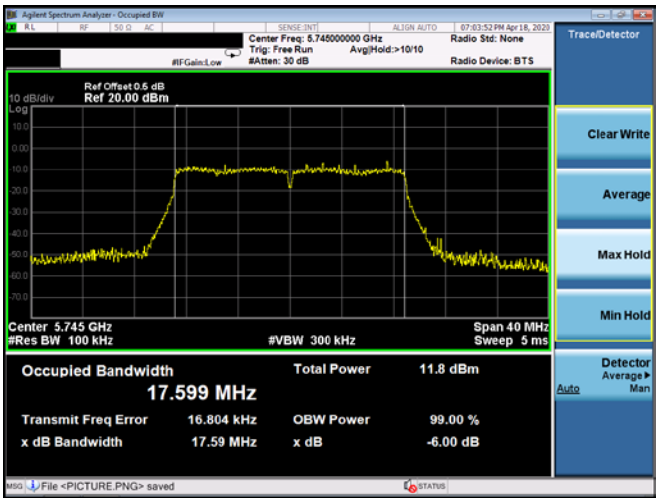
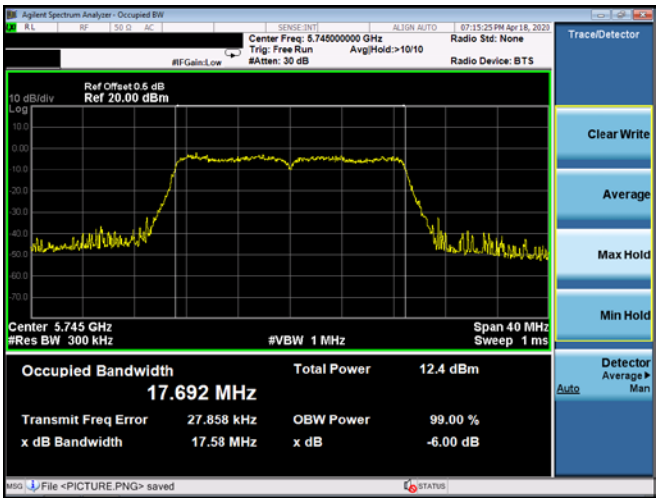
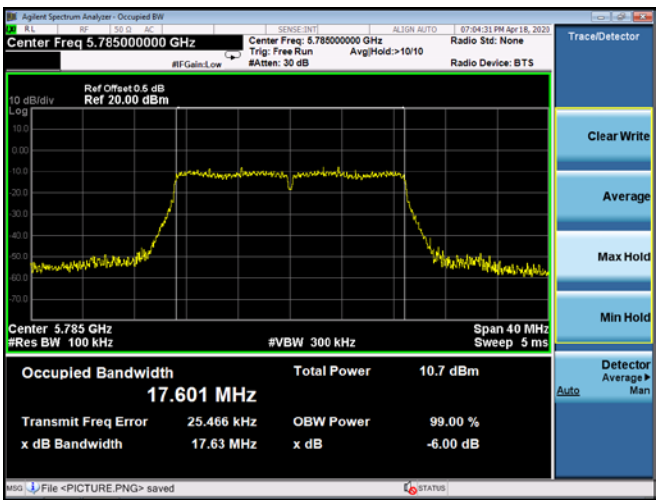
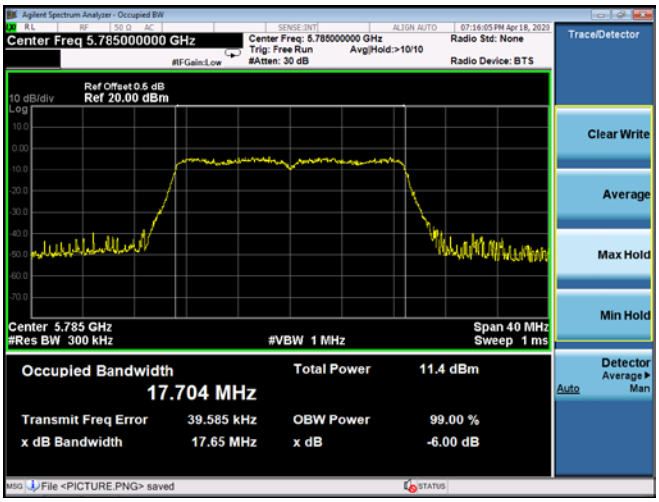
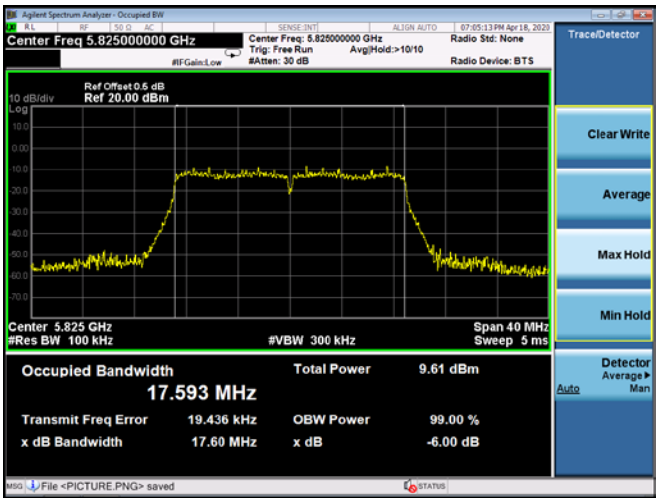
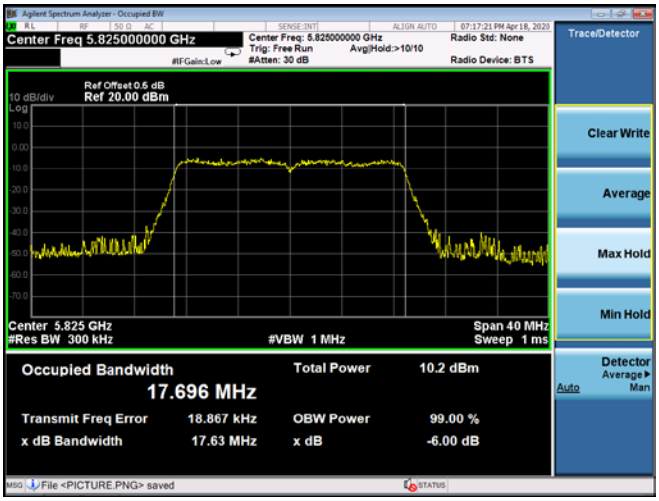
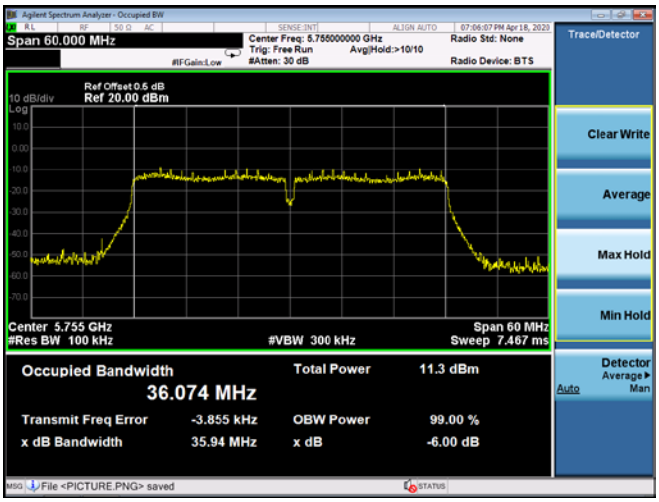
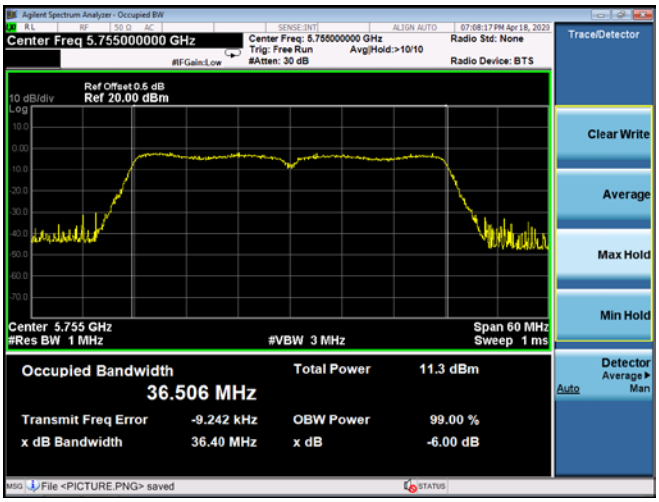
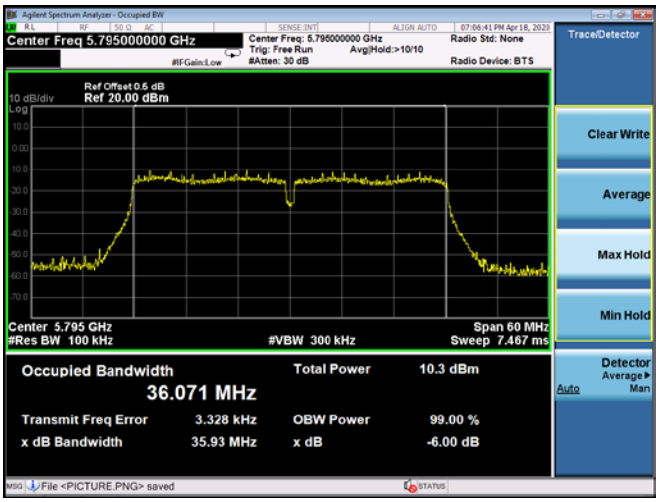
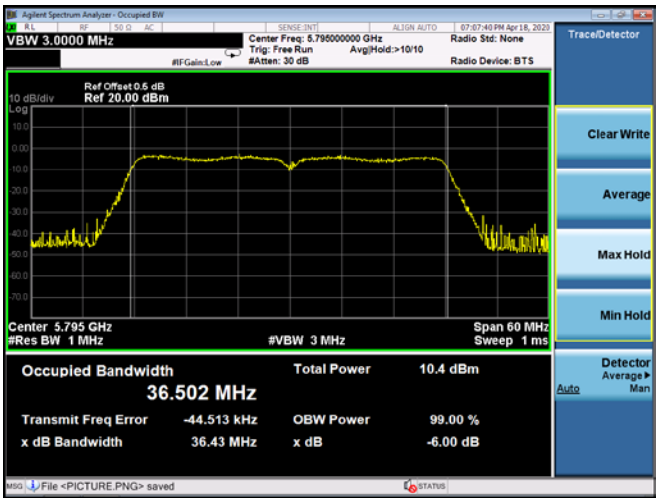
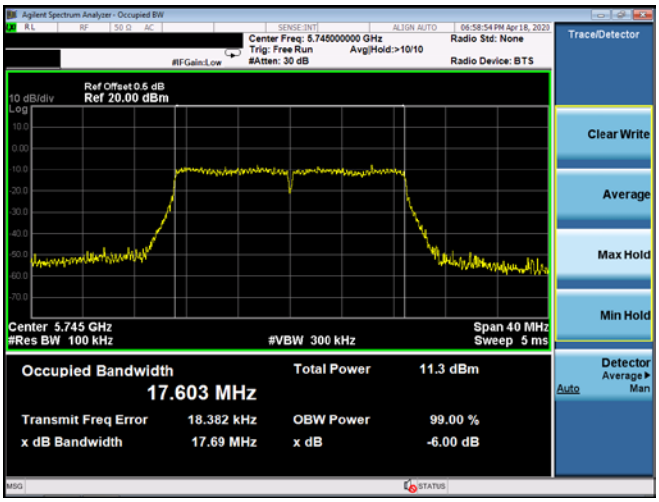
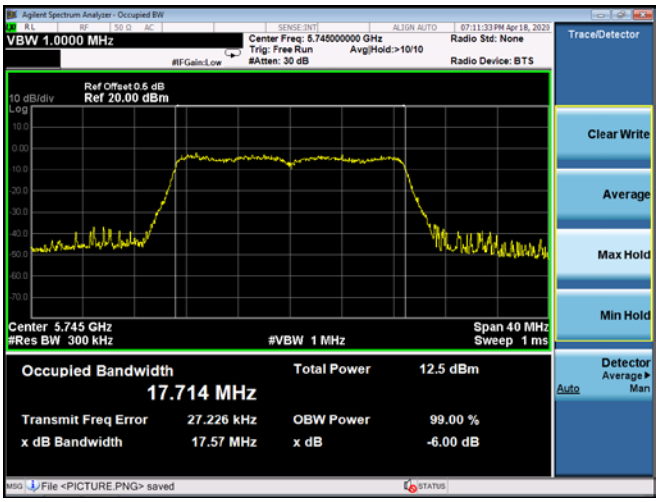
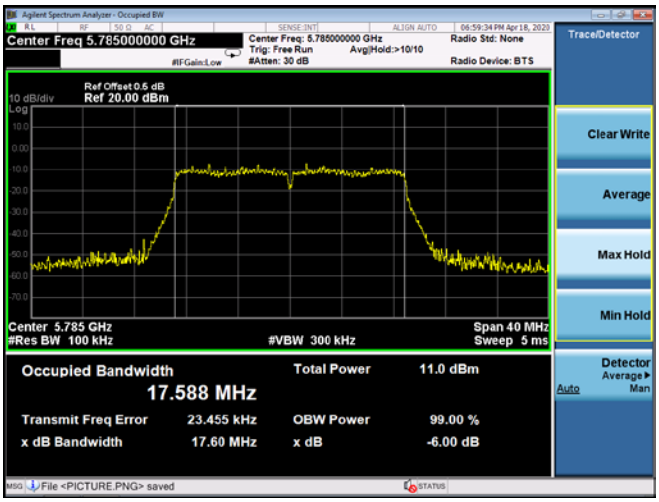
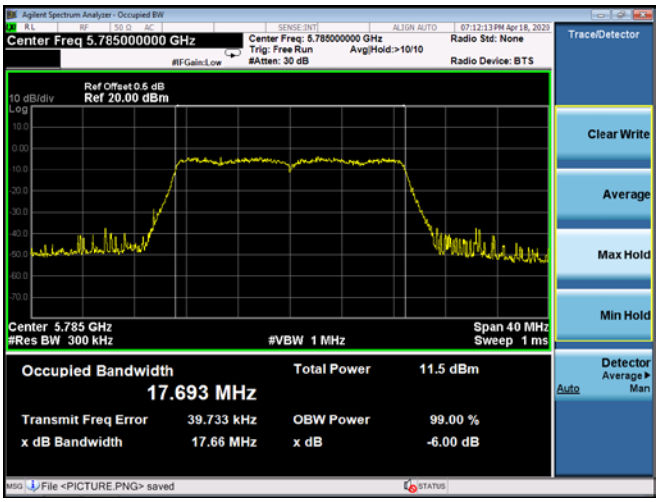
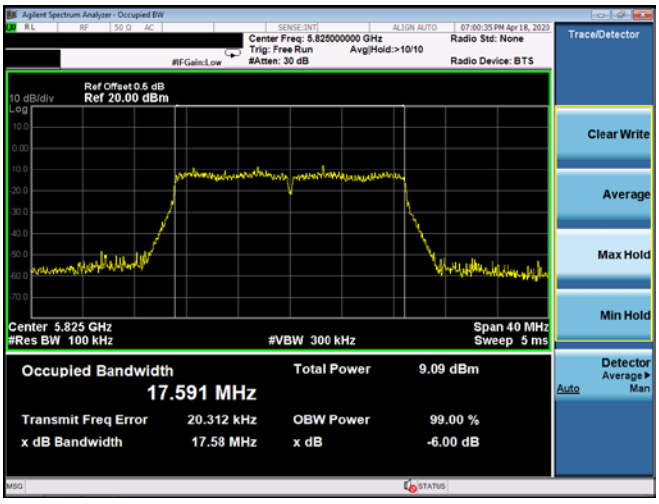
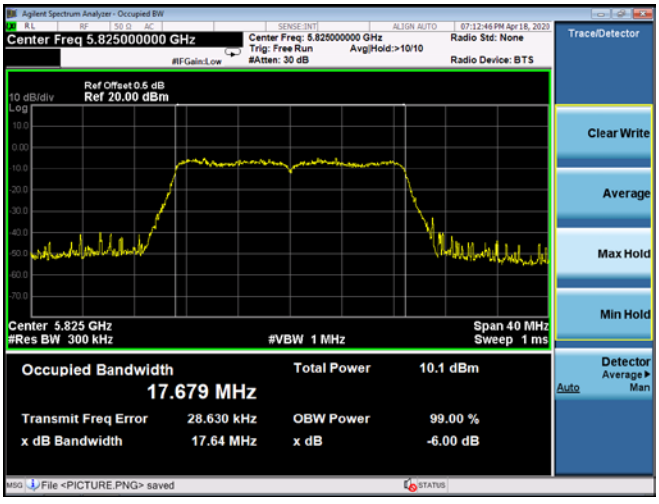
Mode:	802.11n-HT20
5745MHz **6dB bandwidth**	
5745MHz 99% bandwidth	
5785MHz **6dB bandwidth**	

