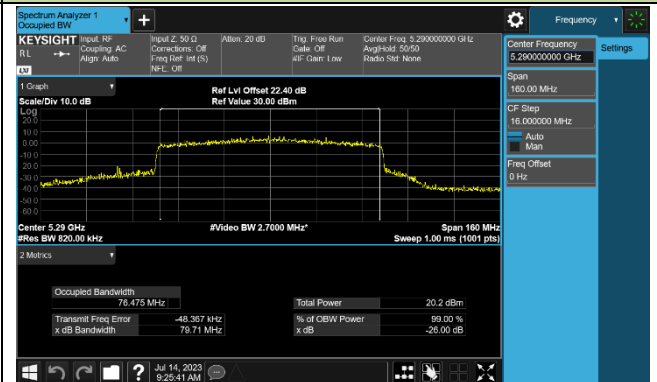


8802.11ax-HE80 26dB Bandwidth & 99% Bandwidth

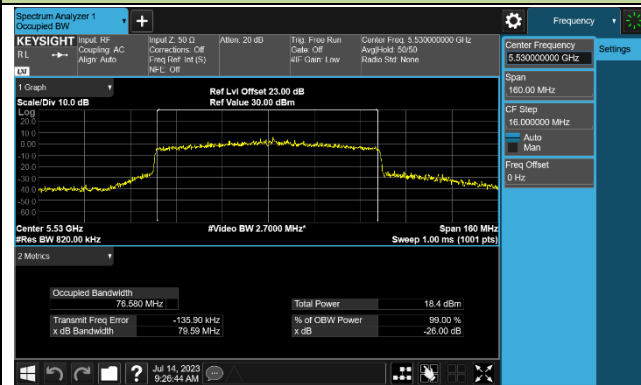
Channel 42 (5210MHz)



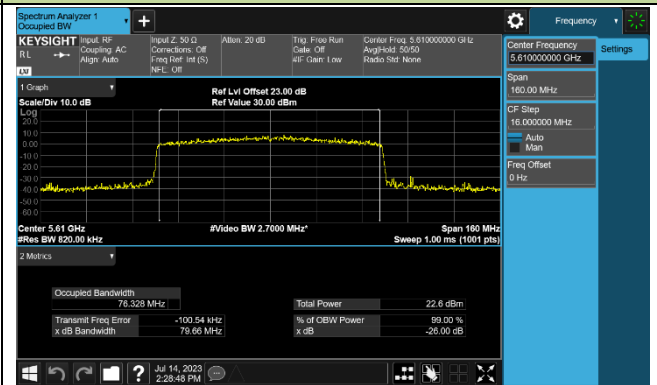
Channel 58 (5290MHz)



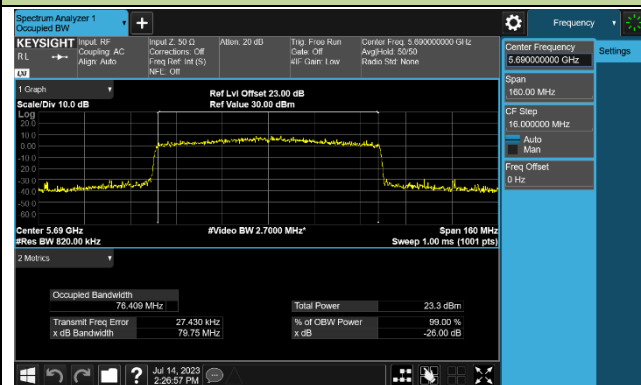
Channel 106 (5530MHz)



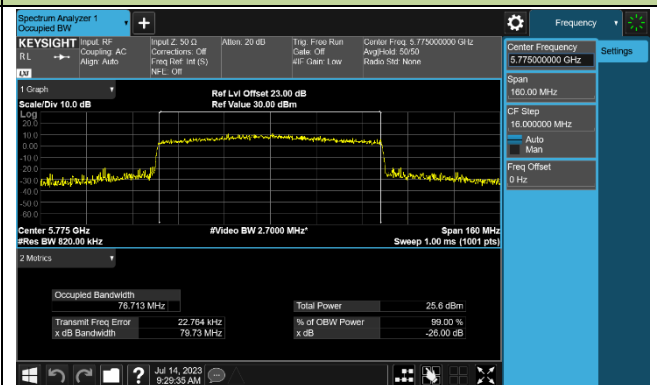
Channel 122 (5610MHz)



Channel 138 (5690MHz)

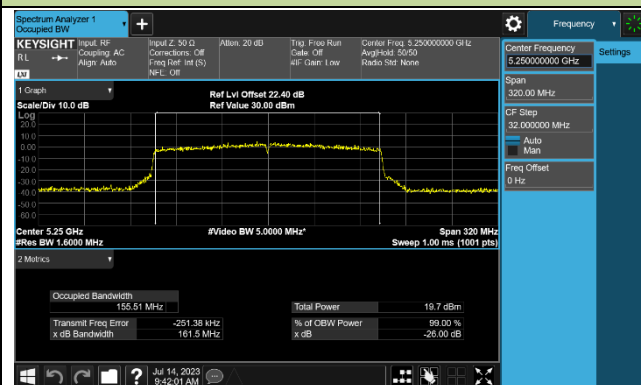


Channel 155 (5775MHz)

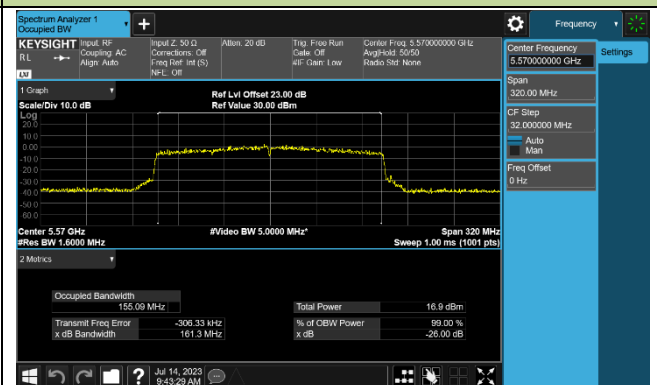


802.11ax-HE160 26dB Bandwidth & 99% Bandwidth

Channel 50 (5250MHz)



Channel 114 (5570MHz)



7.3. 6dB Bandwidth Measurement

7.3.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

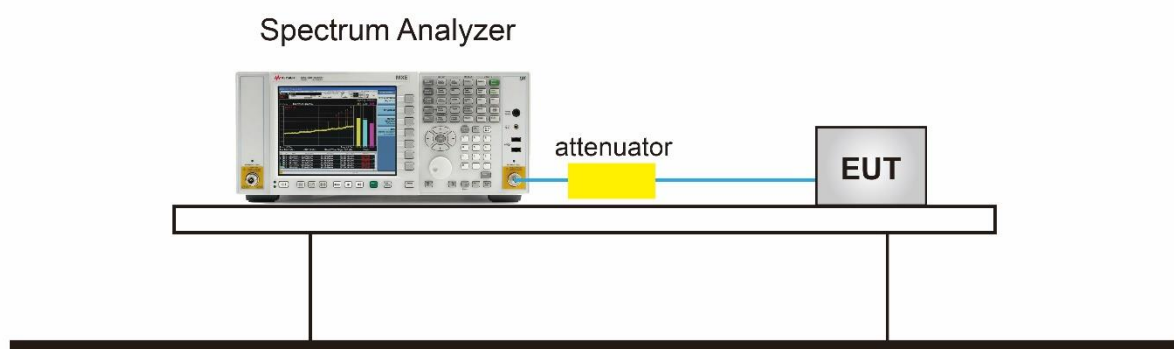
7.3.2. Test Procedure used

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 $3 \times$ 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	Omada AX3000 Gigabit VPN Router	Test Engineer	Xuan
Test Site	SR6	Test Date	2023/7/13~2023/7/14

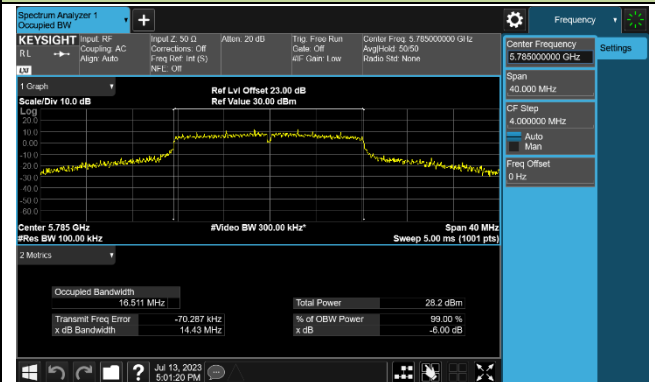
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 1						
802.11a	6Mbps	149	5745	15.990	≥ 0.5	Pass
802.11a	6Mbps	157	5785	14.430	≥ 0.5	Pass
802.11a	6Mbps	165	5825	15.000	≥ 0.5	Pass
802.11ac-VHT20	MCS0	149	5745	15.050	≥ 0.5	Pass
802.11ac-VHT20	MCS0	157	5785	17.520	≥ 0.5	Pass
802.11ac-VHT20	MCS0	165	5825	13.980	≥ 0.5	Pass
802.11ac-VHT40	MCS0	151	5755	35.090	≥ 0.5	Pass
802.11ac-VHT40	MCS0	159	5795	31.250	≥ 0.5	Pass
802.11ac-VHT80	MCS0	155	5775	72.560	≥ 0.5	Pass
802.11ax-HE20	MCS0	149	5745	15.840	≥ 0.5	Pass
802.11ax-HE20	MCS0	157	5785	16.000	≥ 0.5	Pass
802.11ax-HE20	MCS0	165	5825	15.060	≥ 0.5	Pass
802.11ax-HE40	MCS0	151	5755	27.530	≥ 0.5	Pass
802.11ax-HE40	MCS0	159	5795	29.320	≥ 0.5	Pass
802.11ax-HE80	MCS0	155	5775	62.610	≥ 0.5	Pass

802.11a 6dB Bandwidth

Channel 149 (5745MHz)



Channel 157 (5785MHz)

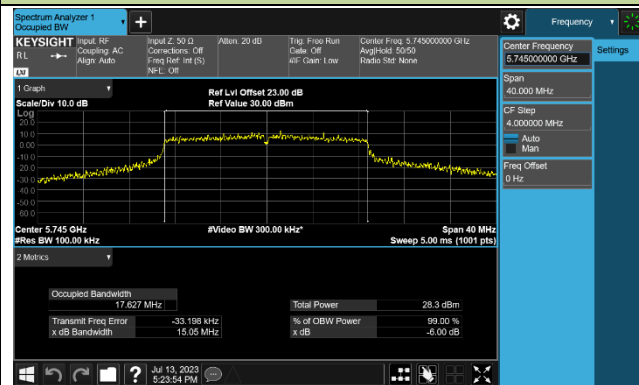


Channel 165 (5825MHz)

