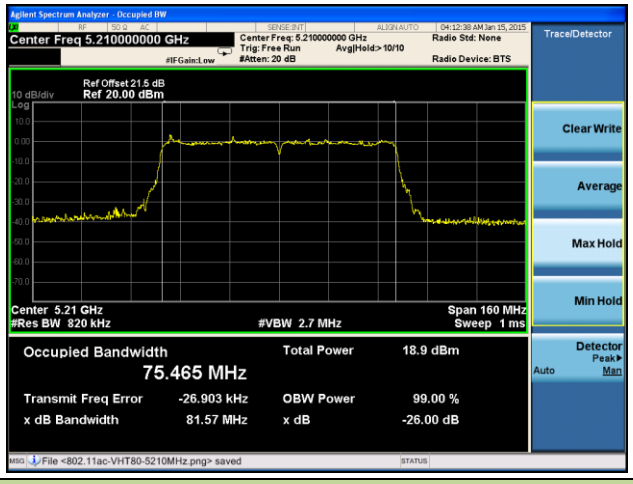
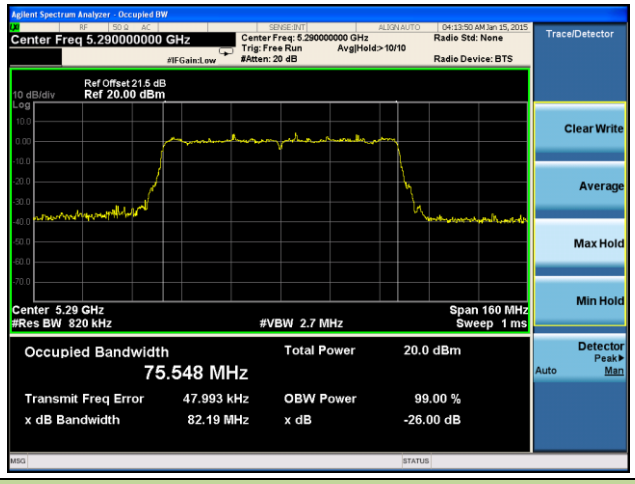
802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

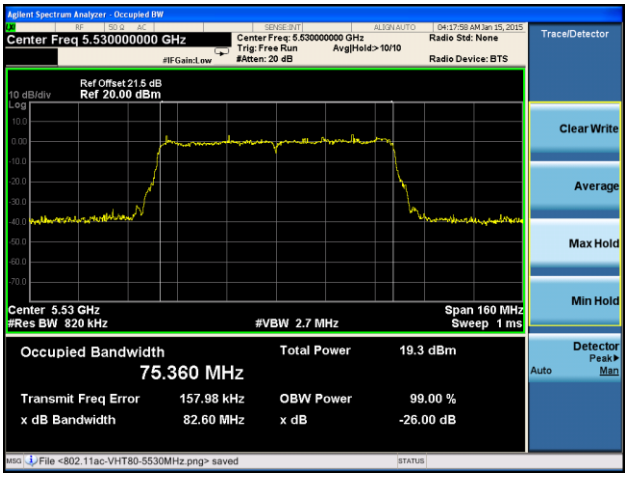
Channel 42 (5210MHz)



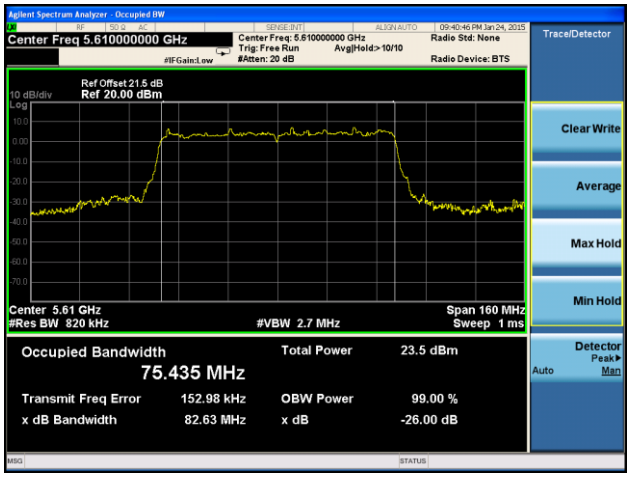
Channel 58 (5290MHz)



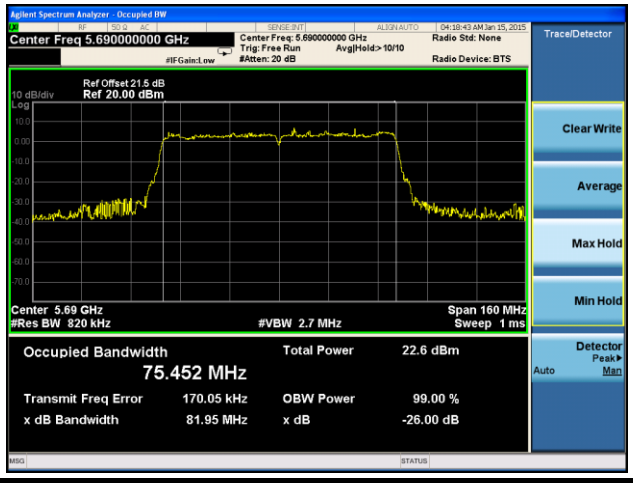
Channel 106 (5530MHz)



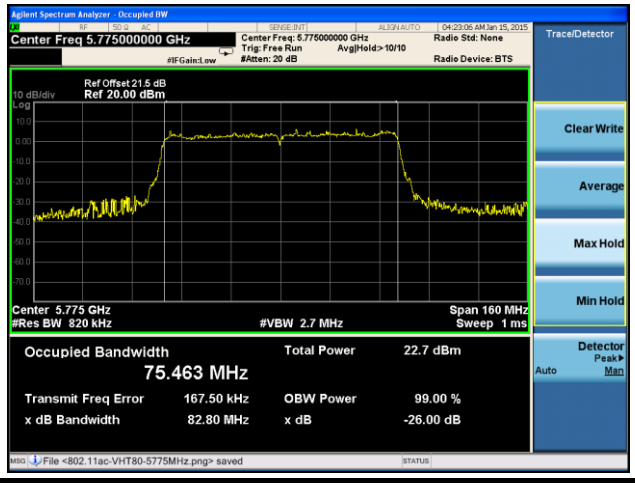
Channel 122 (5610MHz)



Channel 138 (5690MHz)



Channel 155 (5775MHz)



7.3. 6dB Bandwidth Measurement

7.3.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

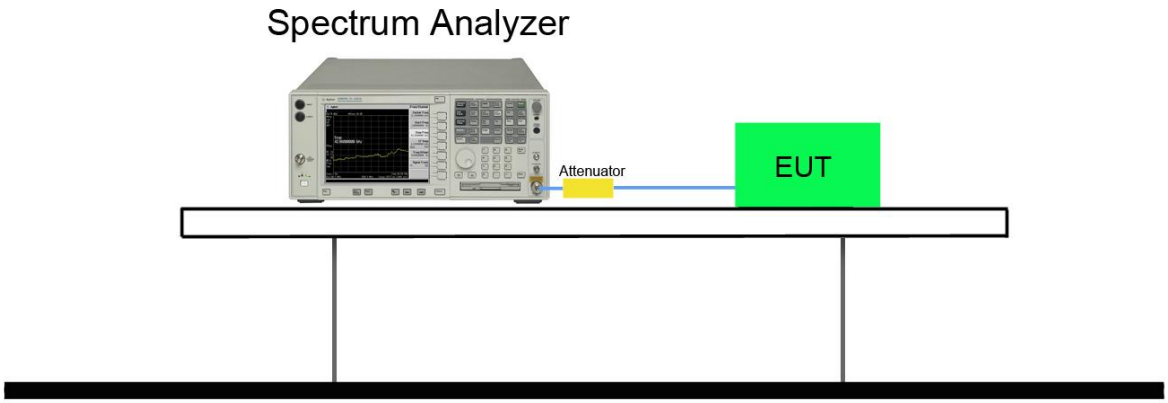
7.3.2. Test Procedure used

KDB 789033 D02v01 - Section C.2

7.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW ≧ 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

