

9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D0115.247 Meas Guidance v05r02

9.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is 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, In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in15.209(a).

9.2 TEST PROCEDURE

Using the following spectrum analyzer setting:

- A) Set the RBW = 100KHz.
- B) Set the VBW = 300KHz.
- C) Sweep time = auto couple.
- D) Detector function = peak.
- E) Trace mode = max hold.
- F) Allow trace to fully stabilize.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP



9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS

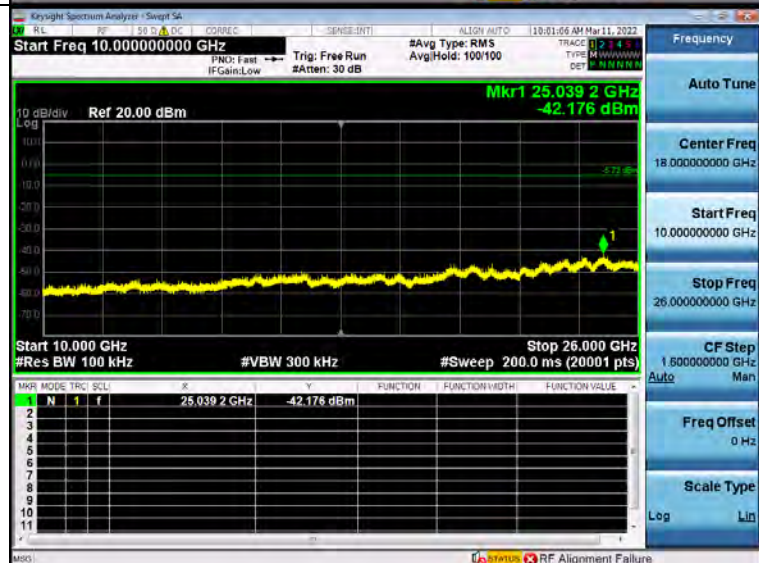
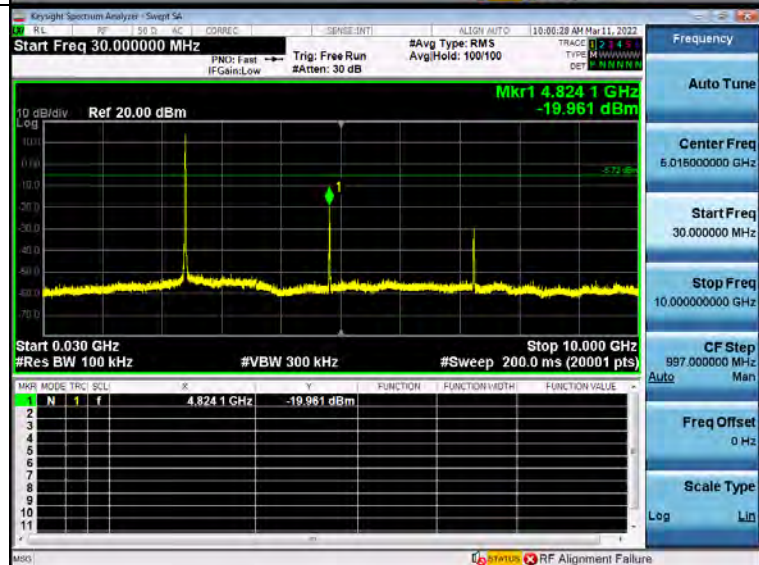
Test plot as follows:

ANT1

802.11b Modulation

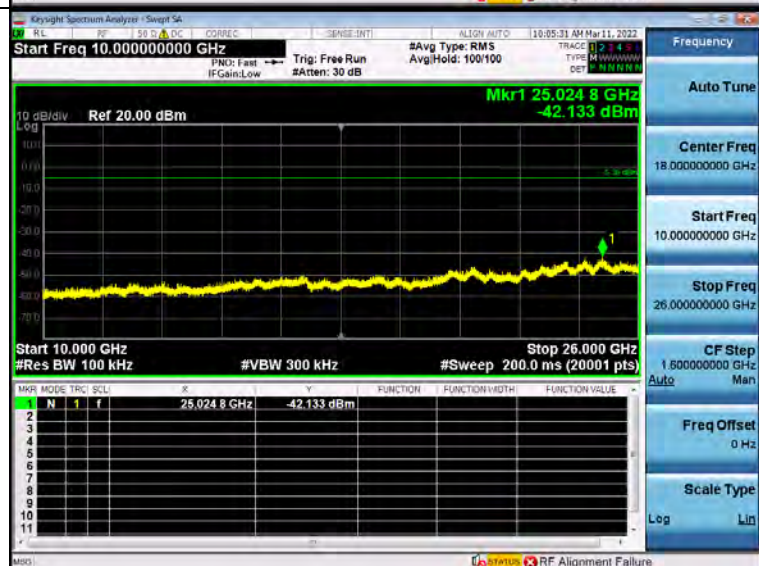
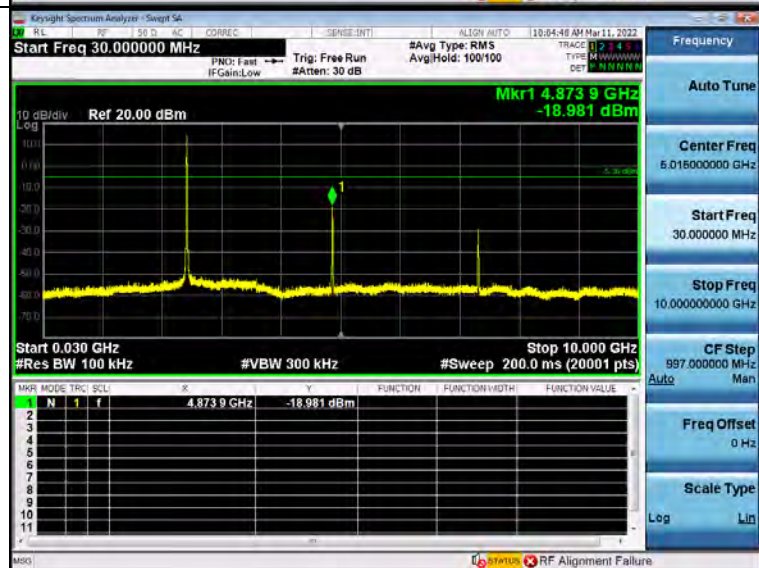
Spurious emission

Low Channel

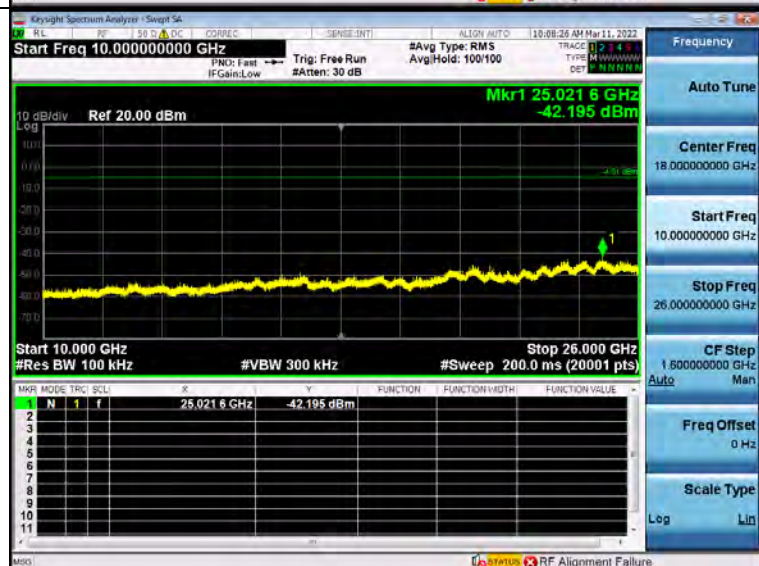
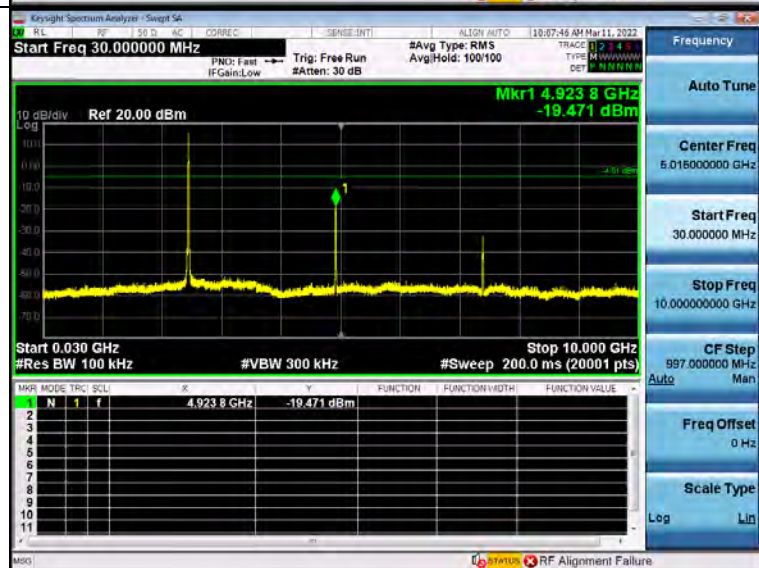




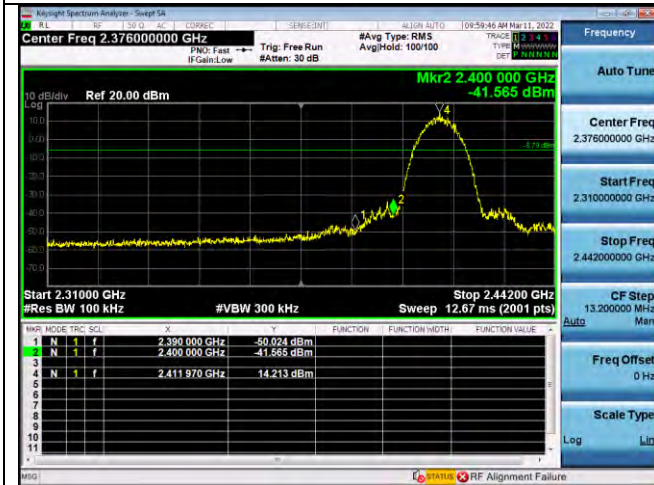
Middle Channel



High Channel

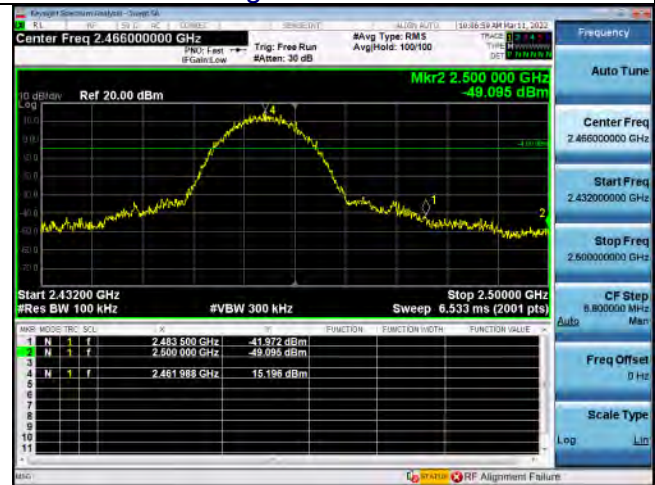


Lowest Channel



Left Band Edge

Highest Channel

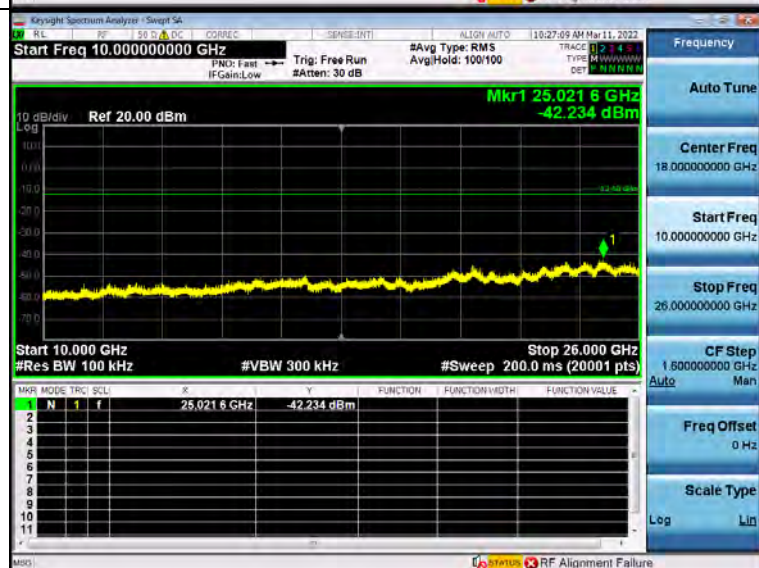
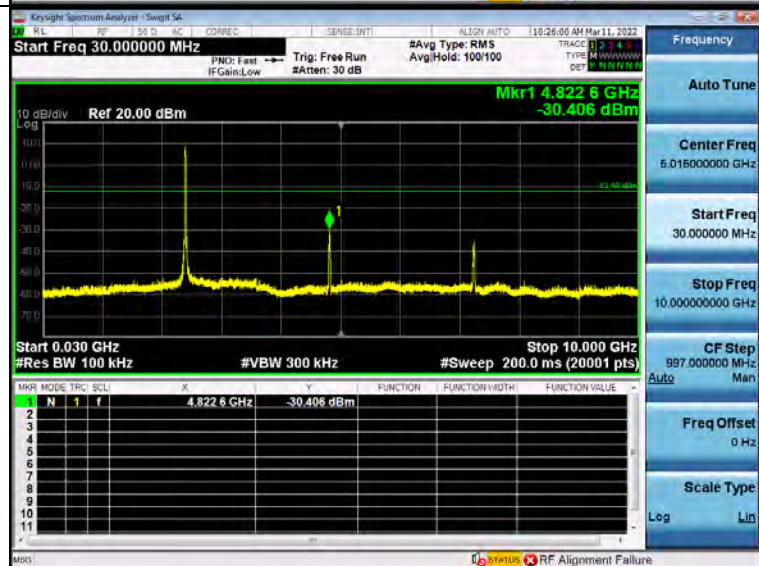
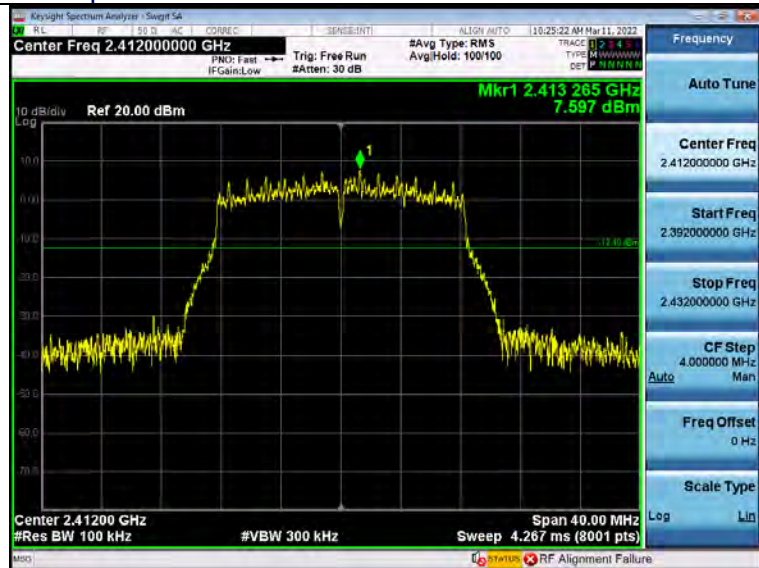


