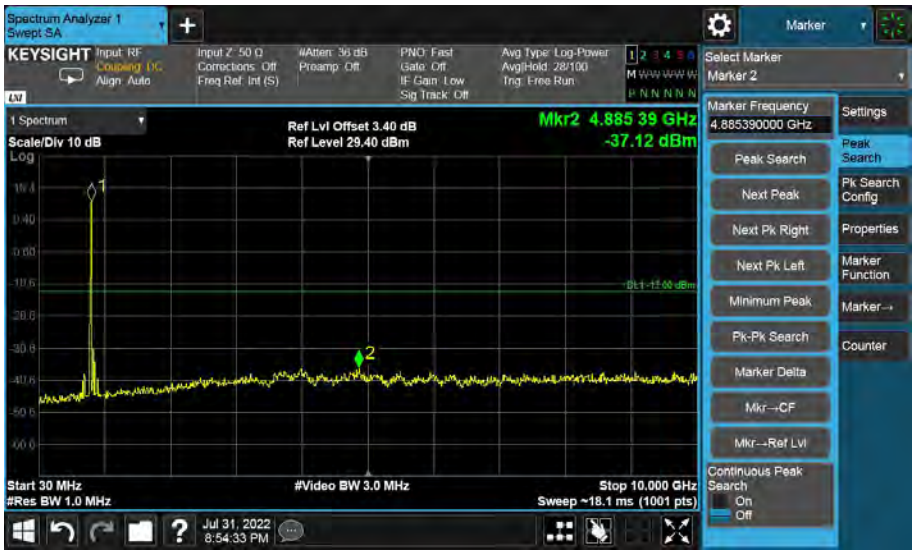
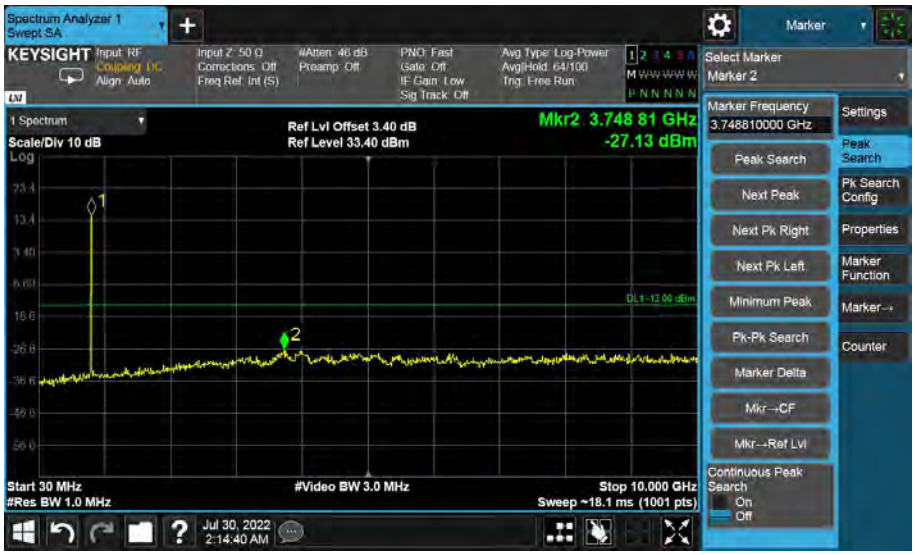
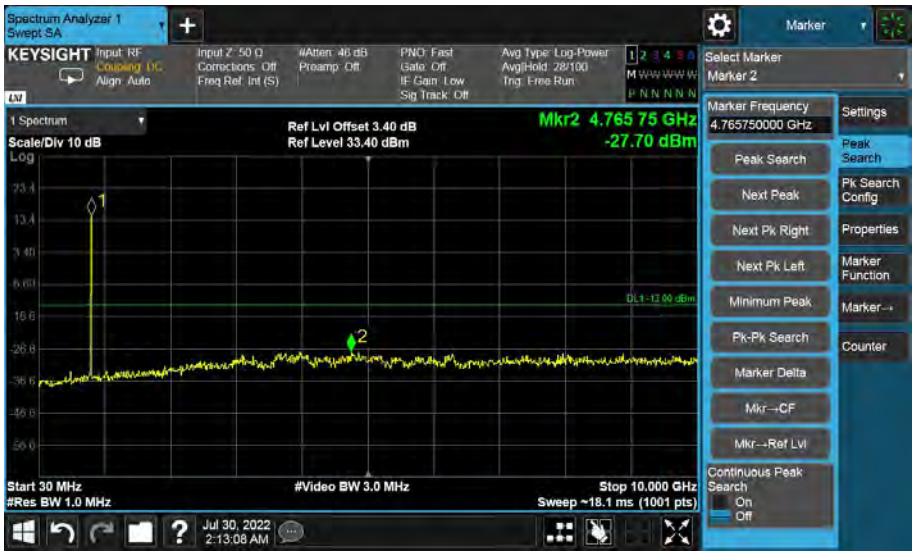


30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), BPSK, 1@0

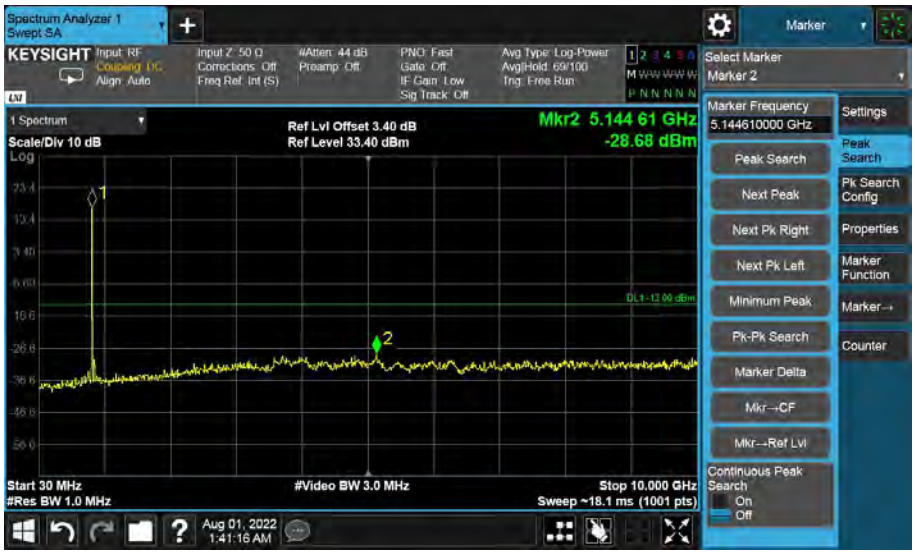


30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 1@0

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 12@0

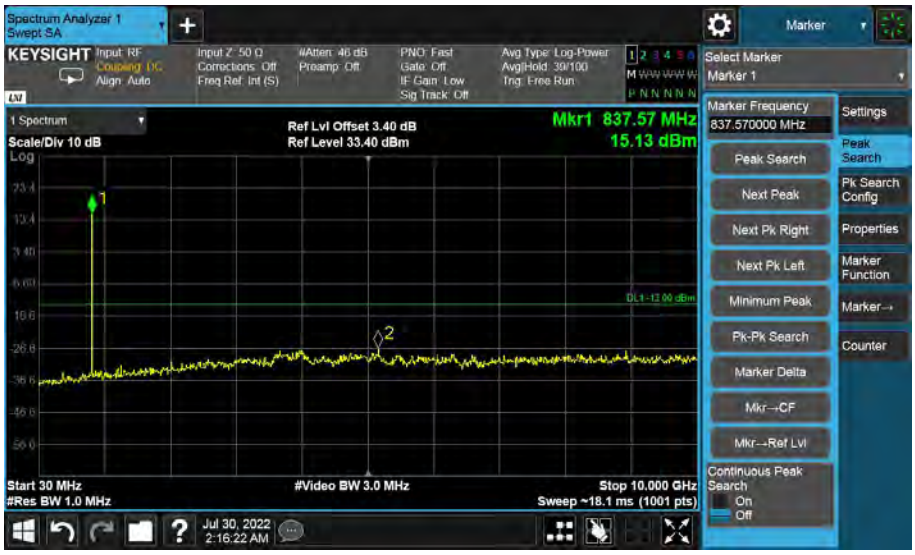


30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 1@0

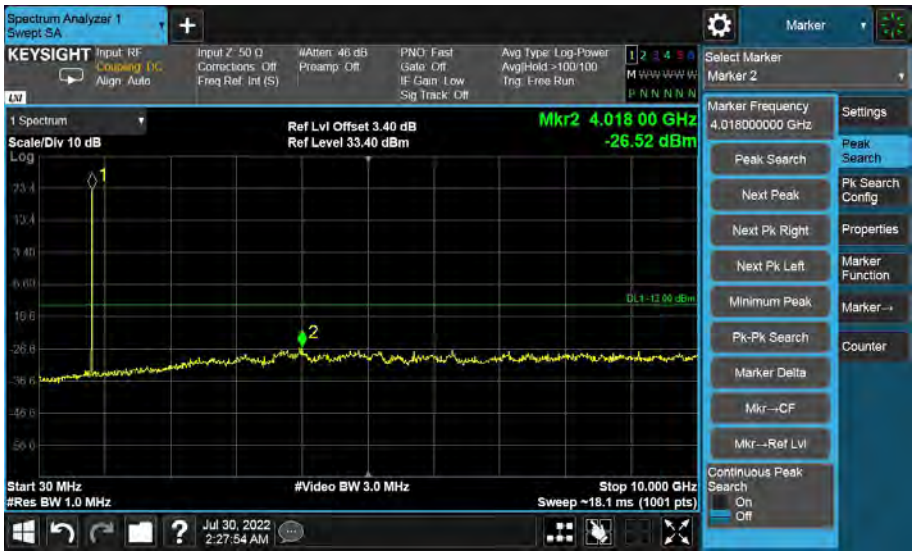


30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0

30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

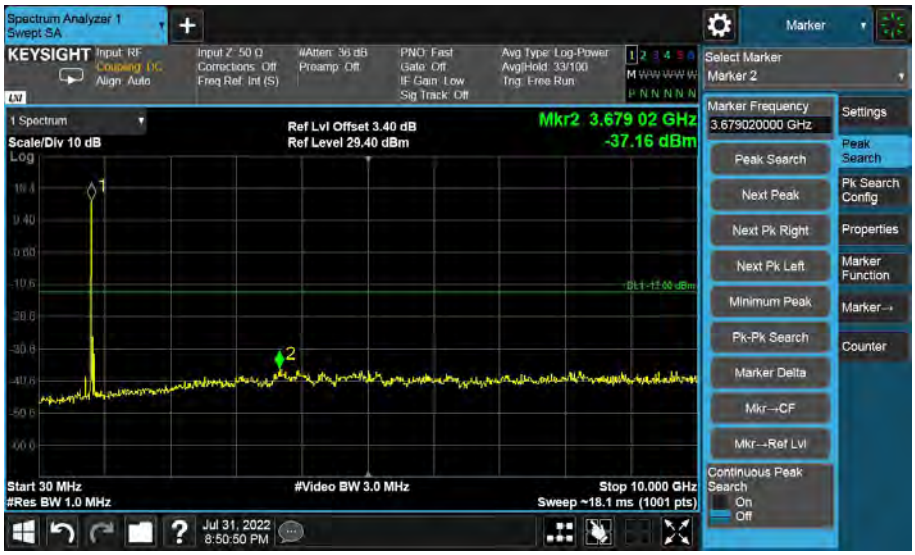


30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0

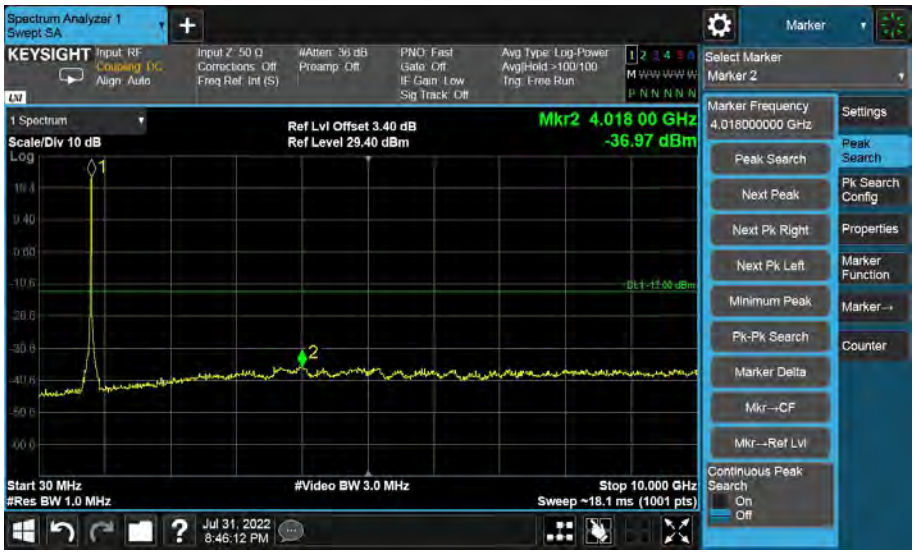


30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0

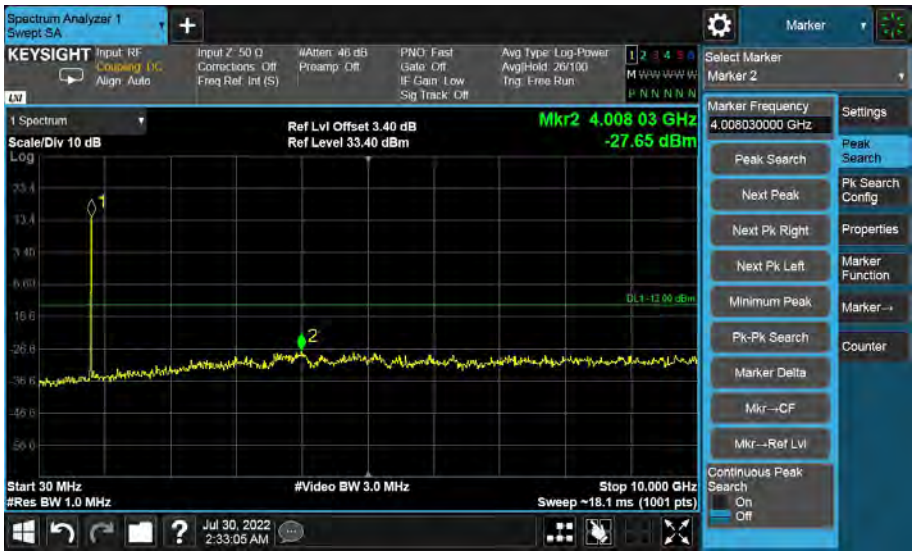
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0



30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0

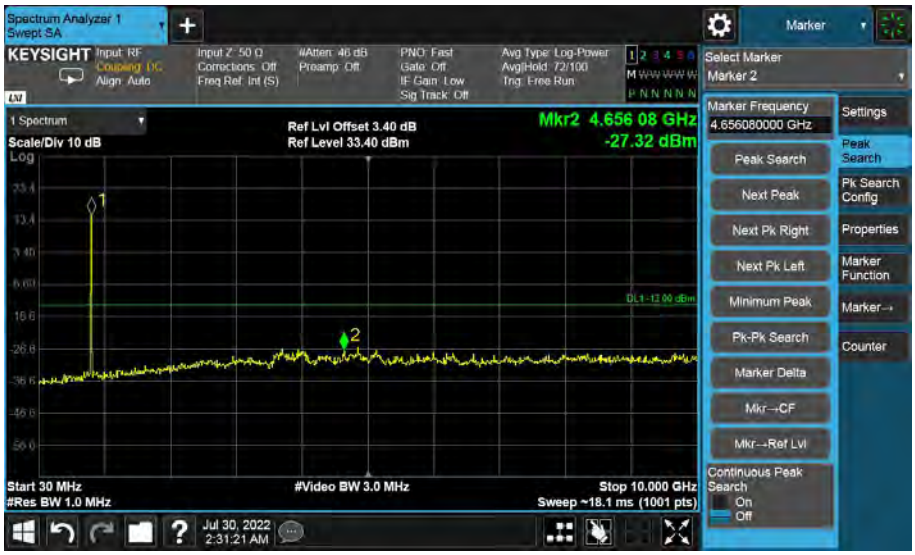


30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0



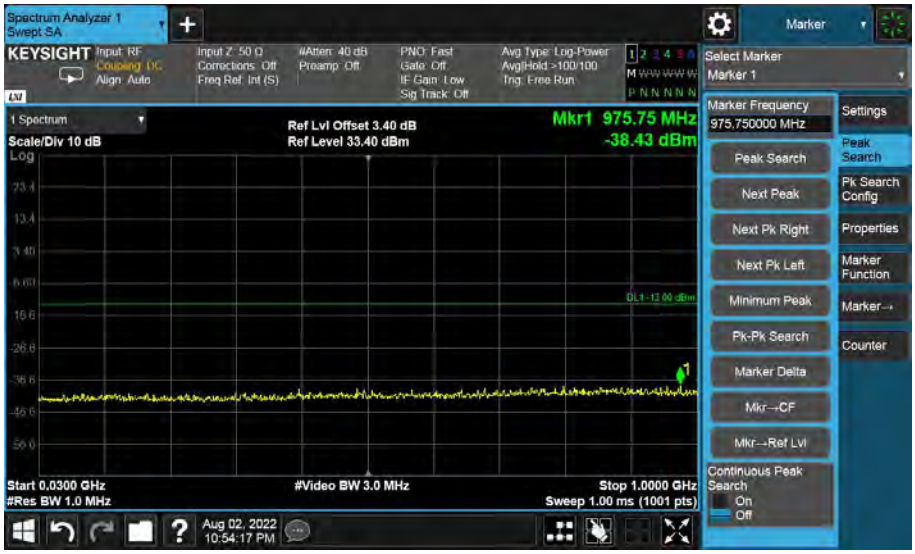
30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0



