

## Appendix D

### RF Test Data for 5.2G WLAN (Conducted Measurement)

Product Name: W97L

Trade Mark: ZAPO

Test Model: W97L-5DB

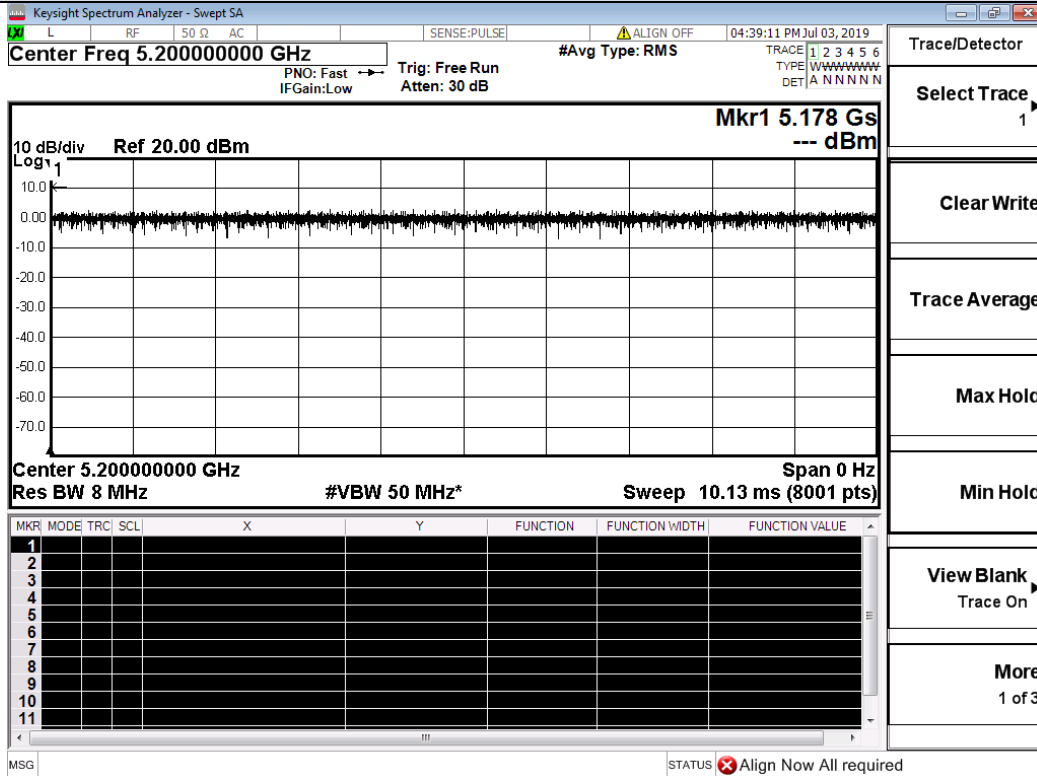
#### Environmental Conditions

Temperature:	23.4 ° C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	CHUANG WANG
Supervised by:	JAYDEN ZHUO

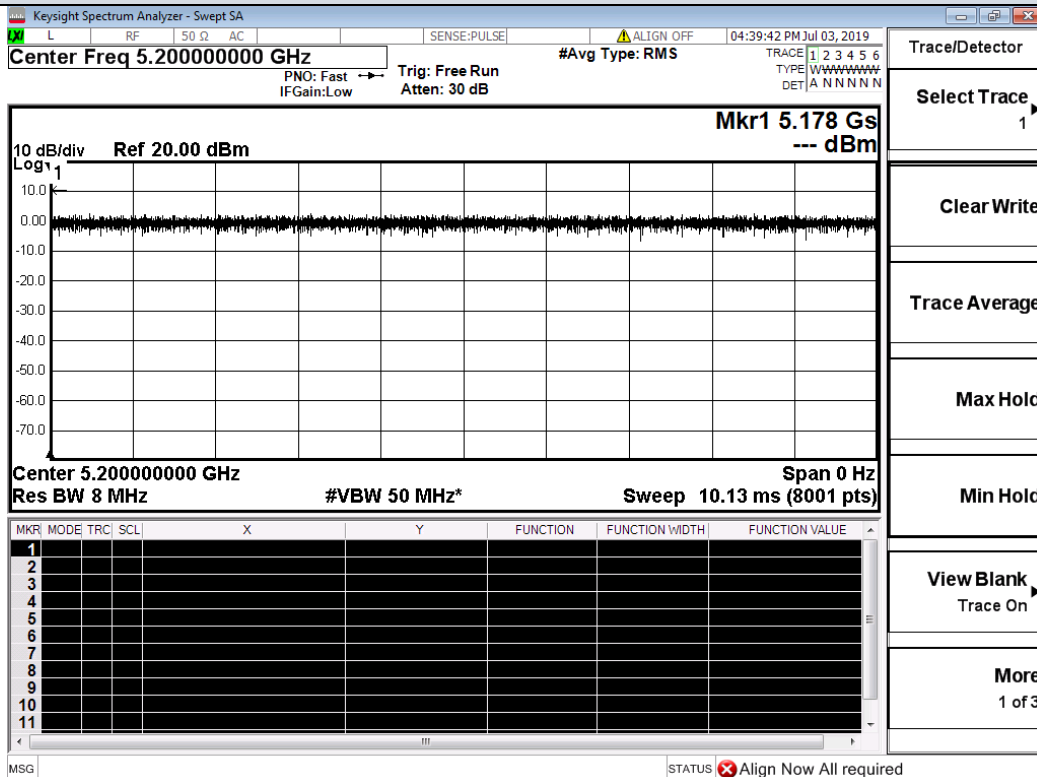
#### D.1 Duty Cycle

Test Mode	Test Frequency (MHz)	Duty Cycle (%)	10log(1/x) Factor (dB)	1/B Minimum VBW(KHz)
11A	5200	100	0.00	0.01
11N20 SISO	5200	100	0.00	0.01
11N40 SISO	5190	100	0.00	0.01
11AC20 SISO	5200	100	0.00	0.01
11AC40 SISO	5190	100	0.00	0.01
11AC80 SISO	5210	100	0.00	0.01

