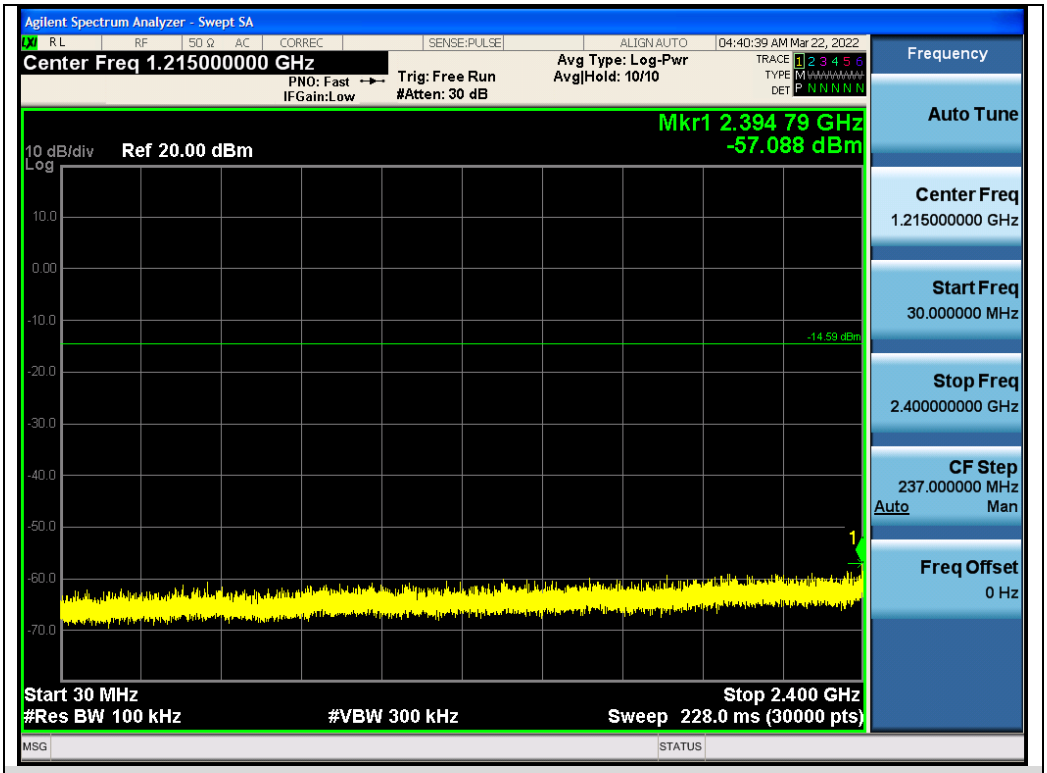
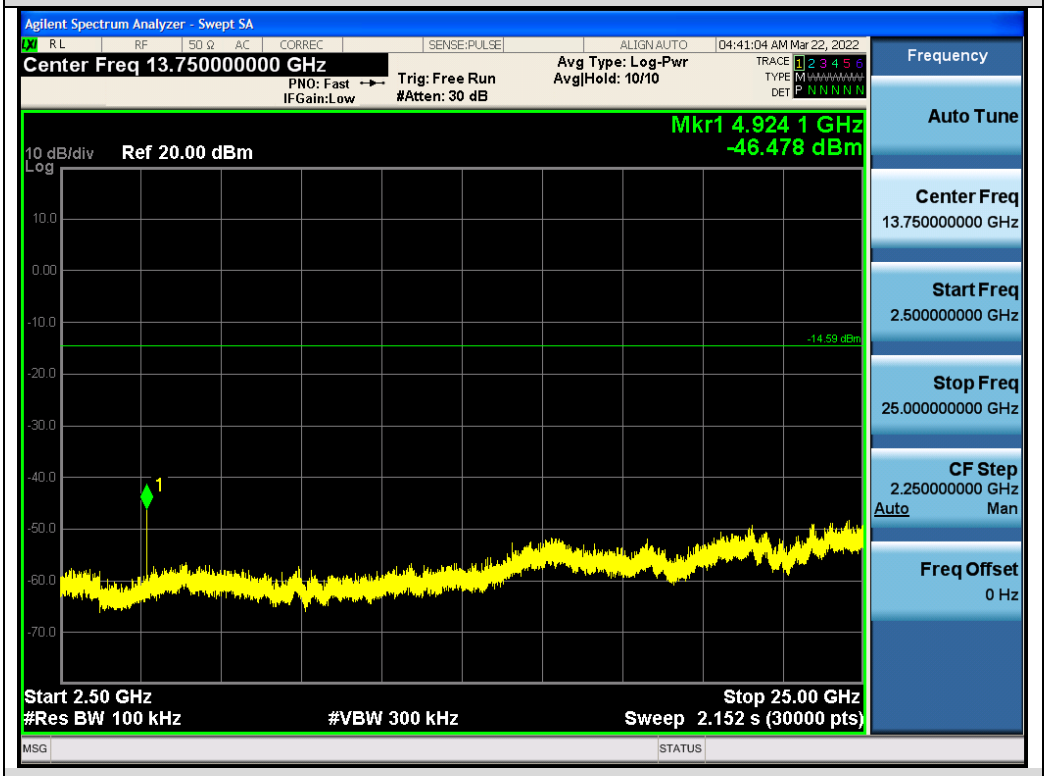
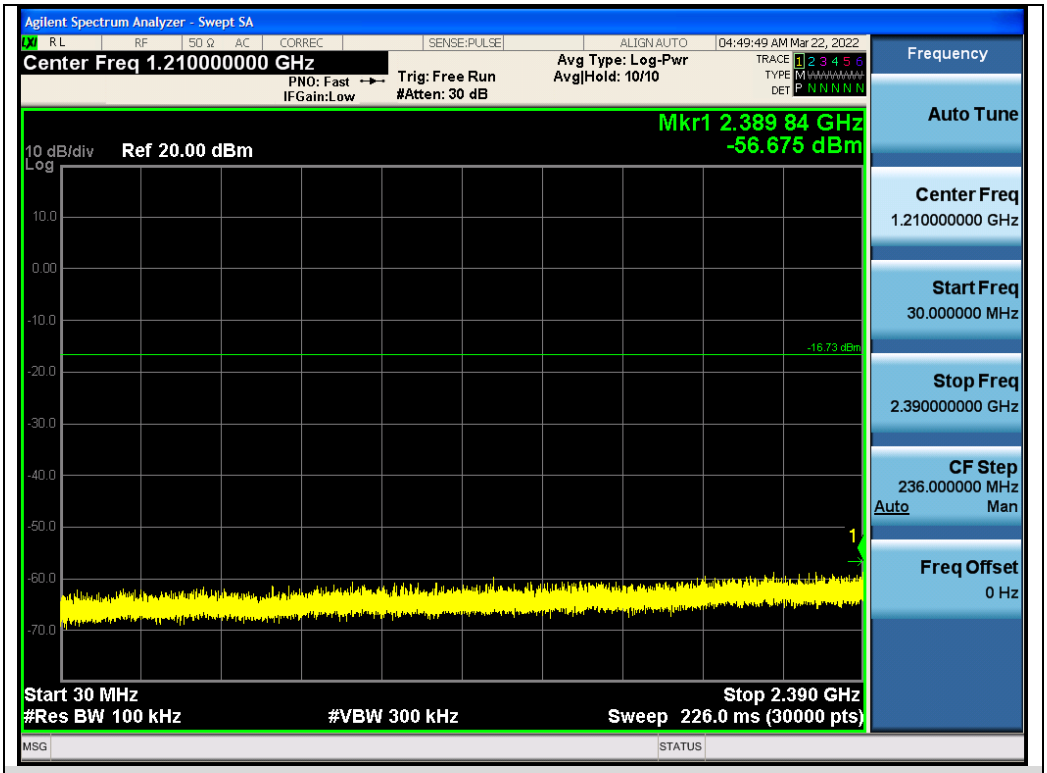


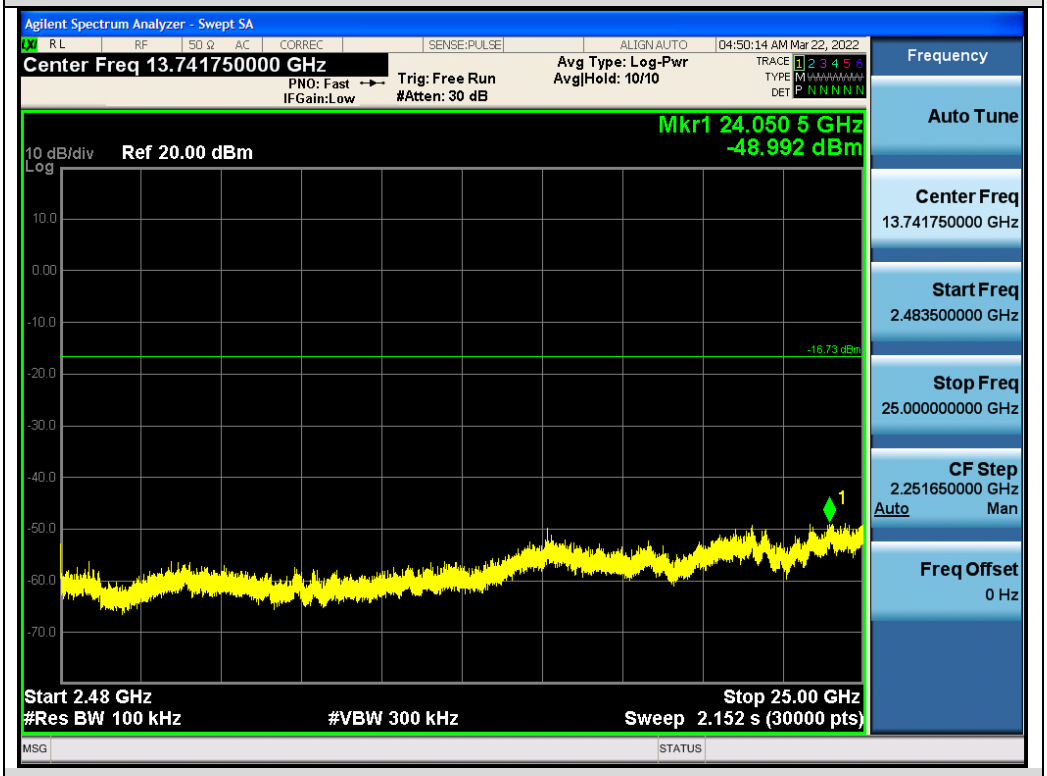
Test_Graph_802.11b_ANT1_2462_1Mbps_Lower Band Emissions



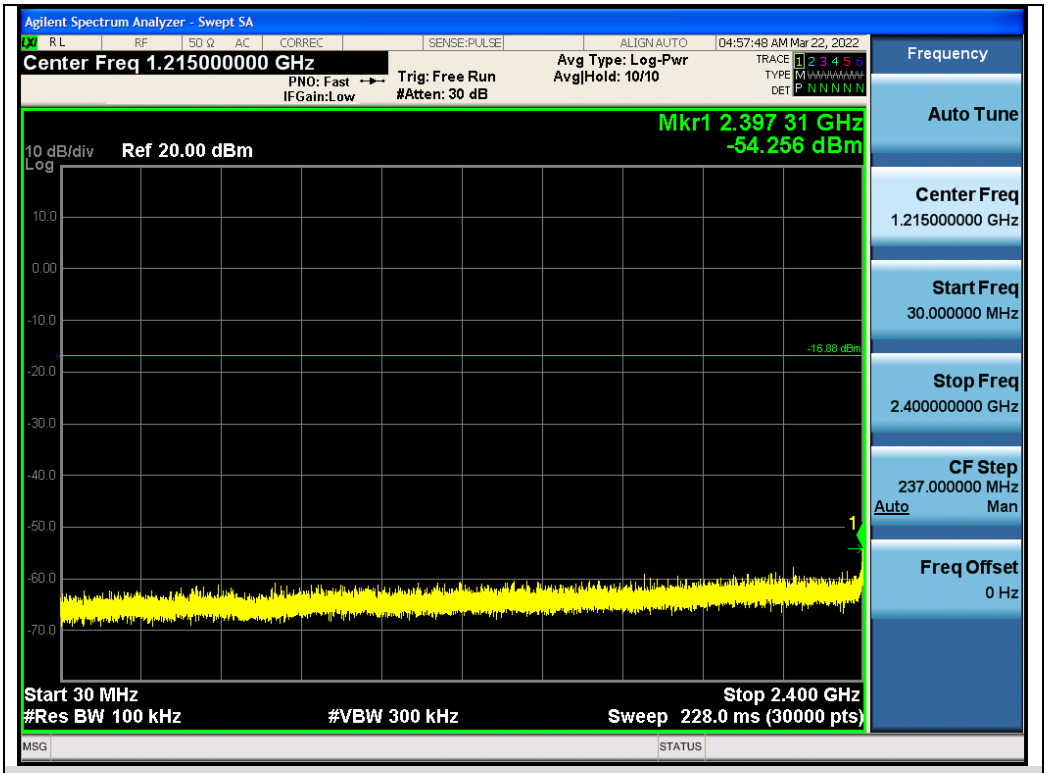
Test_Graph_802.11b_ANT1_2462_1Mbps_Higher Band Emissions



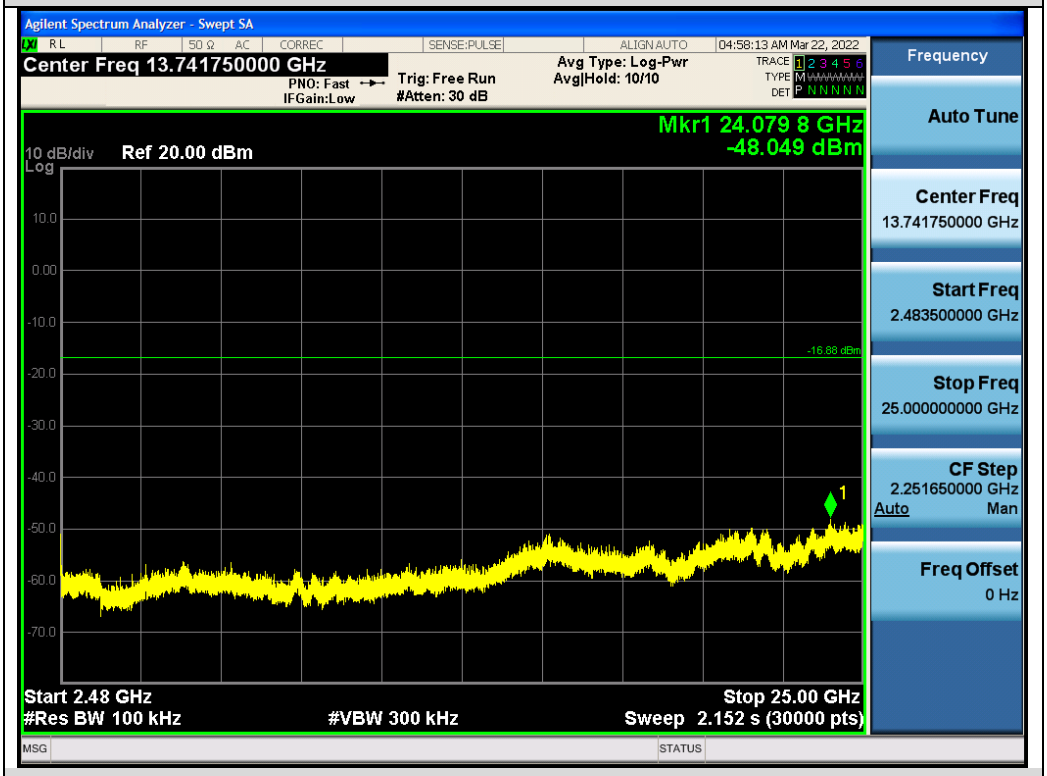
Test_Graph_802.11g_ANT1_2412_6Mbps_Lower Band Emissions



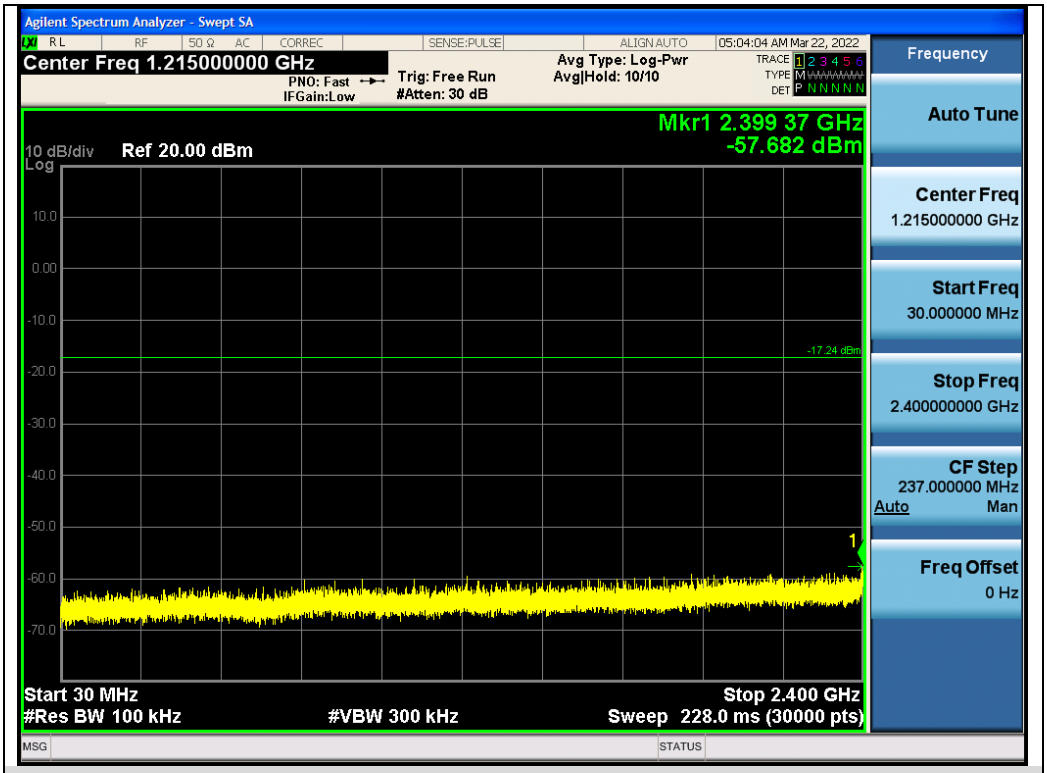
Test_Graph_802.11g_ANT1_2412_6Mbps_Higher Band Emissions



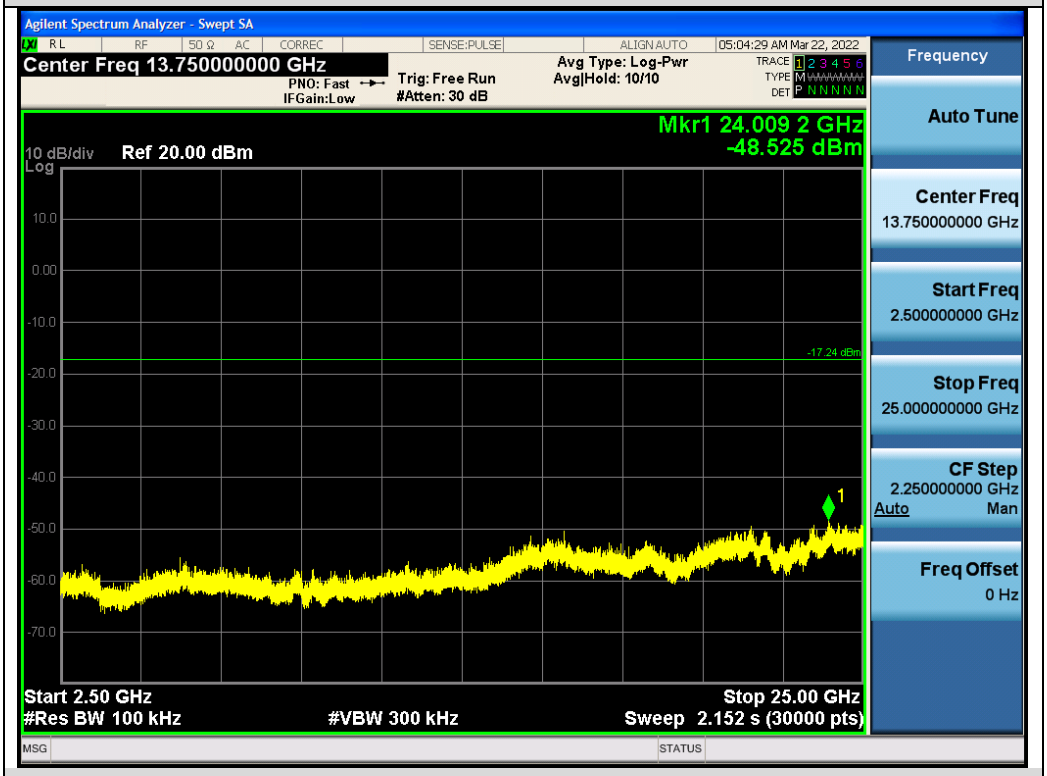
Test_Graph_802.11g_ANT1_2437_6Mbps_Lower Band Emissions



