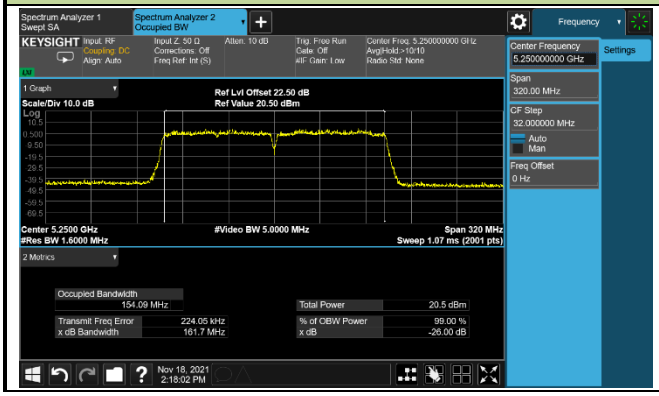
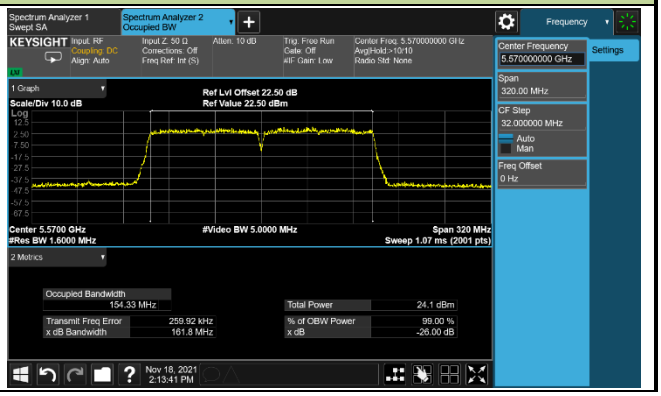
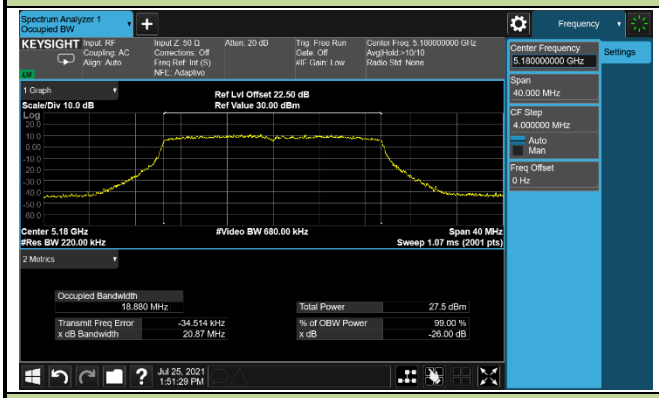
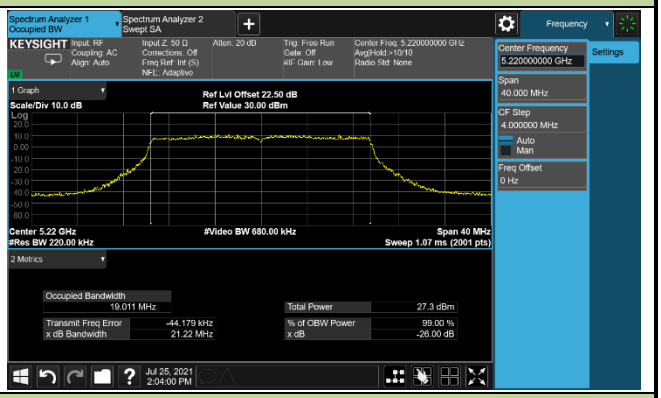
802.11ac-VHT80+80 26dB Bandwidth & 99% Bandwidth	
Channel 42 + 58 (5210 + 5290MHz)	Channel 106 + 122 (5530 + 5610MHz)
	

802.11ax-HE20 26dB Bandwidth & 99% Bandwidth

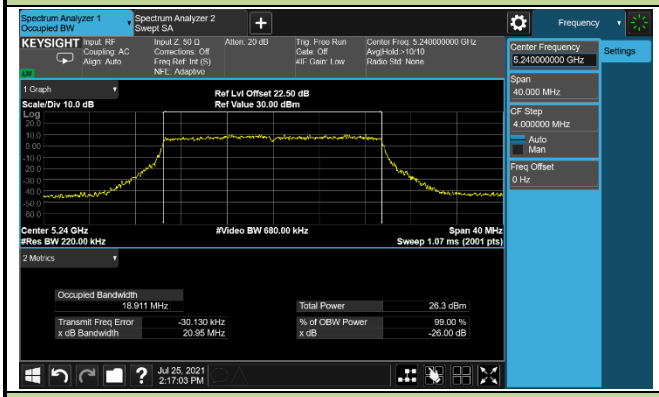
Channel 36 (5180MHz)



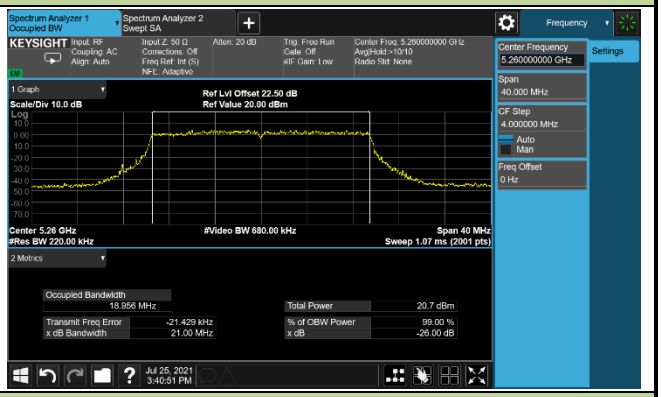
Channel 44 (5220MHz)



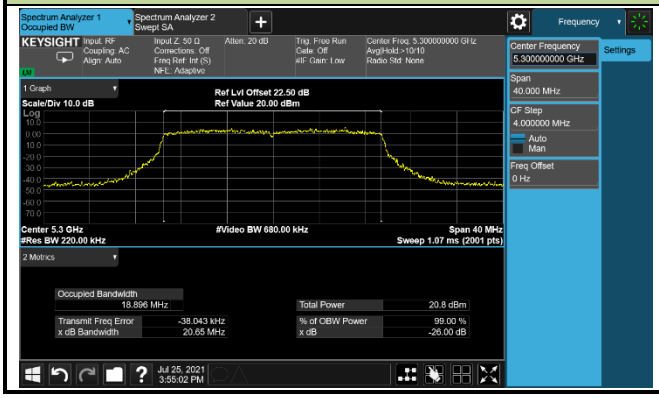
Channel 48 (5240MHz)



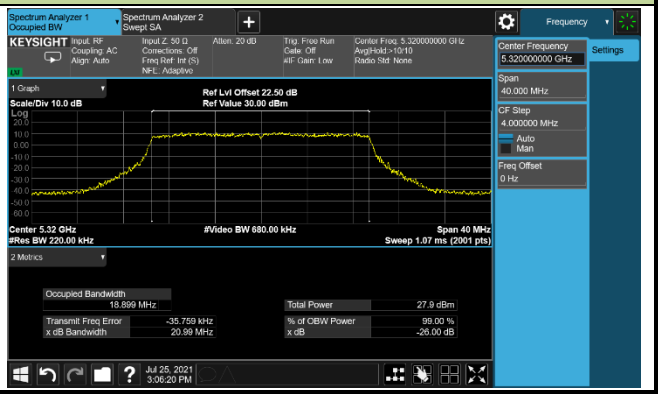
Channel 52 (5260MHz)



Channel 60 (5300MHz)

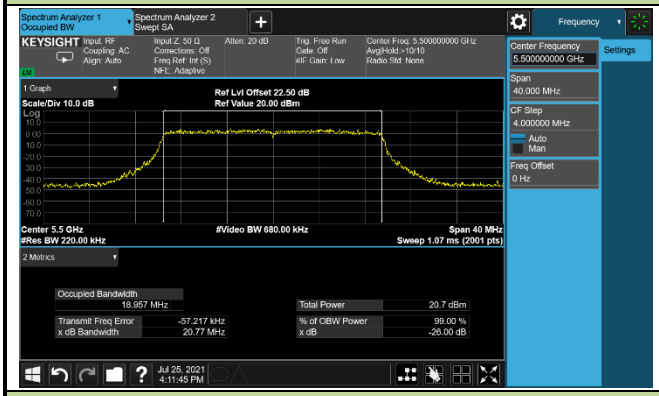


Channel 64 (5320MHz)

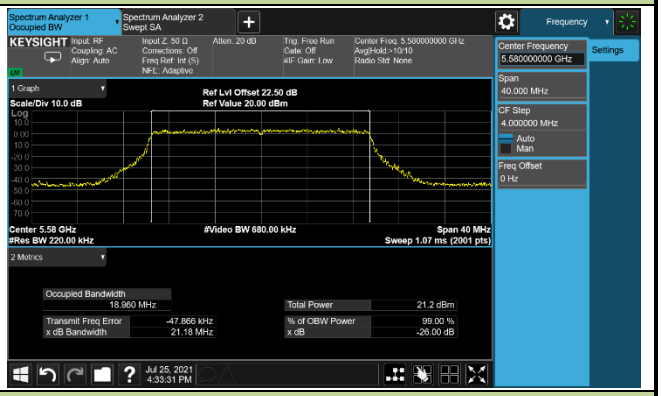


802.11ax-HE20 26dB Bandwidth & 99% Bandwidth

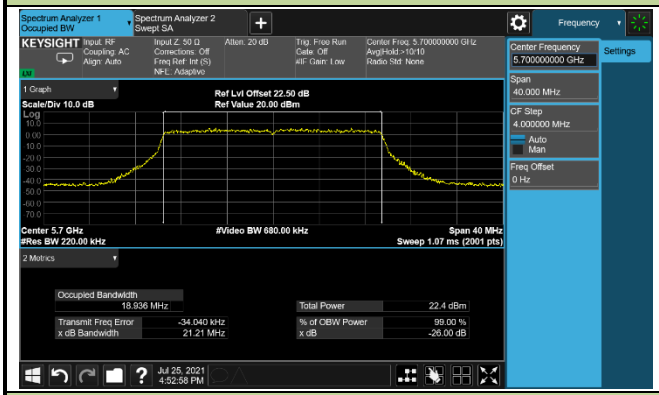
Channel 100 (5500MHz)



