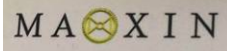


Appendix D

RF Test Data for 5.2G WLAN (Conducted Measurement)

Product Name: Network audio system (built-in amplifier)

Trade Mark:



Test Model: RAPNAS MF-1

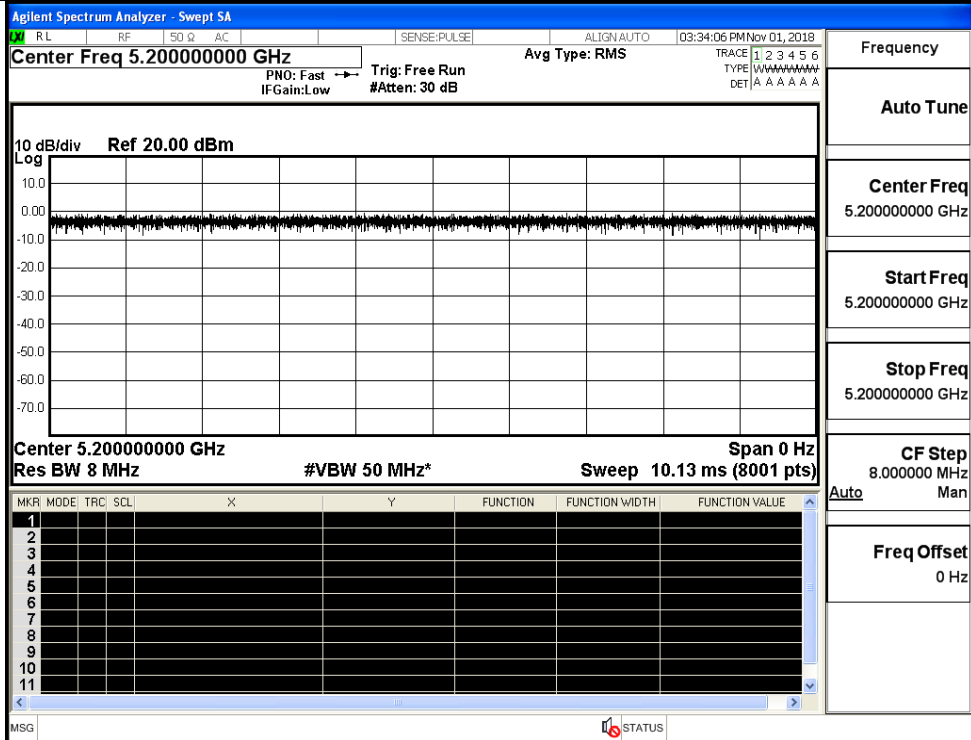
Environmental Conditions

Temperature:	24.6° C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom Liu
Supervised by:	Jayden Zhuo

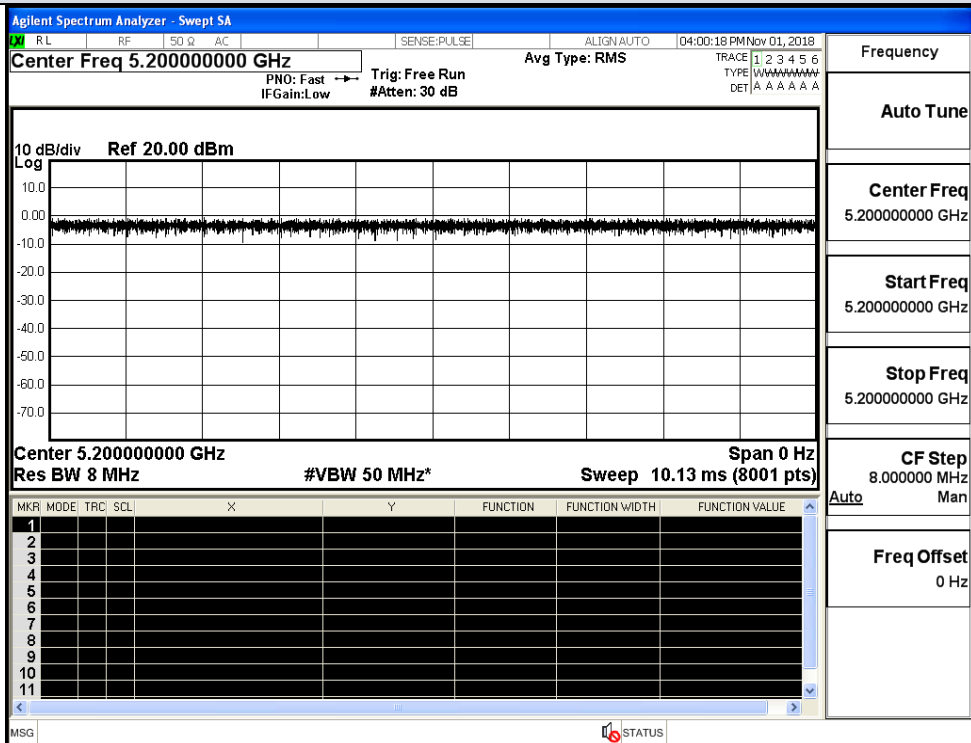
D.1 Duty Cycle

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

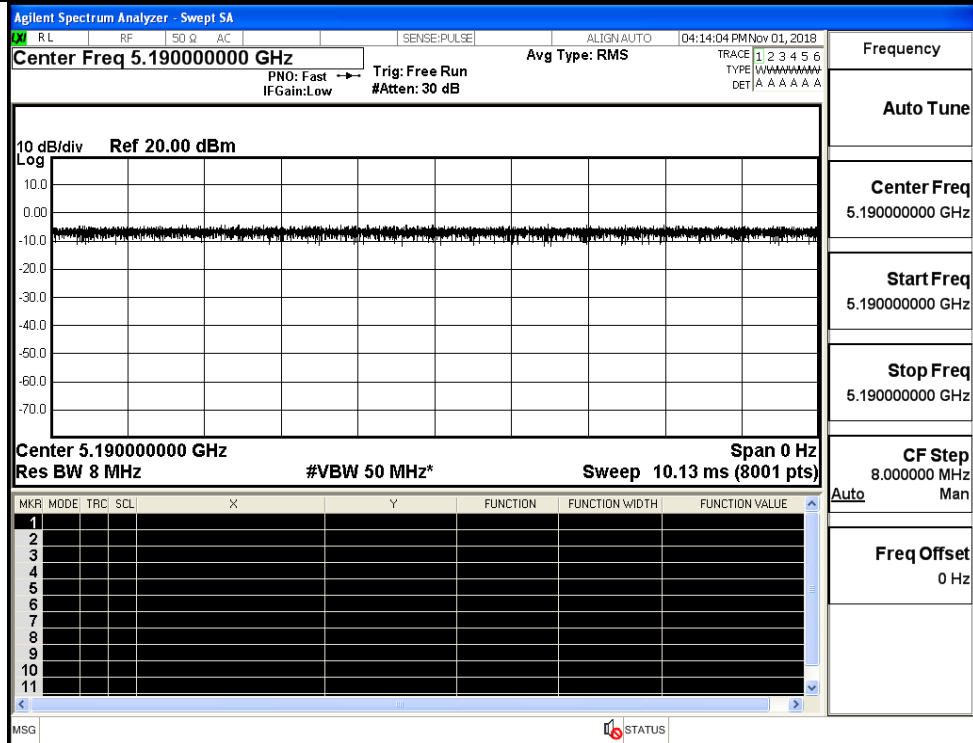
On Time and Duty Cycle



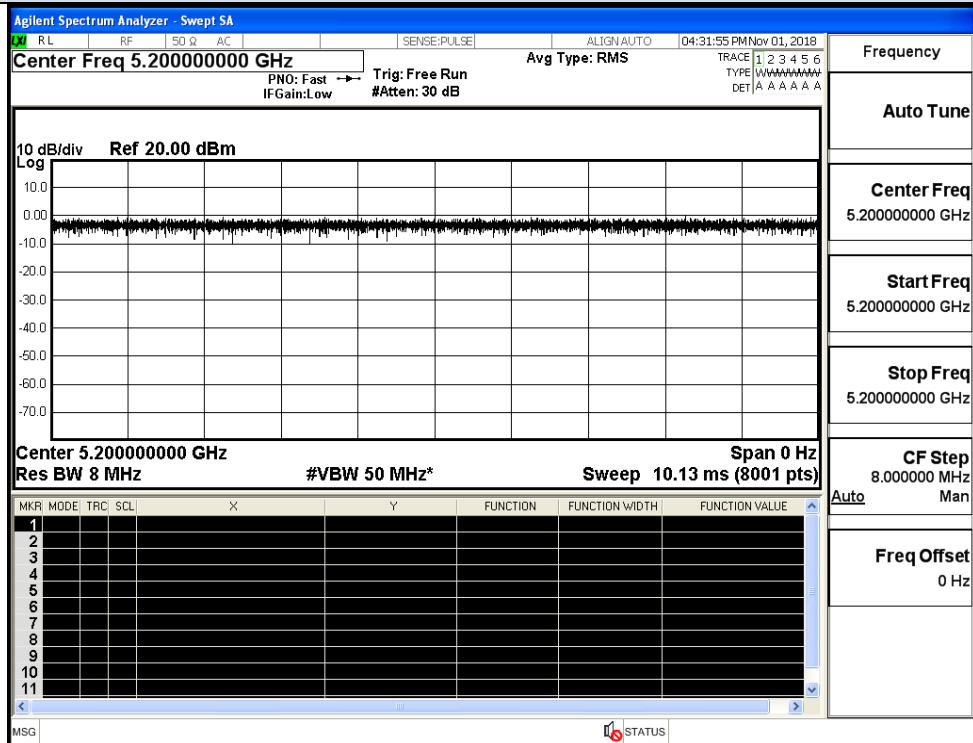
IEEE 802.11a



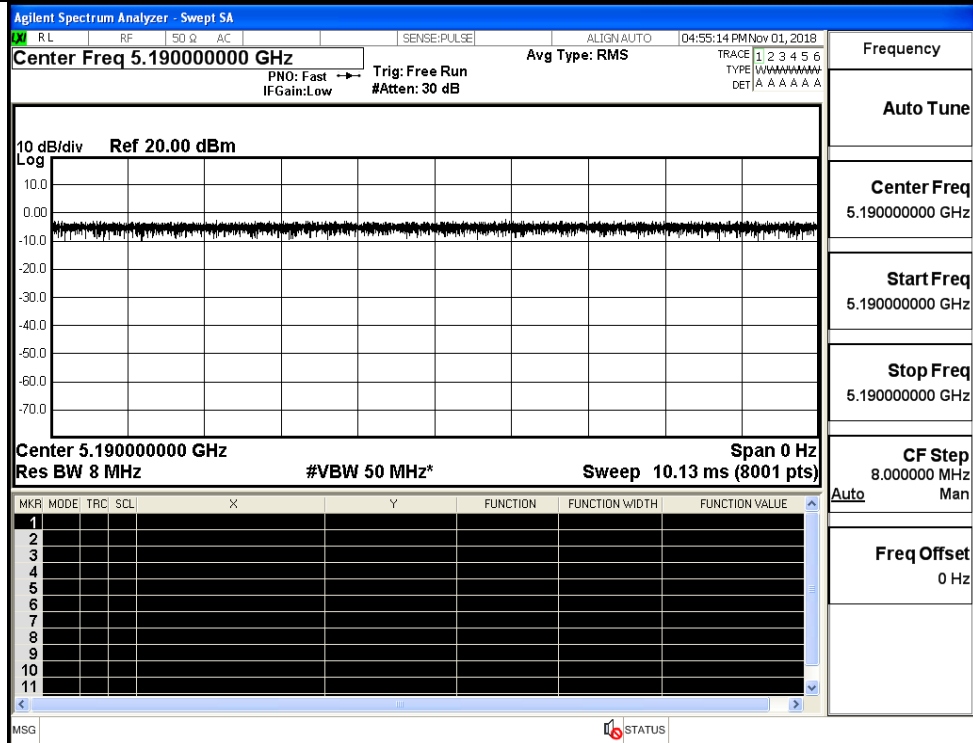
IEEE 802.11n HT20



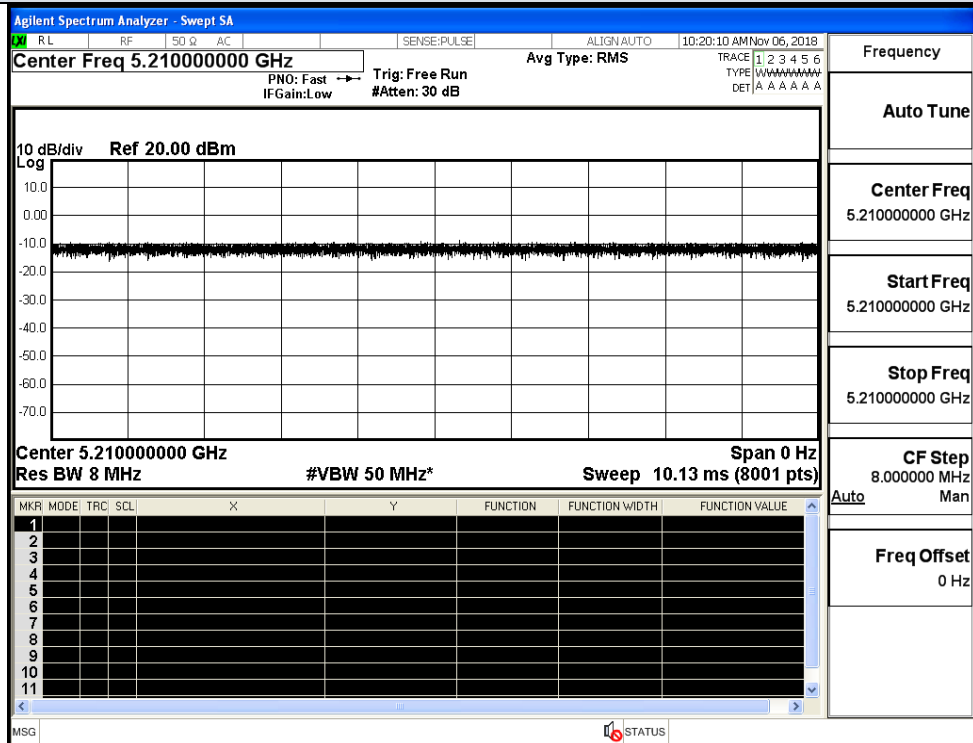
IEEE 802.11n HT40



IEEE 802.11ac VHT20



IEEE 802.11ac VHT40



IEEE 802.11ac VHT80

D.2 Maximum Conduct Output Power

For FCC

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor (dB)	Report Conducted Power (dBm)	Limit (dBm)
11A	36	5180	12.48	0	12.48	24
	40	5200	12.42	0	12.42	
	48	5240	12.78	0	12.78	
11N20 SISO	36	5180	12.27	0	12.27	24
	40	5200	12.49	0	12.49	
	48	5240	12.89	0	12.89	
11N40 SISO	38	5190	12.72	0	12.72	24
	46	5230	13.28	0	13.28	
11AC20 SISO	36	5180	12.19	0	12.19	24
	40	5200	12.54	0	12.54	
	48	5240	12.86	0	12.86	
11AC40 SISO	38	5190	14.48	0	14.48	24
	46	5230	13.34	0	13.34	
11AC80 SISO	42	5210	11.64	0	11.64	24

For ISED

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor (dB)	Report Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)
11A	36	5180	12.48	0	12.48	2.30	14.78	23
	40	5200	12.42	0	12.42	2.30	14.72	
	48	5240	12.78	0	12.78	2.30	15.08	
11N20 SISO	36	5180	12.27	0	12.27	2.30	14.57	23
	40	5200	12.49	0	12.49	2.30	14.79	
	48	5240	12.89	0	12.89	2.30	15.19	
11N40 SISO	38	5190	12.72	0	12.72	2.30	15.02	23
	46	5230	13.28	0	13.28	2.30	15.58	
11AC20 SISO	36	5180	12.19	0	12.19	2.30	14.49	23
	40	5200	12.54	0	12.54	2.30	14.84	
	48	5240	12.86	0	12.86	2.30	15.16	
11AC40 SISO	38	5190	14.48	0	14.48	2.30	16.78	23
	46	5230	13.34	0	13.34	2.30	15.64	
11AC80 SISO	42	5210	11.64	0	11.64	2.30	13.94	23

D.3 Power Spectral Density

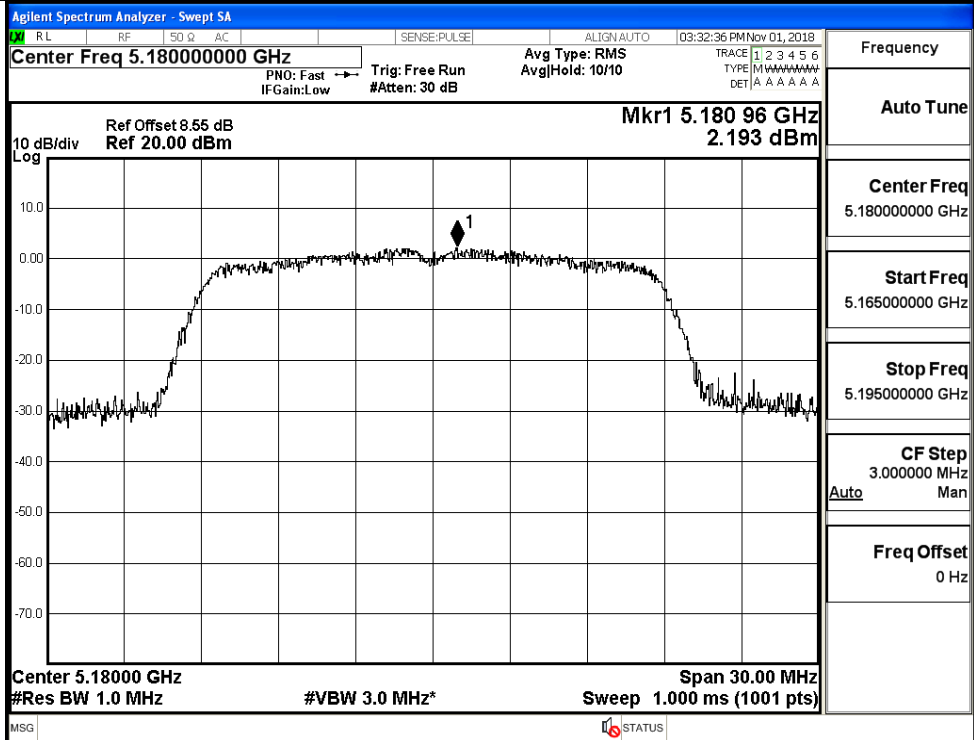
For FCC

Test Mode	Channel	Frequency (MHz)	Power Density (dBm/MHz)	Duty Cycle Factor (dB)	Report Power Density (dBm/MHz)	Limit (dBm/MHz)
11A	36	5180	2.193	0	2.193	11
	40	5200	2.166	0	2.166	
	48	5240	2.651	0	2.651	
11N20 SISO	36	5180	2.260	0	2.260	11
	40	5200	2.373	0	2.373	
	48	5240	2.739	0	2.739	
11N40 SISO	38	5190	-0.674	0	-0.674	11
	46	5230	-0.328	0	-0.328	
11AC20 SISO	36	5180	2.731	0	2.731	11
	40	5200	2.349	0	2.349	
	48	5240	2.725	0	2.725	
11AC40 SISO	38	5190	-0.632	0	-0.632	11
	46	5230	-0.170	0	-0.170	
11AC80 SISO	42	5210	-5.458	0	-5.458	11

