

Appendix D

RF Test Data for 5.2G WLAN (Conducted Measurement)

Product Name: Portable Data Collector

Trade Mark: Newland

Test Model: NLS-N7

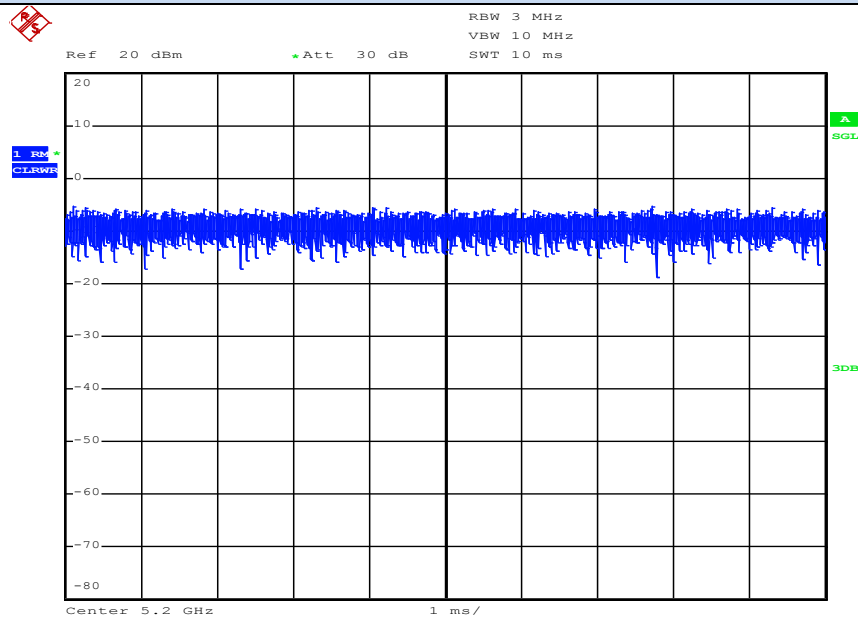
Environmental Conditions

Temperature:	24.7 ° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	JK ZHOU
Supervised by:	Wang.Chuang

D.1 Duty Cycle

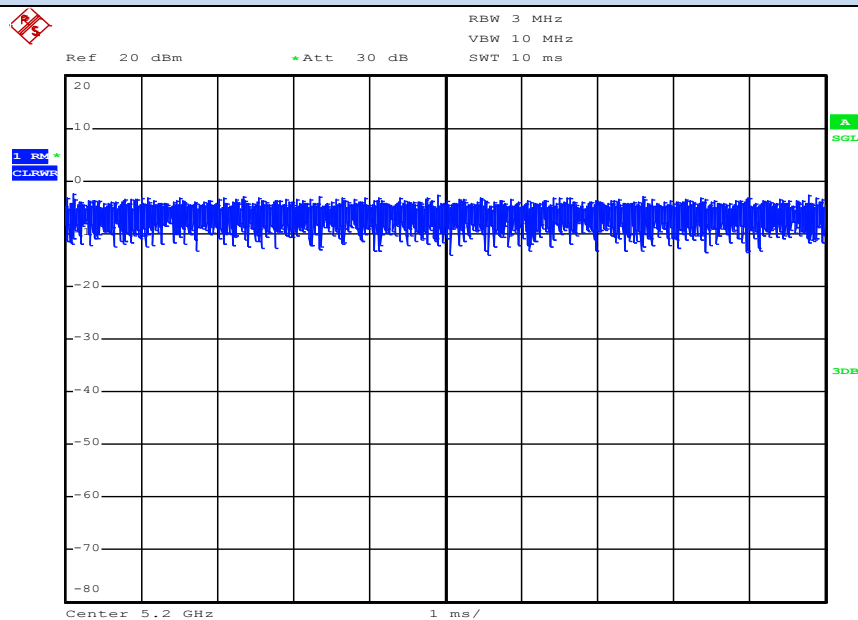
Test Mode	Test Frequency (MHz)	Duty Cycle (%)	10log(1/x) Factor (dB)	1/B Minimum VBW(KHz)
11A	5200	100	0.00	0.01
11N20 SISO	5200	100	0.00	0.01
11N40 SISO	5190	100	0.00	0.01
11AC20 SISO	5200	100	0.00	0.01
11AC40 SISO	5190	100	0.00	0.01
11AC80 SISO	5210	100	0.00	0.01

On Time and Duty Cycle



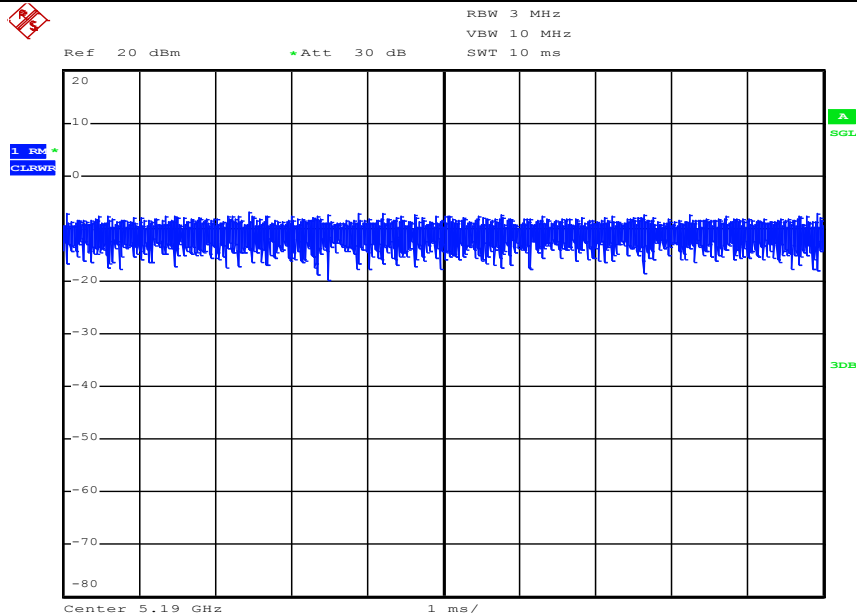
Date: 23.SEP.2019 15:54:20

IEEE 802.11a



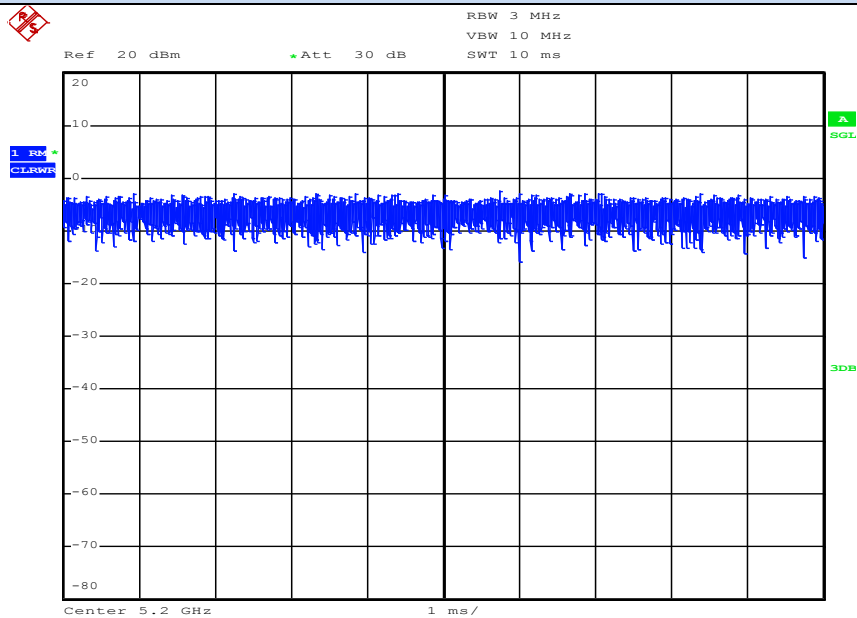
Date: 23.SEP.2019 16:16:59

IEEE 802.11n HT20



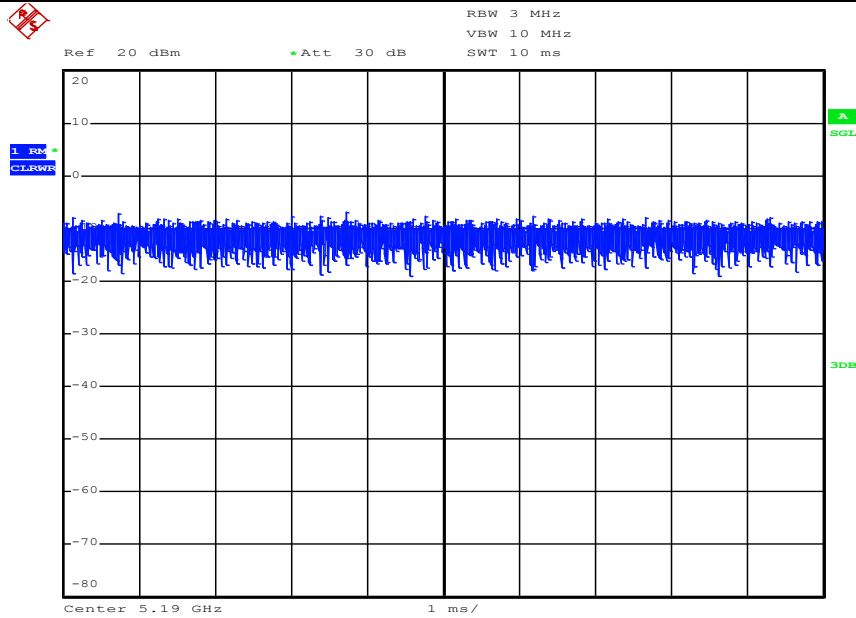
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IEEE 802.11n HT40



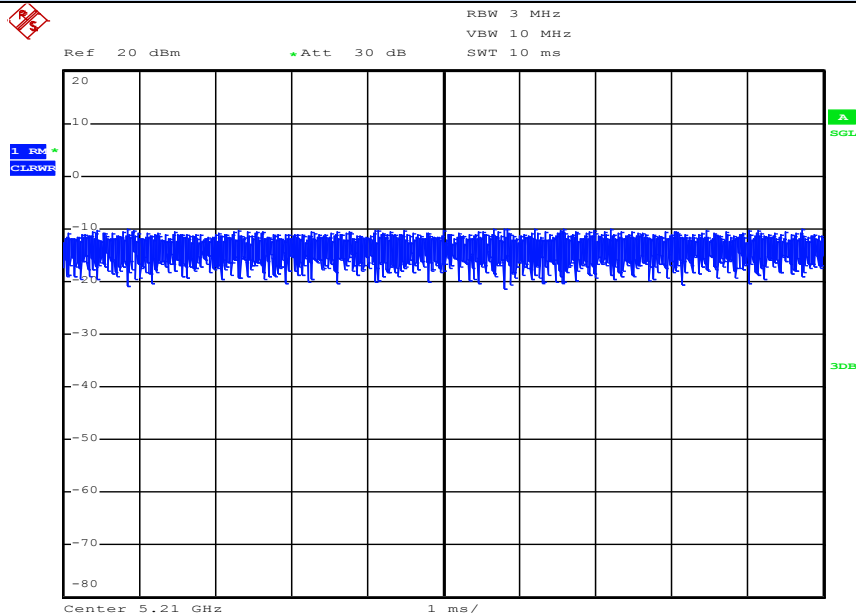
Date: 23.SEP.2019 17:10:13

IEEE 802.11AC20



Date: 23.SEP.2019 17:30:19

IEEE 802.11 AC40



Date: 23.SEP.2019 19:35:24

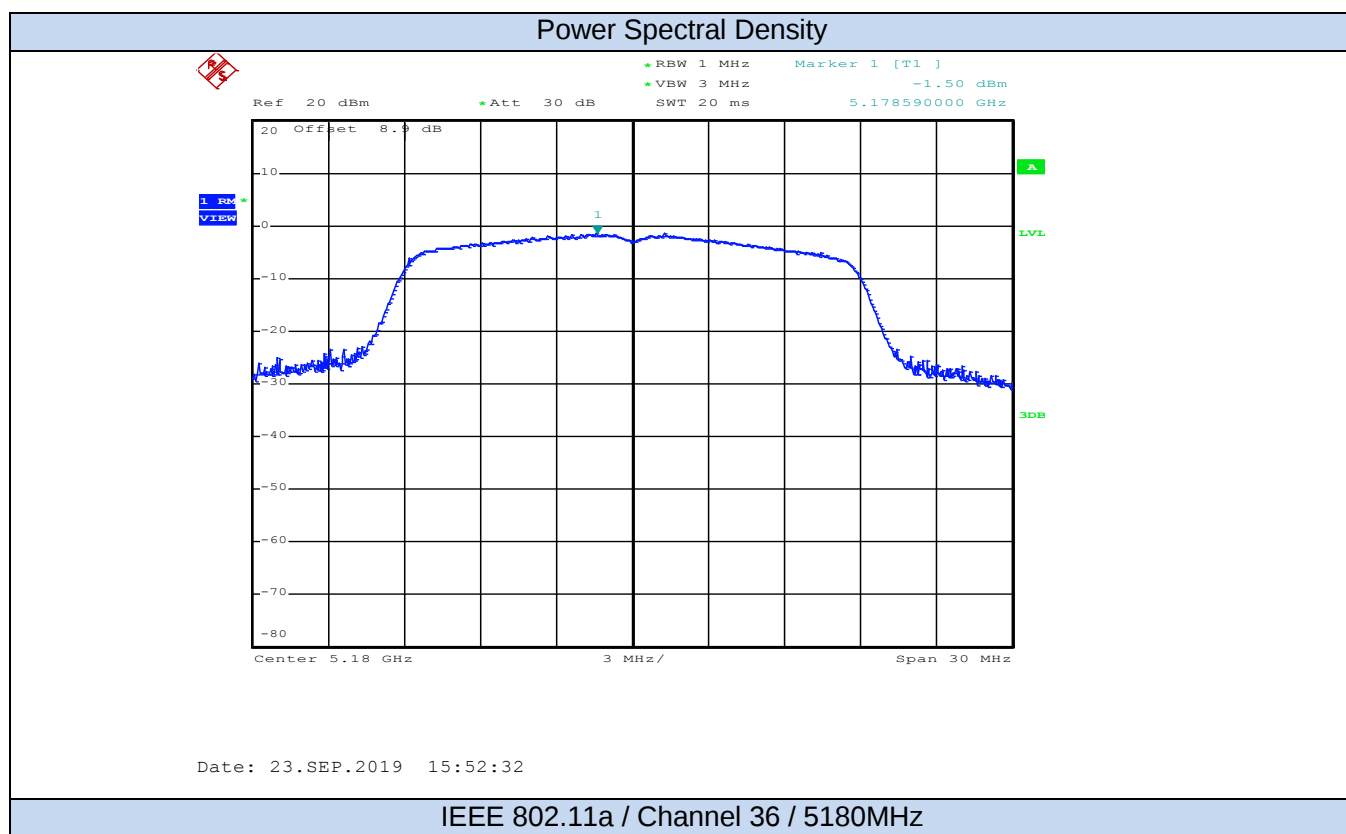
IEEE 802.11AC80

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)	Verdict
11A	36	5180	9.60	0	9.60	24	Pass
	40	5200	11.75	0	11.75		Pass
	48	5240	12.14	0	12.14		Pass
11N20 SISO	36	5180	10.19	0	10.19	24	Pass
	40	5200	10.09	0	10.09		Pass
	48	5240	10.41	0	10.41		Pass
11N40 SISO	38	5190	10.55	0	10.55	24	Pass
	46	5230	10.34	0	10.34		Pass
11AC20 SISO	36	5180	10.34	0	10.34	24	Pass
	40	5200	9.31	0	9.31		Pass
	48	5240	9.77	0	9.77		Pass
11AC40 SISO	38	5190	10.04	0	10.04	24	Pass
	46	5230	10.15	0	10.15		Pass
11AC80 SISO	42	5210	9.99	0	9.99	24	Pass

