TEST REPORT

Applicant:	Shenzhen Huion Trend Technology Co., Ltd.
Address of Applicant:	Huion Science and Technology Park,Keji 1st Road, Bao'an District, Shenzhen, China
Manufacturer:	Shenzhen Huion Trend Technology Co., Ltd.
Address of Manufacturer:	Huion Science and Technology Park,Keji 1st Road, Bao'an District, Shenzhen, China
Product Name:	Creative Drawing Pad
Model No.:	KT1201, KT1101
Trade Mark:	HUION
FCC ID:	2A8IG-D251
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of Test:	Mar.18, 2025-May.22, 2025
Date of report issued:	May.22, 2025

Remark:

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Prepared By

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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	Jason Huang
Conducted Output Power	15.407 (a)(1)/(a)(3)	Pass	Kara Wu
26dB Bandwidth and 99% Occupied Bandwidth	15.407 (a)(12)	Pass	Kara Wu
6dB Bandwidth	15.407 (e)	Pass	Kara Wu
Power Spectral Density	15.407(a)(1)/(a)(3)	Pass	Kara Wu
Band Edge	15.407(b)(1)/(b)(4)	Pass	Kara Wu
Spurious Emission	15.205/15.209 15.407(b)(1)/(b)(4)/(b)(8)	Pass	Jason Huang
Frequency Stability	15.407(g)	Pass	Kara Wu

Remarks:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *Test according to ANSI C63.10:2013*
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
Duty cycle	±0.05%	(1)
Occupied Channel Bandwidth	0.55%	(1)
RF output power, conducted	±0.57 dB	(1)
Power Spectral Density, conducted	±0.61 dB	(1)
Unwanted Emissions, conducted	±0.64 dB	(1)
AC Power Line Conducted Emission	± 2.55 dB	(1)
Radiated emissions 9K-30MHz	±3.79 dB	(1)
Radiated emissions 30M- 1GHz	± 4.24 dB	(1)
Radiated emissions 1GHz-18GHz	± 4.26 dB	(1)
Radiated emissions 18GHz-40GHz	±4.17 dB	(1)
Frequency error	Uc=1X10-7	(1)
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:	Creative Drawing Pad
Model No.:	KT1201, KT1101
Difference of model(s)	All the model are the same circuit and RF module, except the model names.
Test Model:	KT1201
Hardware Version:	V2.1
Software Version:	1.0
Sample(s) Status:	Engineer sample
Operation Frequency:	☒5180-5240MHz for 802.11a/n(HT20)/ac20(VHT20); 5190-5230MHz for 802.11n(HT40)/ac40(VHT40); 5210MHz for 802.11 ac80(VHT40); ☒5745-5825 MHz for 802.11a/n(HT20)/ac20(VHT20); 5755-5795 MHz for 802.11n(HT40)/ac40(VHT40); 5775MHz for 802.11 ac80(VHT40);
Channel numbers:	☒4 channels for 802.11a/n20(HT20)/ac20(VHT20) in the 5180-5240MHz band; 2 channels for 802.11 n40(HT40)/ac40(VHT40) in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210(VHT80)MHz band ; ☒5 channels for 802.11802.11a/n20(HT20)/ac20(VHT20) in the 5745-5825MHz band ; 2 channels for 802.11 n40(HT40)/ac40(VHT40) in the 5755-5795MHz band ; 1 channels for 802.11 5210(VHT80) in the 5775MHz band
Channel bandwidth:	802.11a/802.11n(HT20)/ 802.11ac(VHT20): 20MHz 802.11n(HT40)/ 802.11ac(VHT40) : 40MHz 802.11ac(VHT80) : 80MHz
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT/20/40/80):NSS1, MCS0-MCS9
Modulation technology:	Orthogonal Frequency Division Multiplexing (OFDM) with BPSK/QPSK/16QAM/64QAM/256QAM
Antenna Type:	FPC Antenna
Antenna gain:	2.76 dBi(Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.)
Battery	DC 3.8V 10000mAh
Power supply:	N/A
Adapter Model:	DC 3.8V From Battery or DC 5V From Adapter

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190MHz	40	5200MHz	42	5210MHz
44	5220MHz	46	5230MHz	48	5240MHz	/	/
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	151	5755MHz	153	5765MHz	155	5775MHz
157	5785MHz	159	5795MHz	161	5805MHz	/	/
165	5825MHz	/					

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	**Frequency (MHz)**		
	802.11 a /n(HT20)/ac(VHT20)	802.11 n(HT40)/ac(VHT40)	802.11ac(VHT80)
Lowest channel	5180	5190	5210
Middle channel	5200		
Highest channel	5240	5230	

Test channel	**Frequency (MHz)**		
	802.11 a /n(HT20)/ac(VHT20)	802.11 n(HT40)/ac(VHT40)	802.11ac(VHT80)
Lowest channel	5745	5755	5775
Middle channel	5785		
Highest channel	5825	5795	

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode(or with a duty cycle ≥ 98%)
Remark: For battery operated equipment, the EUT was performed using a new DC 3.8V battery.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pretest Mode	Description
Mode 1	802.11a / n 20/ ac 20 CH36/ CH40/ CH 48 802.11a /n 20/ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40/ac 40 CH38/ CH 46 802.11n 40/ac 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	/
Mode 5	Link Mode

Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a / n 20/ ac 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40/ac 40 CH38/ CH 46 802.11n 40/ac 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	/

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

2.3 Description of Support Units

No.	Description	Manufacturer	Model	Serial Number
1	ADAPTER	XIAOMI	MDY-11-EM	/

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	Engineering mode
Power level setup	Default

3 Test Instruments list

Conducted Emission

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI3	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 2.76 dBi, reference to the appendix II for details	

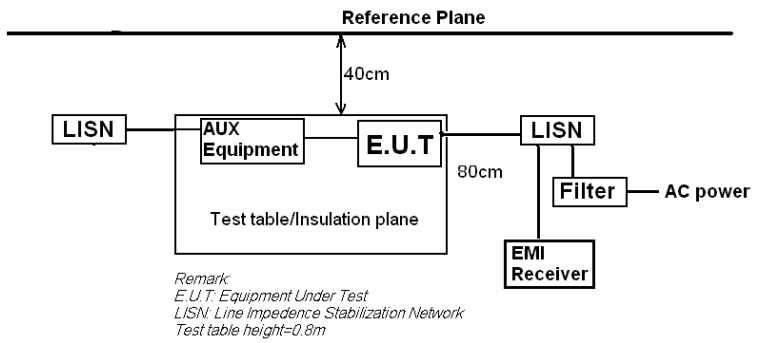
4.2 Conducted Emissions

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:



Test procedure:

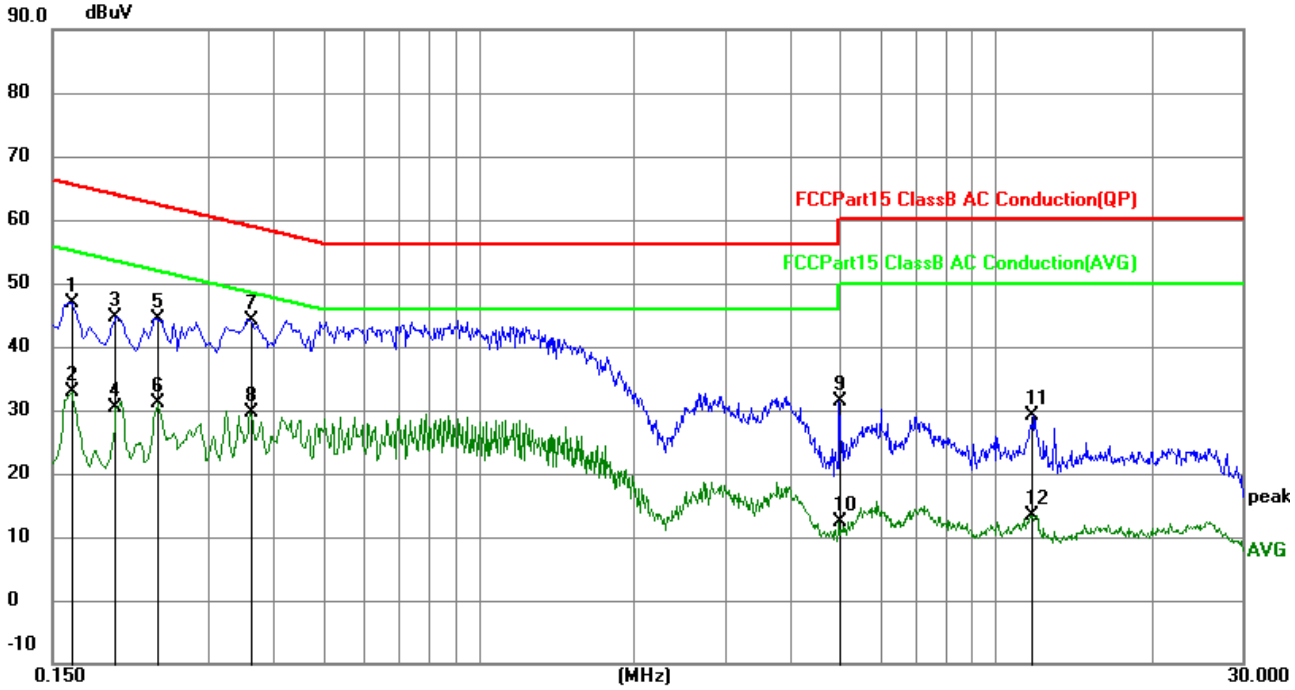
1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling 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.:	25.3°C	Humid.:	57%	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)

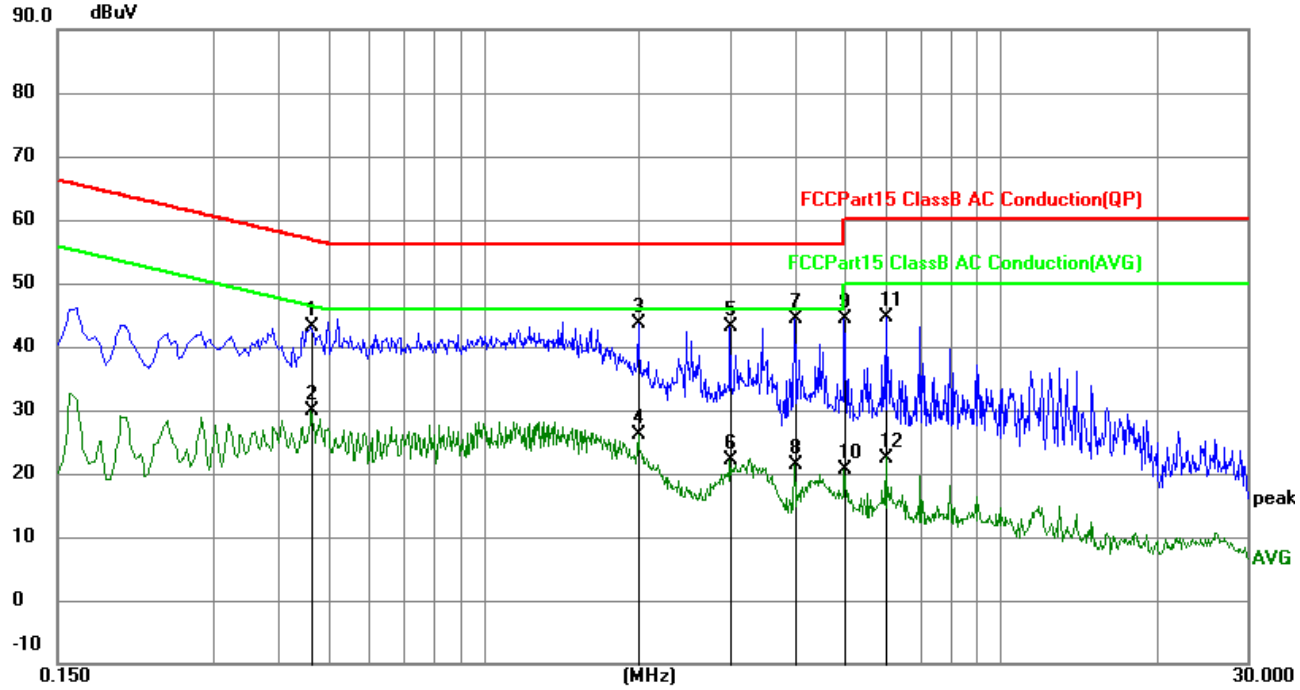
Measurement Result

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1633	37.19	9.80	46.99	65.29	-18.30	QP
2	0.1633	23.10	9.80	32.90	55.29	-22.39	AVG
3	0.1986	34.86	9.81	44.67	63.67	-19.00	QP
4	0.1986	20.65	9.81	30.46	53.67	-23.21	AVG
5	0.2391	34.50	9.82	44.32	62.13	-17.81	QP
6	0.2391	21.22	9.82	31.04	52.13	-21.09	AVG
7	0.3615	34.27	9.88	44.15	58.69	-14.54	QP
8	0.3615	19.82	9.88	29.70	48.69	-18.99	AVG
9	4.9782	21.54	9.83	31.37	56.00	-24.63	QP
10	4.9782	2.61	9.83	12.44	46.00	-33.56	AVG
11	11.6826	19.20	9.82	29.02	60.00	-30.98	QP
12	11.6826	3.67	9.82	13.49	50.00	-36.51	AVG

Neutral:

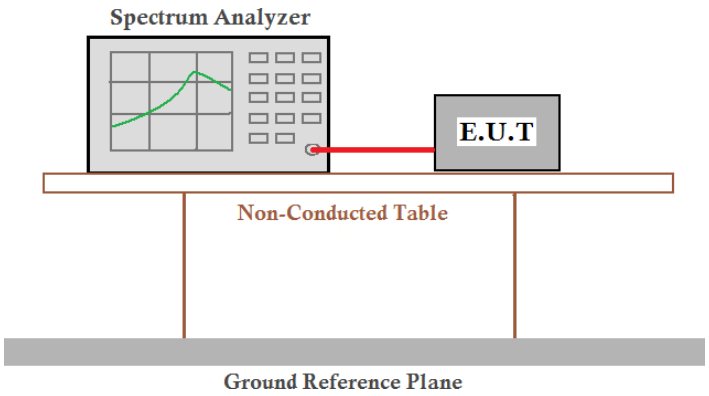


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4650	33.19	9.93	43.12	56.60	-13.48	QP
2	0.4650	19.98	9.93	29.91	46.60	-16.69	AVG
3	1.9994	33.69	9.85	43.54	56.00	-12.46	QP
4	1.9994	16.17	9.85	26.02	46.00	-19.98	AVG
5	3.0030	33.39	9.84	43.23	56.00	-12.77	QP
6	3.0030	12.21	9.84	22.05	46.00	-23.95	AVG
7	4.0020	34.55	9.84	44.39	56.00	-11.61	QP
8	4.0020	11.56	9.84	21.40	46.00	-24.60	AVG
9	5.0010	34.55	9.83	44.38	60.00	-15.62	QP
10	5.0010	10.72	9.83	20.55	50.00	-29.45	AVG
11	6.0000	34.89	9.83	44.72	60.00	-15.28	QP
12	6.0000	12.67	9.83	22.50	50.00	-27.50	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.: 22.1°C	Humid.: 52%RH
Test voltage:	DC 3.8V From Battery	
Test results:	Pass	

Measurement Result

5180-5240MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	97.62	0.10
TX 802.11n20 Mode	97.46	0.11
TX 802.11ac20 Mode	97.74	0.10
TX 802.11n40 Mode	94.89	0.23
TX 802.11ac40 Mode	95.2	0.21
TX 802.11ac80 Mode	82.28	0.85

5745-5825 MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	97.89	0.09
TX 802.11n20 Mode	97.74	0.10
TX 802.11ac20 Mode	97.76	0.10
TX 802.11n40 Mode	97.01	0.13
TX 802.11ac40 Mode	97.01	0.13
TX 802.11ac80 Mode	75.00	1.25

Test plot

5180-5240MHz

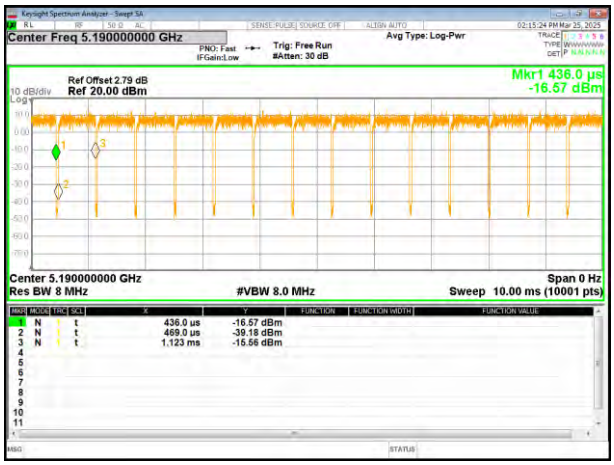
(802.11a) plot

(802.11 n20) plot

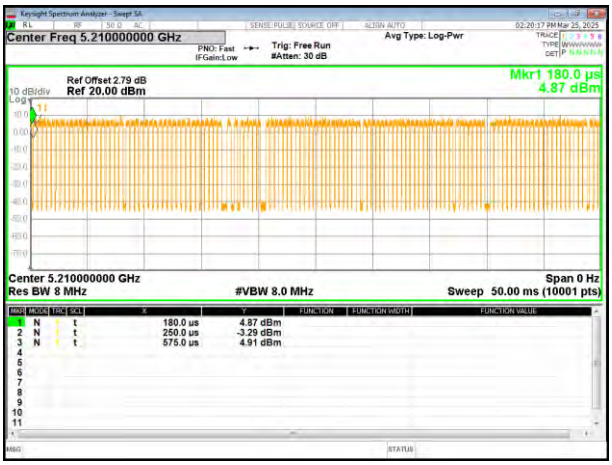
(802.11ac20) plot

(802.11 n40) plot

(802.11ac40) plot



(802.11ac80) plot



5745-5825 MHz

(802.11a) plot

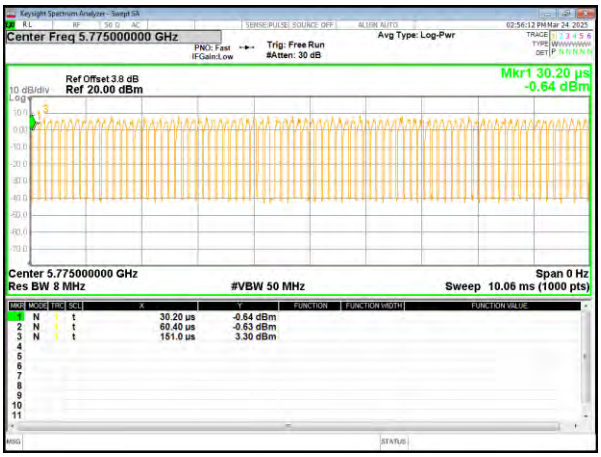
(802.11 n20) plot

(802.11ac20) plot

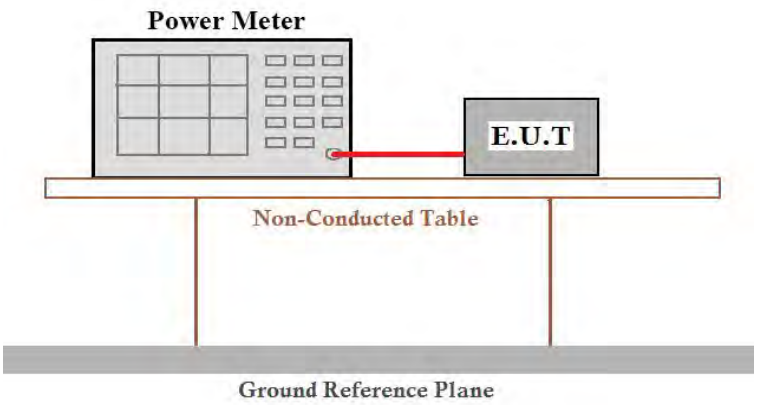
(802.11 n40) plot

(802.11ac40) plot

(802.11ac80) plot



4.4 Conducted Output Power

Test Requirement:	FCC Part15 E Section 15.407 (a)(1)/(a)(3)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	5150-5250MHz : 250mW 5725~5850MHz : 1W	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.1°C	Humid.: 52%RH
Test voltage:	DC 3.8V From Battery	
Test results:	Pass	