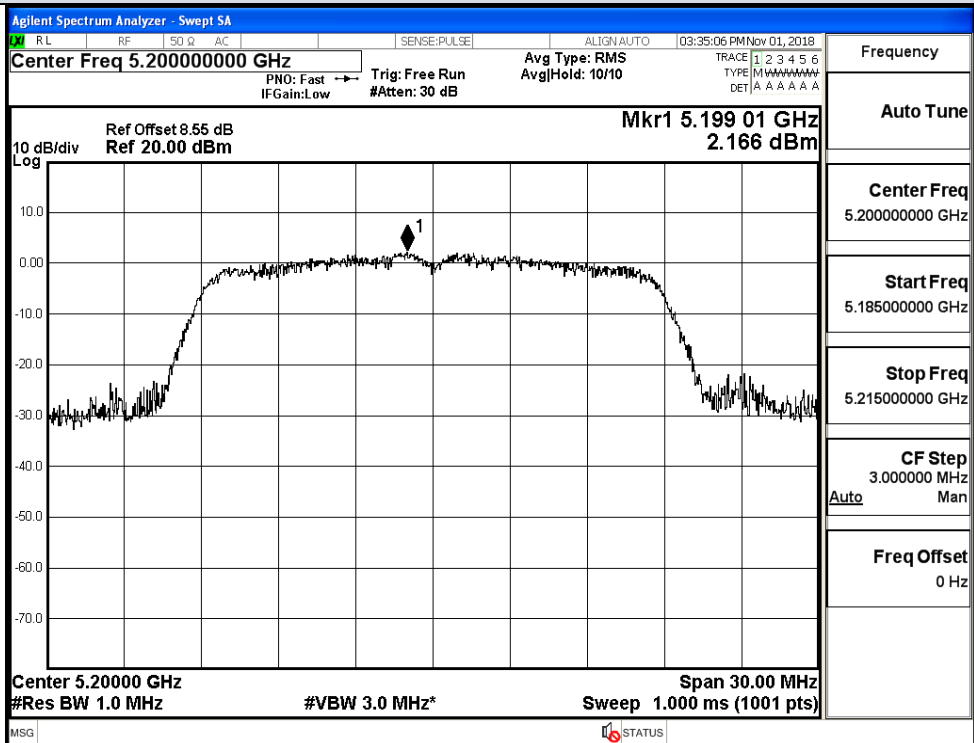
For ISED

Test Mode	Channel	Frequency (MHz)	Power Density (dBm/MHz)	Duty Cycle Factor (dB)	Report Power Density (dBm /MHz)	Antenna Gain (dBi)	Power Density EIRP (dBm /MHz)	Power Density EIRP Limit (dBm /MHz)
11A	36	5180	2.193	0	2.193	2.300	4.493	10
	40	5200	2.166	0	2.166	2.300	4.466	
	48	5240	2.651	0	2.651	2.300	4.951	
11N20 SISO	36	5180	2.260	0	2.260	2.300	4.560	10
	40	5200	2.373	0	2.373	2.300	4.673	
	48	5240	2.739	0	2.739	2.300	5.039	
11N40 SISO	38	5190	-0.674	0	-0.674	2.300	1.626	10
	46	5230	-0.328	0	-0.328	2.300	1.972	
11AC20 SISO	36	5180	2.731	0	2.731	2.300	5.031	10
	40	5200	2.349	0	2.349	2.300	4.649	
	48	5240	2.725	0	2.725	2.300	5.025	
11AC40 SISO	38	5190	-0.632	0	-0.632	2.300	1.668	10
	46	5230	-0.170	0	-0.170	2.300	2.130	
11AC80 SISO	42	5210	-5.458	0	-5.458	2.300	-3.158	10