Right Band Edge

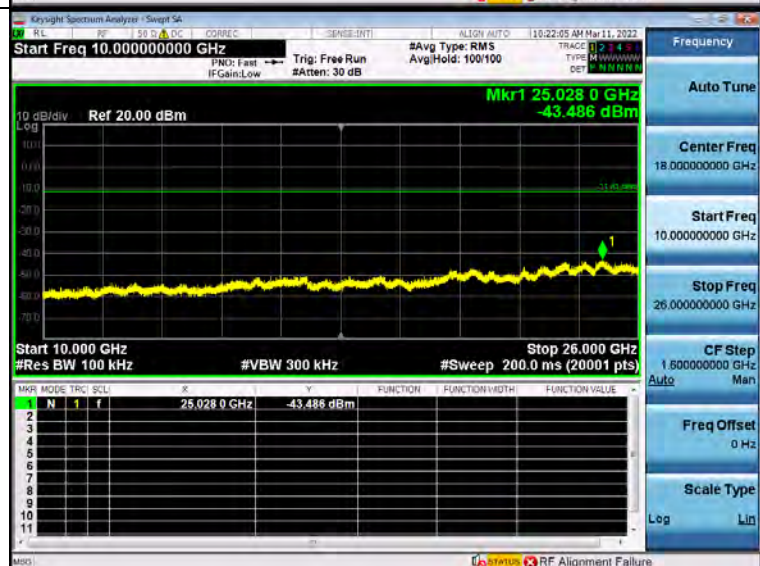
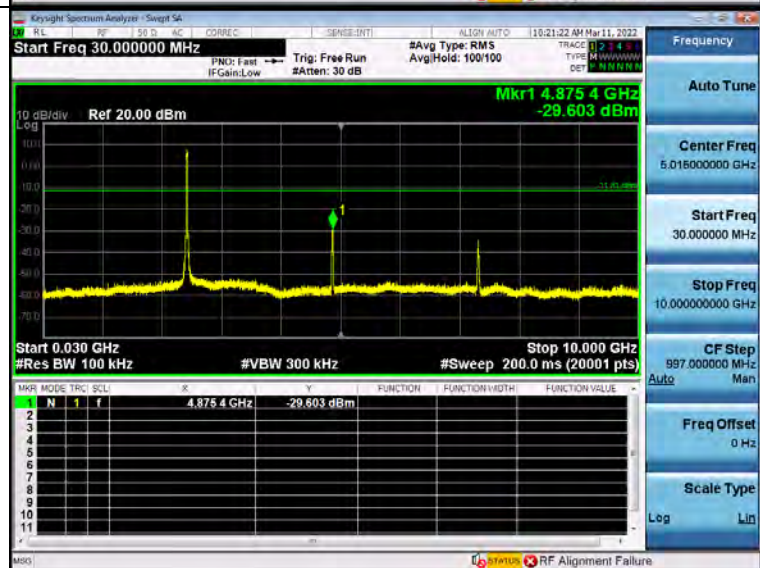
802.11g Modulation

Spurious emission

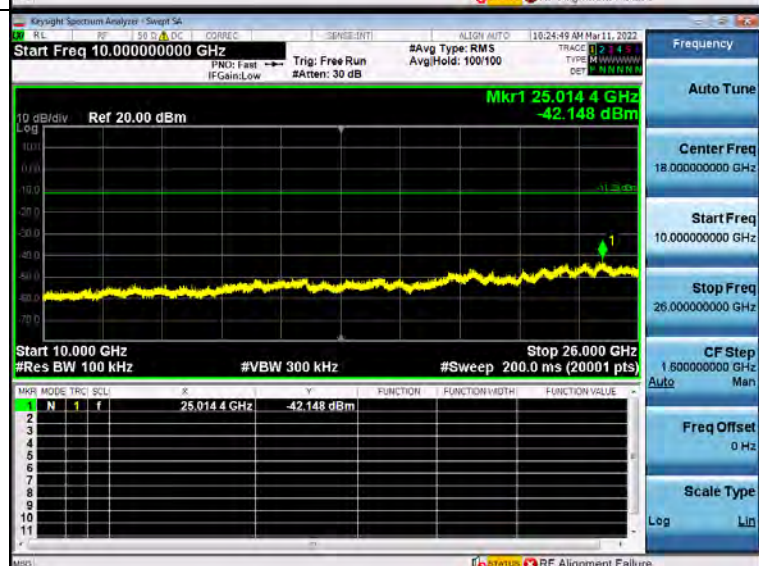
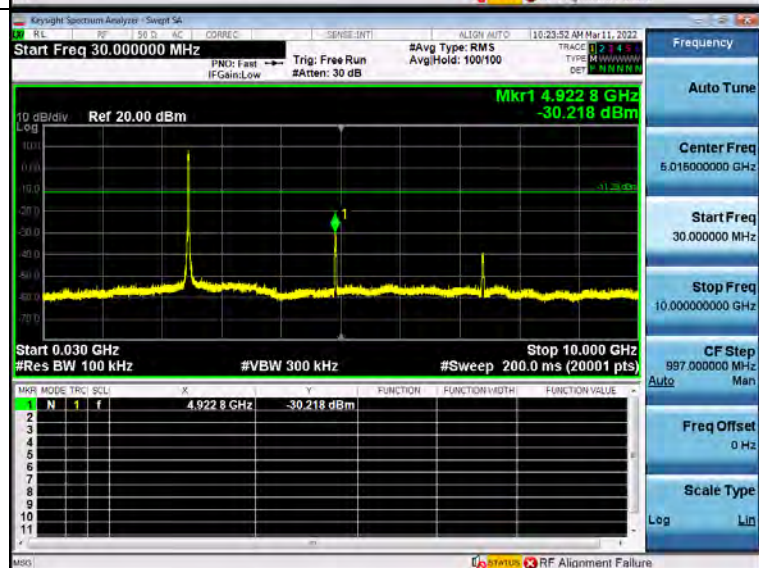
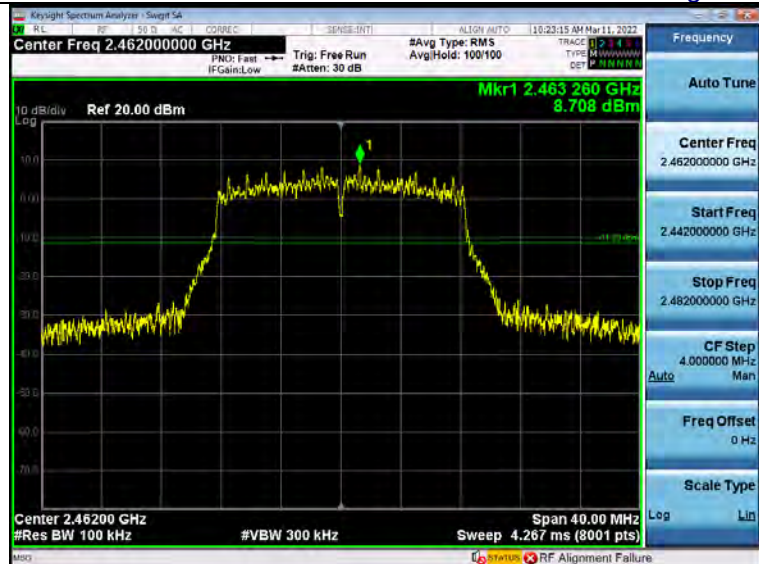
Low Channel



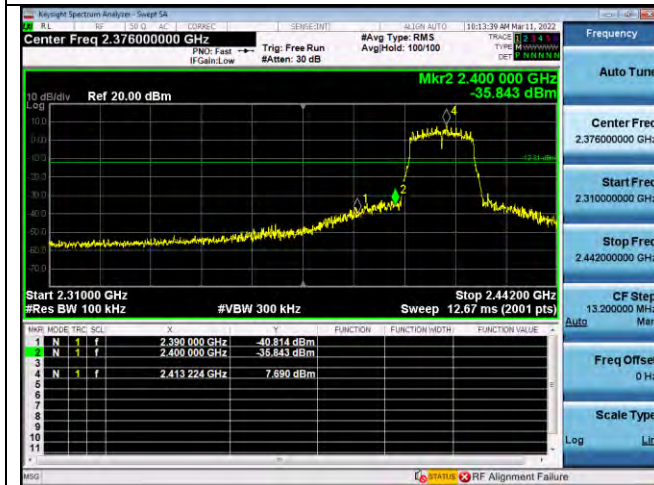
The screenshot displays a Keysight Spectrum Analyzer interface. The main plot shows a signal spectrum with a peak at 2.438 GHz. The y-axis is labeled '10 dBm' and 'Log'. The x-axis is labeled 'Center Freq 2.437000000 GHz'. The peak is labeled 'Mkr1 2.438 260 GHz' and '8.188 dBm'. The signal is identified as 'Trig: Free Run' and 'Avg Type: RMS'. The span is 40.00 MHz, and the resolution bandwidth (RBW) is 100 kHz. The video bandwidth (VBW) is 300 kHz. The sweep time is 4.267 ms (8001 pts). The interface includes various control buttons like 'Auto Tune', 'CF Step', 'Freq Offset', and 'Scale Type'.



High Channel

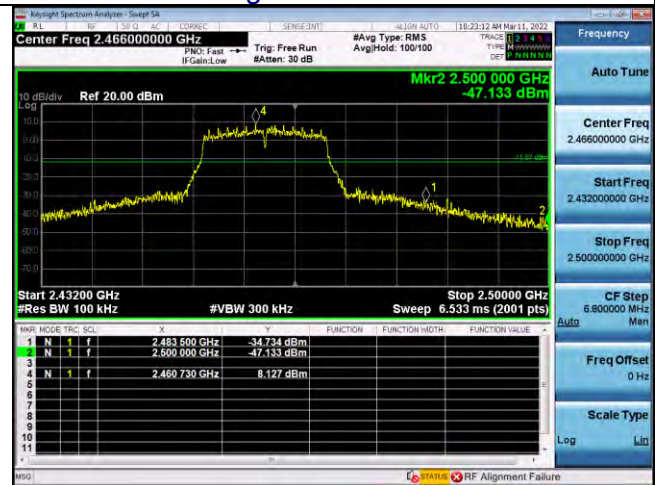


Lowest Channel



Left Band Edge

Highest Channel

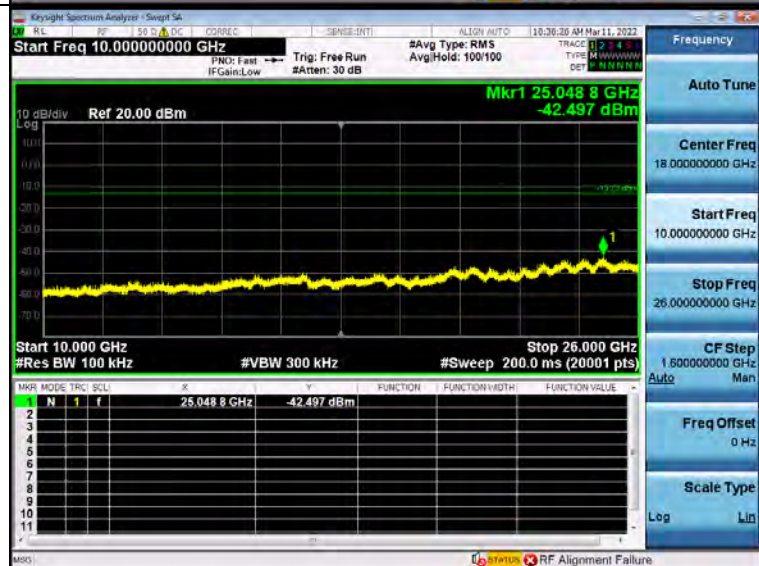
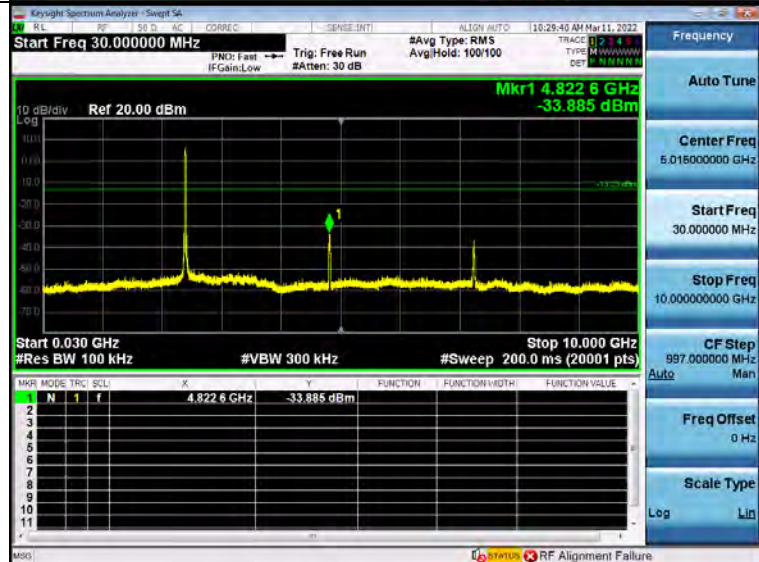
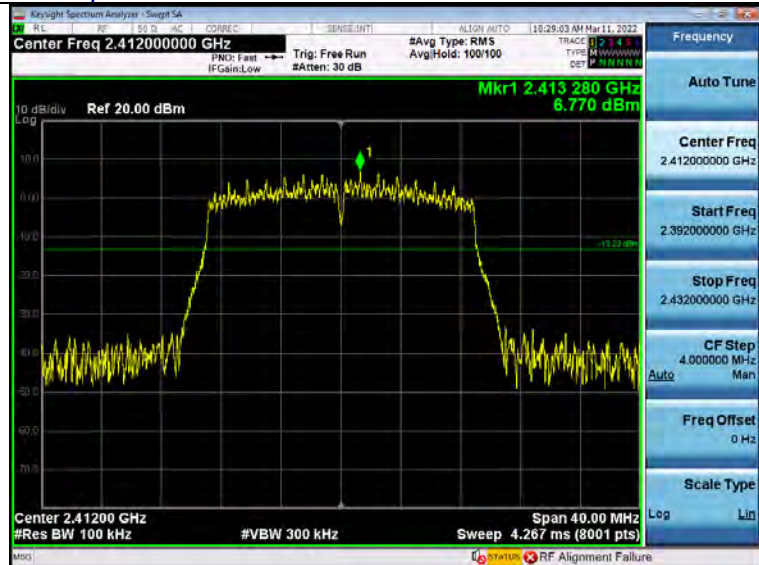


Right Band Edge

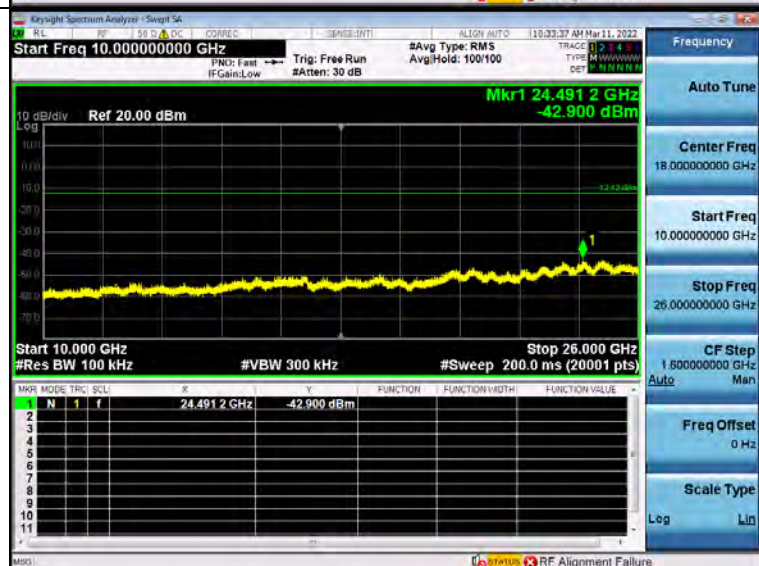
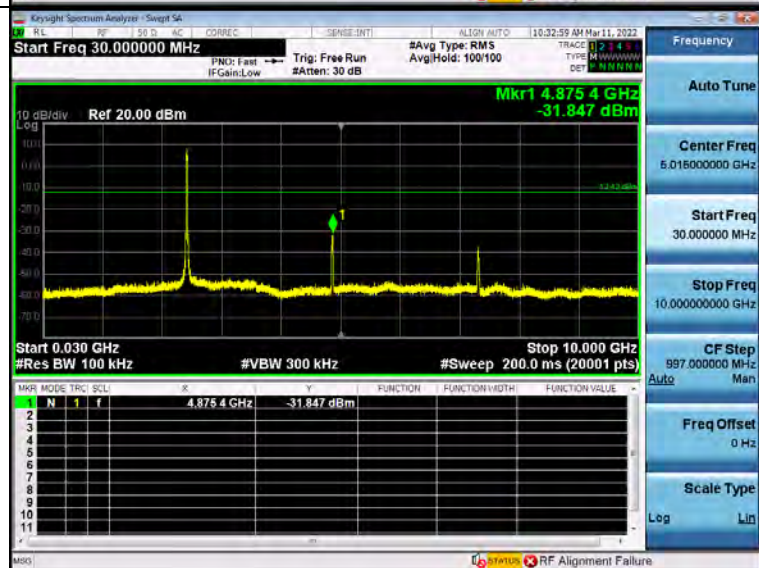
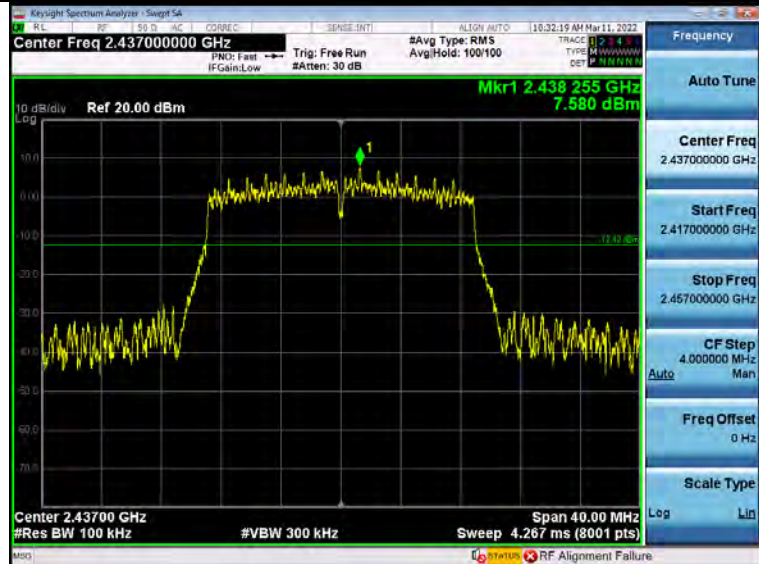
802.11n20 Modulation

