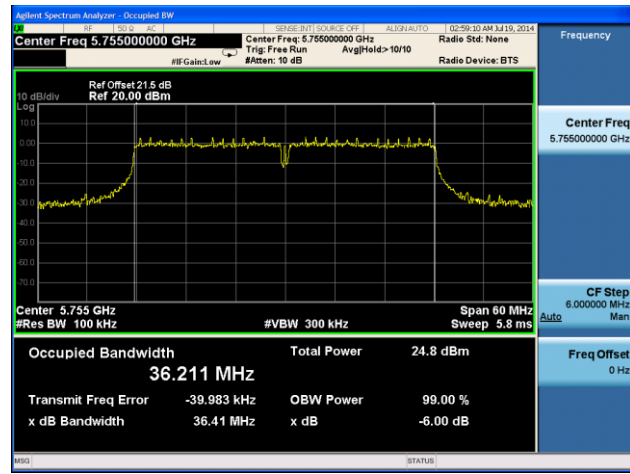
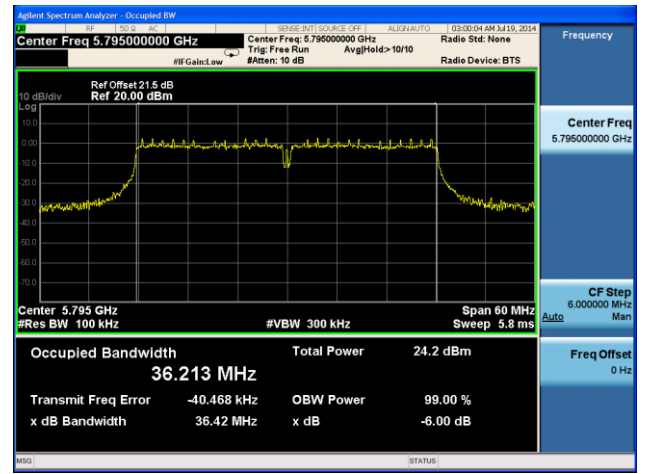


802.11n-HT40 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

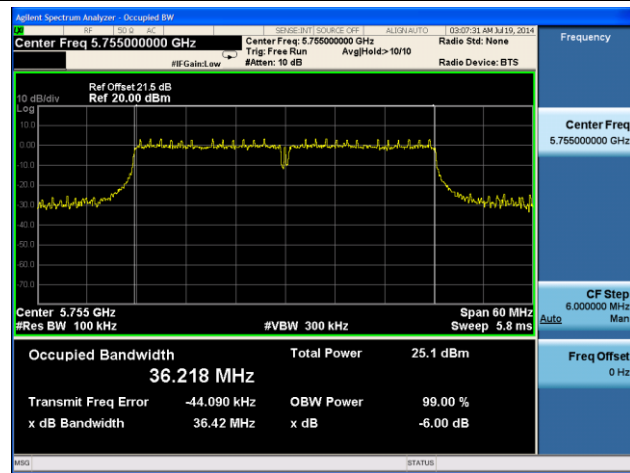


Channel 159 (5795MHz)

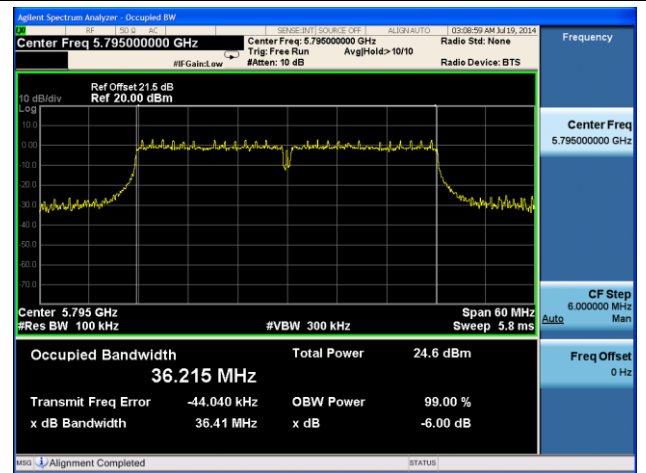


802.11ac-VHT40 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

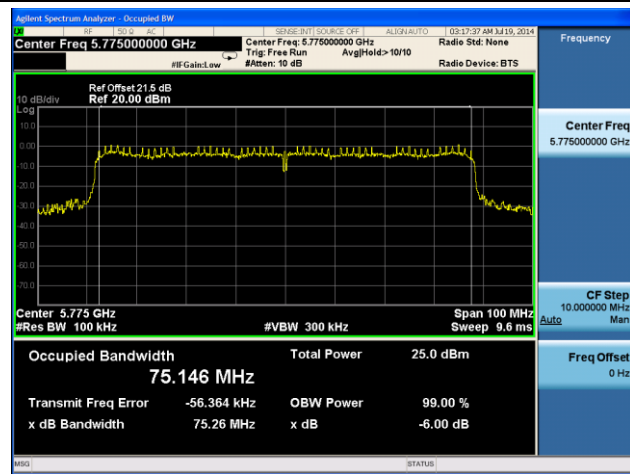


Channel 159 (5795MHz)



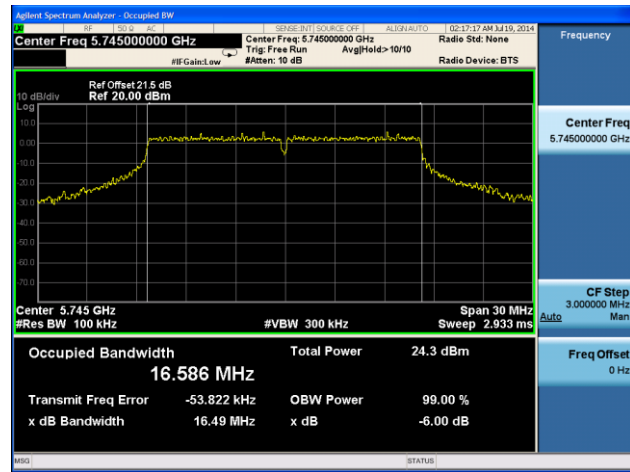
802.11ac-VHT80 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 155 (5775MHz)

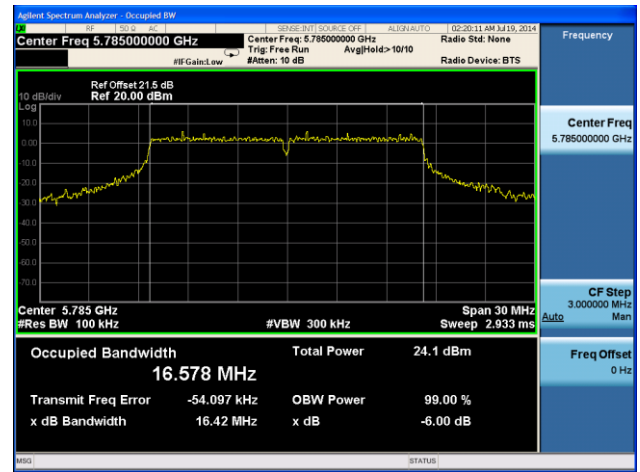


802.11a 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

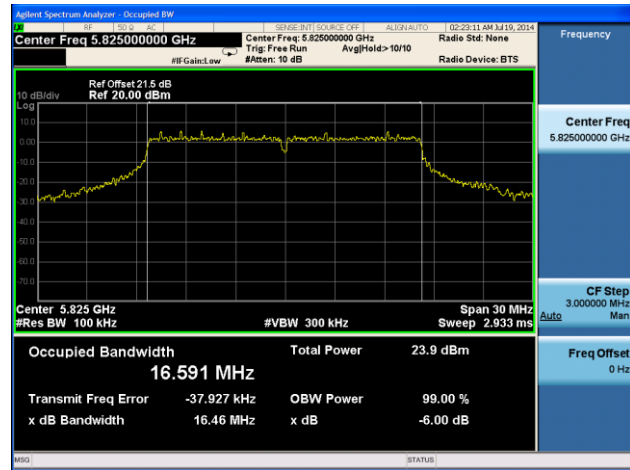
Channel 149 (5745MHz)