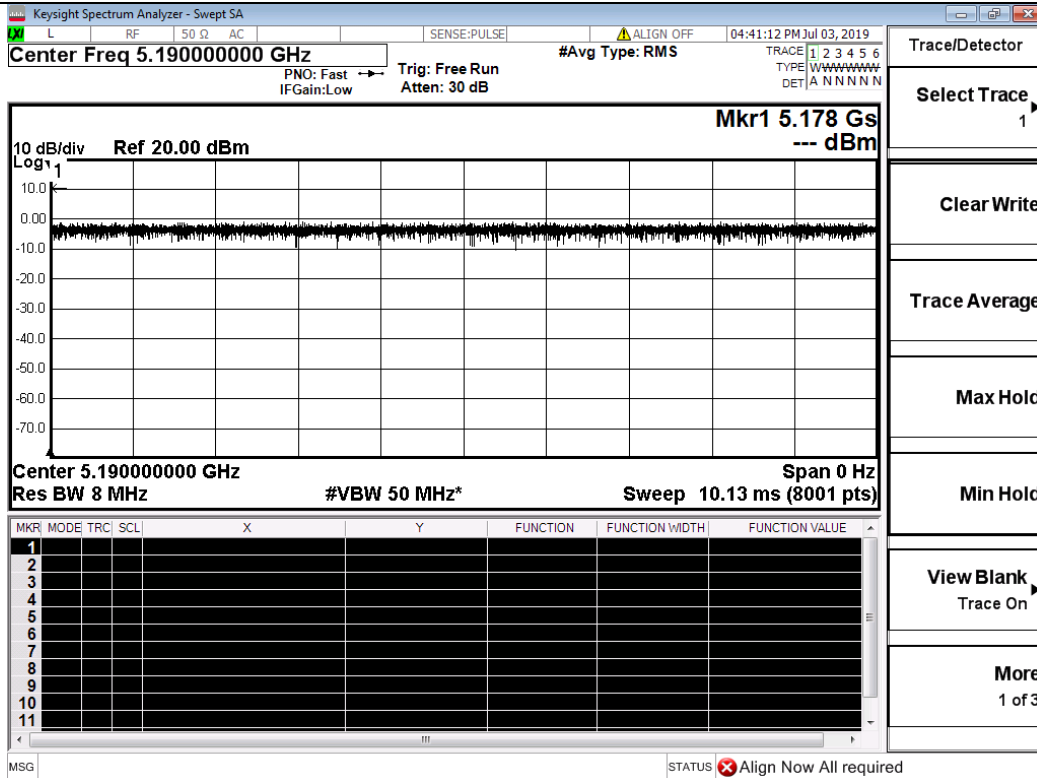
On Time and Duty Cycle



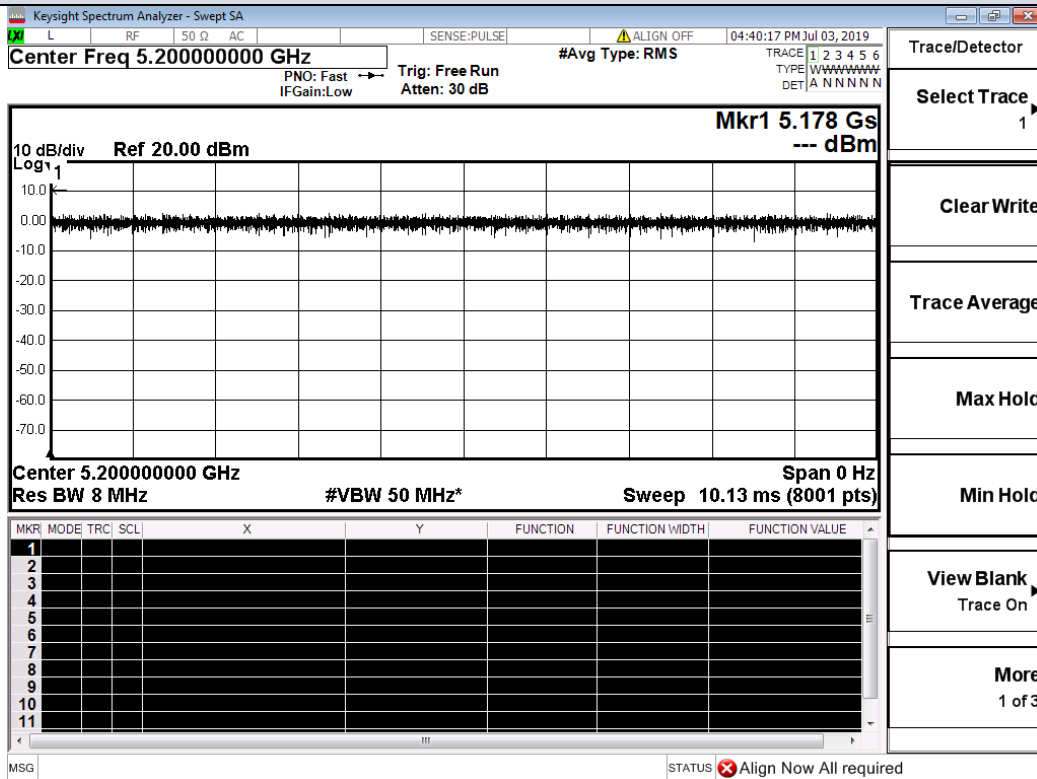
IEEE 802.11a



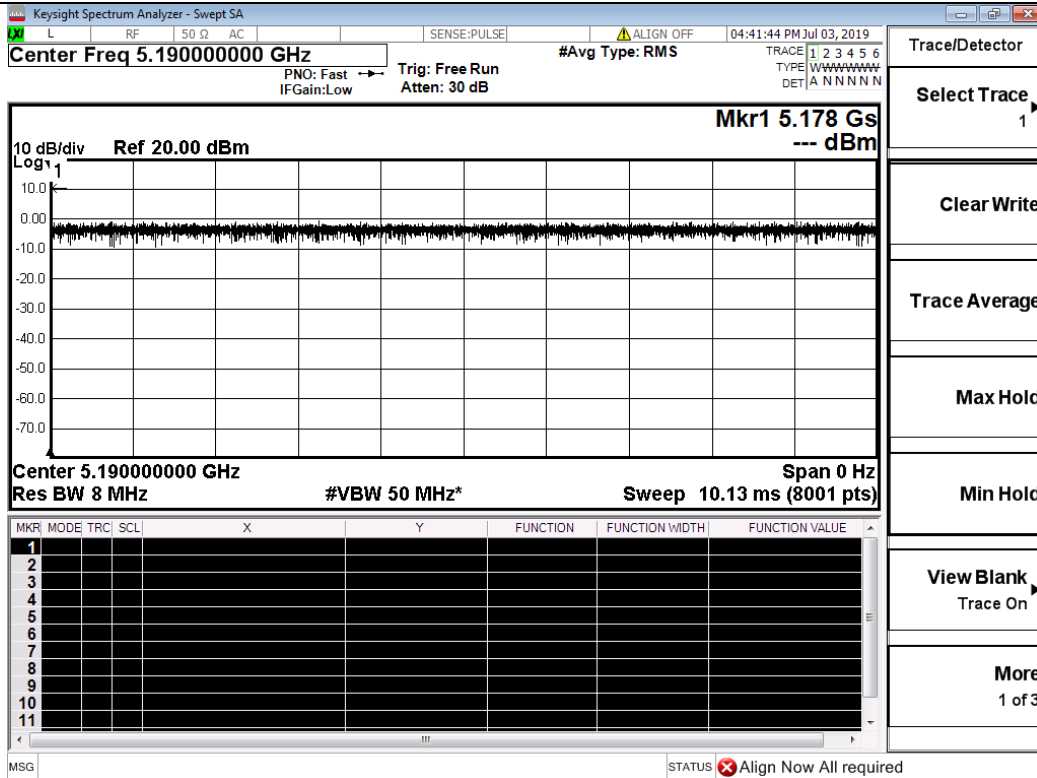
IEEE 802.11n HT20



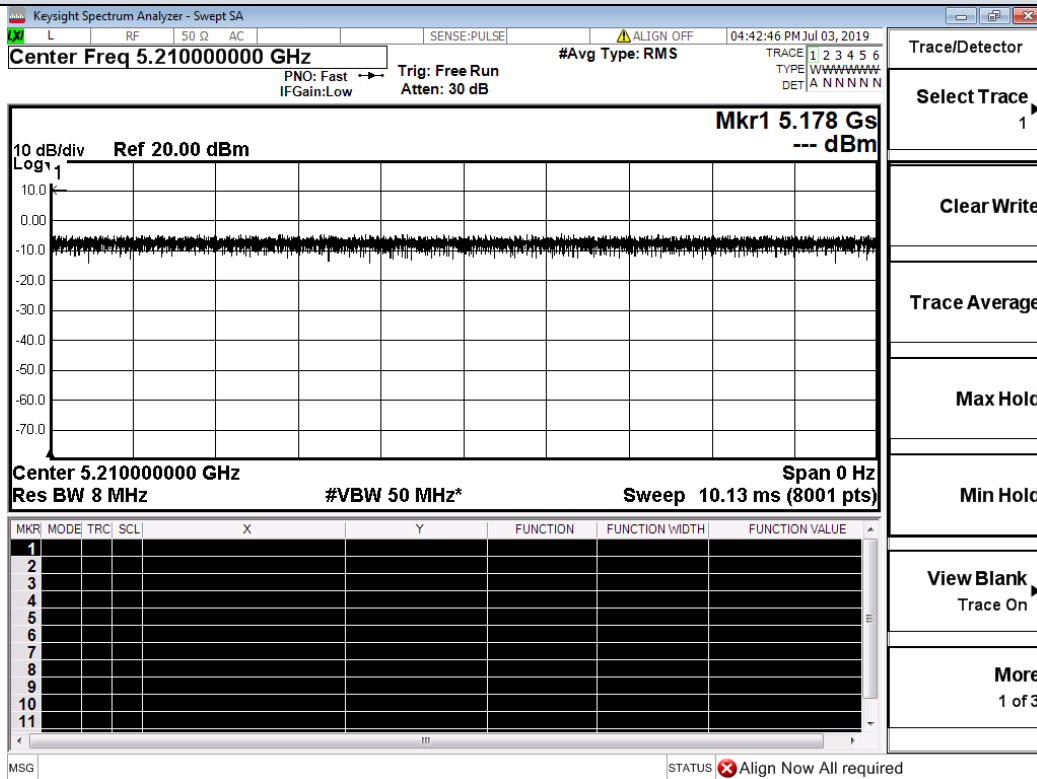
IEEE 802.11n HT40



IEEE 802.11ac HT20



IEEE 802.11 ac HT40



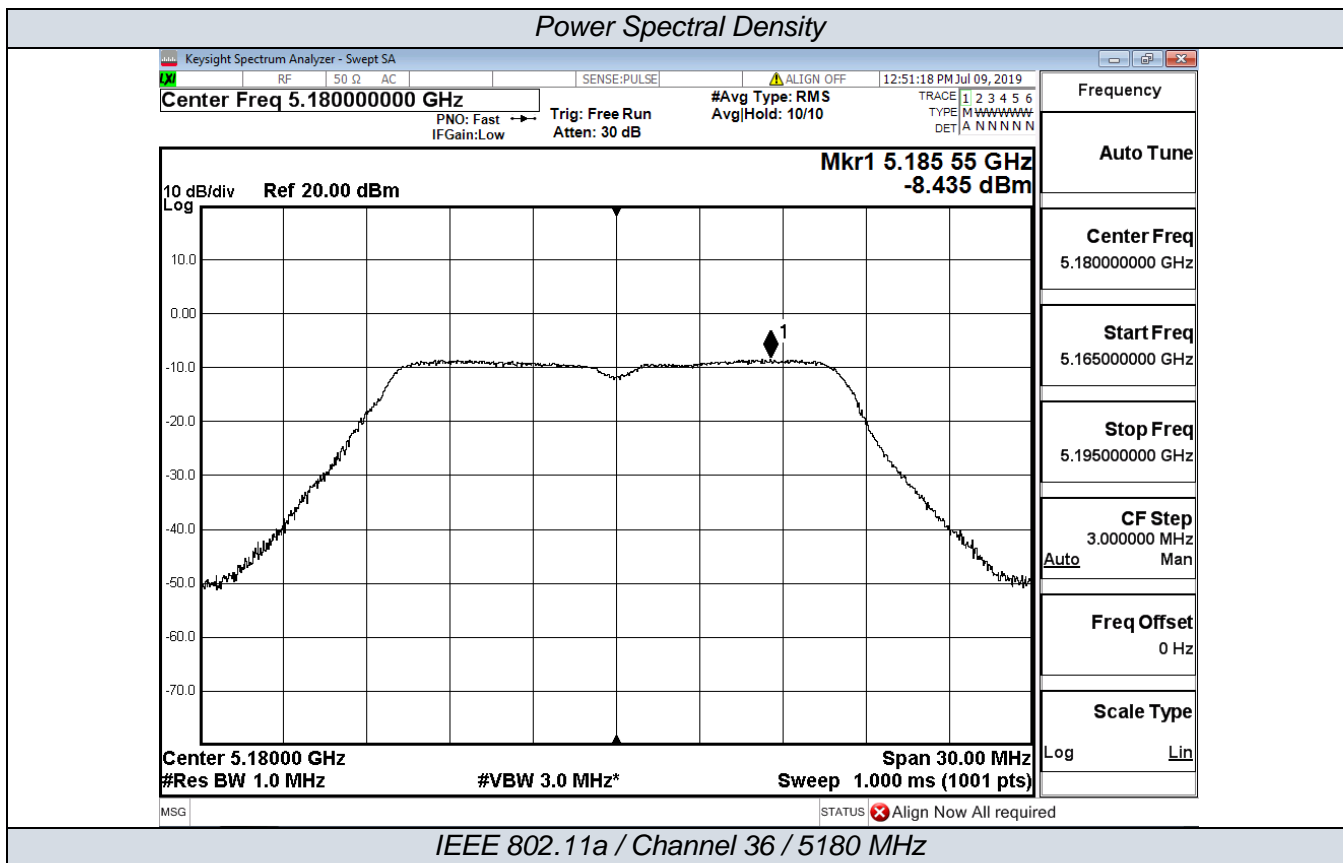
IEEE 802.11 ac HT80

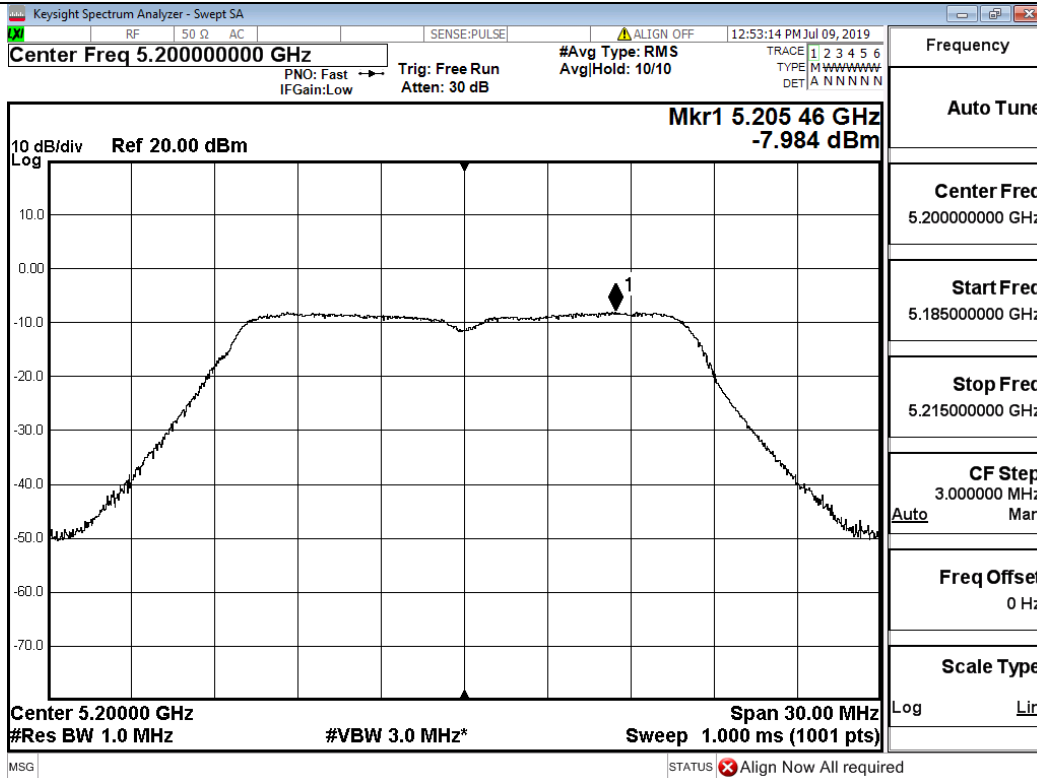
**D.2 Maximum Conduct Output Power**

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor (dB)	Report Conducted Power (dBm)	Limit (dBm)
11A	36	5180	5.87	0	5.87	24
	40	5200	5.44	0	5.44	
	48	5240	6.54	0	6.54	
11N20 SISO	36	5180	4.65	0	4.65	24
	40	5200	5.06	0	5.06	
	48	5240	5.61	0	5.61	
11N40 SISO	38	5190	5.57	0	5.57	24
	46	5230	5.84	0	5.84	
11AC20 SISO	36	5180	4.65	0	4.65	24
	40	5200	5.57	0	5.57	
	48	5240	5.91	0	5.91	
11AC40 SISO	38	5190	5.38	0	5.38	24
	46	5230	6.22	0	6.22	
11AC80 SISO	42	5210	2.12	0	2.12	24

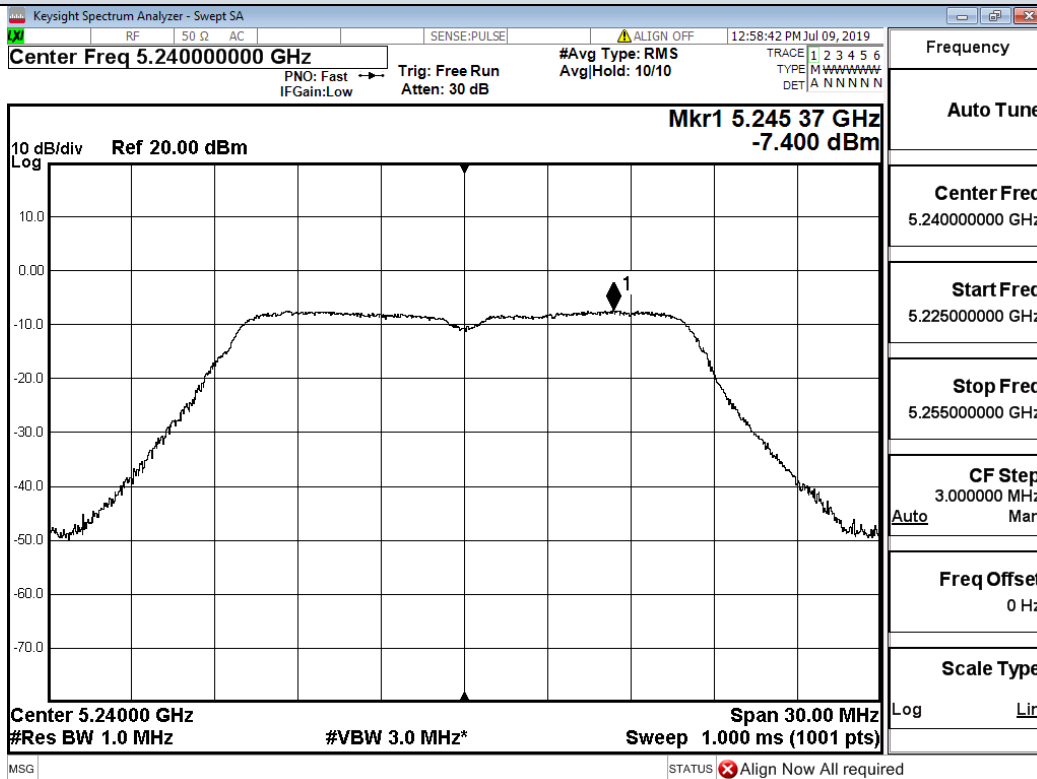
### D.3 Power Spectral Density

Test Mode	Channel	Frequency (MHz)	Power Density (dBm/MHz)	Duty Cycle Factor (dB)	Report Power Density (dBm/MHz)	Limit (dBm/MHz)
11A	36	5180	-8.435	0	-8.435	11
	40	5200	-7.984	0	-7.984	
	48	5240	-7.400	0	-7.400	
11N20 SISO	36	5180	-8.501	0	-8.501	11
	40	5200	-7.996	0	-7.996	
	48	5240	-7.435	0	-7.435	
11N40 SISO	38	5190	-9.122	0	-9.122	11
	46	5230	-9.048	0	-9.048	
11AC20 SISO	36	5180	-8.794	0	-8.794	11
	40	5200	-7.974	0	-7.974	
	48	5240	-7.582	0	-7.582	
11AC40 SISO	38	5190	-8.797	0	-8.797	11
	46	5230	-8.942	0	-8.942	
11AC80 SISO	42	5210	-11.081	0	-11.081	11



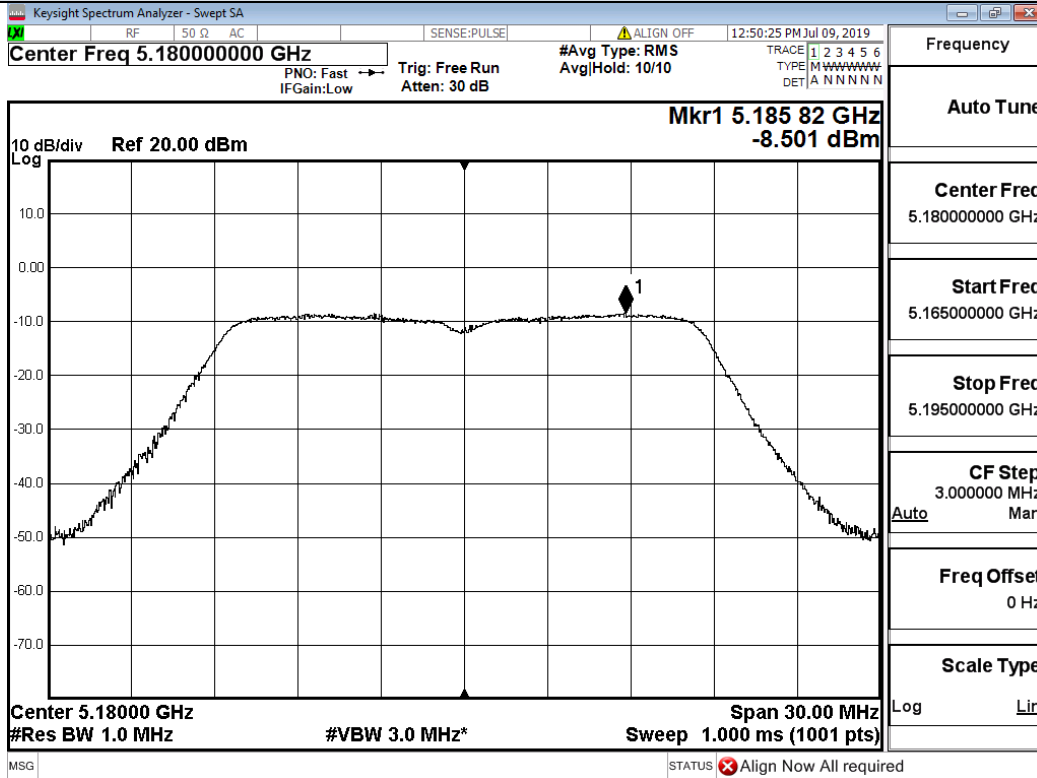


IEEE 802.11a / Channel 40 / 5200 MHz

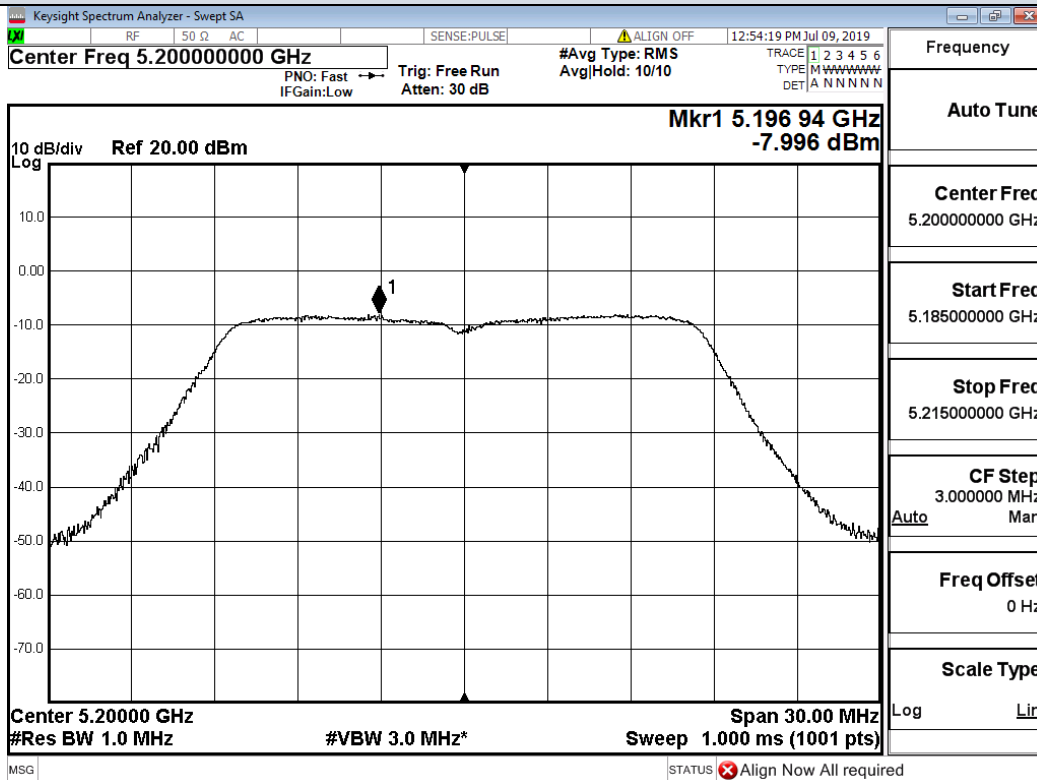


IEEE 802.11a / Channel 48 / 5240 MHz

Power Spectral Density

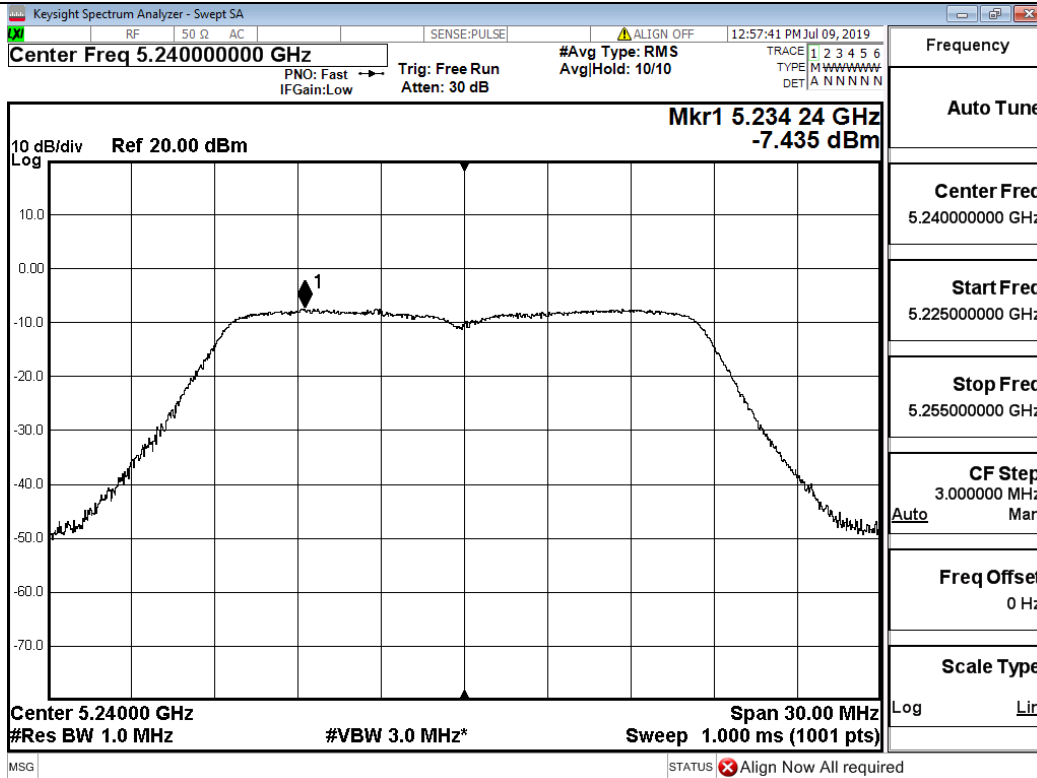


IEEE 802.11n HT20 / Channel 36 / 5180 MHz



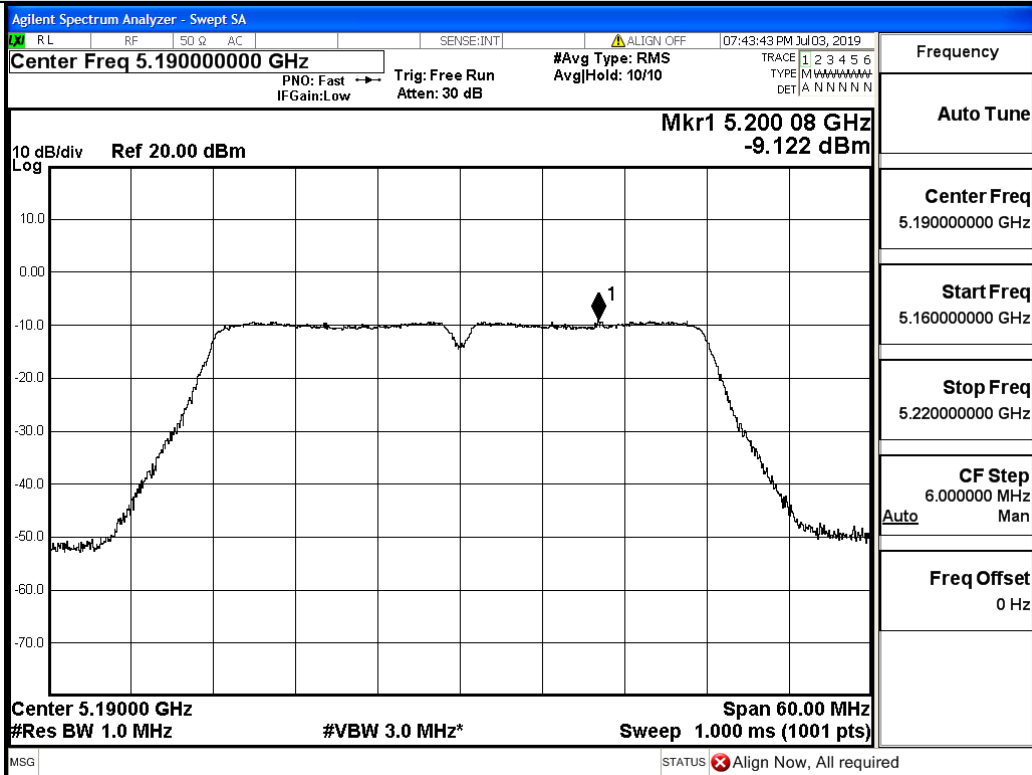
IEEE 802.11n HT20 / Channel 40 / 5200 MHz