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)	Verdict
11A	36	5180	-1.50	0	-1.50	11	Pass
	40	5200	1.99	0	1.99		Pass
	48	5240	2.79	0	2.79		Pass
11N20 SISO	36	5180	0.30	0	0.30	11	Pass
	40	5200	0.07	0	0.07		Pass
	48	5240	0.55	0	0.55		Pass
11N40 SISO	38	5190	-2.30	0	-2.30	11	Pass
	46	5230	-2.51	0	-2.51		Pass
11AC20 SISO	36	5180	0.59	0	0.59	11	Pass
	40	5200	-0.55	0	-0.55		Pass
	48	5240	0.28	0	0.28		Pass
11AC40 SISO	38	5190	-2.80	0	-2.80	11	Pass
	46	5230	-2.66	0	-2.66		Pass
11AC80 SISO	42	5210	-5.93	0	-5.93	11	Pass

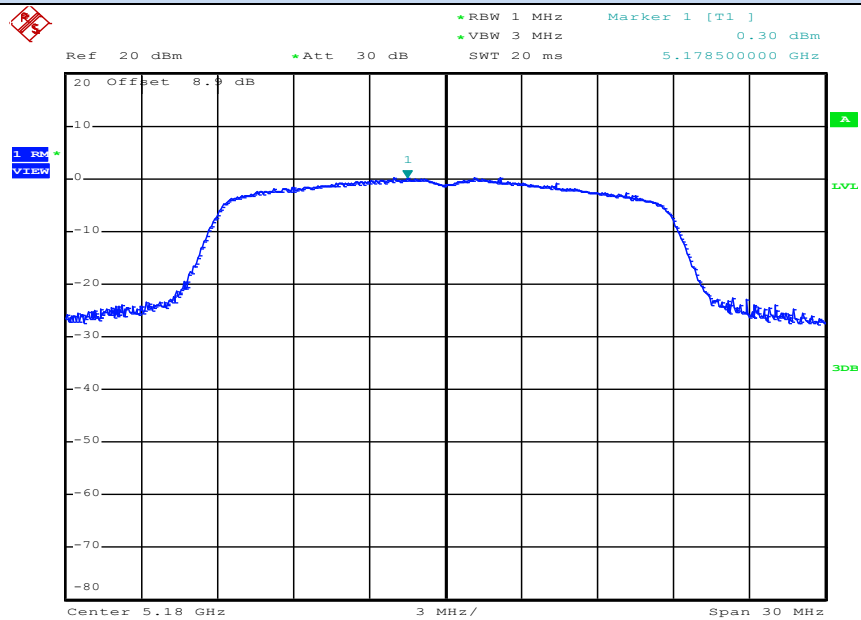




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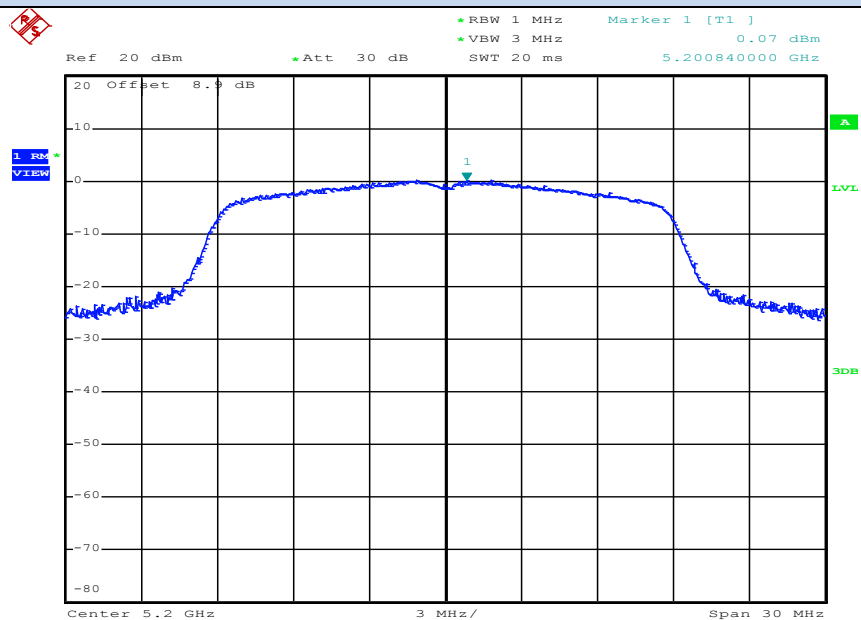
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Power Spectral Density



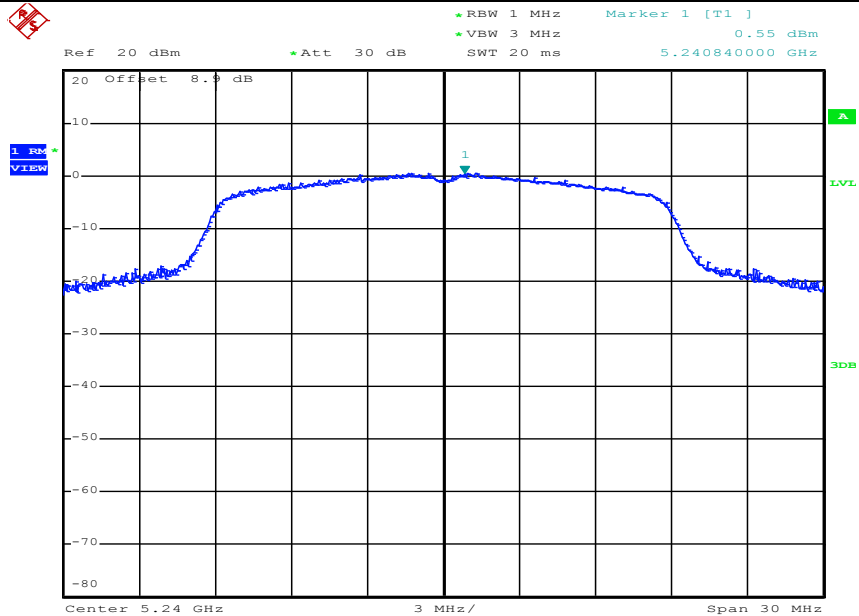
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IEEE 802.11n20 / Channel 36 / 5180MHz



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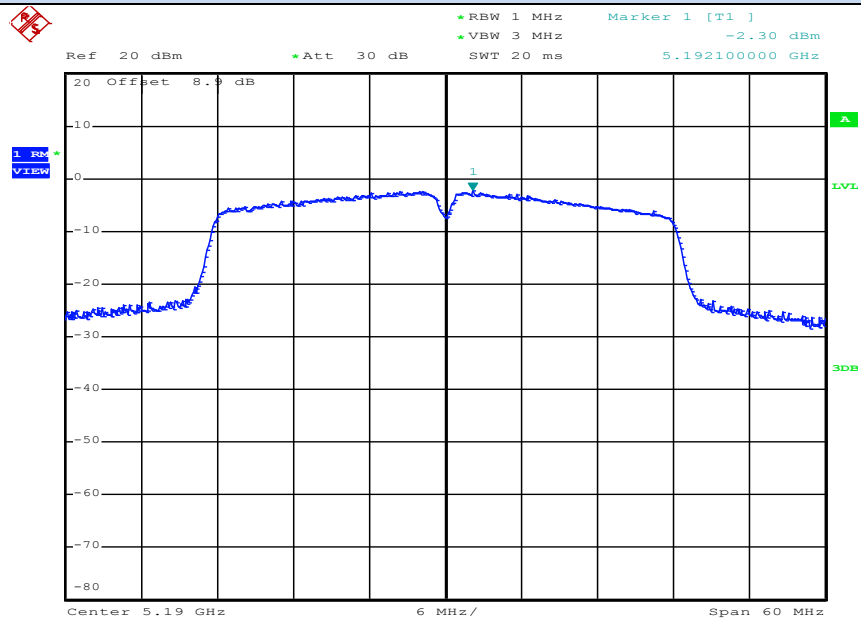
IEEE 802.11n20 / Channel 40 / 5200MHz



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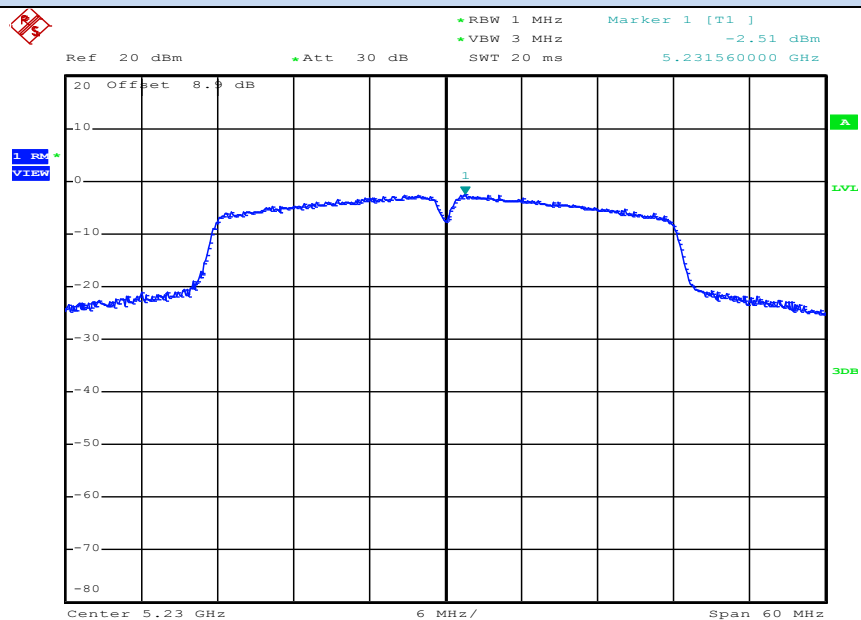
IEEE 802.11n20 / Channel 48 / 5240MHz

Power Spectral Density



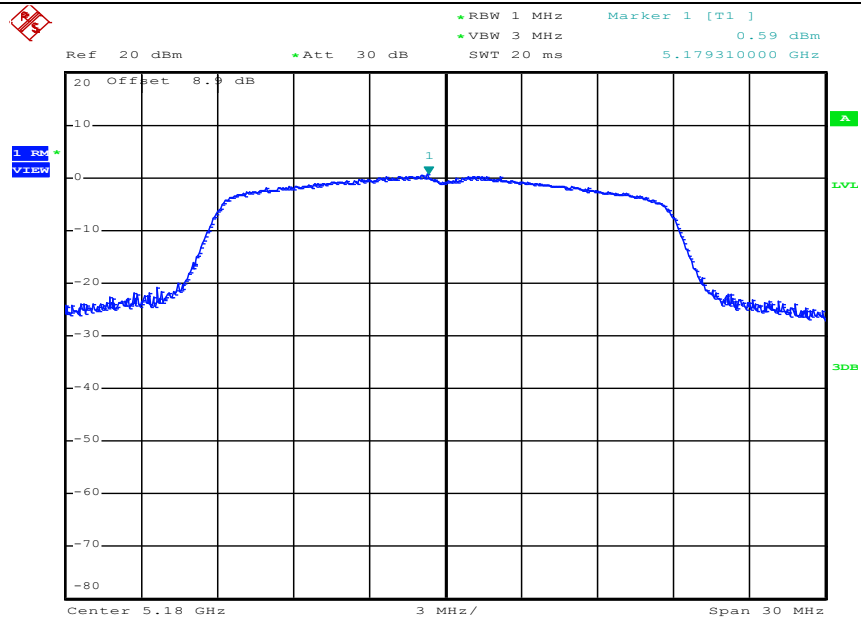
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IEEE 802.11n40 / Channel 38 / 5190MHz



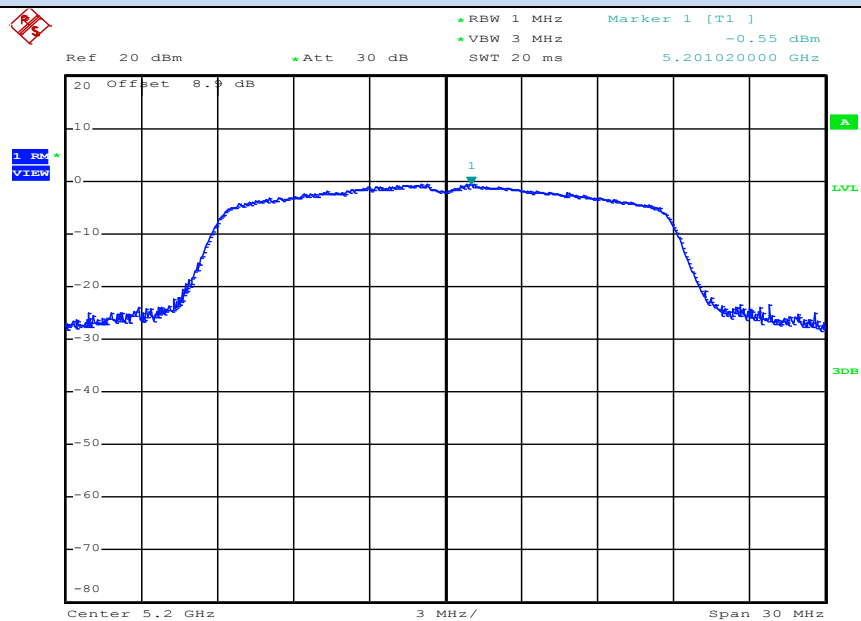
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IEEE 802.11n40 / Channel 46 / 5230MHz



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IEEE 802.11ac20 / Channel 36 / 5180MHz



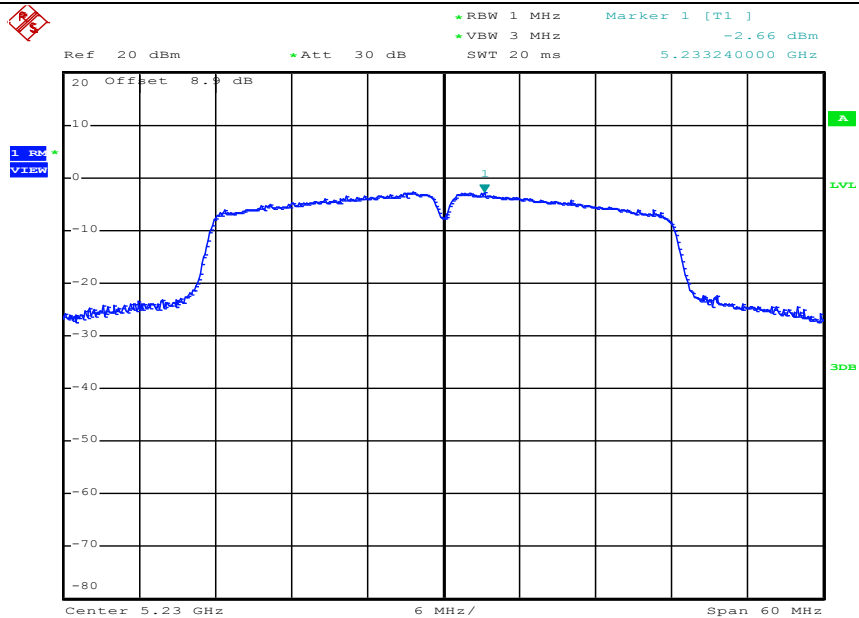
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IEEE 802.11ac20 / Channel 40 / 5200MHz



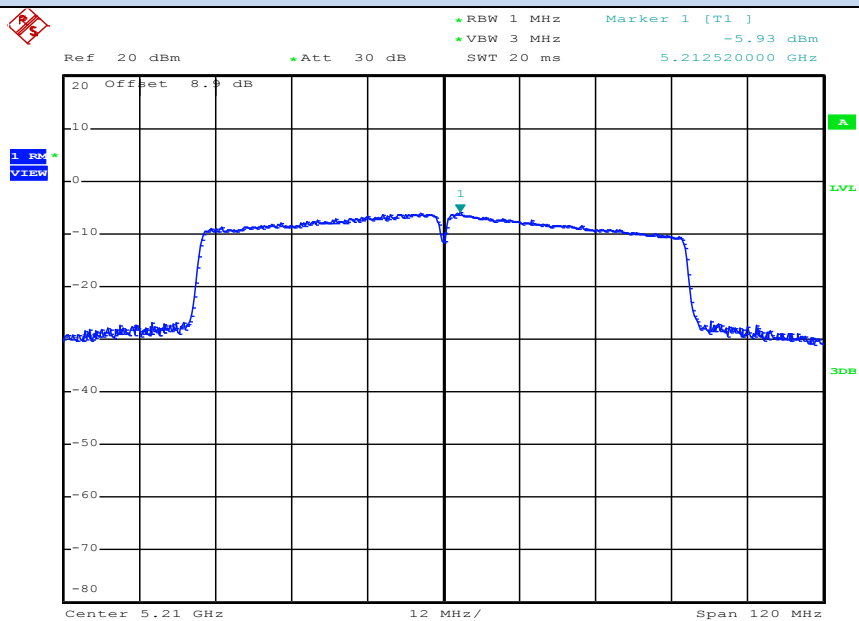
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IEEE 802.11ac40 / Channel 46 / 5230MHz

