TEST REPORT

Applicant:	Shenzhen AZW Technology Co., Ltd.
Address of Applicant:	701, Building 8, Hengda Shishang Huigu, next to Fulong Road, Shanghenglang Community,Dalang Street, Longhua District, ShenZhen, China
Manufacturer:	Shenzhen AZW Technology Co., Ltd.
Address of Manufacturer:	701, Building 8, Hengda Shishang Huigu, next to Fulong Road, Shanghenglang Community,Dalang Street, Longhua District, ShenZhen, China
Factory:	Shenzhen BeelinkYao Technology Co., Ltd.
Address of Factory:	Floor4-5，Building 2，Brilliant Industrial Park，Xitian Community,Gongming Street,Guangming District,Shen zhen,Guangdong
Product Name:	Mini PC
Model No.:	ME mini
Trade Mark:	Beelink
IC:	22890-MEMINI
FCC ID:	2A4J2-MEMINI
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247 RSS-Gen Issue 5,RSS-247 Issue 3
Date of Test:	Apr.01, 2025- Apr.17, 2025
Date of report issued:	Apr.18, 2025

Remark:

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Prepared By

Shenzhen ETR Standard Technology Co., Ltd.

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Compiled by:	Reviewed by:	Approved by:
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Project Engineer	Project Manager	Authorized Signature

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Report Revision History		
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1 Test Summary

Test Item	Section in CFR 47	Result	Test by
Antenna requirement	15.203,RSS-Gen §6.8	Pass	/
AC Power Line Conducted Emission	15.207,RSS-Gen §6.8	Pass	Carr Kang
Conducted Output Power	15.407 (a)(1)/(a)(3) RSS-247 §6.2.1.1&6.2.4.2	Pass	Yvan Fan
26dB Bandwidth and 99% Occupied Bandwidth	15.407 (a)(12) ,RSS-GEN 6.7	Pass	Yvan Fan
6dB Bandwidth	15.407 (e),RSS-247 §6.2.4.2	Pass	Yvan Fan
Power Spectral Density	15.407(a)(1)/(a)(3) RSS-247 §6.2.1.1&6.2.4.2	Pass	Yvan Fan
Band Edge	15.407(b)(1)/(b)(4) RSS-247 §6.2.1.2&6.2.4.3	Pass	Yvan Fan
Spurious Emission	15.205/15.209 15.407(b)(1)/(b)(4)/(b)(8) RSS-247 §6.2.1.2&6.2.4.3	Pass	Carr Kang
Frequency Stability	15.407(g),RSS Gen§ 8.11	Pass	Yvan Fan

Remarks:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *Test according to ANSI C63.10:2013 and RSS-Gen*
3. *Note: Compliance determination rules*

1).The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacturer. If measurement uncertainty is taken into account, the applicant/manufacturer will bear all possible risks of non-compliance.

2).The measurement uncertainty please refer to each test result in the "Measurement Uncertainty"

1.1 Measurement Uncertainty

Test Item	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	0.55%	(1)
RF output power, conducted	±0.57dB	(1)
Power Spectral Density, conducted	±0.61dB	(1)
Unwanted Emissions, conducted	±0.64dB	(1)
AC Power Line Conducted Emission	± 2.55 dB	(1)
Radiated emissions 9K-30MHz	±3.79dB	(1)
Radiated emissions 30M- 1GHz	± 4.24 dB	(1)
Radiated emissions 1GHz-18GHz	± 4.26 dB	(1)
Radiated emissions 18GHz-40GHz	±4.17 dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.		

2 General Information

2.1 General Description of EUT

Product Name:	Mini PC
Model No.:	ME mini
Difference of model(s)	N/A
Test Model:	ME mini
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:	FPC Antenna
Antenna gain:	2.81 dBi(Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.)
Battery	N/A
Adapter Model:	N/A
Power supply:	AC 100-240V 50/60Hz 1.5A

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		
Highest channel	5240	5230	

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		
Highest channel	5825	5795	

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode(or with a duty cycle ≥ 98%)

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.

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	/
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	/

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	monitor	SKYWORTH	2BU1	/
2	mouse	DELL	MS116	/
3	keyboard	DELL	KB216t	/

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

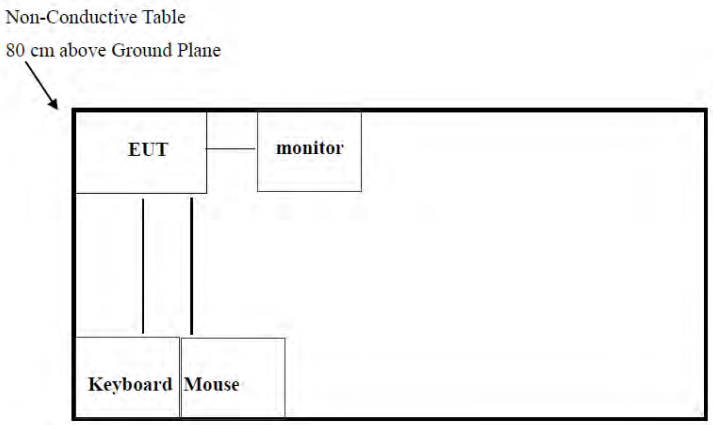
All tests were performed at:	
Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	+86 755 85259392

2.8 Additional Instructions

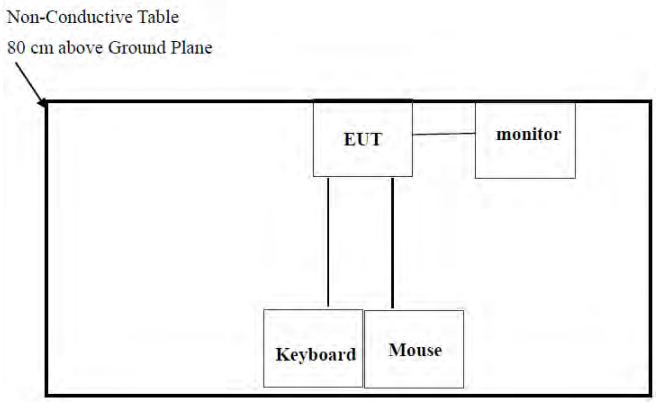
Test Software	DRTU.EXE（VERSION:0.0.0.0）
Power level setup	Default

2.9 2.9 Block diagram displaying the configuration of the tested system

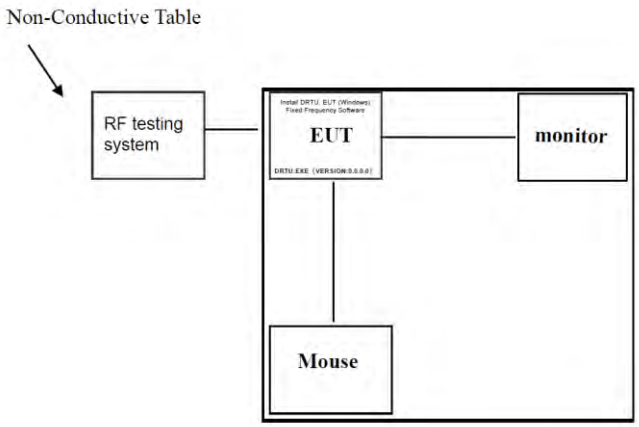
CONDUCTED EMISSION



RADIATED EMISSION



RF EMISSION



3 Test Instruments list

Conducted Emission

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

Radiated Emission &RF Conducted test:

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101032	2025.3.06	2026.3.05
2	Broadband antenna	schwarabeck	VULB9168	1064	2024.3.26	2026.3.25
3	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2024.3.22	2026.3.21
4	Amplifier	EMtrace	RP01A	50117	2025.3.06	2026.3.05
5	Amplifier	Space-Dtronics	EWLAN0118G-P40	19113001	2025.3.06	2026.3.05
6	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2025.3.06	2026.3.05
7	Power detector meter	MWRFtest	MW100-PSB	MW201020JYT	2025.3.06	2026.3.05
8	Signal generator	Agilent	N5182A	MY49060455	2025.3.06	2026.3.05
9	Spectrum analyzer	Rohde&schwarz	FSU40	1166.1660K43	2025.3.06	2026.3.05
10	Amplifier	SKET	LNPA_1840-50	SK2019040302	2025.3.06	2026.3.05
11	Horn antenna	schwarabeck	BBHA 9170	946	2024.3.22	2026.3.21
12	Loop antenna	schwarabeck	FMZB 1519 B	1519	2024.3.22	2026.3.21
13	Cable 6	HUBER SUNNER	0.5M	/	2025.3.06	2026.3.05
14	Cable7	HUBER SUNNER	2.0M	/	2025.3.06	2026.3.05
15	Cable8	HUBER SUNNER	6.0M	/	2025.3.06	2026.3.05
16	Filter	Xin bo	XBLBQ-GTA29	210410-3-2	2025.3.06	2026.3.05
17	Power meter	Rohde&Schwarz	NRP-Z11	1138.3004.02-117725-vh	2025.3.06	2026.3.05
18	Temp. & Humidity Chamber	Jiecheng Instrument	QA-LP-80	20160705001	2024/4/23	2025/4/22

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
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.*	
E.U.T Antenna:	
The antennas are FPC Antenna, the best case gain of the antennas are 2.81dBi, reference to the appendix II for details	

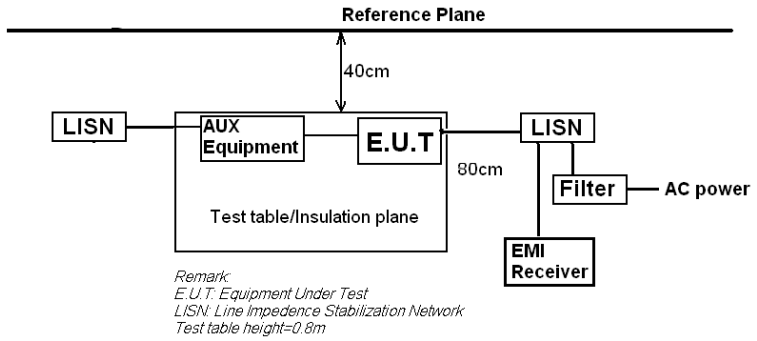
4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207, RSS-Gen §8.8
Test Method:	ANSI C63.10:2013 and RSS-Gen
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto
Limit:	

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

Test setup:



Test procedure:

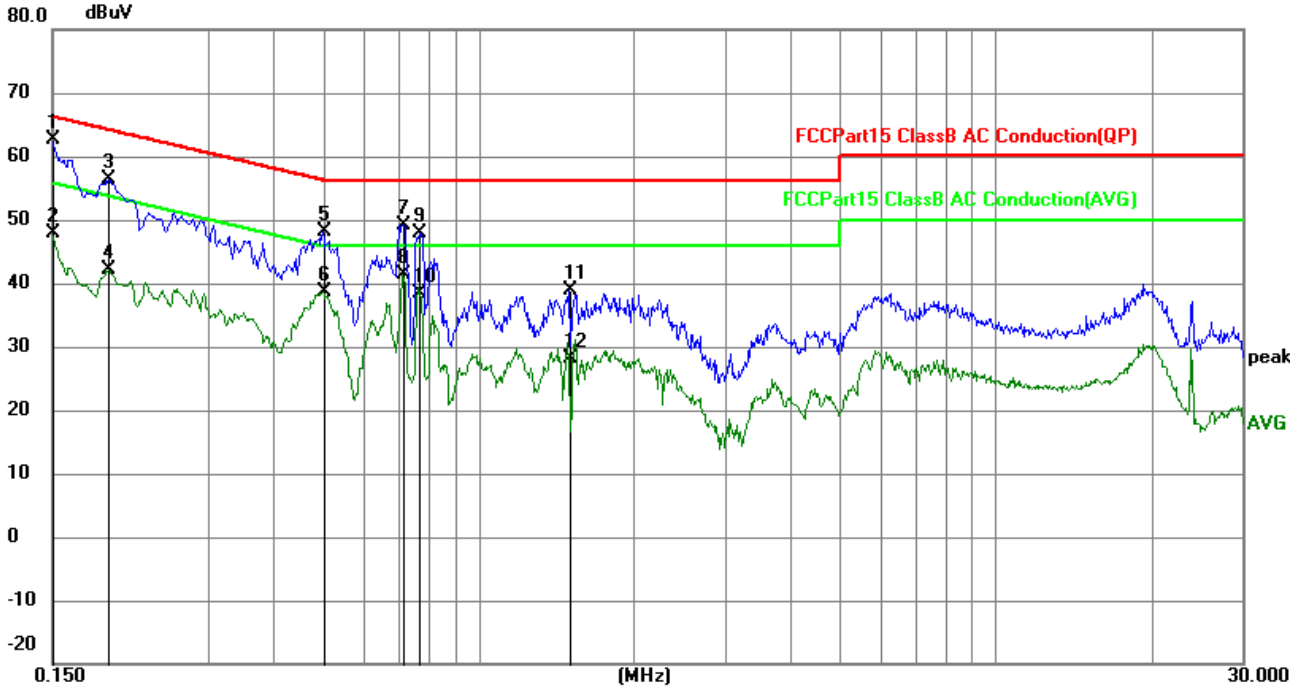
1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling 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.:	23.3°C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Remark:
1. Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.
2. All mode have been tested, the report only shows the worst mode (802.11ac20 5180MHz)

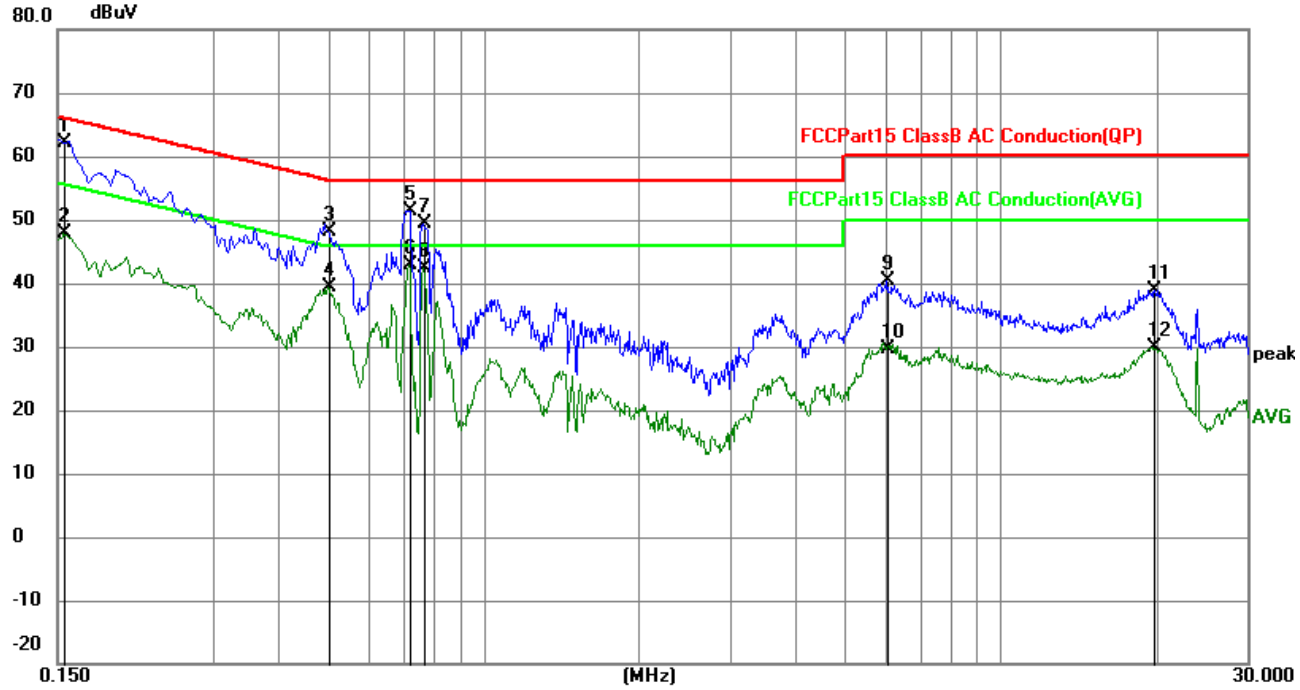
Measurement Result

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	52.75	9.80	62.55	66.00	-3.45	QP
2	0.1500	38.06	9.80	47.86	56.00	-8.14	AVG
3	0.1923	46.49	9.81	56.30	63.94	-7.64	QP
4	0.1923	32.38	9.81	42.19	53.94	-11.75	AVG
5	0.5010	38.24	9.94	48.18	56.00	-7.82	QP
6	0.5010	28.64	9.94	38.58	46.00	-7.42	AVG
7	0.7124	39.25	9.94	49.19	56.00	-6.81	QP
8	0.7124	31.39	9.94	41.33	46.00	-4.67	AVG
9	0.7710	38.02	9.96	47.98	56.00	-8.02	QP
10	0.7710	28.50	9.96	38.46	46.00	-7.54	AVG
11	1.4954	28.88	9.90	38.78	56.00	-17.22	QP
12	1.4954	18.25	9.90	28.15	46.00	-17.85	AVG

Neutral:

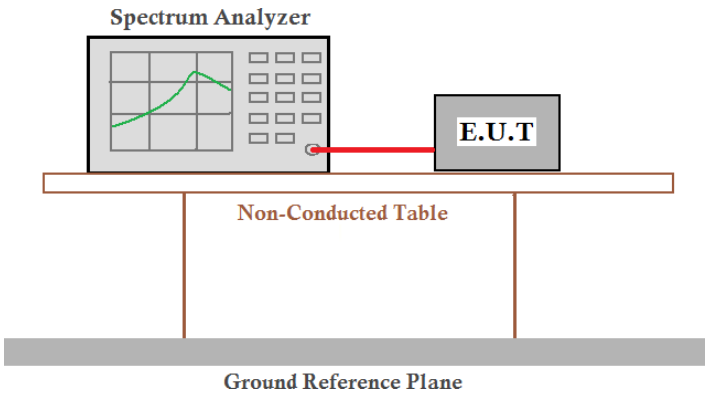


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1544	52.34	9.80	62.14	65.76	-3.62	QP
2	0.1544	37.96	9.80	47.76	55.76	-8.00	AVG
3	0.5010	38.21	9.94	48.15	56.00	-7.85	QP
4	0.5010	29.35	9.94	39.29	46.00	-6.71	AVG
5	0.7168	41.55	9.94	51.49	56.00	-4.51	QP
6	0.7168	32.93	9.94	42.87	46.00	-3.13	AVG
7	0.7663	39.36	9.96	49.32	56.00	-6.68	QP
8	0.7663	32.43	9.96	42.39	46.00	-3.61	AVG
9	6.0314	30.60	9.83	40.43	60.00	-19.57	QP
10	6.0314	19.92	9.83	29.75	50.00	-20.25	AVG
11	19.8329	29.22	9.67	38.89	60.00	-21.11	QP
12	19.8329	20.18	9.67	29.85	50.00	-20.15	AVG

Notes:

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

4.3 Duty cycle

Test Method :	ANSI C63.10:2013	
Limit:	/	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 24.3°C	Humid.: 61%RH
Test voltage:	AC 120V, 60Hz	
Test results:	Pass	

Measurement Result

5180-5240MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	97.99	0.09
TX 802.11n20 Mode	94.38	0.25
TX 802.11ac20 Mode	84.53	0.73
TX 802.11n40 Mode	84.02	0.76
TX 802.11a40 Mode	84.02	0.76
TX 802.11ac80 Mode	83.97	0.76

5745-5825 MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	91.67	0.38
TX 802.11n20 Mode	98.44	0.07
TX 802.11ac20 Mode	90.91	0.41
TX 802.11n40 Mode	95.92	0.18
TX 802.11a40 Mode	95.92	0.18
TX 802.11ac80 Mode	97.86	0.09