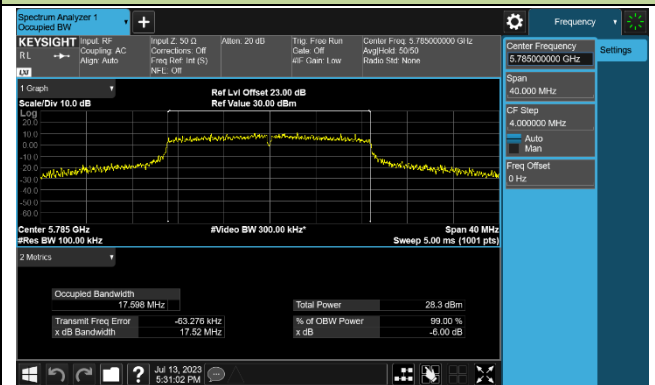


802.11ac-VHT20 6dB Bandwidth

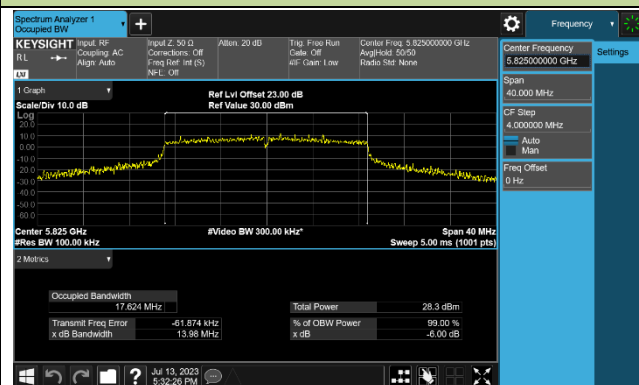
Channel 149 (5745MHz)



Channel 157 (5785MHz)

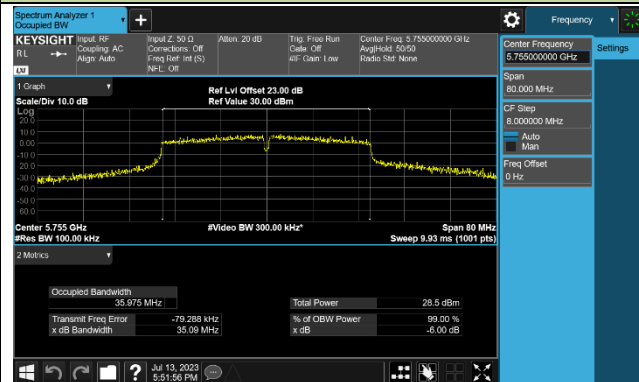


Channel 165 (5825MHz)

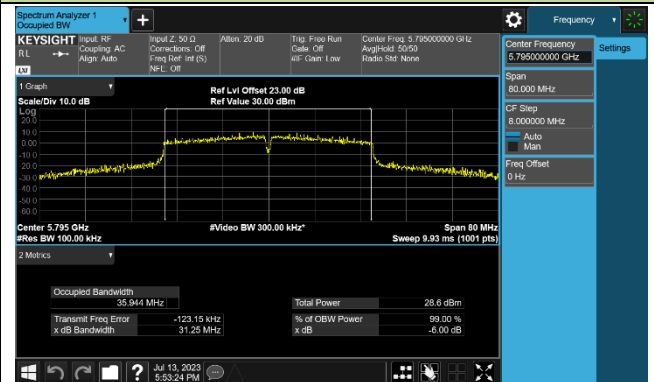


802.11ac-VHT40 6dB Bandwidth

Channel 151 (5755MHz)

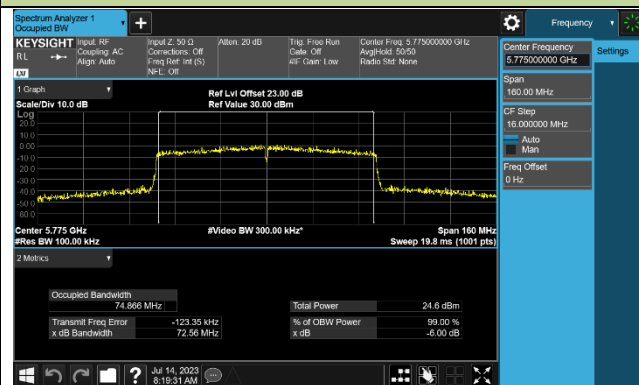


Channel 159 (5795MHz)



802.11ac-VHT80 6dB Bandwidth

Channel 155 (5775MHz)

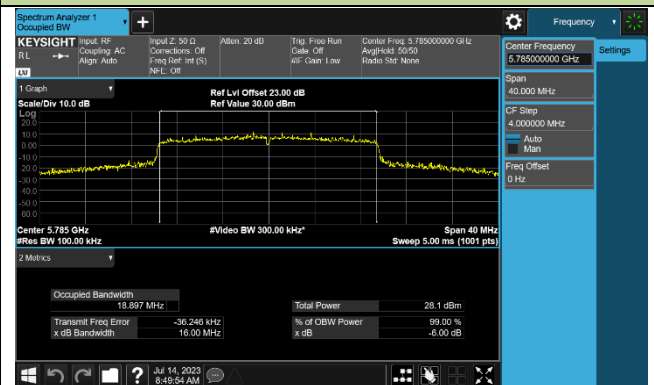


802.11ax-HE20 6dB Bandwidth

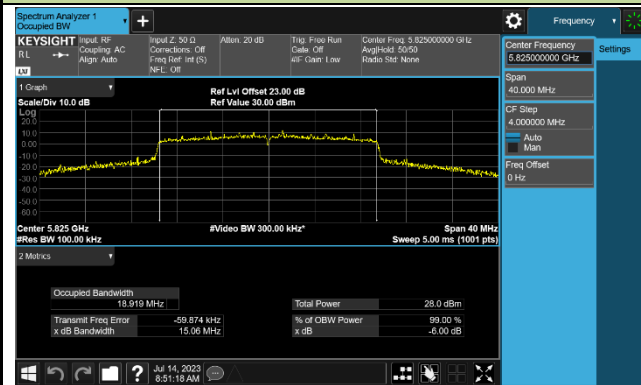
Channel 149 (5745MHz)



Channel 157 (5785MHz)

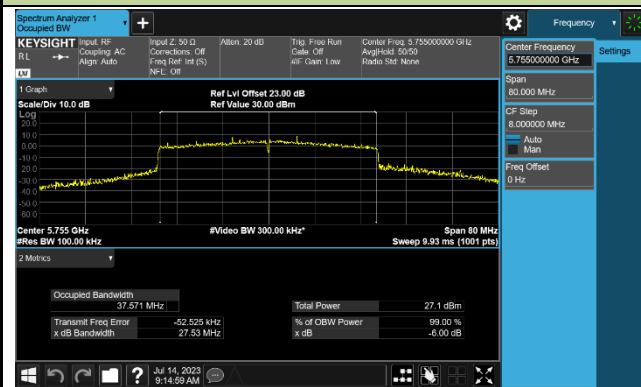


Channel 165 (5825MHz)

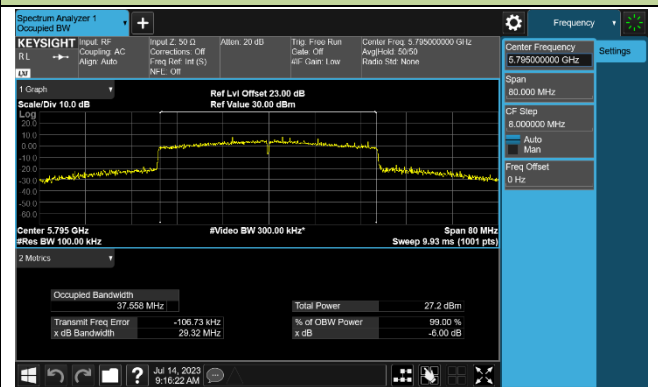


802.11ax-HE40 6dB Bandwidth

Channel 151 (5755MHz)

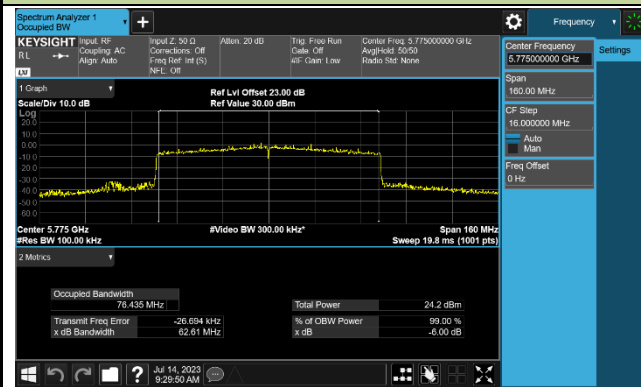


Channel 159 (5795MHz)



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 conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna 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 $11 \text{ dBm} + 10 \log B$, 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 maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

