



TEST REPORT

Applicant: Shenzhen Baishi Internet Technology Co. , Ltd.
Address of Applicant: Room 616, 6th floor, Liangji Building,Fukang Community, Longhua Street,Shenzhen
Manufacturer/Factory: Shenzhen Baishi Internet Technology Co. , Ltd.
Address of Manufacturer: Room 616, 6th floor, Liangji Building,Fukang Community, Longhua Street,Shenzhen
Product Name: LED Projector
Model No.: F18,K6,K7,K8,K18,K19,H5,H6,H8,H9,H10,H16,H18,F10,F16,M9,M10,H5 PLUS,X8 MAX,X8 PLUS,X10 MAX,X10 PLUS,F18 MAX,F18 PLUS
Trade Mark: bsway
FCC ID: 2BADK-F18
Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of Test: Feb.24, 2023- Mar.05, 2023
Date of report issued: Mar.06, 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

Shenzhen ETR Standard Technology Co., Ltd.

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Compiled 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:	LED Projector
Model No.:	F18,K6,K7,K8,K18,K19,H5,H6,H8,H9,H10,H16,H18,F10,F16,M9,M10,H5 PLUS,X8 MAX,X8 PLUS,X10 MAX,X10 PLUS,F18 MAX,F18 PLUS
Difference of model(s)	All the model are the same circuit and RF module, except the model names and colors
Test Model:	F18
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:	Integrated antenna
Antenna gain:	3.46 dBi(Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.)
Power supply:	AC 100-240V 50/60Hz

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

None.

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	MP_Kit_RTL11ac_8822BS_SDIO_v0.02
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	amplifier	EMtrace	RP01A	50117	2023.3.02	2024.3.01
3	Artificial power network	schwarabeck	NSLK8127	8127483	2023.3.02	2024.3.01
4	Artificial power network	ETS	3186/2NM	1132	2023.3.02	2024.3.01
5	10dB attenuator	HUBER+SUHNER	10dB	/	2023.3.02	2024.3.01
6	Cable 4	HUBER SUNNER	3M	/	2022.3.09	2022.3.08
7	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	ESPI7	100605	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	2023.3.06	2024.3.05
7	Power detector box	MWRFTtest	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	100363	2022.8.21	2023.8.20
10	amplifier	Aeroflex	DLE-161	097	2023.3.02	2024.3.01
11	Horn antenna	Com-Power	SAS-574	588	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	/	2022.3.09	2023.3.08
14	Cable7	HUBER SUNNER	2.0M	/	2022.3.09	2023.3.08
15	Cable8	HUBER SUNNER	6.0M	/	2022.3.09	2023.3.08

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	MWRFTtest	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 Integrated antenna, the best case gain of the antennas are 3.46 dBi, reference to the appendix II for details</i>	

4.2 Conducted Emissions

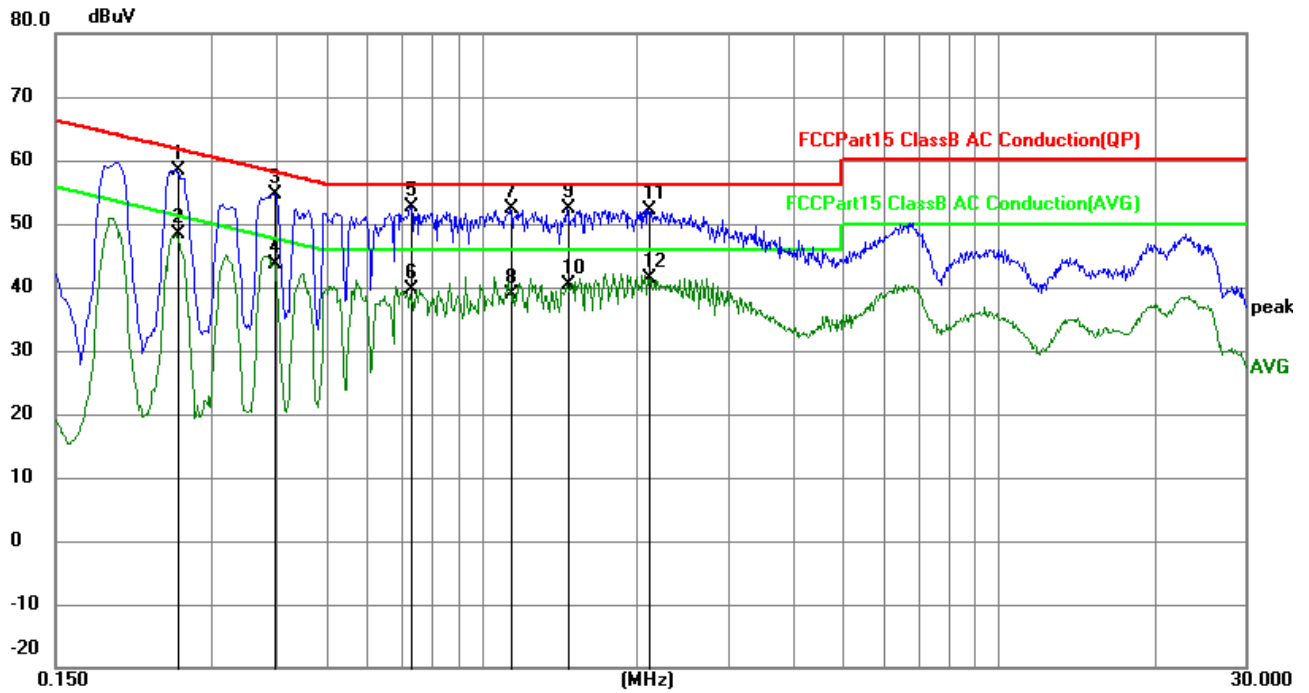
Test Requirement:	FCC Part15 C Section 15.207					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150KHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto					
Limit:	Frequency range (MHz)		Limit (dBuV)			
			Quasi-peak		Average	
	0.15-0.5		66 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.:	22.3°C	Humid.:	44%	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. The report only shows the worst mode (802.11 ac20 5180MHz)

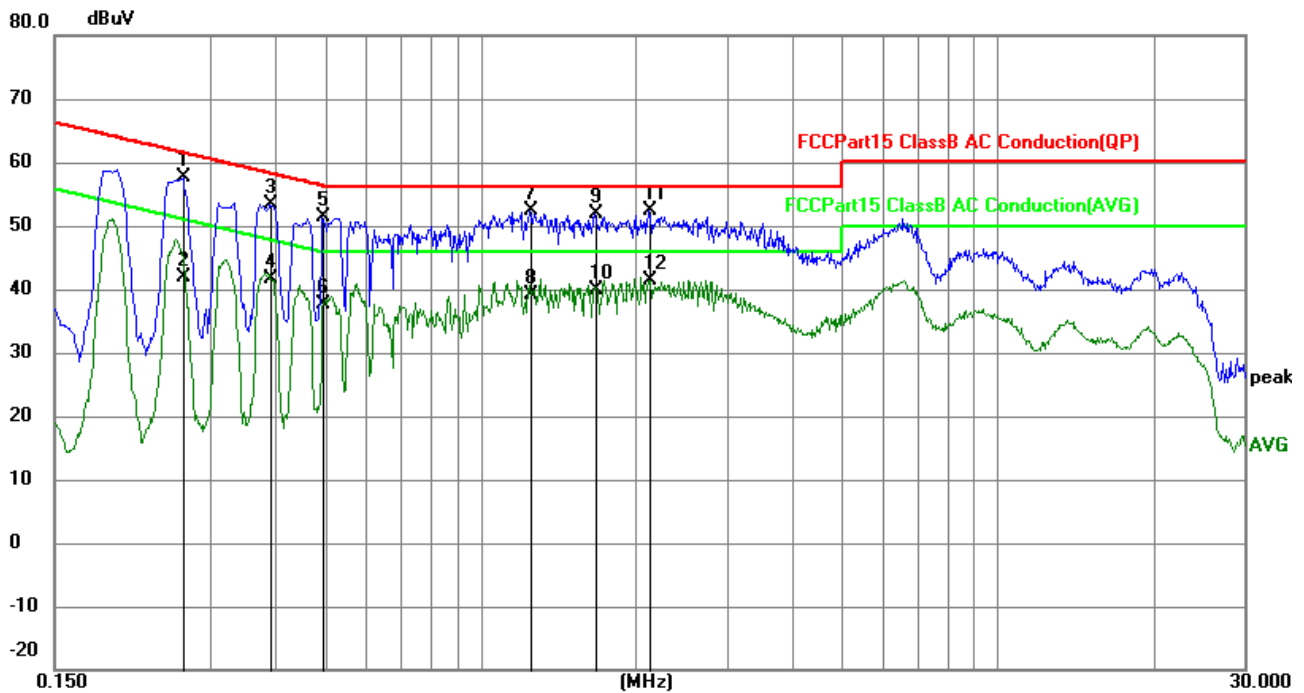
Measurement data

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2580	46.06	12.42	58.48	61.50	-3.02	QP
2	0.2580	35.96	12.42	48.38	51.50	-3.12	AVG
3	0.3975	42.35	12.38	54.73	57.91	-3.18	QP
4	0.3975	31.31	12.38	43.69	47.91	-4.22	AVG
5	0.7304	40.22	12.33	52.55	56.00	-3.45	QP
6	0.7304	27.38	12.33	39.71	46.00	-6.29	AVG
7	1.1400	40.00	12.29	52.29	56.00	-3.71	QP
8	1.1400	26.51	12.29	38.80	46.00	-7.20	AVG
9	1.4683	40.19	12.30	52.49	56.00	-3.51	QP
10	1.4683	28.03	12.30	40.33	46.00	-5.67	AVG
11	2.1074	39.94	12.30	52.24	56.00	-3.76	QP
12	2.1074	28.99	12.30	41.29	46.00	-4.71	AVG

Neutral:

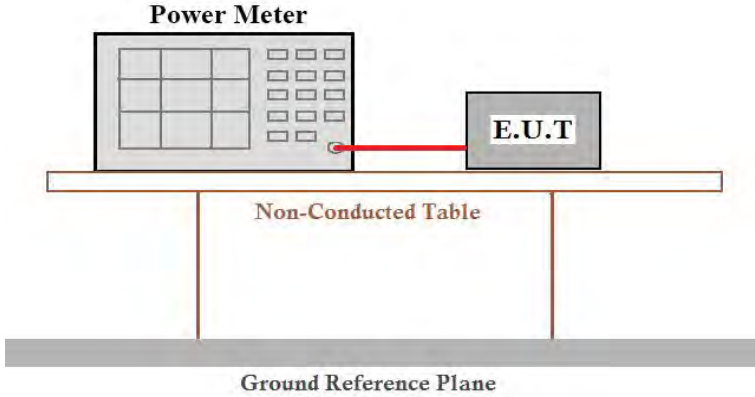


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2670	45.28	12.41	57.69	61.21	-3.52	QP
2	0.2670	29.51	12.41	41.92	51.21	-9.29	AVG
3	0.3930	40.88	12.38	53.26	58.00	-4.74	QP
4	0.3930	29.20	12.38	41.58	48.00	-6.42	AVG
5	0.4964	39.10	12.36	51.46	56.06	-4.60	QP
6	0.4964	25.15	12.36	37.51	46.06	-8.55	AVG
7	1.2434	40.14	12.29	52.43	56.00	-3.57	QP
8	1.2434	26.85	12.29	39.14	46.00	-6.86	AVG
9	1.6664	39.53	12.30	51.83	56.00	-4.17	QP
10	1.6664	27.68	12.30	39.98	46.00	-6.02	AVG
11	2.1118	39.98	12.30	52.28	56.00	-3.72	QP
12	2.1118	29.08	12.30	41.38	46.00	-4.62	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 results:	Pass

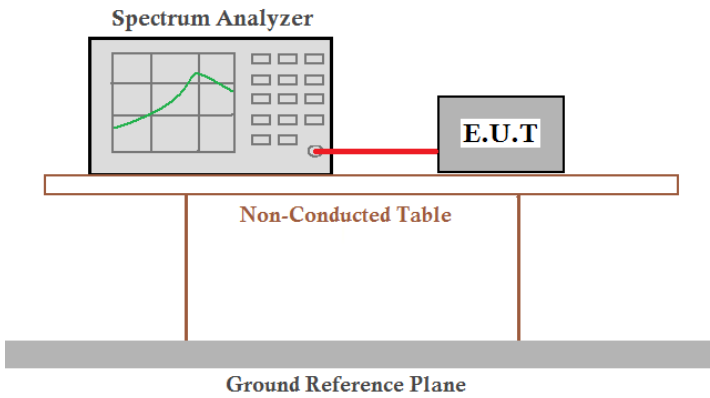
Measurement Data

Test Channel	Frequency (MHz)	Maximum output power (dBm)	LIMIT dBm	Result
TX 802.11a Mode				
CH36	5180	14.32	23.98	Pass
CH40	5200	14.03	23.98	Pass
CH48	5240	13.36	23.98	Pass
TX 802.11 n20 Mode				
CH36	5180	14.27	23.98	Pass
CH40	5200	13.99	23.98	Pass
CH48	5240	13.32	23.98	Pass
TX 802.11 ac20 Mode				
CH36	5180	14.35	23.98	Pass
CH40	5200	13.92	23.98	Pass
CH48	5240	13.18	23.98	Pass
TX 802.11 n40 Mode				
CH38	5190	12.81	23.98	Pass
CH46	5230	12.12	23.98	Pass
TX 802.11 ac40 Mode				
CH38	5190	12.77	23.98	Pass
CH46	5230	12.14	23.98	Pass
TX 802.11 ac80 Mode				
CH42	5210	11.26	23.98	Pass



Test Channel	Frequency	Maximum output power.	LIMIT	Result
	(MHz)	(dBm)	dBm	
TX 802.11a Mode				
CH149	5745	12.73	30	Pass
CH157	5785	12.86	30	Pass
CH165	5825	13.17	30	Pass
TX 802.11 n20 Mode				
CH149	5745	12.70	30	Pass
CH157	5785	12.81	30	Pass
CH165	5825	13.05	30	Pass
TX 802.11 ac20 Mode				
CH149	5745	12.65	30	Pass
CH157	5785	12.79	30	Pass
CH165	5825	13.08	30	Pass
TX 802.11 n40 Mode				
CH151	5755	11.85	30	Pass
CH159	5795	11.98	30	Pass
TX 802.11 ac40 Mode				
CH151	5755	11.75	30	Pass
CH159	5795	11.96	30	Pass
TX 802.11 ac80 Mode				
CH155	5775	10.70	30	Pass

4.4 Channel 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 results:	Pass

Measurement Data

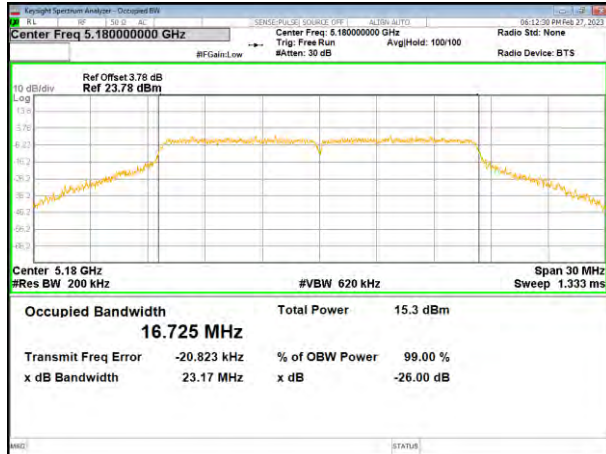
5180-5240MHz

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	23.17	23.34	2.69	44.80	43.47	--	Pass
Middle	23.57	22.75	22.81	--	--	83.27	
Highest	22.62	23.43	23.03	43.76	44.36	--	

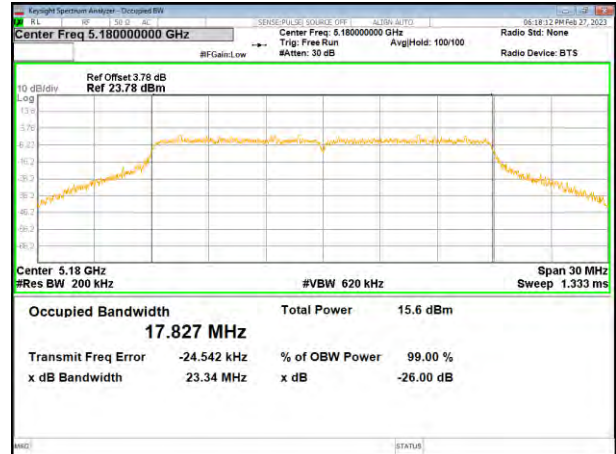
Test CH	99% Occupy Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	16.725	17.827	17.866	36.354	36.344	--	Pass
Middle	16.674	17.874	17.820	--	--	75.127	
Highest	16.695	17.825	17.877	36.374	36.400	--	