Channel 116 (5580MHz)

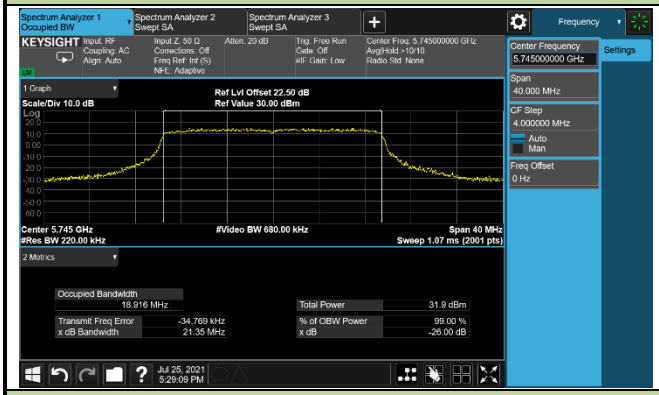


Channel 140 (5700MHz)

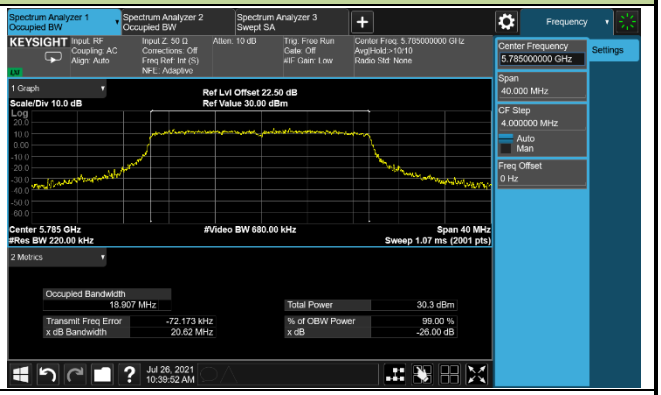


Channel 144 (5720MHz)

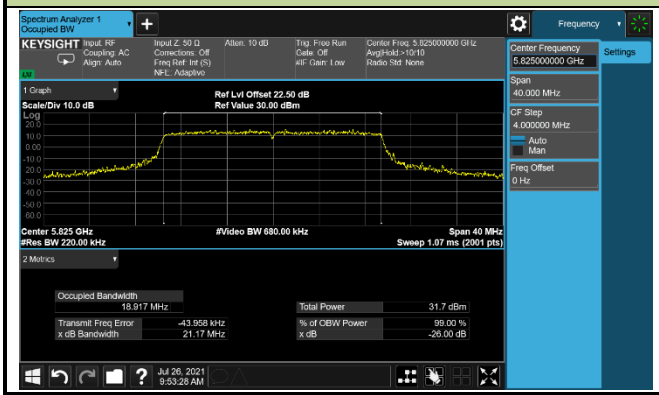
Channel 149 (5745MHz)



Channel 157 (5785MHz)

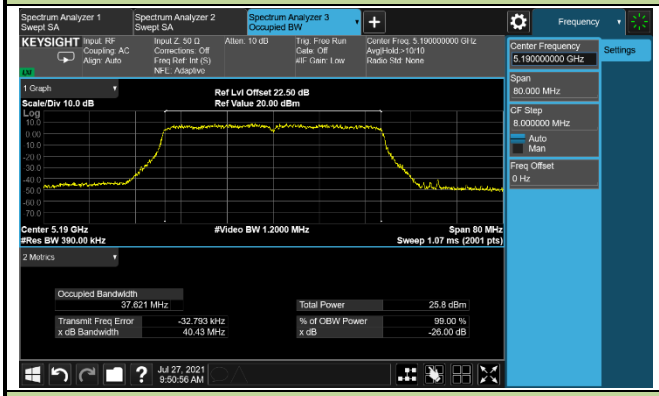


Channel 165 (5825MHz)

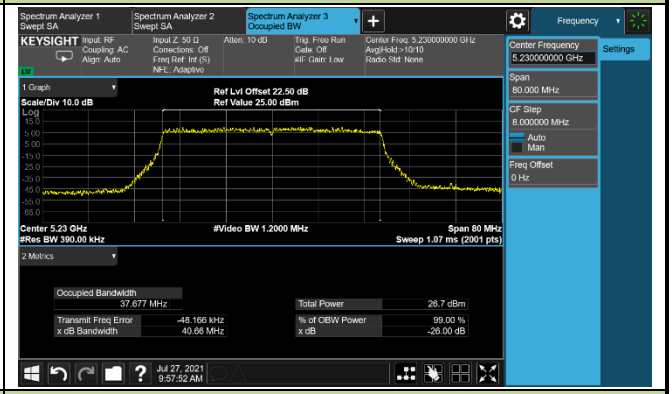


802.11ax-HE40 26dB Bandwidth & 99% Bandwidth

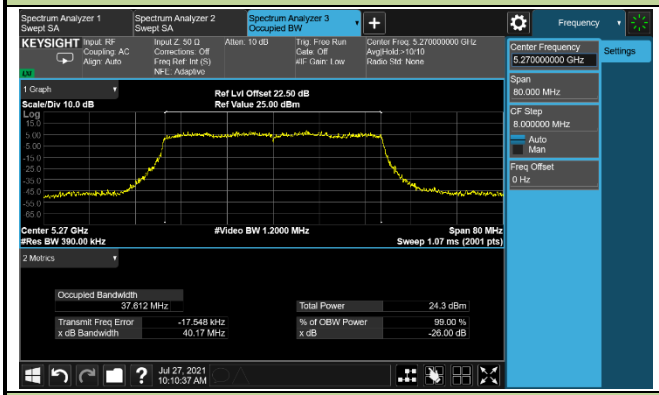
Channel 38 (5190MHz)



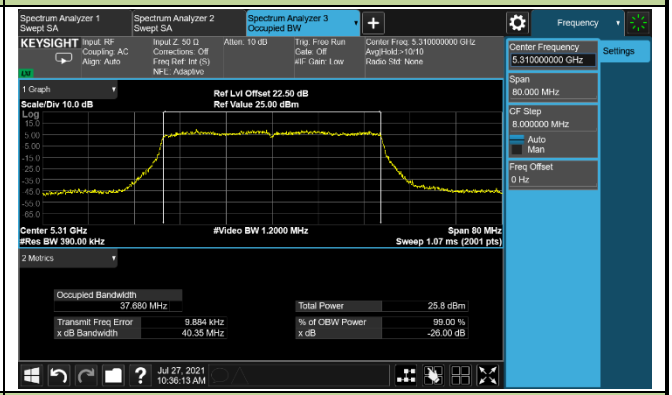
Channel 46 (5230MHz)



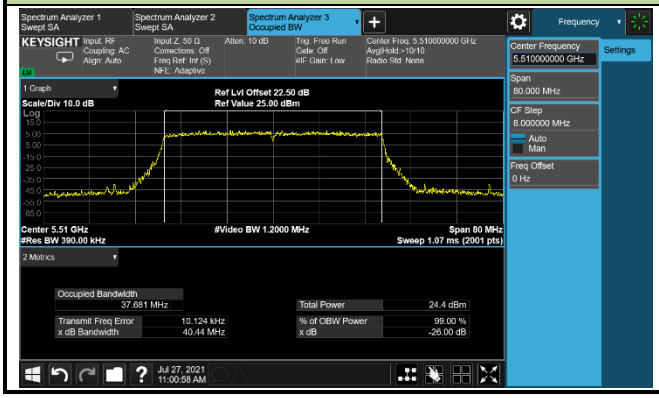
Channel 54 (5270MHz)



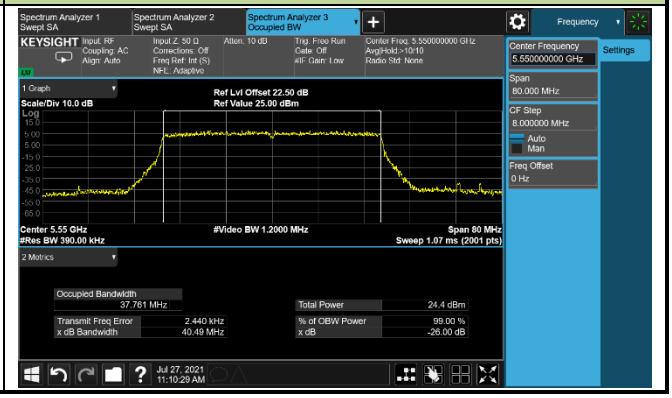
Channel 62 (5310MHz)

