

TEST REPORT

Reference No. : WTD24D08203365W007 V1
FCC ID..... : XUJEVB624
Applicant : Launch Tech Co., Ltd.
Address : Launch Industrial Park, North of Wuhe Rd. Banxuegang, Longgang
Shenzhen China
Manufacturer : Launch Tech Co., Ltd.
Address : Launch Industrial Park, North of Wuhe Rd. Banxuegang, Longgang
Shenzhen China
Product Name : Modularized Wireless Equalizer
Model No. : EVB624
Standards..... : FCC 47CFR Part 15 Section 15.407
Date of Receipt sample..... : 2024-09-05
Date of Test..... : 2024-09-05 to 2024-11-05
Date of Issue : 2024-11-18
Test Result : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.
The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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3 Revision History

Test Report No.	Date of Receipt Sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD24D08203365W007	2024-09-05	2024-09-05 to 2024-11-05	2024-11-07	Original	-	Replaced
WTD24D08203365W007 V1	2024-09-05	2024-09-05 to 2024-11-05	2024-11-18	Version 1	Updated	Valid
Note: The content of this report belongs to the RF sub-module of the host.						

4 General Information

4.1 General Description of E.U.T.

Product:	Modularized Wireless Equalizer
Model(s):	EVB624
Model Description:	N/A
Test Sample No.:	1-1/1
Wi-Fi Specification:	802.11a/n(HT20)/ac (VHT20) 802.11n(HT40)/ac (VHT40) 802.11ac (VHT80)
Hardware Version:	XY-Y30-V2
Software Version:	V1.0.15

4.2 Details of E.U.T.

Operation Frequency:	U-NII-1 802.11a/n (HT20) /ac (HT20), 5180-5240MHz 4CH 802.11n (HT40) /ac (HT40), 5190-5230MHz 2CH 802.11ac (HT80), 5210MHz 1CH U-NII-3 802.11a/n (HT20)/ac (HT20), 5745-5825MHz 5CH 802.11n (HT40)/ ac (HT40), 5755-5795MHz 2CH 802.11ac (HT80), 5775MHz 1CH
Max. RF output power:	U-NII-1 Ant. 0: 12.89dBm, Ant. 1: 14.00dBm, Total: 16.49dBm U-NII-3: Ant. 0: 12.43dBm, Ant. 1: 14.72dBm, Total: 16.73dBm
Type of Modulation:	802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Antenna installation:	External antenna with RP-SMA connector
Antenna Gain:	

Ant.	Operation Frequencies (MHz) /Antenna Gain (dBi)	
	5150~5250	5725~5850
0	3.51	2.16
1	3.51	2.16

Note:

#: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, WALTEK lab has not verified the authenticity of its information.

Ratings: AC 90-264V 50/60Hz

4.3 Channel List

U-NII-1 (5.15-5.25GHz)			
channel	Frequency(MHz)	channel	Frequency(MHz)
36	5180	38	5190
40	5200	42	5210
44	5220	46	5230
48	5240		

U-NII-3 (5.725-5.85GHz)			
channel	Frequency(MHz)	channel	Frequency(MHz)
149	5745	151	5755
153	5765	155	5775
157	5785	159	5795
161	5805	165	5825

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:

For 802.11a/n (HT20):

channel	Frequency(MHz)	channel	Frequency(MHz)
36	5180	40	5200
48	5240		

channel	Frequency(MHz)	channel	Frequency(MHz)
149	5745	157	5785
165	5825		

For 802.11n (HT40):

channel	Frequency(MHz)	channel	Frequency(MHz)
38	5190	46	5230

channel	Frequency(MHz)	channel	Frequency(MHz)
151	5755	159	5795

4.4 Test Mode Description

During testing, Channel and Power Controlling Software provided by the applicant was used to control the operating channel as well as the maximum output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Transmitting duty cycle is no less 98%.

The software is TermAssist and SecureCRT tool Use together.

Test Items	Mode	Data Rate	TX/RX
Radiated Emissions	802.11a (HT20)	6 Mbps	TX
	802.11n(HT20/40)	MCS0	TX
Duty Cycle	802.11a (HT20)	6 Mbps	TX
	802.11n(HT20/40)	MCS0	TX
Band Edge	802.11a (HT20)	6 Mbps	TX
	802.11n(HT20/40)	MCS0	TX
6dB Bandwidth	802.11a (HT20)	6 Mbps	TX
	802.11n(HT20/40)	MCS0	TX
26dB Bandwidth and 99% Occupied Bandwidth	802.11a (HT20)	6 Mbps	TX
	802.11n(HT20/40)	MCS0	TX
Conducted Output Power	802.11a (HT20)	6 Mbps	TX
	802.11n(HT20/40)	MCS0	TX
Power Spectral Density	802.11a (HT20)	6 Mbps	TX
	802.11n(HT20/40)	MCS0	TX
Frequency Stability	Un-modulation	/	TX

4.5 Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Testing Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

5 Equipment Used during Test

5.1 Equipments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date	Calibration Due Date
Conducted emissions from the AC mains power ports 2#						
1	EMI Test Receiver	R&S	ESCI	101155	2024-07-27	2025-07-26
2	LISN	SCHWARZBECK	NSLK 8128	8128-259	2023-11-30	2024-11-29
3	Limiter	CYBERTEK	EM5010	261115-001-0024	2024-07-27	2025-07-26
4	Cable	Laplace	RF300	-	2024-07-27	2025-07-26
3m Semi-anechoic Chamber for Radiation Emissions 1#						
1	Spectrum Analyzer	R&S	FSP30	100091	2024-04-22	2025-04-21
2	Amplifier	Agilent	8447D	2944A10178	2024-07-27	2025-07-26
3	Tri-log Broadband Antenna	SCHWARZBECK	VULB9163	336	2024-08-07	2025-08-06
4	Coaxial Cable	Top	TYPE16(13M)	-	2024-04-22	2025-04-21
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120D	667	2024-01-23	2025-01-22
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2024-08-02	2025-08-01
7	Broadband Preamplifier	COMPLIANCE	PAP-1G18	2004	2024-07-27	2025-07-26
8	Coaxial Cable	Top	ZT26-NJ-NJ-8M/FA	-	2024-04-22	2025-04-21
9	Microwave Amplifier	SCHWARZBECK	BBV 9721	100472	2024-07-27	2025-07-26
10	Coaxial Cable	Top	ZT40-2.92J-2.92J-2.0M	17100919	2024-04-22	2025-04-21
3m Semi-anechoic Chamber for Radiation Emissions 2#						
1	Test Receiver	R&S	ESCI	101296	2024-04-22	2025-04-21
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2023-11-04	2024-11-03
3	Active Loop Antenna	Com-Power	AL-130R	10160007	2024-05-07	2025-05-06
4	Amplifier	ANRITSU	MH648A	M43381	2024-04-22	2025-04-21
5	Cable	HUBER+SUHNER	CBL2	525178	2024-04-22	2025-04-21
RF Conducting						
1	Spectrum Analyzer	R&S	FSP40	100501	2024-07-27	2025-07-26
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2024-07-27	2025-07-26

Test Software:

Test Item	Software name	Software version
Conducted Emission Radiated Emission(3m)	EZ-EMC	EZ-EMC(RA-03A1-1)

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-6}$
RF Power	± 1.0 dB

RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (30M~1000MHz)
	± 5.47 dB (1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

6 Test Summary

Test Items	Test Requirement	Result
Conducted Emissions	15.207(a)	PASS
Radiated Emissions	15.407(a) 15.205(a) 15.209(a)	PASS
Duty Cycle	KDB 789033	PASS
6dB Bandwidth	15.407(a)	PASS
26 dB Emission Bandwidth & 99% Occupied Bandwidth	15.407(a)	PASS
Maximum Conducted Output Power	15.407(a)	PASS
Power Spectral Density	15.407(a)	PASS
Restricted bands around fundamental frequency	15.407(a)	PASS
Antenna Requirement	15.203	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

7 Duty cycle

Test Requirement: FCC 47CFR Part 15 Section 15.407
KDB789033 D02 General U-NII Test Procedures New Rules v02r01, Section (B)

Test Method: ANSI C63.10: 2013

Test Limit: N/A

Test Result: PASS

Remark: Through Pre-scan, and found 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.

7.1 Summary of Test Results

Type of Modulation	On time ms	Period ms	Duty Cycle linear	Duty Cycle %	Duty Cycle Factor(dB)	Average Factor(dB)
U-NII-1 802.11a	2.052	2.28	0.90	90.00	0.46	-0.92
U-NII-1 802.11n(HT20)	1.908	2.1	0.91	90.86	0.42	-0.83
U-NII-1 802.11n(HT40)	0.936	1.11	0.84	84.32	0.74	-1.48
U-NII-1 802.11ac(HT20)	1.926	2.136	0.90	90.17	0.45	-0.90
U-NII-1 802.11ac(HT40)	0.948	1.092	0.87	86.81	0.61	-1.23
U-NII-1 802.11ac(HT80)	0.458	0.644	0.71	71.12	1.48	-2.96
U-NII-3 802.11a	2.052	2.225	0.92	92.22	0.35	-0.70
U-NII-3 802.11n(HT20)	1.912	2.15	0.89	88.93	0.51	-1.02
U-NII-3 802.11n(HT40)	0.935	1.096	0.85	85.31	0.69	-1.38
U-NII-3 802.11ac(HT20)	1.927	2.115	0.91	91.11	0.40	-0.81
U-NII-3 802.11ac(HT40)	0.944	1.153	0.82	81.87	0.87	-1.74
U-NII-3 802.11ac(HT80)	0.458	0.68	0.67	67.35	1.72	-3.43

Remark:

Duty cycle=On Time/period;

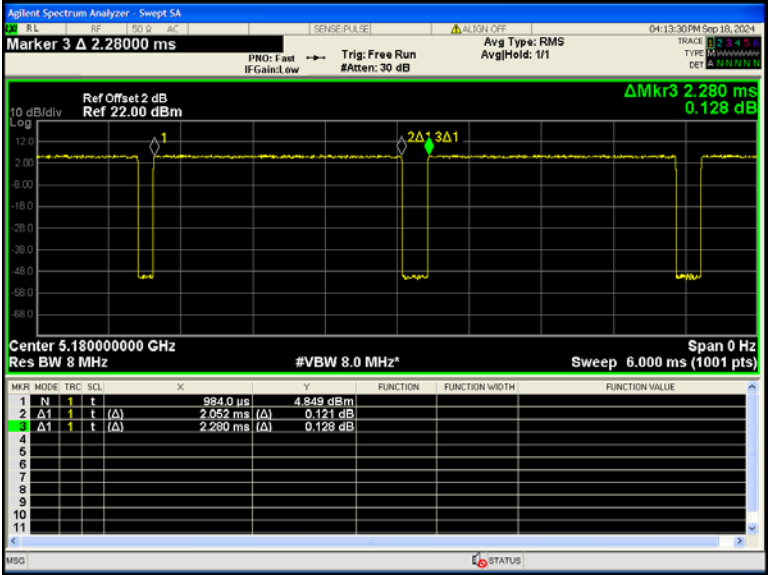
Duty cycle factor= $10 \cdot \log (1/\text{Duty cycle})$;

Average factor= $20 \log_{10} \text{Duty cycle}$

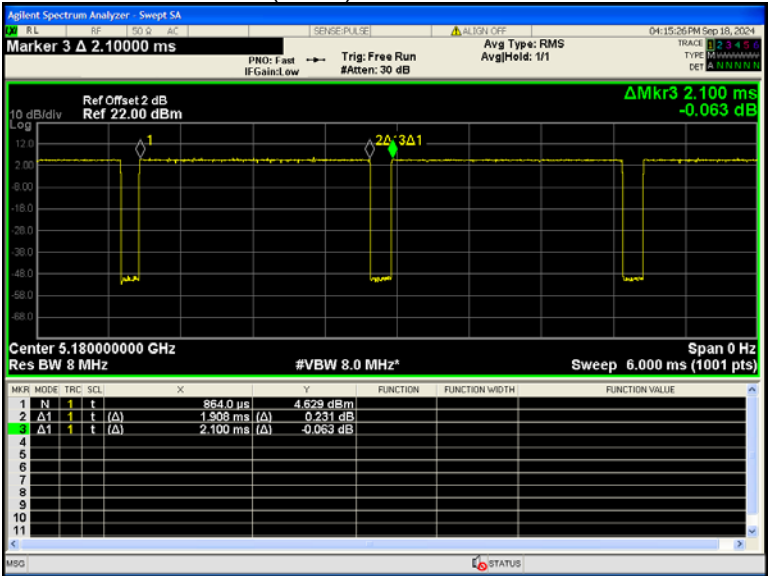
Note: Both antennas were tested and only the worst data was shown in the report.

Test result plots shown as follows:

