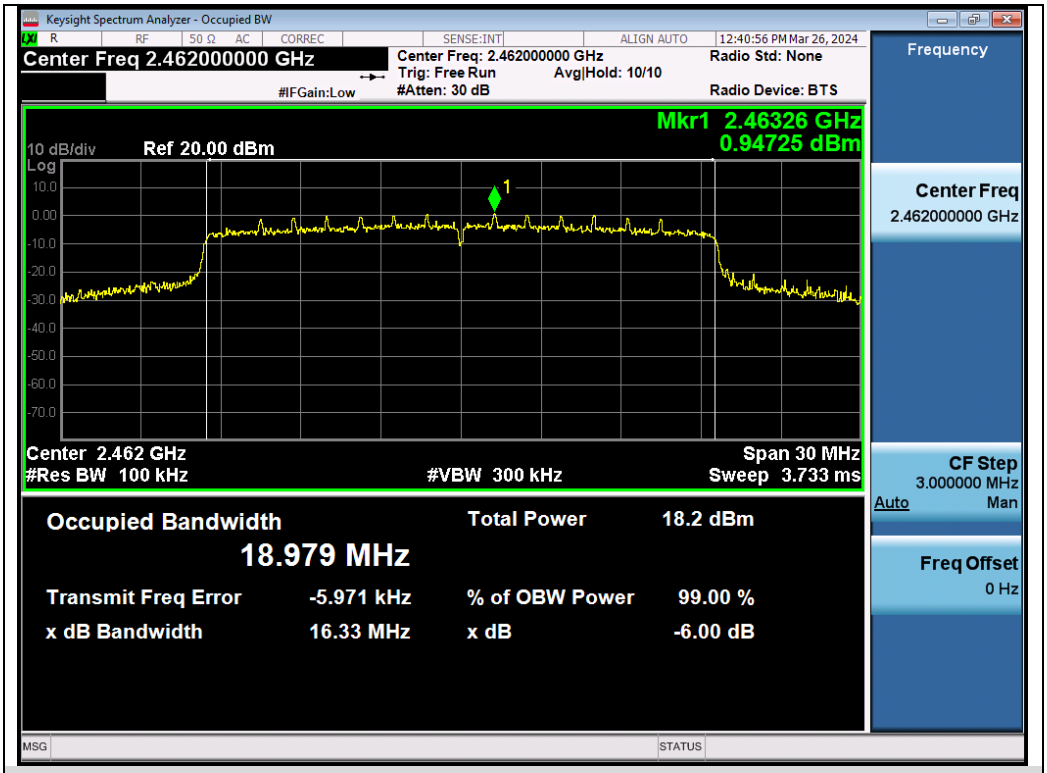
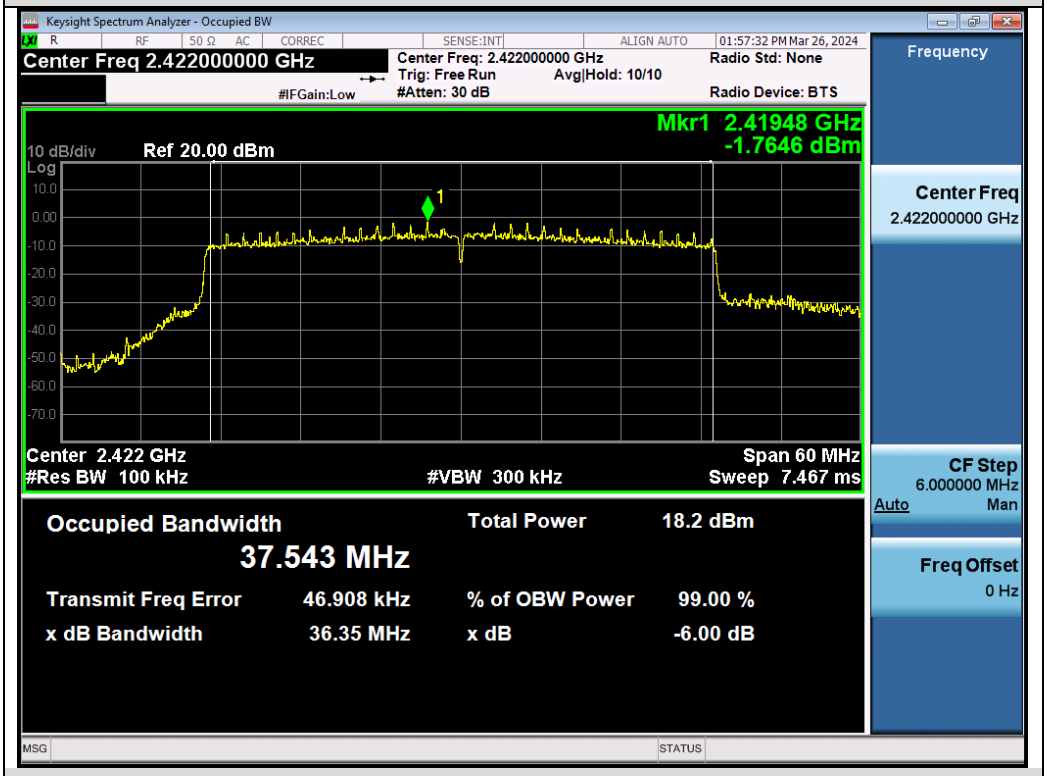
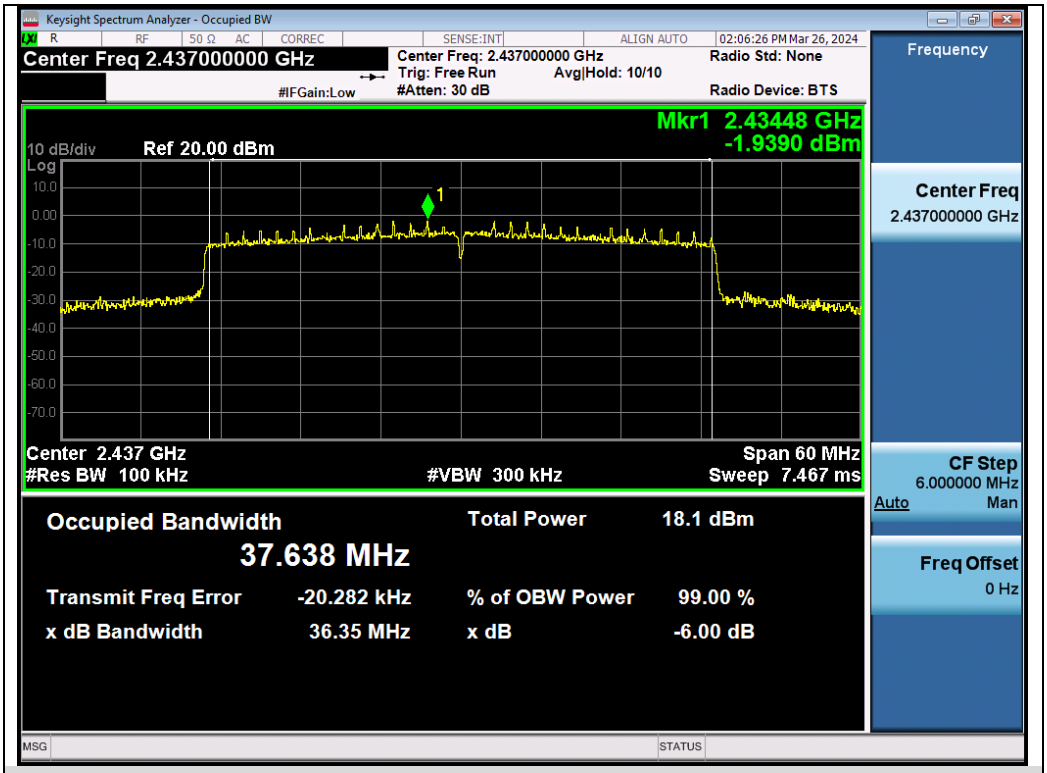


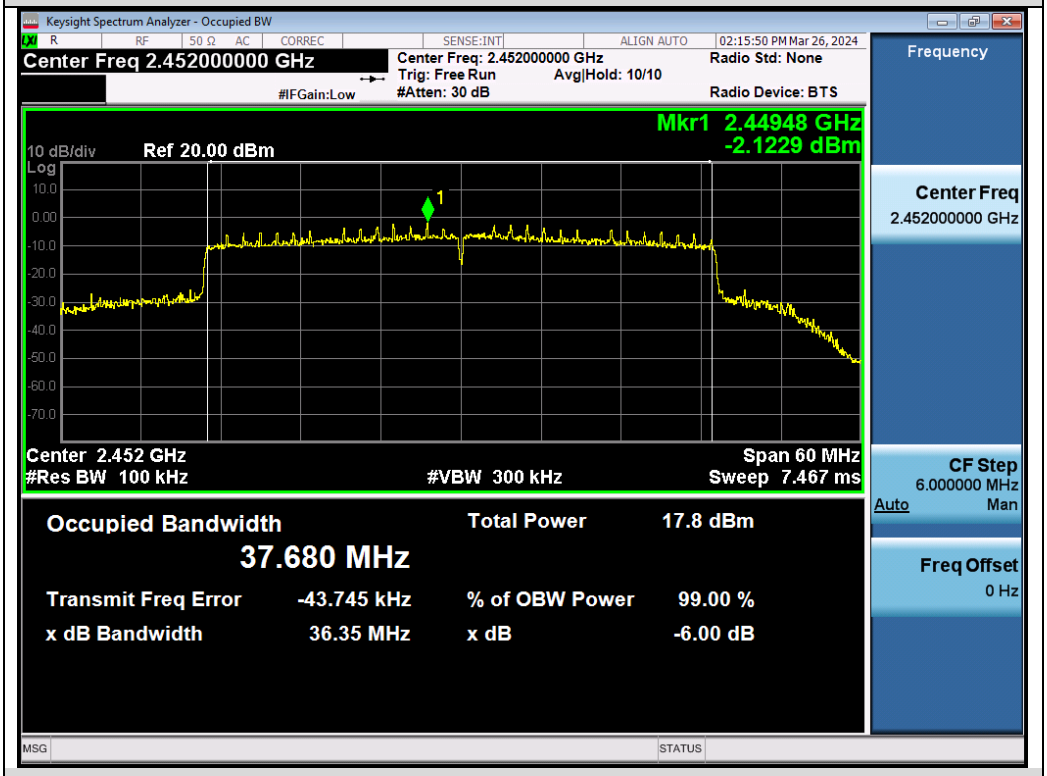
Test_Graph_802.11ax20_Chain B_2462_MCS0_DTSBW



Test_Graph_802.11ax40_Chain B_2422_MCS0_DTSBW



Test_Graph_802.11ax40_Chain B_2437_MCS0_DTSBW



Test_Graph_802.11ax40_Chain B_2452_MCS0_DTSBW

9. Power Spectral Density Measurement

9.1 Provisions Applicable

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

9.2 Measurement Procedure

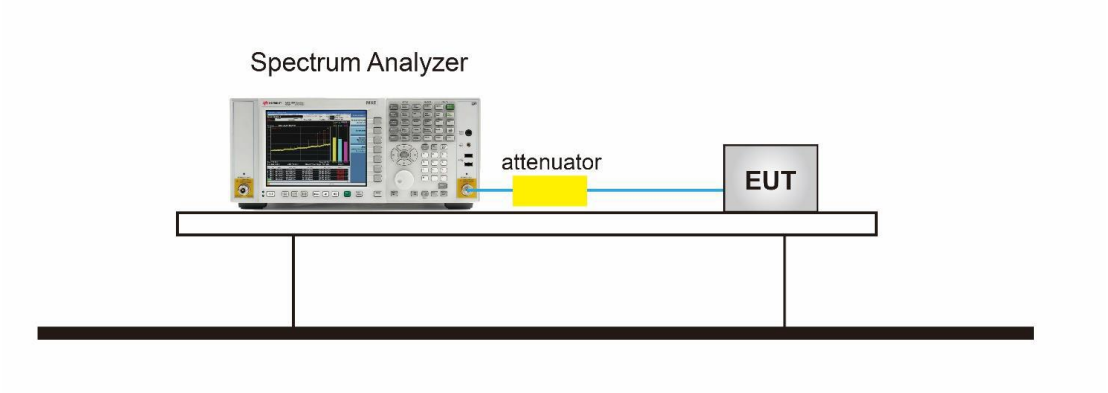
☒For Peak power spectral density test:

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the RBW = 20 kHz.
4. Set the VBW ≥ [3 × RBW].
5. Set the Span ≥ [1.5 × DTS bandwidth].
6. Sweep time=Auto couple.
7. Detector function=Peak.
8. Trace Mode=Max hold.
9. When the measurement bandwidth of Maximum PSD is specified in 3 kHz, add a constant factor 10*log(3kHz/20kHz) = -8.23 dB to the measured result.
10. Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission.
11. The indicated level is the peak output power, after any corrections for external attenuators and cables.

☐For Average power spectral density test:

1. The testing follows the ANSI C63.10 Section 11.10.5 Method AVPSD.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator.
3. Set Span to at least 1.5 times the OBW.
4. Set RBW to:3 kHz ≤ RBW ≤ 100 kHz.
5. Set VBW≥[3×RBW].
6. Sweep Time=Auto couple.
7. Detector function=RMS (i.e., power averaging).
8. Trace average at least 100 traces in power averaging (rms) mode.
9. When the measurement bandwidth of Maximum PSD is specified in 3 kHz, add a constant factor 10*log(3kHz/20kHz) = -8.23 dB to the measured result.
10. Determine according to the duty cycle of the equipment: when it is less than 98%, follow the steps below.
11. Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is 25%.
12. Record the test results in the report.

9.3 Measurement Setup (Block Diagram of Configuration)



9.4 Measurement Result

Test Data of Conducted Output Power Spectral Density-Chain A					
Test Mode	Test Frequency (MHz)	Power Spectral density (dBm/20kHz)	Power Spectral density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail
802.11b	2412	0.406	-7.833	⩽8	Pass
	2437	0.271	-7.968	⩽8	Pass
	2462	0.988	-7.251	⩽8	Pass
802.11g	2412	-4.008	-12.247	⩽8	Pass
	2437	-3.247	-11.486	⩽8	Pass
	2462	-2.310	-10.549	⩽8	Pass
802.11n20	2412	-4.884	-13.123	⩽8	Pass
	2437	-4.664	-12.903	⩽8	Pass
	2462	-5.197	-13.436	⩽8	Pass
802.11n40	2422	-7.269	-15.508	⩽8	Pass
	2437	-6.290	-14.529	⩽8	Pass
	2452	-6.895	-15.134	⩽8	Pass
802.11ax20	2412	-4.385	-12.624	⩽8	Pass
	2437	-4.320	-12.559	⩽8	Pass
	2462	-4.264	-12.503	⩽8	Pass
802.11ax40	2422	-6.906	-15.145	⩽8	Pass
	2437	-6.750	-14.989	⩽8	Pass
	2452	-6.950	-15.189	⩽8	Pass

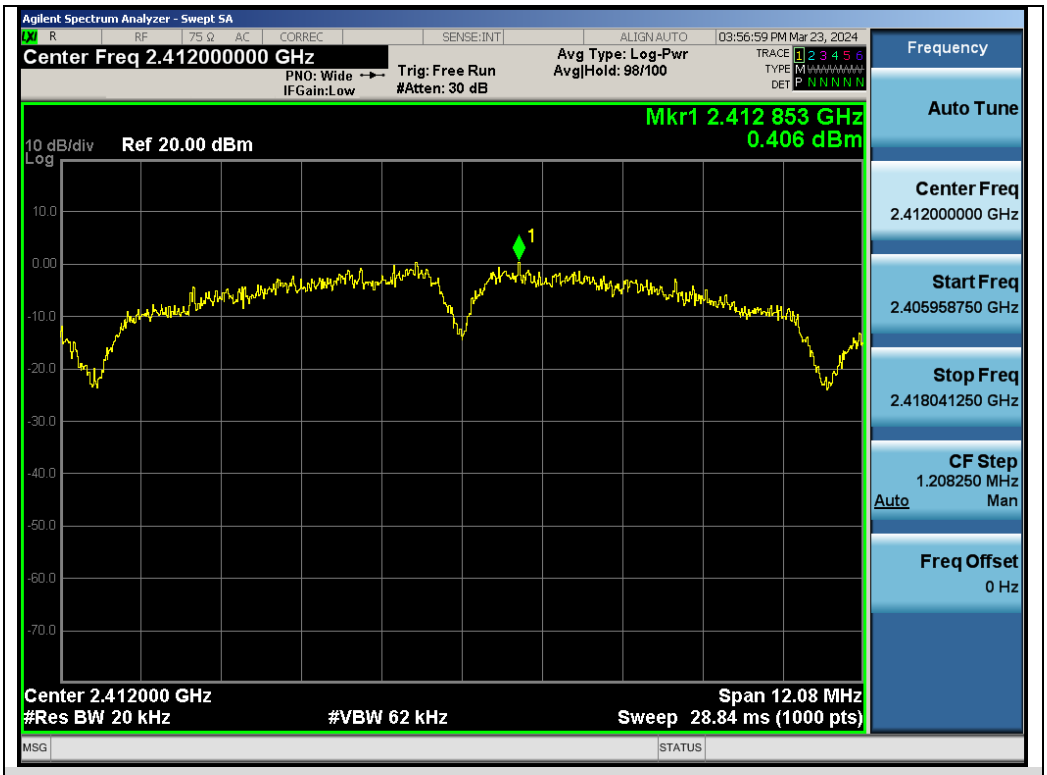
Test Data of Conducted Output Power Spectral Density-Chain B					
Test Mode	Test Frequency (MHz)	Power Spectral density (dBm/20kHz)	Power Spectral density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail
802.11b	2412	1.434	-6.805	≤8	Pass
	2437	1.111	-7.128	≤8	Pass
	2462	1.662	-6.577	≤8	Pass
802.11g	2412	-2.706	-10.945	≤8	Pass
	2437	-2.433	-10.672	≤8	Pass
	2462	-2.391	-10.63	≤8	Pass
802.11n20	2412	-4.515	-12.754	≤8	Pass
	2437	-3.910	-12.149	≤8	Pass
	2462	-4.330	-12.569	≤8	Pass
802.11n40	2422	-6.314	-14.553	≤8	Pass
	2437	-6.660	-14.899	≤8	Pass
	2452	-6.789	-15.028	≤8	Pass
802.11ax20	2412	-5.292	-13.531	≤8	Pass
	2437	-5.504	-13.743	≤8	Pass
	2462	-6.043	-14.282	≤8	Pass
802.11ax40	2422	-5.393	-13.632	≤8	Pass
	2437	-5.483	-13.722	≤8	Pass
	2452	-6.118	-14.357	≤8	Pass

Test Data of Conducted Output Power Spectral Density-Total					
Test Mode	Test Frequency (MHz)	Power Spectral density (dBm/20kHz)	Power Spectral density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail
802.11n20	2412	-1.69	-9.92	≤7.9	Pass
	2437	-1.26	-9.50	≤7.9	Pass
	2462	-1.73	-9.97	≤7.9	Pass
802.11n40	2422	-3.76	-11.99	≤7.9	Pass
	2437	-3.46	-11.70	≤7.9	Pass
	2452	-3.83	-12.07	≤7.9	Pass
802.11ax20	2412	-1.80	-10.04	≤7.9	Pass
	2437	-1.86	-10.10	≤7.9	Pass
	2462	-2.05	-10.29	≤7.9	Pass
802.11ax40	2422	-3.07	-11.31	≤7.9	Pass
	2437	-3.06	-11.30	≤7.9	Pass
	2452	-3.50	-11.74	≤7.9	Pass

Note：

1. The Total Power Spectral Density (dBm) = 10*log {$10^{(\text{Chain A PSD }/10)}$ + $10^{(\text{Chain BPSD }/10)}$}.

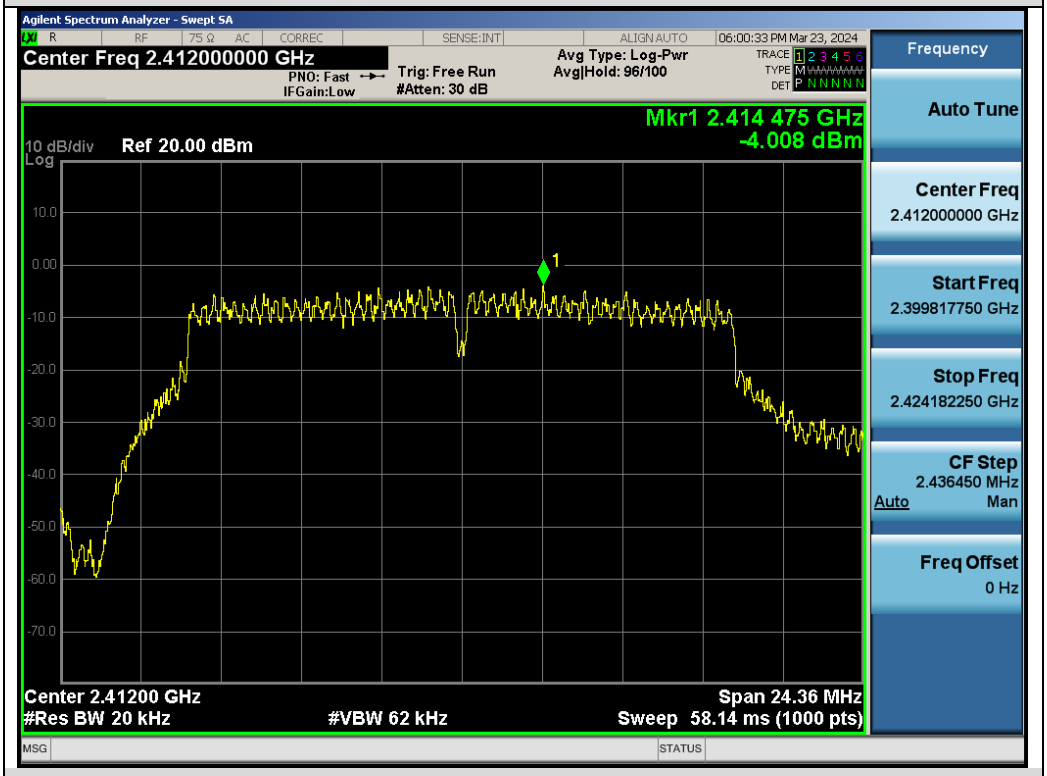
Test Graphs of Conducted Output Power Spectral Density