30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0

6.5.6 CAT-M B2 Conducted Spurious Emission Results



Band2-High Channel-1.4MHz Bandwidth-30MHz to 1GHz

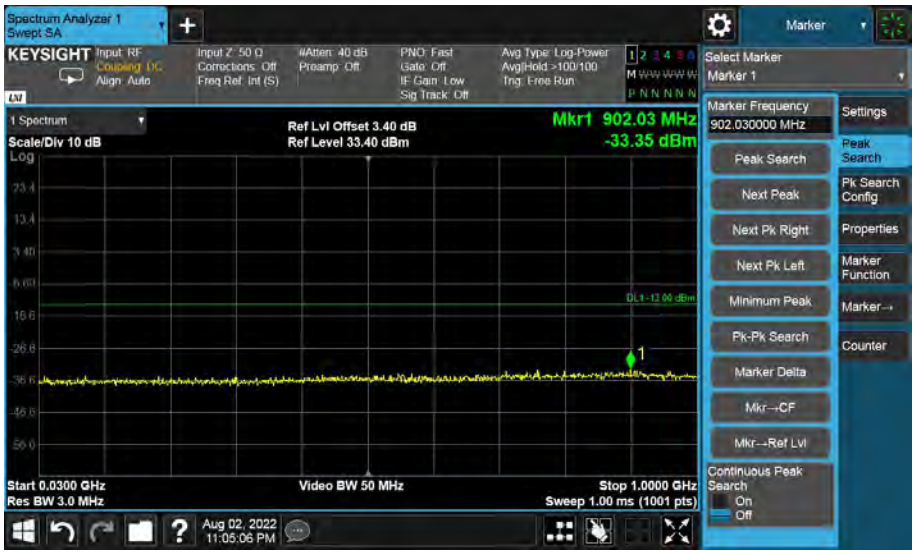
Band2-High Channel-1.4MHz Bandwidth-1GHz to 10GHz

Band2-High Channel-1.4MHz Bandwidth-10GHz to 20GHz

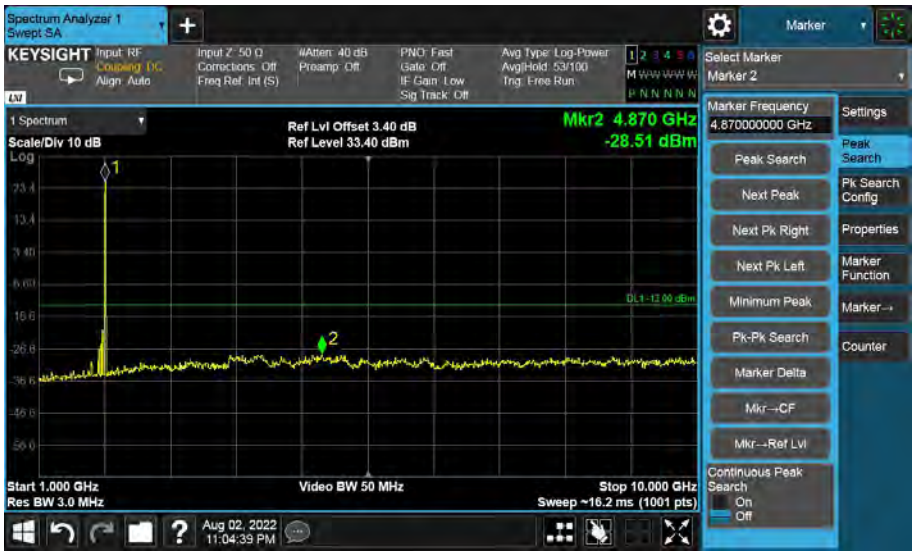
Band2-High Channel-3MHz Bandwidth-30MHz to 1GHz

Band2-High Channel-3MHz Bandwidth-1GHz to 10GHz

Band2-High Channel-3MHz Bandwidth-10GHz to 20GHz

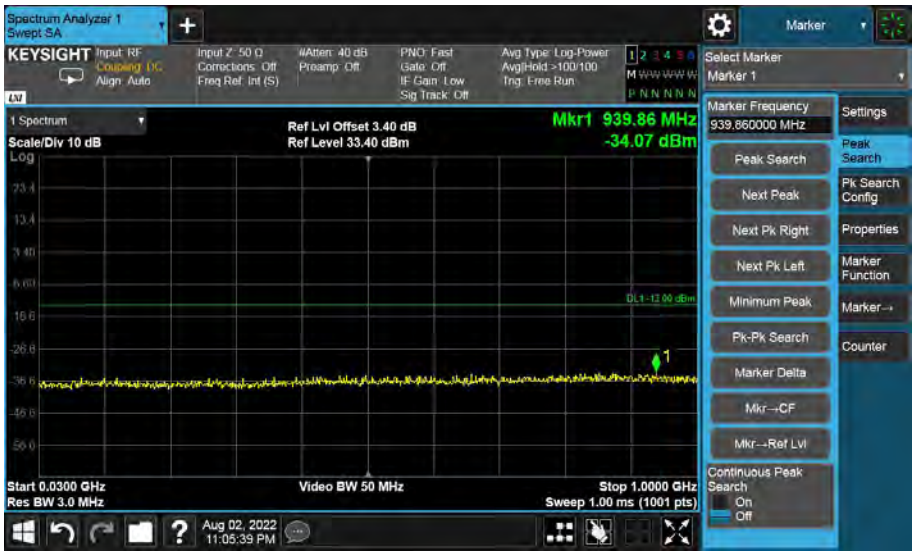


Band2-High Channel-5MHz Bandwidth-30MHz to 1GHz

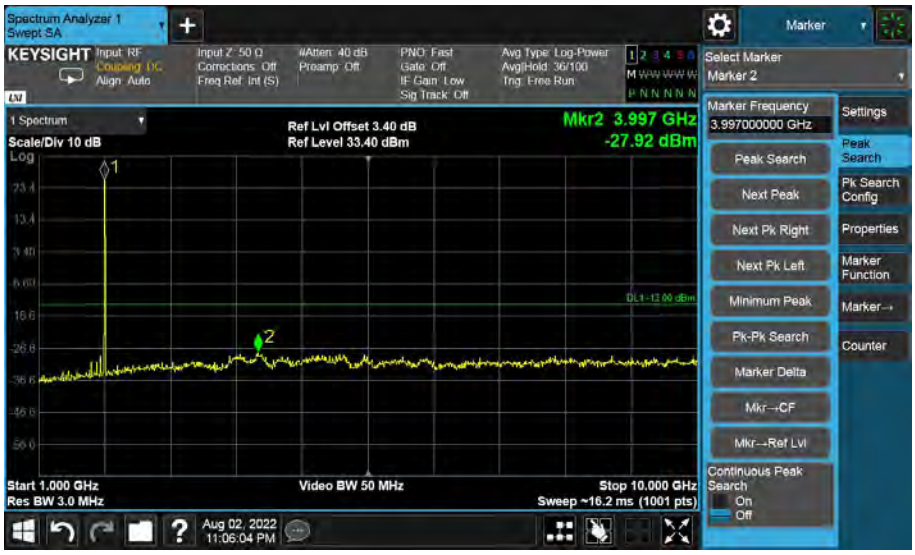


Band2-High Channel-5MHz Bandwidth-1GHz to 10GHz

Band2-High Channel-5MHz Bandwidth-10GHz to 20GHz

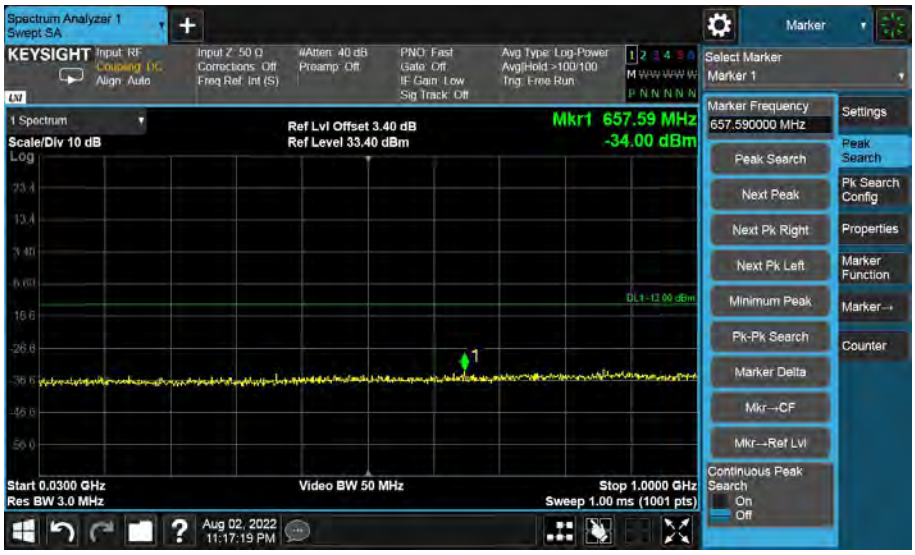


Band2-High Channel-10MHz Bandwidth-30MHz to 1GHz



Band2-High Channel-10MHz Bandwidth-1GHz to 10GHz

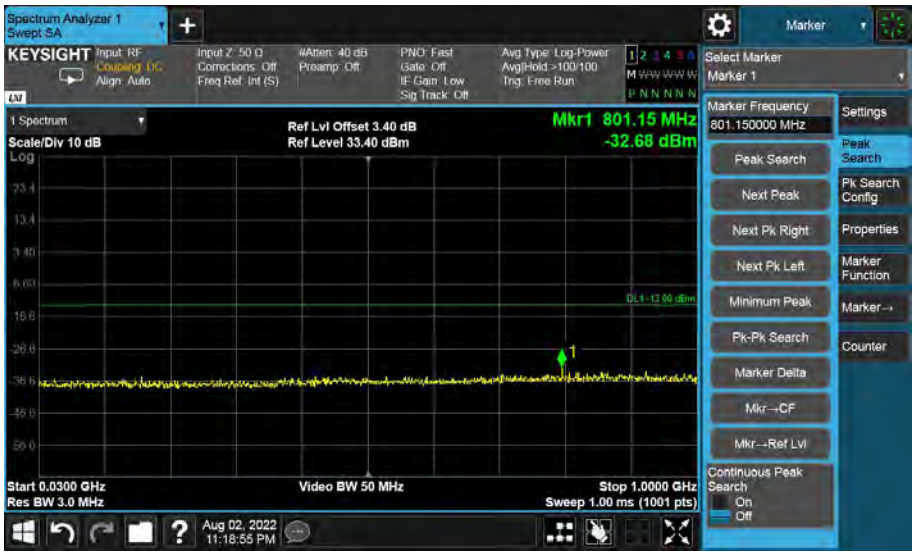
Band2-High Channel-10MHz Bandwidth-10GHz to 20GHz



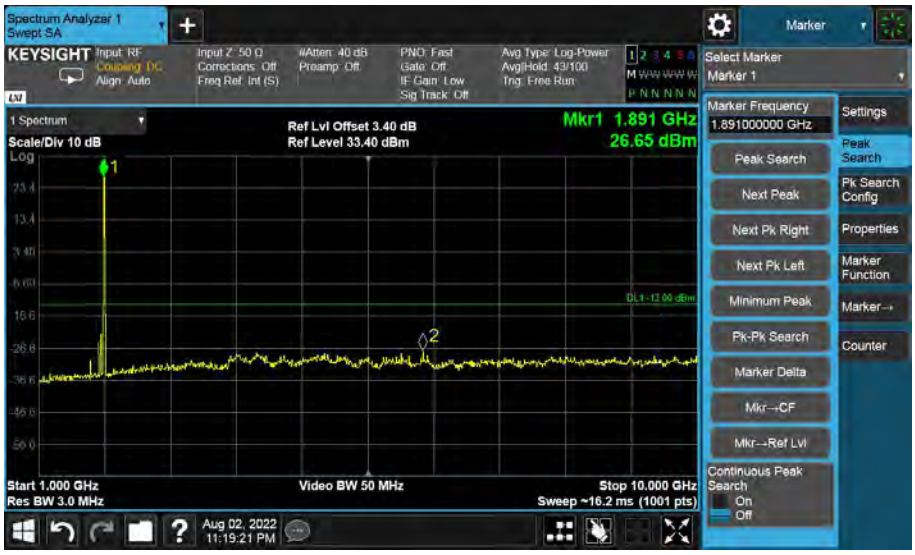
Band2-High Channel-15MHz Bandwidth-30MHz to 1GHz

Band2-High Channel-15MHz Bandwidth-1GHz to 10GHz

Band2-High Channel-15MHz Bandwidth-10GHz to 20GHz

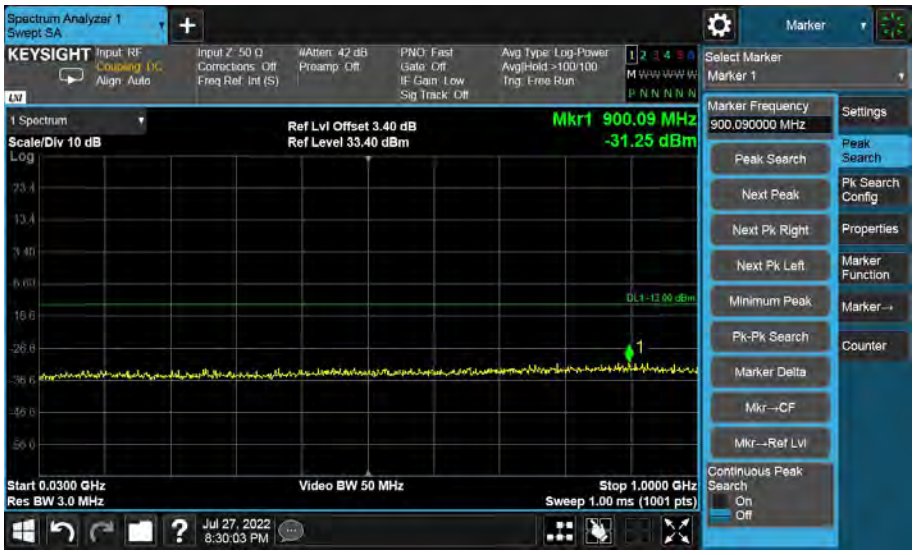


Band2-High Channel-20MHz Bandwidth-30MHz to 1GHz



Band2-High Channel-20MHz Bandwidth-1GHz to 10GHz

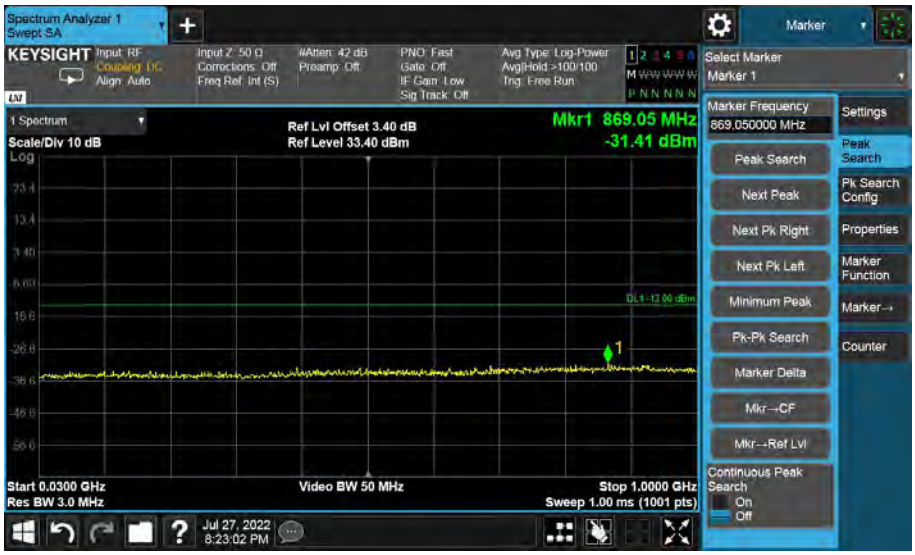
Band2-High Channel-20MHz Bandwidth-10GHz to 20GHz



Band2-Middle Channel-1.4MHz Bandwidth-30MHz to 1GHz

Band2-Middle Channel-1.4MHz Bandwidth-1GHz to 10GHz

Band2-Middle Channel-1.4MHz Bandwidth-10GHz to 20GHz



Band2-Middle Channel-3MHz Bandwidth-30MHz to 1GHz

Band2-Middle Channel-3MHz Bandwidth-1GHz to 10GHz

Band2-Middle Channel-3MHz Bandwidth-10GHz to 20GHz

Band2-Middle Channel-5MHz Bandwidth-30MHz to 1GHz

Band2-Middle Channel-5MHz Bandwidth-1GHz to 10GHz

Band2-Middle Channel-5MHz Bandwidth-10GHz to 20GHz

Band2-Middle Channel-10MHz Bandwidth-30MHz to 1GHz

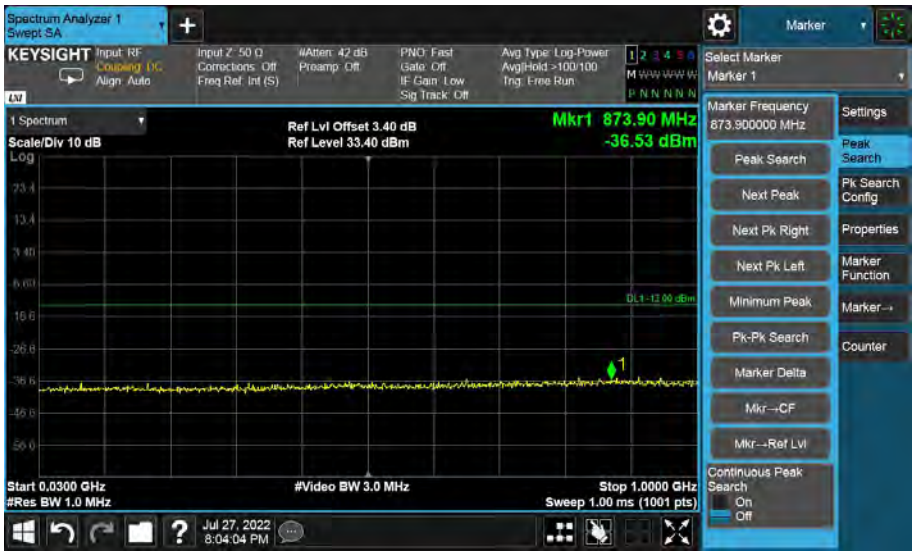
Band2-Middle Channel-10MHz Bandwidth-1GHz to 10GHz

