



TEST REPORT

Applicant: Jiumao (Shenzhen) Industrial Co., LTD
Address of Applicant: 2nd Floor, Building 9, Jingxuan Industrial Park, Donghuan Road, Longhua District, Shenzhen
Manufacturer/Factory: Jiumao (Shenzhen) Industrial Co., LTD
Address of Manufacturer: 2nd Floor, Building 9, Jingxuan Industrial Park, Donghuan Road, Longhua District, Shenzhen
Product Name: Android tv box
Model No.: M98,M98PRO,M98mini,M98Max,M98Plus,Q96,M5,M98-M5, M6,M7,M8,M9,Y4,X2,X3,X4,X8,XX1,X96,X98,X96Q,X96mini, X96Pro,MXQ,MXQPro
Trade Mark: JIUMAO
FCC ID: 2BB8K-M98
Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of Test: Jul.14, 2023-Jul.31, 2023
Date of report issued: Aug.09, 2023
Test Result : PASS *

Remark:

* In the configuration tested, the EUT complied with the standards specified above.

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

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Approved by:

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Authorized Signature



Report Revision History		
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1 Test Summary

Test Item	Section in CFR 47	Result	Test by
Antenna requirement	15.203	Pass	/
AC Power Line Conducted Emission	15.207	Pass	Carr Kang
Conducted Output Power	15.407 (a)(1)/(a)(3)	Pass	Yvan Fan
26dB Bandwidth and 99% Occupied Bandwidth	15.407 (a)(12)	Pass	Yvan Fan
6dB Bandwidth	15.407 (e)	Pass	Yvan Fan
Power Spectral Density	15.407(a)(1)/(a)(3)	Pass	Yvan Fan
Band Edge	15.407(b)(1)/(b)(4)	Pass	Yvan Fan
Spurious Emission	15.205/15.209 15.407(b)(1)/(b)(4)/(b)(8)	Pass	Qiao Li
Frequency Stability	15.407(g)	Pass	Yvan Fan

Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10:2013.

1.1 Measurement Uncertainty

Test Item	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	±0.55%	(1)
RF output power, conducted	±0.99dB	(1)
Power Spectral Density, conducted	±0.61dB	(1)
Unwanted Emissions, conducted	±0.64dB	(1)
AC Power Line Conducted Emission	± 3.02dB	(1)
Radiated emissions 9K-30MHz	±3.98dB	(1)
Radiated emissions 30M- 1GHz	±4.30dB	(1)
Radiated emissions 1GHz-18GHz	±4.35dB	(1)
Radiated emissions 18GHz-40GHz	±4.59 dB	(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:	Android tv box
Model No.:	M98
Difference of model(s)	M98PRO,M98mini,M98Max,M98Plus,Q96,M5,M98-M5,M6,M7,M8,M9,Y4,X2,X3,X4,X8,XX1,X96,X98,X96Q,X96mini,X96Pro,MXQ,MXQPro
Test Model:	All the model are the same circuit and RF module, except the model names and colors
Hardware Version:	N/A
Software Version:	N/A
Sample(s) Status:	Engineer sample
Operation Frequency:	☒ 5180-5240MHz for 802.11a/n(HT20)/ac20; 5190-5230MHz for 802.11n(HT40)/ac40; 5210MHz for 802.11 ac80; ☒ 5745-5825 MHz for 802.11a/n(HT20)/ac20; 5755-5795 MHz for 802.11n(HT40)/ac40; 5775MHz for 802.11 ac80;
Channel numbers:	☒ 4 channels for 802.11a/n20/ac20 in the 5180-5240MHz band; 2 channels for 802.11 n40/ac40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; ☒ 5 channels for 802.11a/n20/ac20 in the 5745-5825MHz band ; 2 channels for 802.11 n40/ac40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band
Channel bandwidth:	802.11a/802.11n(HT20)/ 802.11ac(HT20): 20MHz 802.11n(HT40)/ 802.11ac(HT40) : 40MHz 802.11ac(HT80) : 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:	FPCB Antenna
Antenna gain:	3.46 dBi (Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.)
Battery	N/A
Power supply:	DC 5V
Adapter information:	Model:LD005-V3.0 INPUT:110-240V 50/60HZ OUTPUT:DC 5V 2A

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(HT20)	802.11 n(HT40)/ac(HT40)	802.11ac(HT80)
Lowest channel	5180	5190	5210
Middle channel	5200	X	
Highest channel	5240		

Test channel	Frequency (MHz)		
	802.11 a /n(HT20)/ac(HT20)	802.11 n(HT40)/ac(HT40)	802.11ac(HT80)
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(or with a duty cycle $\geq 98\%$)
<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 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40 CH38/ CH 46 802.11n 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
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 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40 CH38/ CH 46 802.11n 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165

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	LED Screen	Dell	ZQT	N/A
2	Mouse	Dell	N/A	N/A
3	keyboard	Dell	N/A	N/A

2.4 Deviation from Standards

None.

2.5 Abnormalities from Standard Conditions

None.

2.6 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

2.7 Test Location

All tests were performed at:

Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	+86 755 85259392

2.8 Additional Instructions

Test Software	COM Port Command
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	2023.3.02	2024.3.01
2	Artificial power network	schwarabeck	NSLK8127	8127483	2023.3.02	2024.3.01
3	Artificial power network	ETS	3186/2NM	1132	2023.3.02	2024.3.01
4	10dB attenuator	HUBER+SUHNER	10dB	/	2023.3.02	2024.3.01
5	Cable 4	HUBER SUNNER	3M	/	2023.3.02	2024.3.01
6	Absorbing Clamp	schwarabeck	MDS21	D69250	2023.3.06	2024.3.05

Radiated Emission & RF Conducted test:

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101032	2023.3.02	2024.3.01
2	Broadband antenna	schwarabeck	VULB9168	1064	2022.3.11	2024.3.10
3	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2022.3.11	2024.3.10
4	Amplifier	EMtrace	RP01A	50117	2023.3.02	2024.3.01
5	Amplifier	Space-Dtronics	EWLAN0118G-P40	19113001	2023.3.02	2024.3.01
6	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2023.3.02	2024.3.01
7	Power detector meter	MWRFTest	MW100-PSB	MW201020JYT	2022.11.09	2023.11.08
8	Signal generator	Agilent	N5182A	MY49060455	2022.11.09	2023.11.08
9	Spectrum analyzer	Rohde&schwarz	FSV40	102137	2023.3.02	2024.3.01
10	Amplifier	SKET	LNPA_1840-50	SK2019040302	2023.3.02	2024.3.01
11	Horn antenna	schwarabeck	BBHA 9170	946	2022.3.11	2024.3.10
12	Loop antenna	schwarabeck	FMZB 1519 B	1519	2022.3.11	2024.3.10
13	Cable 6	HUBER SUNNER	0.5M	/	2023.3.02	2024.3.01
14	Cable7	HUBER SUNNER	2.0M	/	2023.3.02	2024.3.01
15	Cable8	HUBER SUNNER	6.0M	/	2023.3.02	2024.3.01
16	Filter	Xin bo	XBLBQ-GTA29	210410-3-2	2023.3.06	2024.3.05

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:	FCC Part15 C Section 15.203
<i>15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i>	
E.U.T Antenna:	
<i>The antennas are FPCB antenna, the best case gain of the antennas are 3.46 dBi, reference to the appendix II for details</i>	

4.2 Conducted Emissions

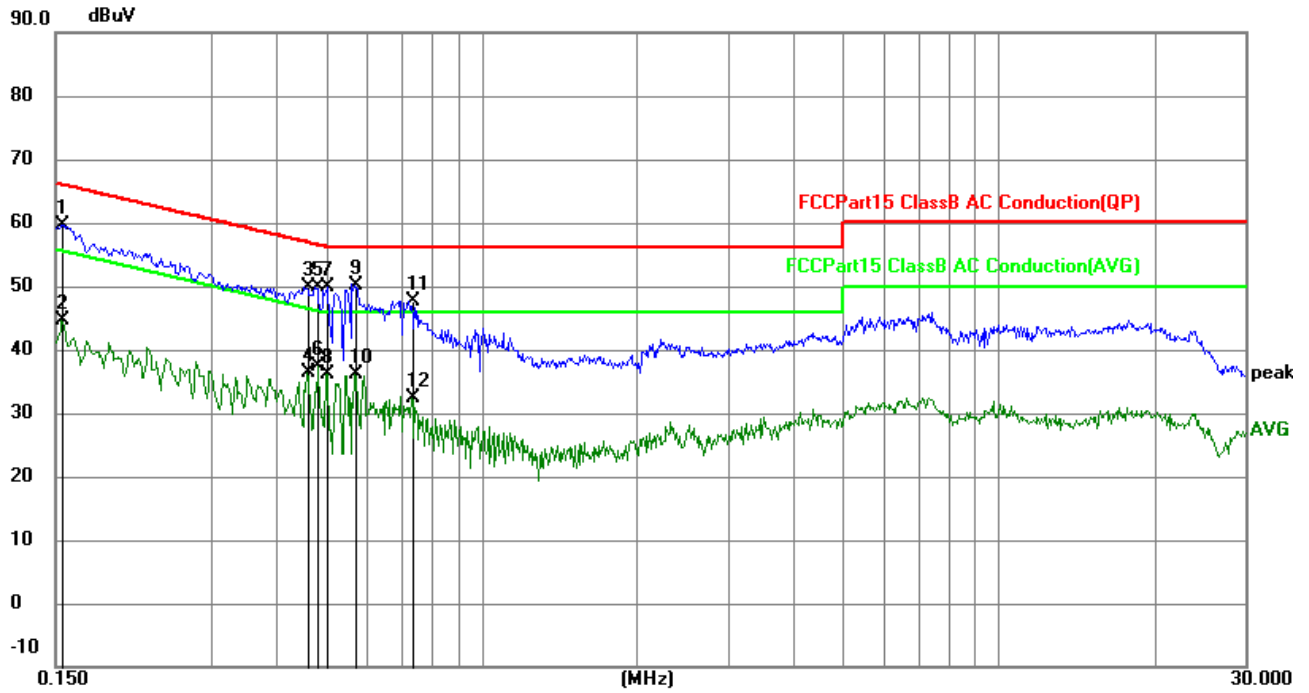
Test Requirement:	FCC Part15 C Section 15.207						
Test Method:	ANSI C63.10:2013						
Test Frequency Range:	150KHz to 30MHz						
Class / Severity:	Class B						
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto						
Limit:	Frequency range (MHz)		Limit (dBuV)				
			Quasi-peak		Average		
	0.15-0.5		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.:	26.1°C	Humid.:	48%	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 (802.11 ac20 5180MHz) data.

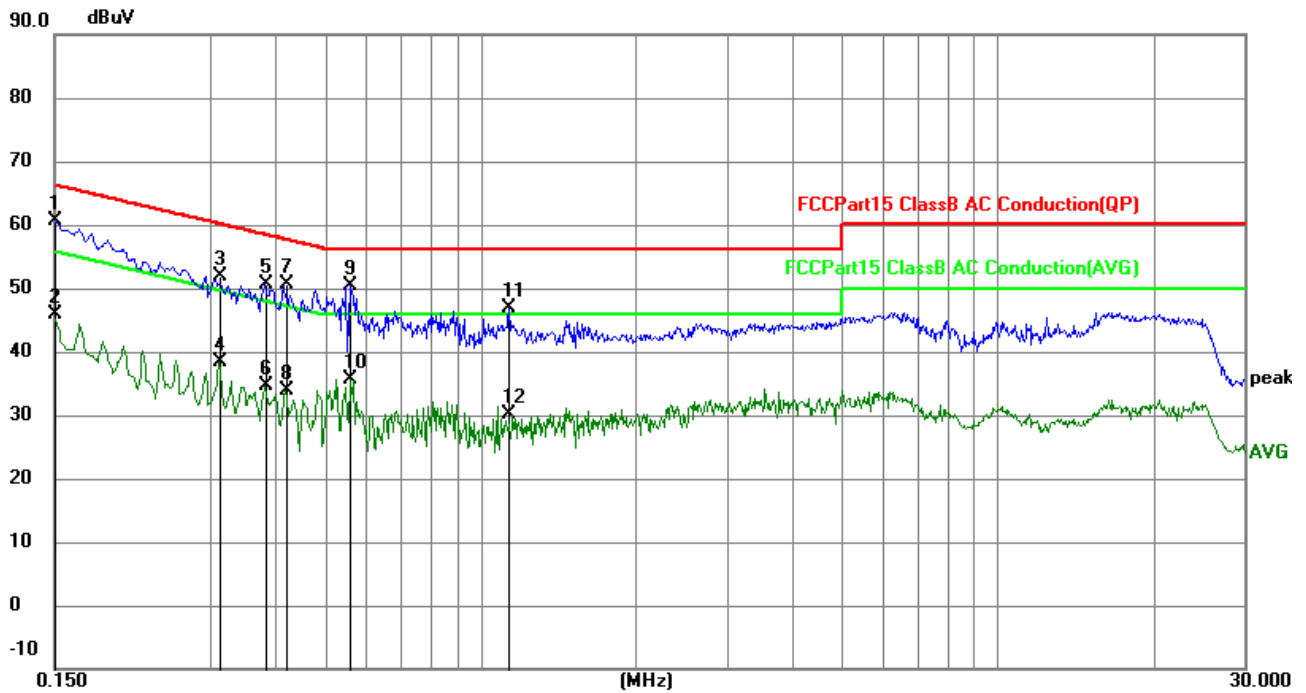
Measurement data

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1544	49.84	9.80	59.64	65.76	-6.12	QP
2	0.1544	34.75	9.80	44.55	55.76	-11.21	AVG
3	0.4605	40.06	9.93	49.99	56.68	-6.69	QP
4	0.4605	26.33	9.93	36.26	46.68	-10.42	AVG
5	0.4837	39.91	9.93	49.84	56.28	-6.44	QP
6	0.4837	27.33	9.93	37.26	46.28	-9.02	AVG
7	0.5010	39.93	9.94	49.87	56.00	-6.13	QP
8	0.5010	26.25	9.94	36.19	46.00	-9.81	AVG
9	0.5684	40.31	9.94	50.25	56.00	-5.75	QP
10	0.5684	26.26	9.94	36.20	46.00	-9.80	AVG
11	0.7347	37.76	9.94	47.70	56.00	-8.30	QP
12	0.7347	22.45	9.94	32.39	46.00	-13.61	AVG

Neutral:

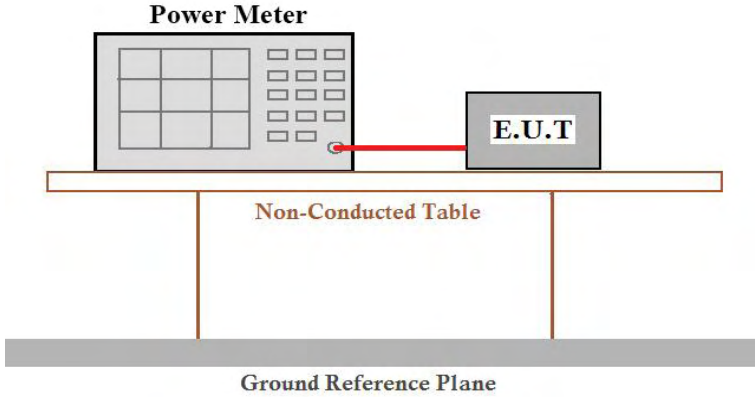


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	50.89	9.80	60.69	66.00	-5.31	QP
2	0.1500	36.04	9.80	45.84	56.00	-10.16	AVG
3	0.3119	42.09	9.87	51.96	59.92	-7.96	QP
4	0.3119	28.48	9.87	38.35	49.92	-11.57	AVG
5	0.3840	40.69	9.89	50.58	58.19	-7.61	QP
6	0.3840	24.74	9.89	34.63	48.19	-13.56	AVG
7	0.4200	40.84	9.90	50.74	57.45	-6.71	QP
8	0.4200	24.08	9.90	33.98	47.45	-13.47	AVG
9	0.5594	40.52	9.94	50.46	56.00	-5.54	QP
10	0.5594	25.72	9.94	35.66	46.00	-10.34	AVG
11	1.1350	36.94	9.95	46.89	56.00	-9.11	QP
12	1.1350	20.06	9.95	30.01	46.00	-15.99	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 Conducted Peak Output Power

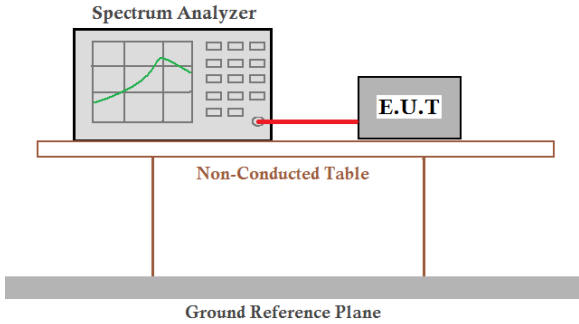
Test Requirement:	FCC Part15 E Section 15.407 (a)(1)/(a)(3)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	5150-5250MHz : 250mW 5725~5850MHz : 1W	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 25.3°C	Humid.: 53%RH
Test voltage:	DC 5V	
Test results:	Pass	

Measurement Result

Test Channel	Frequency	Maximum output power	LIMIT	Result
	(MHz)	(dBm)	dBm	
TX 802.11a Mode				
CH36	5180	15.37	23.98	Pass
CH40	5200	15.14	23.98	Pass
CH48	5240	14.83	23.98	Pass
TX 802.11 n20 Mode				
CH36	5180	15.30	23.98	Pass
CH40	5200	15.15	23.98	Pass
CH48	5240	14.78	23.98	Pass
TX 802.11 ac20 Mode				
CH36	5180	15.37	23.98	Pass
CH40	5200	15.16	23.98	Pass
CH48	5240	14.79	23.98	Pass
TX 802.11 n40 Mode				
CH38	5190	13.28	23.98	Pass
CH46	5230	12.92	23.98	Pass
TX 802.11 ac40 Mode				
CH38	5190	13.28	23.98	Pass
CH46	5230	12.88	23.98	Pass
TX 802.11 ac80 Mode				
CH42	5210	11.37	23.98	Pass