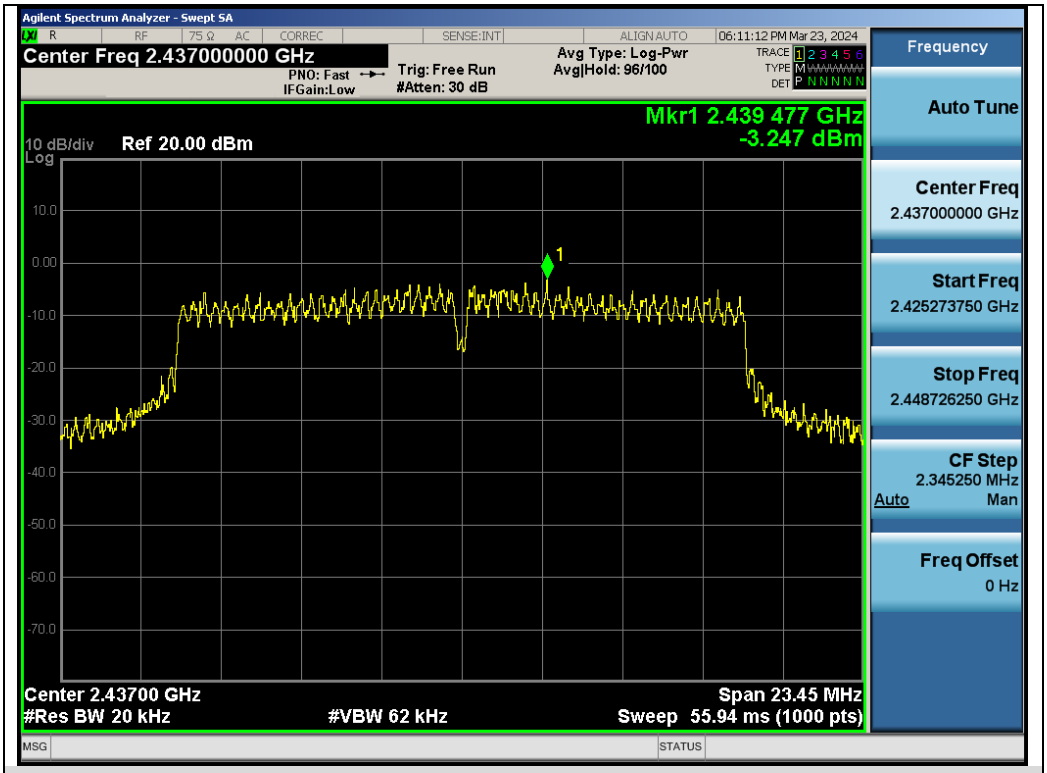
Test_Graph_802.11b_Chain A_2412_1Mbps_PSD

Test_Graph_802.11b_Chain A_2437_1Mbps_PSD

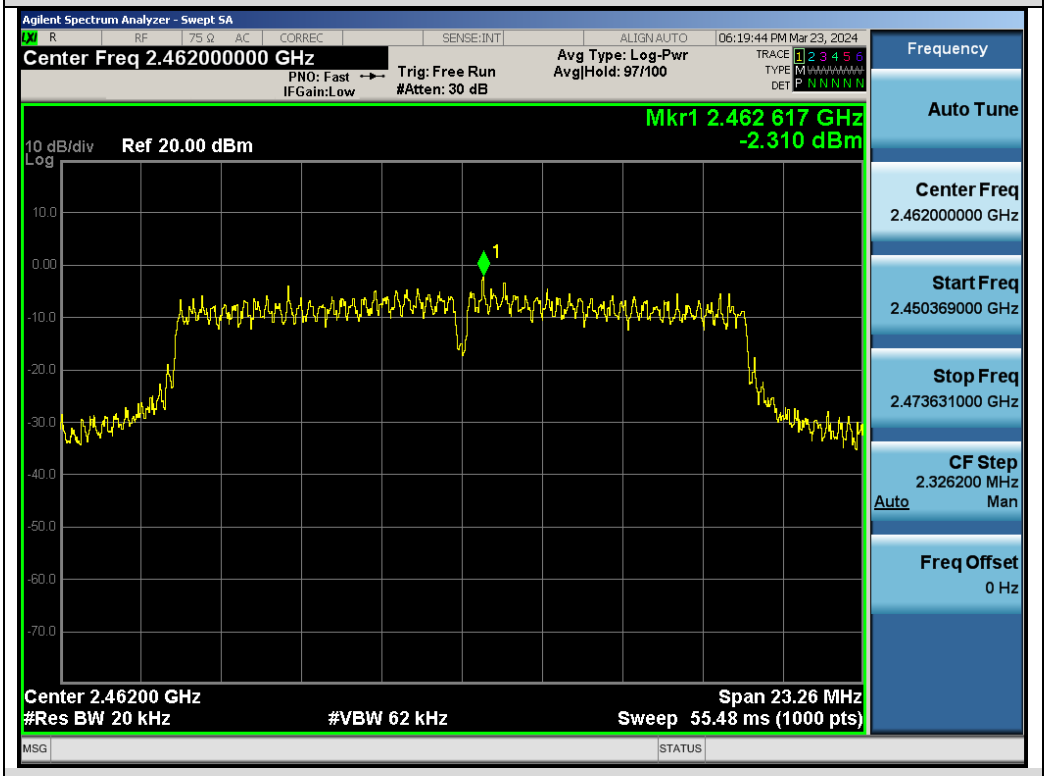
Test_Graph_802.11b_Chain A_2462_1Mbps_PSD



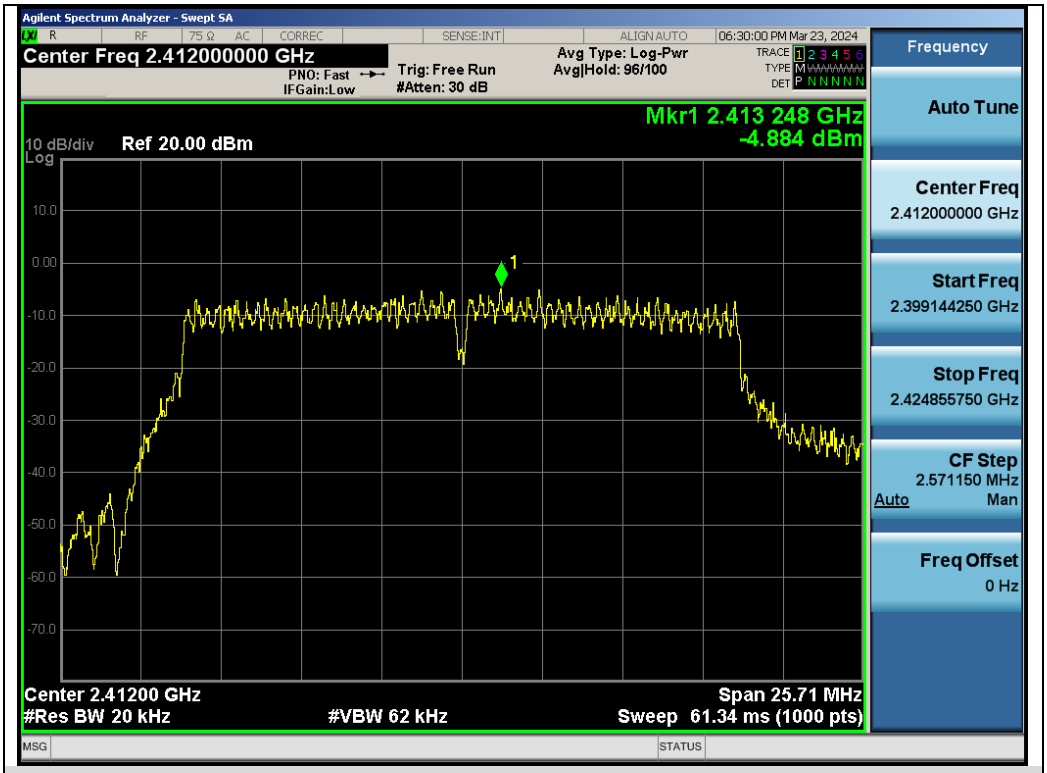
Test_Graph_802.11g_Chain A_2412_6Mbps_PSD



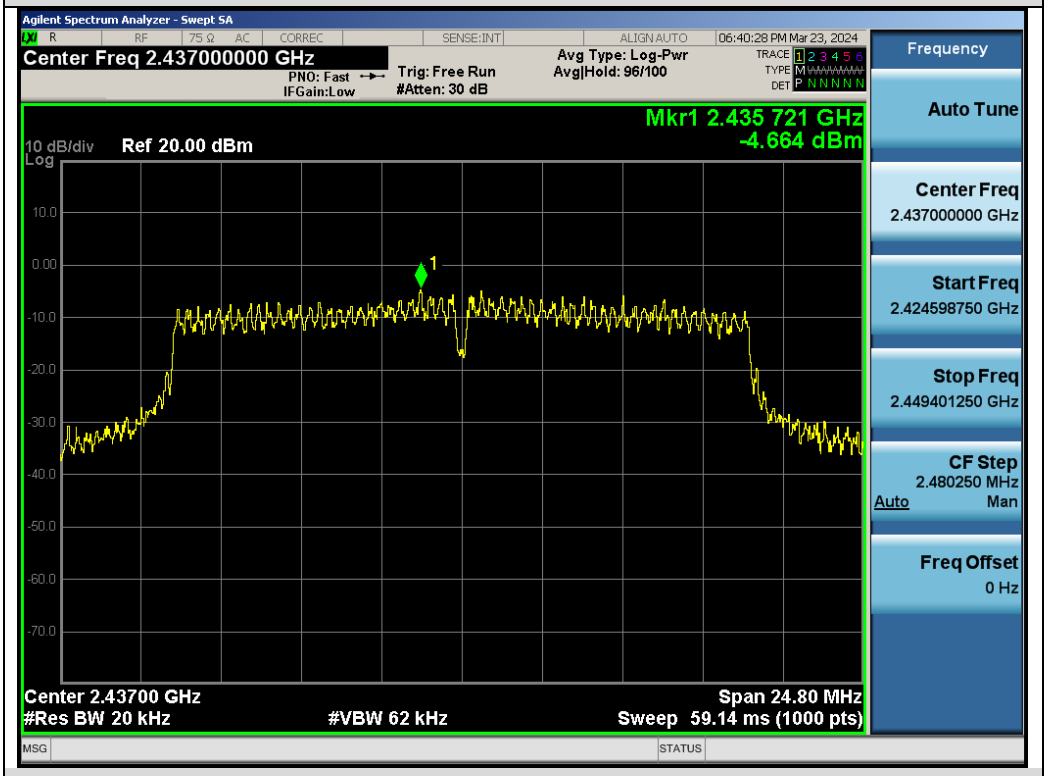
Test_Graph_802.11g_Chain A_2437_6Mbps_PSD



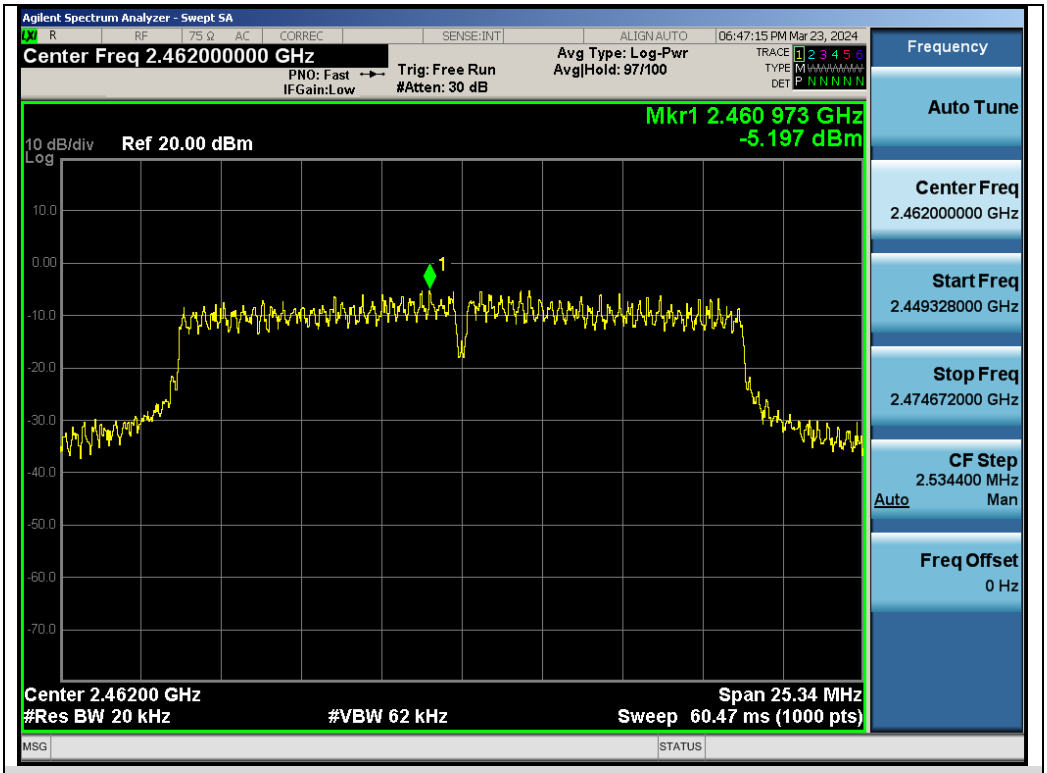
Test_Graph_802.11g_Chain A_2462_6Mbps_PSD



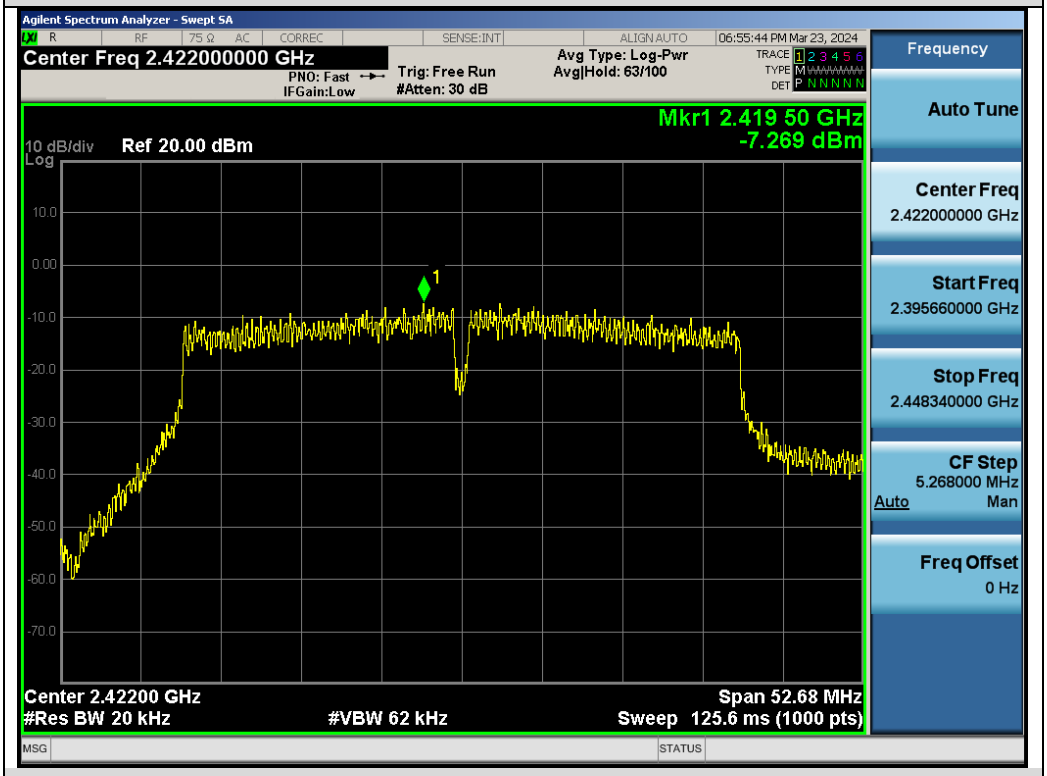
Test_Graph_802.11n20_Chain A_2412_MCS0_PSD



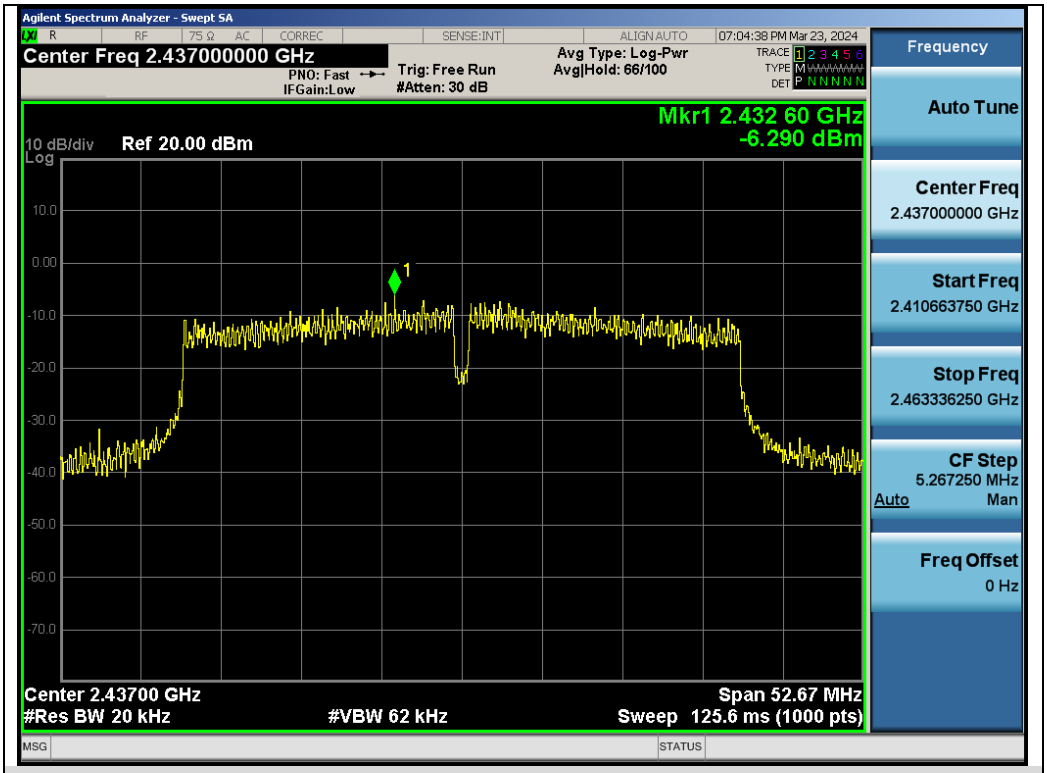
Test_Graph_802.11n20_Chain A_2437_MCS0_PSD



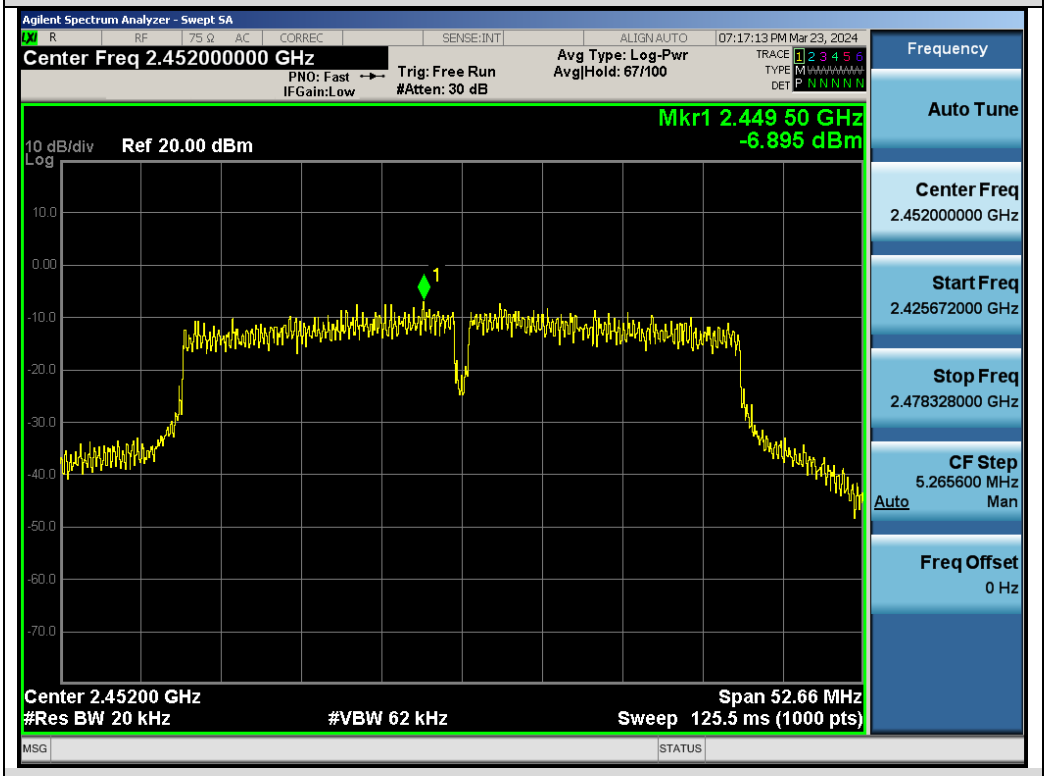
Test_Graph_802.11n20_Chain A_2462_MCS0_PSD



