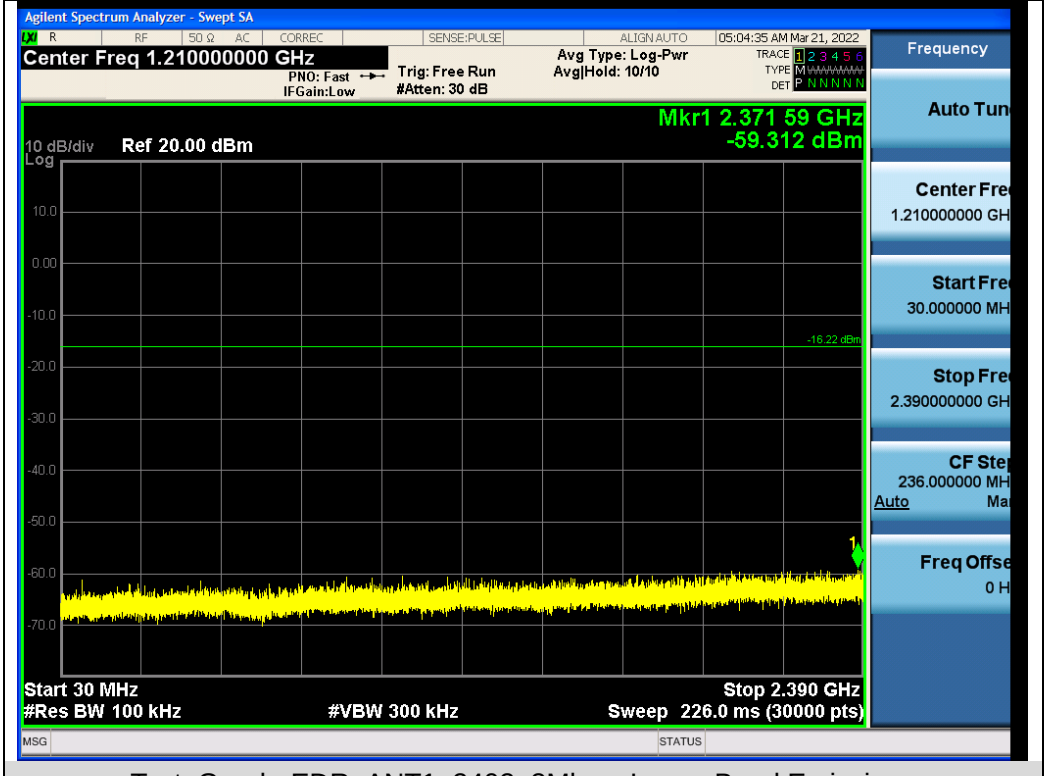
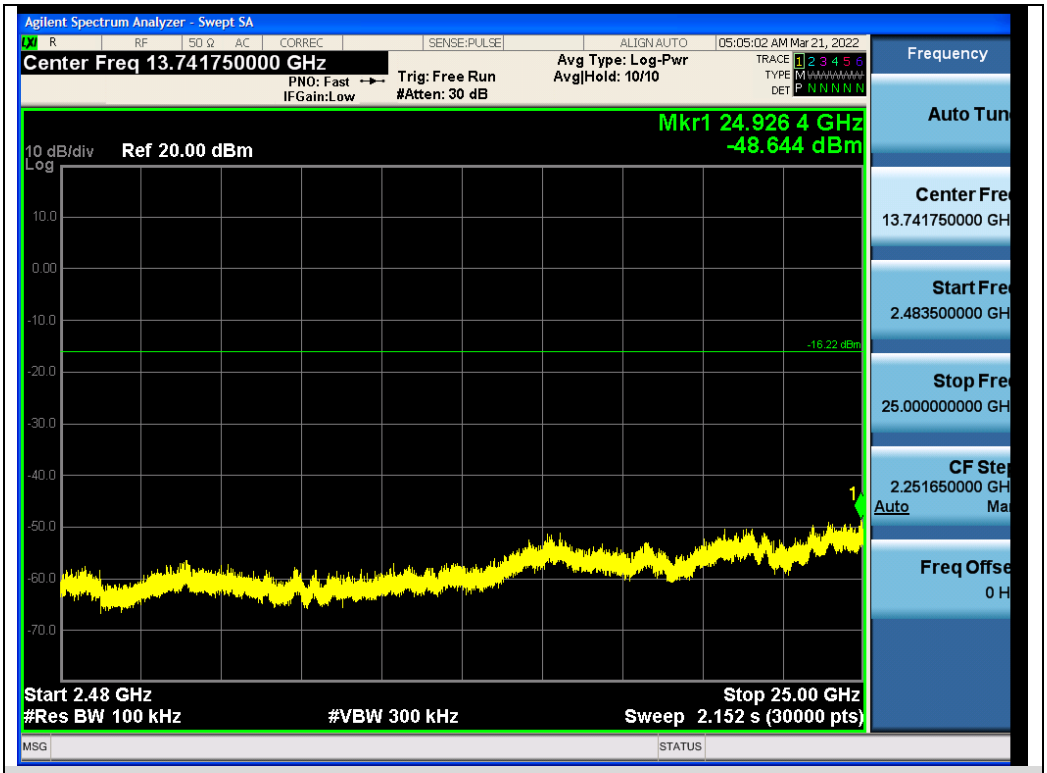
Test_Graph_EDR_ANT1_2402_3Mbps_Reference Level

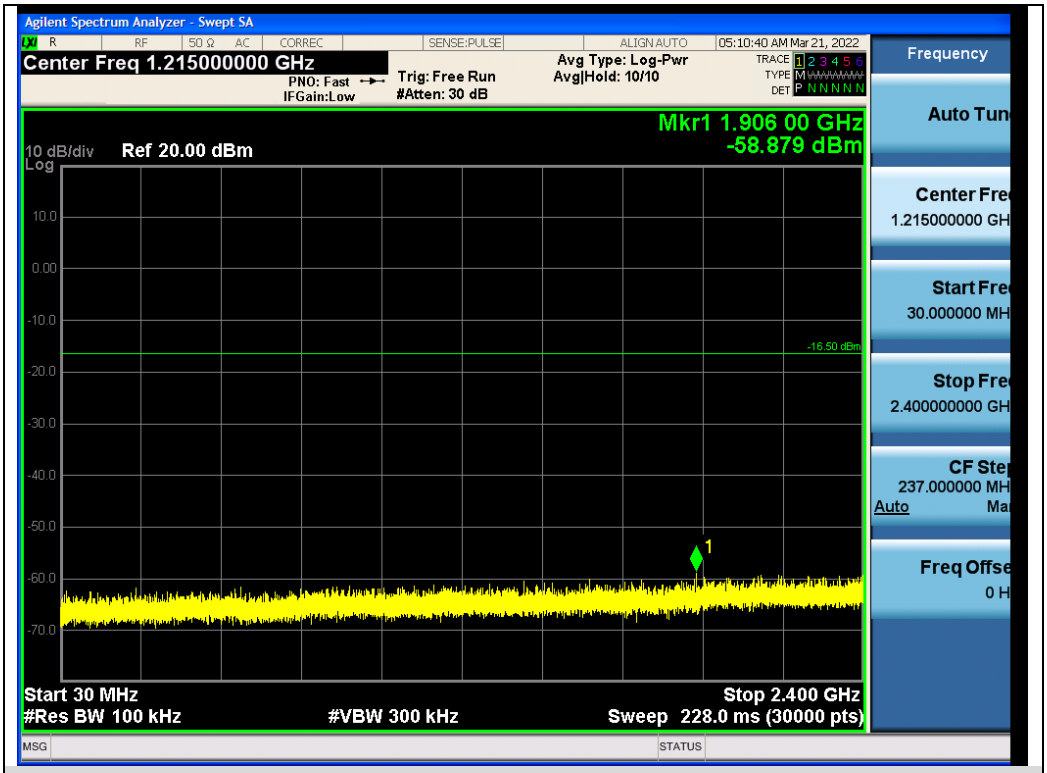


Test_Graph_EDR_ANT1_2402_3Mbps_Lower Band Emissions



Test_Graph_EDR_ANT1_2402_3Mbps_Higher Band Emissions

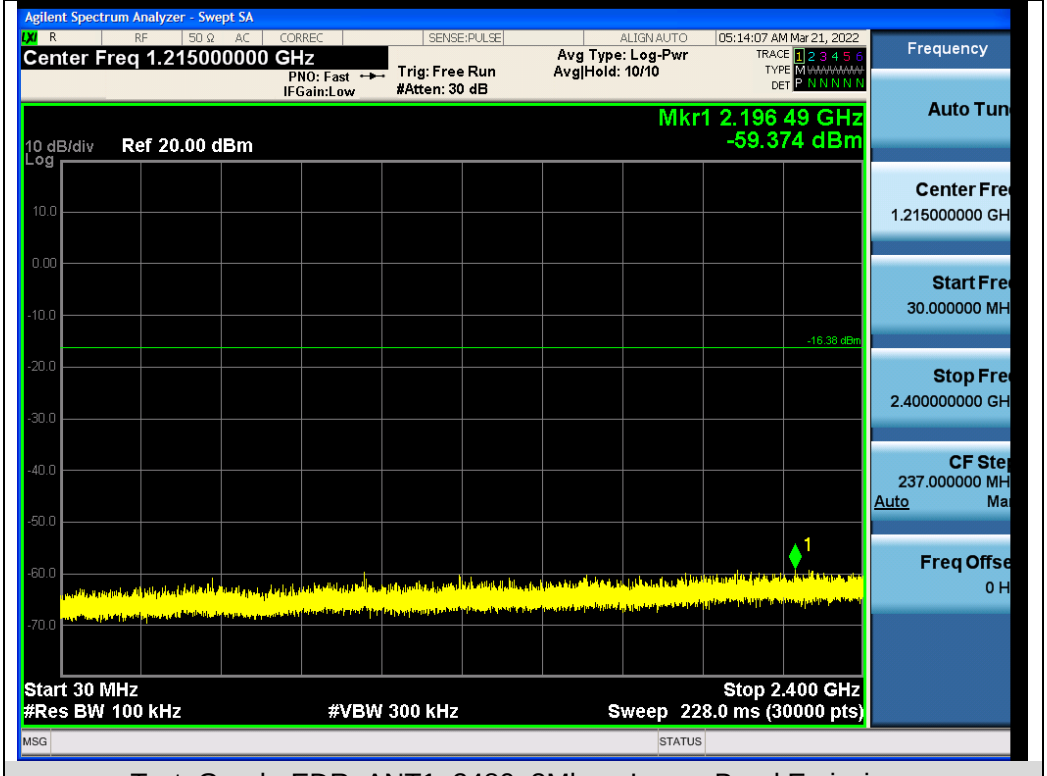
Test_Graph_EDR_ANT1_2441_3Mbps_Reference Level



Test_Graph_EDR_ANT1_2441_3Mbps_Lower Band Emissions

Test_Graph_EDR_ANT1_2441_3Mbps_Higher Band Emissions

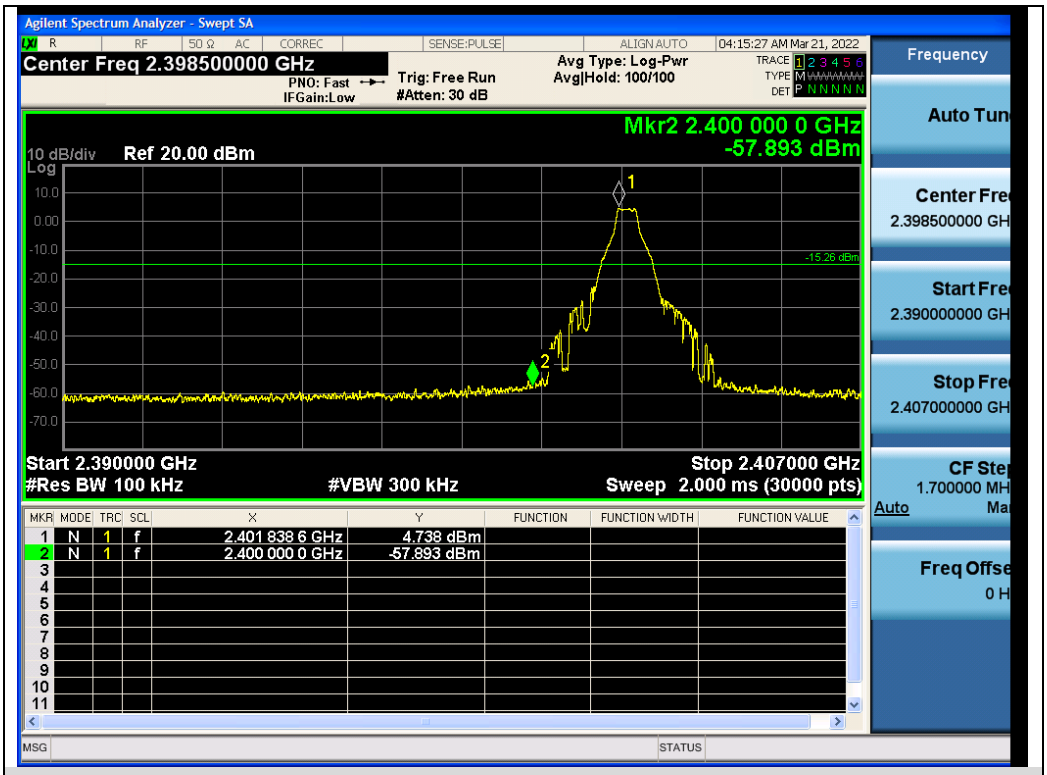
Test_Graph_EDR_ANT1_2480_3Mbps_Reference Level



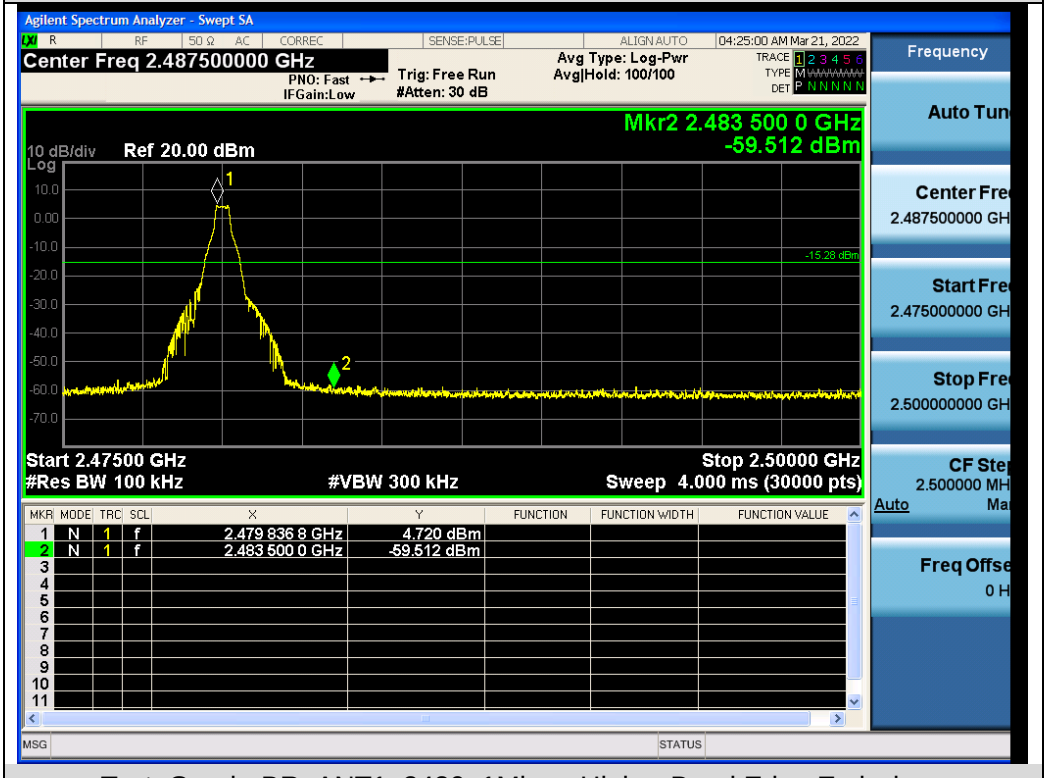
Test_Graph_EDR_ANT1_2480_3Mbps_Lower Band Emissions

