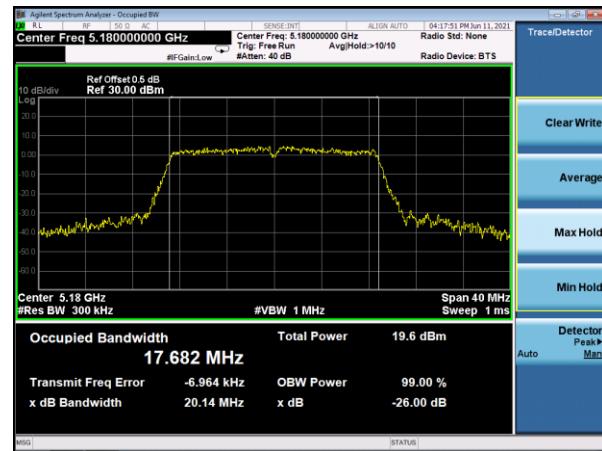


Test plot

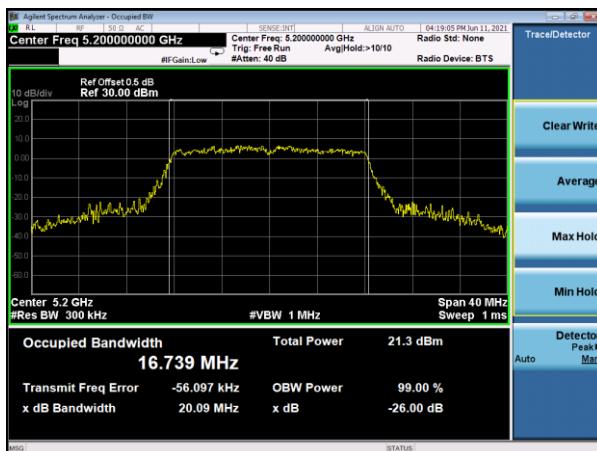
(802.11a) 26dB&99%Bandwidth plot on channel 36



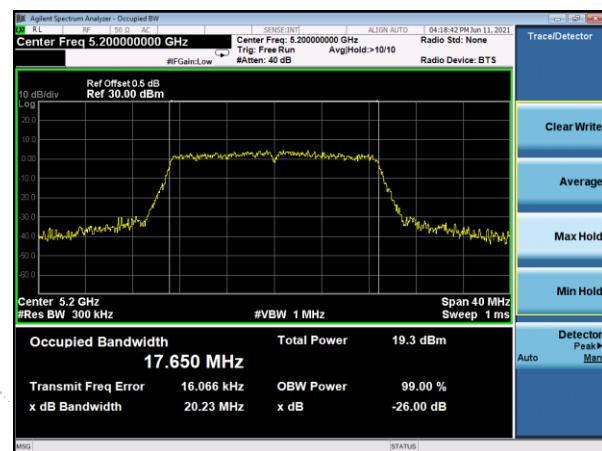
(802.11 n20) 26dB&99%Bandwidth plot on channel 36



(802.11a) 26dB&99%Bandwidth plot on channel 40



(802.11 n20) 26dB&99%Bandwidth plot on channel 40



(802.11a) 26dB&99%Bandwidth plot on channel 48

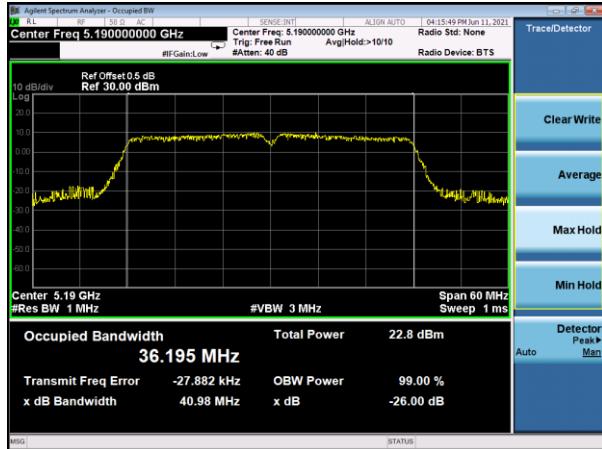


(802.11 n20) 26dB&99%Bandwidth plot on channel 48

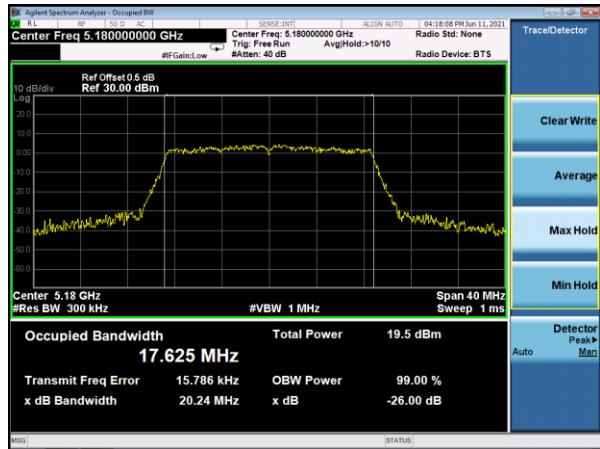


Test plot

(802.11 n40) 26dB&99%Bandwidth plot on channel 38



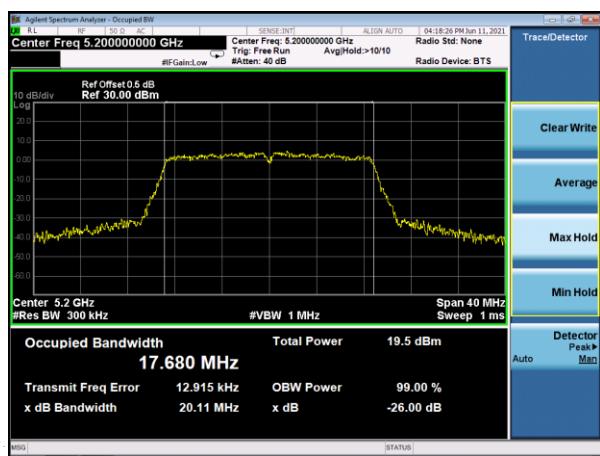
(802.11 AC20) 26dB&99%Bandwidth plot on channel 36



(802.11 n40) 26dB&99%Bandwidth plot on channel 46



(802.11 AC20) 26dB&99%Bandwidth plot on channel 40

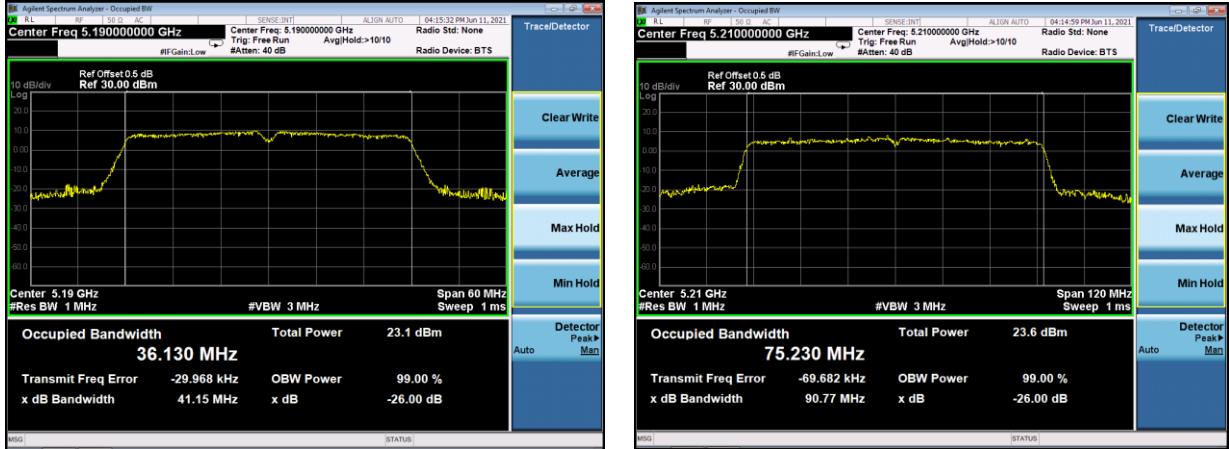


(802.11 AC20) 26dB&99%Bandwidth plot on channel 40



Test plot

(802.11 AC40) 26dB&99%Bandwidth plot on channel 38 (802.11 AC80) 26dB&99%Bandwidth plot on channel 42



(802.11 AC40) 26dB&99%Bandwidth plot on channel 46



Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX Frequency U-NII-3(5745-5825MHz)		

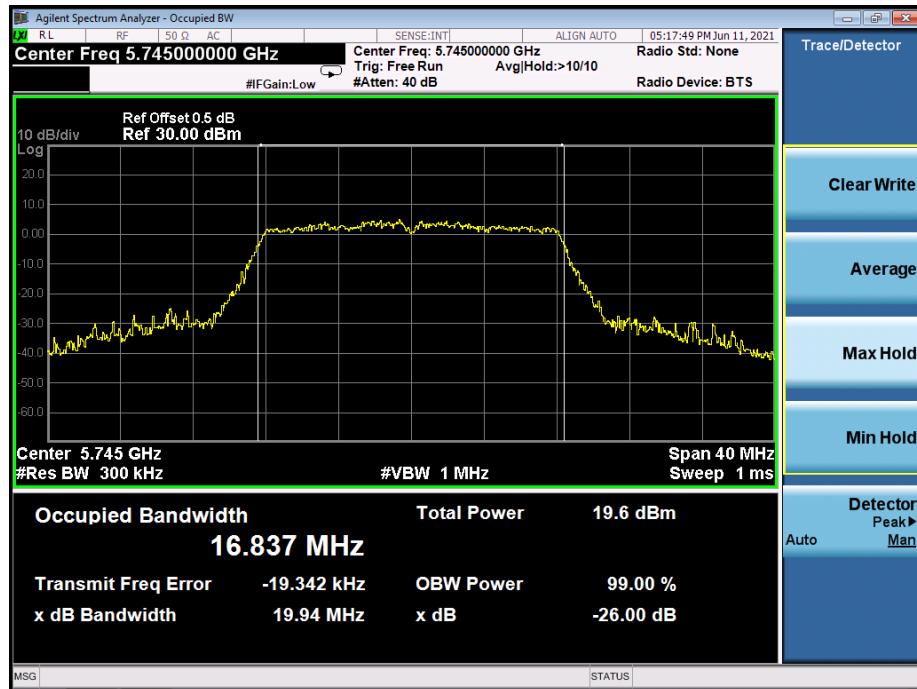
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

Mode	Channel	Frequency (MHz)	99% bandwidth (MHz)	6dB bandwidth (MHz)	Limit MHz	Result
			ANT A	ANT A		
802.11a	CH149	5745	16.837	16.33	≥500	Pass
	CH157	5785	16.847	16.07	≥500	Pass
	CH165	5825	16.842	16.34	≥500	Pass
802.11 n20	CH149	5745	17.703	15.58	≥500	Pass
	CH157	5785	17.689	17.08	≥500	Pass
	CH165	5825	17.656	17.01	≥500	Pass
802.11 n40	CH151	5755	36.222	35.02	≥500	Pass
	CH159	5795	36.249	35.12	≥500	Pass
802.11 ac20	CH149	5745	17.668	15.49	≥500	Pass
	CH157	5785	17.665	15.09	≥500	Pass
	CH165	5825	17.708	16.39	≥500	Pass
802.11 ac40	CH151	5755	36.240	35.20	≥500	Pass
	CH159	5795	36.269	35.14	≥500	Pass
802.11 AC80	CH155	5775	75.154	75.23	≥500	Pass

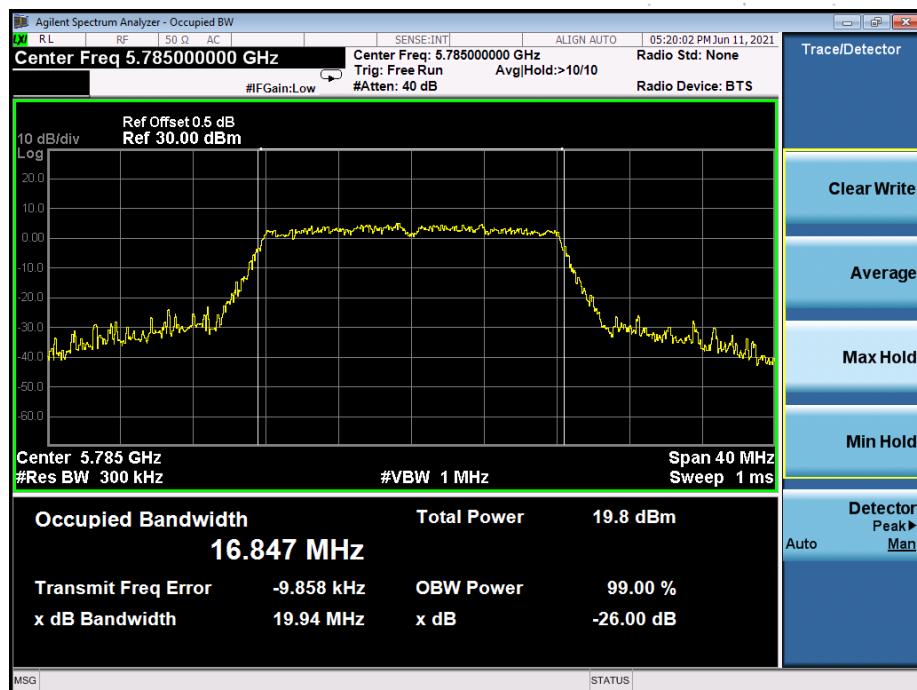
Mode	Channel	Frequency (MHz)	99% bandwidth (MHz)	6dB bandwidth (MHz)	Limit MHz	Result
			ANT B	ANT B		
802.11a	CH149	5745	16.754	16.37	≥500	Pass
	CH157	5785	16.726	15.72	≥500	Pass
	CH165	5825	16.819	16.32	≥500	Pass
802.11 n20	CH149	5745	17.674	17.59	≥500	Pass
	CH157	5785	17.727	17.54	≥500	Pass
	CH165	5825	17.702	17.05	≥500	Pass
802.11 n40	CH151	5755	36.226	35.19	≥500	Pass
	CH159	5795	36.208	35.15	≥500	Pass
802.11 ac20	CH149	5745	17.740	16.50	≥500	Pass
	CH157	5785	17.682	15.06	≥500	Pass
	CH165	5825	17.735	16.90	≥500	Pass
802.11 ac40	CH151	5755	36.240	35.15	≥500	Pass
	CH159	5795	36.242	35.26	≥500	Pass
802.11 AC80	CH155	5775	75.090	73.28	≥500	Pass