Band2-Middle Channel-10MHz Bandwidth-10GHz to 20GHz

Band2-Middle Channel-15MHz Bandwidth-30MHz to 1GHz

Band2-Middle Channel-15MHz Bandwidth-1GHz to 10GHz

Band2-Middle Channel-15MHz Bandwidth-10GHz to 20GHz



Band2-Middle Channel-20MHz Bandwidth-30MHz to 1GHz

Band2-Middle Channel-20MHz Bandwidth-1GHz to 10GHz

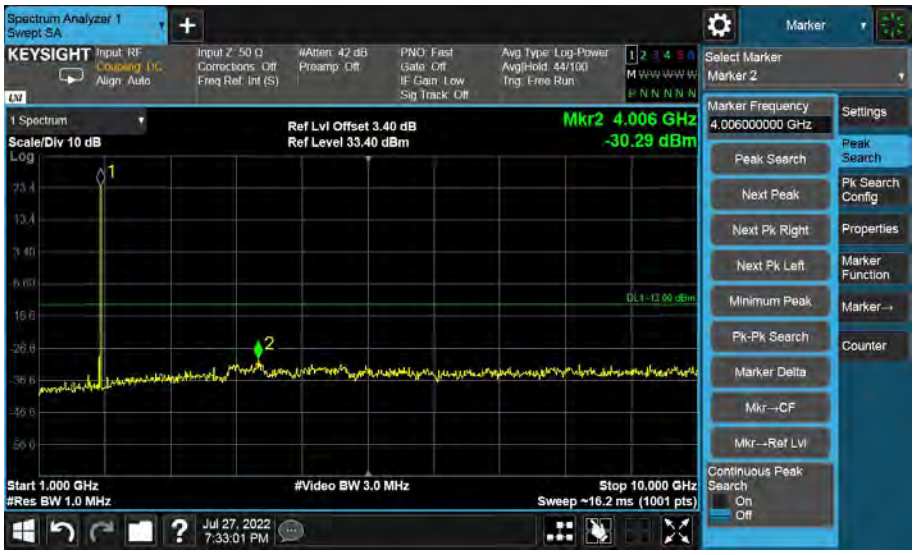
Band2-Middle Channel-20MHz Bandwidth-10GHz to 20GHz

Band2-Low Channel-1.4MHz Bandwidth-30MHz to 1GHz

Band2-Low Channel-1.4MHz Bandwidth-1GHz to 10GHz

Band2-Low Channel-1.4MHz Bandwidth-10GHz to 20GHz

Band2-Low Channel-3MHz Bandwidth-30MHz to 1GHz



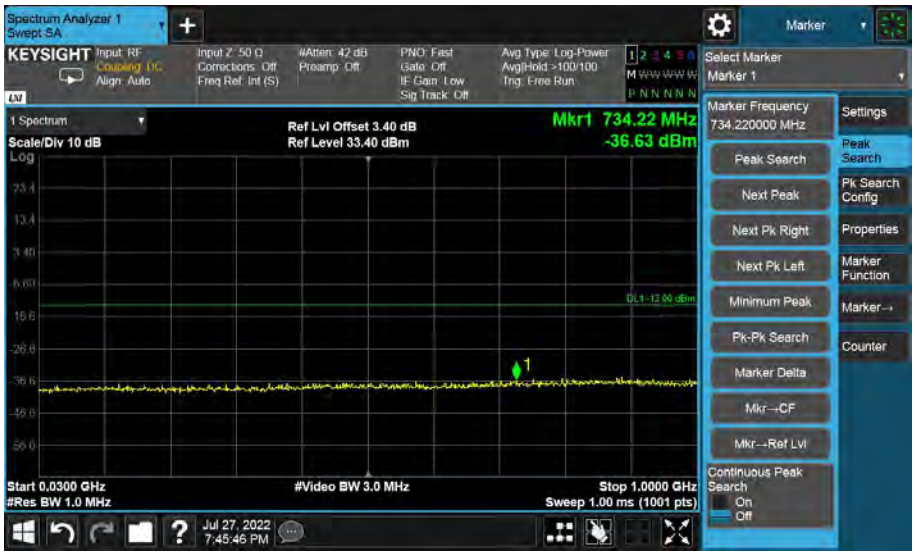
Band2-Low Channel-3MHz Bandwidth-1GHz to 10GHz

Band2-Low Channel-3MHz Bandwidth-10GHz to 20GHz

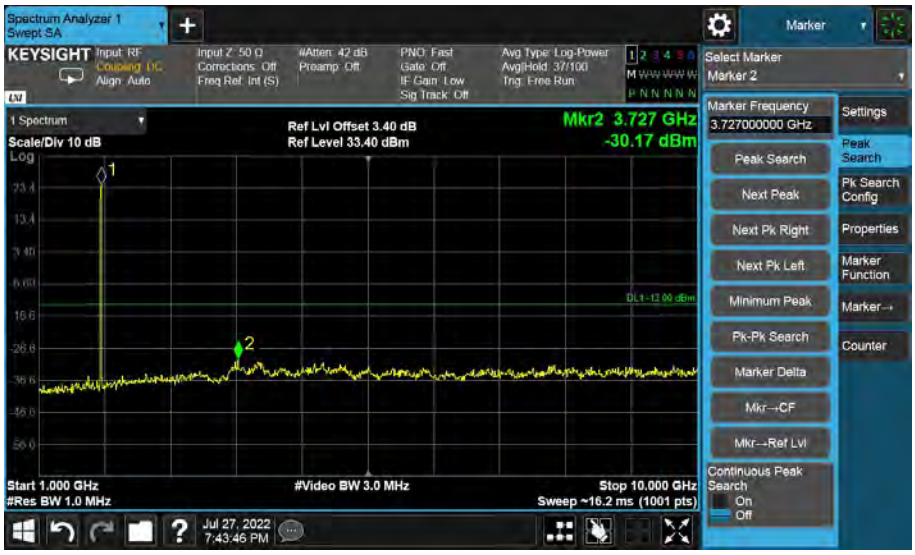
Band2-Low Channel-5MHz Bandwidth-30MHz to 1GHz

Band2-Low Channel-5MHz Bandwidth-1GHz to 10GHz

Band2-Low Channel-5MHz Bandwidth-10GHz to 20GHz



Band2-Low Channel-10MHz Bandwidth-30MHz to 1GHz



Band2-Low Channel-10MHz Bandwidth-1GHz to 10GHz

Band2-Low Channel-10MHz Bandwidth-10GHz to 20GHz

Band2-Low Channel-15MHz Bandwidth-30MHz to 1GHz

Band2-Low Channel-15MHz Bandwidth-1GHz to 10GHz

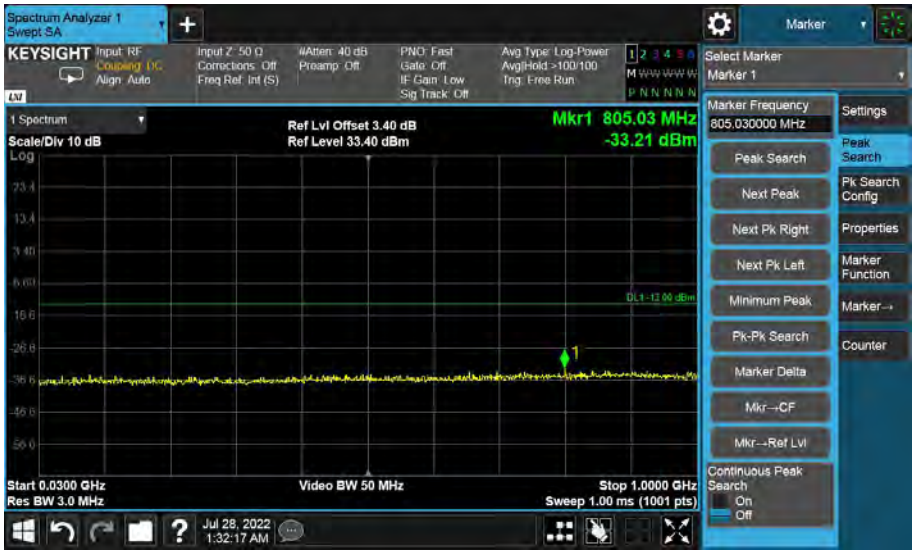
Band2-Low Channel-15MHz Bandwidth-10GHz to 20GHz

Band2-Low Channel-20MHz Bandwidth-30MHz to 1GHz

Band2-Low Channel-20MHz Bandwidth-1GHz to 10GHz

Band2-Low Channel-20MHz Bandwidth-10GHz to 20GHz

6.5.7 CAT-M B4 Conducted Spurious Emission Results



Band4-High Channel-1.4MHz Bandwidth-30MHz to 1GHz

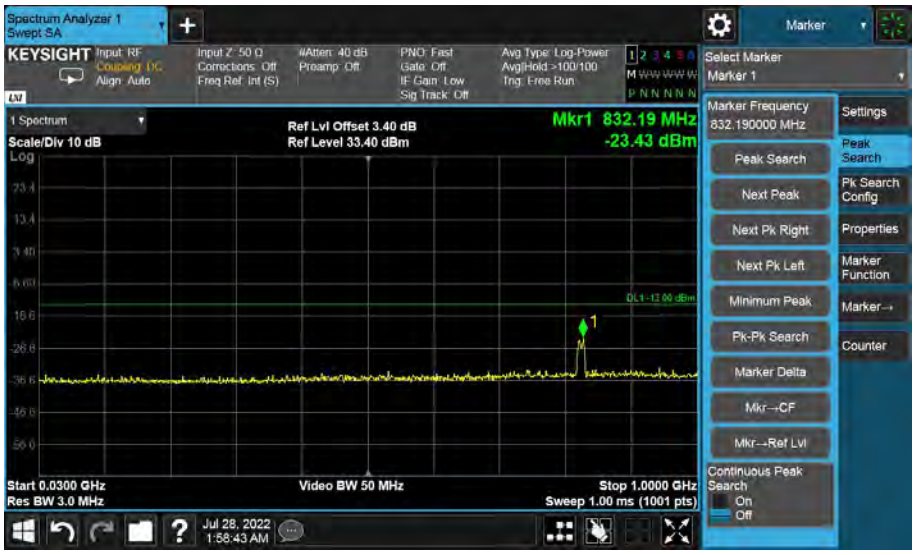
Band4-High Channel-1.4MHz Bandwidth-1GHz to 10GHz

Band4-High Channel-1.4MHz Bandwidth-10GHz to 20GHz

Band4-High Channel-3MHz Bandwidth-30MHz to 1GHz

Band4-High Channel-3MHz Bandwidth-1GHz to 10GHz

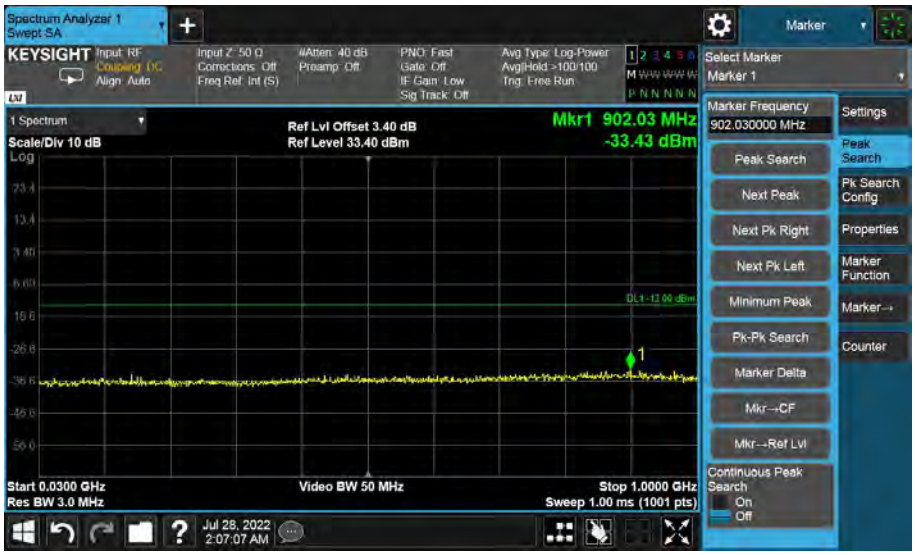
Band4-High Channel-3MHz Bandwidth-10GHz to 20GHz



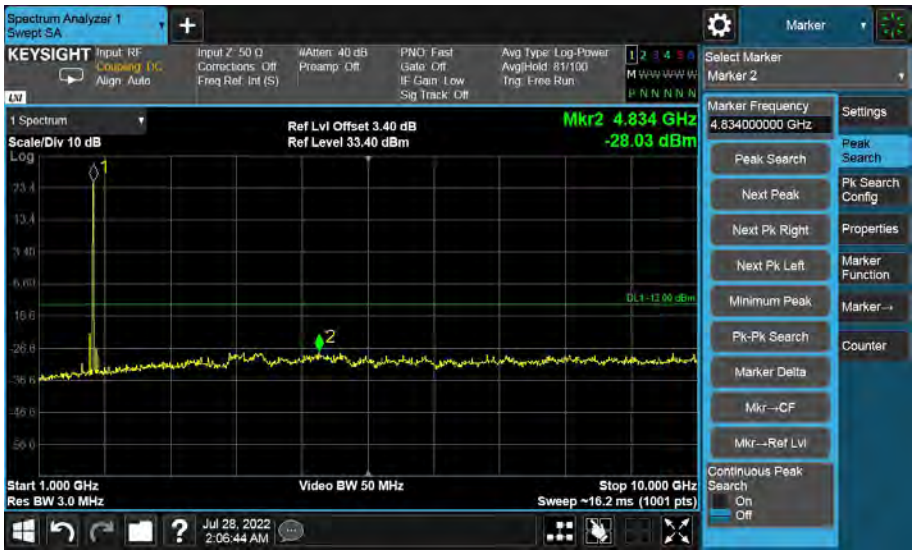
Band4-High Channel-5MHz Bandwidth-30MHz to 1GHz