Test_Graph_EDR_ANT1_2480_3Mbps_Higher Band Emissions

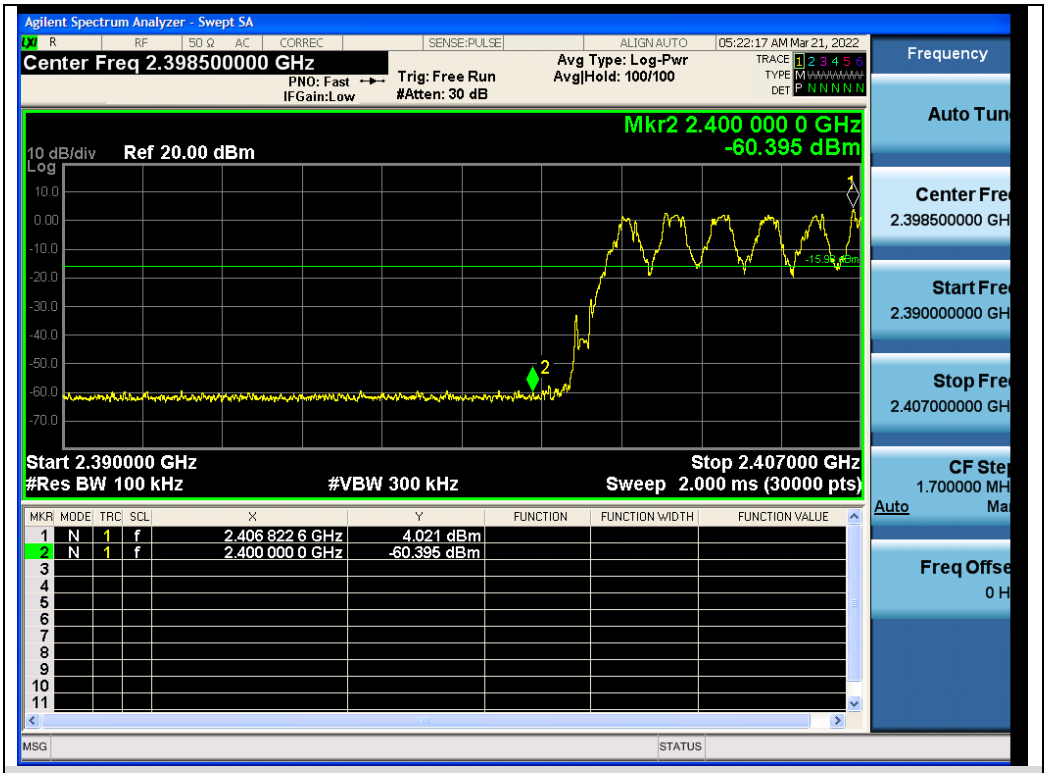
Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands



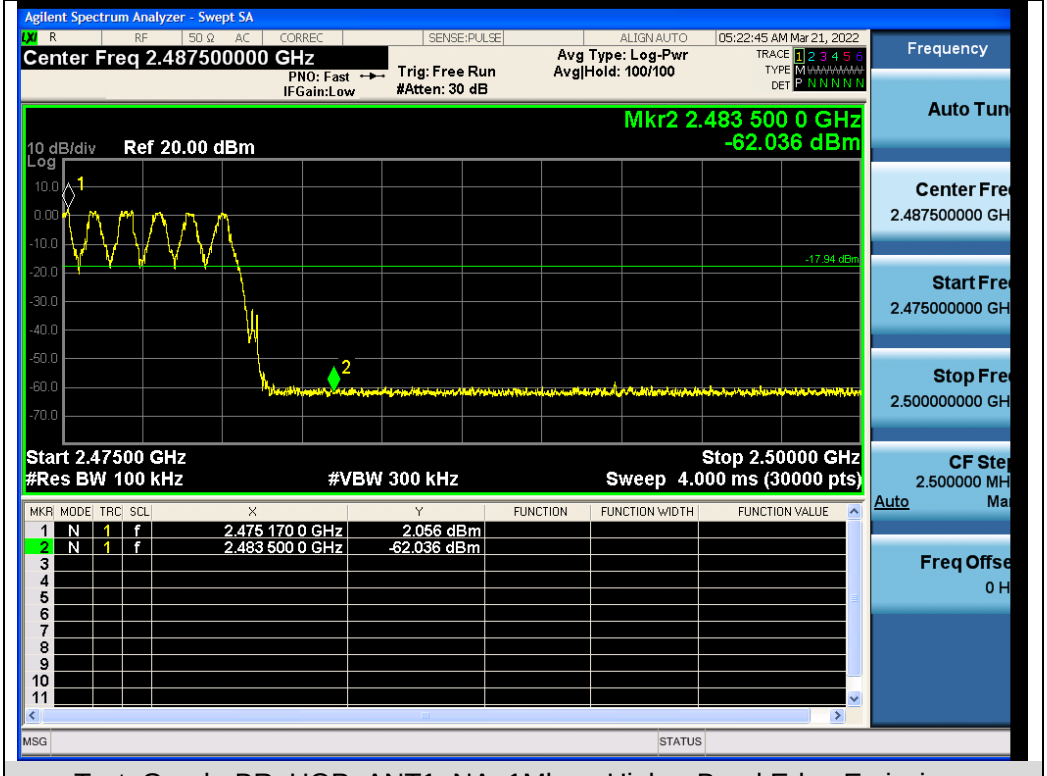
Test_Graph_BR_ANT1_2402_1Mbps_Lower Band Edge Emissions



Test_Graph_BR_ANT1_2480_1Mbps_Higher Band Edge Emissions



Test_Graph_BR_HOP_ANT1_NA_1Mbps_Lower Band Edge Emissions



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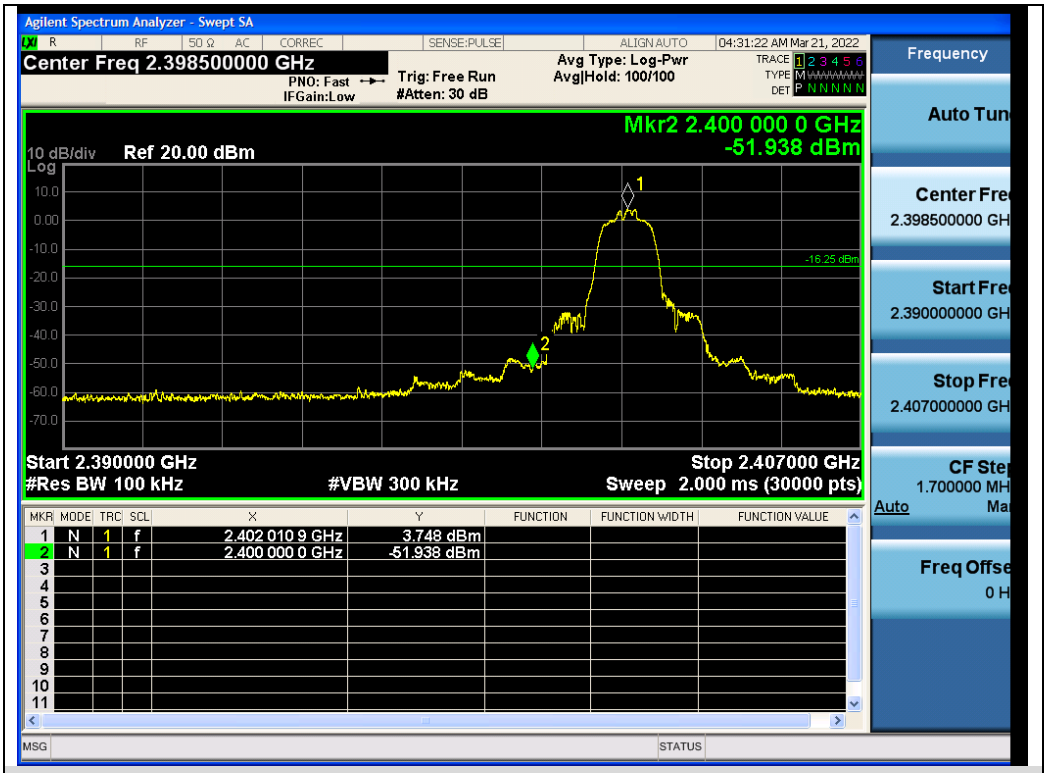
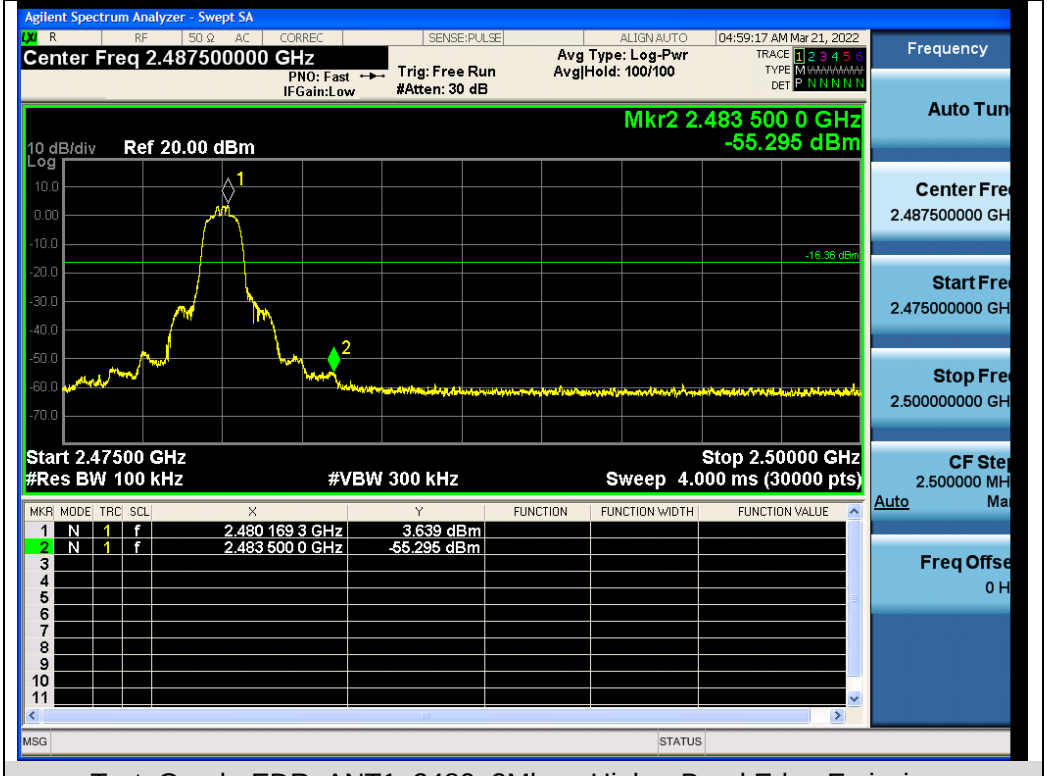
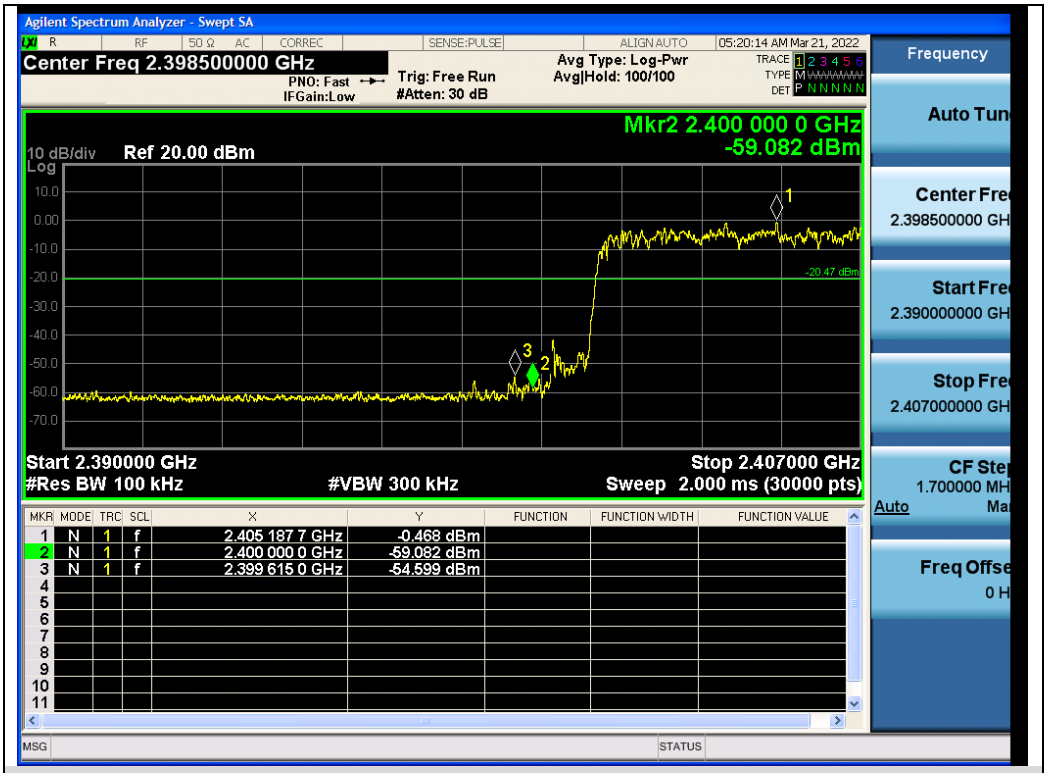