Antenna A: 5725-5850MHz

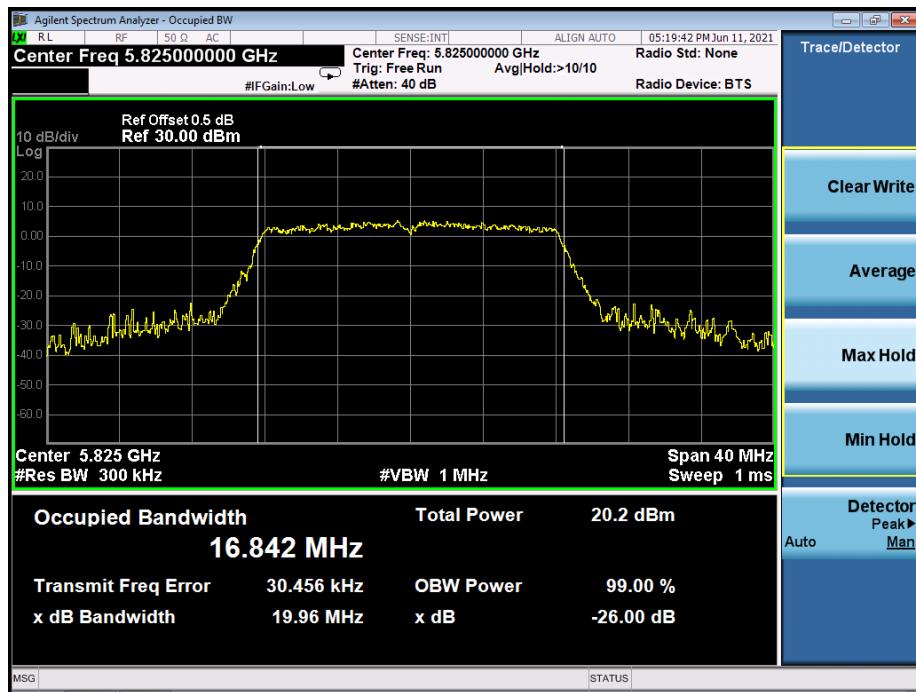
802.11a 5745MHz 99% bandwidth



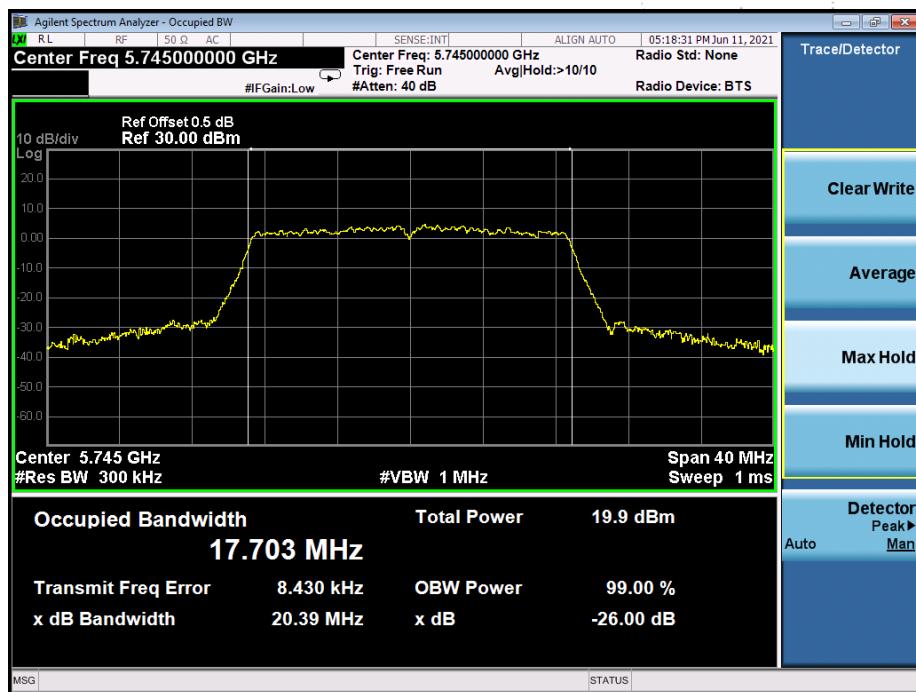
802.11a 5785MHz 99% bandwidth

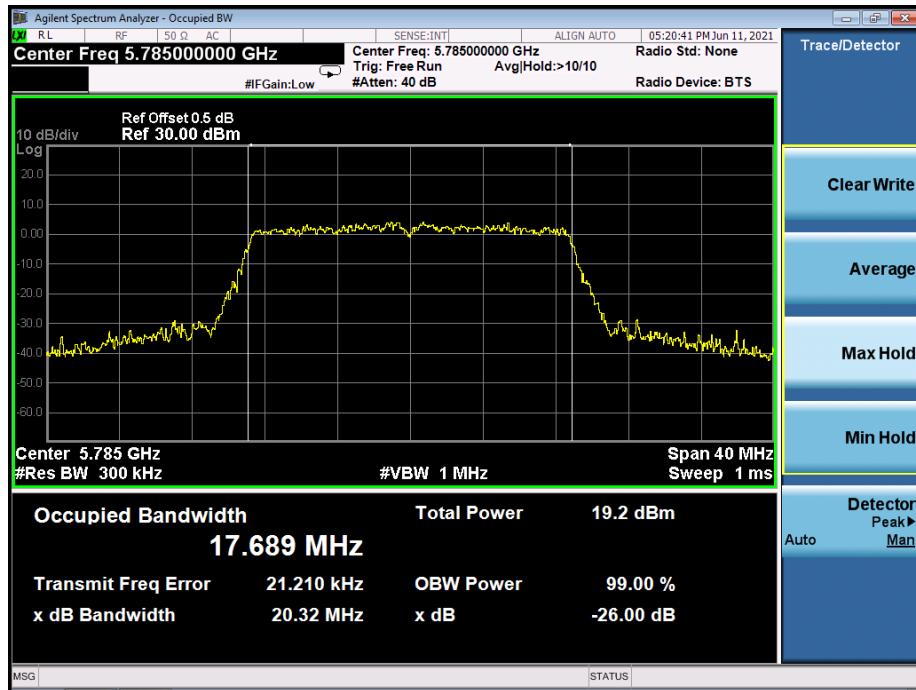
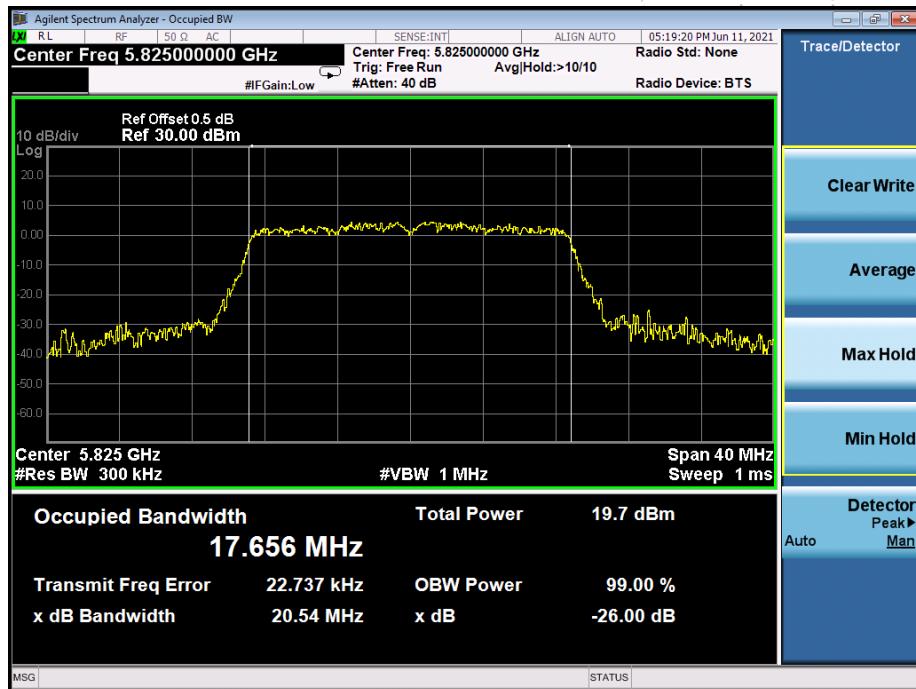


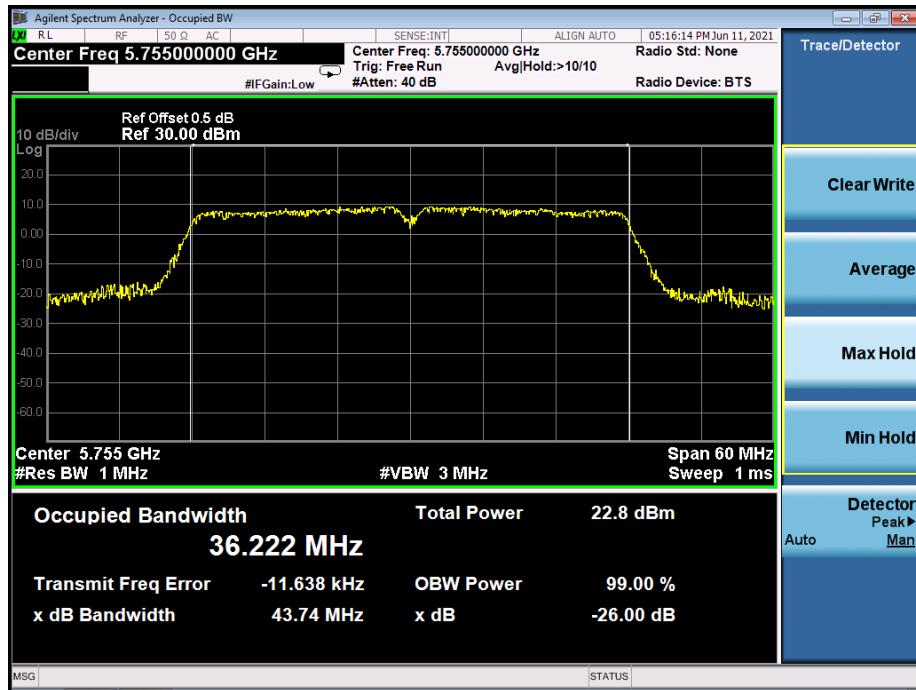
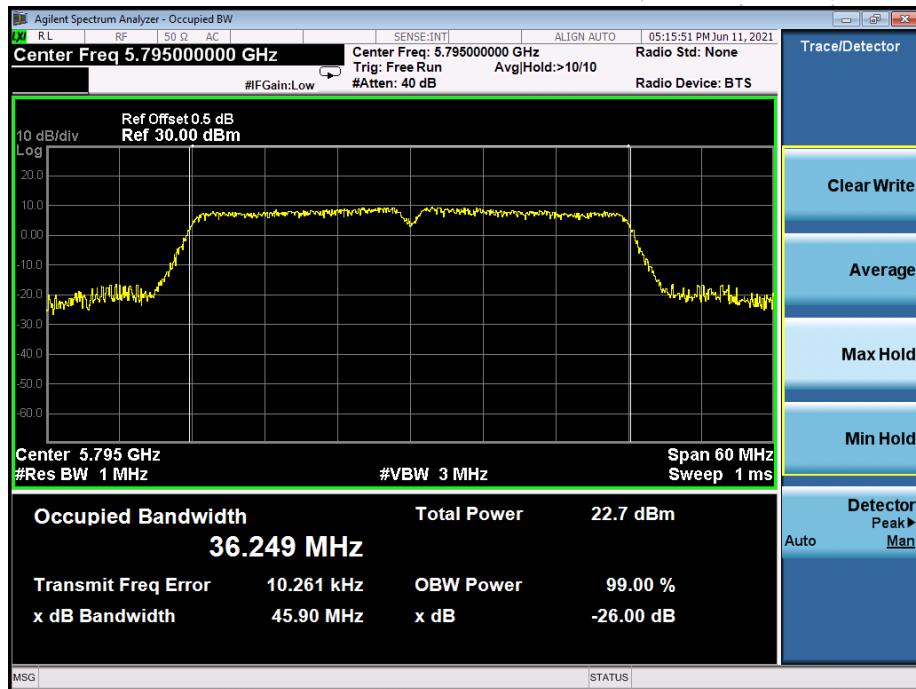
802.11a 5825MHz 99% bandwidth