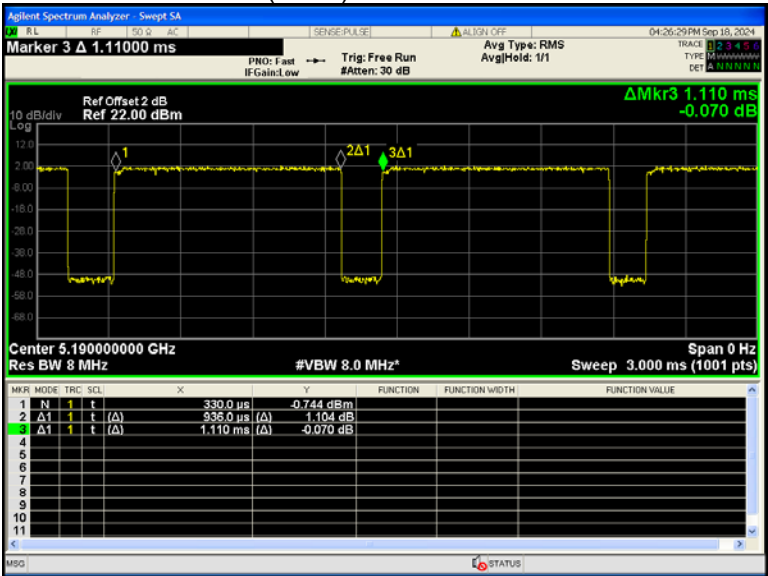
802.11a U-NII-1 Low channel



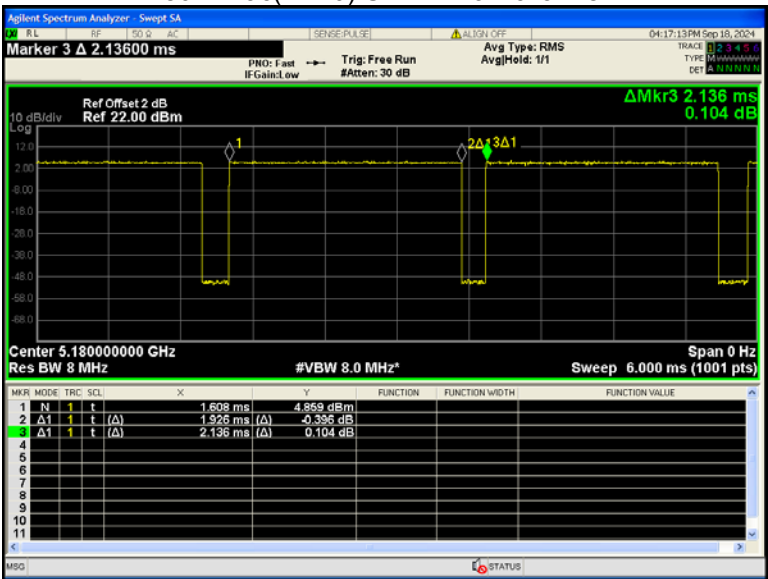
802.11n(HT20) U-NII-1 Low channel



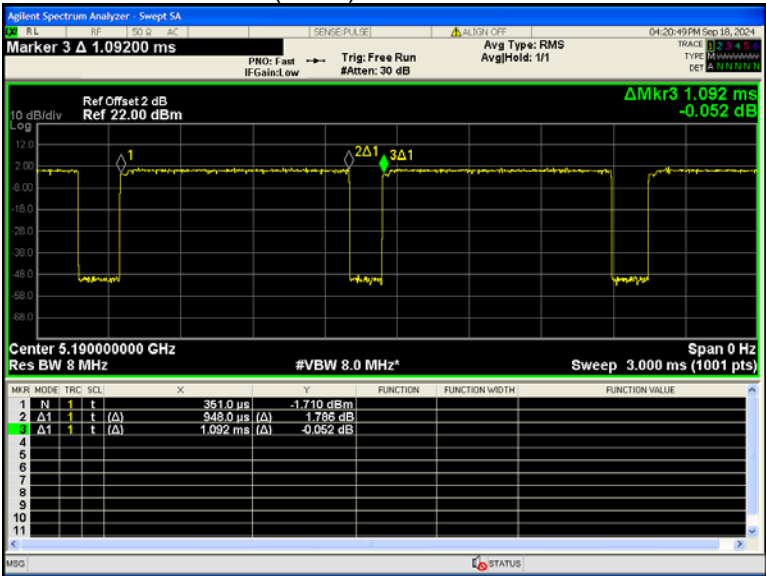
802.11n(HT40) U-NII-1 Low channel



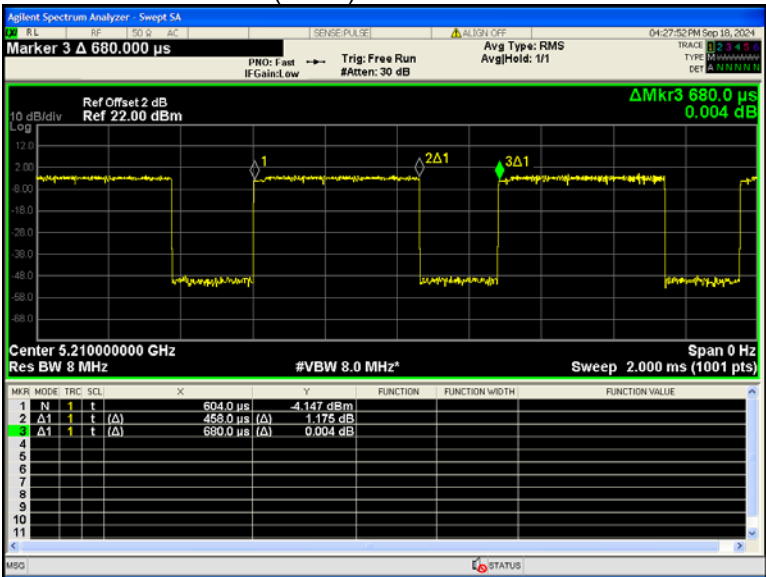
802.11ac(HT20) U-NII-1 Low channel



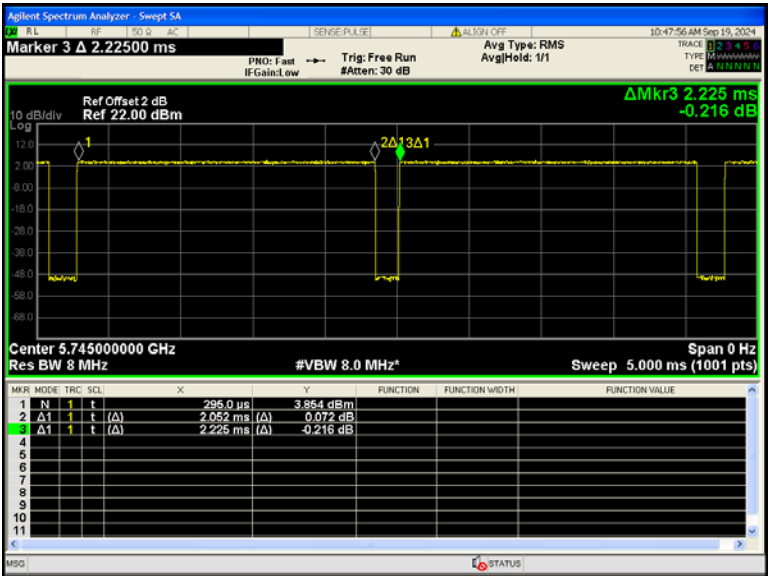
802.11ac(HT40) U-NII-1 Low channel



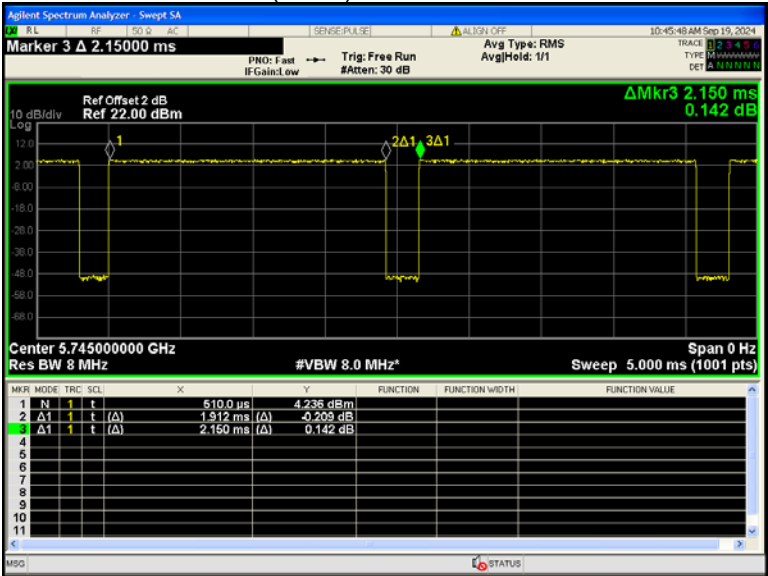
802.11ac(HT80) U-NII-1 Low channel



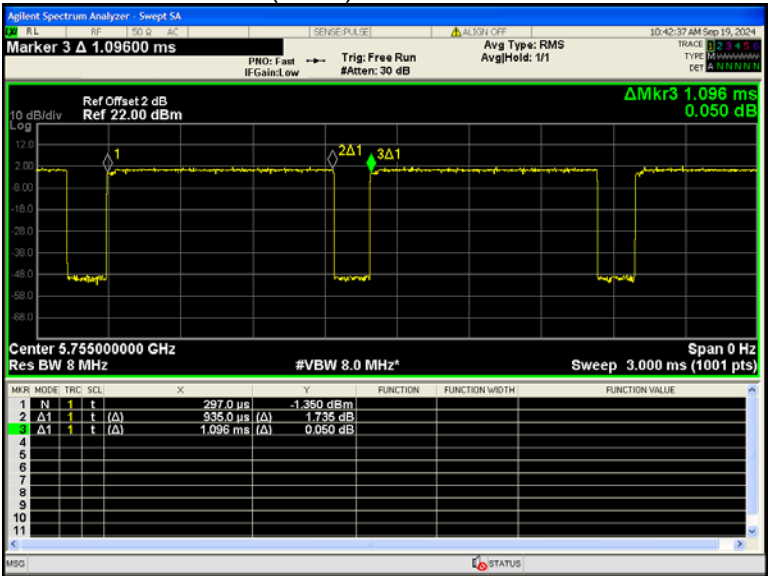
802.11a U-NII-3 Low channel



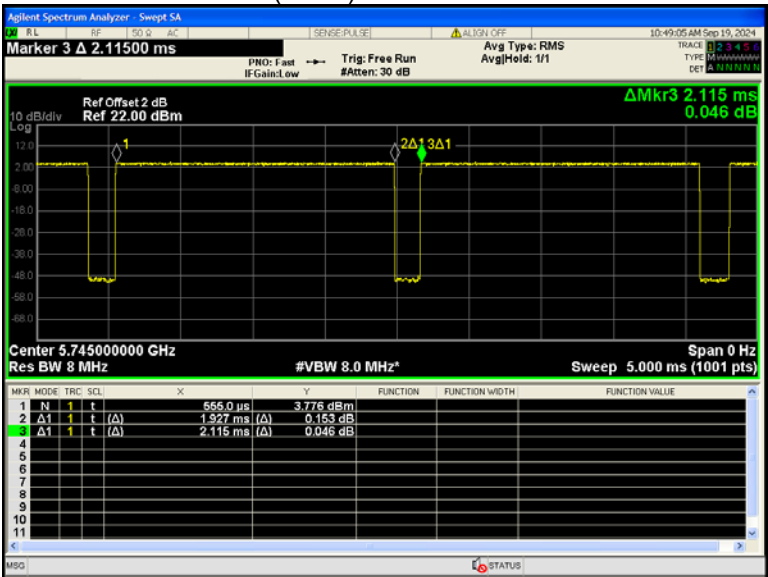
802.11n(HT20) U-NII-3 Low channel



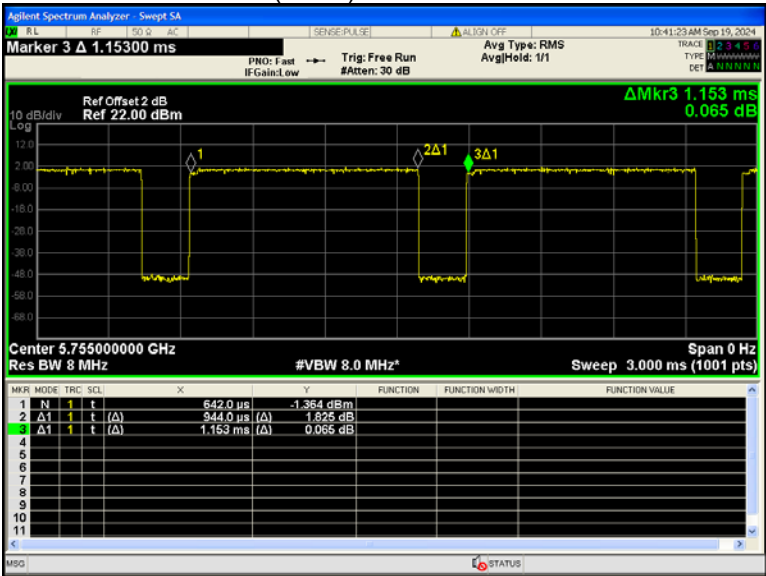
802.11n(HT40) U-NII-3 Low channel



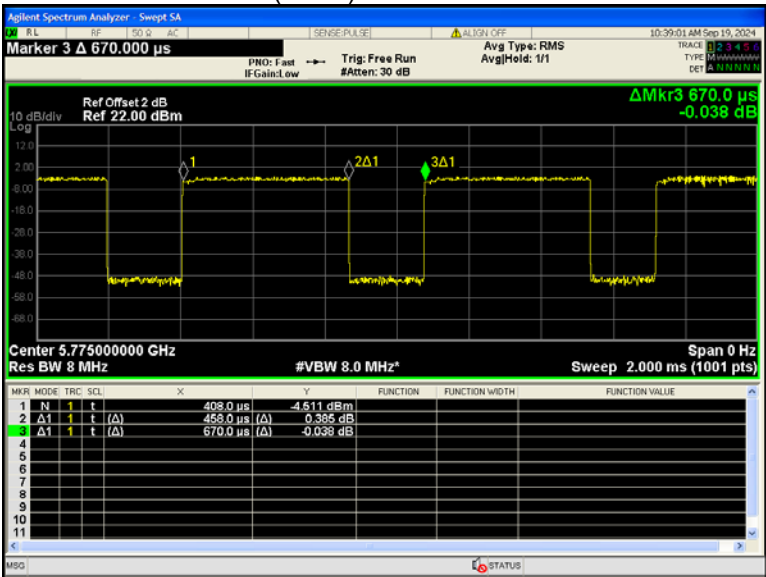
802.11ac(HT20) U-NII-3 Low channel



802.11ac(HT40) U-NII-3 Low channel



802.11ac(HT80) U-NII-3 Low channel



8 Conducted Emission

Test Requirement: 47CFR FCC Part15 Subpart C §15.207

Test Method: ANSI C63.10:2013

Test Result: PASS

Frequency Range: 150kHz to 30MHz

Limit:

Frequency (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5.0	56	46
5.0 to 30	60	50
*Decreases with the logarithm of the frequency.		

8.1 E.U.T. Operation

Operating Environment:

Temperature: 25.5 °C

Humidity: 46.3 % RH

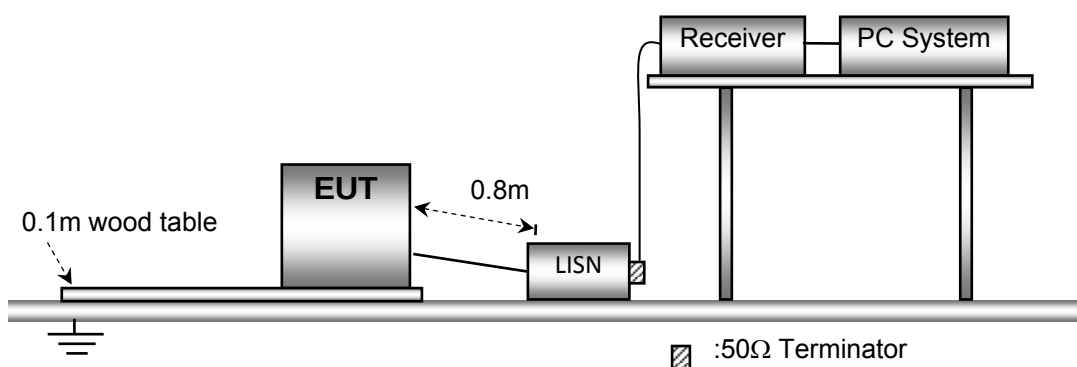
Atmospheric Pressure: 101.2kPa

EUT Operation:

The test was performed in Transmitting mode, the worst test data were shown in the report.

8.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



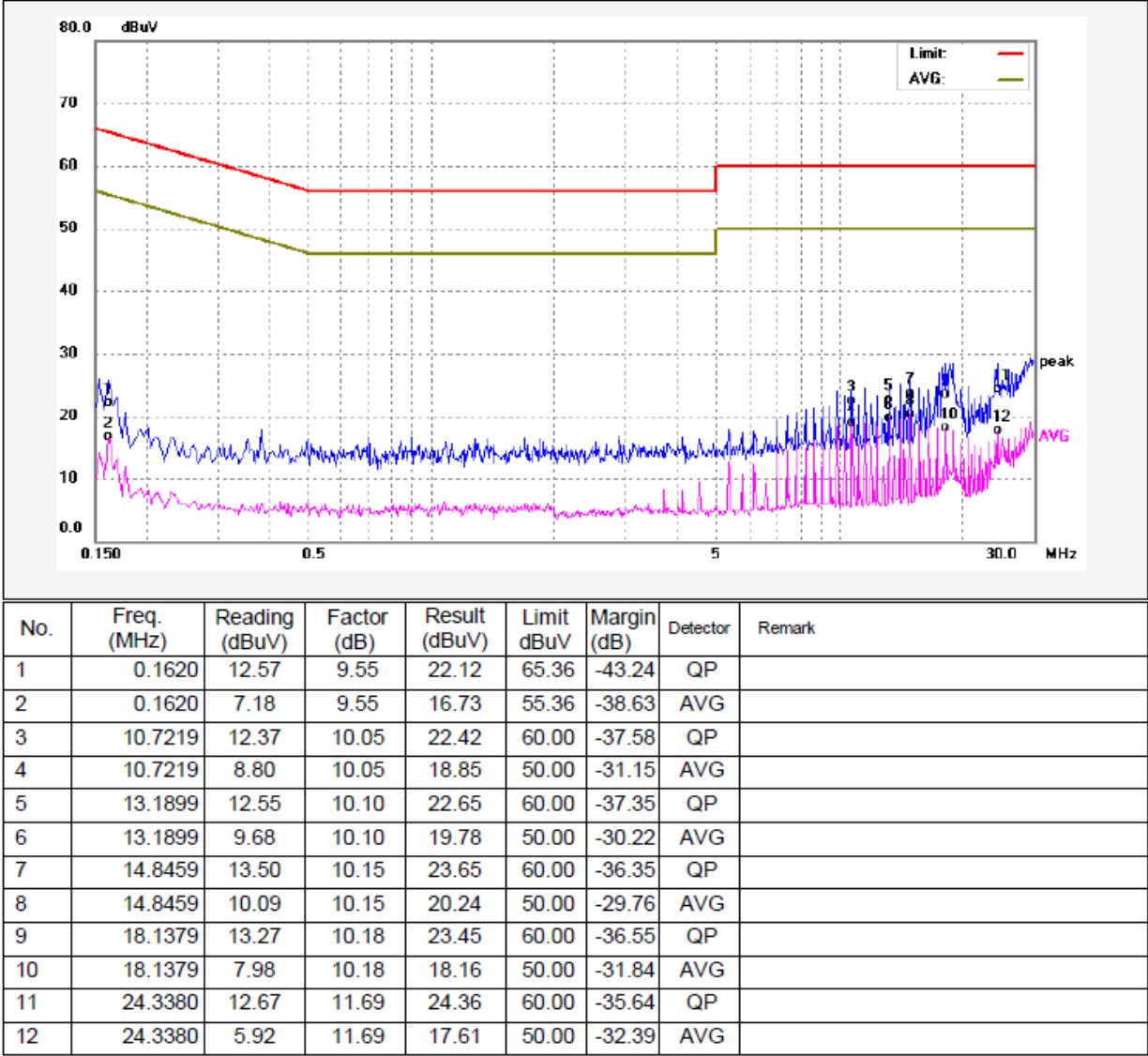
8.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

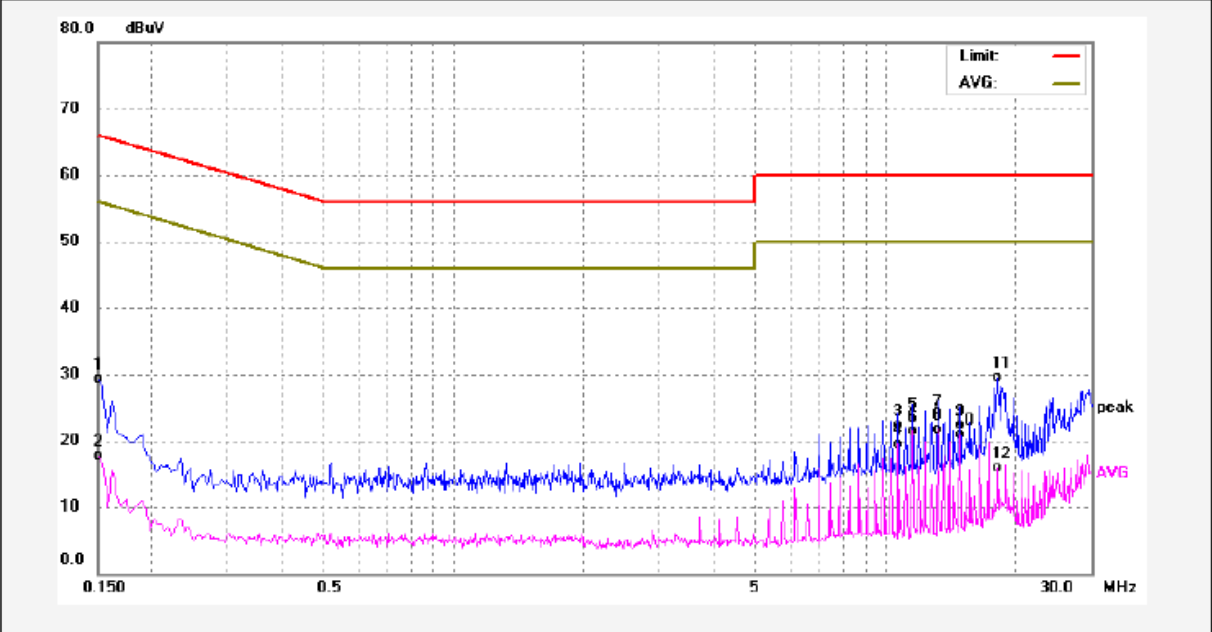
8.4 Conducted Emission Test Result

Remark: only the worst data (U-NII-1 802.11a High channel mode) were reported

Live line:



Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1499	19.84	9.55	29.39	66.00	-36.61	QP	
2	0.1499	8.10	9.55	17.65	56.00	-38.35	AVG	
3	10.7179	12.33	10.05	22.38	60.00	-37.62	QP	
4	10.7179	9.44	10.05	19.49	50.00	-30.51	AVG	
5	11.5459	13.28	10.07	23.35	60.00	-36.65	QP	
6	11.5459	11.38	10.07	21.45	50.00	-28.55	AVG	
7	13.1979	13.51	10.10	23.61	60.00	-36.39	QP	
8	13.1979	11.63	10.10	21.73	50.00	-28.27	AVG	
9	14.8459	12.21	10.15	22.36	60.00	-37.64	QP	
10	14.8459	10.73	10.15	20.88	50.00	-29.12	AVG	
11	18.1339	19.24	10.18	29.42	60.00	-30.58	QP	
12	18.1339	5.68	10.18	15.86	50.00	-34.14	AVG	

9 Radiated Emissions

Test Requirement: FCC 47CFR Part 15 Section 15.209 & 15.407

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Distance	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

9.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

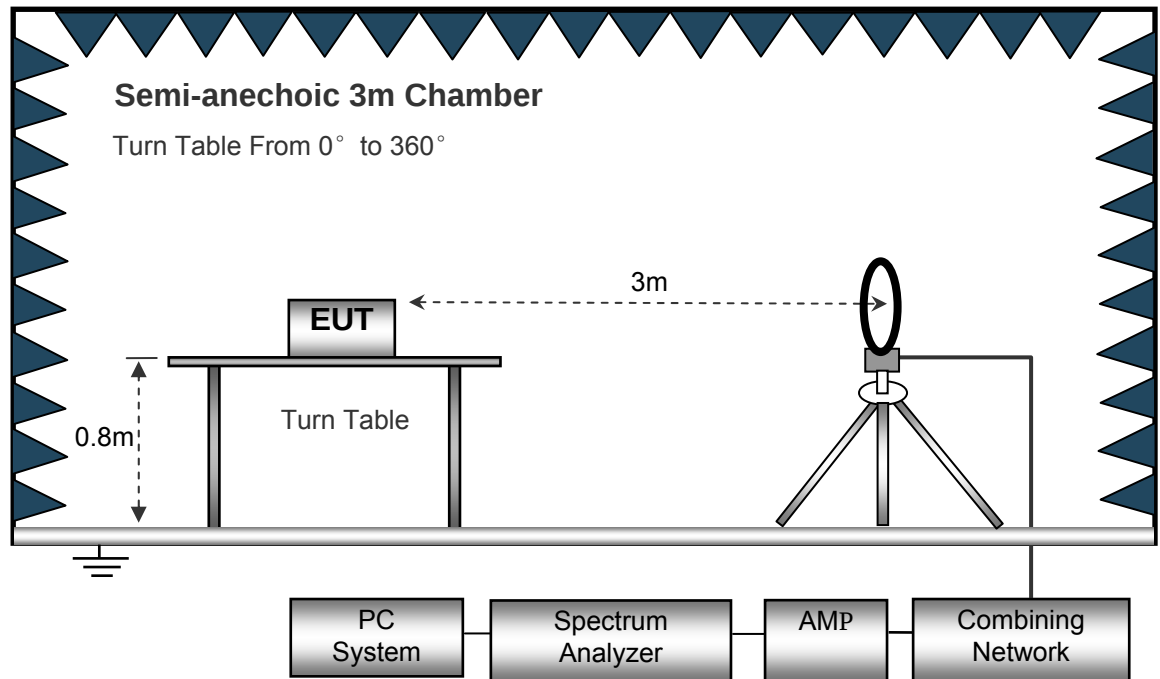
EUT Operation :

The test was performed in transmitting mode, the test data were shown in the report.

