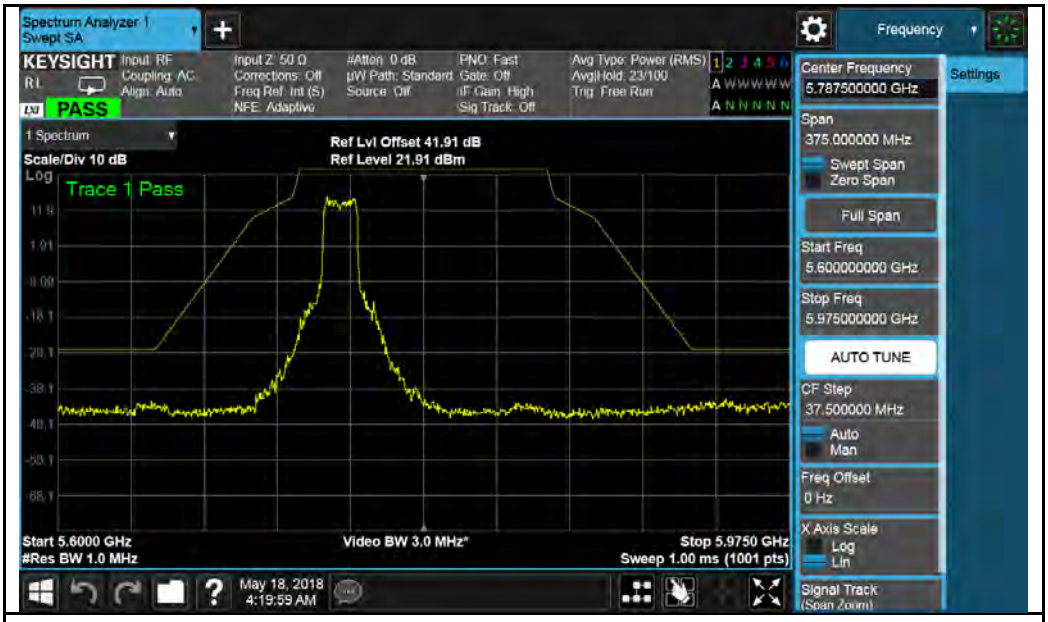
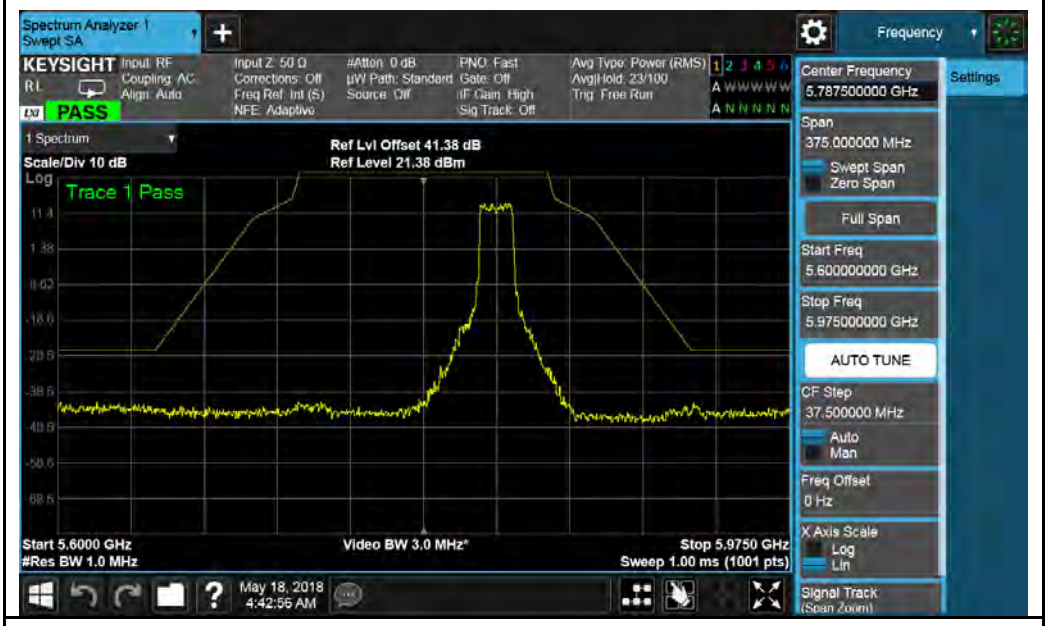
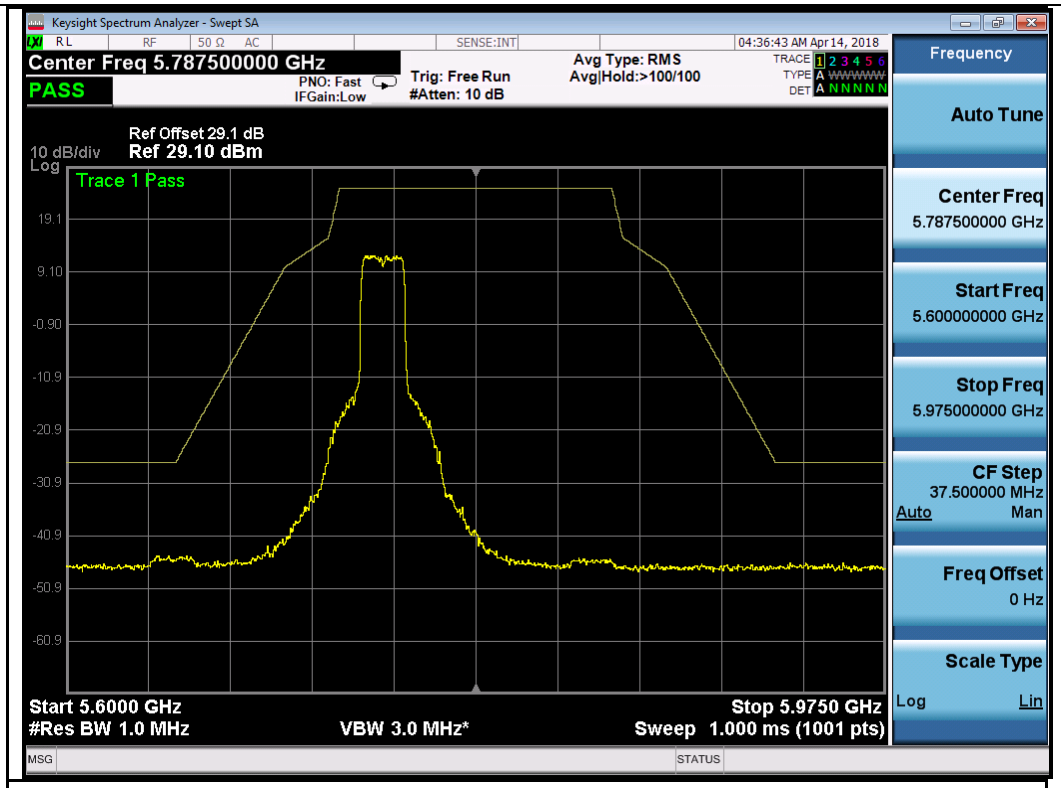
Chain 3:



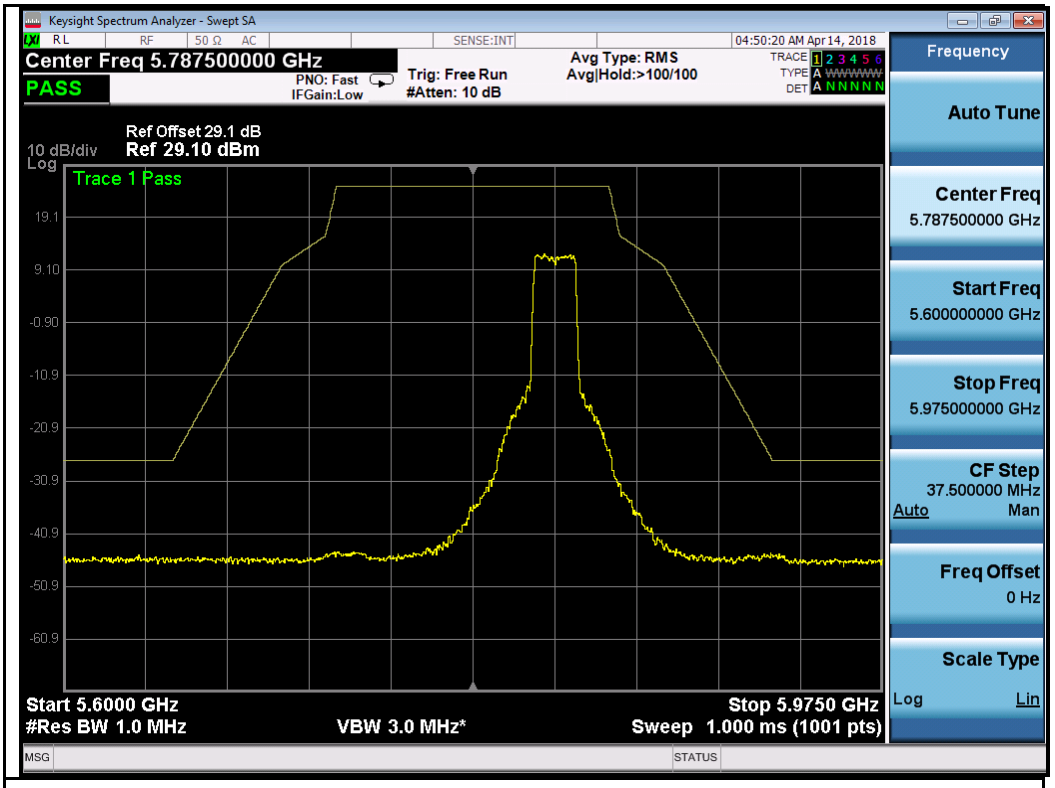
802.11a-5745M



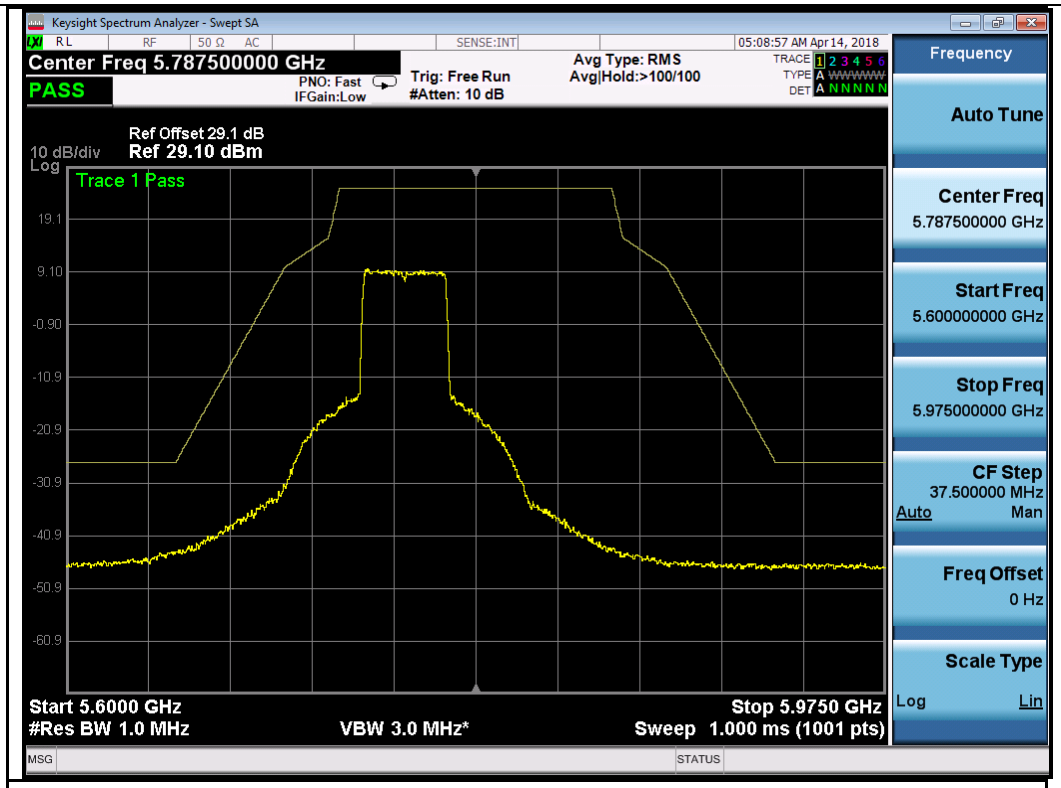
802.11a-5825M



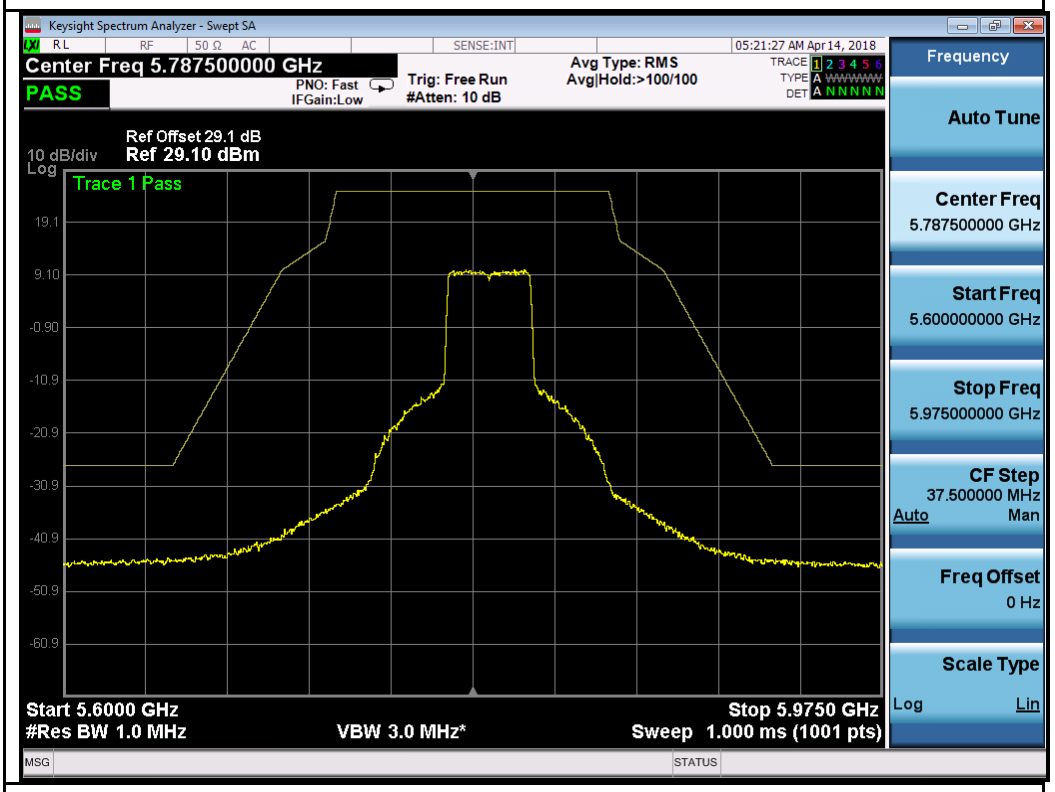
802.11ax20 5745M



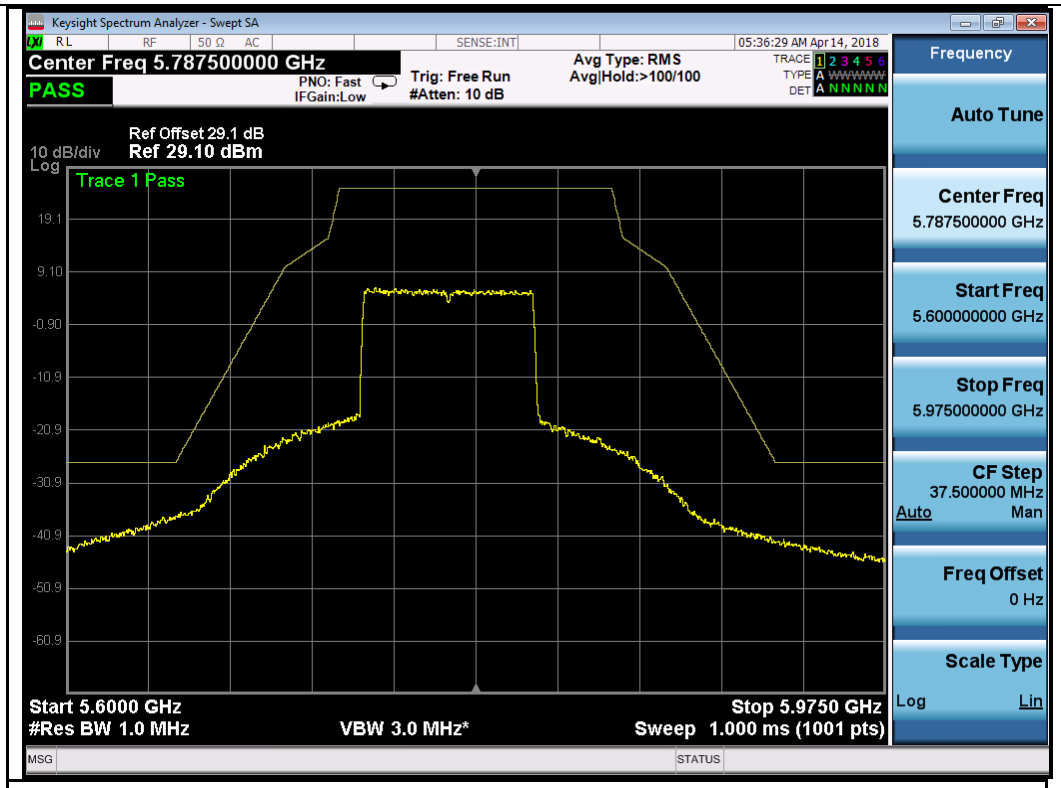
802.11ax20 5825M



802.11ax40 5755M

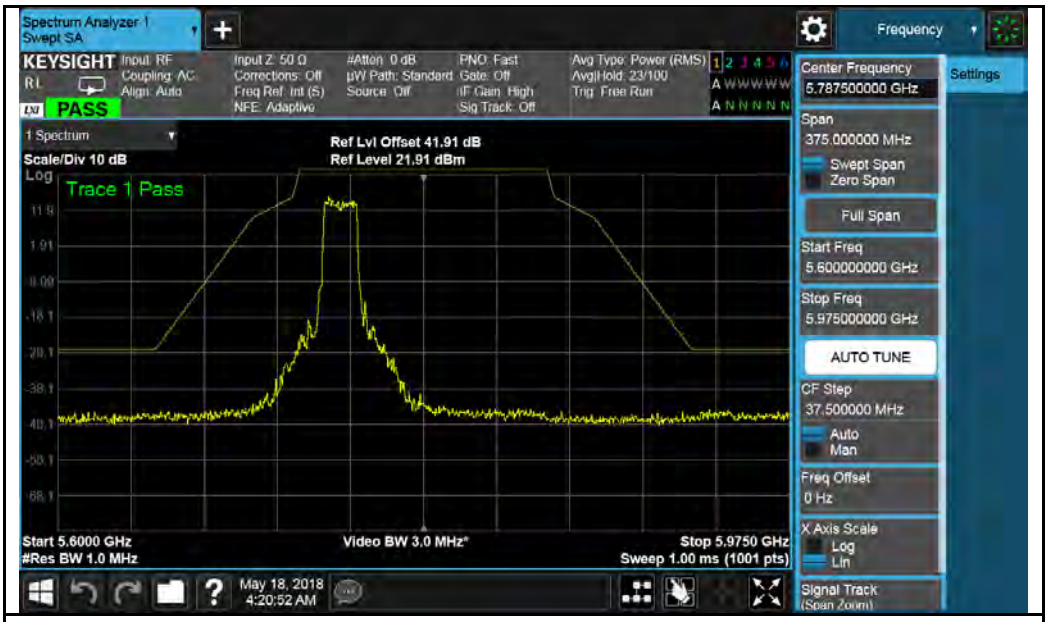


802.11ax40 5795M



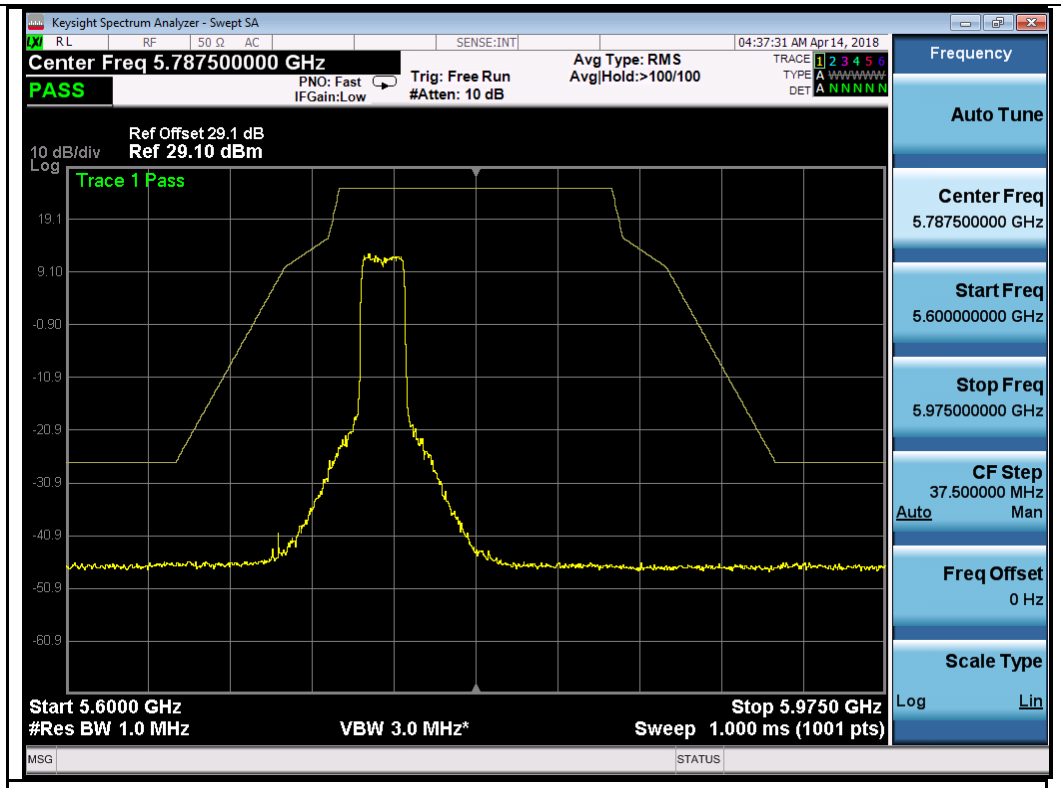
802.11ax80 5775M

Chain 4:

