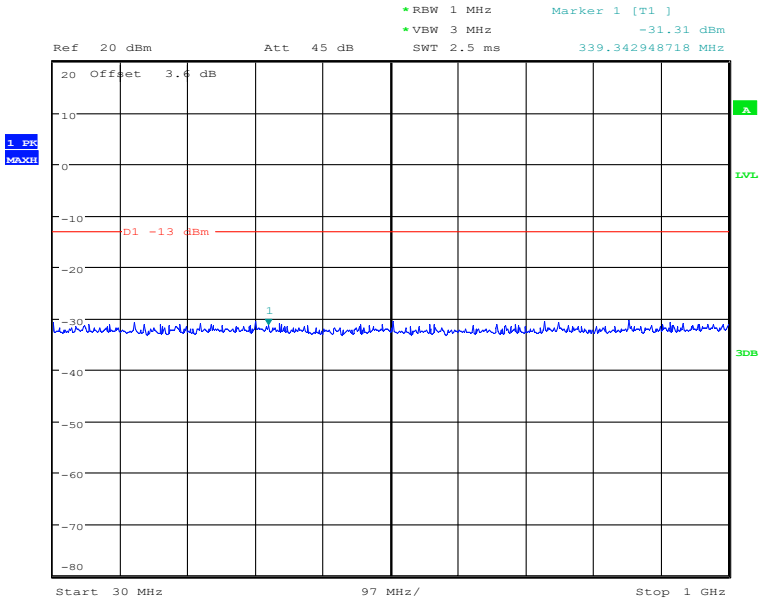
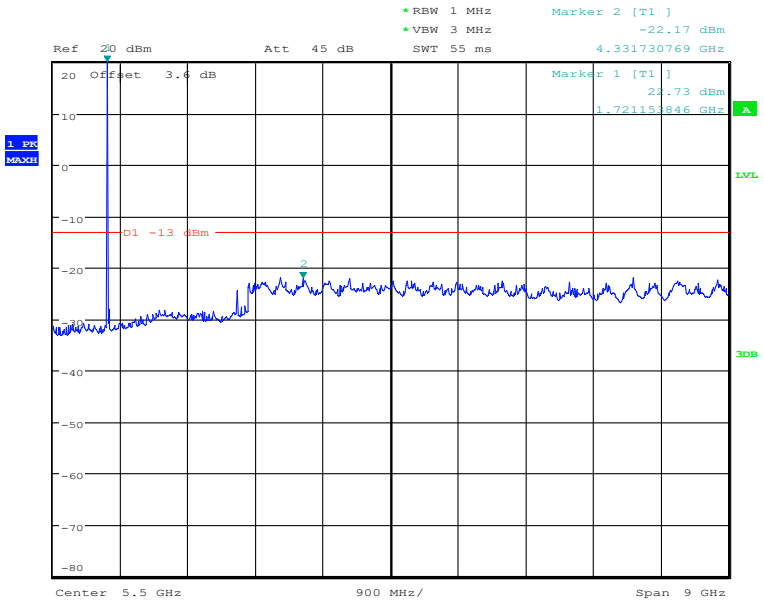
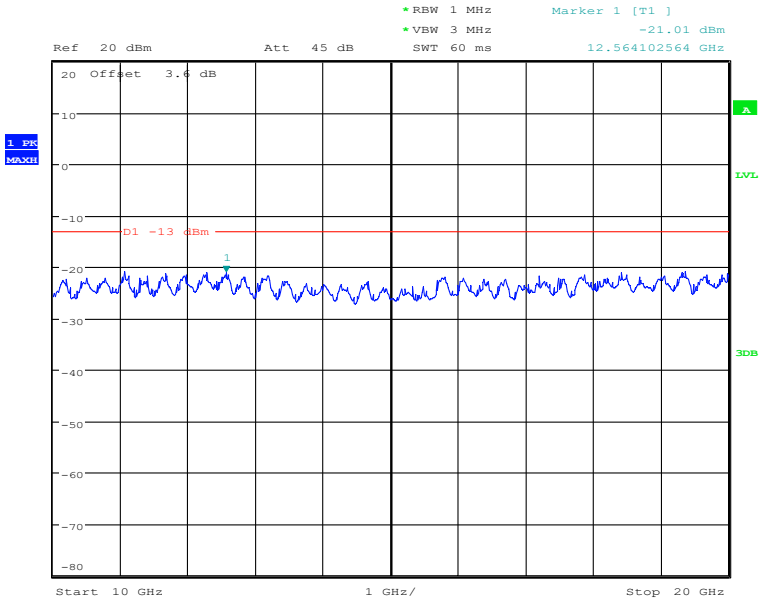


Band4-Middle Channel-15MHz Bandwidth-30MHz to 1GHz

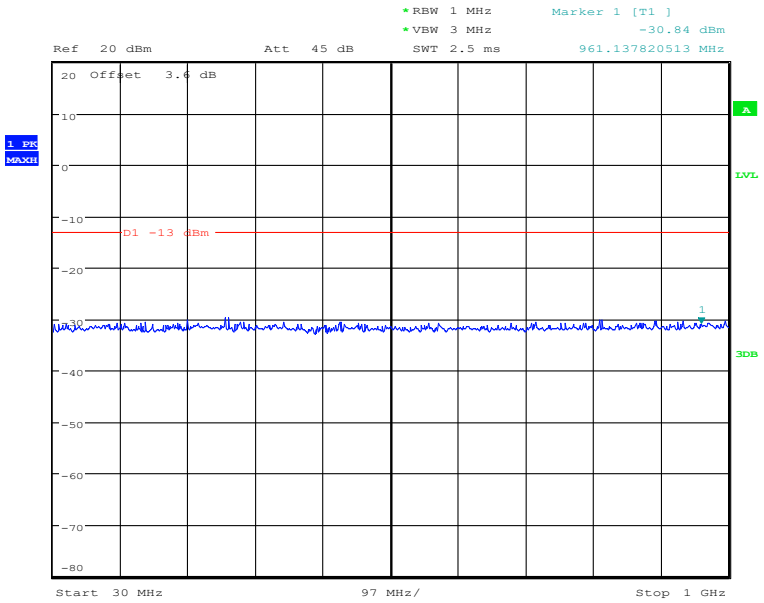


Band4-Middle Channel-15MHz Bandwidth-1GHz to 10GHz

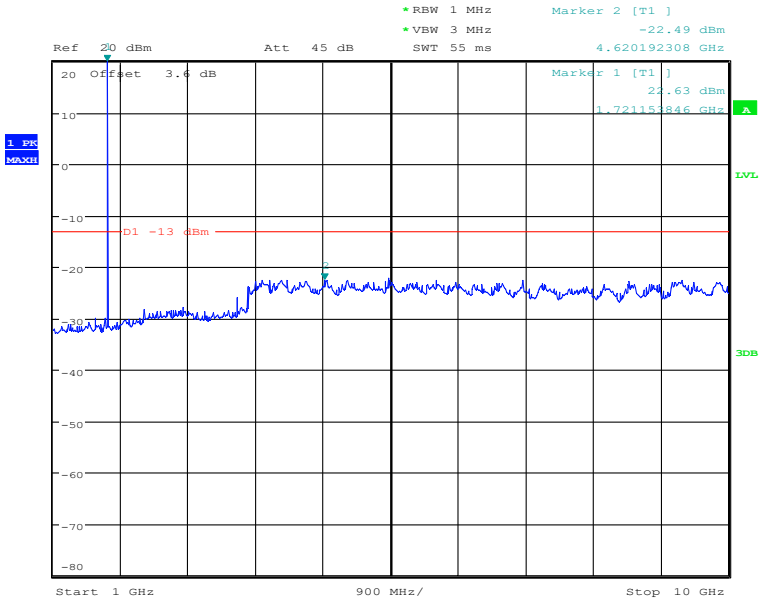
Note: The strong emission shown in each case is the carrier signal.



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



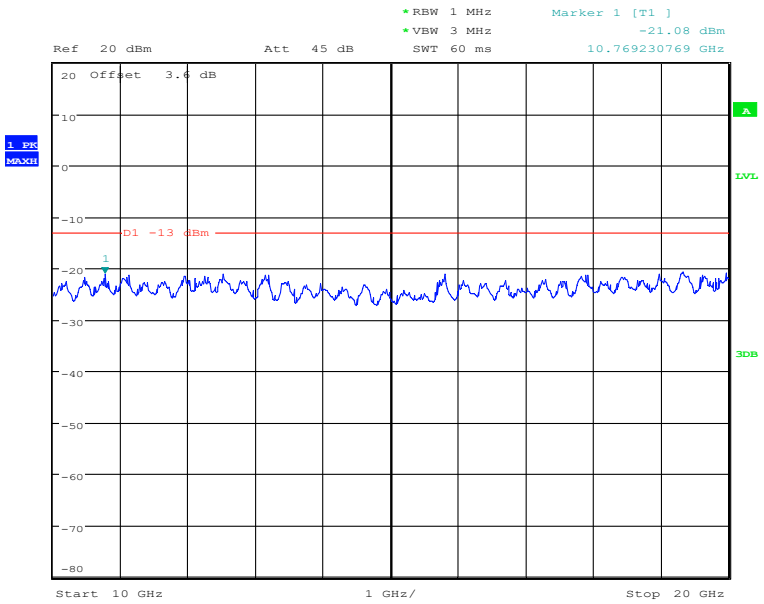
Band4-Middle Channel-20MHz Bandwidth-30MHz to 1GHz



Date: 2.SEP.2020 03:37:09

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

Note: The strong emission shown in each case is the carrier signal.



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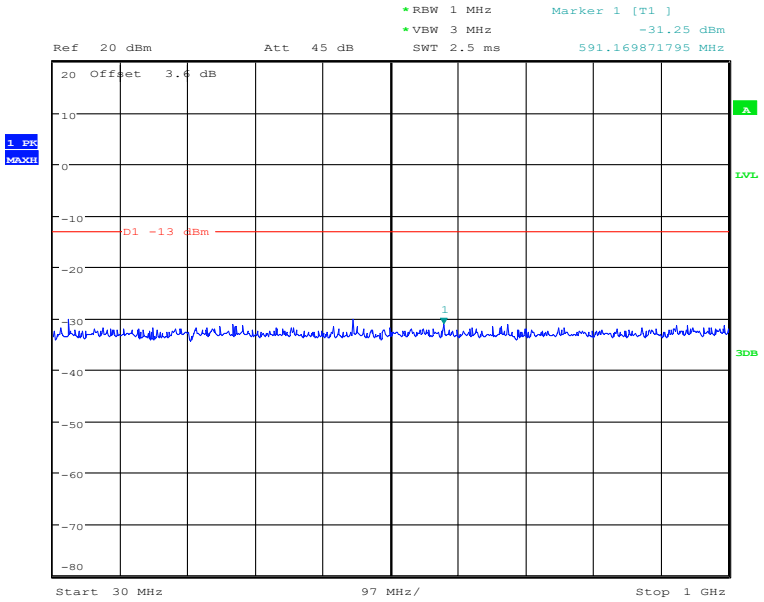
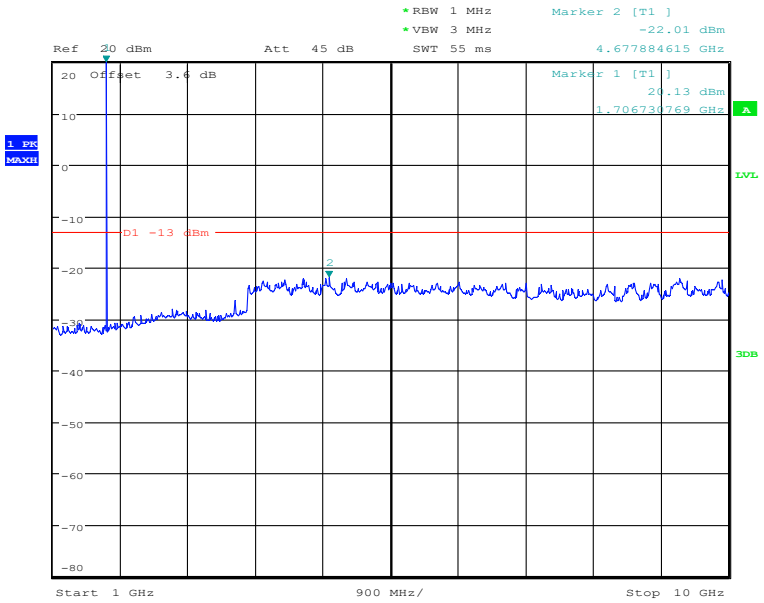
Band4-Middle Channel-20MHz Bandwidth-10GHz to 20GHz

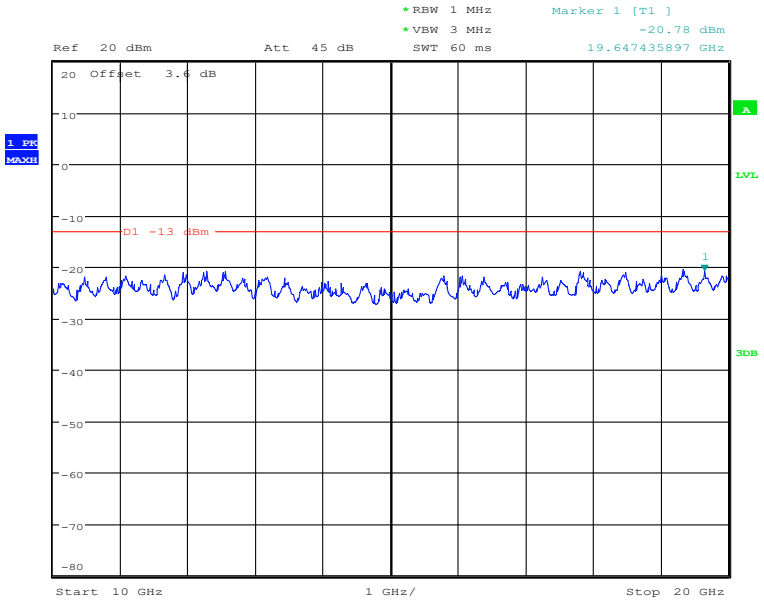


Band4-Low Channel-1.4MHz Bandwidth-30MHz to 1GHz

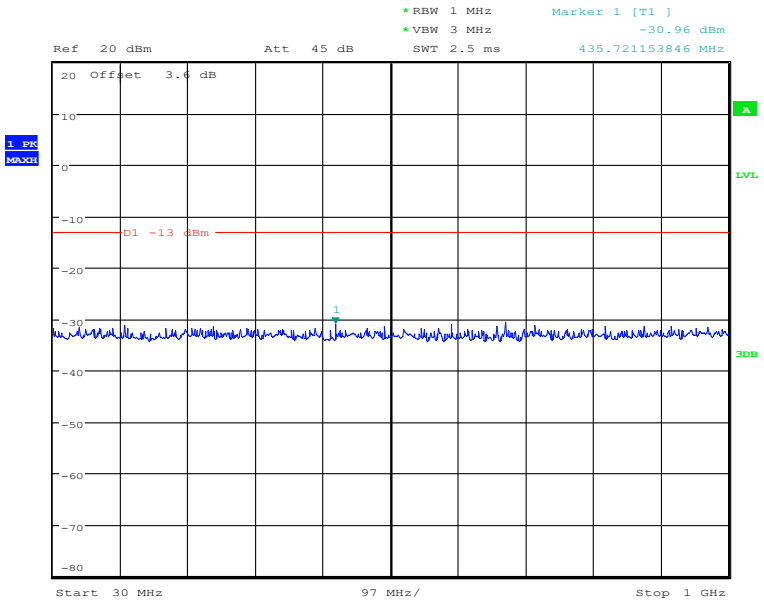


Band4-Low Channel-1.4MHz Bandwidth-1GHz to 10GHz

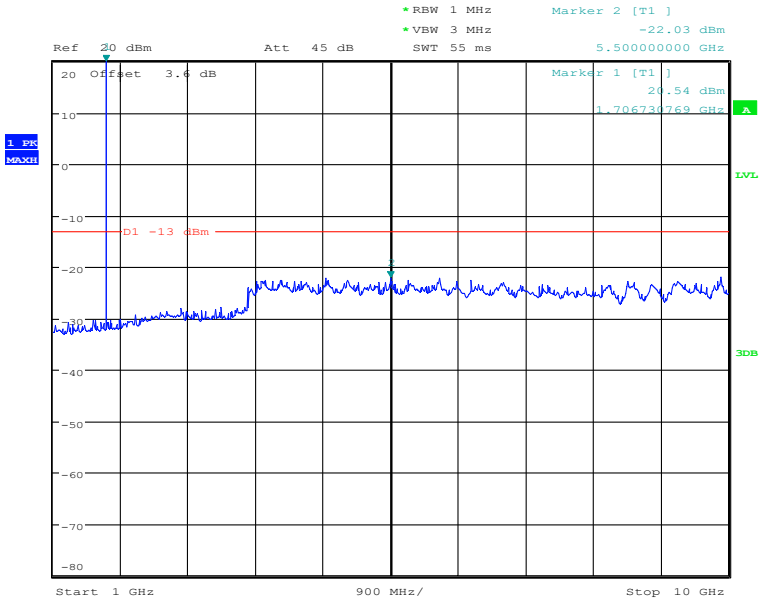
Note: The strong emission shown in each case is the carrier signal.



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



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



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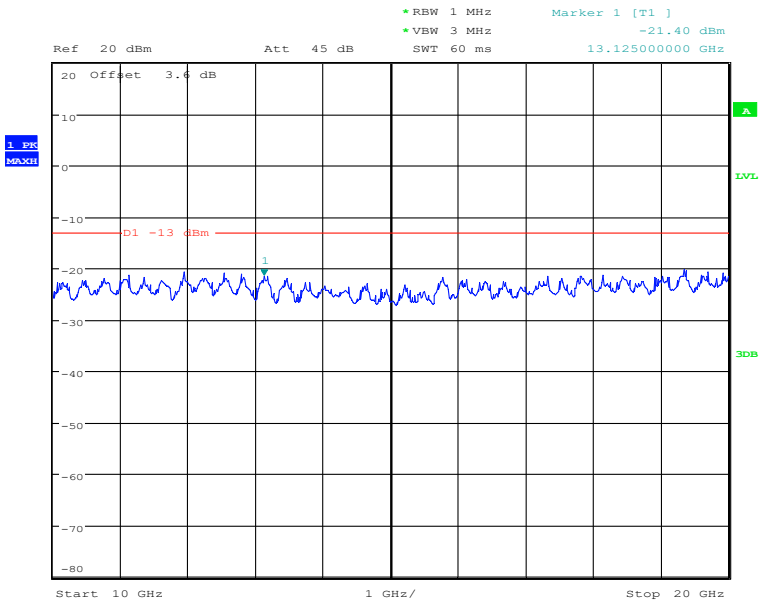
Band4-Low Channel-3MHz Bandwidth-1GHz to 10GHz

Note: The strong emission shown in each case is the carrier signal.



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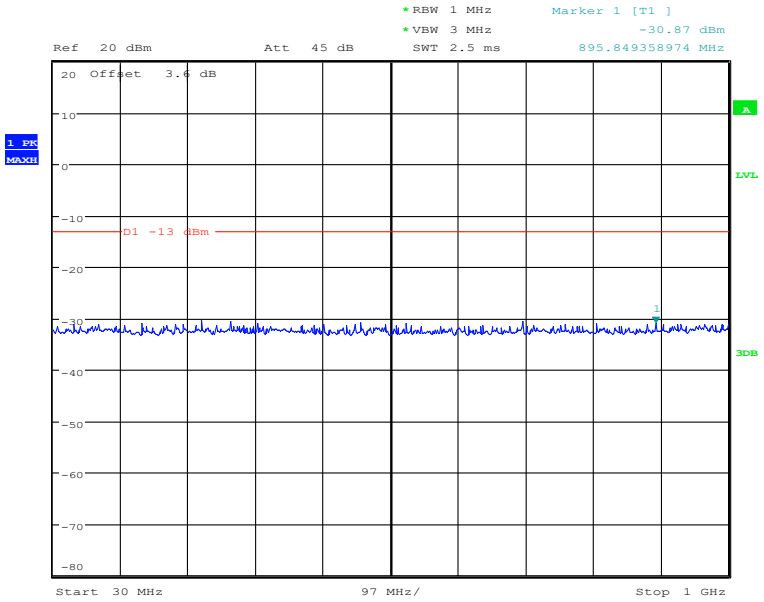
Band4-Low Channel-3MHz Bandwidth-10GHz to 20GHz



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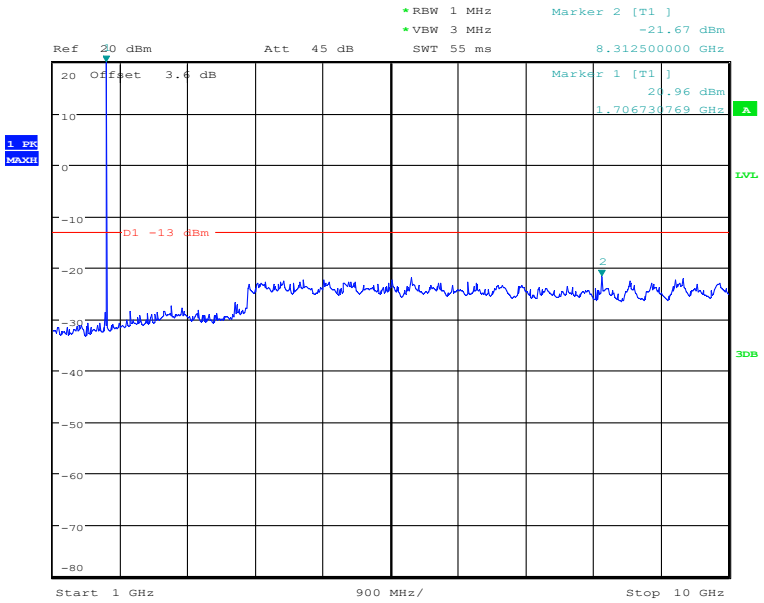
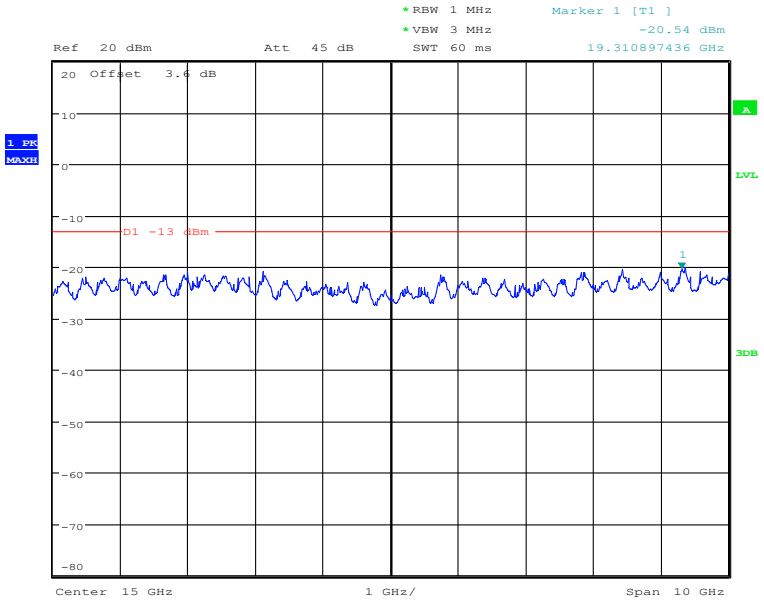
Band4-Low Channel-5MHz Bandwidth-30MHz to 1GHz



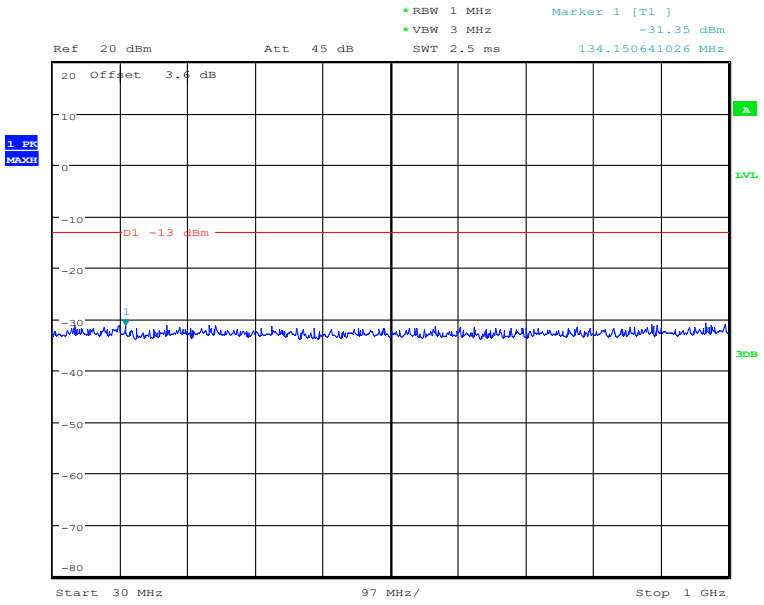
Date: 2.SEP.2020 03:18:26

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

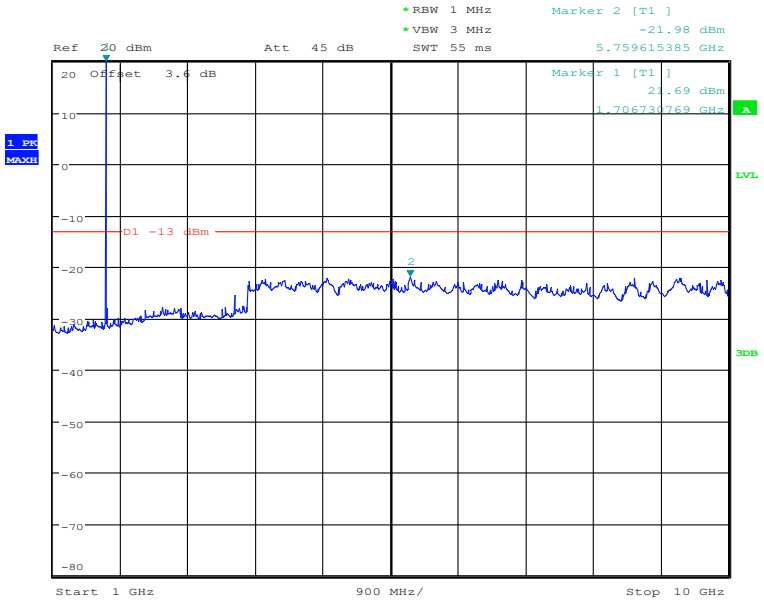
Note: The strong emission shown in each case is the carrier signal.



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



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



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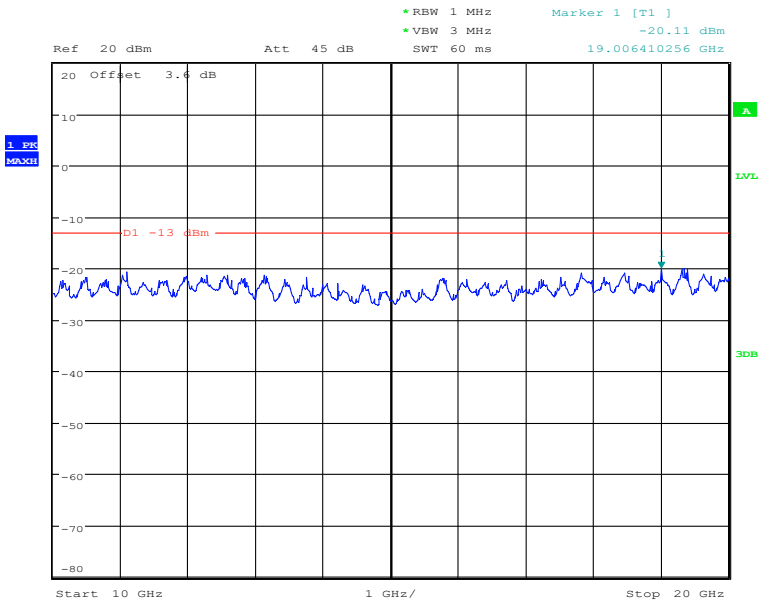
Band4-Low Channel-10MHz Bandwidth-1GHz to 10GHz

Note: The strong emission shown in each case is the carrier signal.



