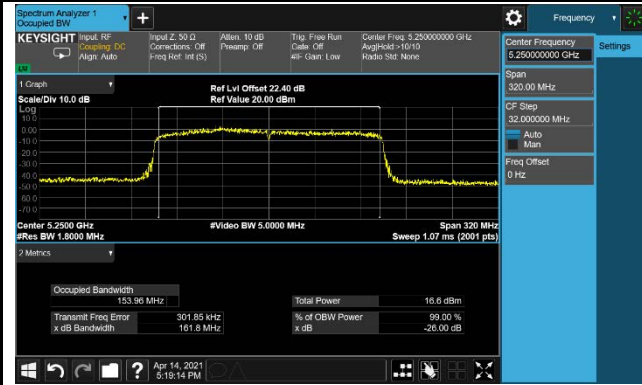


802.11ax-HE160 26dB Bandwidth & 99% Bandwidth

Channel 50 (5250MHz)



802.11a 26dB Bandwidth & 99% Bandwidth - Scan Antenna

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11ac-VHT20 26dB Bandwidth & 99% Bandwidth- Scan Antenna

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11ac-VHT40 26dB Bandwidth & 99% Bandwidth- Scan Antenna

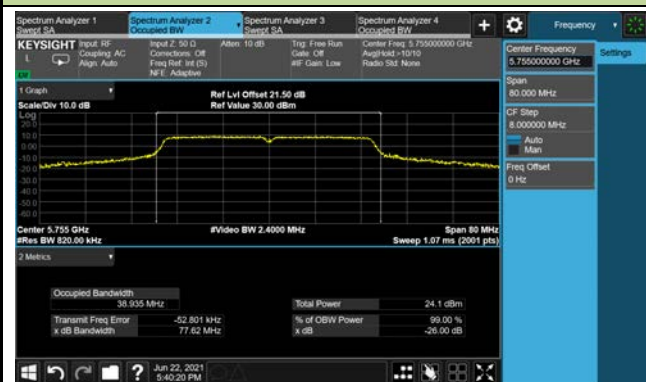
Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)



802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth- Scan Antenna

Channel 42 (5210MHz)



Channel 155 (5775MHz)



6.3. 6dB Bandwidth Measurement

6.3.1. Test Limit

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

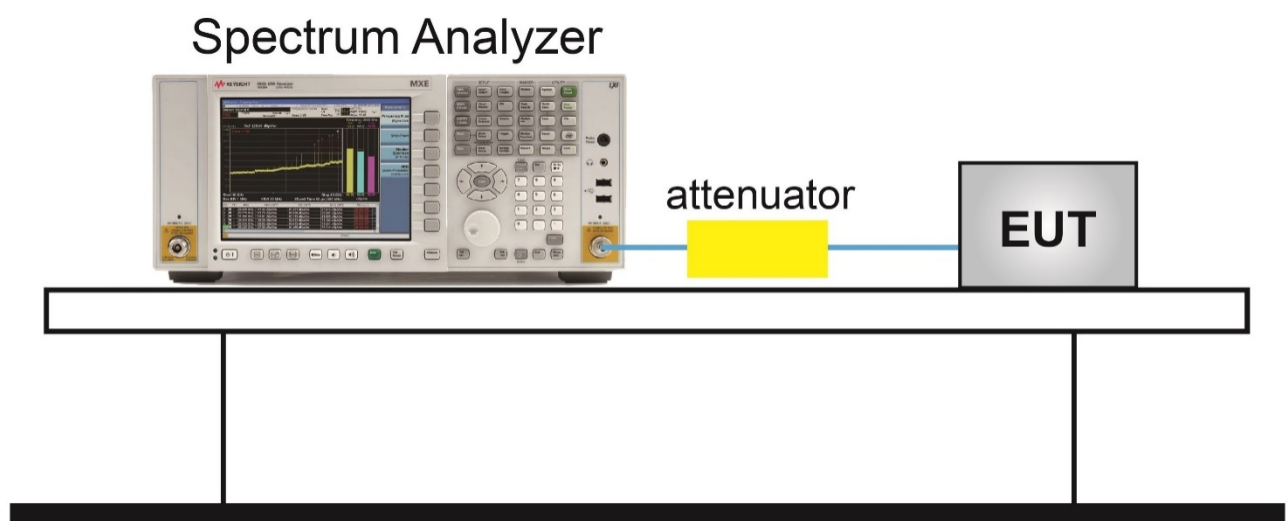
6.3.2. Test Procedure used

KDB 789033 D02v02r01- Section C.2

6.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW $\geq 3 \times$ 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.

6.3.4. Test Setup



6.3.5. Test Result

Test Site	SR2	Test Engineer	Peter
Test Date	2021/05/05	Test item	6dB bandwidth (U-NII-3)

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11a	6Mbps	149	5745	16.33	≥ 0.5	Pass
802.11a	6Mbps	157	5785	16.34	≥ 0.5	Pass
802.11a	6Mbps	165	5825	16.36	≥ 0.5	Pass
802.11ac-VHT20	MCS0	149	5745	17.65	≥ 0.5	Pass
802.11ac-VHT20	MCS0	157	5785	17.62	≥ 0.5	Pass
802.11ac-VHT20	MCS0	165	5825	17.59	≥ 0.5	Pass
802.11ac-VHT40	MCS0	151	5755	36.26	≥ 0.5	Pass
802.11ac-VHT40	MCS0	159	5795	36.49	≥ 0.5	Pass
802.11ac-VHT80	MCS0	155	5775	76.42	≥ 0.5	Pass
802.11ax-HE20	MCS0	149	5745	18.96	≥ 0.5	Pass
802.11ax-HE20	MCS0	157	5785	18.82	≥ 0.5	Pass
802.11ax-HE20	MCS0	165	5825	18.99	≥ 0.5	Pass
802.11ax-HE40	MCS0	151	5755	37.71	≥ 0.5	Pass
802.11ax-HE40	MCS0	159	5795	37.78	≥ 0.5	Pass
802.11ax-HE80	MCS0	155	5775	77.34	≥ 0.5	Pass

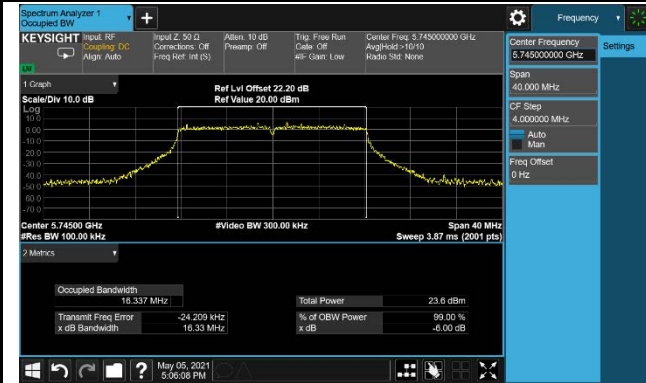
Note: The Data only show the max power Antenna Port in the test report.

Test Site	SR2	Test Engineer	Peter
Test Date	2021/05/06 ~ 2021/06/22	Test item	6dB bandwidth (U-NII-3)
Test Mode	Scan Antenna		

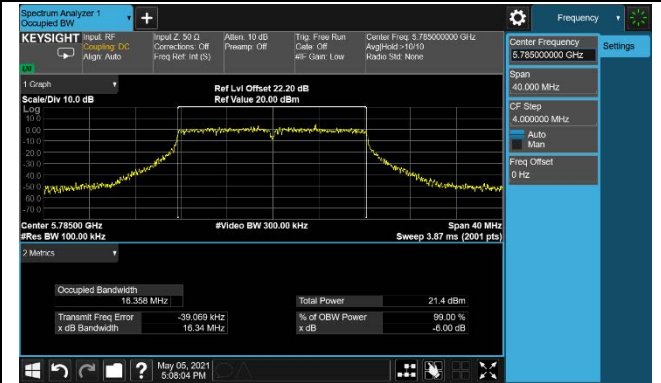
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11a	6Mbps	149	5745	16.32	≥ 0.5	Pass
802.11a	6Mbps	157	5785	16.35	≥ 0.5	Pass
802.11a	6Mbps	165	5825	16.34	≥ 0.5	Pass
802.11ac-VHT20	MCS0	149	5745	17.32	≥ 0.5	Pass
802.11ac-VHT20	MCS0	157	5785	17.16	≥ 0.5	Pass
802.11ac-VHT20	MCS0	165	5825	17.61	≥ 0.5	Pass
802.11ac-VHT40	MCS0	151	5755	36.31	≥ 0.5	Pass
802.11ac-VHT40	MCS0	159	5795	35.72	≥ 0.5	Pass
802.11ac-VHT80	MCS0	155	5775	68.91	≥ 0.5	Pass