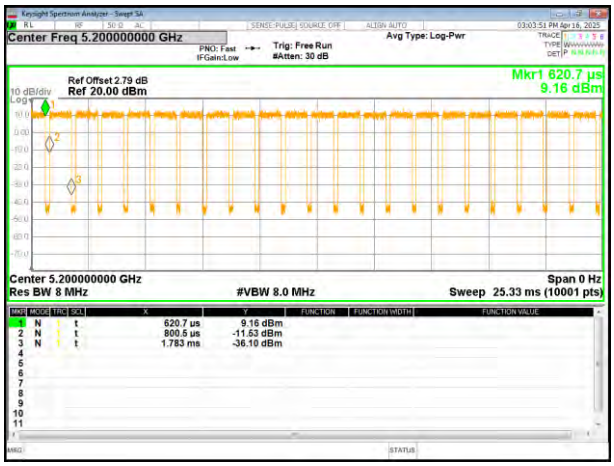
Test plot

5180-5240MHz

(802.11a) plot

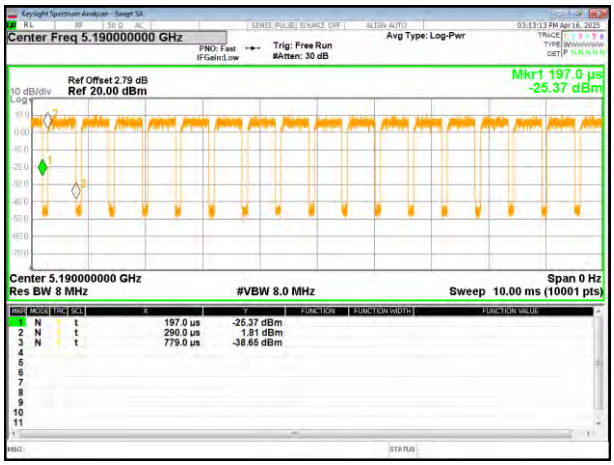
(802.11 n20) plot

(802.11ac20) plot

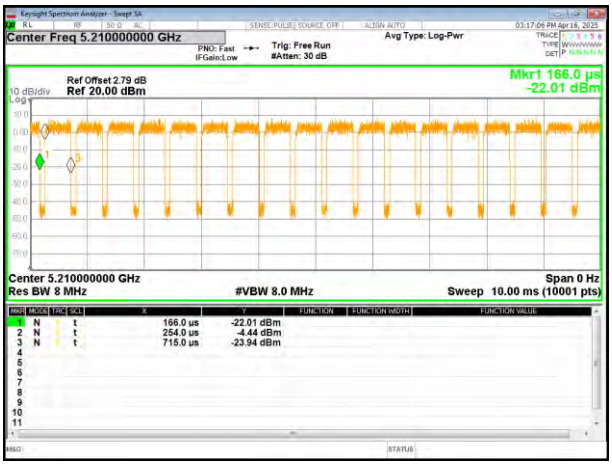


(802.11 n40) plot

(802.11ac40) plot



(802.11ac80) plot



5745-5825 MHz

(802.11a) plot

(802.11 n20) plot

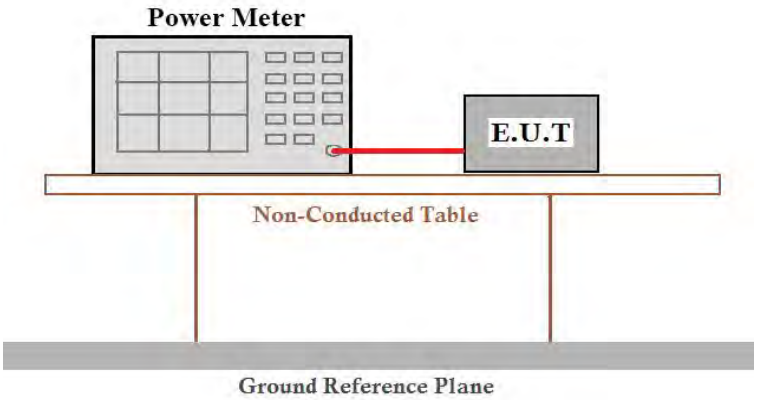
(802.11ac20) plot

(802.11 n40) plot

(802.11ac40) plot

(802.11ac80) plot

4.4 Conducted Output Power&EIRP

Test Requirement:	FCC Part15 E Section 15.407 (a)(1)/(a)(3), RSS-247 §6.2.1.1&6.2.4.2	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, RSS Gen	
Limit:	For FCC: 5150-5250MHz : 250mW 5725~5850MHz : 1W For IC: 5150-5250MHz : e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. 5725~5850MHz : conducted output power shall not exceed 1 W	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 24.3°C	Humid.: 61%RH
Test voltage:	AC 120V, 60Hz	
Test results:	Pass	

Measurement Result

5180-5240MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	0.09	12.44	12.53	23.98	Pass
CH40	5200	0.09	12.12	12.21	23.98	Pass
CH48	5240	0.09	12.12	12.21	23.98	Pass
TX 802.11 n20 Mode						
CH36	5180	0.25	12.16	12.41	23.98	Pass
CH40	5200	0.25	12.61	12.86	23.98	Pass
CH48	5240	0.25	12.49	12.74	23.98	Pass
TX 802.11 ac20 Mode						
CH36	5180	0.73	12.83	13.56	23.98	Pass
CH40	5200	0.73	12.65	13.38	23.98	Pass
CH48	5240	0.73	12.28	13.01	23.98	Pass
TX 802.11 n40 Mode						
CH38	5190	0.76	12.14	12.90	23.98	Pass
CH46	5230	0.76	11.86	12.62	23.98	Pass
TX 802.11 ac40 Mode						
CH38	5190	0.76	12.14	12.90	23.98	Pass
CH46	5230	0.76	11.88	12.64	23.98	Pass
TX 802.11 ac80 Mode						
CH42	5210	0.76	11.75	12.51	23.98	Pass

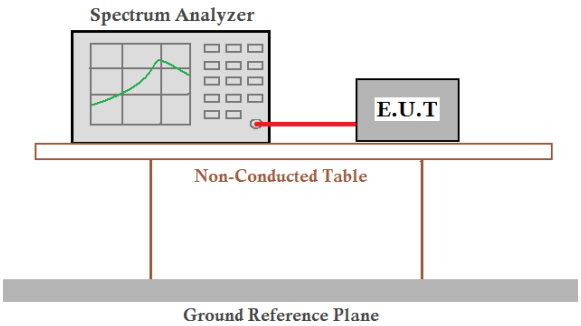
EIRP

Test Channel	Frequency	Maximum output power	ANT gain	E.I.R.P	LIMIT	Result
	(MHz)	(dBm)	dBi	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	12.53	2.81	15.34	22.2	Pass
CH40	5200	12.21	2.81	15.02	22.2	Pass
CH48	5240	12.21	2.81	15.02	22.2	Pass
TX 802.11 n20 Mode						
CH36	5180	12.41	2.81	15.22	22.5	Pass
CH40	5200	12.86	2.81	15.67	22.5	Pass
CH48	5240	12.74	2.81	15.55	22.5	Pass
TX 802.11 ac20 Mode						
CH36	5180	13.56	2.81	16.37	22.5	Pass
CH40	5200	13.38	2.81	16.19	22.5	Pass
CH48	5240	13.01	2.81	15.82	22.5	Pass
TX 802.11 n40 Mode						
CH38	5190	12.90	2.81	15.71	23	Pass
CH46	5230	12.62	2.81	15.43	23	Pass
TX 802.11 ac40 Mode						
CH38	5190	12.90	2.81	15.71	23	Pass
CH46	5230	12.64	2.81	15.45	23	Pass
TX 802.11 ac80 Mode						
CH42	5210	12.51	2.81	15.32	23	Pass

5745-5825 MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH149	5745	0.38	12.08	12.46	30	Pass
CH157	5785	0.38	12.46	12.84	30	Pass
CH165	5825	0.38	12.78	13.16	30	Pass
TX 802.11 n20 Mode						
CH149	5745	0.07	12.47	12.54	30	Pass
CH157	5785	0.07	12.54	12.61	30	Pass
CH165	5825	0.07	12.77	12.84	30	Pass
TX 802.11 ac20 Mode						
CH149	5745	0.41	12.57	12.98	30	Pass
CH157	5785	0.41	12.48	12.89	30	Pass
CH165	5825	0.41	12.75	13.16	30	Pass
TX 802.11 n40 Mode						
CH151	5755	0.18	11.87	12.05	30	Pass
CH159	5795	0.18	11.73	11.91	30	Pass
TX 802.11 ac40 Mode						
CH151	5755	0.18	11.71	11.89	30	Pass
CH159	5795	0.18	11.70	11.88	30	Pass
TX 802.11 ac80 Mode						
CH155	5775	0.09	10.59	10.68	30	Pass

4.5 Bandwidth &99% Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407(a)(12)&15.407(e), RSS-247 §6.2.1.2&6.2.4.2	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, RSS Gen	
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.: 24.3°C	Humid.: 61%RH
Test voltage:	AC 120V, 60Hz	
Test results:	Pass	

Measurement Result

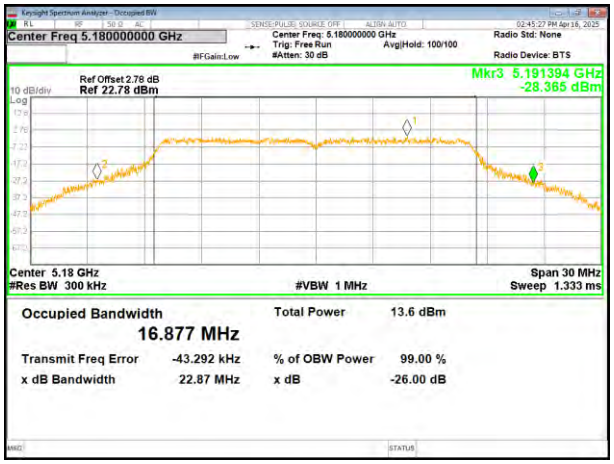
5180-5240MHz

Test CH	-26dB Channel Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	22.87	22.54	22.26	43.05	42.91	--	Pass
Middle	23.97	22.28	22.62	--	--	80.63	
Highest	23.68	23.01	22.65	42.79	42.92	--	

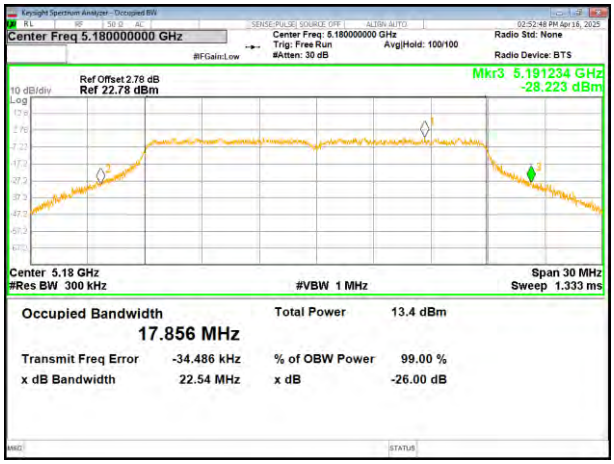
Test CH	99% Occupy Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	16.678	17.737	17.759	36.328	36.304	--	Pass
Middle	16.691	17.754	17.738	--	--	75.021	
Highest	16.703	17.734	17.781	36.332	36.327	--	

Test plot -26dB Channel Bandwidth

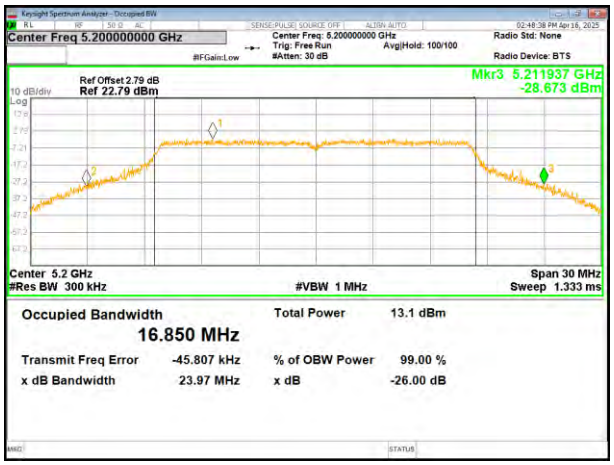
(802.11a) plot on channel 36



(802.11 n20) plot on channel 36



(802.11a) plot on channel 40



(802.11 n20) plot on channel 40

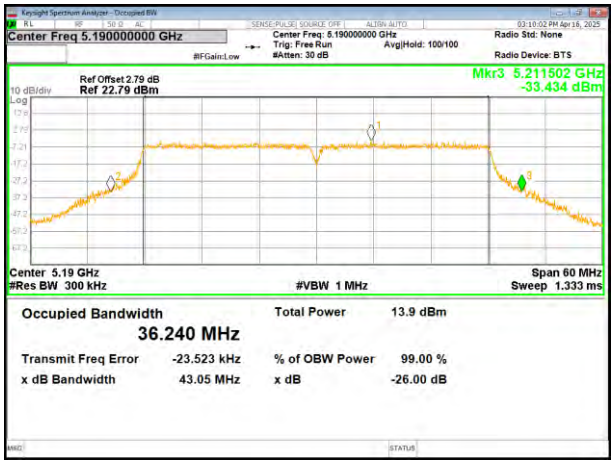
(802.11a) plot on channel 48

(802.11 n20) plot on channel 48

Test plot

(802.11ac20) plot on channel 36

(802.11 n40) plot on channel 38



(802.11ac20) plot on channel 40

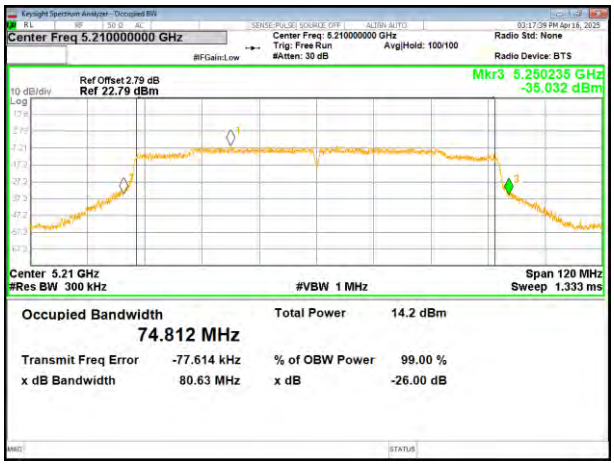
(802.11 n40) plot on channel 46

(802.11ac20) plot on channel 48

Test plot

(802.11ac40) plot on channel 38

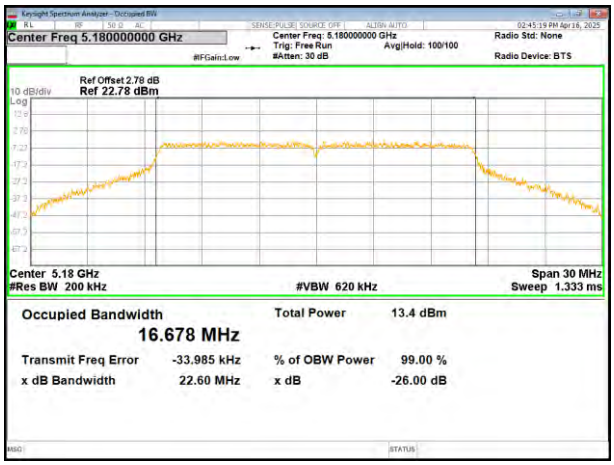
(802.11ac80) plot on channel 42



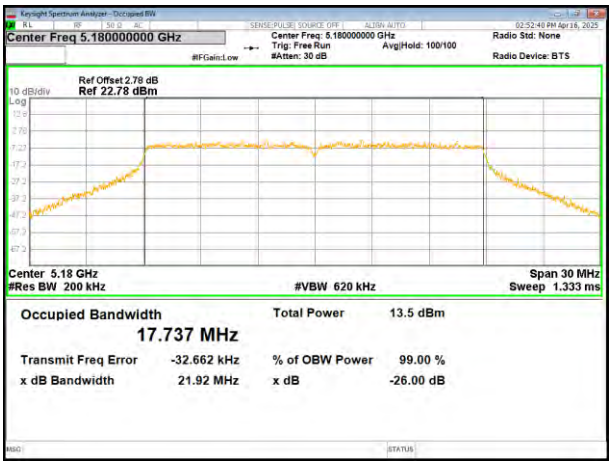
(802.11ac40) plot on channel 46

Test plot 99% Occupy Bandwidth

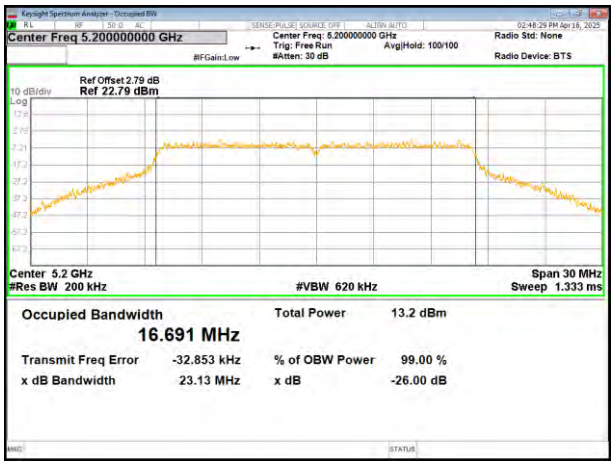
(802.11a) plot on channel 36



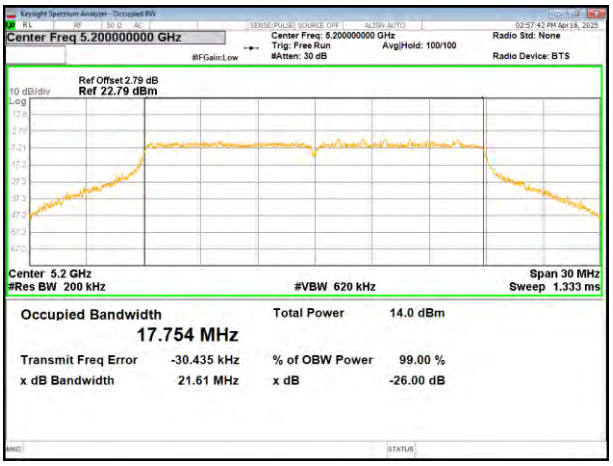
(802.11 n20) plot on channel 36



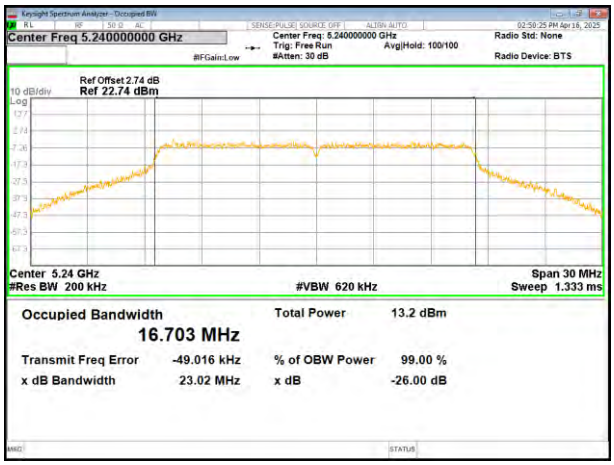
(802.11a) plot on channel 40



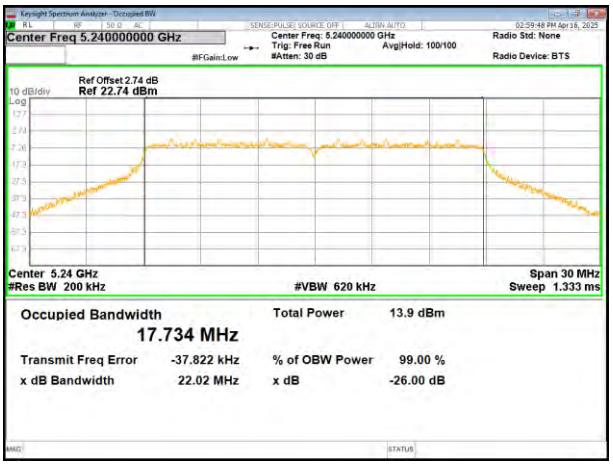
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