Spurious emission

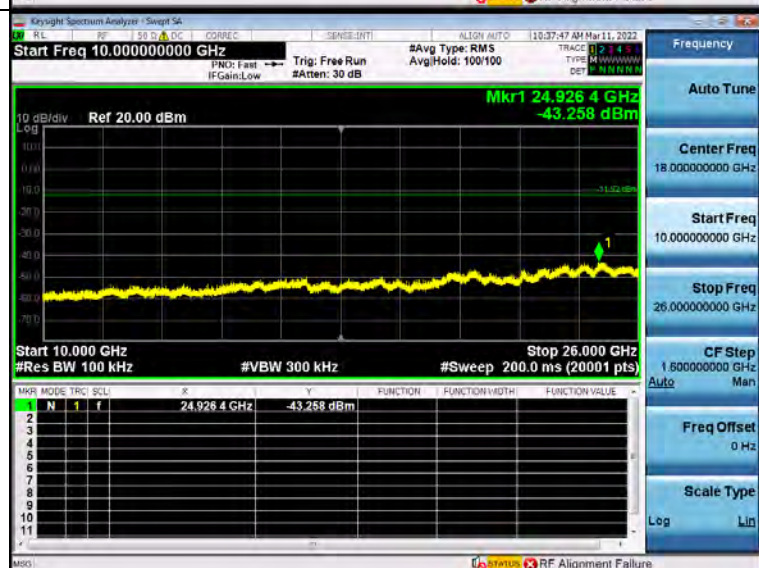
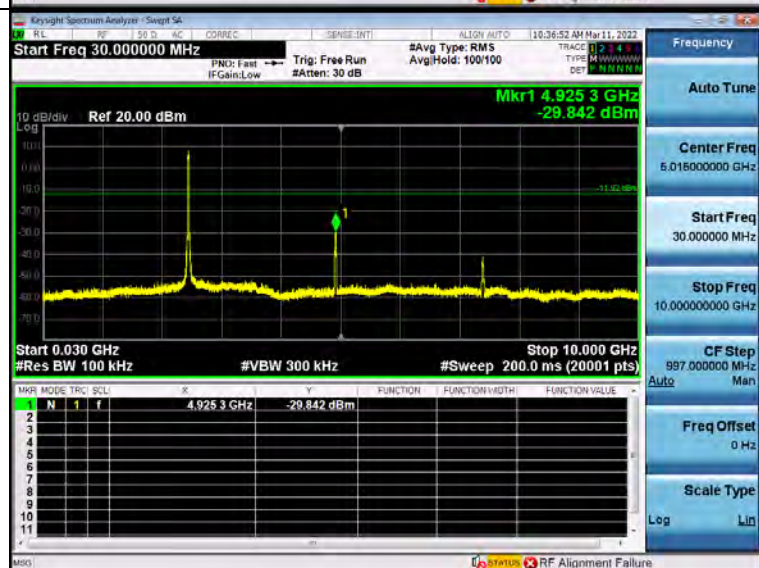
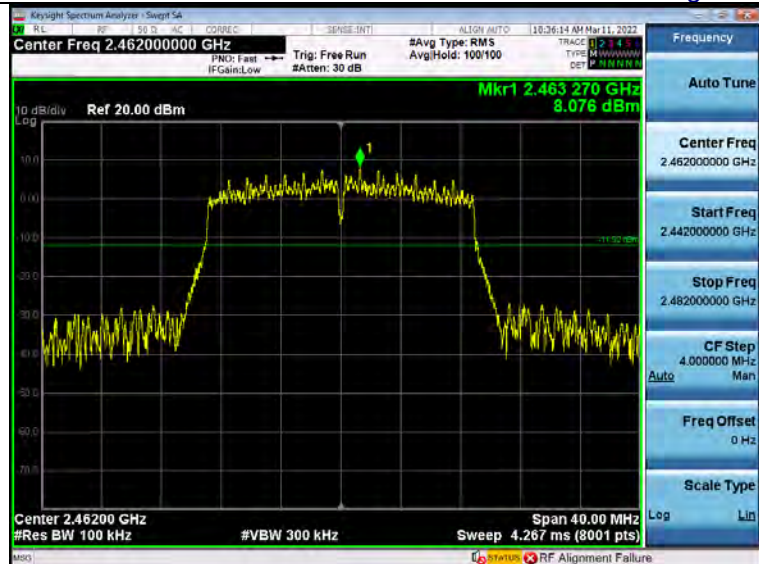
Low Channel



Middle Channel



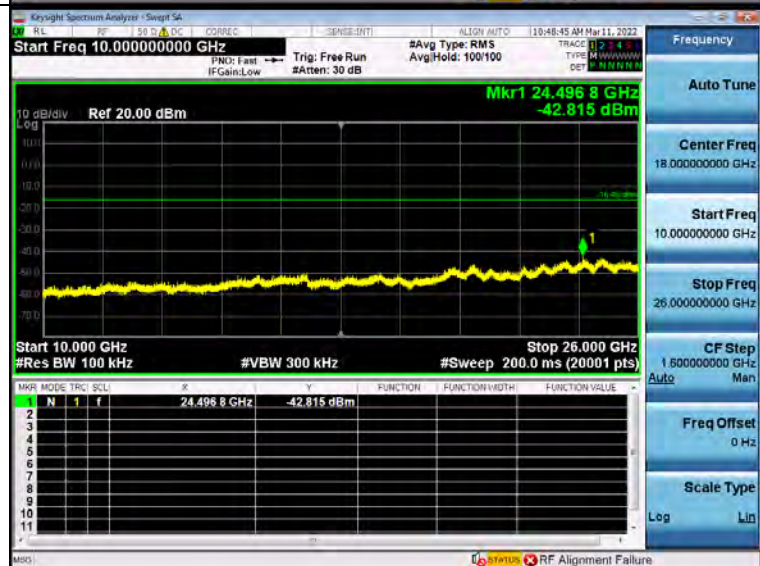
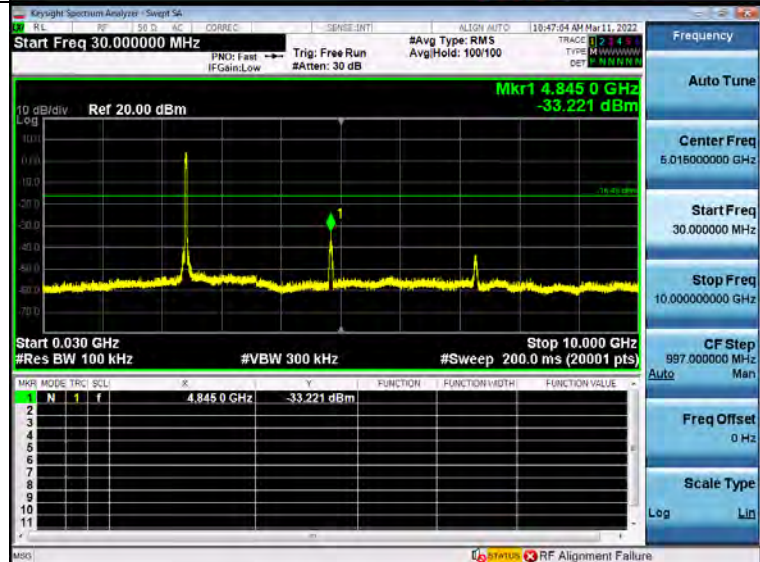
High Channel



802.11n40 Modulation

Spurious emission

Low Channel



Keysight Spectrum Analyzer - SigStk 5A

Center Freq 2.437000000 GHz

RF: 1.50 GHz AC COARSEC SENSE: INT1 ALIGN: AUTO 10:50:09 AM Mar 11, 2022

#Avg Type: RMS AvgHold: 100/100

TRACED 1 2 3 4 5

TYPE M W W W W W W W W W

DET P 2 1 0 0 0 0

PRF: Fast IFGain: Low Trig: Free Run #Atten: 30 dB

10 dBm Ref 20.00 dBm

Mkrt 2.434 50 GHz 4.040 dBm

10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70.0

Log

Center Freq 2.437000000 GHz

Start Freq 2.397000000 GHz

Stop Freq 2.477000000 GHz

CF Step 8.000000 MHz

Auto Man

Freq Offset 0 Hz

Scale Type

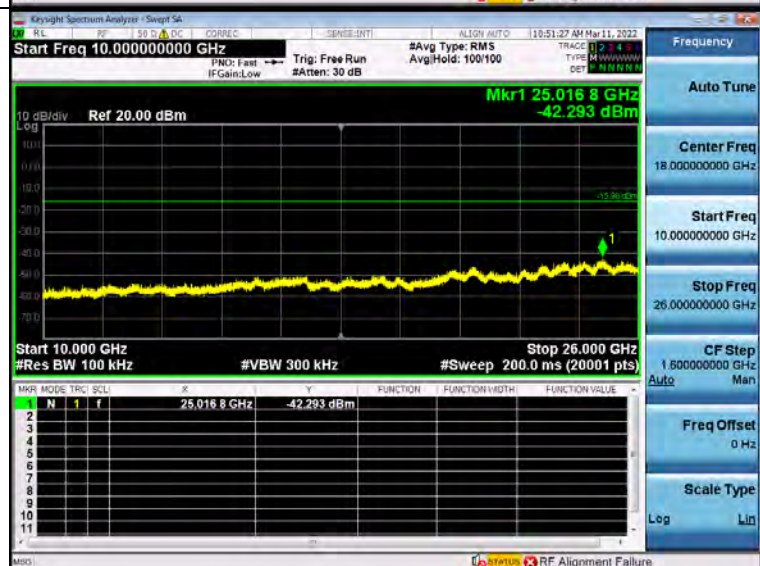
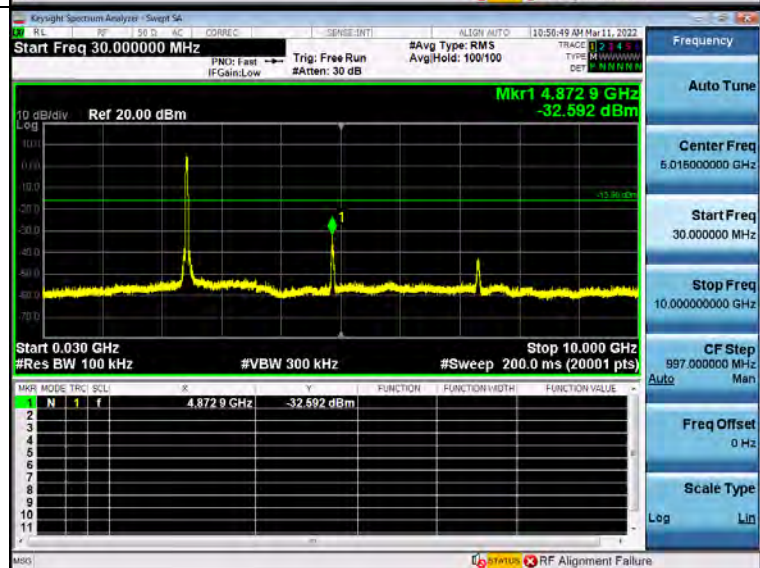
Log Lin

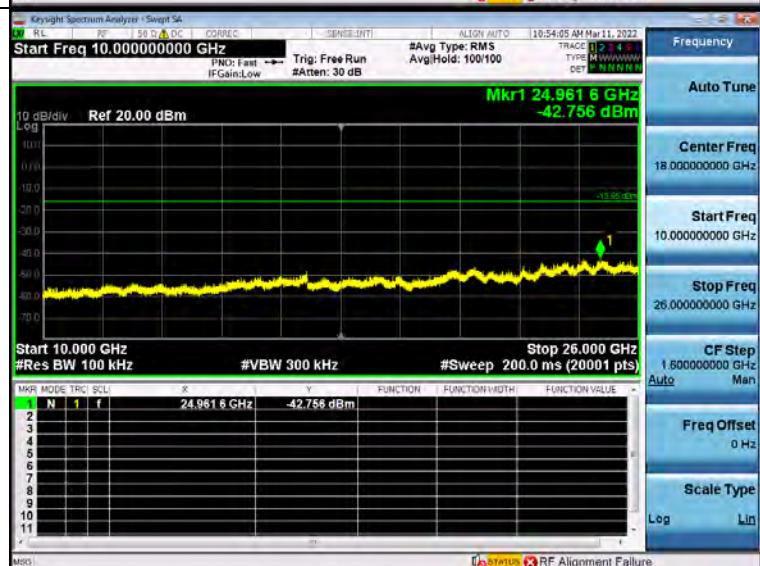
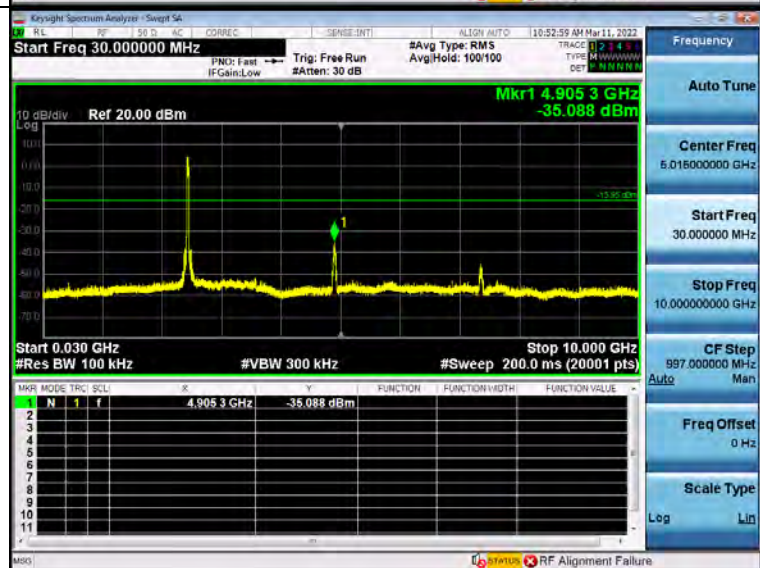
Center 2.43700 GHz Span 80.00 MHz

#Res BW 100 kHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)

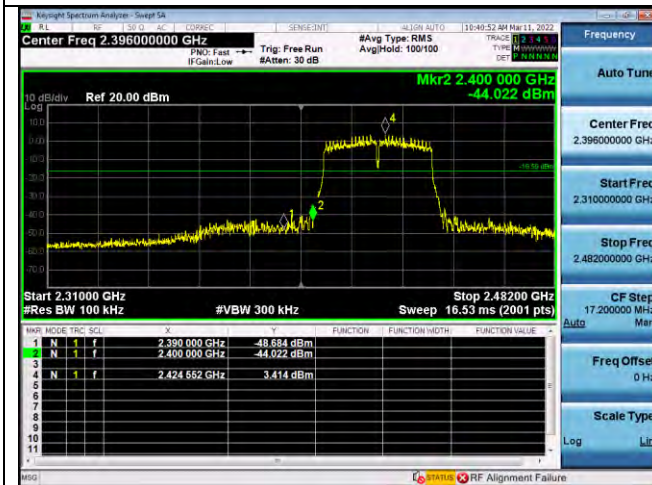
MS3

STATUS RF Alignment Failure

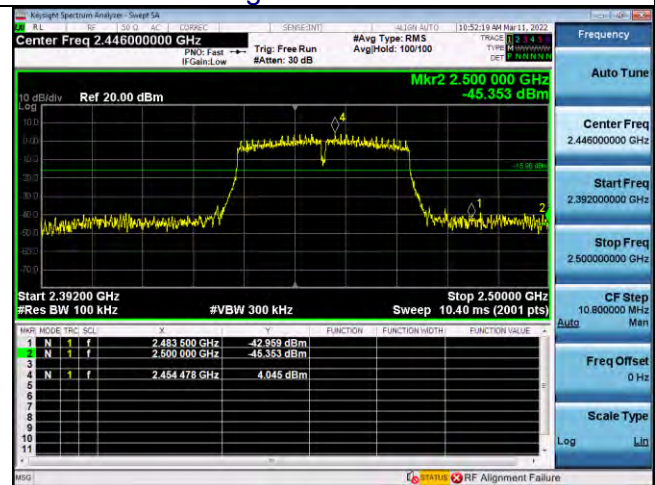


[illegible]

