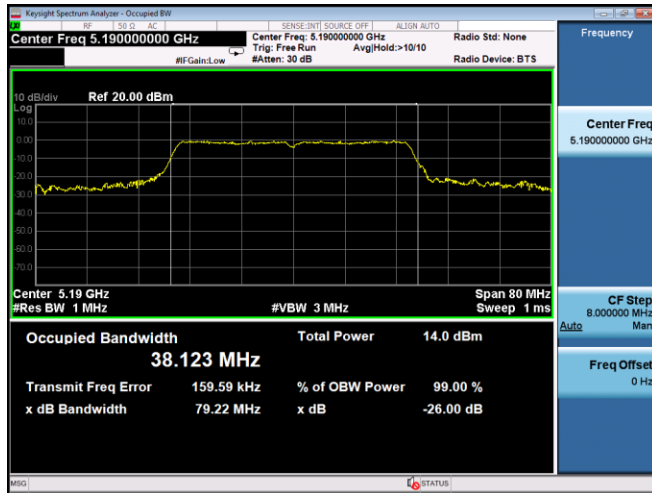
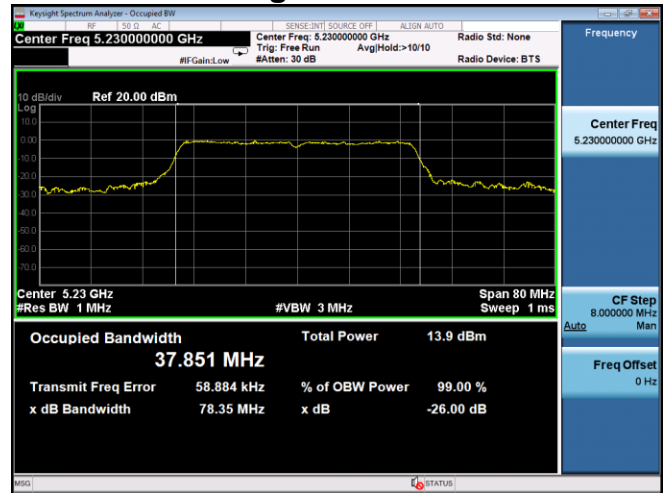


802.11n(HT40)

Low Channel

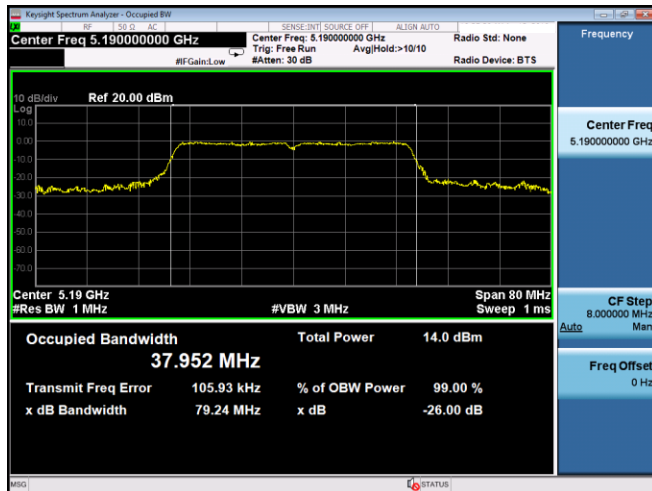


High Channel

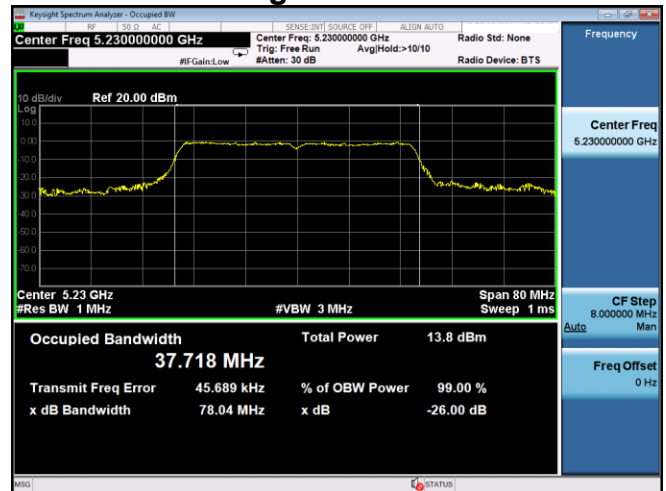


802.11ac(VHT40)

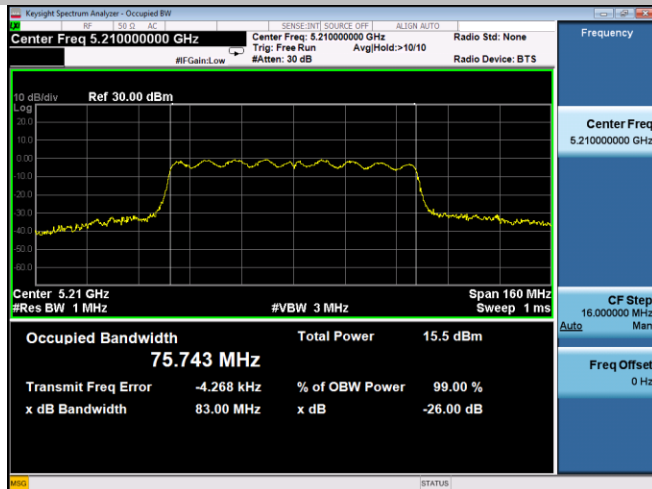
Low Channel



High Channel

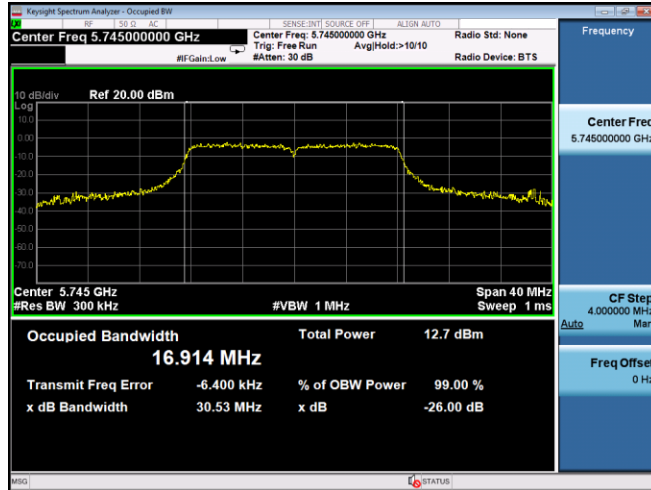


802.11ac(VHT80)

