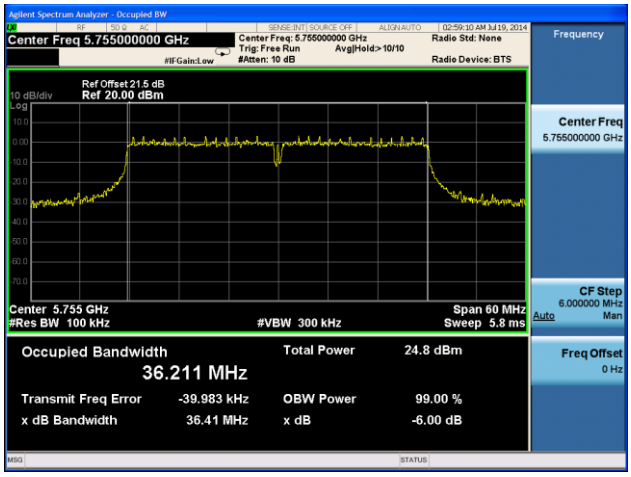
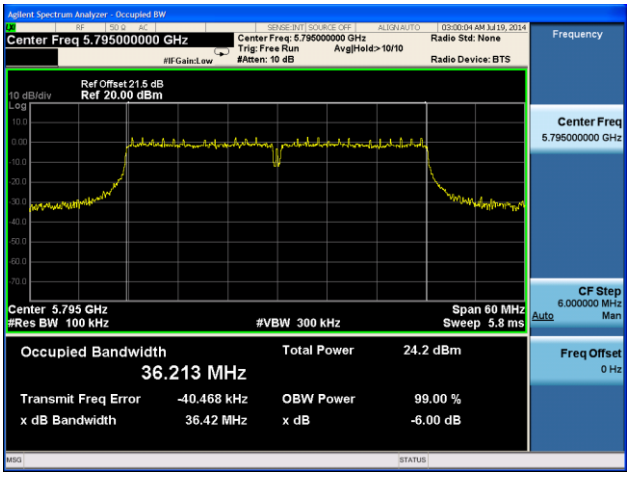
802.11n-HT40 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

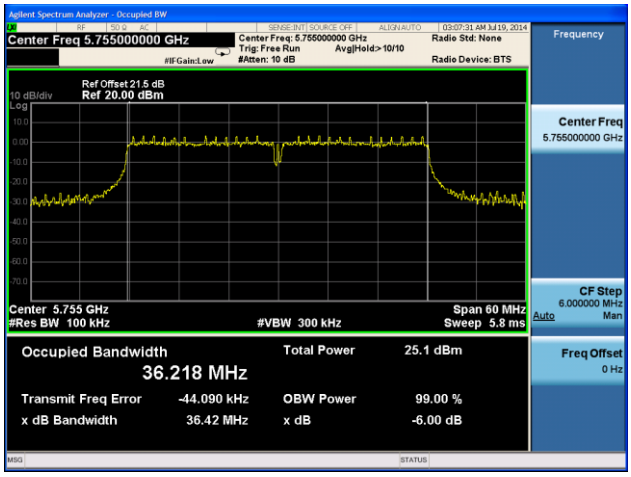


Channel 159 (5795MHz)

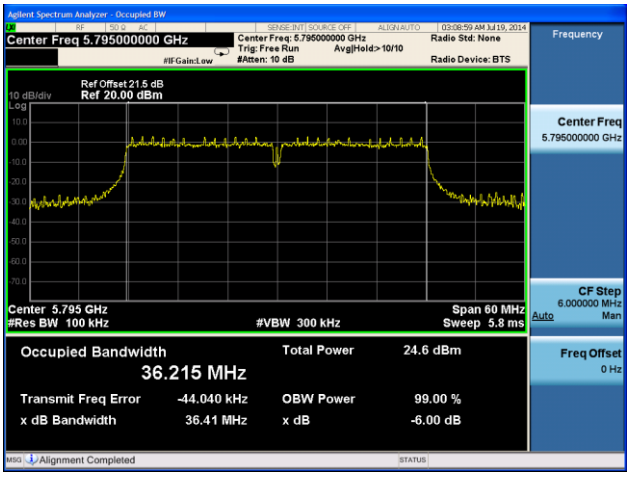


802.11ac-VHT40 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

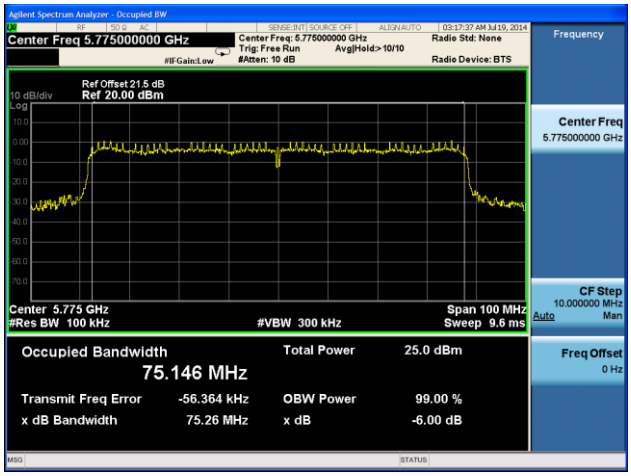


Channel 159 (5795MHz)



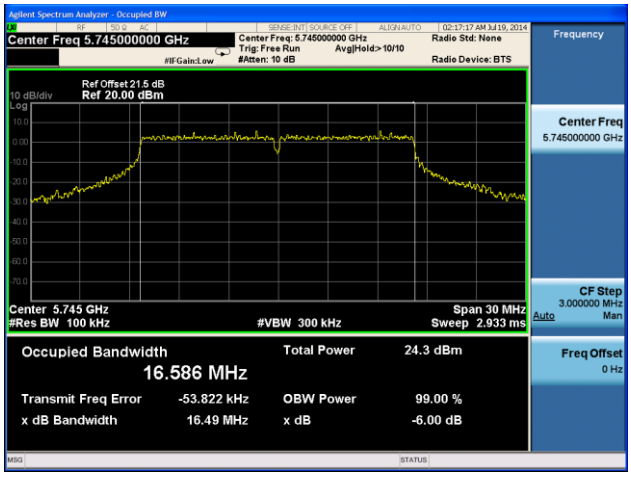
802.11ac-VHT80 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 155 (5775MHz)