Lowest Channel



Highest Channel



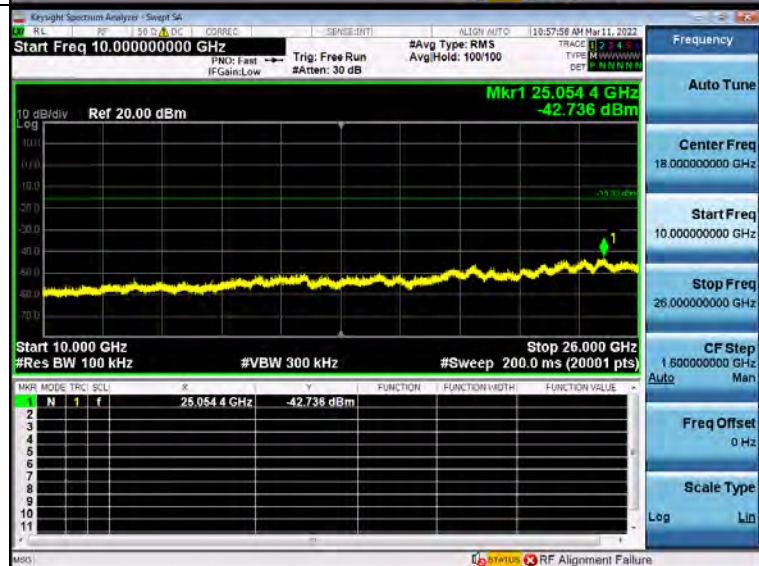
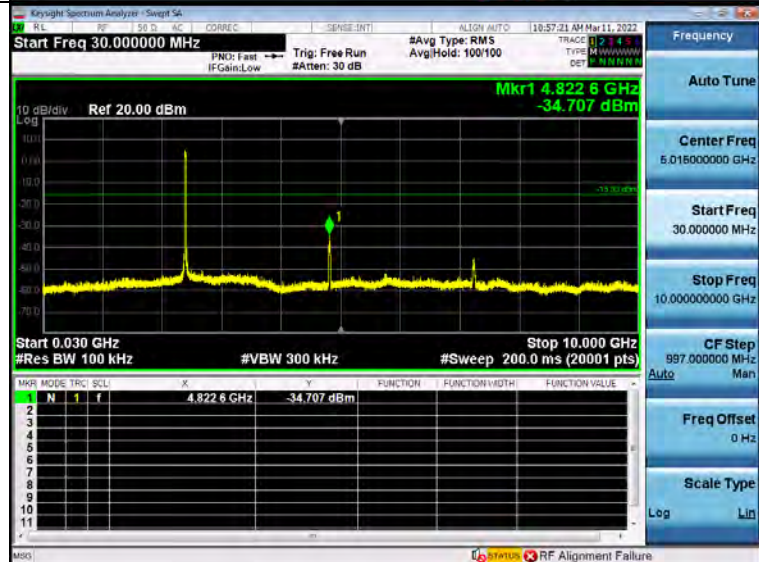
Left Band Edge

Right Band Edge

802.11ax20 Modulation

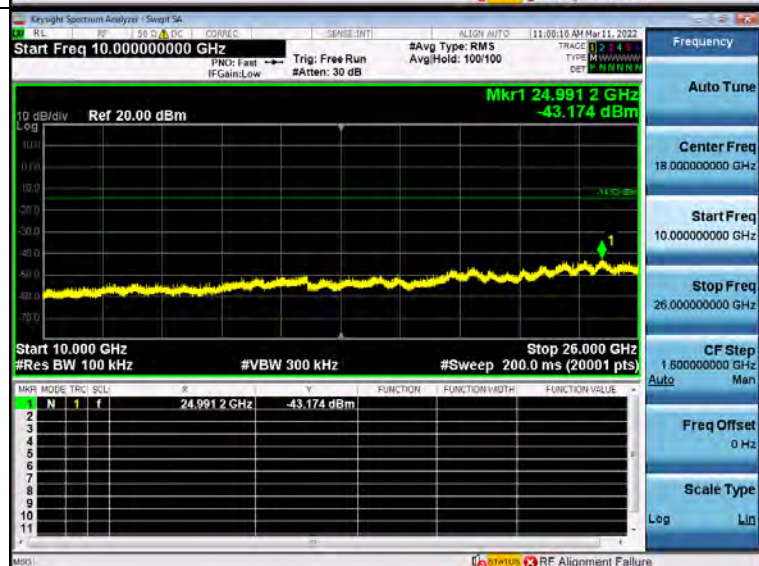
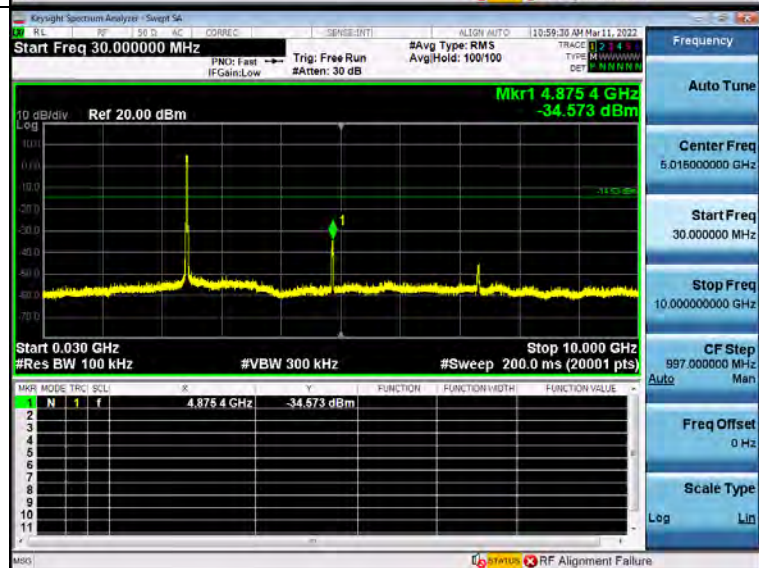
Spurious emission

Low Channel

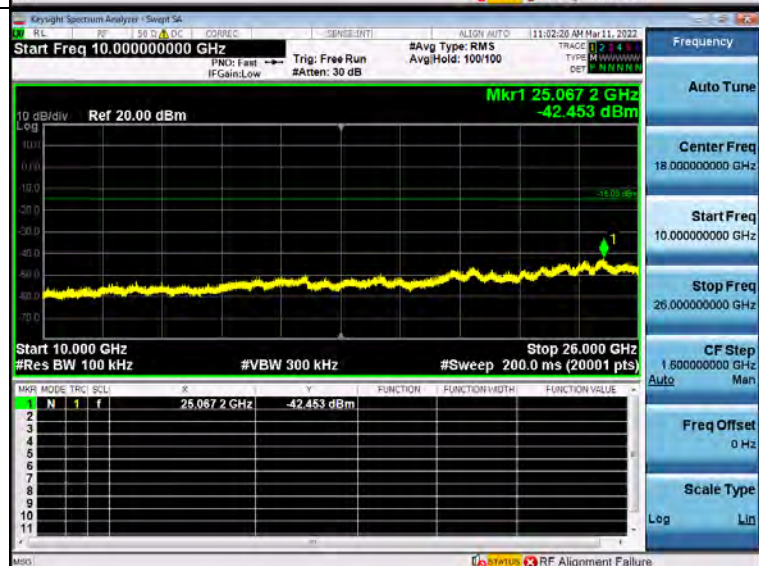
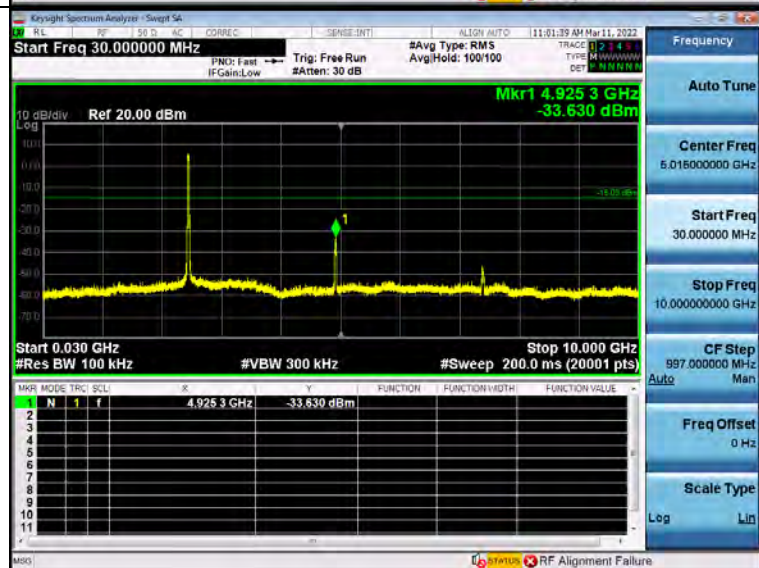


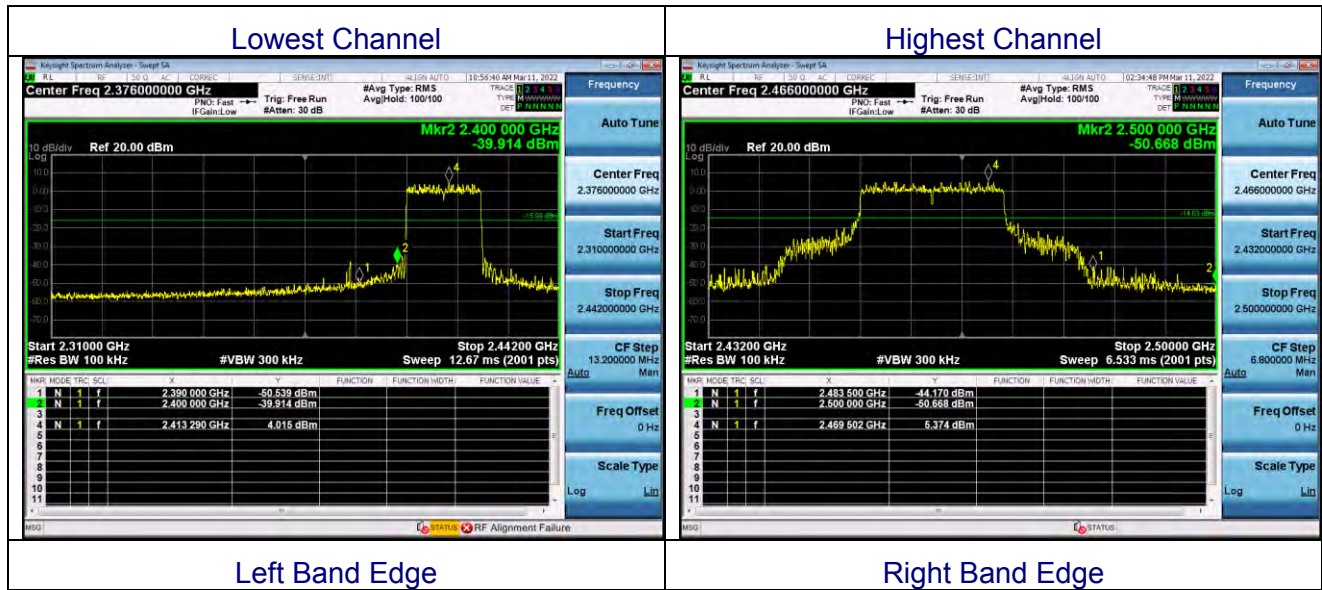


Middle Channel



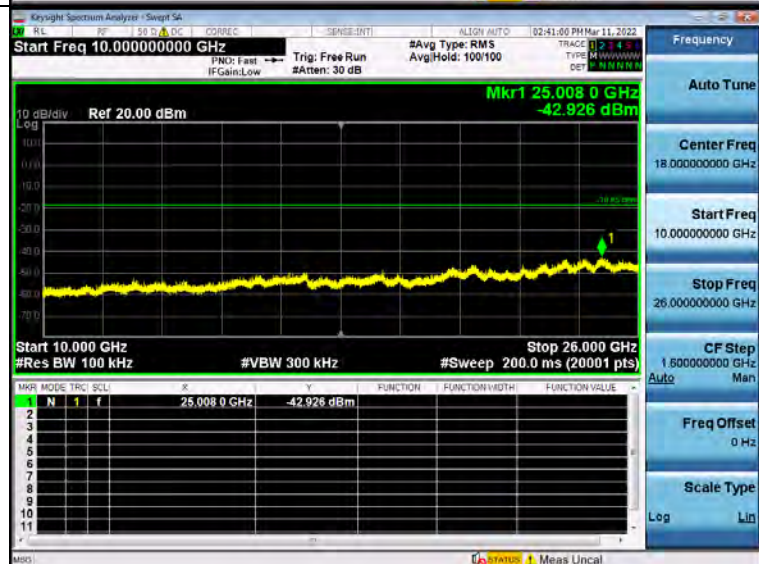
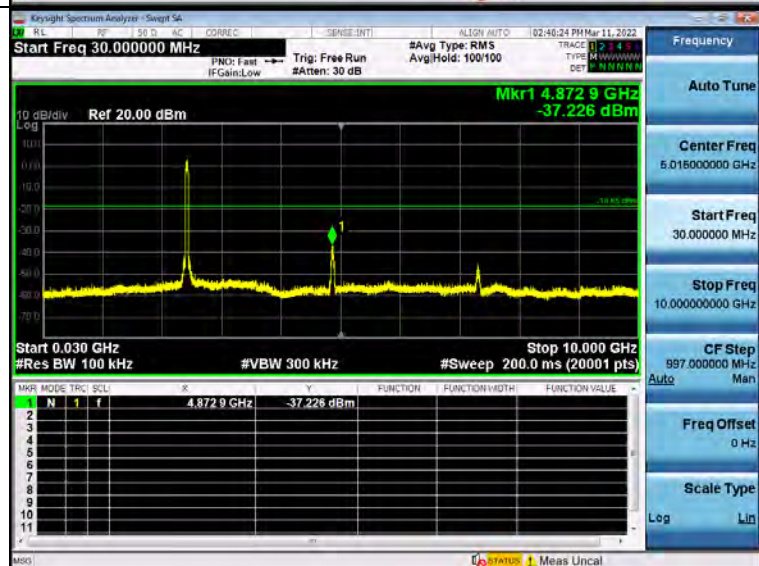
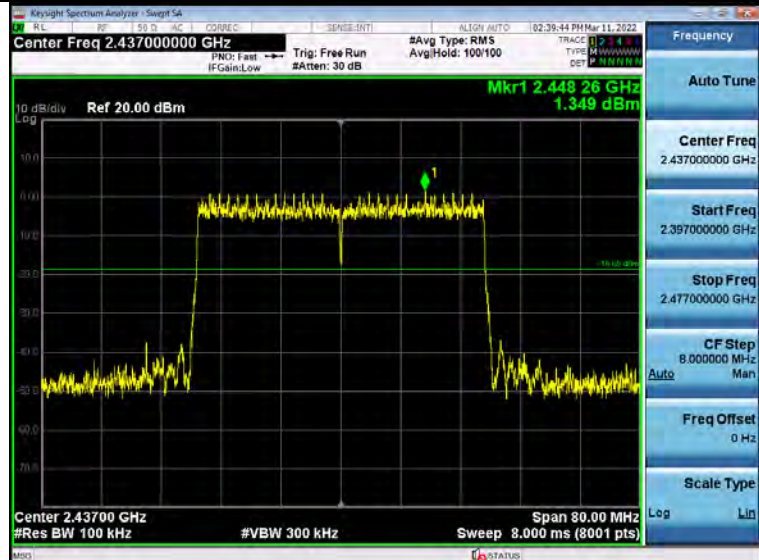
High Channel