802.11a 6dB Bandwidth

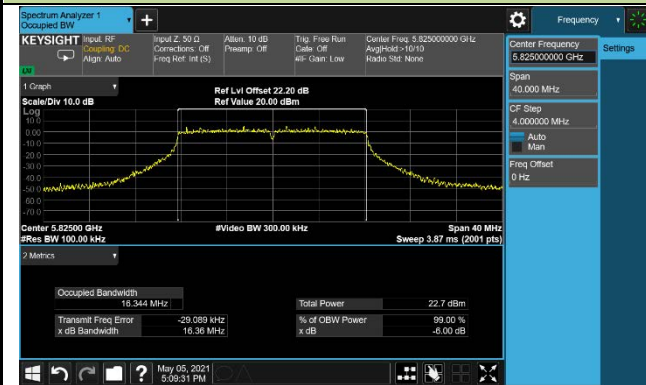
Channel 149 (5745MHz)



Channel 157 (5785MHz)

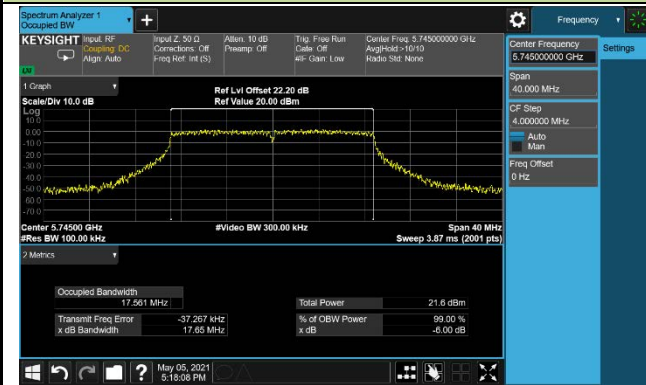


Channel 165 (5825MHz)



802.11ac-VHT20 6dB Bandwidth

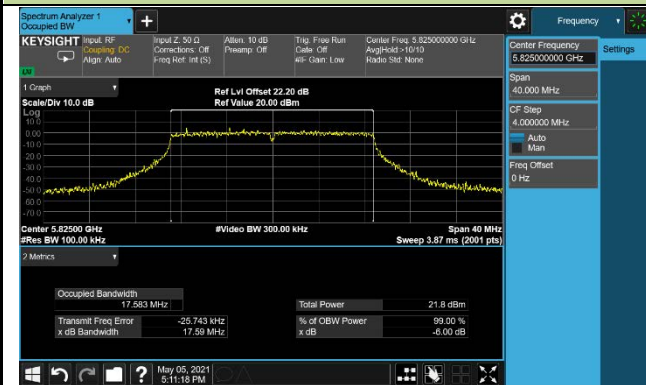
Channel 149 (5745MHz)



Channel 157 (5785MHz)

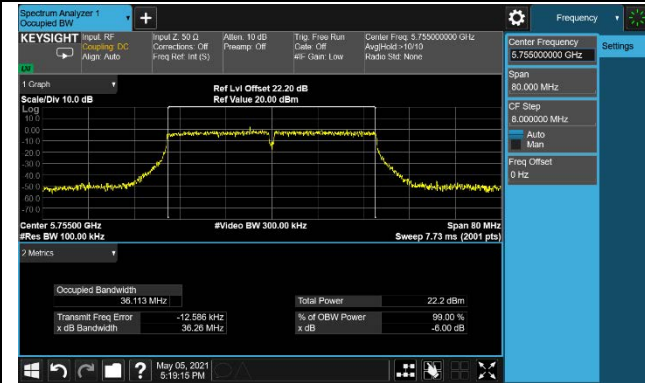


Channel 165 (5825MHz)

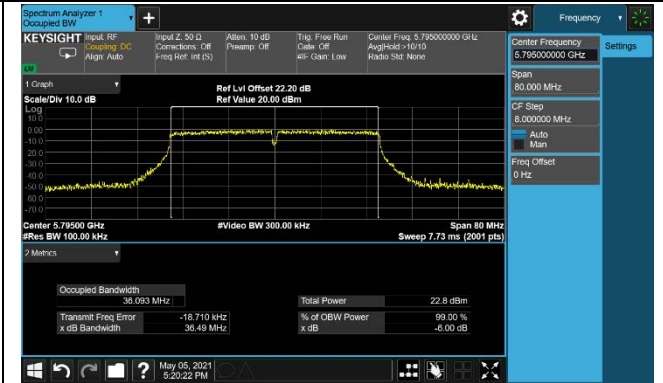


802.11ac-VHT40 6dB Bandwidth

Channel 151 (5755MHz)

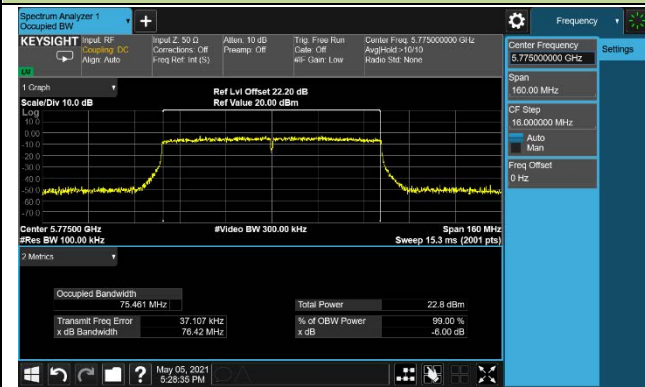


Channel 159 (5795MHz)



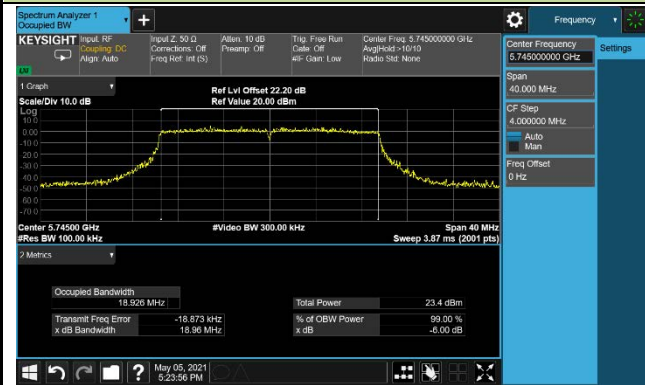
802.11ac-VHT80 6dB Bandwidth

Channel 155 (5775MHz)

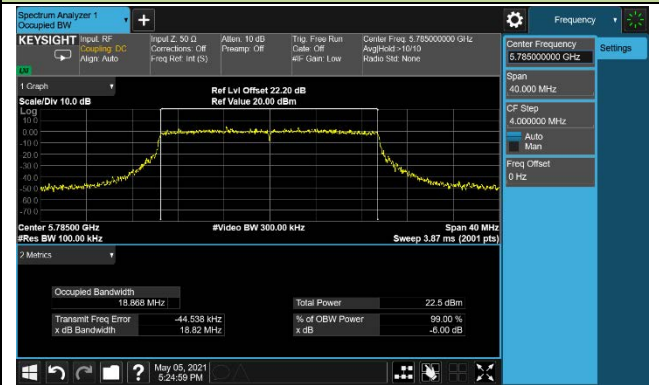


802.11ax-HE20 6dB Bandwidth

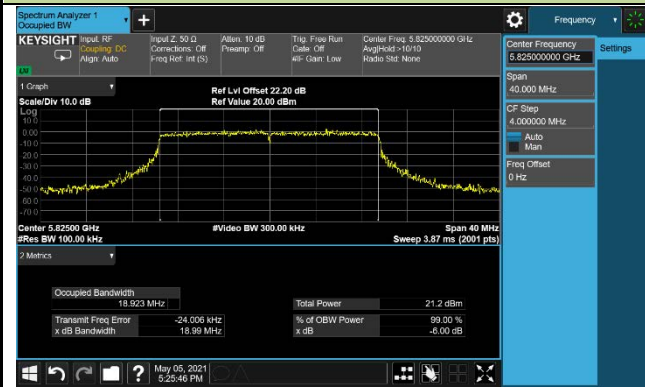
Channel 149 (5745MHz)



Channel 157 (5785MHz)

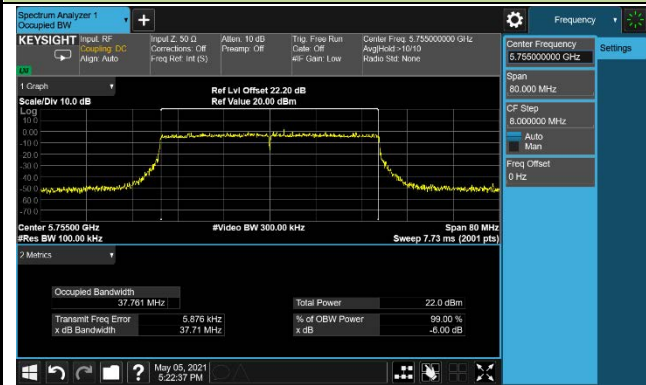


Channel 165 (5825MHz)

