Appendix A

RF Test Data for 5.2G WLAN (Conducted Measurement)

Product Name: wireless transmission system

Trade Mark: Hollyland

Test Model: Mars300

Environmental Conditions

Temperature:	23.5 ° C
Relative Humidity:	52.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom Liu
Supervised by:	Jayden Zhuo

A.1 Duty Cycle

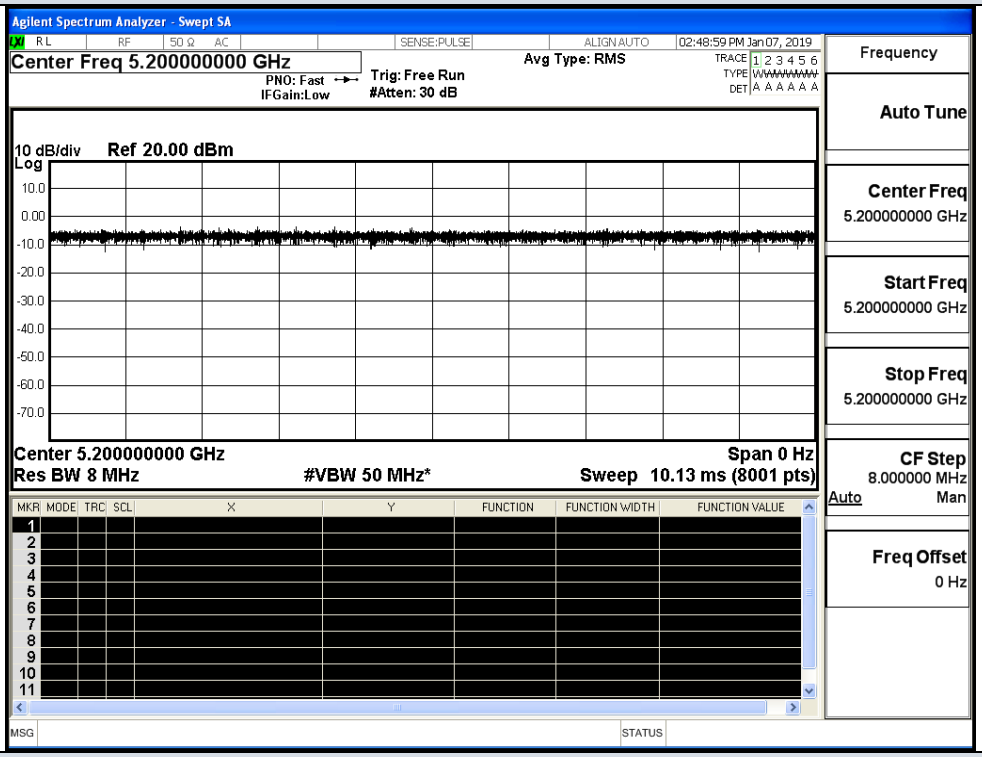
Antenna 0

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	5200	100	0.00	0.01
11N40	5190	100	0.00	0.01

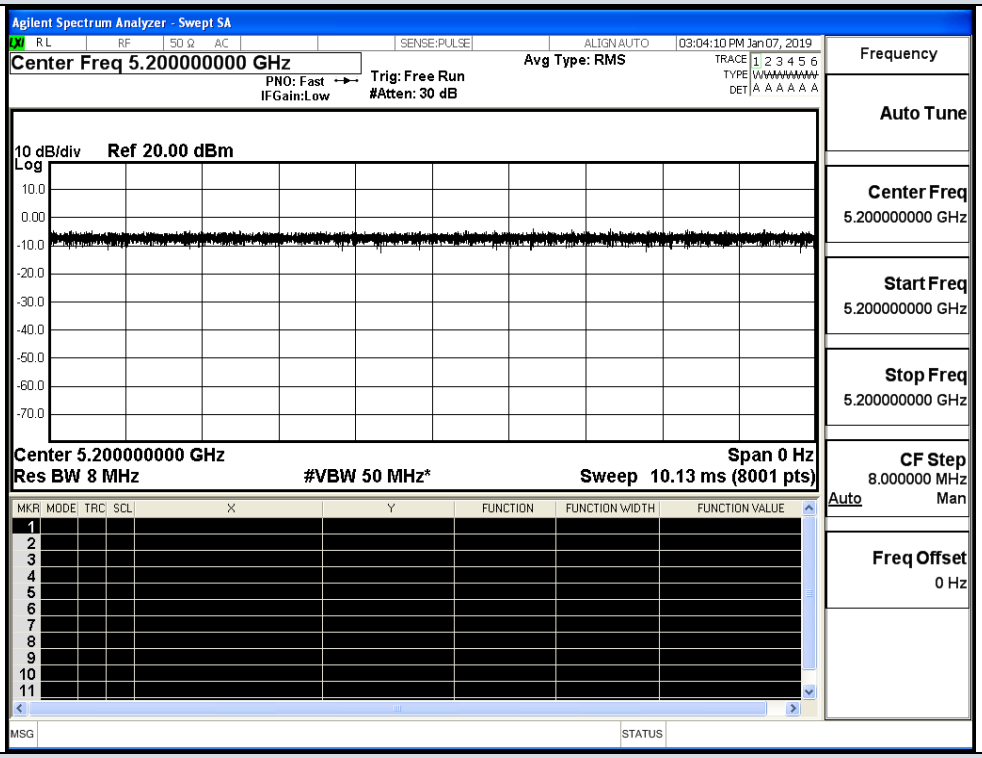
Antenna 1

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	5200	100	0.00	0.01
11N40	5190	100	0.00	0.01

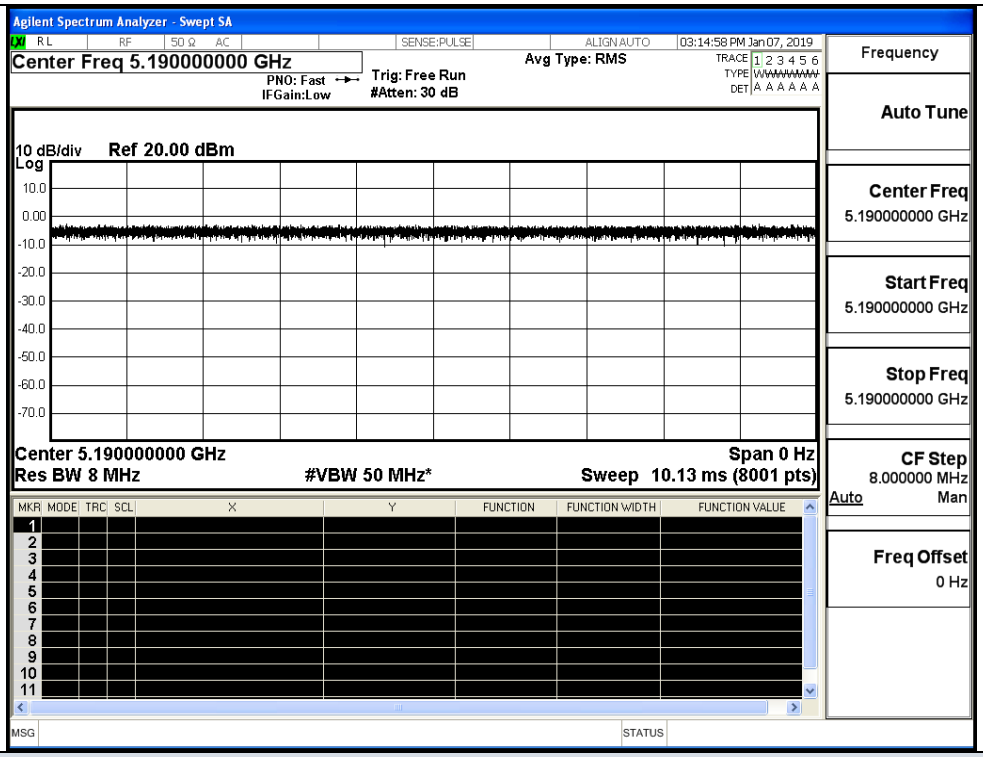
On Time and Duty Cycle_Ant0



IEEE 802.11a_Ant0

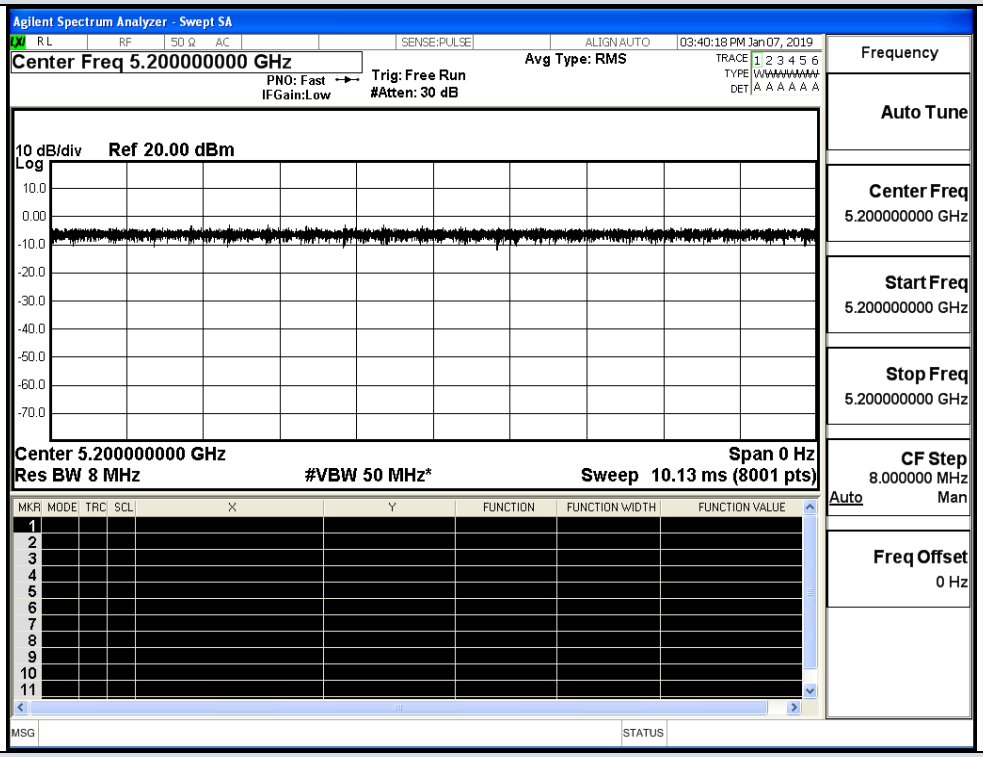


IEEE 802.11n HT20_Ant0

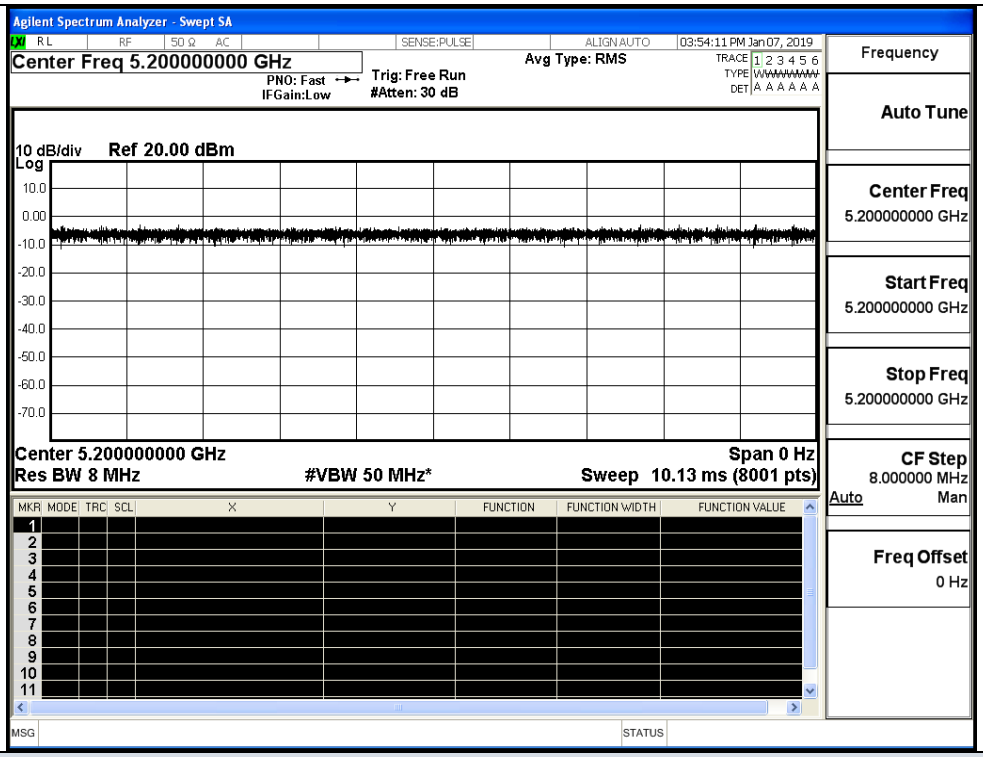


IEEE 802.11n HT40_Ant0

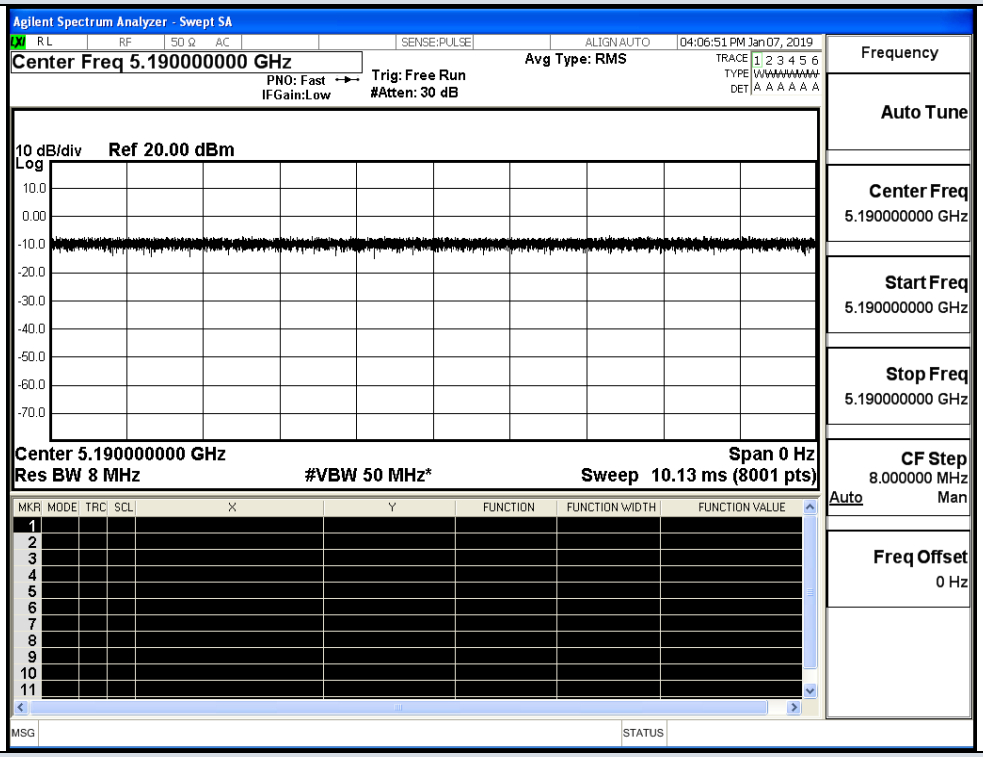
On Time and Duty Cycle_Ant1



IEEE 802.11a_Ant1



IEEE 802.11n HT20_Ant1



IEEE 802.11n HT40_Ant1

A.2 Maximum Conduct Output Power

Antenna 0

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor (dB)	Report Conducted Power dBm)	Limit (dBm)
IEEE 802.11a	36	5180	16.93	0	16.93	30
	40	5200	16.87	0	16.87	
	48	5240	17.79	0	17.79	
IEEE 802.11n HT20	36	5180	14.85	0	14.85	30
	40	5200	14.94	0	14.94	
	48	5240	15.07	0	15.07	
IEEE 802.11n HT40	38	5190	13.99	0	13.99	30
	46	5230	14.01	0	14.01	

Antenna 1

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor (dB)	Report Conducted Power dBm)	Limit (dBm)
IEEE 802.11a	36	5180	16.87	0	16.87	30
	40	5200	17.11	0	17.11	
	48	5240	17.16	0	17.16	
IEEE 802.11n HT20	36	5180	14.93	0	14.93	30
	40	5200	15.23	0	15.23	
	48	5240	15.29	0	15.29	
IEEE 802.11n HT40	38	5190	13.94	0	13.94	30
	46	5230	14.02	0	14.02	

Antenna 0+Antenna 1

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)			Duty Cycle Factor (dB)	Report Conducted Power (dBm)			Limit (dBm)
			Ant0	Ant1	Sum		Ant0	Ant1	Sum	
11N20	36	5180	14.85	14.93	17.90	0	14.85	14.93	17.90	30
	40	5200	14.94	15.23	18.10	0	14.94	15.23	18.10	
	48	5240	15.07	15.29	18.19	0	15.07	15.29	18.19	
11N40	38	5190	13.99	13.94	16.98	0	13.99	13.94	16.98	30
	46	5230	14.01	14.02	17.03	0	14.01	14.02	17.03	

A.3 Power Spectral Density

Antenna 0

Test Mode	Channel	Frequency (MHz)	Power Density (dBm/MHz)	Duty Cycle Factor (dB)	Report Power Density (dBm/MHz)	Limit (dBm/MHz)
IEEE 802.11a	36	5180	1.094	0	1.094	17
	40	5200	-0.468	0	-0.468	
	48	5240	-0.959	0	-0.959	
IEEE 802.11n HT20	36	5180	-1.103	0	-1.103	17
	40	5200	-0.412	0	-0.412	
	48	5240	0.180	0	0.180	
IEEE 802.11n HT40	38	5190	-2.619	0	-2.619	17
	46	5230	-2.764	0	-2.764	

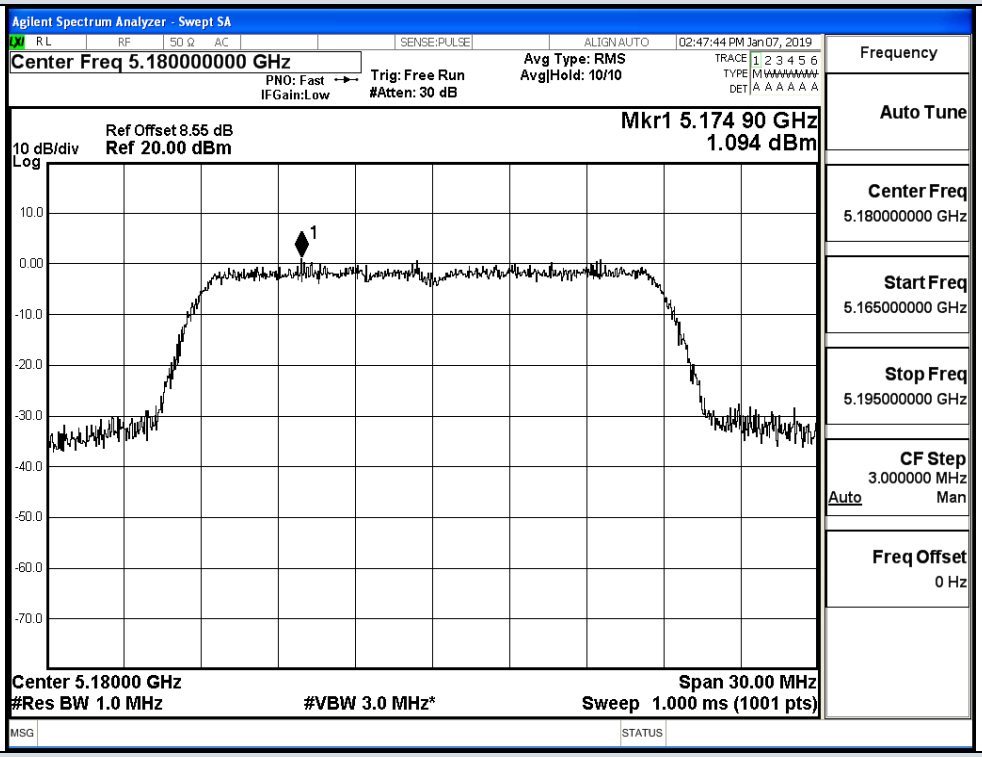
Antenna 1

Test Mode	Channel	Frequency (MHz)	Power Density (dBm/MHz)	Duty Cycle Factor (dB)	Report Power Density (dBm/MHz)	Limit (dBm/MHz)
IEEE 802.11a	36	5180	-0.151	0	-0.151	17
	40	5200	0.773	0	0.773	
	48	5240	0.402	0	0.402	
IEEE 802.11n HT20	36	5180	-0.083	0	-0.083	17
	40	5200	0.332	0	0.332	
	48	5240	0.097	0	0.097	
IEEE 802.11n HT40	38	5190	-1.685	0	-1.685	17
	46	5230	-2.390	0	-2.390	