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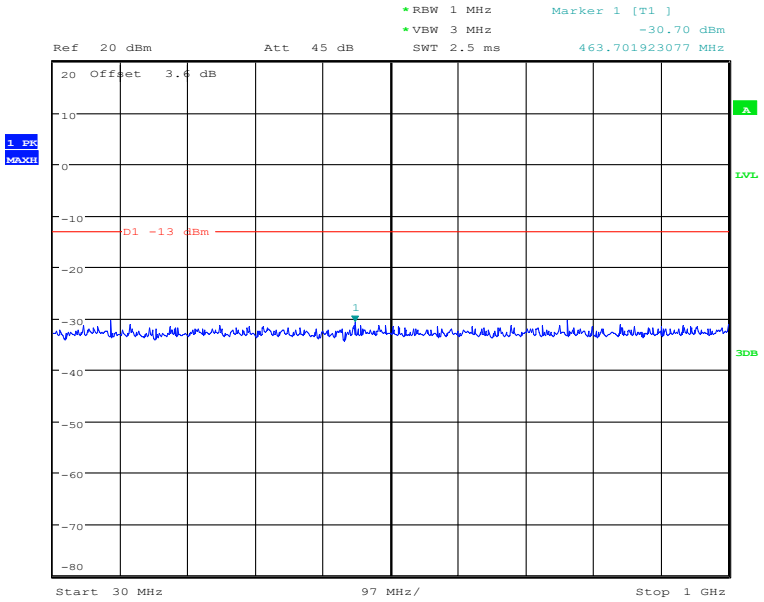
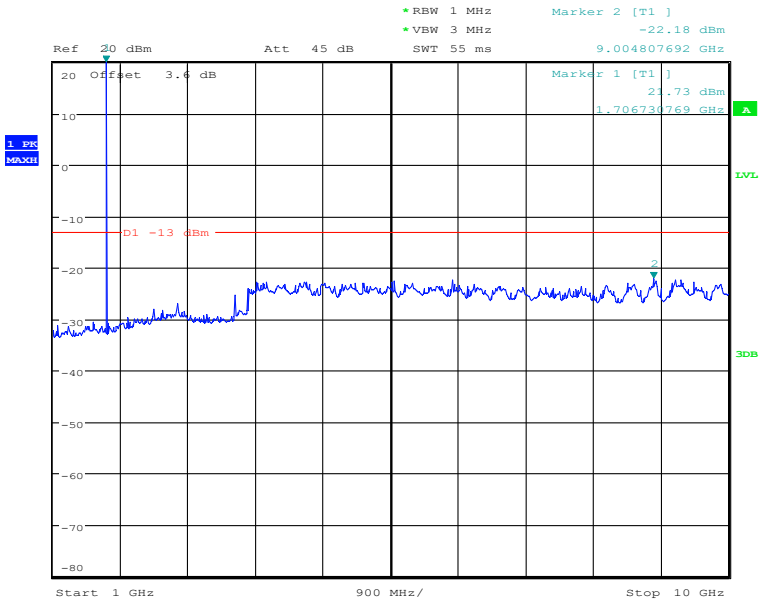
Band4-Low Channel-10MHz Bandwidth-10GHz to 20GHz

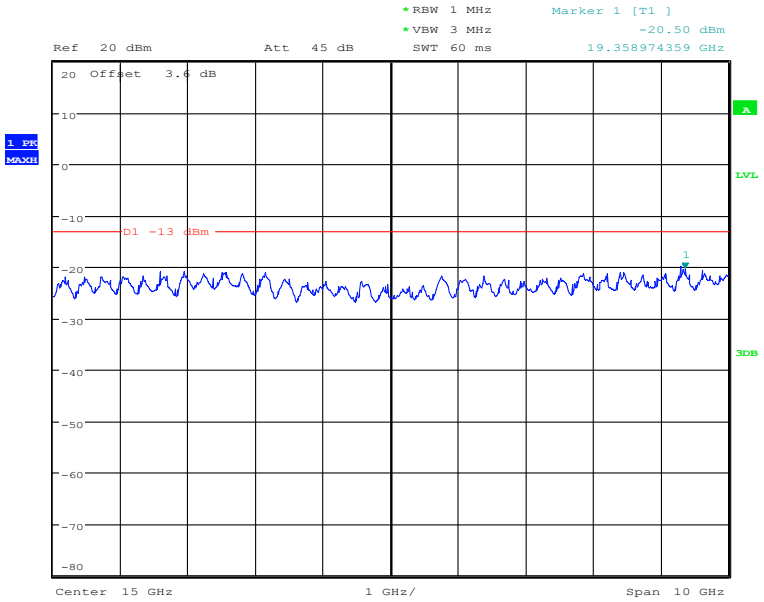


Band4-Low Channel-15MHz Bandwidth-30MHz to 1GHz

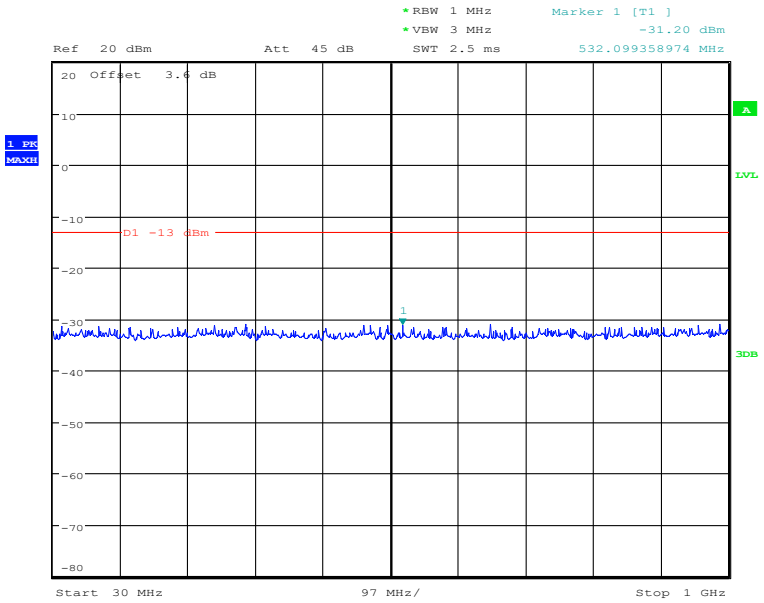


Band4-Low Channel-15MHz Bandwidth-1GHz to 10GHz

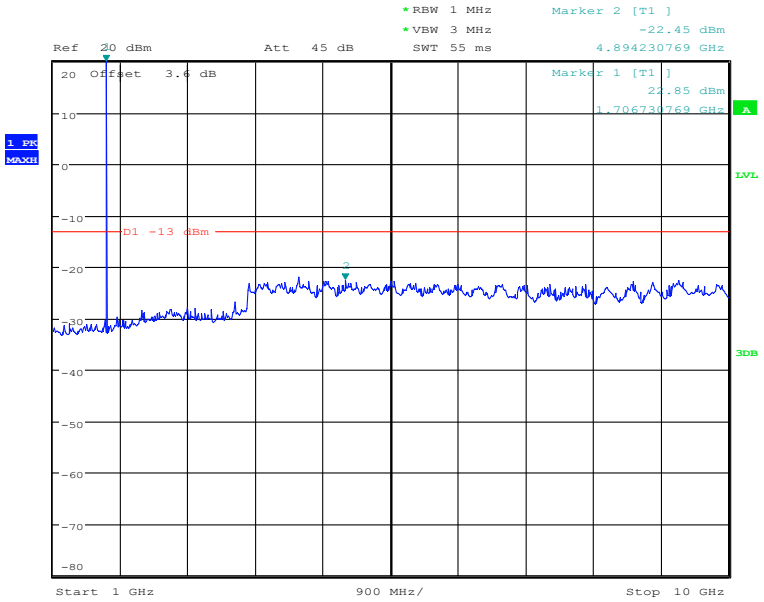
Note: The strong emission shown in each case is the carrier signal.



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



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



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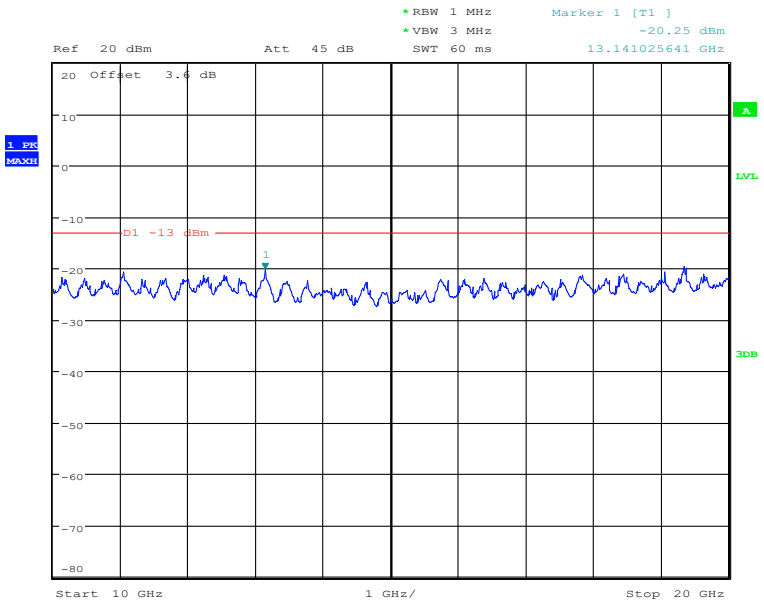
Band4-Low Channel-20MHz Bandwidth-1GHz to 10GHz

Note: The strong emission shown in each case is the carrier signal.



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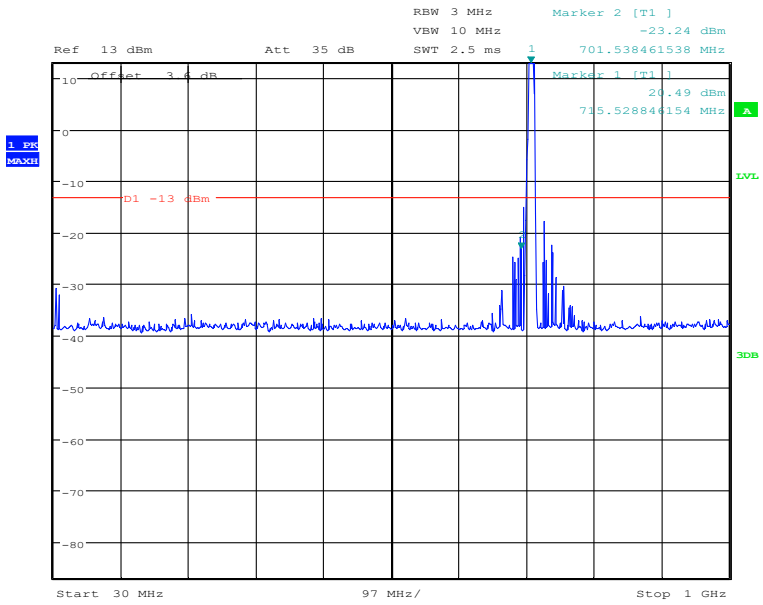
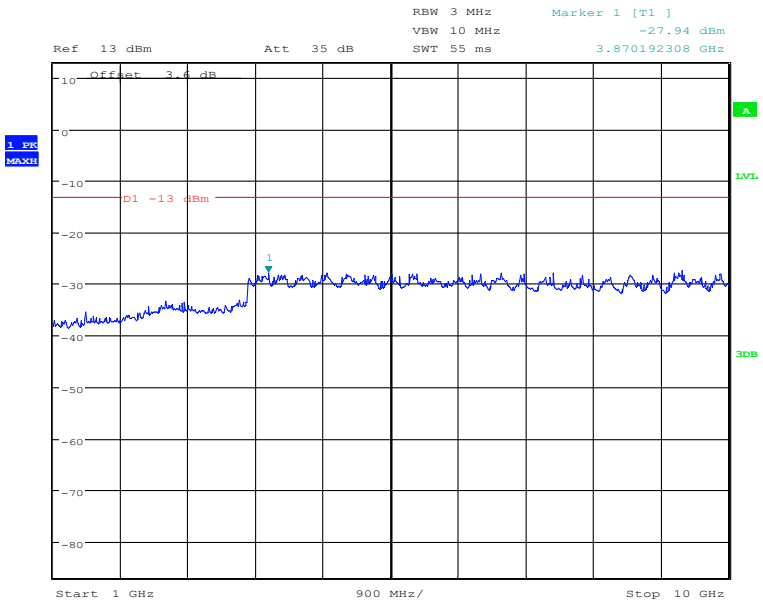
Band4-Low Channel-20MHz Bandwidth-10GHz to 20GHz

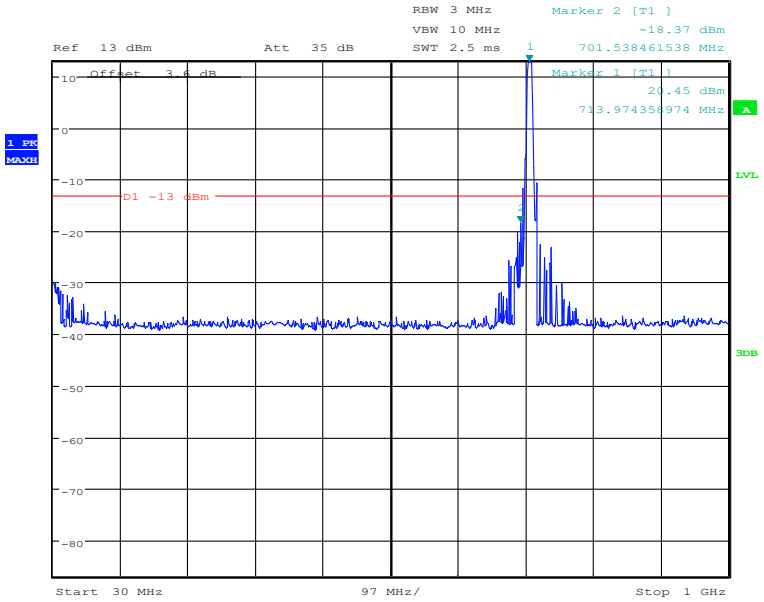
5.4.6 CAT-M B12 Conducted Spurious Emission Results



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



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



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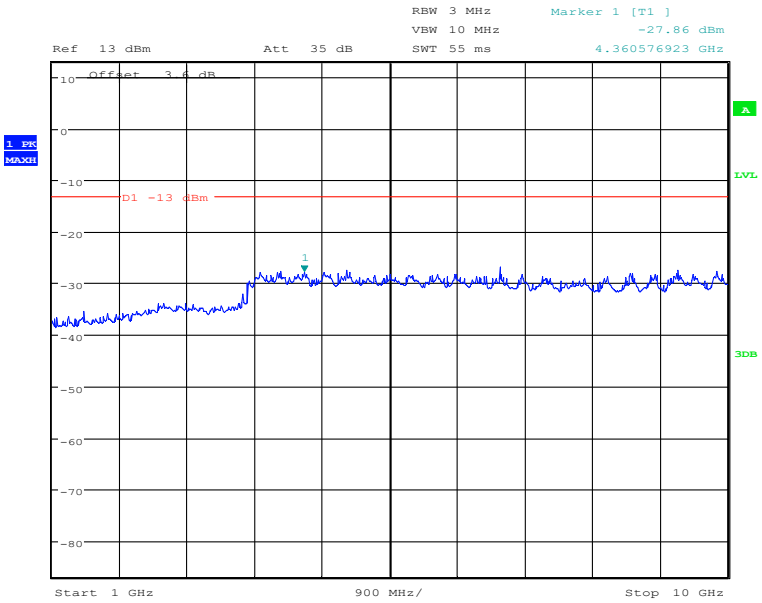
High Channel-3MHz Bandwidth-30MHz to 1GHz



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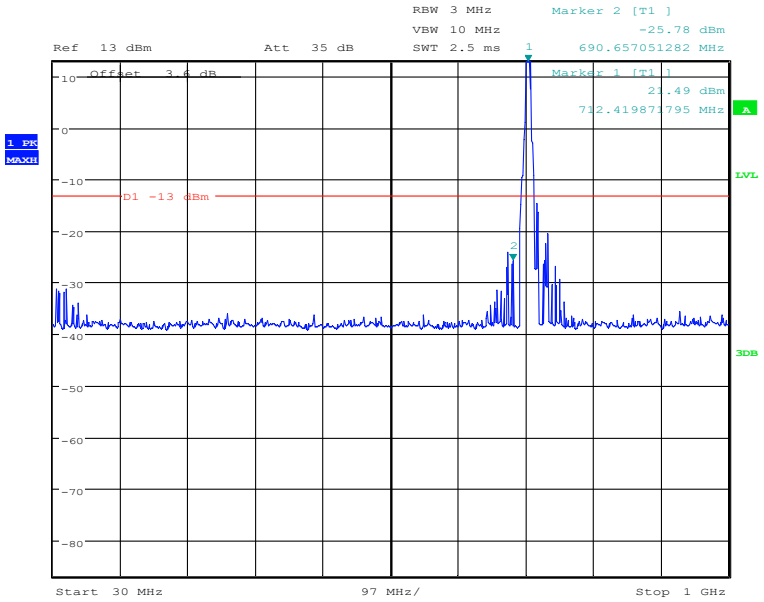
High Channel-3MHz Bandwidth-1GHz to 10GHz



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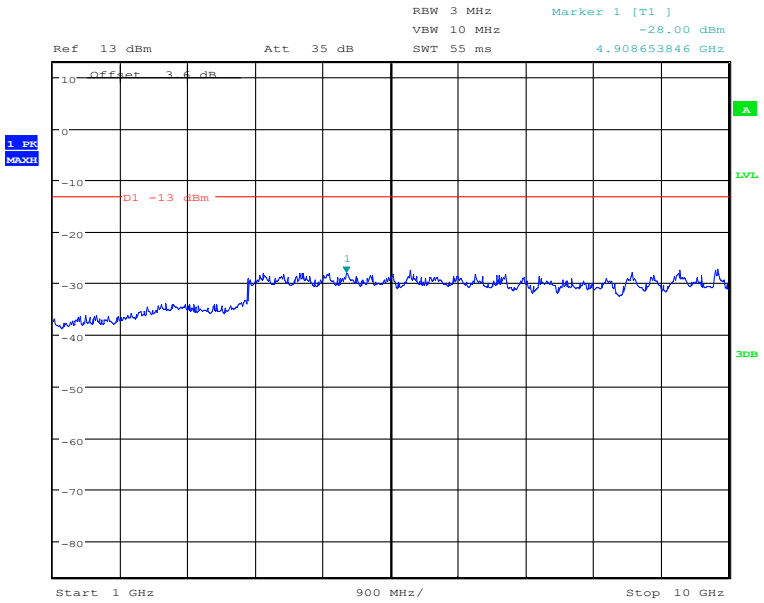
High Channel-5MHz Bandwidth-30MHz to 1GHz



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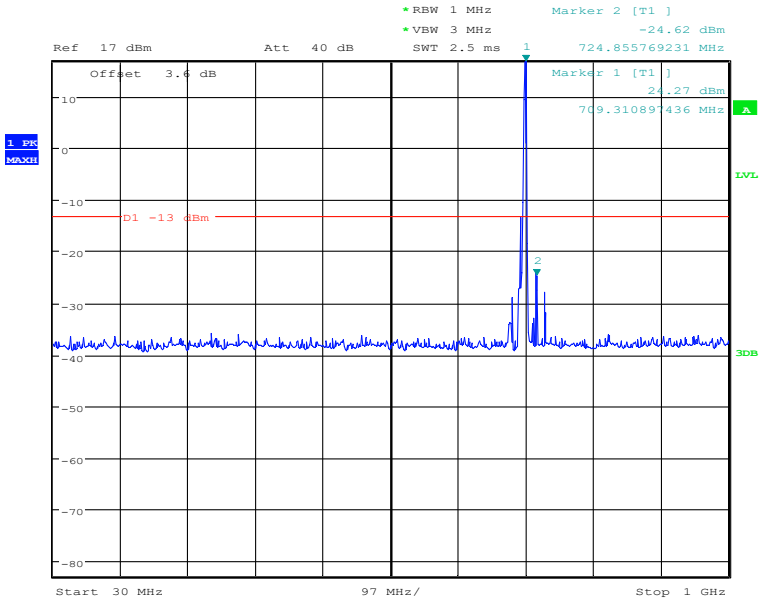
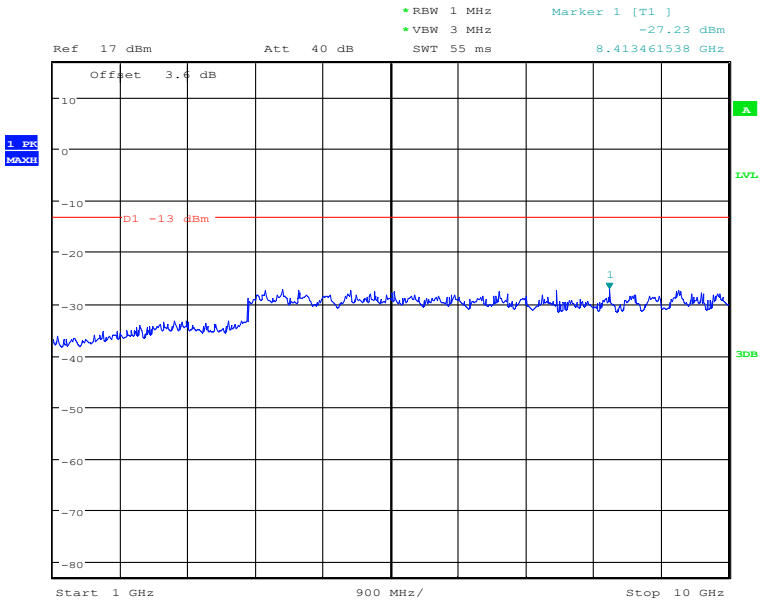
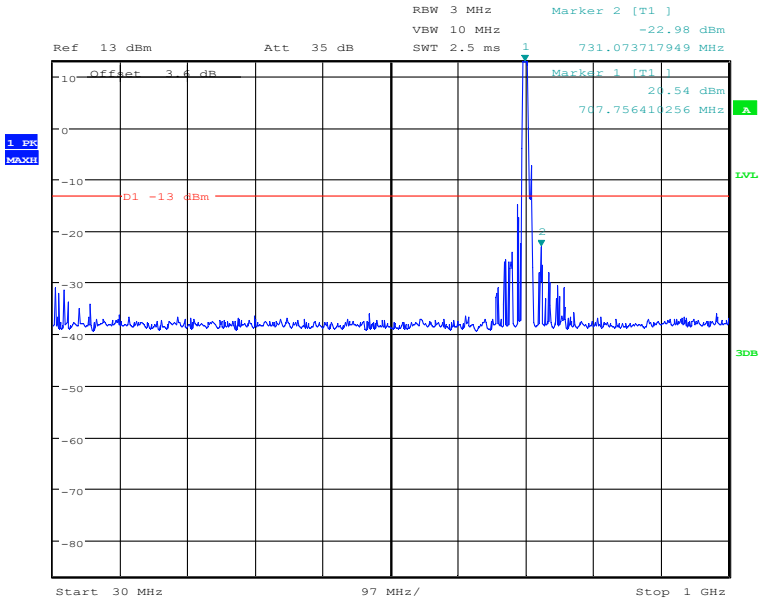
High Channel-5MHz Bandwidth-1GHz to 10GHz



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



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



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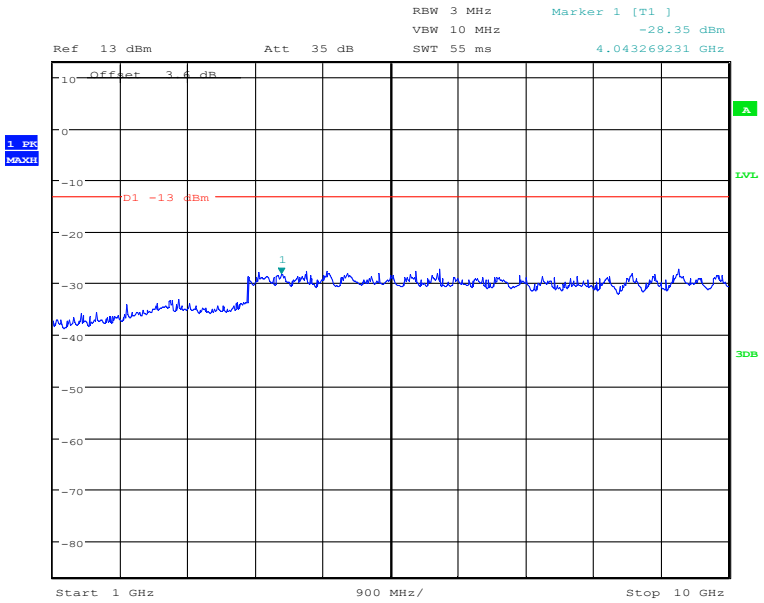
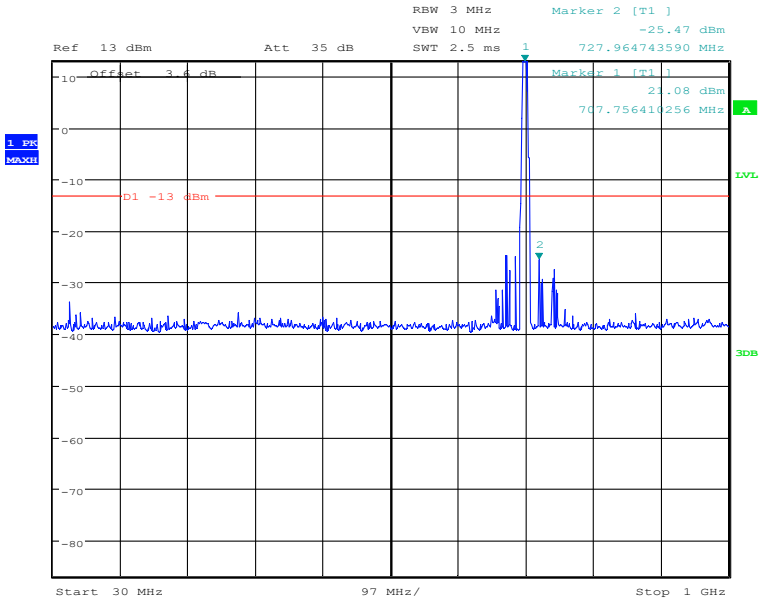
Middle Channel-1.4MHz Bandwidth-30MHz to 1GHz



Date: 2.SEP.2020 04:23:20

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



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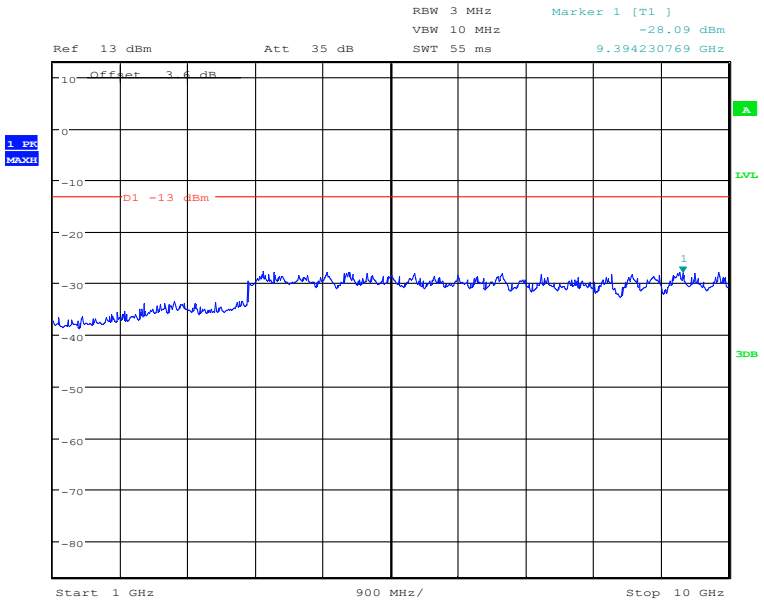
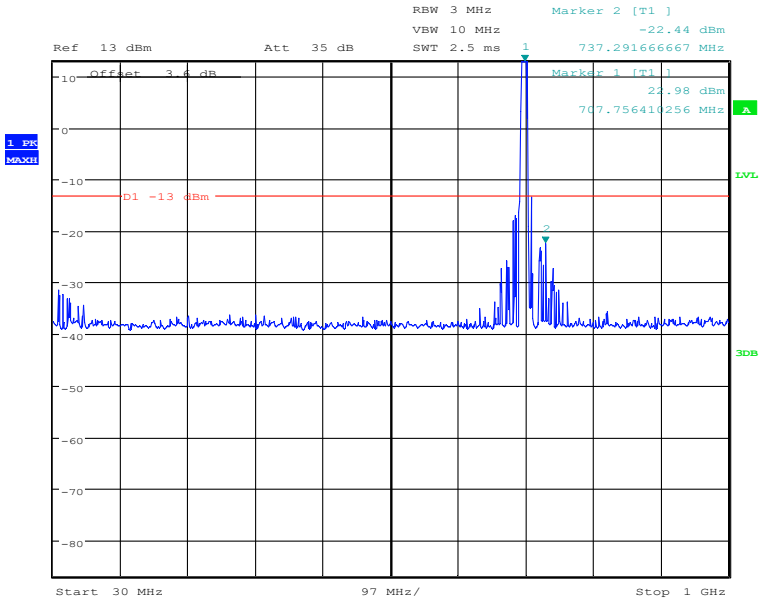
Middle Channel-3MHz Bandwidth-30MHz to 1GHz



Date: 2.SEP.2020 04:26:43

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



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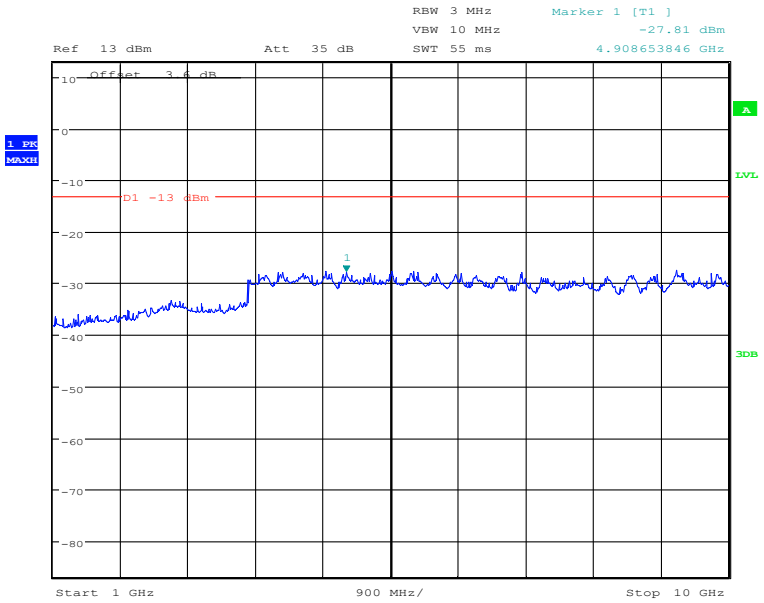
Middle Channel-5MHz Bandwidth-30MHz to 1GHz