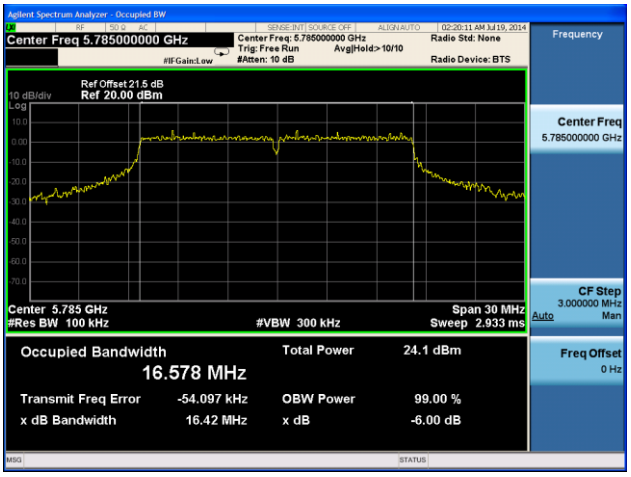


802.11a 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

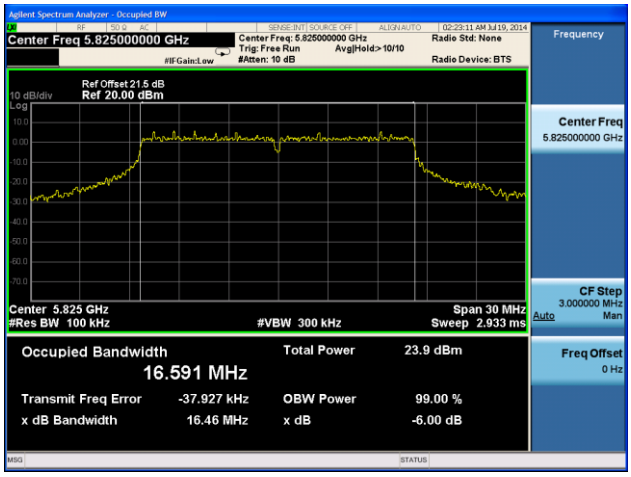
Channel 149 (5745MHz)



Channel 157 (5785MHz)

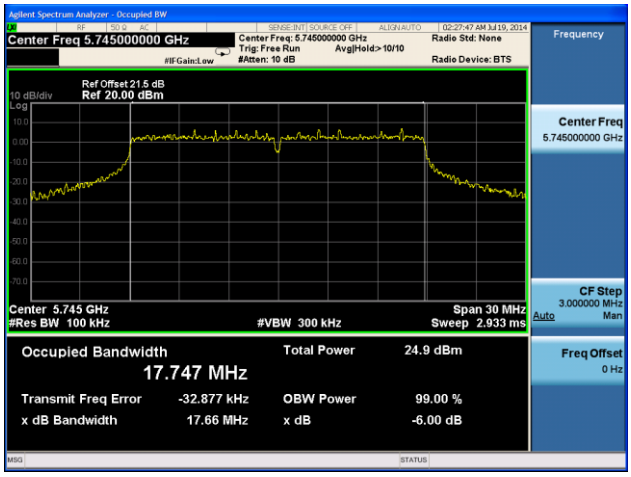


Channel 165 (5825MHz)

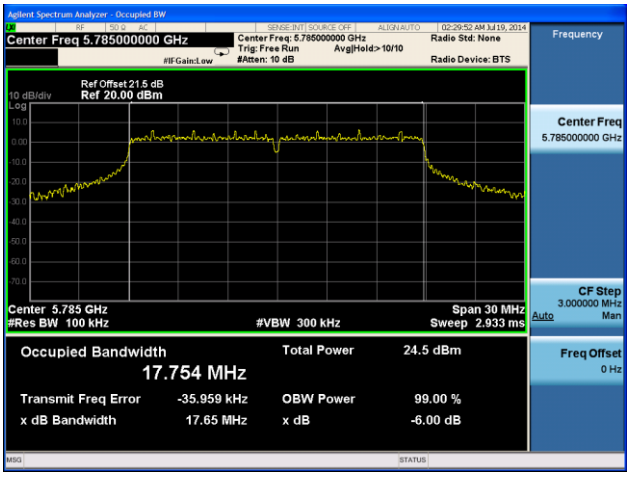


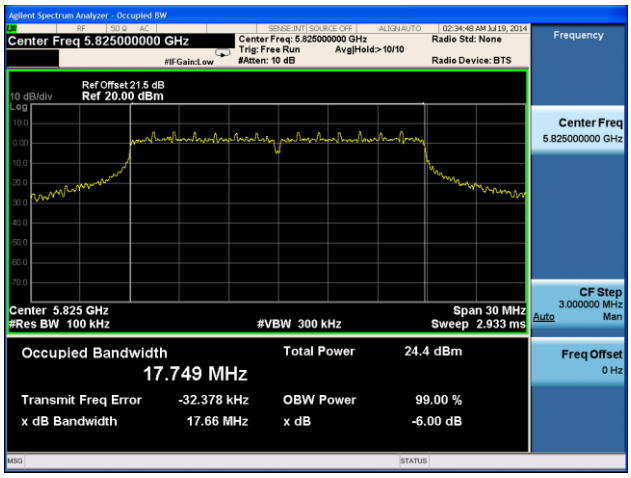
802.11n-HT20 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

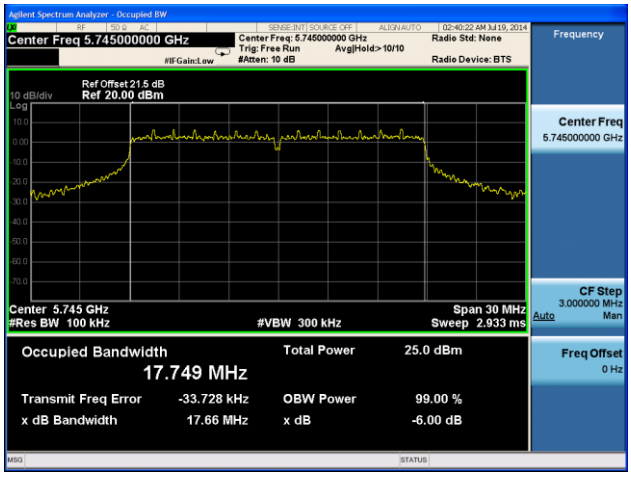
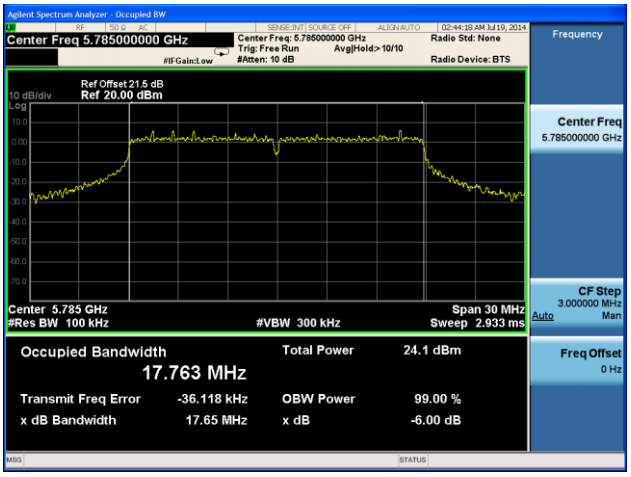
Channel 149 (5745MHz)

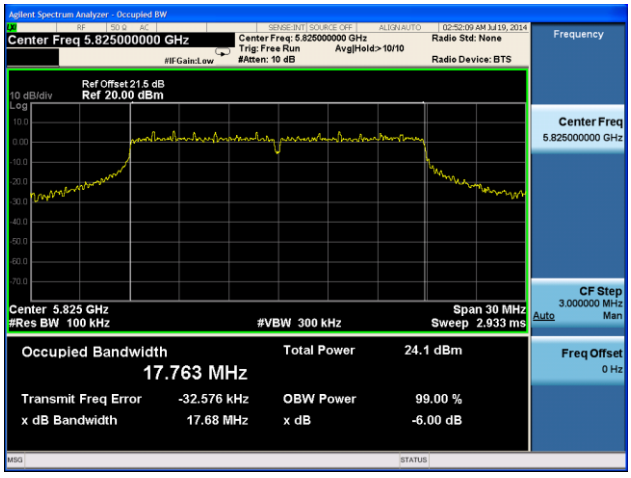


Channel 157 (5785MHz)