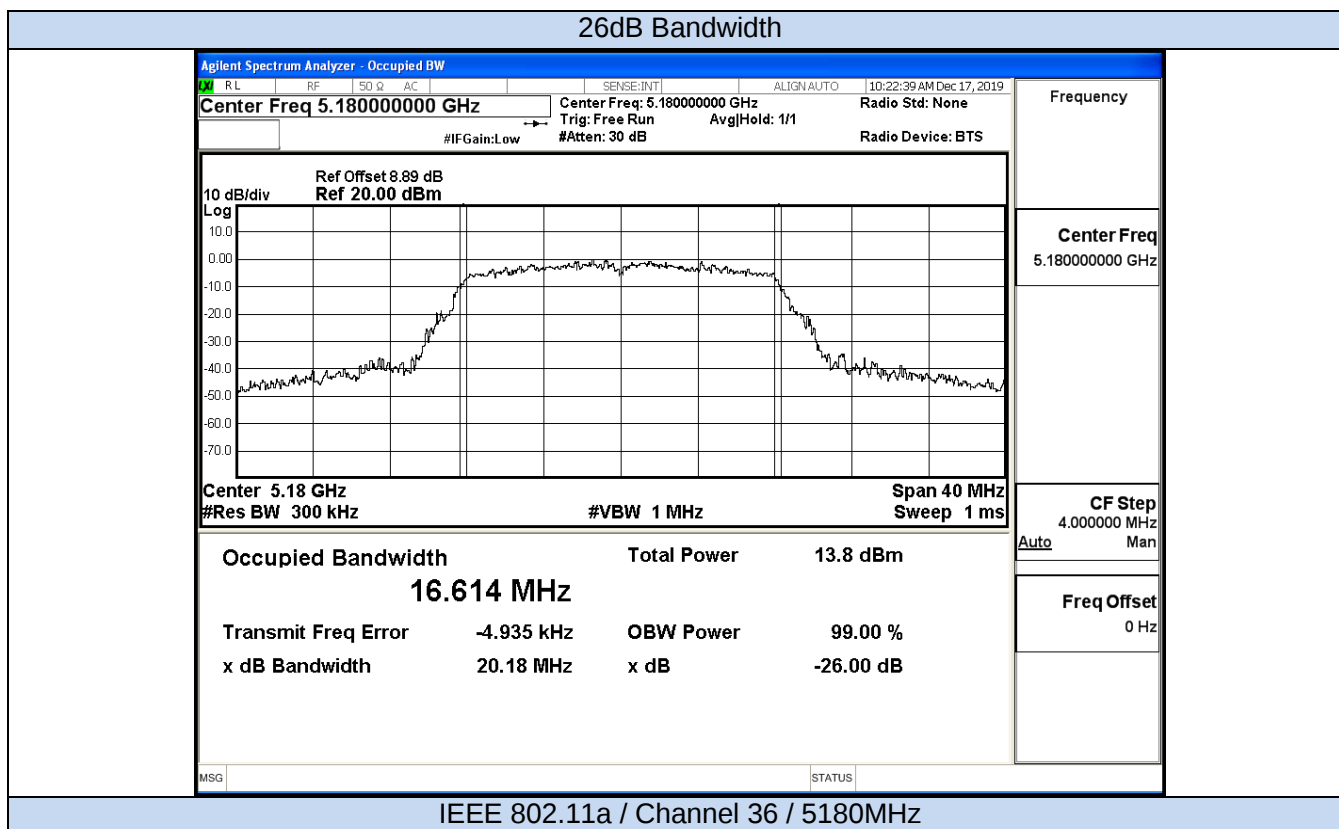


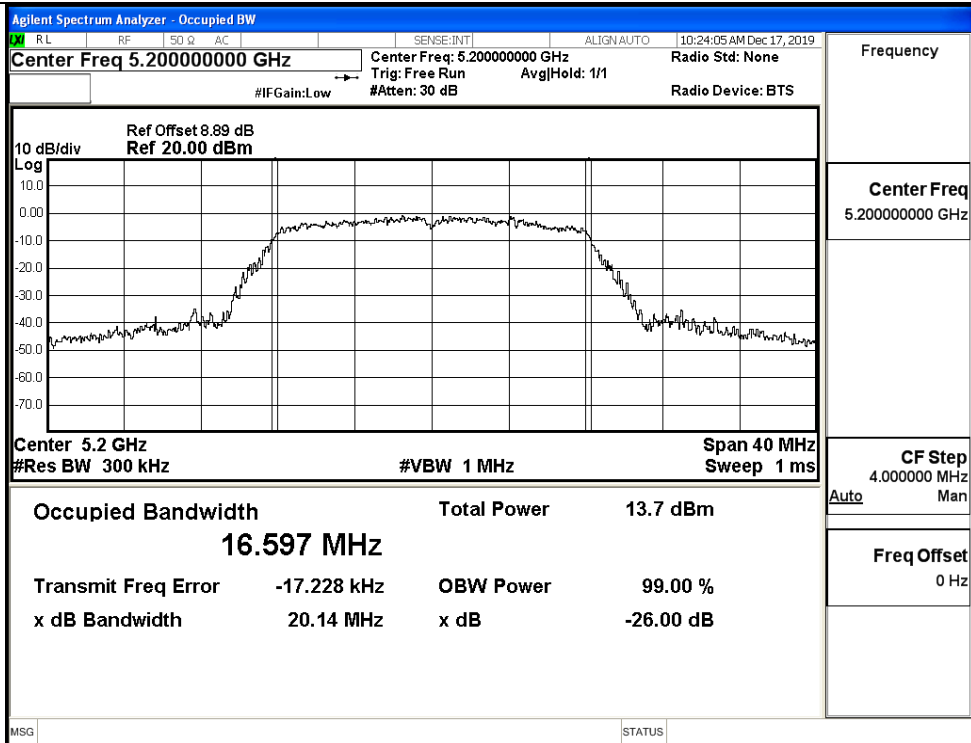
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IEEE 802.11ac80 / Channel 42 / 5210MHz

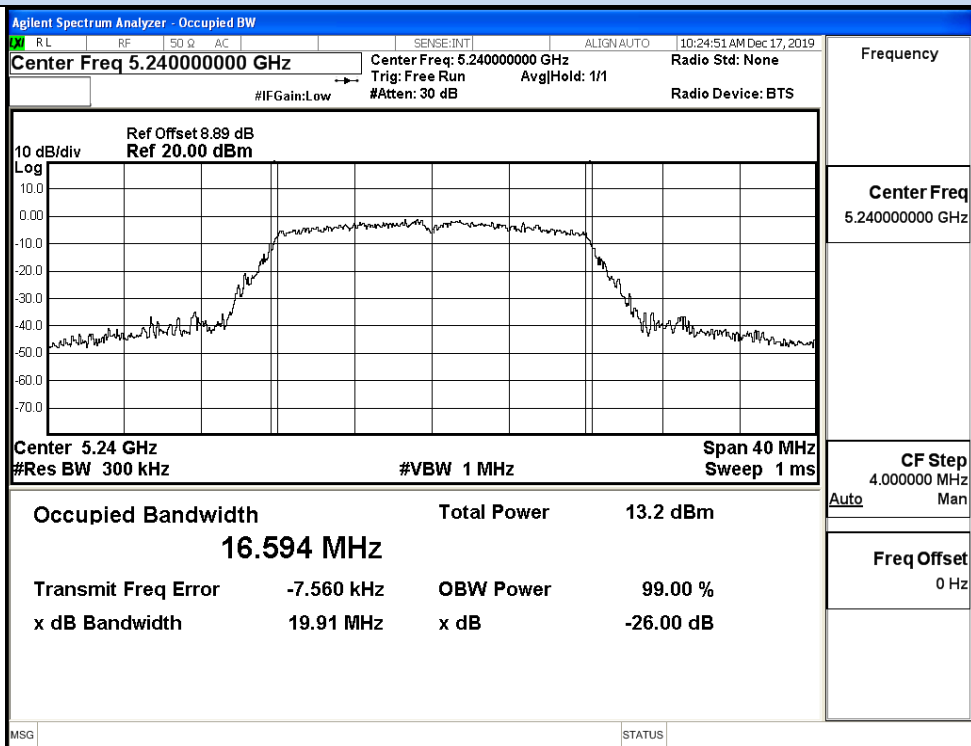
D.4 Emission Bandwidth

Test Mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
11A	36	5180	20.18	No Limit	Pass
	40	5200	20.14		Pass
	48	5240	19.91		Pass
11N20 SISO	36	5180	24.69	No Limit	Pass
	40	5200	23.38		Pass
	48	5240	21.36		Pass
11N40 SISO	38	5190	40.84	No Limit	Pass
	46	5230	41.17		Pass
11AC20 SISO	36	5180	19.98	No Limit	Pass
	40	5200	22.83		Pass
	48	5240	24.52		Pass
11AC40 SISO	38	5190	43.34	No Limit	Pass
	46	5230	47.20		Pass
11AC80 SISO	42	5210	91.40	No Limit	Pass