Channel 157 (5785MHz)

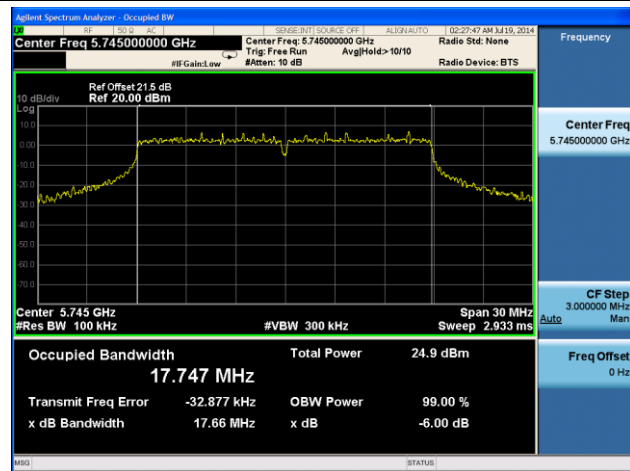


Channel 165 (5825MHz)

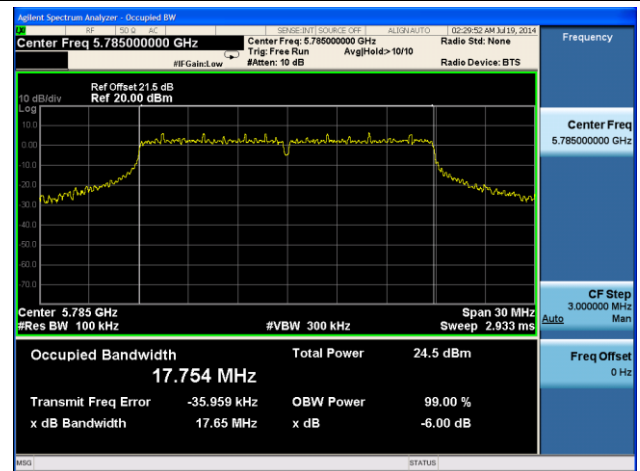


802.11n-HT20 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

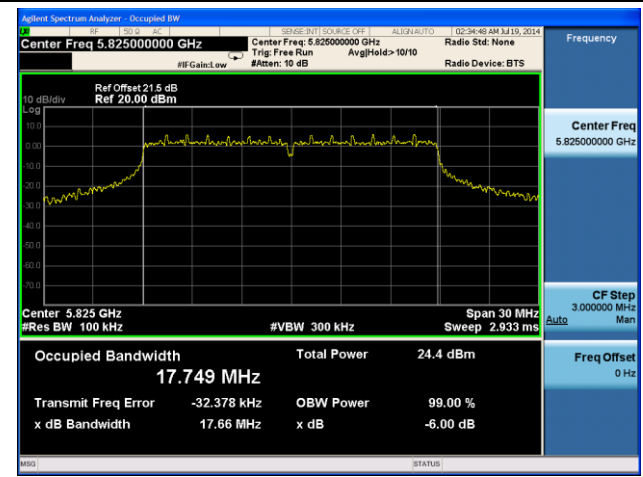
Channel 149 (5745MHz)



Channel 157 (5785MHz)

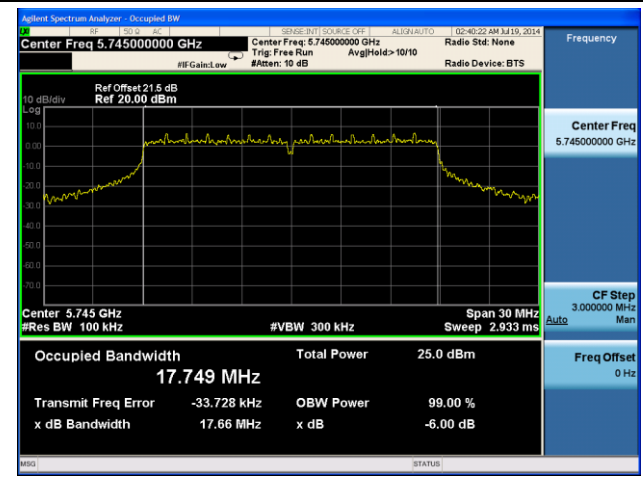


Channel 165 (5825MHz)

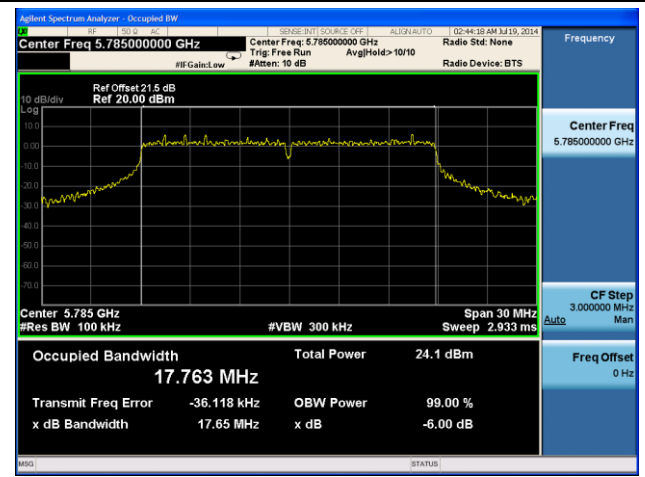


802.11ac-VHT20 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

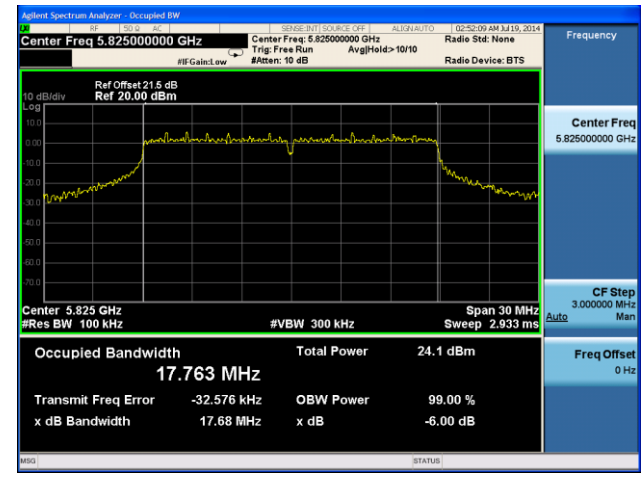
Channel 149 (5745MHz)



Channel 157 (5785MHz)

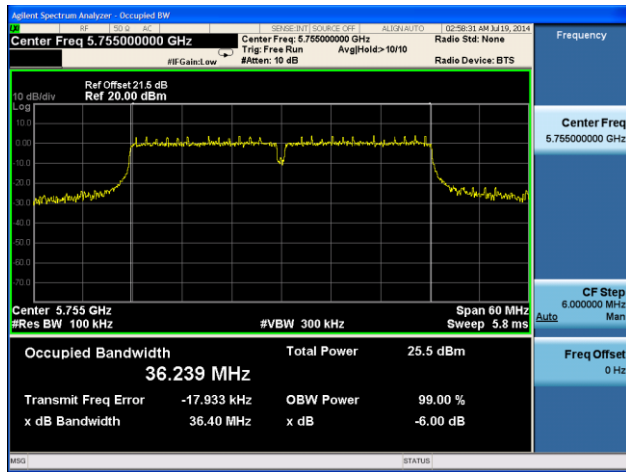


Channel 165 (5825MHz)