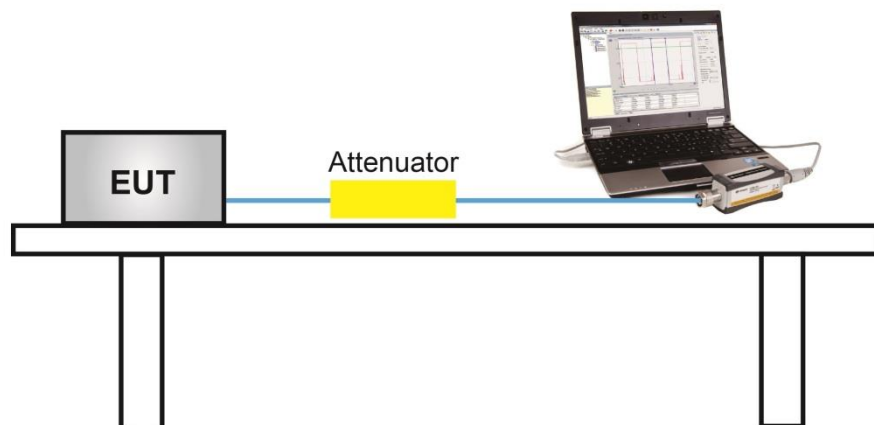
7.4.2. Test Procedure Used

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	Omada AX3000 Gigabit VPN Router	Test Engineer	Xuan
Test Site	SR6	Test Date	2023/7/10
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)	Total Average Power (dBm)	Power Limit (dBm)	Result
11a	6Mbps	36	5180	20.07	20.67	20.37	25.15	≤ 30.00	Pass
11a	6Mbps	44	5220	21.04	21.51	21.04	25.97	≤ 30.00	Pass
11a	6Mbps	48	5240	20.62	21.26	20.79	25.67	≤ 30.00	Pass
11a	6Mbps	52	5260	14.79	14.72	15.30	19.72	≤ 23.98	Pass
11a	6Mbps	60	5300	14.83	14.91	14.98	19.68	≤ 23.98	Pass
11a	6Mbps	64	5320	15.49	15.40	15.38	20.19	≤ 23.98	Pass
11a	6Mbps	100	5500	15.03	14.17	14.45	19.34	≤ 23.98	Pass
11a	6Mbps	116	5580	15.61	14.76	15.72	20.16	≤ 23.98	Pass
11a	6Mbps	140	5700	14.55	15.61	14.57	19.71	≤ 23.98	Pass
11a	6Mbps	144	5720	14.89	15.91	15.01	20.07	≤ 22.67	Pass
11a	6Mbps	149	5745	24.01	24.40	25.00	29.26	≤ 30.00	Pass
11a	6Mbps	157	5785	25.00	24.92	25.43	29.89	≤ 30.00	Pass
11a	6Mbps	165	5825	24.45	24.63	25.11	29.51	≤ 30.00	Pass
11ac-VHT20	MCS0	36	5180	20.05	20.56	20.43	25.12	≤ 30.00	Pass
11ac-VHT20	MCS0	40	5220	20.97	21.56	21.40	26.09	≤ 30.00	Pass
11ac-VHT20	MCS0	48	5240	21.40	21.96	21.60	26.43	≤ 30.00	Pass
11ac-VHT20	MCS0	52	5260	14.89	14.89	14.65	19.58	≤ 23.98	Pass
11ac-VHT20	MCS0	60	5300	14.97	15.30	14.73	19.78	≤ 23.98	Pass
11ac-VHT20	MCS0	64	5320	15.02	15.37	14.54	19.76	≤ 23.98	Pass
11ac-VHT20	MCS0	100	5500	15.71	15.05	15.13	20.08	≤ 23.98	Pass
11ac-VHT20	MCS0	116	5580	15.81	14.60	15.59	20.14	≤ 23.98	Pass
11ac-VHT20	MCS0	140	5700	15.07	16.11	15.16	20.24	≤ 23.98	Pass
11ac-VHT20	MCS0	144	5720	14.97	15.90	14.96	20.07	≤ 22.85	Pass
11ac-VHT20	MCS0	149	5745	24.70	24.85	25.37	29.75	≤ 30.00	Pass
11ac-VHT20	MCS0	157	5785	24.65	24.50	25.14	29.54	≤ 30.00	Pass
11ac-VHT20	MCS0	165	5825	24.47	24.55	25.12	29.49	≤ 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)	Total Average Power (dBm)	Power Limit (dBm)	Result
11ac-VHT40	MCS0	38	5190	16.77	17.25	16.75	21.70	≤ 30.00	Pass
11ac-VHT40	MCS0	46	5230	23.16	24.05	23.60	28.39	≤ 30.00	Pass
11ac-VHT40	MCS0	54	5270	17.28	17.57	17.03	22.07	≤ 23.98	Pass
11ac-VHT40	MCS0	62	5310	16.88	17.43	16.80	21.82	≤ 23.98	Pass
11ac-VHT40	MCS0	102	5510	16.77	16.90	17.14	21.71	≤ 23.98	Pass
11ac-VHT40	MCS0	110	5550	17.81	17.16	17.51	22.27	≤ 23.98	Pass
11ac-VHT40	MCS0	134	5670	17.43	18.00	17.50	22.42	≤ 23.98	Pass
11ac-VHT40	MCS0	142	5710	17.35	18.16	17.82	22.56	≤ 23.98	Pass
11ac-VHT40	MCS0	151	5755	24.20	24.58	25.27	29.48	≤ 30.00	Pass
11ac-VHT40	MCS0	159	5795	24.73	24.45	25.50	29.69	≤ 30.00	Pass
11ac-VHT80	MCS0	42	5210	14.86	15.32	14.76	19.76	≤ 30.00	Pass
11ac-VHT80	MCS0	58	5290	14.50	14.85	14.65	19.44	≤ 23.98	Pass
11ac-VHT80	MCS0	106	5530	15.39	14.78	14.94	19.82	≤ 23.98	Pass
11ac-VHT80	MCS0	122	5610	18.71	18.39	19.70	23.74	≤ 23.98	Pass
11ac-VHT80	MCS0	138	5690	18.41	18.72	18.61	23.35	≤ 23.98	Pass
11ac-VHT80	MCS0	155	5775	21.69	21.75	22.32	26.70	≤ 30.00	Pass
11ac-VHT160	MCS0	50	5250	14.75	15.64	14.23	19.68	≤ 23.98	Pass
11ac-VHT160	MCS0	114	5570	13.73	12.78	12.95	17.94	≤ 23.98	Pass
11ax-HE20	MCS0	36	5180	19.52	20.27	19.78	24.64	≤ 30.00	Pass
11ax-HE20	MCS0	40	5220	20.90	21.63	20.82	25.90	≤ 30.00	Pass
11ax-HE20	MCS0	48	5240	21.27	21.95	21.12	26.23	≤ 30.00	Pass
11ax-HE20	MCS0	52	5260	15.08	15.12	14.62	19.72	≤ 23.98	Pass
11ax-HE20	MCS0	60	5300	14.96	15.31	14.41	19.68	≤ 23.98	Pass
11ax-HE20	MCS0	64	5320	14.85	15.25	13.95	19.49	≤ 23.98	Pass
11ax-HE20	MCS0	100	5500	15.98	15.16	15.30	20.27	≤ 23.98	Pass
11ax-HE20	MCS0	116	5580	15.83	14.96	15.75	20.30	≤ 23.98	Pass
11ax-HE20	MCS0	140	5700	15.30	16.29	15.25	20.41	≤ 23.98	Pass
11ax-HE20	MCS0	144	5720	15.68	16.61	15.28	20.66	≤ 22.87	Pass
11ax-HE20	MCS0	149	5745	24.60	24.61	25.36	29.64	≤ 30.00	Pass
11ax-HE20	MCS0	157	5785	24.88	24.75	25.58	29.86	≤ 30.00	Pass
11ax-HE20	MCS0	165	5825	24.46	24.52	25.03	29.45	≤ 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)	Total Average Power (dBm)	Power Limit (dBm)	Result
11ax-HE40	MCS0	38	5190	16.50	17.01	16.50	21.45	≤ 30.00	Pass
11ax-HE40	MCS0	46	5230	23.13	24.08	23.11	28.24	≤ 30.00	Pass
11ax-HE40	MCS0	54	5270	17.29	17.67	16.84	22.05	≤ 23.98	Pass
11ax-HE40	MCS0	62	5310	17.23	17.88	17.12	22.19	≤ 23.98	Pass
11ax-HE40	MCS0	102	5510	16.98	16.52	16.74	21.52	≤ 23.98	Pass
11ax-HE40	MCS0	110	5550	18.00	17.47	17.67	22.49	≤ 23.98	Pass
11ax-HE40	MCS0	134	5670	17.21	18.01	17.25	22.28	≤ 23.98	Pass
11ax-HE40	MCS0	142	5710	17.13	18.17	17.58	22.42	≤ 23.98	Pass
11ax-HE40	MCS0	151	5755	24.38	24.34	25.17	29.42	≤ 30.00	Pass
11ax-HE40	MCS0	159	5795	24.60	24.44	25.45	29.62	≤ 30.00	Pass
11ax-HE80	MCS0	42	5210	15.38	15.94	15.14	20.27	≤ 30.00	Pass
11ax-HE80	MCS0	58	5290	15.64	16.18	15.46	20.54	≤ 23.98	Pass
11ax-HE80	MCS0	106	5530	15.52	14.63	14.81	19.78	≤ 23.98	Pass
11ax-HE80	MCS0	122	5610	19.20	18.62	19.45	23.87	≤ 23.98	Pass
11ax-HE80	MCS0	138	5690	18.60	18.94	18.83	23.56	≤ 23.98	Pass
11ax-HE80	MCS0	155	5775	22.00	22.16	22.55	27.01	≤ 30.00	Pass
11ax-HE160	MCS0	50	5250	15.53	16.23	15.19	20.44	≤ 23.98	Pass
11ax-HE160	MCS0	114	5570	14.03	13.69	13.85	18.63	≤ 23.98	Pass

Note 1:

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

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 802.11a Ch144 (5720MHz), Average Power Limit (dBm) = $11 + 10 \cdot \log(5\text{MHz} + \text{BW}_{26\text{dBc}}/2) = 22.67$ dBm.

For 802.11ac Ch144 (5720MHz), Average Power Limit (dBm) = $11 + 10 \cdot \log(5\text{MHz} + \text{BW}_{26\text{dBc}}/2) = 22.85$ dBm.

For 802.11ax Ch144 (5720MHz), Average Power Limit (dBm) = $11 + 10 \cdot \log(5\text{MHz} + \text{BW}_{26\text{dBc}}/2) = 22.87$ dBm.

Product	Omada AX3000 Gigabit VPN Router	Test Engineer	Xuan
Test Site	SR6	Test Date	2023/7/10
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)	Total Average Power (dBm)	Power Limit (dBm)	Result
11ac-VHT20	MCS0	36	5180	20.05	20.56	20.43	25.12	≤28.23	Pass
11ac-VHT20	MCS0	40	5220	20.97	21.56	21.40	26.09	≤28.23	Pass
11ac-VHT20	MCS0	48	5240	21.40	21.96	21.60	26.43	≤28.23	Pass
11ac-VHT20	MCS0	52	5260	14.89	14.89	14.65	19.58	≤22.21	Pass
11ac-VHT20	MCS0	60	5300	14.97	15.30	14.73	19.78	≤22.21	Pass
11ac-VHT20	MCS0	64	5320	15.02	15.37	14.54	19.76	≤22.21	Pass
11ac-VHT20	MCS0	100	5500	15.71	15.05	15.13	20.08	≤22.21	Pass
11ac-VHT20	MCS0	116	5580	15.81	14.60	15.59	20.14	≤22.21	Pass
11ac-VHT20	MCS0	140	5700	15.07	16.11	15.16	20.24	≤22.21	Pass
11ac-VHT20	MCS0	144	5720	14.97	15.90	14.96	20.07	≤21.08	Pass
11ac-VHT20	MCS0	149	5745	22.99	23.10	22.83	27.75	≤28.23	Pass
11ac-VHT20	MCS0	157	5785	23.29	23.04	23.19	27.95	≤28.23	Pass
11ac-VHT20	MCS0	165	5825	23.26	23.28	23.39	28.08	≤28.23	Pass
11ac-VHT40	MCS0	38	5190	16.77	17.25	16.75	21.70	≤28.23	Pass
11ac-VHT40	MCS0	46	5230	22.82	23.56	22.96	27.90	≤28.23	Pass
11ac-VHT40	MCS0	54	5270	17.28	17.57	17.03	22.07	≤22.21	Pass
11ac-VHT40	MCS0	62	5310	16.88	17.43	16.80	21.82	≤22.21	Pass
11ac-VHT40	MCS0	102	5510	16.77	16.90	17.14	21.71	≤22.21	Pass
11ac-VHT40	MCS0	110	5550	17.06	16.54	16.68	21.54	≤22.21	Pass
11ac-VHT40	MCS0	134	5670	17.04	17.50	16.98	21.95	≤22.21	Pass
11ac-VHT40	MCS0	142	5710	16.80	17.58	17.21	21.98	≤22.21	Pass
11ac-VHT40	MCS0	151	5755	23.31	22.96	23.66	28.09	≤28.23	Pass
11ac-VHT40	MCS0	159	5795	22.80	22.55	23.31	27.67	≤28.23	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)	Total Average Power (dBm)	Power Limit (dBm)	Result
11ac-VHT80	MCS0	42	5210	14.86	15.32	14.76	19.76	≤28.23	Pass
11ac-VHT80	MCS0	58	5290	14.50	14.85	14.65	19.44	≤22.21	Pass
11ac-VHT80	MCS0	106	5530	15.39	14.78	14.94	19.82	≤22.21	Pass
11ac-VHT80	MCS0	122	5610	17.43	16.88	17.59	22.08	≤22.21	Pass
11ac-VHT80	MCS0	138	5690	16.95	17.43	16.64	21.79	≤22.21	Pass
11ac-VHT80	MCS0	155	5775	21.69	21.75	22.32	26.70	≤28.23	Pass
11ac-VHT160	MCS0	50	5250	14.75	15.64	14.23	19.68	≤22.21	Pass
11ac-VHT160	MCS0	114	5570	13.73	12.78	12.95	17.94	≤22.21	Pass
11ax-HE20	MCS0	36	5180	19.52	20.27	19.78	24.64	≤28.23	Pass
11ax-HE20	MCS0	40	5220	20.90	21.63	20.82	25.90	≤28.23	Pass
11ax-HE20	MCS0	48	5240	21.27	21.95	21.12	26.23	≤28.23	Pass
11ax-HE20	MCS0	52	5260	15.08	15.12	14.62	19.72	≤22.21	Pass
11ax-HE20	MCS0	60	5300	14.96	15.31	14.41	19.68	≤22.21	Pass
11ax-HE20	MCS0	64	5320	14.85	15.25	13.95	19.49	≤22.21	Pass
11ax-HE20	MCS0	100	5500	15.98	15.16	15.30	20.27	≤22.21	Pass
11ax-HE20	MCS0	116	5580	15.83	14.96	15.75	20.30	≤22.21	Pass
11ax-HE20	MCS0	140	5700	15.30	16.29	15.25	20.41	≤22.21	Pass
11ax-HE20	MCS0	144	5720	15.68	16.61	15.28	20.66	≤21.10	Pass
11ax-HE20	MCS0	149	5745	23.07	23.36	23.09	27.95	≤28.23	Pass
11ax-HE20	MCS0	157	5785	23.17	23.07	23.38	27.98	≤28.23	Pass
11ax-HE20	MCS0	165	5825	22.80	22.97	23.18	27.76	≤28.23	Pass
11ax-HE40	MCS0	38	5190	16.50	17.01	16.50	21.45	≤28.23	Pass
11ax-HE40	MCS0	46	5230	22.57	23.45	22.80	27.73	≤28.23	Pass
11ax-HE40	MCS0	54	5270	17.29	17.67	16.84	22.05	≤22.21	Pass
11ax-HE40	MCS0	62	5310	16.72	17.25	16.68	21.66	≤22.21	Pass
11ax-HE40	MCS0	102	5510	16.98	16.52	16.74	21.52	≤22.21	Pass
11ax-HE40	MCS0	110	5550	17.45	16.80	17.00	21.86	≤22.21	Pass
11ax-HE40	MCS0	134	5670	16.86	17.56	16.79	21.86	≤22.21	Pass
11ax-HE40	MCS0	142	5710	16.77	17.65	17.19	21.99	≤22.21	Pass
11ax-HE40	MCS0	151	5755	22.87	23.11	23.90	28.09	≤28.23	Pass
11ax-HE40	MCS0	159	5795	22.88	22.97	23.40	27.86	≤28.23	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)	Total Average Power (dBm)	Power Limit (dBm)	Result
11ax-HE80	MCS0	42	5210	15.38	15.94	15.14	20.27	≤28.23	Pass
11ax-HE80	MCS0	58	5290	15.64	16.18	15.46	20.54	≤22.21	Pass
11ax-HE80	MCS0	106	5530	15.52	14.63	14.81	19.78	≤22.21	Pass
11ax-HE80	MCS0	122	5610	17.02	16.05	17.15	21.54	≤22.21	Pass
11ax-HE80	MCS0	138	5690	17.07	17.61	17.07	22.03	≤22.21	Pass
11ax-HE80	MCS0	155	5775	22.00	22.16	22.55	27.01	≤28.23	Pass
11ax-HE160	MCS0	50	5250	15.53	16.23	15.19	20.44	≤22.21	Pass
11ax-HE160	MCS0	114	5570	14.03	13.69	13.85	18.63	≤22.21	Pass