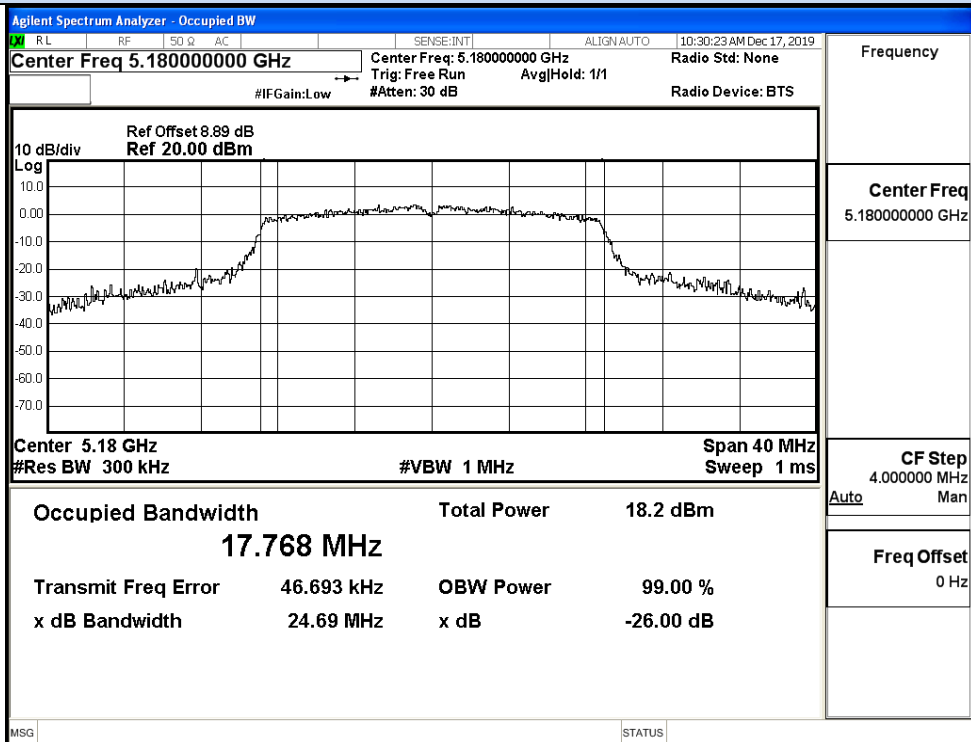


IEEE 802.11a / Channel 40 / 5200MHz

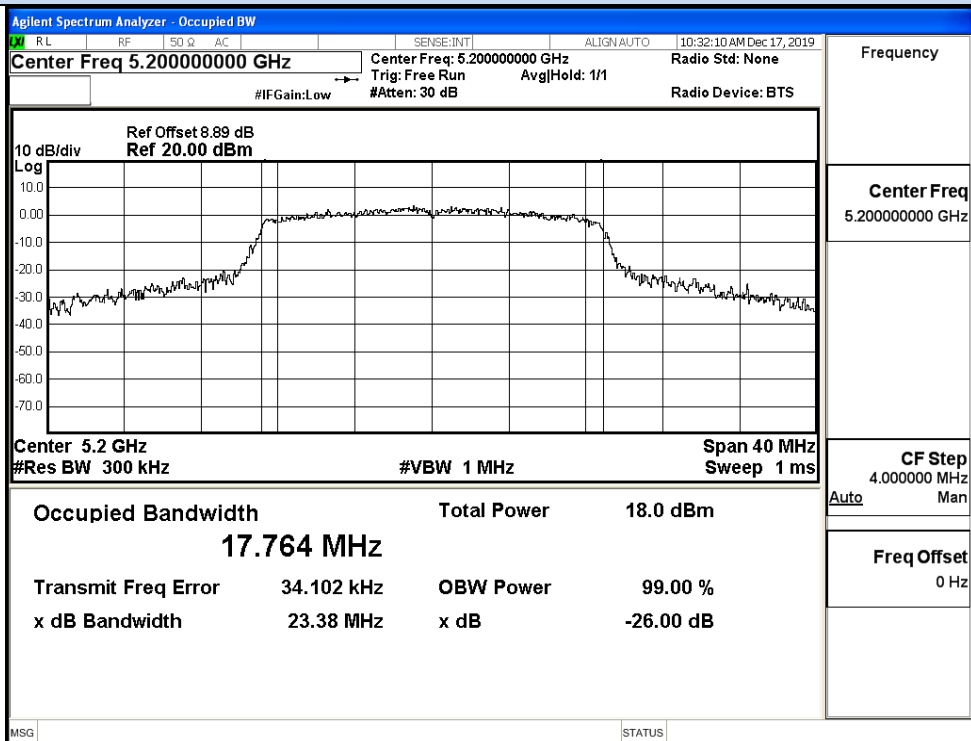


IEEE 802.11a / Channel 48 / 5240MHz

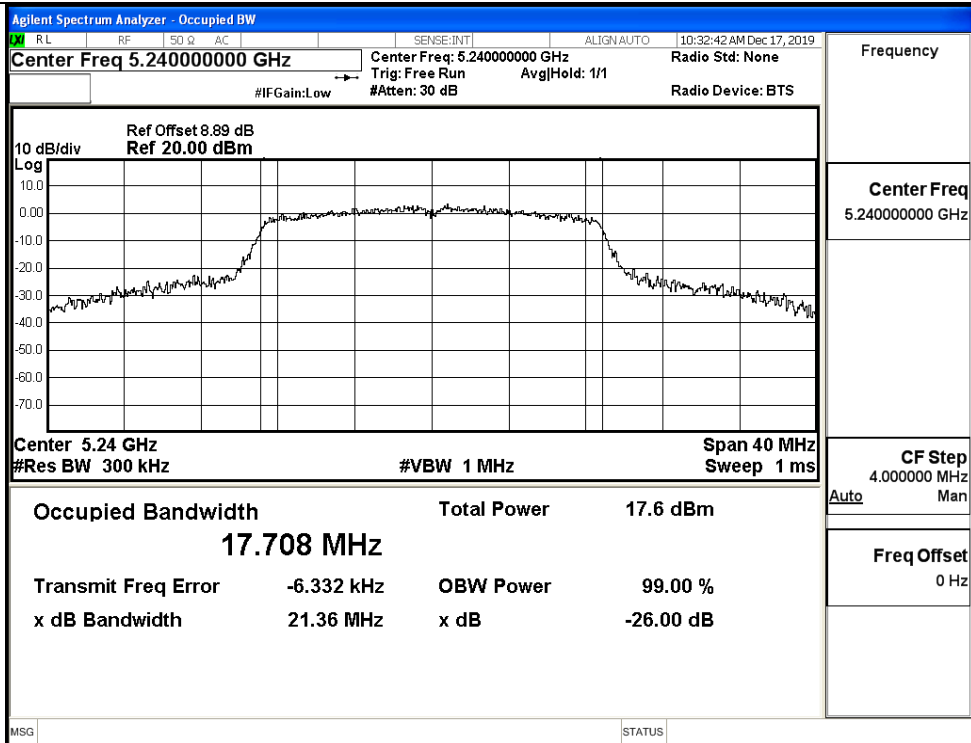
26dB Bandwidth



IEEE 802.11n20 / Channel 36 / 5180MHz

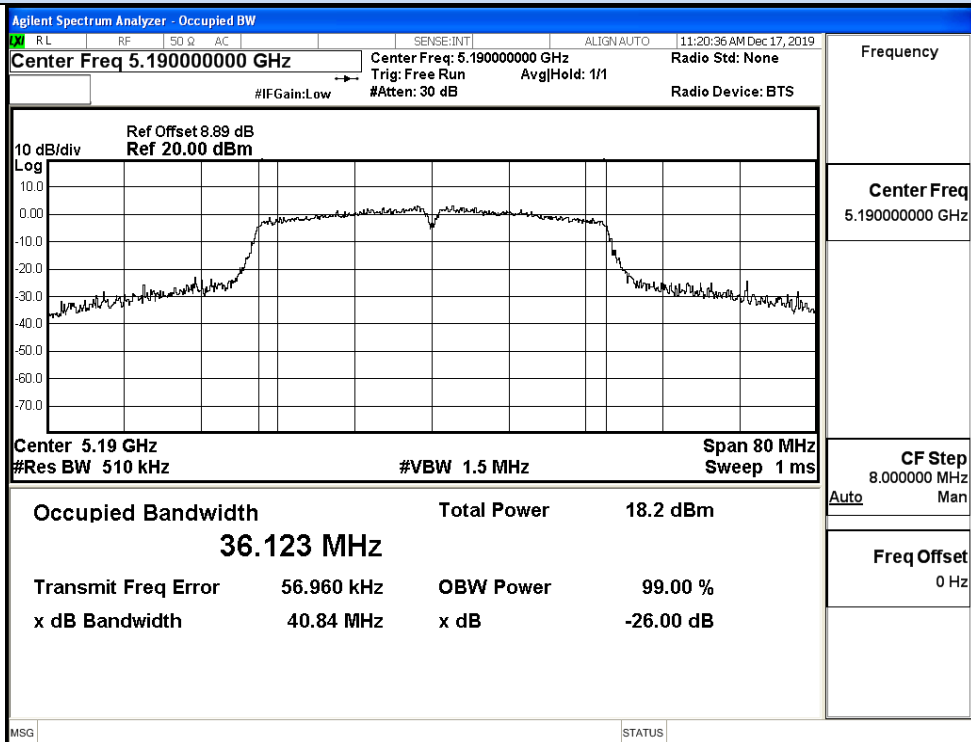


IEEE 802.11n20 / Channel 40 / 5200MHz

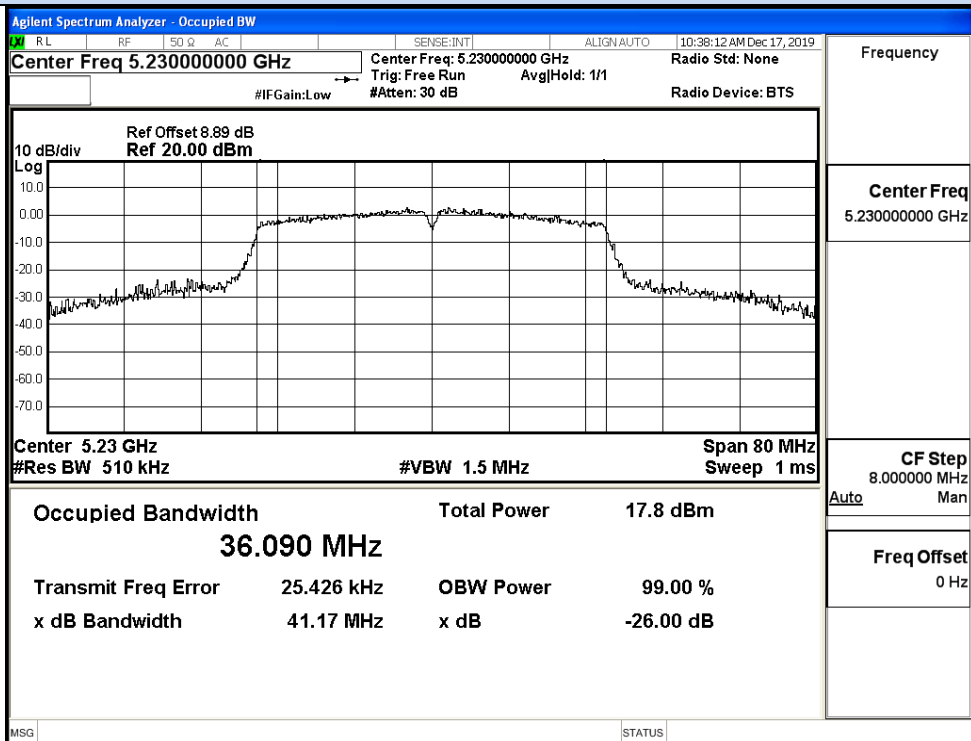


IEEE 802.11n20 / Channel 48 / 5240MHz

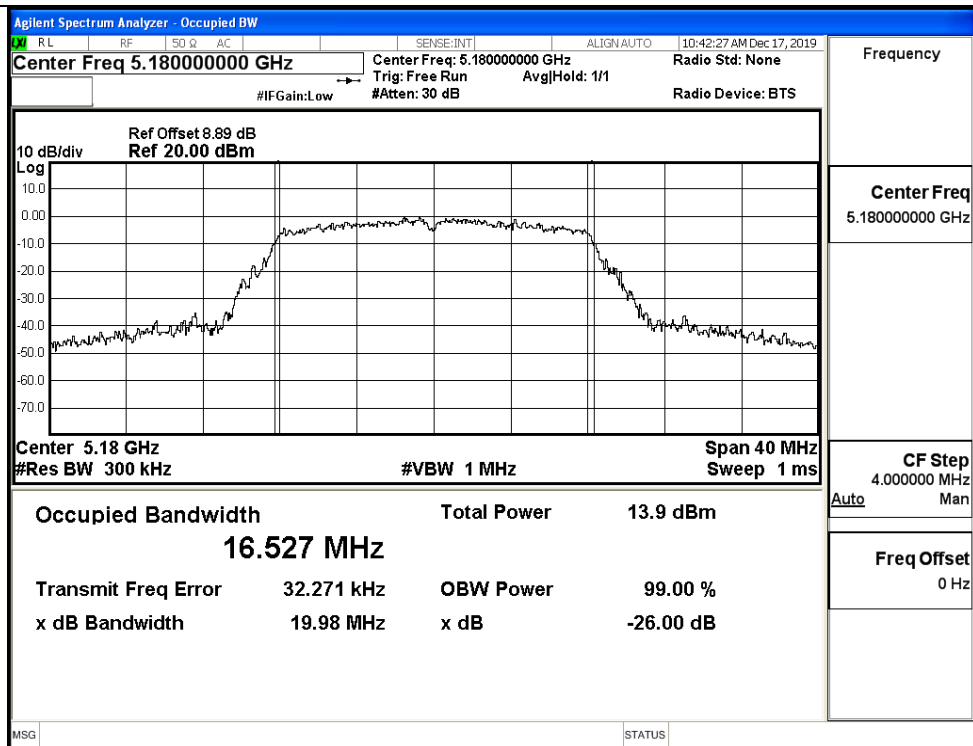
26dB Bandwidth



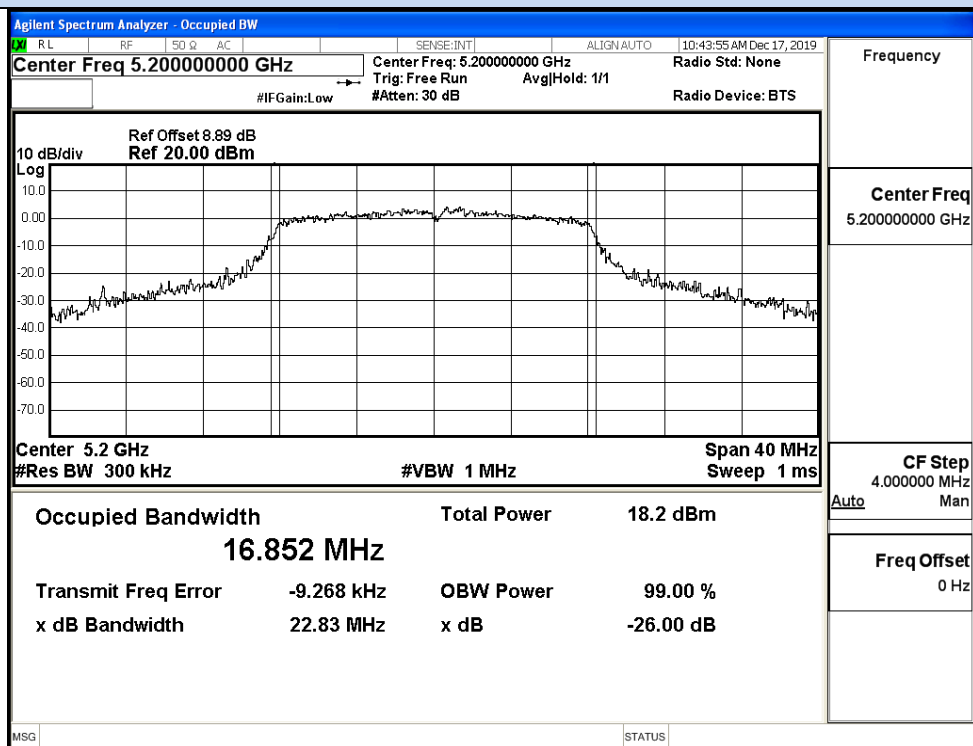
IEEE 802.11n40 / Channel 38 / 5190MHz



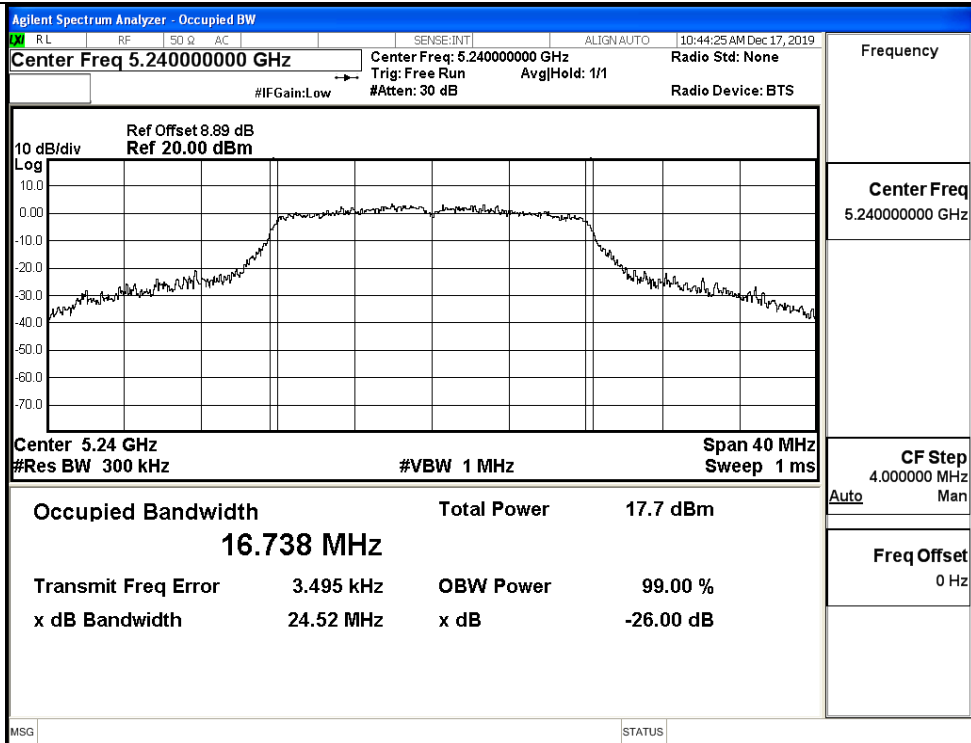
IEEE 802.11n40 / Channel 46 / 5230MHz



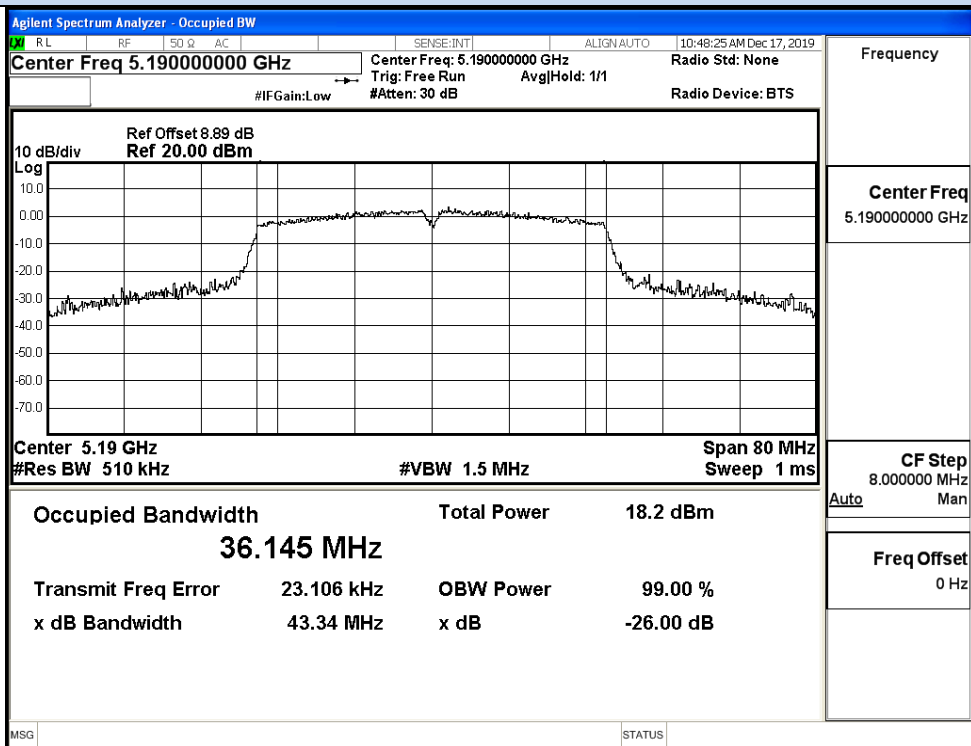
IEEE 802.11ac20 / Channel 36 / 5180MHz



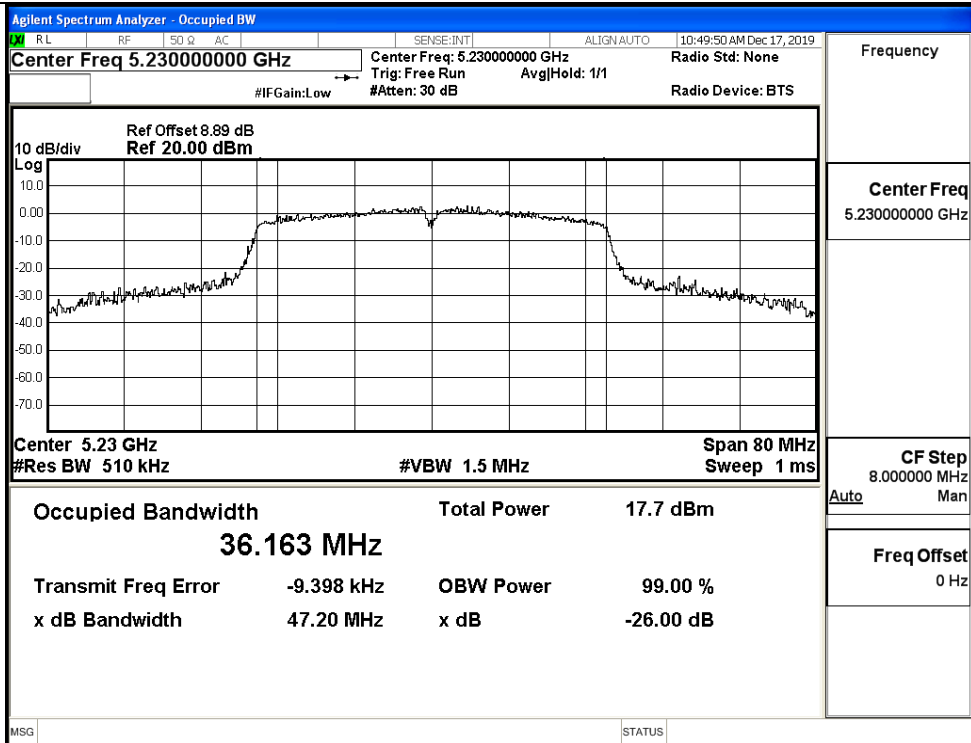
IEEE 802.11ac20 / Channel 40 / 5200MHz



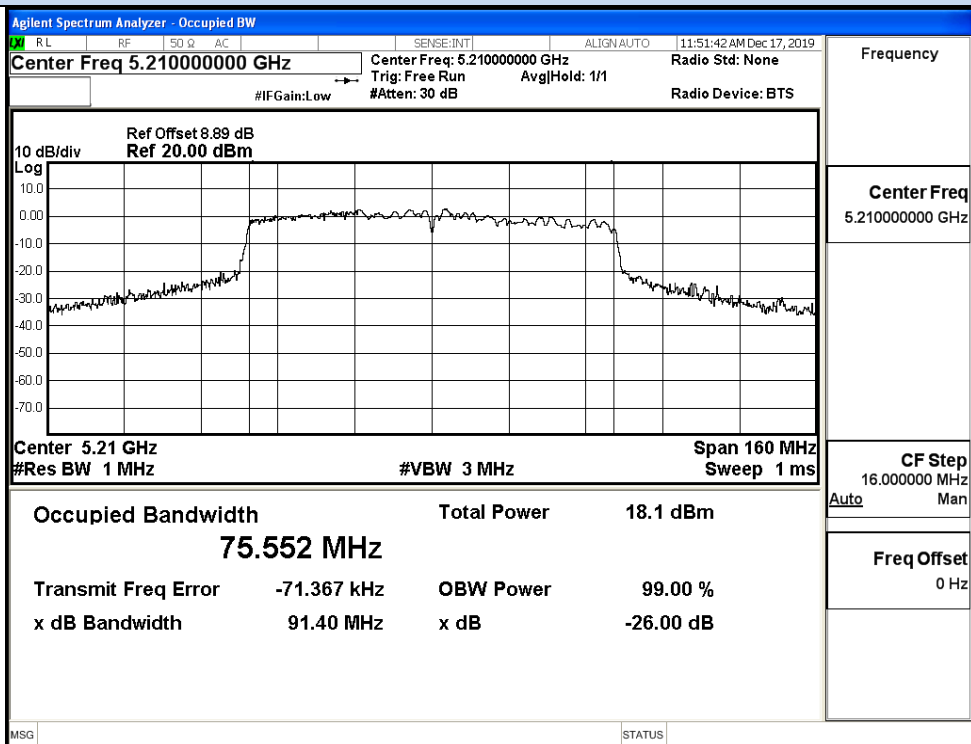
IEEE 802.11ac20 / Channel 48 / 5240MHz



IEEE 802.11ac40 / Channel 38 / 5190MHz



IEEE 802.11ac40 / Channel 46 / 5230MHz

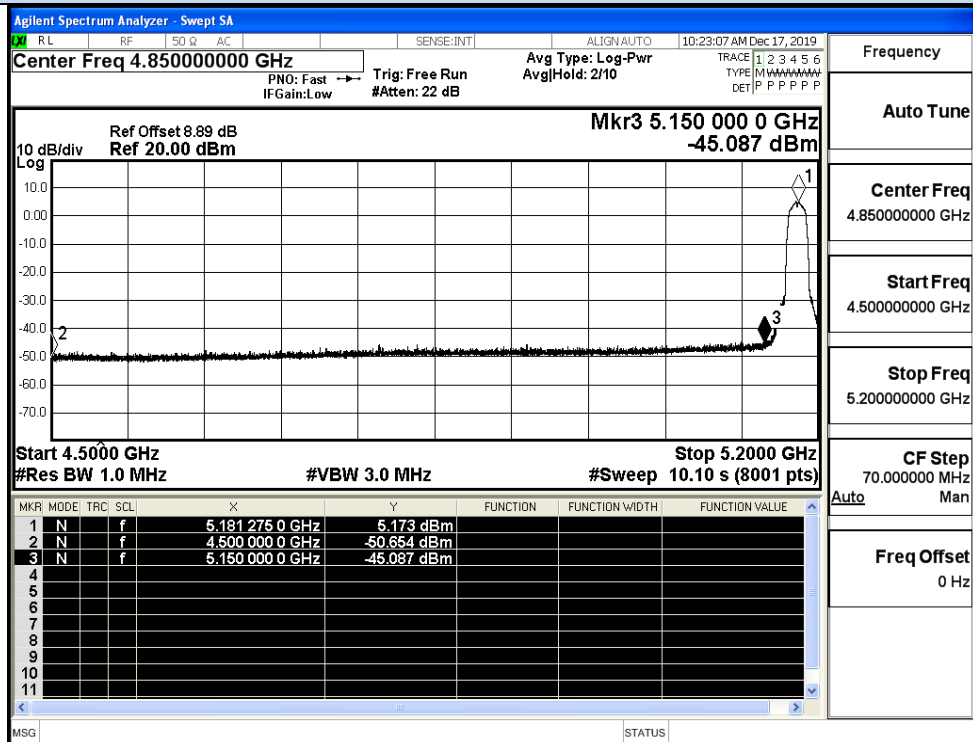


IEEE 802.11ac80 / Channel 42 / 5210MHz

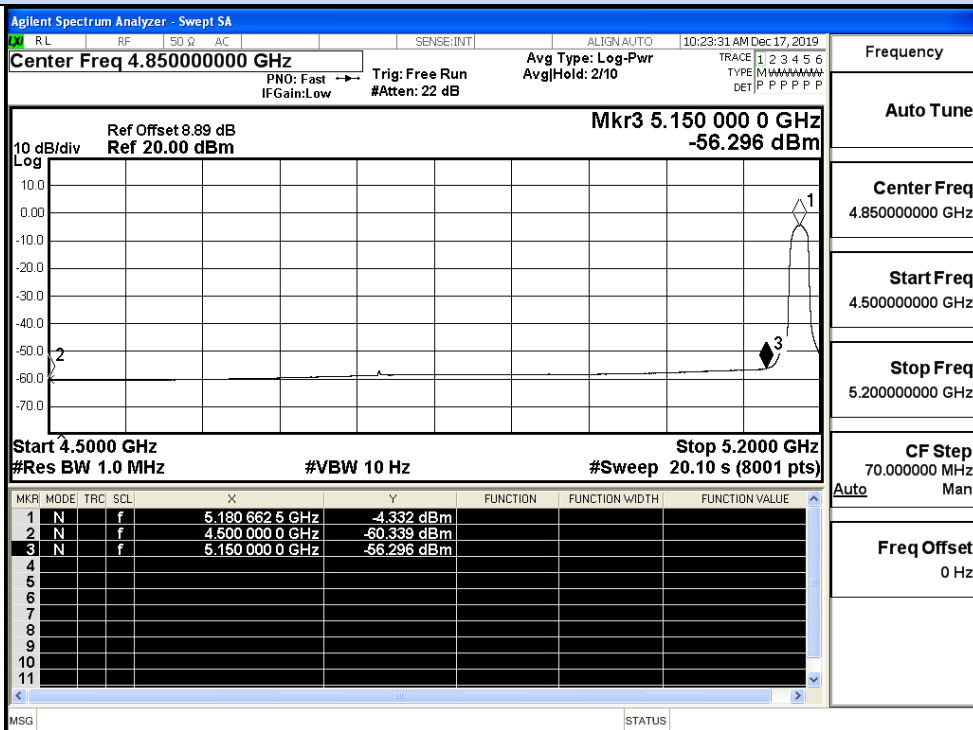
D.5 Undesirable Emissions Measurement

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)	Verdict
11A	36	4500.0	-50.65	2.00	0	46.57	Peak	68.20	Pass
		4500.0	-60.34	2.00	0	36.89	Average	54.00	Pass
		5150.0	-45.09	2.00	0	52.14	Peak	68.20	Pass
		5150.0	-56.30	2.00	0	40.93	Average	54.00	Pass
	48	5350.0	-48.37	2.00	0	48.85	Peak	68.20	Pass
		5350.0	-58.70	2.00	0	38.53	Average	54.00	Pass
		5460.0	-48.80	2.00	0	48.43	Peak	68.20	Pass
		5460.0	-59.36	2.00	0	37.86	Average	54.00	Pass
11N20 SISO	36	4500.0	-50.56	2.00	0	46.67	Peak	68.20	Pass
		4500.0	-60.36	2.00	0	36.86	Average	54.00	Pass
		5150.0	-39.46	2.00	0	57.77	Peak	68.20	Pass
		5150.0	-52.75	2.00	0	44.48	Average	54.00	Pass