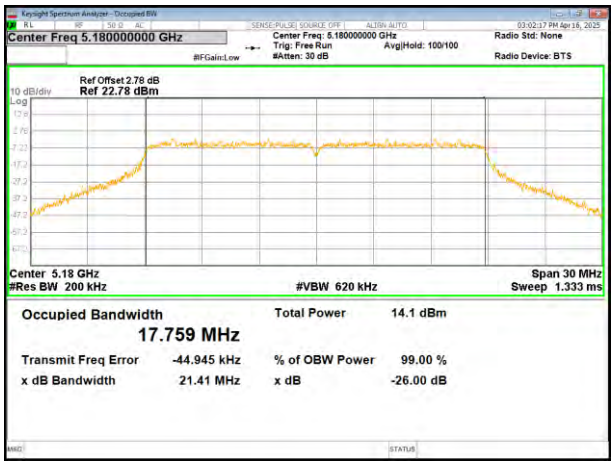


(802.11 n20) plot on channel 48

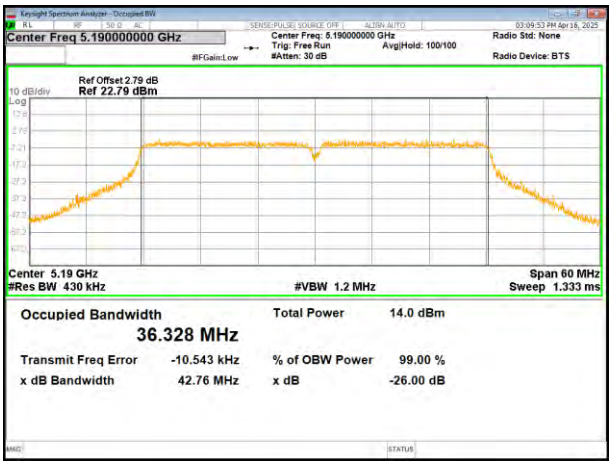


Test plot

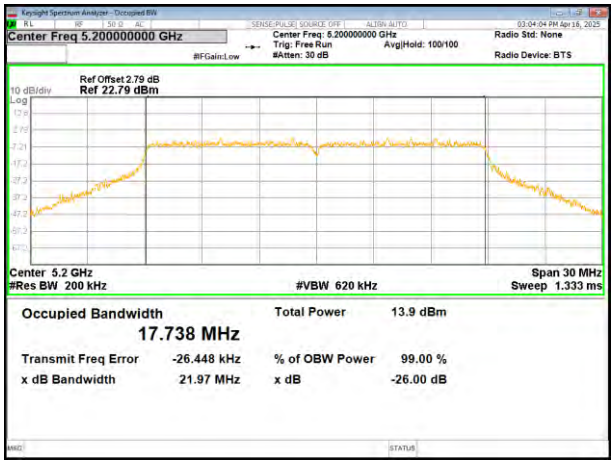
(802.11ac20) plot on channel 36



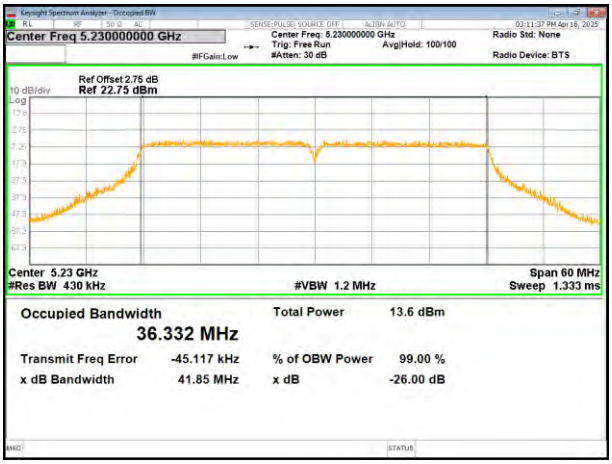
(802.11 n40) plot on channel 38



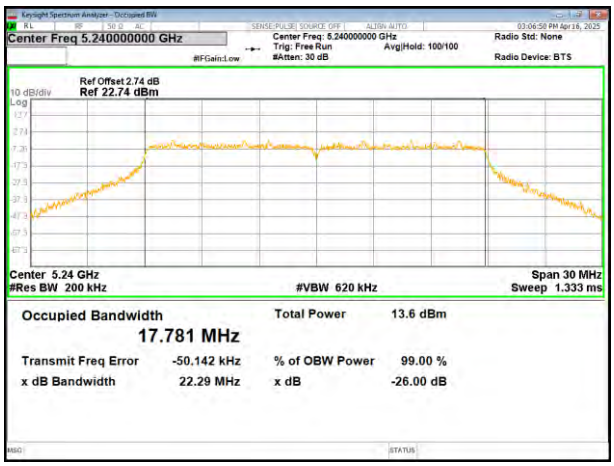
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

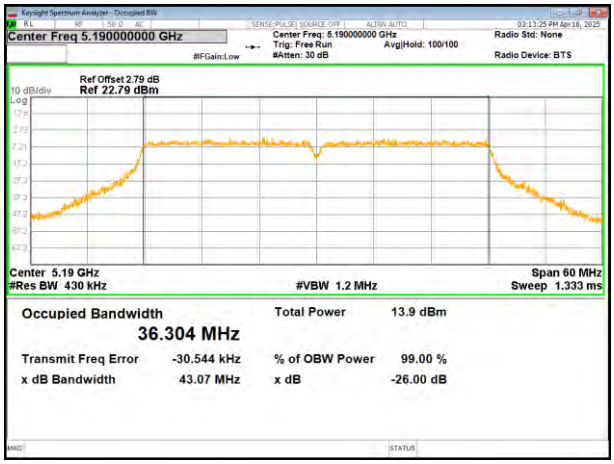


(802.11ac20) plot on channel 48

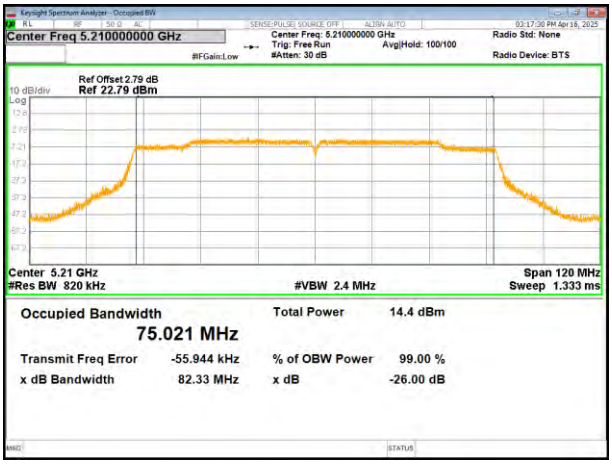


Test plot

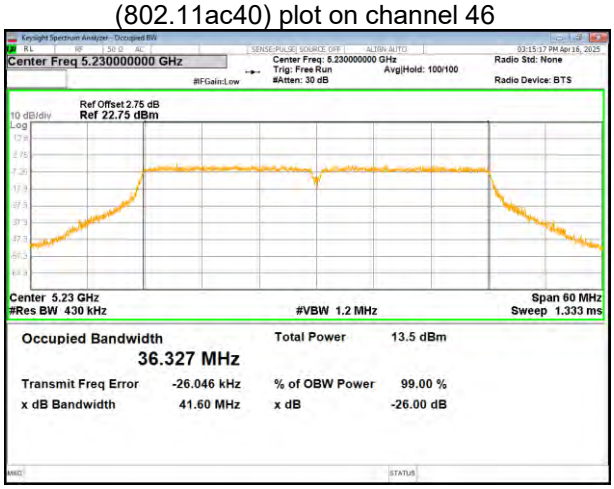
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46



5745-5825MHz

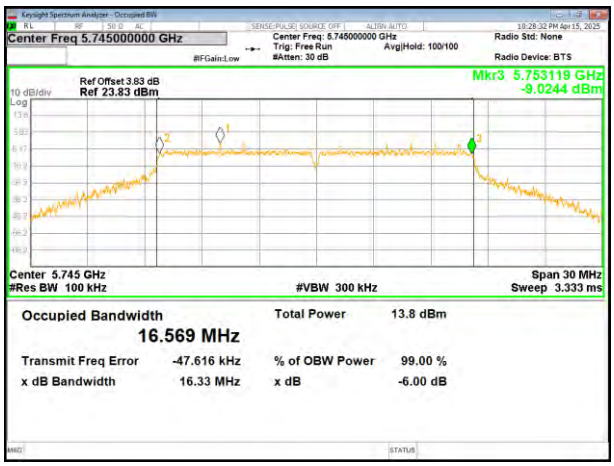
Test CH	-6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	16.33	17.56	17.55	36.32	36.31	--	>500	Pass
Middle	16.32	17.53	17.55	--	--	73.85		
Highest	16.35	17.31	17.55	36.32	36.05	--		

Test CH	99% Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	16.693	17.812	17.854	36.407	36.335	--	>500	Pass
Middle	16.622	17.826	17.828	--	--	75.031		
Highest	16.651	17.843	17.792	36.356	36.349	--		

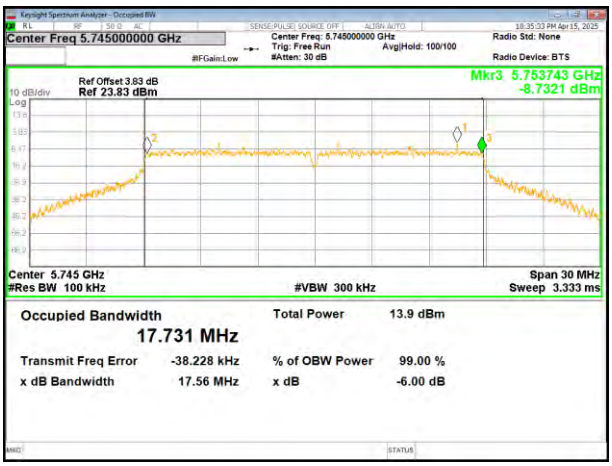
Remark: “---“is not applicable

Test plot -6dB Channel Bandwidth

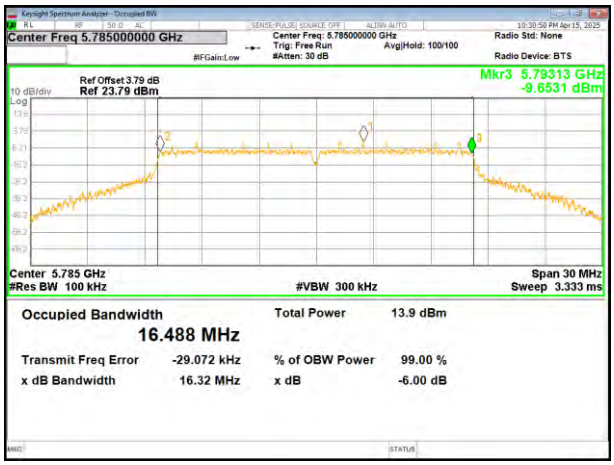
(802.11a) plot on channel 149



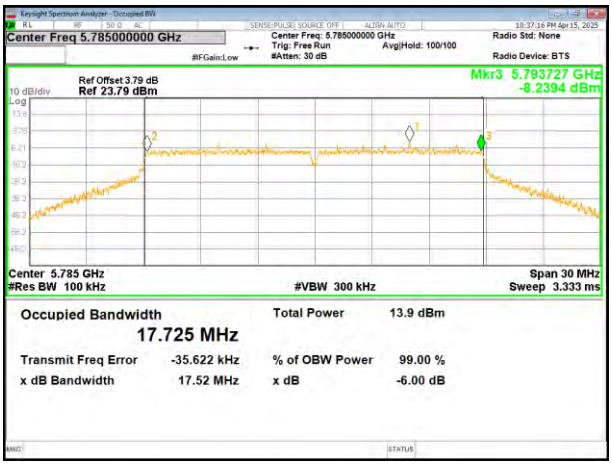
(802.11 n20) plot on channel 149



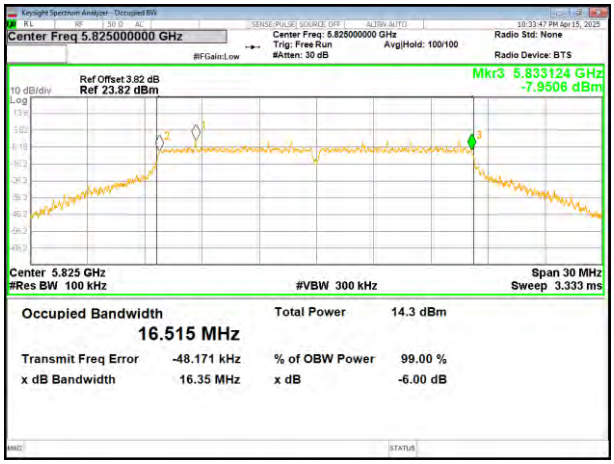
(802.11a) plot on channel 157



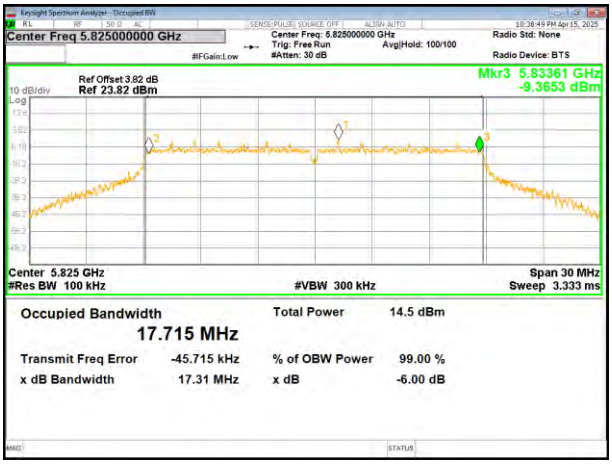
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165

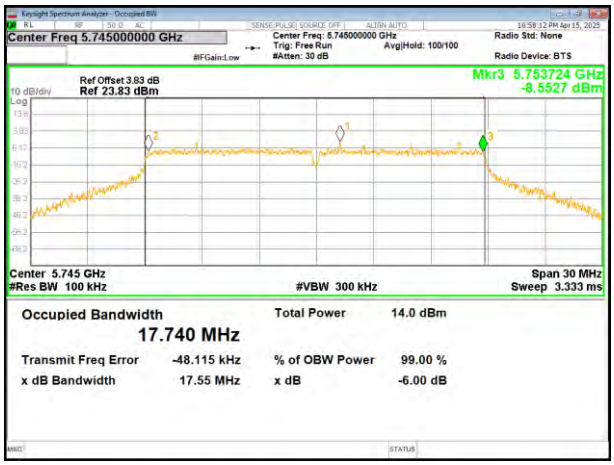


(802.11 n20) plot on channel 165

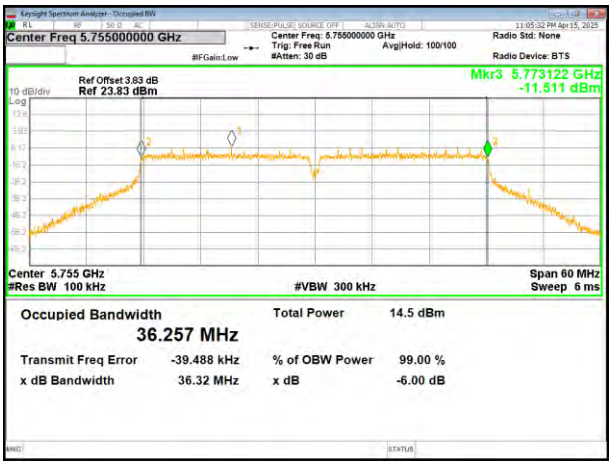


Test plot

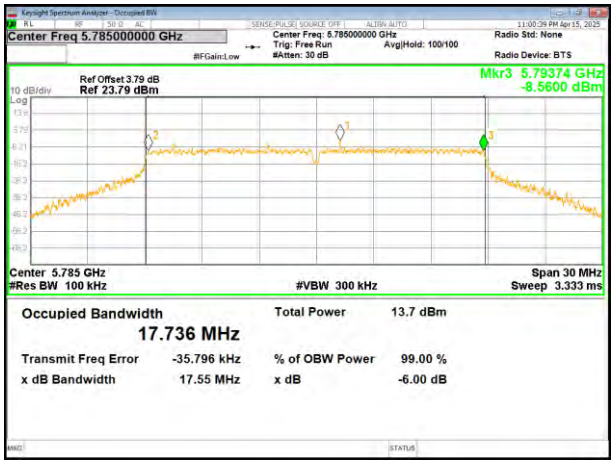
(802.11ac20) plot on channel 149



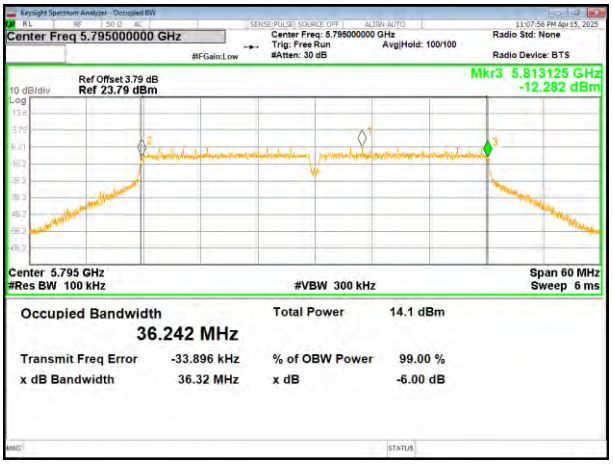
(802.11 n40) plot on channel 151



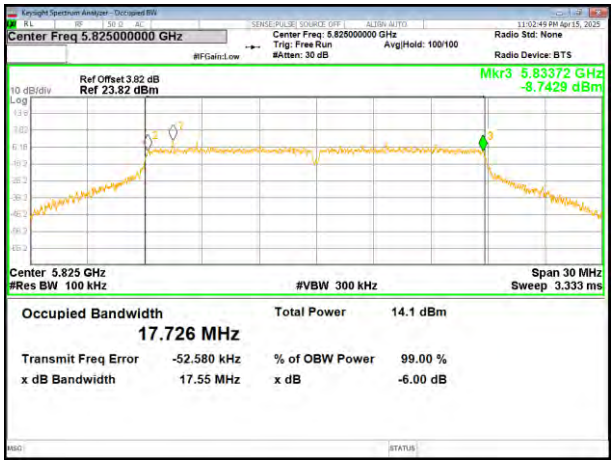
(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