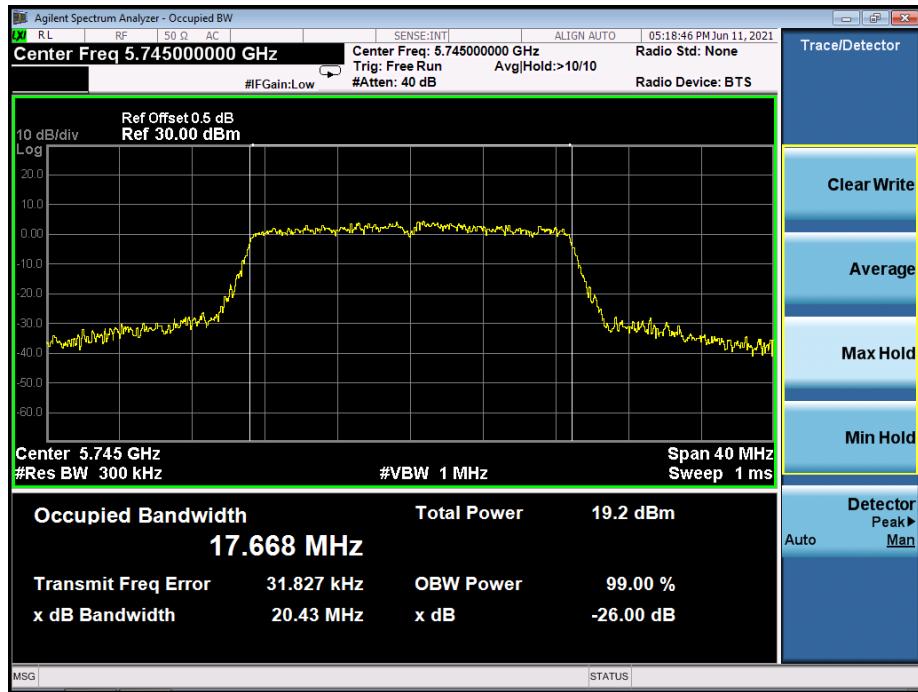
802.11n20 5745MHz 99% bandwidth



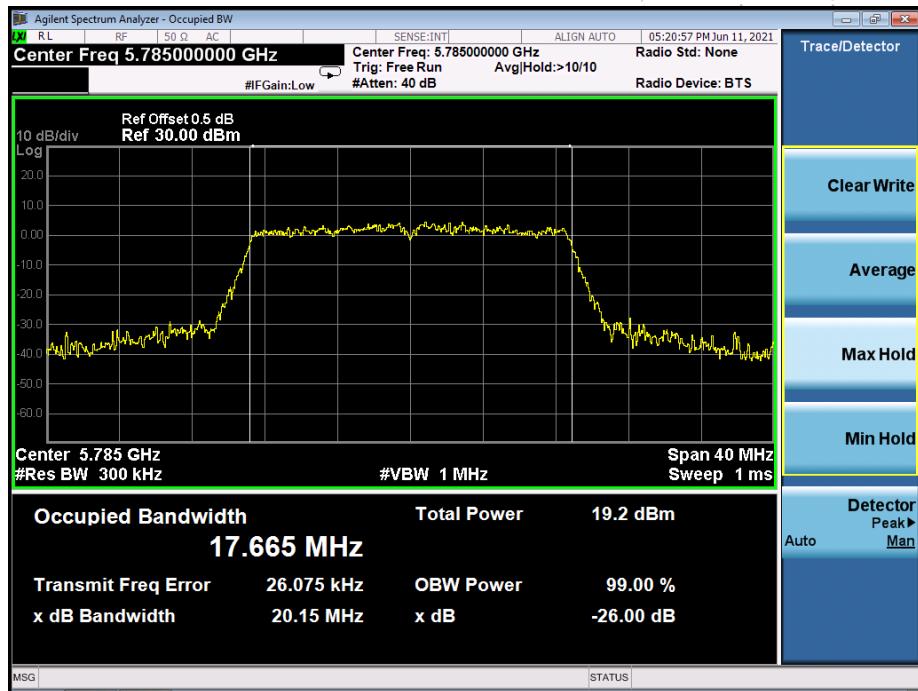
802.11n20 5785MHz 99% bandwidth

802.11n20 5825MHz 99% bandwidth


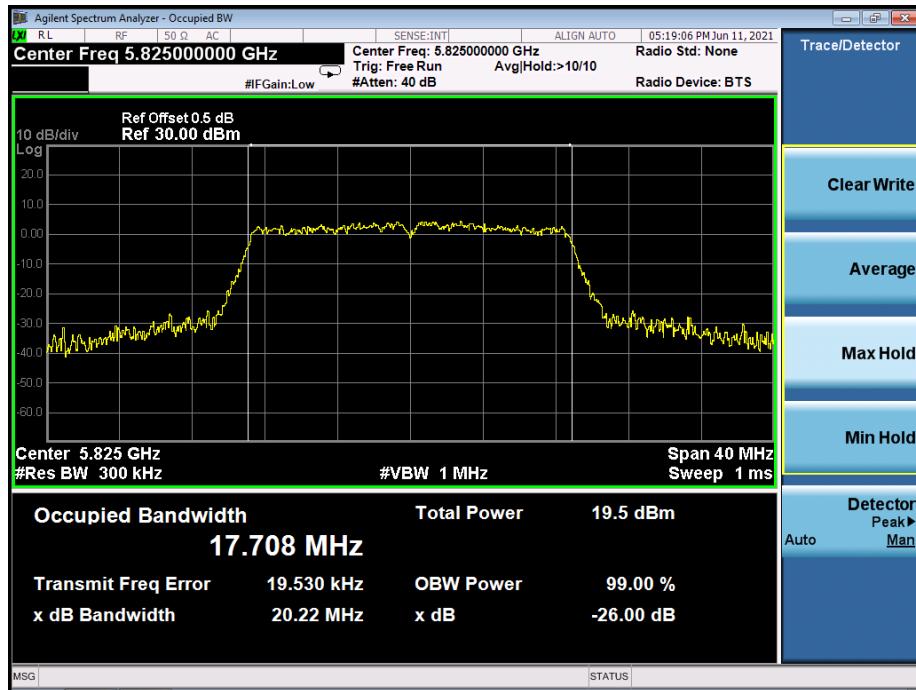
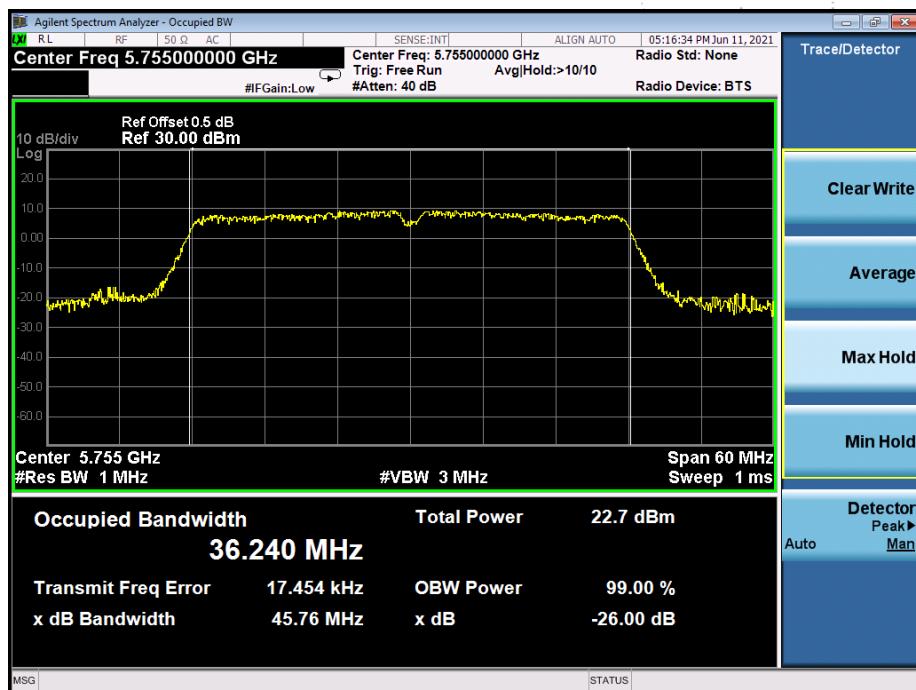
802.11 n40 5755MHz 99% bandwidth