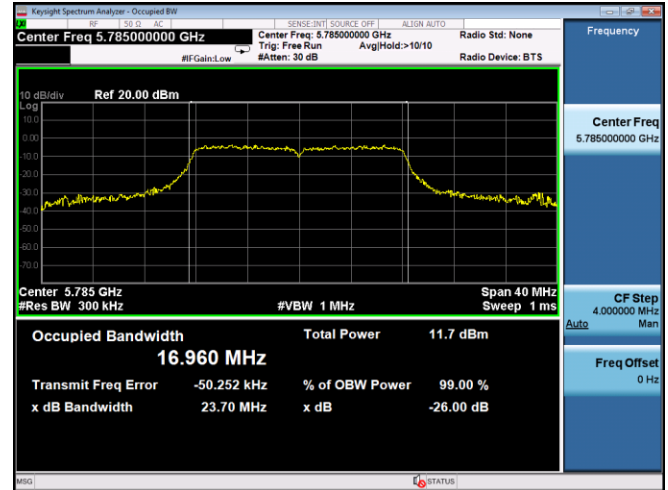


Band 5725-5850MHz IEEE 802.11a

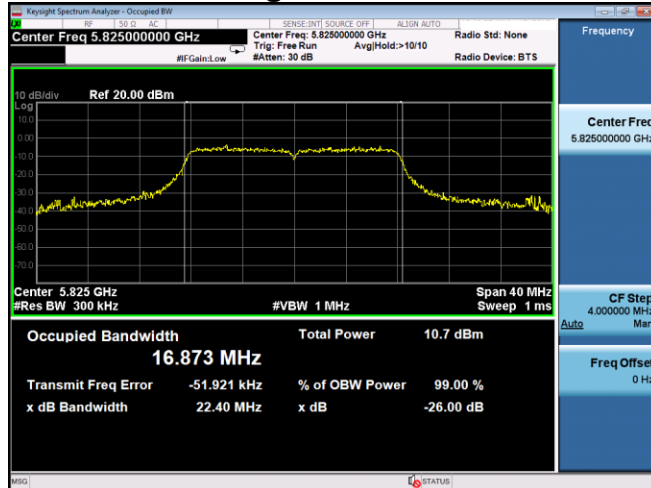
Low Channel



Middle Channel

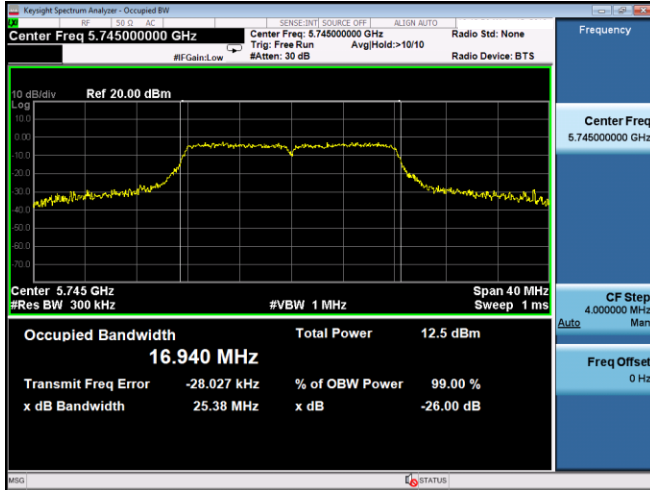


High Channel

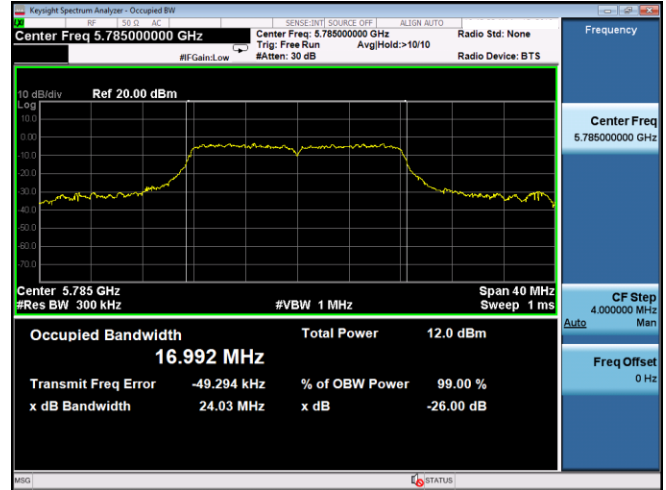


802.11n(HT20)

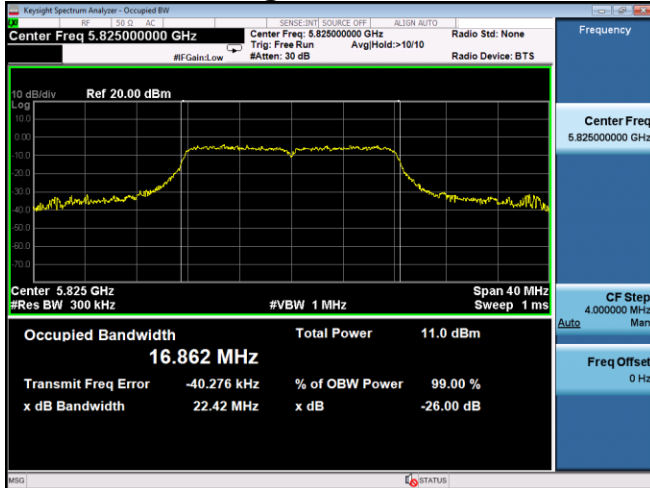
Low Channel



Middle Channel

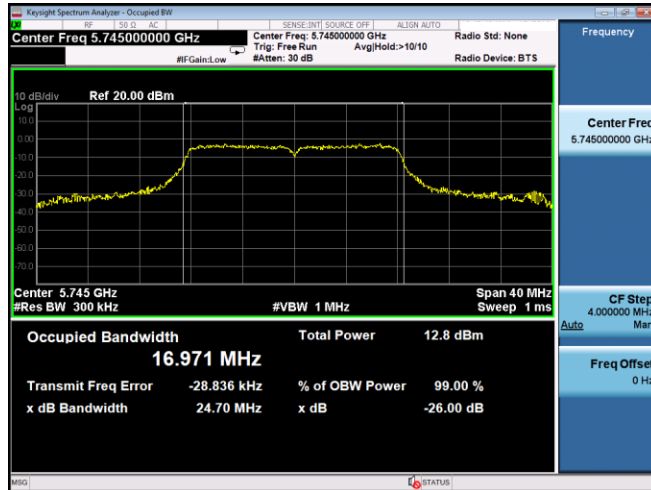


High Channel

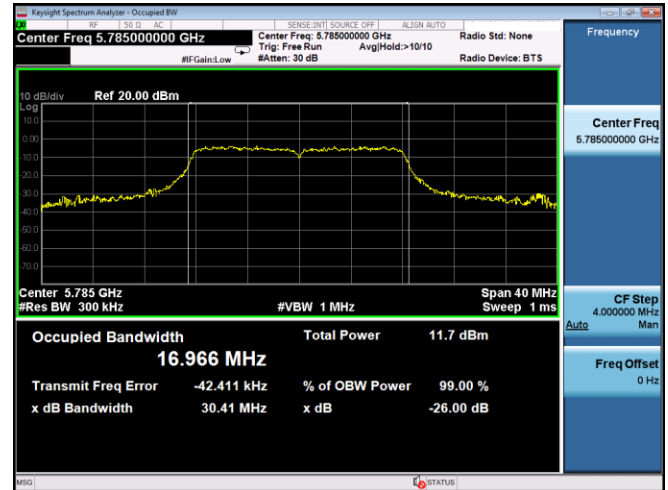


802.11ac(VHT20)