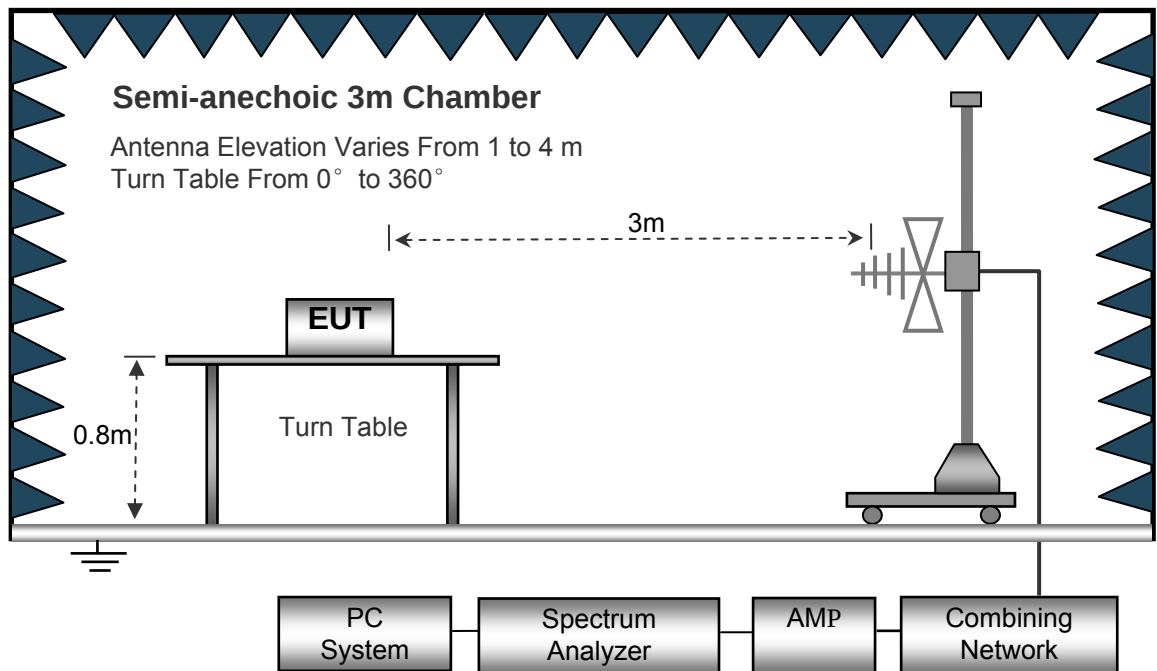
9.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10: 2013.

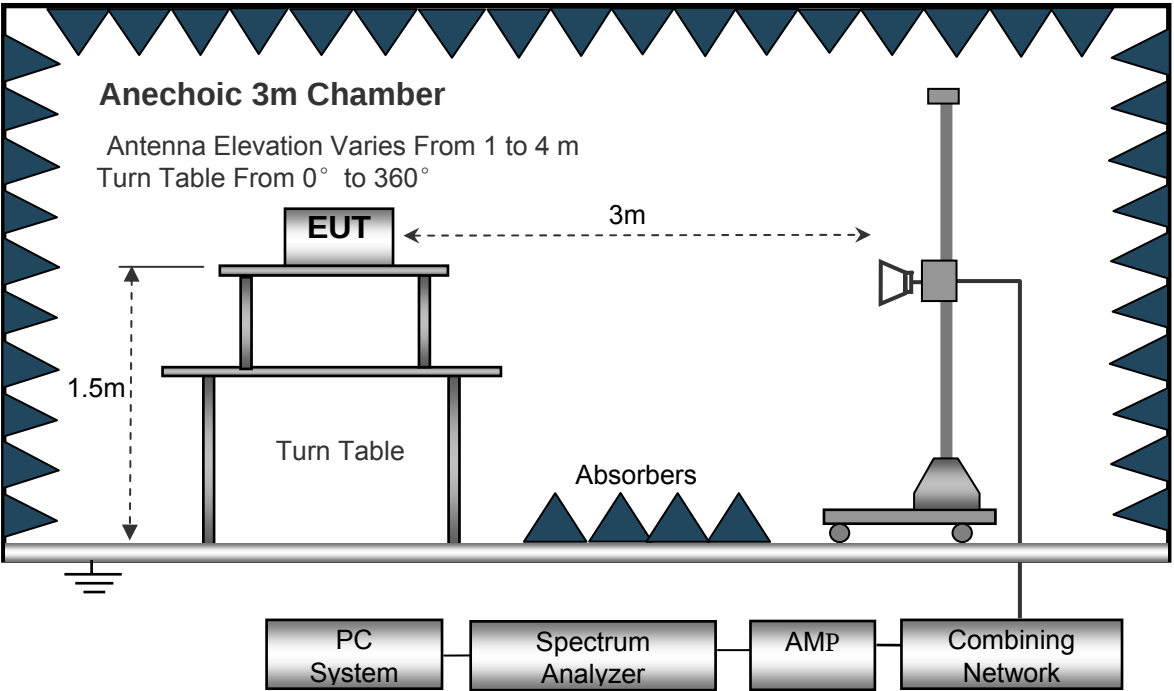
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



9.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed Auto
IF Bandwidth.....10kHz
Video Bandwidth.....10kHz
Resolution Bandwidth.....10kHz

30MHz ~ 1GHz

Sweep Speed Auto
DetectorPK
Resolution Bandwidth.....100kHz
Video Bandwidth.....300kHz

Above 1GHz

Sweep Speed Auto
DetectorPK
Resolution Bandwidth.....1MHz
Video Bandwidth.....3MHz
DetectorAve.
Resolution Bandwidth.....1MHz
Video Bandwidth.....10Hz

9.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis,so the worst data were shown as follow.
8. A 2.4GHz high –pass filter is used during radiated emissions above 1GHz measurement.

9.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

9.6 Summary of Test Results

Test Frequency: 9KHz~30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency : 30MHz ~ 18GHz

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-1 Low Channel 5180MHz									
316.58	39.78	QP	227	1.7	H	-11.62	28.16	46.00	-17.84
316.58	42.21	QP	282	1.6	V	-11.62	30.59	46.00	-15.41
4505.35	53.49	PK	74	1.1	H	-2.03	51.46	74.00	-22.54
4505.35	43.99	Ave	74	1.1	H	-2.03	41.96	54.00	-12.04
5142.41	52.73	PK	194	1.8	H	-1.02	51.71	74.00	-22.29
5142.41	45.02	Ave	194	1.8	H	-1.02	44.00	54.00	-10.00
10360.00	41.62	PK	262	1.2	H	5.33	46.95	74.00	-27.05
10360.00	37.04	Ave	262	1.2	H	5.33	42.37	54.00	-11.63
802.11a U-NII-1 Middle channel 5200MHz									
316.58	40.90	QP	184	1.7	H	-11.62	29.28	46.00	-16.72
316.58	42.78	QP	182	1.1	V	-11.62	31.16	46.00	-14.84
4513.81	52.39	PK	133	1.9	H	-1.94	50.45	74.00	-23.55
4513.81	44.34	Ave	133	1.9	H	-1.94	42.40	54.00	-11.60
5130.35	52.07	PK	221	1.9	H	-1.06	51.01	74.00	-22.99
5130.35	45.02	Ave	221	1.9	H	-1.06	43.96	54.00	-10.04
10400.00	41.21	PK	148	1.4	H	5.21	46.42	74.00	-27.58
10400.00	38.48	Ave	148	1.4	H	5.21	43.69	54.00	-10.31

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-1 High channel 5240MHz									
316.58	39.53	QP	72	1.9	H	-11.62	27.91	46.00	-18.09
316.58	41.98	QP	313	2.0	V	-11.62	30.36	46.00	-15.64
4514.76	53.34	PK	317	1.0	H	-2.24	51.10	74.00	-22.90
4514.76	44.23	Ave	317	1.0	H	-2.24	41.99	54.00	-12.01
5135.92	53.22	PK	178	1.0	H	-1.09	52.13	74.00	-21.87
5135.92	44.51	Ave	178	1.0	H	-1.09	43.42	54.00	-10.58
10480.00	41.32	PK	255	1.2	H	5.14	46.46	74.00	-27.54
10480.00	36.78	Ave	255	1.2	H	5.14	41.92	54.00	-12.08
802.11a U-NII-3 Low Channel 5745MHz									
316.58	39.19	QP	217	1.2	H	-11.62	27.57	46.00	-18.43
316.58	43.16	QP	159	1.6	V	-11.62	31.54	46.00	-14.46
4514.09	52.38	PK	138	1.4	H	-2.06	50.32	74.00	-23.68
4514.09	45.14	Ave	138	1.4	H	-2.06	43.08	54.00	-10.92
5368.56	40.83	PK	93	1.3	H	5.93	46.76	74.00	-27.24
5368.56	35.91	Ave	93	1.3	H	5.93	41.84	54.00	-12.16
11490.00	45.30	PK	81	1.6	H	-1.25	44.05	74.00	-29.95
11490.00	38.21	Ave	81	1.6	H	-1.25	36.96	54.00	-17.04

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-3 middle channel 5785MHz									
316.58	40.42	QP	239	1.4	H	-11.62	28.80	46.00	-17.20
316.58	43.47	QP	17	1.5	V	-11.62	31.85	46.00	-14.15
4505.59	53.35	PK	51	1.7	H	-2.03	51.32	74.00	-22.68
4505.59	45.72	Ave	51	1.7	H	-2.03	43.69	54.00	-10.31
5388.52	40.51	PK	9	2.0	H	5.81	46.32	74.00	-27.68
5388.52	37.91	Ave	9	2.0	H	5.81	43.72	54.00	-10.28
11570.00	45.96	PK	211	1.8	H	-1.22	44.74	74.00	-29.26
11570.00	39.85	Ave	211	1.8	H	-1.22	38.63	54.00	-15.37
802.11a U-NII-3 High channel 5825MHz									
316.58	41.68	QP	188	1.6	H	-11.62	30.06	46.00	-15.94
316.58	42.87	QP	136	1.4	V	-11.62	31.25	46.00	-14.75
4531.57	52.29	PK	115	1.7	H	-1.84	50.45	74.00	-23.55
4531.57	44.66	Ave	115	1.7	H	-1.84	42.82	54.00	-11.18
5372.18	41.46	PK	314	1.5	H	5.84	47.30	74.00	-26.70
5372.18	36.98	Ave	314	1.5	H	5.84	42.82	54.00	-11.18
11650.00	45.15	PK	236	1.9	H	-1.30	43.85	74.00	-30.15
11650.00	38.33	Ave	236	1.9	H	-1.30	37.03	54.00	-16.97

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 Low Channel 5180MHz									
316.58	42.10	QP	118	1.1	H	-11.62	30.48	46.00	-15.52
316.58	43.06	QP	237	1.2	V	-11.62	31.44	46.00	-14.56
4505.17	52.77	PK	249	1.9	H	-2.14	50.63	74.00	-23.37
4505.17	43.83	Ave	249	1.9	H	-2.14	41.69	54.00	-12.31
5131.61	45.95	PK	256	1.9	H	-1.06	44.89	74.00	-29.11
5131.61	39.37	Ave	256	1.9	H	-1.06	38.31	54.00	-15.69
10360.00	42.29	PK	200	2.0	H	5.33	47.62	74.00	-26.38
10360.00	37.74	Ave	200	2.0	H	5.33	43.07	54.00	-10.93
802.11n(HT20) U-NII-1 Middle channel 5200MHz									
316.58	41.55	QP	58	1.9	H	-11.62	29.93	46.00	-16.07
316.58	42.15	QP	93	1.1	V	-11.62	30.53	46.00	-15.47
4502.75	52.59	PK	197	1.4	H	-2.12	50.47	74.00	-23.53
4502.75	44.63	Ave	197	1.4	H	-2.12	42.51	54.00	-11.49
5111.49	45.18	PK	5	1.9	H	-1.06	44.12	74.00	-29.88
5111.49	38.37	Ave	5	1.9	H	-1.06	37.31	54.00	-16.69
10400.00	41.89	PK	246	1.5	H	5.21	47.10	74.00	-26.90
10400.00	37.13	Ave	246	1.5	H	5.21	42.34	54.00	-11.66

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 High channel 5240MHz									
316.58	42.57	QP	180	1.4	H	-11.62	30.95	46.00	-15.05
316.58	42.70	QP	43	2.0	V	-11.62	31.08	46.00	-14.92
4504.41	52.02	PK	228	1.0	H	-1.96	50.06	74.00	-23.94
4504.41	43.33	Ave	228	1.0	H	-1.96	41.37	54.00	-12.63
5118.72	45.67	PK	289	1.0	H	-1.06	44.61	74.00	-29.39
5118.72	37.53	Ave	289	1.0	H	-1.06	36.47	54.00	-17.53
10480.00	42.65	PK	315	1.2	H	5.14	47.79	74.00	-26.21
10480.00	36.27	Ave	315	1.2	H	5.14	41.41	54.00	-12.59
802.11n(HT20) U-NII-3 Low Channel 5745MHz									
316.58	43.89	QP	250	1.7	H	-11.62	32.27	46.00	-13.73
316.58	48.72	QP	36	2.0	V	-11.62	37.10	46.00	-8.90
4531.90	44.36	PK	277	1.3	H	-2.06	42.30	74.00	-31.70
4531.90	46.30	Ave	277	1.3	H	-2.06	44.24	54.00	-9.76
5382.93	36.64	PK	208	1.6	H	5.93	42.57	74.00	-31.43
5382.93	38.97	Ave	208	1.6	H	5.93	44.90	54.00	-9.10
11490.00	46.83	PK	144	1.1	H	-1.25	45.58	74.00	-28.42
11490.00	37.49	Ave	144	1.1	H	-1.25	36.24	54.00	-17.76

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-3 middle channel 5785MHz									
316.58	44.93	QP	104	1.6	H	-11.62	33.31	46.00	-12.69
316.58	44.40	QP	332	1.6	V	-11.62	32.78	46.00	-13.22
4523.17	45.84	PK	144	1.7	H	-2.03	43.81	74.00	-30.19
4523.17	47.00	Ave	144	1.7	H	-2.03	44.97	54.00	-9.03
5353.48	37.33	PK	135	1.9	H	5.81	43.14	74.00	-30.86
5353.48	39.32	Ave	135	1.9	H	5.81	45.13	54.00	-8.87
11570.00	46.12	PK	8	1.6	H	-1.22	44.90	74.00	-29.10
11570.00	38.07	Ave	8	1.6	H	-1.22	36.85	54.00	-17.15
802.11n(HT20) U-NII-3 High channel 5825MHz									
316.58	44.22	QP	12	1.4	H	-11.62	32.60	46.00	-13.40
316.58	43.02	QP	122	1.5	V	-11.62	31.40	46.00	-14.60
4533.11	46.31	PK	118	1.2	H	-1.84	44.47	74.00	-29.53
4533.11	45.90	Ave	118	1.2	H	-1.84	44.06	54.00	-9.94
5354.40	37.47	PK	192	1.9	H	5.84	43.31	74.00	-30.69
5354.40	40.52	Ave	192	1.9	H	5.84	46.36	54.00	-7.64
11650.00	45.39	PK	334	1.1	H	-1.30	44.09	74.00	-29.91
11650.00	37.43	Ave	334	1.1	H	-1.30	36.13	54.00	-17.87

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-1 Low Channel 5190MHz									
316.58	41.28	QP	132	1.7	H	-11.62	29.66	46.00	-16.34
316.58	40.63	QP	101	1.9	V	-11.62	29.01	46.00	-16.99
4514.47	38.85	PK	325	1.4	H	-1.89	36.96	74.00	-37.04
4514.47	28.86	Ave	325	1.4	H	-1.89	26.97	54.00	-27.03
5126.75	45.10	PK	337	1.6	H	-1.06	44.04	74.00	-29.96
5126.75	39.09	Ave	337	1.6	H	-1.06	38.03	54.00	-15.97
10380.00	39.65	PK	53	1.3	H	5.26	44.91	74.00	-29.09
10380.00	34.60	Ave	53	1.3	H	5.26	39.86	54.00	-14.14
802.11n(HT40) U-NII-1 High channel 5230MHz									
316.58	41.78	QP	79	1.5	H	-11.62	30.16	46.00	-15.84
316.58	39.96	QP	187	1.8	V	-11.62	28.34	46.00	-17.66
4502.03	39.28	PK	186	1.5	H	-1.94	37.34	74.00	-36.66
4502.03	28.96	Ave	186	1.5	H	-1.94	27.02	54.00	-26.98
5143.64	44.54	PK	126	1.2	H	-1.06	43.48	74.00	-30.52
5143.64	38.65	Ave	126	1.2	H	-1.06	37.59	54.00	-16.41
10460.00	40.63	PK	357	1.2	H	5.28	45.91	74.00	-28.09
10460.00	36.52	Ave	357	1.2	H	5.28	41.80	54.00	-12.20

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-3 Low Channel 5755MHz									
316.58	40.71	QP	230	1.6	H	-11.62	29.09	46.00	-16.91
316.58	40.66	QP	78	1.6	V	-11.62	29.04	46.00	-16.96
4524.90	36.57	PK	290	1.0	H	-1.96	34.61	74.00	-39.39
4524.90	26.33	Ave	290	1.0	H	-1.96	24.37	54.00	-29.63
5374.30	39.41	PK	218	1.6	H	5.88	45.29	74.00	-28.71
5374.30	35.60	Ave	218	1.6	H	5.88	41.48	54.00	-12.52
11510.00	45.73	PK	320	1.7	H	-1.01	44.72	74.00	-29.28
11510.00	39.54	Ave	320	1.7	H	-1.01	38.53	54.00	-15.47
802.11n(HT40) U-NII-3 High Channel 5795MHz									
316.58	41.13	QP	257	1.3	H	-11.62	29.51	46.00	-16.49
316.58	39.98	QP	54	1.1	V	-11.62	28.36	46.00	-17.64
4509.46	35.96	PK	295	1.3	H	-1.92	34.04	74.00	-39.96
4509.46	27.06	Ave	295	1.3	H	-1.92	25.14	54.00	-28.86
5363.60	40.97	PK	283	1.8	H	5.63	46.60	74.00	-27.40
5363.60	37.14	Ave	283	1.8	H	5.63	42.77	54.00	-11.23
11590.00	46.07	PK	128	1.9	H	-1.04	45.03	74.00	-28.97
11590.00	39.89	Ave	128	1.9	H	-1.04	38.85	54.00	-15.15

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT20) U-NII-1 Low Channel 5180MHz									
316.58	36.71	QP	5	1.2	H	-11.62	25.09	46.00	-20.91
316.58	40.53	QP	312	1.5	V	-11.62	28.91	46.00	-17.09
4516.57	44.20	PK	101	1.2	H	-1.86	42.34	74.00	-31.66
4516.57	37.18	Ave	101	1.2	H	-1.86	35.32	54.00	-18.68
5121.47	43.59	PK	114	1.7	H	-1.06	42.53	74.00	-31.47
5121.47	43.98	Ave	114	1.7	H	-1.06	42.92	54.00	-11.08
10360.00	46.12	PK	273	1.7	H	5.33	51.45	74.00	-22.55
10360.00	39.64	Ave	273	1.7	H	5.33	44.97	54.00	-9.03
802.11ac(HT20) U-NII-1 Middle Channel 5200MHz									
316.58	37.36	QP	212	1.3	H	-11.62	25.74	46.00	-20.26
316.58	41.18	QP	58	2.0	V	-11.62	29.56	46.00	-16.44
4507.10	43.38	PK	144	1.9	H	-1.82	41.56	74.00	-32.44
4507.10	37.00	Ave	144	1.9	H	-1.82	35.18	54.00	-18.82
5128.63	44.06	PK	217	1.6	H	-1.06	43.00	74.00	-31.00
5128.63	44.25	Ave	217	1.6	H	-1.06	43.19	54.00	-10.81
10400.00	42.58	PK	95	2.0	H	5.21	47.79	74.00	-26.21
10400.00	37.56	Ave	95	2.0	H	5.21	42.77	54.00	-11.23
802.11ac(HT20) U-NII-1 High Channel 5240MHz									
316.58	38.00	QP	144	1.1	H	-11.62	26.38	46.00	-19.62
316.58	41.29	QP	320	1.8	V	-11.62	29.67	46.00	-16.33
4527.53	42.60	PK	22	1.2	H	-1.81	40.79	74.00	-33.21
4527.53	36.21	Ave	22	1.2	H	-1.81	34.40	54.00	-19.60
5139.50	43.58	PK	106	1.6	H	-1.06	42.52	74.00	-31.48
5139.50	46.19	Ave	106	1.6	H	-1.06	45.13	54.00	-8.87
10480.00	41.73	PK	285	1.1	H	5.14	46.87	74.00	-27.13
10480.00	37.27	Ave	285	1.1	H	5.14	42.41	54.00	-11.59