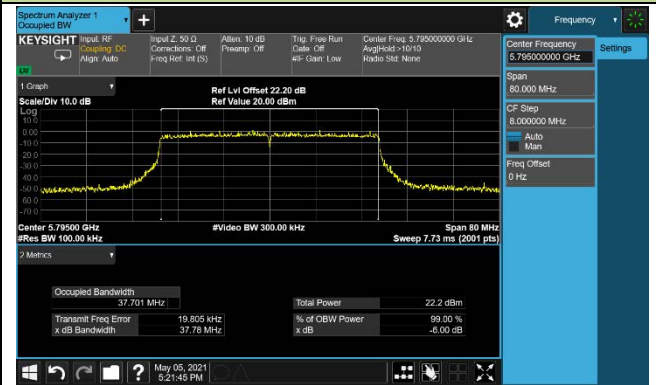


802.11ax-HE40 6dB Bandwidth

Channel 151 (5755MHz)

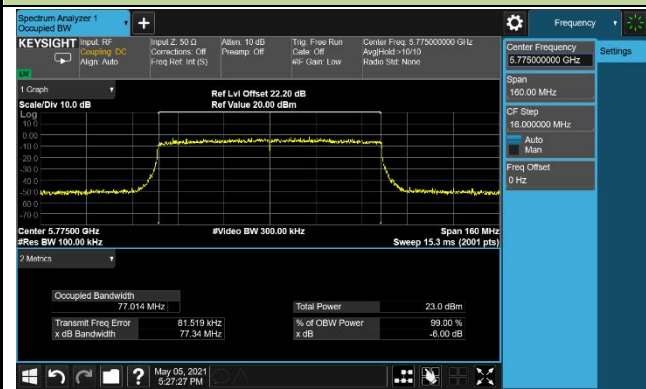


Channel 159 (5795MHz)



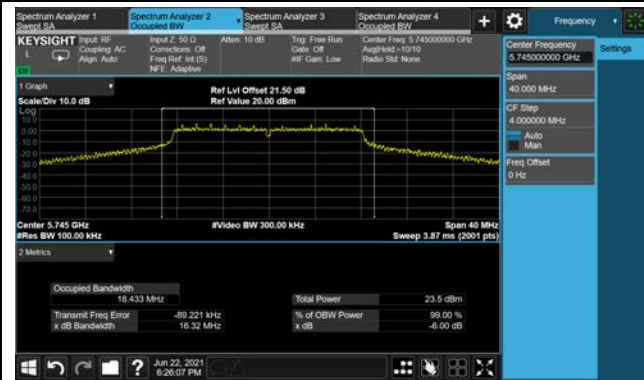
802.11ax-HE80 6dB Bandwidth

Channel 155 (5775MHz)

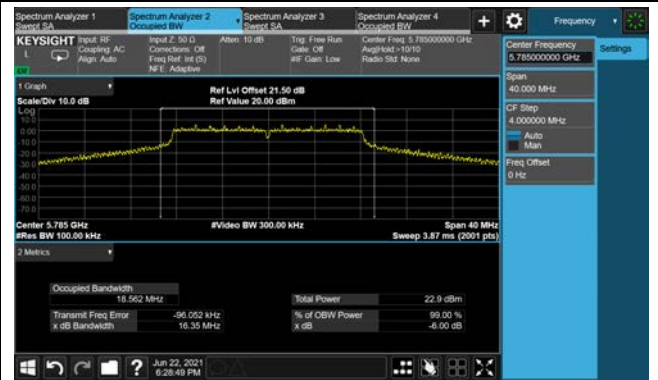


802.11a 6dB Bandwidth - Scan Antenna

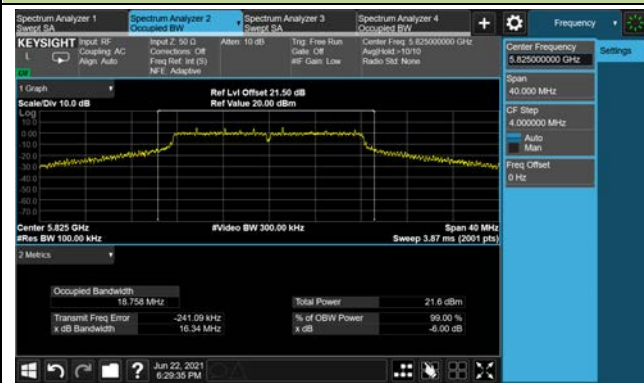
Channel 149 (5745MHz)



Channel 157 (5785MHz)

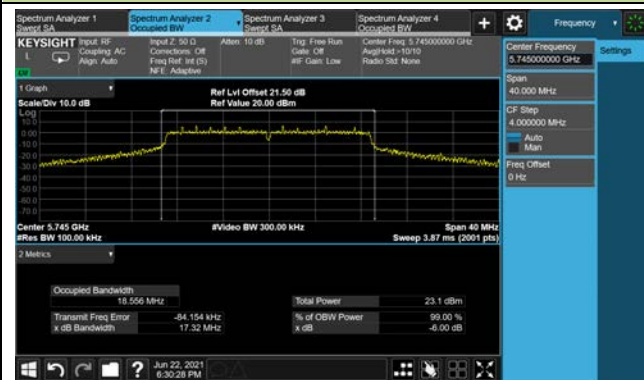


Channel 165 (5825MHz)

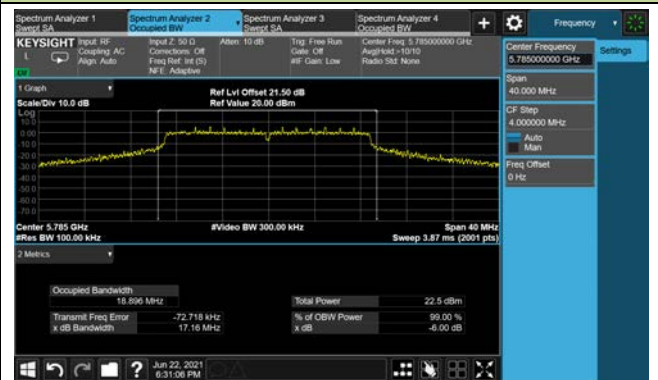


802.11ac-VHT20 6dB Bandwidth- Scan Antenna

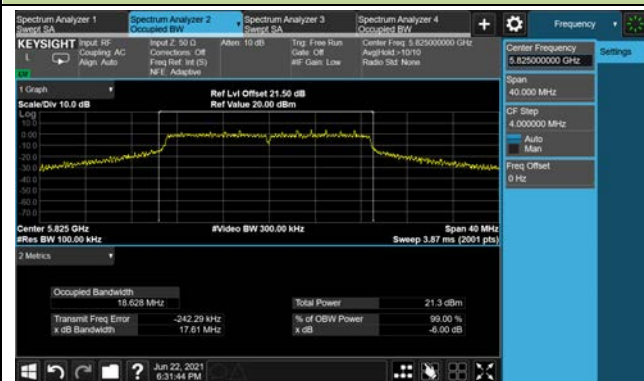
Channel 149 (5745MHz)



Channel 157 (5785MHz)

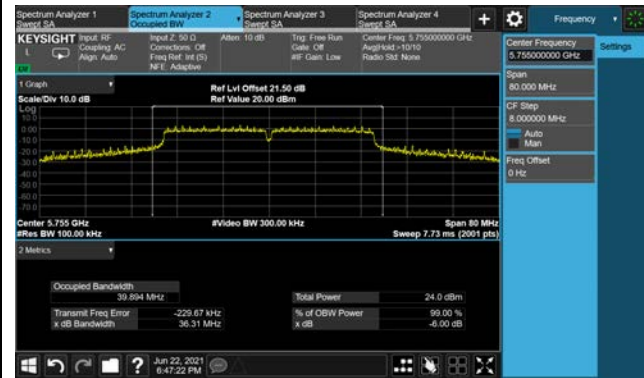


Channel 165 (5825MHz)

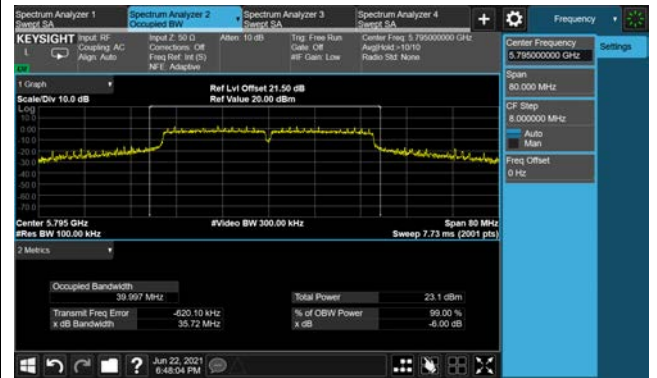


802.11ac-VHT40 6dB Bandwidth- Scan Antenna

Channel 151 (5755MHz)

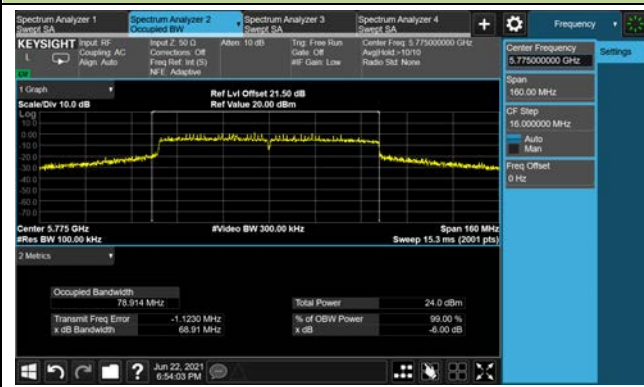


Channel 159 (5795MHz)



802.11ac-VHT80 6dB Bandwidth- Scan Antenna

Channel 155 (5775MHz)



6.4. Output Power Measurement

6.4.1. 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.

