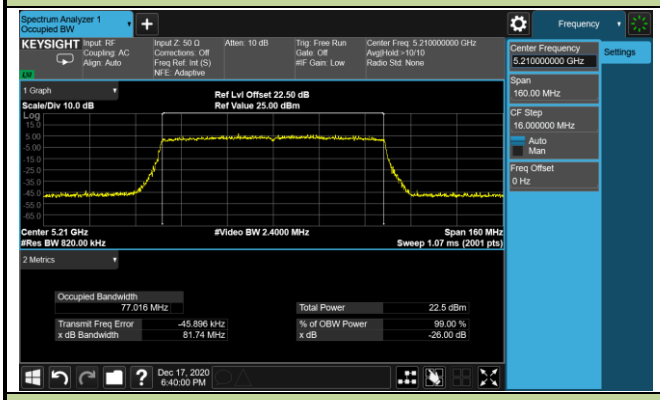
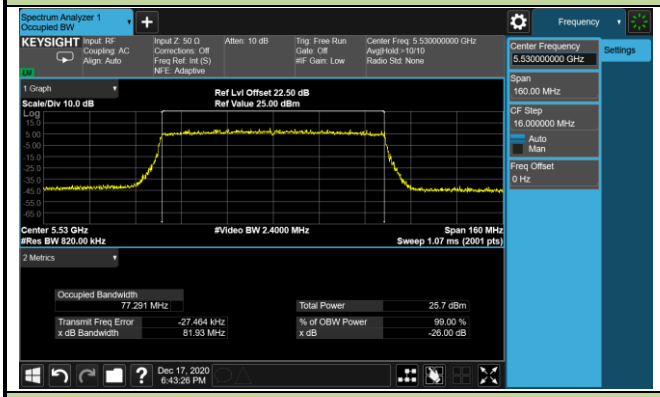
8802.11ax-HE80 26dB Bandwidth & 99% Bandwidth

Channel 42 (5210MHz)

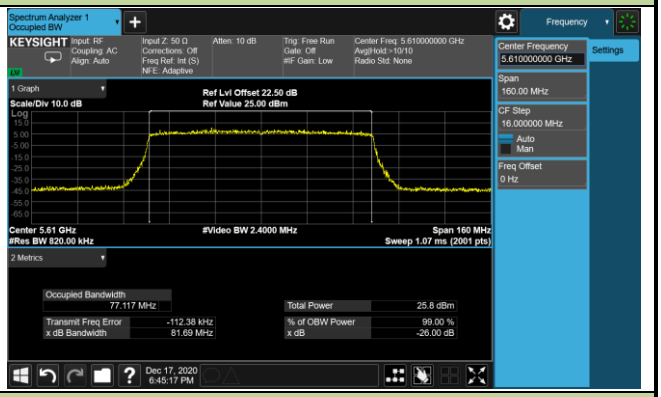


Channel 58 (5290MHz)

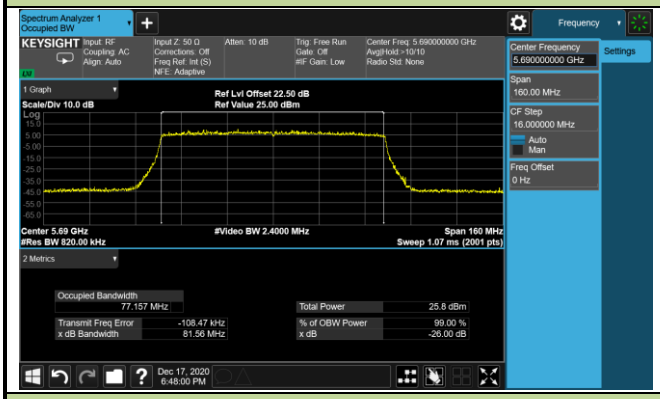
Channel 106 (5530MHz)



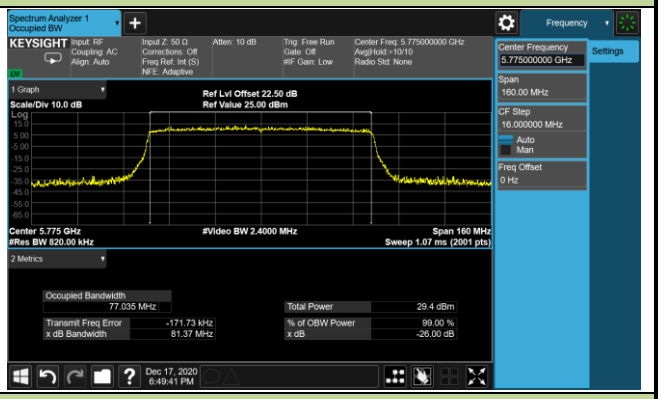
Channel 122 (5610MHz)



Channel 138 (5690MHz)

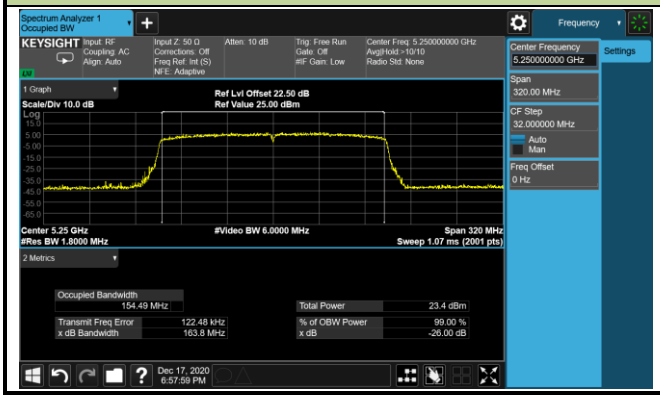


Channel 155 (5775MHz)



802.11ax-HE160 26dB Bandwidth & 99% Bandwidth

Channel 50 (5250MHz)



Channel 114 (5570MHz)

7.3. 6dB Bandwidth Measurement

7.3.1.Test Limit

The minimum 6dBbandwidth shall be at least 500 kHz.

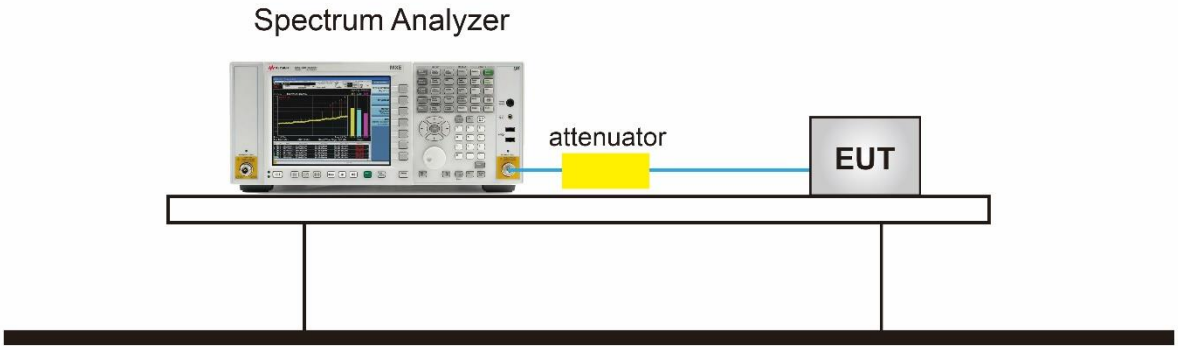
7.3.2.Test Procedure used

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.TestResult

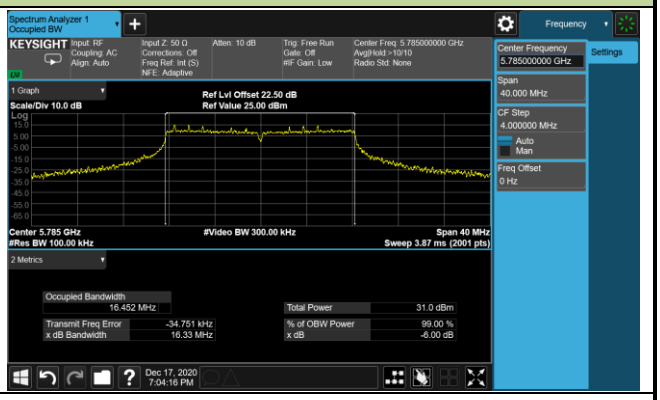
Product	AX5400 Wi-Fi 6 Router	Test Engineer	Eric Lin
Test Site	SR1	Test Date	2020/12/17

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 3						
802.11a	6Mbps	149	5745	16.32	≥ 0.5	Pass
802.11a	6Mbps	157	5785	16.33	≥ 0.5	Pass
802.11a	6Mbps	165	5825	16.35	≥ 0.5	Pass
802.11ac-VHT20	NSS2MCS0	149	5745	17.54	≥ 0.5	Pass
802.11ac-VHT20	NSS2MCS0	157	5785	17.57	≥ 0.5	Pass
802.11ac-VHT20	NSS2MCS0	165	5825	17.63	≥ 0.5	Pass
802.11ac-VHT40	NSS2MCS0	151	5755	34.14	≥ 0.5	Pass
802.11ac-VHT40	NSS2MCS0	159	5795	36.29	≥ 0.5	Pass
802.11ac-VHT80	NSS2MCS0	155	5775	72.61	≥ 0.5	Pass
802.11ax-HE20	NSS2MCS0	149	5745	19.03	≥ 0.5	Pass
802.11ax-HE20	NSS2MCS0	157	5785	19.02	≥ 0.5	Pass
802.11ax-HE20	NSS2MCS0	165	5825	18.90	≥ 0.5	Pass
802.11ax-HE40	NSS2MCS0	151	5755	38.09	≥ 0.5	Pass
802.11ax-HE40	NSS2MCS0	159	5795	35.52	≥ 0.5	Pass
802.11ax-HE80	NSS2MCS0	155	5775	73.02	≥ 0.5	Pass

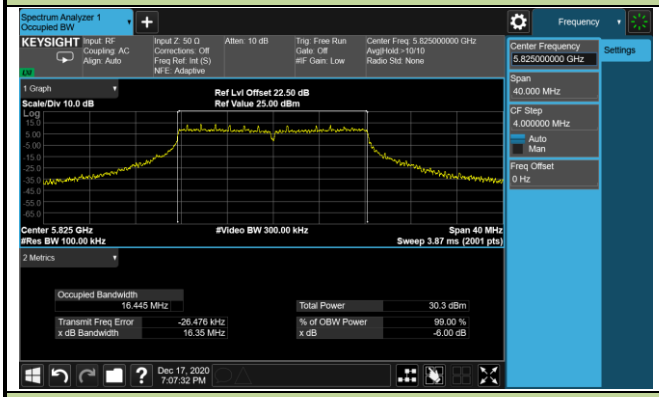
802.11a 6dB Bandwidth

Channel 149 (5745MHz)

Channel 157 (5785MHz)



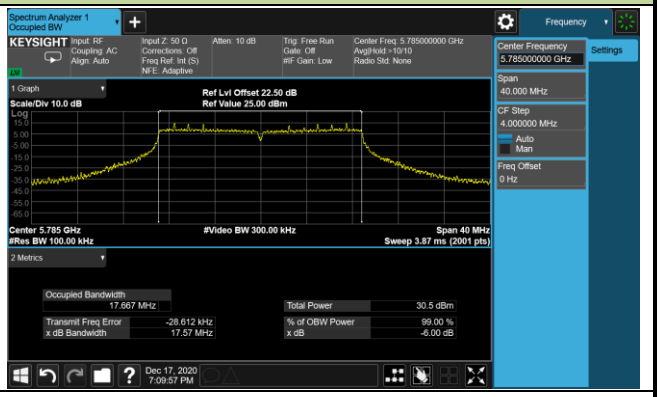
Channel 165 (5825MHz)



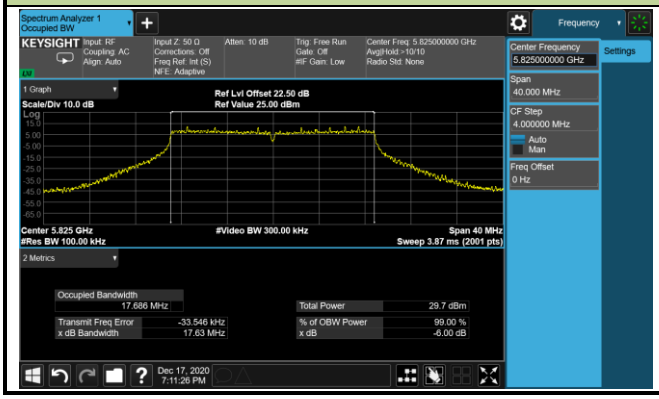
802.11ac-VHT20 6dB Bandwidth

Channel 149 (5745MHz)