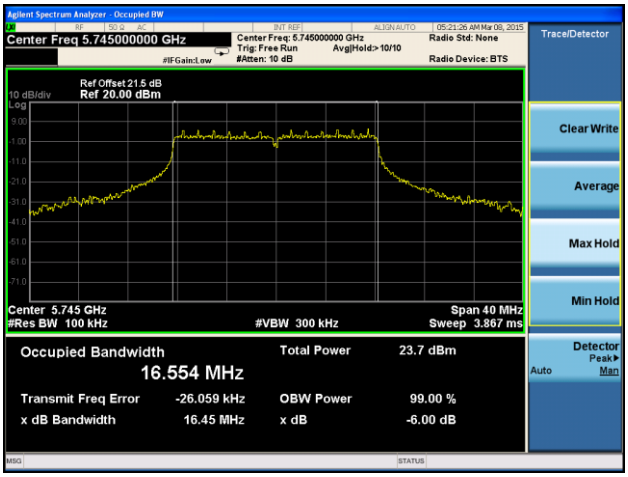
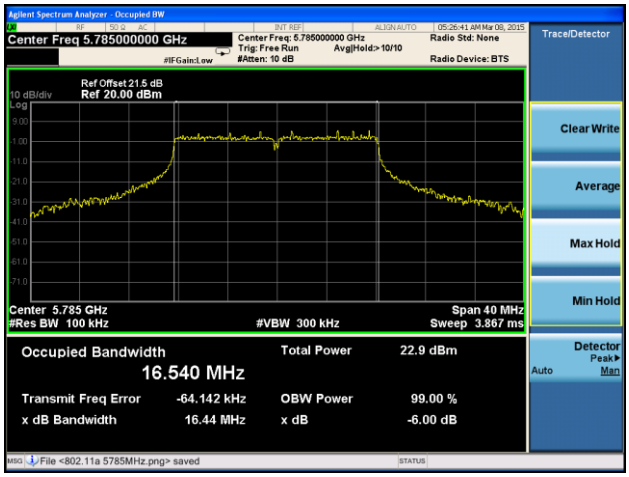
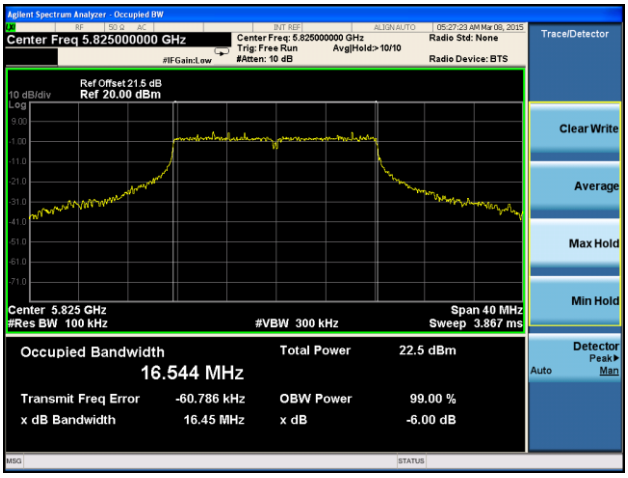
7.3.4. Test Setup

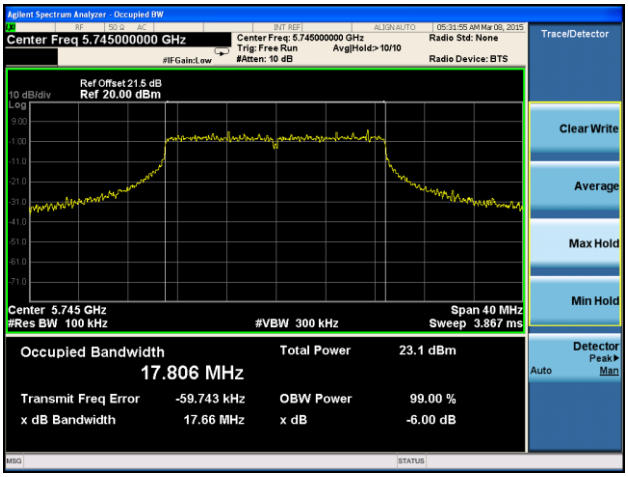
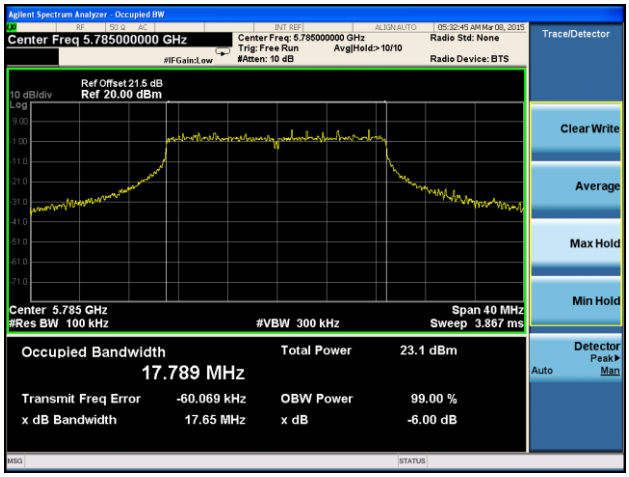
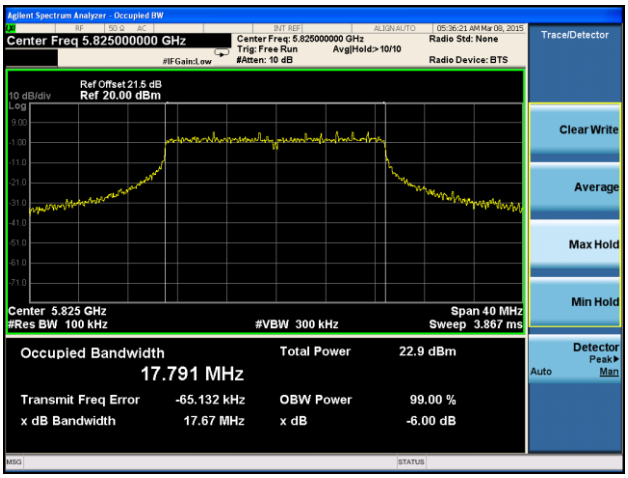


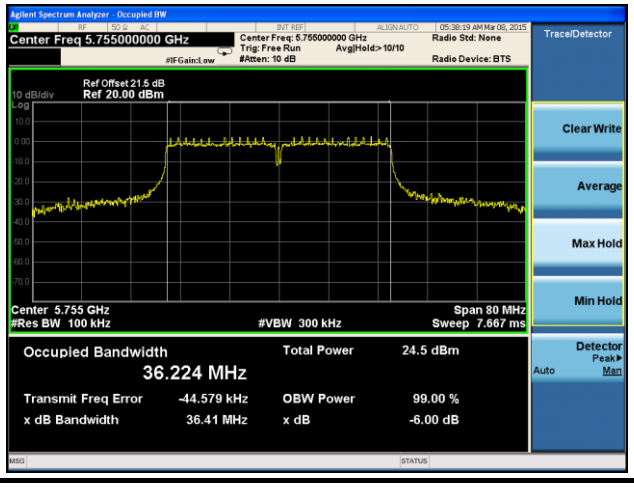
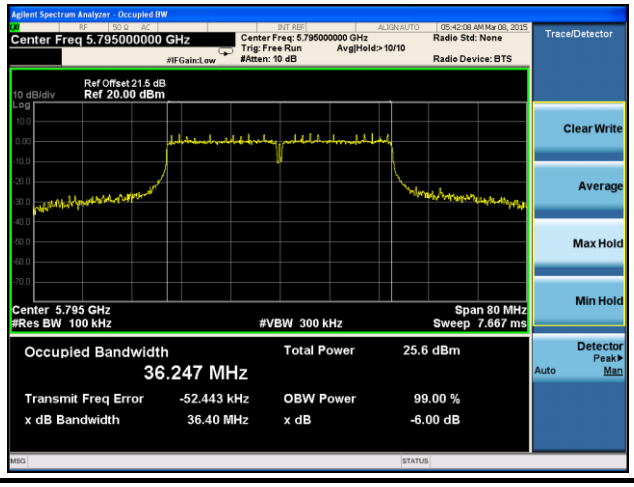
7.3.5. Test Result

