Annex D

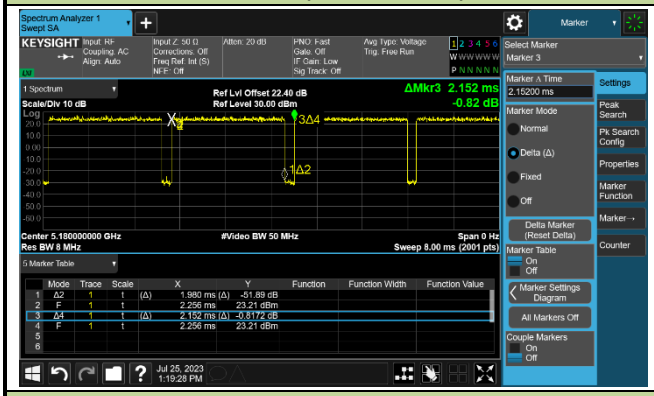
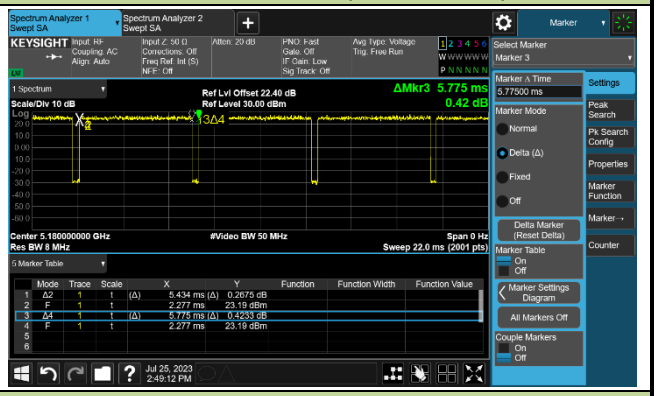
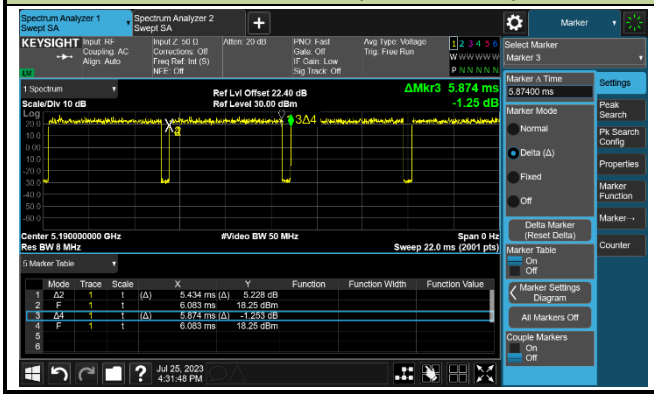
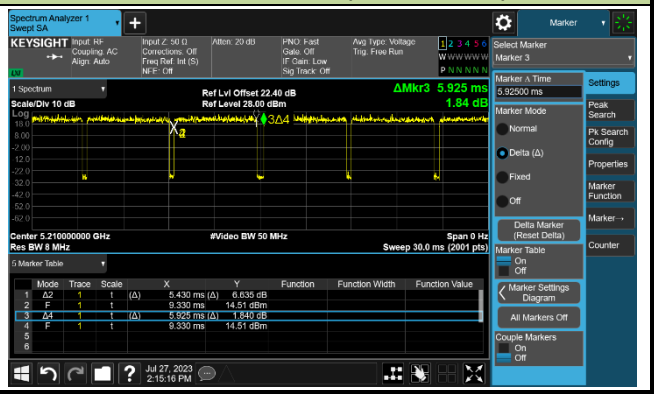
WLAN 802.11a/ac/ax Test Result

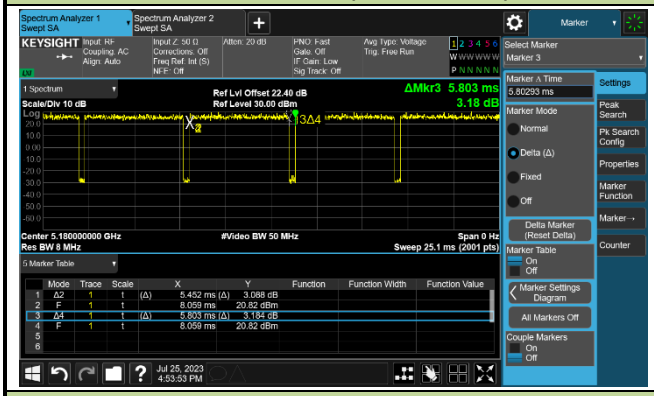
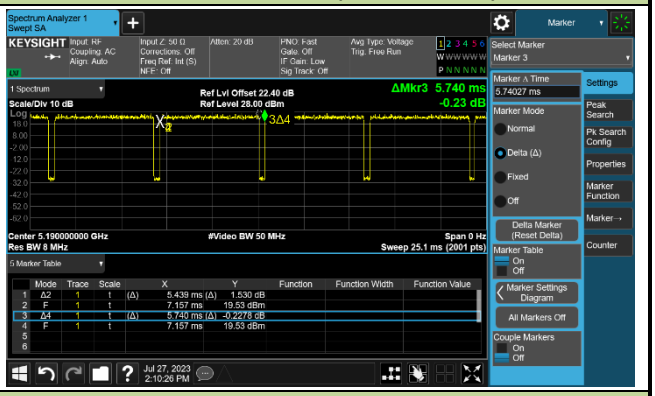
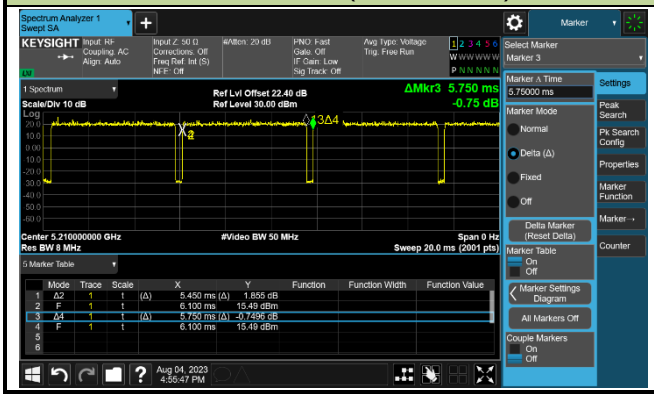
Model No.: APEX0675

1. Duty Cycle Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-07-25~2023-08-04		

Test Mode	Duty Cycle
802.11a	92.01%
802.11ac-VHT20	94.10%
802.11ac-VHT40	92.51%
802.11ac-VHT80	91.65%
802.11ax-HE20	93.95%
802.11ax-HE40	94.76%
802.11ax-HE80	94.78%

Duty Cycle (T = Transmission Duration)	
802.11a (T = 1.980ms)	802.11ac-VHT20 (T = 5.434ms)
	
802.11ac-VHT40 (T = 5.434ms)	802.11ac-VHT80 (T = 5.430ms)
	

802.11ax-HE20 (T = 5.452ms)	802.11ax-HE40 (T = 5.439ms)
	
802.11ax-HE80 (T = 5.450ms)	
	

2. 26dB Bandwidth Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-08-04~2023-08-08		

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	6Mbps	36	5180	20.00	16.367
11a	6Mbps	44	5220	18.99	16.353
11a	6Mbps	48	5240	19.56	16.347
11a	6Mbps	52	5260	18.98	16.342
11a	6Mbps	60	5300	19.54	16.334
11a	6Mbps	64	5320	18.91	16.346
11a	6Mbps	100	5500	18.87	16.347
11a	6Mbps	116	5580	19.13	16.339
11a	6Mbps	140	5700	19.21	16.346
11a	6Mbps	144	5720	18.91	16.348
11a	6Mbps	149	5745	19.25	16.365
11a	6Mbps	157	5785	19.74	16.363
11a	6Mbps	165	5825	20.98	16.452
11ac-VHT20	MCS0	36	5180	20.71	17.556
11ac-VHT20	MCS0	44	5220	20.59	17.531
11ac-VHT20	MCS0	48	5240	20.56	17.549
11ac-VHT20	MCS0	52	5260	20.74	17.537
11ac-VHT20	MCS0	60	5300	20.64	17.535
11ac-VHT20	MCS0	64	5320	20.63	17.534
11ac-VHT20	MCS0	100	5500	20.41	17.551
11ac-VHT20	MCS0	116	5580	20.26	17.556
11ac-VHT20	MCS0	140	5700	20.12	17.545
11ac-VHT20	MCS0	144	5720	20.10	17.536
11ac-VHT20	MCS0	149	5745	20.56	17.552
11ac-VHT20	MCS0	157	5785	20.26	17.559
11ac-VHT20	MCS0	165	5825	22.45	17.650