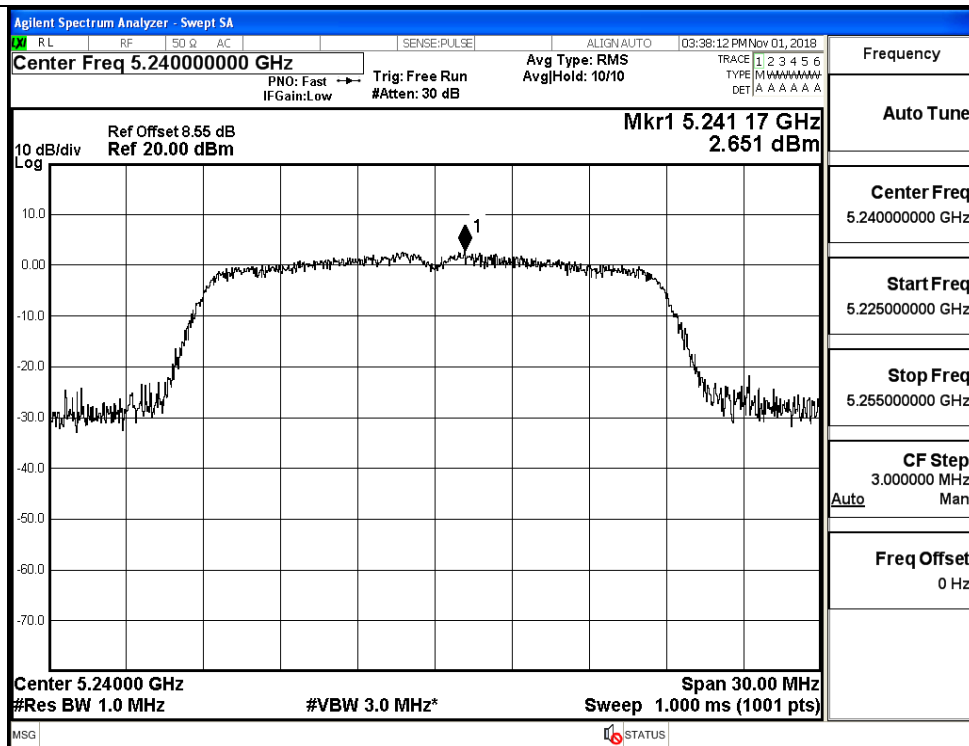
Power Spectral Density



IEEE 802.11a / Channel 36 / 5180 MHz

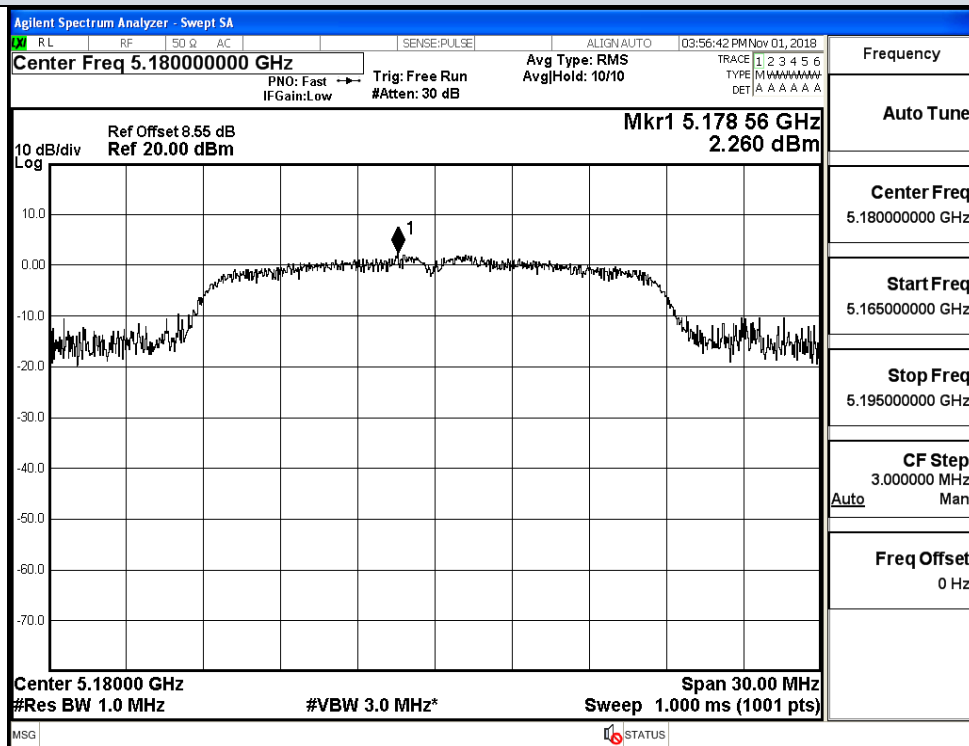


IEEE 802.11a / Channel 40 / 5200 MHz

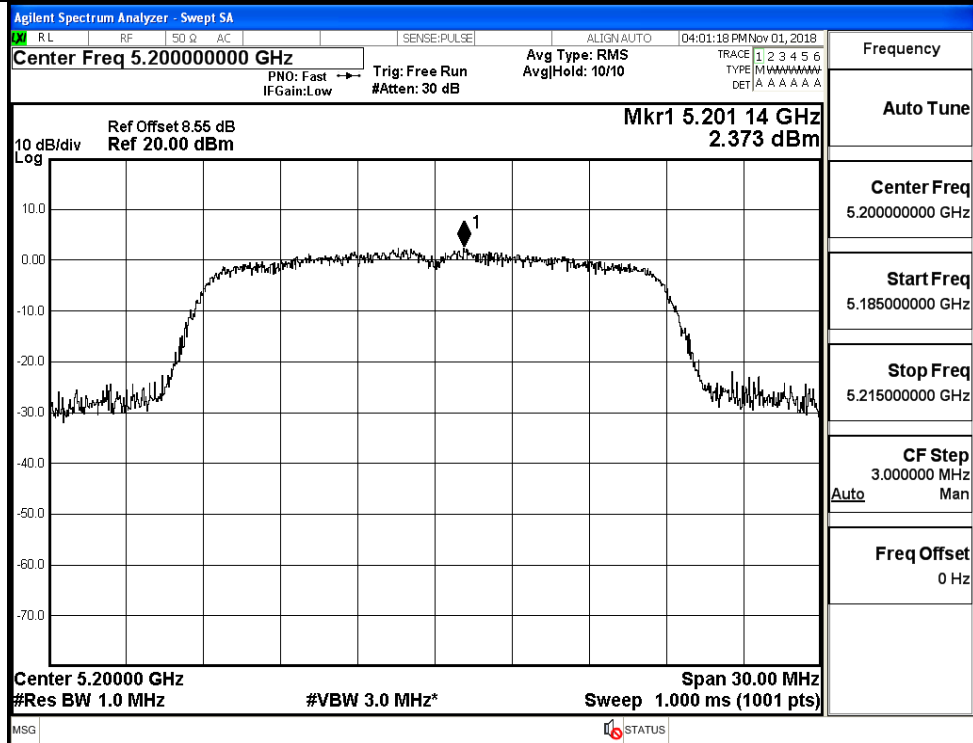


IEEE 802.11a / Channel 48 / 5240 MHz

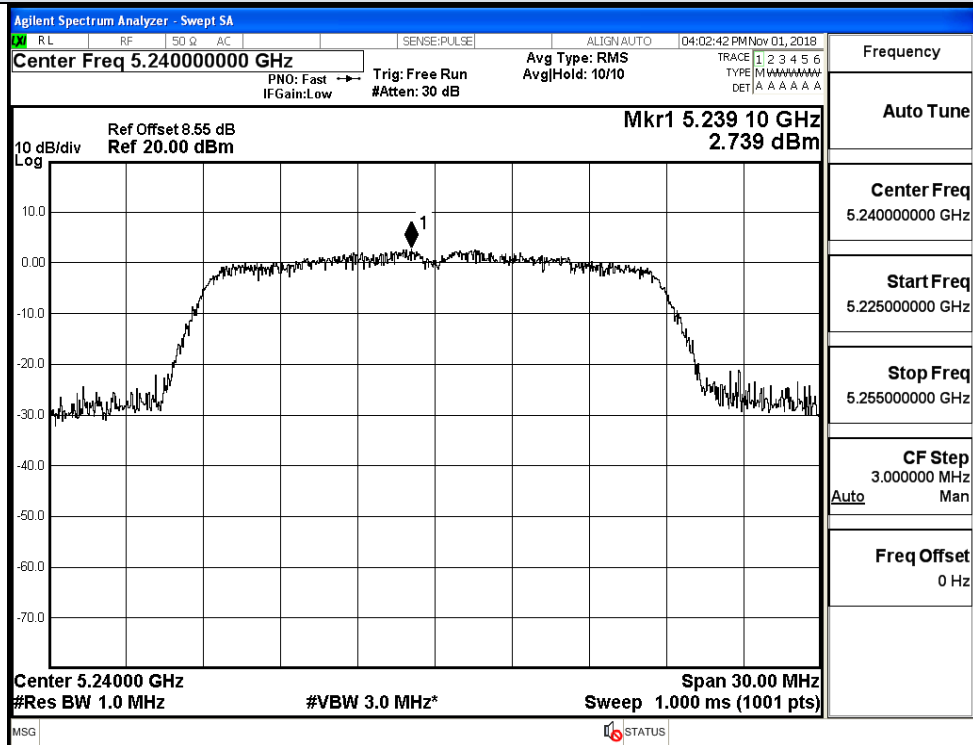
Power Spectral Density



IEEE 802.11n HT20 / Channel 36 / 5180 MHz

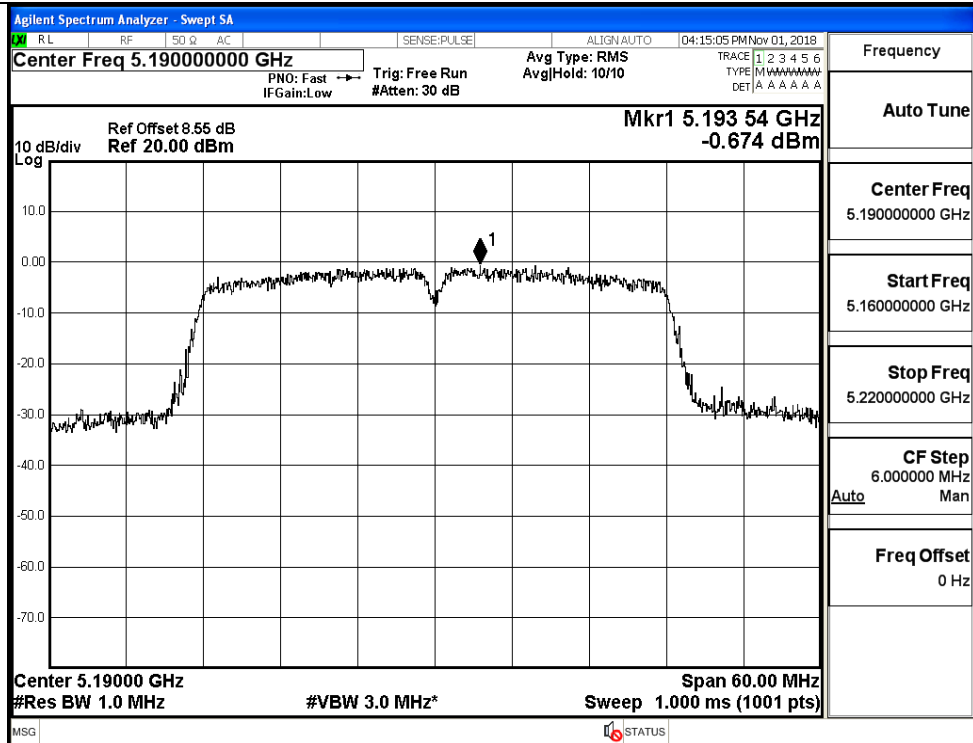


IEEE 802.11n HT20 / Channel 40 / 5200 MHz

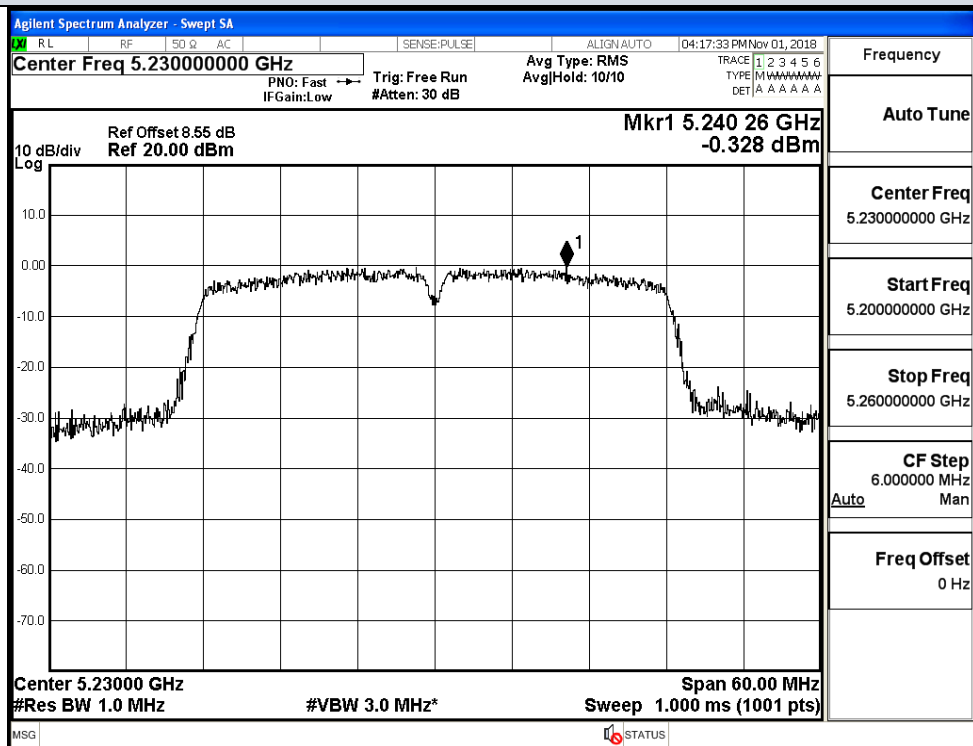


IEEE 802.11n HT20 / Channel 48 / 5240 MHz

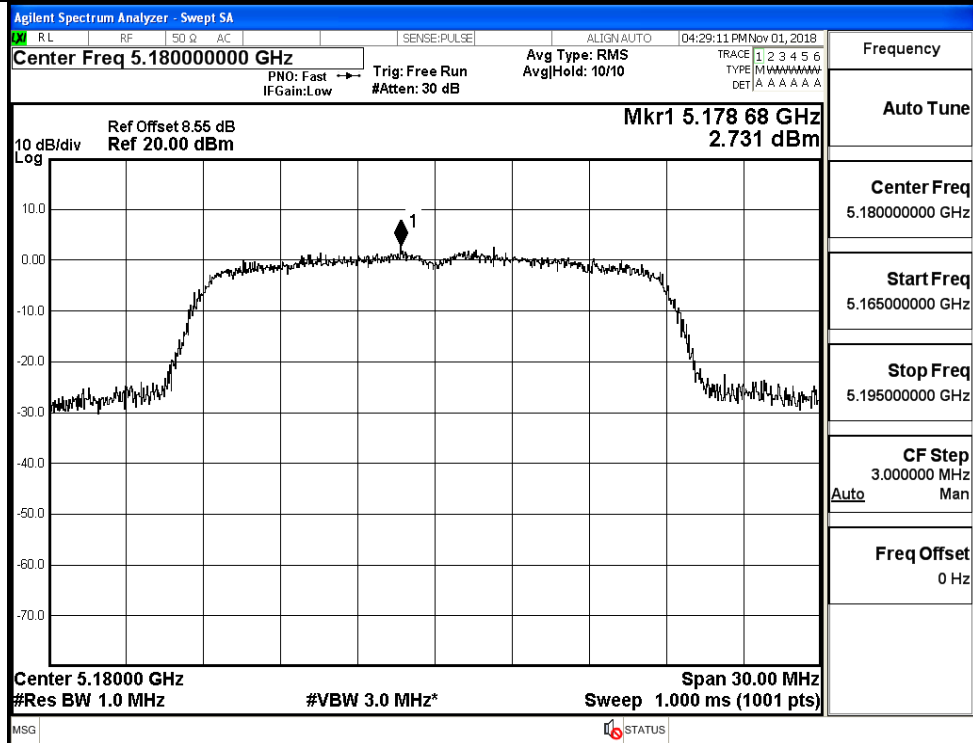
Power Spectral Density



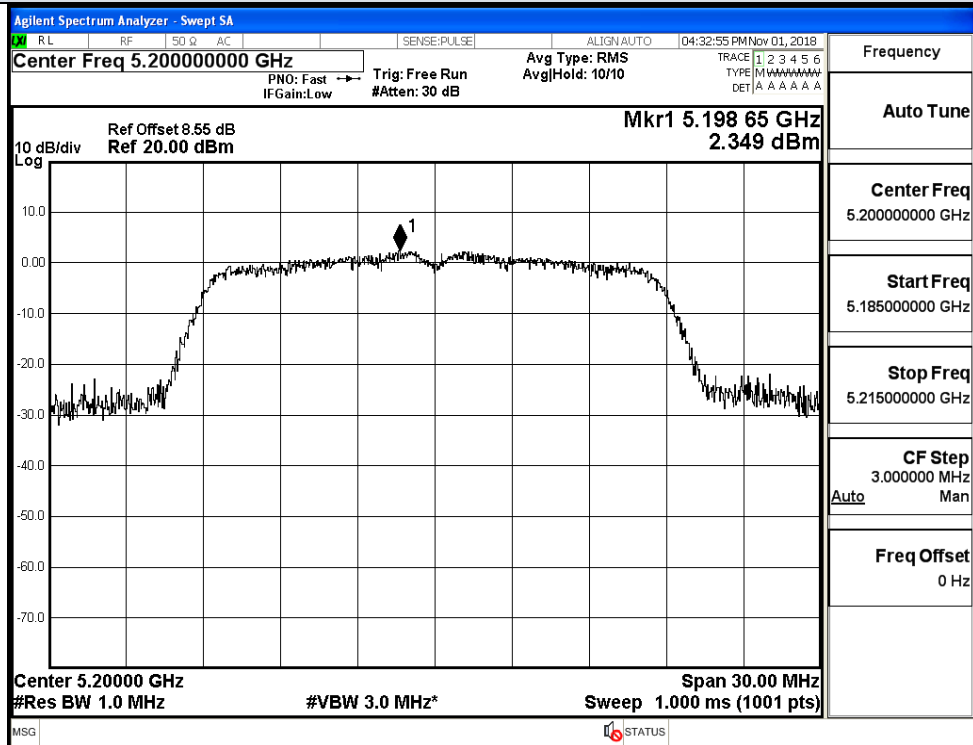
IEEE 802.11n HT40 / Channel 38 / 5190 MHz



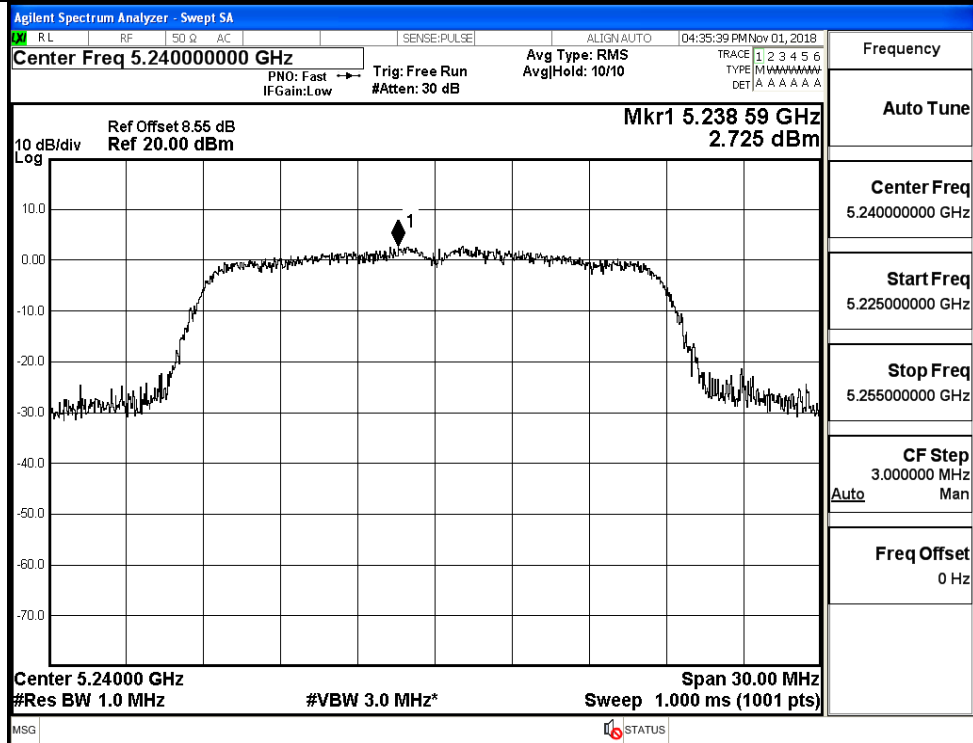
IEEE 802.11n HT40 / Channel 46 / 5230 MHz



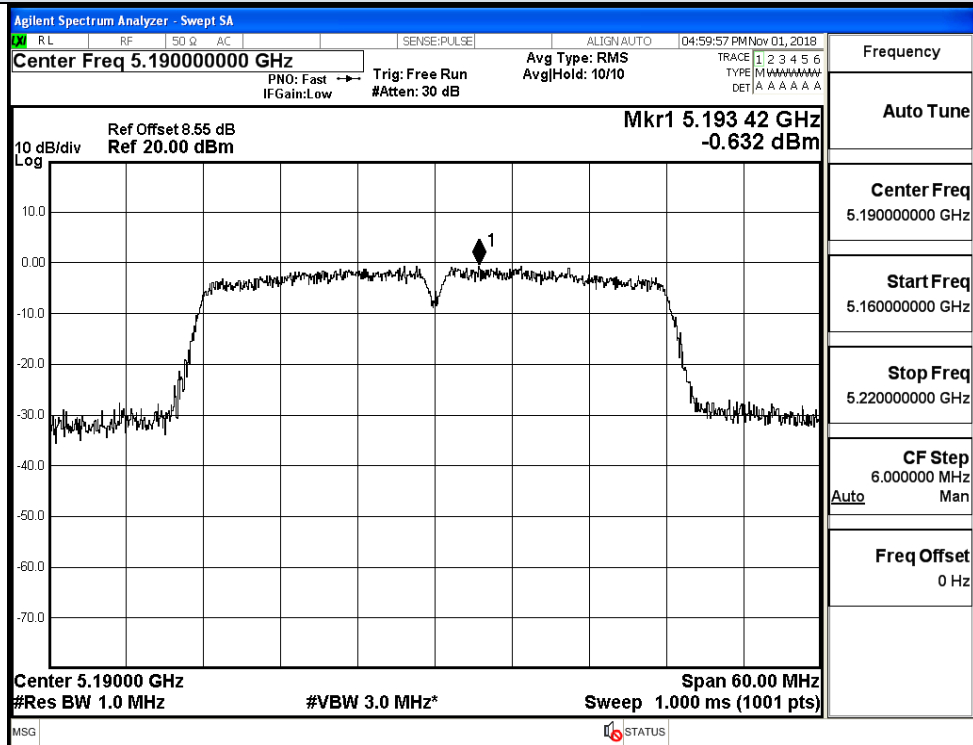
IEEE 802.11ac VHT20 / Channel 36 / 5180 MHz



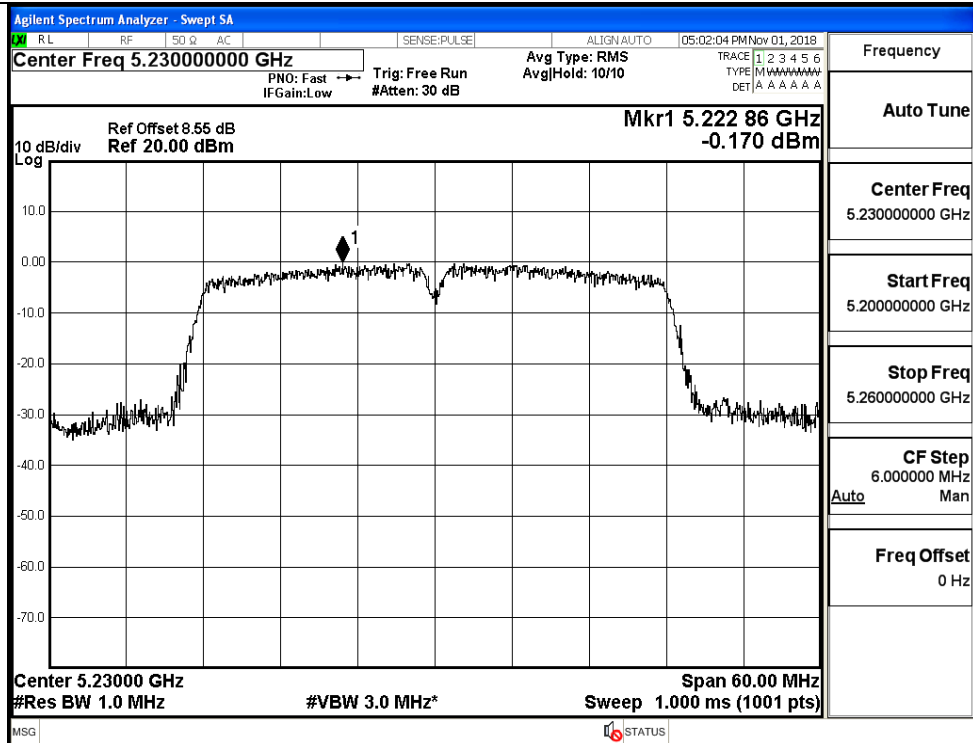