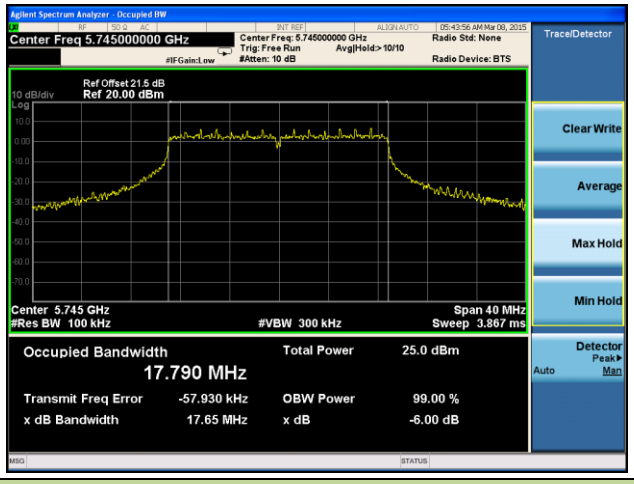
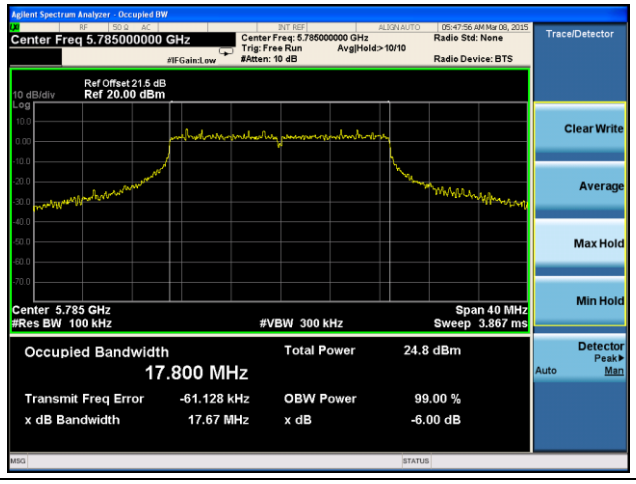
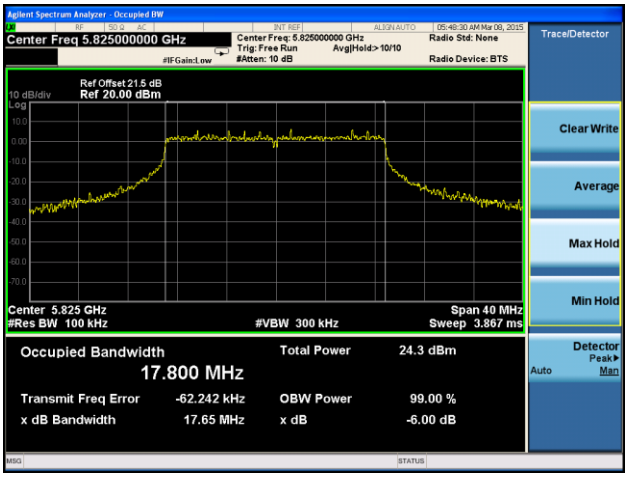
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 0 / Ant 0 + 1 + 2 + 3						
802.11a	6	149	5745	16.45	≥0.5	Pass
802.11a	6	157	5785	16.44	≥0.5	Pass
802.11a	6	165	5825	16.45	≥0.5	Pass
802.11n-HT20	6.5	149	5745	17.66	≥0.5	Pass
802.11n-HT20	6.5	157	5785	17.65	≥0.5	Pass
802.11n-HT20	6.5	165	5825	17.67	≥0.5	Pass
802.11n-HT40	13.5	151	5755	36.41	≥0.5	Pass
802.11n-HT40	13.5	159	5795	36.40	≥0.5	Pass
802.11ac-VHT20	6.5	149	5745	17.65	≥0.5	Pass
802.11ac-VHT20	6.5	157	5785	17.67	≥0.5	Pass
802.11ac-VHT20	6.5	165	5825	17.65	≥0.5	Pass
802.11ac-VHT40	13.5	151	5755	36.44	≥0.5	Pass
802.11ac-VHT40	13.5	159	5795	36.42	≥0.5	Pass
802.11ac-VHT80	29.3	155	5775	75.23	≥0.5	Pass
Ant 1 / Ant 0 + 1 + 2 + 3						
802.11a	6	149	5745	16.44	≥0.5	Pass
802.11a	6	157	5785	16.48	≥0.5	Pass
802.11a	6	165	5825	16.45	≥0.5	Pass
802.11n-HT20	6.5	149	5745	17.70	≥0.5	Pass
802.11n-HT20	6.5	157	5785	17.65	≥0.5	Pass
802.11n-HT20	6.5	165	5825	17.67	≥0.5	Pass
802.11n-HT40	13.5	151	5755	36.39	≥0.5	Pass
802.11n-HT40	13.5	159	5795	36.40	≥0.5	Pass
802.11ac-VHT20	6.5	149	5745	17.78	≥0.5	Pass
802.11ac-VHT20	6.5	157	5785	17.66	≥0.5	Pass
802.11ac-VHT20	6.5	165	5825	17.69	≥0.5	Pass
802.11ac-VHT40	13.5	151	5755	36.42	≥0.5	Pass
802.11ac-VHT40	13.5	159	5795	36.40	≥0.5	Pass
802.11ac-VHT80	29.3	155	5775	74.01	≥0.5	Pass

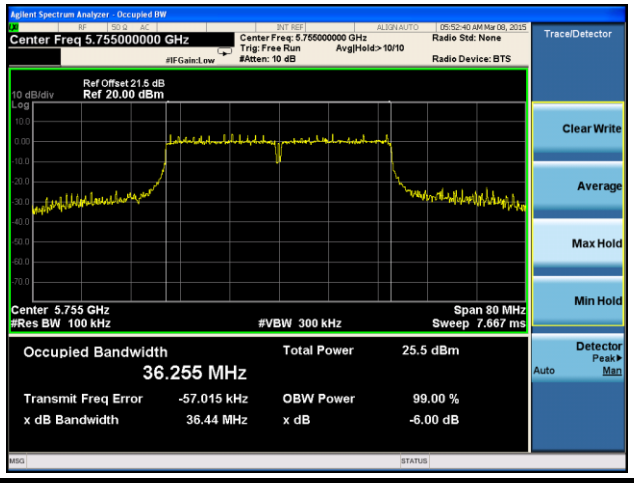
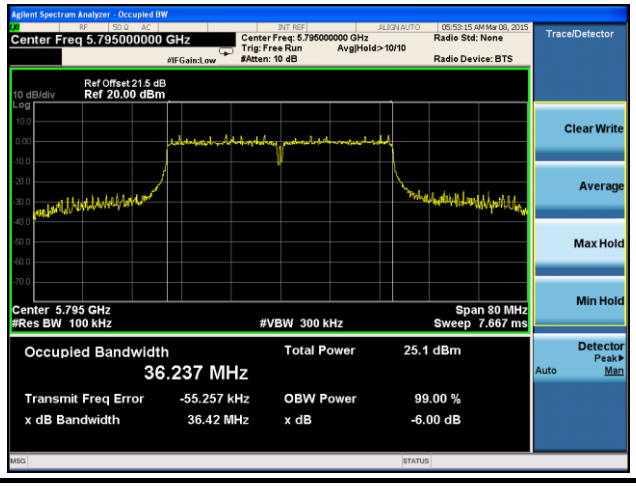
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 2 / Ant 0 + 1 + 2 + 3						
802.11a	6	149	5745	16.43	≥0.5	Pass
802.11a	6	157	5785	16.47	≥0.5	Pass
802.11a	6	165	5825	16.44	≥0.5	Pass
802.11n-HT20	6.5	149	5745	17.69	≥0.5	Pass
802.11n-HT20	6.5	157	5785	17.70	≥0.5	Pass
802.11n-HT20	6.5	165	5825	17.68	≥0.5	Pass
802.11n-HT40	13.5	151	5755	36.42	≥0.5	Pass
802.11n-HT40	13.5	159	5795	36.40	≥0.5	Pass
802.11ac-VHT20	6.5	149	5745	17.69	≥0.5	Pass
802.11ac-VHT20	6.5	157	5785	17.66	≥0.5	Pass
802.11ac-VHT20	6.5	165	5825	17.68	≥0.5	Pass
802.11ac-VHT40	13.5	151	5755	36.41	≥0.5	Pass
802.11ac-VHT40	13.5	159	5795	36.41	≥0.5	Pass
802.11ac-VHT80	29.3	155	5775	75.25	≥0.5	Pass
Ant 3 / Ant 0 + 1 + 2 + 3						
802.11a	6	149	5745	16.43	≥0.5	Pass
802.11a	6	157	5785	16.44	≥0.5	Pass
802.11a	6	165	5825	16.43	≥0.5	Pass
802.11n-HT20	6.5	149	5745	17.69	≥0.5	Pass
802.11n-HT20	6.5	157	5785	17.66	≥0.5	Pass
802.11n-HT20	6.5	165	5825	17.70	≥0.5	Pass
802.11n-HT40	13.5	151	5755	36.41	≥0.5	Pass
802.11n-HT40	13.5	159	5795	36.38	≥0.5	Pass
802.11ac-VHT20	6.5	149	5745	17.66	≥0.5	Pass
802.11ac-VHT20	6.5	157	5785	17.67	≥0.5	Pass
802.11ac-VHT20	6.5	165	5825	17.69	≥0.5	Pass
802.11ac-VHT40	13.5	151	5755	36.44	≥0.5	Pass
802.11ac-VHT40	13.5	159	5795	36.42	≥0.5	Pass
802.11ac-VHT80	29.3	155	5775	75.24	≥0.5	Pass

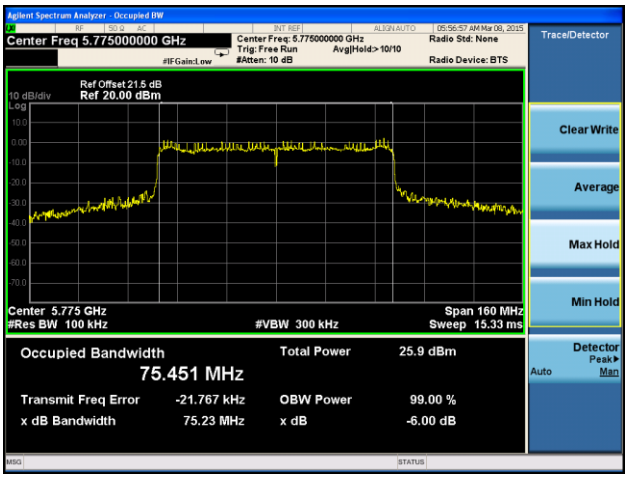
802.11a 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