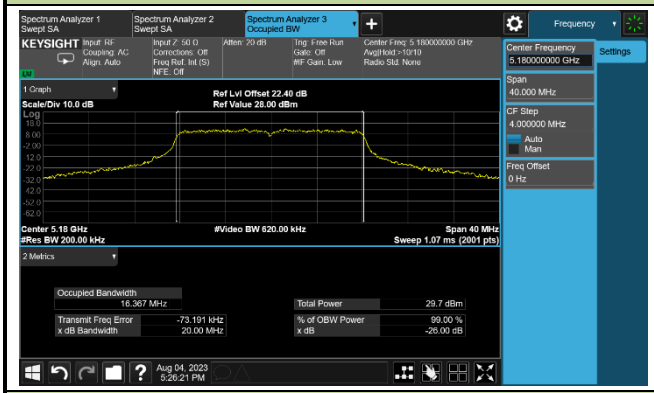
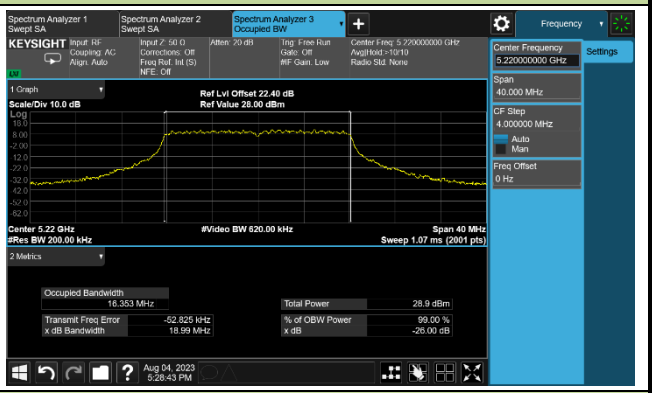
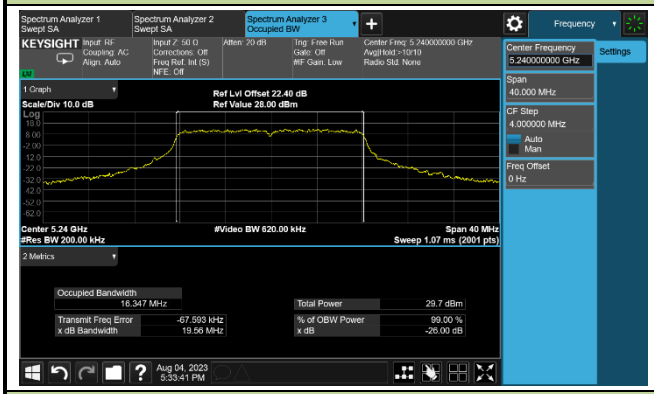
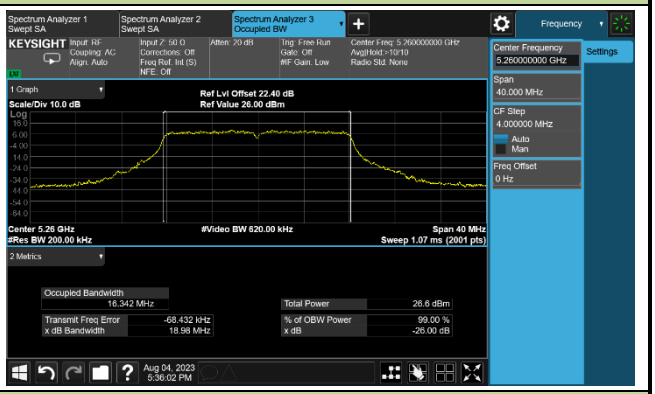
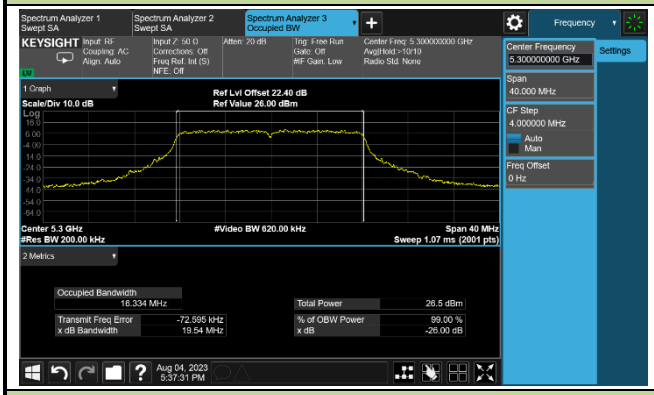
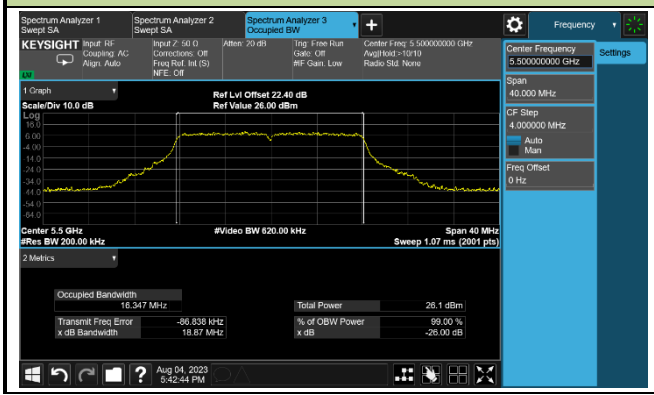
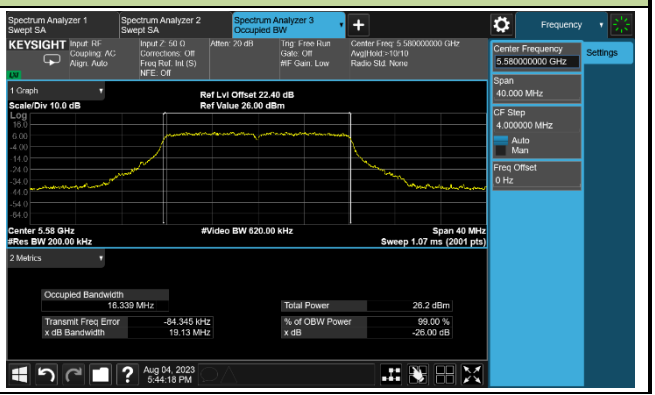
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
11ac-VHT40	MCS0	38	5190	40.54	36.112
11ac-VHT40	MCS0	46	5230	40.47	36.071
11ac-VHT40	MCS0	54	5270	40.26	36.069
11ac-VHT40	MCS0	62	5310	40.23	36.042
11ac-VHT40	MCS0	102	5510	40.41	36.067
11ac-VHT40	MCS0	110	5550	40.20	36.040
11ac-VHT40	MCS0	134	5670	40.32	36.074
11ac-VHT40	MCS0	142	5710	40.33	36.069
11ac-VHT40	MCS0	151	5755	40.53	36.105
11ac-VHT40	MCS0	159	5795	40.43	36.120
11ac-VHT80	MCS0	42	5210	81.54	75.536
11ac-VHT80	MCS0	58	5290	81.19	75.346
11ac-VHT80	MCS0	106	5530	81.86	75.397
11ac-VHT80	MCS0	122	5610	81.63	75.378
11ac-VHT80	MCS0	138	5690	81.64	75.342
11ac-VHT80	MCS0	155	5775	82.75	75.681
11ax-HE20	MCS0	36	5180	21.20	18.937
11ax-HE20	MCS0	44	5220	21.29	18.938
11ax-HE20	MCS0	48	5240	21.17	18.912
11ax-HE20	MCS0	52	5260	20.82	18.903
11ax-HE20	MCS0	60	5300	20.96	18.911
11ax-HE20	MCS0	64	5320	20.83	18.914
11ax-HE20	MCS0	100	5500	20.87	18.920
11ax-HE20	MCS0	116	5580	20.66	18.920
11ax-HE20	MCS0	140	5700	20.63	18.923
11ax-HE20	MCS0	144	5720	20.91	18.874
11ax-HE20	MCS0	149	5745	20.91	18.914
11ax-HE20	MCS0	157	5785	20.97	18.931
11ax-HE20	MCS0	165	5825	23.11	18.972

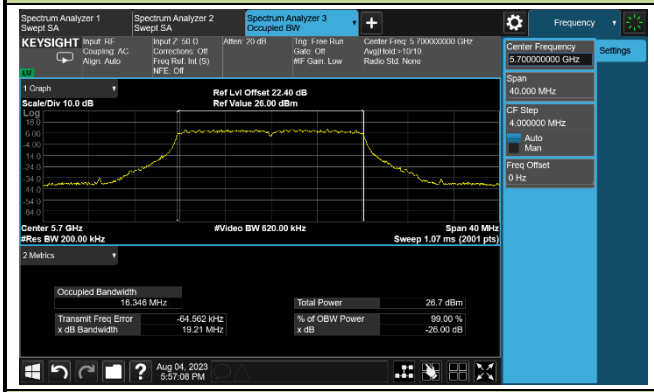
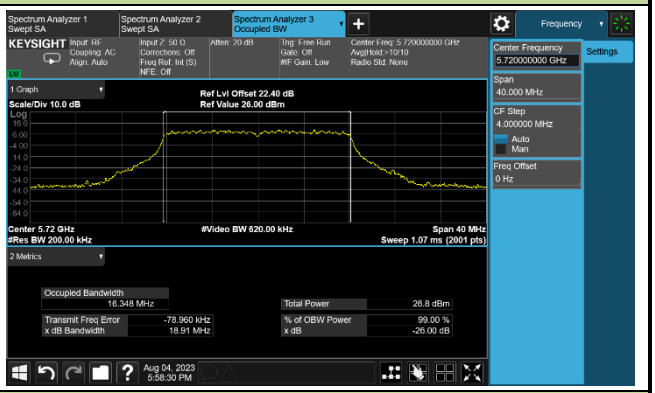
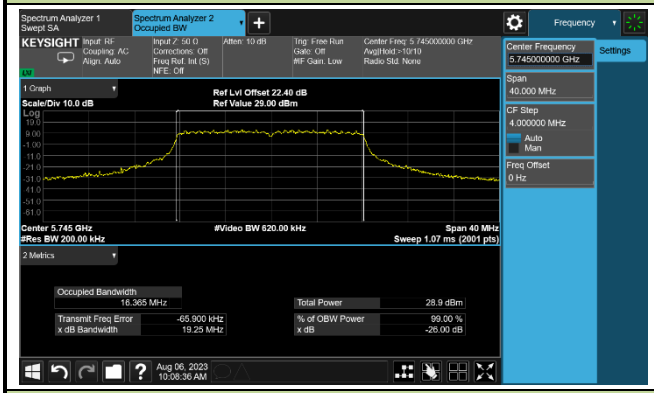
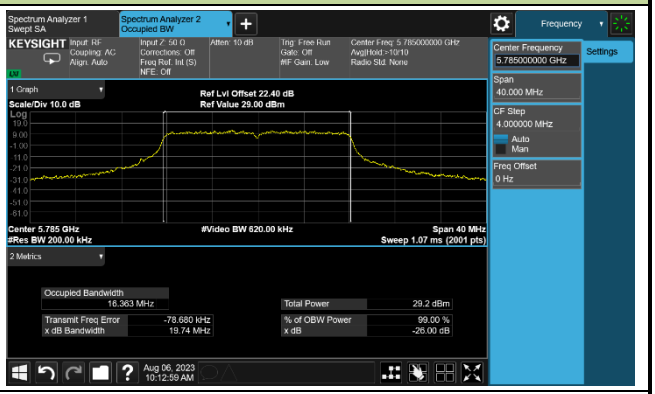
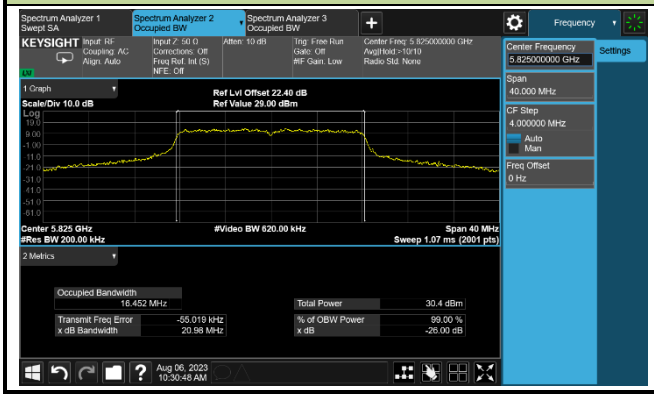
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
11ax-HE40	MCS0	38	5190	41.03	37.726
11ax-HE40	MCS0	46	5230	41.05	37.734
11ax-HE40	MCS0	54	5270	40.94	37.733
11ax-HE40	MCS0	62	5310	40.84	37.715
11ax-HE40	MCS0	102	5510	40.85	37.793
11ax-HE40	MCS0	110	5550	40.86	37.689
11ax-HE40	MCS0	134	5670	40.54	37.716
11ax-HE40	MCS0	142	5710	40.96	37.754
11ax-HE40	MCS0	151	5755	41.23	37.790
11ax-HE40	MCS0	159	5795	41.96	37.748
11ax-HE80	MCS0	42	5210	82.27	77.109
11ax-HE80	MCS0	58	5290	81.68	77.192
11ax-HE80	MCS0	106	5530	82.01	77.159
11ax-HE80	MCS0	122	5610	81.74	77.179
11ax-HE80	MCS0	138	5690	81.75	77.086
11ax-HE80	MCS0	155	5775	82.25	77.348