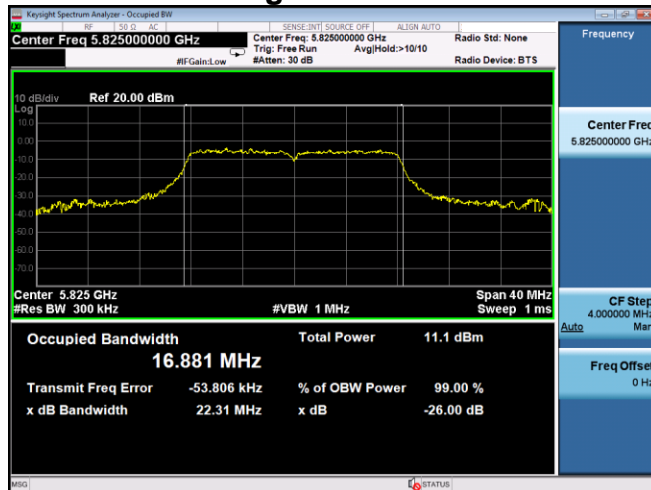
Low Channel



Middle Channel

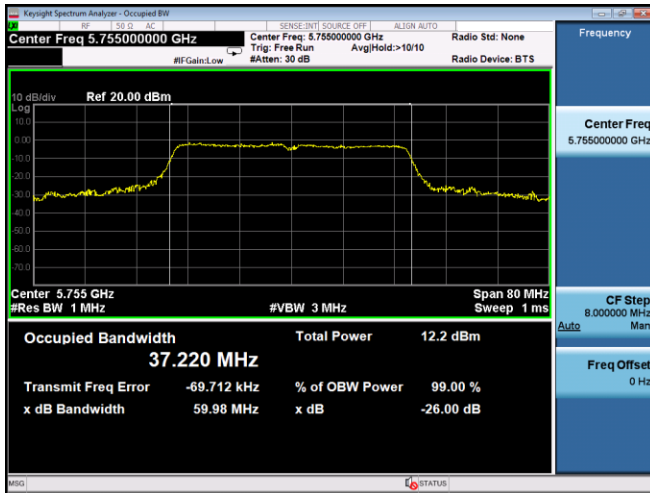


High Channel

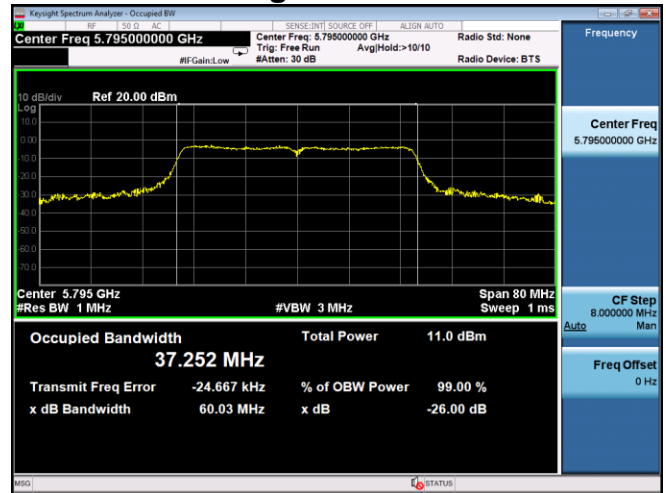


802.11n(HT40)

Low Channel

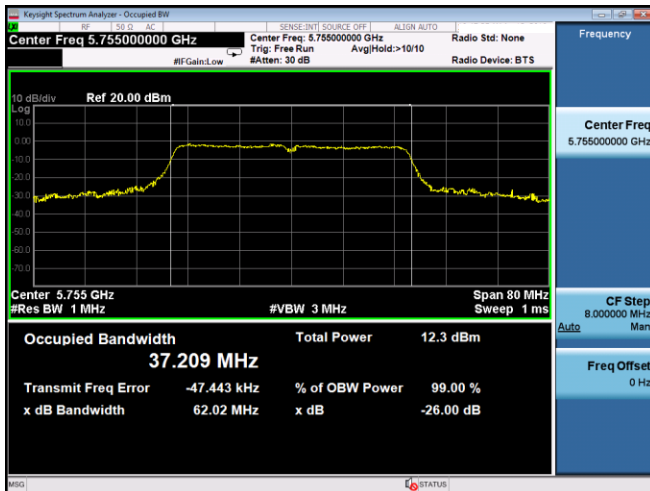


High Channel

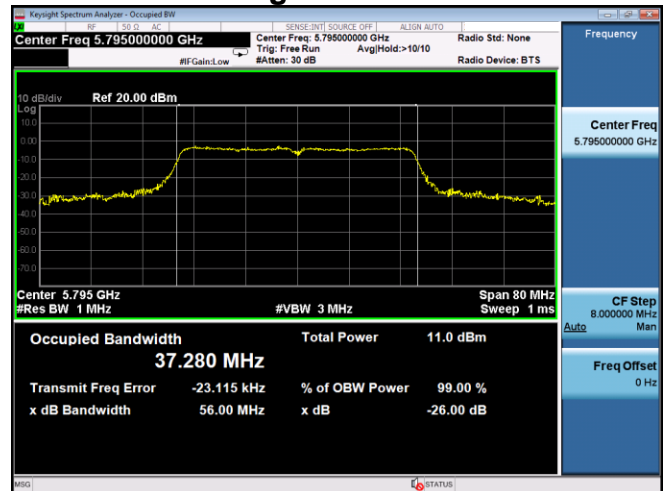


802.11ac(VHT40)

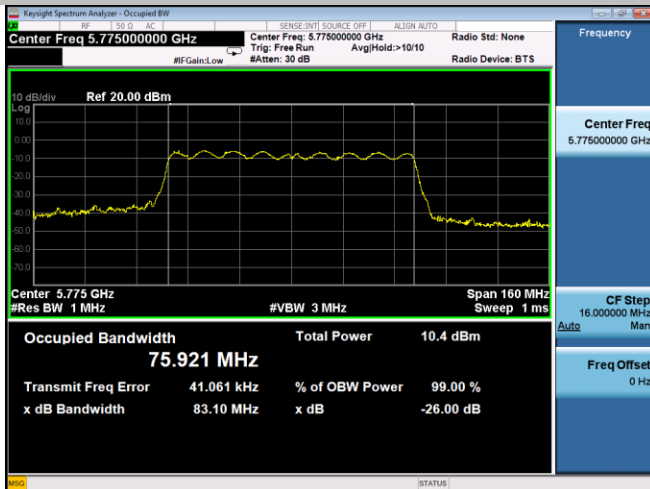
Low Channel



High Channel



802.11ac(VHT80)

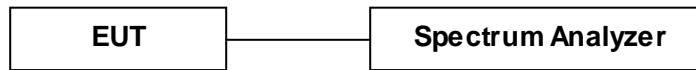


7. Power Spectral Density

7.1 Limits

Operation Band		Limit
■5180~5240MHz	<input type="checkbox"/> Outdoor access point	17 dBm/MHz
	<input type="checkbox"/> Indoor access point	17 dBm/MHz
	<input type="checkbox"/> Fixed point-to-point access points	17 dBm/MHz
	■Client devices	11 dBm/MHz
■5745~5825MHz		30 dBm/500kHz

7.2 Test SET-UP (Block Diagram of Configuration)



7.3 Test Procedure

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer was set as below according to FCC KDB789033 (v02r01):

1. Set analyzer center frequency to center frequency
2. Set the RBW to: 1MHz
3. Set the VBW to: 3MHz
4. Detector = RMS
5. Sweep time = auto couple
6. Trace Average = 100 times
7. If measured bandwidth of Maximum PSD is specified in 500kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas RBW (<500kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

7.4 Test SET-UP (Block Diagram of Configuration)



7.5 Measurement Results

Pass

Please refer to following table and plots.