Measurement Result

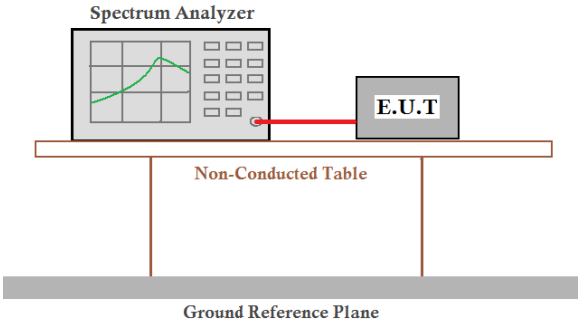
5180-5240MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	0.10	7.23	7.33	23.98	Pass
CH40	5200	0.10	7.15	7.25	23.98	Pass
CH48	5240	0.10	6.82	6.92	23.98	Pass
TX 802.11 n20 Mode						
CH36	5180	0.11	7.22	7.33	23.98	Pass
CH40	5200	0.11	7.04	7.15	23.98	Pass
CH48	5240	0.11	6.78	6.89	23.98	Pass
TX 802.11 ac20 Mode						
CH36	5180	0.10	7.38	7.48	23.98	Pass
CH40	5200	0.10	7.19	7.29	23.98	Pass
CH48	5240	0.10	6.97	7.07	23.98	Pass
TX 802.11 n40 Mode						
CH38	5190	0.23	6.57	6.80	23.98	Pass
CH46	5230	0.23	6.45	6.68	23.98	Pass
TX 802.11 ac40 Mode						
CH38	5190	0.21	6.56	6.77	23.98	Pass
CH46	5230	0.21	6.49	6.70	23.98	Pass
TX 802.11 ac80 Mode						
CH42	5210	0.85	5.61	6.46	23.98	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	0.09	6.49	6.58	30	Pass
CH157	5785	0.09	6.25	6.34	30	Pass
CH165	5825	0.09	6.77	6.86	30	Pass
TX 802.11 n20 Mode						
CH149	5745	0.10	6.41	6.51	30	Pass
CH157	5785	0.10	6.26	6.36	30	Pass
CH165	5825	0.10	6.77	6.87	30	Pass
TX 802.11 ac20 Mode						
CH149	5745	0.10	6.76	6.86	30	Pass
CH157	5785	0.10	6.40	6.50	30	Pass
CH165	5825	0.10	6.94	7.04	30	Pass
TX 802.11 n40 Mode						
CH151	5755	0.13	5.33	5.46	30	Pass
CH159	5795	0.13	5.59	5.72	30	Pass
TX 802.11 ac40 Mode						
CH151	5755	0.13	5.26	5.39	30	Pass
CH159	5795	0.13	5.51	5.64	30	Pass
TX 802.11 ac80 Mode						
CH155	5775	1.25	5.36	6.61	30	Pass

4.5 Bandwidth &99% Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407(a)(12)&15.407(e)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Measurements in the 5.725-5.85 GHz band, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.1°C	Humid.: 52%RH
Test voltage:	DC 3.8V From Battery	
Test results:	Pass	

Measurement Result

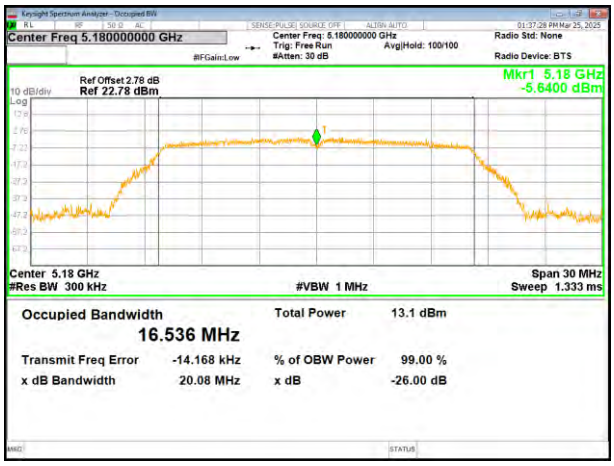
5180-5240MHz

Test CH	-26dB Channel Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (VHT20)	802.11n (HT40)	802.11ac (VHT40)	802.11ac (VHT80)	
Lowest	20.08	20.32	20.20	40.03	39.88	--	Pass
Middle	19.97	20.37	20.41	--	--	79.29	
Highest	19.79	20.03	20.29	39.85	39.61	--	

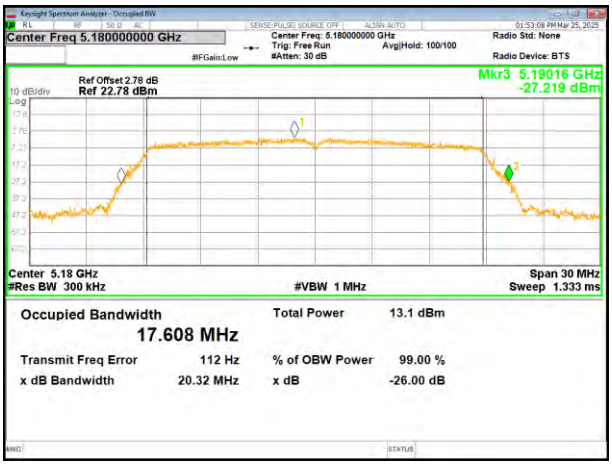
Test CH	99% Occupy Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (VHT20)	802.11n (HT40)	802.11ac (VHT40)	802.11ac (VHT80)	
Lowest	16.380	17.539	17.525	35.935	35.973	--	Pass
Middle	16.400	17.537	17.539	--	--	75.142	
Highest	16.377	17.550	17.514	35.947	35.893	--	

Test plot -26dB Channel Bandwidth

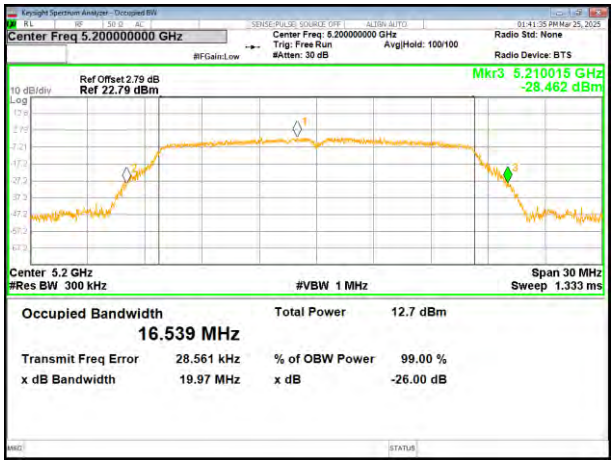
(802.11a) plot on channel 36



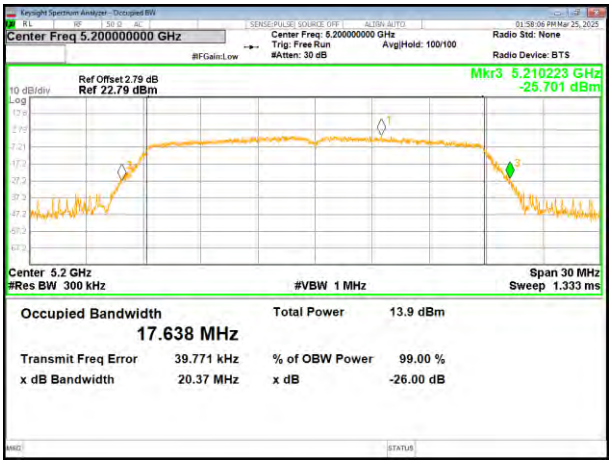
(802.11 n20) plot on channel 36



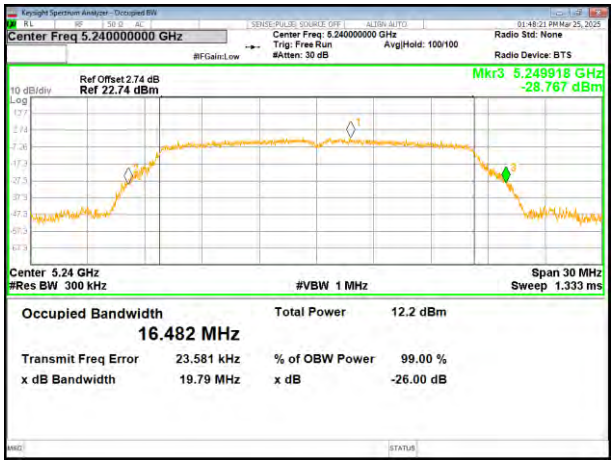
(802.11a) plot on channel 40



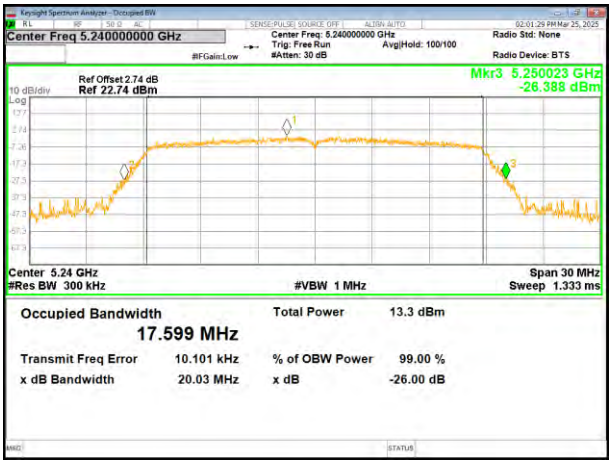
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

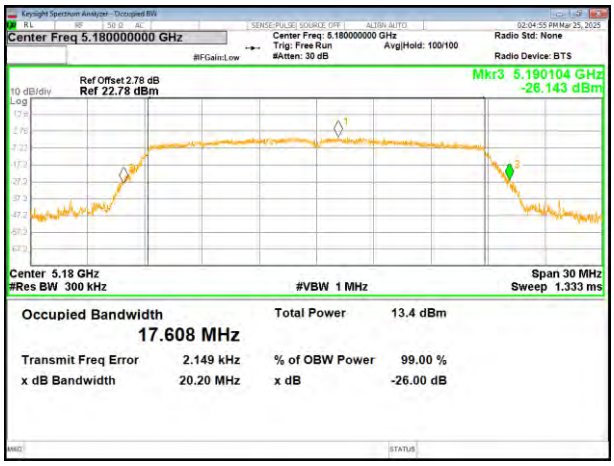


(802.11 n20) plot on channel 48

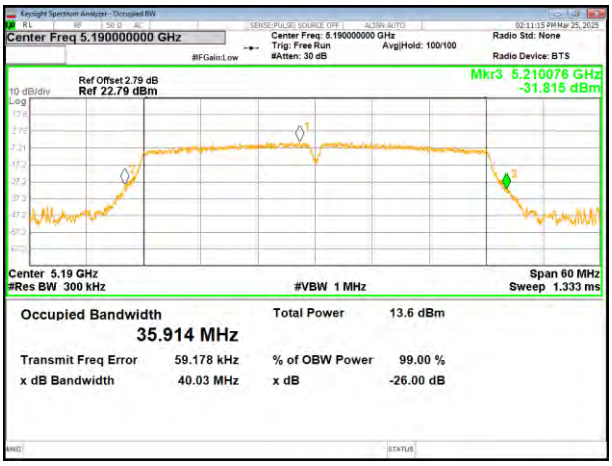


Test plot

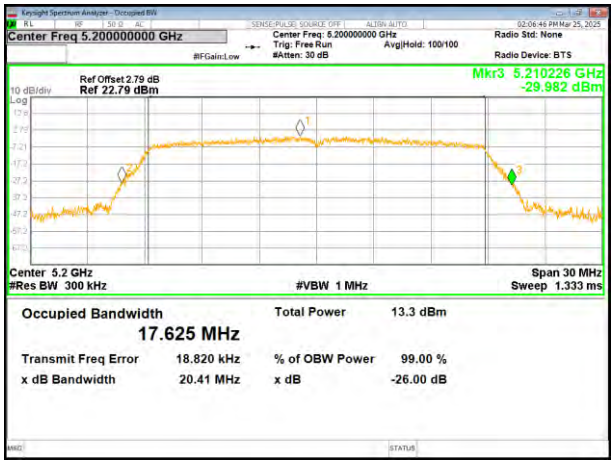
(802.11ac20) plot on channel 36



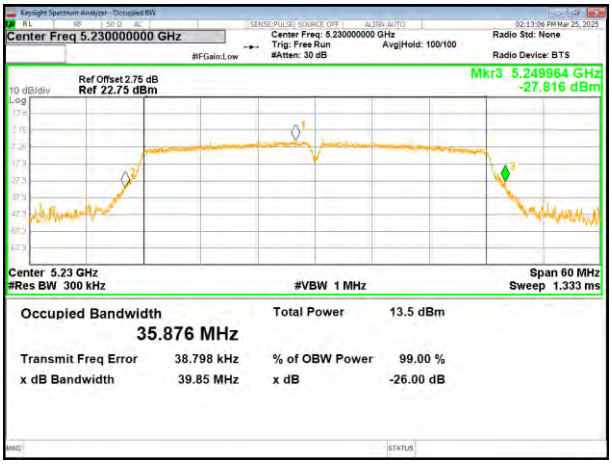
(802.11 n40) plot on channel 38



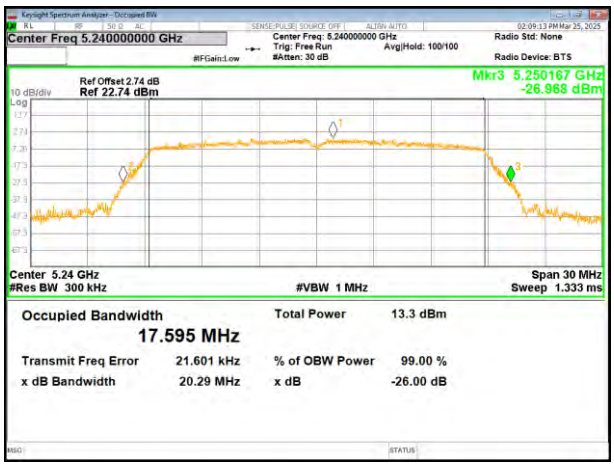
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

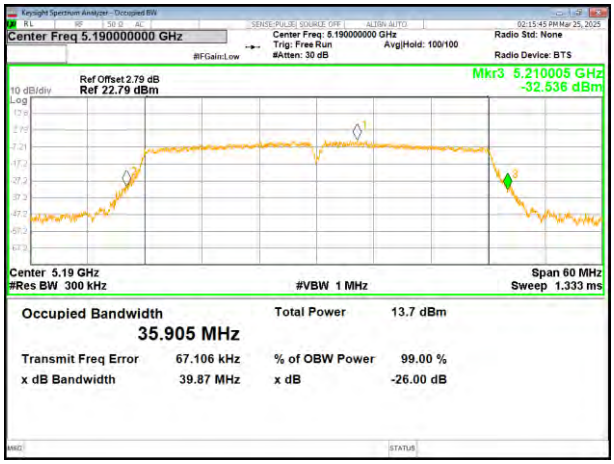


(802.11ac20) plot on channel 48

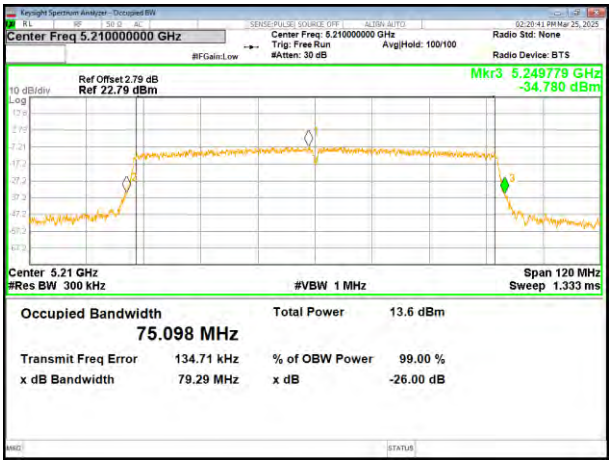


Test plot

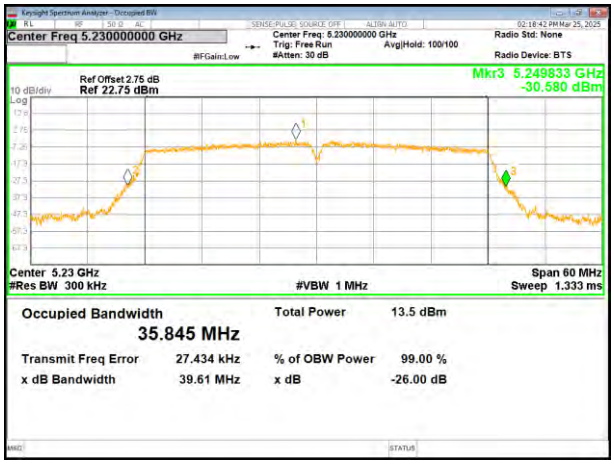
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42

