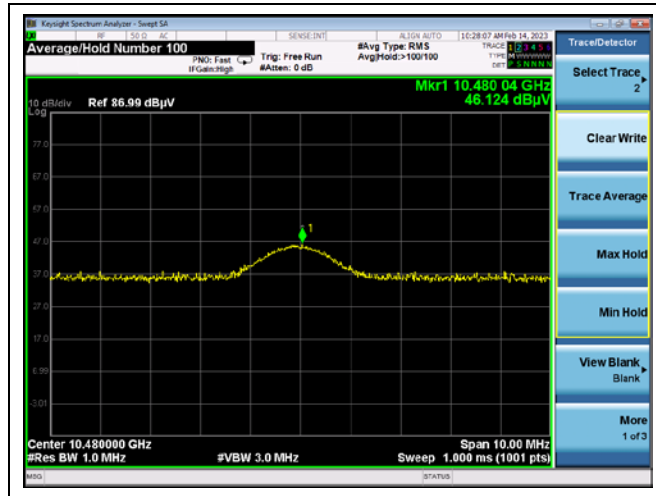


High channel 2nd harmonic (Peak) - Band 1



Low channel Band edge (Peak) - Band 3

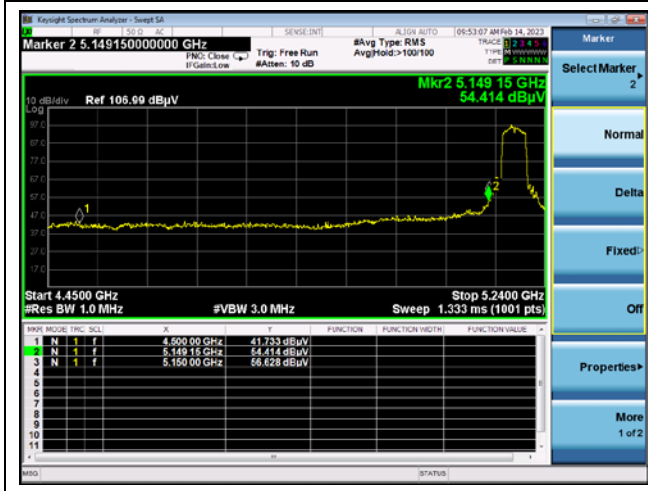


High channel Band edge (Peak) - Band 3

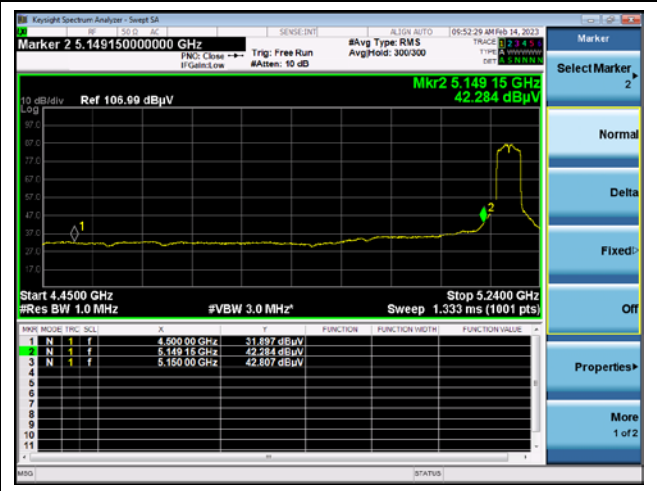


802.11ac_VHT40

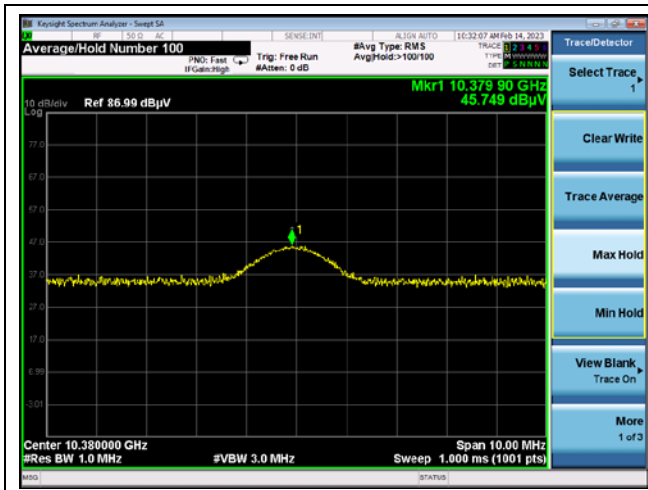
Low channel Band edge (Peak) - Band 1



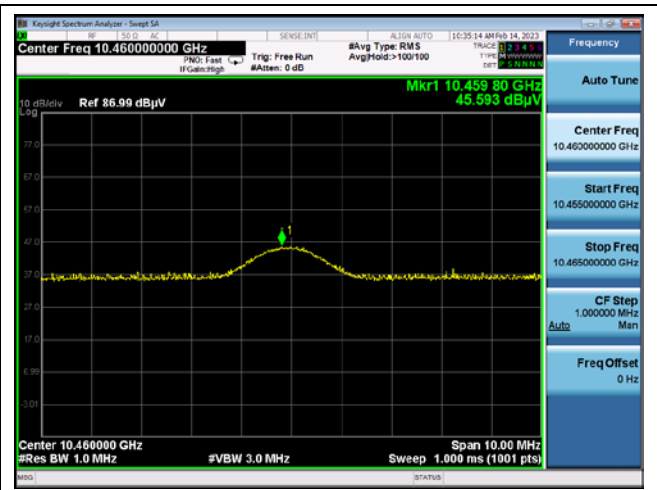
Low channel Band edge (Average) - Band 1