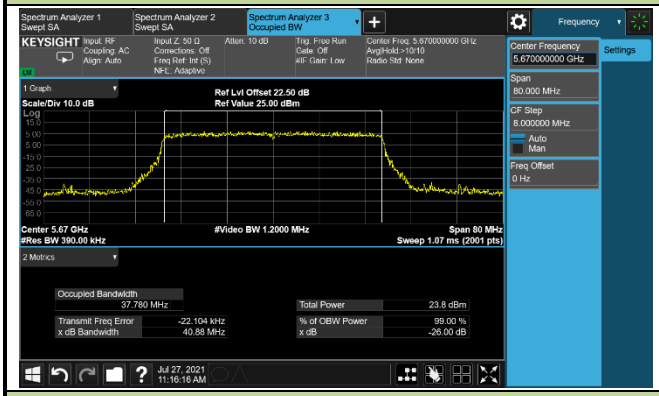
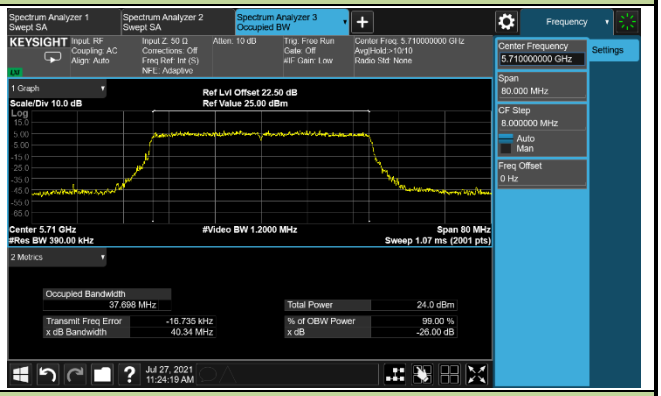
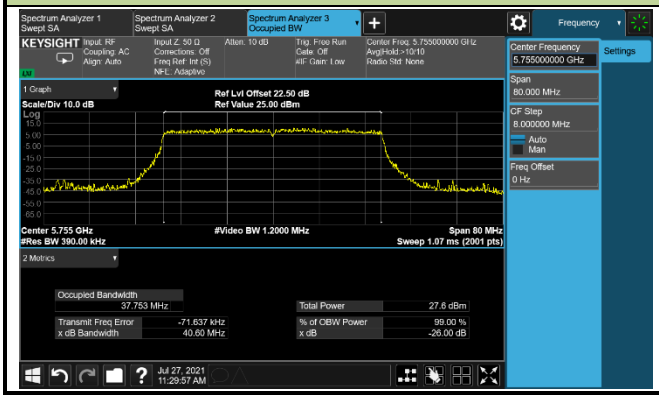
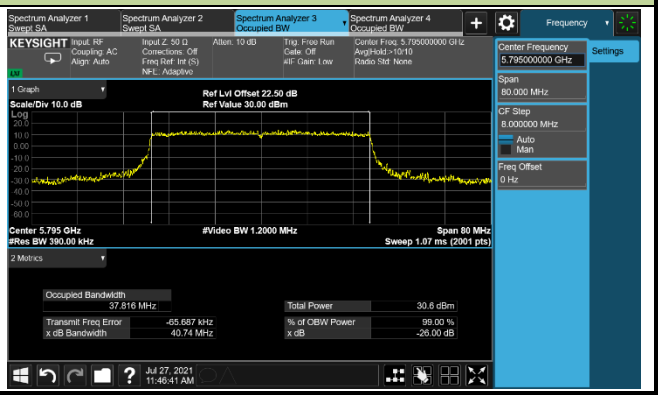


Channel 102 (5510MHz)



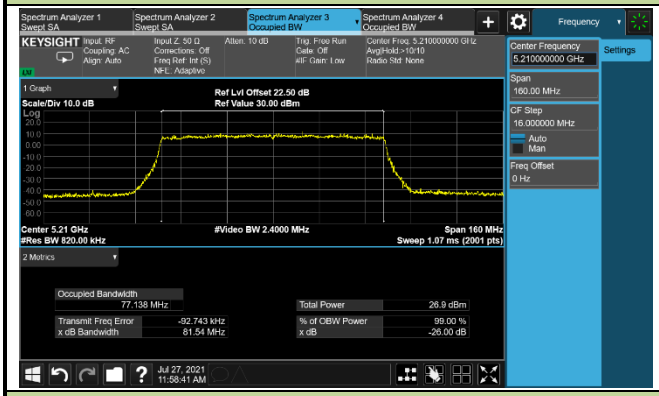
Channel 110 (5550MHz)



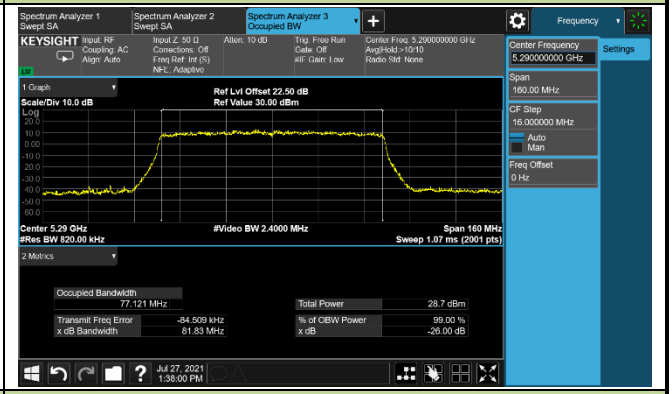
802.11ax-HE40 26dB Bandwidth & 99% Bandwidth	
Channel 134 (5670MHz)	Channel 142 (5710MHz)
	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

802.11ax-HE80 26dB Bandwidth & 99% Bandwidth

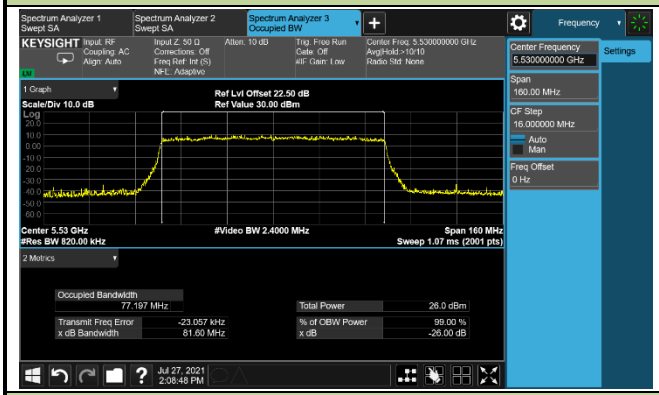
Channel 42 (5210MHz)



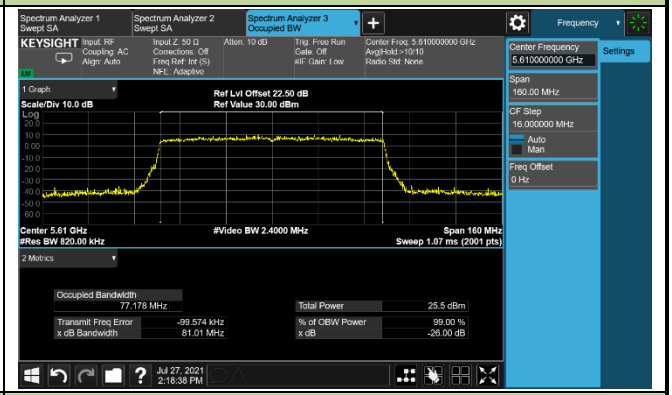
Channel 58 (5290MHz)



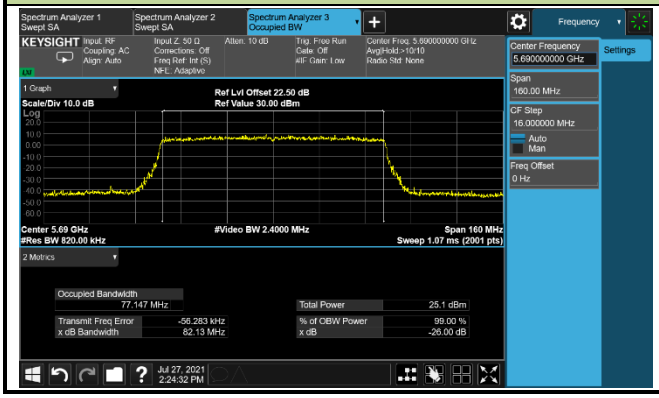
Channel 106 (5530MHz)



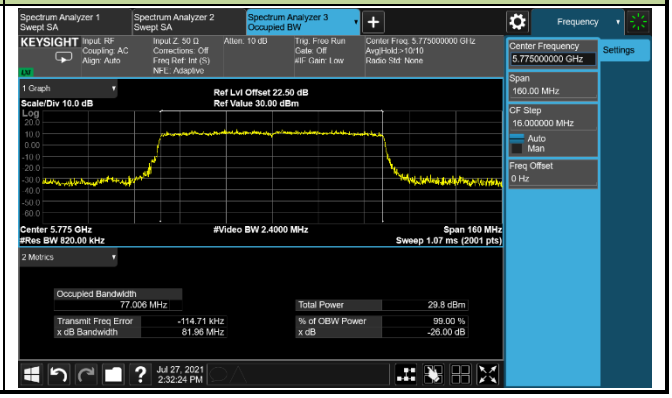
Channel 122 (5610MHz)

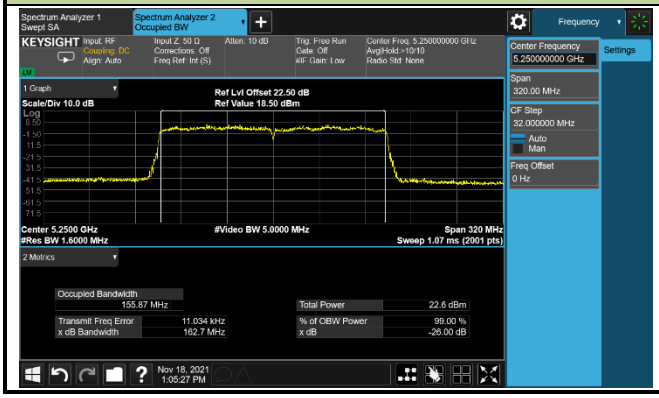
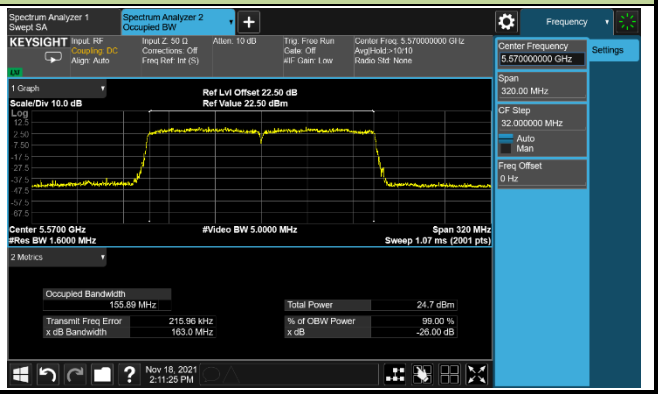


Channel 138 (5690MHz)



Channel 155 (5775MHz)



802.11ax-HE80+80 26dB Bandwidth & 99% Bandwidth	
Channel 42 + 58 (5210 + 5290MHz)	Channel 106 + 122 (5530 + 5610MHz)
	

7.3. 6dB Bandwidth Measurement

7.3.1.Test Limit

The minimum 6dBbandwidth shall be at least 500 kHz.