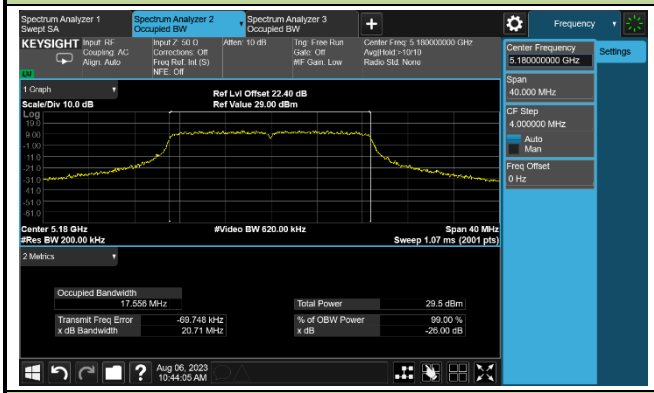
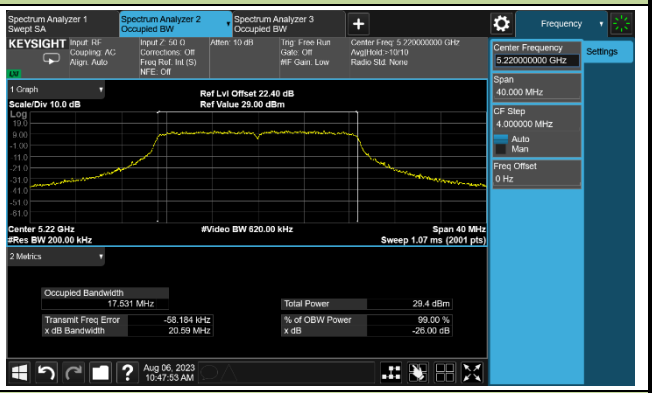
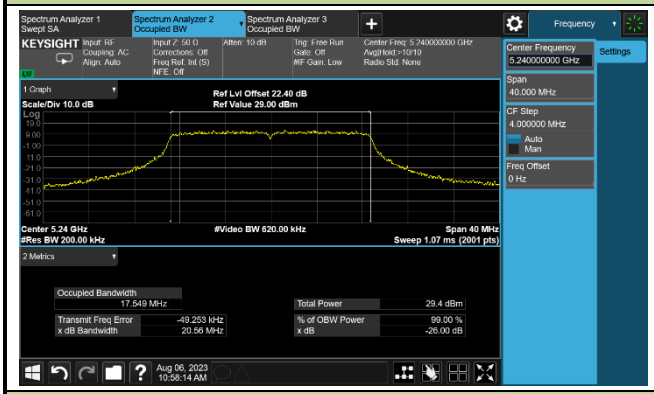
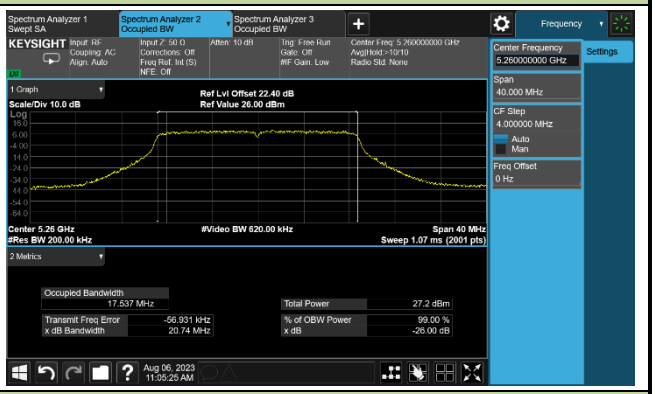
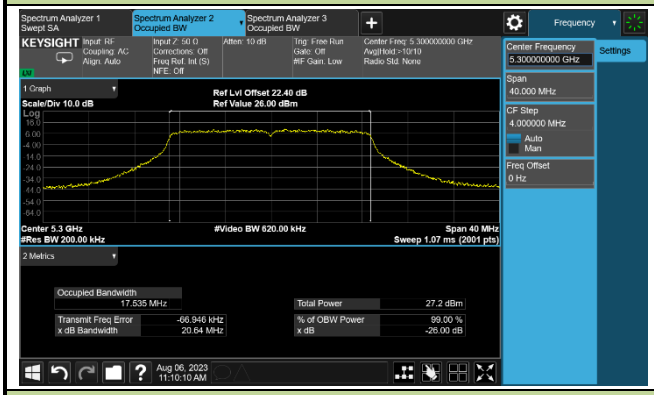
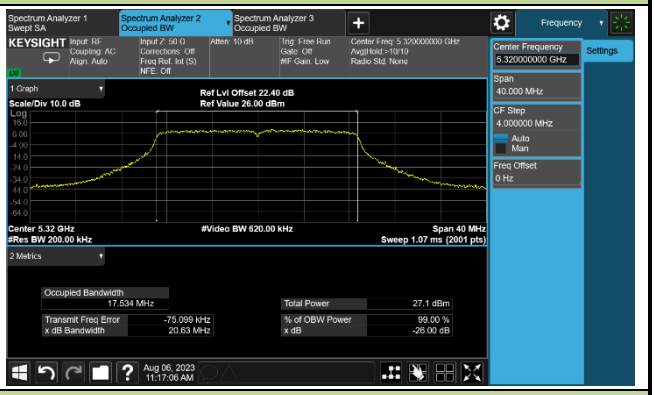
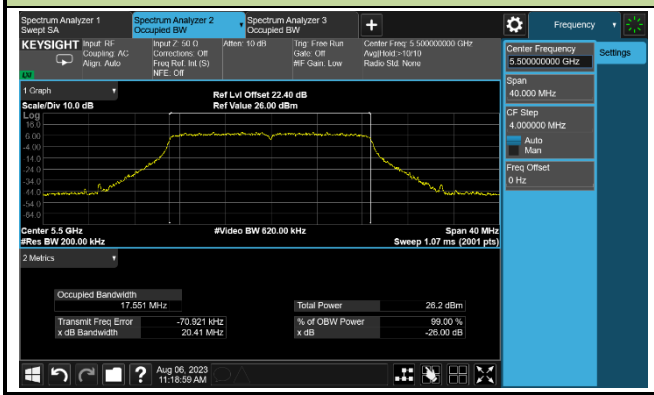
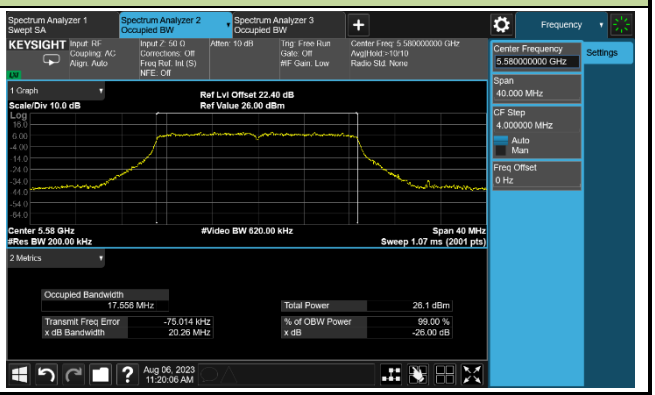
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	F_H (MHz)	Limit (MHz)
802.11a	6Mbps	48	5240	5248.17	< 5250
802.11ac-VHT20	MCS0	48	5240	5248.77	< 5250
802.11ac-VHT40	MCS0	46	5230	5248.04	< 5250
802.11ac-VHT80	MCS0	42	5210	5247.77	< 5250
802.11ax-HE20	MCS0	48	5240	5249.46	< 5250
802.11ax-HE40	MCS0	46	5230	5248.87	< 5250
802.11ax-HE80	MCS0	42	5210	5248.55	< 5250