802.11 n40 5795MHz 99% bandwidth


802.11ac20 5745MHz 99% bandwidth

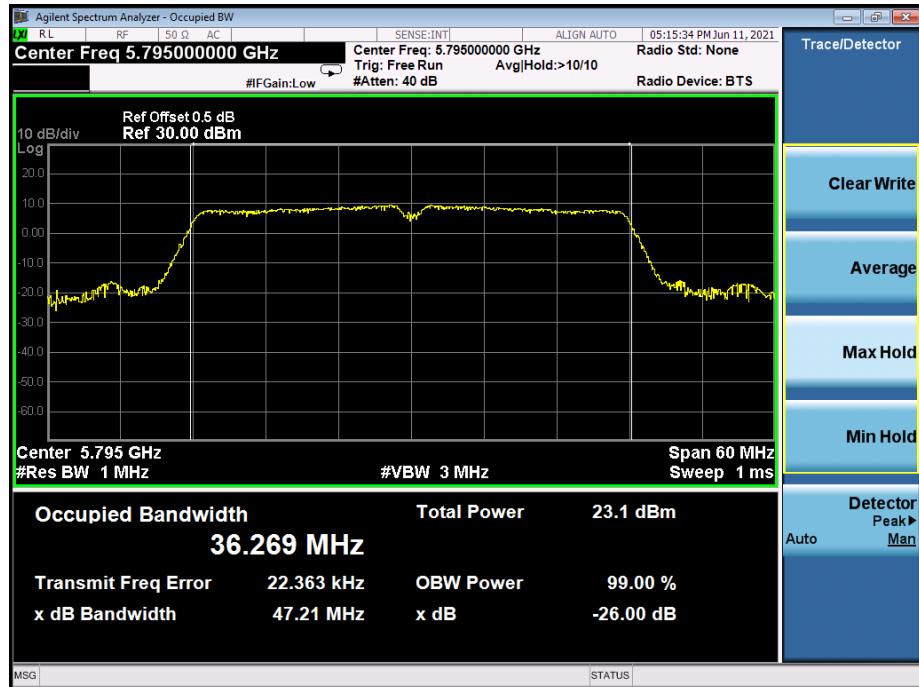


802.11ac20 5785MHz 99% bandwidth

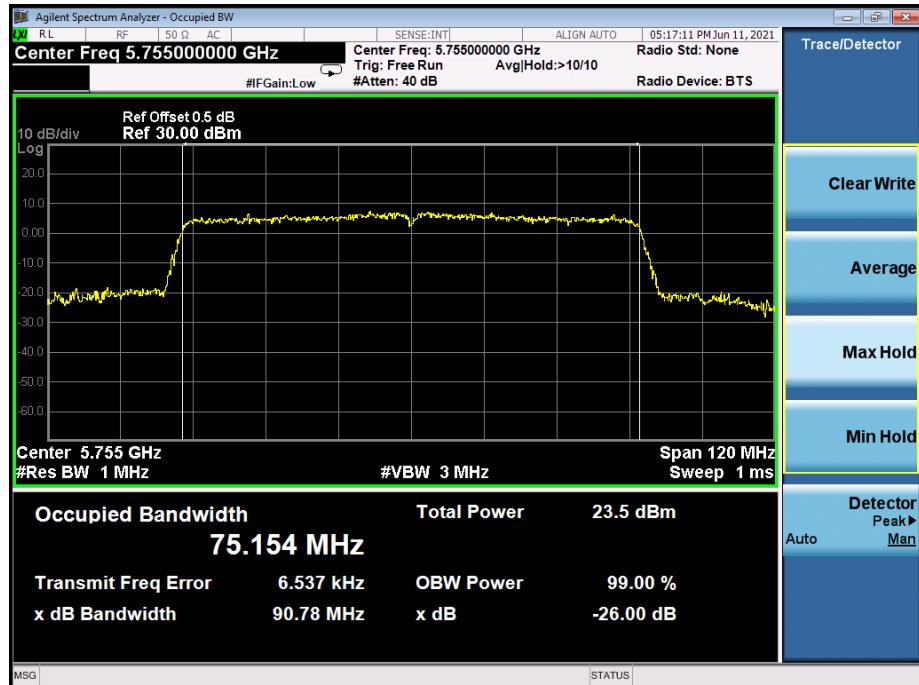


802.11ac20 5825MHz 99% bandwidth

802.11 ac40 5755MHz 99% bandwidth


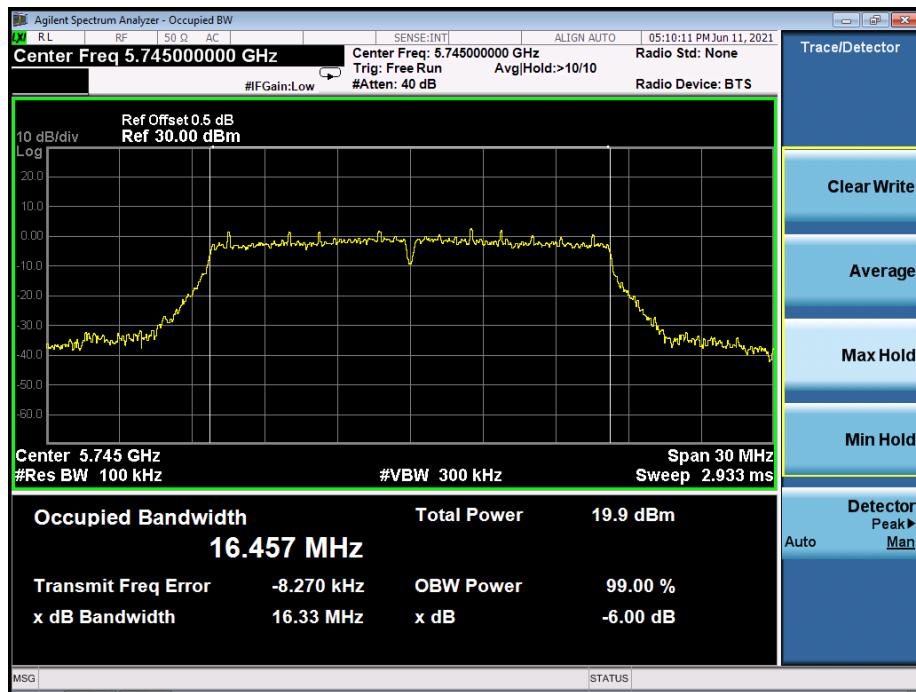
802.11 ac40 5795MHz 99% bandwidth



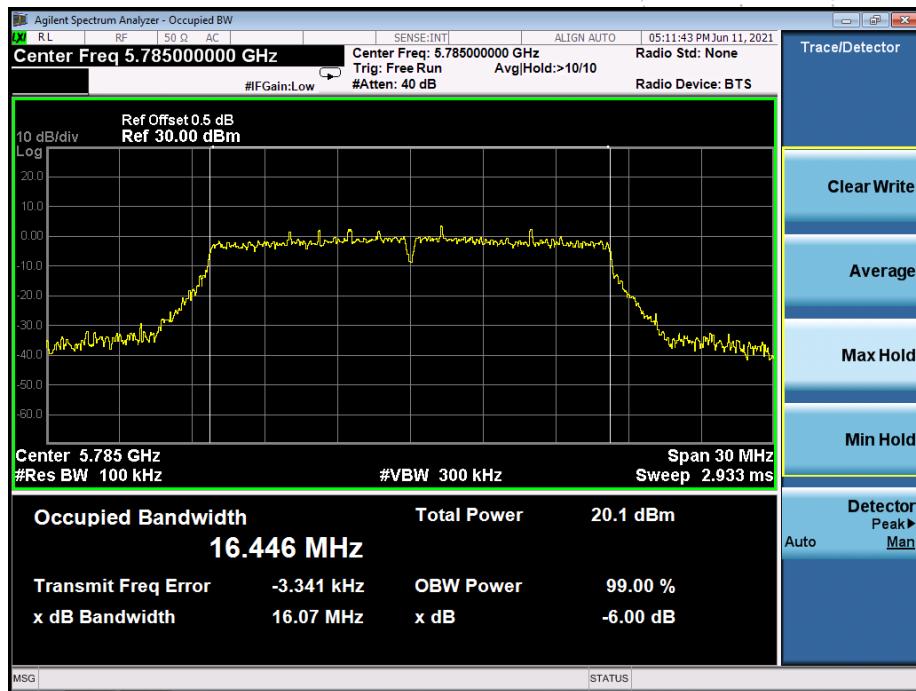
802.11 ac80 5775MHz 99% bandwidth



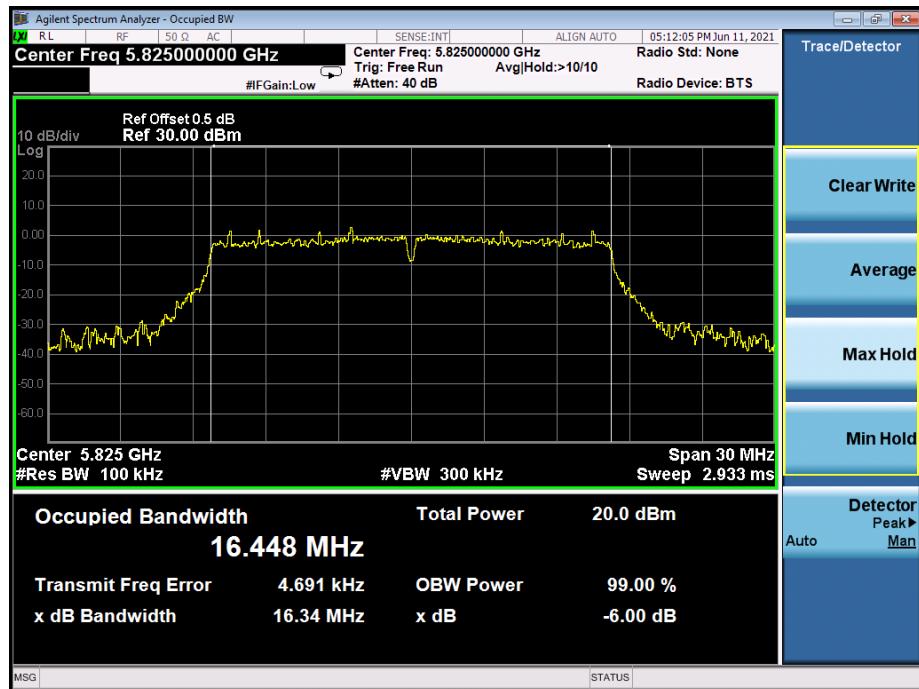
802.11a 5745MHz 6dB bandwidth



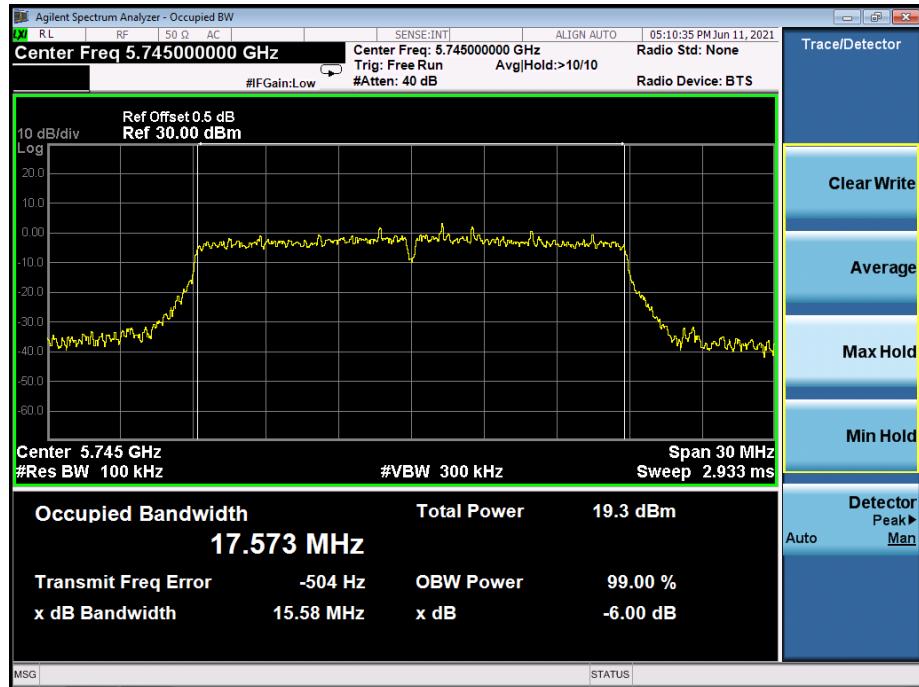
802.11a 5785MHz 6dB bandwidth



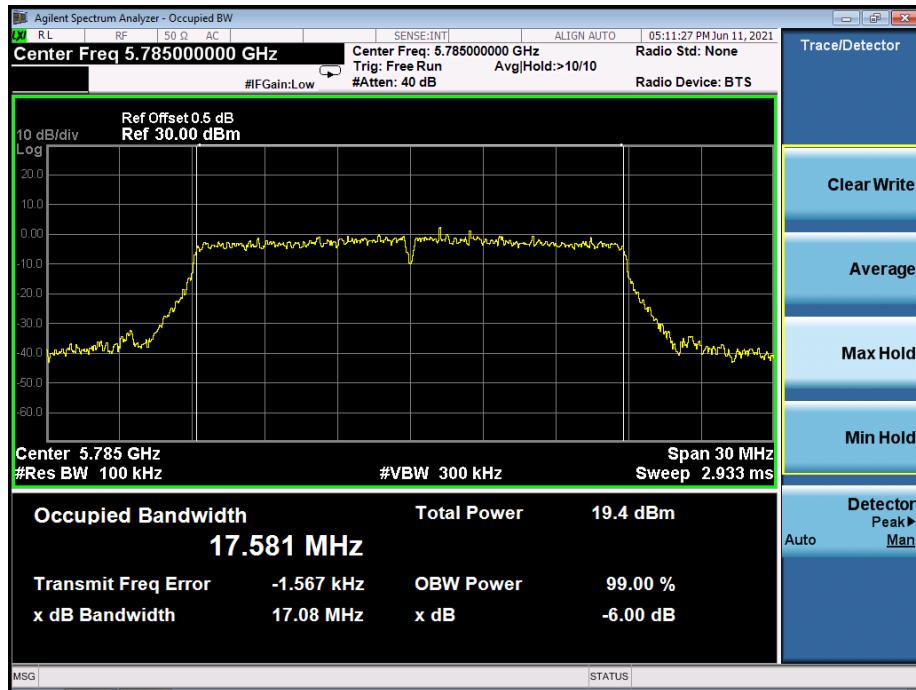
802.11a 5825MHz 6dB bandwidth



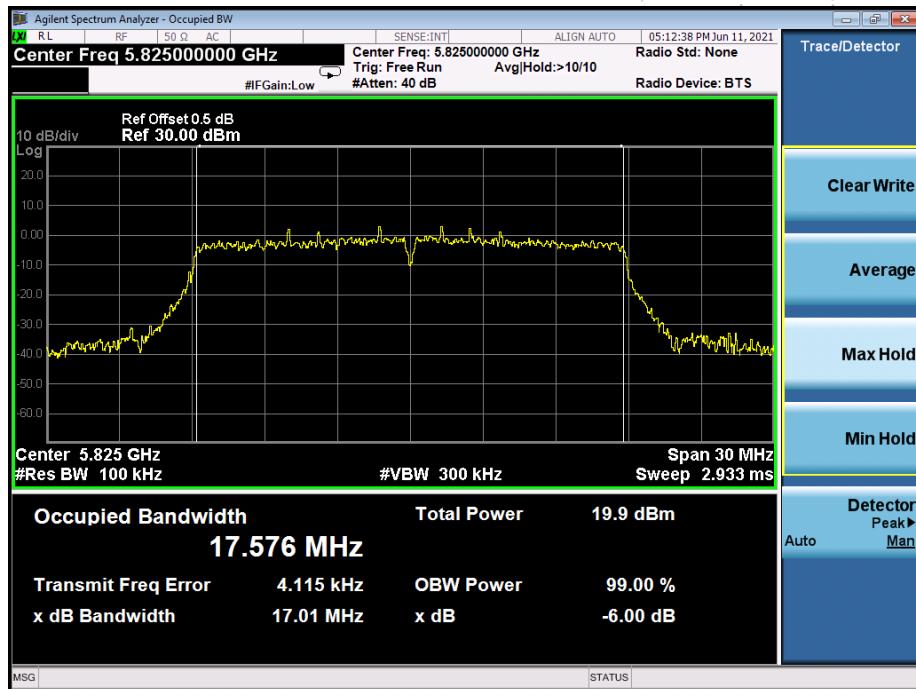
802.11n20 5745MHz 6dB bandwidth



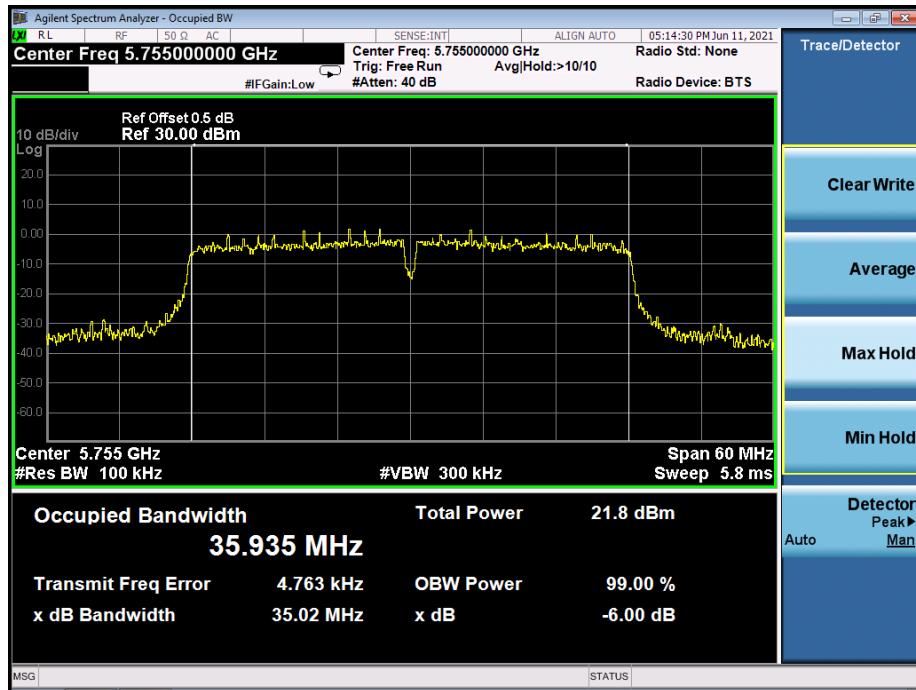
802.11n20 5785MHz 6dB bandwidth



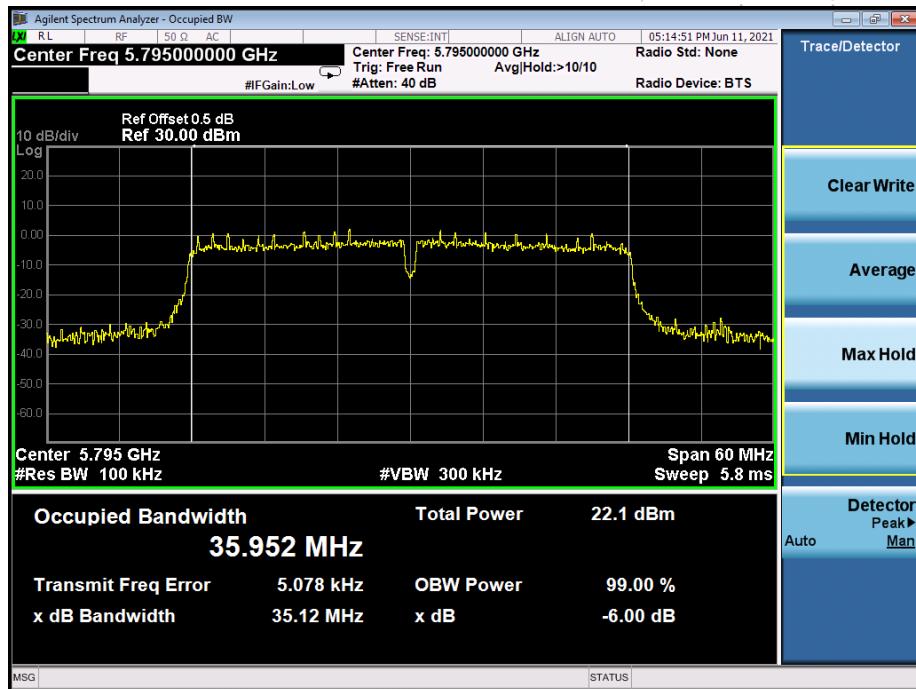
802.11n20 5825MHz 6dB bandwidth



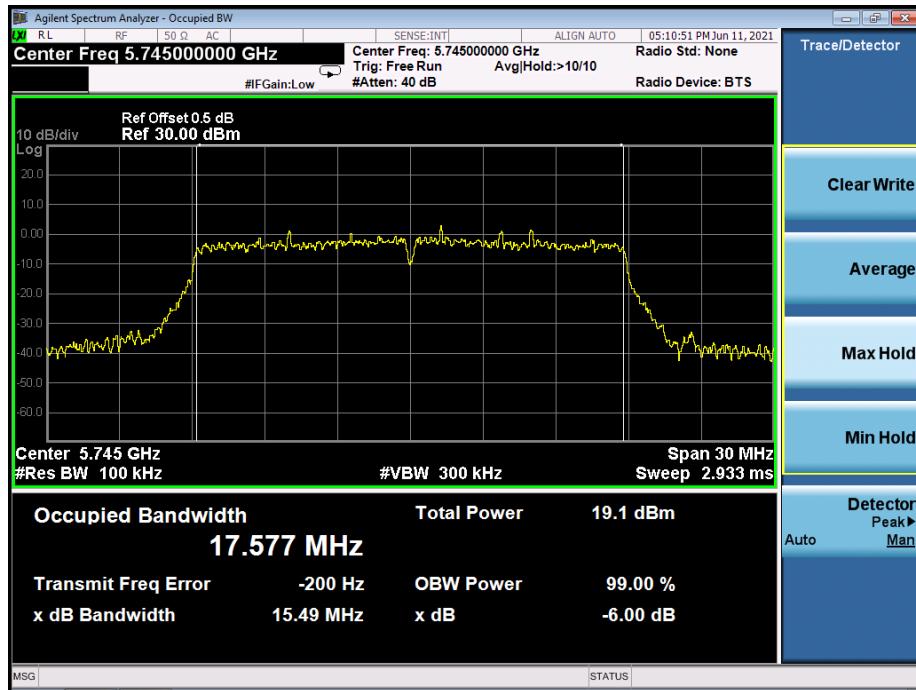
802.11 n40 5755MHz 6dB bandwidth



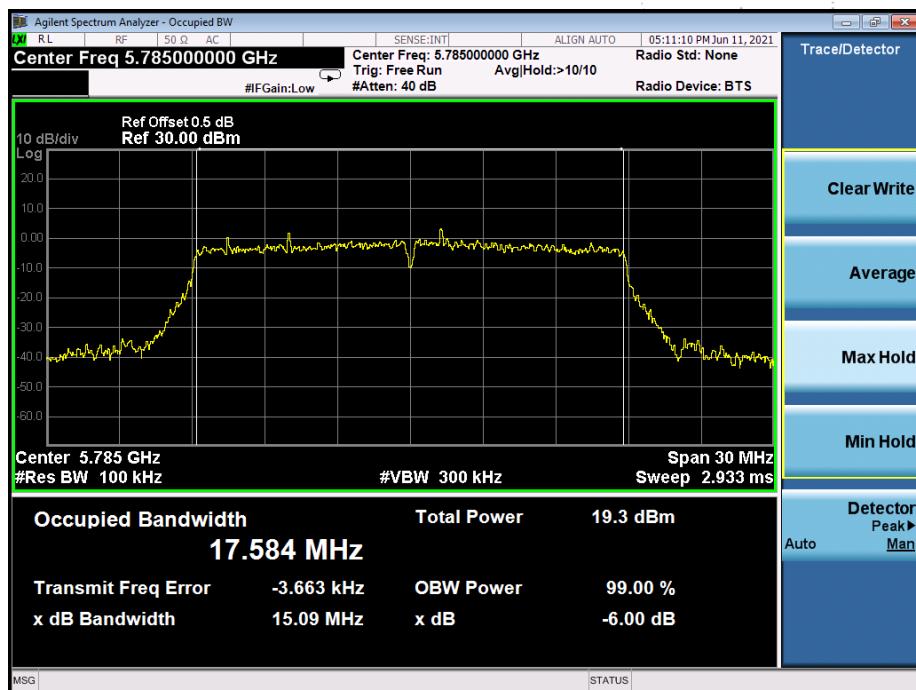
802.11 n40 5795MHz 6dB bandwidth

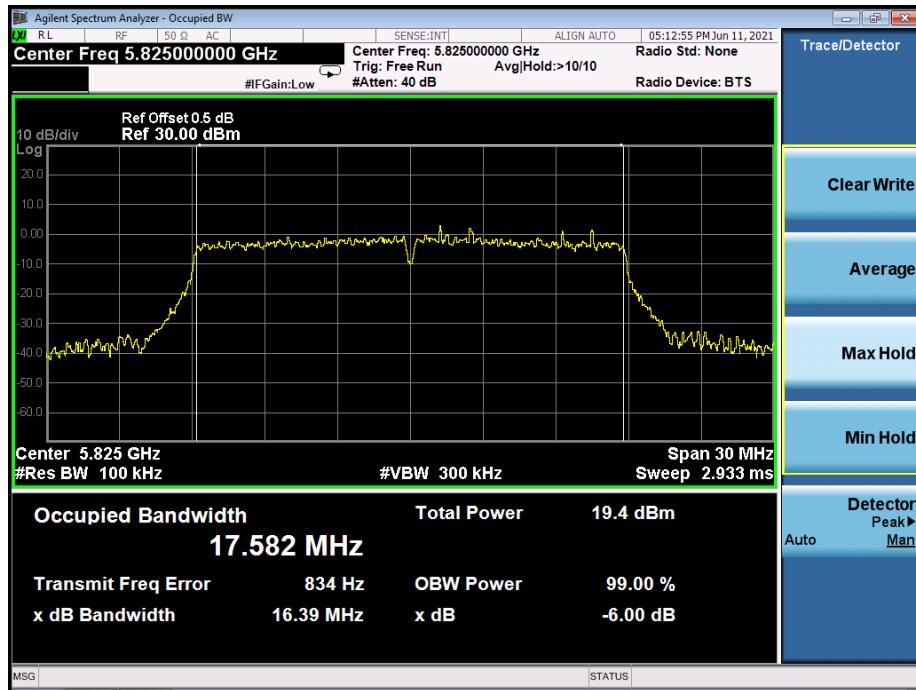
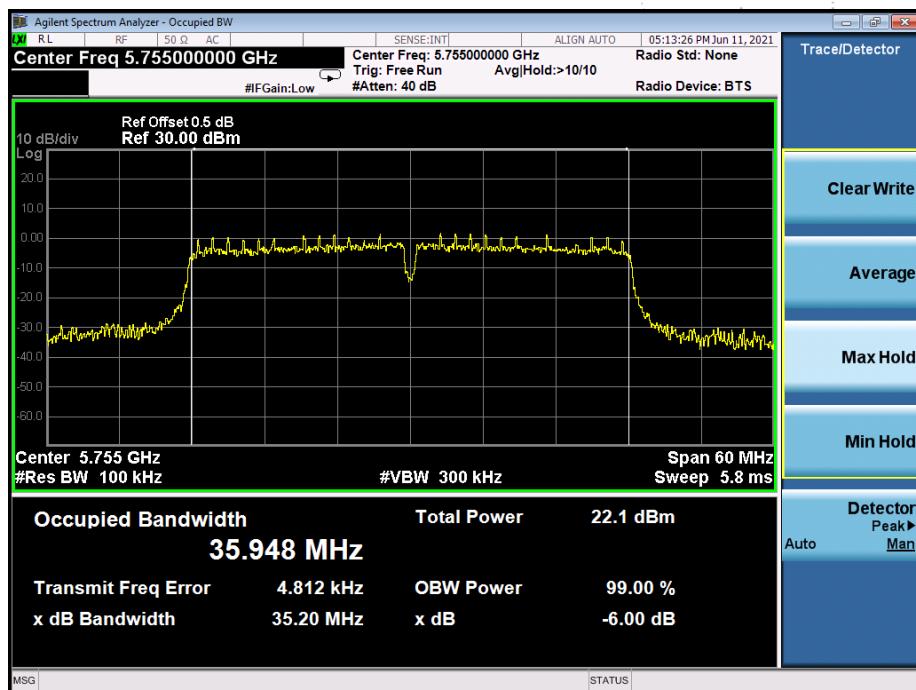


802.11ac20 5745MHz 6dB bandwidth

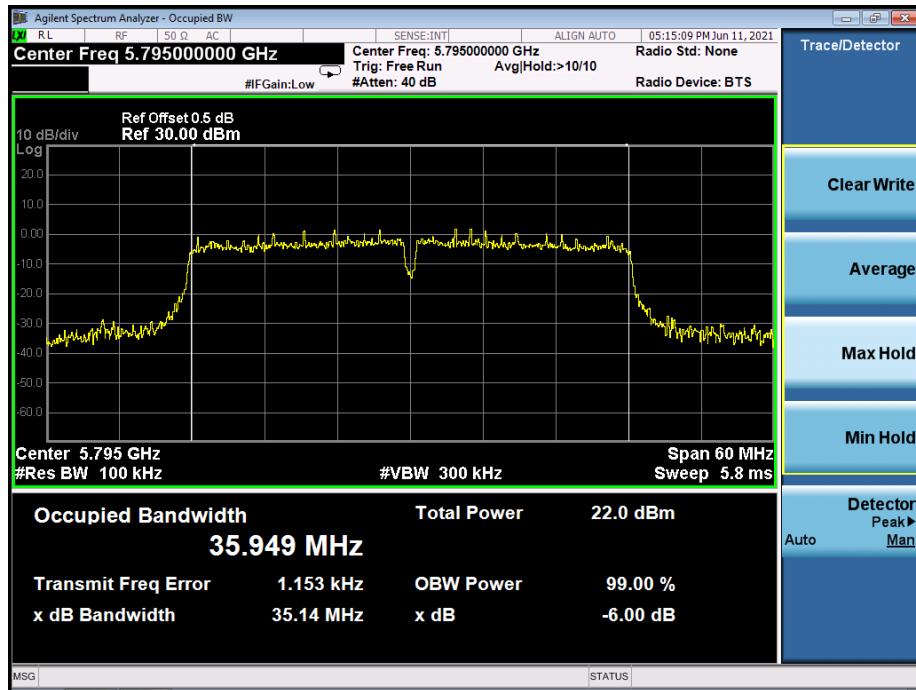


802.11ac20 5785MHz 6dB bandwidth

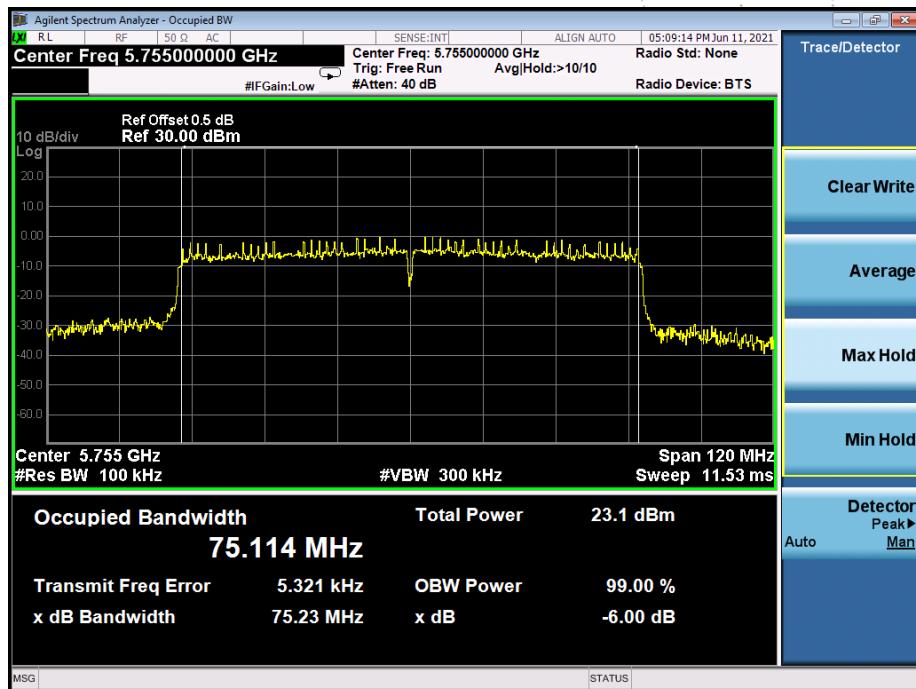


802.11ac20 5825MHz 6dB bandwidth

802.11 ac40 5755MHz 6dB bandwidth


802.11 ac40 5795MHz 6dB bandwidth



802.11 ac80 5775MHz 6dB bandwidth



10. MAXIMUM CONDUCTED OUTPUT POWER

10.1 Block Diagram Of Test Setup



10.2 Limit

According to FCC §15.407

The maximum conducted output power should not exceed:

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

10.3 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 \geq 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 \geq 3 MHz.

(iv) Number of points in sweep \geq 2 Span / RBW. (This ensures that bin-to-bin spacing is \leq 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 \geq 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

10.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