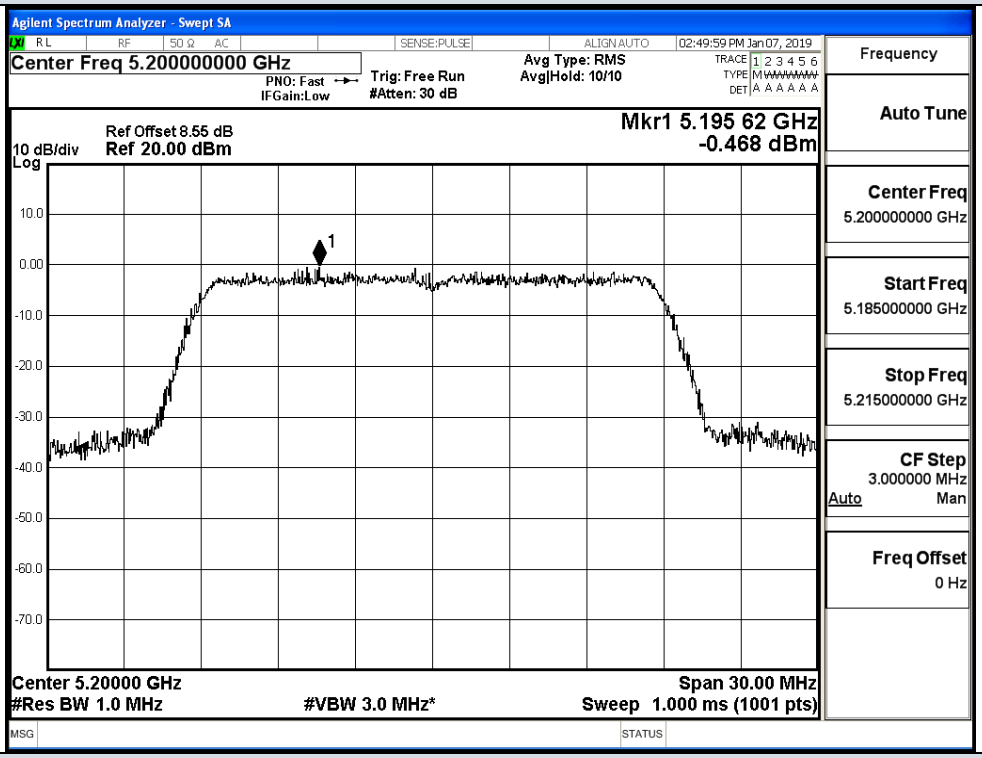
Antenna 0+Antenna 1

Test Mode	Channel	Frequency (MHz)	Power Density (dBm/MHz)			Duty Cycle Factor (dB)	Report Power Density (dBm/MHz)			Limit (dBm/MHz)
			Ant0	Ant1	Sum		Ant0	Ant1	Sum	
11N20	36	5180	-1.103	-0.083	2.447	0	-1.103	-0.083	2.447	17
	40	5200	-0.412	0.332	2.986	0	-0.412	0.332	2.986	
	48	5240	0.180	0.097	3.149	0	0.180	0.097	3.149	
11N40	38	5190	-2.619	-1.685	0.883	0	-2.619	-1.685	0.883	17
	46	5230	-2.764	-2.390	0.437	0	-2.764	-2.390	0.437	