	48	5350.0	-47.62	2.00	0	49.61	Peak	68.20	Pass
		5350.0	-57.44	2.00	0	39.79	Average	54.00	Pass
		5460.0	-48.67	2.00	0	48.56	Peak	68.20	Pass
		5460.0	-59.04	2.00	0	38.18	Average	54.00	Pass
11N40 SISO	38	4500.0	-51.10	2.00	0	46.12	Peak	68.20	Pass
		4500.0	-60.34	2.00	0	36.89	Average	54.00	Pass
		5150.0	-28.11	2.00	0	69.11	Peak	68.20	Pass
		5150.0	-44.57	2.00	0	52.66	Average	54.00	Pass
	46	5350.0	-46.92	2.00	0	50.31	Peak	68.20	Pass
		5350.0	-57.24	2.00	0	39.99	Average	54.00	Pass
		5460.0	-48.00	2.00	0	49.23	Peak	68.20	Pass
		5460.0	-58.75	2.00	0	38.47	Average	54.00	Pass
11AC20 SISO	36	4500.0	-49.57	2.00	0	47.66	Peak	68.20	Pass
		4500.0	-60.33	2.00	0	36.90	Average	54.00	Pass
		5150.0	-46.15	2.00	0	51.07	Peak	68.20	Pass
		5150.0	-56.06	2.00	0	41.17	Average	54.00	Pass
	48	4500.0	-49.57	2.00	0	47.66	Peak	68.20	Pass
		4500.0	-60.33	2.00	0	36.90	Average	54.00	Pass
		5150.0	-46.15	2.00	0	51.07	Peak	68.20	Pass
		5150.0	-56.06	2.00	0	41.17	Average	54.00	Pass
11AC40 SISO	38	4500.0	-50.75	2.00	0	46.48	Peak	68.20	Pass
		4500.0	-60.37	2.00	0	36.85	Average	54.00	Pass
		5150.0	-29.25	2.00	0	67.98	Peak	68.20	Pass
		5150.0	-44.64	2.00	0	52.59	Average	54.00	Pass
	46	5350.0	-46.73	2.00	0	50.50	Peak	68.20	Pass
		5350.0	-57.19	2.00	0	40.03	Average	54.00	Pass
		5460.0	-47.20	2.00	0	50.03	Peak	68.20	Pass
		5460.0	-58.78	2.00	0	38.45	Average	54.00	Pass
11AC80 SISO	42	4500.0	-48.94	2.00	0	48.29	Peak	68.20	Pass
		5150.0	-58.18	2.00	0	39.05	Average	54.00	Pass
		4500.0	-48.85	2.00	0	48.37	Peak	68.20	Pass
		5150.0	-58.63	2.00	0	38.59	Average	54.00	Pass
		5350.0	-48.94	2.00	0	48.29	Peak	68.20	Pass
		5460.0	-58.18	2.00	0	39.05	Average	54.00	Pass
		5350.0	-48.85	2.00	0	48.37	Peak	68.20	Pass
		5460.0	-58.63	2.00	0	38.59	Average	54.00	Pass