Test Channel	Frequency	Maximum output power.	LIMIT	Result
	(MHz)	(dBm)	dBm	
TX 802.11a Mode				
CH149	5745	14.01	30	Pass
CH157	5785	13.99	30	Pass
CH165	5825	14.06	30	Pass
TX 802.11 n20 Mode				
CH149	5745	13.88	30	Pass
CH157	5785	13.66	30	Pass
CH165	5825	13.67	30	Pass
TX 802.11 ac20 Mode				
CH149	5745	13.59	30	Pass
CH157	5785	13.53	30	Pass
CH165	5825	13.50	30	Pass
TX 802.11 n40 Mode				
CH151	5755	11.71	30	Pass
CH159	5795	11.62	30	Pass
TX 802.11 ac40 Mode				
CH151	5755	11.80	30	Pass
CH159	5795	11.82	30	Pass
TX 802.11 ac80 Mode				
CH155	5775	8.48	30	Pass

4.4 Bandwidth 99% Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407(a)(12)&15.407(e)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
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.: 25.3°C	Humid.: 53%RH
Test voltage:	DC 5V	
Test results:	Pass	

Measurement Result

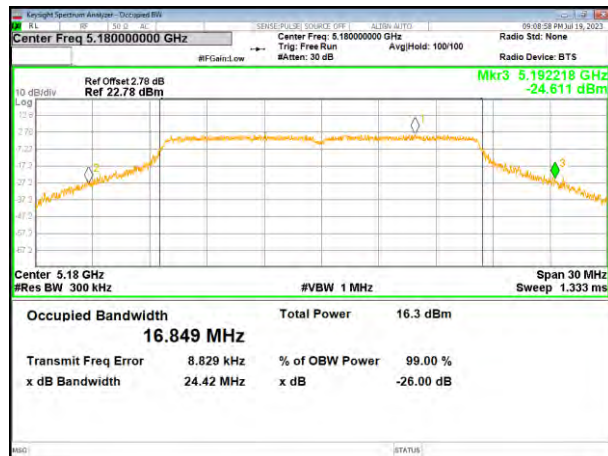
5180-5240MHz

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	24.42	24.19	23.53	44.68	43.12	--	Pass
Middle	23.67	23.50	23.74	--	--	81.23	
Highest	23.77	24.03	23.47	44.60	44.25	--	

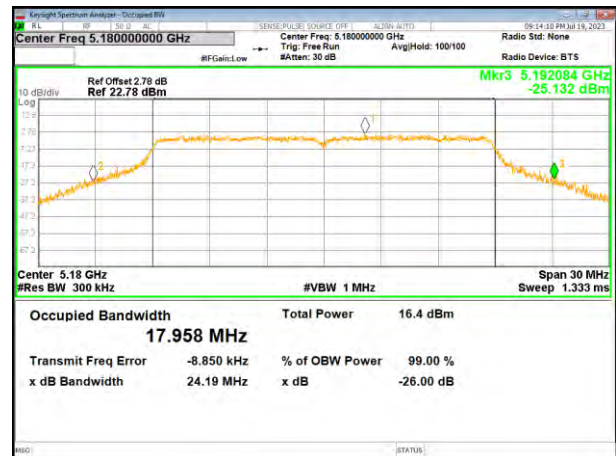
Test CH	99% Occupy Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	16.849	17.958	17.978	36.300	36.295	--	Pass
Middle	16.821	17.976	17.955	--	--	75.016	
Highest	16.832	17.975	17.976	36.261	36.266	--	

Test plot

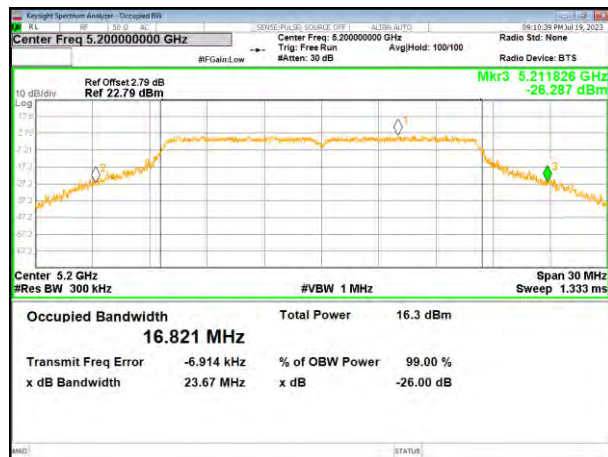
(802.11a) plot on channel 36



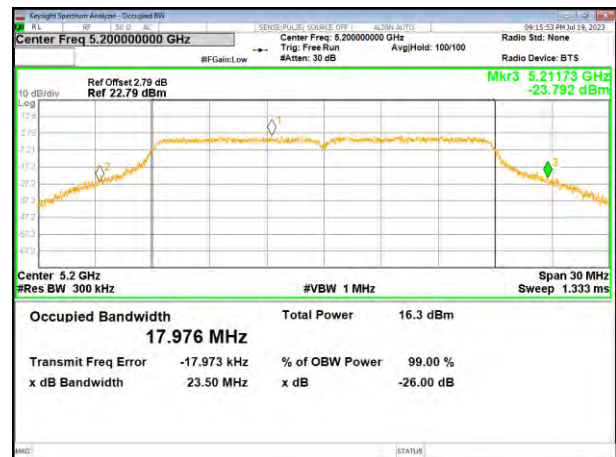
(802.11 n20) plot on channel 36



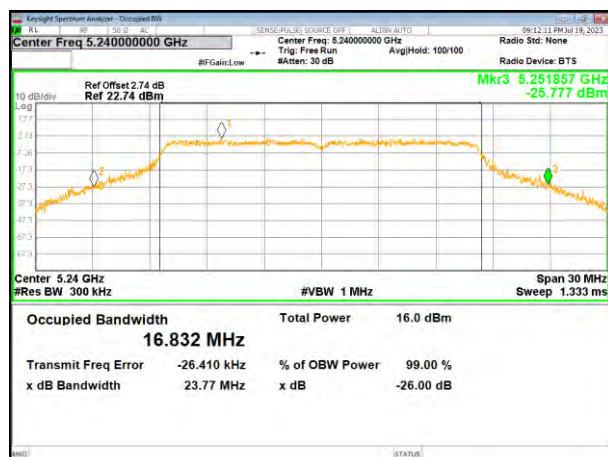
(802.11a) plot on channel 40



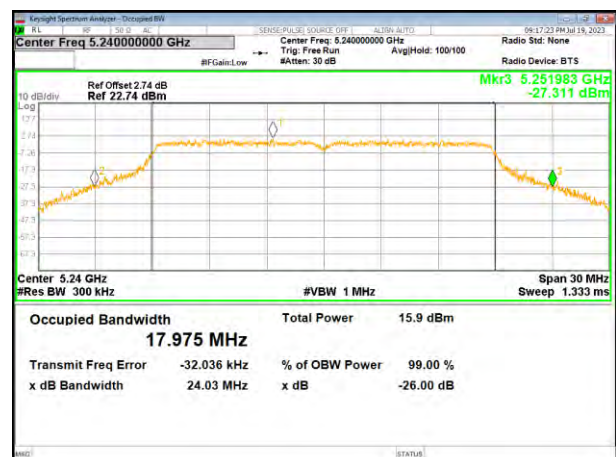
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

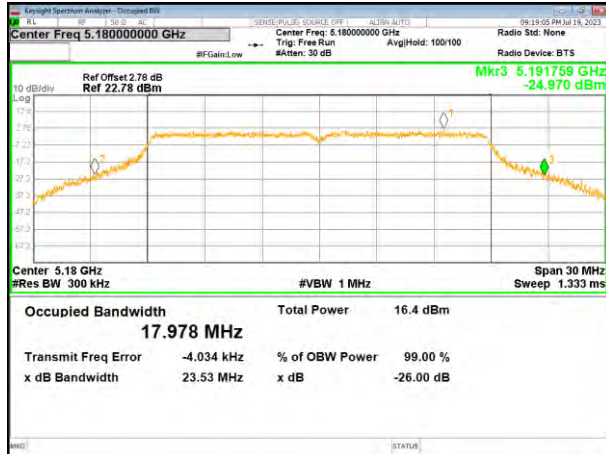


(802.11 n20) plot on channel 48

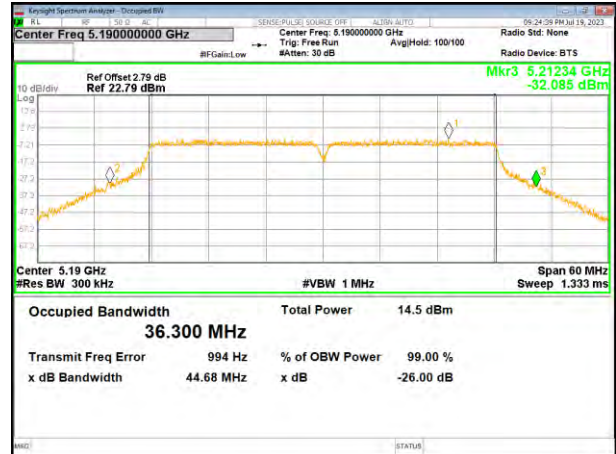


Test plot

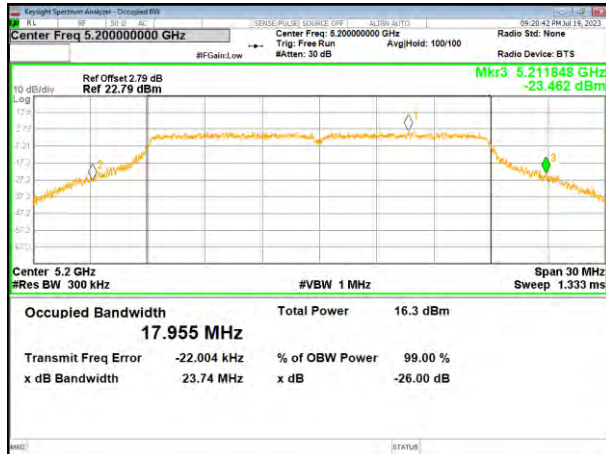
(802.11ac20) plot on channel 36



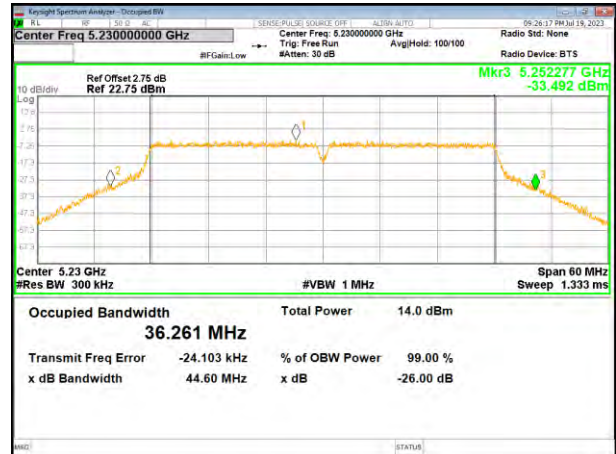
(802.11 n40) plot on channel 38



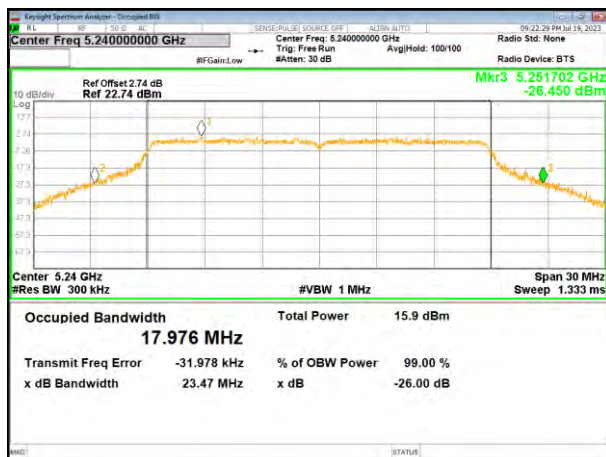
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

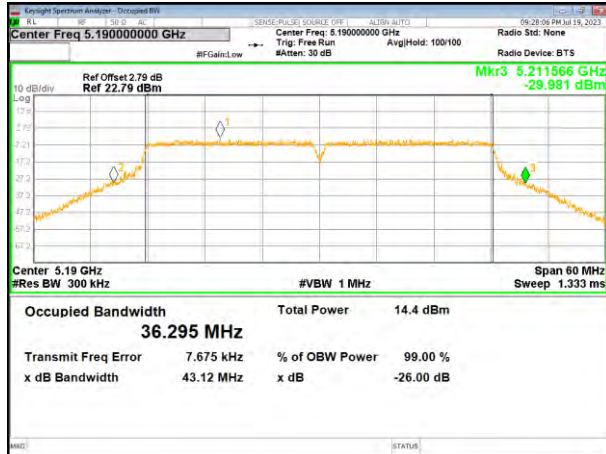


(802.11ac20) plot on channel 48

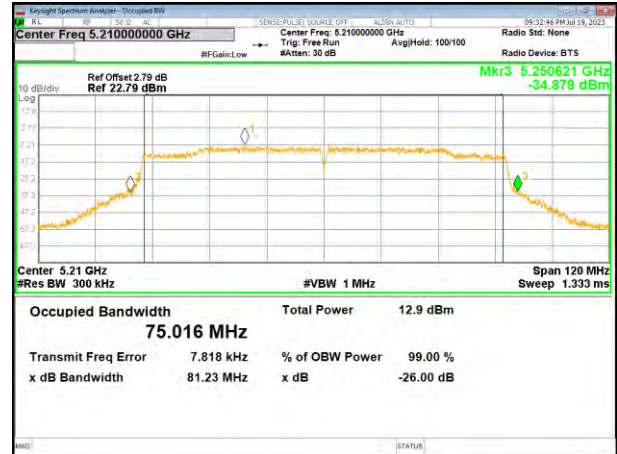


Test plot

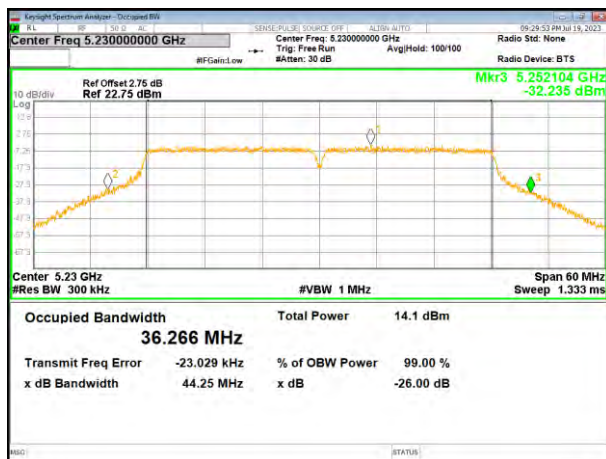
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46





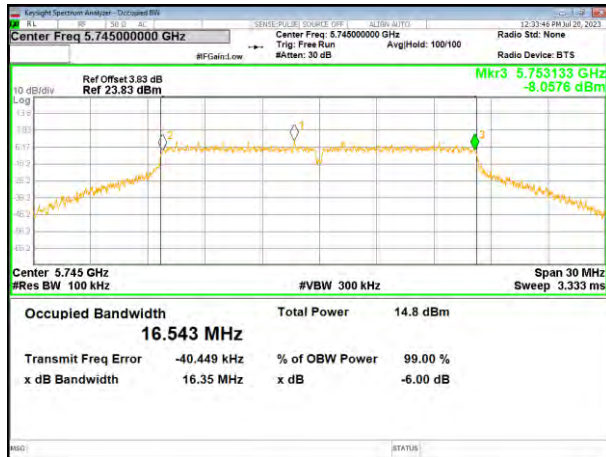
5745-5825MHz

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	16.35	17.57	17.56	36.06	36.27	--	>500	Pass
Middle	16.33	17.53	17.60	--	--	75.03		
Highest	16.33	17.57	17.58	36.28	36.28	--		