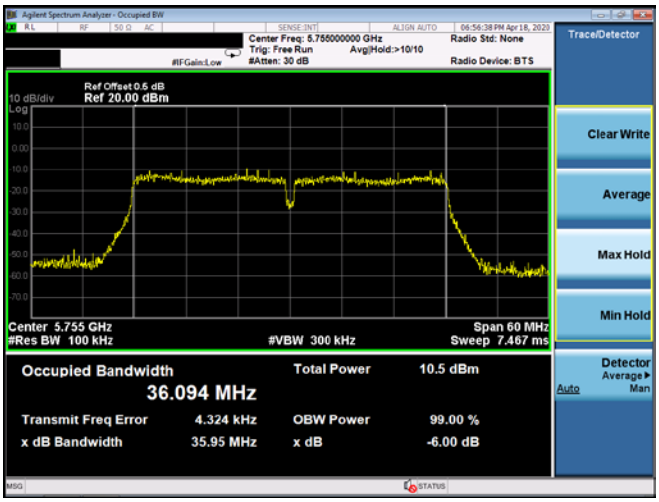
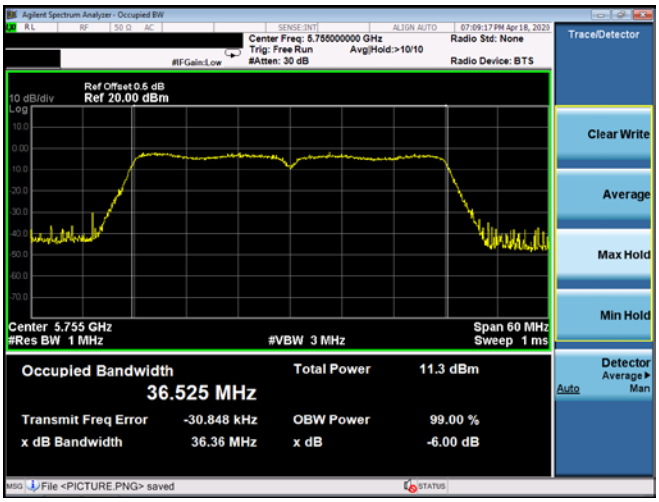
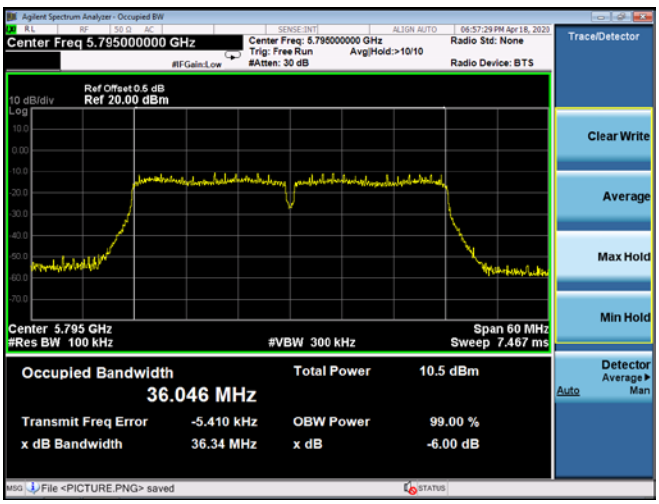
5785MHz 99% bandwidth	
5825MHz **6dB bandwidth**	
5825MHz 99% bandwidth	

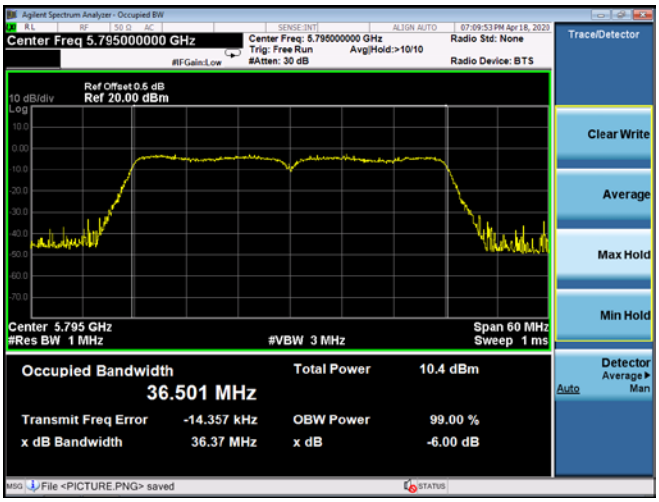
Mode:	802.11n-HT40
5755 MHz **6dB bandwidth**	
5755 MHz 99% bandwidth	
5795 MHz 6dB bandwidth	

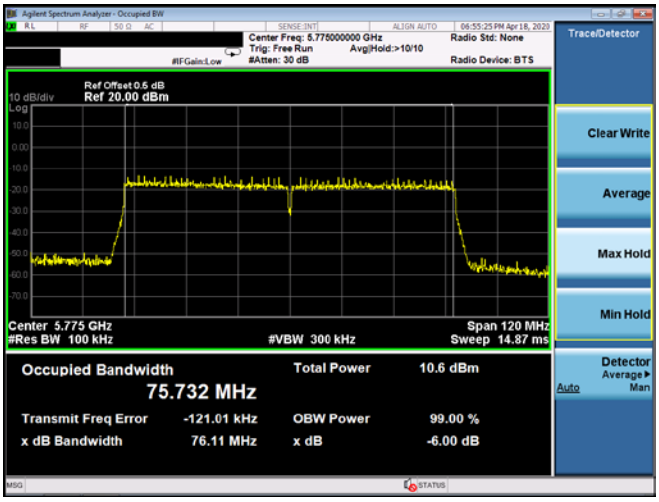
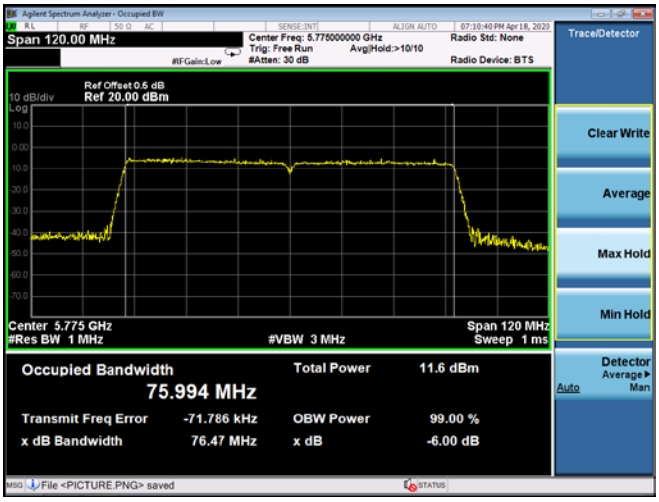
5795 MHz **99% bandwidth**	

Mode:	802.11ac-HT20
5745MHz **6dB bandwidth**	
5745MHz 99% bandwidth	
5785MHz **6dB bandwidth**	

5785MHz 99% bandwidth	
5825MHz **6dB bandwidth**	
5825MHz 99% bandwidth	

Mode:	802.11ac-HT40
5755 MHz **6dB bandwidth**	
5755 MHz 99% bandwidth	
5795 MHz 6dB bandwidth	

5795 MHz **99% bandwidth**	

Mode:	**802.11ac-HT80**
5755 MHz **6dB bandwidth**	
5755 MHz 99% bandwidth	

6. MAXIMUM CONDUCTED OUTPUT POWER

6.1 PPLIED PROCEDURES / LIMIT

According to FCC §15.407

The maximum conduced output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5725~5850	1W

6.2 TEST PROCEDURE

· Maximum conducted output power may be measured using a spectrum analyzer/EMI receiver or an RF power meter.

1. Device Configuration

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).

a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)

Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.1 However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).

a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:

• The EUT transmits continuously (or with a duty cycle ≥ 98 percent).

• Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.

(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.

(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".

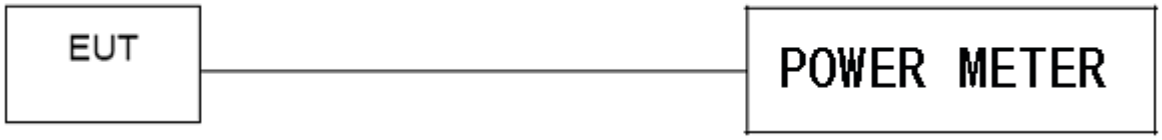
(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULTS

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX (5G) Mode Frequency U-NII-1 (5180-5240MHz)		

Test Channel	Frequency	Maximum output power. Antenna port (AV)			LIMIT	Result
	(MHz)	ANT A(dBm)	ANT B(dBm)	Total(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	13.579	13.935	/	23.98	Pass
CH40	5200	13.649	12.369	/	23.98	Pass
CH48	5240	13.282	13.100	/	23.98	Pass
TX 802.11 n20M Mode						
CH36	5180	12.983	13.328	16.17	23.98	Pass
CH40	5200	13.142	13.402	16.28	23.98	Pass
CH48	5240	12.573	12.787	15.69	23.98	Pass
TX 802.11 n40M Mode						
CH38	5190	10.502	10.159	13.34	23.98	Pass
CH46	5230	9.363	10.750	13.12	23.98	Pass
TX 802.11 AC20M Mode						
CH36	5180	13.237	13.412	16.34	23.98	Pass
CH40	5200	12.420	13.372	15.93	23.98	Pass
CH48	5240	12.399	12.849	15.64	23.98	Pass
TX 802.11 AC40M Mode						
CH38	5190	9.566	10.946	13.32	23.98	Pass
CH46	5230	10.209	10.518	13.38	23.98	Pass
TX 802.11 AC80M Mode						
CH42	5210	7.424	7.674	10.56	23.98	Pass

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX (5G) Mode Frequency U-NII-3 (5745-5825MHz)		

Test Channel	Frequency	Maximum output power. Antenna port (AV)			LIMIT	Result
	(MHz)	ANT A(dBm)	ANT B(dBm)	Total(dBm)	dBm	
TX 802.11a Mode						
CH 149	5745	9.892	9.734	/	30	Pass
CH 157	5785	9.977	10.007	/	30	Pass
CH 165	5825	9.341	9.122	/	30	Pass
TX 802.11 n20M Mode						
CH 149	5745	8.319	8.582	11.46	30	Pass
CH 157	5785	8.893	8.988	11.95	30	Pass
CH 165	5825	8.783	8.696	11.75	30	Pass
TX 802.11 n40M Mode						
CH 151	5755	6.317	6.465	9.40	30	Pass
CH 159	5795	6.712	6.418	9.58	30	Pass
TX 802.11 AC20M Mode						
CH 149	5745	9.053	9.627	12.36	30	Pass
CH 157	5785	9.869	9.754	12.82	30	Pass
CH 165	5825	9.747	9.383	12.58	30	Pass
TX 802.11 AC40M Mode						
CH 151	5755	7.347	7.343	10.36	30	Pass
CH 159	5795	7.671	7.558	10.63	30	Pass
TX 802.11 AC80M Mode						
CH 155	5775	5.153	4.656	7.92	30	Pass

7. OUT OF BAND EMISSIONS

7.1 APPLICABLE STANDARD

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(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 e.i.r.p. of −27 dBm/MHz.