Note 1:

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

Note 2:

For 5125 - 5250MHz Band: Average Power Limit (dBm) = 30 - (7.77- 6) = 28.23dBm

For 5250 - 5350MHz and 5470 - 5725MHz Band: Average Power Limit (dBm) = 23.98 - (7.77- 6) = 22.21dBm.

For 5725 - 5850MHz Band: Average Power Limit (dBm) = 30- (7.77- 6) = 28.23dBm.

For 802.11ac Ch144 (5720MHz), Average Power Limit (dBm) = $11 + 10 \cdot \log(5\text{MHz} + \text{BW}_{26\text{dBc}}/2) - (7.77- 6) = 21.08 \text{ dBm}$.

For 802.11ax Ch144 (5720MHz), Average Power Limit (dBm) = $11 + 10 \cdot \log(5\text{MHz} + \text{BW}_{26\text{dBc}}/2) - (7.77- 6) = 21.10 \text{ dBm}$.

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.

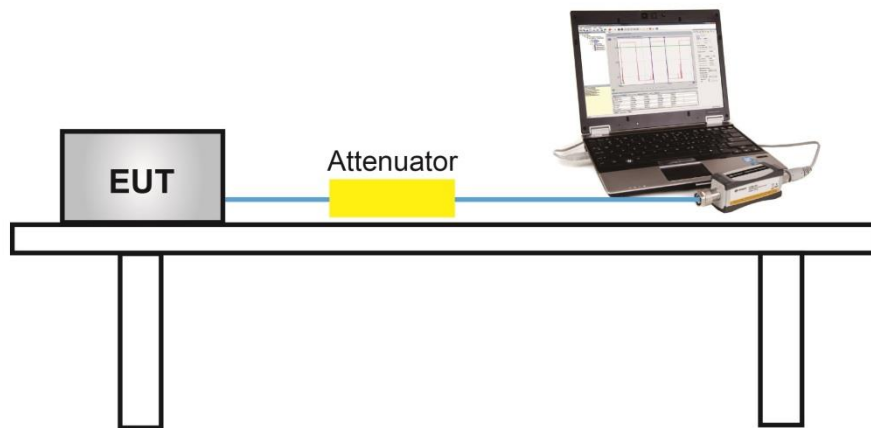
7.5.2. Test Procedure Used

KDB 789033 D02v02r01- 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 the antenna exceeds 6dBi.

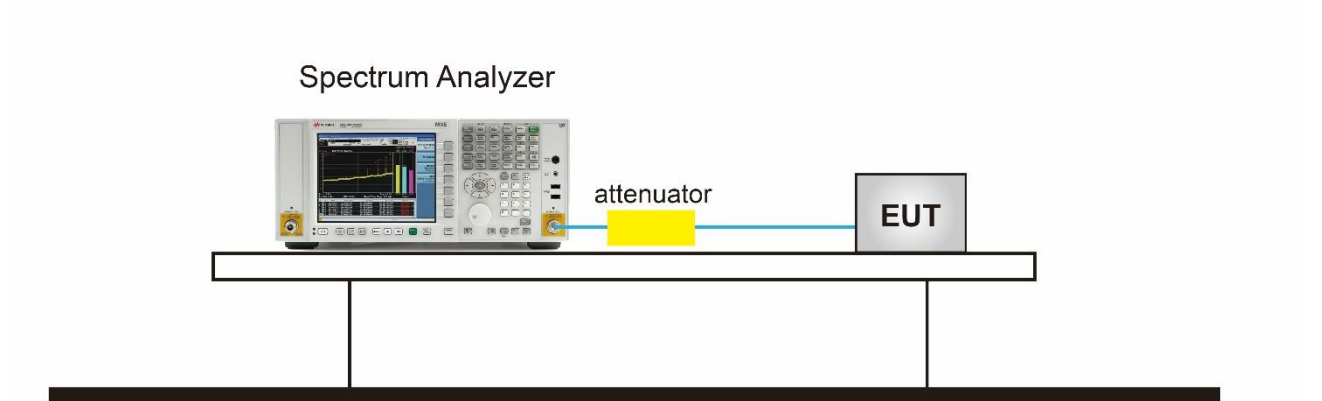
7.6.2. Test Procedure Used

KDB 789033 D02v02r01-Section F

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 $\geq 2 \times (\text{span} / \text{RBW})$
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 $10 \cdot \log(1/x)$, 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 $10 \cdot \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

7.6.4. Test Setup



7.6.5.Test Result

Product	Omada AX3000 Gigabit VPN Router	Test Engineer	Xuan
Test Site	SR6	Test Date	2023/7/10~2023/7/17
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)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
11a	6Mbps	36	5180	8.554	8.183	8.532	95.60%	13.393	≤15.23	Pass
11a	6Mbps	44	5220	9.826	10.645	9.559	95.60%	15.002	≤15.23	Pass
11a	6Mbps	48	5240	10.018	10.765	9.715	95.60%	15.155	≤15.23	Pass
11a	6Mbps	52	5260	3.984	4.238	3.886	95.60%	9.005	≤9.23	Pass
11a	6Mbps	60	5300	3.391	3.873	3.228	95.60%	8.473	≤9.23	Pass
11a	6Mbps	64	5320	4.425	4.010	2.994	95.60%	8.817	≤9.23	Pass
11a	6Mbps	100	5500	4.113	3.178	3.908	95.60%	8.718	≤9.23	Pass
11a	6Mbps	116	5580	4.635	3.694	3.984	95.60%	9.089	≤9.23	Pass
11a	6Mbps	140	5700	3.471	4.633	3.493	95.60%	8.867	≤9.23	Pass
11a	6Mbps	144	5720	3.728	4.698	3.729	95.60%	9.043	≤9.23	Pass
11ac-VHT20	MCS0	36	5180	8.179	8.595	7.980	95.56%	13.227	≤15.23	Pass
11ac-VHT20	MCS0	40	5220	9.465	10.468	9.610	95.56%	14.839	≤15.23	Pass
11ac-VHT20	MCS0	48	5240	9.587	10.464	9.674	95.56%	14.895	≤15.23	Pass
11ac-VHT20	MCS0	52	5260	3.337	4.247	3.574	95.56%	8.705	≤9.23	Pass
11ac-VHT20	MCS0	60	5300	3.744	4.214	4.007	95.56%	8.961	≤9.23	Pass
11ac-VHT20	MCS0	64	5320	3.458	4.412	3.338	95.56%	8.732	≤9.23	Pass
11ac-VHT20	MCS0	100	5500	4.386	3.427	3.297	95.56%	8.700	≤9.23	Pass
11ac-VHT20	MCS0	116	5580	4.385	3.459	4.151	95.56%	8.984	≤9.23	Pass
11ac-VHT20	MCS0	140	5700	3.360	4.833	3.976	95.56%	9.067	≤9.23	Pass
11ac-VHT20	MCS0	144	5720	3.401	4.283	3.670	95.56%	8.769	≤9.23	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)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
11ac-VHT40	MCS0	38	5190	2.840	2.217	2.658	91.02%	7.759	≤15.23	Pass
11ac-VHT40	MCS0	46	5230	9.178	9.826	9.468	91.02%	14.679	≤15.23	Pass
11ac-VHT40	MCS0	54	5270	3.656	4.045	3.639	91.02%	8.964	≤9.23	Pass
11ac-VHT40	MCS0	62	5310	3.330	3.570	3.525	91.02%	8.656	≤9.23	Pass
11ac-VHT40	MCS0	102	5510	3.216	3.174	2.981	91.02%	8.305	≤9.23	Pass
11ac-VHT40	MCS0	110	5550	3.930	3.269	3.208	91.02%	8.661	≤9.23	Pass
11ac-VHT40	MCS0	134	5670	3.779	4.348	3.711	91.02%	9.135	≤9.23	Pass
11ac-VHT40	MCS0	142	5710	3.531	4.250	3.987	91.02%	9.113	≤9.23	Pass
11ac-VHT80	MCS0	42	5210	-2.979	-2.145	-3.234	84.76%	2.729	≤15.23	Pass
11ac-VHT80	MCS0	58	5290	-2.638	-1.842	-2.929	84.76%	3.044	≤9.23	Pass
11ac-VHT80	MCS0	106	5530	-2.171	-2.283	-2.630	84.76%	3.132	≤9.23	Pass
11ac-VHT80	MCS0	122	5610	1.886	2.308	2.663	84.76%	7.787	≤9.23	Pass
11ac-VHT80	MCS0	138	5690	1.435	1.887	2.031	84.76%	7.281	≤9.23	Pass
11ac-VHT160	MCS0	50	5250	-5.317	-5.090	-6.539	76.51%	0.330	≤9.23	Pass
11ac-VHT160	MCS0	114	5570	-6.146	-7.012	-7.774	76.51%	-0.992	≤9.23	Pass
11ax-HE20	MCS0	36	5180	7.885	8.549	7.979	94.65%	13.158	≤15.23	Pass
11ax-HE20	MCS0	44	5220	9.480	10.502	9.726	94.65%	14.935	≤15.23	Pass
11ax-HE20	MCS0	48	5240	9.743	10.685	9.656	94.65%	15.064	≤15.23	Pass
11ax-HE20	MCS0	52	5260	3.488	3.556	3.745	94.65%	8.608	≤9.23	Pass
11ax-HE20	MCS0	60	5300	3.487	3.817	3.291	94.65%	8.547	≤9.23	Pass
11ax-HE20	MCS0	64	5320	3.545	3.829	3.404	94.65%	8.606	≤9.23	Pass
11ax-HE20	MCS0	100	5500	4.211	3.382	2.940	94.65%	8.553	≤9.23	Pass
11ax-HE20	MCS0	116	5580	4.061	3.087	3.820	94.65%	8.685	≤9.23	Pass
11ax-HE20	MCS0	140	5700	3.331	4.147	3.473	94.65%	8.675	≤9.23	Pass
11ax-HE20	MCS0	144	5720	3.515	4.302	4.075	94.65%	8.986	≤9.23	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)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
11ax-HE40	MCS0	38	5190	2.638	1.894	2.580	96.88%	7.292	≤15.23	Pass
11ax-HE40	MCS0	46	5230	9.929	10.268	9.898	96.88%	14.944	≤15.23	Pass
11ax-HE40	MCS0	54	5270	3.923	4.233	3.399	96.88%	8.774	≤9.23	Pass
11ax-HE40	MCS0	62	5310	3.491	4.281	3.832	96.88%	8.789	≤9.23	Pass
11ax-HE40	MCS0	102	5510	2.839	2.684	2.955	96.88%	7.736	≤9.23	Pass
11ax-HE40	MCS0	110	5550	4.136	3.686	3.967	96.88%	8.842	≤9.23	Pass
11ax-HE40	MCS0	134	5670	3.583	4.234	4.181	96.88%	8.918	≤9.23	Pass
11ax-HE40	MCS0	142	5710	3.429	4.066	4.442	96.88%	8.908	≤9.23	Pass
11ax-HE80	MCS0	42	5210	-1.708	-0.840	-1.632	94.36%	3.648	≤15.23	Pass
11ax-HE80	MCS0	58	5290	-1.137	-0.572	-1.034	94.36%	4.116	≤9.23	Pass
11ax-HE80	MCS0	106	5530	-1.740	-2.320	-1.959	94.36%	3.024	≤9.23	Pass
11ax-HE80	MCS0	122	5610	2.277	1.881	2.669	94.36%	7.311	≤9.23	Pass
11ax-HE80	MCS0	122	5690	2.279	2.754	2.842	94.36%	7.655	≤9.23	Pass
11ax-HE160	MCS0	50	5250	-3.995	-3.834	-4.899	89.94%	1.014	≤9.23	Pass
11ax-HE160	MCS0	114	5570	-5.193	-6.505	-6.000	89.94%	-0.634	≤9.23	Pass