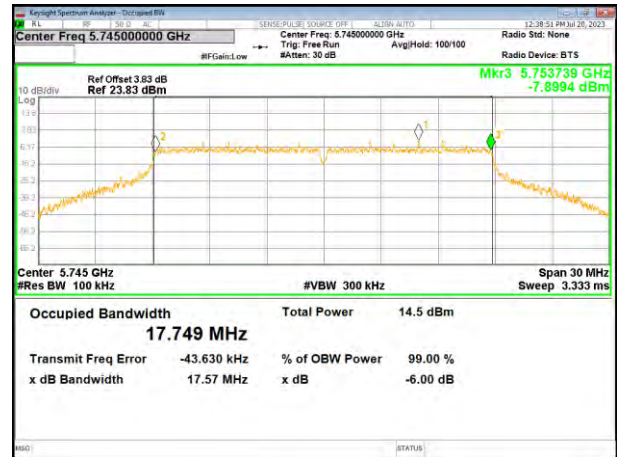
Remark: "---" is not applicable

Test plot

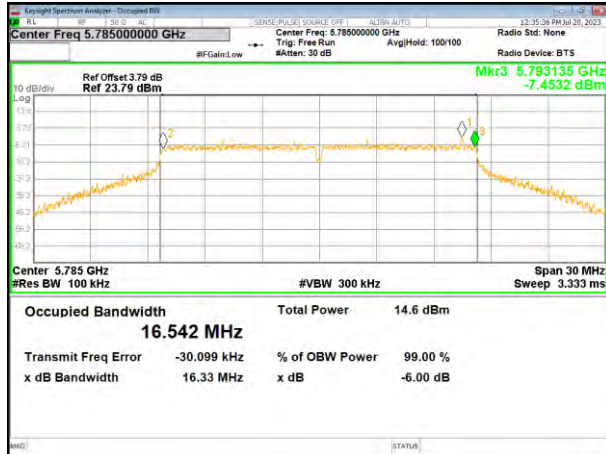
(802.11a) plot on channel 149



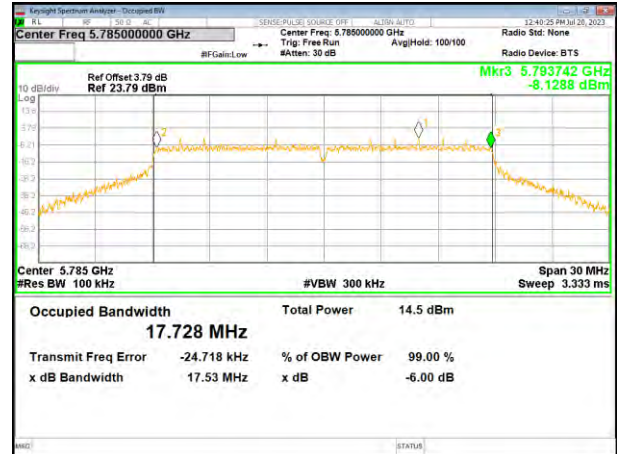
(802.11 n20) plot on channel 149



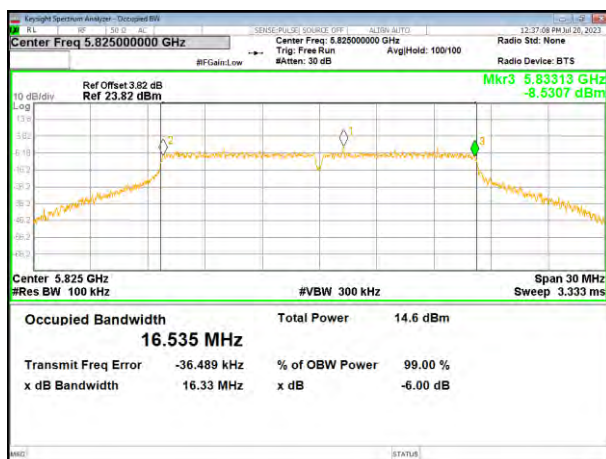
(802.11a) plot on channel 157



(802.11 n20) plot on channel 157



(802.11a) plot on channel 165

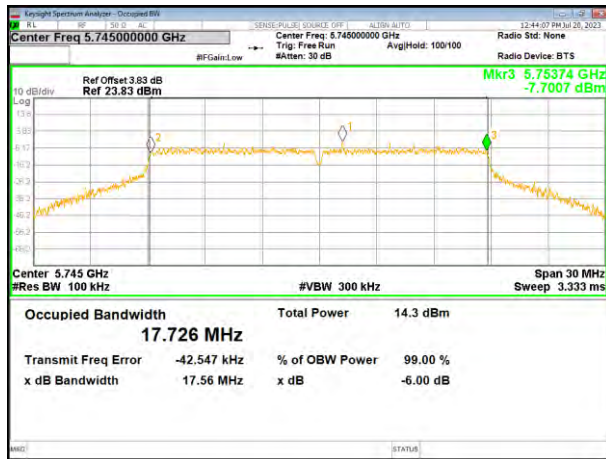


(802.11 n20) plot on channel 165

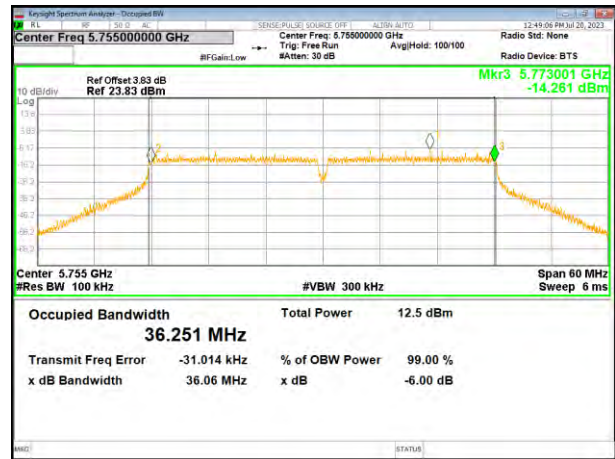


Test plot

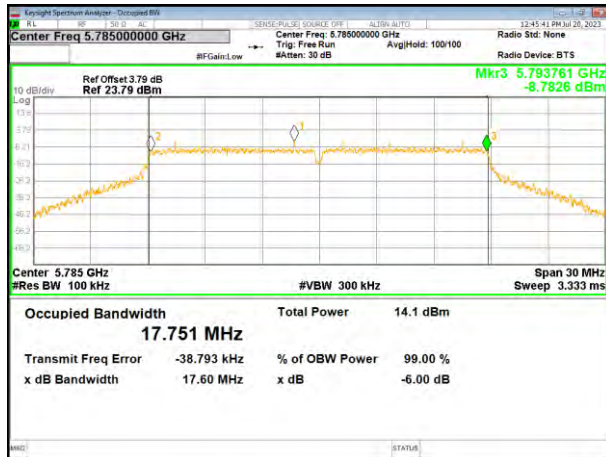
(802.11ac20) plot on channel 149



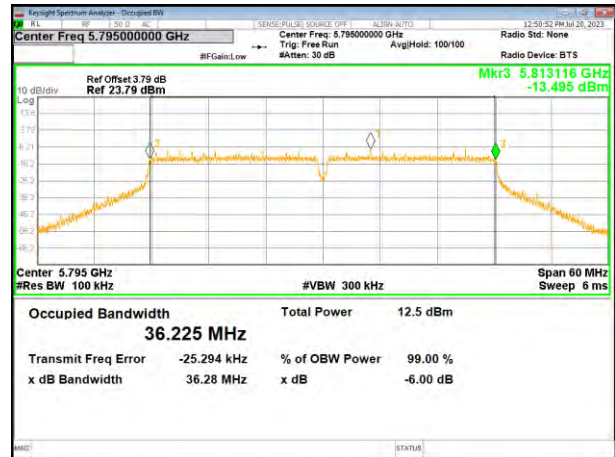
(802.11 n40) plot on channel 151



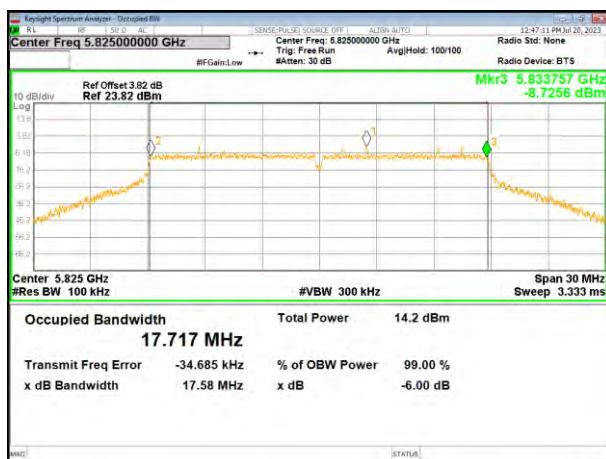
(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

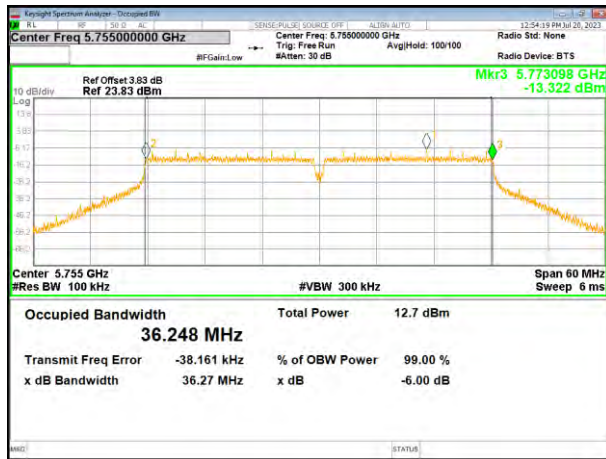


(802.11ac20) plot on channel 165

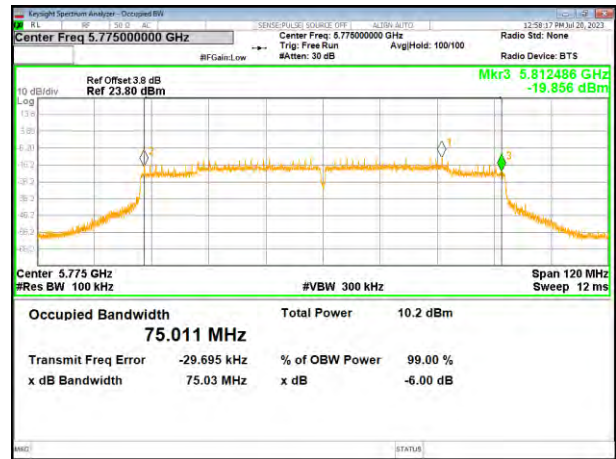


Test plot

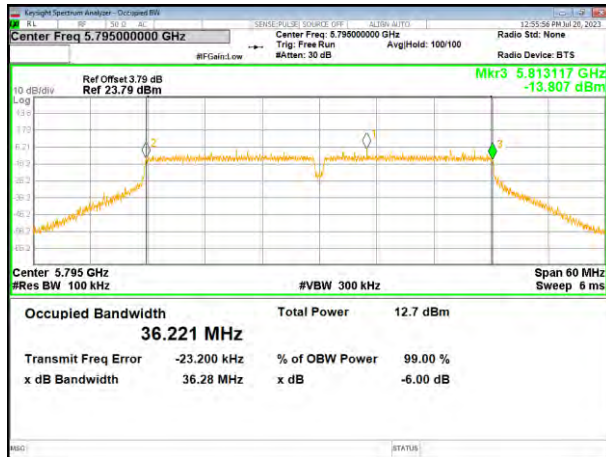
(802.11 ac40) plot on channel 151



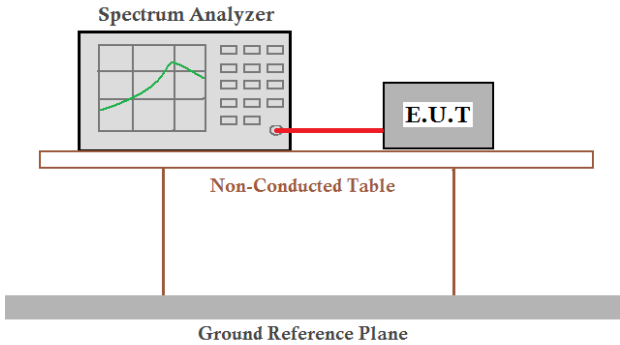
(802.11 ac80) plot on channel 155



(802.11 ac40) plot on channel 159



4.5 Power Spectral Density

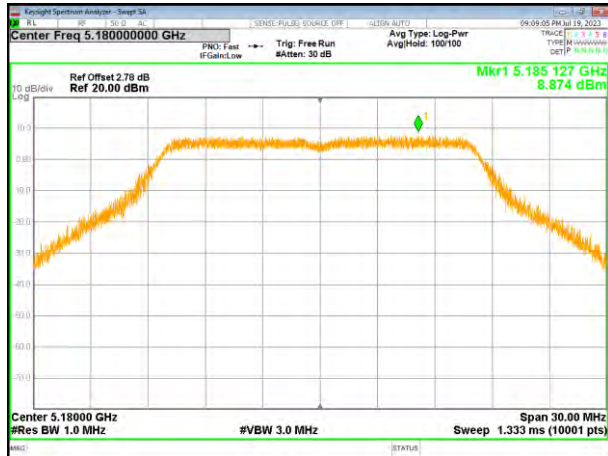
Test Requirement:	FCC Part15 E Section 15.407(a)(1)/ (a)(3)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm/1MHz for master device
		≤11dBm/1MHz for client device
	5250-5350	≤11dBm/1MHz for client device
	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.: 23.4°C	Humid.: 54%RH
Test voltage:	DC 19V	
Test results:	Pass	

Measurement Result

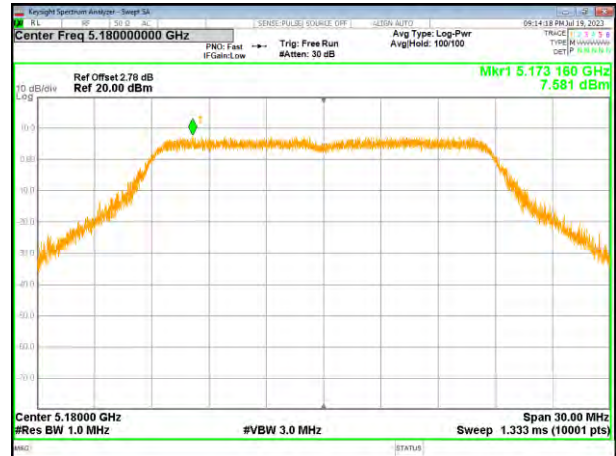
5180-5240MHz

Mode	Frequency	Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	8.874	11
	5200 MHz	8.182	11
	5240 MHz	7.370	11
802.11 n20	5180 MHz	7.581	11
	5200 MHz	7.262	11
	5240 MHz	7.037	11
802.11 ac20	5180 MHz	7.618	11
	5200 MHz	7.545	11
	5240 MHz	7.069	11
802.11 n40	5190 MHz	2.575	11
	5230 MHz	2.380	11
802.11 ac40	5190 MHz	2.509	11
	5230 MHz	2.462	11
802.11 ac80	5210 MHz	-1.867	11

