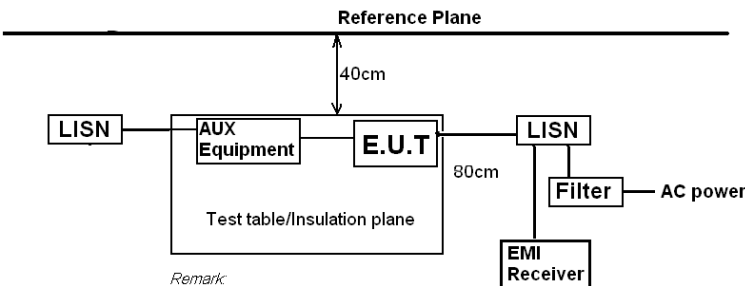
Software Name	Manufacturer	Model	Version
RF test software	MWRFtest	MTS 8310	V2.0.0.0
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4 Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:	47CRF Part 15.203
<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:	
<i>The antenna is Integrated antenna, the best case gain of the antenna is 5.09dBi, reference to the appendix II for details.</i>	

4.2 Conducted Emissions

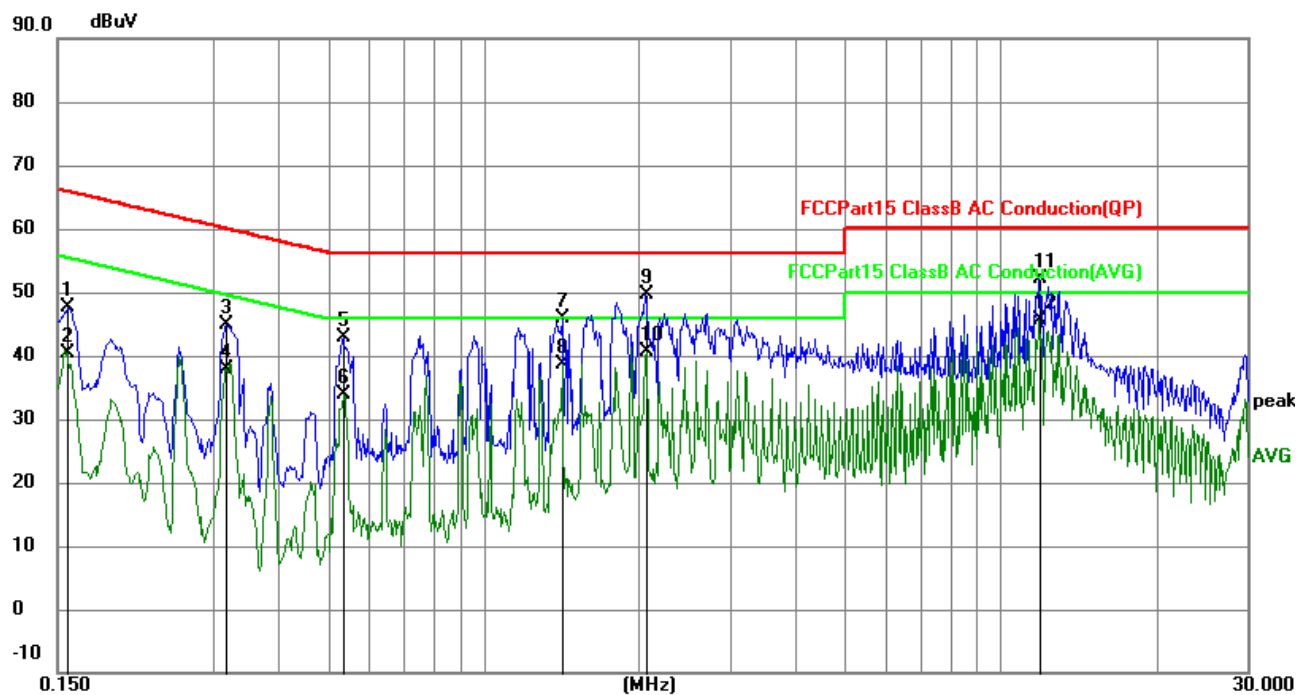
Test Requirement:	47CRF Part 15.207					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150KHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto					
Limit:	Frequency range (MHz)		Limit (dBuV)			
			Quasi-peak		Average	
	0.15-0.5		66 to 56*		56 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 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 C63.10:2013 on conducted measurement.					
Test Instruments:	Refer to section 3.0 for details					
Test mode:	Refer to section 2.2 for details					
Test environment:	Temp.:	28.6°C	Humid.:	49%	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 (802.11ac20 5180MHz)

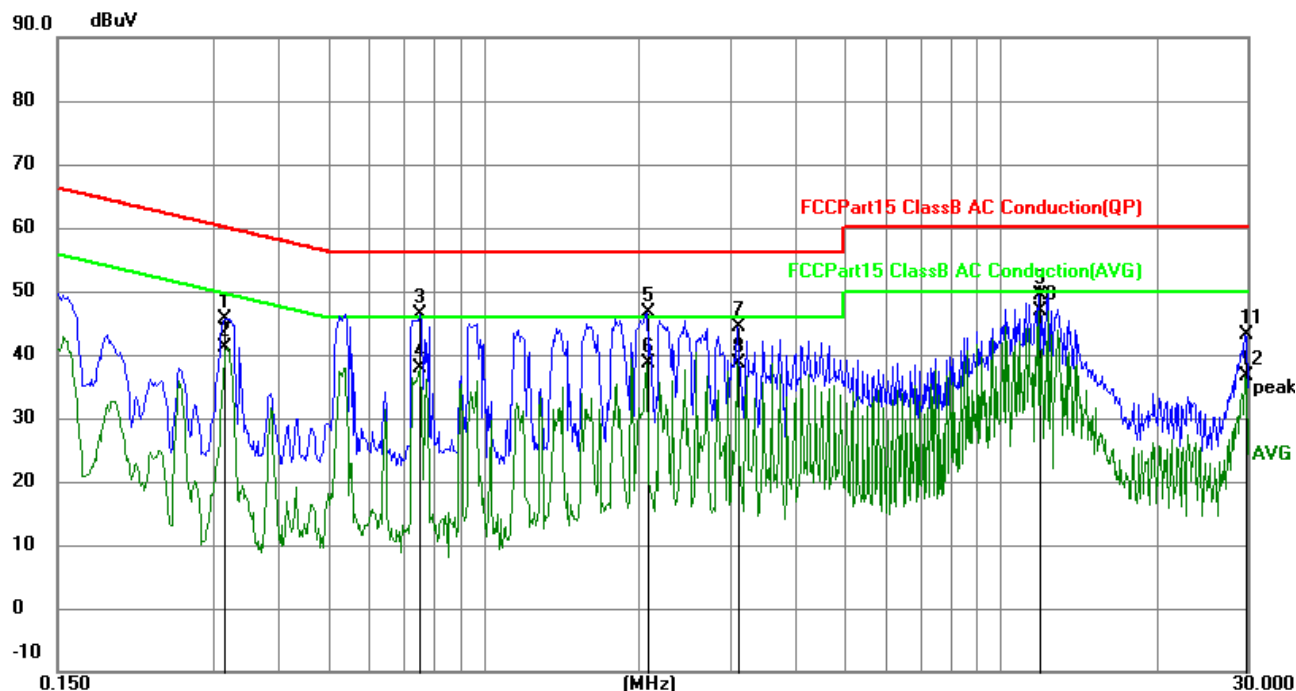
Measurement Result

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1564	37.84	9.80	47.64	65.65	-18.01	QP
2	0.1564	30.55	9.80	40.35	55.65	-15.30	AVG
3	0.3183	35.00	9.87	44.87	59.75	-14.88	QP
4	0.3183	28.00	9.87	37.87	49.75	-11.88	AVG
5	0.5369	32.91	9.94	42.85	56.00	-13.15	QP
6	0.5369	23.86	9.94	33.80	46.00	-12.20	AVG
7	1.4189	35.90	9.91	45.81	56.00	-10.19	QP
8	1.4189	28.64	9.91	38.55	46.00	-7.45	AVG
9	2.0622	39.83	9.85	49.68	56.00	-6.32	QP
10	2.0622	30.86	9.85	40.71	46.00	-5.29	AVG
11	11.8725	42.21	9.81	52.02	60.00	-7.98	QP
12	11.8725	35.90	9.81	45.71	50.00	-4.29	AVG

Neutral:

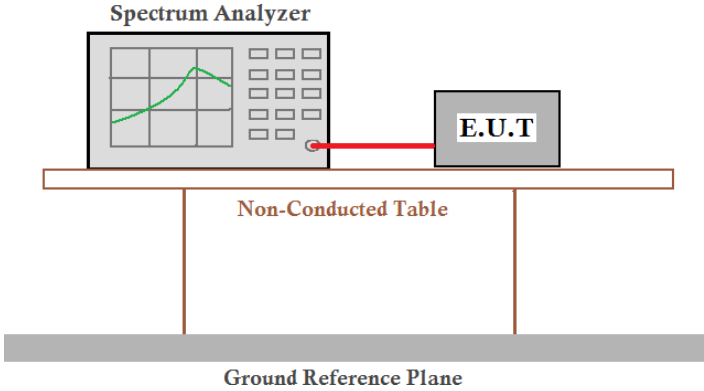


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3165	35.83	9.87	45.70	59.80	-14.10	QP
2	0.3165	31.29	9.87	41.16	49.80	-8.64	AVG
3	0.7529	36.40	9.94	46.34	56.00	-9.66	QP
4	0.7529	28.01	9.94	37.95	46.00	-8.05	AVG
5	2.0668	36.81	9.85	46.66	56.00	-9.34	QP
6	2.0668	28.77	9.85	38.62	46.00	-7.38	AVG
7	3.1018	34.43	9.84	44.27	56.00	-11.73	QP
8	3.1018	28.68	9.84	38.52	46.00	-7.48	AVG
9	11.8856	39.52	9.81	49.33	60.00	-10.67	QP
10	11.8856	37.18	9.81	46.99	50.00	-3.01	AVG
11	29.8275	33.66	9.49	43.15	60.00	-16.85	QP
12	29.8275	27.15	9.49	36.64	50.00	-13.36	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 C63.10:2013	
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.: 23.1°C	Humid.: 51%RH
Test voltage:	AC 120V/60Hz	
Test results:	Pass	

Measurement Result

5180-5240MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	84.68	0.72
TX 802.11n20 Mode	84.89	0.71
TX 802.11ac20 Mode	84.71	0.72
TX 802.11n40 Mode	91.72	0.38
TX 802.11a40 Mode	91.72	0.38
TX 802.11ac80 Mode	90.78	0.42

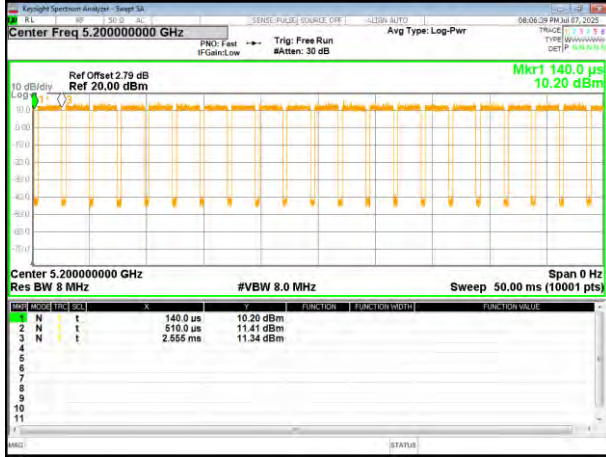
5745-5825 MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	84.44	0.73
TX 802.11n20 Mode	84.78	0.72
TX 802.11ac20 Mode	84.44	0.73
TX 802.11n40 Mode	96.77	0.14
TX 802.11a40 Mode	96.77	0.14
TX 802.11ac80 Mode	93.81	0.28