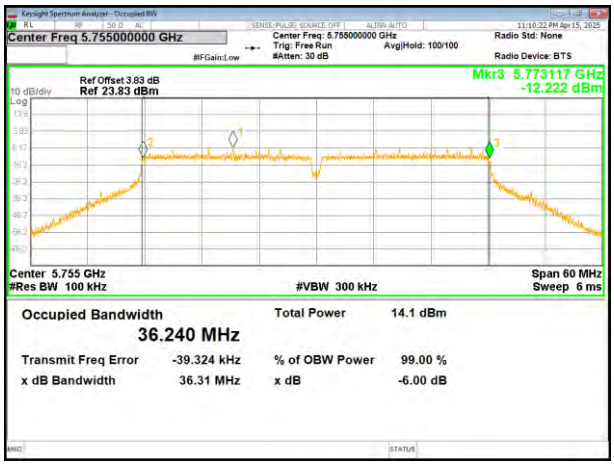


(802.11ac20) plot on channel 165

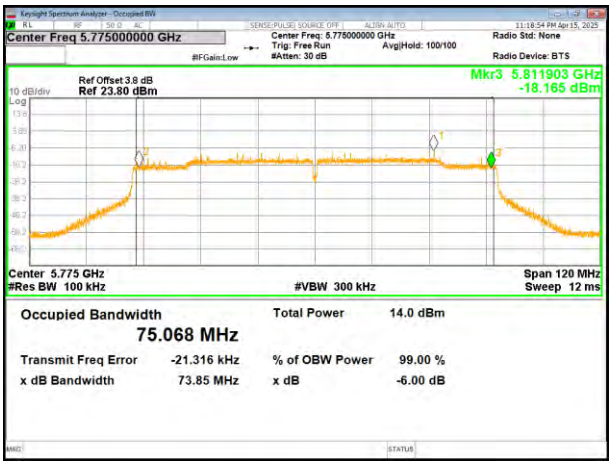


Test plot

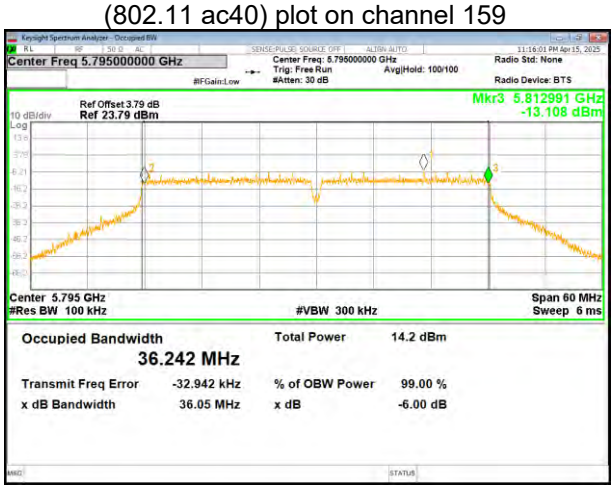
(802.11 ac40) plot on channel 151



(802.11 ac80) plot on channel 155

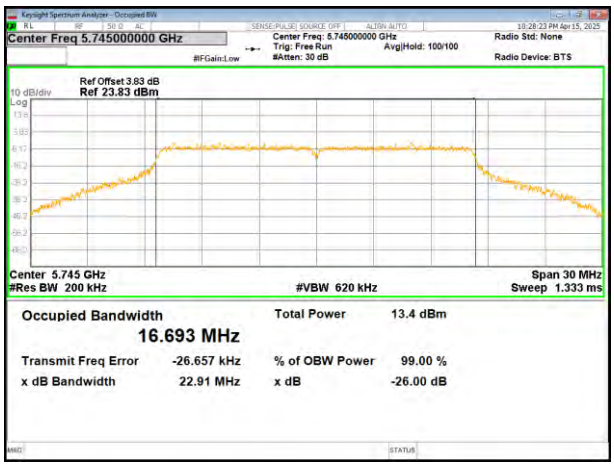


(802.11 ac40) plot on channel 159

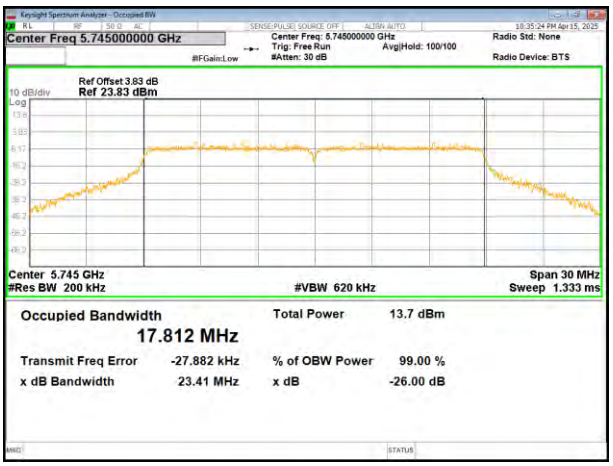


Test plot 99% Bandwidth

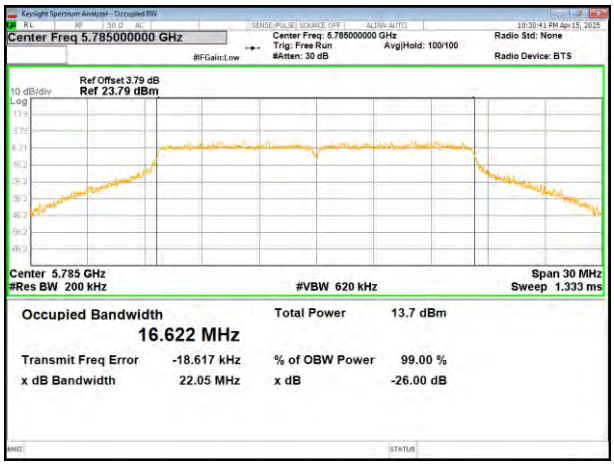
(802.11a) plot on channel 149



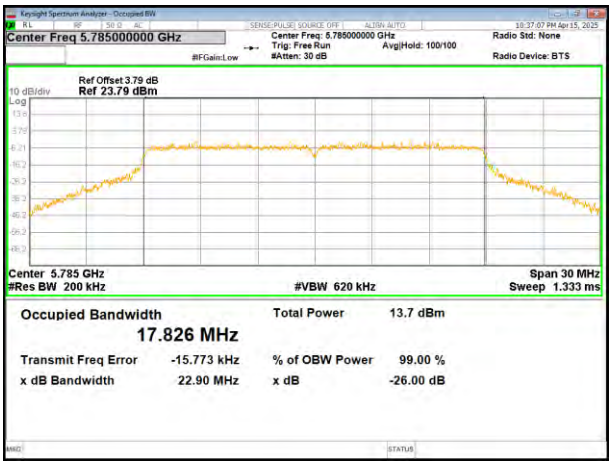
(802.11 n20) plot on channel 149



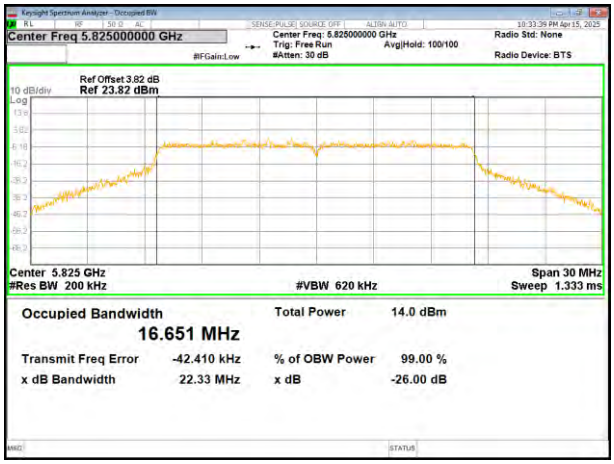
(802.11a) plot on channel 157



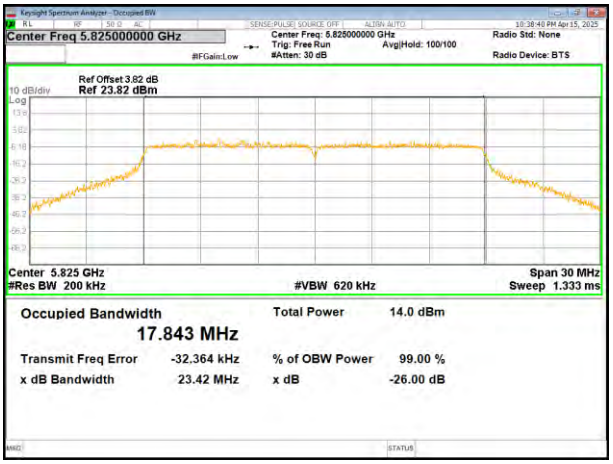
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165

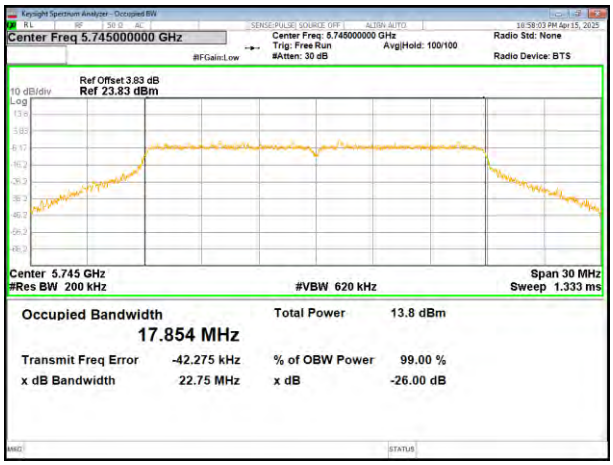


(802.11 n20) plot on channel 165

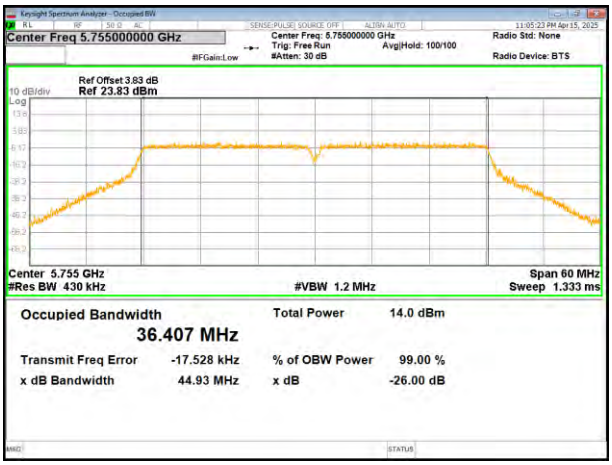


Test plot

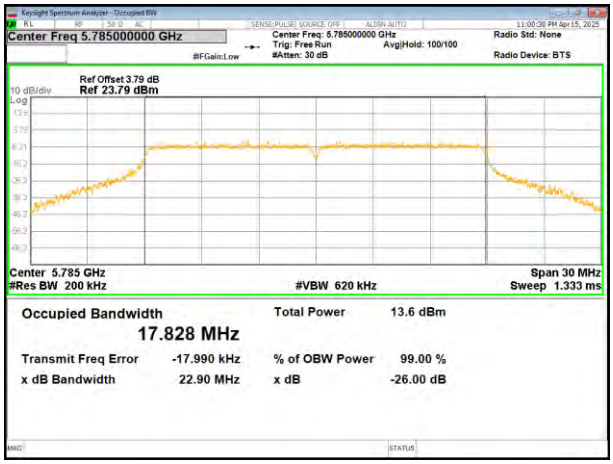
(802.11ac20) plot on channel 149



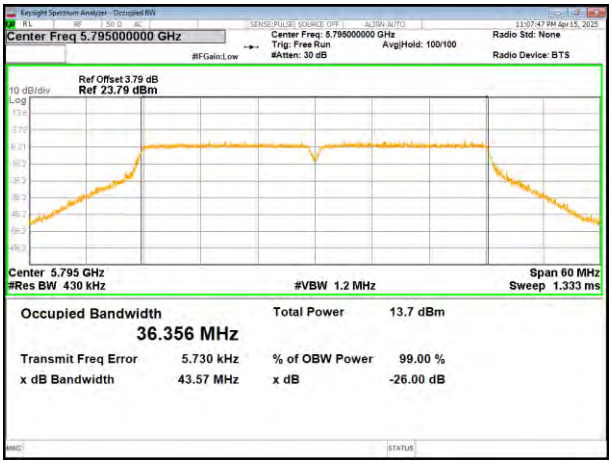
(802.11 n40) plot on channel 151



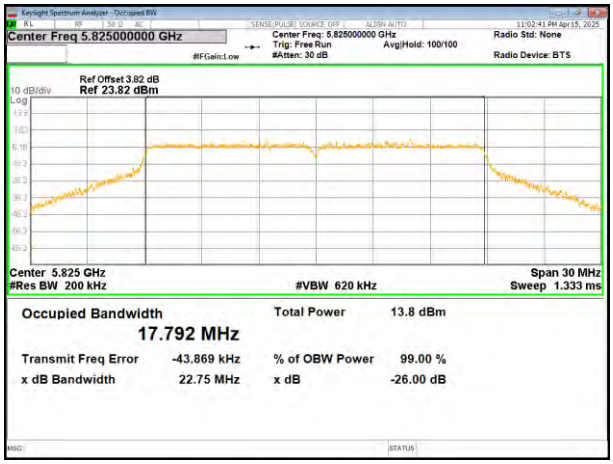
(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

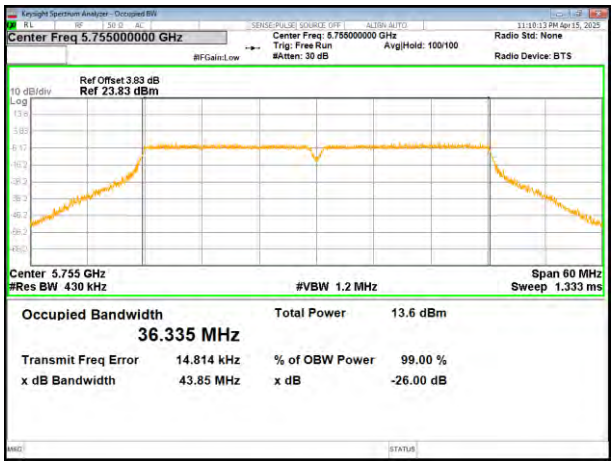


(802.11ac20) plot on channel 165

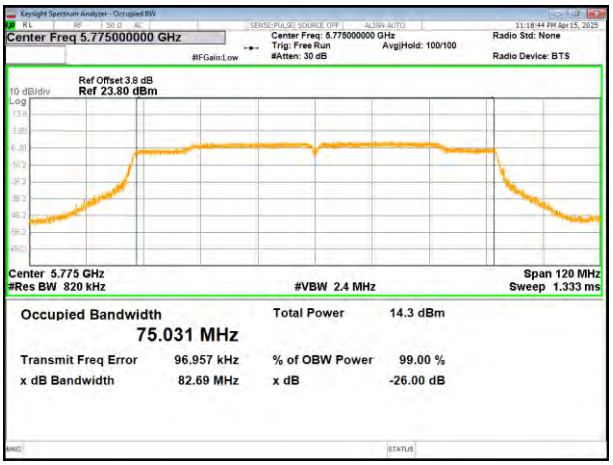


Test plot

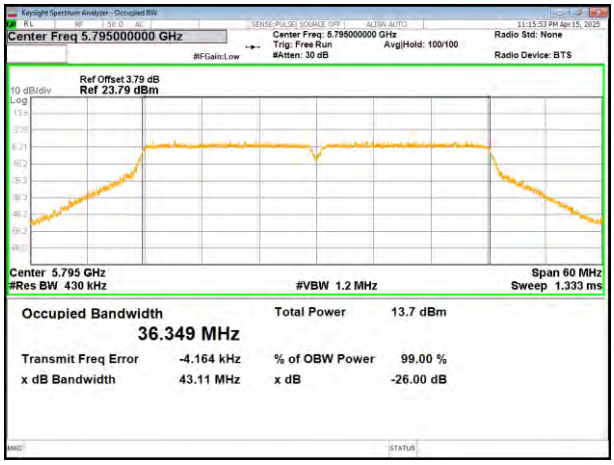
(802.11 ac40) plot on channel 151



(802.11 ac80) plot on channel 155



(802.11 ac40) plot on channel 159

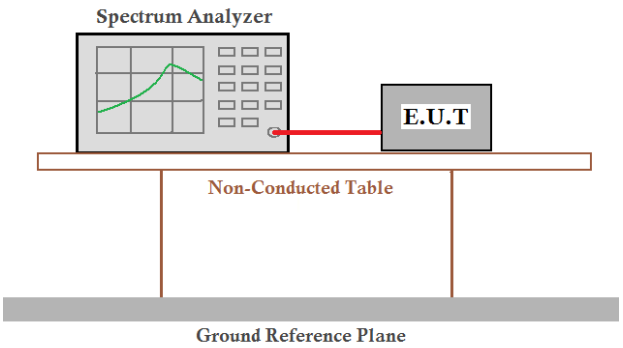


4.6 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407(a)(1)/ (a)(3), RSS-247 §6.2.1.1&6.2.4.2
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, RSS-Gen
Limit:	

Frequency band (MHz)	Limit for FCC
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
Frequency band (MHz)	Limit for IC
5150-5250	≤10dBm/1MHz (e.i.r.p spectral density)
5250-5350	≤11dBm/1MHz
5470-5725	≤11dBm/1MHz
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.: 24.3°C	Humid.: 61%RH
Test voltage:	AC 120V, 60Hz	
Test results:	Pass	

Measurement Result See next page

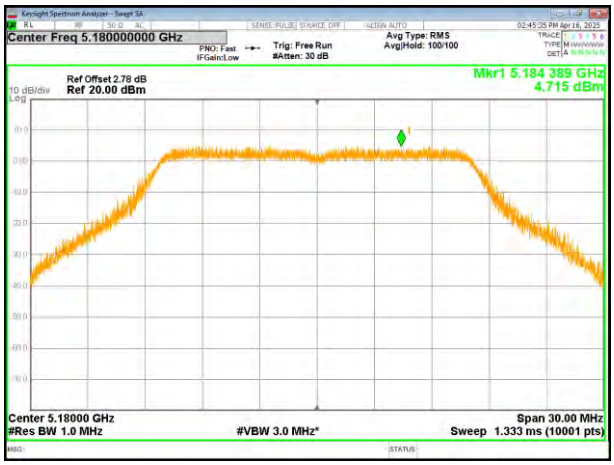
5180-5240MHz

Mode	Frequency	Measured Power Density (dBm/MHz)	Correction Factor (dB)	Total Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	4.715	0.09	4.805	11
	5200 MHz	4.613	0.09	4.703	11
	5240 MHz	4.333	0.09	4.423	11
802.11 n20	5180 MHz	4.557	0.25	4.807	11
	5200 MHz	5.354	0.25	5.604	11
	5240 MHz	4.765	0.25	5.015	11
802.11 ac20	5180 MHz	5.57	0.73	6.300	11
	5200 MHz	5.873	0.73	6.603	11
	5240 MHz	5.484	0.73	6.214	11
802.11 n40	5190 MHz	3.259	0.76	4.019	11
	5230 MHz	2.33	0.76	3.090	11
802.11 ac40	5190 MHz	2.416	0.76	3.176	11
	5230 MHz	2.079	0.76	2.839	11
802.11 ac80	5210 MHz	-0.390	0.76	0.370	11

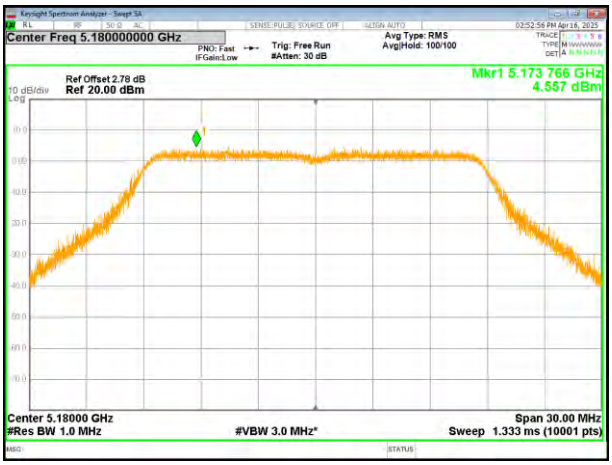
e.i.r.p spectral density

Mode	Frequency	Measured Power Density (dBm/MHz)	ANT Gain(dBi)	e.i.r.p. spectral density	Limit (dBm/MHz)
802.11 a	5180 MHz	4.805	2.81	7.615	10
	5200 MHz	4.703	2.81	7.513	10
	5240 MHz	4.423	2.81	7.233	10
802.11 n20	5180 MHz	4.807	2.81	7.617	10
	5200 MHz	5.604	2.81	8.414	10
	5240 MHz	5.015	2.81	7.825	10
802.11 ac20	5180 MHz	6.300	2.81	9.110	10
	5200 MHz	6.603	2.81	9.413	10
	5240 MHz	6.214	2.81	9.024	10
802.11 n40	5190 MHz	4.019	2.81	6.829	10
	5230 MHz	3.090	2.81	5.900	10
802.11 ac40	5190 MHz	3.176	2.81	5.986	10
	5230 MHz	2.839	2.81	5.649	10
802.11 ac80	5210 MHz	0.370	2.81	3.180	10