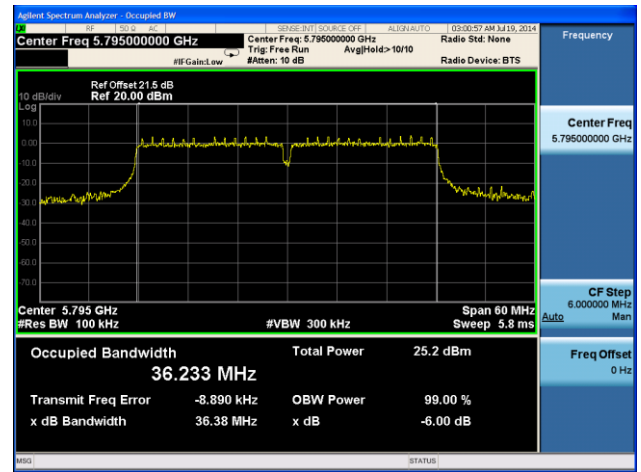


802.11n-HT40 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

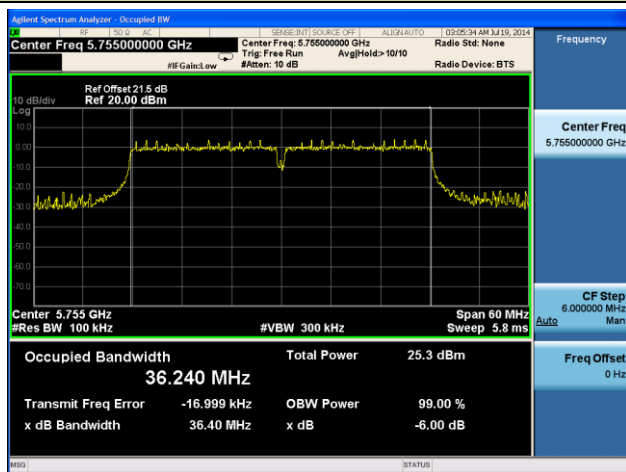


Channel 159 (5795MHz)

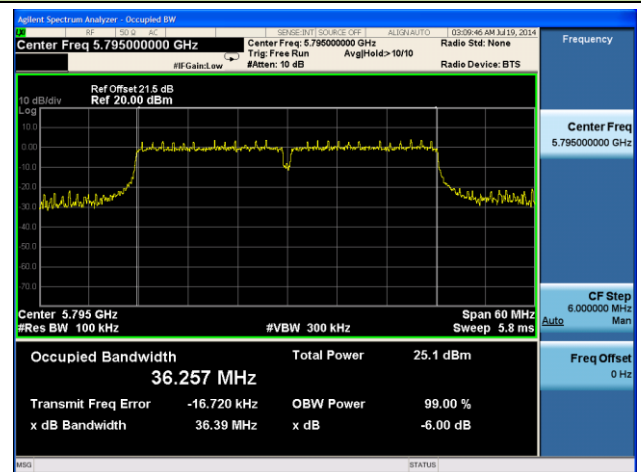


802.11ac-VHT40 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

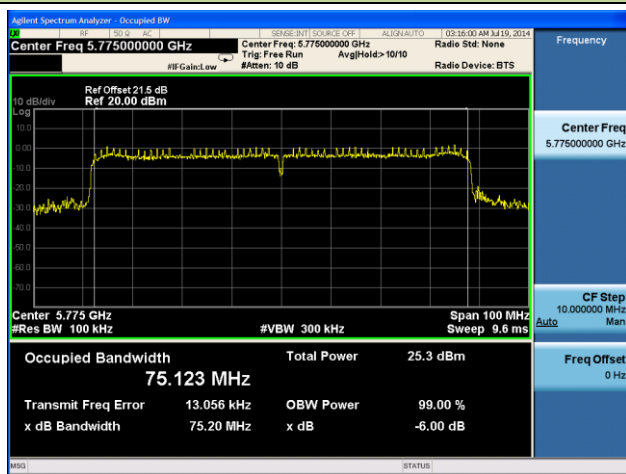


Channel 159 (5795MHz)



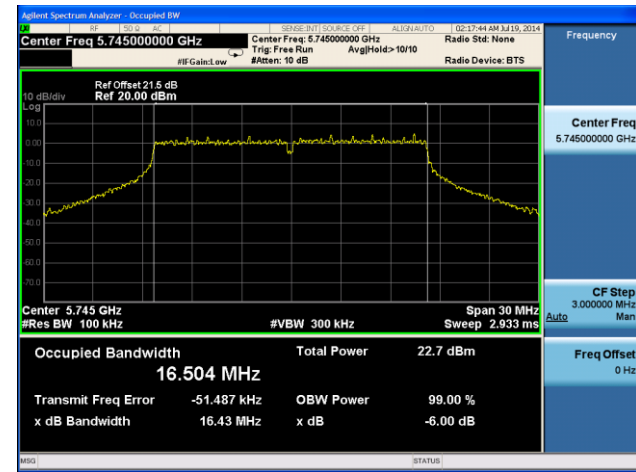
802.11ac-VHT80 6dB Bandwidth - Ant 1 / Ant 0 + 1 + 2 + 3

Channel 155 (5775MHz)

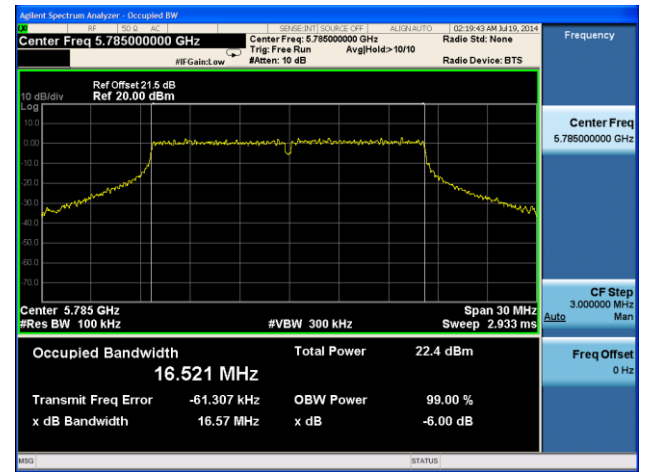


802.11a 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

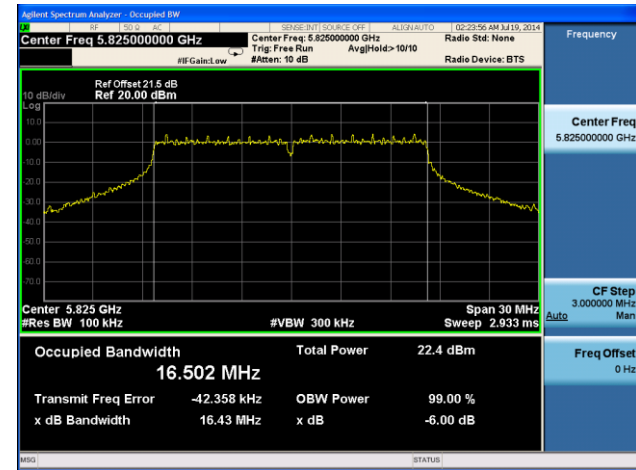
Channel 149 (5745MHz)



Channel 157 (5785MHz)

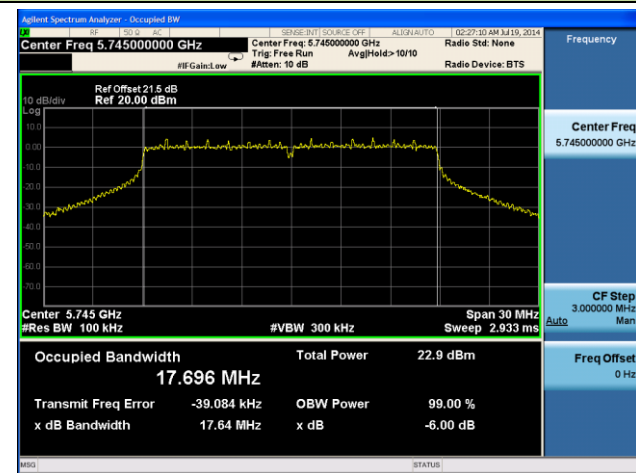


Channel 165 (5825MHz)