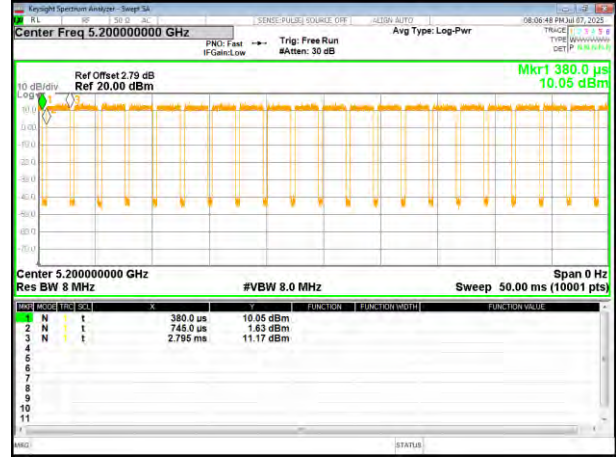
Test plot

5180-5240MHz

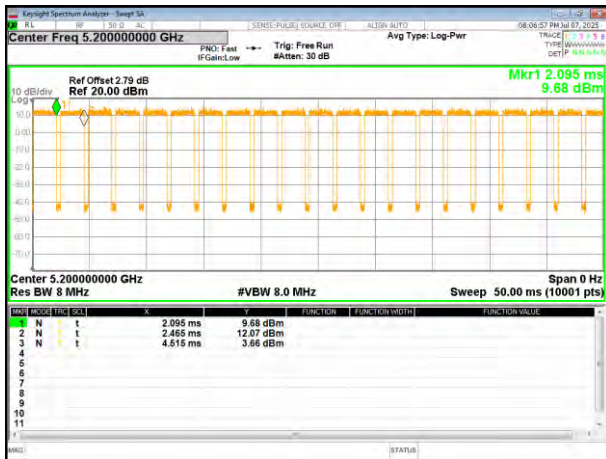
(802.11a) plot



(802.11 n20) plot



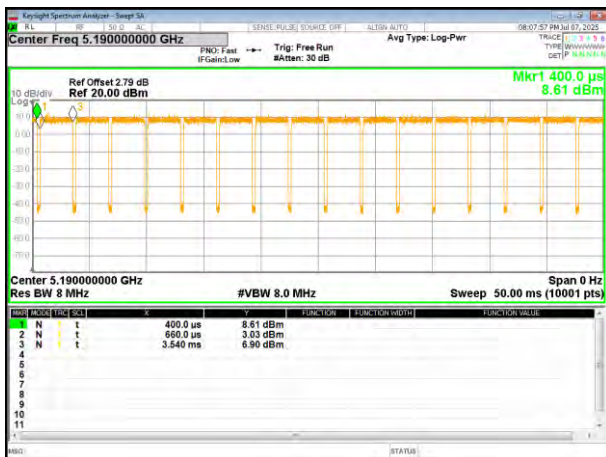
(802.11ac20) plot



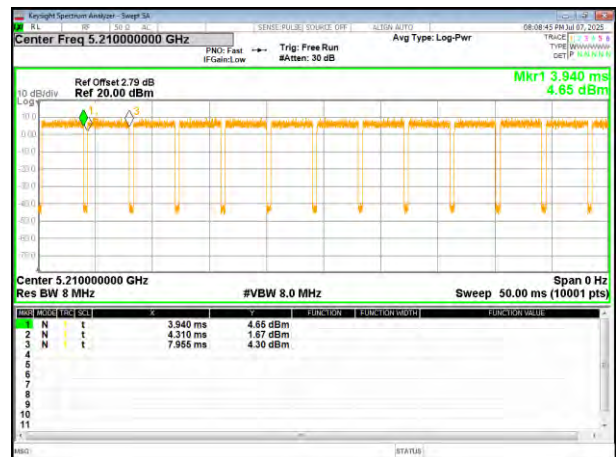
(802.11 n40) plot



(802.11ac40) plot

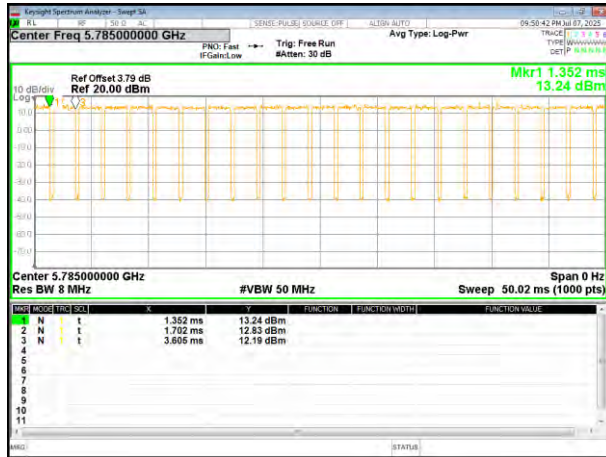


(802.11ac80) plot

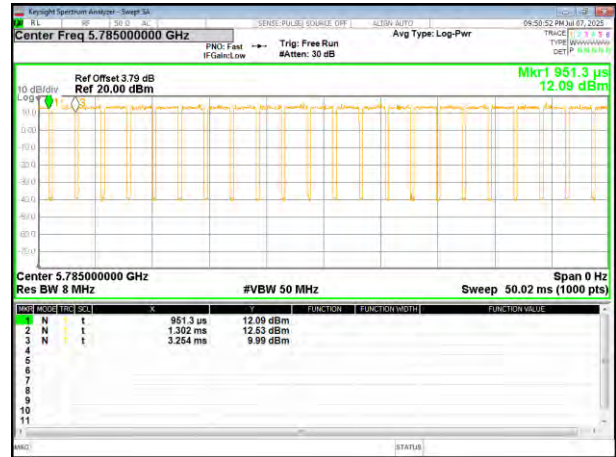


5745-5825 MHz

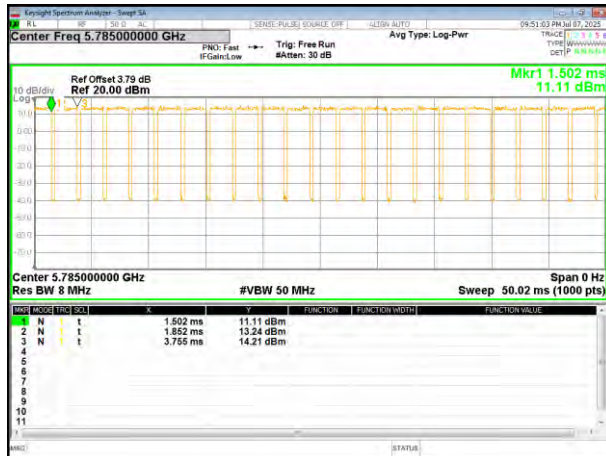
(802.11a) plot



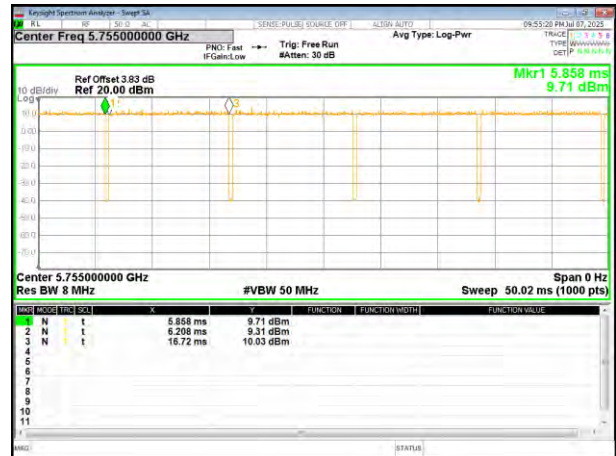
(802.11 n20) plot



(802.11ac20) plot



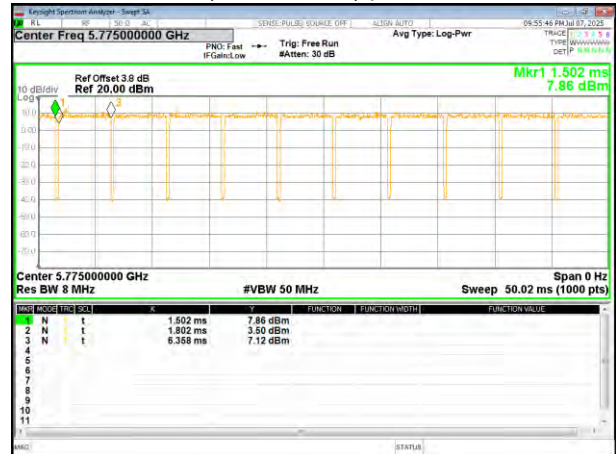
(802.11 n40) plot



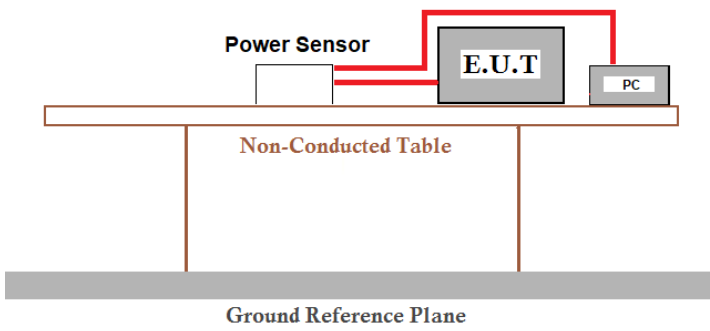
(802.11ac40) plot



(802.11ac80) plot



4.4 Conducted Output Power

Test Requirement:	47CRF Part 15.407 (a)(1)/(a)(3)	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 ANSI C63.10-2013	
Limit:	5150-5250MHz : 250mW 5725~5850MHz : 1W	
Test setup:	 The diagram illustrates the test setup. A Power Sensor is connected via red lines to the E.U.T. (Equipment Under Test) and a PC. The E.U.T. is placed on a Non-Conducted Table, which 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.: 23.1°C	Humid.: 51%RH
Test voltage:	AC 120V/60Hz	
Test results:	Pass	

Measurement Result

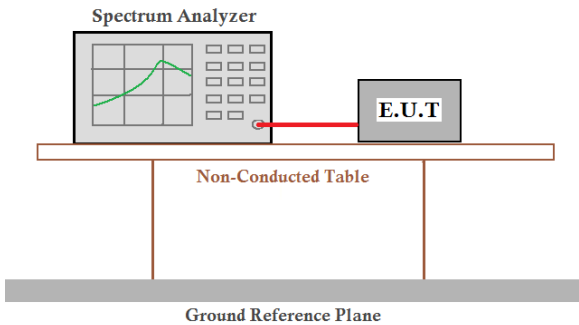
5180-5240MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	0.72	14.86	15.58	24	Pass
CH40	5200	0.72	15.04	15.76	24	Pass
CH48	5240	0.72	15.12	15.84	24	Pass
TX 802.11 n20 Mode						
CH36	5180	0.71	14.75	15.46	24	Pass
CH40	5200	0.71	15.15	15.86	24	Pass
CH48	5240	0.71	14.80	15.51	24	Pass
TX 802.11 ac20 Mode						
CH36	5180	0.72	15.50	16.22	24	Pass
CH40	5200	0.72	15.22	15.94	24	Pass
CH48	5240	0.72	14.74	15.46	24	Pass
TX 802.11 n40 Mode						
CH38	5190	0.38	14.16	14.54	24	Pass
CH46	5230	0.38	13.79	14.17	24	Pass
TX 802.11 ac40 Mode						
CH38	5190	0.38	14.14	14.52	24	Pass
CH46	5230	0.38	13.78	14.16	24	Pass
TX 802.11 ac80 Mode						
CH42	5210	0.42	12.42	12.84	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	0.73	14.33	15.06	30	Pass
CH157	5785	0.73	14.76	15.49	30	Pass
CH165	5825	0.73	14.95	15.68	30	Pass
TX 802.11 n20 Mode						
CH149	5745	0.72	14.29	15.01	30	Pass
CH157	5785	0.72	14.57	15.29	30	Pass
CH165	5825	0.72	14.86	15.58	30	Pass
TX 802.11 ac20 Mode						
CH149	5745	0.73	14.21	14.94	30	Pass
CH157	5785	0.73	14.64	15.37	30	Pass
CH165	5825	0.73	14.85	15.58	30	Pass
TX 802.11 n40 Mode						
CH151	5755	0.14	13.51	13.65	30	Pass
CH159	5795	0.14	13.92	14.06	30	Pass
TX 802.11 ac40 Mode						
CH151	5755	0.14	13.46	13.60	30	Pass
CH159	5795	0.14	13.89	14.03	30	Pass
TX 802.11 ac80 Mode						
CH155	5775	0.28	12.63	12.91	30	Pass

4.5 Bandwidth &99% Occupy Bandwidth

Test Requirement:	47CRF Part 15.407(a)(12)&15.407(e),	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, ANSI C63.10:2013	
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.: 23.1°C	Humid.: 51%RH
Test voltage:	AC 120V/60Hz	
Test results:	Pass	

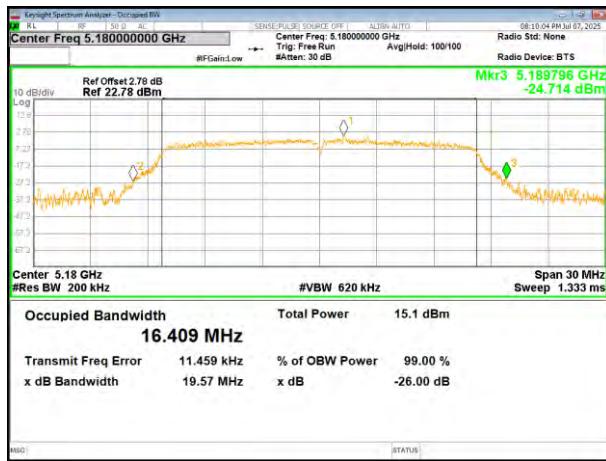
Measurement Result

5180-5240MHz

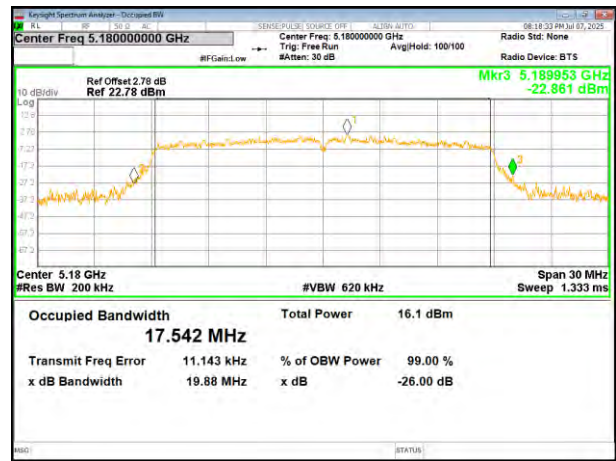
Test CH	-26dB Channel Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	19.57	19.89	19.93	39.65	40.10	--	Pass
Middle	20.01	20.03	19.97	--	--	79.96	
Highest	19.75	19.75	19.93	39.62	39.89	--	