Test_Graph_EDR_ANT1_2402_2Mbps_Lower Band Edge Emissions



Test_Graph_EDR_ANT1_2480_2Mbps_Higher Band Edge Emissions



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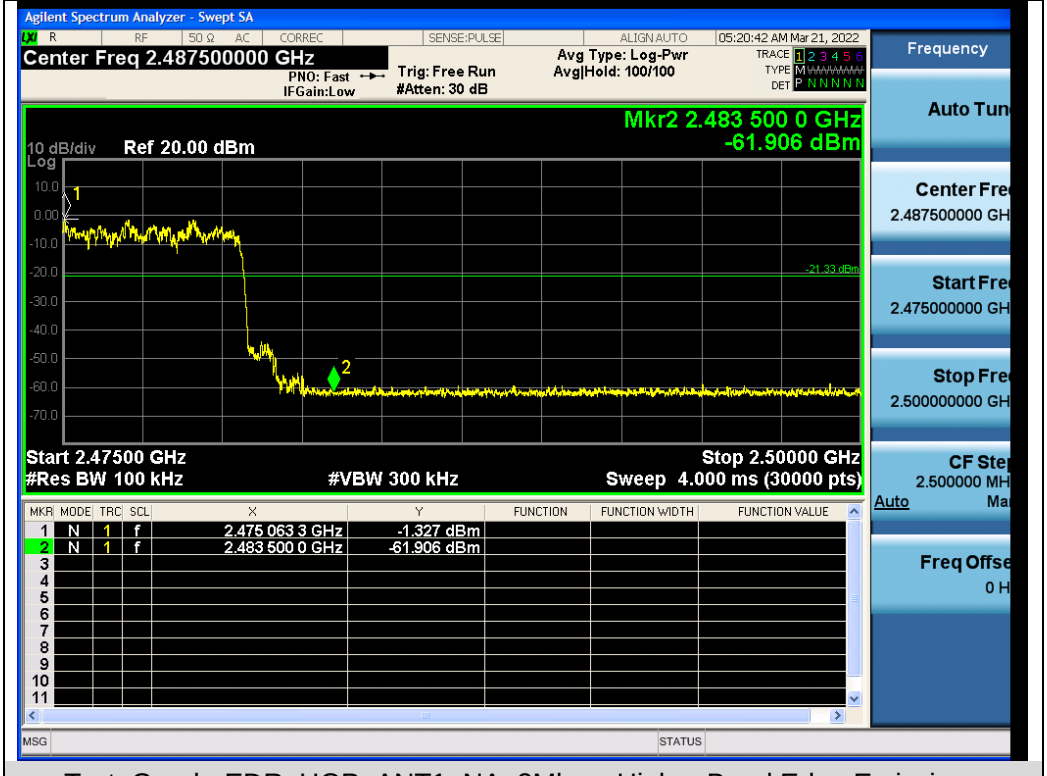
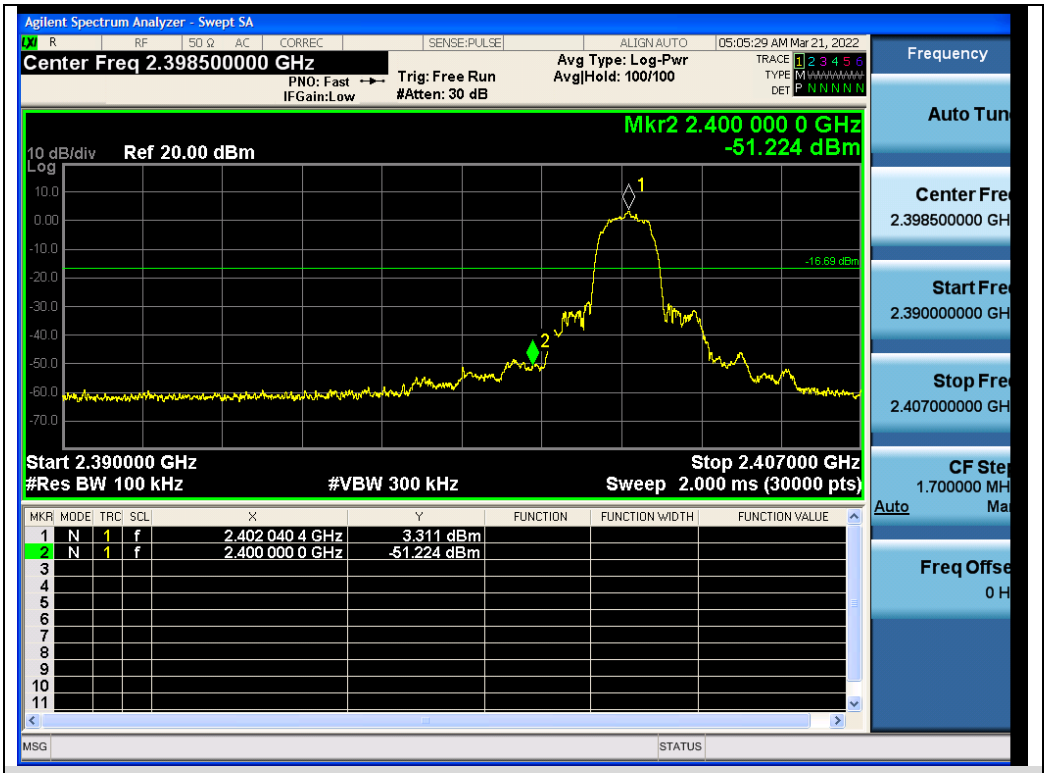
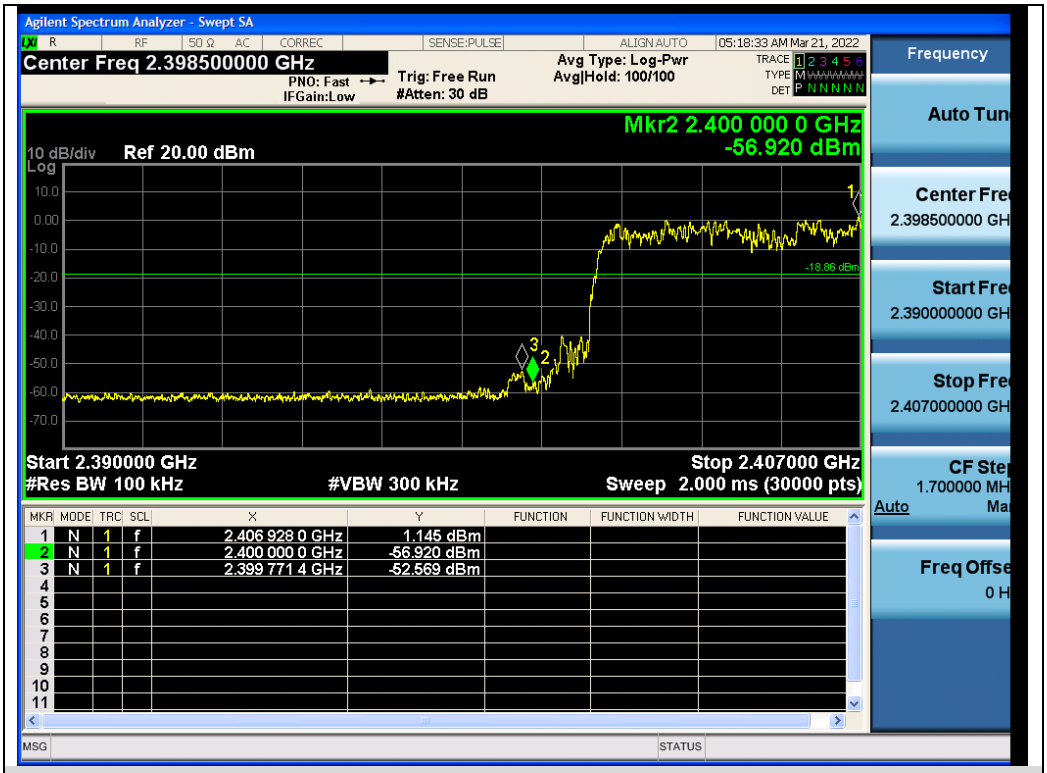


Test_Graph_EDR_HOP_ANT1_NA_2Mbps_Higher Band Edge Emissions

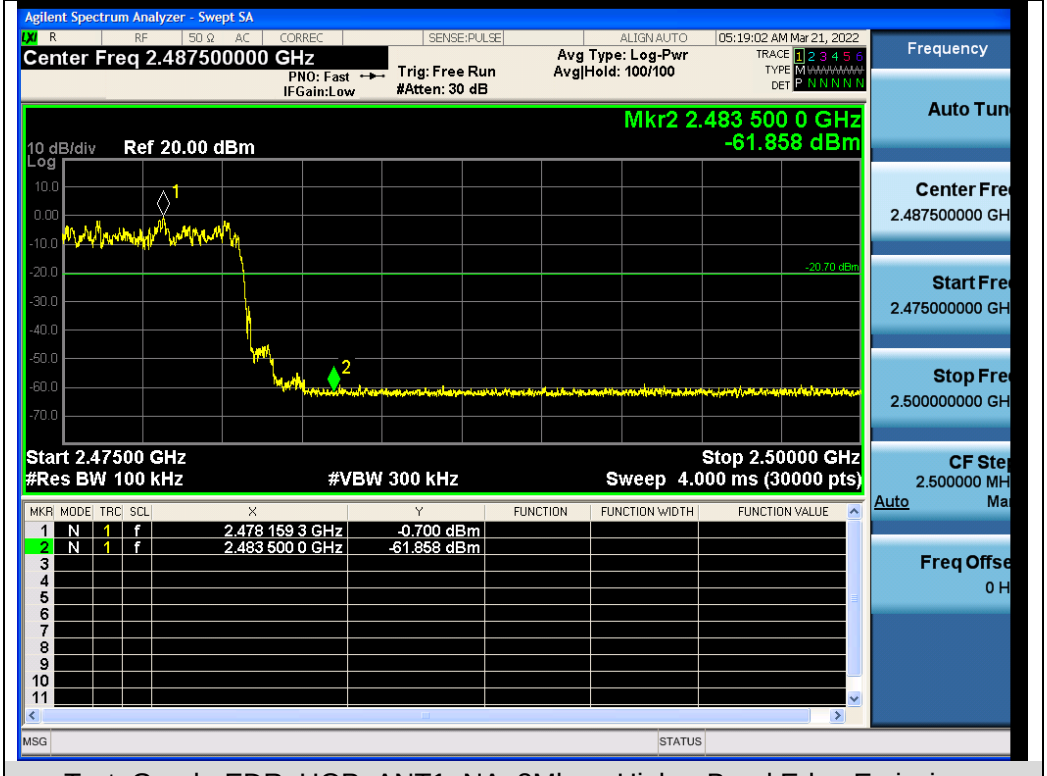


Test_Graph_EDR_ANT1_2402_3Mbps_Lower Band Edge Emissions

Test_Graph_EDR_ANT1_2480_3Mbps_Higher Band Edge Emissions

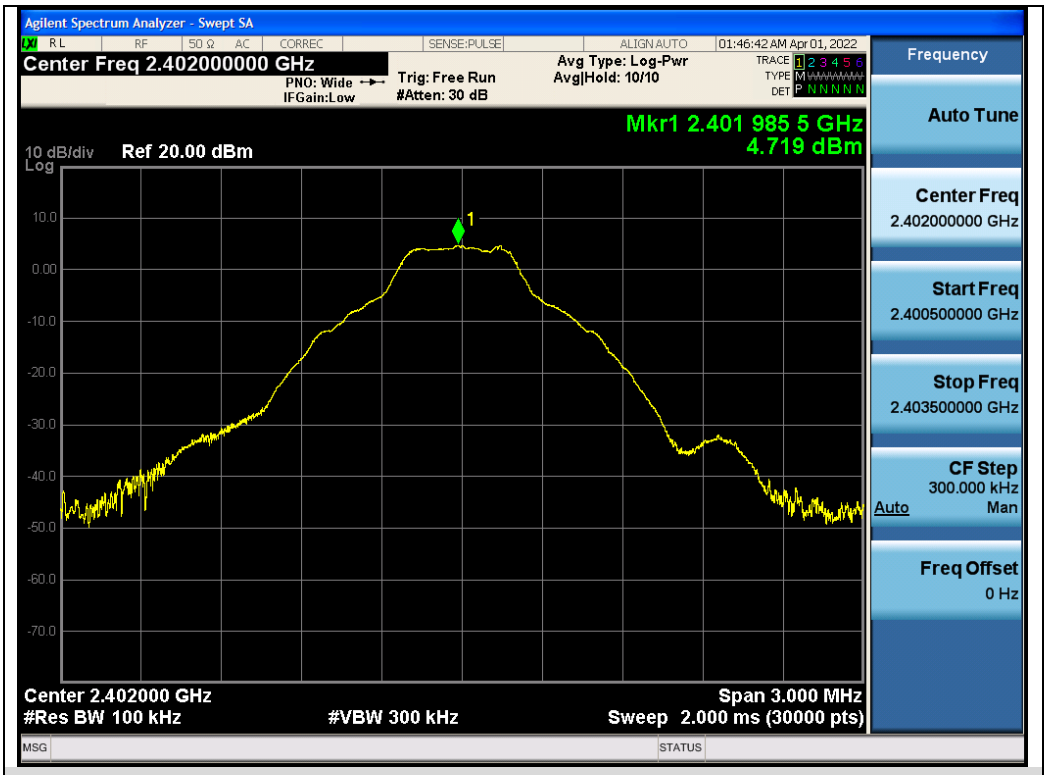


Test_Graph_EDR_HOP_ANT1_NA_3Mbps_Lower Band Edge Emissions

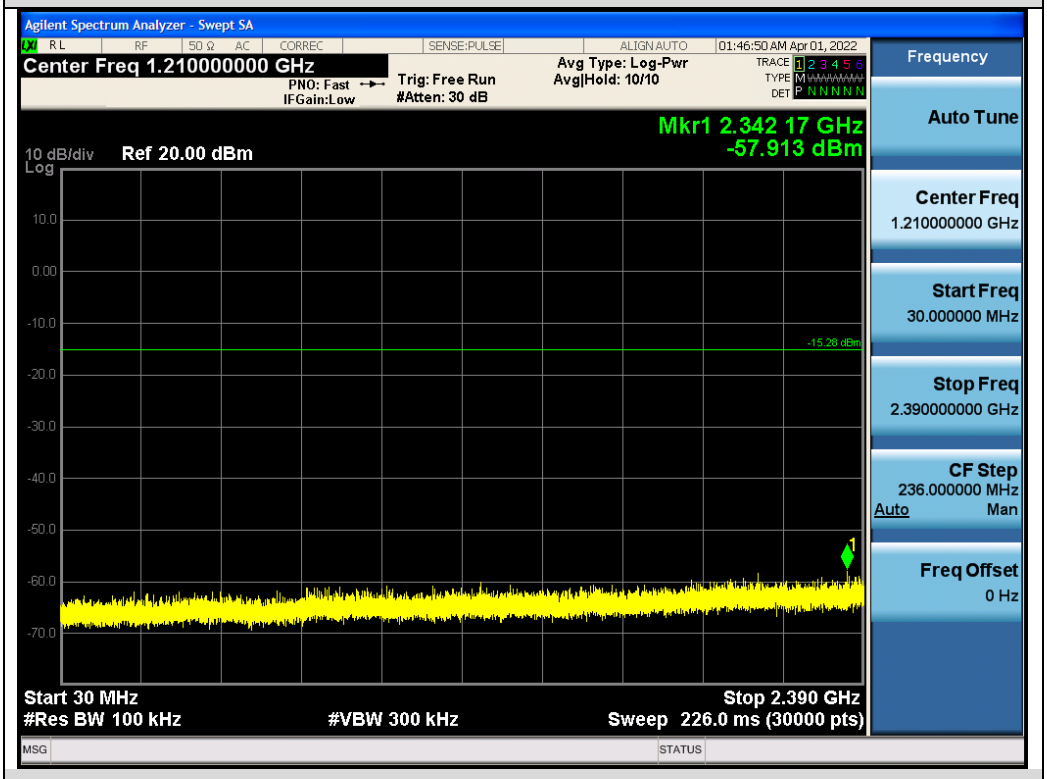


Test_Graph_EDR_HOP_ANT1_NA_3Mbps_Higher Band Edge Emissions

Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands



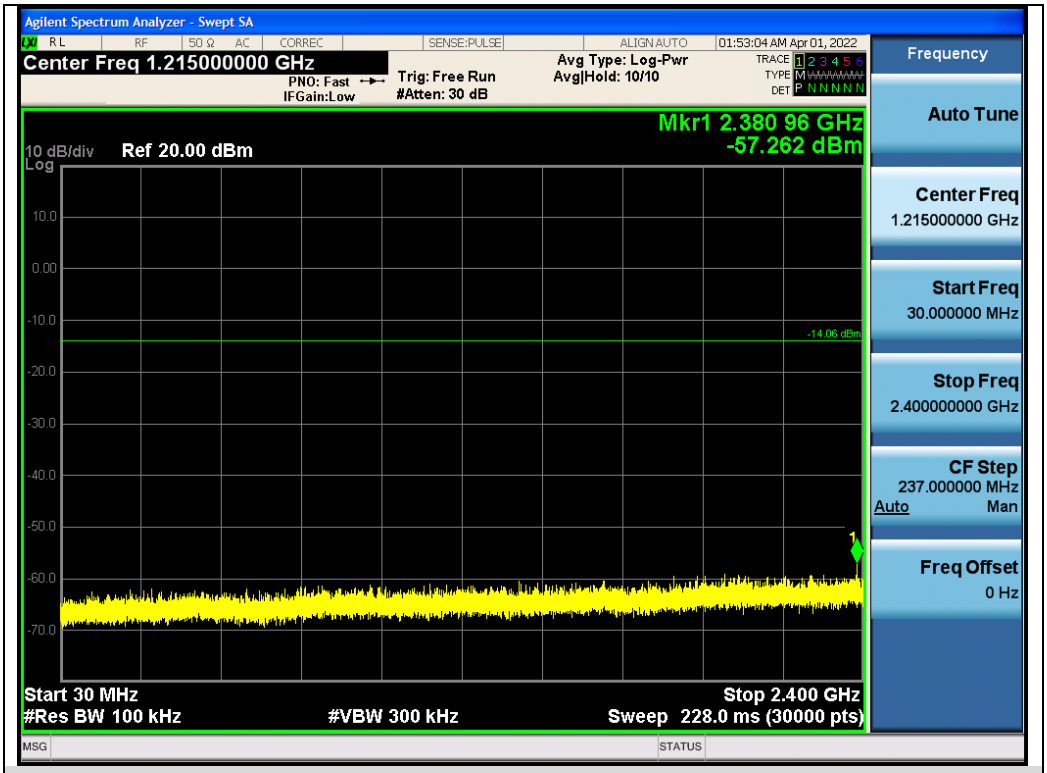
Test_Graph_BR_ANT2_2402_1Mbps_Reference Level



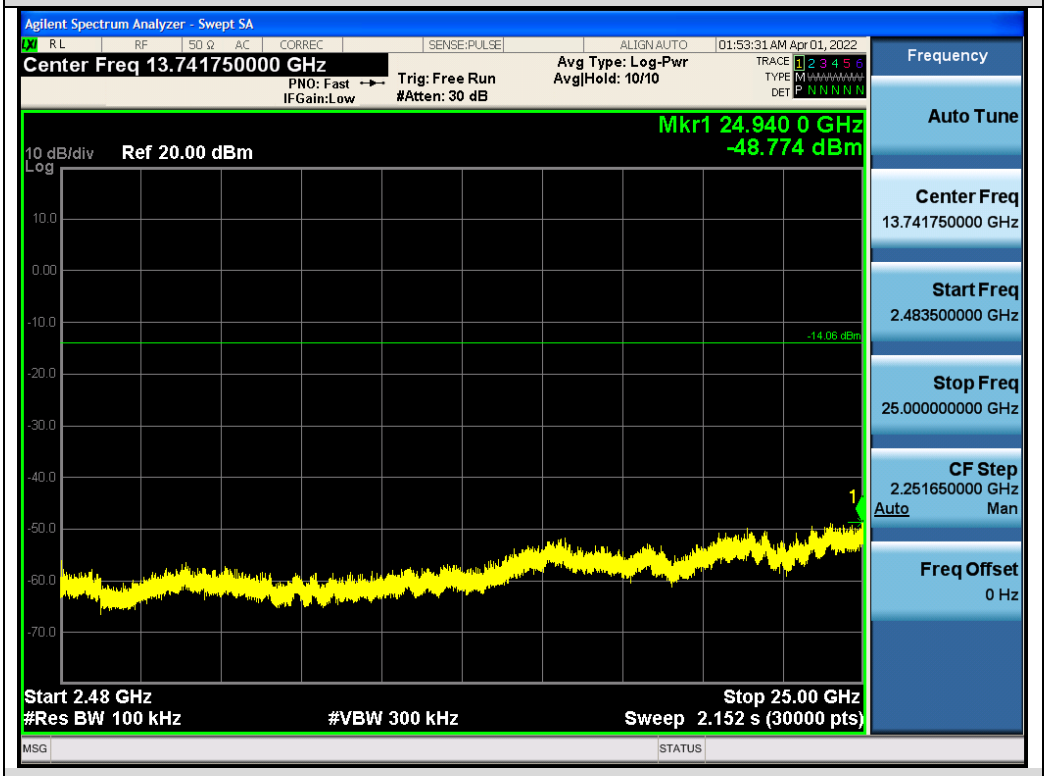
Test_Graph_BR_ANT2_2402_1Mbps_Lower Band Emissions