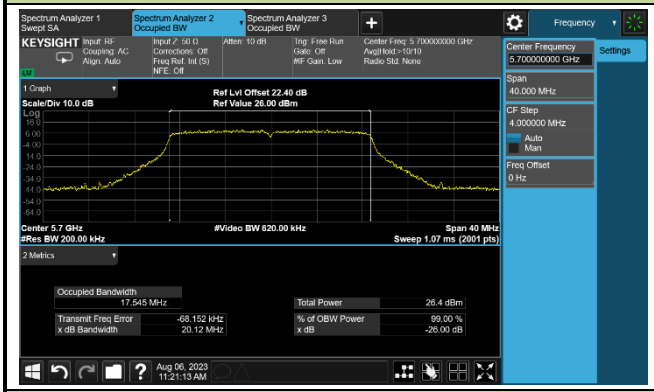
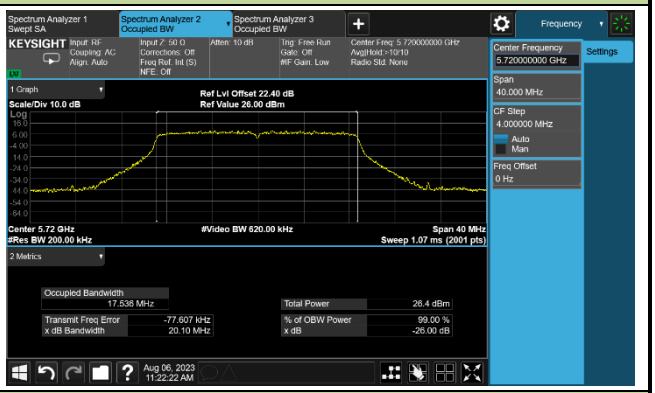
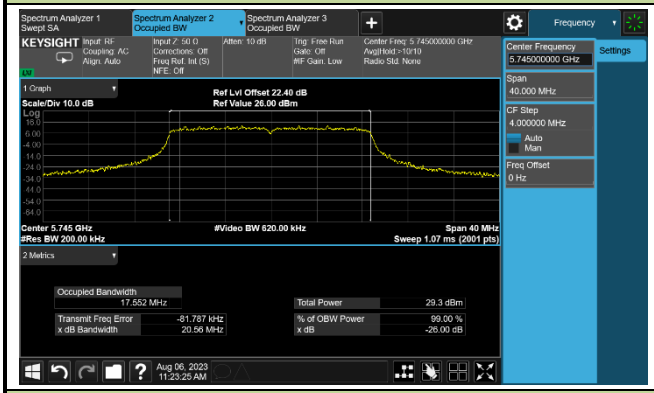
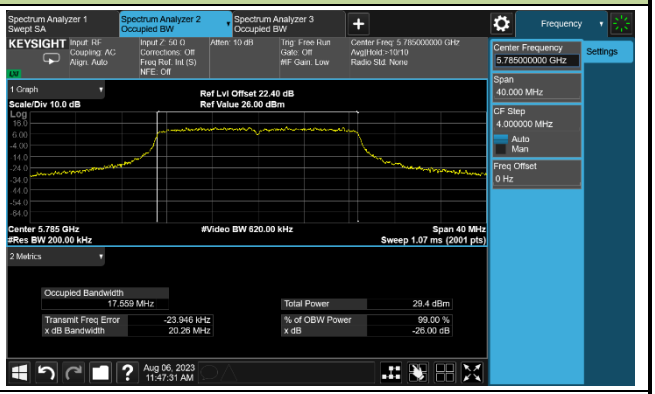
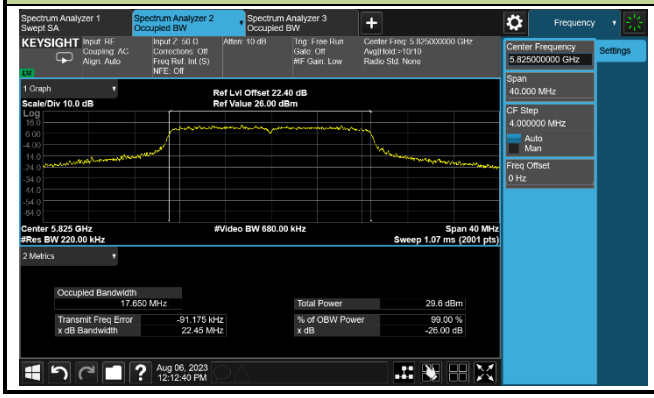
Note: F_H = Centre frequency + 99% OBW / 2.

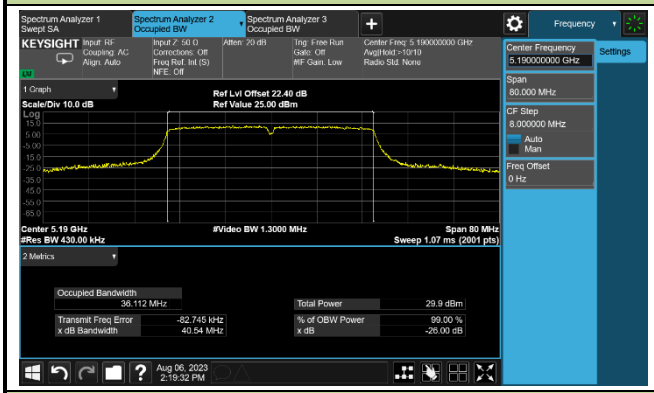
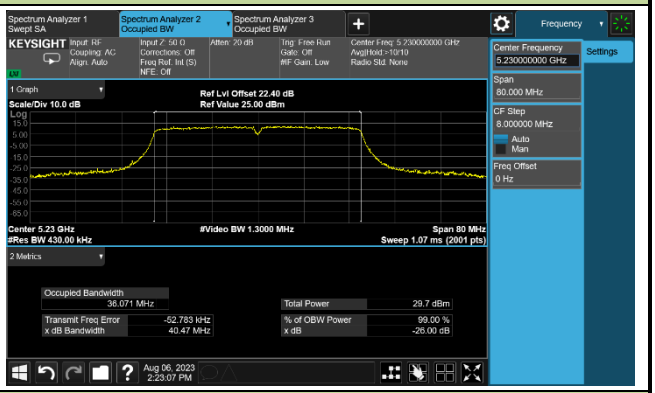
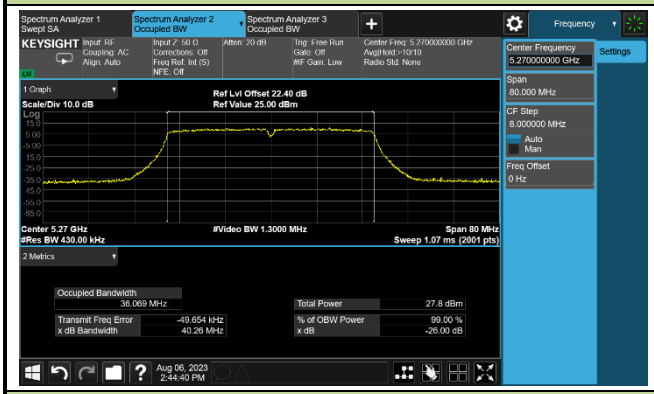
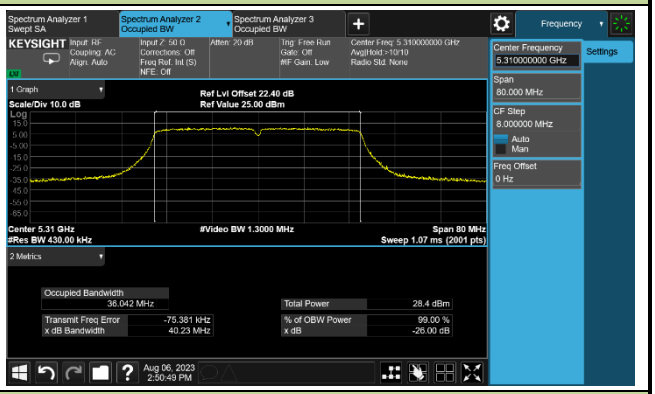
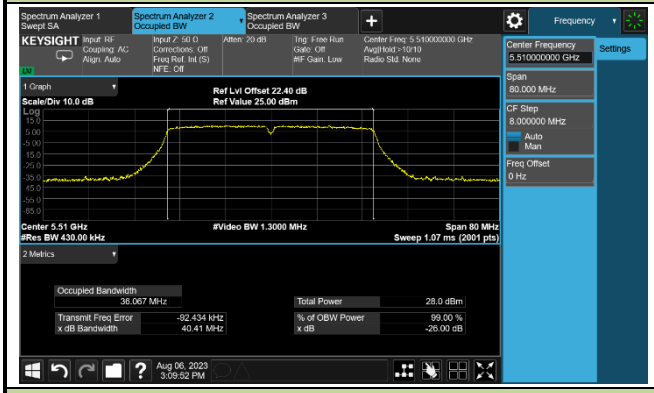
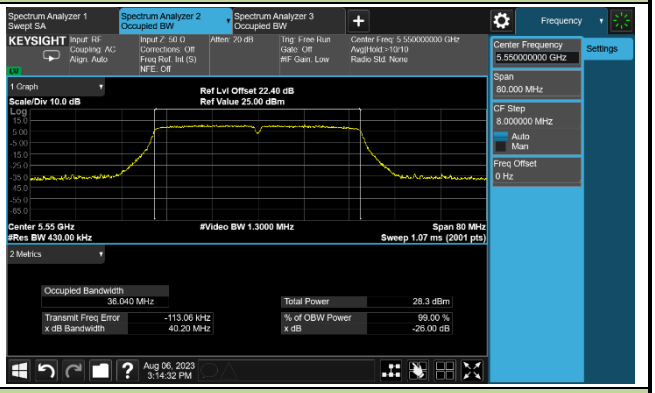
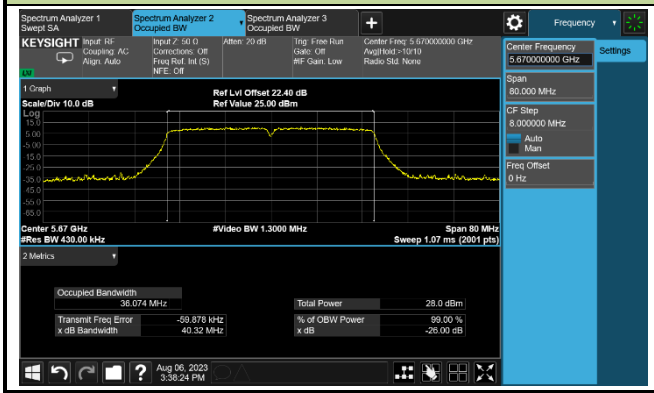
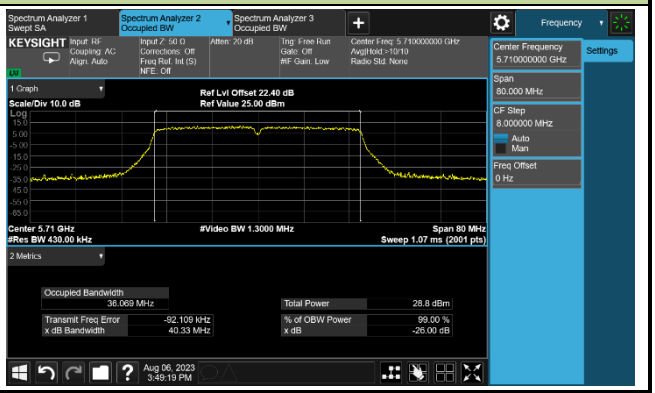
For example, 802.11a 5240MHz, F_H = 5240 MHz + 16.347 MHz / 2 = 5248.17 MHz.