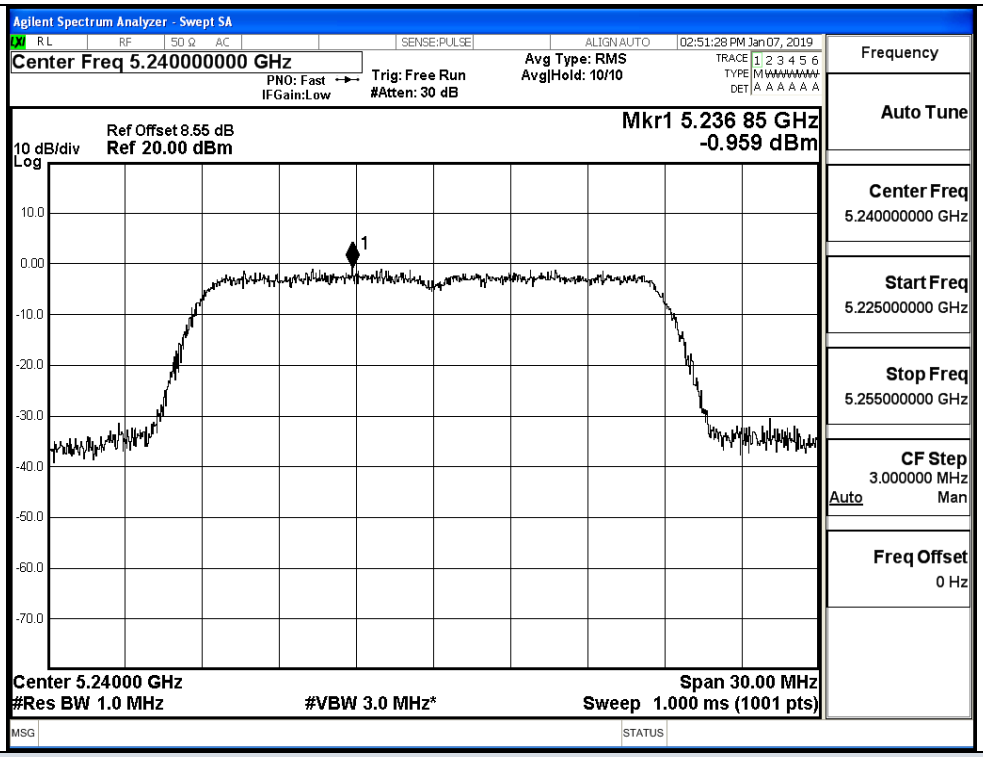
Power Spectral Density_Ant0



IEEE 802.11a / Channel 36 / 5180 MHz_Ant0

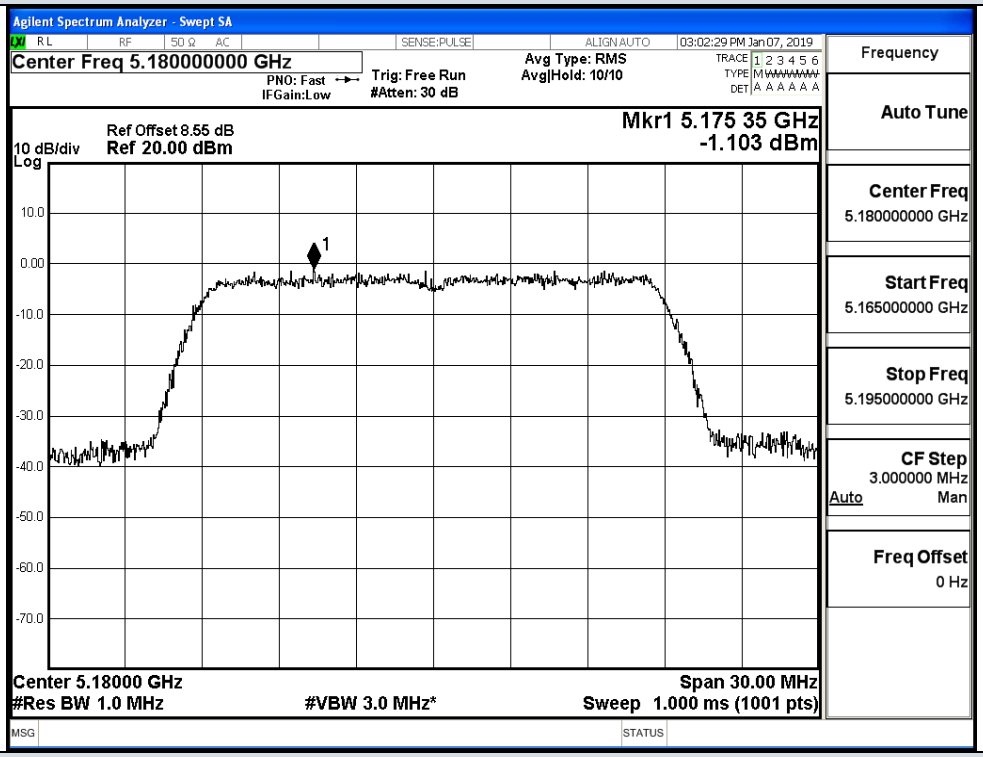


IEEE 802.11a / Channel 40 / 5200 MHz_Ant0

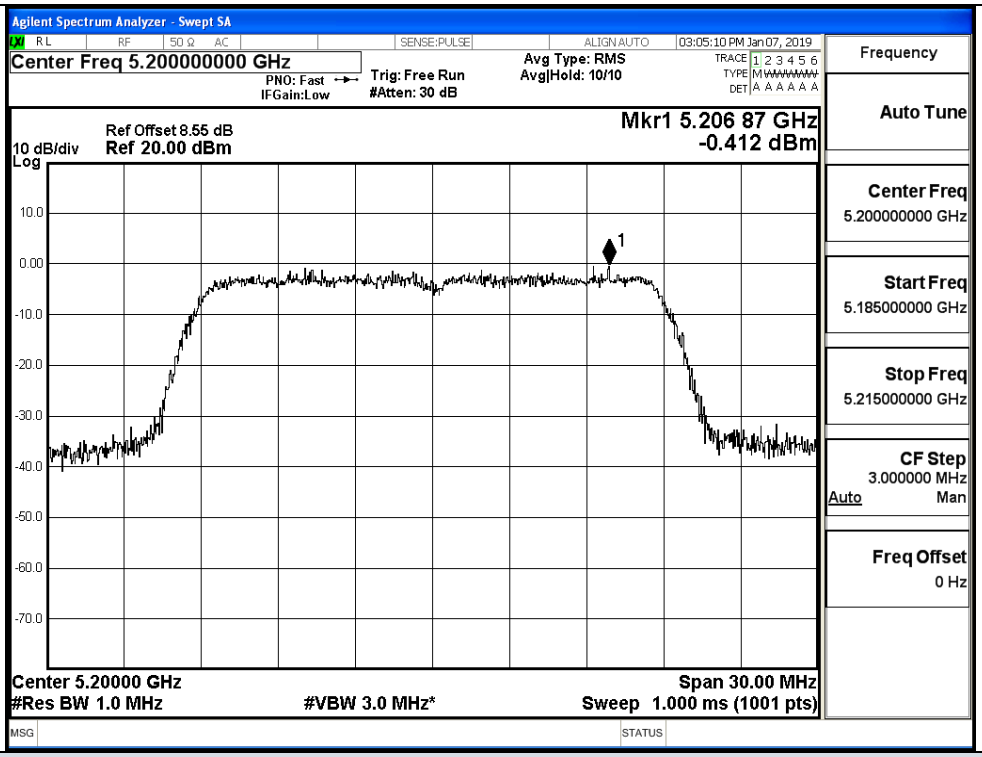


IEEE 802.11a / Channel 48 / 5240 MHz_Ant0

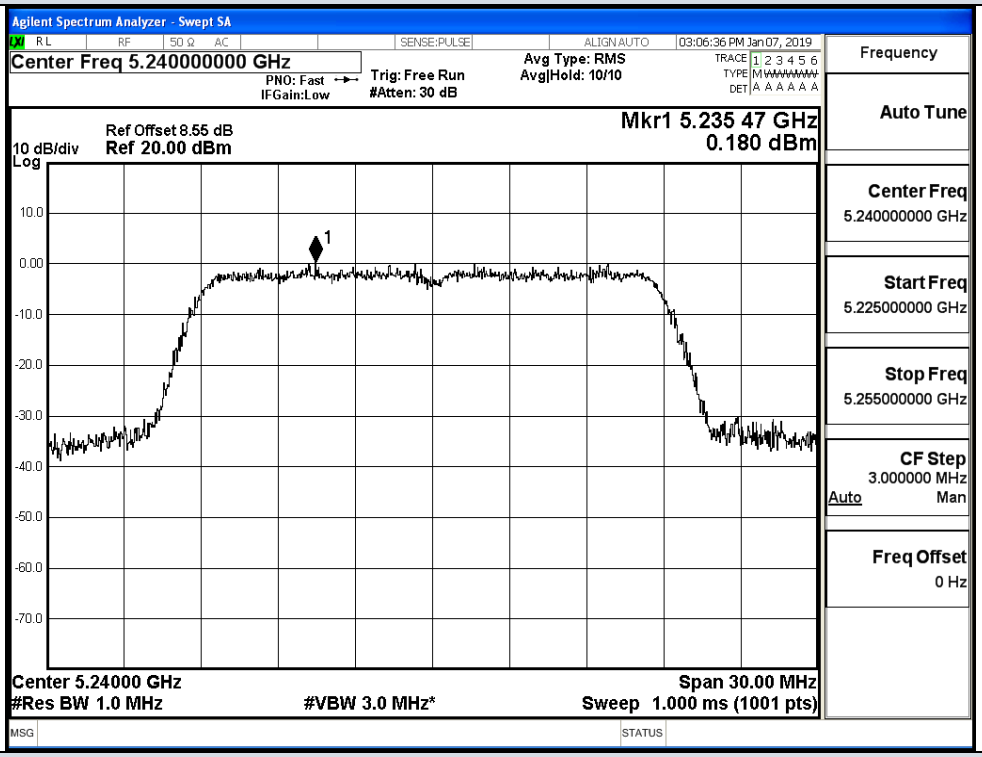
Power Spectral Density_Ant0



IEEE 802.11n HT20 / Channel 36 / 5180 MHz_Ant0

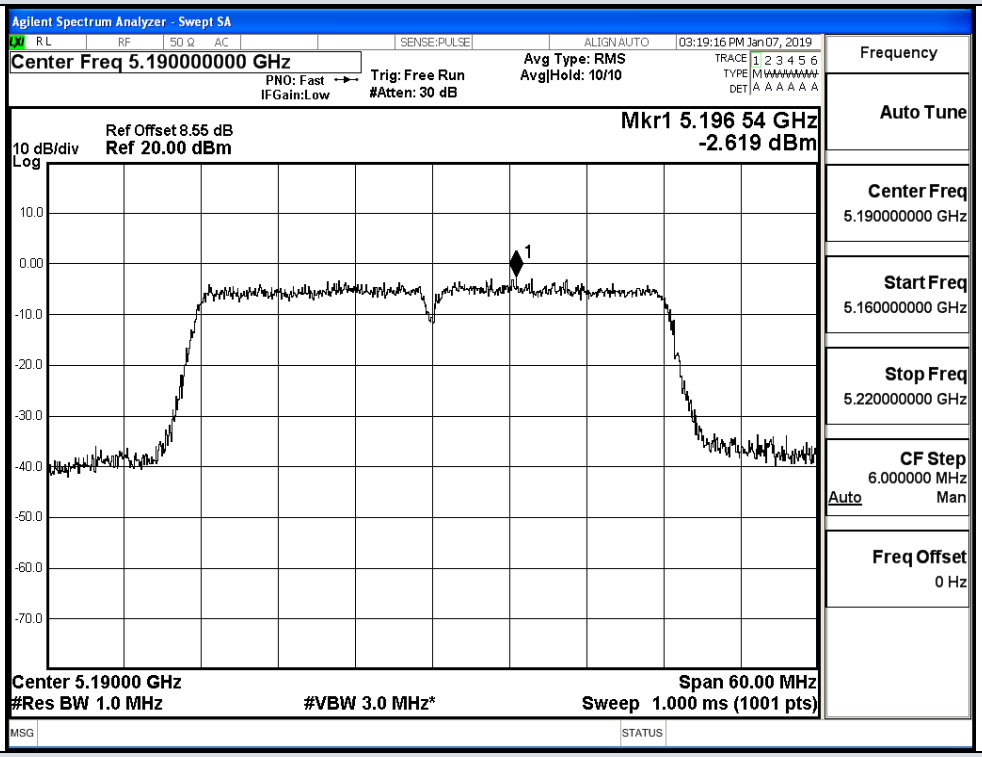


IEEE 802.11n HT20 / Channel 40 / 5200 MHz_Ant0

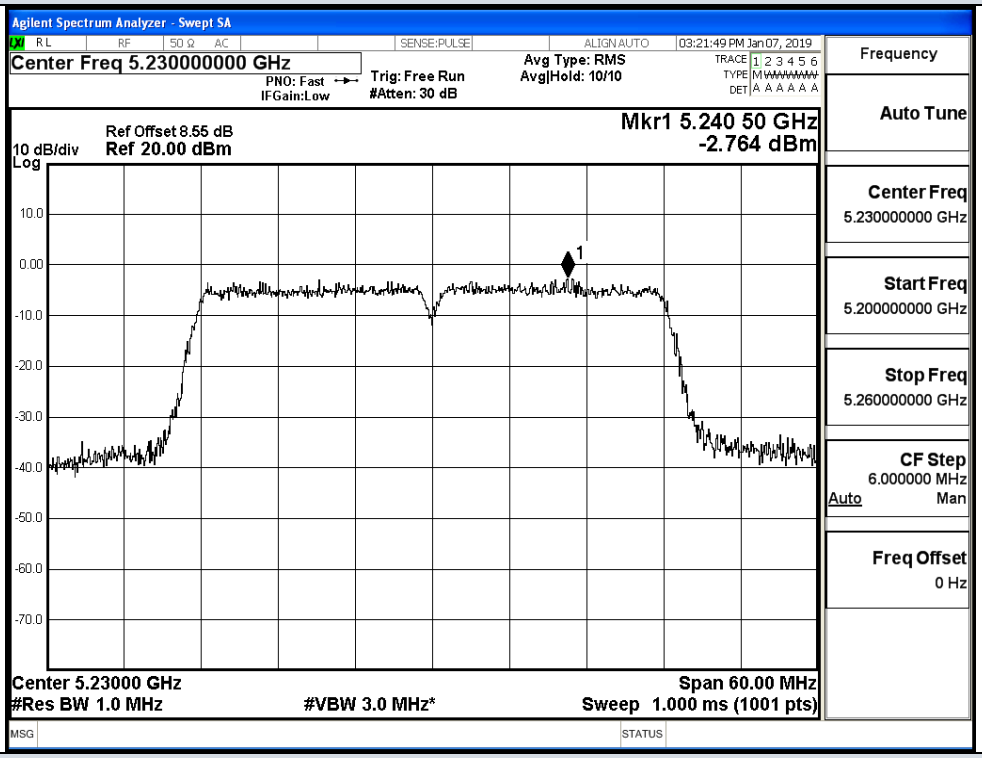


IEEE 802.11n HT20 / Channel 48 / 5240 MHz_Ant0

Power Spectral Density_Ant0

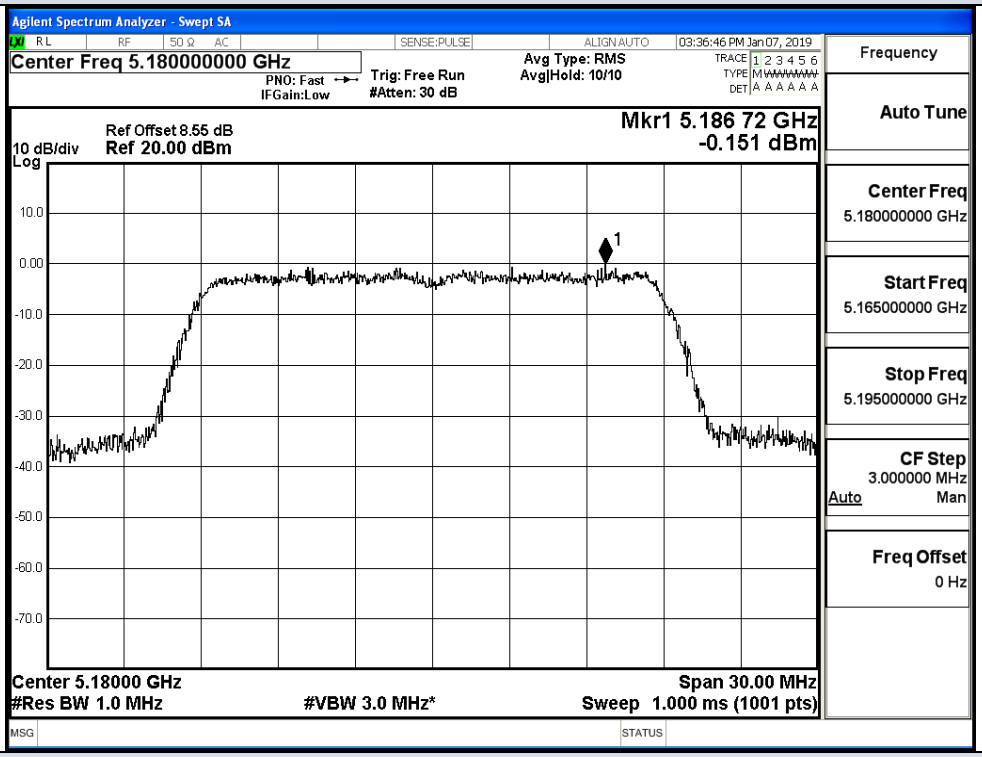


IEEE 802.11n HT40 / Channel 38 / 5190 MHz_Ant0

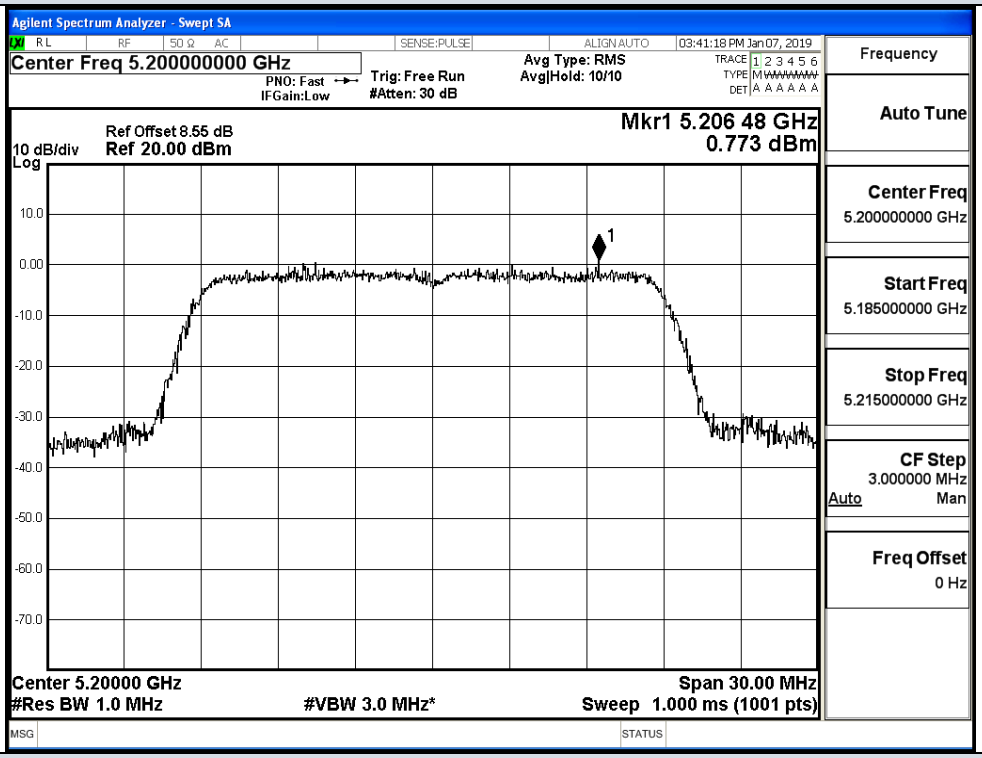


IEEE 802.11n HT40 / Channel 46 / 5230 MHz_Ant0

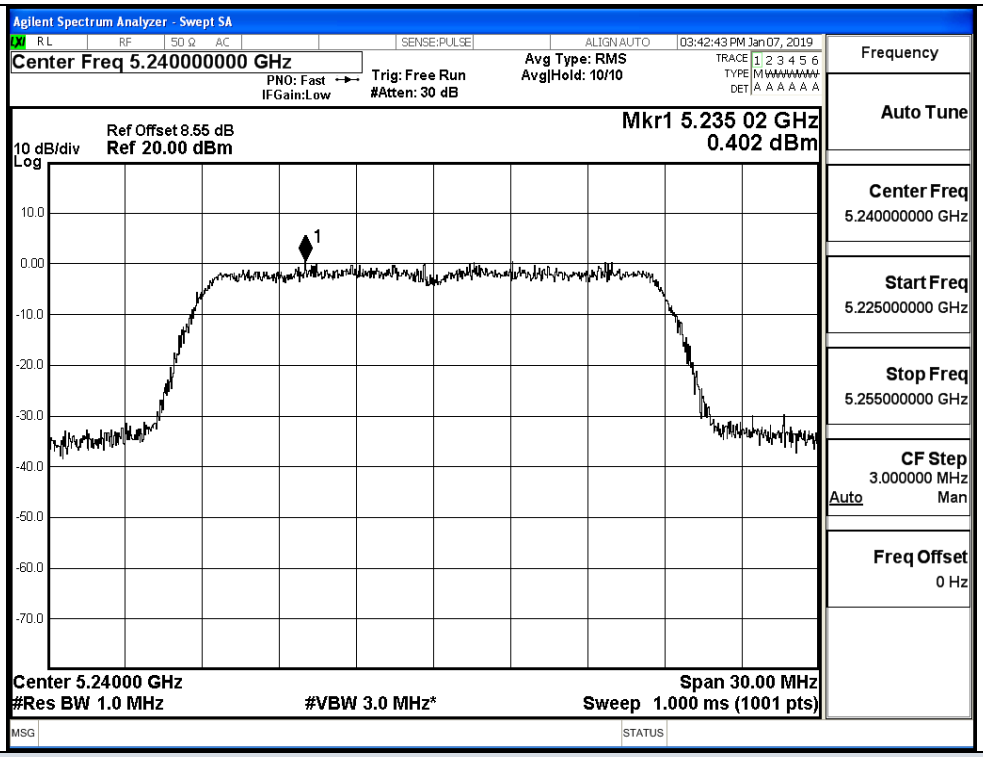
Power Spectral Density_Ant1



IEEE 802.11a / Channel 36 / 5180 MHz_Ant1

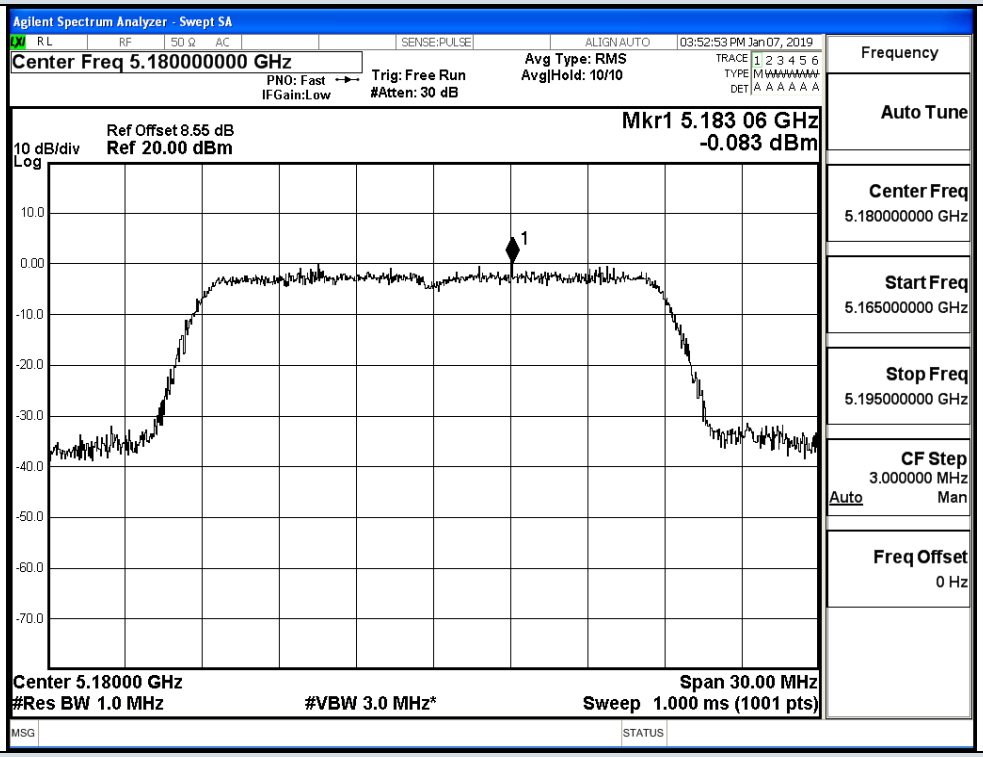


IEEE 802.11a / Channel 40 / 5200 MHz_Ant1

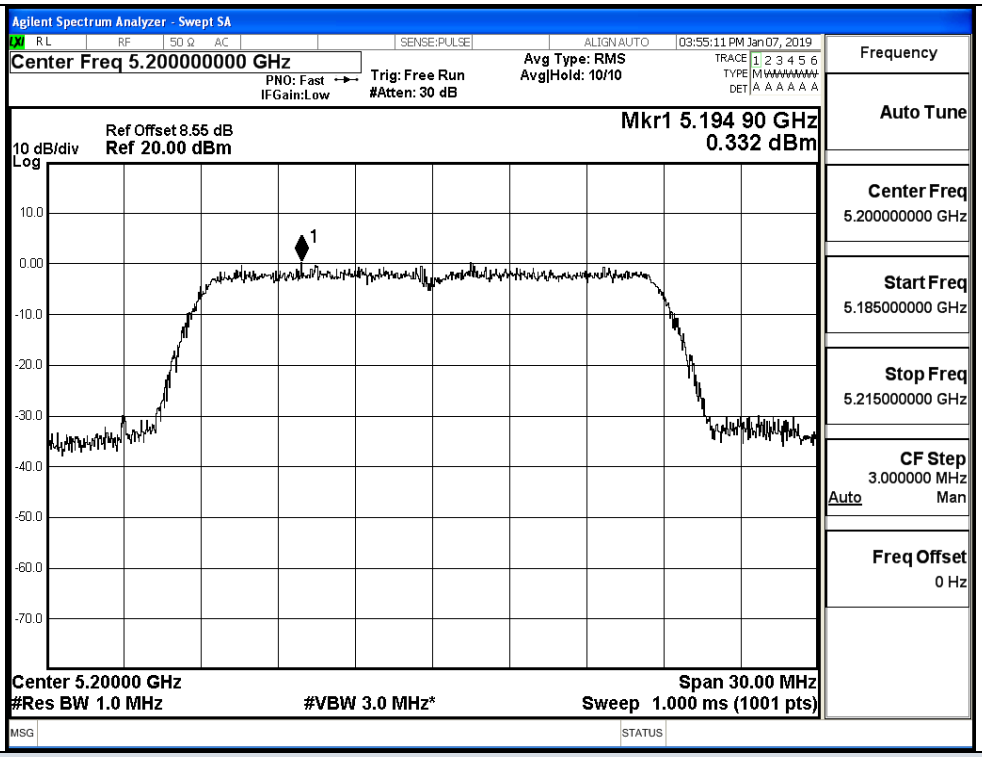


IEEE 802.11a / Channel 48 / 5240 MHz_Ant1

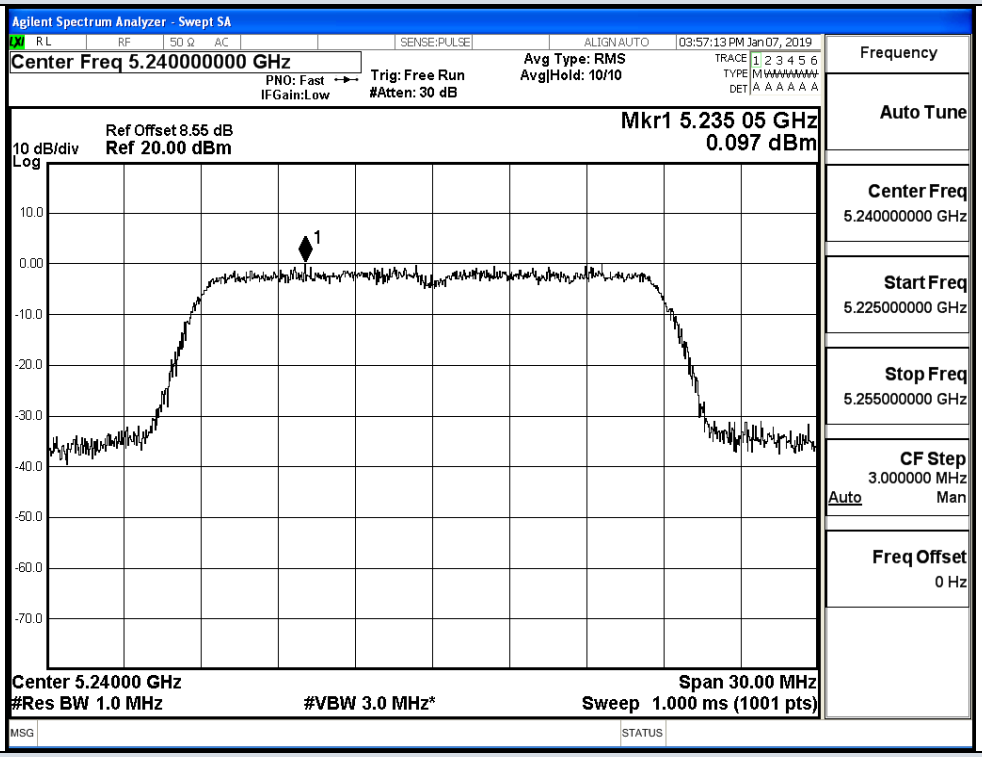
Power Spectral Density_Ant1



IEEE 802.11n HT20 / Channel 36 / 5180 MHz_Ant1

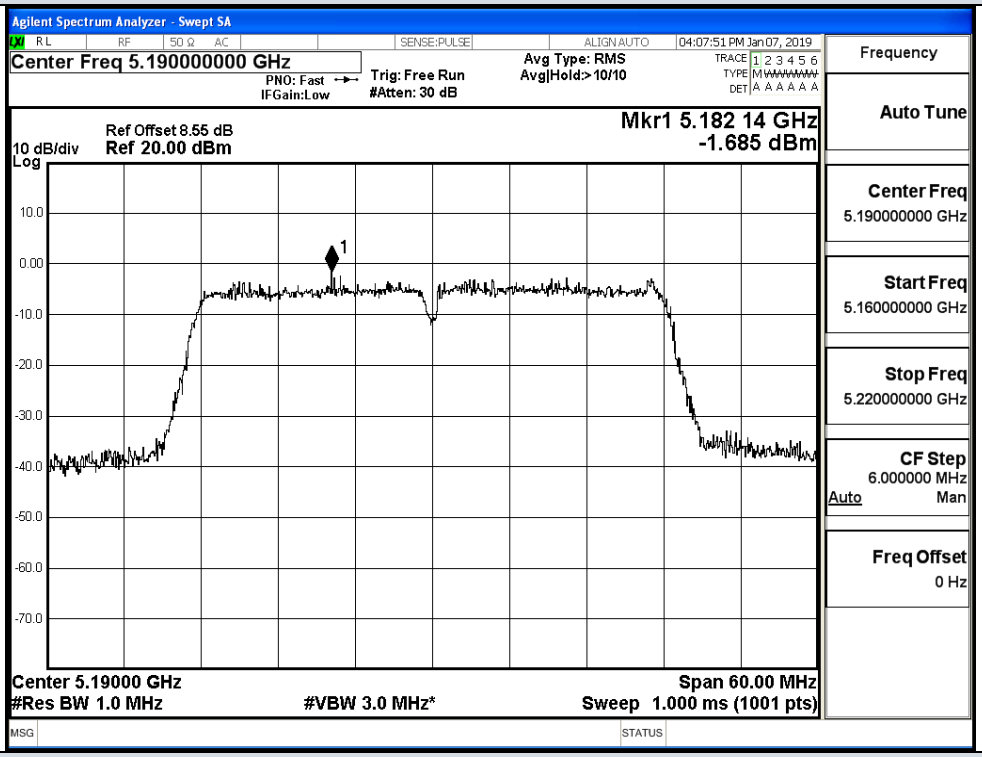


IEEE 802.11n HT20 / Channel 40 / 5200 MHz_Ant1

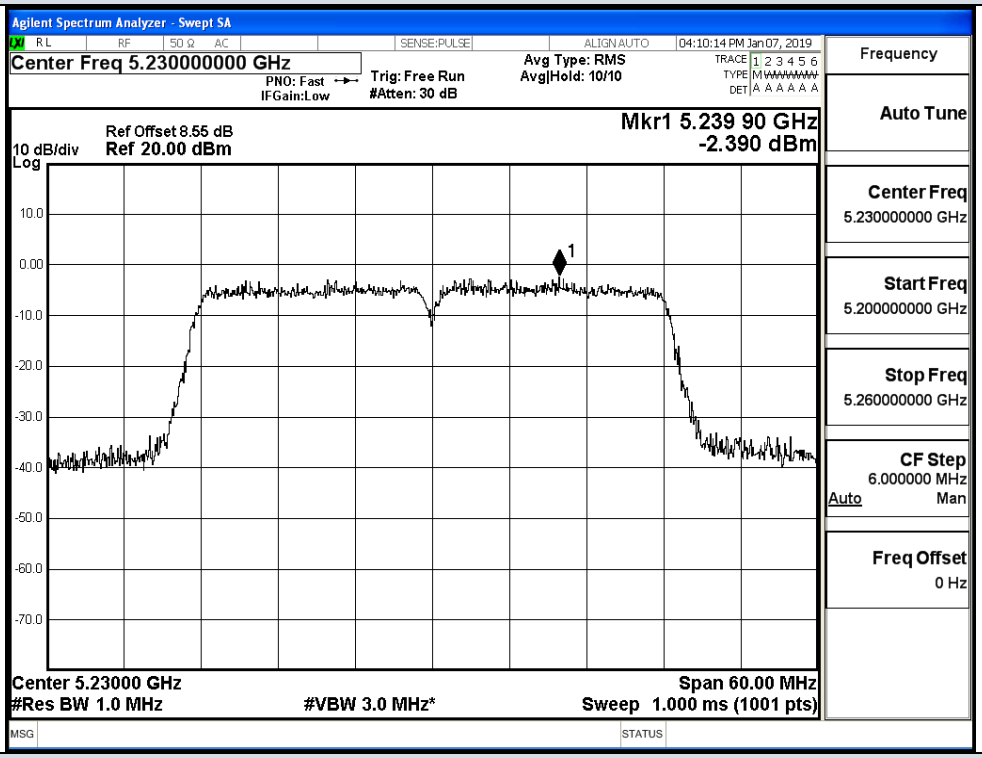


IEEE 802.11n HT20 / Channel 48 / 5240 MHz_Ant1

Power Spectral Density_Ant1



IEEE 802.11n HT40 / Channel 38 / 5190 MHz_Ant1



IEEE 802.11n HT40 / Channel 46 / 5230 MHz_Ant1

A.4 Emission Bandwidth

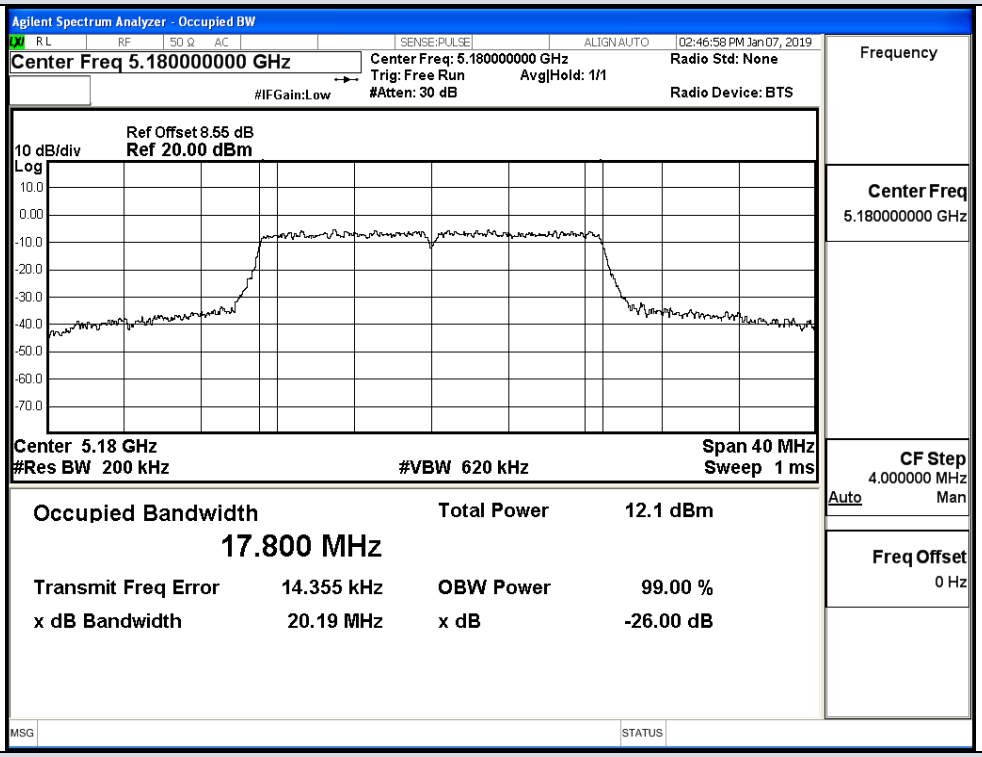
Antenna 0

Test Mode	Channel	Frequency (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)
IEEE 802.11a	36	5180	17.800	20.190	No Limit
	40	5200	17.780	19.850	
	48	5240	17.763	20.070	
IEEE 802.11n HT20	36	5180	17.766	19.940	No Limit
	40	5200	17.776	19.840	
	48	5240	17.783	19.870	
IEEE 802.11n HT40	38	5190	36.248	39.530	No Limit
	46	5230	36.276	39.590	