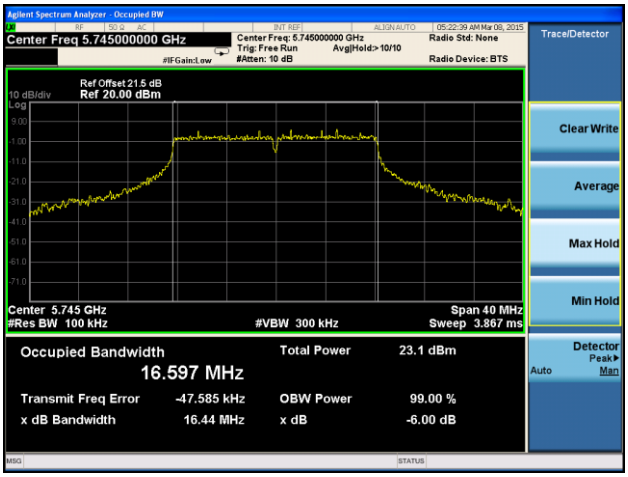
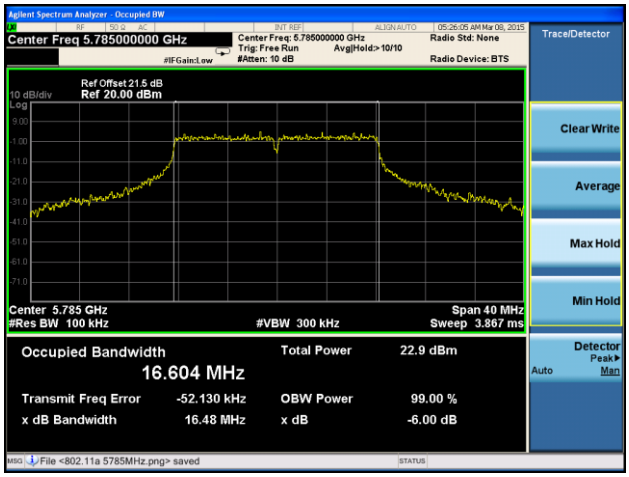
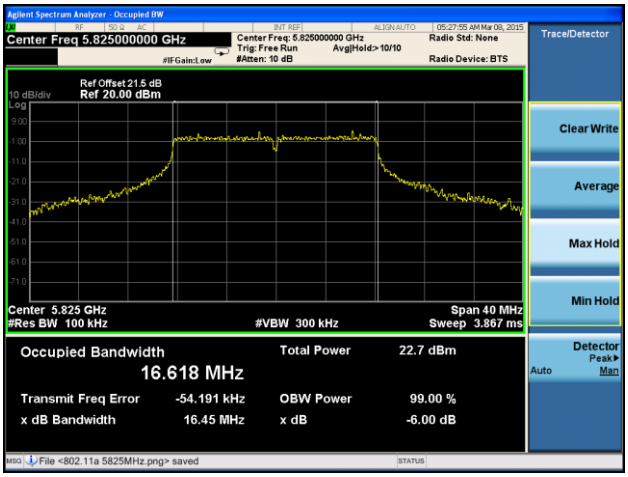
802.11n-HT20 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

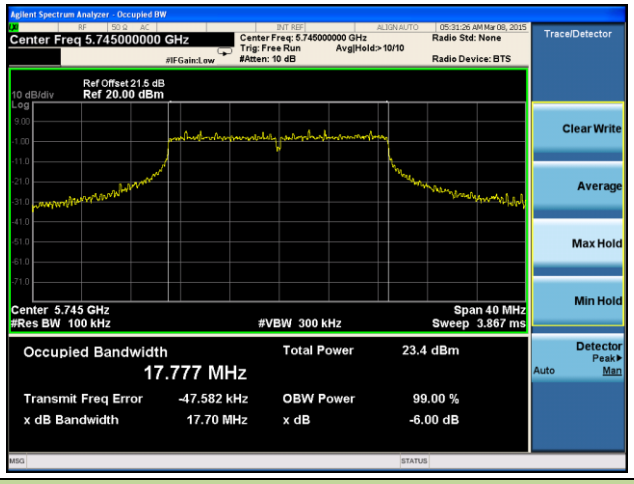
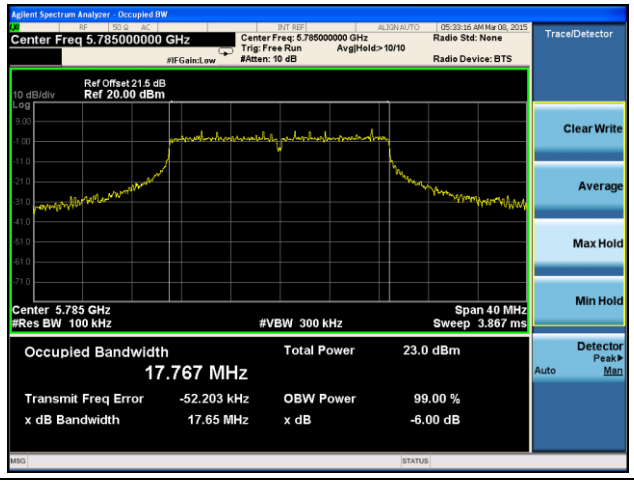
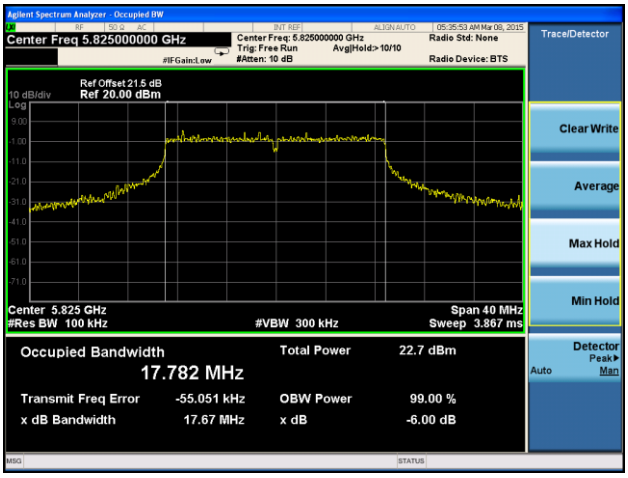
802.11n-HT40 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

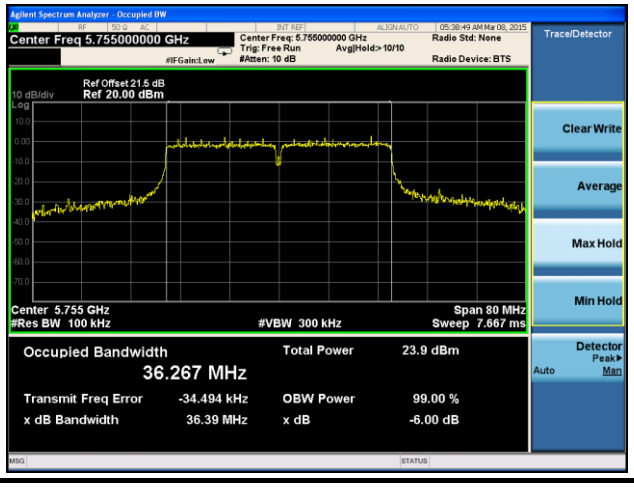
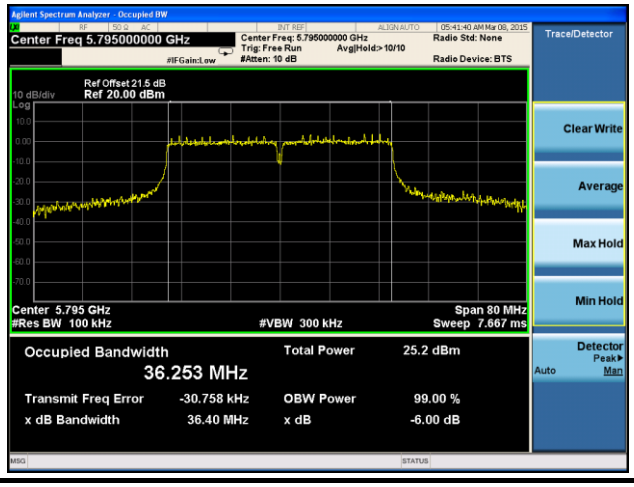
802.11ac-VHT20 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

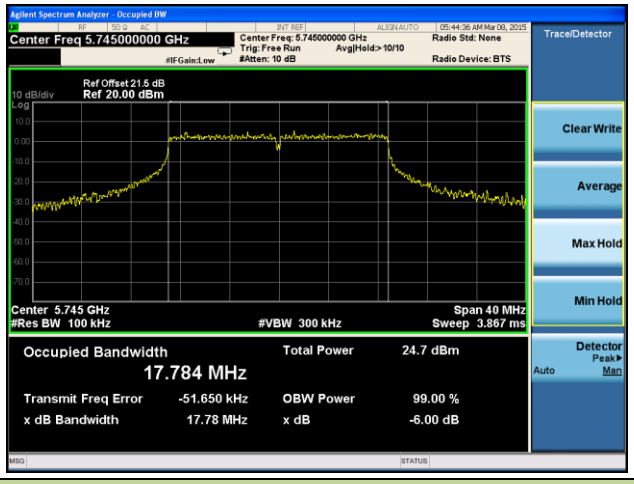
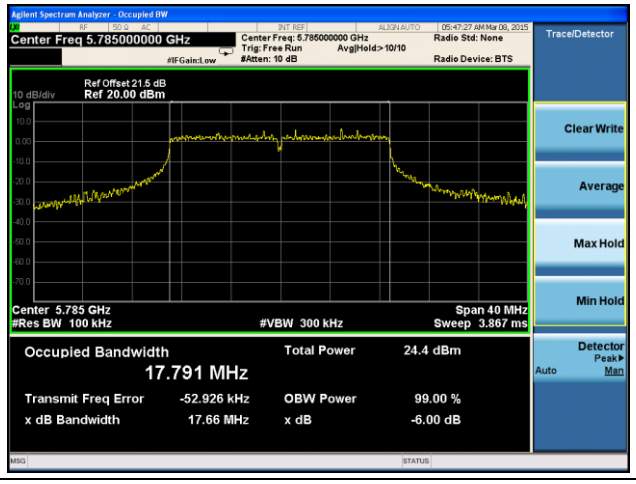
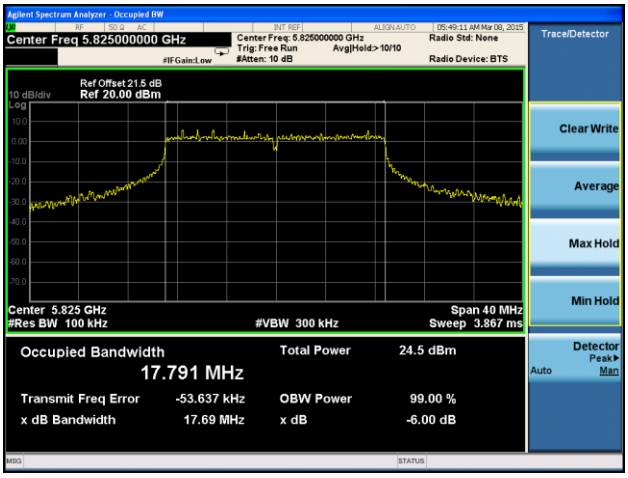
802.11ac-VHT40 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