Band 1: 5180~5240MHz

Temperature :	21 °C	Humidity :	51 %
Test By:	Lee	Test Date :	June 28, 2019
Test Result:	PASS		
Frequency MHz	Data Rate Mbps	PSD dBm/MHz	Limit dBm/ MHz
IEEE 802.11a Mode (OFDM)			
Low Channel: 5180	6	8.463	11
Middle Channel: 5200	6	8.220	11
High Channel: 5240	6	7.467	11

Note: Both of antennas have been tested, but only the worst case (ANT_0) was recorded.

Frequency MHz	Data Rate Mbps	PSD dBm/MHz			Limit dBm/ MHz
IEEE 802.11n(HT20) Mode (OFDM)					
Low Channel: 5180	MCS0	ANT_0	ANT_1	Total	11
		8.240	6.228	10.361	
Middle Channel: 5200	MCS0	7.809	5.693	9.889	11
High Channel: 5240	MCS0	6.626	3.812	8.453	11
IEEE 802.11n(HT40) Mode (OFDM)					
Low Channel: 5190	MCS0	5.162	2.593	7.076	11
High Channel: 5230	MCS0	4.622	0.957	6.180	11
IEEE 802.11ac (VHT20) Mode (OFDM)					
Low Channel: 5180	MCS0	8.017	6.501	10.335	11
Middle Channel: 5200	MCS0	7.472	5.786	9.702	11
High Channel: 5240	MCS0	6.740	3.918	8.561	11
IEEE 802.11ac (VHT40) (OFDM)					
Low Channel: 5190	MCS0	5.767	2.687	7.505	11
High Channel: 5230	MCS0	3.850	1.217	5.740	11
IEEE 802.11ac (VHT80) Mode (OFDM)					
Channel: 5210	MCS0	-0.102	-0.490	2.718	17

Note: The EUT working on MIMO mode, and only the worst case was recorded.

Band 4: 5745~5825MHz

Temperature :	23 °C	Humidity :	53 %	
Test By:	Lee	Test Date :	June 28, 2019	
Test Result:	PASS			
Frequency MHz	Data Rate Mbps	PSD dBm/MHz	PSD dBm/ 500kHz	Limit dBm/ 500kHz
IEEE 802.11a Mode (OFDM)				
Low Channel: 5745	6	10.486	7.476	30
Middle Channel: 5785	6	10.496	7.486	30
High Channel: 5825	6	9.597	6.587	30

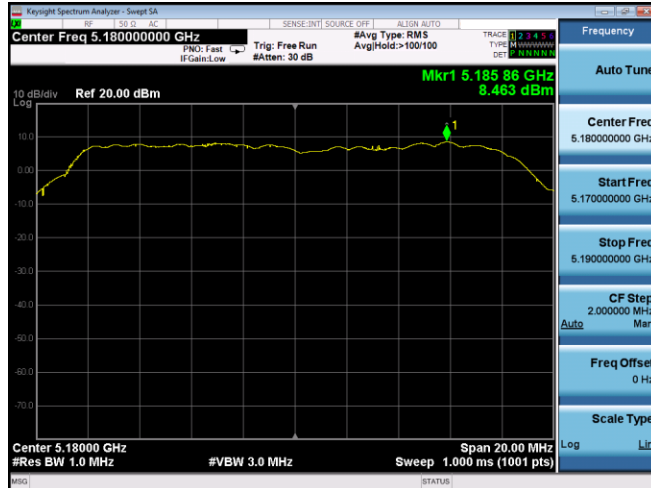
- Note: 1. Both of antennas have considered during pre-test, but only the worst case (ANT_0) was recorded.
 2. $10\log(500\text{kHz}/\text{RBW})$ Factor = -3.01dB

Frequency MHz	Data Rate Mbps	PSD dBm/MHz			PSD dBm/500kHz	Limit dBm/500kHz
IEEE 802.11n(HT20) Mode (OFDM)						
Low Channel: 5745	MCS0	ANT_0	ANT_1	Total	8.468	30
		10.042	5.972	11.478		
Middle Channel: 5785	MCS0	9.556	6.742	11.383	8.373	30
High Channel: 5825	MCS0	10.341	7.286	12.087	9.077	30
IEEE 802.11n(HT40) Mode (OFDM)						
Low Channel: 5755	MCS0	6.462	3.103	8.109	5.099	30
High Channel: 5795	MCS0	6.749	3.393	8.395	5.385	30
IEEE 802.11ac (VHT20) Mode (OFDM)						
Low Channel: 5745	MCS0	10.019	6.033	11.477	8.467	30
Middle Channel: 5785	MCS0	9.882	6.742	11.600	8.590	30
High Channel: 5825	MCS0	10.091	6.679	11.720	8.710	30
IEEE 802.11ac (VHT40) (OFDM)						
Low Channel: 5755	MCS0	6.777	3.114	8.331	5.321	30
High Channel: 5795	MCS0	6.682	3.314	8.325	5.315	30
IEEE 802.11ac (VHT80) Mode (OFDM)						
Channel: 5775	MCS0	2.380	2.355	5.378	2.728	30

Note: 1. The EUT working on MIMO mode, and only the worst case was recorded.
 2. $10\log(500\text{kHz}/\text{RBW})$ Factor = -3.01dB

Band 5180-5240MHz IEEE 802.11a

Low Channel



Middle Channel

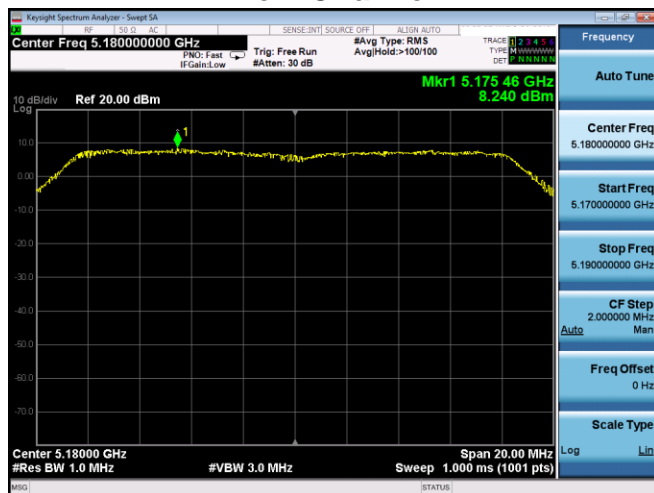


High Channel

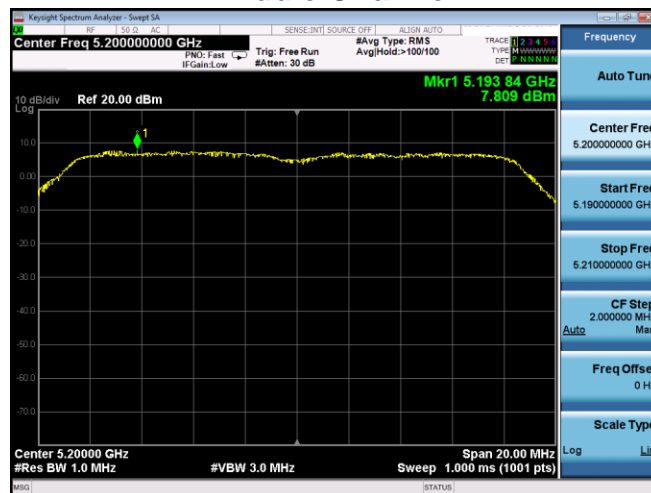


802.11n(HT20)