Test plot

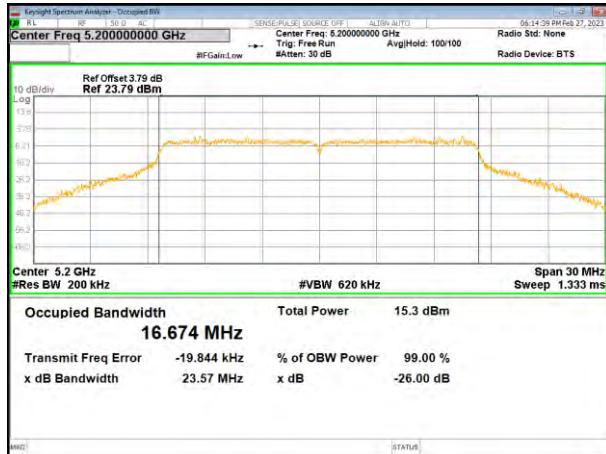
(802.11a) plot on channel 36



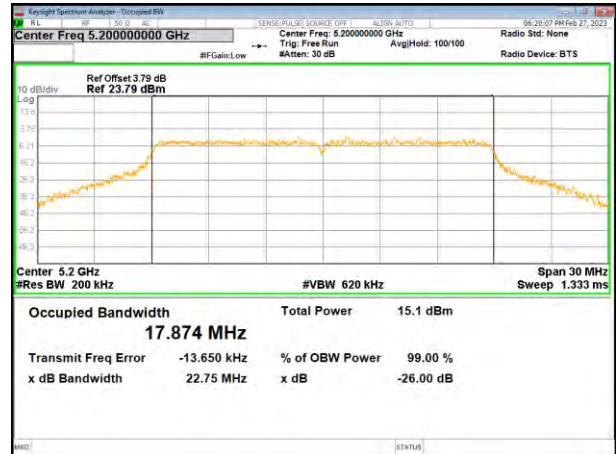
(802.11 n20) plot on channel 36



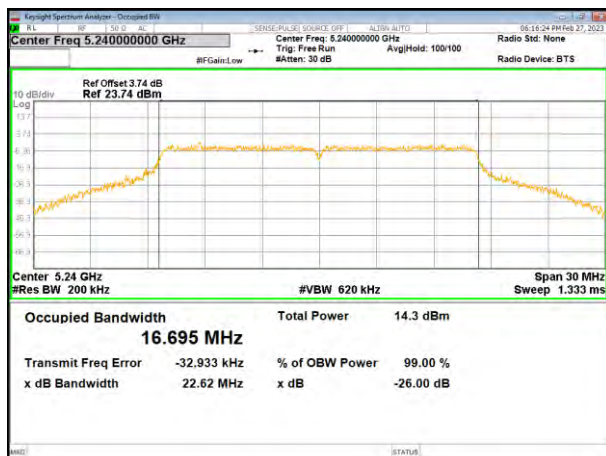
(802.11a) plot on channel 40



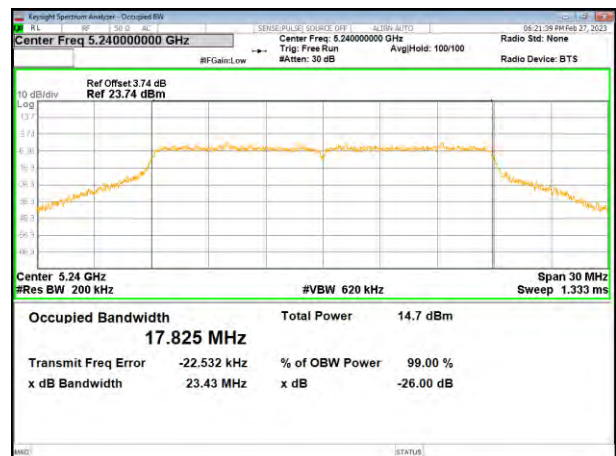
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

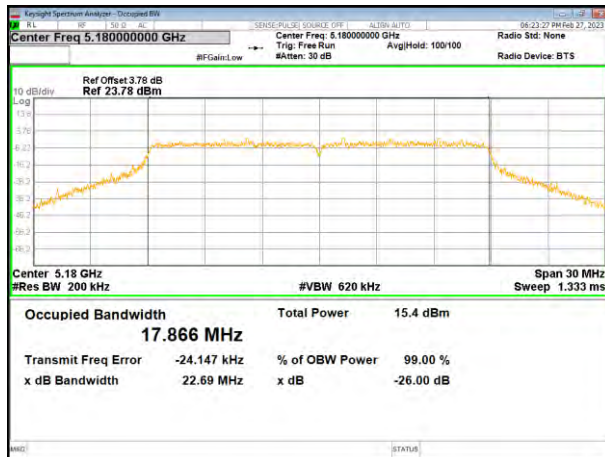


(802.11 n20) plot on channel 48

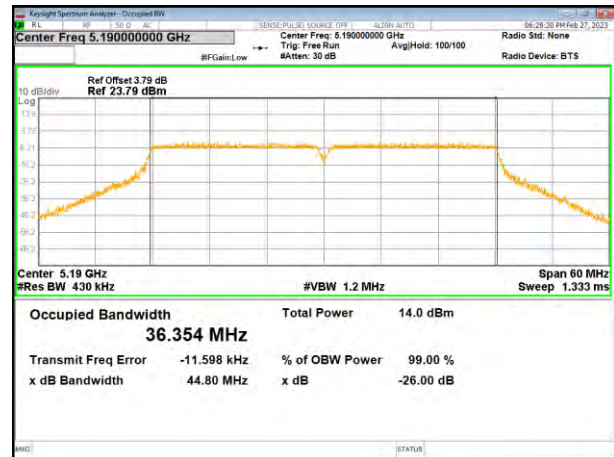


Test plot

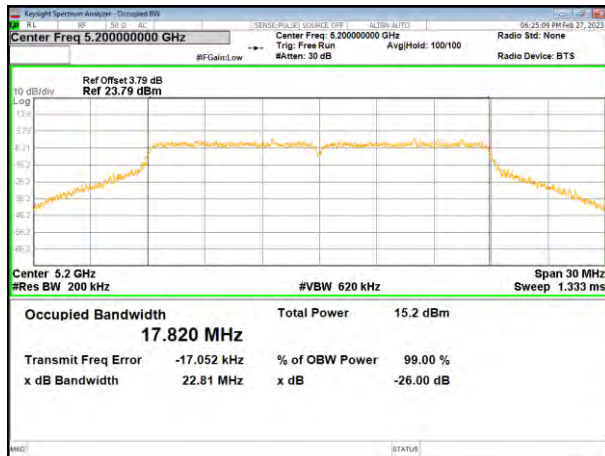
(802.11ac20) plot on channel 36



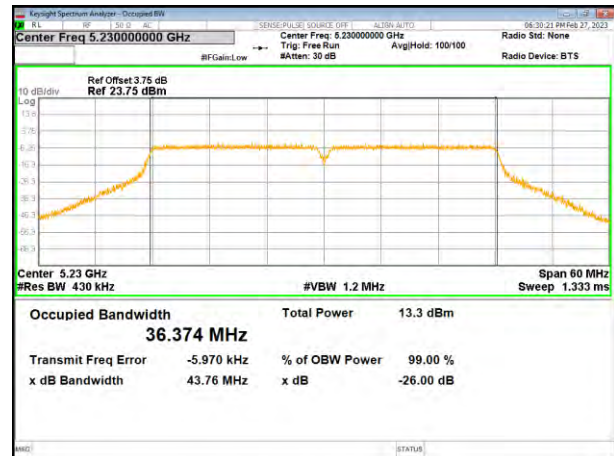
(802.11 n40) plot on channel 38



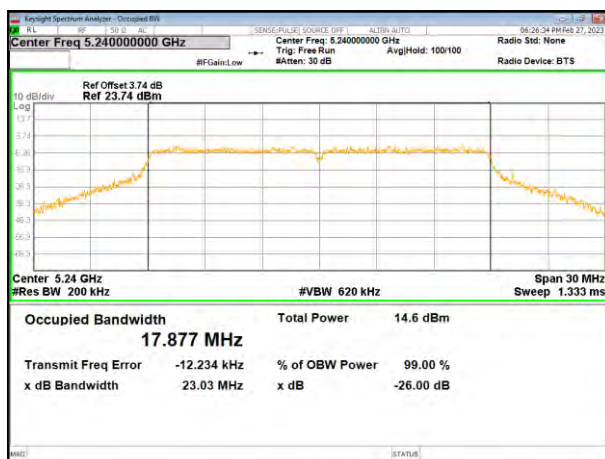
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

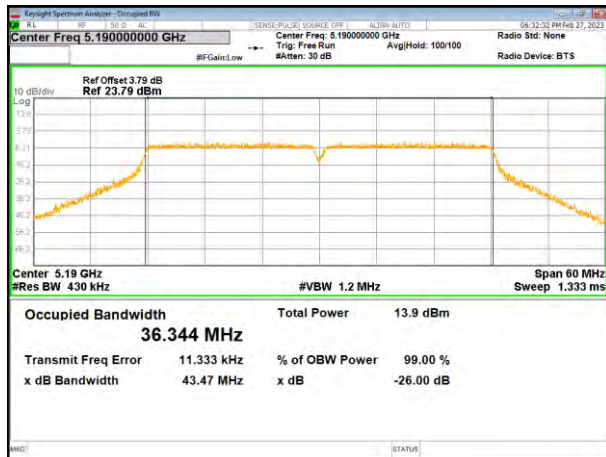


(802.11ac20) plot on channel 48

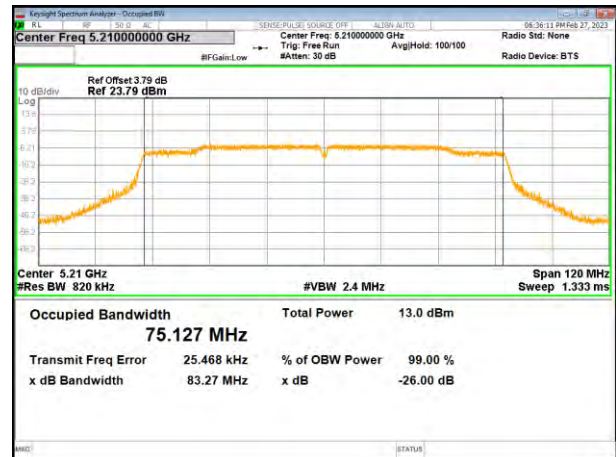


Test plot

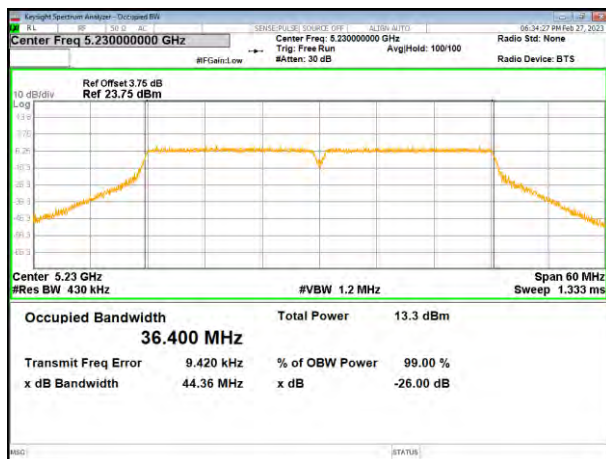
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46





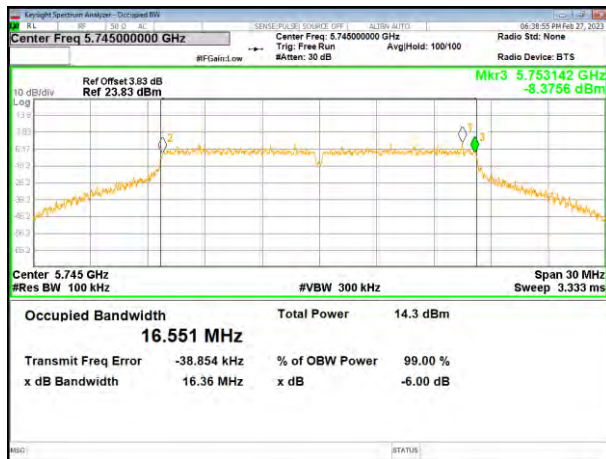
5745-5825MHz

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	16.36	17.29	17.55	36.32	36.32	--	>500	Pass
Middle	16.31	17.56	17.56	--	--	75.08		
Highest	16.32	17.58	17.55	36.30	36.32	--		

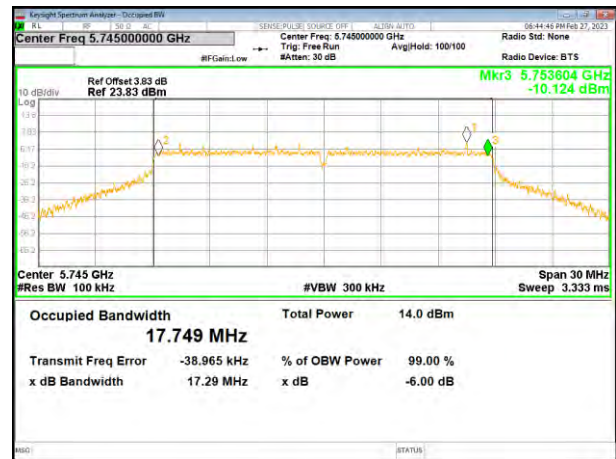
Remark: "---" is not applicable

Test plot

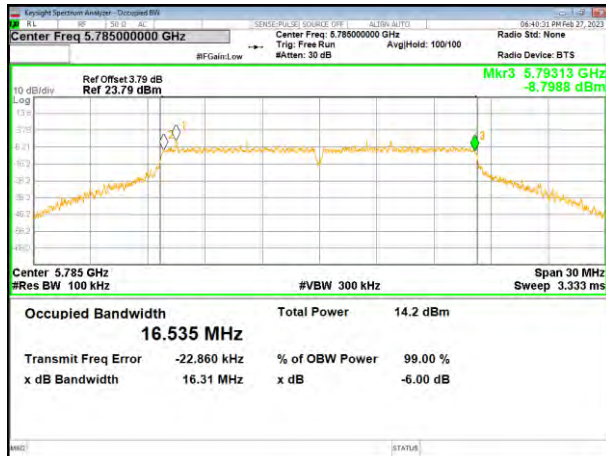
(802.11a) plot on channel 149



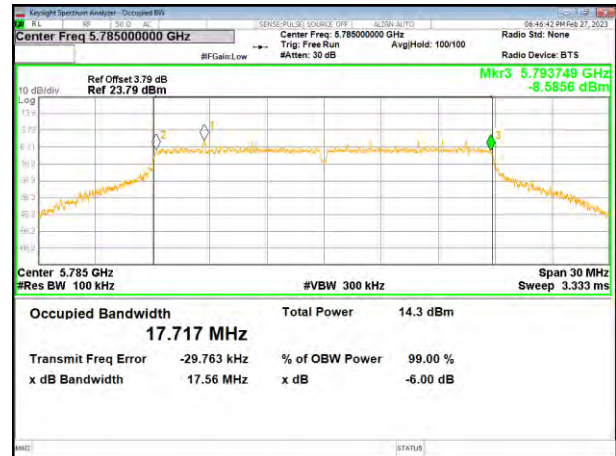
(802.11 n20) plot on channel 149



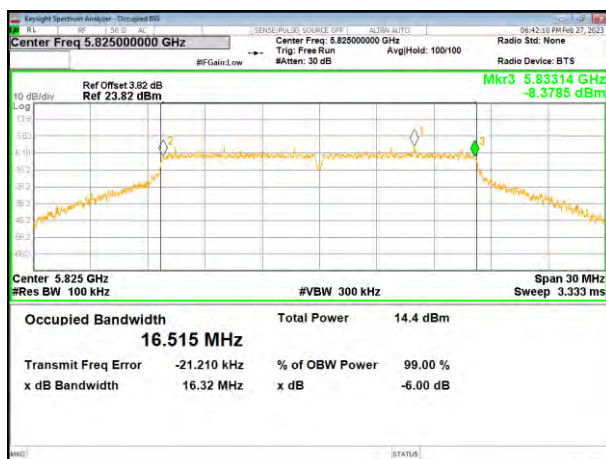
(802.11a) plot on channel 157



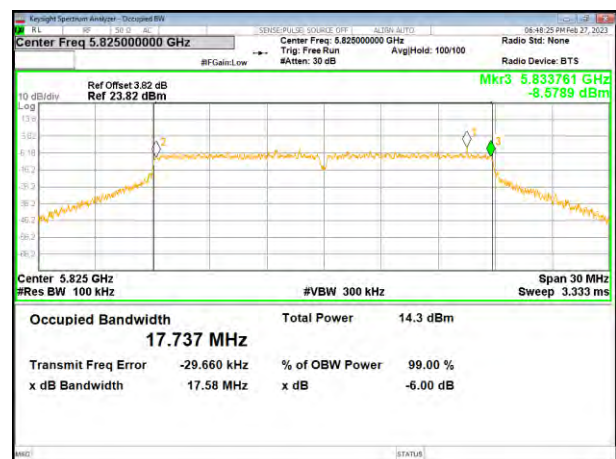
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165