(2) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

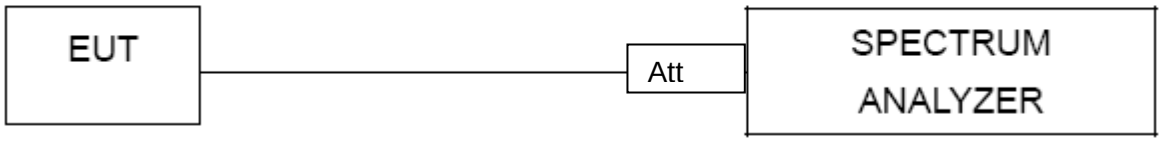
7.2 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

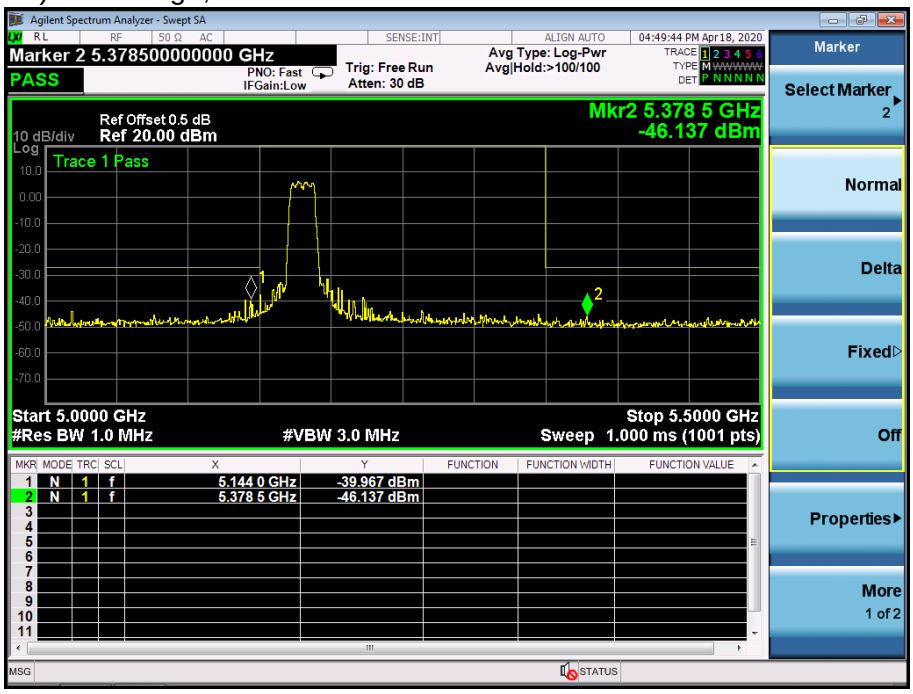
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	AC 120V/60Hz

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A ,only shown Antenna A . Plot.Antenna A: 5180-5240MHz