Channel 157 (5785MHz)

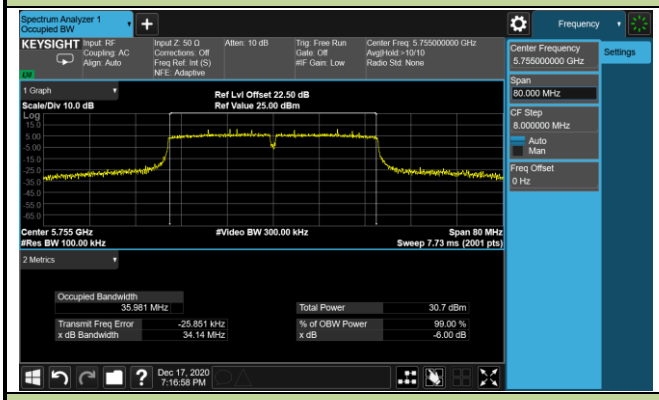


Channel 165 (5825MHz)



802.11ac-VHT40 6dB Bandwidth

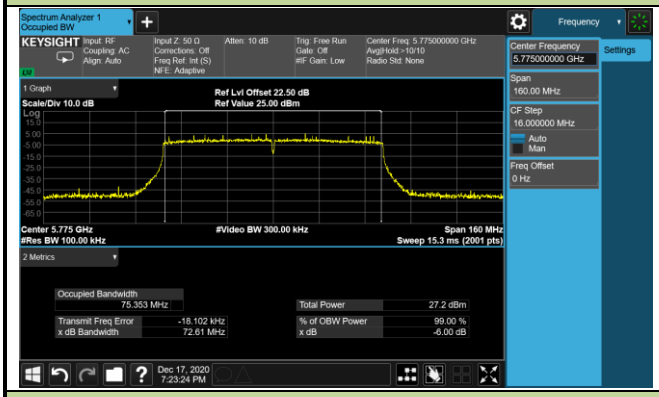
Channel 151 (5755MHz)



Channel 159 (5795MHz)

802.11ac-VHT80 6dB Bandwidth

Channel 155 (5775MHz)



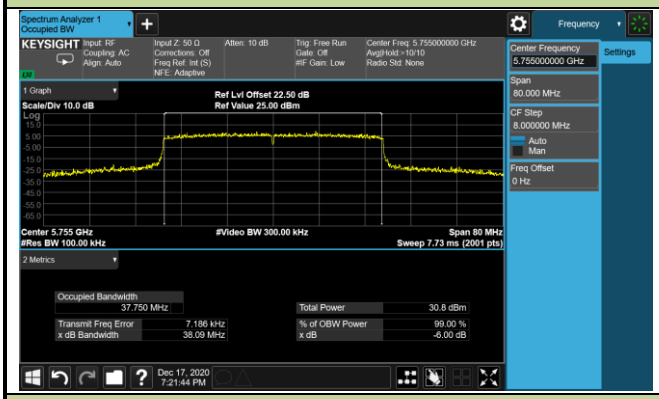
802.11ax-HE20 6dB Bandwidth

Channel 149 (5745MHz)

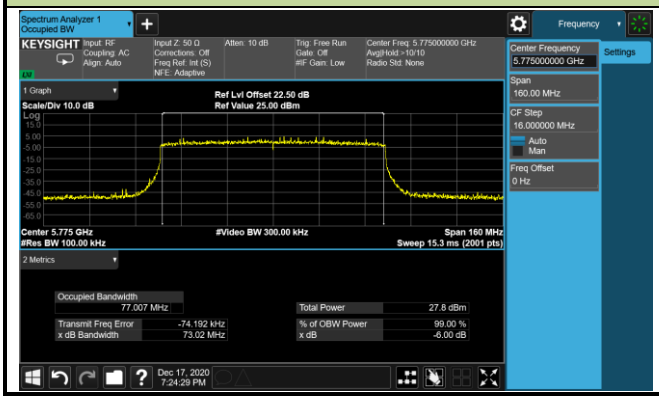
Channel 157 (5785MHz)

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 the band 5.15-5.25 GHz, the maximum conductedoutput power over the frequency band of operation shall not exceed 1 W provided the maximumantenna gain does not exceed 6 dBi.

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.

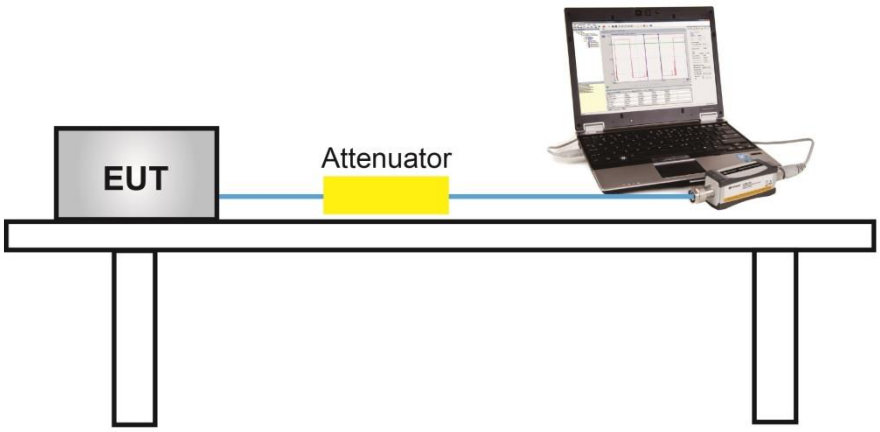
7.4.2.Test Procedure Used

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

Product	AX5400 Wi-Fi 6 Router	Test Engineer	Eric Lin
Test Site	SR1	Test Date	2020/12/14~2020/12/30
Test Mode	CDD Mode		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Ant 3 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
11a	6Mbps	36	5180	18.71	19.01	18.98	18.95	24.93	≤ 30.00	Pass
11a	6Mbps	44	5220	19.11	19.49	19.31	19.15	25.29	≤ 30.00	Pass
11a	6Mbps	48	5240	23.02	23.46	23.25	23.45	29.32	≤ 30.00	Pass
11a	6Mbps	52	5260	12.68	12.85	13.09	13.02	18.93	≤ 23.98	Pass
11a	6Mbps	60	5300	12.87	13.01	12.98	12.78	18.93	≤ 23.98	Pass
11a	6Mbps	64	5320	12.50	13.02	12.62	12.80	18.76	≤ 23.98	Pass
11a	6Mbps	100	5500	12.75	13.06	13.03	13.20	19.03	≤ 23.98	Pass
11a	6Mbps	116	5580	13.06	13.04	12.71	12.45	18.84	≤ 23.98	Pass
11a	6Mbps	140	5700	12.70	12.86	13.15	12.92	18.93	≤ 23.98	Pass
11a	6Mbps	144	5720	12.98	12.89	13.01	12.63	18.90	≤ 22.71	Pass
11a	6Mbps	149	5745	23.73	24.02	23.61	23.67	29.78	≤ 30.00	Pass
11a	6Mbps	157	5785	23.62	23.91	23.63	23.74	29.75	≤ 30.00	Pass
11a	6Mbps	165	5825	23.23	23.24	23.87	23.84	29.58	≤ 30.00	Pass
11ac-VHT20	MCS0	36	5180	19.34	19.60	19.65	19.36	25.51	≤ 30.00	Pass
11ac-VHT20	MCS0	40	5220	20.15	20.57	20.28	20.00	26.28	≤ 30.00	Pass
11ac-VHT20	MCS0	48	5240	23.18	23.47	23.35	23.26	29.34	≤ 30.00	Pass
11ac-VHT20	MCS0	52	5260	13.02	13.15	13.44	13.16	19.22	≤ 23.98	Pass
11ac-VHT20	MCS0	60	5300	13.21	13.41	13.37	13.14	19.30	≤ 23.98	Pass
11ac-VHT20	MCS0	64	5320	13.03	13.38	13.10	13.19	19.20	≤ 23.98	Pass
11ac-VHT20	MCS0	100	5500	12.80	12.94	13.15	13.25	19.06	≤ 23.98	Pass
11ac-VHT20	MCS0	116	5580	13.25	13.44	12.94	13.02	19.19	≤ 23.98	Pass
11ac-VHT20	MCS0	140	5700	12.69	12.83	13.21	13.02	18.96	≤ 23.98	Pass
11ac-VHT20	MCS0	144	5720	13.48	13.33	12.88	12.95	19.19	≤ 22.91	Pass
11ac-VHT20	MCS0	149	5745	23.62	23.77	23.28	23.14	29.48	≤ 30.00	Pass
11ac-VHT20	MCS0	157	5785	23.52	23.64	23.54	23.55	29.58	≤ 30.00	Pass
11ac-VHT20	MCS0	165	5825	22.88	22.76	23.52	23.42	29.18	≤ 30.00	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Ant 3 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
11ac-VHT40	MCS0	38	5190	18.65	18.88	18.83	18.79	24.81	≤ 30.00	Pass
11ac-VHT40	MCS0	46	5230	23.38	23.66	23.55	23.68	29.59	≤ 30.00	Pass
11ac-VHT40	MCS0	54	5270	15.61	16.02	16.16	16.33	22.06	≤ 23.98	Pass
11ac-VHT40	MCS0	62	5310	15.97	16.21	15.97	16.01	22.06	≤ 23.98	Pass
11ac-VHT40	MCS0	102	5510	16.26	16.20	16.45	16.49	22.37	≤ 23.98	Pass
11ac-VHT40	MCS0	110	5550	16.13	16.43	16.28	16.27	22.30	≤ 23.98	Pass
11ac-VHT40	MCS0	134	5670	15.65	15.54	16.16	16.41	21.98	≤ 23.98	Pass
11ac-VHT40	MCS0	142	5710	15.87	15.80	15.93	16.05	21.93	≤ 23.98	Pass
11ac-VHT40	MCS0	151	5755	24.02	24.07	23.43	23.57	29.80	≤ 30.00	Pass
11ac-VHT40	MCS0	159	5795	23.84	23.92	23.88	23.86	29.90	≤ 30.00	Pass
11ac-VHT80	MCS0	42	5210	17.79	18.16	18.11	18.15	24.08	≤ 30.00	Pass
11ac-VHT80	MCS0	58	5290	17.41	17.47	17.56	17.72	23.56	≤ 23.98	Pass
11ac-VHT80	MCS0	106	5530	17.39	17.49	17.54	17.64	23.54	≤ 23.98	Pass
11ac-VHT80	MCS0	122	5610	17.82	17.92	17.85	17.86	23.88	≤ 23.98	Pass
11ac-VHT80	MCS0	138	5690	17.23	17.20	17.94	18.03	23.64	≤ 23.98	Pass
11ac-VHT80	MCS0	155	5775	20.20	20.38	19.95	20.05	26.17	≤ 30.00	Pass
11ac-VHT160	MCS0	50	5250	14.27	14.56	14.09	14.48	20.37	≤ 23.98	Pass
11ac-VHT160	MCS0	114	5570	12.98	13.35	13.01	12.85	19.07	≤ 23.98	Pass
11ax-HE20	MCS0	36	5180	18.31	18.66	18.36	18.53	24.49	≤ 30.00	Pass
11ax-HE20	MCS0	40	5220	20.15	20.57	20.06	20.11	26.25	≤ 30.00	Pass
11ax-HE20	MCS0	48	5240	23.38	23.82	23.40	23.69	29.60	≤ 30.00	Pass
11ax-HE20	MCS0	52	5260	13.38	13.54	13.45	13.51	19.49	≤ 23.98	Pass
11ax-HE20	MCS0	60	5300	13.31	13.46	13.21	13.36	19.36	≤ 23.98	Pass
11ax-HE20	MCS0	64	5320	13.14	13.51	13.00	13.35	19.27	≤ 23.98	Pass
11ax-HE20	MCS0	100	5500	13.21	13.25	13.17	13.43	19.29	≤ 23.98	Pass
11ax-HE20	MCS0	116	5580	13.49	13.54	13.19	13.12	19.36	≤ 23.98	Pass
11ax-HE20	MCS0	140	5700	13.36	13.44	13.55	13.58	19.50	≤ 23.98	Pass
11ax-HE20	MCS0	144	5720	13.59	13.32	13.16	13.02	19.30	≤ 22.94	Pass
11ax-HE20	MCS0	149	5745	23.78	24.14	23.35	23.54	29.73	≤ 30.00	Pass
11ax-HE20	MCS0	157	5785	23.70	23.94	23.45	23.91	29.78	≤ 30.00	Pass
11ax-HE20	MCS0	165	5825	23.45	23.41	23.93	24.13	29.76	≤ 30.00	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Ant 3 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
11ax-HE40	MCS0	38	5190	15.42	16.10	16.12	16.20	21.99	≤ 30.00	Pass
11ax-HE40	MCS0	46	5230	23.45	23.50	23.25	23.32	29.40	≤ 30.00	Pass
11ax-HE40	MCS0	54	5270	16.06	16.16	16.38	16.53	22.31	≤ 23.98	Pass
11ax-HE40	MCS0	62	5310	16.21	16.38	16.17	16.26	22.28	≤ 23.98	Pass
11ax-HE40	MCS0	102	5510	15.99	15.91	16.04	16.19	22.05	≤ 23.98	Pass
11ax-HE40	MCS0	110	5550	15.84	16.16	15.85	15.96	21.98	≤ 23.98	Pass
11ax-HE40	MCS0	134	5670	15.71	15.64	16.25	16.54	22.07	≤ 23.98	Pass
11ax-HE40	MCS0	142	5710	16.01	16.03	16.01	16.19	22.08	≤ 23.98	Pass
11ax-HE40	MCS0	151	5755	24.06	24.18	23.46	23.62	29.86	≤ 30.00	Pass
11ax-HE40	MCS0	159	5795	23.87	24.02	23.79	23.99	29.94	≤ 30.00	Pass
11ax-HE80	MCS0	42	5210	16.17	16.88	16.60	16.82	22.65	≤ 30.00	Pass
11ax-HE80	MCS0	58	5290	17.58	17.79	17.72	17.91	23.77	≤ 23.98	Pass
11ax-HE80	MCS0	106	5530	17.61	17.78	17.71	17.87	23.76	≤ 23.98	Pass
11ax-HE80	MCS0	122	5610	17.65	17.80	17.61	17.71	23.71	≤ 23.98	Pass
11ax-HE80	MCS0	138	5690	17.52	17.55	18.02	18.30	23.88	≤ 23.98	Pass
11ax-HE80	MCS0	155	5775	20.52	20.63	20.21	20.42	26.47	≤ 30.00	Pass
11ax-HE160	MCS0	50	5250	13.03	13.13	12.78	13.16	19.05	≤ 23.98	Pass
11ax-HE160	MCS0	114	5570	13.13	13.61	12.99	13.05	19.22	≤ 23.98	Pass