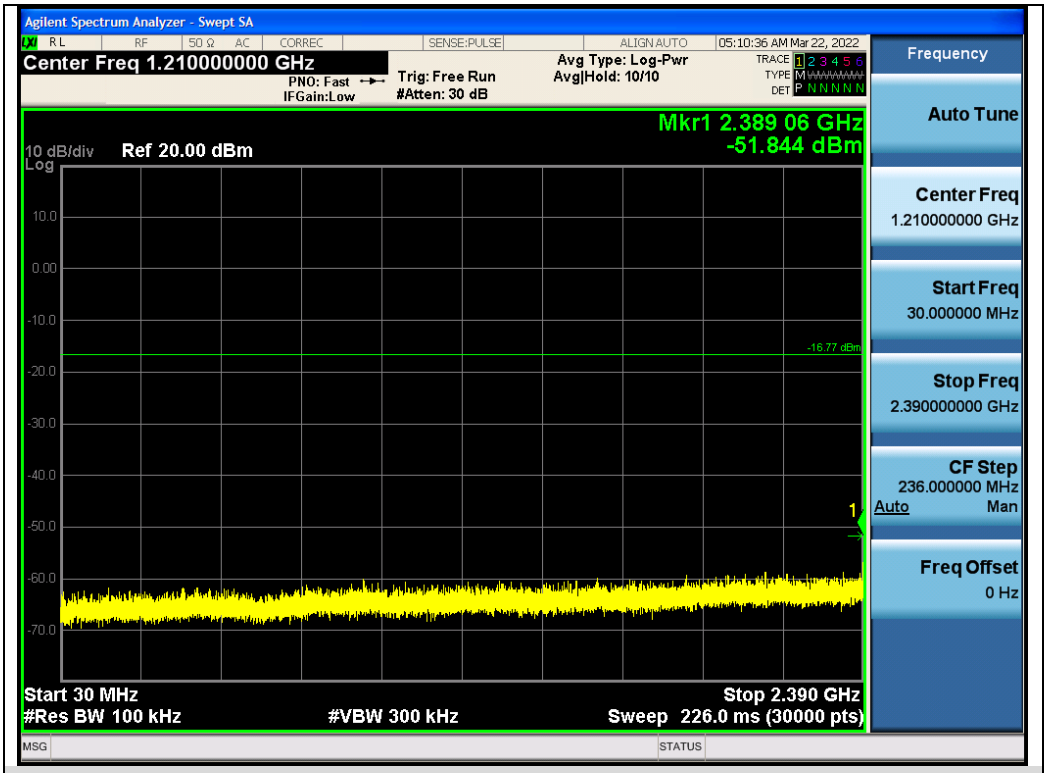
Test_Graph_802.11g_ANT1_2437_6Mbps_Higher Band Emissions



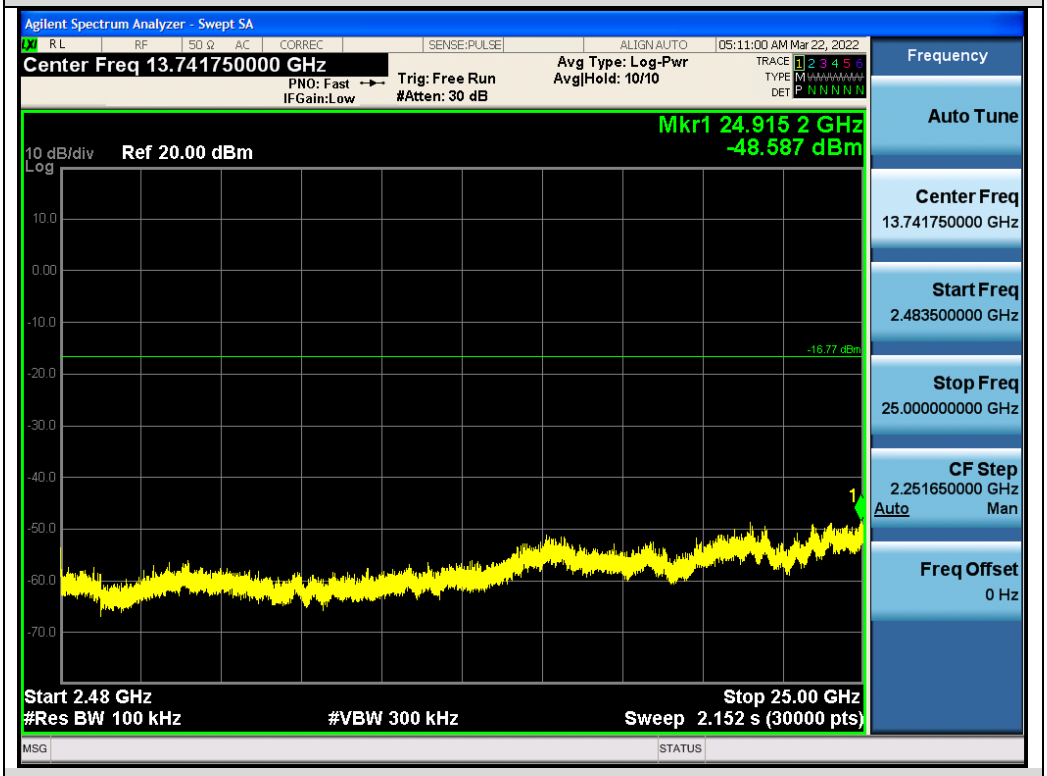
Test_Graph_802.11g_ANT1_2462_6Mbps_Lower Band Emissions



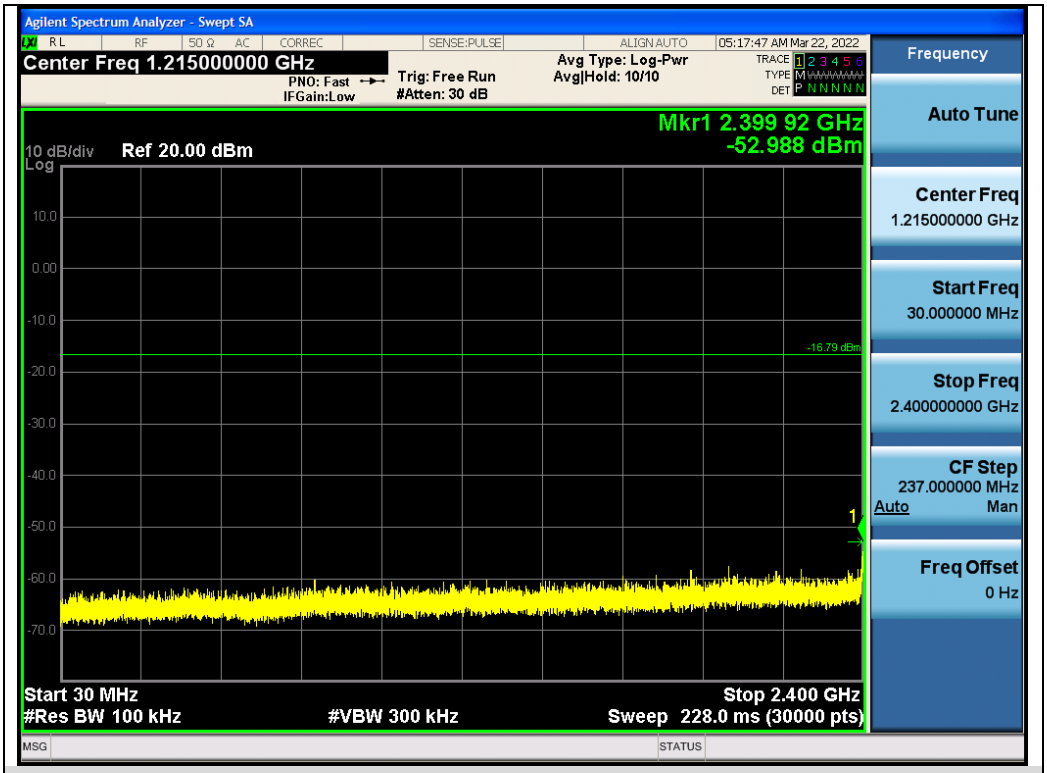
Test_Graph_802.11g_ANT1_2462_6Mbps_Higher Band Emissions



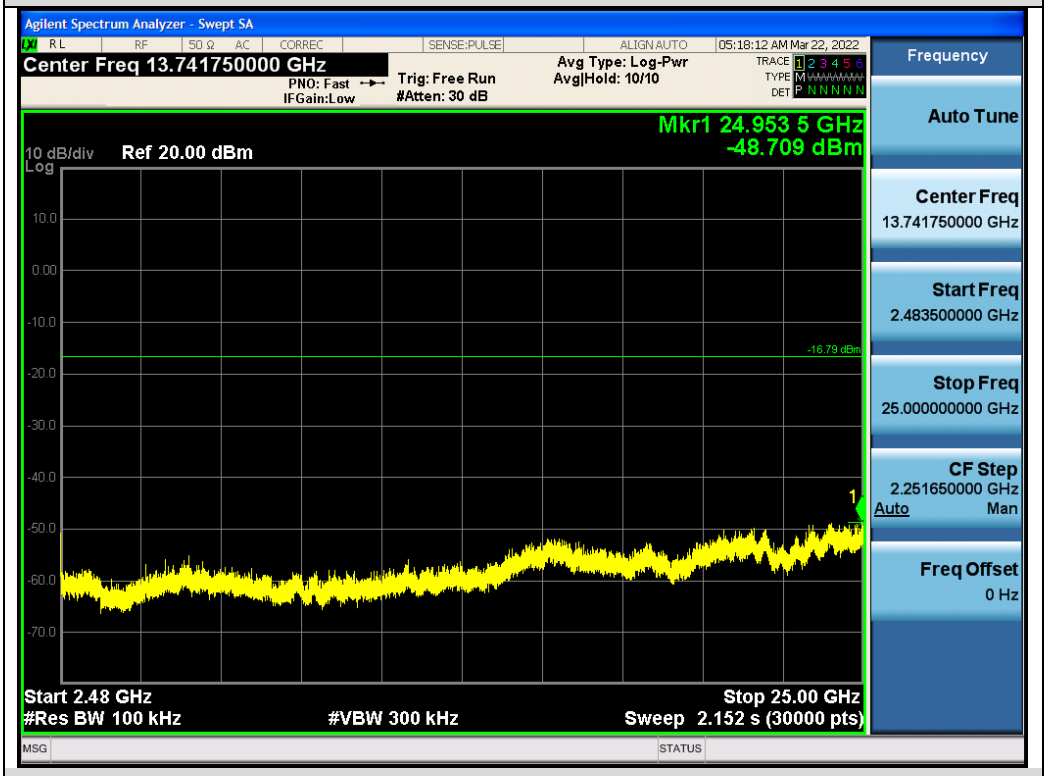
Test_Graph_802.11n20_ANT1_2412_MCS0_Lower Band Emissions



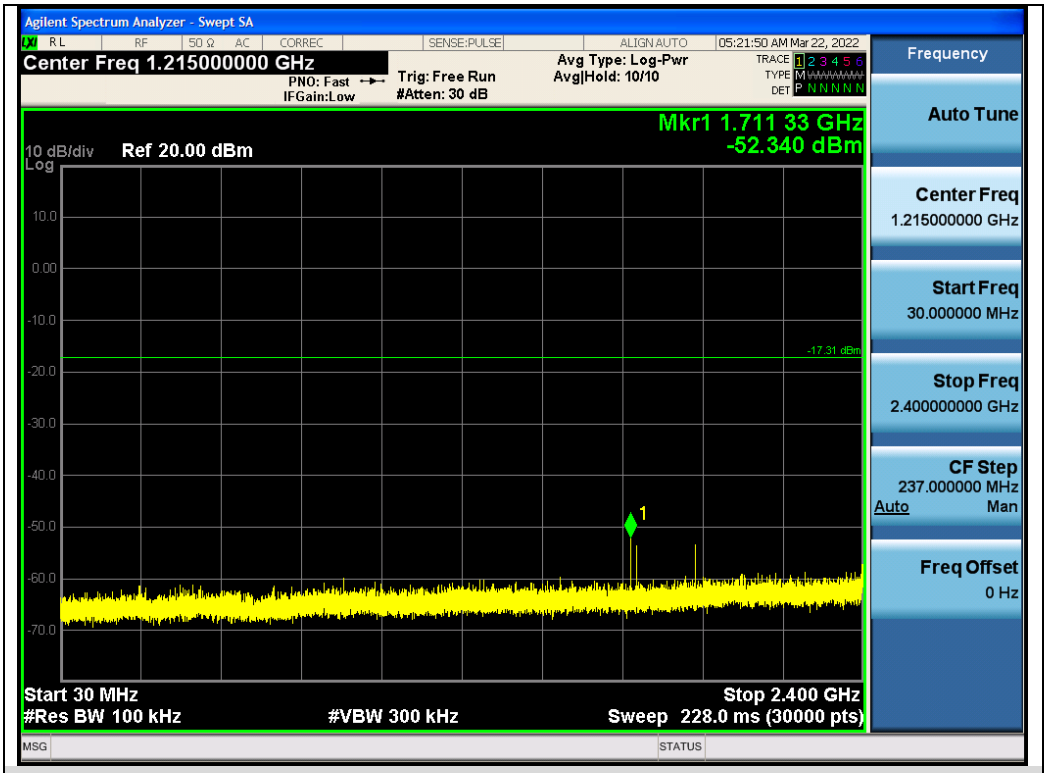
Test_Graph_802.11n20_ANT1_2412_MCS0_Higher Band Emissions



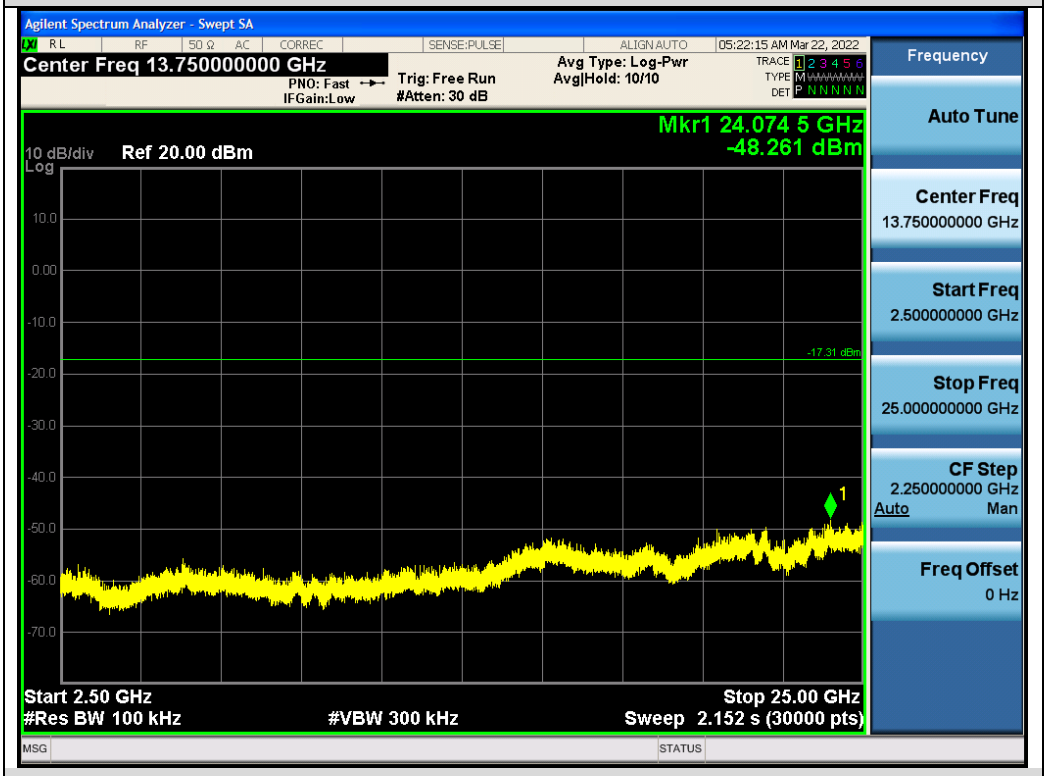
Test_Graph_802.11n20_ANT1_2437_MCS0_Lower Band Emissions



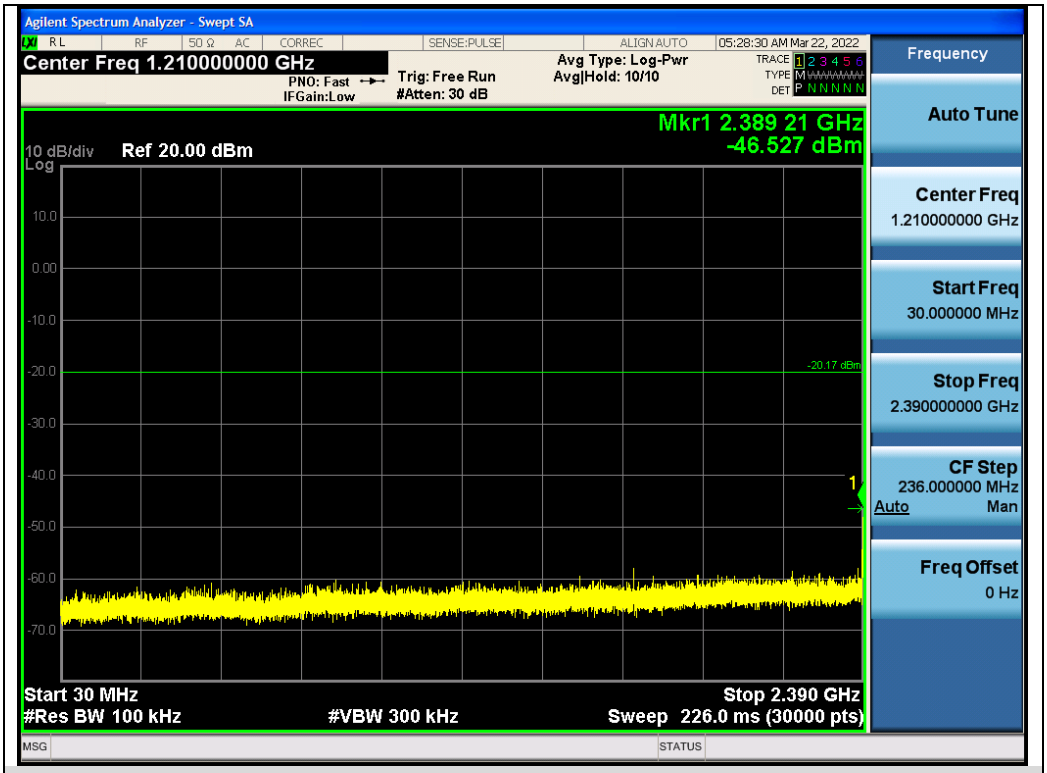
Test_Graph_802.11n20_ANT1_2437_MCS0_Higher Band Emissions