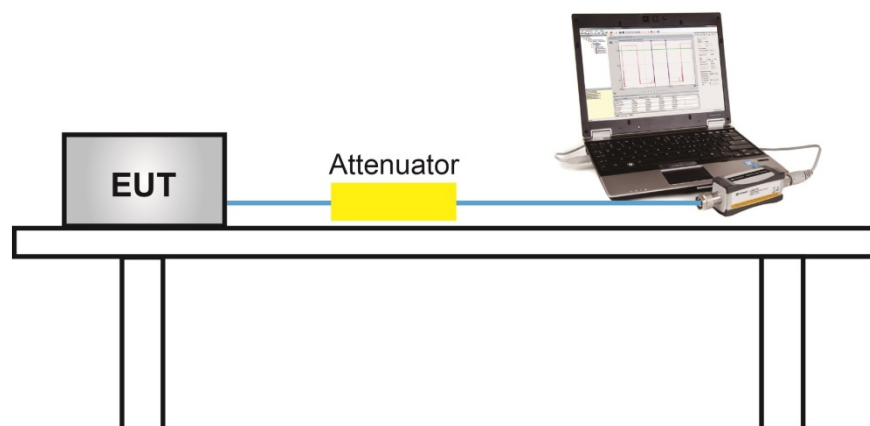
6.4.2. Test Procedure Used

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

6.4.3. 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.

6.4.4. Test Setup



6.4.5. Test Result

Test Site	SR2	Test Engineer	Peter
Test Date	2021/04/21~2021/04/25	Test item	Output Power

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)								Total Average Power (dBm)	Average Power Limit (dBm)	Result
				Ant 0	Ant 1	Ant 2	Ant 3	Ant 4	Ant 5	Ant 6	Ant 7			
11a	6Mbps	36	5180	13.97	14.11	14.04	13.86	--	--	--	--	20.02	30.00	Pass
11a	6Mbps	44	5220	16.66	17.26	16.63	17.49	--	--	--	--	23.05	30.00	Pass
11a	6Mbps	48	5240	16.59	17.16	16.25	17.53	--	--	--	--	22.93	30.00	Pass
11a	6Mbps	52	5260	12.28	12.51	12.45	11.66	--	--	--	--	18.26	23.85	Pass
11a	6Mbps	60	5300	12.08	12.25	11.92	11.69	--	--	--	--	18.01	23.85	Pass
11a	6Mbps	64	5320	12.83	12.89	12.49	12.98	--	--	--	--	18.82	23.85	Pass
11a	6Mbps	100	5500	4.76	5.00	4.53	3.11	4.69	4.79	4.68	4.83	13.61	22.86	Pass
11a	6Mbps	116	5580	4.89	6.04	4.74	4.85	5.35	4.89	4.90	5.24	14.16	22.86	Pass
11a	6Mbps	140	5700	4.62	5.83	3.88	4.88	5.21	4.37	4.70	3.95	13.75	22.86	Pass
11a	6Mbps	144	5720	4.32	5.15	3.51	5.35	4.62	4.35	4.15	3.46	13.44	21.78	Pass
11a	6Mbps	149	5745	17.52	17.78	17.70	16.23	18.35	17.19	17.53	17.05	26.49	29.10	Pass
11a	6Mbps	157	5785	18.38	18.15	18.10	16.88	18.36	17.66	17.56	17.70	26.90	29.10	Pass
11a	6Mbps	165	5825	15.70	17.29	16.88	17.11	18.00	17.55	17.00	17.68	26.23	29.10	Pass
11ac-VHT20	MCS0	36	5180	15.33	15.75	15.48	14.83	--	--	--	--	21.38	30.00	Pass
11ac-VHT20	MCS0	40	5220	17.13	17.73	16.63	18.09	--	--	--	--	23.45	30.00	Pass
11ac-VHT20	MCS0	48	5240	16.80	17.36	16.77	17.73	--	--	--	--	23.20	30.00	Pass
11ac-VHT20	MCS0	52	5260	12.57	12.86	12.84	12.10	--	--	--	--	18.62	23.98	Pass
11ac-VHT20	MCS0	60	5300	12.13	12.55	12.45	11.94	--	--	--	--	18.29	23.98	Pass
11ac-VHT20	MCS0	64	5320	12.97	13.12	12.83	12.81	--	--	--	--	18.95	23.98	Pass
11ac-VHT20	MCS0	100	5500	5.51	5.62	5.08	4.23	6.15	5.48	4.97	5.38	14.36	23.08	Pass
11ac-VHT20	MCS0	116	5580	4.81	5.93	5.78	4.85	5.19	4.91	4.47	5.34	14.22	23.08	Pass
11ac-VHT20	MCS0	140	5700	4.58	5.37	5.66	4.61	5.50	4.39	5.05	3.88	13.95	23.08	Pass
11ac-VHT20	MCS0	144	5720	4.85	6.43	4.43	4.65	5.16	4.62	4.68	4.03	13.94	21.89	Pass
11ac-VHT20	MCS0	149	5745	18.18	18.28	17.67	17.13	17.91	17.58	17.22	17.23	26.70	29.10	Pass
11ac-VHT20	MCS0	157	5785	18.31	18.17	17.83	16.87	17.96	17.85	17.39	18.17	26.87	29.10	Pass
11ac-VHT20	MCS0	165	5825	17.10	16.98	17.39	17.05	18.16	17.72	16.98	17.47	26.41	29.10	Pass

Test Mode	Data Rate/MCS	Channel No.	Freq. (MHz)	Average Power (dBm)								Total Average Power (dBm)	Average Power Limit (dBm)	Result
				Ant 0	Ant 1	Ant 2	Ant 3	Ant 4	Ant 5	Ant 6	Ant 7			
11ac-VHT40	MCS0	38	5190	14.21	14.75	14.43	13.79	--	--	--	--	20.33	30.00	Pass
11ac-VHT40	MCS0	46	5230	19.69	20.38	19.54	20.75	--	--	--	--	26.14	30.00	Pass
11ac-VHT40	MCS0	54	5270	15.83	16.19	16.28	15.29	--	--	--	--	21.94	23.98	Pass
11ac-VHT40	MCS0	62	5310	14.59	14.61	13.83	14.19	--	--	--	--	20.34	23.98	Pass
11ac-VHT40	MCS0	102	5510	8.93	9.03	8.33	7.58	9.30	8.64	8.59	8.63	17.69	23.98	Pass
11ac-VHT40	MCS0	110	5550	8.70	9.32	8.43	7.89	9.35	8.92	8.41	8.46	17.74	23.98	Pass
11ac-VHT40	MCS0	134	5670	8.52	9.22	8.49	7.71	9.58	8.63	8.62	8.01	17.66	23.98	Pass
11ac-VHT40	MCS0	142	5710	8.00	9.30	8.76	8.87	8.88	8.43	8.46	7.29	17.57	23.98	Pass
11ac-VHT40	MCS0	151	5755	17.90	18.12	17.70	17.58	17.76	17.26	17.45	17.17	26.66	30.00	Pass
11ac-VHT40	MCS0	159	5795	18.33	18.13	18.08	17.64	18.57	17.97	18.17	18.20	27.17	30.00	Pass
11ac-VHT80	MCS0	42	5210	10.68	10.84	10.44	10.67	--	--	--	--	16.68	30.00	Pass
11ac-VHT80	MCS0	58	5290	12.44	12.66	11.83	12.30	--	--	--	--	18.34	23.98	Pass
11ac-VHT80	MCS0	106	5530	12.50	13.31	12.01	11.37	13.40	12.73	12.42	11.98	21.54	23.98	Pass
11ac-VHT80	MCS0	122	5610	11.89	12.16	11.96	11.62	12.18	11.96	11.83	12.92	21.11	23.98	Pass
11ac-VHT80	MCS0	138	5690	11.37	12.42	11.49	11.56	12.01	11.76	11.81	11.43	20.77	23.98	Pass
11ac-VHT80	MCS0	155	5775	18.30	18.32	18.10	17.57	18.45	17.95	18.05	17.91	27.12	30.00	Pass
11ac-VHT160	MCS0	50	5250	8.85	9.09	8.65	8.64	--	--	--	--	14.83	23.98	Pass
11ax-HE20	MCS0	36	5180	15.17	15.87	15.61	14.76	--	--	--	--	21.39	30.00	Pass
11ax-HE20	MCS0	40	5220	17.56	18.19	17.10	18.61	--	--	--	--	23.92	30.00	Pass
11ax-HE20	MCS0	48	5240	17.31	17.88	17.27	18.28	--	--	--	--	23.73	30.00	Pass
11ax-HE20	MCS0	52	5260	13.12	13.32	13.36	12.44	--	--	--	--	19.10	23.98	Pass
11ax-HE20	MCS0	60	5300	13.58	13.61	13.30	13.22	--	--	--	--	19.45	23.98	Pass
11ax-HE20	MCS0	64	5320	13.22	13.30	13.18	13.36	--	--	--	--	19.29	23.98	Pass
11ax-HE20	MCS0	100	5500	5.85	5.71	5.26	4.20	6.39	5.55	5.30	5.35	14.52	23.08	Pass
11ax-HE20	MCS0	116	5580	5.28	5.86	5.28	5.15	5.70	5.45	5.25	5.35	14.45	23.08	Pass
11ax-HE20	MCS0	140	5700	4.52	5.71	4.46	4.55	5.05	4.03	4.36	3.75	13.62	23.08	Pass
11ax-HE20	MCS0	144	5720	4.99	5.83	5.18	5.55	5.33	4.84	5.05	4.34	14.19	22.03	Pass
11ax-HE20	MCS0	149	5745	18.40	18.59	18.30	17.98	18.82	18.18	18.09	17.50	27.28	29.10	Pass
11ax-HE20	MCS0	157	5785	18.19	18.21	17.73	17.07	18.26	17.56	17.68	17.63	26.84	29.10	Pass
11ax-HE20	MCS0	165	5825	17.55	17.12	17.39	16.86	18.44	17.78	17.79	17.83	26.65	29.10	Pass