Note 1:

The Total Average Power (dBm) = $10*\log \{10^{(\text{Ant 0 Average Power /10})} + 10^{(\text{Ant 1 Average Power /10})} + 10^{(\text{Ant 2 Average Power /10})} + 10^{(\text{Ant 3 Average Power /10})}\}$.

Note 2:

For 5250- 5350MHz and 5470 - 5725MHz Band: Average Power Limit (dBm) = 23.98 dBm.

For 5150 - 5250MHz and 5725 - 5850MHz Bands: Average Power Limit (dBm) = 30 dBm.

For Channel 144 (5720MHz), Average Power Limit (dBm) = $11+10*\log(5\text{MHz} + BW_{26dBc}/2)$

Product	AX5400 Wi-Fi 6 Router	Test Engineer	Eric Lin
Test Site	SR1	Test Date	2020/12/14~2020/12/30
Test Mode	Beamforming Mode		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Ant 3 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
11ac-VHT20	MCS0	36	5180	19.34	19.60	19.65	19.36	25.51	≤ 27.48	Pass
11ac-VHT20	MCS0	40	5220	20.15	20.57	20.28	20.00	26.28	≤ 27.48	Pass
11ac-VHT20	MCS0	48	5240	20.64	20.58	21.37	21.08	26.95	≤ 27.48	Pass
11ac-VHT20	MCS0	52	5260	13.02	13.15	13.44	13.16	19.22	≤ 21.46	Pass
11ac-VHT20	MCS0	60	5300	13.21	13.41	13.37	13.14	19.30	≤ 21.46	Pass
11ac-VHT20	MCS0	64	5320	13.03	13.38	13.10	13.19	19.20	≤ 21.46	Pass
11ac-VHT20	MCS0	100	5500	12.80	12.94	13.15	13.25	19.06	≤ 21.46	Pass
11ac-VHT20	MCS0	116	5580	13.25	13.44	12.94	13.02	19.19	≤ 21.46	Pass
11ac-VHT20	MCS0	140	5700	12.69	12.83	13.21	13.02	18.96	≤ 21.46	Pass
11ac-VHT20	MCS0	144	5720	13.48	13.33	12.88	12.95	19.19	≤ 20.89	Pass
11ac-VHT20	MCS0	149	5745	21.18	20.46	20.09	21.25	26.79	≤ 27.48	Pass
11ac-VHT20	MCS0	157	5785	20.45	20.85	21.52	21.36	27.09	≤ 27.48	Pass
11ac-VHT20	MCS0	165	5825	20.63	20.67	21.35	21.38	27.04	≤ 27.48	Pass
11ac-VHT40	MCS0	38	5190	18.65	18.88	18.83	18.79	24.81	≤ 27.48	Pass
11ac-VHT40	MCS0	46	5230	21.15	21.67	21.13	21.06	27.28	≤ 27.48	Pass
11ac-VHT40	MCS0	54	5270	14.53	14.67	15.23	15.29	20.96	≤ 21.46	Pass
11ac-VHT40	MCS0	62	5310	14.79	15.25	15.02	15.04	21.05	≤ 21.46	Pass
11ac-VHT40	MCS0	102	5510	14.57	15.14	15.06	15.15	21.01	≤ 21.46	Pass
11ac-VHT40	MCS0	110	5550	15.02	15.44	15.13	15.17	21.21	≤ 21.46	Pass
11ac-VHT40	MCS0	134	5670	14.64	14.61	15.25	15.36	21.00	≤ 21.46	Pass
11ac-VHT40	MCS0	142	5710	14.52	14.82	15.07	15.05	20.89	≤ 21.46	Pass
11ac-VHT40	MCS0	151	5755	21.18	21.50	20.79	20.81	27.10	≤ 27.48	Pass
11ac-VHT40	MCS0	159	5795	20.83	21.40	21.16	21.15	27.16	≤ 27.48	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Ant 3 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
11ac-VHT80	MCS0	42	5210	17.79	18.16	18.11	18.15	24.08	≤ 27.48	Pass
11ac-VHT80	MCS0	58	5290	14.64	15.39	15.45	15.46	21.27	≤ 21.46	Pass
11ac-VHT80	MCS0	106	5530	14.77	15.22	15.34	15.60	21.26	≤ 21.46	Pass
11ac-VHT80	MCS0	122	5610	14.83	15.36	15.32	15.23	21.21	≤ 21.46	Pass
11ac-VHT80	MCS0	138	5690	14.15	14.59	15.27	15.33	20.88	≤ 21.46	Pass
11ac-VHT80	MCS0	155	5775	20.20	20.38	19.95	20.05	26.17	≤ 27.48	Pass
11ac-VHT160	MCS0	50	5250	14.27	14.56	14.09	14.48	20.37	≤ 21.46	Pass
11ac-VHT160	MCS0	114	5570	12.98	13.35	13.01	12.85	19.07	≤ 21.46	Pass
11ax-HE20	MCS0	36	5180	18.31	18.66	18.36	18.53	24.49	≤ 27.48	Pass
11ax-HE20	MCS0	40	5220	20.15	20.57	20.06	20.11	26.25	≤ 27.48	Pass
11ax-HE20	MCS0	48	5240	20.61	20.84	21.29	21.43	27.08	≤ 27.48	Pass
11ax-HE20	MCS0	52	5260	13.38	13.54	13.45	13.51	19.49	≤ 21.46	Pass
11ax-HE20	MCS0	60	5300	13.31	13.46	13.21	13.36	19.36	≤ 21.46	Pass
11ax-HE20	MCS0	64	5320	13.14	13.51	13.00	13.35	19.27	≤ 21.46	Pass
11ax-HE20	MCS0	100	5500	13.21	13.25	13.17	13.43	19.29	≤ 21.46	Pass
11ax-HE20	MCS0	116	5580	13.49	13.54	13.19	13.12	19.36	≤ 21.46	Pass
11ax-HE20	MCS0	140	5700	13.36	13.44	13.55	13.58	19.50	≤ 21.46	Pass
11ax-HE20	MCS0	144	5720	13.59	13.32	13.16	13.02	19.30	≤ 20.92	Pass
11ax-HE20	MCS0	149	5745	21.42	21.68	20.43	21.03	27.19	≤ 27.48	Pass
11ax-HE20	MCS0	157	5785	21.35	21.56	20.91	21.43	27.34	≤ 27.48	Pass
11ax-HE20	MCS0	165	5825	20.63	20.78	21.03	21.62	27.05	≤ 27.48	Pass
11ax-HE40	MCS0	38	5190	15.42	16.10	16.12	16.20	21.99	≤ 27.48	Pass
11ax-HE40	MCS0	46	5230	20.58	20.83	21.32	21.17	27.01	≤ 27.48	Pass
11ax-HE40	MCS0	54	5270	14.74	14.83	14.89	15.24	20.95	≤ 21.46	Pass
11ax-HE40	MCS0	62	5310	15.35	15.78	15.13	15.19	21.39	≤ 21.46	Pass
11ax-HE40	MCS0	102	5510	15.02	14.91	15.08	15.28	21.10	≤ 21.46	Pass
11ax-HE40	MCS0	110	5550	15.04	15.36	14.89	15.23	21.15	≤ 21.46	Pass
11ax-HE40	MCS0	134	5670	15.17	14.88	15.37	15.92	21.37	≤ 21.46	Pass
11ax-HE40	MCS0	142	5710	15.22	15.41	15.19	15.40	21.33	≤ 21.46	Pass
11ax-HE40	MCS0	151	5755	21.26	21.50	20.45	20.81	27.04	≤ 27.48	Pass
11ax-HE40	MCS0	159	5795	20.92	21.22	20.74	21.08	27.01	≤ 27.48	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Ant 3 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
11ax-HE80	MCS0	42	5210	16.17	16.88	16.60	16.82	22.65	≤ 27.50	Pass
11ax-HE80	MCS0	58	5290	14.76	15.11	14.97	15.38	21.08	≤ 21.46	Pass
11ax-HE80	MCS0	106	5530	15.06	15.13	14.81	15.19	21.07	≤ 21.46	Pass
11ax-HE80	MCS0	122	5610	15.32	15.56	14.98	15.27	21.31	≤ 21.46	Pass
11ax-HE80	MCS0	138	5690	14.72	14.78	15.21	15.35	21.04	≤ 21.46	Pass
11ax-HE80	MCS0	155	5775	20.52	20.63	20.21	20.42	26.47	≤ 27.48	Pass
11ax-HE160	MCS0	50	5250	13.03	13.13	12.78	13.16	19.05	≤ 21.46	Pass
11ax-HE160	MCS0	114	5570	13.13	13.61	12.99	13.05	19.22	≤ 21.46	Pass

Note 1:

The Total Average Power (dBm) = $10*\log \{10^{(\text{Ant 0 Average Power /10})} + 10^{(\text{Ant 1 Average Power /10})} + 10^{(\text{Ant 2 Average Power /10})} + 10^{(\text{Ant 3 Average Power /10})}\}$.

Note 2:

For 5125 - 5250MHz Band: Average Power Limit (dBm) = 30 - (8.52- 6) = 27.48dBm

For 5250 - 5350MHz and 5470 - 5725MHz Band: Average Power Limit (dBm) = 23.98 - (8.52- 6) = 21.46dBm.

For 5725 - 5850MHz Band: Average Power Limit (dBm) = 30- (8.5- 6) = 27.50dBm.

For Channel 144 (5720MHz), Average Power Limit (dBm) = $11+10*\log(5\text{MHz} + BW_{26dBc}/2) - (8.52- 6)$

7.5. Transmit Power Control

7.5.1.Test Limit

The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm.