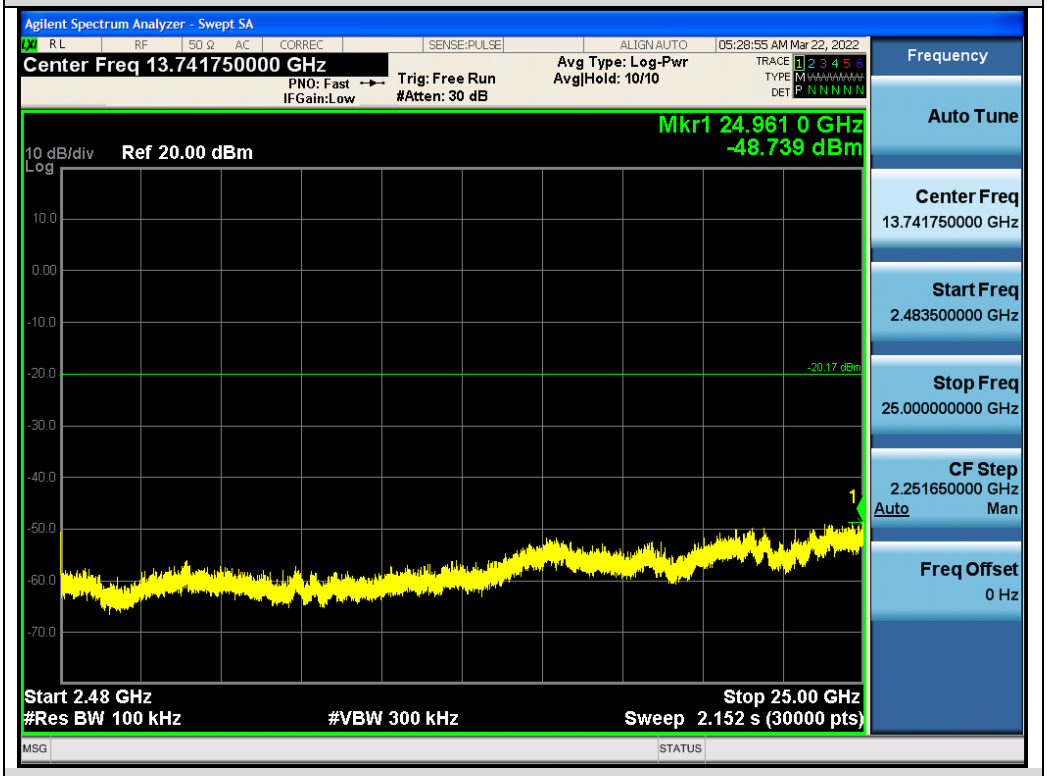
Test_Graph_802.11n20_ANT1_2462_MCS0_Lower Band Emissions



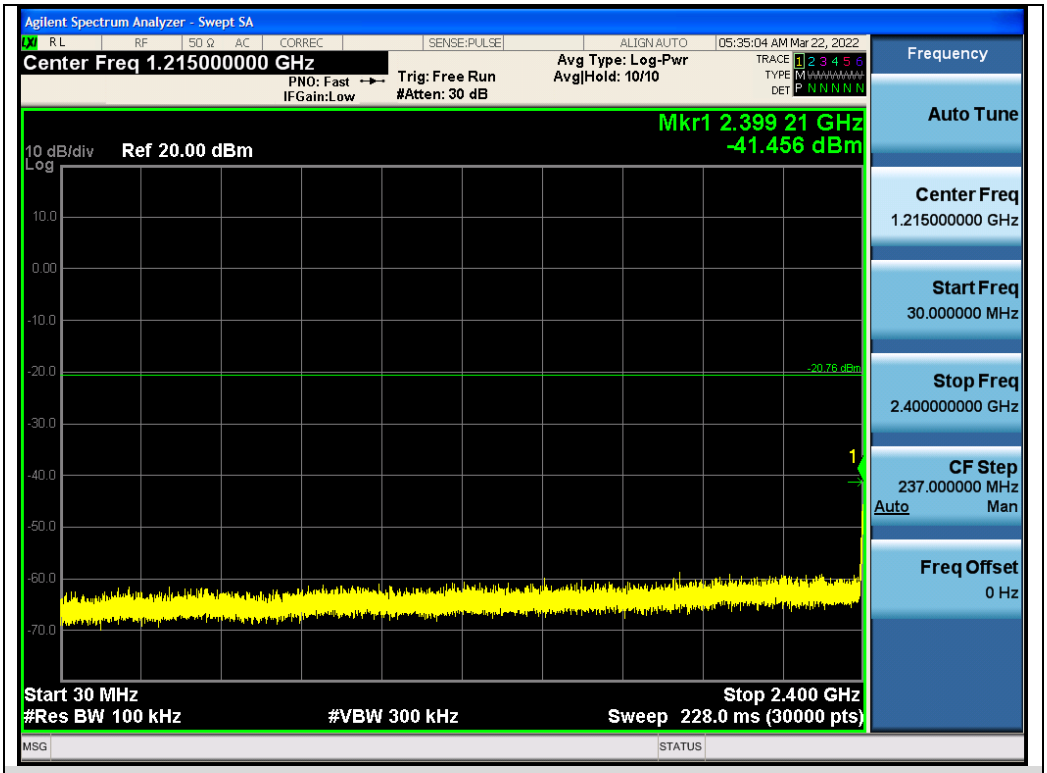
Test_Graph_802.11n20_ANT1_2462_MCS0_Higher Band Emissions



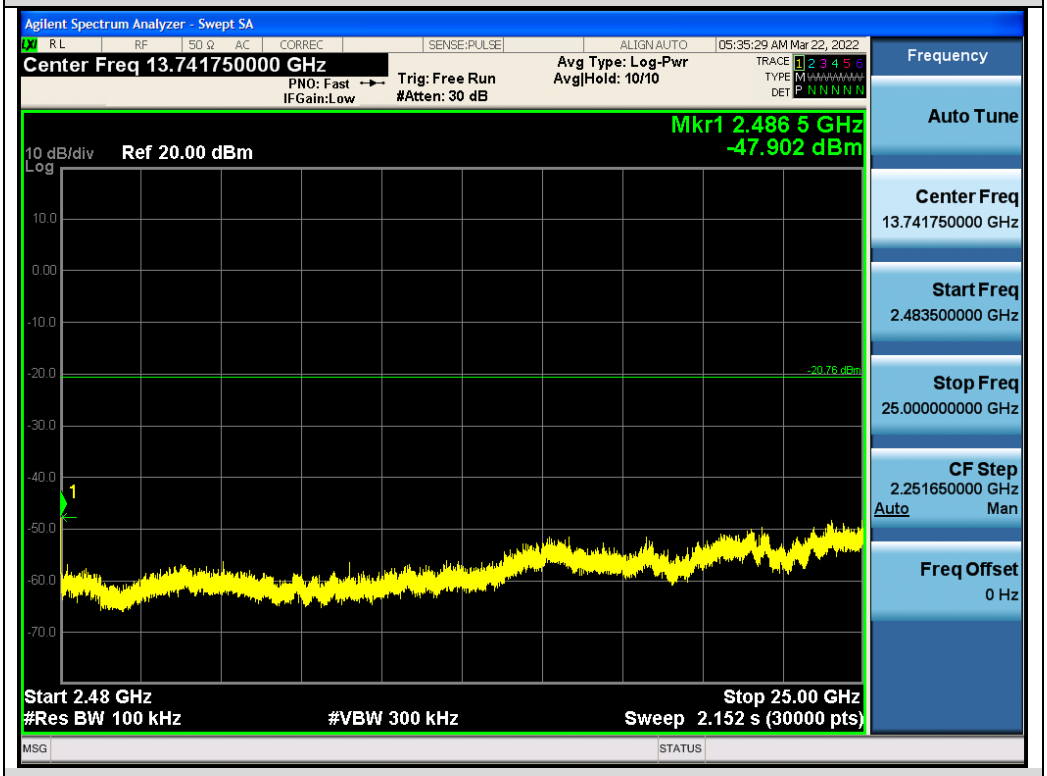
Test_Graph_802.11n40_ANT1_2422_MCS0_Lower Band Emissions



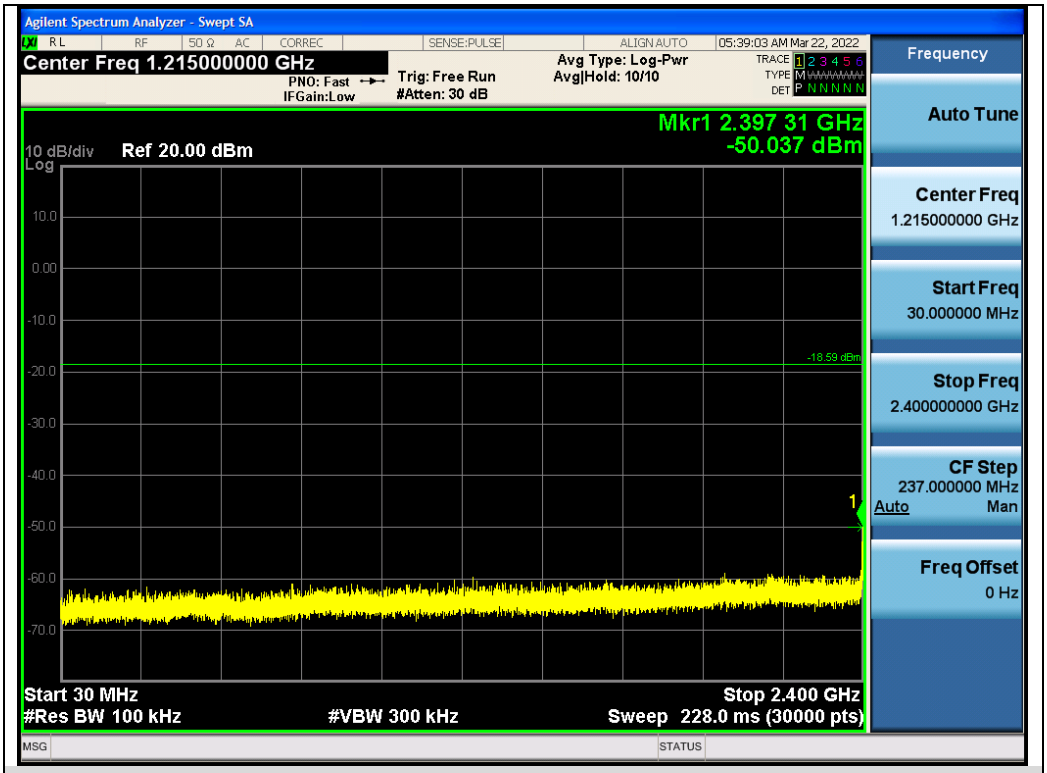
Test_Graph_802.11n40_ANT1_2422_MCS0_Higher Band Emissions



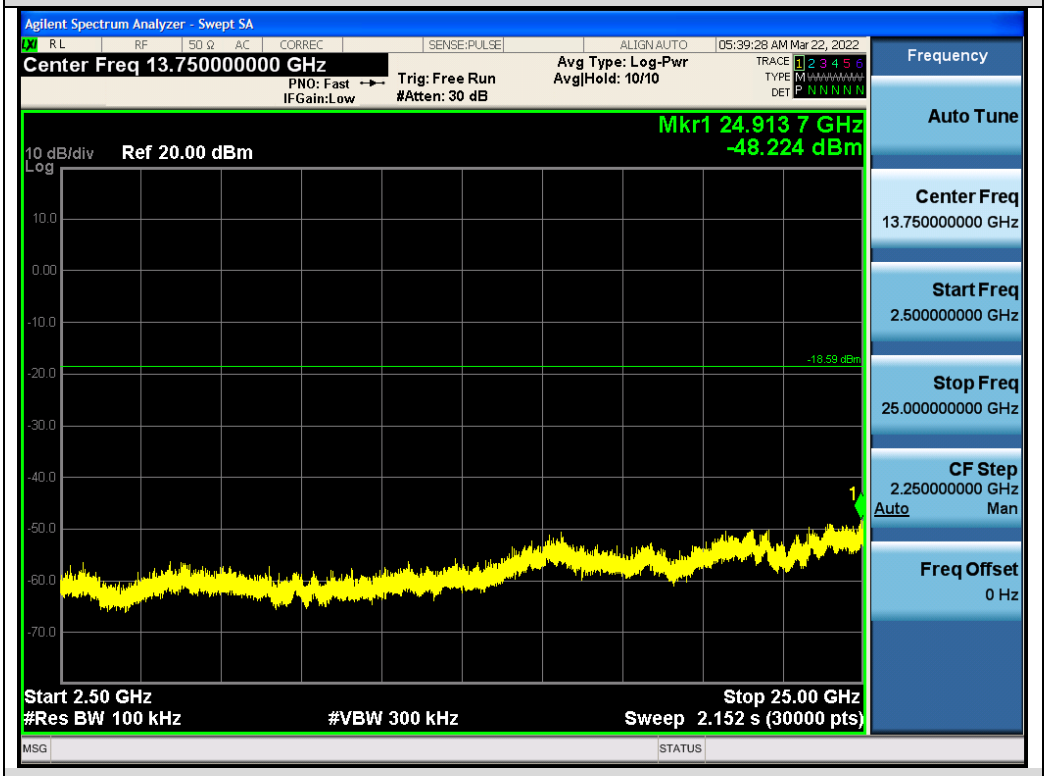
Test_Graph_802.11n40_ANT1_2437_MCS0_Lower Band Emissions



Test_Graph_802.11n40_ANT1_2437_MCS0_Higher Band Emissions



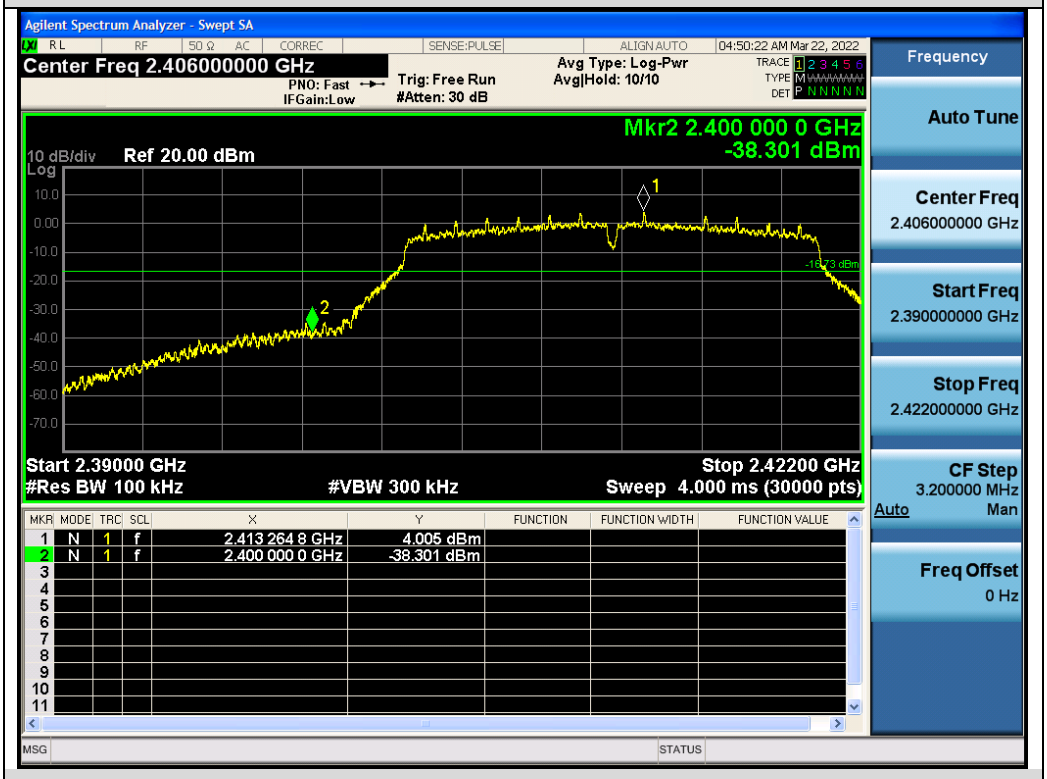
Test_Graph_802.11n40_ANT1_2452_MCS0_Lower Band Emissions



Test_Graph_802.11n40_ANT1_2452_MCS0_Higher Band Emissions

Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands

Test_Graph_802.11b_ANT1_2412_1Mbps_Lower Band Edge Emissions

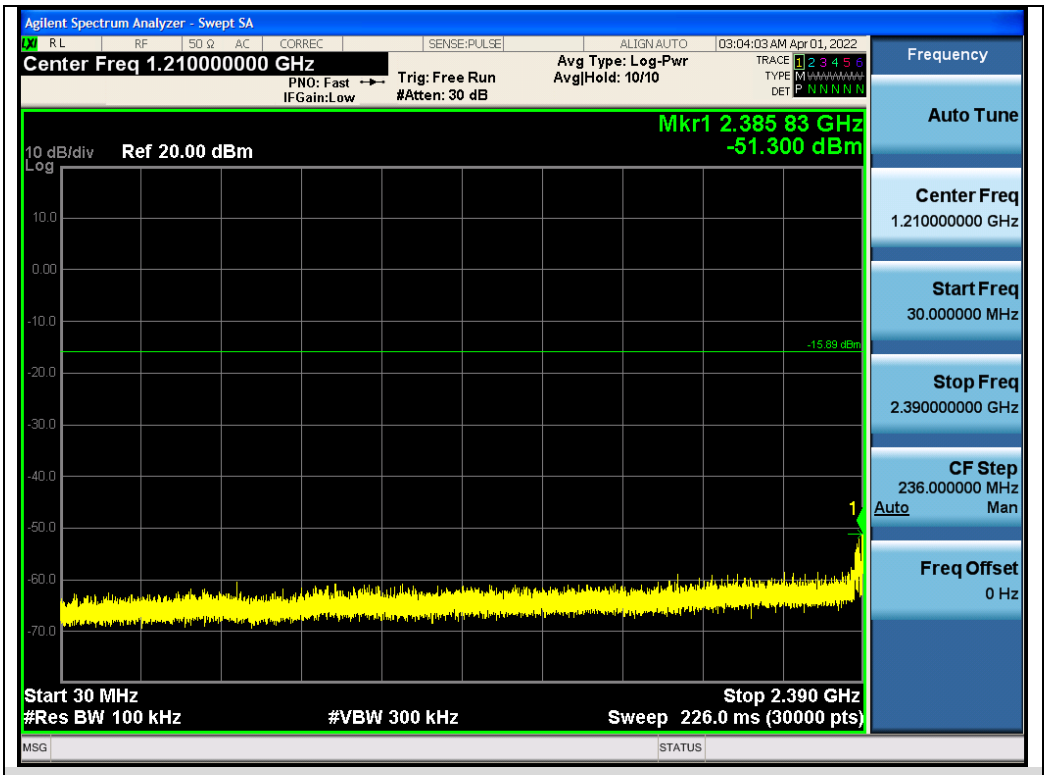


Test_Graph_802.11g_ANT1_2412_6Mbps_Lower Band Edge Emissions

Test_Graph_802.11n20_ANT1_2412_MCS0_Lower Band Edge Emissions

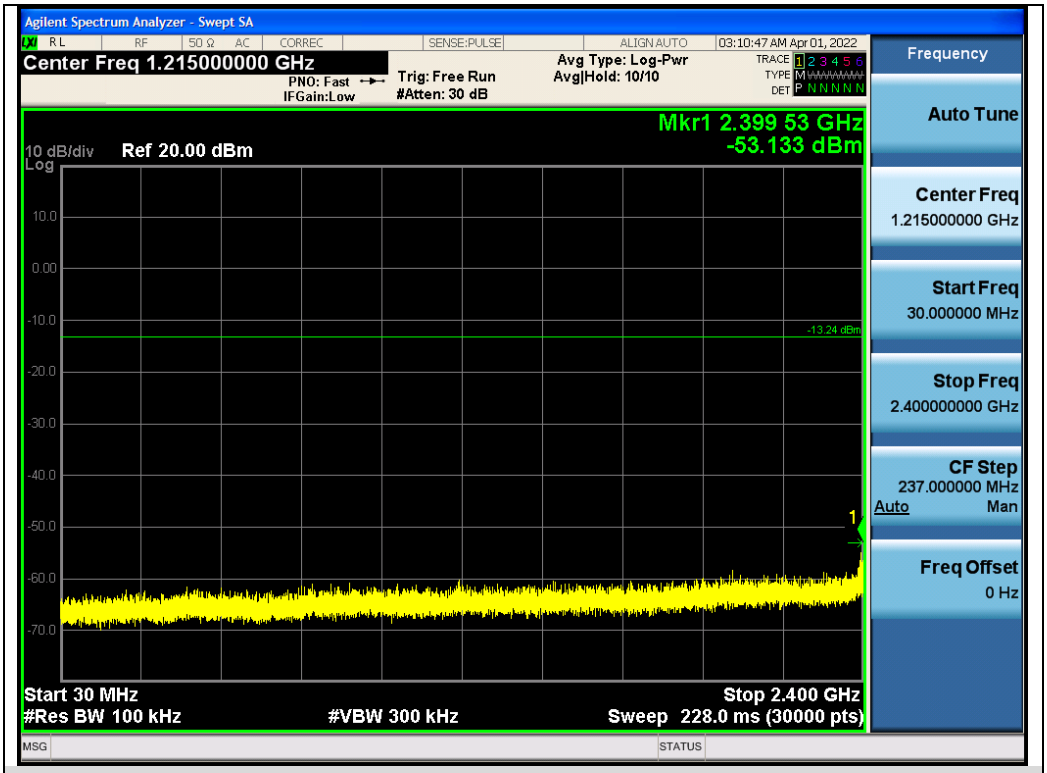
Test_Graph_802.11n40_ANT1_2422_MCS0_Lower Band Edge Emissions

Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands

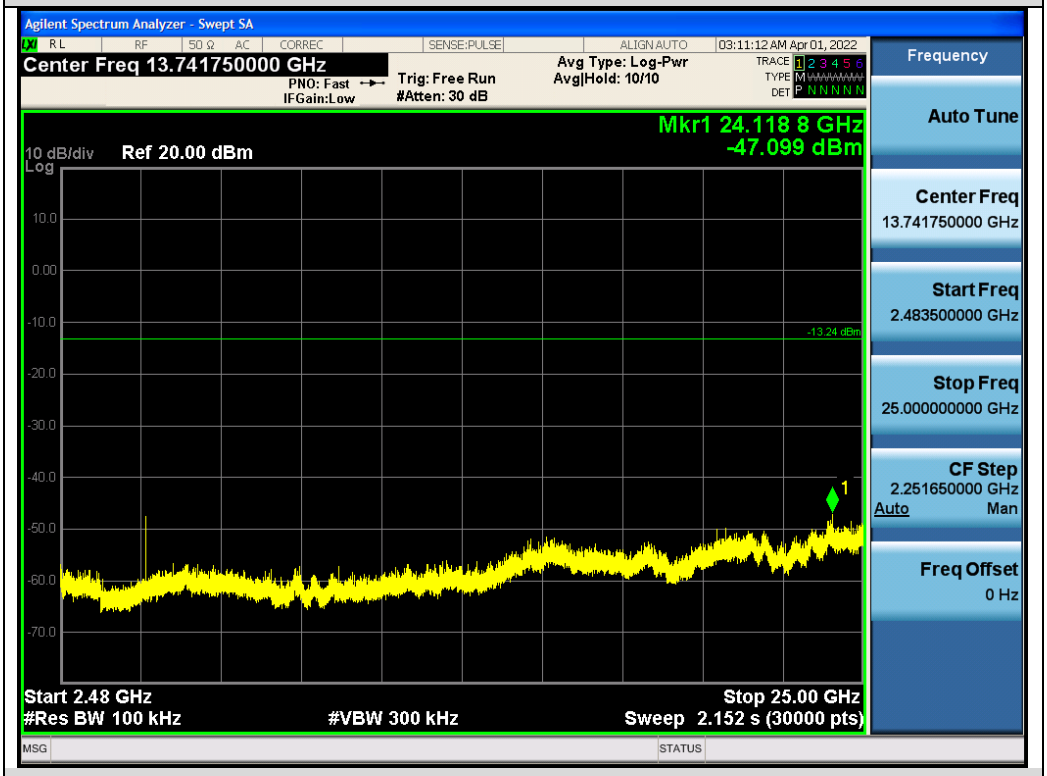


Test_Graph_802.11b_ANT2_2412_1Mbps_Lower Band Emissions

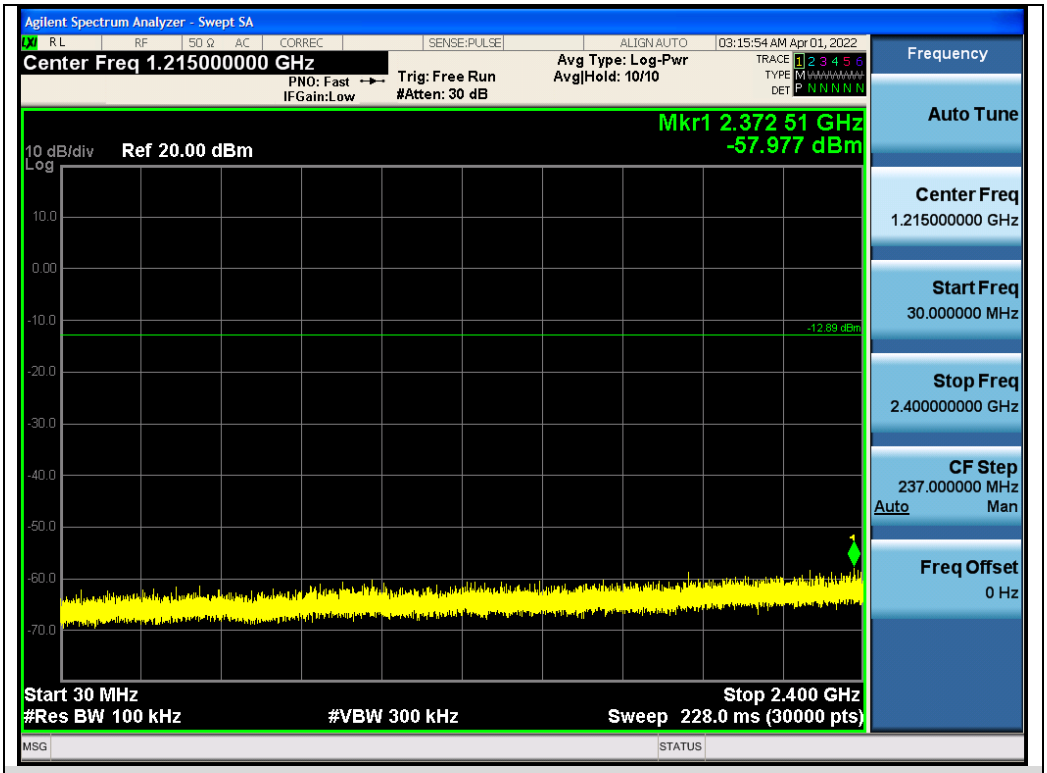
Test_Graph_802.11b_ANT2_2412_1Mbps_Higher Band Emissions



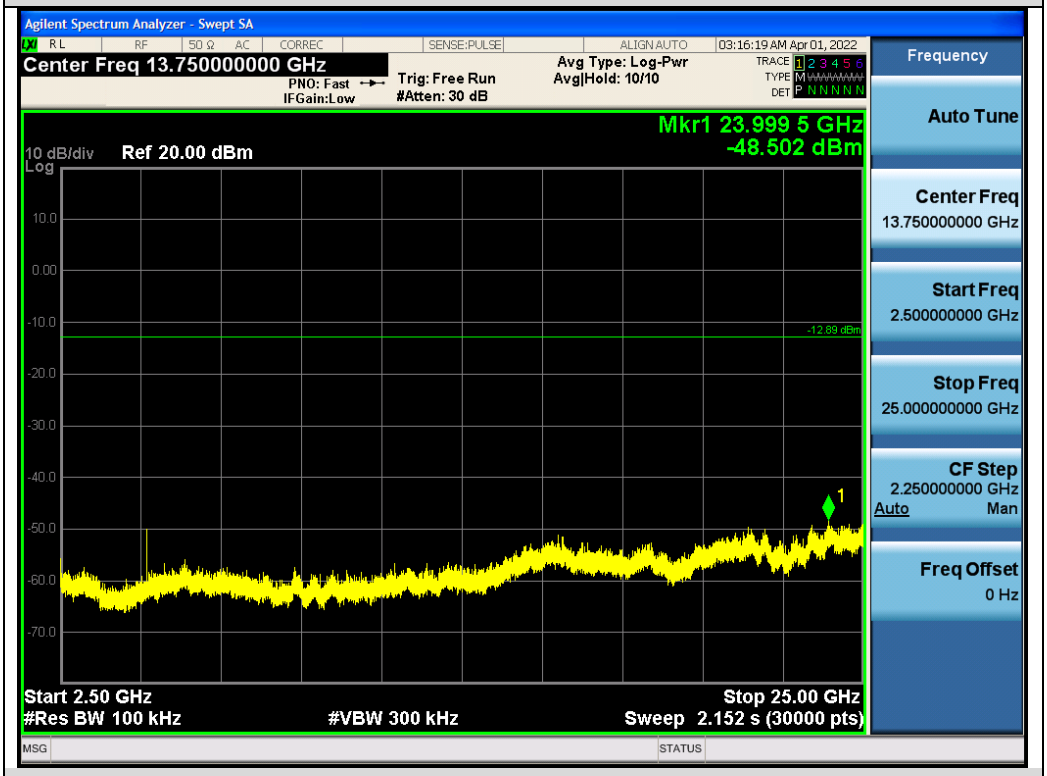
Test_Graph_802.11b_ANT2_2437_1Mbps_Lower Band Emissions



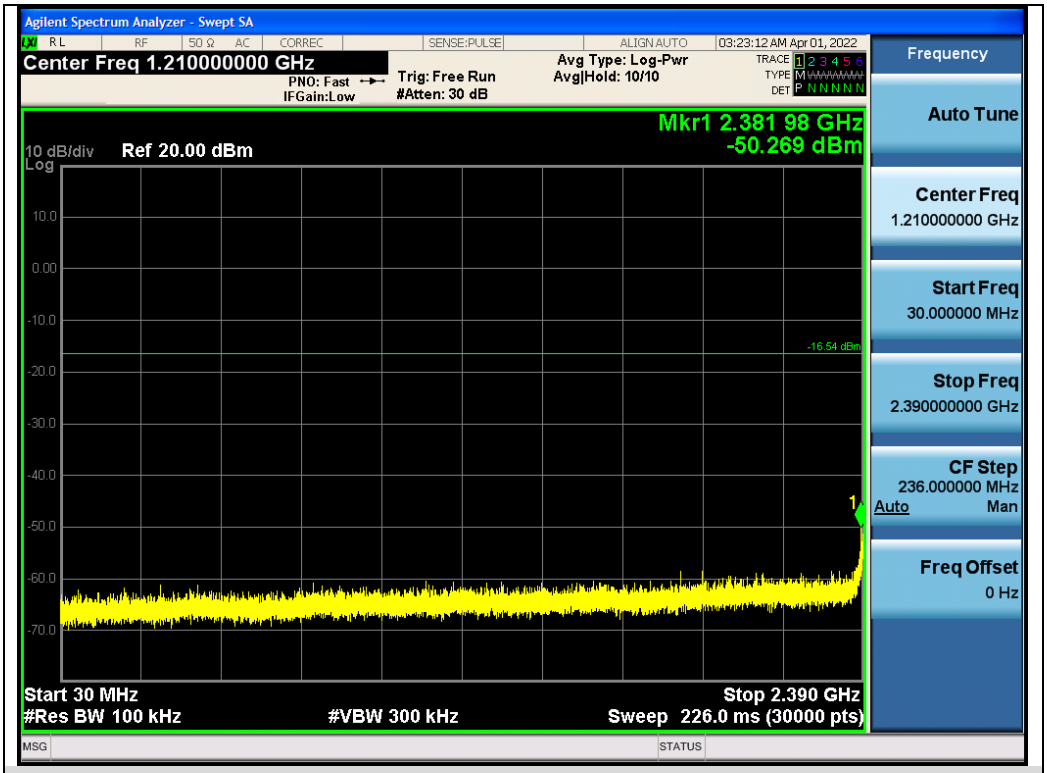
Test_Graph_802.11b_ANT2_2437_1Mbps_Higher Band Emissions



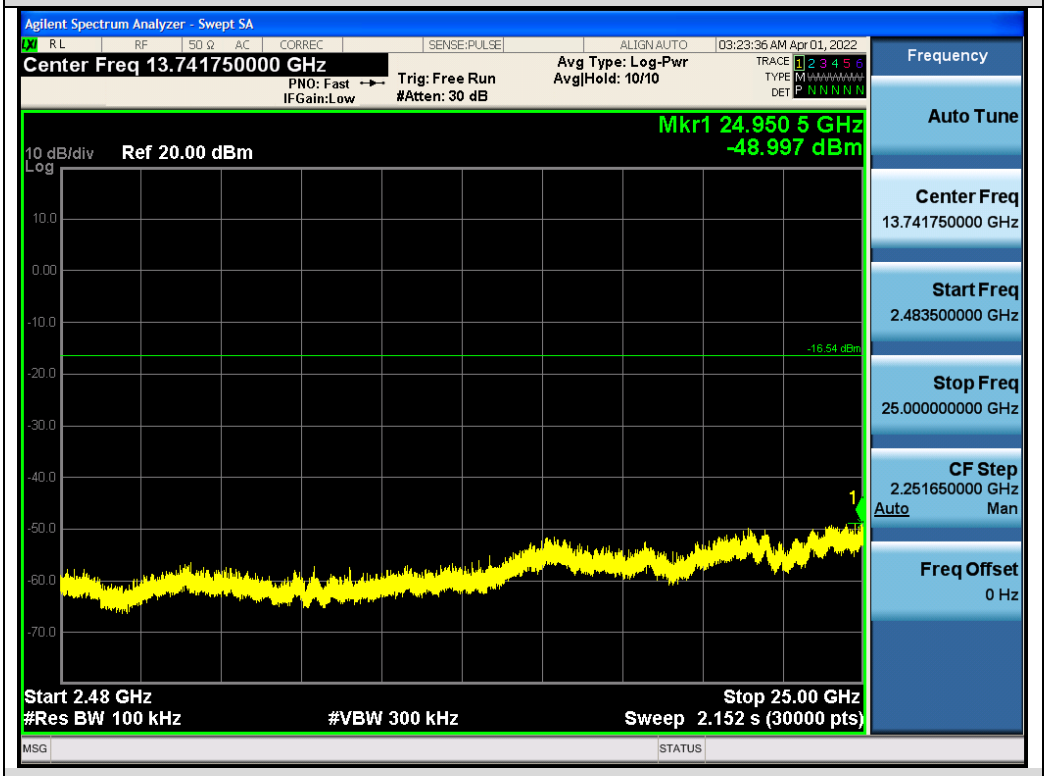
Test_Graph_802.11b_ANT2_2462_1Mbps_Lower Band Emissions



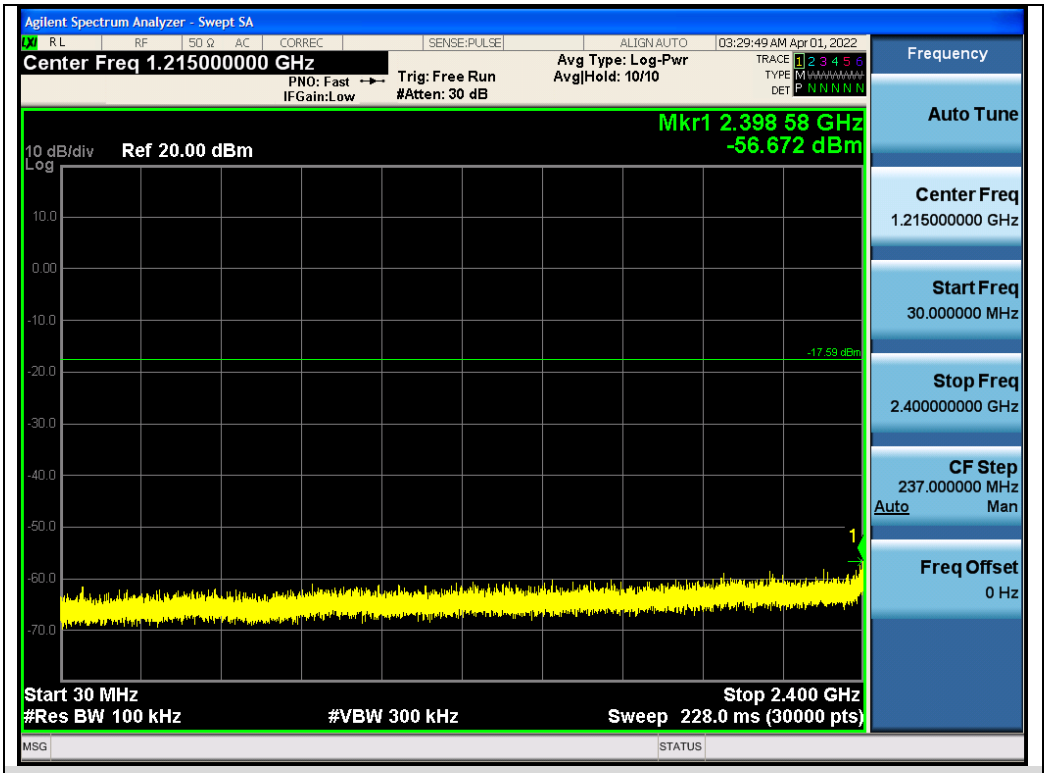
Test_Graph_802.11b_ANT2_2462_1Mbps_Higher Band Emissions



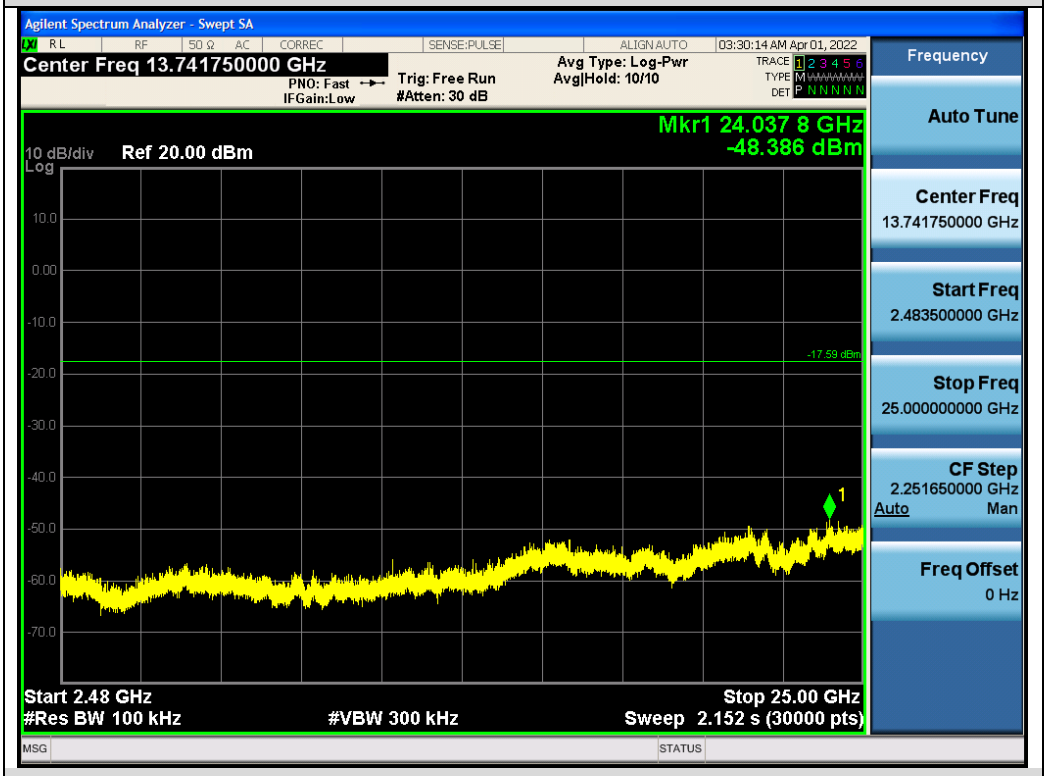
Test_Graph_802.11g_ANT2_2412_6Mbps_Lower Band Emissions