Test_Graph_802.11n40_Chain A_2422_MCS0_PSD

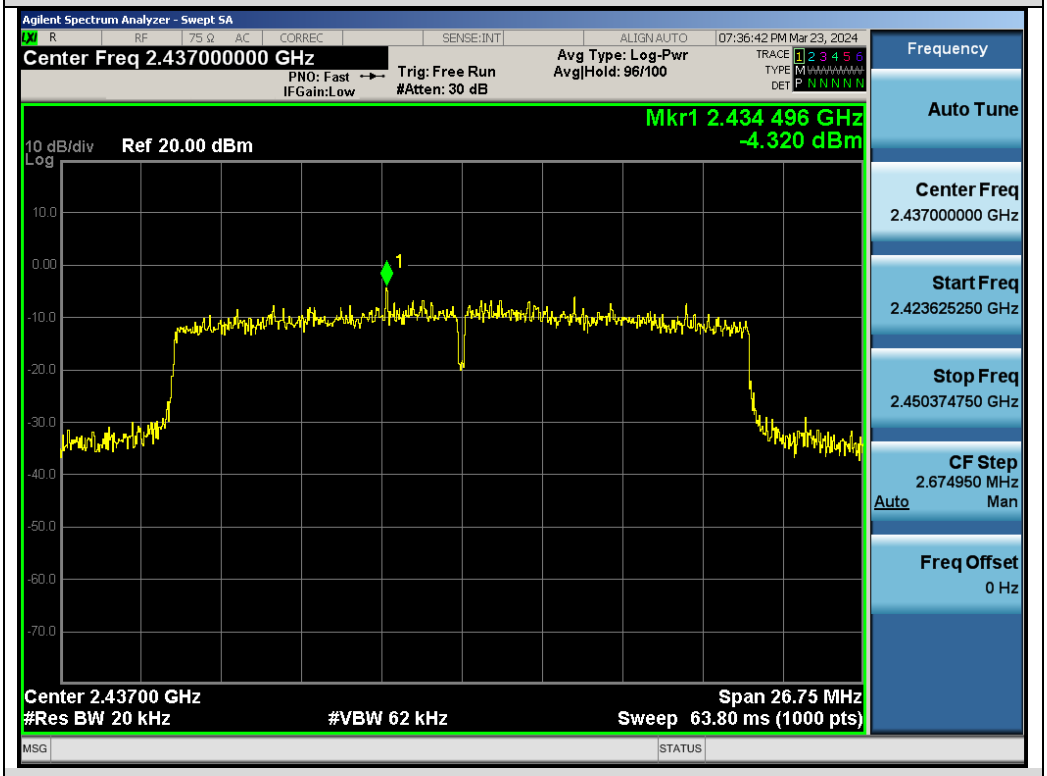


Test_Graph_802.11n40_Chain A_2437_MCS0_PSD



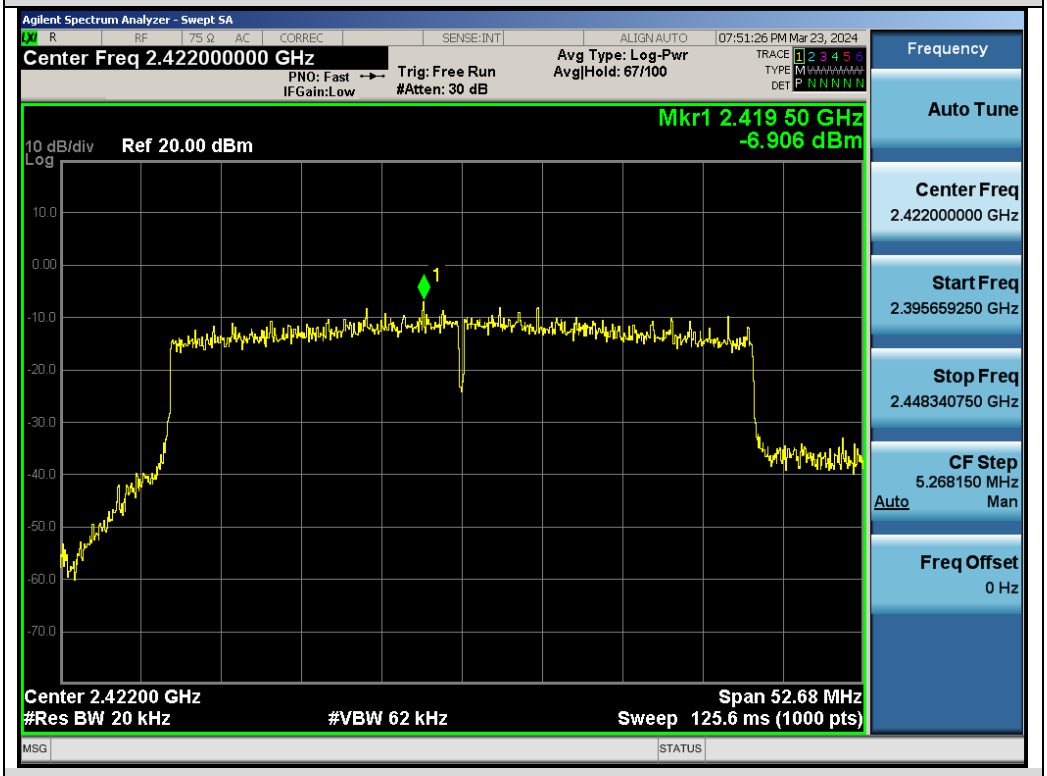
Test_Graph_802.11n40_Chain A_2452_MCS0_PSD

Test_Graph_802.11ax20_Chain A_2412_MCS0_PSD

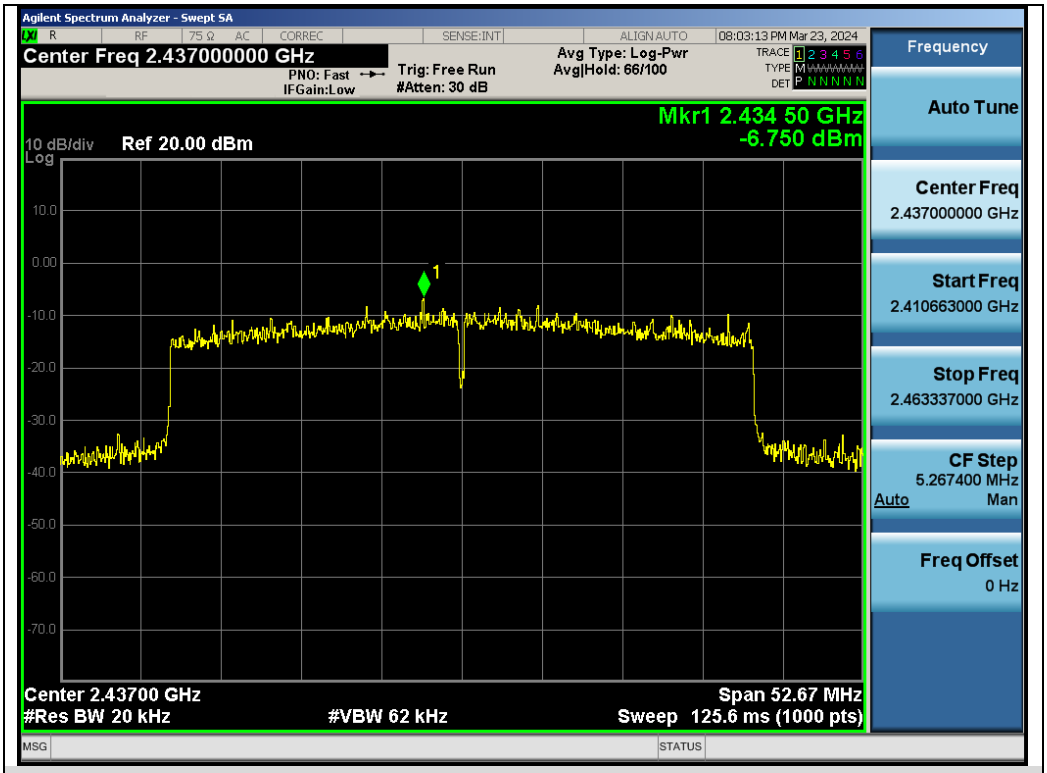


Test_Graph_802.11ax20_Chain A_2437_MCS0_PSD

Test_Graph_802.11ax20_Chain A_2462_MCS0_PSD



Test_Graph_802.11ax40_Chain A_2422_MCS0_PSD



Test_Graph_802.11ax40_Chain A_2437_MCS0_PSD

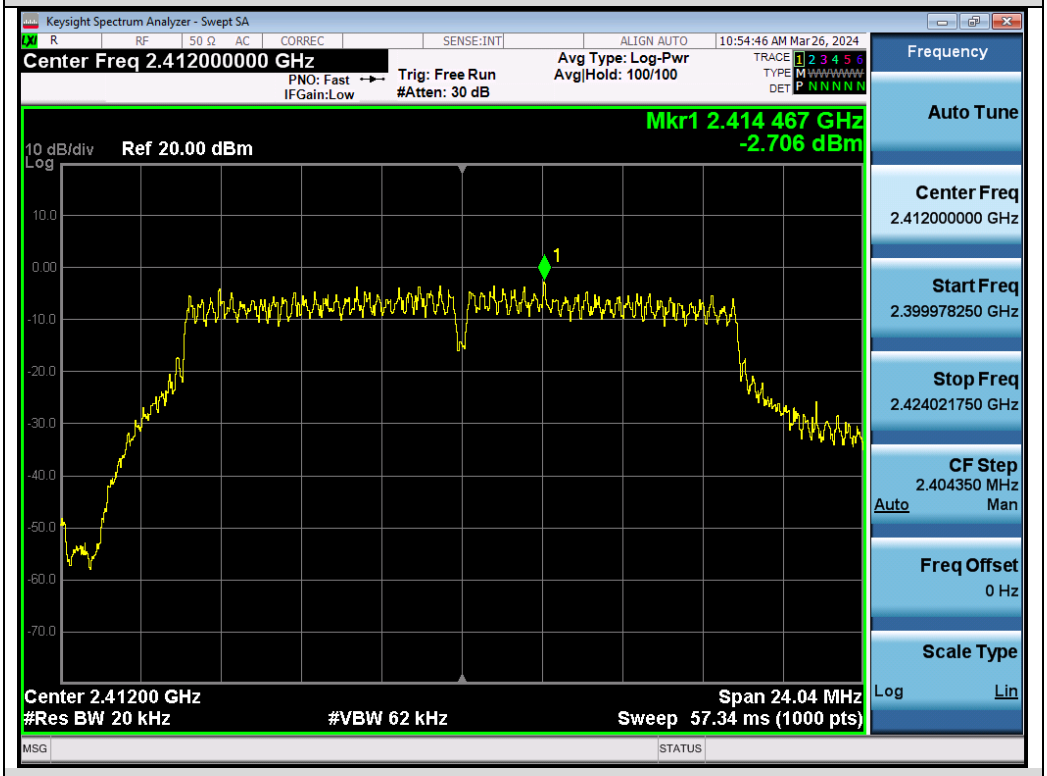
Test_Graph_802.11ax40_Chain A_2452_MCS0_PSD

Test Graphs of Conducted Output Power Spectral Density

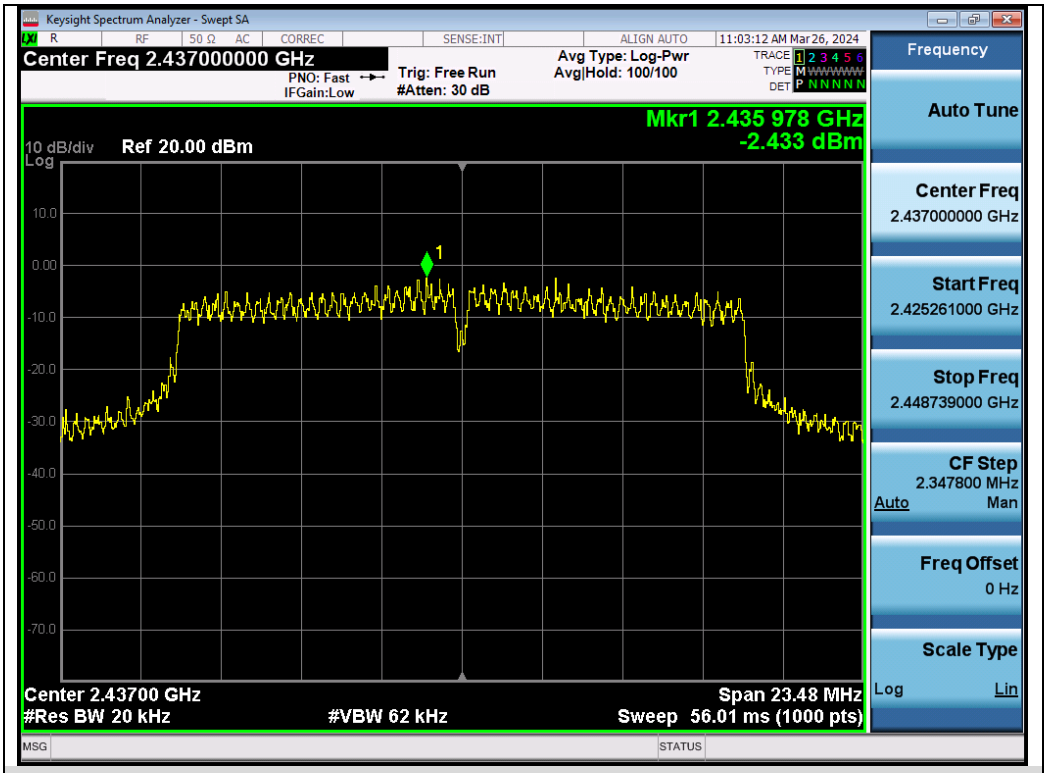
Test_Graph_802.11b_Chain B_2412_1Mbps_PSD

Test_Graph_802.11b_Chain B_2437_1Mbps_PSD

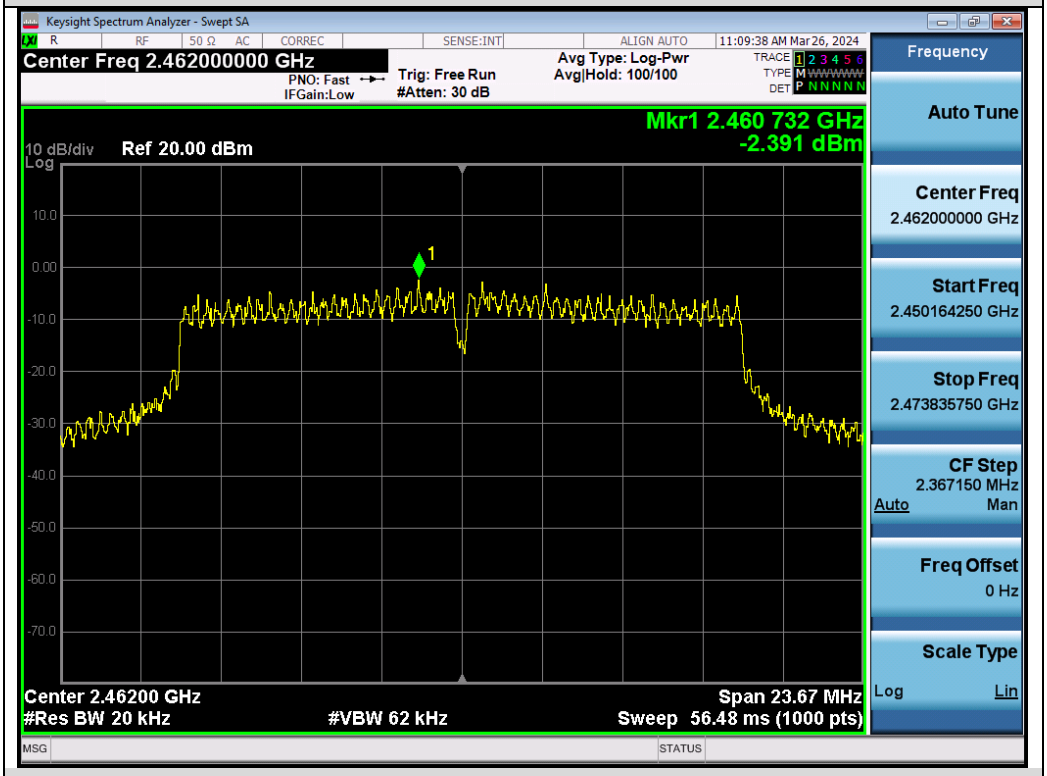
Test_Graph_802.11b_Chain B_2462_1Mbps_PSD



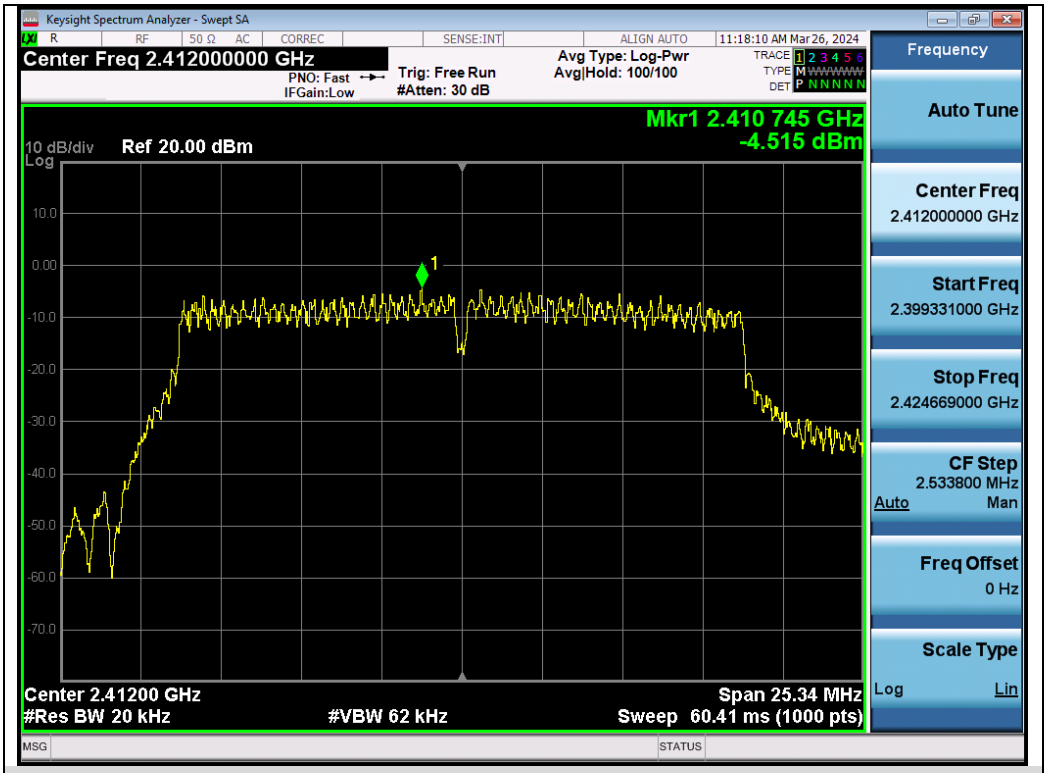
Test_Graph_802.11g_Chain B_2412_6Mbps_PSD



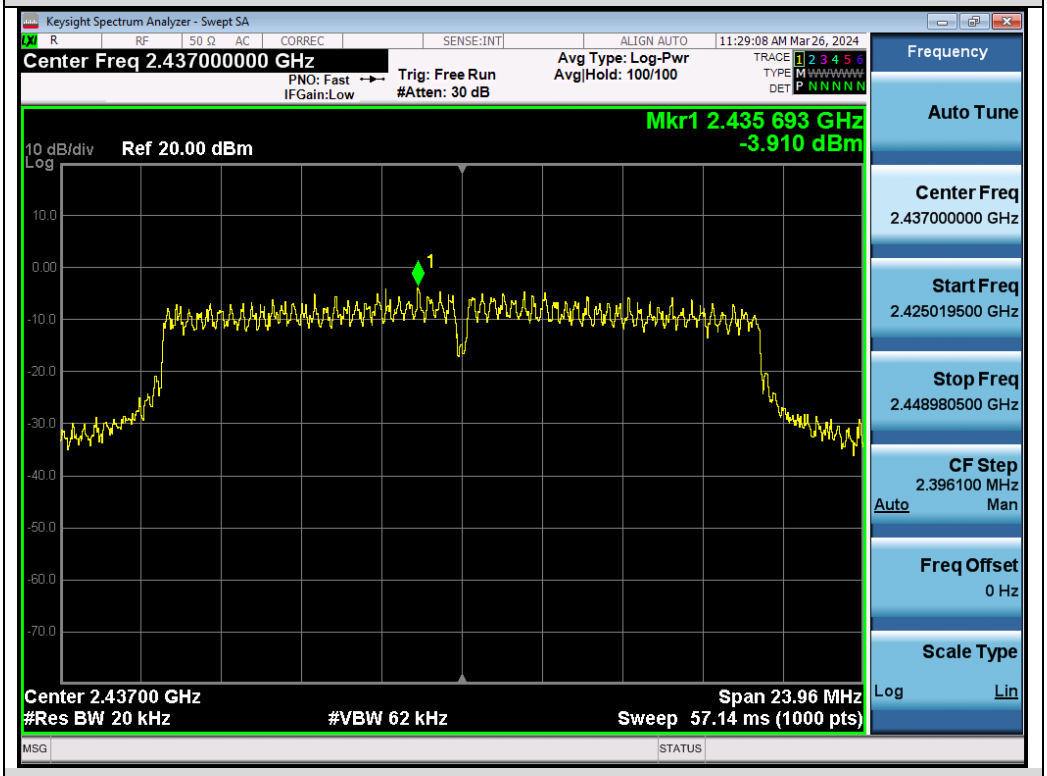
Test_Graph_802.11g_Chain B_2437_6Mbps_PSD