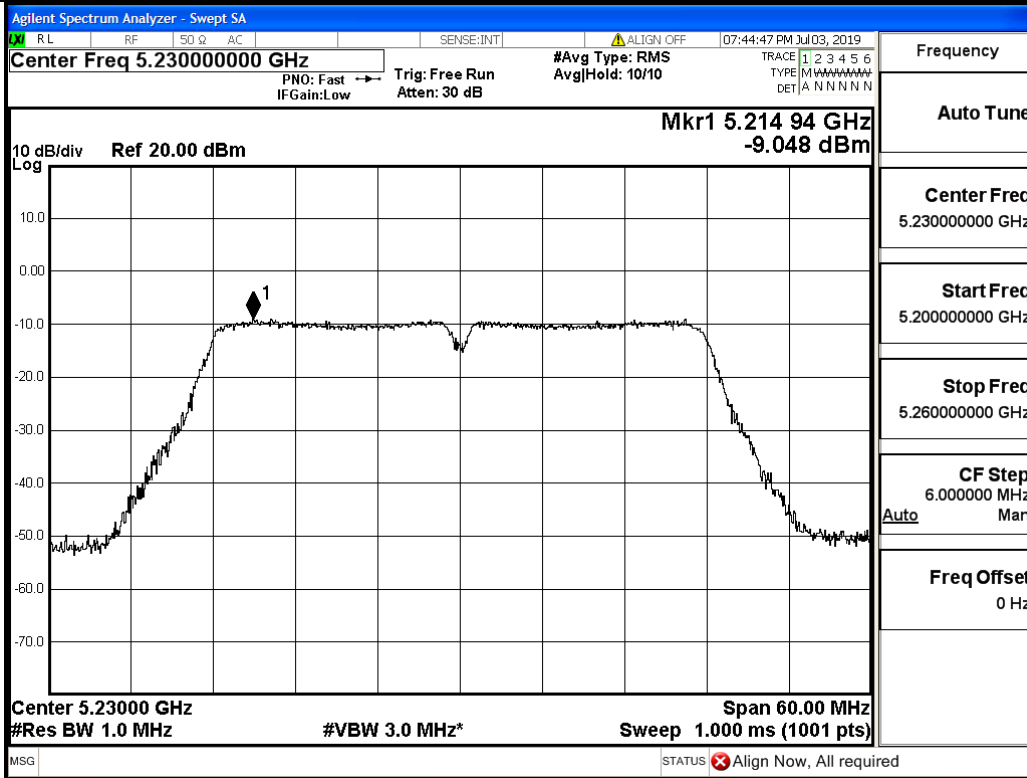


IEEE 802.11n HT20 / Channel 48 / 5240 MHz

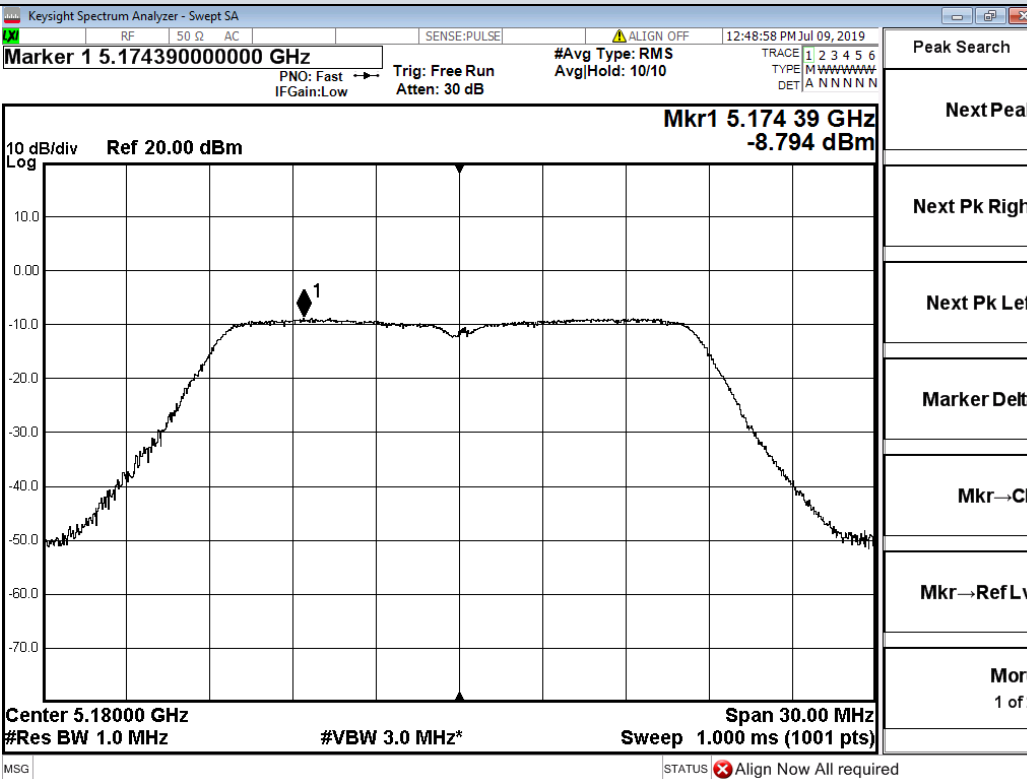
Power Spectral Density



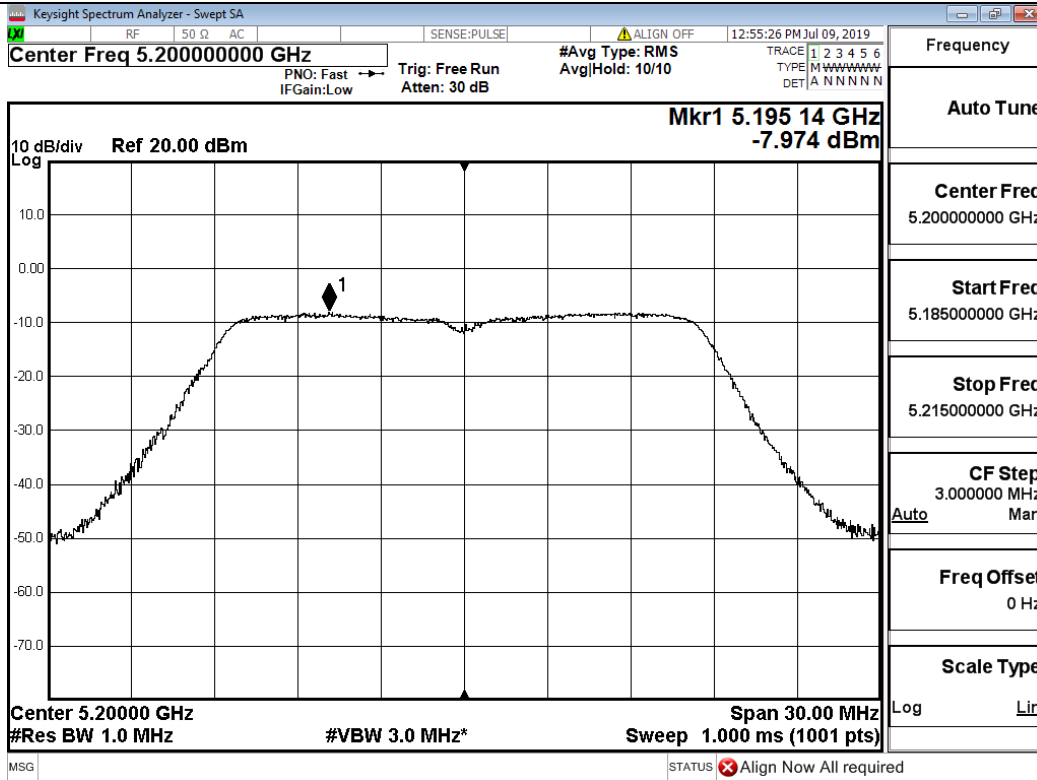
IEEE 802.11n HT40 / Channel 38 / 5190 MHz



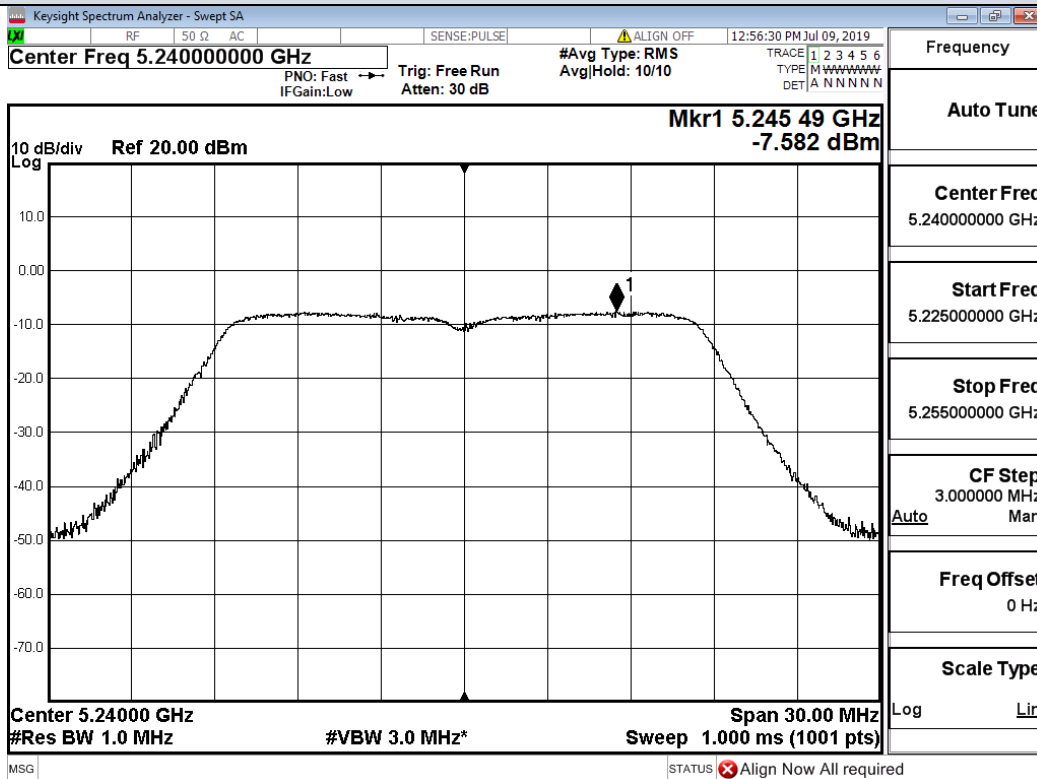
IEEE 802.11n HT40 / Channel 46 / 5230 MHz



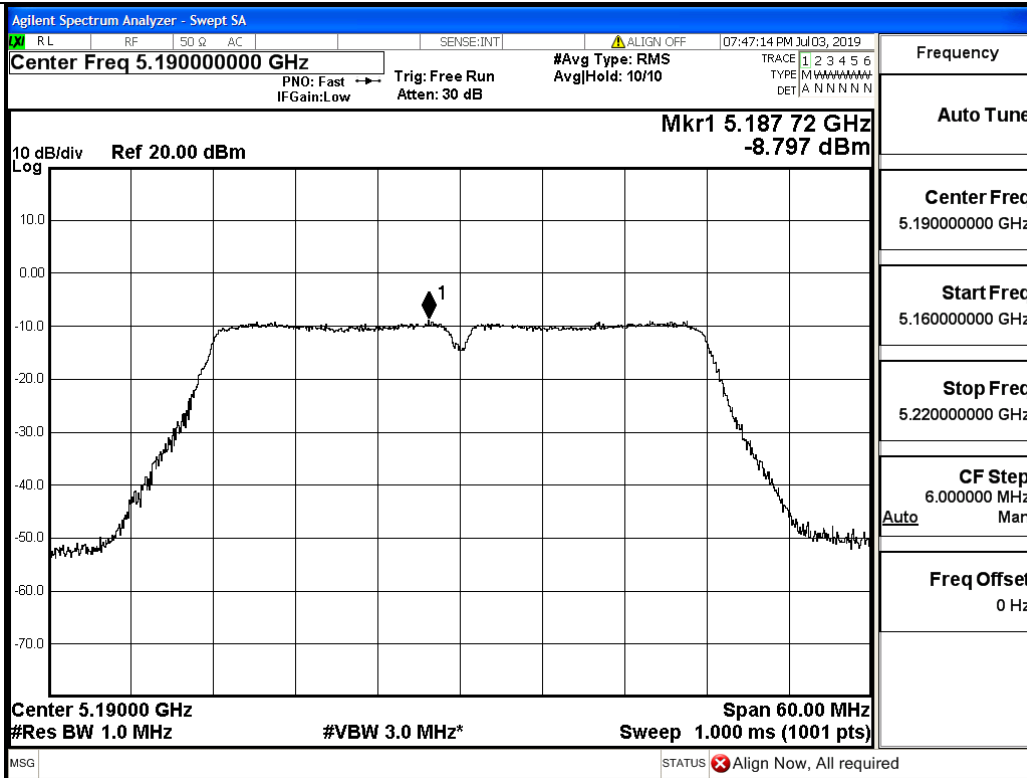
IEEE 802.11ac HT20 / Channel 36 / 5180 MHz



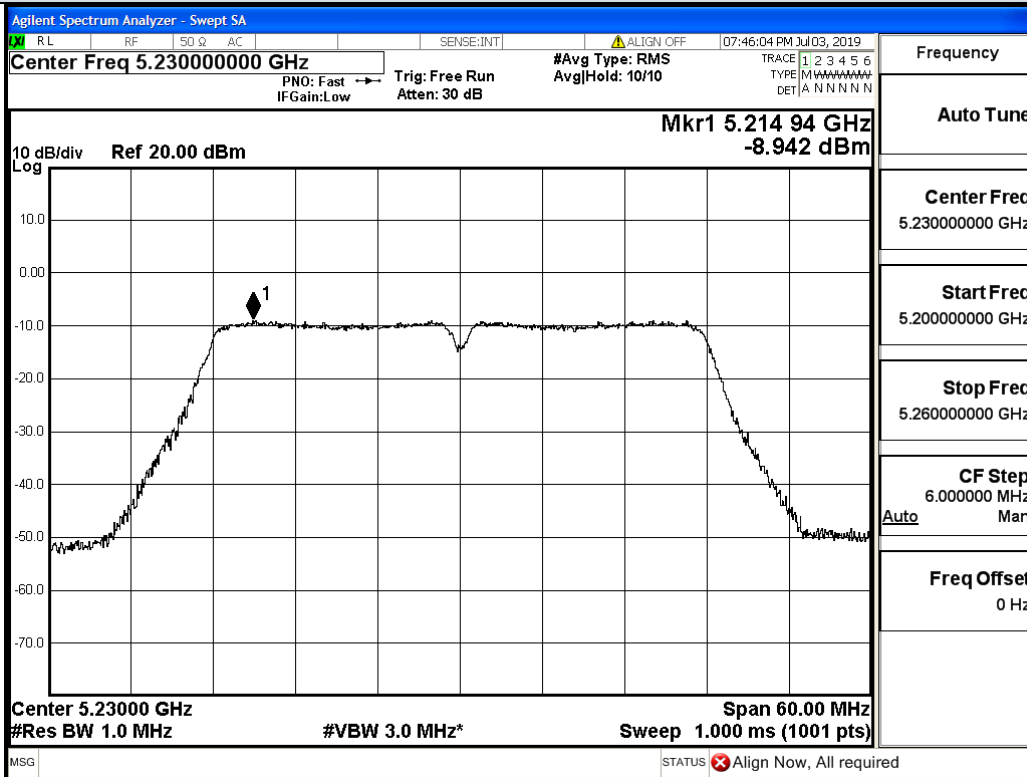
IEEE 802.11ac HT20 / Channel 40 / 5200 MHz



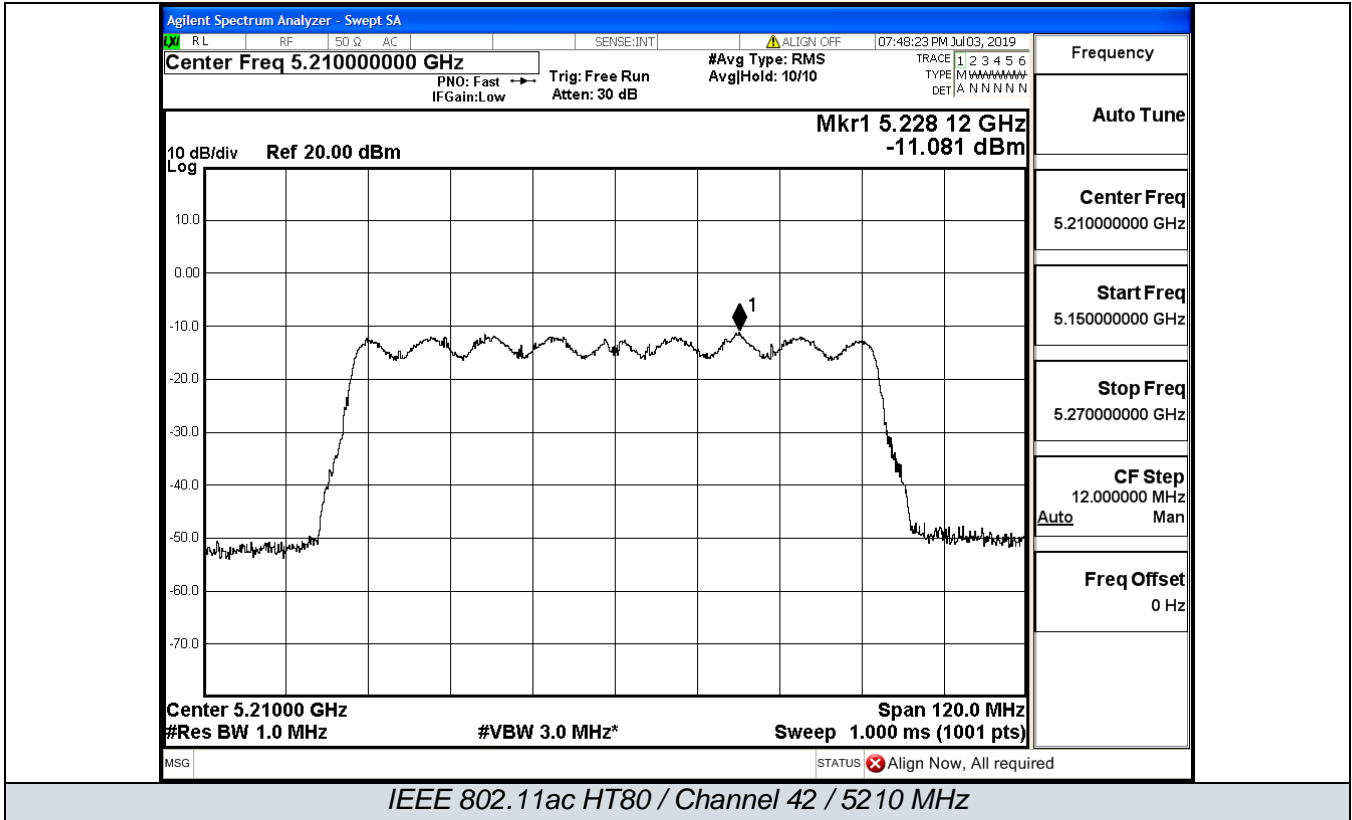
IEEE 802.11ac HT20 / Channel 48 / 5240 MHz



IEEE 802.11ac HT40 / Channel 38 / 5190 MHz

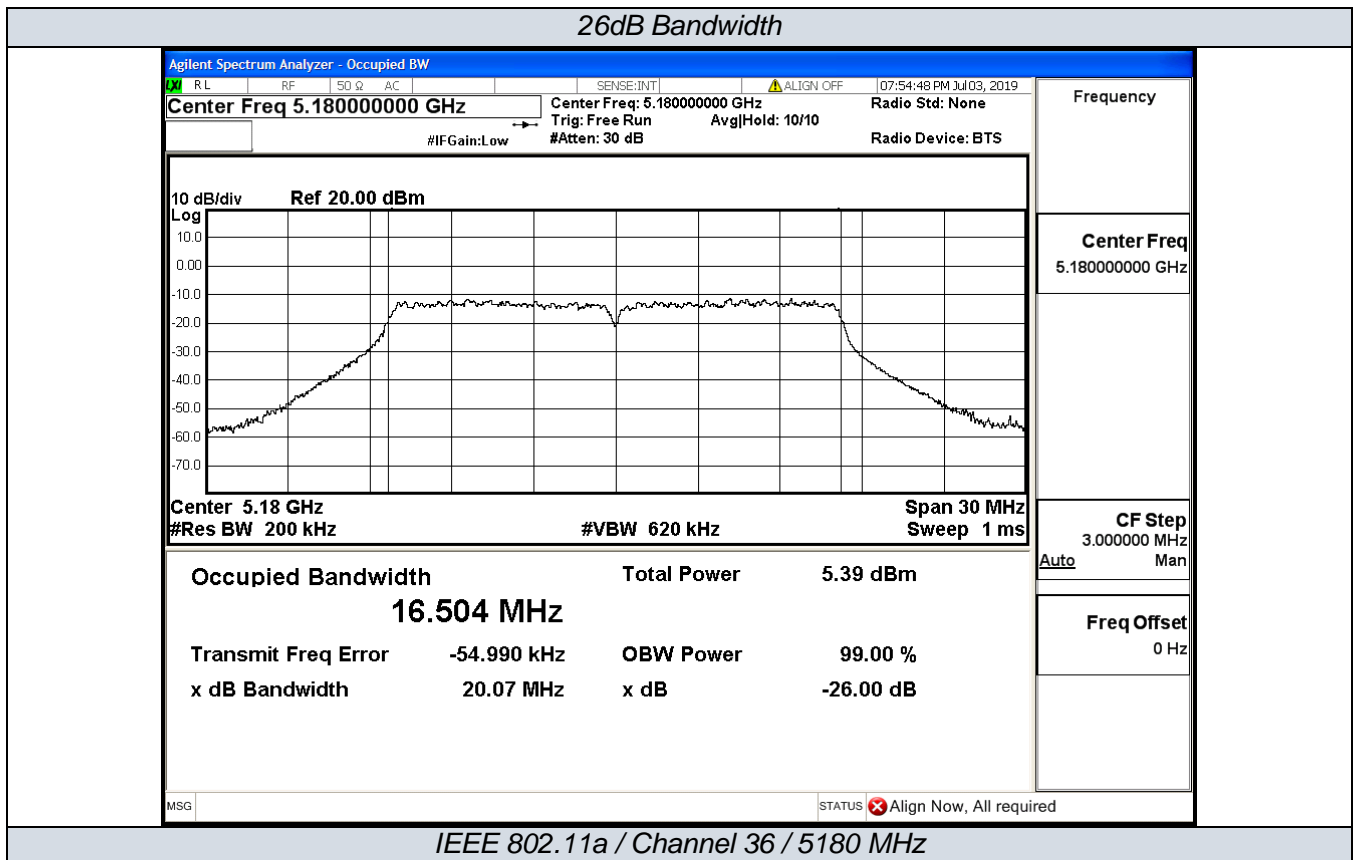


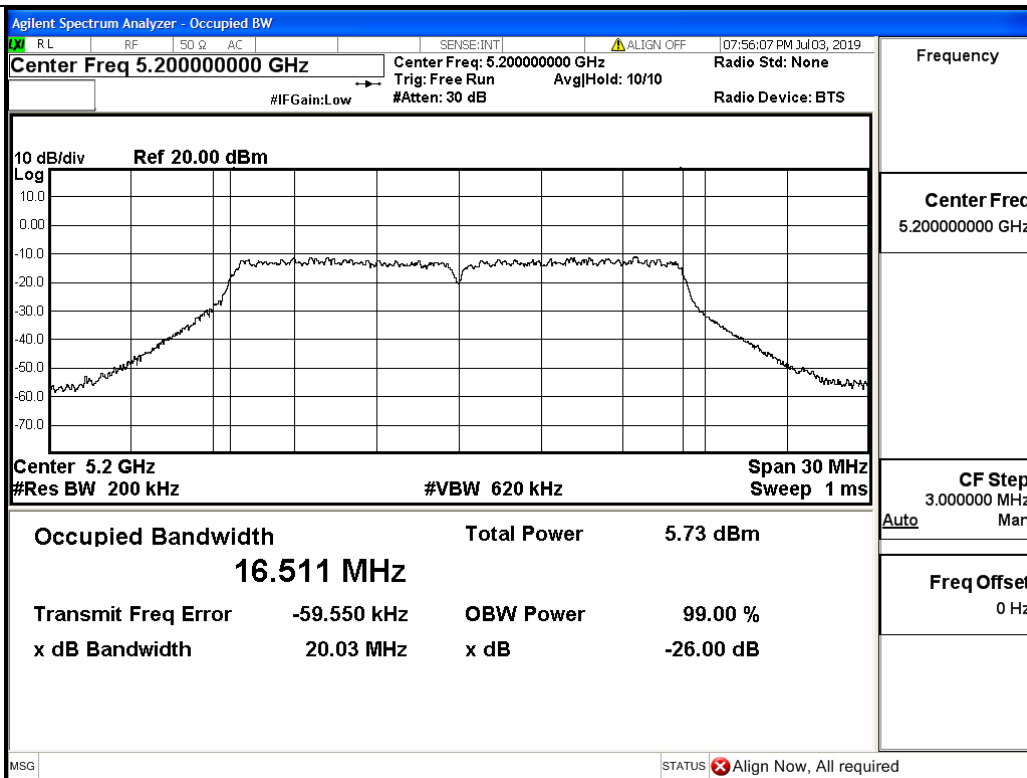
IEEE 802.11ac HT40 / Channel 46 / 5230 MHz