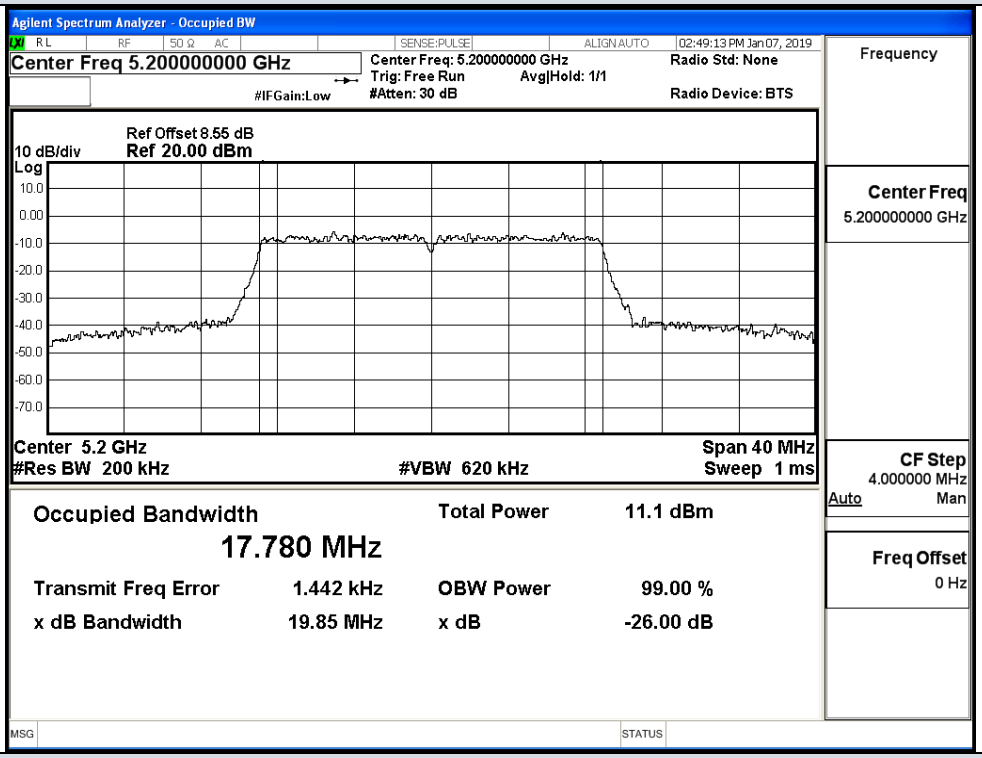
Antenna 1

Test Mode	Channel	Frequency (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)
IEEE 802.11a	36	5180	17.731	19.940	No Limit
	40	5200	17.766	19.990	
	48	5240	17.788	20.090	
IEEE 802.11n HT20	36	5180	17.773	19.870	No Limit
	40	5200	17.780	19.890	
	48	5240	17.744	19.870	
IEEE 802.11n HT40	38	5190	36.212	39.410	No Limit
	46	5230	36.215	39.600	