Note 1: When EUT duty cycle ≥ 98%,

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

When EUT duty cycle < 98%,

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

Note 2:

For 5150 - 5250MHz Band: PSD Limit (dBm/MHz) = 17 - (7.77 - 6) = 15.23dBm/MHz.

For 5250 - 5350MHz and 5470 - 5725MHz Band: PSD Limit (dBm/MHz) = 11 - (7.77 - 6) = 9.23dBm/MHz.

Product	Omada AX3000 Gigabit VPN Router	Test Engineer	Xuan
Test Site	SR6	Test Date	2023/7/10/~2023/7/14
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)	Duty Cycle (%)	Total PSD (dBm/510kHz)	Limit (dBm/500kHz)	Result
11a	6Mbps	149	5745	10.367	10.572	9.003	95.60%	15.001	≤28.23	Pass
11a	6Mbps	157	5785	11.112	10.707	11.441	95.60%	16.064	≤28.23	Pass
11a	6Mbps	165	5825	10.600	10.412	11.275	95.60%	15.745	≤28.23	Pass
11ac-VHT20	MCS0	149	5745	9.655	10.410	10.514	95.56%	15.178	≤28.23	Pass
11ac-VHT20	MCS0	157	5785	10.107	10.046	10.753	95.56%	15.282	≤28.23	Pass
11ac-VHT20	MCS0	165	5825	10.066	9.797	10.484	95.56%	15.093	≤28.23	Pass
11ac-VHT40	MCS0	151	5755	7.640	7.733	8.126	91.02%	13.018	≤28.23	Pass
11ac-VHT40	MCS0	159	5795	7.815	7.879	8.474	91.02%	13.246	≤28.23	Pass
11ac-VHT80	MCS0	155	5775	1.172	1.210	-1.305	84.76%	5.996	≤28.23	Pass
11ax-HE20	MCS0	149	5745	9.544	10.192	10.260	94.65%	15.020	≤28.23	Pass
11ax-HE20	MCS0	157	5785	9.895	10.415	11.277	94.65%	15.577	≤28.23	Pass
11ax-HE20	MCS0	165	5825	9.822	9.726	10.695	94.65%	15.113	≤28.23	Pass
11ax-HE40	MCS0	151	5755	7.292	7.335	8.107	96.88%	12.503	≤28.23	Pass
11ax-HE40	MCS0	159	5795	7.686	7.814	8.625	96.88%	12.971	≤28.23	Pass
11ax-HE80	MCS0	155	5775	2.380	2.479	3.028	94.36%	7.662	≤28.23	Pass

Note 1: When EUT duty cycle ≥ 98%,

the total PSD (dBm/510kHz) = $10 \cdot \log \{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)}\}$ (dBm/510kHz).

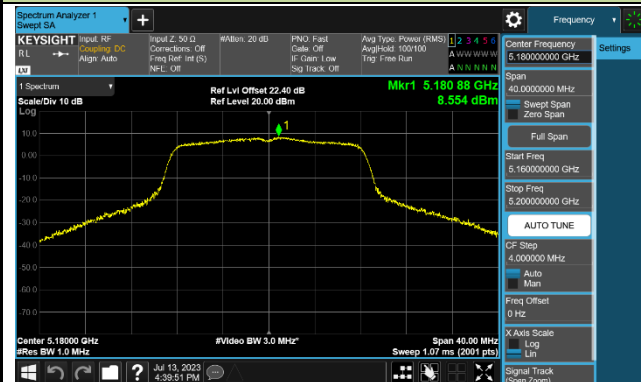
When EUT duty cycle < 98%, the total PSD (dBm/510kHz) = $10 \cdot \log \{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)}\}$ (dBm/510kHz) + $10 \cdot \log (1/\text{Duty Cycle})$.

Note 2: PSD Limit (dBm/500kHz) = 30 - (7.77 - 6) = 28.23 (dBm/500kHz).

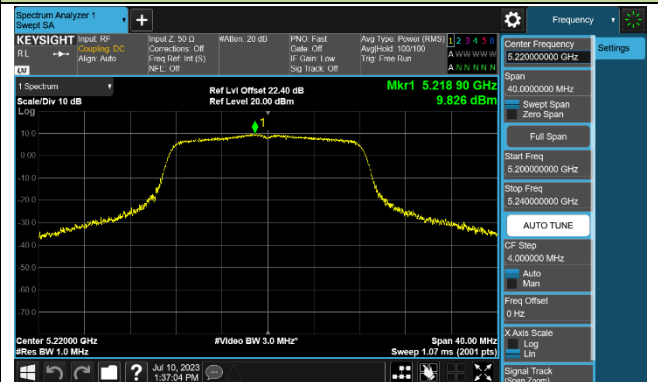
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802.11a Power Spectral Density - Ant 0

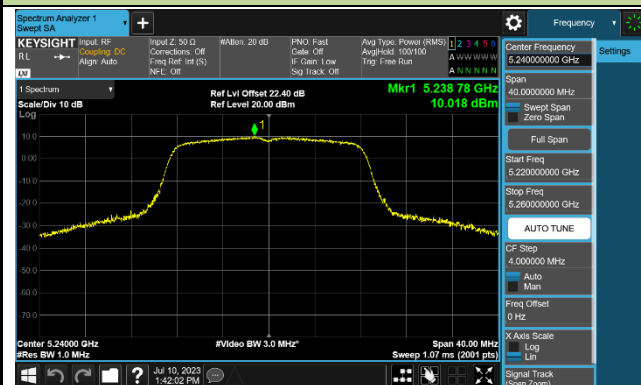
Channel 36 (5180MHz)



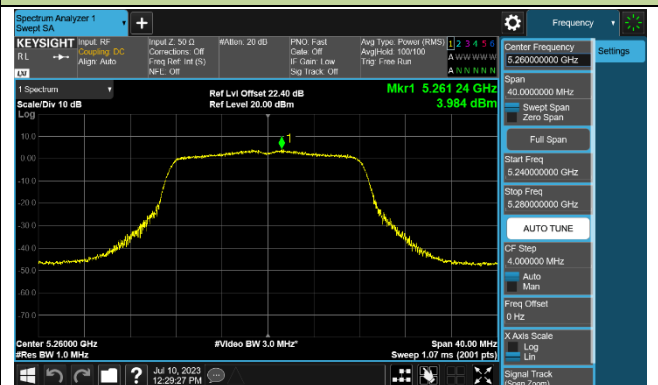
Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



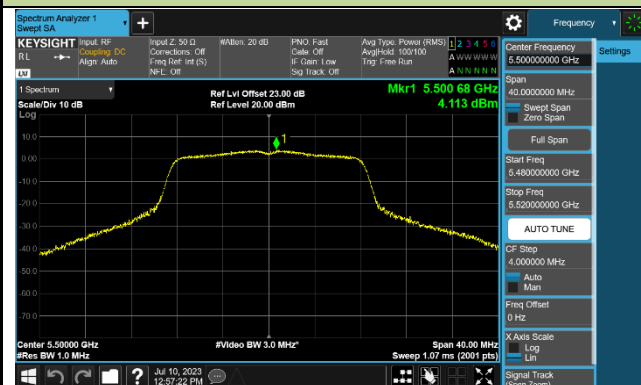
Channel 60 (5300MHz)



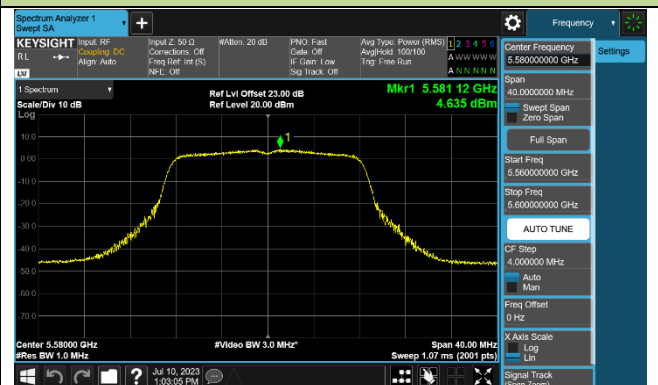
Channel 64 (5320MHz)