Test Mode	Data Rate/MCS	Channel No.	Freq. (MHz)	Average Power (dBm)								Total Average Power (dBm)	Average Power Limit (dBm)	Result
				Ant 0	Ant 1	Ant 2	Ant 3	Ant 4	Ant 5	Ant 6	Ant 7			
11ax-HE40	MCS0	38	5190	14.29	14.94	14.64	13.93	--	--	--	--	20.49	30.00	Pass
11ax-HE40	MCS0	46	5230	19.78	20.46	19.66	20.67	--	--	--	--	26.18	30.00	Pass
11ax-HE40	MCS0	54	5270	15.48	15.41	15.58	14.60	--	--	--	--	21.31	23.98	Pass
11ax-HE40	MCS0	62	5310	14.83	14.72	14.00	14.34	--	--	--	--	20.51	23.98	Pass
11ax-HE40	MCS0	102	5510	8.97	9.21	8.39	8.42	9.21	8.39	8.71	8.53	17.77	23.98	Pass
11ax-HE40	MCS0	110	5550	8.75	9.66	8.29	8.36	8.45	8.88	8.65	8.70	17.77	23.98	Pass
11ax-HE40	MCS0	134	5670	8.76	9.70	8.55	8.12	9.77	8.78	8.82	8.12	17.90	23.98	Pass
11ax-HE40	MCS0	142	5710	8.29	9.61	8.25	8.10	8.85	8.13	8.10	7.63	17.44	23.98	Pass
11ax-HE40	MCS0	151	5755	18.08	18.55	17.76	17.26	18.27	17.76	17.50	17.45	26.88	30.00	Pass
11ax-HE40	MCS0	159	5795	18.08	17.82	17.70	17.02	18.26	17.65	17.80	17.73	26.80	30.00	Pass
11ax-HE80	MCS0	42	5210	11.01	11.16	10.78	10.99	--	--	--	--	17.01	30.00	Pass
11ax-HE80	MCS0	58	5290	11.54	11.43	10.95	11.07	--	--	--	--	17.27	23.98	Pass
11ax-HE80	MCS0	106	5530	11.75	12.81	11.26	10.70	12.72	11.90	11.75	11.45	20.87	23.98	Pass
11ax-HE80	MCS0	122	5610	11.92	11.97	11.16	11.23	12.33	12.03	11.55	12.33	20.87	23.98	Pass
11ax-HE80	MCS0	138	5690	11.18	12.45	10.95	10.73	12.25	11.03	11.17	10.40	20.35	23.98	Pass
11ax-HE80	MCS0	155	5775	18.20	18.32	17.82	17.08	18.36	17.83	17.61	17.70	26.91	30.00	Pass
11ax-HE160	MCS0	50	5250	8.51	8.35	8.25	8.10	--	--	--	--	14.33	23.98	Pass

Note 1:

For 5150-5350MHz, The Total Average Power (dBm) = $10 \cdot \log \{10^{(\text{Ant 0 Average Power} / 10)} + 10^{(\text{Ant 1 Average Power} / 10)} + 10^{(\text{Ant 2 Average Power} / 10)} + 10^{(\text{Ant 3 Average Power} / 10)}\}$.

For 5500-5850MHz, The Total Average Power (dBm) = $10 \cdot \log \{10^{(\text{Ant 0 Average Power} / 10)} + 10^{(\text{Ant 1 Average Power} / 10)} + 10^{(\text{Ant 2 Average Power} / 10)} + 10^{(\text{Ant 3 Average Power} / 10)} + 10^{(\text{Ant 4 Average Power} / 10)} + 10^{(\text{Ant 5 Average Power} / 10)} + 10^{(\text{Ant 6 Average Power} / 10)} + 10^{(\text{Ant 7 Average Power} / 10)}\}$.

Note 2:

For 5150 - 5250MHz: Average Power Limit (dBm) = 30 dBm.

For 5250 - 5350MHz:

802.11a: Average Power Limit (dBm) = $11\text{dBm} + 10\log(19.28) = 23.85\text{dBm} < 23.98\text{dBm}$, Final Limit=23.85dBm;

802.11ac/ax: Average Power Limit (dBm) = $11\text{dBm} + 10\log(26\text{dB bandwidth}) > 23.98\text{dBm}$, Final Limit=23.98dBm;

For 5470~5725MHz:

802.11a: Average Power Limit (dBm) = $11\text{dBm} + 10\log(18.87) = 23.76\text{dBm} < 23.98\text{dBm}$; Final Limit=23.76dBm-(6.9-6) dBi=22.86dBm;

802.11ac-VHT20/ax-HE20: Average Power Limit (dBm) = $11\text{dBm} + 10\log(26\text{dB bandwidth}) > 23.98\text{dBm}$; Final Limit=23.98dBm-(6.9-6) dBi=23.08dBm;

802.11ac-VHT40/ ac-VHT80/ax-HE40/ax-HE80: Average Power Limit (dBm) = $11\text{dBm} + 10\log(26\text{dB bandwidth}) > 23.98\text{dBm}$; Final Limit=23.98dBm;

For 5725~5850MHz:

802.11a/ac-VHT20/ax-HE20: Average Power Limit (dBm) = $30\text{ dBm} - (6.9 - 6)\text{ dB} = 29.1\text{dBm}$.

802.11ac-VHT40/ ac-VHT80/ax-HE40/ax-HE80: Average Power Limit (dBm) = 30 dBm.

Test Site	SR2	Test Engineer	Peter
Test Date	2021/04/22 ~ 2021/06/22	Test item	Output Power
Test Mode	Scan Antenna		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)	Average Power Limit (dBm)	Result
11a	6Mbps	36	5180	16.36	30.00	Pass
11a	6Mbps	44	5220	16.93	30.00	Pass
11a	6Mbps	48	5240	16.41	30.00	Pass
11a	6Mbps	149	5745	16.48	30.00	Pass
11a	6Mbps	157	5785	15.64	30.00	Pass
11a	6Mbps	165	5825	14.87	30.00	Pass
11ac-VHT20	MCS0	36	5180	16.33	30.00	Pass
11ac-VHT20	MCS0	40	5220	16.41	30.00	Pass
11ac-VHT20	MCS0	48	5240	15.83	30.00	Pass
11ac-VHT20	MCS0	149	5745	16.31	30.00	Pass
11ac-VHT20	MCS0	157	5785	15.59	30.00	Pass
11ac-VHT20	MCS0	165	5825	14.47	30.00	Pass
11ac-VHT40	MCS0	38	5190	11.70	30.00	Pass
11ac-VHT40	MCS0	46	5230	17.44	30.00	Pass
11ac-VHT40	MCS0	151	5755	16.65	30.00	Pass
11ac-VHT40	MCS0	159	5795	16.04	30.00	Pass
11ac-VHT80	MCS0	42	5210	8.57	30.00	Pass
11ac-VHT80	MCS0	155	5775	16.33	30.00	Pass

6.5. Transmit Power Control

6.5.1. 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.