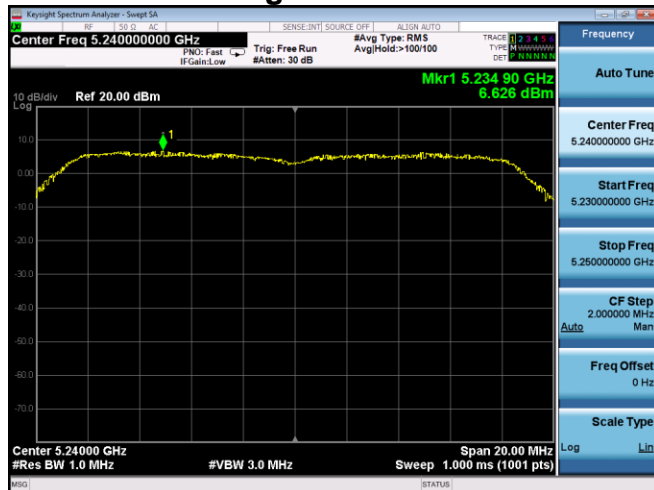
Low Channel



Middle Channel

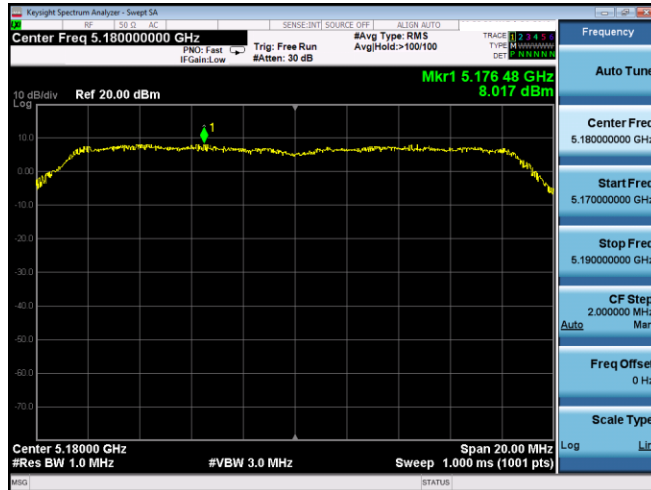


High Channel

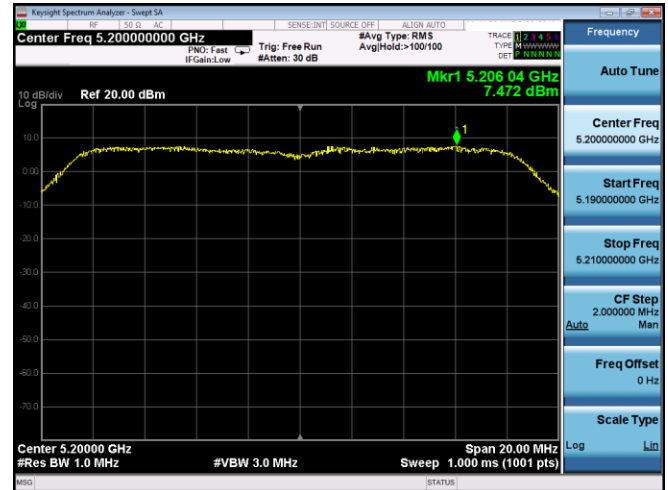


802.11ac(VHT20)

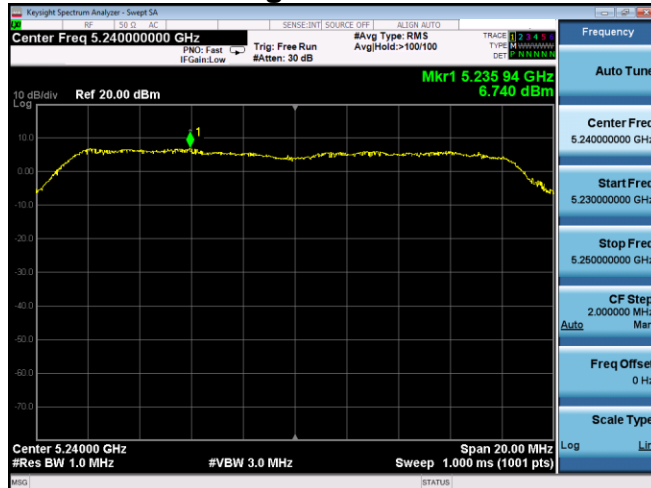
Low Channel



Middle Channel

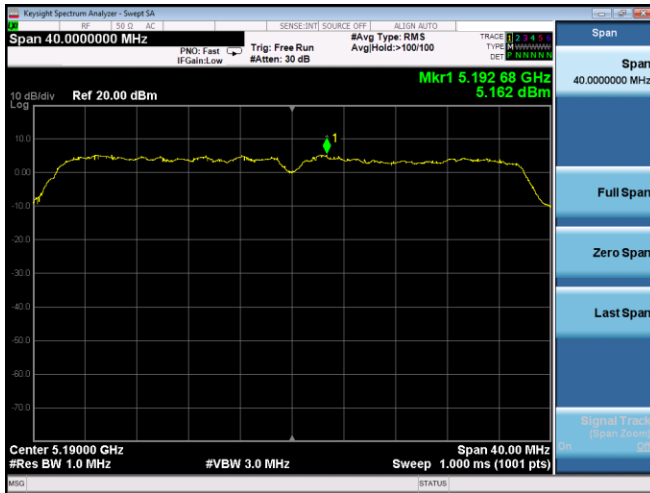


High Channel

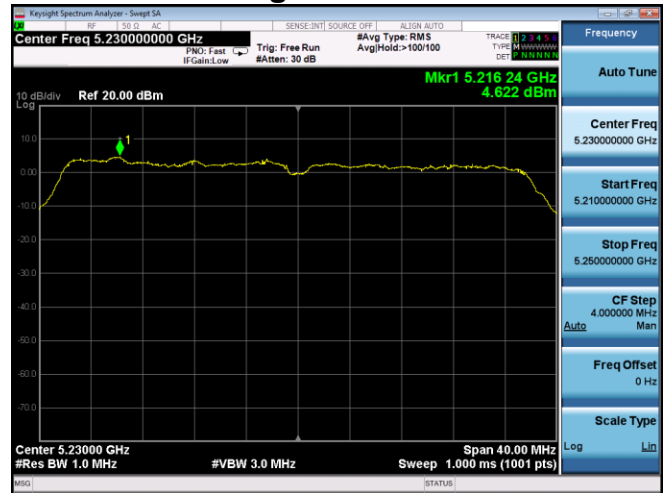


802.11n(HT40)