(802.11a) PSD plot on channel 36



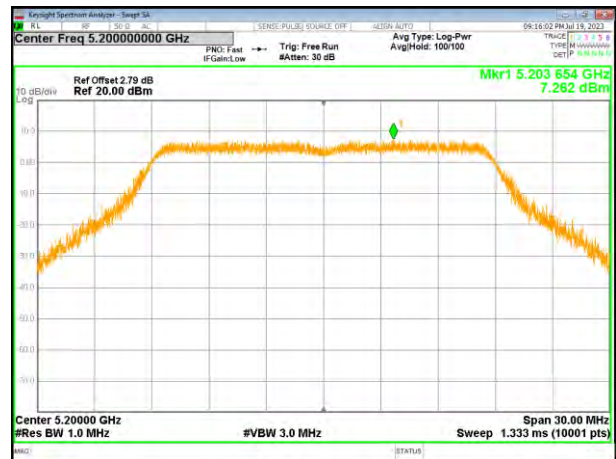
(802.11n20) PSD plot on channel 36



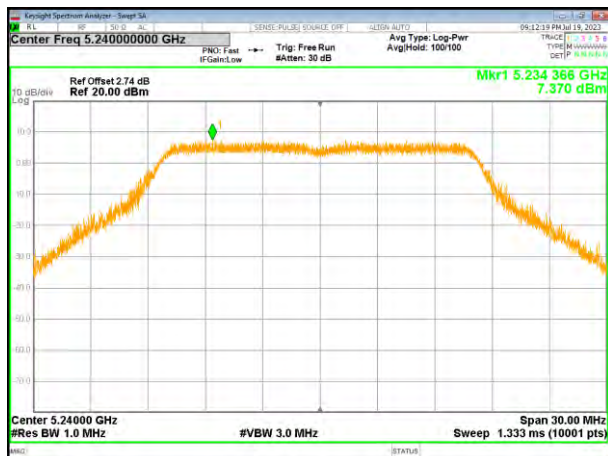
(802.11a) PSD plot on channel 40



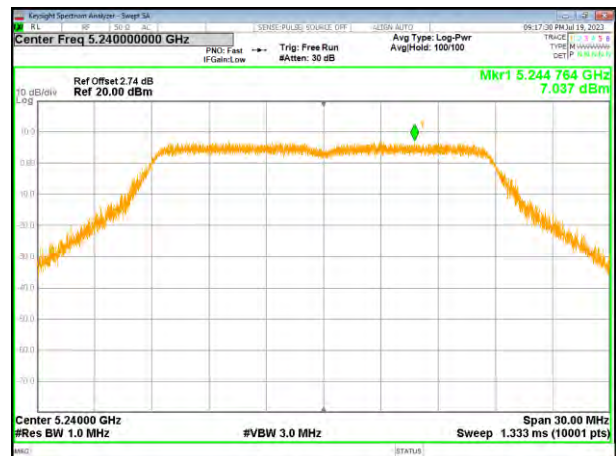
(802.11n20) PSD plot on channel 40



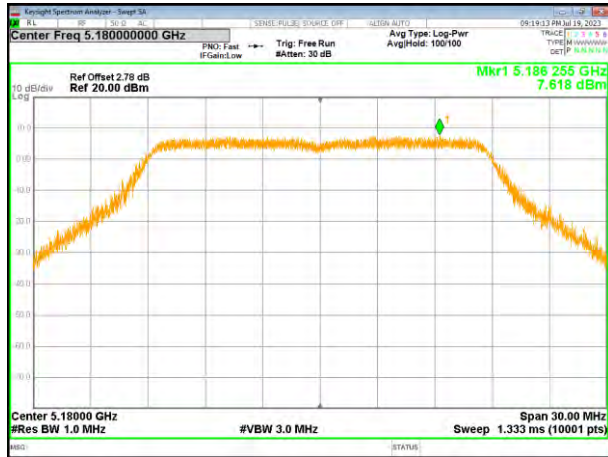
(802.11a) PSD plot on channel 48



(802.11n20) PSD plot on channel 48



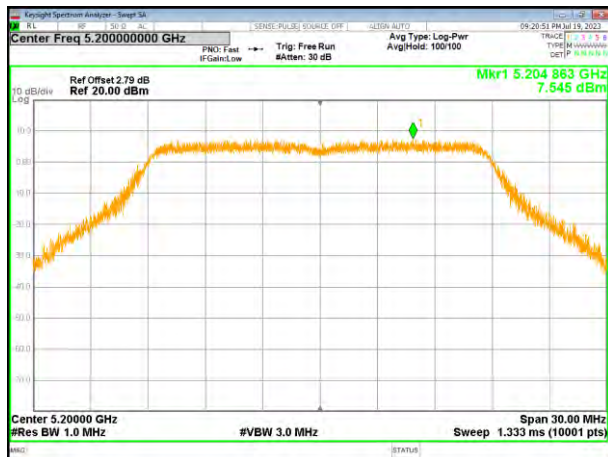
(802.11ac20) PSD plot on channel 36



(802.11n40) PSD plot on channel 38



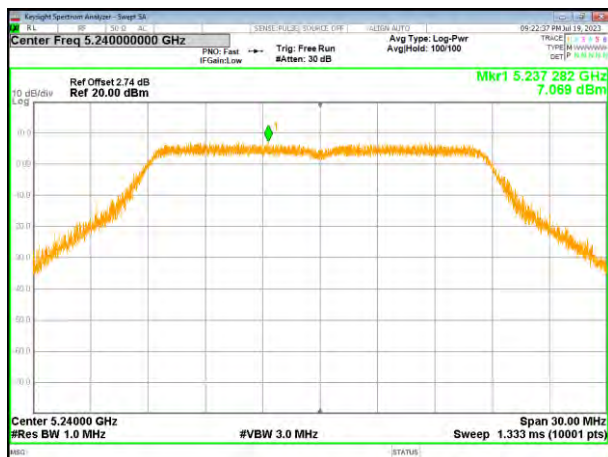
(802.11ac20) PSD plot on channel 40



(802.11n40) PSD plot on channel 46



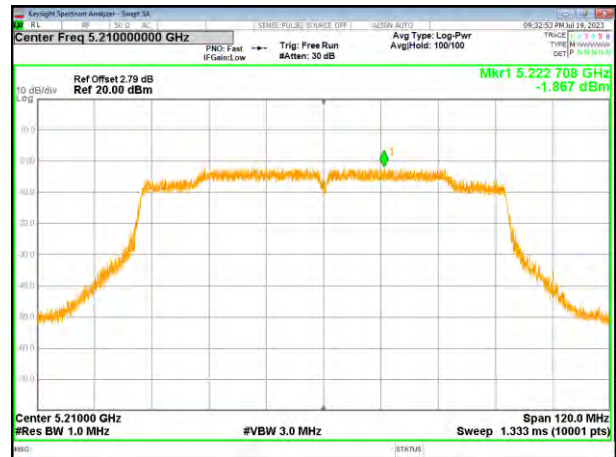
(802.11ac20) PSD plot on channel 48



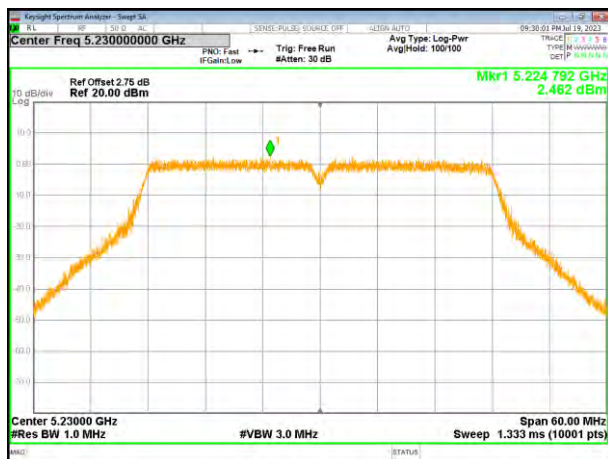
(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



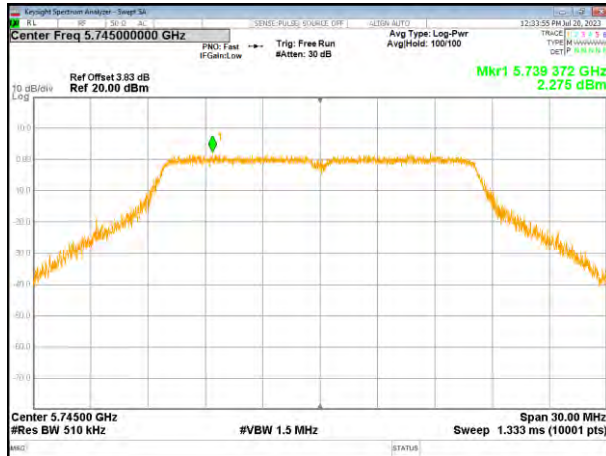
(802.11ac40) PSD plot on channel 46



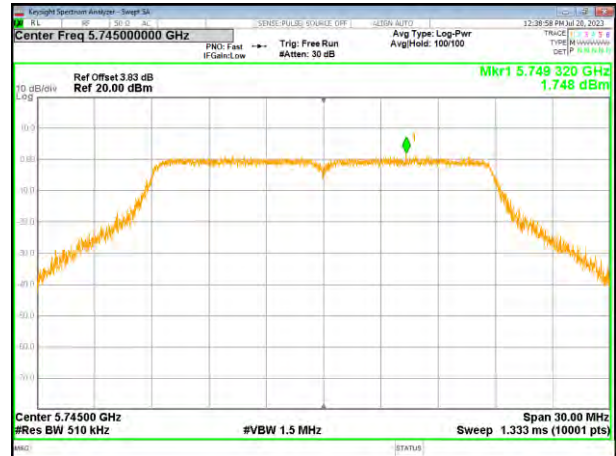
Mode	Frequency	Measured Power Density (dBm/510KHz)	Measured Power Density (dBm/500KHz)	Limit (dBm/MHz)
802.11 a	5745 MHz	2.275	2.189	30
	5785 MHz	2.638	2.552	30
	5825 MHz	1.923	1.837	30
802.11 n20	5745 MHz	1.748	1.662	30
	5785 MHz	1.431	1.345	30
	5825 MHz	1.973	1.887	30
802.11 ac20	5745 MHz	1.789	1.703	30
	5785 MHz	1.464	1.378	30
	5825 MHz	1.777	1.691	30
802.11 n40	5755 MHz	-2.704	-2.79	30
	5795 MHz	-3.229	-3.315	30
802.11 ac40	5755 MHz	-2.963	-3.049	30
	5795 MHz	-2.857	-2.943	30
802.11 AC80	5775 MHz	-7.489	-7.575	30

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

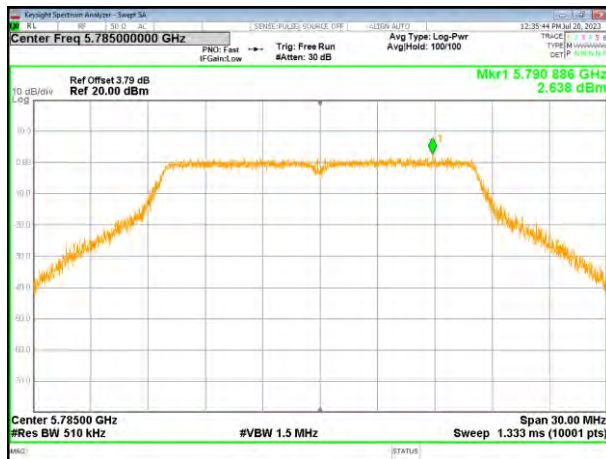
(802.11a) PSD plot on channel 149



(802.11n20) PSD plot on channel 149



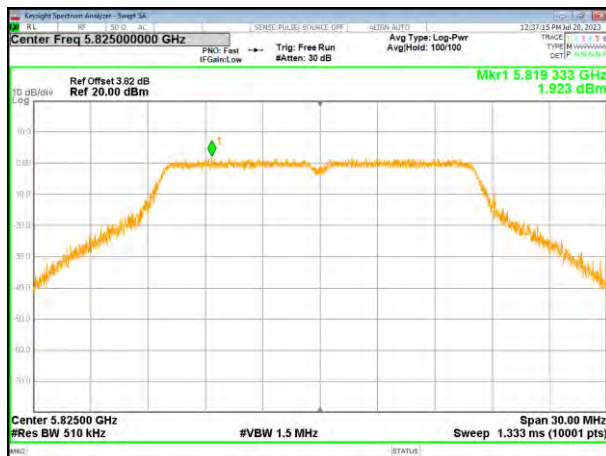
(802.11a) PSD plot on channel 157



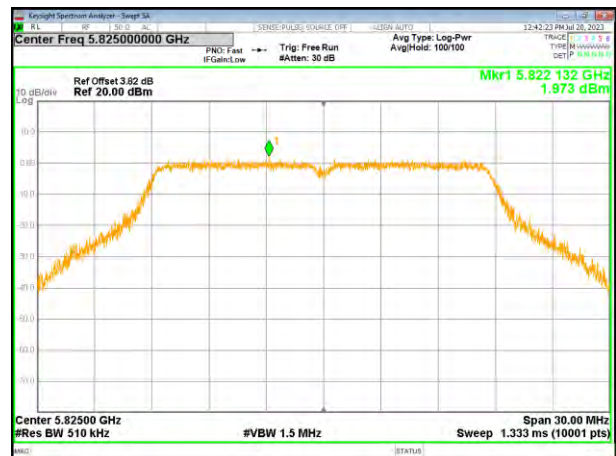
(802.11n20) PSD plot on channel 157



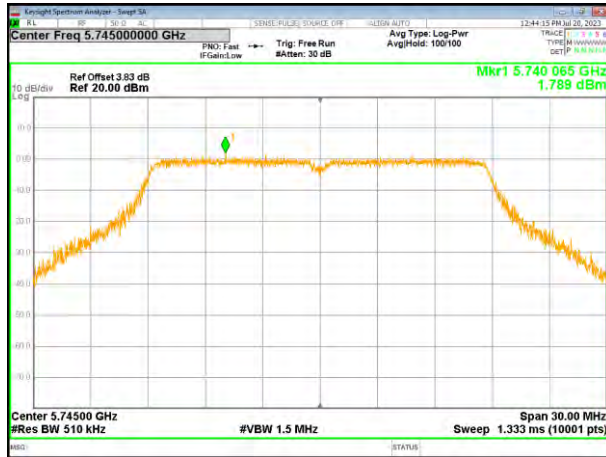
(802.11a) PSD plot on channel 165



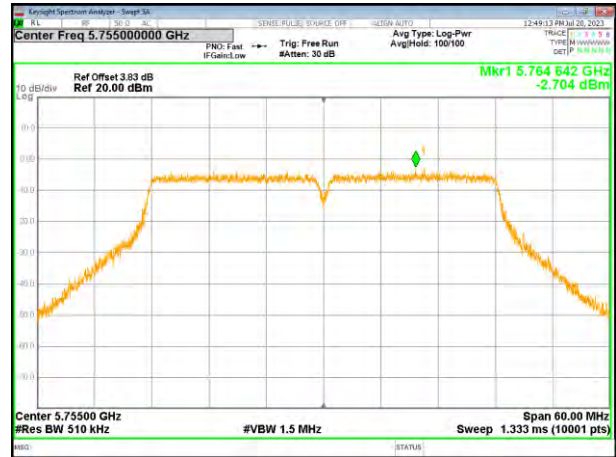
(802.11n20) PSD plot on channel 165



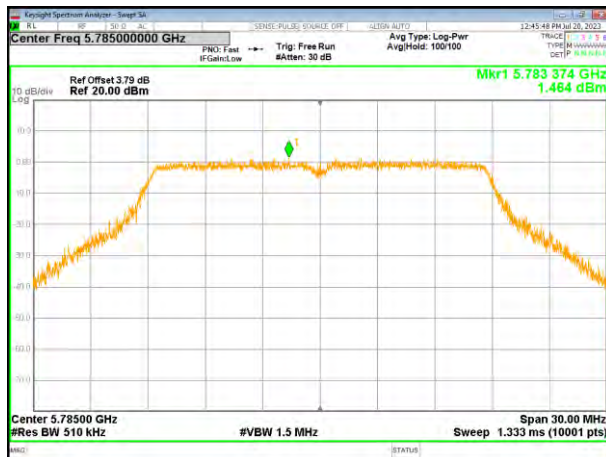
(802.11ac20) PSD plot on channel 149



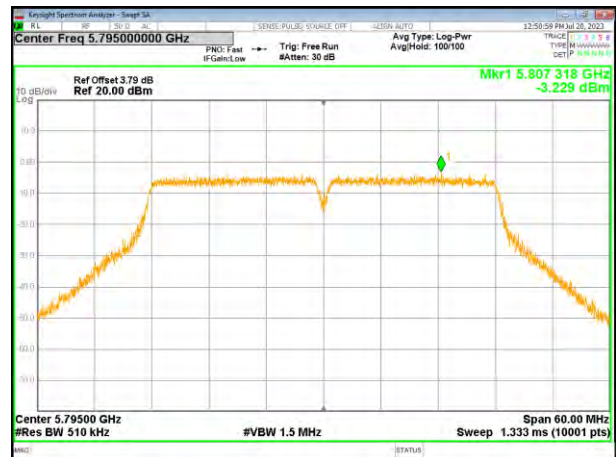
(802.11n40) PSD plot on channel 151



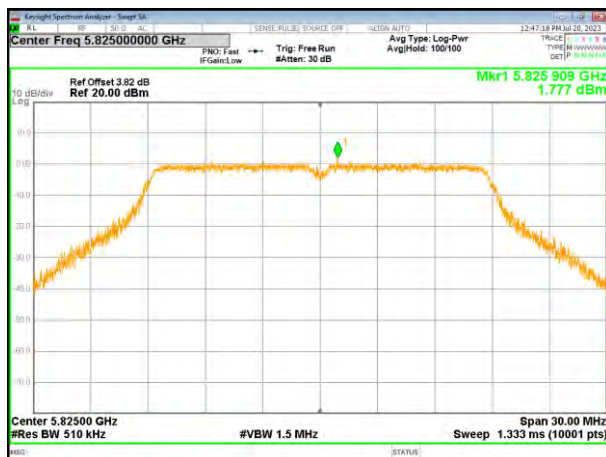
(802.11ac20) PSD plot on channel 157



(802.11n40) PSD plot on channel 159



(802.11ac20) PSD plot on channel 165



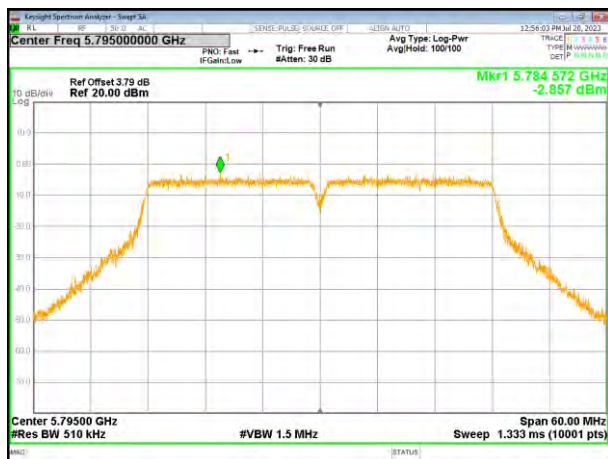
(802.11ac40) PSD plot on channel 151



(802.11ac80) PSD plot on channel 155

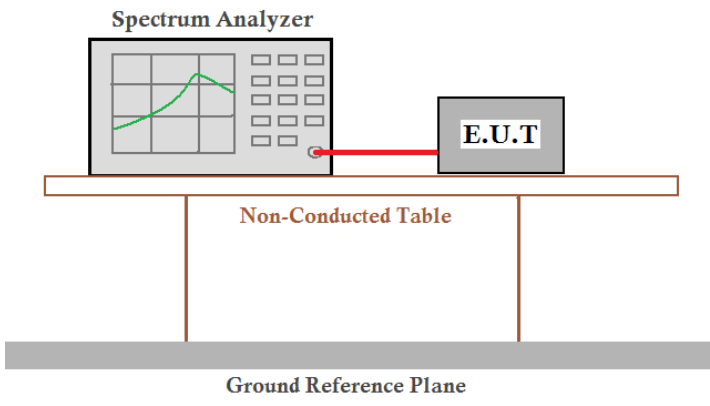


(802.11ac40) PSD plot on channel 159



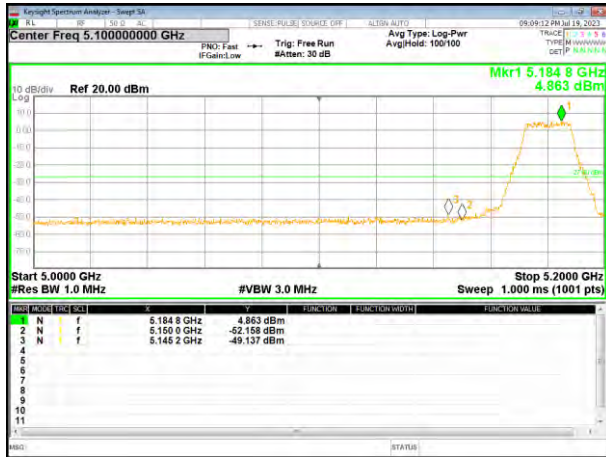
4.6 Band edge

4.6.1 Conducted test Method

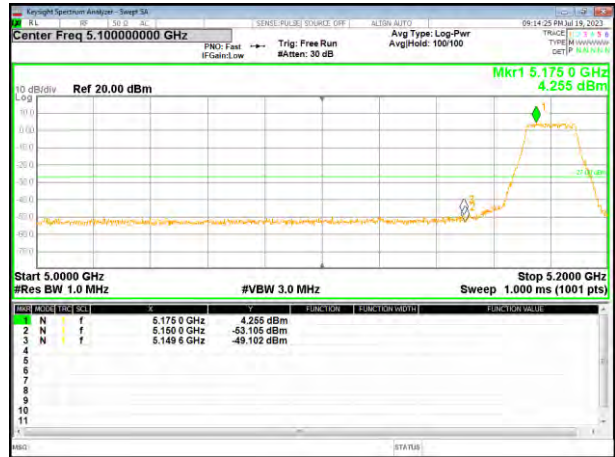
Test Requirement:	FCC Part15 C Section 15.209 and 15.205	
Test Method:	ANSI C63.10: 2013	
Limit:	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below 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:	 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 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.: 25.3°C	Humid.: 53%RH
Test voltage:	DC 5V	
Test results:	Pass	