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT20) U-NII-3 Low Channel 5745MHz									
316.58	38.74	QP	280	1.2	H	-11.62	27.12	46.00	-18.88
316.58	41.27	QP	130	1.8	V	-11.62	29.65	46.00	-16.35
4511.79	40.39	PK	290	1.4	H	-1.92	38.47	74.00	-35.53
4511.79	33.35	Ave	290	1.4	H	-1.92	31.43	54.00	-22.57
5364.48	39.57	PK	103	1.7	H	5.93	45.50	74.00	-28.50
5364.48	35.43	Ave	103	1.7	H	5.93	41.36	54.00	-12.64
11490.00	46.64	PK	159	1.6	H	-1.03	45.61	74.00	-28.39
11490.00	38.94	Ave	159	1.6	H	-1.03	37.91	54.00	-16.09
802.11ac(HT20) U-NII-3 Middle Channel 5785MHz									
316.58	39.56	QP	146	1.4	H	-11.62	27.94	46.00	-18.06
316.58	41.04	QP	136	1.1	V	-11.62	29.42	46.00	-16.58
4520.03	41.28	PK	186	1.1	H	-1.97	39.31	74.00	-34.69
4520.03	32.45	Ave	186	1.1	H	-1.97	30.48	54.00	-23.52
5385.94	41.31	PK	98	1.9	H	5.81	47.12	74.00	-26.88
5385.94	36.86	Ave	98	1.9	H	5.81	42.67	54.00	-11.33
11570.00	46.06	PK	344	1.1	H	-1.05	45.01	74.00	-28.99
11570.00	39.58	Ave	344	1.1	H	-1.05	38.53	54.00	-15.47
802.11ac(HT20) U-NII-3 High Channel 5825MHz									
316.58	39.80	QP	194	1.9	H	-11.62	28.18	46.00	-17.82
316.58	41.95	QP	286	1.0	V	-11.62	30.33	46.00	-15.67
4539.04	40.56	PK	54	1.7	H	-1.88	38.68	74.00	-35.32
4539.04	31.73	Ave	54	1.7	H	-1.88	29.85	54.00	-24.15
5383.62	41.84	PK	291	1.7	H	5.84	47.68	74.00	-26.32
5383.62	37.90	Ave	291	1.7	H	5.84	43.74	54.00	-10.26
11650.00	45.07	PK	155	1.3	H	-1.06	44.01	74.00	-29.99
11650.00	39.00	Ave	155	1.3	H	-1.06	37.94	54.00	-16.06

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT40) U-NII-1 Low Channel 5190MHz									
316.58	41.06	QP	130	1.3	H	-11.62	29.44	46.00	-16.56
316.58	39.07	QP	250	1.5	V	-11.62	27.45	46.00	-18.55
4505.34	33.07	PK	138	1.3	H	-1.91	31.16	74.00	-42.84
4505.34	25.17	Ave	138	1.3	H	-1.91	23.26	54.00	-30.74
5145.46	46.52	PK	91	1.9	H	-1.06	45.46	74.00	-28.54
5145.46	40.08	Ave	91	1.9	H	-1.06	39.02	54.00	-14.98
10380.00	39.33	PK	328	1.9	H	5.26	44.59	74.00	-29.41
10380.00	34.09	Ave	328	1.9	H	5.26	39.35	54.00	-14.65
802.11ac(HT40) U-NII-1 High Channel 5230MHz									
316.58	40.48	QP	165	1.8	H	-11.62	28.86	46.00	-17.14
316.58	39.26	QP	161	1.0	V	-11.62	27.64	46.00	-18.36
4516.63	32.89	PK	308	1.5	H	-1.93	30.96	74.00	-43.04
4516.63	26.06	Ave	308	1.5	H	-1.93	24.13	54.00	-29.87
5128.38	47.36	PK	135	1.2	H	-1.06	46.30	74.00	-27.70
5128.38	39.56	Ave	135	1.2	H	-1.06	38.50	54.00	-15.50
10460.00	41.50	PK	252	1.5	H	5.28	46.78	74.00	-27.22
10460.00	36.21	Ave	252	1.5	H	5.28	41.49	54.00	-12.51

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT40) U-NII-3 Low Channel 5755MHz									
316.58	40.54	QP	263	1.8	H	-11.62	28.92	46.00	-17.08
316.58	40.16	QP	9	1.9	V	-11.62	28.54	46.00	-17.46
4533.83	31.37	PK	329	1.3	H	-1.92	29.45	74.00	-44.55
4533.83	23.45	Ave	329	1.3	H	-1.92	21.53	54.00	-32.47
5355.53	39.31	PK	80	1.6	H	5.88	45.19	74.00	-28.81
5355.53	35.27	Ave	80	1.6	H	5.88	41.15	54.00	-12.85
11510.00	46.53	PK	112	2.0	H	-1.07	45.46	74.00	-28.54
11510.00	37.56	Ave	112	2.0	H	-1.07	36.49	54.00	-17.51
802.11ac(HT40) U-NII-3 High Channel 5795MHz									
316.58	40.00	QP	182	1.6	H	-11.62	28.38	46.00	-17.62
316.58	39.18	QP	318	1.5	V	-11.62	27.56	46.00	-18.44
4522.39	31.50	PK	225	1.4	H	-1.86	29.64	74.00	-44.36
4522.39	24.33	Ave	225	1.4	H	-1.86	22.47	54.00	-31.53
5379.36	41.07	PK	2	1.9	H	5.63	46.70	74.00	-27.30
5379.36	37.20	Ave	2	1.9	H	5.63	42.83	54.00	-11.17
11590.00	46.87	PK	328	1.7	H	-1.03	45.84	74.00	-28.16
11590.00	38.69	Ave	328	1.7	H	-1.03	37.66	54.00	-16.34

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT80) U-NII-1 Low Channel 5210MHz									
316.58	38.49	QP	228	1.3	H	-11.62	26.87	46.00	-19.13
316.58	31.71	QP	159	1.0	V	-11.62	20.09	46.00	-25.91
4523.25	24.85	PK	167	1.1	H	-1.88	22.97	74.00	-51.03
4523.25	41.52	Ave	167	1.1	H	-1.88	39.64	54.00	-14.36
5129.66	37.29	PK	227	1.4	H	-1.06	36.23	74.00	-37.77
5129.66	47.12	Ave	227	1.4	H	-1.06	46.06	54.00	-7.94
10420.00	42.20	PK	192	1.9	H	4.65	46.85	74.00	-27.15
10420.00	37.09	Ave	192	1.9	H	4.65	41.74	54.00	-12.26
802.11ac(HT80) U-NII-3 Low Channel 5775MHz									
316.58	32.36	QP	345	1.7	H	-11.62	20.74	46.00	-25.26
316.58	23.89	QP	267	1.2	V	-11.62	12.27	46.00	-33.73
4532.19	42.22	PK	213	1.2	H	-1.88	40.34	74.00	-33.66
4532.19	36.86	Ave	213	1.2	H	-1.88	34.98	54.00	-19.02
5127.55	47.41	PK	228	1.2	H	-1.06	46.35	74.00	-27.65
5127.55	41.69	Ave	228	1.2	H	-1.06	40.63	54.00	-13.37
10580.00	38.10	PK	100	1.9	H	4.65	42.75	74.00	-31.25
10580.00	47.34	Ave	100	1.9	H	4.65	51.99	54.00	-2.01

Test Frequency: 12GHz~40GHz

The measurements were more than 20 dB below the limit and not reported.

10 Band Edge

Test Requirement:	FCC 47CFR Part 15 Section 15.407
Test Method:	ANSI C63.10 2013
Test Limit:	For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27dBm/MHz. For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. For transmitters operating in the 5.725-5.85 GHz band: (i) 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. (ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.
Test Result:	PASS

10.1 Test Produce

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 to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
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.

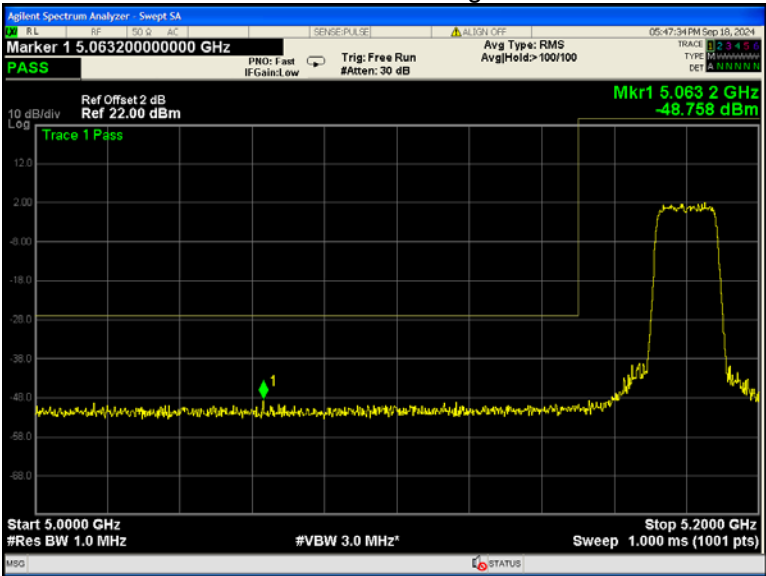
10.2 Test Result

Note: Both antennas were tested and only the worst data was shown in the report.

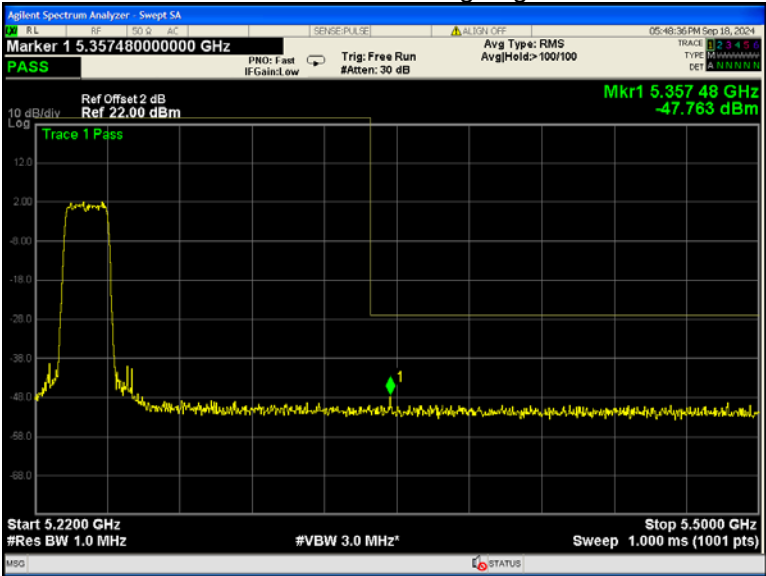
Test result plots shown as follows:

ANT 0

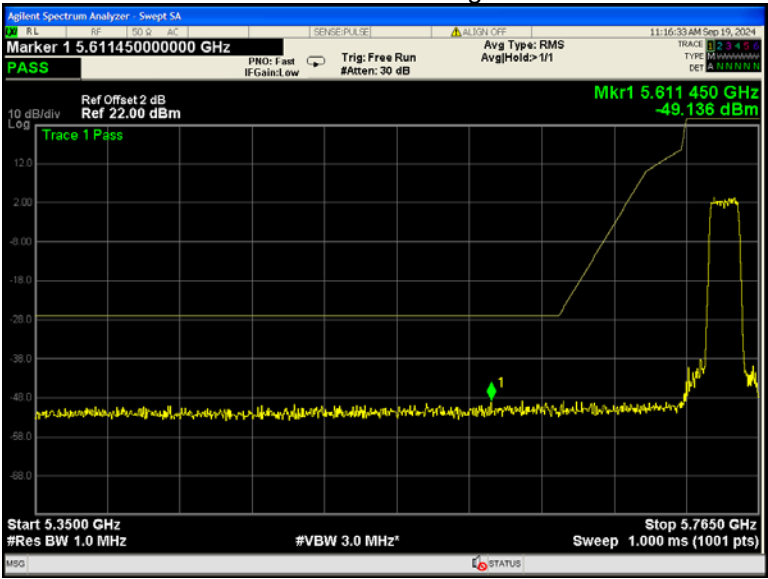
802.11a U-NII-1 Band edge-left side



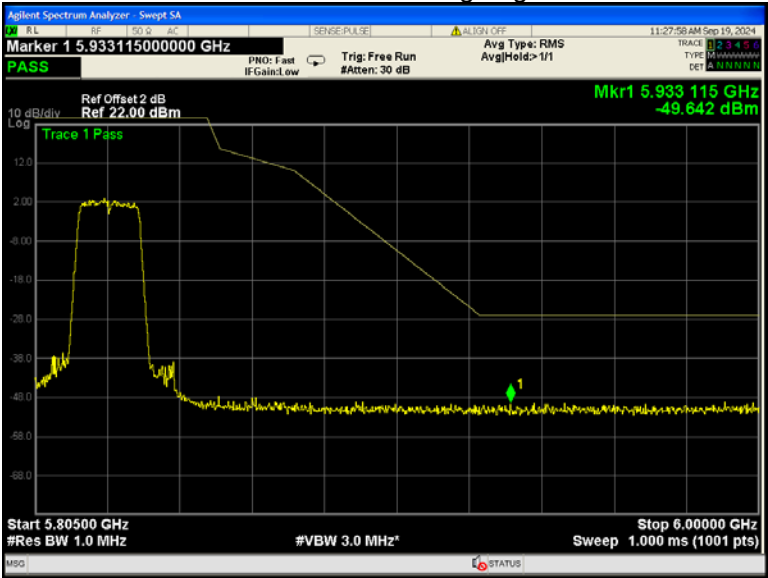
802.11a U-NII-1 Band edge-right side



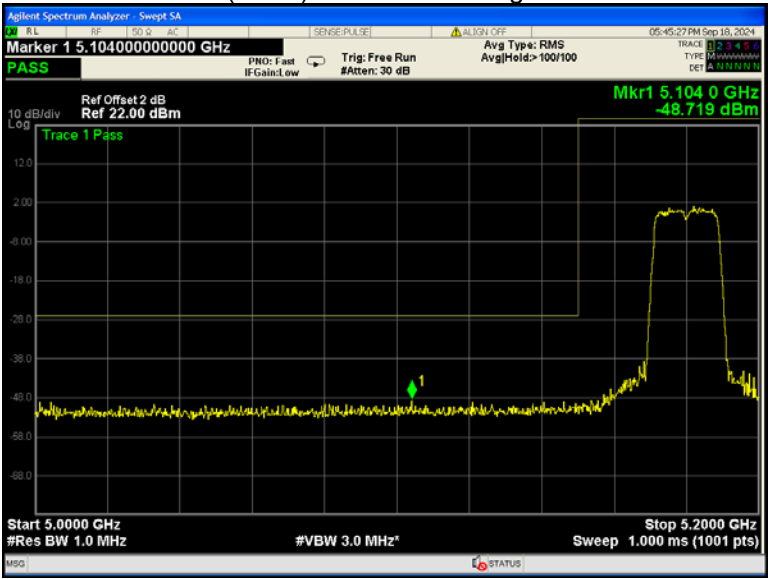
802.11a U-NII-3 Band edge-left side



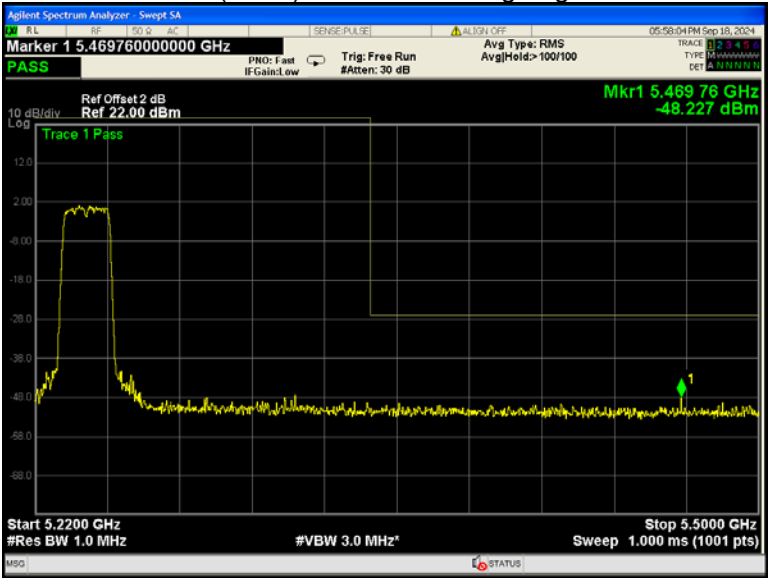
802.11a U-NII-3 Band edge-right side



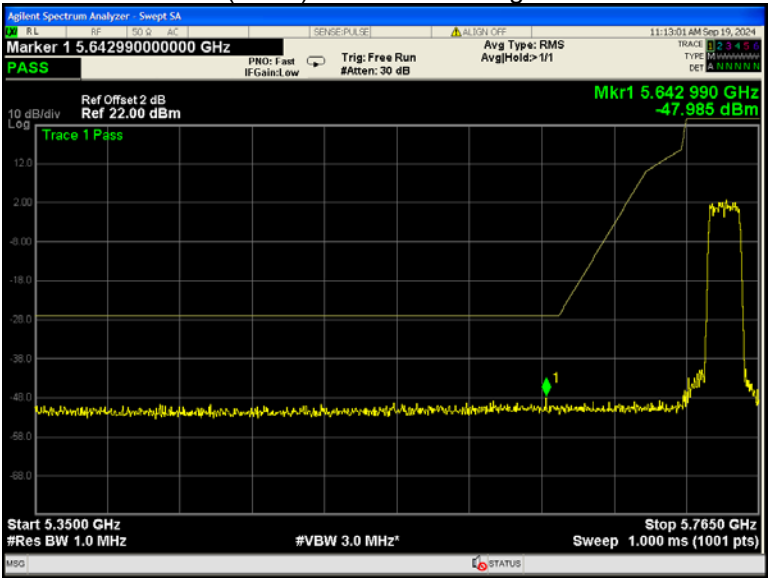
802.11n(HT20) U-NII-1 Band edge-left side



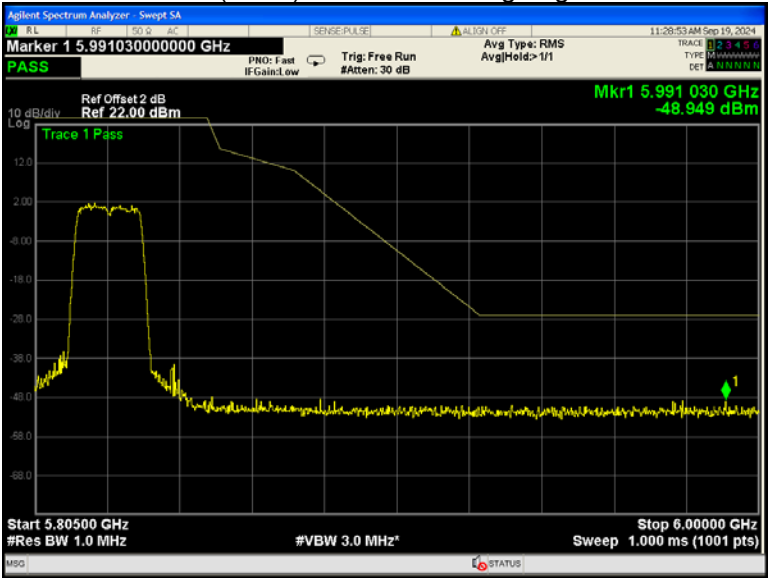
802.11n(HT20) U-NII-1 Band edge-right side