Test plot 99% Occupy Bandwidth

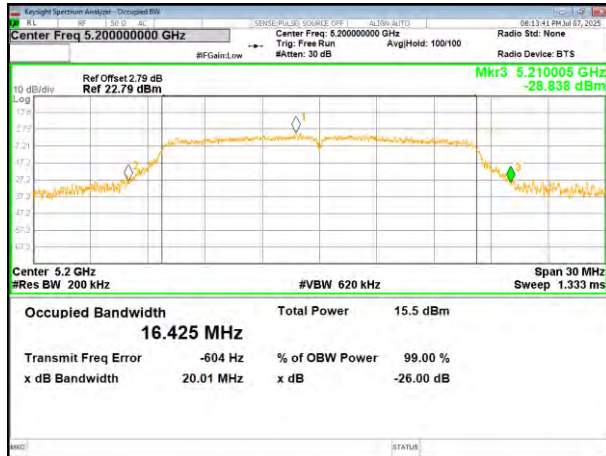
(802.11a) plot on channel 36



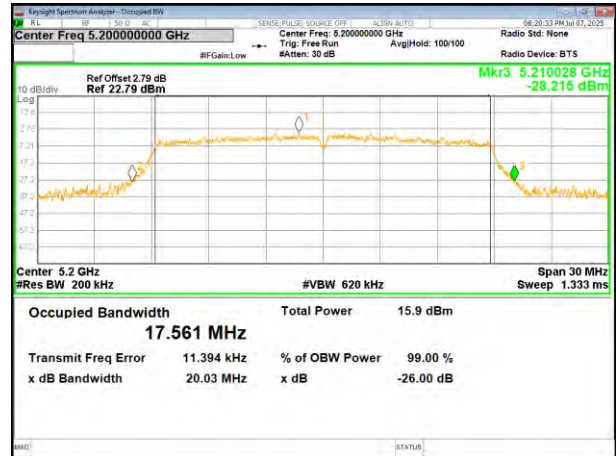
(802.11 n20) plot on channel 36



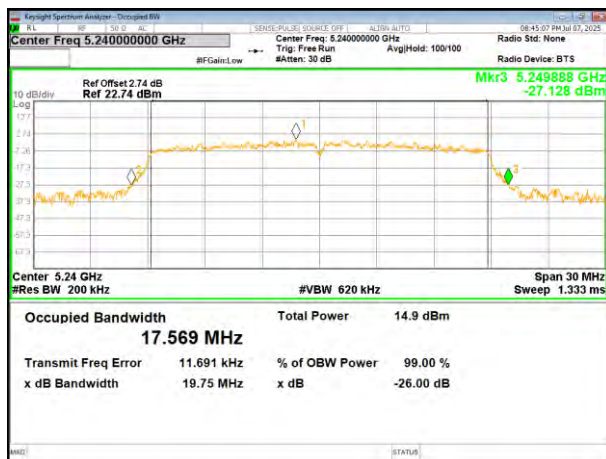
(802.11a) plot on channel 40



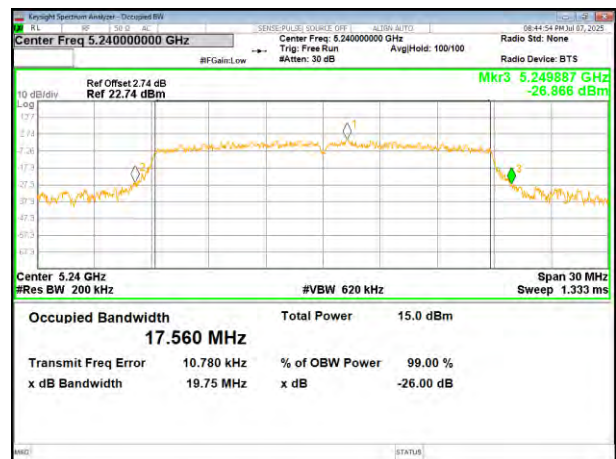
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

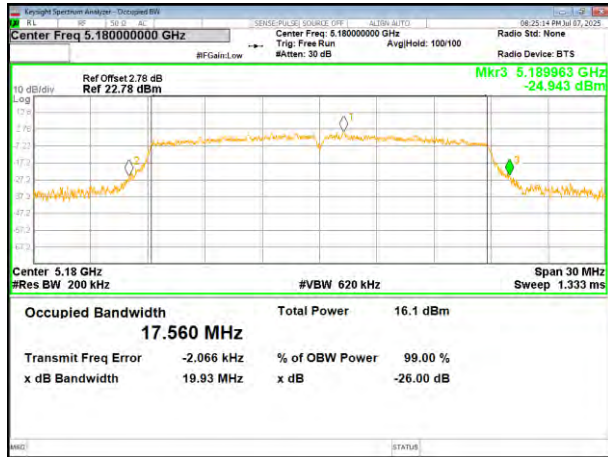


(802.11 n20) plot on channel 48

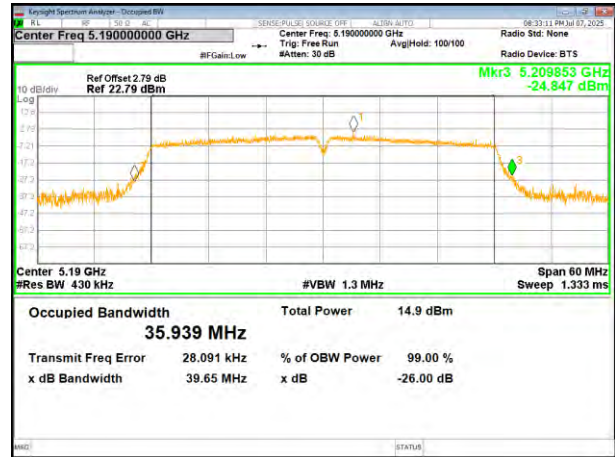


Test plot

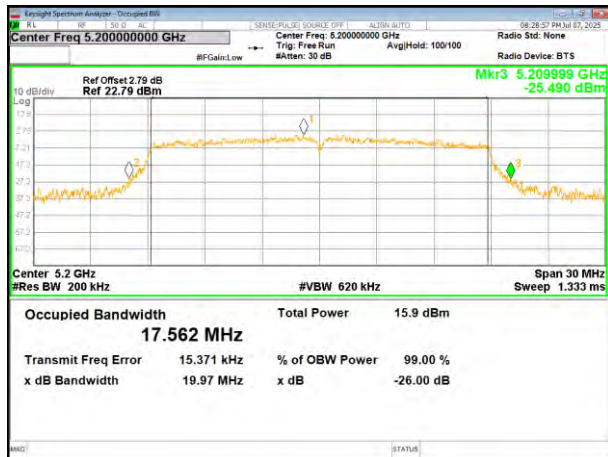
(802.11ac20) plot on channel 36



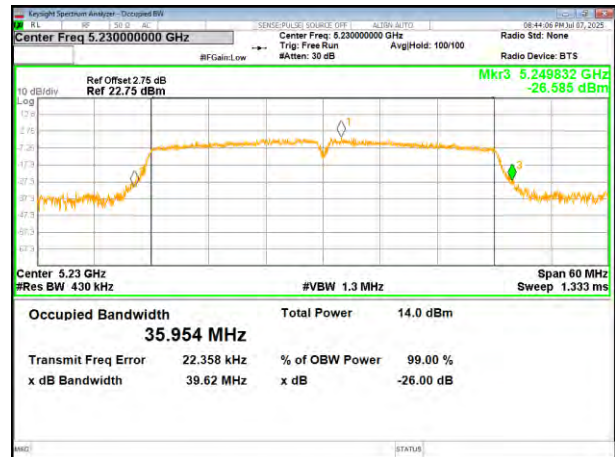
(802.11 n40) plot on channel 38



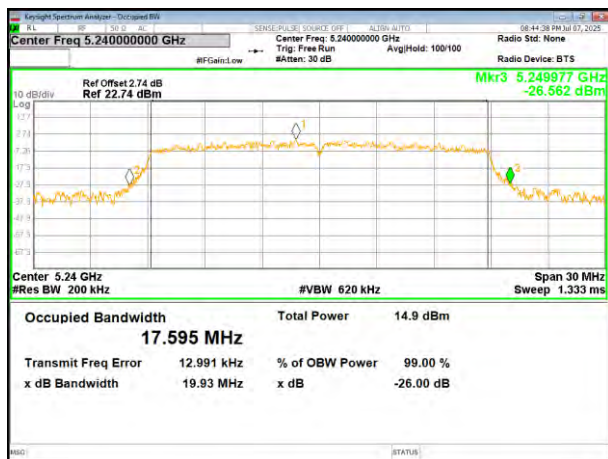
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

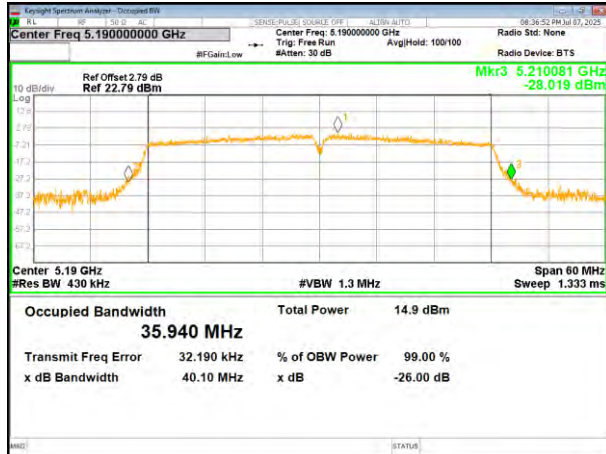


(802.11ac20) plot on channel 48

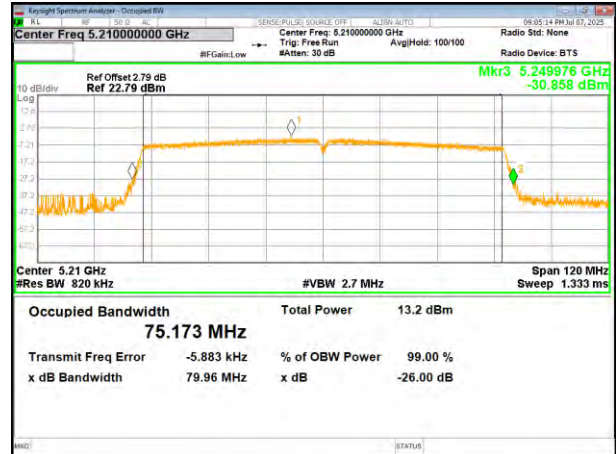


Test plot

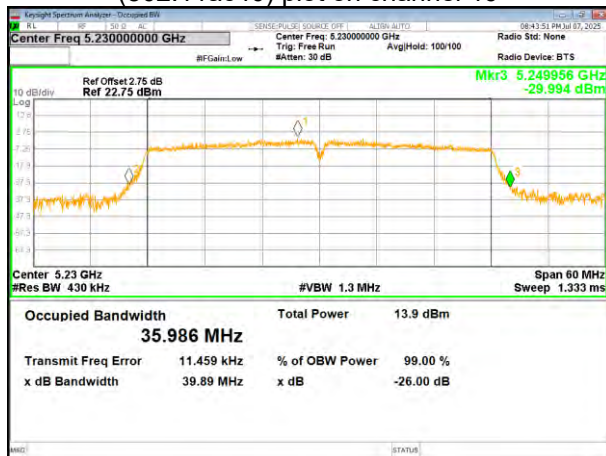
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46



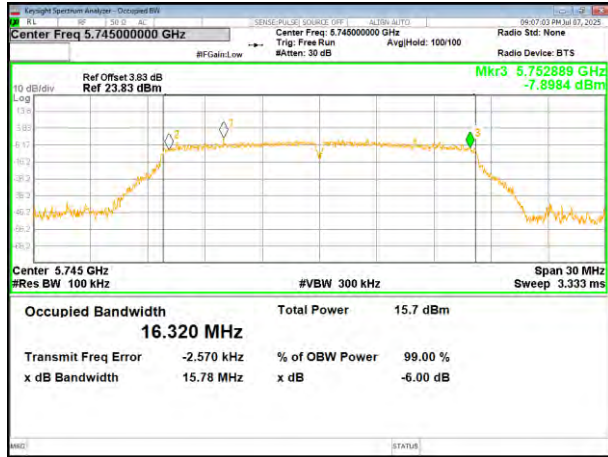
5745-5825MHz

Test CH	-6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	15.78	15.44	14.44	35.11	33.87	--	>500	Pass
Middle	15.04	14.44	15.05	--	--	75.10		
Highest	15.09	15.07	14.33	35.05	35.05	--		