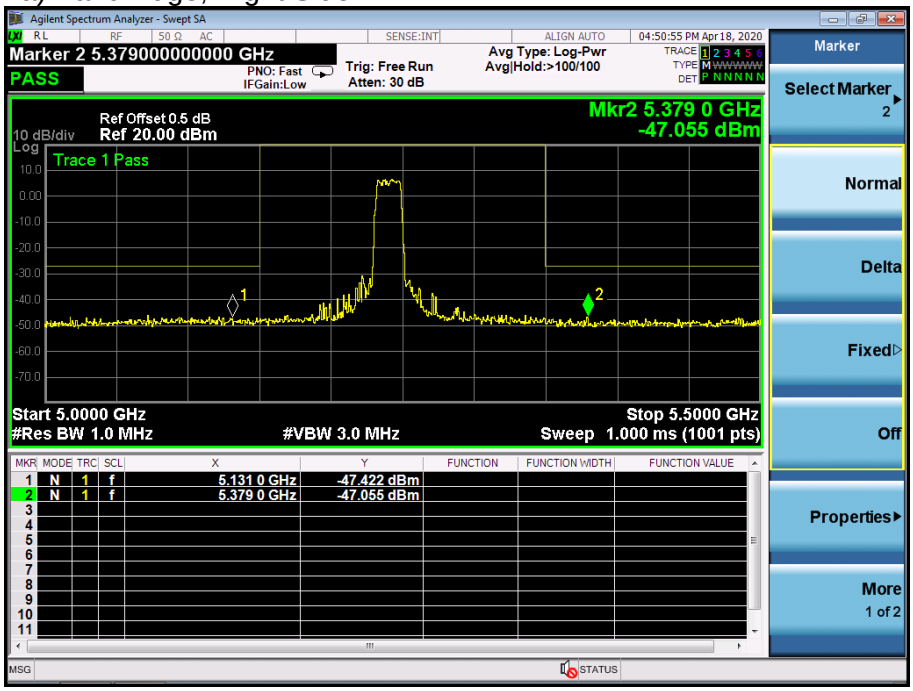
5.2G

5.180~5.240 GHz

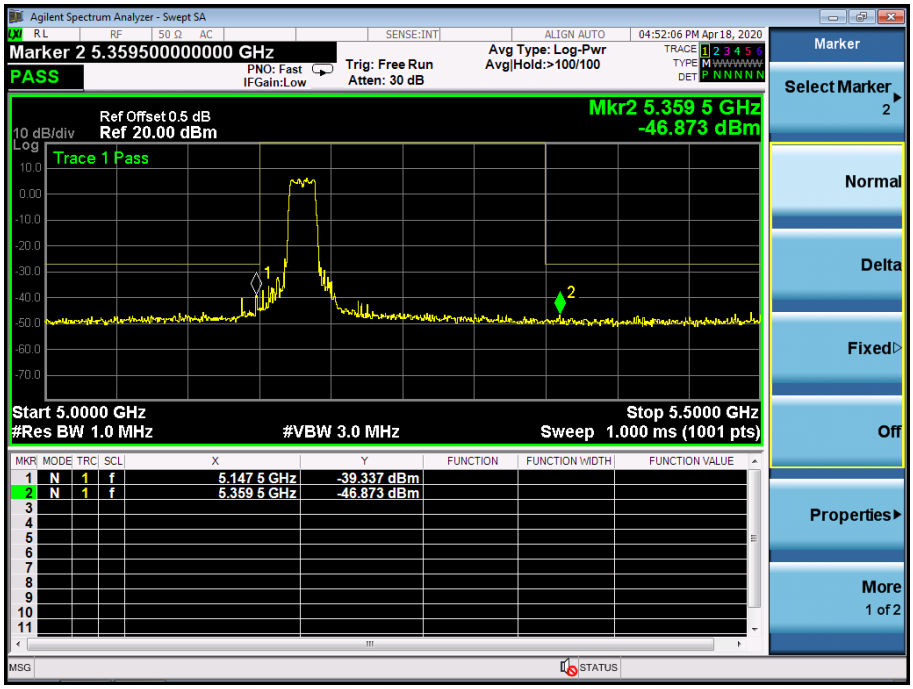
(802.11a) Band Edge, Left Side



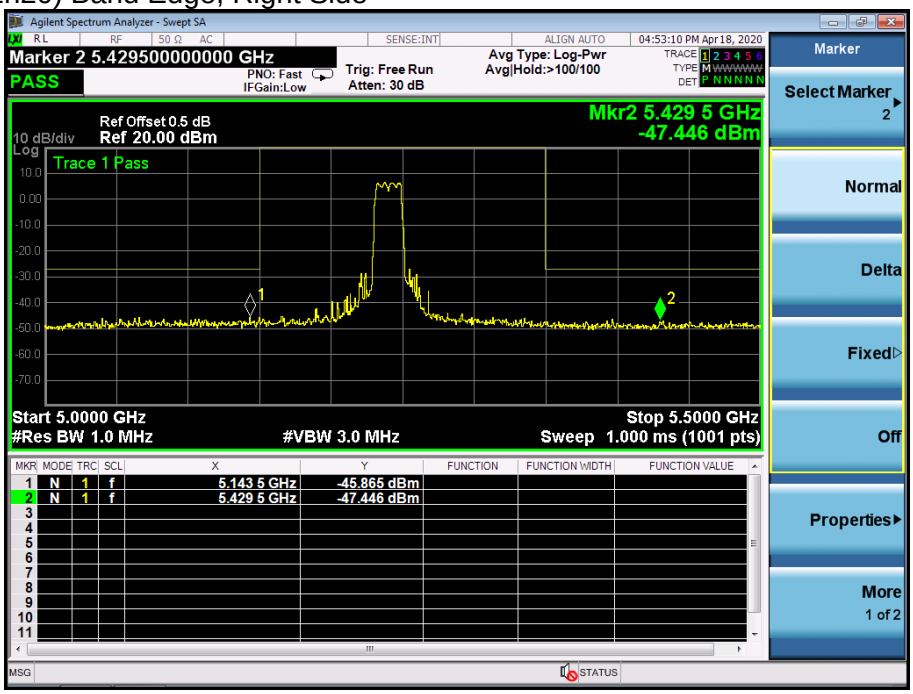
(802.11a) Band Edge, Right Side



(802.11n20) Band Edge, Left Side

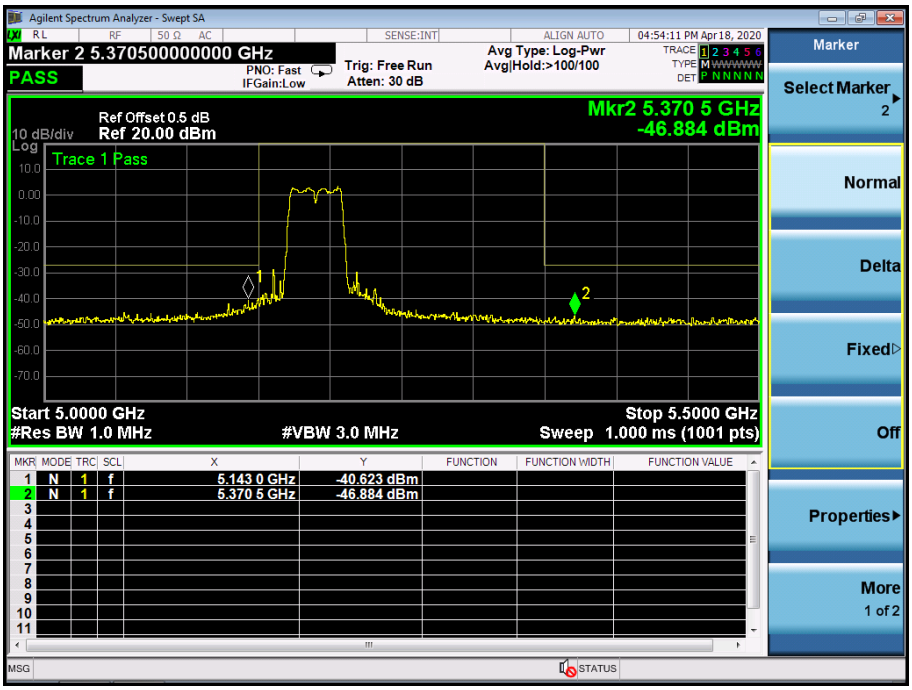


(802.11n20) Band Edge, Right Side

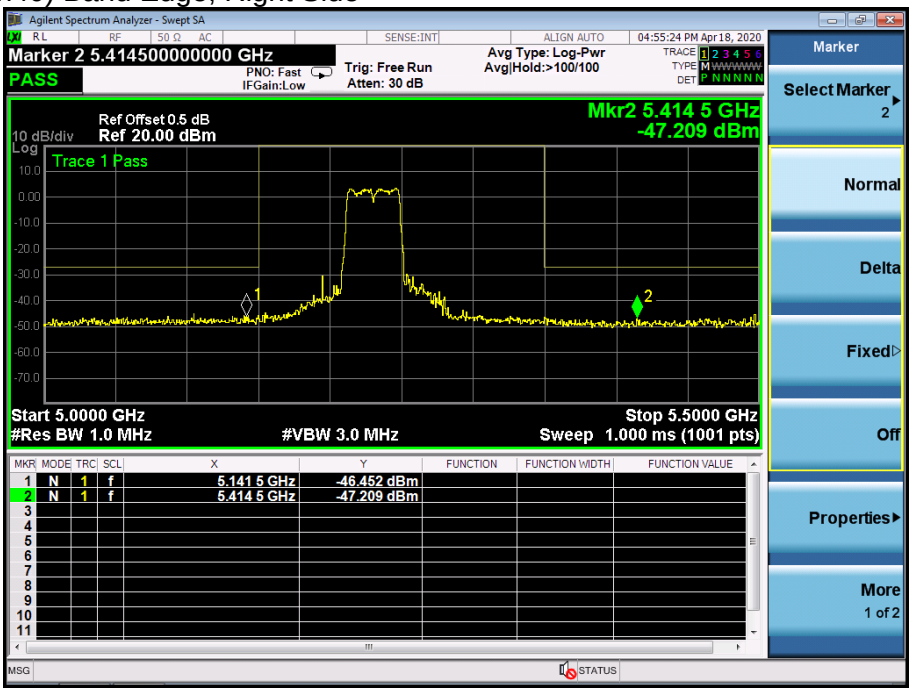


5.180~5.240 GHz

(802.11n40) Band Edge, Left Side

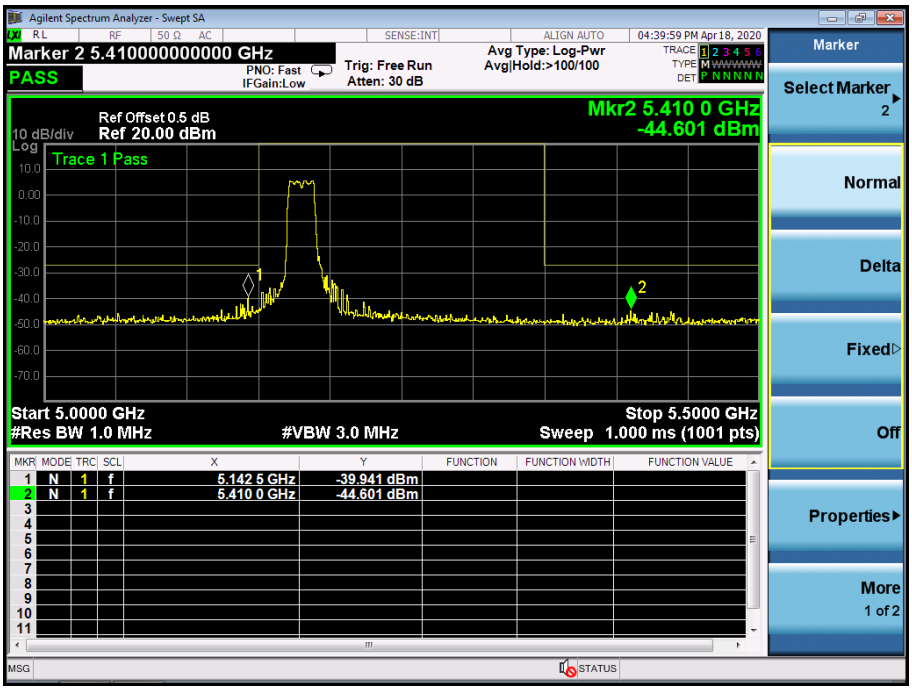


(802.11n40) Band Edge, Right Side

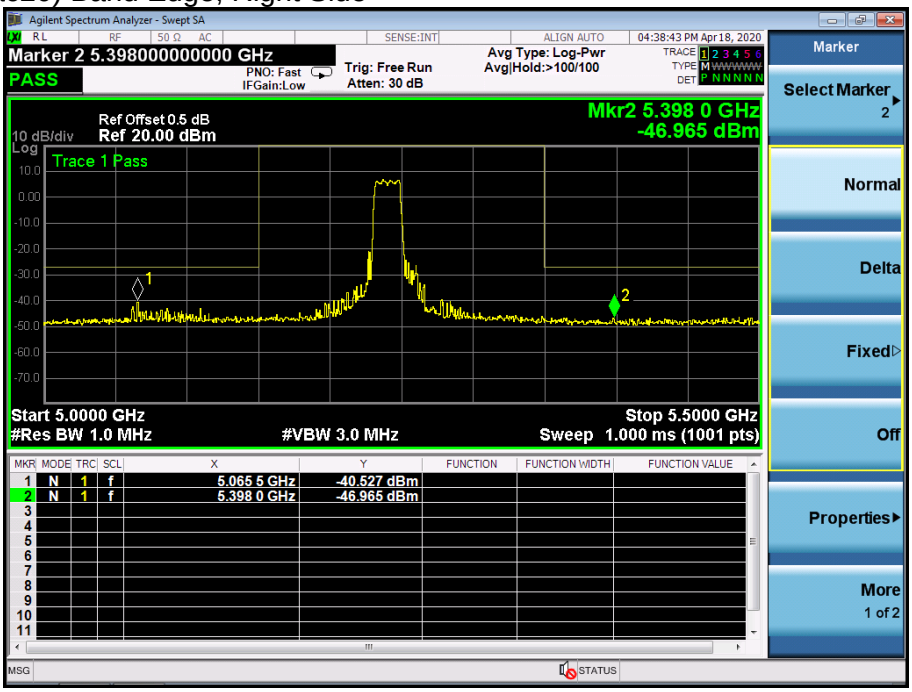


5.180~5.240 GHz

(802.11ac20) Band Edge, Left Side

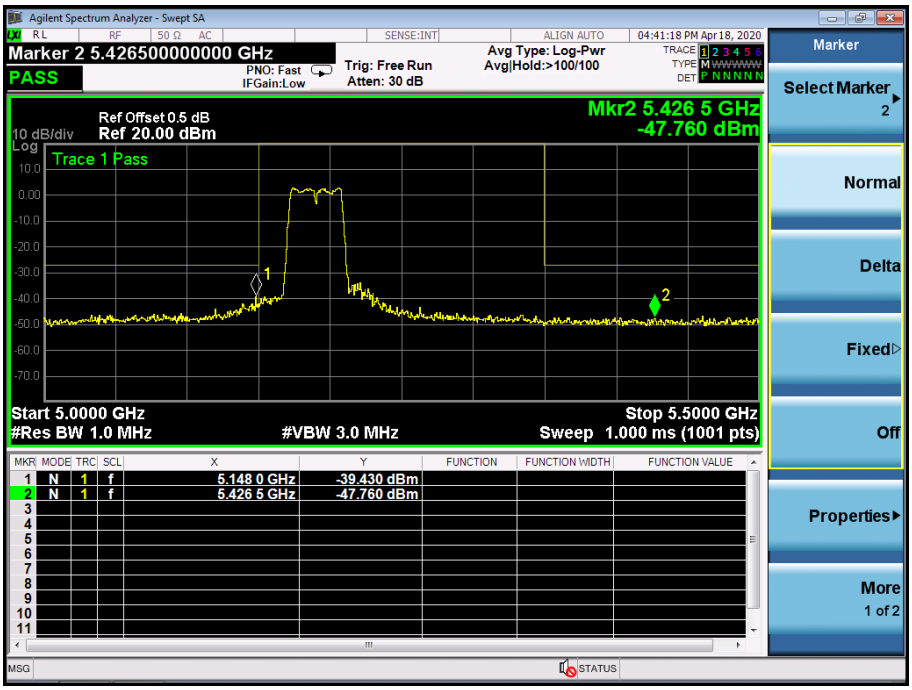


(802.11ac20) Band Edge, Right Side

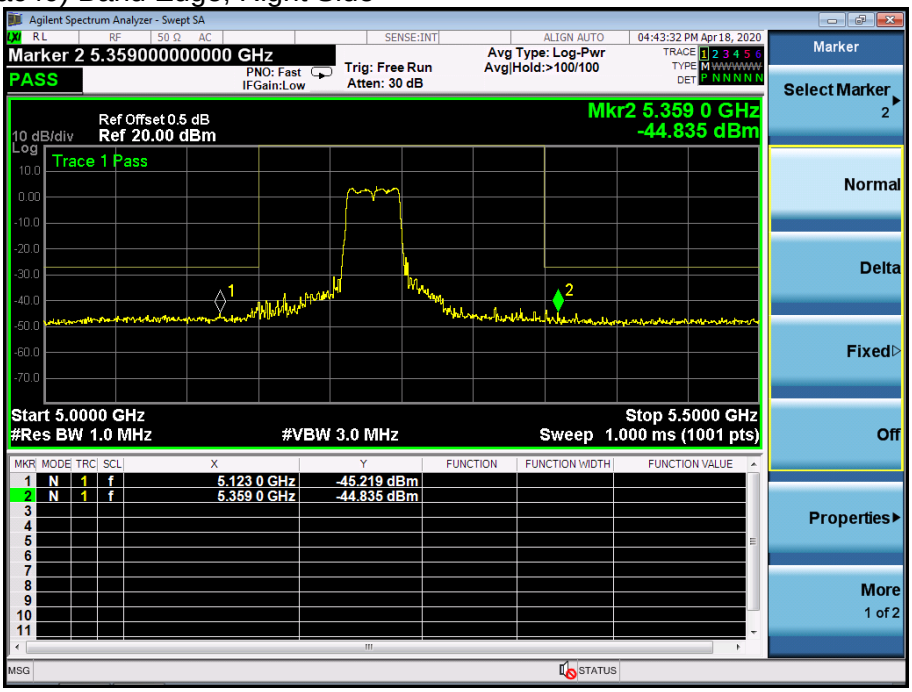


5.180~5.240 GHz

(802.11ac40) Band Edge, Left Side

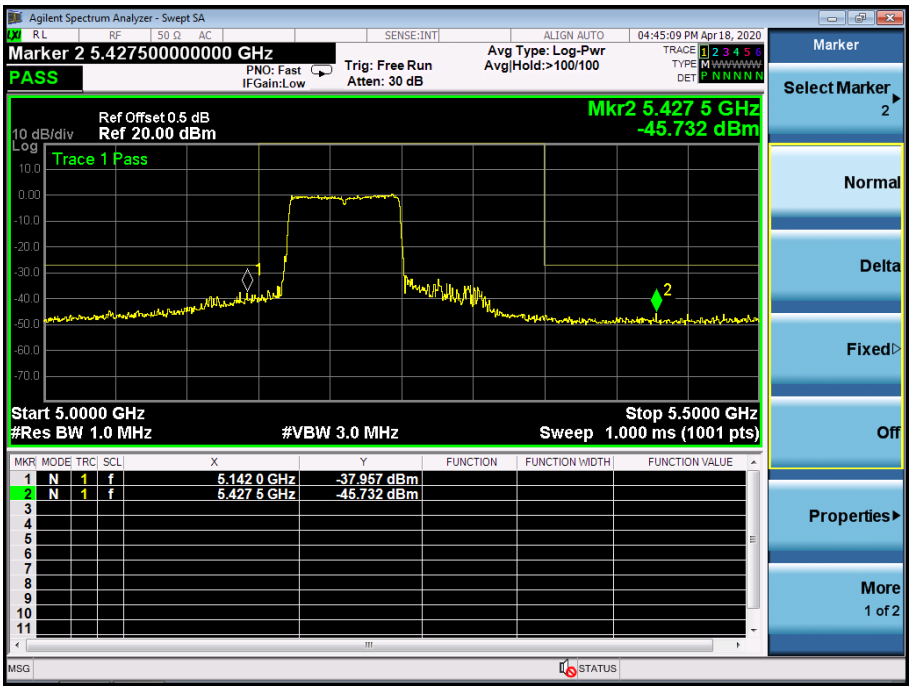


(802.11ac40) Band Edge, Right Side

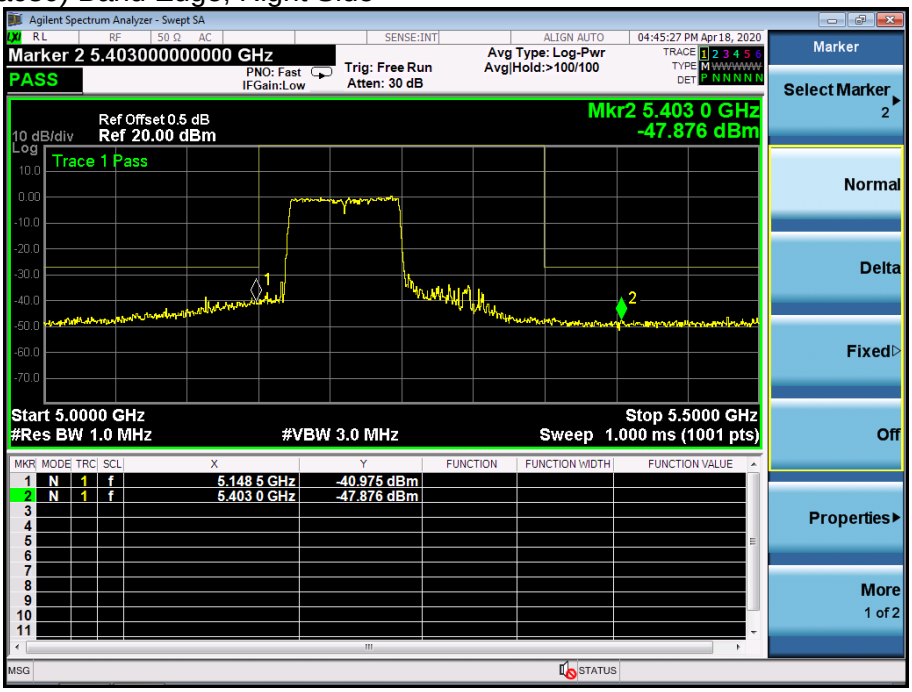