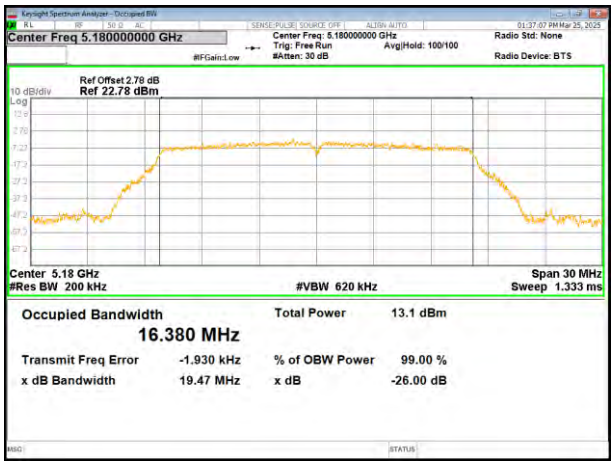


(802.11ac40) plot on channel 46

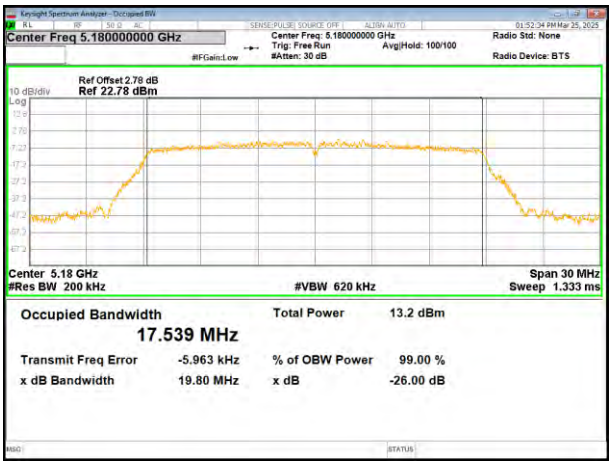


Test plot 99% Occupy Bandwidth

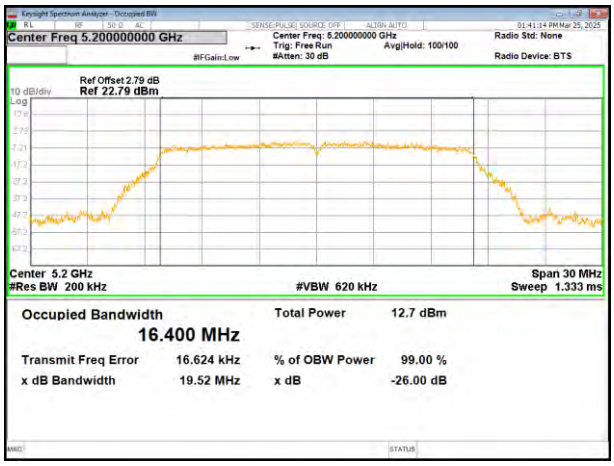
(802.11a) plot on channel 36



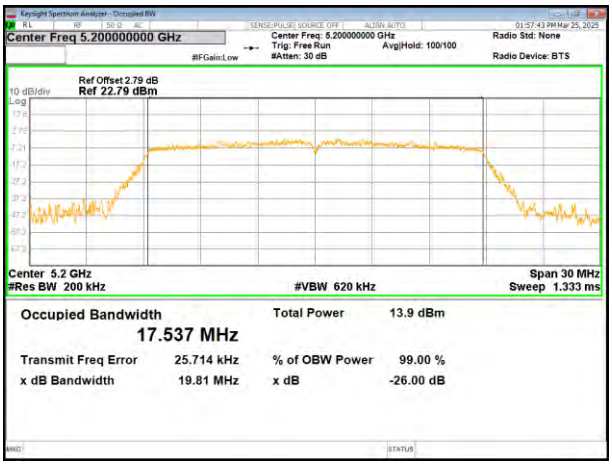
(802.11 n20) plot on channel 36



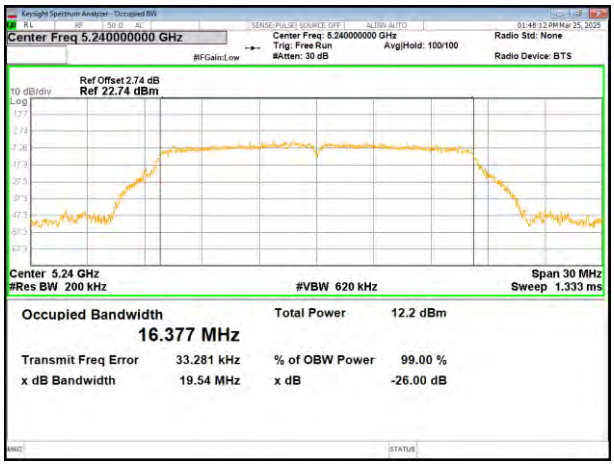
(802.11a) plot on channel 40



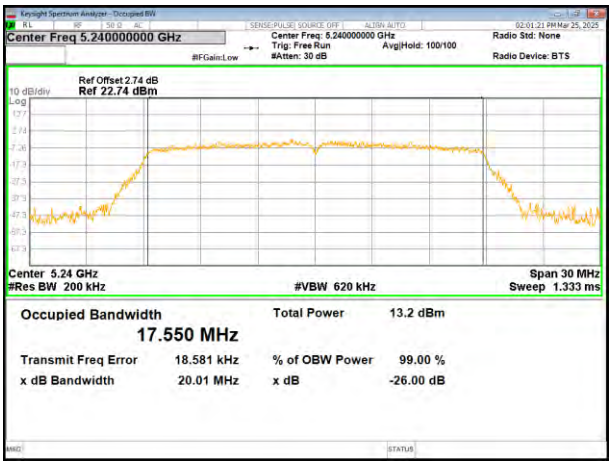
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

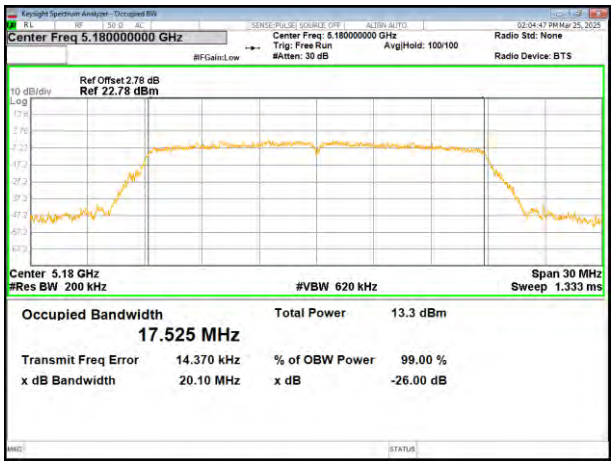


(802.11 n20) plot on channel 48

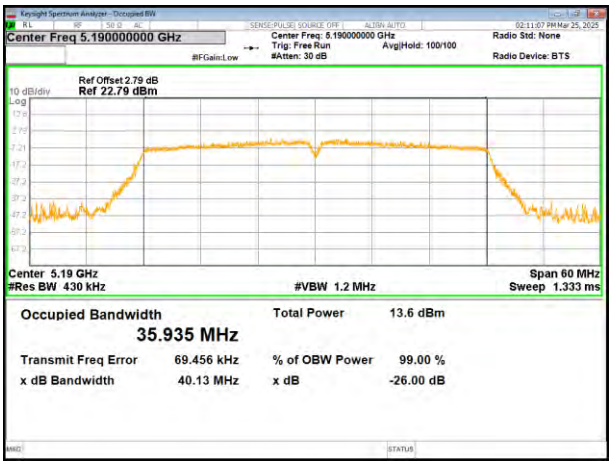


Test plot

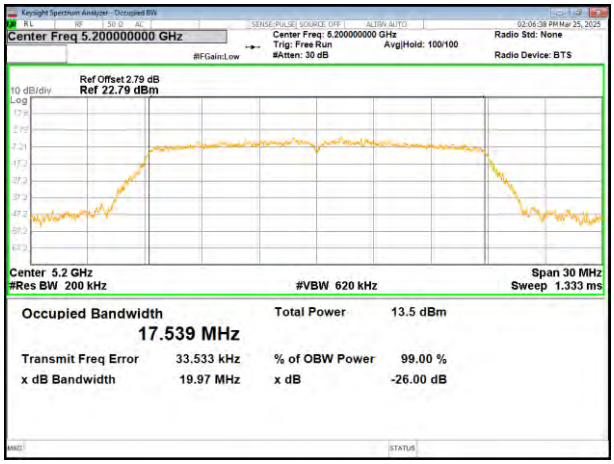
(802.11ac20) plot on channel 36



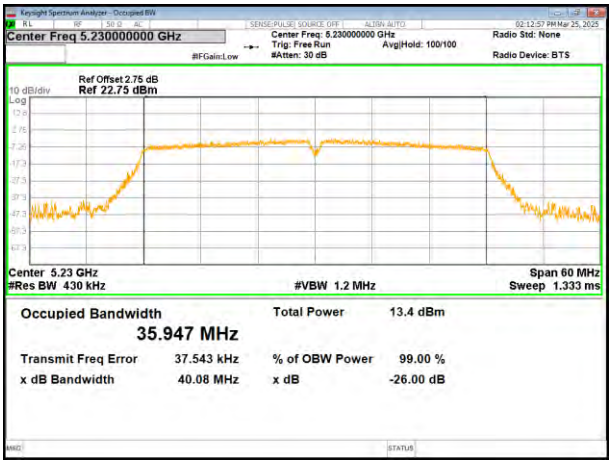
(802.11 n40) plot on channel 38



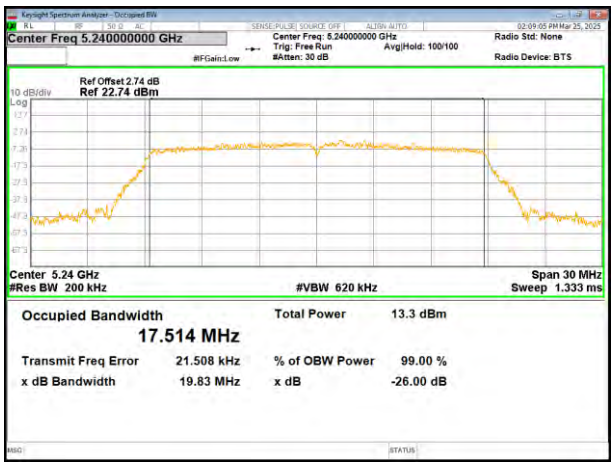
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

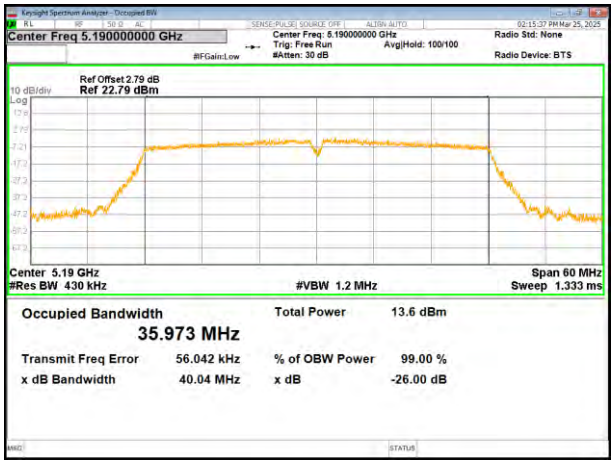


(802.11ac20) plot on channel 48

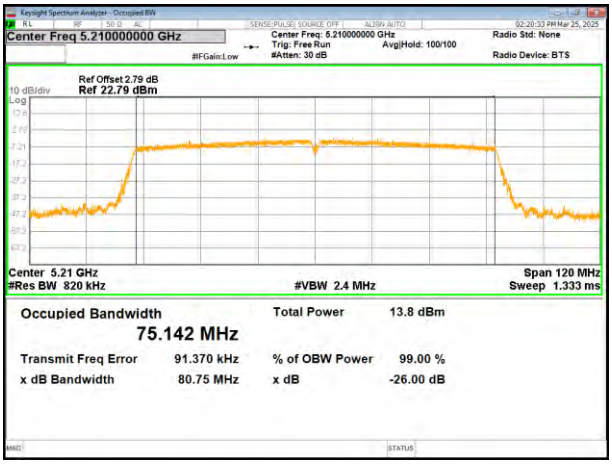


Test plot

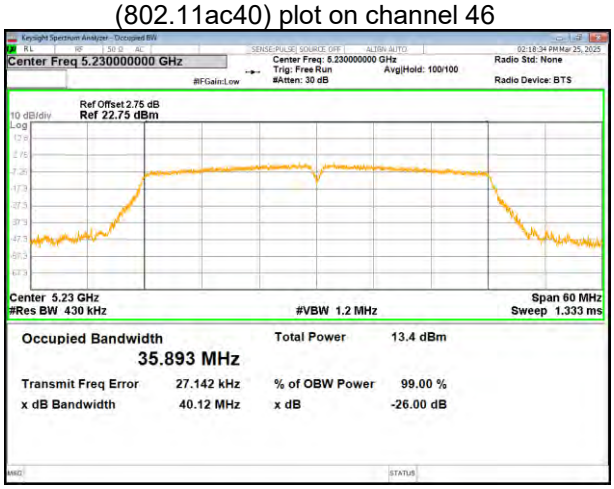
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46



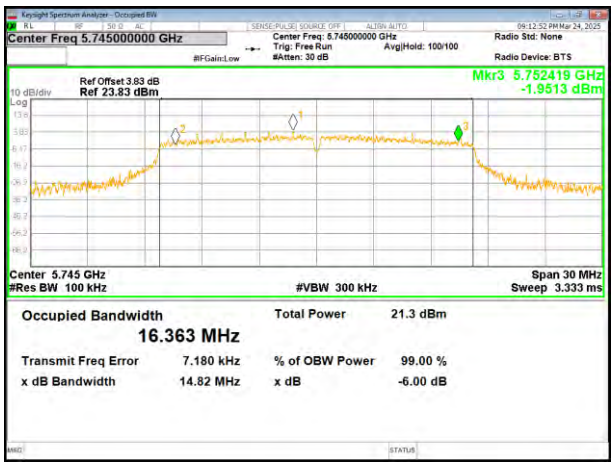
5745-5825MHz

Test CH	-6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (VHT20)	802.11n (HT40)	802.11ac (VHT40)	802.11ac (VHT80)		
Lowest	14.82	15.05	15.33	33.87	35.11	--	>500	Pass
Middle	15.11	15.06	15.72	--	--	75.10		
Highest	14.03	16.90	11.33	35.10	34.99	--		

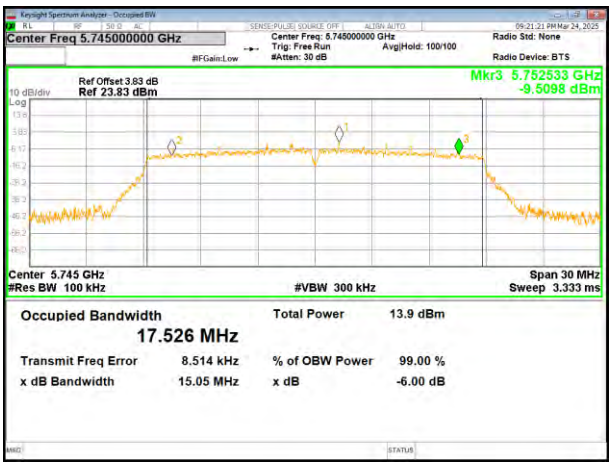
Remark: “---“is not applicable

Test plot

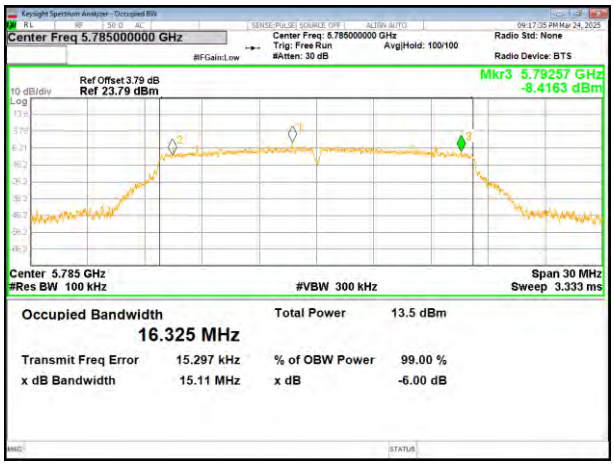
(802.11a) plot on channel 149



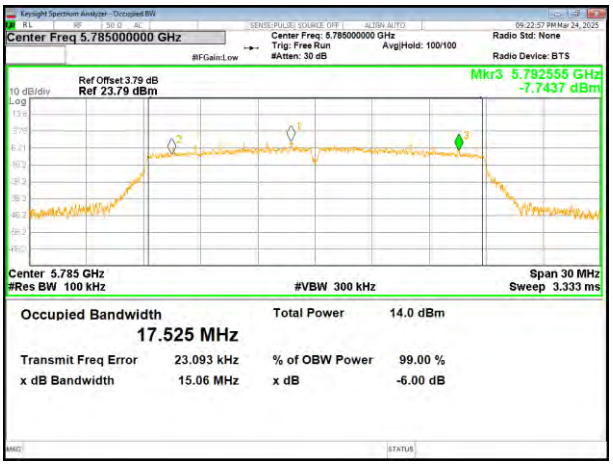
(802.11 n20) plot on channel 149



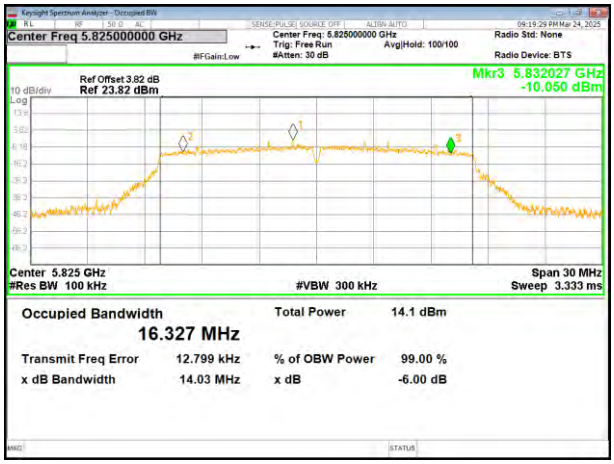
(802.11a) plot on channel 157



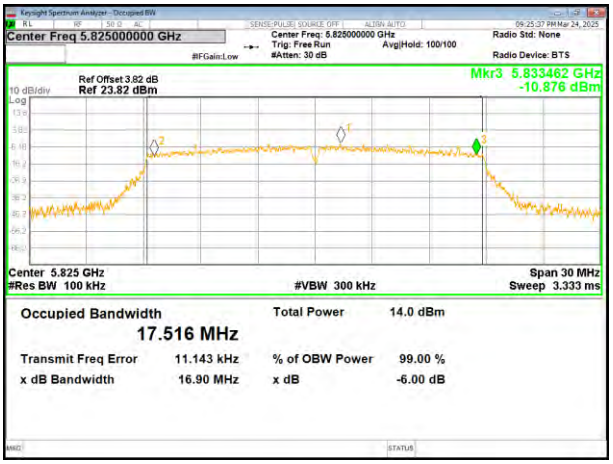
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165