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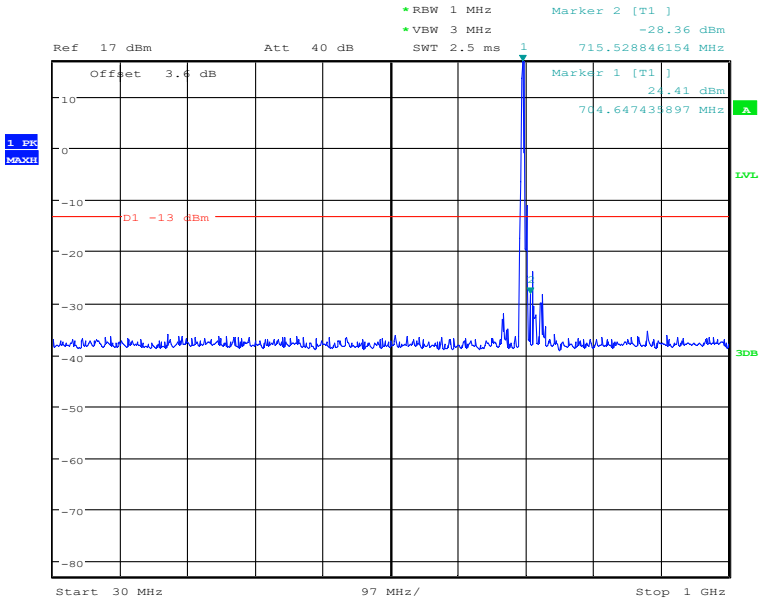
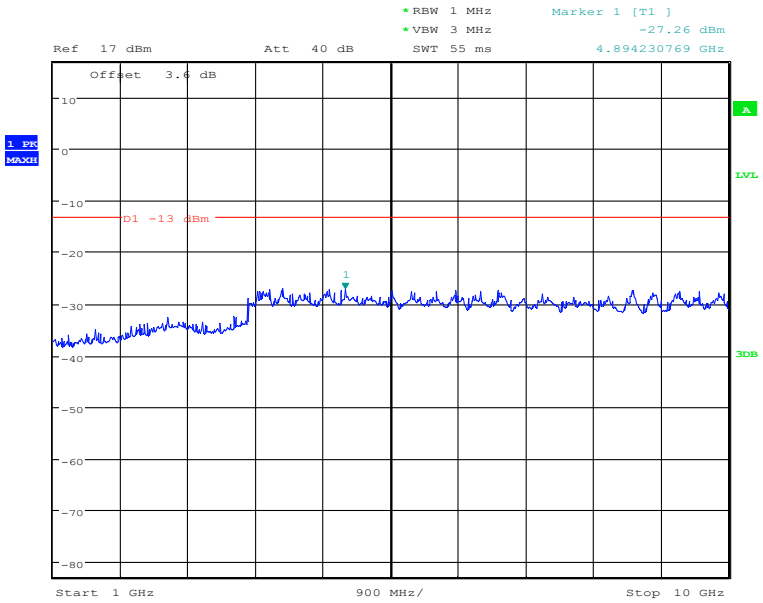
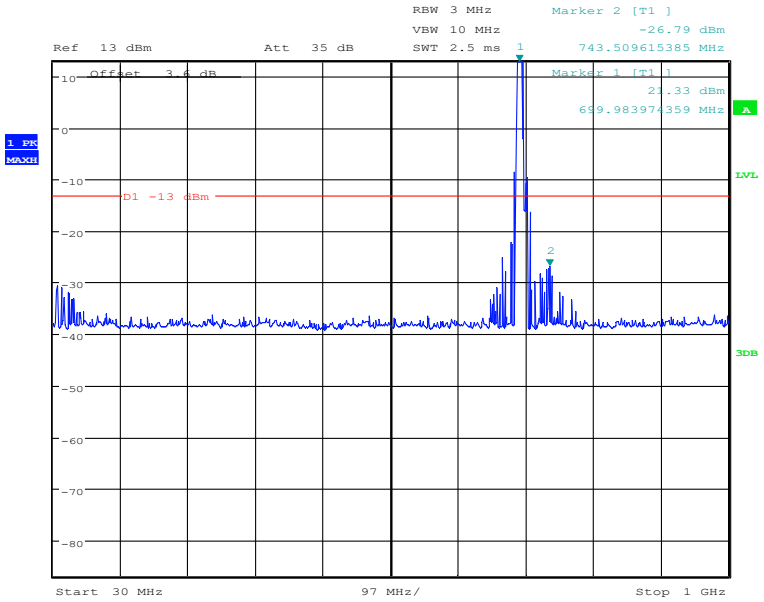
Middle Channel-5MHz Bandwidth-1GHz to 10GHz



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



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



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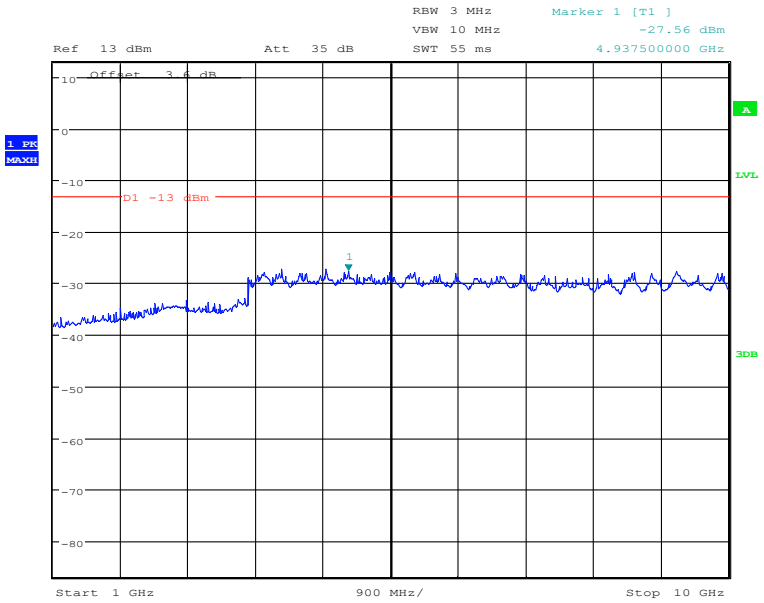
Low Channel-1.4MHz Bandwidth-30MHz to 1GHz



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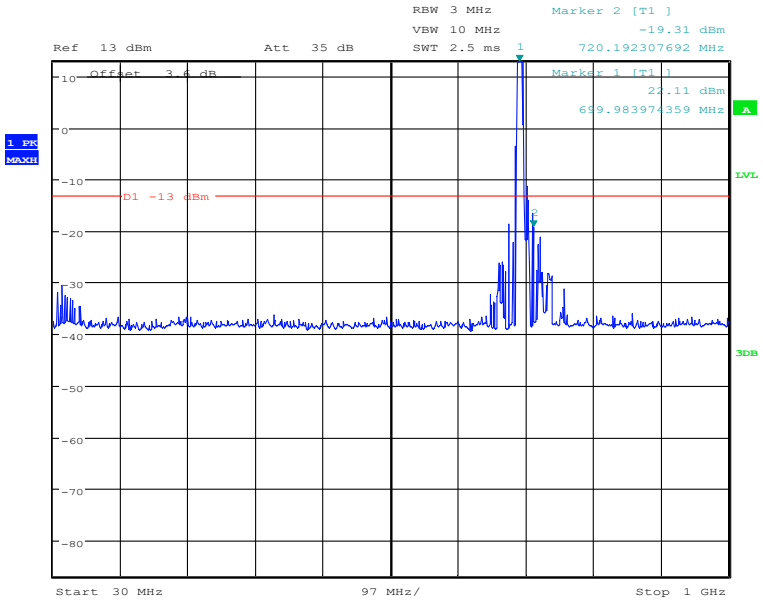
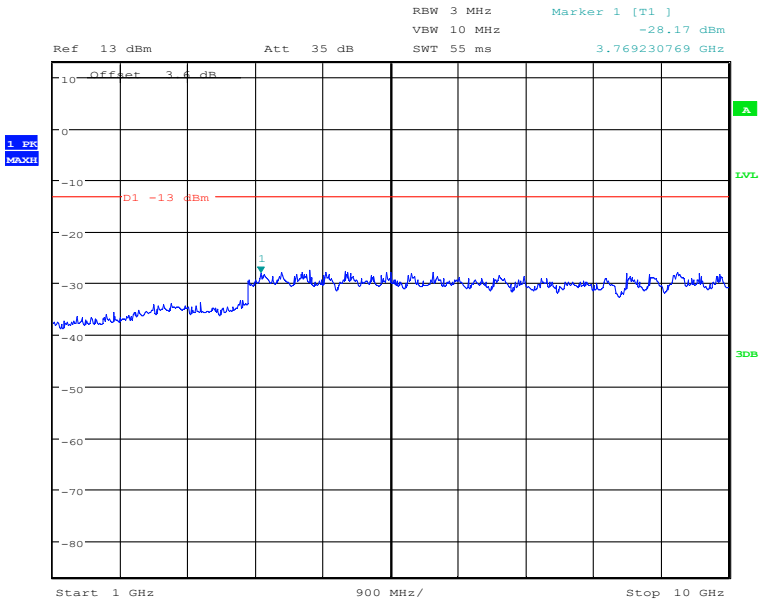
Low Channel-1.4MHz Bandwidth-1GHz to 10GHz



Date: 2.SEP.2020 04:25:27

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



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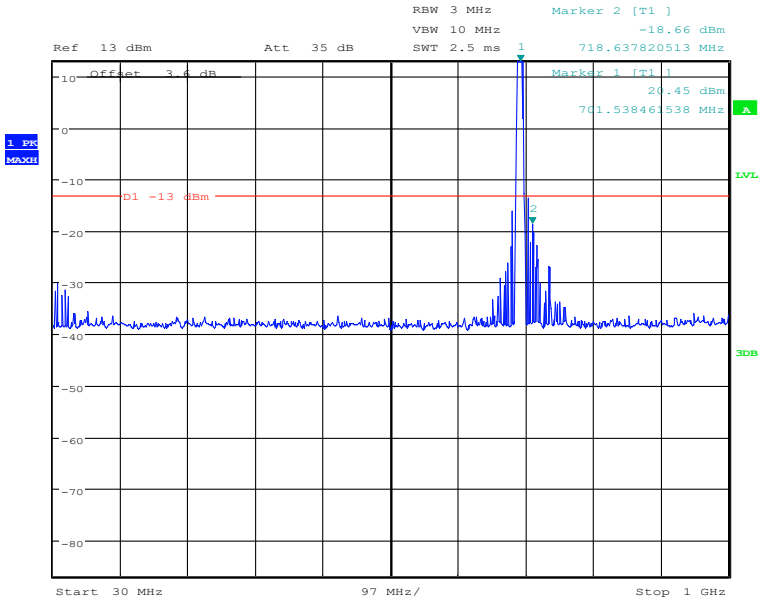
Low Channel-3MHz Bandwidth-1GHz to 10GHz



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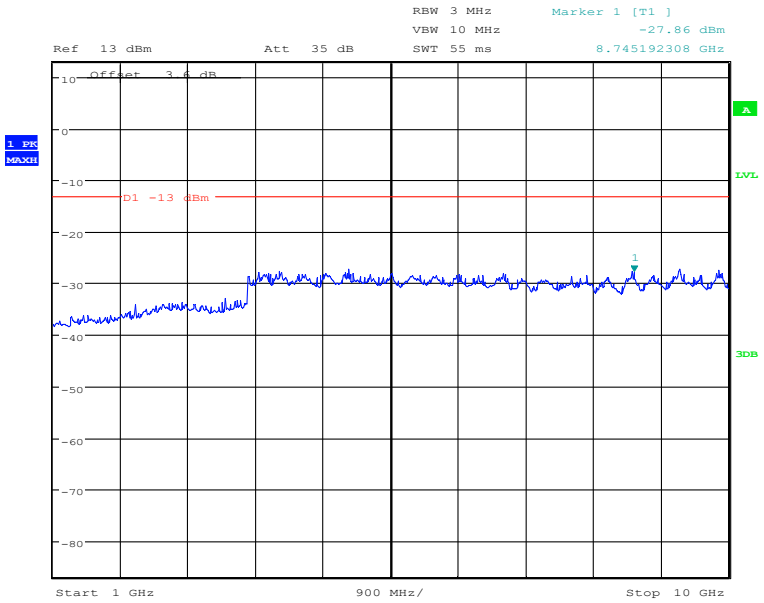
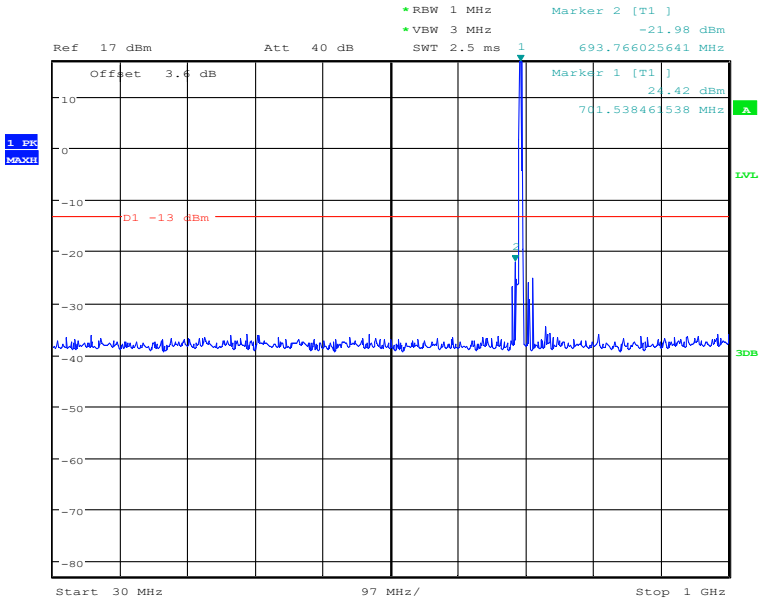
Low Channel-5MHz Bandwidth-30MHz to 1GHz



Date: 2.SEP.2020 04:29:09

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



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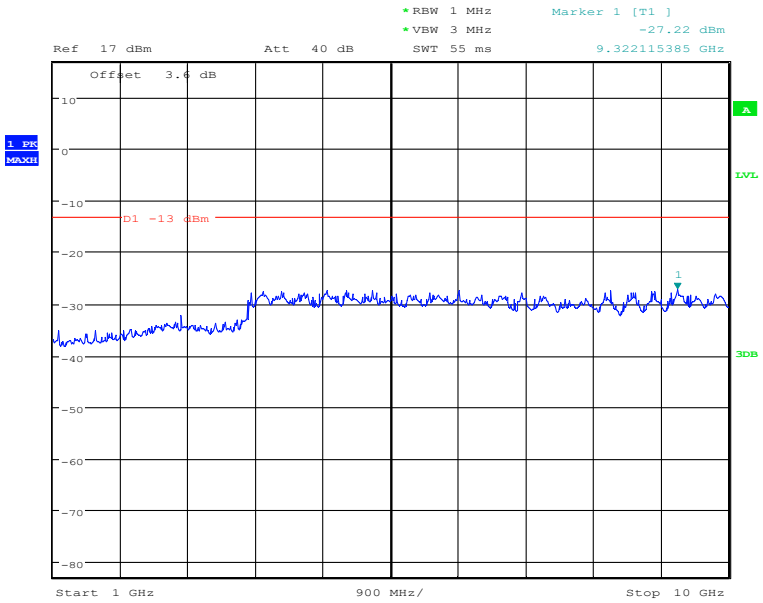
Low Channel-10MHz Bandwidth-30MHz to 1GHz



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

5.5 Radiated Spurious Emission

Specifications:	FCC Part 2.1051, 2.1053, 24.238, 22.917, 27.53,90.691
DUT Serial Number:	866884045622099
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 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.
The power of any emission shall be attenuated below the mean output power P (dBW) by at least 43 + 10 log10(p), measured in a 100 kHz bandwidth for frequencies less than or equal to 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

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	5.15 dB (k=2)

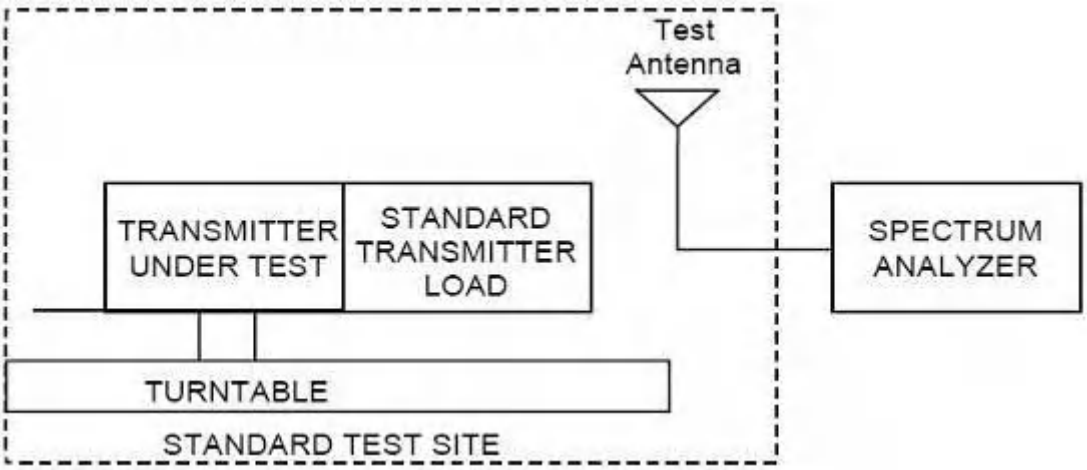
Test Setup:

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.

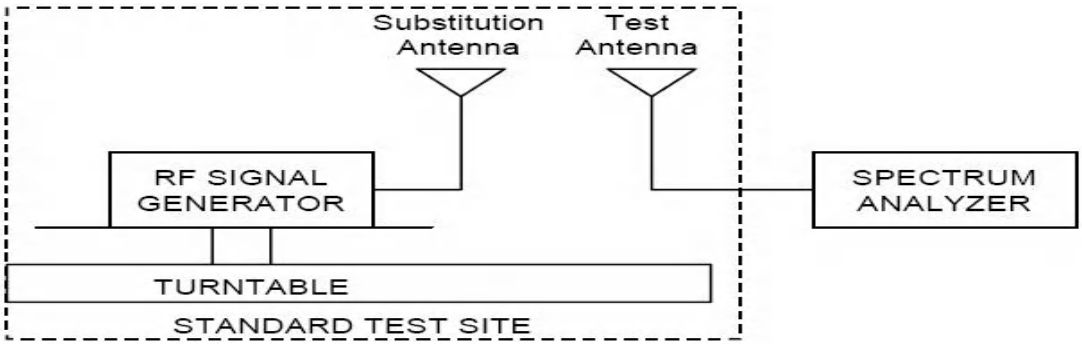
Test Method:

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: Only worst case result is given below.

CAT-M B2 Radiated Spurious Emission Results

Test Data （1.4MHz bandwidth 18607 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3701.4	-62.1	7.2	8.9	-60.4	V
5552.1	-69.8	2.5	10.5	-61.8	V
7402.8	-72.7	0.9	11.9	-61.7	V
9253.5	-70.5	1.0	11.5	-60.0	V
11104.2	-71.7	0.3	12.1	-59.9	V
12954.9	-71.3	0.4	12.4	-59.3	V

Test Data （1.4MHz bandwidth 18607 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3701.4	-61.1	7.2	8.9	-59.4	V
5552.1	-70.4	2.5	10.5	-62.4	V
7402.8	-73.5	0.9	11.9	-62.5	V
9253.5	-70.6	1.0	11.5	-60.1	V
11104.2	-71.5	0.3	12.1	-59.7	V
12954.9	-71.3	0.4	12.4	-59.3	V

Test Data （1.4MHz bandwidth 18900 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-55.9	7.3	8.9	-54.3	V
5640.0	-71.0	1.8	10.5	-62.3	V
7520.0	-72.6	0.9	11.9	-61.6	V
9400.0	-69.9	0.8	11.8	-58.9	V
11280.0	-71.7	0.3	12.1	-59.9	V
13160.0	-70.9	0.4	12.4	-58.9	V

Test Data （1.4MHz bandwidth 18900 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-64.5	7.3	8.9	-62.9	V
5640.0	-69.0	1.8	10.5	-60.3	V
7520.0	-72.3	0.9	11.9	-61.3	V
9400.0	-70.0	0.8	11.8	-59.0	V
11280.0	-71.7	0.3	12.1	-59.9	V
13160.0	-70.6	0.4	12.4	-58.6	V

Test Data （1.4MHz bandwidth 19192 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3818.4	-65.5	7.4	9.2	-63.7	V
5727.6	-67.7	1.5	10.5	-58.7	V
7636.8	-71.8	1.1	11.9	-61.0	V
9546.0	-70.0	0.9	11.8	-59.1	V
11455.2	-71.5	0.3	12.2	-59.6	V
13364.4	-71.3	0.4	12.4	-59.3	V

Test Data （1.4MHz bandwidth 19192 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3818.4	-65.4	7.4	9.2	-63.6	V
5727.6	-69.6	1.5	10.5	-60.6	V
7636.8	-71.4	1.1	11.9	-60.6	V
9546.0	-70.7	0.9	11.8	-59.8	V
11455.2	-72.4	0.3	12.2	-60.5	V
13364.4	-71.0	0.4	12.4	-59.0	V

Test Data （3MHz bandwidth 18615 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3703.0	-66.3	7.2	8.9	-64.6	V
5554.5	-71.4	2.0	10.5	-62.9	V
7406.0	-72.1	0.9	11.9	-61.1	V
9257.5	-70.4	1.0	11.5	-59.9	V
11109.0	-71.9	0.4	12.1	-60.2	V
12960.5	-71.1	0.4	12.4	-59.1	V

Test Data （3MHz bandwidth 18615 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3703.0	-67.6	7.2	8.9	-65.9	V
5554.5	-71.7	2.0	10.5	-63.2	V
7406.0	-73.2	0.9	11.9	-62.2	V
9257.5	-70.1	1.0	11.5	-59.6	V
11109.0	-71.6	0.4	12.1	-59.9	V
12960.5	-70.9	0.4	12.4	-58.9	V

Test Data （3MHz bandwidth 18900 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-60.9	7.3	8.9	-59.3	V
5640.0	-71.5	1.8	10.5	-62.8	V
7520.0	-72.7	0.9	11.9	-61.7	V
9400.0	-70.6	0.8	11.8	-59.6	V
11280.0	-70.9	0.3	12.1	-59.1	V
13160.0	-70.9	0.4	12.4	-58.9	V

Test Data （3MHz bandwidth 18900 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-66.9	7.3	8.9	-65.3	V
5640.0	-72.2	1.8	10.5	-63.5	V
7520.0	-72.0	0.9	11.9	-61.0	V
9400.0	-70.5	0.8	11.8	-59.5	V
11280.0	-71.9	0.3	12.1	-60.1	V
13160.0	-71.3	0.4	12.4	-59.3	V

Test Data （3MHz bandwidth 19184 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3816.4	-67.0	7.4	9.2	-65.2	V
5724.8	-69.9	1.4	10.5	-60.8	V
7633.2	-72.2	1.1	11.9	-61.4	V
9541.6	-70.7	0.9	11.8	-59.8	V
11450.0	-72.0	0.8	12.2	-60.6	V
13358.4	-71.3	0.4	12.4	-59.3	V

Test Data （3MHz bandwidth 19184 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3816.4	-67.3	7.4	9.2	-65.5	V
5724.8	-70.0	1.4	10.5	-60.9	V
7633.2	-72.2	1.1	11.9	-61.4	V
9541.6	-70.4	0.9	11.8	-59.5	V
11450.0	-71.9	0.8	12.2	-60.5	V
13358.4	-71.1	0.4	12.4	-59.1	V

Test Data （5MHz bandwidth 18625 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3705.0	-67.8	7.2	8.9	-66.1	V
5557.5	-71.4	2.5	10.5	-63.4	V
7410.0	-73.5	0.9	11.9	-62.5	V
9262.5	-70.4	1.0	11.5	-59.9	V
11115.0	-71.5	0.3	12.1	-59.7	V
12967.5	-71.1	0.4	12.4	-59.1	V

Test Data （5MHz bandwidth 18625 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3705.0	-67.0	7.2	8.9	-65.3	V
5557.5	-70.8	2.5	10.5	-62.8	V
7410.0	-73.2	0.9	11.9	-62.2	V
9262.5	-70.1	1.0	11.5	-59.6	V
11115.0	-71.5	0.3	12.1	-59.7	V
12967.5	-71.0	0.4	12.4	-59.0	V

Test Data （5MHz bandwidth 18900 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-66.8	7.3	8.9	-65.2	V
5640.0	-71.8	1.8	10.5	-63.1	V
7520.0	-72.8	0.9	11.9	-61.8	V
9400.0	-69.6	0.8	11.8	-58.6	V
11280.0	-71.0	0.3	12.1	-59.2	V
13160.0	-71.3	0.4	12.4	-59.3	V

Test Data （5MHz bandwidth 18900 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-66.9	7.3	8.9	-65.3	V
5640.0	-71.8	1.8	10.5	-63.1	V
7520.0	-72.5	0.9	11.9	-61.5	V
9400.0	-69.3	0.8	11.8	-58.3	V
11280.0	-71.6	0.3	12.1	-59.8	V
13160.0	-71.1	0.4	12.4	-59.1	V

Test Data （5MHz bandwidth 19174 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3814.8	-65.9	7.4	9.2	-64.1	V
5722.2	-72.4	1.5	10.5	-63.4	V
7629.6	-72.9	0.8	11.9	-61.8	V
9537.0	-71.1	0.9	11.8	-60.2	V
11444.4	-71.7	0.8	12.2	-60.3	V
13351.8	-71.0	0.4	12.4	-59.0	V

Test Data （5MHz bandwidth 19174 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3814.8	-64.6	7.4	9.2	-62.8	V
5722.2	-70.7	1.5	10.5	-61.7	V
7629.6	-73.1	0.8	11.9	-62.0	V
9537.0	-70.6	0.9	11.8	-59.7	V
11444.4	-71.4	0.8	12.2	-60.0	V
13351.8	-70.8	0.4	12.4	-58.8	V

Test Data （10MHz bandwidth 18650 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3710.0	-67.7	7.2	8.9	-66.0	V
5565.0	-71.4	2.0	10.5	-62.9	V
7420.0	-72.7	0.9	11.9	-61.7	V
9275.0	-69.0	1.0	11.5	-58.5	V
11130.0	-71.5	0.3	12.1	-59.7	V
12985.0	-71.8	0.4	12.4	-59.8	V

Test Data （10MHz bandwidth 18650 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3710.0	-68.2	7.2	8.9	-66.5	V
5565.0	-71.2	2.0	10.5	-62.7	V
7420.0	-73.5	0.9	11.9	-62.5	V
9275.0	-70.1	1.0	11.5	-59.6	V
11130.0	-71.8	0.3	12.1	-60.0	V
12985.0	-71.1	0.4	12.4	-59.1	V

Test Data （10MHz bandwidth 18900 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-67.8	7.3	8.9	-66.2	V
5640.0	-71.9	1.8	10.5	-63.2	V
7520.0	-72.5	0.9	11.9	-61.5	V
9400.0	-69.9	0.8	11.8	-58.9	V
11280.0	-71.6	0.3	12.1	-59.8	V
13160.0	-71.3	0.4	12.4	-59.3	V

Test Data （10MHz bandwidth 18900 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-67.0	7.3	8.9	-65.4	V
5640.0	-71.7	1.8	10.5	-63.0	V
7520.0	-72.5	0.9	11.9	-61.5	V
9400.0	-70.1	0.8	11.8	-59.1	V
11280.0	-72.1	0.3	12.1	-60.3	V
13160.0	-71.0	0.4	12.4	-59.0	V

Test Data （10MHz bandwidth 19149 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3809.8	-67.2	7.4	9.2	-65.4	V
5714.7	-72.6	1.5	10.5	-63.6	V
7619.6	-72.6	1.1	11.9	-61.8	V
9524.5	-71.0	0.9	11.8	-60.1	V
11429.4	-71.5	0.8	12.2	-60.1	V
13343.3	-71.1	0.4	12.4	-59.1	V

Test Data （10MHz bandwidth 19149 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3809.8	-66.5	7.4	9.2	-64.7	V
5714.7	-72.3	1.5	10.5	-63.3	V
7619.6	-72.6	1.1	11.9	-61.8	V
9524.5	-71.0	0.9	11.8	-60.1	V
11429.4	-71.7	0.8	12.2	-60.3	V
13343.3	-71.1	0.4	12.4	-59.1	V

Test Data （15MHz bandwidth 18675 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3715.0	-68.0	7.2	8.9	-66.3	V
5572.5	-72.2	2.0	10.5	-63.7	V
7430.0	-72.4	0.9	11.9	-61.4	V
9287.5	-70.0	1.0	11.5	-59.5	V
11145.0	-71.9	0.3	12.1	-60.1	V
13002.5	-70.9	0.4	12.4	-58.9	V

Test Data （15MHz bandwidth 18675 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3715.0	-68.0	7.2	8.9	-66.3	V
5572.5	-71.9	2.0	10.5	-63.4	V
7430.0	-72.8	0.9	11.9	-61.8	V
9287.5	-69.9	1.0	11.5	-59.4	V
11145.0	-71.6	0.3	12.1	-59.8	V
13002.5	-71.0	0.4	12.4	-59.0	V