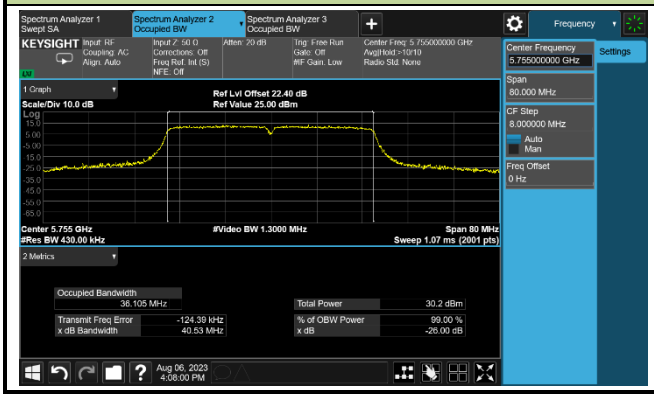
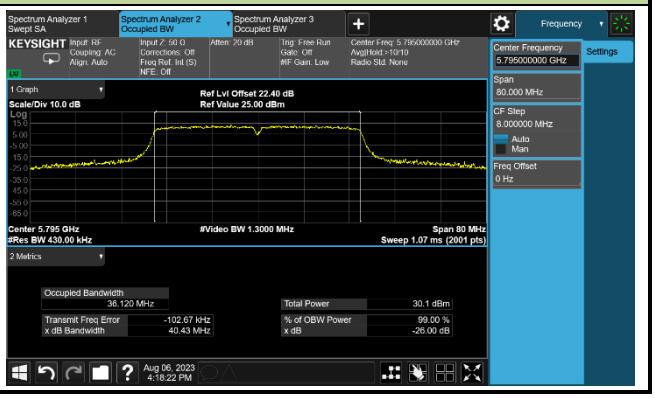
802.11a 26dB Bandwidth & 99% Bandwidth	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	

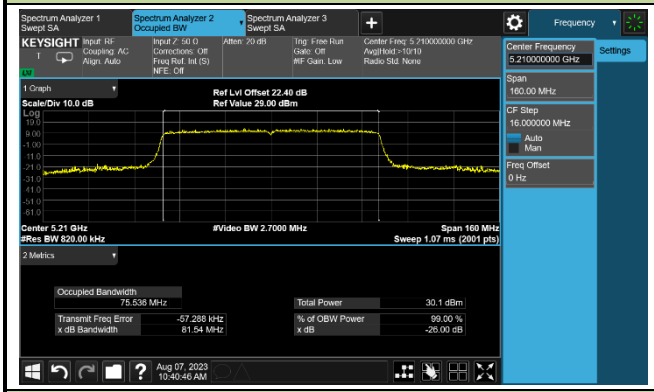
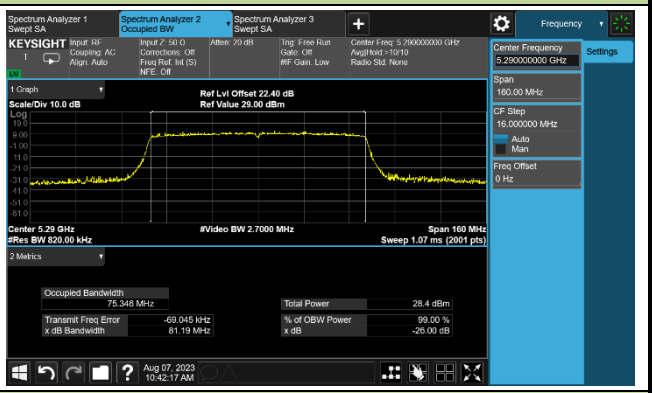
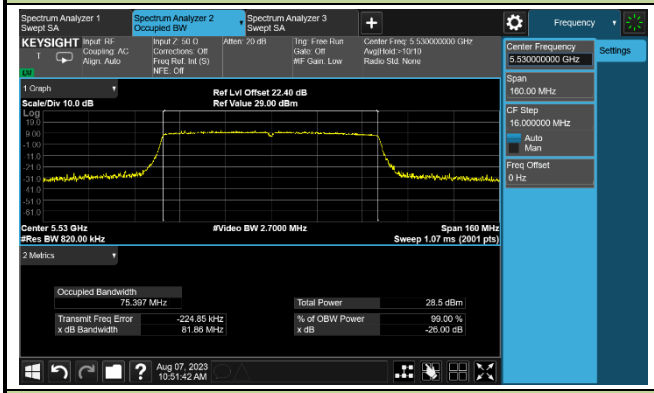
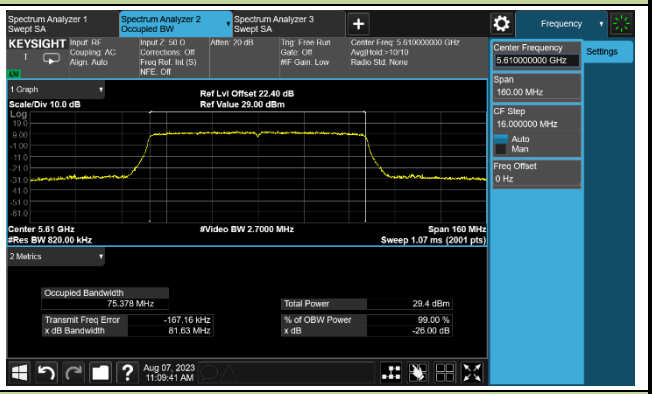
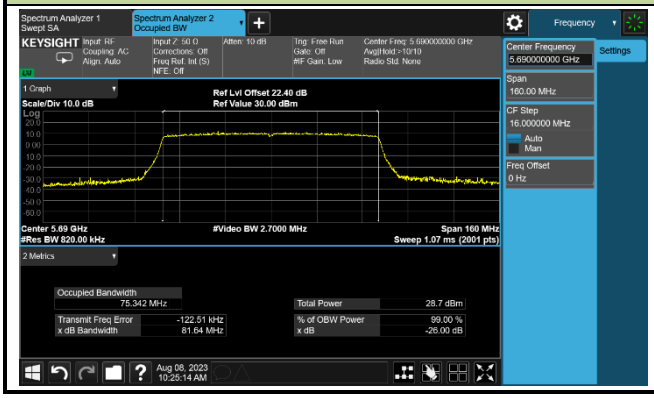
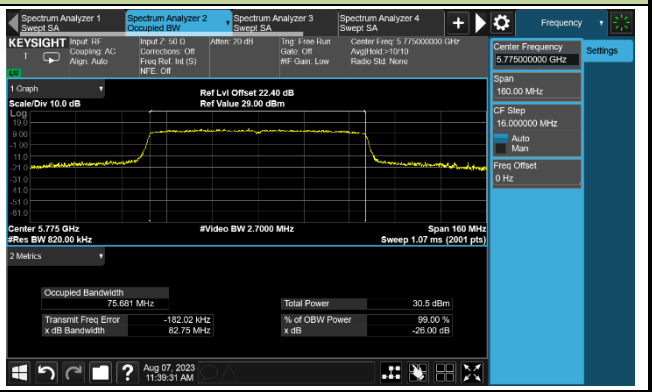
802.11a 26dB Bandwidth & 99% Bandwidth	
Channel 140 (5700MHz)	Channel 144(5720MHz)
	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