Low channel 2nd harmonic (Peak) - Band 1



High channel 2nd harmonic (Peak) - Band 1



Low channel Band edge (Peak) - Band 3



High channel Band edge (Peak) - Band 3



802.11ac_VHT80

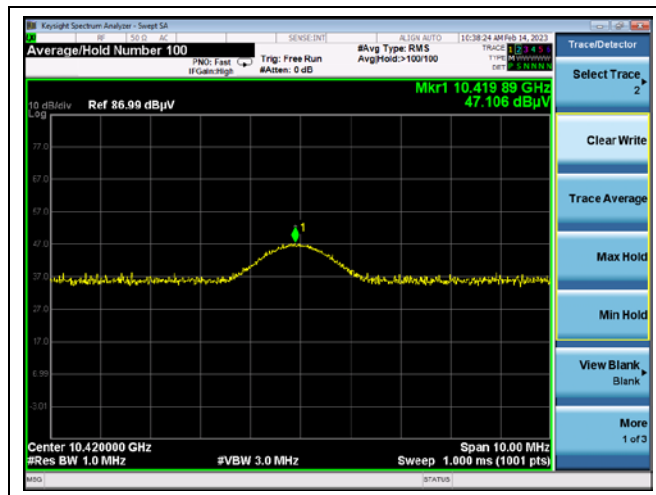
Middle channel Band edge (Peak) - Band 1



Middle channel Band edge (Average) - Band 1



Middle channel 2nd harmonic (Peak) - Band 1



Low channel Band edge (Peak) - Band 3



High channel Band edge (Peak) - Band 3



3. 26 dB Bandwidth & 99 % Bandwidth

3.1. Test Setup



3.2. Limit

None; for reporting purpose only.

3.3. Test Procedure

3.3.1. 26 dB Bandwidth

1. This measurement settings are specified in section II.C.1 of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW = approximately 1 % of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

3.3.2. 99 % Bandwidth

3.3.2.1 FCC

1. This measurement settings are specified in section II.D of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set center frequency to the nominal EUT channel center frequency.
3. Set span = 1.5 times to 5.0 times the OBW.
4. Set RBW = 1 % to 5 % of the OBW.
5. Set VBW $\geq 3 \times$ RBW.
6. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
7. Use the 99 % power bandwidth function of the instrument (if available).
8. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99 % occupied bandwidth is the difference between these two frequencies.

In the result,

- DFS requirements are not applicable in the 5 150 MHz ~ 5 250 MHz.

3.3.2.2 IC

- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99 % emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99 % emission bandwidth).

3.4. Test Result

Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

- SISO_Ant.1

Test mode: 11a

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 180	36	6	20.899	17.019
	5 220	44		21.139	17.019
	5 240	48		20.819	17.019
U-NII 3	5 745	149		20.939	17.077
	5 785	157		20.859	17.019
	5 825	165		21.059	17.077

- SISO_Ant.2

Test mode: 11a

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 180	36	6	20.899	16.961
	5 220	44		21.139	17.077
	5 240	48		21.019	17.077
U-NII 3	5 745	149		21.019	17.019
	5 785	157		21.139	17.077
	5 825	165		21.179	17.019

- MIMO

Test mode: 11ac_VHT20

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)		99 % Bandwidth (MHz)	
				ANT 1	ANT 2	ANT 1	ANT 2
U-NII 1	5 180	36	MCS0	21.419	21.339	18.061	17.829
	5 220	44		21.299	21.419	18.061	17.829
	5 240	48		21.179	21.139	18.061	17.829
U-NII 3	5 745	149		21.419	21.139	18.061	17.887
	5 785	157		21.419	21.099	18.119	17.829
	5 825	165		21.299	21.259	18.061	17.829

Test mode: 11ac_VHT40

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)		99 % Bandwidth (MHz)	
				ANT 1	ANT 2	ANT 1	ANT 2
U-NII 1	5 190	38	MCS0	39.960	39.321	36.237	36.122
	5 230	46		40.120	39.401	36.237	36.122
U-NII 3	5 755	151		40.360	39.560	36.353	36.122
	5 795	159		40.040	39.560	36.353	36.122

Test mode: 11ac_VHT80

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)		99 % Bandwidth (MHz)	
				ANT 1	ANT 2	ANT 1	ANT 2
U-NII 1	5 210	42	MCS0	81.838	81.518	75.485	75.485
U-NII 3	5 775	155		82.158	81.998	75.716	75.485

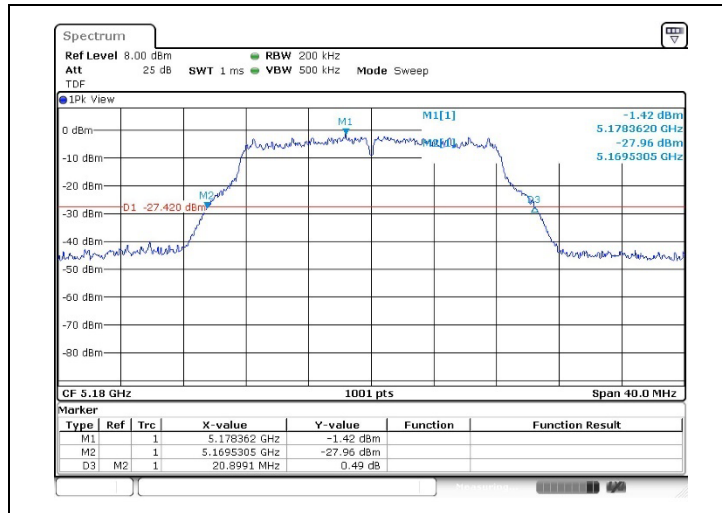
- Test plots

- SISO_Ant.1

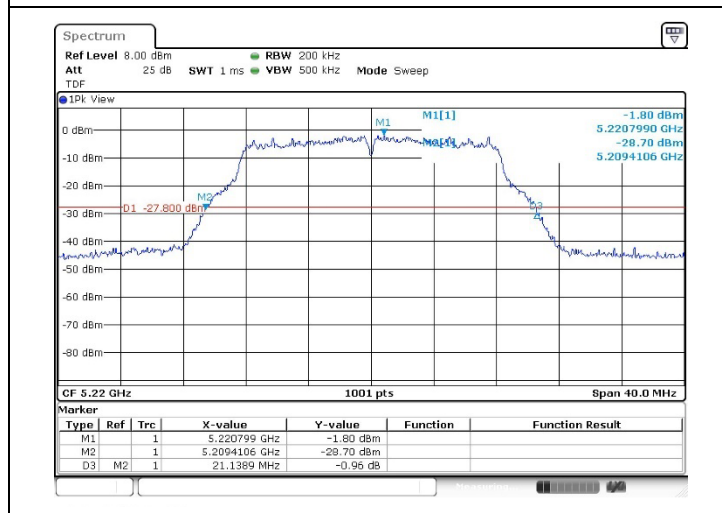
26 dB Bandwidth

802.11a (Band 1)