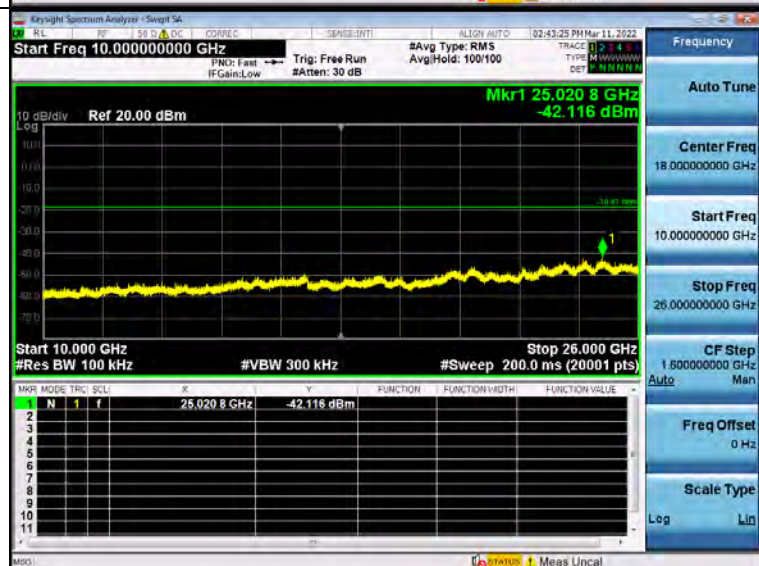
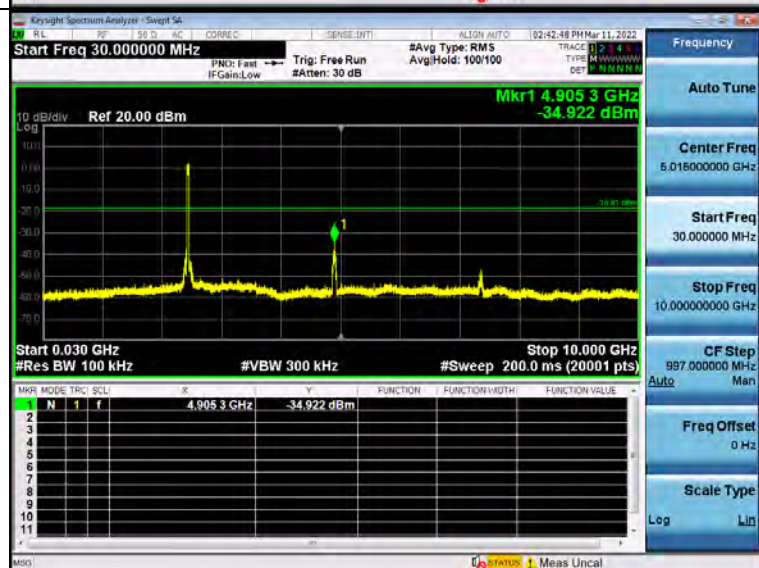




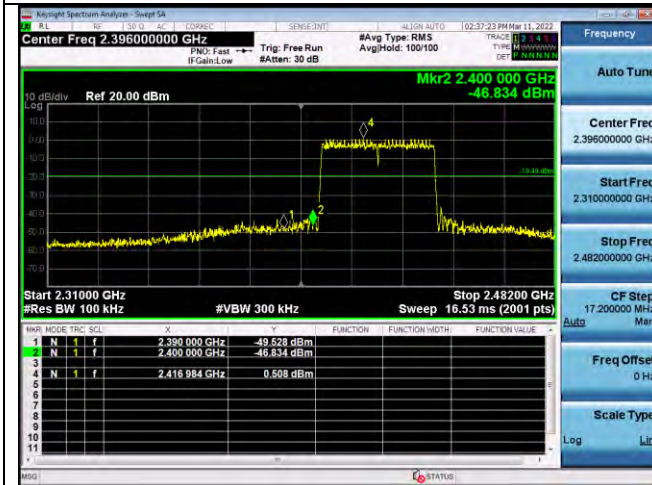
Middle Channel



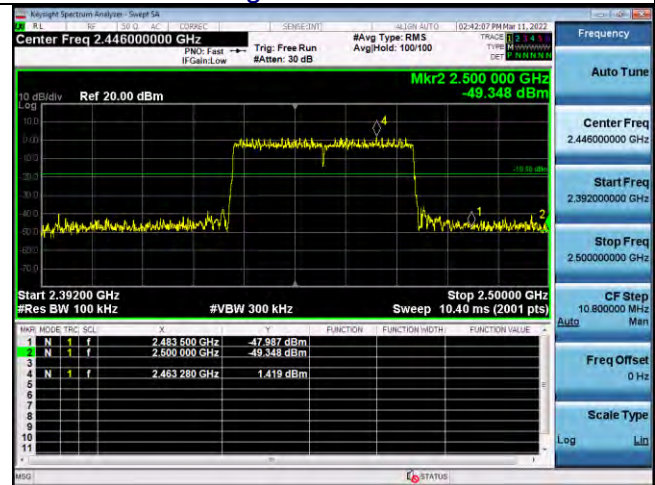
High Channel



Lowest Channel



Highest Channel



Left Band Edge

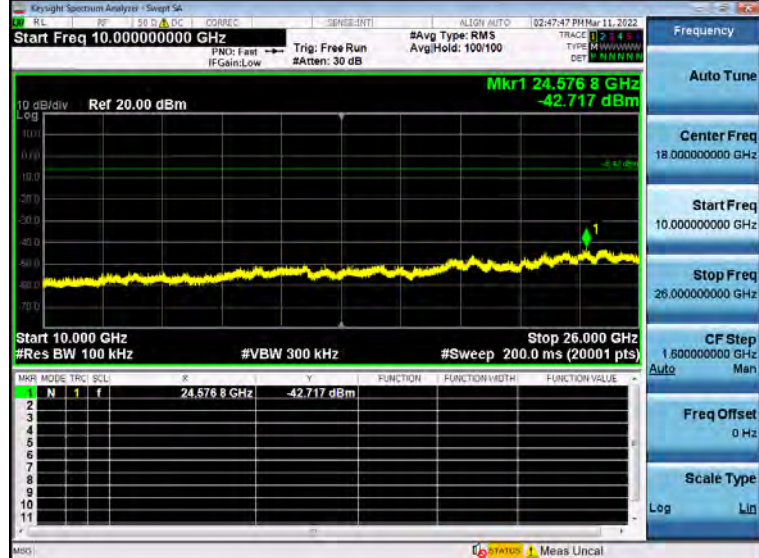
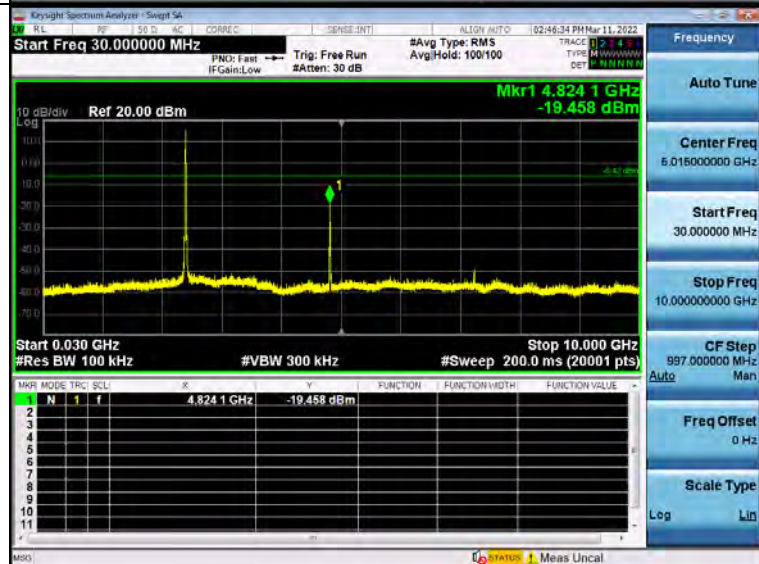
Right Band Edge

ANT2

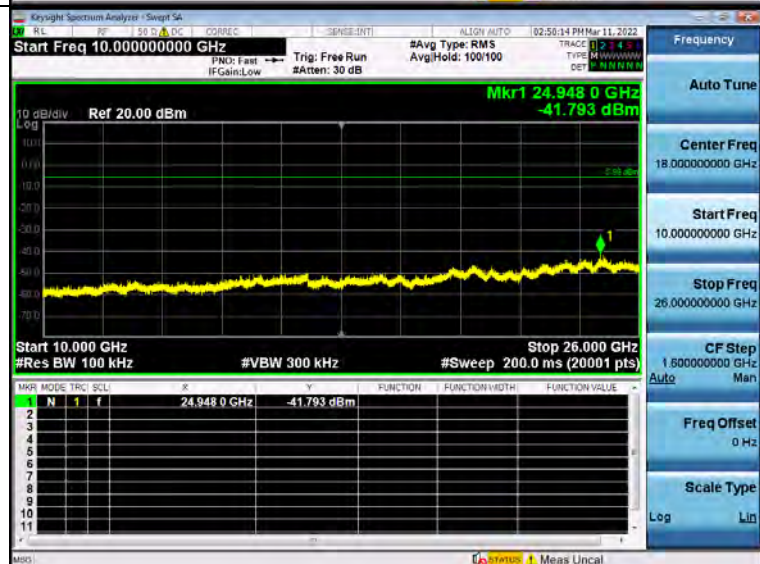
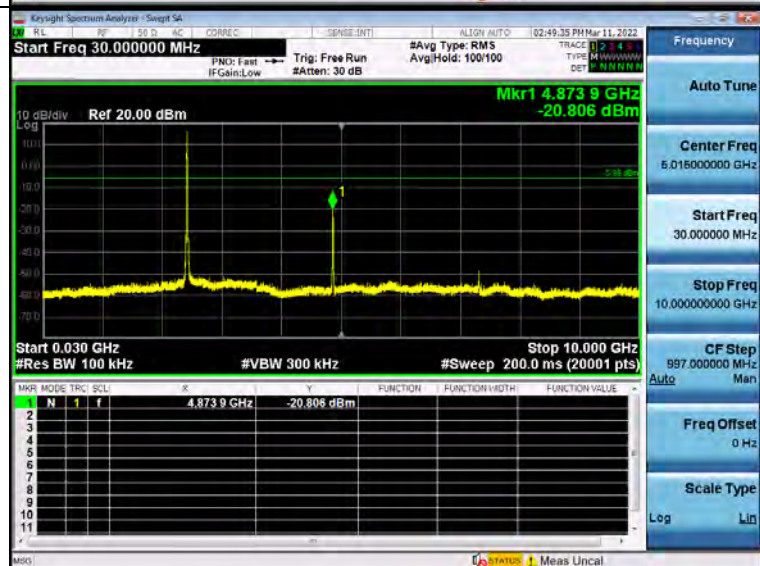
802.11b Modulation

Spurious emission

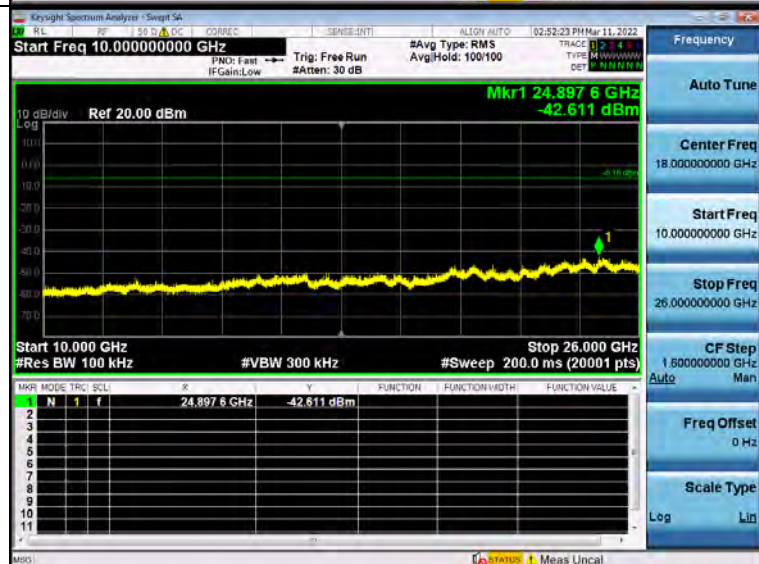
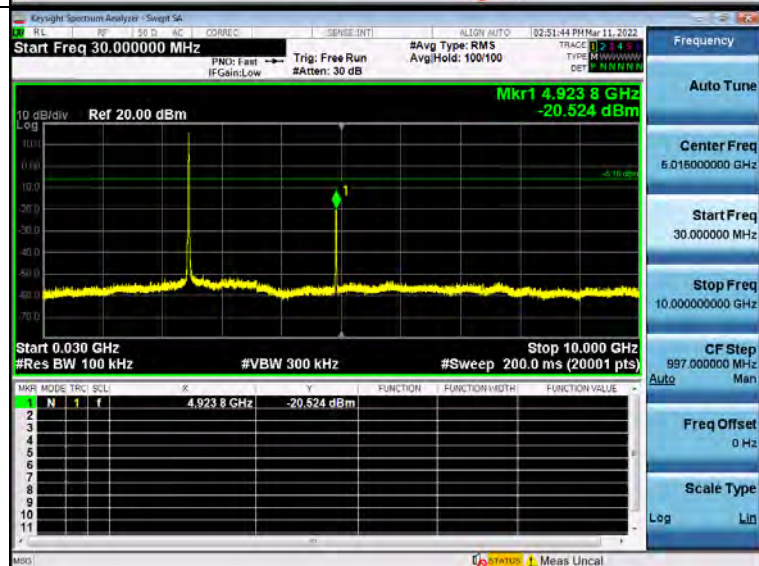
Low Channel



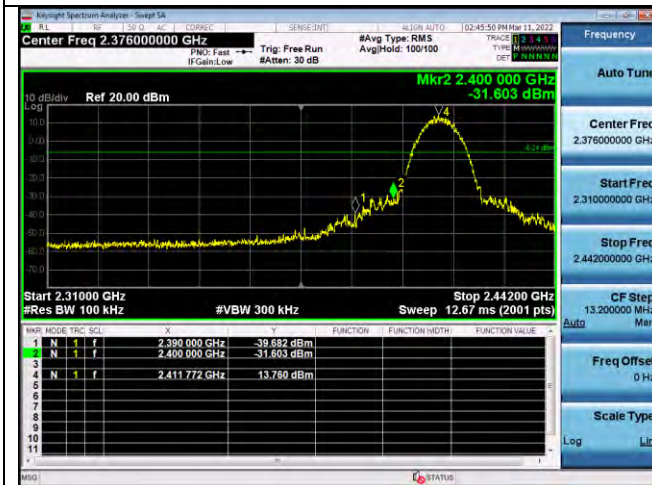
The screenshot displays the Keysight Spectrum Analyzer interface. The main plot shows a signal trace centered at 2.437 GHz. The y-axis represents power in dBm, ranging from -70 to 10. A green horizontal line indicates the reference level at 20.00 dBm. The signal peak is labeled with its frequency, 2.436 745 GHz, and its power, 14.008 dBm. The x-axis represents frequency in kHz, with a center frequency of 2.43700 GHz and a resolution bandwidth (RBW) of 100 kHz. The span is set to 40.00 MHz. The sweep rate is 4.267 ms (8001 pts). The interface includes various control panels on the right side, such as Frequency, Auto Tune, Center Freq, Start Freq, Stop Freq, CF Step, Freq Offset, Scale Type, and Log.