IEEE 802.11ac VHT20 / Channel 40 / 5200 MHz



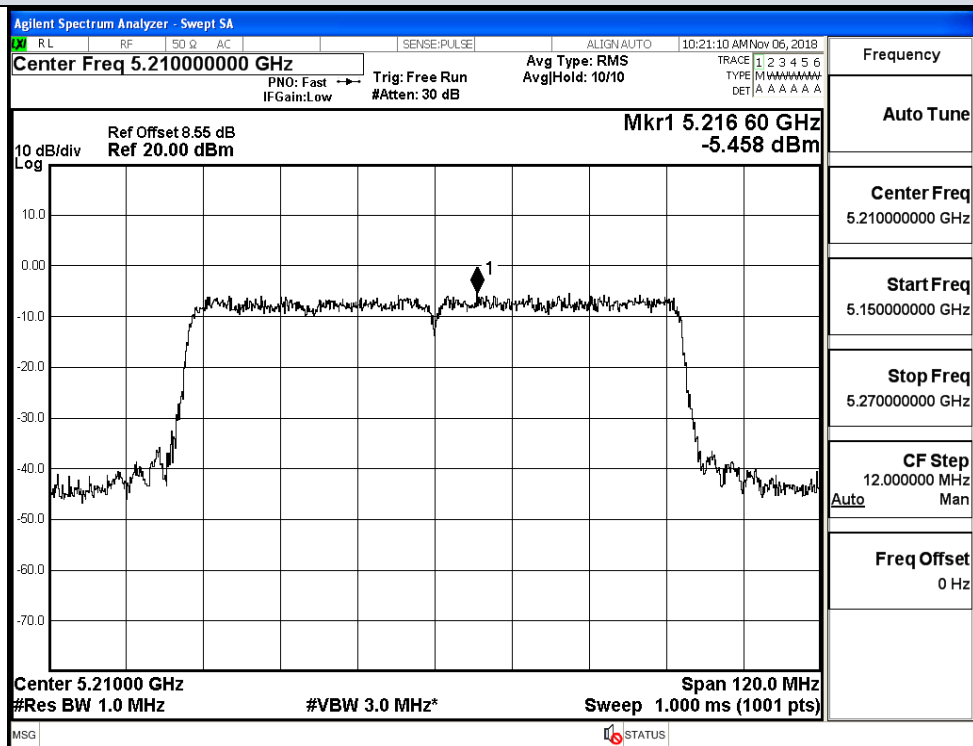
IEEE 802.11ac VHT20 / Channel 48 / 5240 MHz



IEEE 802.11ac VHT40 / Channel 38 / 5190 MHz



IEEE 802.11ac VHT40 / Channel 46 / 5230 MHz

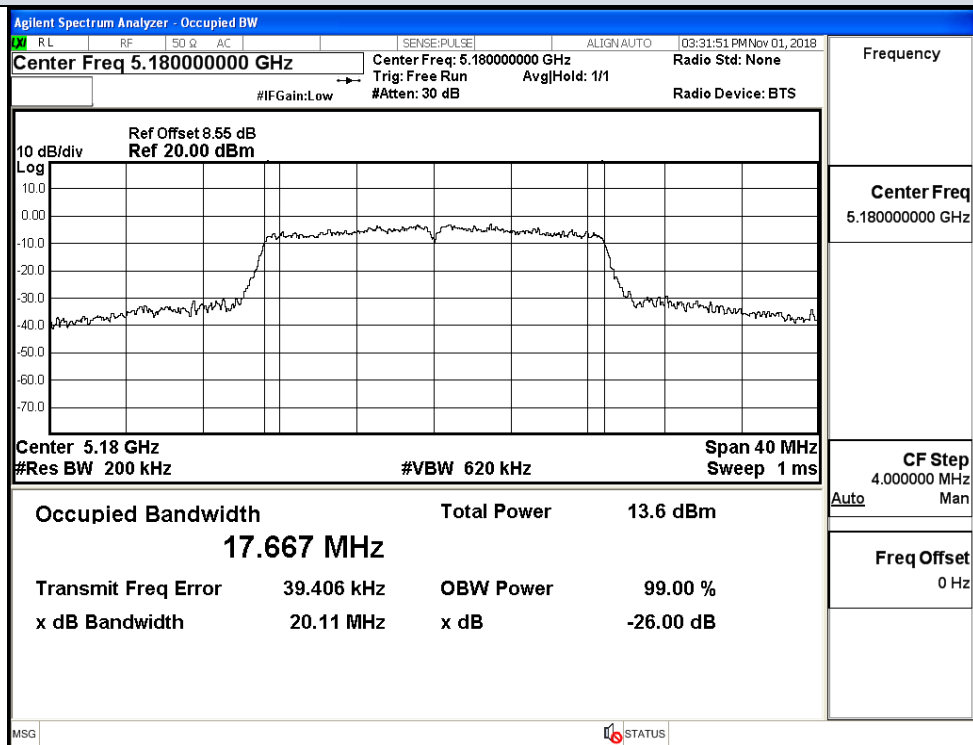


IEEE 802.11ac VHT80 / Channel 42 / 5210 MHz

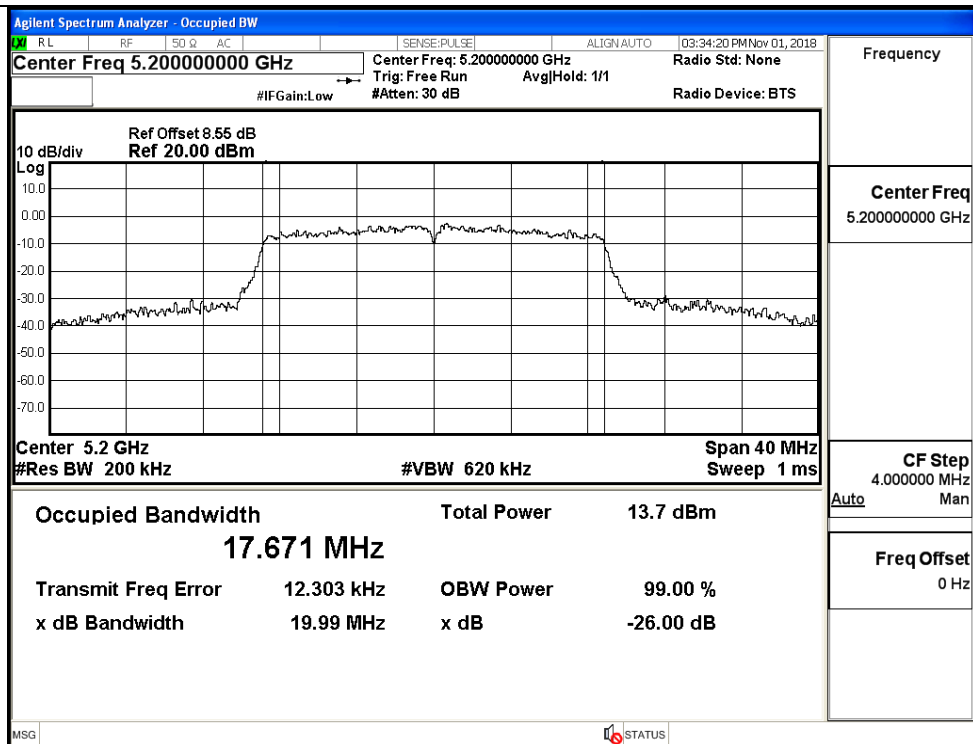
D.4 Emission Bandwidth

Test Mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
11A	36	5180	20.110	17.667	No Limit
	40	5200	19.990	17.671	
	48	5240	20.290	17.664	
11N20 SISO	36	5180	22.800	17.583	No Limit
	40	5200	22.860	17.695	
	48	5240	21.480	17.663	
11N40 SISO	38	5190	42.080	36.073	No Limit
	46	5230	44.500	36.018	
11AC20 SISO	36	5180	19.830	17.717	No Limit
	40	5200	21.990	17.684	
	48	5240	20.150	17.669	
11AC40 SISO	38	5190	39.030	36.200	No Limit
	46	5230	39.700	35.967	
11AC80 SISO	42	5210	80.750	75.467	No Limit