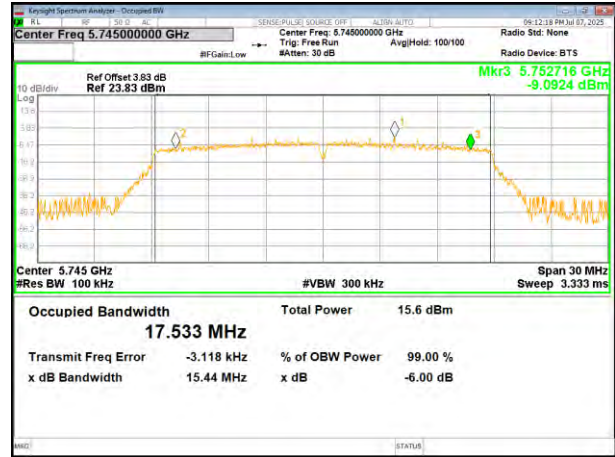
Remark: "---" is not applicable

Test plot

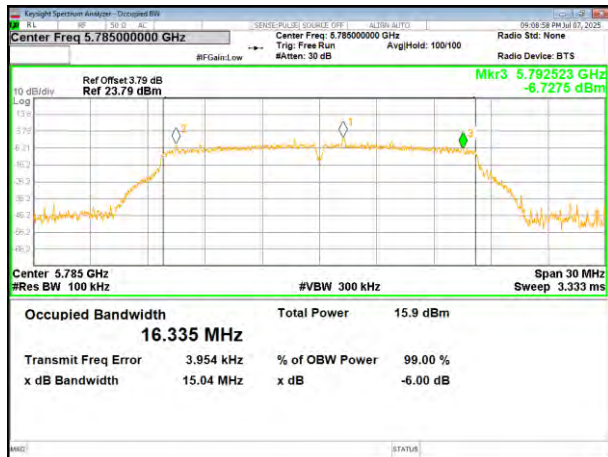
(802.11a) plot on channel 149



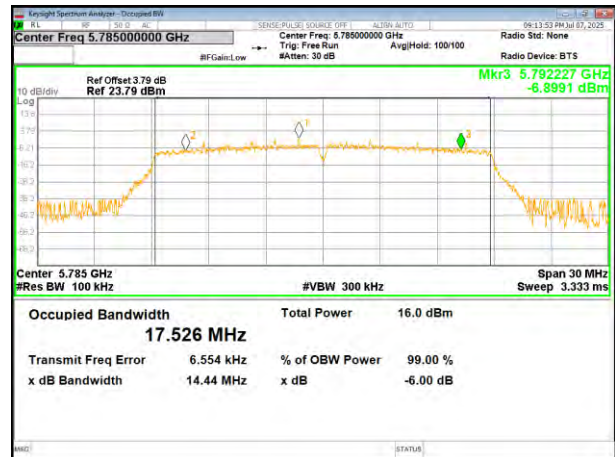
(802.11 n20) plot on channel 149



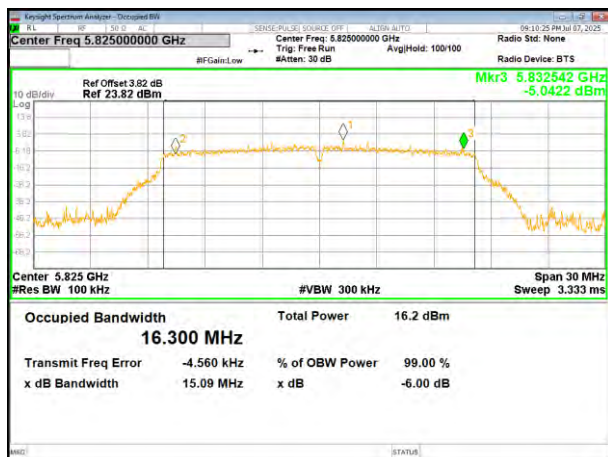
(802.11a) plot on channel 157



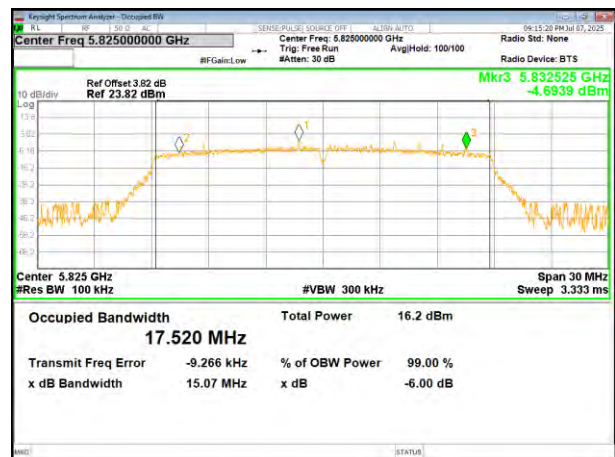
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165

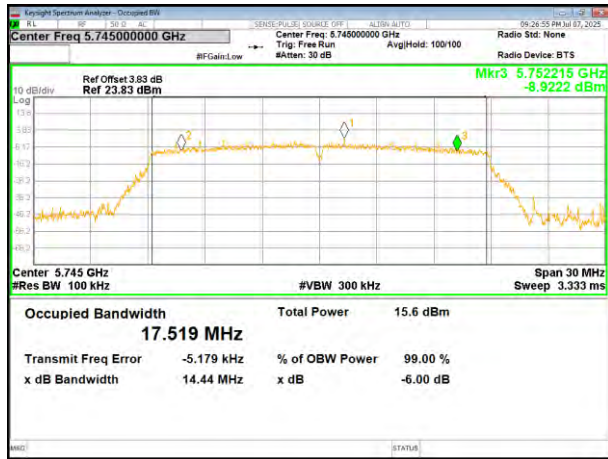


(802.11 n20) plot on channel 165

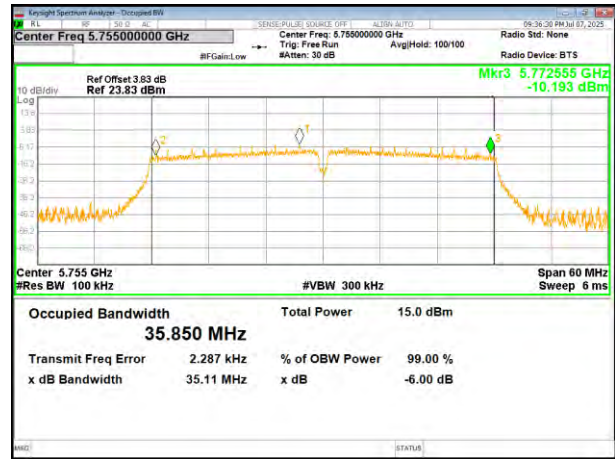


Test plot

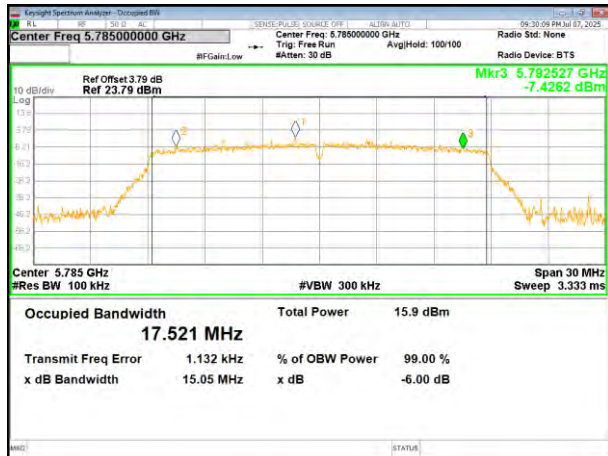
(802.11ac20) plot on channel 149



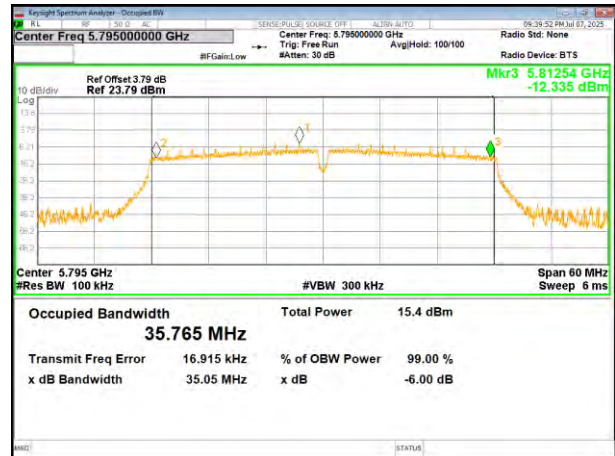
(802.11 n40) plot on channel 151



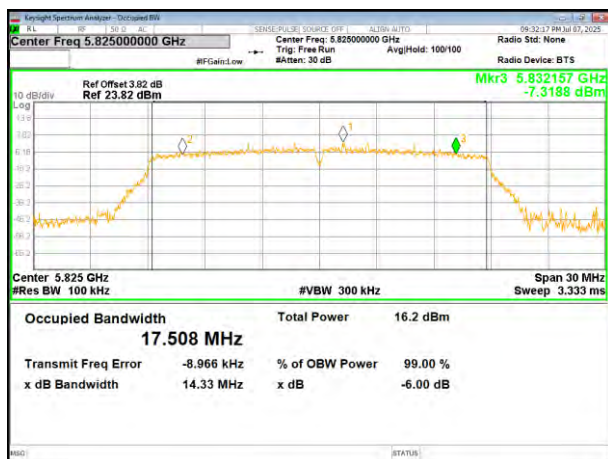
(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

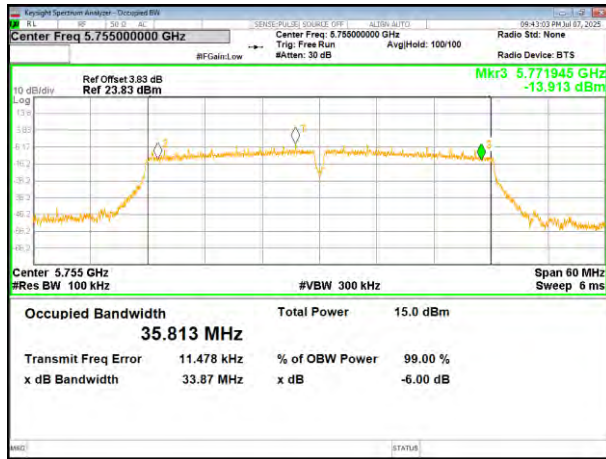


(802.11ac20) plot on channel 165

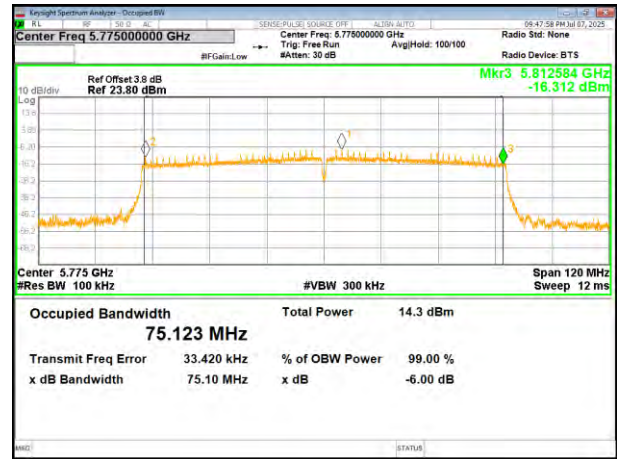


Test plot

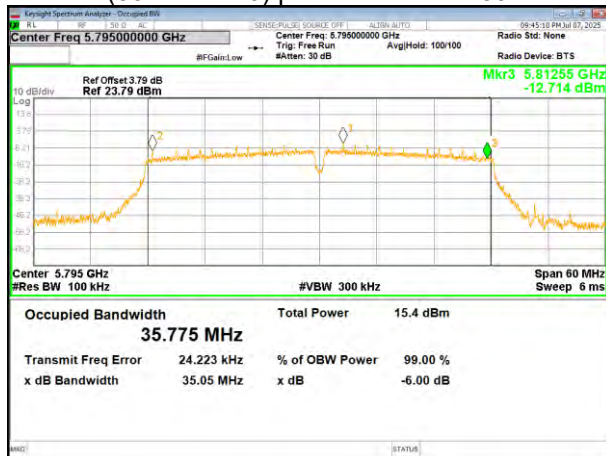
(802.11 ac40) plot on channel 151



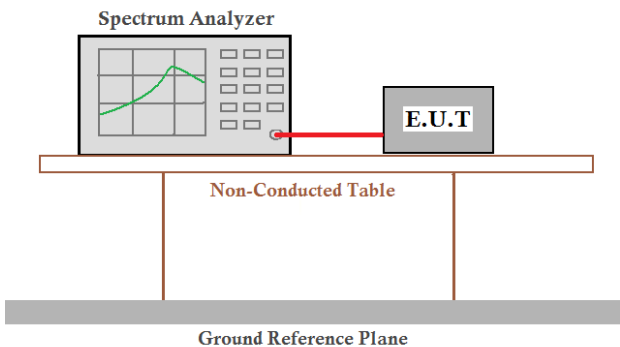
(802.11 ac80) plot on channel 155



(802.11 ac40) plot on channel 159



4.6 Power Spectral Density

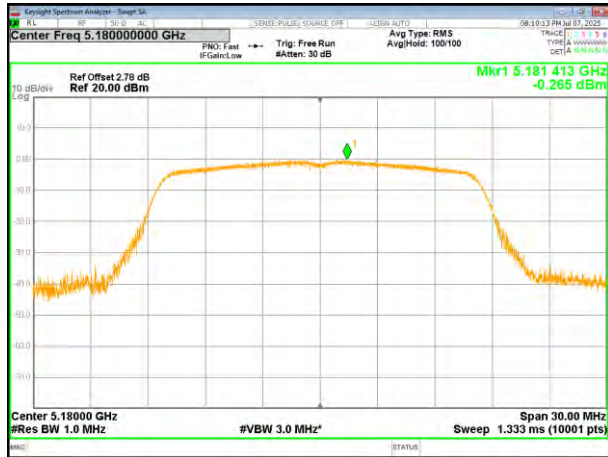
Test Requirement:	47CRF Part 15.407(a)(1)/ (a)(3)	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, ANSI C63.10:2013	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm/1MHz for master device
		≤11dBm/1MHz for client device
	5250-5350	≤11dBm/1MHz for client device
	5470-5725	≤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.: 23.1°C	Humid.: 51%RH
Test voltage:	AC 120V/60Hz	
Test results:	Pass	