10.5 Test Result

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX (5.1G) Mode Frequency U-NII-1 (5180-5240MHz)		

Test Channel	Frequency (MHz)	Maximum output power. Antenna port (AV)			LIMIT	Result
		ANT A(dBm)	ANT B(dBm)	Total(dBm)		
TX 802.11a Mode						
CH36	5180	17.962	16.936	/	30	Pass
CH40	5200	17.481	16.286	/	30	Pass
CH48	5240	17.454	15.134	/	30	Pass
TX 802.11 n20M Mode						
CH36	5180	16.761	15.853	19.341	30	Pass
CH40	5200	16.608	15.467	19.085	30	Pass
CH48	5240	16.060	15.066	18.602	30	Pass
TX 802.11 n40M Mode						
CH38	5190	15.528	13.630	17.692	30	Pass
CH46	5230	15.052	13.391	17.311	30	Pass
TX 802.11 AC20M Mode						
CH36	5180	16.802	15.188	19.080	30	Pass
CH40	5200	16.650	14.706	18.796	30	Pass
CH48	5240	16.134	14.549	18.424	30	Pass
TX 802.11 AC40M Mode						
CH38	5190	15.224	13.572	17.486	30	Pass
CH46	5230	14.311	13.457	16.915	30	Pass
TX 802.11 AC80M Mode						
CH42	5210	14.405	12.316	16.495	30	Pass

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Test Channel	Frequency (MHz)	Maximum output power. Antenna port (AV)			LIMIT	Result
		ANT A(dBm)	ANT B(dBm)	Total(dBm)		
TX 802.11a Mode						
CH 149	5745	17.197	16.452	/	30	Pass
CH 157	5785	16.460	15.634	/	30	Pass
CH 165	5825	17.442	16.319	/	30	Pass
TX 802.11 n20M Mode						
CH 149	5745	16.188	15.432	18.837	30	Pass
CH 157	5785	16.574	15.499	19.080	30	Pass
CH 165	5825	16.615	15.491	19.100	30	Pass
TX 802.11 n40M Mode						
CH 151	5755	15.526	13.835	17.773	30	Pass
CH 159	5795	15.293	13.559	17.522	30	Pass
TX 802.11 AC20M Mode						
CH 149	5745	16.313	15.287	18.841	30	Pass
CH 157	5785	16.518	15.390	19.001	30	Pass
CH 165	5825	16.519	15.788	19.179	30	Pass
TX 802.11 AC40M Mode						
CH 151	5755	15.180	13.806	17.557	30	Pass
CH 159	5795	15.267	13.829	17.618	30	Pass
TX 802.11 AC80M Mode						
CH 155	5775	13.998	12.138	16.177	30	Pass

11. OUT OF BAND EMISSIONS

11.1 Block Diagram Of Test Setup



11.2 Limit

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.

11.3 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.