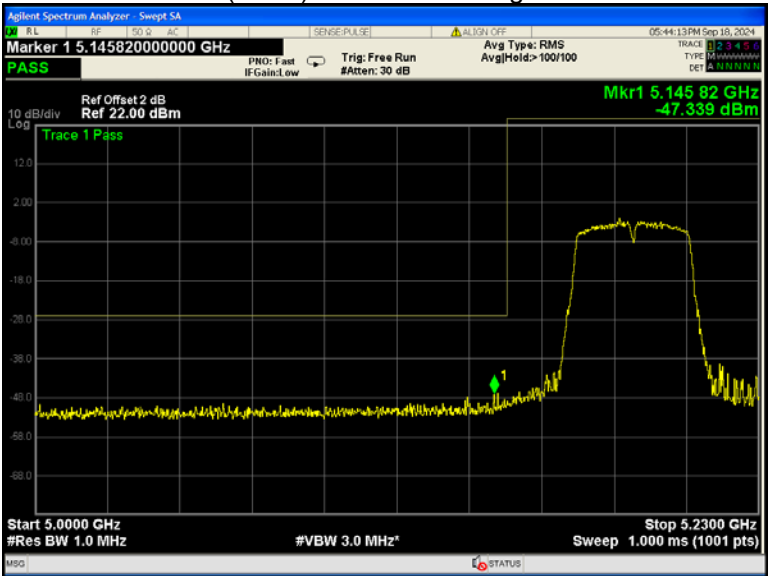
802.11n(HT20) U-NII-3 Band edge-left side



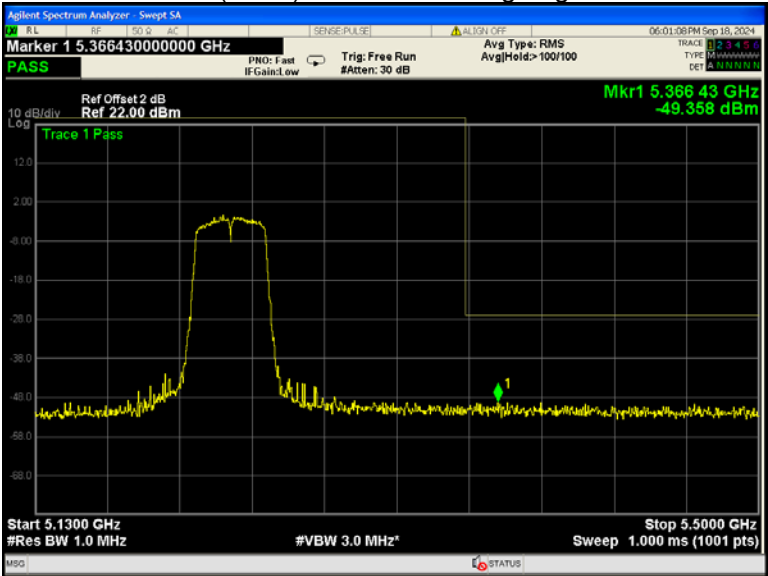
802.11n(HT20) U-NII-3 Band edge-right side



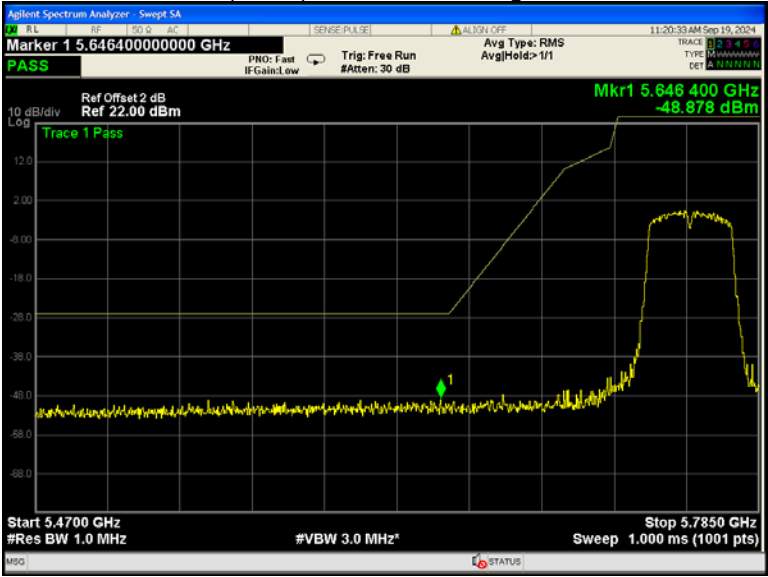
802.11n(HT40) U-NII-1 Band edge-left side



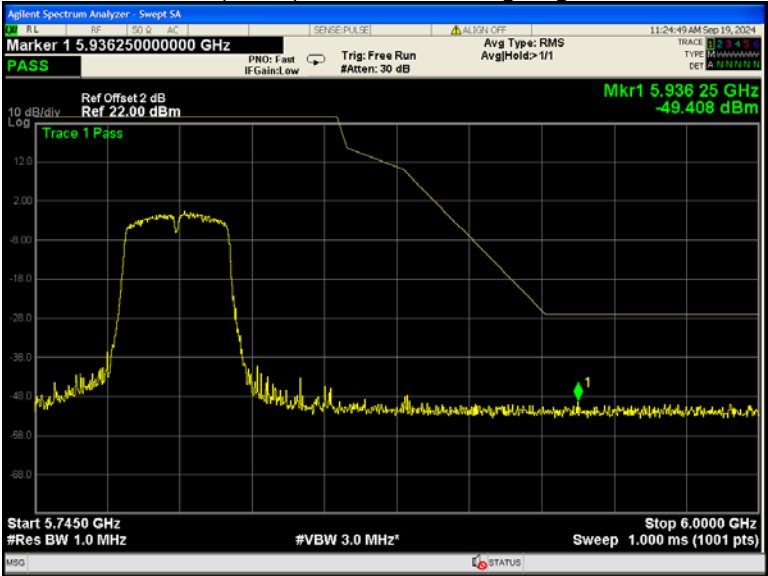
802.11n(HT40) U-NII-1 Band edge-right side



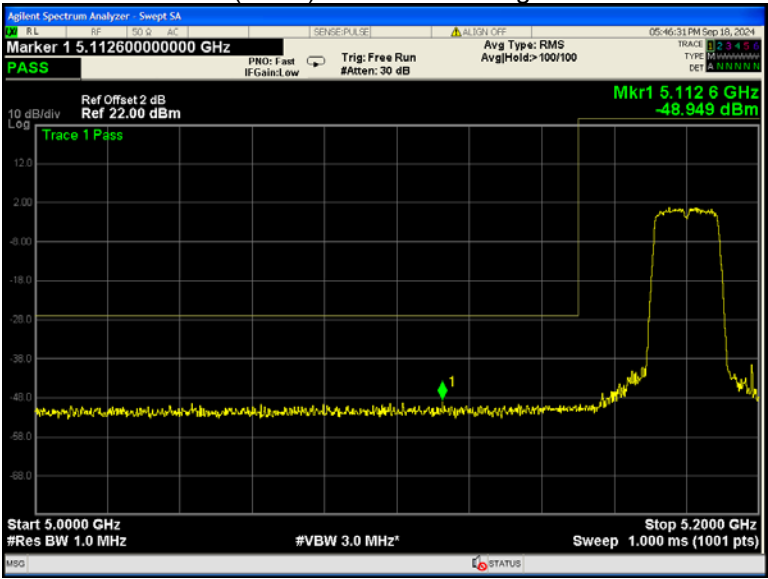
802.11n(HT40) U-NII-3 Band edge-left side



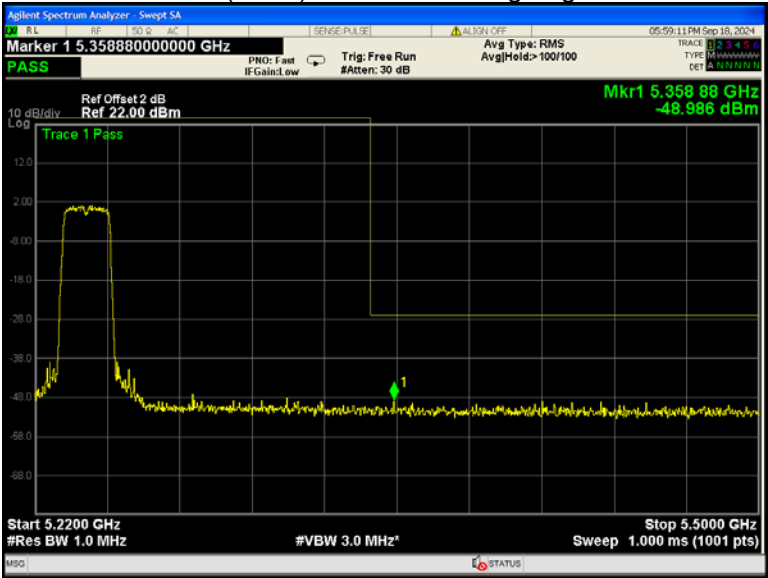
802.11n(HT40) U-NII-3 Band edge-right side



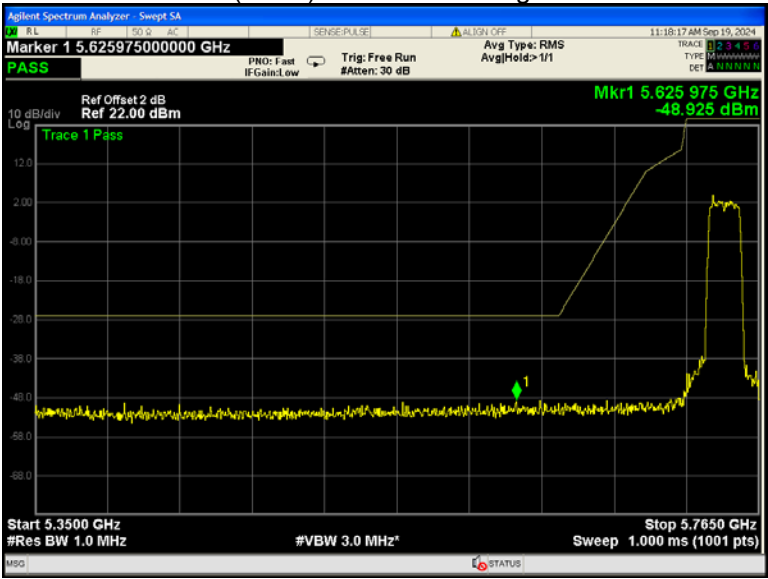
802.11ac(HT20) U-NII-1 Band edge-left side



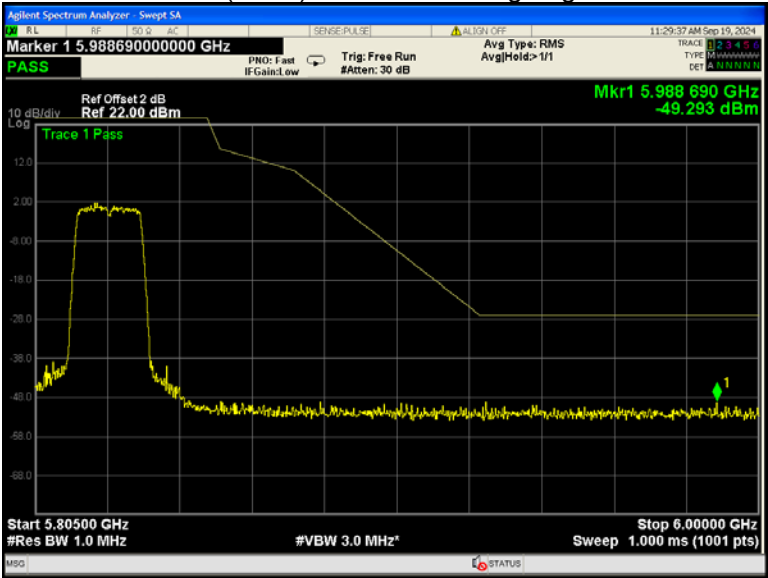
802.11ac(HT20) U-NII-1 Band edge-right side



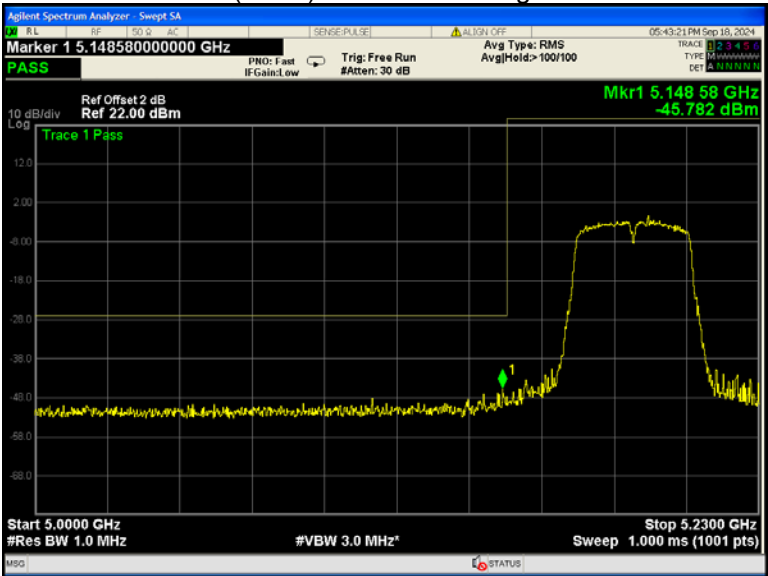
802.11ac(HT20) U-NII-3 Band edge-left side



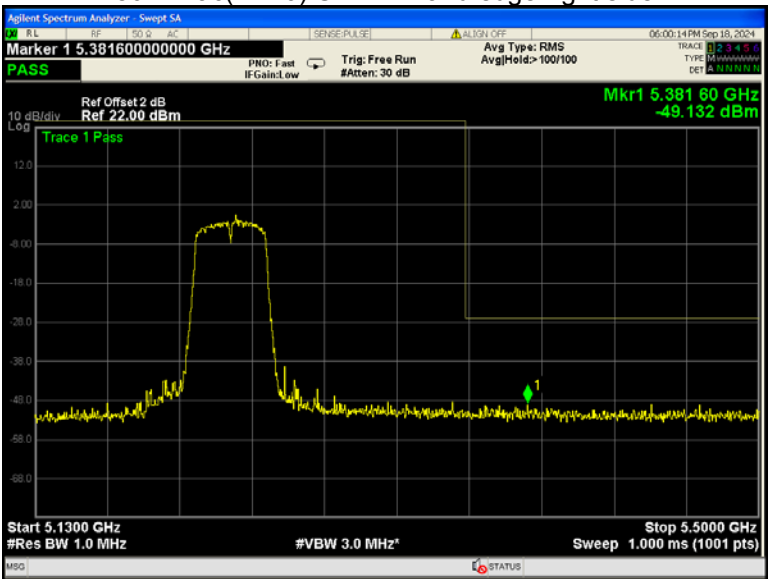
802.11ac(HT20) U-NII-3 Band edge-right side



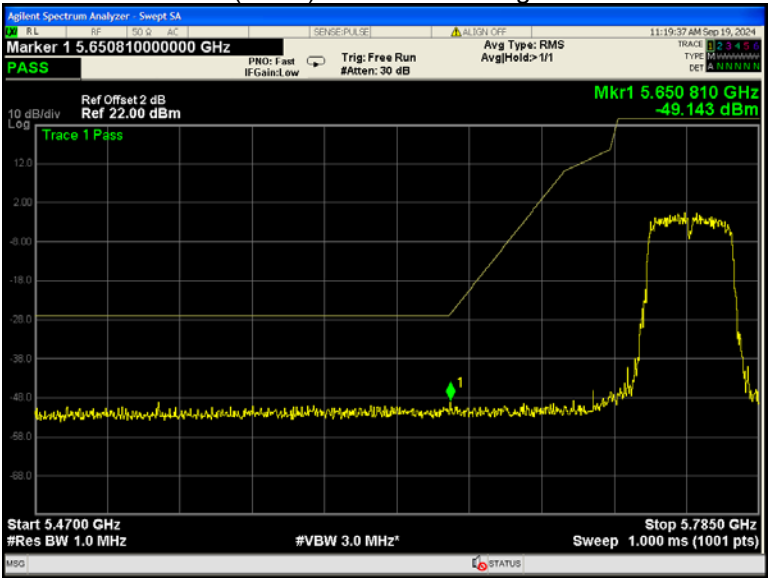
802.11ac(HT40) U-NII-1 Band edge-left side



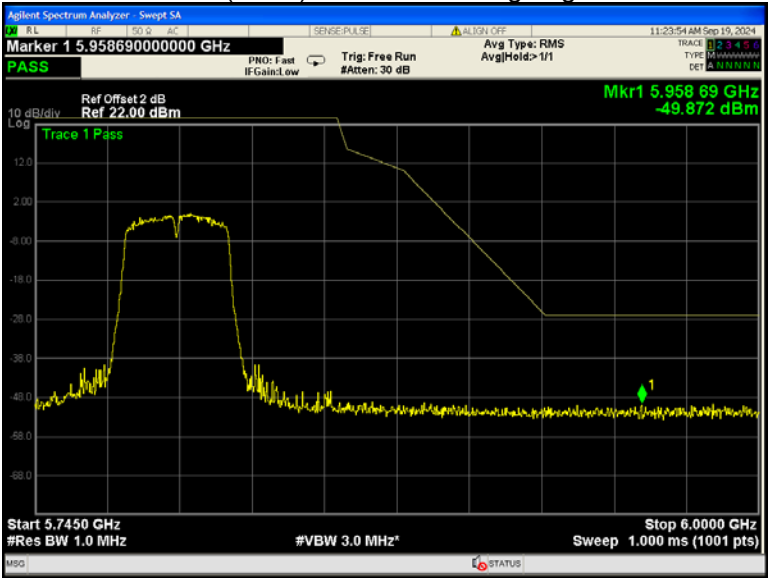
802.11ac(HT40) U-NII-1 Band edge-right side



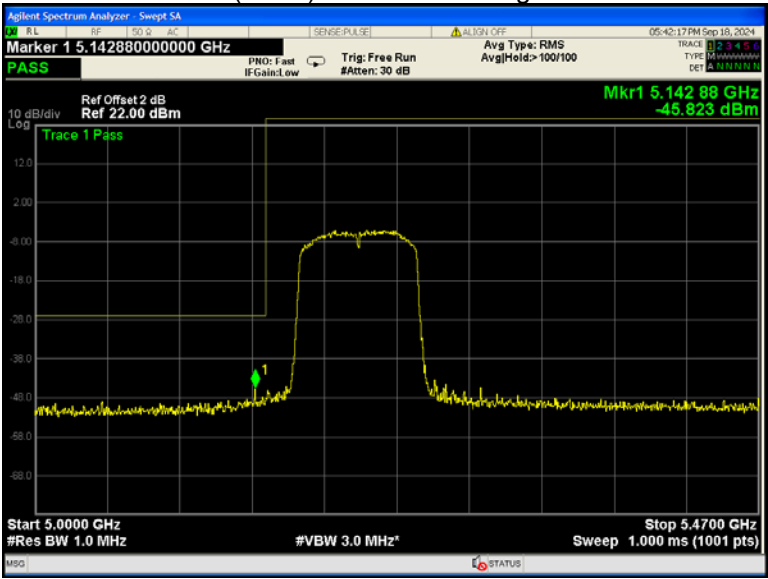
802.11ac(HT40) U-NII-3 Band edge-left side



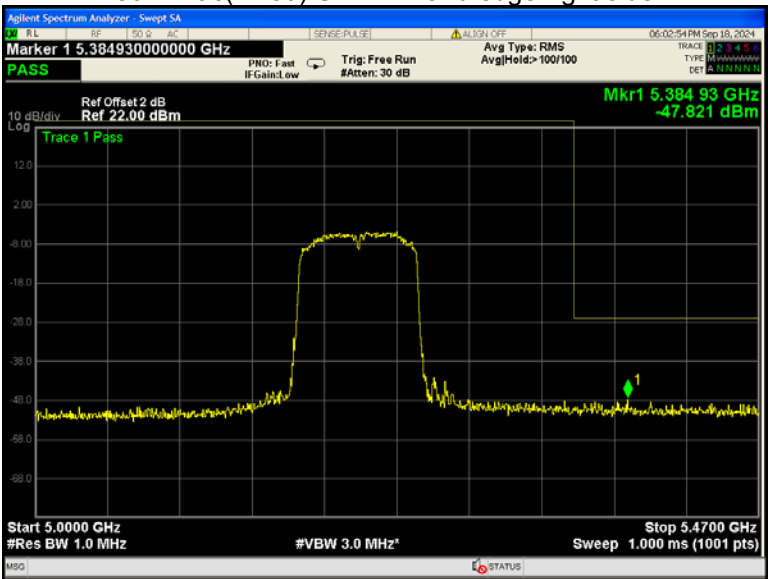
802.11ac(HT40) U-NII-3 Band edge-right side