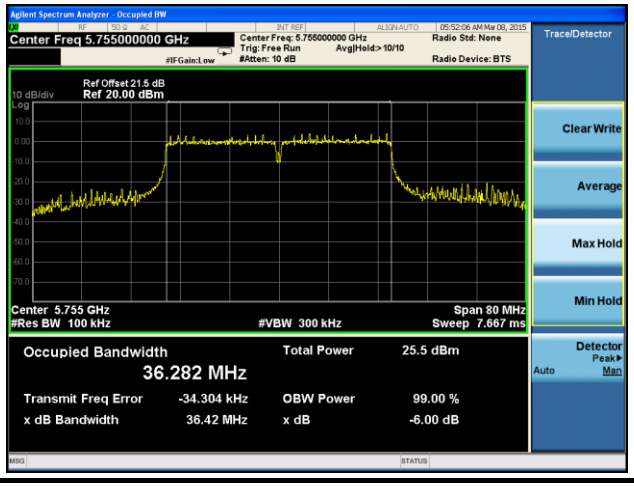
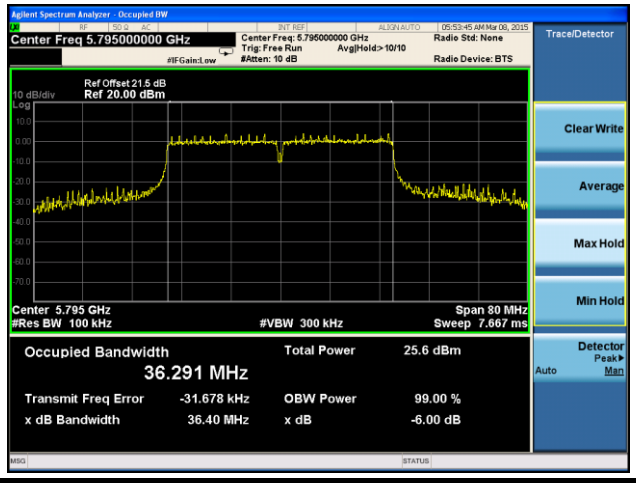
802.11ac-VHT80 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3	
Channel 155 (5775MHz)	
	

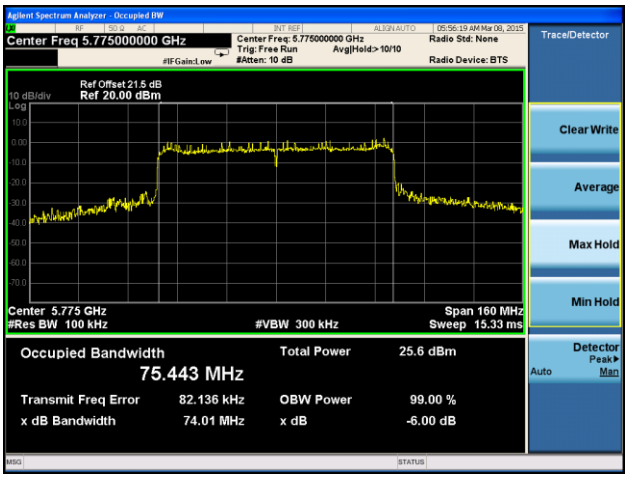
802.11a 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

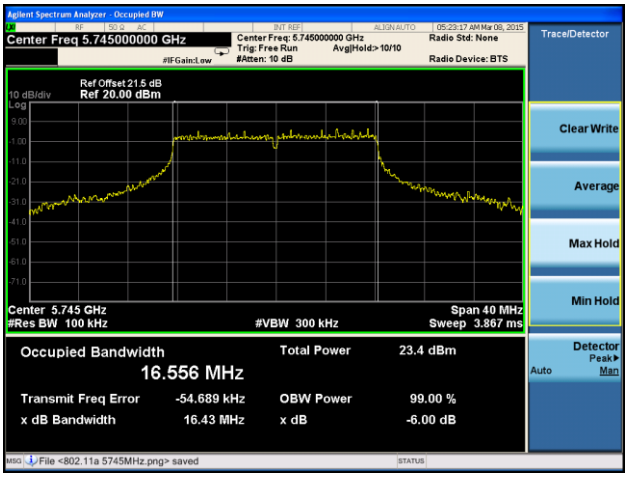
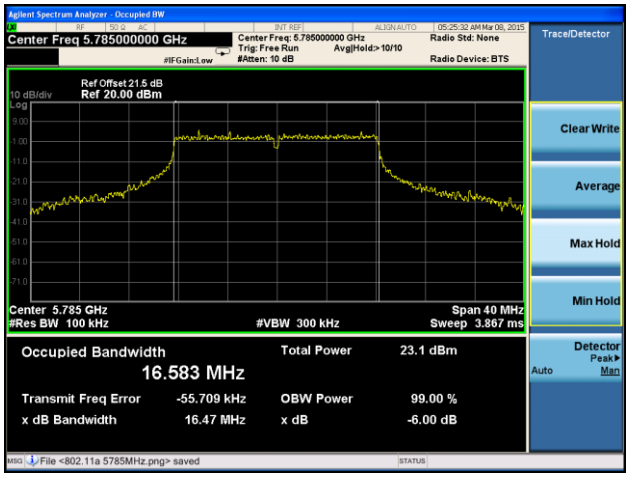
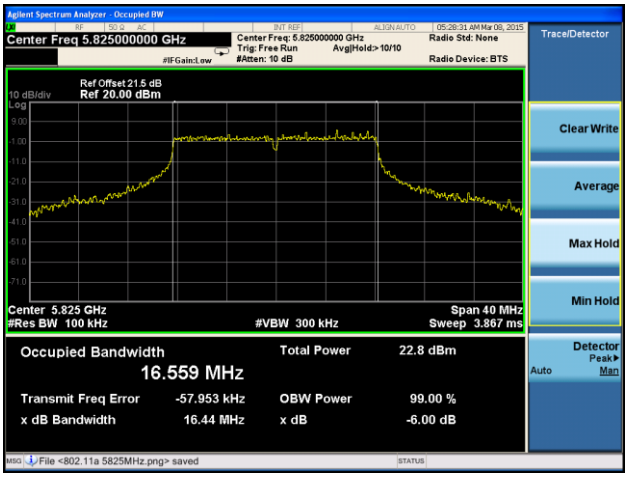
802.11n-HT20 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

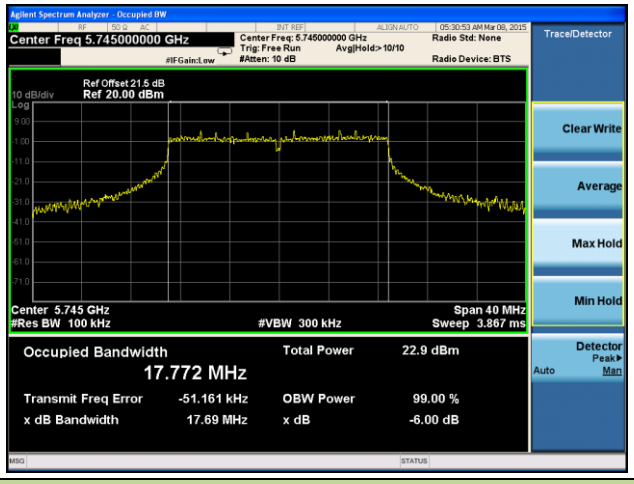
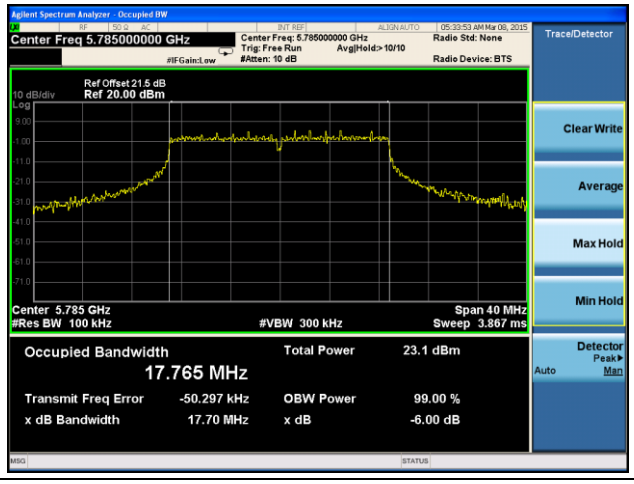
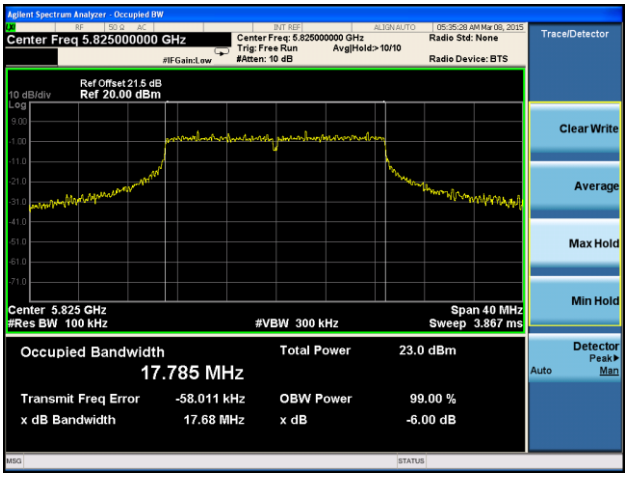
802.11n-HT40 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