Band4-High Channel-5MHz Bandwidth-1GHz to 10GHz

Band4-High Channel-5MHz Bandwidth-10GHz to 20GHz

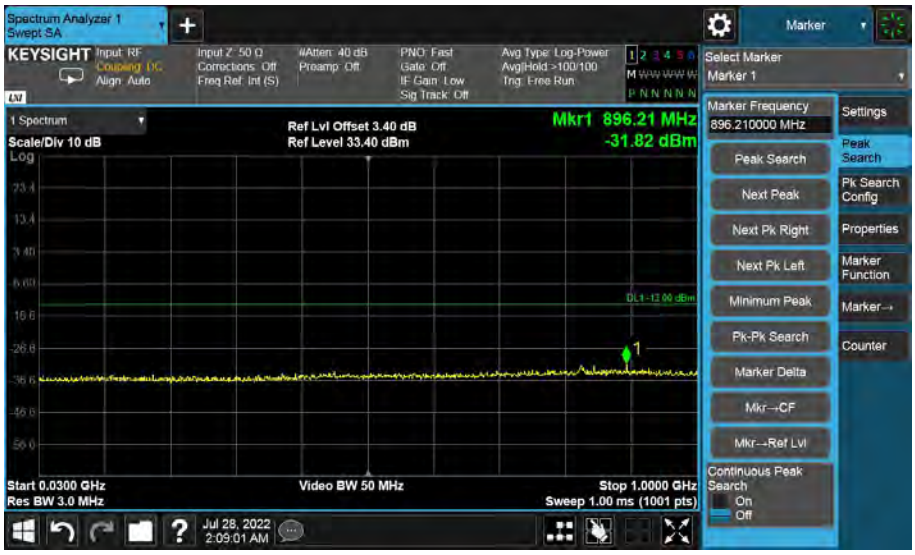


Band4-High Channel-10MHz Bandwidth-30MHz to 1GHz

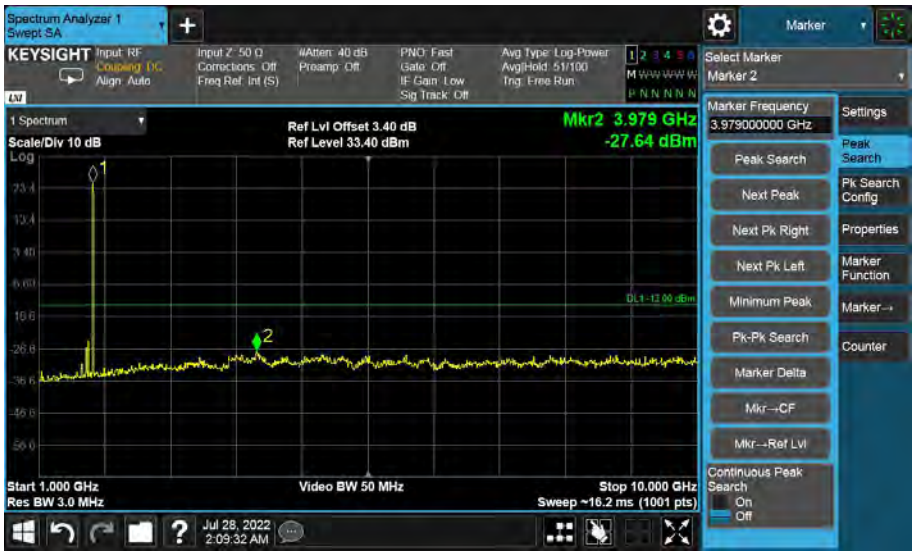


Band4-High Channel-10MHz Bandwidth-1GHz to 10GHz

Band4-High Channel-10MHz Bandwidth-10GHz to 20GHz

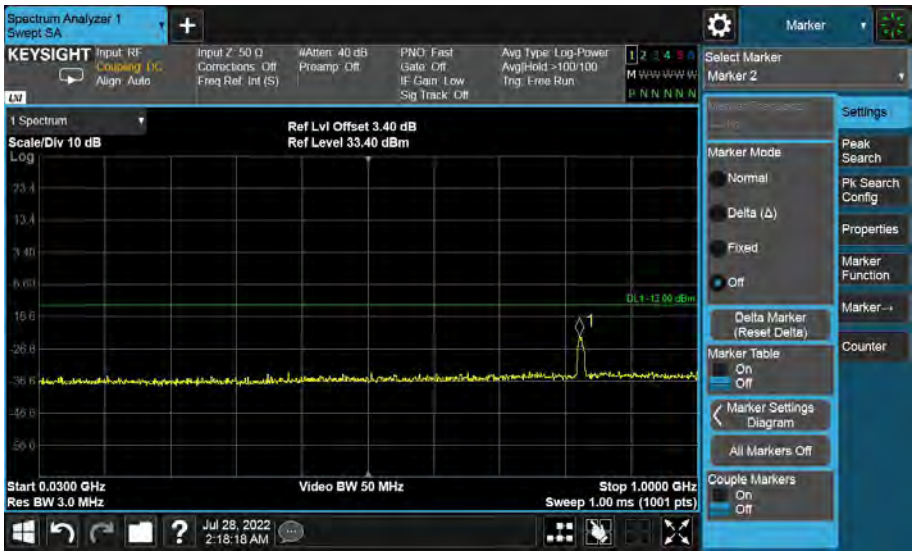


Band4-High Channel-15MHz Bandwidth-30MHz to 1GHz

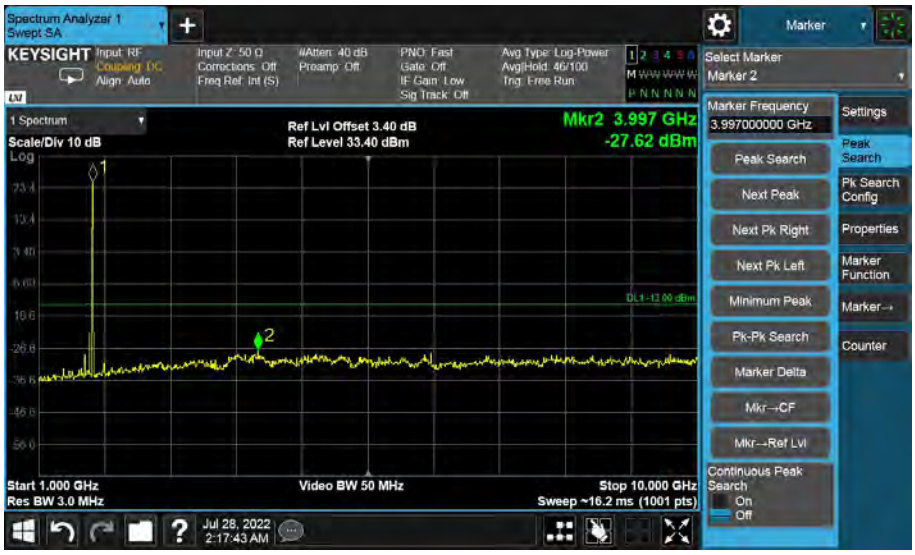


Band4-High Channel-15MHz Bandwidth-1GHz to 10GHz

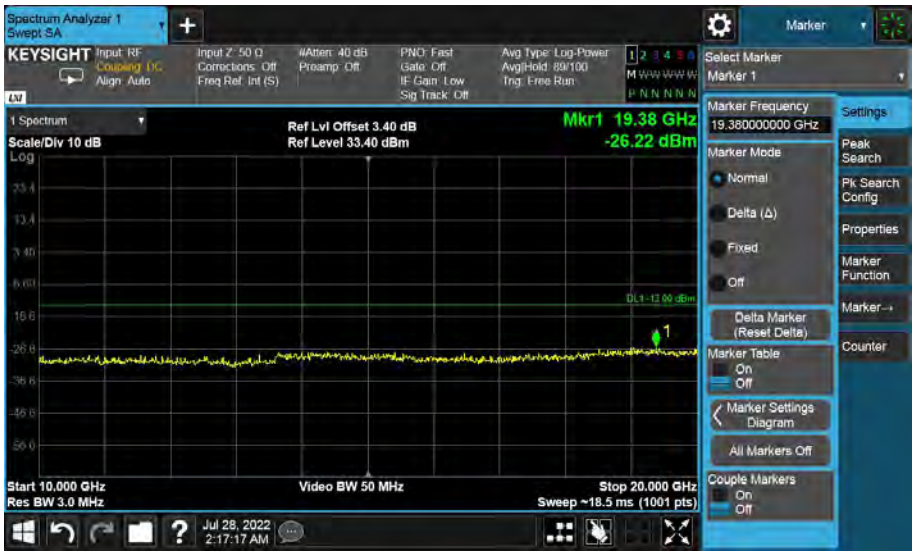
Band4-High Channel-15MHz Bandwidth-10GHz to 20GHz



Band4-High Channel-20MHz Bandwidth-30MHz to 1GHz



Band4-High Channel-20MHz Bandwidth-1GHz to 10GHz

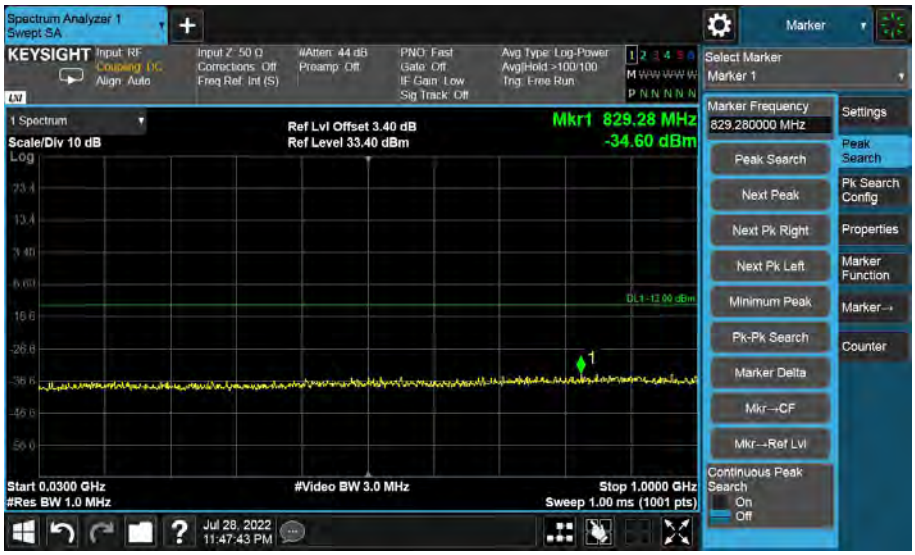


Band4-High Channel-20MHz Bandwidth-10GHz to 20GHz

Band4-Middle Channel-1.4MHz Bandwidth-30MHz to 1GHz

Band4-Middle Channel-1.4MHz Bandwidth-1GHz to 10GHz

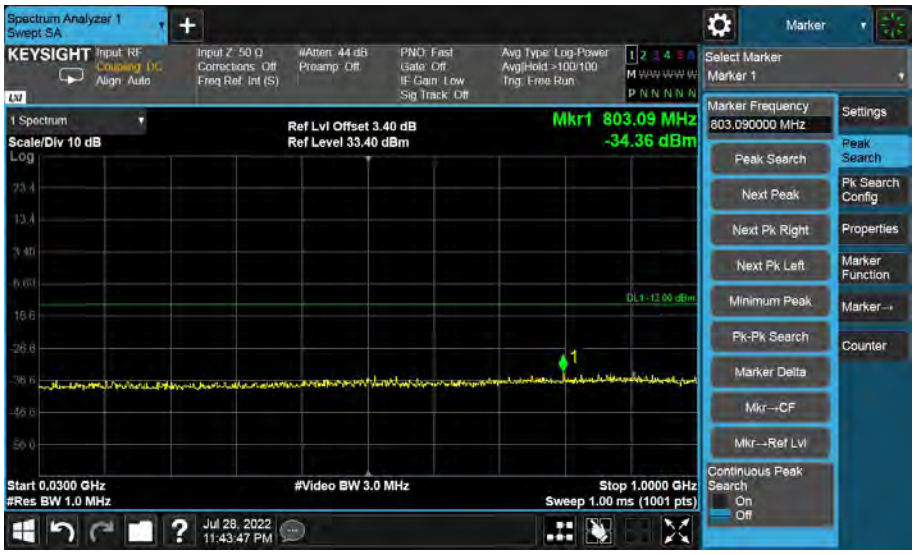
Band4-Middle Channel-1.4MHz Bandwidth-10GHz to 20GHz



Band4-Middle Channel-3MHz Bandwidth-30MHz to 1GHz

Band4-Middle Channel-3MHz Bandwidth-1GHz to 10GHz

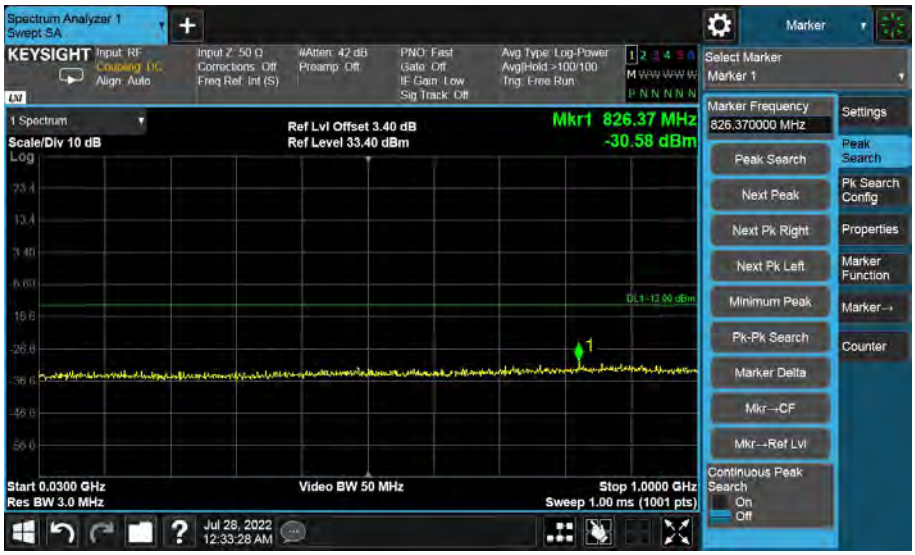
Band4-Middle Channel-3MHz Bandwidth-10GHz to 20GHz



Band4-Middle Channel-5MHz Bandwidth-30MHz to 1GHz

Band4-Middle Channel-5MHz Bandwidth-1GHz to 10GHz

Band4-Middle Channel-5MHz Bandwidth-10GHz to 20GHz



Band4-Middle Channel-10MHz Bandwidth-30MHz to 1GHz

Band4-Middle Channel-10MHz Bandwidth-1GHz to 10GHz

Band4-Middle Channel-10MHz Bandwidth-10GHz to 20GHz

Band4-Low Channel-1.4MHz Bandwidth-30MHz to 1GHz

Band4-Low Channel-1.4MHz Bandwidth-1GHz to 10GHz

Band4-Low Channel-1.4MHz Bandwidth-10GHz to 20GHz

Band4-Low Channel-3MHz Bandwidth-30MHz to 1GHz

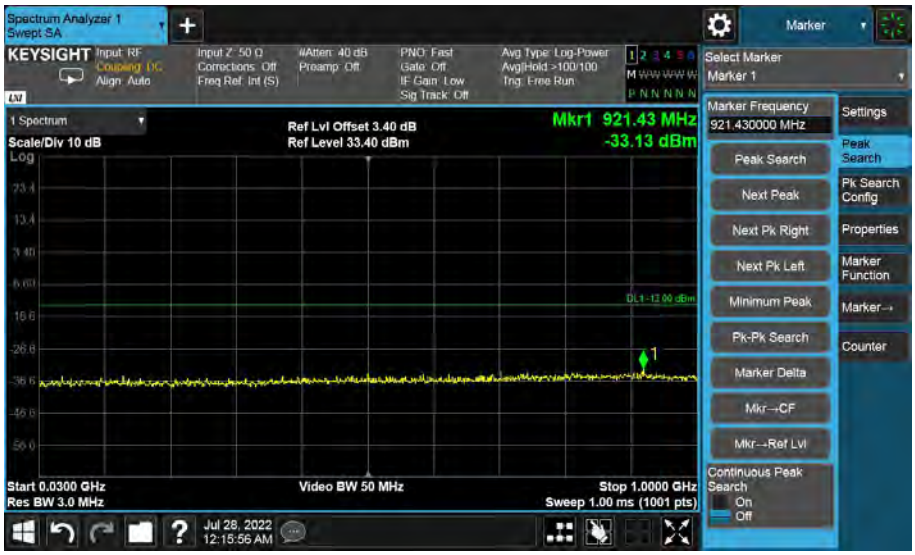
Band4-Low Channel-3MHz Bandwidth-1GHz to 10GHz

Band4-Low Channel-3MHz Bandwidth-10GHz to 20GHz

Band4-Low Channel-5MHz Bandwidth-30MHz to 1GHz

Band4-Low Channel-5MHz Bandwidth-1GHz to 10GHz

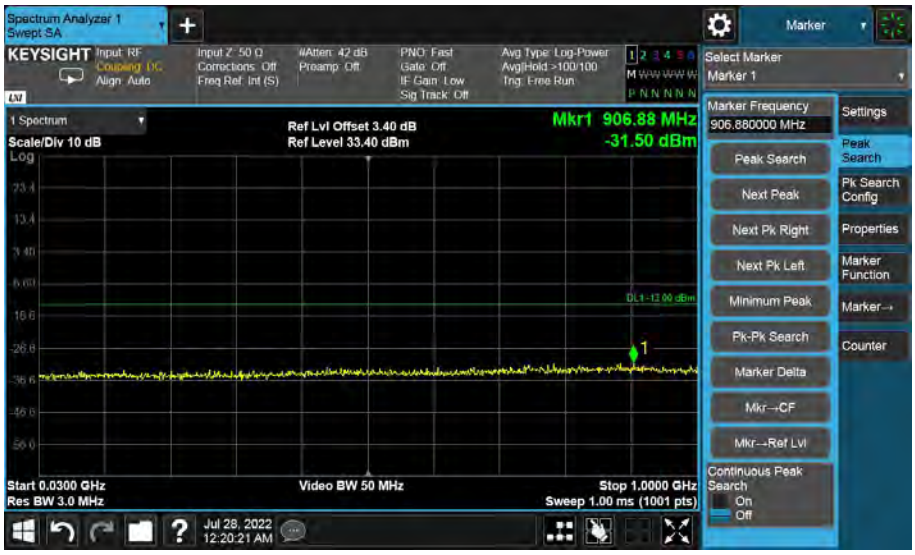
Band4-Low Channel-5MHz Bandwidth-10GHz to 20GHz



Band4-Low Channel-10MHz Bandwidth-30MHz to 1GHz

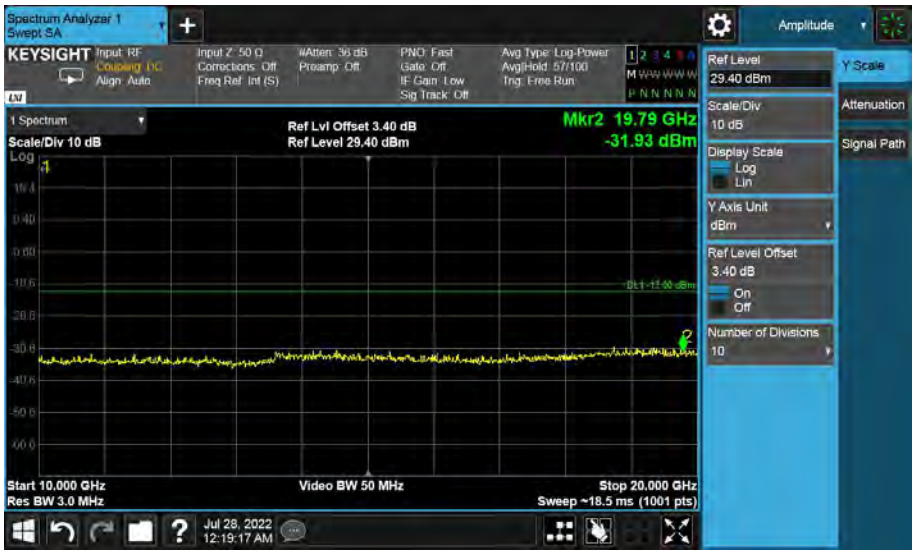
Band4-Low Channel-10MHz Bandwidth-1GHz to 10GHz