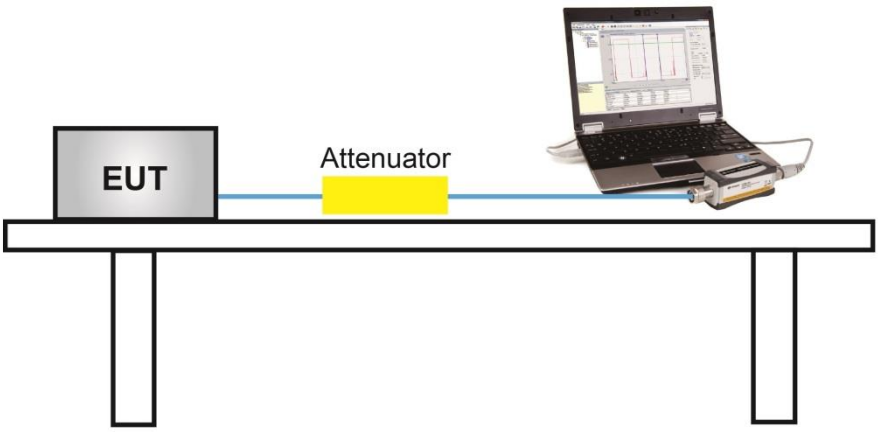
7.5.2.Test Procedure Used

KDB 789033 D02v01- Section E)3)b) Method PM-G

7.5.3.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. The trace was averaged over 100 traces to obtain the final measured average power.

7.5.4.Test Setup



7.5.5.Test Result

Device supports TPC mechanism, details refer to the operational description.

7.6. Power Spectral Density Measurement

7.6.1.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 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

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

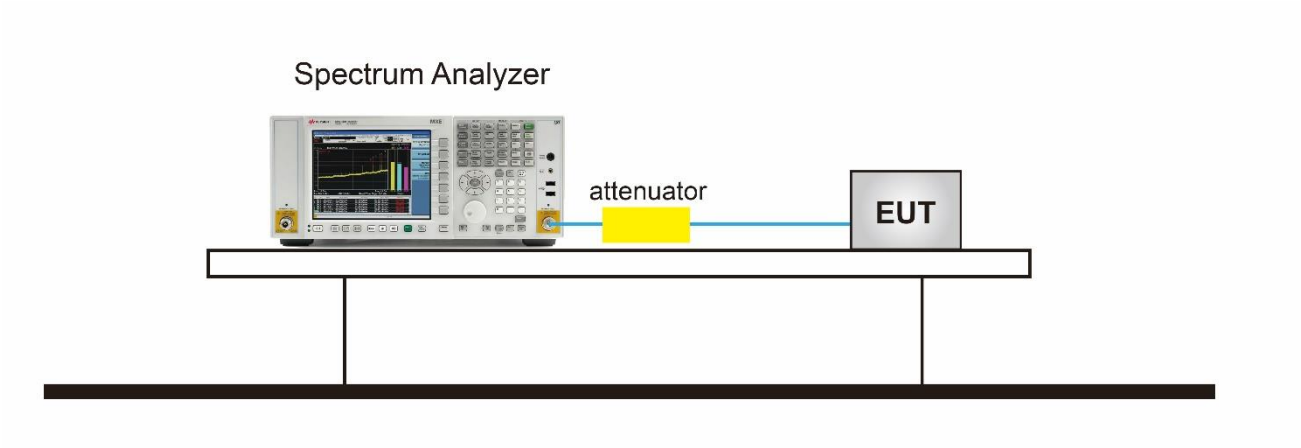
7.6.2.Test Procedure Used

KDB 789033 D02v02r01-SectionF

7.6.3.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 = 510 kHz
4. VBW = 3MHz
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.

7.6.4.Test Setup



7.6.5.Test Result

Product	AX5400 Wi-Fi 6 Router	Test Engineer	Eric Lin
Test Site	SR1	Test Date	2020/12/14~2020/12/30
Mode	Power Spectral Density (U-NII- 1/-2a / -2c) CDD Mode		

Test Mode	Data Rate /MCS	Ch. No.	Freq. (MHz)	Ant 0 PSD (dBm/MHz)	Ant 1 PSD (dBm/MHz)	Ant 2 PSD (dBm/MHz)	Ant 3 PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
11a	6Mbps	36	5180	6.74	7.30	7.13	7.08	94.00	13.35	≤ 14.48	Pass
11a	6Mbps	44	5220	8.06	7.97	8.16	8.11	94.00	14.36	≤ 14.48	Pass
11a	6Mbps	48	5240	7.90	8.00	8.05	8.23	94.00	14.34	≤ 14.48	Pass
11a	6Mbps	52	5260	1.81	2.11	2.19	2.09	94.00	8.34	≤ 8.48	Pass
11a	6Mbps	60	5300	2.07	2.21	2.13	1.92	94.00	8.37	≤ 8.48	Pass
11a	6Mbps	64	5320	1.74	2.18	1.82	1.84	94.00	8.19	≤ 8.48	Pass
11a	6Mbps	100	5500	1.95	1.96	2.19	2.18	94.00	8.36	≤ 8.48	Pass
11a	6Mbps	116	5580	2.10	2.22	1.84	1.72	94.00	8.26	≤ 8.48	Pass
11a	6Mbps	140	5700	1.69	2.02	2.36	2.16	94.00	8.35	≤ 8.48	Pass
11a	6Mbps	144	5720	2.04	2.21	2.14	1.87	94.00	8.36	≤ 8.48	Pass
11ac-VHT20	MCS0	36	5180	7.91	8.25	7.99	7.95	93.78	14.33	≤ 14.48	Pass
11ac-VHT20	MCS0	40	5220	7.93	8.56	8.10	7.92	93.78	14.43	≤ 14.48	Pass
11ac-VHT20	MCS0	48	5240	7.61	7.77	7.89	7.99	93.78	14.11	≤ 14.48	Pass
11ac-VHT20	MCS0	52	5260	1.95	1.91	2.11	2.09	93.78	8.32	≤ 8.48	Pass
11ac-VHT20	MCS0	60	5300	1.85	2.26	1.96	2.03	93.78	8.33	≤ 8.48	Pass
11ac-VHT20	MCS0	64	5320	1.81	2.28	1.87	2.08	93.78	8.31	≤ 8.48	Pass
11ac-VHT20	MCS0	100	5500	2.01	2.21	1.83	2.10	93.78	8.34	≤ 8.48	Pass
11ac-VHT20	MCS0	116	5580	1.92	2.13	1.95	1.99	93.78	8.30	≤ 8.48	Pass
11ac-VHT20	MCS0	140	5700	1.95	2.02	2.02	2.19	93.78	8.34	≤ 8.48	Pass
11ac-VHT20	MCS0	144	5720	2.18	2.15	1.91	1.90	93.78	8.33	≤ 8.48	Pass

Test Mode	Data Rate /MCS	Ch. No.	Freq. (MHz)	Ant 0 PSD (dBm/MHz)	Ant 1 PSD (dBm/MHz)	Ant 2 PSD (dBm/MHz)	Ant 3 PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
11ac-VHT40	MCS0	38	5190	3.03	2.64	3.13	2.45	88.73	9.36	≤ 14.48	Pass
11ac-VHT40	MCS0	46	5230	7.73	8.03	7.85	7.78	88.73	14.39	≤ 14.48	Pass
11ac-VHT40	MCS0	54	5270	1.78	1.57	1.93	1.96	88.73	8.35	≤ 8.48	Pass
11ac-VHT40	MCS0	62	5310	1.67	1.77	1.84	1.81	88.73	8.31	≤ 8.48	Pass
11ac-VHT40	MCS0	102	5510	1.73	1.69	1.94	1.98	88.73	8.38	≤ 8.48	Pass
11ac-VHT40	MCS0	110	5550	1.73	1.94	1.96	1.70	88.73	8.38	≤ 8.48	Pass
11ac-VHT40	MCS0	134	5670	1.39	1.30	2.01	1.98	88.73	8.22	≤ 8.48	Pass
11ac-VHT40	MCS0	142	5710	1.58	1.79	1.82	1.84	88.73	8.29	≤ 8.48	Pass
11ac-VHT80	MCS0	42	5210	-1.85	-1.36	-2.15	-1.99	85.91	4.85	≤ 14.48	Pass
11ac-VHT80	MCS0	58	5290	-0.90	-0.79	-0.75	-0.93	85.91	5.84	≤ 8.48	Pass
11ac-VHT80	MCS0	106	5530	-0.94	-0.69	-0.87	-0.71	85.91	5.88	≤ 8.48	Pass
11ac-VHT80	MCS0	122	5610	-0.21	0.05	0.07	-0.04	85.91	6.65	≤ 8.48	Pass
11ac-VHT80	MCS0	138	5690	-0.20	-0.01	0.05	0.09	85.91	6.67	≤ 8.48	Pass
11ac-VHT160	MCS0	50	5250	-6.52	-6.39	-5.91	-5.96	91.43	0.22	≤ 8.48	Pass
11ac-VHT160	MCS0	114	5570	-7.44	-7.21	-7.59	-7.65	91.43	-1.06	≤ 8.48	Pass
11ax-HE20	MCS0	36	5180	7.56	7.99	7.75	7.46	92.89	14.04	≤ 14.48	Pass
11ax-HE20	MCS0	44	5220	7.80	8.43	7.66	8.32	92.89	14.40	≤ 14.48	Pass
11ax-HE20	MCS0	48	5240	8.18	8.27	7.86	7.90	92.89	14.39	≤ 14.48	Pass
11ax-HE20	MCS0	52	5260	1.84	2.08	1.83	2.07	92.89	8.30	≤ 8.48	Pass
11ax-HE20	MCS0	60	5300	1.71	2.07	1.87	2.03	92.89	8.26	≤ 8.48	Pass
11ax-HE20	MCS0	64	5320	1.78	2.13	1.81	2.02	92.89	8.28	≤ 8.48	Pass
11ax-HE20	MCS0	100	5500	1.92	2.06	1.75	1.80	92.89	8.22	≤ 8.48	Pass
11ax-HE20	MCS0	116	5580	1.88	2.26	1.63	1.77	92.89	8.23	≤ 8.48	Pass
11ax-HE20	MCS0	140	5700	1.77	2.12	2.05	2.14	92.89	8.36	≤ 8.48	Pass
11ax-HE20	MCS0	144	5720	2.05	2.09	1.72	1.82	92.89	8.26	≤ 8.48	Pass

Test Mode	Data Rate/ MCS	Ch. No.	Freq. (MHz)	Ant 0 PSD (dBm/MHz)	Ant 1 PSD (dBm/MHz)	Ant 2 PSD (dBm/MHz)	Ant 3 PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
11ax-HE40	MCS0	38	5190	1.29	1.98	1.19	1.48	92.89	7.84	≤ 14.48	Pass
11ax-HE40	MCS0	46	5230	7.67	8.19	8.13	7.74	92.89	14.28	≤ 14.48	Pass
11ax-HE40	MCS0	54	5270	1.78	1.96	2.09	2.17	92.89	8.34	≤ 8.48	Pass
11ax-HE40	MCS0	62	5310	1.93	2.09	1.89	1.71	92.89	8.25	≤ 8.48	Pass
11ax-HE40	MCS0	102	5510	1.79	1.75	1.85	2.07	92.89	8.21	≤ 8.48	Pass
11ax-HE40	MCS0	110	5550	1.60	1.93	1.95	1.71	92.89	8.14	≤ 8.48	Pass
11ax-HE40	MCS0	134	5670	1.53	1.60	2.00	2.06	92.89	8.14	≤ 8.48	Pass
11ax-HE40	MCS0	142	5710	1.83	1.77	1.83	2.22	92.89	8.26	≤ 8.48	Pass
11ax-HE80	MCS0	42	5210	-1.66	-1.19	-1.94	-1.06	92.83	4.90	≤ 14.48	Pass
11ax-HE80	MCS0	58	5290	-0.21	0.15	0.14	0.07	92.83	6.39	≤ 8.48	Pass
11ax-HE80	MCS0	106	5530	0.05	0.15	0.08	0.12	92.83	6.44	≤ 8.48	Pass
11ax-HE80	MCS0	122	5610	-0.07	0.04	-0.19	-0.15	92.83	6.25	≤ 8.48	Pass
11ax-HE80	MCS0	122	5690	-0.44	-0.35	-0.18	0.08	92.83	6.13	≤ 8.48	Pass
11ax-HE160	MCS0	50	5250	-6.32	-6.14	-5.74	-5.68	93.61	4.90	≤ 8.48	Pass
11ax-HE160	MCS0	114	5570	-6.91	-6.99	-7.09	-7.15	93.61	6.39	≤ 8.48	Pass

Note 1:When EUT duty cycle ≥ 98%,

the total PSD (dBm/MHz) = 10*log {$10^{(\text{Ant 0 PSD}/10)}$ + $10^{(\text{Ant 1 PSD}/10)}$+$10^{(\text{Ant 2 PSD}/10)}$ + $10^{(\text{Ant 3 PSD}/10)}$} (dBm/MHz).