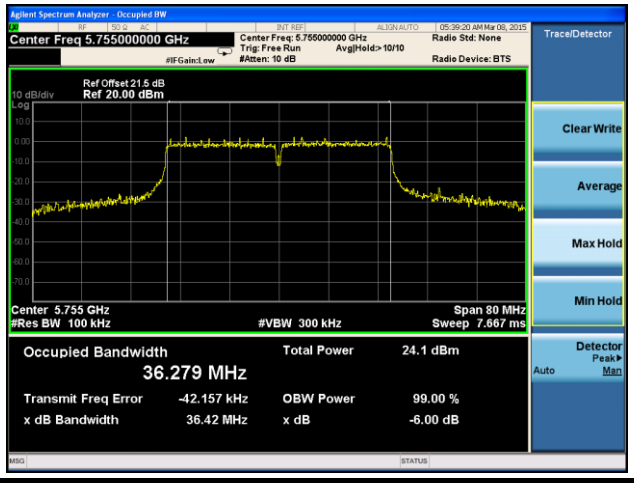
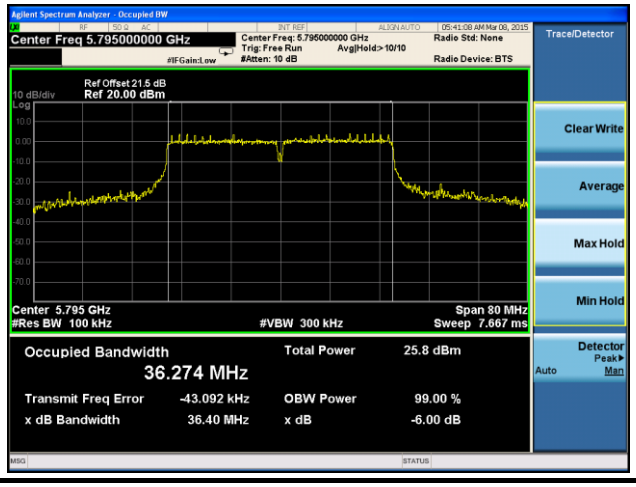
802.11ac-VHT20 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

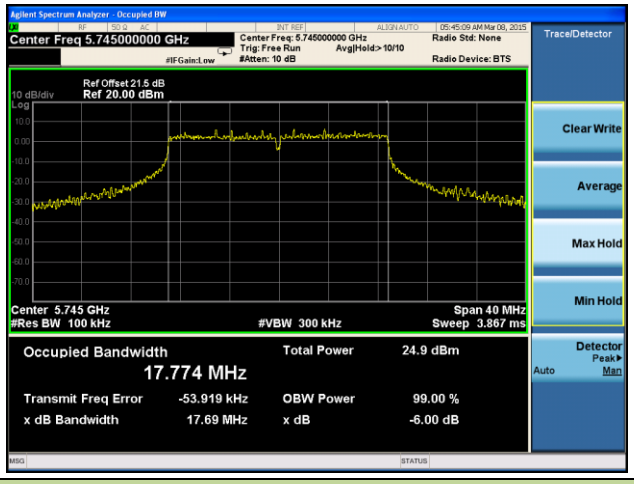
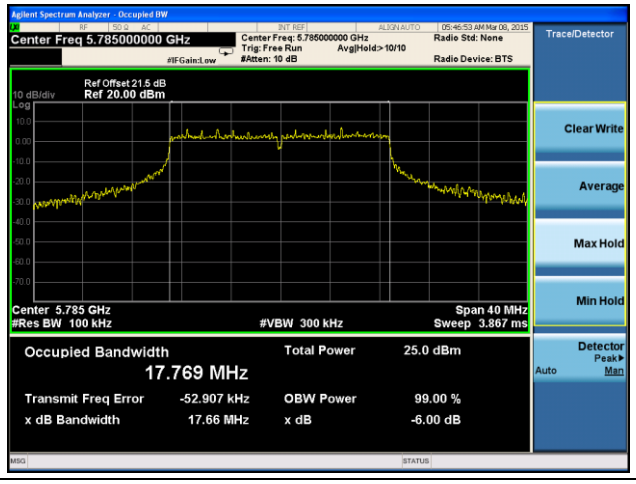
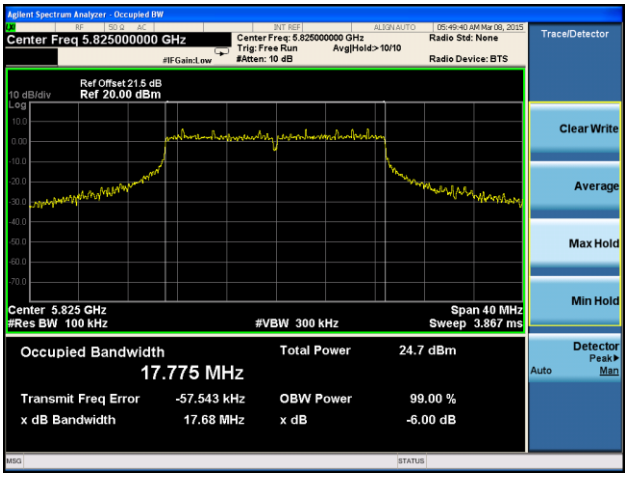
802.11ac-VHT40 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

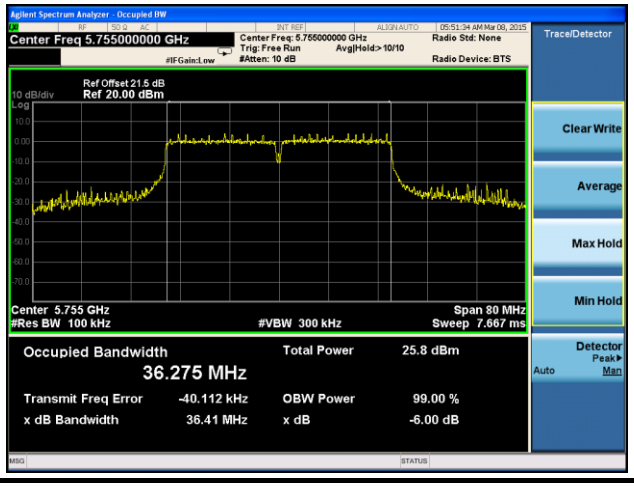
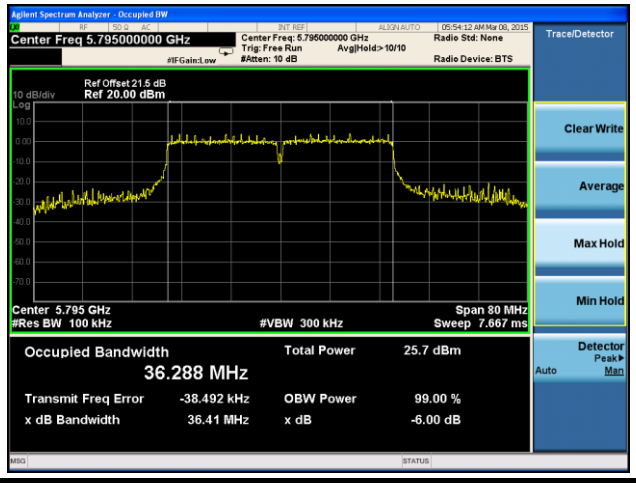
802.11ac-VHT80 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3	
Channel 155 (5775MHz)	
	

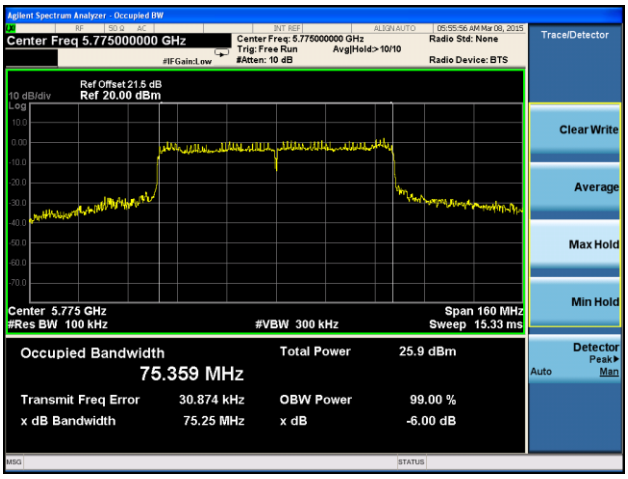
802.11a 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