Test Data （15MHz bandwidth 18900 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-67.5	7.3	8.9	-65.9	V
5640.0	-72.0	1.8	10.5	-63.3	V
7520.0	-72.7	0.9	11.9	-61.7	V
9400.0	-70.2	0.8	11.8	-59.2	V
11280.0	-71.7	0.3	12.1	-59.9	V
13160.0	-71.1	0.4	12.4	-59.1	V

Test Data （15MHz bandwidth 18900 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-66.8	7.3	8.9	-65.2	V
5640.0	-71.9	1.8	10.5	-63.2	V
7520.0	-72.8	0.9	11.9	-61.8	V
9400.0	-69.4	0.8	11.8	-58.4	V
11280.0	-71.5	0.3	12.1	-59.7	V
13160.0	-71.1	0.4	12.4	-59.1	V

Test Data （15MHz bandwidth 19124 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3804.8	-67.1	7.4	9.2	-65.3	V
5707.2	-72.3	1.5	10.5	-63.3	V
7609.6	-72.3	1.1	11.9	-61.5	V
9512.0	-70.7	0.9	11.8	-59.8	V
11414.4	-71.3	0.8	12.2	-59.9	V
13316.8	-71.2	0.4	12.4	-59.2	V

Test Data （15MHz bandwidth 19124 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3804.8	-66.7	7.4	9.2	-64.9	V
5707.2	-72.1	1.5	10.5	-63.1	V
7609.6	-72.7	1.1	11.9	-61.9	V
9512.0	-70.7	0.9	11.8	-59.8	V
11414.4	-71.8	0.8	12.2	-60.4	V
13316.8	-70.8	0.4	12.4	-58.8	V

Test Data （20MHz bandwidth 18700 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3720.0	-67.9	7.3	9.2	-66.0	V
5580.0	-71.7	2.0	10.5	-63.2	V
7440.0	-72.8	0.9	11.9	-61.8	V
9300.0	-70.9	0.7	11.8	-59.8	V
11160.0	-71.3	0.3	12.2	-59.4	V
13020.0	-71.5	0.4	12.4	-59.5	V

Test Data （20MHz bandwidth 18700 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3720.0	-68.1	7.3	9.2	-66.2	V
5580.0	-71.5	2.0	10.5	-63.0	V
7440.0	-72.7	0.9	11.9	-61.7	V
9300..0	-71.1	0.7	11.8	-60.0	V
11160.0	-71.7	0.3	12.2	-59.8	V
13020.0	-71.2	0.4	12.4	-59.2	V

Test Data （20MHz bandwidth 18900 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-66.8	7.3	8.9	-65.2	V
5640.0	-71.0	1.8	10.5	-62.3	V
7520.0	-72.7	0.9	11.9	-61.7	V
9400.0	-70.3	0.8	11.8	-59.3	V
11280.0	-72.0	0.3	12.1	-60.2	V
13160.0	-71.0	0.4	12.4	-59.0	V

Test Data （20MHz bandwidth 18900 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-66.6	7.3	8.9	-65.0	V
5640.0	-72.1	1.8	10.5	-63.4	V
7520.0	-72.3	0.9	11.9	-61.3	V
9400.0	-70.5	0.8	11.8	-59.5	V
11280.0	-71.9	0.3	12.1	-60.1	V
13160.0	-71.1	0.4	12.4	-59.1	V

Test Data （20MHz bandwidth 19099 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3799.8	-67.0	7.4	9.2	-65.2	V
5699.7	-71.8	1.7	10.5	-63.0	V
7599.6	-73.2	0.8	11.9	-62.1	V
9499.5	-71.1	0.8	11.8	-60.1	V
11399.4	-71.9	0.8	12.2	-60.5	V
13299.3	-71.3	0.4	12.4	-59.3	V

Test Data （20MHz bandwidth 19099 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3799.8	-67.6	7.4	9.2	-65.8	V
5699.7	-72.2	1.7	10.5	-63.4	V
7599.6	-73.2	0.8	11.9	-62.1	V
9499.5	-71.2	0.8	11.8	-60.2	V
11399.4	-71.7	0.8	12.2	-60.3	V
13299.3	-71.1	0.4	12.4	-59.1	V

CAT-M B4 Radiated Spurious Emission Results

Test Data （1.4MHz bandwidth 19957 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3421.4	-69.4	6.9	8.9	-67.4	V
5132.1	-64.2	6.3	9.9	-60.6	V
6842.8	-73.7	0.8	11.9	-62.6	V
8553.5	-70.7	0.9	11.2	-60.4	V
10264.2	-71.6	0.5	12.0	-60.1	V
11974.9	-71.3	0.4	12.2	-59.5	V

Test Data （1.4MHz bandwidth 19957 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3421.4	-69.9	6.9	8.9	-67.9	V
5132.1	-62.5	6.3	9.9	-58.9	V
6842.8	-73.3	0.8	11.9	-62.2	V
8553.5	-71.1	0.9	11.2	-60.8	V
10264.2	-71.7	0.5	12.0	-60.2	V
11974.9	-71.0	0.4	12.2	-59.2	V

Test Data （1.4MHz bandwidth 20175 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-69.0	6.9	8.9	-67.0	V
5197.5	-65.4	5.8	9.9	-61.3	V
6930.0	-73.3	0.9	11.9	-62.3	V
8662.5	-70.5	0.9	11.2	-60.2	V
10395.0	-71.9	0.7	12.2	-60.4	V
12127.5	-70.5	0.6	12.2	-58.9	V

Test Data （1.4MHz bandwidth 20175 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-67.5	6.9	8.9	-65.5	V
5197.5	-66.4	5.8	9.9	-62.3	V
6930.0	-73.2	0.9	11.9	-62.2	V
8662.5	-70.4	0.9	11.2	-60.1	V
10395.0	-71.8	0.7	12.2	-60.3	V
12127.5	-70.7	0.6	12.2	-59.1	V

Test Data （1.4MHz bandwidth 20392 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3508.4	-69.0	7.0	8.9	-67.1	V
5262.5	-69.4	4.7	9.9	-64.2	V
7016.8	-72.8	1.2	11.9	-62.1	V
8771.0	-70.5	1.1	11.2	-60.4	V
10525.2	-71.2	0.6	12.2	-59.6	V
12279.4	-70.3	0.3	12.2	-58.4	V

Test Data （1.4MHz bandwidth 20392 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3508.4	-68.9	7.0	8.9	-67.0	V
5262.5	-65.3	4.7	9.9	-60.1	V
7016.8	-72.7	1.2	11.9	-62.0	V
8771.0	-69.4	1.1	11.2	-59.3	V
10525.2	-72.6	0.6	12.2	-61.0	V
12279.4	-70.5	0.3	12.2	-58.6	V

Test Data （3MHz bandwidth 19965 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3423.0	-69.5	6.9	8.9	-67.5	V
5134.5	-66.6	6.3	9.9	-63.0	V
6846.0	-72.8	0.8	11.9	-61.7	V
8557.5	-70.9	0.9	11.2	-60.6	V
10269.0	-71.5	0.5	12.0	-60.0	V
11980.5	-71.1	0.4	12.2	-59.3	V

Test Data （3MHz bandwidth 19965 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3423.0	-70.1	6.9	8.9	-68.1	V
5134.5	-67.5	6.3	9.9	-63.9	V
6846.0	-73.9	0.8	11.9	-62.8	V
8557.5	-70.8	0.9	11.2	-60.5	V
10269.0	-71.9	0.5	12.0	-60.4	V
11980.5	-71.4	0.4	12.2	-59.6	V

Test Data （3MHz bandwidth 20175 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-68.6	6.9	8.9	-66.6	V
5197.5	-66.5	5.8	9.9	-62.4	V
6930.0	-73.5	0.9	11.9	-62.5	V
8662.5	-70.8	0.9	11.2	-60.5	V
10395.0	-72.1	0.7	12.2	-60.6	V
12127.5	-70.2	0.6	12.2	-58.6	V

Test Data （3MHz bandwidth 20175 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-69.1	6.9	8.9	-67.1	V
5197.5	-65.3	5.8	9.9	-61.2	V
6930.0	-73.7	0.9	11.9	-62.7	V
8662.5	-70.5	0.9	11.2	-60.2	V
10395.0	-71.6	0.7	12.2	-60.1	V
12127.5	-70.3	0.6	12.2	-58.7	V

Test Data （3MHz bandwidth 20384 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3506.8	-69.5	7.0	8.9	-67.6	V
5260.2	-69.0	5.0	9.9	-64.1	V
7013.6	-72.2	1.2	11.9	-61.5	V
8767.0	-69.0	1.2	11.2	-59.0	V
10520.4	-71.9	0.6	12.2	-60.3	V
12273.8	-70.1	0.3	12.2	-58.2	V

Test Data （3MHz bandwidth 20384 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3506.8	-69.3	7.0	8.9	-67.4	V
5260.2	-68.6	5.0	9.9	-63.7	V
7013.6	-72.6	1.2	11.9	-61.9	V
8767.0	-69.6	1.2	11.2	-59.6	V
10520.4	-71.0	0.6	12.2	-59.4	V
12273.8	-70.1	0.3	12.2	-58.2	V

Test Data （5MHz bandwidth 19975 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3425.0	-69.8	6.9	8.9	-67.8	V
5137.5	-66.6	6.3	9.9	-63.0	V
6850.0	-73.2	0.8	11.9	-62.1	V
8562.5	-70.9	0.9	11.2	-60.6	V
10275.0	-72.4	0.5	12.0	-60.9	V
11987.5	-71.1	0.4	12.2	-59.3	V

Test Data （5MHz bandwidth 19975 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3425.0	-70.1	6.9	8.9	-68.1	V
5137.5	-67.0	6.3	9.9	-63.4	V
6850.0	-73.5	0.8	11.9	-62.4	V
8562.5	-70.3	0.9	11.2	-60.0	V
10275.0	-71.6	0.5	12.0	-60.1	V
11987.5	-71.5	0.4	12.2	-59.7	V

Test Data （5MHz bandwidth 20175 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-68.8	6.9	8.9	-66.8	V
5197.5	-68.4	5.8	9.9	-64.3	V
6930.0	-73.0	0.9	11.9	-62.0	V
8662.5	-70.1	0.9	11.2	-59.8	V
10395.0	-72.2	0.7	12.2	-60.7	V
12127.5	-70.4	0.6	12.2	-58.8	V

Test Data （5MHz bandwidth 20175 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-68.6	6.9	8.9	-66.6	V
5197.5	-68.6	5.8	9.9	-64.5	V
6930.0	-73.8	0.9	11.9	-62.8	V
8662.5	-70.5	0.9	11.2	-60.2	V
10395.0	-71.4	0.7	12.2	-59.9	V
12127.5	-70.7	0.6	12.2	-59.1	V

Test Data （5MHz bandwidth 20374 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3504.8	-69.3	7.0	8.9	-67.4	V
5257.2	-68.5	5.0	9.9	-63.6	V
7009.6	-72.5	1.2	11.9	-61.8	V
8762.0	-69.8	1.2	11.2	-59.8	V
10514.4	-71.2	0.6	12.2	-59.6	V
12266.8	-70.6	0.4	12.2	-58.8	V

Test Data （5MHz bandwidth 20374 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3504.8	-69.4	7.0	8.9	-67.5	V
5257.2	-68.8	5.0	9.9	-63.9	V
7009.6	-72.4	1.2	11.9	-61.7	V
8762.0	-69.8	1.2	11.2	-59.8	V
10514.4	-72.0	0.6	12.2	-60.4	V
12266.8	-70.6	0.4	12.2	-58.8	V

Test Data （10MHz bandwidth 20000 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3430.0	-70.0	6.9	8.9	-68.0	V
5145.0	-67.0	6.3	9.9	-63.4	V
6860.0	-72.9	0.8	11.9	-61.8	V
8575.0	-71.1	0.9	11.2	-60.8	V
10290.0	-71.6	0.5	12.0	-60.1	V
12005.0	-70.7	0.4	12.2	-58.9	V

Test Data （10MHz bandwidth 20000 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3430.0	-69.7	6.9	8.9	-67.7	V
5145.0	-67.1	6.3	9.9	-63.5	V
6860.0	-73.5	0.8	11.9	-62.4	V
8575.0	-70.6	0.9	11.2	-60.3	V
10290.0	-71.8	0.5	12.0	-60.3	V
12005.0	-71.3	0.4	12.2	-59.5	V

Test Data （10MHz bandwidth 20175 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-67.6	6.9	8.9	-65.6	V
5197.5	-68.2	5.8	9.9	-64.1	V
6930.0	-73.4	0.9	11.9	-62.4	V
8662.5	-70.1	0.9	11.2	-59.8	V
10395.0	-71.5	0.7	12.2	-60.0	V
12127.5	-70.7	0.6	12.2	-59.1	V

Test Data （10MHz bandwidth 20175 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-68.9	6.9	8.9	-66.9	V
5197.5	-68.5	5.8	9.9	-64.4	V
6930.0	-74.2	0.9	11.9	-63.2	V
8662.5	-70.6	0.9	11.2	-60.3	V
10395.0	-71.9	0.7	12.2	-60.4	V
12127.5	-70.7	0.6	12.2	-59.1	V

Test Data （10MHz bandwidth 20349 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3499.8	-69.6	7.0	8.9	-67.7	V
5249.7	-69.2	5.0	9.9	-64.3	V
6999.6	-73.2	0.9	11.9	-62.2	V
8749.5	-69.5	1.2	11.2	-59.5	V
10499.4	-72.2	0.6	12.2	-60.6	V
12249.3	-70.6	0.3	12.2	-58.7	V

Test Data （10MHz bandwidth 20349 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3499.8	-69.4	7.0	8.9	-67.5	V
5249.7	-68.1	5.0	9.9	-63.2	V
6999.6	-73.6	0.9	11.9	-62.6	V
8749.5	-69.9	1.2	11.2	-59.9	V
10499.4	-71.5	0.6	12.2	-59.9	V
12249.3	-70.8	0.3	12.2	-58.9	V

Test Data （15MHz bandwidth 20025 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3435.0	-69.2	6.9	8.9	-67.2	V
5152.5	-67.1	6.3	9.9	-63.5	V
6870.0	-73.7	0.8	11.9	-62.6	V
8587.5	-70.8	0.9	11.2	-60.5	V
10305.0	-72.0	0.7	12.2	-60.5	V
12022.5	-70.7	0.6	12.2	-59.1	V

Test Data （15MHz bandwidth 20025 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3435.0	-69.0	6.9	8.9	-67.0	V
5152.5	-67.3	6.3	9.9	-63.7	V
6870.0	-73.2	0.8	11.9	-62.1	V
8587.5	-71.2	0.9	11.2	-60.9	V
10305.0	-71.8	0.7	12.2	-60.3	V
12022.5	-70.3	0.6	12.2	-58.7	V

Test Data （15MHz bandwidth 20175 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-69.3	6.9	8.9	-67.3	V
5197.5	-67.6	6.3	9.9	-64.0	V
6930.0	-74.1	0.8	11.9	-63.0	V
8662.5	-70.3	0.9	11.2	-60.0	V
10395.0	-71.0	0.7	12.2	-59.5	V
12127.5	-70.9	0.6	12.2	-59.3	V

Test Data （15MHz bandwidth 20175 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-68.7	6.9	8.9	-66.7	V
5197.5	-66.3	5.8	9.9	-62.2	V
6930.0	-73.3	0.9	11.9	-62.3	V
8662.5	-70.0	0.9	11.2	-59.7	V
10395.0	-71.5	0.7	12.2	-60.0	V
12127.5	-70.5	0.6	12.2	-58.9	V

Test Data （15MHz bandwidth 20324 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3494.8	-69.4	7.0	8.9	-67.5	V
5242.2	-69.0	5.0	9.9	-64.1	V
6989.6	-72.7	1.2	11.9	-62.0	V
8737.0	-69.8	1.2	11.2	-59.8	V
10484.4	-72.1	0.3	12.2	-60.2	V
12231.8	-70.7	0.3	12.2	-58.8	V

Test Data （15MHz bandwidth 20324 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3494.8	-69.6	7.0	8.9	-67.7	V
5242.2	-68.7	5.0	9.9	-63.8	V
6989.6	-73.1	1.2	11.9	-62.4	V
8737.0	-69.4	1.2	11.2	-59.4	V
10484.4	-72.4	0.3	12.2	-60.5	V
12231.8	-70.5	0.3	12.2	-58.6	V

Test Data （20MHz bandwidth 20050 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3440.0	-69.8	6.9	8.9	-67.8	V
5160.0	-67.5	6.3	9.9	-63.9	V
6880.0	-73.9	0.8	11.9	-62.8	V
8600.0	-70.1	0.9	11.2	-59.8	V
10320.0	-71.9	0.7	12.2	-60.4	V
12040.0	-70.4	0.6	12.2	-58.8	V

Test Data （20MHz bandwidth 20050 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3440.0	-69.7	6.9	8.9	-67.7	V
5160.0	-67.0	6.3	9.9	-63.4	V
6880.0	-73.4	0.8	11.9	-62.3	V
8600.0	-70.1	0.9	11.2	-59.8	V
10320.0	-72.1	0.7	12.2	-60.6	V
12040.0	-70.6	0.6	12.2	-59.0	V

Test Data （20MHz bandwidth 20175 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-68.5	6.9	8.9	-66.5	V
5197.5	-68.2	5.8	9.9	-64.1	V
6930.0	-74.0	0.9	11.9	-63.0	V
8662.5	-70.4	0.9	11.2	-60.1	V
10395.0	-71.3	0.7	12.2	-59.8	V
12127.5	-70.7	0.6	12.2	-59.1	V

Test Data （20MHz bandwidth 20175 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-68.8	6.9	8.9	-66.8	V
5197.5	-67.5	5.8	9.9	-63.4	V
6930.0	-74.0	0.9	11.9	-63.0	V
8662.5	-70.5	0.9	11.2	-60.2	V
10395.0	-71.2	0.7	12.2	-59.7	V
12127.5	-70.9	0.6	12.2	-59.3	V

Test Data （20MHz bandwidth 20299 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3489.8	-69.5	7.0	8.9	-67.6	V
5234.7	-68.9	5.0	9.9	-64.0	V
6979.6	-73.4	0.9	11.9	-62.4	V
8724.5	-70.3	1.2	11.2	-60.3	V
10469.4	-71.9	0.3	12.2	-60.0	V
12214.3	-70.5	0.3	12.2	-58.6	V

Test Data （20MHz bandwidth 20299 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3489.8	-70.2	7.0	8.9	-68.3	V
5234.7	-68.7	5.0	9.9	-63.8	V
6979.6	-73.7	0.9	11.9	-62.7	V
8724.5	-69.6	1.2	11.2	-59.6	V
10469.4	-72.2	0.3	12.2	-60.3	V
12214.3	-70.7	0.3	12.2	-58.8	V

CAT-M B12 Radiated Spurious Emission Results

Test Data （1.4MHz bandwidth 23017 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1398.0	-76.4	4.4	7.8	-73.0	V
2097.0	-71.6	5.4	8.3	-68.7	V
2796.0	-66.1	6.2	7.9	-64.4	V
3495.0	-69.1	7.0	8.9	-67.2	V
4194.0	-66.4	7.8	9.2	-65.0	V
4893.0	-65.9	7.8	9.9	-63.8	V

Test Data （1.4MHz bandwidth 23017 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1398.0	-76.6	4.4	7.8	-73.2	V
2097.0	-71.4	5.4	8.3	-68.5	V
2796.0	-66.2	6.2	7.9	-64.5	V
3495.0	-69.0	7.0	8.9	-67.1	V
4194.0	-66.3	7.8	9.2	-64.9	V
4893.0	-65.8	7.8	9.9	-63.7	V

Test Data （1.4MHz bandwidth 23095 QPSK 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	-77.1	4.4	8.3	-73.2	V
2122.5	-71.5	5.4	8.1	-68.8	V
2830.0	-65.0	6.3	7.5	-63.8	V
3537.5	-67.6	7.0	8.9	-65.7	V
4245.0	-66.1	7.8	9.2	-64.7	V
4952.5	-65.1	7.7	9.9	-62.9	V

Test Data （1.4MHz 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	-76.6	4.4	8.3	-72.7	V
2122.5	-70.5	5.4	8.1	-67.8	V
2830.0	-65.8	6.3	7.5	-64.6	V
3537.5	-68.2	7.0	8.9	-66.3	V
4245.0	-66.3	7.8	9.2	-64.9	V
4952.5	-65.4	7.7	9.9	-63.2	V

Test Data （1.4MHz bandwidth 23172 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1432.0	-77.2	4.4	8.2	-73.4	V
2148.0	-69.9	5.4	7.0	-68.3	V
2864.0	-66.3	6.5	8.0	-64.8	V
3580.0	-68.0	7.2	8.9	-66.3	V
4296.0	-66.3	7.8	9.5	-64.6	V
5012.0	-66.3	7.5	9.9	-63.9	V

Test Data （1.4MHz bandwidth 23172 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1432.0	-76.7	4.4	8.2	-72.9	V
2148.0	-70.2	5.4	7.0	-68.6	V
2864.0	-66.4	6.5	8.0	-64.9	V
3580.0	-68.4	7.2	8.9	-66.7	V
4296.0	-66.0	7.8	9.5	-64.3	V
5012.0	-65.8	7.5	9.9	-63.4	V

Test Data （3MHz bandwidth 23025 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1401.0	-76.0	4.4	7.8	-72.6	V
2101.5	-70.7	5.4	8.3	-67.8	V
2802.0	-66.3	6.2	8.0	-64.5	V
3502.5	-69.6	7.0	8.9	-67.7	V
4203.0	-66.5	7.8	9.2	-65.1	V
4903.5	-65.5	7.8	9.9	-63.4	V

Test Data （3MHz bandwidth 23025 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1401.0	-77.4	4.4	7.8	-74.0	V
2101.5	-71.3	5.4	8.3	-68.4	V
2802.0	-66.2	6.2	8.0	-64.4	V
3502.5	-69.7	7.0	8.9	-67.8	V
4203.0	-66.4	7.8	9.2	-65.0	V
4903.5	-64.6	7.8	9.9	-62.5	V

Test Data （3MHz bandwidth 23095 QPSK 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	-77.7	4.4	8.3	-73.8	V
2122.5	-70.8	5.4	8.1	-68.1	V
2830.0	-65.8	6.3	7.5	-64.6	V
3537.5	-69.3	7.0	8.9	-67.4	V
4245.0	-65.8	7.8	9.2	-64.4	V
4952.5	-66.0	7.7	9.9	-63.8	V

Test Data （3MHz 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	-78.2	4.4	8.3	-74.3	V
2122.5	-70.6	5.4	8.1	-67.9	V
2830.0	-64.9	6.3	7.5	-63.7	V
3537.5	-68.8	7.0	8.9	-66.9	V
4245.0	-66.4	7.8	9.2	-65.0	V
4952.5	-65.2	7.7	9.9	-63.0	V

Test Data （3MHz bandwidth 23164 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1429.0	-69.1	4.4	8.3	-65.2	V
2143.5	-67.5	5.4	8.1	-64.8	V
2858.0	-67.0	6.3	7.5	-65.8	V
3572.5	-69.0	7.0	8.9	-67.1	V
4287.0	-66.6	7.8	9.2	-65.2	V
5001.5	-65.9	7.7	9.9	-63.7	V

Test Data （3MHz bandwidth 23164 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1429.0	-77.4	4.4	8.3	-73.5	V
2143.5	-69.6	5.4	6.6	-68.4	V
2858.0	-66.0	6.4	8.0	-64.4	V
3572.5	-68.8	7.2	8.9	-67.1	V
4287.0	-66.2	7.8	9.5	-64.5	V
5001.5	-66.3	7.5	9.9	-63.9	V

Test Data （5MHz bandwidth 23035 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1403.0	-77.7	4.4	8.3	-73.8	V
2104.5	-69.8	5.4	6.6	-68.6	V
2806.0	-66.2	6.4	8.0	-64.6	V
3507.5	-68.7	7.2	8.9	-67.0	V
4209.0	-66.4	7.8	9.5	-64.7	V
4910.5	-65.3	7.5	9.9	-62.9	V

Test Data （5MHz bandwidth 23035 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1403.0	-76.8	4.4	7.8	-73.4	V
2104.5	-71.5	5.4	8.3	-68.6	V
2806.0	-66.5	6.2	8.0	-64.7	V
3507.5	-69.1	7.0	8.9	-67.2	V
4209.0	-65.7	7.8	9.2	-64.3	V
4910.5	-65.0	7.8	9.9	-62.9	V

Test Data （5MHz bandwidth 23095 QPSK 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	-77.7	4.4	8.3	-73.8	H
2122.5	-70.3	5.4	8.1	-67.6	H
2830.0	-65.3	6.3	7.5	-64.1	H
3537.5	-69.7	7.0	8.9	-67.8	V
4245.0	-66.5	7.8	9.2	-65.1	V
4952.5	-65.7	7.7	9.9	-63.5	V

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	-78.0	4.4	8.3	-74.1	V
2122.5	-71.0	5.4	8.1	-68.3	H
2830.0	-65.6	6.3	7.5	-64.4	V
3537.5	-68.3	7.0	8.9	-66.4	V
4245.0	-66.3	7.8	9.2	-64.9	V
4952.5	-65.3	7.7	9.9	-63.1	V

Test Data （5MHz bandwidth 23154 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1427.0	-78.1	4.4	8.3	-74.2	V
2140.5	-70.0	5.4	7.0	-68.4	V
2854.0	-66.2	6.4	8.0	-64.6	V
3567.5	-68.7	7.0	8.9	-66.8	V
4281.0	-66.3	7.8	9.5	-64.6	V
4994.5	-65.4	7.5	9.9	-63.0	V

Test Data （5MHz bandwidth 23154 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1427.0	-76.8	4.4	8.3	-72.9	H
2140.5	-70.0	5.4	7.0	-68.4	H
2854.0	-66.2	6.4	8.0	-64.6	V
3567.5	-69.0	7.0	8.9	-67.1	V
4281.0	-66.1	7.8	9.5	-64.4	V
4994.5	-65.9	7.5	9.9	-63.5	V

Test Data （10MHz bandwidth 23060 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1408.0	-77.1	4.4	7.8	-73.7	V
2112.0	-71.2	5.4	8.3	-68.3	V
2816.0	-65.6	6.3	7.5	-64.4	V
3520.0	-69.5	7.0	8.9	-67.6	V
4224.0	-66.1	7.8	9.2	-64.7	V
4928.0	-67.2	7.7	9.9	-65.0	V

Test Data （10MHz bandwidth 23060 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1408.0	-76.9	4.4	7.8	-73.5	V
2112.0	-71.2	5.4	8.3	-68.3	V
2816.0	-64.9	6.3	7.5	-63.7	V
3520.0	-69.0	7.0	8.9	-67.1	V
4224.0	-66.4	7.8	9.2	-65.0	V
4928.0	-65.2	7.7	9.9	-63.0	V

Test Data （10MHz bandwidth 23095 QPSK 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	-78.0	4.4	8.3	-74.1	V
2122.5	-70.9	5.4	8.1	-68.2	V
2830.0	-65.6	6.3	7.5	-64.4	V
3537.5	-69.2	7.0	8.9	-67.3	V
4245.0	-65.9	7.8	9.2	-64.5	V
4952.5	-65.4	7.7	9.9	-63.2	V

Test Data （10MHz 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	-78.2	4.4	8.3	-74.3	V
2122.5	-70.2	5.4	8.1	-67.5	V
2830.0	-65.0	6.3	7.5	-63.8	V
3537.5	-69.7	7.0	8.9	-67.8	V
4245.0	-66.0	7.8	9.2	-64.6	V
4952.5	-65.7	7.7	9.9	-63.5	V

Test Data （10MHz bandwidth 23129 QPSK Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1422.0	-78.3	4.4	8.3	-74.4	V
2133.0	-70.2	5.4	7.0	-68.6	V
2844.0	-67.1	6.3	8.2	-65.2	V
3555.0	-68.8	7.0	8.9	-66.9	V
4266.0	-66.3	7.8	9.5	-64.6	V
4977.0	-65.4	7.5	9.9	-63.0	V

Test Data （10MHz bandwidth 23129 16QAM Mode）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1422.0	-77.7	4.4	8.3	-73.8	V
2133.0	-70.0	5.4	7.0	-68.4	V
2844.0	-66.7	6.3	8.2	-64.8	H
3555.0	-68.7	7.0	8.9	-66.8	V
4266.0	-66.5	7.8	9.5	-64.8	V
4977.0	-65.2	7.5	9.9	-62.8	V

NB-IoT Band 2 Radiated Spurious Emission Results

Test Data （QPSK Mode channel 18600）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3700.0	-65.2	7.2	8.9	-63.5	V
5550.0	-70.6	2.5	10.5	-62.6	V
7400.0	-72.6	0.9	11.9	-61.6	V
9250.0	-70.7	1.0	11.5	-60.2	V
11100.0	-71.1	0.4	12.1	-59.4	V
12950.0	-70.9	0.4	12.4	-58.9	V

Test Data （QPSK Mode channel 18900）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3760.0	-67.6	7.3	9.2	-65.7	V
5640.0	-73.3	1.8	10.5	-64.6	V
7520.0	-74.8	0.9	11.9	-63.8	V
9400.0	-73.9	0.8	11.8	-62.9	V
11280.0	-72.9	0.3	12.1	-61.1	V
13160.0	-72.2	0.4	12.4	-60.2	V