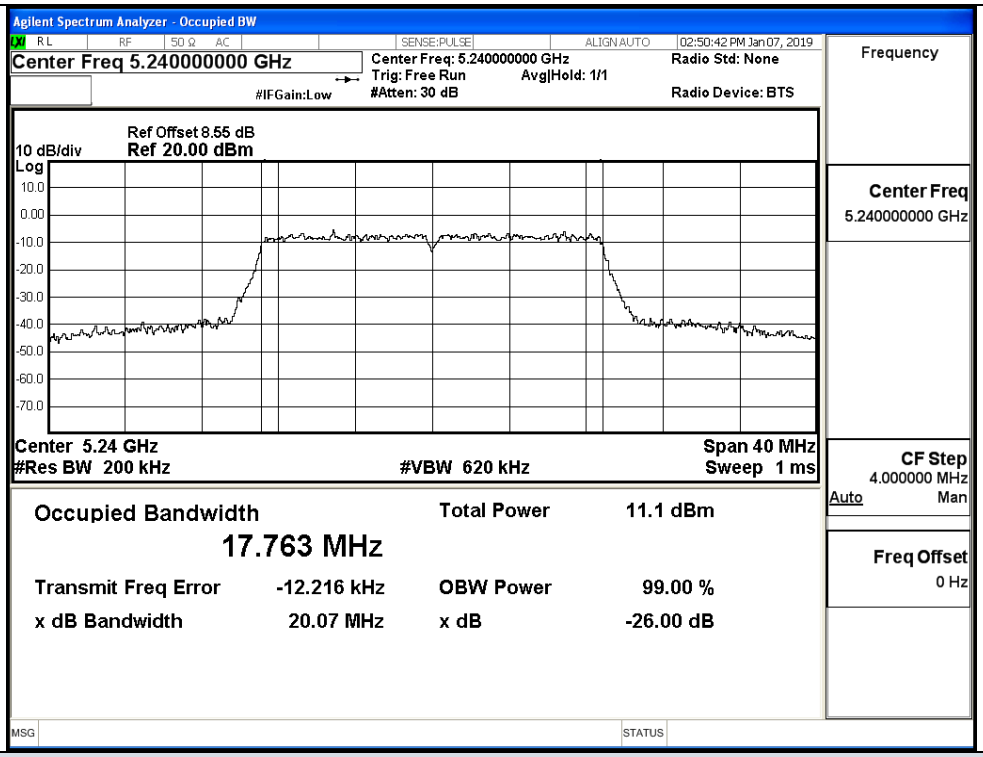
99% and 26dB Bandwidth_Ant0



IEEE 802.11a / Channel 36 / 5180 MHz_Ant0

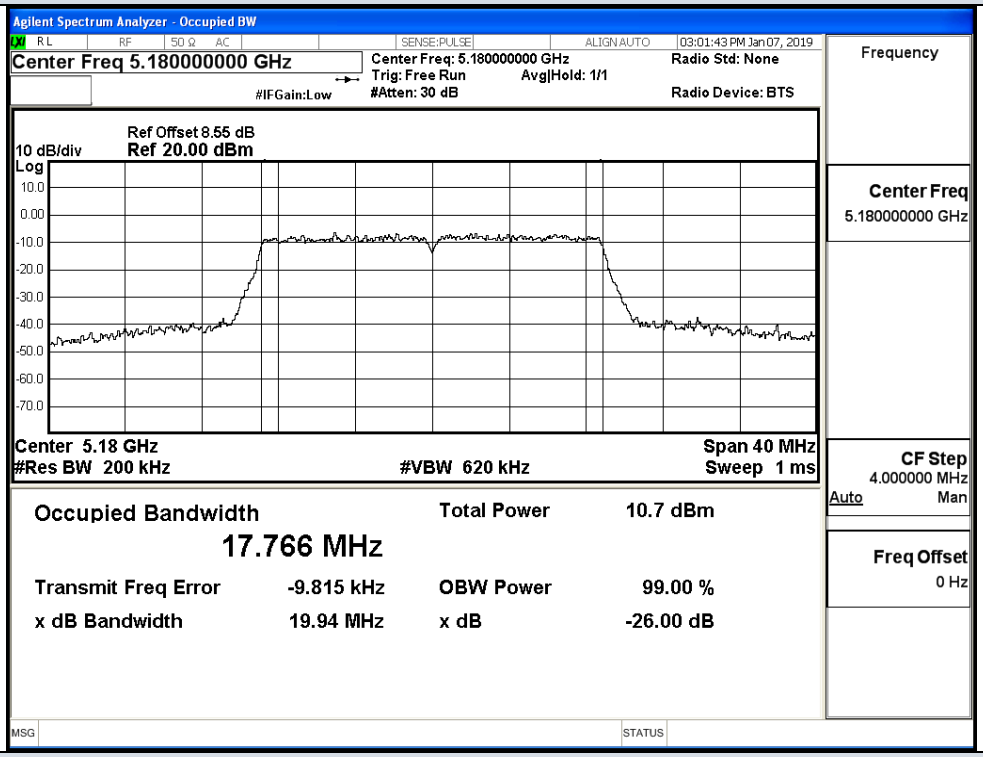


IEEE 802.11a / Channel 40 / 5200 MHz_Ant0

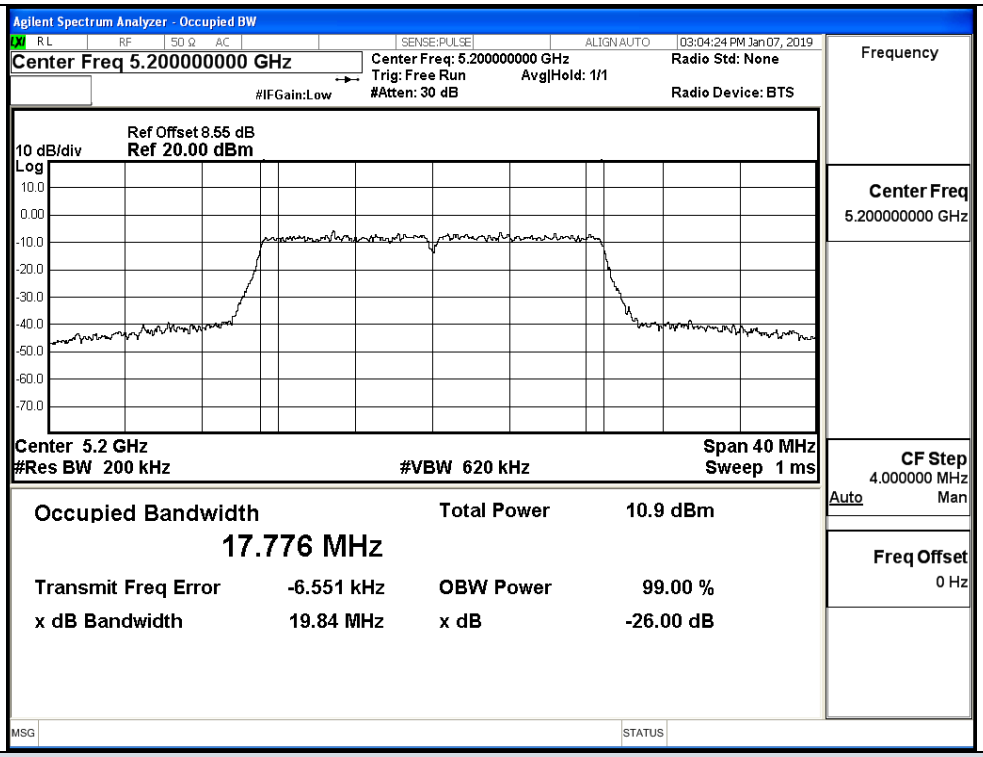


IEEE 802.11a / Channel 48 / 5240 MHz_Ant0

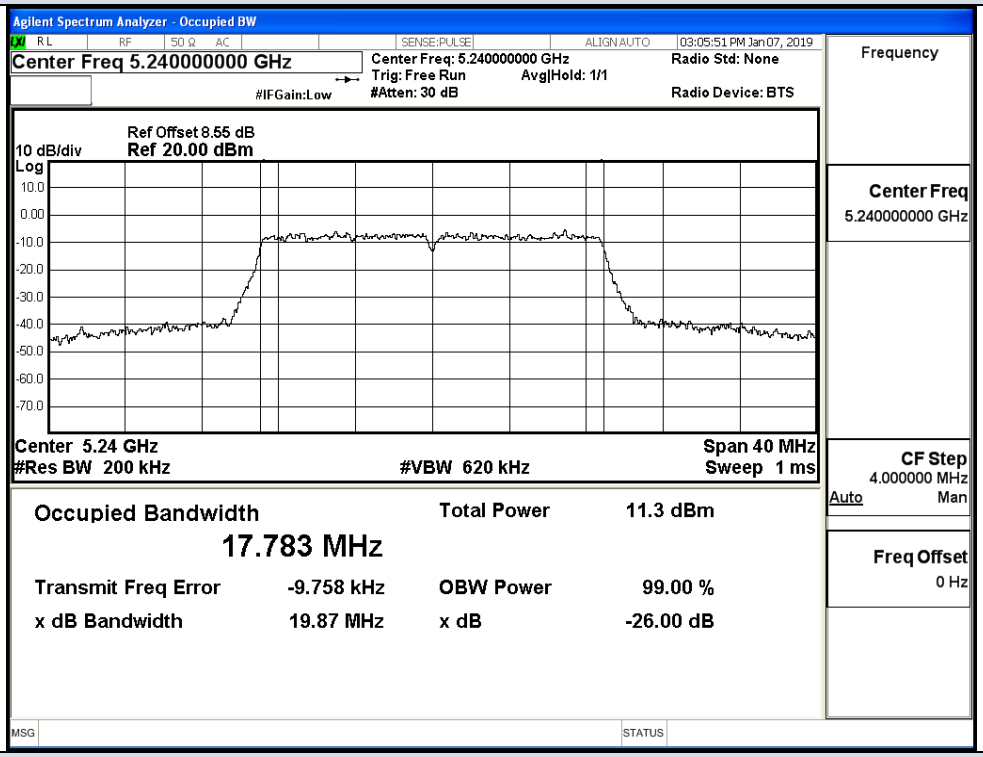
99% and 26dB Bandwidth_Ant0



IEEE 802.11n HT20 / Channel 36 / 5180 MHz_Ant0

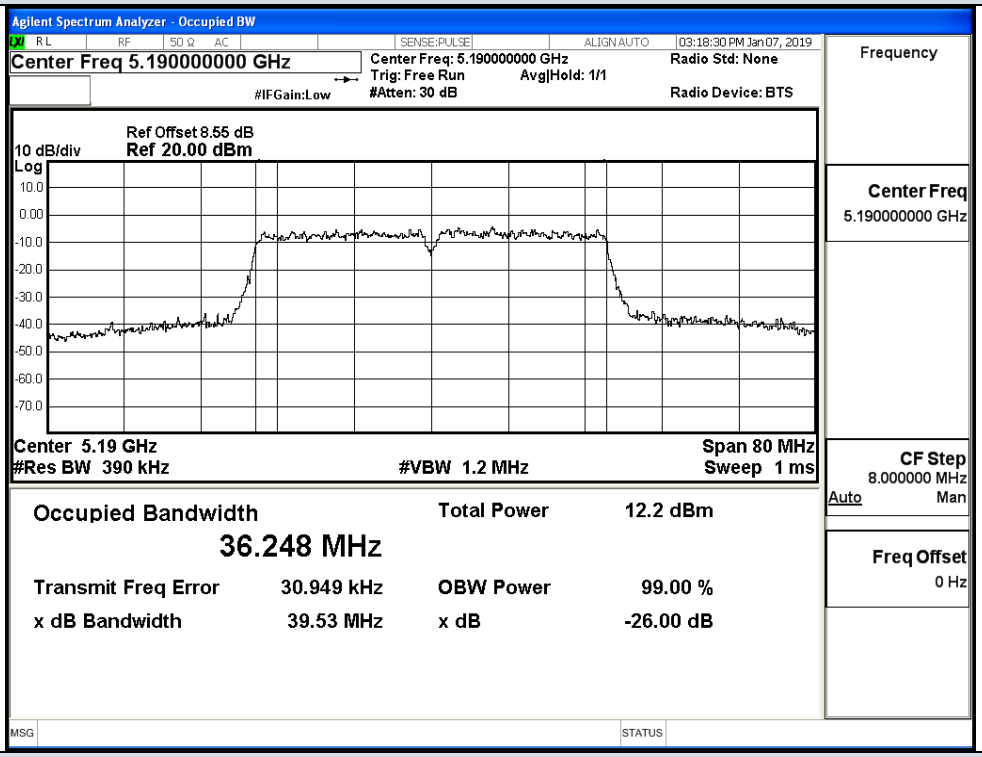


IEEE 802.11n HT20 / Channel 40 / 5200 MHz_Ant0

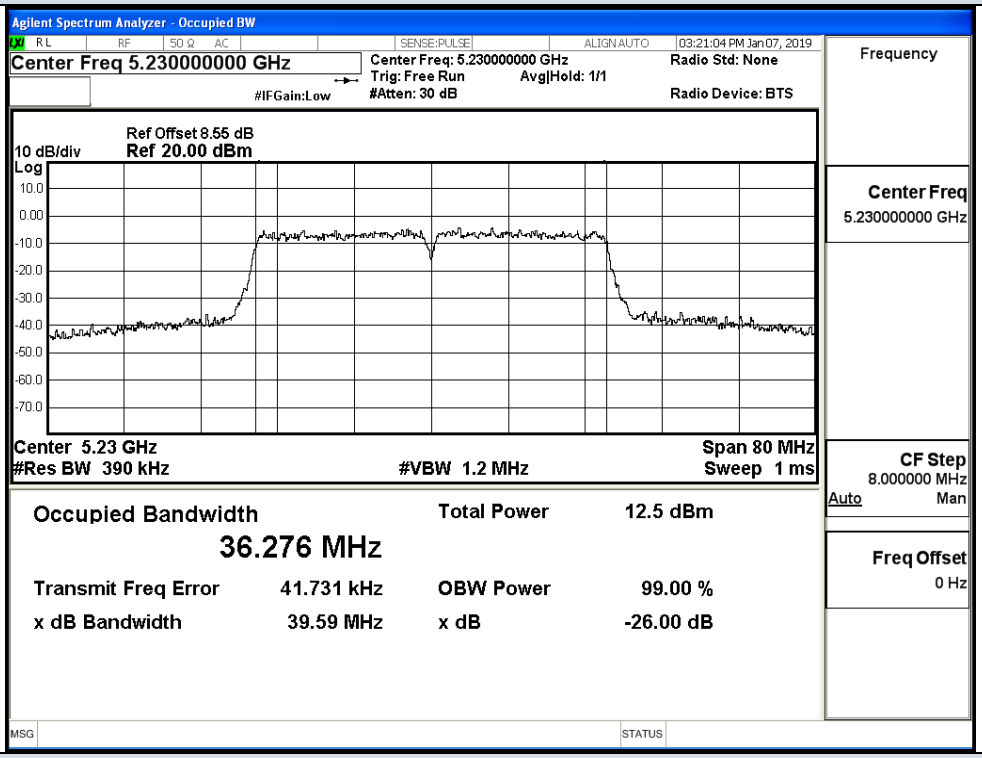


IEEE 802.11n HT20 / Channel 48 / 5240 MHz_Ant0

99% and 26dB Bandwidth_Ant0

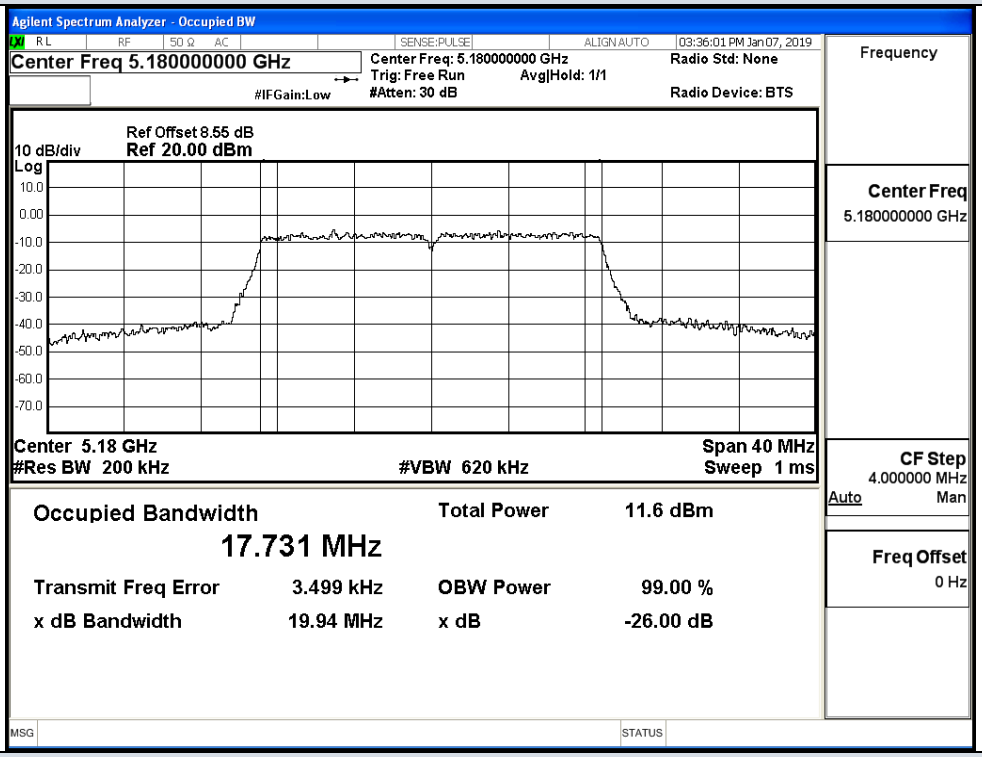


IEEE 802.11n HT40 / Channel 38 / 5190 MHz_Ant0

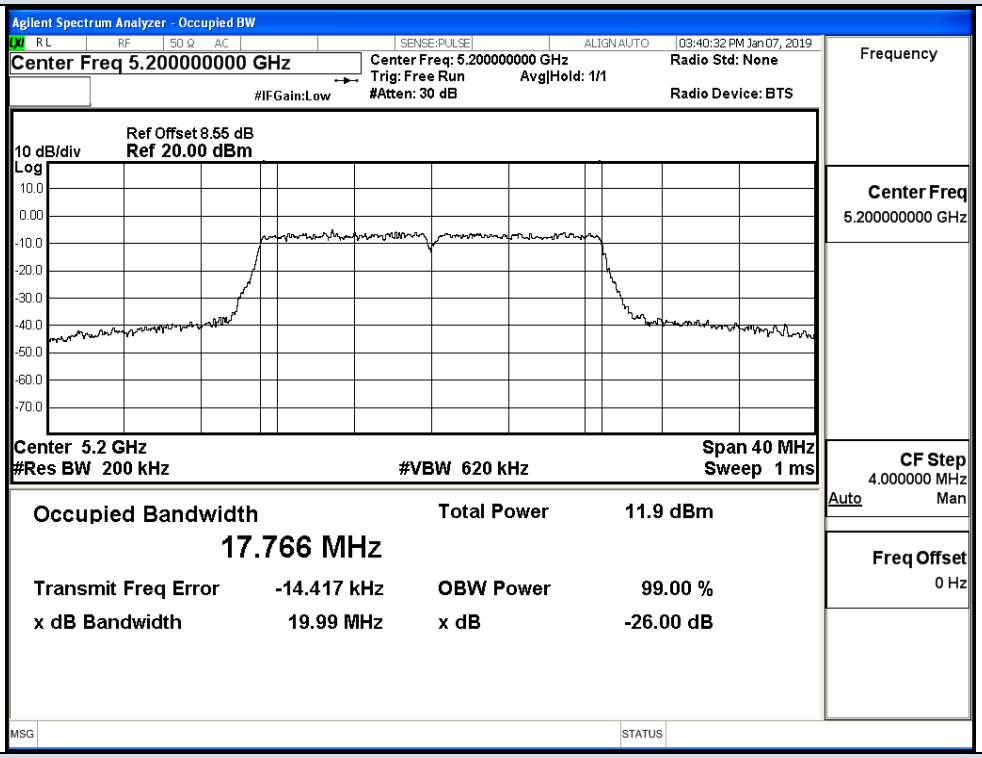


IEEE 802.11 n HT40 / Channel 46 / 5230 MHz_Ant0

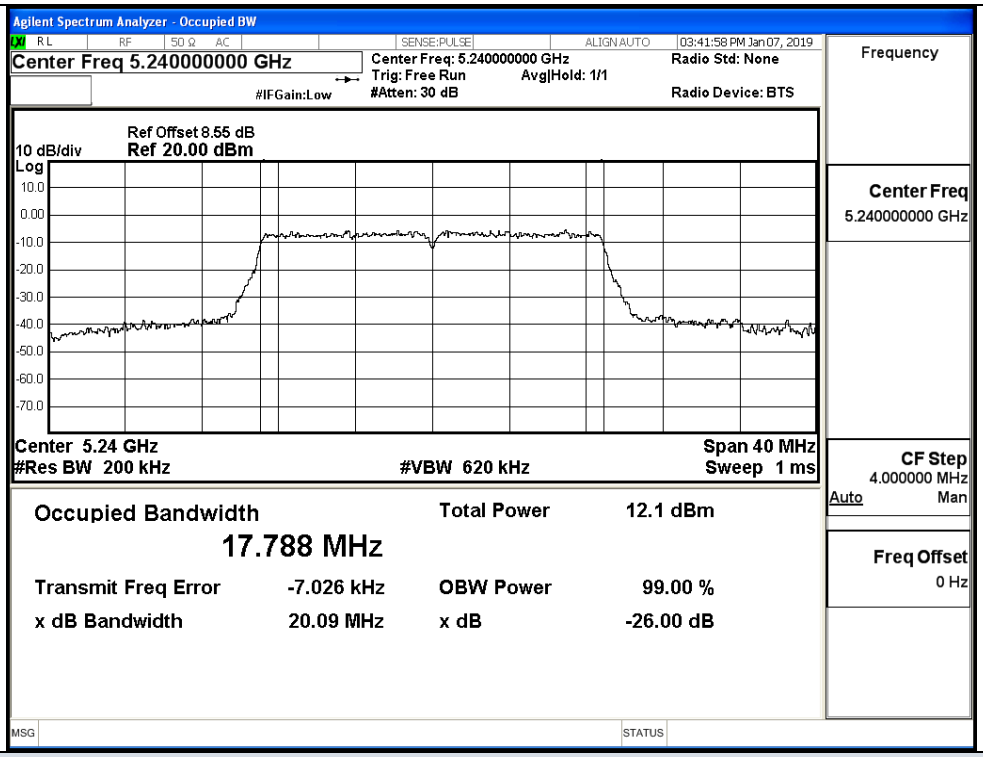
99% and 26dB Bandwidth_Ant1



IEEE 802.11a / Channel 36 / 5180 MHz_Ant1

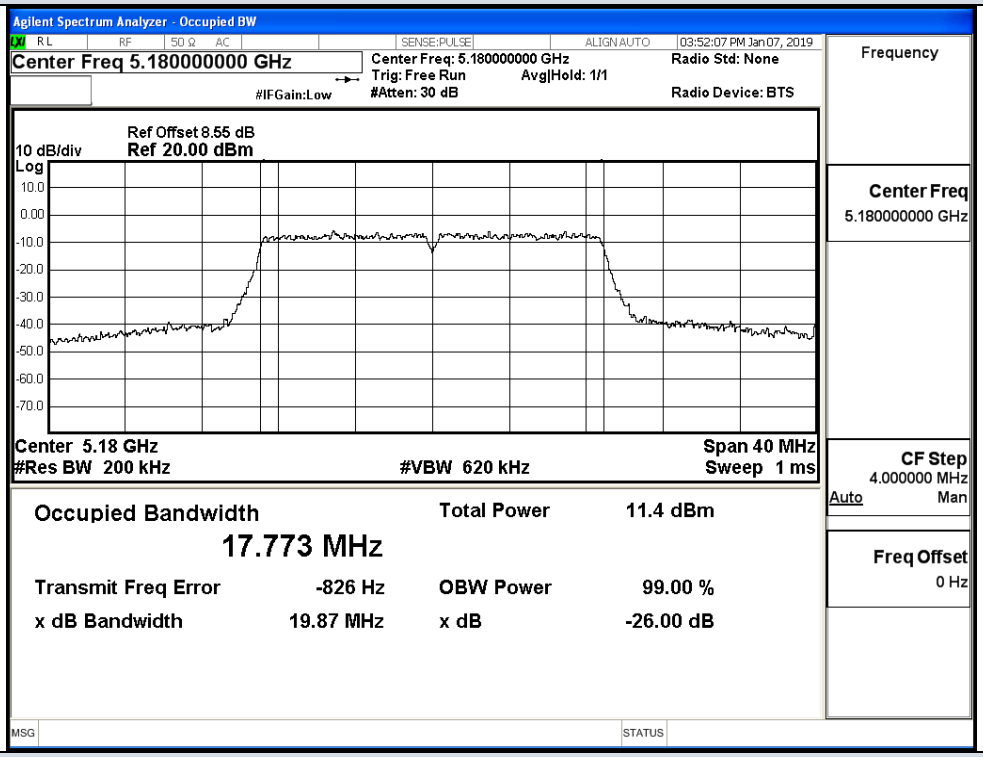


IEEE 802.11a / Channel 40 / 5200 MHz_Ant1

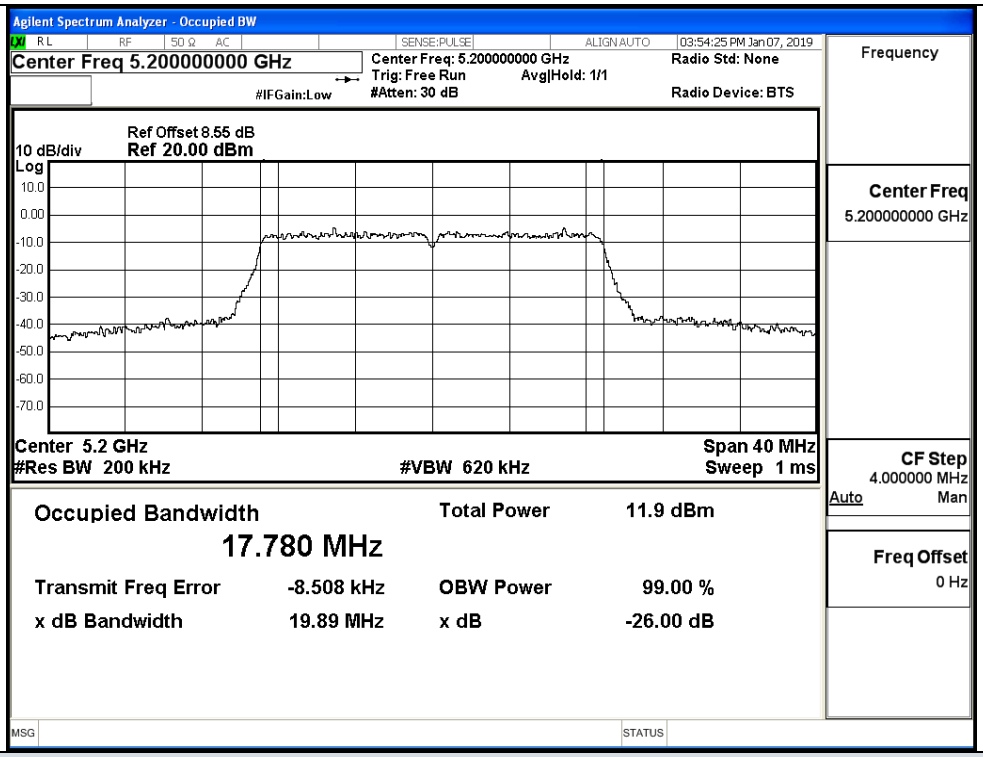


IEEE 802.11a / Channel 48 / 524 0MHz_Ant1

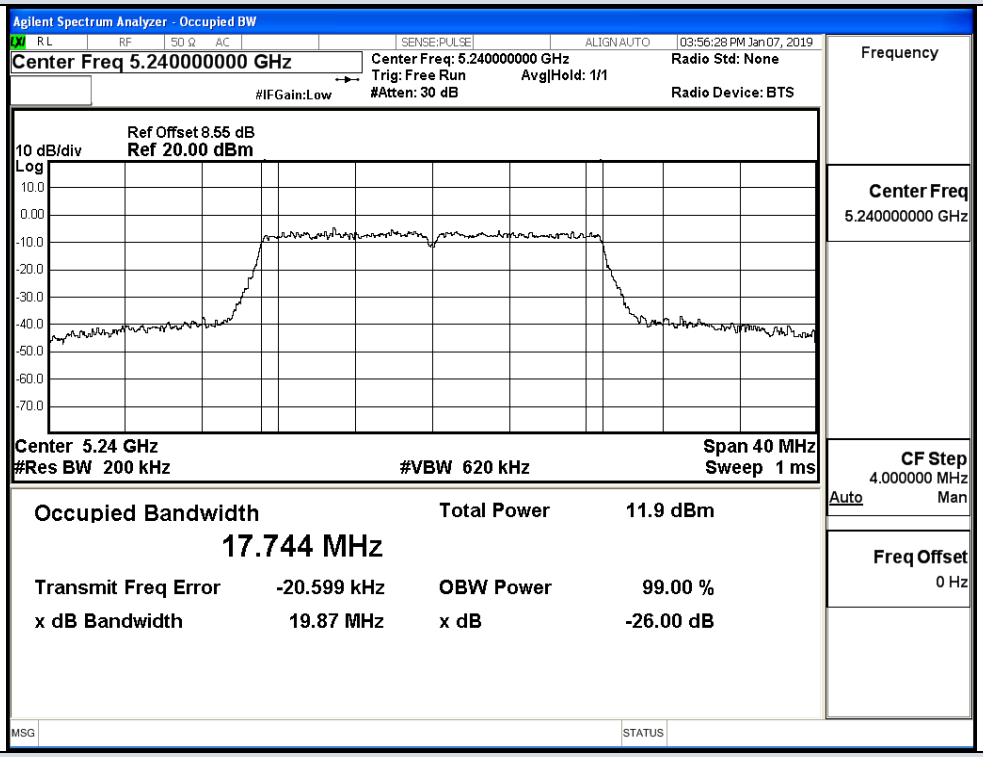
99% and 26dB Bandwidth_Ant1



IEEE 802.11n HT20 / Channel 36 / 5180 MHz_Ant1

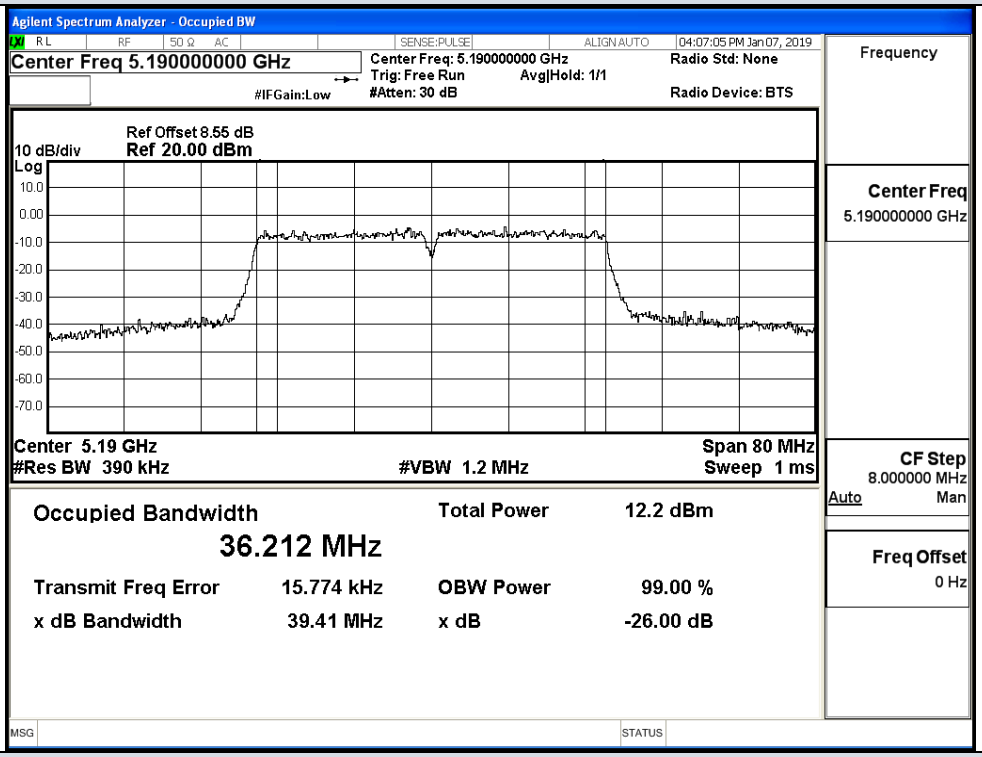


IEEE 802.11n HT20 / Channel 40 / 5200 MHz_Ant1

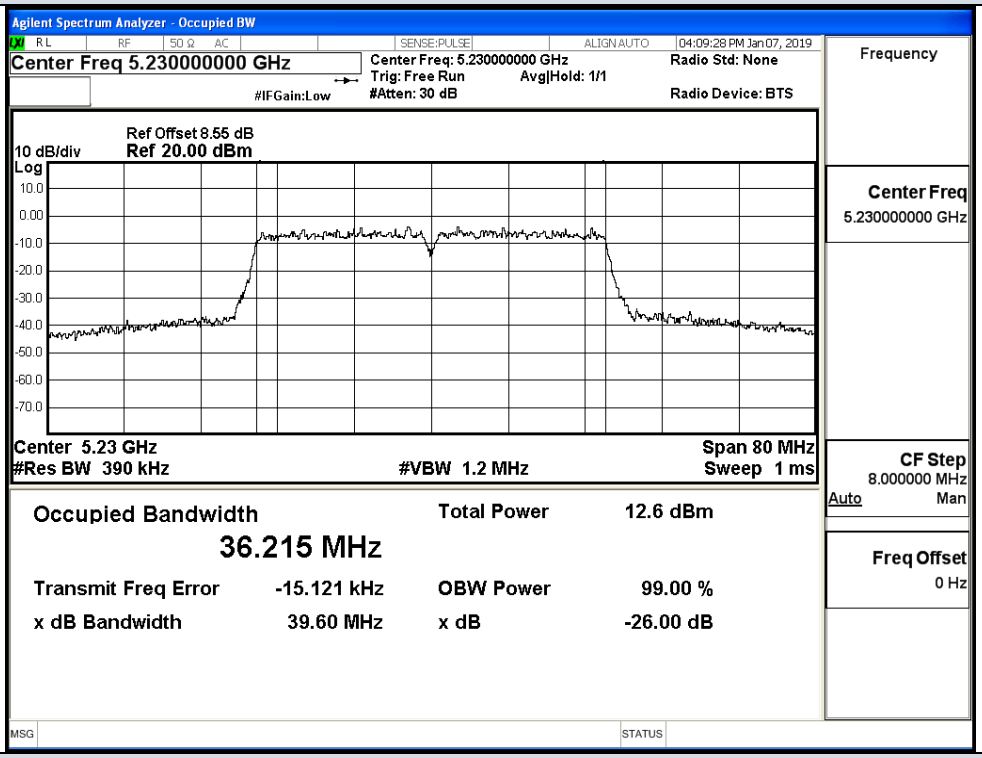


IEEE 802.11n HT20 / Channel 48 / 5240 MHz_Ant1

99% and 26dB Bandwidth_Ant1



IEEE 802.11n HT40 / Channel 38 / 5190 MHz_Ant1



IEEE 802.11n HT40 / Channel 46 / 5230 MHz_Ant1

A.5 Undesirable Emissions Measurement

Antenna 0

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	-50.365	2.00	0	46.863	Peak	68.20
		4500.0	-60.494	2.00	0	36.734	Average	54.00
		5150.0	-45.880	2.00	0	51.348	Peak	68.20
		5150.0	-55.563	2.00	0	41.665	Average	54.00
	48	5350.0	-49.484	2.00	0	47.744	Peak	68.20
		5350.0	-59.816	2.00	0	37.412	Average	54.00
		5460.0	-49.511	2.00	0	47.717	Peak	68.20
		5460.0	-60.613	2.00	0	36.615	Average	54.00
11N20	36	4500.0	-49.755	2.00	0	47.473	Peak	68.20
		4500.0	-60.553	2.00	0	36.675	Average	54.00
		5150.0	-46.632	2.00	0	50.596	Peak	68.20
		5150.0	-56.547	2.00	0	40.681	Average	54.00
	48	5350.0	-48.518	2.00	0	48.710	Peak	68.20
		5350.0	-59.592	2.00	0	37.636	Average	54.00
		5460.0	-50.373	2.00	0	46.855	Peak	68.20
		5460.0	-60.559	2.00	0	36.669	Average	54.00
11N40	38	4500.0	-50.625	2.00	0	46.603	Peak	68.20
		4500.0	-60.547	2.00	0	36.681	Average	54.00
		5150.0	-37.311	2.00	0	59.917	Peak	68.20
		5150.0	-50.742	2.00	0	46.486	Average	54.00
	46	5350.0	-49.285	2.00	0	47.943	Peak	68.20
		5350.0	-59.424	2.00	0	37.804	Average	54.00
		5460.0	-49.418	2.00	0	47.810	Peak	68.20
		5460.0	-60.304	2.00	0	36.924	Average	54.00