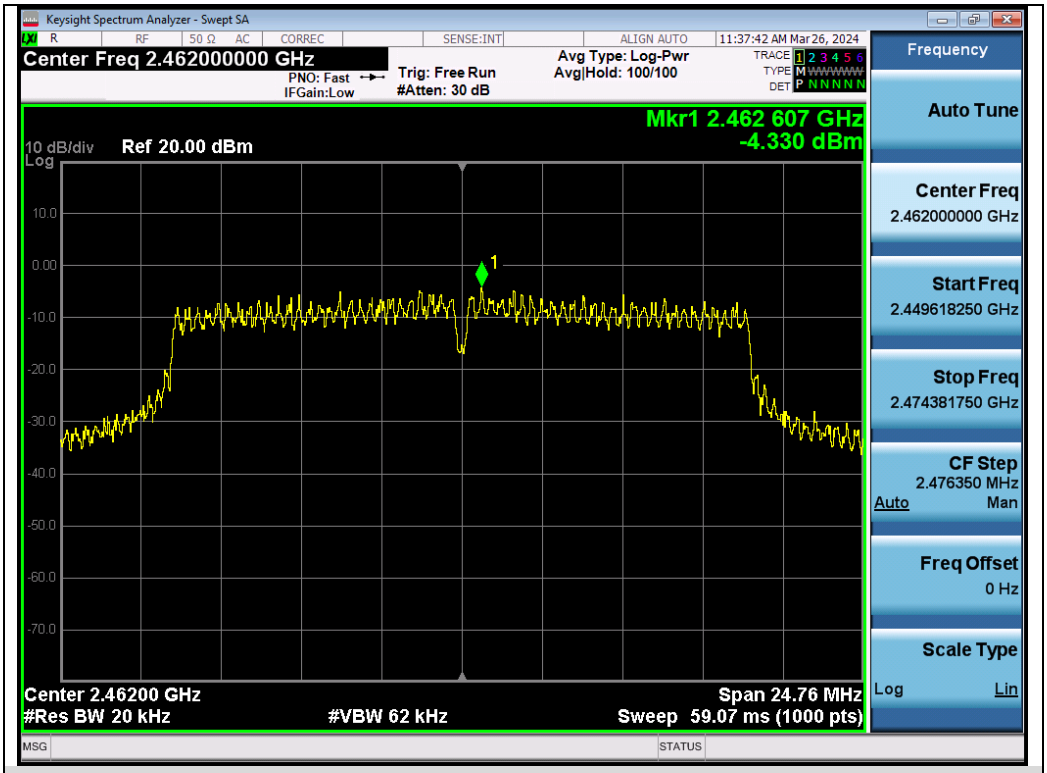
Test_Graph_802.11g_Chain B_2462_6Mbps_PSD



Test_Graph_802.11n20_Chain B_2412_MCS0_PSD

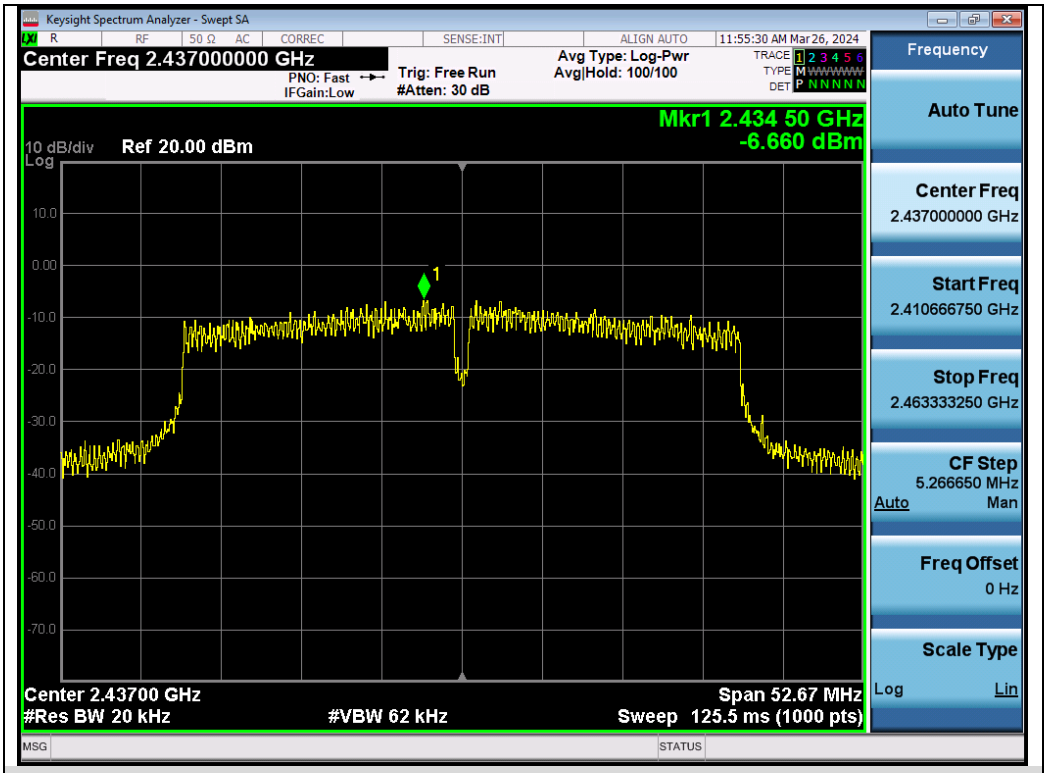


Test_Graph_802.11n20_Chain B_2437_MCS0_PSD



Test_Graph_802.11n20_Chain B_2462_MCS0_PSD

Test_Graph_802.11n40_Chain B_2422_MCS0_PSD



Test_Graph_802.11n40_Chain B_2437_MCS0_PSD

Test_Graph_802.11n40_Chain B_2452_MCS0_PSD

Test_Graph_802.11ax20_Chain B_2412_MCS0_PSD

Test_Graph_802.11ax20_Chain B_2437_MCS0_PSD

Test_Graph_802.11ax20_Chain B_2462_MCS0_PSD

Test_Graph_802.11ax40_Chain B_2422_MCS0_PSD

Test_Graph_802.11ax40_Chain B_2437_MCS0_PSD

Test_Graph_802.11ax40_Chain B_2452_MCS0_PSD

10. Conducted Band Edge and Out-of-Band Emissions

10.1 Provisions Applicable

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

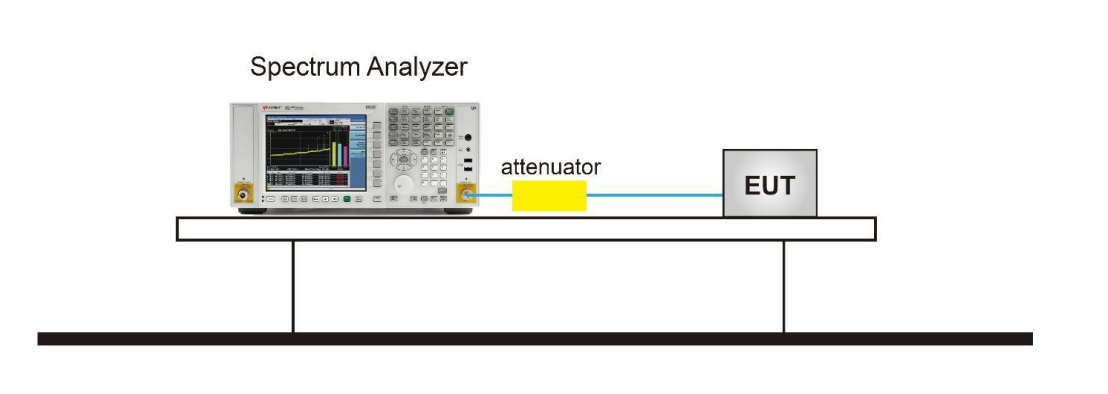
10.2 Measurement Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
Use the following spectrum analyzer settings:

- Step 1: Measurement Procedure In-Band Reference Level
  1. Set instrument center frequency to DTS channel center frequency.
  2. Set the span to ≥ 1.5 times the DTS bandwidth.
  3. Set the RBW = 100 kHz.
  4. Set the VBW ≥ 3 x RBW.
  5. Detector = peak.
  6. Sweep time = auto couple.
  7. Trace mode = max hold.
  8. Allow trace to fully stabilize.
  9. Use the peak marker function to determine the maximum PSD level.
  10. Note that the channel found to contain the maximum PSD level can be used to establish the reference level.
- Step 2: Measurement Procedure Out of Band Emission
  1. Set RBW = 100 kHz.
  2. Set VBW ≥ 300 kHz.
  3. Detector = peak.
  4. Sweep = auto couple.
  5. Trace Mode = max hold.
  6. Allow trace to fully stabilize.
  7. Use the peak marker function to determine the maximum amplitude level.

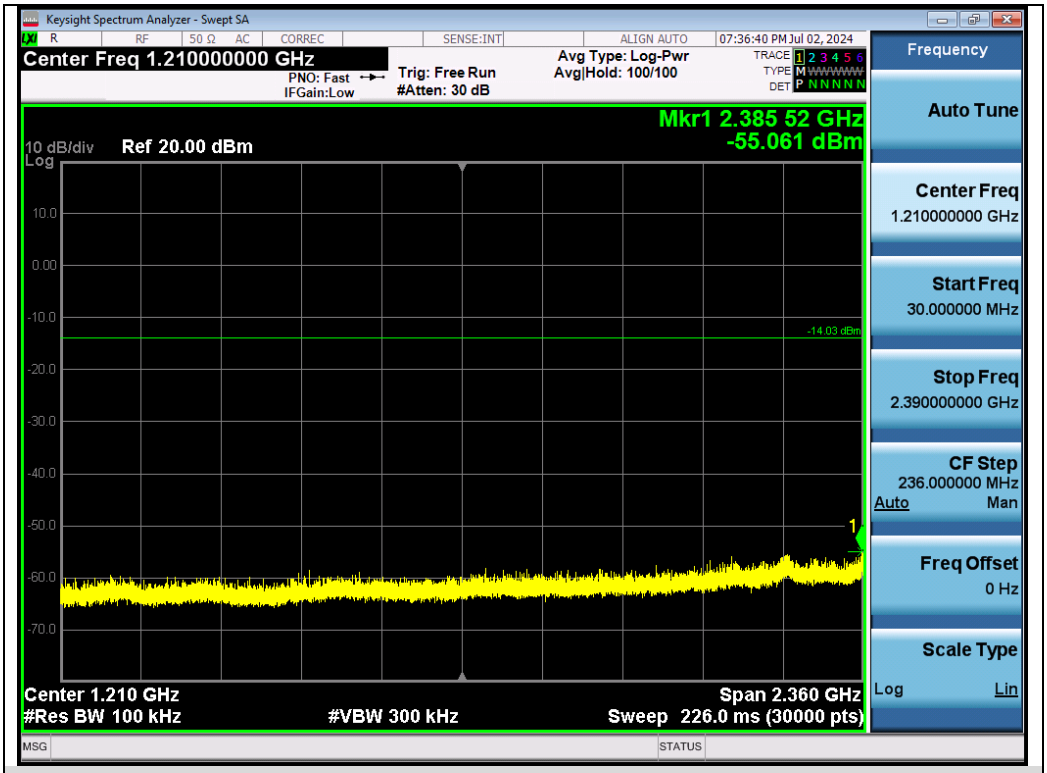
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

10.3 Measurement Setup (Block Diagram of Configuration)



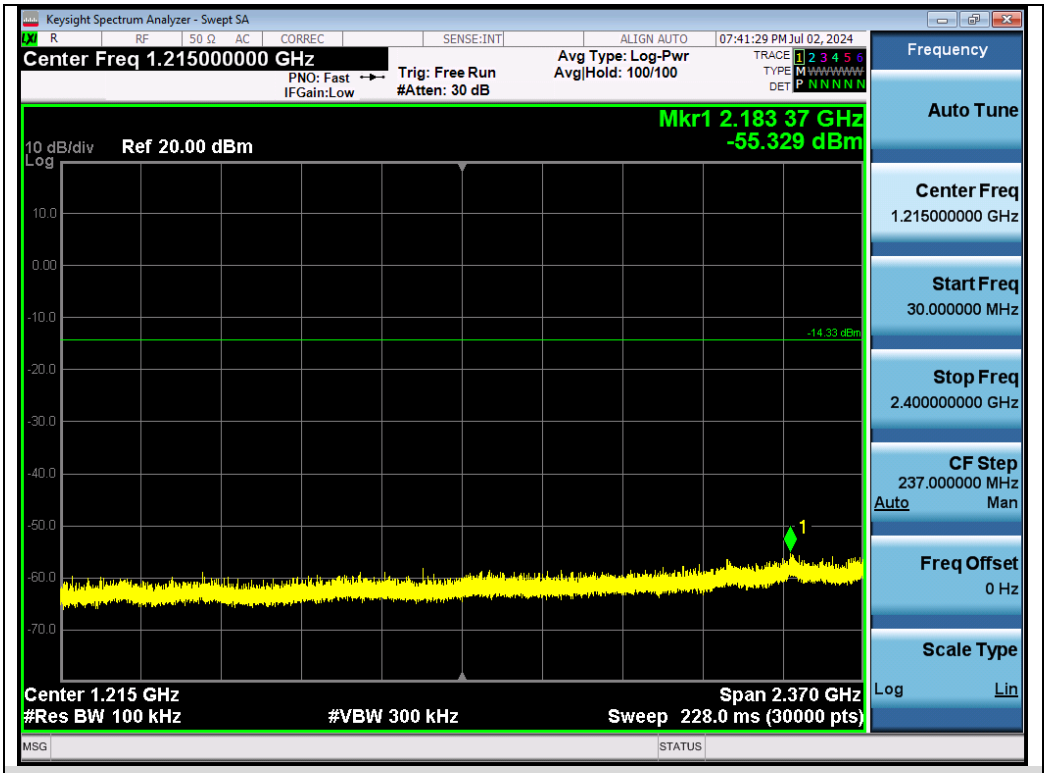
10.4 Measurement Result

Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands

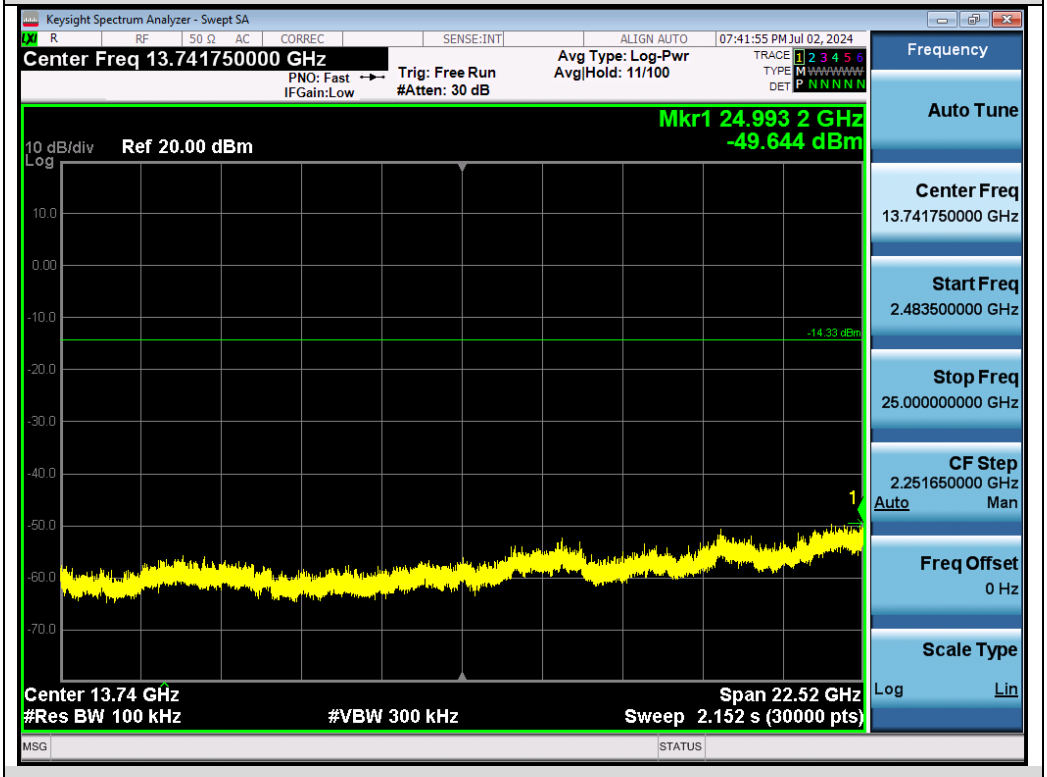


Test_Graph_802.11b_Chain A_2412_1Mbps_Lower Band Emissions

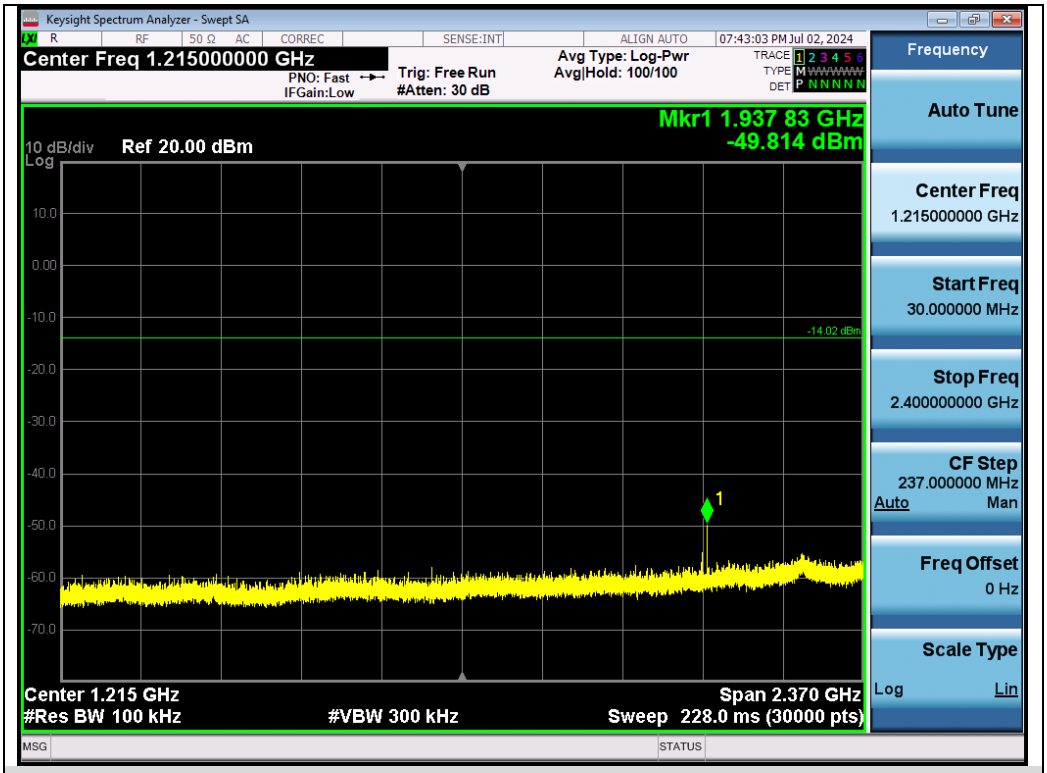
Test_Graph_802.11b_Chain A_2412_1Mbps_Higher Band Emissions