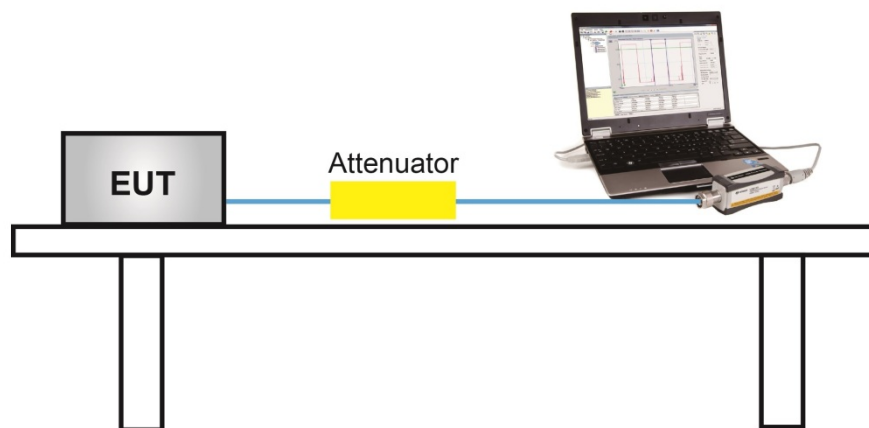
6.5.2. Test Procedure Used

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

6.5.3. 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.

6.5.4. Test Setup



6.5.5. Test Result

Manufacturer declared that device support TPC mechanism in the operation description.

6.6. Power Spectral Density Measurement

6.6.1. 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.

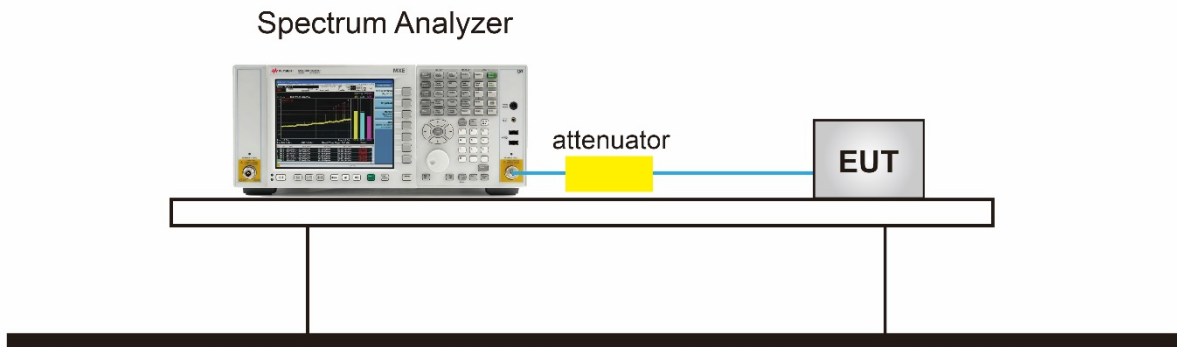
6.6.2. Test Procedure Used

KDB 789033 D02v02r01-SectionF

6.6.3. 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, if measurement bandwidth of Maximum PSD is specified in 500 kHz,
VBW = 1.5MHz
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.

6.6.4. Test Setup



6.6.5. Test Result

Test Site	SR2	Test Engineer	Peter
Test Date	2021/03/30~2021/04/14	Test Item	Power Spectral Density (U-NII- 1&2A)

Test Mode	Data Rate /MCS	Ch. No.	Freq. (MHz)	PSD (dBm/MHz)				Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/MHz)	Result
				Ant 0	Ant 1	Ant 2	Ant 3				
11a	6Mbps	36	5180	4.05	4.40	4.21	3.54	94.52	10.33	13.18	Pass
11a	6Mbps	44	5220	6.24	6.42	6.20	6.98	94.52	12.74	13.18	Pass
11a	6Mbps	48	5240	6.36	6.79	5.83	7.09	94.52	12.81	13.18	Pass
11a	6Mbps	52	5260	0.44	0.45	0.58	-0.18	94.52	6.60	7.18	Pass
11a	6Mbps	60	5300	0.77	0.52	0.23	0.48	94.52	6.77	7.18	Pass
11a	6Mbps	64	5320	0.37	0.54	0.26	1.06	94.52	6.83	7.18	Pass
11ac-VHT20	MCS0	36	5180	4.94	4.88	4.97	3.95	93.76	11.00	13.18	Pass
11ac-VHT20	MCS0	40	5220	6.31	6.44	5.82	6.89	93.76	12.68	13.18	Pass
11ac-VHT20	MCS0	48	5240	6.07	6.21	5.78	6.85	93.76	12.55	13.18	Pass
11ac-VHT20	MCS0	52	5260	0.79	0.51	0.98	-0.24	93.76	6.83	7.18	Pass
11ac-VHT20	MCS0	60	5300	0.60	0.91	0.43	0.46	93.76	6.90	7.18	Pass
11ac-VHT20	MCS0	64	5320	0.57	0.63	0.23	0.69	93.76	6.83	7.18	Pass
11ac-VHT40	MCS0	38	5190	0.37	0.46	0.68	-0.33	93.90	6.60	13.18	Pass
11ac-VHT40	MCS0	46	5230	5.90	5.90	5.42	6.57	93.90	12.26	13.18	Pass
11ac-VHT40	MCS0	54	5270	0.57	0.73	0.89	-0.37	93.90	6.78	7.18	Pass
11ac-VHT40	MCS0	62	5310	0.40	0.54	-0.29	-0.17	93.90	6.43	7.18	Pass
11ac-VHT80	MCS0	42	5210	-5.62	-5.68	-5.78	-5.99	93.26	0.56	13.18	Pass
11ac-VHT80	MCS0	58	5290	-4.83	-4.77	-5.20	-5.21	93.26	1.33	7.18	Pass
11ac-VHT160	MCS0	50	5250	-10.01	-10.24	-10.45	-9.90	93.60	-3.84	7.18	Pass
11ax-HE20	MCS0	36	5180	5.07	4.96	5.23	3.87	93.93	11.11	13.18	Pass
11ax-HE20	MCS0	40	5220	6.31	6.69	5.71	7.13	93.93	12.78	13.18	Pass
11ax-HE20	MCS0	48	5240	6.44	6.83	5.75	6.96	93.93	12.81	13.18	Pass
11ax-HE20	MCS0	52	5260	0.84	0.64	0.71	-0.23	93.93	6.80	7.18	Pass
11ax-HE20	MCS0	60	5300	1.07	0.96	0.27	0.72	93.93	7.06	7.18	Pass
11ax-HE20	MCS0	64	5320	0.33	0.01	0.97	0.71	93.93	6.81	7.18	Pass
11ax-HE40	MCS0	38	5190	0.74	0.92	0.75	0.03	94.08	6.91	13.18	Pass
11ax-HE40	MCS0	46	5230	6.12	6.57	5.95	6.72	94.08	12.63	13.18	Pass
11ax-HE40	MCS0	54	5270	0.79	0.57	0.94	0.01	94.08	6.88	7.18	Pass
11ax-HE40	MCS0	62	5310	0.69	0.28	-0.07	0.08	94.08	6.54	7.18	Pass

11ax-HE80	MCS0	42	5210	-5.60	-5.47	-5.91	-5.21	93.93	0.75	13.18	Pass
11ax-HE80	MCS0	58	5290	-5.00	-5.05	-5.49	-5.40	93.93	1.06	7.18	Pass
11ax-HE160	MCS0	50	5250	-9.83	-10.11	-10.44	-9.91	85.51	-3.36	7.18	Pass

Note 1:

When EUT duty cycle < 98%, the total PSD (dBm/MHz) = $10 \cdot \log \{ 10^{(\text{Ant } 0 \text{ PSD}/10)} + 10^{(\text{Ant } 1 \text{ PSD}/10)} + 10^{(\text{Ant } 2 \text{ PSD}/10)} + 10^{(\text{Ant } 3 \text{ PSD}/10)} \}$
 (dBm/MHz) + $10 \cdot \log (1/\text{Duty Cycle})$.

Note 2:

For 5150 - 5250MHz: PSD Limit (dBm/MHz) = 17 dBm/MHz - (9.82 - 6) dBi = 13.18dBm/MHz.

For 5250 - 5350MHz: PSD Limit (dBm/MHz) = 11 dBm/MHz - (9.82 - 6) dBi = 7.18dBm/MHz.