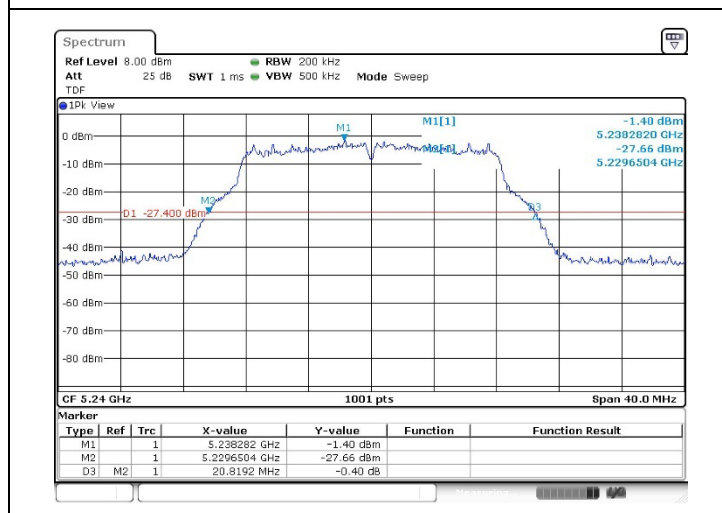
Low Channel
(5 180 MHz)



Middle Channel
(5 220 MHz)

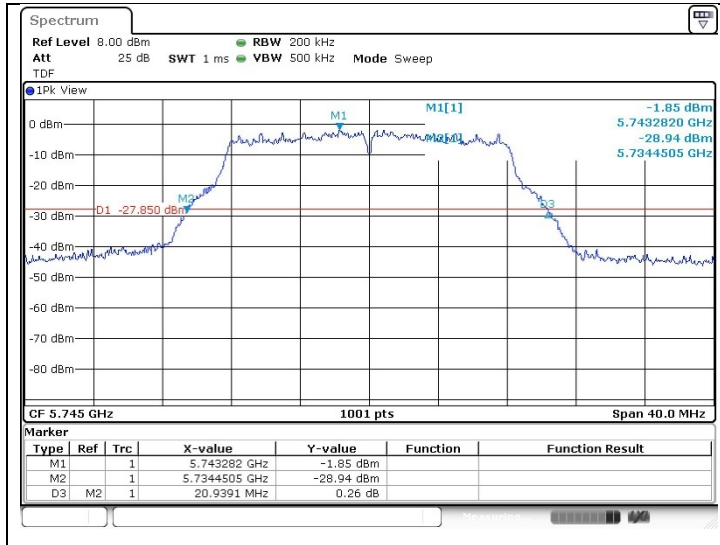


High Channel
(5 240 MHz)

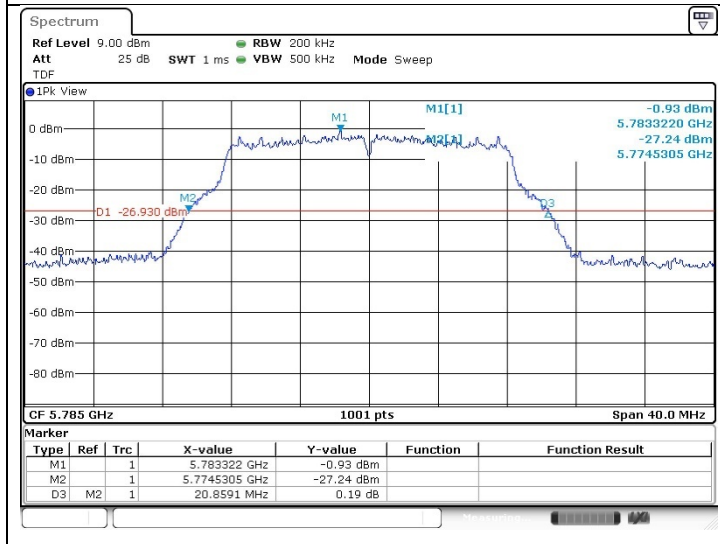


802.11a (Band 3)

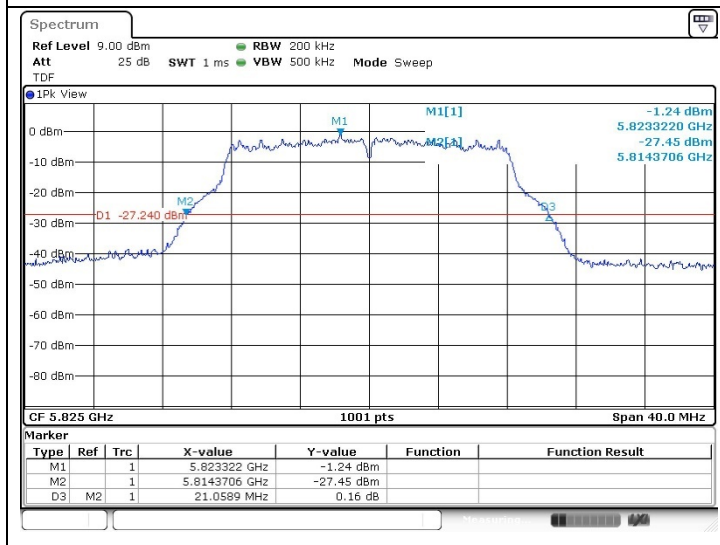
Low Channel
(5 745 MHz)



Middle Channel
(5 785 MHz)