Test_Graph_802.11b_Chain A_2437_1Mbps_Lower Band Emissions

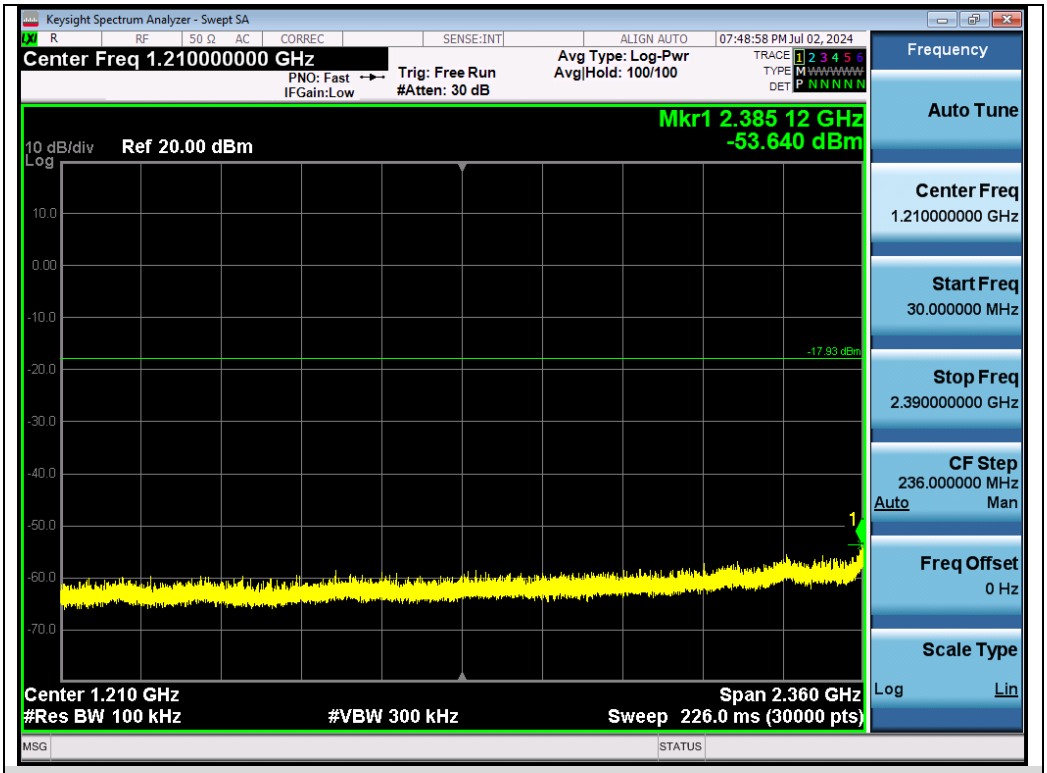


Test_Graph_802.11b_Chain A_2437_1Mbps_Higher Band Emissions

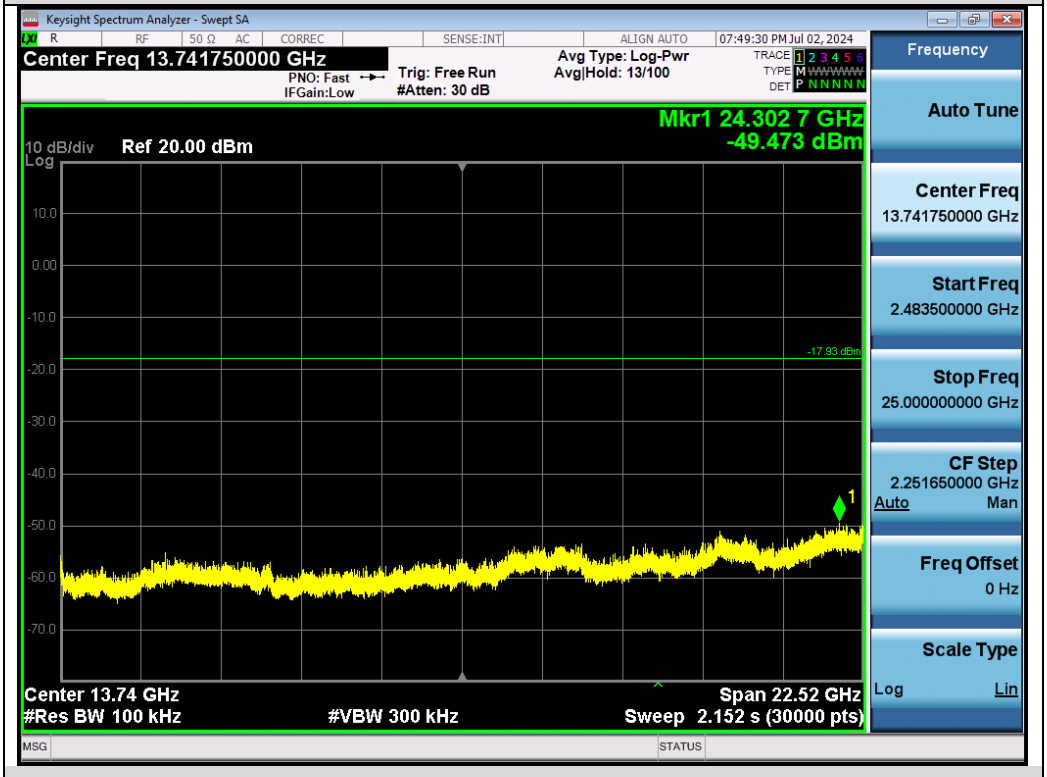


Test_Graph_802.11b_Chain A_2462_1Mbps_Lower Band Emissions

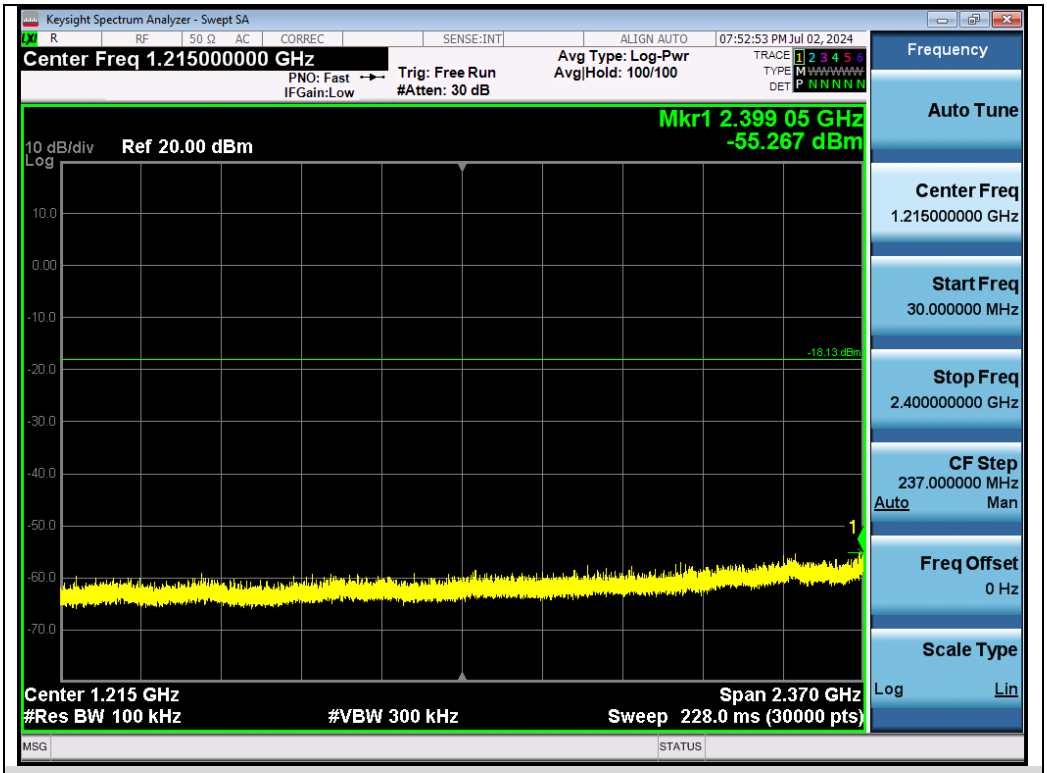
Test_Graph_802.11b_Chain A_2462_1Mbps_Higher Band Emissions



Test_Graph_802.11g_Chain A_2412_6Mbps_Lower Band Emissions

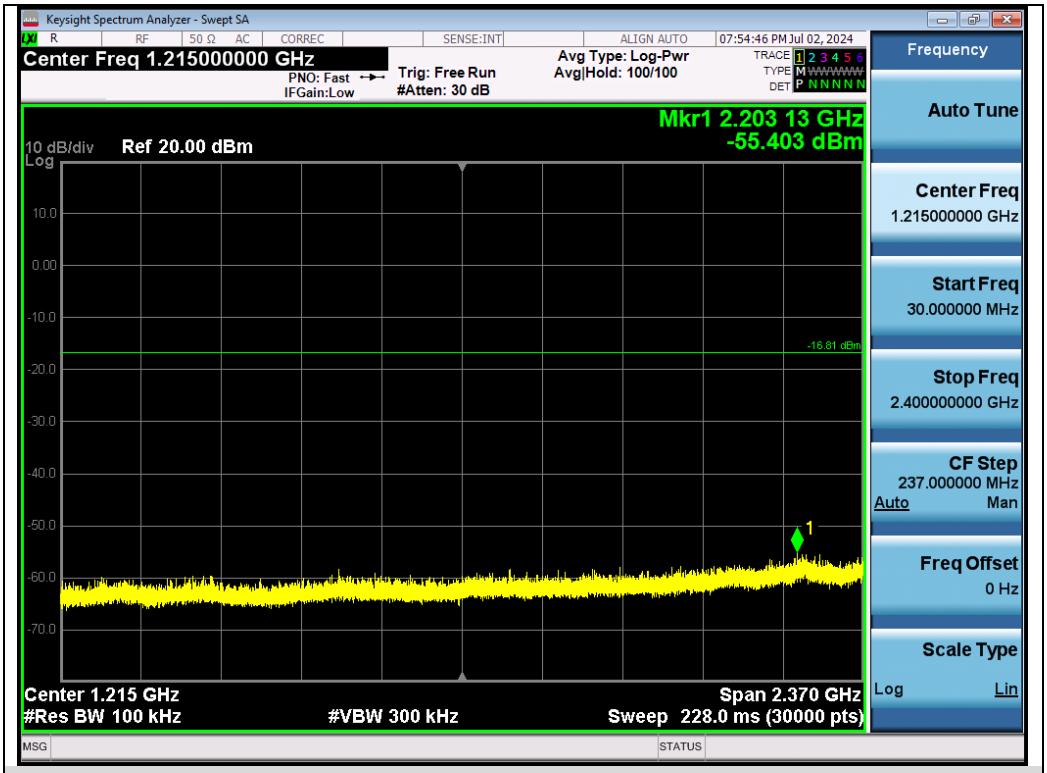


Test_Graph_802.11g_Chain A_2412_6Mbps_Higher Band Emissions



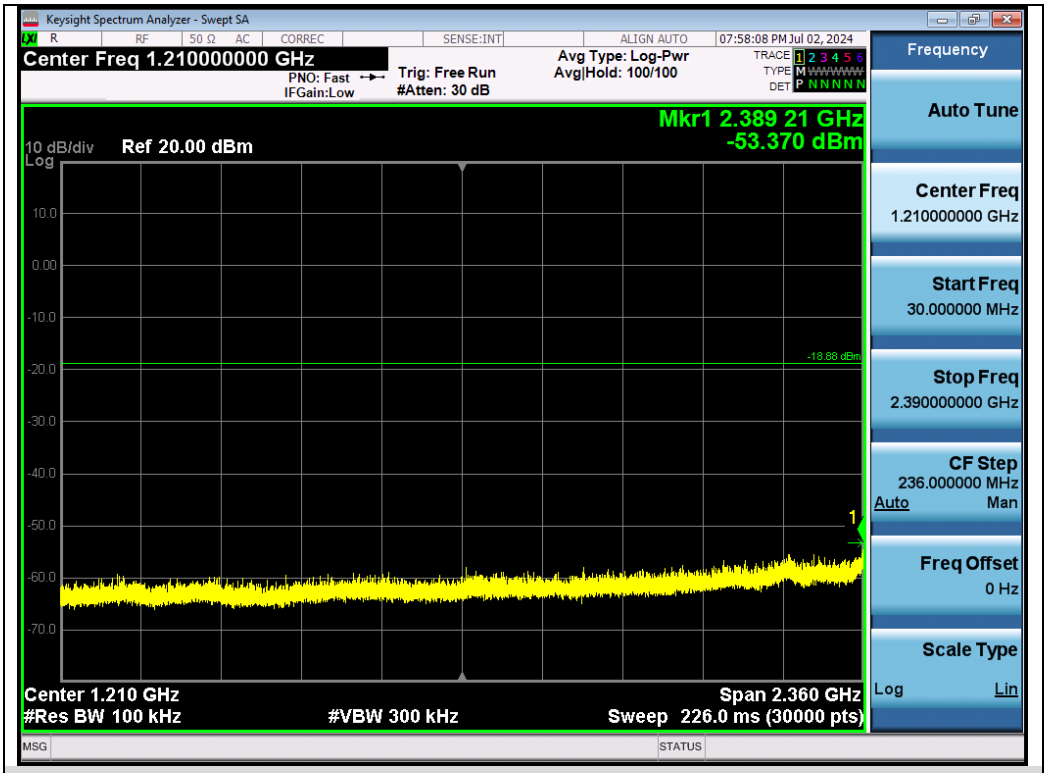
Test_Graph_802.11g_Chain A_2437_6Mbps_Lower Band Emissions

Test_Graph_802.11g_Chain A_2437_6Mbps_Higher Band Emissions



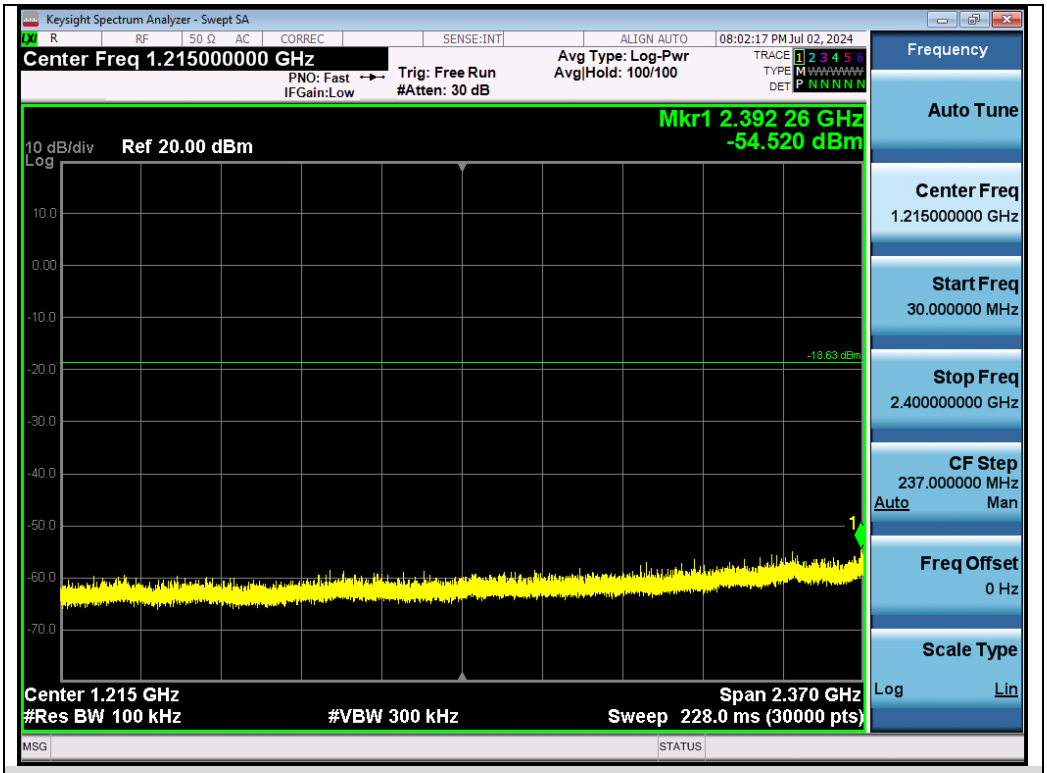
Test_Graph_802.11g_Chain A_2462_6Mbps_Lower Band Emissions

Test_Graph_802.11g_Chain A_2462_6Mbps_Higher Band Emissions



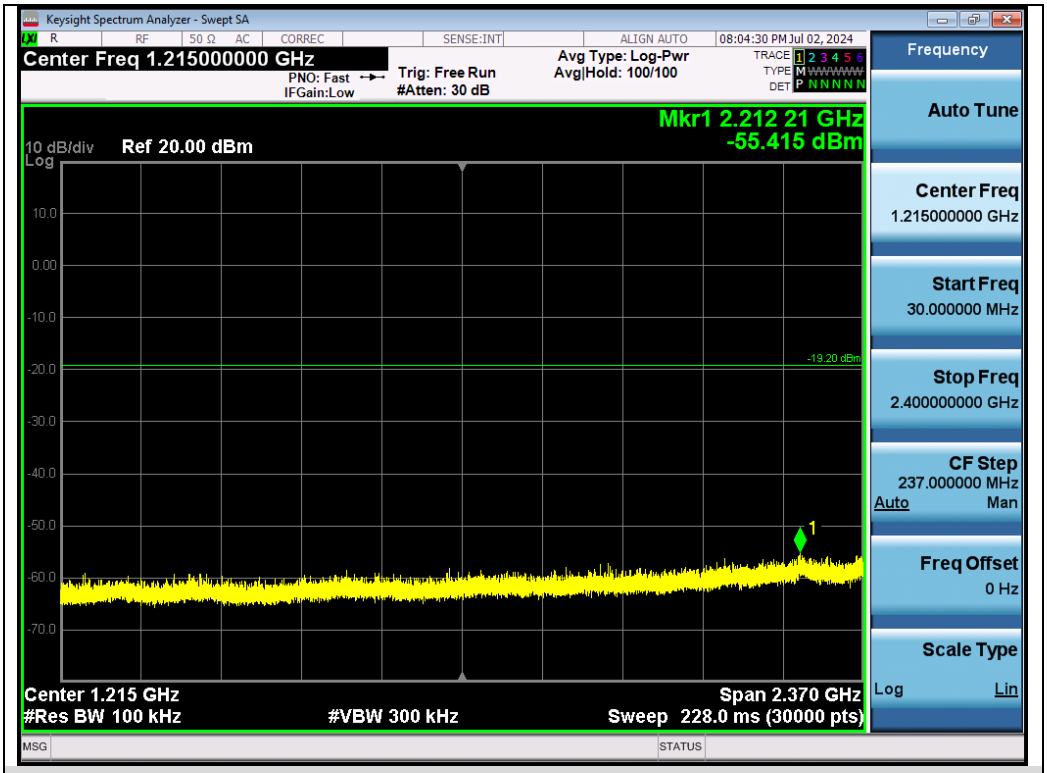
Test_Graph_802.11n20_Chain A_2412_MCS0_Lower Band Emissions

Test_Graph_802.11n20_Chain A_2412_MCS0_Higher Band Emissions



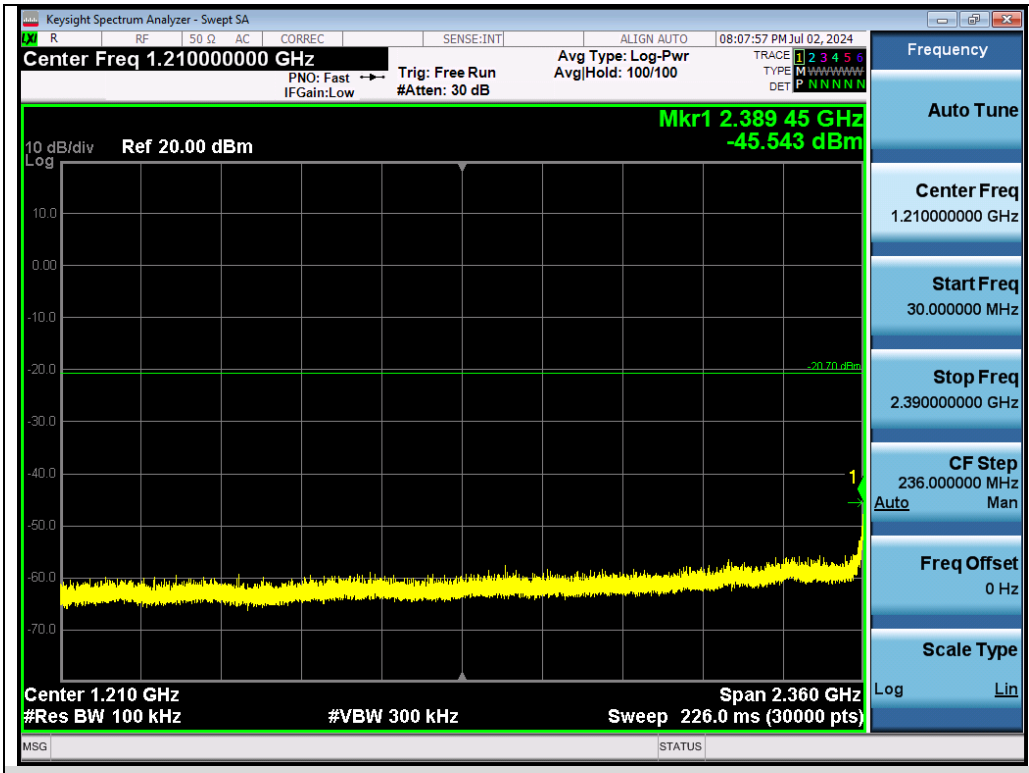
Test_Graph_802.11n20_Chain A_2437_MCS0_Lower Band Emissions

Test_Graph_802.11n20_Chain A_2437_MCS0_Higher Band Emissions



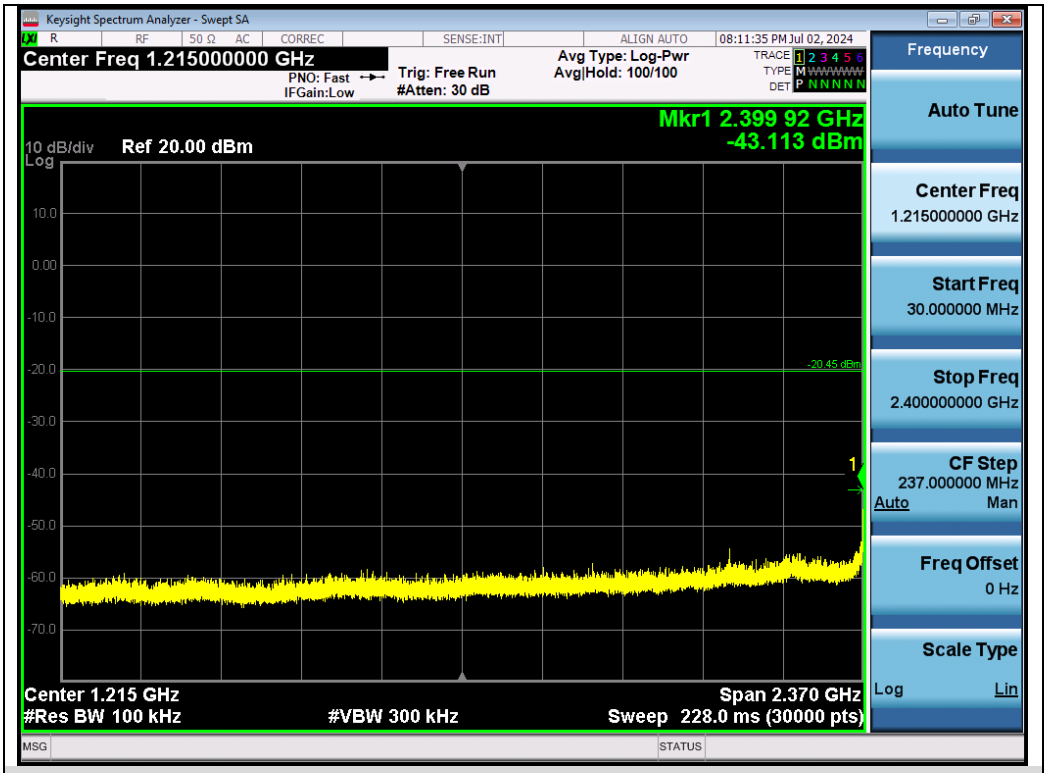
Test_Graph_802.11n20_Chain A_2462_MCS0_Lower Band Emissions

Test_Graph_802.11n20_Chain A_2462_MCS0_Higher Band Emissions



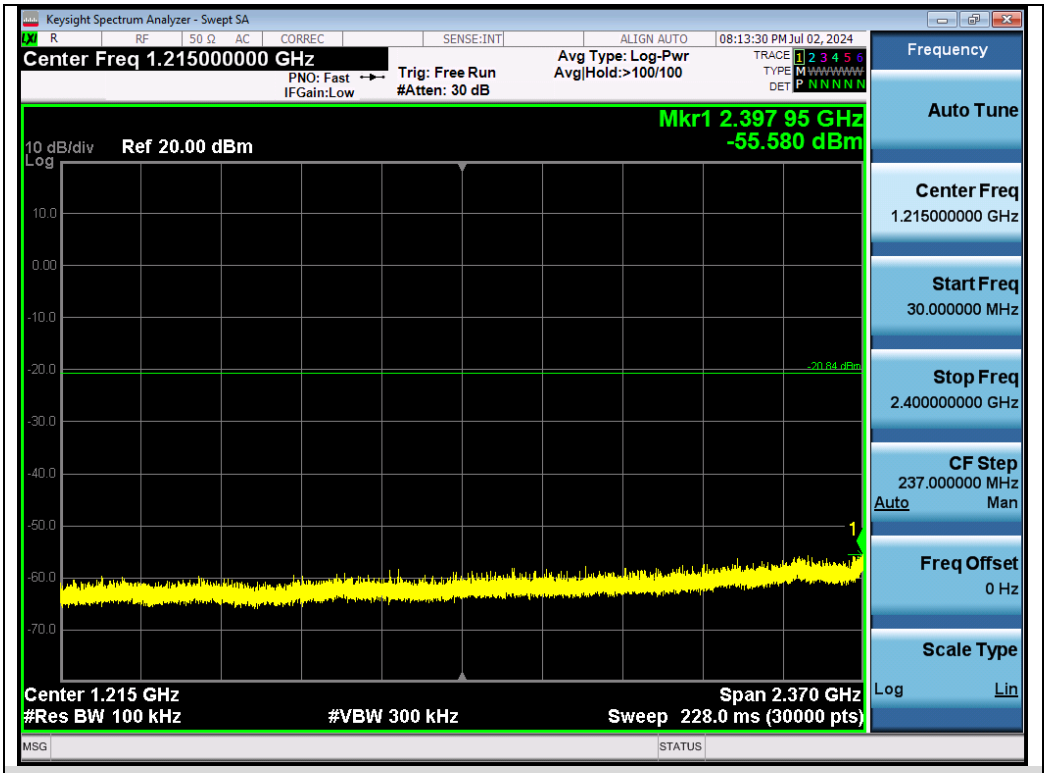
Test_Graph_802.11n40_Chain A_2422_MCS0_Lower Band Emissions