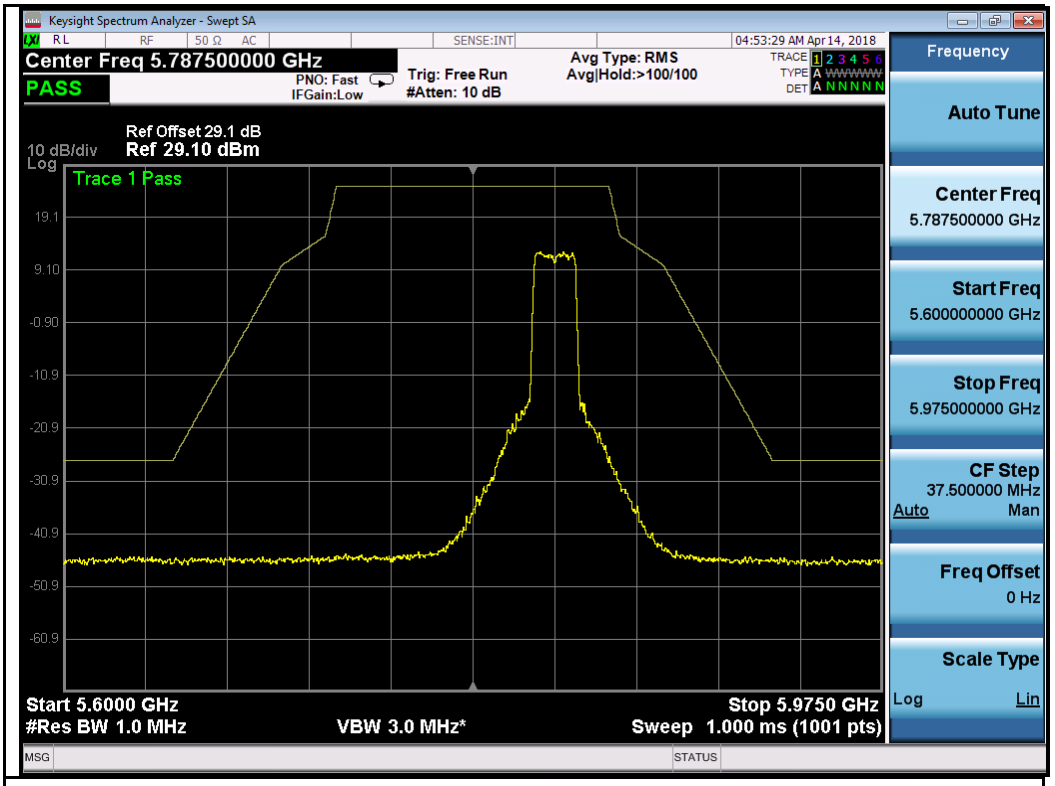


802.11a-5745M

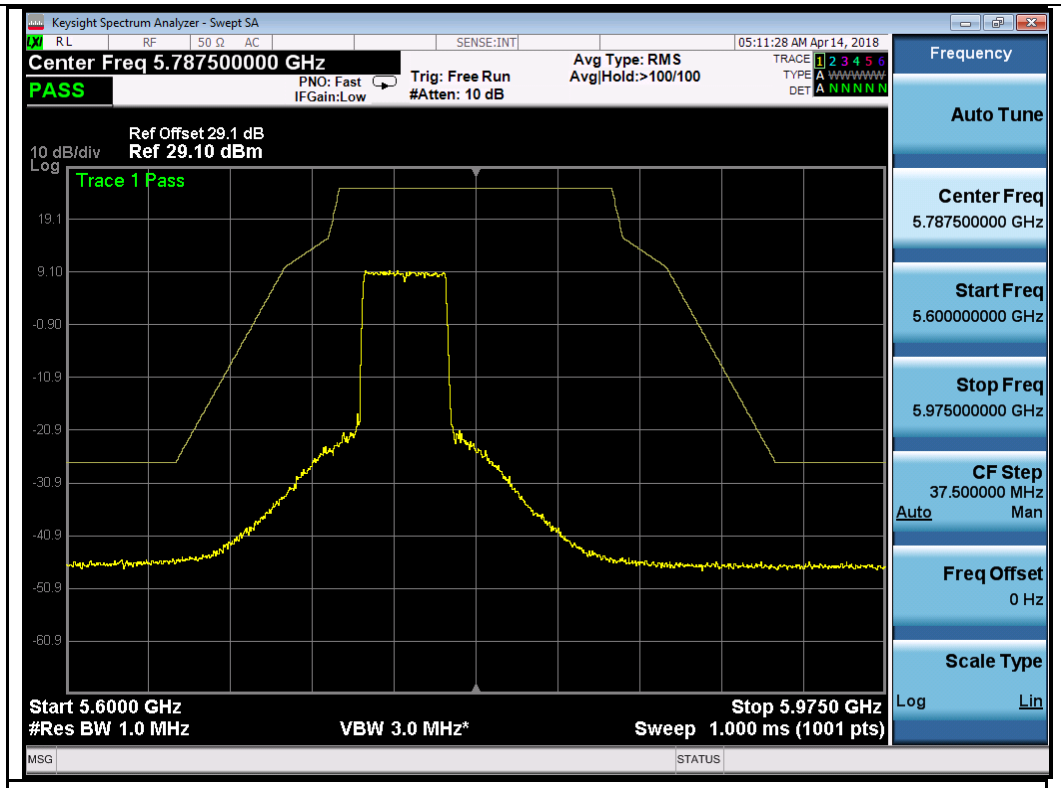
802.11a-5825M



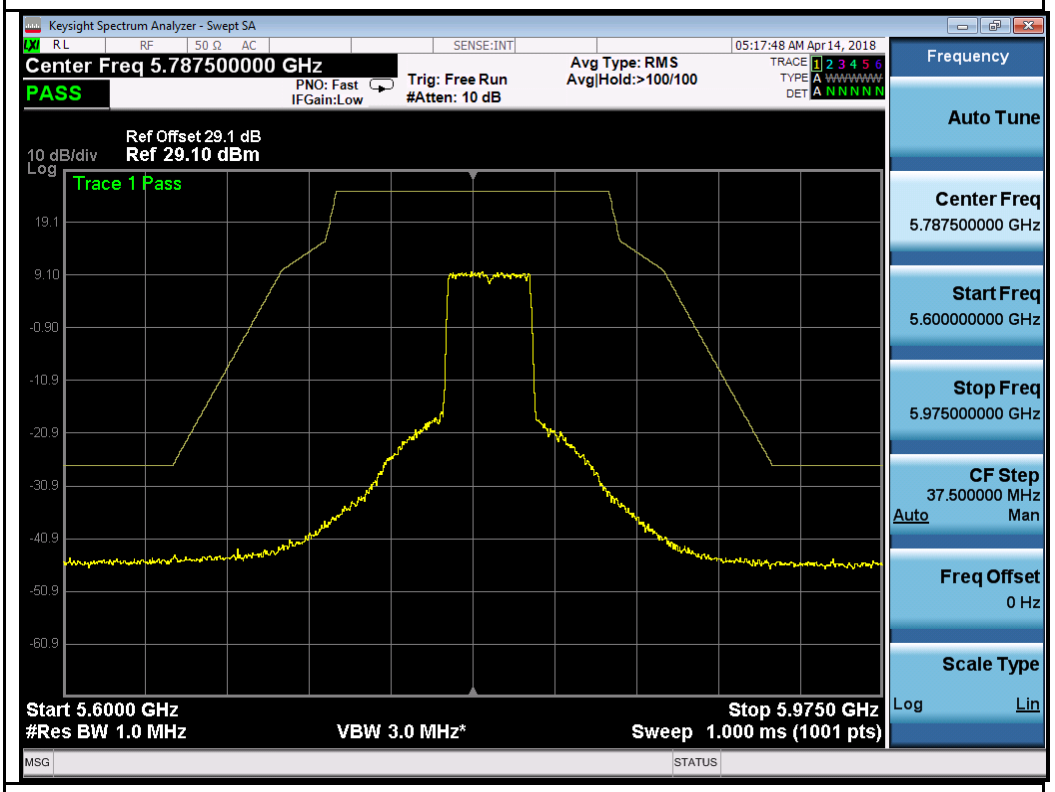
802.11ax20 5745M



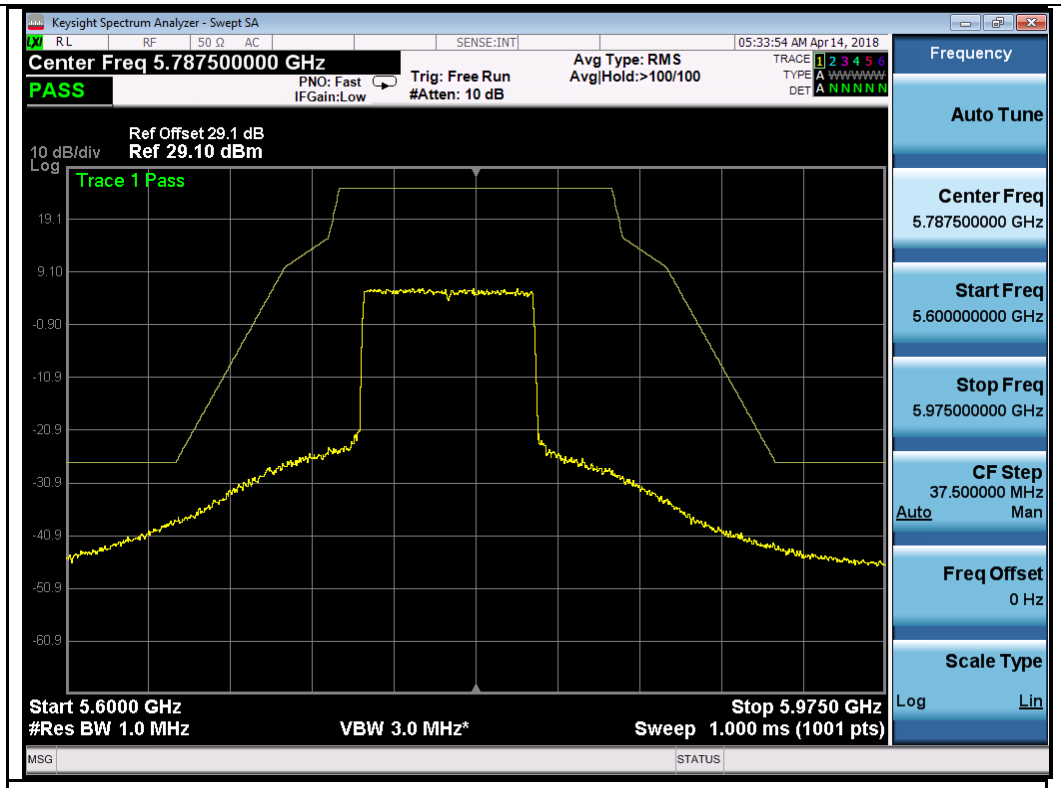
802.11ax20 5825M



802.11ax40 5755M

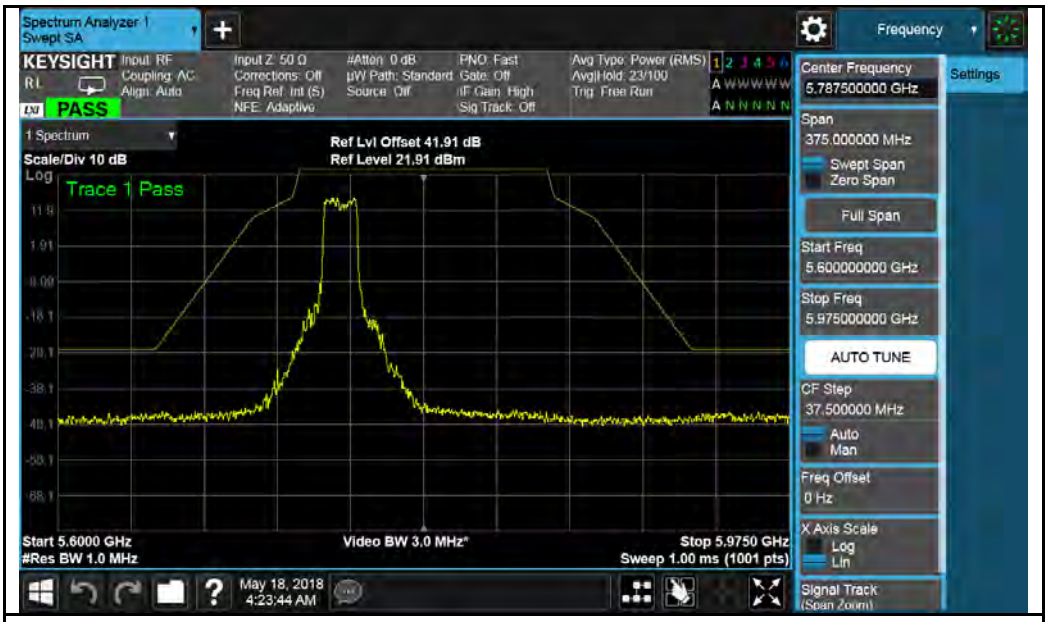


802.11ax40 5795M

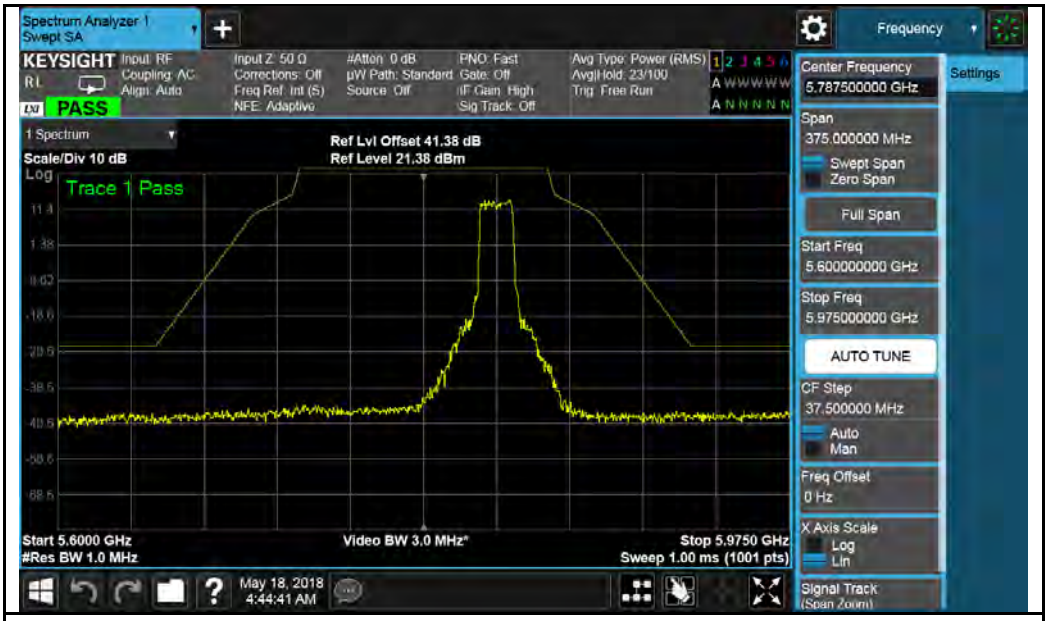


802.11ax80 5775M

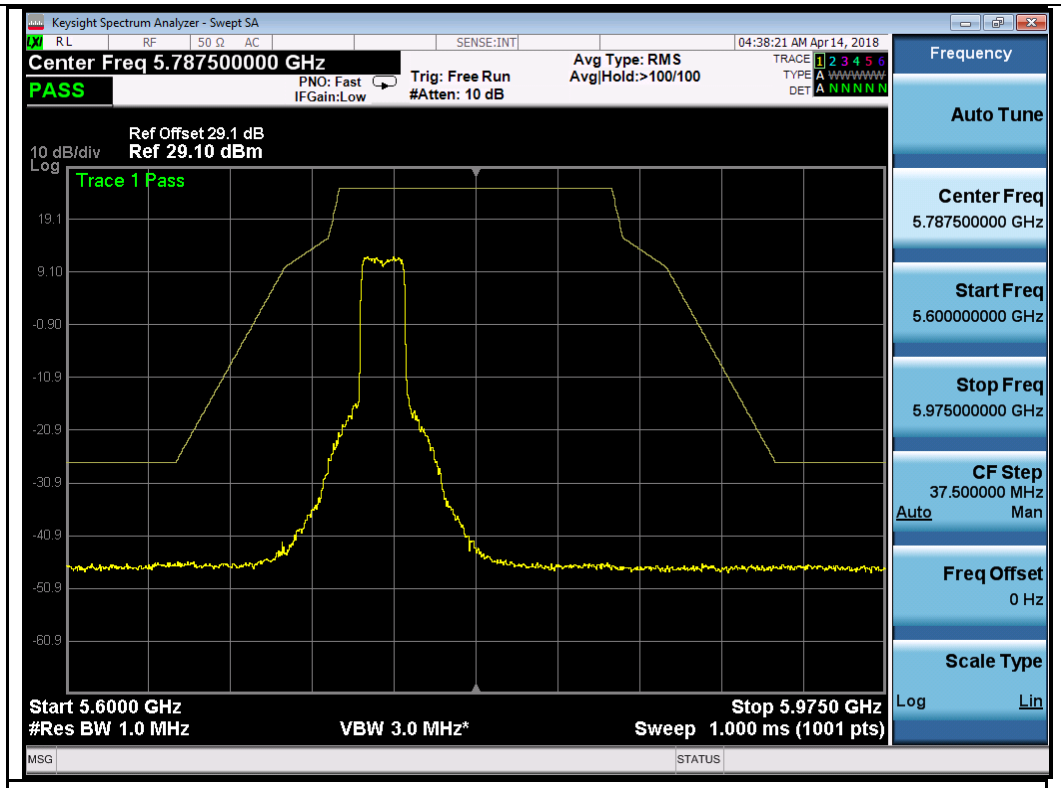
Chain 5:



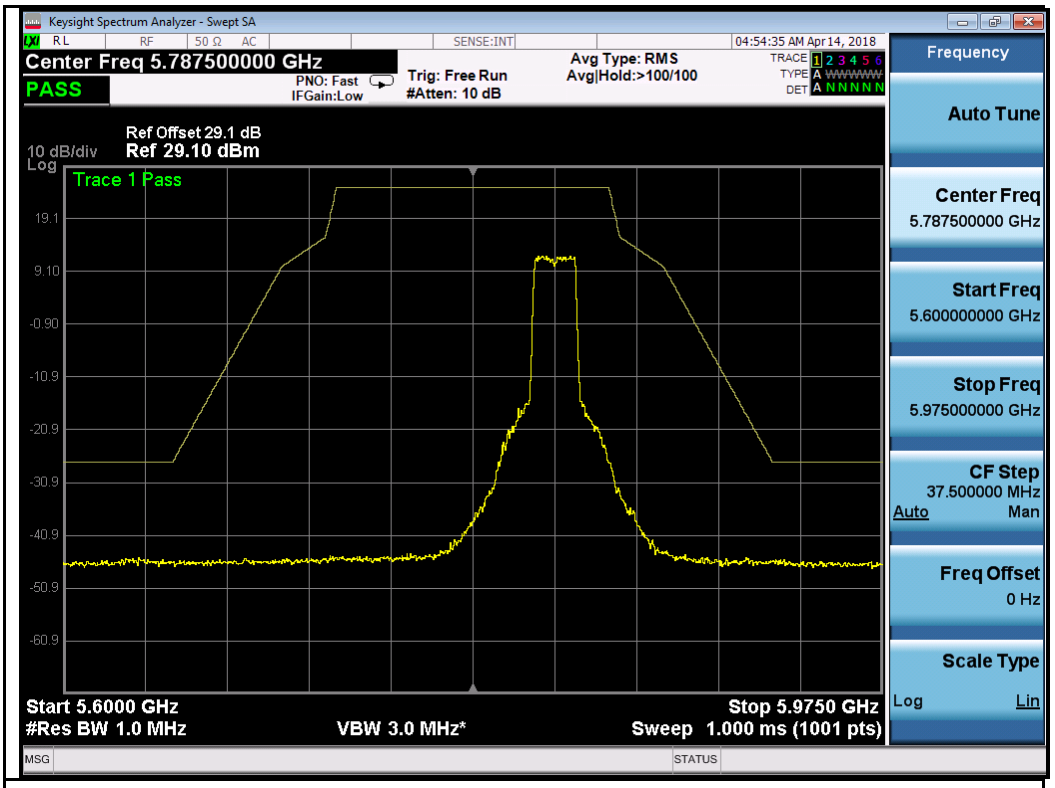
802.11a-5745M



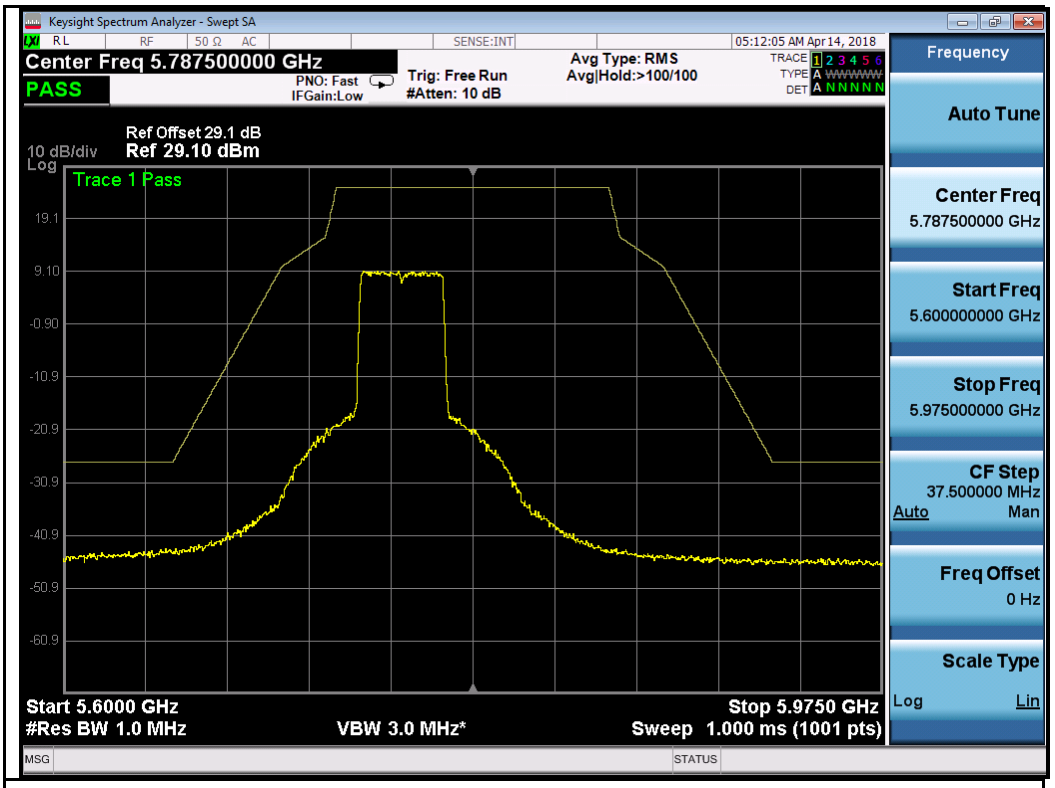
802.11a-5825M



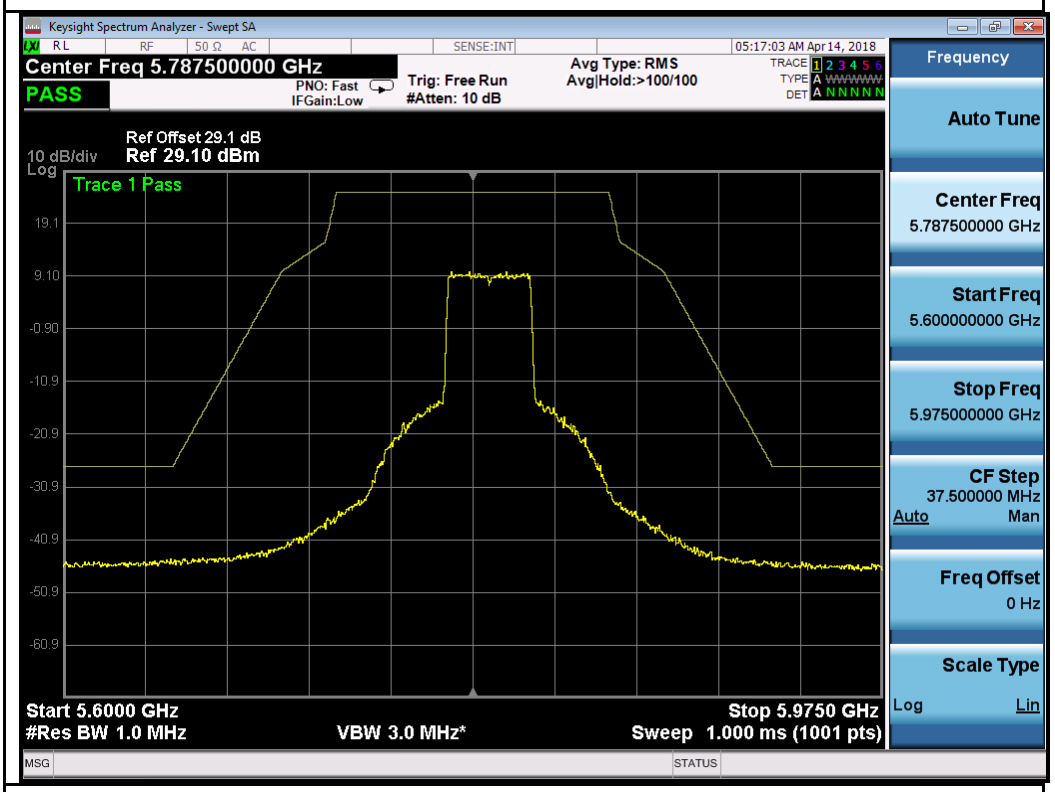
802.11ax20 5745M



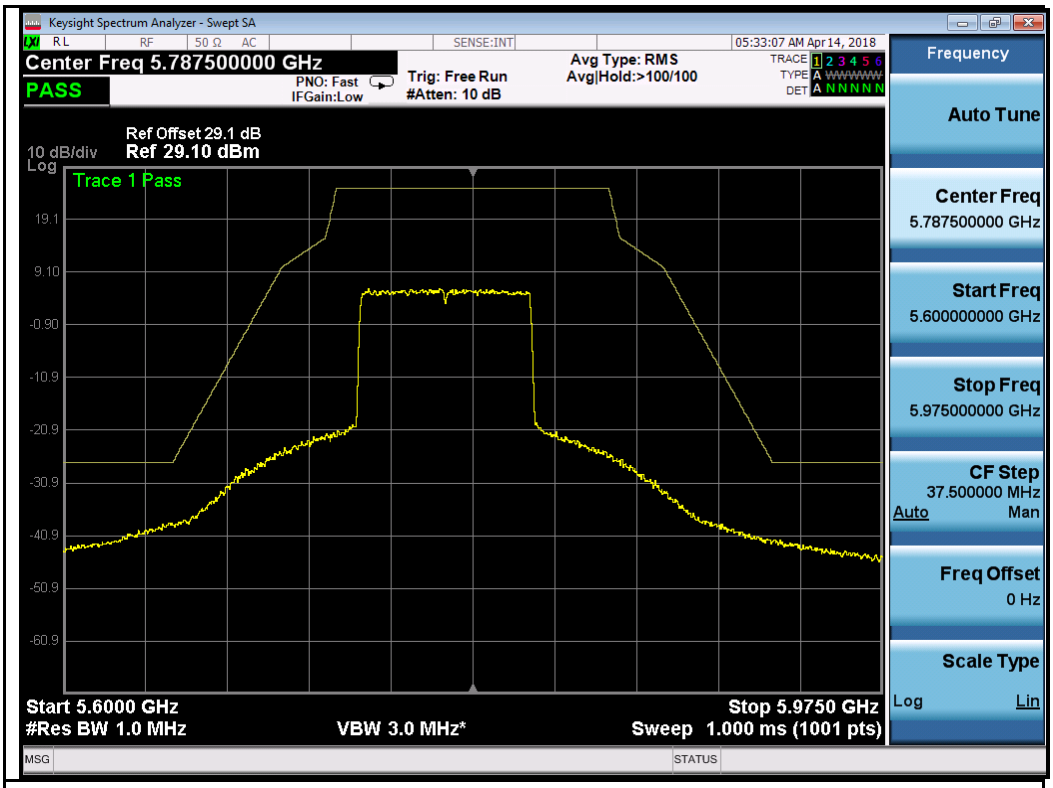
802.11ax20 5825M



802.11ax40 5755M

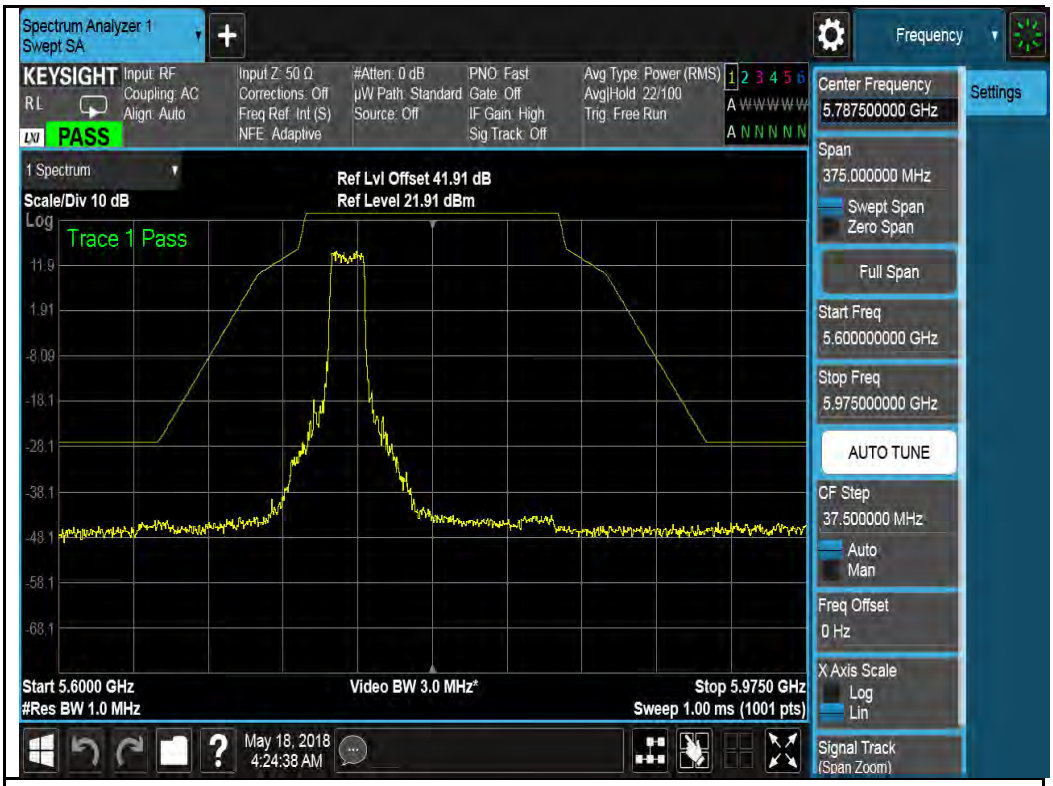


802.11ax40 5795M

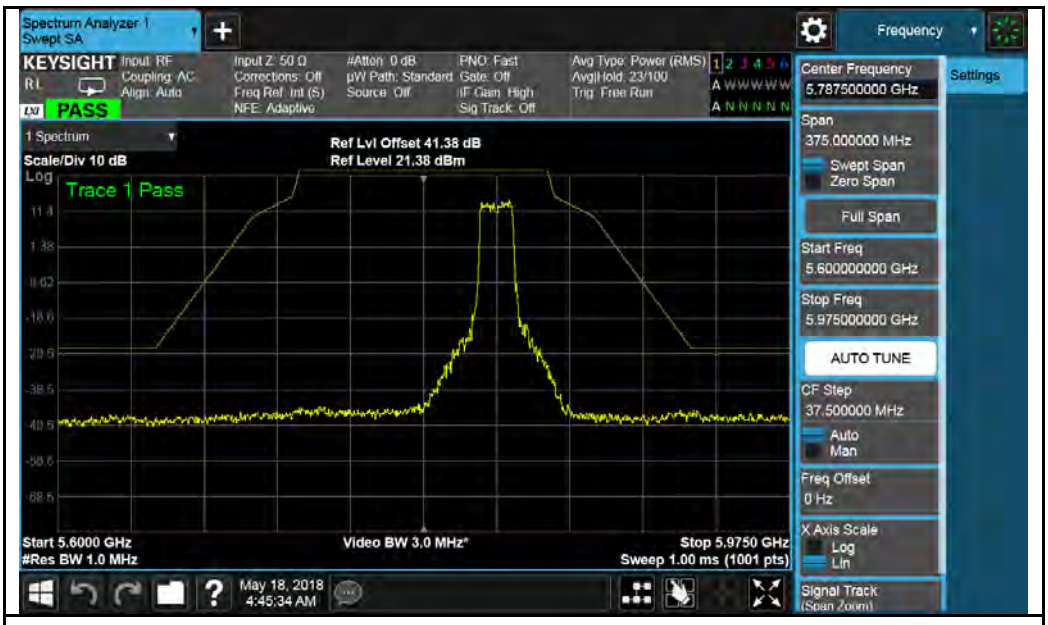


802.11ax80 5775M

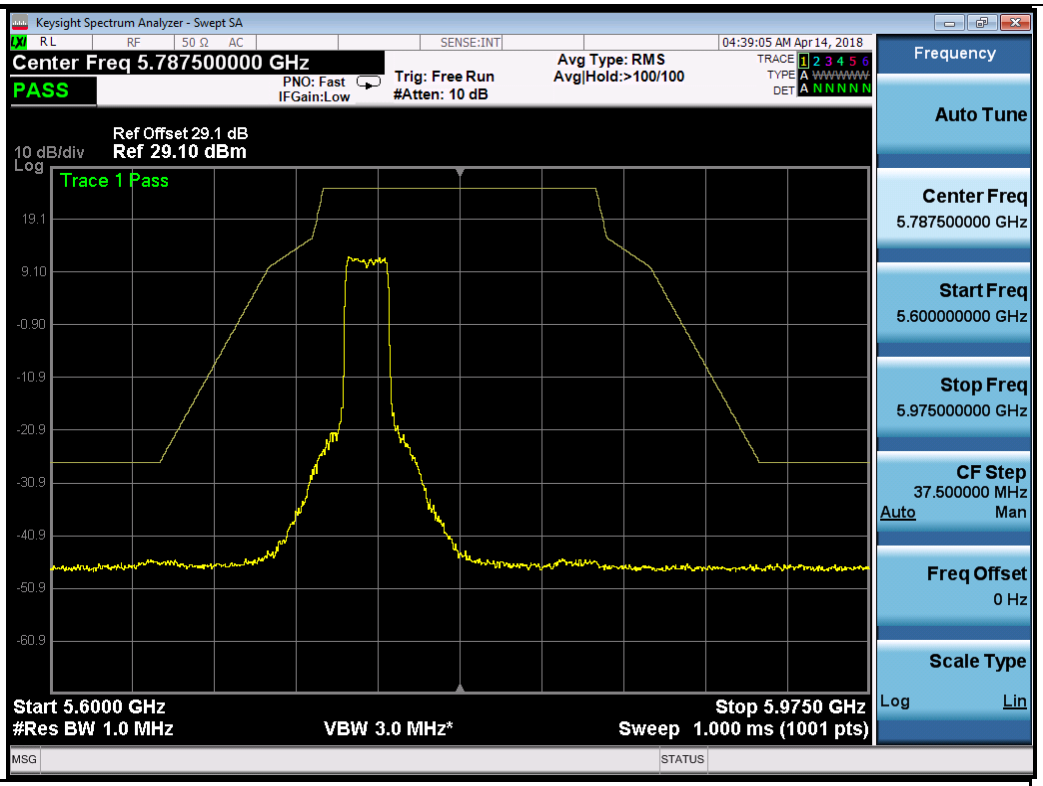
Chain 6:



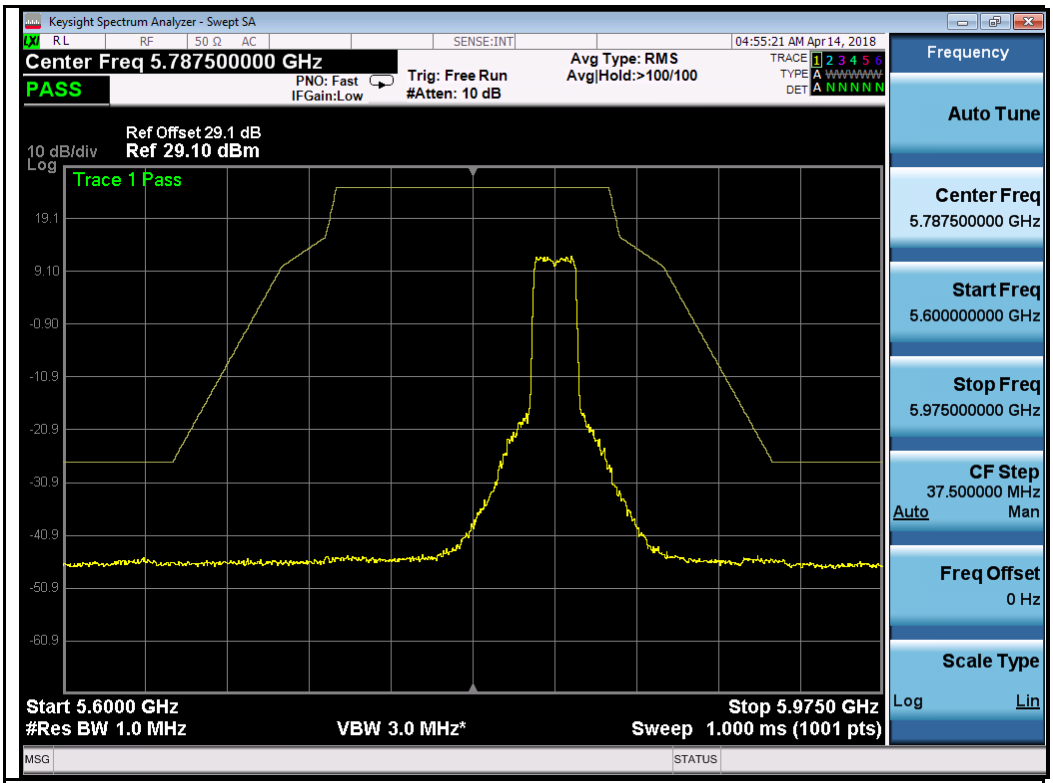
802.11a-5745M



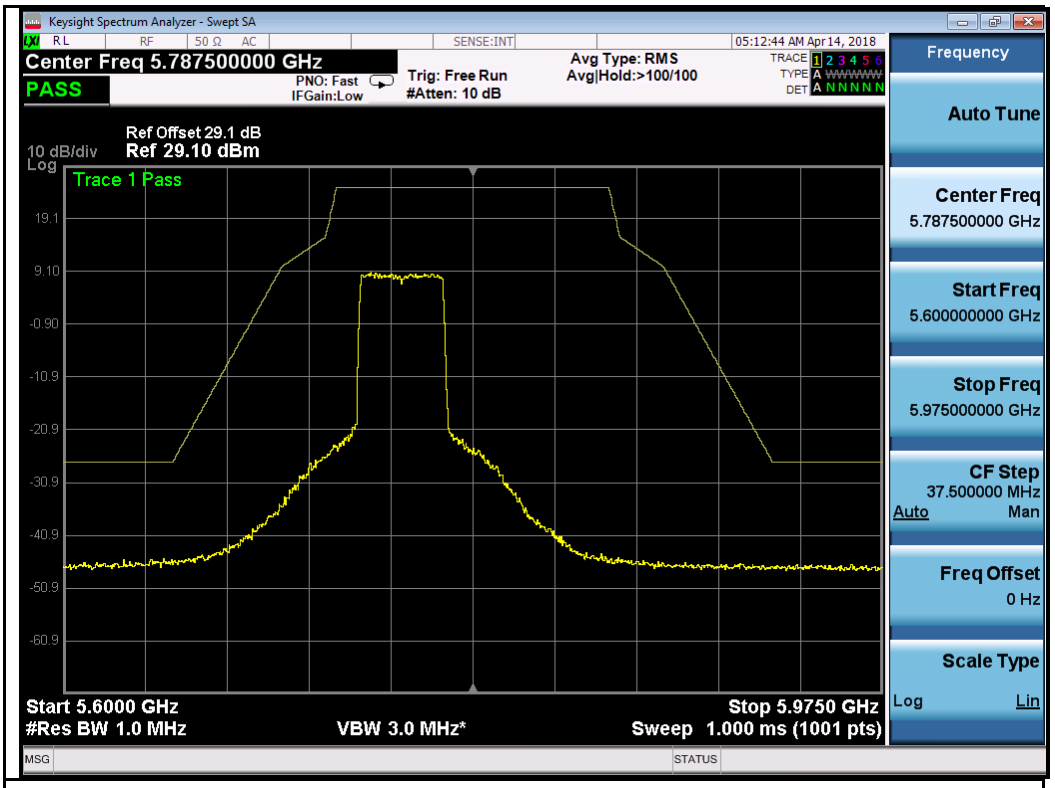
802.11a-5825M



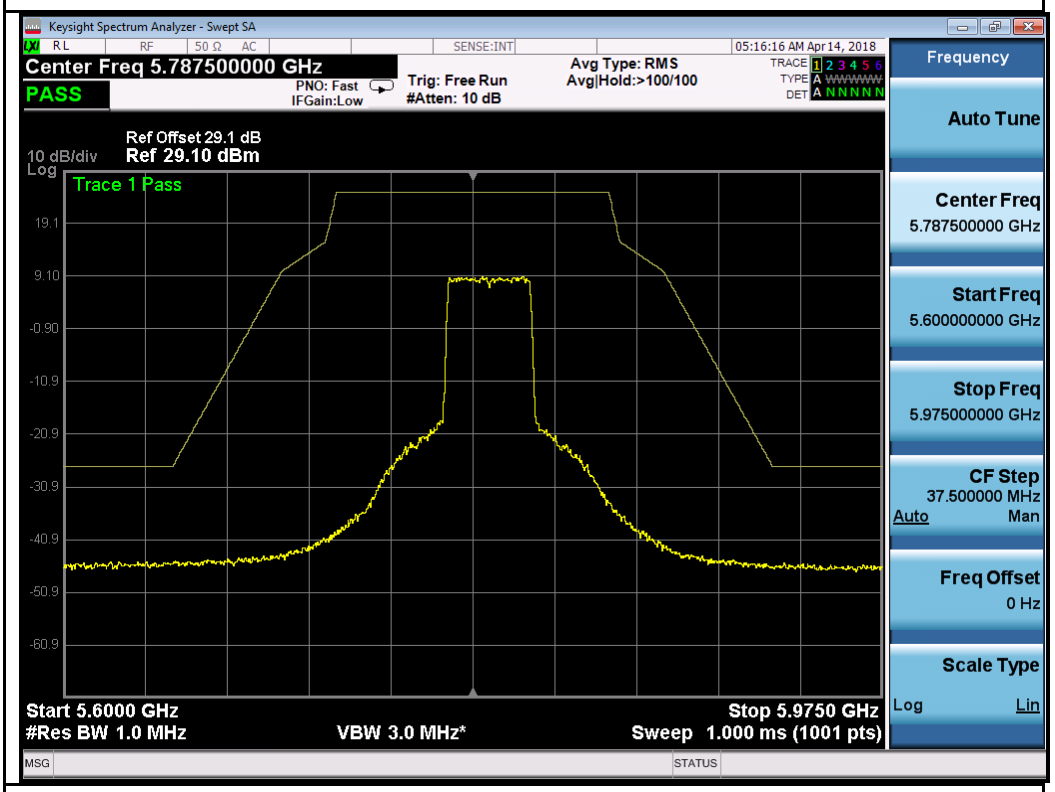
802.11ax20 5745M



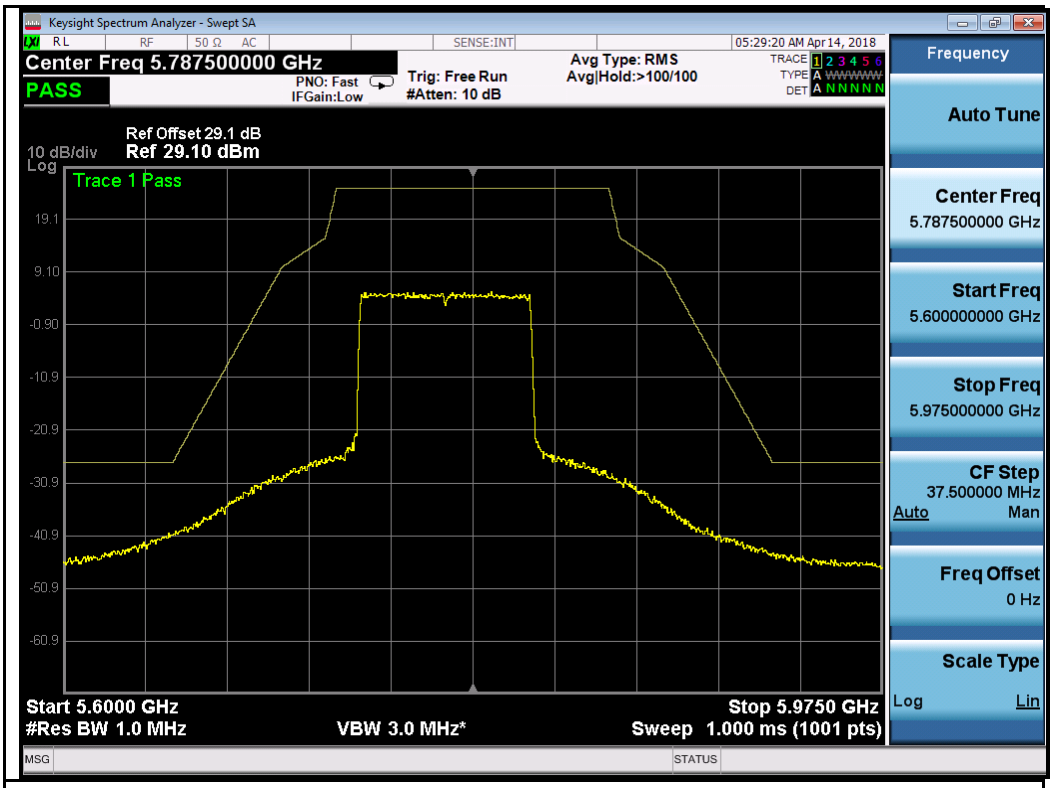
802.11ax20 5825M



802.11ax40 5755M

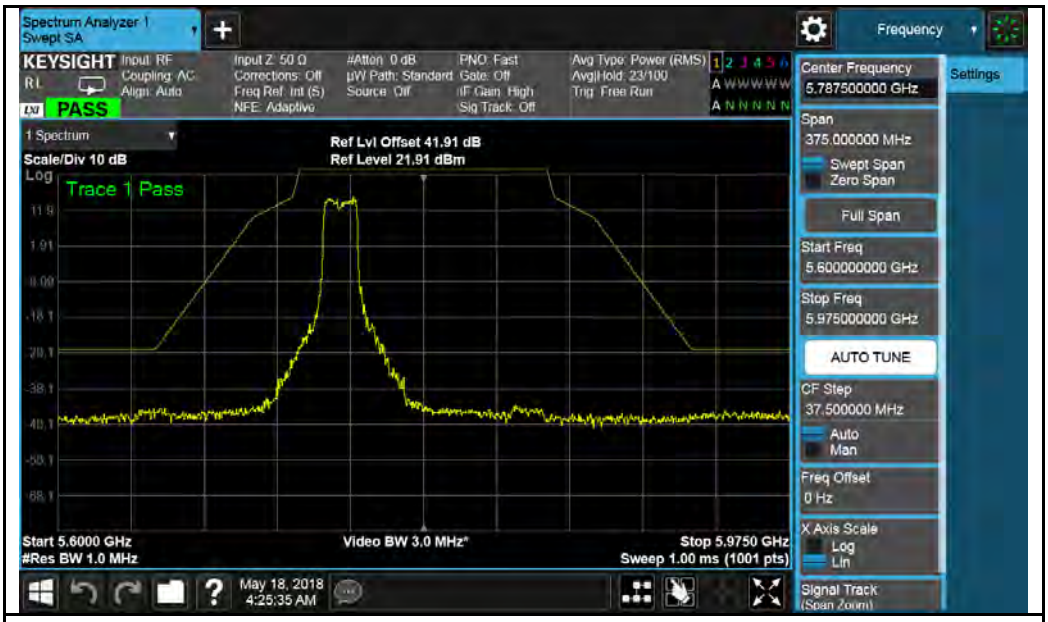


802.11ax40 5795M

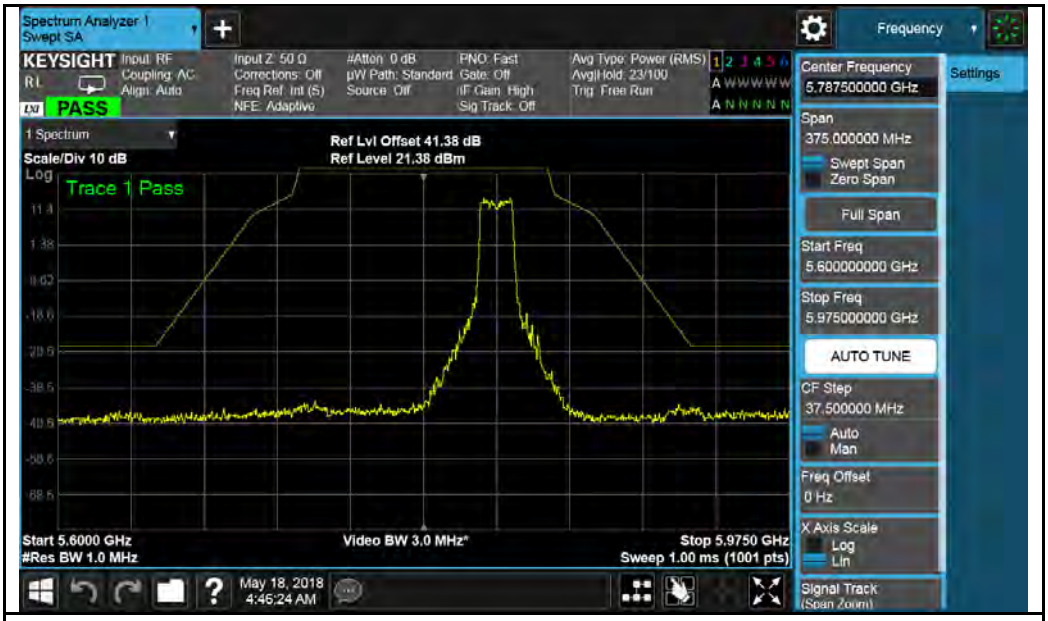


802.11ax80 5775M

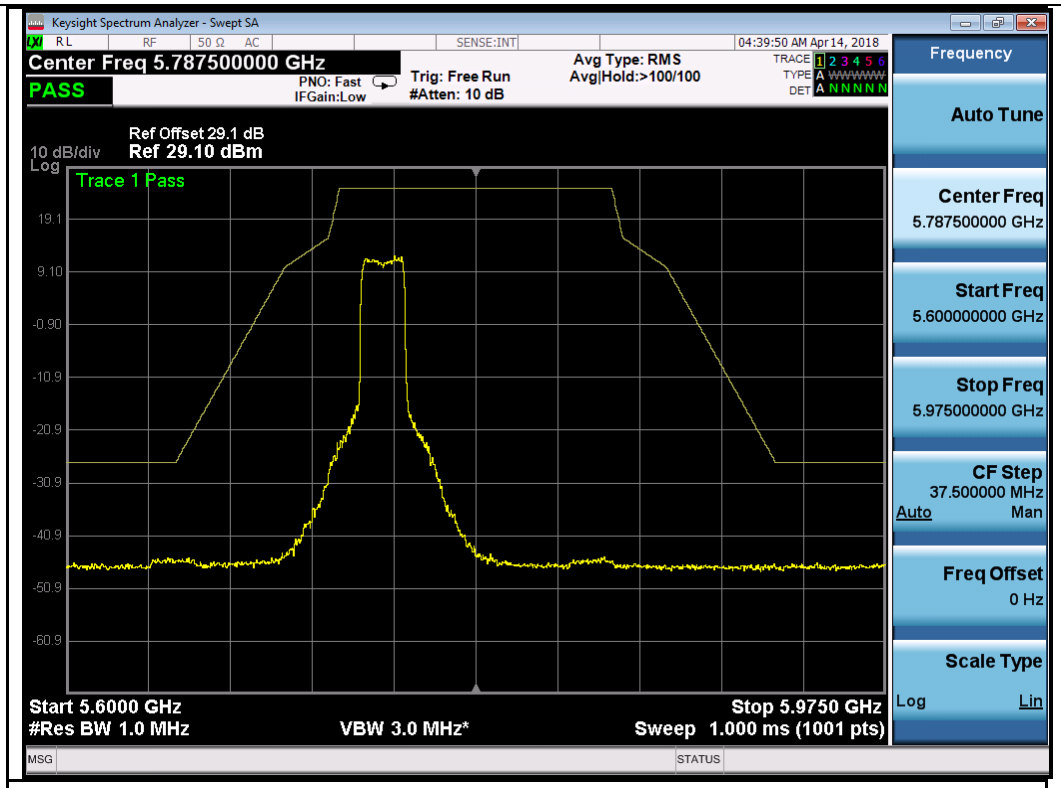
Chain 7:



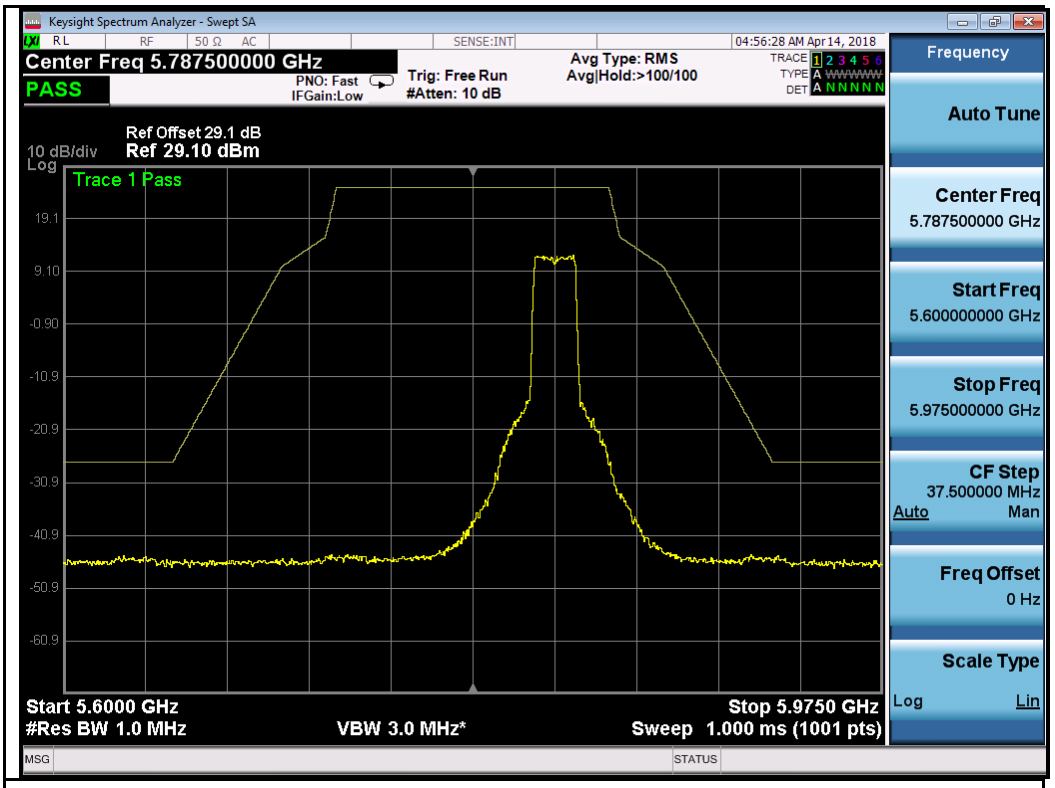
802.11a-5745M



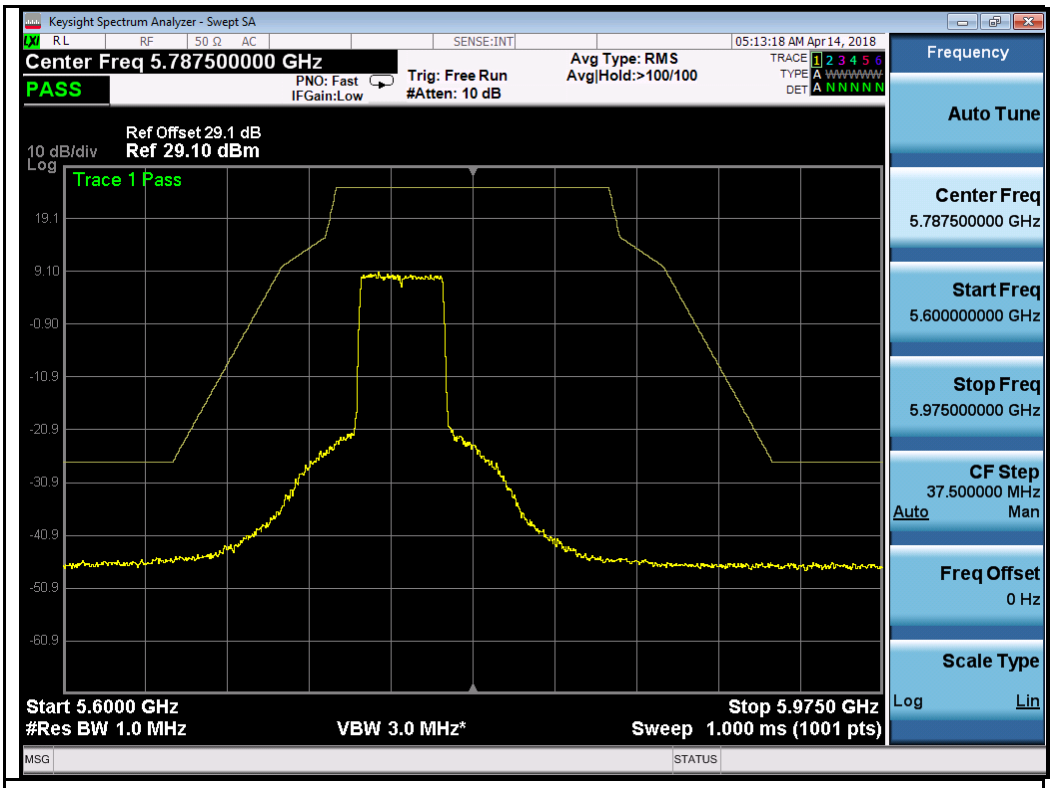
802.11a-5825M



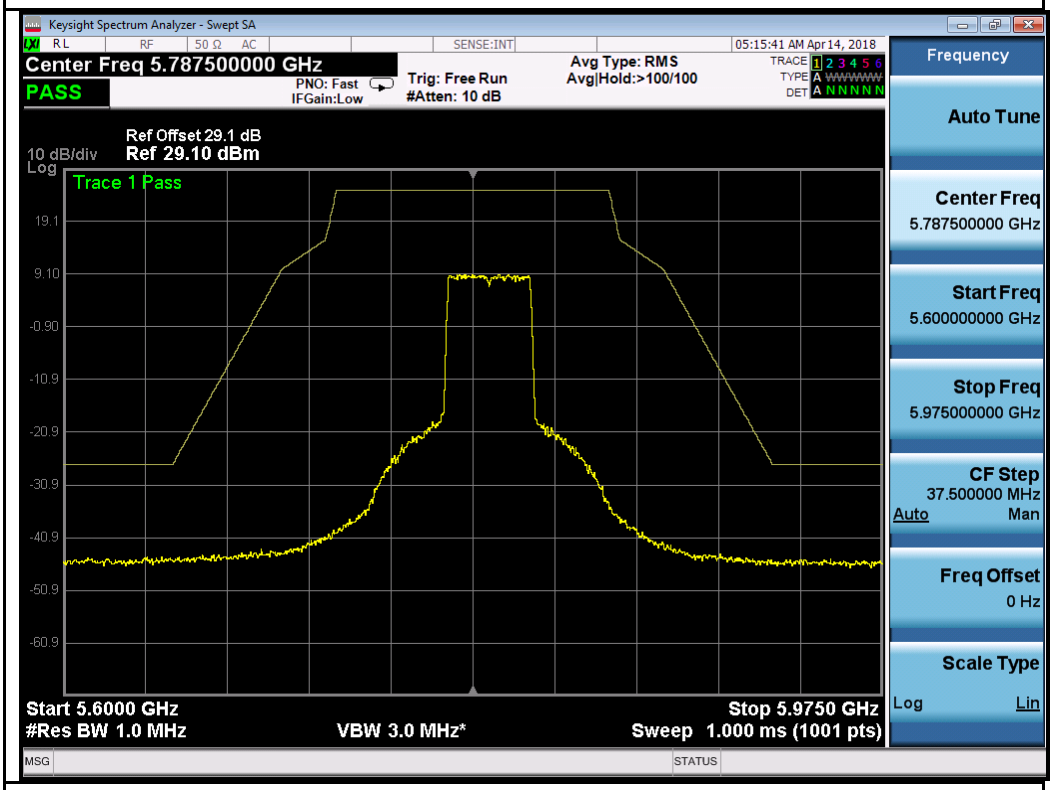
802.11ax20 5745M



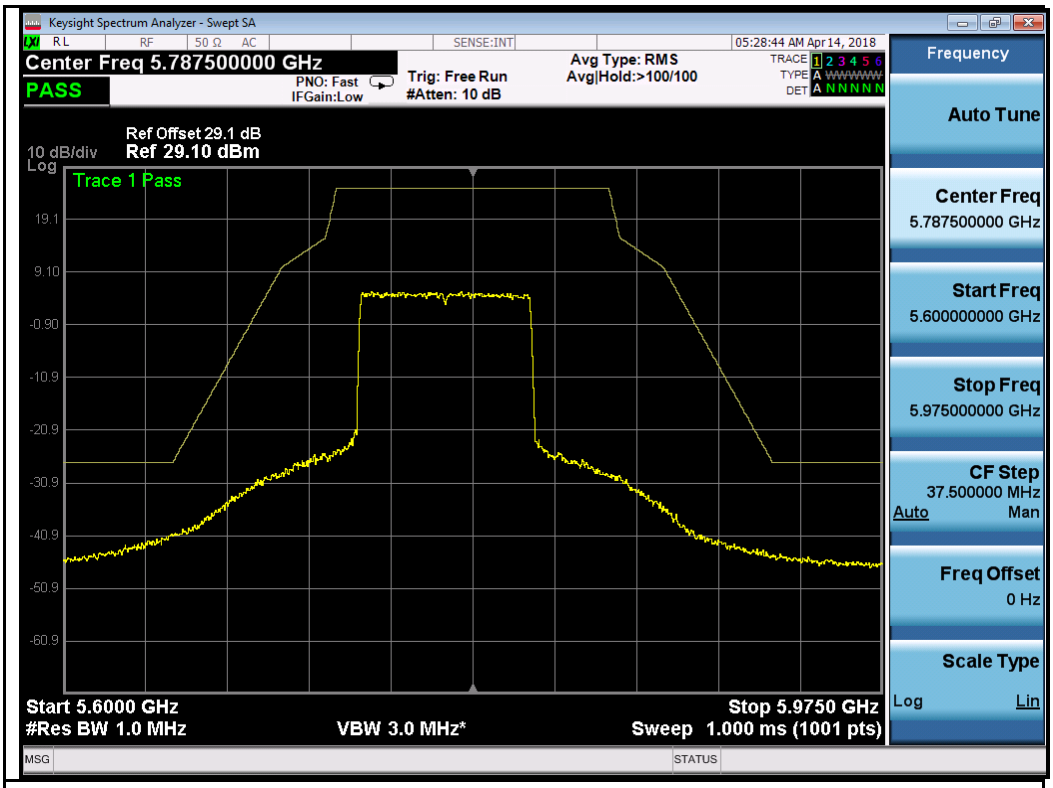
802.11ax20 5825M



802.11ax40 5755M



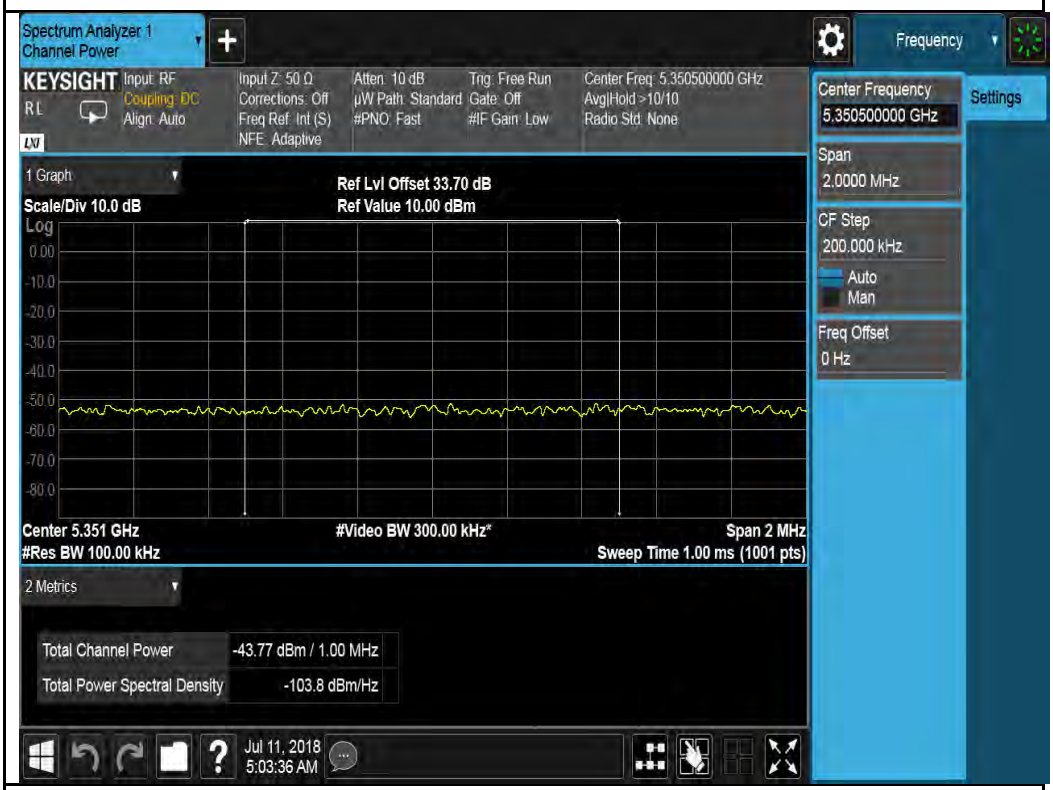
802.11ax40 5795M



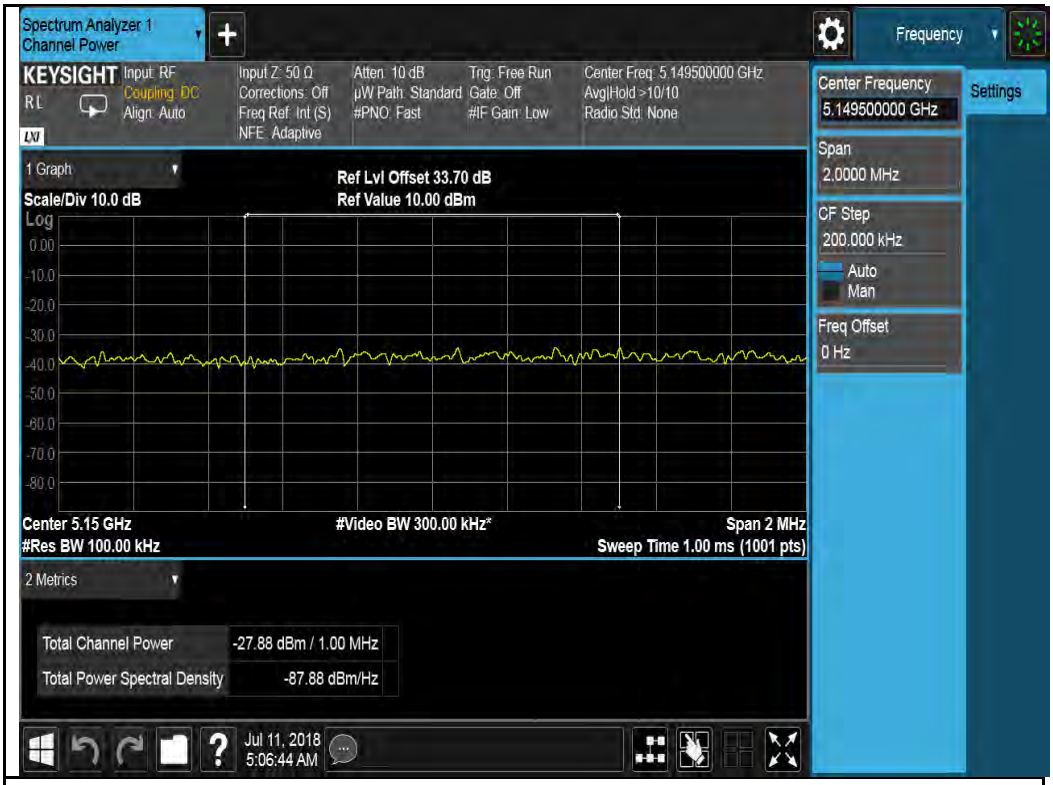
802.11ax80 5775M

Test Plots for 4x4 mode W52:
Chain 0:

802.11a-5180MHz

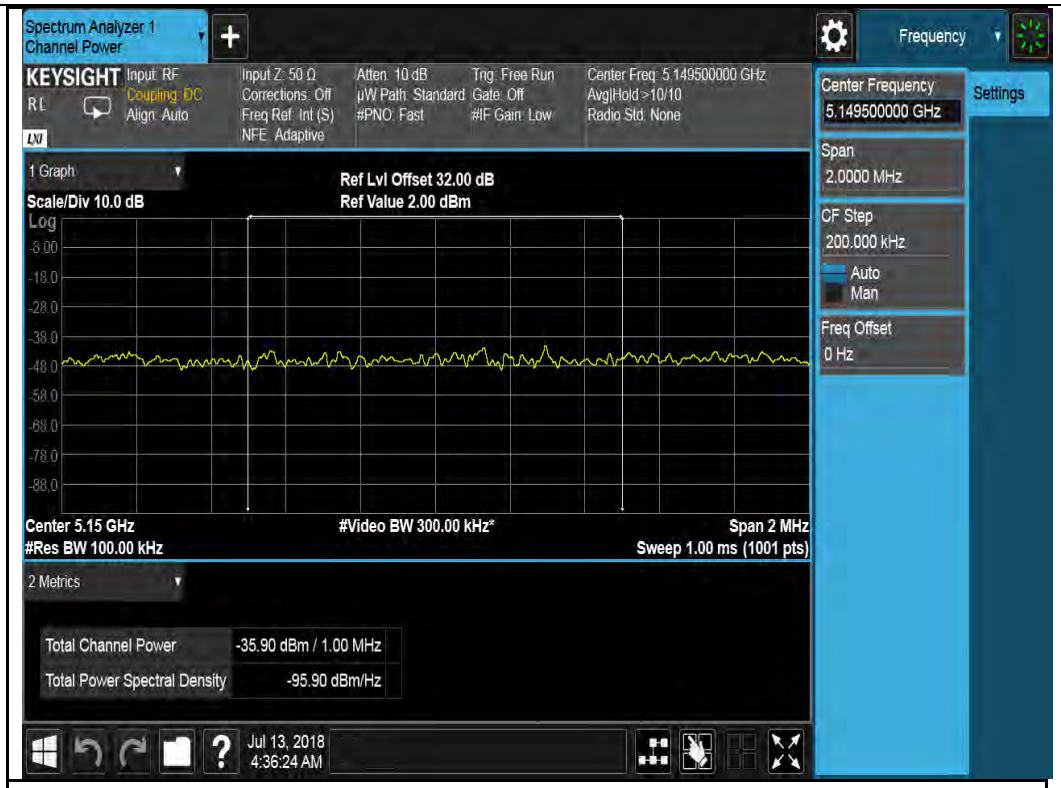


802.11a-5240MHz

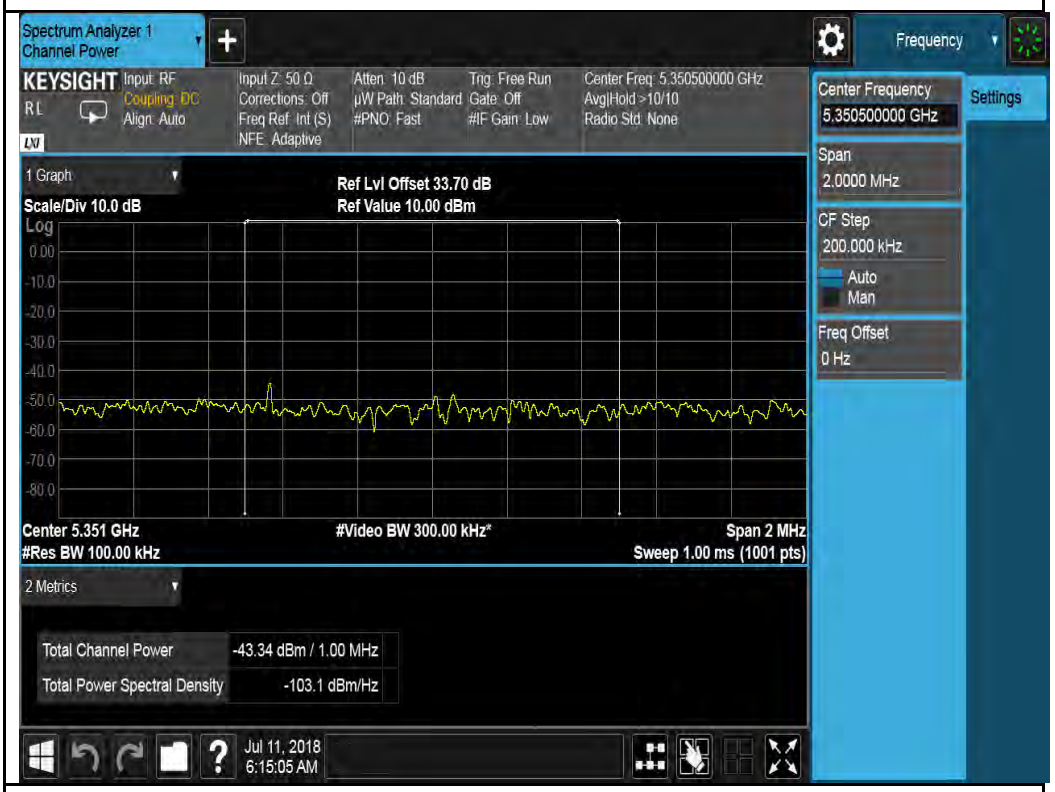


802.11n-HT20-5180MHz

802.11n-HT20-5240MHz



802.11n-HT40-5190MHz

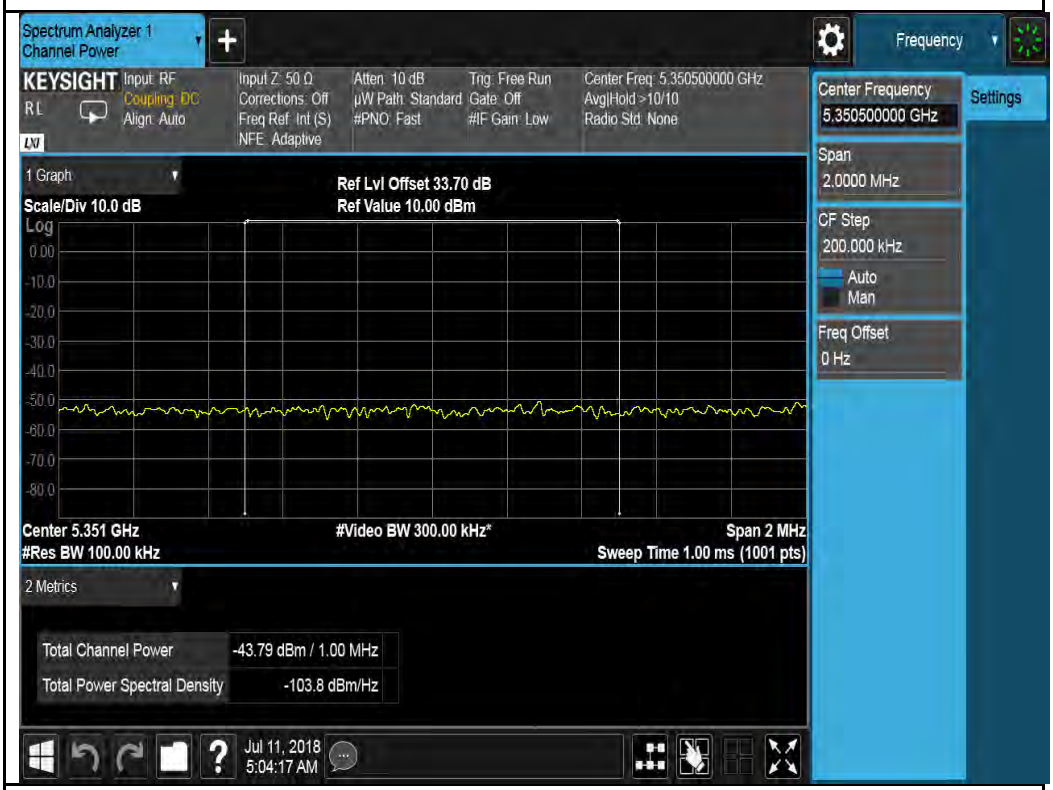


802.11n-HT40-5230MHz

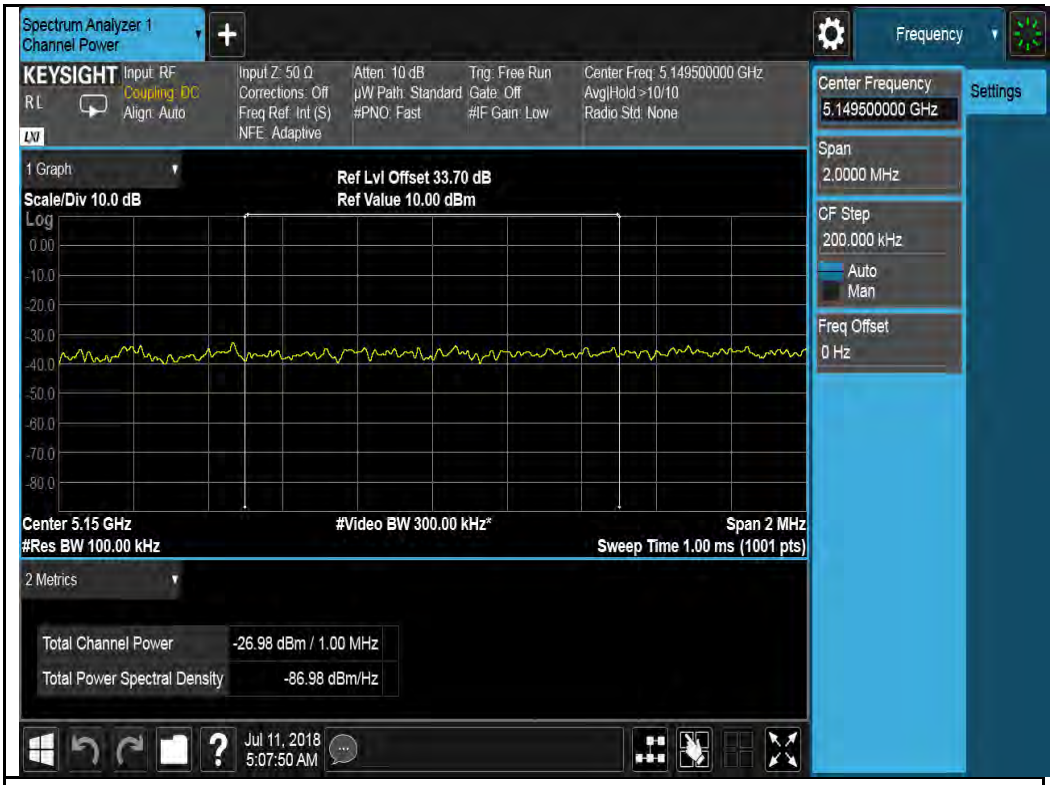
802.11ac-VHT80-5210MHz

Chain 1:

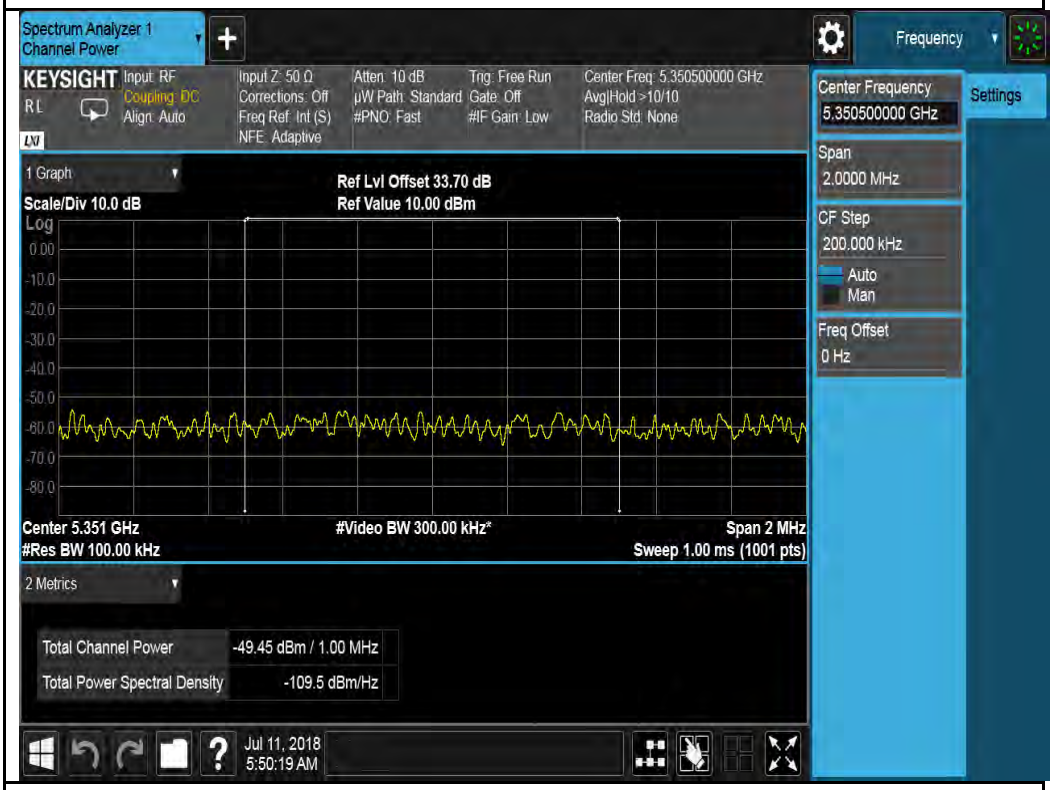
802.11a-5180MHz



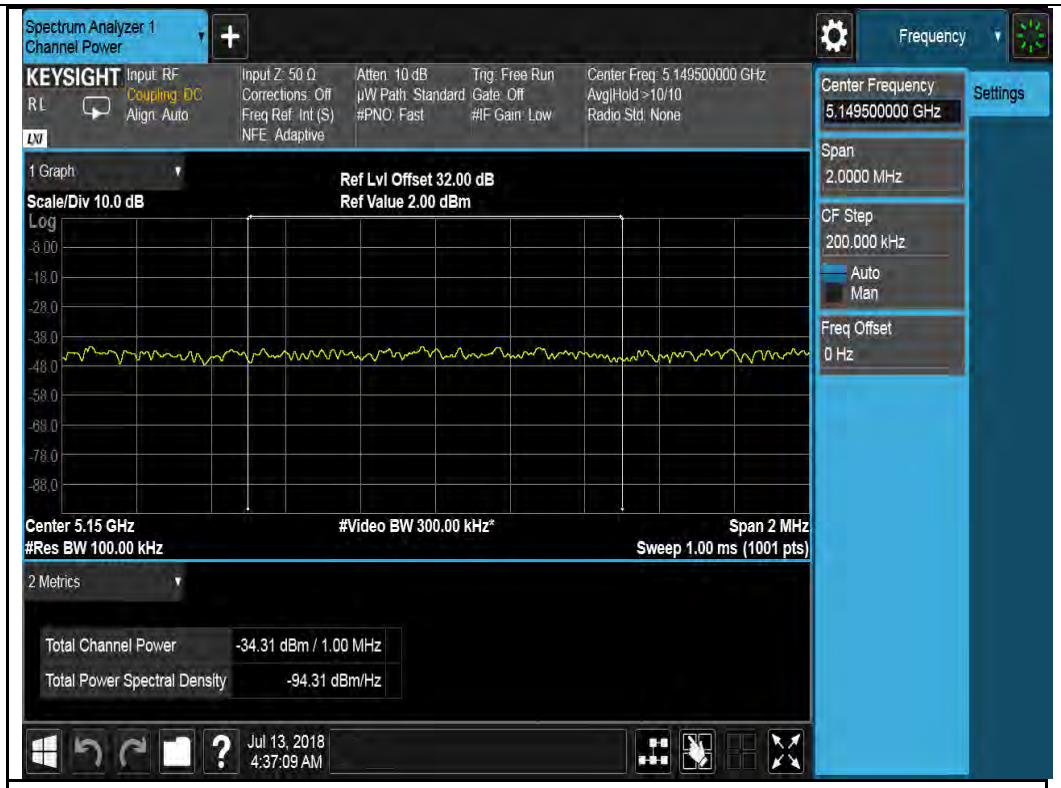
802.11a-5240MHz



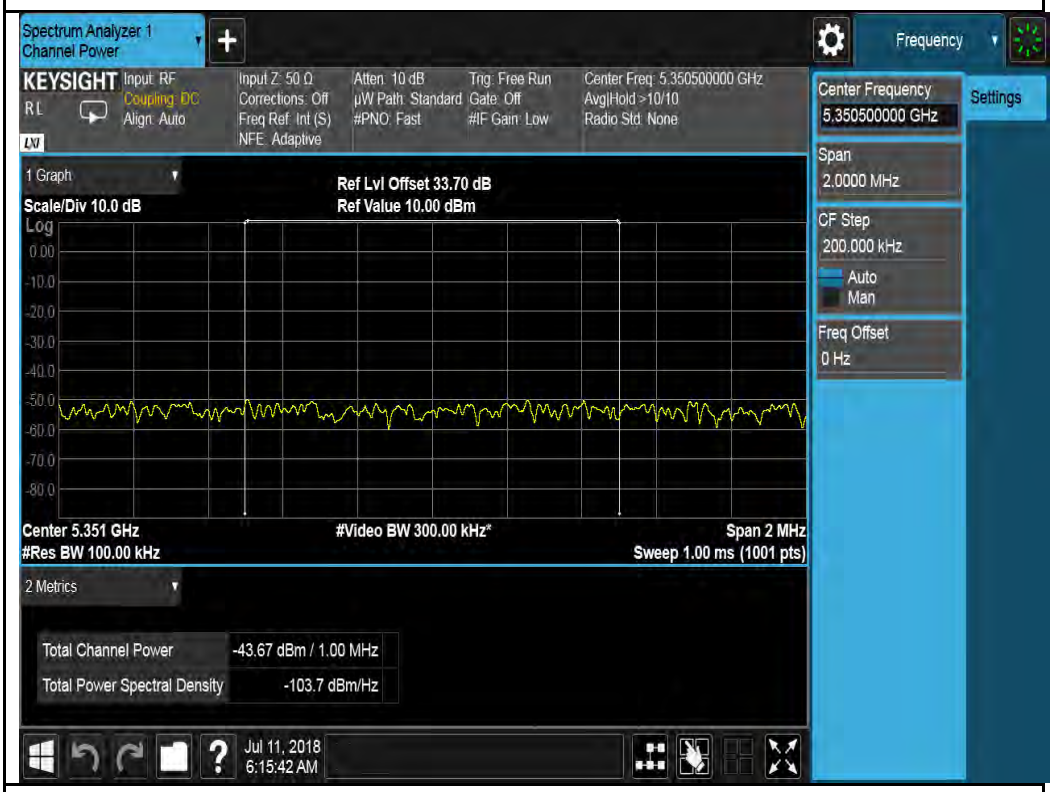
802.11n-HT20-5180MHz



802.11n-HT20-5240MHz



802.11n-HT40-5190MHz

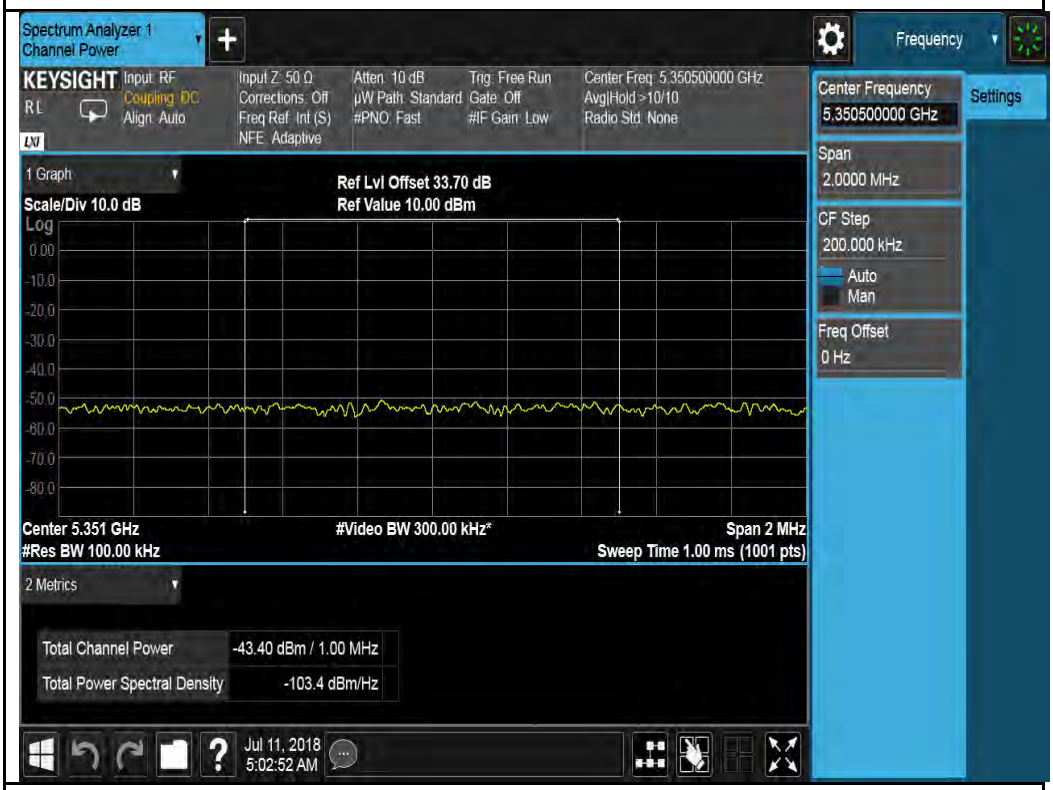


802.11n-HT40-5230MHz

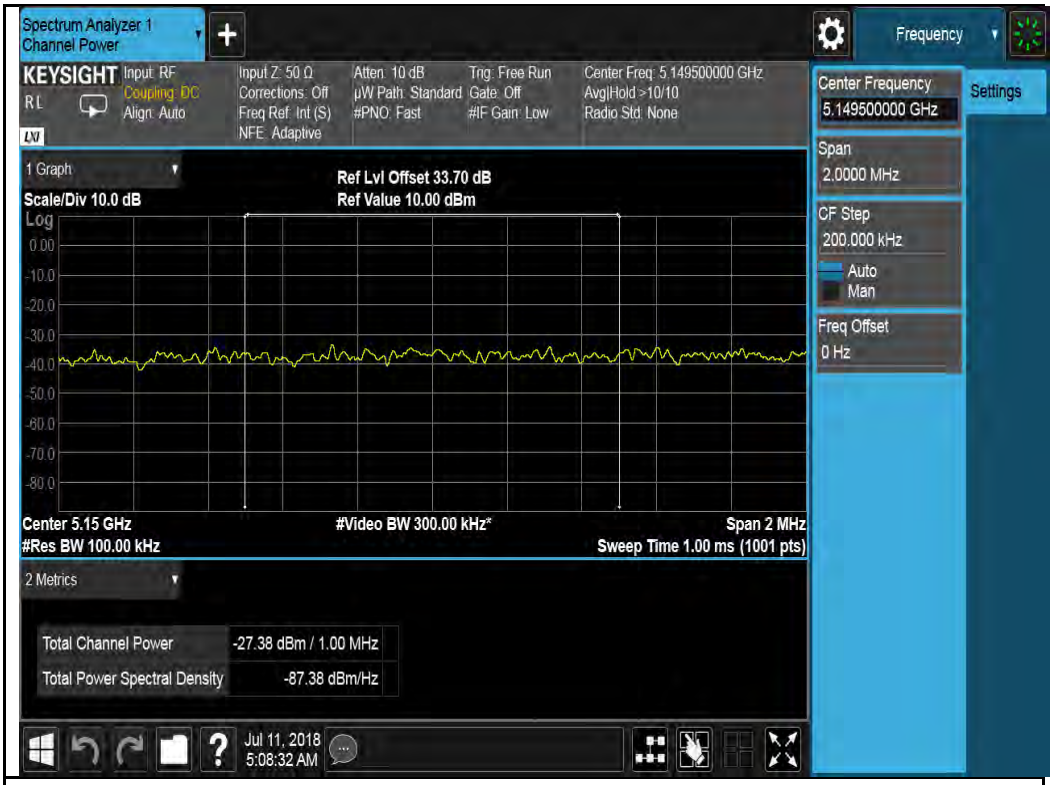
802.11ac-VHT80-5210MHz

Chain 2:

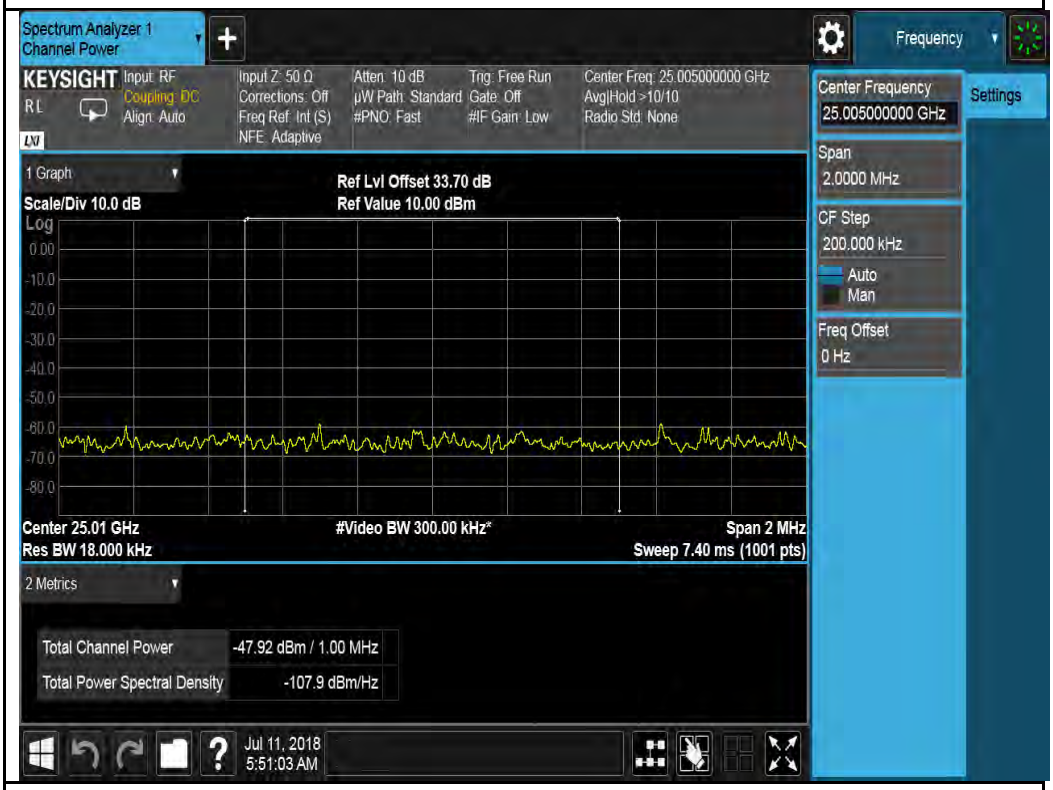
802.11a-5180MHz



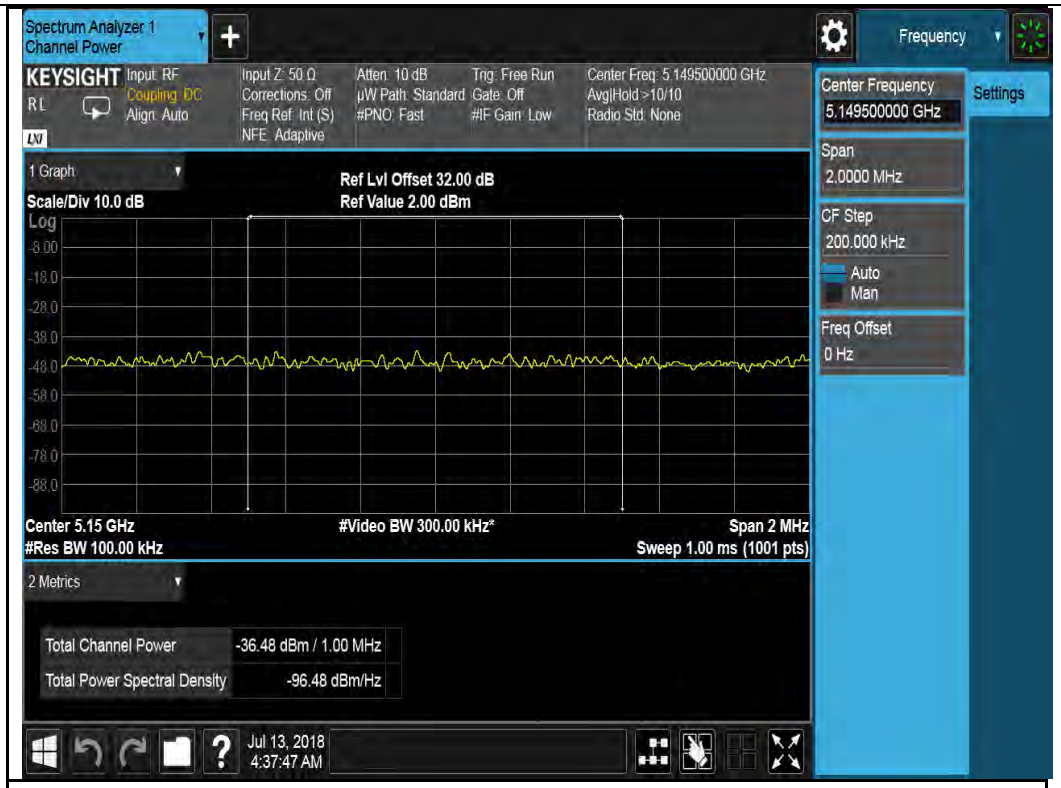
802.11a-5240MHz



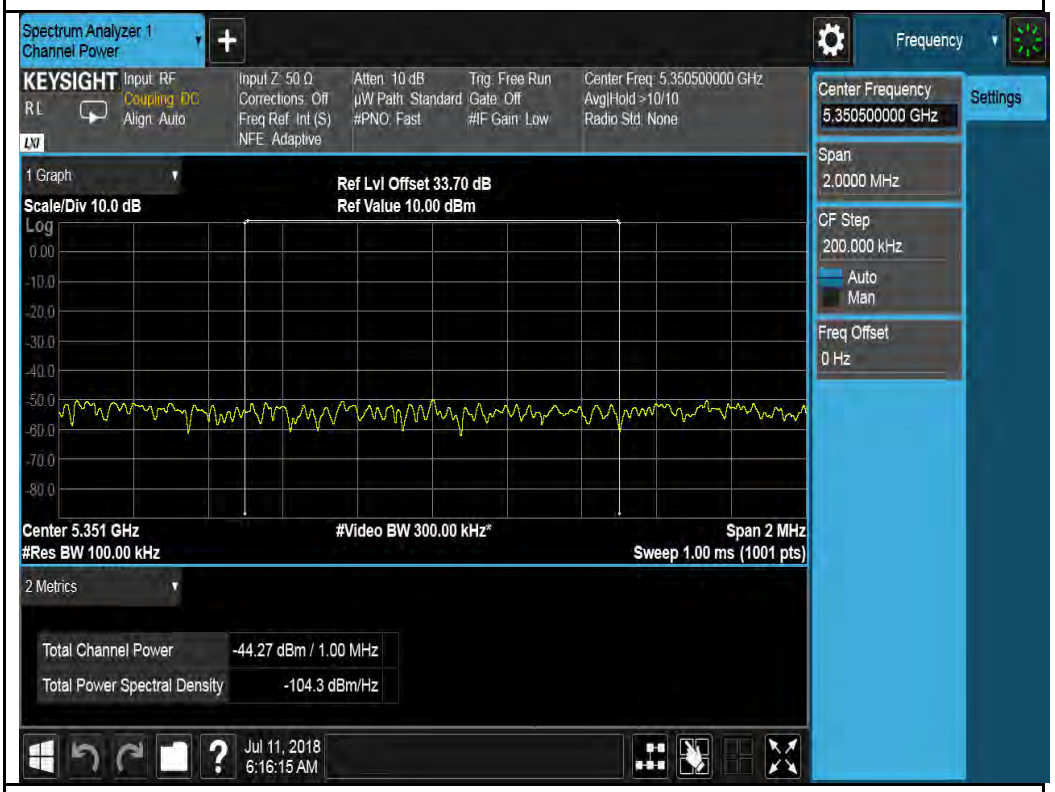
802.11n-HT20-5180MHz



802.11n-HT20-5240MHz



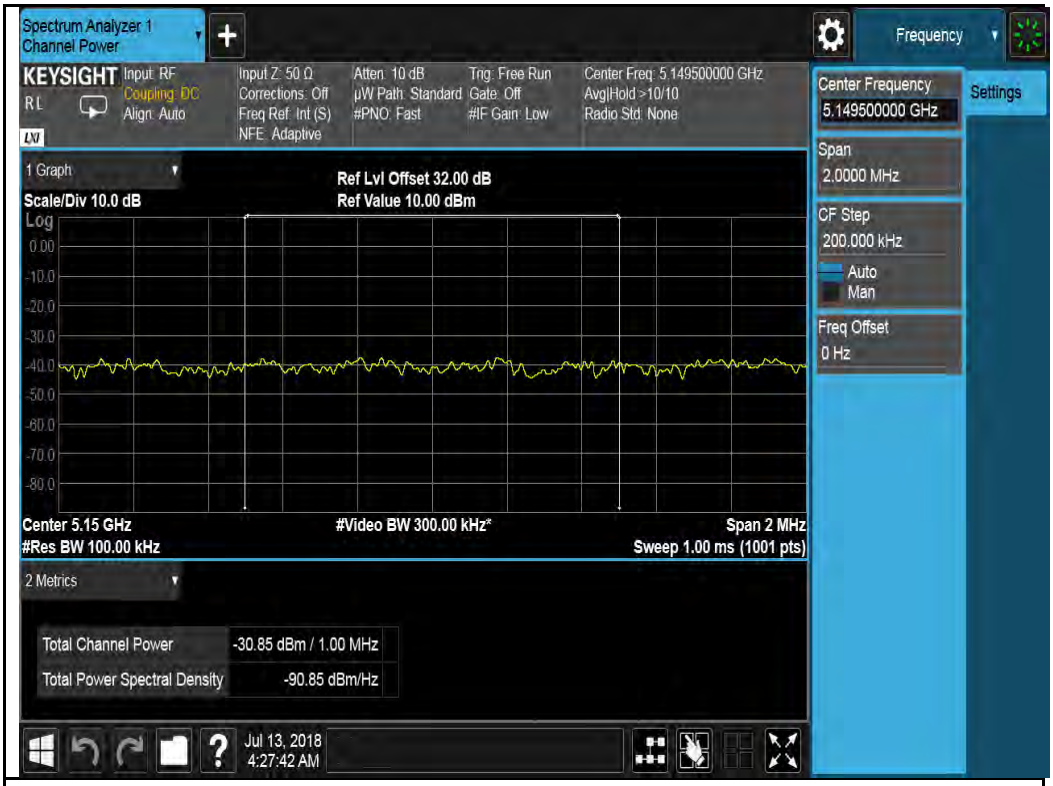
802.11n-HT40-5190MHz



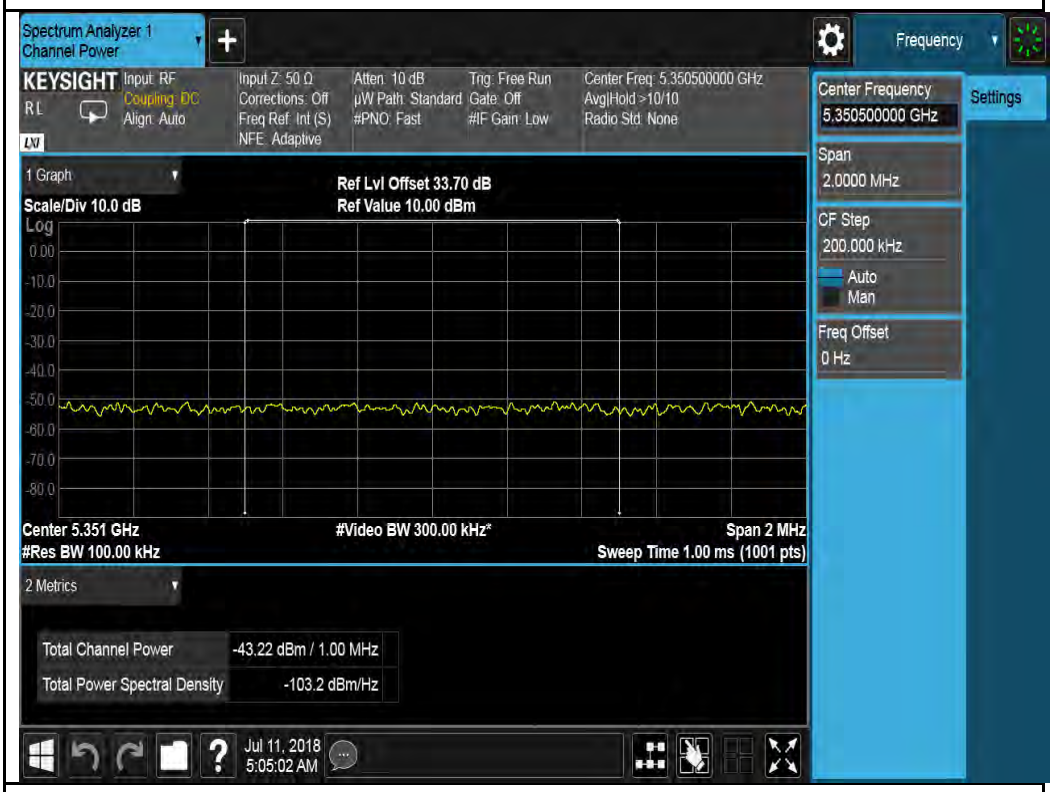
802.11n-HT40-5230MHz

802.11ac-VHT80-5210MHz

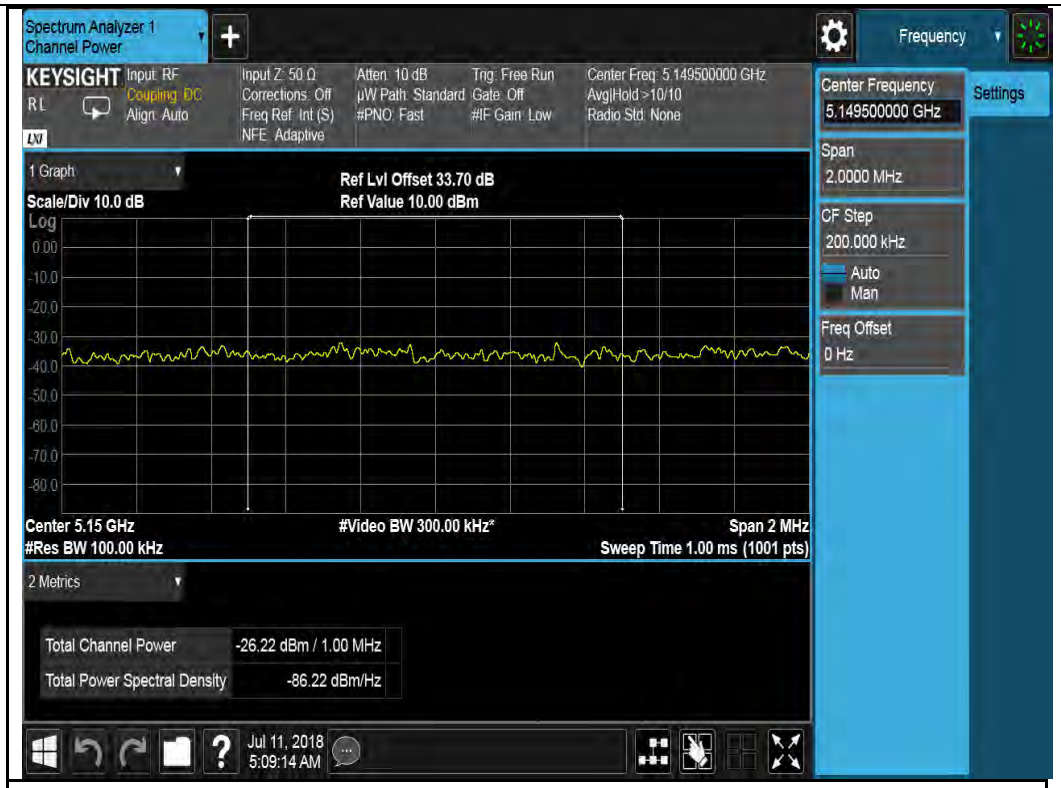
Chain 3:



802.11a-5180MHz



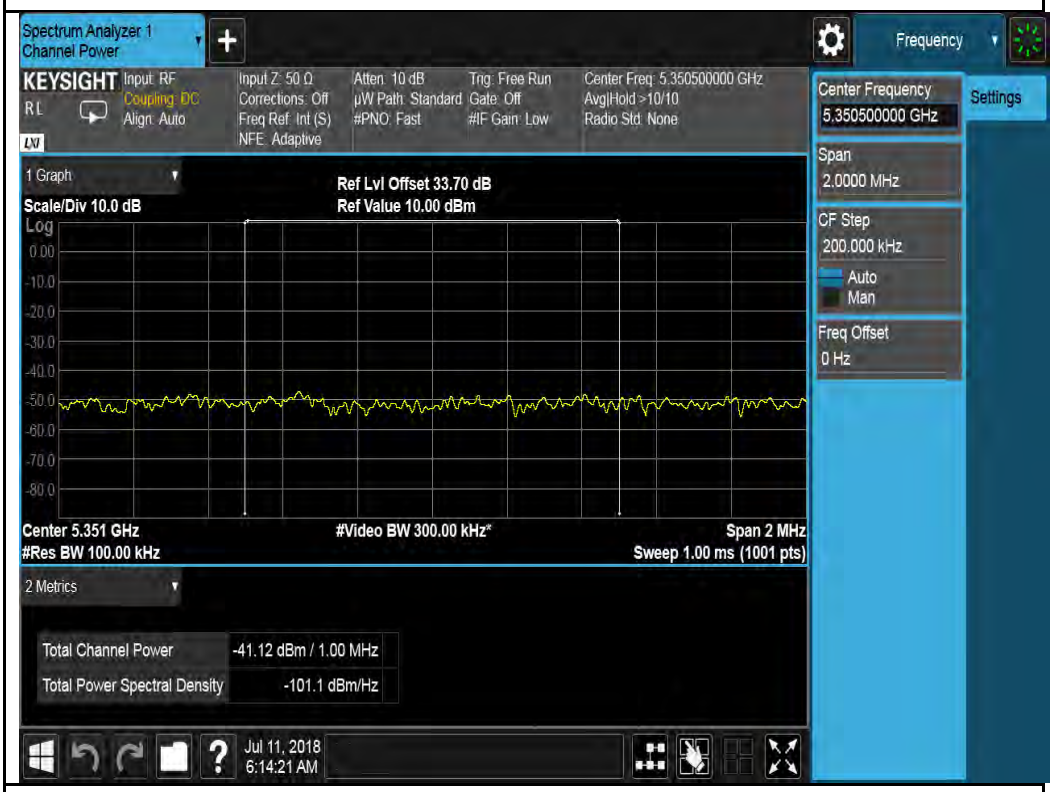
802.11a-5240MHz



802.11n-HT20-5180MHz

802.11n-HT20-5240MHz

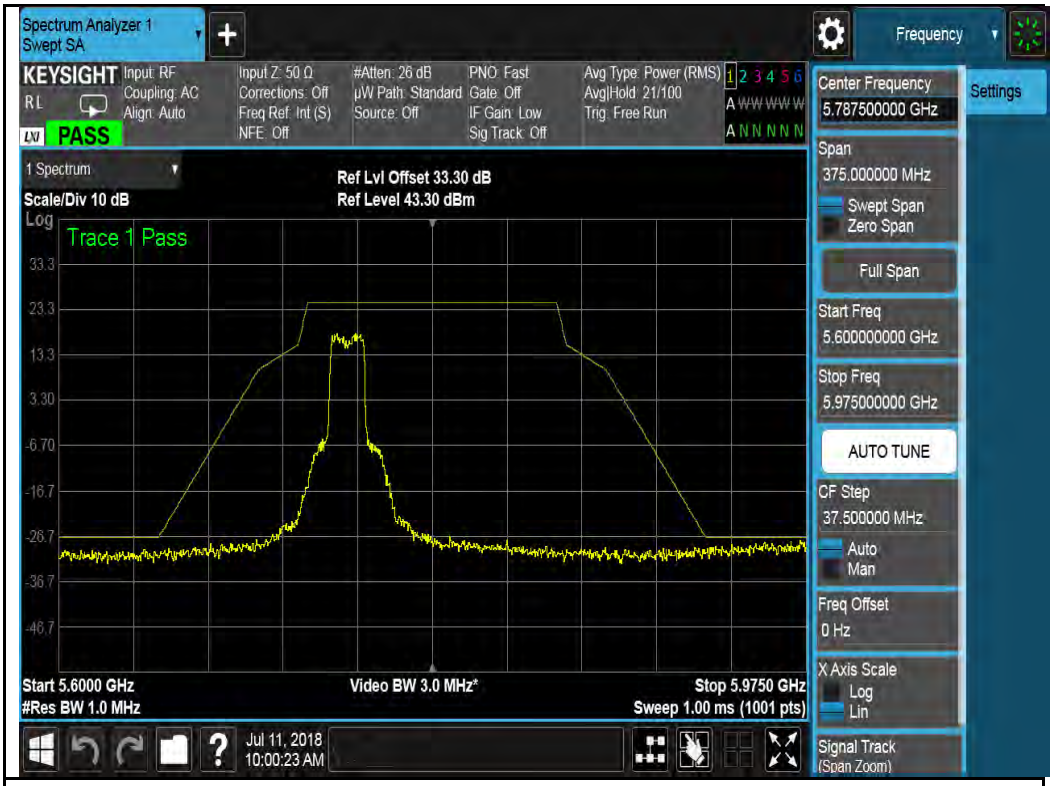
802.11n-HT40-5190MHz



802.11n-HT40-5230MHz

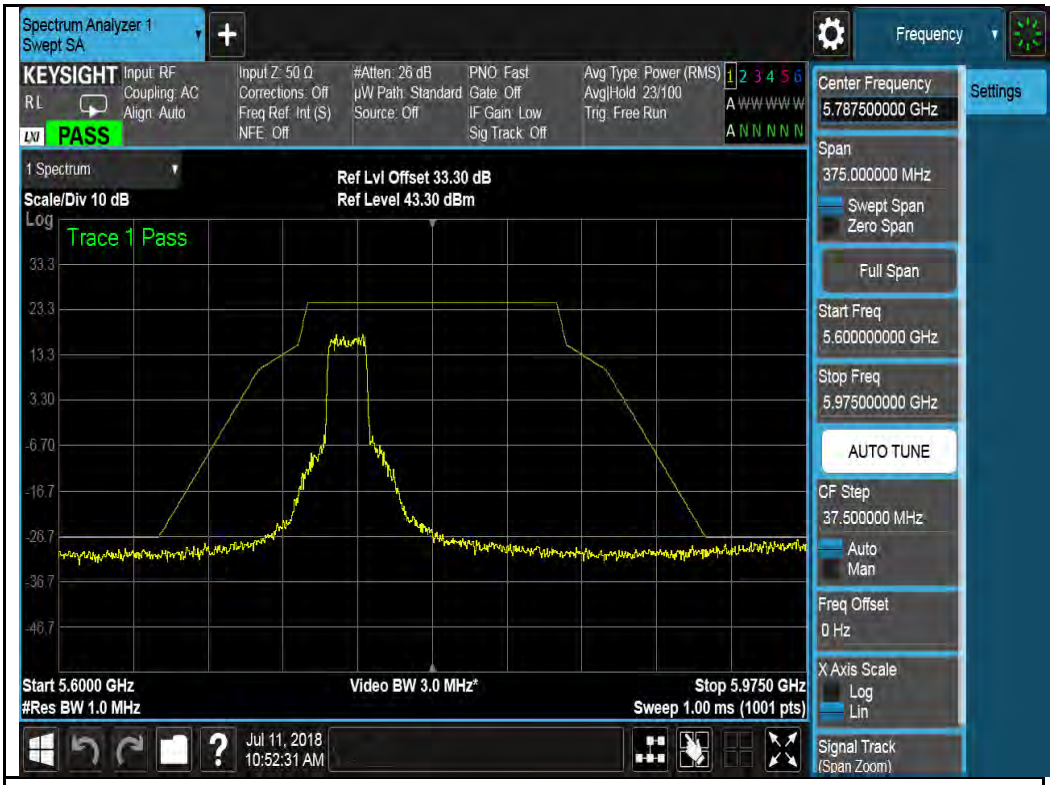
802.11ac-VHT80-5210MHz

Test Plots for 4x4 mode W58:
Chain 0:

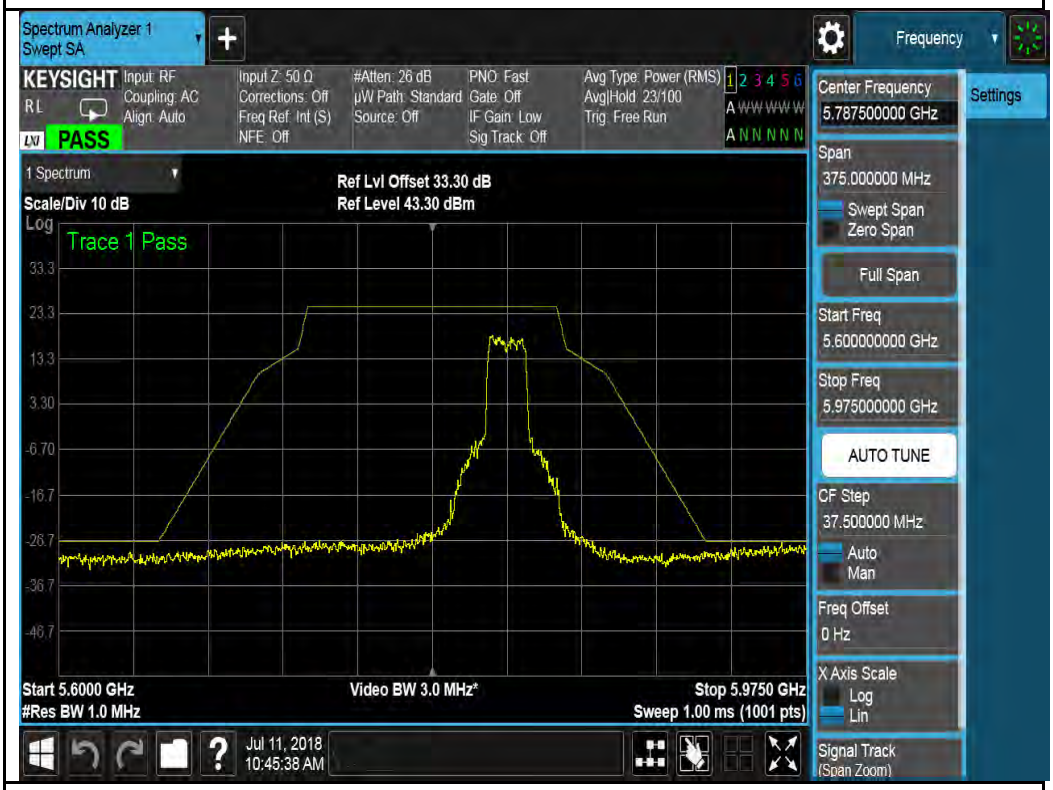


802.11a-5745MHz

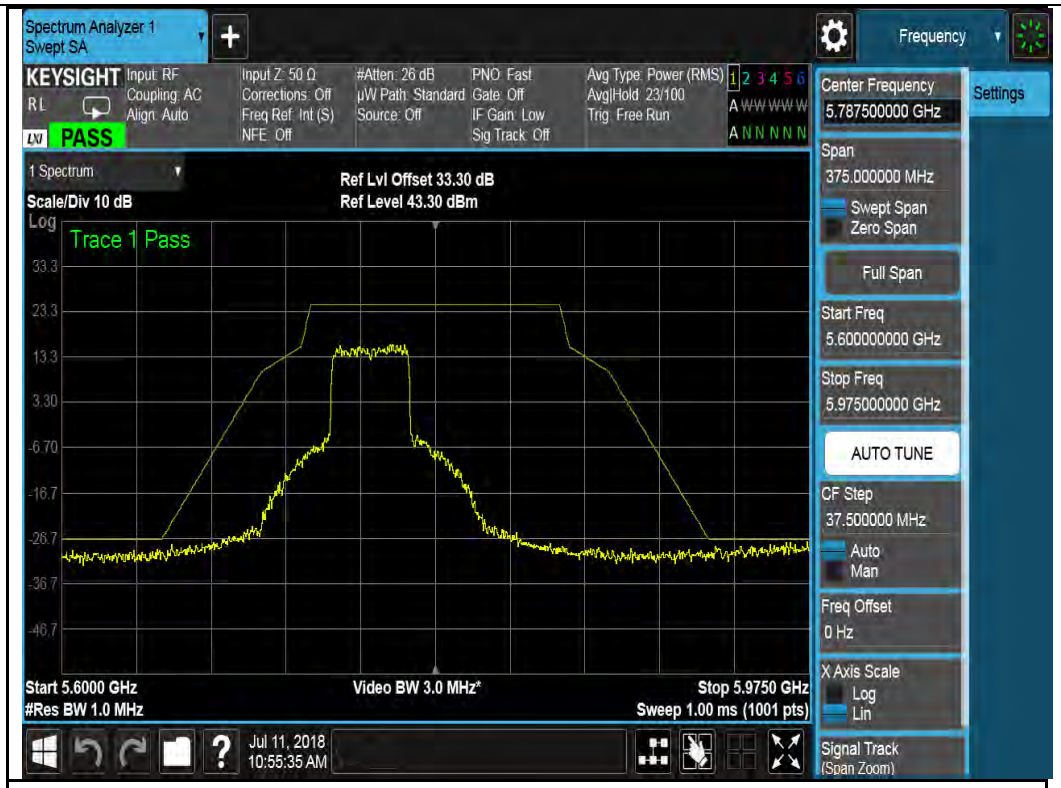
802.11a-5825MHz



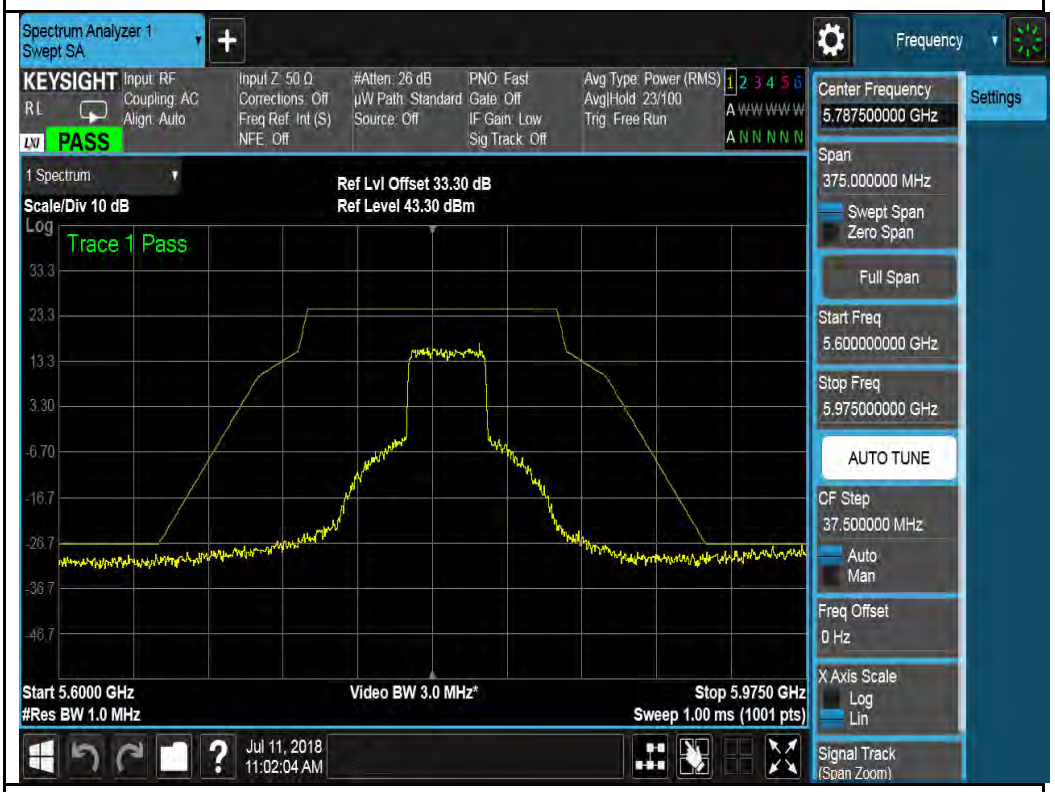
802.11n-HT20-5745MHz



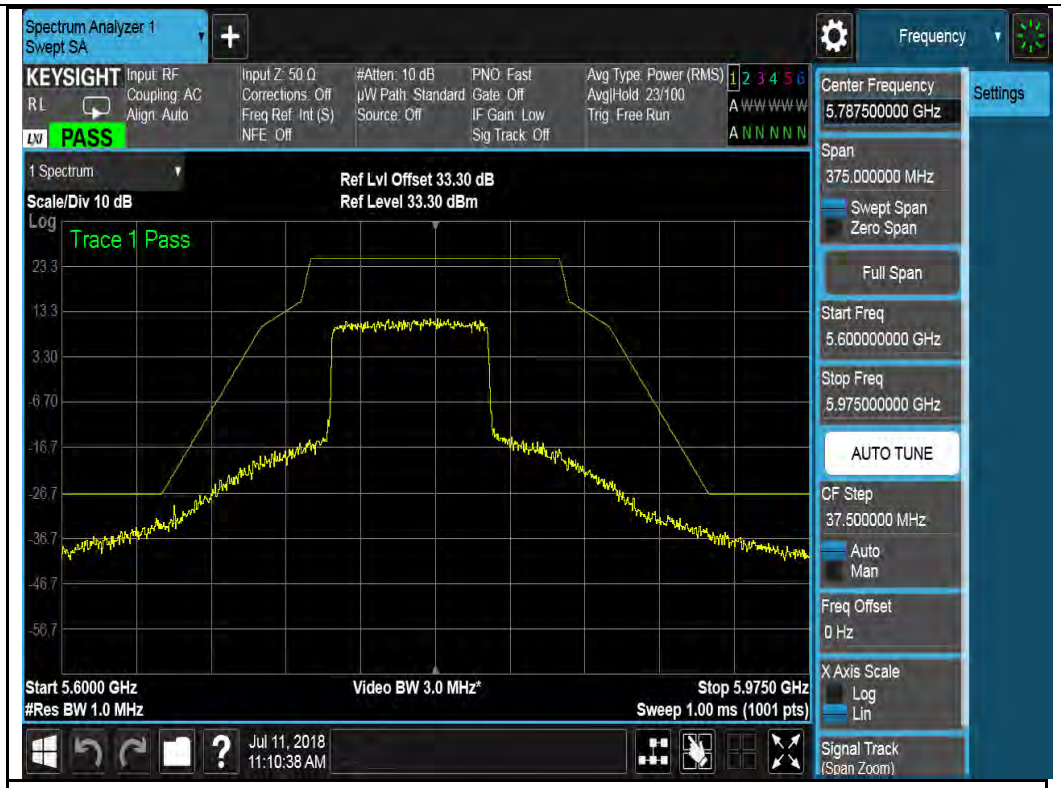
802.11n-HT20-5825MHz



802.11n-HT40-5755MHz

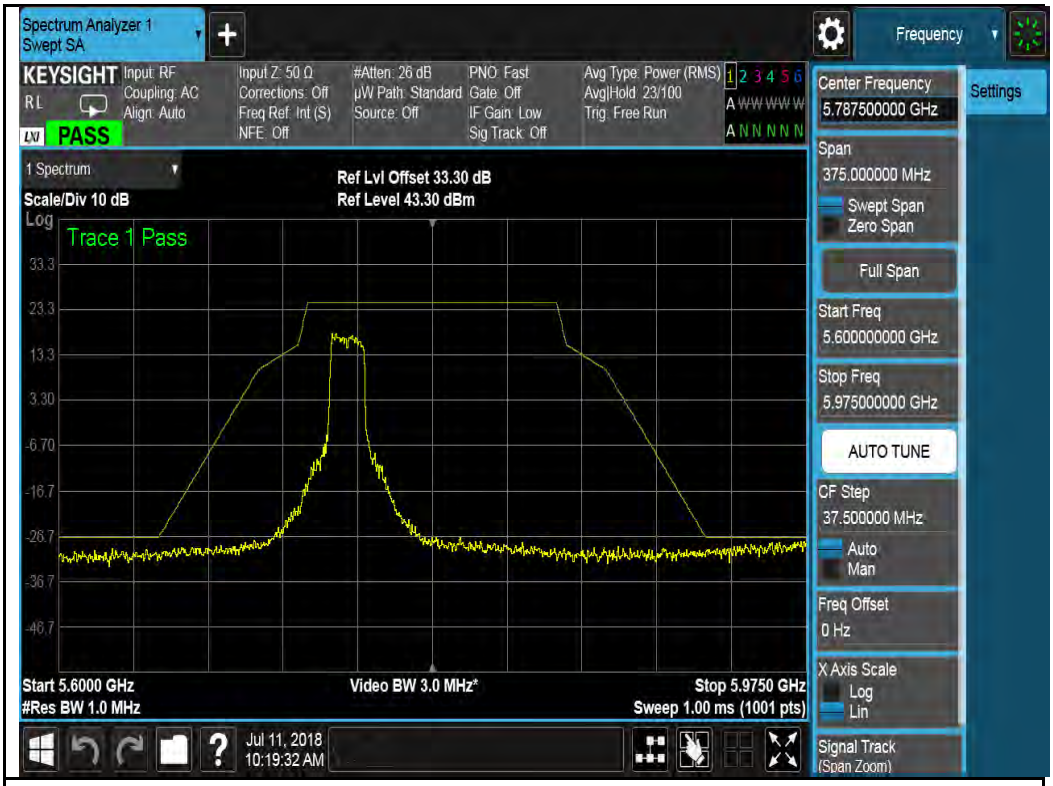


802.11n-HT40-5795MHz



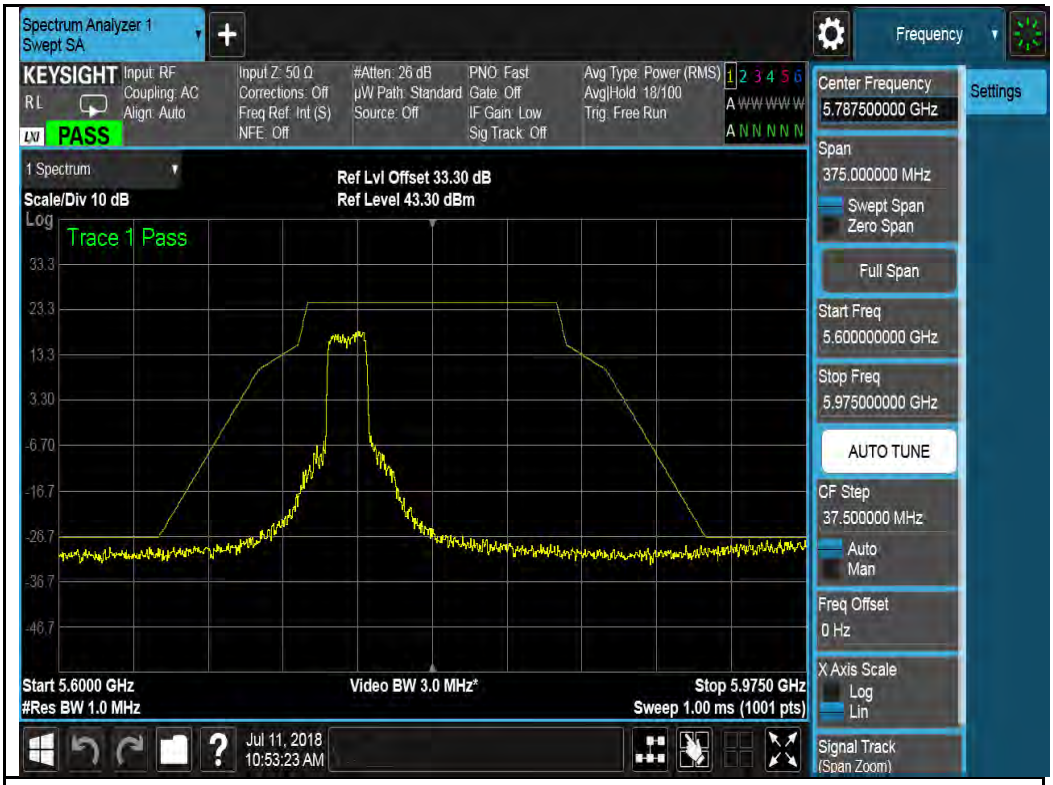
802.11ac-VHT80-5775MHz

Chain 1:

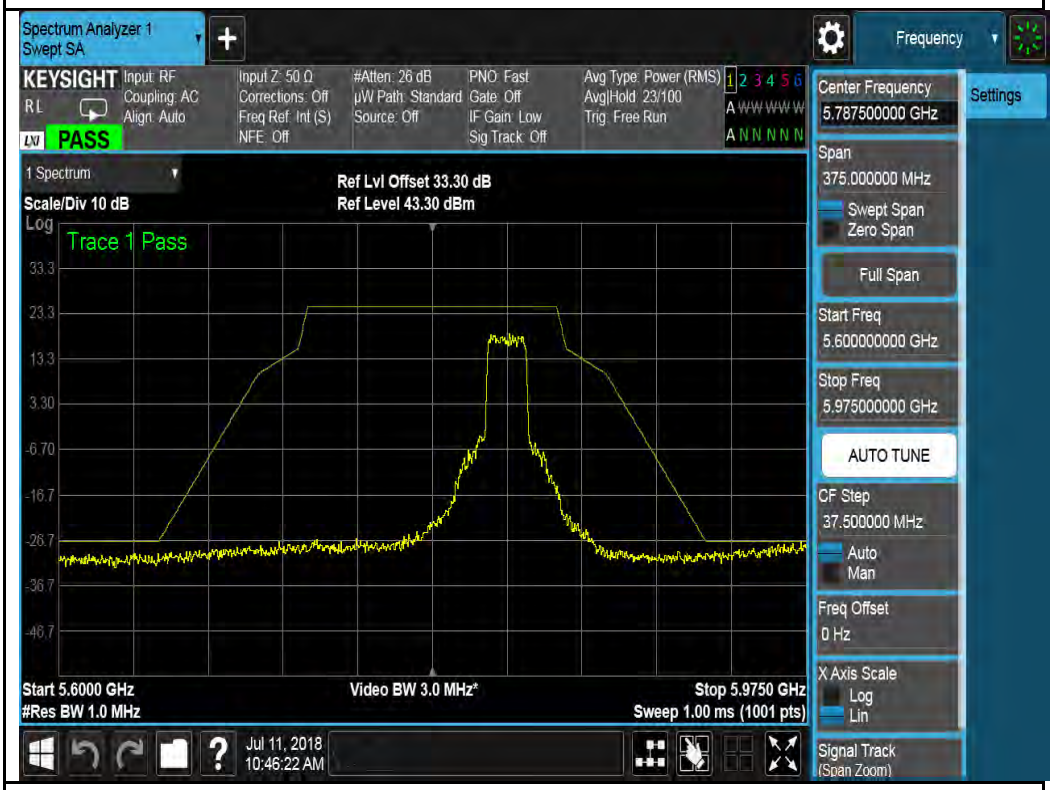


802.11a-5745MHz

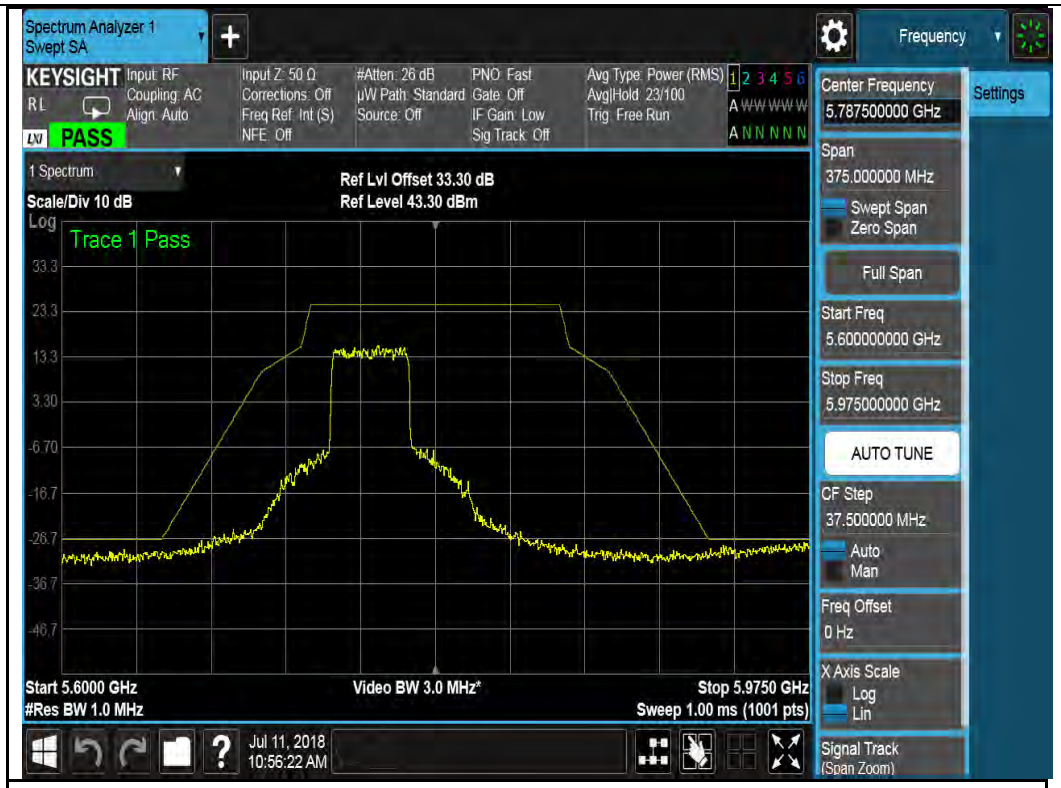
802.11a-5825MHz



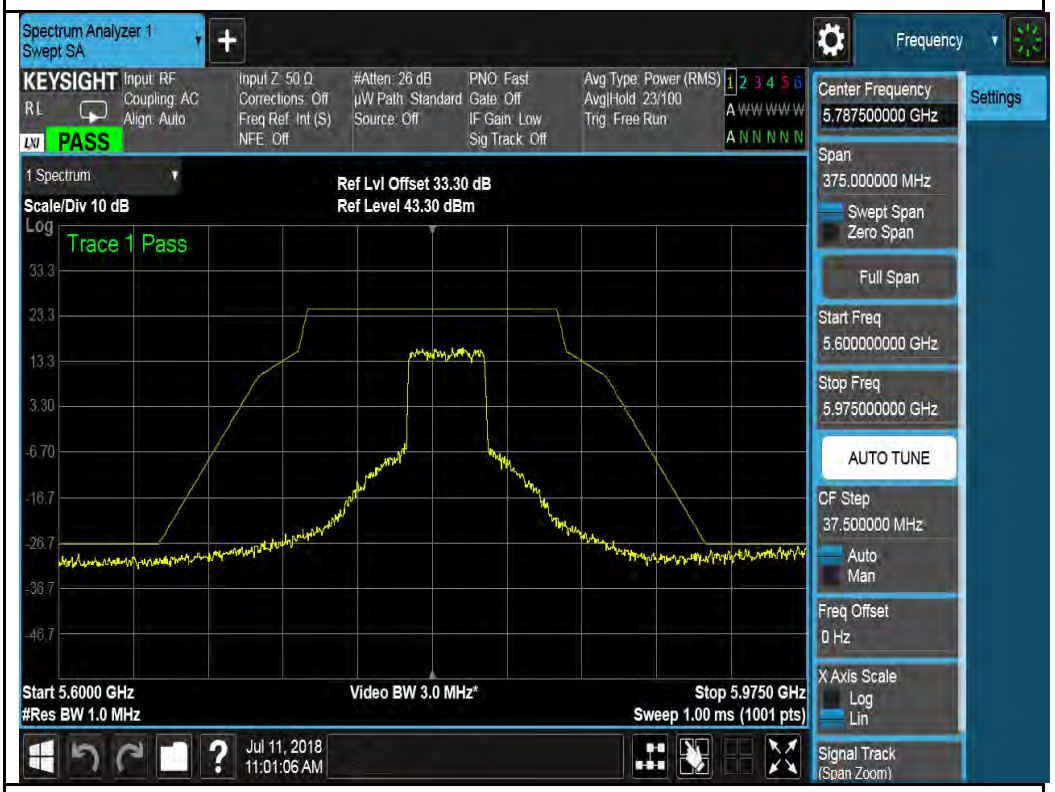
802.11n-HT20-5745MHz



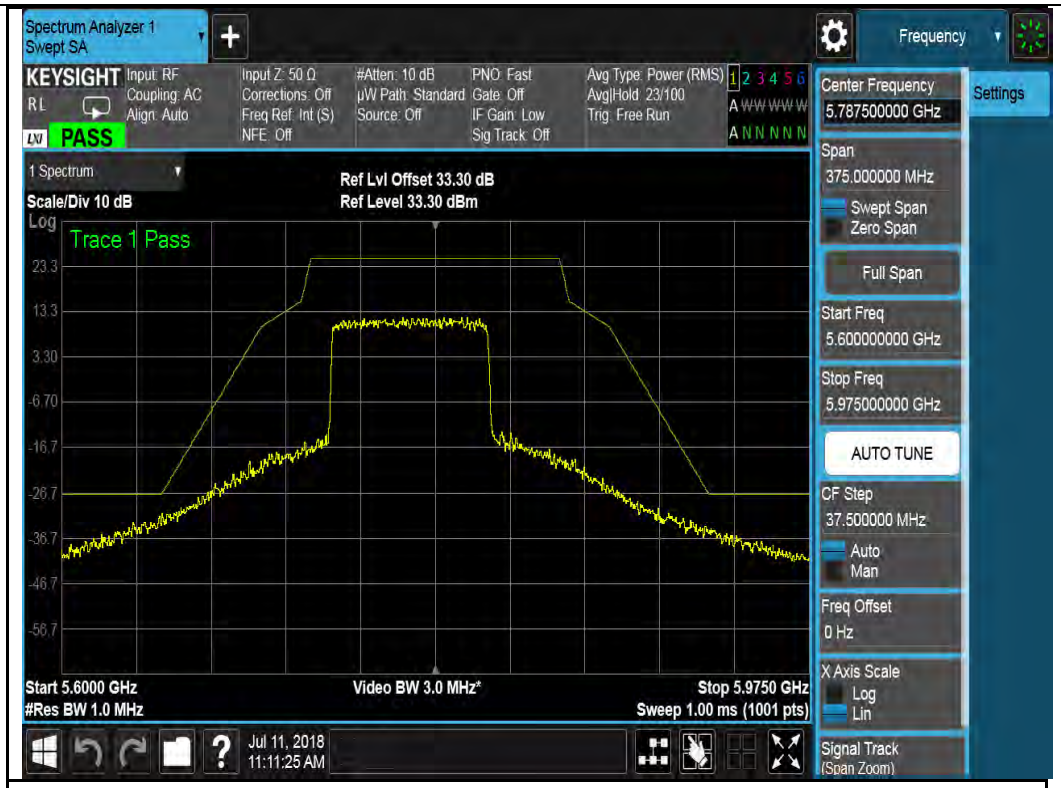
802.11n-HT20-5825MHz



802.11n-HT40-5755MHz

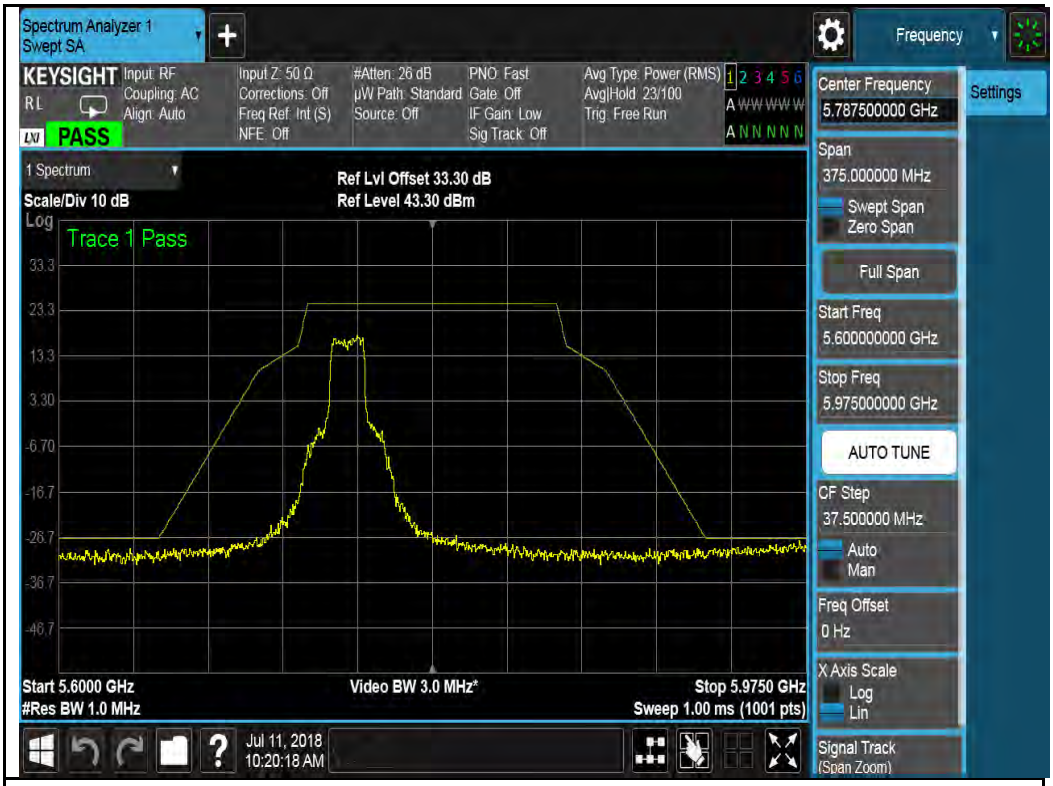


802.11n-HT40-5795MHz

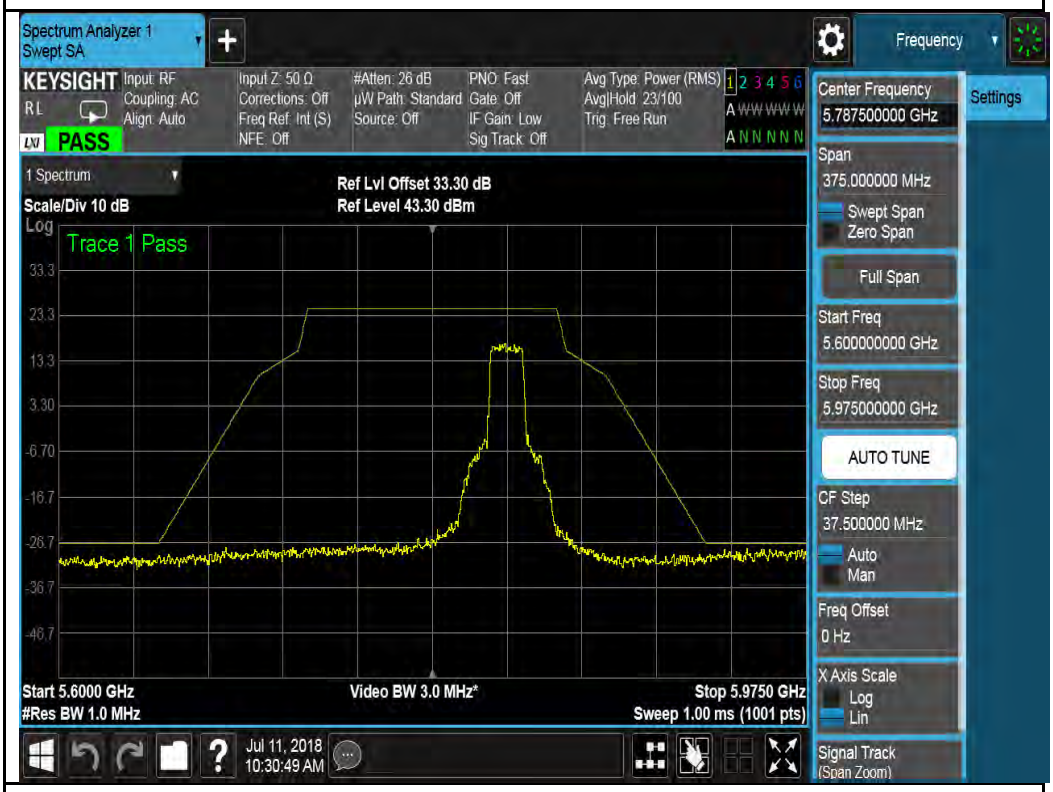


802.11ac-VHT80-5775MHz

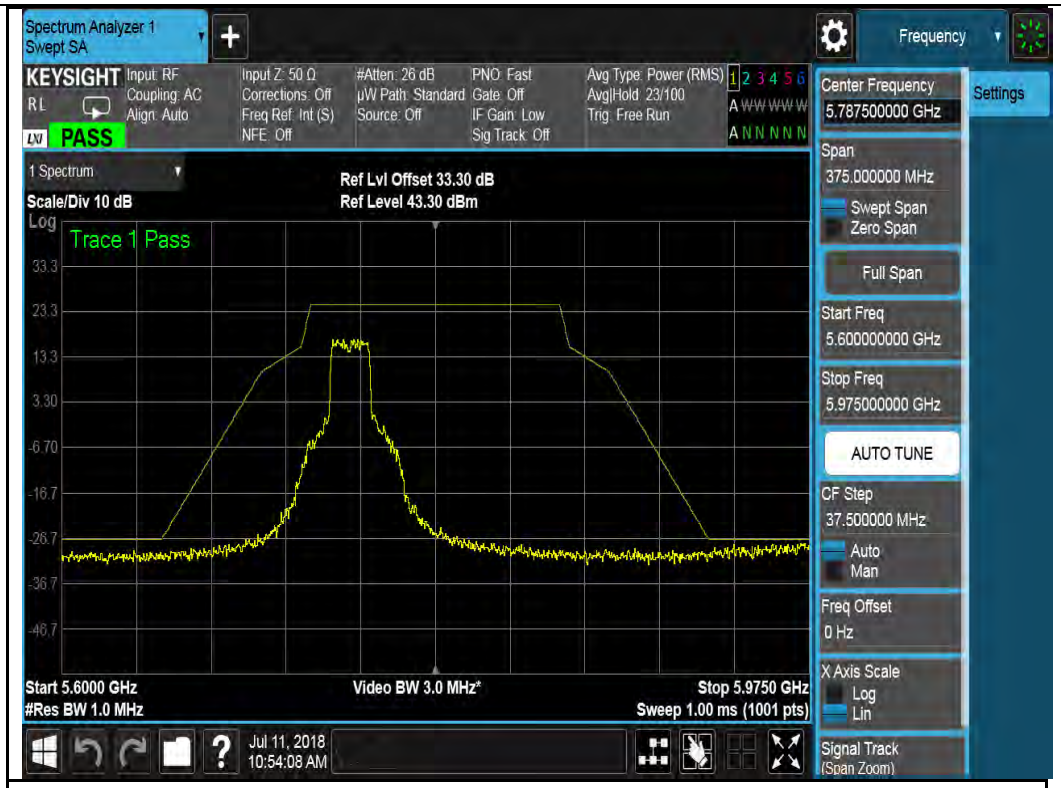
Chain 2:



802.11a-5745MHz

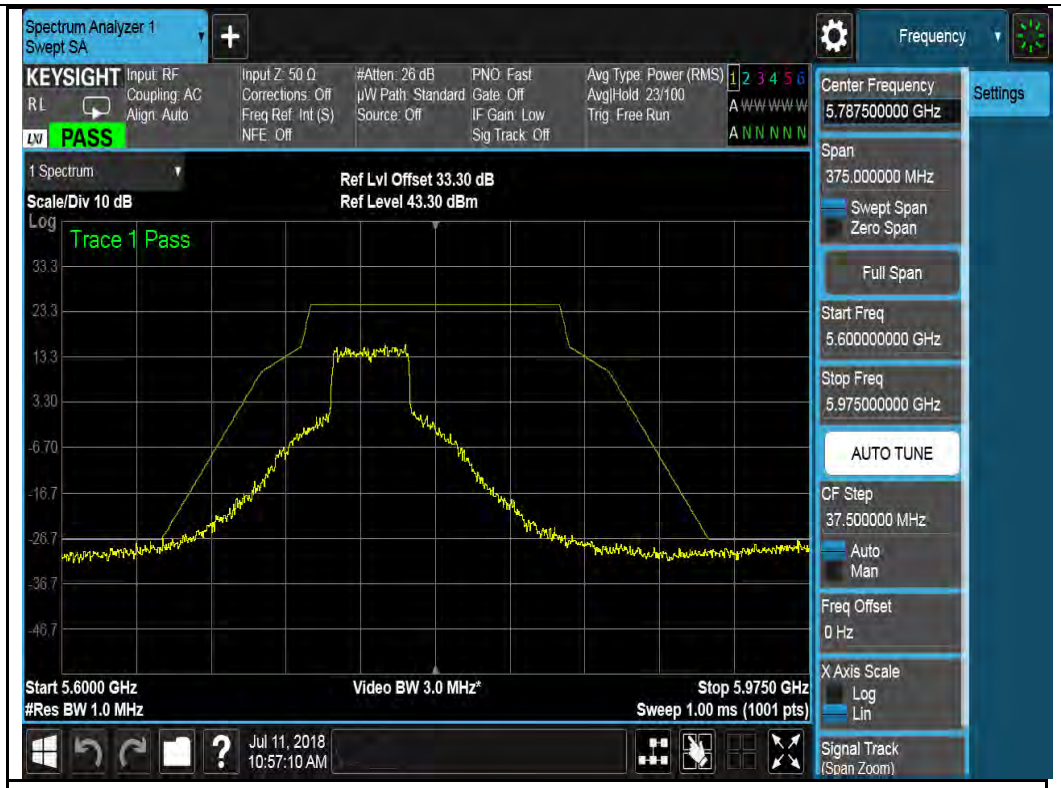


802.11a-5825MHz



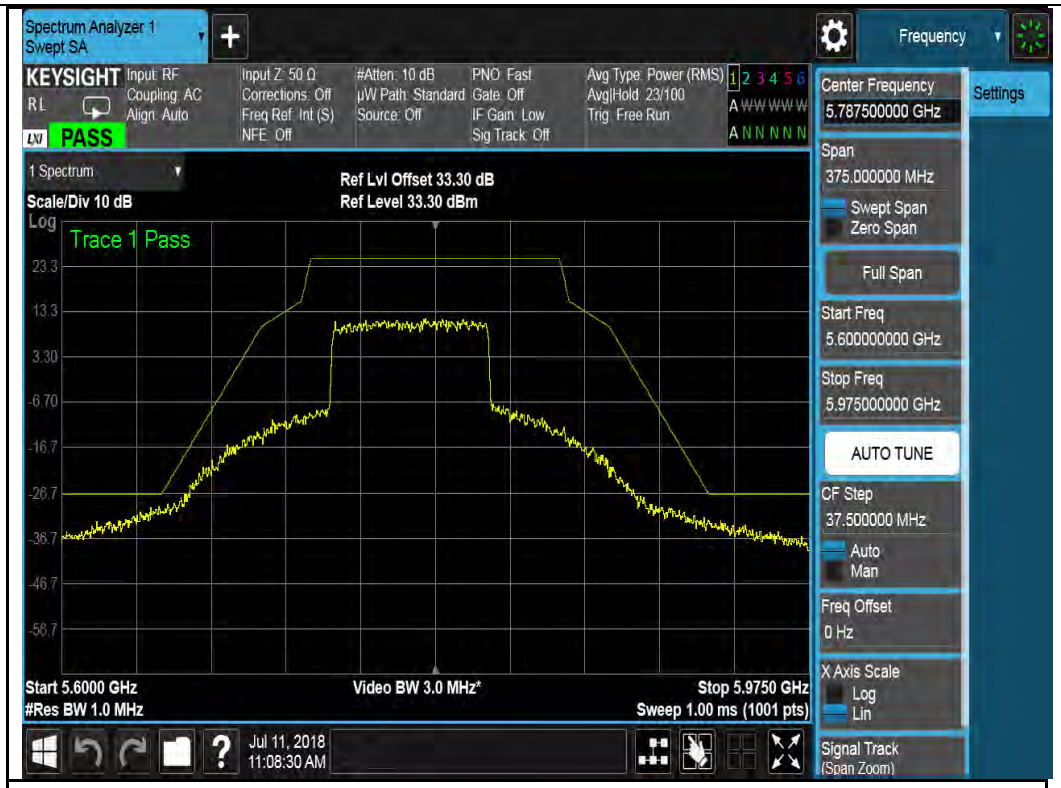
802.11n-HT20-5745MHz

802.11n-HT20-5825MHz



802.11n-HT40-5755MHz

802.11n-HT40-5795MHz



802.11ac-VHT80-5775MHz

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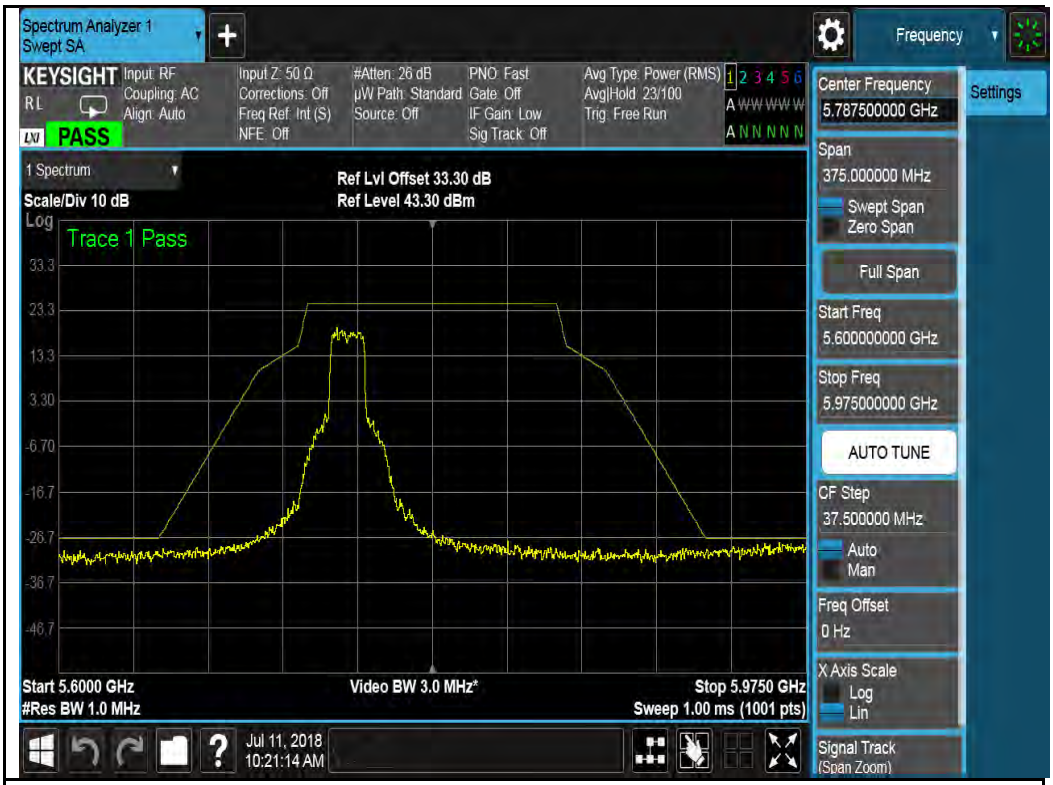
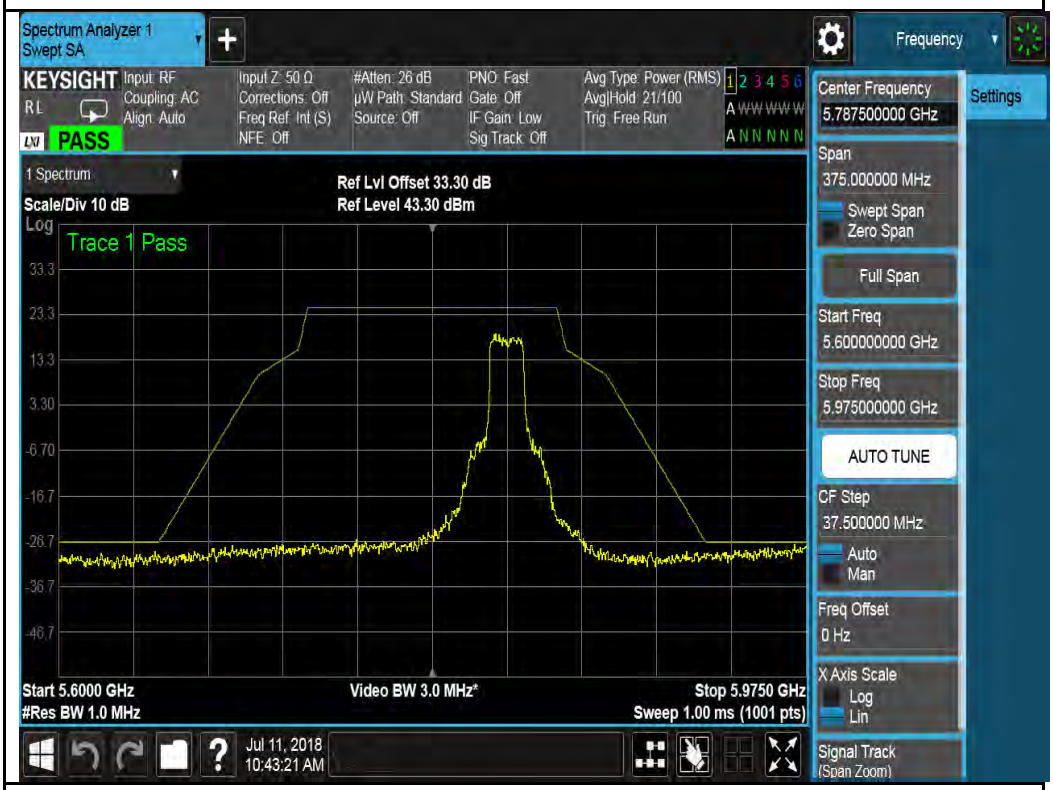
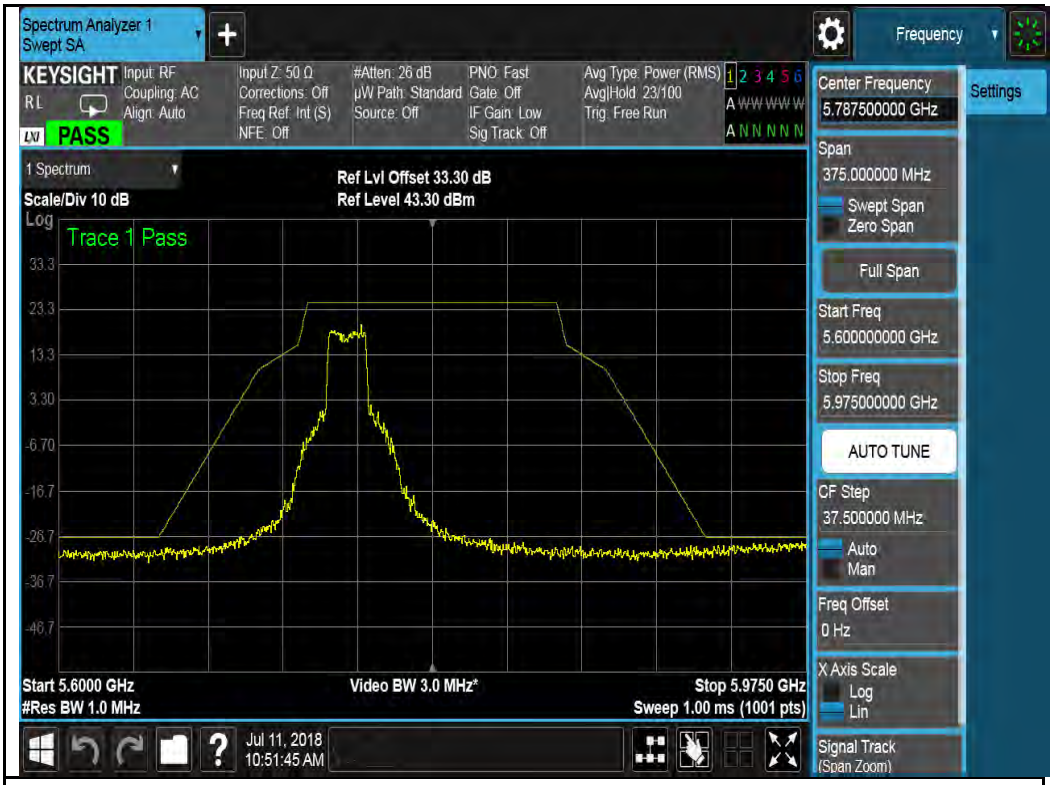