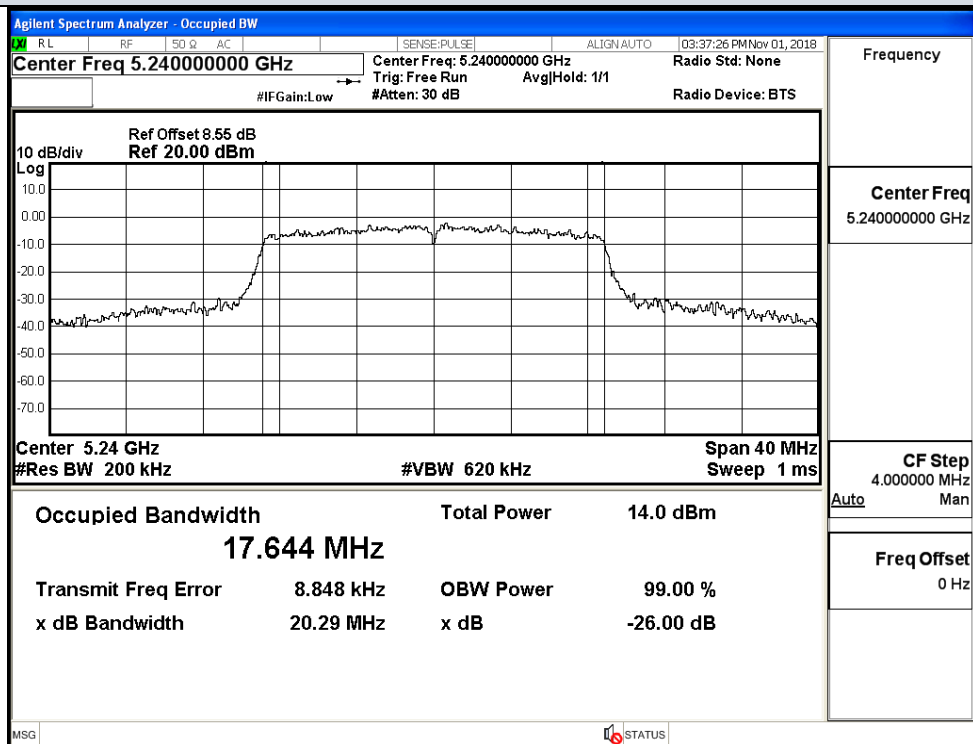
99% and 26dB Bandwidth



IEEE 802.11a / Channel 36 / 5180 MHz

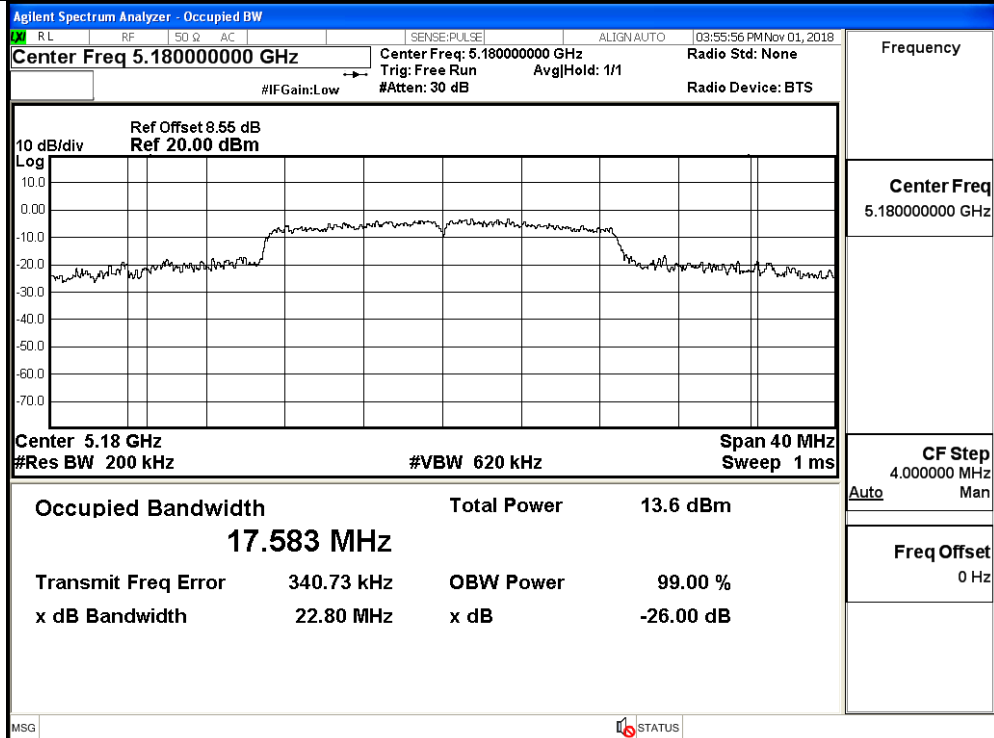


IEEE 802.11a / Channel 40 / 5200 MHz

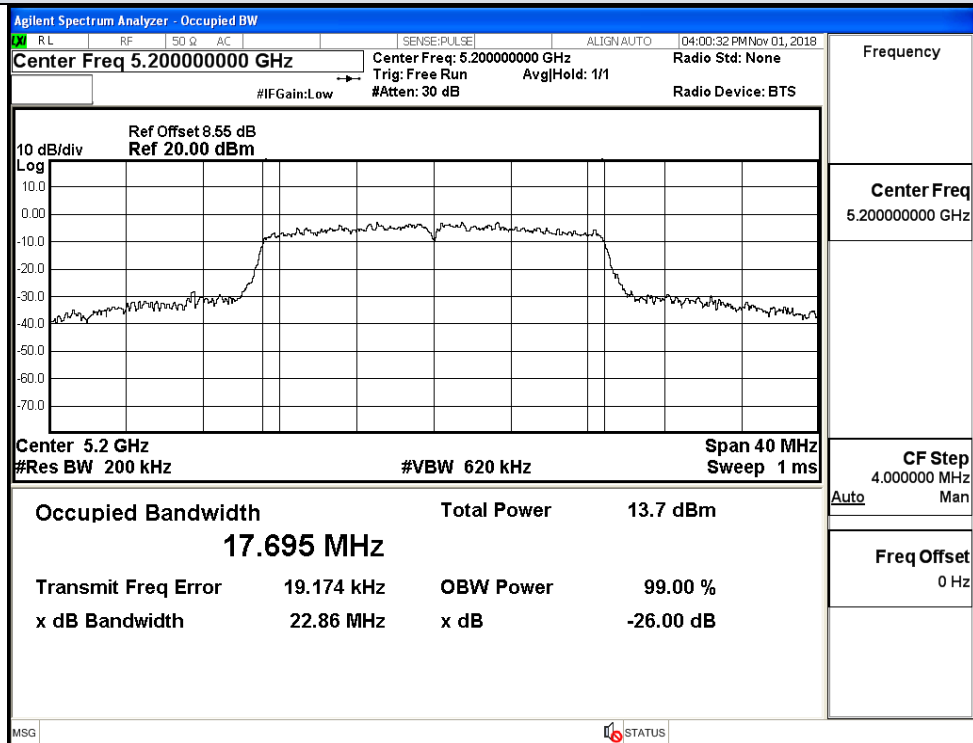


IEEE 802.11a / Channel 48 / 5240 MHz

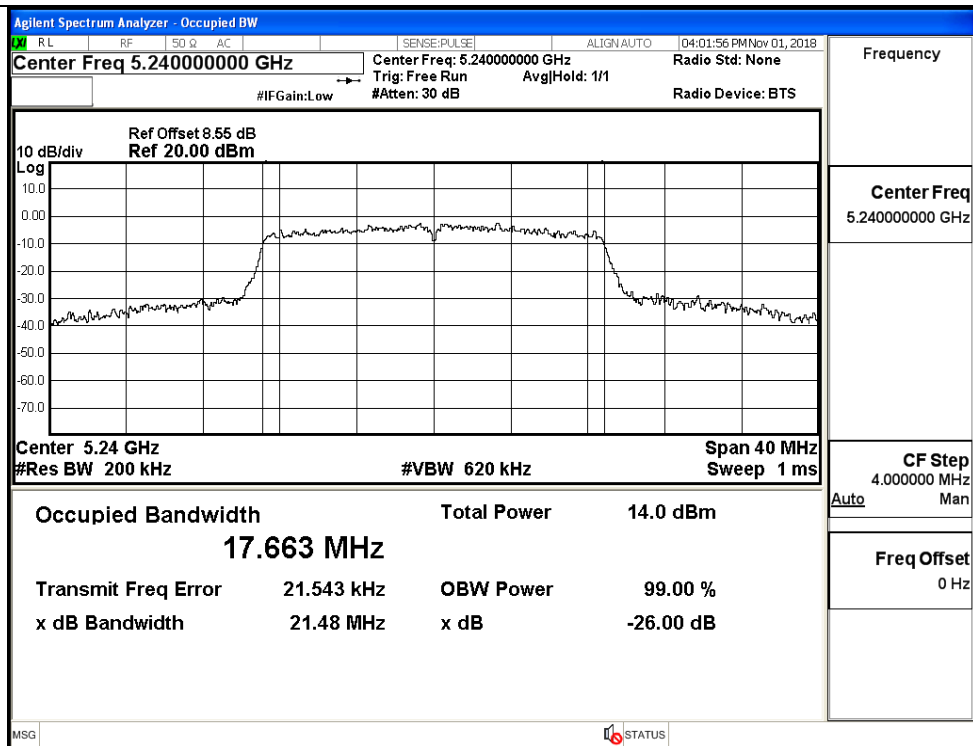
99% and 26dB Bandwidth



IEEE 802.11n HT20 / Channel 36 / 5180 MHz

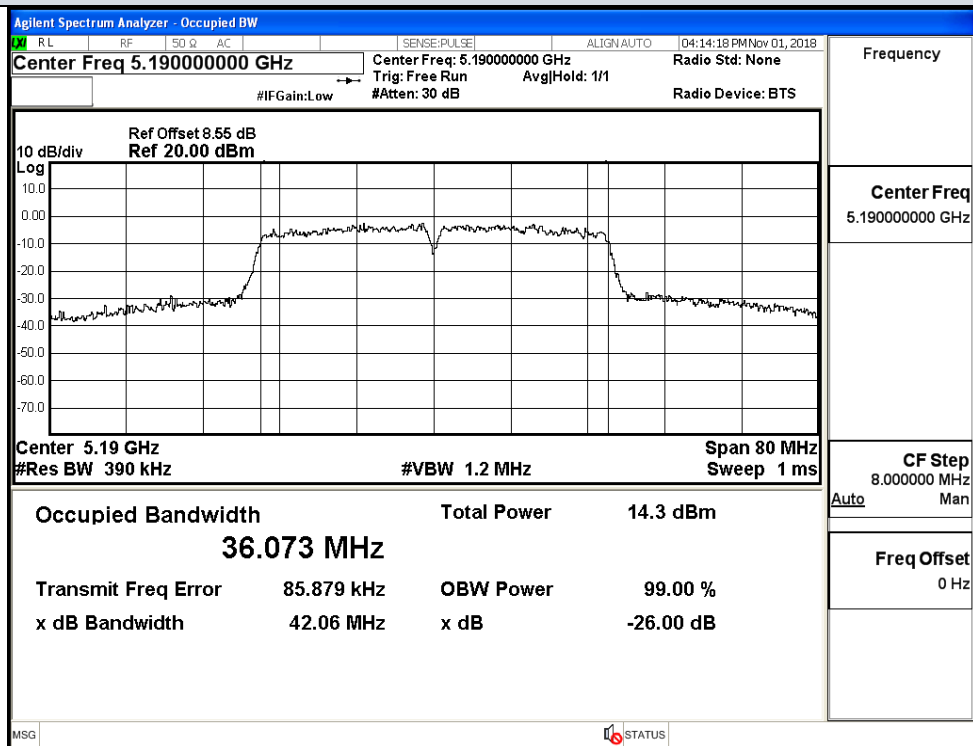


IEEE 802.11n HT20 / Channel 40 / 5200 MHz

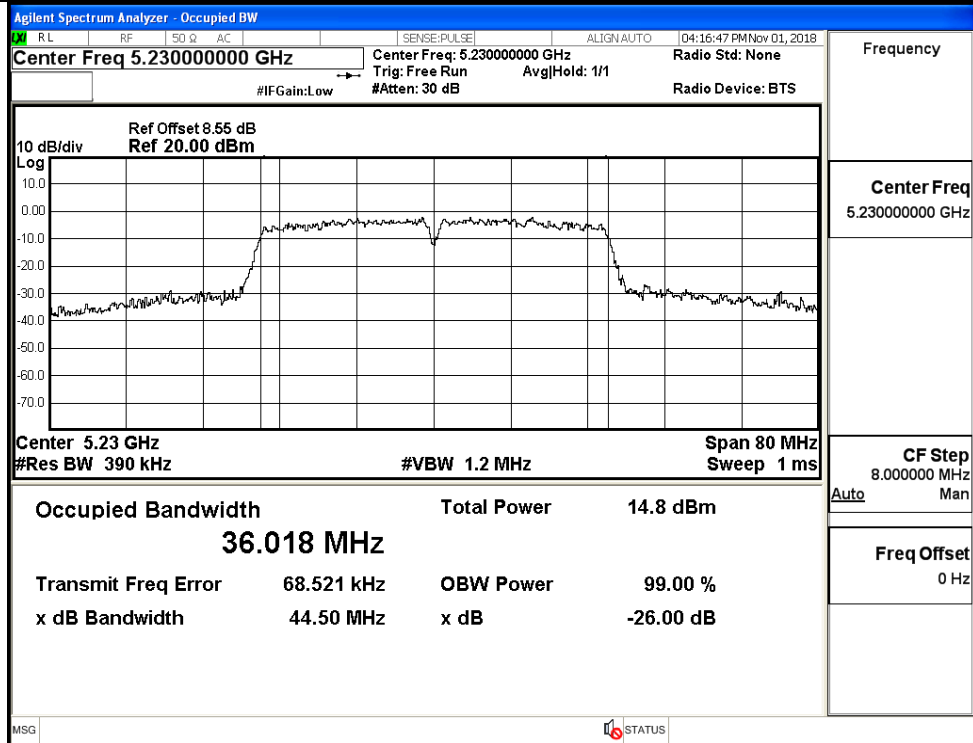


IEEE 802.11n HT20 / Channel 48 / 5240 MHz

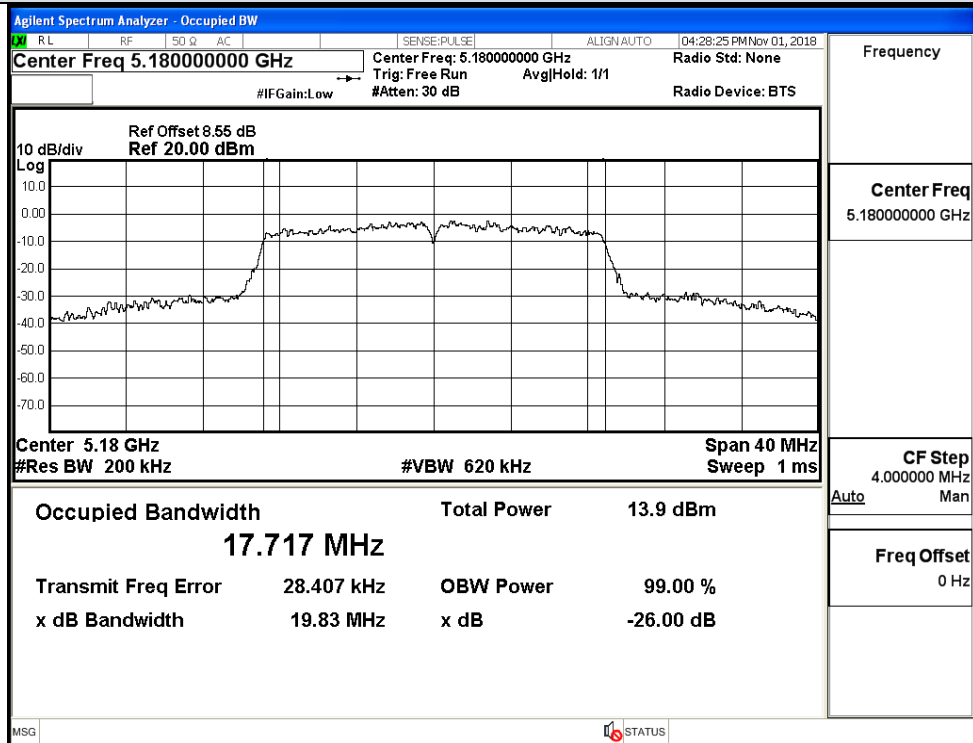
99% and 26dB Bandwidth



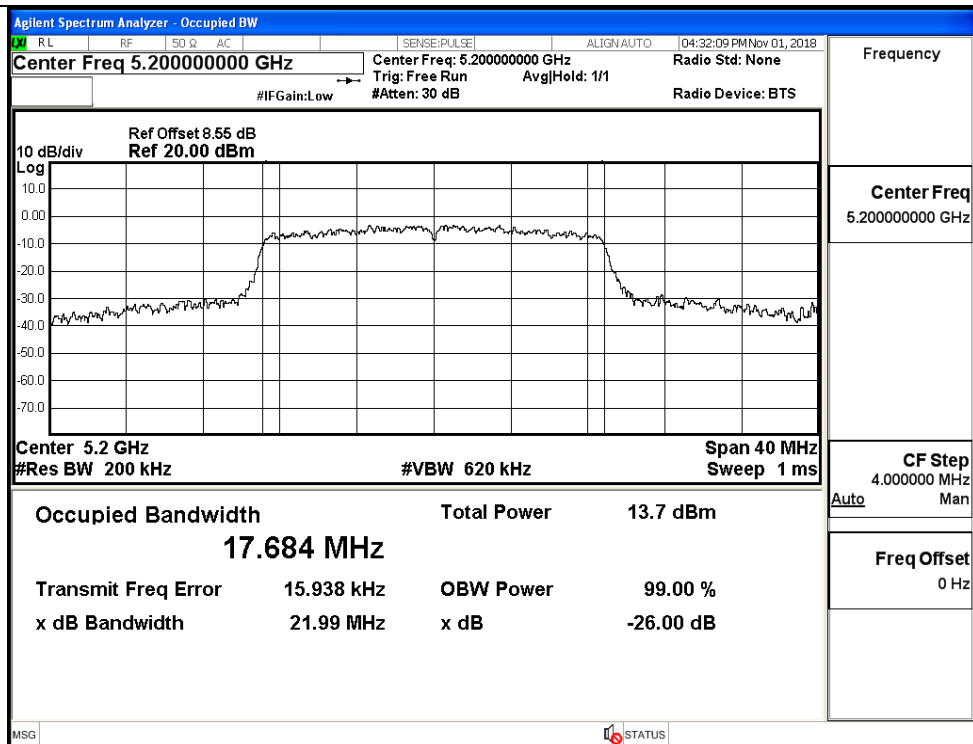
IEEE 802.11n HT40 / Channel 38 / 5190 MHz



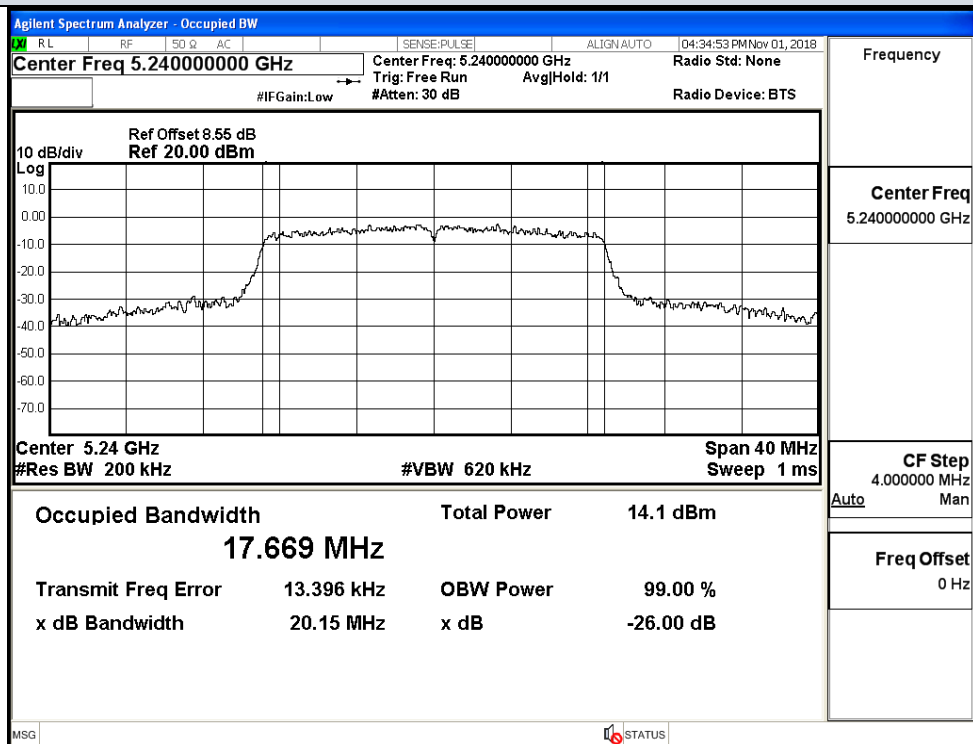
IEEE 802.11n HT40 / Channel 46 / 5230 MHz



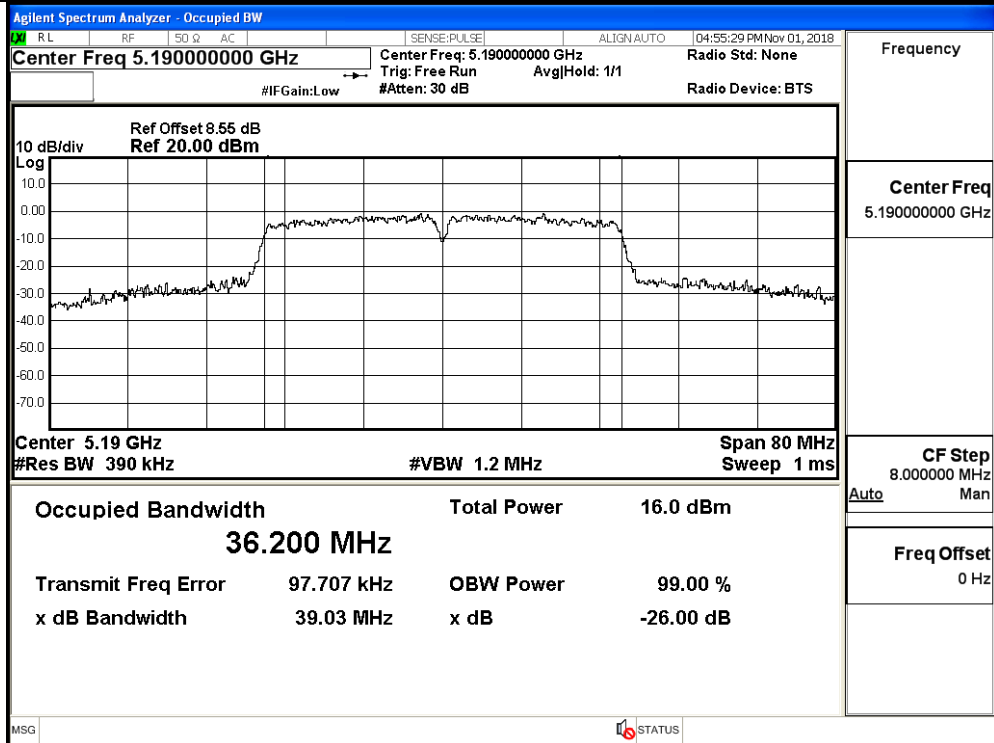
IEEE 802.11ac VHT20 / Channel 36 / 5180 MHz



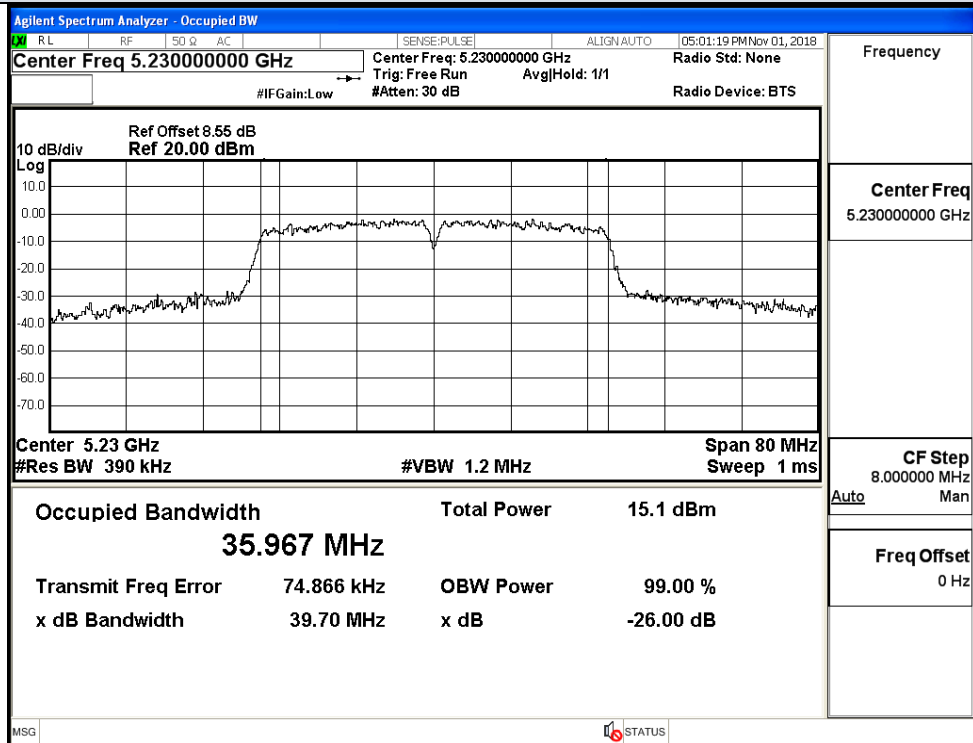
IEEE 802.11ac VHT20 / Channel 40 / 5200 MHz



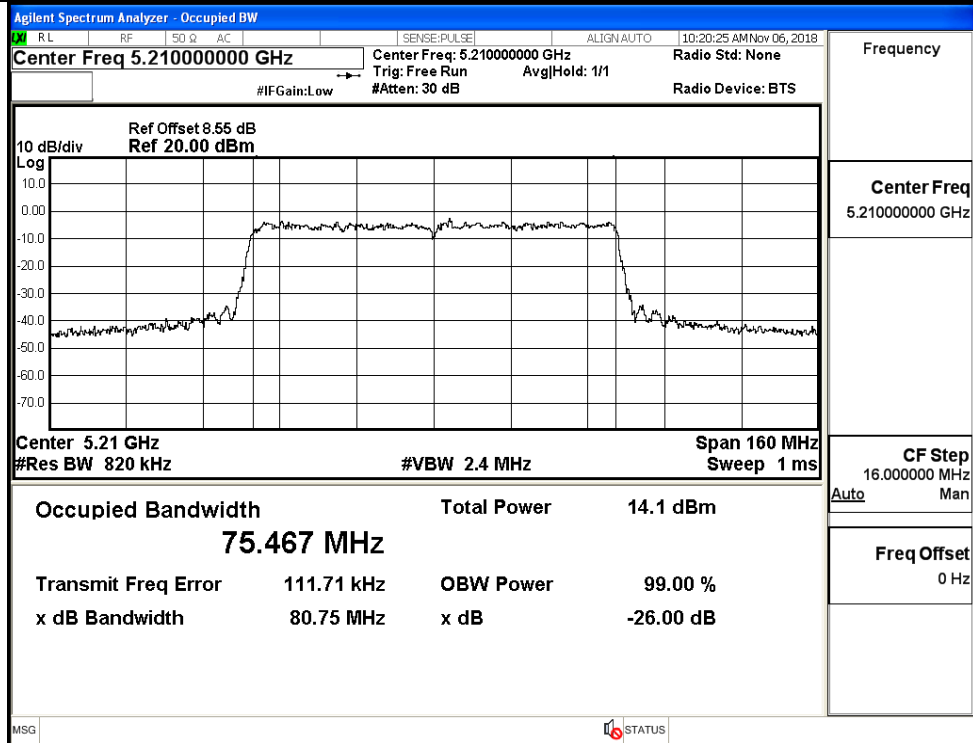
IEEE 802.11ac VHT20 / Channel 48 / 5240 MHz



IEEE 802.11ac VHT40 / Channel 38 / 5190 MHz



IEEE 802.11ac VHT40 / Channel 46 / 5230 MHz



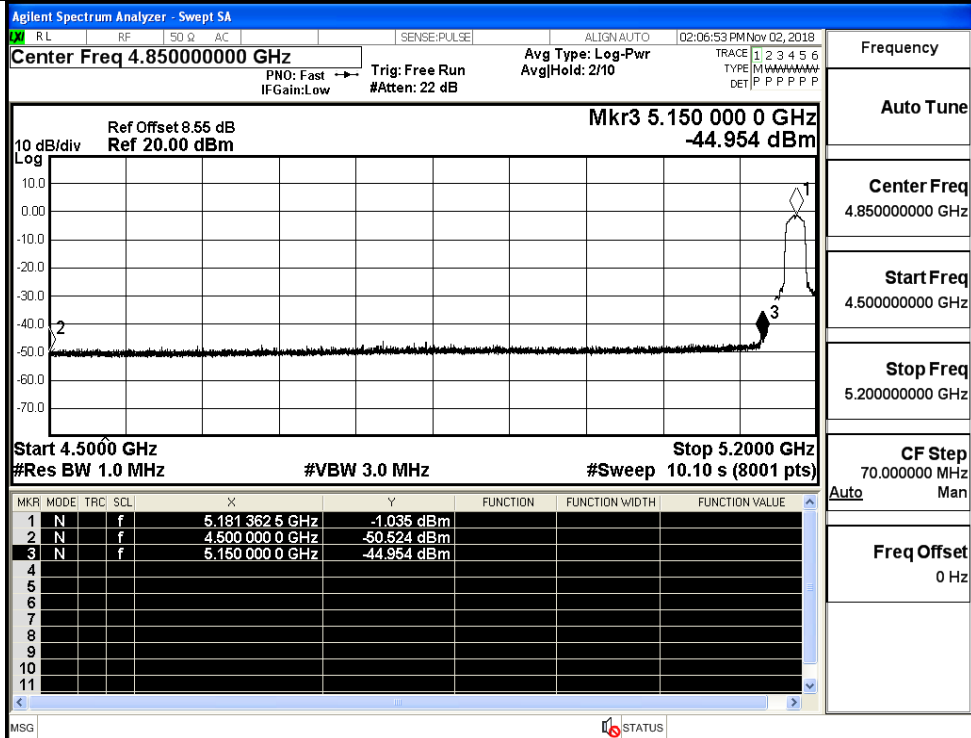
IEEE 802.11ac VHT80 / Channel 42 / 5210 MHz

D.5 Undesirable Emissions Measurement

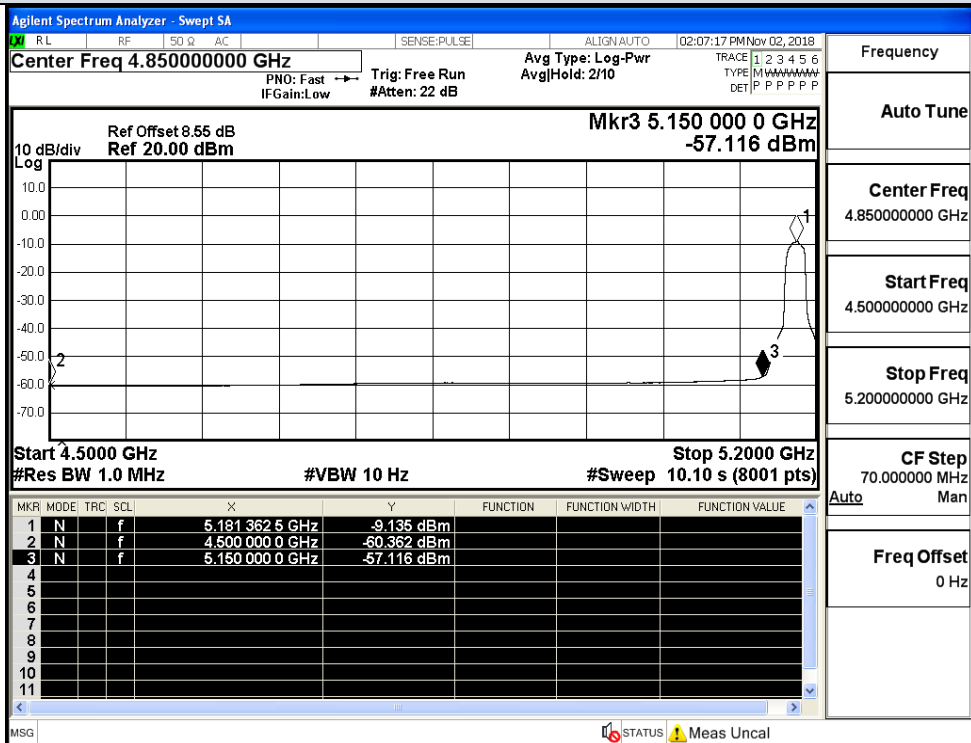
Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)
11A	36	4500.0	-50.524	2.30	0	47.004	Peak	68.20
		4500.0	-60.362	2.30	0	37.166	Average	54.00
		5150.0	-44.954	2.30	0	52.574	Peak	68.20
		5150.0	-57.116	2.30	0	40.412	Average	54.00
	48	5350.0	-49.998	2.30	0	47.530	Peak	68.20
		5350.0	-60.092	2.30	0	37.436	Average	54.00
		5460.0	-49.783	2.30	0	47.745	Peak	68.20