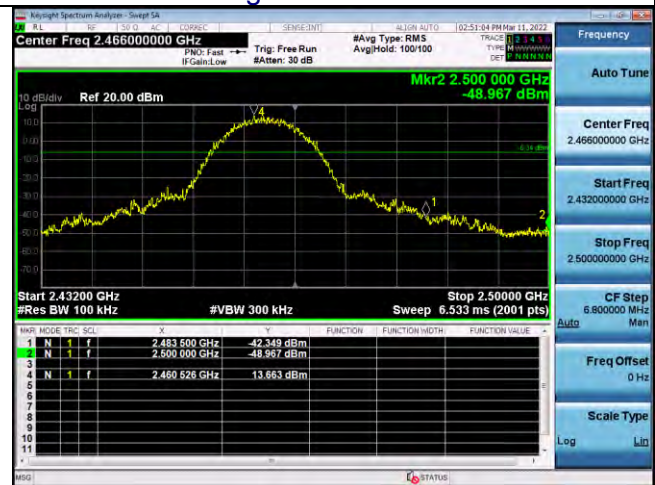
High Channel



Lowest Channel



Highest Channel



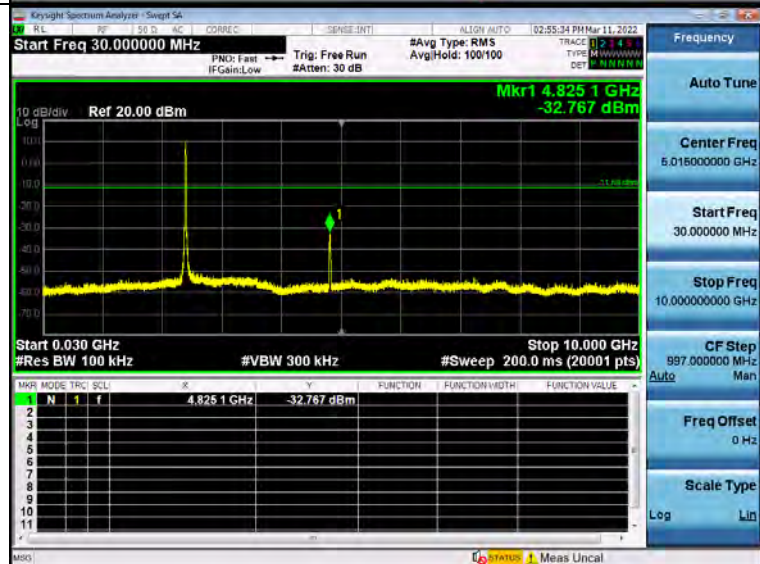
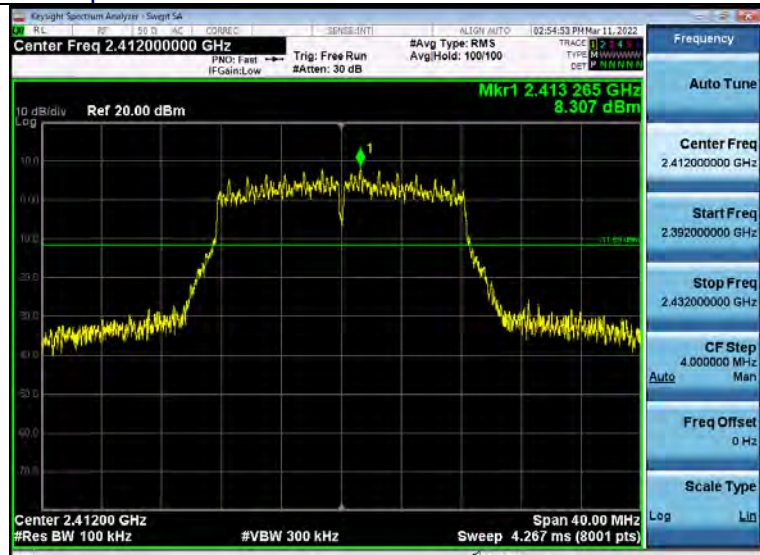
Left Band Edge

Right Band Edge

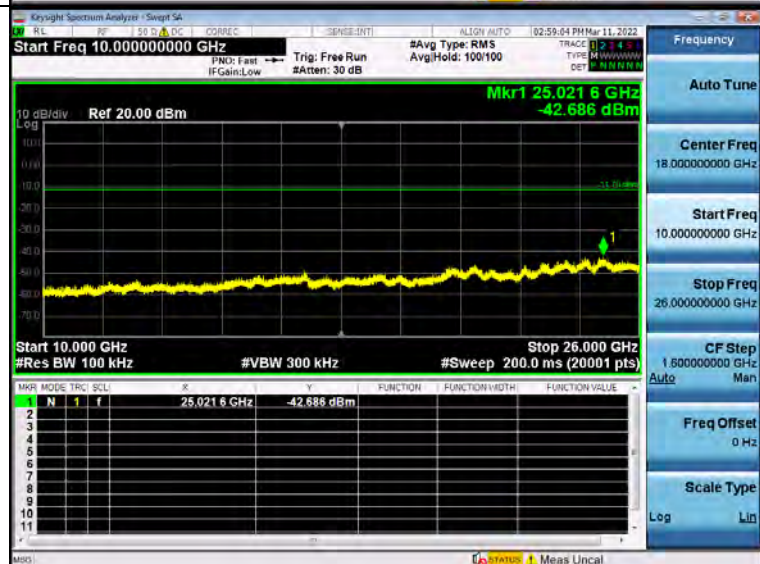
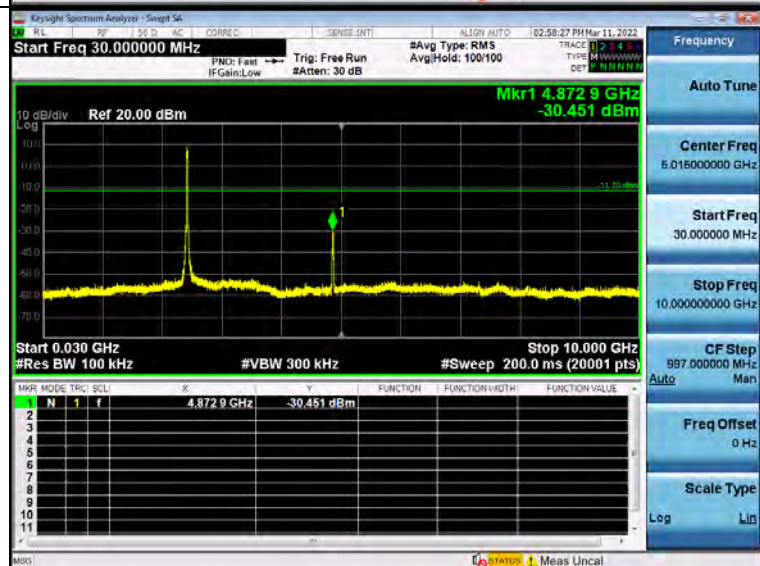
802.11g Modulation

Spurious emission

Low Channel



Middle Channel



Keysight Spectrum Analyzer - SigSt 5A

RF 150.0 AC

Center Freq 2.462000000 GHz PNO: Fast IFGain: Low Trig: Free Run atten: 30 dB #Avg Type: RMS Avg/Hold: 100/100 03:06:50 PM Mar 11, 2022

10 dB/div Ref 20.00 dBm

Mkr1 2.460 740 GHz 8.216 dBm

Center 2.46200 GHz Res BW 100 kHz #VBW 300 kHz Span 40.00 MHz Sweep 4.267 ms (8001 pts)

Frequency Auto Tune

Center Freq 2.462000000 GHz

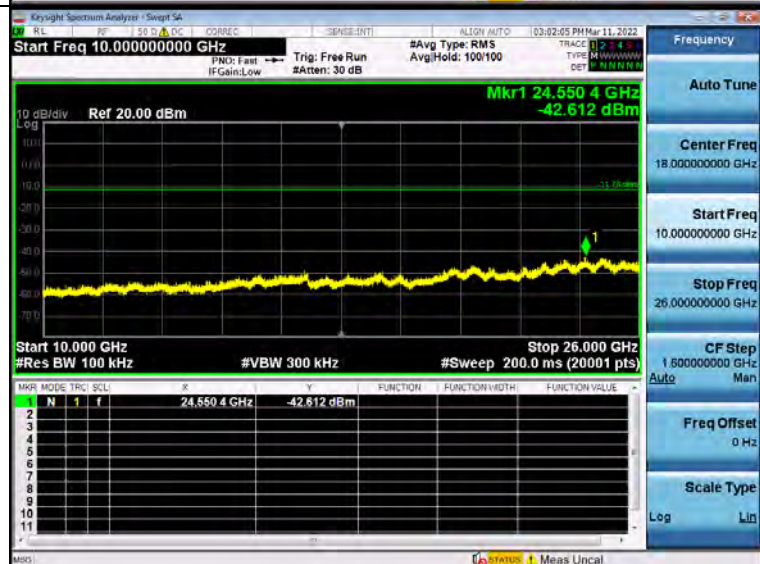
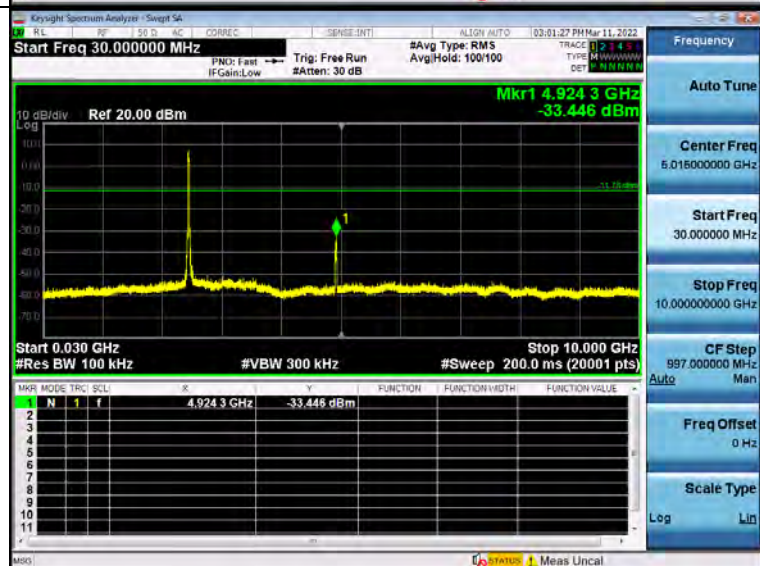
Start Freq 2.442000000 GHz

Stop Freq 2.482000000 GHz

CF Step 4.000000 MHz Man

Freq Offset 0 Hz

Scale Type Log Lin

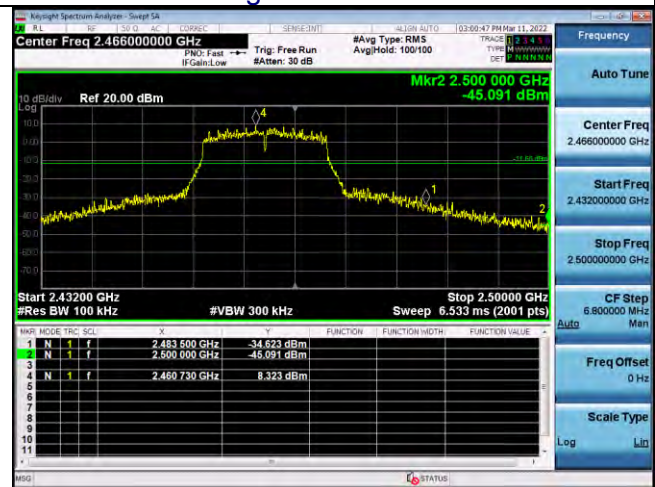


Lowest Channel



Left Band Edge

Highest Channel

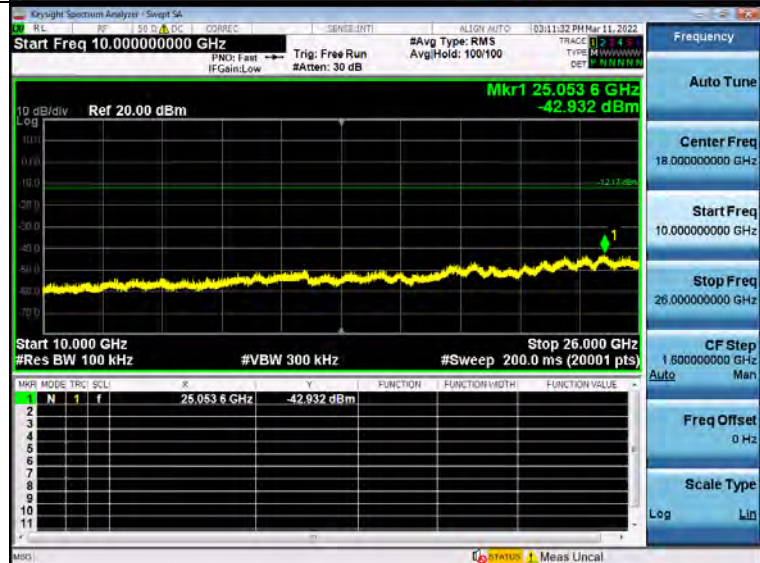
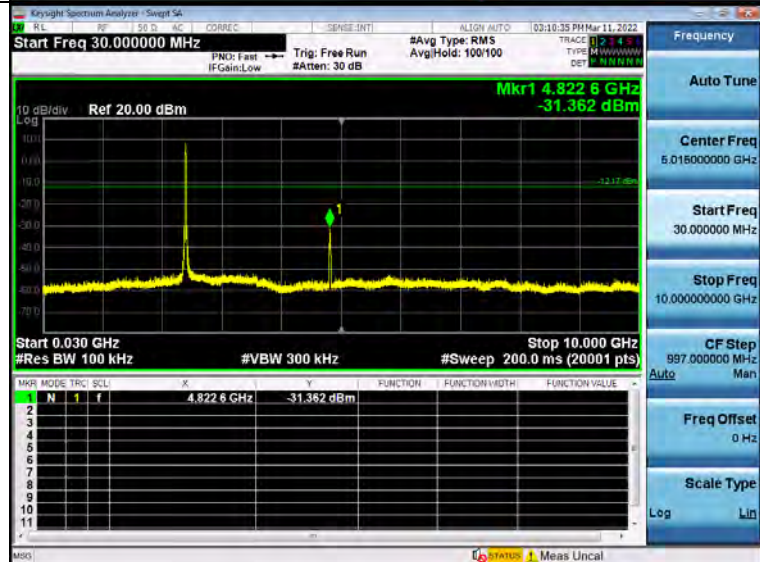


Right Band Edge

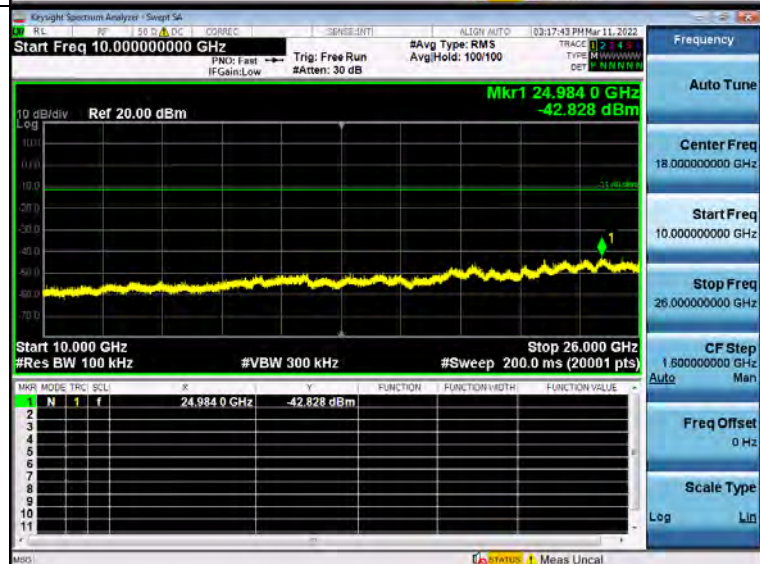
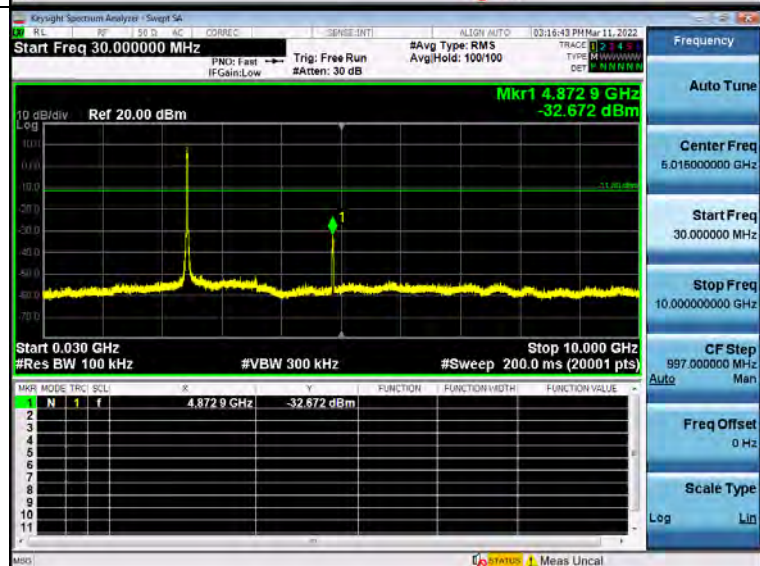
802.11n20 Modulation