Test Data （QPSK Mode channel 19199）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3819.8	-65.3	7.4	9.2	-63.5	V
5729.7	-71.4	1.5	10.5	-62.4	V
7639.6	-72.1	1.1	11.9	-61.3	V
9549.5	-71.9	0.9	11.8	-61.0	V
11459.4	-72.3	0.3	12.1	-60.5	V
13369.3	-72.1	0.4	12.4	-60.1	V

Test Data （BPSK Mode channel 18600）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3700.0	-65.3	7.2	8.9	-63.6	V
5550.0	-70.5	2.5	10.5	-62.5	V
7400.0	-73.1	0.9	11.9	-62.1	V
9250.0	-71.7	1.0	11.5	-61.2	V
11100.0	-71.9	0.4	12.1	-60.2	V
12950.0	-71.8	0.4	12.4	-59.8	V

Test Data （BPSK Mode channel 18900）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3760.0	-65.3	7.3	9.2	-63.4	V
5640.0	-71.2	1.8	10.5	-62.5	V
7520.0	-72.7	0.9	11.9	-61.7	V
9400.0	-71.2	0.8	11.8	-60.2	V
11280.0	-71.8	0.3	12.1	-60.0	V
13160.0	-71.9	0.4	12.4	-59.9	V

Test Data （BPSK Mode channel 19199）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3819.8	-65.5	7.4	9.2	-63.7	V
5729.7	-71.5	1.5	10.5	-62.5	V
7639.6	-72.2	1.1	11.9	-61.4	V
9549.5	-71.8	0.9	11.8	-60.9	V
11459.4	-71.8	0.3	12.1	-60.0	V
13369.3	-71.7	0.4	12.4	-59.7	V

NB-IoT Band 4 Radiated Spurious Emission Results

Test Data （QPSK Mode channel 19950）

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3420.0	-66.5	6.9	8.9	-64.5	V
5130.0	-67.3	6.3	9.9	-63.7	V
6840.0	-73.9	0.8	11.9	-62.8	V
8550.0	-71.5	0.9	11.2	-61.2	V
10260.0	-72.3	0.5	12.0	-60.8	V
11970.0	-71.9	0.4	12.2	-60.1	V

Test Data （QPSK Mode channel 20175）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3465.0	-65.8	6.9	8.9	-63.8	V
5197.5	-66.6	5.8	9.9	-62.5	V
6930.0	-72.4	0.9	11.9	-61.4	V
8662.5	-70.8	0.9	11.2	-60.5	V
10395.0	-71.7	0.3	12.0	-60.0	V
12127.5	-71.5	0.4	12.2	-59.7	V

Test Data （QPSK Mode channel 20399）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3509.8	-65.0	7.0	8.9	-63.1	V
5264.7	-67.6	5.0	9.9	-62.7	V
7019.6	-72.6	1.2	11.9	-61.9	V
8774.5	-70.8	1.2	11.2	-60.8	V
10529.4	-71.6	0.6	12.0	-60.2	V
12284.3	-71.9	0.2	12.2	-59.9	V

Test Data （BPSK Mode channel 19950）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3420.0	-65.5	6.9	8.9	-63.5	V
5130.0	-67.0	5.8	9.9	-62.9	V
6840.0	-72.8	0.9	11.9	-61.8	V
8550.0	-70.7	0.9	11.2	-60.4	V
10260.0	-71.7	0.3	12.0	-60.0	V
11970.0	-71.4	0.4	12.2	-59.6	V

Test Data （BPSK Mode channel 20175）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3465.0	-65.8	6.9	8.9	-63.8	V
5197.5	-66.6	5.8	9.9	-62.5	V
6930.0	-72.4	0.9	11.9	-61.4	V
8662.5	-71.2	0.9	11.2	-60.9	V
10395.0	-71.9	0.3	12.0	-60.2	V
12127.5	-71.5	0.4	12.2	-59.7	V

Test Data （BPSK Mode channel 20399）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3509.8	-65.9	7.0	8.9	-64.0	V
5264.7	-68.7	5.0	9.9	-63.8	V
7019.6	-73.6	1.2	11.9	-62.9	V
8774.5	-71.5	1.2	11.2	-61.5	V
10529.4	-72.0	0.6	12.0	-60.6	V
12284.3	-71.9	0.2	12.2	-59.9	V

NB-IoT Band 12 Radiated Spurious Emission Results

Test Data （QPSK Mode channel 23010）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1398.0	-39.3	4.2	8.0	-35.5	V
2097.0	-39.7	5.4	8.2	-36.9	V
2796.0	-47.2	6.1	7.8	-45.5	V
3495.0	-65.1	7.0	8.9	-63.2	V
4194.0	-63.8	7.8	9.2	-62.4	V
4893.0	-63.1	7.8	9.9	-61.0	V

Test Data （QPSK Mode channel 23095）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1415.0	-39.6	4.4	8.3	-35.7	V
2122.5	-39.3	5.4	8.2	-36.5	V
2830.0	-59.5	6.3	7.9	-57.9	V
3537.5	-65.3	7.0	8.9	-63.4	V
4245.0	-63.5	7.8	9.2	-62.1	V
4952.5	-62.4	7.7	9.9	-60.2	V

Test Data （QPSK Mode channel 23179）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1431.8	-39.5	4.4	8.2	-35.7	V
2147.7	-66.4	5.4	7.0	-64.8	V
2863.6	-64.3	6.4	8.0	-62.7	V
3579.5	-64.9	7.1	8.9	-63.1	V
4295.4	-63.4	7.8	9.2	-62.0	V
5011.3	-63.3	7.5	9.9	-60.9	V

Test Data （BPSK Mode channel 23010）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1398.0	-38.5	4.2	8	-34.7	V
2097.0	-45.1	5.4	8.2	-42.3	V
2796.0	-47.0	6.1	7.8	-45.3	V
3495.0	-65.1	7.0	8.9	-63.2	V
4194.0	-63.5	7.8	9.2	-62.1	V
4893.0	-62.3	7.8	9.9	-60.2	V

Test Data （BPSK Mode channel 23095）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1415.0	-47.7	4.4	8.3	-43.8	V
2122.5	-54.3	5.4	8.2	-51.5	V
2830.0	-43.7	6.3	7.9	-42.1	V
3537.5	-65.3	7.0	8.9	-63.4	V
4245.0	-63.9	7.8	9.2	-62.5	V
4952.5	-63.4	7.7	9.9	-61.2	V

Test Data （BPSK Mode channel 23179）

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1431.8	-36.0	4.4	8.2	-32.2	V
2147.7	-51.9	5.4	7.0	-50.3	V
2863.6	-49.1	6.4	8.0	-47.5	V
3579.5	-65.3	7.1	8.9	-63.5	V
4295.4	-63.5	7.8	9.2	-62.1	V
5011.3	-63.2	7.5	9.9	-60.8	V

5.6 Band Edge

Specifications:	FCC Part 2.1051, 2.1053, 24.238, 22.917, 27.53,90.691
DUT Serial Number:	866884045622016
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 and 24.238:

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 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:

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.

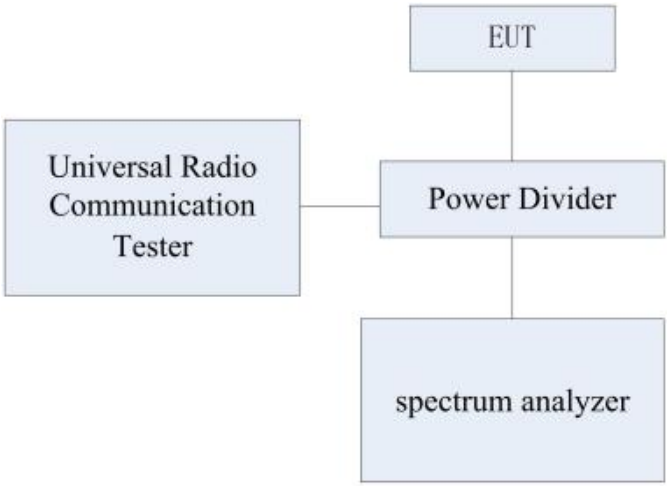
(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

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:

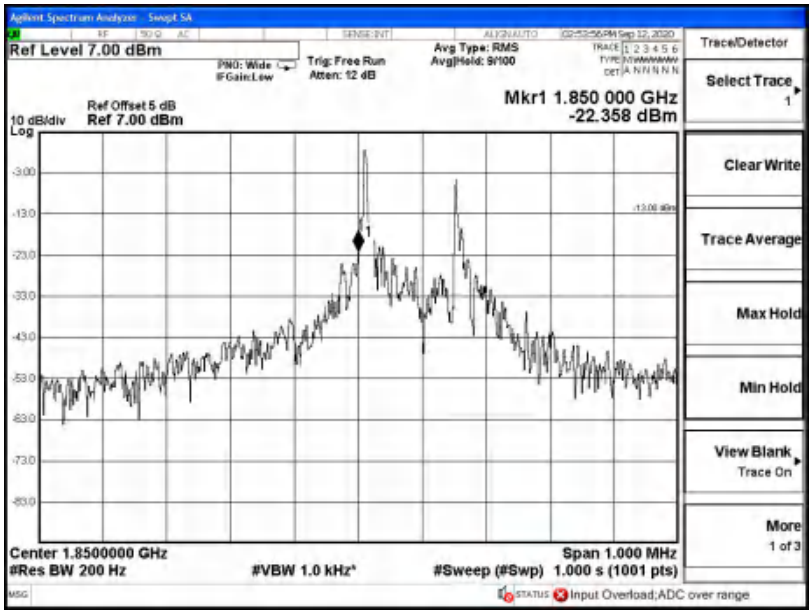
1) The EUT was coupled to the EMI test receiver analyzer mode and the base station simulator through a power divider. The lost of the cables the test system is calibrated to correct the readings.

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

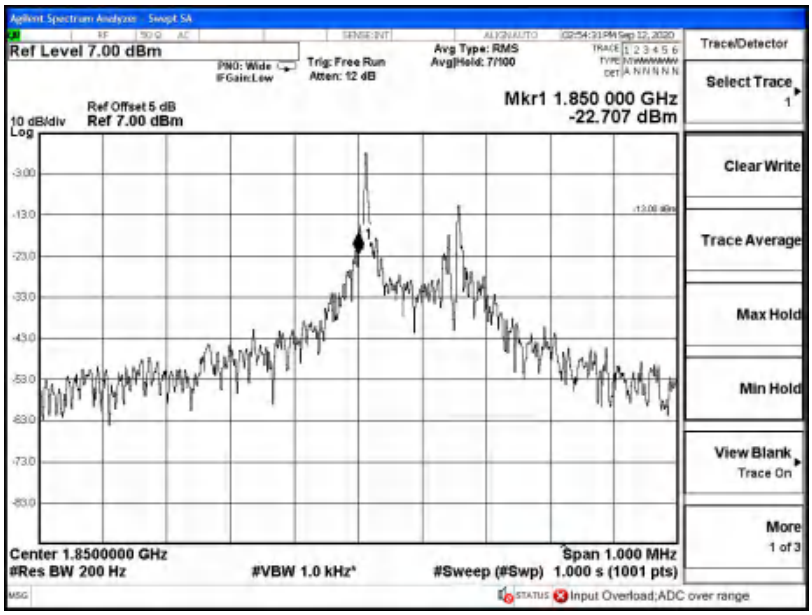
3) The resolution Bandwidth of the spectrum analyzer was a little greater than 1% of the 26dB emission Bandwidth.resolution Bandwidth of the spectrum analyzer was a little greater than 30kHz for Band12

Note: Only worst case result is given below.

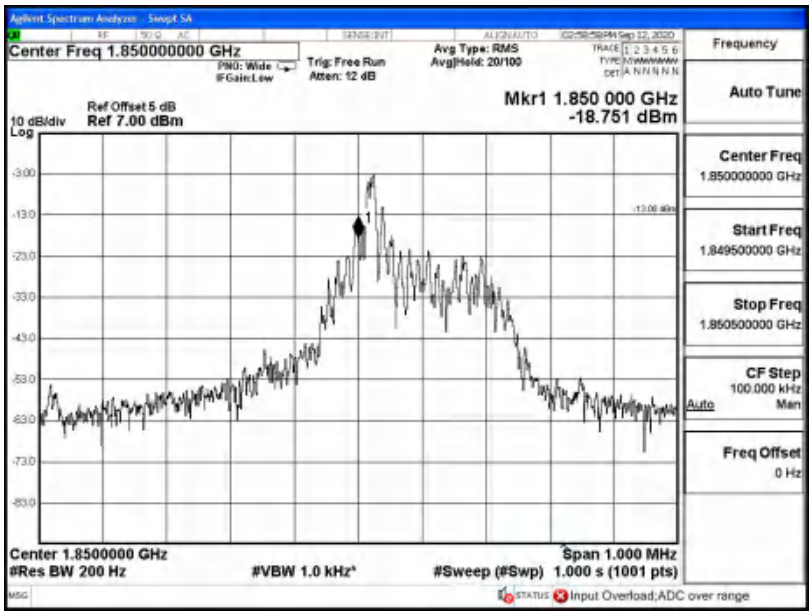
5.6.1 NB-IoT Band2 Edge Results



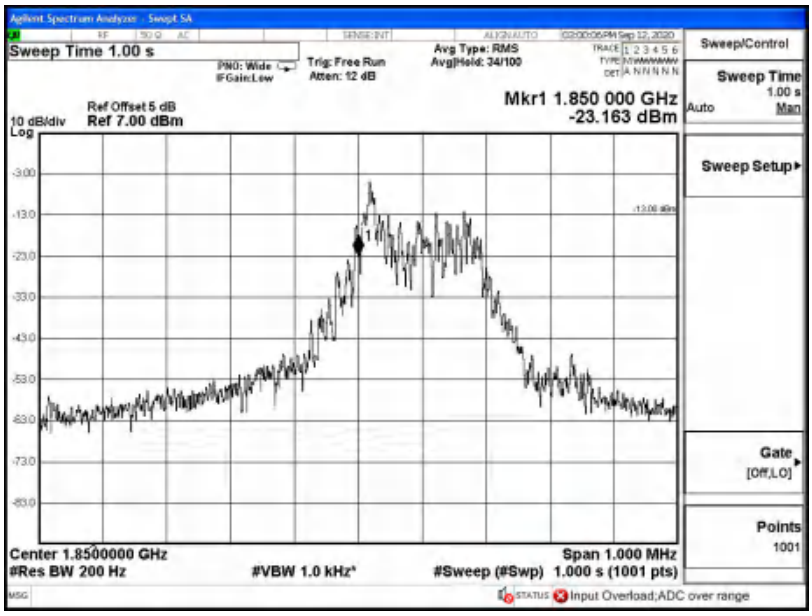
Low Channel, Subcarrier (3.75kHz), QPSK, 1@0



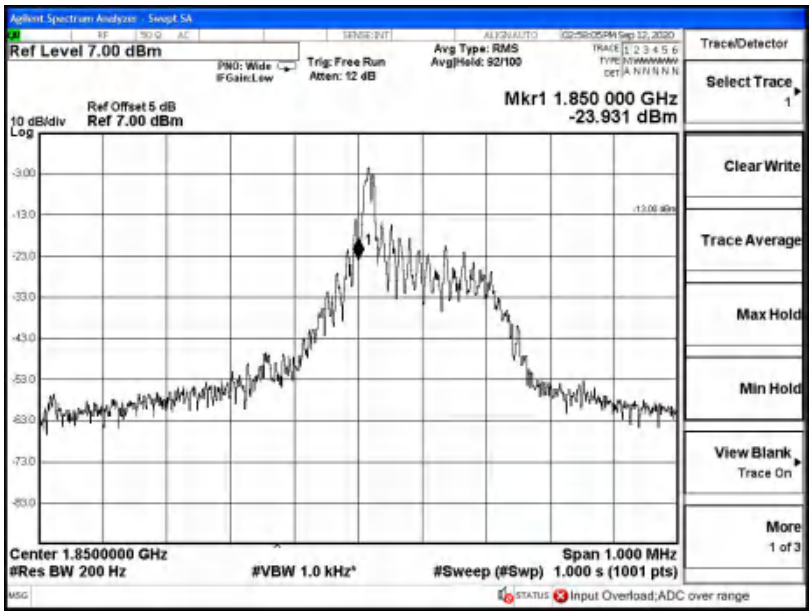
Low Channel, Subcarrier (3.75kHz), BPSK, 1@0



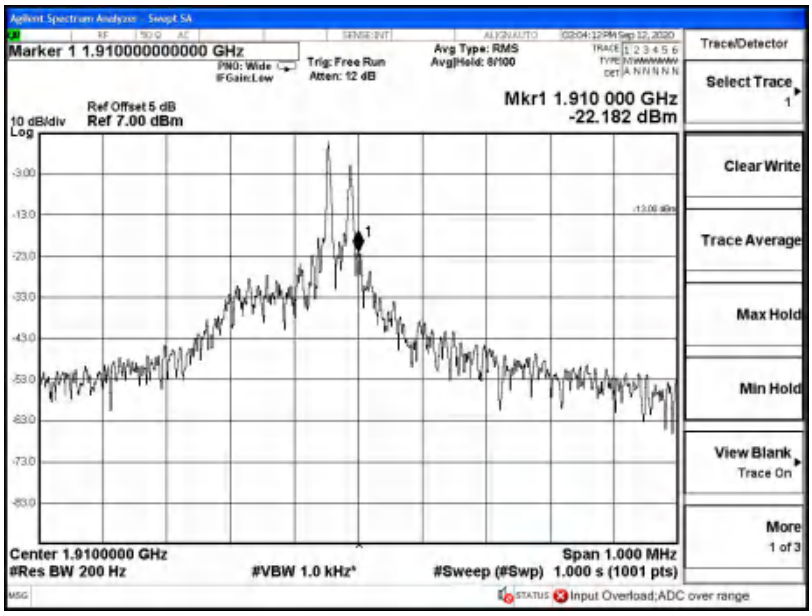
Low Channel, Subcarrier (15kHz), QPSK, 1@0



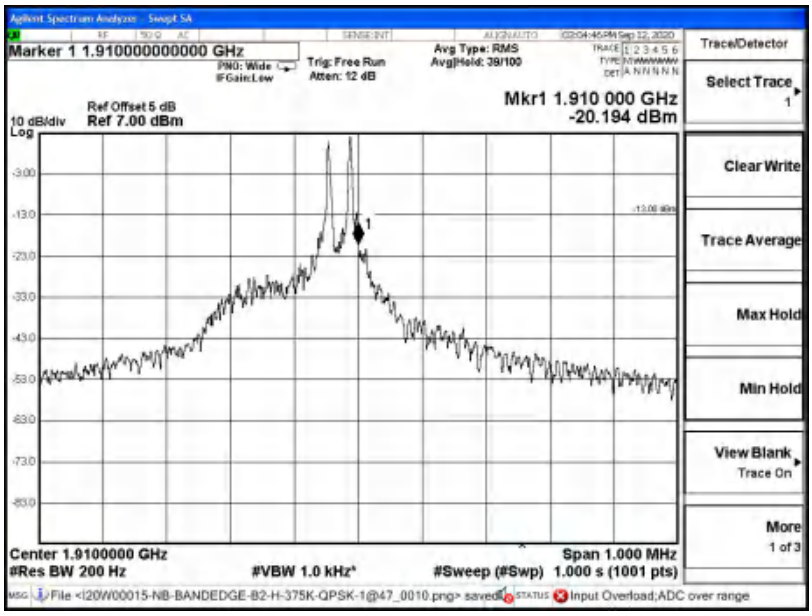
Low Channel, Subcarrier (15kHz), QPSK, 12@0



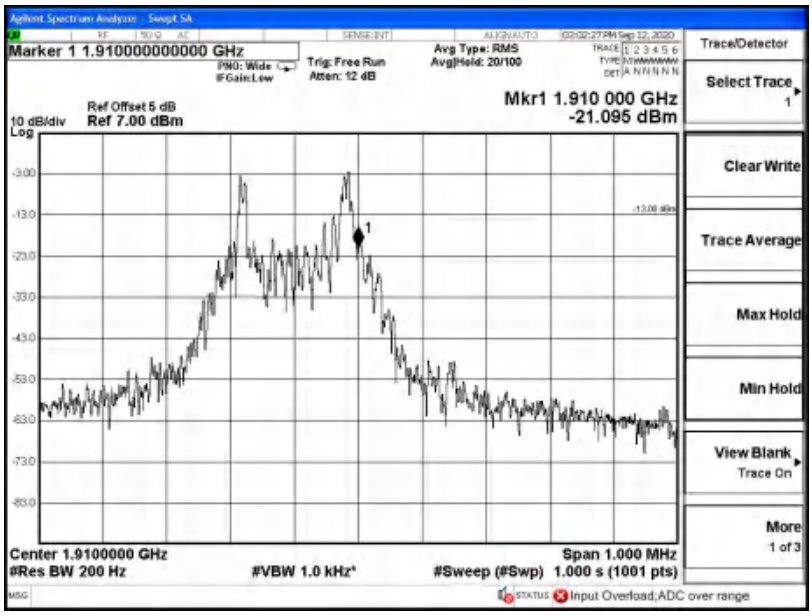
Low Channel, Subcarrier (15kHz), BPSK, 1@0



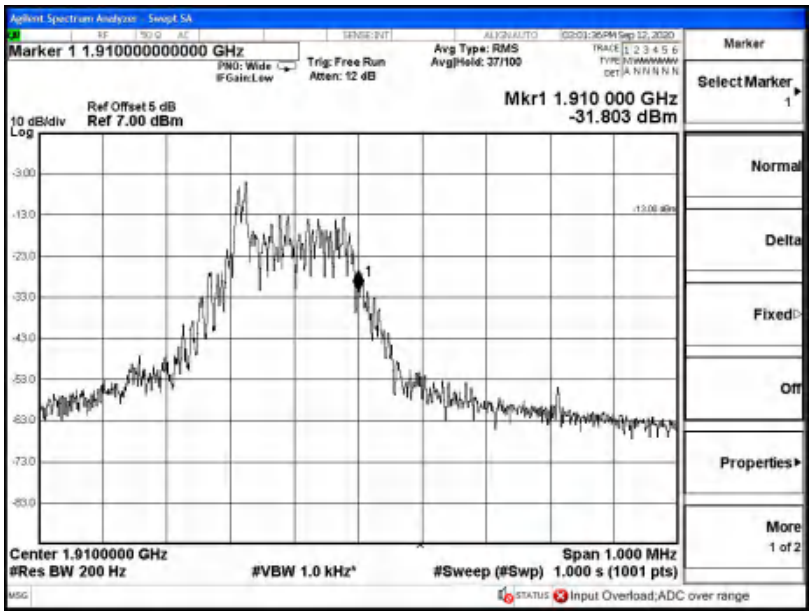
High Channel, Subcarrier (3.75kHz), QPSK, 1@47



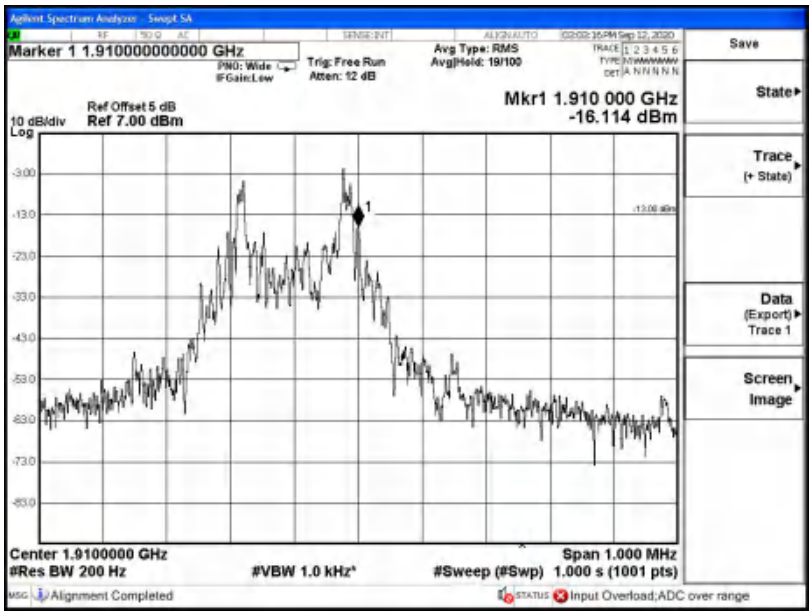
High Channel, Subcarrier (3.75kHz), BPSK, 1@47



High Channel, Subcarrier (15kHz), QPSK, 1@11

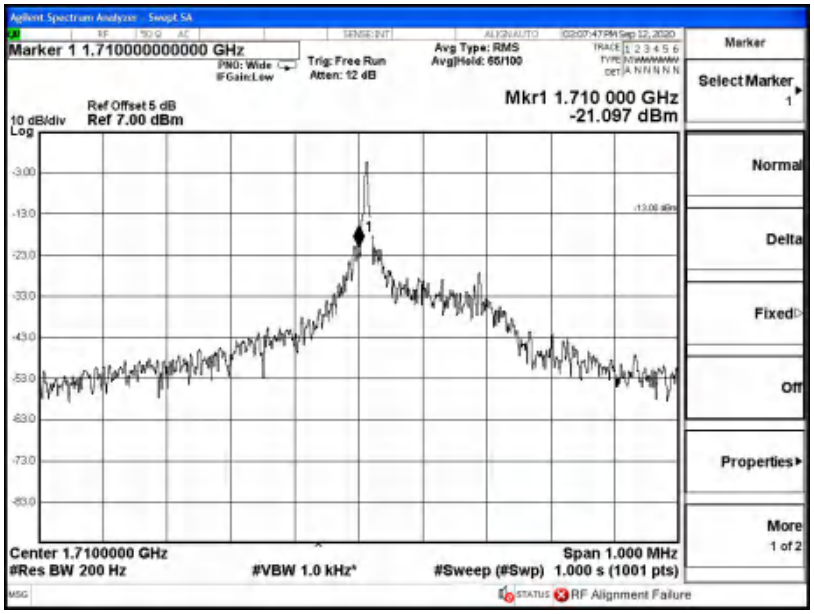


High Channel, Subcarrier (15kHz), QPSK, 12@0

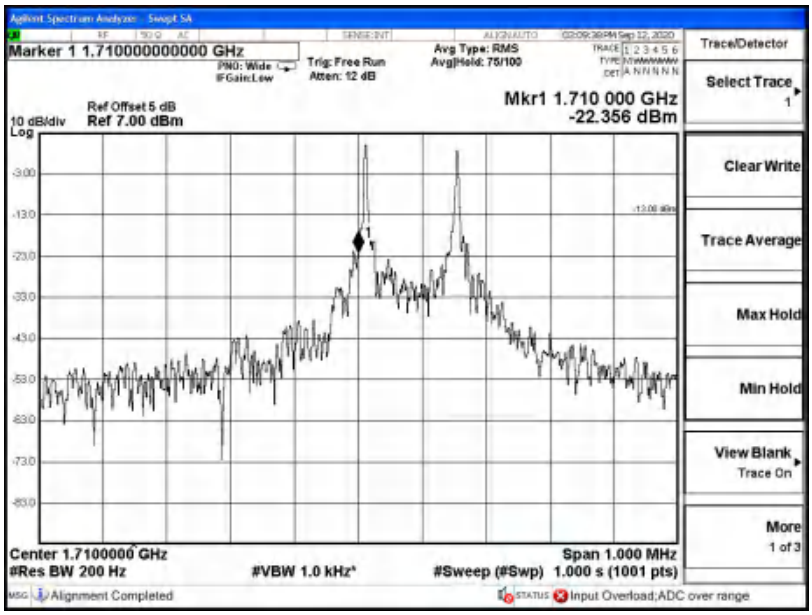


High Channel, Subcarrier (15kHz), BPSK, 1@11

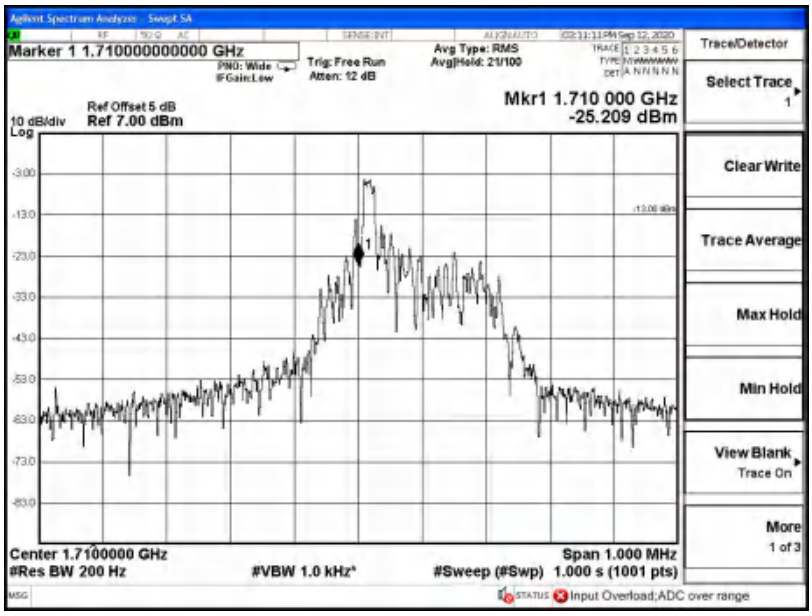
5.6.2 NB-IoT Band4 Edge Results



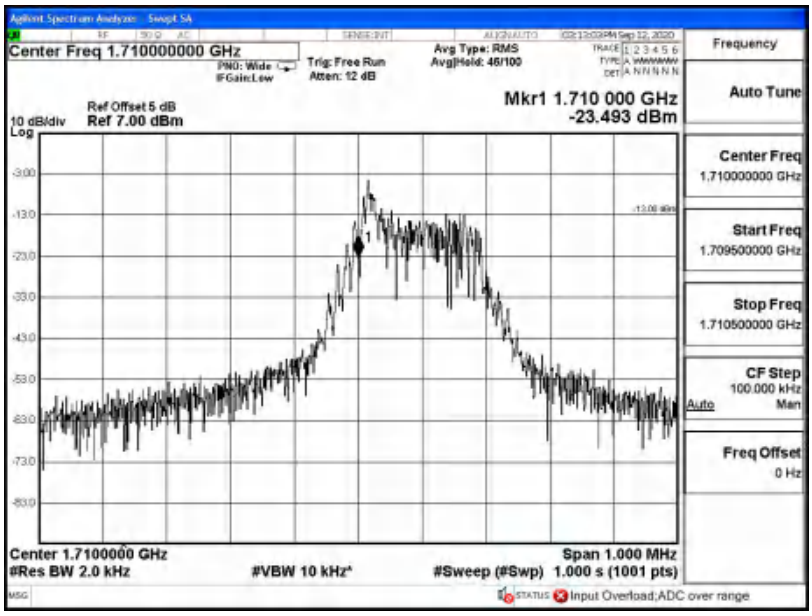
Low Channel, Subcarrier (3.75kHz), QPSK, 1@0