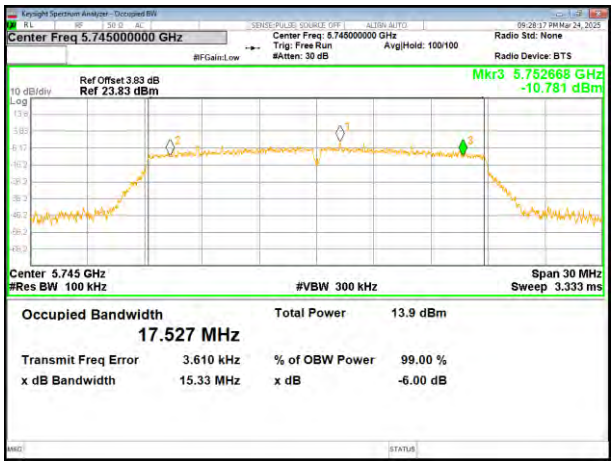


(802.11 n20) plot on channel 165

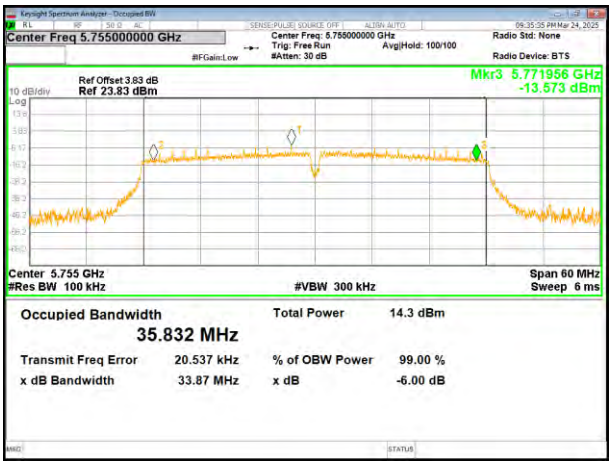


Test plot

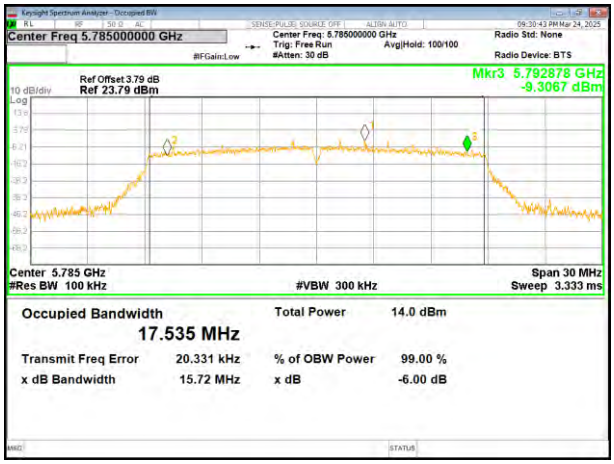
(802.11ac20) plot on channel 149



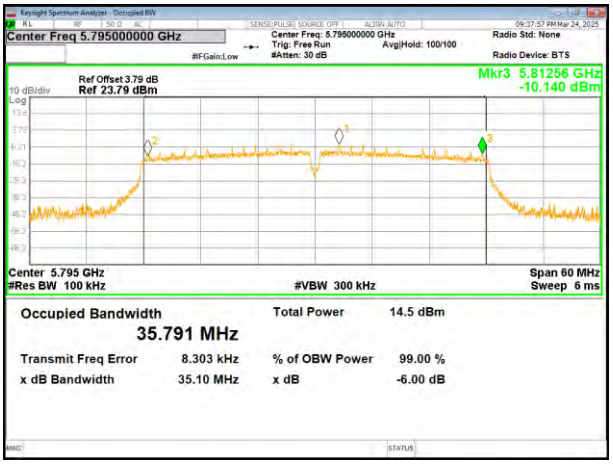
(802.11 n40) plot on channel 151



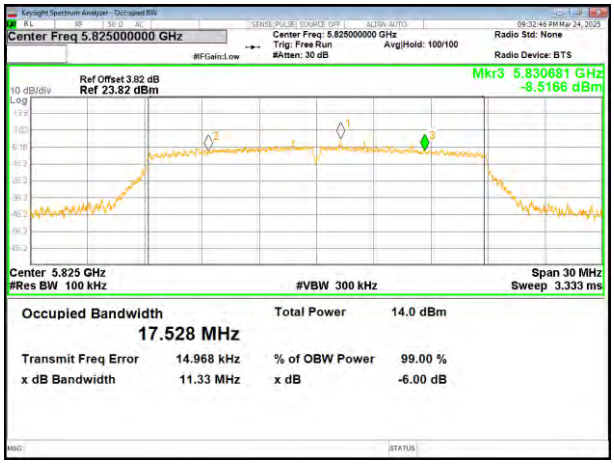
(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

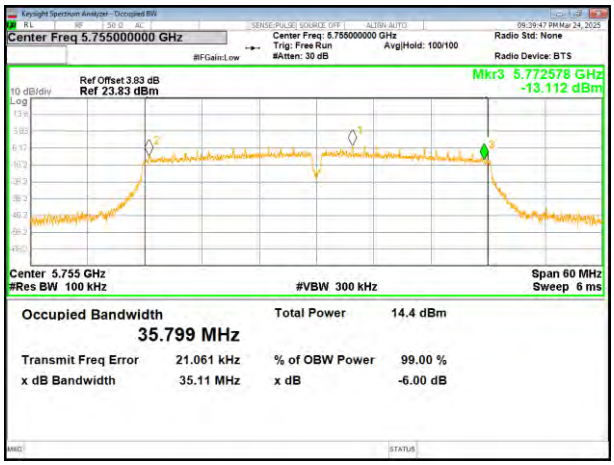


(802.11ac20) plot on channel 165

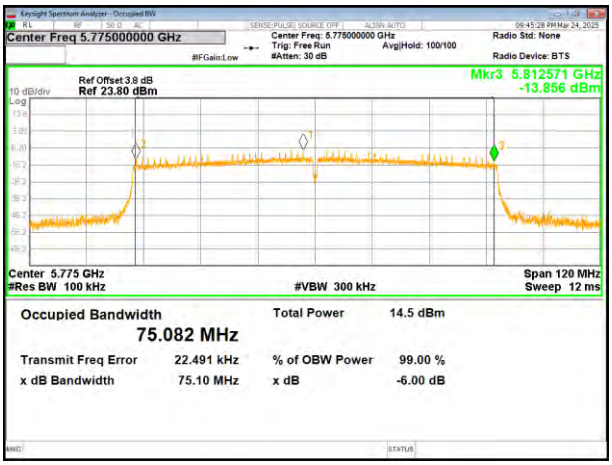


Test plot

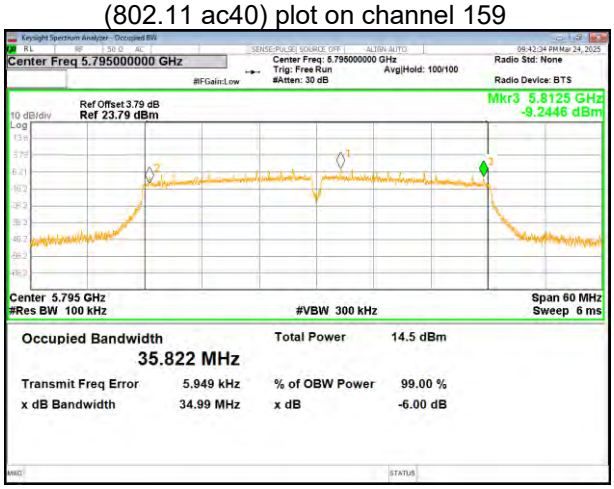
(802.11 ac40) plot on channel 151



(802.11 ac80) plot on channel 155



(802.11 ac40) plot on channel 159

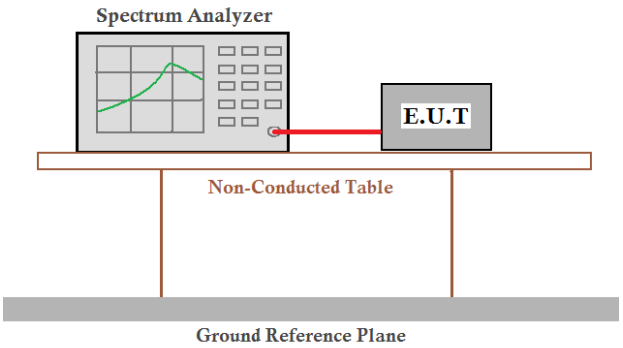


4.6 Power Spectral Density

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

Frequency band (MHz)	Limit
5150-5250	≤17dBm/1MHz for master device
	≤11dBm/1MHz for client device
5250-5350	≤11dBm/1MHz for client device
5470-5725	≤11dBm/1MHz for client device
5725-5850	≤30dBm/500kHz

Test setup:



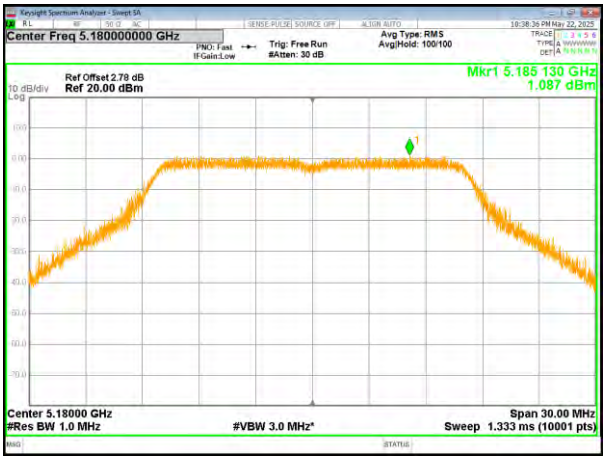
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.1°C	Humid.: 52%RH
Test voltage:	DC 3.8V From Battery	
Test results:	Pass	

Measurement Result

5180-5240MHz

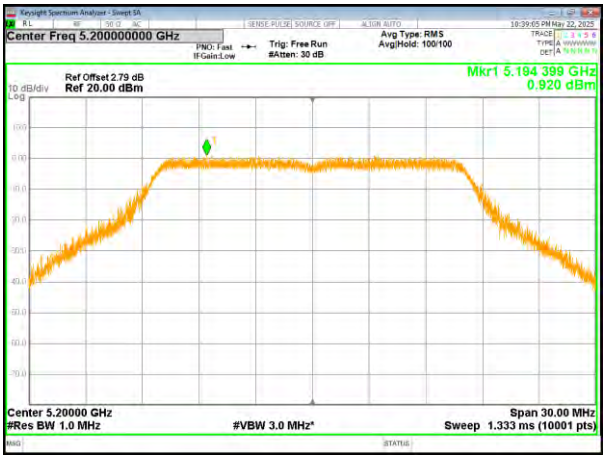
Mode	Frequency	Measured Power Density (dBm/MHz)	Correction Factor (dB)	Total Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	1.087	0.100	1.187	11
	5200 MHz	0.920	0.100	1.020	11
	5240 MHz	0.740	0.100	0.840	11
802.11 n20	5180 MHz	0.351	0.110	0.461	11
	5200 MHz	0.487	0.110	0.597	11
	5240 MHz	0.186	0.110	0.296	11
802.11 ac20	5180 MHz	1.480	0.100	1.580	11
	5200 MHz	0.015	0.230	0.245	11
	5240 MHz	1.081	0.230	1.311	11
802.11 n40	5190 MHz	-2.933	0.100	-2.833	11
	5230 MHz	-3.255	0.100	-3.155	11
802.11 ac40	5190 MHz	-2.882	0.210	-2.672	11
	5230 MHz	-2.898	0.210	-2.688	11
802.11 ac80	5210 MHz	-5.792	0.850	-4.942	11