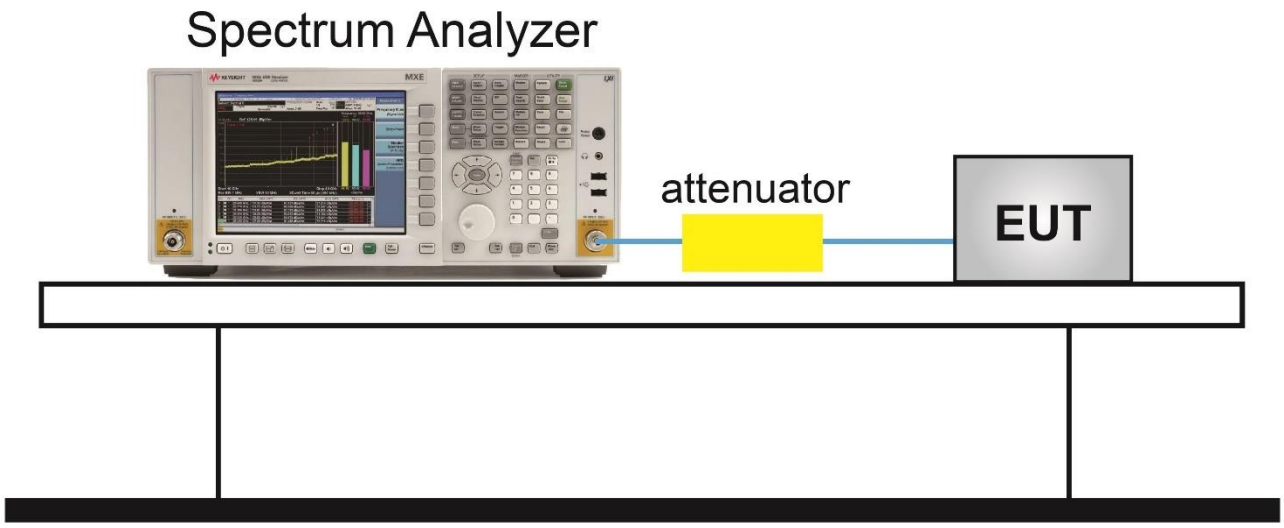
7.3.2.Test Procedure used

KDB 789033 D02v02r01- Section C.2

7.3.3.Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW≥ 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

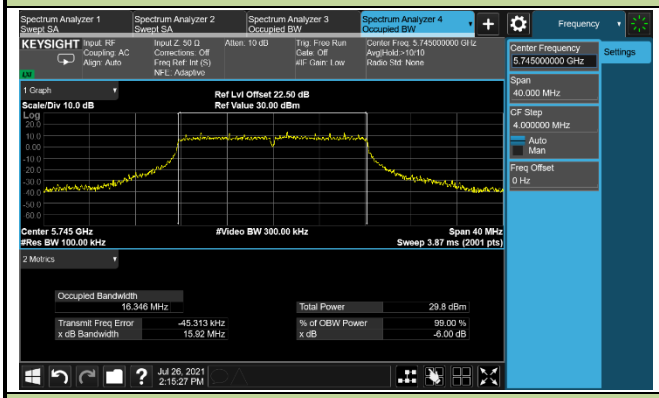
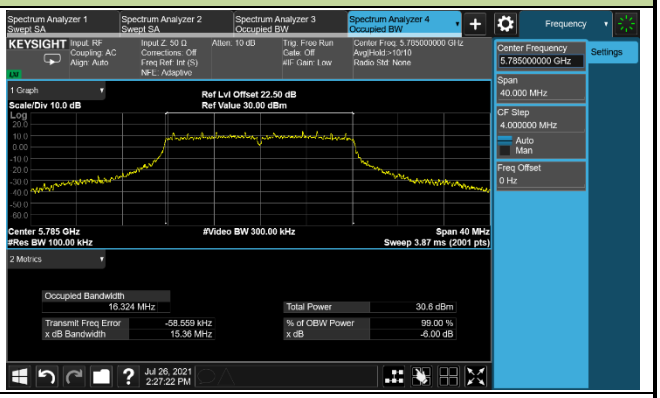
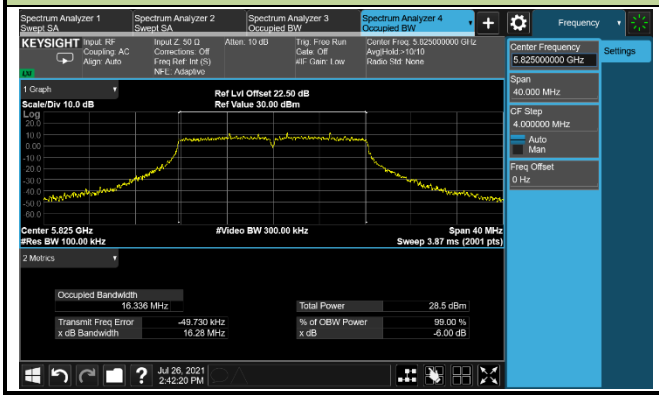
7.3.4.Test Setup



7.3.5.Test Result

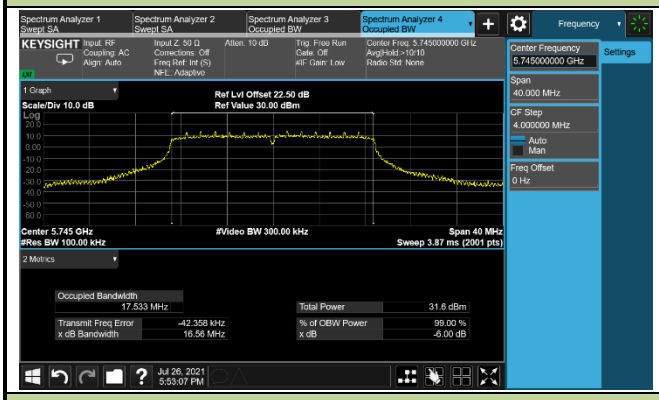
Product	ASSESS POINT	Test Engineer	Eric Lin
Test Site	SR2	Test Date	2021/07/25~2021/07/27
Model No.	APEX0585		

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11a	6Mbps	149	5745	15.92	≥ 0.5	Pass
802.11a	6Mbps	157	5785	15.36	≥ 0.5	Pass
802.11a	6Mbps	165	5825	16.28	≥ 0.5	Pass
802.11ac-VHT20	MCS0	149	5745	16.56	≥ 0.5	Pass
802.11ac-VHT20	MCS0	157	5785	17.64	≥ 0.5	Pass
802.11ac-VHT20	MCS0	165	5825	16.55	≥ 0.5	Pass
802.11ac-VHT40	MCS0	151	5755	35.33	≥ 0.5	Pass
802.11ac-VHT40	MCS0	159	5795	35.95	≥ 0.5	Pass
802.11ac-VHT80	MCS0	155	5775	66.63	≥ 0.5	Pass
802.11ax-HE20	MCS0	149	5745	18.72	≥ 0.5	Pass
802.11ax-HE20	MCS0	157	5785	17.90	≥ 0.5	Pass
802.11ax-HE20	MCS0	165	5825	18.25	≥ 0.5	Pass
802.11ax-HE40	MCS0	151	5755	36.47	≥ 0.5	Pass
802.11ax-HE40	MCS0	159	5795	37.47	≥ 0.5	Pass
802.11ax-HE80	MCS0	155	5775	73.57	≥ 0.5	Pass

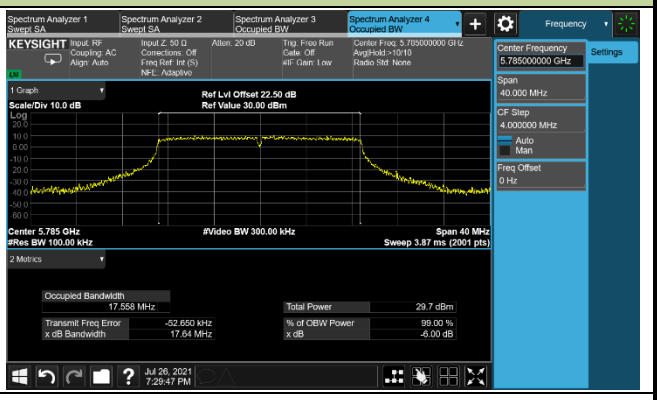
802.11a 6dB Bandwidth	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