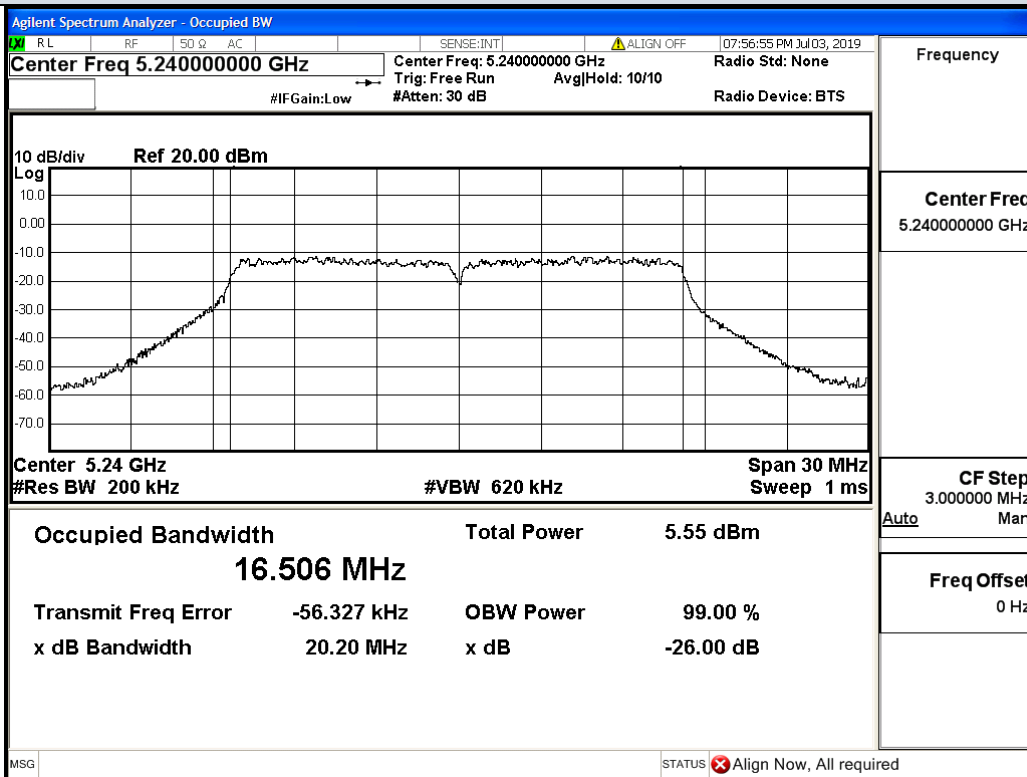
**D.4 Emission Bandwidth**

Test Mode	Channel	Frequency (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)
11A	36	5180	16.504	20.07	No Limit
	40	5200	16.511	20.03	
	48	5240	16.506	20.20	
11N20 SISO	36	5180	17.641	20.94	No Limit
	40	5200	17.640	20.83	
	48	5240	17.641	21.11	
11N40 SISO	38	5190	36.234	42.37	No Limit
	46	5230	36.241	42.05	
11AC20 SISO	36	5180	17.649	20.85	No Limit
	40	5200	17.647	21.05	
	48	5240	17.653	20.83	
11AC40 SISO	38	5190	36.252	42.14	No Limit
	46	5230	36.224	42.27	
11AC80 SISO	42	5210	75.789	83.32	No Limit



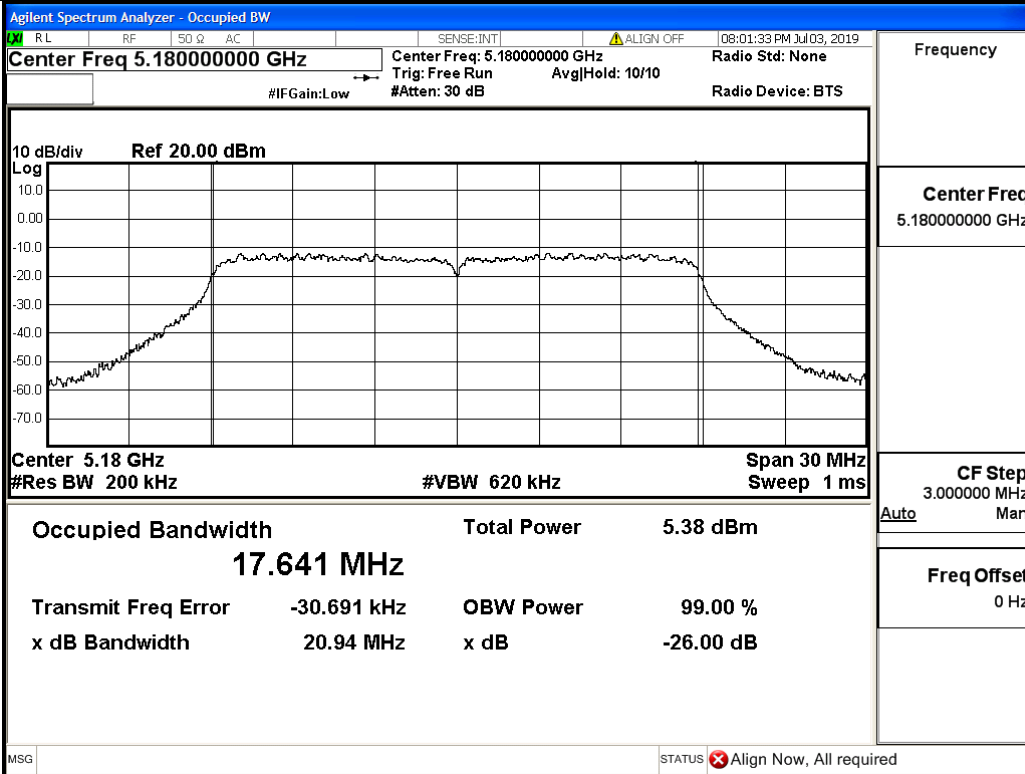


IEEE 802.11a / Channel 40 / 5200 MHz

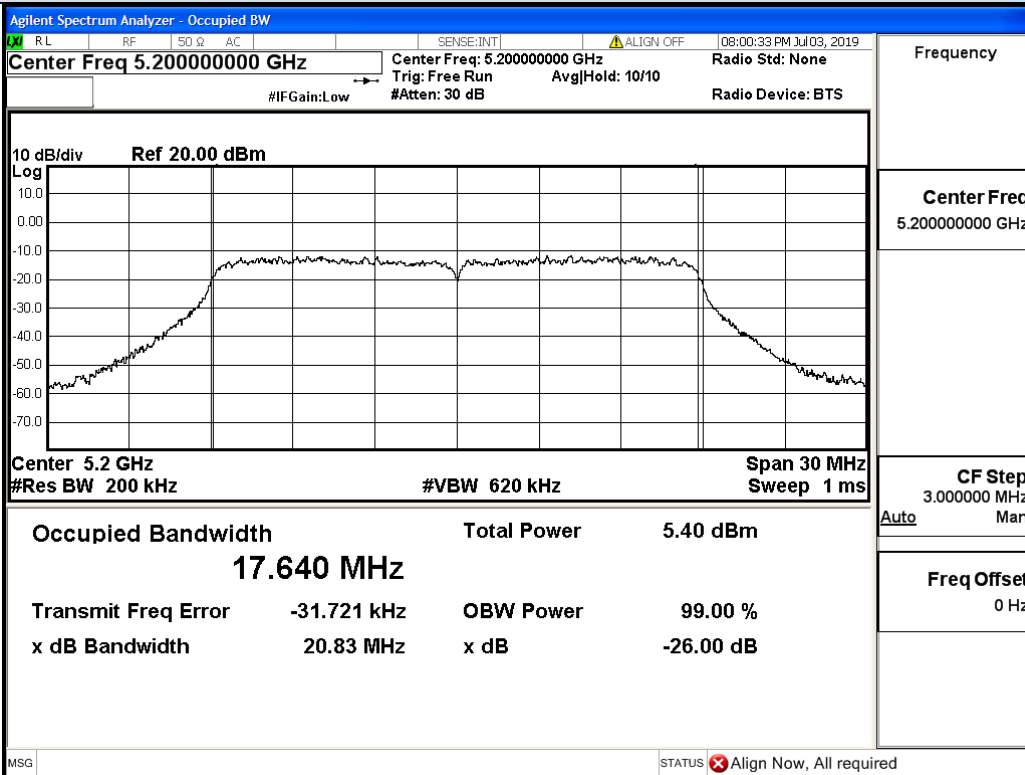


IEEE 802.11a / Channel 48 / 5240 MHz

26dB Bandwidth

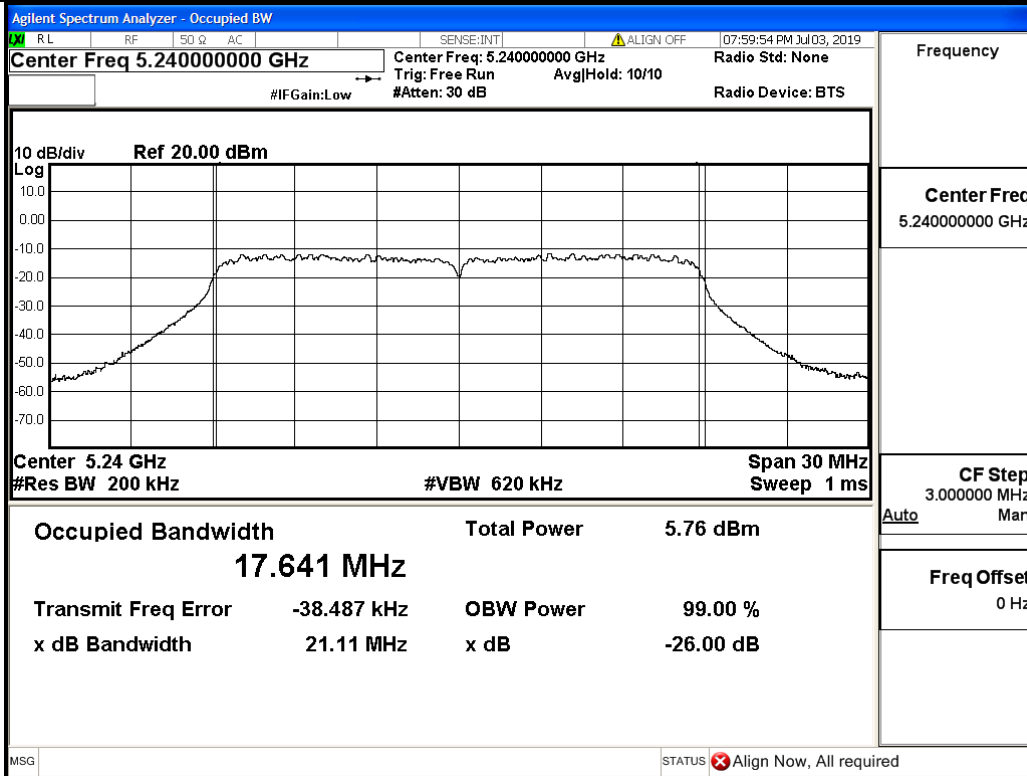


IEEE 802.11n HT20 / Channel 36 / 5180 MHz



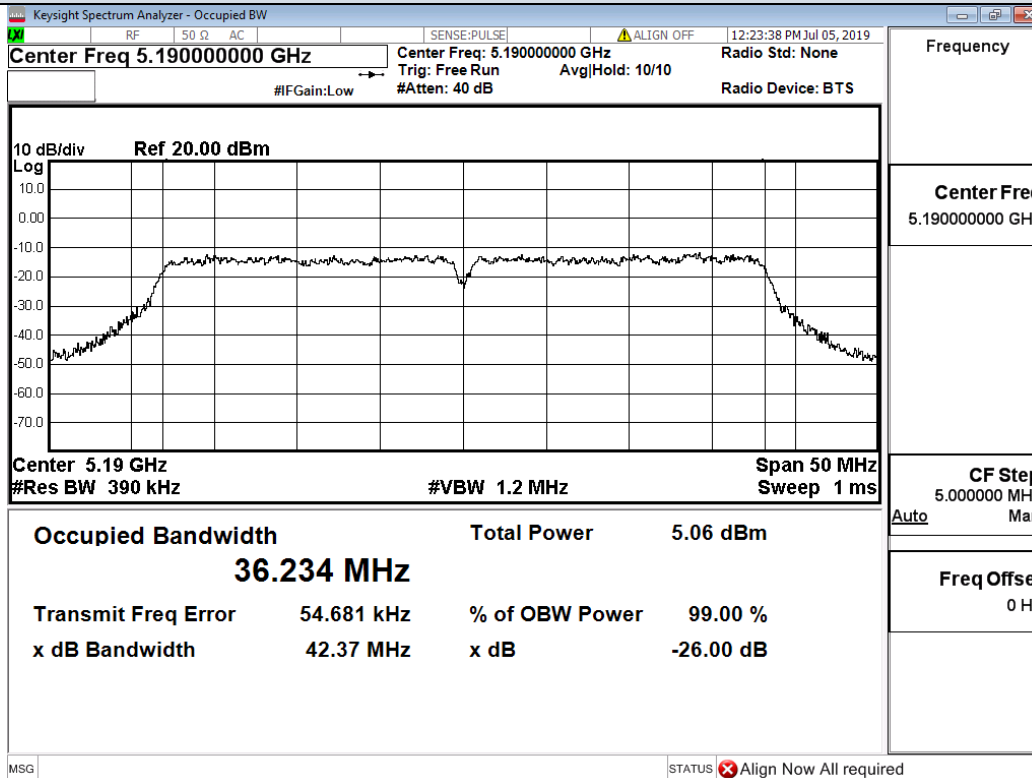
IEEE 802.11n HT20 / Channel 40 / 5200 MHz