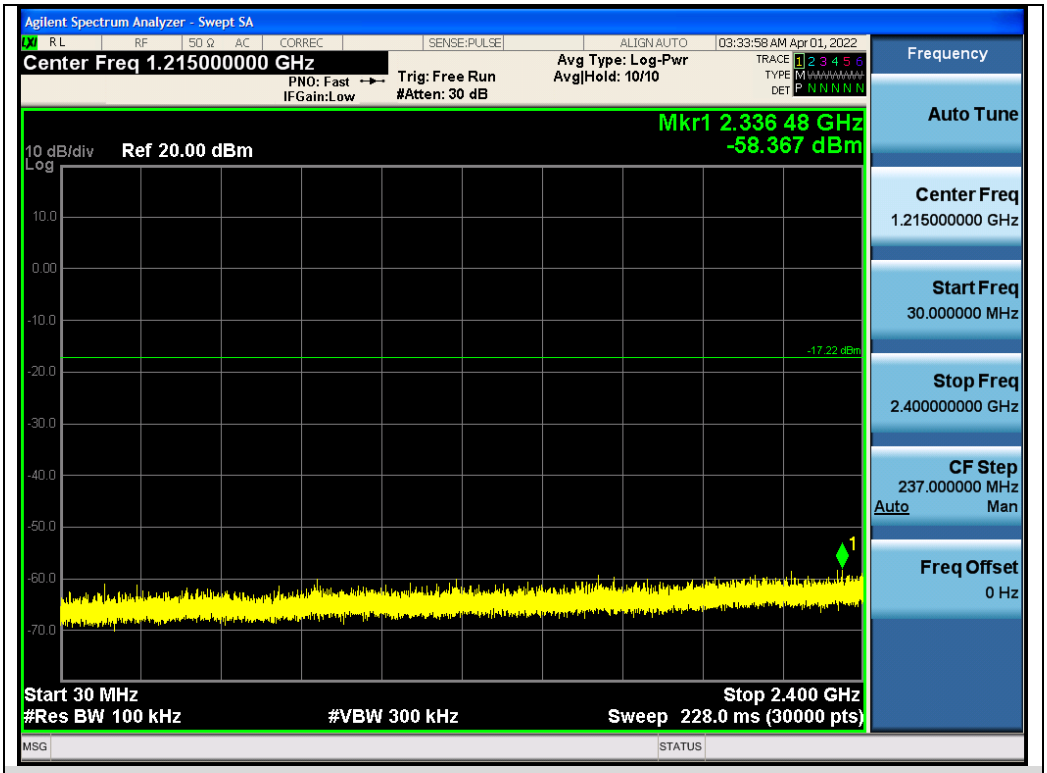
Test_Graph_802.11g_ANT2_2412_6Mbps_Higher Band Emissions



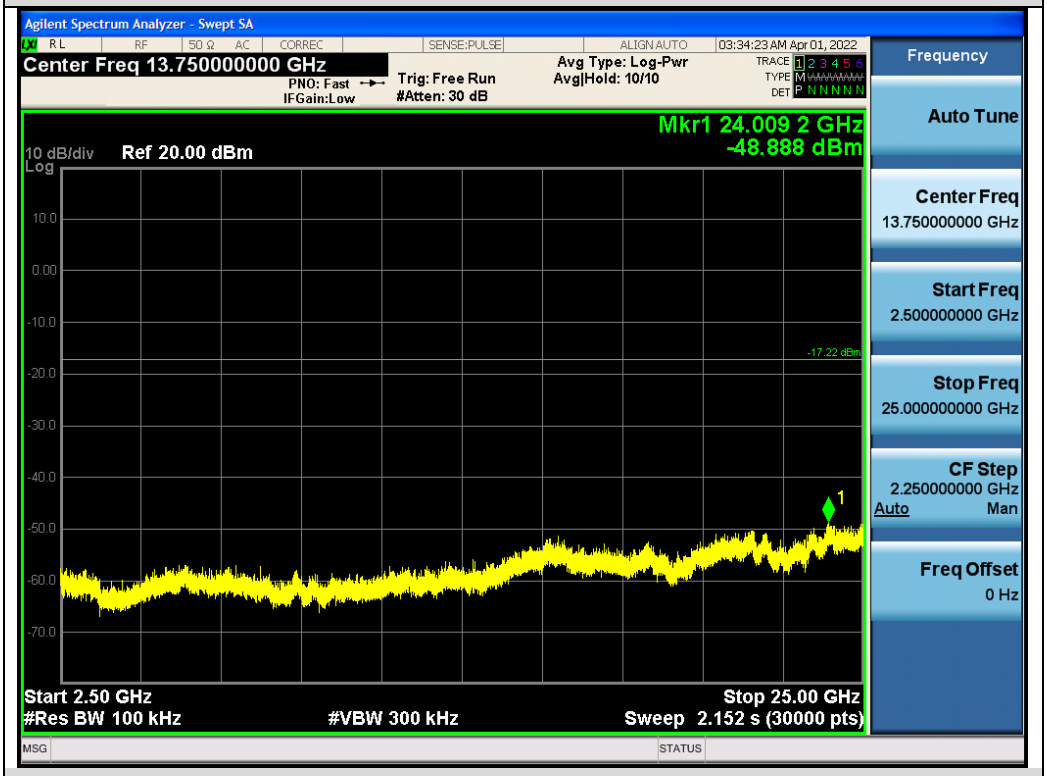
Test_Graph_802.11g_ANT2_2437_6Mbps_Lower Band Emissions



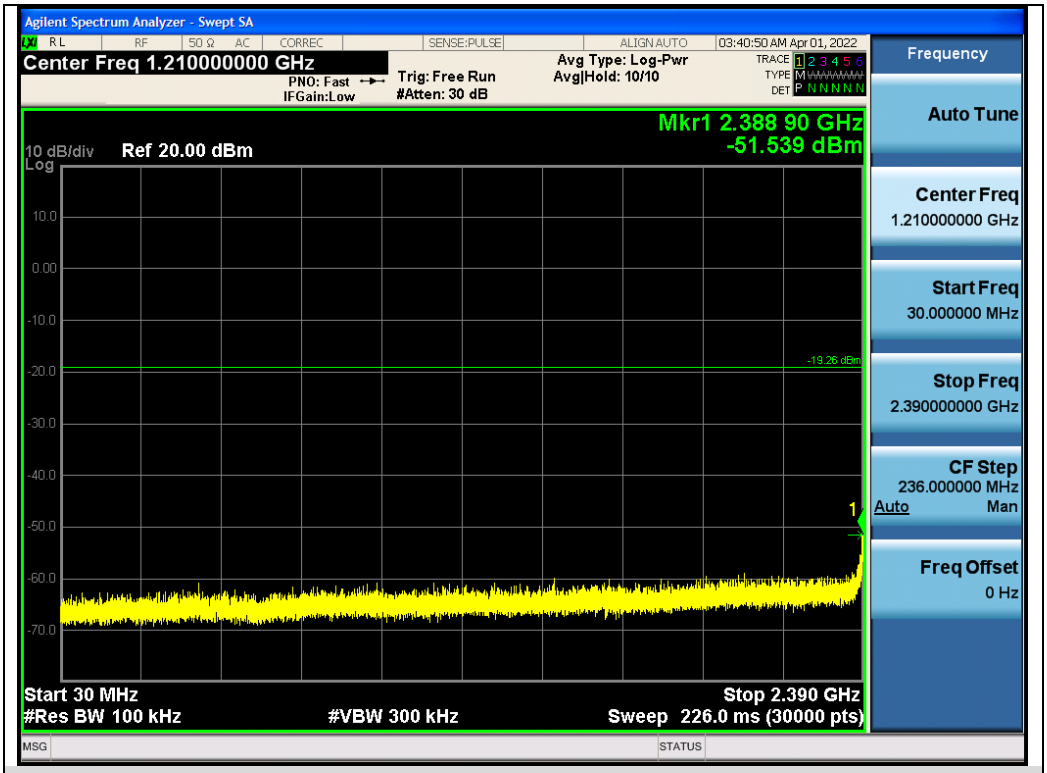
Test_Graph_802.11g_ANT2_2437_6Mbps_Higher Band Emissions



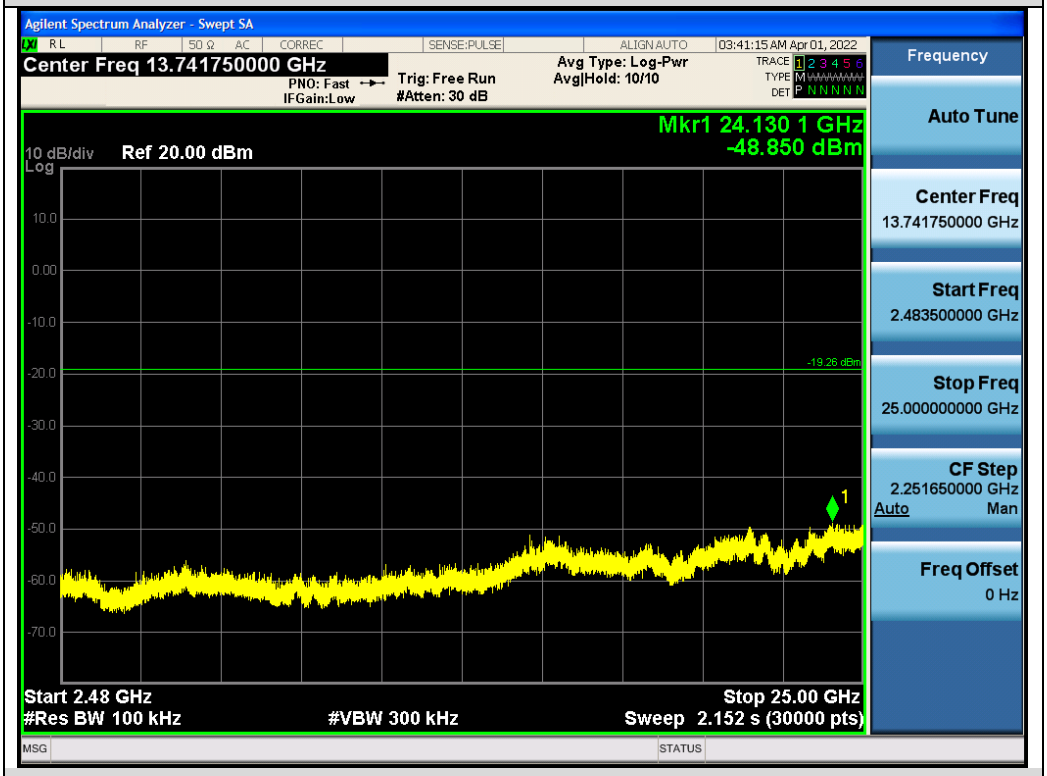
Test_Graph_802.11g_ANT2_2462_6Mbps_Lower Band Emissions



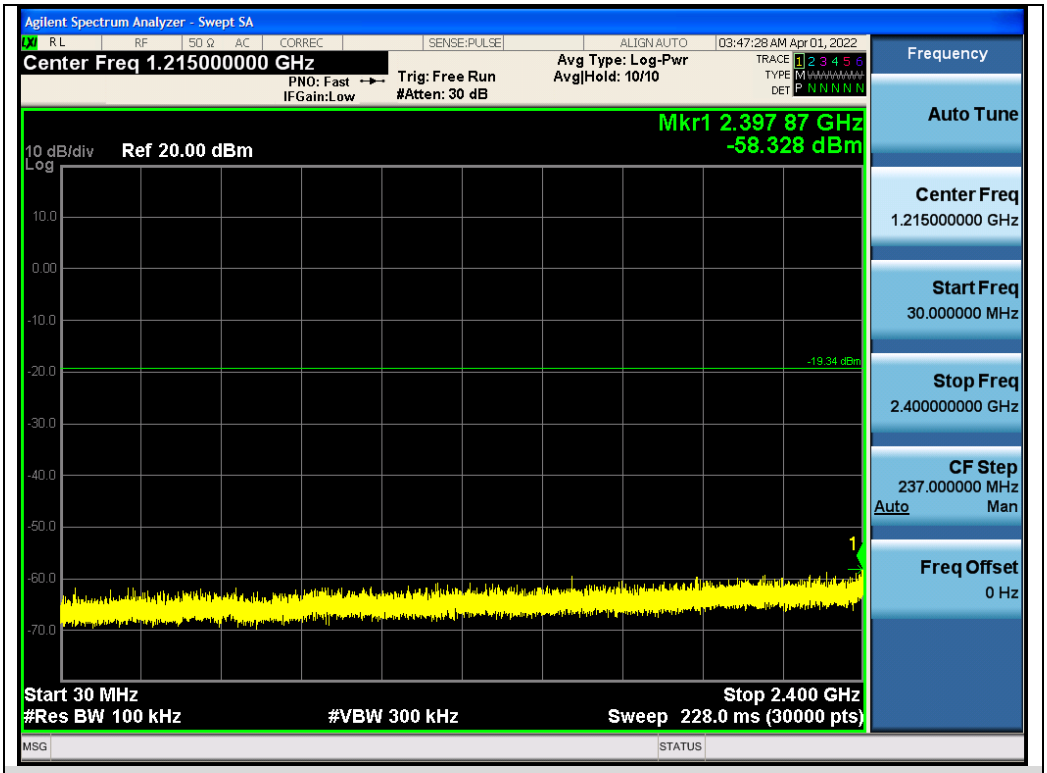
Test_Graph_802.11g_ANT2_2462_6Mbps_Higher Band Emissions



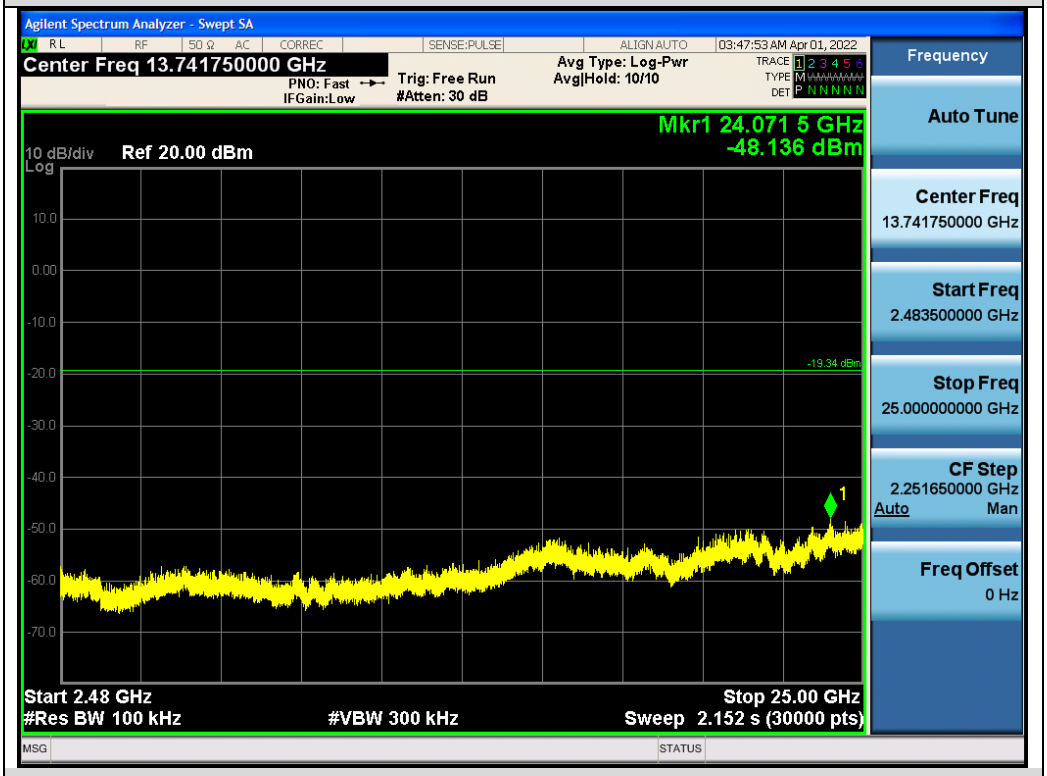
Test_Graph_802.11n20_ANT2_2412_MCS0_Lower Band Emissions



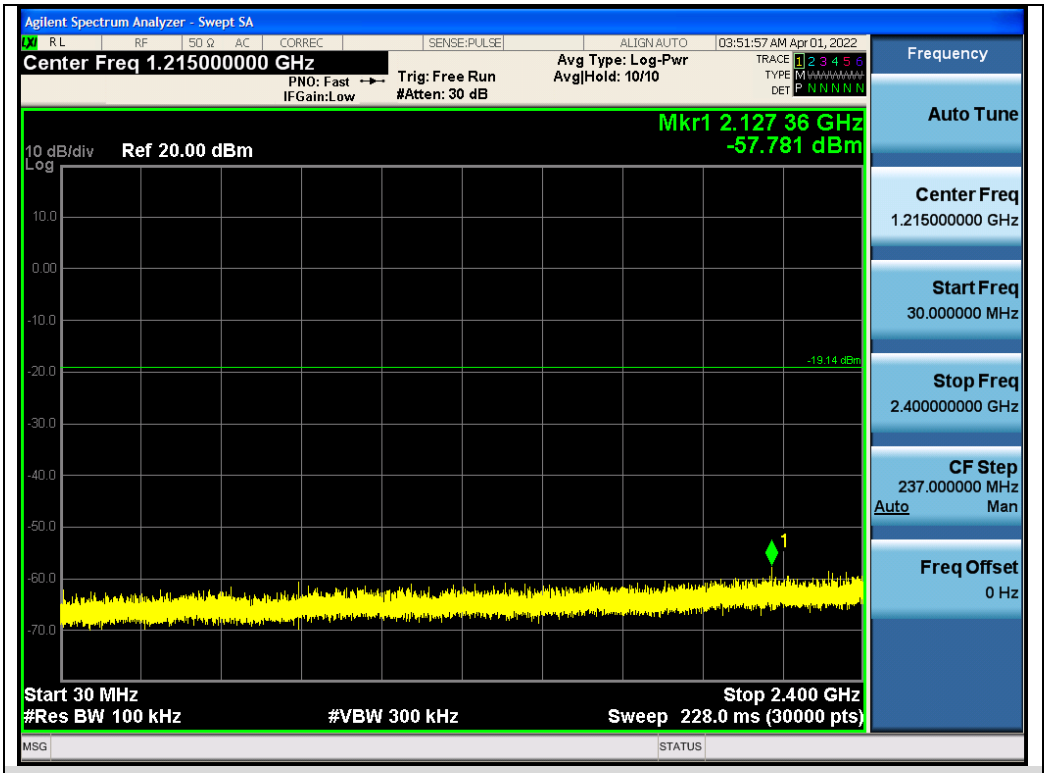
Test_Graph_802.11n20_ANT2_2412_MCS0_Higher Band Emissions



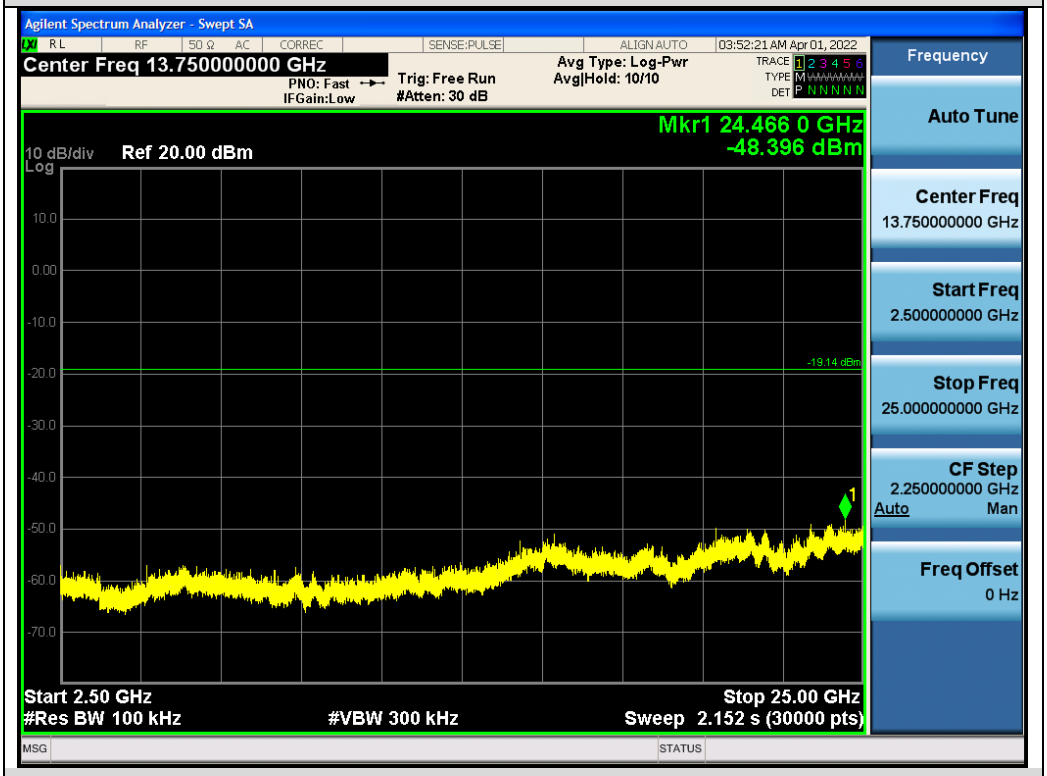
Test_Graph_802.11n20_ANT2_2437_MCS0_Lower Band Emissions