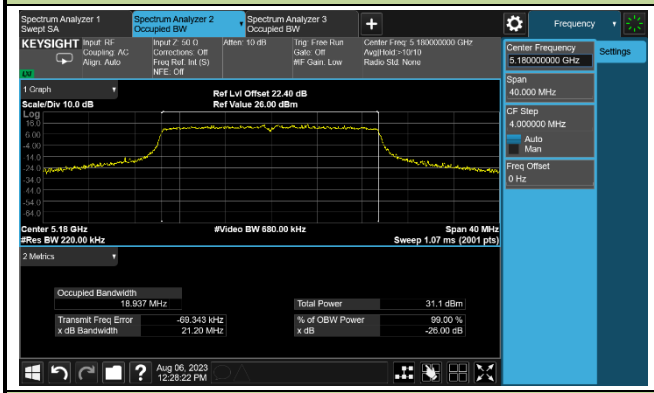
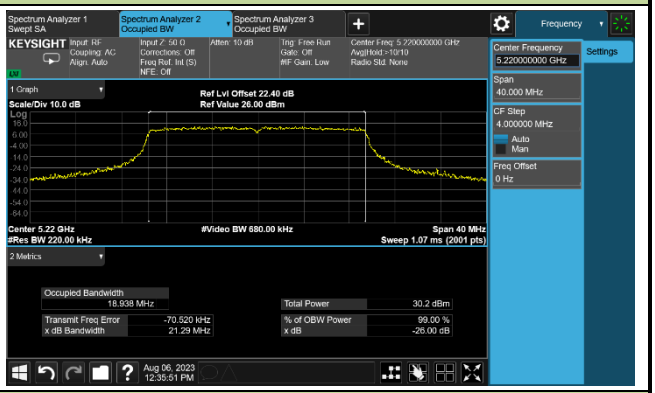
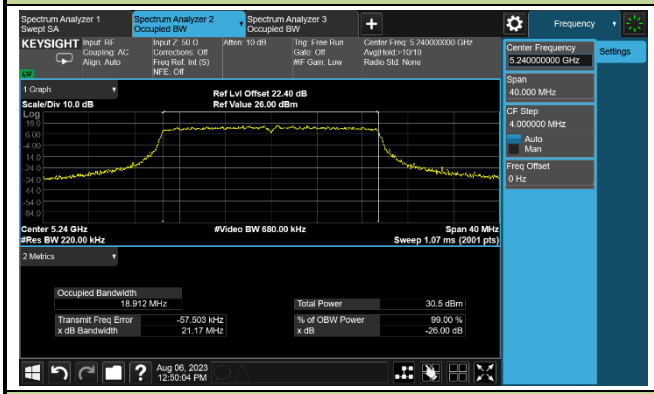
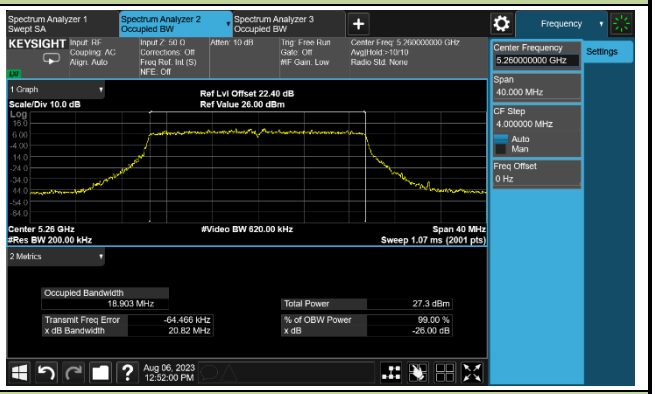
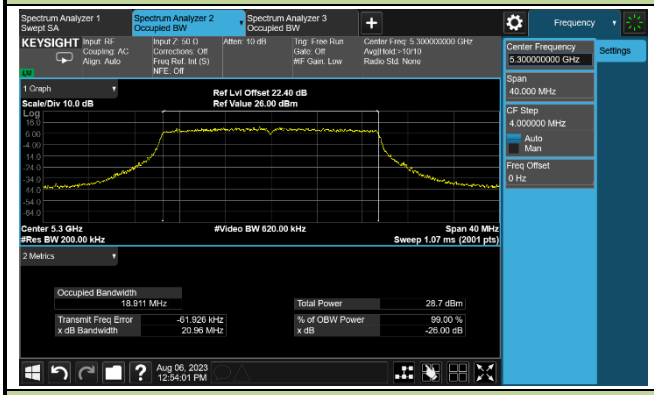
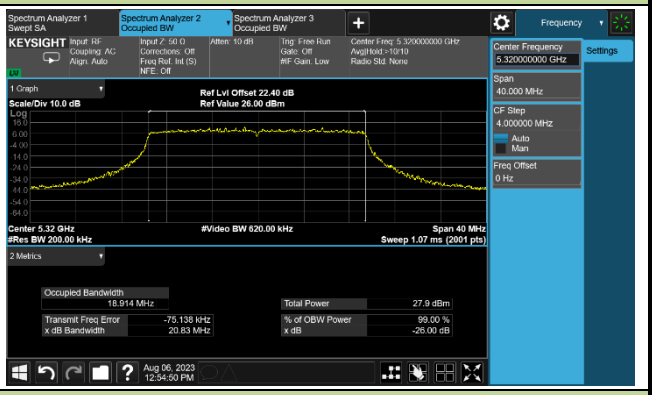
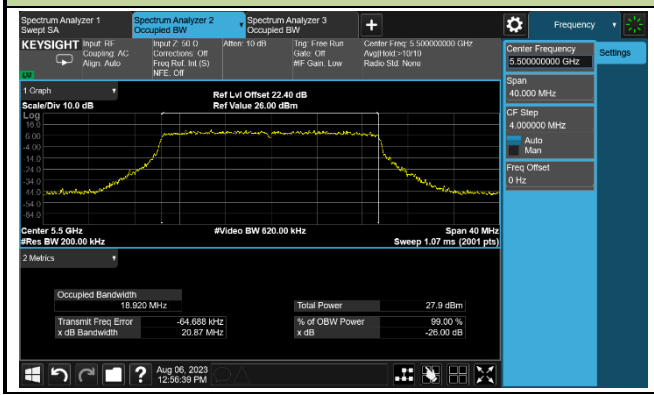
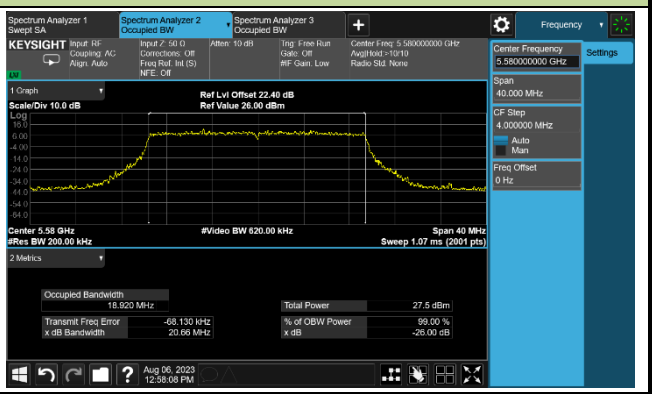
802.11ac-VHT20 26dB Bandwidth	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	

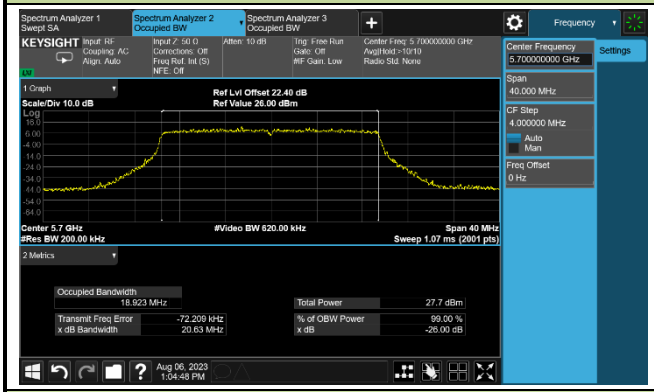
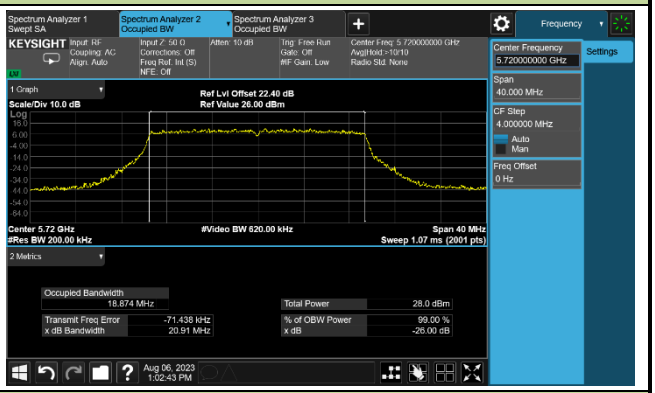
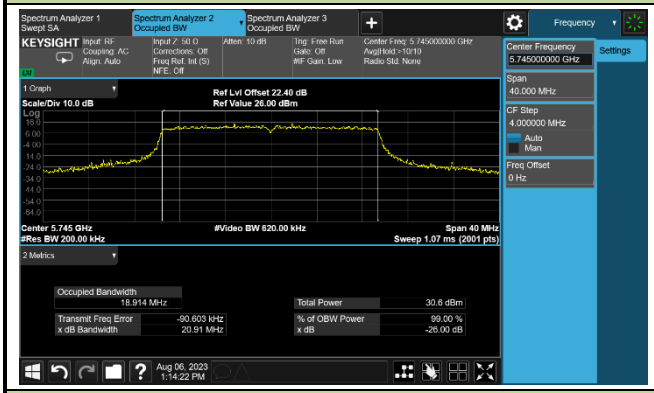
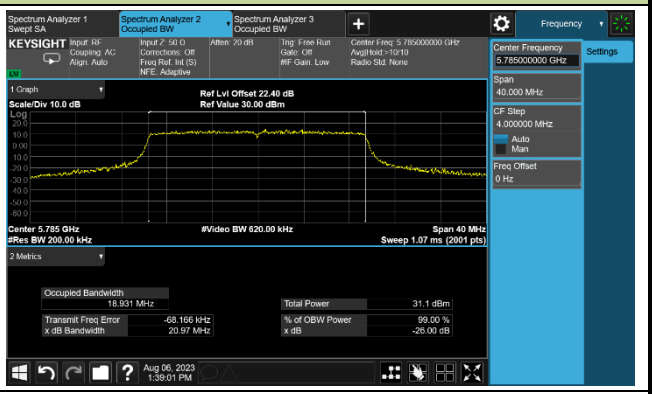
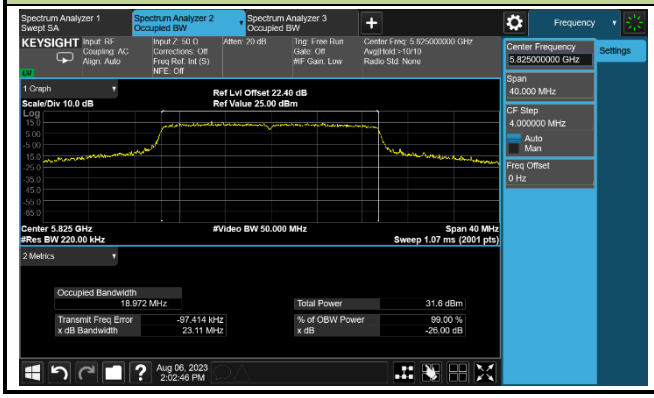
802.11ac-VHT20 26dB Bandwidth & 99% Bandwidth	
Channel 140 (5700MHz)	Channel 144(5720MHz)
	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