		5460.0	-60.632	2.30	0	36.896	Average	54.00
11N20 SISO	36	4500.0	-49.374	2.30	0	48.154	Peak	68.20
		4500.0	-60.426	2.30	0	37.102	Average	54.00
		5150.0	-46.869	2.30	0	50.659	Peak	68.20
		5150.0	-57.154	2.30	0	40.374	Average	54.00
	48	5350.0	-50.406	2.30	0	47.122	Peak	68.20
		5350.0	-60.081	2.30	0	37.447	Average	54.00
		5460.0	-48.733	2.30	0	48.795	Peak	68.20
		5460.0	-60.632	2.30	0	36.896	Average	54.00
11N40 SISO	38	4500.0	-50.488	2.30	0	47.040	Peak	68.20
		4500.0	-60.346	2.30	0	37.182	Average	54.00
		5150.0	-39.319	2.30	0	58.209	Peak	68.20
		5150.0	-51.415	2.30	0	46.113	Average	54.00
	46	5350.0	-49.341	2.30	0	48.187	Peak	68.20
		5350.0	-59.985	2.30	0	37.543	Average	54.00
		5460.0	-49.978	2.30	0	47.550	Peak	68.20
		5460.0	-60.376	2.30	0	37.152	Average	54.00
11AC20 SISO	36	4500.0	-50.853	2.30	0	46.675	Peak	68.20
		4500.0	-60.394	2.30	0	37.134	Average	54.00
		5150.0	-43.915	2.30	0	53.613	Peak	68.20
		5150.0	-57.173	2.30	0	40.355	Average	54.00
	48	4500.0	-49.110	2.30	0	48.418	Peak	68.20
		4500.0	-60.095	2.30	0	37.433	Average	54.00
		5150.0	-50.265	2.30	0	47.263	Peak	68.20
		5150.0	-60.594	2.30	0	36.934	Average	54.00
11AC40 SISO	38	4500.0	-50.482	2.30	0	47.046	Peak	68.20
		4500.0	-60.476	2.30	0	37.052	Average	54.00
		5150.0	-39.814	2.30	0	57.714	Peak	68.20
		5150.0	-51.424	2.30	0	46.104	Average	54.00
	46	5350.0	-48.951	2.30	0	48.577	Peak	68.20
		5350.0	-59.992	2.30	0	37.536	Average	54.00
		5460.0	-49.242	2.30	0	48.286	Peak	68.20
		5460.0	-60.407	2.30	0	37.121	Average	54.00
11AC80 SISO	42	4500.0	-49.718	2.30	0	47.810	Peak	68.20
		5150.0	-60.452	2.30	0	37.076	Average	54.00
		4500.0	-41.408	2.30	0	56.120	Peak	68.20
		5150.0	-51.826	2.30	0	45.702	Average	54.00