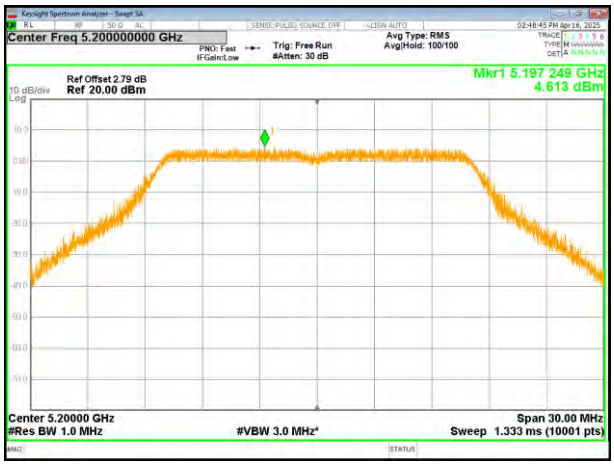
(802.11a) PSD plot on channel 36



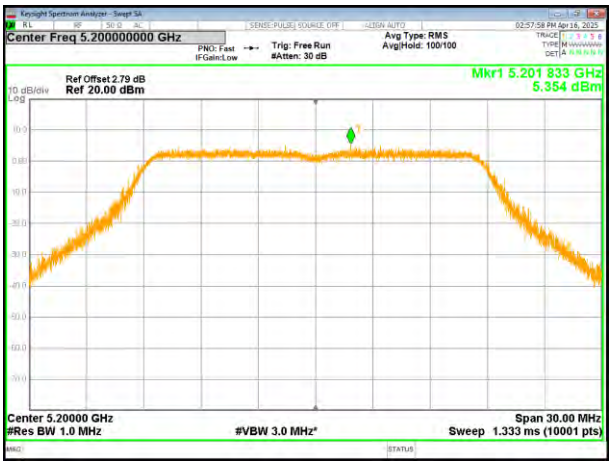
(802.11n20) PSD plot on channel 36



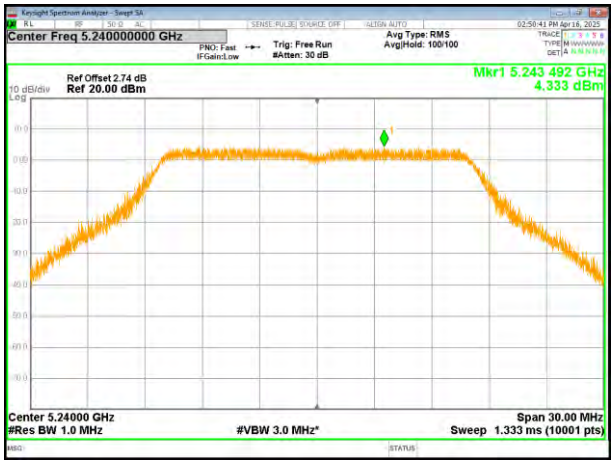
(802.11a) PSD plot on channel 40



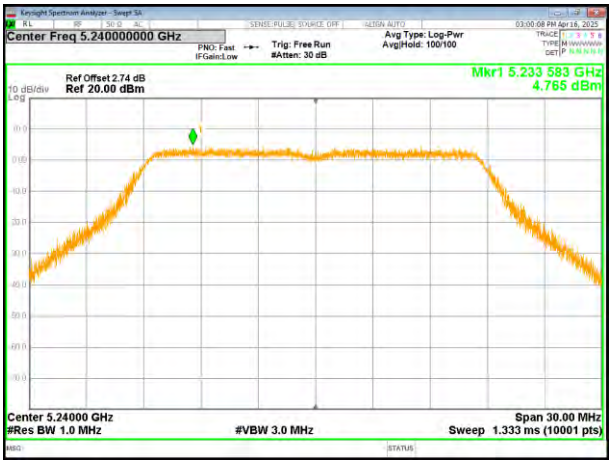
(802.11n20) PSD plot on channel 40



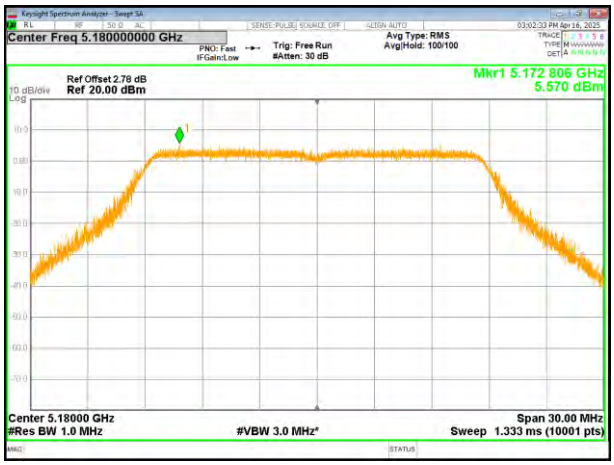
(802.11a) PSD plot on channel 48



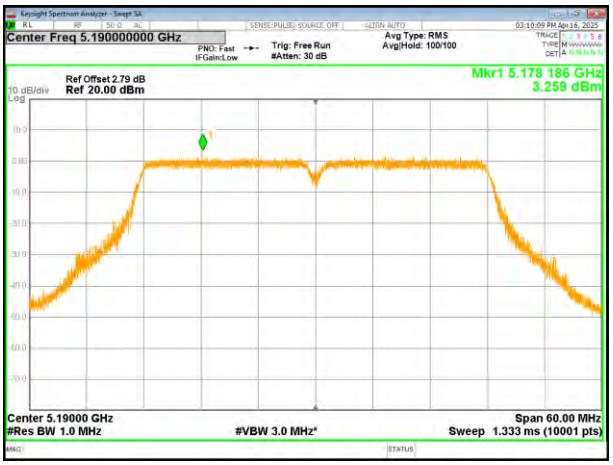
(802.11n20) PSD plot on channel 48



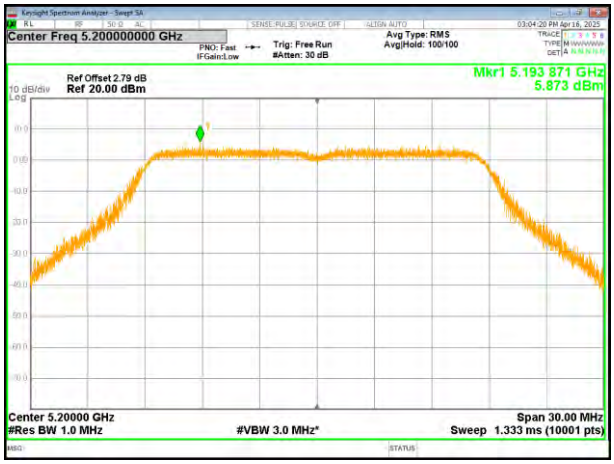
(802.11ac20) PSD plot on channel 36



(802.11n40) PSD plot on channel 38

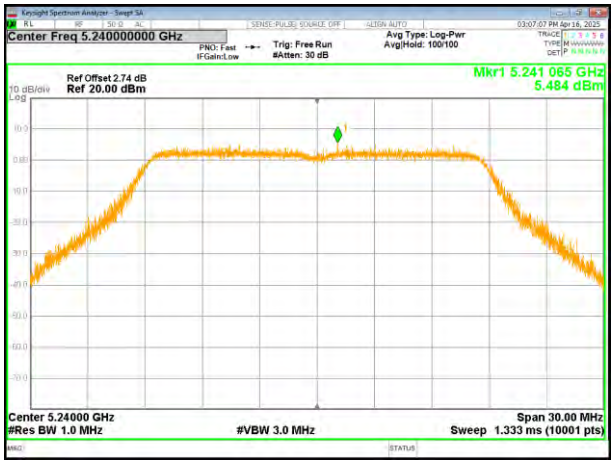


(802.11ac20) PSD plot on channel 40

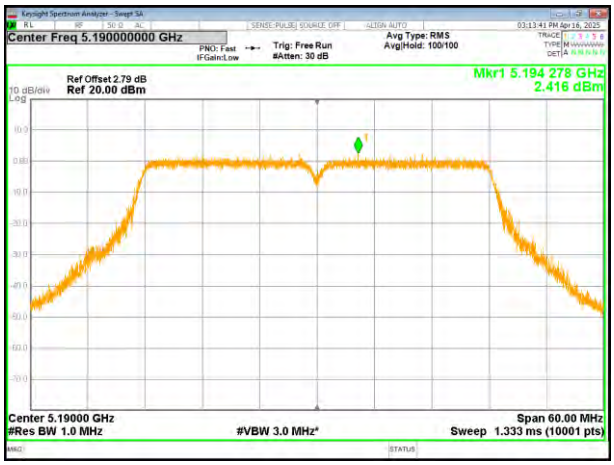


(802.11n40) PSD plot on channel 46

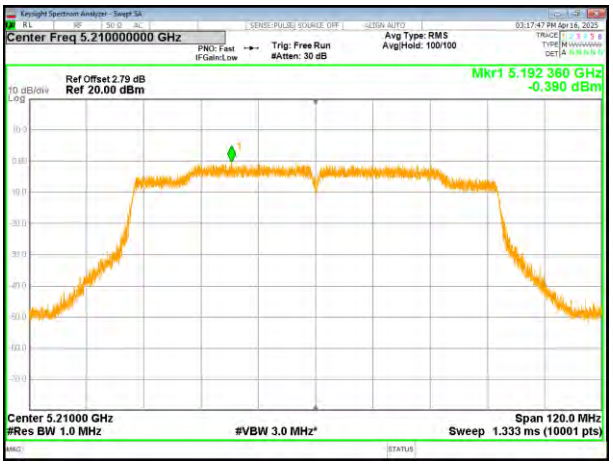
(802.11ac20) PSD plot on channel 48



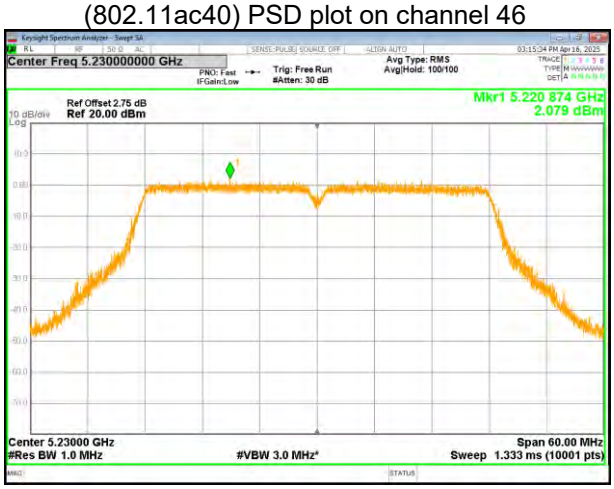
(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



(802.11ac40) PSD plot on channel 46



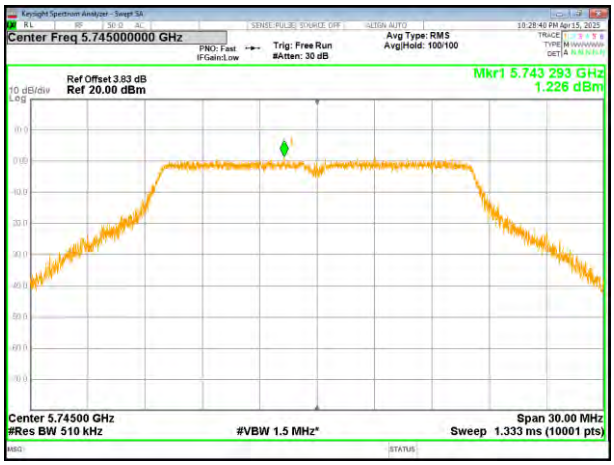
5745-5825MHz

Mode	Frequency	Measured Power Density (dBm/510KHz)	Measured Power Density (dBm/500KHz)	Correction Factor (dB)	Total Measured Power Density (dBm/500KHz)	Limit (dBm/500KHz)
802.11 a	5745 MHz	1.226	1.140	0.38	1.520	30
	5785 MHz	1.530	1.444	0.38	1.824	30
	5825 MHz	1.641	1.555	0.38	1.935	30
802.11 n20	5745 MHz	1.384	1.298	0.07	1.368	30
	5785 MHz	0.910	0.824	0.07	0.894	30
	5825 MHz	1.580	1.494	0.07	1.564	30
802.11ac20	5745 MHz	0.799	0.713	0.41	1.123	30
	5785 MHz	0.839	0.753	0.41	1.163	30
	5825 MHz	1.101	1.015	0.41	1.425	30
802.11 n40	5755 MHz	-1.275	-1.361	0.18	-1.181	30
	5795 MHz	-1.717	-1.803	0.18	-1.623	30
802.11ac40	5755 MHz	-1.941	-2.027	0.18	-1.847	30
	5795 MHz	-1.667	-1.753	0.18	-1.573	30
802.11ac80	5775 MHz	-4.127	-4.213	0.09	-4.123	30

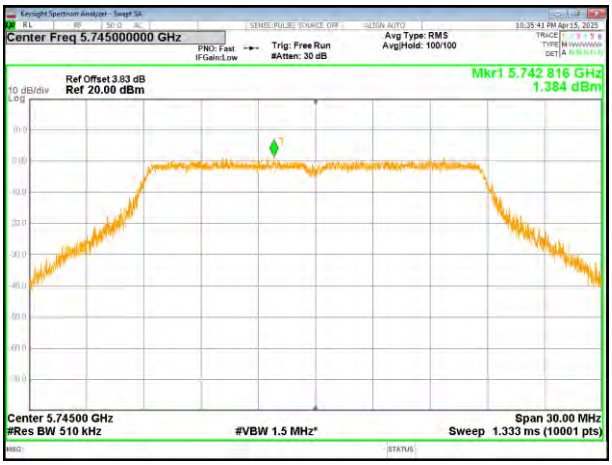
Note: 1. If the measurement is X dBm/510kHz, thus X dBm/510kHz = $(10^{X/10})$*(500 / 510) dBm/500kHz