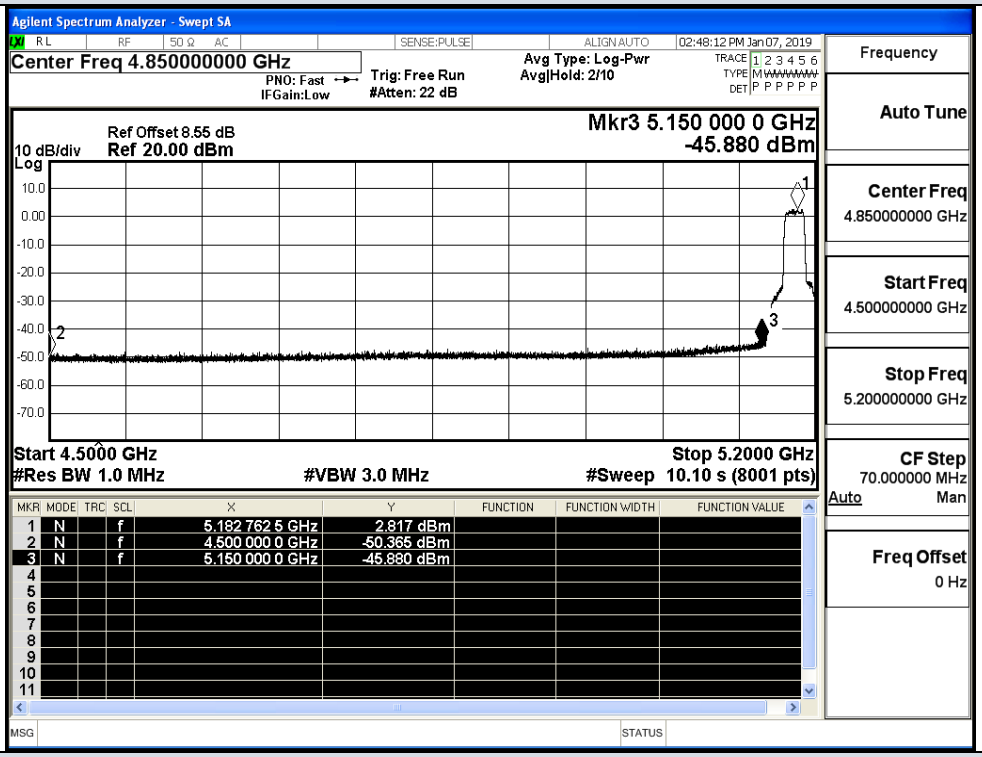
Antenna 1

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	-50.593	2.00	0	46.635	Peak	68.20
		4500.0	-60.535	2.00	0	36.693	Average	54.00
		5150.0	-45.900	2.00	0	51.328	Peak	68.20
		5150.0	-56.169	2.00	0	41.059	Average	54.00
	48	5350.0	-49.312	2.00	0	47.916	Peak	68.20
		5350.0	-59.603	2.00	0	37.625	Average	54.00
		5460.0	-49.147	2.00	0	48.081	Peak	68.20
		5460.0	-60.543	2.00	0	36.685	Average	54.00
11N20	36	4500.0	-50.482	2.00	0	46.746	Peak	68.20
		4500.0	-60.528	2.00	0	36.700	Average	54.00
		5150.0	-47.081	2.00	0	50.147	Peak	68.20
		5150.0	-56.337	2.00	0	40.891	Average	54.00
	48	5350.0	-48.247	2.00	0	48.981	Peak	68.20
		5350.0	-59.640	2.00	0	37.588	Average	54.00
		5460.0	-48.765	2.00	0	48.463	Peak	68.20
		5460.0	-60.592	2.00	0	36.636	Average	54.00
11N40	38	4500.0	-51.162	2.00	0	46.066	Peak	68.20
		4500.0	-60.560	2.00	0	36.668	Average	54.00
		5150.0	-37.998	2.00	0	59.230	Peak	68.20
		5150.0	-60.567	2.00	0	36.661	Average	54.00
	46	5350.0	-48.319	2.00	0	48.909	Peak	68.20
		5350.0	-59.481	2.00	0	37.747	Average	54.00
		5460.0	-49.263	2.00	0	47.965	Peak	68.20
		5460.0	-60.306	2.00	0	36.922	Average	54.00

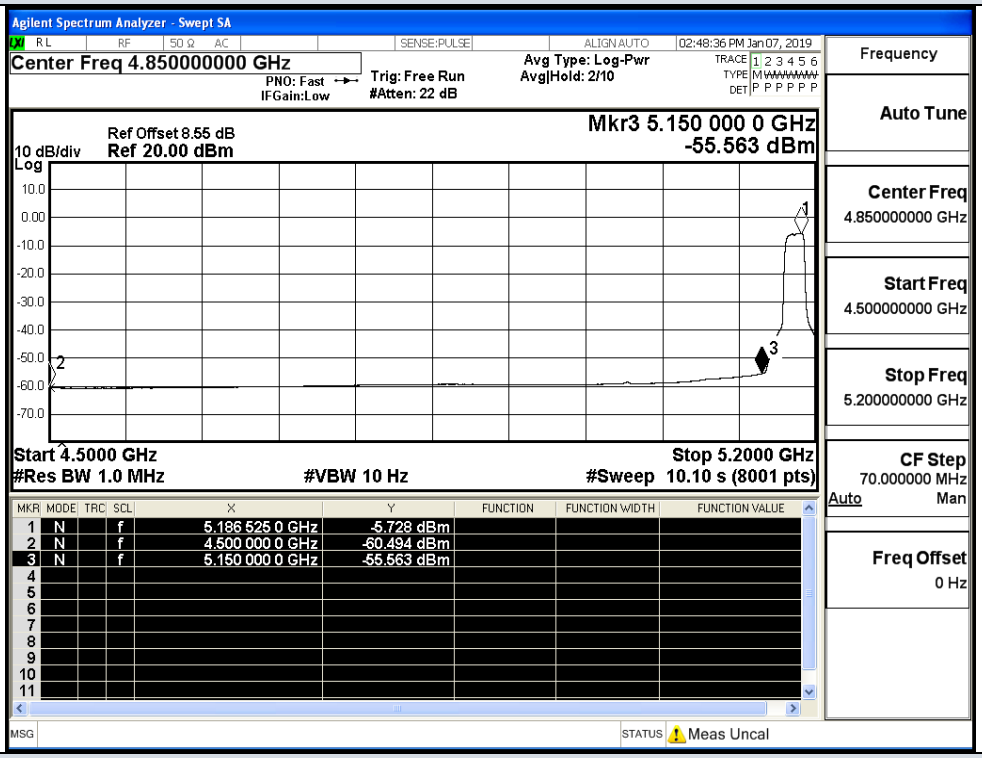
Antenna 0+Antenna 1

Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)			Directional Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)
			Ant0	Ant1	Sum					
11N20	36	4500.0	-49.755	-50.482	-47.093	5.01	0	53.145	Peak	68.20
		4500.0	-60.553	-60.528	-57.530	5.01	0	42.708	Average	54.00
		5150.0	-46.632	-47.081	-43.840	5.01	0	56.398	Peak	68.20
		5150.0	-56.547	-56.337	-53.430	5.01	0	46.808	Average	54.00
	48	5350.0	-48.518	-48.247	-45.370	5.01	0	54.868	Peak	68.20
		5350.0	-59.592	-59.640	-56.606	5.01	0	43.632	Average	54.00
		5460.0	-50.373	-48.765	-46.485	5.01	0	53.753	Peak	68.20
		5460.0	-60.559	-60.592	-57.565	5.01	0	42.673	Average	54.00
11N40	38	4500.0	-50.625	-51.162	-47.875	5.01	0	52.363	Peak	68.20
		4500.0	-60.547	-60.560	-57.543	5.01	0	42.695	Average	54.00
		5150.0	-37.311	-37.998	-34.631	5.01	0	65.607	Peak	68.20
		5150.0	-50.742	-60.567	-50.312	5.01	0	49.926	Average	54.00
	46	5350.0	-49.285	-48.319	-45.765	5.01	0	54.473	Peak	68.20
		5350.0	-59.424	-59.481	-56.442	5.01	0	43.796	Average	54.00
		5460.0	-49.418	-49.263	-46.330	5.01	0	53.908	Peak	68.20
		5460.0	-60.304	-60.306	-57.295	5.01	0	42.943	Average	54.00