Test_Graph_BR_ANT2_2402_1Mbps_Higher Band Emissions

Test_Graph_BR_ANT2_2441_1Mbps_Reference Level

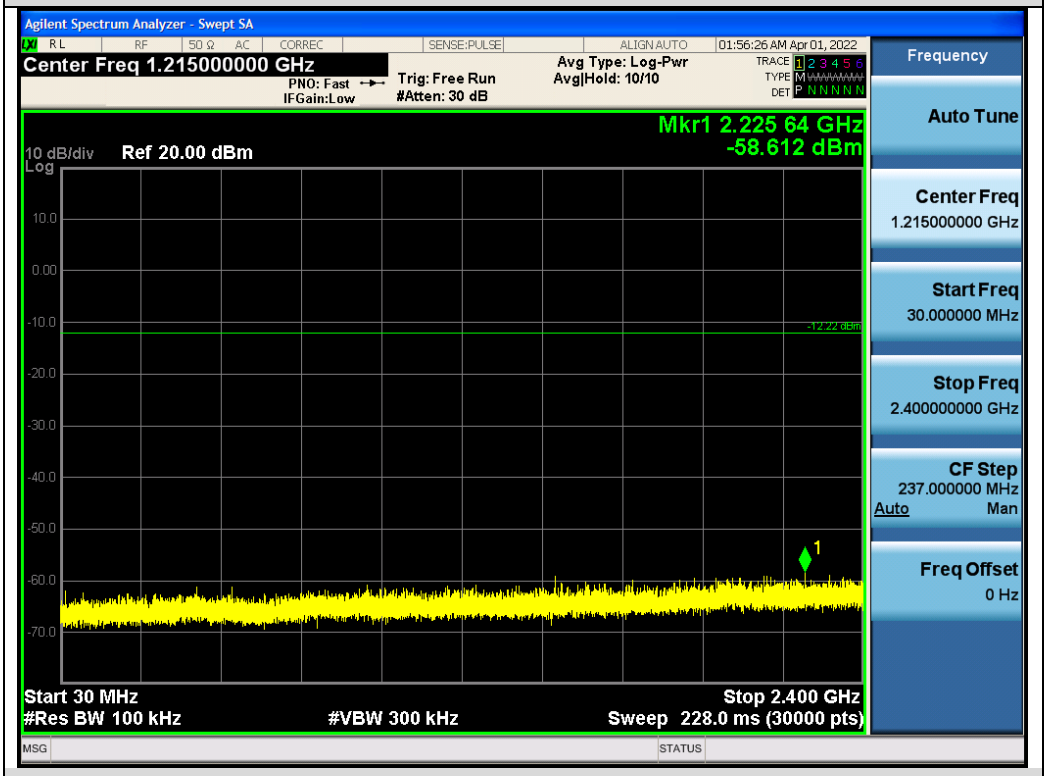


Test_Graph_BR_ANT2_2441_1Mbps_Lower Band Emissions



Test_Graph_BR_ANT2_2441_1Mbps_Higher Band Emissions

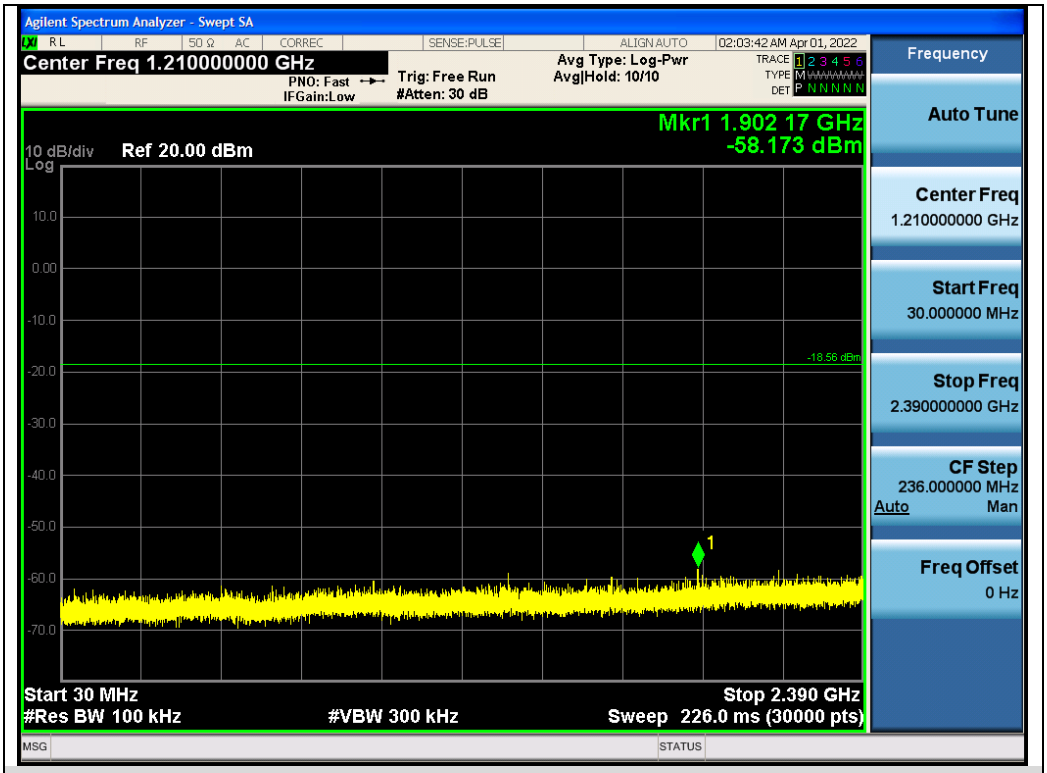
Test_Graph_BR_ANT2_2480_1Mbps_Reference Level



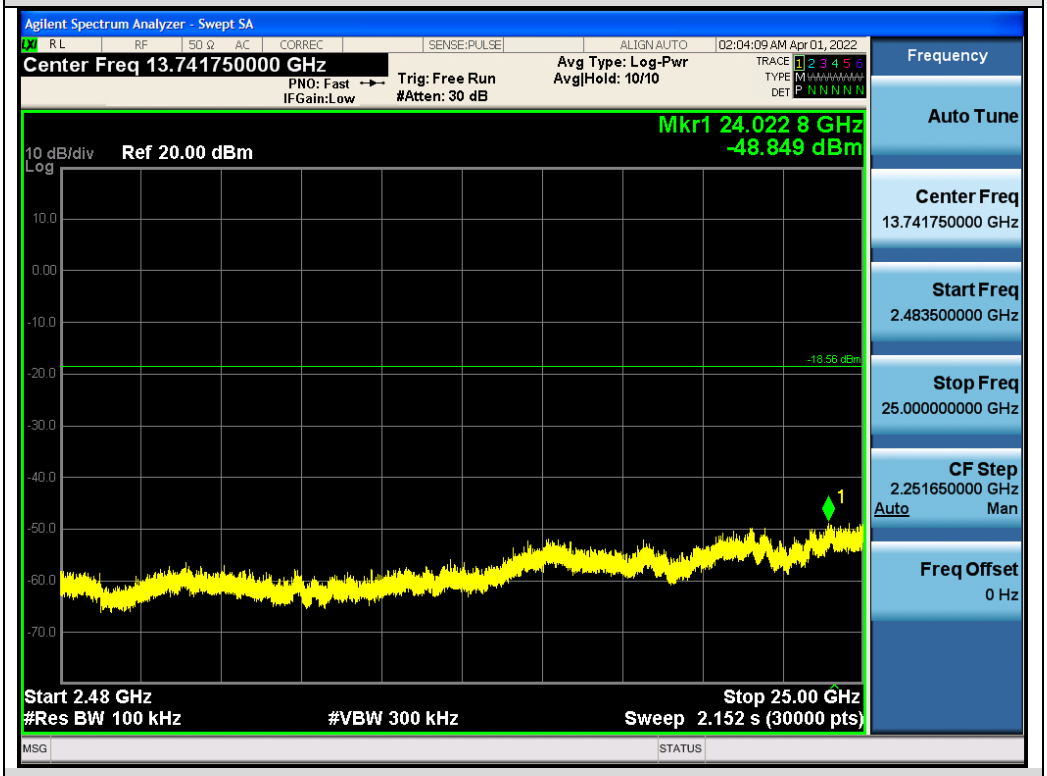
Test_Graph_BR_ANT2_2480_1Mbps_Lower Band Emissions