Measurement Result

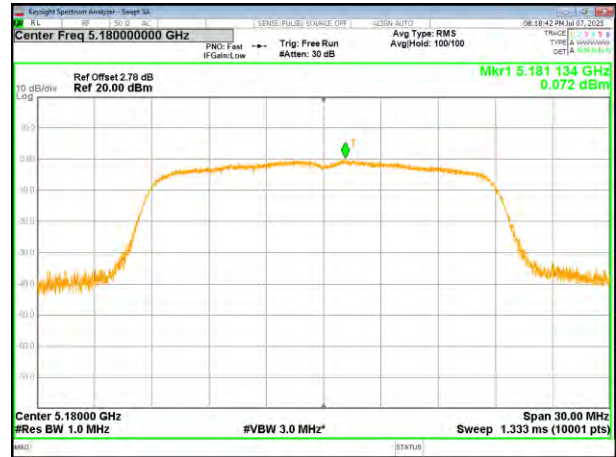
5180-5240MHz

Mode	Frequency	Measured Power Density (dBm/MHz)	Correction Factor (dB)	Total Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	-0.265	0.720	0.455	11
	5200 MHz	0.400	0.720	1.120	11
	5240 MHz	0.011	0.720	0.731	11
802.11 n20	5180 MHz	0.072	0.710	0.782	11
	5200 MHz	-0.682	0.710	0.028	11
	5240 MHz	-0.717	0.710	-0.007	11
802.11 ac20	5180 MHz	-0.196	0.720	0.524	11
	5200 MHz	-0.434	0.720	0.286	11
	5240 MHz	-0.705	0.720	0.015	11
802.11 n40	5190 MHz	-4.197	0.380	-3.817	11
	5230 MHz	-4.694	0.380	-4.314	11
802.11 ac40	5190 MHz	-3.945	0.380	-3.565	11
	5230 MHz	-4.718	0.380	-4.338	11
802.11 ac80	5210 MHz	-9.385	0.420	-8.965	11

(802.11a) PSD plot on channel 36



(802.11n20) PSD plot on channel 36



(802.11a) PSD plot on channel 40



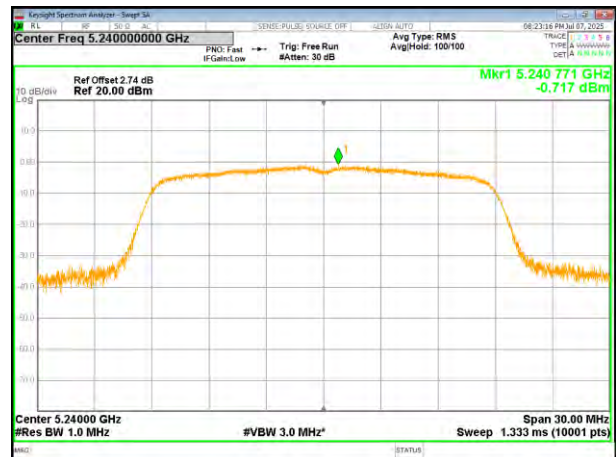
(802.11n20) PSD plot on channel 40



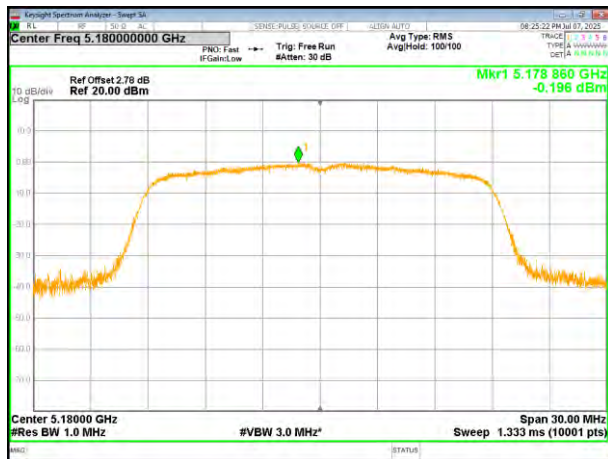
(802.11a) PSD plot on channel 48



(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/MHz)
802.11 a	5745 MHz	-2.523	-2.609	0.730	-1.879	30
	5785 MHz	-2.438	-2.524	0.730	-1.794	30
	5825 MHz	-2.231	-2.317	0.730	-1.587	30
802.11 n20	5745 MHz	-3.018	-3.104	0.720	-2.384	30
	5785 MHz	-2.762	-2.848	0.720	-2.128	30
	5825 MHz	-2.323	-2.409	0.720	-1.689	30
802.11ac20	5745 MHz	-3.088	-3.174	0.730	-2.444	30
	5785 MHz	-2.764	-2.850	0.730	-2.120	30
	5825 MHz	-2.431	-2.517	0.730	-1.787	30
802.11 n40	5755 MHz	-7.041	-7.127	0.140	-6.987	30
	5795 MHz	-6.458	-6.544	0.140	-6.404	30
802.11ac40	5755 MHz	-7.082	-7.168	0.140	-7.028	30
	5795 MHz	-6.485	-6.571	0.140	-6.431	30
802.11ac80	5775 MHz	-11.332	-11.418	0.280	-11.138	30

Note: 1. If the measurement is X dBm/510kHz, thus $X \text{ dBm/510kHz} = (10^{X/10}) \cdot (500 / 510) \text{ dBm/500kHz}$

2. Correction Factor (dB)= duty cycle factor

(802.11a) PSD plot on channel 149



(802.11n20) PSD plot on channel 149



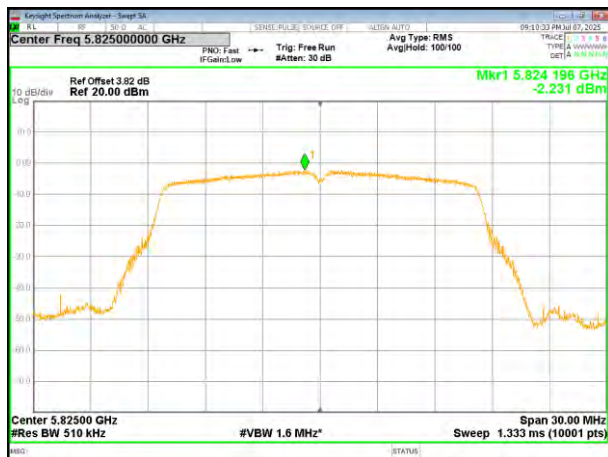
(802.11a) PSD plot on channel 157



(802.11n20) PSD plot on channel 157



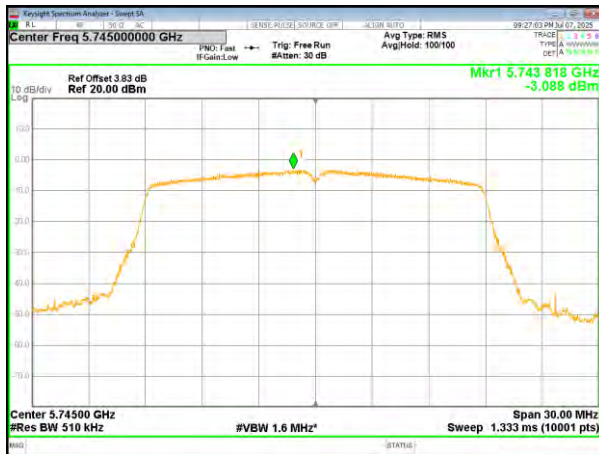
(802.11a) PSD plot on channel 165



(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

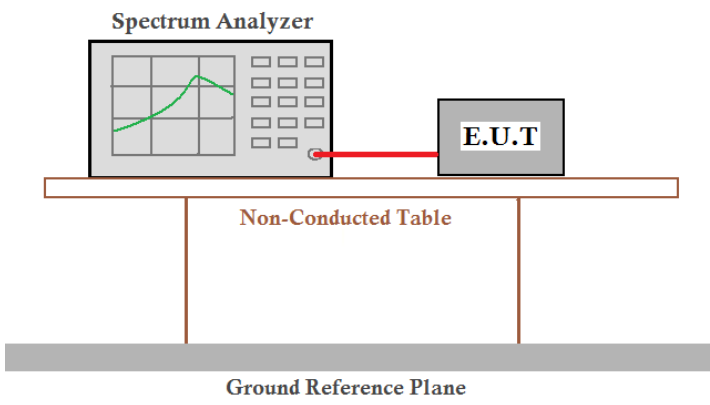


(802.11ac40) PSD plot on channel 159



4.7 Band edge

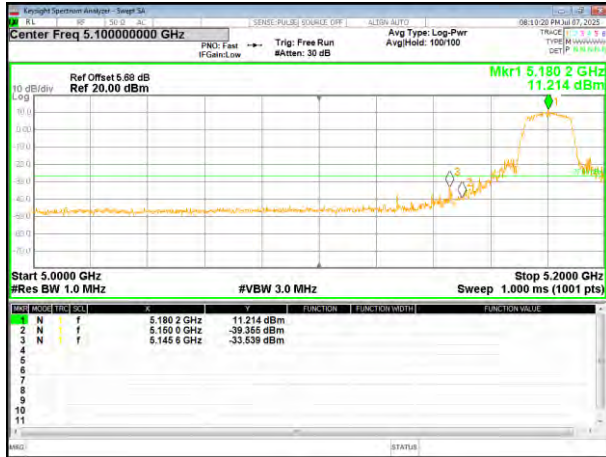
4.7.1 Conducted test Method

Test Requirement:	47CRF Part 15.209 and 15.205	
Test Method:	ANSI C63.10: 2013	
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:		
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.: 23.1°C	Humid.: 51%RH
Test voltage:	AC 120V/60Hz	
Test results:	Pass	

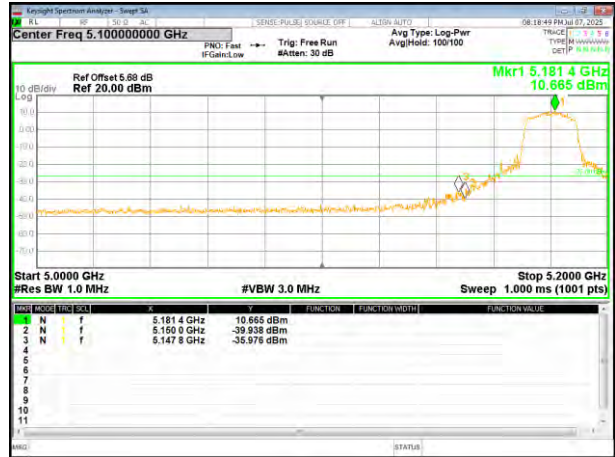
Remark: Due to the margin value of the sideband test being greater than the antenna gain value, the test meets the requirements

5.180~5.240 GHz

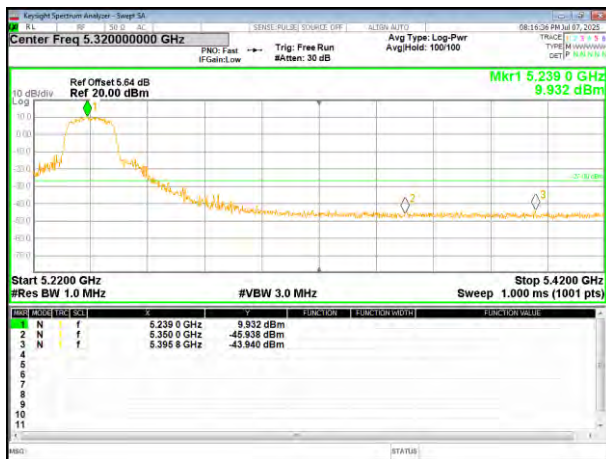
(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