Undesirable Emissions Measurement_Ant0

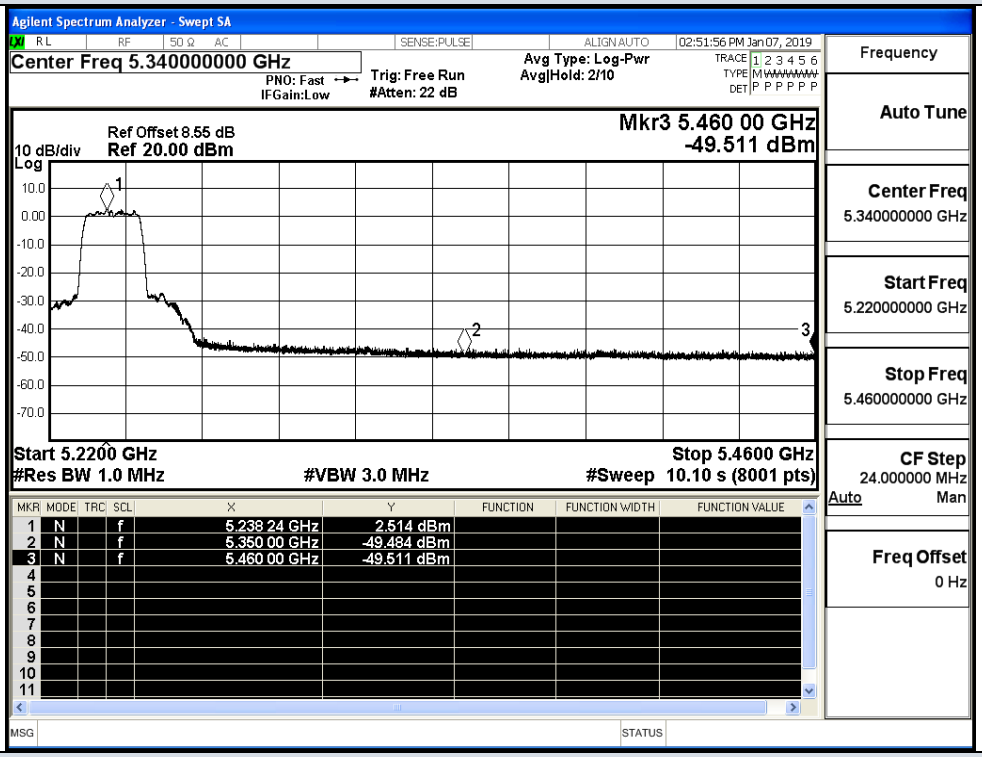


IEEE 802.11a / Channel 36 / 5180 MHz / Peak_Ant0

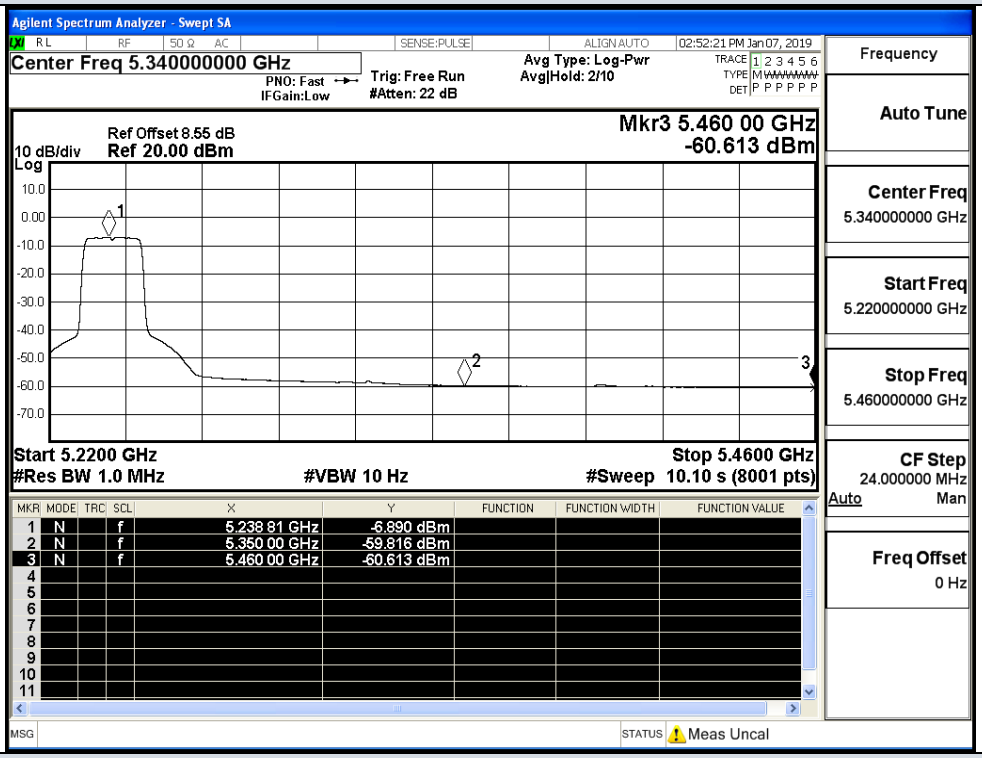


IEEE 802.11a / Channel 36 / 5180 MHz / Average_Ant0

Undesirable Emissions Measurement_Ant0

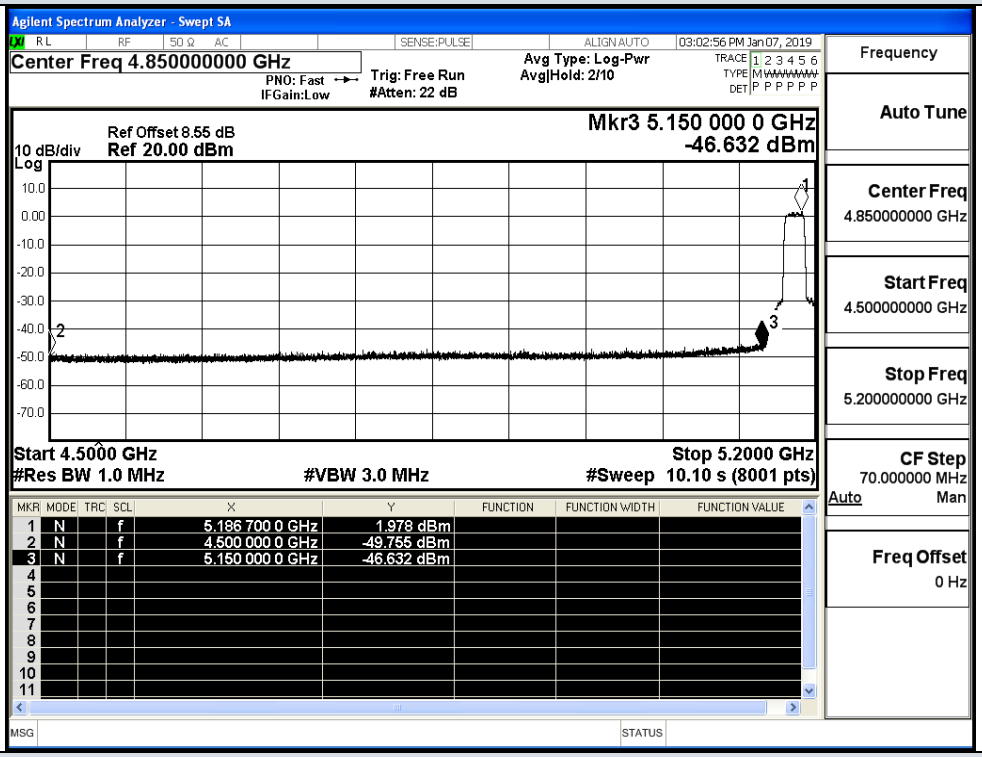


IEEE 802.11a / Channel 48 / 5240 MHz / Peak_Ant0

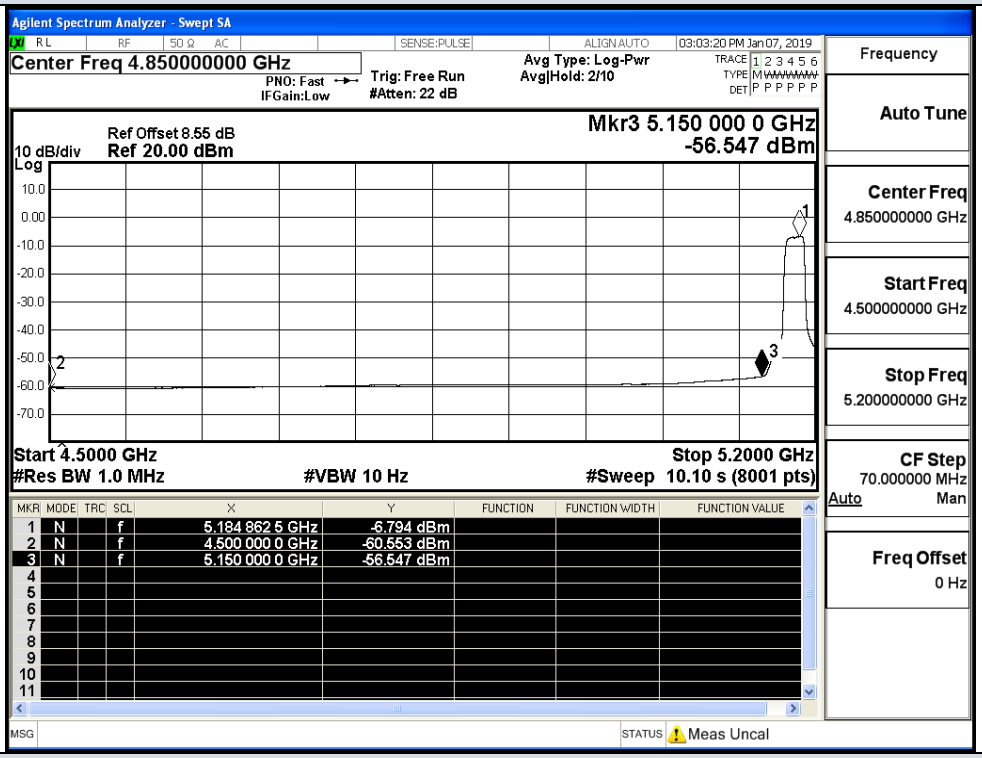


IEEE 802.11a / Channel 48 / 5240 MHz / Average_Ant0

Undesirable Emissions Measurement_Ant0

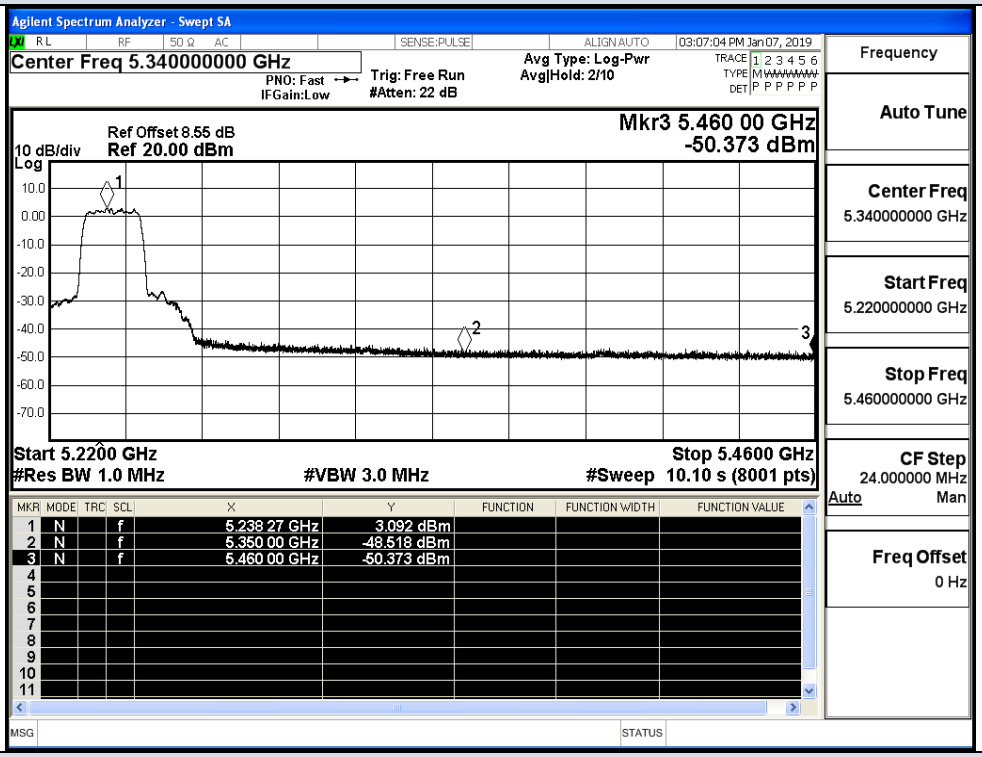


IEEE 802.11n HT20 / Channel 36 / 5180 MHz / Peak_Ant0

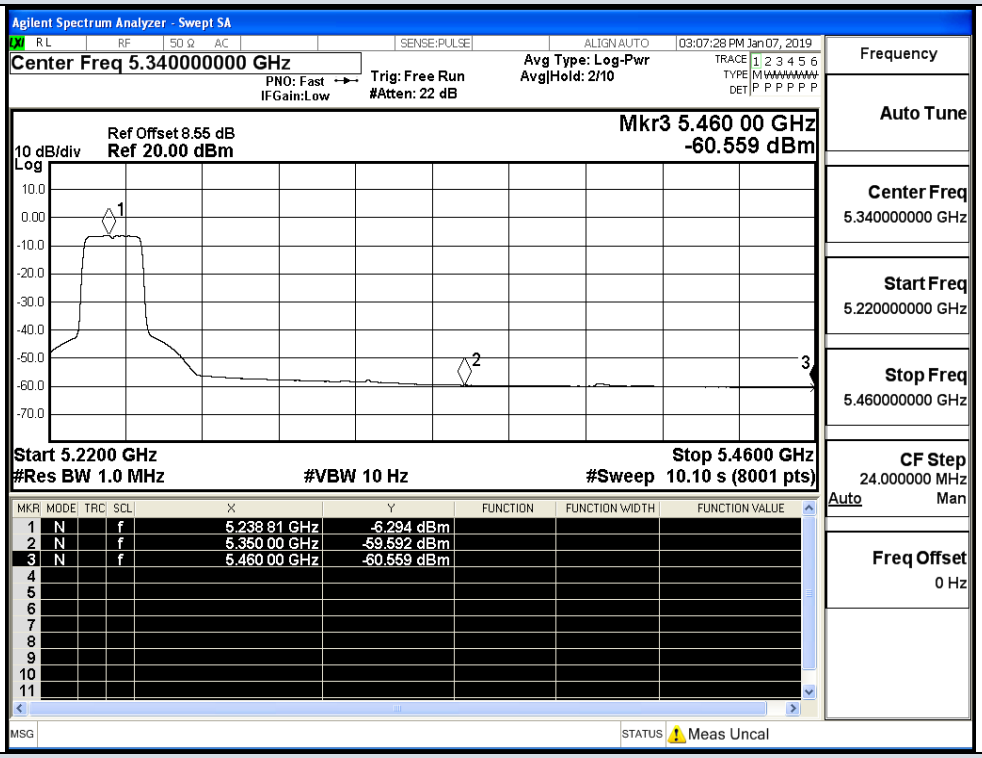


IEEE 802.11n HT20 / Channel 36 / 518 0MHz / Average_Ant0

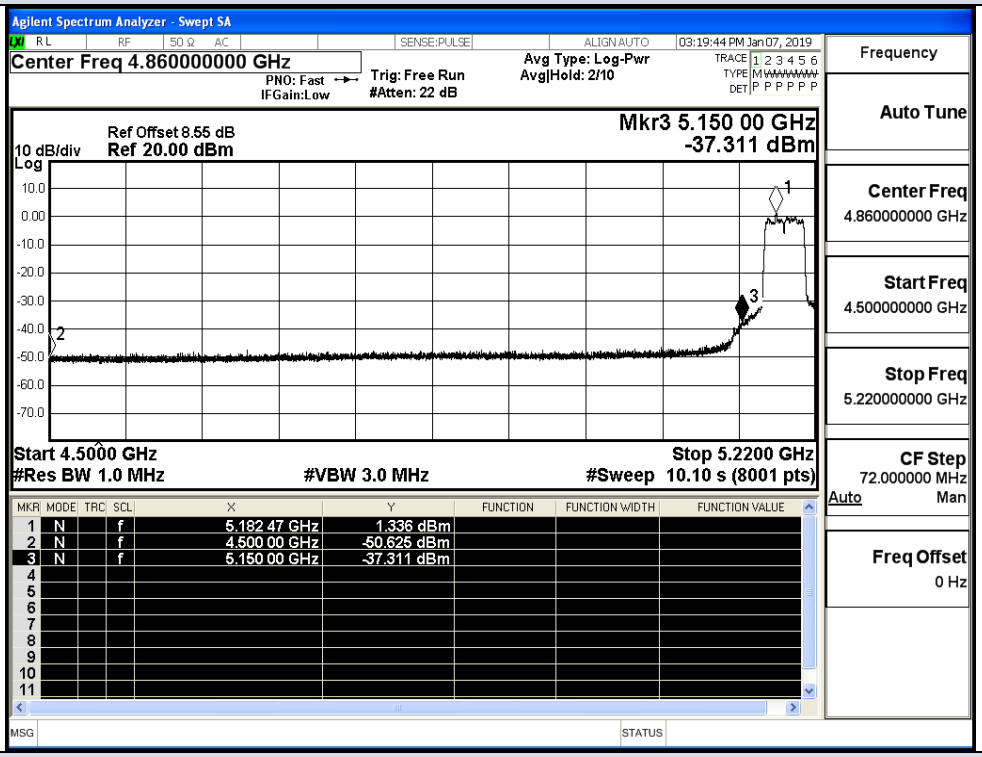
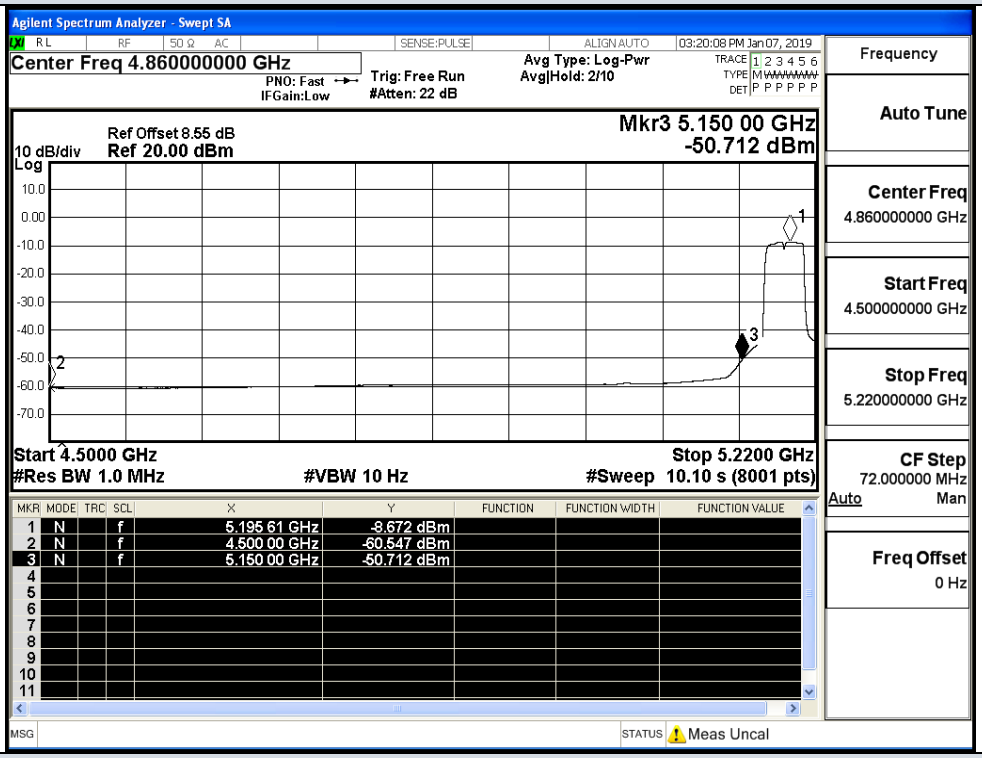
Undesirable Emissions Measurement_Ant0



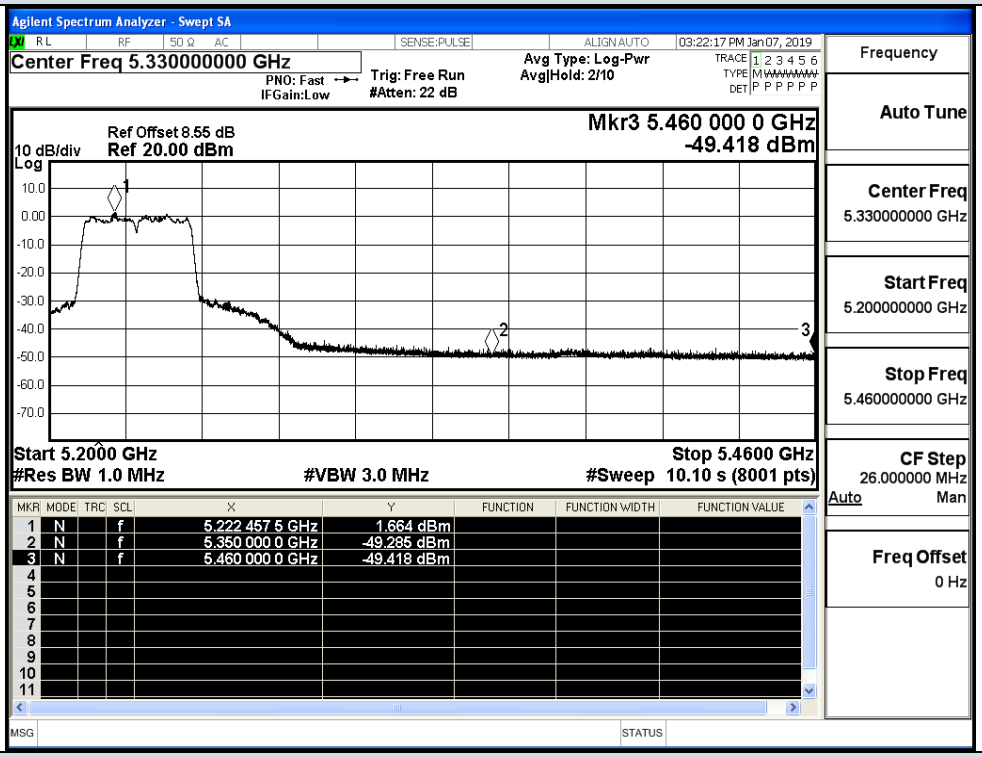
IEEE 802.11n HT20 / Channel 48 / 5240 MHz / Peak_Ant0



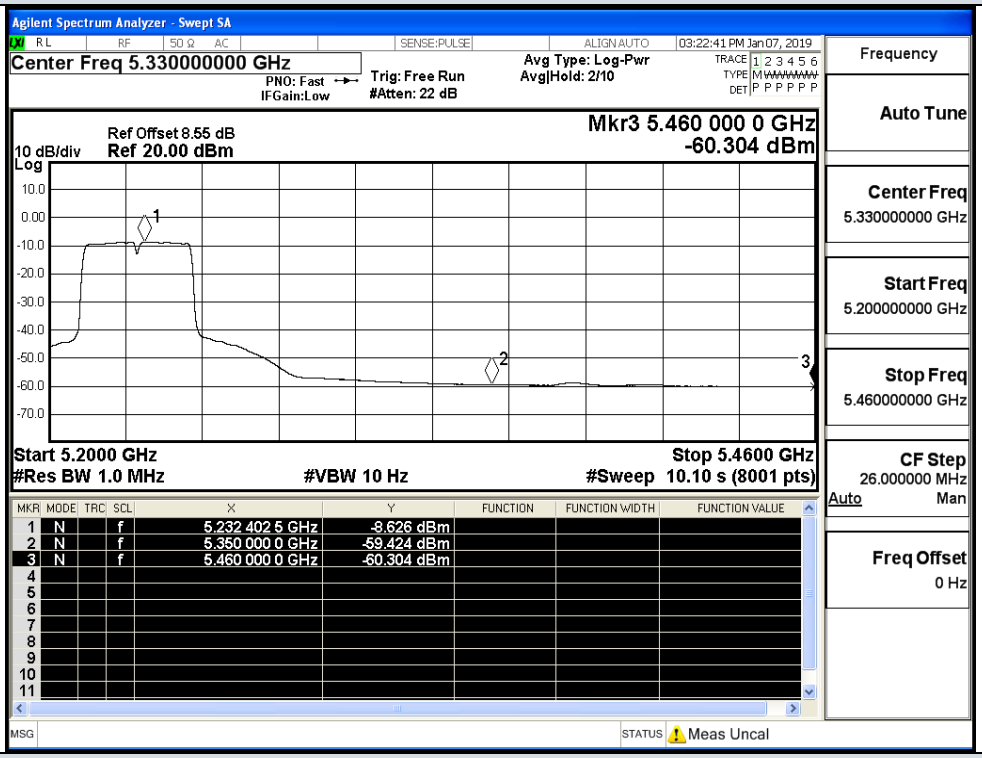
IEEE 802.11n HT20 / Channel 48 / 5240 MHz / Average_Ant0