Low Channel

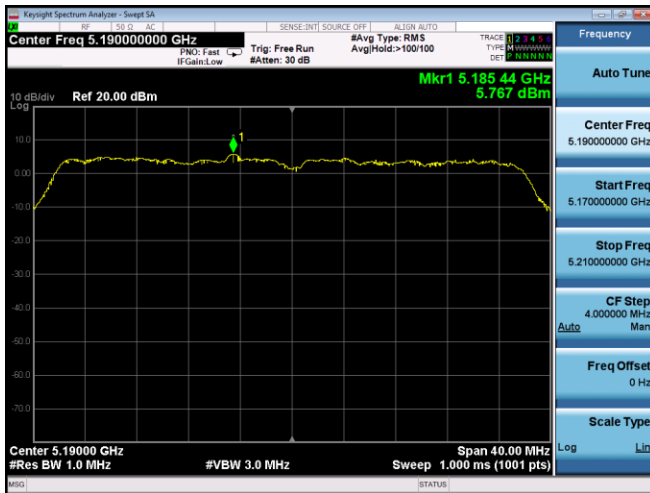


High Channel

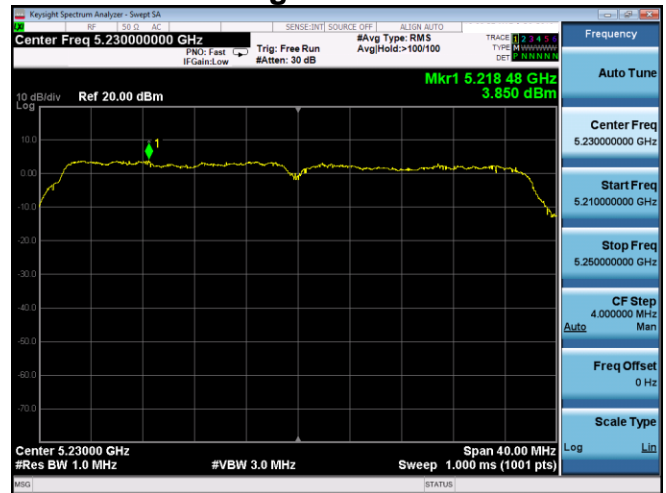


802.11ac(VHT40)

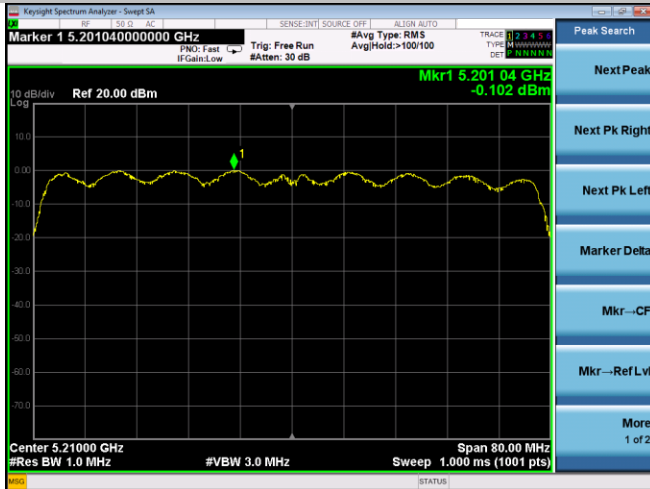
Low Channel



High Channel



802.11ac(VHT80)



Band 5745-5825MHz IEEE 802.11a

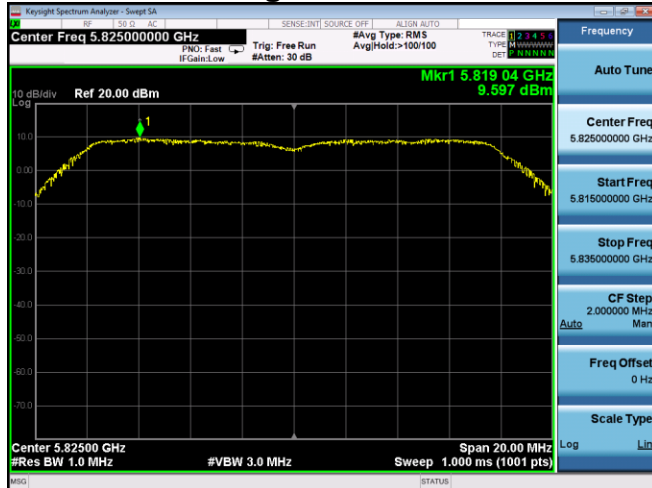
Low Channel



Middle Channel



High Channel



802.11n(HT20)

Low Channel



Middle Channel



High Channel

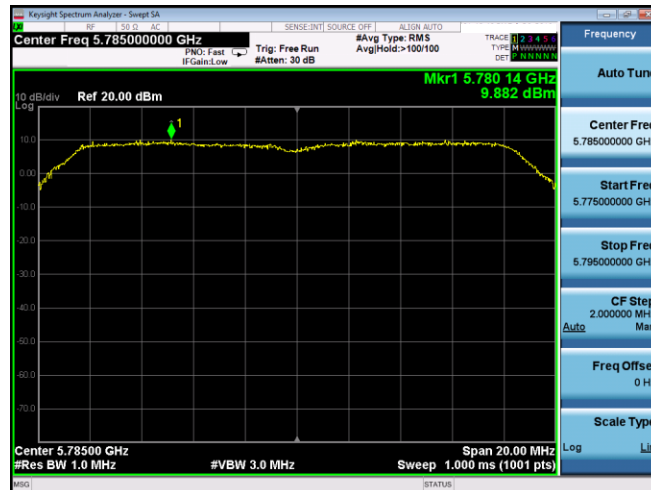


802.11ac(VHT20)

Low Channel



Middle Channel



High Channel

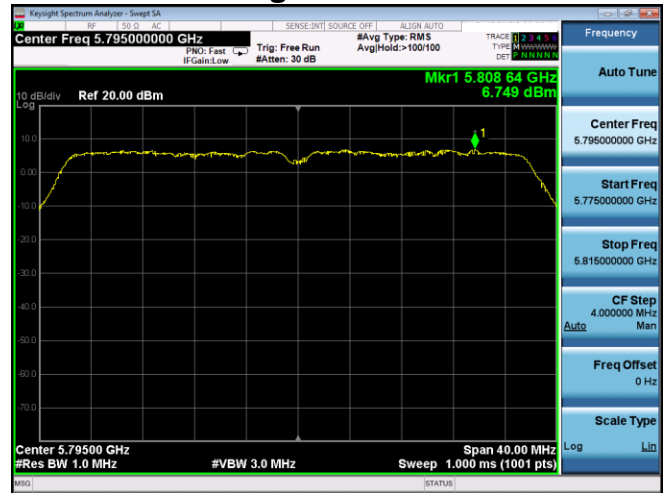


802.11n(HT40)

Low Channel



High Channel



802.11ac(VHT40)