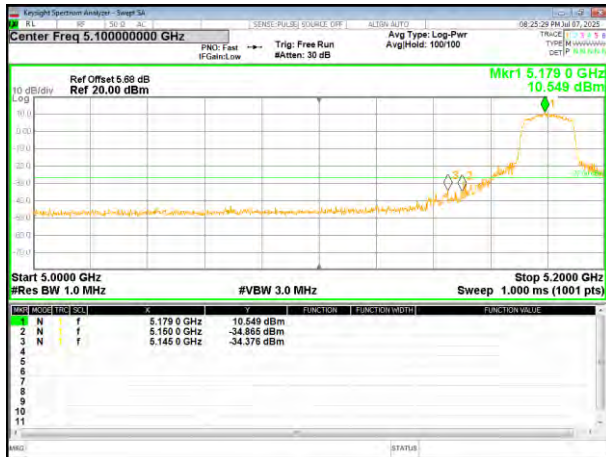


(802.11n20) Band Edge, Right Side



Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

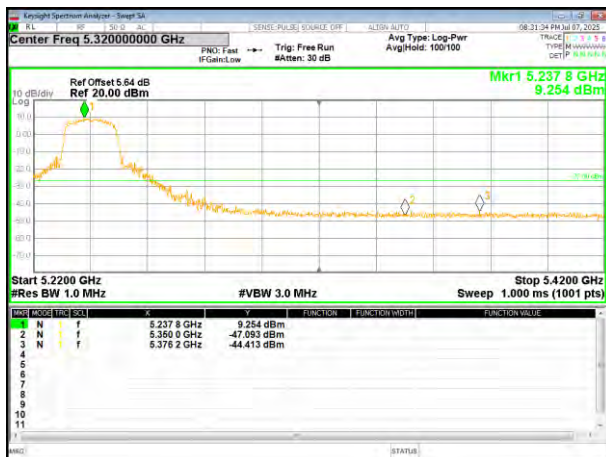
(802.11ac20) Band Edge, Left Side



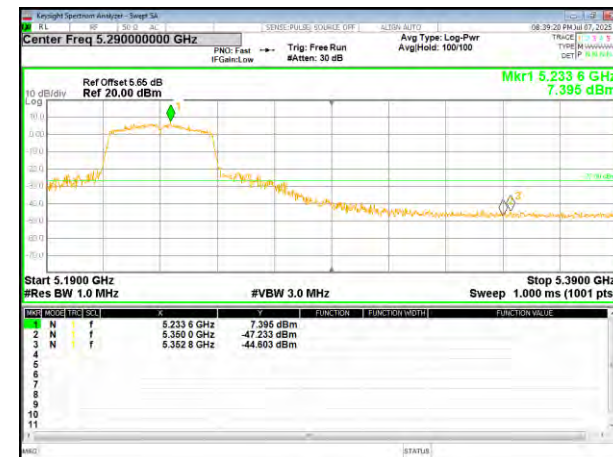
(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

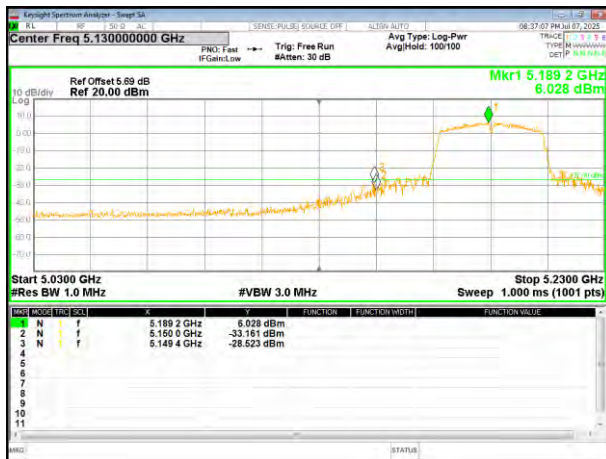


(802.11n40) Band Edge, Right Side



Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

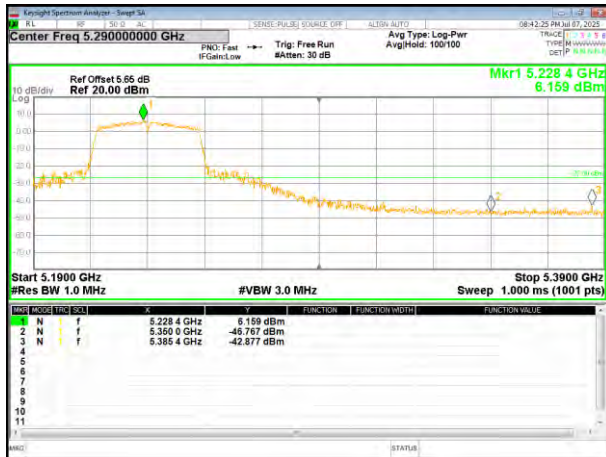
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



(802.11ac40) Band Edge, Right Side



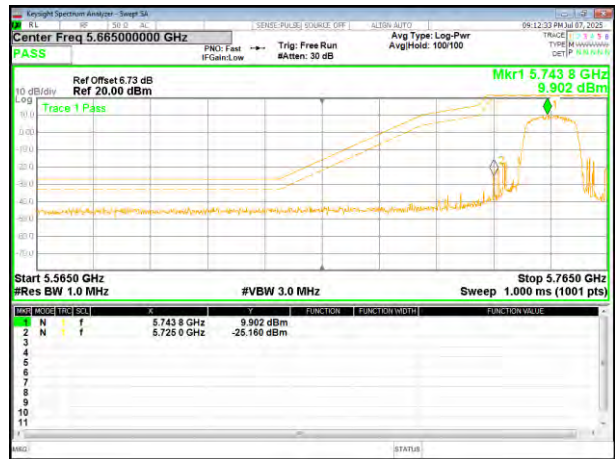
Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

5.745~5.825 GHz

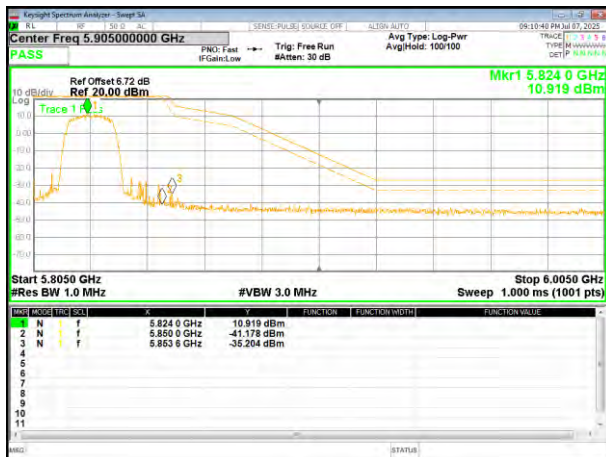
(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

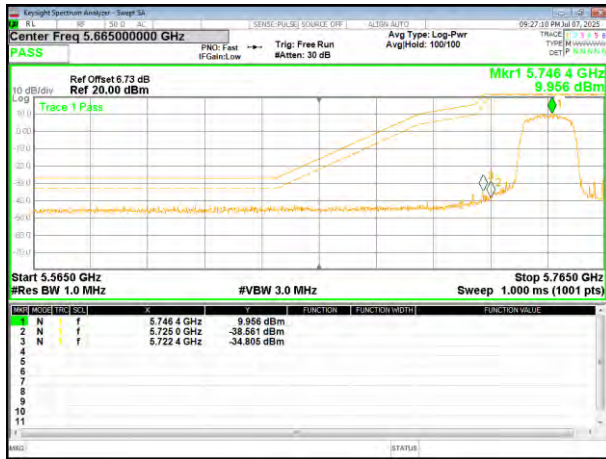


(802.11n20) Band Edge, Right Side

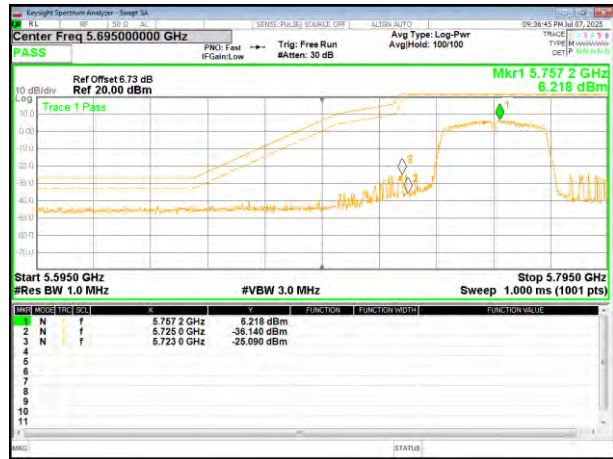


Remark: Antenna gain and cable loss data included in Offset.

(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

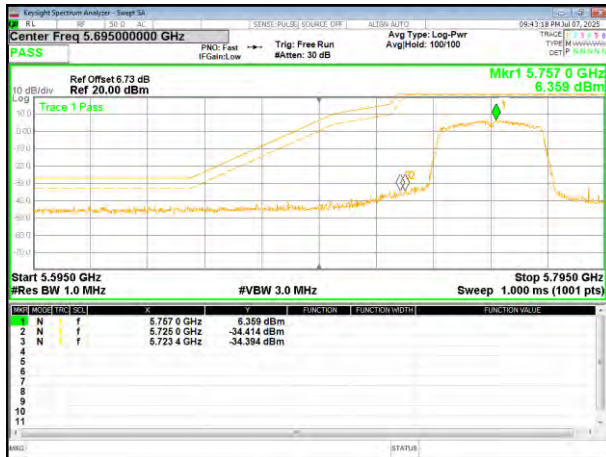


(802.11n40) Band Edge, Right Side

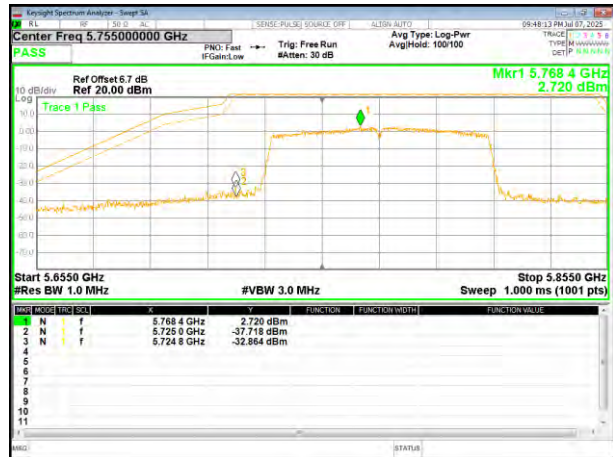


Remark: Antenna gain and cable loss data included in Offset.

(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



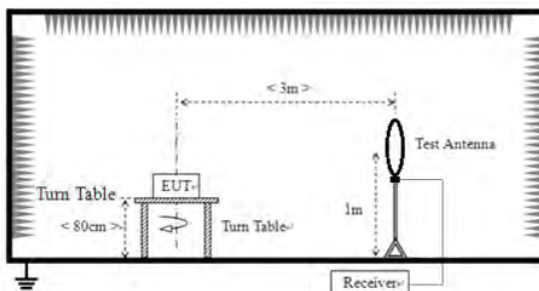
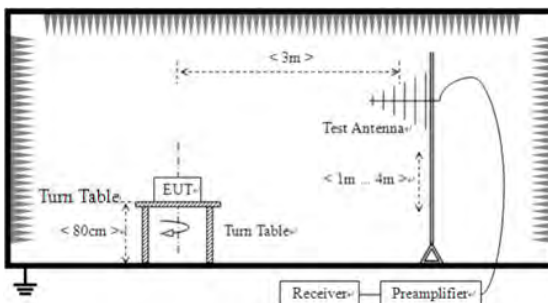
(802.11ac40) Band Edge, Right Side

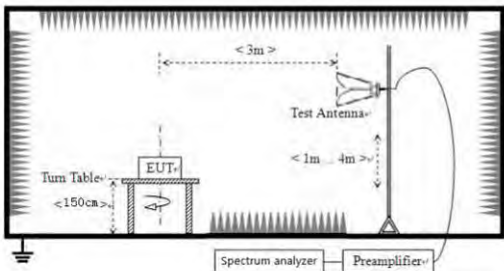


Remark: Antenna gain and cable loss data included in Offset.

4.8 Spurious Emission

4.8.1 Radiated Emission Method

Test Requirement:	47CRF Part 15.209, Part 15E Section 15.407(b)(4)					
Test Method:	ANSI C63.10:2013					
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. 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

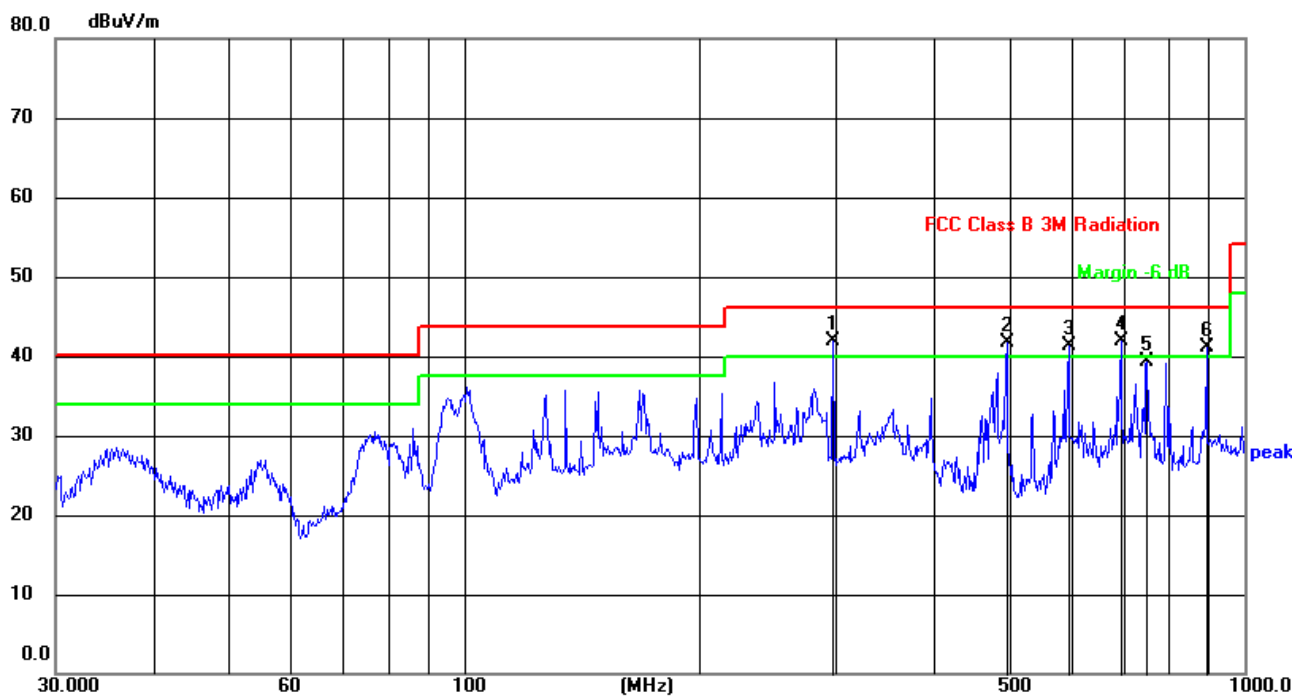
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

Remark: The test data shows only the worst case 802.11ac20 mode.