802.11ac-VHT20 6dB Bandwidth

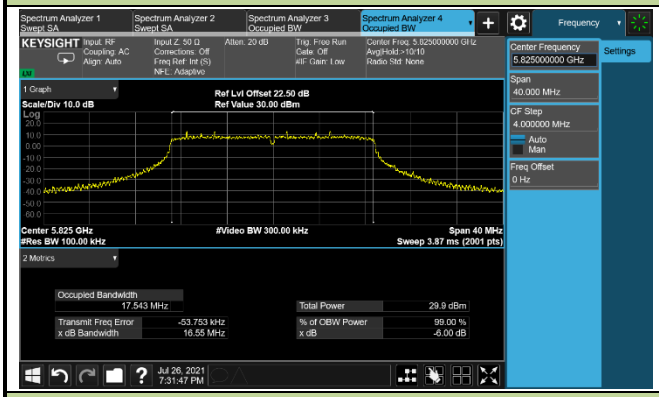
Channel 149 (5745MHz)



Channel 157 (5785MHz)

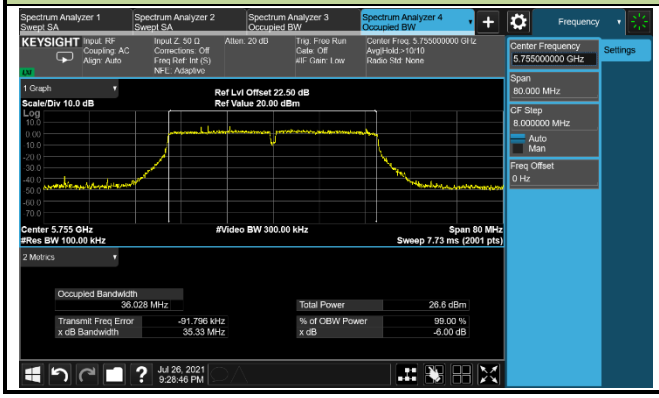


Channel 165 (5825MHz)

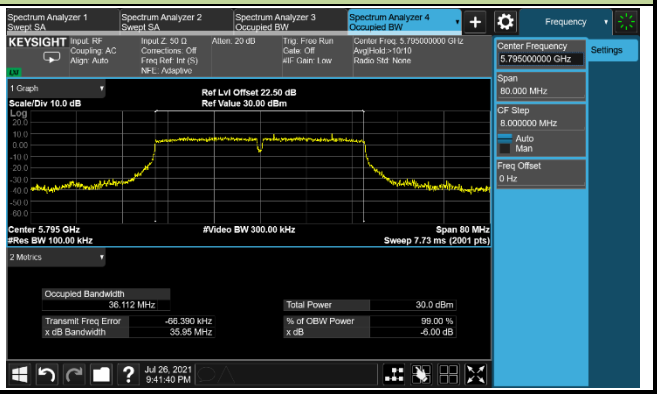


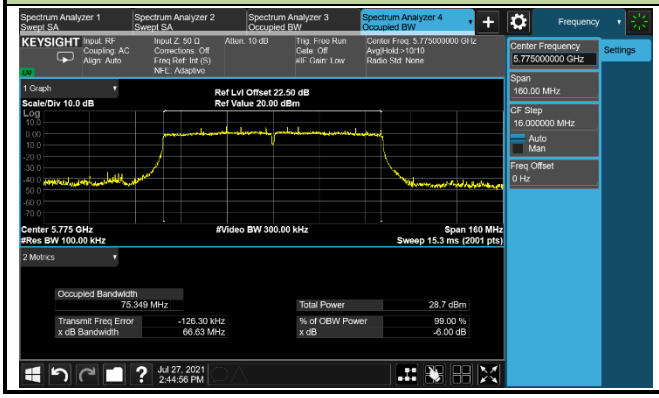
802.11ac-VHT40 6dB Bandwidth

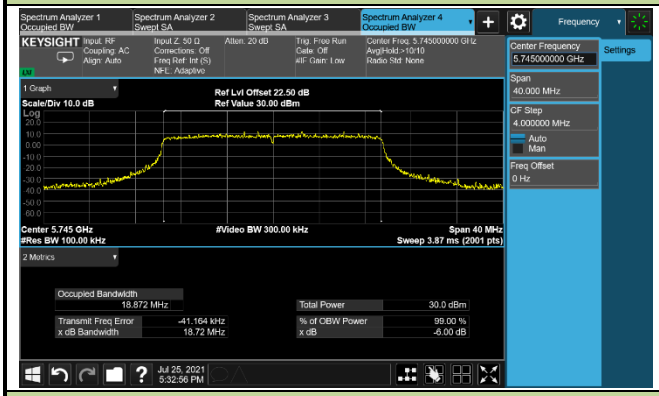
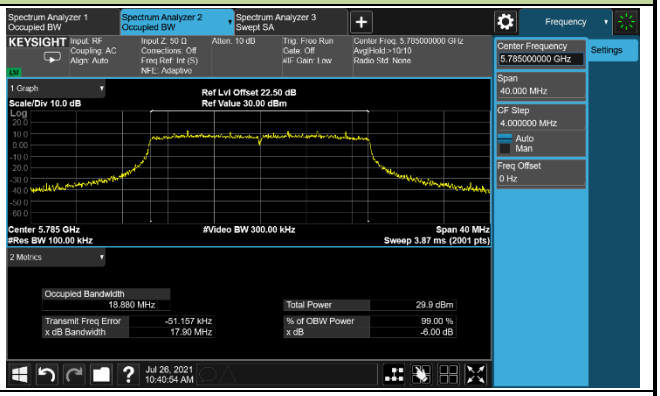
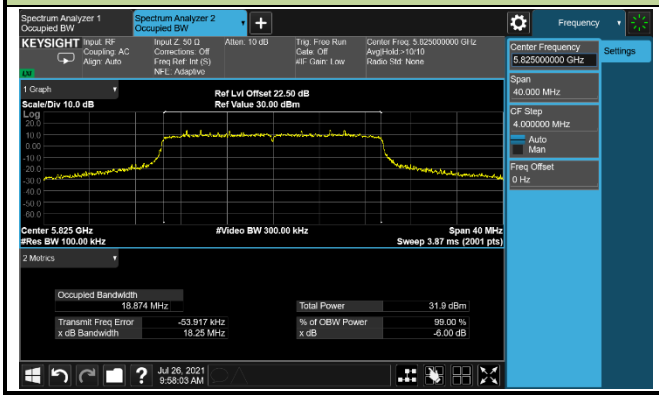
Channel 151 (5755MHz)

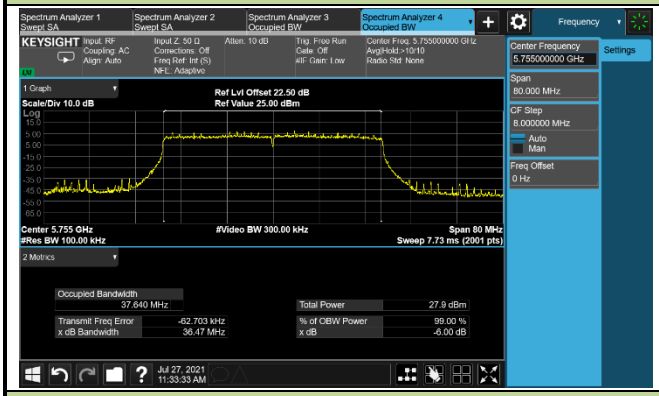
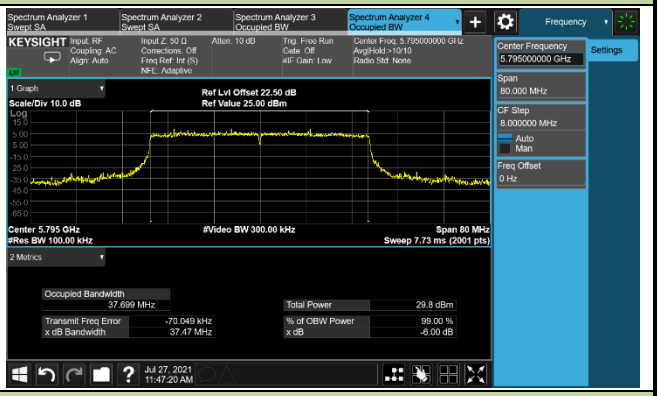
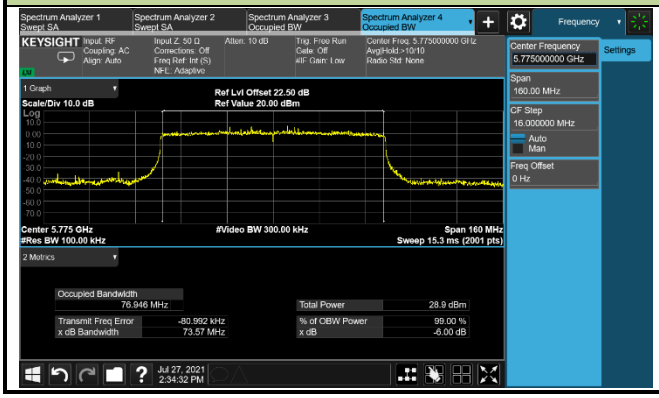


Channel 159 (5795MHz)



802.11ac-VHT80 6dB Bandwidth	
Channel 155 (5775MHz)	
	

802.11ax-HE20 6dB Bandwidth	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

802.11ax-HE40 6dB Bandwidth	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	
802.11ax-HE80 6dB Bandwidth	
Channel 155 (5775MHz)	
	

7.4. Output Power Measurement

7.4.1.Test Limit

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

If transmitting antennas of directional gain greater than 6dBi are used, the maximumconducted output power shall be reduced by the amount in dB that the directional gain of theantenna exceeds 6dBi.