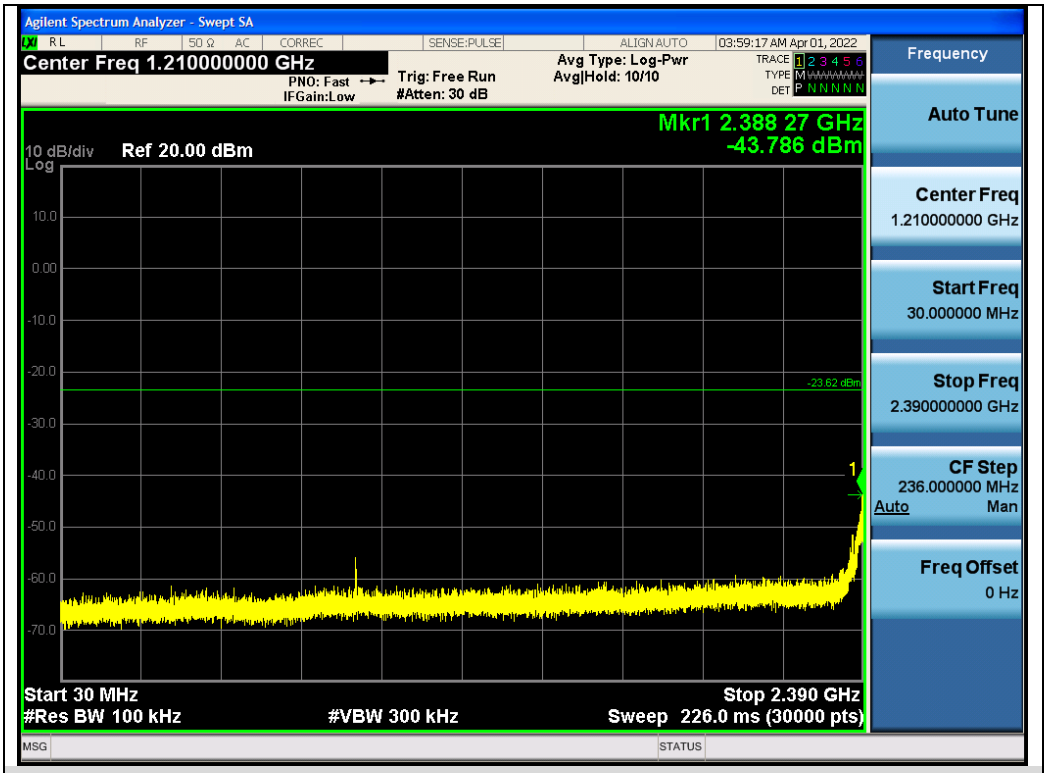
Test_Graph_802.11n20_ANT2_2437_MCS0_Higher Band Emissions



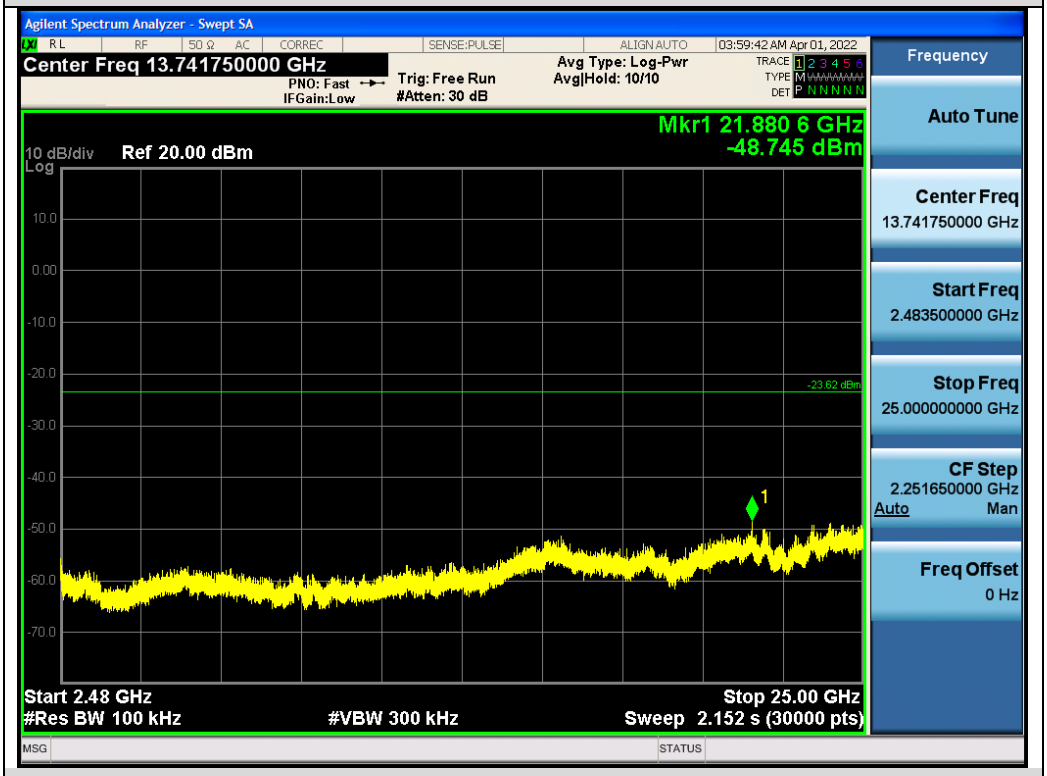
Test_Graph_802.11n20_ANT2_2462_MCS0_Lower Band Emissions



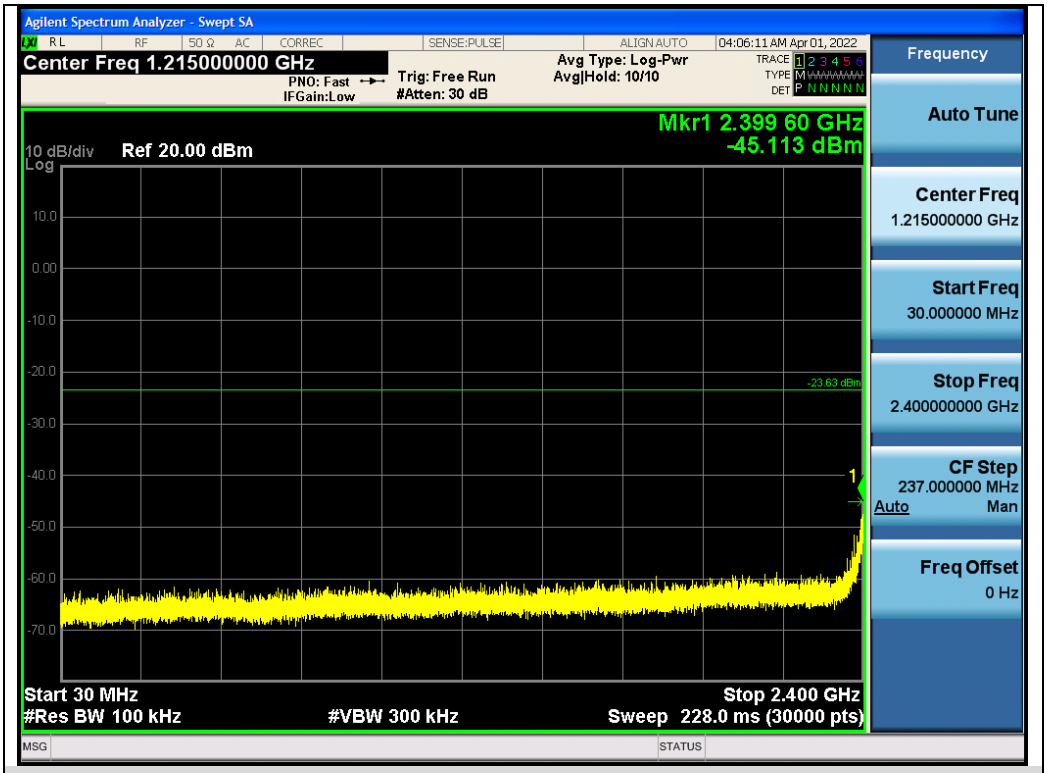
Test_Graph_802.11n20_ANT2_2462_MCS0_Higher Band Emissions



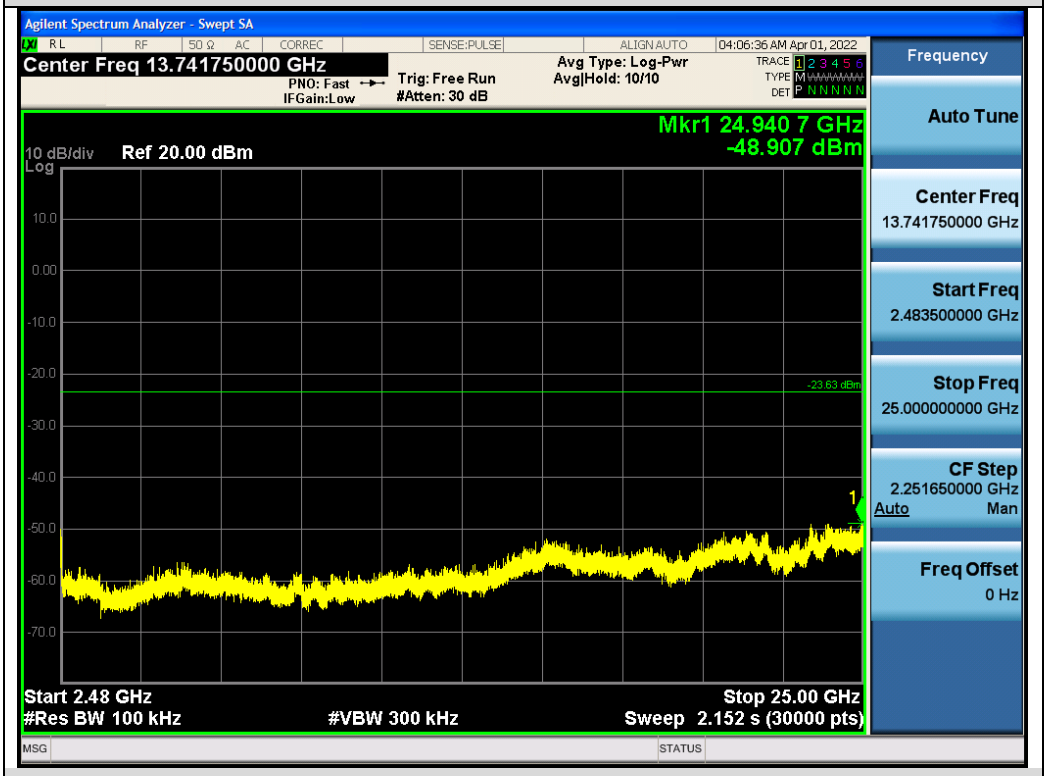
Test_Graph_802.11n40_ANT2_2422_MCS0_Lower Band Emissions



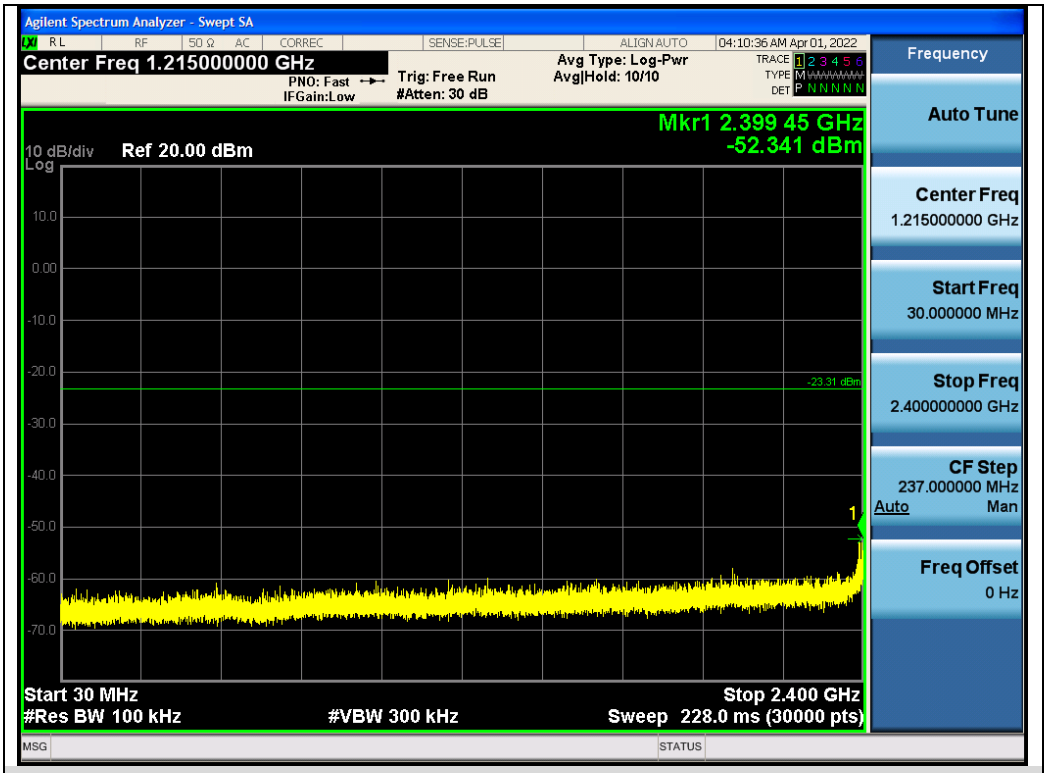
Test_Graph_802.11n40_ANT2_2422_MCS0_Higher Band Emissions



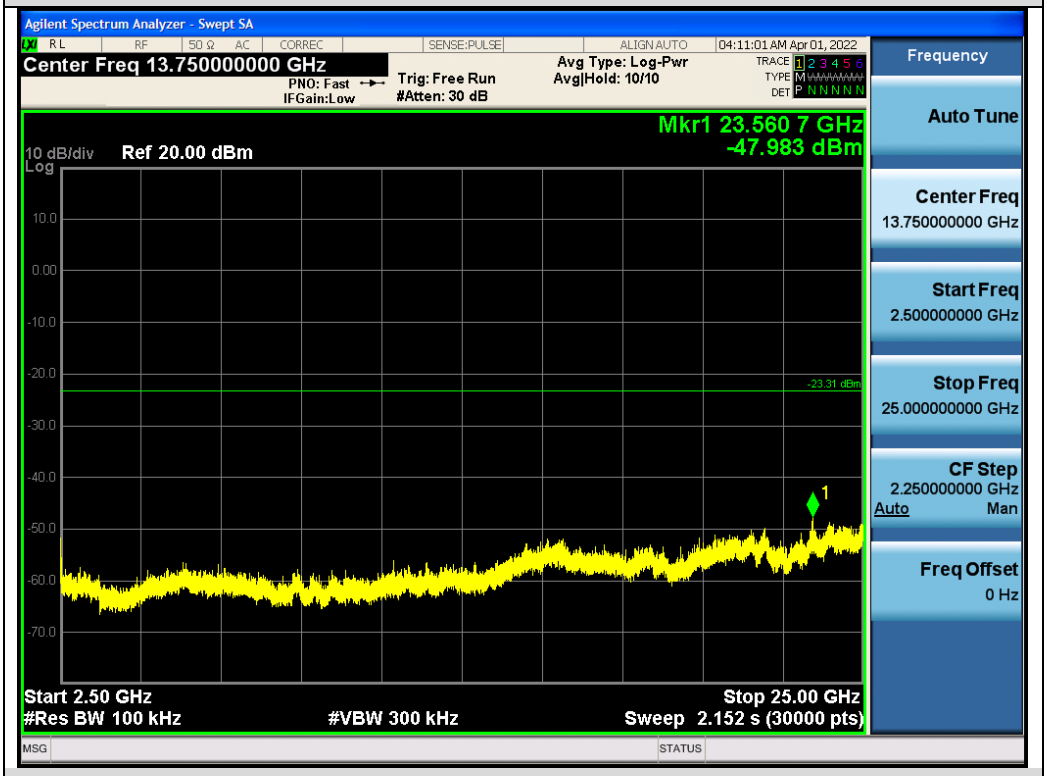
Test_Graph_802.11n40_ANT2_2437_MCS0_Lower Band Emissions



Test_Graph_802.11n40_ANT2_2437_MCS0_Higher Band Emissions



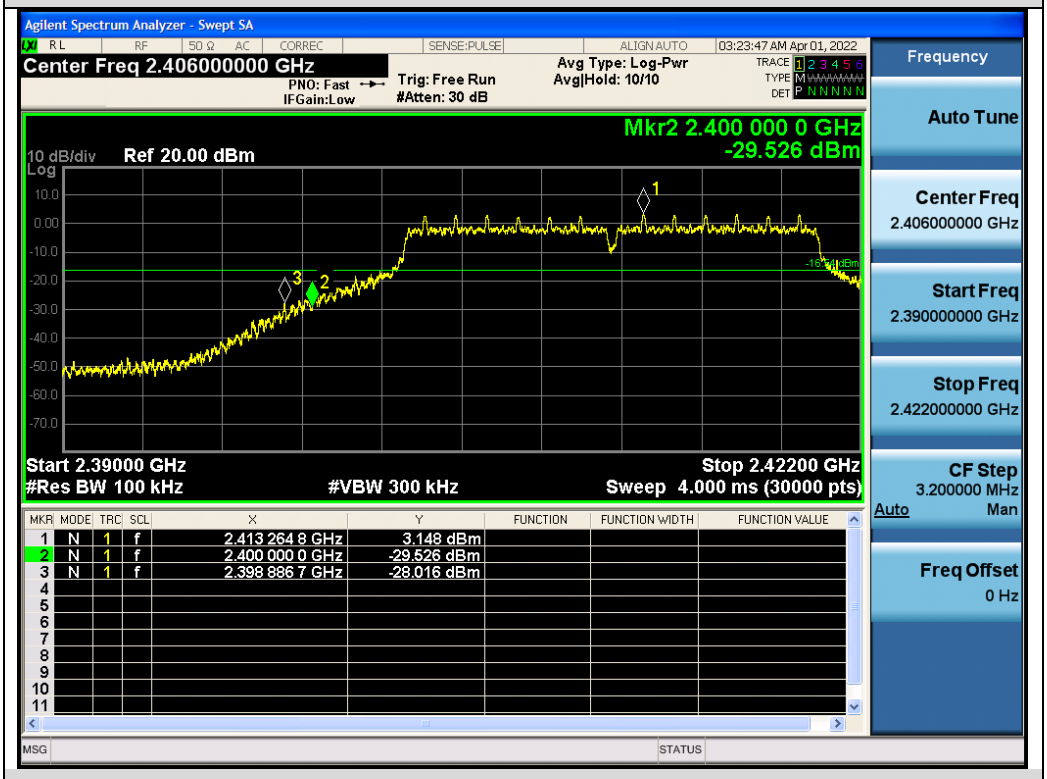
Test_Graph_802.11n40_ANT2_2452_MCS0_Lower Band Emissions



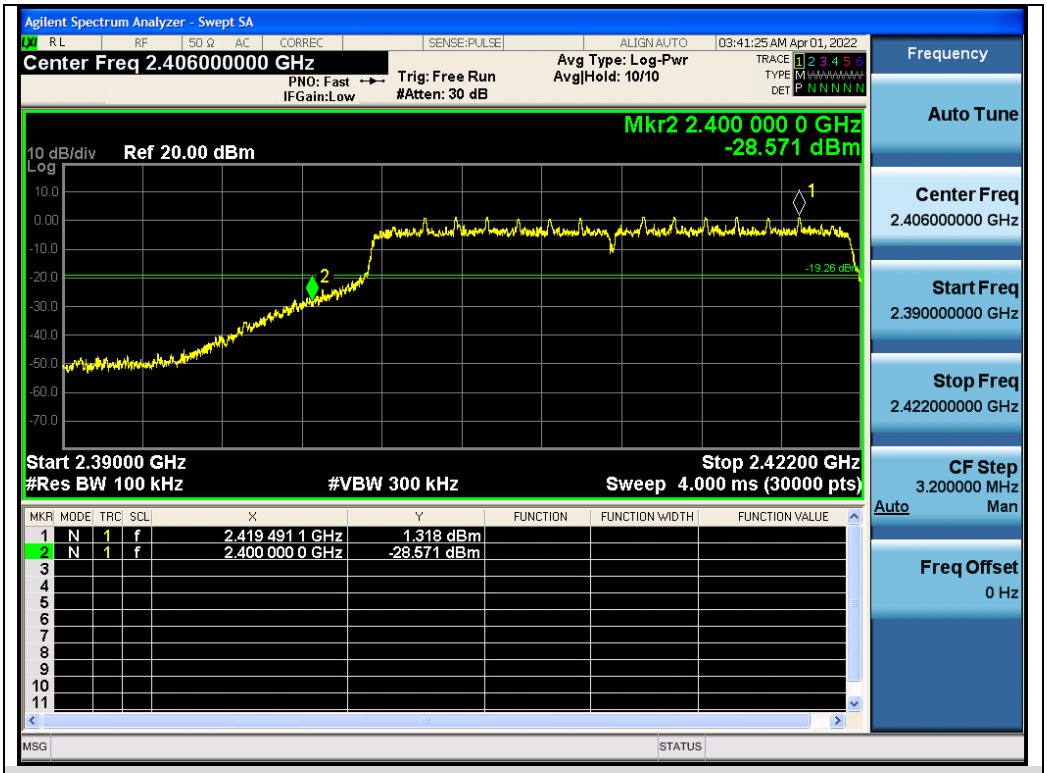
Test_Graph_802.11n40_ANT2_2452_MCS0_Higher Band Emissions

Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands

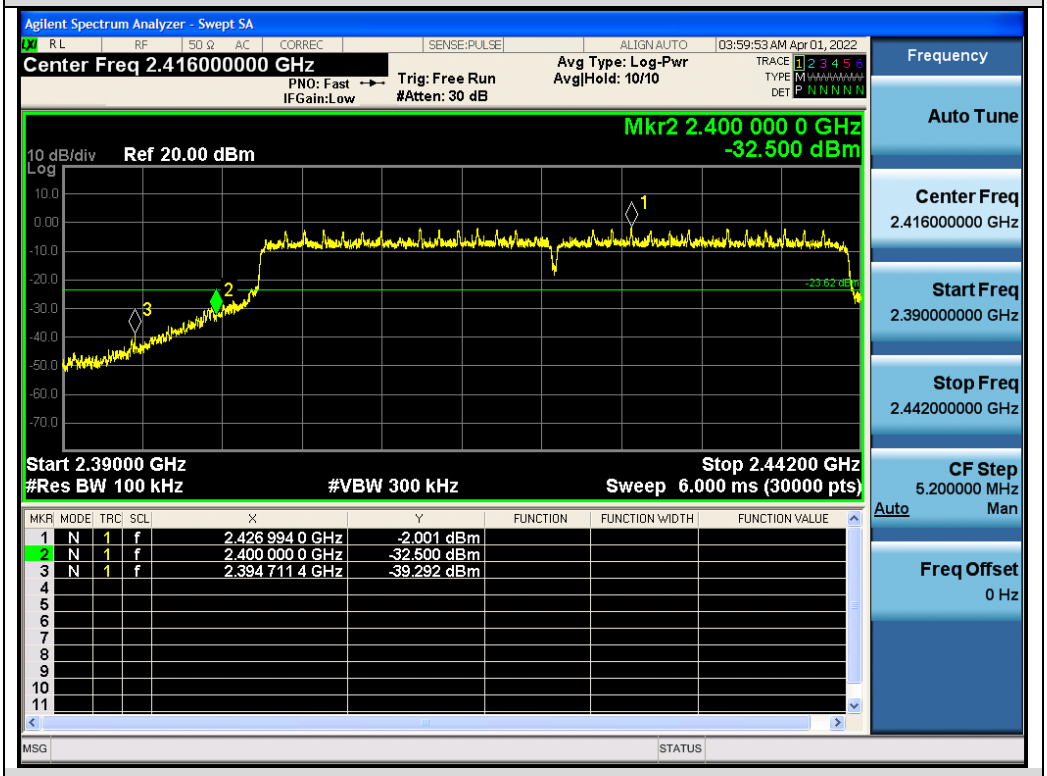
Test_Graph_802.11b_ANT2_2412_1Mbps_Lower Band Edge Emissions



Test_Graph_802.11g_ANT2_2412_6Mbps_Lower Band Edge Emissions



Test_Graph_802.11n20_ANT2_2412_MCS0_Lower Band Edge Emissions



Test_Graph_802.11n40_ANT2_2422_MCS0_Lower Band Edge Emissions

Note: Emissions from 2483.5-2500MHz which fall in the restricted bands had been considered with the radiated emission limits specified.

10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

10.1 MEASUREMENT PROCEDURE

(1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator

(2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.

(3). Set SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the ANSI C63.10 (2013) item 11.10 was used in this testing.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer to Section 8.2.

10.3 MEASUREMENT EQUIPMENT USED

Refer to Section 6.

10.4 LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power Spectral Density-Ant 1					
Test Mode	Test Channel (MHz)	Power density (dBm/20kHz)	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail
802.11b	2412	0.123	-8.116	≤8	Pass
	2437	0.339	-7.9	≤8	Pass
	2462	0.345	-7.894	≤8	Pass
802.11g	2412	-2.506	-10.745	≤8	Pass
	2437	-1.949	-10.188	≤8	Pass
	2462	-2.689	-10.928	≤8	Pass
802.11n20	2412	-1.877	-10.116	≤8	Pass
	2437	-2.549	-10.788	≤8	Pass
	2462	-2.318	-10.557	≤8	Pass
802.11n40	2422	-5.532	-13.771	≤8	Pass
	2437	-5.866	-14.105	≤8	Pass
	2452	-3.275	-11.514	≤8	Pass

Note: Power density(dBm/3kHz) = Power density(dBm/20kHz) – 10*log(20/3).

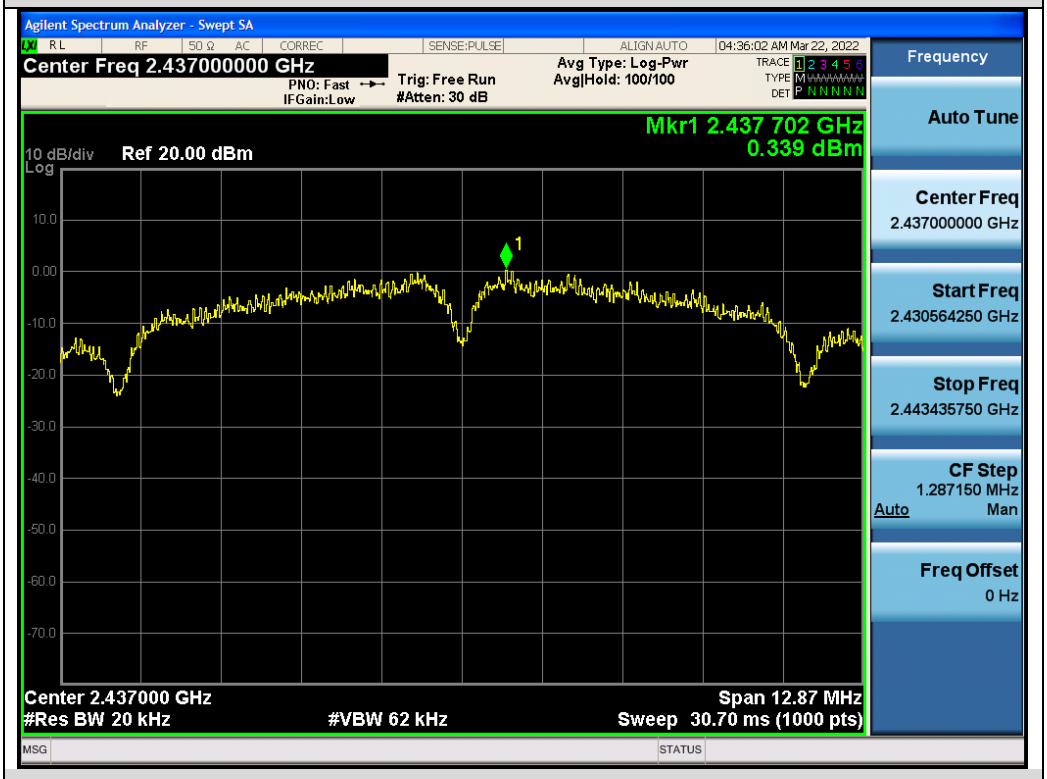
Test Data of Conducted Output Power Spectral Density-Ant 2					
Test Mode	Test Channel (MHz)	Power density (dBm/20kHz)	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail
802.11b	2412	2.110	-6.129	≤8	Pass
	2437	2.116	-6.123	≤8	Pass
	2462	2.496	-5.743	≤8	Pass
802.11g	2412	-2.866	-11.105	≤8	Pass
	2437	-2.966	-11.205	≤8	Pass
	2462	-2.547	-10.786	≤8	Pass
802.11n20	2412	-5.441	-13.68	≤8	Pass
	2437	-5.691	-13.93	≤8	Pass
	2462	-5.366	-13.605	≤8	Pass
802.11n40	2422	-8.024	-16.263	≤8	Pass
	2437	-8.198	-16.437	≤8	Pass
	2452	-8.469	-16.708	≤8	Pass

Test Data of Conducted Output Power Spectral Density-MIMO					
Test Mode	Test Channel (MHz)	Power density (dBm/20kHz)	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail
802.11n20	2412	-0.29	-8.53	≤8	Pass
	2437	-0.83	-9.07	≤8	Pass
	2462	-0.57	-8.81	≤8	Pass
802.11n40	2422	-3.59	-11.83	≤8	Pass
	2437	-3.87	-12.11	≤8	Pass
	2452	-2.13	-10.37	≤8	Pass

Note: Power density(dBm/3kHz) = Power density(dBm/20kHz) – 10*log(20/3).

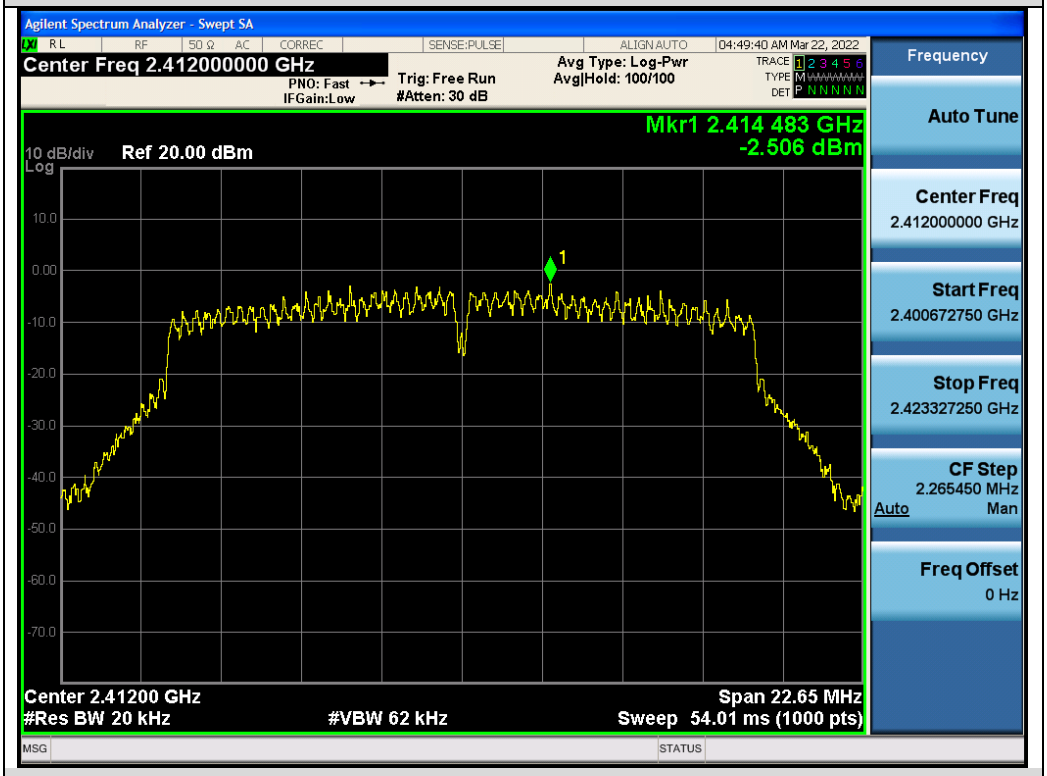
Test Graphs of Conducted Output Power Spectral Density