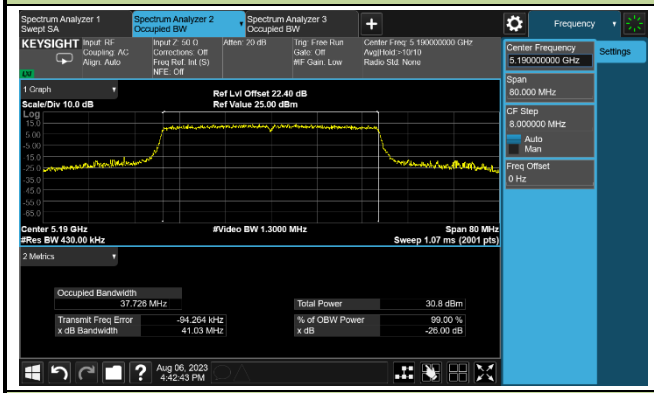
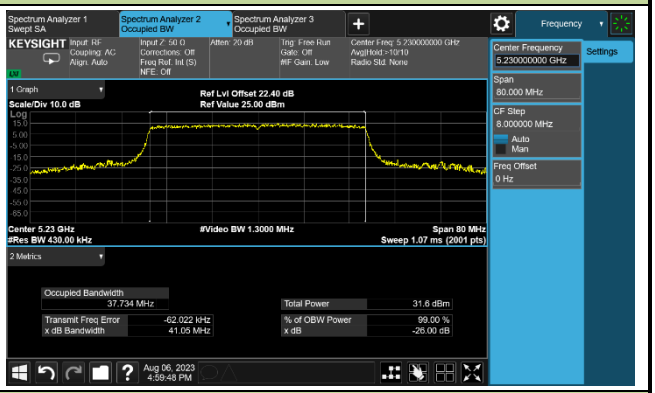
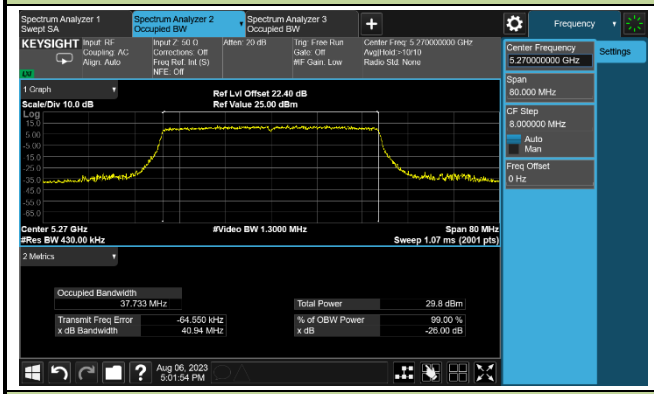
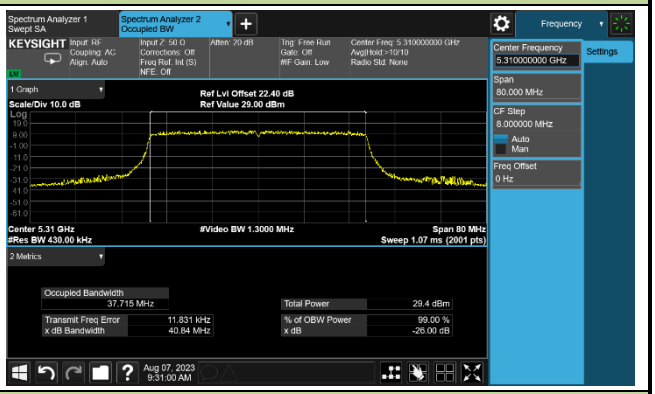
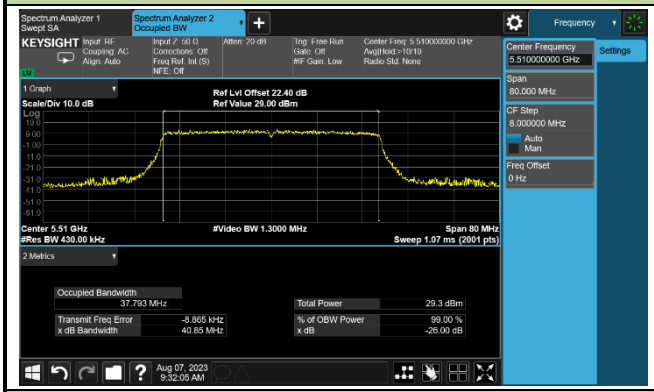
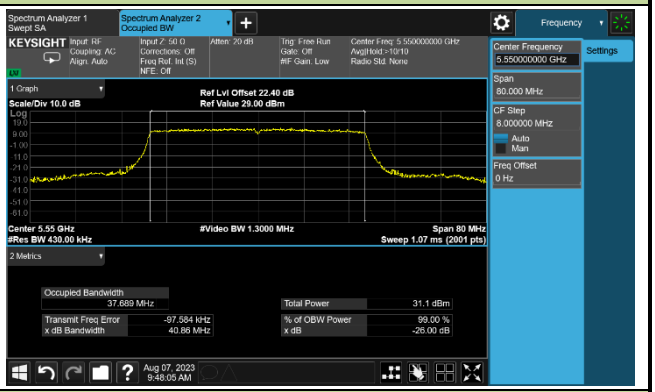
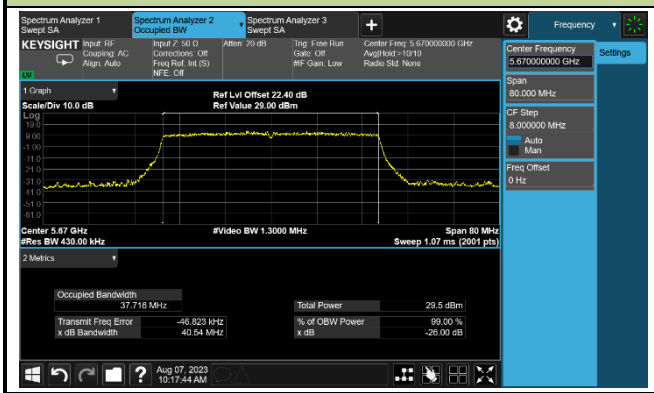
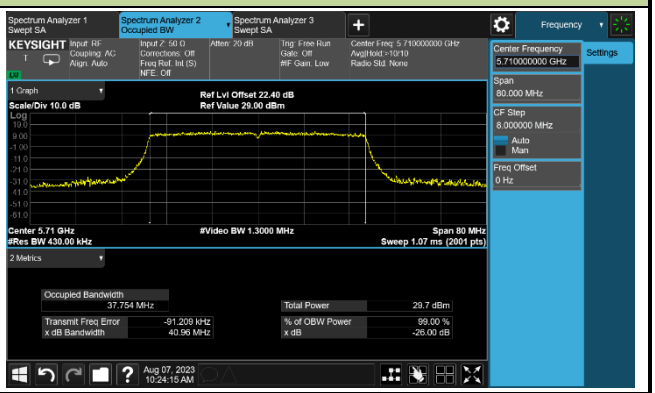
802.11ac-VHT40 26dB Bandwidth	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
Channel 102 (5510MHz)	Channel 110 (5550MHz)
	
Channel 134 (5670MHz)	Channel 142(5710MHz)
	

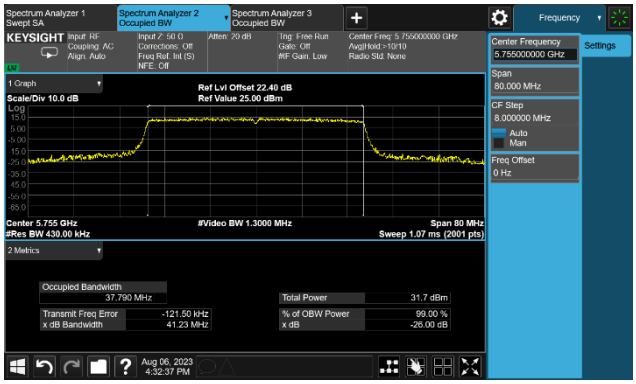
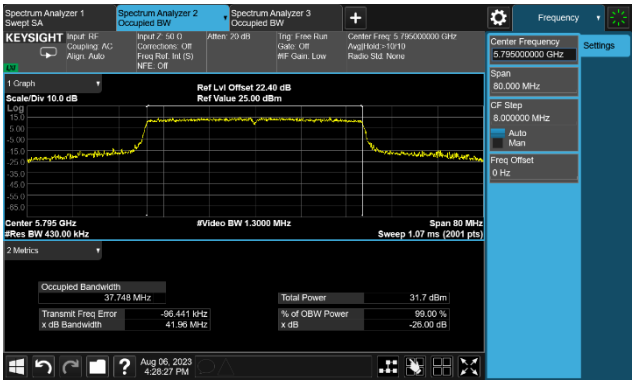
802.11ac-VHT40 26dB Bandwidth	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

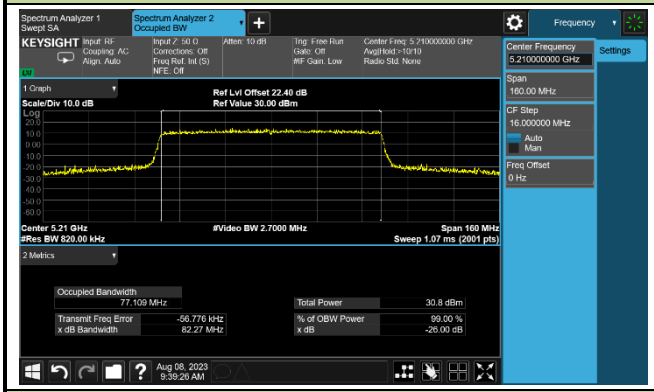
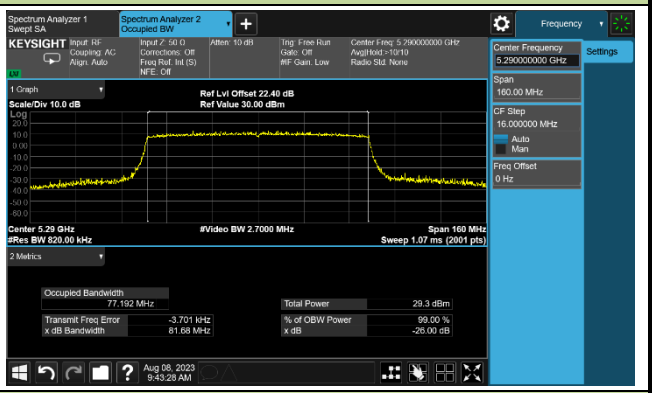
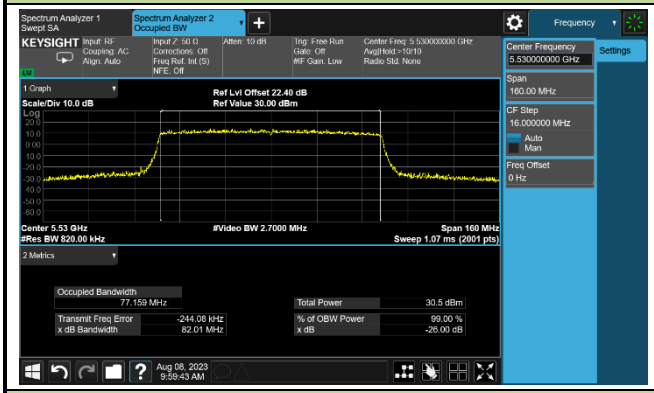
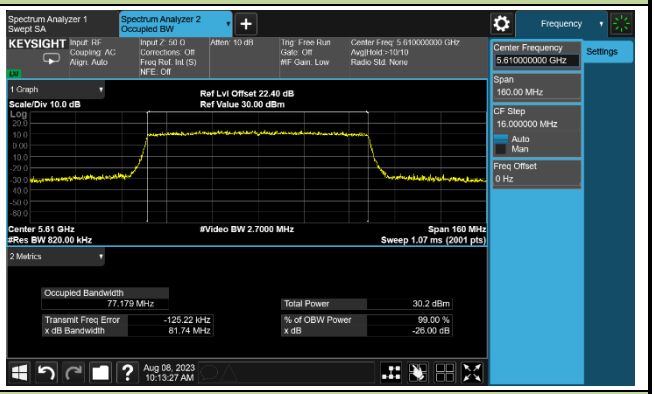
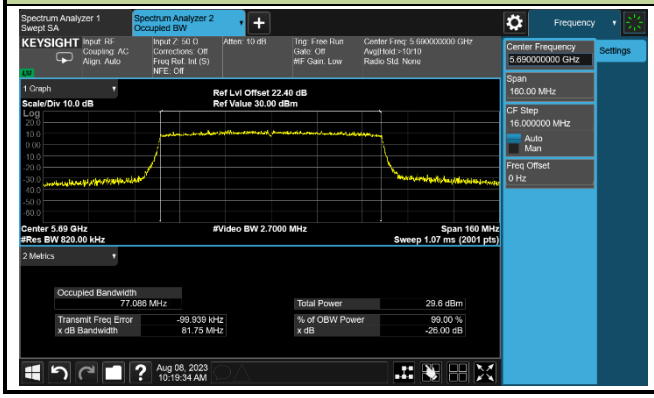
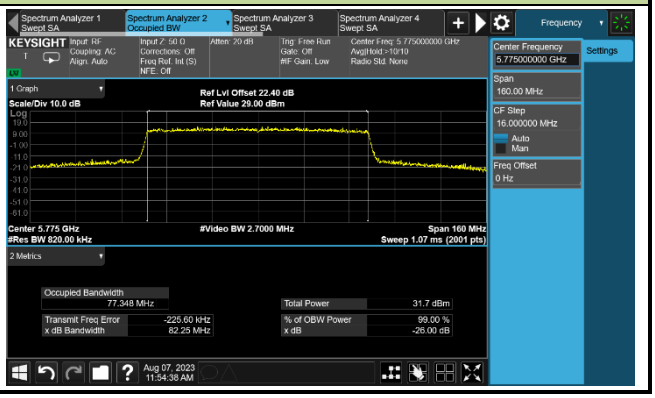
802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	
Channel 106 (5530MHz)	Channel 122 (5610MHz)
	