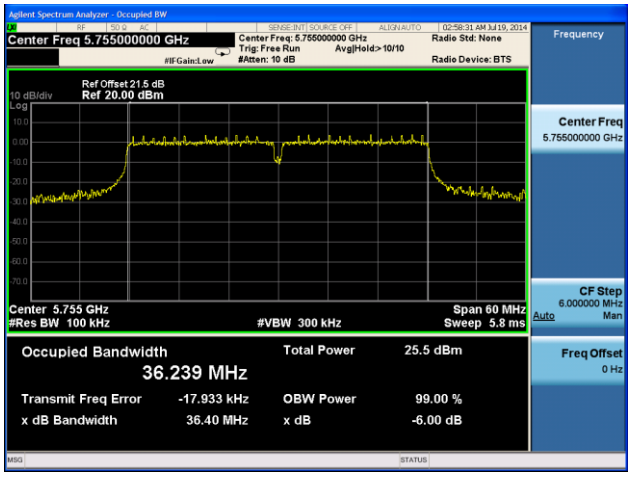
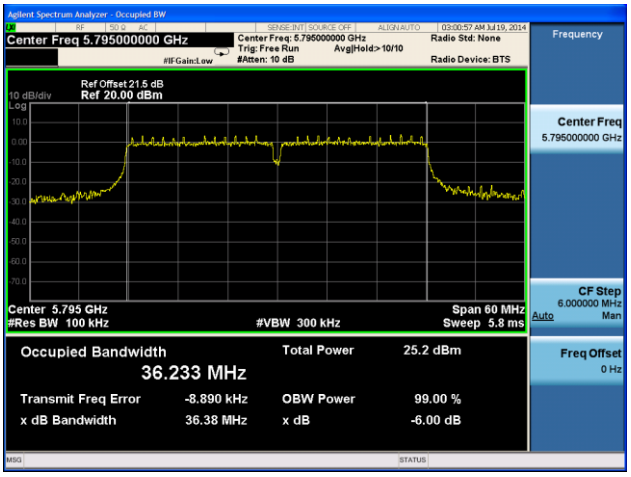


Channel 165 (5825MHz)	
	

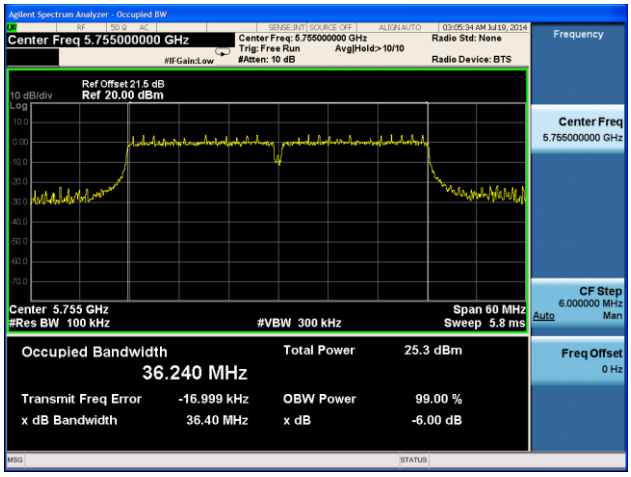
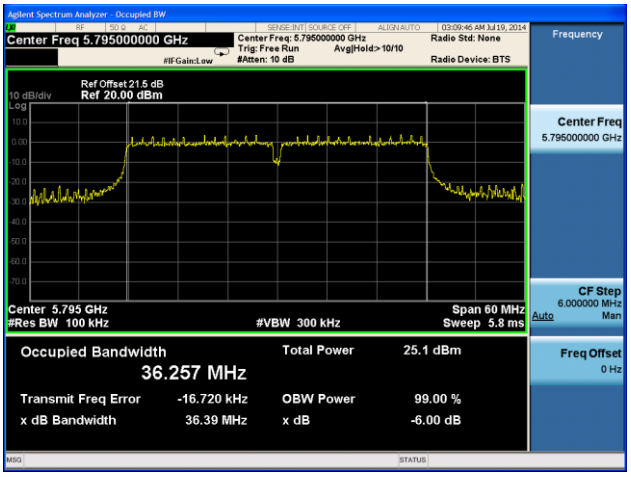
802.11ac-VHT20 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	

Channel 165 (5825MHz)	
	

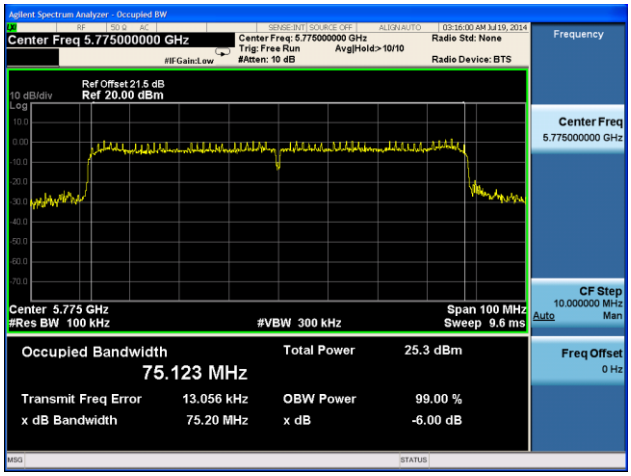
802.11n-HT40 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

802.11ac-VHT40 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

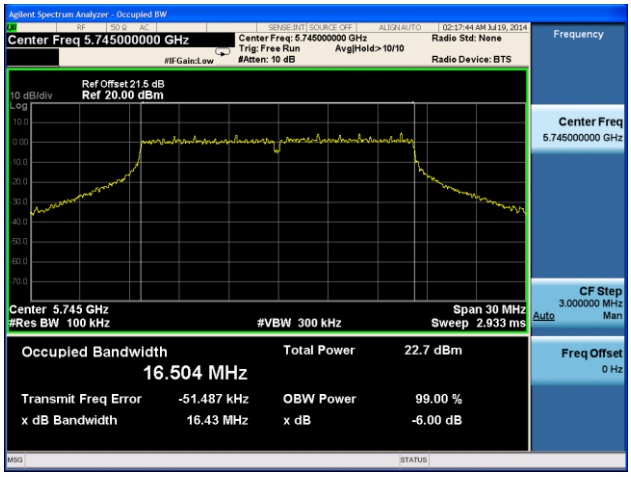
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