		5350.0	-48.541	2.30	0	48.987	Peak	68.20
		5460.0	-58.221	2.30	0	39.307	Average	54.00
		5350.0	-49.485	2.30	0	48.043	Peak	68.20
		5460.0	-59.052	2.30	0	38.476	Average	54.00

Undesirable Emissions Measurement

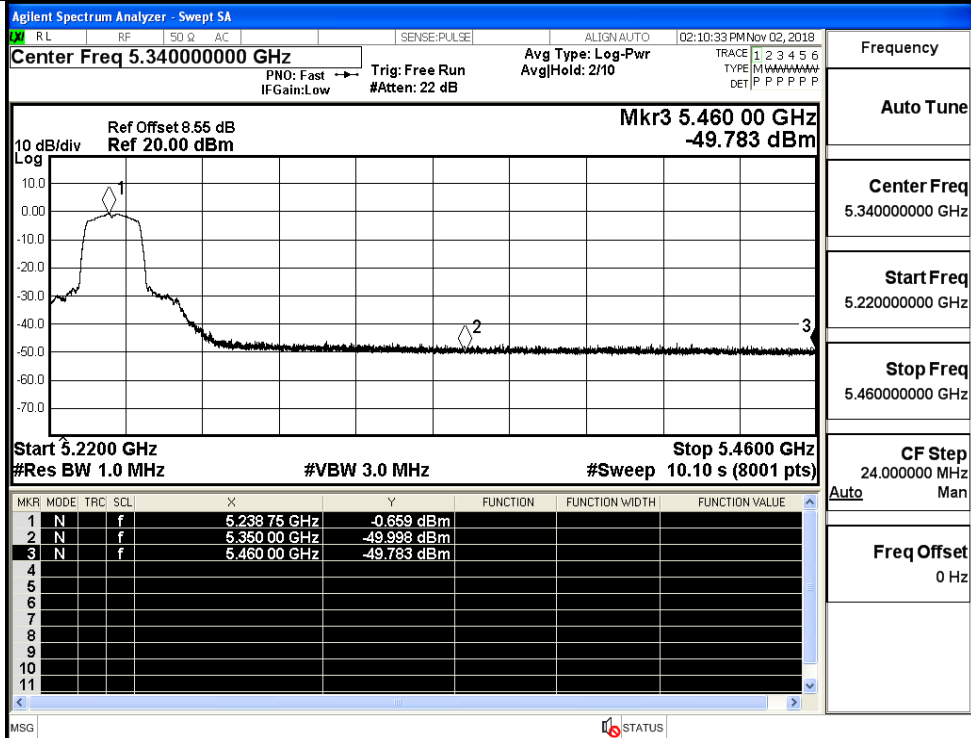


IEEE 802.11a / Channel 36 / 5180 MHz / Peak

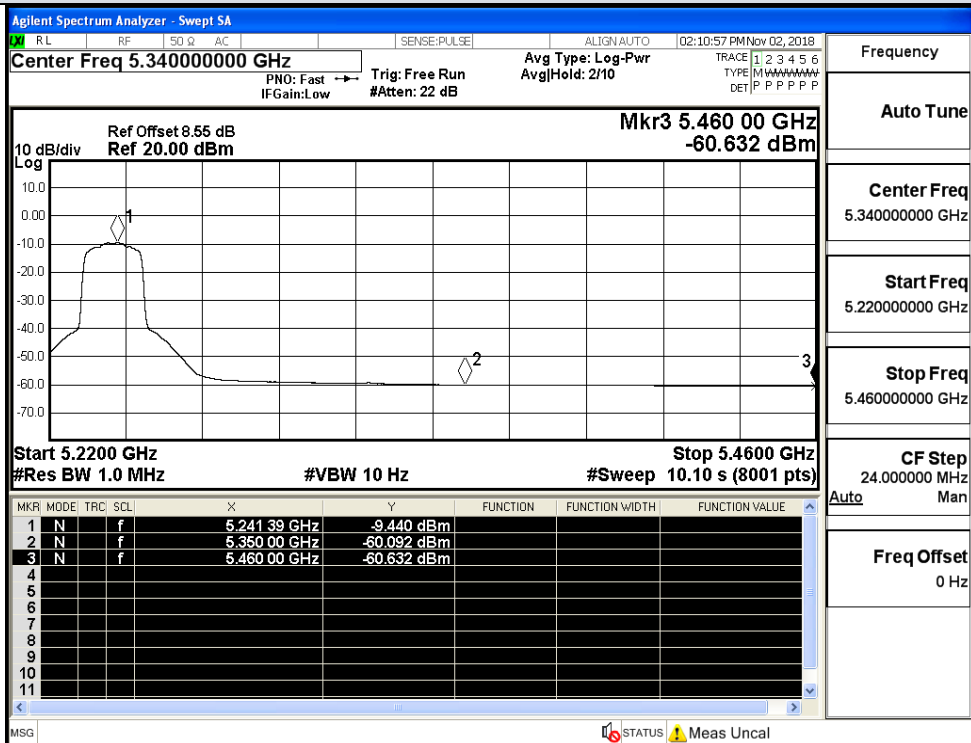


IEEE 802.11a / Channel 36 / 5180 MHz / Average

Undesirable Emissions Measurement

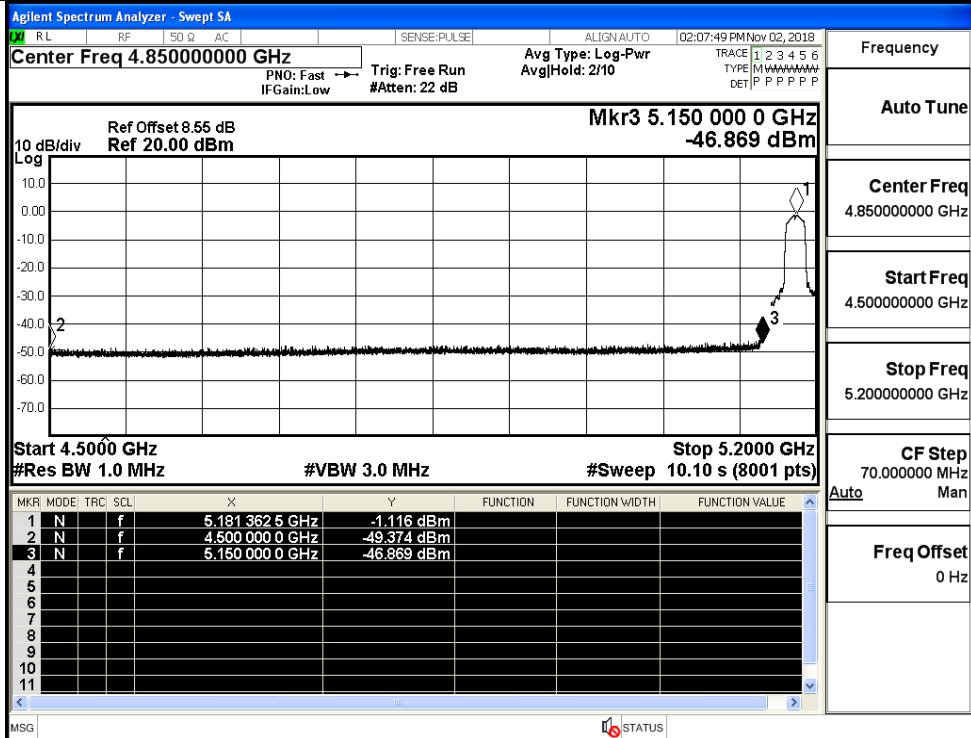


IEEE 802.11a / Channel 48 / 5240 MHz / Peak

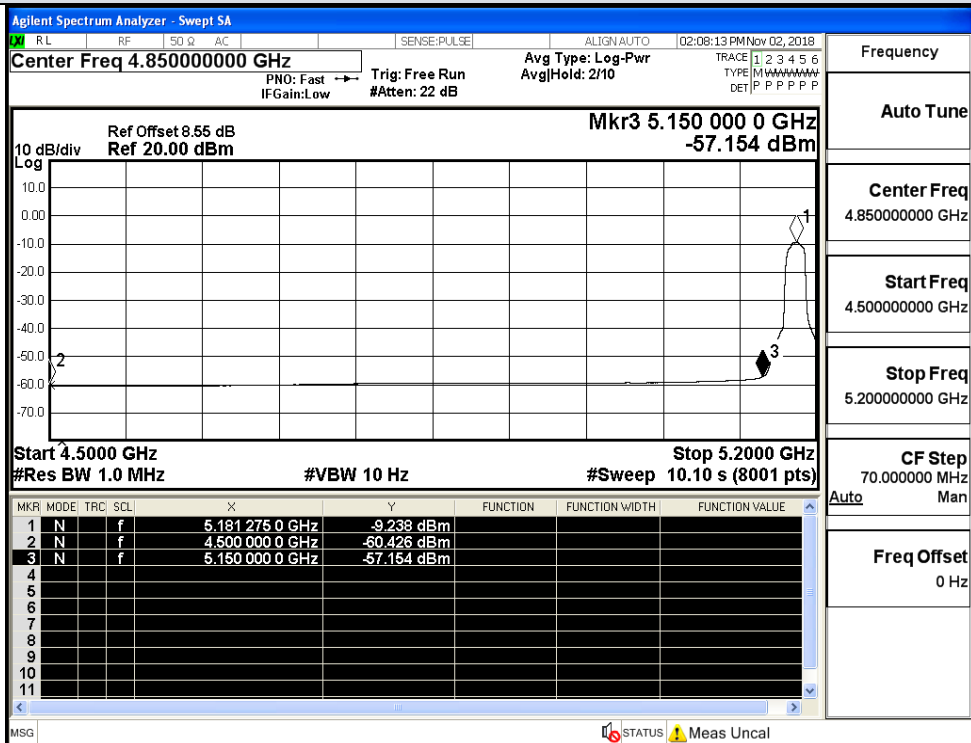


IEEE 802.11a / Channel 48 / 5240 MHz / Average

Undesirable Emissions Measurement

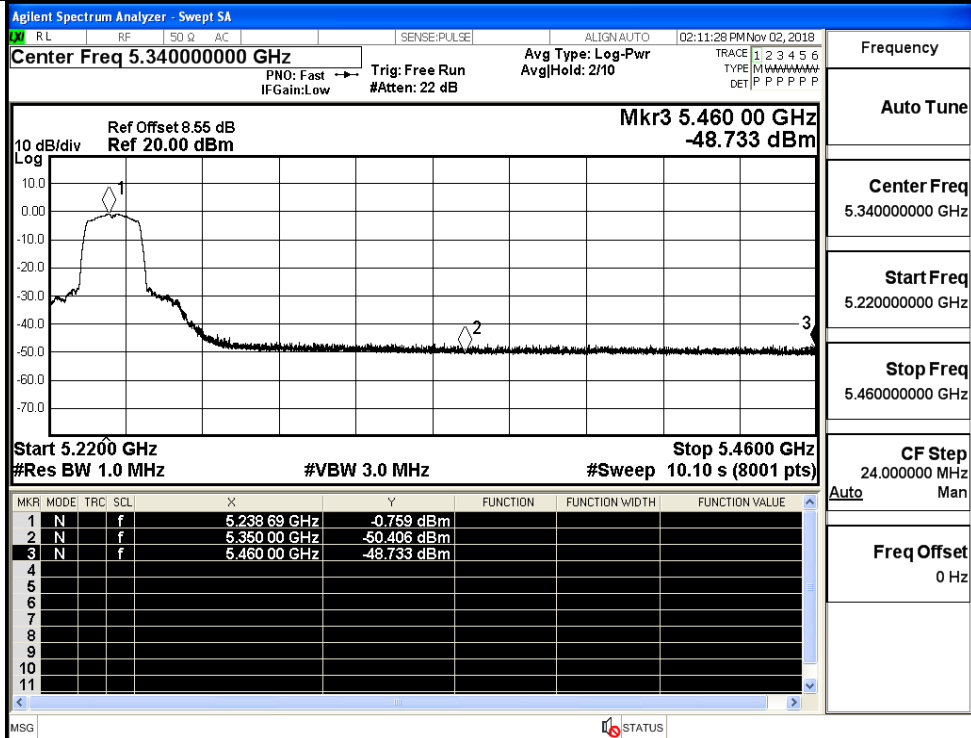


IEEE 802.11n HT20 / Channel 36 / 5180 MHz / Peak

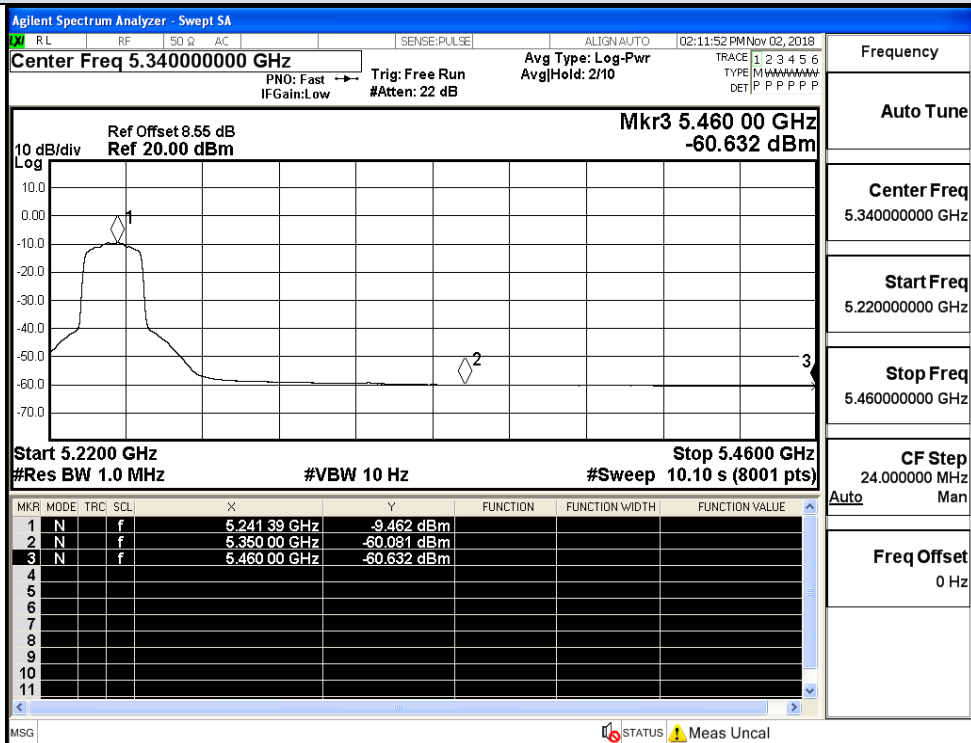


IEEE 802.11n HT20 / Channel 36 / 5180 MHz / Average

Undesirable Emissions Measurement

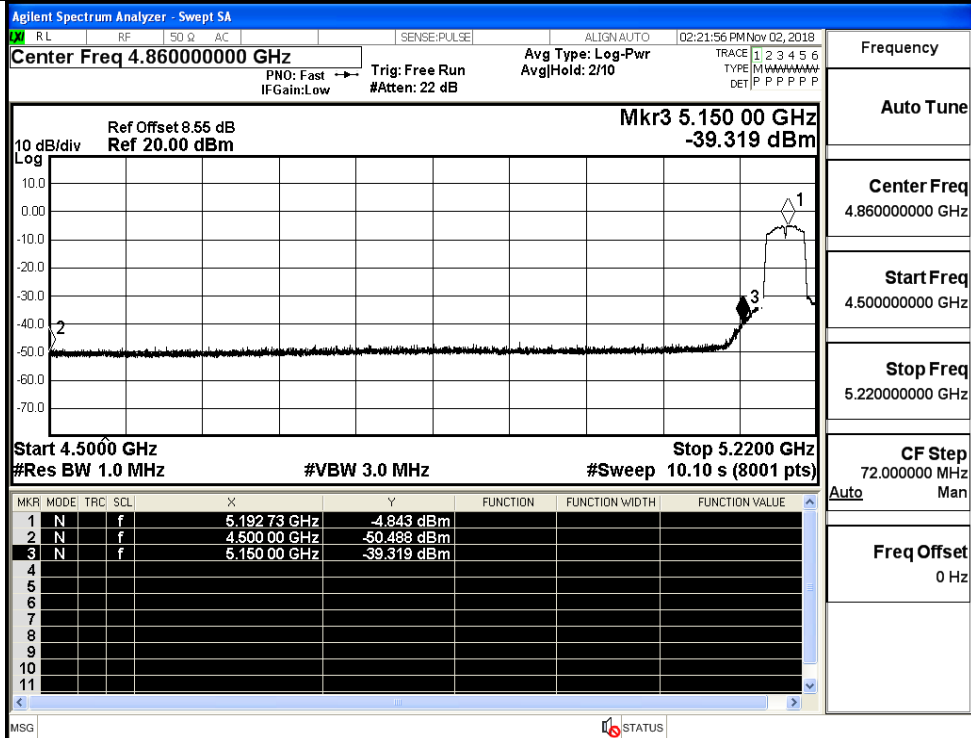


IEEE 802.11n HT20 / Channel 48 / 5240 MHz / Peak

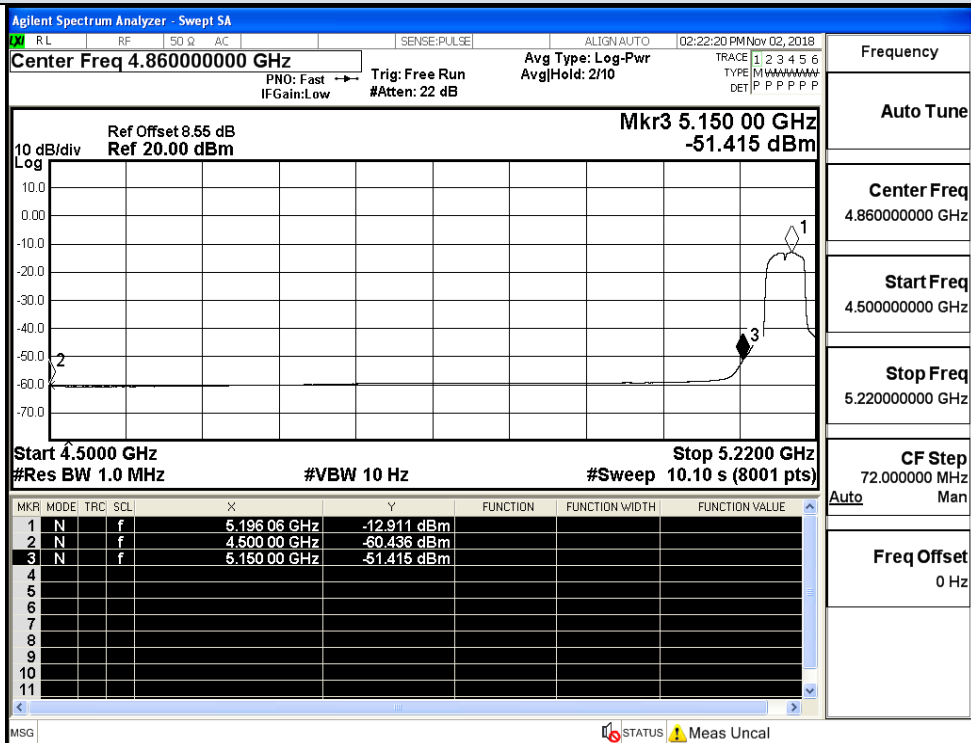


IEEE 802.11n HT20 / Channel 48 / 5240 MHz / Average

Undesirable Emissions Measurement

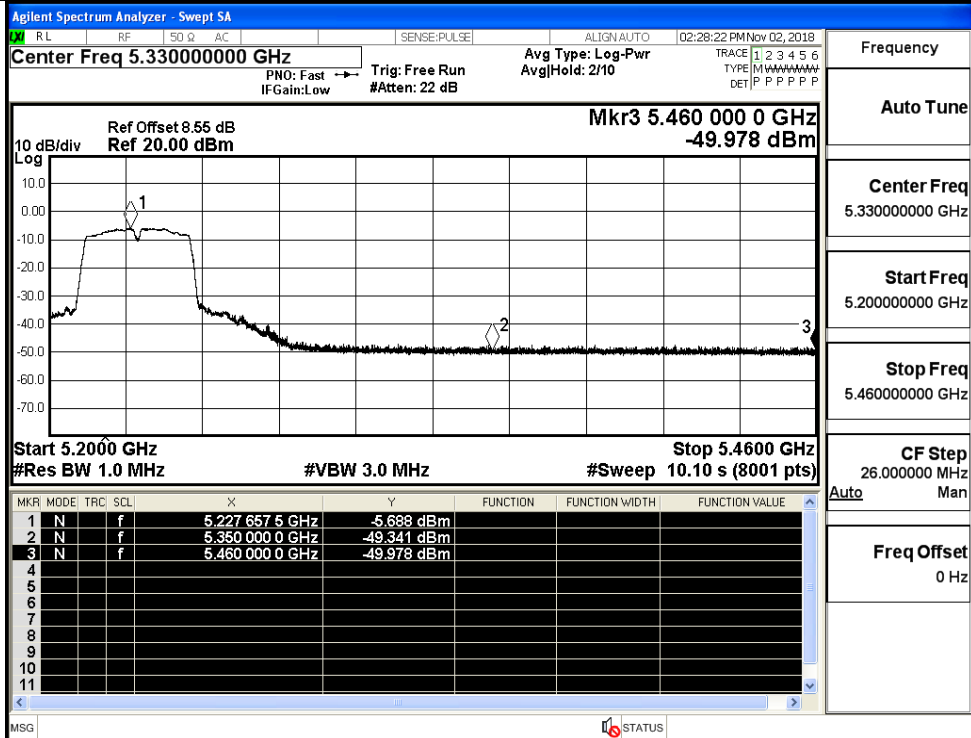


IEEE 802.11n HT40 / Channel 36 / 5180 MHz / Peak

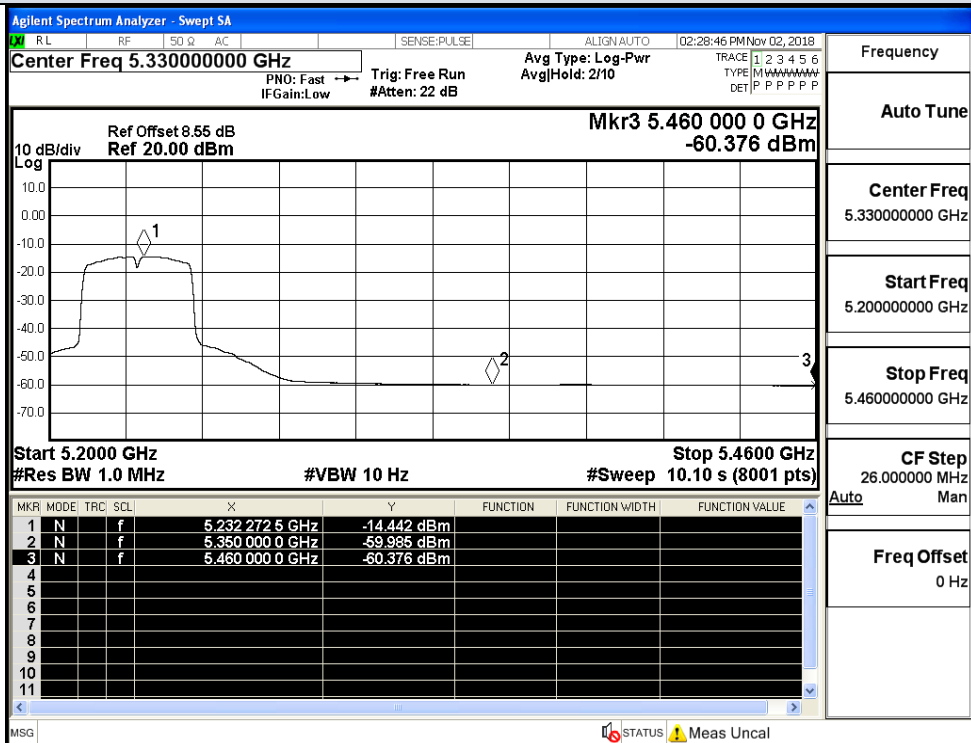


IEEE 802.11n HT40 / Channel 36 / 5180 MHz / Average

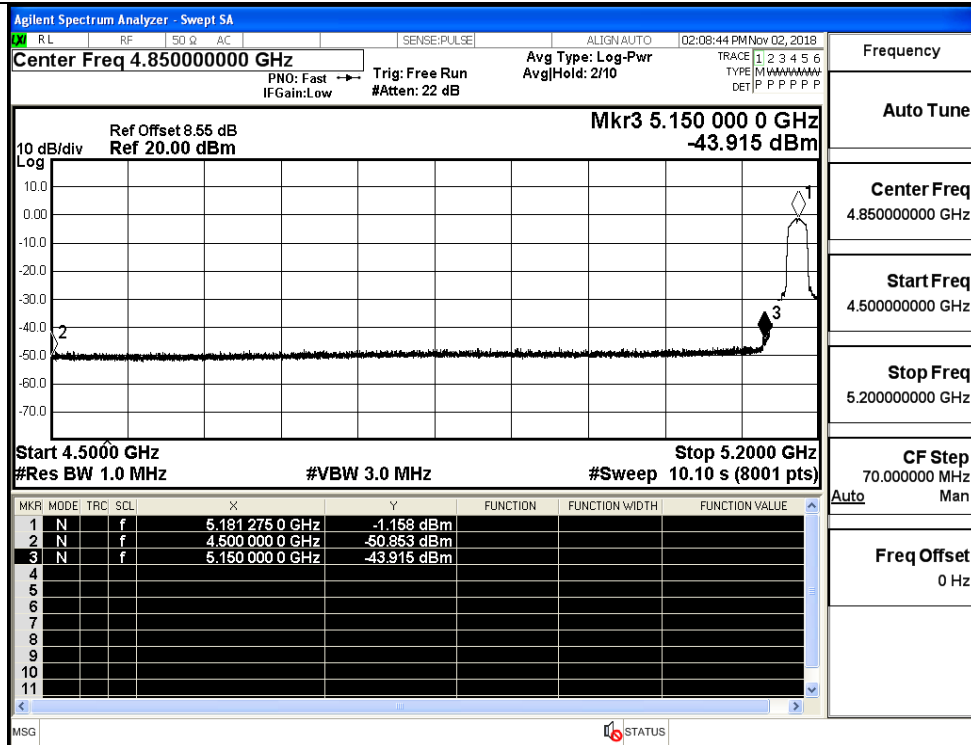
Undesirable Emissions Measurement



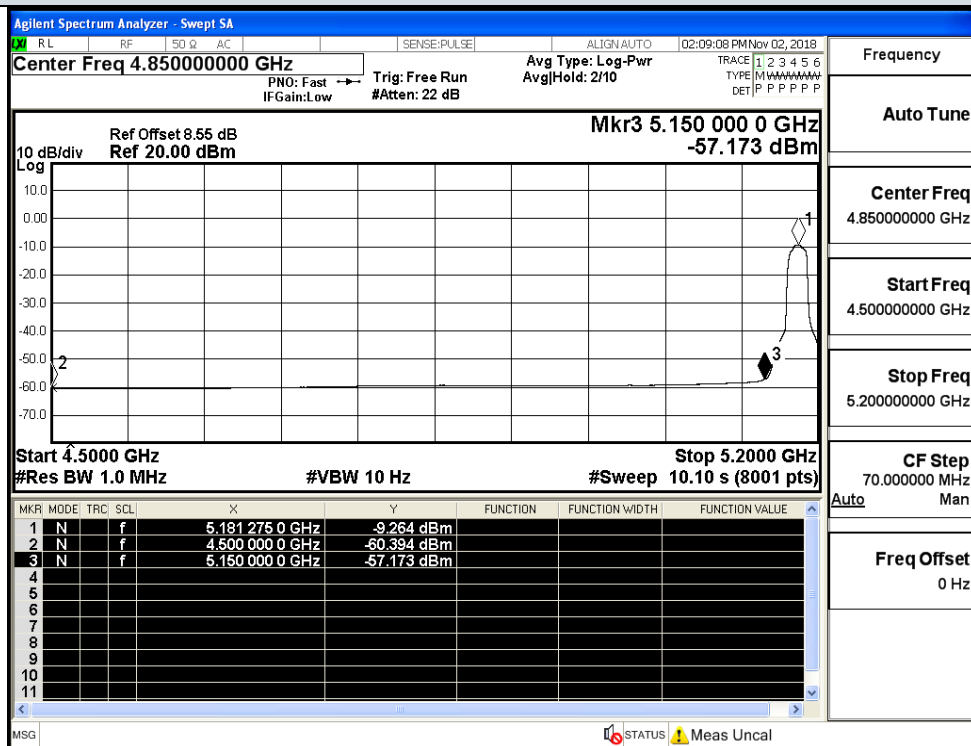
IEEE 802.11n HT40 / Channel 48 / 5230 MHz / Peak



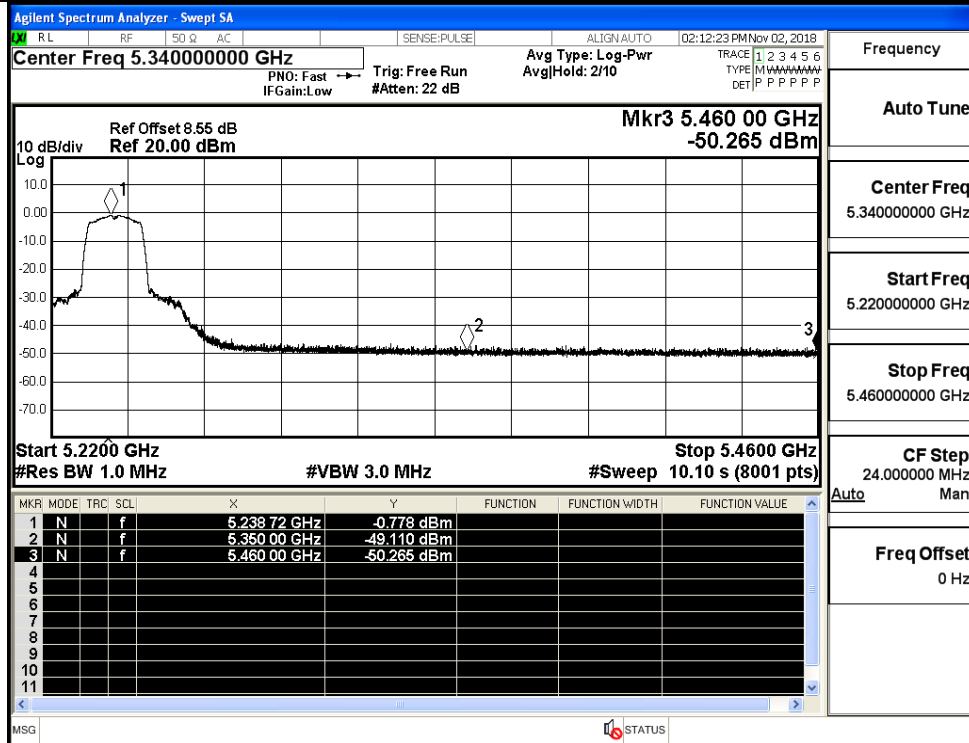
IEEE 802.11n HT40 / Channel 48 / 5230 MHz / Average



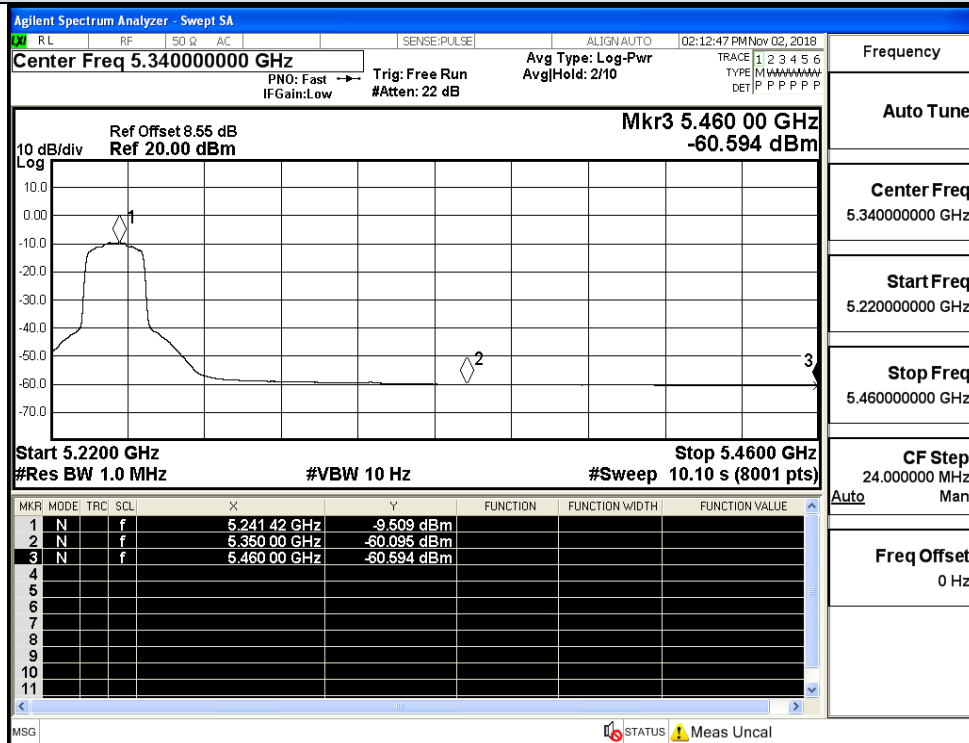
IEEE 802.11ac VHT20 / Channel 36 / 5180 MHz / Peak