High Channel
(5 825 MHz)

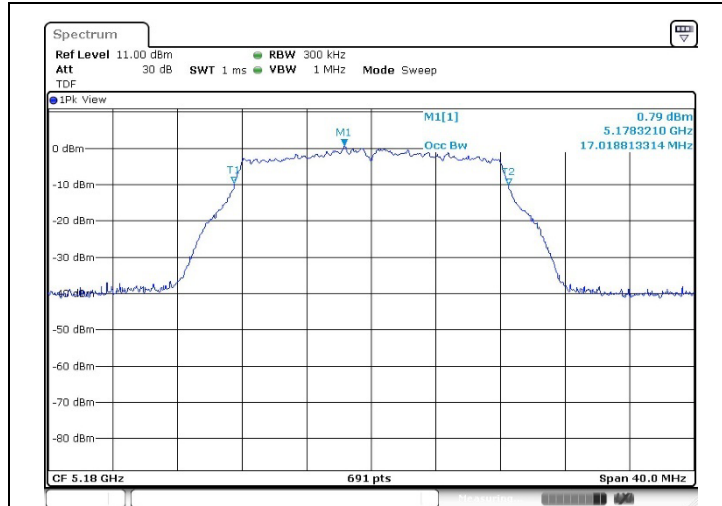


- SISO_Ant.1

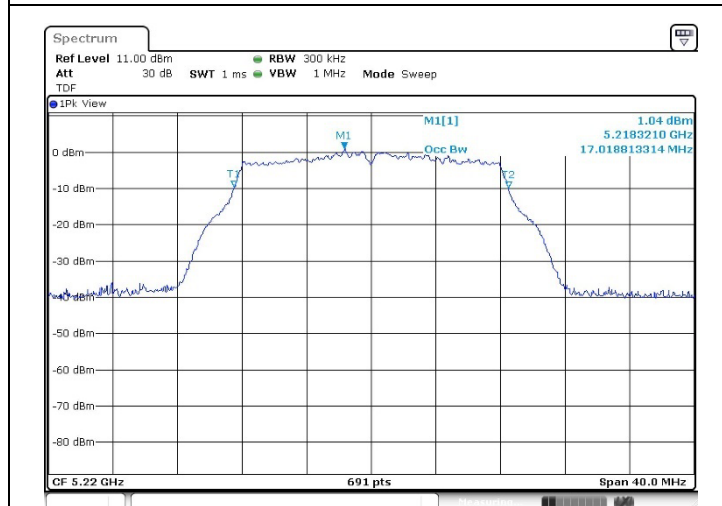
99 % Bandwidth

802.11a (Band 1)

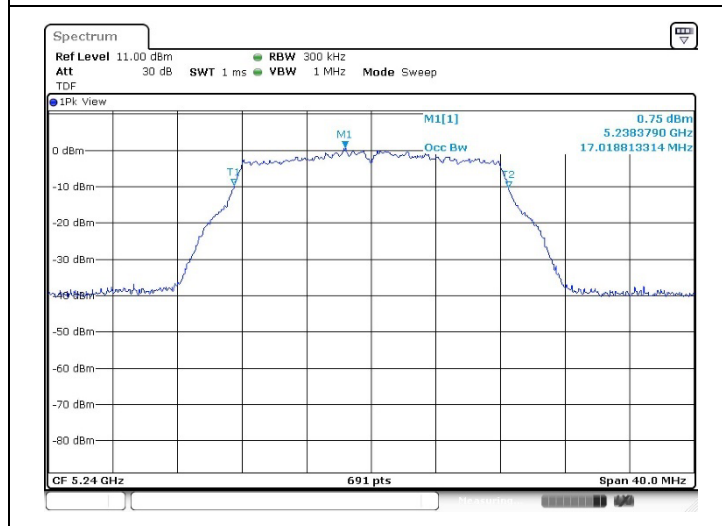
Low Channel
 (5 180 MHz)



Middle Channel
 (5 220 MHz)

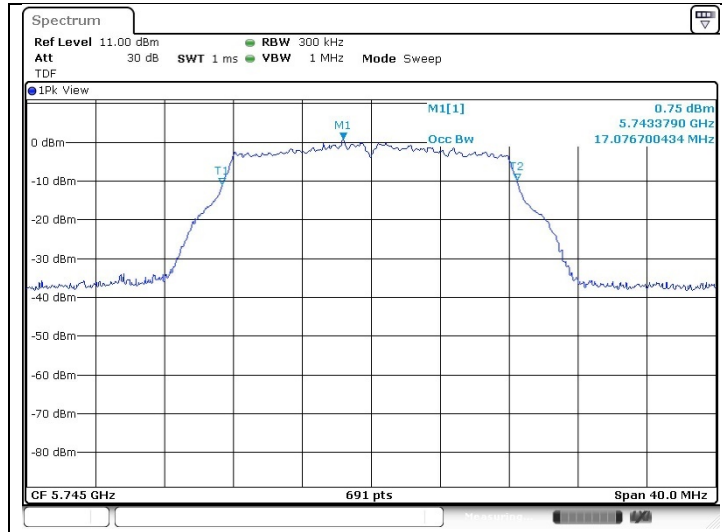


High Channel
 (5 240 MHz)

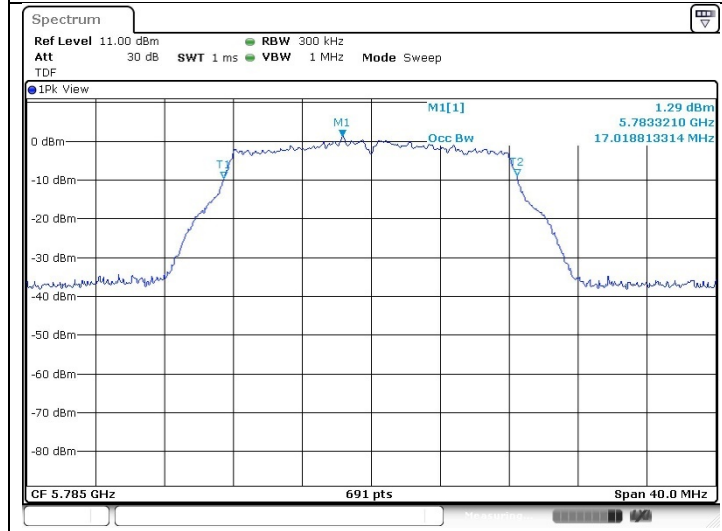


802.11a (Band 3)