2. Correction Factor (dB)= duty cycle factor

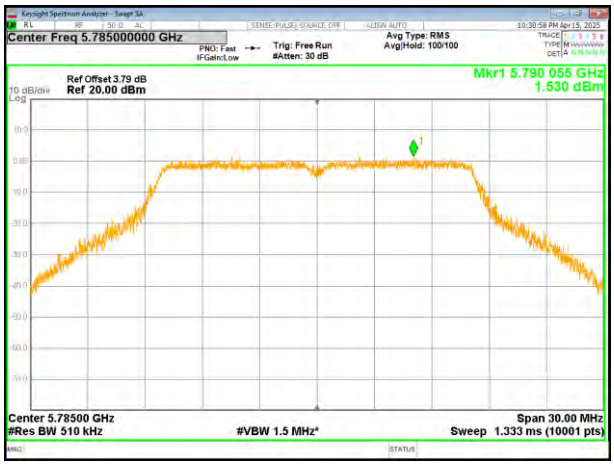
(802.11a) PSD plot on channel 149



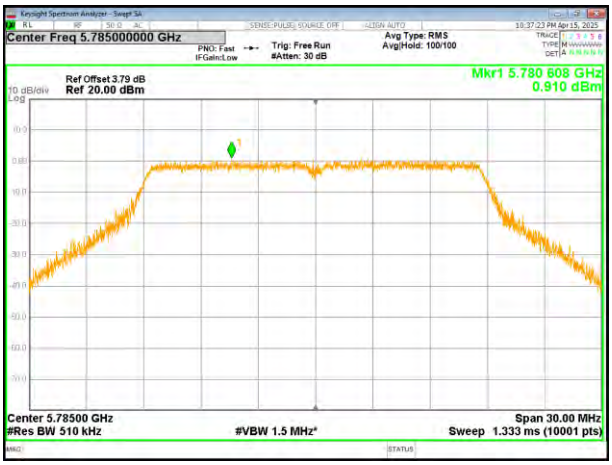
(802.11n20) PSD plot on channel 149



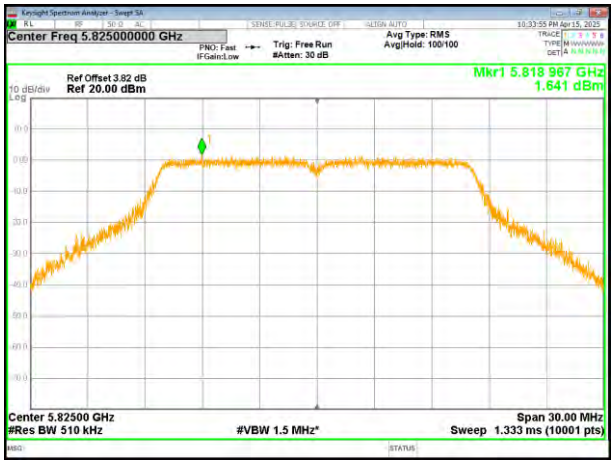
(802.11a) PSD plot on channel 157



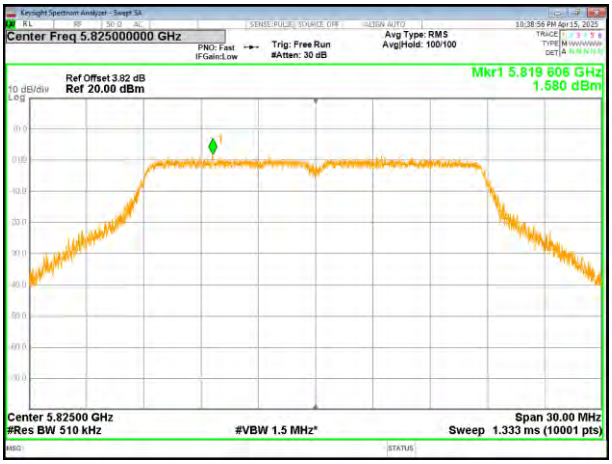
(802.11n20) PSD plot on channel 157



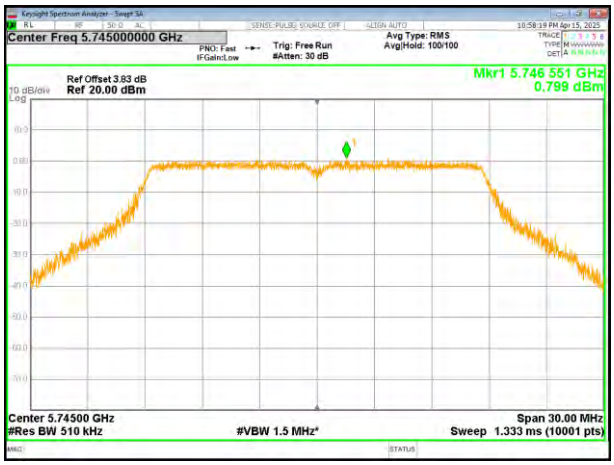
(802.11a) PSD plot on channel 165



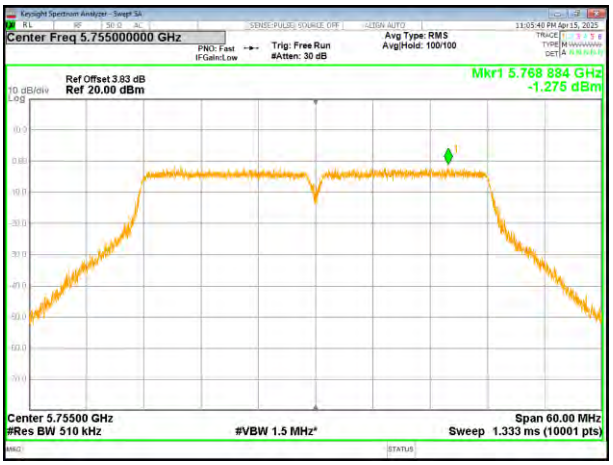
(802.11n20) PSD plot on channel 165



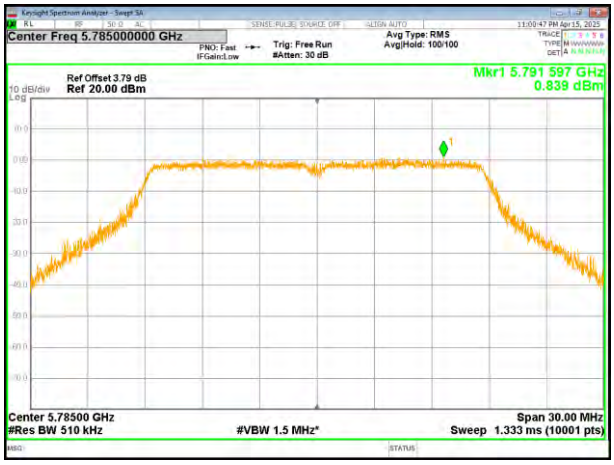
(802.11ac20) PSD plot on channel 149



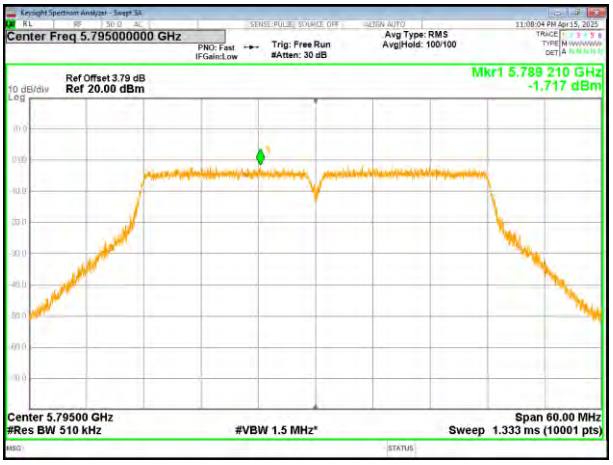
(802.11n40) PSD plot on channel 151



(802.11ac20) PSD plot on channel 157

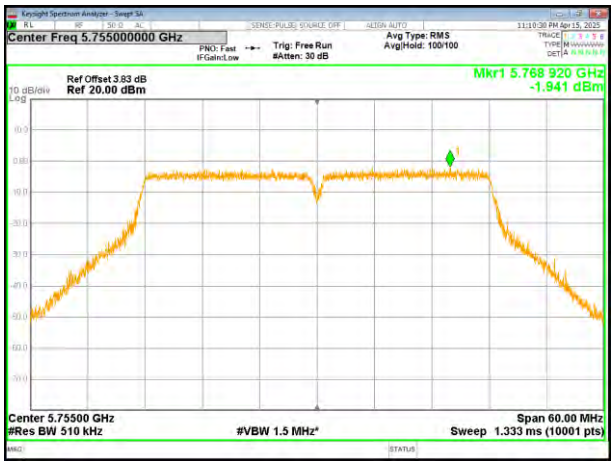


(802.11n40) PSD plot on channel 159

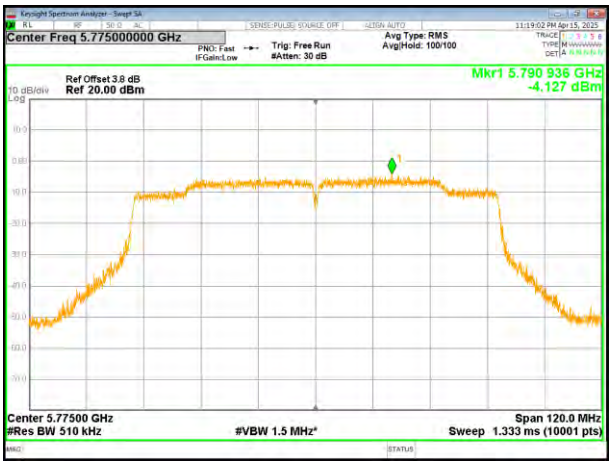


(802.11ac20) PSD plot on channel 165

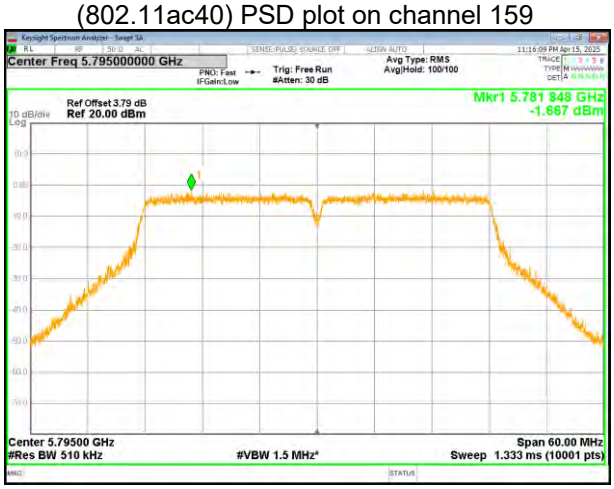
(802.11ac40) PSD plot on channel 151



(802.11ac80) PSD plot on channel 155

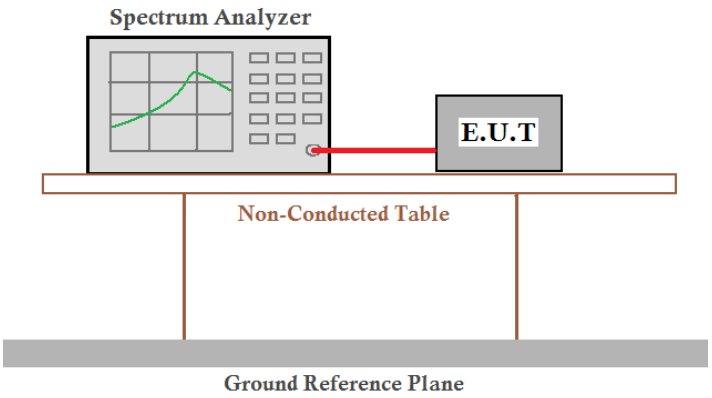


(802.11ac40) PSD plot on channel 159



4.7 Band edge

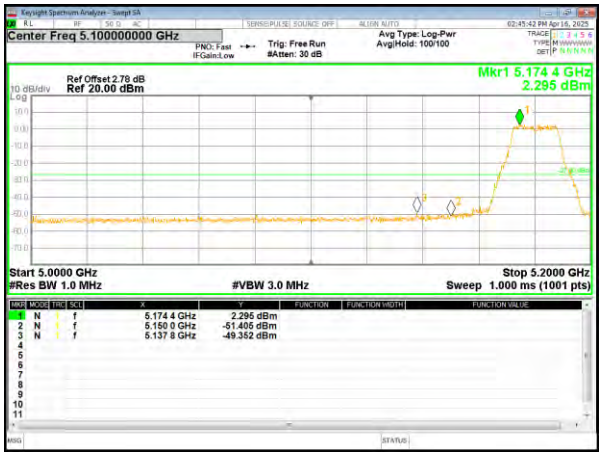
4.7.1 Conducted test Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205, RSS-247 §6.2.1.2&6.2.4.3	
Test Method:	ANSI C63.10: 2013, RSS-Gen	
Limit:	All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	
Test setup:		
Test Procedure:	1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. 2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range. 3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span. 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. 5. Repeat above procedures until all measured frequencies were complete..	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 24.3°C	Humid.: 61%RH
Test voltage:	AC 120V, 60Hz	
Test results:	Pass	

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

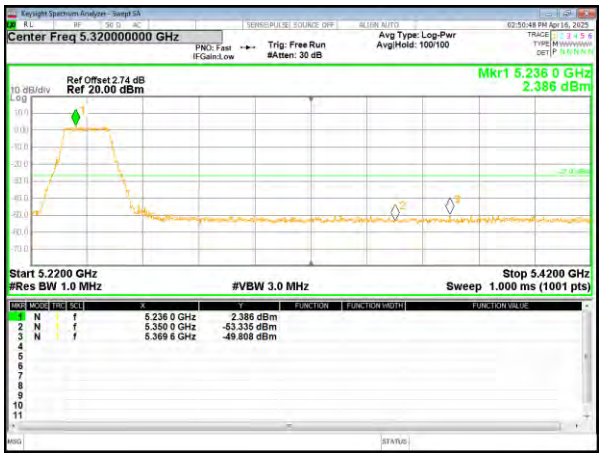
5.180~5.240 GHz

(802.11a) Band Edge, Left Side

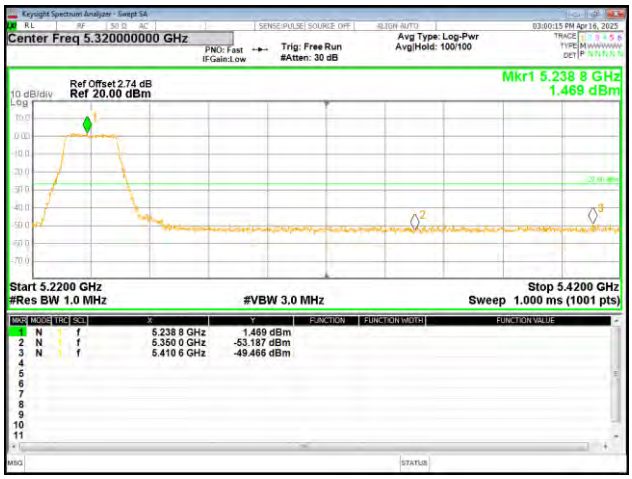


(802.11n20) Band Edge, Left Side

(802.11a) Band Edge, Right Side



(802.11n20) Band Edge, Right Side

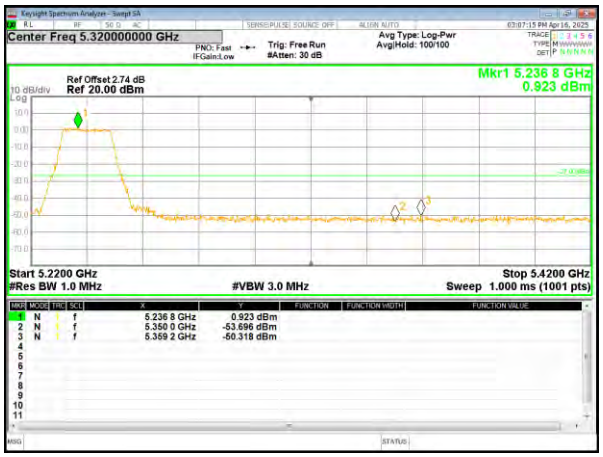


Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

(802.11ac20) Band Edge, Left Side

(802.11n40) Band Edge, Left Side

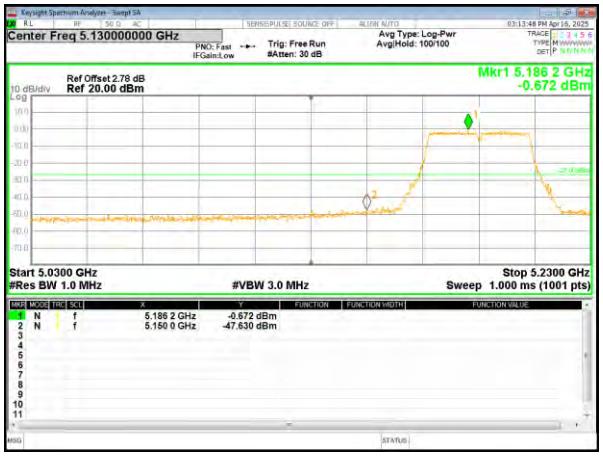
(802.11ac20) Band Edge, Right Side



(802.11n40) Band Edge, Right Side

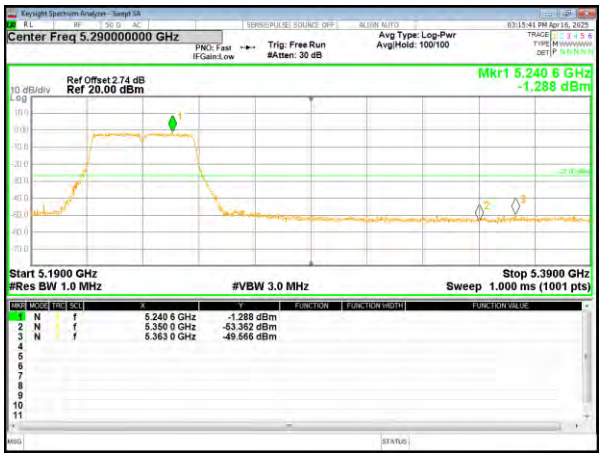
Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge

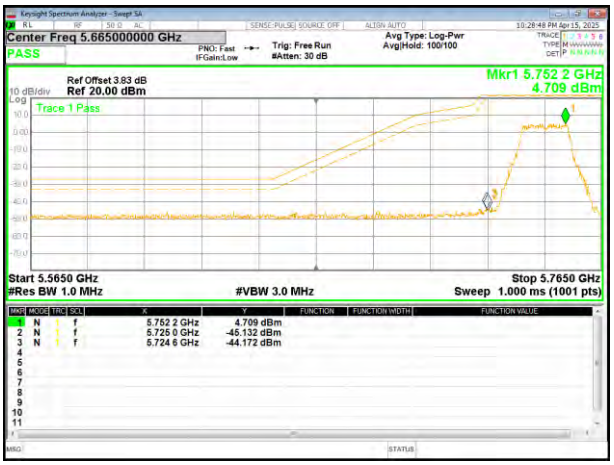
(802.11ac40) Band Edge, Right Side



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

5.745~5.825 GHz

(802.11a) Band Edge, Left Side



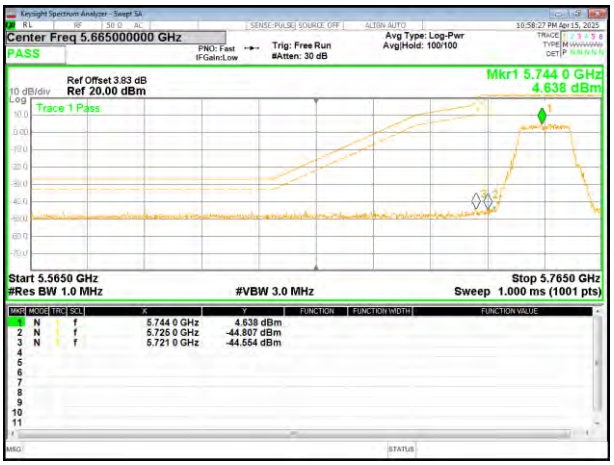
(802.11n20) Band Edge, Left Side

(802.11a) Band Edge, Right Side

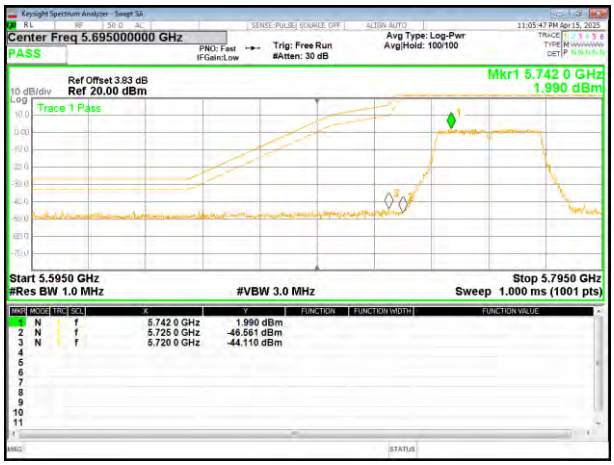
(802.11n20) Band Edge, Right Side

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

(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side

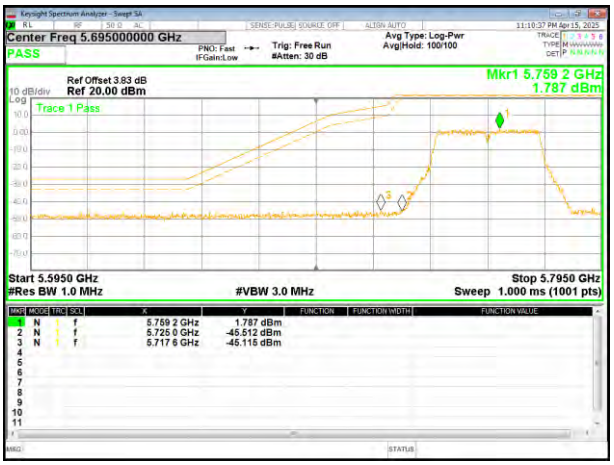


(802.11ac20) Band Edge, Right Side

(802.11n40) Band Edge, Right Side

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

(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge

(802.11ac40) Band Edge, Right Side

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

4.8 Spurious Emission

4.8.1 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4) RSS-247 §6.2.1.2&6.2.4.3
Test Method:	ANSI C63.10:2013, , RSS-Gen
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

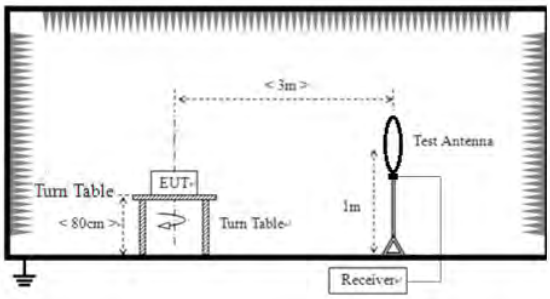
Limit:

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	

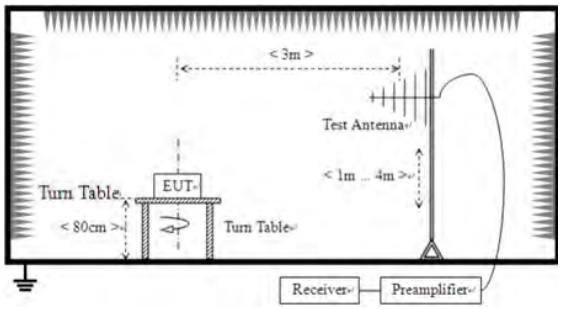
Frequency	Limit (dBm/MHz)	Remark
Above 1GHz	-27.0	Peak Value

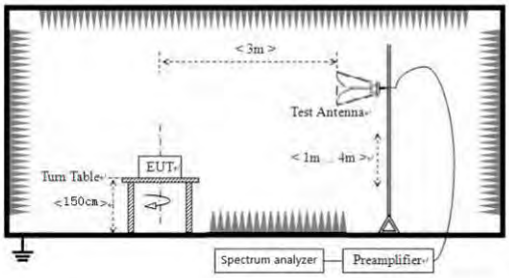
Test setup:

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

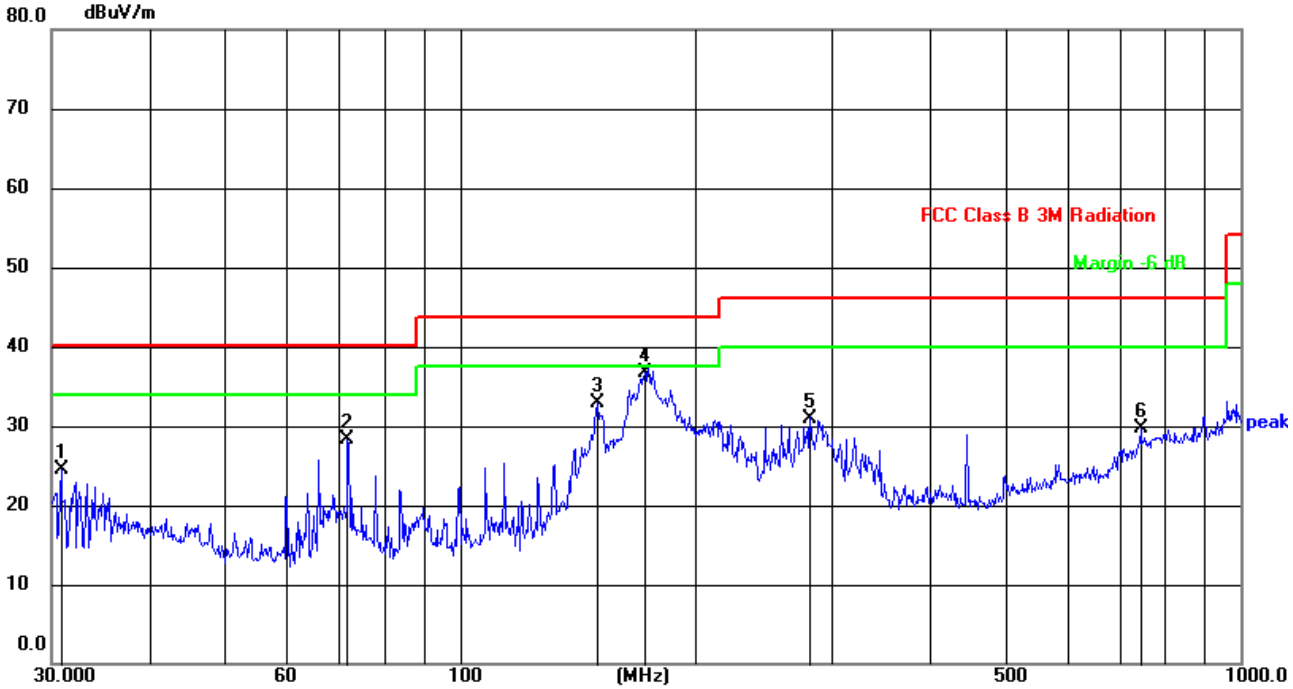
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

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

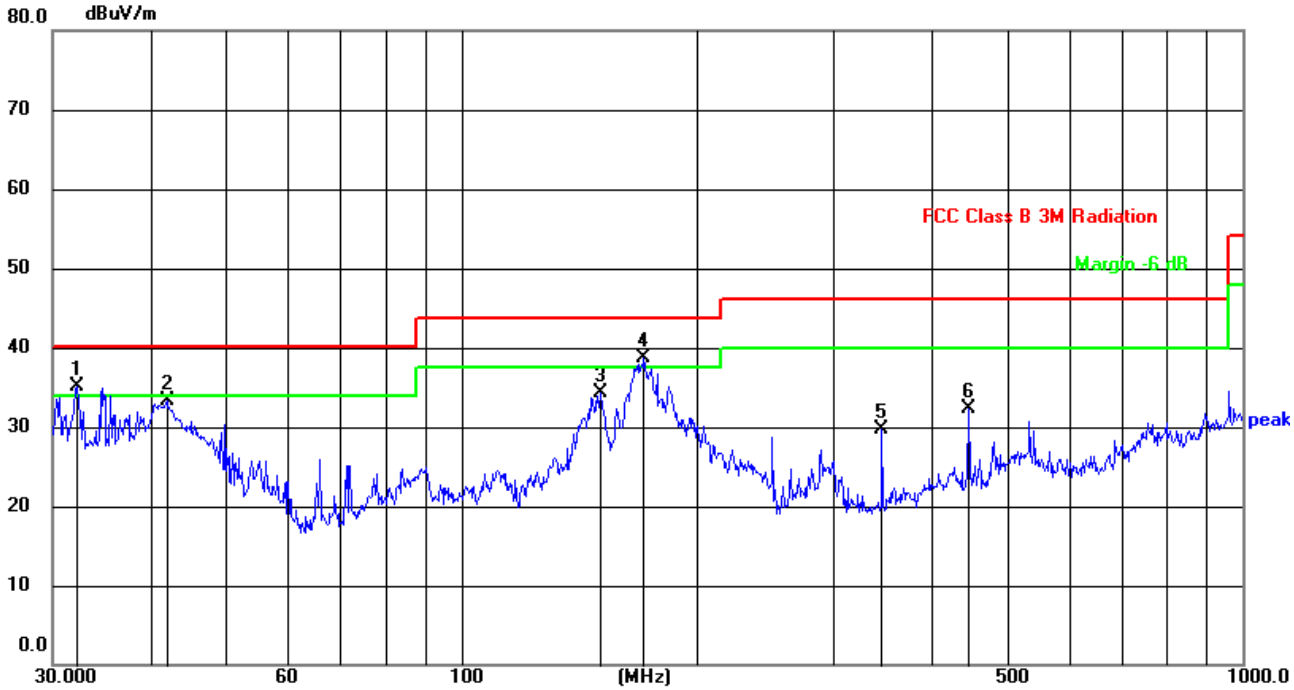
Temperature:	24.3℃	Relative Humidity:	61%
Pressure:	101.2kPar	Test Voltage :	AC 120V 60Hz
Test Mode :	5.2G TX- 802.11ac20 (5180MHz)		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.8534	47.10	-22.59	24.51	40.00	-15.49	QP
2	71.8319	52.77	-24.52	28.25	40.00	-11.75	QP
3	150.0107	53.34	-20.50	32.84	43.50	-10.66	QP
4	172.5987	58.01	-21.36	36.65	43.50	-6.85	QP
5	281.0074	52.29	-21.29	31.00	46.00	-15.00	QP
6	744.8659	37.85	-8.21	29.64	46.00	-16.36	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	32.2924	57.34	-22.28	35.06	40.00	-4.94	QP
2	42.0065	54.38	-21.04	33.34	40.00	-6.66	QP
3	150.5377	54.76	-20.51	34.25	43.50	-9.25	QP
4	171.3925	59.85	-21.18	38.67	43.50	-4.83	QP
5	345.5951	49.13	-19.40	29.73	46.00	-16.27	QP
6	446.4139	47.94	-15.65	32.29	46.00	-13.71	QP