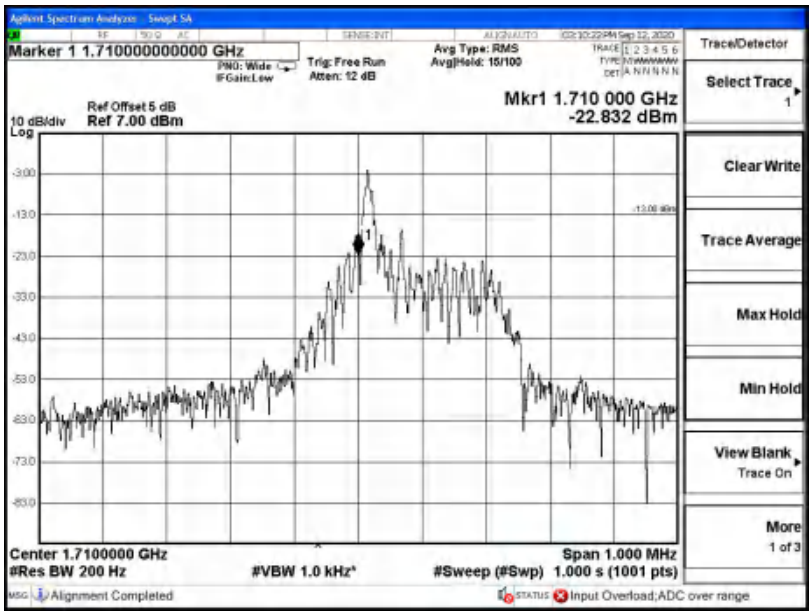
Low Channel, Subcarrier (3.75kHz), BPSK, 1@0



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



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

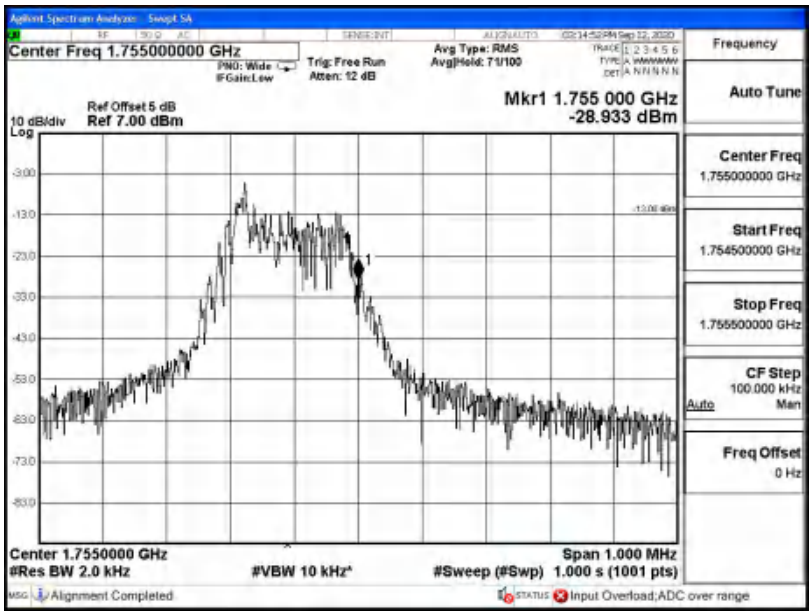


Low Channel, Subcarrier (15kHz), BPSK, 1@0

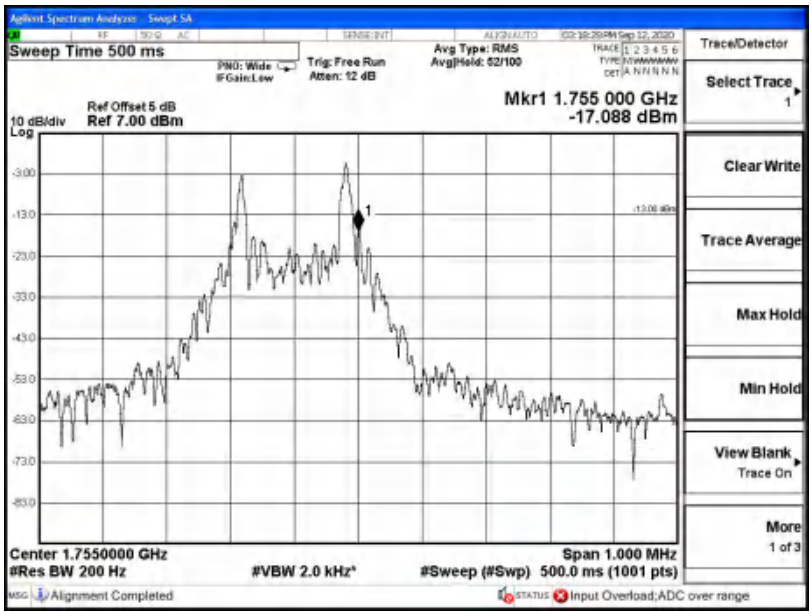
High Channel, Subcarrier (3.75kHz), QPSK, 1@47

High Channel, Subcarrier (3.75kHz), BPSK, 1@47

High Channel, Subcarrier (15kHz), QPSK, 1@11

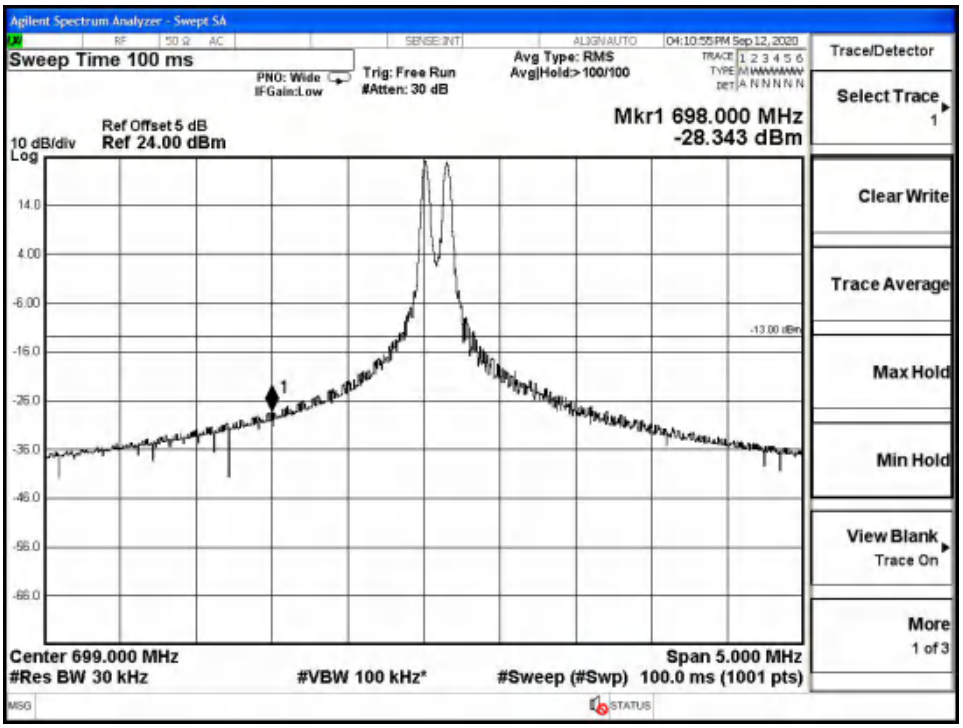


High Channel, Subcarrier (15kHz), QPSK, 12@0

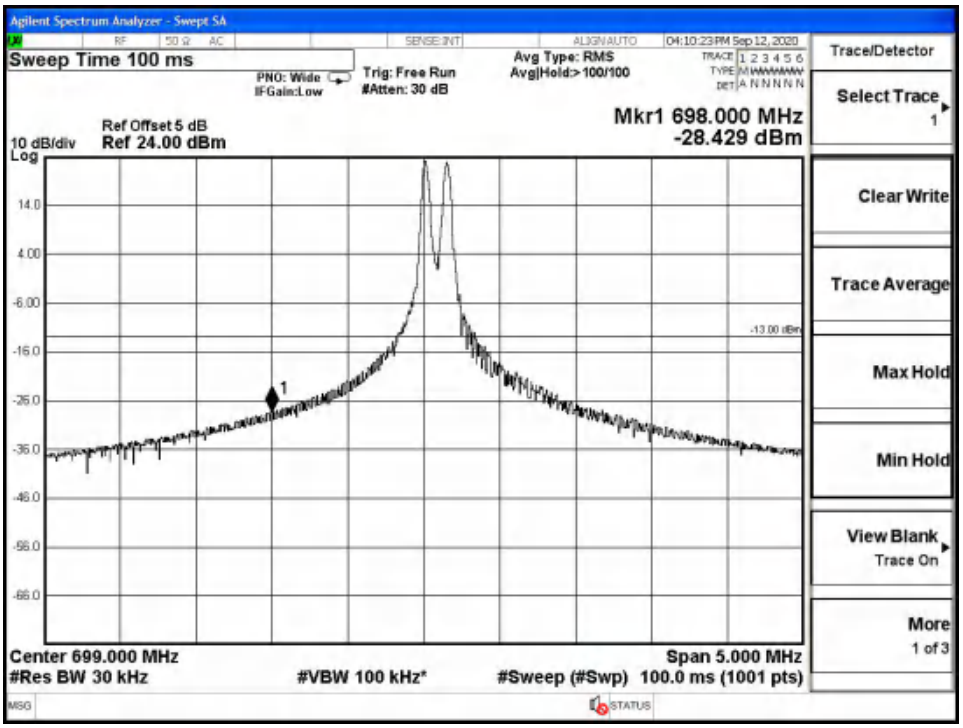


High Channel, Subcarrier (15kHz), BPSK, 1@11

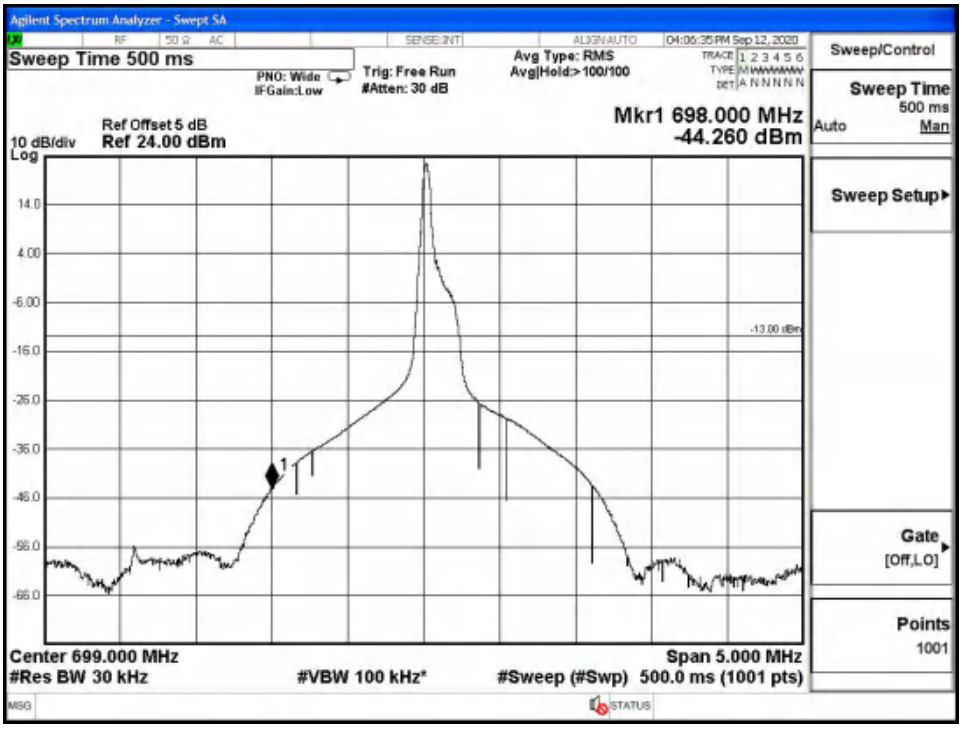
5.6.3 NB-IoT Band12 Edge Results



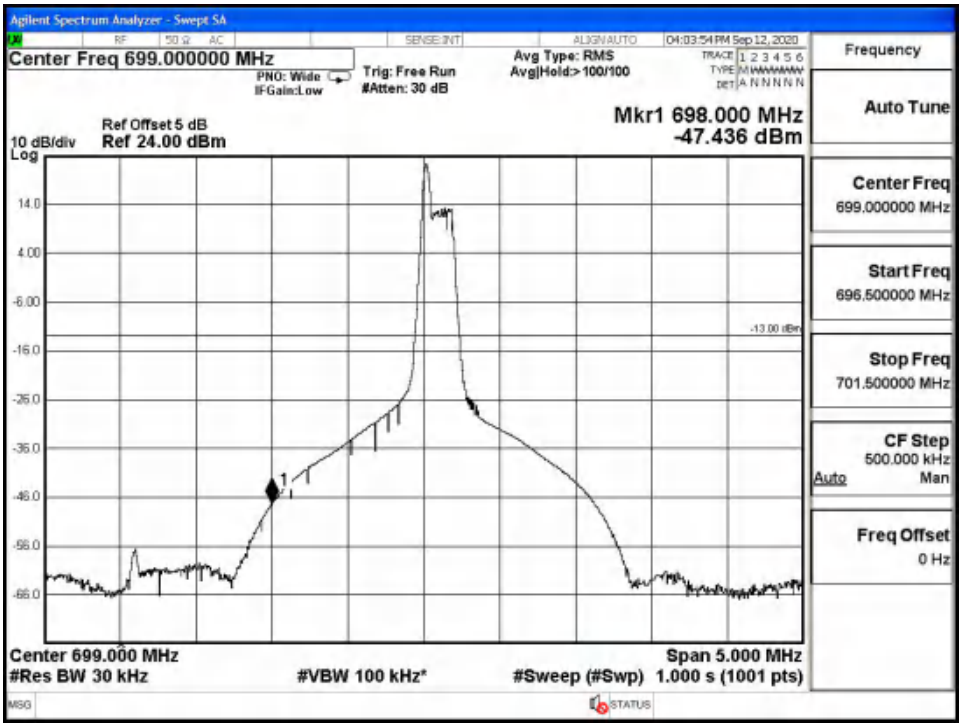
Low Channel, Subcarrier (3.75kHz), QPSK, 1@0



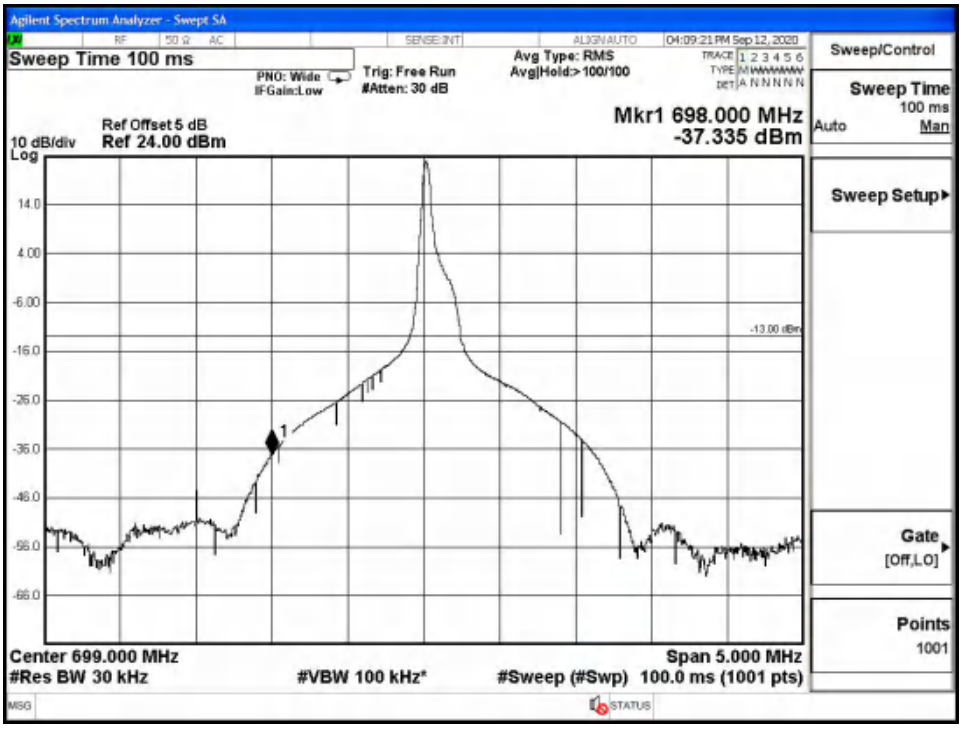
Low Channel, Subcarrier (3.75kHz), BPSK, 1@0



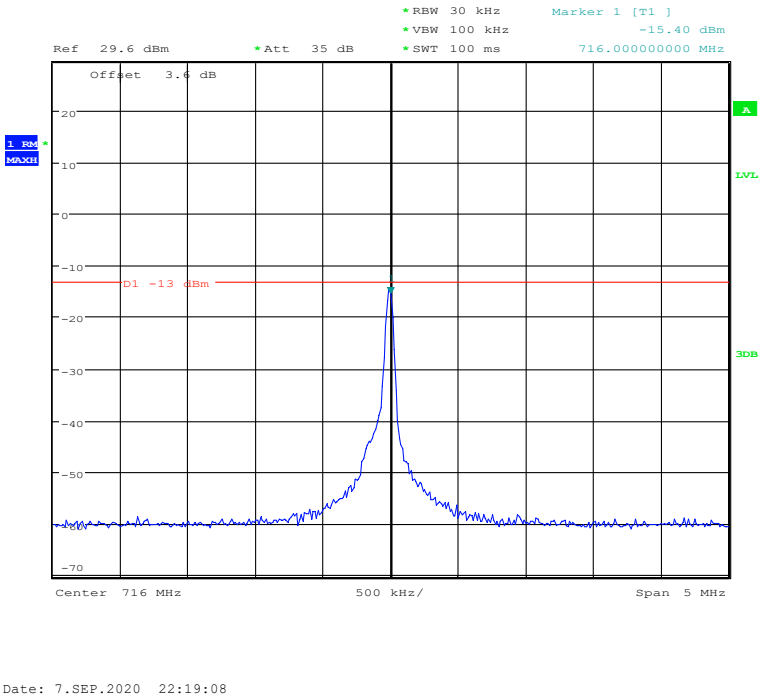
Low Channel, Subcarrier (15kHz), QPSK, 1@0



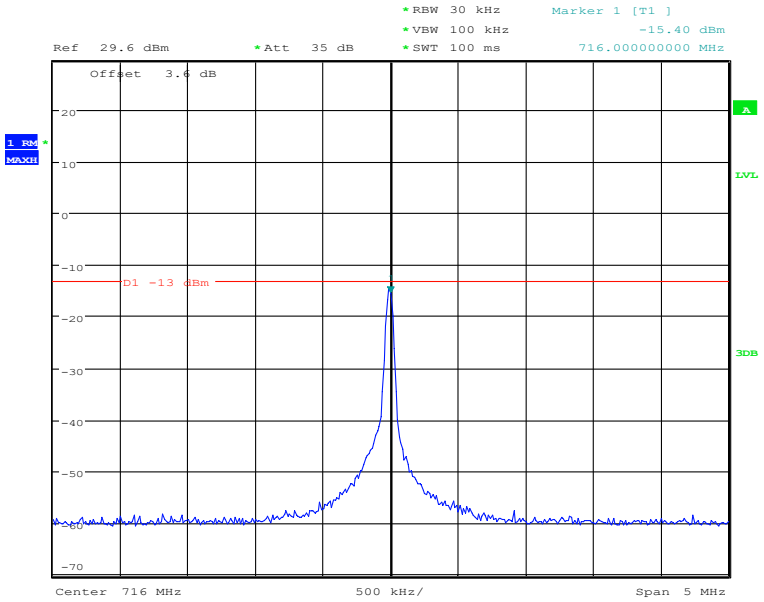
Low Channel, Subcarrier (15kHz), QPSK, 12@0



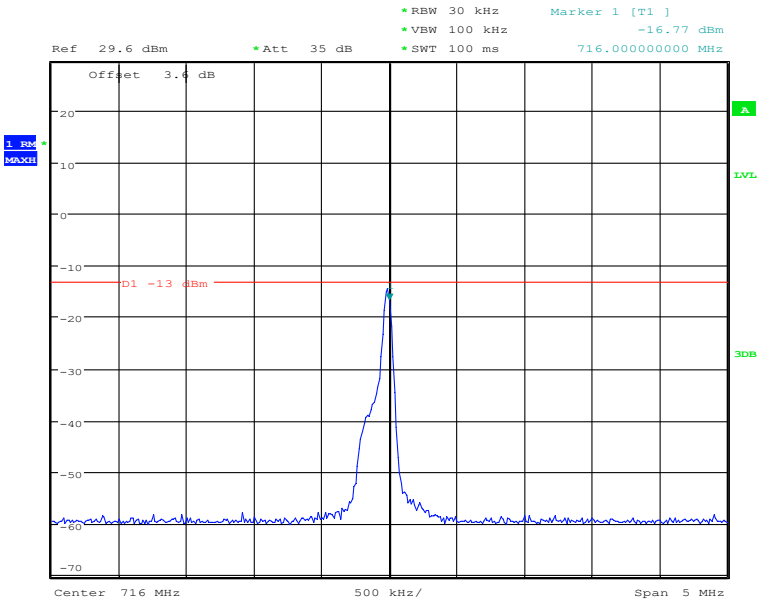
Low Channel, Subcarrier (15kHz), BPSK, 1@0



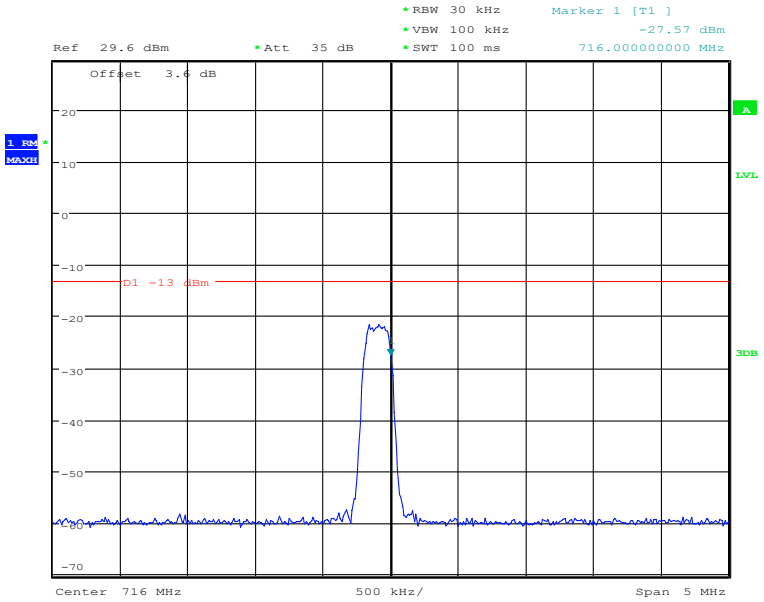
High Channel, Subcarrier (3.75kHz), QPSK, 1@47



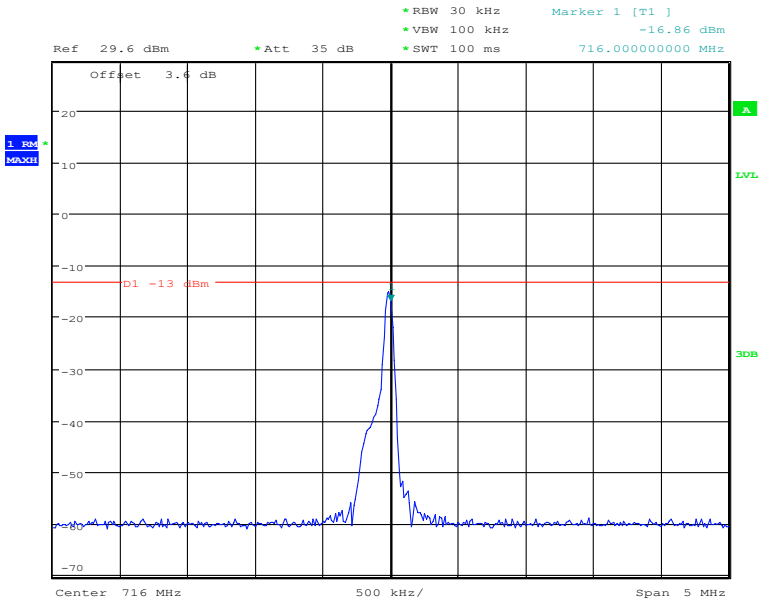
High Channel, Subcarrier (3.75kHz), BPSK, 1@47