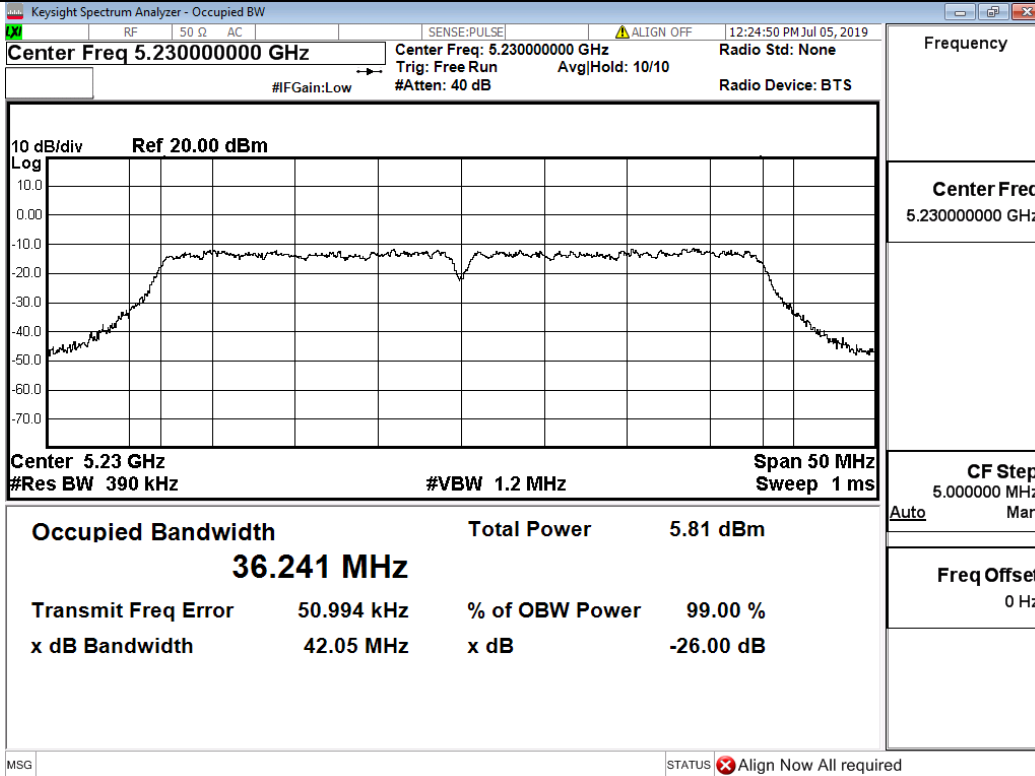


IEEE 802.11n HT20 / Channel 48 / 5240 MHz

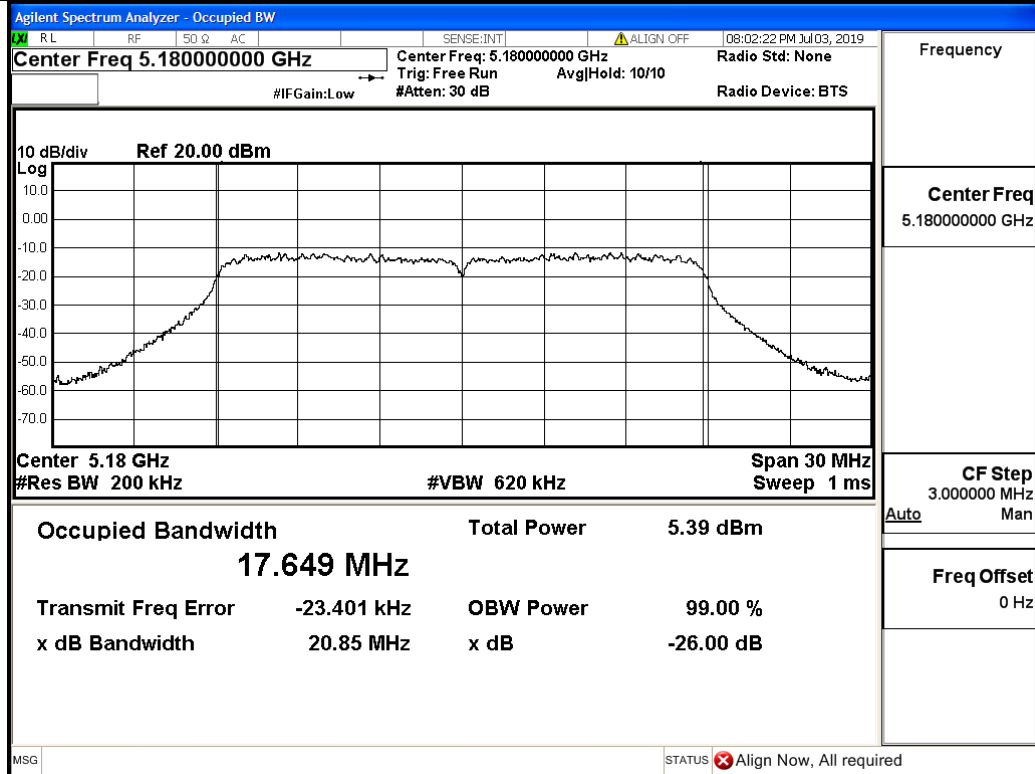
26dB Bandwidth



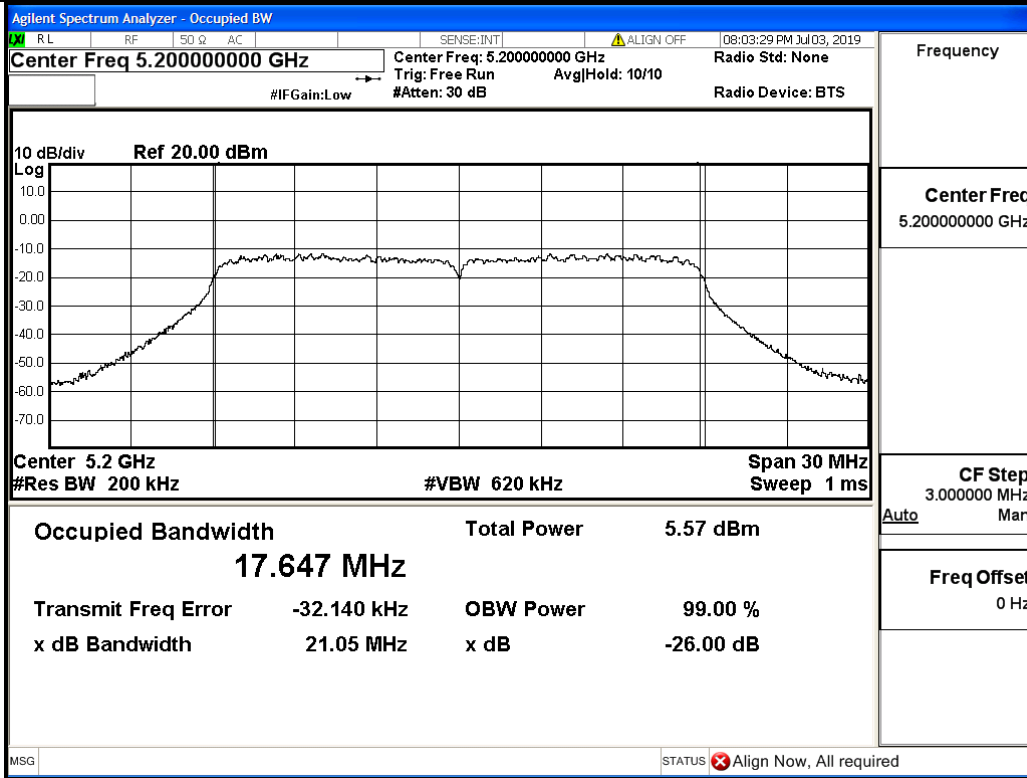
IEEE 802.11n HT40 / Channel 38 / 5190 MHz



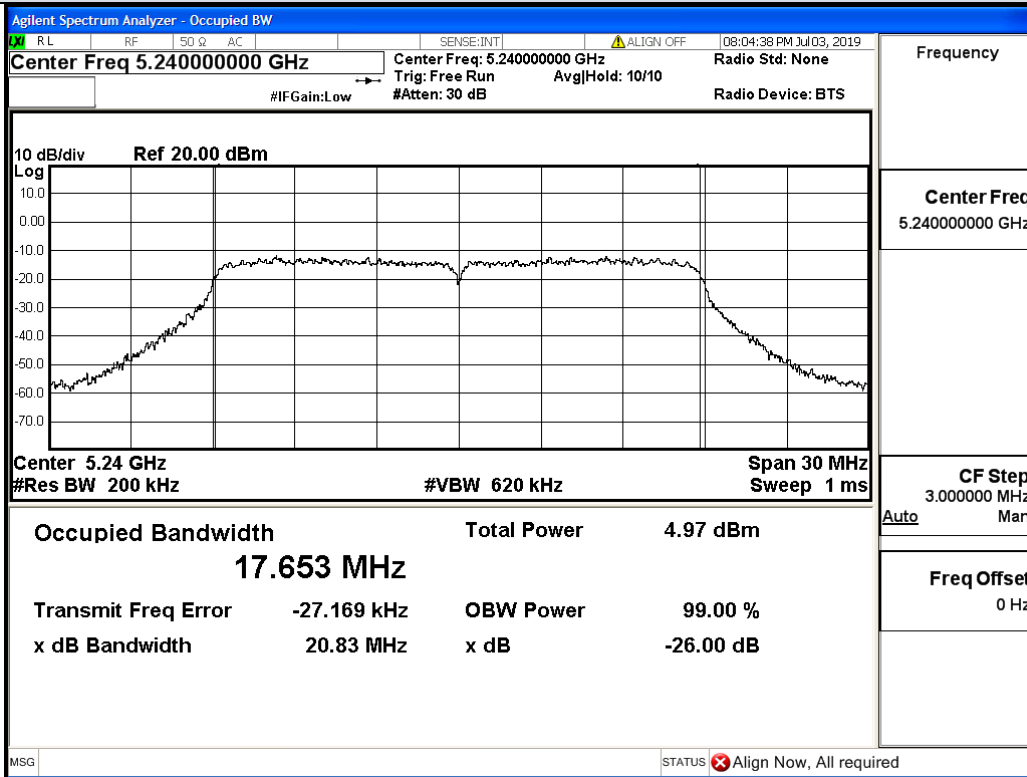
IEEE 802.11n HT40 / Channel 46 / 5230 MHz



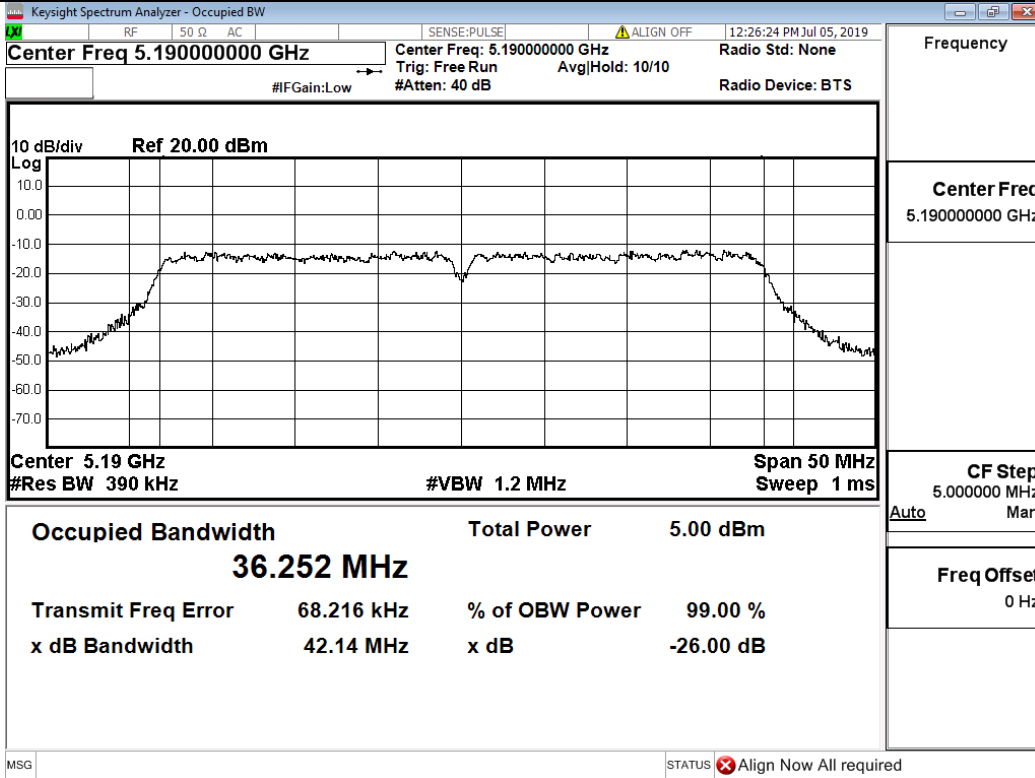
IEEE 802.11ac HT20 / Channel 36 / 5180 MHz



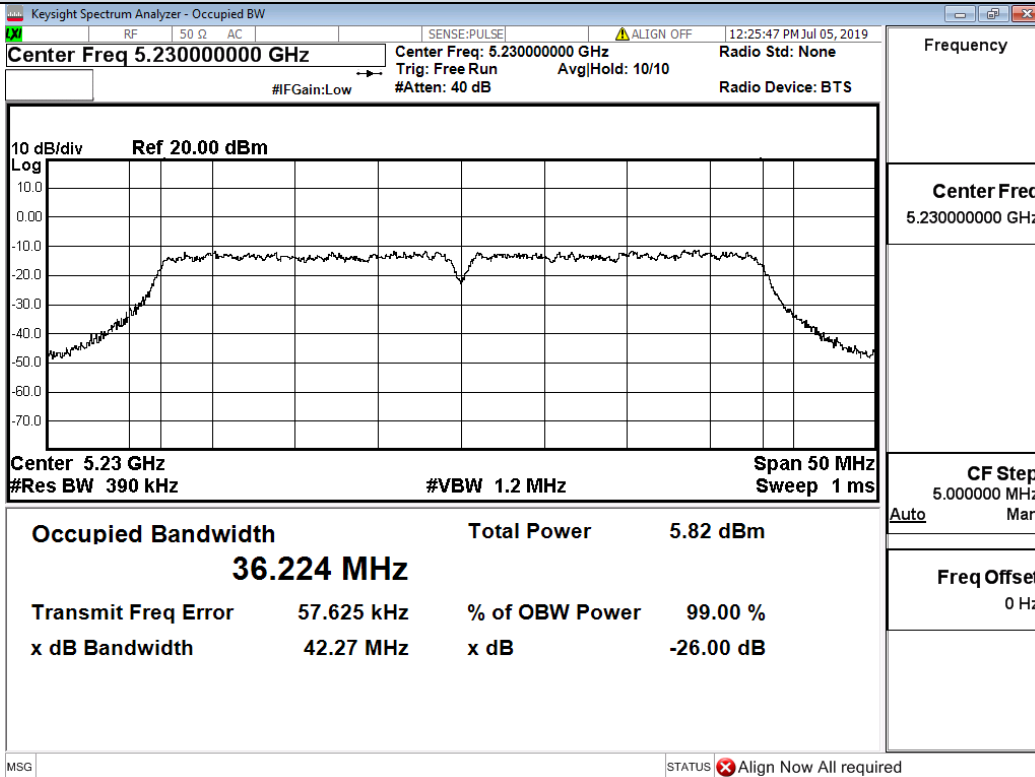
IEEE 802.11ac HT20 / Channel 40 / 5200 MHz



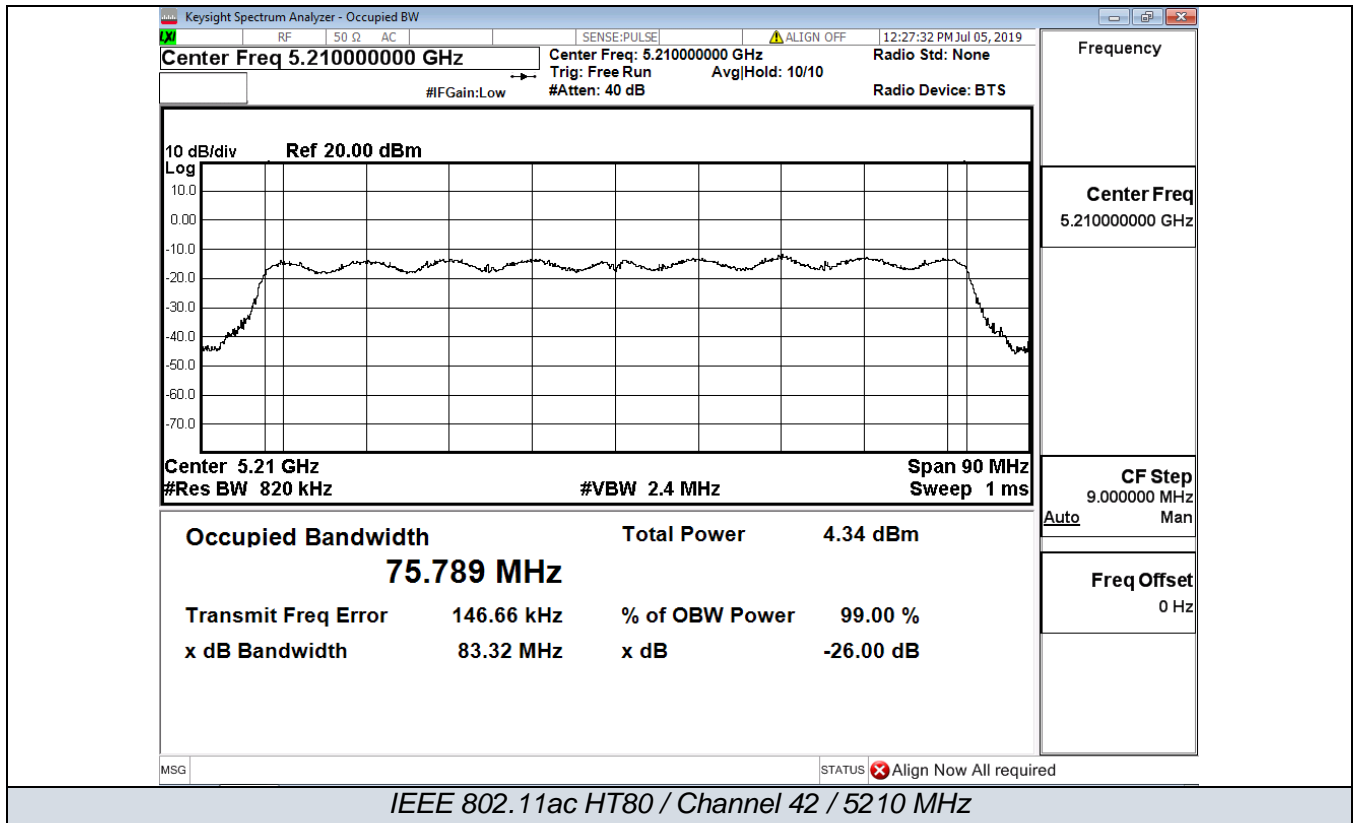
IEEE 802.11ac HT20 / Channel 48 / 5240 MHz



IEEE 802.11ac HT40 / Channel 38 / 5190 MHz



IEEE 802.11ac HT40 / Channel 46 / 5230 MHz



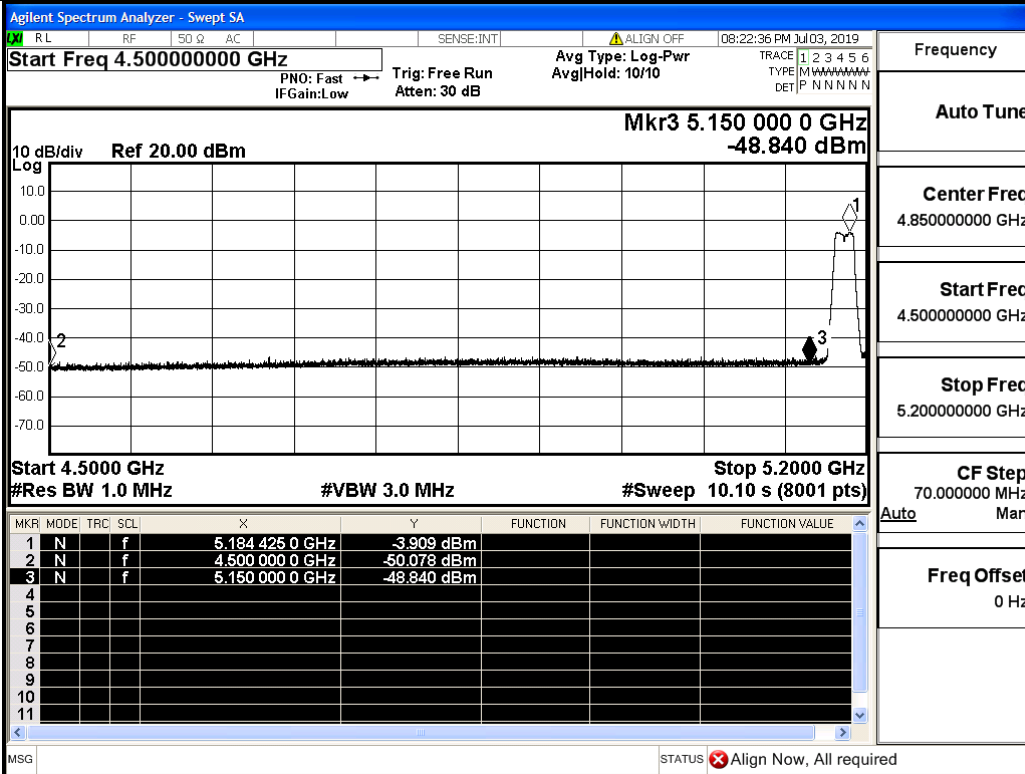
IEEE 802.11ac HT80 / Channel 42 / 5210 MHz