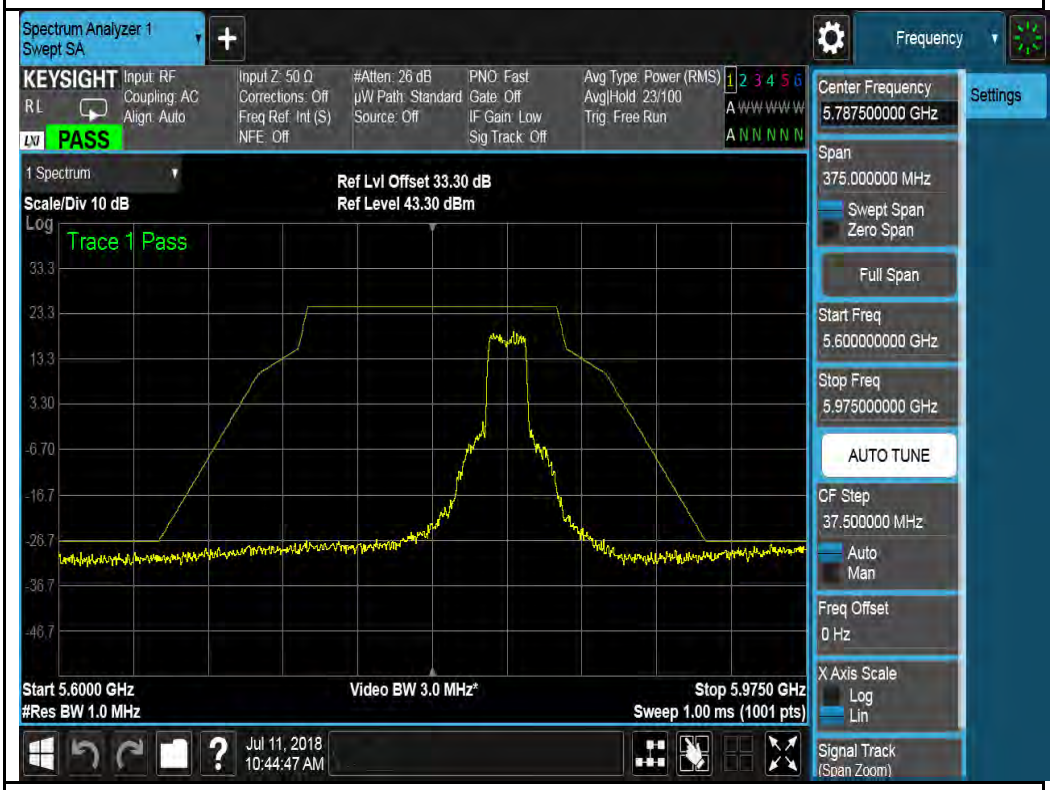
802.11a-5745MHz



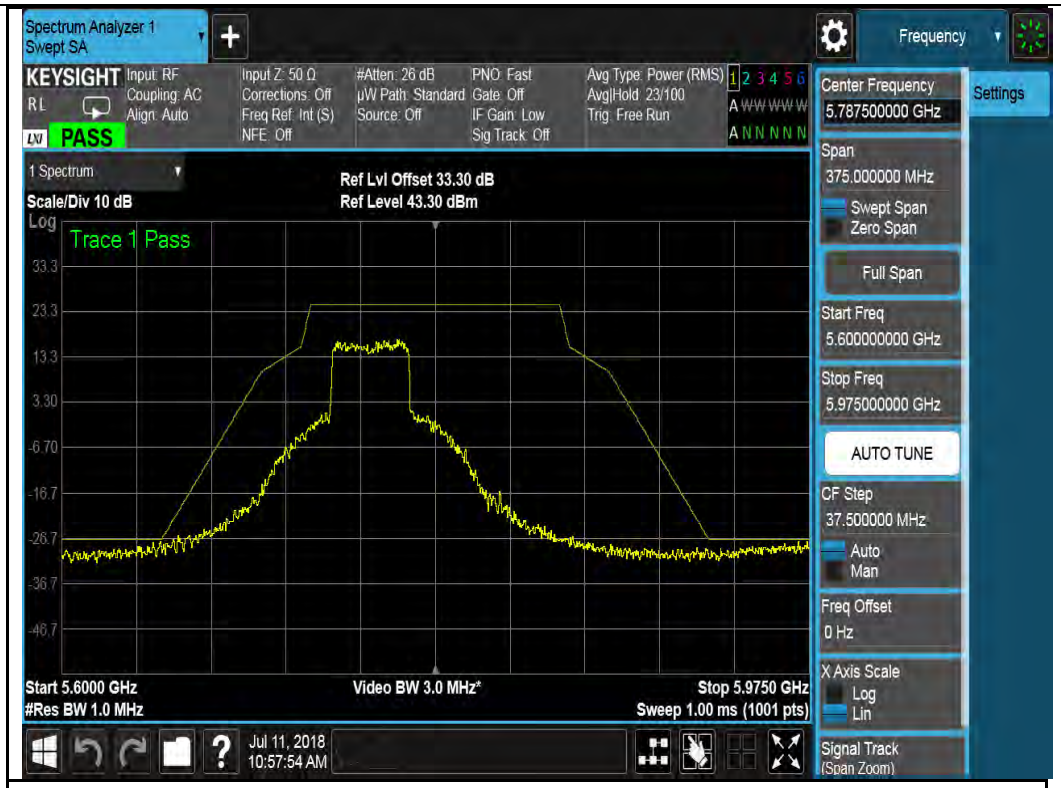
802.11a-5825MHz



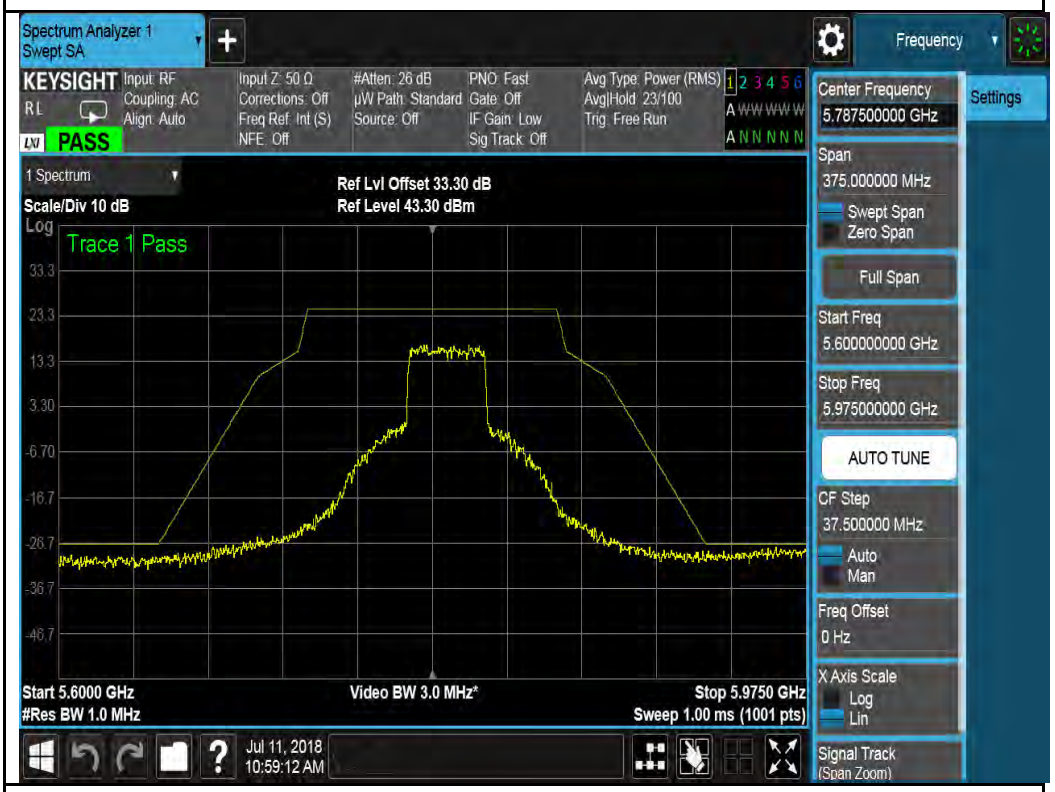
802.11n-HT20-5745MHz



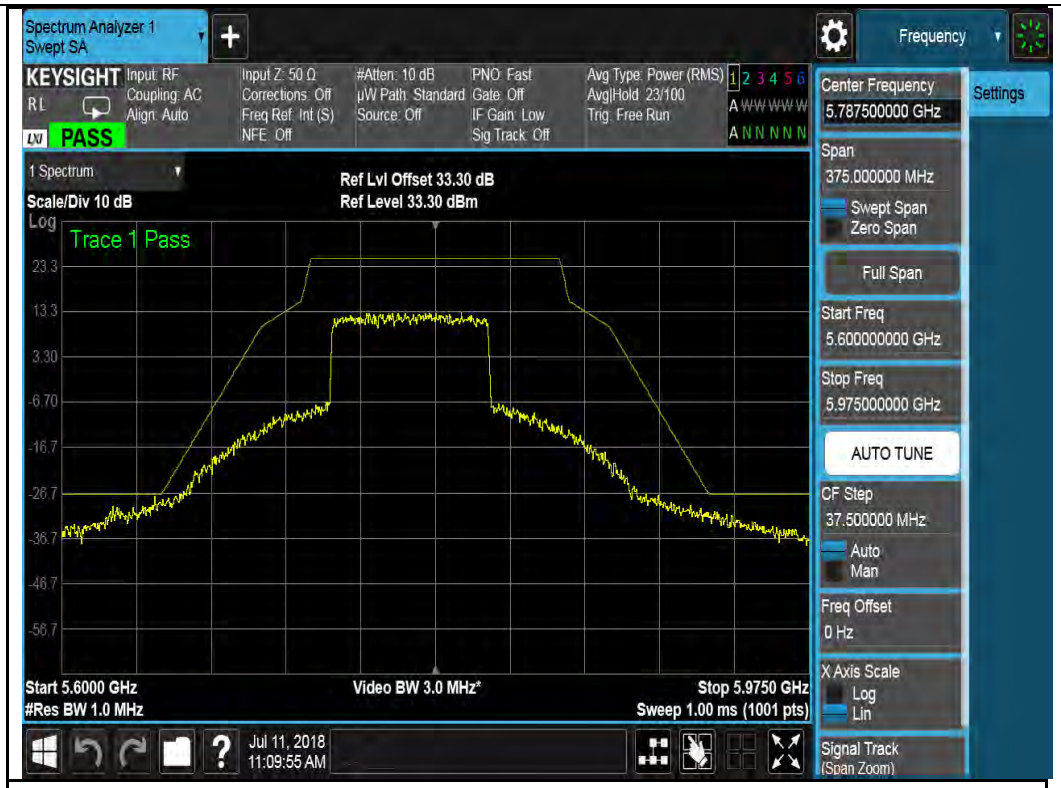
802.11n-HT20-5825MHz



802.11n-HT40-5755MHz



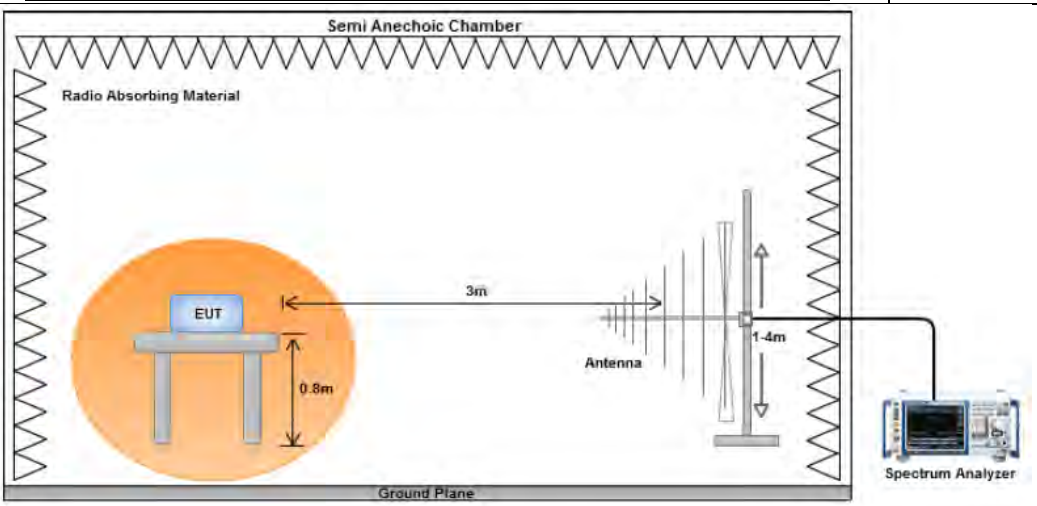
802.11n-HT40-5795MHz



802.11ac-VHT80-5775MHz

10.6 Radiated Emissions below 1GHz

Requirement(s):

<table>
<tr><th>Spec</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§
15.407(b)
15.209 (a)</td><td>Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges
<table>
<tr><th>Frequency range (MHz)</th><th>Field Strength (uV/m)</th></tr>
<tr><td>30 – 88</td><td>100</td></tr>
<tr><td>88 – 216</td><td>150</td></tr>
<tr><td>216 960</td><td>200</td></tr>
<tr><td>Above 960</td><td>500</td></tr>
</table></td><td>☒</td></tr>
<tr><td>Test Setup</td><td colspan="2"> 
</td></tr>
<tr><td>Procedure</td><td colspan="2">1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
b. The EUT was then rotated to the direction that gave the maximum emission.
c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
3. A Quasi-peak measurement was then made for that frequency point.
4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</td></tr>
<tr><td>Remark</td><td colspan="2">The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.</td></tr>
<tr><td>Result</td><td colspan="2">☒ Pass ☐ Fail</td></tr>
</table>

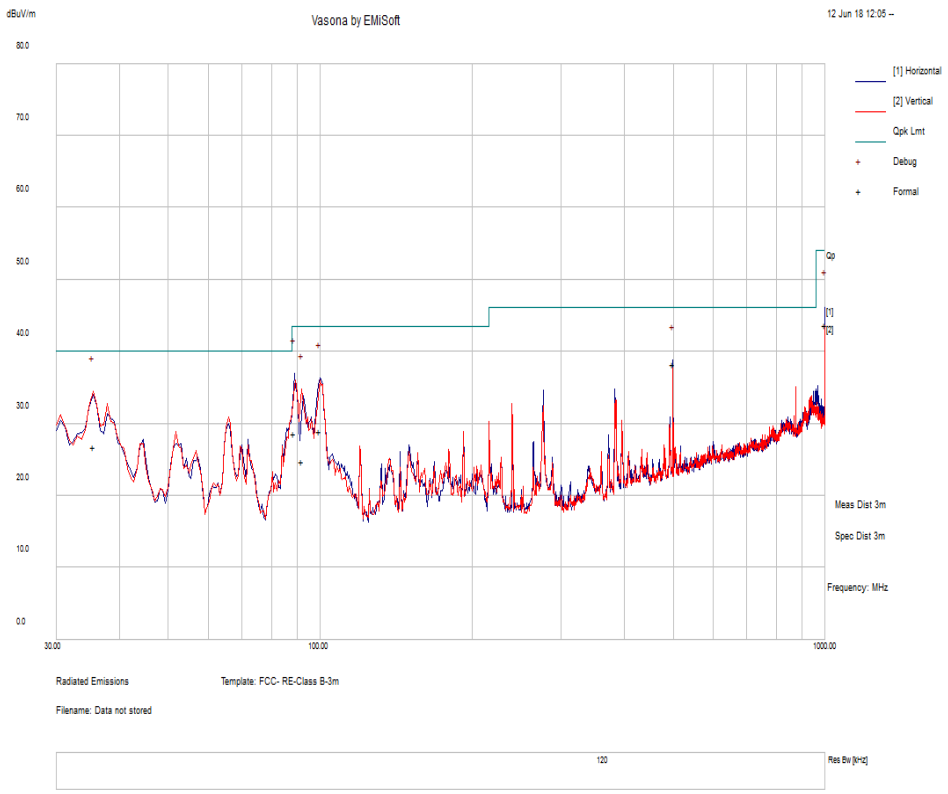
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Deon Dai at 10m chamber.

Radiated Emission Test Results (Below 1GHz)

Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	26	Result	Pass
	Humidity (%)	47		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Deon Dai			
Test Date:	06/12/2018			
Remarks:	802.11ax80, 5775MHz			

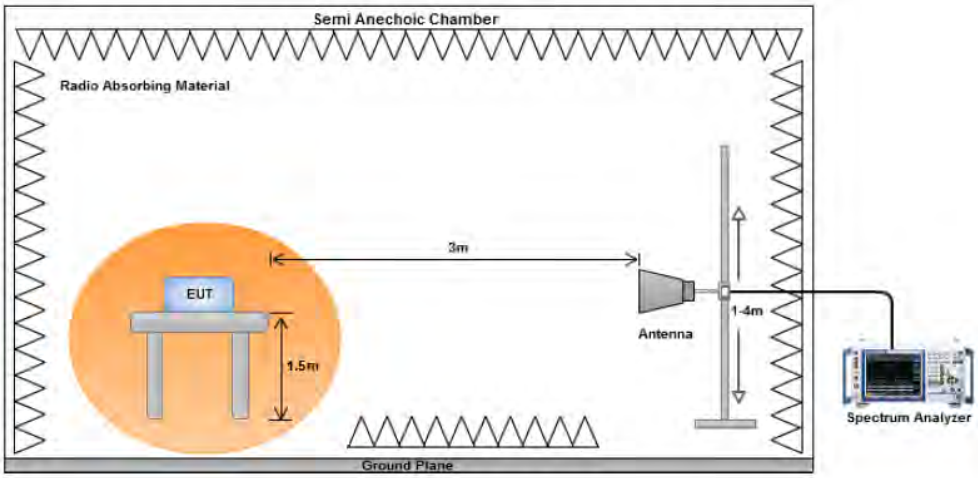


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Po l	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
35.59	33.44	11.21	-17.87	26.79	Quasi Max	V	325	225	40	-13.21	Pass
88.86	44.7	11.78	-27.85	28.62	Quasi Max	H	247	127	43.5	-14.88	Pass
91.87	40.36	11.81	-27.34	24.83	Quasi Max	V	254	280	43.5	-18.67	Pass
99.54	42.64	11.88	-25.57	28.94	Quasi Max	H	146	248	43.5	-14.56	Pass
500.01	42.73	14.17	-18.55	38.35	Quasi Max	H	167	112	46	-7.65	Pass
1000.00	40.31	16.28	-12.92	43.67	Quasi Max	H	106	143	54	-10.33	Pass

Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

10.7 Radiated Spurious Emissions above 1GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§ 15.407(b)(2), 15.407(b)(6)	(1)	For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.	☒
	(2)	For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.	☐
	(3)	For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.	☐
	(4)	For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.	☒
	(5)	Restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒
Test Setup			
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. An average measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.		
Remark	The EUT was scanned up to 40GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.		
Result	☒ Pass ☐ Fail		

Test Data ☐ Yes (See below) ☒ N/A

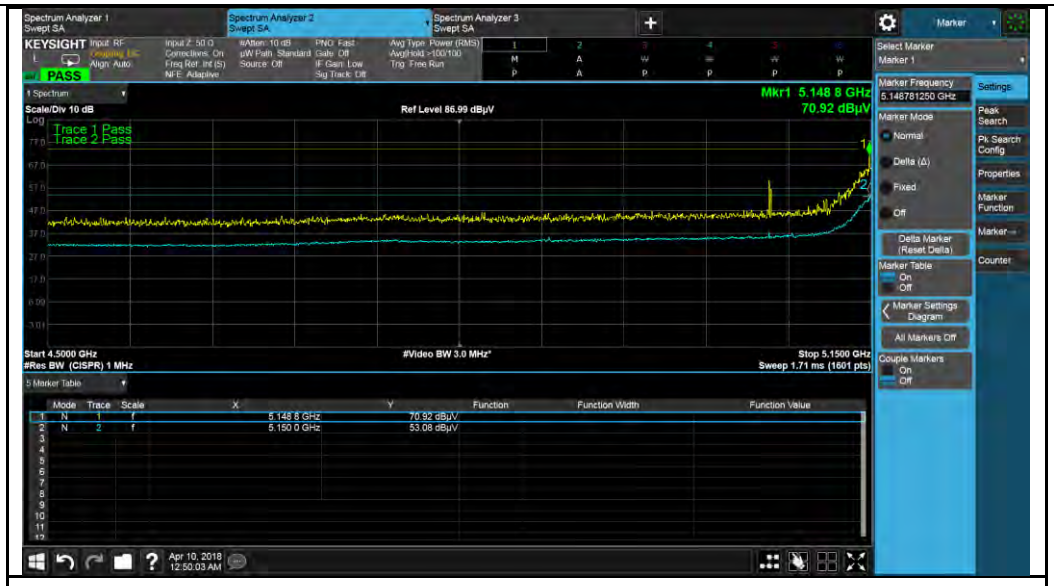
Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Deon Dai at 10m chamber.

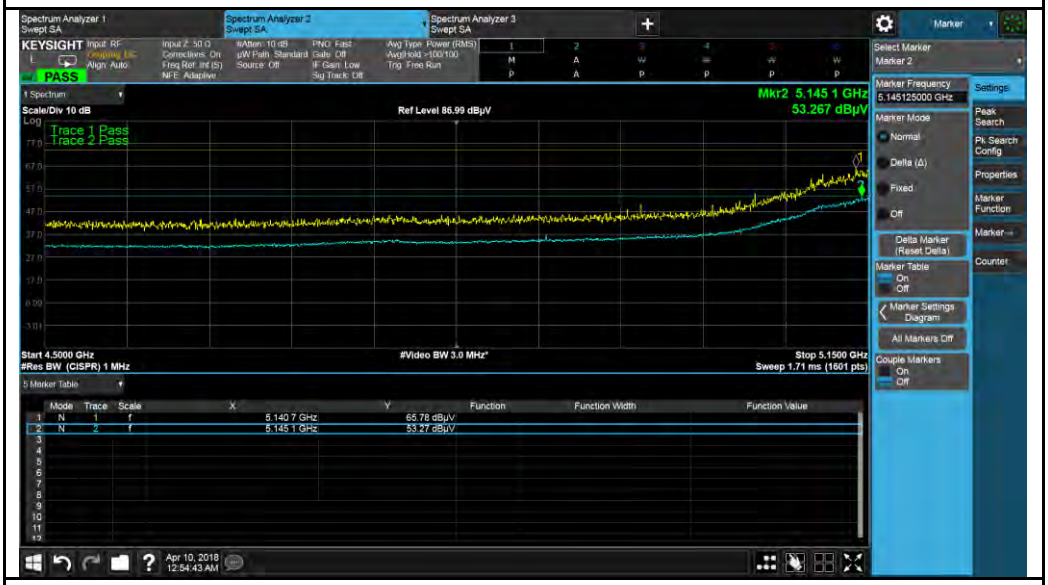
8x8 Mode: Restricted Band Measurement Plots:

802.11a-5180MHz

802.11ax20 5180MHz



802.11ax40 5190MHz



802.11ax80 5210MHz

Radiated Emission Test Results (Above 1GHz)

1GHz-40GHz – 802.11a – 5180MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7264.11	40.59	5.16	-0.33	45.42	Peak Max	V	273	304	74	-28.58	Pass
10360.98	44.19	6	1.5	51.69	Peak Max	V	233	49	74	-22.31	Pass
13285.87	46.09	7.01	4.55	57.65	Peak Max	H	167	162	74	-16.35	Pass
7264.11	22.63	5.16	-0.33	27.46	Average Max	V	273	304	54	-26.54	Pass
10360.98	26.67	6	1.5	34.17	Average Max	V	233	49	54	-19.83	Pass
13285.87	28.24	7.01	4.55	39.8	Average Max	H	167	162	54	-14.2	Pass

1GHz-40GHz – 802.11a – 5200MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7360.60	41.86	5.15	-0.37	46.64	Peak Max	H	273	296	74	-27.36	Pass
10399.15	44.64	6.02	1.61	52.27	Peak Max	H	230	43	74	-21.73	Pass
13704.86	46.48	7.11	4.6	58.19	Peak Max	H	168	156	74	-15.81	Pass
7360.60	24.4	5.15	-0.37	29.18	Average Max	H	273	296	54	-24.82	Pass
10399.15	26.98	6.02	1.61	34.61	Average Max	H	230	43	54	-19.39	Pass
13704.86	28.78	7.11	4.6	40.49	Average Max	V	168	156	54	-13.51	Pass

1GHz-40GHz – 802.11a – 5240MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7786.21	42.53	5.25	-0.32	47.46	Peak Max	V	270	303	74	-26.54	Pass
10480.00	44.59	6.07	1.83	52.49	Peak Max	H	225	48	74	-21.51	Pass
13323.85	46.09	7.01	4.56	57.66	Peak Max	V	169	162	74	-16.34	Pass
7786.21	25.22	5.25	-0.32	30.15	Average Max	V	270	303	54	-23.85	Pass
10480.00	27.58	6.07	1.83	35.48	Average Max	H	225	48	54	-18.52	Pass
13323.85	28.3	7.01	4.56	39.87	Average Max	V	169	162	54	-14.13	Pass

1GHz-40GHz – 802.11ax-20M – 5180MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7770.21	41.54	5.24	-0.32	46.46	Peak Max	V	271	301	74	-27.54	Pass
10360.69	44.17	6	1.5	51.67	Peak Max	V	225	45	74	-22.33	Pass
13038.13	46.23	6.92	4.54	57.69	Peak Max	H	166	156	74	-16.31	Pass
7770.21	24.06	5.24	-0.32	28.98	Average Max	V	271	301	54	-25.02	Pass
10360.69	26.22	6	1.5	33.72	Average Max	H	225	45	54	-20.28	Pass
13038.13	28.76	6.92	4.54	40.22	Average Max	V	166	156	54	-13.78	Pass

1GHz-40GHz – 802.11ax-20M – 5200MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7101.12	42.45	5.11	-0.28	47.28	Peak Max	V	265	299	74	-26.72	Pass
10399.33	44.61	6.02	1.61	52.24	Peak Max	H	228	44	74	-21.76	Pass
13460.16	46.24	7.04	4.52	57.8	Peak Max	H	169	159	74	-16.2	Pass
7101.12	24.63	5.11	-0.28	29.46	Average Max	H	265	299	54	-24.54	Pass
10399.33	27.14	6.02	1.61	34.77	Average Max	V	228	44	54	-19.23	Pass
13460.16	28.93	7.04	4.52	40.49	Average Max	V	169	159	54	-13.51	Pass

1GHz-40GHz – 802.11ax-20M – 5240MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7111.43	41.21	5.12	-0.29	46.04	Peak Max	H	273	295	74	-27.96	Pass
10480.51	44.57	6.07	1.83	52.47	Peak Max	H	234	50	74	-21.53	Pass
13718.07	45.96	7.11	4.58	57.65	Peak Max	V	162	155	74	-16.35	Pass
7111.43	23.61	5.12	-0.29	28.44	Average Max	V	273	295	54	-25.56	Pass
10480.51	27.14	6.07	1.83	35.04	Average Max	V	234	50	54	-18.96	Pass
13718.07	28.6	7.11	4.58	40.29	Average Max	V	162	155	54	-13.71	Pass

1GHz-40GHz – 802.11ax-40M – 5190MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7580.26	41.22	5.16	-0.41	45.97	Peak Max	H	272	299	74	-28.03	Pass
10379.43	43.77	6.01	1.55	51.33	Peak Max	H	233	45	74	-22.67	Pass
13223.35	46.55	6.99	4.47	58.01	Peak Max	V	166	161	74	-15.99	Pass
7580.26	23.28	5.16	-0.41	28.03	Average Max	H	272	299	54	-25.97	Pass
10379.43	26.57	6.01	1.55	34.13	Average Max	H	233	45	54	-19.87	Pass
13223.35	29.43	6.99	4.47	40.89	Average Max	V	166	161	54	-13.11	Pass

1GHz-40GHz – 802.11ax-40M – 5230MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7667.24	42.1	5.19	-0.32	46.97	Peak Max	H	267	299	74	-27.03	Pass
10460.63	44.77	6.06	1.77	52.6	Peak Max	H	227	42	74	-21.4	Pass
13498.92	46.78	7.05	4.49	58.32	Peak Max	H	161	156	74	-15.68	Pass
7667.24	24.17	5.19	-0.32	29.04	Average Max	H	267	299	54	-24.96	Pass
10460.63	27.15	6.06	1.77	34.98	Average Max	H	227	42	54	-19.02	Pass
13498.92	29.64	7.05	4.49	41.18	Average Max	H	161	156	54	-12.82	Pass

1GHz-40GHz – 802.11ax-80M – 5210MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7826.58	41.62	5.28	-0.32	46.58	Peak Max	H	267	297	74	-27.42	Pass
10419.67	43.99	6.04	1.66	51.69	Peak Max	H	234	44	74	-22.31	Pass
13163.37	46.57	6.97	4.44	57.98	Peak Max	H	168	157	74	-16.02	Pass
7826.58	24.29	5.28	-0.32	29.25	Average Max	H	267	297	54	-24.75	Pass
10419.67	26.69	6.04	1.66	34.39	Average Max	H	234	44	54	-19.61	Pass
13163.37	29.08	6.97	4.44	40.49	Average Max	H	168	157	54	-13.51	Pass

1GHz-40GHz – 802.11a – 5745MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7374.50	41.67	5.15	-0.37	46.45	Peak Max	V	271	299	74	-27.55	Pass
11490.50	45.05	6.07	2.64	53.76	Peak Max	H	226	45	74	-20.24	Pass
13775.76	47.15	7.14	4.53	58.82	Peak Max	H	169	158	74	-15.18	Pass
7374.50	24.32	5.15	-0.37	29.1	Average Max	V	271	299	54	-24.9	Pass
11490.50	27.08	6.07	2.64	35.79	Average Max	H	226	45	54	-18.21	Pass
13775.76	30	7.14	4.53	41.67	Average Max	V	169	158	54	-12.33	Pass

1GHz-40GHz - 802.11a– 5785MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7869.84	42.22	5.32	-0.32	47.22	Peak Max	H	269	296	74	-26.78	Pass
11569.02	44.41	6.13	2.75	53.29	Peak Max	V	231	49	74	-20.71	Pass
13122.88	46.96	6.95	4.43	58.34	Peak Max	H	165	153	74	-15.66	Pass
7869.84	24.86	5.32	-0.32	29.86	Average Max	V	269	296	54	-24.14	Pass
11569.02	26.7	6.13	2.75	35.58	Average Max	H	231	49	54	-18.42	Pass
13122.88	29.83	6.95	4.43	41.21	Average Max	V	165	153	54	-12.79	Pass

1GHz-40GHz - 802.11a - 5825MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7359.65	41.8	5.15	-0.37	46.58	Peak Max	V	268	297	74	-27.42	Pass
11650.90	45.38	6.2	2.93	54.51	Peak Max	H	234	50	74	-19.49	Pass
13628.61	46.63	7.09	4.6	58.32	Peak Max	H	163	156	74	-15.68	Pass
7359.65	24.57	5.15	-0.37	29.35	Average Max	V	268	297	54	-24.65	Pass
11650.90	27.91	6.2	2.93	37.04	Average Max	V	234	50	54	-16.96	Pass
13628.61	29.19	7.09	4.6	40.88	Average Max	V	163	156	54	-13.12	Pass

1GHz-40GHz – 802.11ax-20M – 5745MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7113.50	41.48	5.12	-0.29	46.31	Peak Max	H	273	302	74	-27.69	Pass
11490.88	45	6.07	2.64	53.71	Peak Max	H	231	46	74	-20.29	Pass
13311.56	46.06	7.01	4.56	57.63	Peak Max	H	164	159	74	-16.37	Pass
7113.50	24.38	5.12	-0.29	29.21	Average Max	V	273	302	54	-24.79	Pass
11490.88	27.49	6.07	2.64	36.2	Average Max	H	231	46	54	-17.8	Pass
13311.56	28.81	7.01	4.56	40.38	Average Max	H	164	159	54	-13.62	Pass

1GHz-40GHz - 802.11ax-20M– 5785MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7795.61	41.08	5.26	-0.32	46.02	Peak Max	H	266	304	74	-27.98	Pass
11569.34	44.39	6.13	2.75	53.27	Peak Max	V	234	42	74	-20.73	Pass
13192.95	46.52	6.98	4.44	57.94	Peak Max	H	162	161	74	-16.06	Pass
7795.61	23.97	5.26	-0.32	28.91	Average Max	V	266	304	54	-25.09	Pass
11569.34	26.94	6.13	2.75	35.82	Average Max	V	234	42	54	-18.18	Pass
13192.95	29.39	6.98	4.44	40.81	Average Max	V	162	161	54	-13.19	Pass

1GHz-40GHz - 802.11ax-20M - 5825MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7547.15	41.88	5.15	-0.41	46.62	Peak Max	V	270	303	74	-27.38	Pass
11650.67	45.38	6.2	2.93	54.51	Peak Max	V	225	48	74	-19.49	Pass
13424.99	46.6	7.03	4.56	58.19	Peak Max	H	163	157	74	-15.81	Pass
7547.15	24.73	5.15	-0.41	29.47	Average Max	V	270	303	54	-24.53	Pass
11650.67	27.82	6.2	2.93	36.95	Average Max	H	225	48	54	-17.05	Pass
13424.99	28.73	7.03	4.56	40.32	Average Max	H	163	157	54	-13.68	Pass