High Channel, Subcarrier (15kHz), QPSK, 1@11

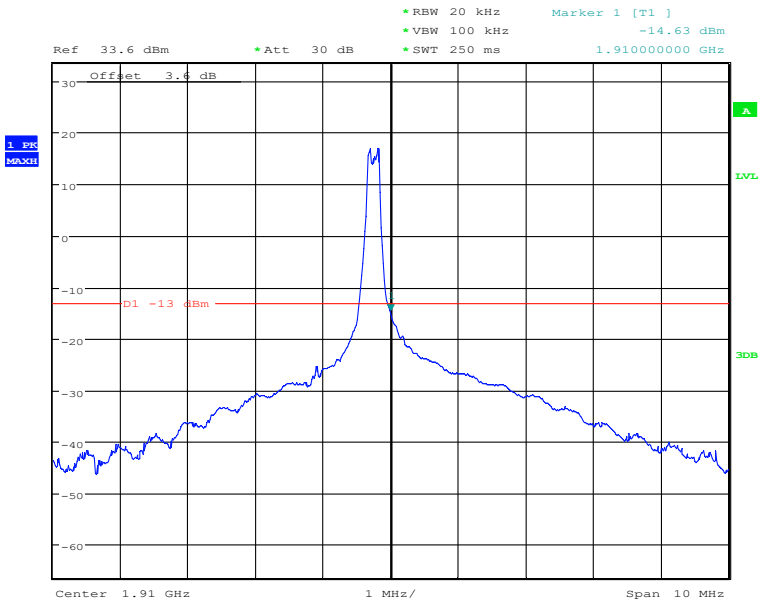


High Channel, Subcarrier (15kHz), QPSK, 12@0

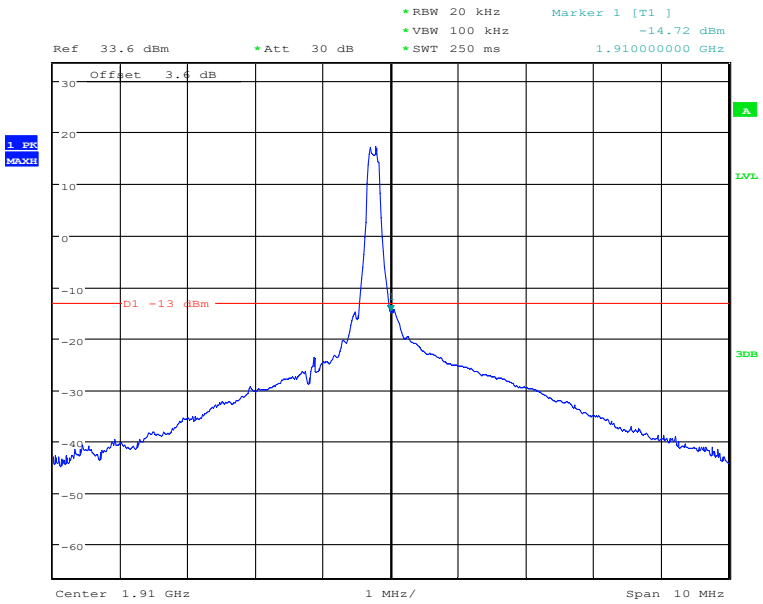


High Channel, Subcarrier (15kHz), BPSK, 1@11

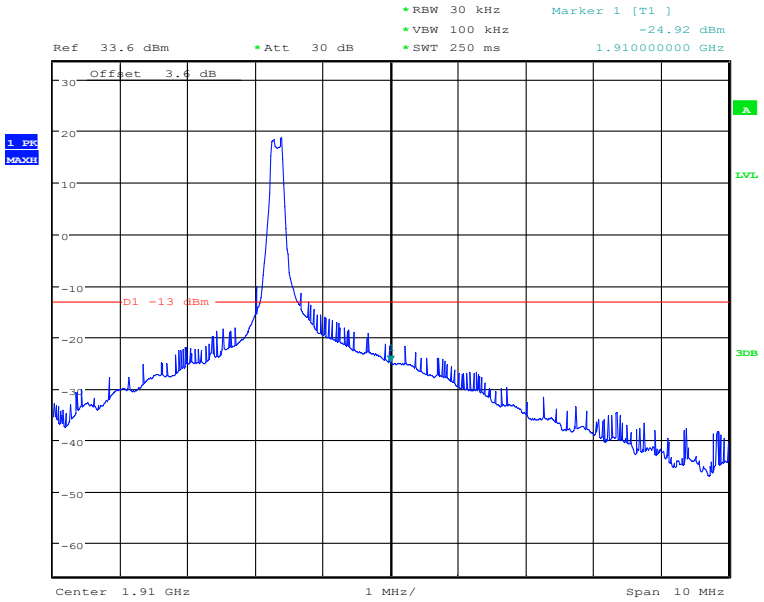
5.6.4 CAT-M Band2 Edge Results



Band2-High Channel-1.4MHz Bandwidth-16QAM

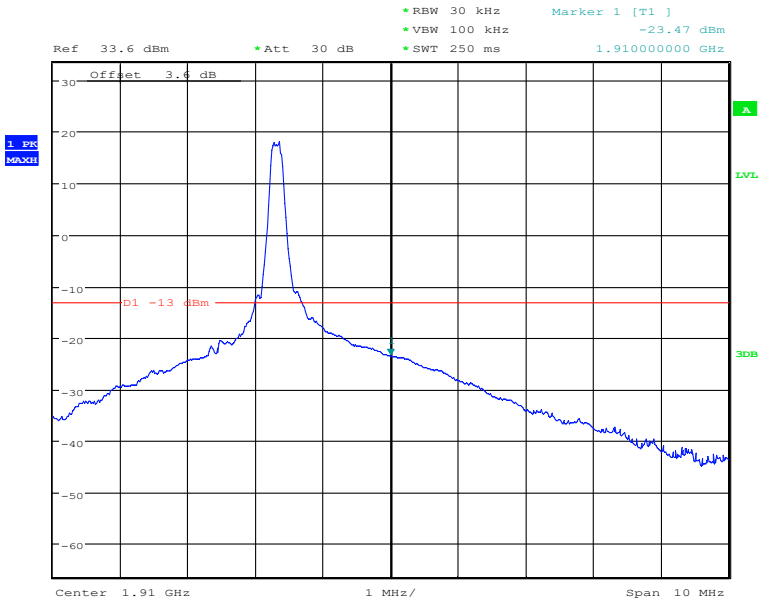


Band2-High Channel-1.4MHz Bandwidth-QPSK



Date: 2.SEP.2020 17:11:31

Band2-High Channel-3MHz Bandwidth-16QAM



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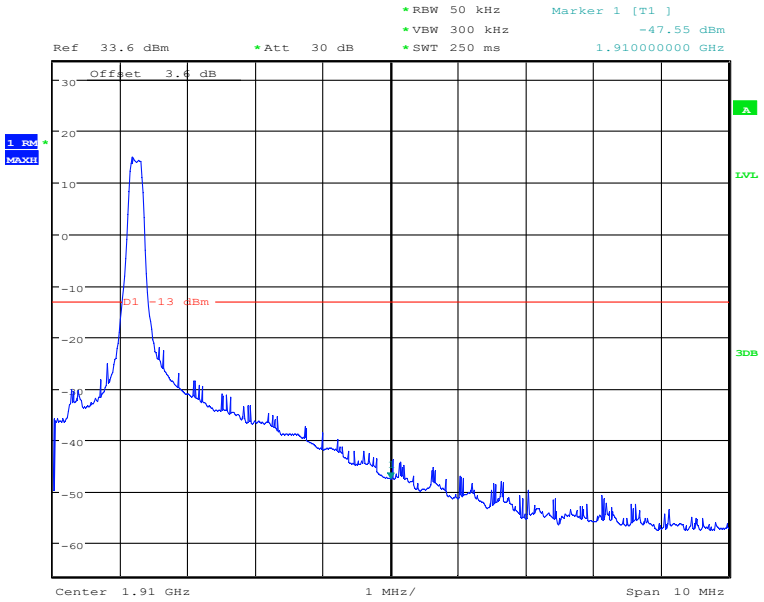
Band2-High Channel-3MHz Bandwidth-QPSK



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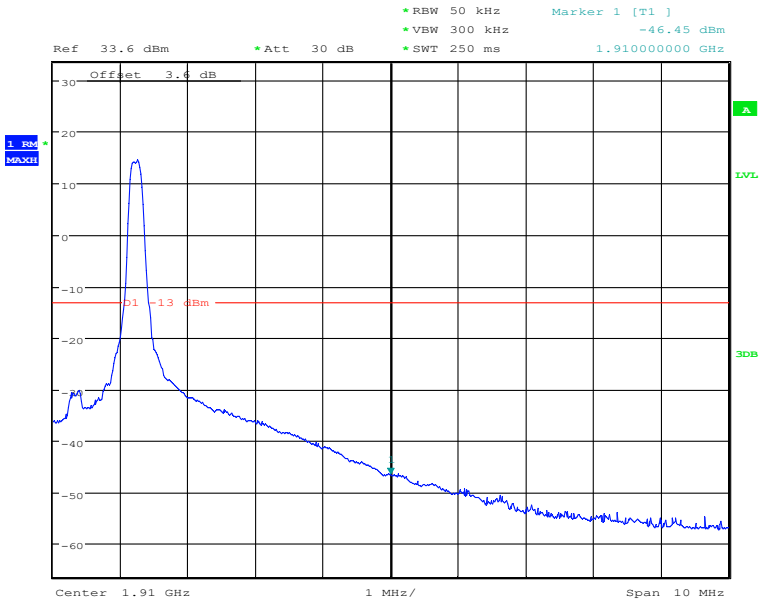
Band2-High Channel-5MHz Bandwidth-16QAM



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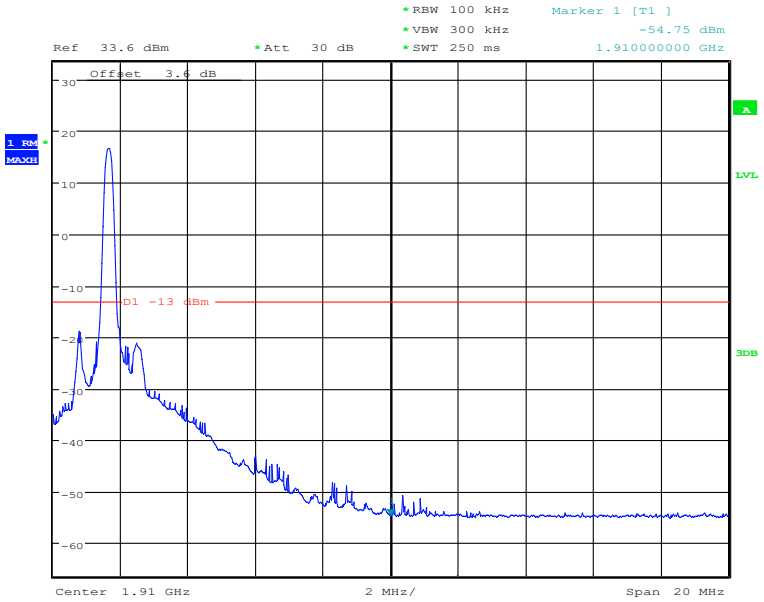
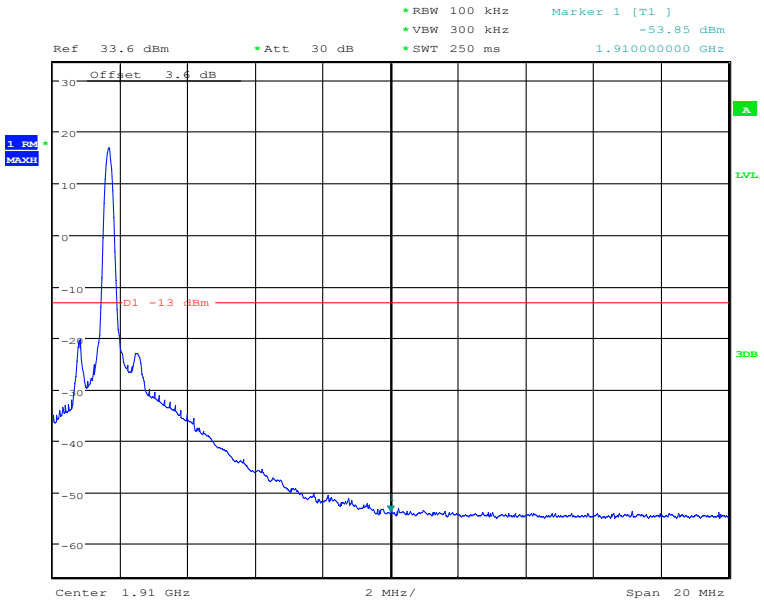
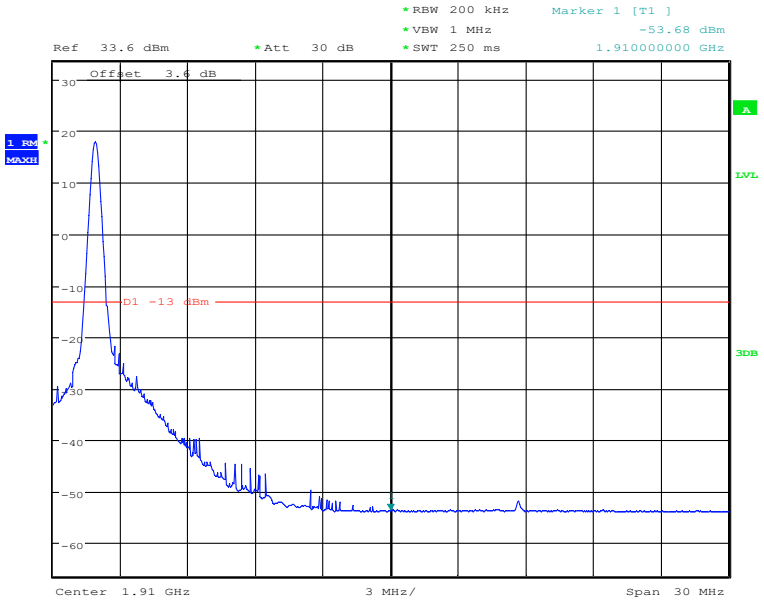
Band2-High Channel-5MHz Bandwidth-QPSK



Band2-High Channel-10MHz Bandwidth-16QAM



Band2-High Channel-10MHz Bandwidth-QPSK



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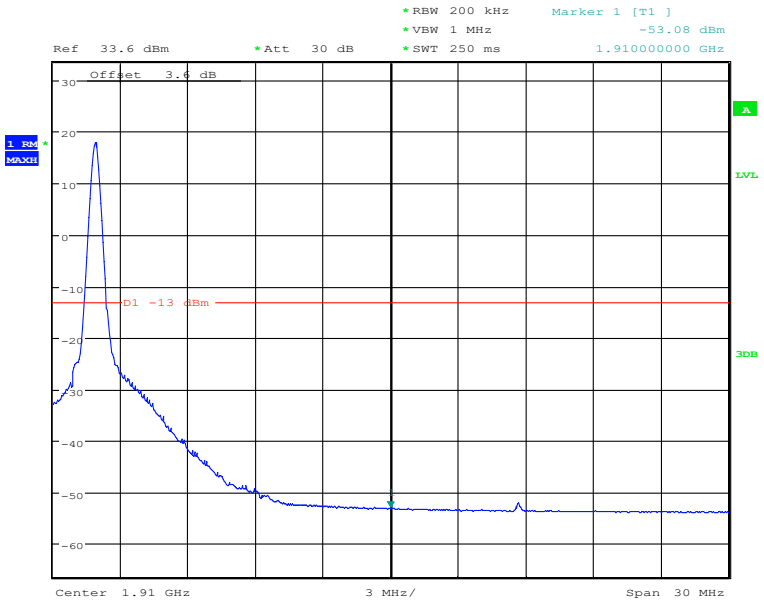
Band2-High Channel-15MHz Bandwidth-16QAM



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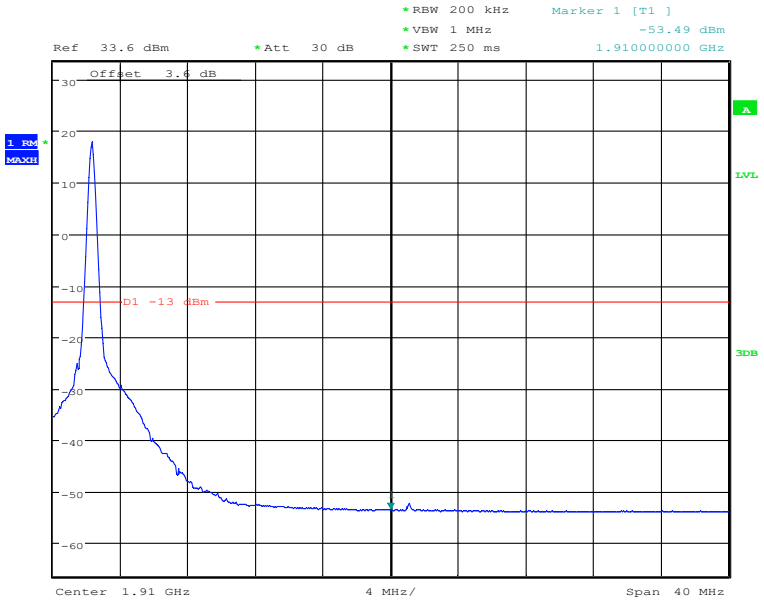
Band2-High Channel-15MHz Bandwidth-QPSK



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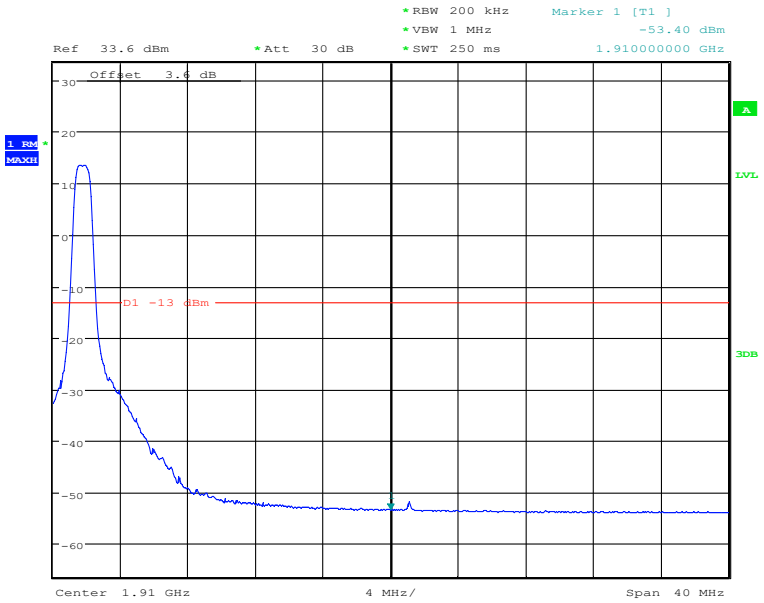
Band2-High Channel-20MHz Bandwidth-16QAM



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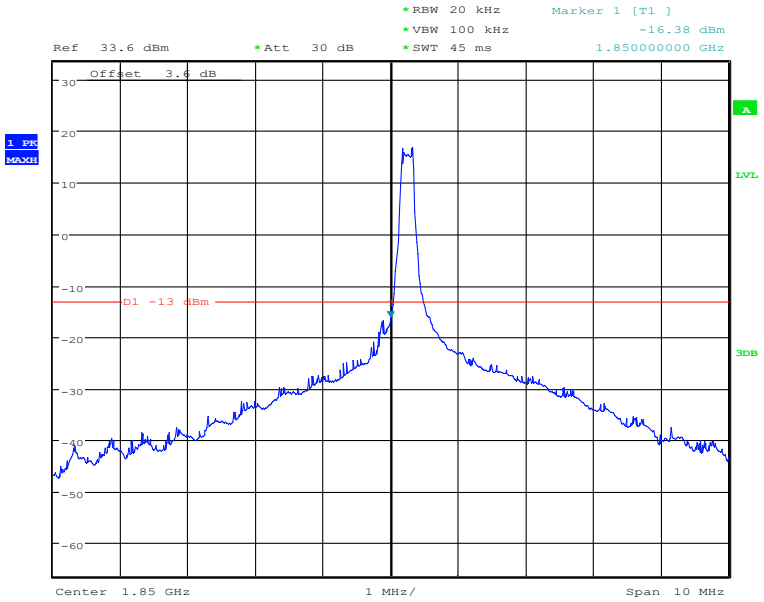
Band2-High Channel-20MHz Bandwidth-QPSK



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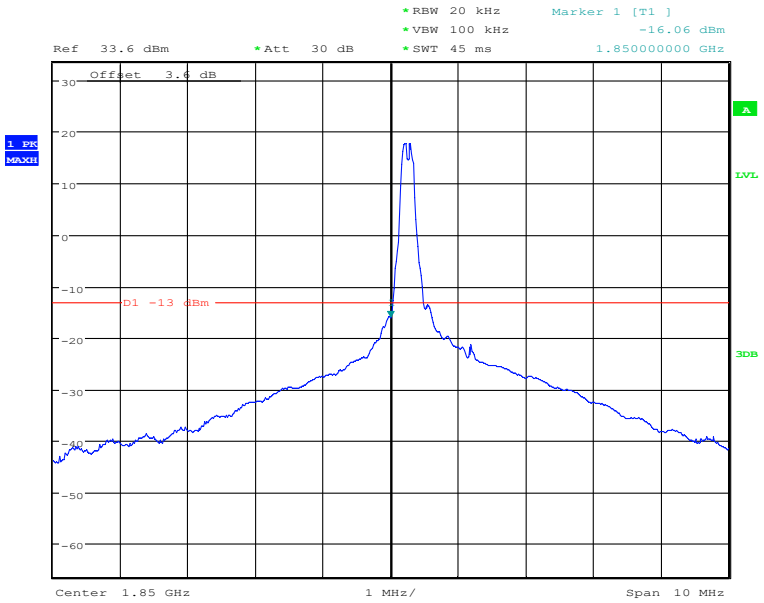
Band2-Low Channel-1.4MHz Bandwidth-16QAM



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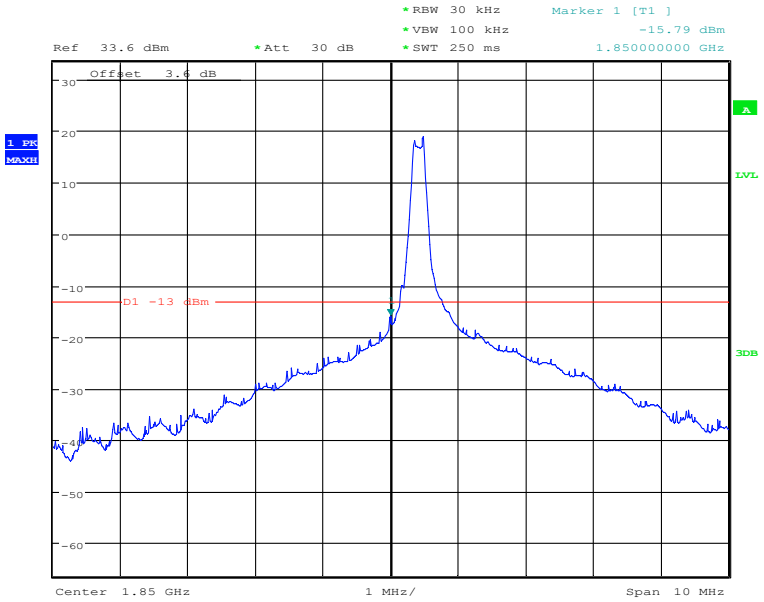
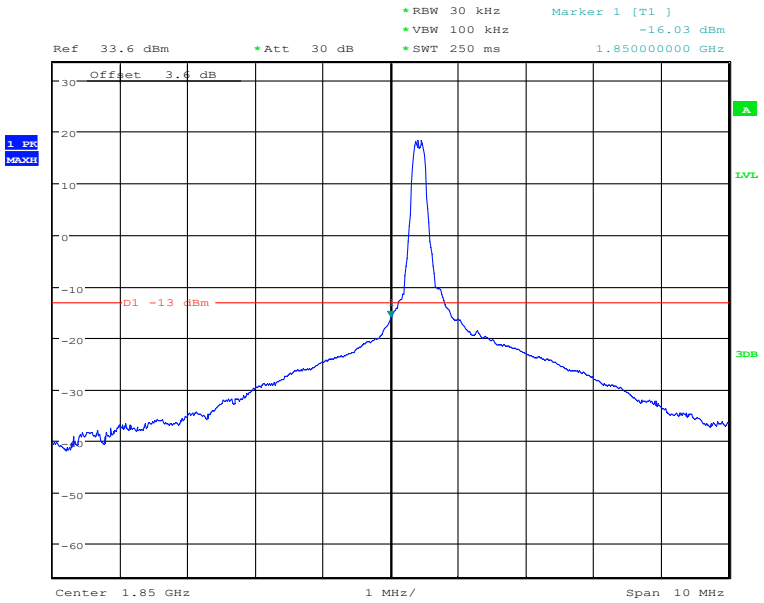
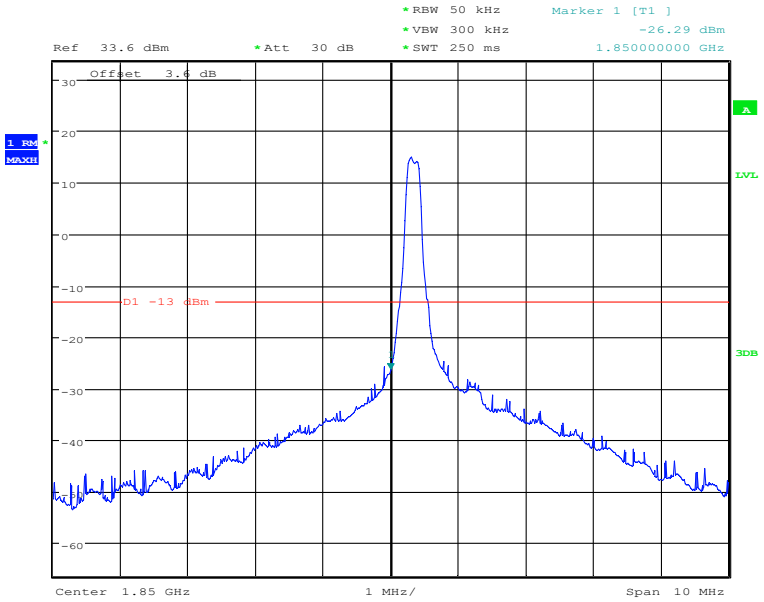
Band2-Low Channel-1.4MHz Bandwidth-QPSK



Band2-Low Channel-3MHz Bandwidth-16QAM



Band2-Low Channel-3MHz Bandwidth-QPSK



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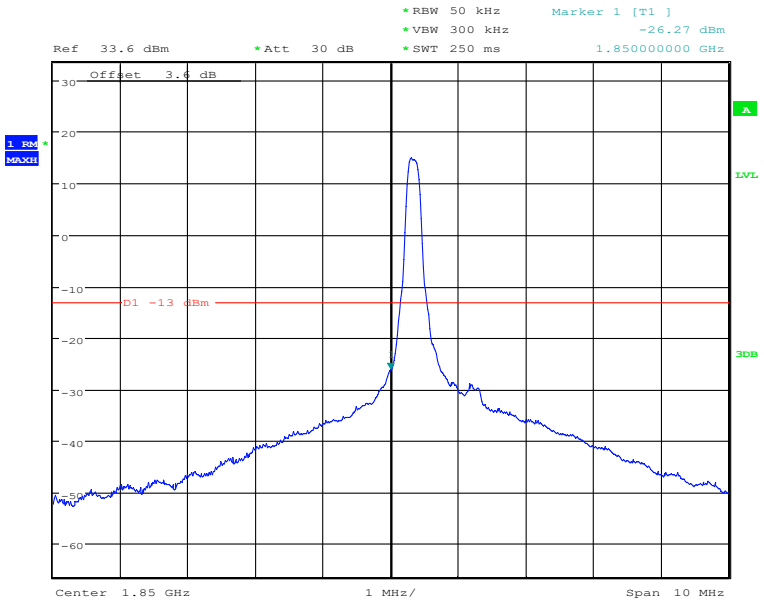
Band2-Low Channel-5MHz Bandwidth-16QAM



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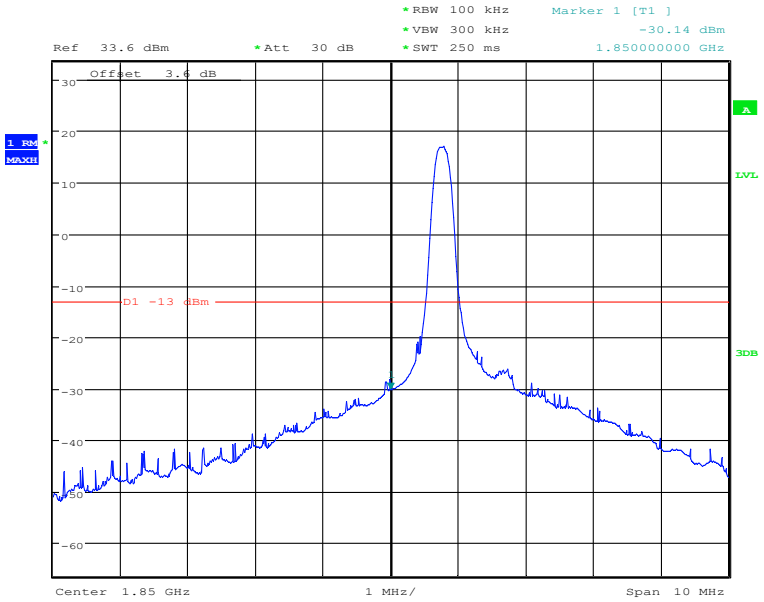
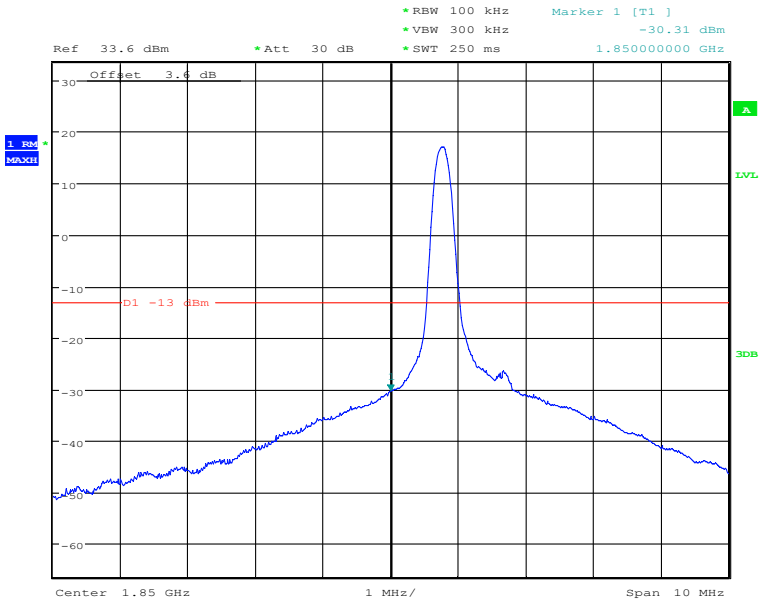
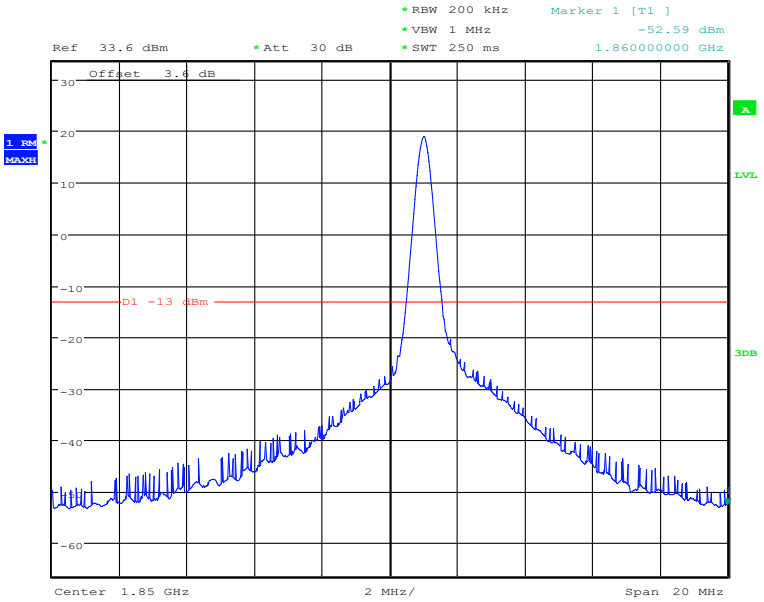
Band2-Low Channel-5MHz Bandwidth-QPSK