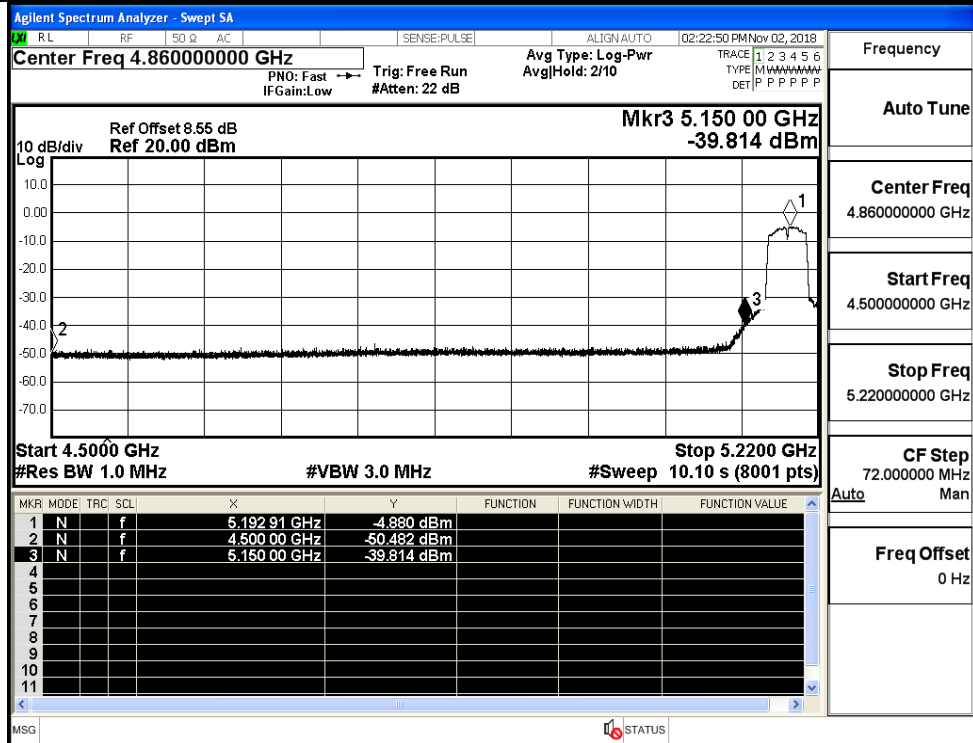
IEEE 802.11ac VHT20 / Channel 36 / 5180 MHz / Average



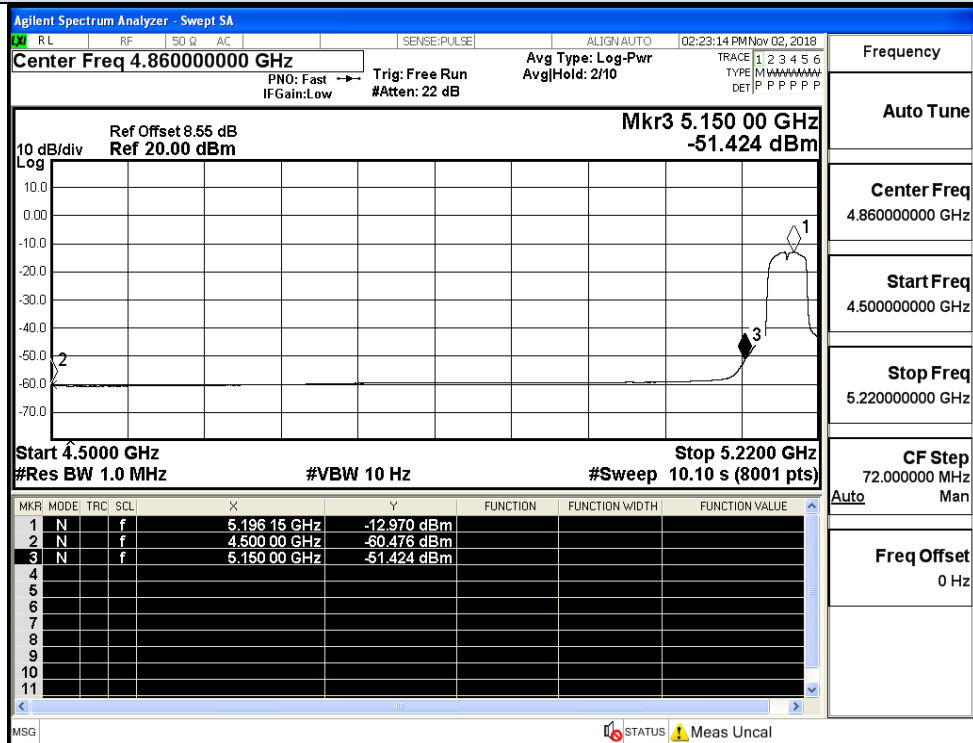
IEEE 802.11ac VHT20 / Channel 48 / 5240 MHz / Peak



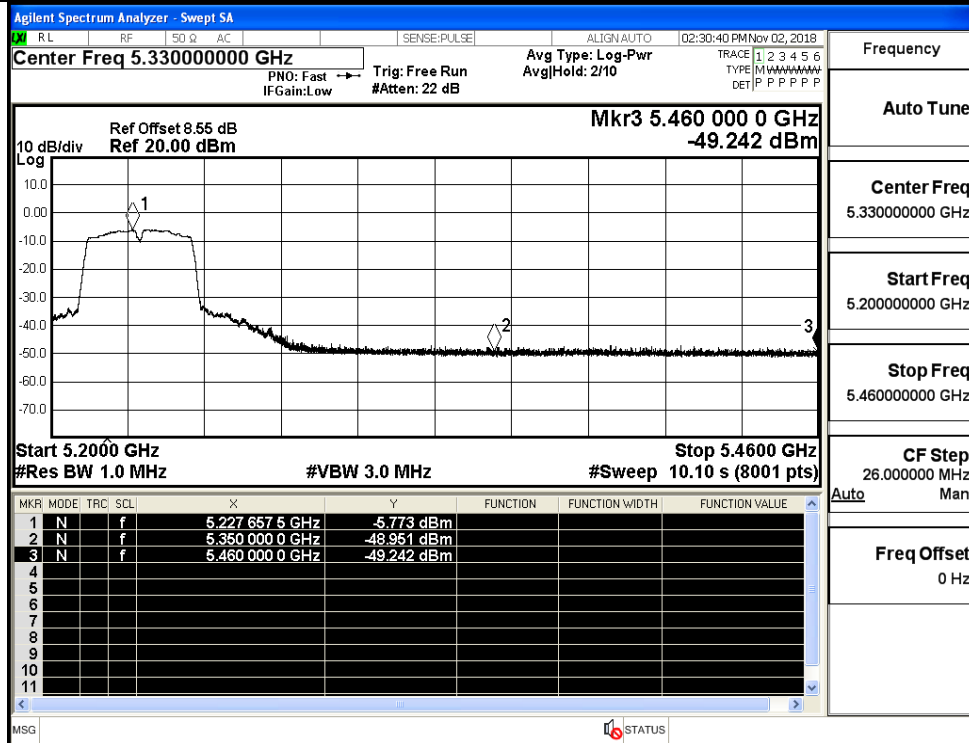
IEEE 802.11ac VHT20 / Channel 48 / 5240 MHz / Average



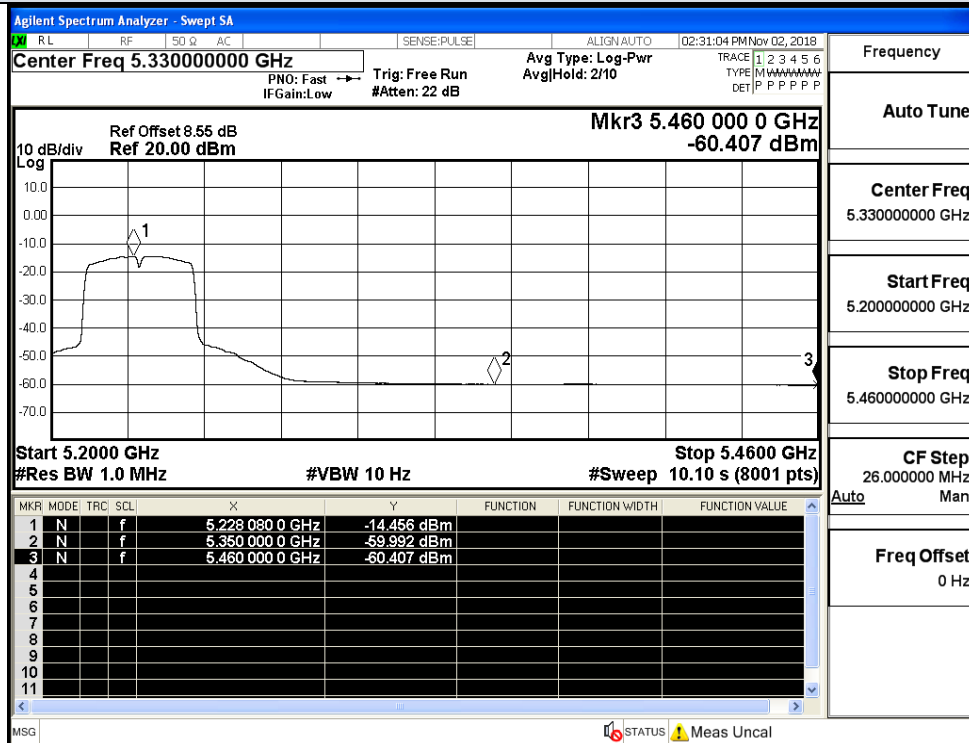
IEEE 802.11ac VHT40 / Channel 36 / 5180 MHz / Peak



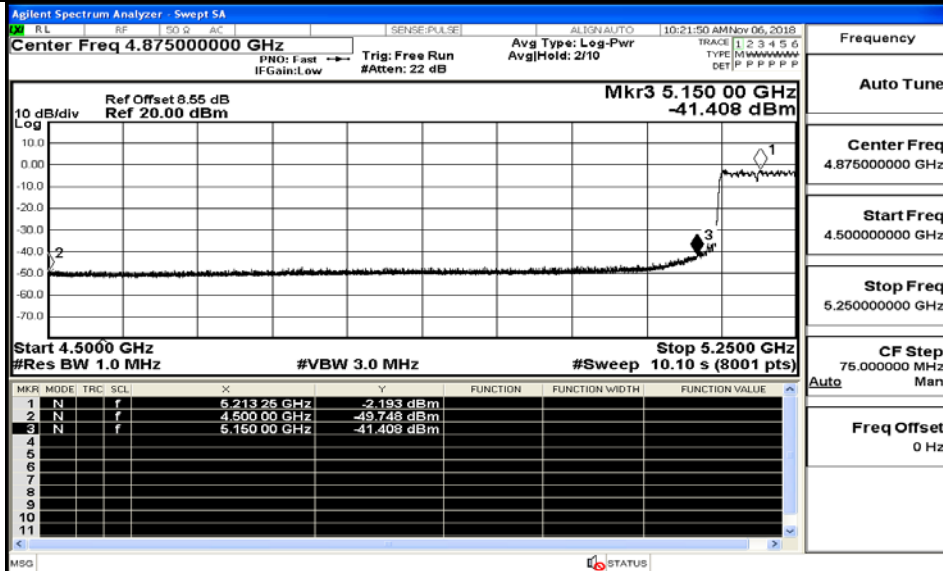
IEEE 802.11ac VHT40 / Channel 36 / 5180 MHz / Average



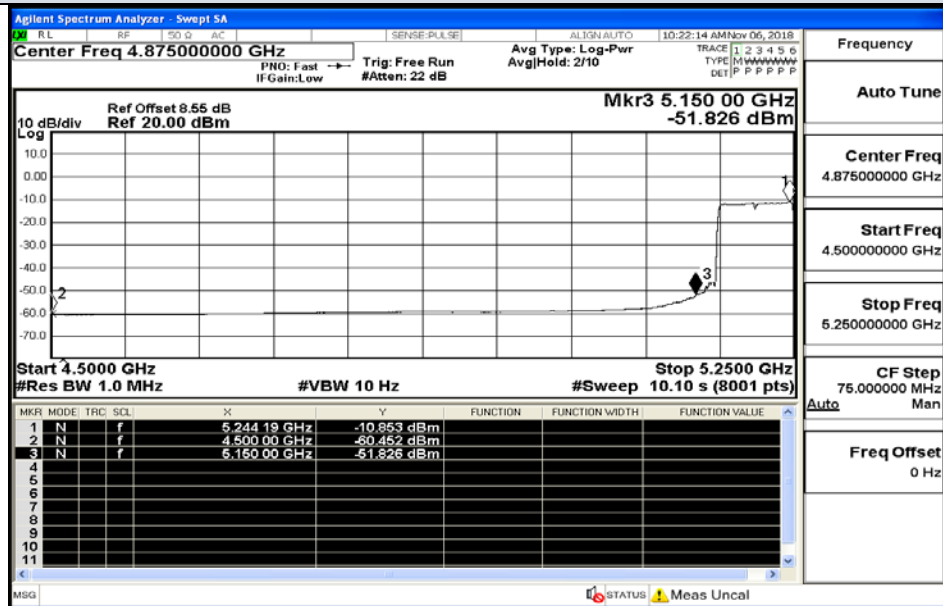
IEEE 802.11ac VHT40 / Channel 48 / 5230 MHz / Peak



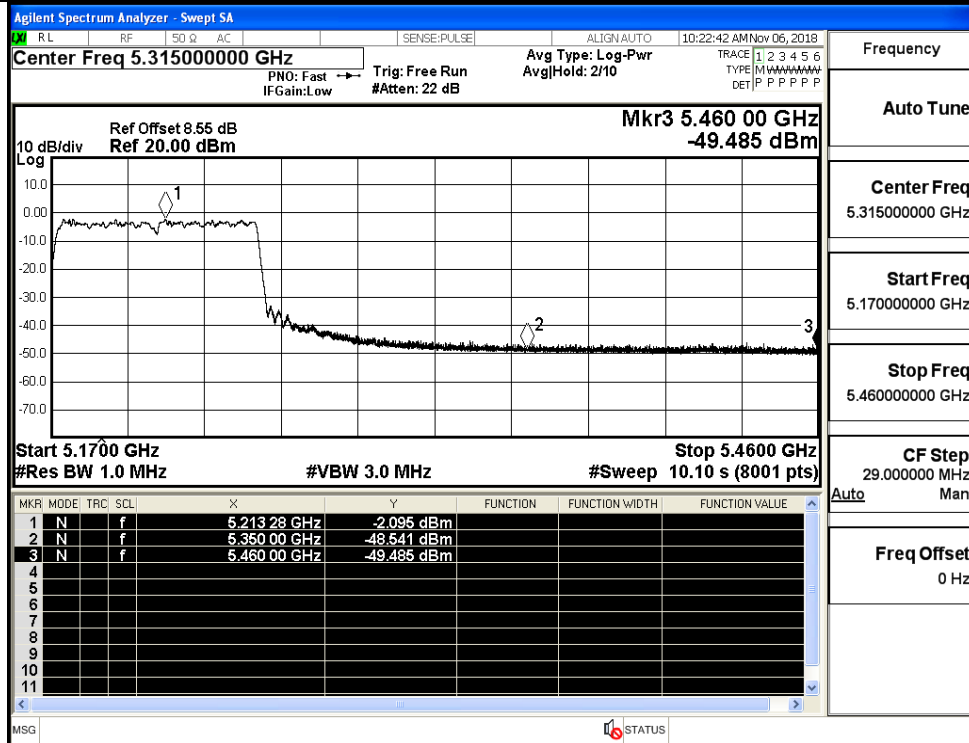
IEEE 802.11ac VHT40 / Channel 48 / 5230 MHz / Average



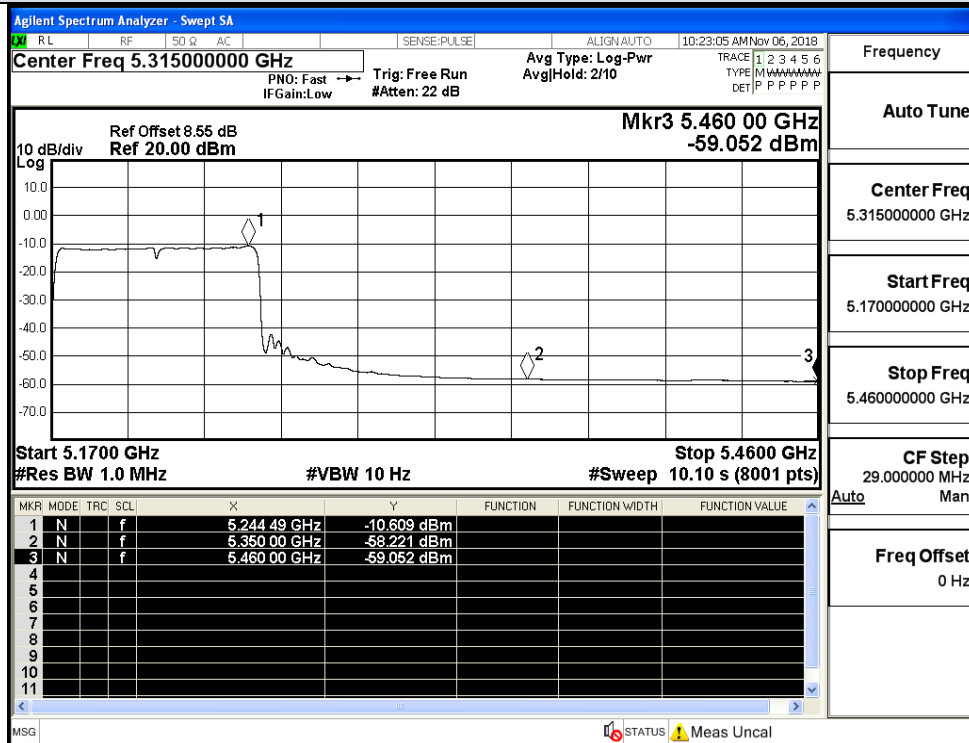
IEEE 802.11ac VHT80 / Channel 42 / 5210 MHz / Peak



IEEE 802.11ac VHT80 / Channel 42 / 5210 MHz / Average



IEEE 802.11ac VHT80 / Channel 42 / 5210 MHz / Peak



IEEE 802.11ac VHT80 / Channel 42 / 5210 MHz / Average