When EUT duty cycle < 98%,

the total PSD (dBm/MHz) = 10*log {$10^{(\text{Ant 0 PSD}/10)}$ + $10^{(\text{Ant 1 PSD}/10)}$+$10^{(\text{Ant 2 PSD}/10)}$ + $10^{(\text{Ant 3 PSD}/10)}$} + 10*log (1/Duty Cycle)(dBm/MHz).

Note 2:

For5150 - 5250MHzBand: PSD Limit (dBm/MHz) = 17 - (8.52 - 6) = 14.48dBm/MHz.

For 5250 - 5350MHz and 5470 - 5725MHz Band:PSD Limit (dBm/MHz) = 11 - (8.52 - 6) = 8.48dBm/MHz.

Note 3: The power setting of Beamforming mode is not greater than CDD mode, so only CDD mode result was shown in this section.

Product	AX5400 Wi-Fi 6 Router	Test Engineer	Eric Lin
Test Site	SR2	Test Date	2020/12/15
Test Item	Power Spectral Density (U-NII-3) CDD Mode		

Test Mode	Data Rate/ MCS	Ch. No.	Freq. (MHz)	Ant 0 PSD (dBm/510KHz)	Ant 1 PSD (dBm/510KHz)	Ant 2 PSD (dBm/510KHz)	Ant 3 PSD (dBm/510KHz)	Duty Cycle (%)	Total PSD(dBm/510kHz)	Limit (dBm/500kHz)	Result
11a	6Mbps	149	5745	9.83	10.13	9.79	9.70	94.00	16.15	≤ 27.48	Pass
11a	6Mbps	157	5785	9.90	10.17	9.99	10.11	94.00	16.33	≤ 27.48	Pass
11a	6Mbps	165	5825	9.69	9.69	10.36	10.18	94.00	16.28	≤ 27.48	Pass
11ac-VHT20	MCS0	149	5745	8.99	9.41	8.91	8.73	93.78	15.32	≤ 27.48	Pass
11ac-VHT20	MCS0	157	5785	9.04	9.59	9.02	9.06	93.78	15.48	≤ 27.48	Pass
11ac-VHT20	MCS0	165	5825	8.81	8.86	9.52	9.30	93.78	15.43	≤ 27.48	Pass
11ac-VHT40	MCS0	151	5755	6.34	6.85	6.34	6.02	88.73	12.94	≤ 27.48	Pass
11ac-VHT40	MCS0	159	5795	6.28	6.44	6.75	6.43	88.73	13.02	≤ 27.48	Pass
11ac-VHT80	MCS0	155	5775	-0.54	-0.38	-0.35	-0.31	85.91	6.28	≤ 27.48	Pass
11ax-HE20	MCS0	149	5745	9.61	10.17	9.40	9.50	92.89	16.02	≤ 27.48	Pass
11ax-HE20	MCS0	157	5785	9.10	9.65	9.02	9.43	92.89	15.64	≤ 27.48	Pass
11ax-HE20	MCS0	165	5825	9.33	9.42	9.59	9.81	92.89	15.88	≤ 27.48	Pass
11ax-HE40	MCS0	151	5755	6.74	7.18	6.58	6.79	92.89	13.17	≤ 27.48	Pass
11ax-HE40	MCS0	159	5795	7.07	6.94	7.06	6.91	92.89	13.34	≤ 27.48	Pass
11ax-HE80	MCS0	155	5775	0.10	0.23	-0.01	0.38	92.83	6.52	≤ 27.48	Pass

Note 1: When EUT duty cycle ≥ 98%,

the total PSD (dBm/500kHz) = 10*log {$10^{(\text{Ant 0 PSD}/10)}$ + $10^{(\text{Ant 1 PSD}/10)}$+$10^{(\text{Ant 2 PSD}/10)}$ + $10^{(\text{Ant 3 PSD}/10)}$} (dBm/100kHz) + Constant Factor (dB).

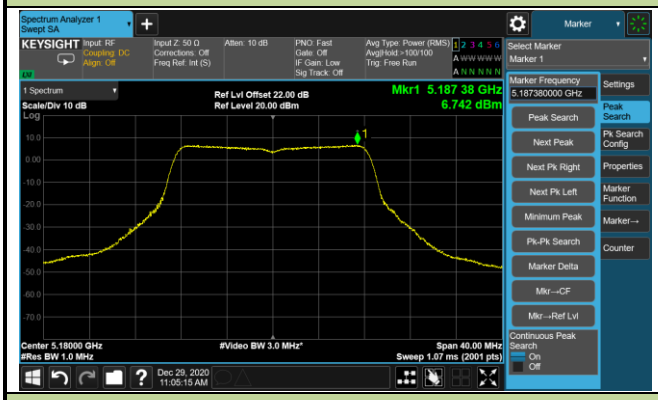
When EUT duty cycle < 98%, the total PSD (dBm/500kHz) = 10*log {$10^{(\text{Ant 0 PSD}/10)}$ + $10^{(\text{Ant 1 PSD}/10)}$+$10^{(\text{Ant 2 PSD}/10)}$ + $10^{(\text{Ant 3 PSD}/10)}$} (dBm/100kHz) + Constant Factor (dB) + 10*log (1/Duty Cycle).

Note 2: PSD Limit (dBm/500kHz) = 30 - (8.52 - 6) = 27.48dBm/500kHz.

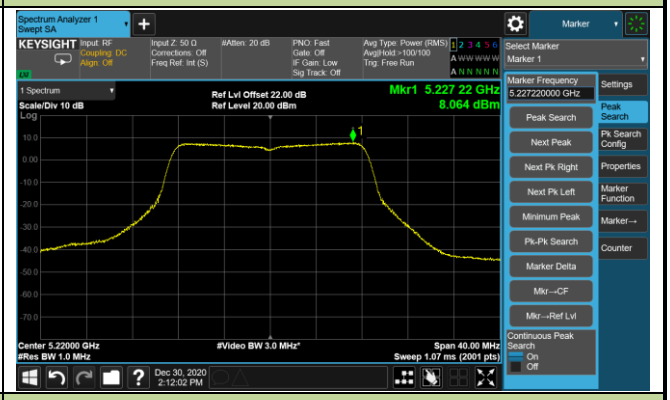
Note 3: The power setting of Beamforming mode is not greater than CDD mode, so only CDD mode result was shown in this section.

802.11a Power Spectral Density - Ant 0

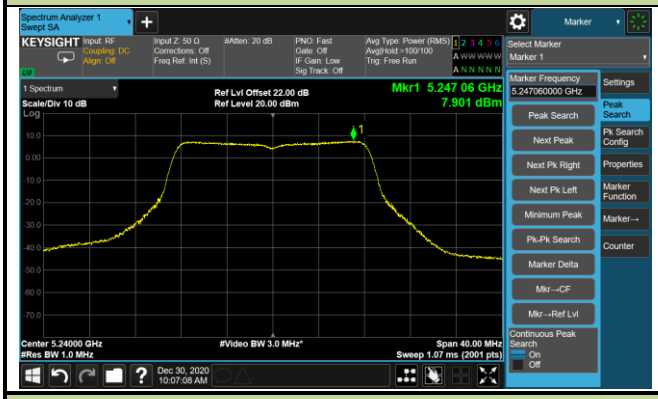
Channel 36 (5180MHz)



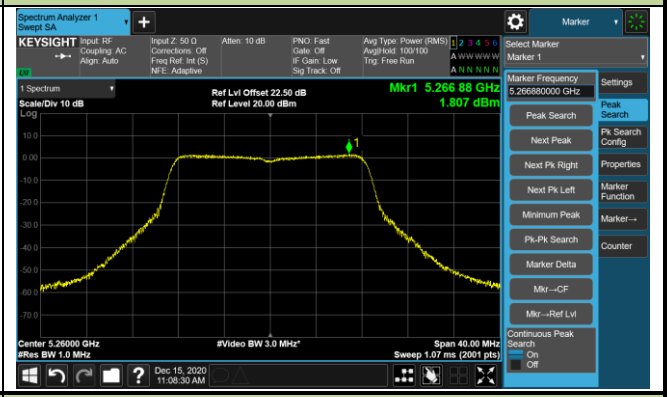
Channel 44 (5220MHz)



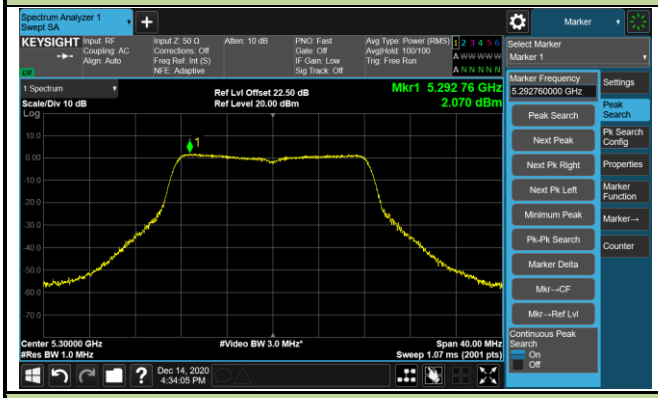
Channel 48 (5240MHz)



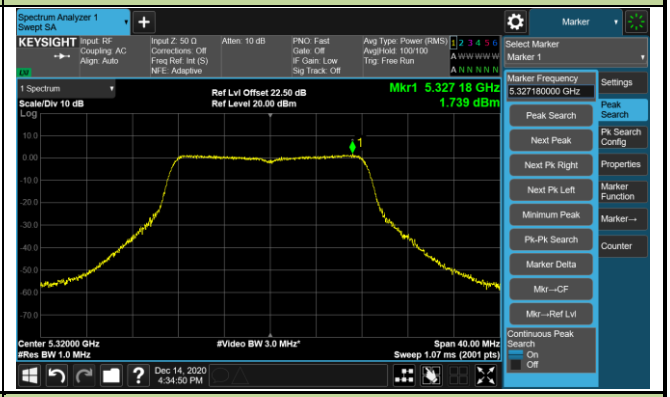
Channel 52 (5260MHz)



Channel 60 (5300MHz)

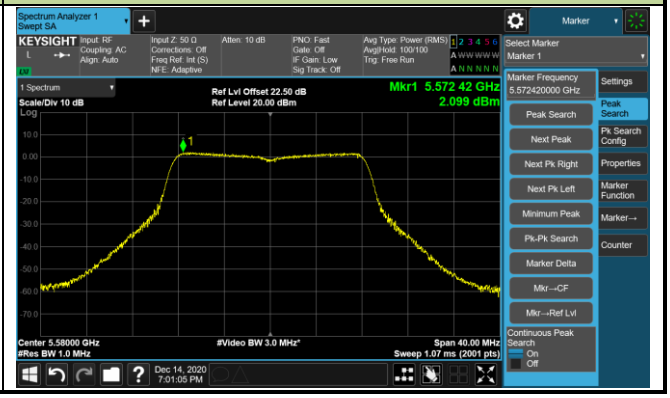


Channel 64 (5320MHz)

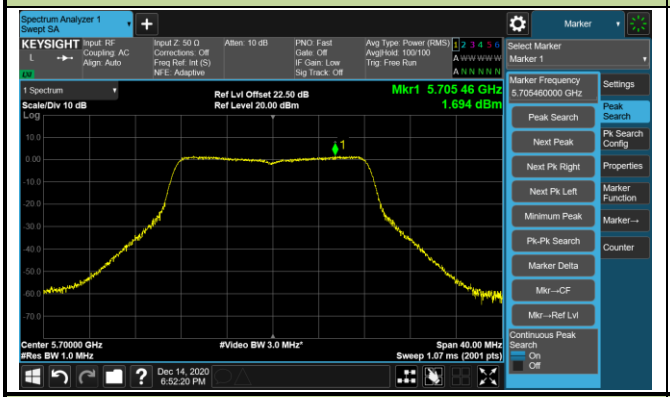


Channel 100 (5500MHz)