11.4 EUT operating Conditions

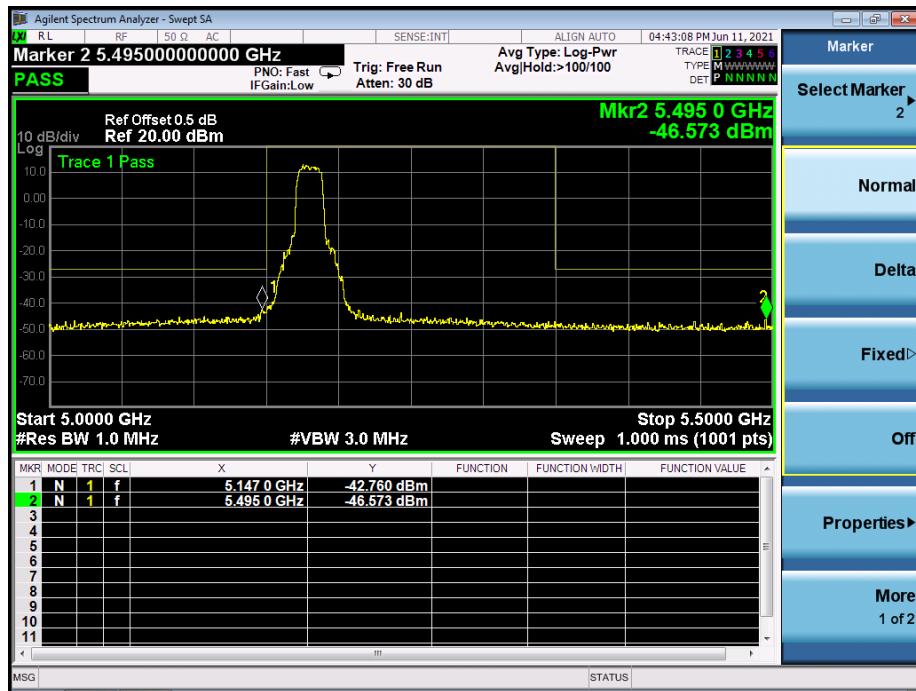
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

11.5 Test Result

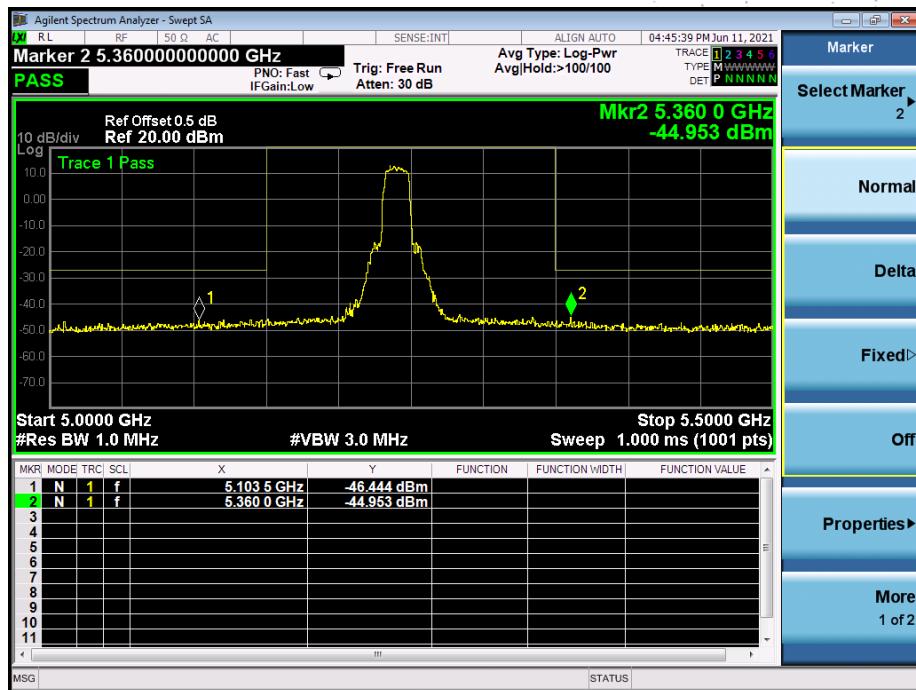
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V/60Hz

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

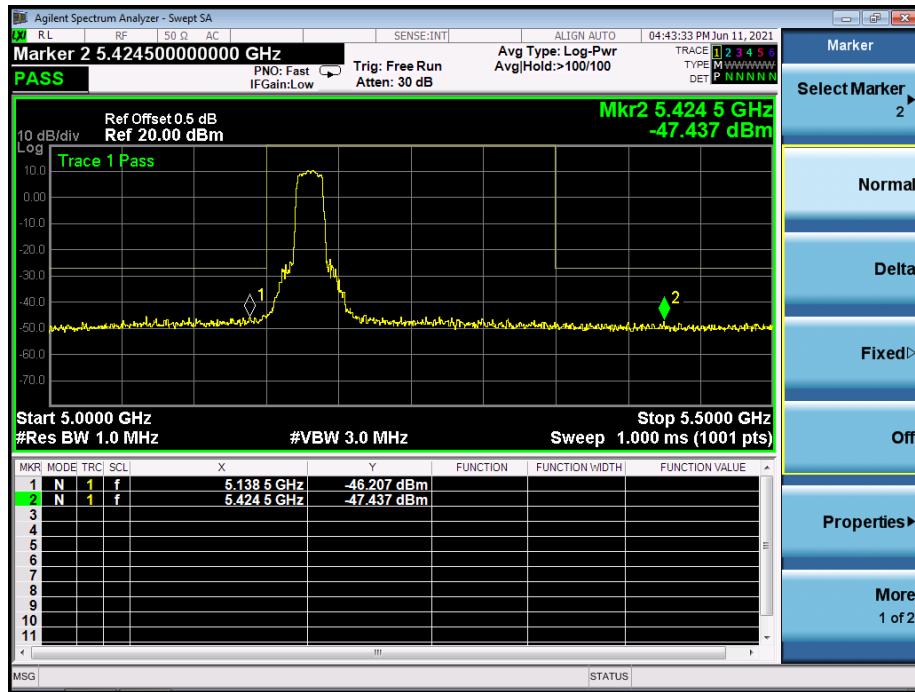
5.180~5.240 GHz
(802.11a) Band Edge, Left Side



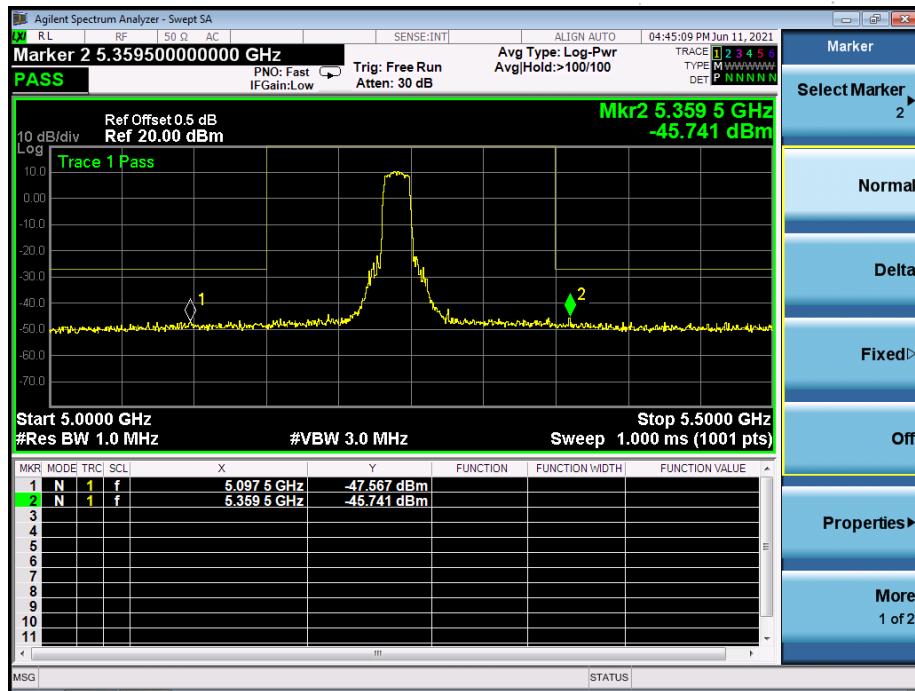
(802.11a) Band Edge, Right Side



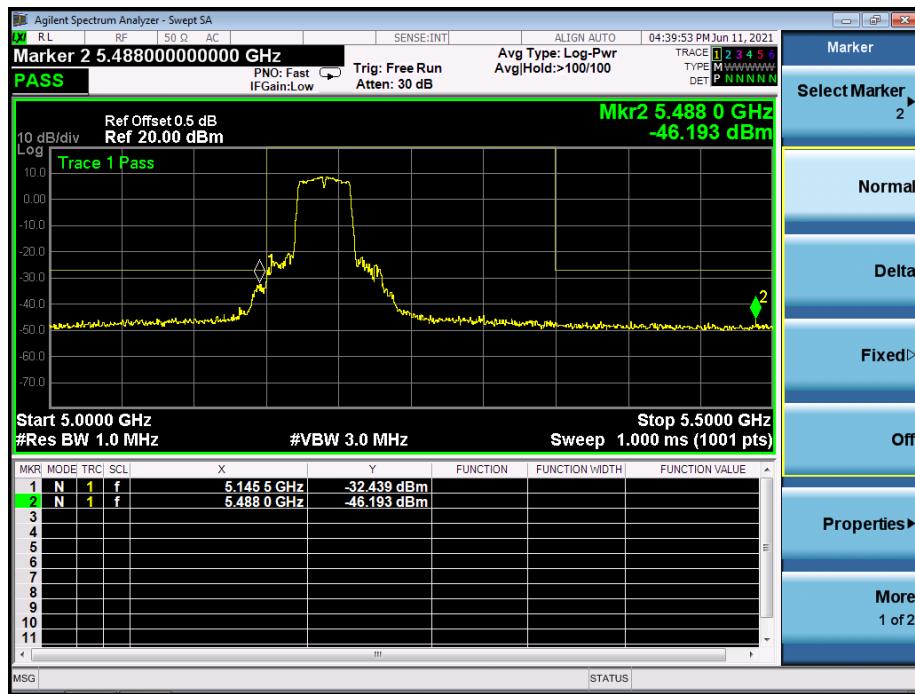
5.180~5.240 GHz (802.11n20) Band Edge, Left Side



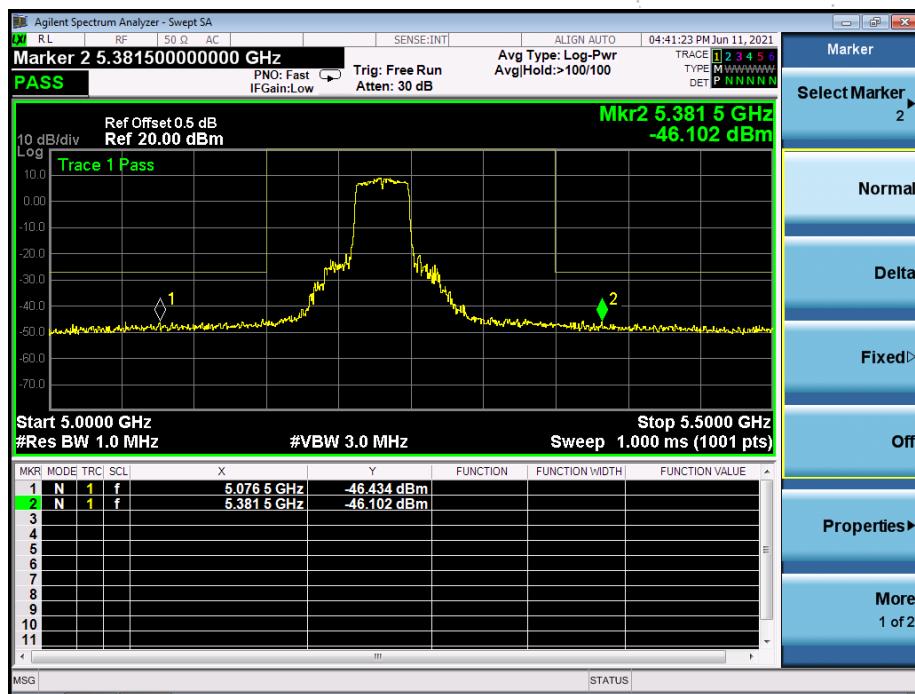
(802.11n20) Band Edge, Right Side



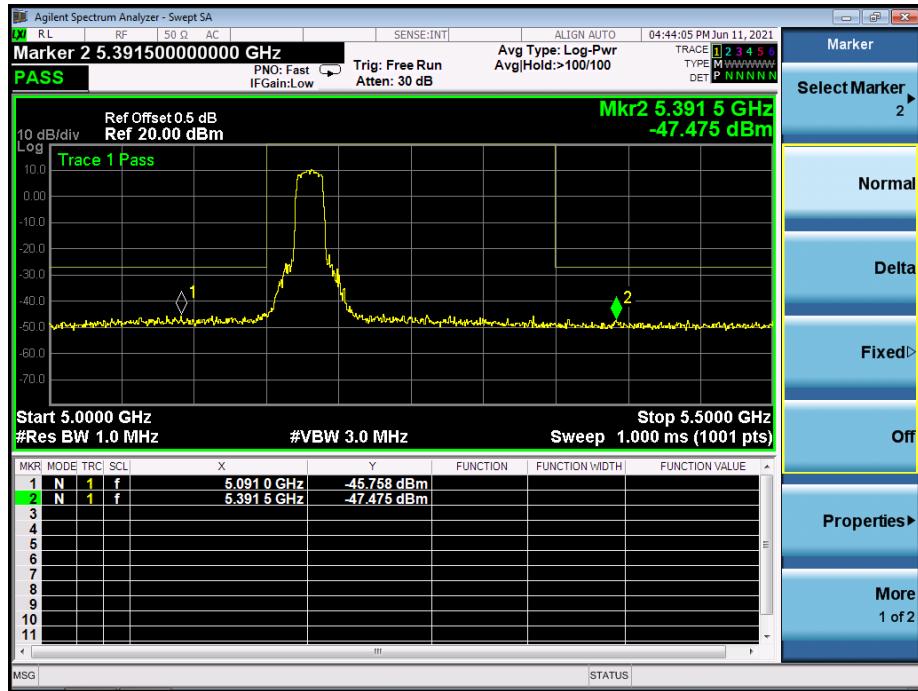
5.180~5.240 GHz
(802.11n40) Band Edge, Left Side



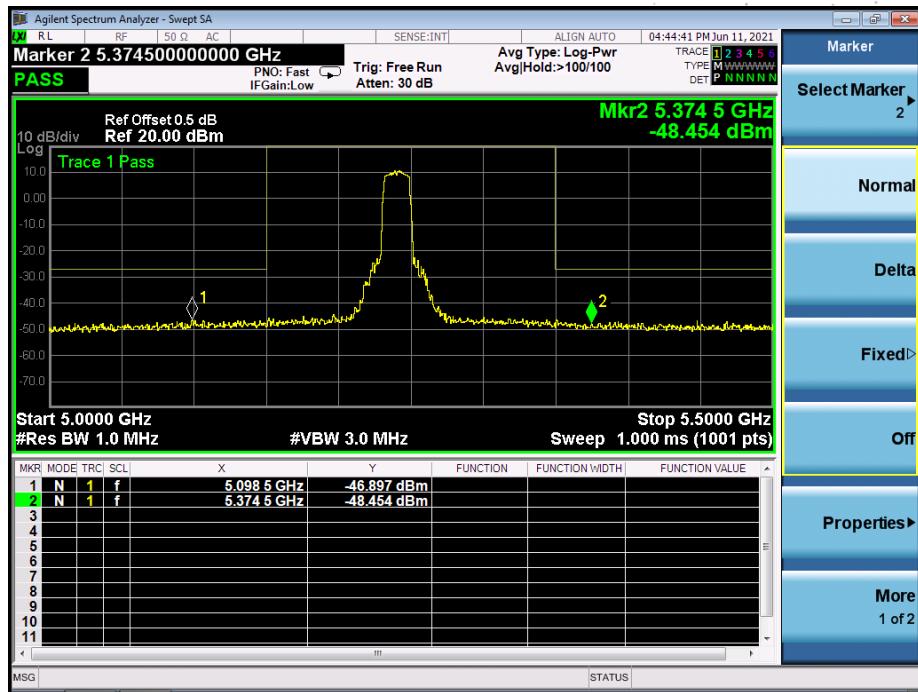
(802.11n40) Band Edge, Right Side



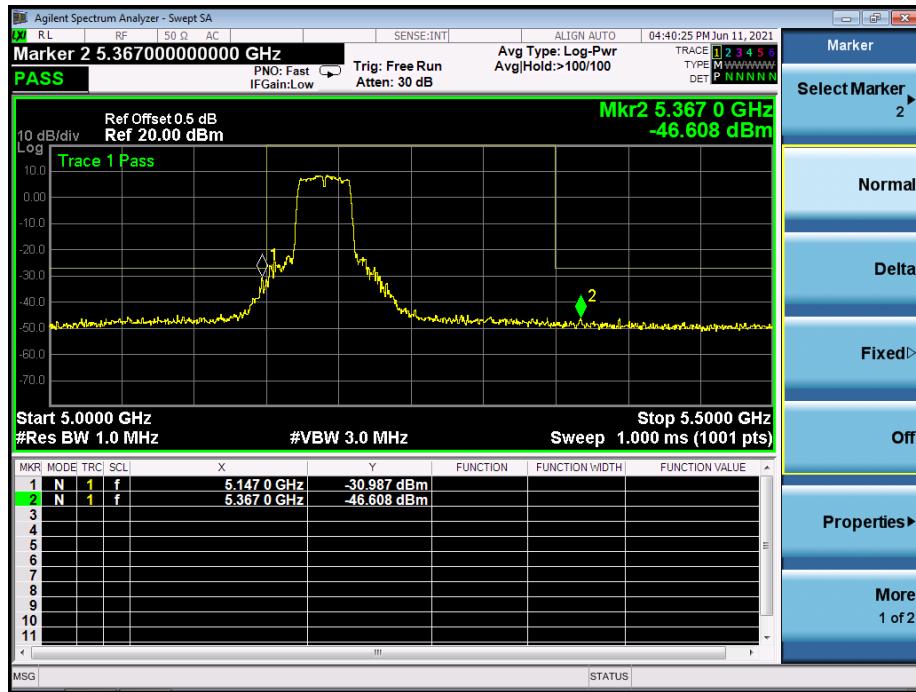
5.180~5.240 GHz
(802.11ac20) Band Edge, Left Side