Test_Graph_802.11b_ANT1_2412_1Mbps_PSD

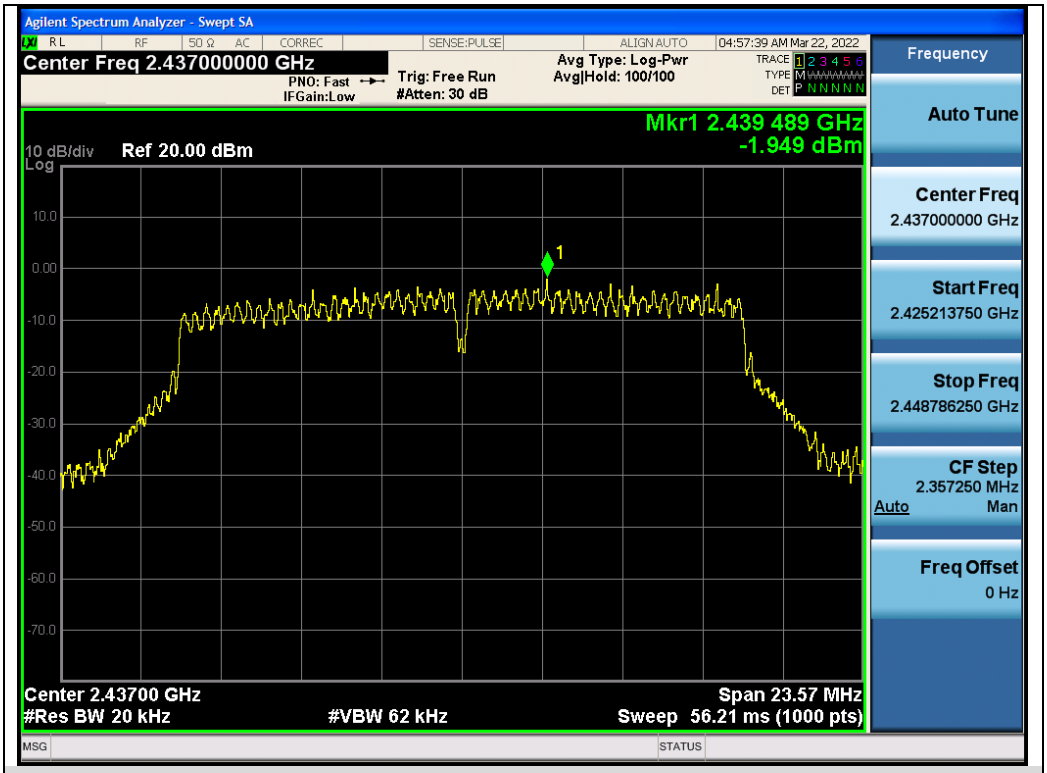


Test_Graph_802.11b_ANT1_2437_1Mbps_PSD

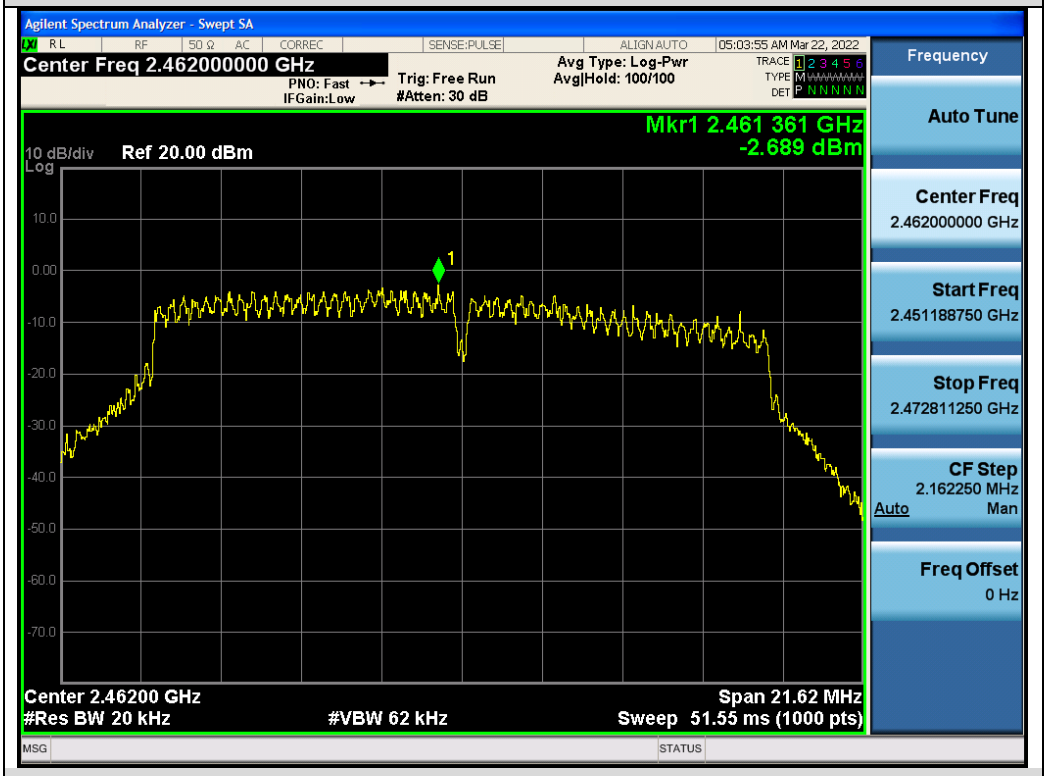
Test_Graph_802.11b_ANT1_2462_1Mbps_PSD



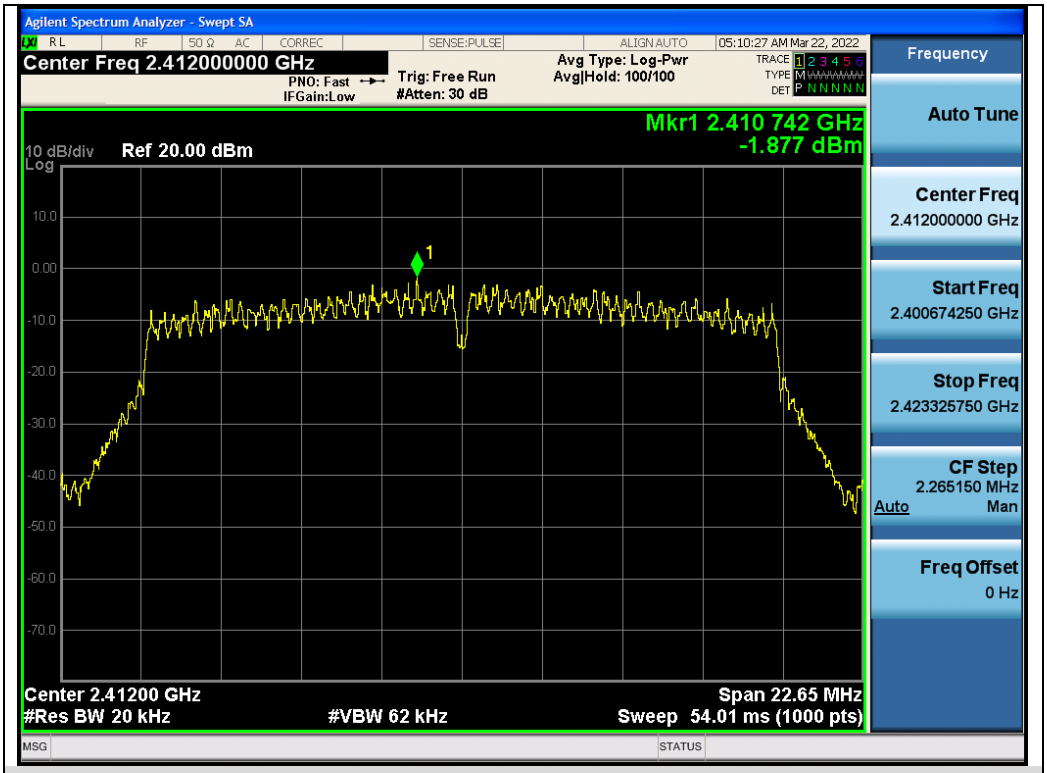
Test_Graph_802.11g_ANT1_2412_6Mbps_PSD



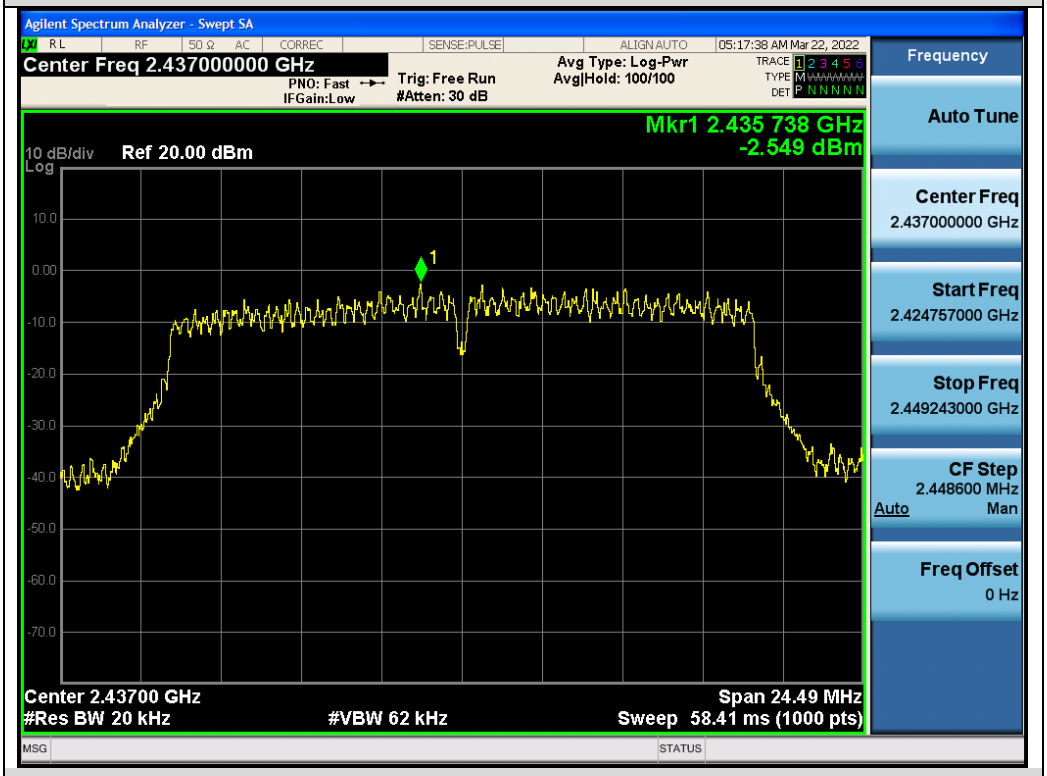
Test_Graph_802.11g_ANT1_2437_6Mbps_PSD



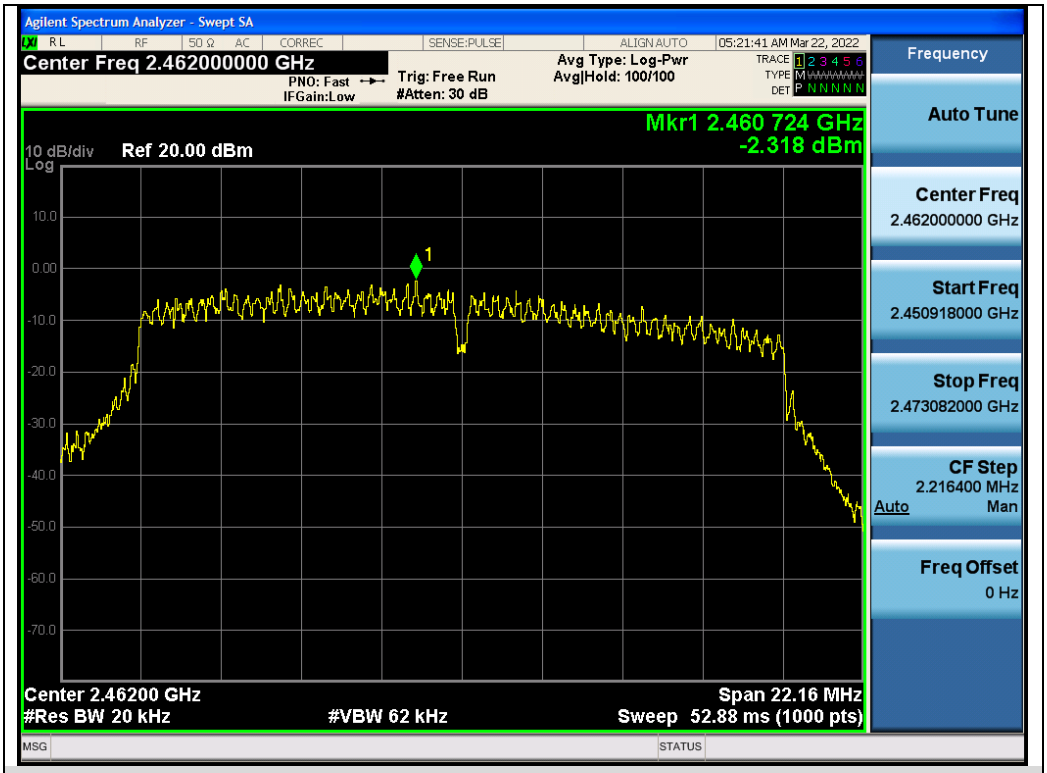
Test_Graph_802.11g_ANT1_2462_6Mbps_PSD



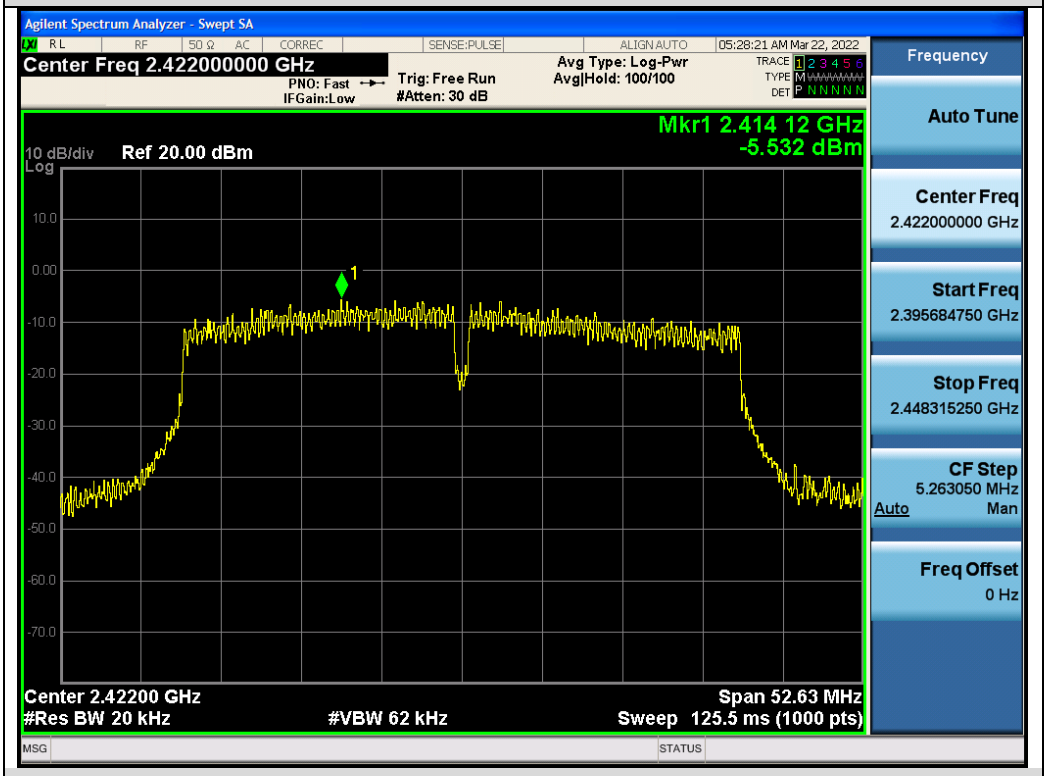
Test_Graph_802.11n20_ANT1_2412_MCS0_PSD



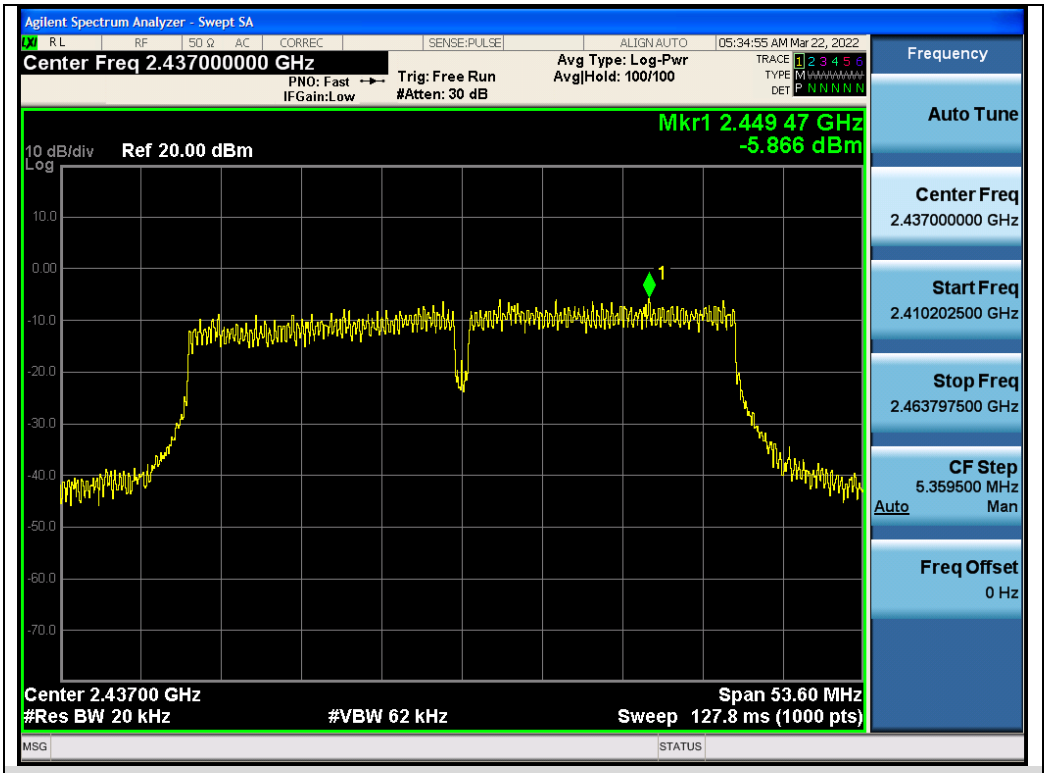
Test_Graph_802.11n20_ANT1_2437_MCS0_PSD



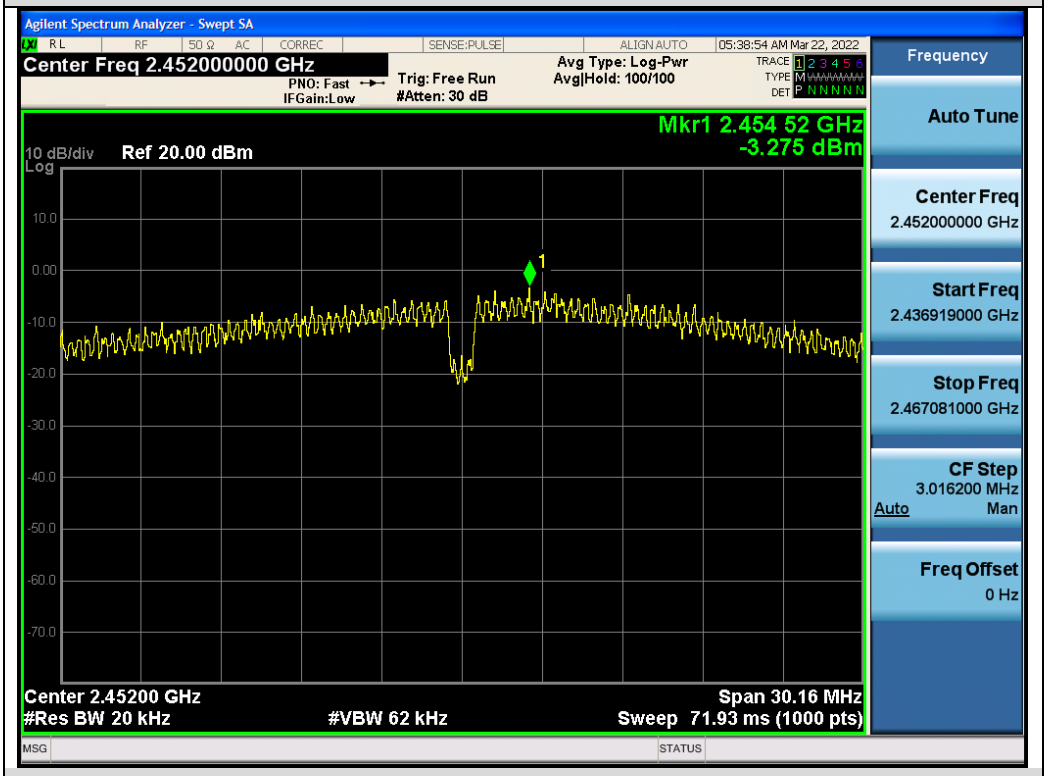
Test_Graph_802.11n20_ANT1_2462_MCS0_PSD



Test_Graph_802.11n40_ANT1_2422_MCS0_PSD



Test_Graph_802.11n40_ANT1_2437_MCS0_PSD



Test_Graph_802.11n40_ANT1_2452_MCS0_PSD

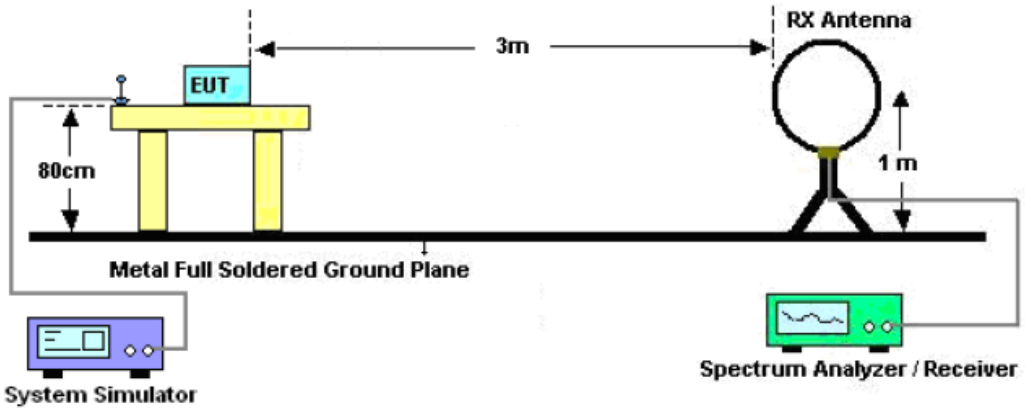
11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

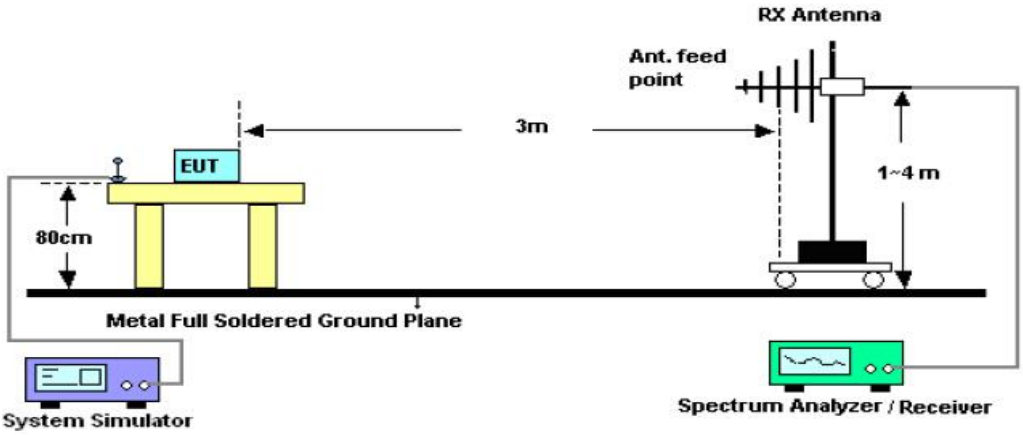
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

11.2. TEST SETUP

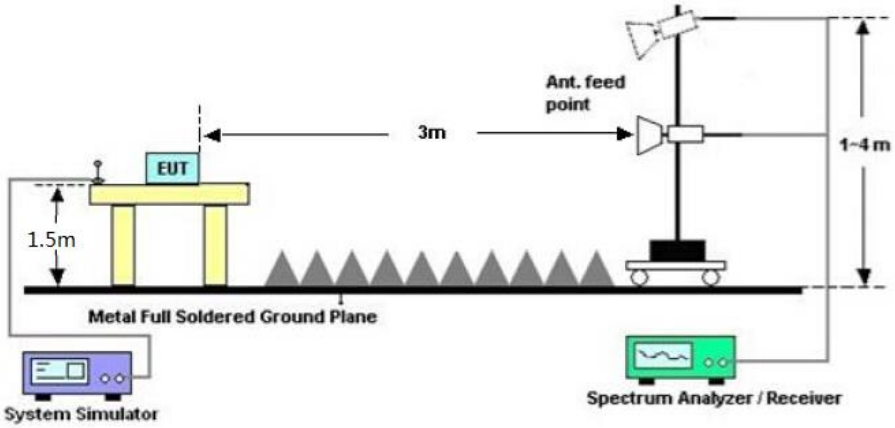
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested for restricted band radiated emission,
the test records reported below are the worst result compared to other modes.

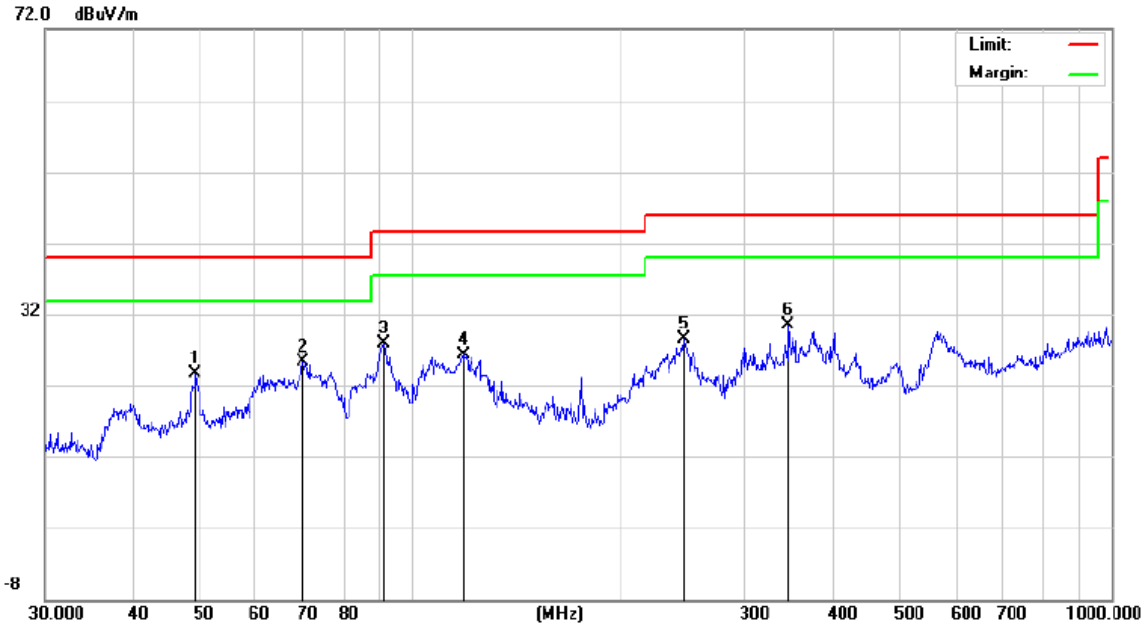
11.4. TEST RESULT

Radiated emission below 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

Radiated emission from 30MHz to 1000MHz

EUT	Mini PC	Model Name	GM11i7T
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHz	Antenna	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		49.1865	14.93	8.84	23.77	40.00	-16.23	peak
2	*	70.0903	13.32	12.07	25.39	40.00	-14.61	peak
3		91.4949	17.95	9.93	27.88	43.50	-15.62	peak
4		119.0180	13.52	12.81	26.33	43.50	-17.17	peak
5		245.0900	20.00	8.57	28.57	46.00	-17.43	peak
6		345.5952	13.01	17.46	30.47	46.00	-15.53	peak

RESULT: PASS