Undesirable Emissions Measurement

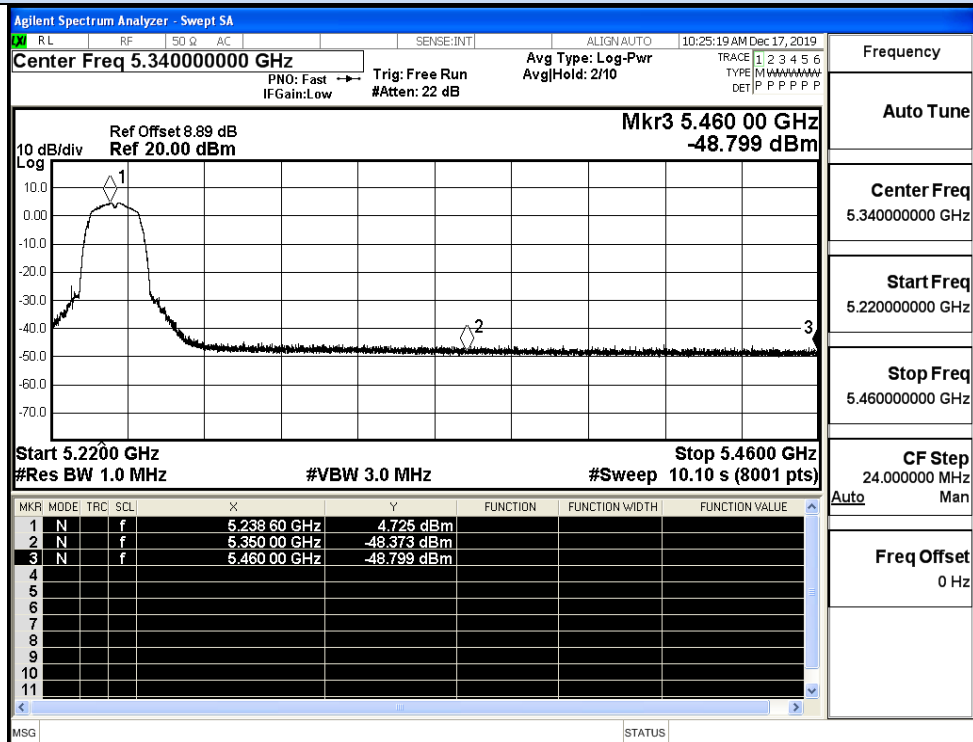


IEEE 802.11a / Channel 36 / 5180MHz / Peak

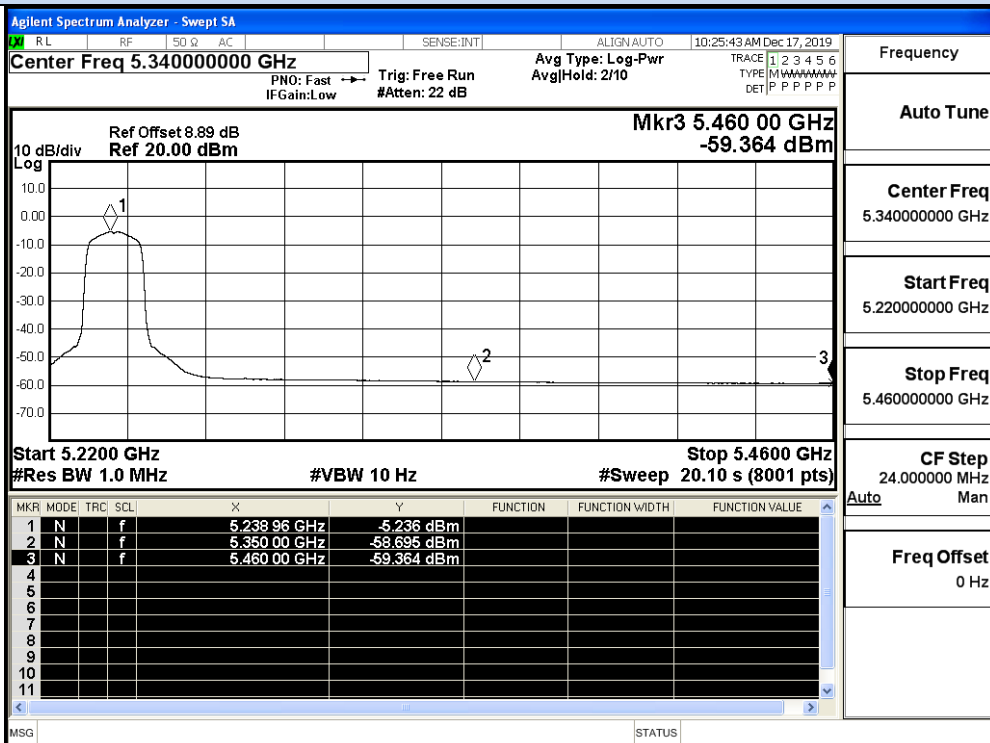


IEEE 802.11a / Channel 36 / 5180MHz / Average

Undesirable Emissions Measurement

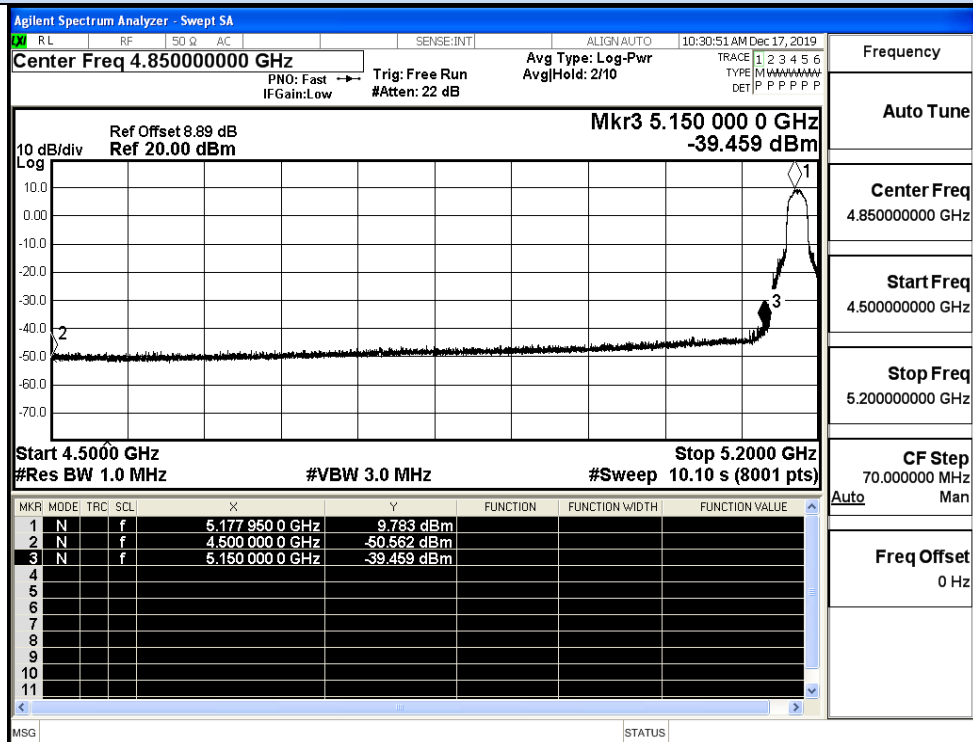


IEEE 802.11a / Channel 48 / 5240MHz / Peak

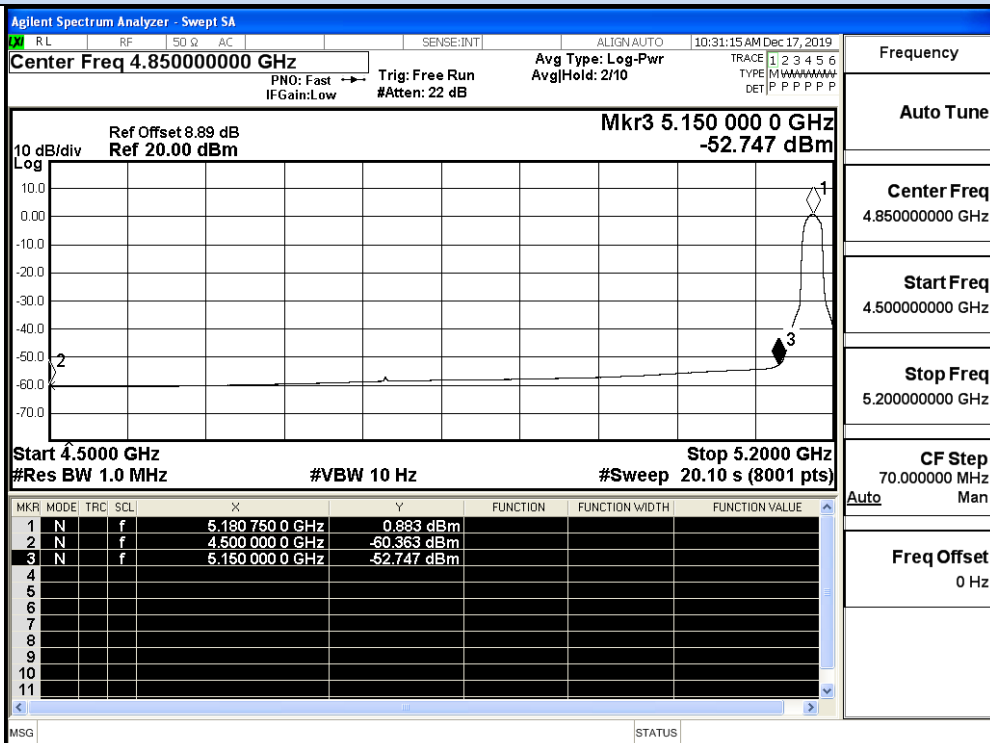


IEEE 802.11a / Channel 48 / 5240MHz / Average

Undesirable Emissions Measurement

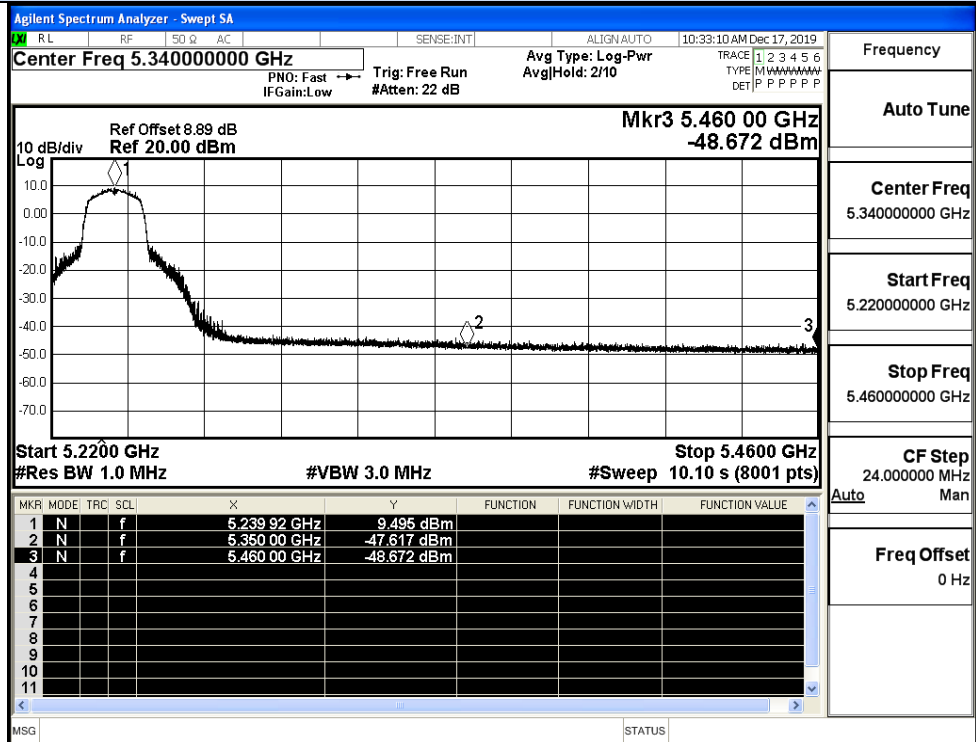


IEEE 802.11n20 / Channel 36 / 5180MHz / Peak

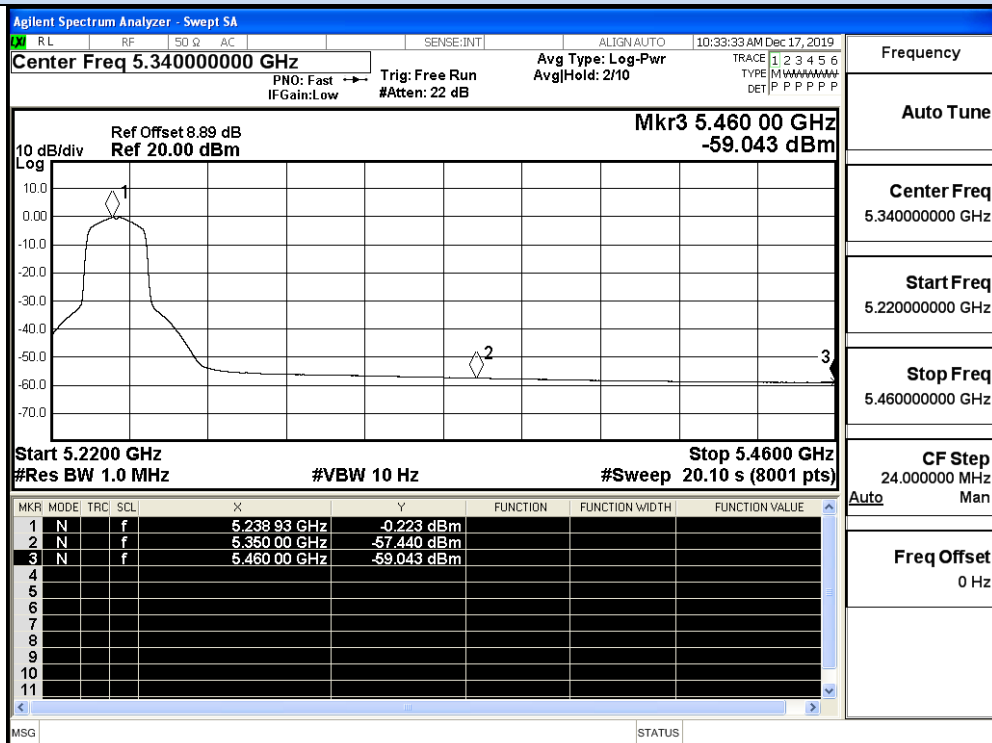


IEEE 802.11n20 / Channel 36 / 5180MHz / Average

Undesirable Emissions Measurement

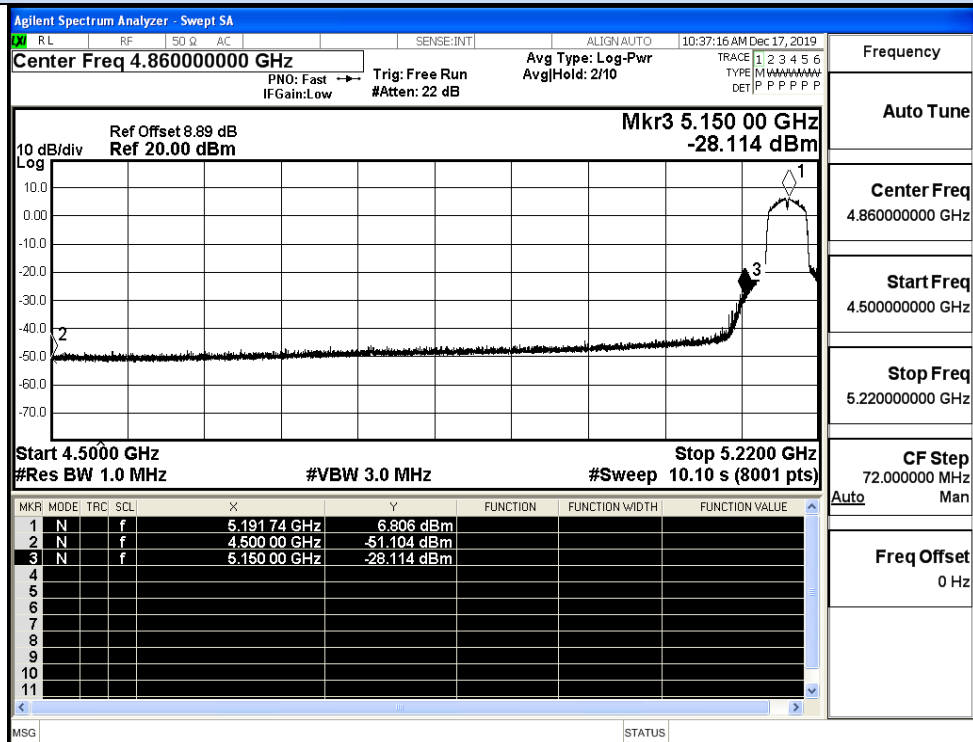


IEEE 802.11n20 / Channel 48 / 5240MHz / Peak