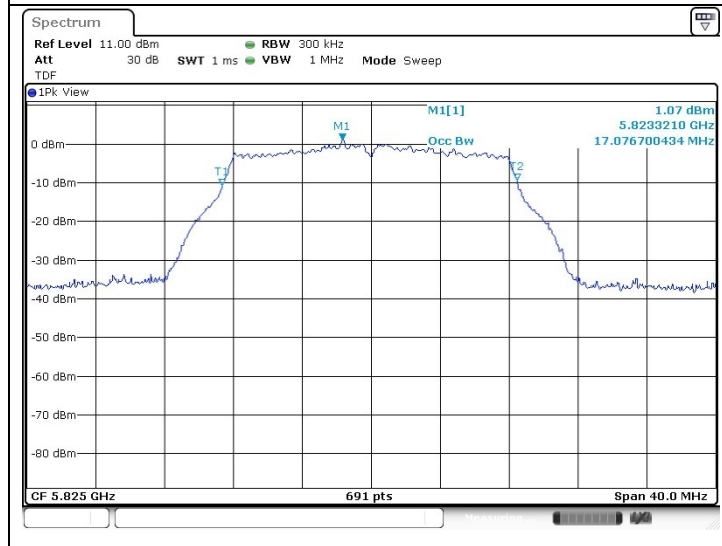
Low Channel
(5 745 MHz)



Middle Channel
(5 785 MHz)



High Channel
(5 825 MHz)

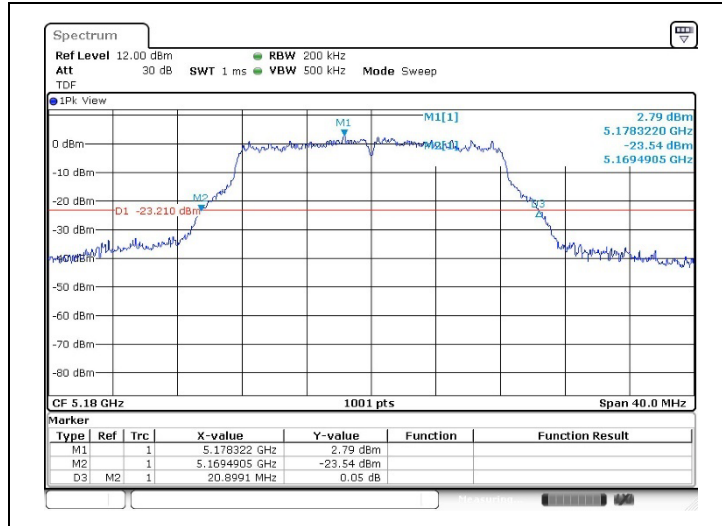


- SISO_Ant.2

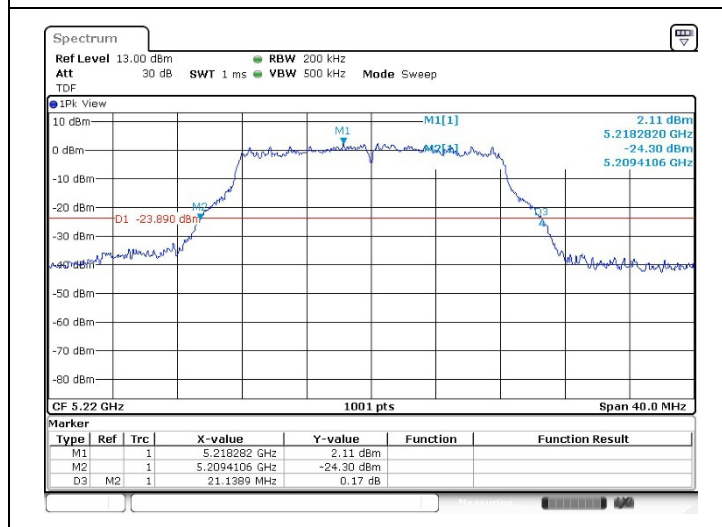
26 dB Bandwidth

802.11a (Band 1)

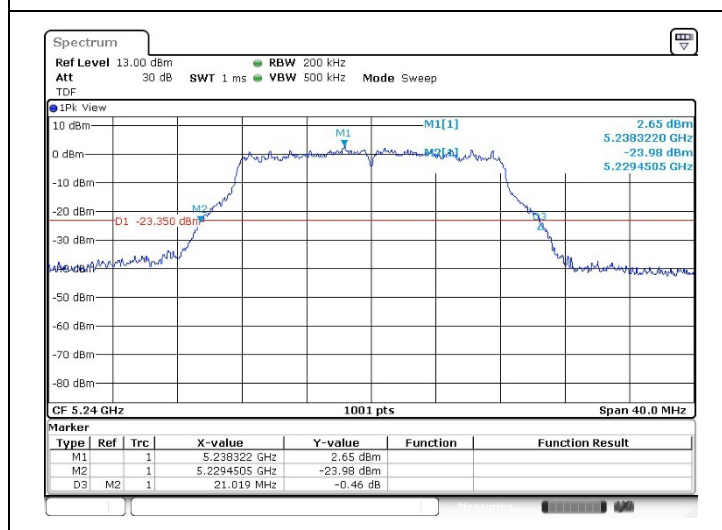
Low Channel
(5 180 MHz)



Middle Channel
(5 220 MHz)