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

Above 1GHz:

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

Temperature:	24.3℃	Relative Humidity:	61%
Pressure:	101.2kPar	Test Voltage :	AC 120V 60Hz
Test Mode :	5.2G TX- 802.11ac20		

Polar (H/V)	Frequency	Meter Reading	Pre-amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
Low Channel:5180MHz									
V	10360.00	45.10	46.20	8.27	38.50	45.67	68.20	-22.53	PK
V	10360.00	39.90	46.20	8.27	38.50	40.47	54.00	-13.53	AV
V	15540.00	49.29	46.30	10.35	38.70	52.04	74.00	-21.96	PK
V	15540.00	39.76	46.30	10.35	38.70	42.51	54.00	-11.49	AV
V	20720.00	52.84	57.40	11.93	37.80	45.17	68.20	-23.03	PK
V	20720.00	49.94	57.40	11.93	37.80	42.27	54.00	-11.73	AV
V	25900.00	48.65	56.50	13.45	39.70	45.30	68.20	-22.90	PK
V	25900.00	43.93	56.50	13.45	39.70	40.58	54.00	-13.42	AV
V	31080.00	46.78	56.10	16.12	41.60	48.40	68.20	-19.80	PK
V	31080.00	40.99	56.10	16.12	41.60	42.61	54.00	-11.39	AV
V	36260.00	44.10	56.80	18.29	42.80	48.39	68.20	-19.81	PK
V	36260.00	39.38	56.80	18.29	42.80	43.67	54.00	-10.33	AV
H	10360.00	44.19	46.20	8.27	38.50	44.76	68.20	-23.44	PK
H	10360.00	39.14	46.20	8.27	38.50	39.71	54.00	-14.29	AV
H	15540.00	48.68	46.30	10.35	38.70	51.43	74.00	-22.57	PK
H	15540.00	37.77	46.30	10.35	38.70	40.52	54.00	-13.48	AV
H	20720.00	52.70	57.40	11.93	37.80	45.03	68.20	-23.17	PK
H	20720.00	48.01	57.40	11.93	37.80	40.34	54.00	-13.66	AV
H	25900.00	49.81	56.50	13.45	39.70	46.46	68.20	-21.74	PK
H	25900.00	45.83	56.50	13.45	39.70	42.48	54.00	-11.52	AV
H	31080.00	46.67	56.10	16.12	41.60	48.29	68.20	-19.91	PK
H	31080.00	41.99	56.10	16.12	41.60	43.61	54.00	-10.39	AV
H	36260.00	43.12	56.80	18.29	42.80	47.41	68.20	-20.79	PK
H	36260.00	39.18	56.80	18.29	42.80	43.47	54.00	-10.53	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)	Detector Type
Middle Channel:5200MHz									
V	10400.00	44.94	46.20	8.27	38.50	45.51	68.20	-22.69	PK
V	10400.00	39.70	46.20	8.27	38.50	40.27	54.00	-13.73	AV
V	15600.00	47.12	46.30	10.35	38.40	49.57	74.00	-24.43	PK
V	15600.00	36.75	46.30	10.35	38.40	39.20	54.00	-14.80	AV
V	20800.00	52.00	57.40	11.93	37.80	44.33	68.20	-23.87	PK
V	20800.00	47.17	57.40	11.93	37.80	39.50	54.00	-14.50	AV
V	26000.00	48.09	56.50	13.45	39.80	44.84	68.20	-23.36	PK
V	26000.00	43.91	56.50	13.45	39.80	40.66	54.00	-13.34	AV
V	31200.00	46.44	56.10	16.12	41.60	48.06	68.20	-20.14	PK
V	31200.00	41.89	56.10	16.12	41.60	43.51	54.00	-10.49	AV
V	36400.00	43.77	56.80	18.29	42.80	48.06	68.20	-20.14	PK
V	36400.00	38.86	56.80	18.29	42.80	43.15	54.00	-10.85	AV
H	10400.00	44.89	46.20	8.27	38.50	45.46	68.20	-22.74	PK
H	10400.00	40.77	46.20	8.27	38.50	41.34	54.00	-12.66	AV
H	15600.00	47.90	46.30	10.35	38.40	50.35	74.00	-23.65	PK
H	15600.00	37.28	46.30	10.35	38.40	39.73	54.00	-14.27	AV
H	20800.00	51.34	57.40	11.93	37.80	43.67	68.20	-24.53	PK
H	20800.00	46.55	57.40	11.93	37.80	38.88	54.00	-15.12	AV
H	26000.00	47.71	56.50	13.45	39.80	44.46	68.20	-23.74	PK
H	26000.00	43.26	56.50	13.45	39.80	40.01	54.00	-13.99	AV
H	31200.00	46.57	56.10	16.12	41.60	48.19	68.20	-20.01	PK
H	31200.00	41.49	56.10	16.12	41.60	43.11	54.00	-10.89	AV
H	36400.00	44.56	56.80	18.29	42.80	48.85	68.20	-19.35	PK
H	36400.00	39.34	56.80	18.29	42.80	43.63	54.00	-10.37	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)	Detector Type
High Channel:5240MHz									
V	10480.00	43.13	46.20	8.27	38.60	43.80	68.20	-24.40	PK
V	10480.00	38.42	46.20	8.27	38.60	39.09	54.00	-14.91	AV
V	15720.00	46.79	46.30	10.35	38.40	49.24	74.00	-24.76	PK
V	15720.00	36.33	46.30	10.35	38.40	38.78	54.00	-15.22	AV
V	20960.00	52.42	57.40	11.93	37.50	44.45	68.20	-23.75	PK
V	20960.00	47.54	57.40	11.93	37.50	39.57	54.00	-14.43	AV
V	26200.00	49.45	56.50	13.45	40.10	46.50	68.20	-21.70	PK
V	26200.00	44.90	56.50	13.45	40.10	41.95	54.00	-12.05	AV
V	31440.00	46.95	56.10	16.12	41.30	48.27	68.20	-19.93	PK
V	31440.00	42.08	56.10	16.12	41.30	43.40	54.00	-10.60	AV
V	36680.00	42.86	56.80	18.29	43.10	47.45	68.20	-20.75	PK
V	36680.00	38.10	56.80	18.29	43.10	42.69	54.00	-11.31	AV
H	10480.00	42.03	46.20	8.27	38.60	42.70	68.20	-25.50	PK
H	10480.00	37.34	46.20	8.27	38.60	38.01	54.00	-15.99	AV
H	15720.00	47.03	46.30	10.35	38.40	49.48	74.00	-24.52	PK
H	15720.00	36.30	46.30	10.35	38.40	38.75	54.00	-15.25	AV
H	20960.00	51.91	57.40	11.93	37.50	43.94	68.20	-24.26	PK
H	20960.00	47.45	57.40	11.93	37.50	39.48	54.00	-14.52	AV
H	26200.00	46.43	56.50	13.45	40.10	43.48	68.20	-24.72	PK
H	26200.00	41.45	56.50	13.45	40.10	38.50	54.00	-15.50	AV
H	31440.00	45.88	56.10	16.12	41.30	47.20	68.20	-21.00	PK
H	31440.00	41.30	56.10	16.12	41.30	42.62	54.00	-11.38	AV
H	36680.00	43.88	56.80	18.29	43.10	48.47	68.20	-19.73	PK
H	36680.00	39.30	56.80	18.29	43.10	43.89	54.00	-10.11	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:	24.3℃	Relative Humidity:	61%
Pressure:	101.2kPar	Test Voltage :	AC 120V 60Hz
Test Mode :	5.8G TX- 802.11a		

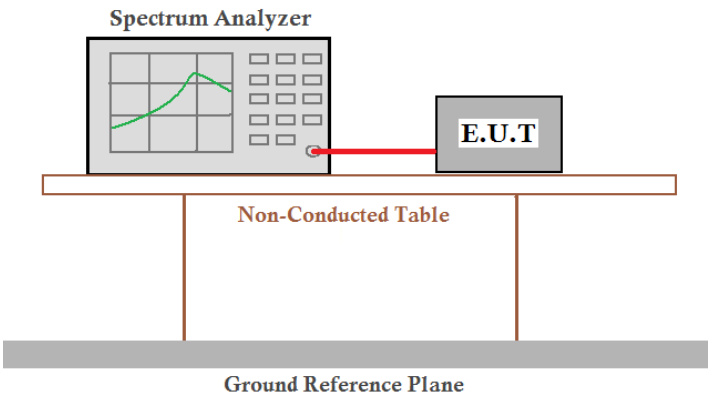
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenn Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Typ
Low Channel:5745MHz									
V	11490.00	47.57	46.10	8.77	39.10	49.34	74.00	-24.66	PK
V	11490.00	36.97	46.10	8.77	39.10	38.74	54.00	-15.26	AV
V	17235.00	42.56	47.60	11.10	38.70	44.76	68.20	-23.44	PK
V	17235.00	37.66	47.60	11.10	38.70	39.86	54.00	-14.14	AV
V	22980.00	55.69	56.90	12.73	37.70	49.22	74.00	-24.78	PK
V	22980.00	44.89	56.90	12.73	37.70	38.42	54.00	-15.58	AV
V	28725.00	46.24	55.60	14.25	40.30	45.19	68.20	-23.01	PK
V	28725.00	41.98	55.60	14.25	40.30	40.93	54.00	-13.07	AV
V	34470.00	45.15	55.90	17.26	42.10	48.61	68.20	-19.59	PK
V	34470.00	40.08	55.90	17.26	42.10	43.54	54.00	-10.46	AV
H	11490.00	47.12	46.10	8.77	39.10	48.89	74.00	-25.11	PK
H	11490.00	36.83	46.10	8.77	39.10	38.60	54.00	-15.40	AV
H	17235.00	42.48	47.60	11.10	38.70	44.68	68.20	-23.52	PK
H	17235.00	37.53	47.60	11.10	38.70	39.73	54.00	-14.27	AV
H	22980.00	54.82	56.90	12.73	37.70	48.35	74.00	-25.65	PK
H	22980.00	45.25	56.90	12.73	37.70	38.78	54.00	-15.22	AV
H	28725.00	47.58	55.60	14.25	40.30	46.53	68.20	-21.67	PK
H	28725.00	43.49	55.60	14.25	40.30	42.44	54.00	-11.56	AV
H	34470.00	45.09	55.90	17.26	42.10	48.55	68.20	-19.65	PK
H	34470.00	40.20	55.90	17.26	42.10	43.66	54.00	-10.34	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)	Detector Type
Middle Channel:5785MHz									
V	11570.00	48.10	46.10	8.77	39.10	49.87	74.00	-24.13	PK
V	11570.00	38.07	46.10	8.77	39.10	39.84	54.00	-14.16	AV
V	17355.00	42.17	47.60	11.10	38.70	44.37	68.20	-23.83	PK
V	17355.00	38.05	47.60	11.10	38.70	40.25	54.00	-13.75	AV
V	23140.00	57.40	56.90	12.73	37.70	50.93	74.00	-23.07	PK
V	23140.00	46.90	56.90	12.73	37.70	40.43	54.00	-13.57	AV
V	28925.00	47.69	55.60	14.25	40.30	46.64	68.20	-21.56	PK
V	28925.00	42.88	55.60	14.25	40.30	41.83	54.00	-12.17	AV
V	34710.00	44.10	55.90	17.26	42.40	47.86	68.20	-20.34	PK
V	34710.00	39.60	55.90	17.26	42.40	43.36	54.00	-10.64	AV
H	11570.00	47.34	46.10	8.77	39.10	49.11	74.00	-24.89	PK
H	11570.00	37.27	46.10	8.77	39.10	39.04	54.00	-14.96	AV
H	17355.00	42.57	47.60	11.10	38.70	44.77	68.20	-23.43	PK
H	17355.00	37.94	47.60	11.10	38.70	40.14	54.00	-13.86	AV
H	23140.00	58.53	56.90	12.73	37.70	52.06	74.00	-21.94	PK
H	23140.00	47.89	56.90	12.73	37.70	41.42	54.00	-12.58	AV
H	28925.00	46.83	55.60	14.25	40.30	45.78	68.20	-22.42	PK
H	28925.00	42.90	55.60	14.25	40.30	41.85	54.00	-12.15	AV
H	34710.00	44.40	55.90	17.26	42.40	48.16	68.20	-20.04	PK
H	34710.00	39.85	55.90	17.26	42.40	43.61	54.00	-10.39	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)	Detector Type
High Channel:5825MHz									
V	11650.00	48.65	46.10	8.77	39.10	50.42	74.00	-23.58	PK
V	11650.00	38.03	46.10	8.77	39.10	39.80	54.00	-14.20	AV
V	17475.00	40.42	47.90	11.23	38.90	42.65	68.20	-25.55	PK
V	17475.00	36.11	47.90	11.23	38.90	38.34	54.00	-15.66	AV
V	23300.00	51.92	57.10	12.73	37.80	45.35	68.20	-22.85	PK
V	23300.00	47.13	57.10	12.73	37.80	40.56	54.00	-13.44	AV
V	29125.00	47.64	55.80	14.25	40.50	46.59	68.20	-21.61	PK
V	29125.00	42.68	55.80	14.25	40.50	41.63	54.00	-12.37	AV
V	34950.00	43.60	56.30	17.91	42.50	47.71	68.20	-20.49	PK
V	34950.00	39.45	56.30	17.91	42.50	43.56	54.00	-10.44	AV
H	11650.00	47.58	46.10	8.77	39.10	49.35	74.00	-24.65	PK
H	11650.00	37.39	46.10	8.77	39.10	39.16	54.00	-14.84	AV
H	17475.00	42.38	47.90	11.23	38.90	44.61	68.20	-23.59	PK
H	17475.00	37.51	47.90	11.23	38.90	39.74	54.00	-14.26	AV
H	23300.00	52.74	57.10	12.73	37.80	46.17	68.20	-22.03	PK
H	23300.00	48.87	57.10	12.73	37.80	42.30	54.00	-11.70	AV
H	29125.00	46.63	55.80	14.25	40.50	45.58	68.20	-22.62	PK
H	29125.00	41.51	55.80	14.25	40.50	40.46	54.00	-13.54	AV
H	34950.00	44.30	56.30	17.91	42.50	48.41	68.20	-19.79	PK
H	34950.00	39.03	56.30	17.91	42.50	43.14	54.00	-10.86	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.

4.8.2 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4) RSS-247 §6.2.1.2&6.2.4.3	
Test Method:	ANSI C63.10:2013 , RSS-Gen	
Limit:	-27dBm/MHz	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 24.3°C	Humid.: 61%RH
Test voltage:	AC 120V, 60Hz	
Test results:	Pass	

Remark:

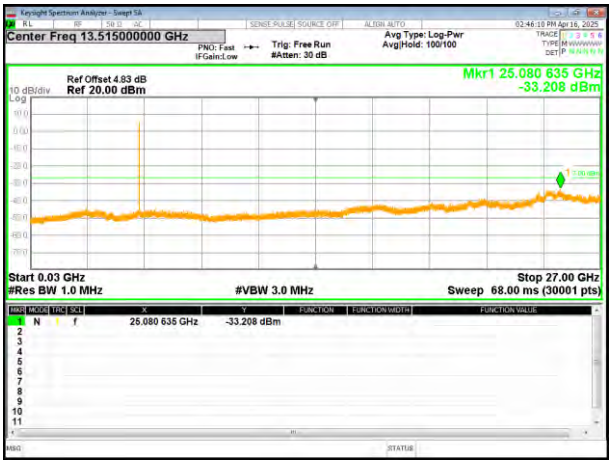
1. Antenna gain and cable loss data included in Offset.

2. We tested 30MHz-40GHz frequency and found 27GHz-40GHz test data was very lower (close to the noise of the spectrum analyzer). The test report only showed data for 30MHz-27GHz.