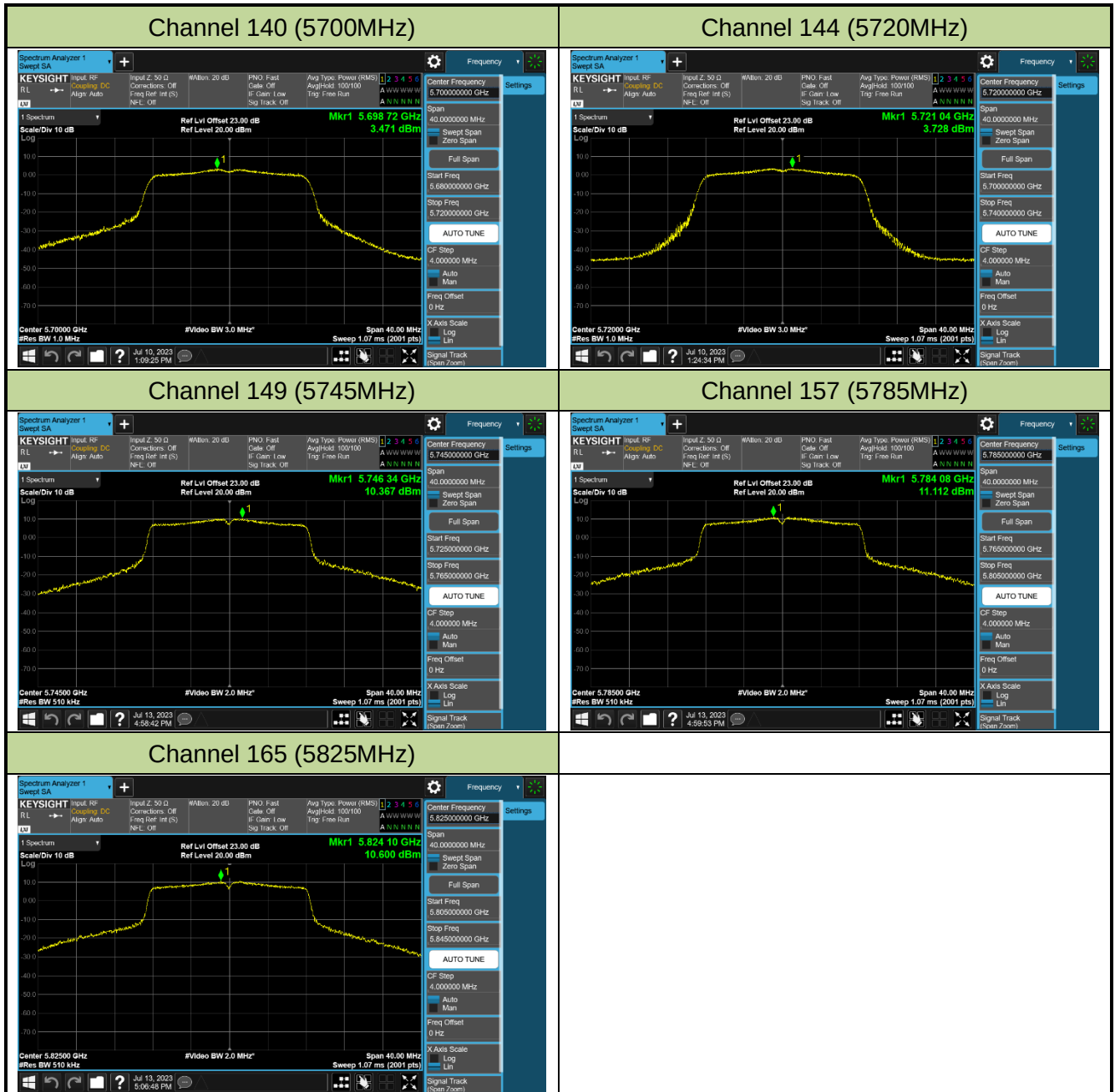


Channel 100 (5500MHz)



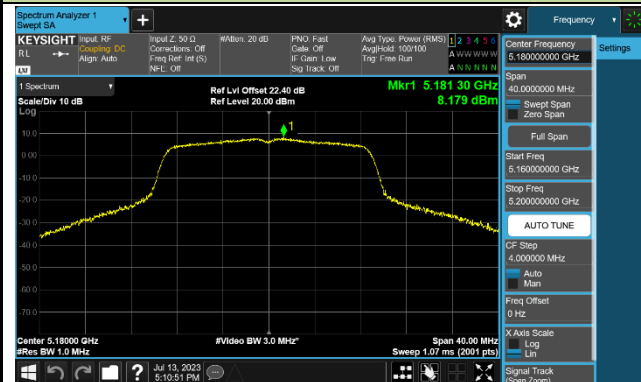
Channel 116 (5580MHz)



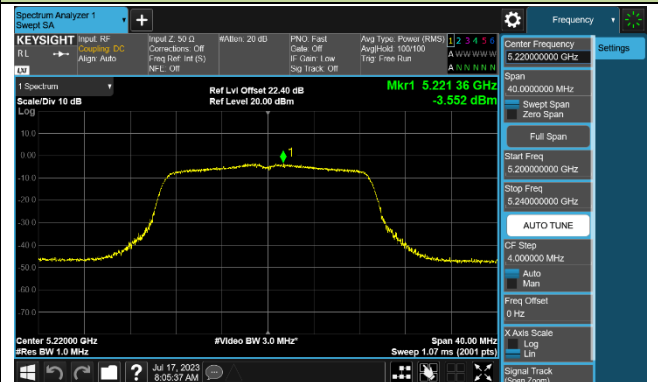


802.11ac-VHT20 Power Spectral Density - Ant 0

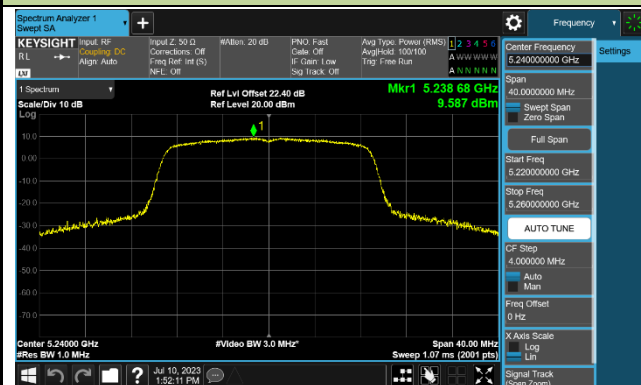
Channel 36 (5180MHz)



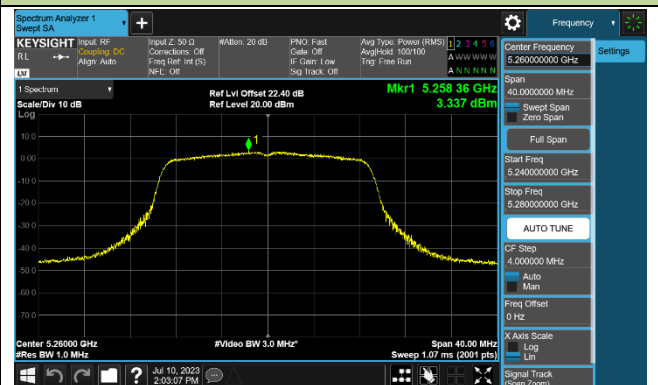
Channel 44 (5220MHz)



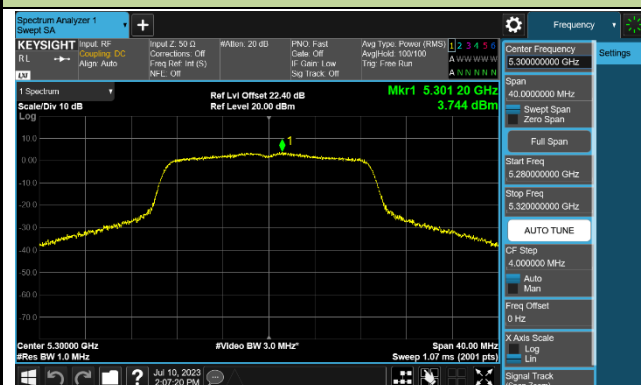
Channel 48 (5240MHz)



Channel 52 (5260MHz)



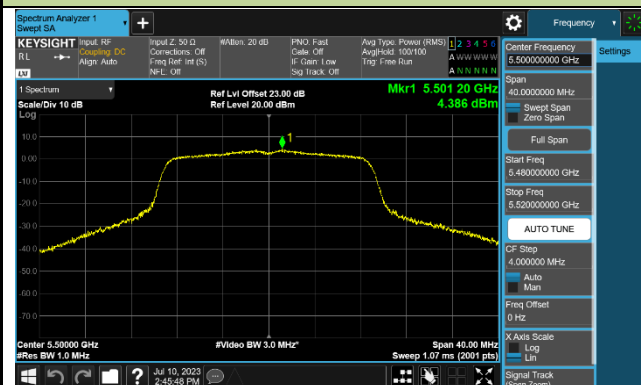
Channel 60 (5300MHz)



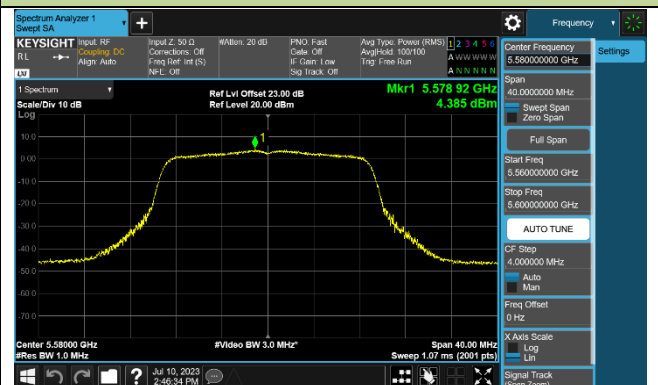
Channel 64 (5320MHz)