Test_Graph_802.11n40_Chain A_2422_MCS0_Higher Band Emissions



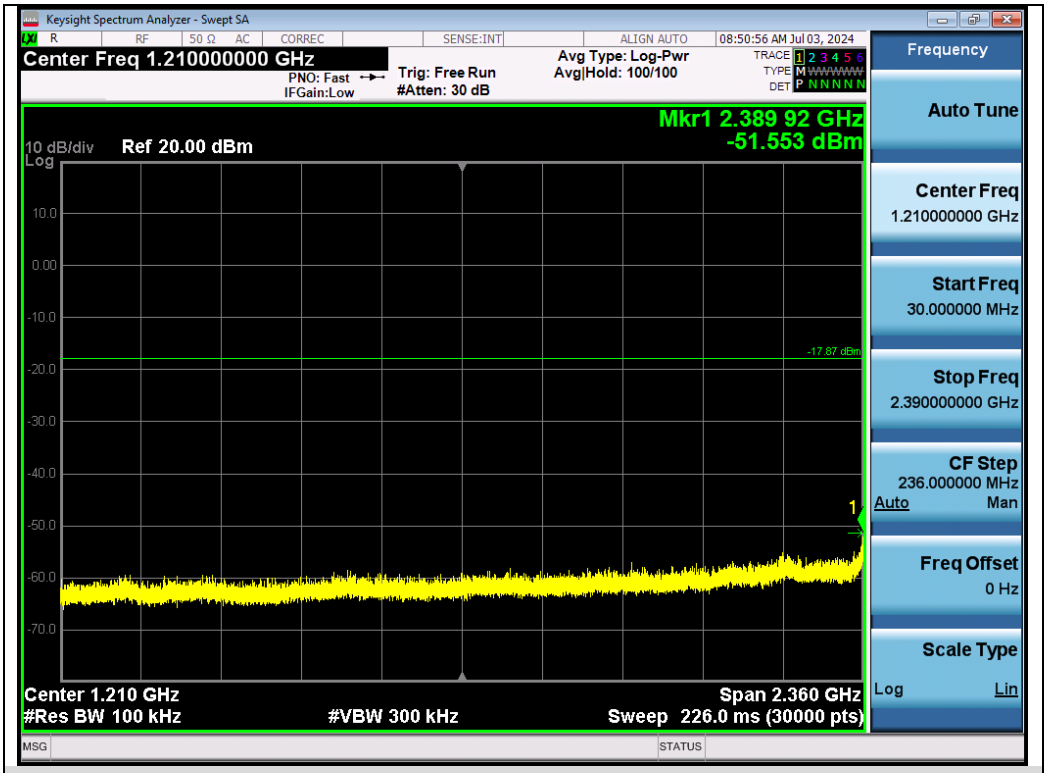
Test_Graph_802.11n40_Chain A_2437_MCS0_Lower Band Emissions

Test_Graph_802.11n40_Chain A_2437_MCS0_Higher Band Emissions



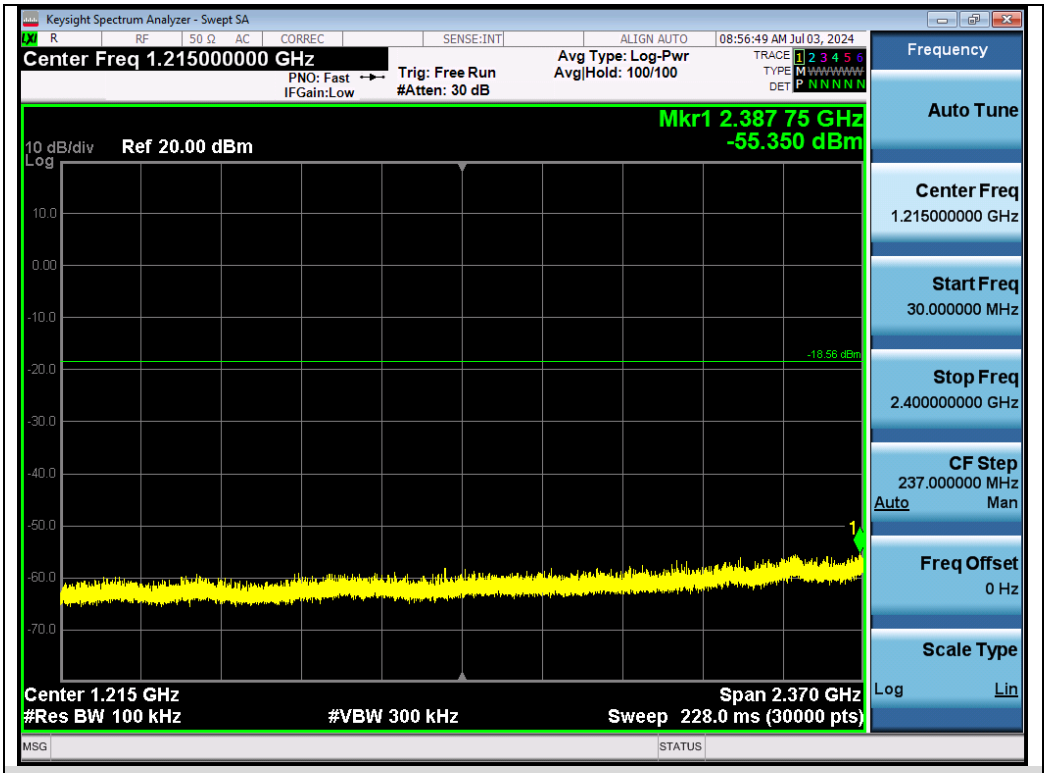
Test_Graph_802.11n40_Chain A_2452_MCS0_Lower Band Emissions

Test_Graph_802.11n40_Chain A_2452_MCS0_Higher Band Emissions



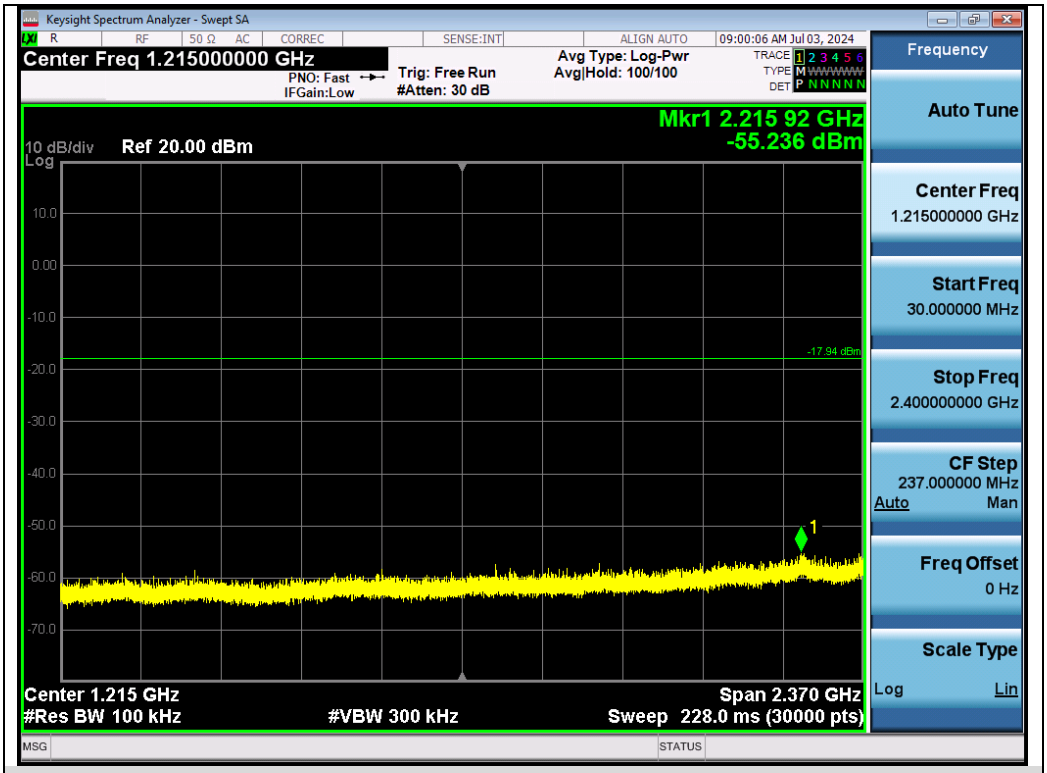
Test_Graph_802.11ax20_Chain A_2412_MCS0_Lower Band Emissions

Test_Graph_802.11ax20_Chain A_2412_MCS0_Higher Band Emissions



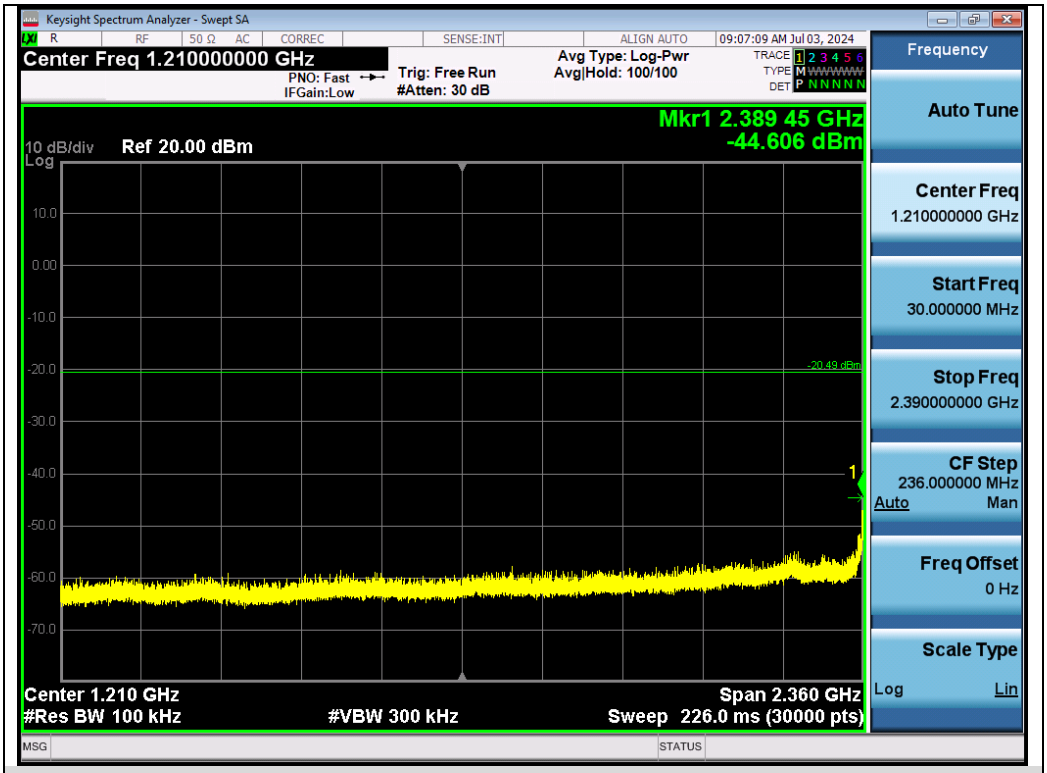
Test_Graph_802.11ax20_Chain A_2437_MCS0_Lower Band Emissions

Test_Graph_802.11ax20_Chain A_2437_MCS0_Higher Band Emissions



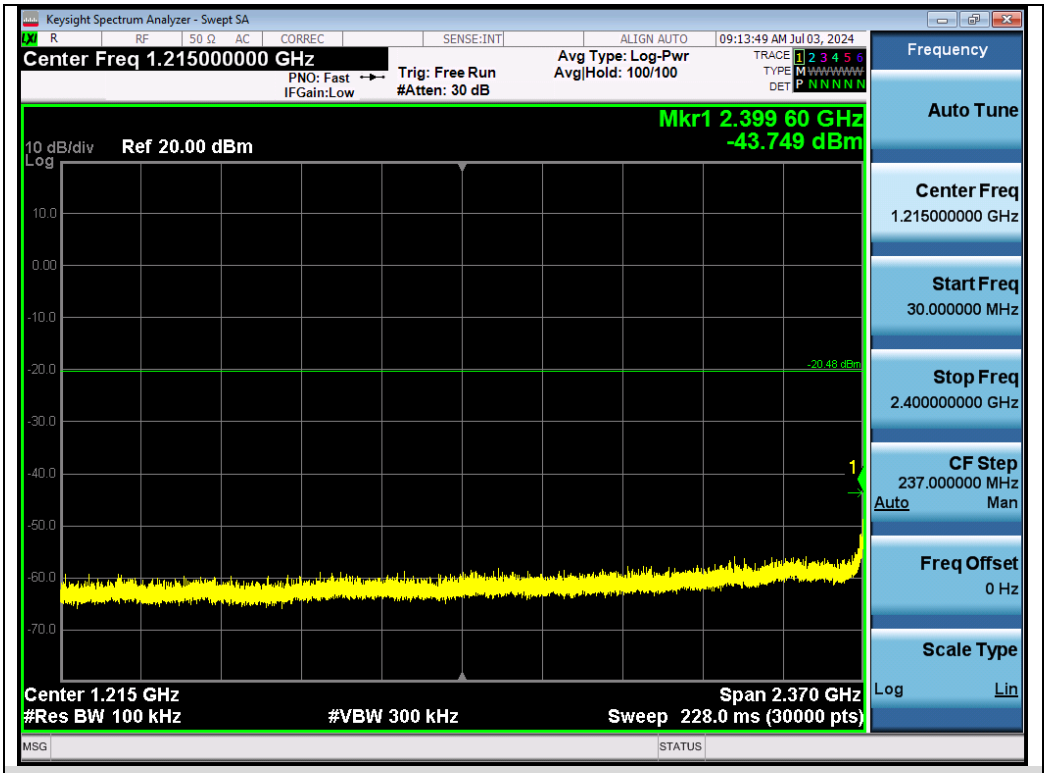
Test_Graph_802.11ax20_Chain A_2462_MCS0_Lower Band Emissions

Test_Graph_802.11ax20_Chain A_2462_MCS0_Higher Band Emissions



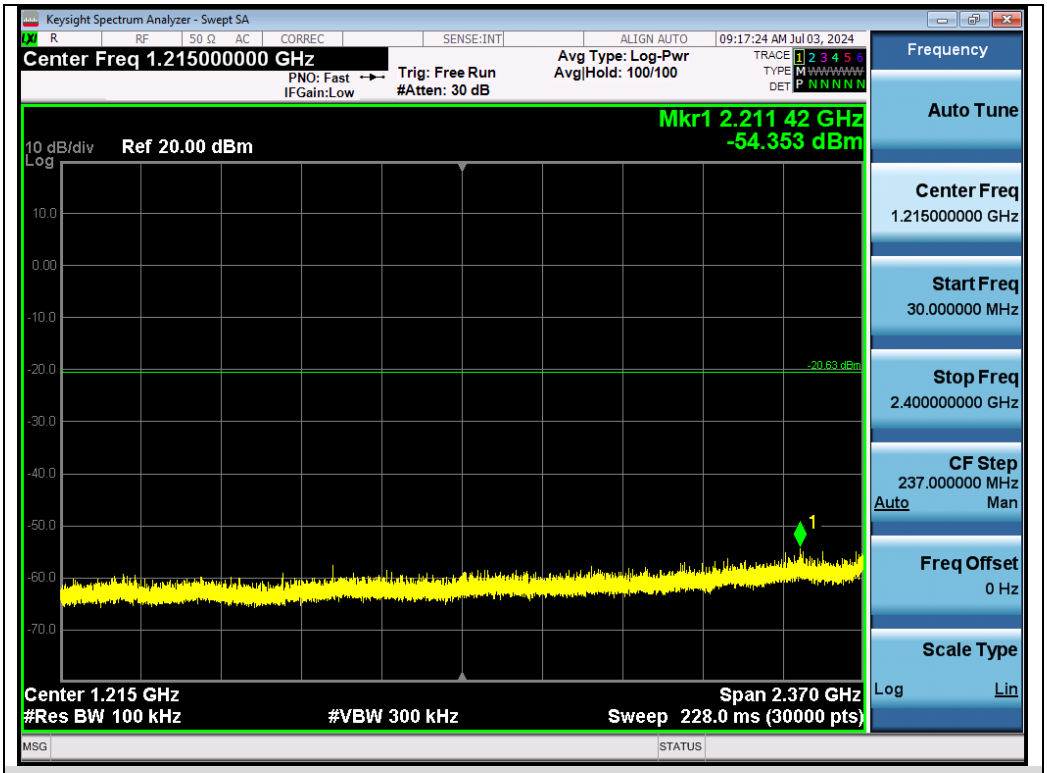
Test_Graph_802.11ax40_Chain A_2422_MCS0_Lower Band Emissions

Test_Graph_802.11ax40_Chain A_2422_MCS0_Higher Band Emissions



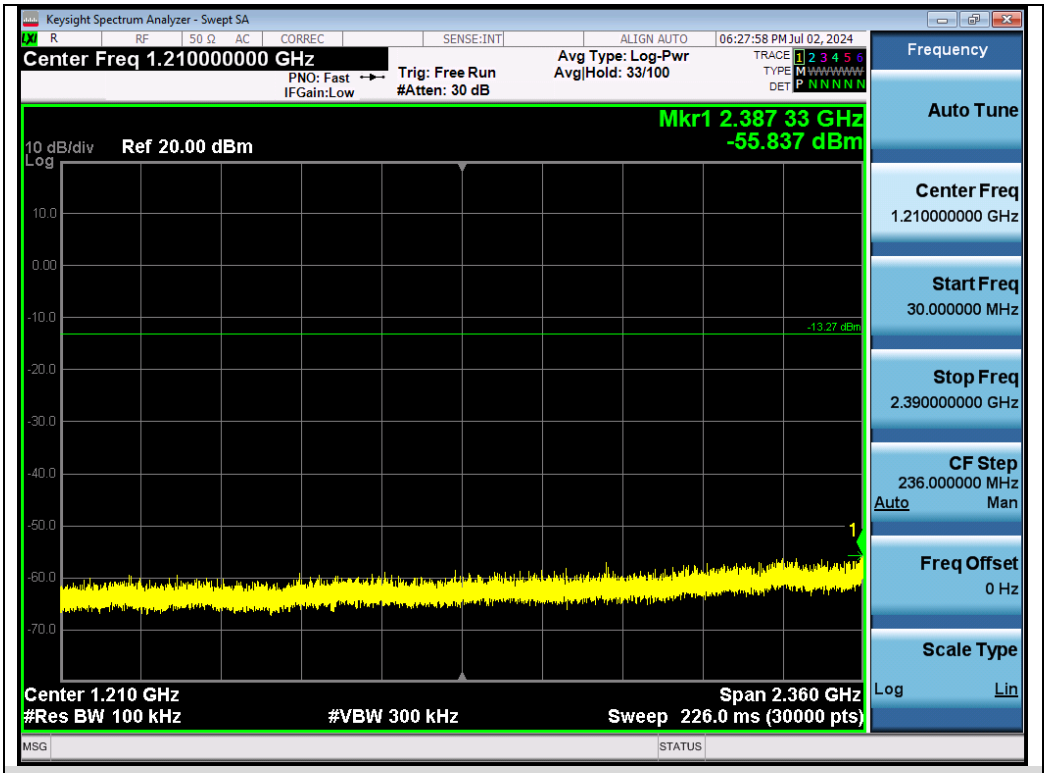
Test_Graph_802.11ax40_Chain A_2437_MCS0_Lower Band Emissions