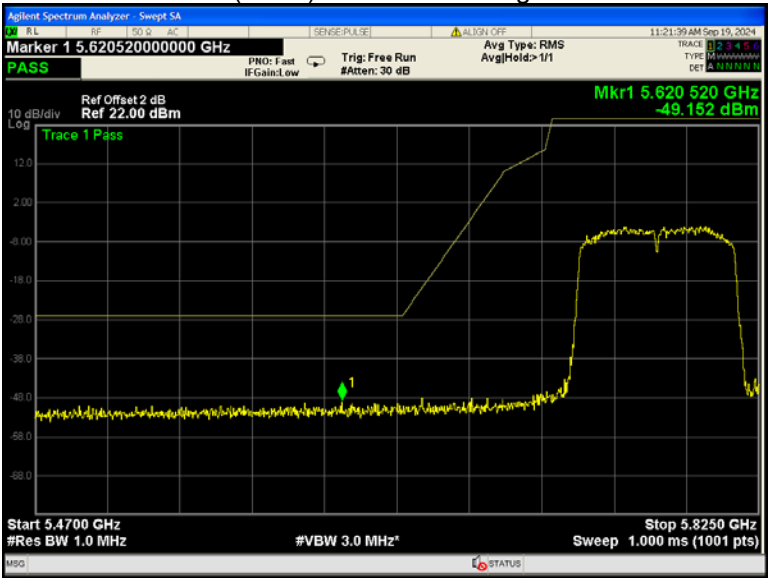
802.11ac(HT80) U-NII-1 Band edge-left side



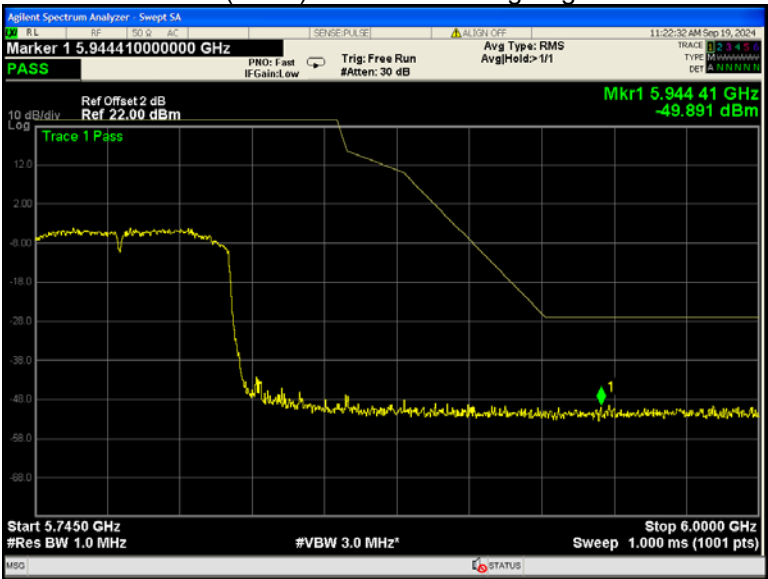
802.11ac(HT80) U-NII-1 Band edge-right side



802.11ac(HT80) U-NII-3 Band edge-left side



802.11ac(HT80) U-NII-3 Band edge-right side



11 6 dB Bandwidth

Test Requirement:	FCC 47CFR Part 15 Section 15.407(e) KDB662911 D01 Multiple Transmitter Output v02r01
Test Method:	KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section C
Test Limit:	≥ 500 kHz
Test Result:	PASS

11.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

11.2 Test Result

Note: Both antennas were tested and only the worst data was shown in the report.

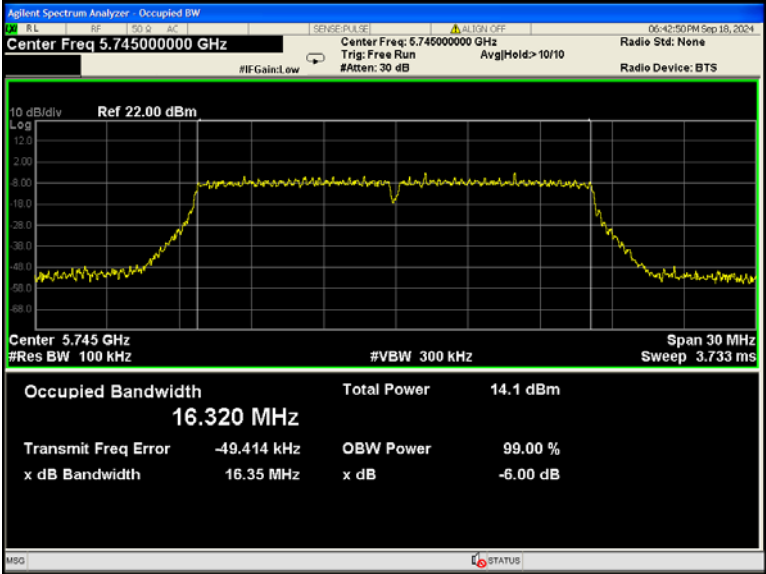
ANT 0

Band	Operation mode	6 dB Bandwidth (MHz)		
		Low	Middle	High
U-NII-3	802.11a	16.320	16.318	16.334
	802.11n(HT20)	17.541	17.524	17.533
	802.11n(HT40)	35.887	/	35.864
	802.11ac(HT20)	17.536	17.545	17.565
	802.11ac(HT40)	35.892	/	35.891
	802.11ac(HT80)	/	74.818	/

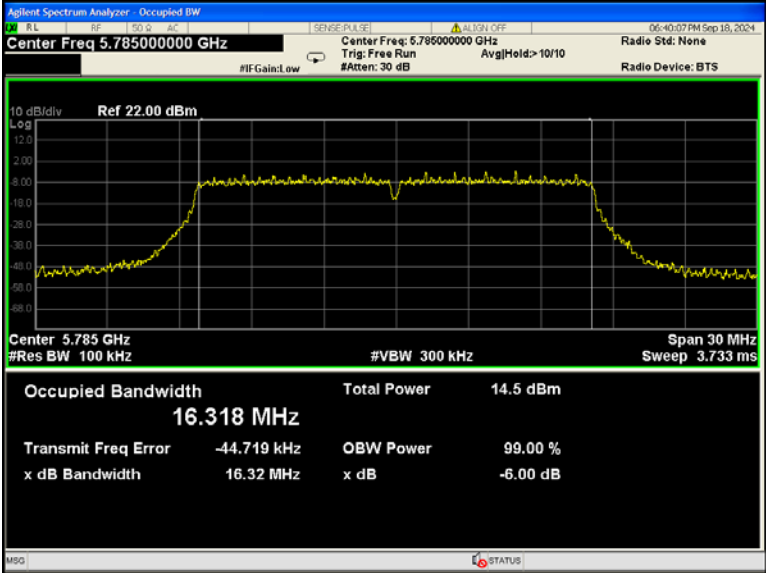
Test result plots shown as follows:

ANT 0

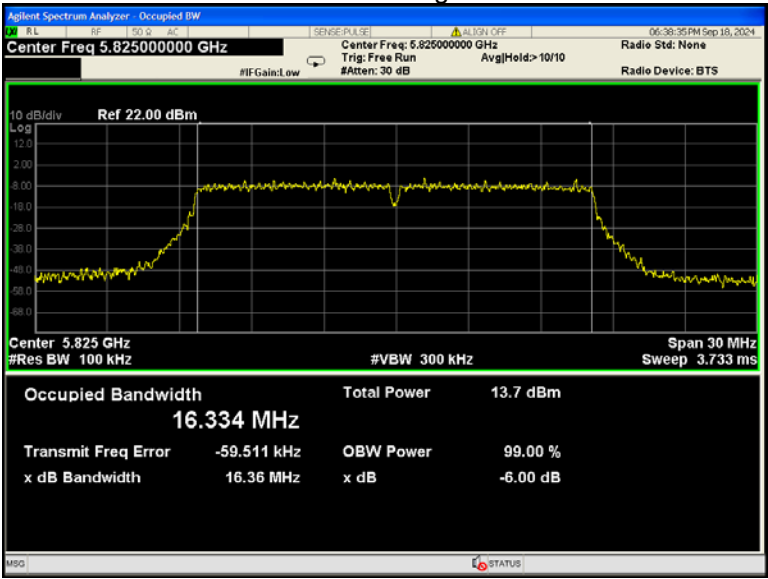
802.11a U-NII-3 Low channel



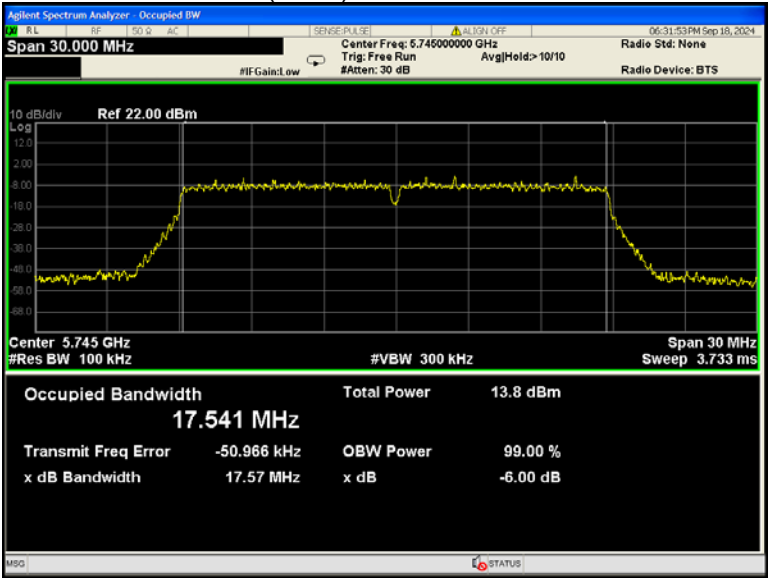
802.11a U-NII-3 Middle channel



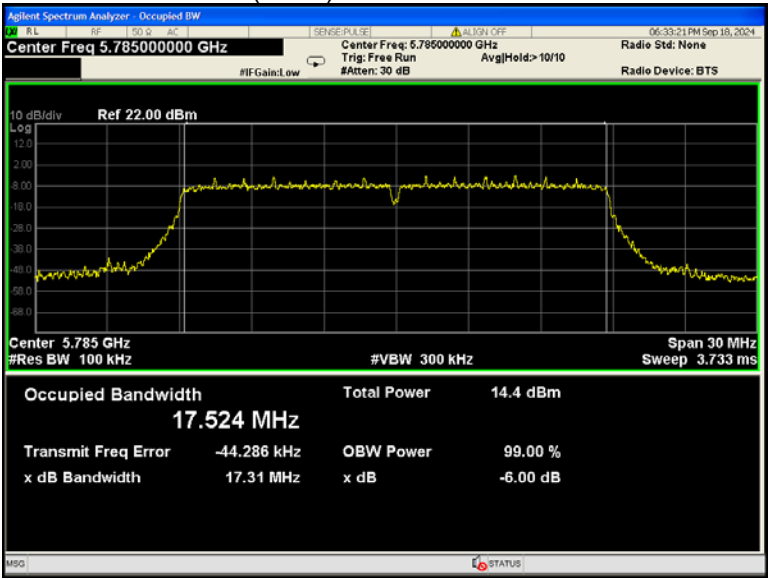
802.11a U-NII-3 High channel



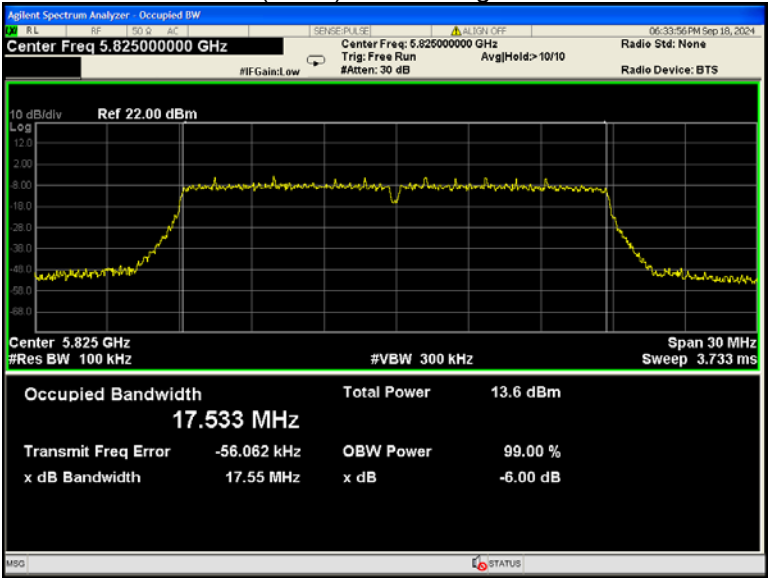
802.11n(HT20) U-NII-3 Low channel



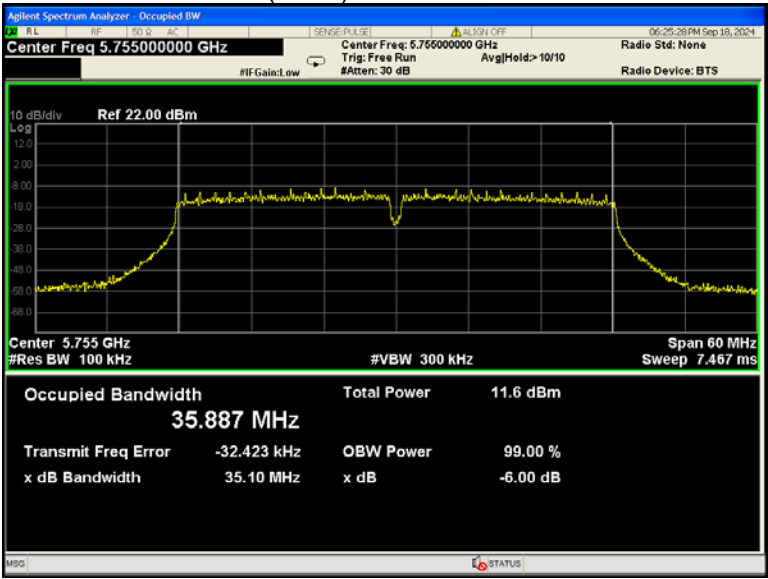
802.11n(HT20) U-NII-3 Middle channel



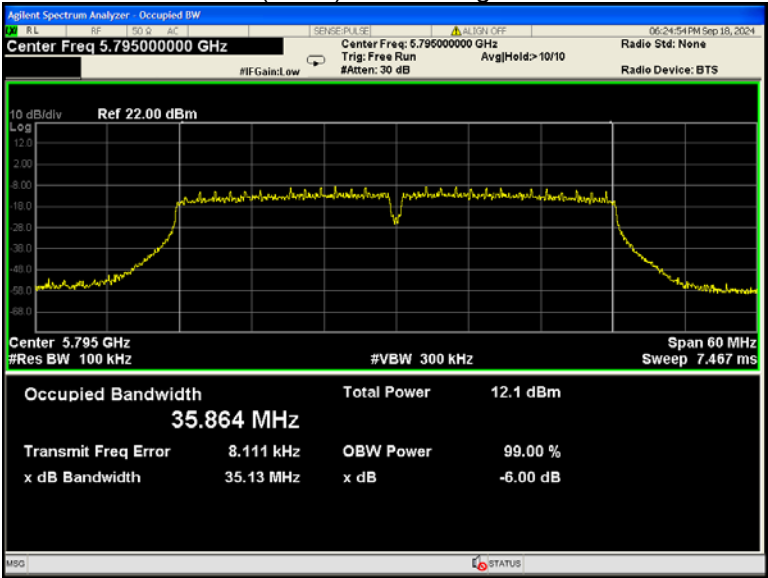
802.11n(HT20) U-NII-3 High channel



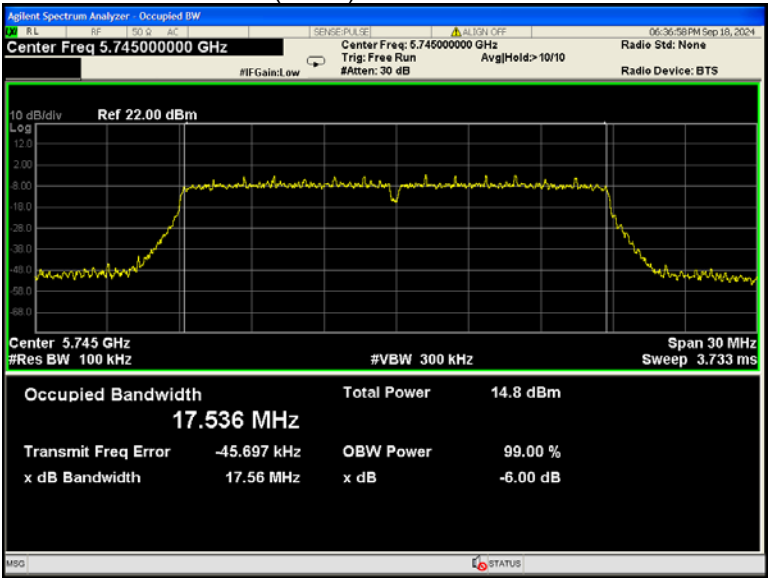
802.11n(HT40) U-NII-3 Low channel



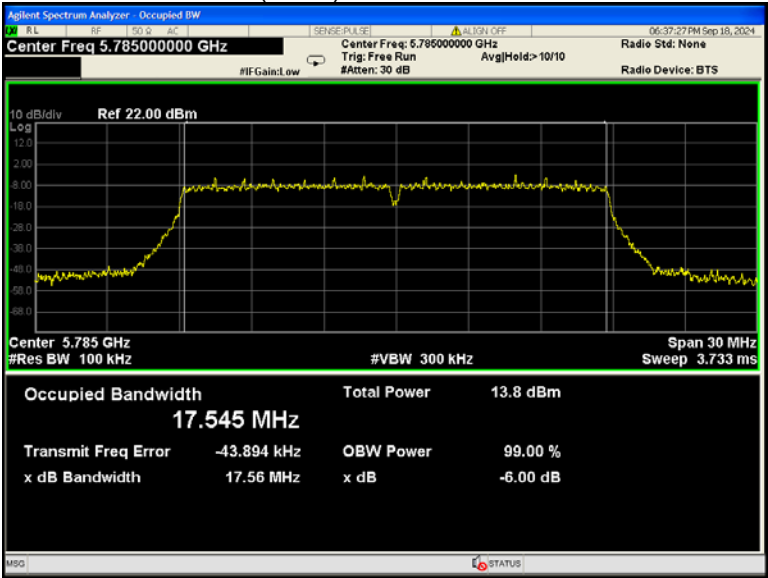
802.11n(HT40) U-NII-3 High channel



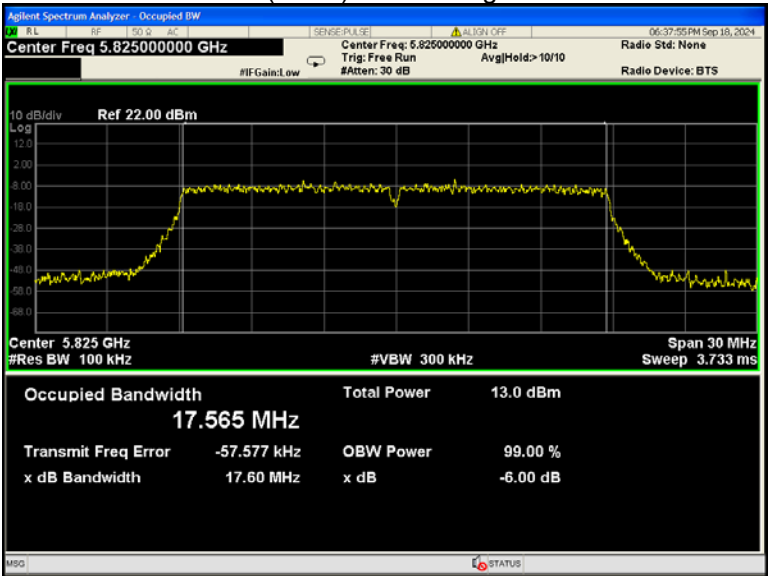
802.11ac(HT20) U-NII-3 Low channel



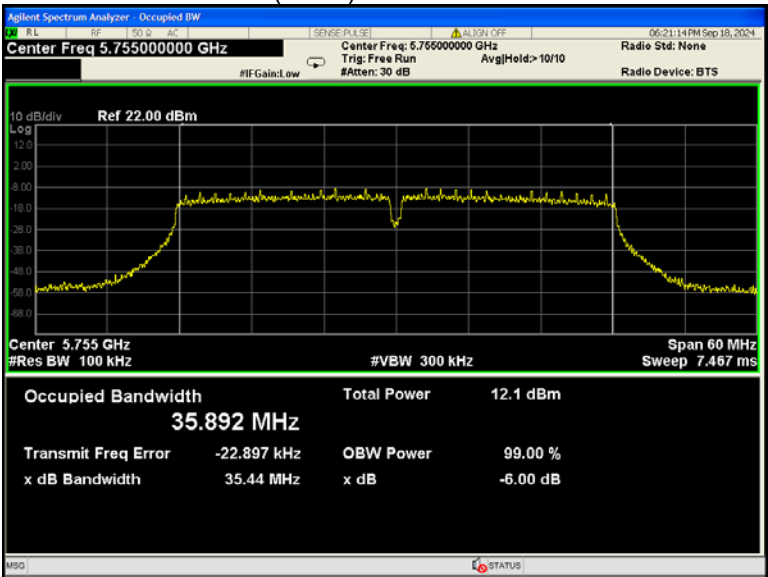
802.11ac(HT20) U-NII-3 Middle channel



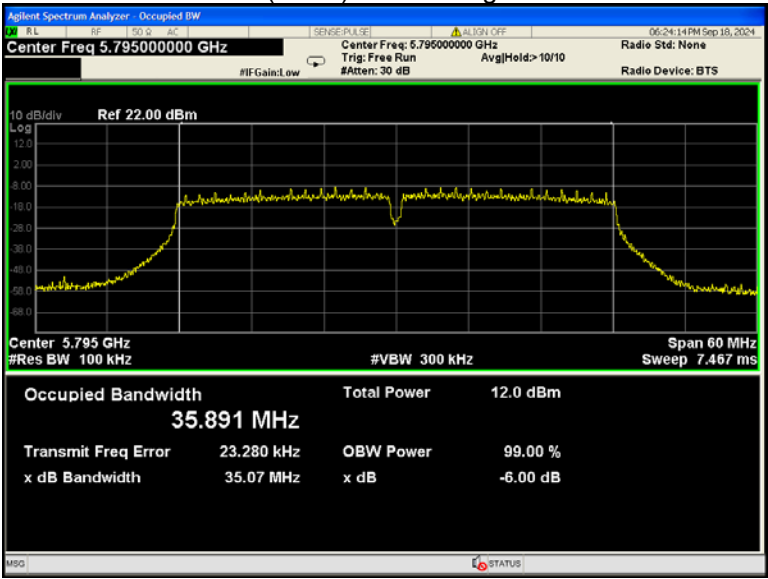
802.11ac(HT20) U-NII-3 High channel



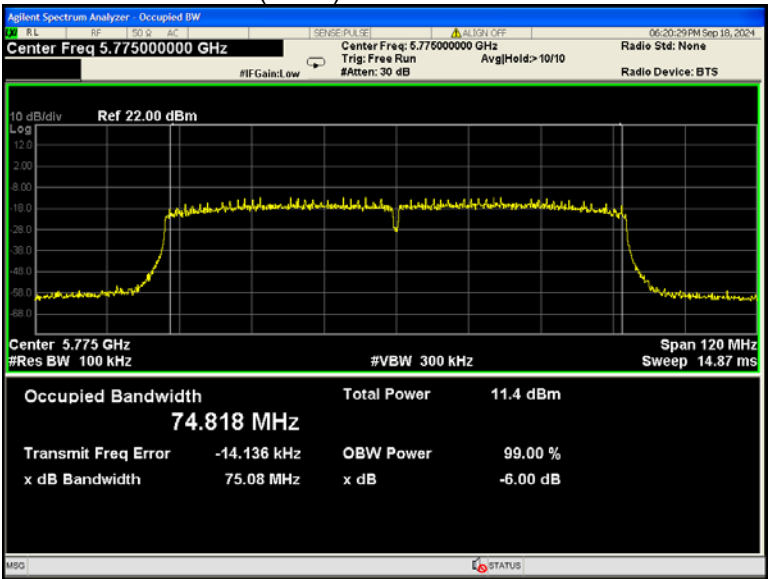
802.11ac(HT40) U-NII-3 Low channel



802.11ac(HT40) U-NII-3 High channel



802.11ac(HT80) U-NII-3 Middle channel



12 26 dB Bandwidth and 99% Occupied Bandwidth

Test Requirement:	FCC 47CFR Part 15 Section 15.407 (a) KDB662911 D01 Multiple Transmitter Output v02r01
Test Method:	KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section D
Test Limit:	No restriction limits
Test Result:	PASS

12.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 1% to 5% of the OBW, VBW = 3x RBW

12.2 Test Result

Note: Both antennas were tested and only the worst data was shown in the report.

ANT 0

Band	Operation mode	26 dB Bandwidth (MHz)			99% Bandwidth (MHz)		
		Low	Middle	High	Low	Middle	High
U-NII-1	802.11a	18.36	18.34	18.36	16.337	16.339	16.331
	802.11n(HT20)	19.40	19.38	19.18	17.514	17.522	17.513
	802.11n(HT40)	40.63	/	40.85	36.053	/	36.064
	802.11ac(HT20)	19.29	19.32	19.36	17.506	17.419	17.515
	802.11ac(HT40)	40.44	/	40.40	36.028	/	36.018
	802.11ac(HT80)	/	80.23	/	/	74.634	/

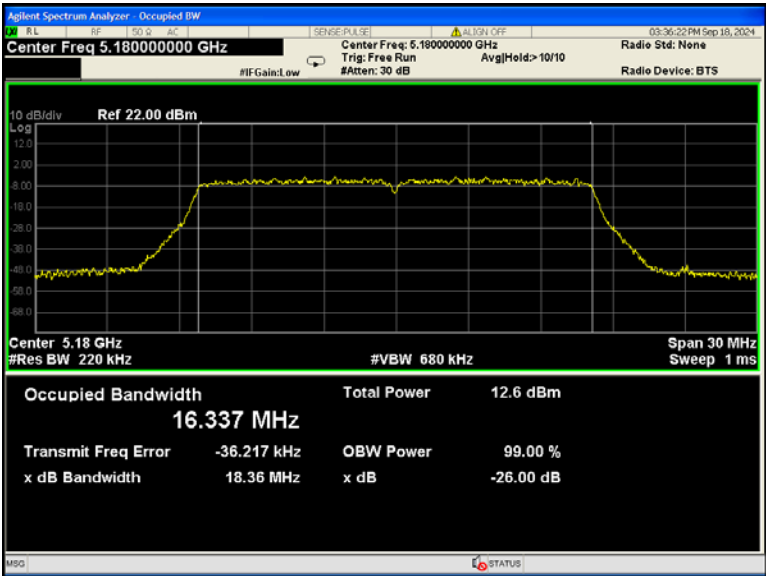
Band	Operation mode	99% Bandwidth (MHz)		
		Low	Middle	High
U-NII-3	802.11a	16.336	16.350	16.348
	802.11n(HT20)	17.520	17.497	17.528
	802.11n(HT40)	36.115	/	36.059
	802.11ac(HT20)	17.519	17.509	17.514
	802.11ac(HT40)	36.001	/	35.974
	802.11ac(HT80)	/	74.734	/

Test result plots shown as follows:

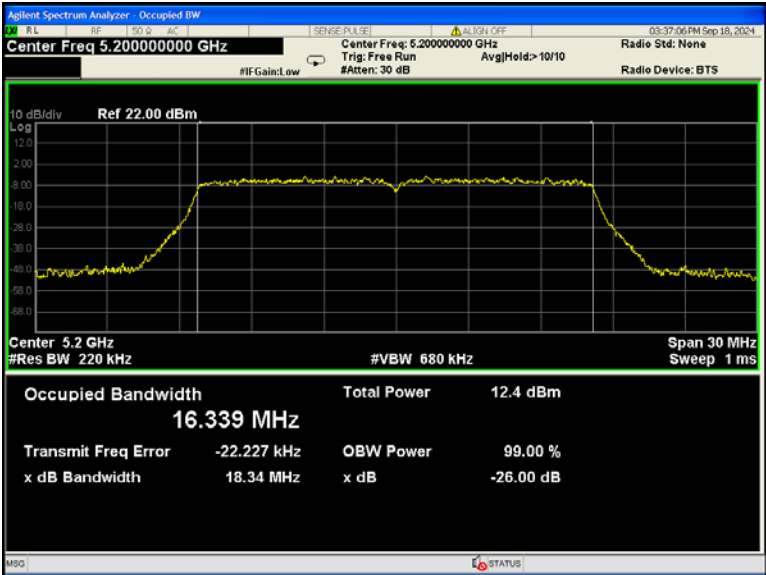
ANT 0

26 dB Bandwidth and 99% Occupied Bandwidth

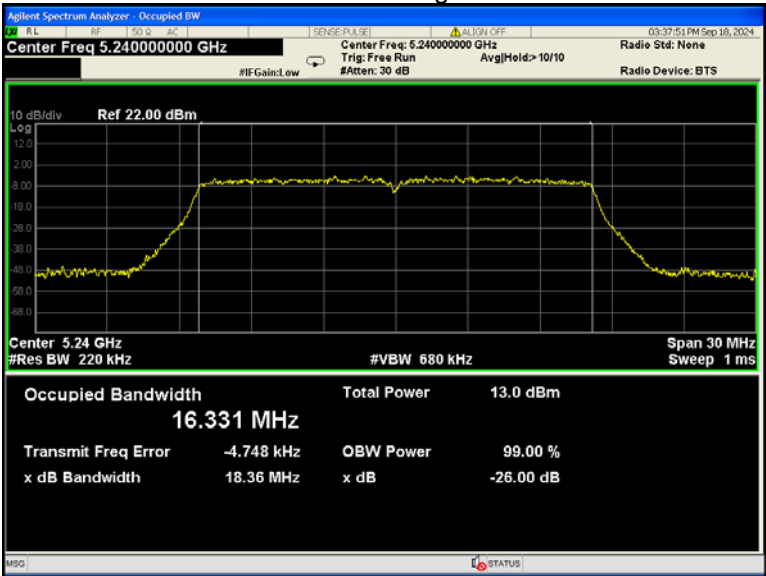
802.11a U-NII-1 Low channel



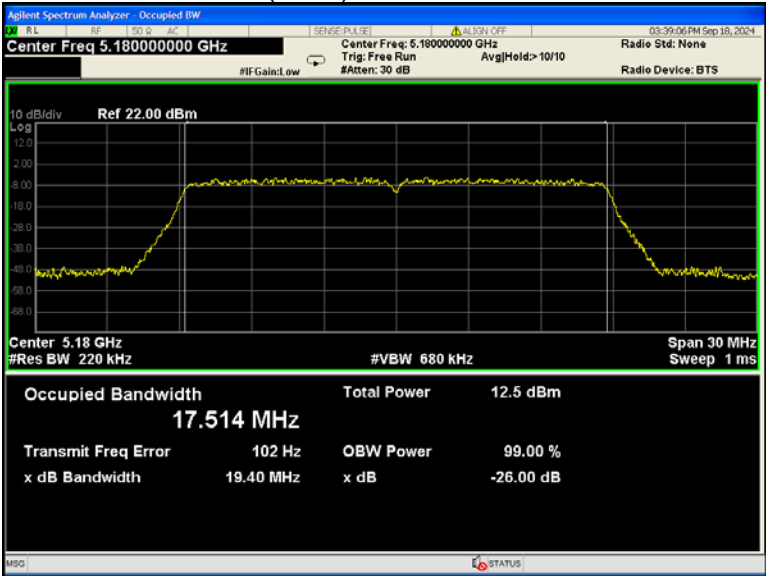
802.11a U-NII-1 Middle channel



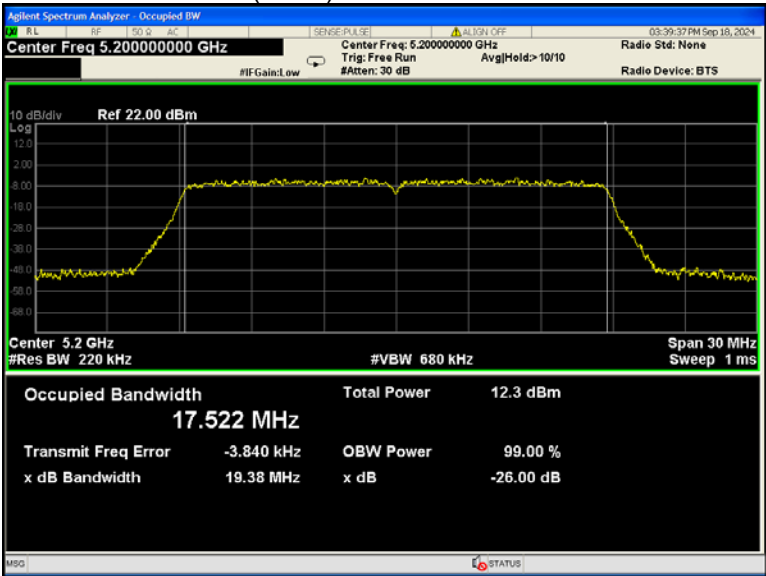
802.11a U-NII-1 High channel



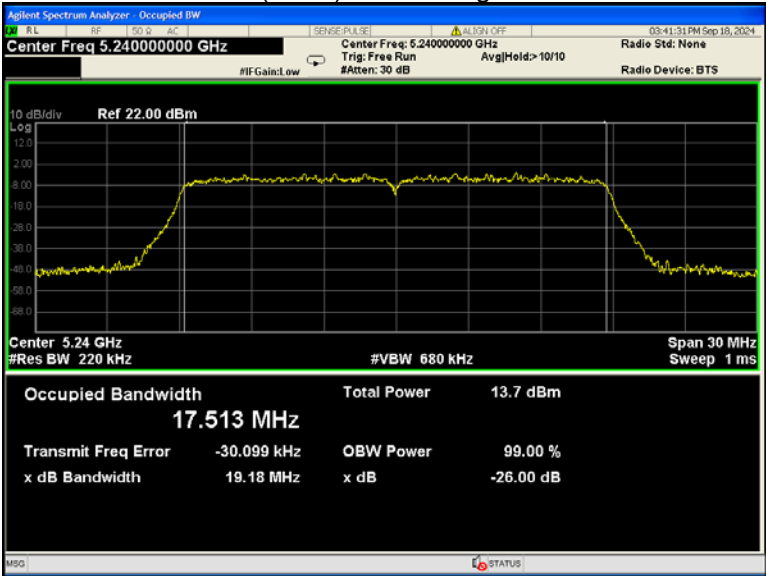
802.11n(HT20) U-NII-1 Low channel



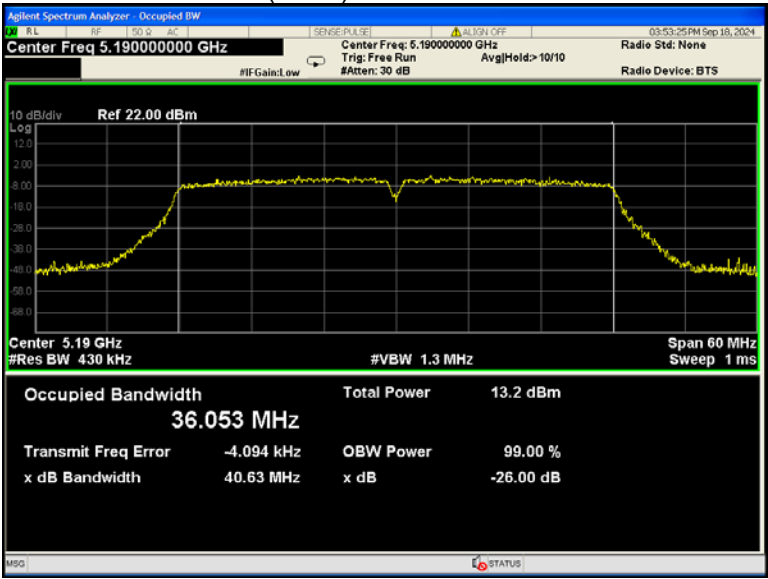
802.11n(HT20) U-NII-1 Middle channel



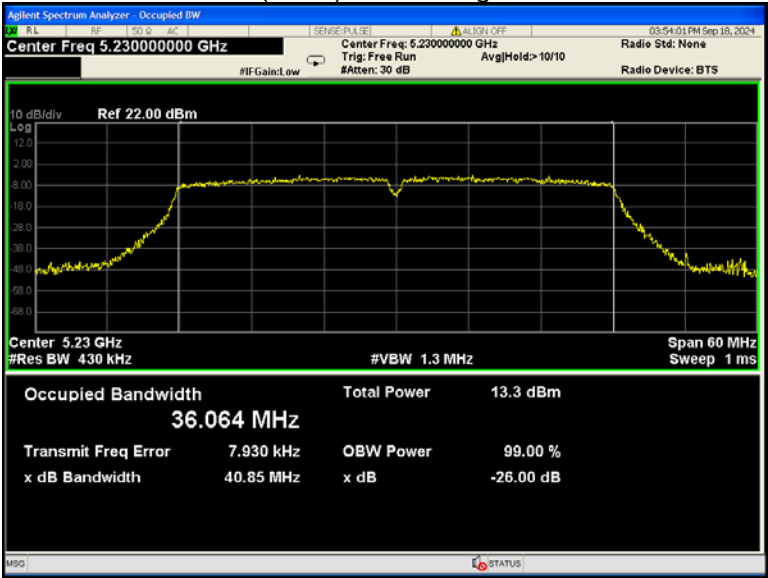
802.11n(HT20) U-NII-1 High channel



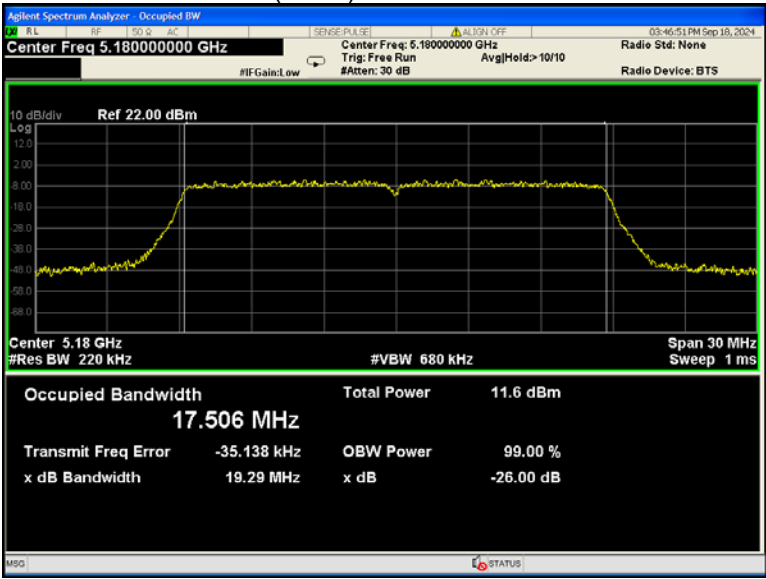
802.11n(HT40) U-NII-1 Low channel



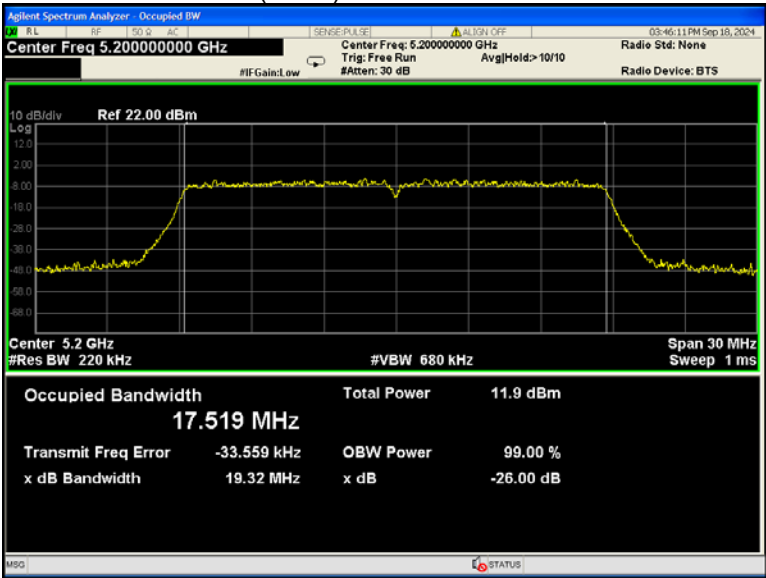
802.11n(HT40) U-NII-1 High channel



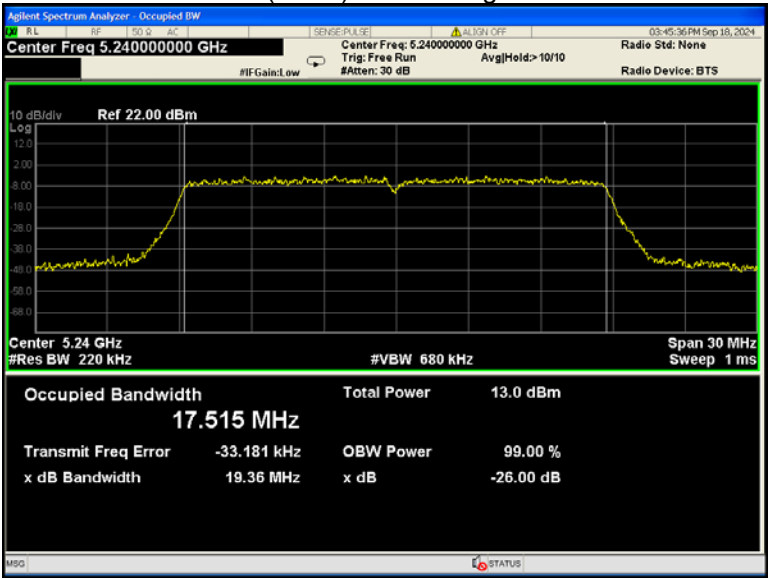
802.11ac(HT20) U-NII-1 Low channel



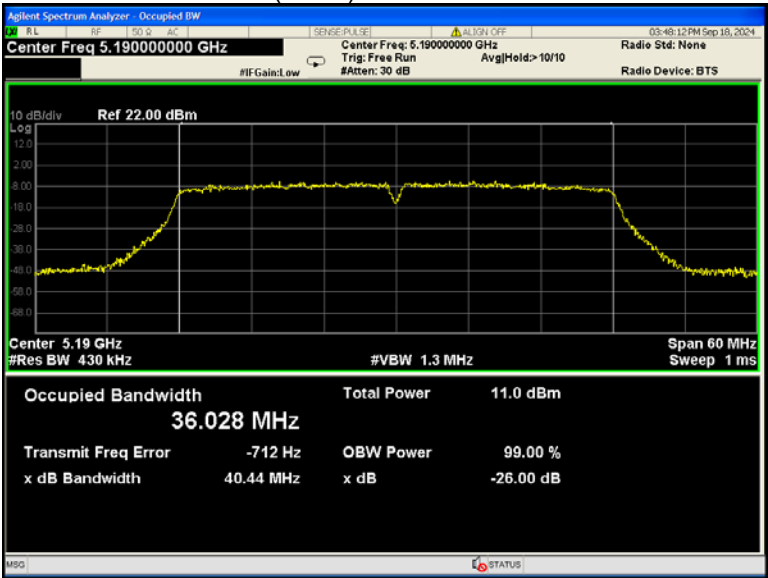
802.11ac(HT20) U-NII-1 Middle channel



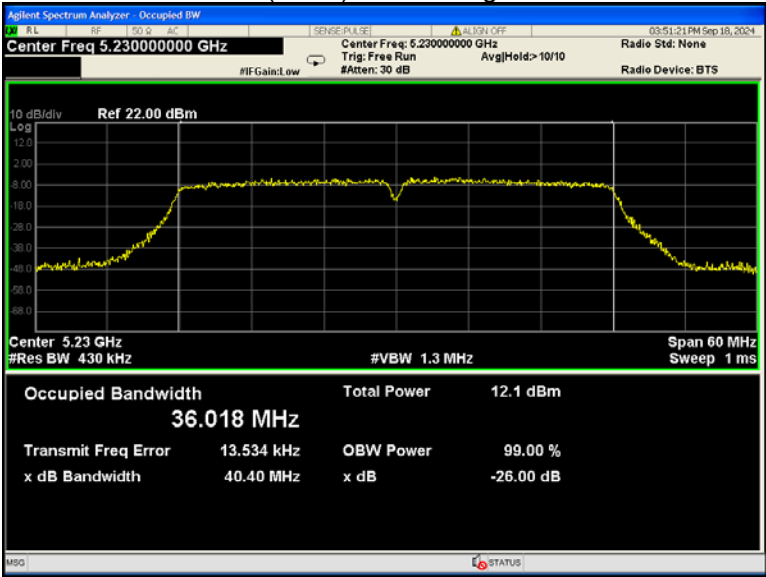
802.11ac(HT20) U-NII-1 High channel



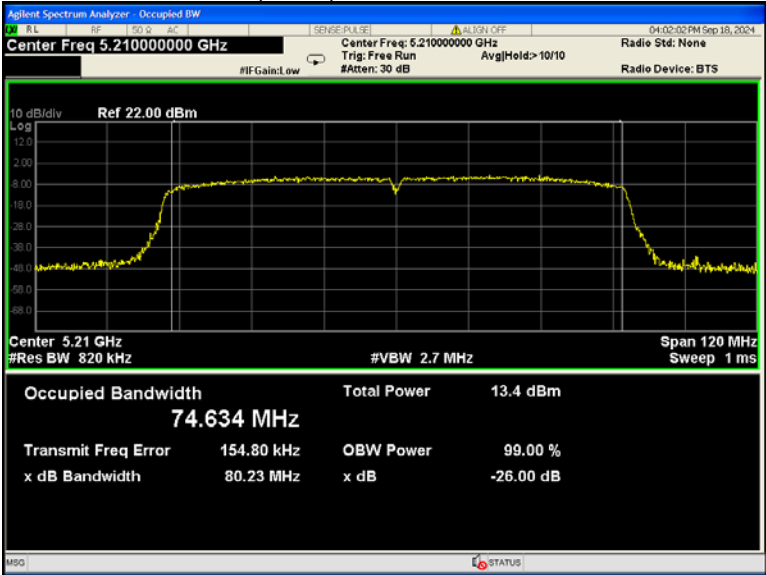
802.11ac(HT40) U-NII-1 Low channel



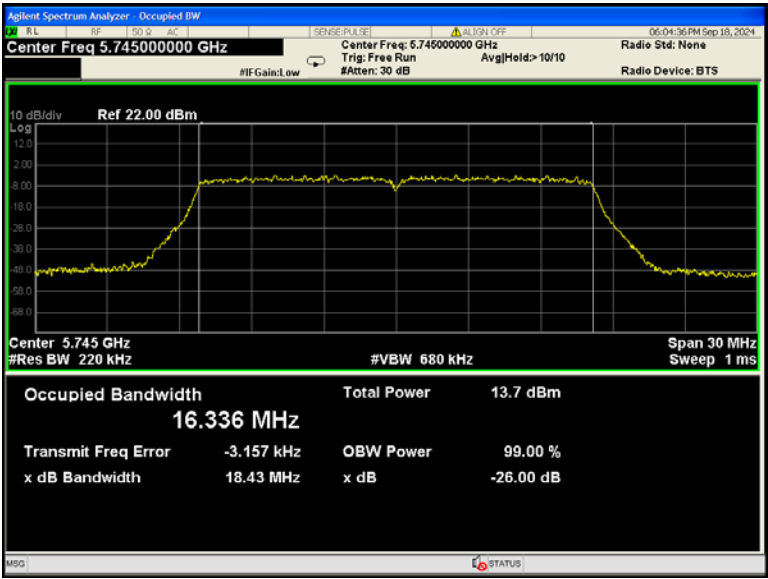
802.11ac(HT40) U-NII-1 High channel



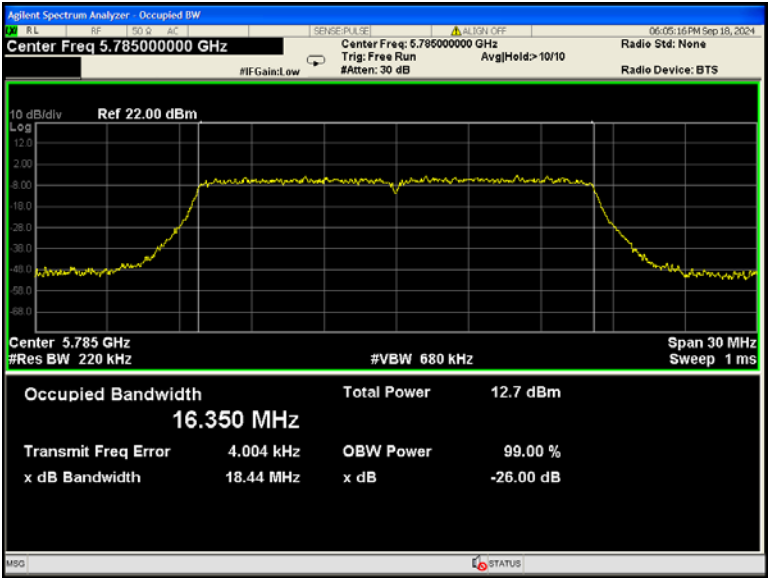
802.11ac(HT80) U-NII-1 Middle channel



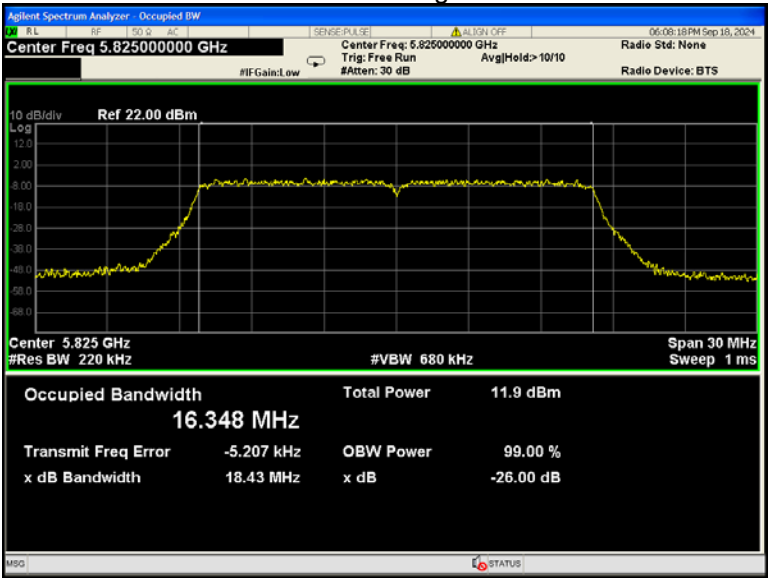
802.11a U-NII-3 Low channel



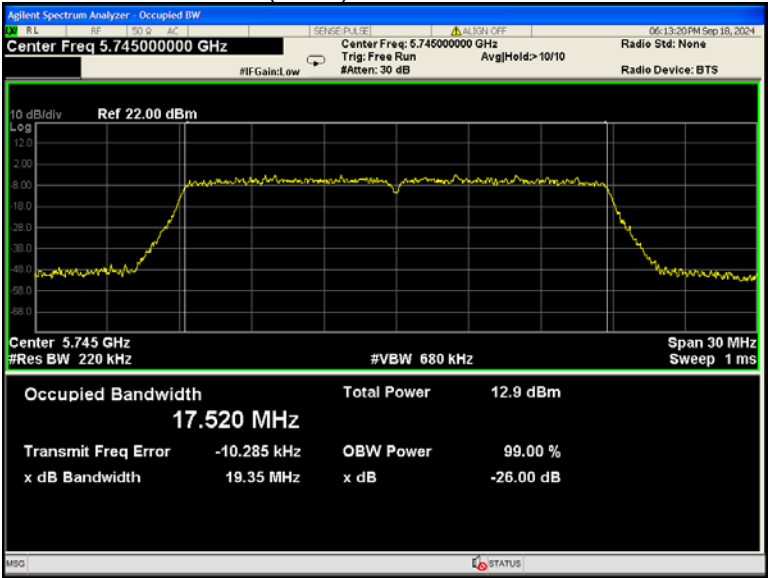
802.11a U-NII-3 Middle channel



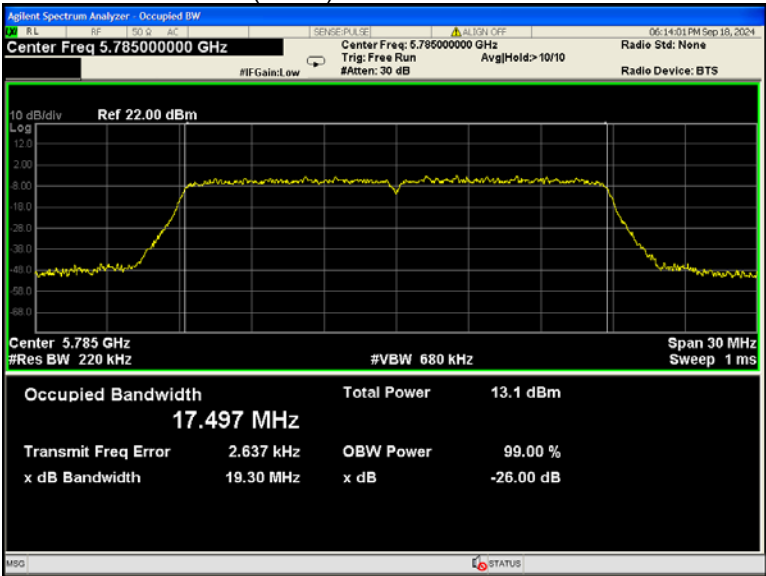
802.11a U-NII-3 High channel



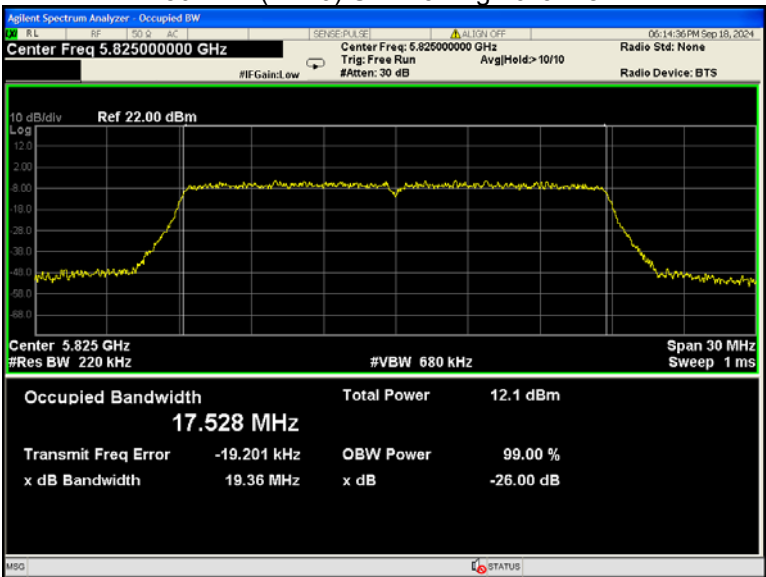
802.11n(HT20) U-NII-3 Low channel



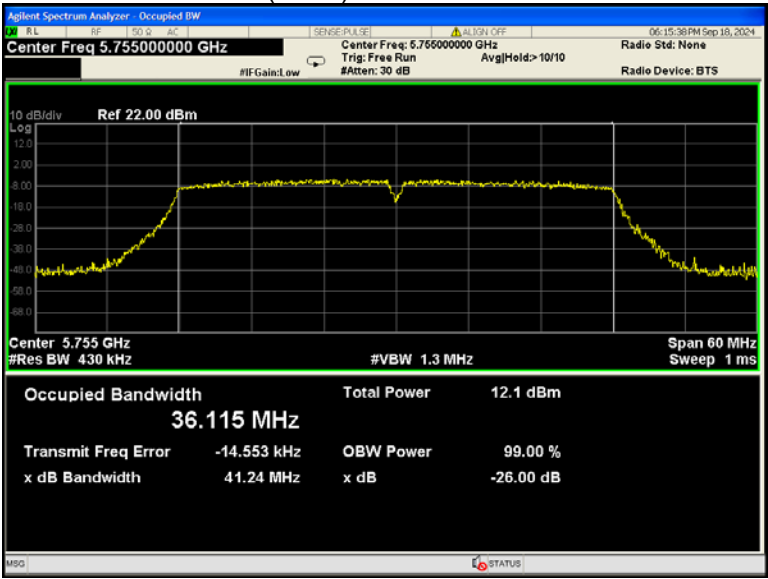
802.11n(HT20) U-NII-3 Middle channel



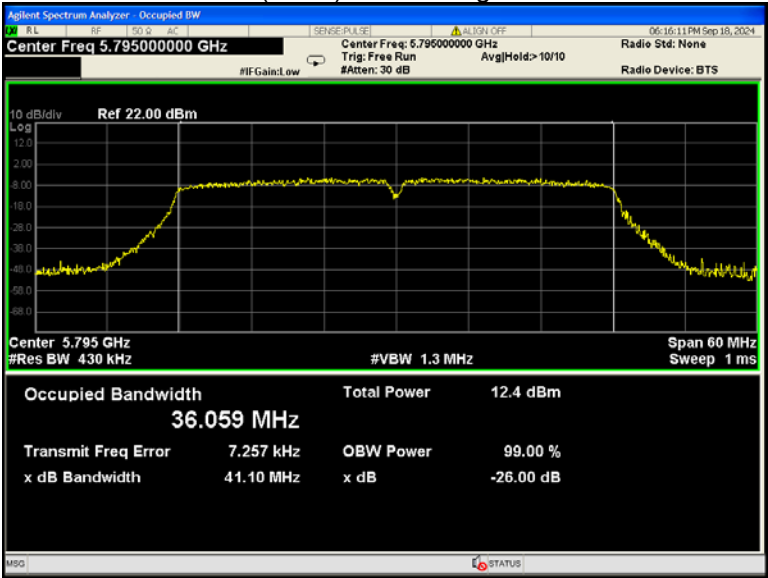
802.11n(HT20) U-NII-3 High channel



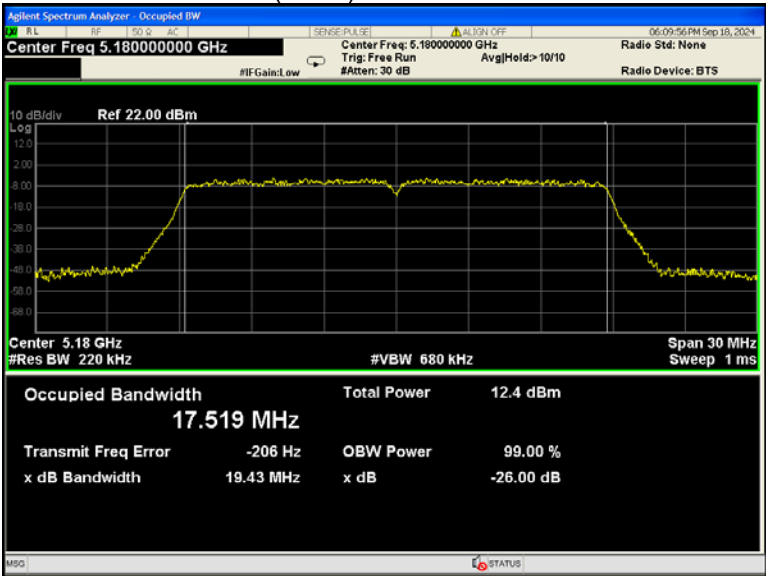
802.11n(HT40) U-NII-3 Low channel



802.11n(HT40) U-NII-3 High channel



802.11ac(HT20) U-NII-3 Low channel



802.11ac(HT20) U-NII-3 Middle channel