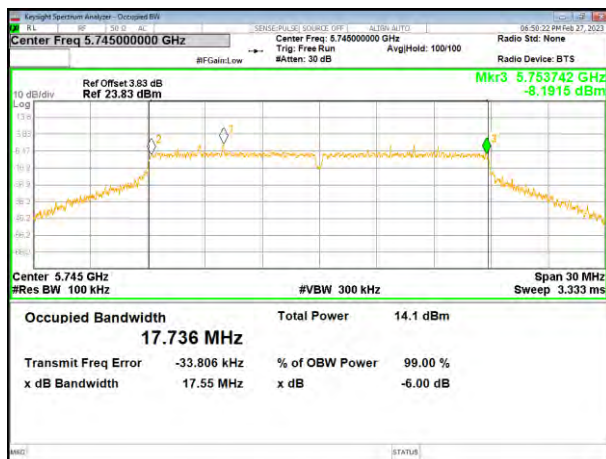


(802.11 n20) plot on channel 165

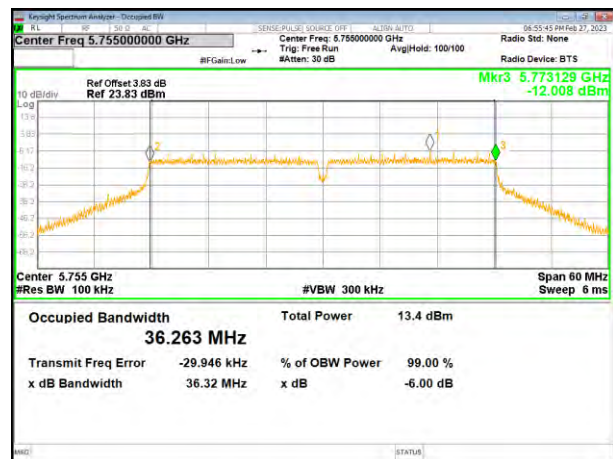


Test plot

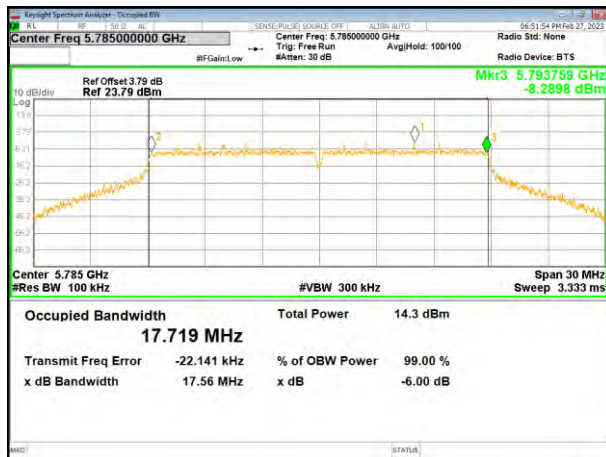
(802.11ac20) plot on channel 149



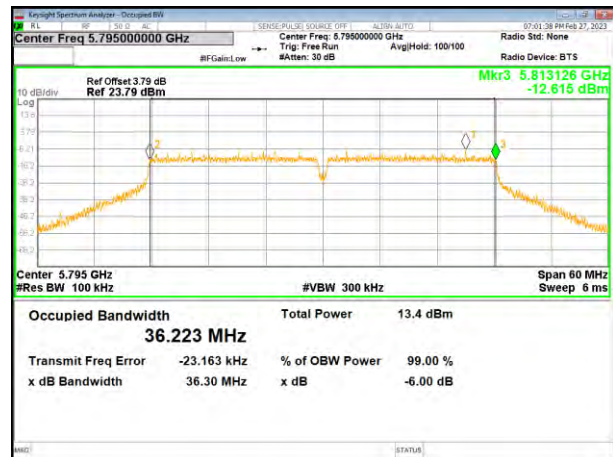
(802.11 n40) plot on channel 151



(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

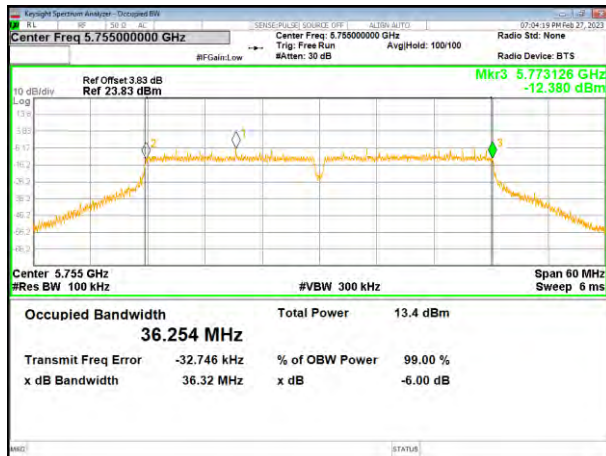


(802.11ac20) plot on channel 165

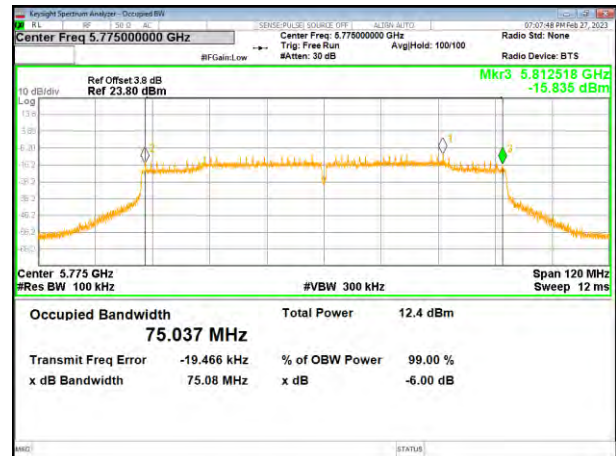


Test plot

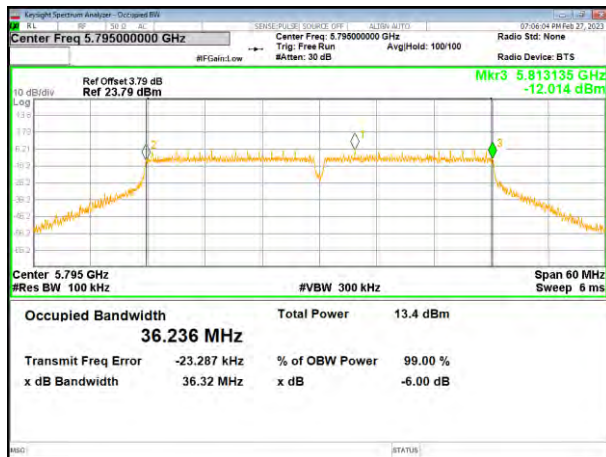
(802.11 ac40) plot on channel 151



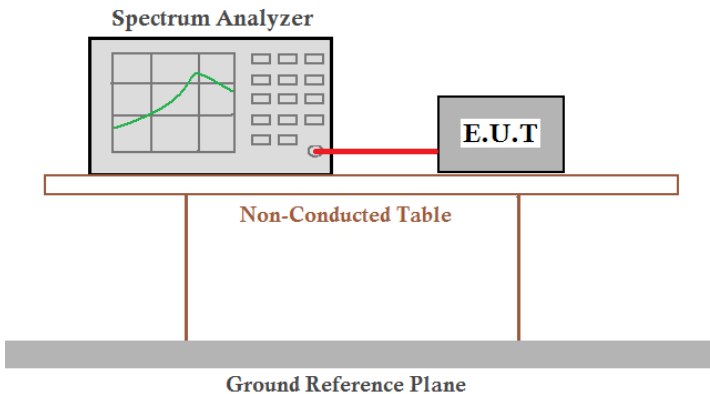
(802.11 ac80) plot on channel 155



(802.11 ac40) plot on channel 159



4.5 Power Spectral Density

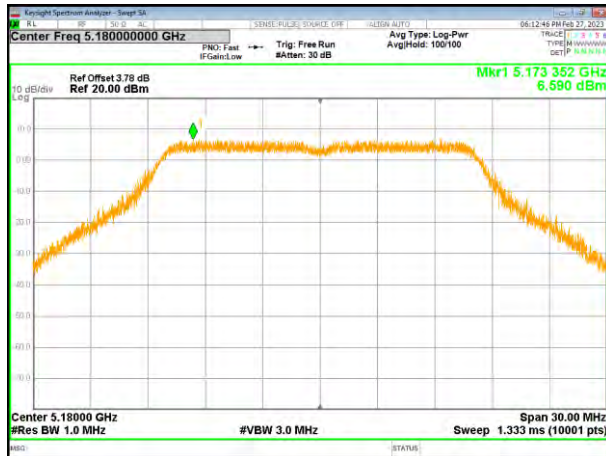
Test Requirement:	FCC Part15 E Section 15.407(a)(1)/ (a)(3)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm/1MHz for master device
		≤11dBm/1MHz for client device
	5250-5350	≤11dBm/1MHz for client device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

Measurement Data

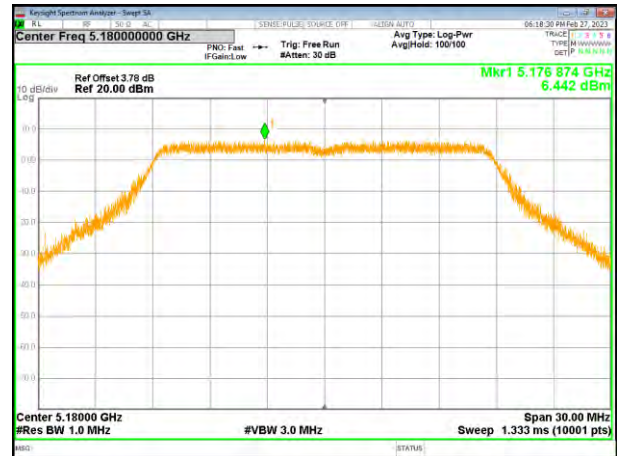
5180-5240MHz

Mode	Frequency	Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	6.590	11
	5200 MHz	7.414	11
	5240 MHz	5.970	11
802.11 n20	5180 MHz	6.442	11
	5200 MHz	6.831	11
	5240 MHz	5.427	11
802.11 ac20	5180 MHz	2.158	11
	5200 MHz	1.860	11
	5240 MHz	6.449	11
802.11 n40	5190 MHz	6.312	11
	5230 MHz	5.470	11
802.11 ac40	5190 MHz	2.695	11
	5230 MHz	2.267	11
802.11 ac80	5210 MHz	-1.276	11

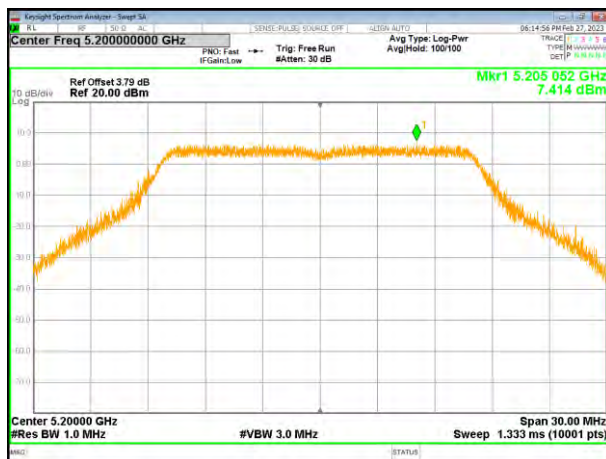
(802.11a) PSD plot on channel 36



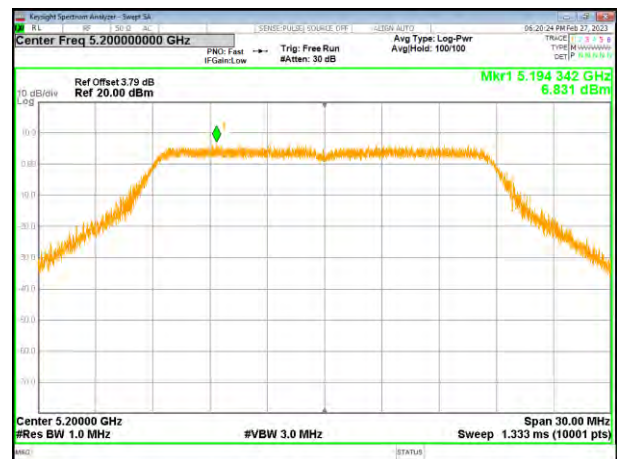
(802.11n20) PSD plot on channel 36



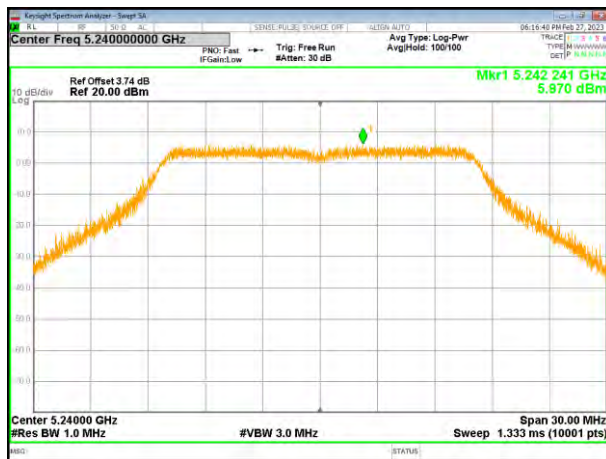
(802.11a) PSD plot on channel 40



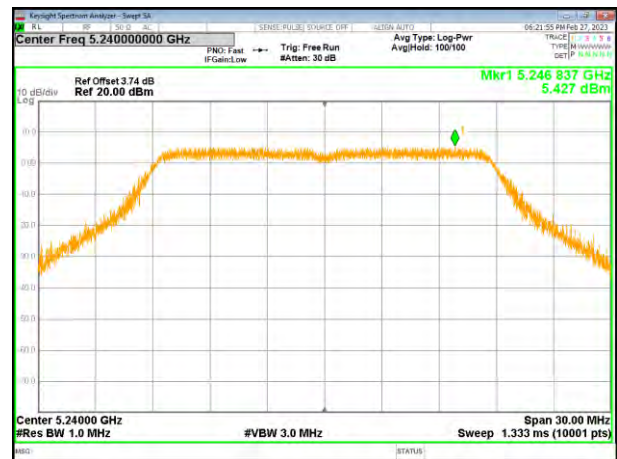
(802.11n20) PSD plot on channel 40



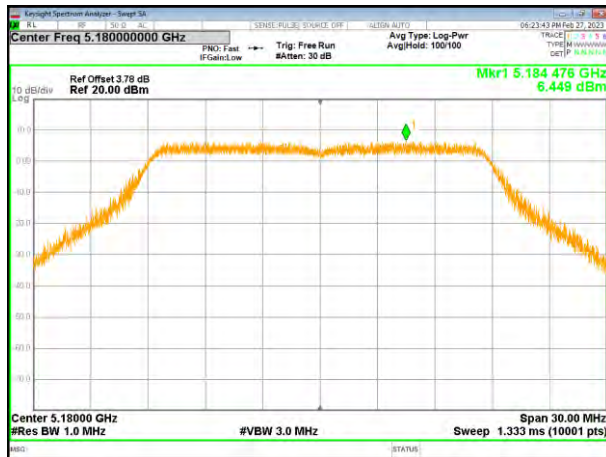
(802.11a) PSD plot on channel 48



(802.11n20) PSD plot on channel 48



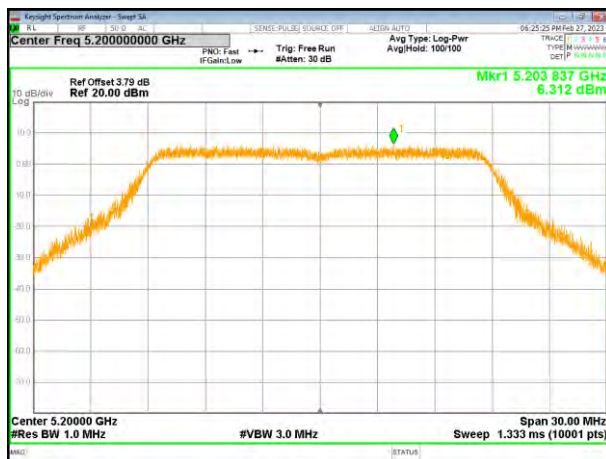
(802.11ac20) PSD plot on channel 36



(802.11n40) PSD plot on channel 38



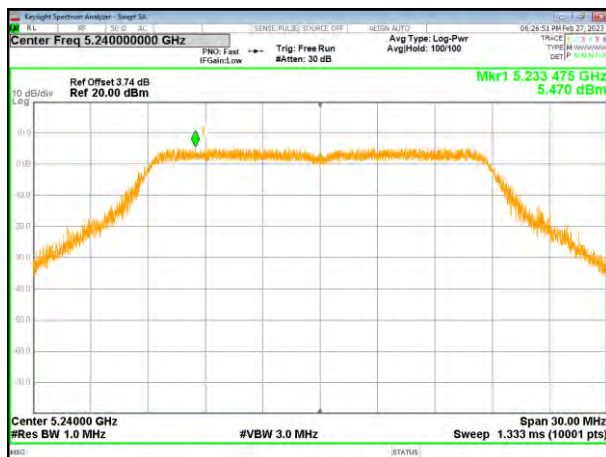
(802.11ac20) PSD plot on channel 40



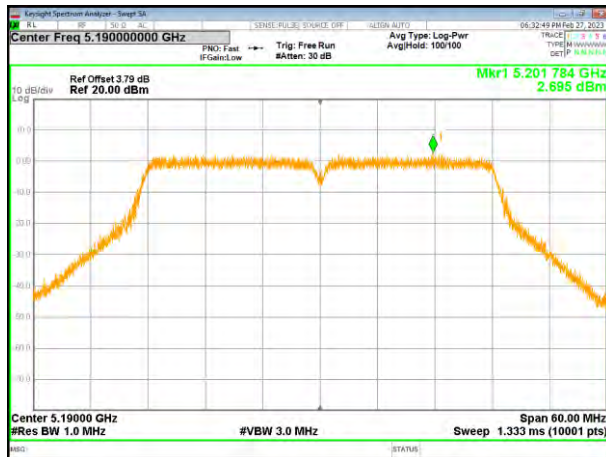
(802.11n40) PSD plot on channel 46



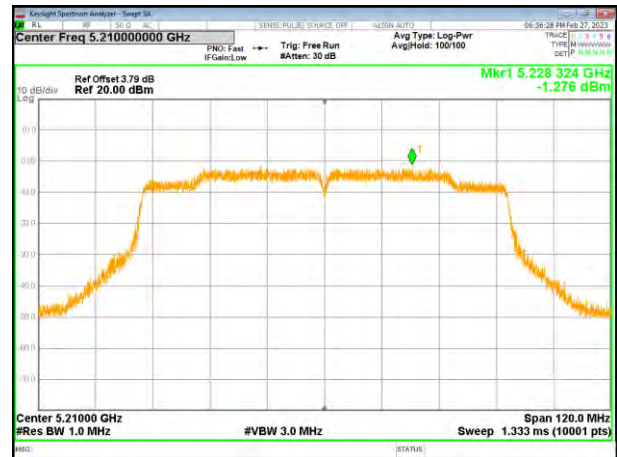
(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