Test_Graph_802.11ax40_Chain A_2437_MCS0_Higher Band Emissions

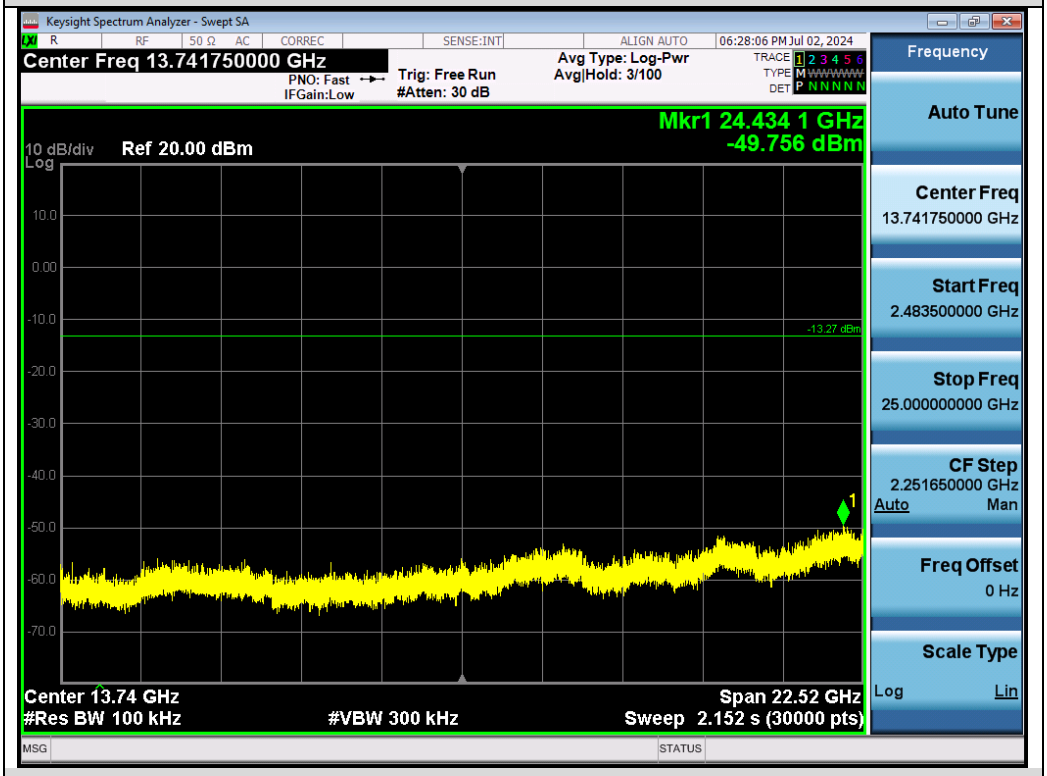


Test_Graph_802.11ax40_Chain A_2452_MCS0_Lower Band Emissions

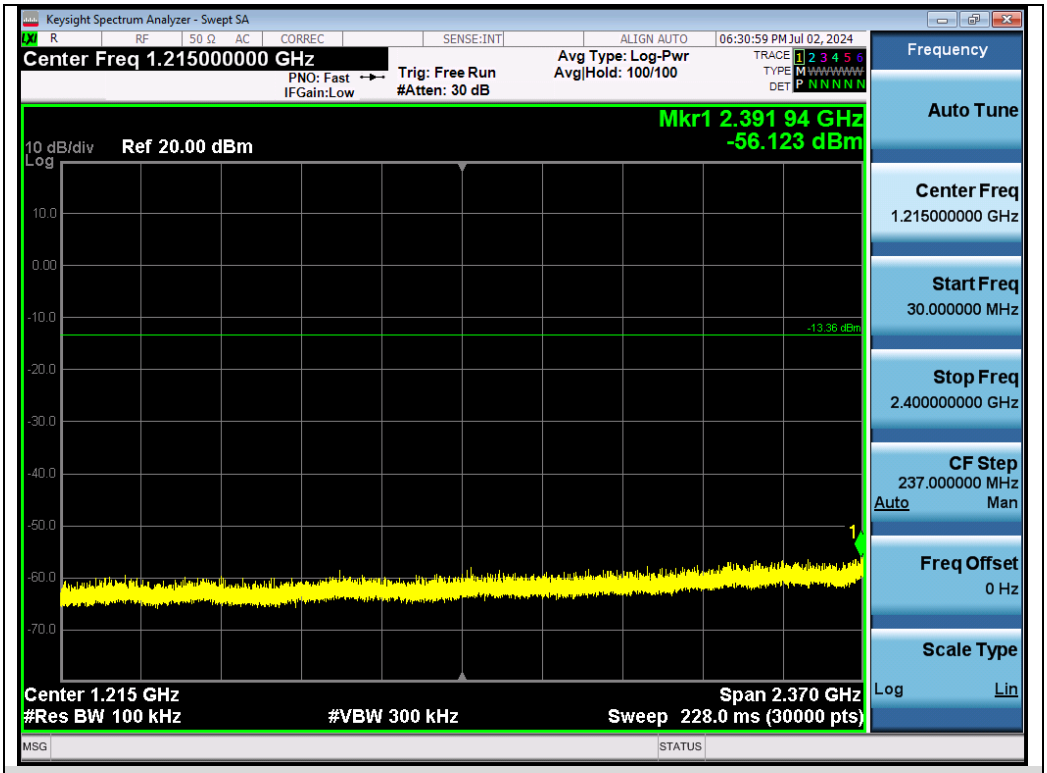
Test_Graph_802.11ax40_Chain A_2452_MCS0_Higher Band Emissions



Test_Graph_802.11b_Chain B_2412_1Mbps_Lower Band Emissions

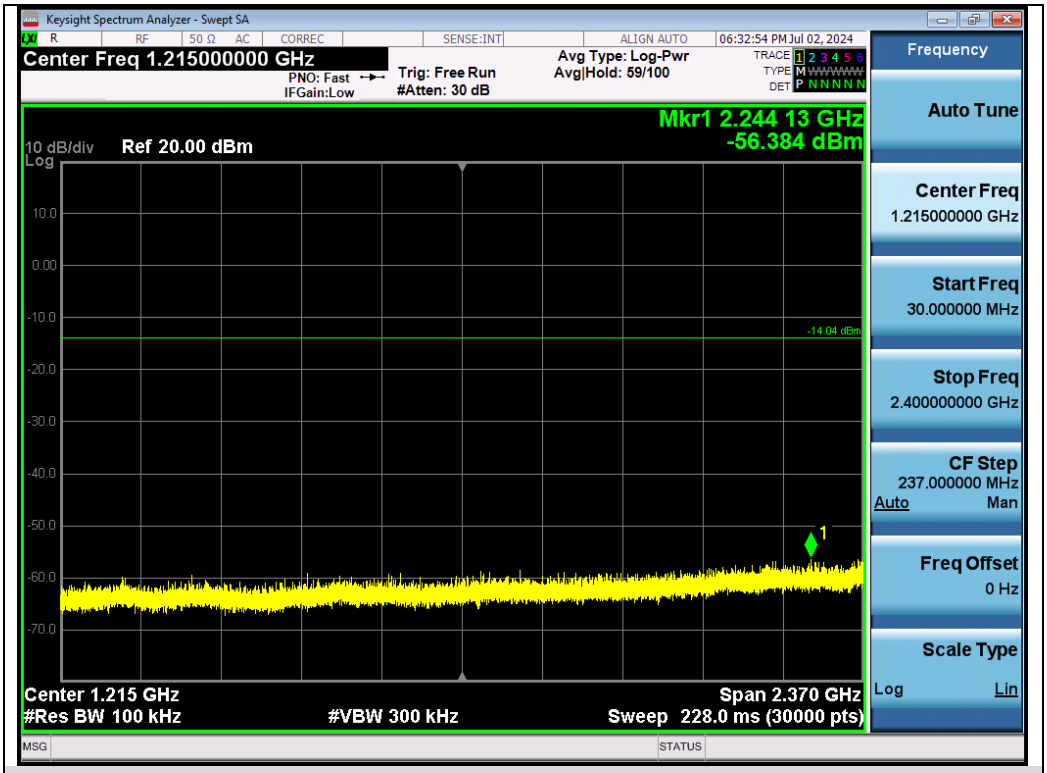


Test_Graph_802.11b_Chain B_2412_1Mbps_Higher Band Emissions



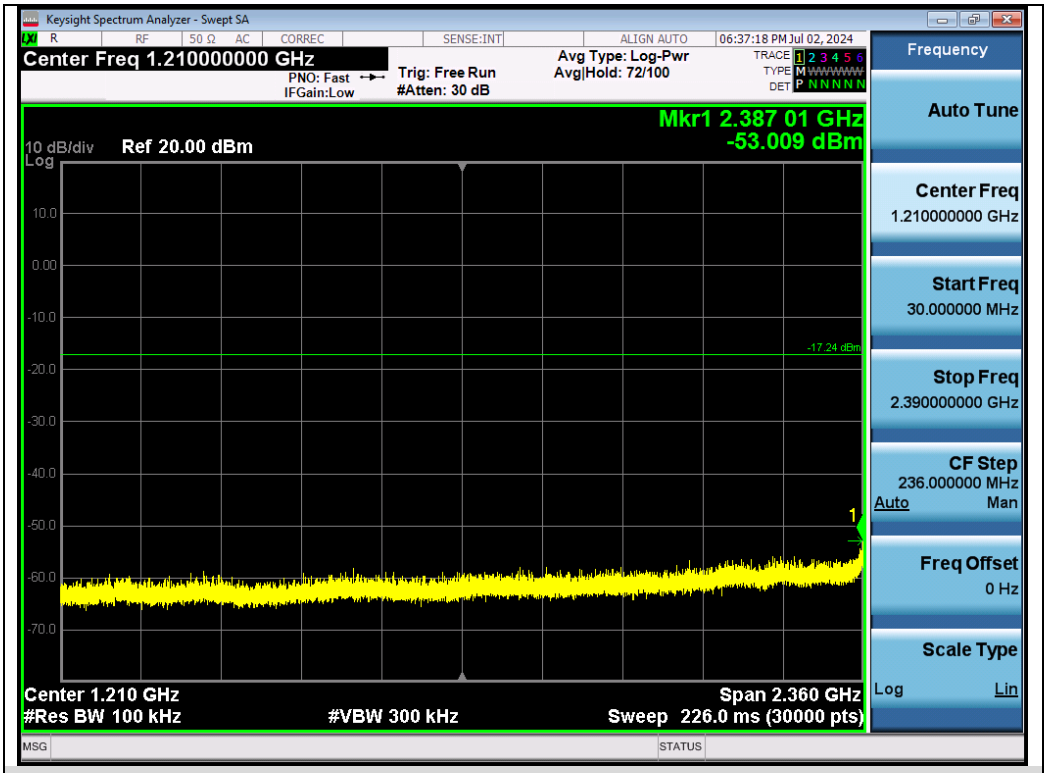
Test_Graph_802.11b_Chain B_2437_1Mbps_Lower Band Emissions

Test_Graph_802.11b_Chain B_2437_1Mbps_Higher Band Emissions

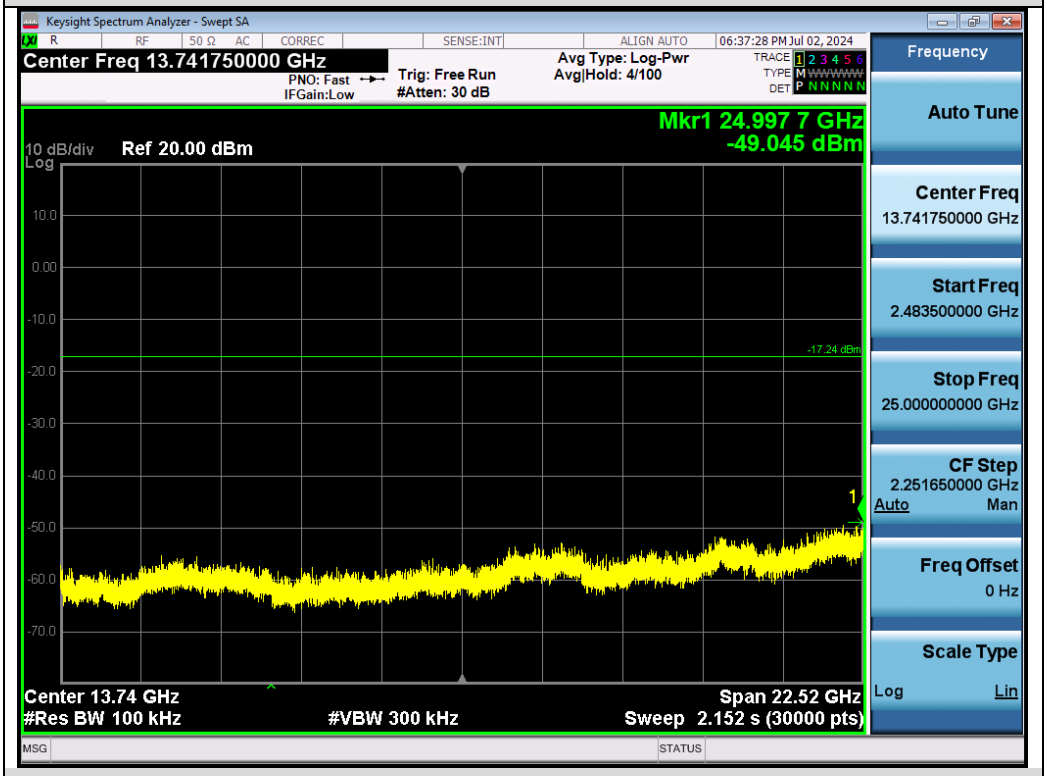


Test_Graph_802.11b_Chain B_2462_1Mbps_Lower Band Emissions

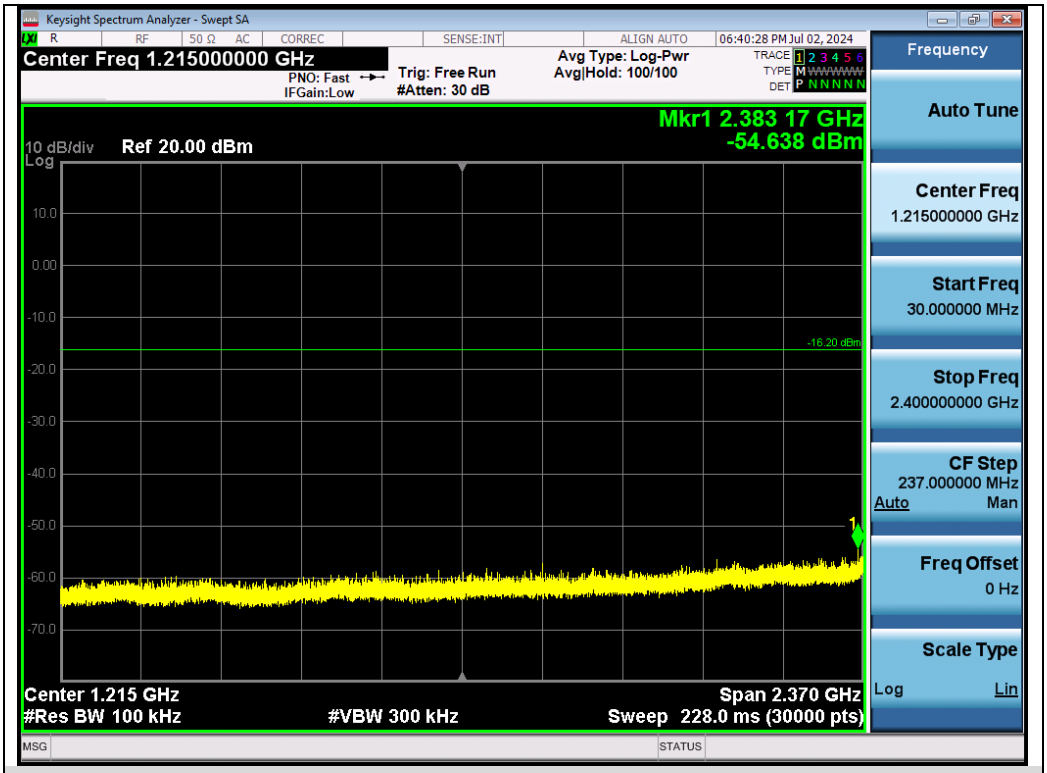
Test_Graph_802.11b_Chain B_2462_1Mbps_Higher Band Emissions



Test_Graph_802.11g_Chain B_2412_6Mbps_Lower Band Emissions

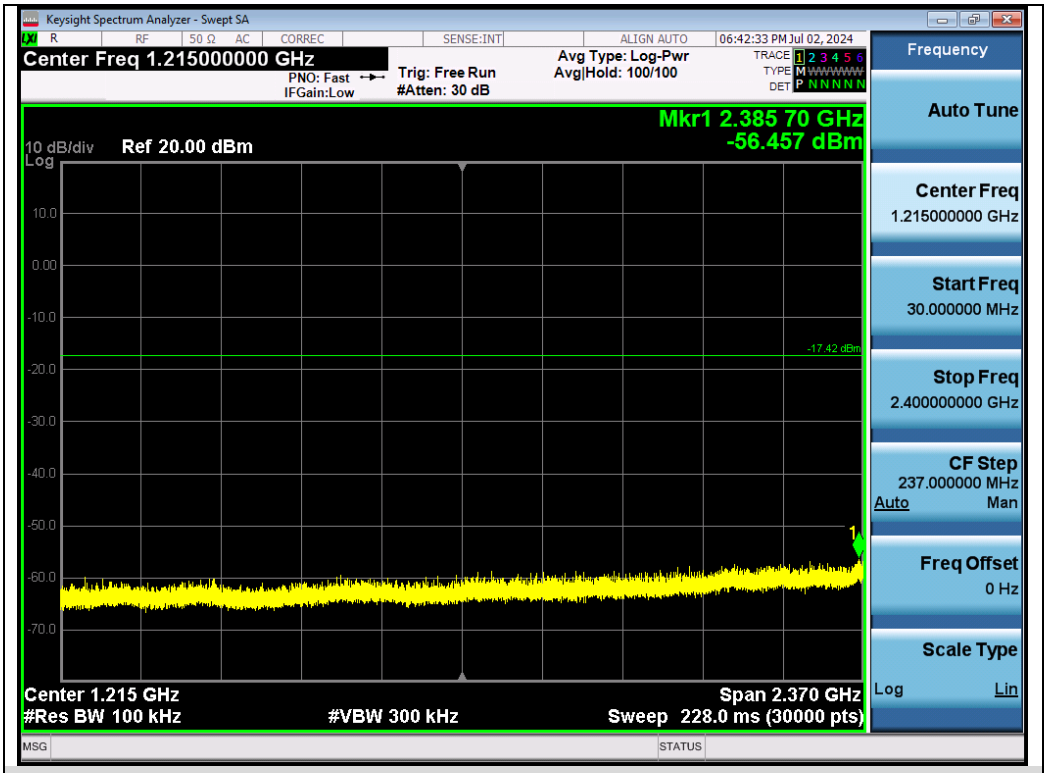


Test_Graph_802.11g_Chain B_2412_6Mbps_Higher Band Emissions



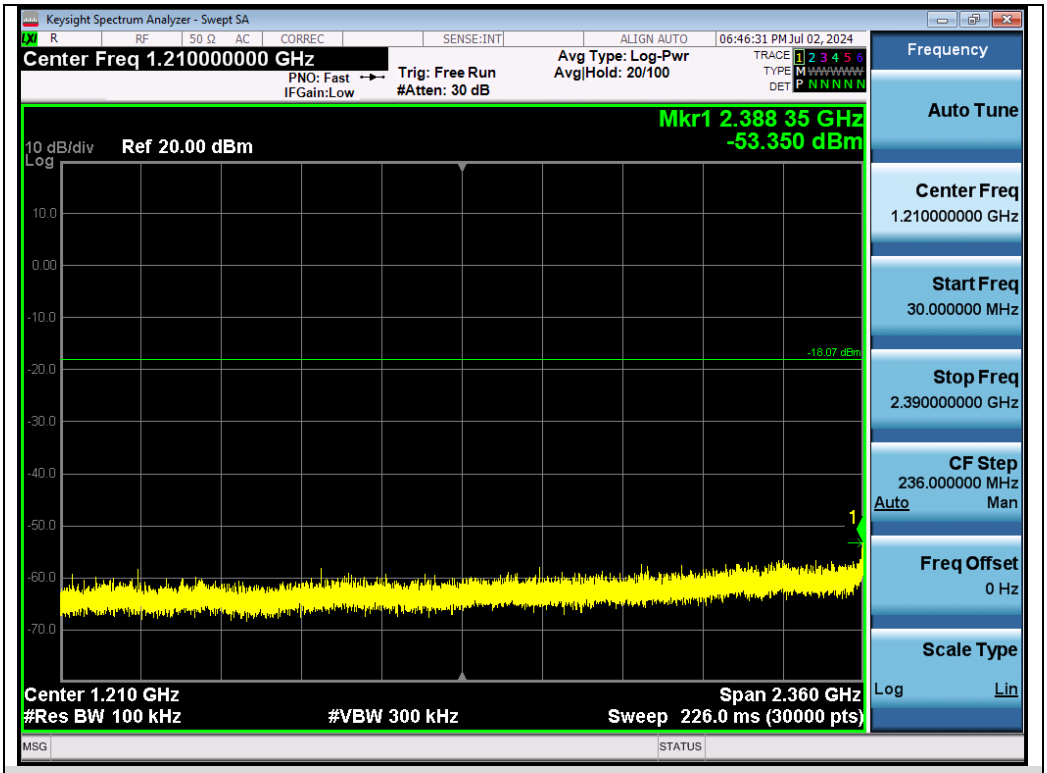
Test_Graph_802.11g_Chain B_2437_6Mbps_Lower Band Emissions

Test_Graph_802.11g_Chain B_2437_6Mbps_Higher Band Emissions



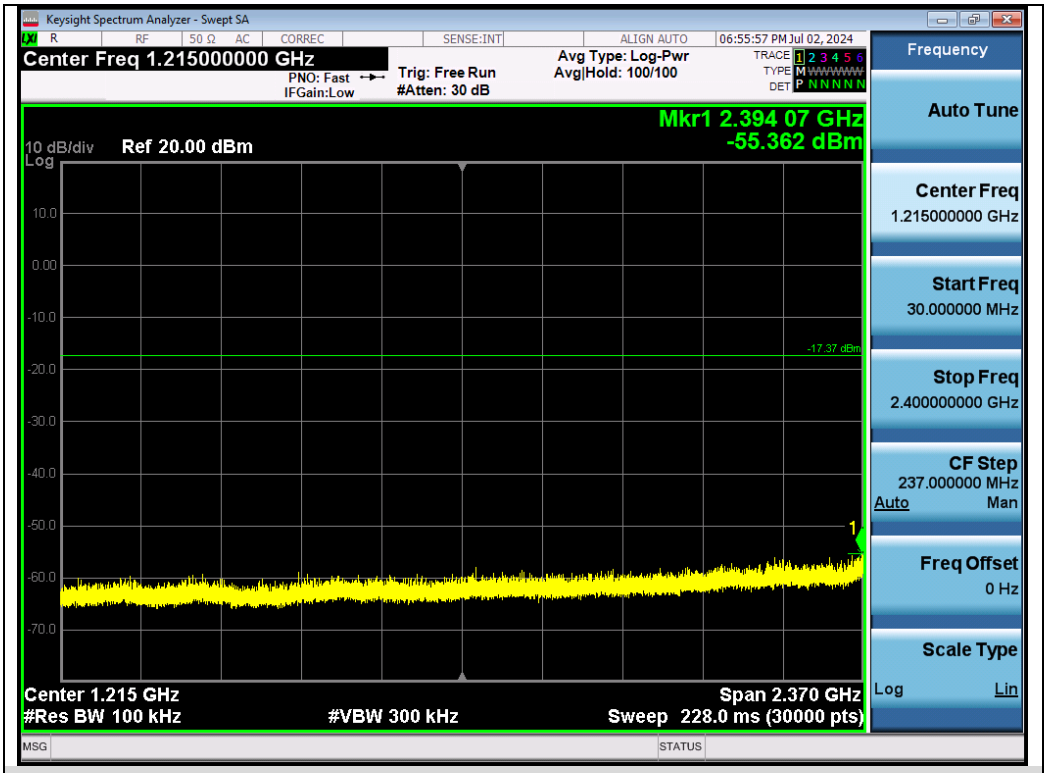
Test_Graph_802.11g_Chain B_2462_6Mbps_Lower Band Emissions