**D.5 Undesirable Emissions Measurement**

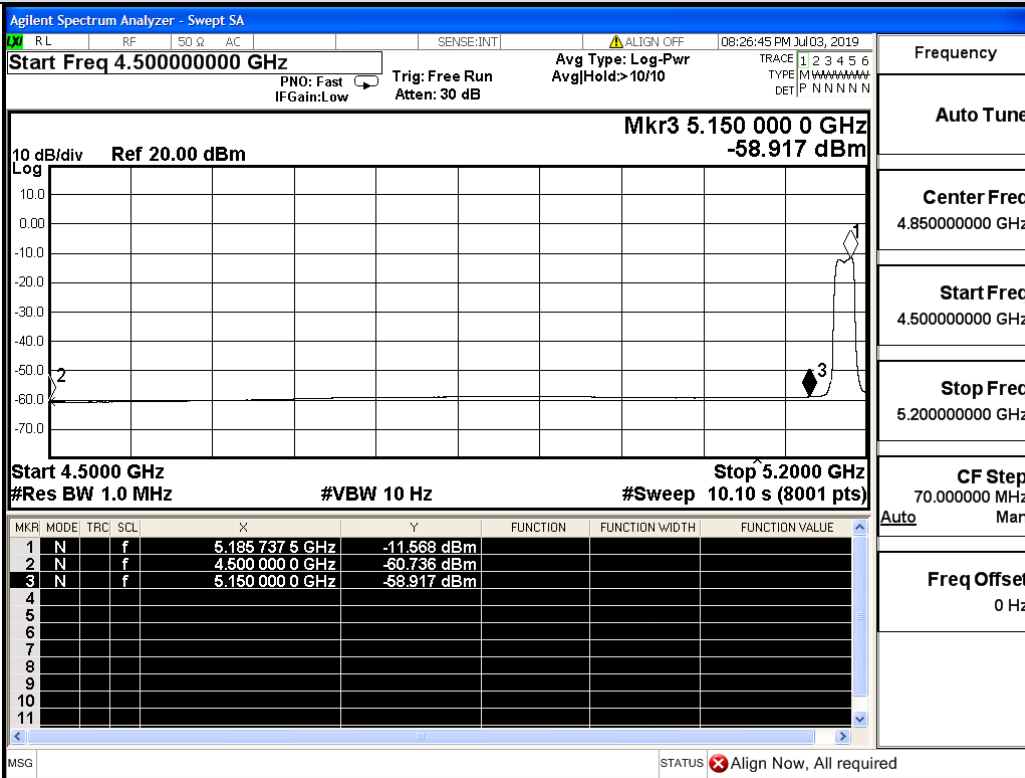
Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)
11A	36	4500.0	-50.078	5.00	0	50.15	Peak	68.20
		4500.0	-60.736	5.00	0	39.49	Average	54.00
		5150.0	-48.840	5.00	0	51.39	Peak	68.20
		5150.0	-58.917	5.00	0	41.31	Average	54.00
	48	5350.0	-49.149	5.00	0	51.08	Peak	68.20
		5350.0	-60.285	5.00	0	39.95	Average	54.00
		5460.0	-48.843	5.00	0	51.39	Peak	68.20
		5460.0	-60.613	5.00	0	39.62	Average	54.00
11N20 SISO	36	4500.0	-50.687	5.00	0	49.54	Peak	68.20
		4500.0	-60.768	5.00	0	39.46	Average	54.00
		5150.0	-49.041	5.00	0	51.19	Peak	68.20
		5150.0	-58.928	5.00	0	41.30	Average	54.00
	48	5350.0	-48.805	5.00	0	51.43	Peak	68.20
		5350.0	-60.297	5.00	0	39.93	Average	54.00
		5460.0	-50.177	5.00	0	50.05	Peak	68.20
		5460.0	-60.616	5.00	0	39.61	Average	54.00
11N40 SISO	38	4500.0	-50.522	5.00	0	49.71	Peak	68.20
		4500.0	-60.767	5.00	0	39.46	Average	54.00
		5150.0	-47.526	5.00	0	52.70	Peak	68.20
		5150.0	-58.881	5.00	0	41.35	Average	54.00
	46	5350.0	-48.470	5.00	0	51.76	Peak	68.20
		5350.0	-59.996	5.00	0	40.23	Average	54.00
		5460.0	-49.771	5.00	0	50.46	Peak	68.20
		5460.0	-60.314	5.00	0	39.92	Average	54.00
11AC20 SISO	36	4500.0	-49.620	5.00	0	50.61	Peak	68.20
		4500.0	-60.762	5.00	0	39.47	Average	54.00
		5150.0	-48.711	5.00	0	51.52	Peak	68.20
		5150.0	-58.923	5.00	0	41.31	Average	54.00
	48	4500.0	-48.796	5.00	0	51.43	Peak	68.20
		4500.0	-60.282	5.00	0	39.95	Average	54.00
		5150.0	-48.306	5.00	0	51.92	Peak	68.20
		5150.0	-60.612	5.00	0	39.62	Average	54.00
11AC40 SISO	38	4500.0	-50.909	5.00	0	49.32	Peak	68.20
		4500.0	-60.740	5.00	0	39.49	Average	54.00
		5150.0	-48.900	5.00	0	51.33	Peak	68.20
		5150.0	-58.893	5.00	0	41.34	Average	54.00
	46	5350.0	-49.576	5.00	0	50.65	Peak	68.20
		5350.0	-61.238	5.00	0	38.99	Average	54.00
		5460.0	-49.305	5.00	0	50.93	Peak	68.20
		5460.0	-60.477	5.00	0	39.75	Average	54.00
11AC80 SISO	42	4500.0	-50.741	5.00	0	49.49	Peak	68.20
		5150.0	-60.754	5.00	0	39.48	Average	54.00
		4500.0	-47.910	5.00	0	52.32	Peak	68.20
		5150.0	-58.483	5.00	0	41.75	Average	54.00
		5350.0	-48.171	5.00	0	52.06	Peak	68.20

		5460.0	-59.546	5.00	0	40.68	Average	54.00
		5350.0	-49.268	5.00	0	50.96	Peak	68.20
		5460.0	-59.850	5.00	0	40.38	Average	54.00

Undesirable Emissions Measurement



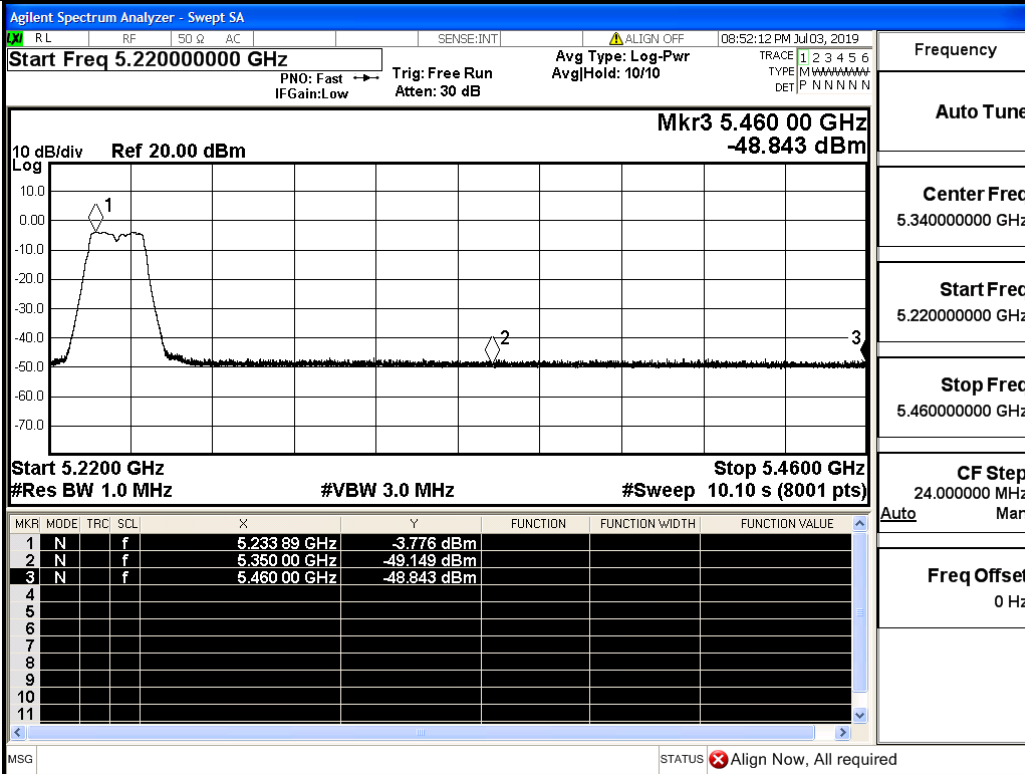
IEEE 802.11a / Channel 36 / 5180 MHz / Peak



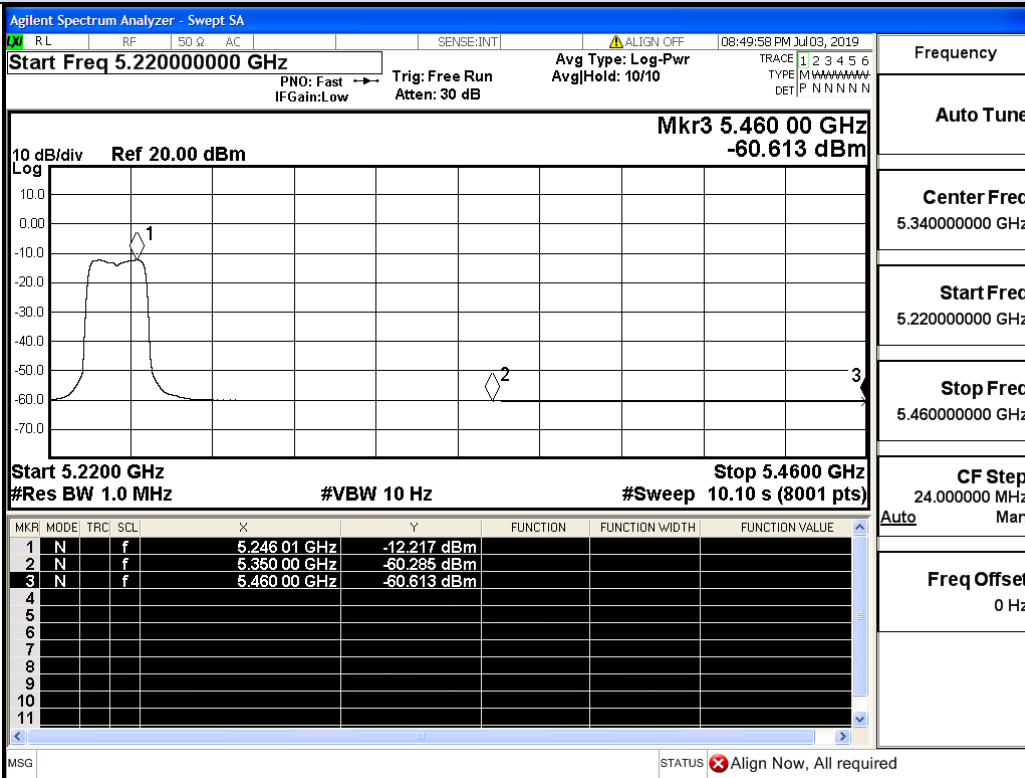
IEEE 802.11a / Channel 36 / 5180 MHz / Average