5.180~5.240 GHz

(802.11 ac80) Band Edge, Left Side



(802.11ac80) Band Edge, Right Side

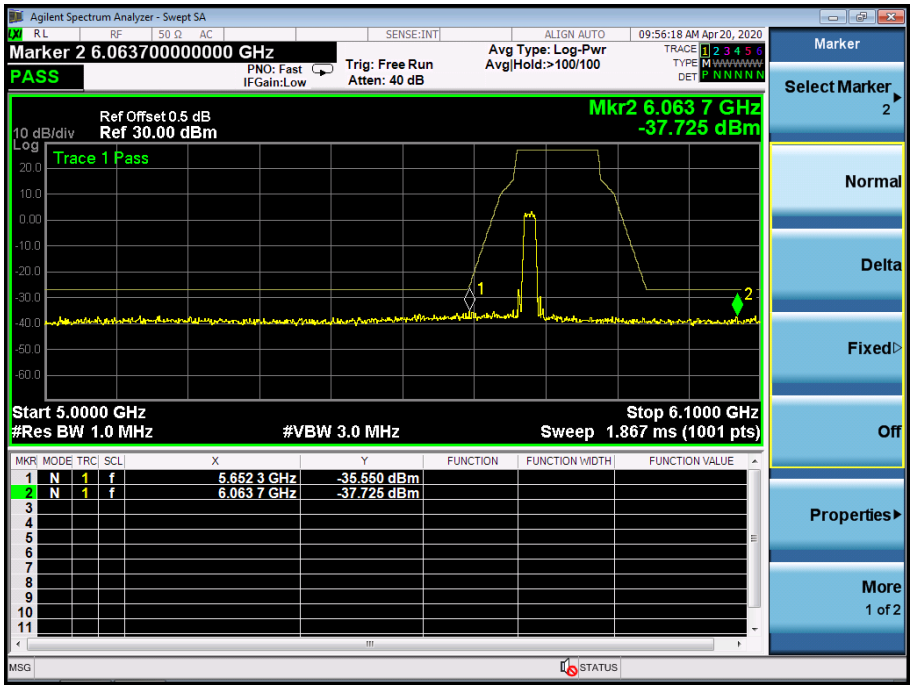


Antenna A: 5745-5825MHz

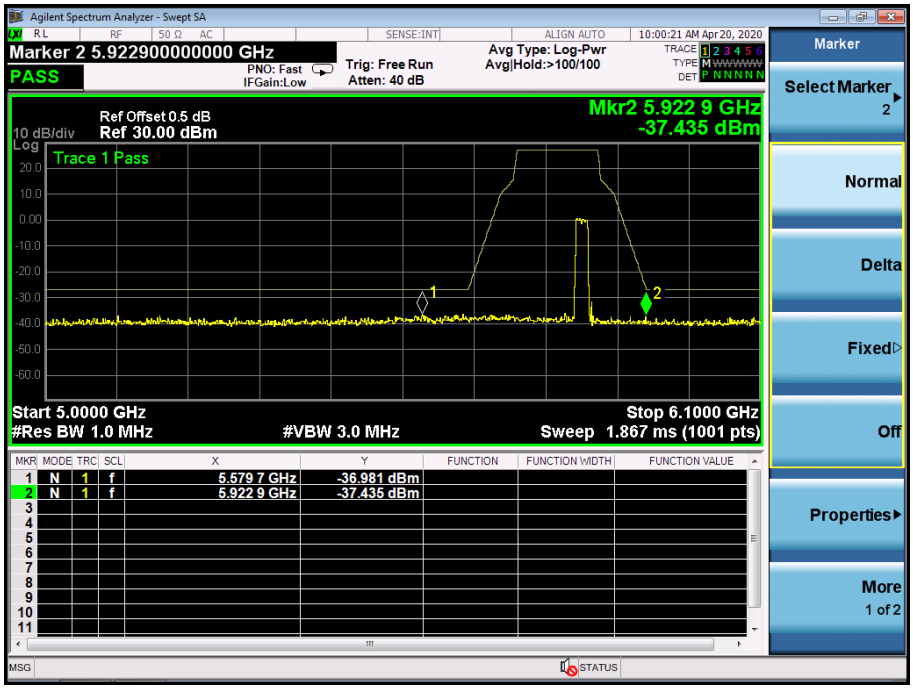
5.8G

5.745~5.825 GHz

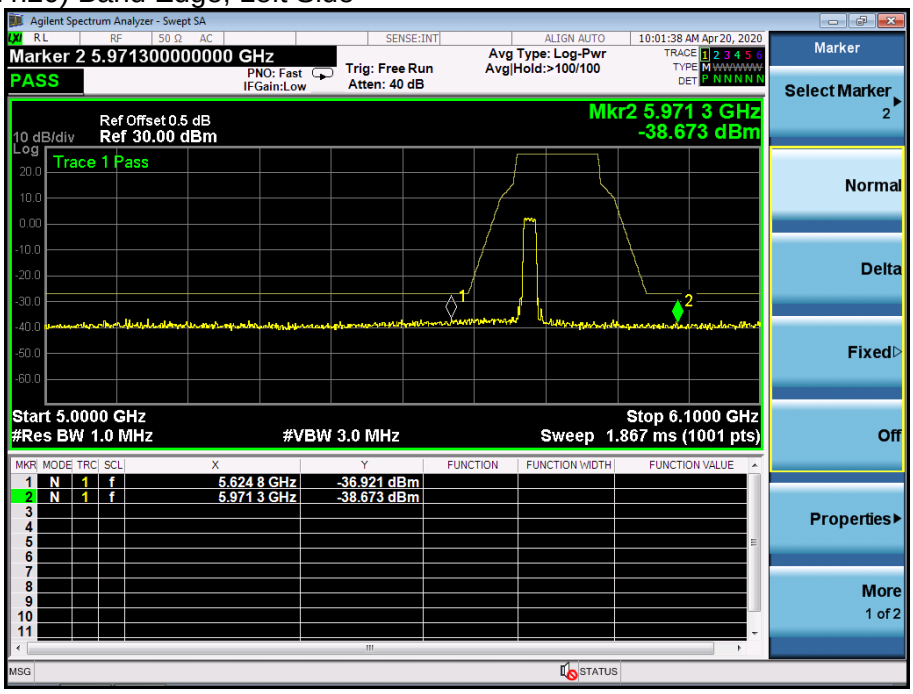
(802.11a) Band Edge, Left Side



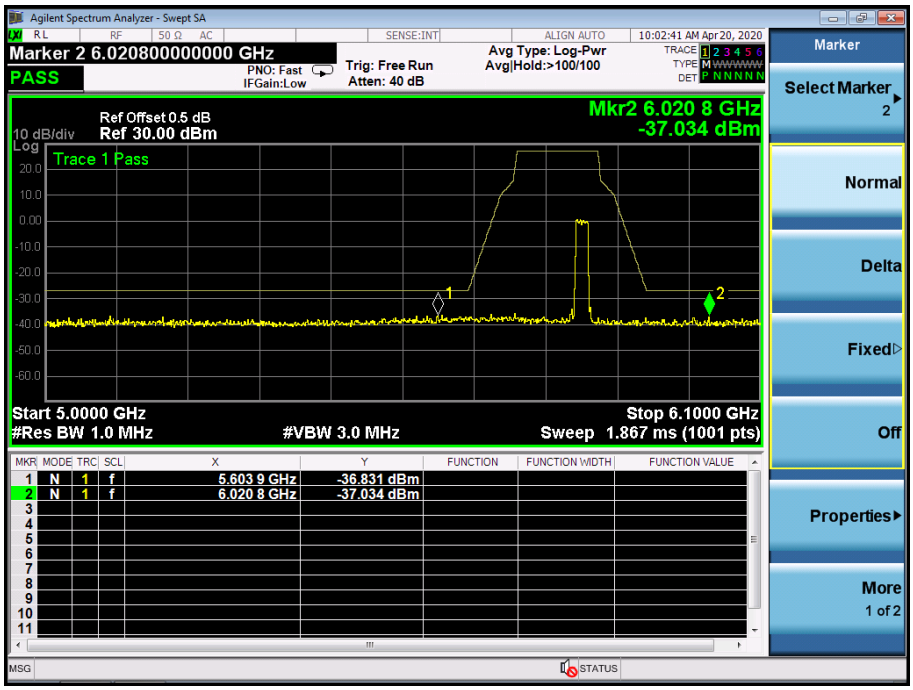
(802.11a) Band Edge, Right Side



(802.11 n20) Band Edge, Left Side

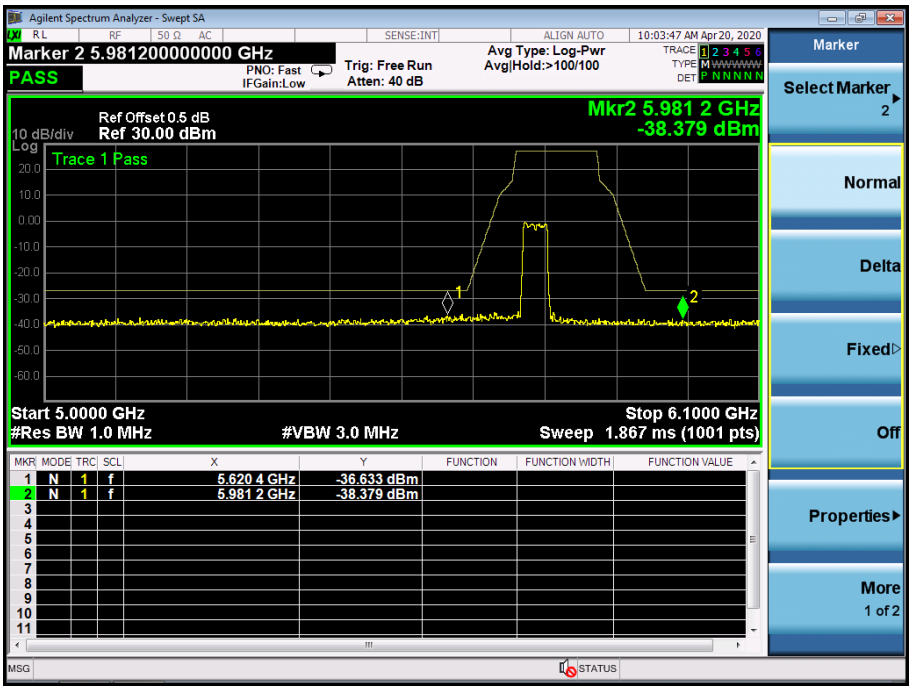


(802.11n20) Band Edge, Right Side

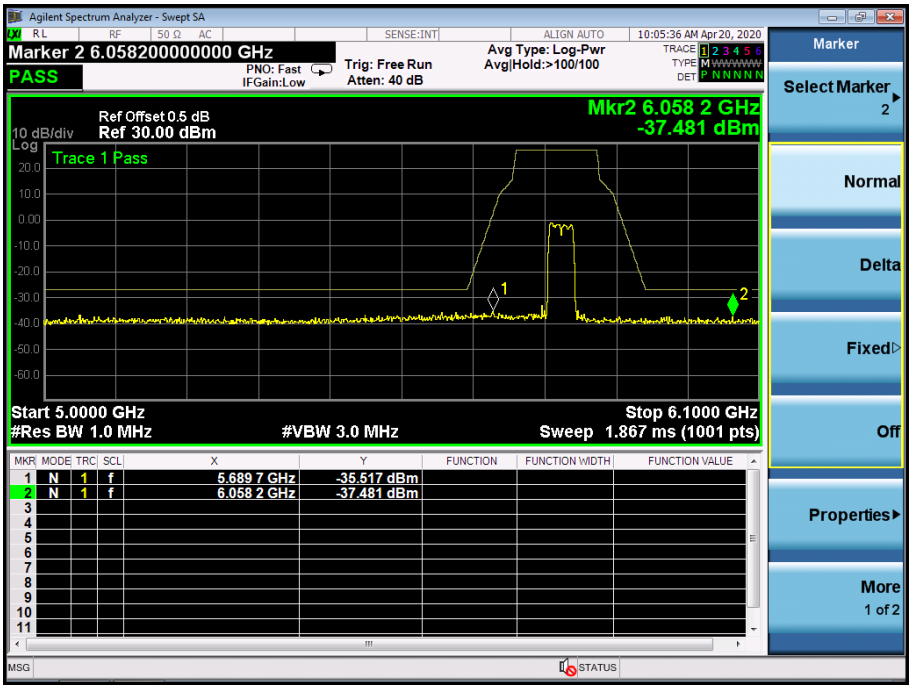


5.745~5.825 GHz

(802.11n40) Band Edge, Left Side

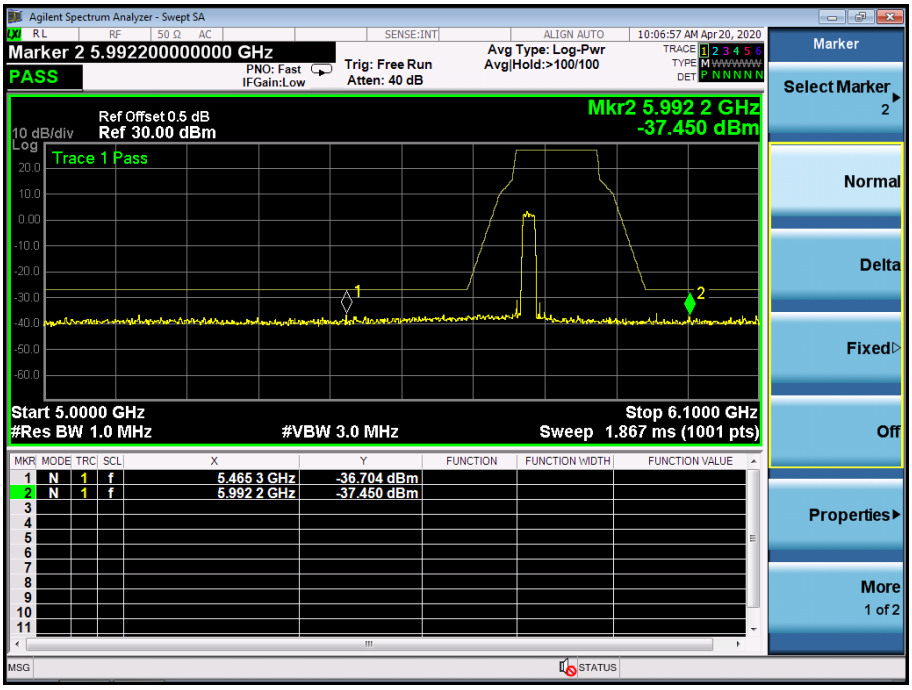


(802.11n40) Band Edge, Right Side

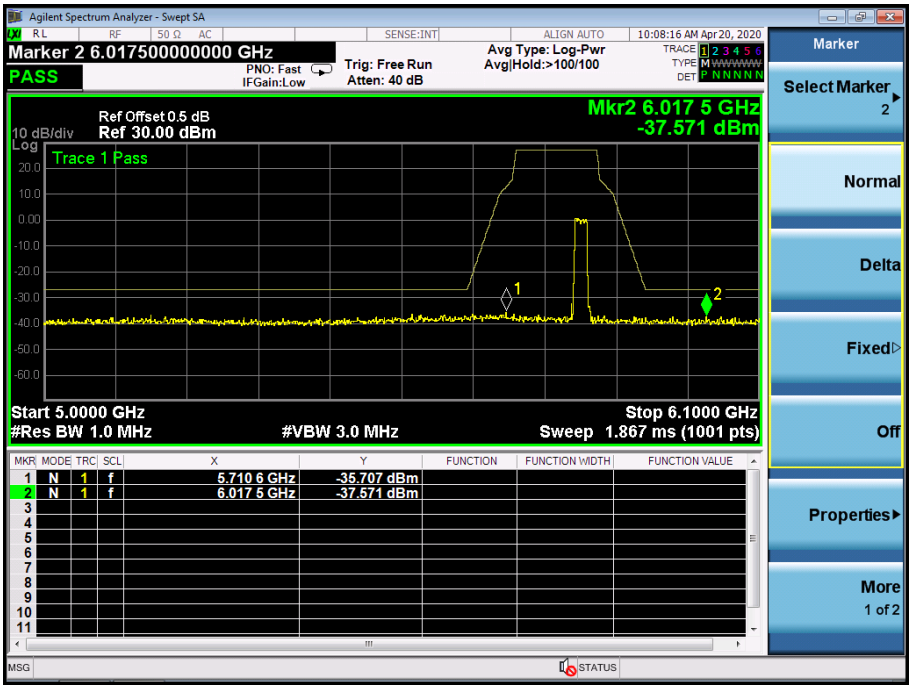


5.745~5.825 GHz

(802.11ac20) Band Edge, Left Side

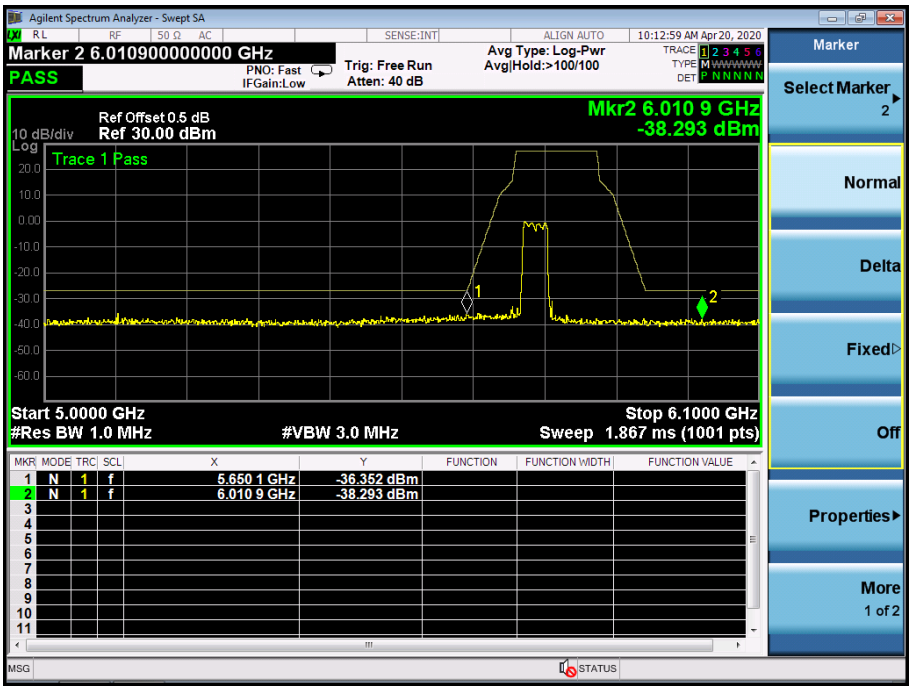


(802.11 ac20) Band Edge, Right Side

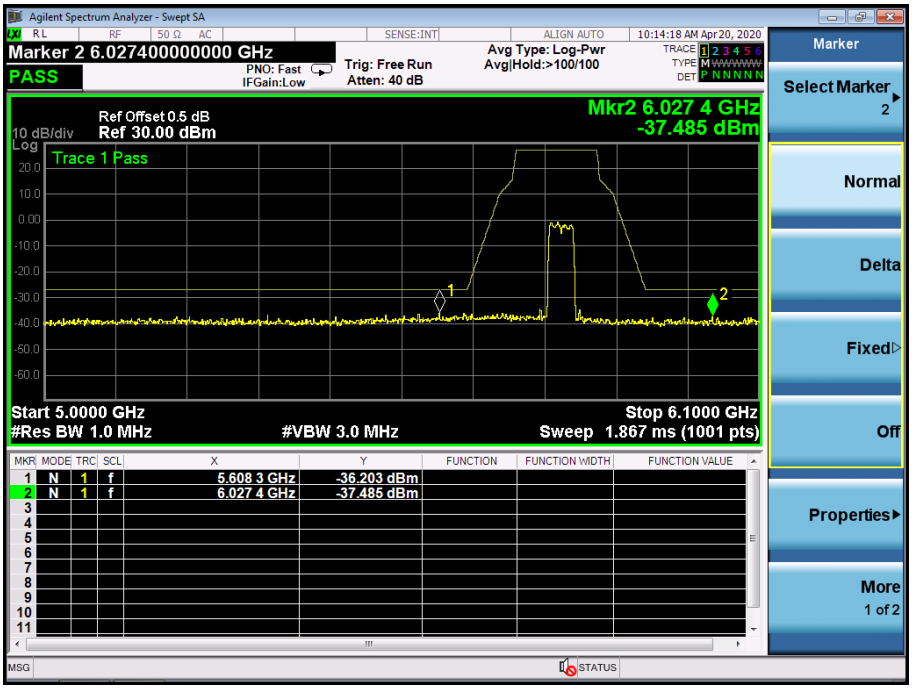