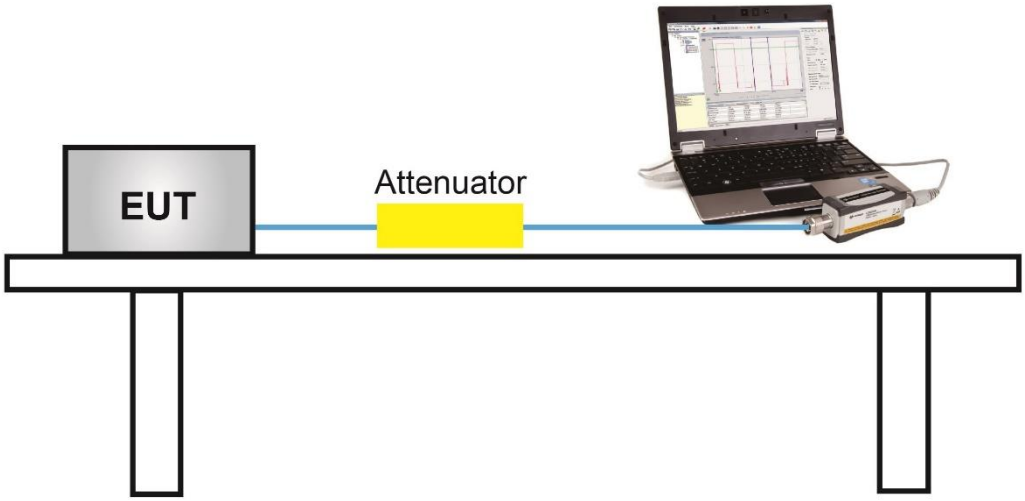
7.4.2.Test Procedure Used

KDB 789033D02v02r01- Section E)3)b) Method PM-G

7.4.3.Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

7.4.4.Test Setup



7.4.5.Test Result

Please refer to Appendix D Clause 3

7.5. Power Spectral Density Measurement

7.5.1.Test Limit

For the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

For the band 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any1 megahertz band.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band.

If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of theantenna exceeds 6dBi.

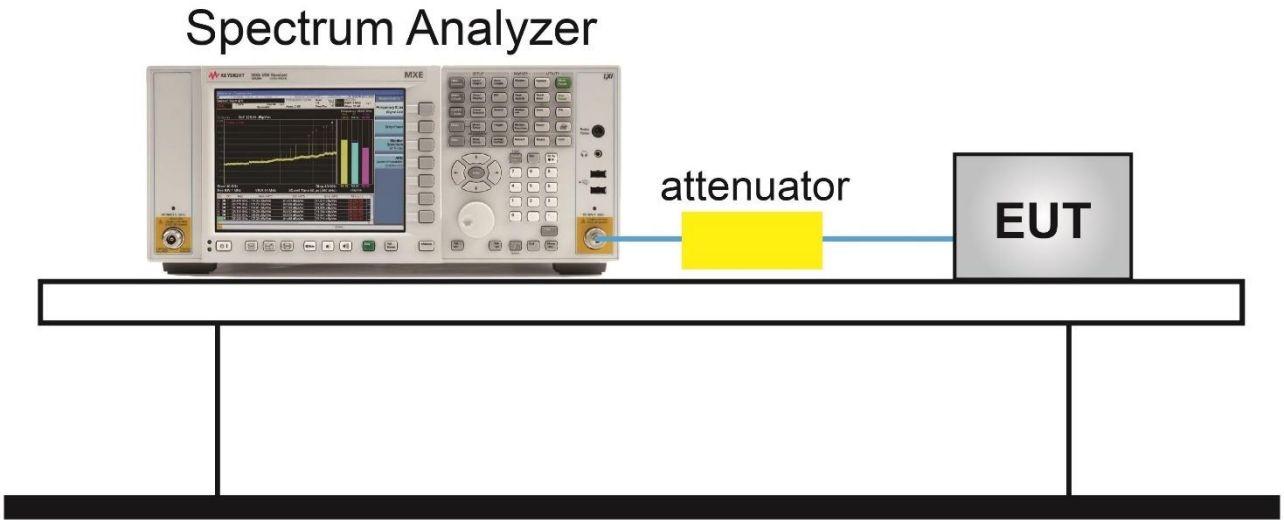
7.5.2.Test Procedure Used

KDB 789033 D02v02r01-SectionF

7.5.3.Test Setting

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz, if measurement bandwidth of Maximum PSD is specified in 500 kHz, RBW = 510KHz
4. VBW ≥3RBW
5. Number of sweep points ≥ 2 × (span / RBW)
6. Detector = power averaging (Average)
7. Sweep time = auto
8. Trigger = free run
9. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
10. Add 10*log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10*log(1/0.25) = 6 dB if the duty cycle is 25 percent.

7.5.4.Test Setup



7.5.5.Test Result

Please refer to Appendix D Clause 3

7.6. Frequency Stability Measurement

7.6.1.Test 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 in the user's manual.

The transmitter center frequency tolerance shall be ±20 ppm maximum for the 5GHz band (IEEE 802.11 specification).

7.6.2.Test Procedure Used

Frequency Stability Under Temperature Variations:

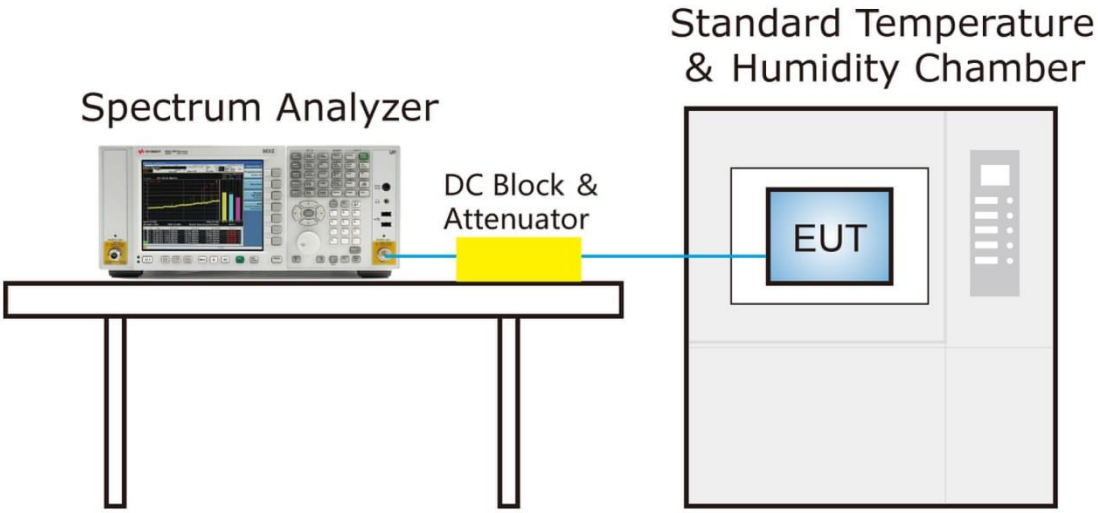
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, recordthe maximum frequency change.

7.6.3.Test Setup



7.6.4.Test Result

Product	ACCESS POINT	Temperature	24°C
Test Engineer	Eric Lin	Relative Humidity	45%RH
Test Site	SR2	Test Date	2021/10/27
Test Mode	5180MHz (Carrier Mode)		

Voltage (%)	Power (VAC)	Temp (°C)	Frequency Tolerance (ppm)			
			0 minutes	2 minutes	5 minutes	10 minutes
100	120	- 30	-6.99	-7.88	-8.16	-7.82
		- 20	-8.16	-7.95	-8.12	-8.29
		- 10	-8.05	-7.97	-8.04	-6.77
		0	-8.27	-8.23	-7.77	-6.43
		+ 10	-6.88	-8.26	-7.70	-6.27
		+ 20	-6.98	-8.34	-7.62	-6.16
		+ 30	-7.09	-8.29	-7.26	-5.96
		+ 40	-7.35	-8.35	-7.19	-5.81
		+ 50	-7.43	-8.38	-7.02	-5.64
115	138	+ 20	-7.48	-8.43	-4.55	-5.43
85	102	+ 20	17.54	17.60	17.64	17.65

Note: Frequency Tolerance (ppm) = {[Measured Frequency (Hz) - Declared Frequency (Hz)] / Declared Frequency (Hz)} *10^6.

7.7. Radiated Spurious Emission Measurement

7.7.1.Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [μV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.7.2.Test Procedure Used

KDB 789033 D02v02r01 – Section G

7.7.3.Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
>1000 MHz	1 MHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.

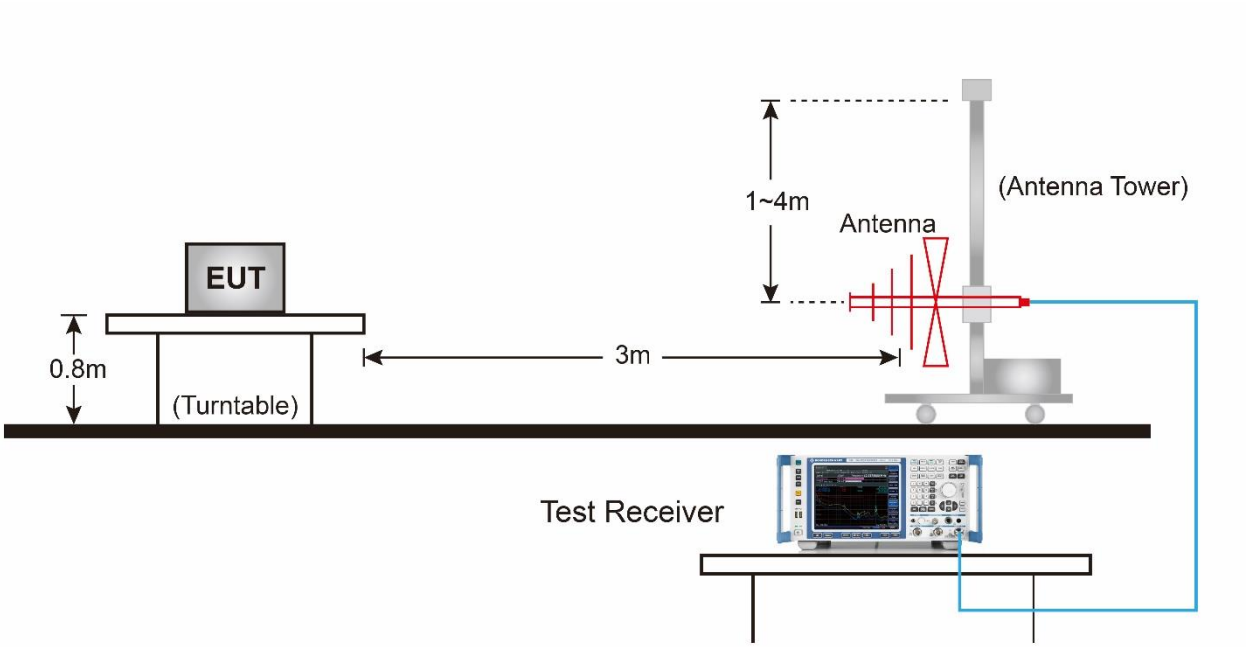
If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.