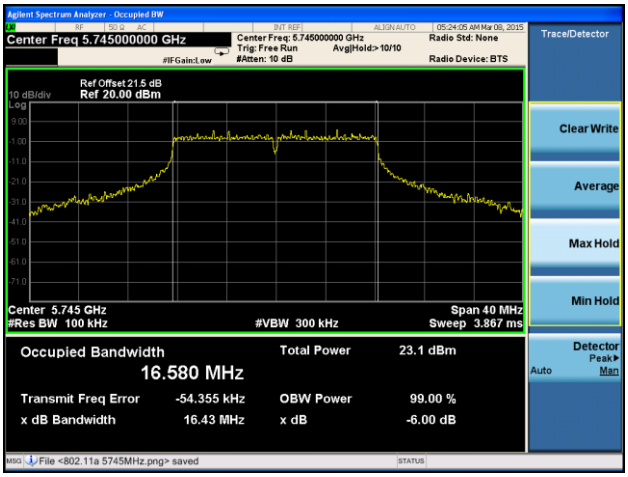
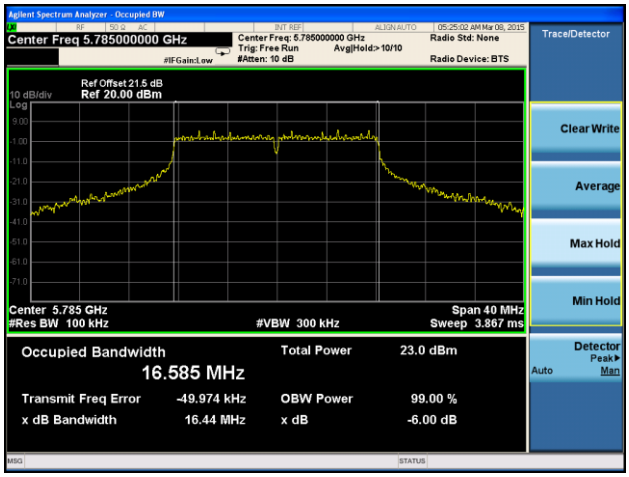
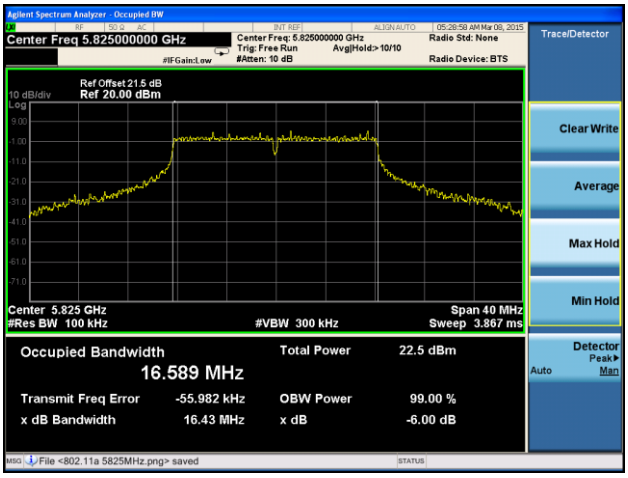
802.11n-HT20 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

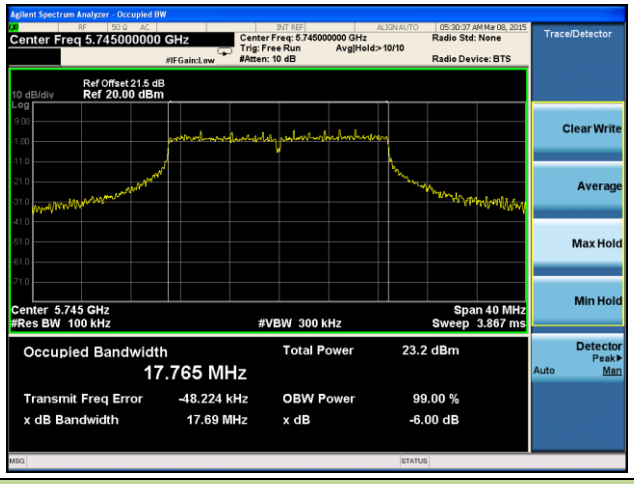
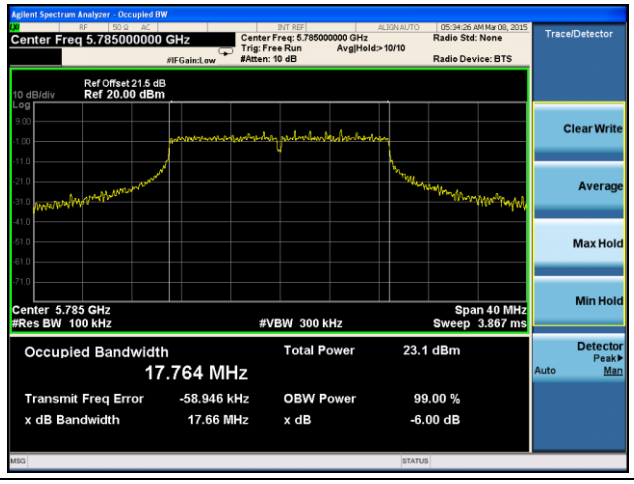
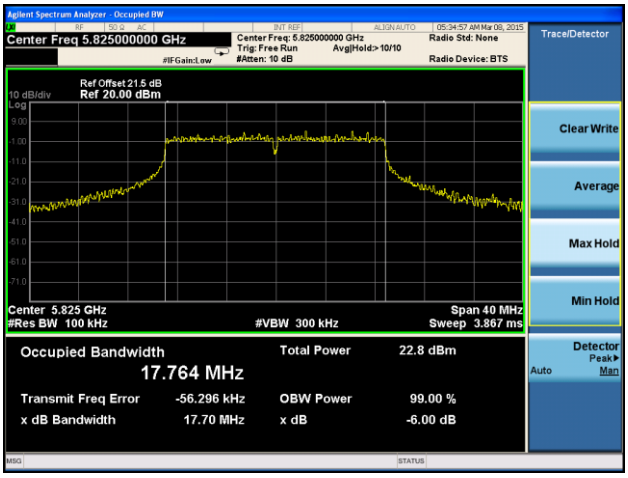
802.11n-HT40 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

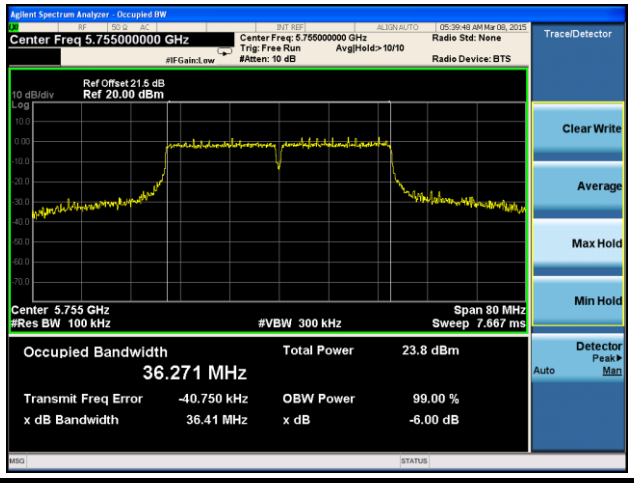
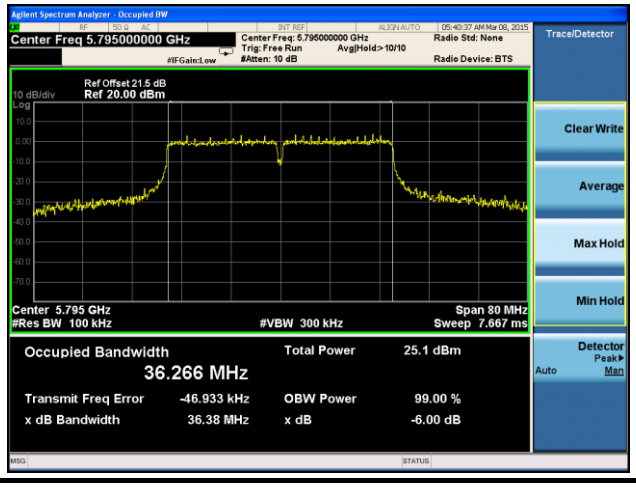
802.11ac-VHT20 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