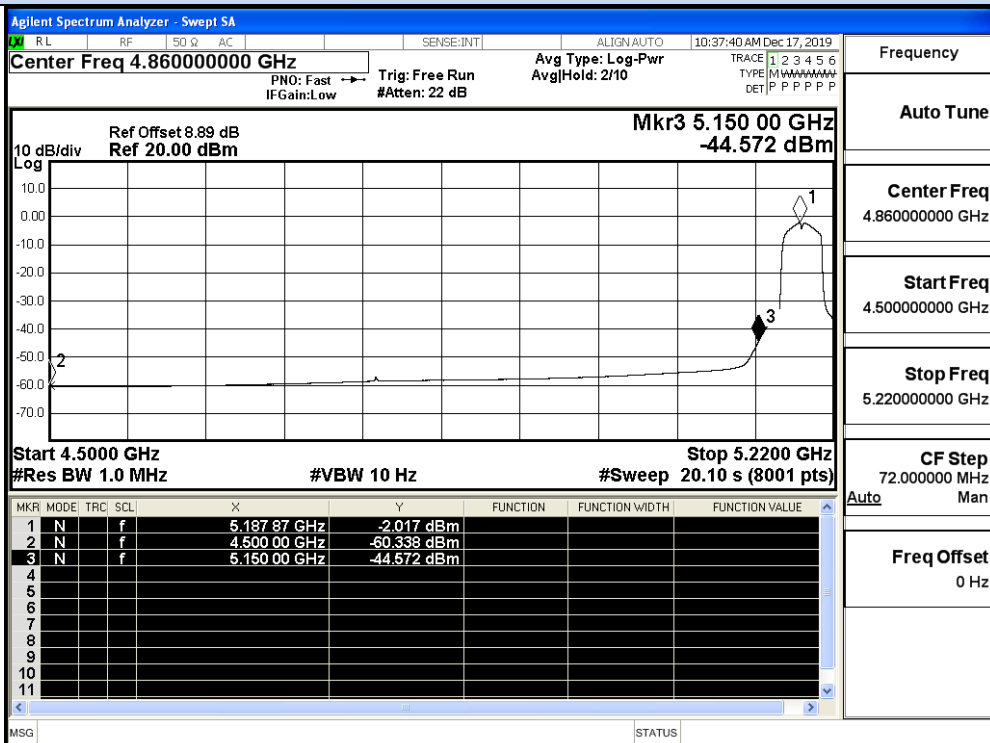


IEEE 802.11n20 / Channel 48 / 5240MHz / Average

Undesirable Emissions Measurement

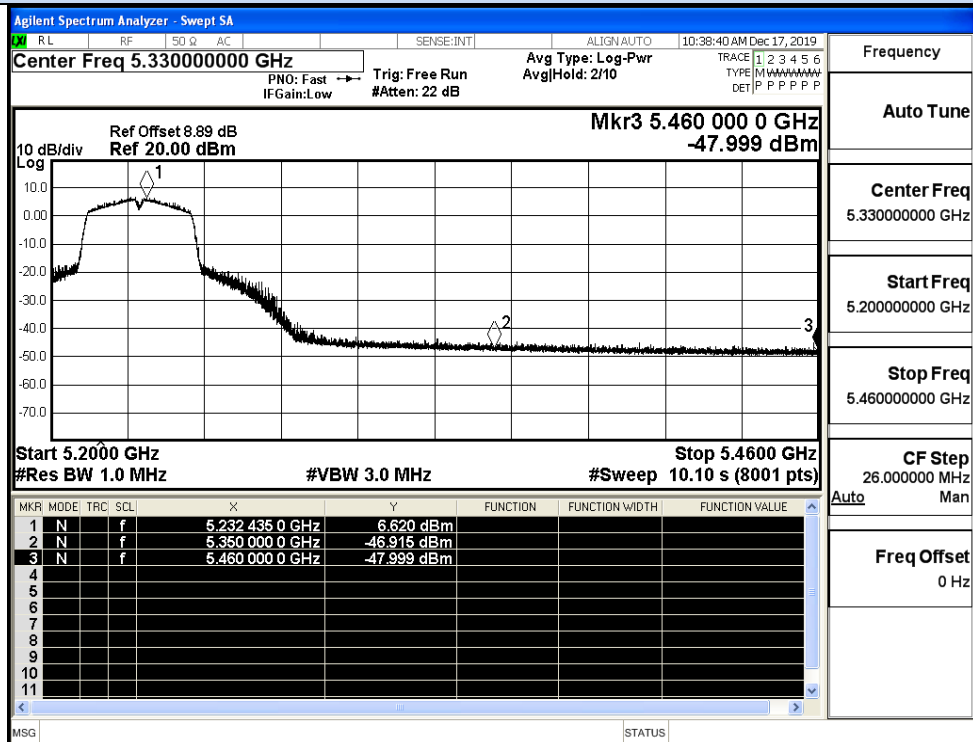


IEEE 802.11n40 / Channel 38 / 5190MHz / Peak

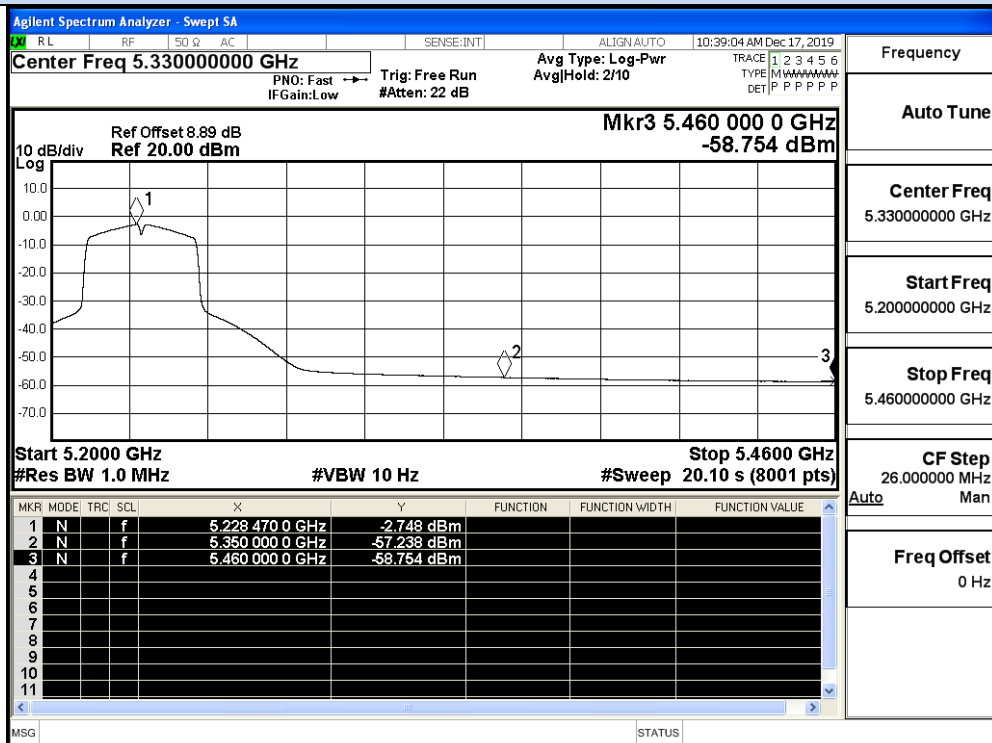


IEEE 802.11n40 / Channel 38 / 5190MHz / Average

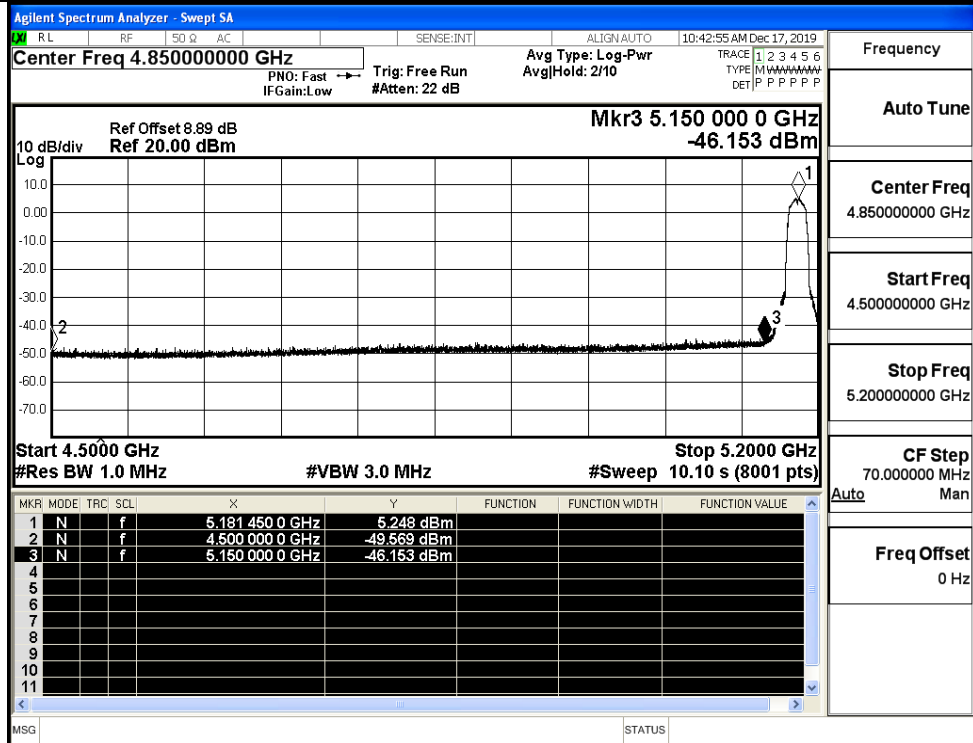
Undesirable Emissions Measurement



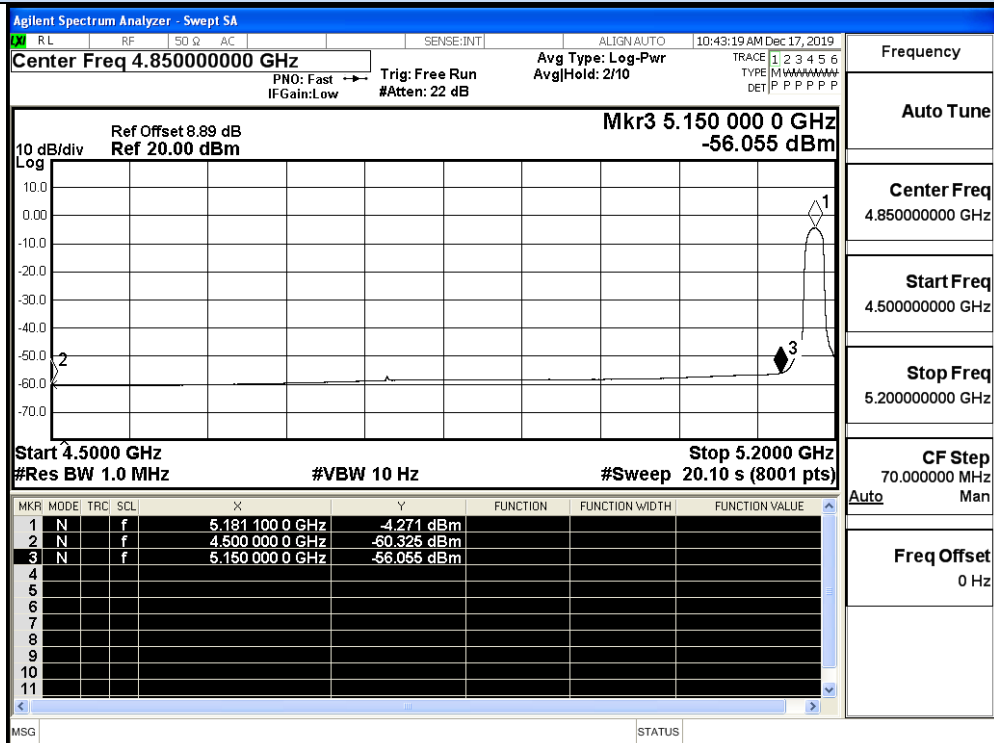
IEEE 802.11n40 / Channel 46 / 5230MHz / Peak



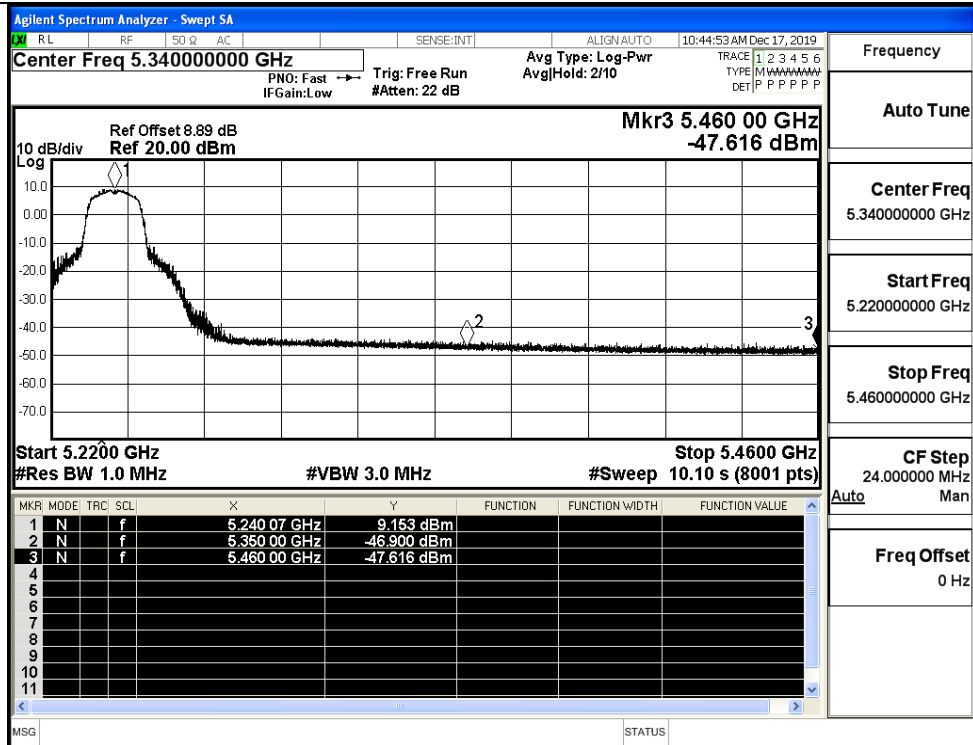
IEEE 802.11n40 / Channel 46 / 5230MHz / Average



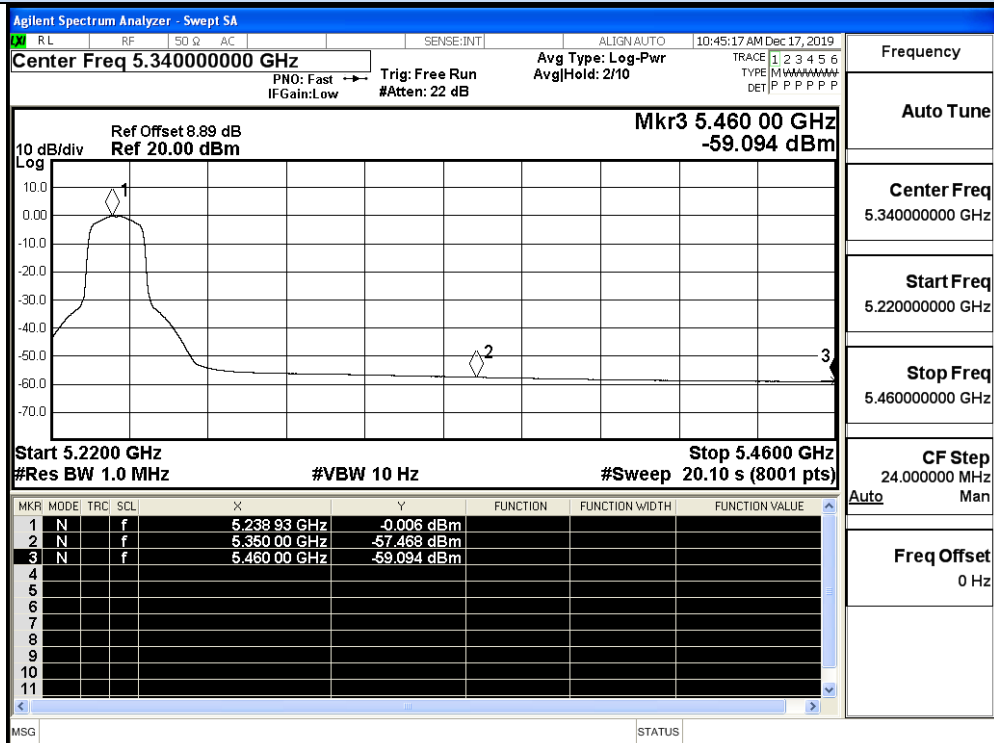
IEEE 802.11ac20 / Channel 36 / 5180MHz / Peak



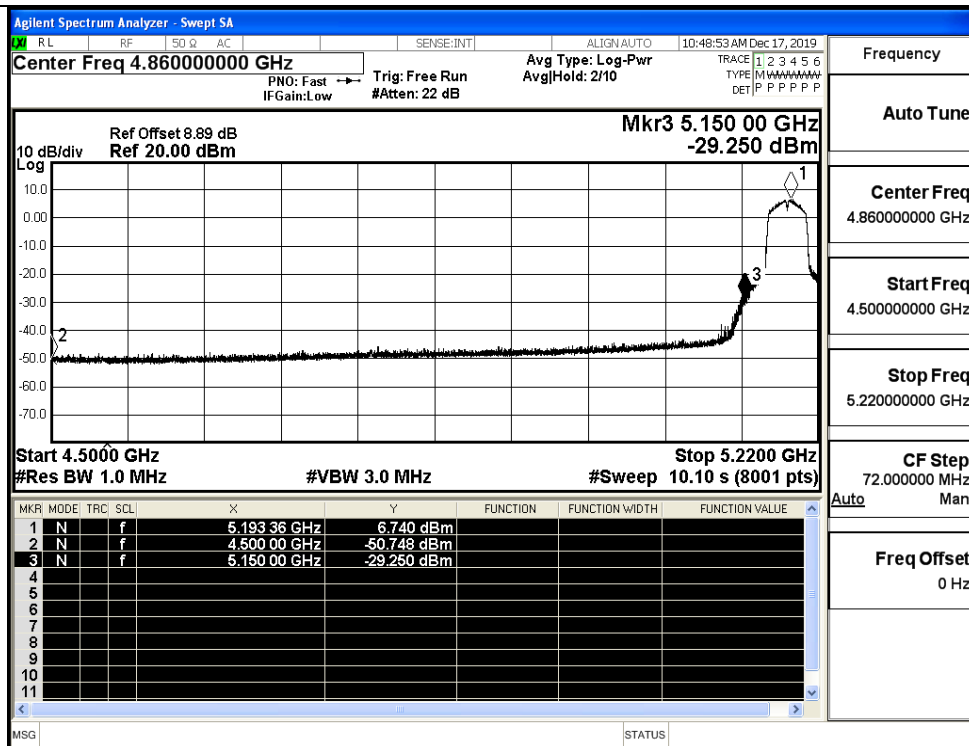
IEEE 802.11ac20 / Channel 36 / 5180MHz / Average