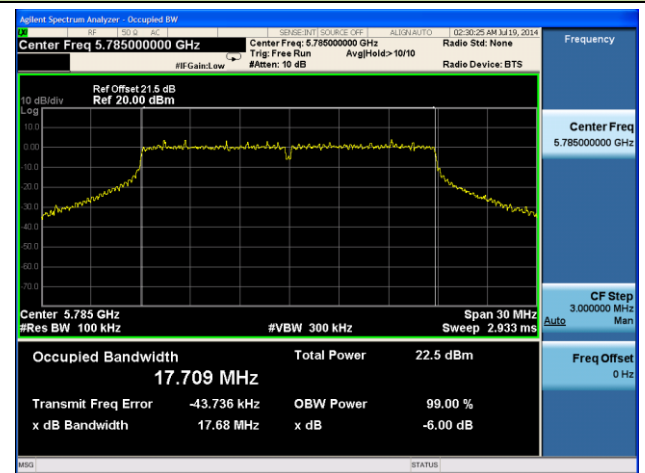


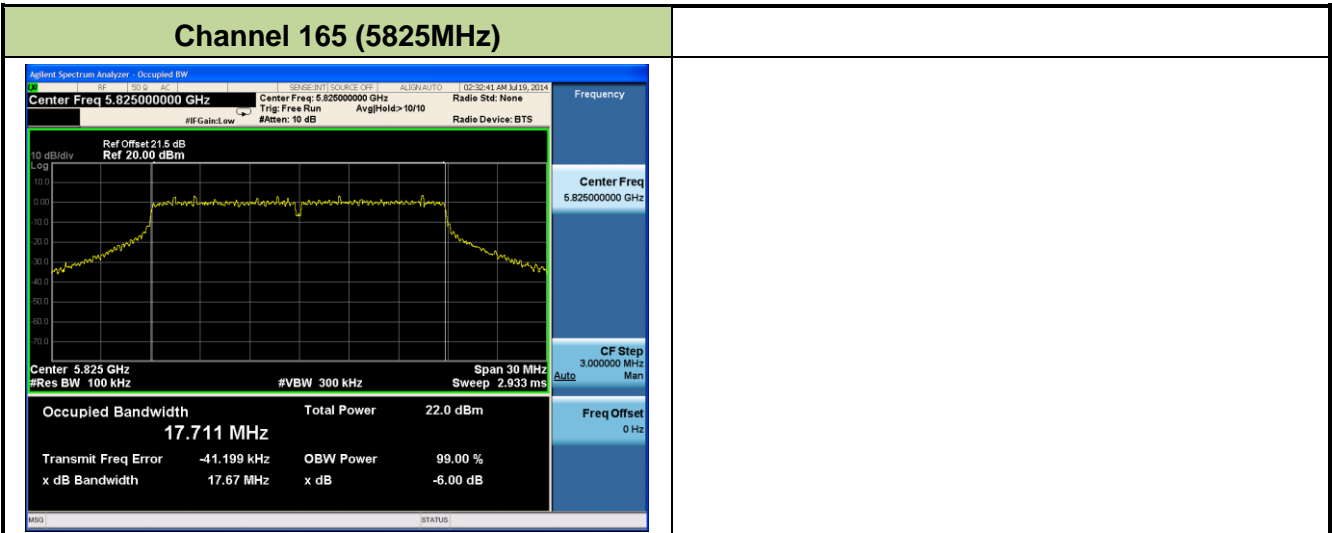
802.11n-HT20 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

Channel 149 (5745MHz)

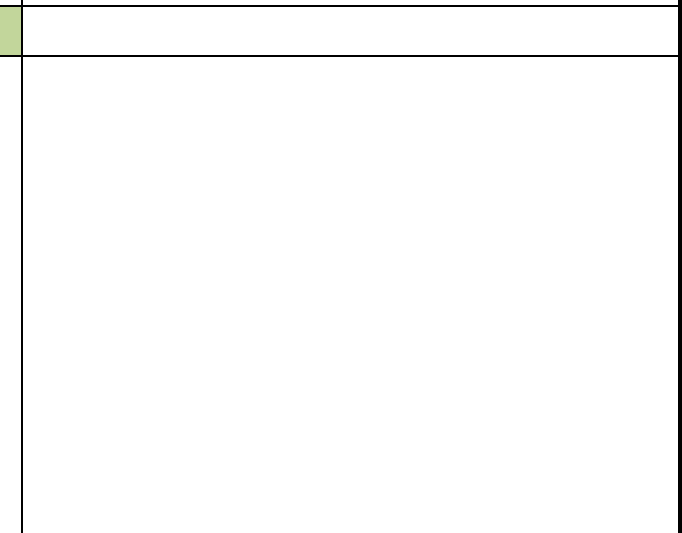
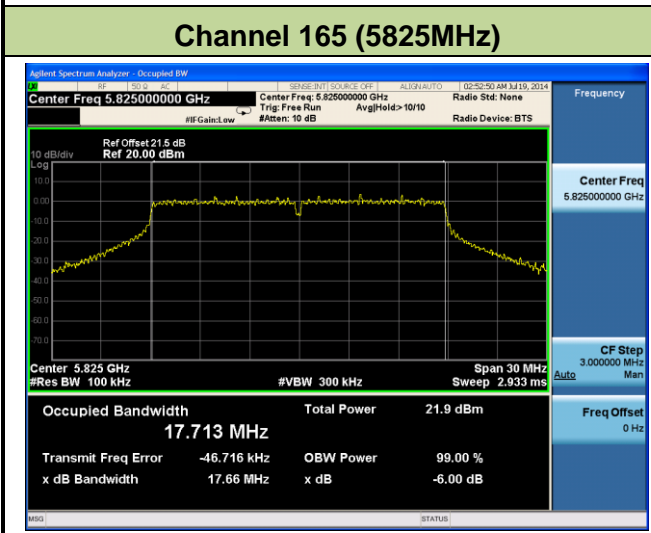
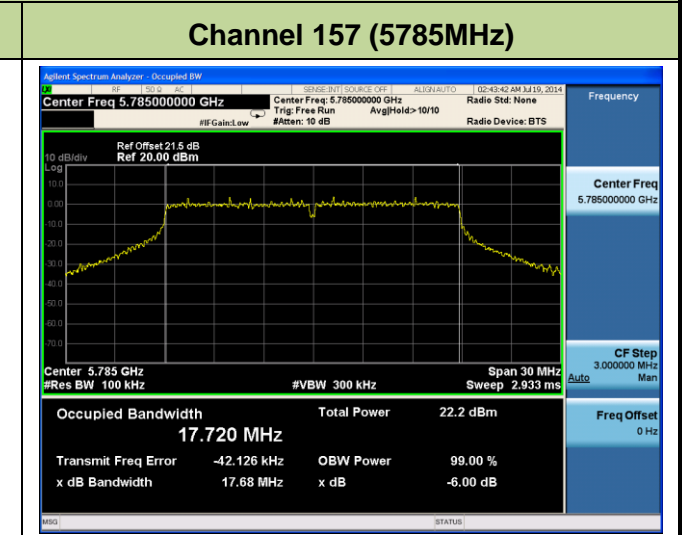
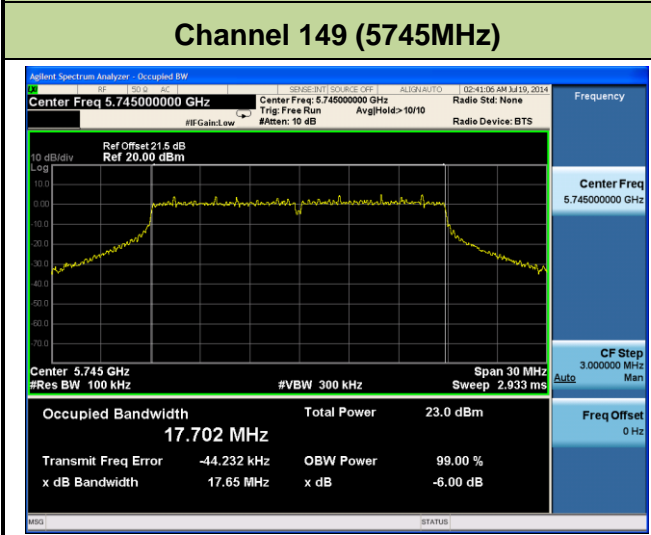