802.11ac-VHT80 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

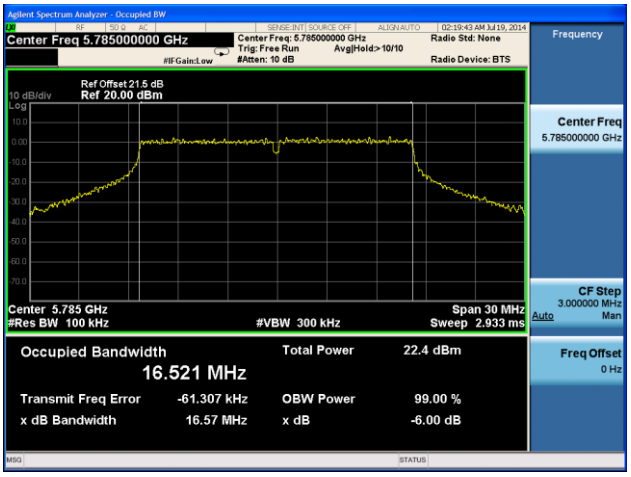
Channel 155 (5775MHz)	
	

802.11a 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

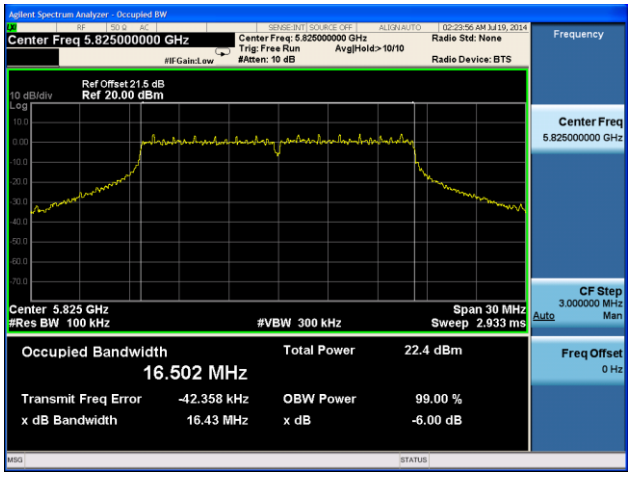
Channel 149 (5745MHz)



Channel 157 (5785MHz)

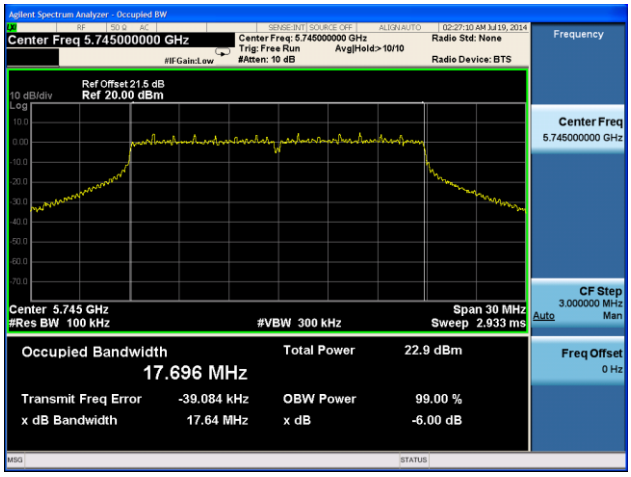


Channel 165 (5825MHz)

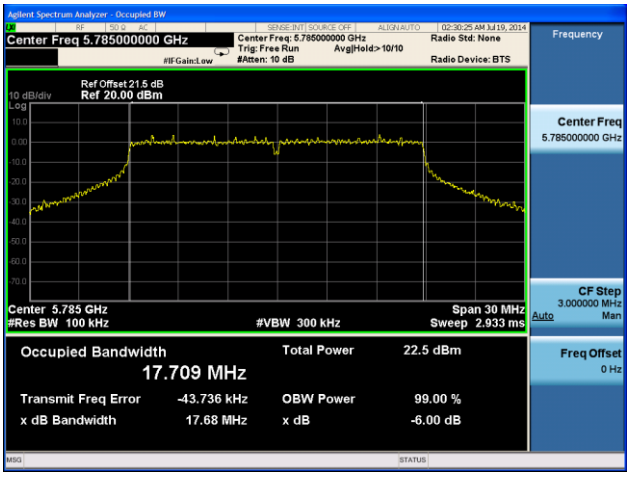


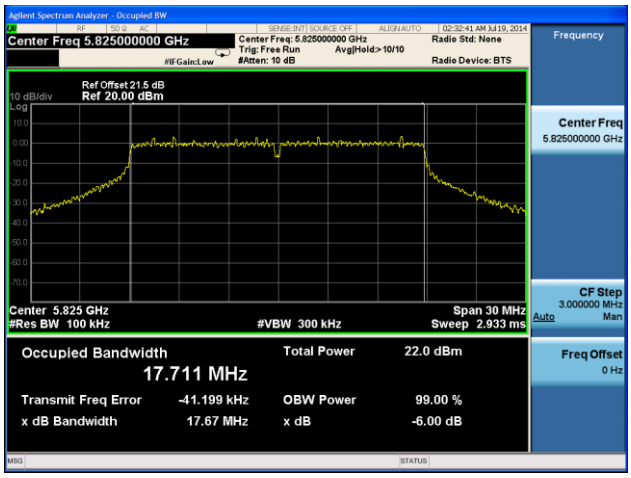
802.11n-HT20 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

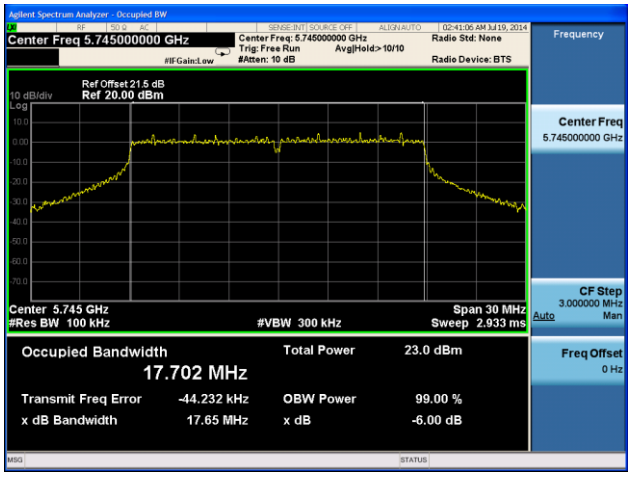
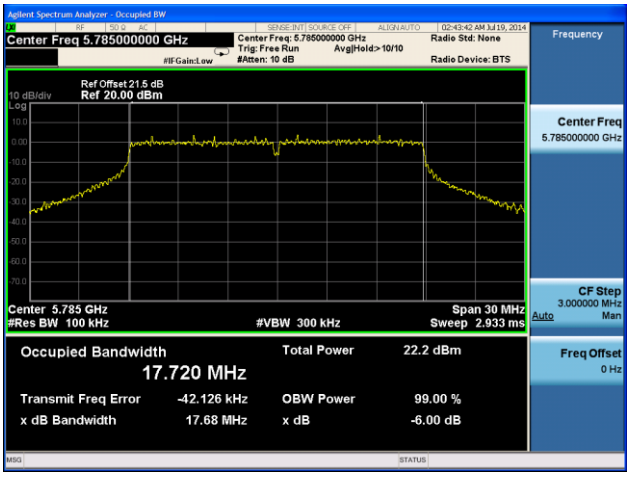
Channel 149 (5745MHz)