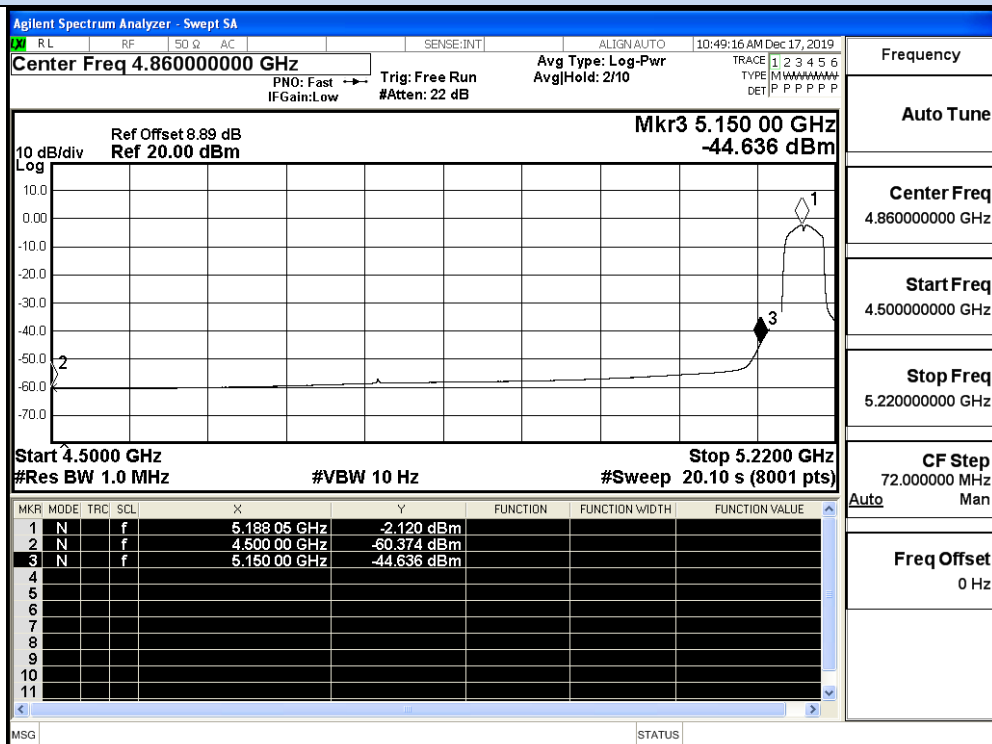
IEEE 802.11ac20 / Channel 48 / 5240MHz / Peak



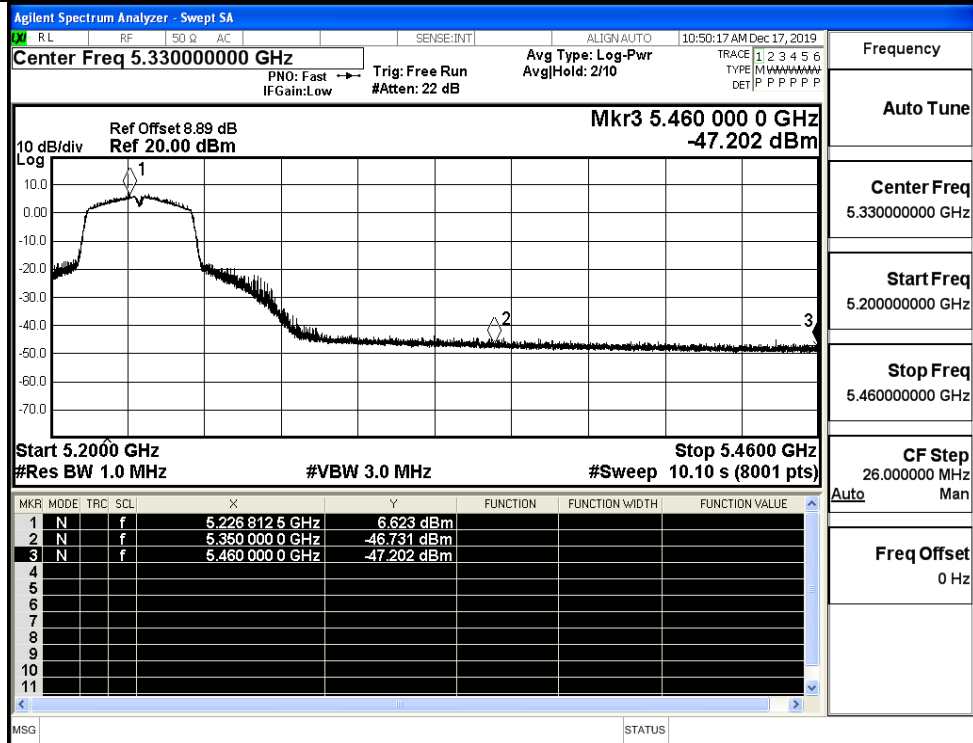
IEEE 802.11ac20 / Channel 48 / 5240MHz / Average



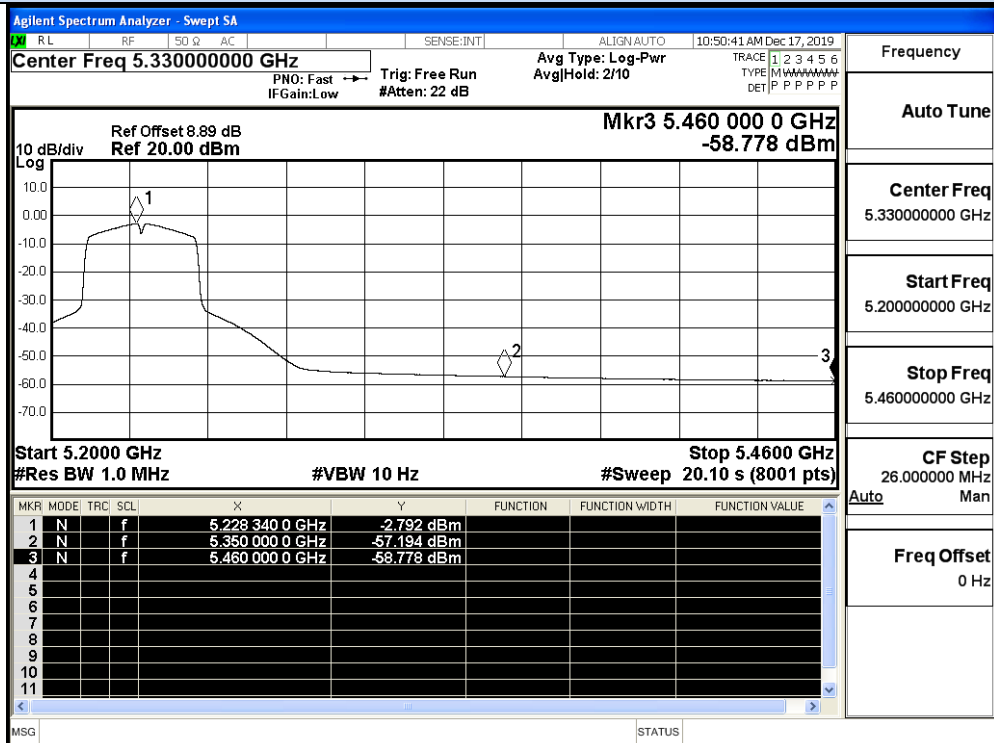
IEEE 802.11ac40 / Channel 38/ 5190MHz / Peak



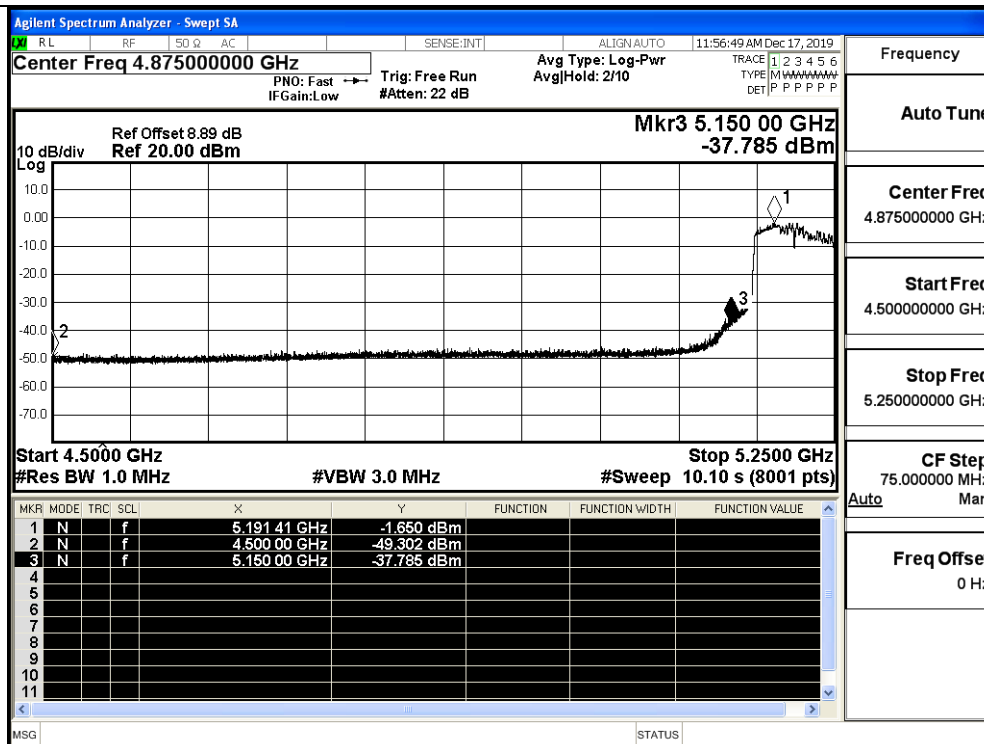
IEEE 802.11ac40 / Channel 38 / 5190MHz / Average



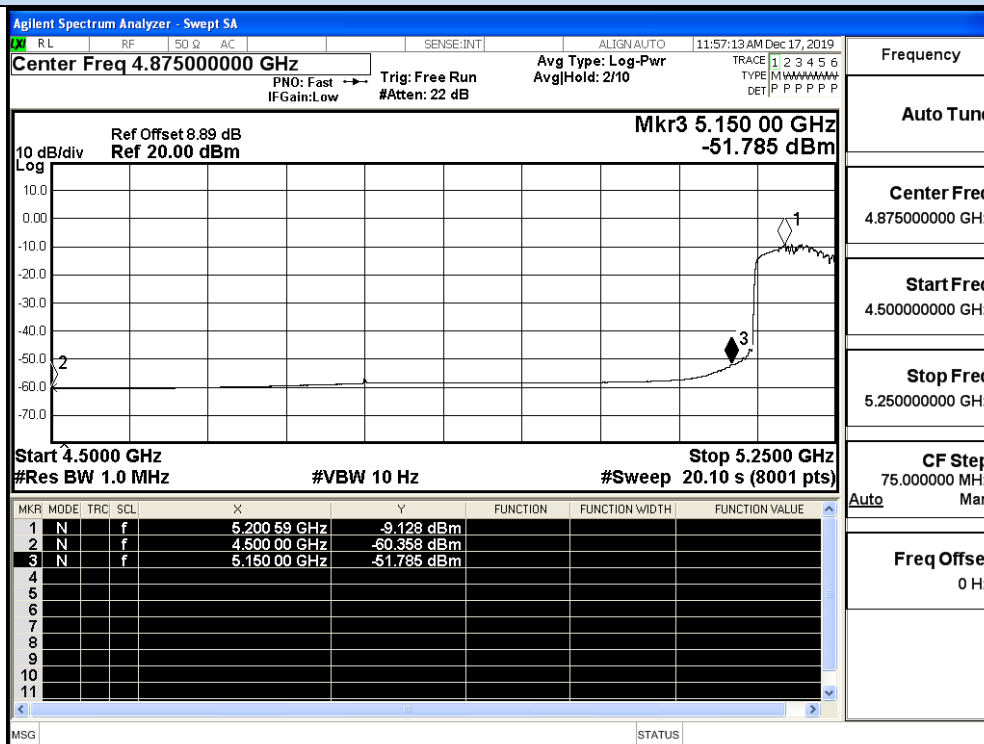
IEEE 802.11ac40 / Channel 46/ 5230MHz / Peak



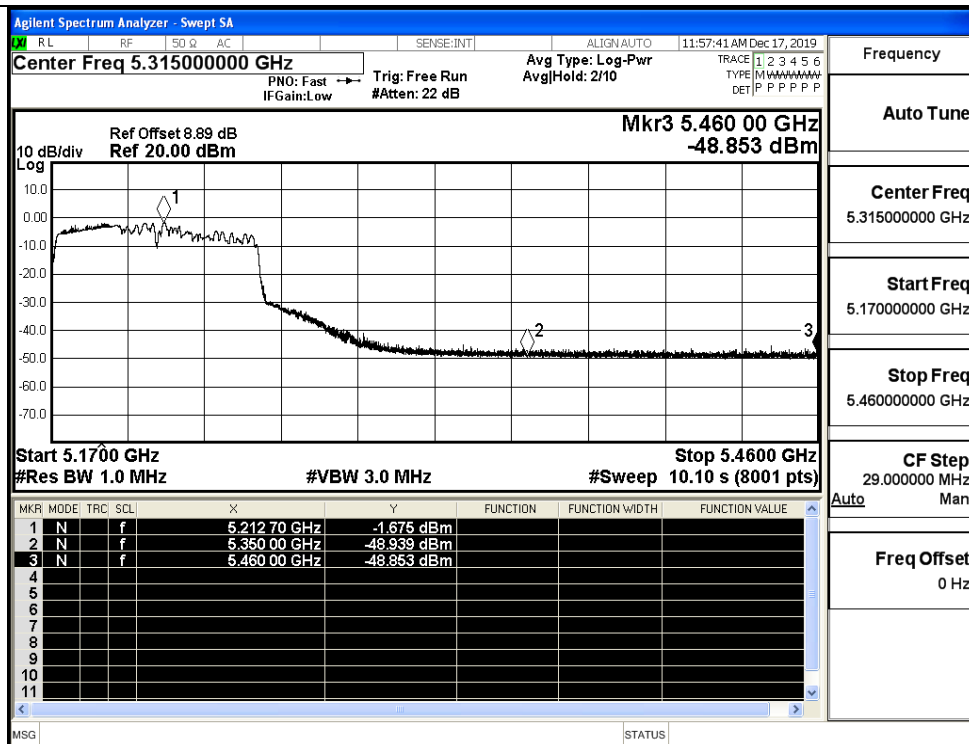
IEEE 802.11ac40 / Channel 46 / 5230MHz / Average



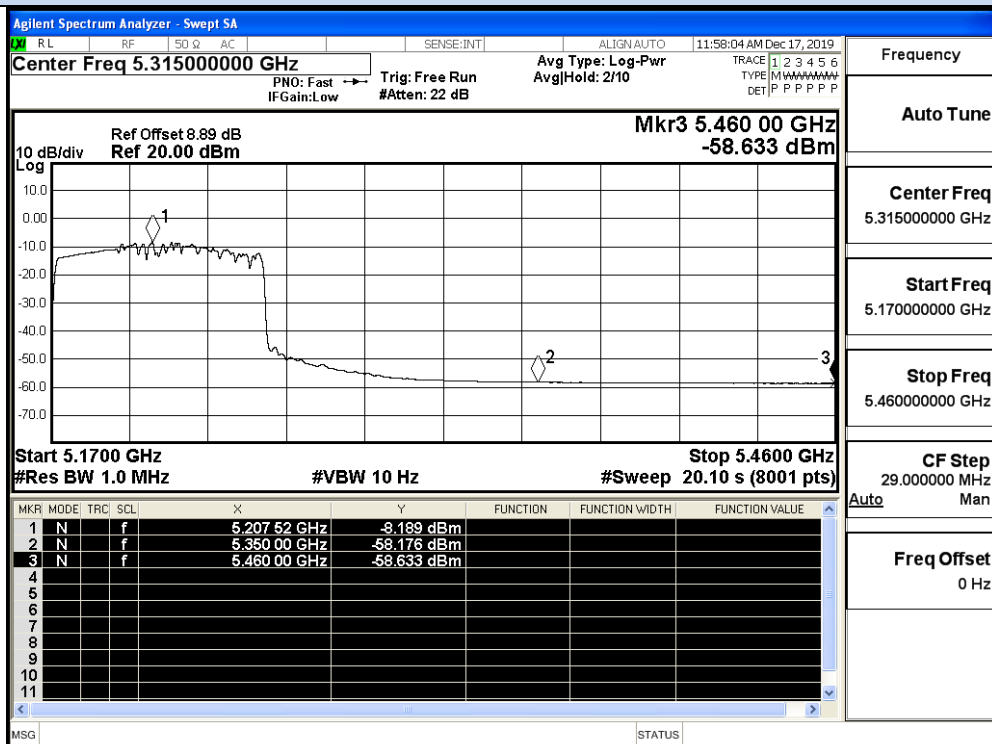
IEEE 802.11ac80 / Channel 42 / 5210MHz / Peak



IEEE 802.11ac80 / Channel 42 / 5210MHz / Average



IEEE 802.11ac80 / Channel 42 / 5210MHz / Peak



IEEE 802.11ac80 / Channel 42 / 5210MHz / Average