Channel 157 (5785MHz)



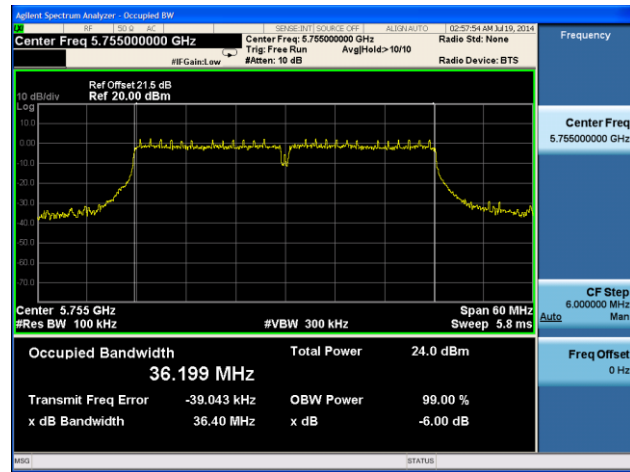


802.11ac-VHT20 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

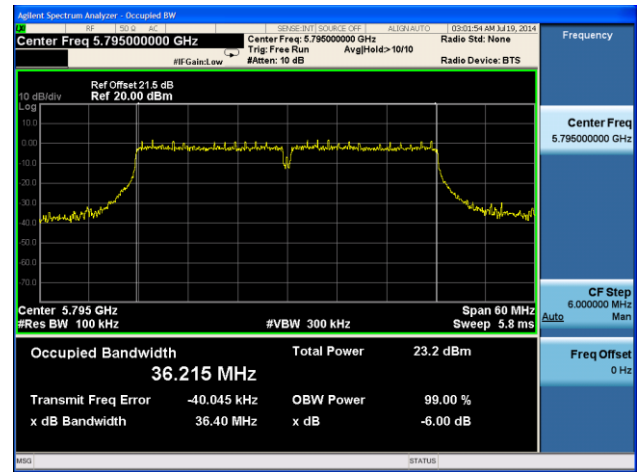


802.11n-HT40 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

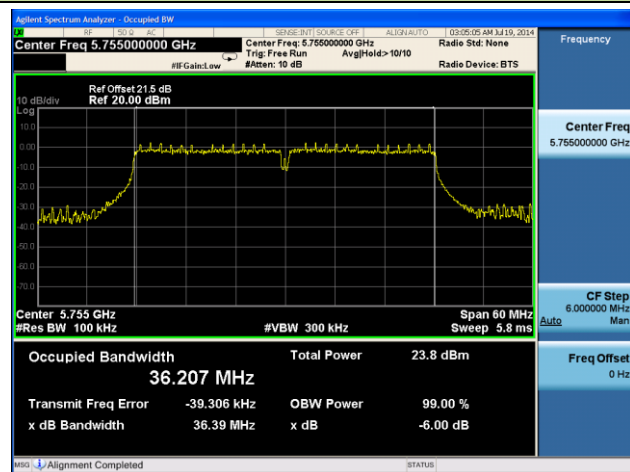


Channel 159 (5795MHz)

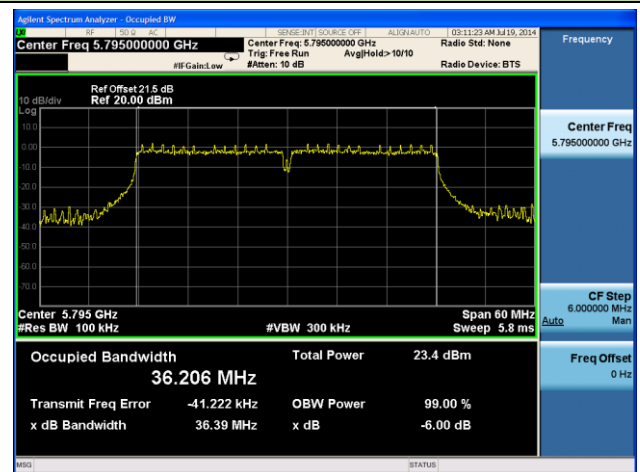


802.11ac-VHT40 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

Channel 151 (5745MHz)

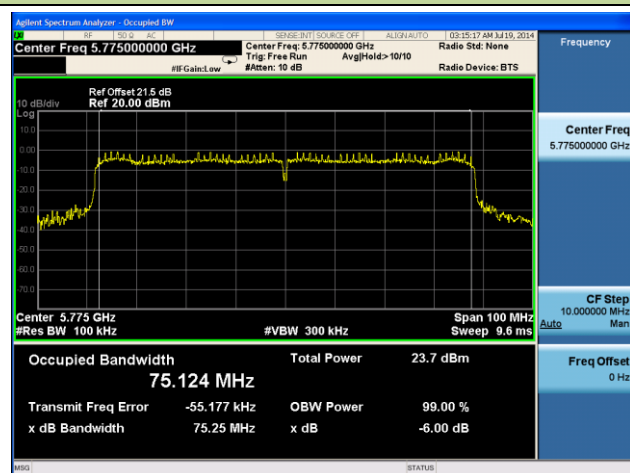


Channel 159 (5795MHz)



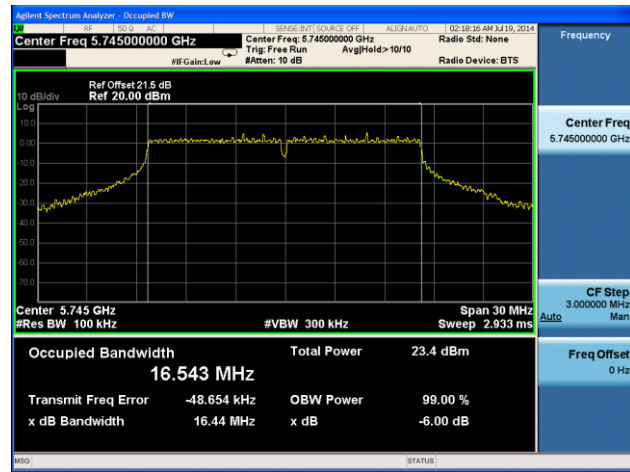
802.11ac-VHT80 6dB Bandwidth - Ant 2 / Ant 0 + 1 + 2 + 3

Channel 155 (5775MHz)