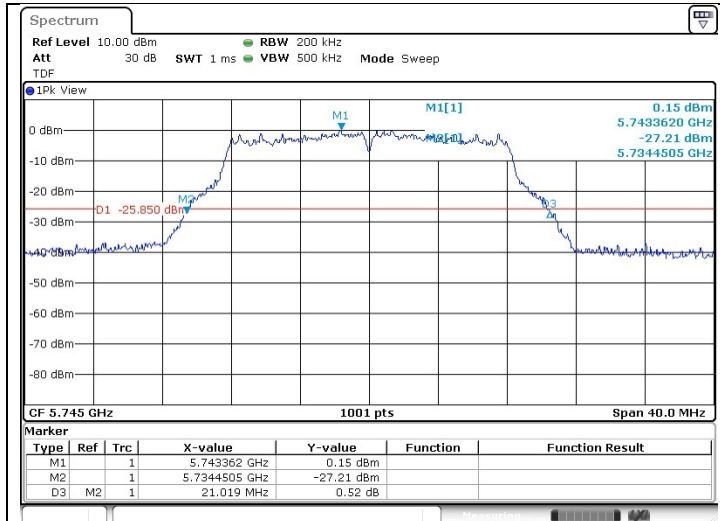


High Channel
(5 240 MHz)

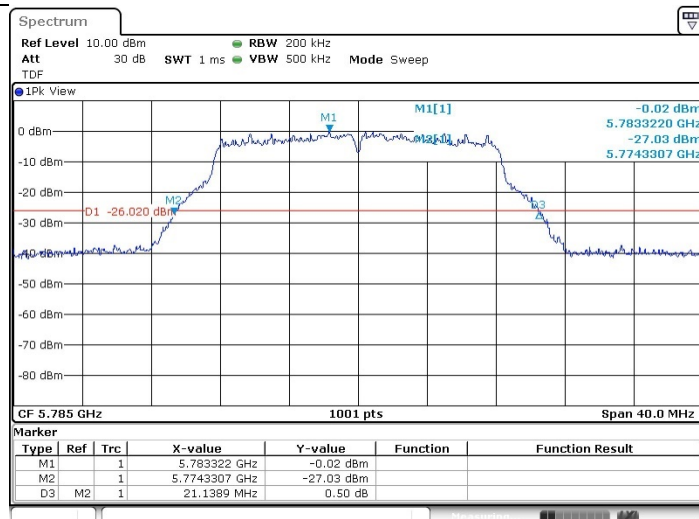


802.11a (Band 3)

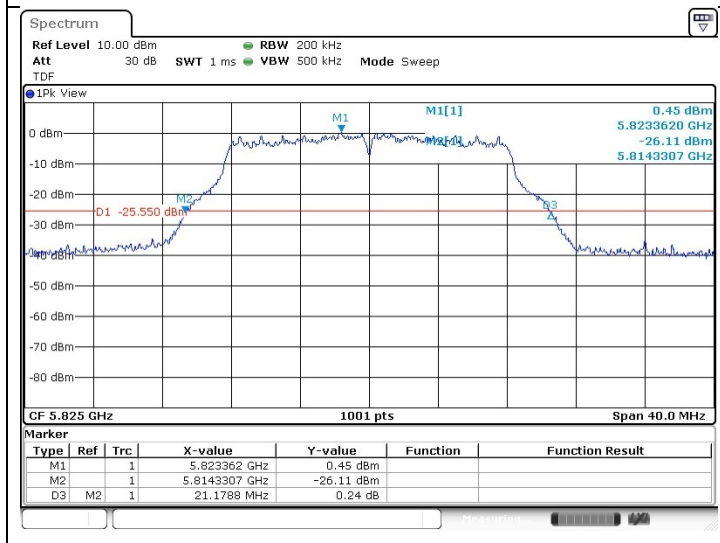
Low Channel
(5 745 MHz)



Middle Channel
(5 785 MHz)



High Channel
(5 825 MHz)

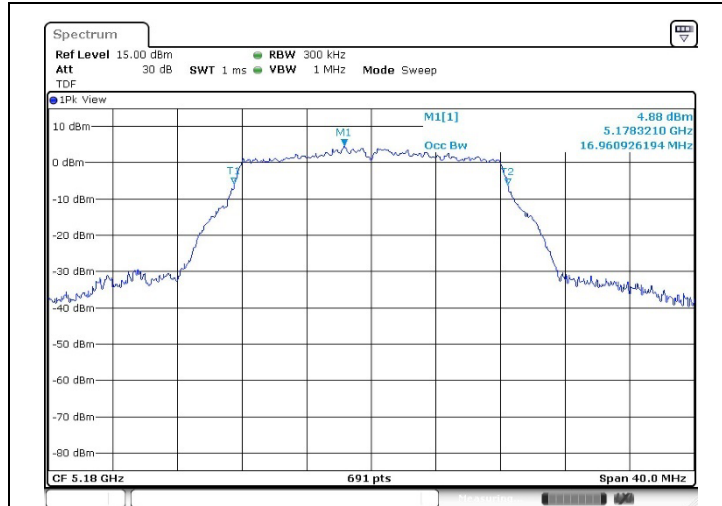


- SISO_Ant.2

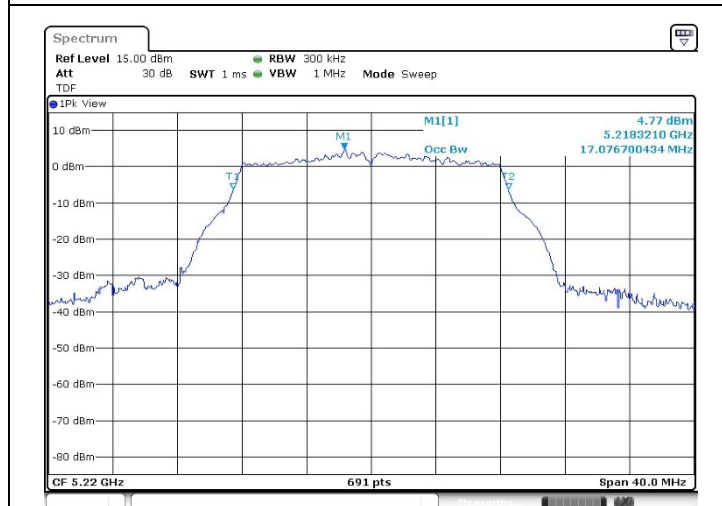
99 % Bandwidth

802.11a (Band 1)