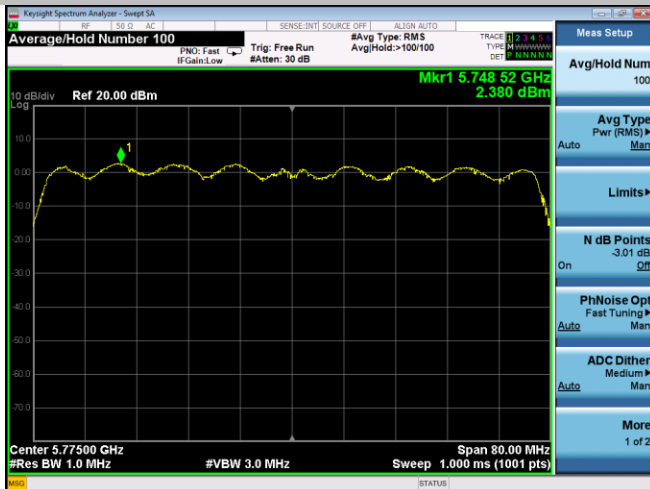
Low Channel



High Channel



802.11ac(VHT80)



8. Band Edge

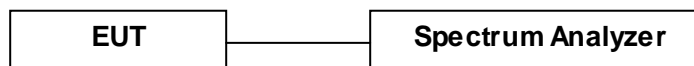
8.1 Limits

For transmitters operating in the 5.15-5.25GHz band: all emissions outside of the 5.15-5.35GHz band shall not exceed an EIRP of -27dBm

For transmitter operating in the 5.25-5.35GHz band: all emissions outside of the 5.15-5.35GHz band shall not exceed an EIRP of -27dBm/MHz. Devices operating in the 5.25-5.35GHz band generate emissions in the 5.15-5.25GHz 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 -27dBm/MHz in the 5.15-5.25GHz band.

For transmitters operating in the 5.725-5.850GHz band: all emissions shall be limited to a level of -27dBm/MHz at 75MHz or more above or below the band edge increasing linearly to 10dBm/MHz at 25MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6dBm/MHz at 5MHz above or below the band edge, and from 5MHz above or below the band increasing linearly to a level of 27dBm/MHz at the band edge.

8.2 Test SET-UP (Block Diagram of Configuration)



8.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibration 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 to 1MHz and VBW to 3MHz of spectrum analyzer.
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.

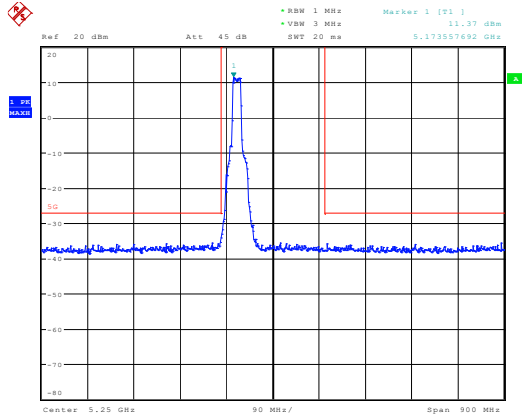
8.4 Measurement Results

Pass

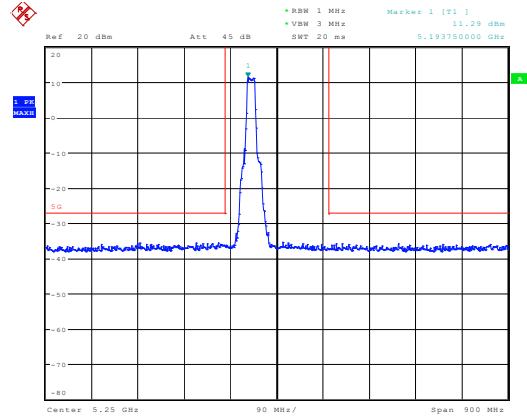
Please refer to following plots.

Band 5180-5240MHz IEEE 802.11a

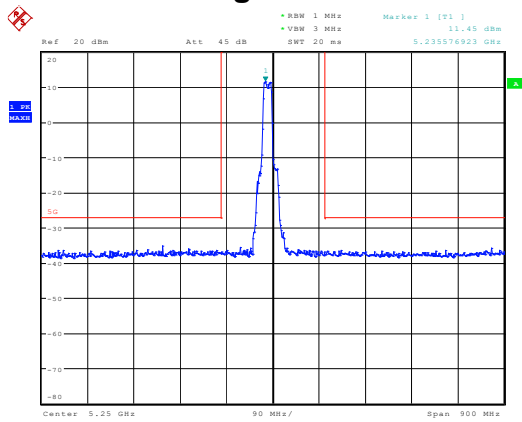
Low Channel



Middle Channel

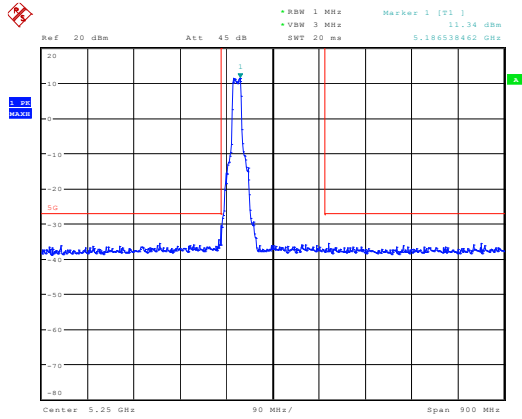


High Channel

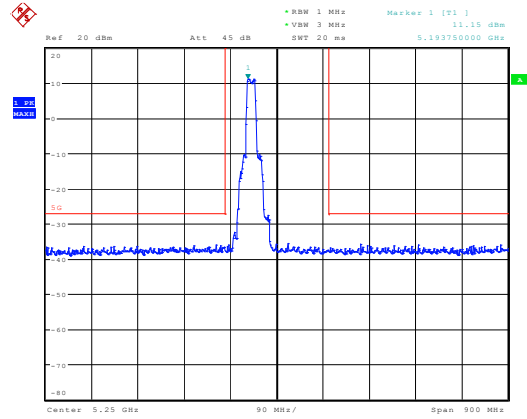


802.11n(HT20)