Test_Graph_BR_ANT2_2480_1Mbps_Higher Band Emissions

Test_Graph_EDR_ANT2_2402_2Mbps_Reference Level

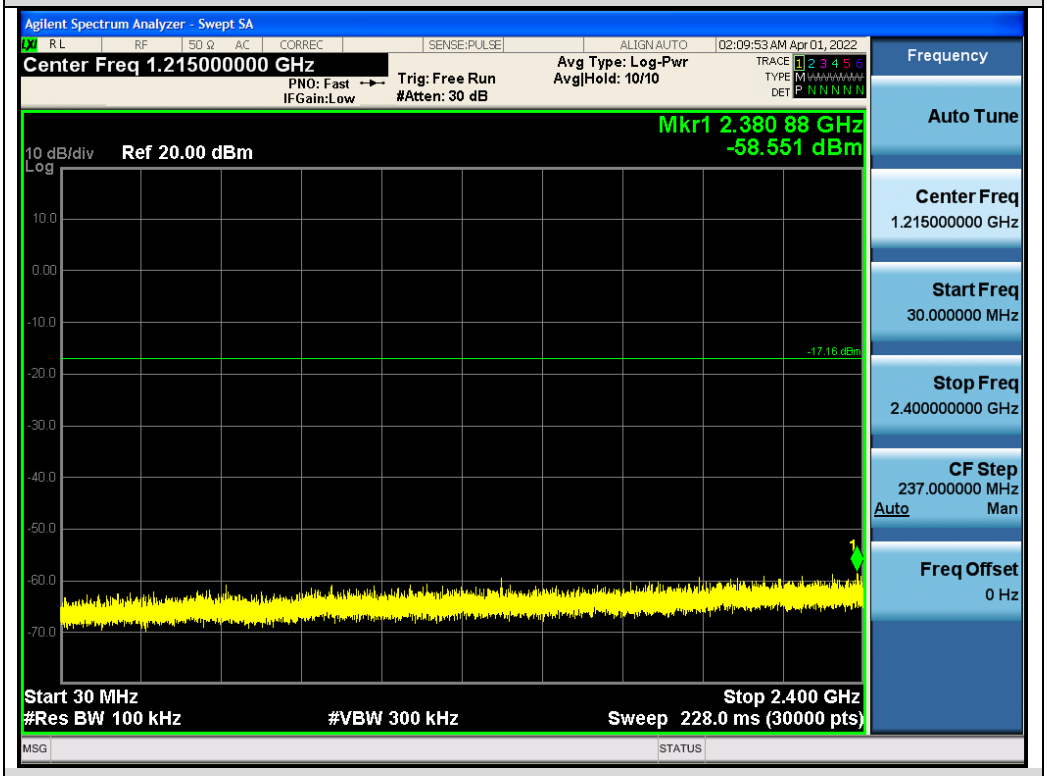


Test_Graph_EDR_ANT2_2402_2Mbps_Lower Band Emissions

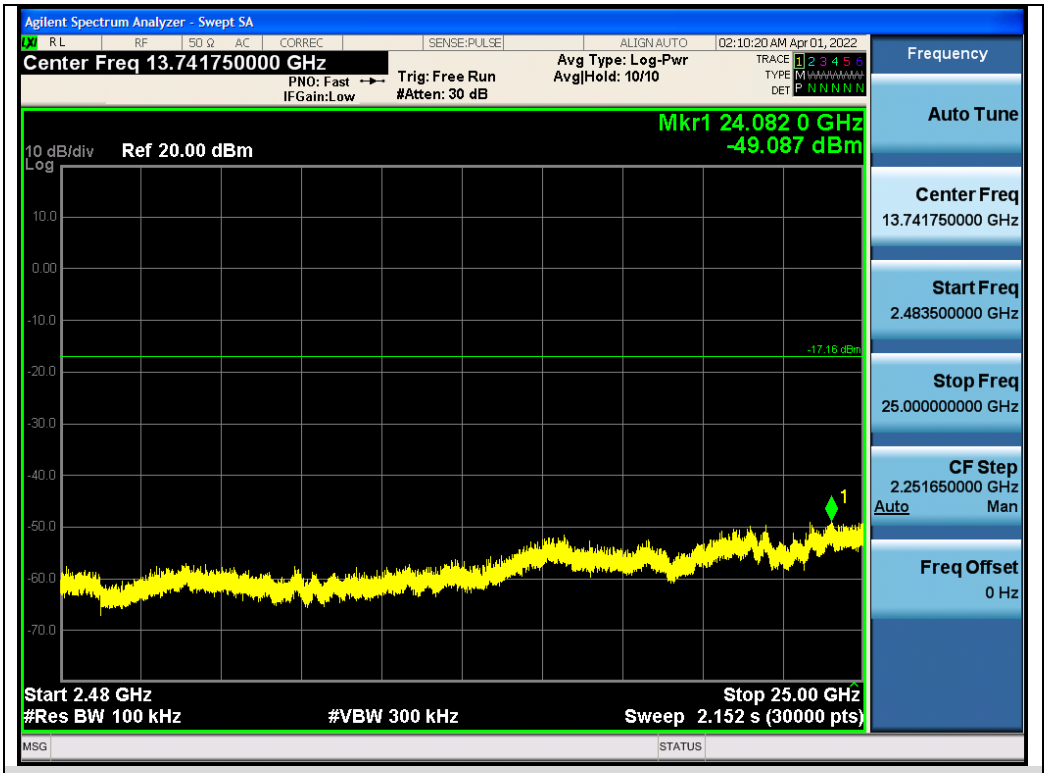


Test_Graph_EDR_ANT2_2402_2Mbps_Higher Band Emissions

Test_Graph_EDR_ANT2_2441_2Mbps_Reference Level

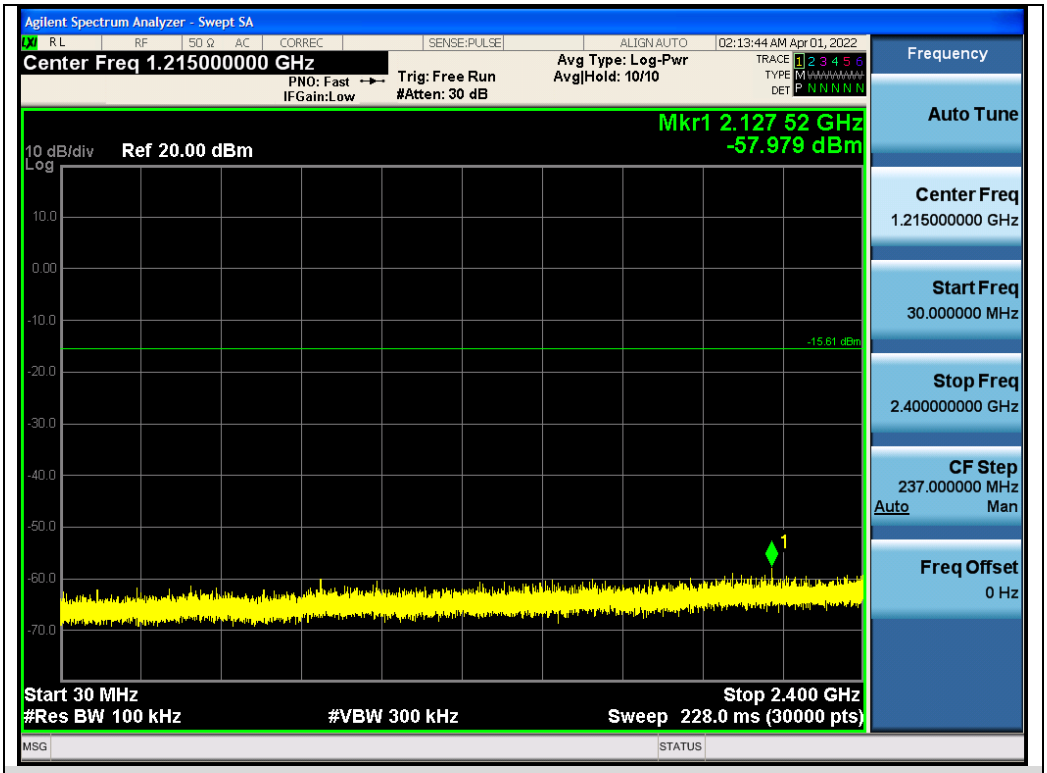


Test_Graph_EDR_ANT2_2441_2Mbps_Lower Band Emissions

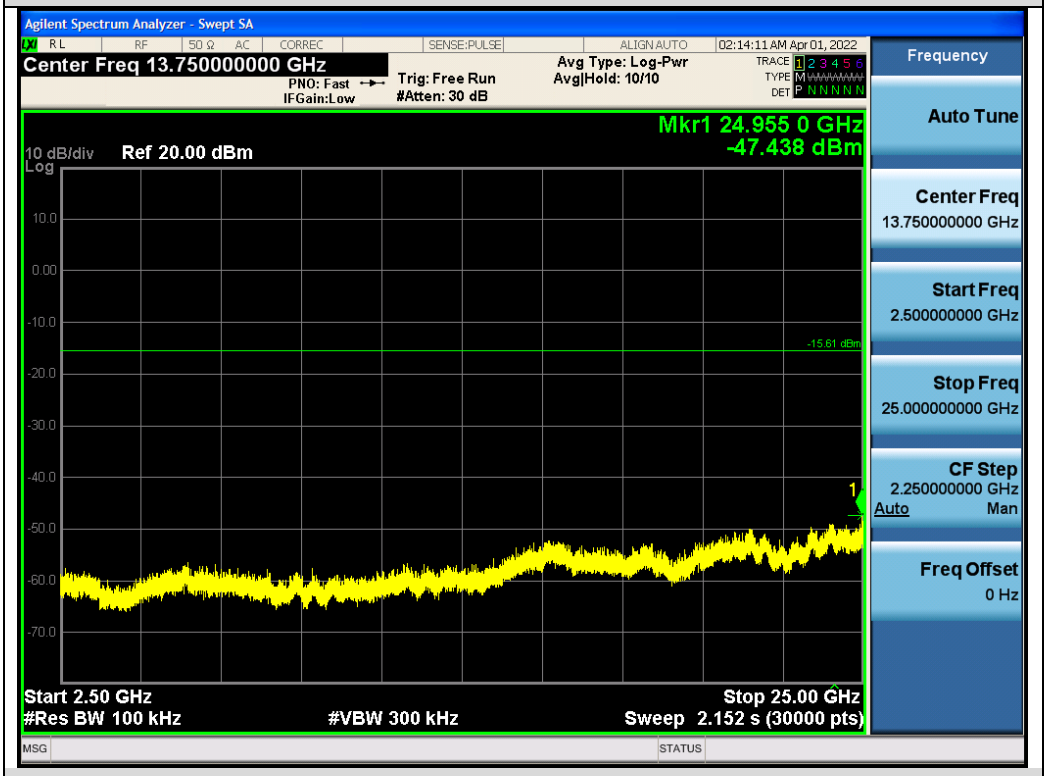


Test_Graph_EDR_ANT2_2441_2Mbps_Higher Band Emissions

Test_Graph_EDR_ANT2_2480_2Mbps_Reference Level

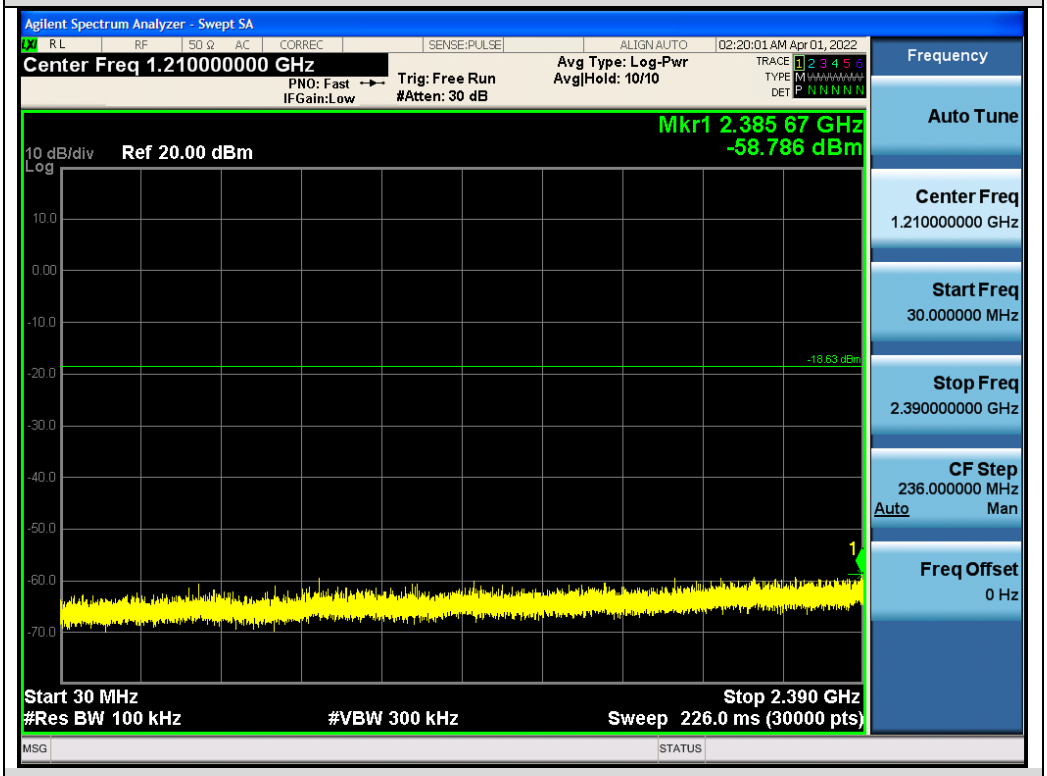


Test_Graph_EDR_ANT2_2480_2Mbps_Lower Band Emissions

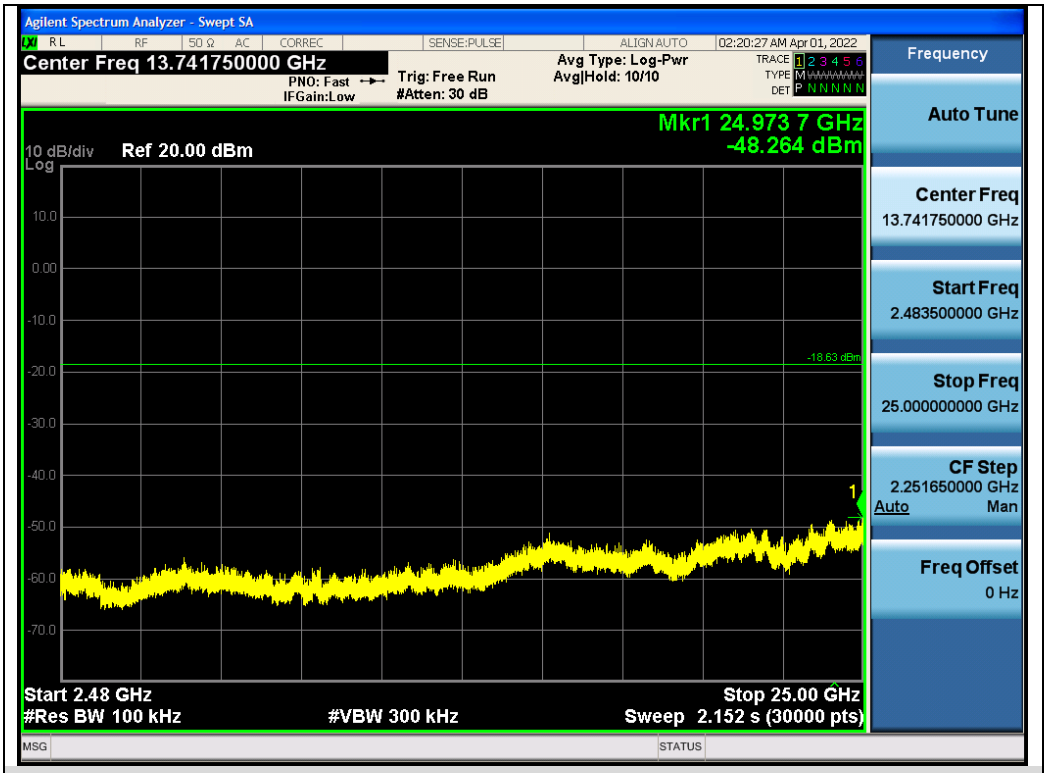


Test_Graph_EDR_ANT2_2480_2Mbps_Higher Band Emissions

Test_Graph_EDR_ANT2_2402_3Mbps_Reference Level

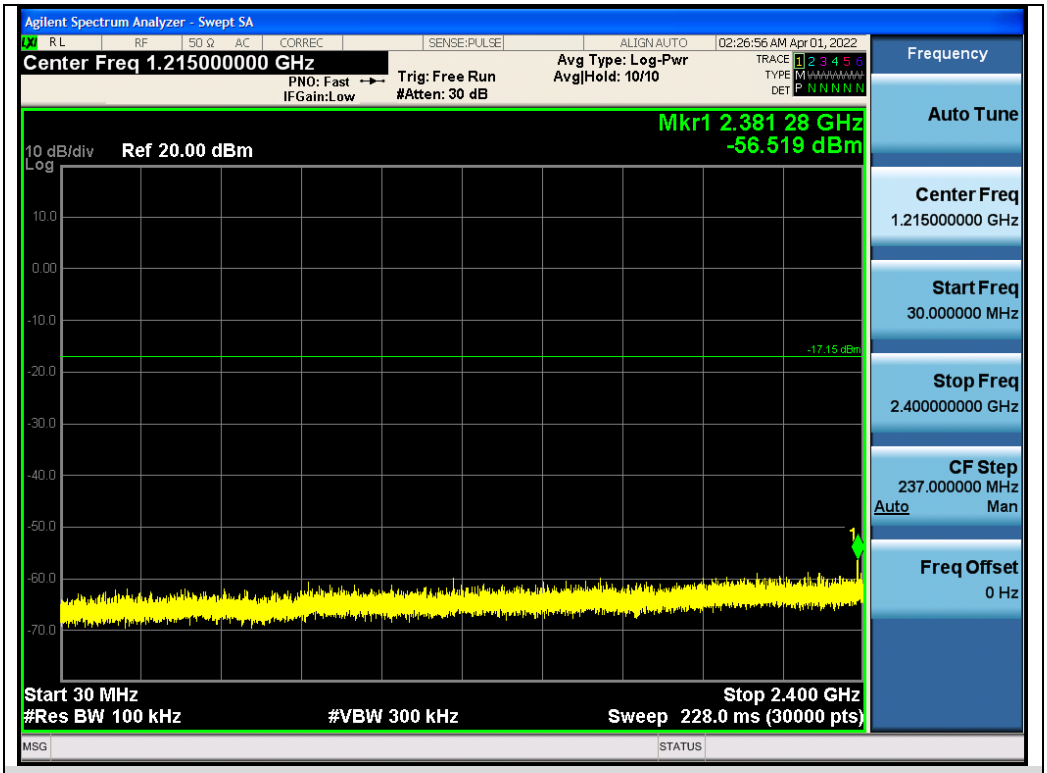


Test_Graph_EDR_ANT2_2402_3Mbps_Lower Band Emissions