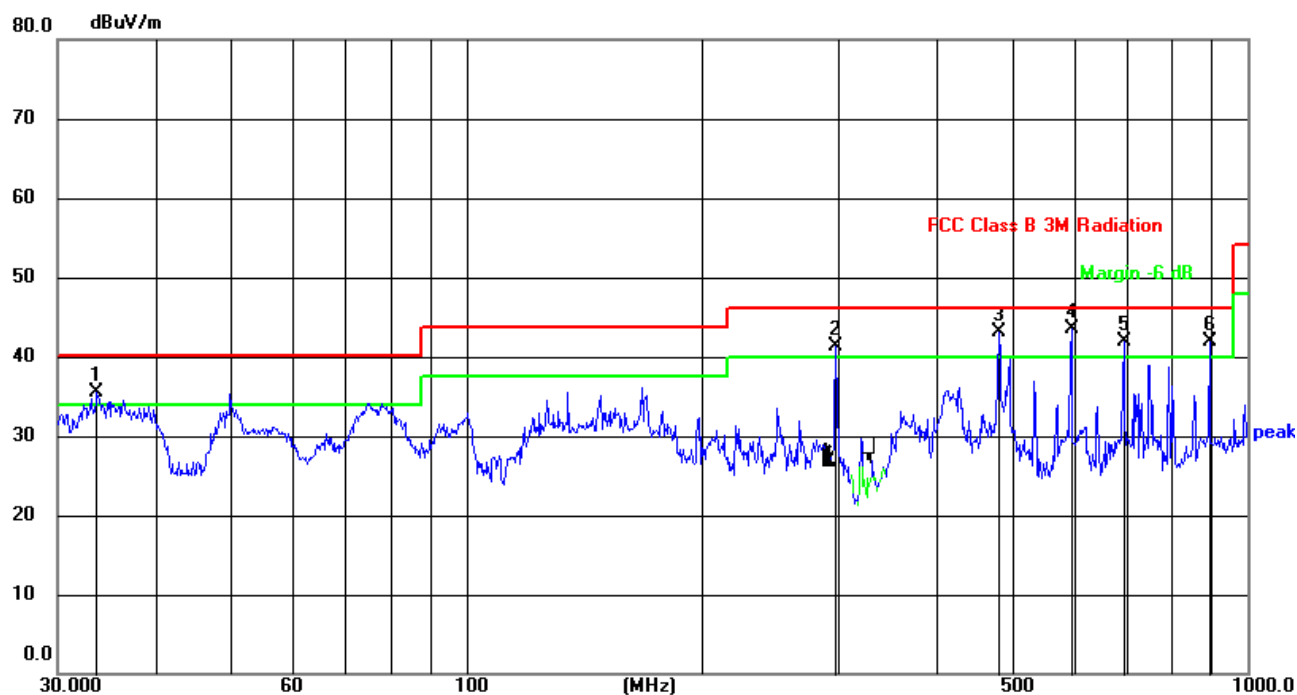
Temperature:	23.1°C	Relative Humidity:	51%
Pressure:	101.2kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	5.2G TX- 802.11ac20 (5180MHz)		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	297.2238	60.52	-18.54	41.98	46.00	-4.02	QP
2	495.9343	55.52	-13.87	41.65	46.00	-4.35	QP
3	595.1326	51.73	-10.46	41.27	46.00	-4.73	QP
4	694.4174	51.08	-9.27	41.81	46.00	-4.19	QP
5	750.1082	47.50	-8.24	39.26	46.00	-6.74	QP
6	893.8564	47.85	-6.65	41.20	46.00	-4.80	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.6802	56.86	-21.37	35.49	40.00	-4.51	QP
2	297.2238	59.38	-18.03	41.35	46.00	-4.65	QP
3	480.5276	57.27	-14.21	43.06	46.00	-2.94	QP
4	595.1326	54.90	-11.36	43.54	46.00	-2.46	QP
5	694.4174	50.99	-9.12	41.87	46.00	-4.13	QP
6	893.8564	47.86	-6.00	41.86	46.00	-4.14	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 802.11ac20 mode.

Temperature:	23.1°C	Relative Humidity:	51%
Pressure:	101.2kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	5.2G TX- 802.11ac20		

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	42.27	1.77	44.04	68.20	-24.16	PK
V	10360.00	37.60	1.77	39.37	54.00	-14.63	AV
V	15540.00	46.91	7.72	54.63	74.00	-19.37	PK
V	15540.00	36.15	7.72	43.87	54.00	-10.13	AV
V	20720.00	52.49	-5.73	46.76	68.20	-21.44	PK
V	20720.00	47.92	-5.73	42.19	54.00	-11.81	AV
V	25900.00	49.09	-2.89	46.20	68.20	-22.00	PK
V	25900.00	43.78	-2.89	40.89	54.00	-13.11	AV
V	31080.00	46.04	1.66	47.70	68.20	-20.50	PK
V	31080.00	41.25	1.66	42.91	54.00	-11.09	AV
V	36260.00	43.08	4.63	47.71	68.20	-20.49	PK
V	36260.00	38.24	4.63	42.87	54.00	-11.13	AV
H	10360.00	41.73	1.77	43.50	68.20	-24.70	PK
H	10360.00	37.08	1.77	38.85	54.00	-15.15	AV
H	15540.00	46.70	7.72	54.42	74.00	-19.58	PK
H	15540.00	36.55	7.72	44.27	54.00	-9.73	AV
H	20720.00	52.26	-5.73	46.53	68.20	-21.67	PK
H	20720.00	47.03	-5.73	41.30	54.00	-12.70	AV
H	25900.00	49.08	-2.89	46.19	68.20	-22.01	PK
H	25900.00	44.18	-2.89	41.29	54.00	-12.71	AV
H	31080.00	45.28	1.66	46.94	68.20	-21.26	PK
H	31080.00	40.08	1.66	41.74	54.00	-12.26	AV
H	36260.00	42.95	4.63	47.58	68.20	-20.62	PK
H	36260.00	38.72	4.63	43.35	54.00	-10.65	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	41.72	1.85	43.57	68.20	-24.63	PK
V	10400.00	37.45	1.85	39.30	54.00	-14.70	AV
V	15600.00	46.41	7.64	54.05	74.00	-19.95	PK
V	15600.00	35.81	7.64	43.45	54.00	-10.55	AV
V	20800.00	52.25	-5.67	46.58	68.20	-21.62	PK
V	20800.00	47.21	-5.67	41.54	54.00	-12.46	AV
V	26000.00	49.24	-2.85	46.39	68.20	-21.81	PK
V	26000.00	43.97	-2.85	41.12	54.00	-12.88	AV
V	31200.00	45.40	1.57	46.97	68.20	-21.23	PK
V	31200.00	40.43	1.57	42.00	54.00	-12.00	AV
V	36400.00	43.08	4.93	48.01	68.20	-20.19	PK
V	36400.00	38.73	4.93	43.66	54.00	-10.34	AV
H	10400.00	42.18	1.85	44.03	68.20	-24.17	PK
H	10400.00	38.13	1.85	39.98	54.00	-14.02	AV
H	15600.00	48.10	7.64	55.74	74.00	-18.26	PK
H	15600.00	37.62	7.64	45.26	54.00	-8.74	AV
H	20800.00	53.24	-5.67	47.57	68.20	-20.63	PK
H	20800.00	47.90	-5.67	42.23	54.00	-11.77	AV
H	26000.00	47.10	-2.85	44.25	68.20	-23.95	PK
H	26000.00	34.64	-2.85	31.79	54.00	-22.21	AV
H	31200.00	45.25	1.57	46.82	68.20	-21.38	PK
H	31200.00	40.06	1.57	41.63	54.00	-12.37	AV
H	36400.00	42.81	4.93	47.74	68.20	-20.46	PK
H	36400.00	37.85	4.93	42.78	54.00	-11.22	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	43.35	2.02	45.37	68.20	-22.83	PK
V	10480.00	38.54	2.02	40.56	54.00	-13.44	AV
V	15720.00	45.46	7.46	52.92	74.00	-21.08	PK
V	15720.00	35.37	7.46	42.83	54.00	-11.17	AV
V	20960.00	52.58	-5.56	47.02	68.20	-21.18	PK
V	20960.00	47.52	-5.56	41.96	54.00	-12.04	AV
V	26200.00	48.45	-2.50	45.95	68.20	-22.25	PK
V	26200.00	44.15	-2.50	41.65	54.00	-12.35	AV
V	31440.00	45.56	1.39	46.95	68.20	-21.25	PK
V	31440.00	40.61	1.39	42.00	54.00	-12.00	AV
V	36680.00	42.54	5.25	47.79	68.20	-20.41	PK
V	36680.00	38.28	5.25	43.53	54.00	-10.47	AV
H	10480.00	42.52	2.02	44.54	68.20	-23.66	PK
H	10480.00	37.57	2.02	39.59	54.00	-14.41	AV
H	15720.00	46.84	7.46	54.30	74.00	-19.70	PK
H	15720.00	36.36	7.46	43.82	54.00	-10.18	AV
H	20960.00	53.34	-5.56	47.78	68.20	-20.42	PK
H	20960.00	47.86	-5.56	42.30	54.00	-11.70	AV
H	26200.00	48.89	-2.50	46.39	68.20	-21.81	PK
H	26200.00	44.86	-2.50	42.36	54.00	-11.64	AV
H	31440.00	45.81	1.39	47.20	68.20	-21.00	PK
H	31440.00	41.66	1.39	43.05	54.00	-10.95	AV
H	36680.00	43.57	5.15	48.72	68.20	-19.48	PK
H	36680.00	43.35	5.15	48.50	54.00	-5.50	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:	23.1°C	Relative Humidity:	51%
Pressure:	101.2kPa	Test Voltage :	AC 120V/60Hz
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	46.13	3.31	49.44	74.00	-24.56	PK
V	11490.00	36.78	3.31	40.09	54.00	-13.91	AV
V	17235.00	42.55	10.10	52.65	68.20	-15.55	PK
V	17235.00	37.35	10.10	47.45	54.00	-6.55	AV
V	22980.00	54.45	-4.61	49.84	74.00	-24.16	PK
V	22980.00	45.12	-4.61	40.51	54.00	-13.49	AV
V	28725.00	47.04	0.87	47.91	68.20	-20.29	PK
V	28725.00	41.93	0.87	42.80	54.00	-11.20	AV
V	34470.00	43.22	3.82	47.04	68.20	-21.16	PK
V	34470.00	38.67	3.82	42.49	54.00	-11.51	AV
H	11490.00	46.42	3.31	49.73	74.00	-24.27	PK
H	11490.00	36.12	3.31	39.43	54.00	-14.57	AV
H	17235.00	41.09	10.10	51.19	68.20	-17.01	PK
H	17235.00	36.04	10.10	46.14	54.00	-7.86	AV
H	22980.00	56.71	-4.61	52.10	74.00	-21.90	PK
H	22980.00	46.00	-4.61	41.39	54.00	-12.61	AV
H	28725.00	47.02	0.87	47.89	68.20	-20.31	PK
H	28725.00	42.74	0.87	43.61	54.00	-10.39	AV
H	34470.00	43.61	3.82	47.43	68.20	-20.78	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	46.80	3.34	50.14	74.00	-23.86	PK
V	11570.00	36.52	3.34	39.86	54.00	-14.14	AV
V	17355.00	42.52	10.52	53.04	68.20	-15.16	PK
V	17355.00	37.91	10.52	48.43	54.00	-5.57	AV
V	23140.00	54.11	-4.66	49.45	74.00	-24.55	PK
V	23140.00	44.45	-4.66	39.79	54.00	-14.21	AV
V	28925.00	46.54	1.36	47.90	68.20	-20.30	PK
V	28925.00	42.85	1.36	44.21	54.00	-9.79	AV
V	34710.00	43.01	3.95	46.96	68.20	-21.24	PK
V	34710.00	38.29	3.95	42.24	54.00	-11.76	AV
H	11570.00	47.59	3.34	50.93	74.00	-23.07	PK
H	11570.00	37.47	3.34	40.81	54.00	-13.19	AV
H	17355.00	40.89	10.52	51.41	68.20	-16.79	PK
H	17355.00	34.03	10.52	44.55	54.00	-9.45	AV
H	23140.00	53.49	-4.66	48.83	74.00	-25.17	PK
H	23140.00	42.34	-4.66	37.68	54.00	-16.32	AV
H	28925.00	52.26	1.36	53.62	68.20	-14.58	PK
H	28925.00	46.83	1.36	48.19	54.00	-5.81	AV
H	34710.00	52.54	3.95	56.49	68.20	-11.71	PK
H	34710.00	41.60	3.95	45.55	54.00	-8.45	AV