Undesirable Emissions Measurement

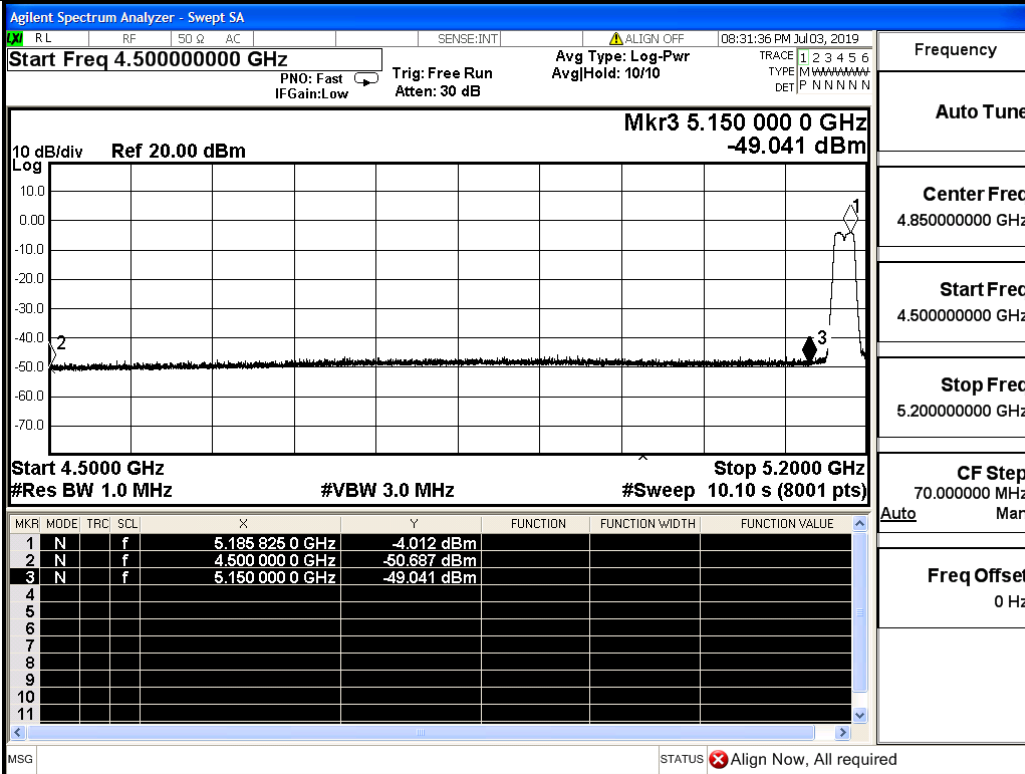


IEEE 802.11a / Channel 48 / 5240 MHz / Peak

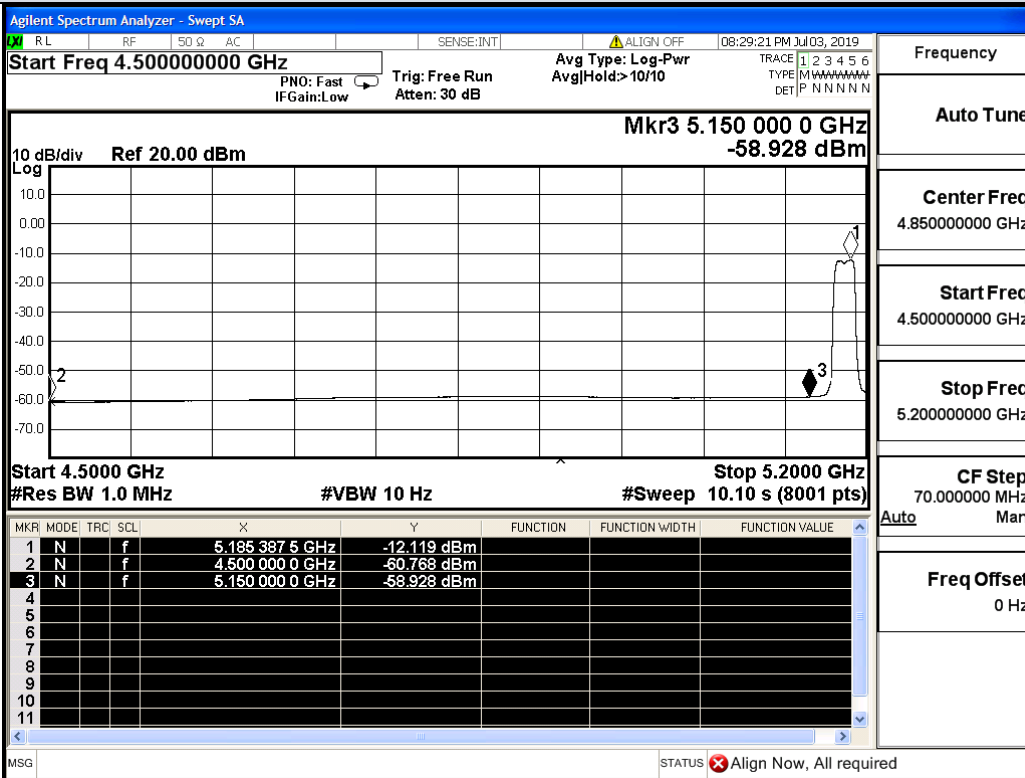


IEEE 802.11a / Channel 48 / 5240 MHz / Average

Undesirable Emissions Measurement

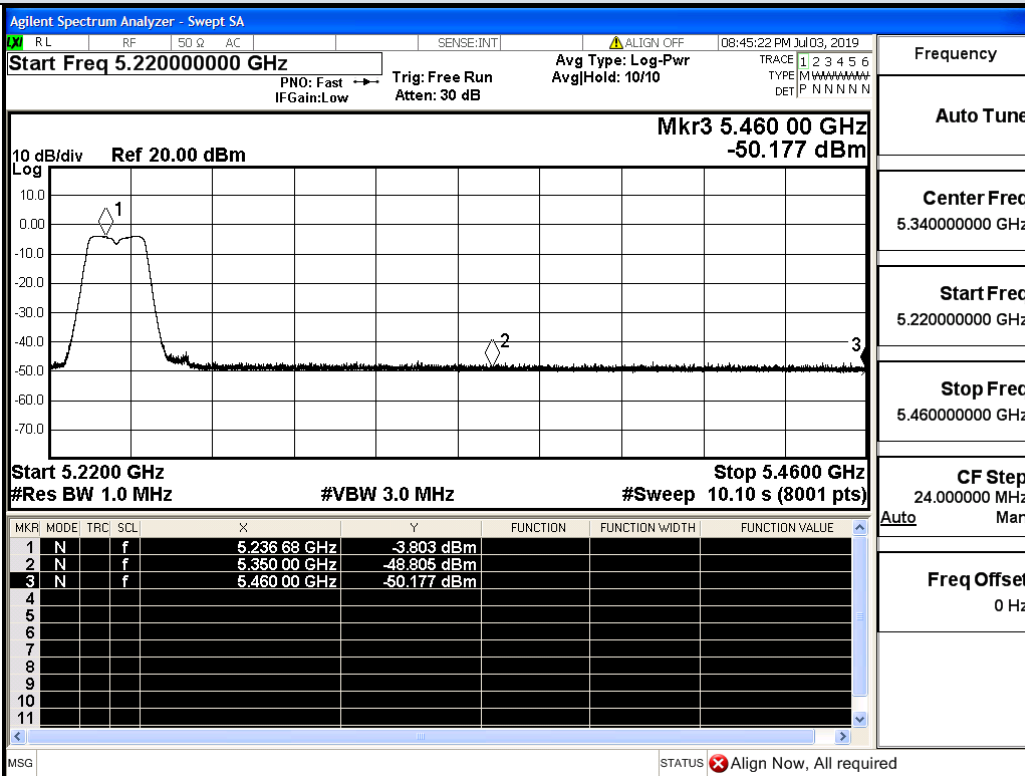


IEEE 802.11n HT20 / Channel 36 / 5180 MHz / Peak

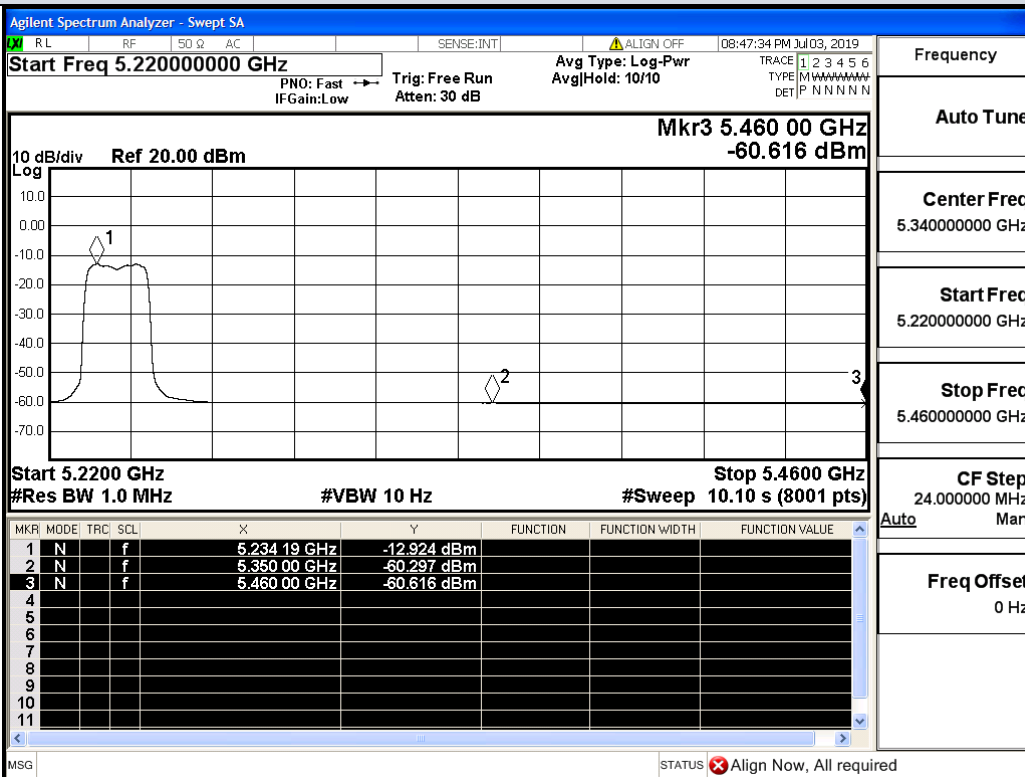


IEEE 802.11n HT20 / Channel 36 / 5180 MHz / Average

Undesirable Emissions Measurement

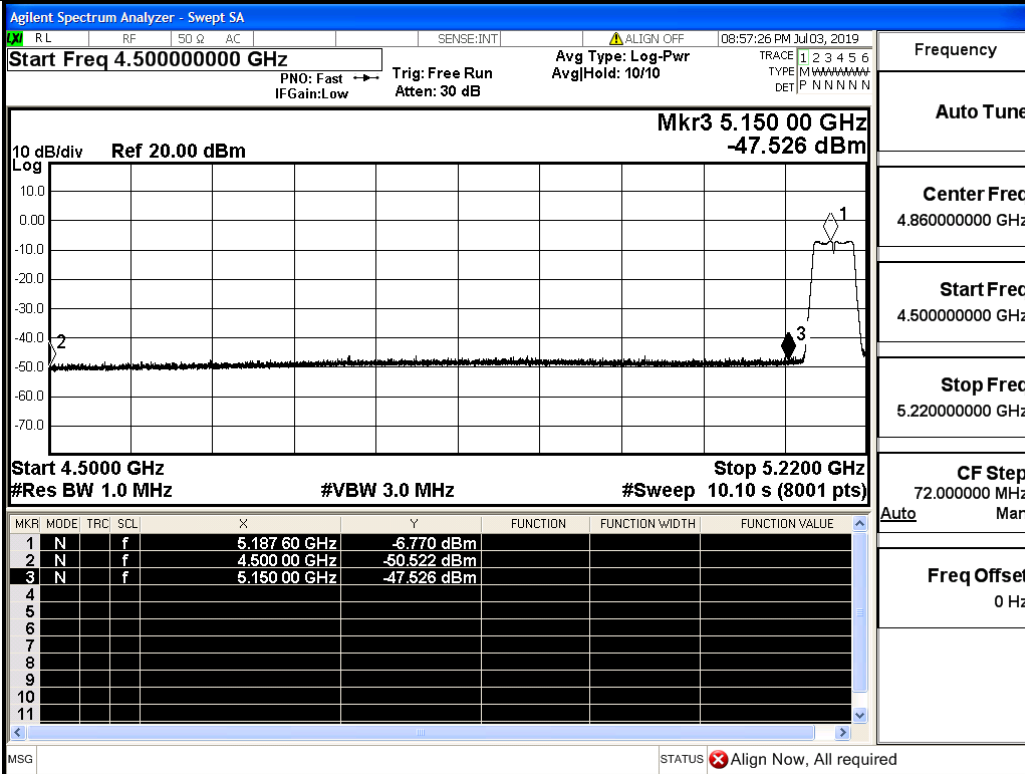


IEEE 802.11n HT20 / Channel 48 / 5240 MHz / Peak

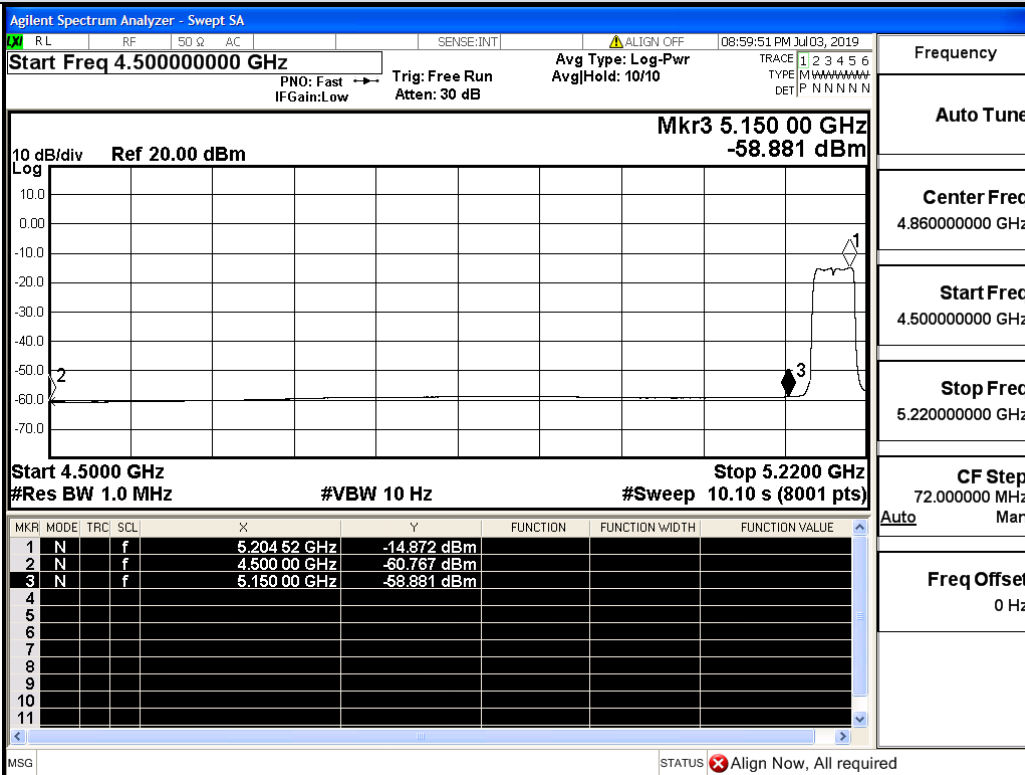


IEEE 802.11n HT20 / Channel 48 / 5240 MHz / Average

Undesirable Emissions Measurement

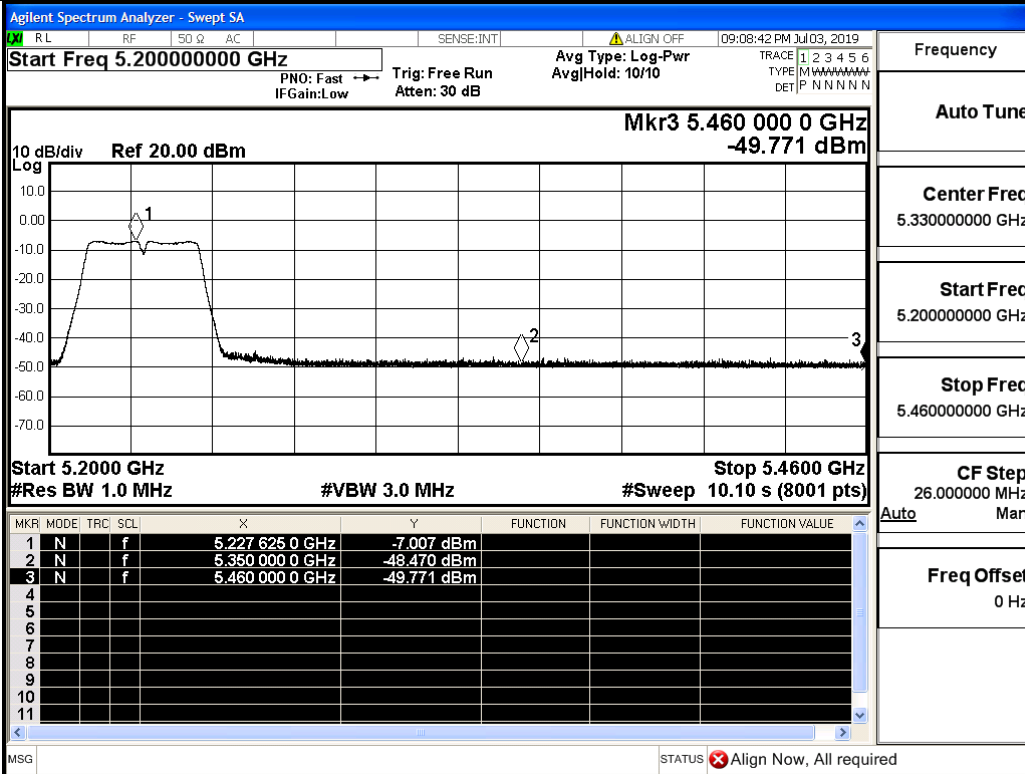


IEEE 802.11n HT40 / Channel 38 / 5190 MHz / Peak

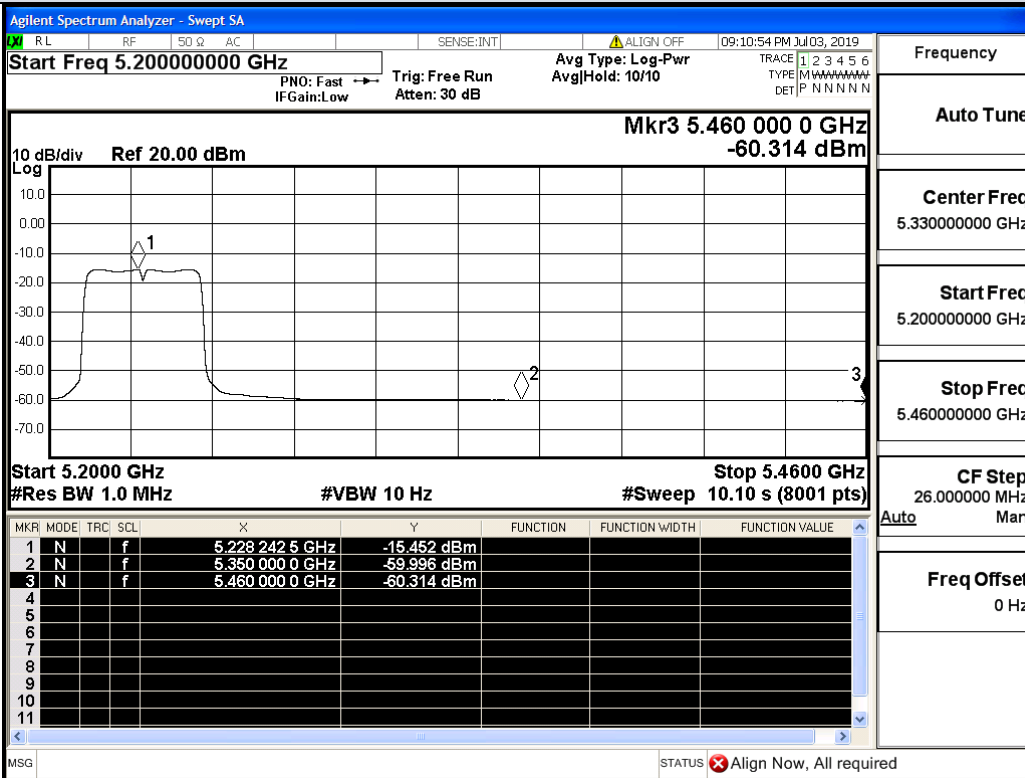


IEEE 802.11n HT40 / Channel 38 / 5190 MHz / Average

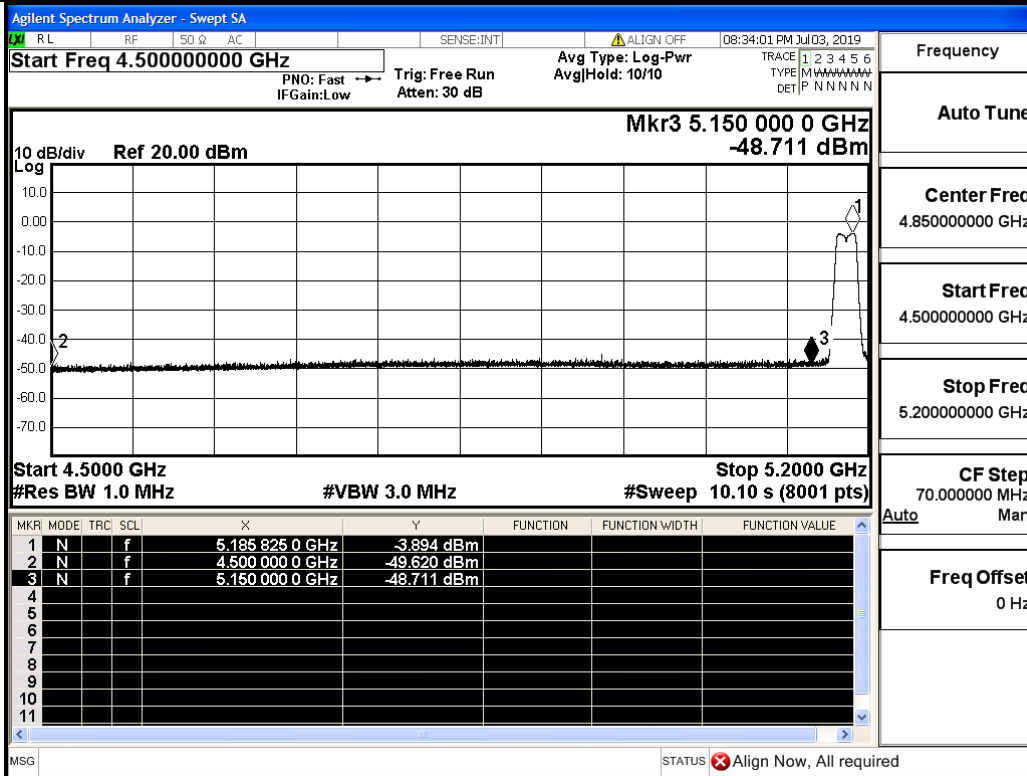
Undesirable Emissions Measurement



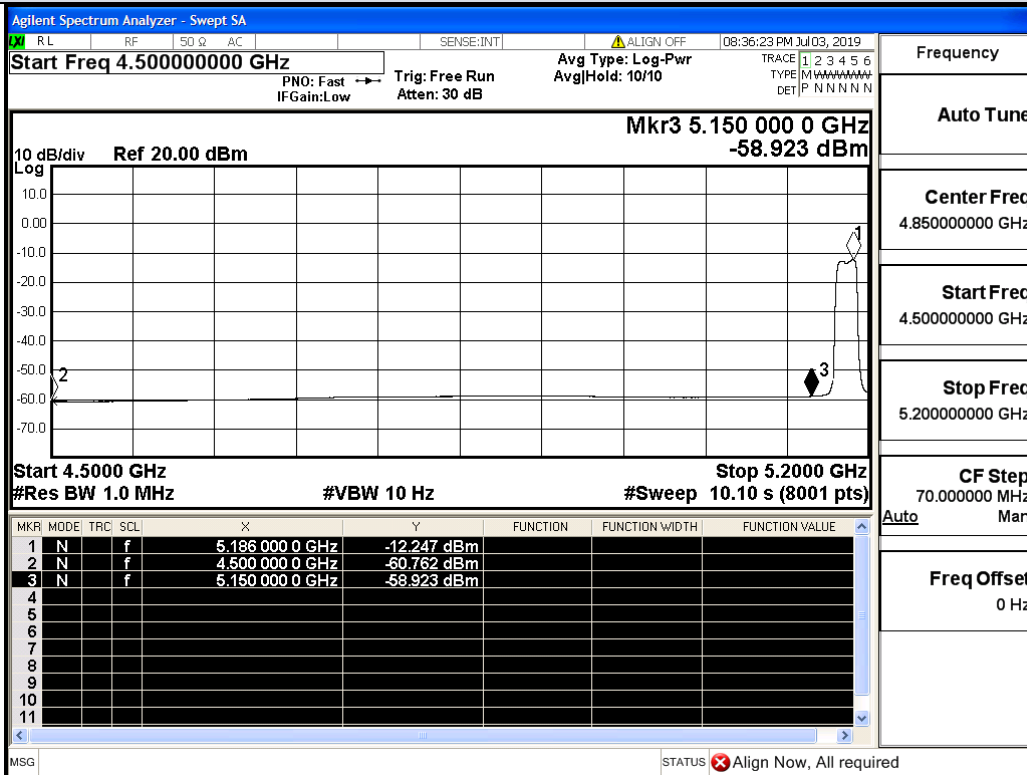
IEEE 802.11n HT40 / Channel 46 / 5230 MHz / Peak



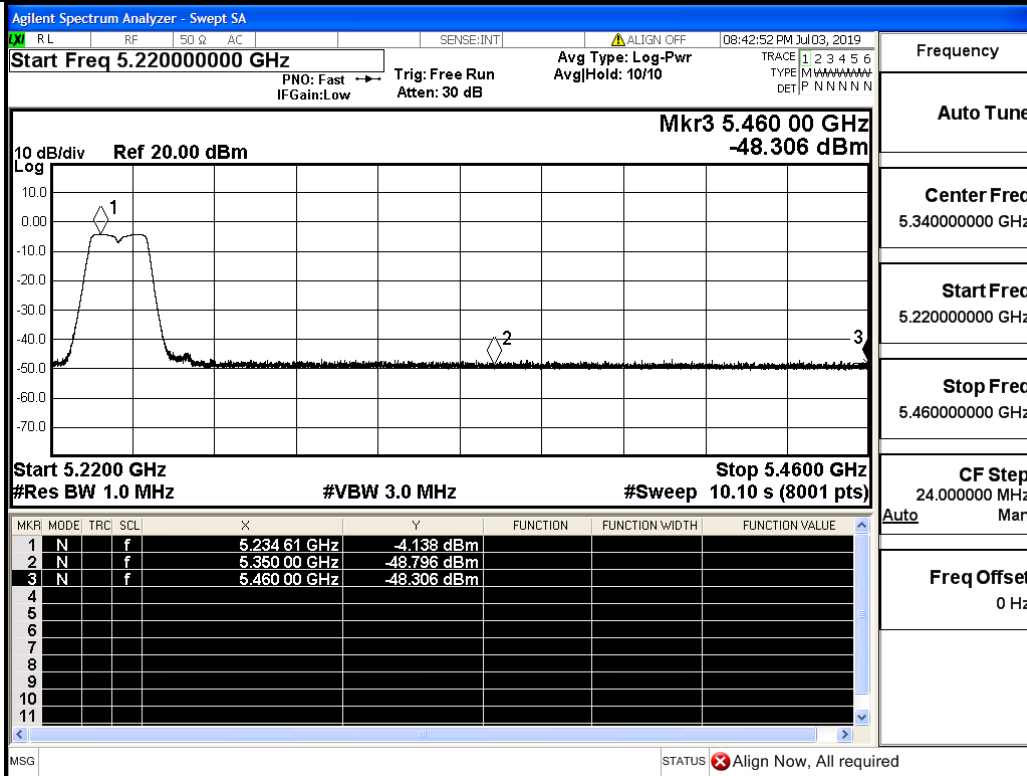
IEEE 802.11n HT40 / Channel 46 / 5230 MHz / Average



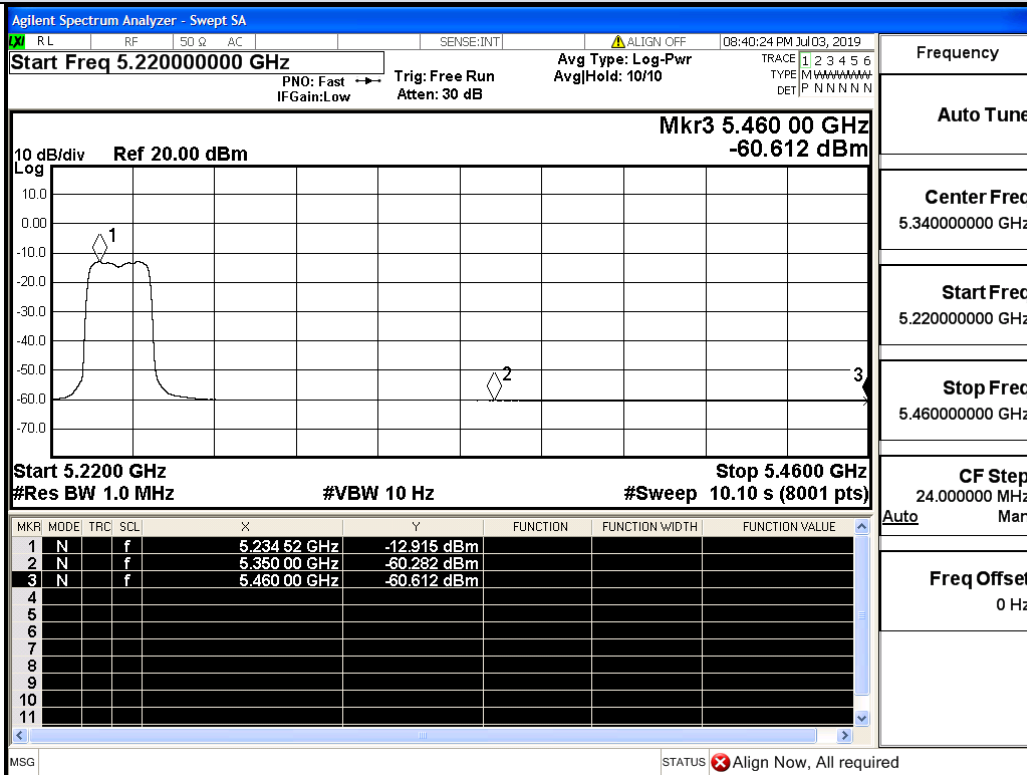
IEEE 802.11ac HT20 / Channel 36 / 5180 MHz / Peak