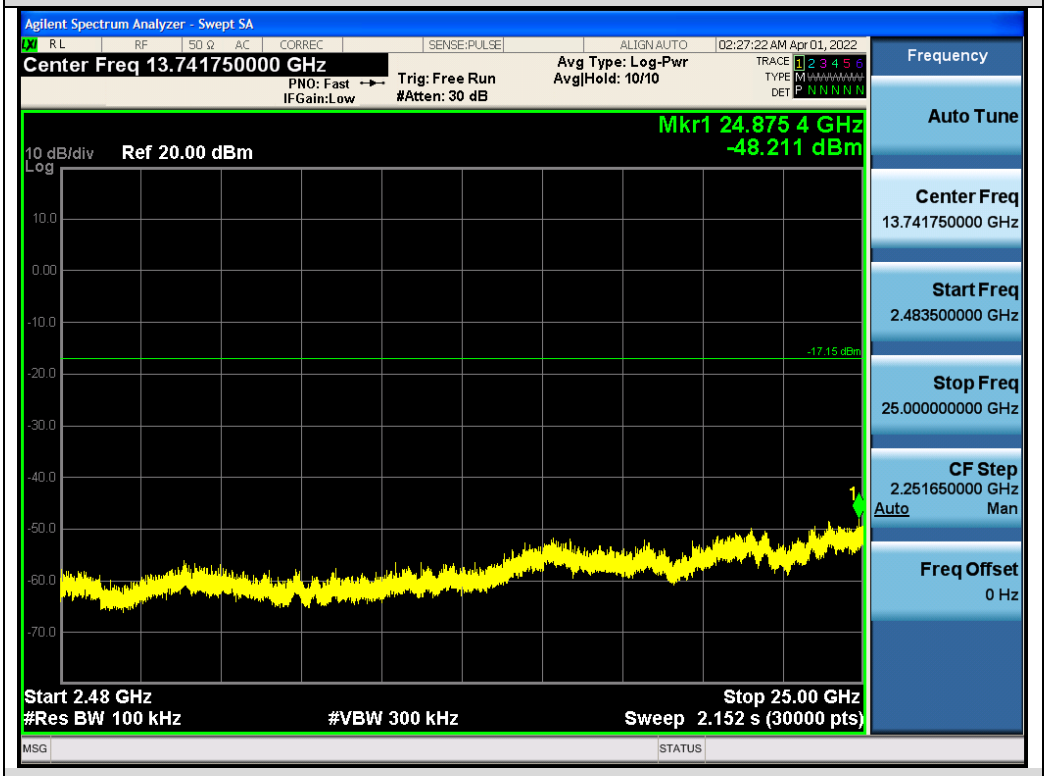


Test_Graph_EDR_ANT2_2402_3Mbps_Higher Band Emissions

Test_Graph_EDR_ANT2_2441_3Mbps_Reference Level

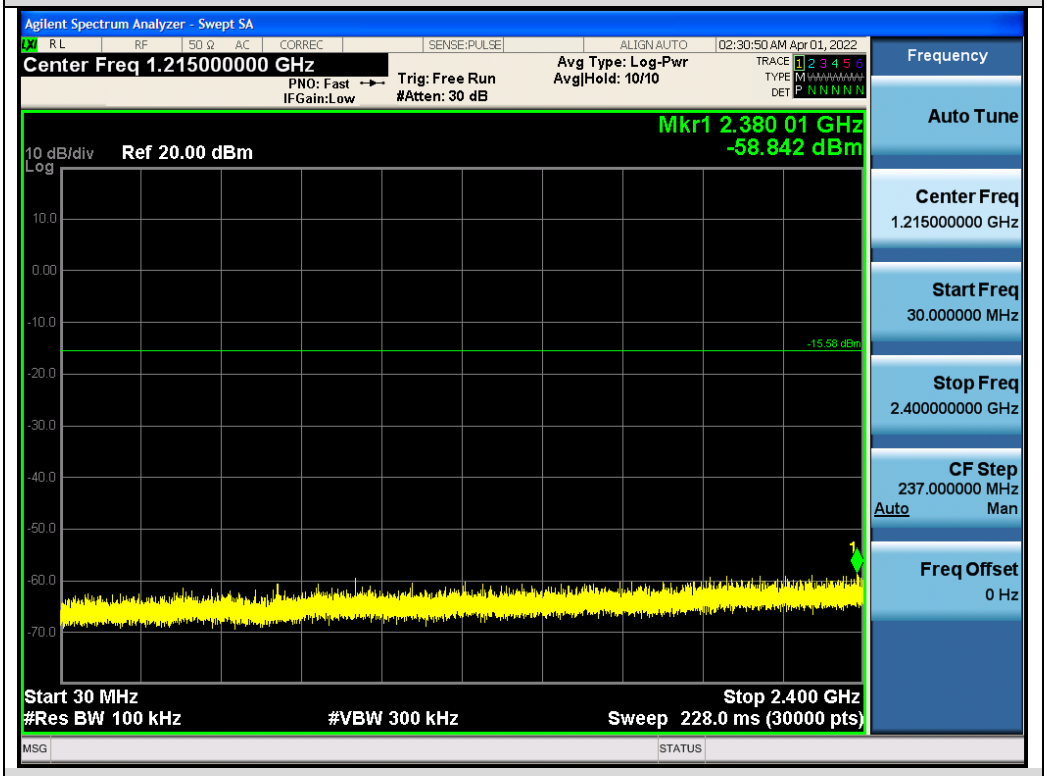


Test_Graph_EDR_ANT2_2441_3Mbps_Lower Band Emissions

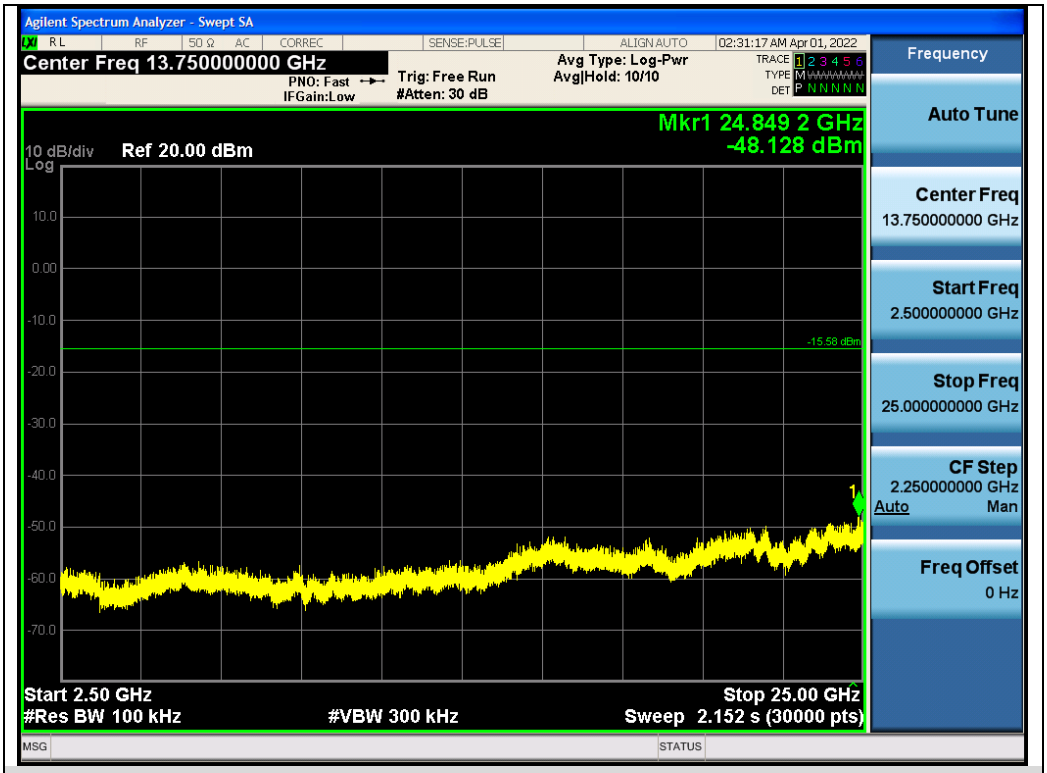


Test_Graph_EDR_ANT2_2441_3Mbps_Higher Band Emissions

Test_Graph_EDR_ANT2_2480_3Mbps_Reference Level

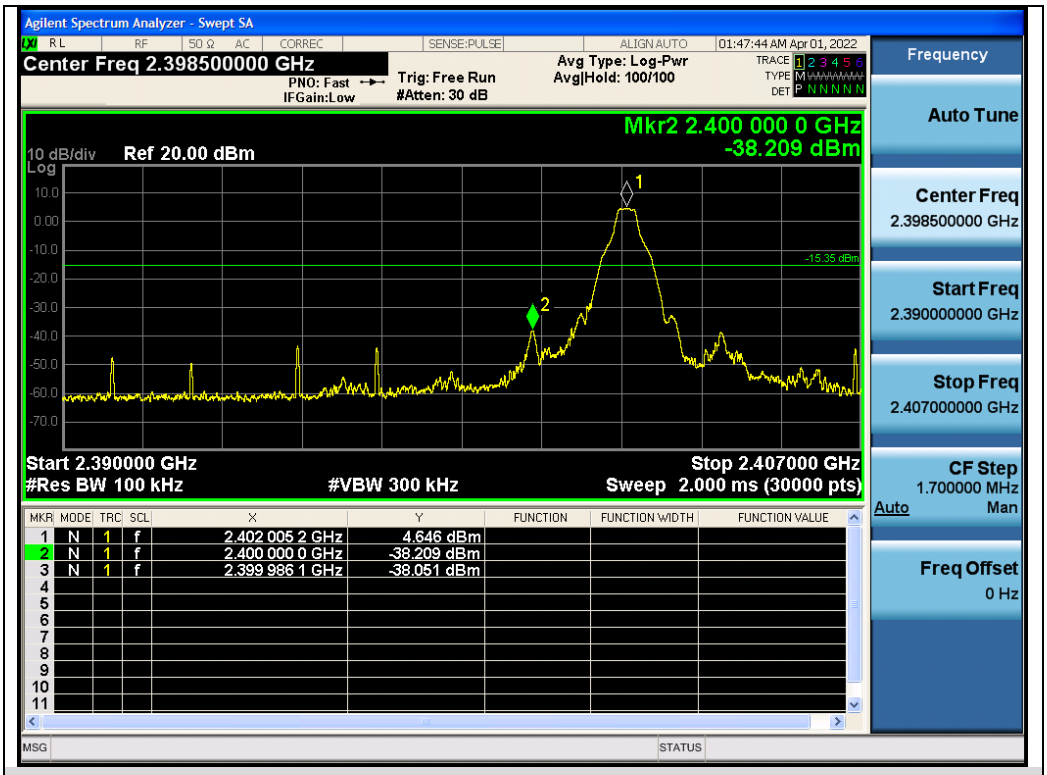


Test_Graph_EDR_ANT2_2480_3Mbps_Lower Band Emissions

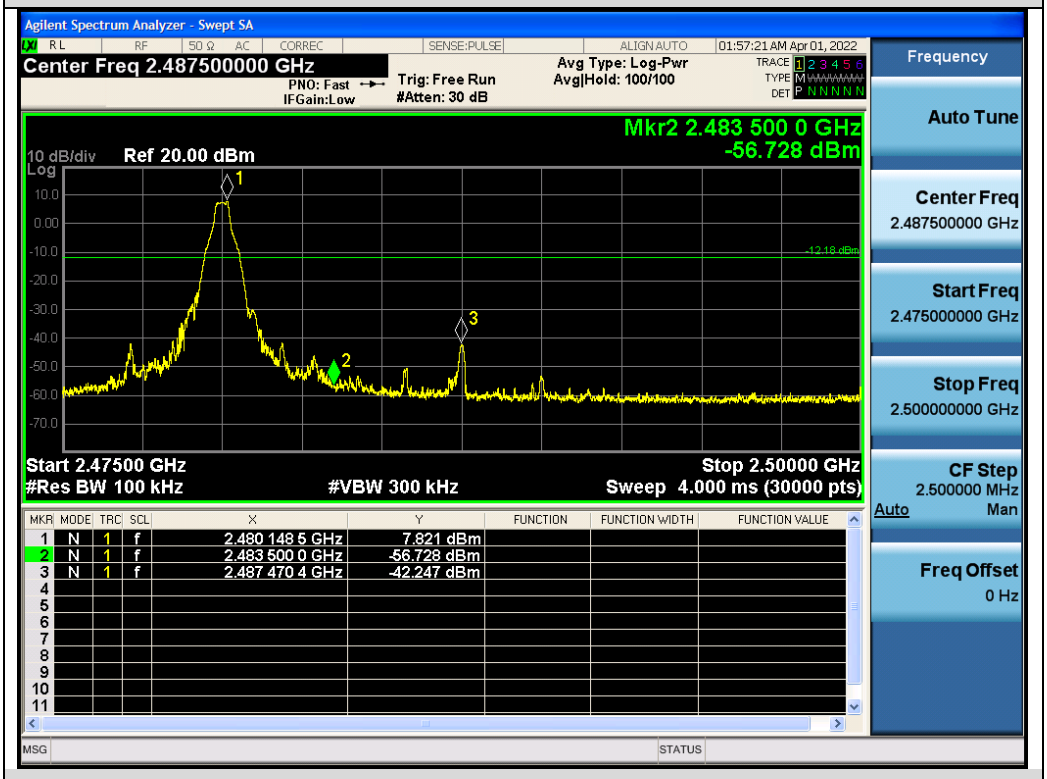


Test_Graph_EDR_ANT2_2480_3Mbps_Higher Band Emissions

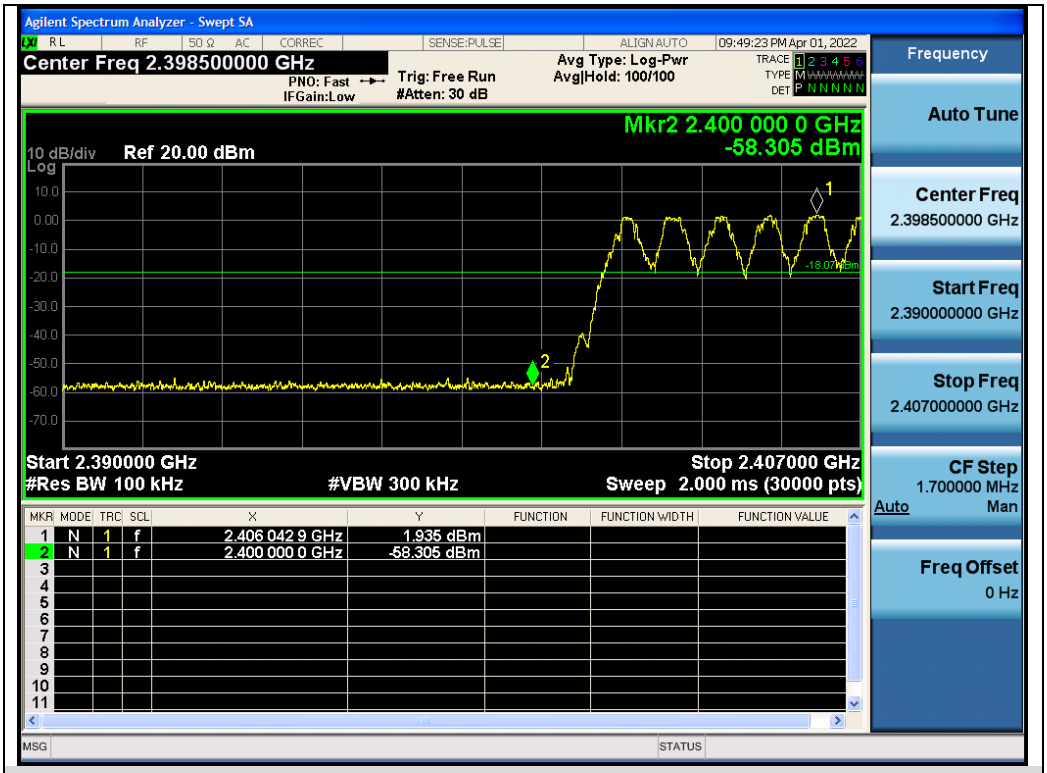
Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands



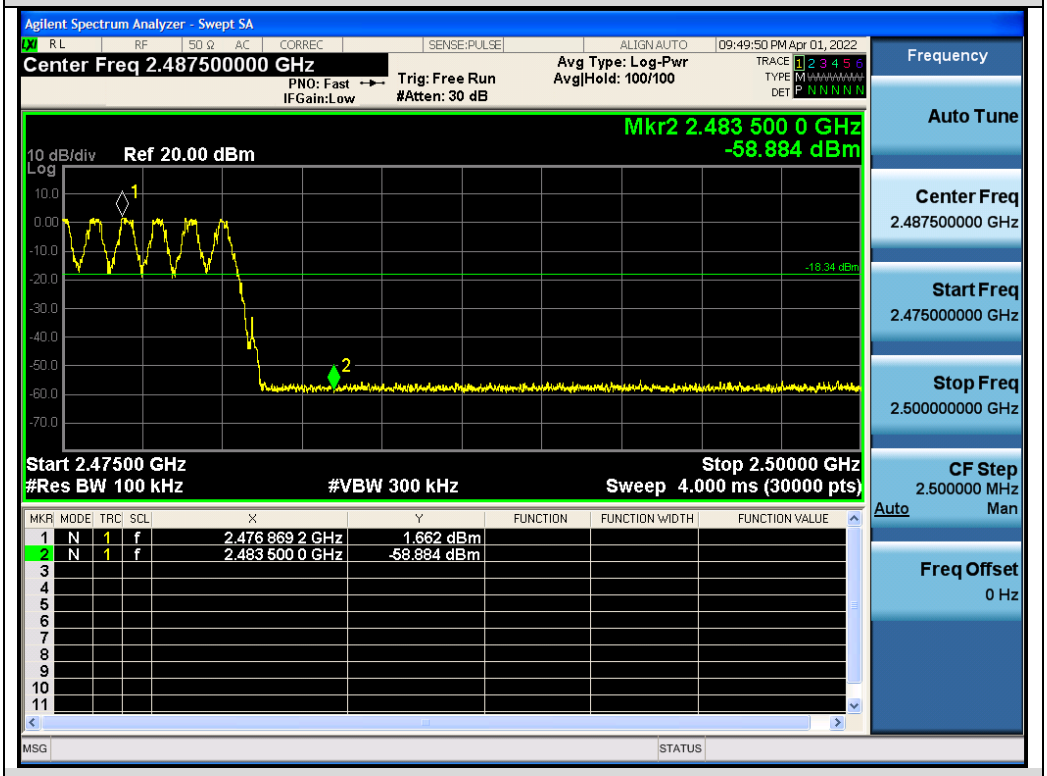
Test_Graph_BR_ANT2_2402_1Mbps_Lower Band Edge Emissions



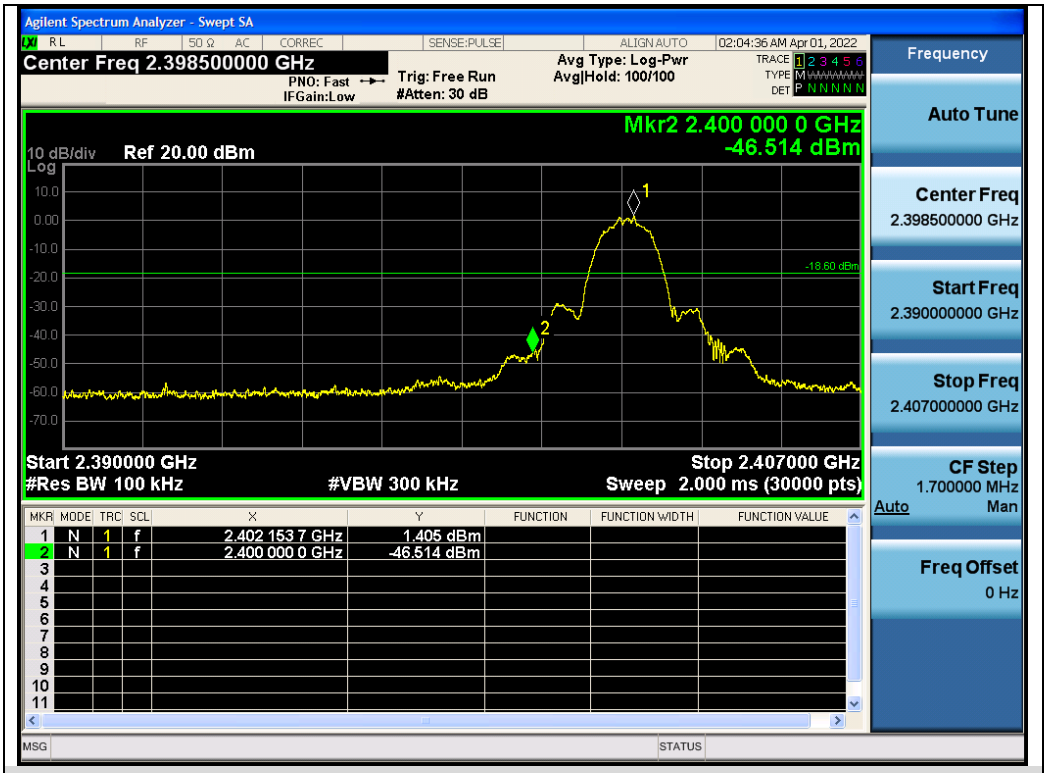
Test_Graph_BR_ANT2_2480_1Mbps_Higher Band Edge Emissions