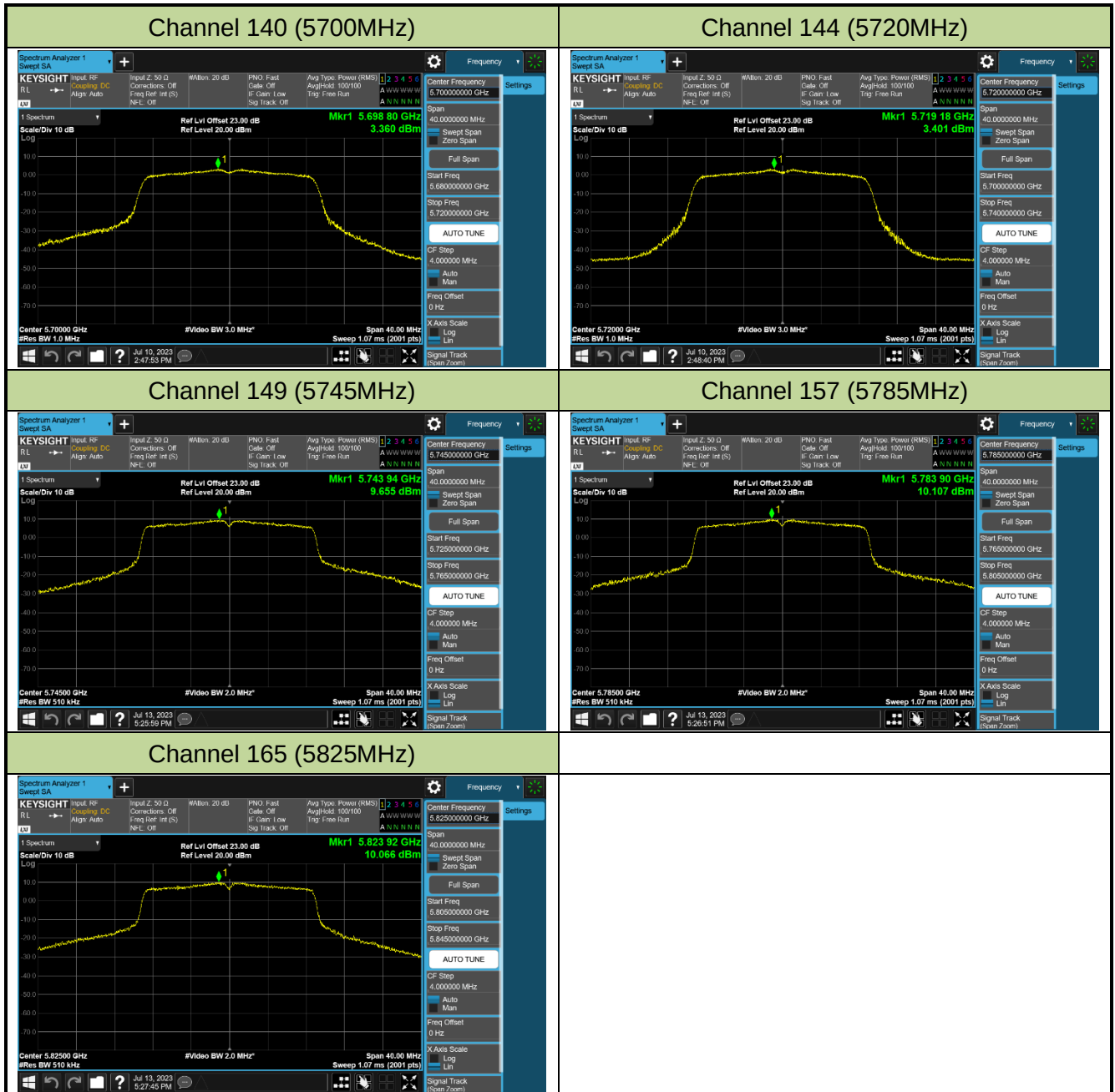


Channel 100 (5500MHz)



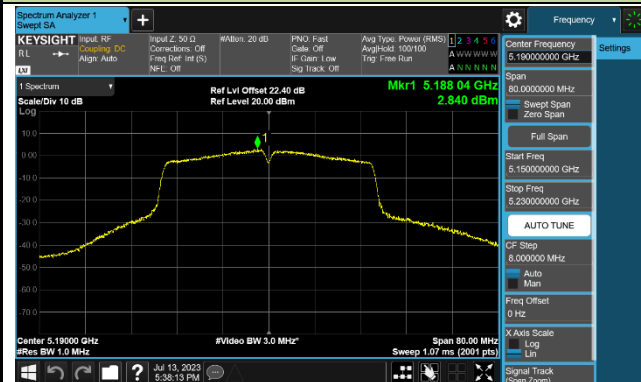
Channel 116 (5580MHz)



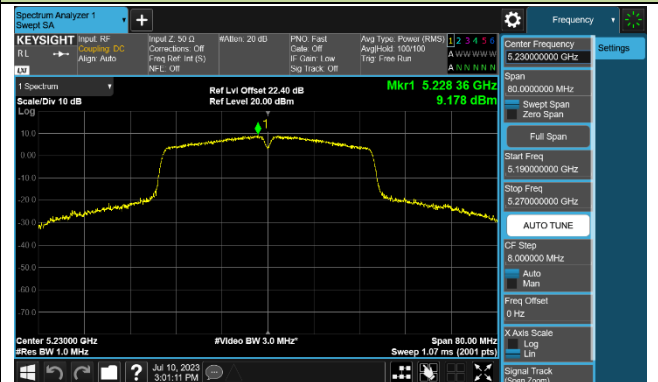


802.11ac-VHT40 Power Spectral Density - Ant 0

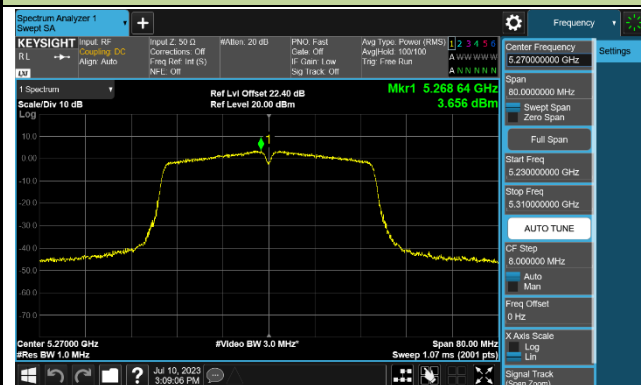
Channel 38 (5190MHz)



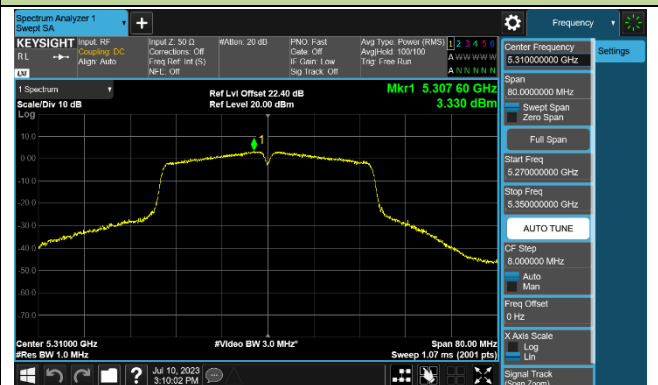
Channel 46 (5230MHz)



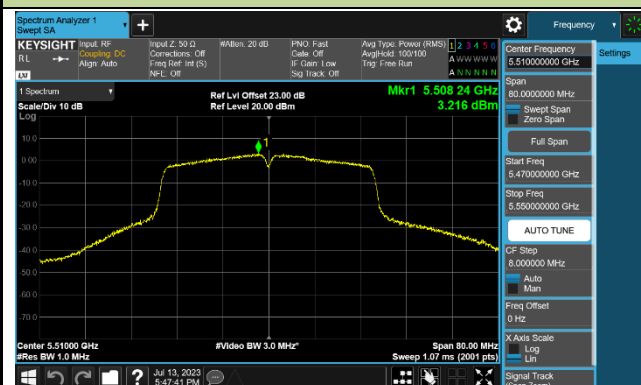
Channel 54 (5270MHz)



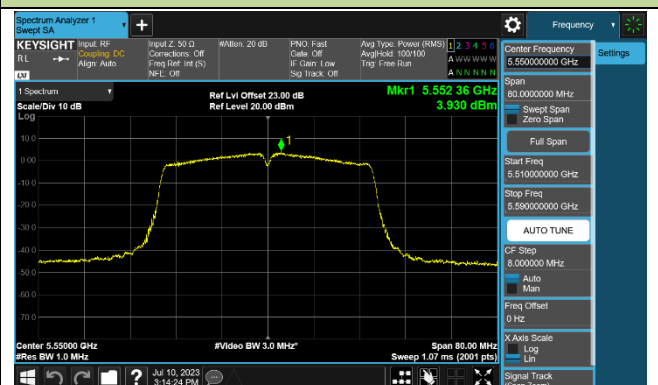
Channel 62 (5310MHz)



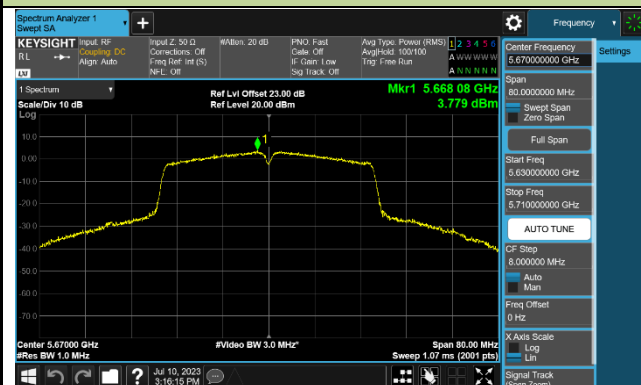
Channel 102 (5510MHz)



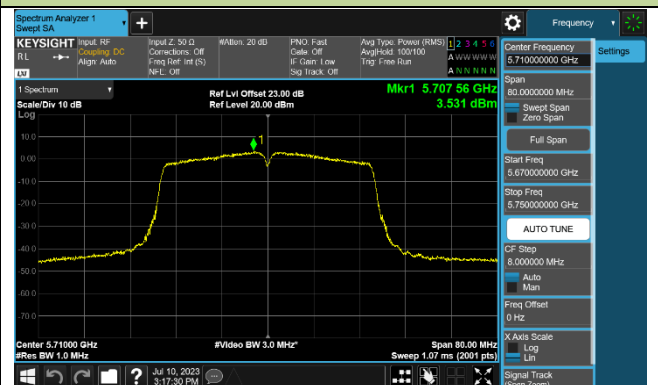
Channel 110 (5550MHz)

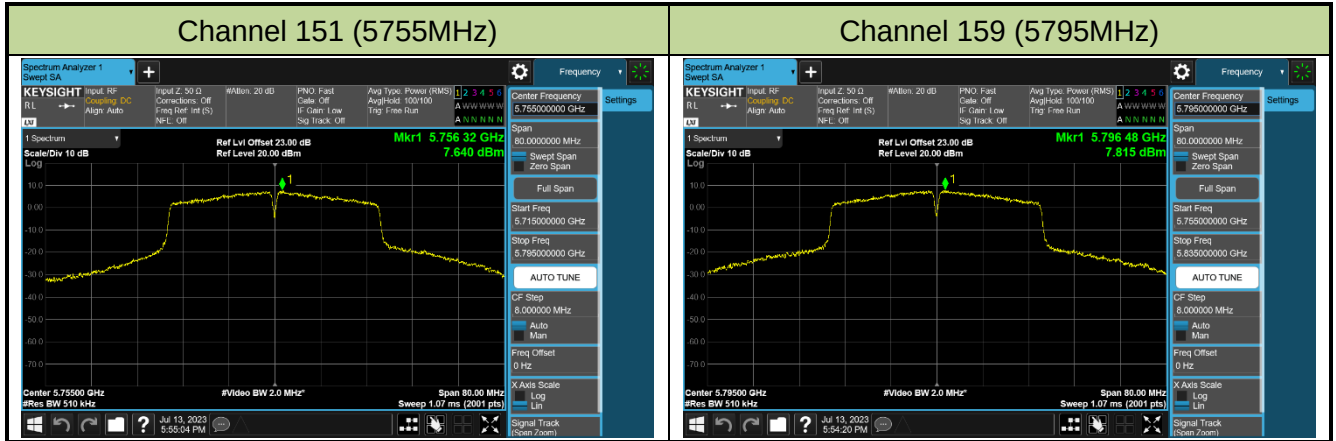


Channel 134 (5670MHz)



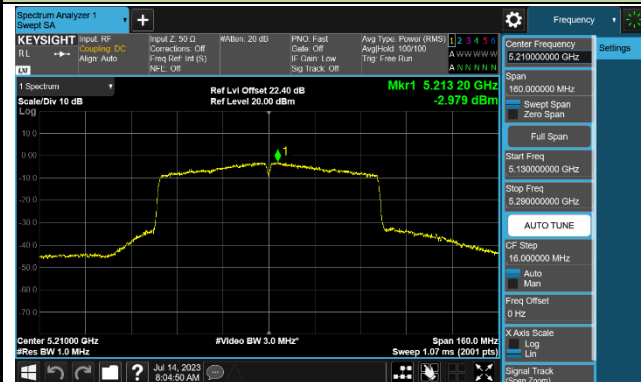
Channel 142 (5710MHz)