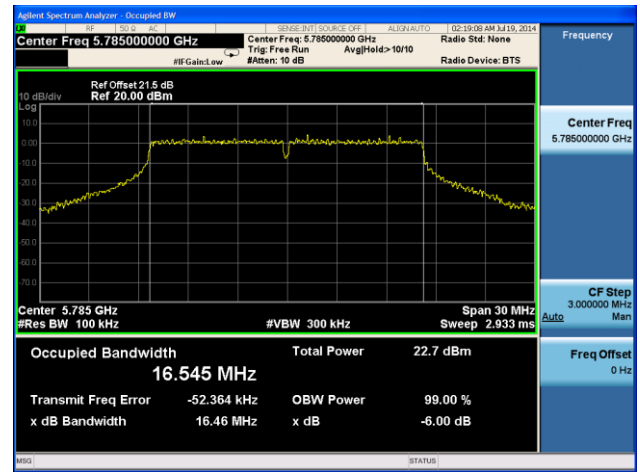


802.11a 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

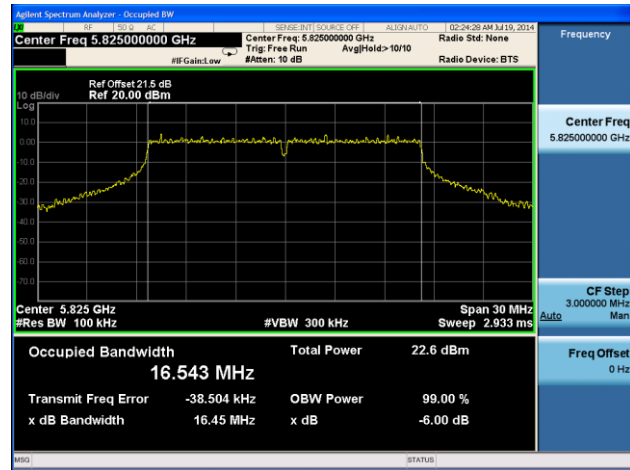
Channel 149 (5745MHz)



Channel 157 (5785MHz)

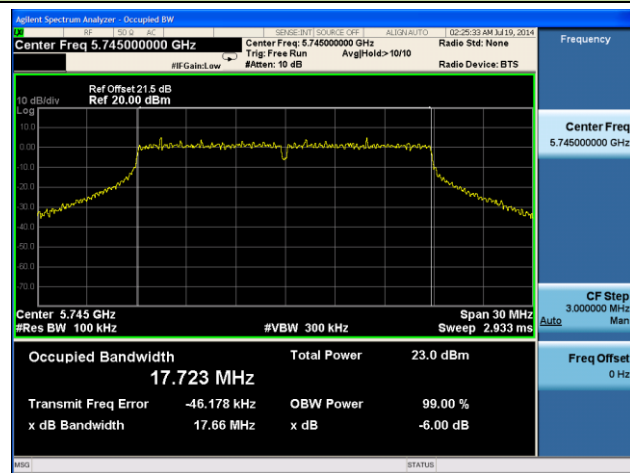


Channel 165 (5825MHz)

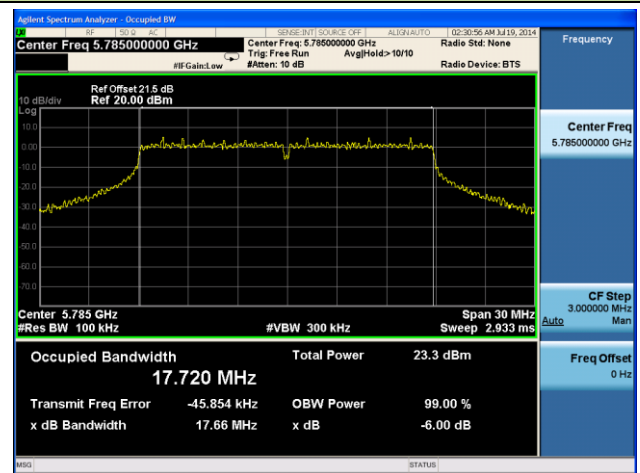


802.11n-HT20 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

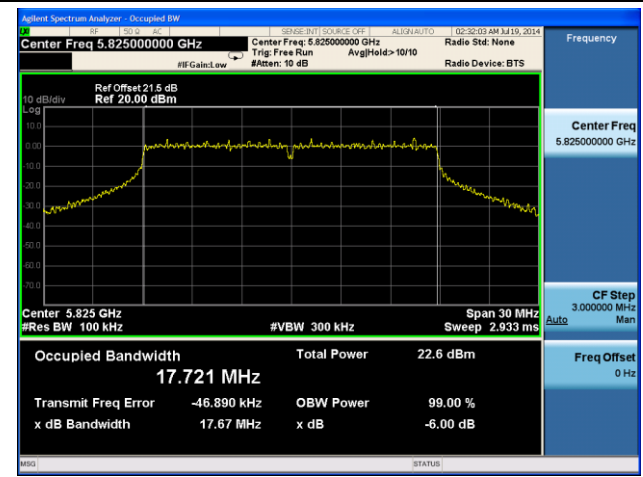
Channel 149 (5745MHz)



Channel 157 (5785MHz)

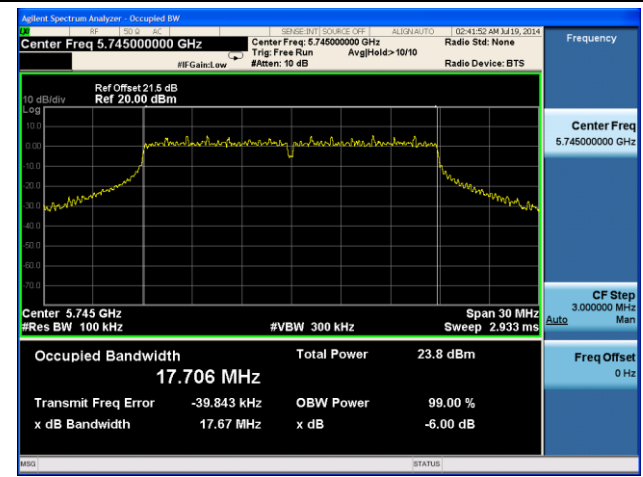


Channel 165 (5825MHz)

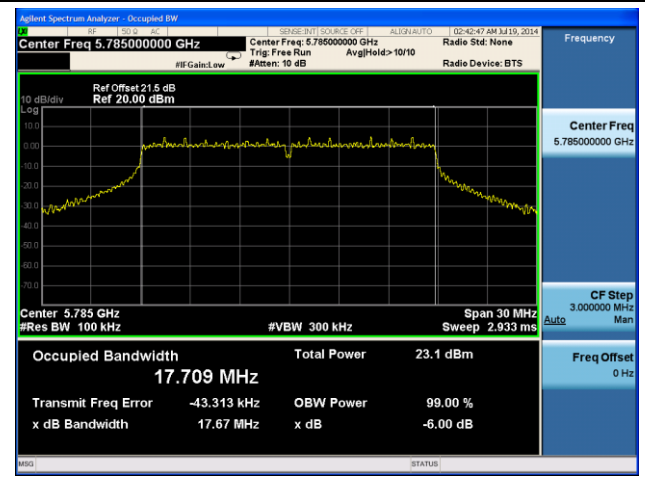


802.11ac-VHT20 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

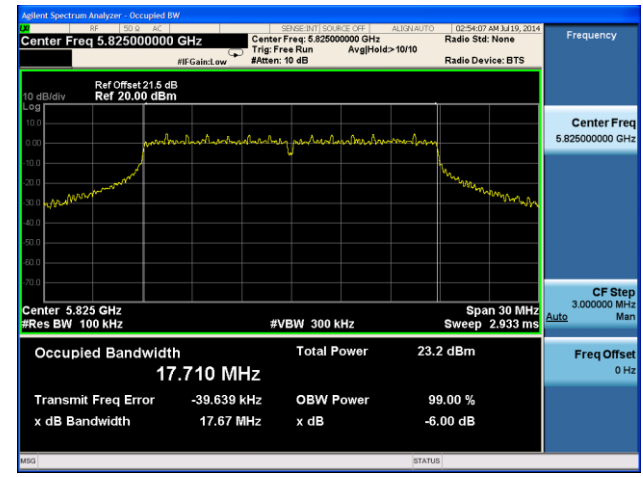
Channel 149 (5745MHz)



Channel 157 (5785MHz)