Undesirable Emissions Measurement_Ant0

IEEE 802.11n HT40 / Channel 38 / 5190 MHz / Peak_Ant0

IEEE 802.11n HT40 / Channel 38 / 5190 MHz / Average_Ant0

Undesirable Emissions Measurement_Ant0

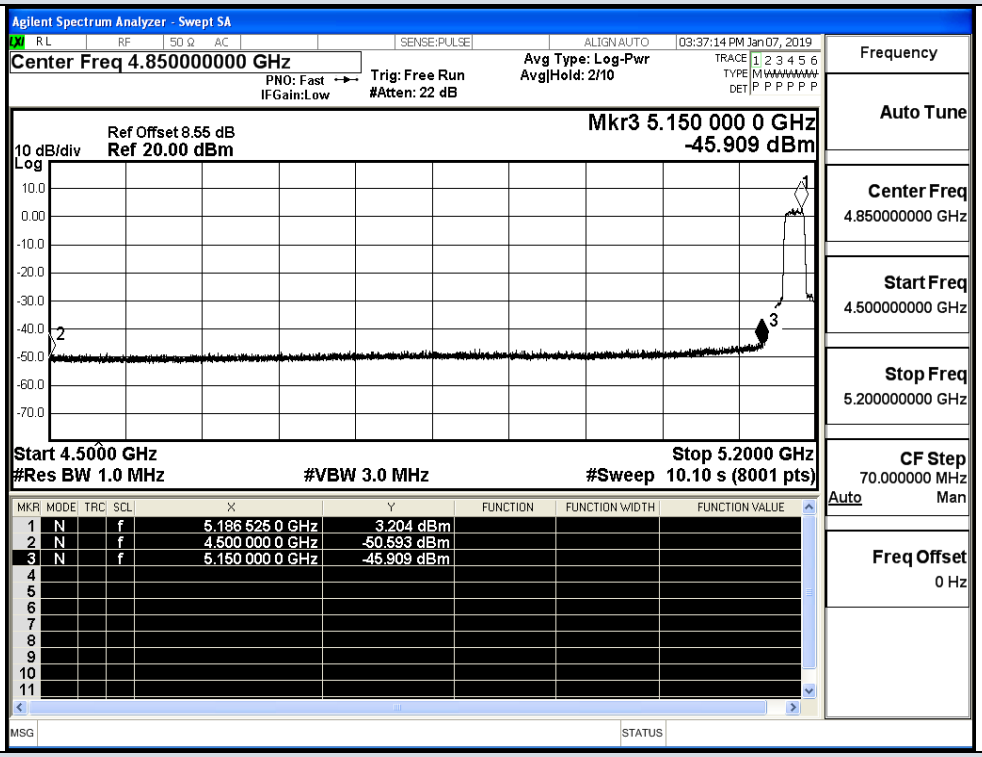


IEEE 802.11n HT40 / Channel 46 / 5230 MHz / Peak_Ant0

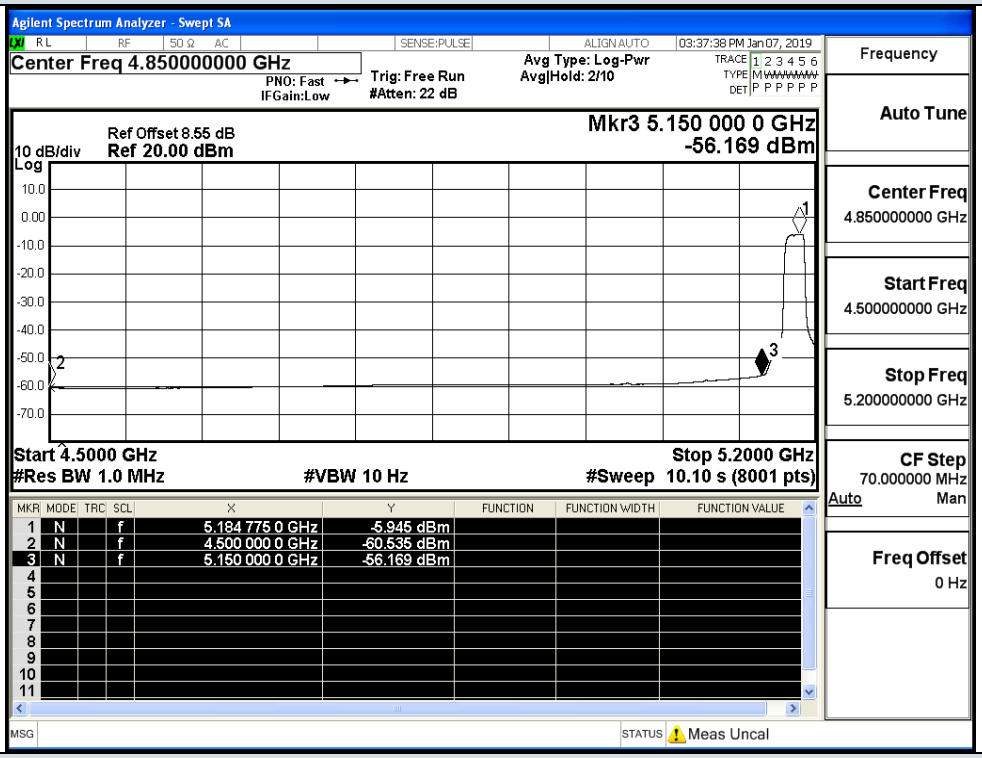


IEEE 802.11n HT40 / Channel 46 / 5230 MHz / Average_Ant0

Undesirable Emissions Measurement_Ant1

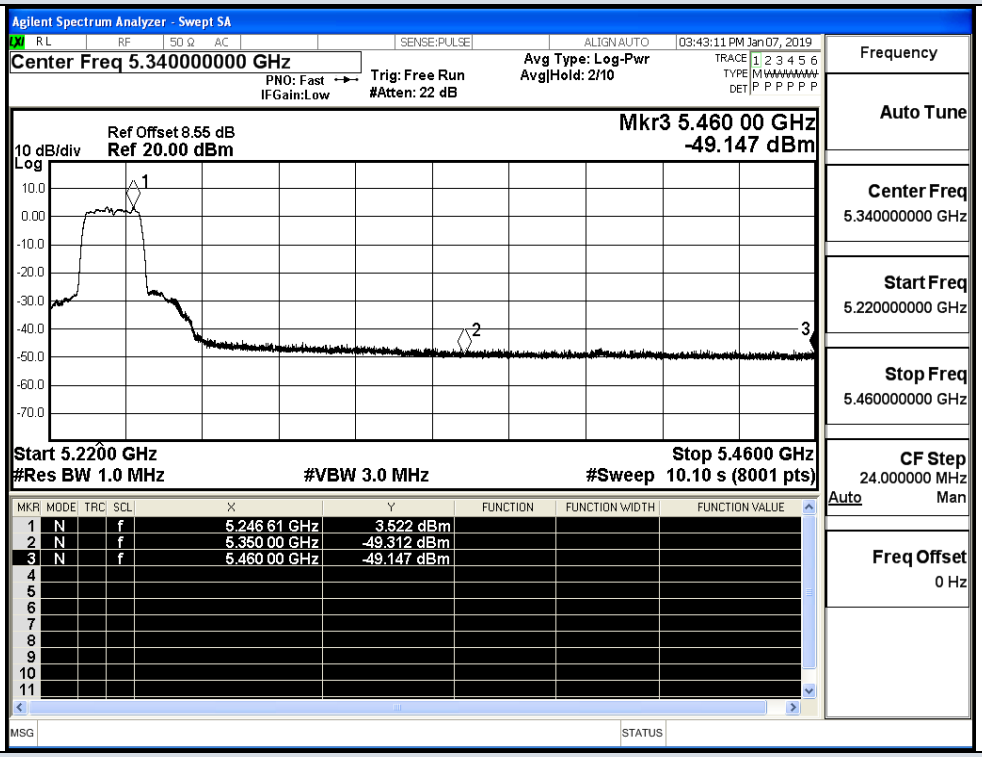


IEEE 802.11a / Channel 36 / 5180 MHz / Peak_Ant1

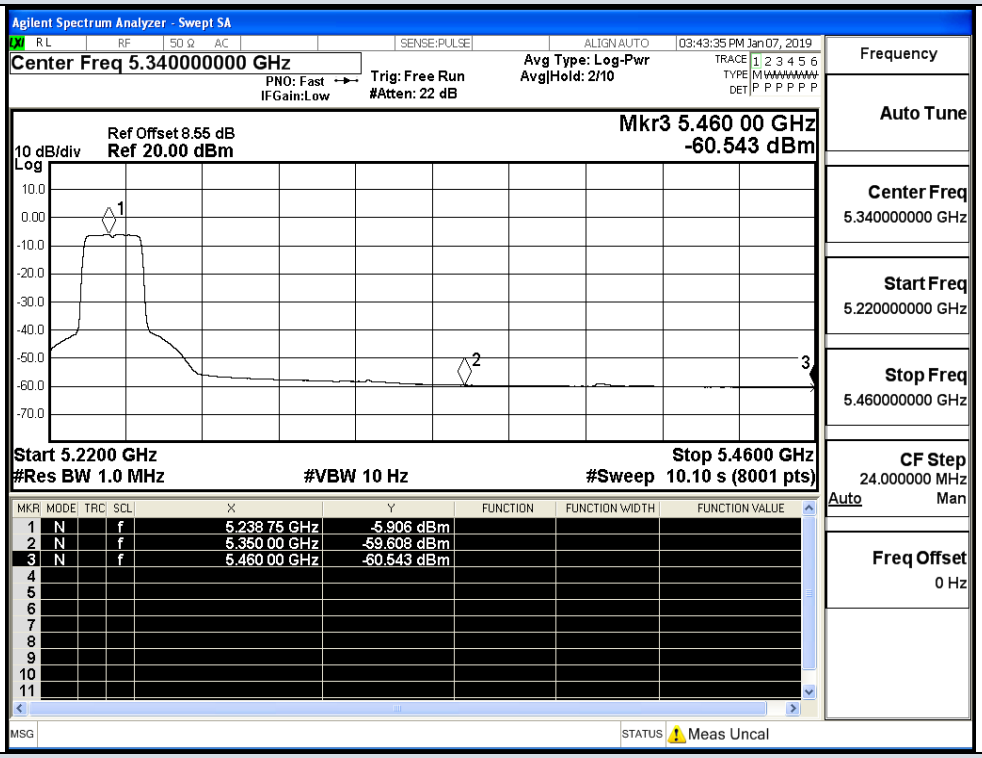


IEEE 802.11a / Channel 36 / 5180 MHz / Average_Ant1

Undesirable Emissions Measurement_Ant1

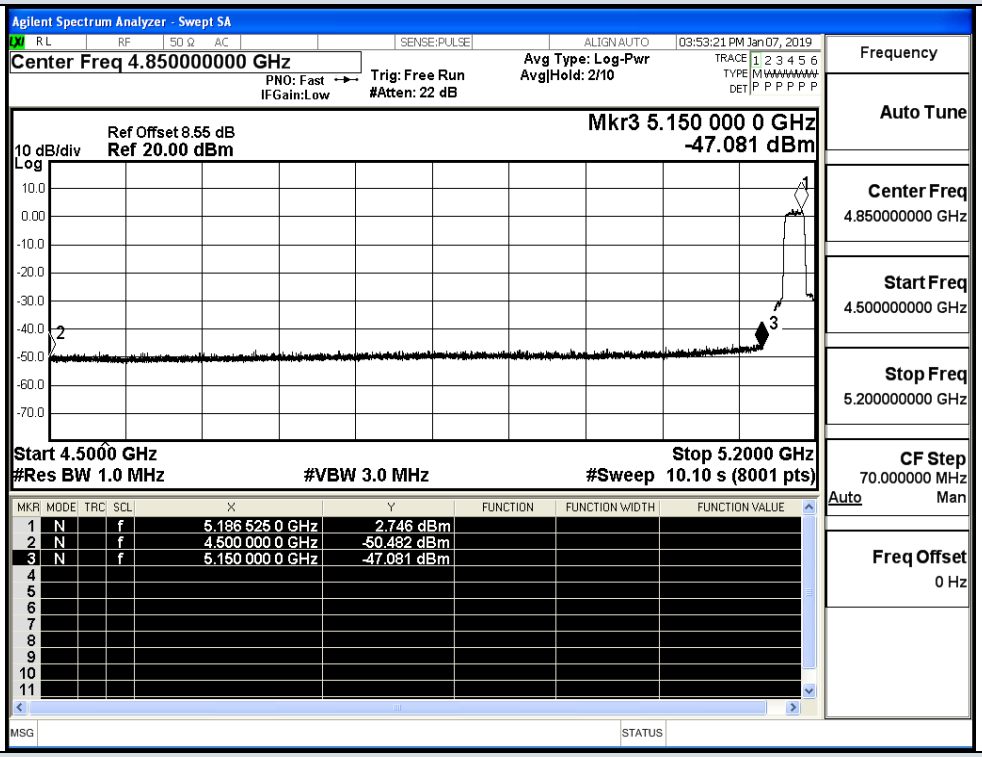


IEEE 802.11a / Channel 48 / 5240 MHz / Peak_Ant1

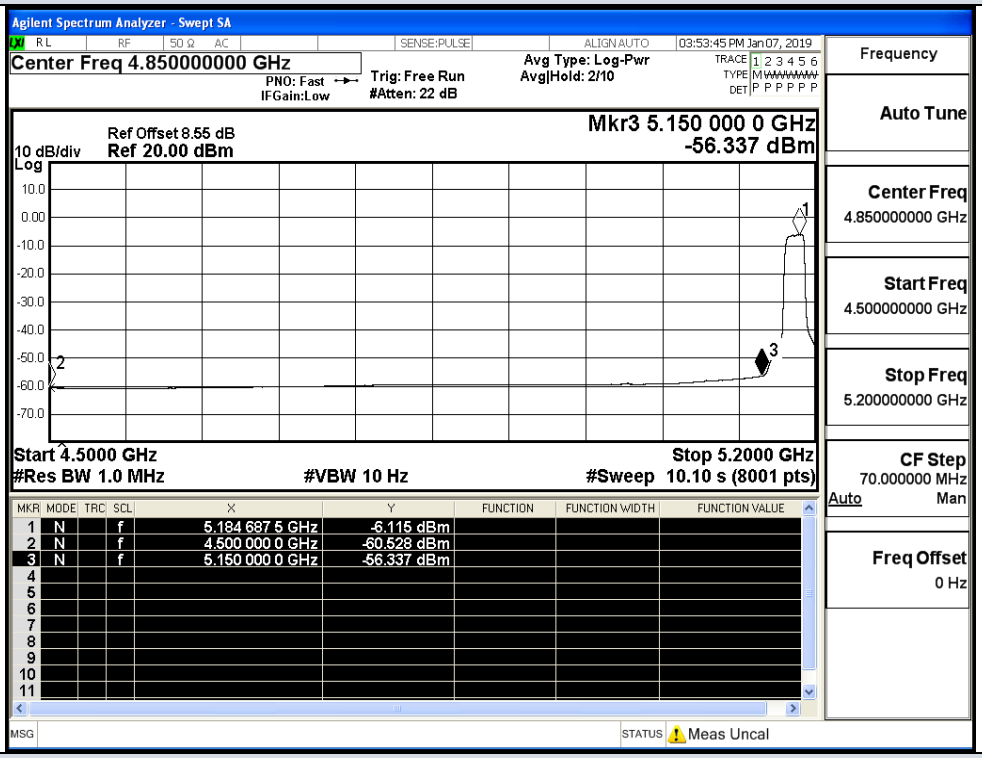


IEEE 802.11a / Channel 48 / 5240 MHz / Average_Ant1

Undesirable Emissions Measurement_Ant1

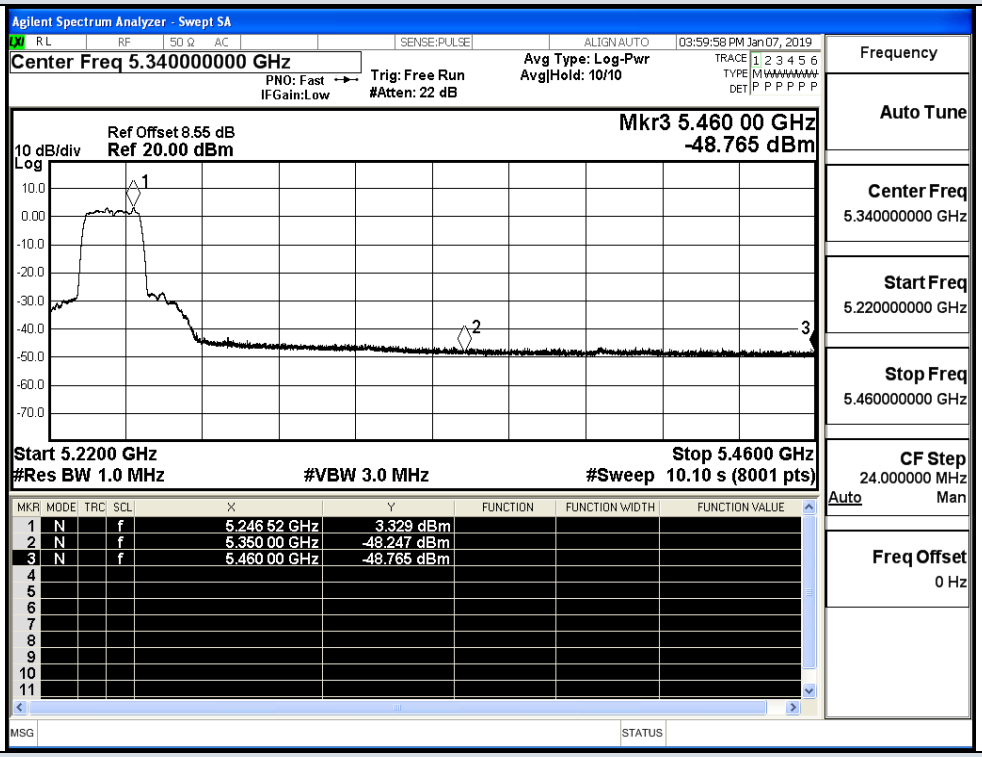


IEEE 802.11n HT20 / Channel 36 / 5180 MHz / Peak_Ant1

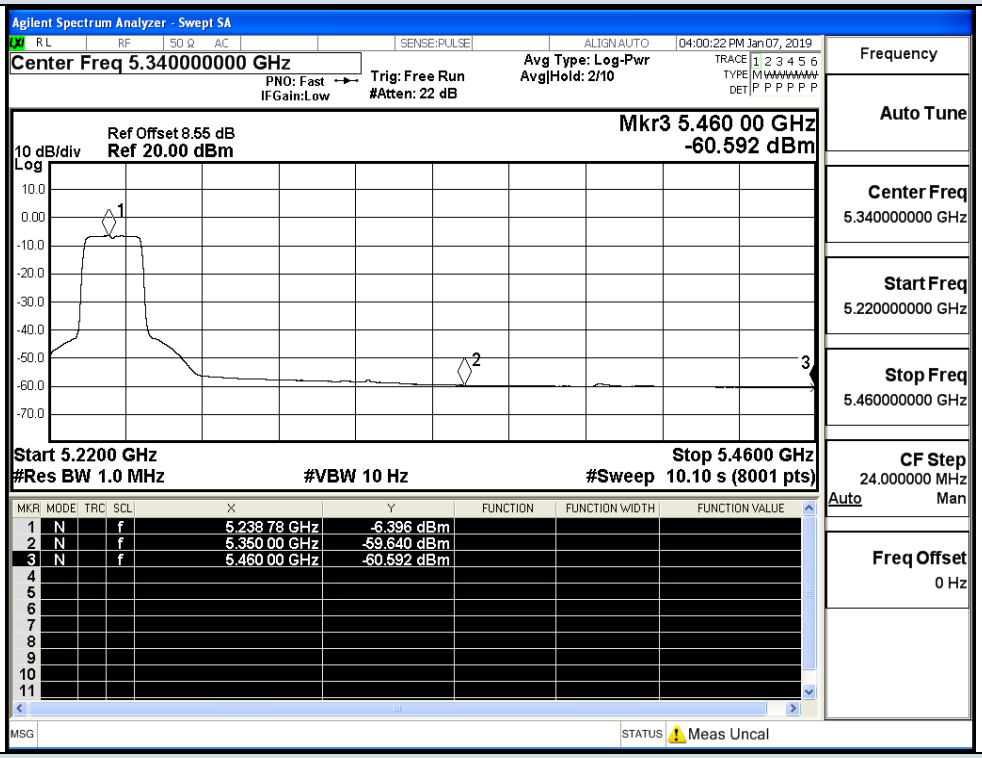


IEEE 802.11n HT20 / Channel 36 / 5180 MHz / Average_Ant1

Undesirable Emissions Measurement_Ant1

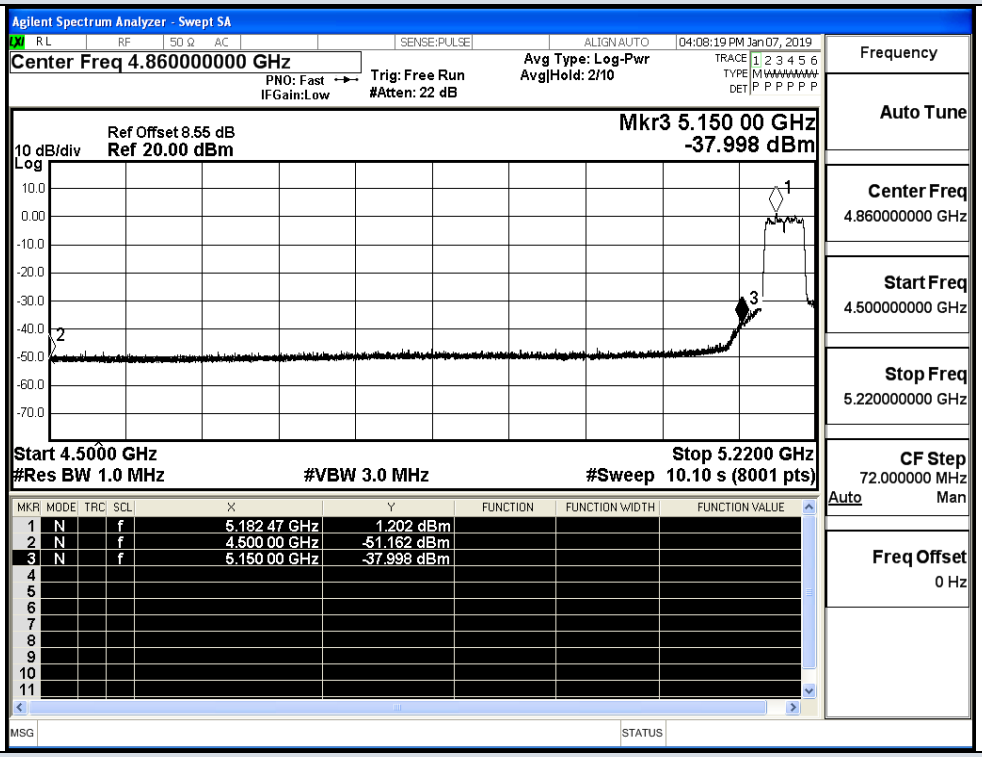


IEEE 802.11n HT20 / Channel 48 / 5240 MHz / Peak_Ant1

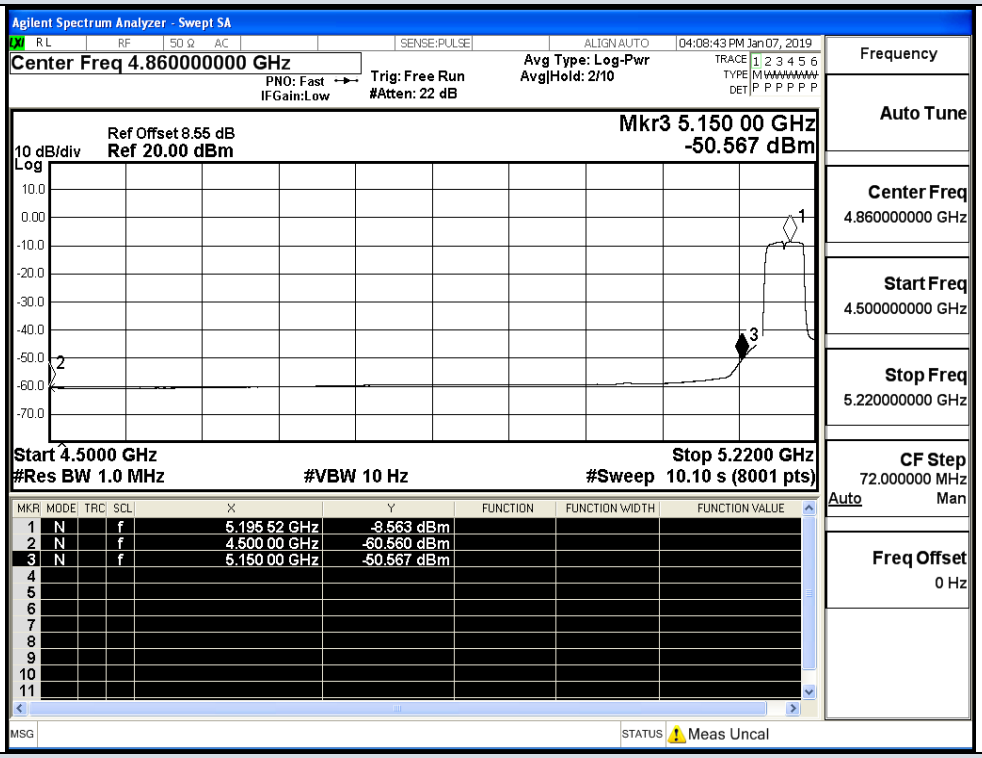


IEEE 802.11n HT20 / Channel 48 / 5240 MHz / Average_Ant1

Undesirable Emissions Measurement_Ant1

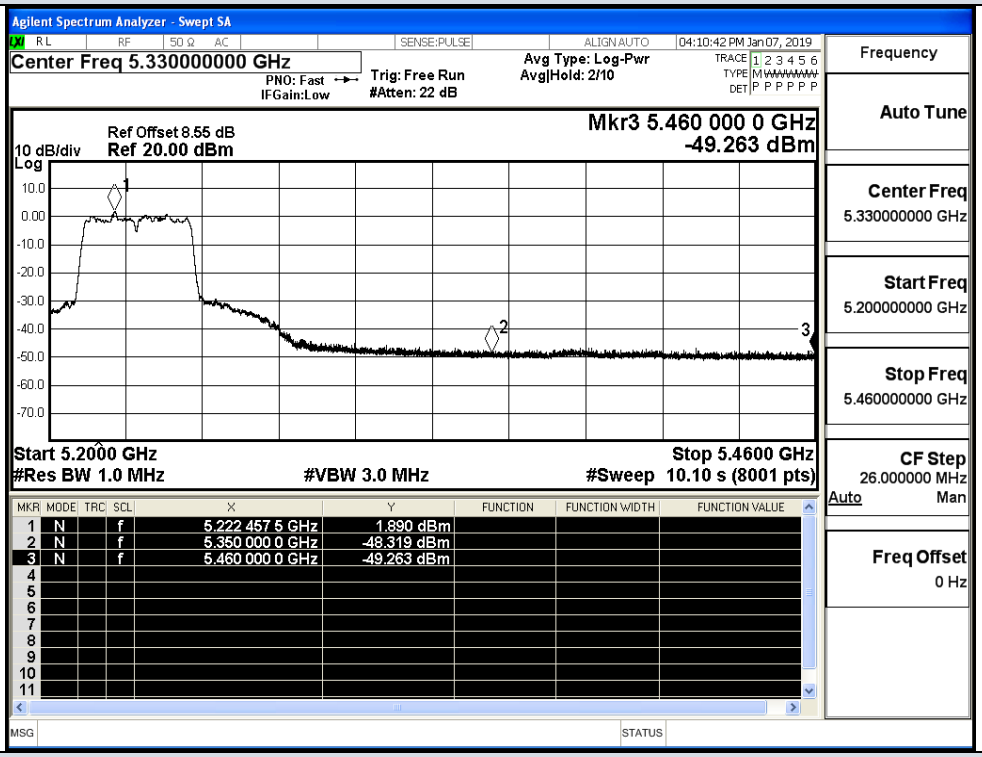


IEEE 802.11n HT40 / Channel 38 / 5190 MHz / Peak_Ant1

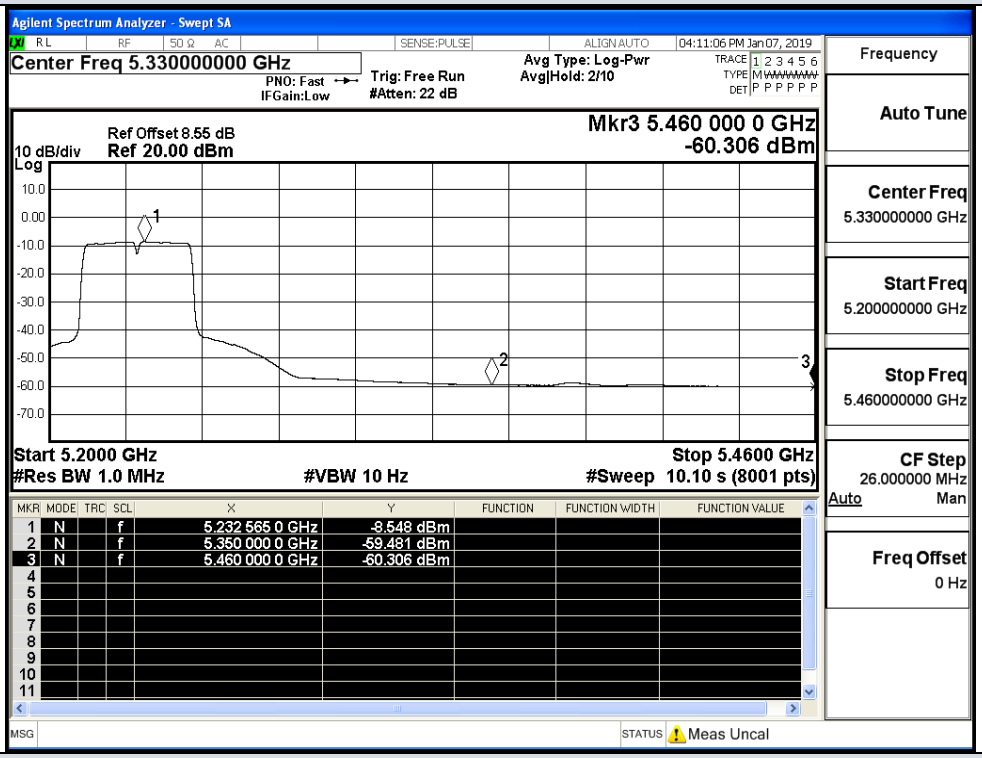


IEEE 802.11n HT40 / Channel 38 / 5190 MHz / Average_Ant1

Undesirable Emissions Measurement_Ant1



IEEE 802.11n HT40 / Channel 46 / 5230 MHz / Peak_Ant1



IEEE 802.11n HT40 / Channel 46 / 5230 MHz / Average_Ant1