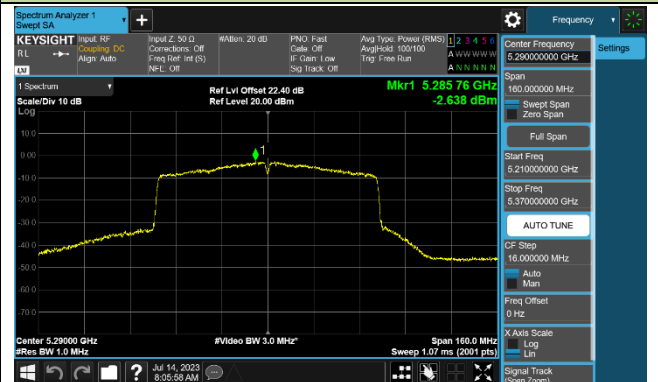


802.11ac-VHT80 Power Spectral Density - Ant 0

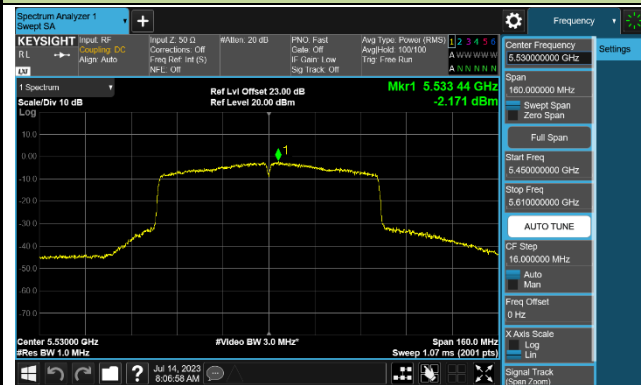
Channel 42 (5210MHz)



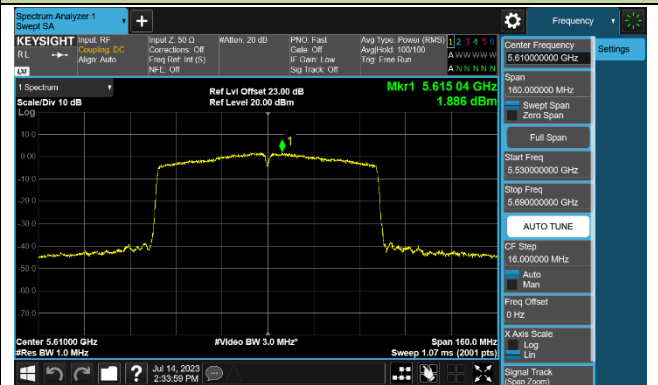
Channel 58 (5290MHz)



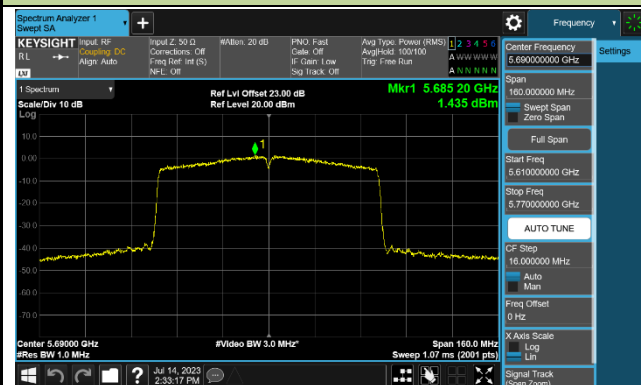
Channel 106 (5530MHz)



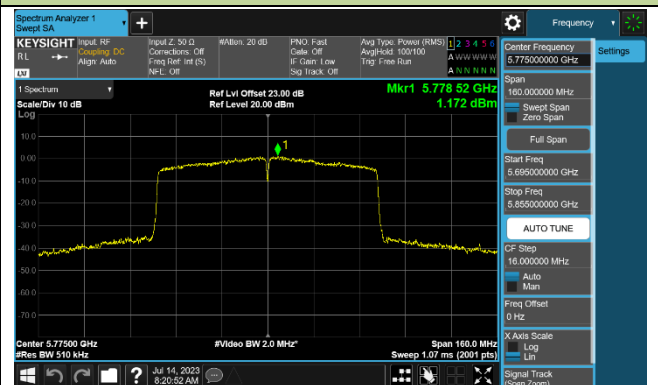
Channel 122 (5610MHz)



Channel 138 (5690MHz)

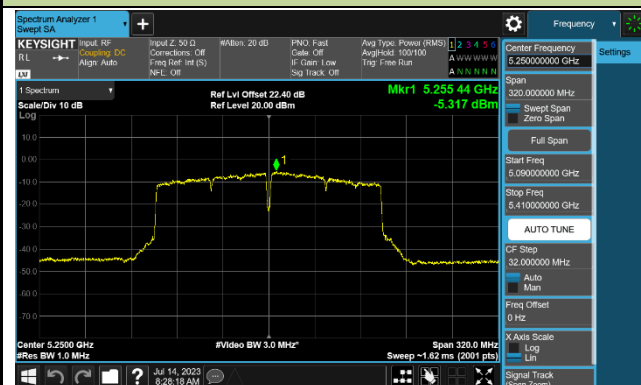


Channel 155 (5775MHz)

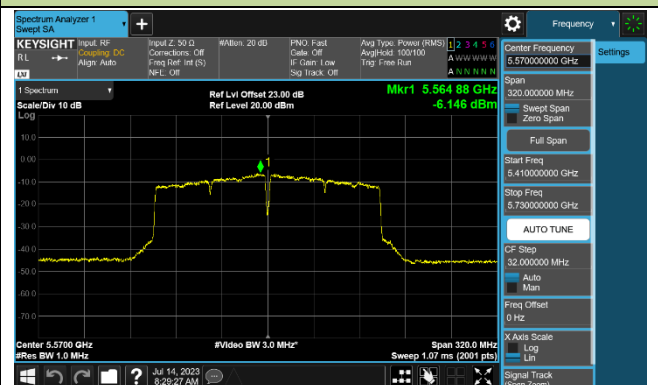


802.11ac-VHT160 Power Spectral Density - Ant 0

Channel 50 (5250MHz)

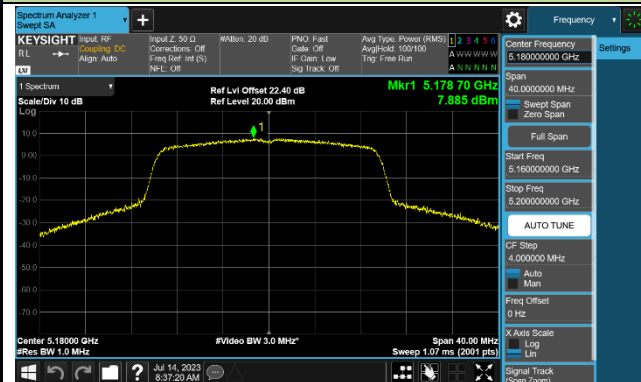


Channel 114 (5570MHz)

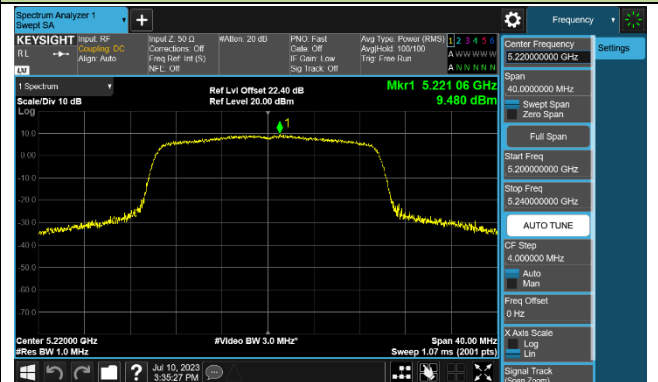


802.11ax-HE20 Power Spectral Density - Ant 0

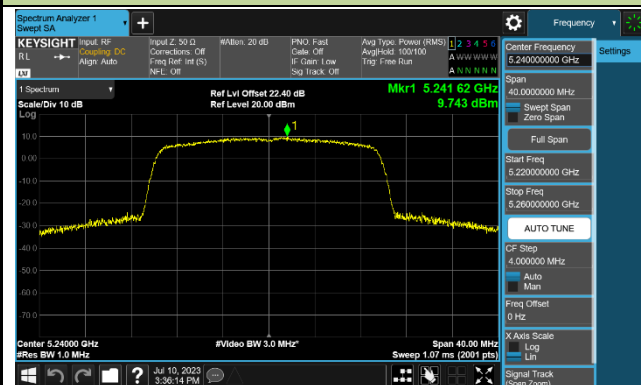
Channel 36 (5180MHz)



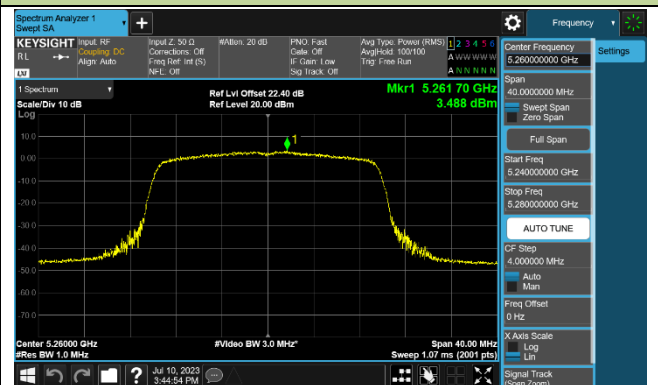
Channel 44 (5220MHz)



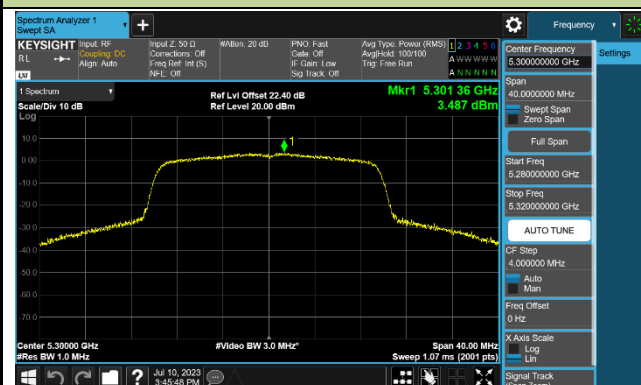
Channel 48 (5240MHz)



Channel 52 (5260MHz)



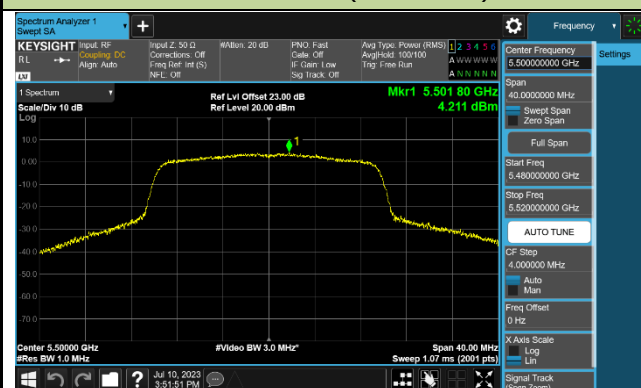
Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 116 (5580MHz)