Test Site	SR2	Test Engineer	Peter
Test Date	2021/03/27~2021/05/05	Test Item	Power Spectral Density (U-NII 2C)

Test Mode	Data Rate /MCS	Ch. No.	Freq. (MHz)	PSD (dBm/MHz)								Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
				Ant 0	Ant 1	Ant 2	Ant 3	Ant 4	Ant 5	Ant 6	Ant 7				
11a	6Mbps	100	5500	-6.26	-5.66	-6.67	-6.86	-5.51	-5.83	-6.09	-6.24	92.69	3.24	4.07	Pass
11a	6Mbps	116	5580	-5.94	-4.72	-6.46	-6.02	-5.58	-5.09	-5.58	-5.81	92.69	3.74	4.07	Pass
11a	6Mbps	140	5700	-5.38	-4.73	-5.37	-6.50	-5.05	-6.22	-5.73	-6.40	92.69	3.73	4.07	Pass
11a	6Mbps	144	5720	-5.98	-5.45	-6.06	-6.79	-5.29	-5.47	-6.32	-6.92	92.69	3.36	4.07	Pass
11ac-VHT20	MCS0	100	5500	-5.43	-5.54	-6.25	-6.40	-4.65	-5.04	-4.94	-5.97	93.60	3.83	4.07	Pass
11ac-VHT20	MCS0	116	5580	-5.63	-4.93	-5.77	-5.99	-5.34	-5.57	-6.36	-5.54	93.60	3.70	4.07	Pass
11ac-VHT20	MCS0	140	5700	-6.18	-4.59	-4.94	-5.69	-4.85	-6.30	-5.15	-6.83	93.60	3.82	4.07	Pass
11ac-VHT20	MCS0	144	5720	-6.13	-4.37	-4.83	-5.46	-4.90	-5.43	-5.75	-6.39	93.60	3.96	4.07	Pass
11ac-VHT40	MCS0	102	5510	-5.84	-5.95	-6.88	-7.27	-5.45	-5.77	-5.33	-6.03	93.58	3.30	4.07	Pass
11ac-VHT40	MCS0	110	5550	-5.96	-5.78	-6.41	-6.59	-5.12	-5.34	-5.20	-6.03	93.58	3.55	4.07	Pass
11ac-VHT40	MCS0	134	5670	-6.02	-4.78	-4.96	-7.03	-4.95	-5.48	-5.13	-6.73	93.58	3.76	4.07	Pass
11ac-VHT40	MCS0	142	5710	-6.45	-4.50	-5.59	-6.35	-5.91	-6.05	-6.36	-7.23	93.58	3.33	4.07	Pass
11ac-VHT80	MCS0	106	5530	-5.70	-4.98	-6.06	-6.72	-4.53	-4.38	-5.11	-5.82	93.75	3.96	4.07	Pass
11ac-VHT80	MCS0	122	5610	-5.76	-5.74	-5.21	-7.05	-4.99	-5.23	-5.73	-5.57	93.75	3.69	4.07	Pass
11ac-VHT80	MCS0	138	5690	-6.07	-4.73	-5.28	-6.84	-5.20	-5.88	-6.41	-6.87	93.75	3.46	4.07	Pass
11ax-HE20	MCS0	100	5500	-5.28	-5.64	-6.06	-6.74	-4.85	-5.07	-5.13	-5.68	94.76	3.75	4.07	Pass
11ax-HE20	MCS0	116	5580	-5.96	-4.62	-5.55	-6.15	-5.32	-5.27	-5.61	-5.33	94.76	3.81	4.07	Pass
11ax-HE20	MCS0	140	5700	-6.34	-4.47	-5.64	-6.06	-5.37	-6.62	-6.31	-7.14	94.76	3.34	4.07	Pass
11ax-HE20	MCS0	144	5720	-5.75	-3.99	-5.44	-5.45	-5.13	-5.70	-5.75	-6.33	94.76	3.87	4.07	Pass
11ax-HE40	MCS0	102	5510	-5.38	-5.64	-6.08	-6.95	-5.06	-5.48	-5.86	-6.48	94.08	3.47	4.07	Pass
11ax-HE40	MCS0	110	5550	-6.65	-5.78	-6.59	-6.36	-5.64	-5.69	-5.77	-6.18	94.08	3.23	4.07	Pass
11ax-HE40	MCS0	134	5670	-5.94	-5.19	-5.36	-7.33	-5.07	-6.01	-5.76	-6.47	94.08	3.46	4.07	Pass
11ax-HE40	MCS0	142	5710	-6.13	-3.96	-5.50	-6.39	-5.60	-5.85	-6.12	-6.73	94.08	3.59	4.07	Pass
11ax-HE80	MCS0	106	5530	-6.51	-5.66	-7.16	-7.20	-5.04	-5.14	-5.17	-6.35	94.11	3.35	4.07	Pass
11ax-HE80	MCS0	122	5610	-5.91	-5.62	-5.05	-7.07	-5.12	-5.24	-5.57	-5.54	94.11	3.69	4.07	Pass
11ax-HE80	MCS0	138	5690	-6.35	-4.58	-5.31	-6.66	-5.32	-5.93	-6.23	-6.83	94.11	3.46	4.07	Pass

Note 1:

When EUT duty cycle < 98%, the total PSD (dBm/MHz) = $10 \cdot \log \{ 10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)} + 10^{(\text{Ant 3 PSD}/10)} + 10^{(\text{Ant 4 PSD}/10)} + 10^{(\text{Ant 5 PSD}/10)} + 10^{(\text{Ant 6 PSD}/10)} + 10^{(\text{Ant 7 PSD}/10)} \}$ (dBm/MHz) + $10 \cdot \log (1/\text{Duty Cycle})$.

Note 2:

For 5470 - 5725MHz: PSD Limit (dBm/MHz) = 11 dBm/MHz - (12.93 - 6) dB = 4.07dBm/MHz.

Test Site	SR2	Test Engineer	Peter
Test Date	2021/05/05	Test Item	Power Spectral Density (U-NII-3)

Test Mode	Data Rate/MCS	Ch. No.	Freq. (MHz)	PSD (dBm/510KHz)								Duty Cycle (%)	Total PSD (dBm/510kHz)	Limit (dBm/500kHz)	Result
				Ant 0	Ant 1	Ant 2	Ant 3	Ant 4	Ant 5	Ant 6	Ant 7				
11a	6Mbps	149	5745	3.39	4.47	2.84	4.30	2.97	3.39	3.72	3.59	92.69	12.98	23.07	Pass
11a	6Mbps	157	5785	4.30	4.90	3.49	4.44	4.61	4.70	5.11	3.81	92.69	13.81	23.07	Pass
11a	6Mbps	165	5825	3.85	3.14	2.33	3.12	4.70	3.08	4.35	3.71	92.69	12.96	23.07	Pass
11ac-VHT20	MCS0	149	5745	3.61	4.49	4.11	4.57	4.08	3.80	4.06	3.23	93.60	13.33	23.07	Pass
11ac-VHT20	MCS0	157	5785	3.55	4.37	3.36	2.23	3.78	3.25	4.40	3.79	93.60	12.96	23.07	Pass
11ac-VHT20	MCS0	165	5825	3.01	2.47	3.34	2.68	4.41	3.40	3.03	3.12	93.60	12.54	23.07	Pass
11ac-VHT40	MCS0	151	5755	0.48	1.02	0.57	0.11	0.24	0.51	0.64	0.10	93.58	9.79	23.07	Pass
11ac-VHT40	MCS0	159	5795	0.63	0.98	0.97	0.44	1.54	1.35	1.96	0.76	93.58	10.42	23.07	Pass
11ac-VHT80	MCS0	155	5775	-2.69	-2.31	-2.69	-2.98	-2.33	-2.54	-2.04	-2.60	92.94	6.83	23.07	Pass
11ax-HE20	MCS0	149	5745	3.93	5.19	3.93	4.17	3.78	3.90	4.34	3.58	94.76	13.39	23.07	Pass
11ax-HE20	MCS0	157	5785	3.62	4.03	3.29	3.00	3.31	2.75	4.43	3.89	94.76	12.84	23.07	Pass
11ax-HE20	MCS0	165	5825	3.32	3.29	3.41	2.49	4.82	3.74	4.24	3.15	94.76	12.87	23.07	Pass
11ax-HE40	MCS0	151	5755	0.37	1.53	0.73	-0.22	0.80	0.75	0.99	0.37	94.08	9.99	23.07	Pass
11ax-HE40	MCS0	159	5795	0.79	0.51	0.44	-0.42	1.03	0.72	1.39	0.73	94.08	9.97	23.07	Pass
11ax-HE80	MCS0	155	5775	-2.24	-1.55	-2.14	-3.20	-2.58	-2.34	-2.06	-2.64	94.11	6.98	23.07	Pass

Note 1:

When EUT duty cycle < 98%, the total PSD (dBm/510kHz) = $10 \cdot \log \{ 10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)} + 10^{(\text{Ant 3 PSD}/10)} + 10^{(\text{Ant 4 PSD}/10)} + 10^{(\text{Ant 5 PSD}/10)} + 10^{(\text{Ant 6 PSD}/10)} + 10^{(\text{Ant 7 PSD}/10)} \}$ (dBm/510kHz) + $10 \cdot \log (1/\text{Duty Cycle})$.

Note 2: PSD Limit (dBm/500kHz) = 30 dBm/500kHz - (12.93 - 6) dB = 23.07dBm/500kHz.