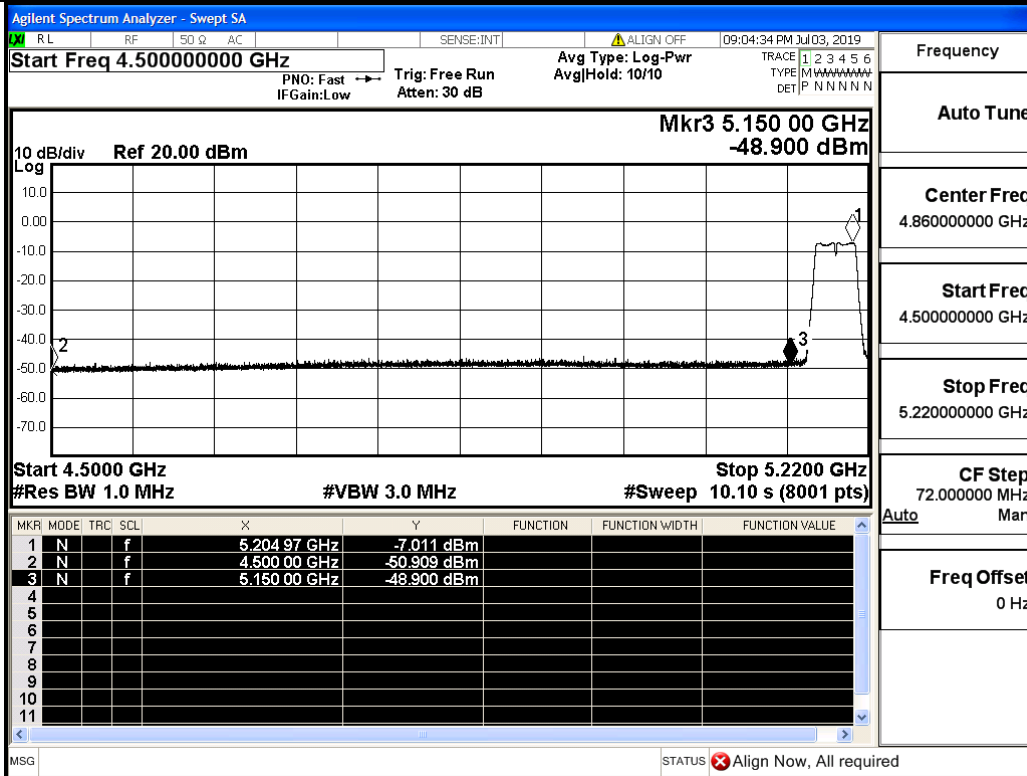
IEEE 802.11ac HT20 / Channel 36 / 5180 MHz / Average



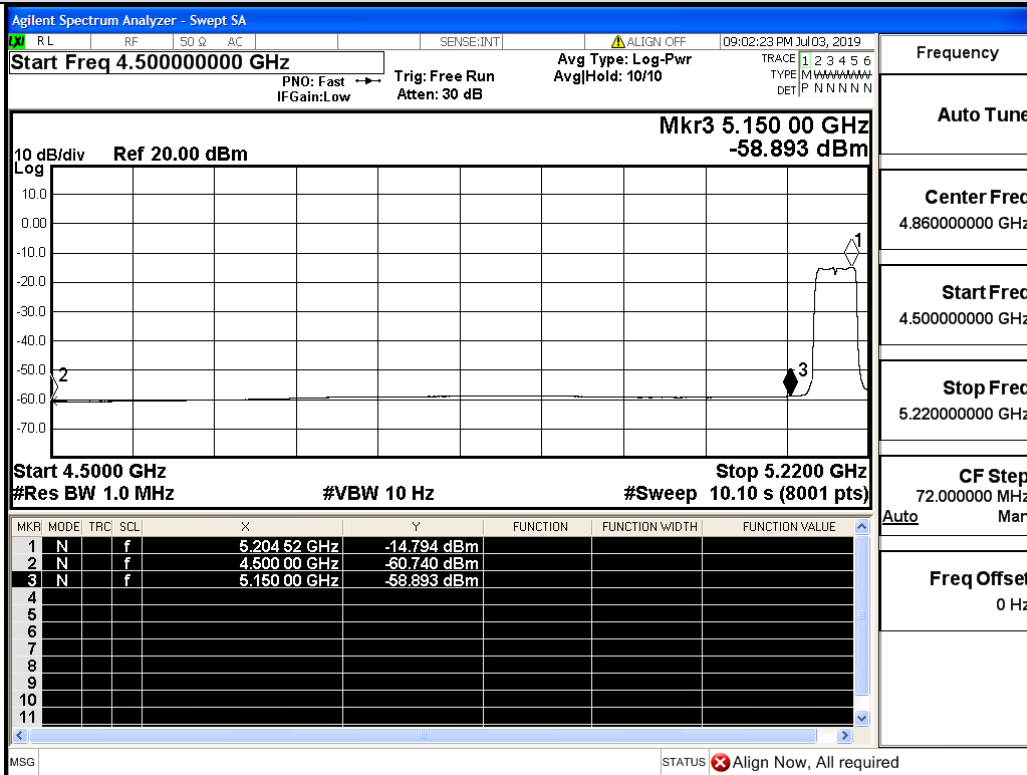
IEEE 802.11ac HT20 / Channel 48 / 5240 MHz / Peak



IEEE 802.11ac HT20 / Channel 48 / 5240 MHz / Average

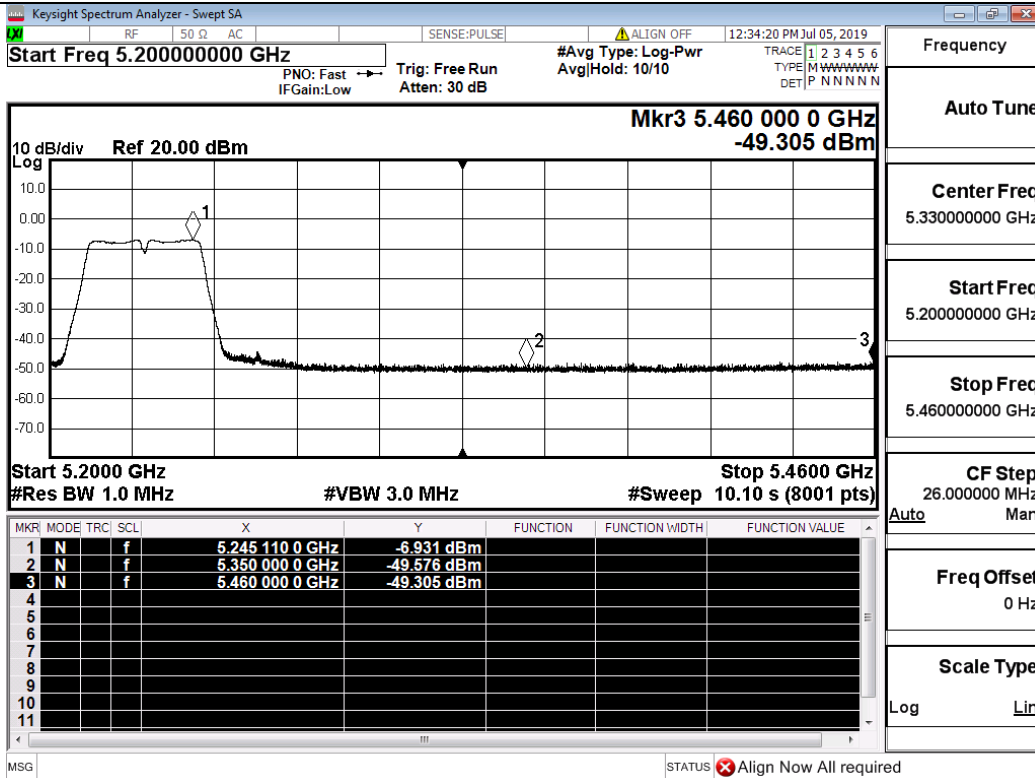


IEEE 802.11ac HT40 / Channel 38 / 5190 MHz / Peak

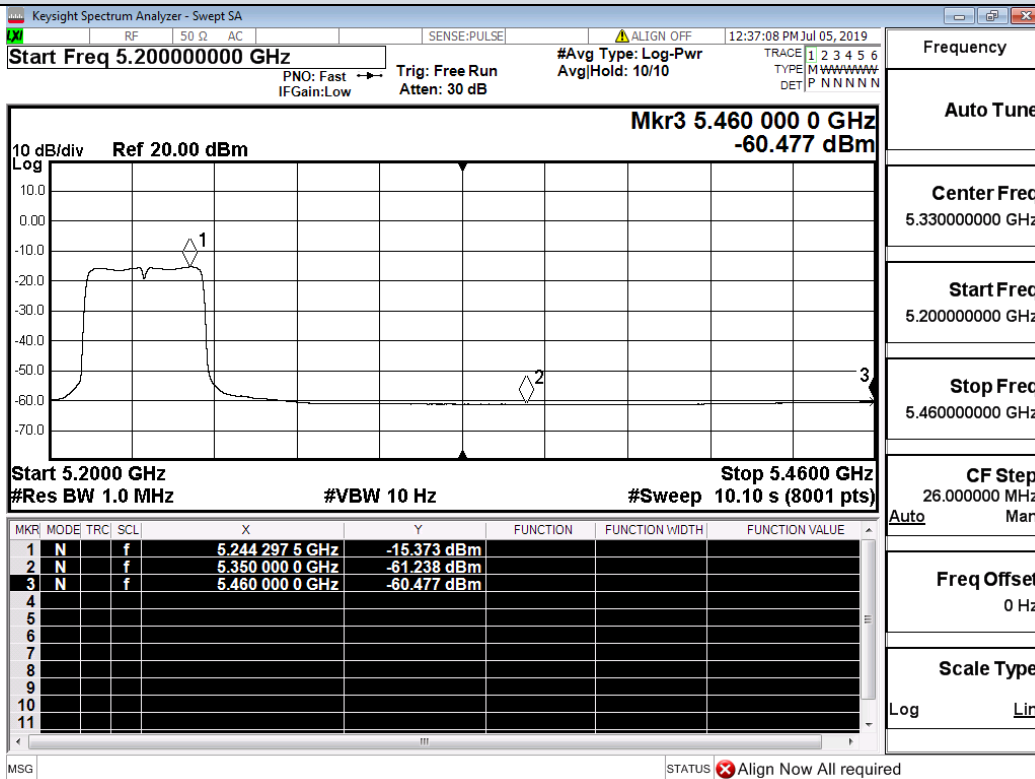


IEEE 802.11ac HT40 / Channel 38 / 5190 MHz / Average

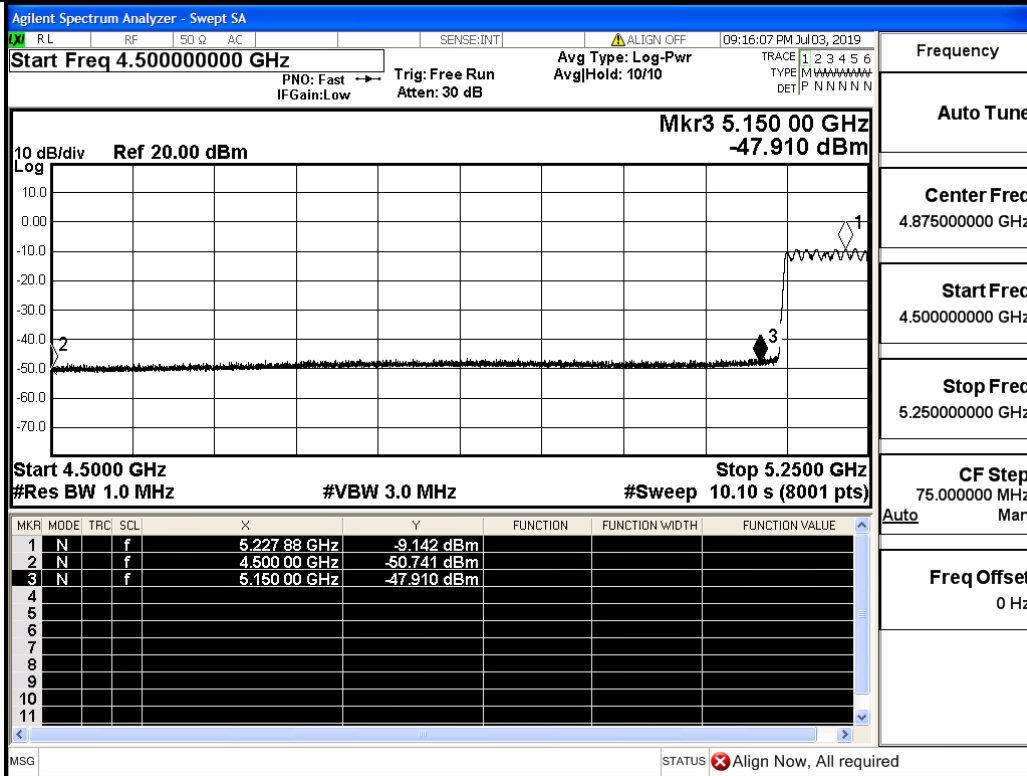




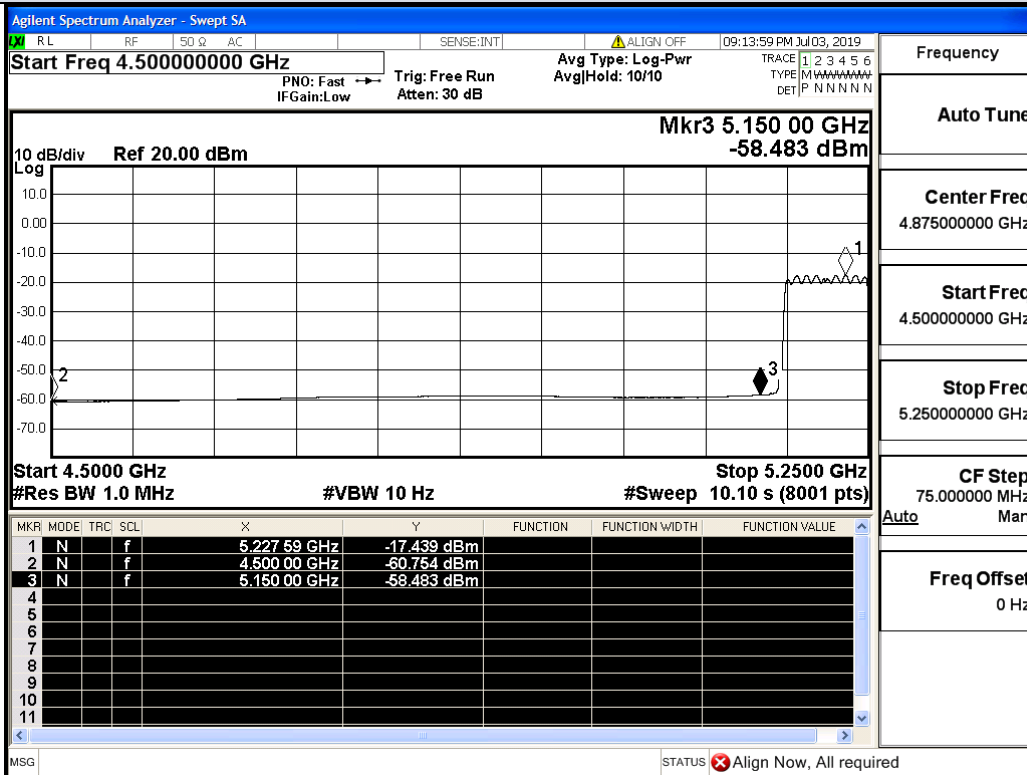
IEEE 802.11ac HT40 / Channel 46 / 5230 MHz / Peak



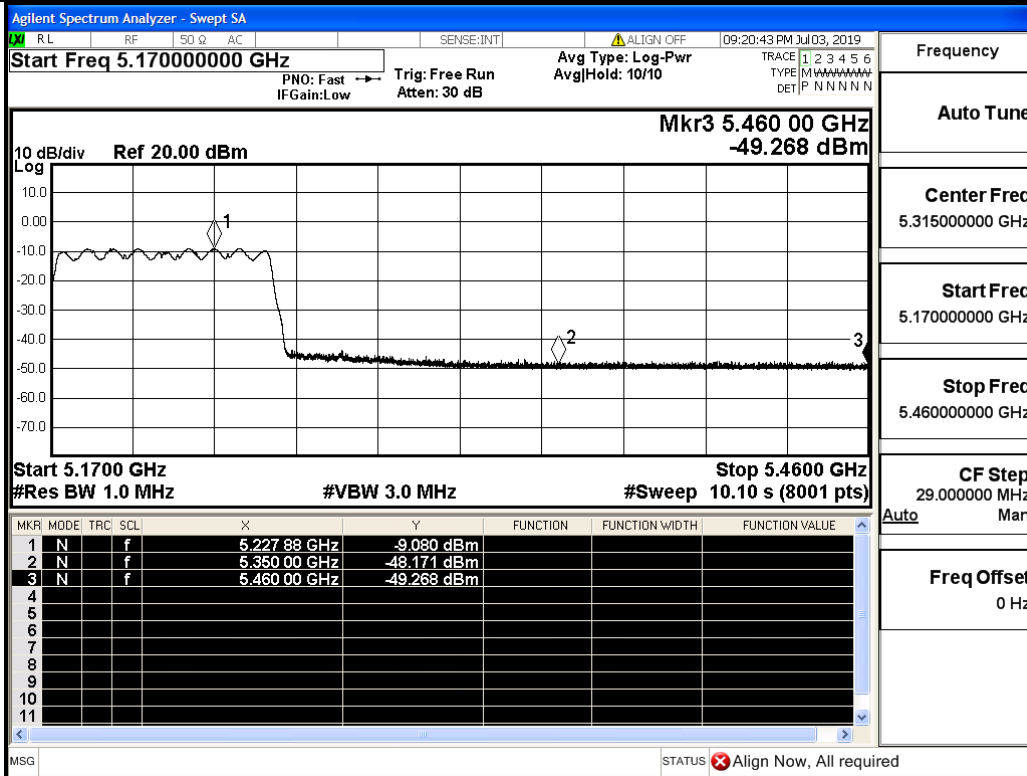
IEEE 802.11ac HT40 / Channel 46 / 5230 MHz / Average



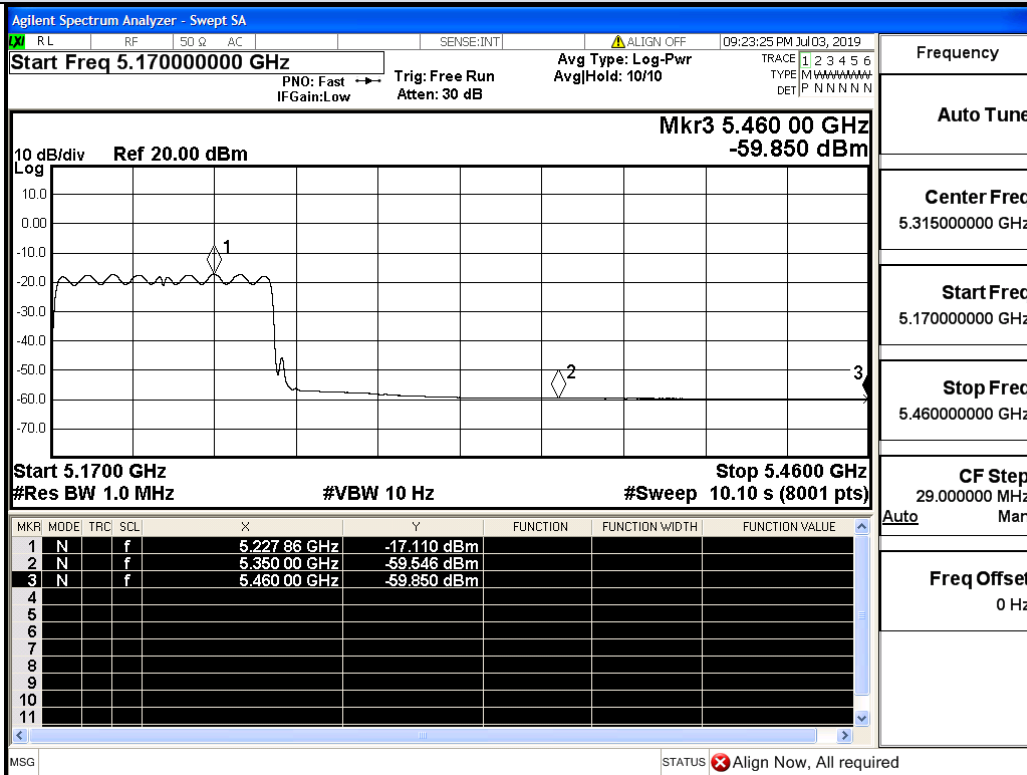
IEEE 802.11ac HT80 / Channel 42 / 5210 MHz / Peak



IEEE 802.11ac HT80 / Channel 42 / 5210 MHz / Average



IEEE 802.11ac HT80 / Channel 42 / 5210 MHz / Peak



IEEE 802.11ac HT80 / Channel 42 / 5210 MHz / Average