(802.11a) PSD plot on channel 36

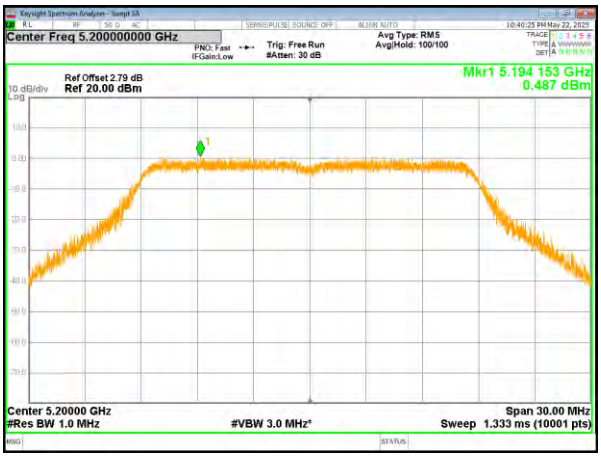


(802.11n20) PSD plot on channel 36

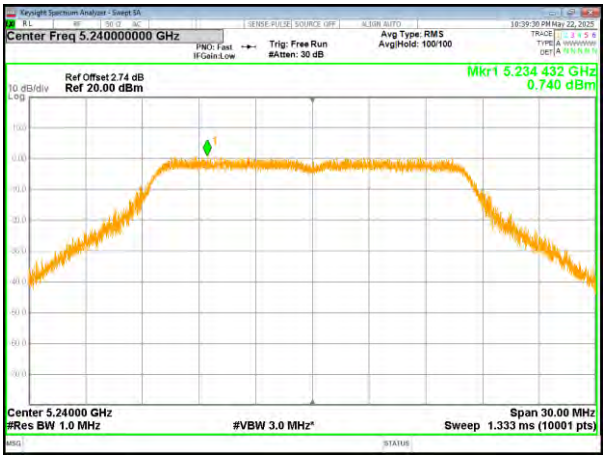
(802.11a) PSD plot on channel 40



(802.11n20) PSD plot on channel 40

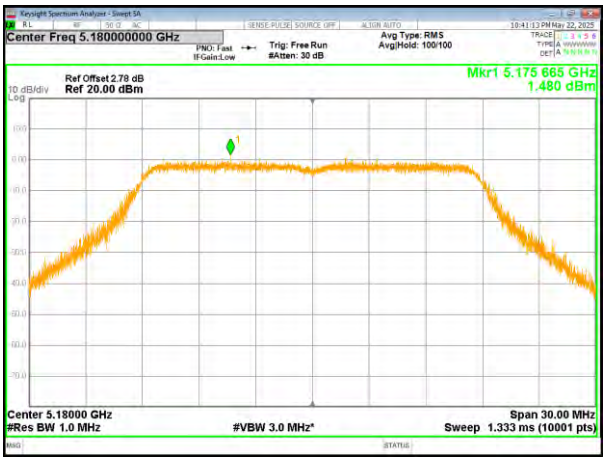


(802.11a) PSD plot on channel 48



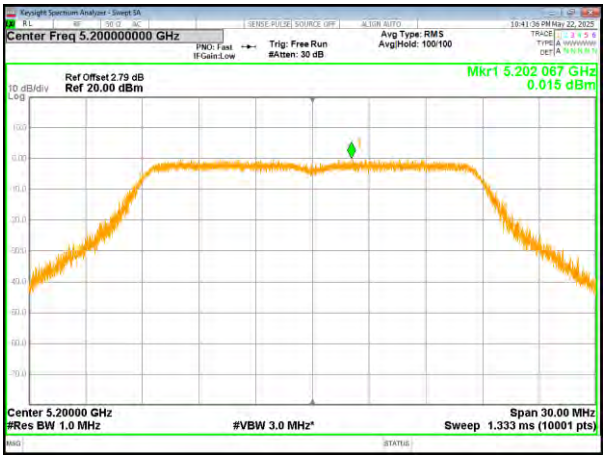
(802.11n20) PSD plot on channel 48

(802.11ac20) PSD plot on channel 36

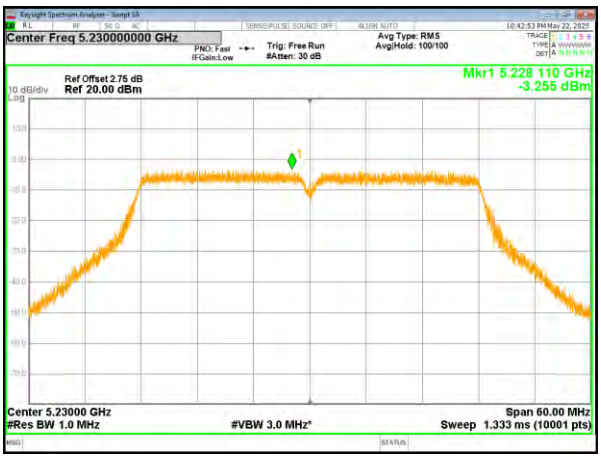


(802.11n40) PSD plot on channel 38

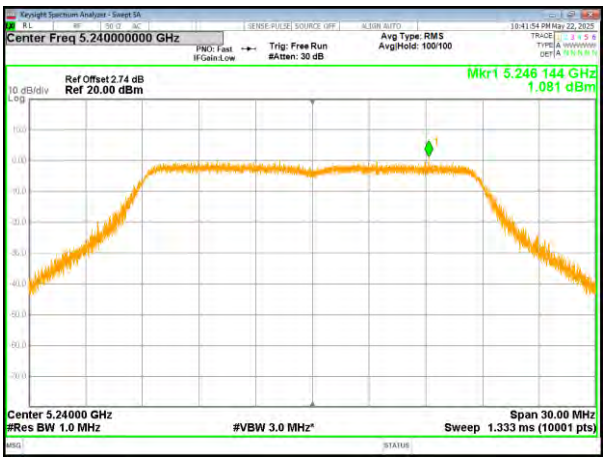
(802.11ac20) PSD plot on channel 40



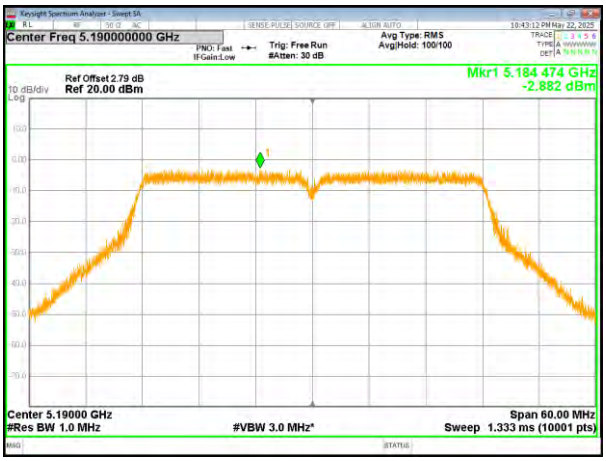
(802.11n40) PSD plot on channel 46



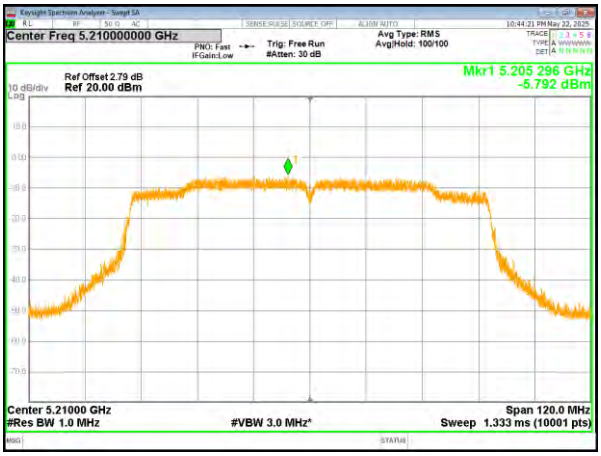
(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



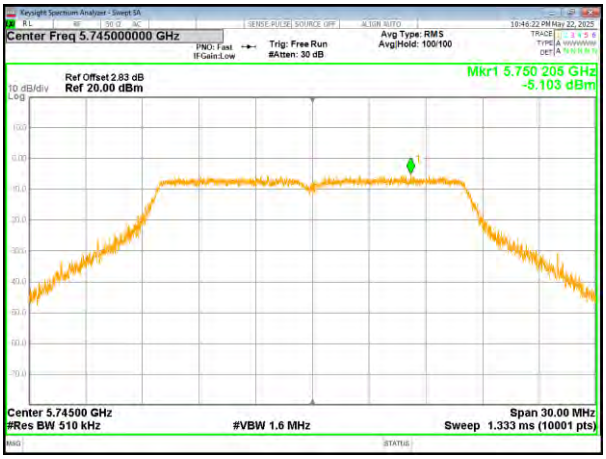
(802.11ac40) PSD plot on channel 46

Mode	Frequency	Measured Power Density (dBm/510KHz)	Measured Power Density (dBm/500KHz)	Correction Factor (dB)	Total Measured Power Density (dBm/500KHz)	Limit (dBm/MHz)
802.11 a	5745 MHz	-5.103	-5.189	0.090	-5.099	30
	5785 MHz	-4.951	-5.037	0.090	-4.947	30
	5825 MHz	-4.828	-4.914	0.090	-4.824	30
802.11 n20	5745 MHz	-5.566	-5.652	0.100	-5.552	30
	5785 MHz	-5.071	-5.157	0.100	-5.057	30
	5825 MHz	-5.137	-5.223	0.100	-5.123	30
802.11ac20	5745 MHz	-4.970	-5.056	0.100	-4.956	30
	5785 MHz	-5.064	-5.150	0.100	-5.050	30
	5825 MHz	-4.952	-5.038	0.100	-4.938	30
802.11 n40	5755 MHz	-8.751	-8.837	0.130	-8.707	30
	5795 MHz	-8.763	-8.849	0.130	-8.719	30
802.11ac40	5755 MHz	-8.615	-8.701	0.130	-8.571	30
	5795 MHz	-7.702	-7.788	0.130	-7.658	30
802.11ac80	5775 MHz	-11.376	-11.462	1.250	-10.212	30

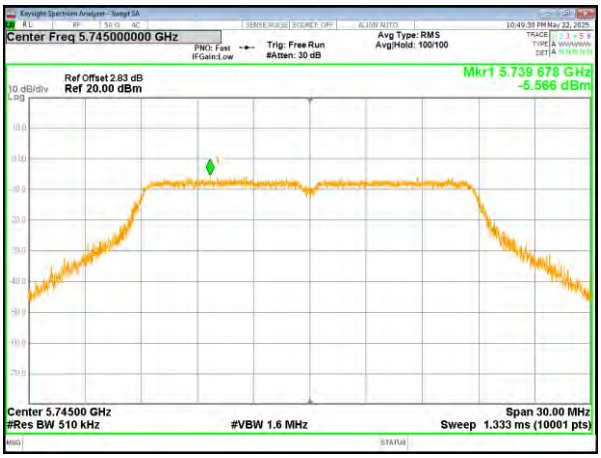
Note: 1. If the measurement is X dBm/510kHz, thus X dBm/510kHz = $(10^{X/10})$*(500 / 510) dBm/500kHz

2. Correction Factor (dB)= duty cycle factor

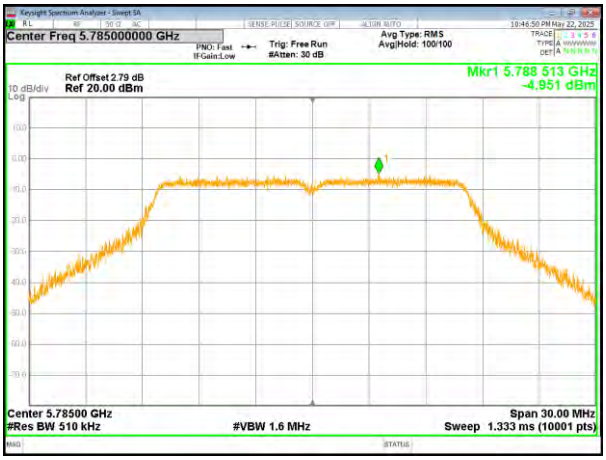
(802.11a) PSD plot on channel 149



(802.11n20) PSD plot on channel 149

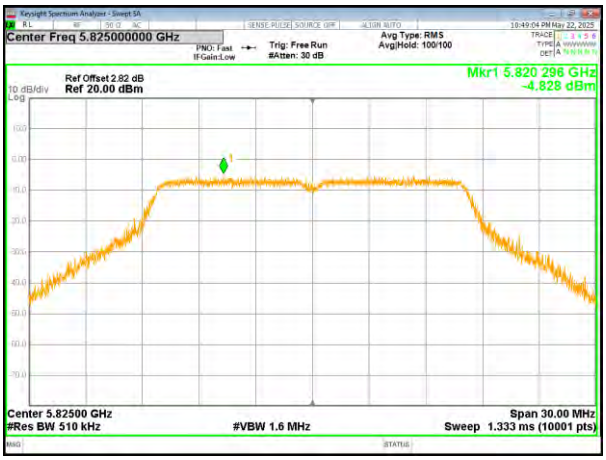


(802.11a) PSD plot on channel 157



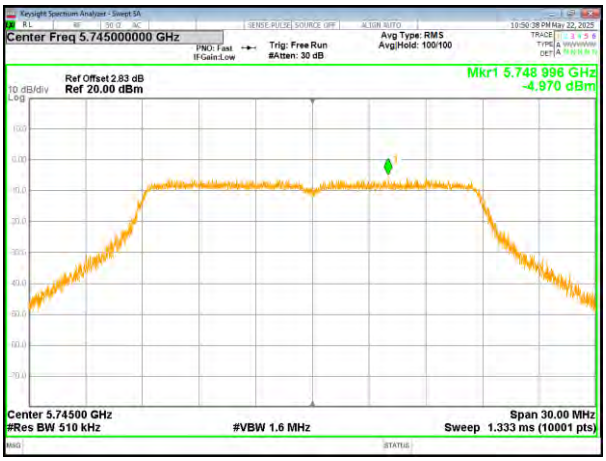
(802.11n20) PSD plot on channel 157

(802.11a) PSD plot on channel 165



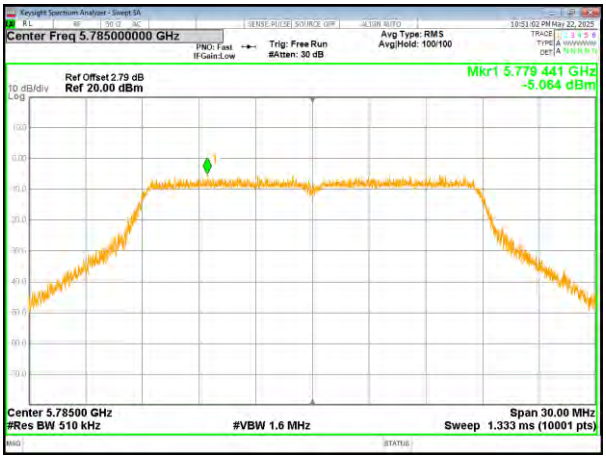
(802.11n20) PSD plot on channel 165

(802.11ac20) PSD plot on channel 149



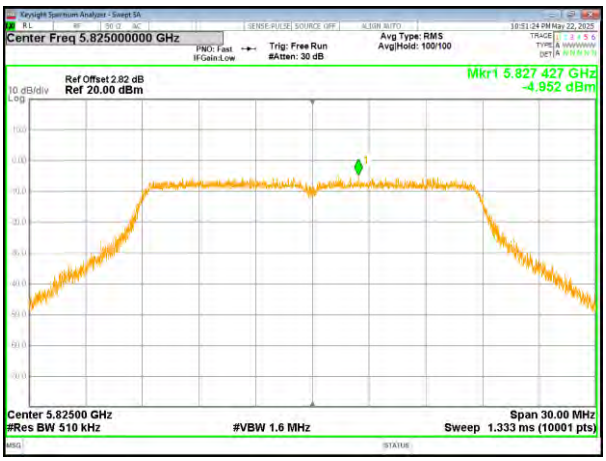
(802.11n40) PSD plot on channel 151

(802.11ac20) PSD plot on channel 157

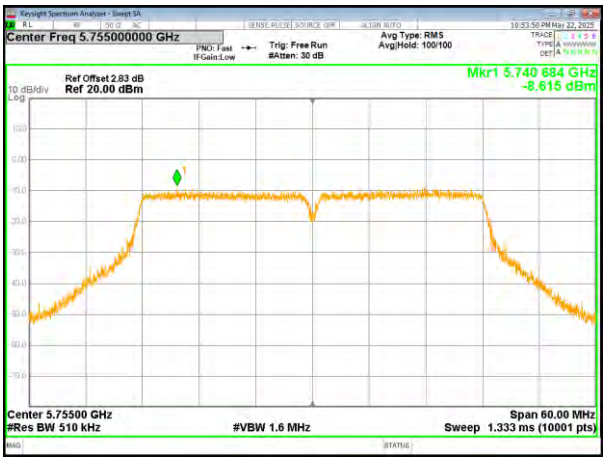


(802.11n40) PSD plot on channel 159

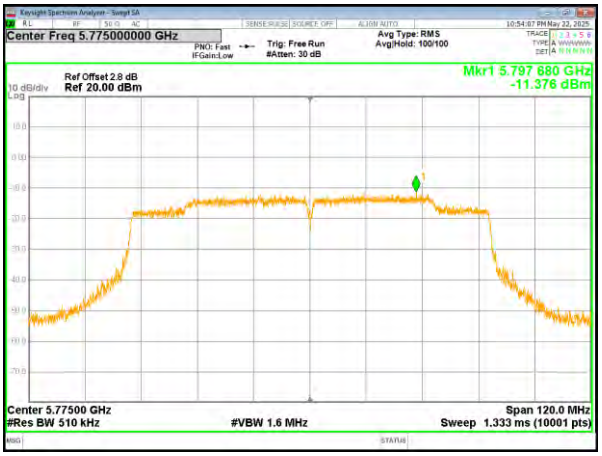
(802.11ac20) PSD plot on channel 165



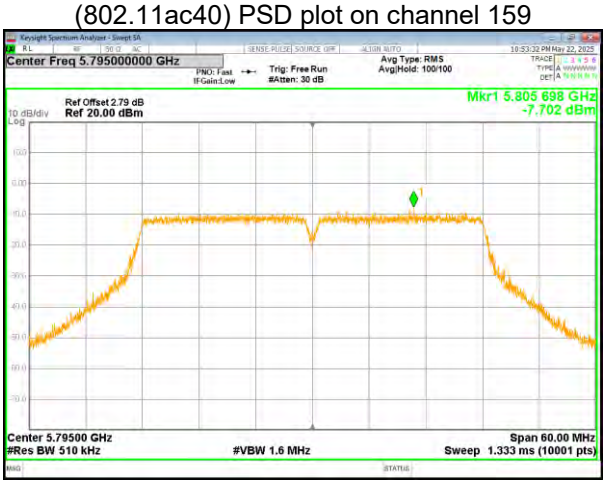
(802.11ac40) PSD plot on channel 151



(802.11ac80) PSD plot on channel 155

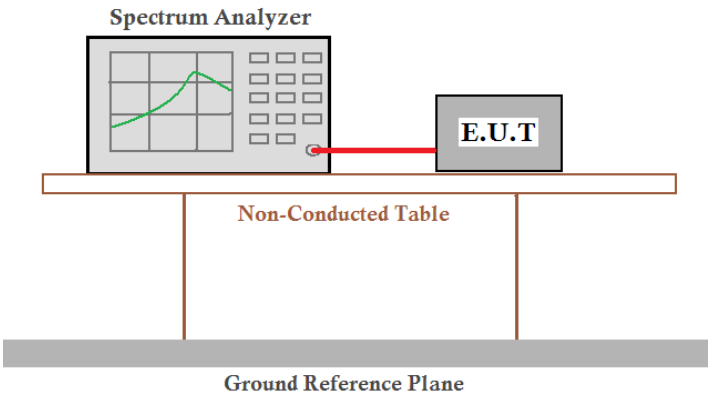


(802.11ac40) PSD plot on channel 159



4.7 Band edge

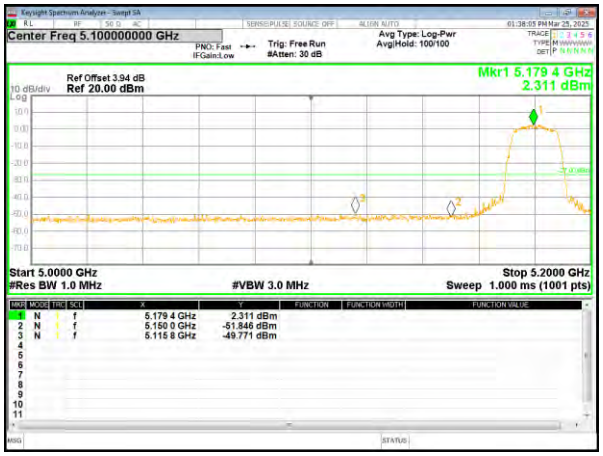
4.7.1 Conducted test Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205	
Test Method:	ANSI C63.10: 2013	
Limit:	All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	
Test setup:		
Test Procedure:	1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. 2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range. 3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span. 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. 5. Repeat above procedures until all measured frequencies were complete..	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.1°C	Humid.: 52%RH
Test voltage:	DC 3.8V From Battery	
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

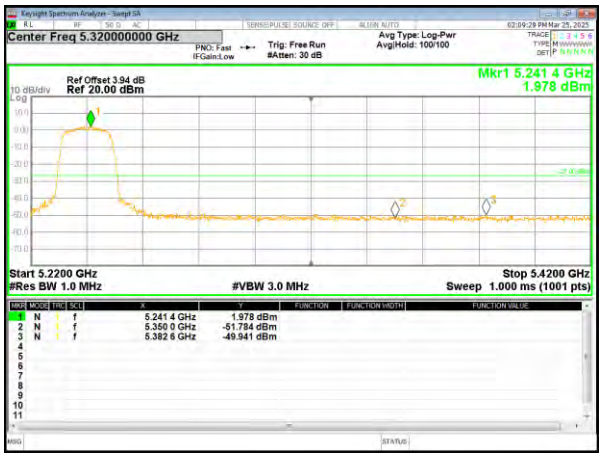
(802.11n20) Band Edge, Right Side

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

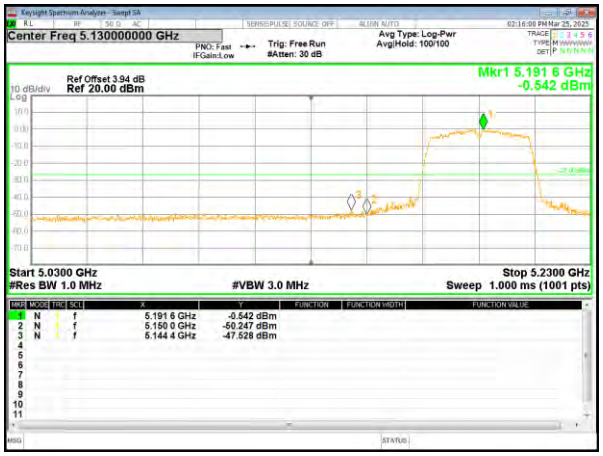
(802.11ac20) Band Edge, Right Side



(802.11n40) Band Edge, Right Side

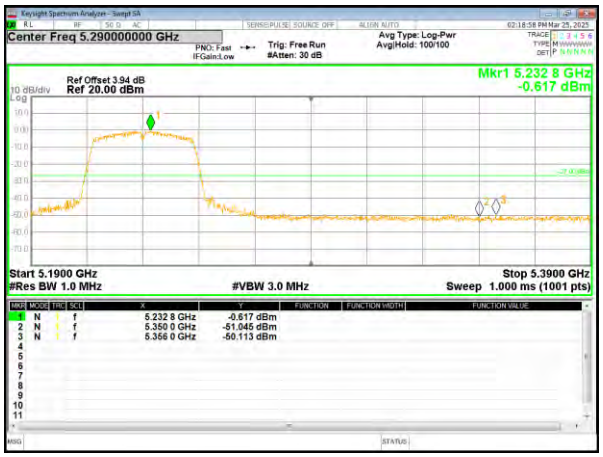
Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