Spurious emission

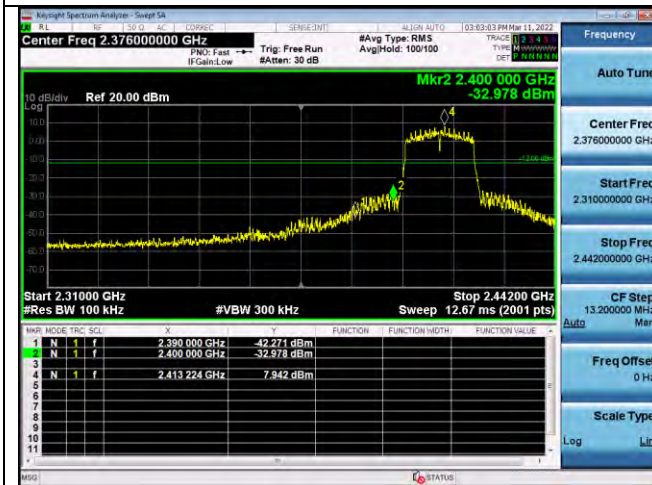
Low Channel



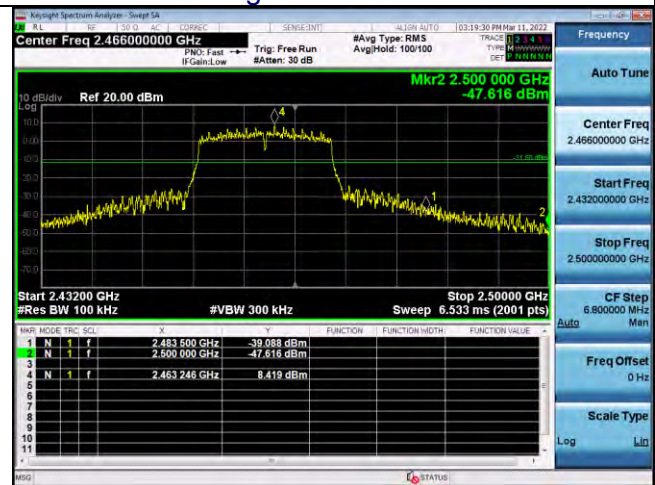
Middle Channel



Lowest Channel



Highest Channel



Left Band Edge

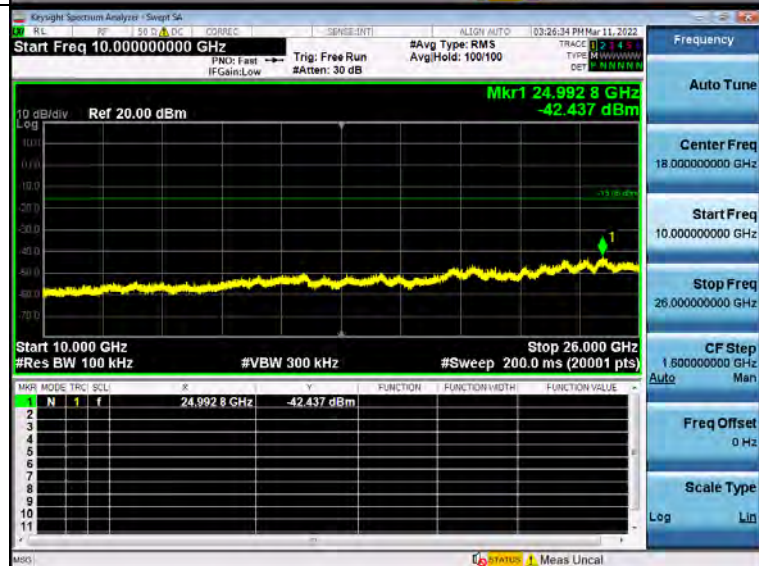
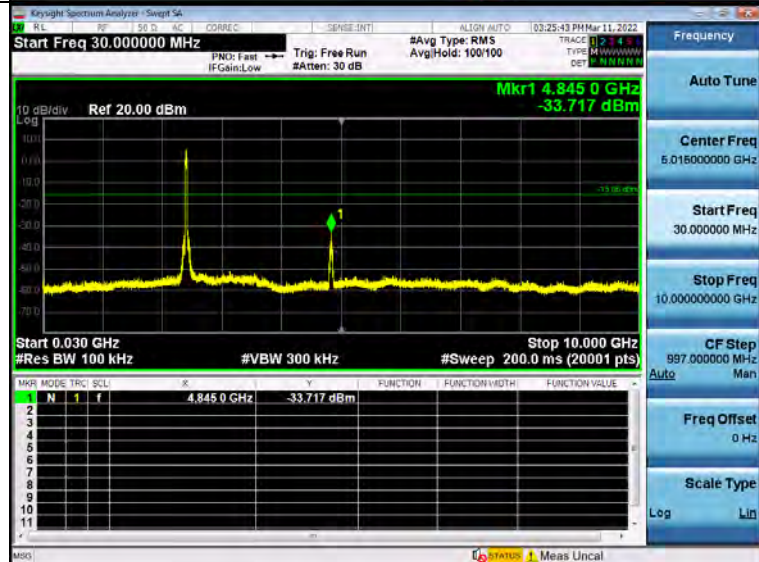
Right Band Edge

802.11n40 Modulation

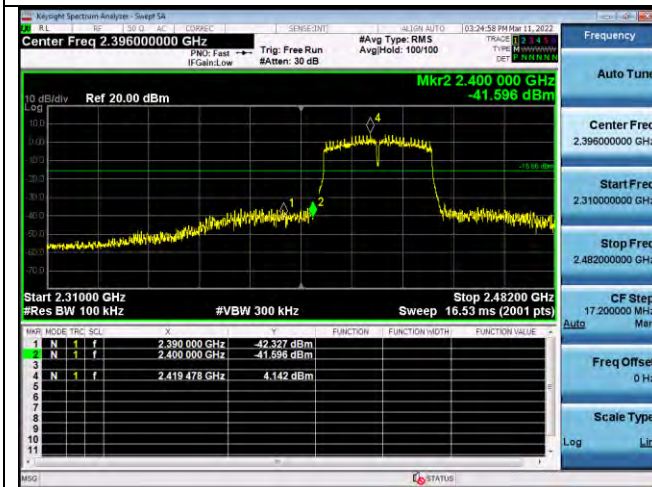
Spurious emission



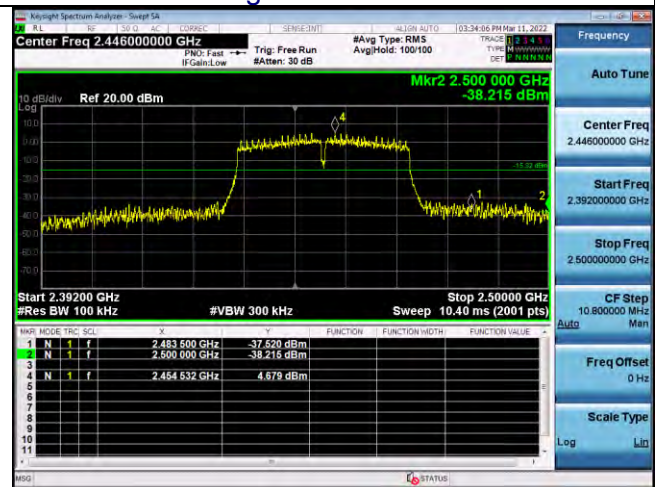
Low Channel



Lowest Channel



Highest Channel



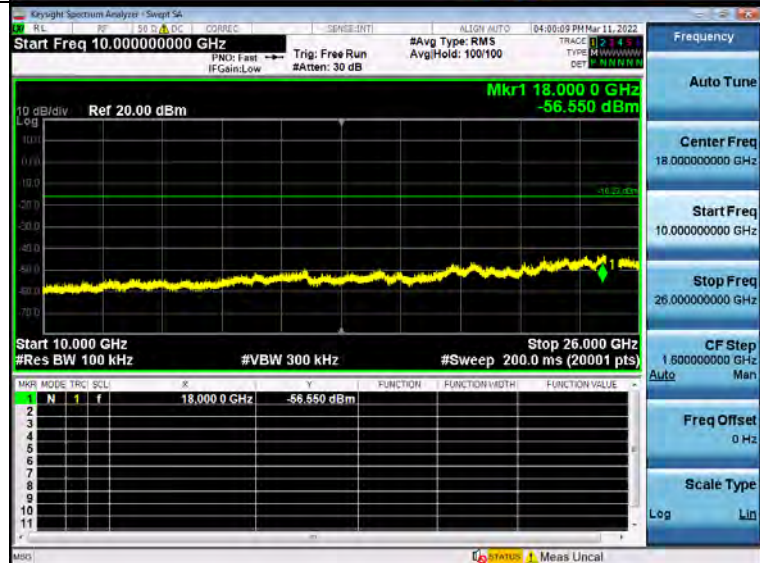
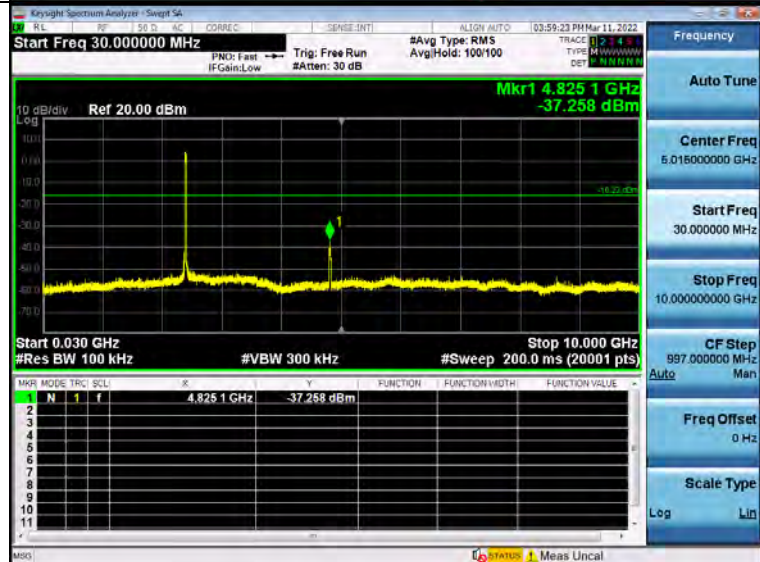
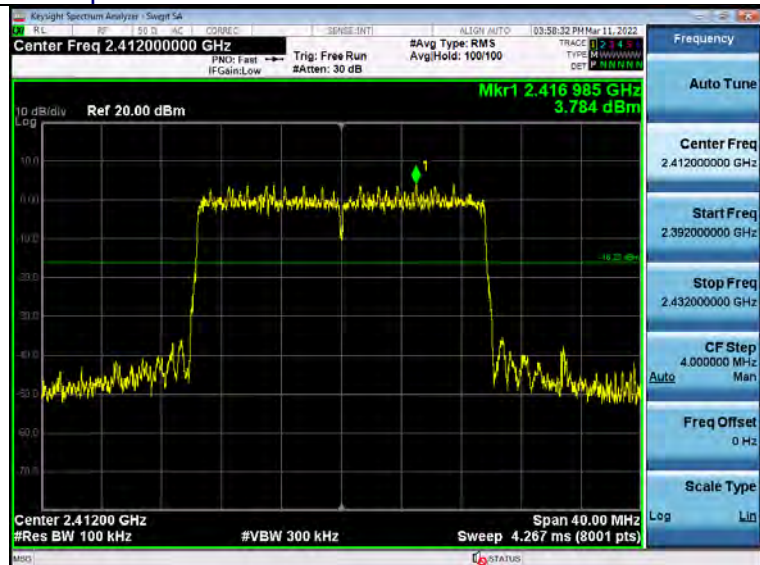
Left Band Edge

Right Band Edge

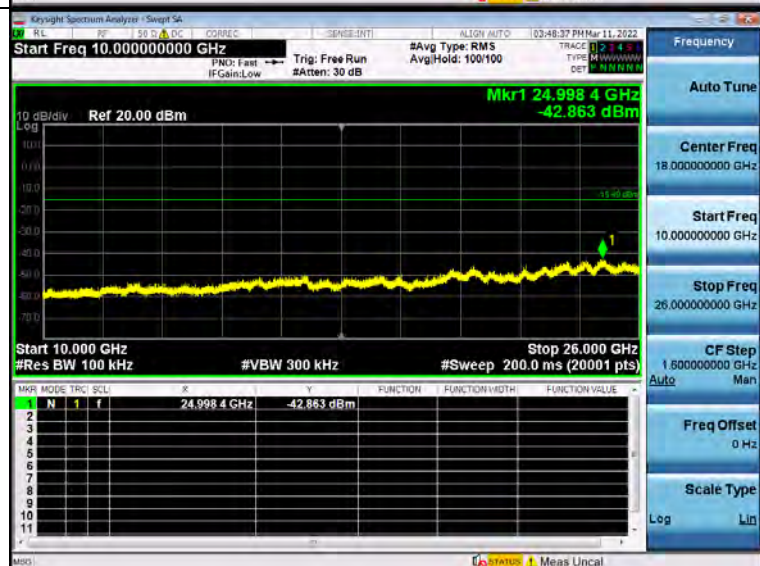
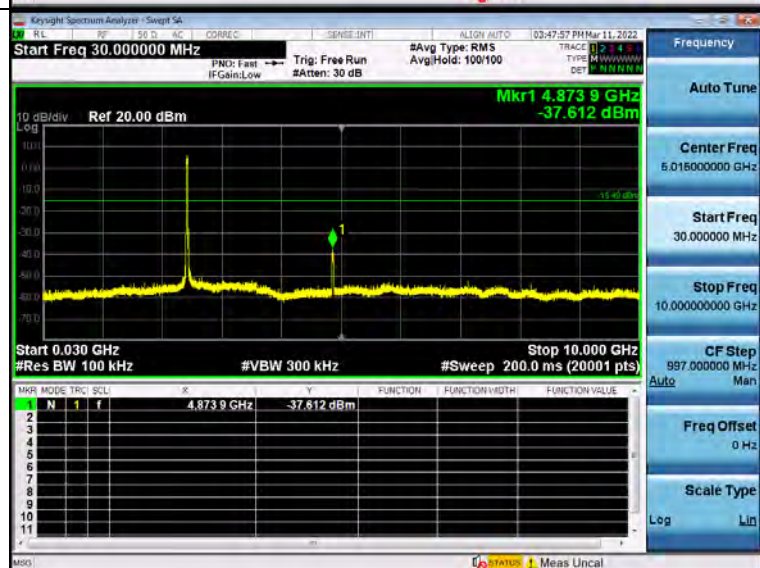
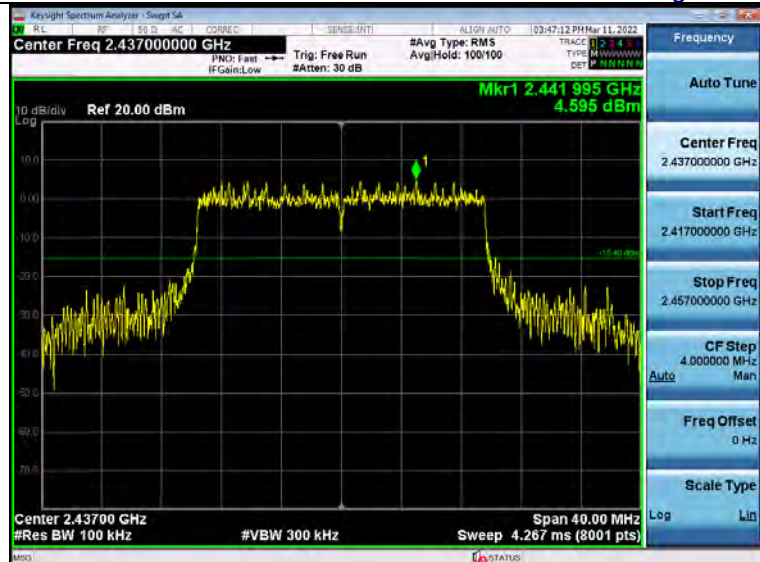
802.11ax20 Modulation