5.180~5.240 GHz

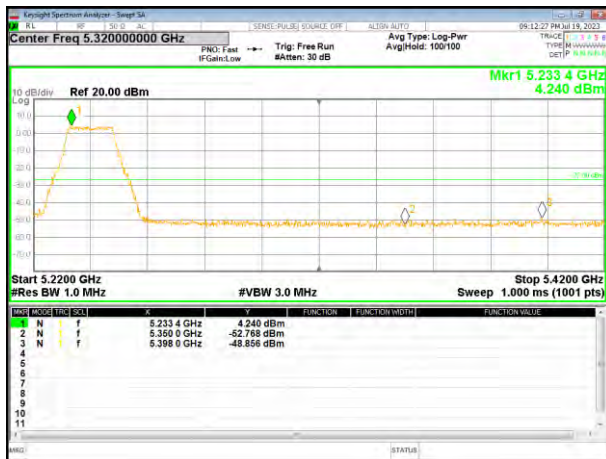
(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

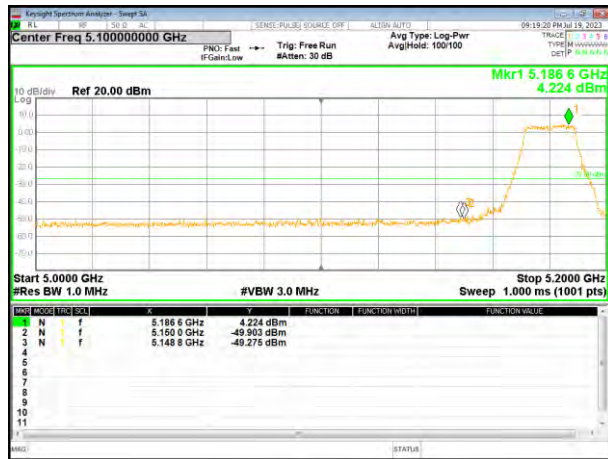


(802.11n20) Band Edge, Right Side

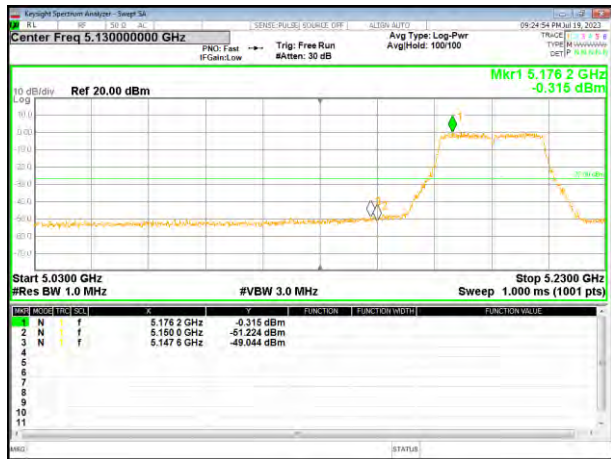


5.180~5.240 GHz

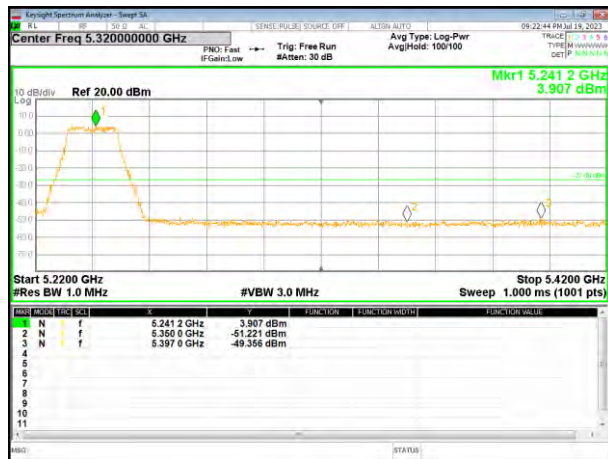
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

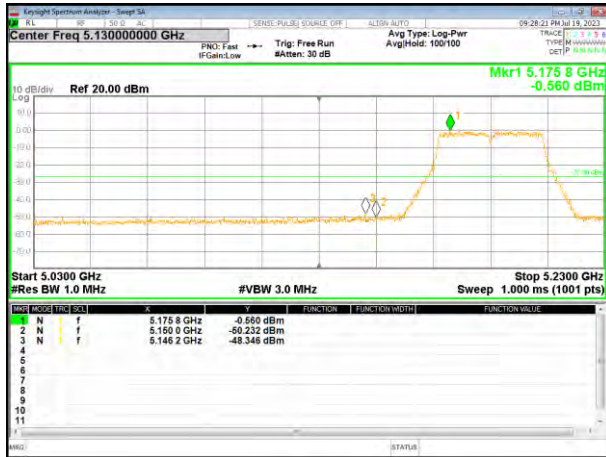


(802.11n40) Band Edge, Right Side

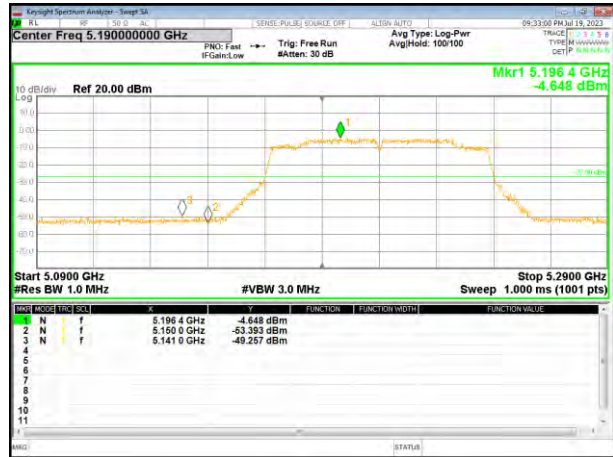


5.180~5.240 GHz

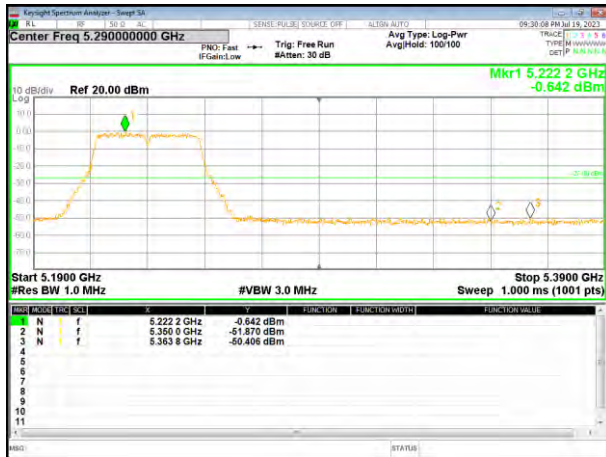
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge

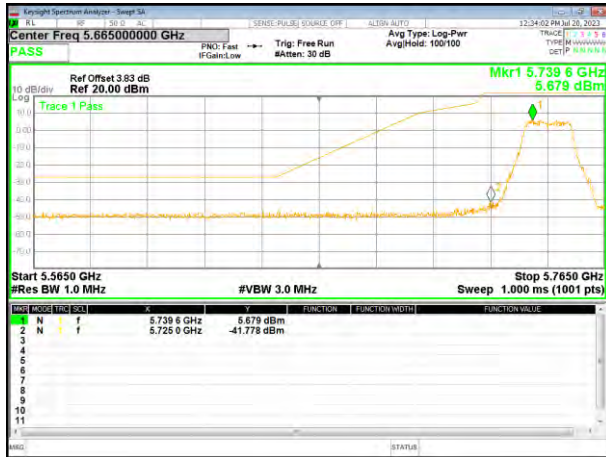


(802.11ac40) Band Edge, Right Side

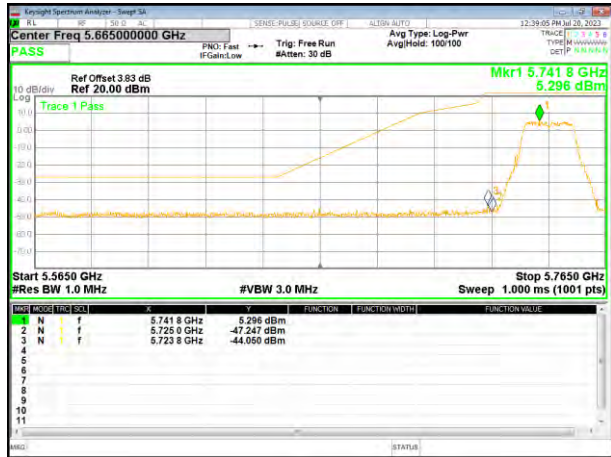


5.745~5.825 GHz

(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

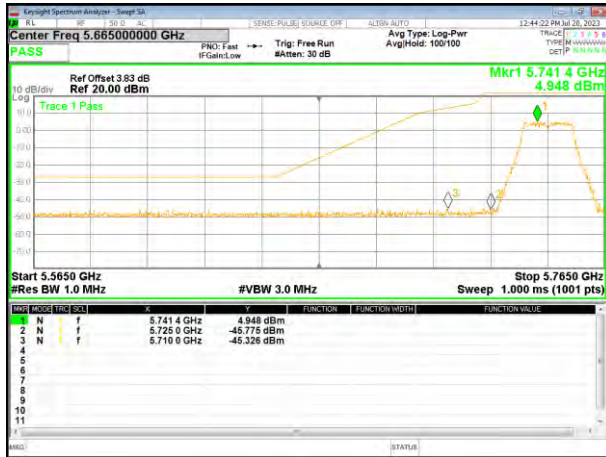


(802.11n20) Band Edge, Right Side

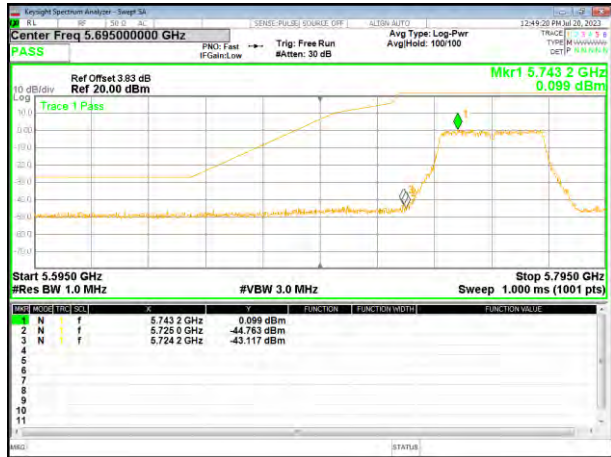


5.745~5.825 GHz

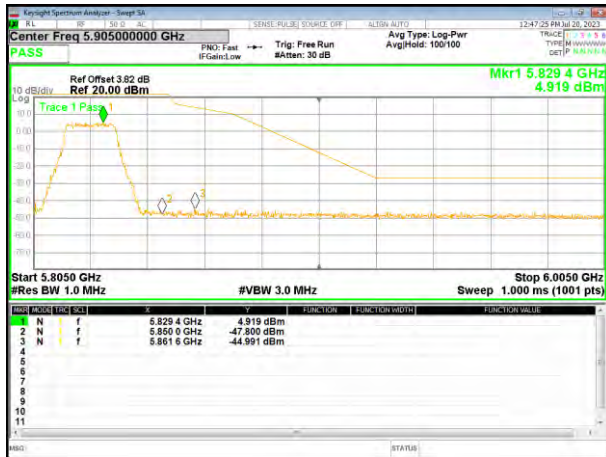
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

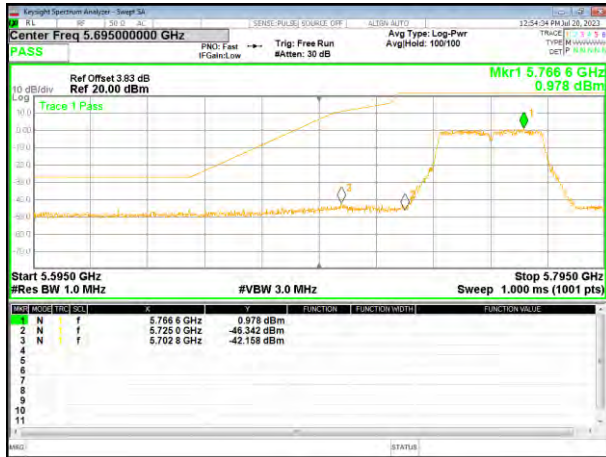


(802.11n40) Band Edge, Right Side



5.745~5.825 GHz

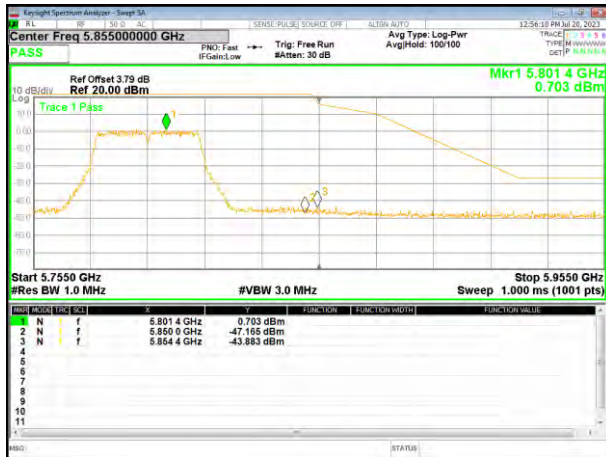
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge

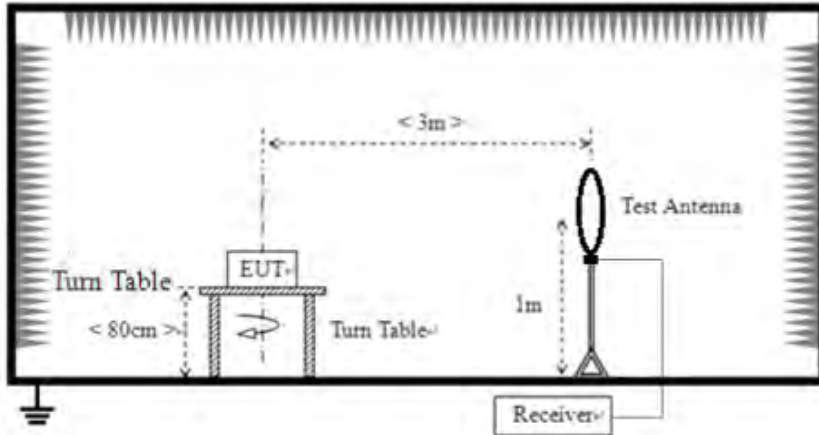


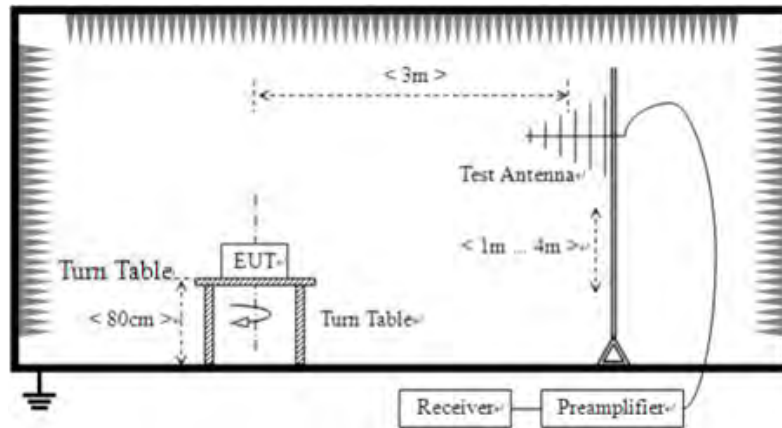
(802.11ac40) Band Edge, Right Side



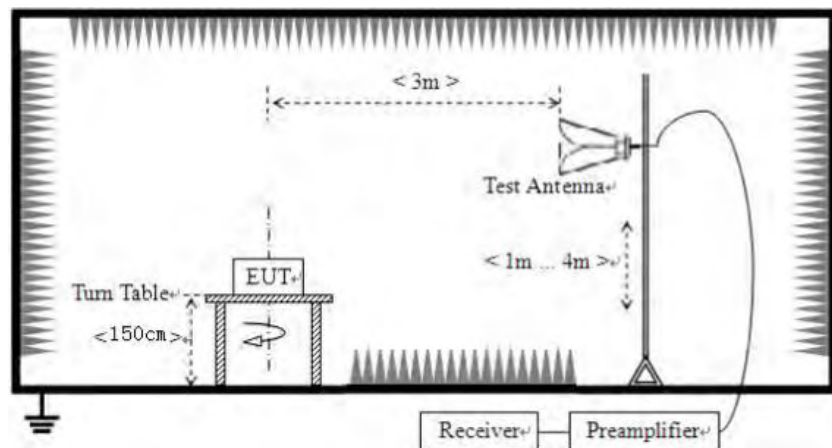
4.7 Spurious Emission

4.7.1 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 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 to1GHz				