Band4-Low Channel-10MHz Bandwidth-10GHz to 20GHz

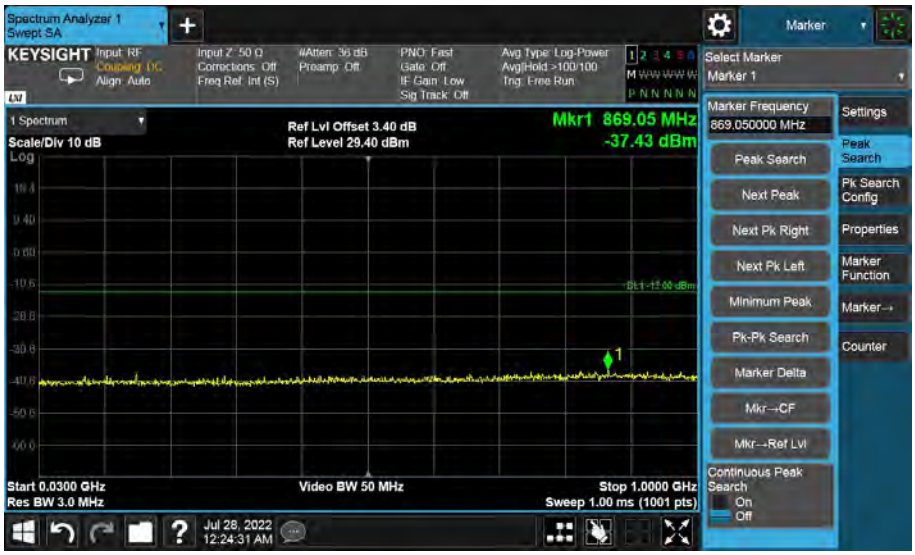


Band4-Low Channel-15MHz Bandwidth-30MHz to 1GHz

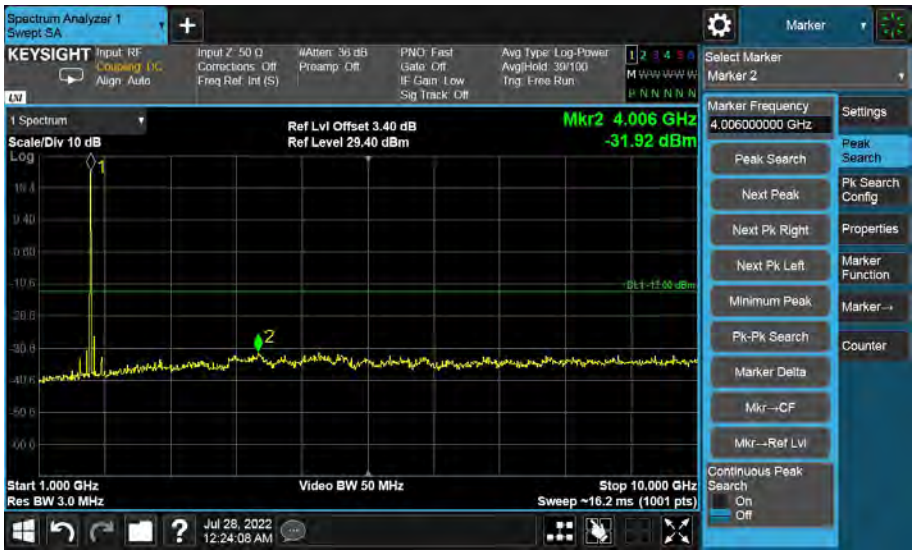
Band4-Low Channel-15MHz Bandwidth-1GHz to 10GHz



Band4-Low Channel-15MHz Bandwidth-10GHz to 20GHz



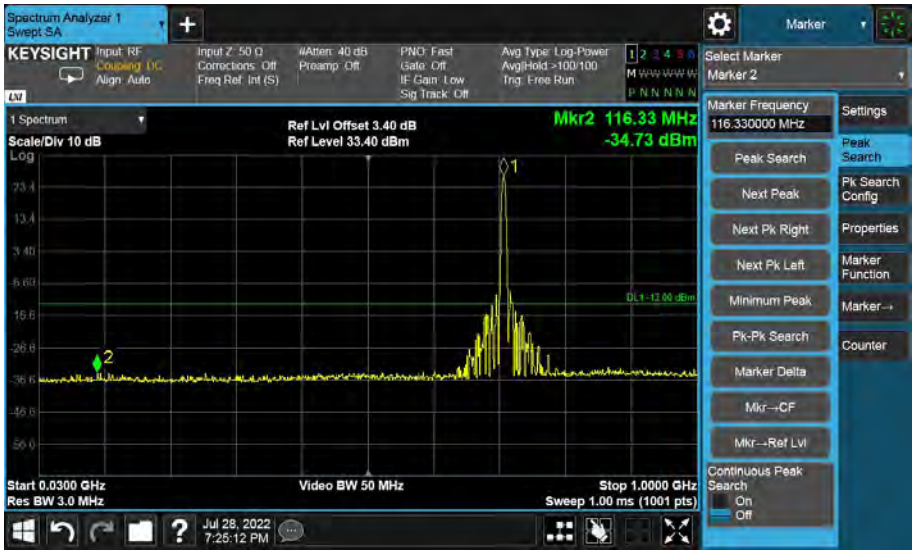
Band4-Low Channel-20MHz Bandwidth-30MHz to 1GHz



Band4-Low Channel-20MHz Bandwidth-1GHz to 10GHz

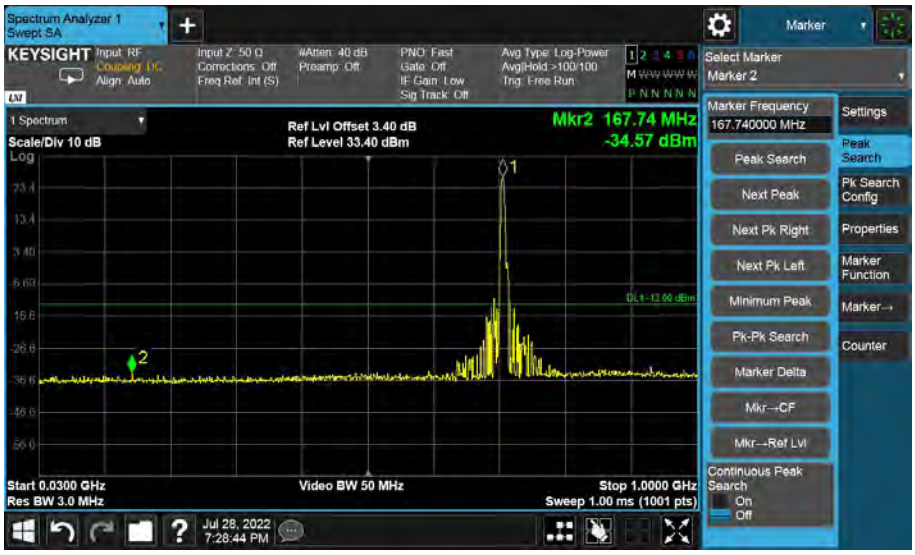
Band4-Low Channel-20MHz Bandwidth-10GHz to 20GHz

6.5.8 CAT-M B12 Conducted Spurious Emission Results

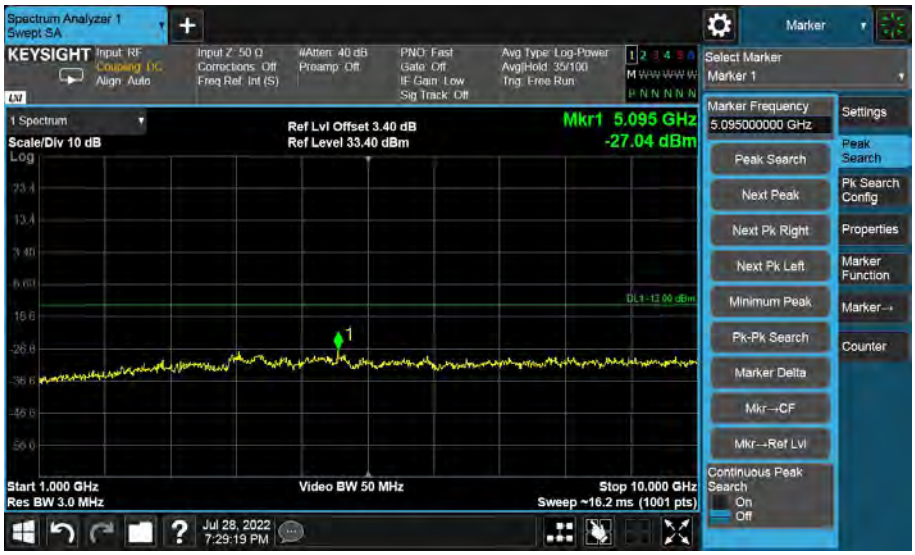


High Channel-1.4MHz Bandwidth-30MHz to 1GHz

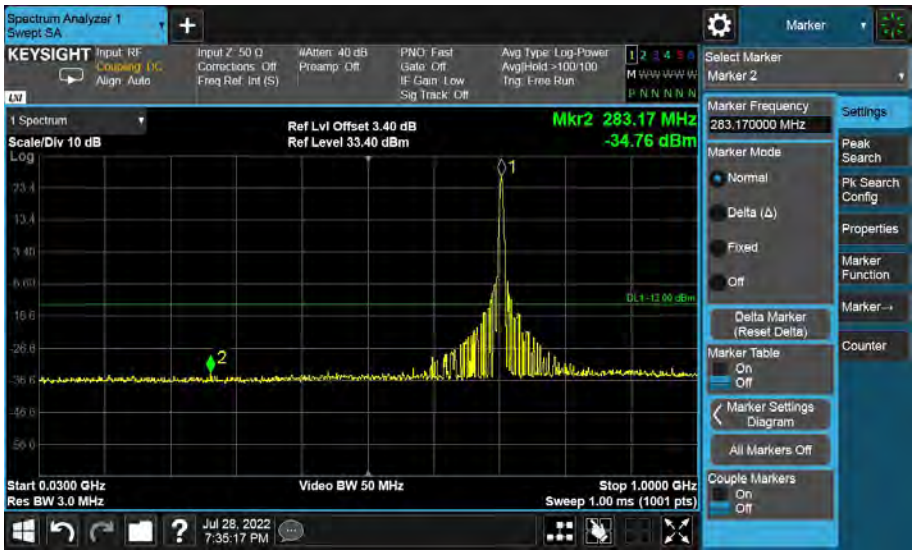
High Channel-1.4MHz Bandwidth-1GHz to 10GHz



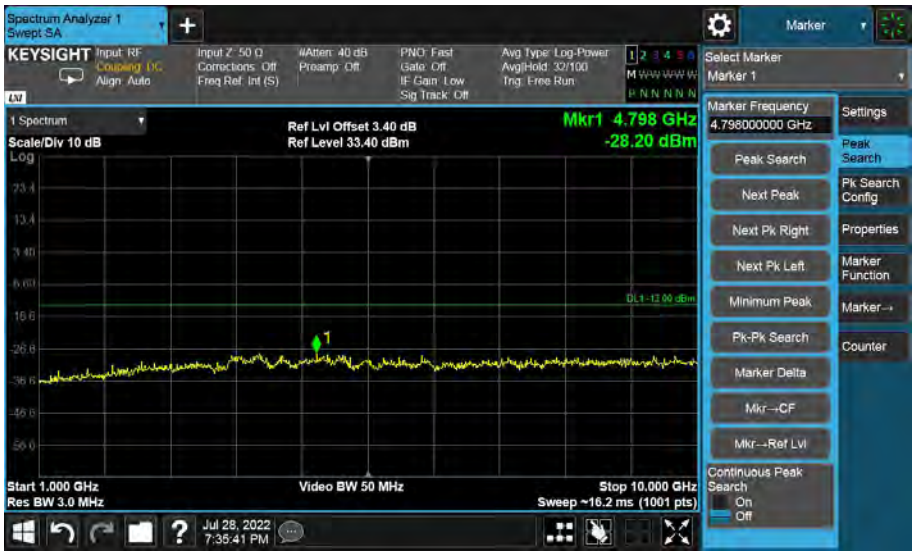
High Channel-3MHz Bandwidth-30MHz to 1GHz



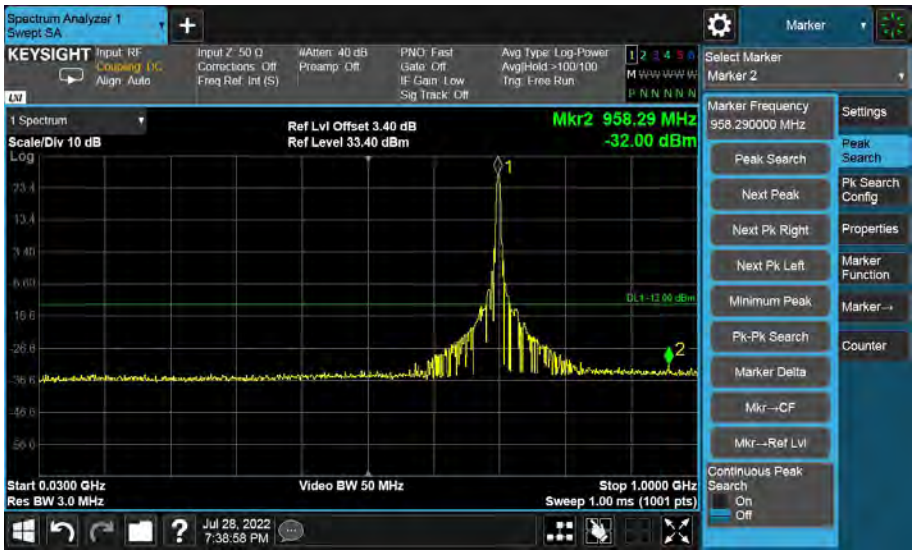
High Channel-3MHz Bandwidth -1GHz to 10GHz



High Channel-5MHz Bandwidth-30MHz to 1GHz

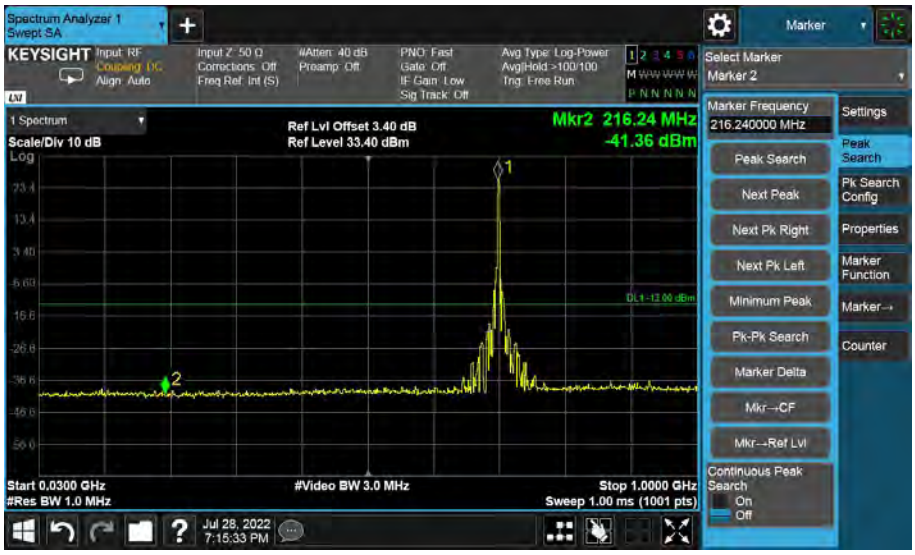


High Channel-5MHz Bandwidth-1GHz to 10GHz



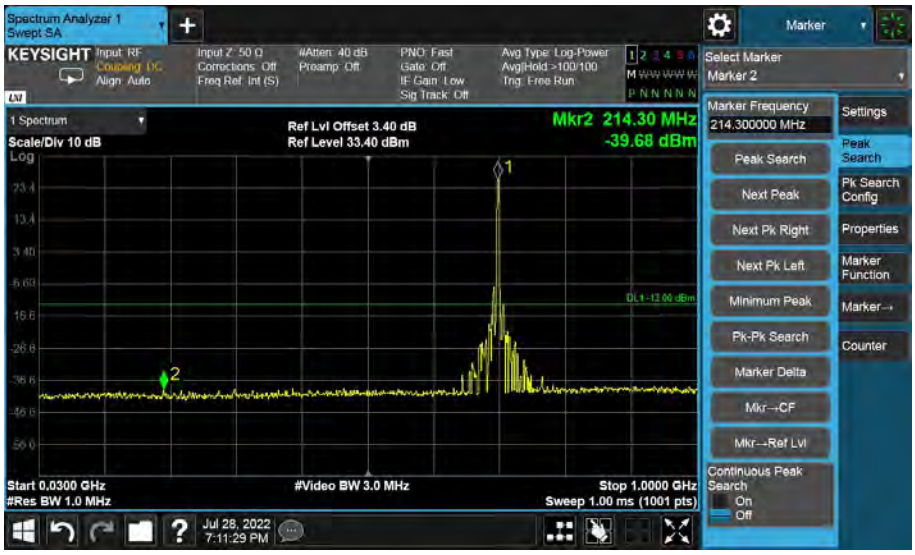
High Channel-10MHz Bandwidth-30MHz to 1GHz

High Channel-10MHz Bandwidth-1GHz to 10GHz



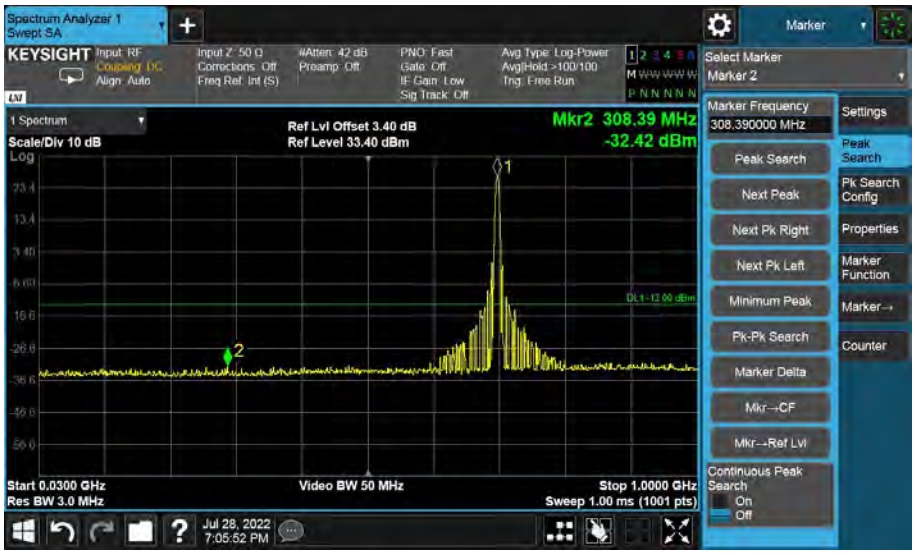
Middle Channel-1.4MHz Bandwidth-30MHz to 1GHz