802.11a	VBW = 510Hz	802.11ax-HE20	VBW = 180Hz
802.11ac-VHT20	VBW = 180Hz	802.11ax-HE40	VBW = 180Hz
802.11ac-VHT40	VBW = 91Hz	802.11ax-HE80	VBW = 180Hz
802.11ac-VHT80	VBW = 180Hz	802.11ax-HE80+80	VBW = 180Hz
802.11ac-VHT80+80	VBW = 180Hz	N/A	N/A

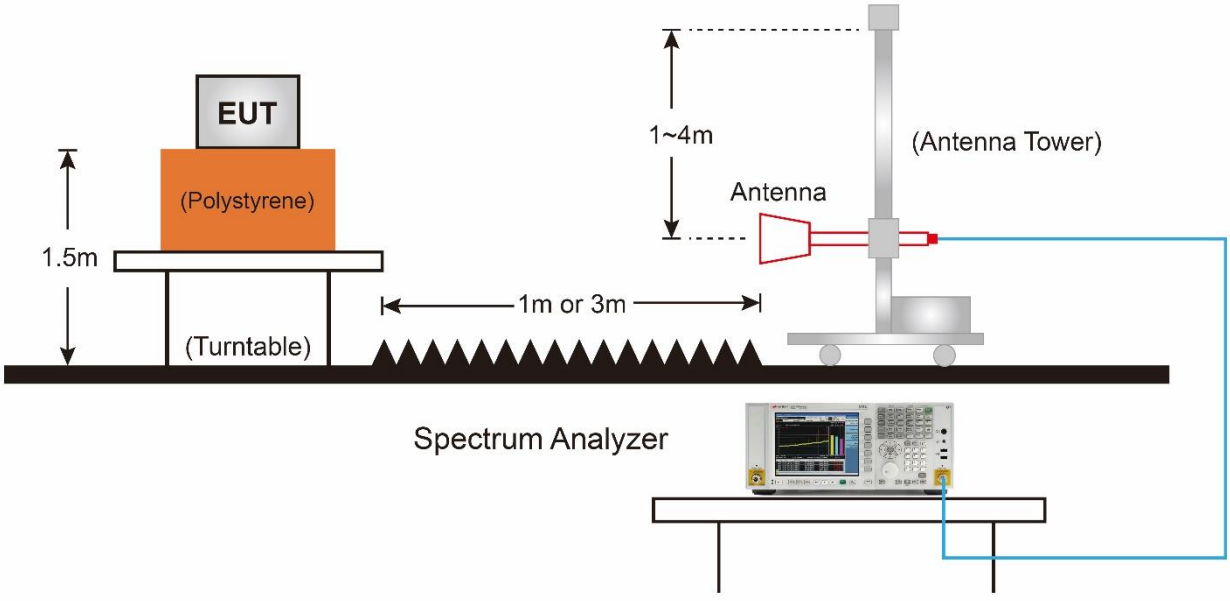
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

7.7.4.Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



7.7.5.Test Result

Please refer to Appendix D Clause 3;

7.8. Radiated Restricted Band Edge Measurement

7.8.1.Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42-16.423	399.9 - 410	4.5-5.15
[1] 0.495 - 0.505	16.69475-16.69525	608 - 614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960 - 1240	7.25-7.75
4.125-4.128	25.5 -25.67	1300 - 1427	8.025 - 8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660 - 1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123 - 138	2200 - 2300	14.47-14.5
8.291-8.294	149.9-150.05	2310 - 2390	15.35-16.2
8.362-8.366	156.52475-156.525	2483.5 - 2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690 - 2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260 - 3267	23.6-24.0
12.29-12.293	167.72-173.2	3332 - 3339	31.2-31.8
12.51975-12.52025	240 - 285	3345.8 - 3358	36.43-36.5
12.57675-12.57725	322-335.4	3600 - 4400	([2])
13.36-13.41	--	--	--

For 15.407(b) requirement:

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 -27 dBm/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: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasinglinearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasinglinearly 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 edgeincreasing linearly to a level of 27 dBm/MHz at the band edge.

Refer to KDB 789033 D02v02r01 G)2)c), as specified in § 15.407(b), emissions above 1000 MHz.

1) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.

2) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are based on the use of a peak detector.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [μV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.8.2.Test Procedure Used

KDB 789033 D02v02r01 – Section G

7.8.3.Test Setting

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBWIf the EUT is configured to transmit with duty cycle ≥ 98%, set VBW ≤ RBW/100 (i.e., 10 kHz) but not less than 10 Hz. If the EUT duty cycle is < 98%, set VBW ≥ 1/T.

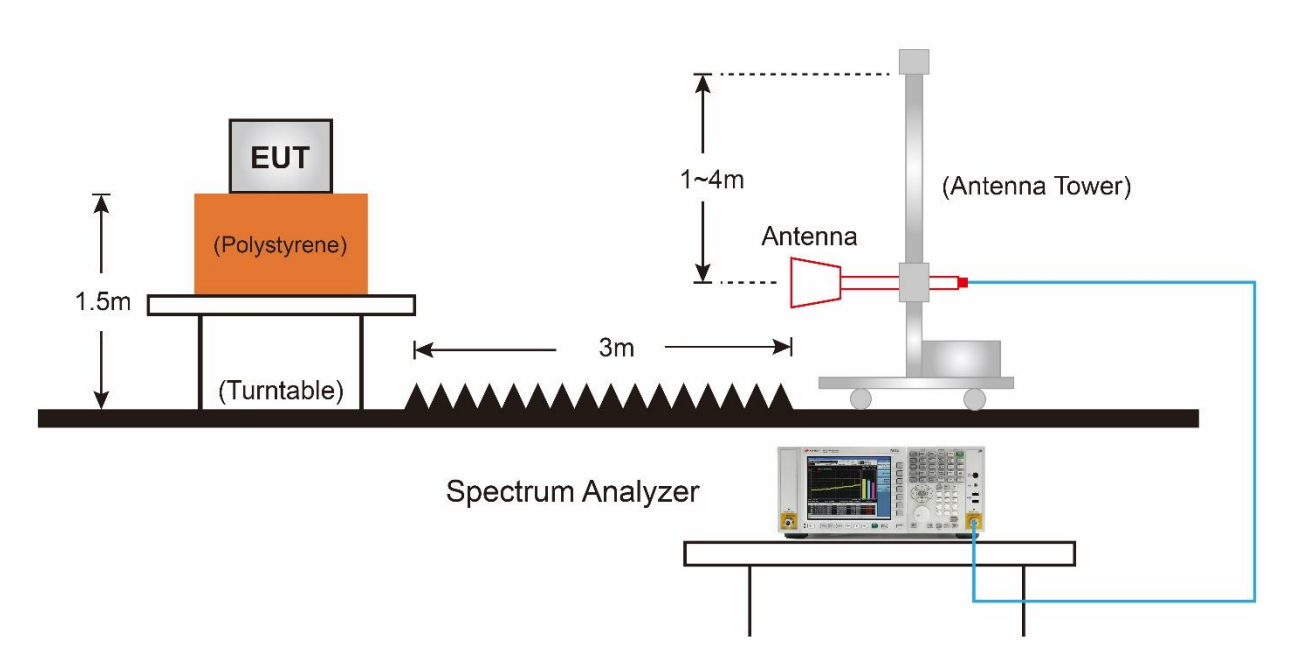
802.11a	VBW = 510Hz	802.11ax-HE20	VBW = 180Hz
802.11ac-VHT20	VBW = 180Hz	802.11ax-HE40	VBW = 180Hz
802.11ac-VHT40	VBW = 91Hz	802.11ax-HE80	VBW = 180Hz
802.11ac-VHT80	VBW = 180Hz	802.11ax-HE80+80	VBW = 180Hz
802.11ac-VHT80+80	VBW = 180Hz	N/A	N/A

4. Detector = Peak

5. Sweep time = auto

6. Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98% duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of 1/x, where x is the duty cycle.