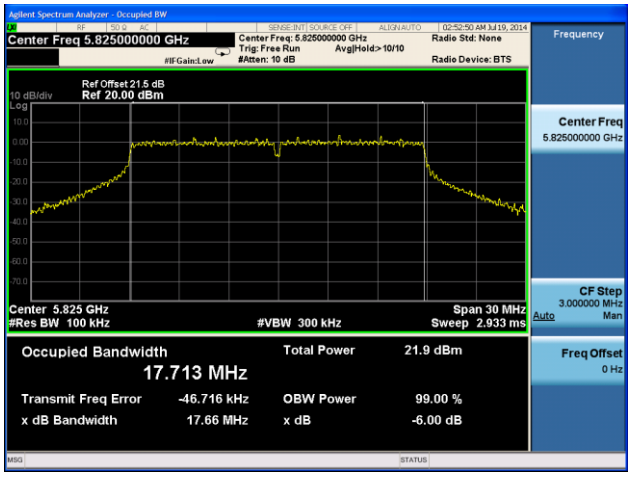


Channel 157 (5785MHz)



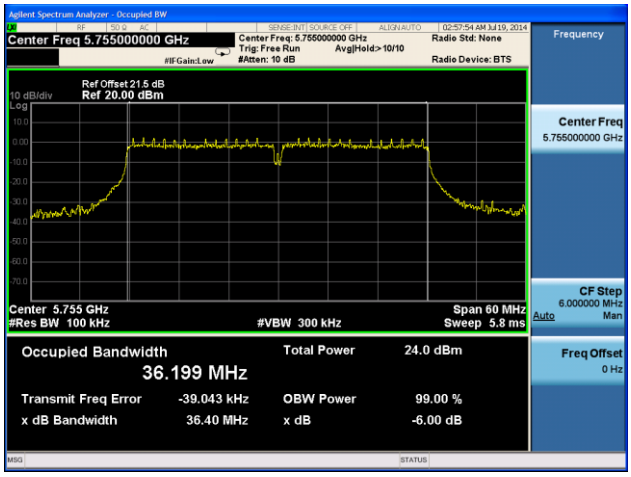
Channel 165 (5825MHz)	
	

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

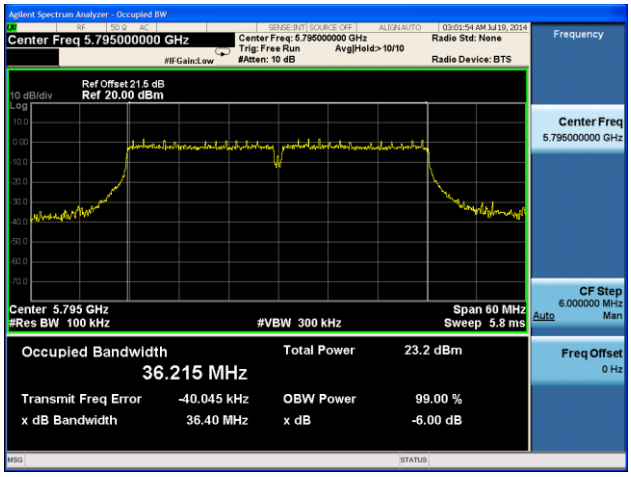
Channel 165 (5825MHz)	
	

802.11n-HT40 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

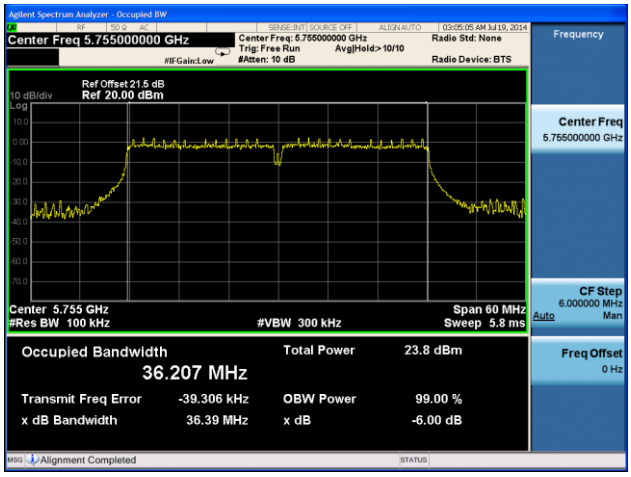


Channel 159 (5795MHz)

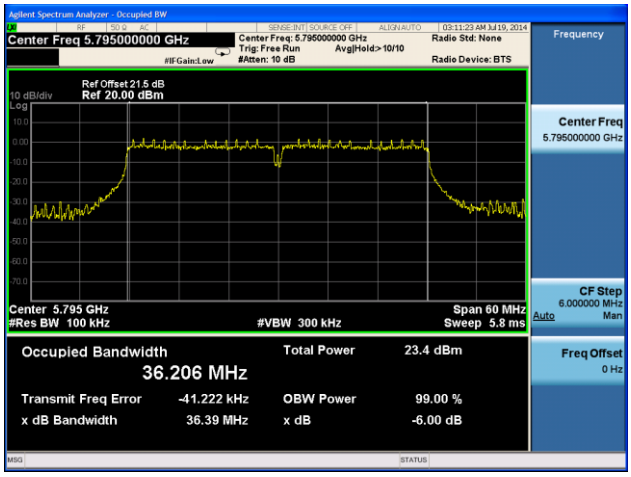


802.11ac-VHT40 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

Channel 151 (5745MHz)

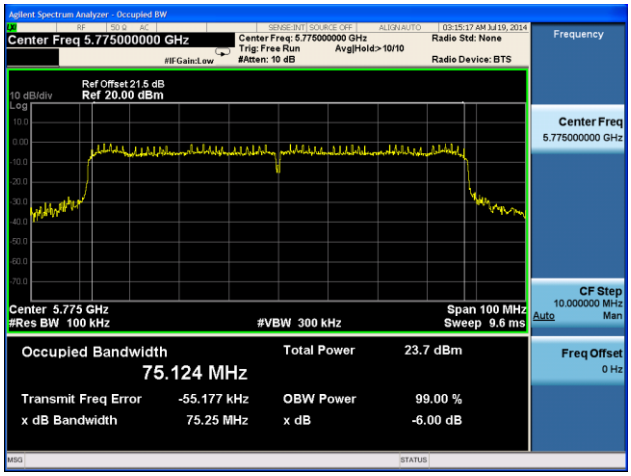


Channel 159 (5795MHz)



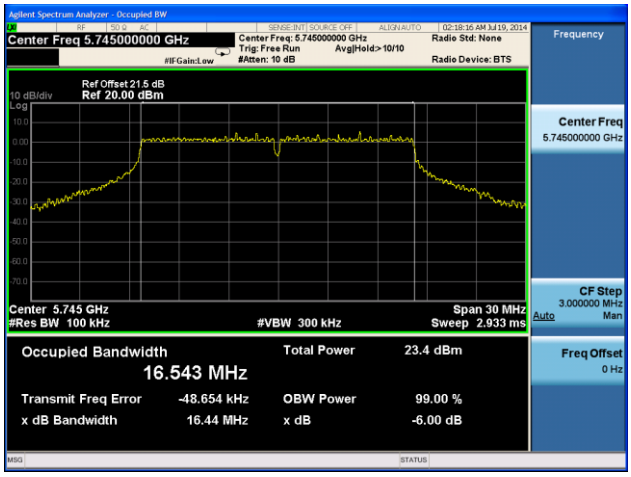
802.11ac-VHT80 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