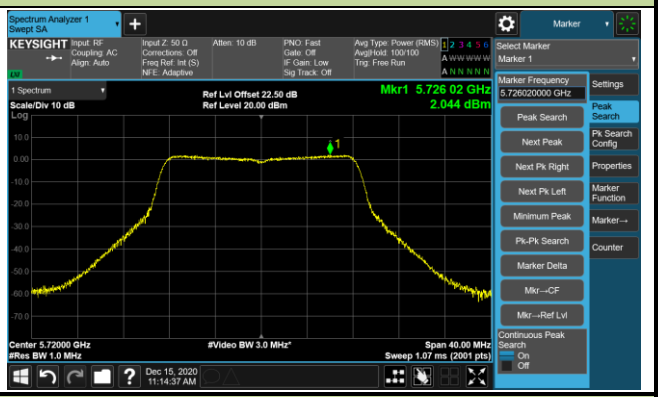
Channel 116 (5580MHz)



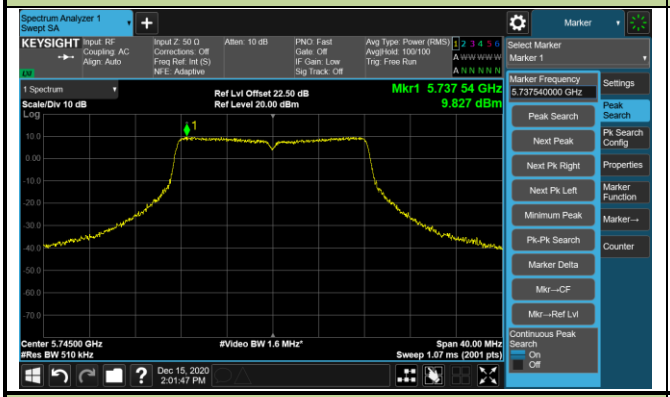
Channel 140 (5700MHz)



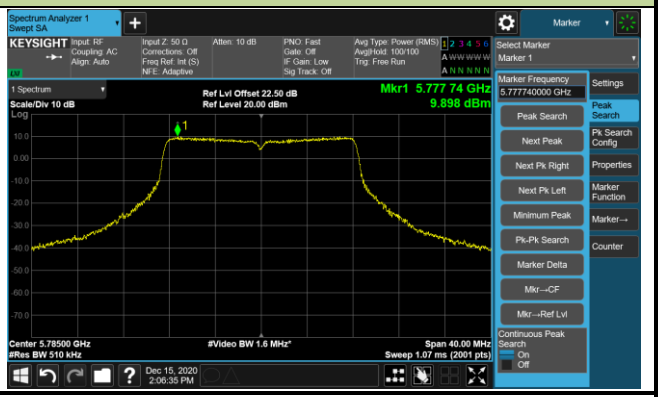
Channel 144 (5720MHz)



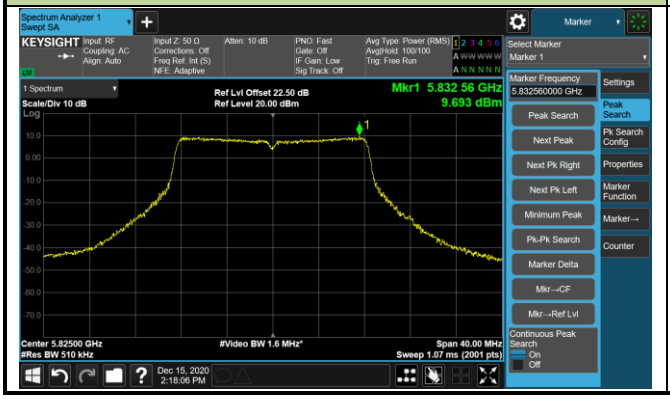
Channel 149 (5745MHz)



Channel 157 (5785MHz)

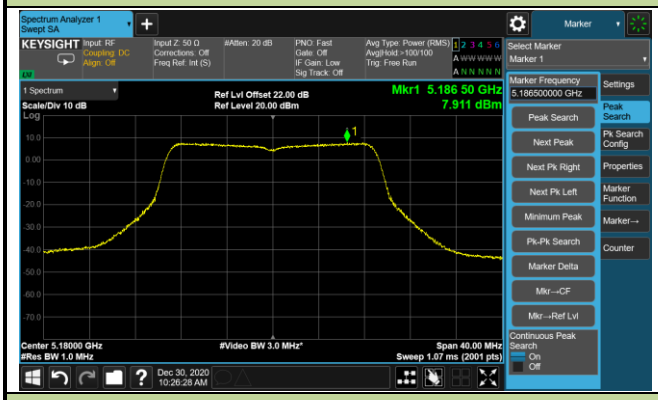


Channel 165 (5825MHz)

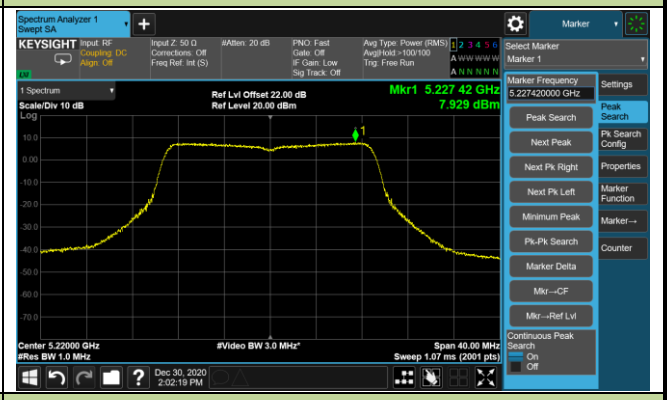


802.11ac-VHT20 Power Spectral Density - Ant 0

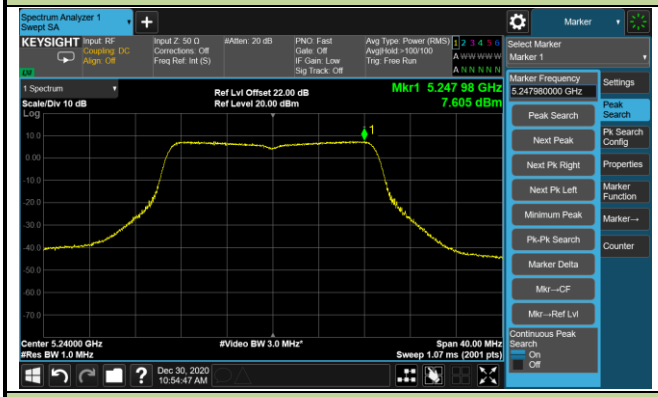
Channel 36 (5180MHz)



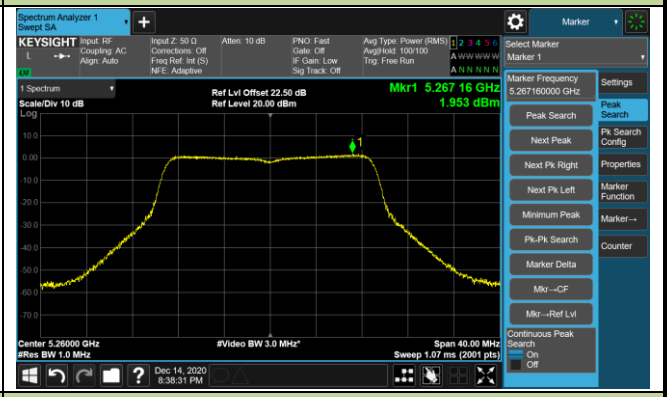
Channel 44 (5220MHz)



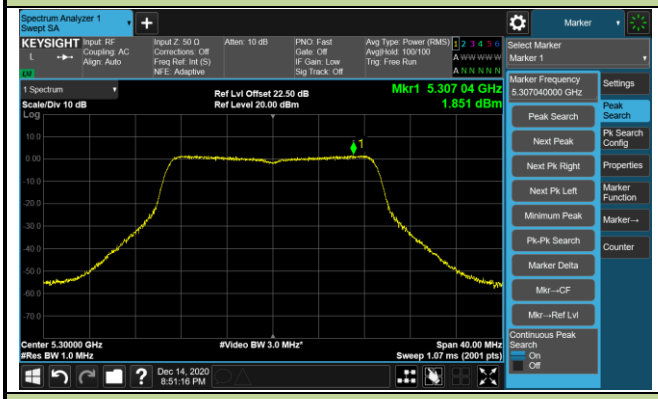
Channel 48 (5240MHz)



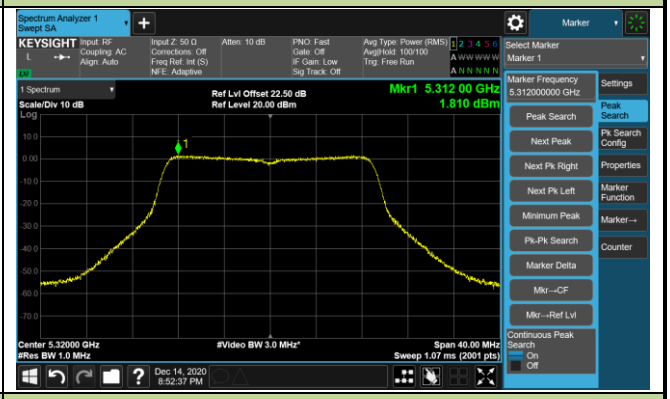
Channel 52 (5260MHz)



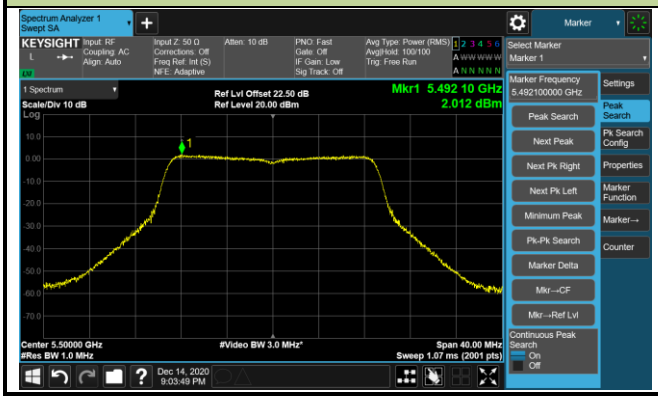
Channel 60 (5300MHz)



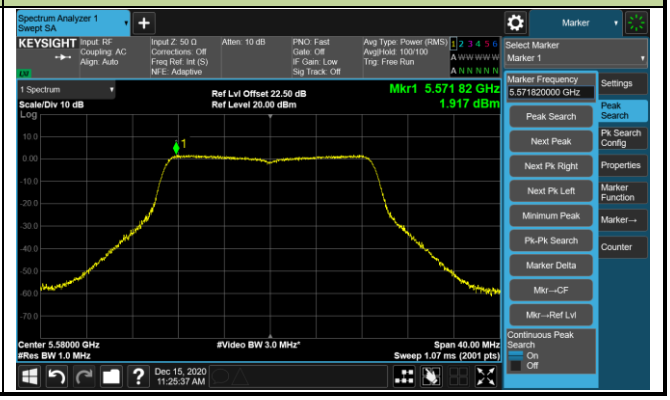
Channel 64 (5320MHz)



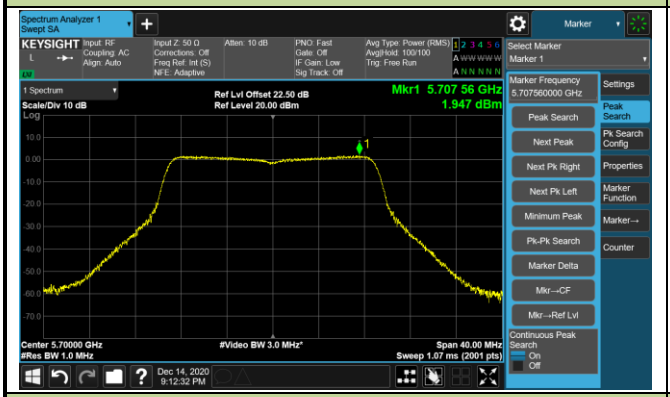
Channel 100 (5500MHz)



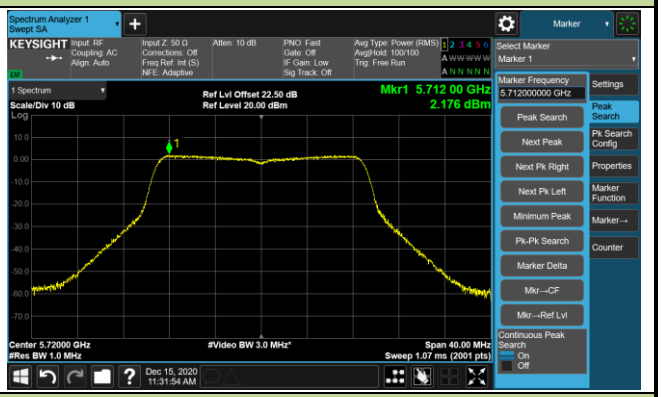
Channel 116 (5580MHz)