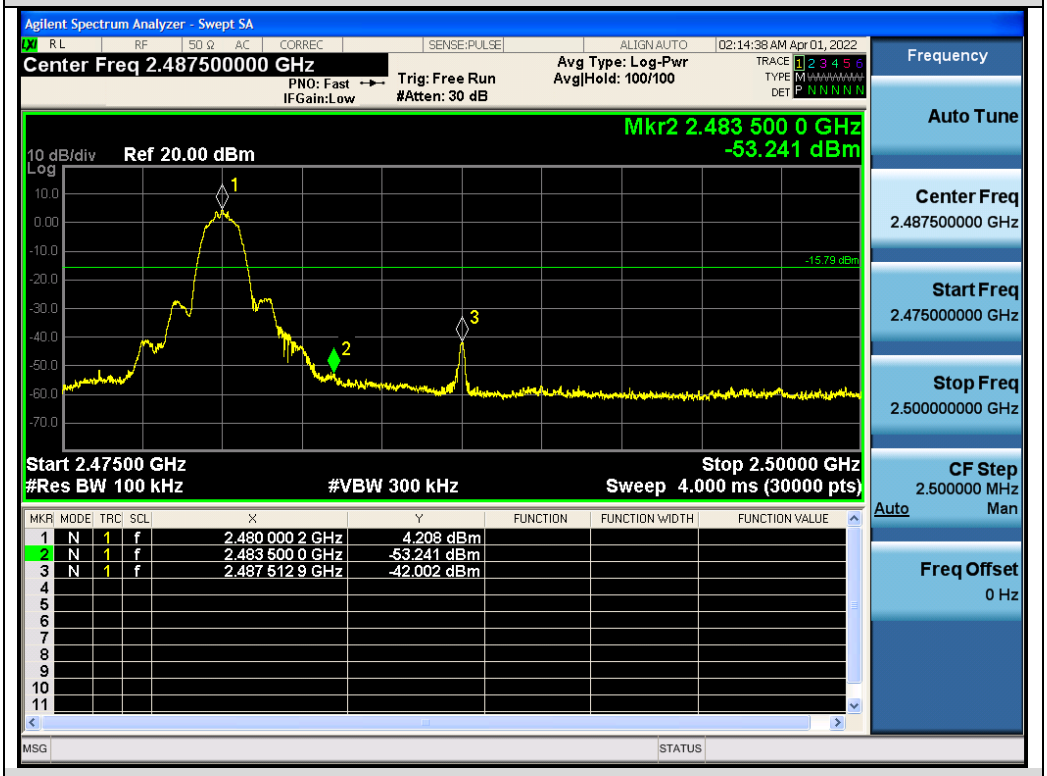
Test_Graph_BR_HOP_ANT2_NA_1Mbps_Lower Band Edge Emissions



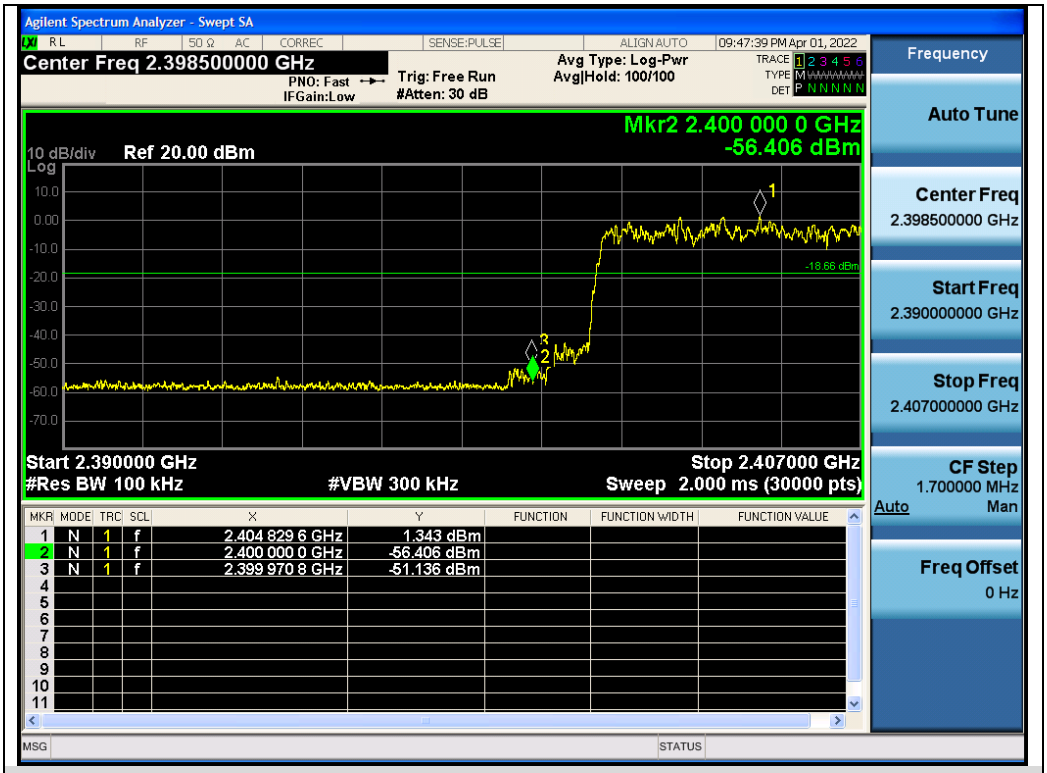
Test_Graph_BR_HOP_ANT2_NA_1Mbps_Higher Band Edge Emissions



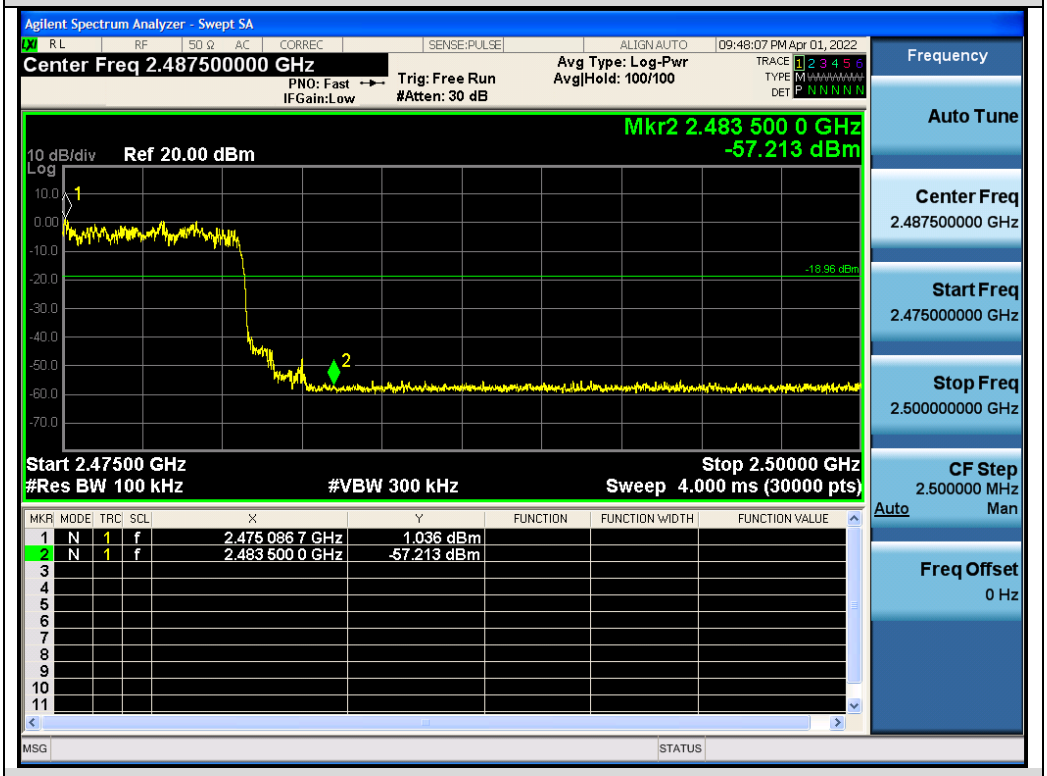
Test_Graph_EDR_ANT2_2402_2Mbps_Lower Band Edge Emissions



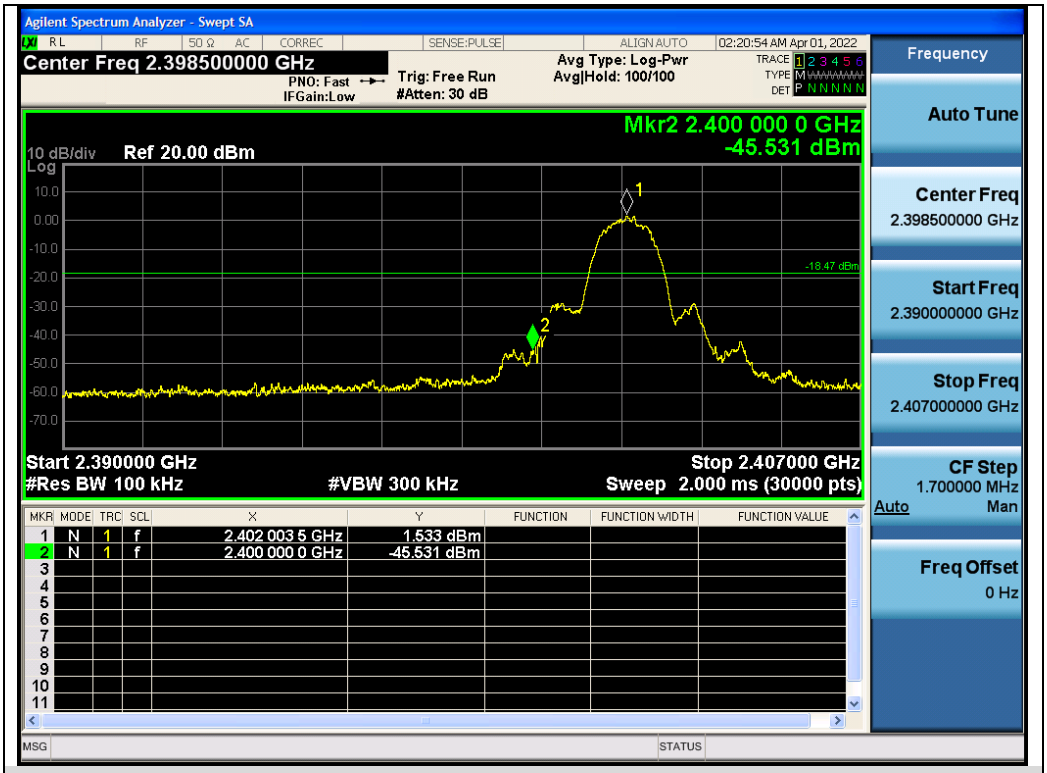
Test_Graph_EDR_ANT2_2480_2Mbps_Higher Band Edge Emissions



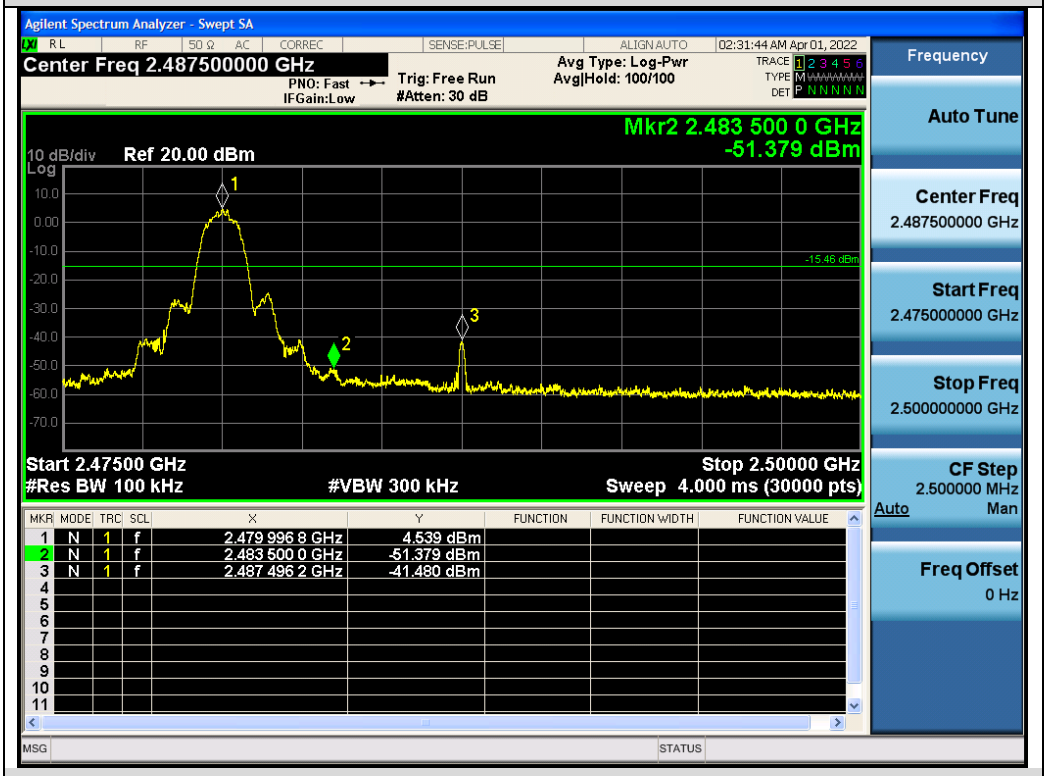
Test_Graph_EDR_HOP_ANT2_NA_2Mbps_Lower Band Edge Emissions



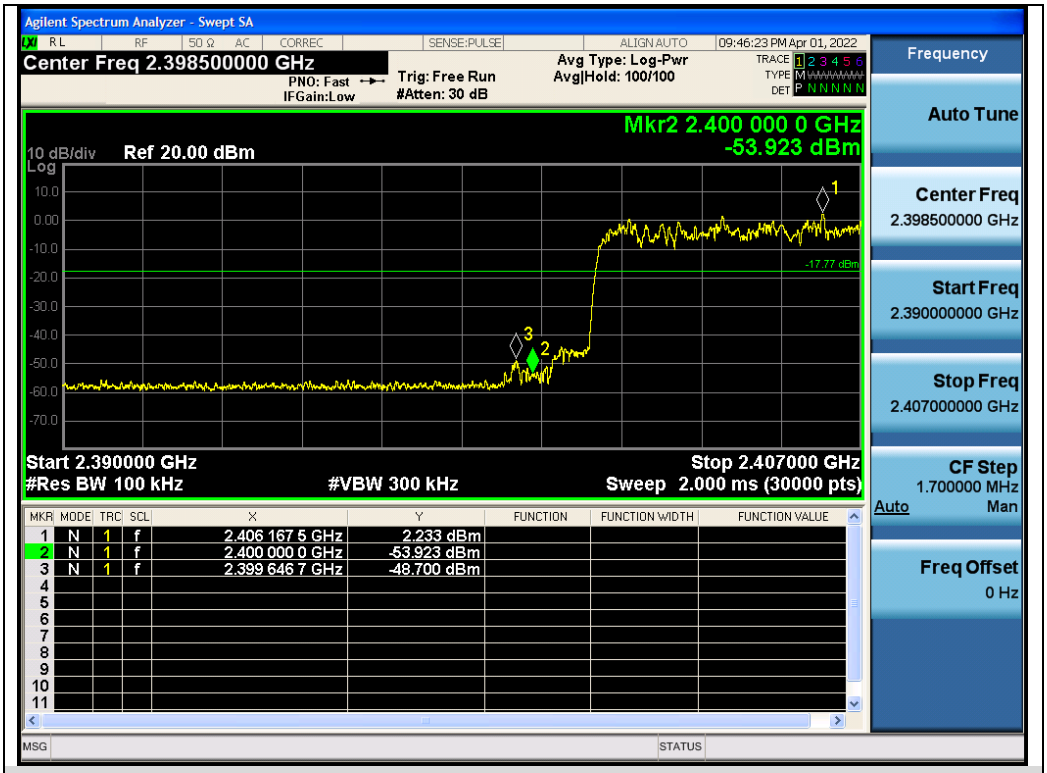
Test_Graph_EDR_HOP_ANT2_NA_2Mbps_Higher Band Edge Emissions



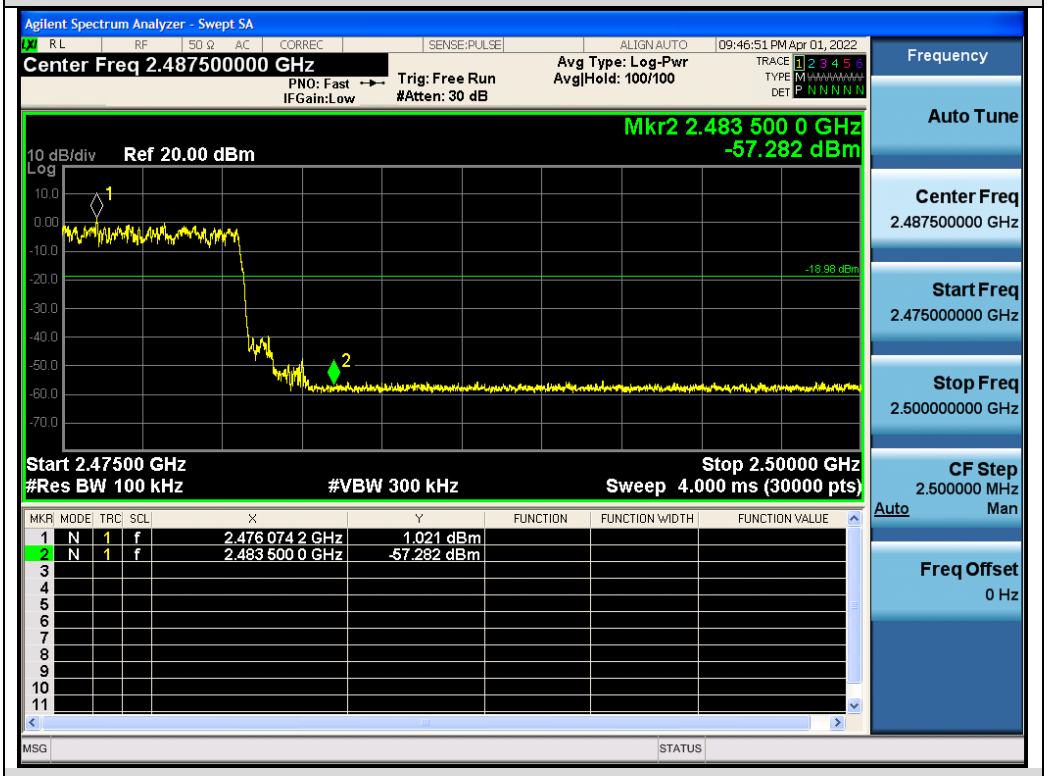
Test_Graph_EDR_ANT2_2402_3Mbps_Lower Band Edge Emissions



Test_Graph_EDR_ANT2_2480_3Mbps_Higher Band Edge Emissions



Test_Graph_EDR_HOP_ANT2_NA_3Mbps_Lower Band Edge Emissions



Test_Graph_EDR_HOP_ANT2_NA_3Mbps_Higher Band Edge Emissions

10. RADIATED EMISSION

10.1. 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.