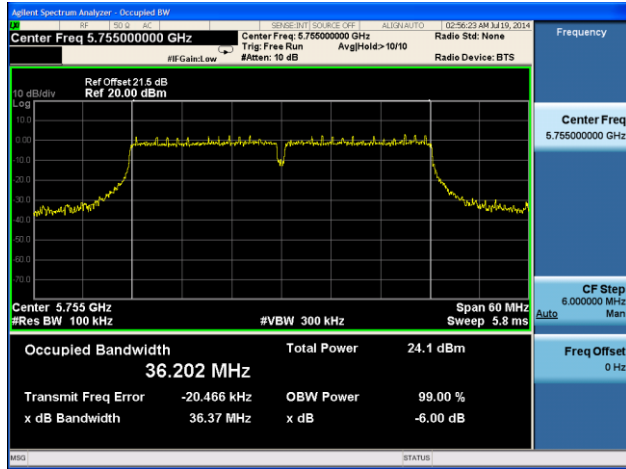


Channel 165 (5825MHz)

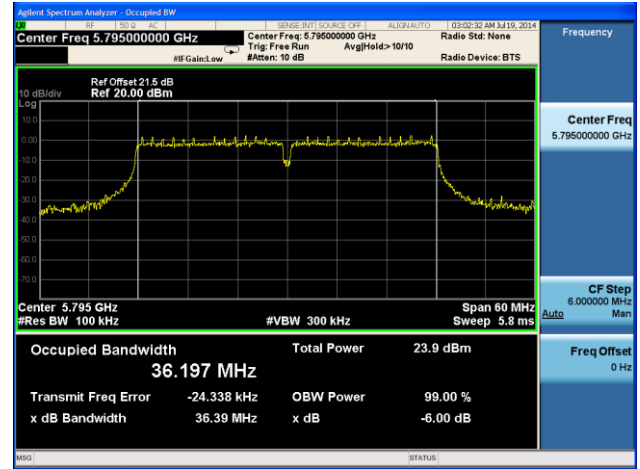


802.11n-HT40 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

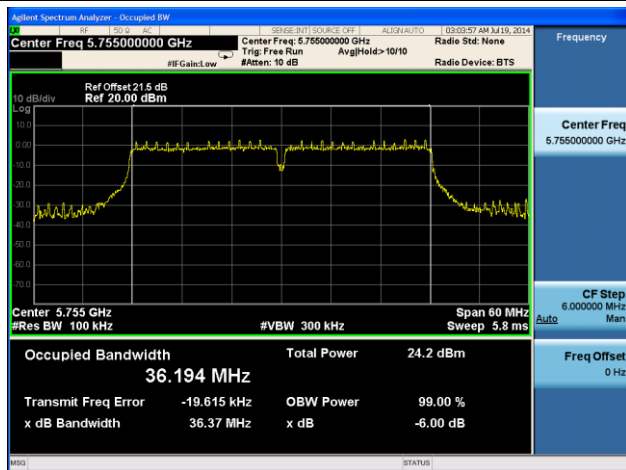


Channel 159 (5795MHz)

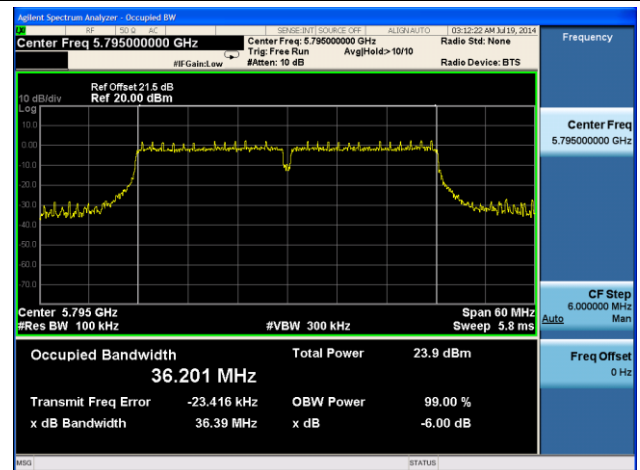


802.11ac-VHT40 6dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)

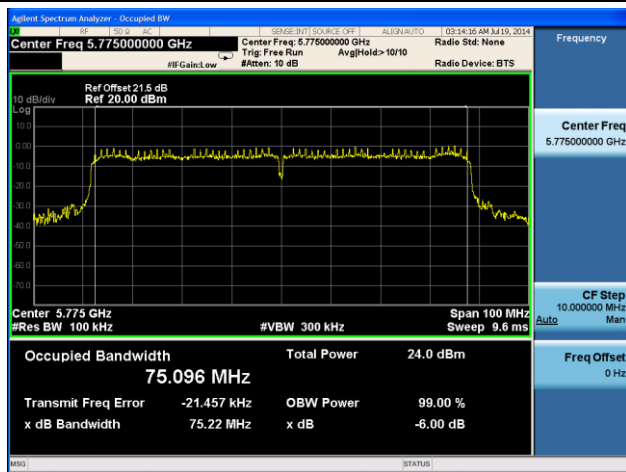


Channel 159 (5795MHz)



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)

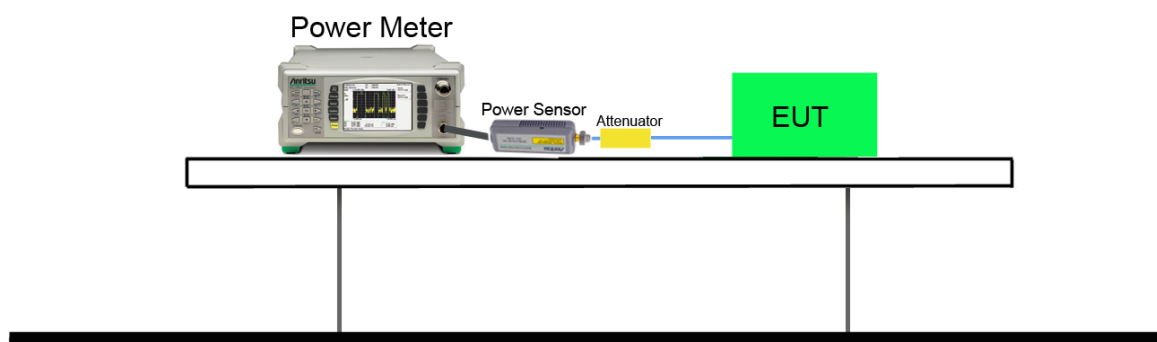
Peak power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The pulse sensor employs a VBW = 50MHz so this method was only used for signals whose DTS bandwidth was less than or equal to 50MHz.

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	23.97
				5.5	23.14
				11	22.73
802.11g	20	6	2437	6	29.23
				36	28.65
				54	27.78
802.11n	20	6	2437	6.5	27.71
				65	27.15
				130	26.87
802.11n	40	6	2437	13.5	26.93
				135	26.25
				270	25.53
802.11a	20	157	5785	6	23.56
				36	23.15
				54	22.96
802.11n	20	157	5785	6.5	23.13
				130	22.98
				260	22.34
802.11ac	20	157	5785	6.5	23.59
				78	23.16
				312	22.73
802.11n	40	151	5755	13.5	23.89
				270	22.97
				540	22.61
802.11ac	40	151	5755	13.5	24.07
				162	23.38
				720	22.83
802.11ac	80	155	5775	29.3	23.56
				390	23.05
				1560	22.61