Channel 155 (5775MHz)

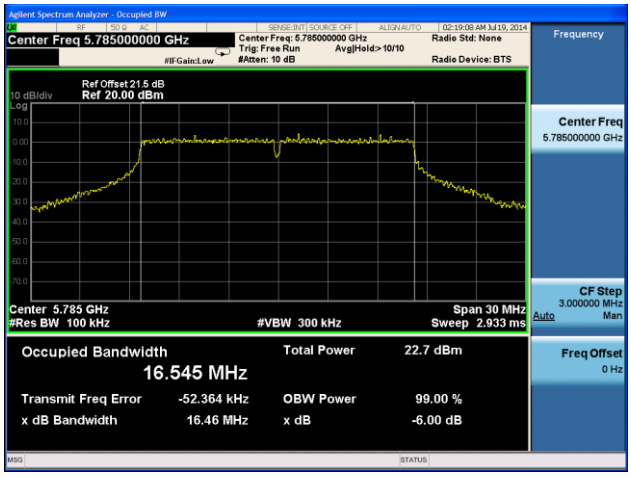


802.11a 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

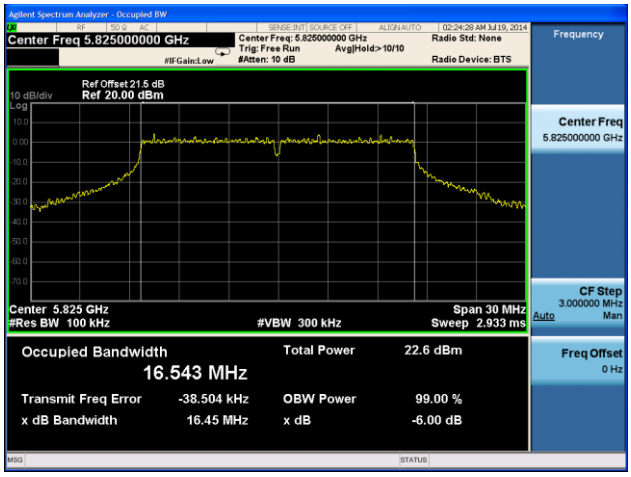
Channel 149 (5745MHz)



Channel 157 (5785MHz)

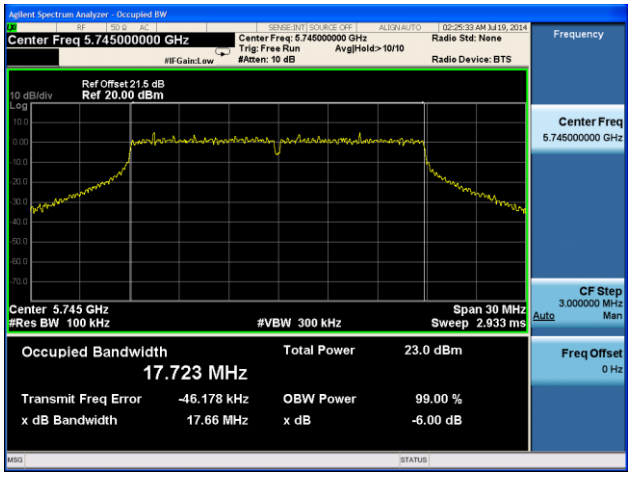


Channel 165 (5825MHz)

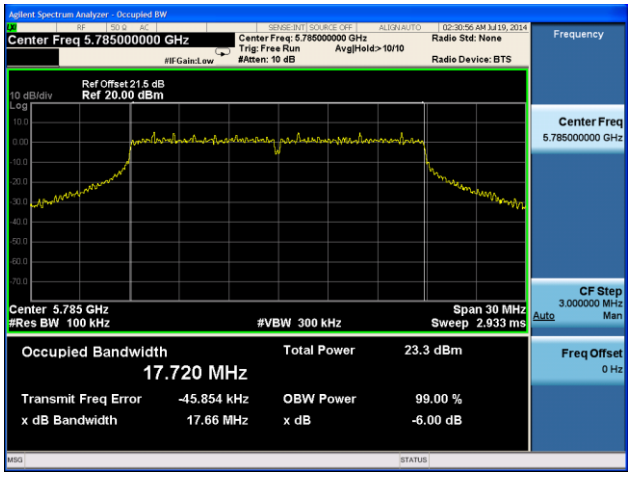


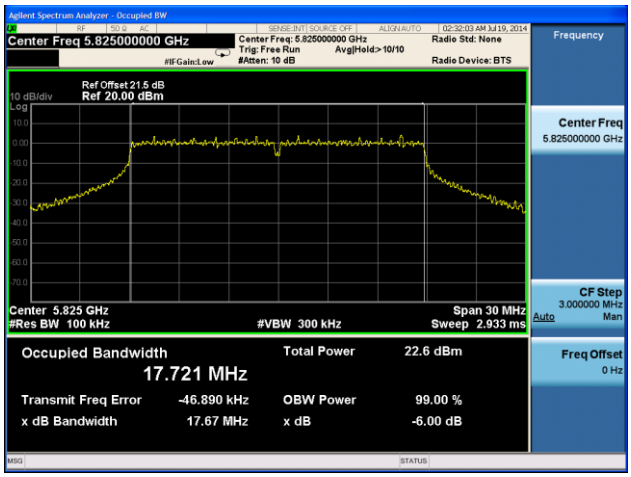
802.11n-HT20 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

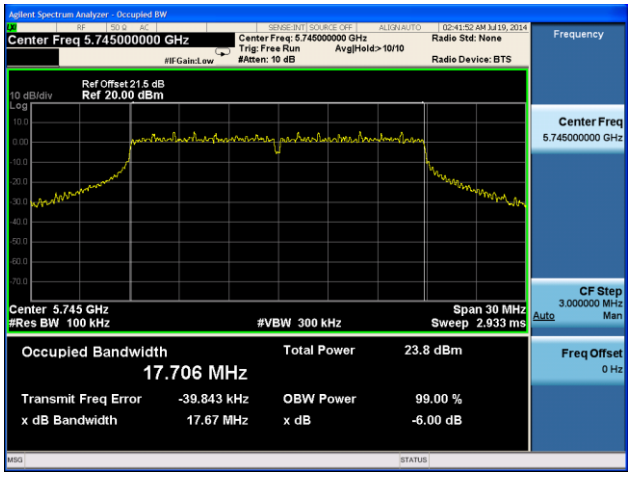
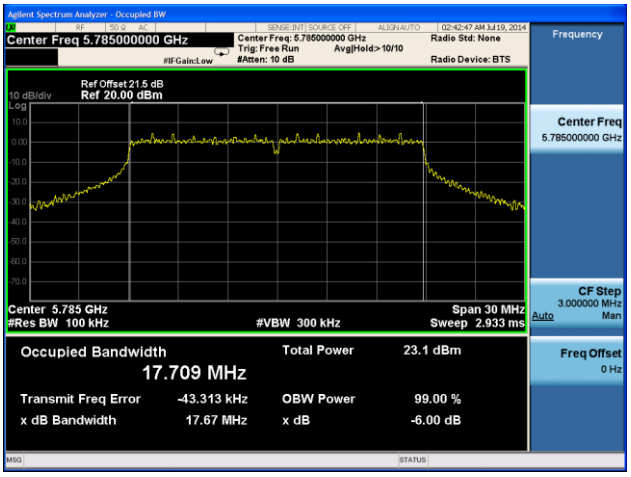
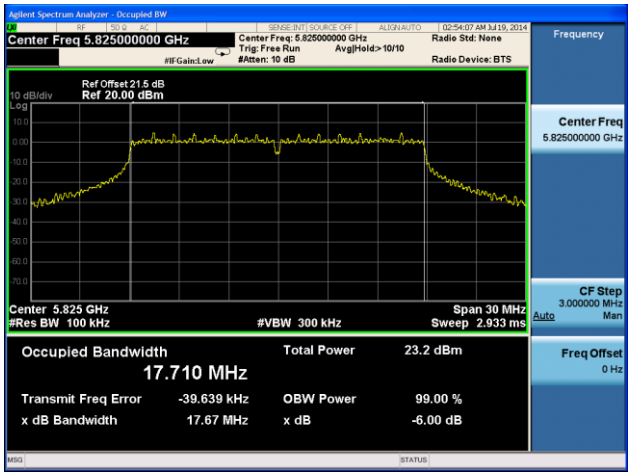
Channel 149 (5745MHz)