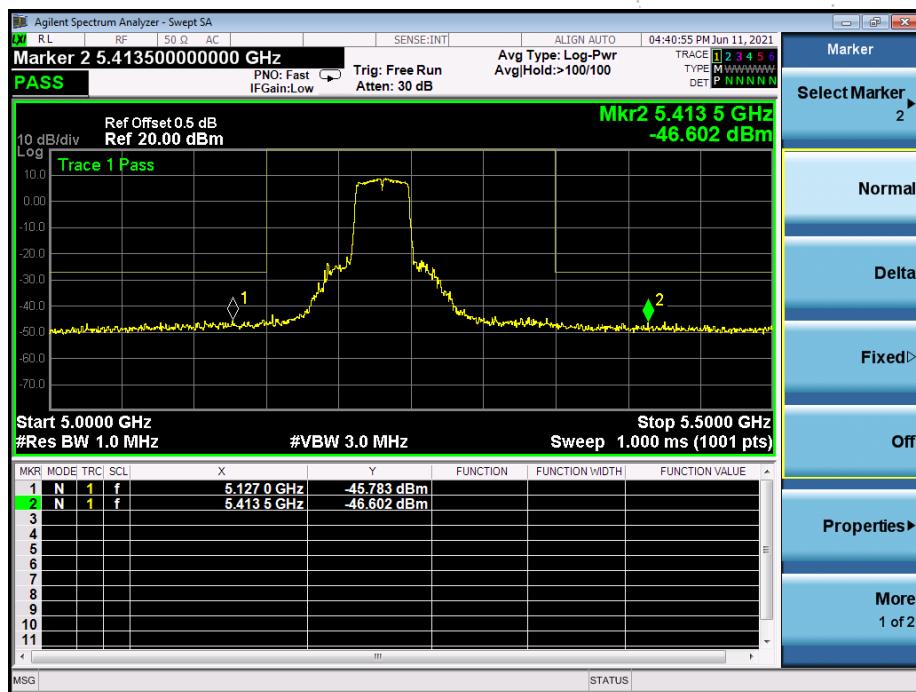
(802.11ac20) Band Edge, Right Side



5.180~5.240 GHz
(802.11ac40) Band Edge, Left Side



(802.11ac40) Band Edge, Right Side



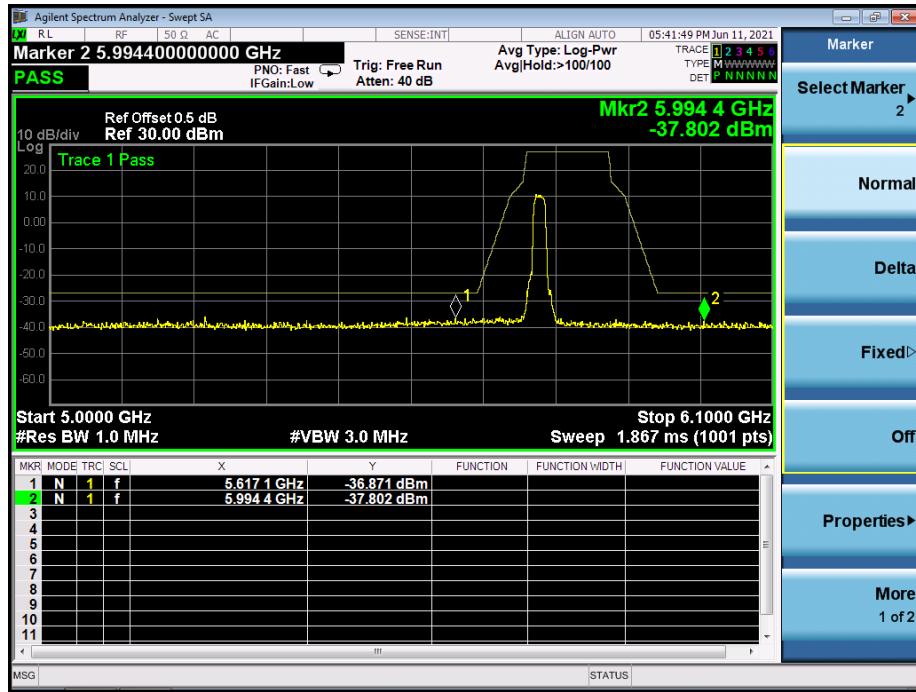
5.180~5.240 GHz
(802.11ac80) Band Edge, Left Side



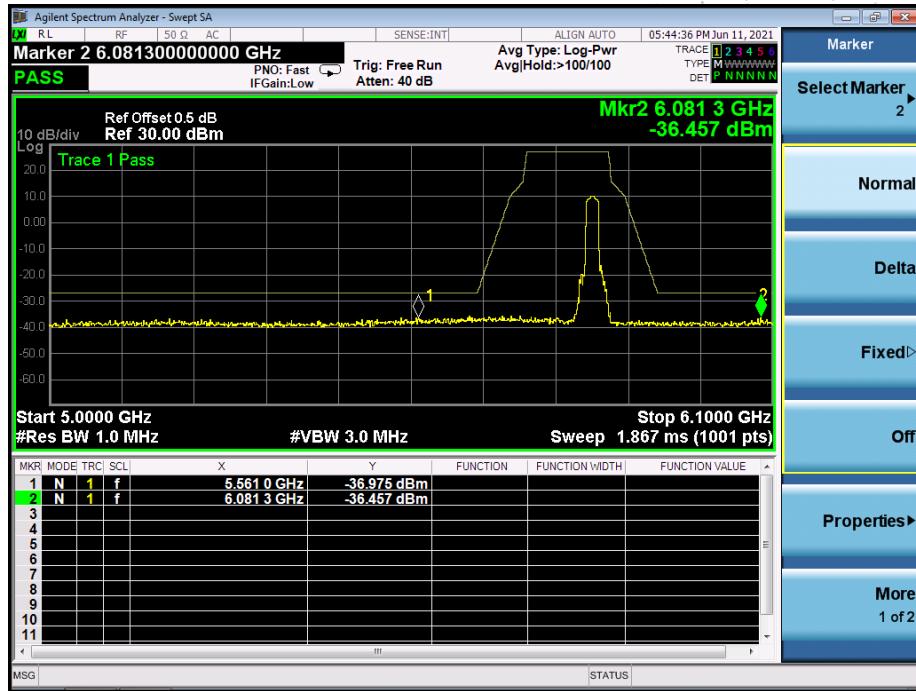
(802.11ac80) Band Edge, Right Side



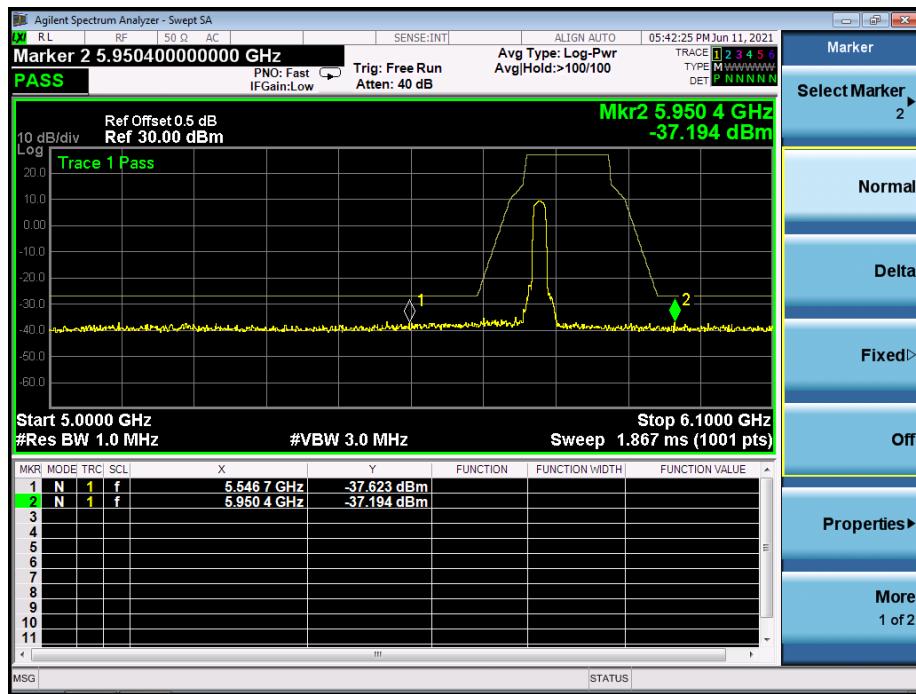
5.745~5.825 GHz
(802.11a) Band Edge, Left Side



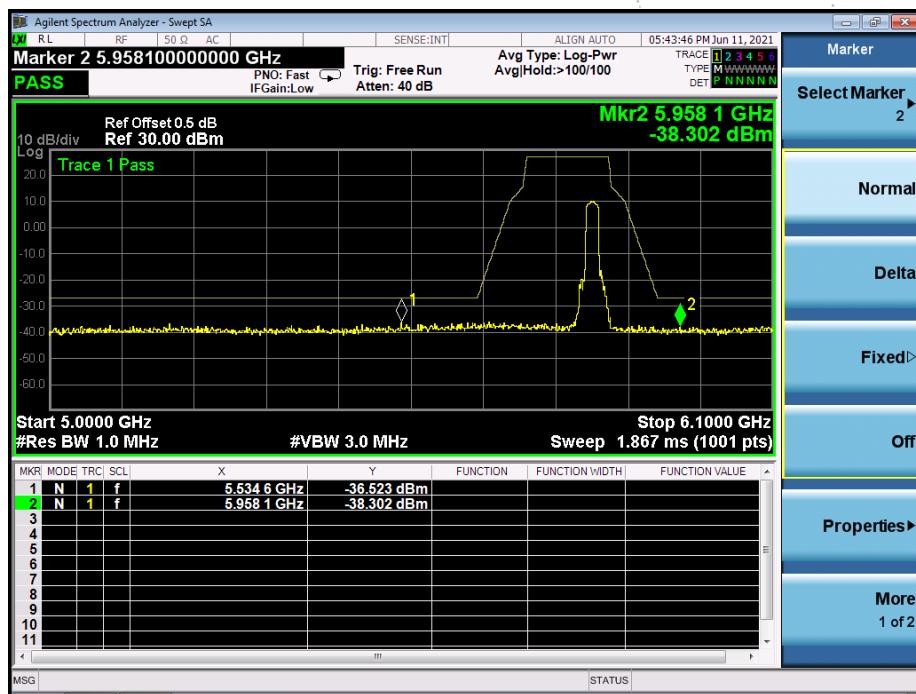
(802.11a) Band Edge, Right Side



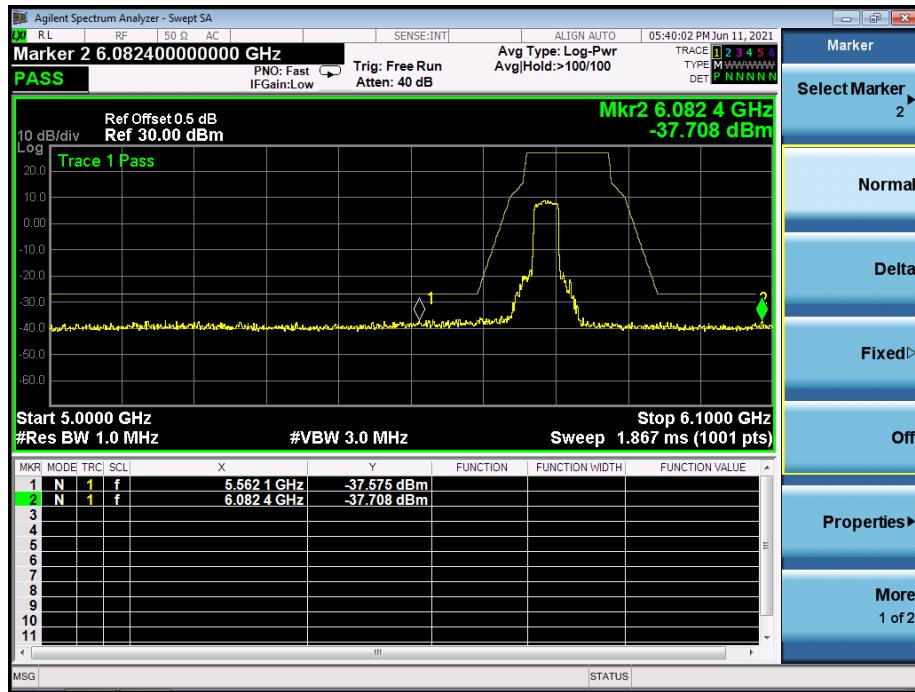
5.745~5.825 GHz
(802.11n20) Band Edge, Left Side