(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

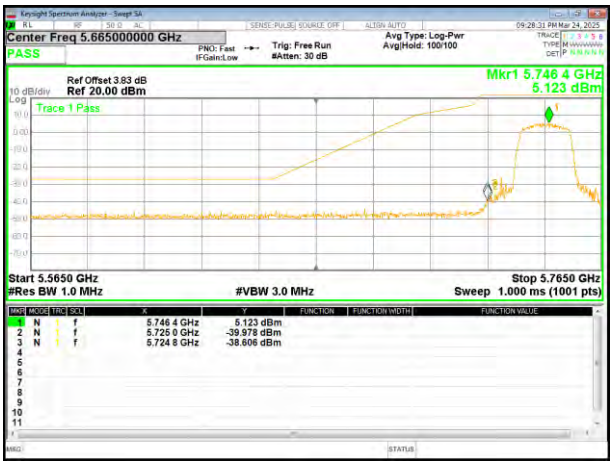
(802.11n20) Band Edge, Left Side

(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



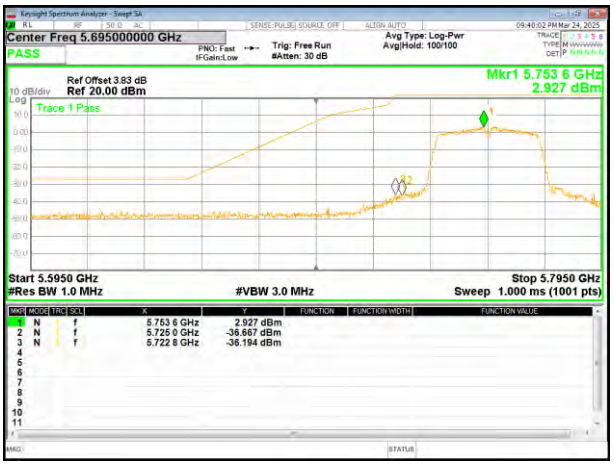
(802.11n40) Band Edge, Left Side

(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)
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9kHz to 40GHz
Test site:	Measurement Distance: 3m

Receiver setup:

Frequency	Detector	RBW	VBW	Value
9kHz-150KHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	AV	1MHz	3MHz	Average Value

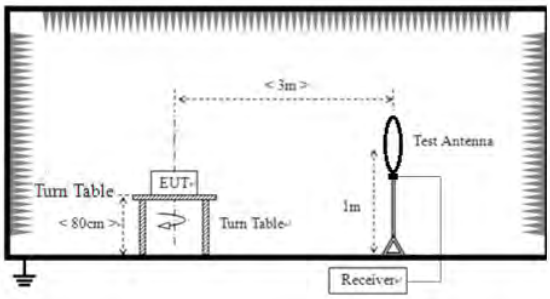
Limit:

Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	300m
1.705MHz-30MHz	30	QP	30m
30MHz-88MHz	100	QP	3m
88MHz-216MHz	150	QP	
216MHz-960MHz	200	QP	
960MHz-1GHz	500	QP	

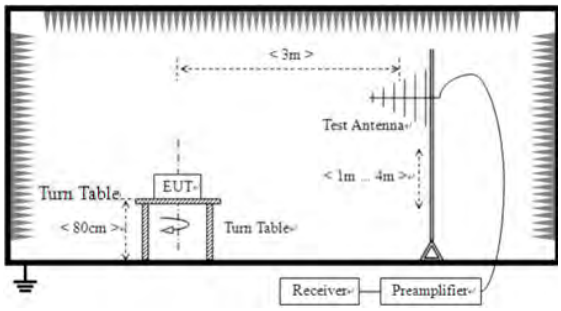
Frequency	Limit (dBm/MHz)	Remark
Above 1GHz	-27.0	Peak Value

Test setup:

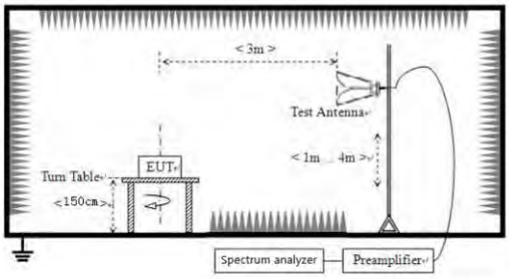
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz

	
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Remarks:

1. *The report only shows the worst mode.*
2. *Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.*

Measurement Data:

9 kHz ~ 30 MHz

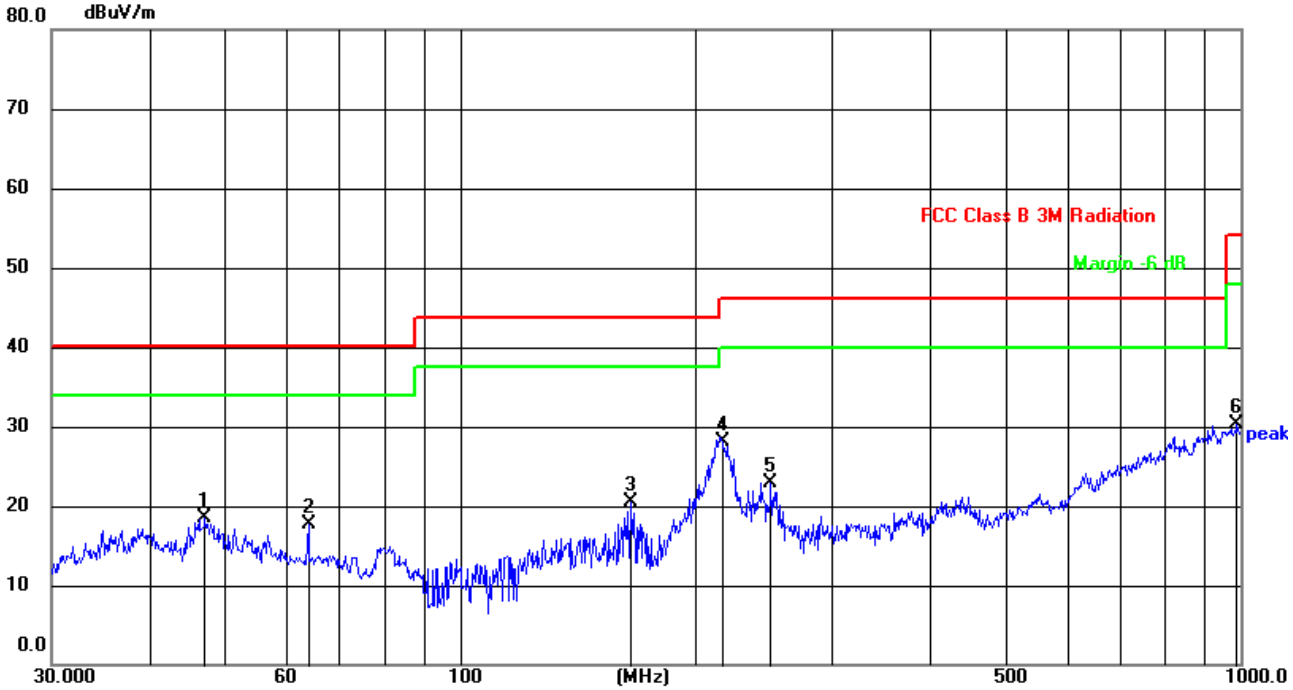
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

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

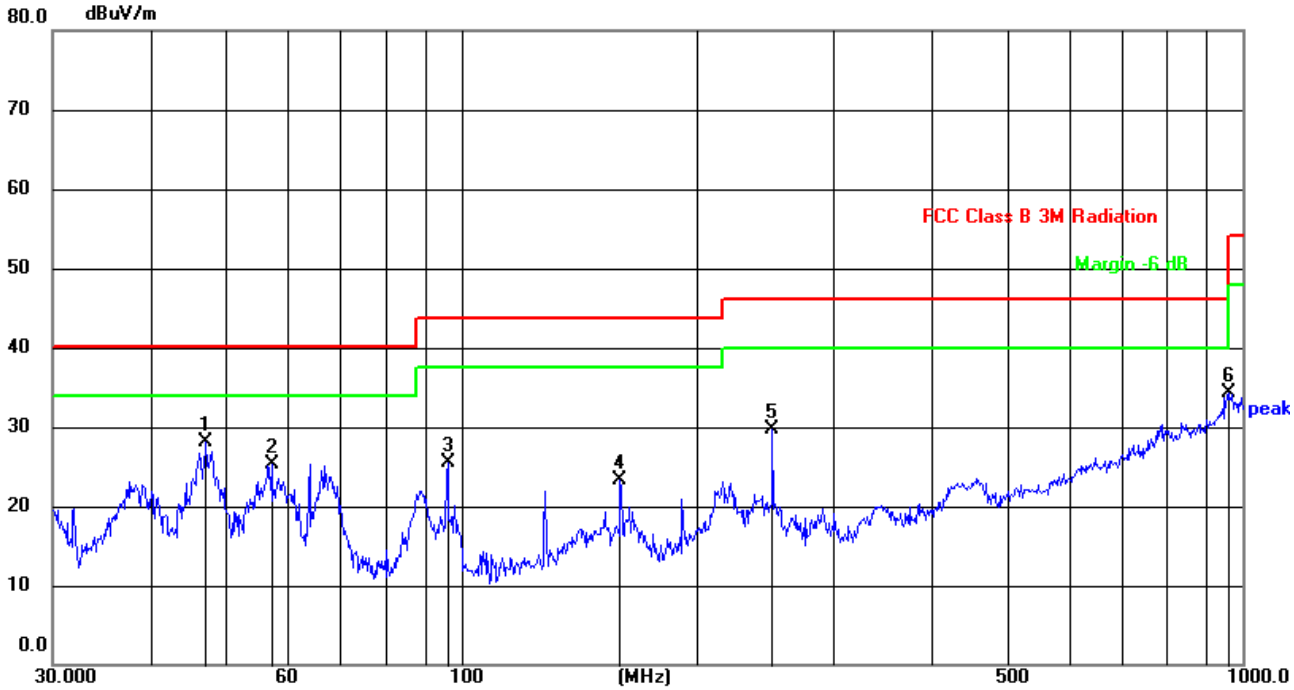
Temperature:	22.1°C	Relative Humidity:	52%
Pressure:	101.2kPar	Test Voltage :	DC 3.8V From Battery
Test Mode :	5.2G TX- 802.11ac20 (5180MHz)		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	47.1597	40.05	-21.46	18.59	40.00	-21.41	QP
2	63.9827	40.87	-23.19	17.68	40.00	-22.32	QP
3	165.4866	41.30	-20.78	20.52	43.50	-22.98	QP
4	216.7828	51.72	-23.55	28.17	46.00	-17.83	QP
5	250.3009	45.09	-22.25	22.84	46.00	-23.16	QP
6	989.5353	33.75	-3.45	30.30	54.00	-23.70	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	47.1597	49.60	-21.46	28.14	40.00	-11.86	QP
2	57.1914	47.74	-22.34	25.40	40.00	-14.60	QP
3	96.0985	50.89	-25.30	25.59	43.50	-17.91	QP
4	159.7844	43.85	-20.58	23.27	43.50	-20.23	QP
5	250.3009	51.92	-22.25	29.67	46.00	-16.33	QP
6	958.7943	37.95	-3.73	34.22	46.00	-11.78	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 802.11ac20 mode

Above 1GHz:

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

Temperature:	22.1℃	Relative Humidity:	52%
Pressure:	101.2kPar	Test Voltage :	DC 3.8V From Battery
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	44.97	46.20	8.27	38.50	45.54	68.20	-22.66	PK
V	15540.00	49.91	46.30	10.35	38.70	52.66	74.00	-21.34	PK
V	15540.00	38.46	46.30	10.35	38.70	41.21	54.00	-12.79	AV
V	20720.00	55.83	57.40	11.93	37.80	48.16	68.20	-20.04	PK
V	25900.00	52.23	56.50	13.45	39.70	48.88	68.20	-19.32	PK
V	31080.00	48.98	56.10	16.12	41.60	50.60	68.20	-17.60	PK
V	36260.00	45.83	56.80	18.29	42.80	50.12	68.20	-18.08	PK
H	10360.00	44.39	46.20	8.27	38.50	44.96	68.20	-23.24	PK
H	15540.00	49.68	46.30	10.35	38.70	52.43	74.00	-21.57	PK
H	15540.00	38.87	46.30	10.35	38.70	41.62	54.00	-12.38	AV
H	20720.00	55.59	57.40	11.93	37.80	47.92	68.20	-20.28	PK
H	25900.00	52.21	56.50	13.45	39.70	48.86	68.20	-19.34	PK
H	31080.00	48.17	56.10	16.12	41.60	49.79	68.20	-18.41	PK
H	36260.00	45.69	56.80	18.29	42.80	49.98	68.20	-18.22	PK

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	44.37	46.20	8.27	38.50	44.94	68.20	-23.26	PK
V	15600.00	49.38	46.30	10.35	38.40	51.83	74.00	-22.17	PK
V	15600.00	38.09	46.30	10.35	38.40	40.54	54.00	-13.46	AV
V	20800.00	55.58	57.40	11.93	37.80	47.91	68.20	-20.29	PK
V	26000.00	52.37	56.50	13.45	39.80	49.12	68.20	-19.08	PK
V	31200.00	48.29	56.10	16.12	41.60	49.91	68.20	-18.29	PK
V	36400.00	45.83	56.80	18.29	42.80	50.12	68.20	-18.08	PK
H	10400.00	44.86	46.20	8.27	38.50	45.43	68.20	-22.77	PK
H	15600.00	51.17	46.30	10.35	38.40	53.62	74.00	-20.38	PK
H	15600.00	40.02	46.30	10.35	38.40	42.47	54.00	-11.53	AV
H	20800.00	56.65	57.40	11.93	37.80	48.98	68.20	-19.22	PK
H	26000.00	50.10	56.50	13.45	39.80	46.85	68.20	-21.35	PK
H	31200.00	48.14	56.10	16.12	41.60	49.76	68.20	-18.44	PK
H	36400.00	45.54	56.80	18.29	42.80	49.83	68.20	-18.37	PK

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	42.95	46.20	8.27	38.60	43.62	68.20	-24.58	PK
V	15720.00	45.04	46.30	10.35	38.40	47.49	74.00	-26.51	PK
V	15720.00	35.06	46.30	10.35	38.40	37.51	54.00	-16.50	AV
V	20960.00	52.10	57.40	11.93	37.50	44.13	68.20	-24.07	PK
V	26200.00	48.00	56.50	13.45	40.10	45.05	68.20	-23.15	PK
V	31440.00	45.14	56.10	16.12	41.30	46.46	68.20	-21.74	PK
V	36680.00	42.15	56.80	18.29	43.10	46.74	68.20	-21.46	PK
H	10480.00	42.13	46.20	8.27	38.60	42.80	68.20	-25.40	PK
H	15720.00	46.40	46.30	10.35	38.40	48.85	74.00	-25.15	PK
H	15720.00	36.03	46.30	10.35	38.40	38.48	54.00	-15.52	AV
H	20960.00	52.85	57.40	11.93	37.50	44.88	68.20	-23.32	PK
H	26200.00	48.44	56.50	13.45	40.10	45.49	68.20	-22.71	PK
H	31440.00	45.38	56.10	16.12	41.30	46.70	68.20	-21.50	PK
H	36680.00	43.17	56.80	18.29	43.10	47.76	68.20	-20.44	PK

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:	22.1℃	Relative Humidity:	52%
Pressure:	101.2kPar	Test Voltage :	DC 3.8V From Battery
Test Mode :	5.8G TX- 802.11ac20		

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	49.07	46.10	8.77	39.10	50.84	74.00	-23.16	PK
V	11490.00	39.12	46.10	8.77	39.10	40.89	54.00	-13.11	AV
V	17235.00	45.27	47.60	11.10	38.70	47.47	68.20	-20.73	PK
V	22980.00	57.92	56.90	12.73	37.70	51.45	74.00	-22.55	PK
V	22980.00	48.00	56.90	12.73	37.70	41.53	54.00	-12.47	AV
V	28725.00	50.04	55.60	14.25	40.30	48.99	68.20	-19.21	PK
V	34470.00	45.98	55.90	17.26	42.10	49.44	68.20	-18.76	PK
H	11490.00	49.39	46.10	8.77	39.10	51.16	74.00	-22.84	PK
H	11490.00	38.43	46.10	8.77	39.10	40.20	54.00	-13.80	AV
H	17235.00	43.71	47.60	11.10	38.70	45.91	68.20	-22.29	PK
H	22980.00	60.33	56.90	12.73	37.70	53.86	74.00	-20.14	PK
H	22980.00	48.94	56.90	12.73	37.70	42.47	54.00	-11.53	AV
H	28725.00	50.02	55.60	14.25	40.30	48.97	68.20	-19.23	PK
H	34470.00	46.39	55.90	17.26	42.10	49.85	68.20	-18.35	PK

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	49.78	46.10	8.77	39.10	51.55	74.00	-22.45	PK
V	11570.00	38.84	46.10	8.77	39.10	40.61	54.00	-13.39	AV
V	17355.00	45.24	47.60	11.10	38.70	47.44	68.20	-20.76	PK