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

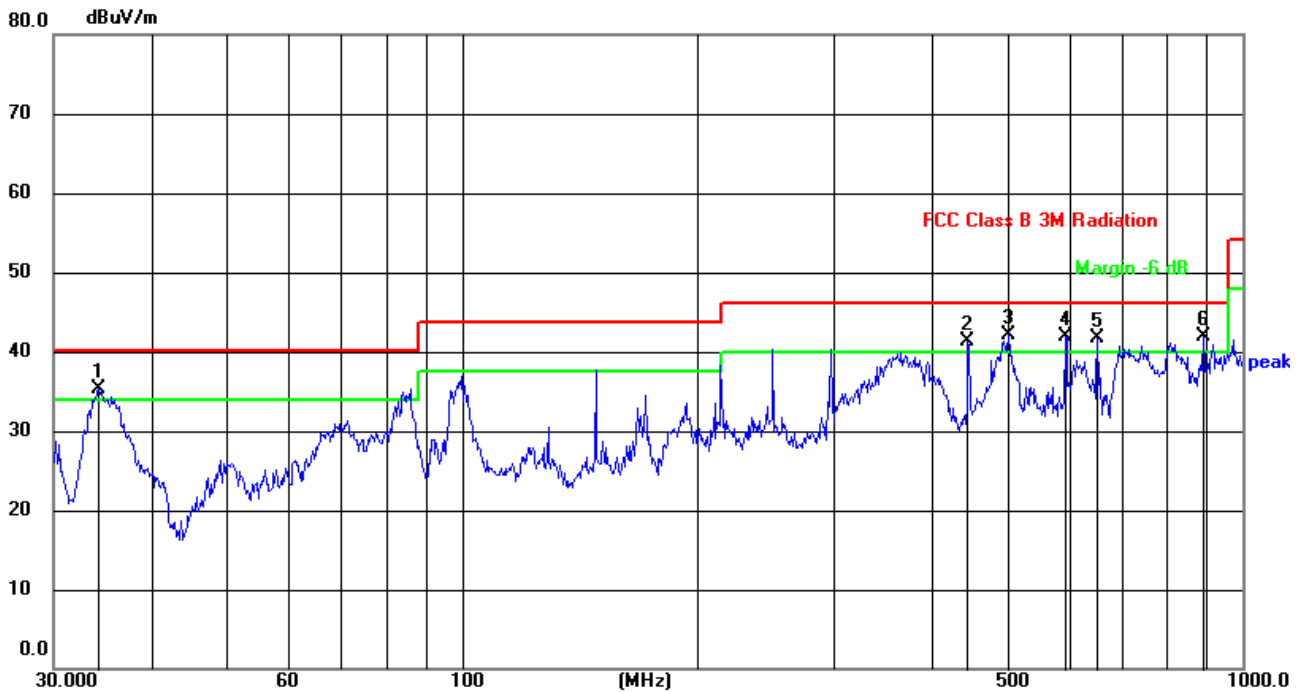
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

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

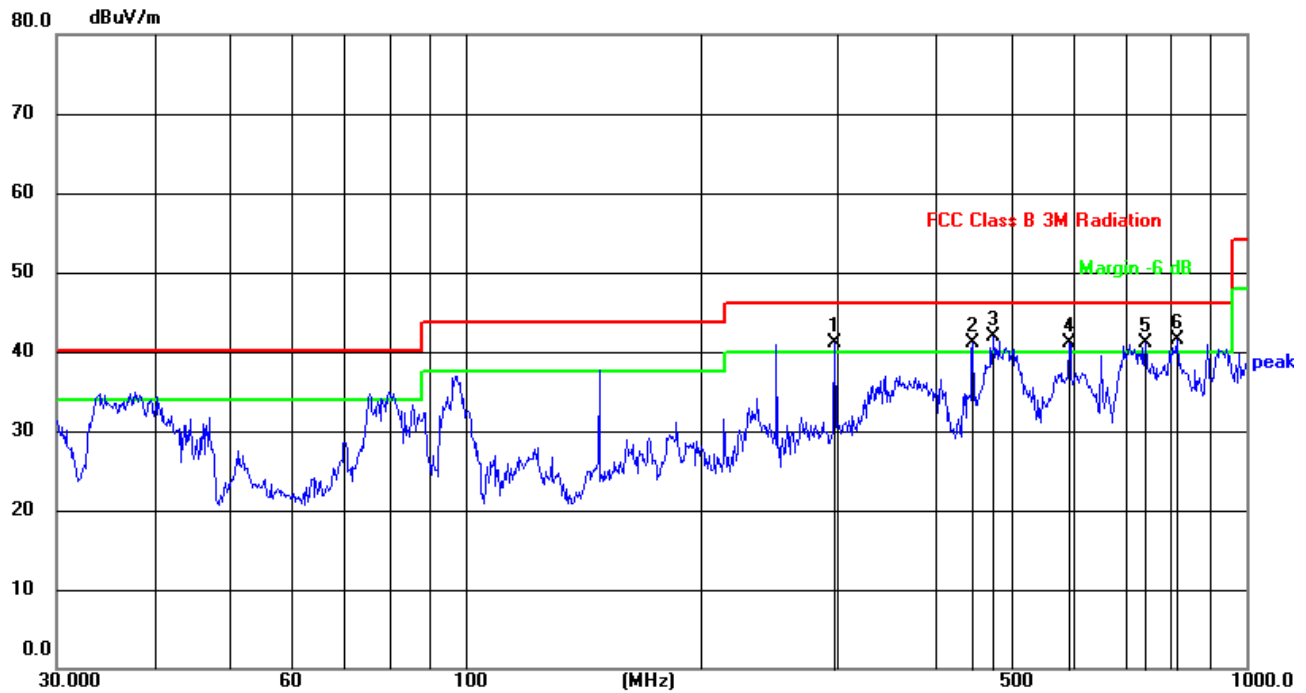
Temperature:	23.5℃	Relative Humidity:	53%
Pressure:	1010 hPa	Test Voltage :	DC 5V From adapter
Test Mode :	5.2G TX- 802.11a20		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	34.2760	57.13	-21.85	35.28	40.00	-4.72	QP
2	444.8514	56.93	-15.69	41.24	46.00	-4.76	QP
3	501.1788	56.22	-14.17	42.05	46.00	-3.95	QP
4	593.0496	53.77	-11.91	41.86	46.00	-4.14	QP
5	651.9415	51.94	-10.32	41.62	46.00	-4.38	QP
6	890.7277	47.46	-5.60	41.86	46.00	-4.14	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	297.2238	61.54	-20.40	41.14	46.00	-4.86	QP
2	446.4139	56.70	-15.65	41.05	46.00	-4.95	QP
3	473.8346	57.42	-15.53	41.89	46.00	-4.11	QP
4	593.0496	53.04	-11.91	41.13	46.00	-4.87	QP
5	742.2586	49.39	-8.27	41.12	46.00	-4.88	QP
6	815.9678	47.84	-6.43	41.41	46.00	-4.59	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 802.11a mode.

Temperature:	23.5℃	Relative Humidity:	53%
Pressure:	1010 hPa	Test Voltage :	DC 5V From adapter
Test Mode :	5.2G TX- 802.11a		

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel:5180MHz									
V	10360.00	49.14	46.20	8.27	38.50	49.71	68.20	-18.49	PK
V	10360.00	39.40	46.20	8.27	38.50	39.97	54.00	-14.03	AV
V	15540.00	46.33	46.30	10.35	38.70	49.08	74.00	-24.93	PK
V	15540.00	36.52	46.30	10.35	38.70	39.27	54.00	-14.73	AV
V	20720.00	55.21	57.40	11.93	37.80	47.54	68.20	-20.66	PK
V	20720.00	45.41	57.40	11.93	37.80	37.74	54.00	-16.26	AV
V	25900.00	52.90	56.50	13.45	39.70	49.55	68.20	-18.65	PK
V	25900.00	42.71	56.50	13.45	39.70	39.36	54.00	-14.64	AV
H	10360.00	49.06	46.20	8.27	38.50	49.63	68.20	-18.57	PK
H	10360.00	38.06	46.20	8.27	38.50	38.63	54.00	-15.37	AV
H	15540.00	45.36	46.30	10.35	38.70	48.11	74.00	-25.89	PK
H	15540.00	34.14	46.30	10.35	38.70	36.89	54.00	-17.11	AV
H	20720.00	57.38	57.40	11.93	37.80	49.71	68.20	-18.49	PK
H	20720.00	46.30	57.40	11.93	37.80	38.63	54.00	-15.37	AV
H	25900.00	53.90	56.50	13.45	39.70	50.55	68.20	-17.65	PK
H	25900.00	42.75	56.50	13.45	39.70	39.40	54.00	-14.60	AV

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel:5200MHz									
V	10400.00	48.21	46.20	8.27	38.50	48.78	68.20	-19.42	PK
V	10400.00	39.16	46.20	8.27	38.50	39.73	54.00	-14.27	AV
V	15600.00	46.63	46.30	10.35	38.40	49.08	74.00	-24.92	PK
V	15600.00	38.01	46.30	10.35	38.40	40.46	54.00	-13.54	AV
V	20800.00	56.38	57.40	11.93	37.80	48.71	68.20	-19.49	PK
V	20800.00	46.91	57.40	11.93	37.80	39.24	54.00	-14.76	AV
V	26000.00	51.63	56.50	13.45	39.80	48.38	68.20	-19.82	PK
V	26000.00	43.93	56.50	13.45	39.80	40.68	54.00	-13.32	AV
H	10400.00	48.81	46.20	8.27	38.50	49.38	68.20	-18.82	PK
H	10400.00	39.42	46.20	8.27	38.50	39.99	54.00	-14.01	AV
H	15600.00	46.61	46.30	10.35	38.40	49.06	74.00	-24.94	PK
H	15600.00	38.01	46.30	10.35	38.40	40.46	54.00	-13.54	AV
H	20800.00	55.36	57.40	11.93	37.80	47.69	68.20	-20.51	PK
H	20800.00	44.85	57.40	11.93	37.80	37.18	54.00	-16.82	AV
H	26000.00	51.35	56.50	13.45	39.80	48.10	68.20	-20.10	PK
H	26000.00	43.15	56.50	13.45	39.80	39.90	54.00	-14.10	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detect or Type
High Channel:5240MHz									
V	10480.00	45.09	46.20	8.27	38.60	45.76	68.20	-22.44	PK
V	10480.00	35.32	46.20	8.27	38.60	35.99	54.00	-18.01	AV
V	15720.00	42.71	46.30	10.35	38.40	45.16	74.00	-28.84	PK
V	15720.00	33.10	46.30	10.35	38.40	35.55	54.00	-18.45	AV
V	20960.00	52.61	57.40	11.93	37.50	44.64	68.20	-23.56	PK
V	20960.00	44.22	57.40	11.93	37.50	36.25	54.00	-17.75	AV
V	26200.00	48.68	56.50	13.45	40.10	45.73	68.20	-22.47	PK
V	26200.00	39.46	56.50	13.45	40.10	36.51	54.00	-17.49	AV
H	10480.00	45.33	46.20	8.27	38.60	46.00	68.20	-22.20	PK
H	10480.00	35.32	46.20	8.27	38.60	35.99	54.00	-18.01	AV
H	15720.00	43.04	46.30	10.35	38.40	45.49	74.00	-28.51	PK
H	15720.00	33.19	46.30	10.35	38.40	35.64	54.00	-18.36	AV
H	20960.00	52.79	57.40	11.93	37.50	44.82	68.20	-23.38	PK
H	20960.00	44.12	57.40	11.93	37.50	36.15	54.00	-17.85	AV
H	26200.00	48.38	56.50	13.45	40.10	45.43	68.20	-22.77	PK
H	26200.00	38.85	56.50	13.45	40.10	35.90	54.00	-18.10	AV

Remark:

1. Emission Level = Meter Reading + 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:	23.4℃	Relative Humidity:	54%
Pressure:	1010 hPa	Test Voltage :	DC 5V From adapter
Test Mode :	5.8G TX- 802.11a		

Polar (H/V)	Frequency	Meter Readi g	Pre- amplifier	Cable Loss	Antenn Factor	Emission Level	Limits	Margin	Detect or Typ
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel:5745MHz									
V	11490.00	44.45	46.10	8.77	39.10	46.22	74.00	-27.78	PK
V	11490.00	36.73	46.10	8.77	39.10	38.50	54.00	-15.50	AV
V	17235.00	42.16	47.60	11.10	38.70	44.36	68.20	-23.84	PK
V	17235.00	35.25	47.60	11.10	38.70	37.45	54.00	-16.55	AV
V	22980.00	50.41	56.90	12.73	37.70	43.94	74.00	-30.06	PK
V	22980.00	42.85	56.90	12.73	37.70	36.38	54.00	-17.62	AV
V	28725.00	47.40	55.60	14.25	40.30	46.35	68.20	-21.85	PK
V	28725.00	39.35	55.60	14.25	40.30	38.30	54.00	-15.70	AV
H	11490.00	44.91	46.10	8.77	39.10	46.68	74.00	-27.32	PK
H	11490.00	36.57	46.10	8.77	39.10	38.34	54.00	-15.66	AV
H	17235.00	43.12	47.60	11.10	38.70	45.32	68.20	-22.88	PK
H	17235.00	35.65	47.60	11.10	38.70	37.85	54.00	-16.15	AV
H	22980.00	52.51	56.90	12.73	37.70	46.04	74.00	-27.96	PK
H	22980.00	42.63	56.90	12.73	37.70	36.16	54.00	-17.84	AV
H	28725.00	49.26	55.60	14.25	40.30	48.21	68.20	-19.99	PK
H	28725.00	39.94	55.60	14.25	40.30	38.89	54.00	-15.11	AV

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel:5785MHz									
V	11570.00	44.28	46.10	8.77	39.10	46.05	74.00	-27.95	PK
V	11570.00	36.56	46.10	8.77	39.10	38.33	54.00	-15.67	AV
V	17355.00	41.98	47.60	11.10	38.70	44.18	68.20	-24.02	PK
V	17355.00	35.07	47.60	11.10	38.70	37.27	54.00	-16.73	AV
V	23140.00	50.25	56.90	12.73	37.70	43.78	74.00	-30.22	PK
V	23140.00	42.66	56.90	12.73	37.70	36.19	54.00	-17.81	AV
V	28925.00	47.21	55.60	14.25	40.30	46.16	68.20	-22.04	PK
V	28925.00	39.17	55.60	14.25	40.30	38.12	54.00	-15.88	AV
H	11570.00	44.72	46.10	8.77	39.10	46.49	74.00	-27.51	PK
H	11570.00	36.38	46.10	8.77	39.10	38.15	54.00	-15.85	AV
H	17355.00	42.95	47.60	11.10	38.70	45.15	68.20	-23.05	PK
H	17355.00	35.46	47.60	11.10	38.70	37.66	54.00	-16.34	AV
H	23140.00	52.33	56.90	12.73	37.70	45.86	74.00	-28.14	PK
H	23140.00	42.45	56.90	12.73	37.70	35.98	54.00	-18.02	AV
H	28925.00	49.08	55.60	14.25	40.30	48.03	68.20	-20.17	PK
H	28925.00	39.76	55.60	14.25	40.30	38.71	54.00	-15.29	AV

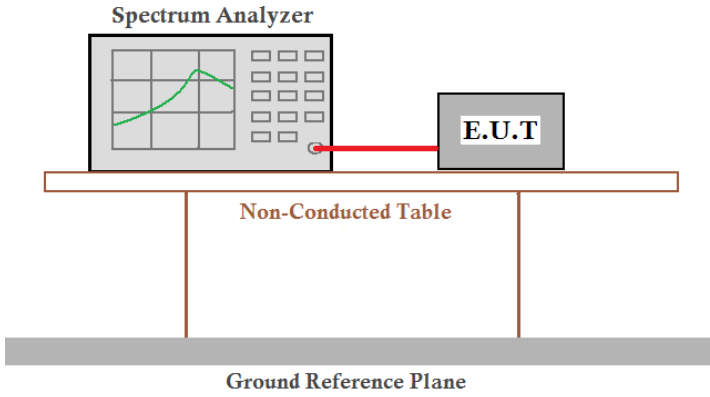


Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
High Channel:5825MHz									
V	11650.00	45.31	46.10	8.77	39.10	47.08	74.00	-26.92	PK
V	11650.00	36.72	46.10	8.77	39.10	38.49	54.00	-15.51	AV
V	17475.00	43.29	47.90	11.23	38.90	45.52	68.20	-22.68	PK
V	17475.00	36.03	47.90	11.23	38.90	38.26	54.00	-15.74	AV
V	23300.00	52.44	57.10	12.73	37.80	45.87	68.20	-22.33	PK
V	23300.00	43.55	57.10	12.73	37.80	36.98	54.00	-17.02	AV
V	29125.00	49.35	55.80	14.25	40.50	48.30	68.20	-19.90	PK
V	29125.00	40.95	55.80	14.25	40.50	39.90	54.00	-14.10	AV
H	11650.00	47.20	46.10	8.77	39.10	48.97	74.00	-25.03	PK
H	11650.00	39.00	46.10	8.77	39.10	40.77	54.00	-13.23	AV
H	17475.00	44.44	47.90	11.23	38.90	46.67	68.20	-21.53	PK
H	17475.00	37.24	47.90	11.23	38.90	39.47	54.00	-14.53	AV
H	23300.00	53.77	57.10	12.73	37.80	47.20	68.20	-21.00	PK
H	23300.00	44.93	57.10	12.73	37.80	38.36	54.00	-15.64	AV
H	29125.00	50.34	55.80	14.25	40.50	49.29	68.20	-18.91	PK
H	29125.00	41.65	55.80	14.25	40.50	40.60	54.00	-13.40	AV

Remark:

1. Emission Level = Meter Reading + 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.

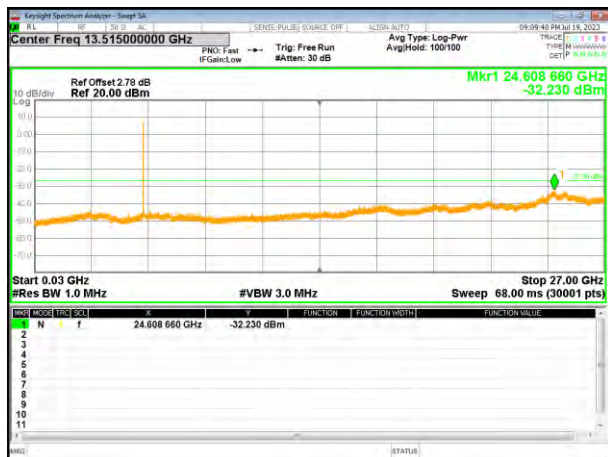
4.7.2 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)	
Test Method:	ANSI C63.10:2013	
Limit:	-27dBm/MHz	
Test setup:	 The diagram illustrates the test setup for conducted emissions. A Spectrum Analyzer, shown with a green trace on its screen, is connected to an Equipment Under Test (E.U.T.) by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a table labeled 'Non-Conducted Table'. This table is supported by two vertical legs and sits on a thick grey horizontal bar labeled 'Ground Reference Plane'.	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 25.3°C	Humid.: 53%RH
Test voltage:	DC 5V	
Test results:	Pass	