5.745~5.825 GHz

(802.11ac40) Band Edge, Left Side

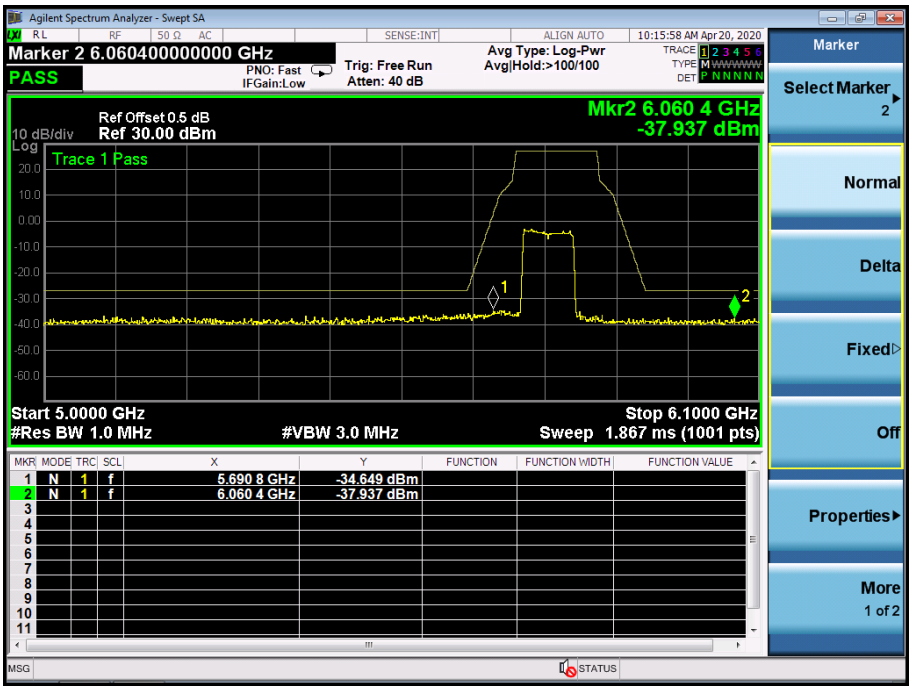


(802.11ac40) Band Edge, Right Side

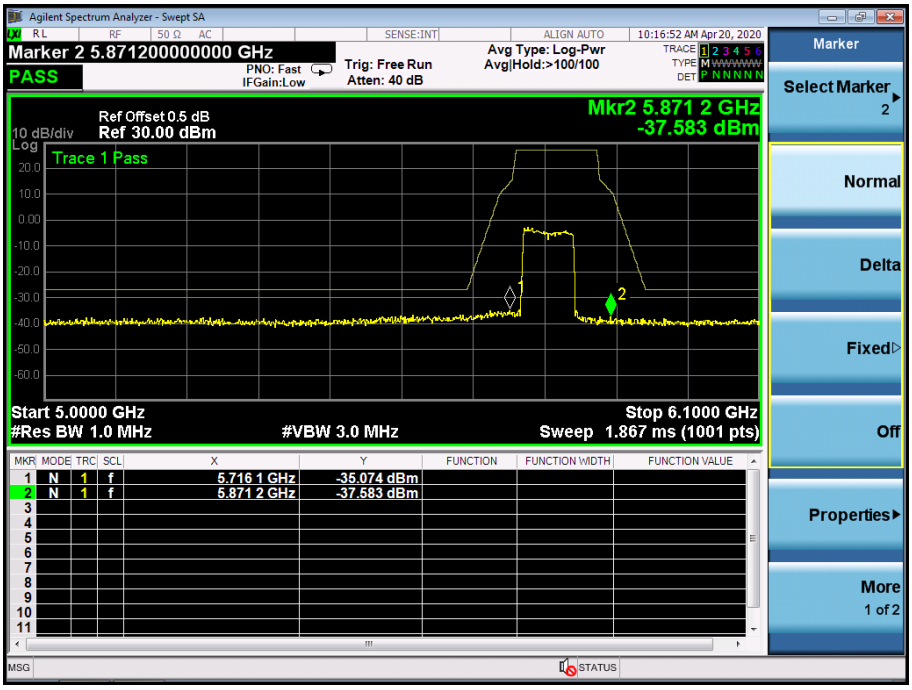


5.745~5.825 GHz

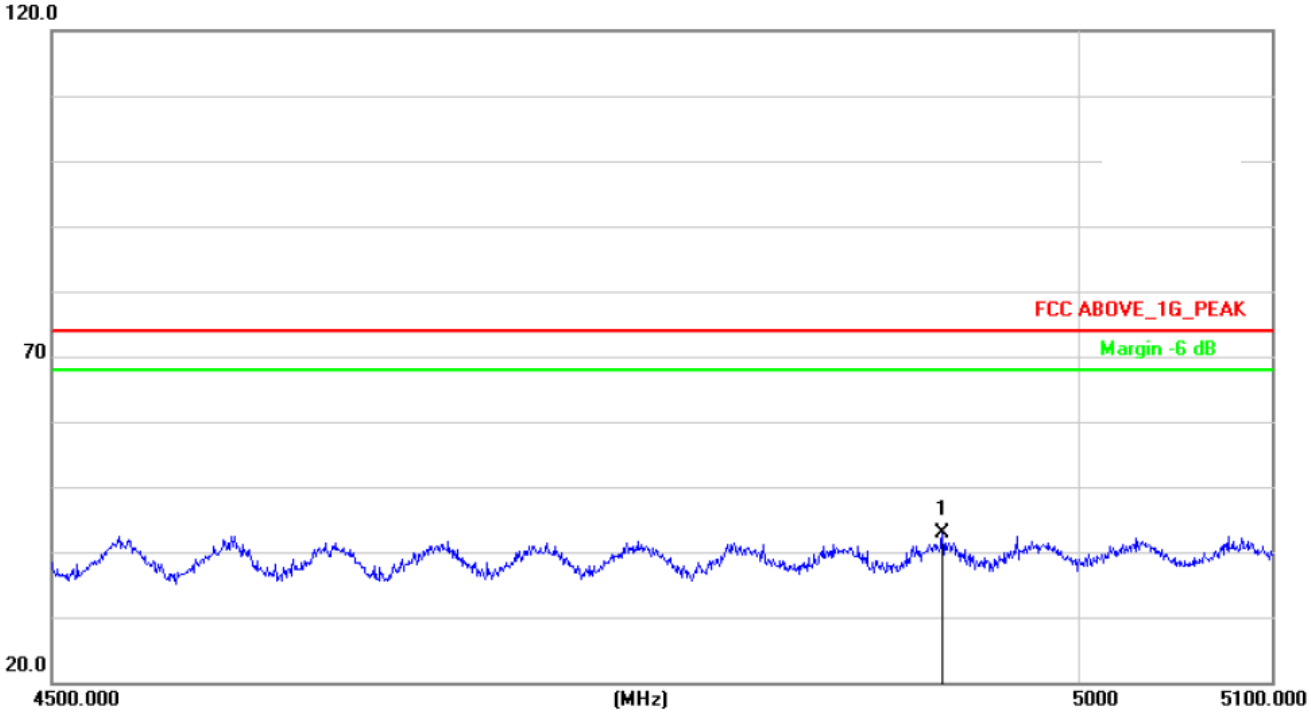
(802.11ac80) Band Edge, Left Side



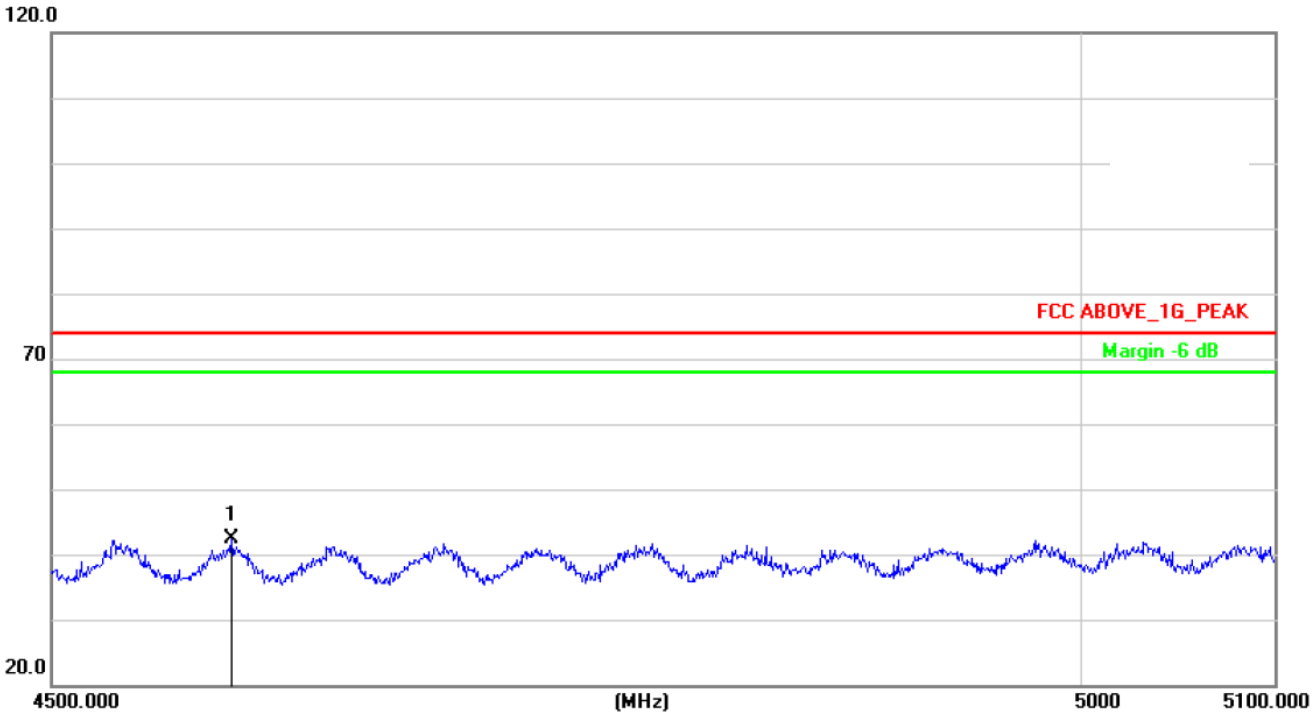
(802.11ac80) Band Edge, Right Side



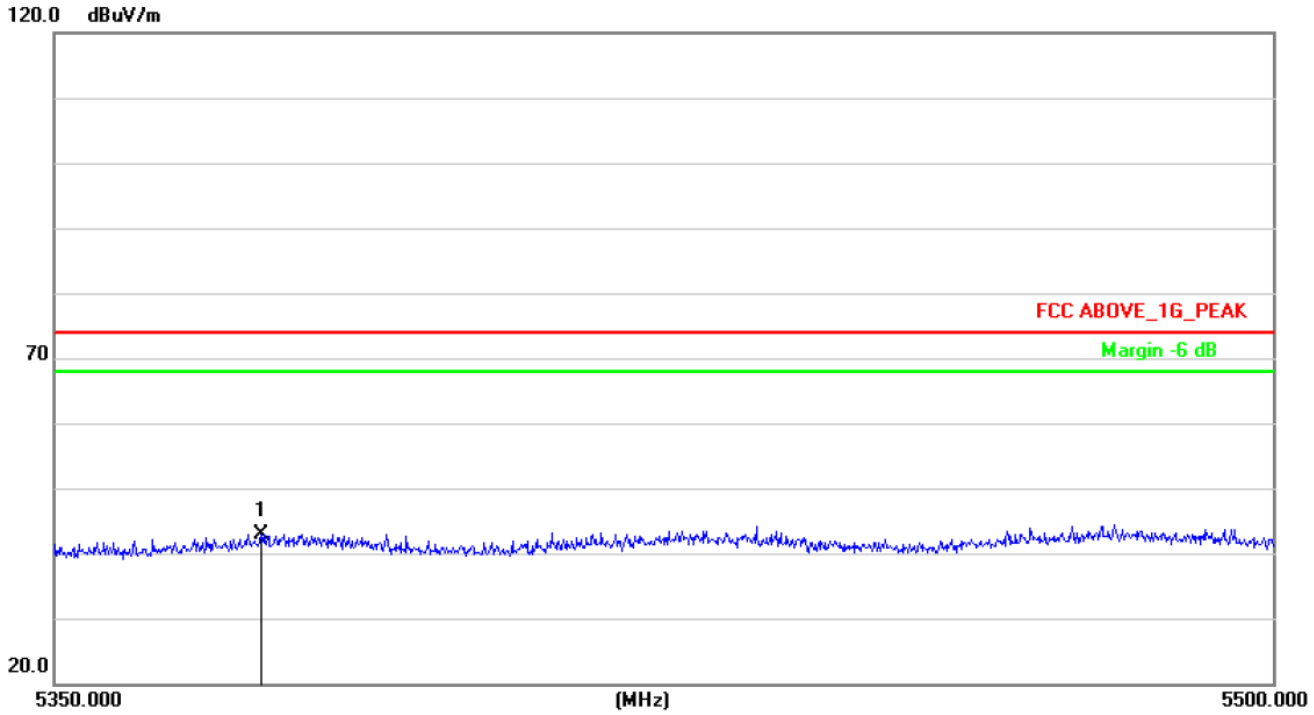
Radiated bandedge



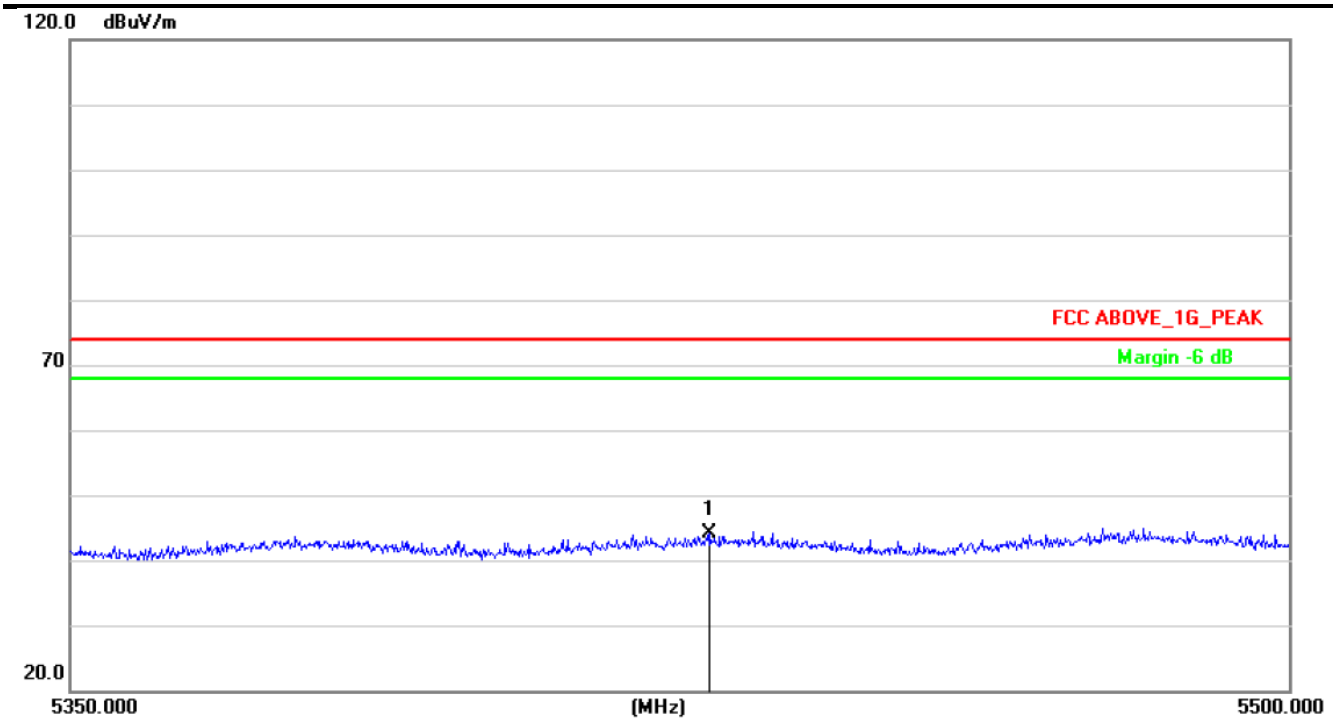
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type	Polarization
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
4930.800	43.17	-0.34	42.83	74.00	-31.17	PK	Horizontal
Remark: Factor = Antenna Factor + Correct Factor. Correct Factor= Cable Loss – Pre-amplifier							



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type	Polarization
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