Channel 157 (5785MHz)

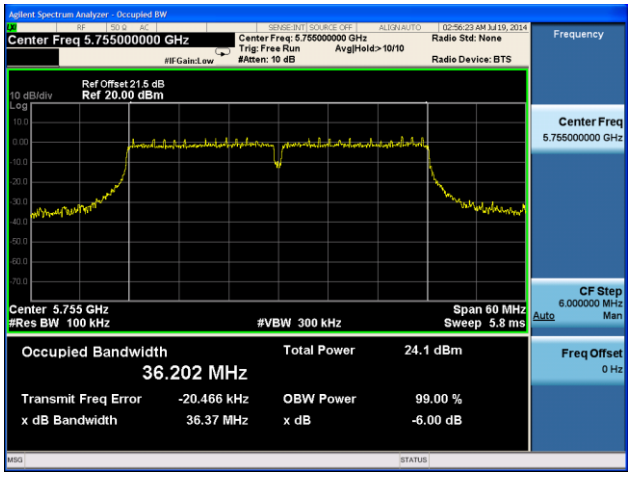


Channel 165 (5825MHz)	
	

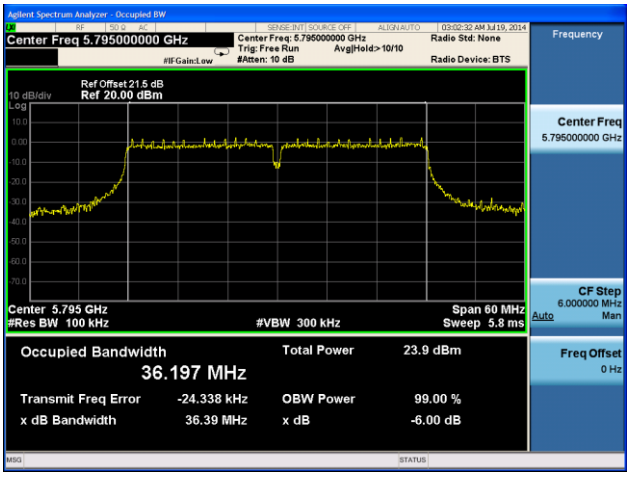
802.11ac-VHT20 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

802.11n-HT40 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

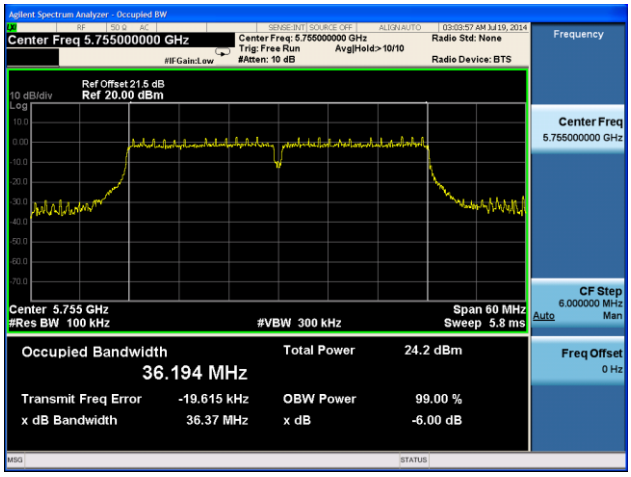


Channel 159 (5795MHz)

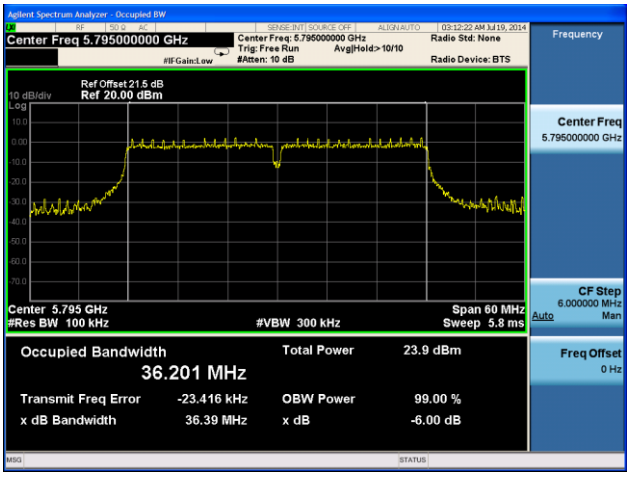


802.11ac-VHT40 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

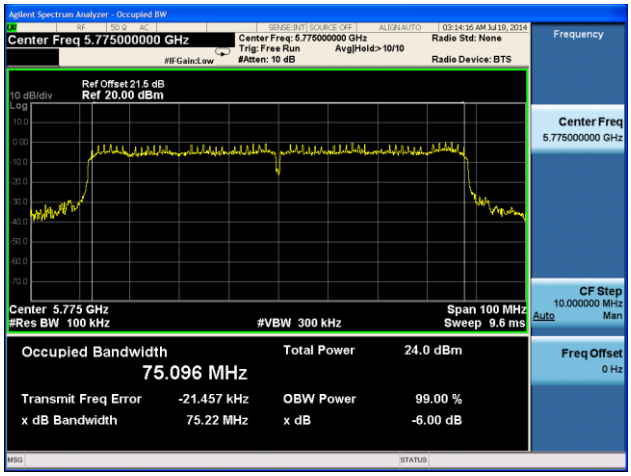


Channel 159 (5795MHz)



802.11ac-VHT80 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

Channel 155 (5775MHz)



7.3. Output Power Measurement *§15.247(b)(3); RSS-210 [A8.4]*

7.3.1. Test Limit

For FCC

The maximum out power shall be less 1 Watt (30dBm).