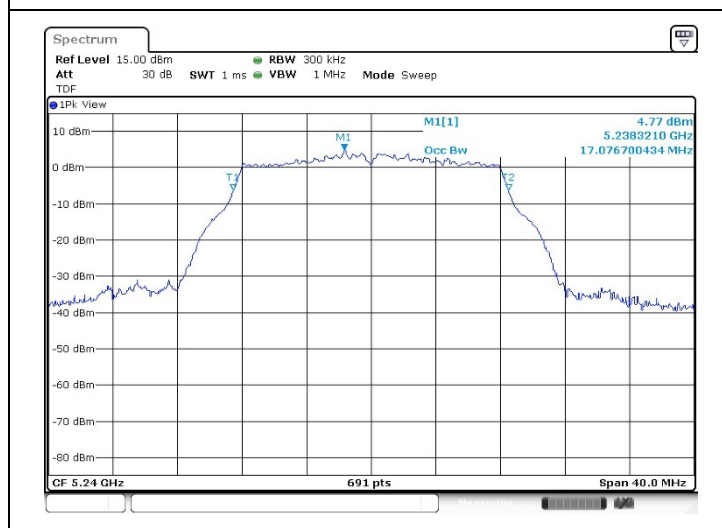
Low Channel
(5 180 MHz)



Middle Channel
(5 220 MHz)

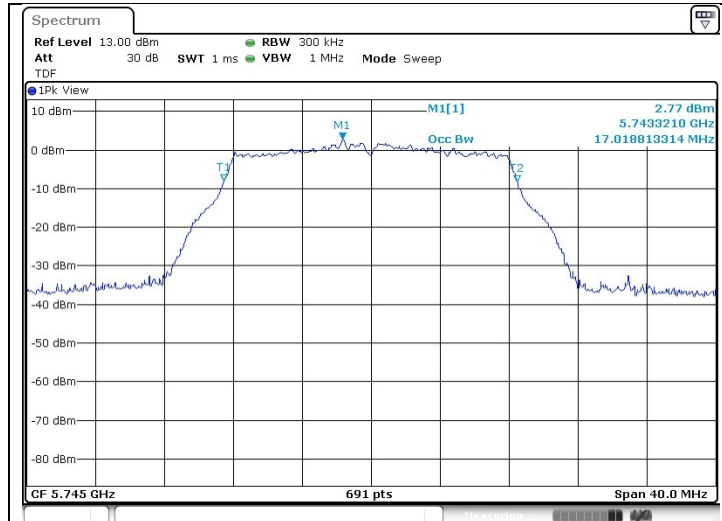


High Channel
(5 240 MHz)

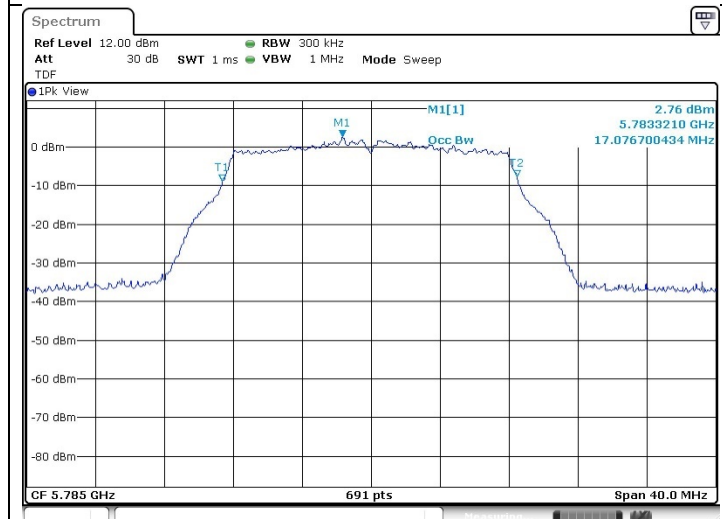


802.11a (Band 3)

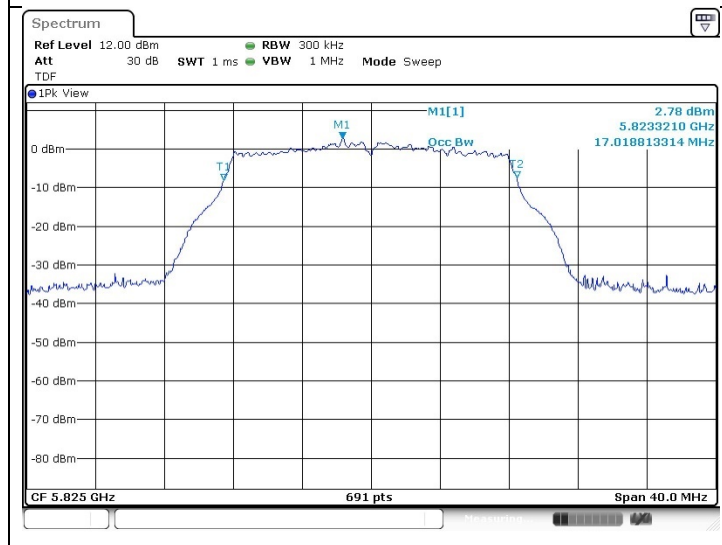
Low Channel
(5 745 MHz)



Middle Channel
(5 785 MHz)



High Channel
(5 825 MHz)