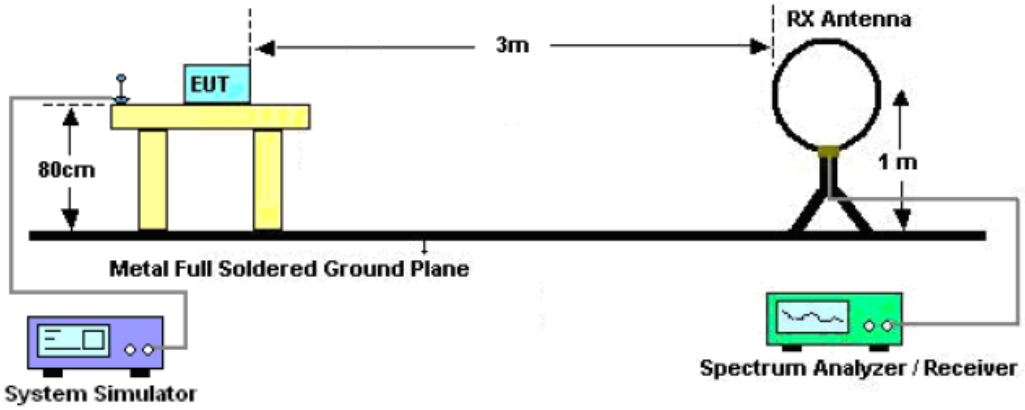
The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average

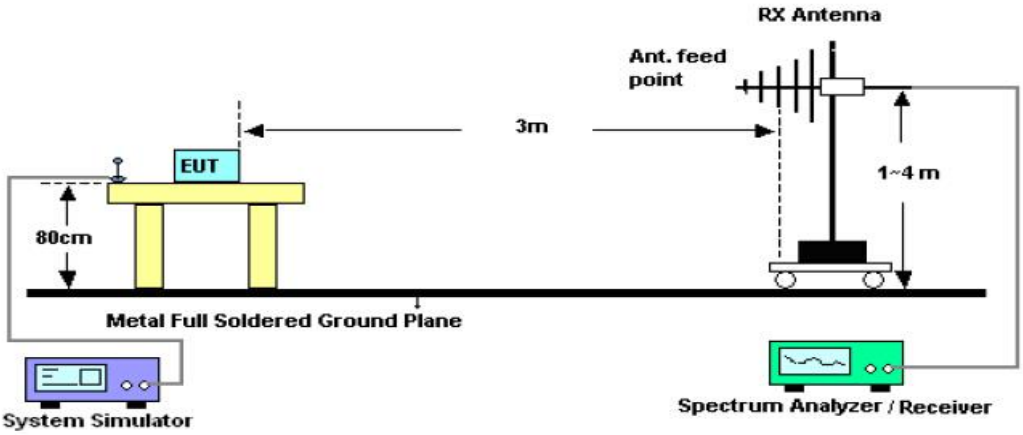
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

10.2. TEST SETUP

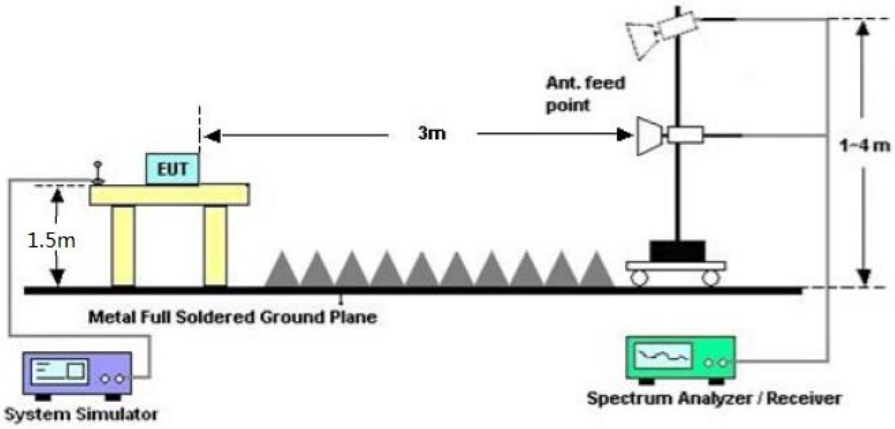
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



10.3. LIMITS AND MEASUREMENT RESULT

15.209 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.

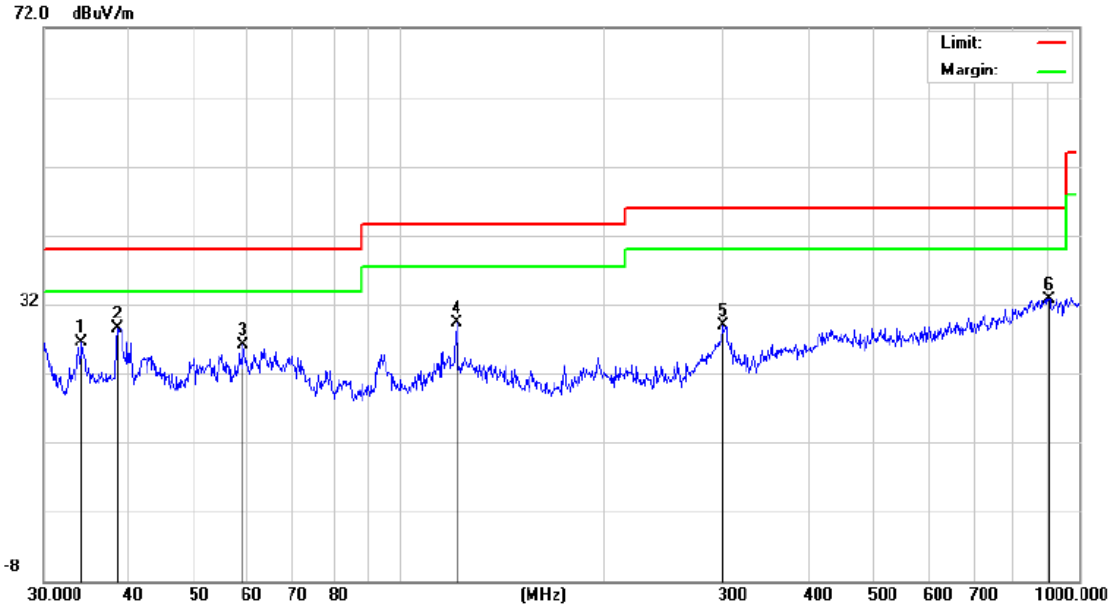
10.4. TEST RESULT

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

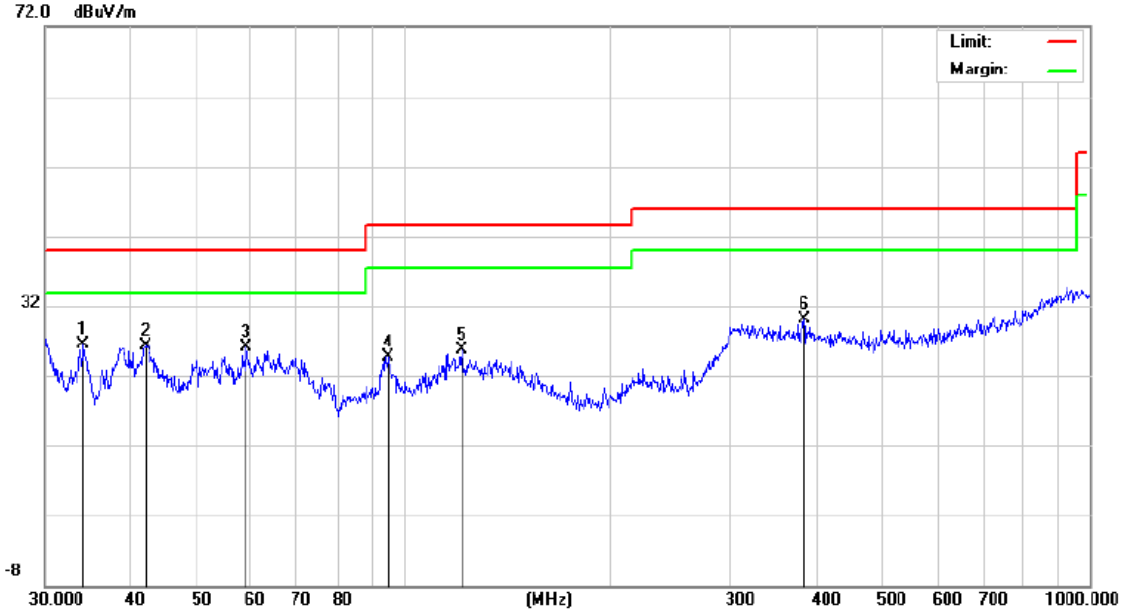
EUT	Mini PC	**Model Name**	GM11i7T
Temperature	25℃	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 3	**Antenna**	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		34.1561	13.15	13.29	26.44	40.00	-13.56	peak
2	*	38.4808	13.22	15.25	28.47	40.00	-11.53	peak
3		59.0251	8.88	17.21	26.09	40.00	-13.91	peak
4		121.5485	10.30	18.94	29.24	43.50	-14.26	peak
5		300.3672	4.41	24.44	28.85	46.00	-17.15	peak
6		903.3093	3.88	28.87	32.75	46.00	-13.25	peak

RESULT: PASS

EUT	Mini PC	Model Name	GM11i7T
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	34.1561	13.15	13.29	26.44	40.00	-13.56	peak
2		42.1542	10.43	15.80	26.23	40.00	-13.77	peak
3		59.0251	8.88	17.21	26.09	40.00	-13.91	peak
4		94.7601	8.92	15.83	24.75	43.50	-18.75	peak
5		121.5486	6.80	18.94	25.74	43.50	-17.76	peak
6		383.9318	6.28	23.80	30.08	46.00	-15.92	peak

Radiated emission above 1GHz

EUT	Mini PC	Model Name	GM11i7T
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.000	51.35	0.08	51.43	74.00	-22.57	peak
4804.000	43.33	0.08	43.41	54.00	-10.59	AVG
7206.000	49.17	2.21	51.38	74.00	-22.62	peak
7206.000	41.05	2.21	43.26	54.00	-10.74	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	Mini PC	Model Name	GM11i7T
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.000	50.89	0.08	50.97	74.00	-23.03	peak
4804.000	41.31	0.08	41.39	54.00	-12.61	AVG
7206.000	50.22	2.21	52.43	74.00	-21.57	peak
7206.000	39.58	2.21	41.79	54.00	-12.21	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	Mini PC	Model Name	GM11i7T
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4882.000	50.27	0.14	50.41	74.00	-23.59	peak
4882.000	39.12	0.14	39.26	54.00	-14.74	AVG
7323.000	49.52	2.36	51.88	74.00	-22.12	peak
7323.000	37.28	2.36	39.64	54.00	-14.36	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	Mini PC	Model Name	GM11i7T
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4882.000	49.37	0.14	49.51	74.00	-24.49	peak
4882.000	38.37	0.14	38.51	54.00	-15.49	AVG
7323.000	48.24	2.36	50.60	74.00	-23.40	peak
7323.000	38.53	2.36	40.89	54.00	-13.11	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	Mini PC	Model Name	GM11i7T
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.000	48.37	0.22	48.59	74.00	-25.41	peak
4960.000	39.12	0.22	39.34	54.00	-14.66	AVG
7440.000	48.56	2.64	51.20	74.00	-22.80	peak
7440.000	33.14	2.64	35.78	54.00	-18.22	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	Mini PC	Model Name	GM11i7T
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.000	49.51	0.22	49.73	74.00	-24.27	peak
4960.000	40.21	0.22	40.43	54.00	-13.57	AVG
7440.000	49.33	2.64	51.97	74.00	-22.03	peak
7440.000	34.51	2.64	37.15	54.00	-16.85	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RESULT: PASS

Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

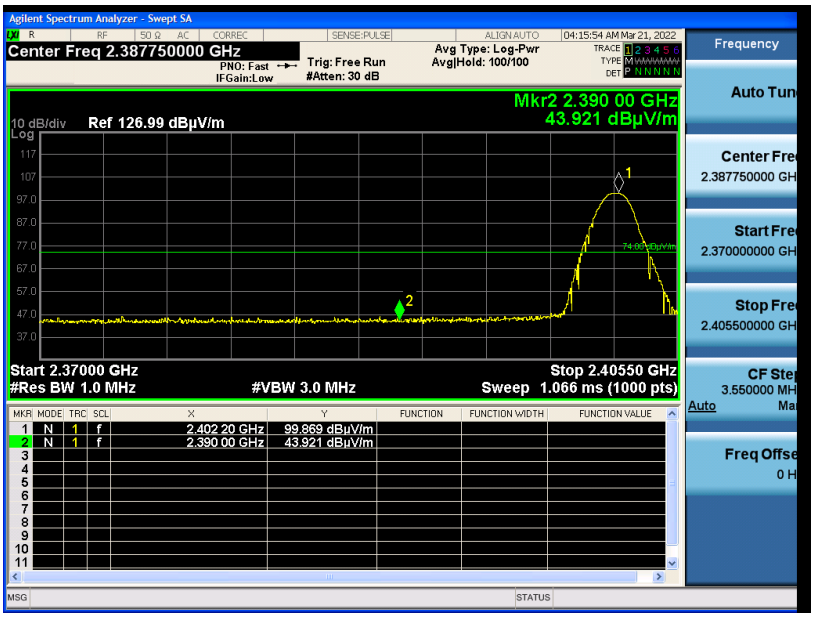
The “Factor” value can be calculated automatically by software of measurement system.

All adapters are tested, All antennas are tested. All test modes had been tested. The Ant 1 GFSK modulation is the worst case and recorded in the report.

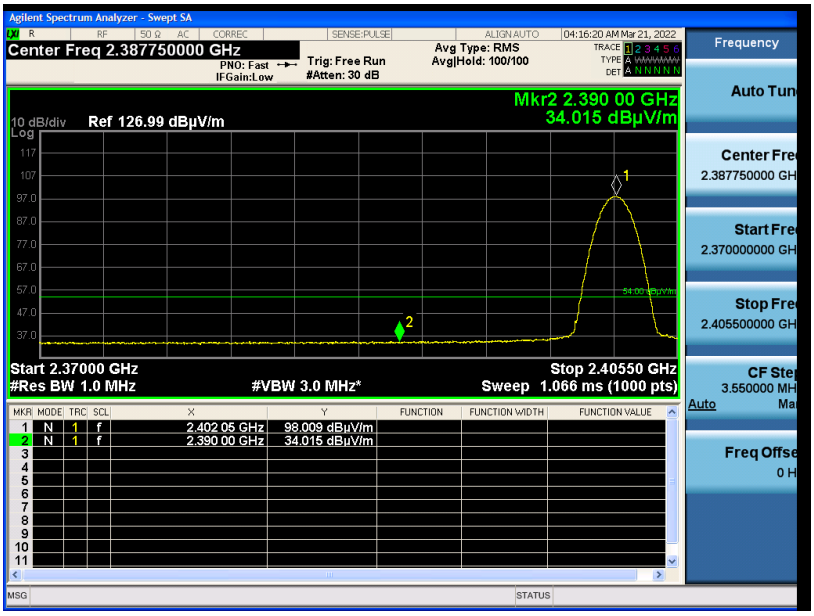
Test result for band edge emission at restricted bands-Ant 1

EUT	Mini PC	Model Name	GM11i7T
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: PASS