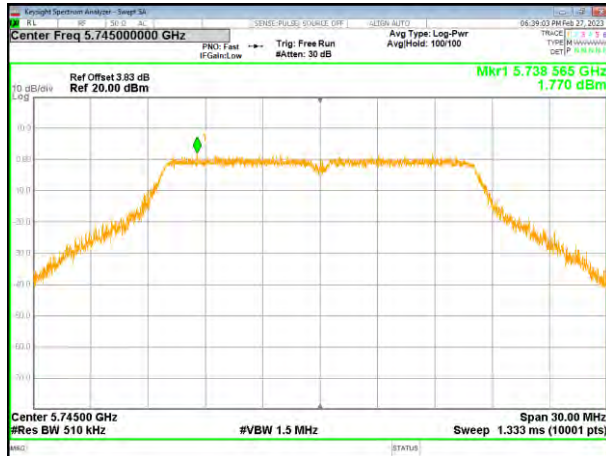
(802.11ac40) PSD plot on channel 46



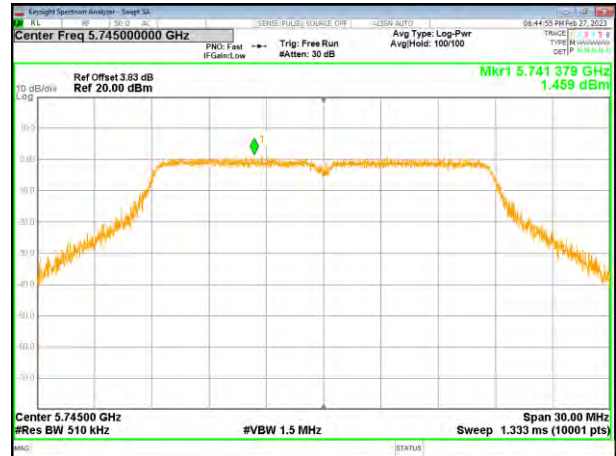
Mode	Frequency	Measured Power Density (dBm/510KHz)	Measured Power Density (dBm/500KHz)	Limit (dBm/MHz)
802.11 a	5745 MHz	1.77	1.684	30
	5785 MHz	2.045	1.959	30
	5825 MHz	2.219	2.133	30
802.11 n20	5745 MHz	1.459	1.373	30
	5785 MHz	1.444	1.358	30
	5825 MHz	2.207	2.121	30
802.11 ac20	5745 MHz	-2.164	-2.25	30
	5785 MHz	-2.424	-2.51	30
	5825 MHz	1.018	0.932	30
802.11 n40	5755 MHz	1.806	1.72	30
	5795 MHz	1.897	1.811	30
802.11 ac40	5755 MHz	-2.507	-2.593	30
	5795 MHz	-2.228	-2.314	30
802.11 AC80	5775 MHz	-6.042	-6.128	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



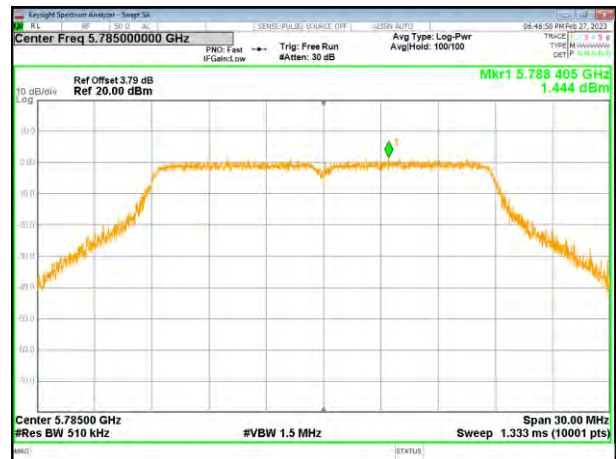
(802.11n20) PSD plot on channel 149



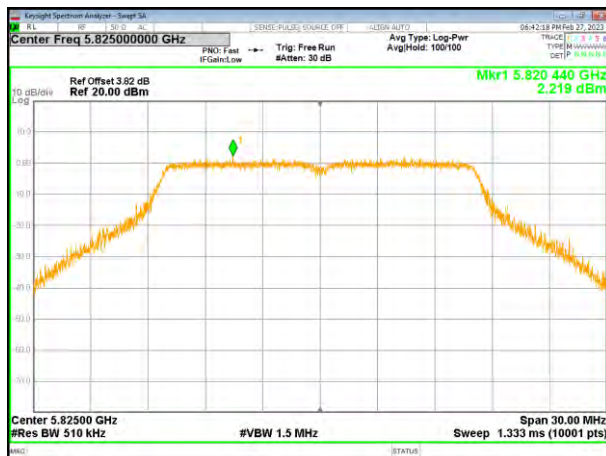
(802.11a) PSD plot on channel 157



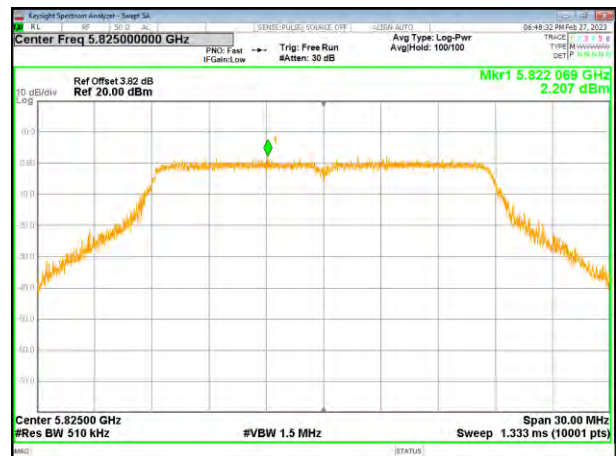
(802.11n20) PSD plot on channel 157



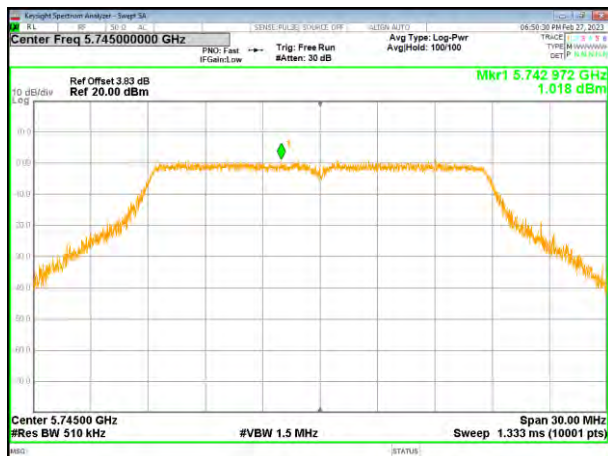
(802.11a) PSD plot on channel 165



(802.11n20) PSD plot on channel 165



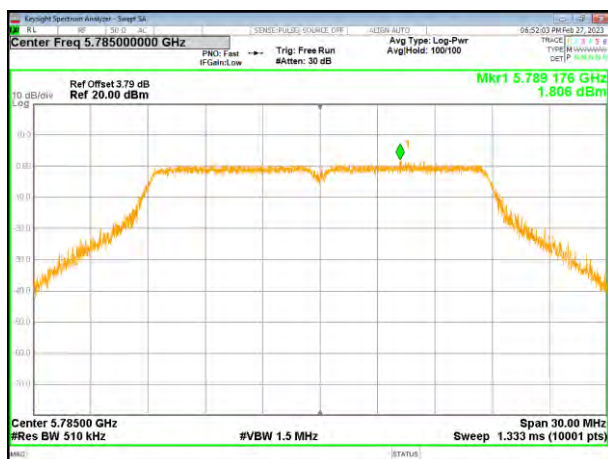
(802.11ac20) PSD plot on channel 149



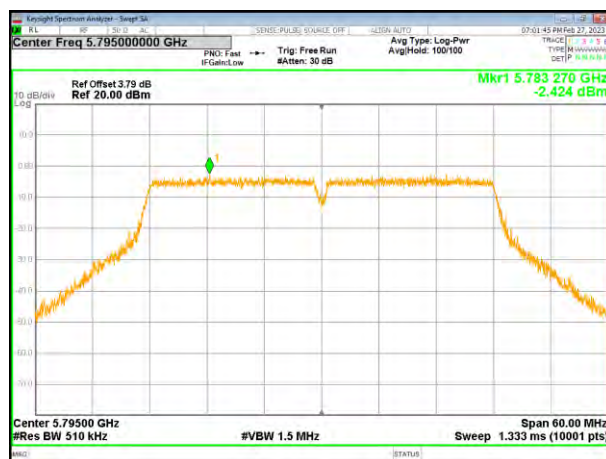
(802.11n40) PSD plot on channel 151



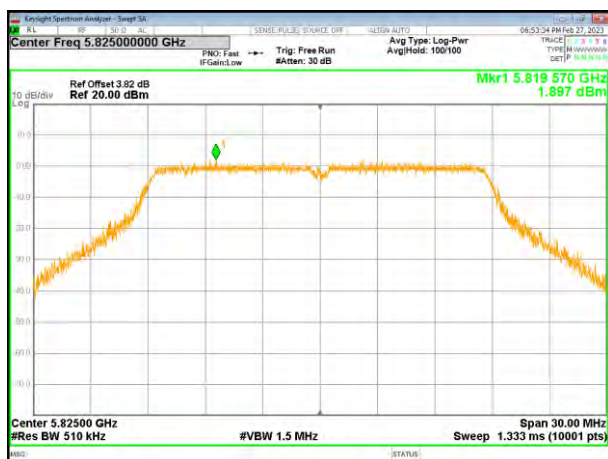
(802.11ac20) PSD plot on channel 157



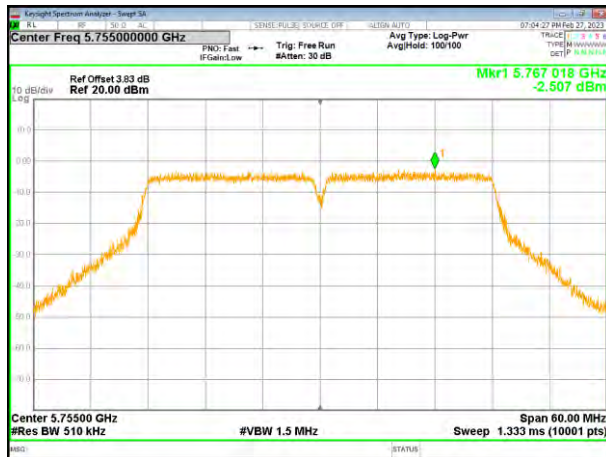
(802.11n40) PSD plot on channel 159



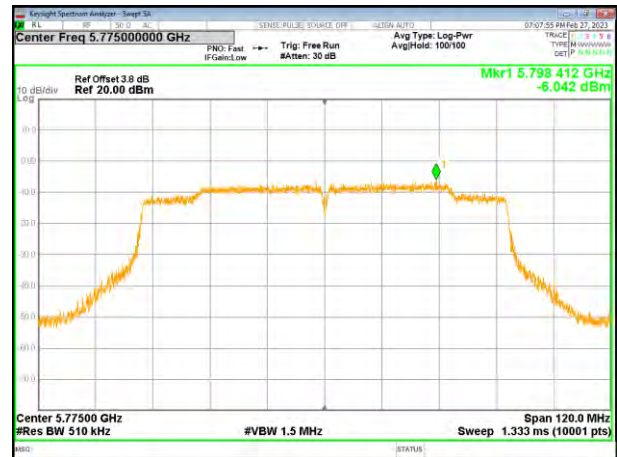
(802.11ac20) PSD plot on channel 165



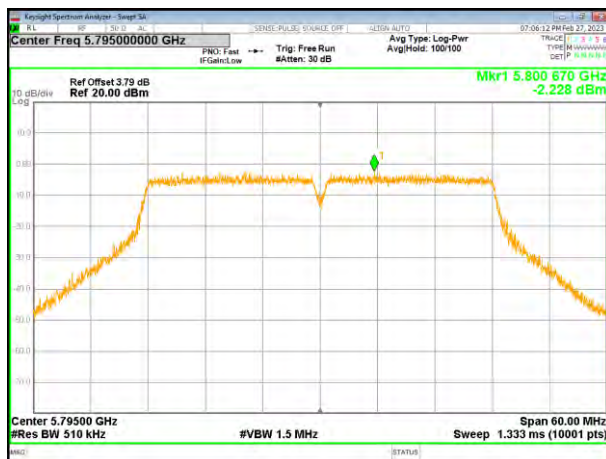
(802.11ac40) PSD plot on channel 151



(802.11ac80) PSD plot on channel 155

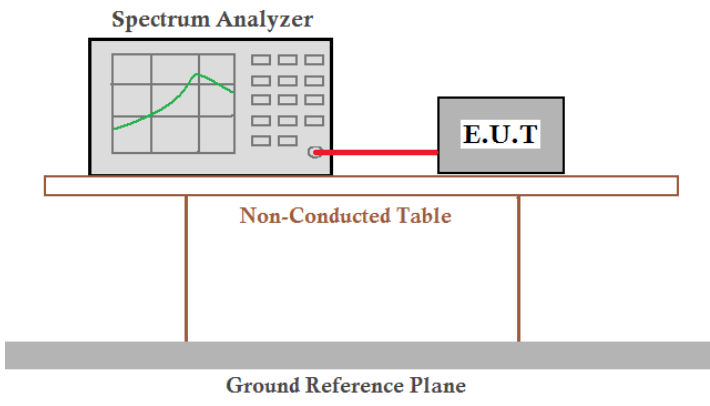


(802.11ac40) PSD plot on channel 159



4.6 Band edge

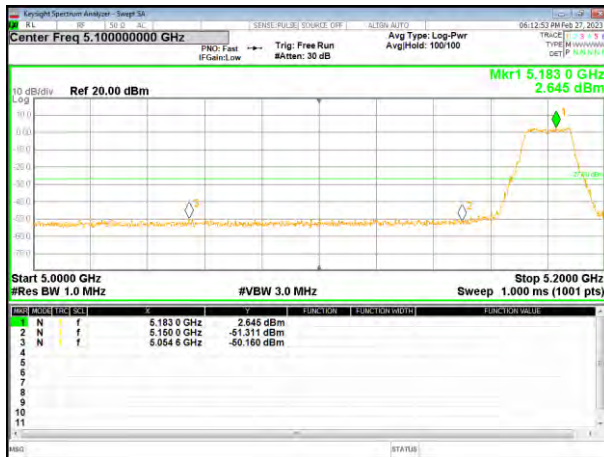
4.6.1 Conducted test Method

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 are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.
Test Procedure:	1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. 2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range. 3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span. 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. 5. Repeat above procedures until all measured frequencies were complete..
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

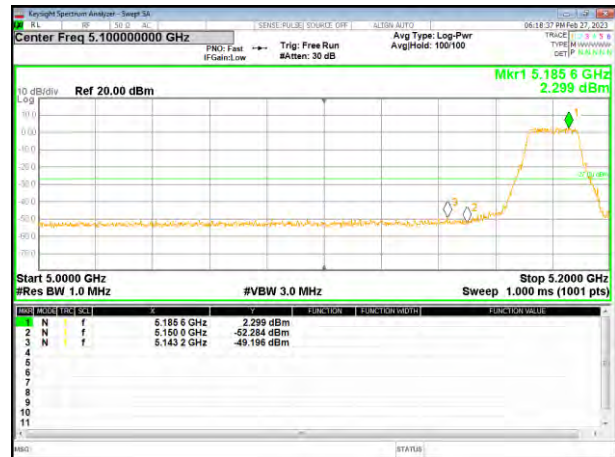
Remarks:/

5.180~5.240 GHz

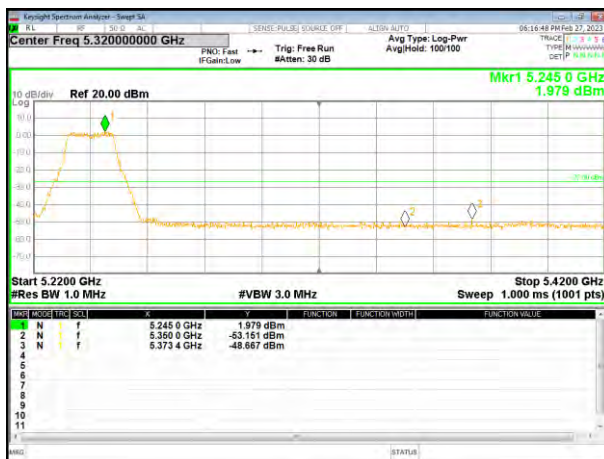
(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