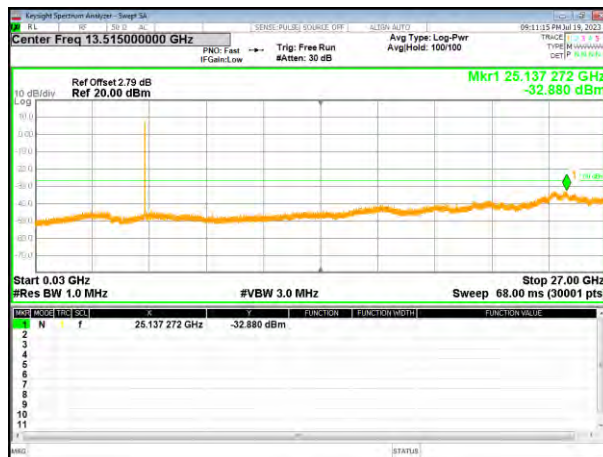
5180-5240MHz

Test Plot

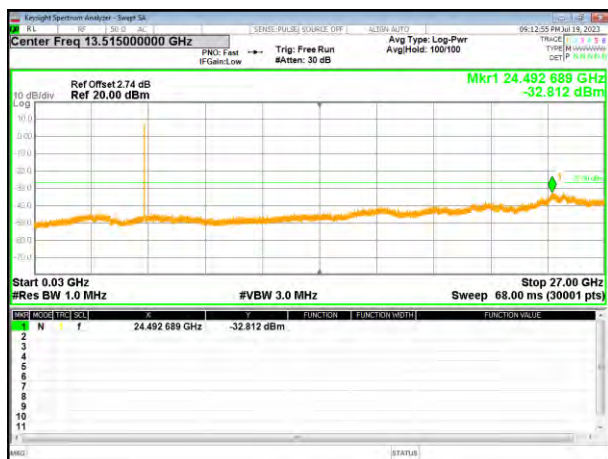
802.11a on channel 36



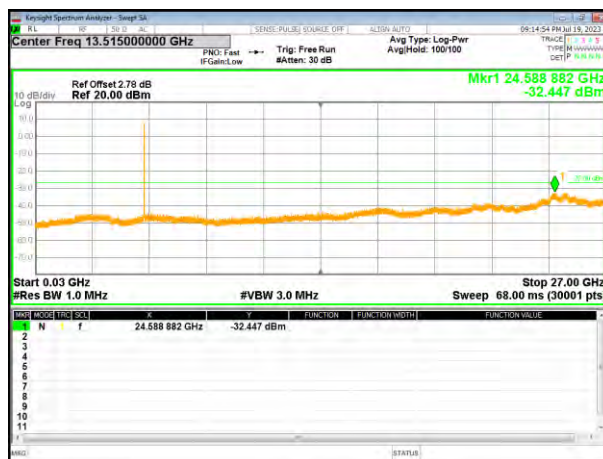
802.11a on channel 40



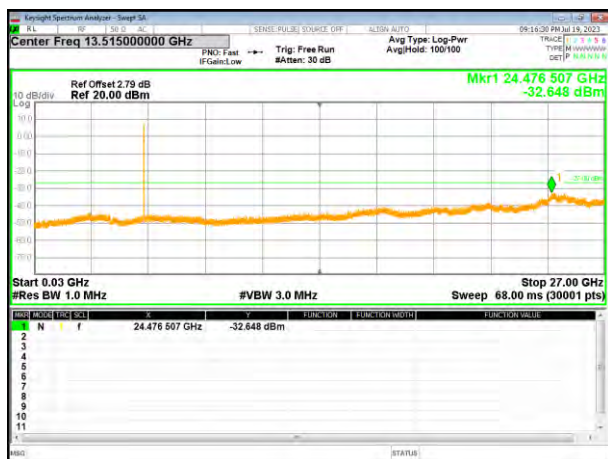
802.11a on channel 48



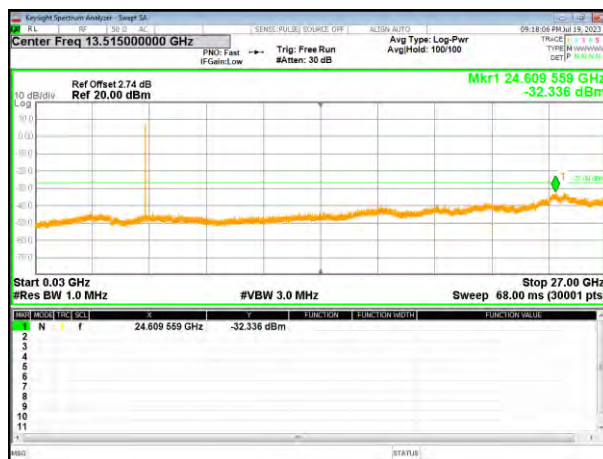
802.11n20 on channel 36



802.11n20 on channel 40

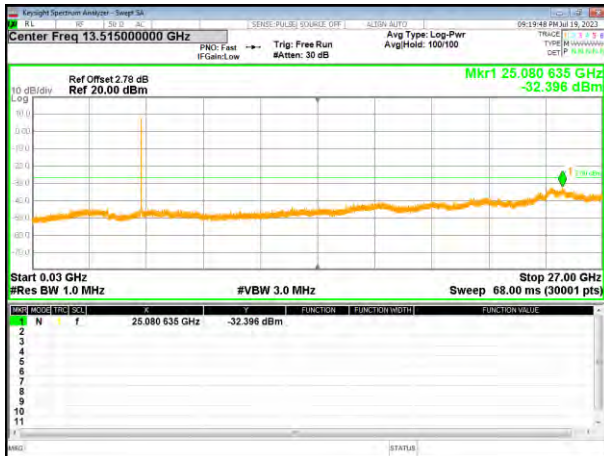


802.11n20 on channel 48

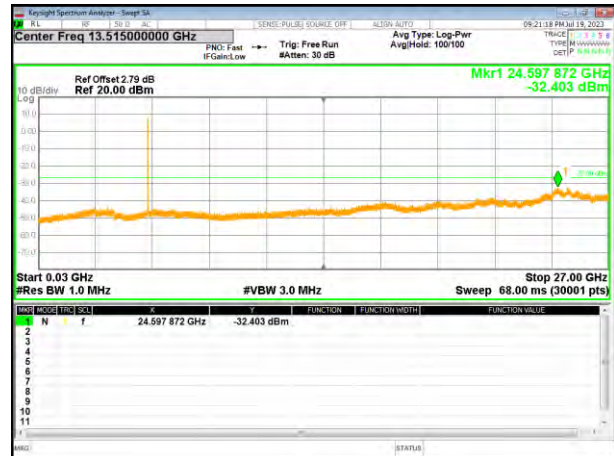


Test Plot

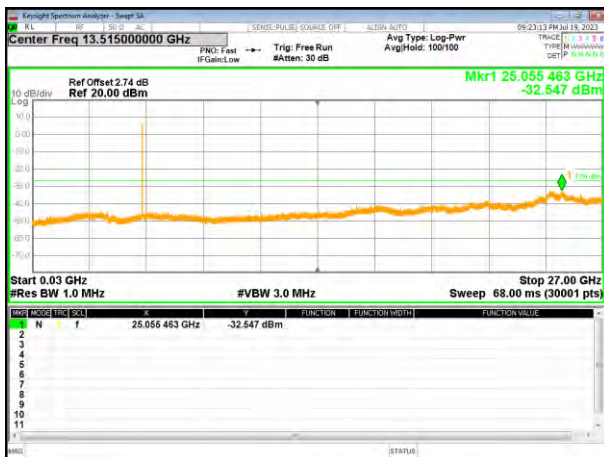
802.11ac20 on channel 36



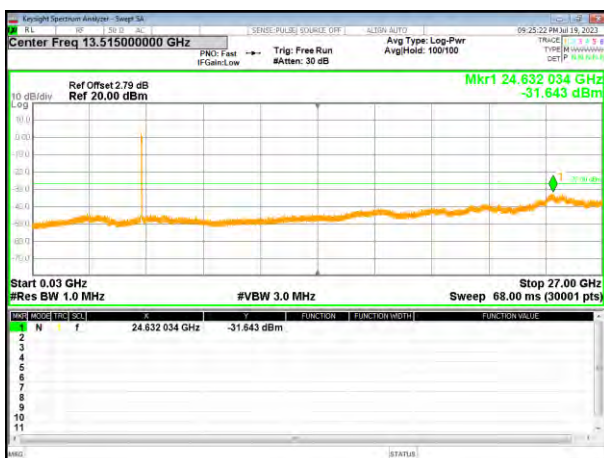
802.11ac20 on channel 40



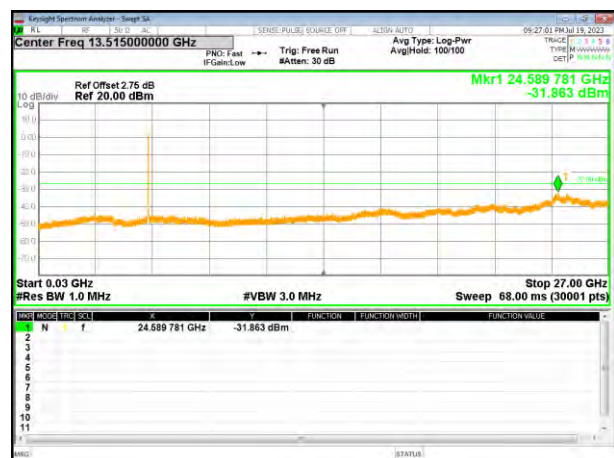
802.11ac20 on channel 48



802.11n40 on channel 38

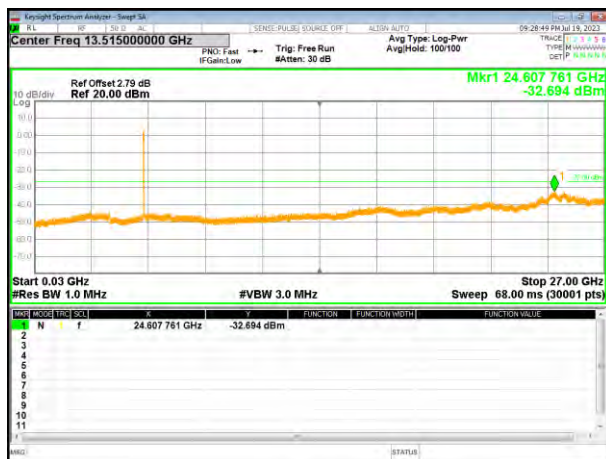


802.11n40 on channel 46

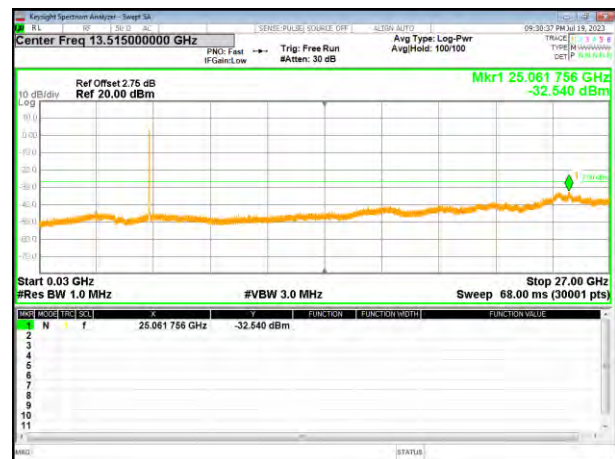


Test Plot

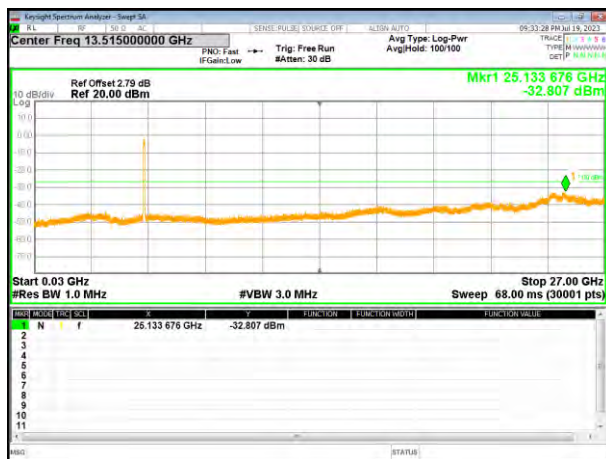
802.11ac40 on channel 38



802.11ac40 on channel 46



802.11ac80 on channel 42

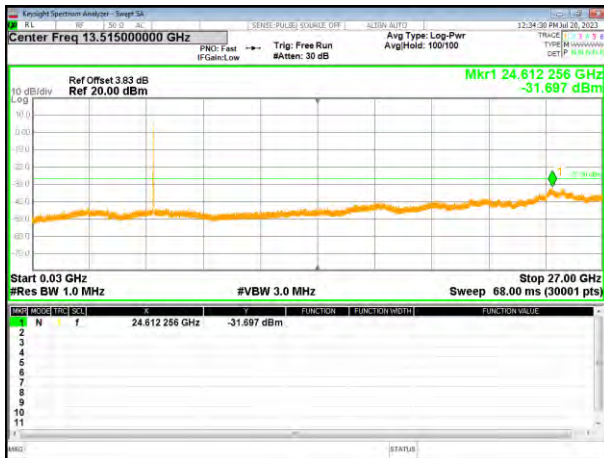




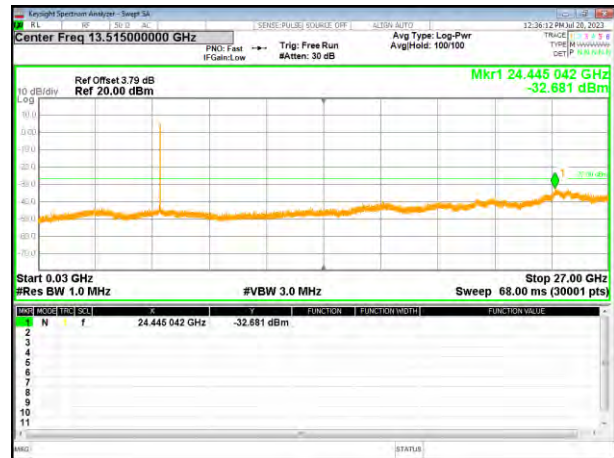
5745-5825MHz

Test Plot

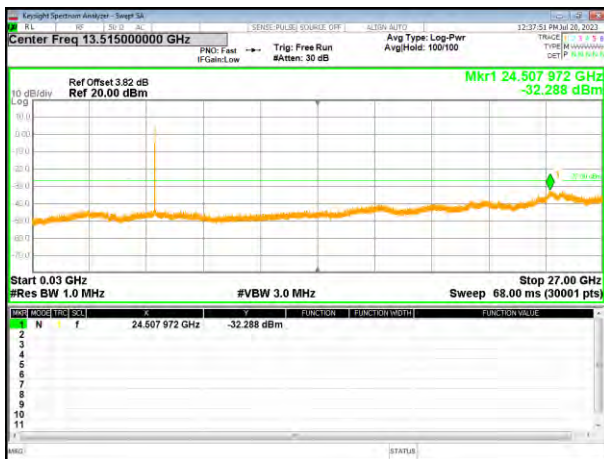
802.11a on channel 149



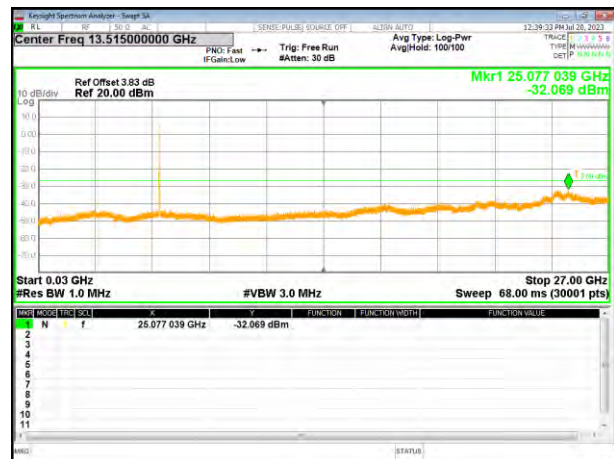
802.11a on channel 157



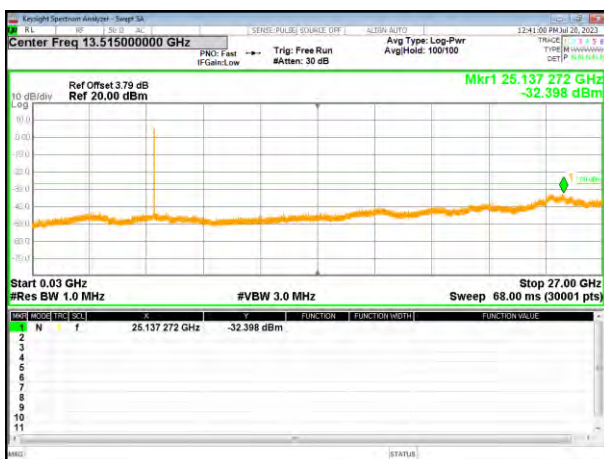
802.11a on channel 165



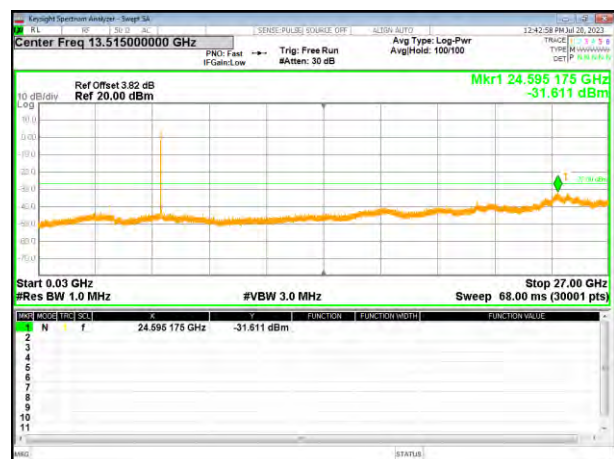
802.11n20 on channel 149



802.11n20 on channel 157

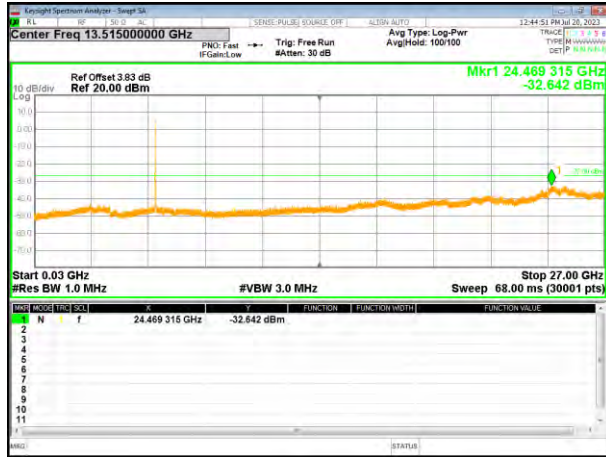


802.11n20 on channel 165

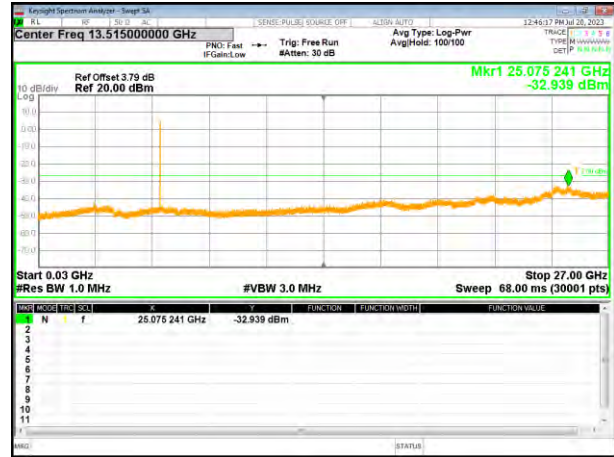


Test Plot

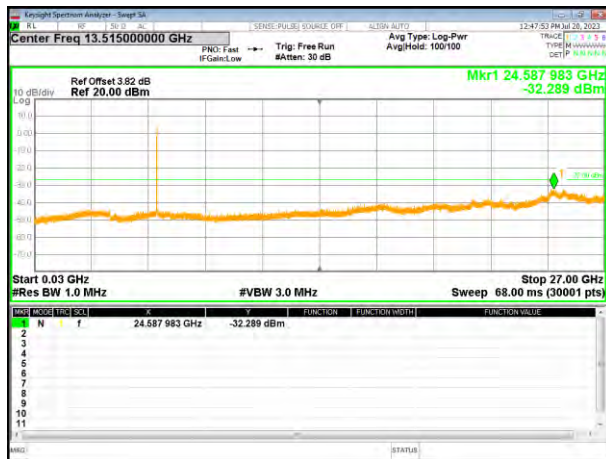
802.11ac20 on channel 149



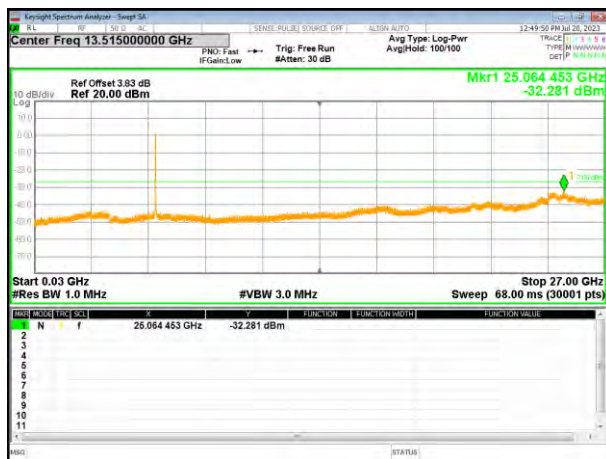
802.11ac20 on channel 157



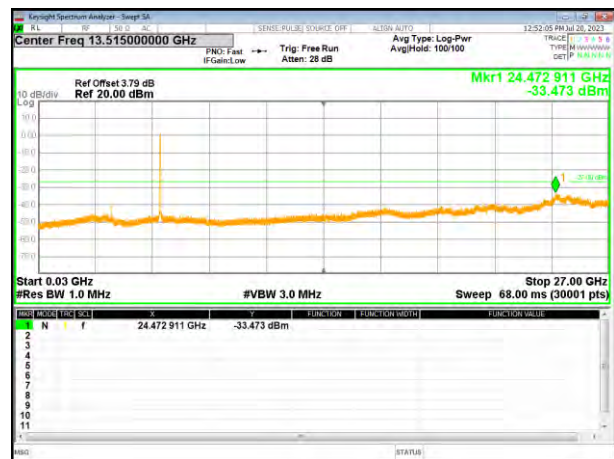
802.11ac20 on channel 165



802.11n40 on channel 151

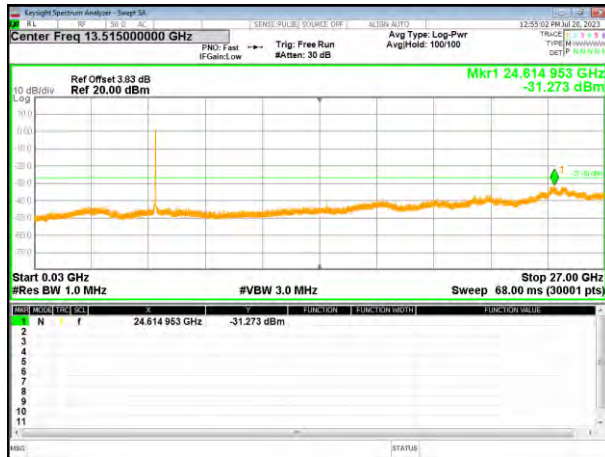


802.11n40 on channel 159

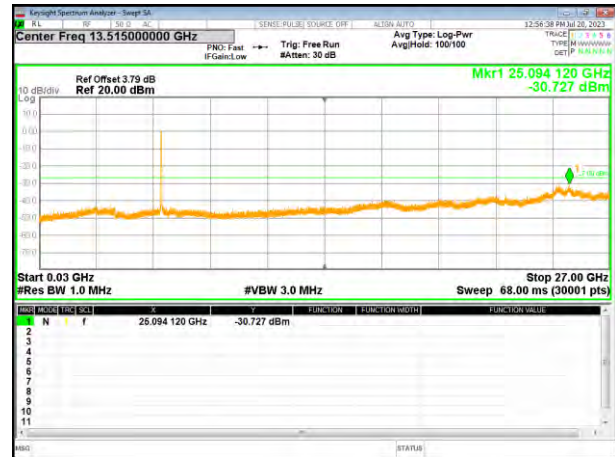


Test Plot

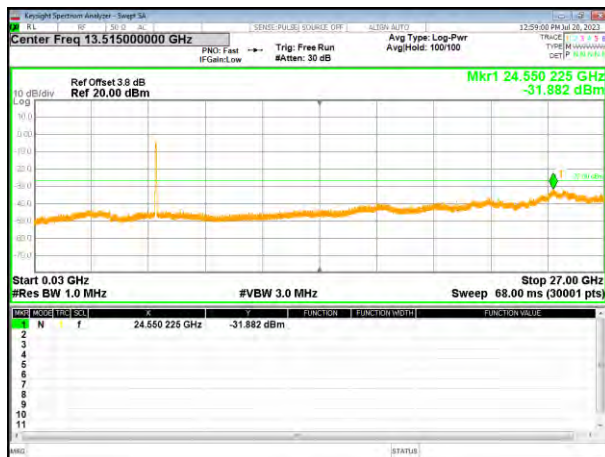
802.11ac40 on channel 151



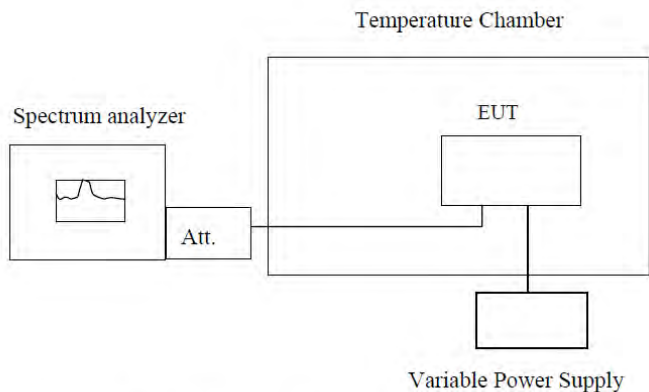
802.11ac40 on channel 159



802.11ac80 on channel 155



4.8 Frequency stability

Test Requirement:	FCC Part15 C Section 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: DC 5V					
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	5180	5179.976	5179.506	5179.969	5179.360
	5190	5189.972	5199.379	5199.844	5189.371
	5200	5199.967	5199.404	5199.869	5199.361
	5210	5209.973	5209.381	5209.847	5209.361
	5220	5219.968	5219.396	5219.862	5219.368
	5230	5229.964	5229.388	5229.854	5229.384
	5240	5239.937	5239.395	5239.862	5239.369
-20	5180	5179.967	5179.382	5179.854	5179.381
	5190	5189.958	5189.372	5189.853	5189.377
	5200	5199.966	5199.379	5199.847	5199.371
	5210	5209.958	5209.370	5209.837	5209.376
	5220	5219.979	5219.391	5219.847	5219.371
	5230	5229.955	5229.368	5299.843	5229.367
	5240	5239.973	5239.385	5239.848	5239.340
-10	5180	5179.976	5179.391	5179.833	5179.360
	5190	5189.972	5189.386	5189.844	5189.371
	5200	5199.967	5199.380	5199.835	5199.361
	5210	5209.973	5209.385	5209.836	5209.361
	5220	5219.968	5219.380	5219.843	5219.368
	5230	5229.964	5229.377	5229.860	5229.384
	5240	5239.937	5239.349	5239.832	5239.356
0	5180	5179.753	5179.370	5179.845	5179.371
	5190	5199.925	5189.380	5189.836	5189.372
	5200	5199.923	5199.370	5199.844	5199.362
	5210	5209.978	5209.370	5209.836	5299.362
	5220	5219.967	5219.377	5219.857	5219.361
	5230	5229.952	5229.394	5229.834	5229.380
	5240	5239.969	5239.365	5239.852	5239.358
10	5180	5179.955	5179.382	5179.854	5179.372
	5190	5189.966	5189.372	5189.850	5189.363
	5200	5199.957	5199.379	5199.845	5199.370



	5210	5209.958	5209.370	5209.851	5209.361
	5220	5219.965	5219.391	5219.846	5219.382
	5230	5229.981	5229.368	5229.843	5229.358
	5240	5239.966	5239.385	5239.816	5239.376
20	5180	5179.976	5179.381	5179.845	5179.333
	5190	5189.972	5189.381	5189.836	5189.363
	5200	5199.967	5199.371	5199.844	5199.387
	5210	5209.973	5209.370	5209.836	5209.370
	5220	5219.968	5219.370	5219.857	5219.361
	5230	5229.964	5229.390	5229.834	5229.387
	5240	5239.937	5239.367	5239.852	5239.375
30	5180	5179.955	5179.382	5179.845	5179.381
	5190	5189.966	5189.372	5189.836	5179.381
	5200	5199.957	5199.379	5199.844	5189.377
	5210	5209.958	5209.370	5209.836	5199.371
	5220	5219.965	5219.391	5219.857	5209.376
	5230	5229.981	5229.368	5229.834	5219.371
	5240	5239.953	5239.385	5239.852	5229.367
40	5180	5179.967	5179.381	5179.631	5179.360
	5190	5189.958	5189.381	5199.803	5189.371
	5200	5199.966	5199.371	5199.801	5199.361
	5210	5209.958	5209.370	5209.856	5209.361
	5220	5219.979	5219.370	5219.845	5219.368
	5230	5229.955	5229.390	5229.831	5229.384
	5240	5239.973	5239.367	5239.848	5239.356
50	5180	5179.967	5179.382	5179.845	5179.333