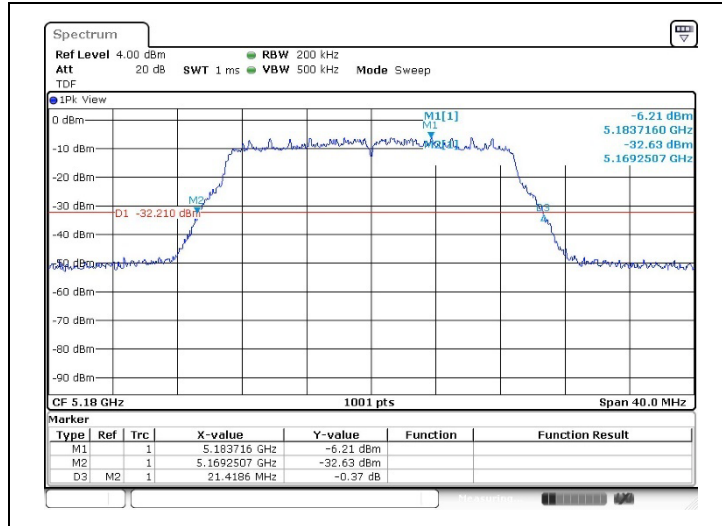


- MIMO_Ant.1

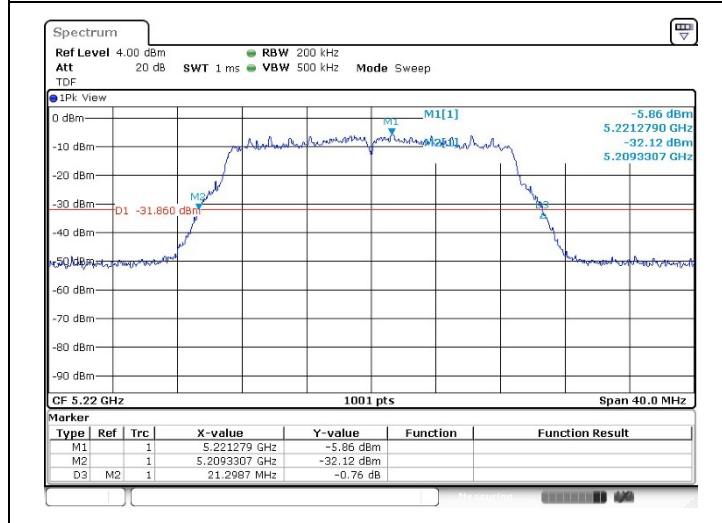
26 dB Bandwidth

802.11ac_VHT20 (Band 1)

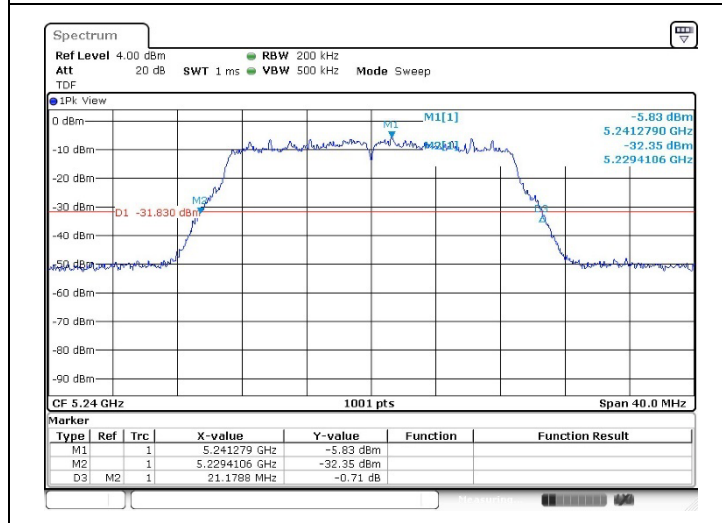
Low Channel
(5 180 MHz)



Middle Channel
(5 220 MHz)

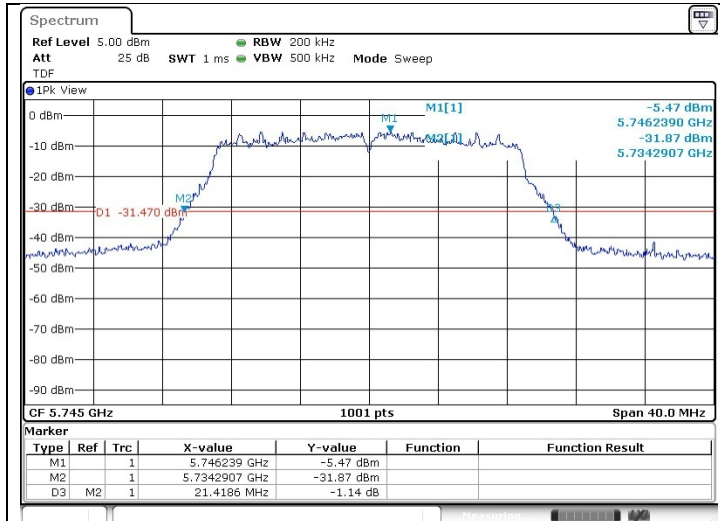


High Channel
(5 240 MHz)

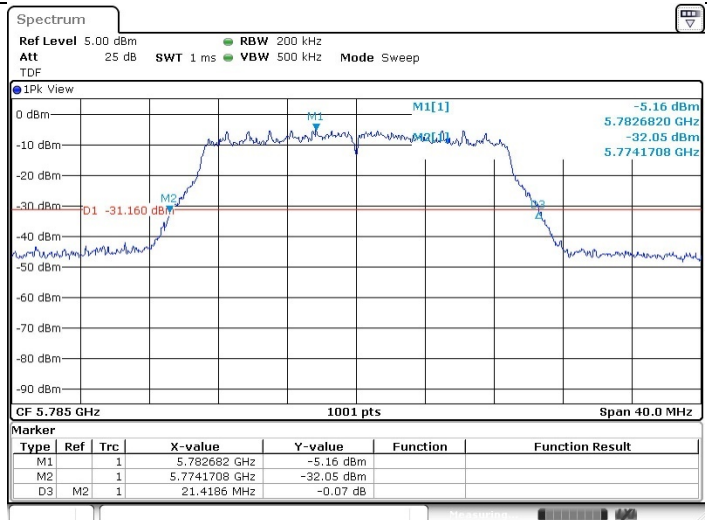


802.11ac_VHT20 (Band 3)

Low Channel
(5 745 MHz)



Middle Channel
(5 785 MHz)



High Channel
(5 825 MHz)