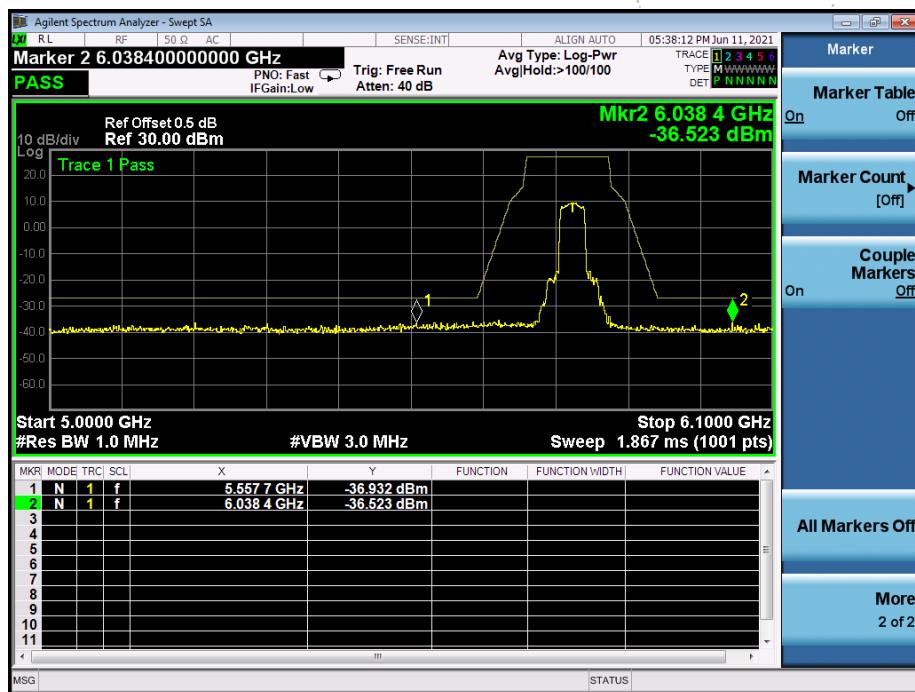
(802.11n20) Band Edge, Right Side



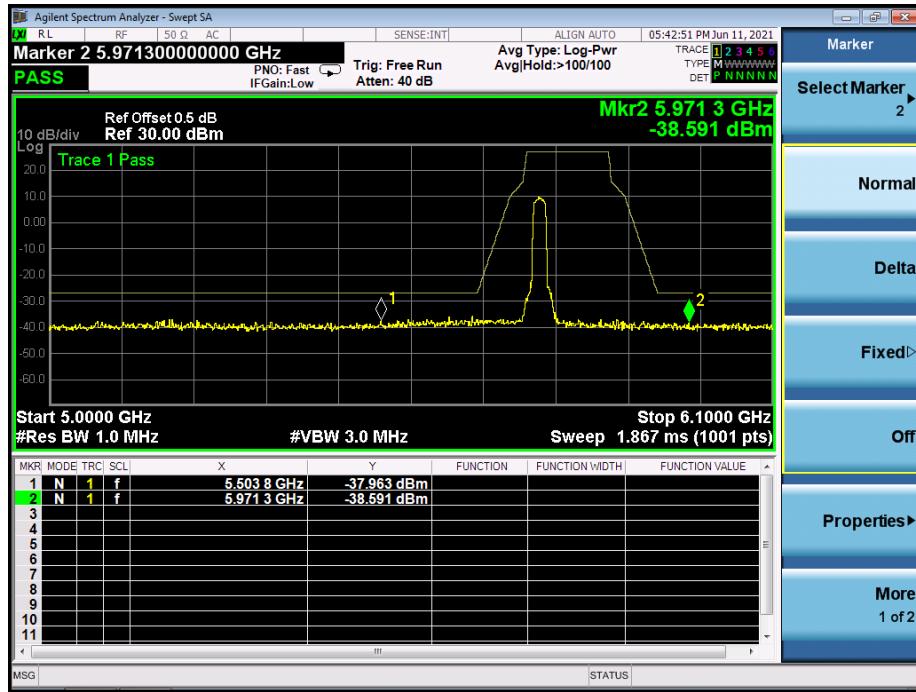
5.745~5.825 GHz
(802.11n40) Band Edge, Left Side



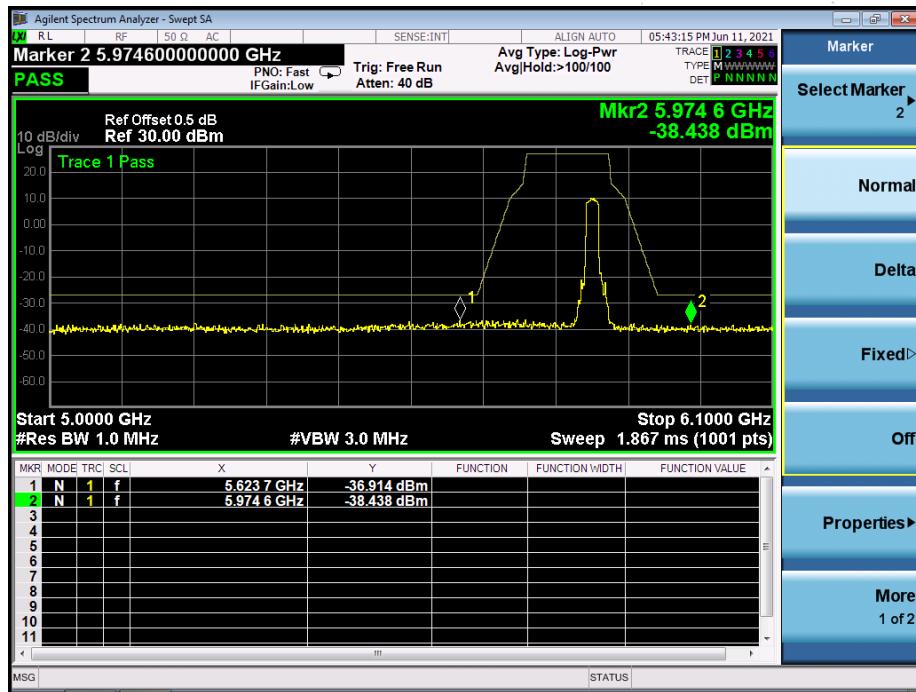
(802.11n40) Band Edge, Right Side



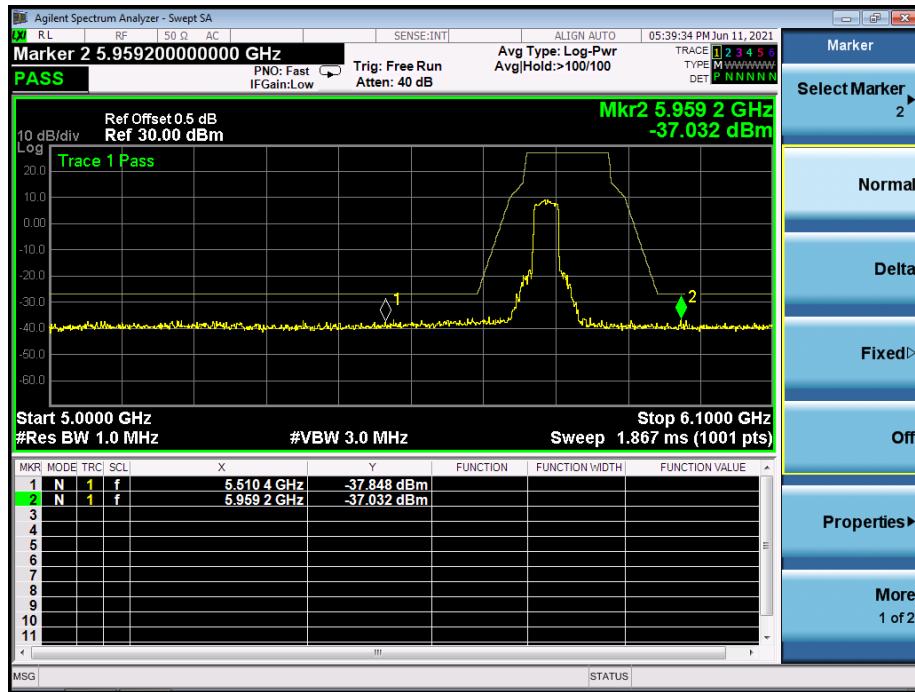
5.745~5.825 GHz
(802.11ac20) Band Edge, Left Side



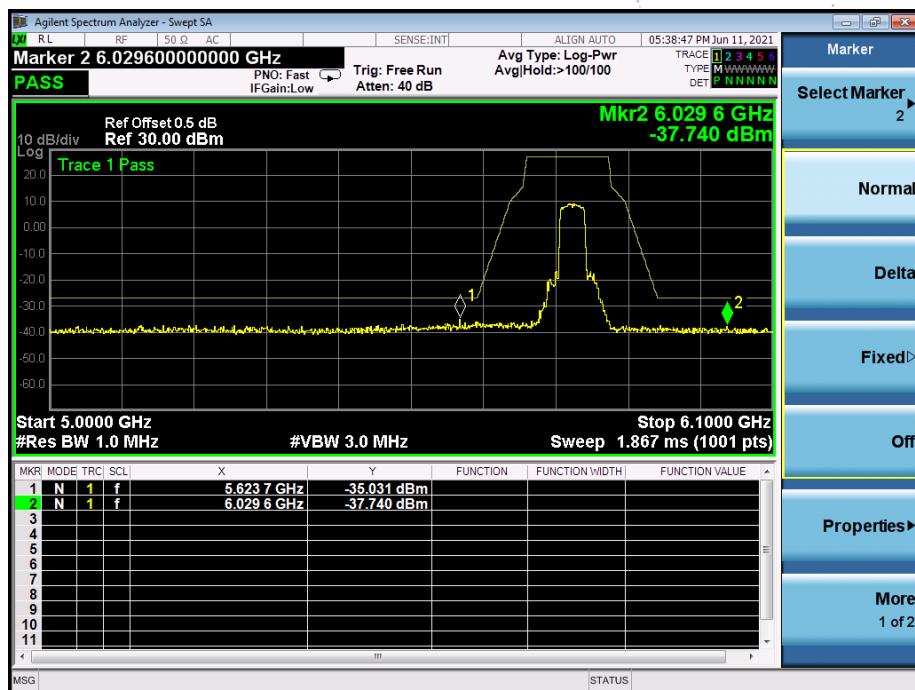
(802.11ac20) Band Edge, Right Side



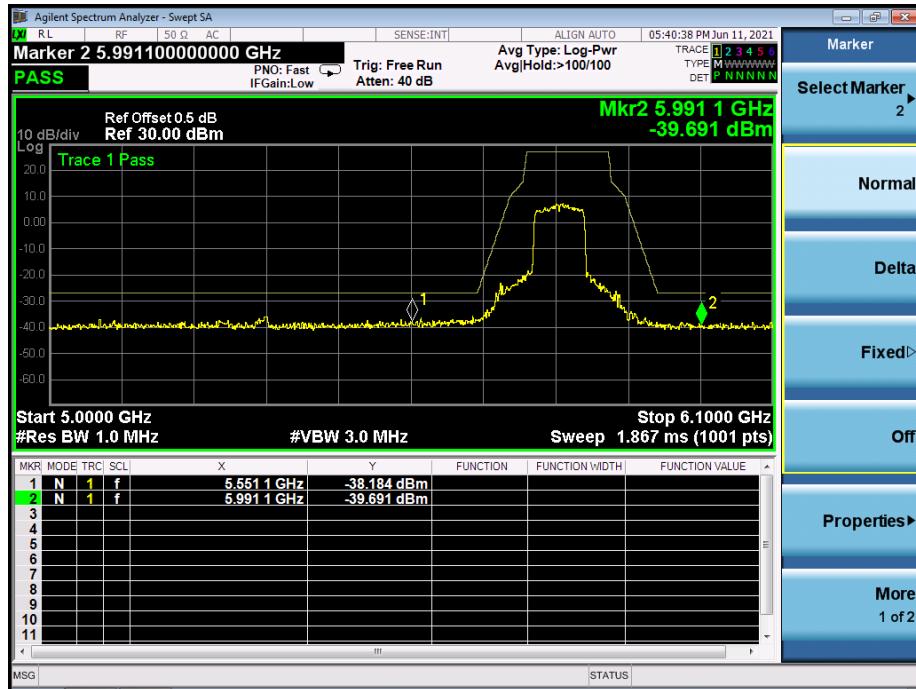
5.745~5.825 GHz
(802.11ac40) Band Edge, Left Side



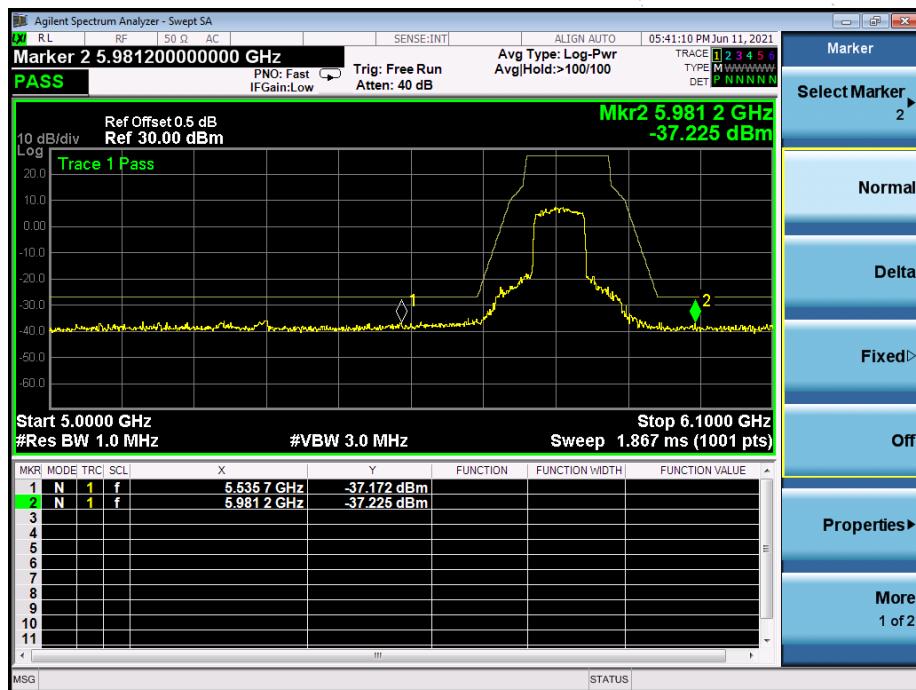
(802.11ac40) Band Edge, Right Side



5.745~5.825 GHz
(802.11ac80) Band Edge, Left Side



(802.11ac80) Band Edge, Right Side



12. SPURIOUS RF CONDUCTED EMISSIONS

12.1 Block Diagram Of Test Setup



12.2 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..

12.3 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.

12.4 Test Result

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.