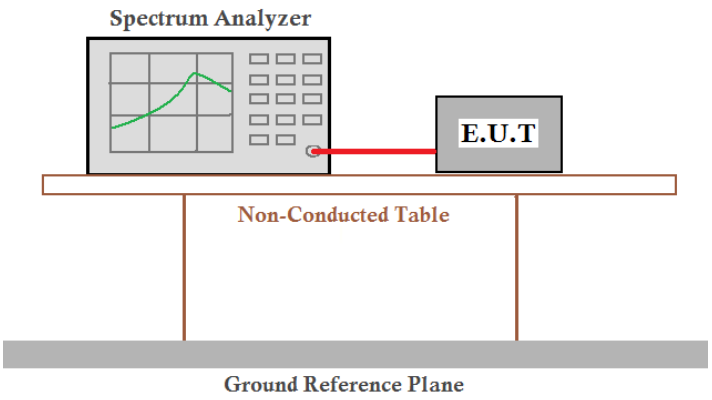
V	23140.00	57.56	56.90	12.73	37.70	51.09	74.00	-22.91	PK
V	23140.00	47.29	56.90	12.73	37.70	40.82	54.00	-13.18	AV
V	28925.00	49.51	55.60	14.25	40.30	48.46	68.20	-19.74	PK
V	34710.00	45.76	55.90	17.26	42.40	49.52	68.20	-18.68	PK
H	11570.00	50.63	46.10	8.77	39.10	52.40	74.00	-21.60	PK
H	11570.00	39.86	46.10	8.77	39.10	41.63	54.00	-12.37	AV
H	17355.00	43.50	47.60	11.10	38.70	45.70	68.20	-22.50	PK
H	23140.00	60.62	56.90	12.73	37.70	54.15	74.00	-19.85	PK
H	23140.00	49.00	56.90	12.73	37.70	42.53	54.00	-11.47	AV
H	28925.00	49.79	55.60	14.25	40.30	48.74	68.20	-19.46	PK
H	34710.00	47.50	55.90	17.26	42.40	51.26	68.20	-16.94	PK

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)*	
High Channel:5825MHz									
V	11650.00	48.07	46.10	8.77	39.10	49.84	74.00	-24.16	PK
V	11650.00	38.19	46.10	8.77	39.10	39.96	54.00	-14.04	AV
V	17475.00	44.51	47.90	11.23	38.90	46.74	68.20	-21.46	PK
V	23300.00	55.70	57.10	12.73	37.80	49.13	68.20	-19.07	PK
V	29125.00	50.00	55.80	14.25	40.50	48.95	68.20	-19.25	PK
V	34950.00	44.23	56.30	17.91	42.50	48.34	68.20	-19.86	PK
H	11650.00	51.09	46.10	8.77	39.10	52.86	74.00	-21.14	PK
H	11650.00	39.70	46.10	8.77	39.10	41.47	54.00	-12.53	AV
H	17475.00	42.55	47.90	11.23	38.90	44.78	68.20	-23.42	PK
H	23300.00	54.63	57.10	12.73	37.80	48.06	68.20	-20.14	PK

H	29125.00	50.92	55.80	14.25	40.50	49.87	68.20	-18.33	PK
H	34950.00	48.07	56.30	17.91	42.50	52.18	68.20	-16.02	PK

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)	
Test Method:	ANSI C63.10:2013	
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.: 22.1°C	Humid.: 52%RH
Test voltage:	DC 3.8V From Battery	
Test results:	Pass	

Remark:

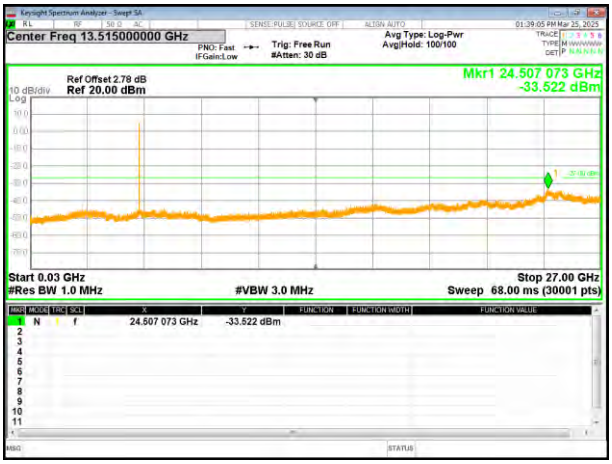
1. Antenna gain and cable loss data included in Offset.

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.