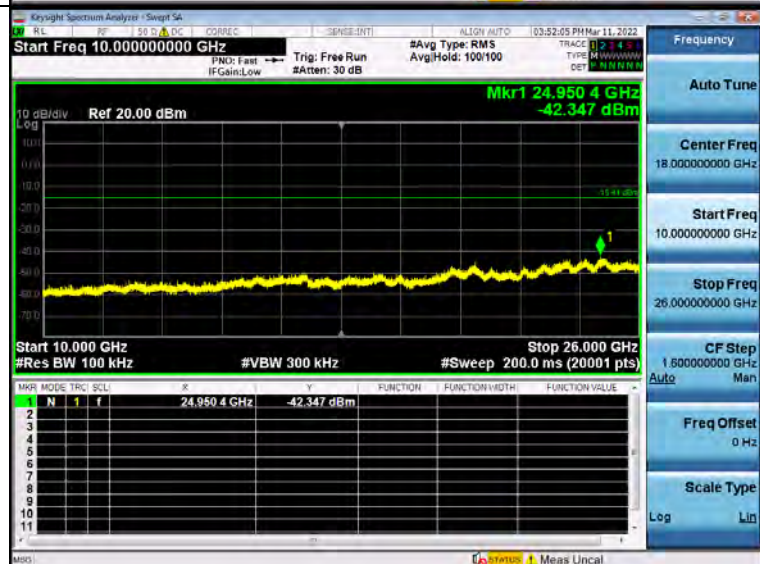
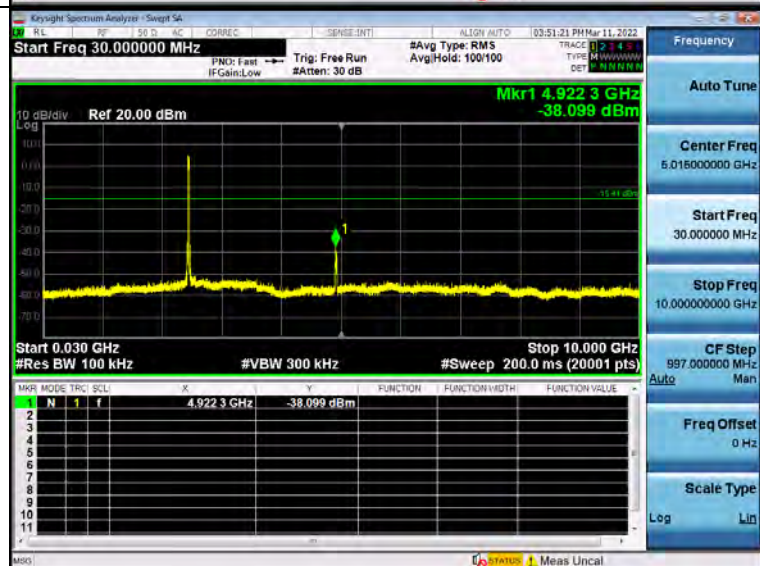
Spurious emission

Low Channel

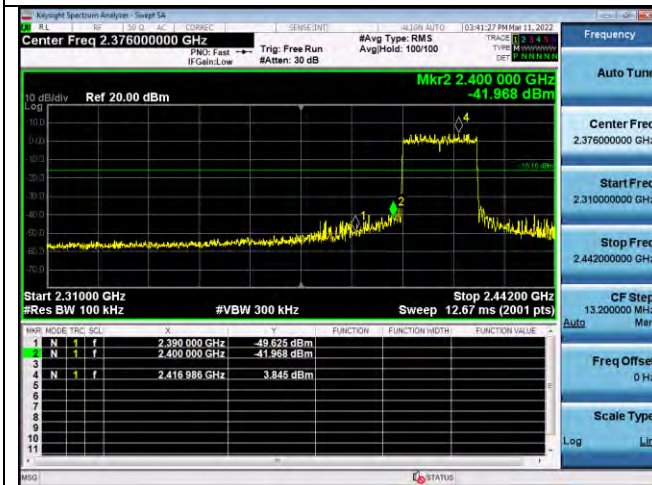


Middle Channel

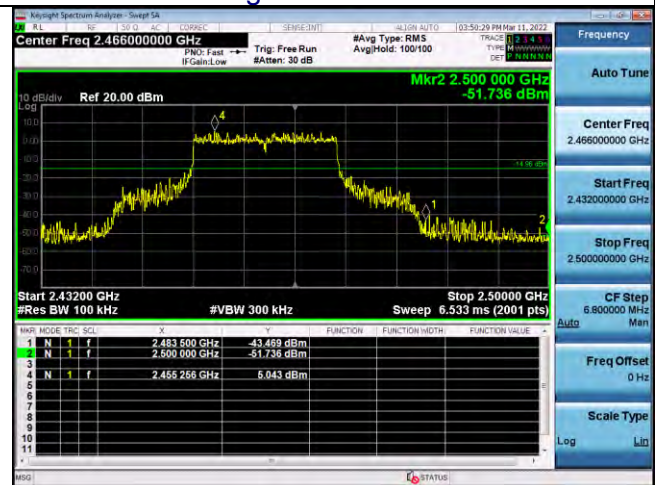


[illegible]

Lowest Channel



Highest Channel

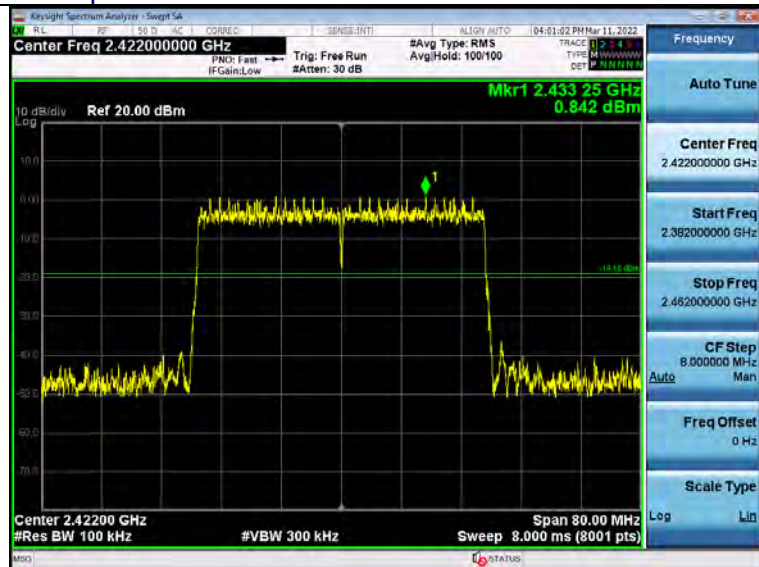


Left Band Edge

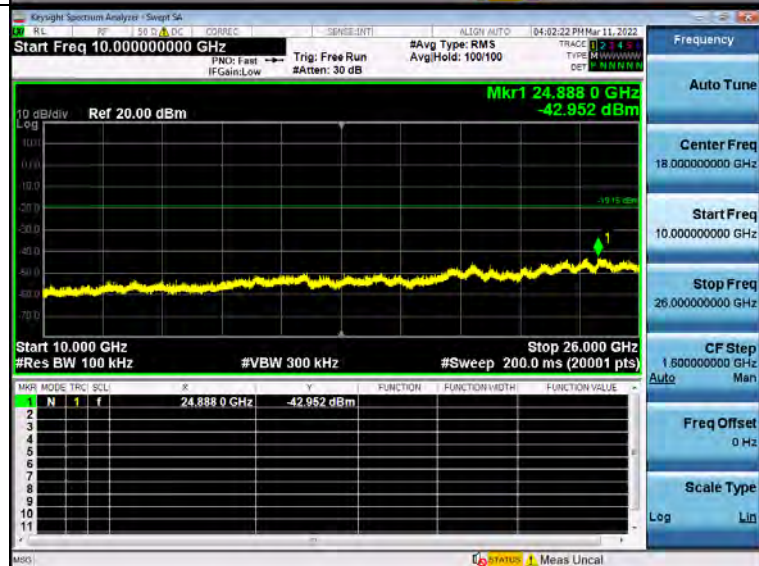
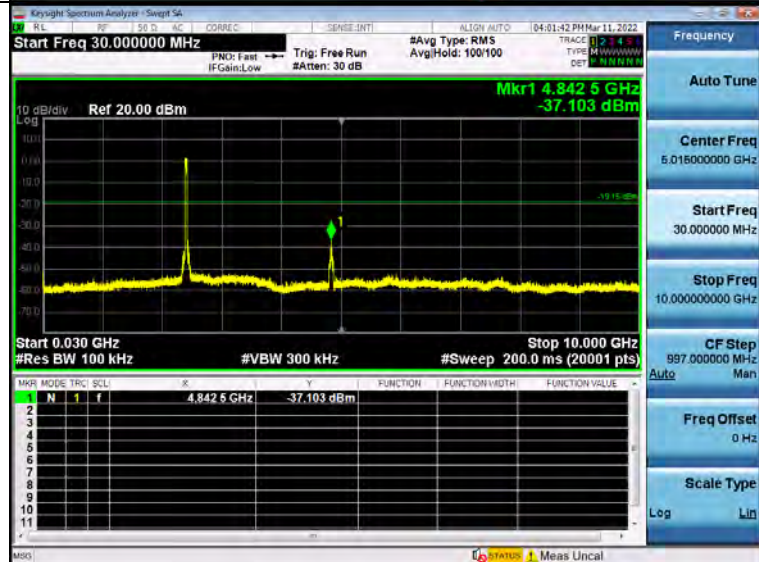
Right Band Edge

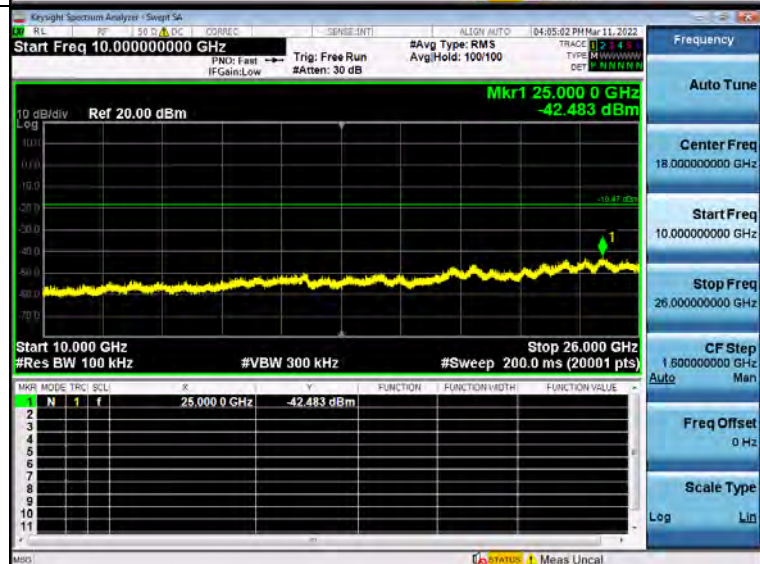
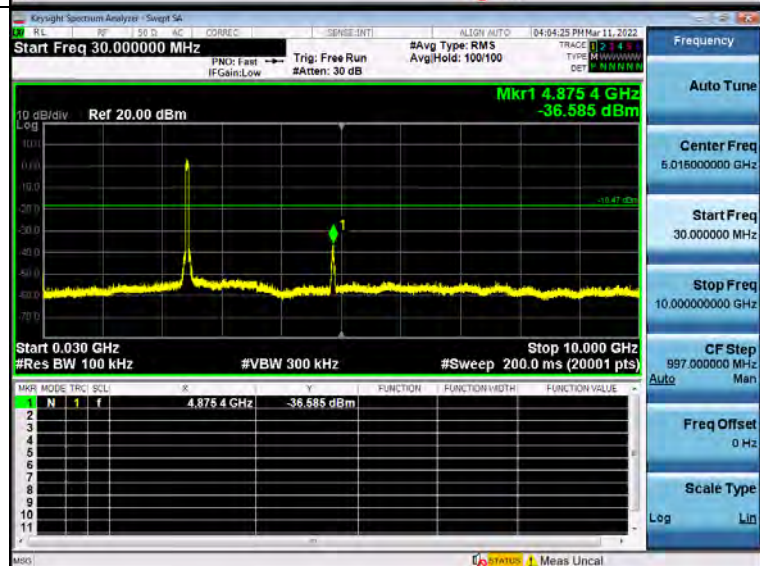
802.11ax40 Modulation

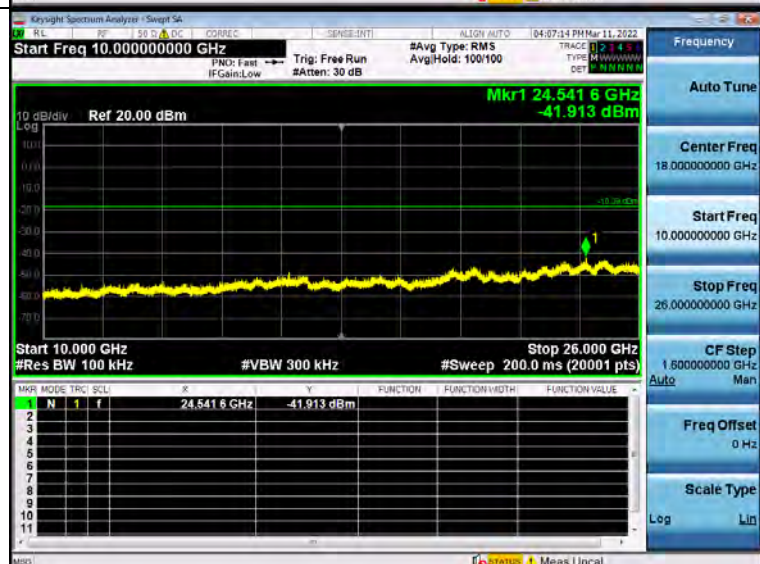
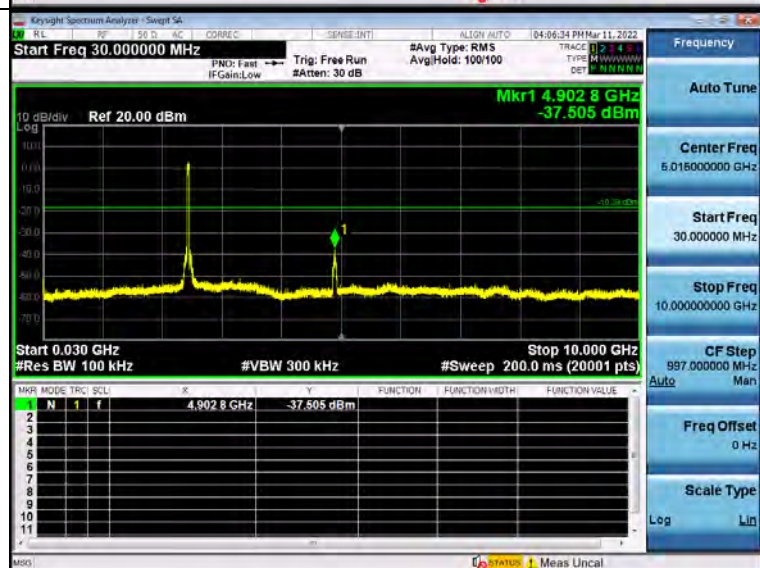
Spurious emission



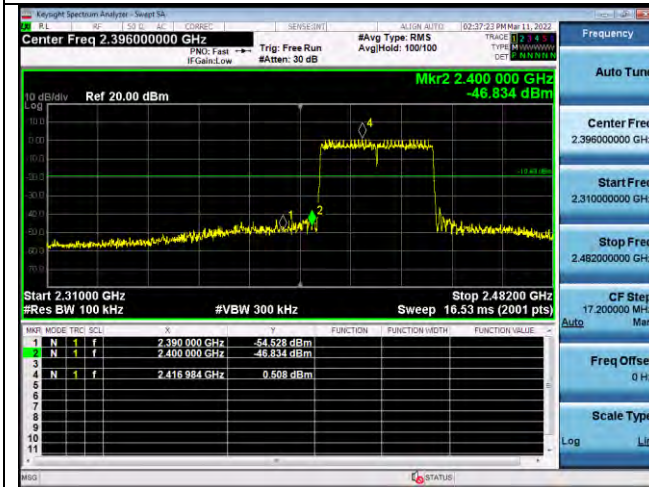
Low Channel



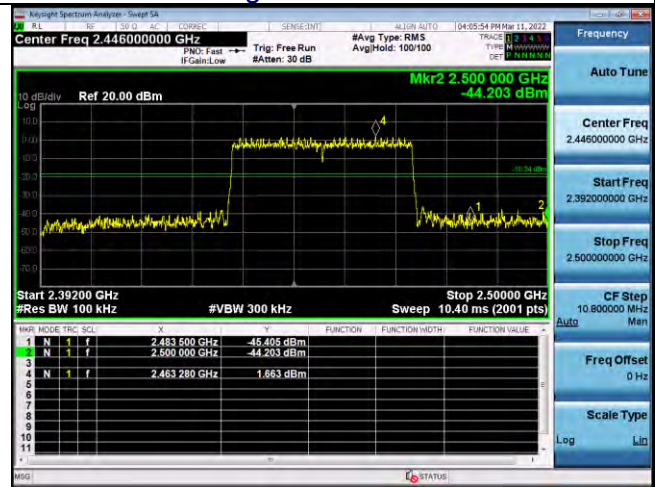
[illegible]

[illegible]

Lowest Channel



Highest Channel



Left Band Edge

Right Band Edge

10. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. Refer to statement below for compliance. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed. Antenna Connected Construction The antenna used in this product are Internal antennas, and the best case gain of the antenna is antenna port 1:2dBi and Antenna port 2:2dBi.	
EUT Antenna: 2.4G-ANT 5G-ANT 	

11. TEST SETUP PHOTO





12. EUT CONSTRUCTIONAL DETAILS

Reference to the external photos file and internal photos file for details.

***** END OF REPORT *****