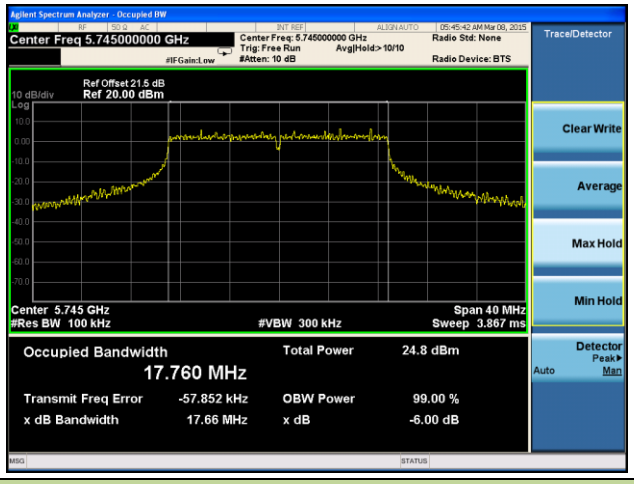
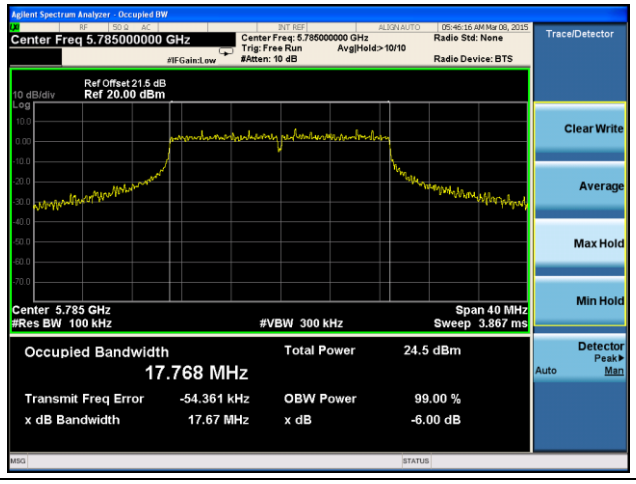
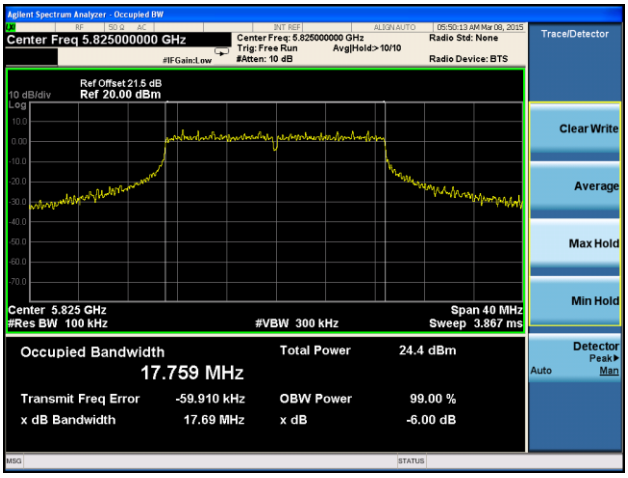
802.11ac-VHT40 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

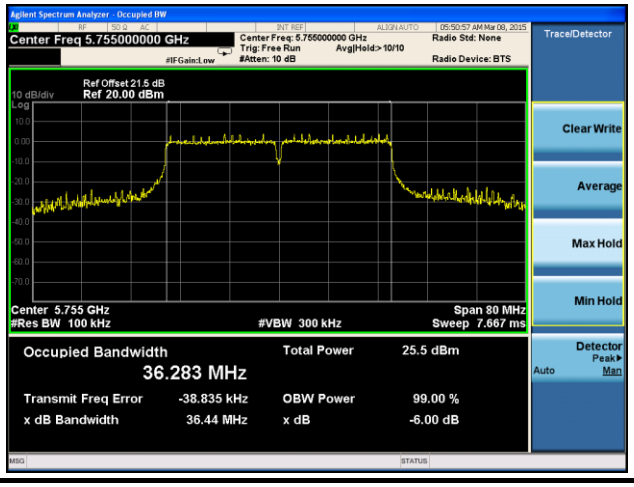
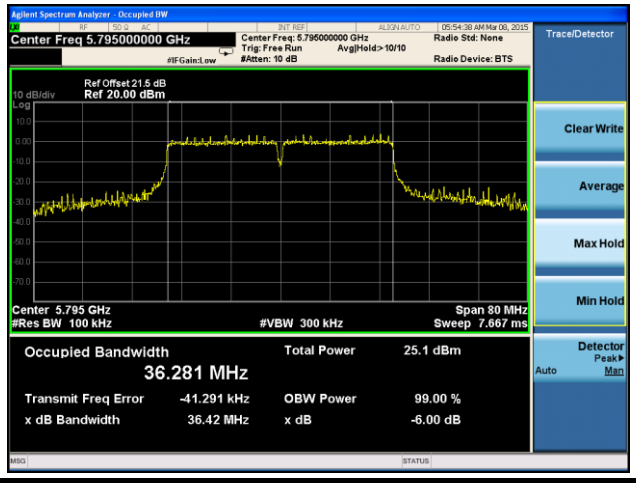
802.11ac-VHT80 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3	
Channel 155 (5775MHz)	
	

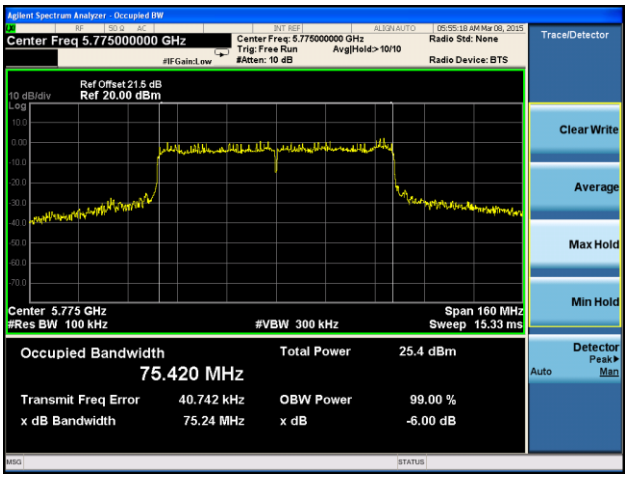
802.11a 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

802.11n-HT20 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

802.11n-HT40 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

802.11ac-VHT20 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

802.11ac-VHT40 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

802.11ac-VHT80 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 155 (5775MHz)	
	

7.4. Output Power Measurement

7.4.1. Test Limit

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (23.98dBm) or 11 dBm 10 log (26dB BW).

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

For 802.11n/ac:

5.15-5.25GHz: Limit (dBm) = 30dBm - (8.04dBi - 6dBi) = 27.96dBm

5.25-5.35GHz: Limit (dBm) = 23.98dBm - (7.78dBi - 6dBi) = 22.20dBm

5.47-5.725GHz: Limit (dBm) = 23.98dBm - (8.38dBi - 6dBi) = 21.62dBm

5.725-5.85GHz: Limit (dBm) = 30dBm - (8.70dBi - 6dBi) = 27.30dBm

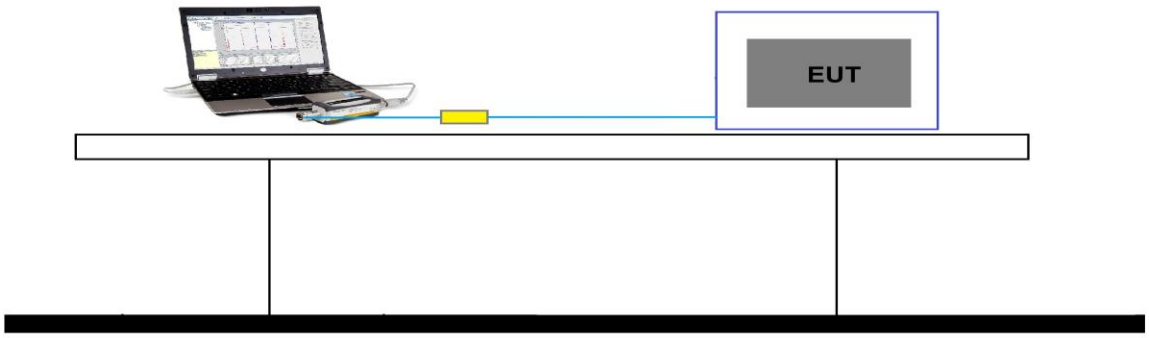
7.4.2. Test Procedure Used

KDB 789033 D02v01 - Section E) 3) b) Method PM-G

7.4.3. Test Setting

Average power measurements were perform only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

7.4.4. Test Setup



7.4.5. Test Result

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (yellow marker) for final test of each channel.

N_{Tx}	a	MCS Index for 802.11n	Data Rate (Mbps)			
			20MHz Bandwidth		40MHz Bandwidth	
			800ns GI	400ns GI	800ns GI	400ns GI
1	6	0	6.5	7.2	13.5	15.0
1	9	1	13.0	14.4	27.0	30.0
1	12	2	19.5	21.7	40.5	45.0
1	18	3	26.0	28.9	54.0	60.0
1	24	4	39.0	43.3	81.0	90.0
1	36	5	52.0	57.8	108.0	120.0
1	48	6	58.5	65.0	121.5	135.0
1	54	7	65.0	72.2	135.0	150.0
4	6	24	26.0	28.8	54.0	60.0
4	9	25	52.0	57.6	108.0	120.0
4	12	26	78.0	86.8	162.0	180.0
4	18	27	104.0	115.6	216.0	240.0
4	24	28	156.0	173.2	324.0	360.0
4	36	29	208.0	231.2	342.0	480.0
4	48	30	234.0	260.0	486.0	540.0
4	54	31	260.0	288.8	540.0	600.0