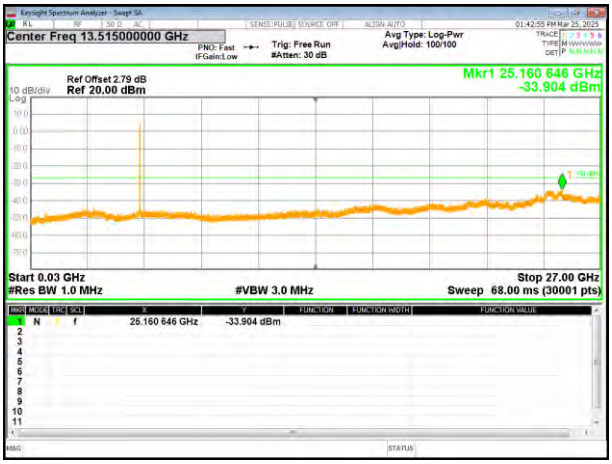
5180-5240MHz

Test Plot

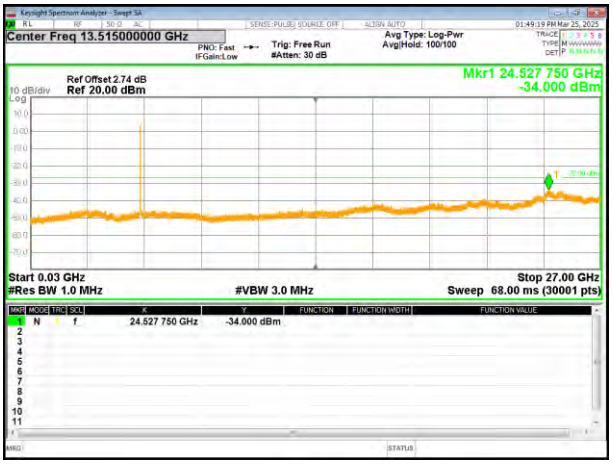
802.11a on channel 36



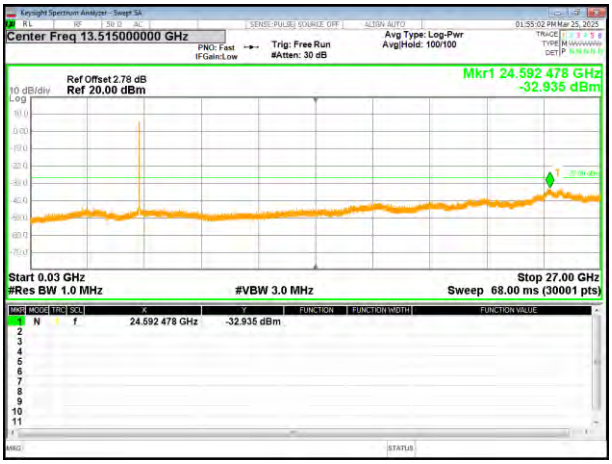
802.11a on channel 40



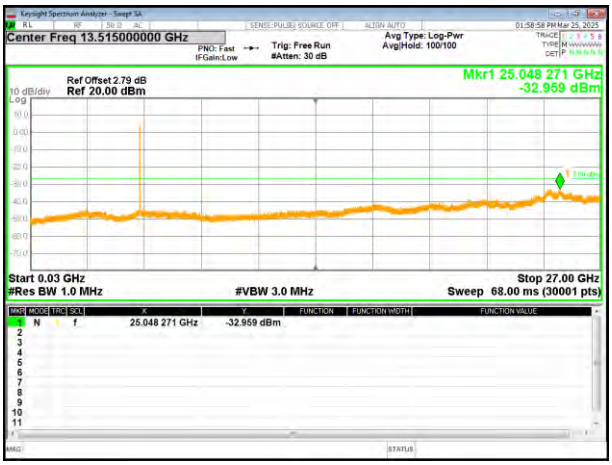
802.11a on channel 48



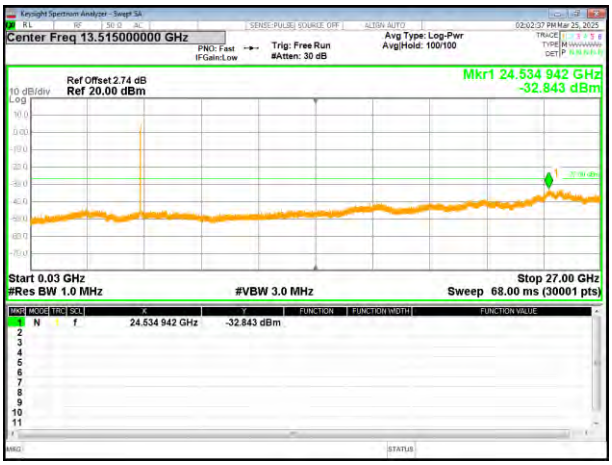
802.11n20 on channel 36



802.11n20 on channel 40

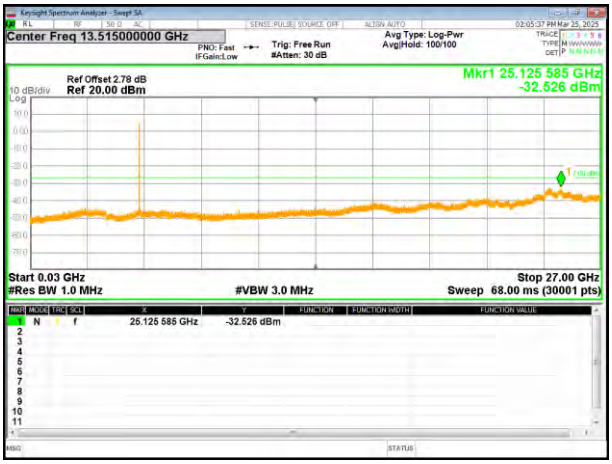


802.11n20 on channel 48

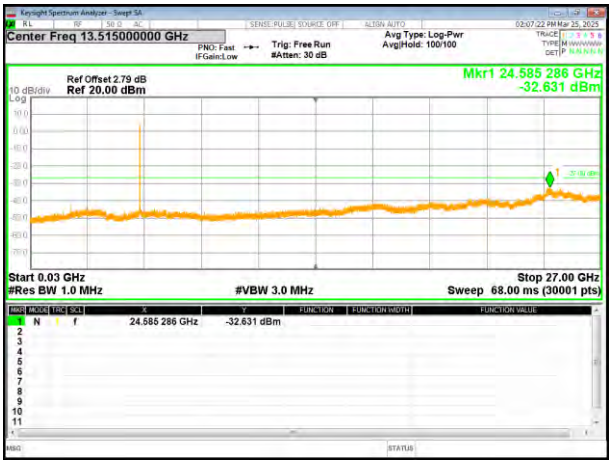


Test Plot

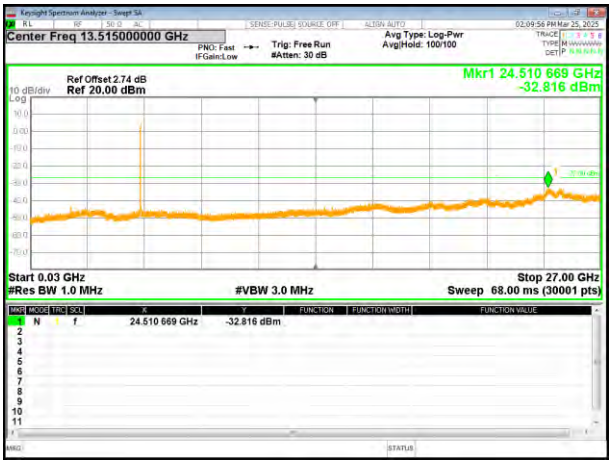
802.11ac20 on channel 36



802.11ac20 on channel 40

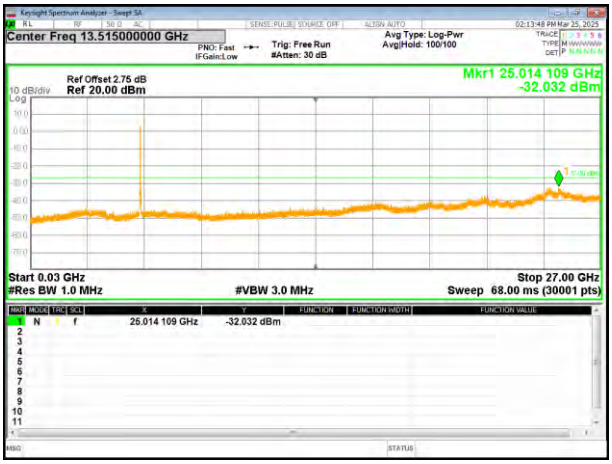


802.11ac20 on channel 48



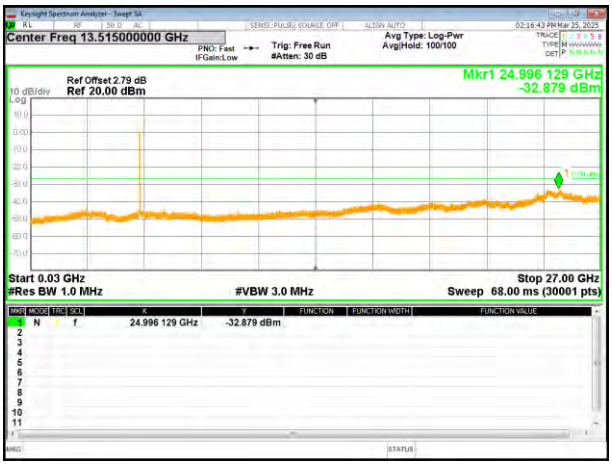
802.11n40 on channel 38

802.11n40 on channel 46

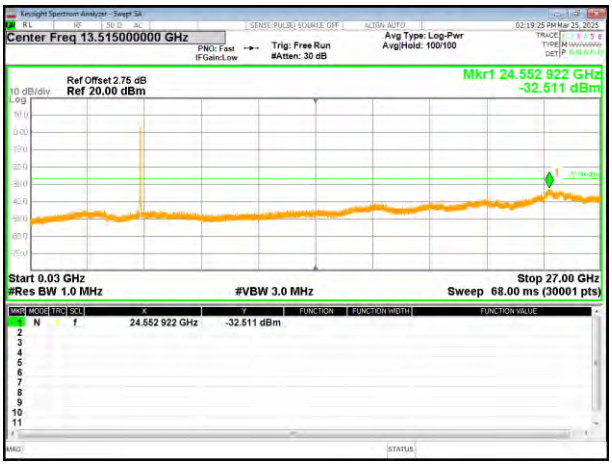


Test Plot

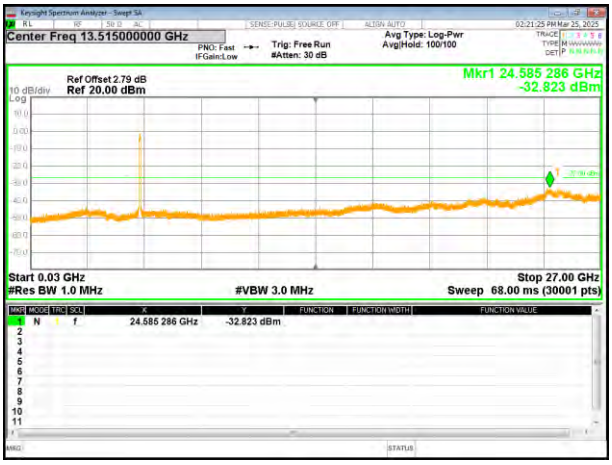
802.11ac40 on channel 38



802.11ac40 on channel 46



802.11ac80 on channel 42

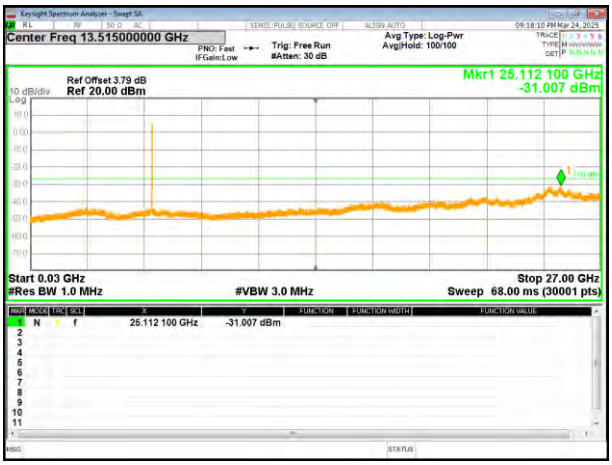


5745-5825MHz

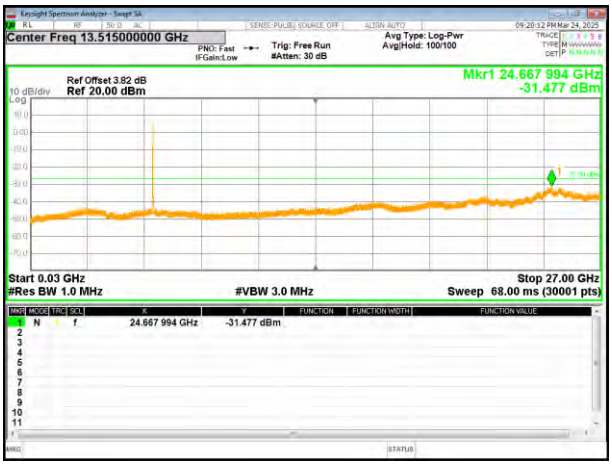
Test Plot

802.11a on channel 149

802.11a on channel 157

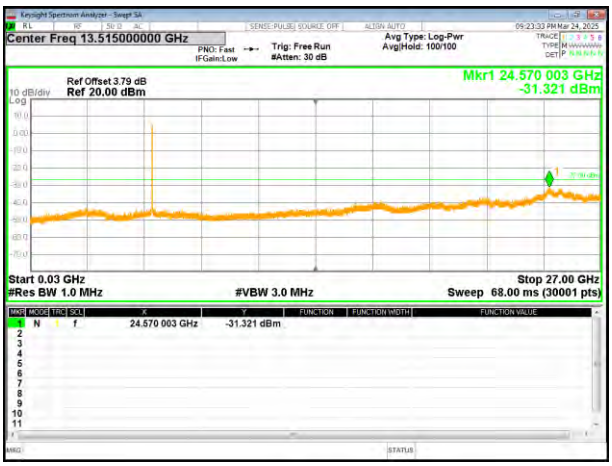


802.11a on channel 165



802.11n20 on channel 149

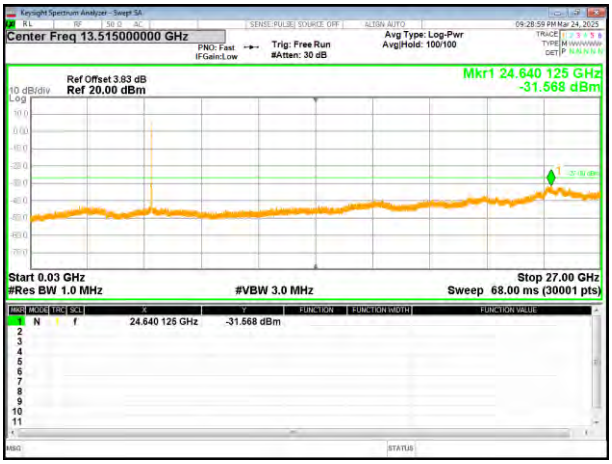
802.11n20 on channel 157



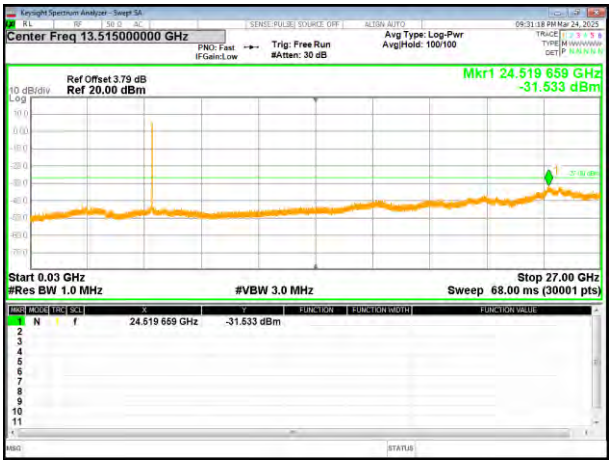
802.11n20 on channel 165

Test Plot

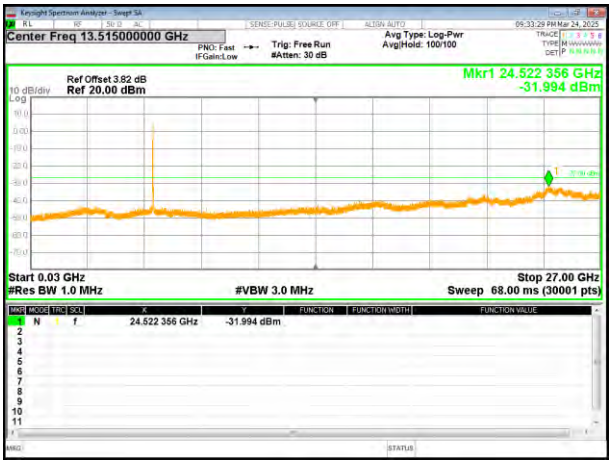
802.11ac20 on channel 149



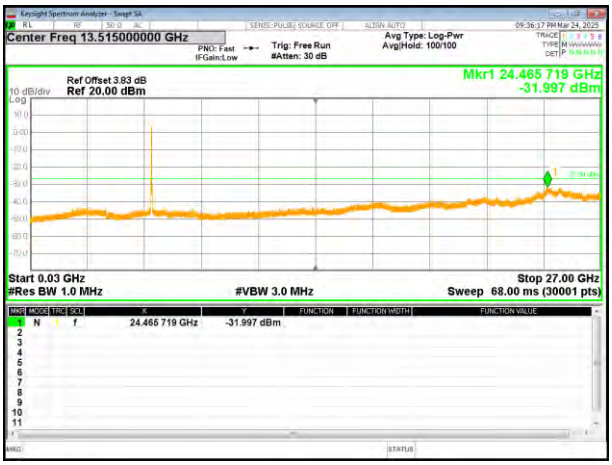
802.11ac20 on channel 157



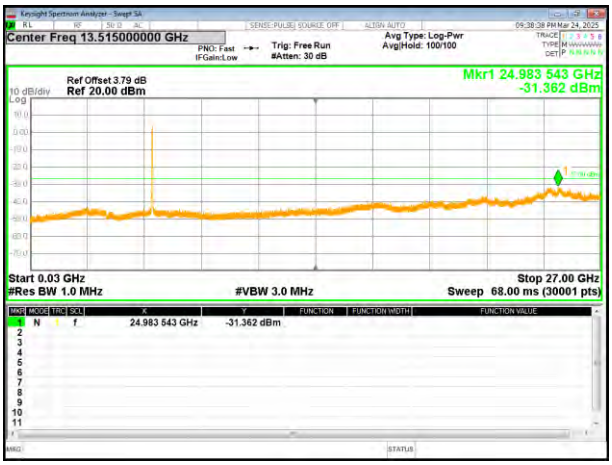
802.11ac20 on channel 165



802.11n40 on channel 151

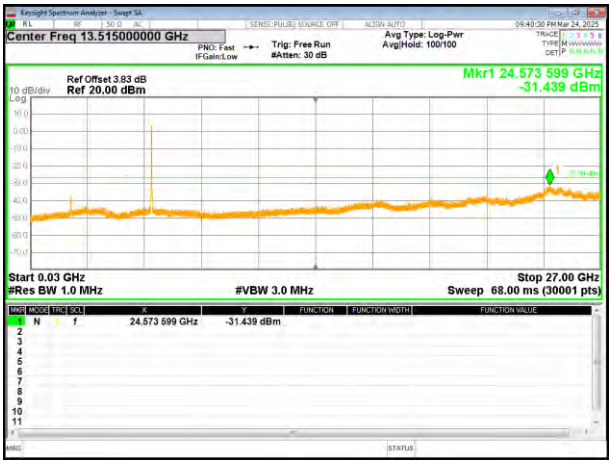


802.11n40 on channel 159

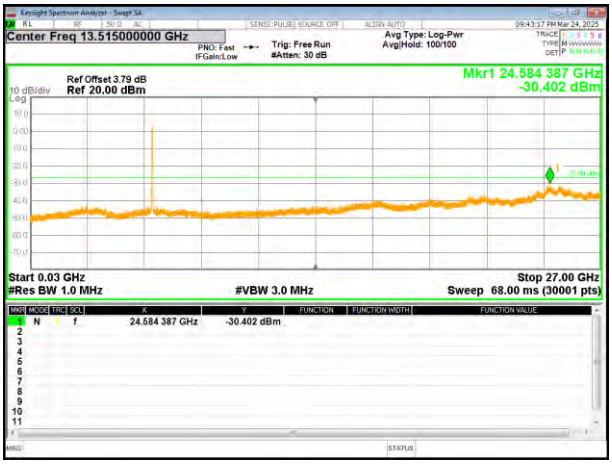


Test Plot

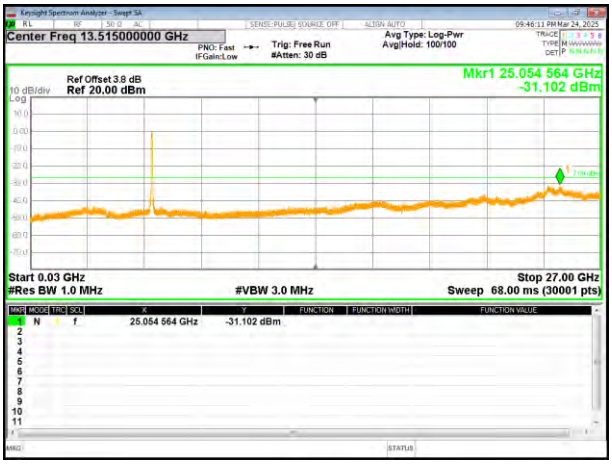
802.11ac40 on channel 151



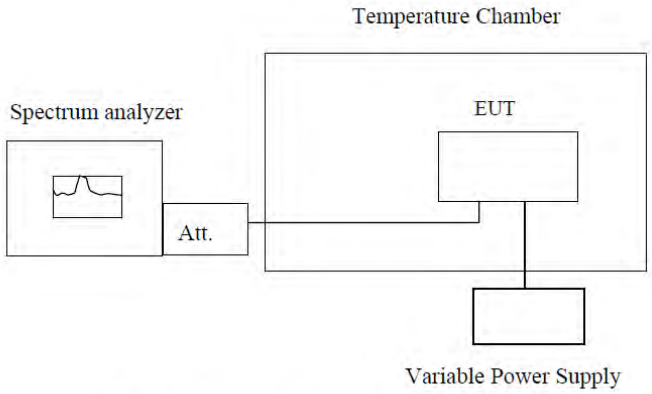
802.11ac40 on channel 159



802.11ac80 on channel 155



4.9 Frequency stability

Test Requirement:	FCC Part15 C Section 15.407(g)
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 3.8V					
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	5179.972	5179.935	5179.969	5179.988
	5190	5189.963	5189.965	5189.970	5189.987
	5200	5199.971	5199.990	5199.961	5199.981
	5210	5209.963	5209.974	5299.969	5209.971
	5220	5219.984	5219.965	5219.961	5219.981
	5230	5229.962	5229.993	5229.982	5299.979
	5240	5239.980	5239.981	5239.960	5239.983
-20	5180	5179.981	5179.973	5179.970	5179.940
	5190	5189.977	5189.974	5189.961	5189.970
	5200	5199.972	5199.965	5199.969	5199.995
	5210	5209.978	5299.973	5209.961	5209.979
	5220	5219.973	5219.965	5219.982	5219.970
	5230	5229.971	5229.986	5229.960	5229.998
	5240	5239.944	5239.964	5239.978	5239.986
-10	5180	5179.933	5179.973	5179.970	5179.988
	5190	5189.963	5189.974	5189.961	5189.984
	5200	5199.988	5199.965	5199.969	5199.979
	5210	5209.972	5299.973	5209.961	5209.985
	5220	5219.963	5219.965	5219.982	5219.980
	5230	5229.991	5229.986	5229.960	5229.978
	5240	5239.979	5239.964	5239.978	5239.951
0	5180	5179.972	5179.935	5179.969	5179.988
	5190	5189.963	5189.965	5189.970	5189.987
	5200	5199.971	5199.990	5199.961	5199.981
	5210	5209.963	5209.974	5299.969	5209.971
	5220	5219.984	5219.965	5219.961	5219.981
	5230	5229.962	5229.993	5229.982	5299.979
	5240	5239.980	5239.981	5239.960	5239.983
10	5180	5179.960	5179.974	5179.970	5179.988
	5190	5189.971	5189.965	5189.961	5179.988
	5200	5199.962	5199.973	5199.969	5189.984
	5210	5209.963	5209.965	5209.961	5199.979
	5220	5219.970	5219.986	5219.982	5209.985
	5230	5229.988	5229.964	5229.960	5219.980
	5240	5239.960	5239.982	5239.978	5229.978
20	5180	5179.981	5179.973	5179.970	5179.940
	5190	5189.977	5189.974	5189.961	5189.970

	5200	5199.972	5199.965	5199.969	5199.995
	5210	5209.978	5299.973	5209.961	5209.979
	5220	5219.973	5219.965	5219.982	5219.970
	5230	5229.971	5229.986	5229.960	5229.998
	5240	5239.944	5239.964	5239.978	5239.986
30	5180	5179.981	5179.973	5179.970	5179.940
	5190	5189.977	5189.974	5189.961	5189.970
	5200	5199.972	5199.965	5199.969	5199.995
	5210	5209.978	5299.973	5209.961	5209.979
	5220	5219.973	5219.965	5219.982	5219.970
	5230	5229.971	5229.986	5229.960	5229.998
	5240	5239.944	5239.964	5239.978	5239.986
40	5180	5179.971	5179.962	5179.970	5179.978
	5190	5189.972	5189.973	5189.961	5189.979
	5200	5199.963	5199.964	5199.969	5199.970
	5210	5299.971	5209.965	5209.961	5299.978
	5220	5219.963	5219.972	5219.982	5219.970
	5230	5229.984	5229.990	5229.960	5229.991
	5240	5239.962	5239.962	5239.978	5239.969
50	5180	5179.933	5179.973	5179.958	5180.103
	5190	5189.963	5189.974	5189.969	5199.978
	5200	5199.988	5199.965	5199.960	5200.003
	5210	5209.972	5299.973	5209.961	5209.981
	5220	5219.963	5219.965	5219.968	5219.996
	5230	5229.991	5229.986	5229.986	5229.989
	5240	5239.979	5239.964	5239.958	5239.997

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
DC 3.42V	5180	5179.966	5179.962	5179.979	5179.984
	5190	5189.960	5189.973	5189.975	5189.970
	5200	5199.973	5199.964	5199.970	5199.971
	5210	5209.977	5209.965	5209.976	5209.993
	5220	5219.963	5219.972	5219.971	5219.979
	5230	5229.956	5229.990	5229.969	5229.989
	5240	5180.096	5179.978	5179.970	5179.967
DC 3.8V	5180	5199.971	5189.972	5189.961	5189.978
	5190	5199.996	5199.972	5199.969	5199.969
	5200	5209.974	5209.984	5209.961	5209.970
	5210	5219.989	5219.975	5219.982	5219.977
	5220	5229.982	5299.978	5229.960	5229.995
	5230	5239.990	5239.975	5239.978	5239.980
	5240	5180.096	5179.978	5179.970	5179.967
DC 4.2V	5180	5179.981	5179.983	5179.958	5179.967
	5190	5189.977	5189.979	5189.969	5189.978
	5200	5199.972	5199.974	5199.960	5199.968
	5210	5209.978	5209.980	5209.961	5209.970
	5220	5219.973	5219.975	5219.968	5219.977
	5230	5229.971	5229.973	5229.986	5230.000
	5240	5239.944	5239.946	5239.958	5239.967

Frequency stability versus Temp.					
Power Supply: DC 3.8V					
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	5744.993	5744.955	5744.591	5744.948
	5755	5744.941	5754.971	5754.975	5754.970
	5775	5754.963	5774.970	5774.976	5774.979
	5785	5774.972	5784.973	5784.979	5784.970
	5795	5784.963	5794.984	5794.962	5794.981
	5825	5794.974	5824.965	5824.958	5824.984
-20	5745	5744.958	5744.955	5744.972	5744.971
	5755	5754.983	5754.971	5754.974	5754.997
	5775	5774.964	5774.970	5774.977	5774.993
	5785	5784.973	5784.973	5784.969	5784.977
	5795	5794.971	5794.984	5794.960	5794.966
	5825	5824.981	5824.965	5824.969	5824.901
-10	5745	5744.963	5744.966	5744.956	5745.035
	5755	5754.970	5754.973	5754.981	5744.600
	5775	5774.962	5774.990	5774.962	5754.984
	5785	5784.954	5784.966	5784.971	5774.985
	5795	5794.961	5794.962	5794.969	5784.988
	5825	5824.890	5824.965	5824.979	5794.971
0	5745	5744.957	5744.965	5744.962	5744.970
	5755	5754.967	5754.972	5754.969	5754.959
	5775	5774.988	5774.964	5774.986	5774.970
	5785	5784.964	5784.956	5784.962	5784.977
	5795	5794.960	5794.963	5794.958	5794.995
	5825	5824.958	5824.892	5824.961	5824.987
10	5745	5744.954	5744.976	5744.956	5744.981
	5755	5754.969	5754.978	5754.981	5754.995
	5775	5774.968	5774.981	5774.962	5774.980
	5785	5784.971	5784.973	5784.971	5784.967
	5795	5794.981	5794.964	5794.969	5794.961
	5825	5824.963	5824.973	5824.979	5824.995
20	5745	5744.974	5744.990	5744.972	5744.970
	5755	5754.988	5754.962	5754.986	5754.989
	5775	5774.973	5774.985	5774.971	5774.969
	5785	5784.960	5784.985	5784.958	5784.996
	5795	5794.954	5794.976	5794.952	5794.988
	5825	5824.988	5824.991	5824.986	5824.997
30	5745	5744.953	5744.976	5744.956	5744.981
	5755	5754.969	5754.978	5754.981	5754.995
	5775	5774.968	5774.981	5774.962	5774.980
	5785	5784.971	5784.973	5784.971	5784.967
	5795	5794.982	5794.964	5794.969	5794.961
	5825	5824.963	5824.973	5824.979	5824.995
40	5745	5744.974	5744.965	5744.956	5744.965
	5755	5754.976	5754.982	5754.981	5754.990
	5775	5774.979	5774.983	5774.962	5774.971
	5785	5784.971	5784.965	5784.971	5784.980

	5795	5794.962	5794.982	5794.969	5794.978
	5825	5824.971	5824.980	5824.979	5824.988
50	5745	5744.958	5744.965	5744.961	5744.971
	5755	5754.983	5754.982	5754.968	5754.978
	5775	5774.964	5774.983	5774.960	5774.995
	5785	5784.973	5784.965	5784.952	5784.971
	5795	5794.971	5794.982	5794.959	5794.967
	5825	5824.981	5824.980	5824.888	5824.970

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
DC 3.42V	5745	5744.953	5744.965	5744.961	5744.965
	5755	5754.969	5754.972	5754.978	5754.990
	5775	5774.968	5774.964	5774.979	5774.971
	5785	5784.971	5784.956	5784.961	5784.980
	5795	5794.982	5794.963	5794.979	5794.978
	5825	5824.963	5824.892	5824.976	5824.988
DC 3.8V	5745	5744.953	5744.976	5744.956	5744.981
	5755	5754.969	5754.978	5754.981	5754.995
	5775	5774.968	5774.981	5774.962	5774.980
	5785	5784.971	5784.973	5784.971	5784.967
	5795	5794.978	5794.964	5794.969	5794.961
	5825	5824.963	5824.973	5824.979	5824.995
DC 4.2V	5745	5744.974	5744.989	5744.972	5744.970
	5755	5754.988	5754.962	5754.986	5754.989
	5775	5774.973	5774.985	5774.971	5774.969
	5785	5784.960	5784.985	5784.958	5784.996
	5795	5794.954	5794.976	5794.952	5794.988
	5825	5824.988	5824.991	5824.986	5824.997

5 Test Setup Photo

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

6 EUT Constructional Details

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

------END------