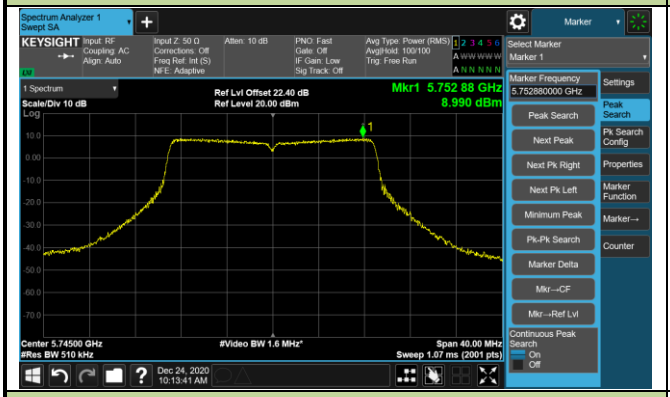
Channel 140 (5700MHz)



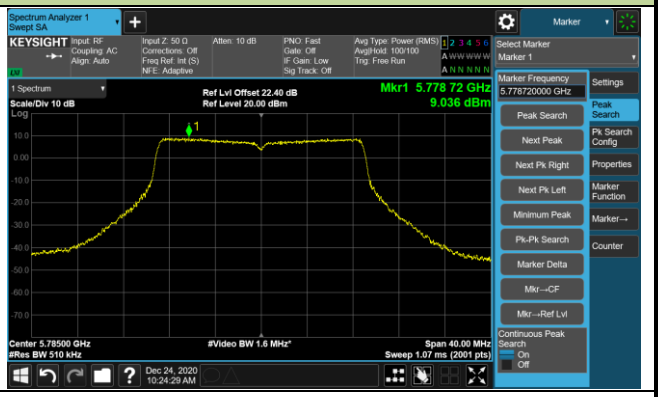
Channel 144 (5720MHz)



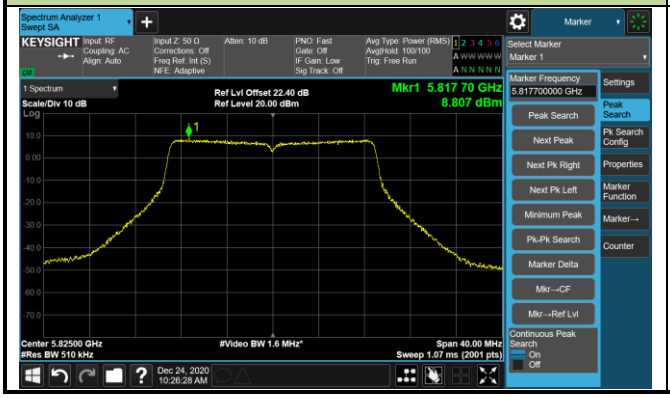
Channel 149 (5745MHz)



Channel 157 (5785MHz)

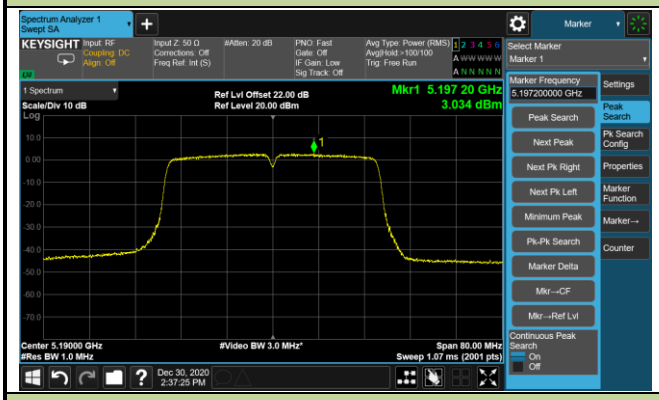


Channel 165 (5825MHz)

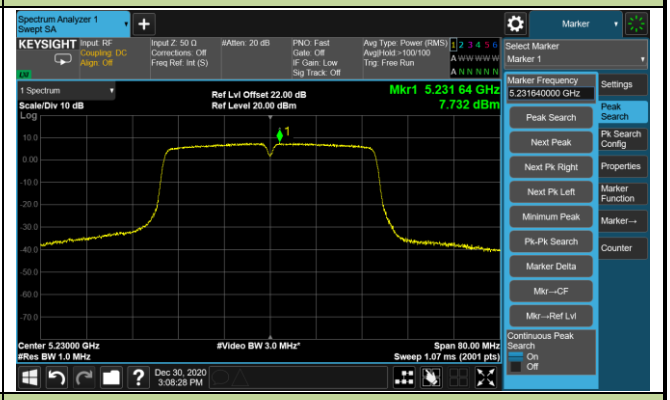


802.11ac-VHT40 Power Spectral Density - Ant 0

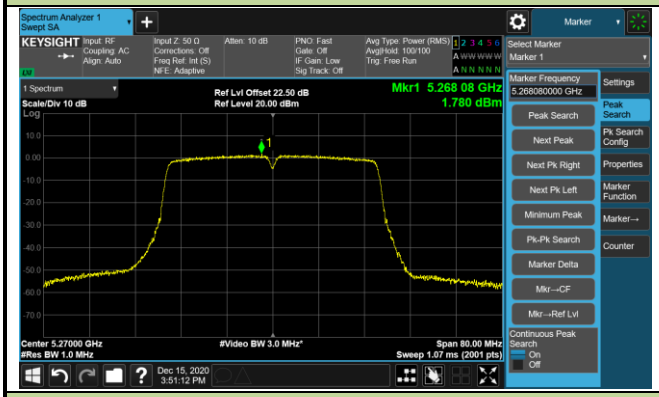
Channel 38 (5190MHz)



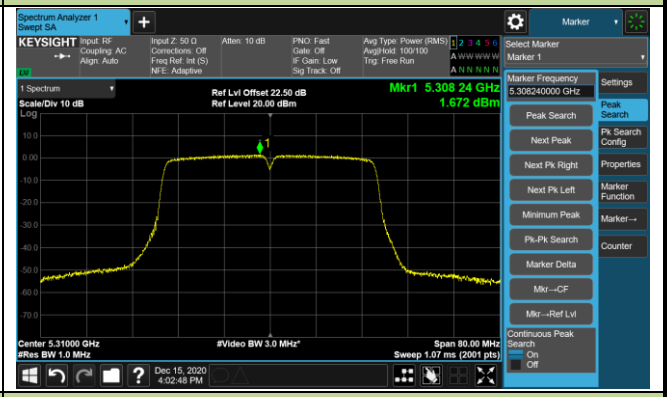
Channel 46 (5230MHz)



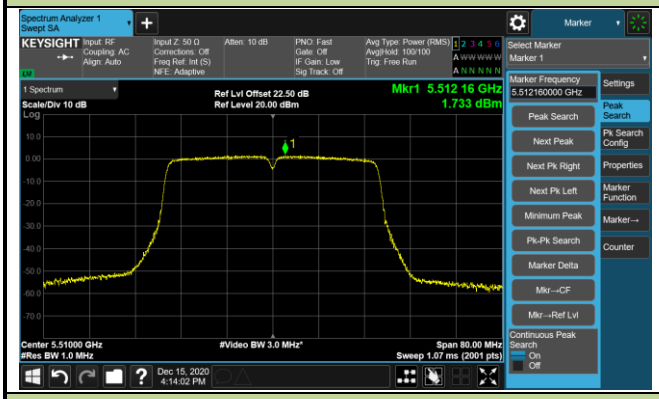
Channel 54 (5270MHz)



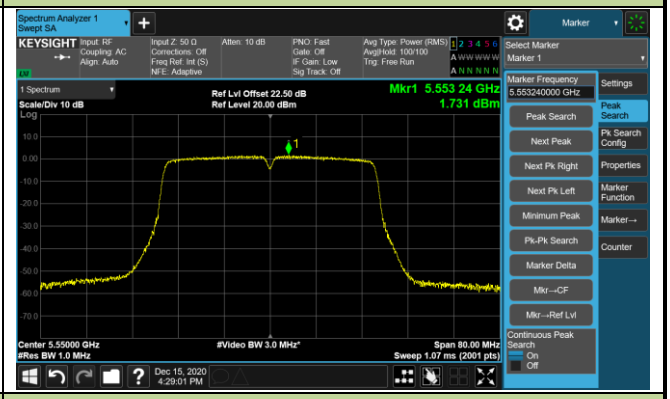
Channel 62 (5310MHz)



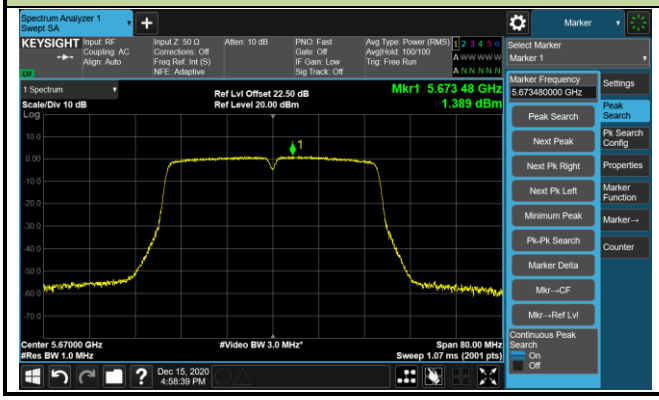
Channel 102 (5510MHz)



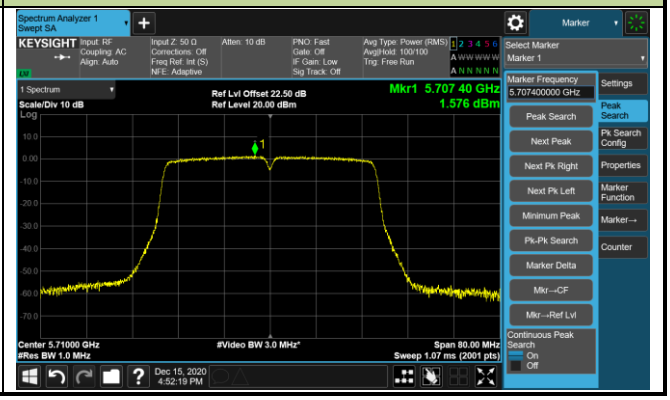
Channel 110 (5550MHz)

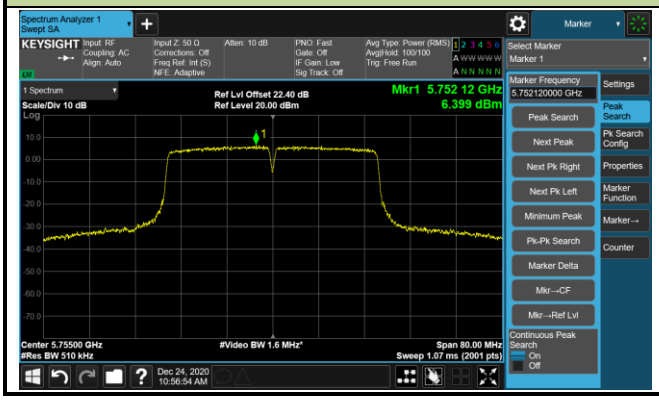
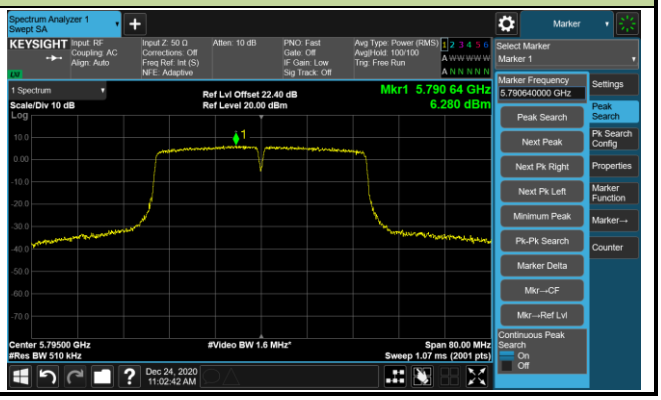