	5190	5189.958	5189.372	5189.836	5189.363
	5200	5199.966	5199.379	5199.844	5199.387
	5210	5209.958	5209.370	5209.836	5209.370
	5220	5219.979	5219.391	5219.857	5219.361
	5230	5229.955	5229.368	5229.834	5229.387
	5240	5239.973	5239.385	5239.852	5239.375

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
4.50	5180	5179.976	5179.506	5179.845	5179.496
	5190	5189.972	5199.379	5189.836	5199.370
	5200	5199.967	5199.404	5199.844	5199.395
	5210	5209.973	5209.381	5209.836	5209.372
	5220	5219.968	5219.396	5219.857	5219.387
	5230	5229.964	5229.388	5229.834	5229.378
	5240	5239.937	5239.395	5239.852	5239.386
5.00	5180	5179.967	5179.400	5179.844	5179.381
	5190	5189.958	5179.506	5189.845	5189.380
	5200	5199.966	5199.379	5199.836	5199.373
	5210	5209.958	5209.403	5299.842	5209.362
	5220	5219.979	5219.381	5219.836	5219.372
	5230	5229.955	5229.395	5229.856	5299.363
	5240	5239.973	5239.387	5239.834	5239.372
5.50	5180	5179.976	5179.391	5179.833	5179.360
	5190	5189.972	5189.386	5189.844	5189.371
	5200	5199.967	5199.380	5199.835	5199.361
	5210	5209.973	5209.385	5209.836	5209.361
	5220	5219.968	5219.380	5219.843	5219.368
	5230	5229.964	5229.377	5229.860	5229.384
	5240	5239.937	5239.349	5239.832	5239.356



Frequency stability versus Temp.					
Power Supply: DC 5V					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5745	5744.942	5744.323	5744.822	5744.319
	5755	5754.950	5754.327	5754.829	5754.306
	5775	5774.964	5774.318	5774.845	5774.316
	5785	5784.940	5784.309	5784.820	5784.322
	5795	5794.936	5794.315	5794.816	5794.340
	5825	5824.938	5824.241	5824.819	5824.329
-20	5745	5744.931	5744.334	5744.816	5744.330
	5755	5754.948	5754.333	5754.841	5754.342
	5775	5774.944	5774.335	5774.821	5774.326
	5785	5784.947	5784.326	5784.829	5784.312
	5795	5794.958	5794.316	5794.827	5794.306
	5825	5824.938	5824.322	5824.837	5824.337
-10	5745	5744.942	5744.324	5744.832	5743.950
	5755	5754.969	5754.328	5754.834	5754.331
	5775	5774.962	5774.344	5774.836	5774.331
	5785	5784.946	5784.319	5784.827	5784.333
	5795	5794.935	5794.314	5794.818	5794.316
	5825	5824.870	5824.314	5824.827	5824.309
0	5745	5744.936	5744.313	5744.832	5742.355
	5755	5754.962	5754.326	5754.834	5754.344
	5775	5774.941	5774.324	5774.836	5774.339
	5785	5784.949	5784.326	5784.827	5784.322
	5795	5794.947	5794.336	5794.818	5794.311
	5825	5824.955	5824.314	5824.827	5824.243
10	5745	5744.936	5744.323	5744.821	5744.320
	5755	5754.962	5754.337	5754.828	5754.325
	5775	5774.941	5774.337	5774.819	5774.341
	5785	5784.949	5784.318	5784.810	5784.316
	5795	5794.947	5794.334	5794.817	5794.312
	5825	5824.955	5824.329	5824.746	5824.312
20	5745	5744.952	5744.348	5744.832	5744.319
	5755	5754.967	5754.317	5754.846	5754.336
	5775	5774.949	5774.339	5774.830	5774.315
	5785	5784.936	5784.338	5784.816	5784.341
	5795	5794.930	5794.328	5794.810	5794.333
	5825	5824.962	5824.340	5824.844	5824.339
30	5745	5744.942	5744.334	5744.821	5744.344
	5755	5754.950	5754.333	5754.838	5754.314
	5775	5774.964	5774.335	5774.838	5774.336
	5785	5784.940	5784.326	5784.819	5784.335
	5795	5794.936	5794.316	5794.836	5794.326
	5825	5824.938	5824.322	5824.834	5824.338
40	5745	5744.952	5744.318	5744.832	5742.355



	5755	5754.967	5754.340	5754.834	5754.344
	5775	5774.949	5774.320	5774.836	5774.339
	5785	5784.936	5784.328	5784.827	5784.322
	5795	5794.930	5794.325	5794.818	5794.311
	5825	5824.962	5824.332	5824.827	5824.243
50	5745	5744.952	5744.348	5744.832	5744.319
	5755	5754.967	5754.317	5754.846	5754.336
	5775	5774.949	5774.339	5774.830	5774.315
	5785	5784.936	5784.338	5784.816	5784.341
	5795	5794.930	5794.328	5794.810	5794.333
	5825	5824.962	5824.340	5824.844	5824.339

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)
4.50	5745	5744.931	5744.323	5744.821	5744.314
	5755	5754.948	5754.327	5754.838	5754.337
	5775	5774.944	5774.318	5774.838	5774.317
	5785	5784.947	5784.309	5784.819	5784.325
	5795	5794.958	5794.315	5794.836	5794.323
	5825	5824.938	5824.241	5824.834	5824.330
5.00	5745	5744.931	5744.334	5744.816	5744.330
	5755	5754.948	5754.333	5754.841	5754.342
	5775	5774.944	5774.335	5774.821	5774.326
	5785	5784.947	5784.326	5784.829	5784.312
	5795	5794.958	5794.316	5794.827	5794.306
	5825	5824.938	5824.322	5824.837	5824.337
5.50	5745	5744.952	5744.348	5744.832	5744.319
	5755	5754.967	5754.317	5754.846	5754.336
	5775	5774.949	5774.339	5774.830	5774.315
	5785	5784.936	5784.338	5784.816	5784.341
	5795	5794.930	5794.328	5794.810	5794.333
	5825	5824.962	5824.340	5824.844	5824.339



5 Test Setup Photo

Reference to the **appendix I** for details.

6 EUT Constructional Details

Reference to the **appendix II** for details.

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