Test Site	SR2	Test Engineer	Peter
Test Date	2021/04/13~2021/06/22	Test Item	Power Spectral Density (U-NII- 1)
Test Mode	Scan Antenna		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm/MHz)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
11a	6Mbps	36	5180	4.42	4.58	17.0	Pass
11a	6Mbps	44	5220	4.89	5.05	17.0	Pass
11a	6Mbps	48	5240	4.32	4.48	17.0	Pass
11ac-VHT20	MCS0	36	5180	4.05	4.22	17.0	Pass
11ac-VHT20	MCS0	40	5220	3.92	4.09	17.0	Pass
11ac-VHT20	MCS0	48	5240	3.52	3.69	17.0	Pass
11ac-VHT40	MCS0	38	5190	-2.55	-2.30	17.0	Pass
11ac-VHT40	MCS0	46	5230	1.92	2.17	17.0	Pass
11ac-VHT80	MCS0	42	5210	-9.83	-9.15	17.0	Pass

Test Site	SR2	Test Engineer	Peter
Test Date	2021/05/06 ~ 2021/06/22	Test Item	Power Spectral Density (U-NII-3)
Test Mode	Scan Antenna		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm/510kHz)	Total PSD (dBm/510kHz)	PSD Limit (500kHz)	Result
11a	6Mbps	149	5745	2.09	2.25	30.0	Pass
11a	6Mbps	157	5785	2.37	2.53	30.0	Pass
11a	6Mbps	165	5825	0.48	0.64	30.0	Pass
11ac-VHT20	MCS0	149	5745	1.35	1.52	30.0	Pass
11ac-VHT20	MCS0	157	5785	0.96	1.13	30.0	Pass
11ac-VHT20	MCS0	165	5825	-0.14	0.03	30.0	Pass
11ac-VHT40	MCS0	151	5755	-1.07	-0.82	30.0	Pass
11ac-VHT40	MCS0	159	5795	-2.33	-2.08	30.0	Pass
11ac-VHT80	MCS0	155	5775	-5.11	-4.43	30.0	Pass

802.11a Power Spectral Density - Low Band Ant 0/ Ant 0+1+2+3

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



802.11ac-VHT20 Power Spectral Density - Low Band Ant 0/ Ant 0+1+2+3

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



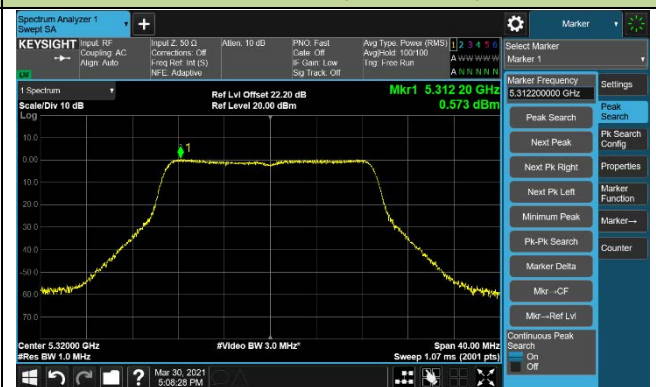
Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



802.11ac-VHT40 Power Spectral Density - Low Band Ant 0/ Ant 0+1+2+3

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 54 (5270MHz)

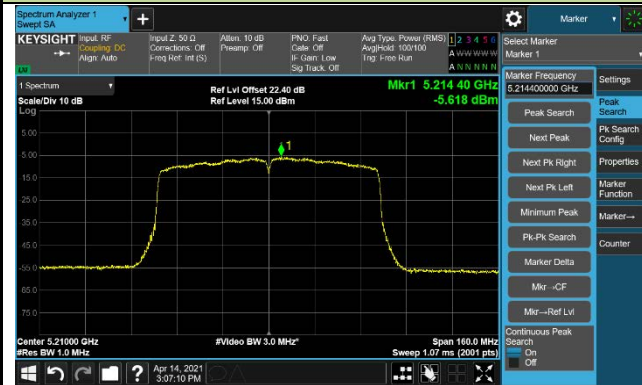


Channel 62 (5310MHz)



802.11ac-VHT80 Power Spectral Density - Low Band Ant 0/ Ant 0+1+2+3

Channel 42 (5210MHz)

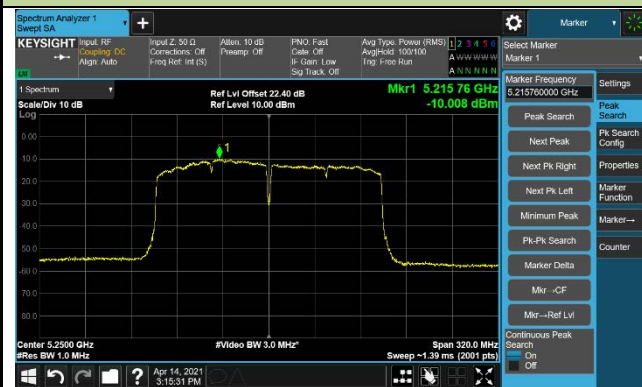


Channel 58 (5290MHz)



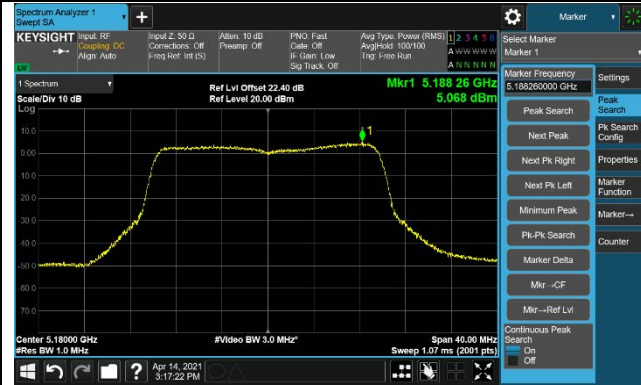
802.11ac-VHT160 Power Spectral Density - Low Band Ant 0/ Ant 0+1+2+3

Channel 50 (5250MHz)



802.11ax-HE20 Power Spectral Density - Low Band Ant 0/ Ant 0+1+2+3

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



802.11ax-HE40 Power Spectral Density - Low Band Ant 0/ Ant 0+1+2+3

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 54 (5270MHz)

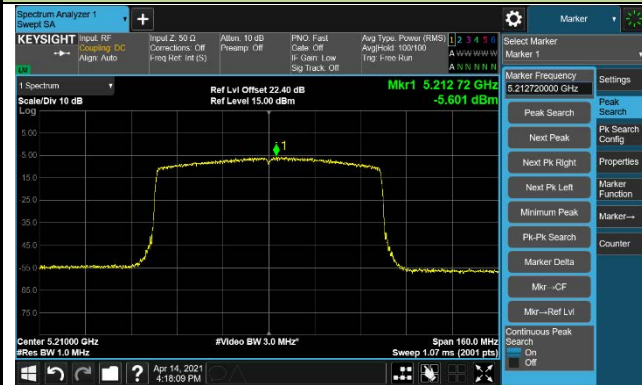


Channel 62 (5310MHz)



802.11ax-HE80 Power Spectral Density - Low Band Ant 0/ Ant 0+1+2+3

Channel 42 (5210MHz)

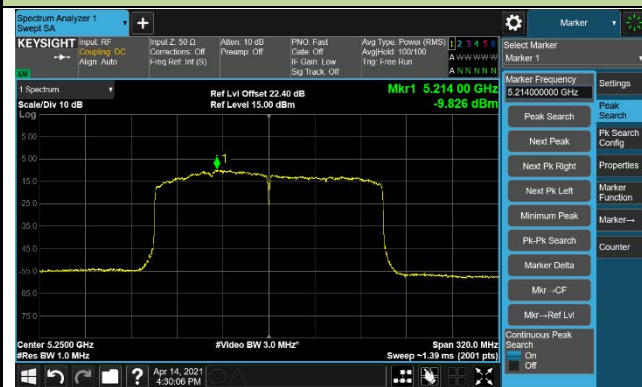


Channel 58 (5290MHz)



802.11ax-HE160 Power Spectral Density - Low Band Ant 0/ Ant 0+1+2+3

Channel 50 (5250MHz)



802.11a Power Spectral Density - Low Band Ant 1/ Ant 0+1+2+3

Channel 36 (5180MHz)



Channel 44 (5220MHz)



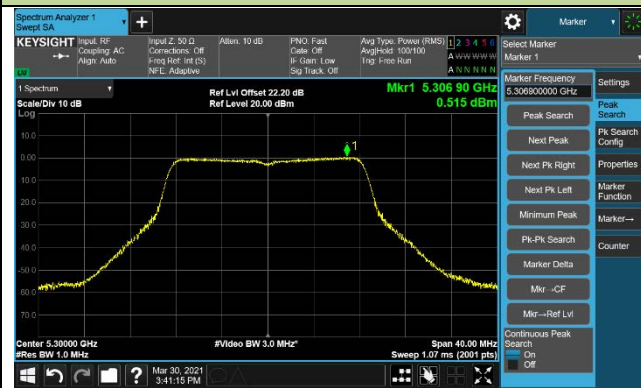
Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



802.11ac-VHT20 Power Spectral Density - Low Band Ant 1/ Ant 0+1+2+3

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



802.11ac-VHT40 Power Spectral Density - Low Band Ant 1/ Ant 0+1+2+3

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 54 (5270MHz)



Channel 62 (5310MHz)