4584.000	42.97	-0.59	42.38	74.00	-31.62	PK	Vertical
Remark: Factor = Antenna Factor + Correct Factor. Correct Factor= Cable Loss – Pre-amplifier							



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type	Polarization
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
5375.350	41.58	1.31	42.89	74.00	-31.11	PK	Horizontal
Remark: Factor = Antenna Factor + Correct Factor. Correct Factor= Cable Loss – Pre-amplifier							

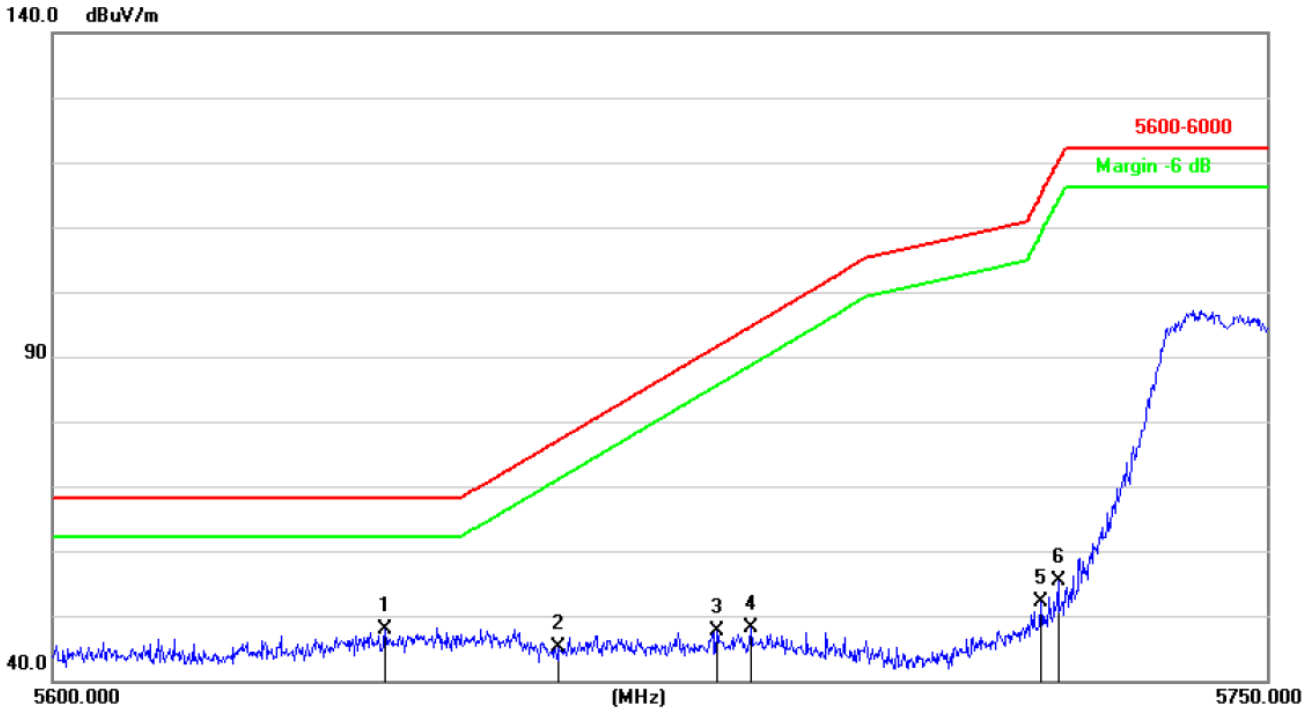


Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type	Polarization
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
5428.300	42.48	1.53	44.01	74.00	-29.99	PK	Vertical
Remark: Factor = Antenna Factor + Correct Factor. Correct Factor= Cable Loss – Pre-amplifier							

Note:
1. This EUT was tested in 802.11a/n(HT20), n(HT40) mode and 802.11a Antenna A the worst case position data was reported.