Limit for Non-Beam Forming

Output power Limit 2412 ~ 2462MHz: Limit (dBm) = 30dBm

Output power Limit 5745 ~ 5825MHz: Limit (dBm) = 30dBm

Limit for Beam Forming

Output power Limit 5745 ~ 5825MHz: Limit (dBm) = 30dBm - (8.7dBi - 6dBi) = 27.3dBm

For IC

The maximum peak conducted output power shall be exceed 1 Watt (30dBm) and the E.I.R.P shall not exceed 4 Watt (36dBm).

7.3.2. Test Procedure Used

KDB 558074 D01v03r01 - Section 9.1.3 PKPM1 Peak Power Method (for signals with BW ≤ 50MHz)

KDB 558074 D01v03r01 - Section 9.1.2 PKPM1 Peak Power Method (for signals with BW > 50MHz)

7.3.3. Test Setting

Method PKPM1 (Peak Power Measurement of Signals with DTS BW ≤ 50MHz)

Peak power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The pulse sensor employs a VBW = 50MHz so this method was only used for signals whose DTS bandwidth was less than or equal to 50MHz.

Method PKPM1 (Peak Power Measurement of Signals with DTS BW > 50MHz)

1) Set the RBW = 1MHz.

2) Set the VBW ≥ 3RBW

3) Set the span ≥ 1.5 x DTS bandwidth.

4) Detector = peak.

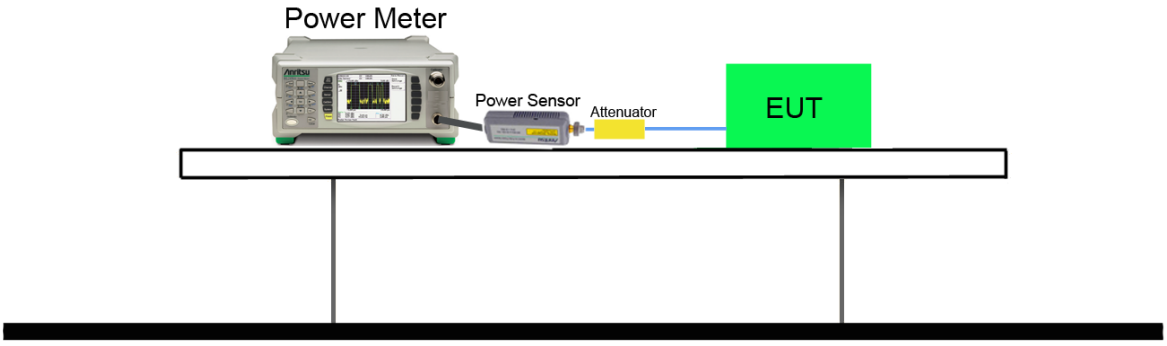
5) Sweep time = auto couple.

6) Trace mode = max hold.

7) Allow trace to fully stabilize.

8) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector).

7.3.4. Test Setup



7.3.5. Test Result of Output Power

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.

MCS Index for 802.11n	N_{Tx}	Data Rate (Mbps)					
		802.11b	802.11g	20MHz Bandwidth		40MHz Bandwidth	
				800ns GI	400ns GI	800ns GI	400ns GI
0	1	1	6	6.5	7.2	13.5	15.0
1	1	2	9	13.0	14.4	27.0	30.0
2	1	5.5	12	19.5	21.7	40.5	45.0
3	1	11	18	26.0	28.9	54.0	60.0
4	1	--	24	39.0	43.3	81.0	90.0
5	1	--	36	52.0	57.8	108.0	120.0
6	1	--	48	58.5	65.0	121.5	135.0
7	1	--	54	65.0	72.2	135.0	150.0
8	2	--	--	13.0	14.4	27.0	30.0
9	2	--	--	26.0	28.9	54.0	60.0
10	2	--	--	39.0	43.3	81.0	90.0
11	2	--	--	52.0	57.8	108.0	120.0
12	2	--	--	78.0	86.7	162.0	180.0
13	2	--	--	104.0	115.6	216.0	240.0
14	2	--	--	117.0	130.0	243.0	270.0
15	2	--	--	130.0	144.0	270.0	300.0

MCS Index for 802.11n	N_{Tx}	Data Rate (Mbps)				
		802.11a	20MHz Bandwidth		40MHz Bandwidth	
			800ns GI	400ns GI	800ns GI	400ns GI
24	4	6	26.0	28.8	54.0	60.0
25	4	9	52.0	57.6	108.0	120.0
26	4	12	78.0	86.8	162.0	180.0
27	4	18	104.0	115.6	216.0	240.0
28	4	24	156.0	173.2	324.0	360.0
29	4	36	208.0	231.2	342.0	480.0
30	4	48	234.0	260.0	486.0	540.0
31	4	54	260.0	288.8	540.0	600.0

MCS Index for 802.11ac	N_{SS}	Data Rate (Mbps)					
		20MHz Bandwidth		40MHz Bandwidth		80MHz Bandwidth	
		800ns GI	400ns GI	800ns GI	400ns GI	800ns GI	400ns GI
0	1	6.5	7.2	13.5	15.0	29.3	32.5
1	1	13.0	14.4	27.0	30.0	58.5	65.0
2	1	19.5	21.7	40.5	45.0	87.8	97.5
3	1	26.0	28.9	54.0	60.0	117.0	130.0
4	1	39.0	43.3	81.0	90.0	175.5	195.0
5	1	52.0	57.8	108.0	120.0	234.0	260.0
6	1	58.5	65.0	121.5	135.0	263.0	292.5
7	1	65.0	72.2	135.0	150.0	292.5	325.0
8	1	78.0	86.7	162.0	180.0	351.0	390.0
9	1	--	--	180.0	200.0	390.0	433.3
0	4	26.0	28.9	54.0	60.0	117.0	130.0
1	4	52.0	57.8	108.0	120.0	234.0	260.0
2	4	78.0	86.7	162.0	180.0	351.0	390.0
3	4	104.0	115.6	216.0	240.0	468.0	520.0
4	4	156.0	173.3	324.0	360.0	702.0	780.0
5	4	208.0	231.1	432.0	480.0	936.0	1040.0
6	4	234.0	260.0	486.0	540.0	1053.0	1170.0
7	4	260.0	288.9	540.0	600.0	1170.0	1300.0
8	4	312.0	246.7	648.0	720.0	1404.0	1560.0
9	4	--	--	720.0	800.0	1560.0	1733.3

Output power at various data rates for Ant0:

Test Mode	Bandwidth (MHz)	Channel No.	Frequency (MHz)	Data Rate (Mbps)	Peak Power (dBm)
802.11b	20	6	2437	1	22.01
				5.5	21.59
				11	20.77
802.11g	20	6	2437	6	24.86
				36	24.32
				54	23.76
802.11n	20	6	2437	6.5	25.36
				65	24.79
				130	24.11
802.11n	40	6	2437	13.5	25.23
				135	24.82
				270	24.27
802.11a	20	157	5785	6	23.56
				36	22.94
				54	22.18
802.11n	20	157	5785	6.5	23.13
				130	22.61
				260	22.07
802.11ac	20	157	5785	6.5	23.59
				78	23.08
				312	22.27
802.11n	40	151	5755	13.5	23.89
				270	23.08
				540	22.73
802.11ac	40	151	5755	13.5	24.07
				162	23.63
				720	23.08
802.11ac	80	155	5775	29.3	23.56
				390	23.08
				1560	22.67