Middle Channel-1.4MHz Bandwidth-1GHz to 10GHz



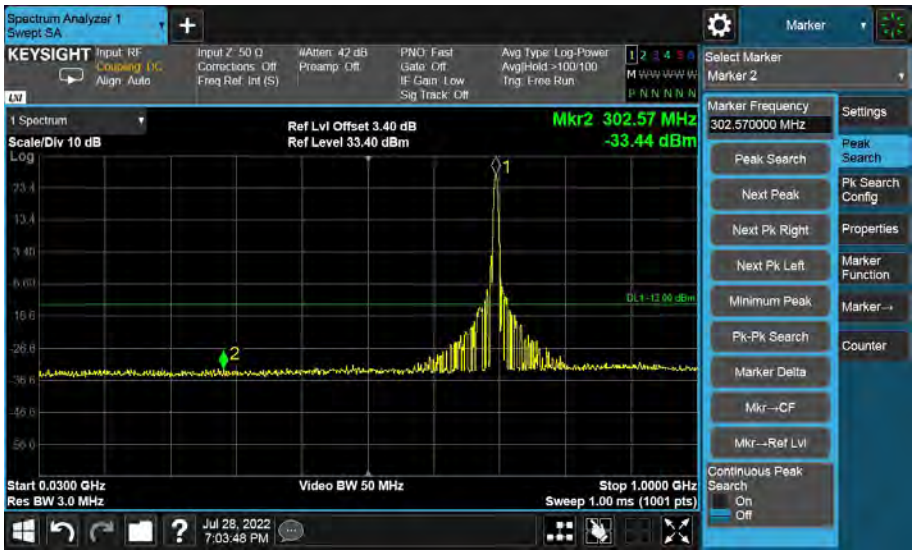
Middle Channel-3MHz Bandwidth-30MHz to 1GHz

Middle Channel-3MHz Bandwidth-1GHz to 10GHz



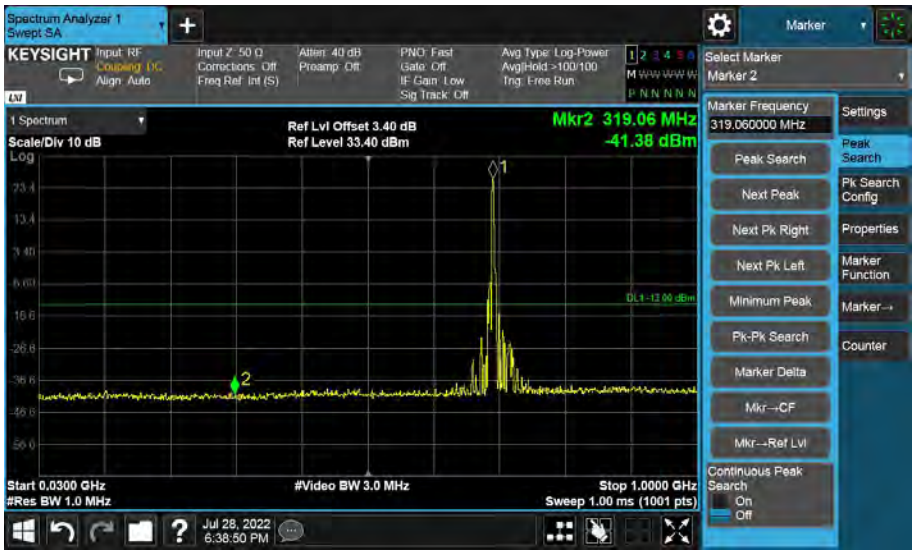
Middle Channel-5MHz Bandwidth-30MHz to 1GHz

Middle Channel-5MHz Bandwidth-1GHz to 10GHz



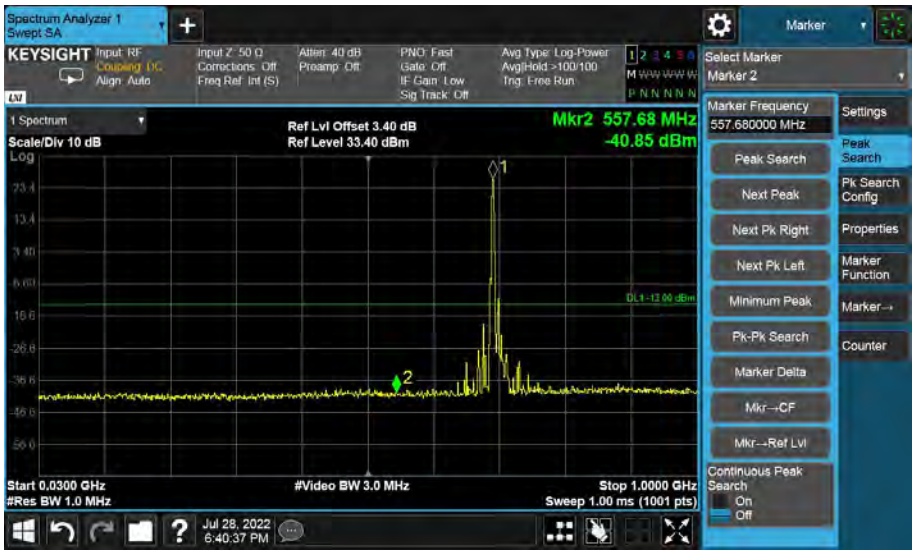
Middle Channel-10MHz Bandwidth-30MHz to 1GHz

Middle Channel-10MHz Bandwidth-1GHz to 10GHz



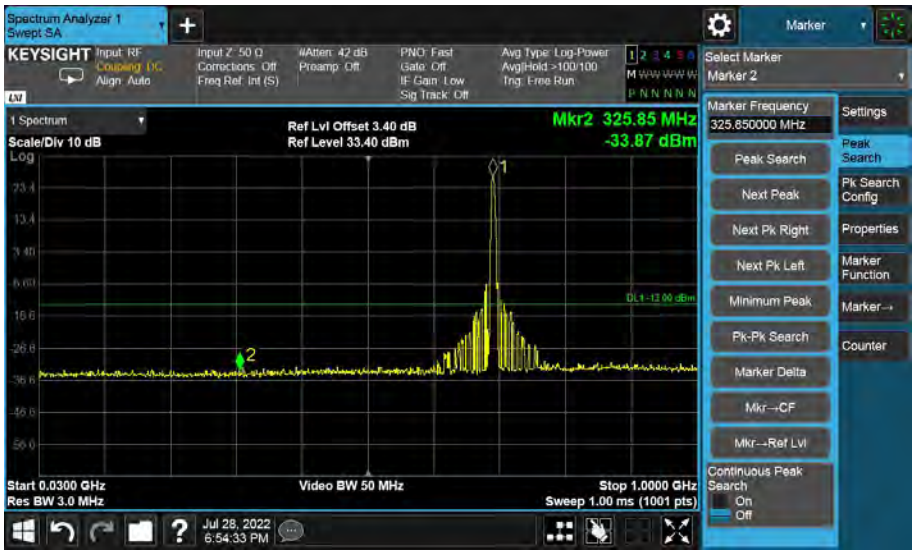
Low Channel-1.4MHz Bandwidth-30MHz to 1GHz

Low Channel-1.4MHz Bandwidth-1GHz to 10GHz



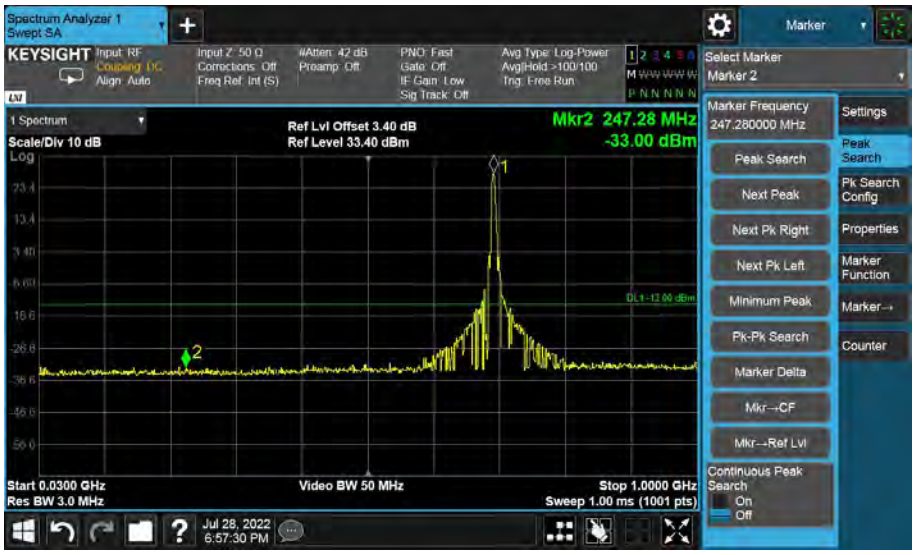
Low Channel-3MHz Bandwidth-30MHz to 1GHz

Low Channel-3MHz Bandwidth-1GHz to 10GHz



Low Channel-5MHz Bandwidth-30MHz to 1GHz

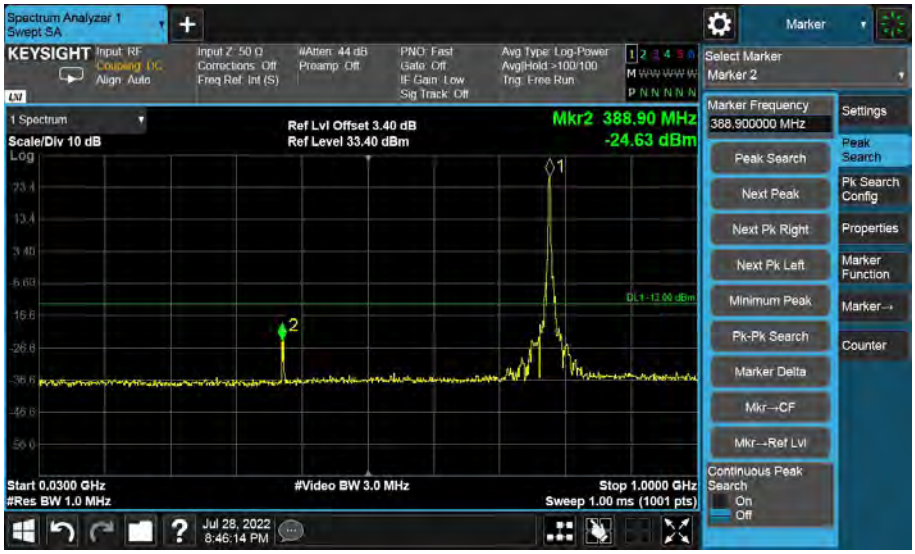
Low Channel-5MHz Bandwidth-1GHz to 10GHz



Low Channel-10MHz Bandwidth-30MHz to 1GHz

Low Channel-10MHz Bandwidth-1GHz to 10GHz

6.5.9 CAT-M B13 Conducted Spurious Emission Results



High Channel-5MHz Bandwidth-30MHz to 1GHz

High Channel-5MHz Bandwidth-1GHz to 10GHz

High Channel-10MHz Bandwidth-30MHz to 1GHz

High Channel-10MHz Bandwidth-1GHz to 10GHz

Middle Channel-5MHz Bandwidth-30MHz to 1GHz

Middle Channel-5MHz Bandwidth-1GHz to 10GHz

Middle Channel-10MHz Bandwidth-30MHz to 1GHz

Middle Channel-10MHz Bandwidth-1GHz to 10GHz

Low Channel-5MHz Bandwidth-30MHz to 1GHz

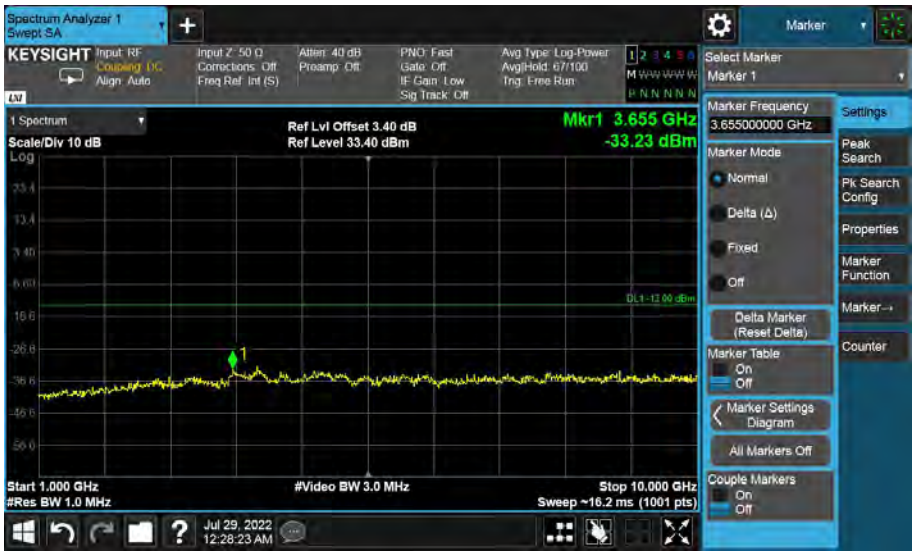
Low Channel-5MHz Bandwidth-1GHz to 10GHz

Low Channel-10MHz Bandwidth-30MHz to 1GHz

Low Channel-10MHz Bandwidth-1GHz to 10GHz

6.5.10 CAT-M B26 Conducted Spurious Emission Results (814MHz-824MHz)

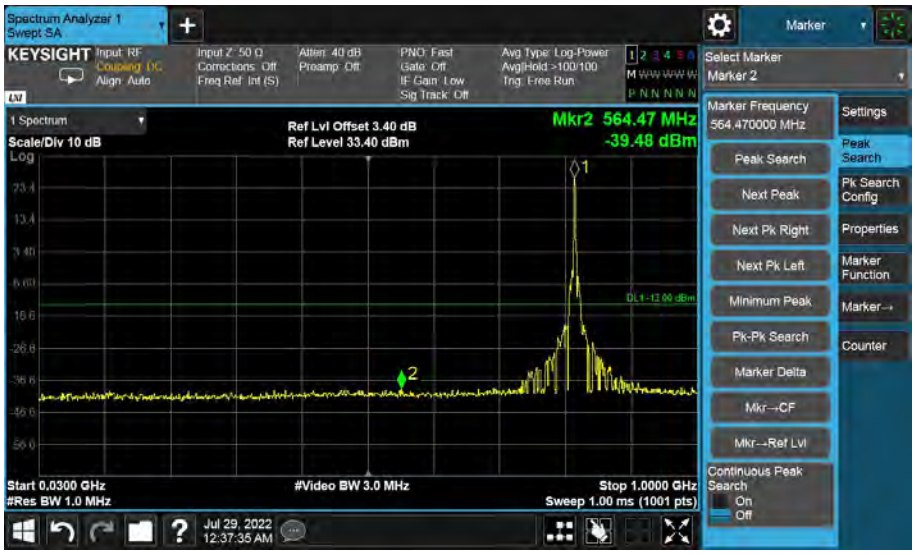
High Channel-1.4MHz Bandwidth-30MHz to 1GHz



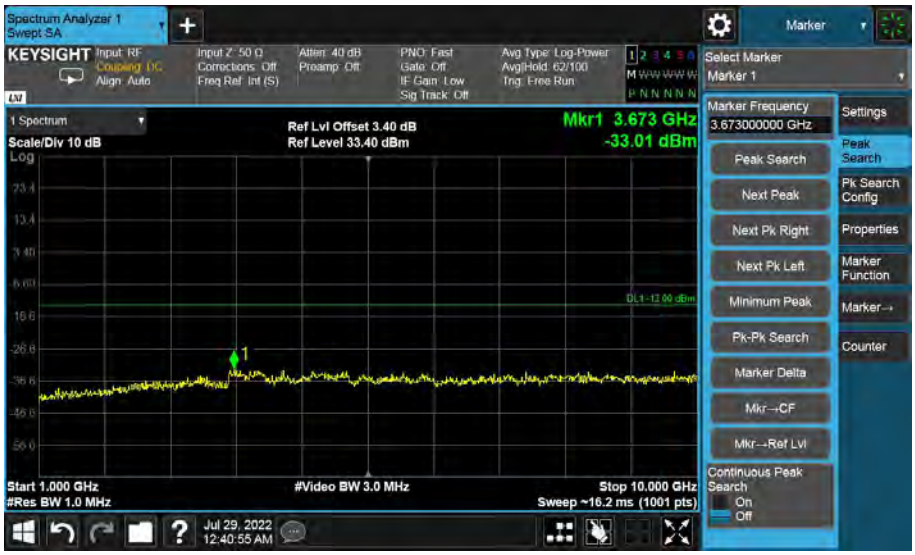
High Channel-1.4MHz Bandwidth-1GHz to 10GHz

High Channel-3MHz Bandwidth-30MHz to 1GHz

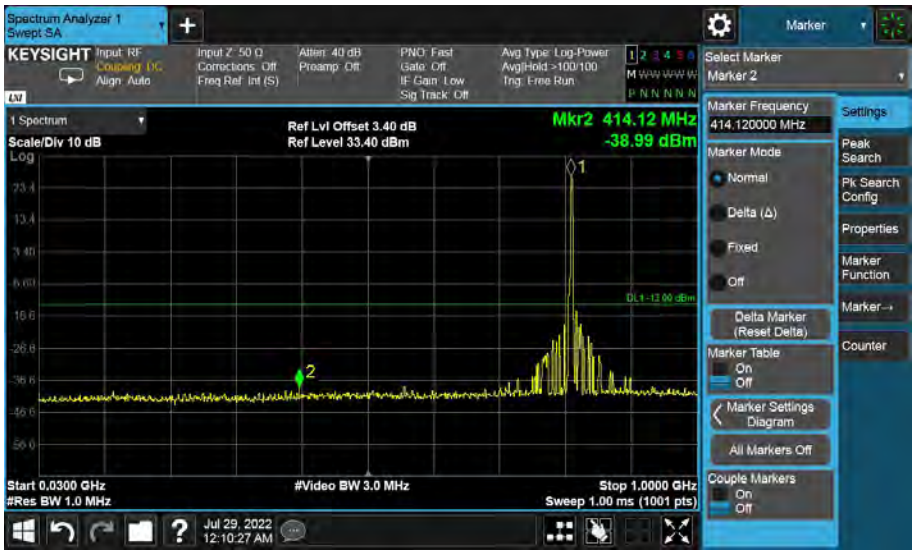
High Channel-3MHz Bandwidth-1GHz to 10GHz