Channel 134 (5670MHz)



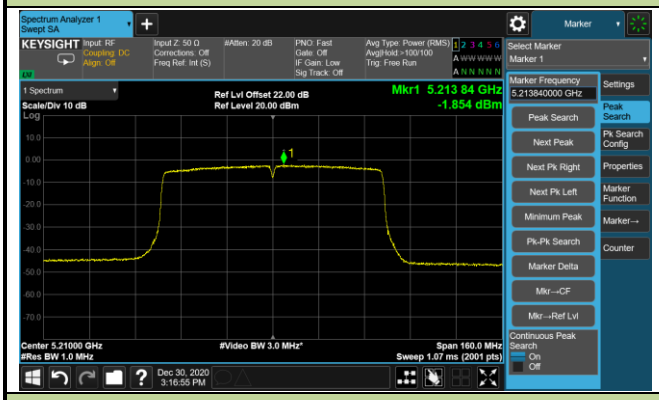
Channel 142 (5710MHz)



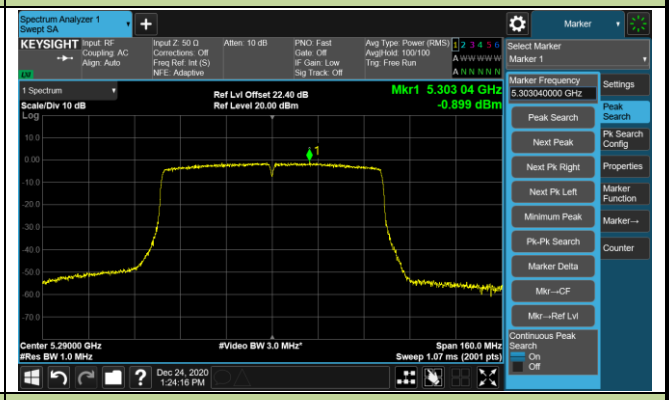
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

802.11ac-VHT80 Power Spectral Density - Ant 0

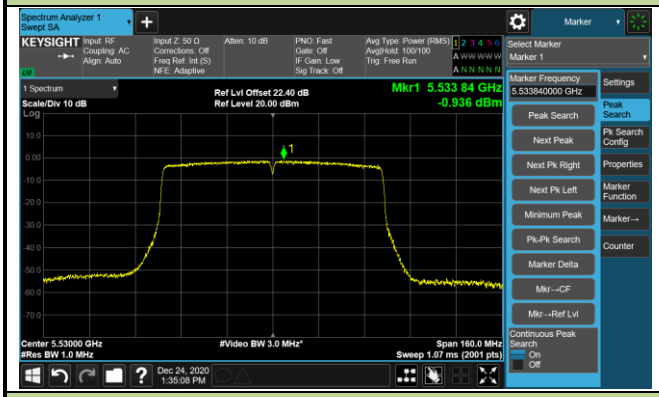
Channel 42 (5210MHz)



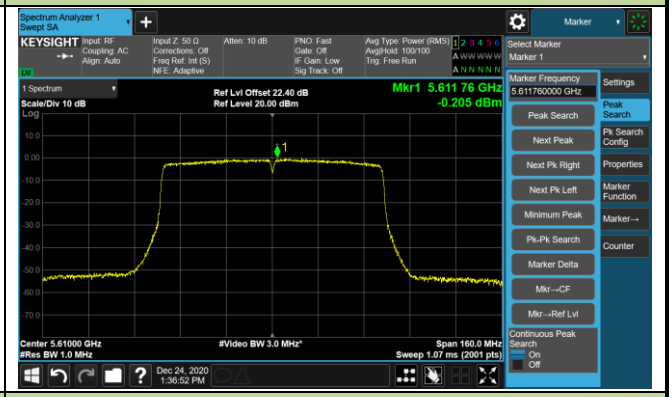
Channel 58 (5290MHz)



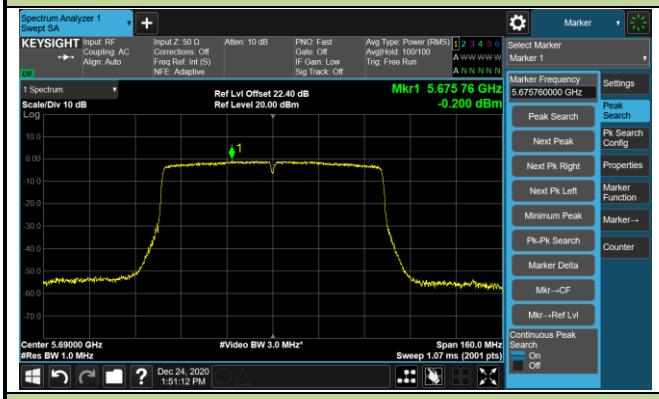
Channel 106 (5530MHz)



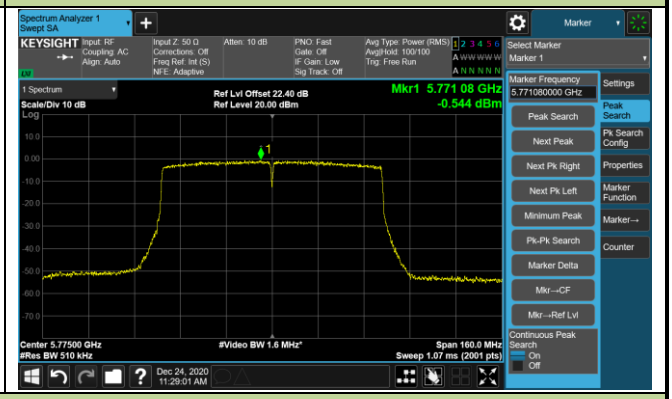
Channel 122 (5610MHz)



Channel 138 (5690MHz)

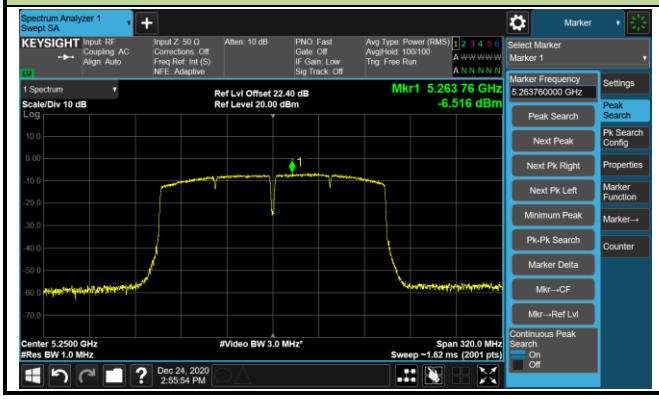


Channel 155 (5775MHz)

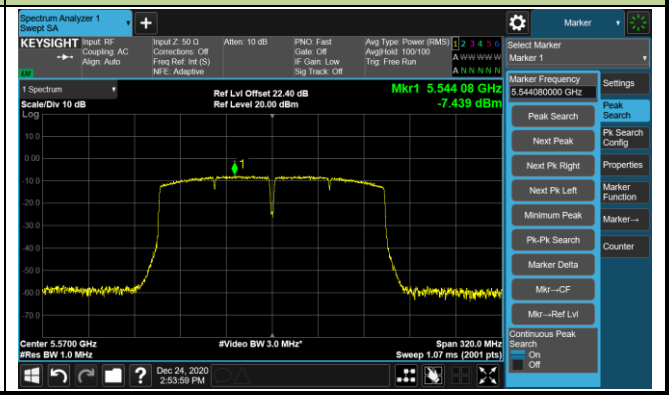


802.11ac-VHT160 Power Spectral Density - Ant 0

Channel 50 (5250MHz)

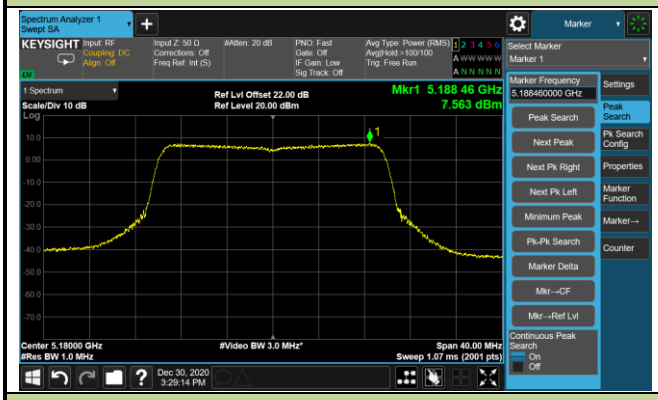


Channel 114 (5570MHz)

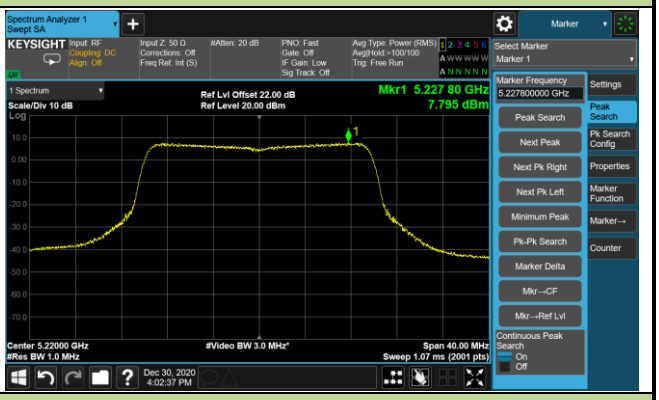


802.11ax-HE20 Power Spectral Density - Ant 0

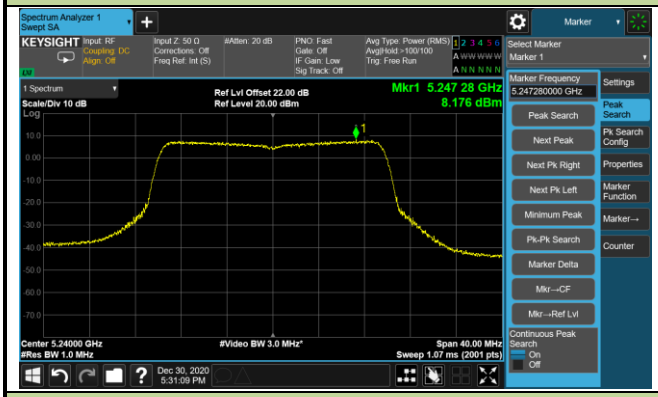
Channel 36 (5180MHz)



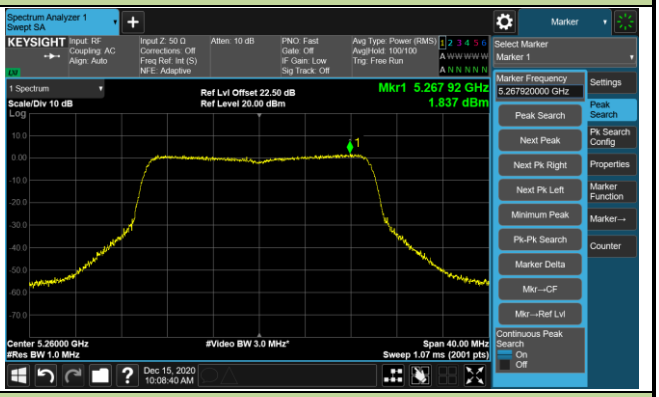
Channel 44 (5220MHz)



Channel 48 (5240MHz)

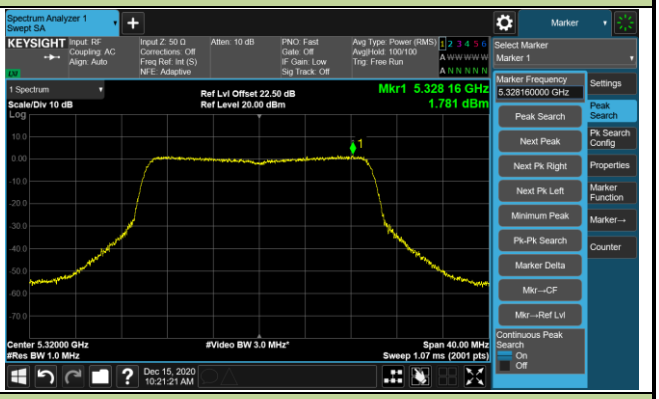


Channel 52 (5260MHz)



Channel 60 (5300MHz)

Channel 64 (5320MHz)



Channel 100 (5500MHz)

Channel 116 (5580MHz)