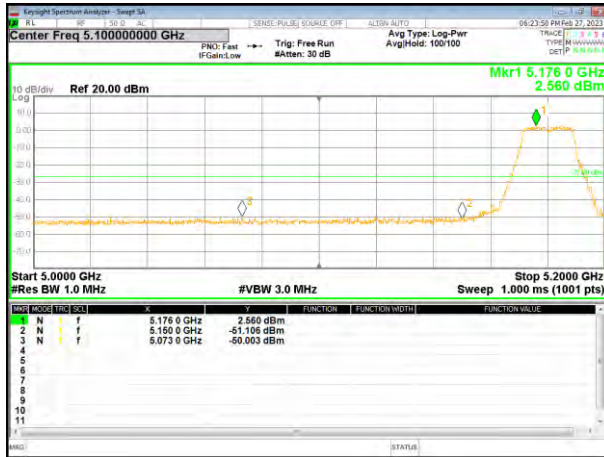


(802.11n20) Band Edge, Right Side

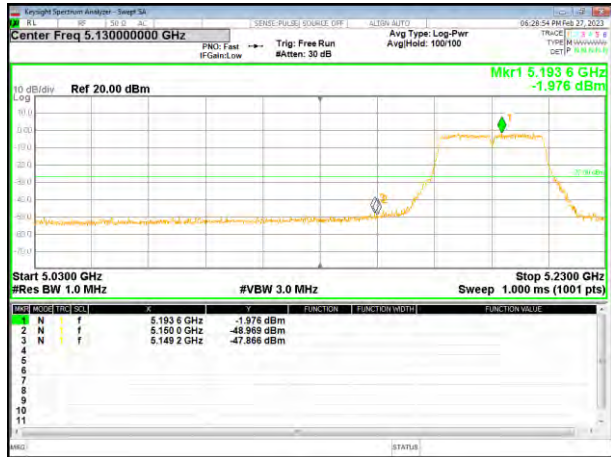


5.180~5.240 GHz

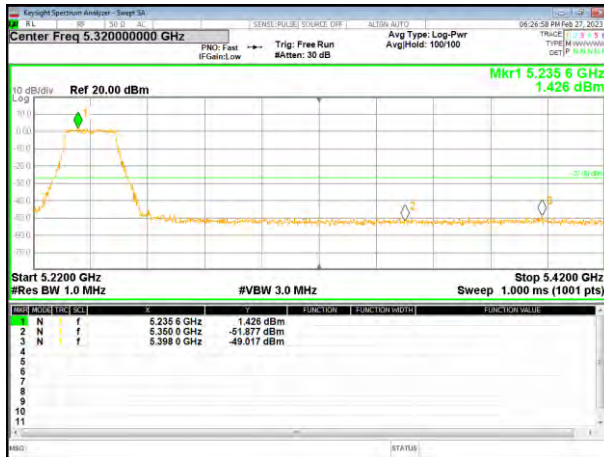
(802.11ac20) Band Edge, Left Side



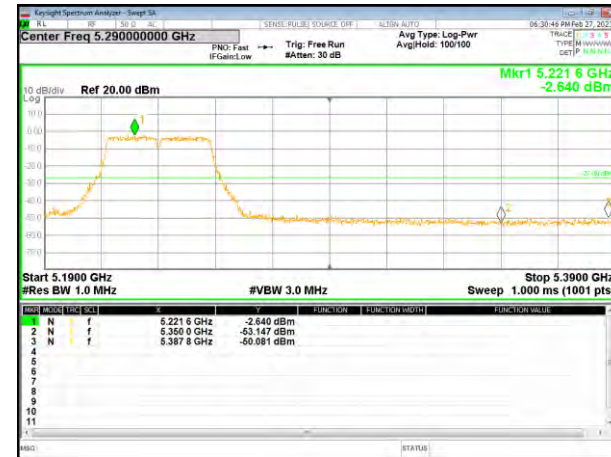
(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side



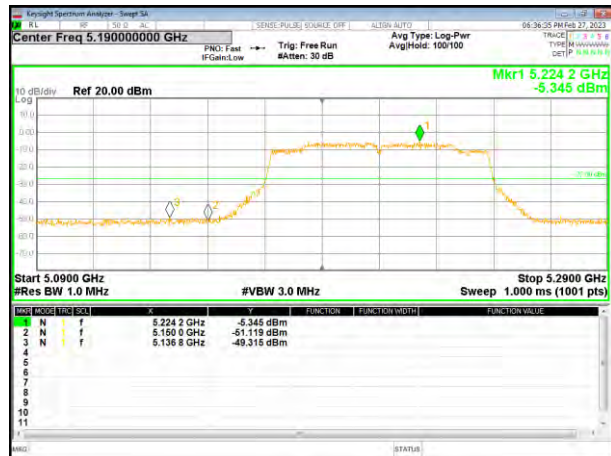
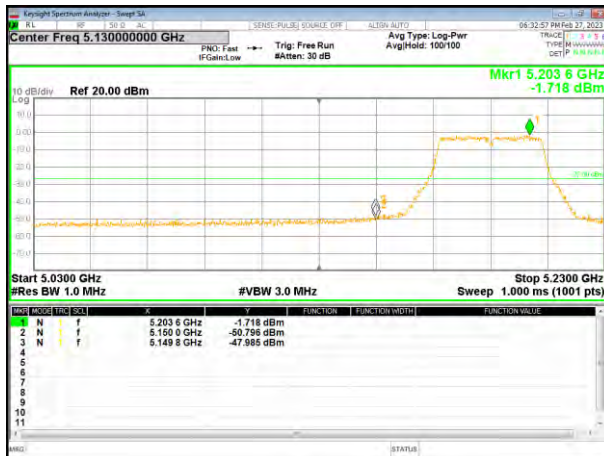
(802.11n40) Band Edge, Right Side



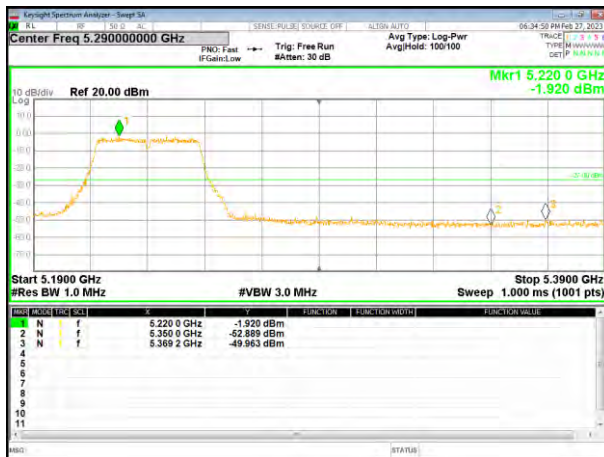
5.180~5.240 GHz

(802.11ac40) Band Edge, Left Side

(802.11ac80) Band Edge



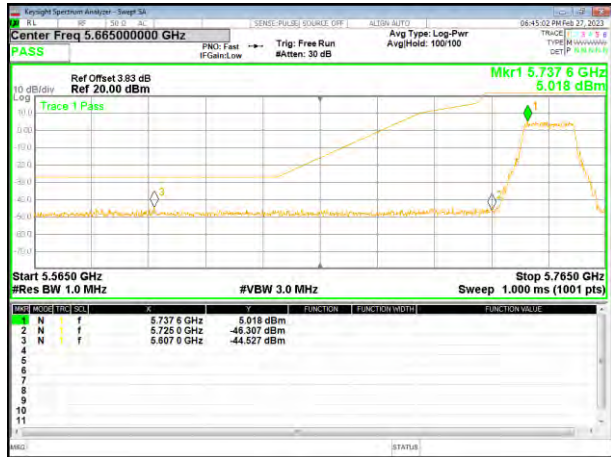
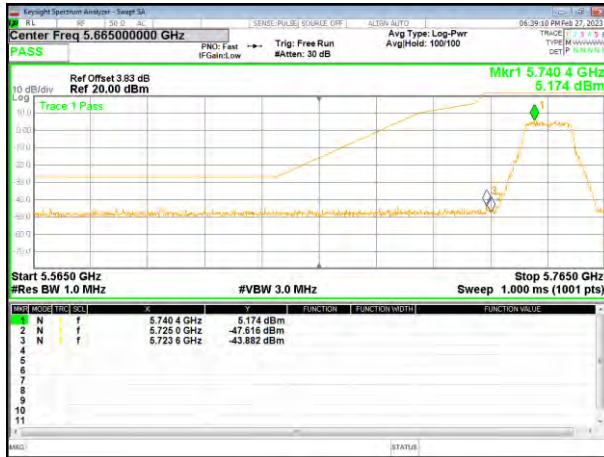
(802.11ac40) Band Edge, Right Side



5.745~5.825 GHz

(802.11a) Band Edge, Left Side

(802.11n20) Band Edge, Left Side



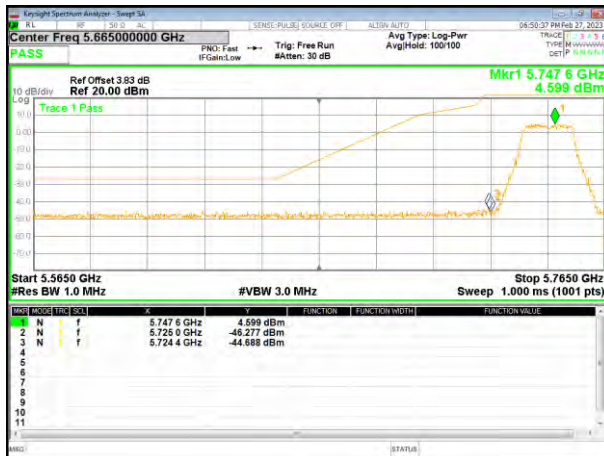
(802.11a) Band Edge, Right Side

(802.11n20) Band Edge, Right Side

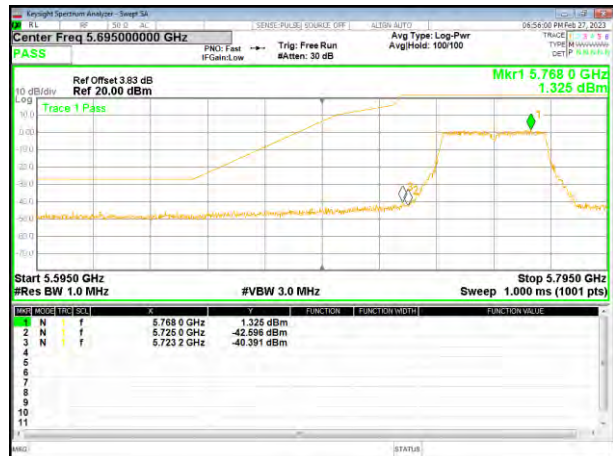


5.745~5.825 GHz

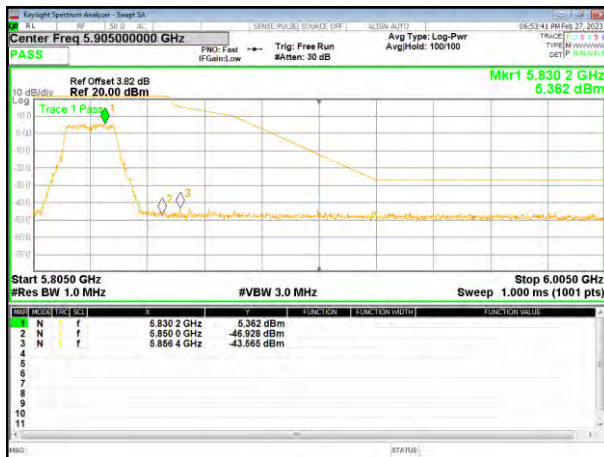
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side



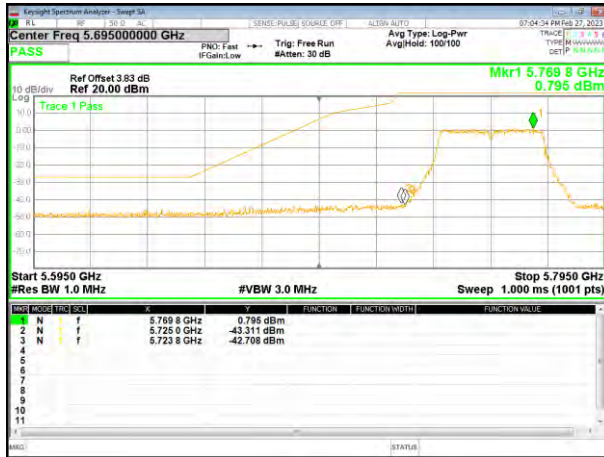
(802.11n40) Band Edge, Right Side



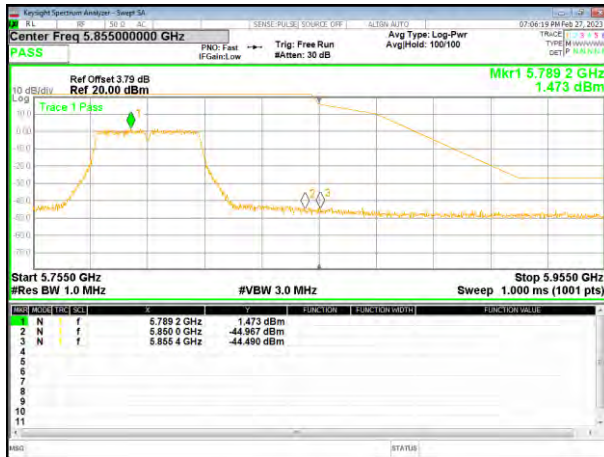
5.745~5.825 GHz

(802.11ac40) Band Edge, Left Side

(802.11ac80) Band Edge

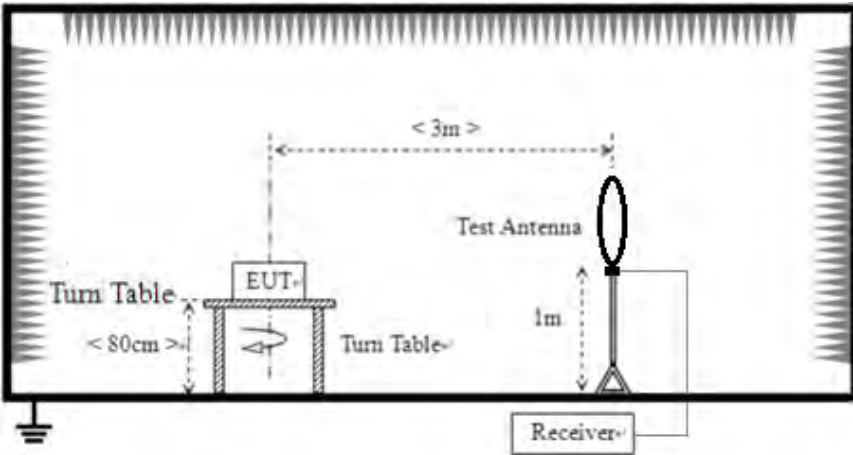


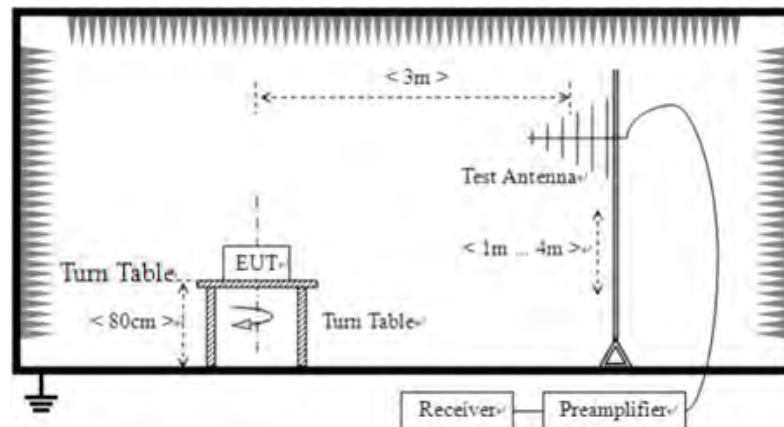
(802.11ac40) Band Edge, Right Side



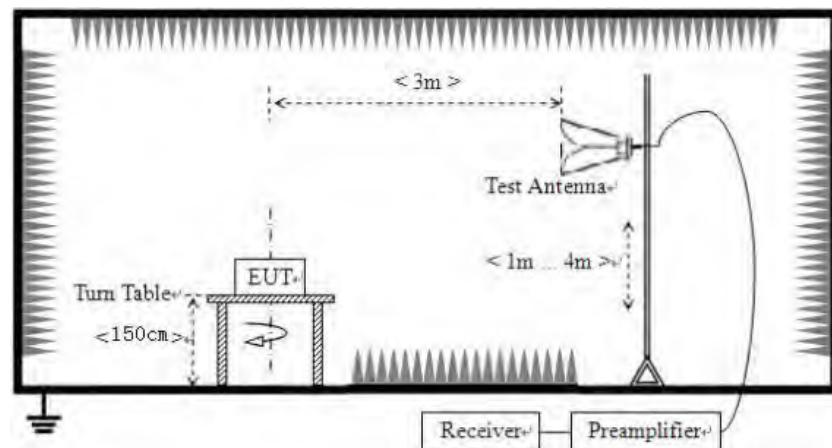
4.7 Spurious Emission

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.					
	7. 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 environment:	Temp.:	23.7°C	Humid.:	46%	Press.:	1012mbar
Test voltage:	AC 120V					
Test results:	Pass					