5180-5240MHz

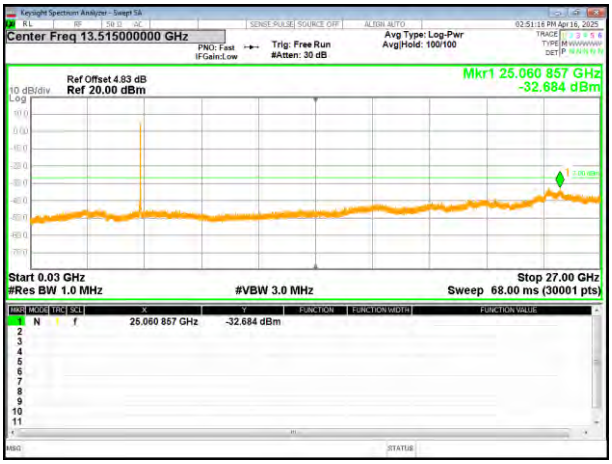
Test Plot

802.11a on channel 36



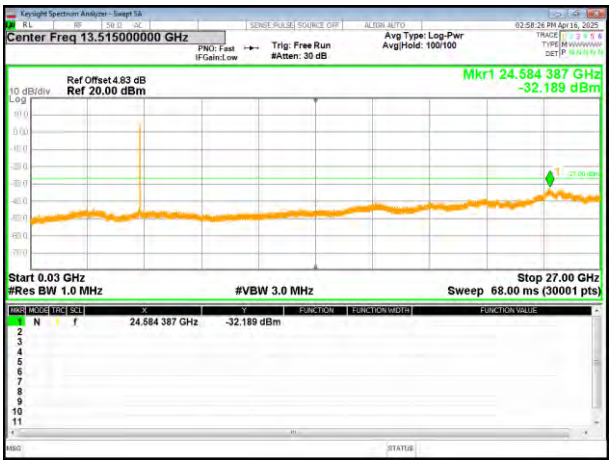
802.11a on channel 40

802.11a on channel 48

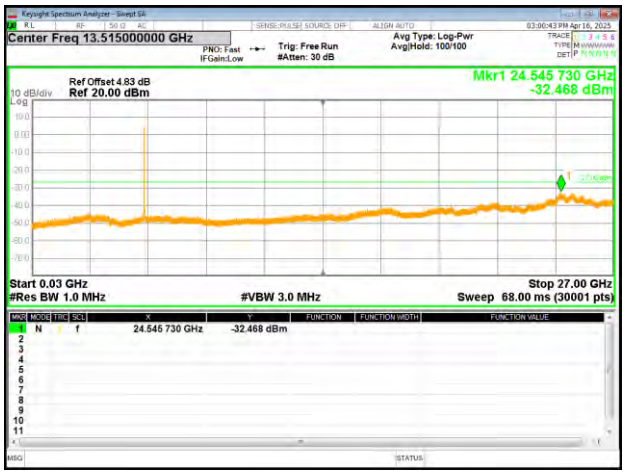


802.11n20 on channel 36

802.11n20 on channel 40

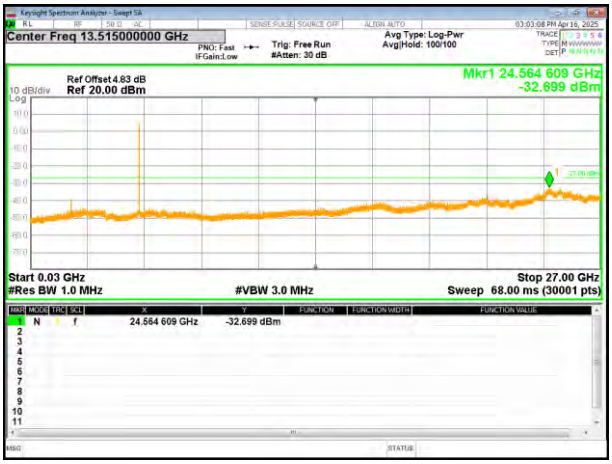


802.11n20 on channel 48

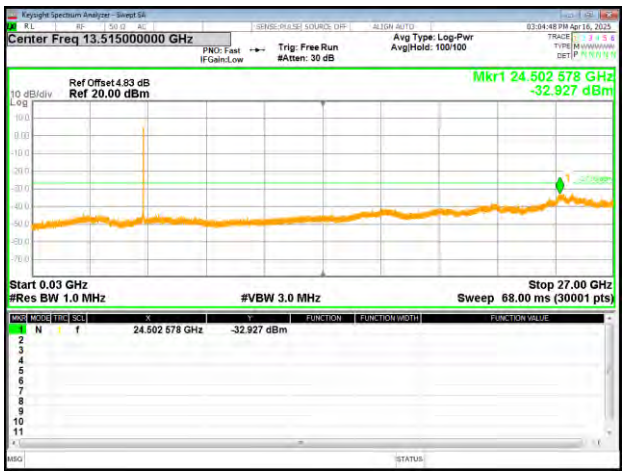


Test Plot

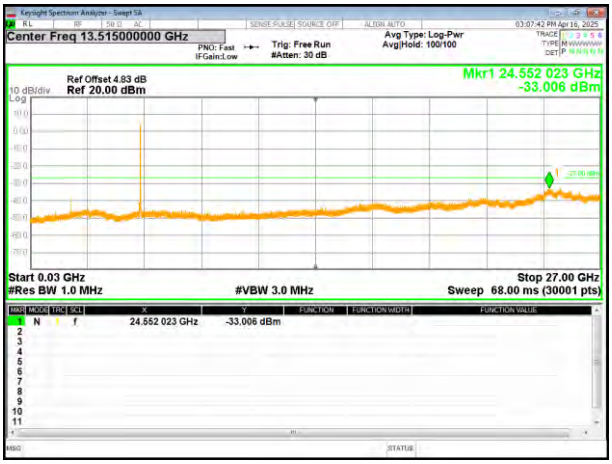
802.11ac20 on channel 36



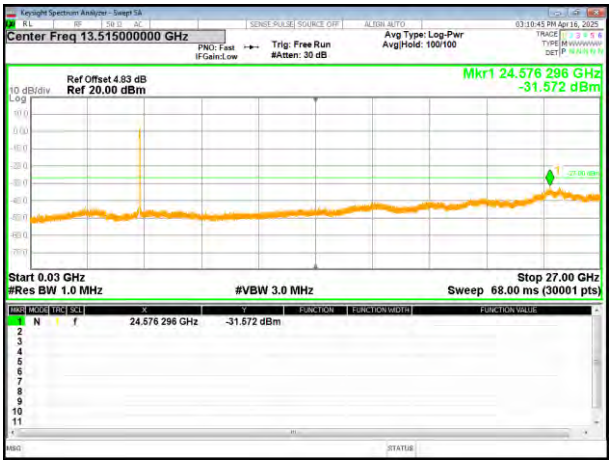
802.11ac20 on channel 40



802.11ac20 on channel 48



802.11n40 on channel 38



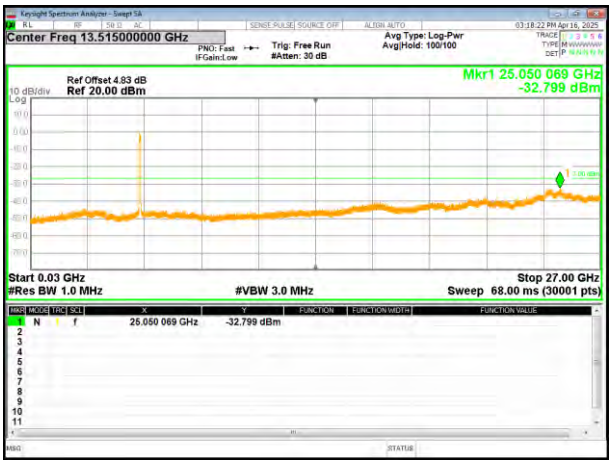
802.11n40 on channel 46

Test Plot

802.11ac40 on channel 38

802.11ac40 on channel 46

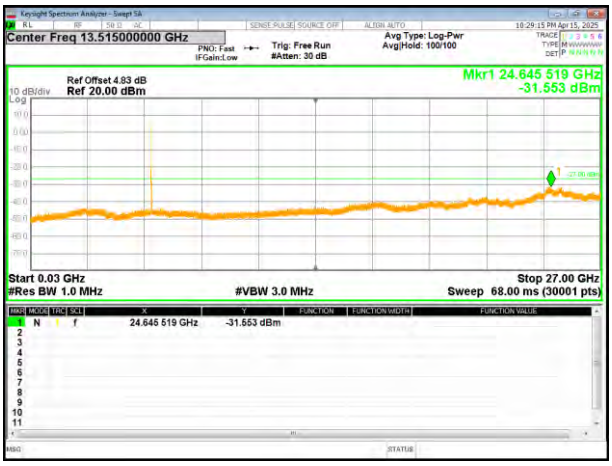
802.11ac80 on channel 42



5745-5825MHz

Test Plot

802.11a on channel 149

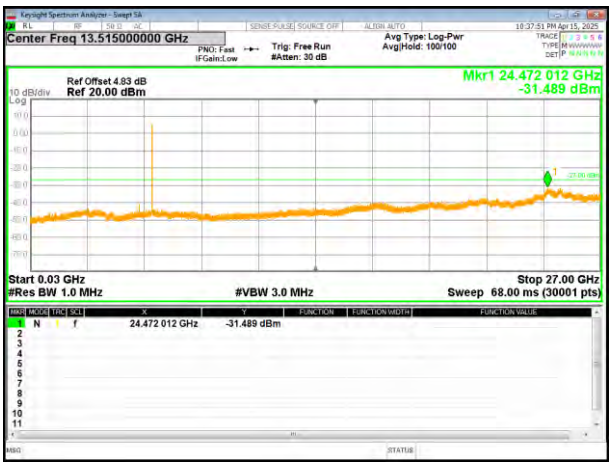


802.11a on channel 157

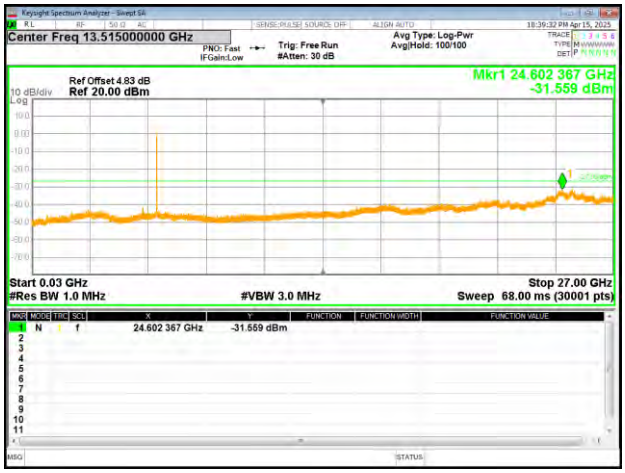
802.11a on channel 165

802.11n20 on channel 149

802.11n20 on channel 157

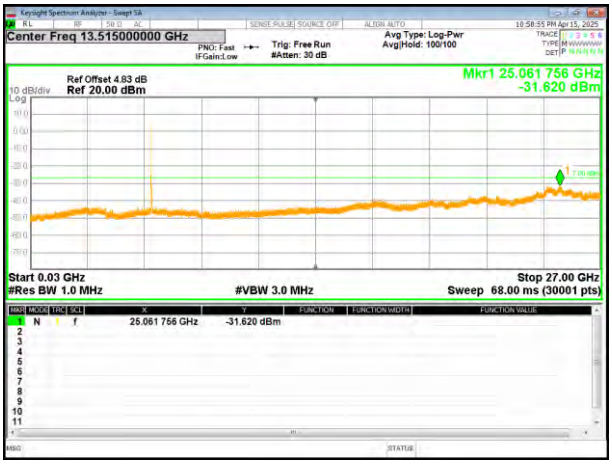


802.11n20 on channel 165



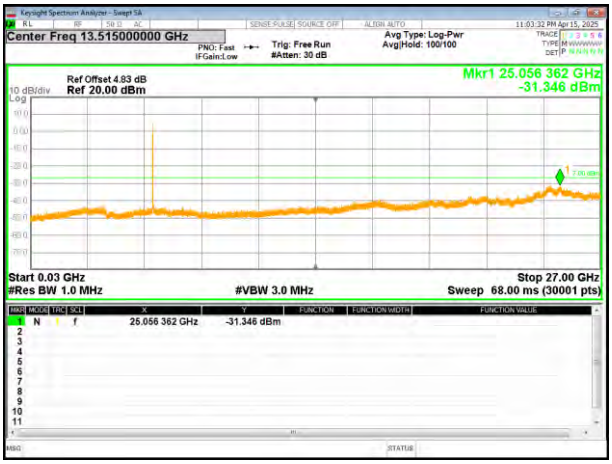
Test Plot

802.11ac20 on channel 149

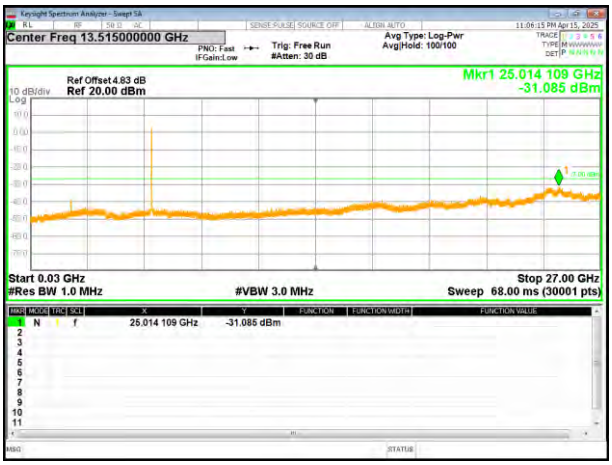


802.11ac20 on channel 157

802.11ac20 on channel 165



802.11n40 on channel 151



802.11n40 on channel 159

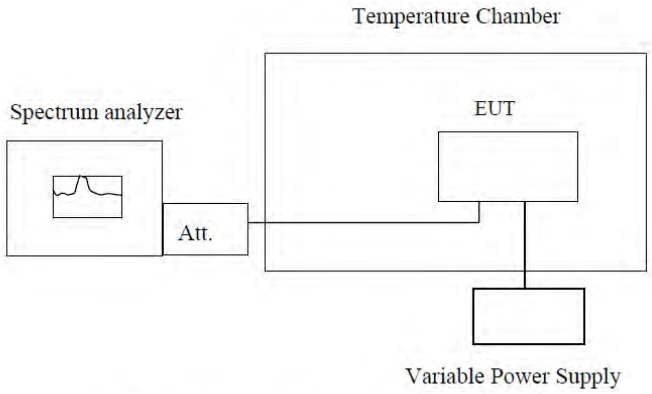
Test Plot

802.11ac40 on channel 151

802.11ac40 on channel 159

802.11ac80 on channel 155

4.9 Frequency stability

Test Requirement:	FCC Part15 C Section 15.407(g) , RSS Gen§ 8.11
Test Method:	ANSI C63.10:2013, FCC Part 2.1055, RSS Gen
Limit:	Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified
Test Procedure:	a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minute s. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test setup:	 **Note :** Measurement setup for testing on Antenna connector
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

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

Measurement data:

Frequency stability versus Temp.					
Power Supply: AC 120V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5180	5179.978	5179.981	5180.068	5180.006
	5190	5189.972	5189.992	5190.069	5190.005
	5200	5199.985	5199.983	5200.060	5199.999
	5210	5209.989	5209.984	5300.070	5209.989
	5220	5219.975	5219.991	5220.061	5219.999
	5230	5229.968	5230.009	5230.082	5299.997
	5240	5179.978	5179.981	5240.060	5240.001
-20	5180	5179.770	5179.981	5180.069	5179.996
	5190	5199.942	5189.992	5190.060	5189.997
	5200	5199.940	5199.983	5200.068	5199.988
	5210	5209.995	5209.984	5210.061	5299.996
	5220	5219.984	5219.991	5220.082	5219.988
	5230	5229.971	5230.009	5230.060	5230.009
	5240	5239.988	5239.981	5240.078	5239.987
-10	5180	5179.993	5179.992	5180.069	5179.958
	5190	5189.989	5189.993	5190.060	5189.988
	5200	5199.984	5199.984	5200.068	5200.013
	5210	5209.990	5299.992	5210.061	5209.997
	5220	5219.985	5219.984	5220.082	5219.988
	5230	5229.983	5230.005	5230.060	5230.016
	5240	5239.956	5239.983	5240.078	5240.004
0	5180	5179.984	5179.954	5180.068	5180.006
	5190	5189.975	5189.984	5190.069	5190.005
	5200	5199.983	5200.009	5200.060	5199.999
	5210	5209.975	5209.993	5300.070	5209.989
	5220	5219.996	5219.984	5220.061	5219.999
	5230	5229.974	5230.012	5230.082	5299.997
	5240	5239.992	5240.000	5240.060	5240.001
10	5180	5179.972	5179.993	5180.069	5180.006
	5190	5189.983	5189.984	5190.060	5180.006
	5200	5199.974	5199.992	5200.068	5190.002
	5210	5209.975	5209.984	5210.061	5199.997
	5220	5219.982	5220.005	5220.082	5210.003
	5230	5230.000	5229.983	5230.060	5219.998
	5240	5239.972	5240.001	5240.078	5229.996
20	5180	5179.993	5179.992	5180.069	5179.958
	5190	5189.989	5189.993	5190.060	5189.988

	5200	5199.984	5199.984	5200.068	5200.013
	5210	5209.990	5299.992	5210.061	5209.997
	5220	5219.985	5219.984	5220.082	5219.988
	5230	5229.983	5230.005	5230.060	5230.016
	5240	5239.956	5239.983	5240.078	5240.004
30	5180	5179.993	5179.992	5180.069	5179.958
	5190	5189.989	5189.993	5190.060	5189.988
	5200	5199.984	5199.984	5200.068	5200.013
	5210	5209.990	5299.992	5210.061	5209.997
	5220	5219.985	5219.984	5220.082	5219.988
	5230	5229.983	5230.005	5230.060	5230.016
	5240	5239.956	5239.983	5240.078	5240.004
40	5180	5179.983	5179.981	5180.069	5179.996
	5190	5189.984	5189.992	5190.060	5189.997
	5200	5199.975	5199.983	5200.068	5199.988
	5210	5299.983	5209.984	5210.061	5299.996
	5220	5219.975	5219.991	5220.082	5219.988
	5230	5229.996	5230.009	5230.060	5230.009
	5240	5239.974	5239.981	5240.078	5239.987
50	5180	5179.945	5179.992	5180.057	5180.121
	5190	5189.975	5189.993	5190.068	5199.996
	5200	5200.000	5199.984	5200.059	5200.021
	5210	5209.984	5299.992	5210.061	5209.999
	5220	5219.975	5219.984	5220.068	5220.014
	5230	5230.003	5230.005	5230.086	5230.007
	5240	5239.991	5239.983	5240.058	5240.015

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)
AC102V	5180	5179.978	5179.981	5180.078	5180.002
	5190	5189.972	5189.992	5190.074	5189.988
	5200	5199.985	5199.983	5200.069	5199.989
	5210	5209.989	5209.984	5210.076	5210.011
	5220	5219.975	5219.991	5220.071	5219.997
	5230	5229.968	5230.009	5230.069	5230.007
	5240	5180.108	5179.997	5180.069	5179.985
AC120V	5180	5199.983	5189.991	5190.060	5189.996
	5190	5200.008	5199.991	5200.068	5199.987
	5200	5209.986	5210.003	5210.061	5209.988
	5210	5220.001	5219.994	5220.082	5219.995
	5220	5229.994	5299.997	5230.060	5230.013
	5230	5240.002	5239.994	5240.078	5239.998
	5240	5180.108	5179.997	5180.069	5179.985
AC138V	5180	5189.983	5179.993	5180.068	5179.996
	5190	5199.974	5189.984	5190.069	5189.997
	5200	5209.975	5199.992	5200.060	5199.988
	5210	5219.982	5209.984	5300.070	5299.996
	5220	5230.000	5220.005	5220.061	5219.988
	5230	5239.985	5229.983	5230.082	5230.009
	5240	5179.972	5240.001	5240.060	5239.987

Frequency stability versus Temp.					
Power Supply: AC 120V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5745	5745.006	5744.975	5744.697	5744.966
	5755	5744.954	5754.991	5755.081	5754.988
	5775	5754.976	5774.990	5775.082	5774.997
	5785	5774.985	5784.993	5785.085	5784.988
	5795	5784.977	5795.004	5795.069	5794.999
	5825	5794.988	5824.985	5825.065	5825.002
-20	5745	5744.971	5744.975	5745.078	5744.989
	5755	5754.996	5754.991	5755.080	5755.015
	5775	5774.977	5774.990	5775.083	5775.011
	5785	5784.987	5784.993	5785.075	5784.995
	5795	5794.985	5795.004	5795.067	5794.984
	5825	5824.995	5824.985	5825.076	5824.919
-10	5745	5744.976	5744.986	5745.062	5745.053
	5755	5754.983	5754.993	5755.087	5744.618
	5775	5774.975	5775.010	5775.068	5755.002
	5785	5784.968	5784.986	5785.077	5775.003
	5795	5794.975	5794.982	5795.076	5785.006
	5825	5824.904	5824.985	5825.086	5794.989
0	5745	5744.971	5744.985	5745.067	5744.989
	5755	5754.996	5755.002	5755.074	5754.996
	5775	5774.977	5775.003	5775.066	5775.013
	5785	5784.987	5784.985	5785.058	5784.989
	5795	5794.985	5795.002	5795.066	5794.985
	5825	5824.995	5825.000	5824.995	5824.988
10	5745	5744.977	5744.985	5745.068	5744.988
	5755	5754.984	5754.992	5755.075	5754.977
	5775	5775.001	5774.984	5775.092	5774.988
	5785	5784.978	5784.976	5785.068	5784.995
	5795	5794.974	5794.983	5795.065	5795.013
	5825	5824.977	5824.912	5825.068	5825.005
20	5745	5744.987	5745.010	5745.078	5744.988
	5755	5755.001	5754.982	5755.092	5755.007
	5775	5774.986	5775.005	5775.077	5774.987
	5785	5784.974	5785.005	5785.064	5785.014
	5795	5794.968	5794.996	5795.059	5795.006
	5825	5825.002	5825.011	5825.093	5825.015
30	5745	5744.966	5744.996	5745.062	5744.999
	5755	5754.982	5754.998	5755.087	5755.013
	5775	5774.981	5775.001	5775.068	5774.998
	5785	5784.985	5784.993	5785.077	5784.985
	5795	5794.996	5794.984	5795.076	5794.979
	5825	5824.977	5824.993	5825.086	5825.013
40	5745	5744.987	5744.985	5745.062	5744.983
	5755	5754.989	5755.002	5755.087	5755.008
	5775	5774.992	5775.003	5775.068	5774.989
	5785	5784.985	5784.985	5785.077	5784.998

	5795	5794.976	5795.002	5795.076	5794.996
	5825	5824.985	5825.000	5825.086	5825.006
50	5745	5744.971	5744.985	5745.067	5744.989
	5755	5754.996	5755.002	5755.074	5754.996
	5775	5774.977	5775.003	5775.066	5775.013
	5785	5784.987	5784.985	5785.058	5784.989
	5795	5794.985	5795.002	5795.066	5794.985
	5825	5824.995	5825.000	5824.995	5824.988

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)
AC102V	5745	5744.971	5744.985	5745.067	5744.989
	5755	5754.996	5755.002	5755.074	5754.996
	5775	5774.977	5775.003	5775.066	5775.013
	5785	5784.987	5784.985	5785.058	5784.989
	5795	5794.985	5795.002	5795.066	5794.985
	5825	5824.995	5825.000	5824.995	5824.988
AC120V	5745	5744.977	5744.996	5745.067	5745.013
	5755	5754.984	5754.998	5755.084	5754.985
	5775	5775.001	5775.001	5775.085	5775.008
	5785	5784.978	5784.993	5785.067	5785.008
	5795	5794.974	5794.984	5795.085	5794.999
	5825	5824.977	5824.993	5825.083	5825.014
AC138V	5745	5744.987	5744.964	5745.045	5744.988
	5755	5754.989	5754.935	5755.067	5754.995
	5775	5774.992	5774.959	5775.076	5774.987
	5785	5784.985	5784.960	5785.067	5784.979
	5795	5794.976	5794.950	5795.079	5794.986
	5825	5824.985	5824.971	5825.082	5824.915

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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