Channel 138 (5690MHz)	Channel 155 (5775MHz)
	

802.11ax-HE20 26dB Bandwidth	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	

802.11ax-HE20 26dB Bandwidth	
Channel 140 (5700MHz)	Channel 144(5720MHz)
	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

802.11ax-HE40 26dB Bandwidth	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
Channel 102 (5510MHz)	Channel 110 (5550MHz)
	
Channel 134 (5670MHz)	Channel 142(5710MHz)
	

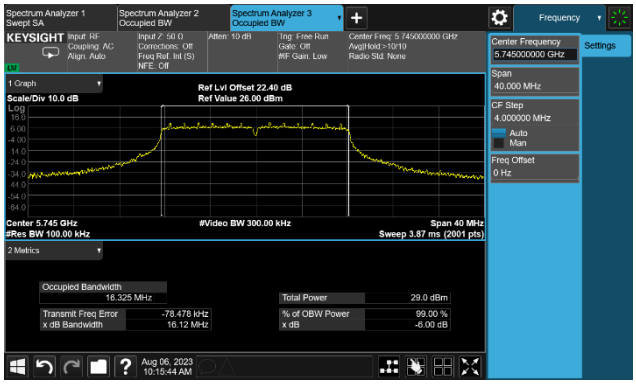
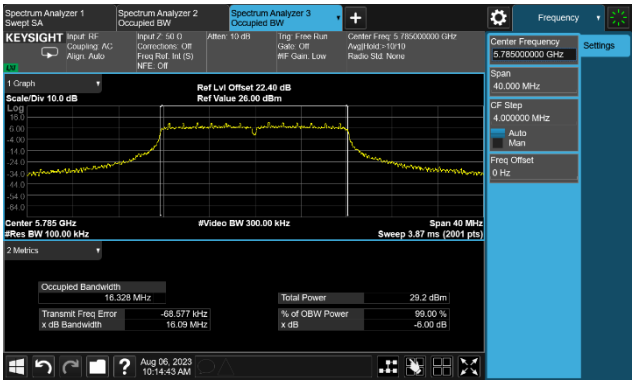
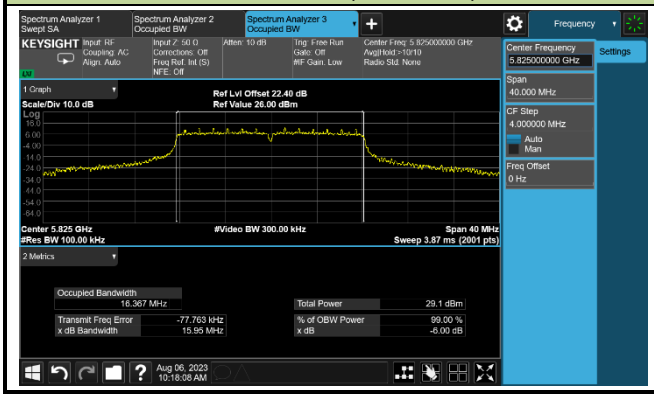
802.11ax-HE40 26dB Bandwidth	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

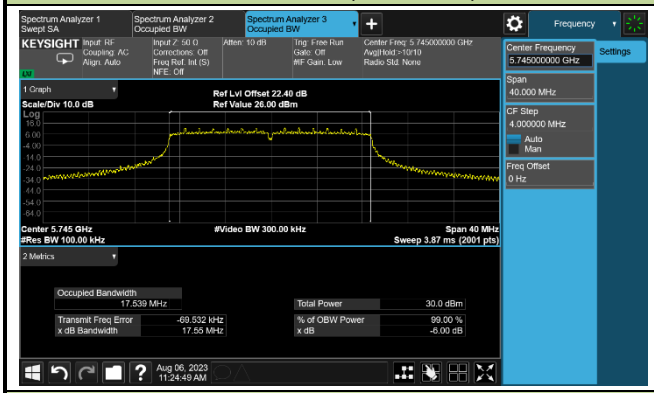
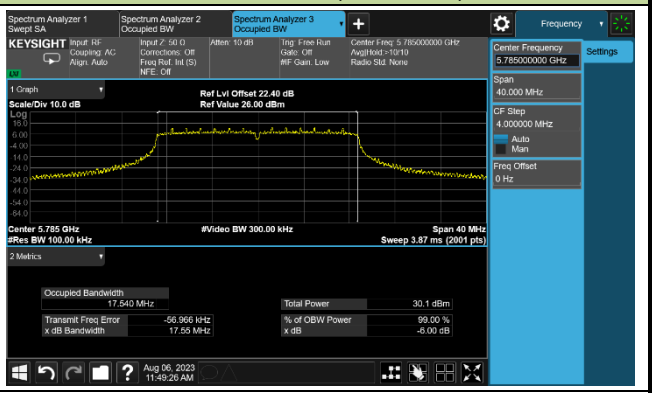
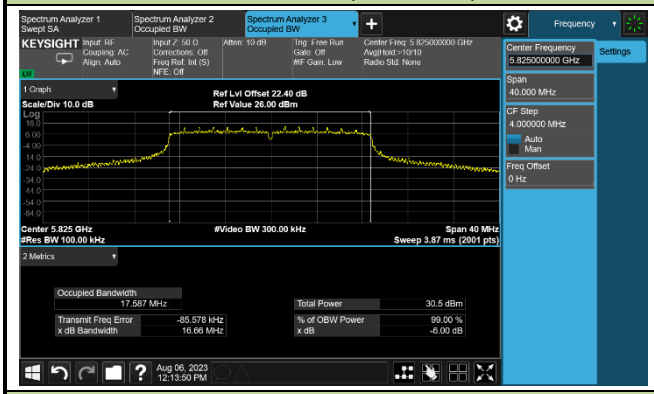
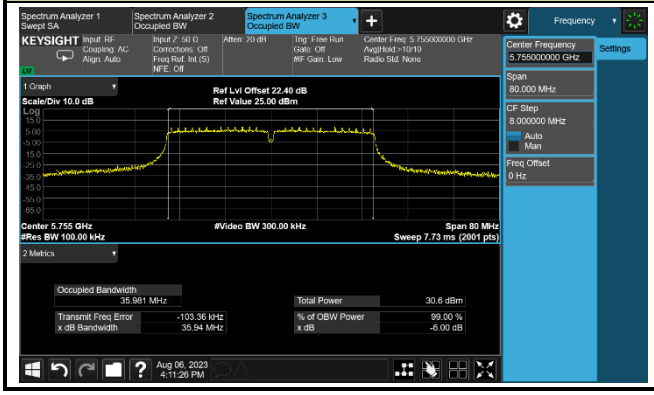
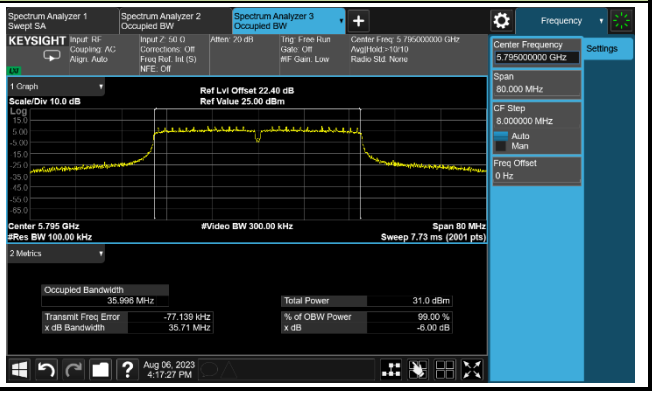
802.11ax-HE80 26dB Bandwidth & 99% Bandwidth	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	
Channel 106 (5530MHz)	Channel 122 (5610MHz)
	
Channel 138 (5690MHz)	Channel 155 (5775MHz)
	

3. 6dB Bandwidth Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-08-06~2023-08-07		

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
11a	6Mbps	149	5745	16.12	≥0.5
11a	6Mbps	157	5785	16.09	≥0.5
11a	6Mbps	165	5825	15.95	≥0.5
11ac-VHT20	MCS0	149	5745	17.55	≥0.5
11ac-VHT20	MCS0	157	5785	17.55	≥0.5
11ac-VHT20	MCS0	165	5825	16.66	≥0.5
11ac-VHT40	MCS0	151	5755	35.94	≥0.5
11ac-VHT40	MCS0	159	5795	35.71	≥0.5
11ac-VHT80	MCS0	155	5775	75.60	≥0.5
11ax-HE20	MCS0	149	5745	18.86	≥0.5
11ax-HE20	MCS0	157	5785	18.69	≥0.5
11ax-HE20	MCS0	165	5825	18.70	≥0.5
11ax-HE40	MCS0	151	5755	37.50	≥0.5
11ax-HE40	MCS0	159	5795	37.95	≥0.5
11ax-HE80	MCS0	155	5775	77.35	≥0.5

802.11a 6dB Bandwidth	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

802.11ac-VHT20 6dB Bandwidth	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	
802.11ac-VHT40 6dB Bandwidth	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

802.11ac-VHT80 6dB Bandwidth	
Channel 155 (5775MHz)