7.8.4.Test Setup



7.8.5.Test Result

Please refer to Appendix D Clause 3;

7.9. AC Conducted Emissions Measurement

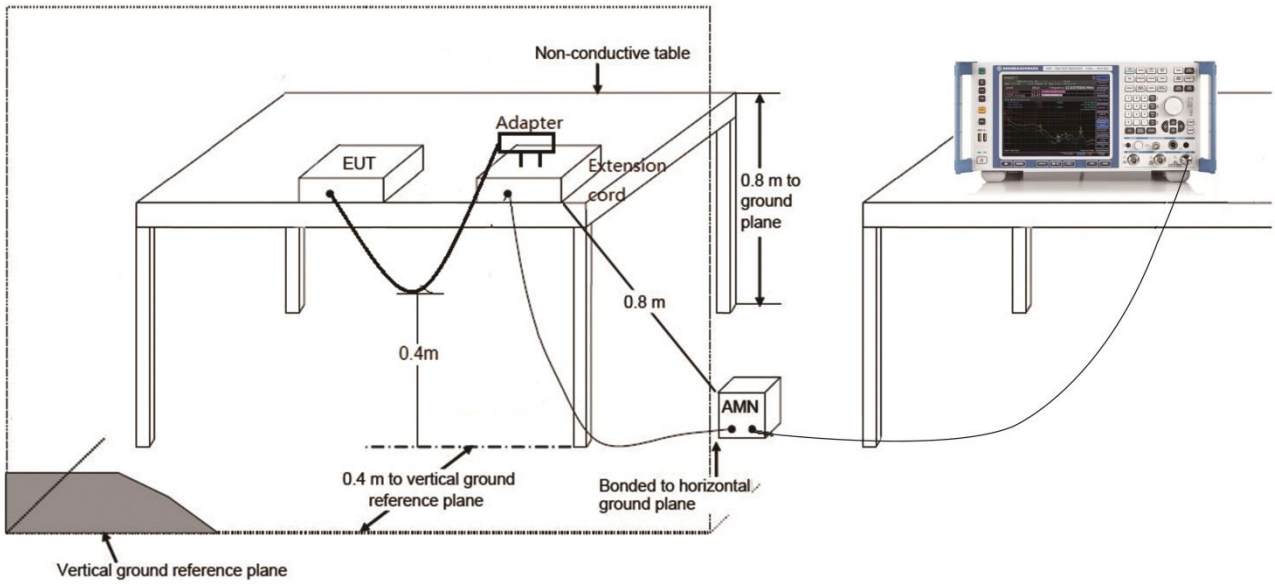
7.9.1. Test Limit

FCC Part 15.207 Limits		
Frequency (MHz)	QP (dBμV)	AV (dBμV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

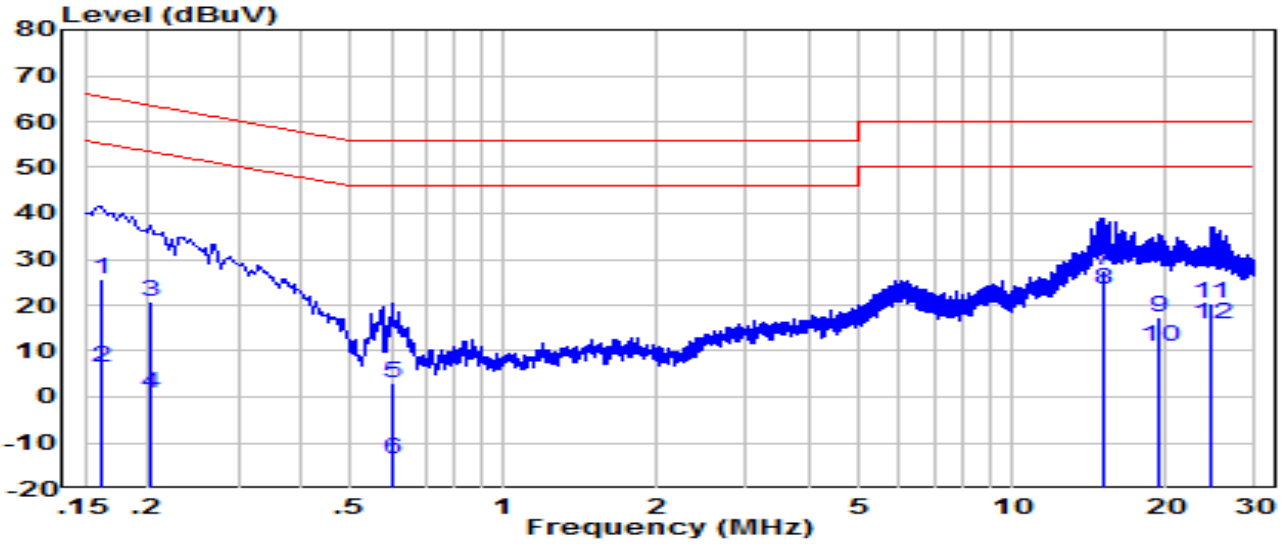
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.9.2. Test Setup



7.9.3.Test Result

EUT	ACCESS POINT	Date of Test	2021-11-03
Factor	CE_ENV216-L1 (Filter OFF) _2021	Temp. / Humidity	25.2°C /47%
Polarity	Line1	Site / Test Engineer	SR2 / Eric Lin
Test Mode	Transmit by 802.11a at Channel 5745MHz	Test Voltage	120V/60Hz

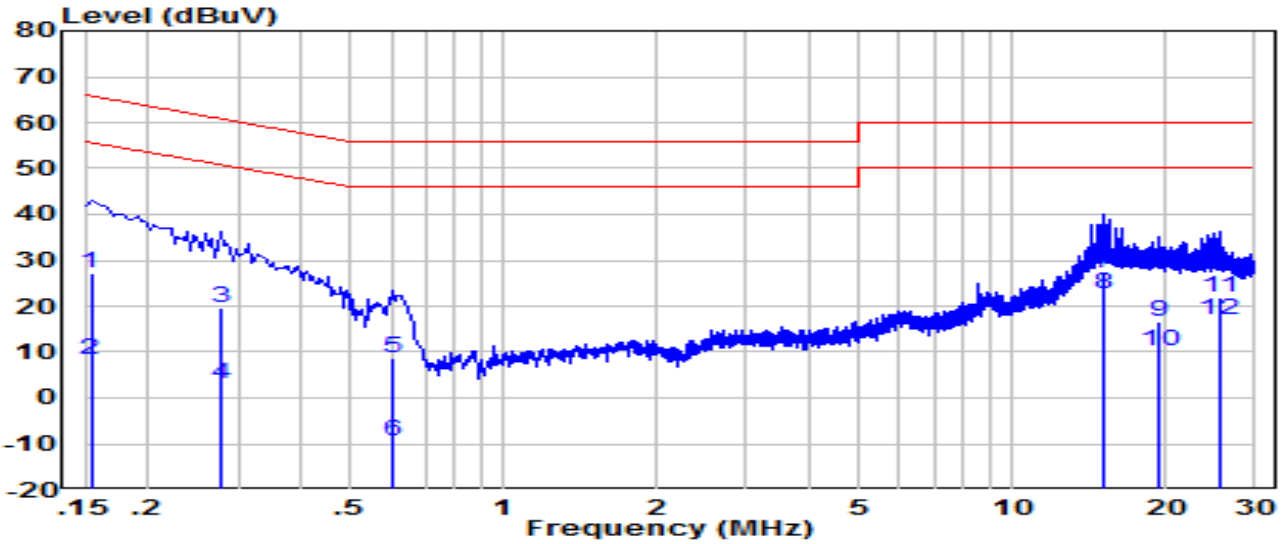


No		Frequency (MHz)	Reading (dBµV)	C.F (dB)	Measurement (dBµV)	Margin (dB)	Limit (dBµV)	Remark (QP/PK/AV)
1		0.162	15.99	9.61	25.60	-39.76	65.36	QP
2		0.162	-3.01	9.61	6.60	-48.76	55.36	Average
3		0.202	11.09	9.61	20.70	-42.83	63.53	QP
4		0.202	-9.01	9.61	0.60	-52.93	53.53	Average
5		0.602	-6.54	9.64	3.10	-52.90	56.00	QP
6		0.602	-23.24	9.64	-13.60	-59.60	46.00	Average
7		15.130	17.78	9.92	27.70	-32.30	60.00	QP
8	*	15.130	13.58	9.92	23.50	-26.50	50.00	Average
9		19.540	7.43	9.97	17.40	-42.60	60.00	QP
10		19.540	1.13	9.97	11.10	-38.90	50.00	Average
11		24.450	10.20	10.00	20.20	-39.80	60.00	QP
12		24.450	5.70	10.00	15.70	-34.30	50.00	Average

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = LISN Factor (dB)+ Cable Loss (dB).
3. Measurement(dBµV) = Reading(dBµV) + C.F (Correction Factor).

EUT	ACCESS POINT	Date of Test	2021-11-03
Factor	CE_ENV216-L1 (Filter OFF) _2021	Temp. / Humidity	25.2°C /47%
Polarity	Neutral	Site / Test Engineer	SR2 / Eric Lin
Test Mode	Transmit by 802.11a at Channel 5745MHz	Test Voltage	120V/60Hz



No		Frequency (MHz)	Reading (dBµV)	C.F (dB)	Measurement (dBµV)	Margin (dB)	Limit (dBµV)	Remark (QP/PK/AV)
1		0.154	526.97	-499.97	27.00	-38.78	65.78	QP
2		0.154	508.27	-499.97	8.30	-47.48	55.78	Average
3		0.278	519.46	-499.96	19.50	-41.38	60.88	QP
4		0.278	503.06	-499.96	3.10	-47.78	50.88	Average
5		0.602	508.55	-499.95	8.60	-47.40	56.00	QP
6		0.602	490.45	-499.95	-9.50	-55.50	46.00	Average
7		15.130	526.75	-499.75	27.00	-33.00	60.00	QP
8	*	15.130	522.55	-499.75	22.80	-27.20	50.00	Average
9		19.520	516.40	-499.70	16.70	-43.30	60.00	QP
10		19.520	510.00	-499.70	10.30	-39.70	50.00	Average
11		25.460	521.48	-499.68	21.80	-38.20	60.00	QP
12		25.460	516.58	-499.68	16.90	-33.10	50.00	Average

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = LISN Factor (dB)+ Cable Loss (dB).
3. Measurement(dBµV) = Reading(dBµV) + C.F (Correction Factor).

8. CONCLUSION

The data collected relate only the item(s) tested and show that the device is in compliance with Part 15E of the FCC Rules.

The End

Appendix A - Test Setup Photograph

Refer to “2105TW0005-UT” file.

Appendix B - EUT Photograph

Refer to “2105TW0005-UE” file.