Test Result of Peak Output Power

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	Ant 0 Peak Power (dBm)	Ant 1 Peak Power (dBm)	Total Peak Power (dBm)	Peak Power Limit (dBm)	Max EIRP (dBm)	EIRP Limit (dBm)	Result
Ant 0										
11b	1	1	2412	24.18	--	24.18	≤30	26.08	≤ 36	Pass
11b	1	6	2437	23.97	--	23.97	≤30	25.87	≤ 36	Pass
11b	1	11	2462	23.76	--	23.76	≤30	25.66	≤ 36	Pass
11g	6	1	2412	27.86	--	27.86	≤30	29.76	≤ 36	Pass
11g	6	6	2437	29.23	--	29.23	≤30	31.13	≤ 36	Pass
11g	6	11	2462	28.21	--	28.21	≤30	30.11	≤ 36	Pass
11n-HT20	6.5	1	2412	26.67	--	26.67	≤30	28.57	≤ 36	Pass
11n-HT20	6.5	6	2437	29.71	--	29.71	≤30	31.61	≤ 36	Pass
11n-HT20	6.5	11	2462	26.27	--	26.27	≤30	28.17	≤ 36	Pass
11n-HT40	13.5	3	2422	22.95	--	22.95	≤30	24.85	≤ 36	Pass
11n-HT40	13.5	6	2437	28.93	--	28.93	≤30	30.83	≤ 36	Pass
11n-HT40	13.5	9	2452	23.92	--	23.92	≤30	25.82	≤ 36	Pass
Ant 1										
11n-HT20	6.5	1	2412	--	26.35	26.35	≤30	28.25	≤ 36	Pass
11n-HT20	6.5	6	2437	--	28.98	28.98	≤30	30.88	≤ 36	Pass
11n-HT20	6.5	11	2462	--	25.35	25.35	≤30	27.25	≤ 36	Pass
11n-HT40	13.5	3	2422	--	22.94	22.94	≤30	24.84	≤ 36	Pass
11n-HT40	13.5	6	2437	--	28.52	28.52	≤30	30.42	≤ 36	Pass
11n-HT40	13.5	9	2452	--	23.37	23.37	≤30	25.27	≤ 36	Pass
Ant 0 + 1										
11n-HT20	6.5	1	2412	26.36	26.23	29.31	≤30	31.21	≤ 36	Pass
11n-HT20	6.5	6	2437	27.21	26.22	29.75	≤30	31.65	≤ 36	Pass
11n-HT20	6.5	11	2462	26.92	25.92	29.46	≤30	31.36	≤ 36	Pass
11n-HT40	13.5	3	2422	23.24	24.21	26.76	≤30	28.66	≤ 36	Pass
11n-HT40	13.5	6	2437	26.44	26.97	29.72	≤30	31.62	≤ 36	Pass
11n-HT40	13.5	9	2452	24.13	24.84	27.51	≤30	29.41	≤ 36	Pass



Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	Ant 0 Peak Power (dBm)	Ant 1 Peak Power (dBm)	Ant 2 Peak Power (dBm)	Ant 3 Peak Power (dBm)	Total Peak Power (dBm)	Peak Power Limit (dBm)	Max EIRP (dBm)	EIRP Limit (dBm)	Result
Ant 0 + 1 + 2 + 3, Non-Beam Forming												
11a	6	149	5745	23.32	23.78	22.15	22.58	29.02	≤30	31.72	≤ 36	Pass
11a	6	157	5785	23.56	24.62	23.15	23.41	29.74	≤30	32.44	≤ 36	Pass
11a	6	165	5825	23.76	24.31	22.75	23.19	29.56	≤30	32.26	≤ 36	Pass
11n-HT20	6.5	149	5745	23.67	24.26	23.07	23.22	29.60	≤30	32.30	≤ 36	Pass
11n-HT20	6.5	157	5785	23.13	23.91	22.65	22.82	29.18	≤30	31.88	≤ 36	Pass
11n-HT20	6.5	165	5825	22.69	23.81	22.02	22.83	28.91	≤30	31.61	≤ 36	Pass
11ac-VHT20	6.5	149	5745	23.68	24.08	22.84	23.70	29.62	≤30	32.32	≤ 36	Pass
11ac-VHT20	6.5	157	5785	23.59	23.78	22.52	22.79	29.22	≤30	31.92	≤ 36	Pass
11ac-VHT20	6.5	165	5825	22.98	23.61	22.34	22.95	29.01	≤30	31.71	≤ 36	Pass
11n-HT40	13.5	151	5755	23.89	24.69	22.76	23.27	29.73	≤30	32.43	≤ 36	Pass
11n-HT40	13.5	159	5795	23.75	24.22	22.41	22.81	29.38	≤30	32.08	≤ 36	Pass
11ac-VHT40	13.5	151	5755	24.07	24.44	23.02	23.22	29.75	≤30	32.45	≤ 36	Pass
11ac-VHT40	13.5	159	5795	23.38	24.29	22.34	22.96	29.32	≤30	32.02	≤ 36	Pass
11ac-VHT80	29.3	155	5775	23.56	24.65	22.35	23.14	29.53	≤30	32.23	≤ 36	Pass
Ant 0 + 1 + 2 + 3, Beam Forming												
11n-HT20	6.5	149	5745	20.71	21.03	19.77	19.33	26.28	≤27.3	28.98	≤ 36	Pass
11n-HT20	6.5	157	5785	20.10	20.70	18.77	19.55	25.86	≤27.3	28.56	≤ 36	Pass
11n-HT20	6.5	165	5825	21.32	21.47	19.96	20.49	26.87	≤27.3	29.57	≤ 36	Pass
11ac-VHT20	6.5	149	5745	20.56	20.91	19.56	19.96	26.30	≤27.3	29.00	≤ 36	Pass
11ac-VHT20	6.5	157	5785	20.23	20.75	19.26	20.06	26.13	≤27.3	28.83	≤ 36	Pass
11ac-VHT20	6.5	165	5825	21.42	21.68	19.91	20.80	27.03	≤27.3	29.73	≤ 36	Pass
11n-HT40	13.5	151	5755	20.83	20.68	19.42	19.54	26.19	≤27.3	28.89	≤ 36	Pass
11n-HT40	13.5	159	5795	20.62	20.68	19.34	19.91	26.19	≤27.3	28.89	≤ 36	Pass
11ac-VHT40	13.5	151	5755	20.48	20.57	19.09	19.39	25.95	≤27.3	28.65	≤ 36	Pass
11ac-VHT40	13.5	159	5795	20.28	20.62	19.27	19.85	26.05	≤27.3	28.75	≤ 36	Pass
11ac-VHT80	29.3	155	5775	20.74	20.76	19.42	19.50	26.17	≤27.3	28.87	≤ 36	Pass

Test Result of Average Output Power (Reporting Only)

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)	Result
Ant 0								
11b	1	1	2412	20.98	--	20.98	≤30	Pass
11b	1	6	2437	20.65	--	20.65	≤30	Pass
11b	1	11	2462	20.72	--	20.72	≤30	Pass
11g	6	1	2412	18.98	--	18.98	≤30	Pass
11g	6	6	2437	21.24	--	21.24	≤30	Pass
11g	6	11	2462	19.22	--	19.22	≤30	Pass
11n-HT20	6.5	1	2412	17.83	--	17.83	≤30	Pass
11n-HT20	6.5	6	2437	20.65	--	20.65	≤30	Pass
11n-HT20	6.5	11	2462	17.45	--	17.45	≤30	Pass
11n-HT40	13.5	3	2422	13.84	--	13.84	≤30	Pass
11n-HT40	13.5	6	2437	19.66	--	19.66	≤30	Pass
11n-HT40	13.5	9	2452	14.54	--	14.54	≤30	Pass
Ant 1								
11n-HT20	6.5	1	2412	--	17.30	17.30	≤30	Pass
11n-HT20	6.5	6	2437	--	20.16	20.16	≤30	Pass
11n-HT20	6.5	11	2462	--	16.41	16.41	≤30	Pass
11n-HT40	13.5	3	2422	--	13.79	13.79	≤30	Pass
11n-HT40	13.5	6	2437	--	19.16	19.16	≤30	Pass
11n-HT40	13.5	9	2452	--	13.99	13.99	≤30	Pass
Ant 0 + 1								
11n-HT20	6.5	1	2412	17.05	16.38	19.74	≤30	Pass
11n-HT20	6.5	6	2437	17.53	16.35	19.99	≤30	Pass
11n-HT20	6.5	11	2462	17.44	16.03	19.80	≤30	Pass
11n-HT40	13.5	3	2422	13.48	13.98	16.75	≤30	Pass
11n-HT40	13.5	6	2437	16.52	16.86	19.70	≤30	Pass
11n-HT40	13.5	9	2452	14.51	14.55	17.54	≤30	Pass