High Channel-5MHz Bandwidth-30MHz to 1GHz



High Channel-5MHz Bandwidth-1GHz to 10GHz

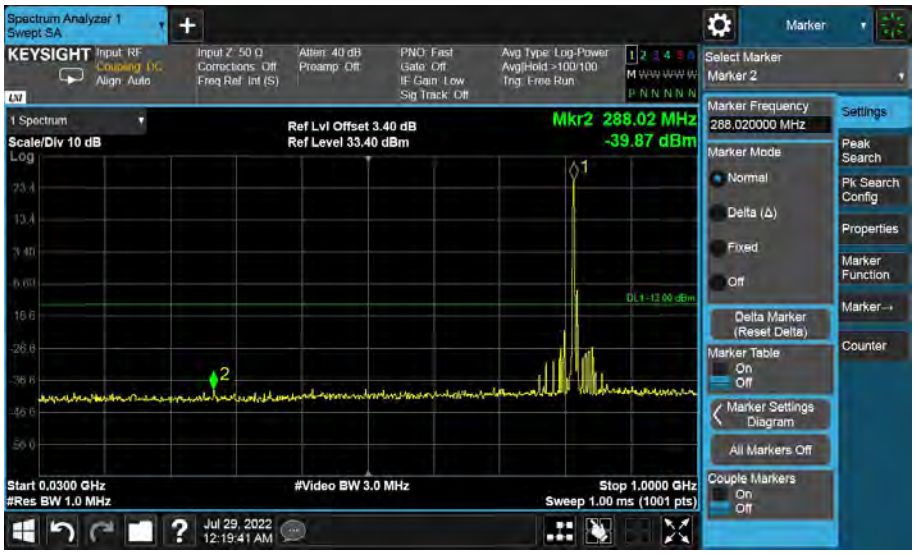


High Channel-10MHz Bandwidth-30MHz to 1GHz

High Channel-10MHz Bandwidth-1GHz to 10GHz

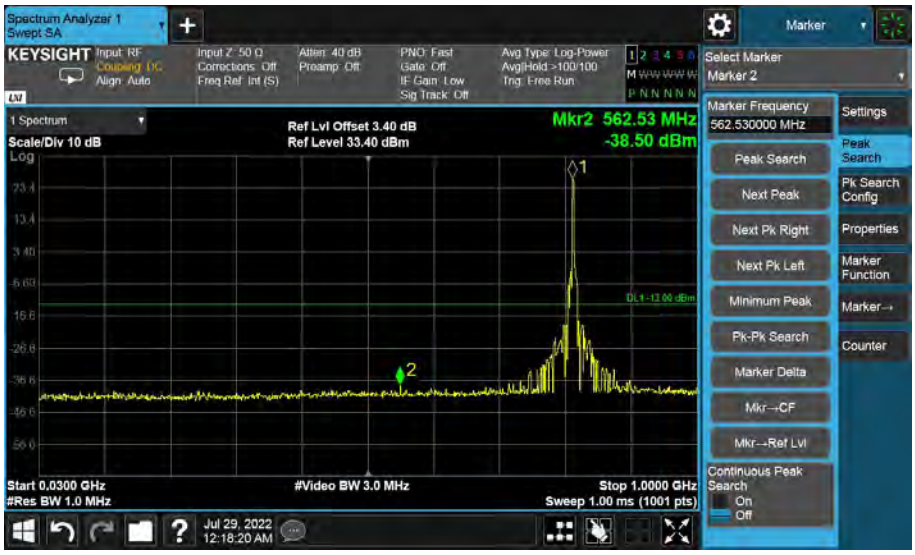
Middle Channel-1.4MHz Bandwidth-30MHz to 1GHz

Middle Channel-1.4MHz Bandwidth-1GHz to 10GHz



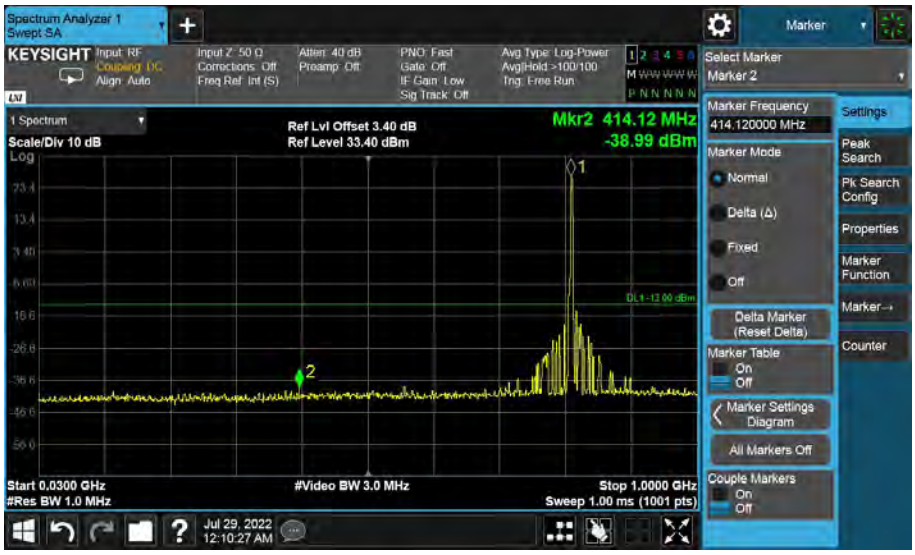
Middle Channel-3MHz Bandwidth-30MHz to 1GHz

Middle Channel-3MHz Bandwidth-1GHz to 10GHz



Middle Channel-5MHz Bandwidth-30MHz to 1GHz

Middle Channel-5MHz Bandwidth-1GHz to 10GHz



Middle Channel-10MHz Bandwidth-30MHz to 1GHz

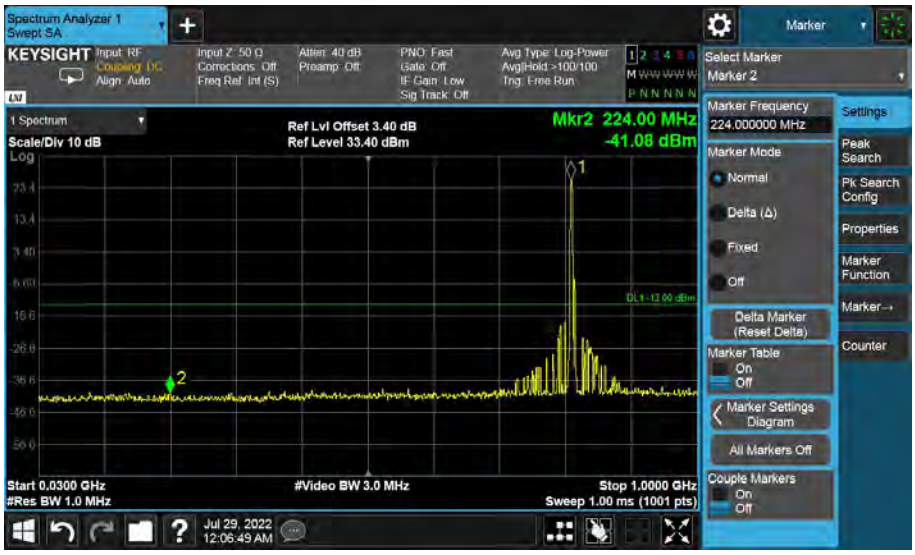
Middle Channel-10MHz Bandwidth-1GHz to 10GHz

Low Channel-1.4MHz Bandwidth-30MHz to 1GHz

Low Channel-1.4MHz Bandwidth-1GHz to 10GHz

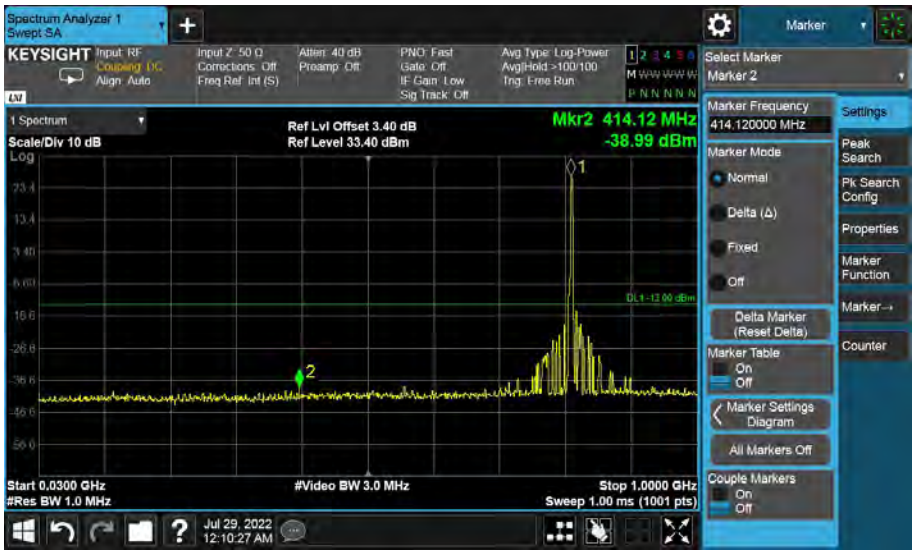
Low Channel-3MHz Bandwidth-30MHz to 1GHz

Low Channel-3MHz Bandwidth-1GHz to 10GHz



Low Channel-5MHz Bandwidth-30MHz to 1GHz

Low Channel-5MHz Bandwidth-1GHz to 10GHz



Low Channel-10MHz Bandwidth-30MHz to 1GHz

Low Channel-10MHz Bandwidth-1GHz to 10GHz

(824MHz-849MHz)

High Channel-1.4MHz Bandwidth-30MHz to 1GHz

High Channel-1.4MHz Bandwidth-1GHz to 10GHz

High Channel-3MHz Bandwidth-30MHz to 1GHz

High Channel-3MHz Bandwidth-1GHz to 10GHz

High Channel-5MHz Bandwidth-30MHz to 1GHz

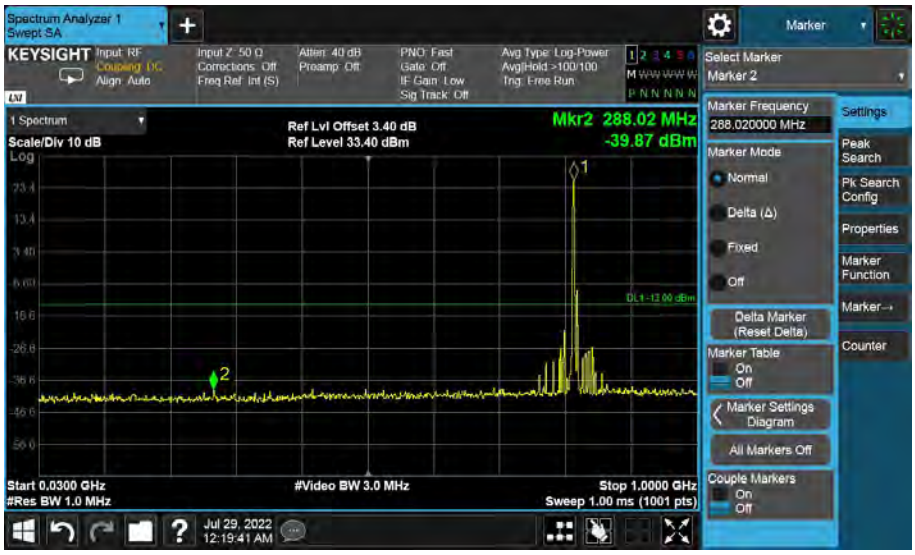
High Channel-5MHz Bandwidth-1GHz to 10GHz

High Channel-10MHz Bandwidth-30MHz to 1GHz

High Channel-10MHz Bandwidth-1GHz to 10GHz

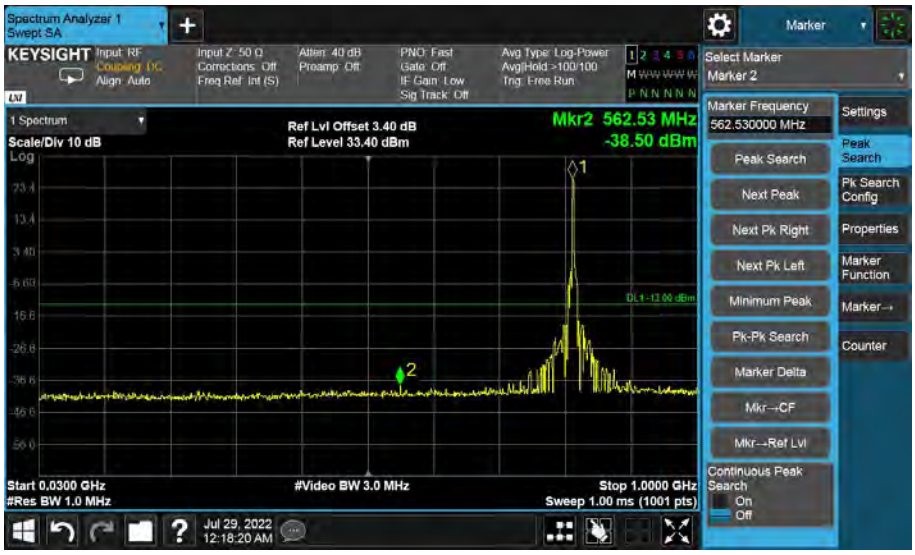
Middle Channel-1.4MHz Bandwidth-30MHz to 1GHz

Middle Channel-1.4MHz Bandwidth-1GHz to 10GHz



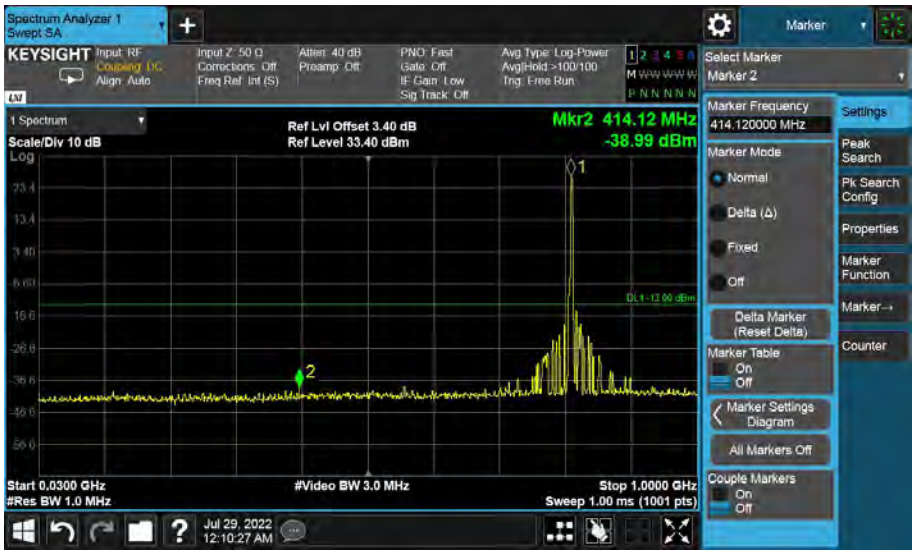
Middle Channel-3MHz Bandwidth-30MHz to 1GHz

Middle Channel-3MHz Bandwidth-1GHz to 10GHz



Middle Channel-5MHz Bandwidth-30MHz to 1GHz

Middle Channel-5MHz Bandwidth-1GHz to 10GHz



Middle Channel-10MHz Bandwidth-30MHz to 1GHz

Middle Channel-10MHz Bandwidth-1GHz to 10GHz

Low Channel-1.4MHz Bandwidth-30MHz to 1GHz

Low Channel-1.4MHz Bandwidth-1GHz to 10GHz

Low Channel-3MHz Bandwidth-30MHz to 1GHz

Low Channel-3MHz Bandwidth-1GHz to 10GHz

Low Channel-5MHz Bandwidth-30MHz to 1GHz

Low Channel-5MHz Bandwidth-1GHz to 10GHz

Low Channel-10MHz Bandwidth-30MHz to 1GHz

Low Channel-10MHz Bandwidth-1GHz to 10GHz

6.6. Radiated Spurious Emission

Specifications:	FCC Part 2.1051, 2.1053, 22.917
DUT Serial Number:	866884046100616
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 22.917 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to Part 24.238 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB, so the limit level is: P(dBm)– (43 + 10 log(P)) dB= -13dBm.

According to Part 27.53(c):

On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

According to Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 Bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10(P) dB.

According to Part 27.53(g):

For operations in the 600 MHz Band and the 698-746 MHz Band, the power of any emission outside a licensee's frequency Band(s) of operation shall be attenuated below the transmitter power (P) within the licensed Band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution Bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz Bands immediately outside and adjacent to a licensee's frequency block, a resolution Bandwidth of at least 30 kHz may be employed.

According to Part 90.691:

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.
(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

Limits for Radiated spurious emissions(UE)	
Frequency range	**Limit Level /Resolution Bandwidth**
30 MHz to 20000 MHz	-13dBm/1MHz

Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty（30MHz-150MHz）	5.15 dB (k=2)
Expanded Uncertainty（150MHz-1GHz）	4.09dB (k=2)
Expanded Uncertainty（1GHz-3GHz）	2.92dB (k=2)
Expanded Uncertainty（3GHz-6GHz）	2.93dB (k=2)
Expanded Uncertainty（3GHz-12.75GHz）	2.69dB (k=2)

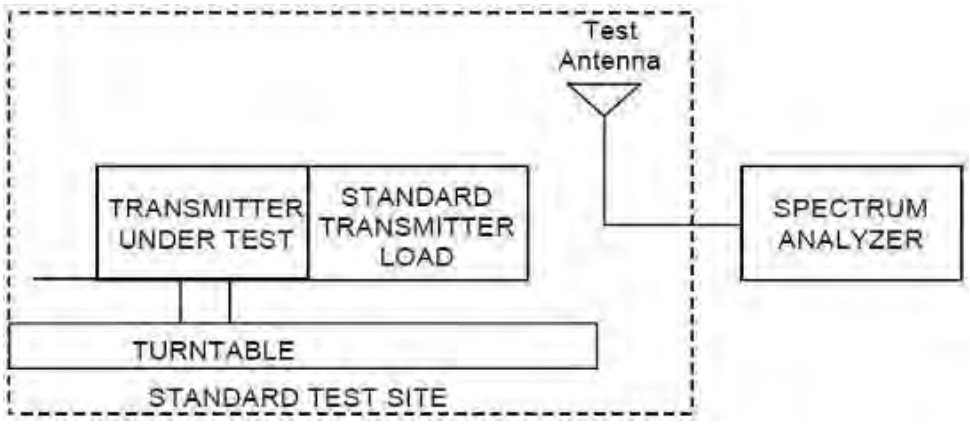
Test Setup:

The EUT was placed in an anechoic chamber. The Wireless Communications Test Set was used to set the TX channel and power level and modulate the TX signal with different bit patterns.