Remark:

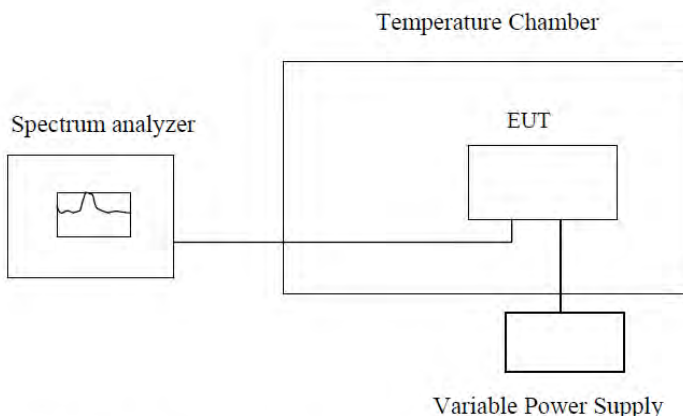
1. Emission Level = Meter Reading + Factor,
Factor=Antenna Factor + Cable Loss – Pre-amplifier
Margin= Emission Level – Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value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

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	45.19	3.36	48.55	74.00	-25.45	PK
V	11650.00	35.89	3.36	39.25	54.00	-14.75	AV
V	17475.00	41.84	10.93	52.77	68.20	-15.43	PK
V	17475.00	37.41	10.93	48.34	54.00	-5.66	AV
V	23300.00	52.36	-4.77	47.59	68.20	-20.61	PK
V	23300.00	47.10	-4.77	42.33	54.00	-11.67	AV
V	29125.00	47.00	1.65	48.65	68.20	-19.55	PK
V	29125.00	41.60	1.65	43.25	54.00	-10.75	AV
V	34950.00	41.58	4.09	45.67	68.20	-22.53	PK
V	34950.00	37.89	4.09	41.98	54.00	-12.02	AV
H	11650.00	48.03	3.36	51.39	74.00	-22.61	PK
H	11650.00	37.32	3.36	40.68	54.00	-13.32	AV
H	17475.00	40.00	10.93	50.93	68.20	-17.27	PK
H	17475.00	36.32	10.93	47.25	54.00	-6.75	AV
H	23300.00	51.35	-4.77	46.58	68.20	-21.62	PK
H	23300.00	47.92	-4.77	43.15	54.00	-10.85	AV
H	29125.00	47.86	1.65	49.51	68.20	-18.69	PK
H	29125.00	43.43	1.65	45.08	54.00	-8.92	AV
H	34950.00	45.19	4.09	49.28	68.20	-18.92	PK
H	34950.00	35.89	4.09	39.98	54.00	-14.02	AV

Remark:

- Emission Level = Meter Reading + Factor,
Factor=Antenna Factor + Cable Loss – Pre-amplifier
Margin= Emission Level – Limit
- If peak below the average limit, the average emission was no test.
- 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:	47CRF Part 15.407(g)
Test Method:	ANSI C63.10:2013, FCC Part 2.1055
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	5179.981	5179.946	5179.978	5179.989
	5190	5189.972	5189.976	5189.979	5189.988
	5200	5199.980	5200.001	5199.970	5199.982
	5210	5209.972	5209.985	5299.978	5209.972
	5220	5219.993	5219.976	5219.970	5219.982
	5230	5229.971	5230.004	5229.991	5299.980
	5240	5239.989	5239.992	5239.969	5239.984
-20	5180	5179.990	5179.984	5179.979	5179.941
	5190	5189.986	5189.985	5189.970	5189.971
	5200	5199.981	5199.976	5199.978	5199.996
	5210	5209.987	5299.984	5209.970	5209.980
	5220	5219.982	5219.976	5219.991	5219.971
	5230	5229.980	5229.997	5229.969	5229.999
	5240	5239.953	5239.975	5239.987	5239.987
-10	5180	5179.942	5179.984	5179.979	5179.989
	5190	5189.972	5189.985	5189.970	5189.985
	5200	5199.997	5199.976	5199.978	5199.980
	5210	5209.981	5299.984	5209.970	5209.986
	5220	5219.972	5219.976	5219.991	5219.981
	5230	5230.000	5229.997	5229.969	5229.979
	5240	5239.988	5239.975	5239.987	5239.952
0	5180	5179.981	5179.946	5179.978	5179.989
	5190	5189.972	5189.976	5189.979	5189.988
	5200	5199.980	5200.001	5199.970	5199.982
	5210	5209.972	5209.985	5299.978	5209.972
	5220	5219.993	5219.976	5219.970	5219.982
	5230	5229.971	5230.004	5229.991	5299.980
	5240	5239.989	5239.992	5239.969	5239.984
10	5180	5179.969	5179.985	5179.979	5179.989
	5190	5189.980	5189.976	5189.970	5179.989
	5200	5199.971	5199.984	5199.978	5189.985
	5210	5209.972	5209.976	5209.970	5199.980
	5220	5219.979	5219.997	5219.991	5209.986
	5230	5229.997	5229.975	5229.969	5219.981
	5240	5239.969	5239.993	5239.987	5229.979
20	5180	5179.990	5179.984	5179.979	5179.941
	5190	5189.986	5189.985	5189.970	5189.971

	5200	5199.981	5199.976	5199.978	5199.996
	5210	5209.987	5299.984	5209.970	5209.980
	5220	5219.982	5219.976	5219.991	5219.971
	5230	5229.980	5229.997	5229.969	5229.999
	5240	5239.953	5239.975	5239.987	5239.987
30	5180	5179.990	5179.984	5179.979	5179.941
	5190	5189.986	5189.985	5189.970	5189.971
	5200	5199.981	5199.976	5199.978	5199.996
	5210	5209.987	5299.984	5209.970	5209.980
	5220	5219.982	5219.976	5219.991	5219.971
	5230	5229.980	5229.997	5229.969	5229.999
	5240	5239.953	5239.975	5239.987	5239.987
40	5180	5179.980	5179.973	5179.979	5179.979
	5190	5189.981	5189.984	5189.970	5189.980
	5200	5199.972	5199.975	5199.978	5199.971
	5210	5299.980	5209.976	5209.970	5299.979
	5220	5219.972	5219.983	5219.991	5219.971
	5230	5229.993	5230.001	5229.969	5229.992
	5240	5239.971	5239.973	5239.987	5239.970
50	5180	5179.942	5179.984	5179.967	5180.104
	5190	5189.972	5189.985	5189.978	5199.979
	5200	5199.997	5199.976	5199.969	5200.004
	5210	5209.981	5299.984	5209.970	5209.982
	5220	5219.972	5219.976	5219.977	5219.997
	5230	5230.000	5229.997	5229.995	5229.990
	5240	5239.988	5239.975	5239.967	5239.998

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)
AC 106V	5180	5179.975	5179.973	5179.988	5179.985
	5190	5189.969	5189.984	5189.984	5189.971
	5200	5199.982	5199.975	5199.979	5199.972
	5210	5209.986	5209.976	5209.985	5209.994
	5220	5219.972	5219.983	5219.980	5219.980
	5230	5229.965	5230.001	5229.978	5229.990
	5240	5180.105	5179.989	5179.979	5179.968
AC120V	5180	5199.980	5189.983	5189.970	5189.979
	5190	5200.005	5199.983	5199.978	5199.970
	5200	5209.983	5209.995	5209.970	5209.971
	5210	5219.998	5219.986	5219.991	5219.978
	5220	5229.991	5299.989	5229.969	5229.996
	5230	5239.999	5239.986	5239.987	5239.981
	5240	5180.105	5179.989	5179.979	5179.968
AC 138V	5180	5179.990	5179.994	5179.967	5179.968
	5190	5189.986	5189.990	5189.978	5189.979
	5200	5199.981	5199.985	5199.969	5199.969
	5210	5209.987	5209.991	5209.970	5209.971
	5220	5219.982	5219.986	5219.977	5219.978
	5230	5229.980	5229.984	5229.995	5230.001
	5240	5239.953	5239.957	5239.967	5239.968

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	5745.003	5744.966	5744.600	5744.949
	5755	5744.951	5754.982	5754.984	5754.971
	5775	5754.973	5774.981	5774.985	5774.980
	5785	5774.982	5784.984	5784.988	5784.971
	5795	5784.973	5794.995	5794.971	5794.982
	5825	5794.984	5824.976	5824.967	5824.985
-20	5745	5744.968	5744.966	5744.981	5744.972
	5755	5754.993	5754.982	5754.983	5754.998
	5775	5774.974	5774.981	5774.986	5774.994
	5785	5784.983	5784.984	5784.978	5784.978
	5795	5794.981	5794.995	5794.969	5794.967
	5825	5824.991	5824.976	5824.978	5824.902
-10	5745	5744.973	5744.977	5744.965	5745.036
	5755	5754.980	5754.984	5754.990	5744.601
	5775	5774.972	5775.001	5774.971	5754.985
	5785	5784.964	5784.977	5784.980	5774.986
	5795	5794.971	5794.973	5794.978	5784.989
	5825	5824.900	5824.976	5824.988	5794.972
0	5745	5744.967	5744.976	5744.971	5744.971
	5755	5754.977	5754.983	5754.978	5754.960
	5775	5774.998	5774.975	5774.995	5774.971
	5785	5784.974	5784.967	5784.971	5784.978
	5795	5794.970	5794.974	5794.967	5794.996
	5825	5824.968	5824.903	5824.970	5824.988
10	5745	5744.964	5744.987	5744.965	5744.982
	5755	5754.979	5754.989	5754.990	5754.996
	5775	5774.978	5774.992	5774.971	5774.981
	5785	5784.981	5784.984	5784.980	5784.968
	5795	5794.991	5794.975	5794.978	5794.962
	5825	5824.973	5824.984	5824.988	5824.996
20	5745	5744.984	5745.001	5744.981	5744.971
	5755	5754.998	5754.973	5754.995	5754.990
	5775	5774.983	5774.996	5774.980	5774.970
	5785	5784.970	5784.996	5784.967	5784.997
	5795	5794.964	5794.987	5794.961	5794.989
	5825	5824.998	5825.002	5824.995	5824.998
30	5745	5744.963	5744.987	5744.965	5744.982
	5755	5754.979	5754.989	5754.990	5754.996
	5775	5774.978	5774.992	5774.971	5774.981
	5785	5784.981	5784.984	5784.980	5784.968
	5795	5794.992	5794.975	5794.978	5794.962
	5825	5824.973	5824.984	5824.988	5824.996
40	5745	5744.984	5744.976	5744.965	5744.966
	5755	5754.986	5754.993	5754.990	5754.991
	5775	5774.989	5774.994	5774.971	5774.972
	5785	5784.981	5784.976	5784.980	5784.981

50	5795	5794.972	5794.993	5794.978	5794.979
	5825	5824.981	5824.991	5824.988	5824.989
	5745	5744.968	5744.976	5744.970	5744.972
	5755	5754.993	5754.993	5754.977	5754.979
	5775	5774.974	5774.994	5774.969	5774.996
	5785	5784.983	5784.976	5784.961	5784.972
	5795	5794.981	5794.993	5794.968	5794.968
	5825	5824.991	5824.991	5824.897	5824.971

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)
AC 106V	5745	5744.963	5744.976	5744.970	5744.966
	5755	5754.979	5754.983	5754.987	5754.991
	5775	5774.978	5774.975	5774.988	5774.972
	5785	5784.981	5784.967	5784.970	5784.981
	5795	5794.992	5794.974	5794.988	5794.979
	5825	5824.973	5824.903	5824.985	5824.989
AC120V	5745	5744.963	5744.987	5744.965	5744.982
	5755	5754.979	5754.989	5754.990	5754.996
	5775	5774.978	5774.992	5774.971	5774.981
	5785	5784.981	5784.984	5784.980	5784.968
	5795	5794.988	5794.975	5794.978	5794.962
	5825	5824.973	5824.984	5824.988	5824.996
AC 138V	5745	5744.984	5745.000	5744.981	5744.971
	5755	5754.998	5754.973	5754.995	5754.990
	5775	5774.983	5774.996	5774.980	5774.970
	5785	5784.970	5784.996	5784.967	5784.997
	5795	5794.964	5794.987	5794.961	5794.989
	5825	5824.998	5825.002	5824.995	5824.998

5 Test Setup Photo

Reference to the file No.: ET-25072150SP for details.

6 EUT Constructional Details

Reference to the file No.: ET-25072150EP and ET-25072150IP for details

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