Remarks:

- 1. All antennas was tested, only show the worst case 802.11n20 mode test data.*
- 2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.*

Measurement Data:

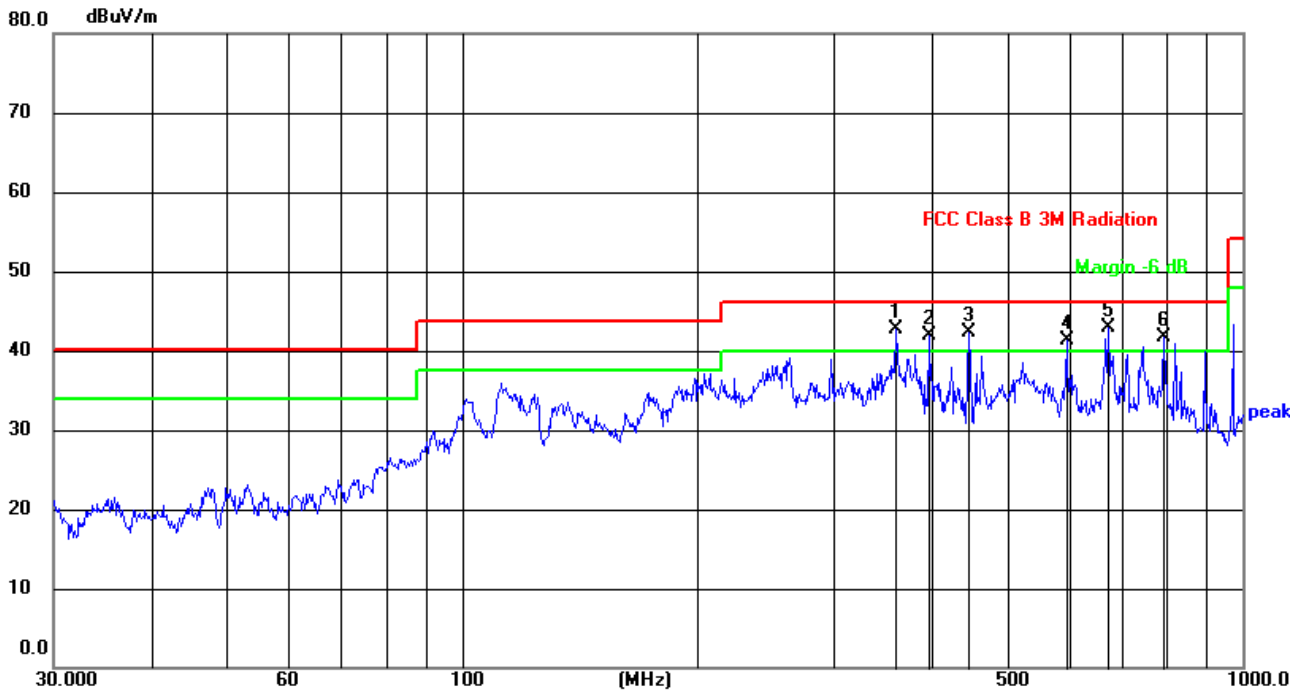
9 kHz ~ 30 MHz

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

Below 1GHz

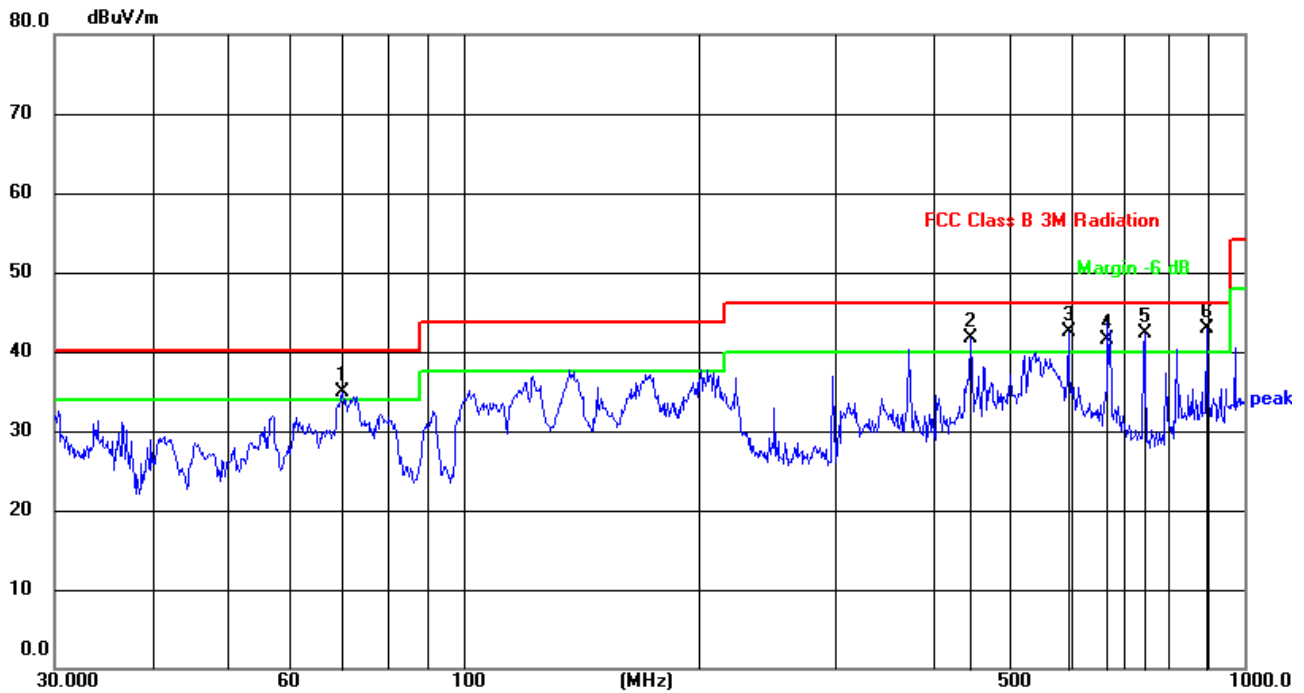
Temperature:	23.7℃	Relative Humidity:	46%
Pressure:	1010 hPa	Test Voltage :	AC120V
Test Mode :	5.2G TX- 802.11n20		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	360.4476	59.53	-16.80	42.73	46.00	-3.27	QP
2	396.2412	58.49	-16.51	41.98	46.00	-4.02	QP
3	446.4139	57.11	-14.87	42.24	46.00	-3.76	QP
4	595.1326	51.81	-10.41	41.40	46.00	-4.60	QP
5	672.8442	52.44	-9.54	42.90	46.00	-3.10	QP
6	793.3958	49.22	-7.53	41.69	46.00	-4.31	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	70.0901	55.40	-20.55	34.85	40.00	-5.15	QP
2	446.4139	56.62	-14.88	41.74	46.00	-4.26	QP
3	595.1326	53.72	-11.31	42.41	46.00	-3.59	QP
4	668.1422	51.03	-9.53	41.50	46.00	-4.50	QP
5	744.8659	50.58	-8.25	42.33	46.00	-3.67	QP
6	893.8564	48.88	-5.99	42.89	46.00	-3.11	QP

Remarks:

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

**Above 1GHz:**

Temperature:	23.7°C	Relative Humidity:	46%
Pressure:	1010 hPa	Test Voltage :	AC120V
Test Mode :	5.2G TX- 802.11n20		

802.11n20

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	52.65	46.20	8.27	38.50	53.22	68.20	-14.98	PK
V	10360.00	42.28	46.20	8.27	38.50	42.85	54.00	-11.15	AV
V	15540.00	49.65	46.30	10.35	38.70	52.40	74.00	-21.60	PK
V	15540.00	39.22	46.30	10.35	38.70	41.97	54.00	-12.03	AV
V	20720.00	59.11	57.40	11.93	37.80	51.44	68.20	-16.76	PK
V	20720.00	48.68	57.40	11.93	37.80	41.01	54.00	-12.99	AV
V	25900.00	56.66	56.50	13.45	39.70	53.31	68.20	-14.89	PK
V	25900.00	45.81	56.50	13.45	39.70	42.46	54.00	-11.54	AV
H	10360.00	52.57	46.20	8.27	38.50	53.14	68.20	-15.06	PK
H	10360.00	40.86	46.20	8.27	38.50	41.43	54.00	-12.57	AV
H	15540.00	48.63	46.30	10.35	38.70	51.38	74.00	-22.62	PK
H	15540.00	36.69	46.30	10.35	38.70	39.44	54.00	-14.56	AV
H	20720.00	61.42	57.40	11.93	37.80	53.75	68.20	-14.45	PK
H	20720.00	49.62	57.40	11.93	37.80	41.95	54.00	-12.05	AV
H	25900.00	57.72	56.50	13.45	39.70	54.37	68.20	-13.84	PK
H	25900.00	45.85	56.50	13.45	39.70	42.50	54.00	-11.50	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	51.66	46.20	8.27	38.50	52.23	68.20	-15.97	PK
V	10400.00	42.03	46.20	8.27	38.50	42.60	54.00	-11.40	AV
V	15600.00	49.98	46.30	10.35	38.40	52.43	74.00	-21.57	PK
V	15600.00	40.80	46.30	10.35	38.40	43.25	54.00	-10.75	AV
V	20800.00	60.36	57.40	11.93	37.80	52.69	68.20	-15.51	PK
V	20800.00	50.27	57.40	11.93	37.80	42.60	54.00	-11.40	AV
V	26000.00	55.30	56.50	13.45	39.80	52.05	68.20	-16.15	PK
V	26000.00	47.11	56.50	13.45	39.80	43.86	54.00	-10.14	AV
H	10400.00	52.30	46.20	8.27	38.50	52.87	68.20	-15.33	PK
H	10400.00	42.30	46.20	8.27	38.50	42.87	54.00	-11.13	AV
H	15600.00	49.96	46.30	10.35	38.40	52.41	74.00	-21.59	PK
H	15600.00	40.80	46.30	10.35	38.40	43.25	54.00	-10.75	AV
H	20800.00	59.27	57.40	11.93	37.80	51.60	68.20	-16.60	PK
H	20800.00	48.08	57.40	11.93	37.80	40.41	54.00	-13.59	AV
H	26000.00	55.00	56.50	13.45	39.80	51.75	68.20	-16.45	PK
H	26000.00	46.28	56.50	13.45	39.80	43.03	54.00	-10.97	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	48.34	46.20	8.27	38.60	49.01	68.20	-19.19	PK
V	10480.00	37.94	46.20	8.27	38.60	38.61	54.00	-15.39	AV
V	15720.00	45.81	46.30	10.35	38.40	48.26	74.00	-25.74	PK
V	15720.00	35.57	46.30	10.35	38.40	38.02	54.00	-15.98	AV
V	20960.00	56.34	57.40	11.93	37.50	48.37	68.20	-19.83	PK
V	20960.00	47.41	57.40	11.93	37.50	39.44	54.00	-14.56	AV
V	26200.00	52.16	56.50	13.45	40.10	49.21	68.20	-18.99	PK
V	26200.00	42.35	56.50	13.45	40.10	39.40	54.00	-14.60	AV
H	10480.00	48.60	46.20	8.27	38.60	49.27	68.20	-18.93	PK
H	10480.00	37.94	46.20	8.27	38.60	38.61	54.00	-15.39	AV
H	15720.00	46.16	46.30	10.35	38.40	48.61	74.00	-25.39	PK
H	15720.00	35.68	46.30	10.35	38.40	38.13	54.00	-15.87	AV
H	20960.00	56.53	57.40	11.93	37.50	48.56	68.20	-19.64	PK
H	20960.00	47.31	57.40	11.93	37.50	39.34	54.00	-14.66	AV
H	26200.00	51.85	56.50	13.45	40.10	48.90	68.20	-19.30	PK
H	26200.00	41.70	56.50	13.45	40.10	38.75	54.00	-15.25	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. The worst mode is 802.11n20, only the worst data is recorded.



Temperature:	23.7℃	Relative Humidity:	46%
Pressure:	1010 hPa	Test Voltage :	AC120V
Test Mode :	5.8G TX- 802.11n20		

802.11n20

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	47.66	46.10	8.77	39.10	49.43	74.00	-24.57	PK
V	11490.00	39.44	46.10	8.77	39.10	41.21	54.00	-12.79	AV
V	17235.00	45.22	47.60	11.10	38.70	47.42	68.20	-20.78	PK
V	17235.00	37.87	47.60	11.10	38.70	40.07	54.00	-13.93	AV
V	22980.00	54.01	56.90	12.73	37.70	47.54	74.00	-26.46	PK
V	22980.00	45.95	56.90	12.73	37.70	39.48	54.00	-14.52	AV
V	28725.00	50.80	55.60	14.25	40.30	49.75	68.20	-18.45	PK
V	28725.00	42.23	55.60	14.25	40.30	41.18	54.00	-12.82	AV
H	11490.00	48.14	46.10	8.77	39.10	49.91	74.00	-24.09	PK
H	11490.00	39.27	46.10	8.77	39.10	41.04	54.00	-12.96	AV
H	17235.00	46.25	47.60	11.10	38.70	48.45	68.20	-19.75	PK
H	17235.00	38.29	47.60	11.10	38.70	40.49	54.00	-13.51	AV
H	22980.00	56.24	56.90	12.73	37.70	49.77	74.00	-24.23	PK
H	22980.00	45.72	56.90	12.73	37.70	39.25	54.00	-14.75	AV
H	28725.00	52.78	55.60	14.25	40.30	51.73	68.20	-16.47	PK
H	28725.00	42.86	55.60	14.25	40.30	41.81	54.00	-12.19	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	47.47	46.10	8.77	39.10	49.24	74.00	-24.76	PK
V	11570.00	39.26	46.10	8.77	39.10	41.03	54.00	-12.97	AV
V	17355.00	45.03	47.60	11.10	38.70	47.23	68.20	-20.97	PK
V	17355.00	37.67	47.60	11.10	38.70	39.87	54.00	-14.13	AV
V	23140.00	53.83	56.90	12.73	37.70	47.36	74.00	-26.64	PK
V	23140.00	45.75	56.90	12.73	37.70	39.28	54.00	-14.72	AV
V	28925.00	50.60	55.60	14.25	40.30	49.55	68.20	-18.65	PK
V	28925.00	42.04	55.60	14.25	40.30	40.99	54.00	-13.01	AV
H	11570.00	47.95	46.10	8.77	39.10	49.72	74.00	-24.28	PK
H	11570.00	39.06	46.10	8.77	39.10	40.83	54.00	-13.17	AV
H	17355.00	46.06	47.60	11.10	38.70	48.26	68.20	-19.94	PK
H	17355.00	38.09	47.60	11.10	38.70	40.29	54.00	-13.71	AV
H	23140.00	56.05	56.90	12.73	37.70	49.58	74.00	-24.42	PK
H	23140.00	45.53	56.90	12.73	37.70	39.06	54.00	-14.94	AV
H	28925.00	52.59	55.60	14.25	40.30	51.54	68.20	-16.66	PK
H	28925.00	42.67	55.60	14.25	40.30	41.62	54.00	-12.38	AV

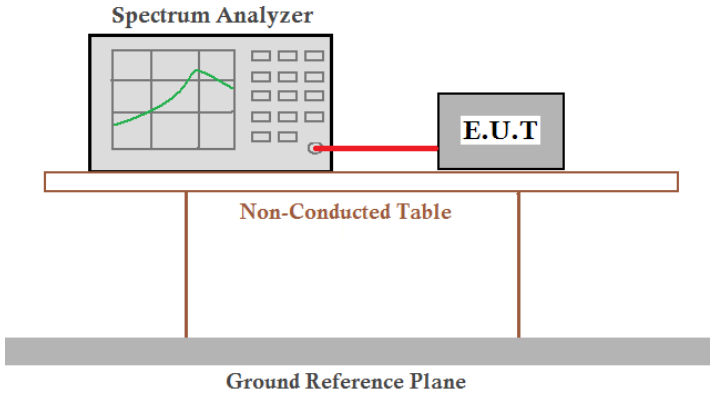


Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
High Channel:5825MHz									
V	11650.00	48.57	46.10	8.77	39.10	50.34	74.00	-23.66	PK
V	11650.00	39.43	46.10	8.77	39.10	41.20	54.00	-12.80	AV
V	17475.00	46.42	47.90	11.23	38.90	48.65	68.20	-19.55	PK
V	17475.00	38.70	47.90	11.23	38.90	40.93	54.00	-13.07	AV
V	23300.00	56.16	57.10	12.73	37.80	49.59	68.20	-18.61	PK
V	23300.00	46.70	57.10	12.73	37.80	40.13	54.00	-13.87	AV
V	29125.00	52.87	55.80	14.25	40.50	51.82	68.20	-16.39	PK
V	29125.00	43.93	55.80	14.25	40.50	42.88	54.00	-11.12	AV
H	11650.00	50.59	46.10	8.77	39.10	52.36	74.00	-21.64	PK
H	11650.00	41.85	46.10	8.77	39.10	43.62	54.00	-10.38	AV
H	17475.00	47.65	47.90	11.23	38.90	49.88	68.20	-18.32	PK
H	17475.00	39.99	47.90	11.23	38.90	42.22	54.00	-11.78	AV
H	23300.00	57.58	57.10	12.73	37.80	51.01	68.20	-17.19	PK
H	23300.00	48.16	57.10	12.73	37.80	41.59	54.00	-12.41	AV
H	29125.00	53.93	55.80	14.25	40.50	52.88	68.20	-15.32	PK
H	29125.00	44.67	55.80	14.25	40.50	43.62	54.00	-10.38	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. The worst mode is 802.11n20, only the worst data is recorded.