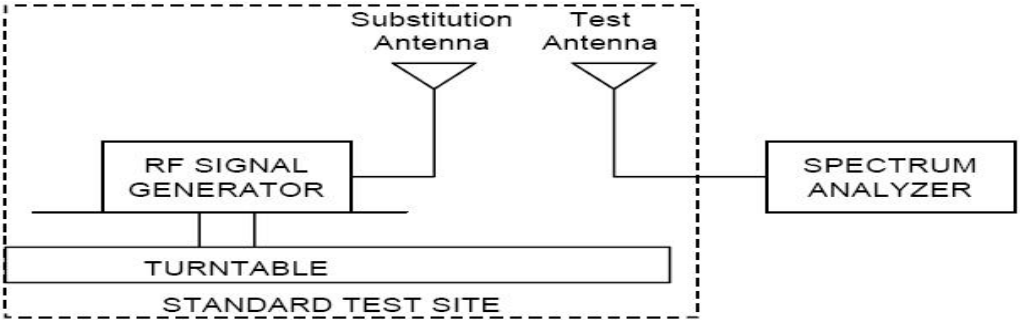
Test Method:

The measurement method is substitution method accordance with section 2.2.12 of ANSI/TIA-603-E: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

(a) Connect the equipment as illustrated and measure the spurious emissions as the method as above. The distance from the device to the antenna is 3 m .



(b) Reconnect the equipment as illustrated.



(c) Remove the transmitter and replace it with a substitution antenna. The center of the substitution antenna should be approximately at the same location as the center of the transmitter.

(d) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.

(e) Repeat step d) with both antennas vertically polarized for each spurious frequency.

(f) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps d) and e) by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:

P_d(dBm) = P_g(dBm) – cable loss (dB) + antenna gain (dB)

where:

Pd is the dipole equivalent power and Pg is the generator output power into the substitution antenna.

Note:

The radiation spurious test data only show the worst case, which is chosen according to the conduction power.

NB-IoT B 2 Radiated Spurious Emission Results

Test Data （3.75 kHz Sub-carrier Spacing 19199 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
2604.8	-51.1	1.3	-0.4	-52.8	V
3819.6	-65.5	1.6	8.7	-58.4	V
5279.6	-62.0	2.0	10.5	-53.5	V
7639.2	-65.4	2.6	11.5	-56.5	V
8131.2	-69.1	2.6	11.7	-60.0	V
10880	-67.9	3.4	13.5	-57.8	V

NB-IoT B 4 Radiated Spurious Emission Results

Test Data （3.75 kHz Sub-carrier Spacing 20399 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3509.8	-70.7	1.6	9.0	-63.3	V
5264.7	-70.2	2.0	10.4	-61.8	V
7019.6	-69.2	2.5	11.3	-60.4	V
8774.5	-69.4	3.3	12.0	-60.7	V
10529.4	-68.8	3.6	13.2	-59.2	V
12284.3	-69.5	3.5	13.9	-59.1	V

NB-IoT B 12 Radiated Spurious Emission Results

Test Data （3.75 kHz Sub-carrier Spacing 23011 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1412.2	-49.0	0.9	1.7	-48.2	V
2068.8	-54.5	1.2	1.7	-54.0	V
2627.4	-50.8	1.3	-0.4	-52.5	V
3059.6	-70.5	1.4	8.6	-63.3	V
5264.4	-68.9	2.0	10.5	-60.4	V
7019.2	-61.5	2.5	11.3	-52.7	V

NB-IoT B 13 Radiated Spurious Emission Results

Test Data （3.75 kHz Sub-carrier Spacing 23279 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1410.2	-50.3	0.9	1.7	-49.5	V
2134.0	-55.9	1.2	1.2	-55.9	V
2438.4	-47.4	1.3	0.1	-48.6	V
3075.6	-71.1	1.4	8.7	-63.8	V
3794.0	-68.1	1.7	8.7	-61.1	V
4516.0	-70.3	1.8	9.7	-62.4	V

NB-IoT B26 (824MHz-849MHz) Radiated Spurious Emission Results

Test Data （3.75 kHz Sub-carrier Spacing 27039QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1400.0	-50.0	0.9	1.7	-49.2	V
1697.4	-54.9	1.0	1.6	-54.3	V
2050.8	-56.2	1.1	1.8	-55.5	V
2604.4	-51.1	1.3	-0.4	-52.8	V
3034.0	-70.8	1.4	8.93	-63.3	V
6586.0	-68.7	2.5	11.13	-60.1	V

NB-IoT B26(814MHz-824MHz) Radiated Spurious Emission Results

Test Data （3.75 kHz Sub-carrier Spacing 26691 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1414.4	-50.3	0.9	1.7	-49.5	V
1642.3	-56.3	1.2	1.6	-55.9	V
2078.8	-49.0	1.3	1.7	-48.6	V
2630.8	-62.0	1.4	-0.4	-63.8	V
3146.8	-68.1	1.7	8.73	-61.1	V
4262.8	-70.3	1.8	9.66	-62.4	V

CAT-M B2 Radiated Spurious Emission Results

Test Data （5MHz bandwidth 19175 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3815.0	-71.9	1.6	9.3	-64.2	V
5722.5	-72.6	2.2	10.3	-64.5	V
7630.0	-71.6	2.6	11.7	-62.5	V
9537.5	-70.3	3.2	12.4	-61.1	V
11445.0	-70.0	3.7	13.8	-59.9	V
13352.5	-68.8	4.1	14.0	-58.9	V

CAT-M B4 Radiated Spurious Emission Results

Test Data （5MHz bandwidth 20375 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3505.0	-74.4	1.6	9.0	-67.0	V
5257.5	-72.9	2.0	10.3	-64.6	V
7010.0	-71.3	2.5	11.4	-62.4	V
8762.5	-69.1	3.3	12.1	-60.3	V
10515.0	-70.7	3.6	13.2	-61.1	V
12267.5	-69.6	3.5	14.1	-59.0	V

CAT-M B12 Radiated Spurious Emission Results

Test Data （5MHz bandwidth 23095 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1415.0	-69.4	0.9	1.7	-68.6	H
2122.5	-64.1	1.2	1.6	-63.7	H
2830.0	-56.6	1.4	-0.7	-58.7	H
3537.5	-74.4	1.6	9.0	-67.0	V
4245.0	-73.0	1.8	9.3	-65.5	V
4952.5	-71.4	1.9	9.8	-63.5	V

CAT-M B13 Radiated Spurious Emission Results

Test Data （10MHz bandwidth 23230 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1564.0	-65.4	1.0	0.2	-66.2	H
2346.0	-60.4	1.3	0.4	-61.3	V
3128.0	-74.2	1.5	8.9	-66.8	V
3910.0	-72.0	1.7	9.3	-64.4	V
4692.0	-72.2	1.9	9.7	-64.4	V
5474.0	-73.4	2.1	10.3	-65.2	V

CAT-M B26(Part22) Radiated Spurious Emission Results

Test Data （5MHz bandwidth 26715 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1633.0	-67.2	1.0	1.6	-66.6	V
2449.5	-59.5	1.3	0.3	-60.5	V
3266.0	-73.8	1.5	9.0	-66.3	V
4082.5	-72.9	1.7	9.3	-65.3	V
4899.0	-72.1	2.0	9.8	-64.3	V
5715.5	-72.1	2.1	10.3	-63.9	V

CAT-M B26(Part90) Radiated Spurious Emission Results

Test Data （5MHz bandwidth 26815 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1653.0	-67.4	1.0	1.6	-66.8	H
2479.5	-59.3	1.3	-0.1	-60.7	H
3306.0	-74.3	1.5	9.0	-66.8	V
4132.5	-73.1	1.7	9.3	-65.5	V
4959.0	-72.1	1.9	9.8	-64.2	V
5785.5	-73.5	2.2	10.9	-64.8	V

6.7. Band Edge

Specifications:	FCC Part 2.1051, 2.1053, 22.917
DUT Serial Number:	866884046100624
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 22.917 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to Part 24.238 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB, so the limit level is: P(dBm)– (43 + 10 log(P)) dB= -13dBm.

According to Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 Bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10(P) dB.

According to Part 90.691:

For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz

According to Part 27.53(g):

For operations in the 600 MHz Band and the 698-746 MHz Band, the power of any emission outside a licensee's frequency Band(s) of operation shall be attenuated below the transmitter power (P) within the licensed Band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution Bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz Bands immediately outside and adjacent to a licensee's frequency block, a resolution Bandwidth of at least 30 kHz may be employed.

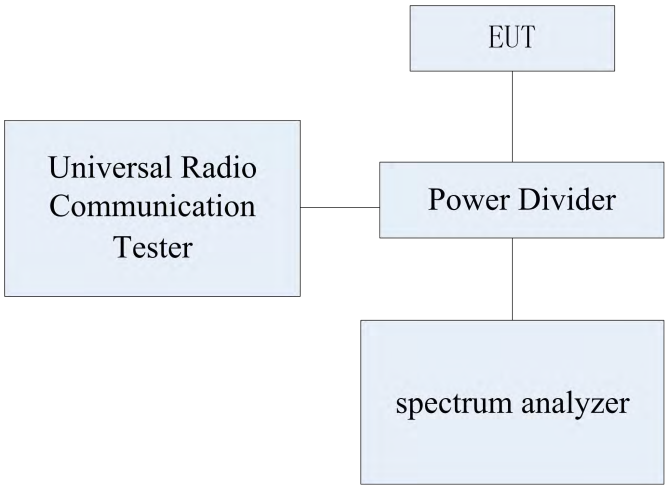
Measurement Uncertainty:

Item	Uncertainty	
Expanded Uncertainty	9kHz < f≤4GHz	0.71 dB (k=2)

	4GHz≤f < 12.75GHz	0.74 dB (k=2)
	12.75GHz≤f < 26GHz	2.70 dB (k=2)

Test Setup:

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



Test Method:

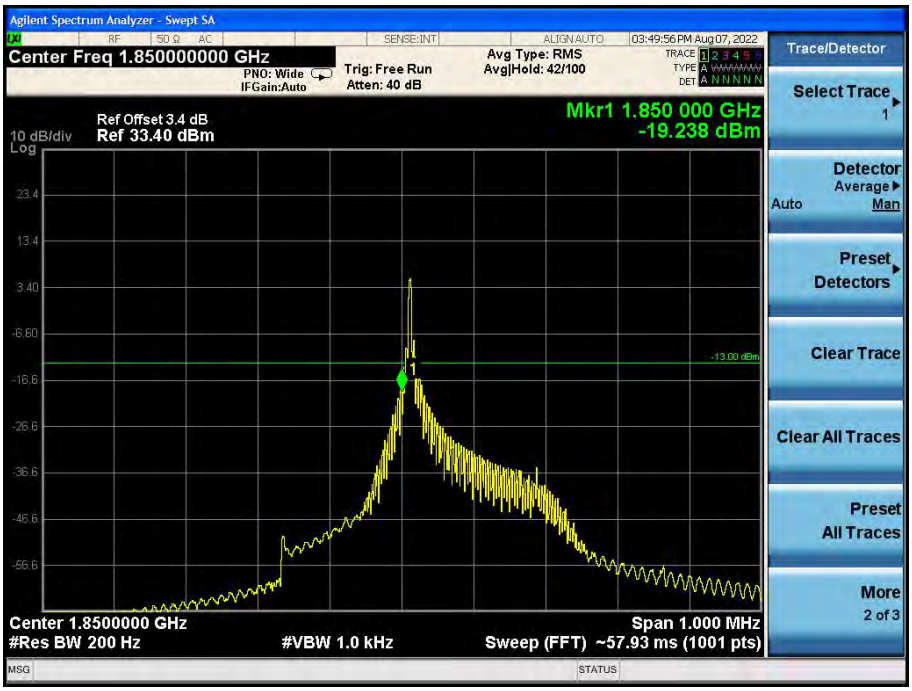
1) The EUT was coupled to the EMI test receiver analyzer mode and the base station simulator through a power divider. The lost of the cables the test system is calibrated to correct the readings.

2) The spectrum analyzer was set to Average Detector function and Maximum hold mode.

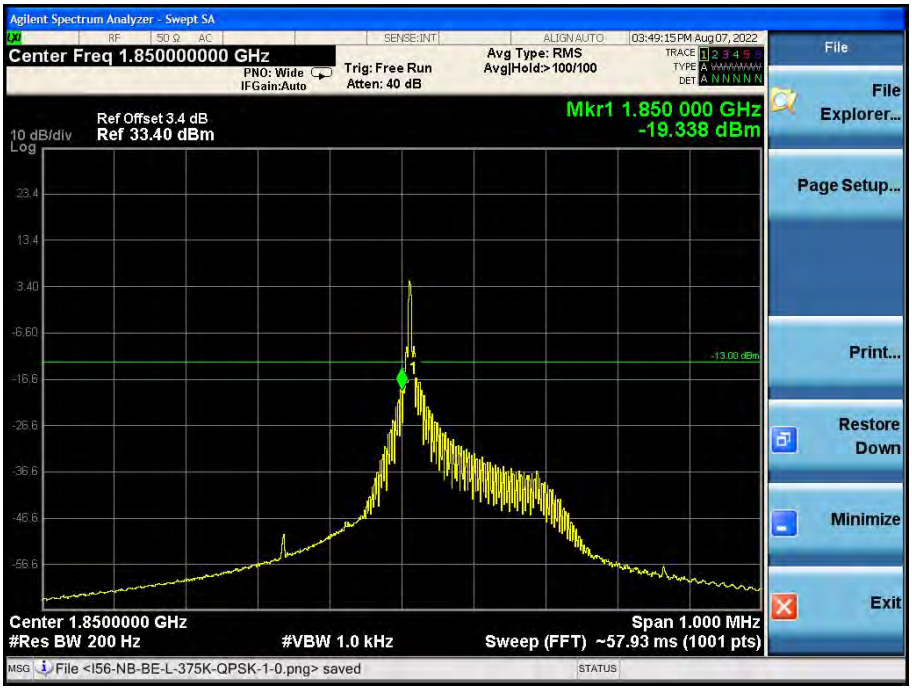
3) The resolution Bandwidth of the spectrum analyzer was a little greater than 1% of the 26dB emission Bandwidth.

Note: In the graphical result description (X, Y), X represents the number of RB, Y represents the RB offset.

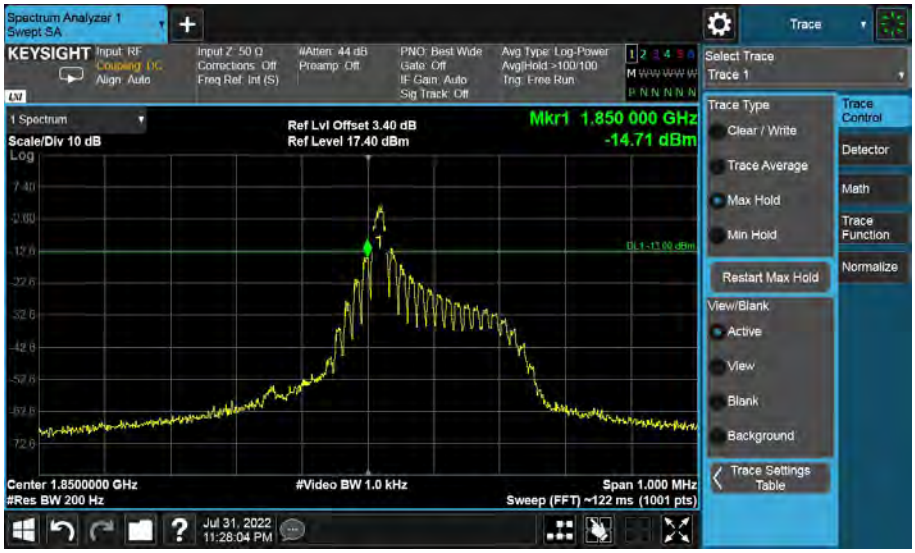
6.7.1 NB-IoT Band2 Edge Results



Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

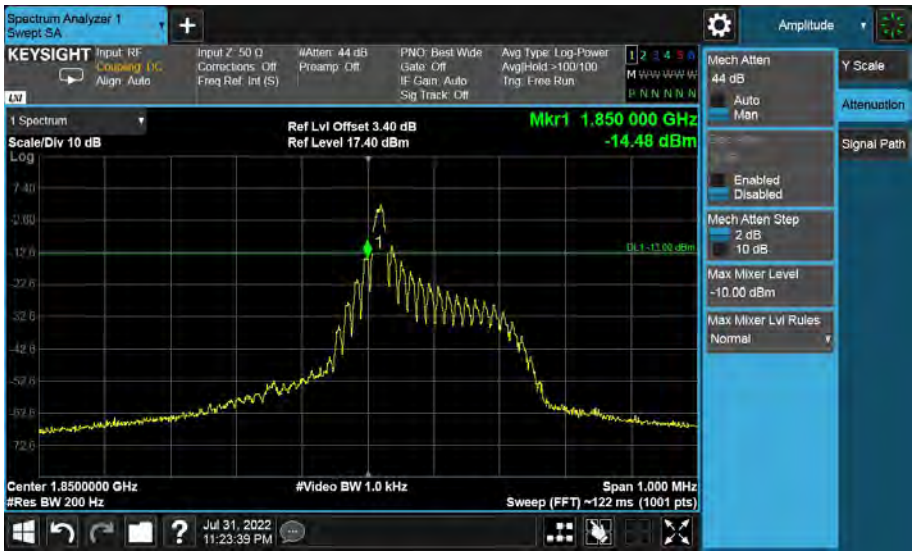


Low Channel, Subcarrier (3.75kHz), BPSK, 1@0



Low Channel, Subcarrier (15kHz), QPSK, 1@0

Low Channel, Subcarrier (15kHz), QPSK, 12@0



Low Channel, Subcarrier (15kHz), BPSK, 1@0