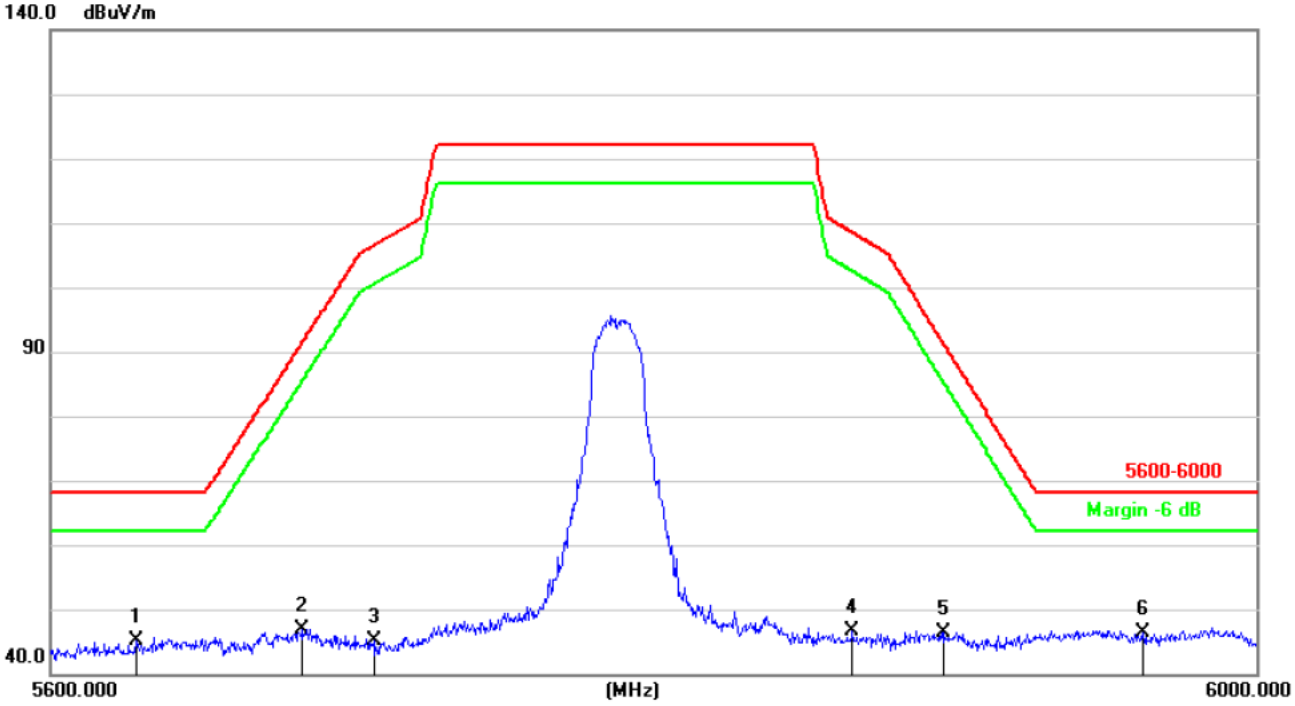
802.11n(HT20)
For the frequency band 5745-5825MHz

Low Channel



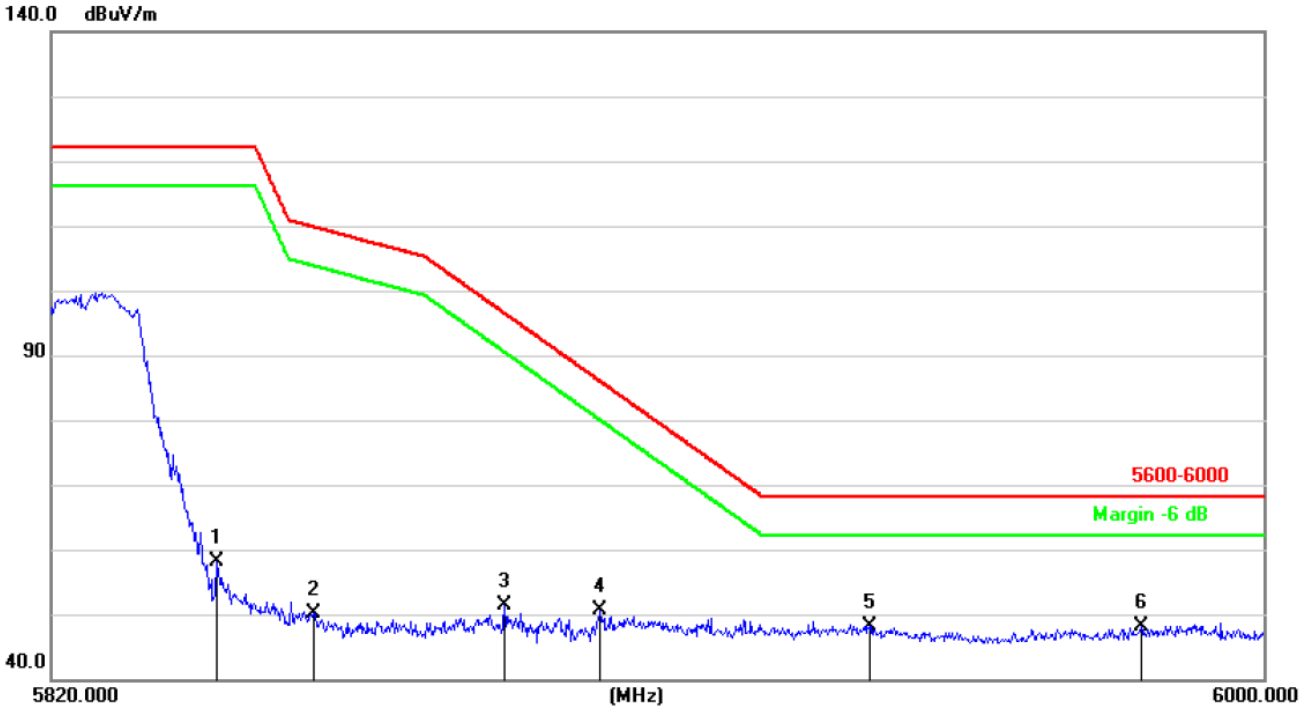
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5640.800	45.36	2.43	47.79	68.20	-20.41	peak
2	5662.100	42.69	2.52	45.21	77.18	-31.97	peak
3	5681.600	44.92	2.61	47.53	91.62	-44.09	peak
4	5685.800	45.43	2.62	48.05	94.73	-46.68	peak
5	5721.800	49.37	2.78	52.15	114.91	-62.76	peak
6	5724.050	52.61	2.79	55.40	120.03	-64.63	peak

Middle Channel



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5627.600	42.64	2.38	45.02	68.20	-23.18	peak
2	5681.600	44.34	2.61	46.95	91.62	-44.67	peak
3	5704.800	42.31	2.71	45.02	106.55	-61.53	peak
4	5863.200	43.13	3.38	46.51	108.50	-61.99	peak
5	5894.000	42.85	3.51	46.36	91.10	-44.74	peak
6	5961.600	42.46	3.80	46.26	68.20	-21.94	peak

High Channel



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5844.300	54.88	3.30	58.18	122.20	-64.02	peak
2	5858.520	46.71	3.36	50.07	109.81	-59.74	peak
3	5886.780	47.93	3.48	51.41	96.45	-45.04	peak
4	5901.000	47.02	3.54	50.56	85.92	-35.36	peak
5	5940.960	44.30	3.71	48.01	68.20	-20.19	peak
6	5981.640	44.25	3.88	48.13	68.20	-20.07	peak

Note:
1. This EUT was tested in 802.11a/n/ac(HT20), n/ac(HT40), ac(HT80) mode and 802.11n(HT20) the worst case position data was reported.

8.SPURIOUS RF CONDUCTED EMISSIONS

8.1CONFORMANCE LIMIT

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(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 e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

.

8.2MEASURING INSTRUMENTS

The Measuring equipment is listed in the section 6.3 of this test report.

8.3TEST SETUP

Please refer to Section 6.1 of this test report.

8.4TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

8.5TEST RESULTS

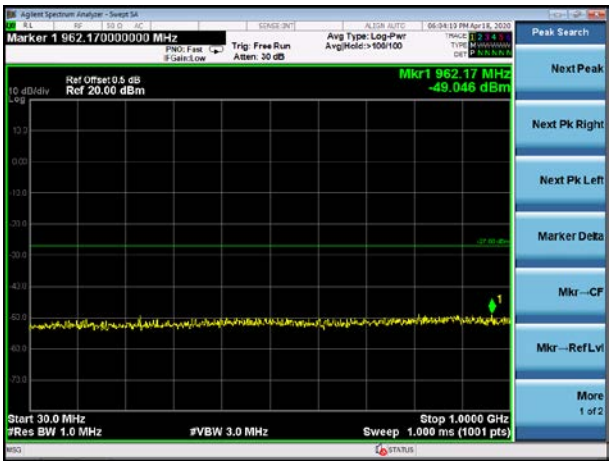
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.

About:26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

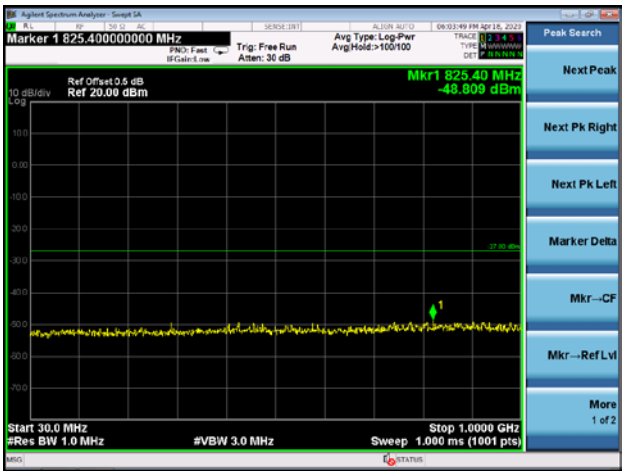
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B ,only shown Antenna B Plot.

5.2G

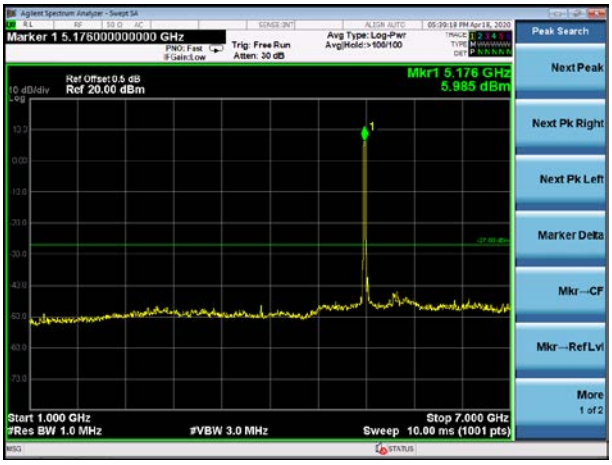
802.11a on channel 36



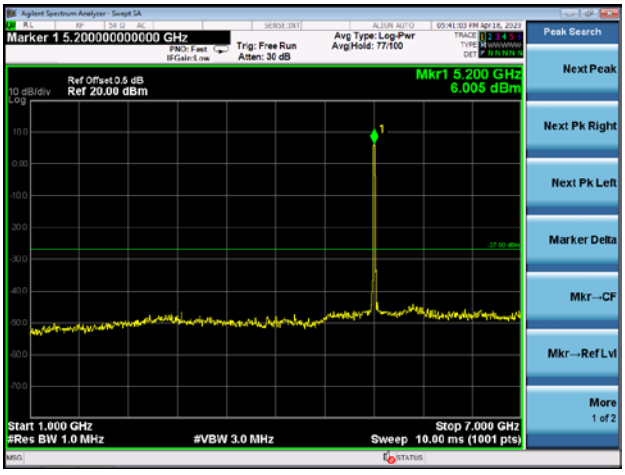
802.11a on channel 40



802.11a on channel 36



802.11a on channel 40

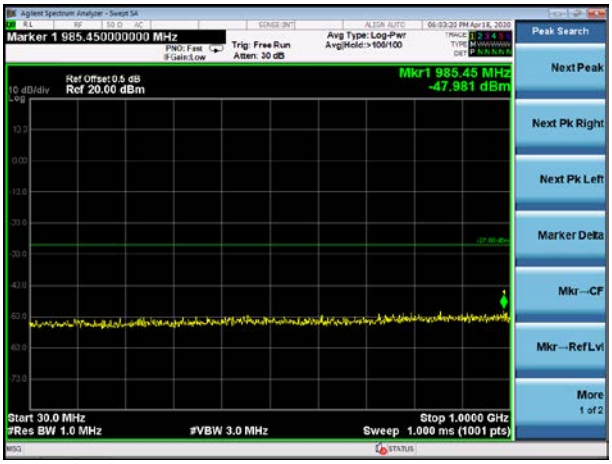


802.11a on channel 36

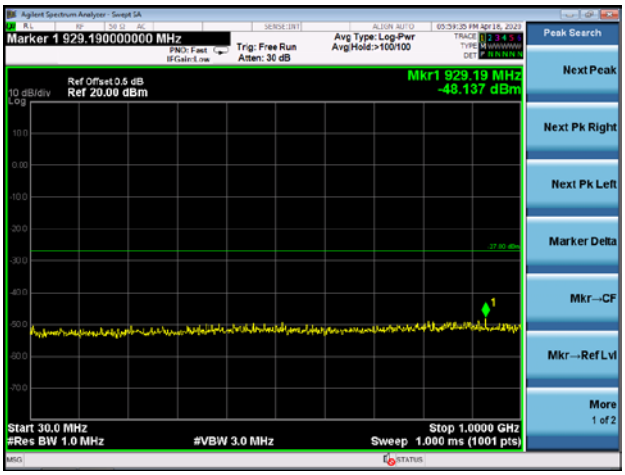
802.11a on channel 40

Test Plot

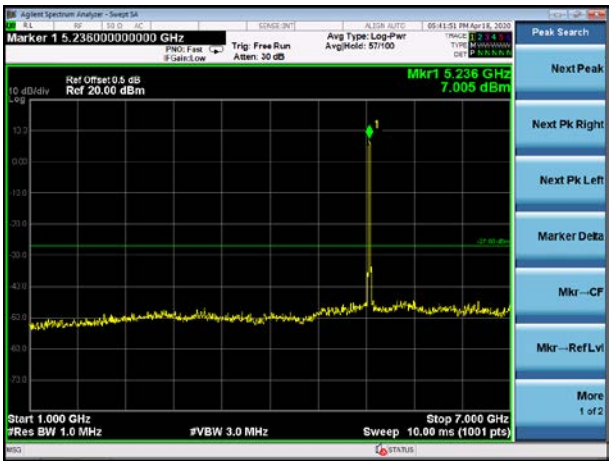
802.11a on channel 48



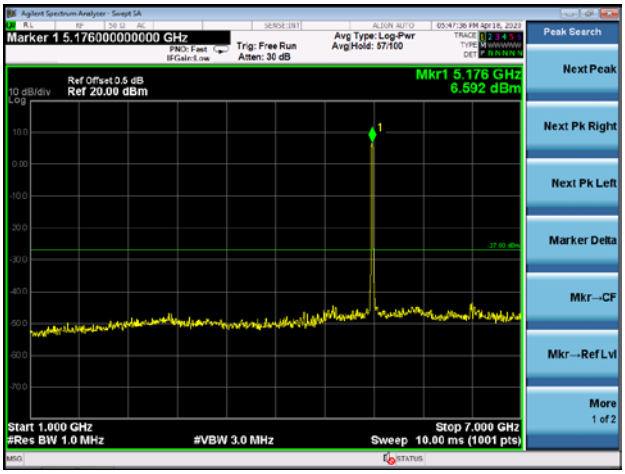
802.11n20 on channel 36



802.11a on channel 48



802.11n20 on channel 36



802.11a on channel 48

802.11n20 on channel 36