4.7.2 Conducted Emission Method

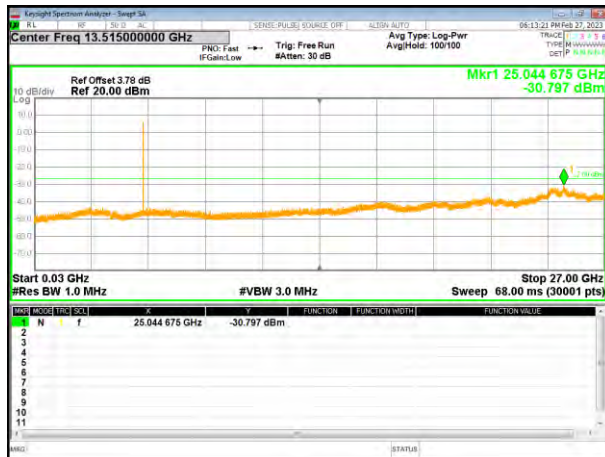
Test Requirement:	FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)
Test Method:	ANSI C63.10:2013
Limit:	-27dBm/MHz
Test setup:	 The diagram illustrates the test setup for conducted emissions. A Spectrum Analyzer is connected to an Equipment Under Test (E.U.T.) via a red cable. Both the Spectrum 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 results:	Pass