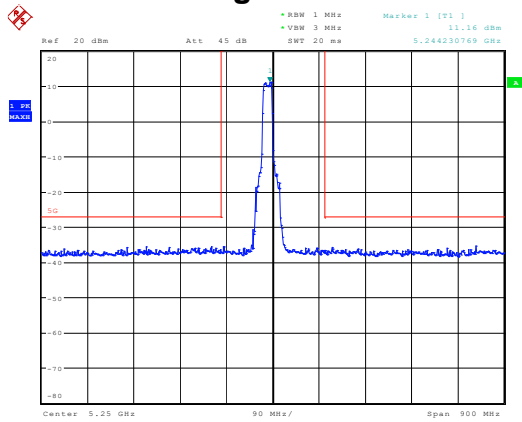
Low Channel



Middle Channel

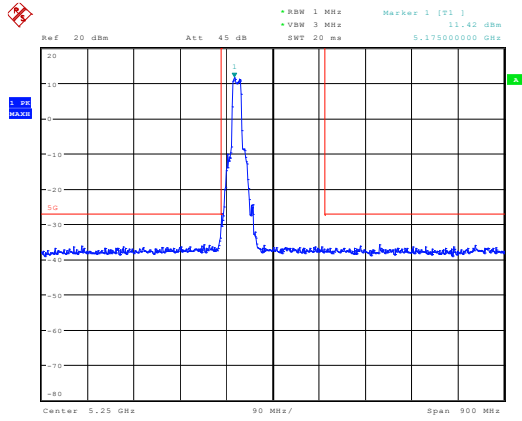


High Channel

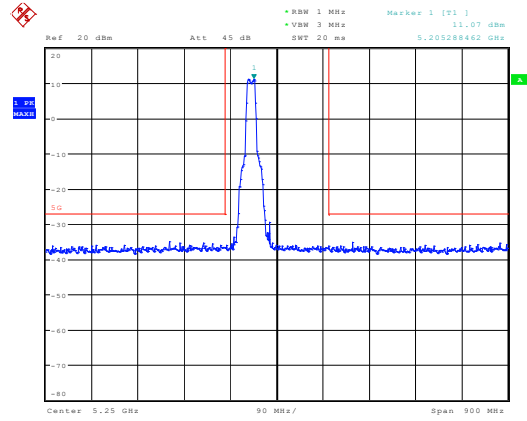


802.11ac(VHT20)

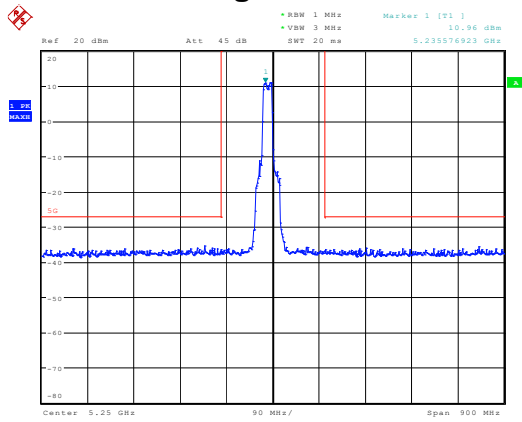
Low Channel



Middle Channel

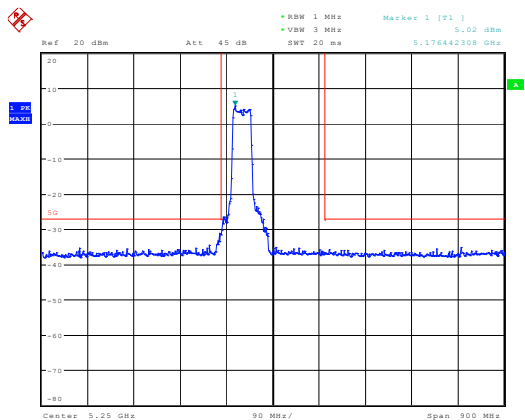


High Channel

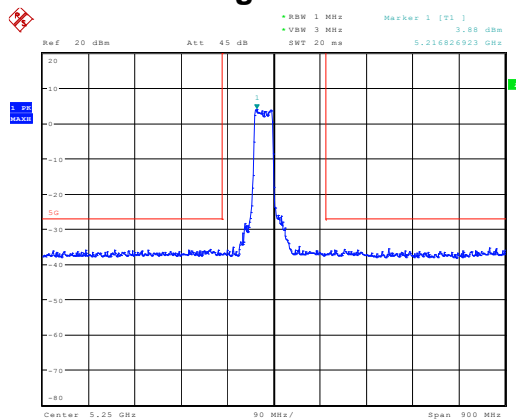


802.11n(HT40)

Low Channel

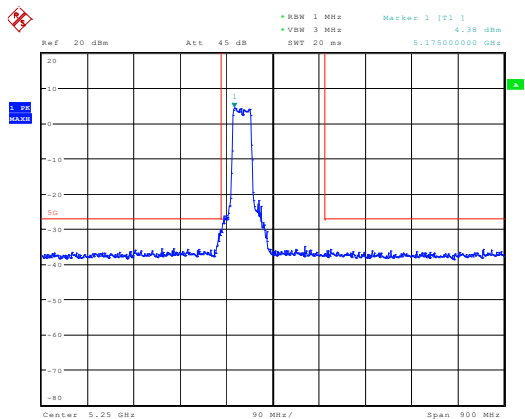


High Channel

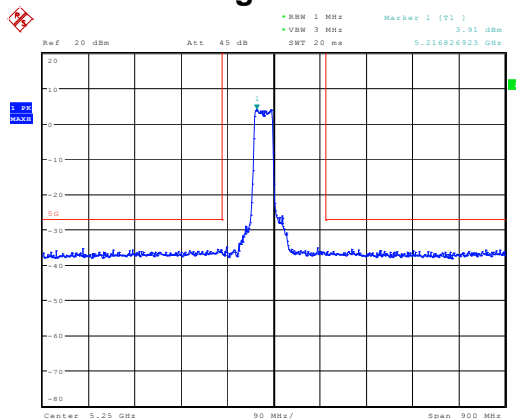


802.11ac(VHT40)

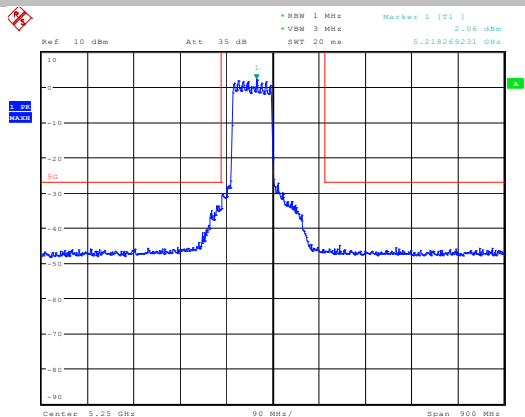
Low Channel



High Channel

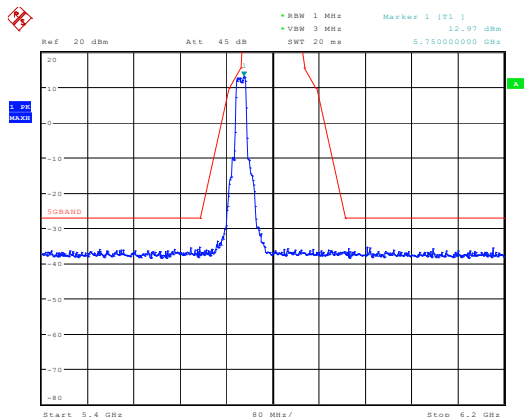


802.11ac(VHT80)

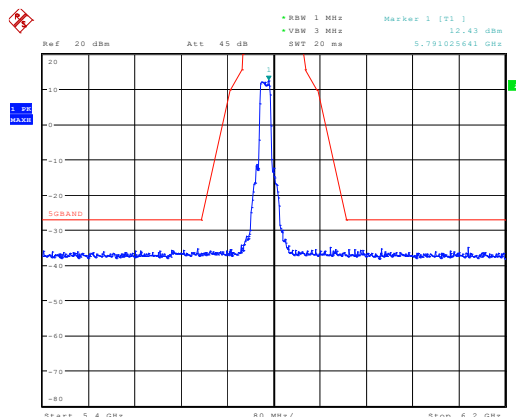


Band 5745-5825MHz IEEE 802.11a

Low Channel



Middle Channel



High Channel