Test_Graph_802.11g_Chain B_2462_6Mbps_Higher Band Emissions



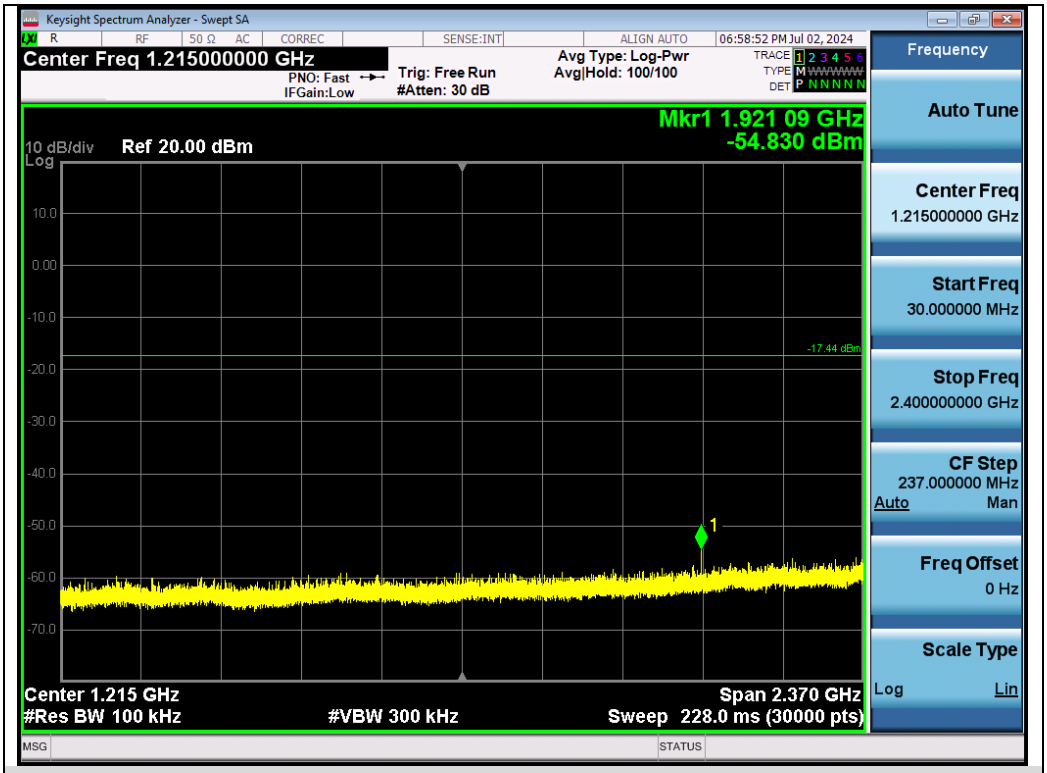
Test_Graph_802.11n20_Chain B_2412_MCS0_Lower Band Emissions

Test_Graph_802.11n20_Chain B_2412_MCS0_Higher Band Emissions

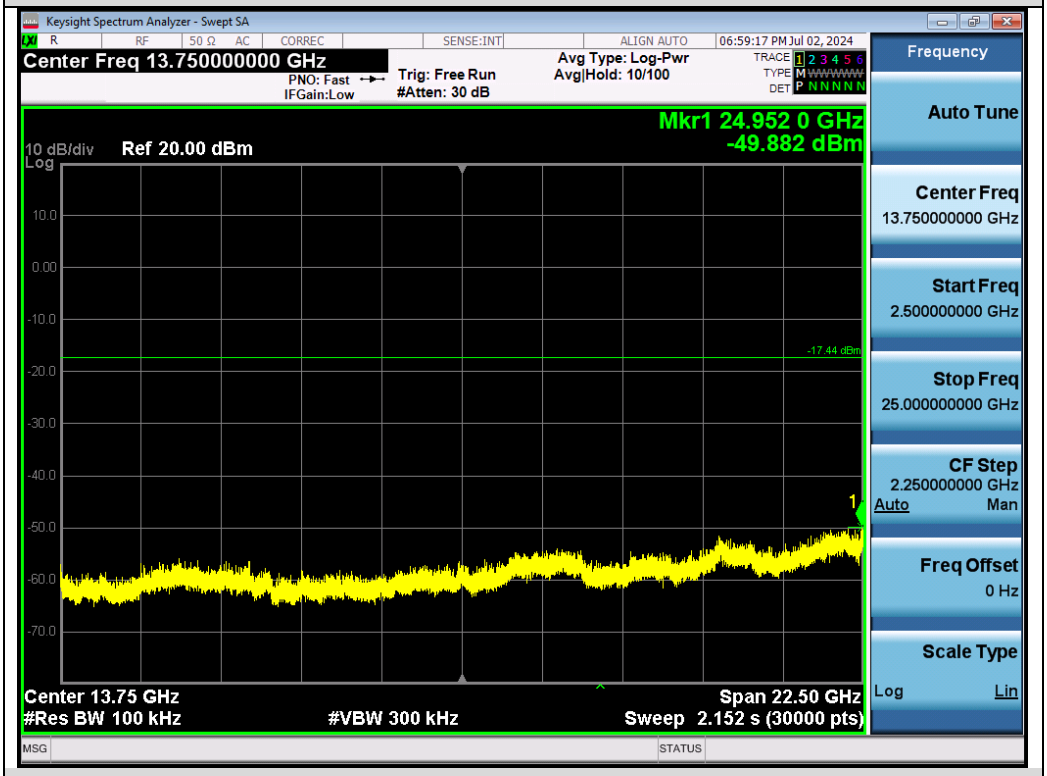


Test_Graph_802.11n20_Chain B_2437_MCS0_Lower Band Emissions

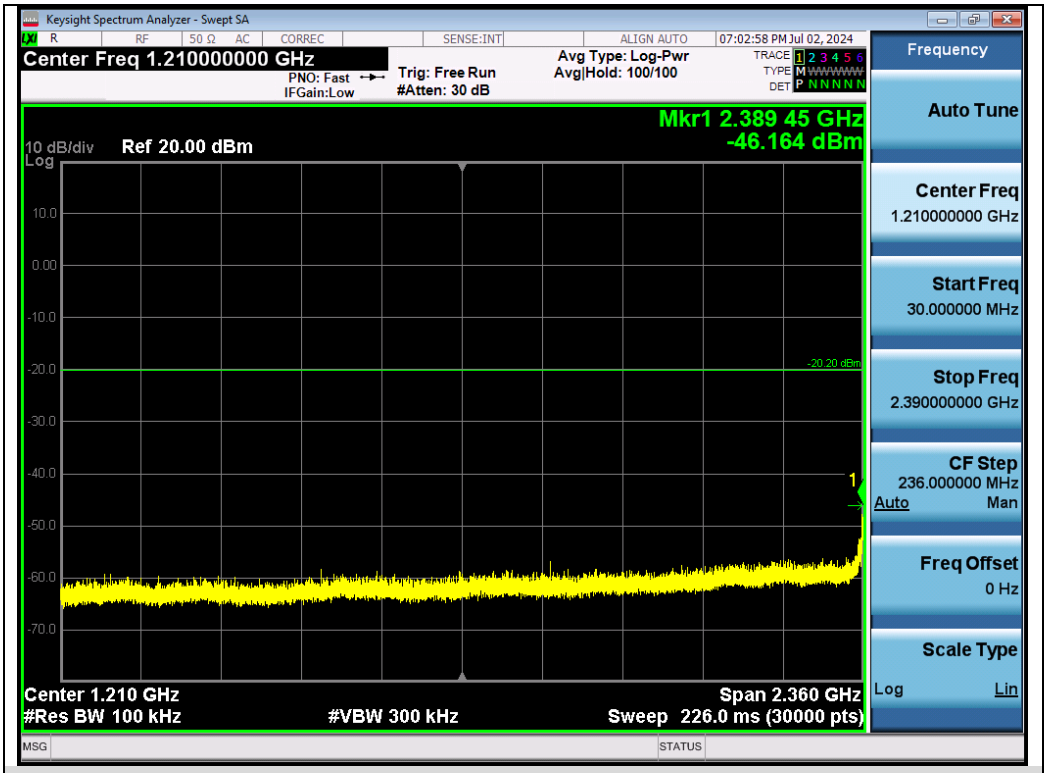
Test_Graph_802.11n20_Chain B_2437_MCS0_Higher Band Emissions



Test_Graph_802.11n20_Chain B_2462_MCS0_Lower Band Emissions

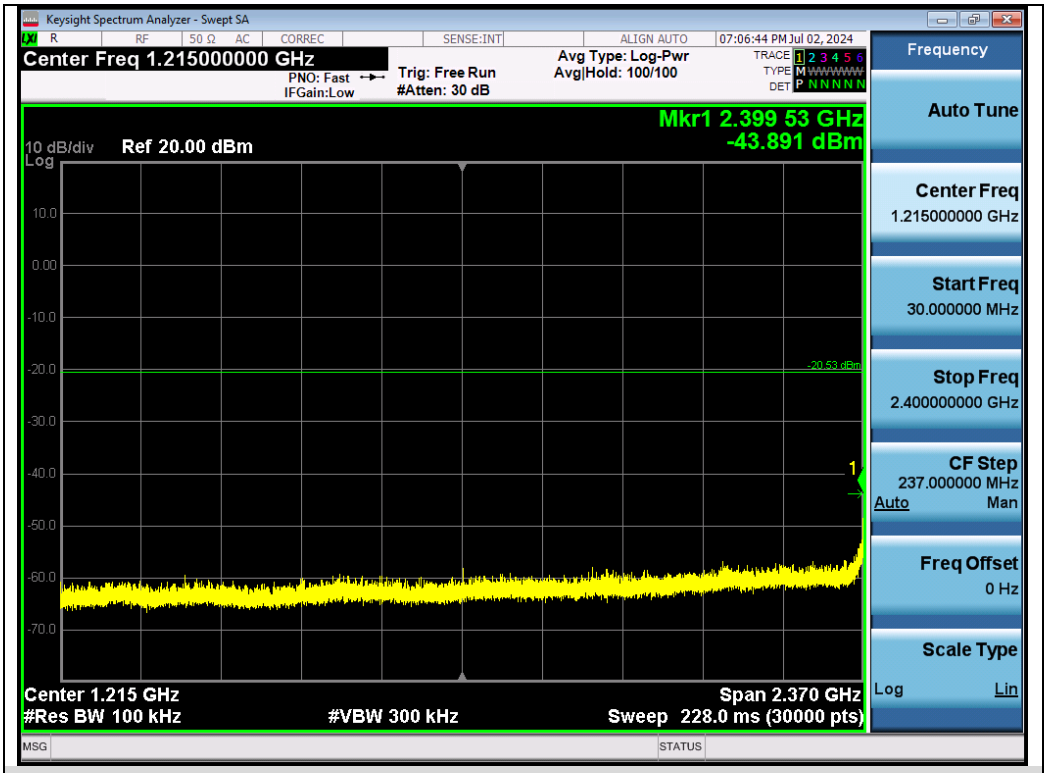


Test_Graph_802.11n20_Chain B_2462_MCS0_Higher Band Emissions



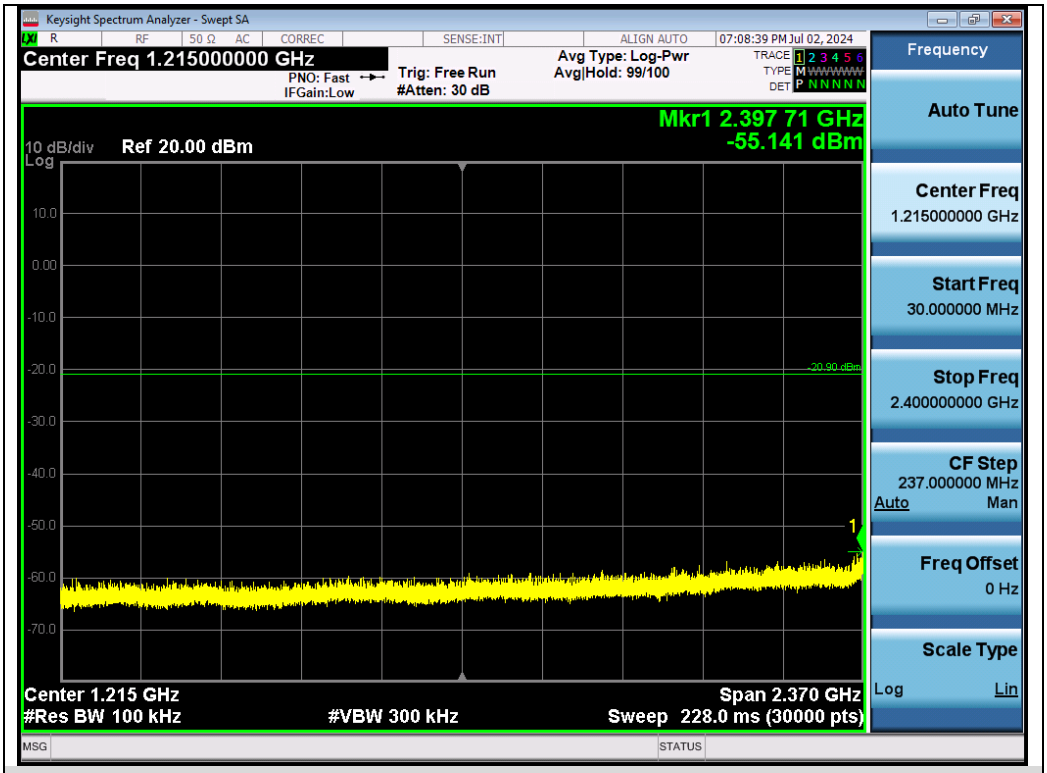
Test_Graph_802.11n40_Chain B_2422_MCS0_Lower Band Emissions

Test_Graph_802.11n40_Chain B_2422_MCS0_Higher Band Emissions



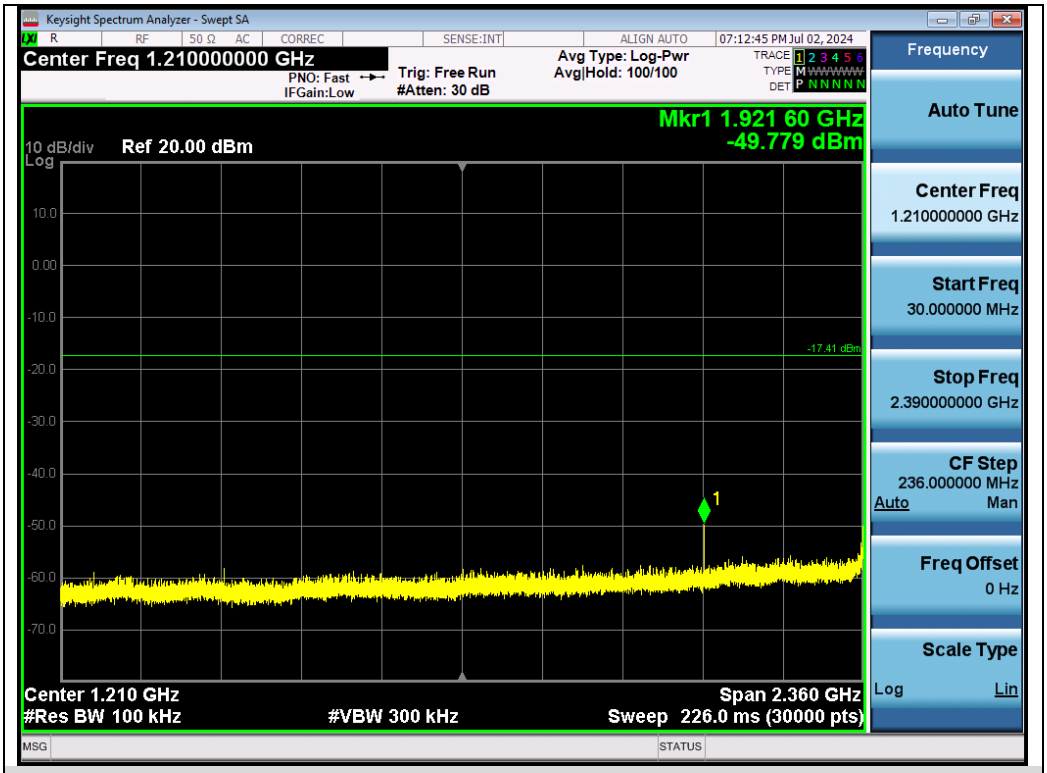
Test_Graph_802.11n40_Chain B_2437_MCS0_Lower Band Emissions

Test_Graph_802.11n40_Chain B_2437_MCS0_Higher Band Emissions

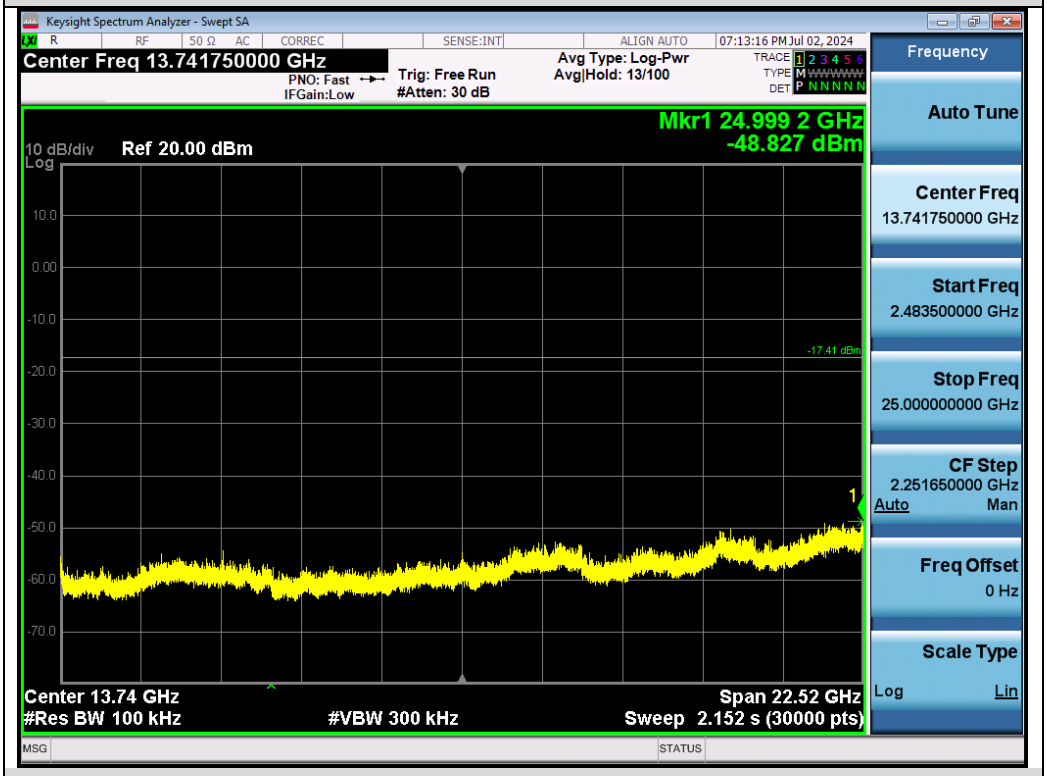


Test_Graph_802.11n40_Chain B_2452_MCS0_Lower Band Emissions

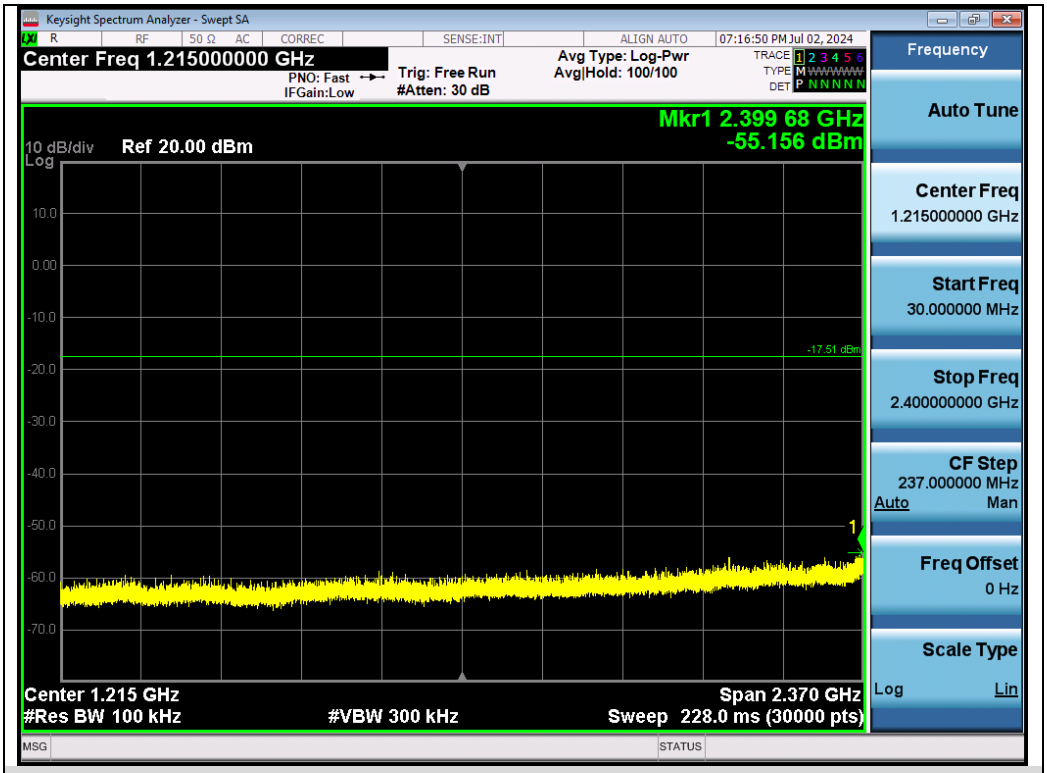
Test_Graph_802.11n40_Chain B_2452_MCS0_Higher Band Emissions



Test_Graph_802.11ax20_Chain B_2412_MCS0_Lower Band Emissions



Test_Graph_802.11ax20_Chain B_2412_MCS0_Higher Band Emissions



Test_Graph_802.11ax20_Chain B_2437_MCS0_Lower Band Emissions

Test_Graph_802.11ax20_Chain B_2437_MCS0_Higher Band Emissions