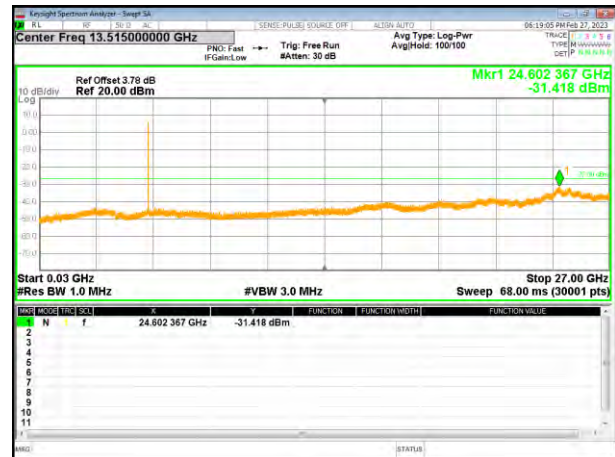
5180-5240MHz

Test Plot

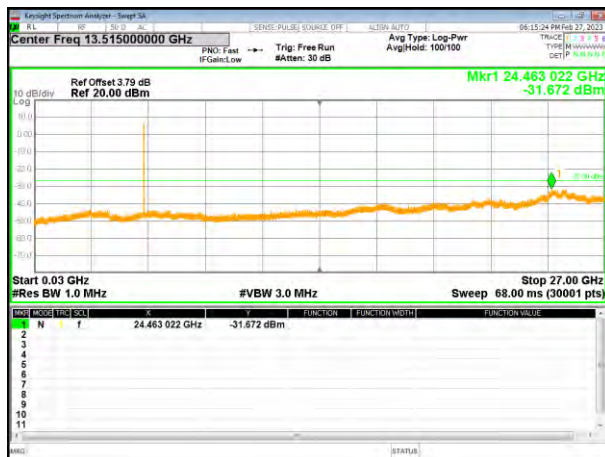
802.11a on channel 36



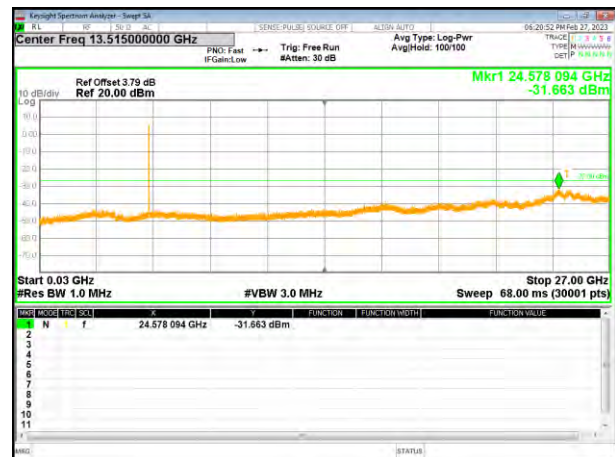
802.11a on channel 40



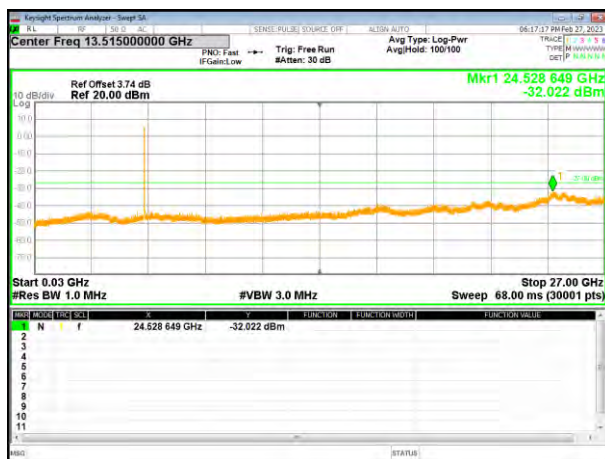
802.11a on channel 48



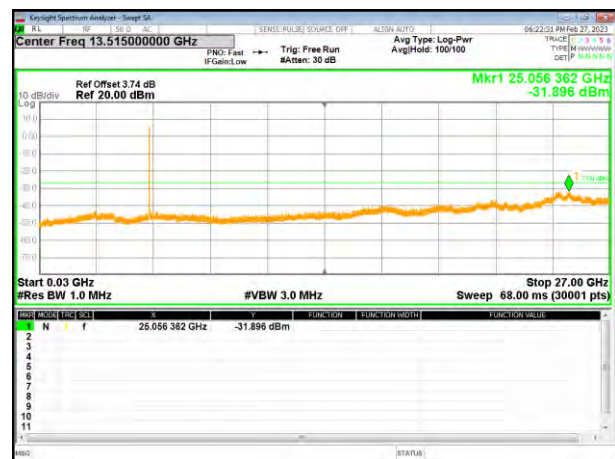
802.11n20 on channel 36



802.11n20 on channel 40

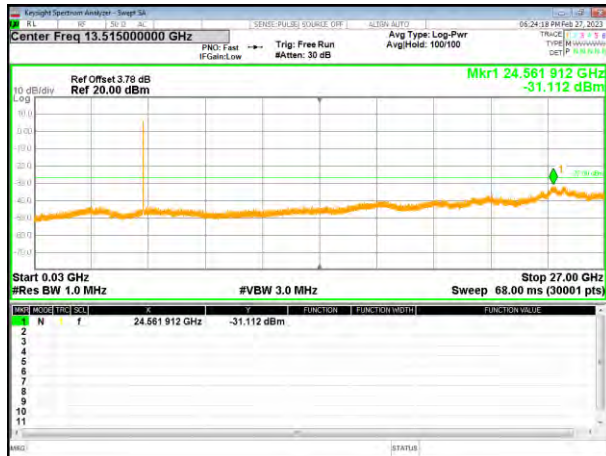


802.11n20 on channel 48

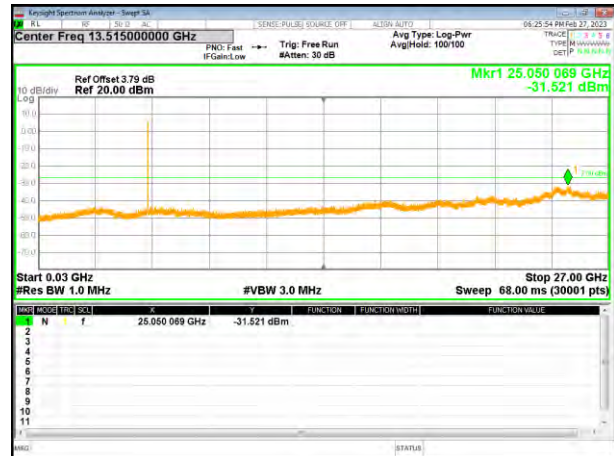


Test Plot

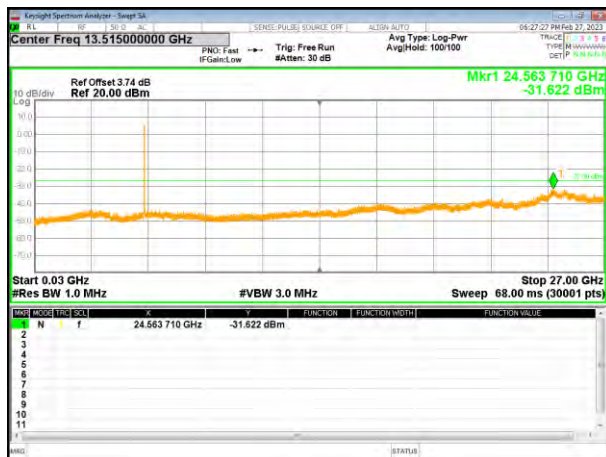
802.11ac20 on channel 36



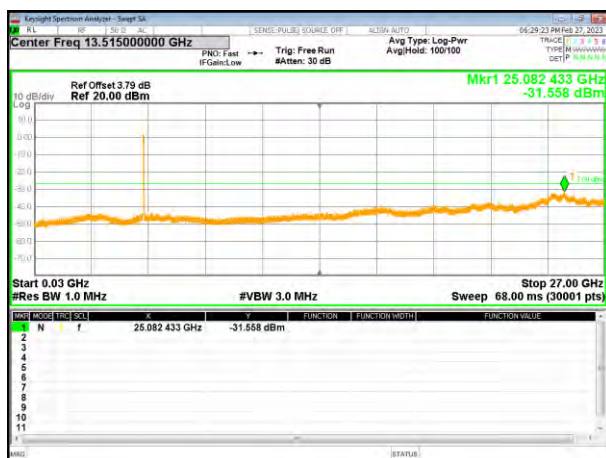
802.11ac20 on channel 40



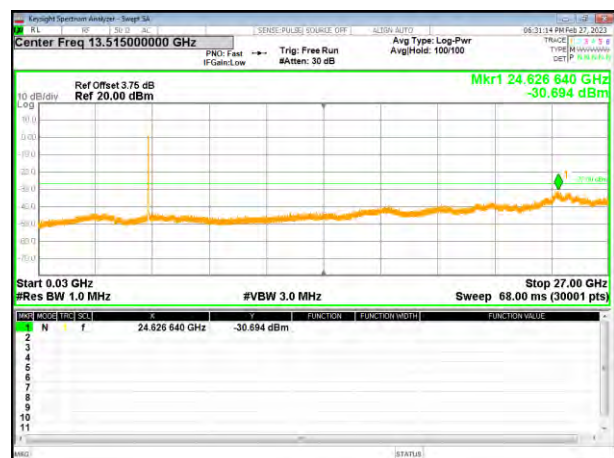
802.11ac20 on channel 48



802.11n40 on channel 38



802.11n40 on channel 46

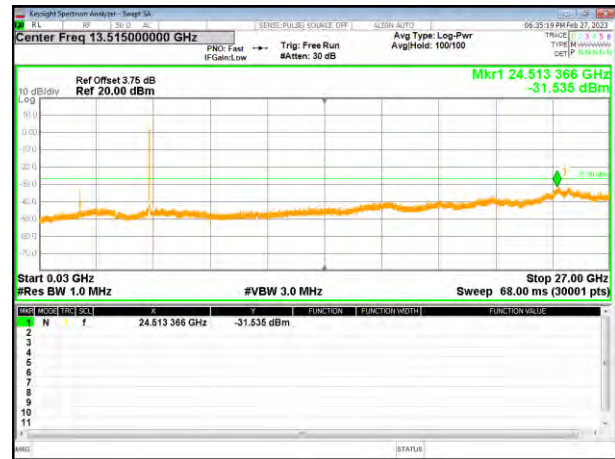


Test Plot

802.11ac40 on channel 38



802.11ac40 on channel 46



802.11ac80 on channel 42

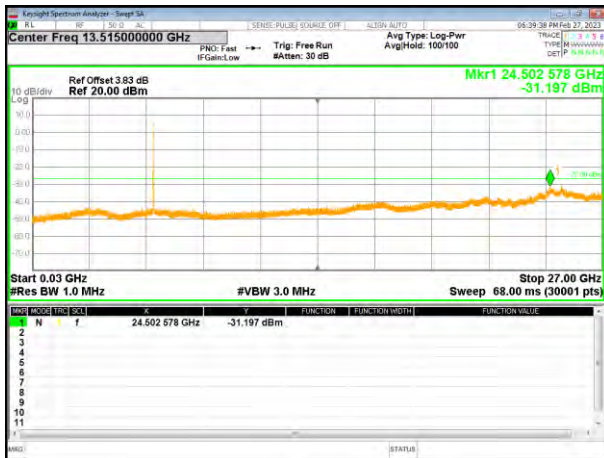




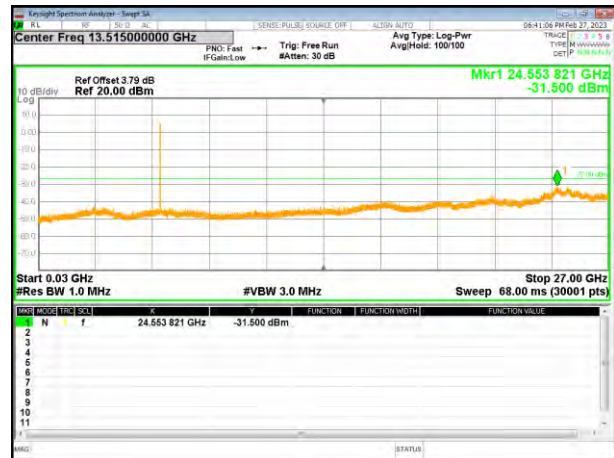
5745-5825MHz

Test Plot

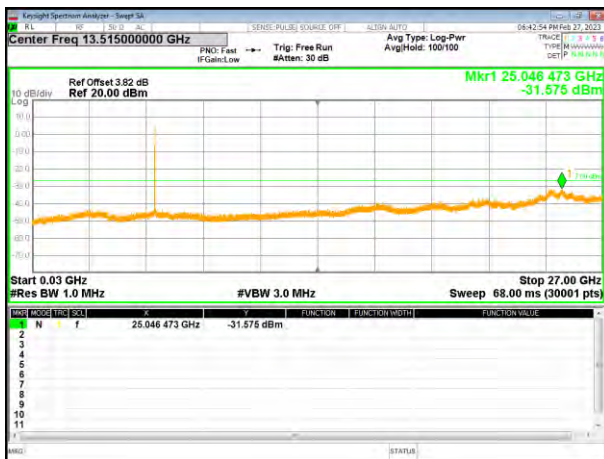
802.11a on channel 149



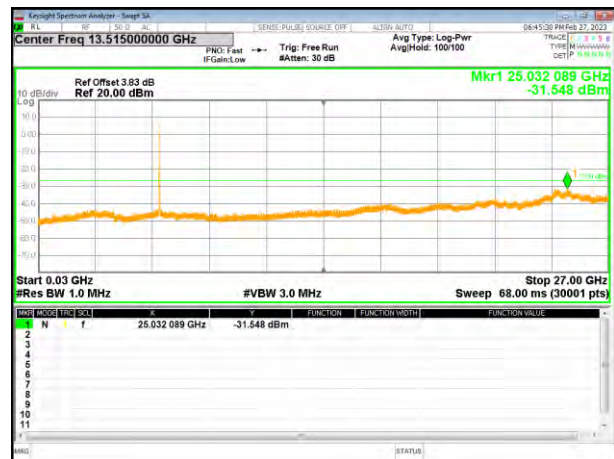
802.11a on channel 157



802.11a on channel 165



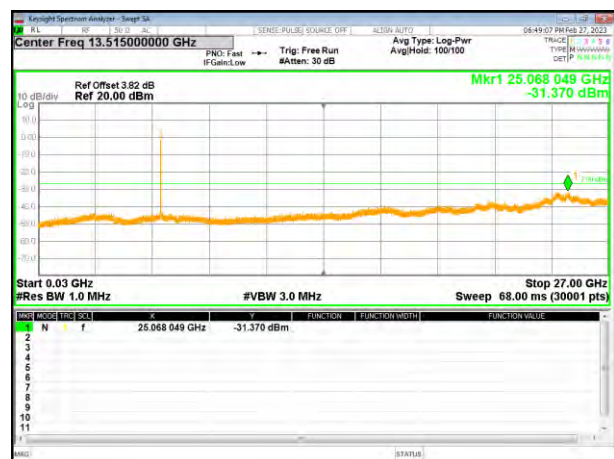
802.11n20 on channel 149



802.11n20 on channel 157

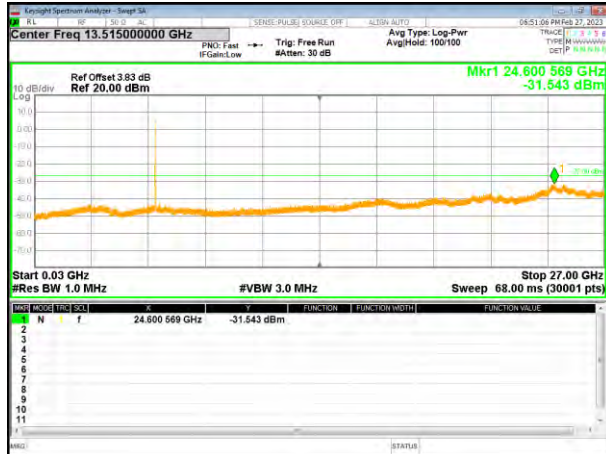


802.11n20 on channel 165

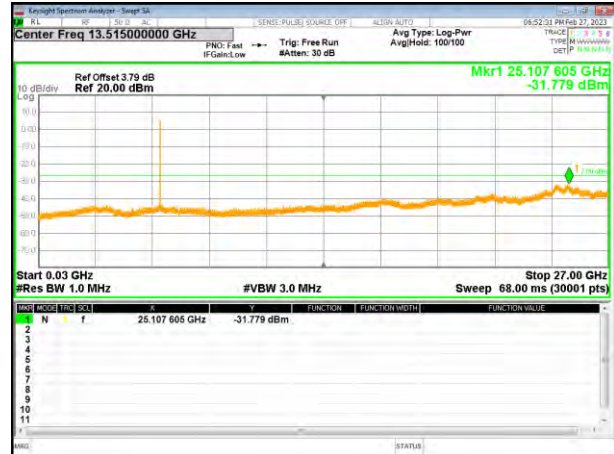


Test Plot

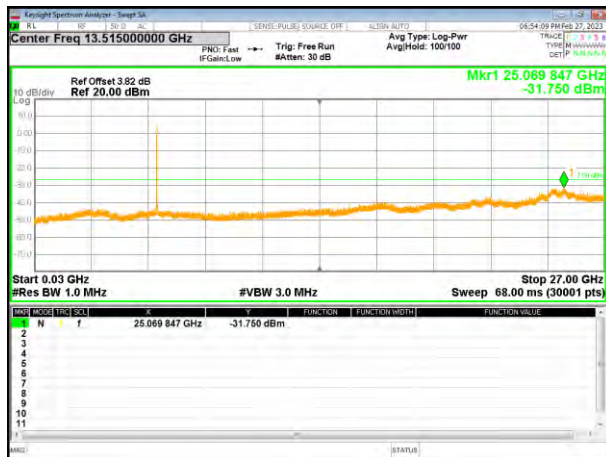
802.11ac20 on channel 149



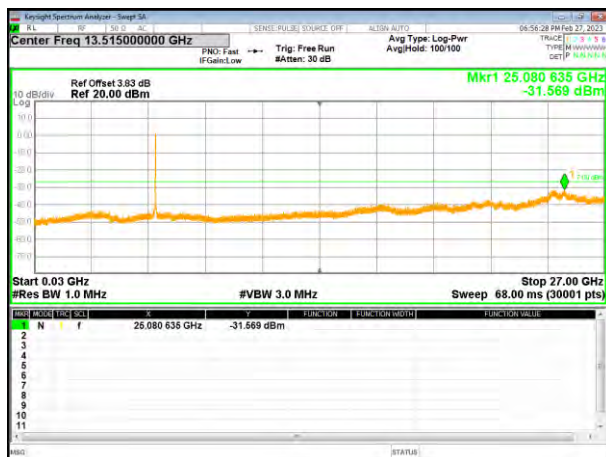
802.11ac20 on channel 157



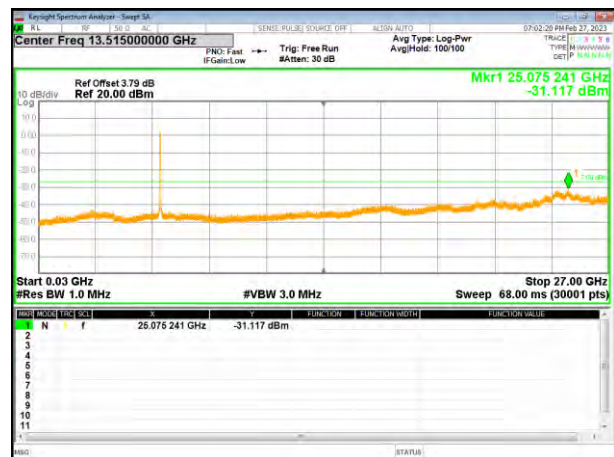
802.11ac20 on channel 165



802.11n40 on channel 151

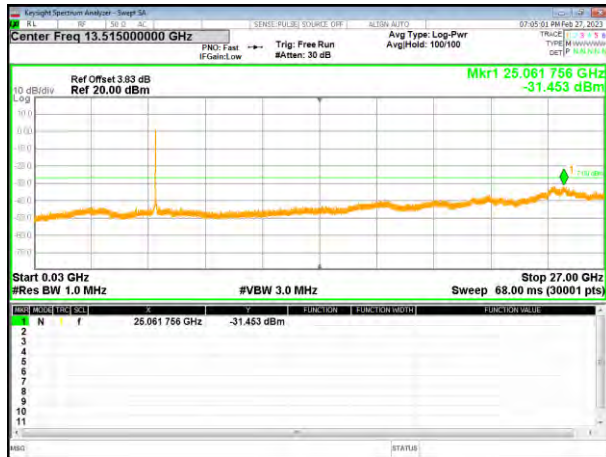


802.11n40 on channel 159

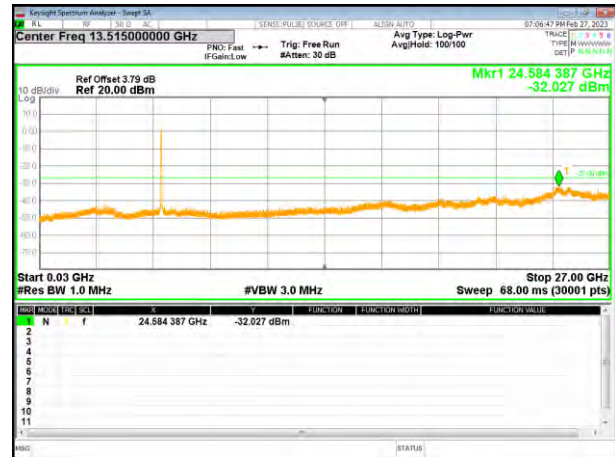


Test Plot

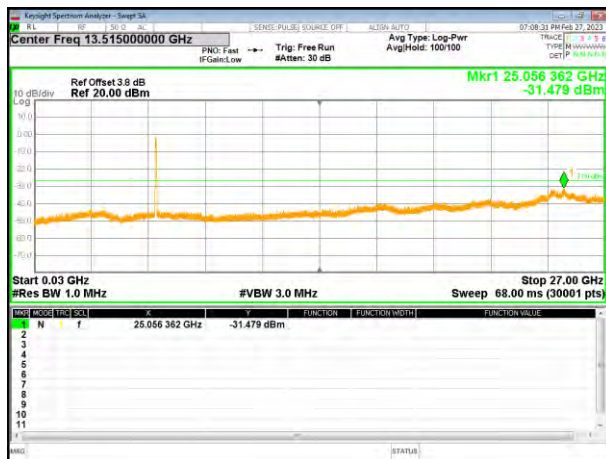
802.11ac40 on channel 151



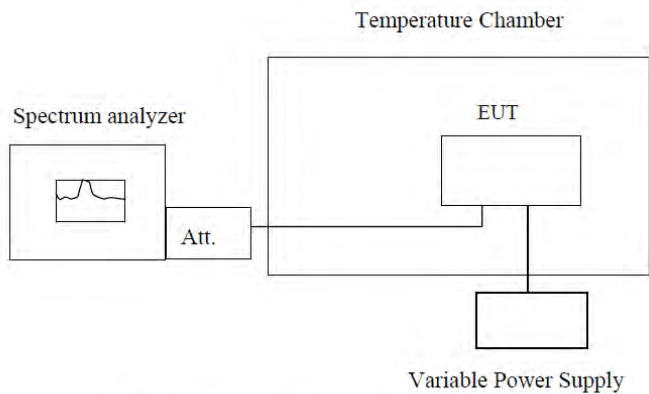
802.11ac40 on channel 159



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 12V					
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	5180.028	5179.516	5179.941	5179.593
	5190	5190.024	5199.389	5199.816	5189.604
	5200	5200.019	5199.414	5199.841	5199.594
	5210	5210.025	5209.391	5209.819	5209.595
	5220	5220.020	5219.406	5219.834	5219.602
	5230	5230.017	5229.398	5229.826	5229.619
	5240	5239.990	5239.405	5239.834	5239.604
-20	5180	5180.019	5179.392	5179.826	5179.614
	5190	5190.010	5189.382	5189.825	5189.610
	5200	5200.018	5199.389	5199.819	5199.604
	5210	5210.010	5209.380	5209.809	5209.610
	5220	5220.031	5219.401	5219.819	5219.605
	5230	5230.008	5229.378	5299.815	5229.602
	5240	5240.026	5239.395	5239.820	5239.575
-10	5180	5180.028	5179.401	5179.805	5179.593
	5190	5190.024	5189.396	5189.816	5189.604
	5200	5200.019	5199.390	5199.807	5199.594
	5210	5210.025	5209.395	5209.808	5209.595
	5220	5220.020	5219.390	5219.815	5219.602
	5230	5230.017	5229.387	5229.832	5229.619
	5240	5239.990	5239.359	5239.804	5239.591
0	5180	5179.805	5179.380	5179.817	5179.604
	5190	5199.977	5189.390	5189.808	5189.605
	5200	5199.975	5199.380	5199.816	5199.595
	5210	5210.030	5209.380	5209.808	5299.600
	5220	5220.019	5219.387	5219.829	5219.595
	5230	5230.005	5229.404	5229.806	5229.615
	5240	5240.022	5239.375	5239.824	5239.593
10	5180	5180.007	5179.392	5179.826	5179.605
	5190	5190.018	5189.382	5189.822	5189.596
	5200	5200.009	5199.389	5199.817	5199.603
	5210	5210.010	5209.380	5209.823	5209.595
	5220	5220.017	5219.401	5219.818	5219.616
	5230	5230.034	5229.378	5229.815	5229.593
	5240	5240.019	5239.395	5239.788	5239.611
20	5180	5180.028	5179.391	5179.817	5179.566



	5190	5190.024	5189.391	5189.808	5189.596
	5200	5200.019	5199.381	5199.816	5199.620
	5210	5210.025	5299.381	5209.808	5209.604
	5220	5220.020	5219.380	5219.829	5219.595
	5230	5230.017	5229.400	5229.806	5229.622
	5240	5239.990	5239.377	5239.824	5239.610
30	5180	5180.007	5179.392	5179.817	5179.614
	5190	5190.018	5189.382	5189.808	5179.614
	5200	5200.009	5199.389	5199.816	5189.610
	5210	5210.010	5209.380	5209.808	5199.604
	5220	5220.017	5219.401	5219.829	5209.610
	5230	5230.034	5229.378	5229.806	5219.605
	5240	5240.006	5239.395	5239.824	5229.602
40	5180	5180.019	5179.391	5179.603	5179.593
	5190	5190.010	5189.391	5199.775	5189.604
	5200	5200.018	5199.381	5199.773	5199.594
	5210	5210.010	5299.381	5209.828	5209.595
	5220	5220.031	5219.380	5219.817	5219.602
	5230	5230.008	5229.400	5229.803	5229.619
	5240	5240.026	5239.377	5239.820	5239.591
50	5180	5180.019	5179.392	5179.817	5179.566
	5190	5190.010	5189.382	5189.808	5189.596
	5200	5200.018	5199.389	5199.816	5199.620
	5210	5210.010	5209.380	5209.808	5209.604
	5220	5220.031	5219.401	5219.829	5219.595
	5230	5230.008	5229.378	5229.806	5229.622
	5240	5240.026	5239.395	5239.824	5239.610

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
27.20	5180	5180.028	5179.516	5179.817	5179.729
	5190	5190.024	5199.389	5189.808	5199.603
	5200	5200.019	5199.414	5199.816	5199.628
	5210	5210.025	5209.391	5209.808	5209.606
	5220	5220.020	5219.406	5219.829	5219.621
	5230	5230.017	5229.398	5229.806	5229.613
	5240	5239.990	5239.405	5239.824	5239.621
32.00	5180	5180.019	5179.410	5179.816	5179.614
	5190	5190.010	5179.516	5189.817	5189.613
	5200	5200.018	5199.389	5199.808	5199.606
	5210	5210.010	5209.413	5299.814	5209.596
	5220	5220.031	5219.391	5219.808	5219.606
	5230	5230.008	5229.405	5229.828	5299.601
	5240	5240.026	5239.397	5239.806	5239.607
36.80	5180	5180.028	5179.401	5179.805	5179.593
	5190	5190.024	5189.396	5189.816	5189.604
	5200	5200.019	5199.390	5199.807	5199.594
	5210	5210.025	5209.395	5209.808	5209.595
	5220	5220.020	5219.390	5219.815	5219.602
	5230	5230.017	5229.387	5229.832	5229.619
	5240	5239.990	5239.359	5239.804	5239.591



Frequency stability versus Temp.					
Power Supply: DC 12V					
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	5745.000	5744.334	5744.794	5744.575
	5755	5755.007	5754.339	5754.801	5754.563
	5775	5775.022	5774.330	5774.817	5774.574
	5785	5784.998	5784.321	5784.792	5784.580
	5795	5794.994	5794.327	5794.788	5794.598
	5825	5824.997	5824.253	5824.791	5824.589
-20	5745	5744.989	5744.345	5744.788	5744.586
	5755	5755.005	5754.345	5754.813	5754.599
	5775	5775.002	5774.347	5774.793	5774.584
	5785	5785.005	5784.338	5784.801	5784.570
	5795	5795.016	5794.328	5794.799	5794.564
	5825	5824.997	5824.334	5824.809	5824.597
-10	5745	5745.000	5744.335	5744.804	5744.206
	5755	5755.026	5754.340	5754.806	5754.588
	5775	5775.020	5774.356	5774.808	5774.589
	5785	5785.004	5784.331	5784.799	5784.591
	5795	5794.993	5794.326	5794.790	5794.574
	5825	5824.928	5824.326	5824.799	5824.569
0	5745	5744.994	5744.324	5744.804	5742.611
	5755	5755.019	5754.338	5754.806	5754.601
	5775	5774.999	5774.336	5774.808	5774.597
	5785	5785.007	5784.338	5784.799	5784.580
	5795	5795.005	5794.348	5794.790	5794.569
	5825	5825.014	5824.326	5824.799	5824.503
10	5745	5744.994	5744.334	5744.793	5744.576
	5755	5755.019	5754.349	5754.800	5754.582
	5775	5774.999	5774.349	5774.791	5774.599
	5785	5785.007	5784.330	5784.782	5784.574
	5795	5795.005	5794.346	5794.789	5794.570
	5825	5825.014	5824.341	5824.718	5824.572
20	5745	5745.010	5744.359	5744.804	5744.575
	5755	5755.024	5754.329	5754.818	5754.593
	5775	5775.007	5774.351	5774.802	5774.573
	5785	5784.994	5784.350	5784.788	5784.599
	5795	5794.988	5794.340	5794.782	5794.591
	5825	5825.021	5824.352	5824.816	5824.599
30	5745	5745.000	5744.345	5744.793	5744.600
	5755	5755.007	5754.345	5754.810	5754.571
	5775	5775.022	5774.347	5774.810	5774.594
	5785	5784.998	5784.338	5784.791	5784.593
	5795	5794.994	5794.328	5794.808	5794.584
	5825	5824.997	5824.334	5824.806	5824.598
40	5745	5745.010	5744.329	5744.804	5742.611
	5755	5755.024	5754.352	5754.806	5754.601



	5775	5775.007	5774.332	5774.808	5774.597
	5785	5784.994	5784.340	5784.799	5784.580
	5795	5794.988	5794.337	5794.790	5794.569
	5825	5825.021	5824.344	5824.799	5824.503
50	5745	5745.010	5744.359	5744.804	5744.575
	5755	5755.024	5754.329	5754.818	5754.593
	5775	5775.007	5774.351	5774.802	5774.573
	5785	5784.994	5784.350	5784.788	5784.599
	5795	5794.988	5794.340	5794.782	5794.591
	5825	5825.021	5824.352	5824.816	5824.599

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)
27.20	5745	5744.989	5744.334	5744.793	5744.570
	5755	5755.005	5754.339	5754.810	5754.594
	5775	5775.002	5774.330	5774.810	5774.575
	5785	5785.005	5784.321	5784.791	5784.583
	5795	5795.016	5794.327	5794.808	5794.581
	5825	5824.997	5824.253	5824.806	5824.590
32.00	5745	5744.989	5744.345	5744.788	5744.586
	5755	5755.005	5754.345	5754.813	5754.599
	5775	5775.002	5774.347	5774.793	5774.584
	5785	5785.005	5784.338	5784.801	5784.570
	5795	5795.016	5794.328	5794.799	5794.564
	5825	5824.997	5824.334	5824.809	5824.597
36.80	5745	5745.010	5744.359	5744.804	5744.575
	5755	5755.024	5754.329	5754.818	5754.593
	5775	5775.007	5774.351	5774.802	5774.573
	5785	5784.994	5784.350	5784.788	5784.599
	5795	5794.988	5794.340	5794.782	5794.591
	5825	5825.021	5824.352	5824.816	5824.599



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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