Band2-Low Channel-10MHz Bandwidth-16QAM



Band2-Low Channel-10MHz Bandwidth-QPSK



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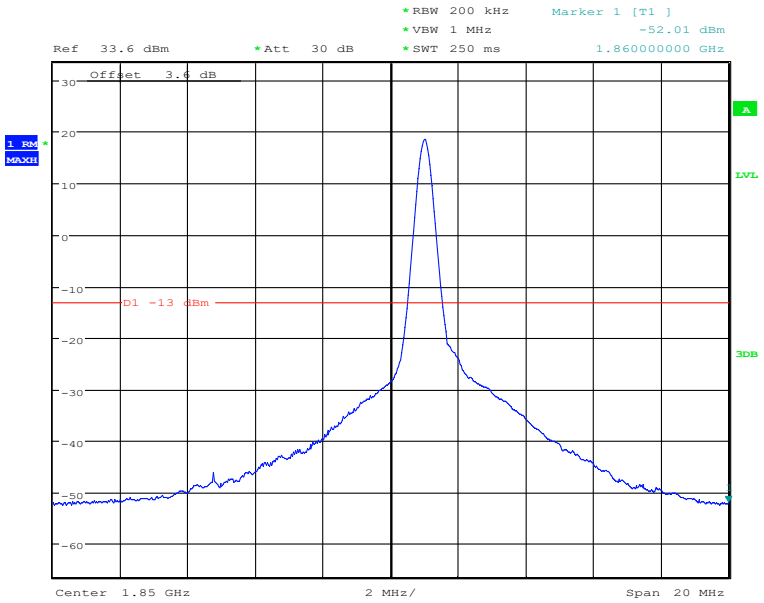
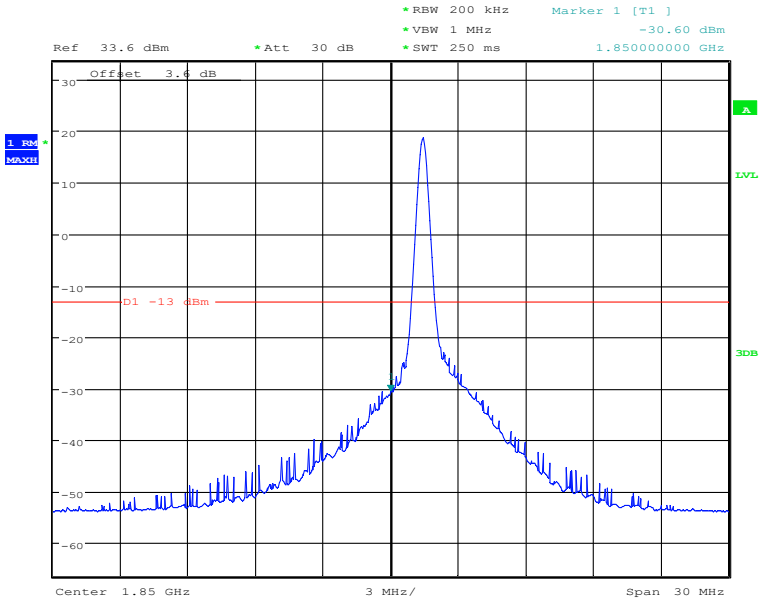
Band2-Low Channel-15MHz Bandwidth-16QAM

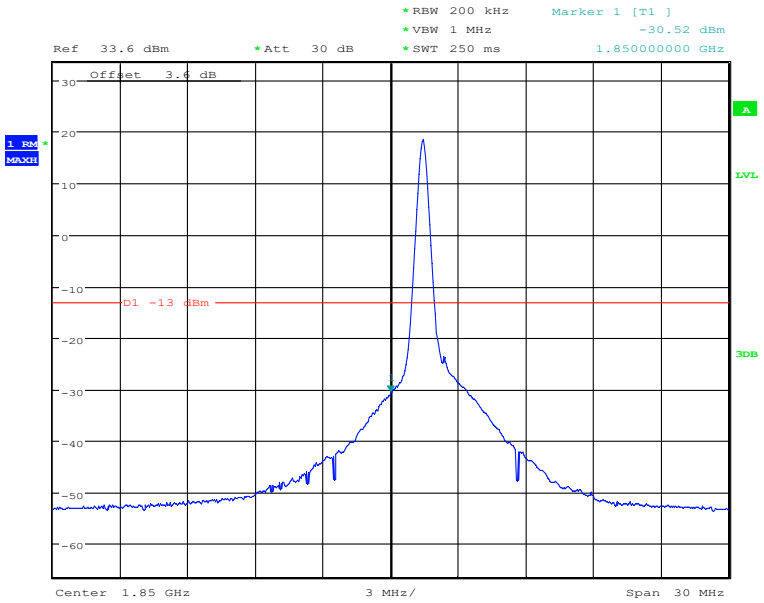


Date: 2.SEP.2020 17:57:09

Band2-Low Channel-15MHz Bandwidth-QPSK

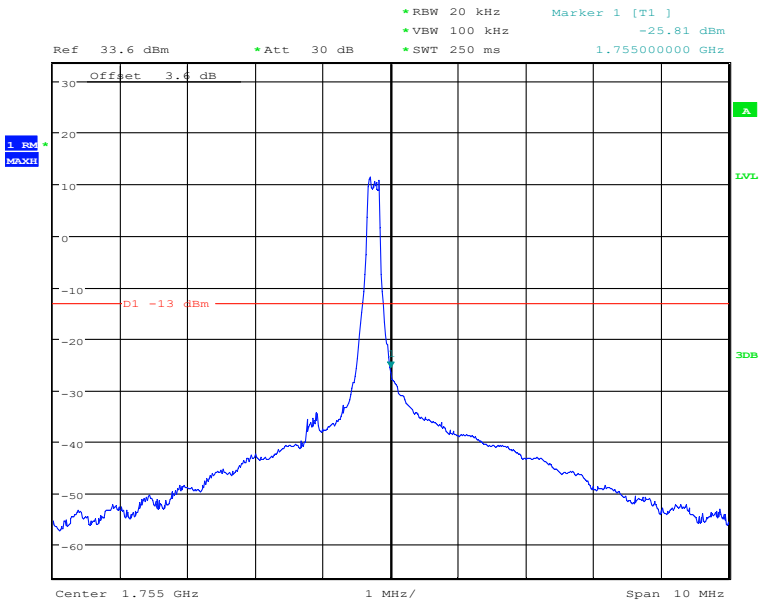


Band2-Low Channel-20MHz Bandwidth-16QAM

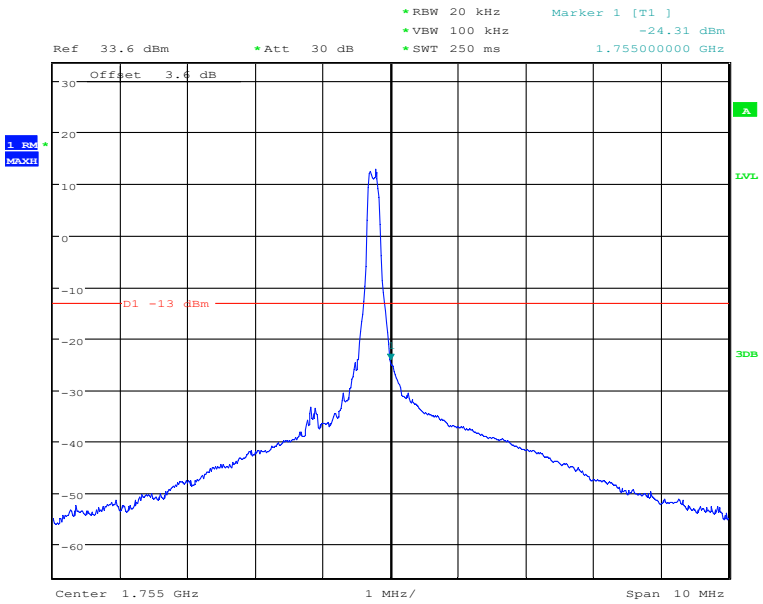


Band2-Low Channel-20MHz Bandwidth-QPSK

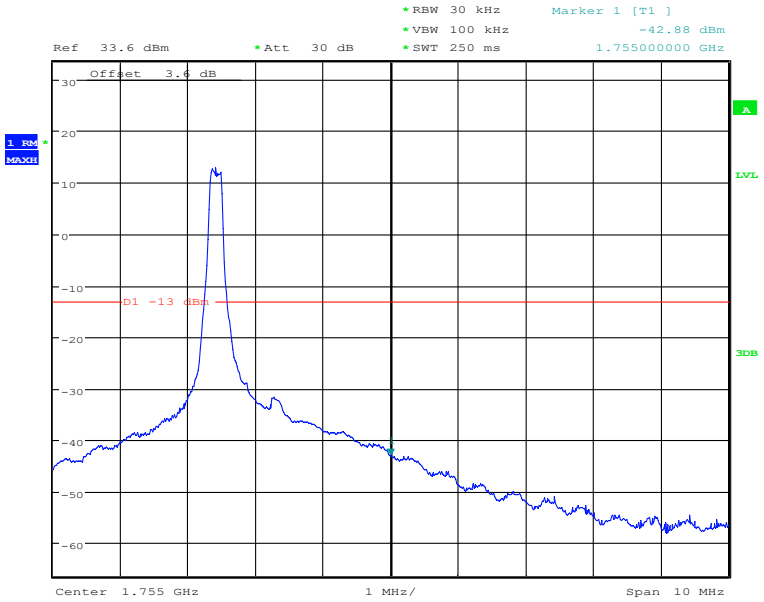
5.6.5 CAT-M Band4 Edge Results



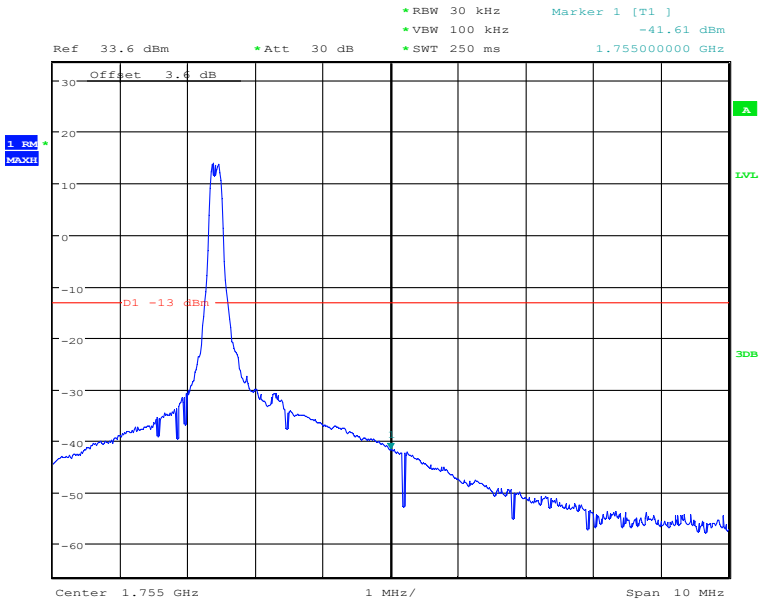
Band4-High Channel-1.4MHz Bandwidth-16QAM



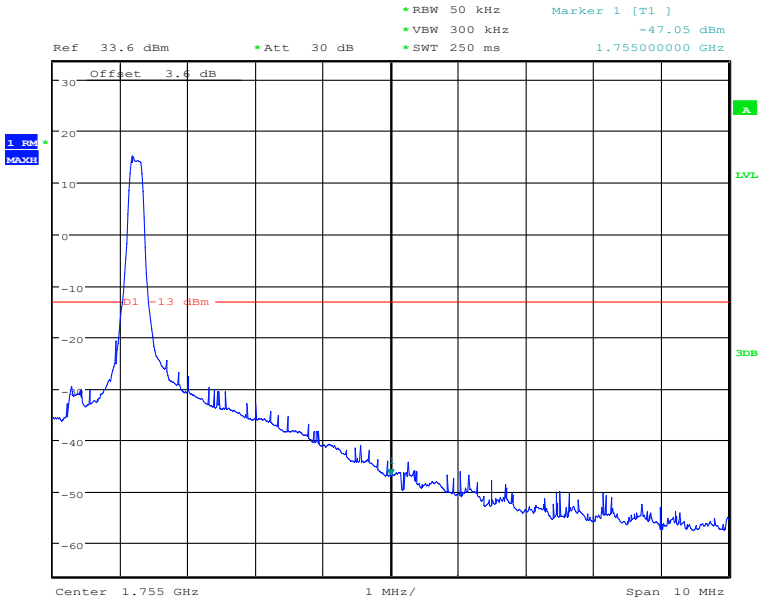
Band4-High Channel-1.4MHz Bandwidth-QPSK



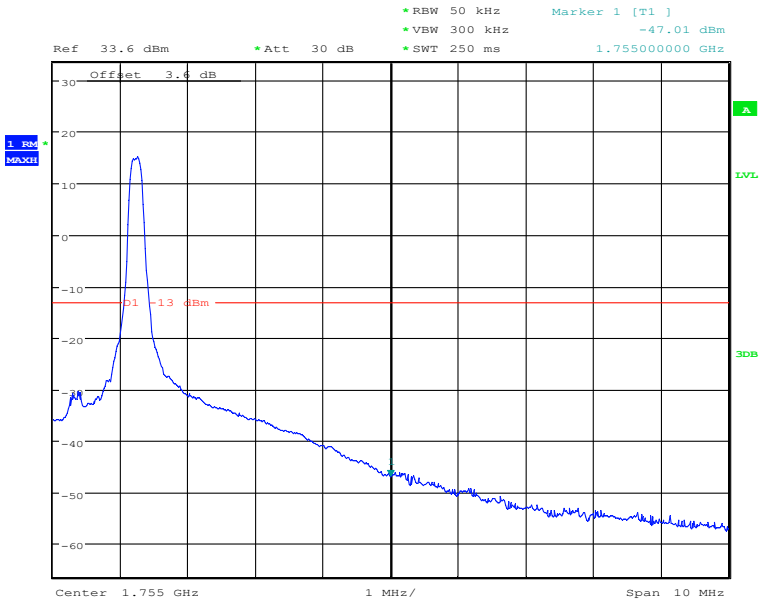
Band4-High Channel-3MHz Bandwidth-16QAM



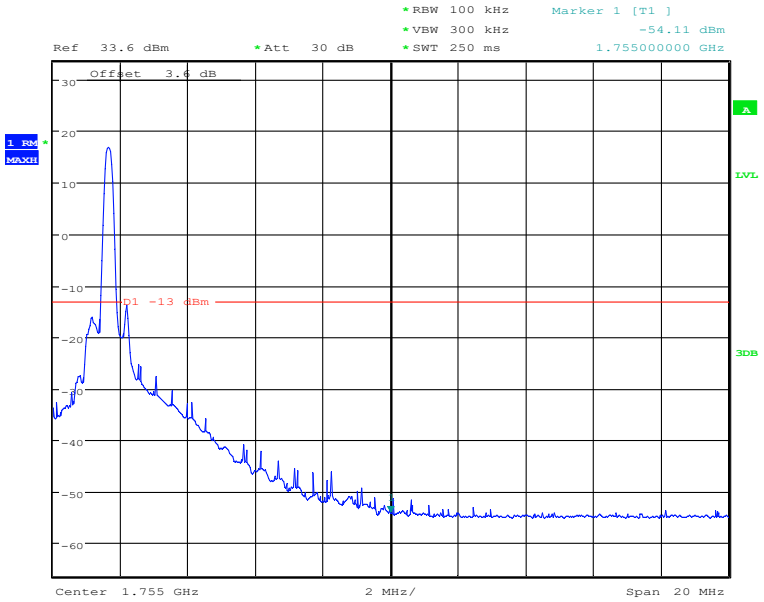
Band4-High Channel-3MHz Bandwidth-QPSK



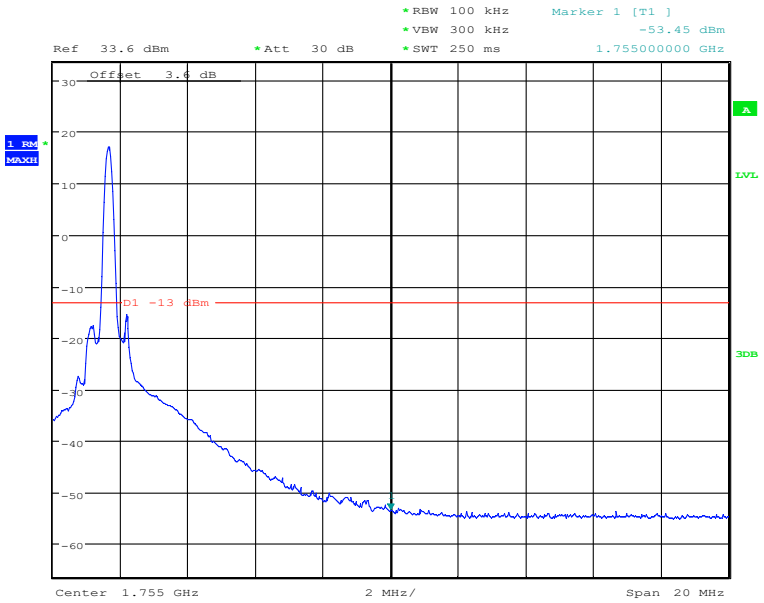
Band4-High Channel-5MHz Bandwidth-16QAM



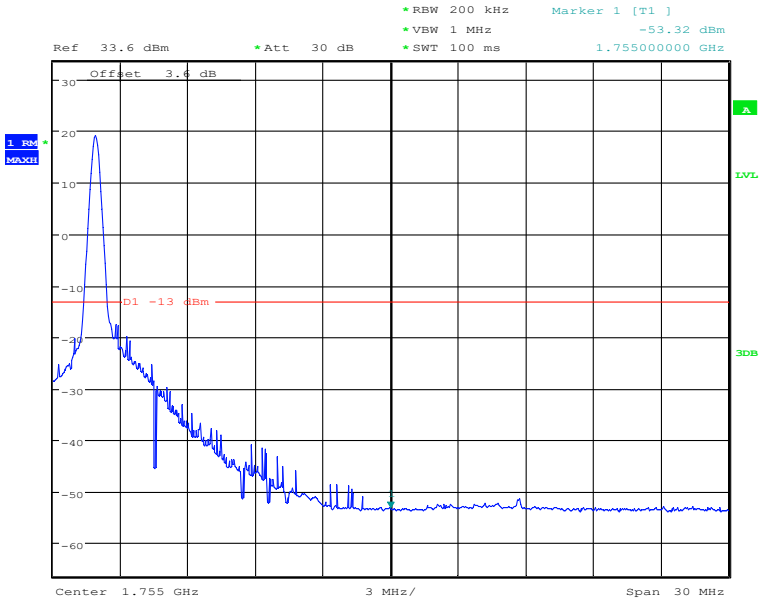
Band4-High Channel-5MHz Bandwidth-QPSK



Band4-High Channel-10MHz Bandwidth-16QAM



Band4-High Channel-10MHz Bandwidth-QPSK



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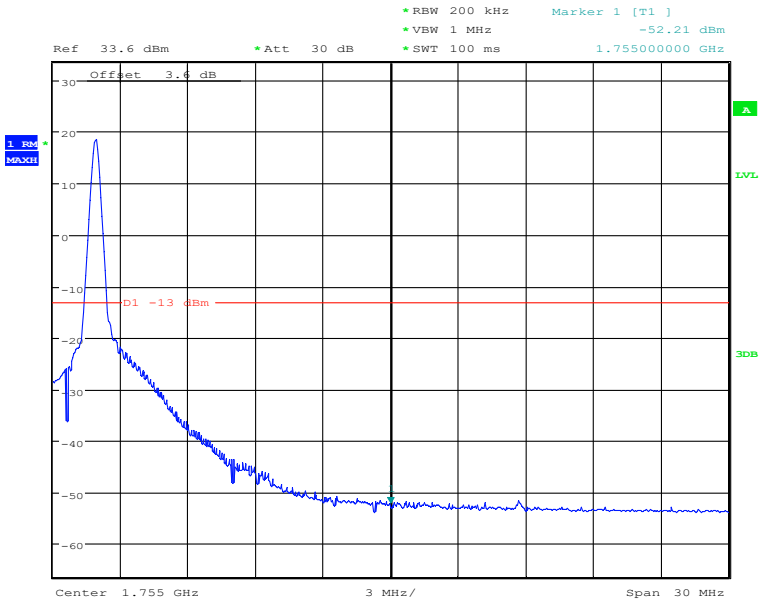
Band4-High Channel-15MHz Bandwidth-16QAM



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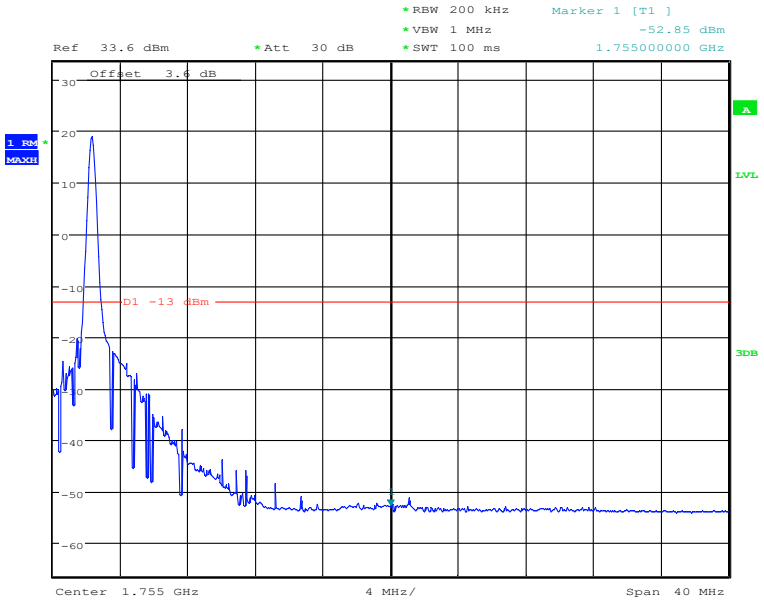
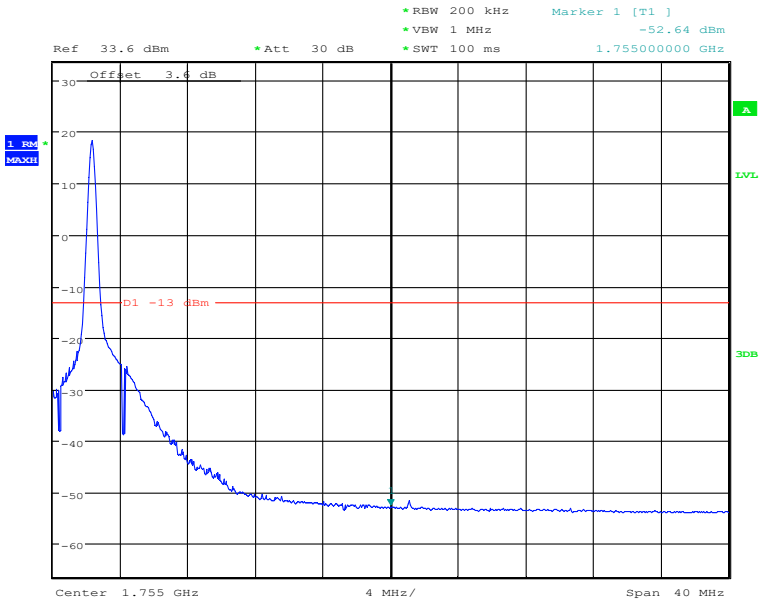
Band4-High Channel-15MHz Bandwidth-QPSK



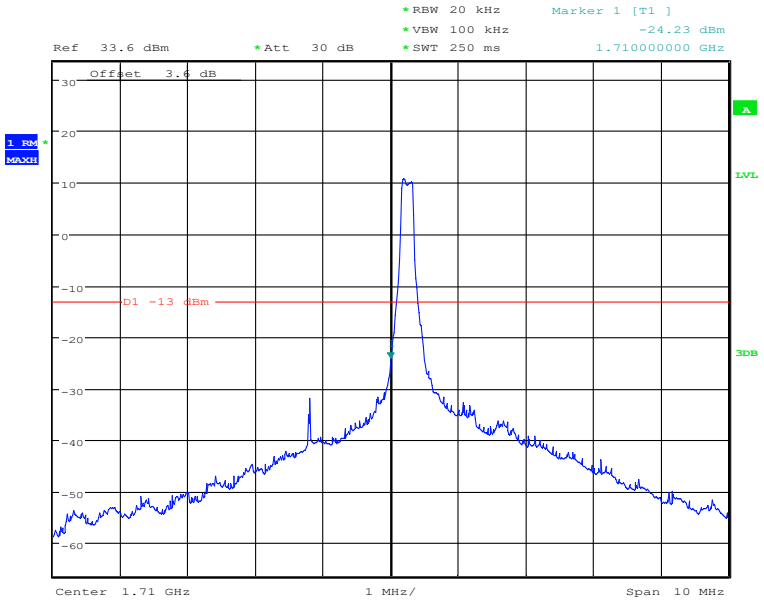
Date: 2.SEP.2020 23:59:58

Band4-High Channel-20MHz Bandwidth-16QAM

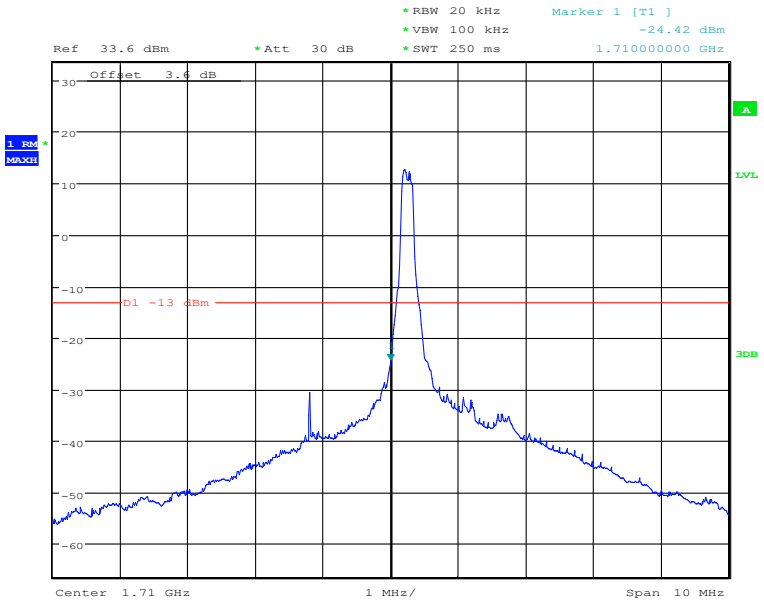


Date: 3.SEP.2020 00:01:05

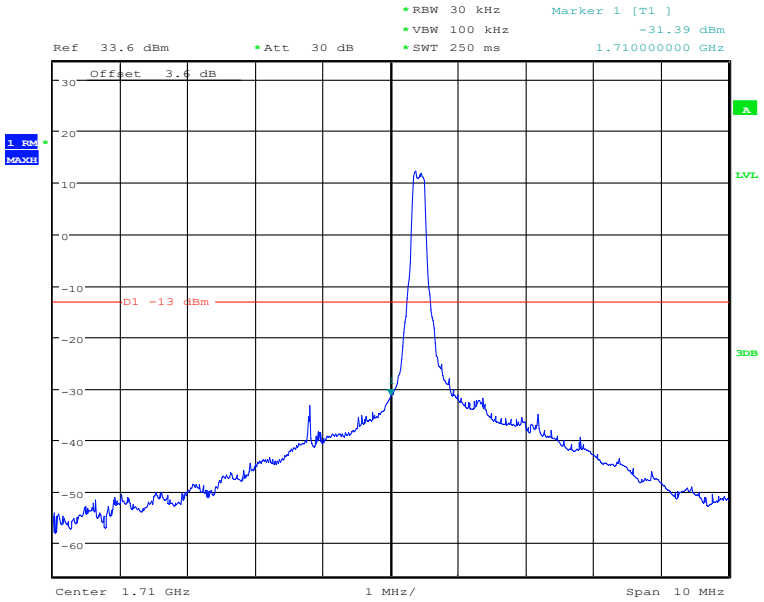
Band4-High Channel-20MHz Bandwidth-QPSK



Band4-Low Channel-1.4MHz Bandwidth-16QAM



Band4-Low Channel-1.4MHz Bandwidth-QPSK



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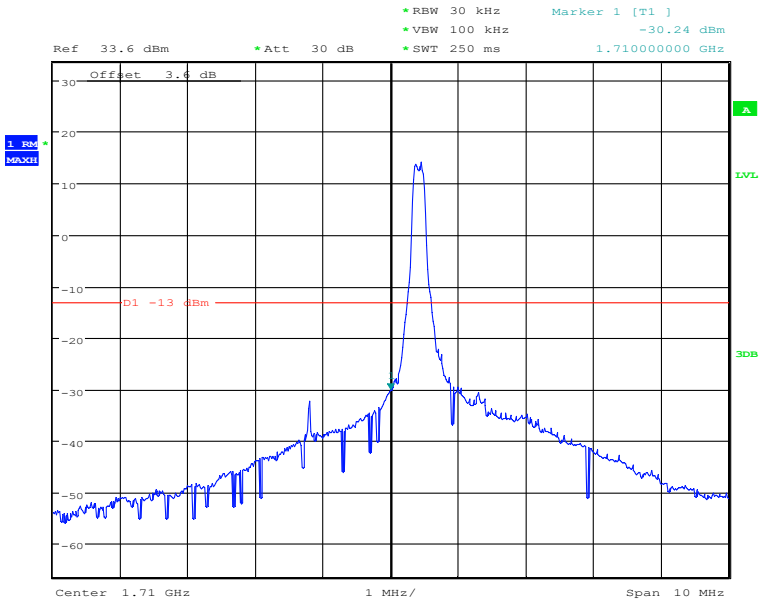
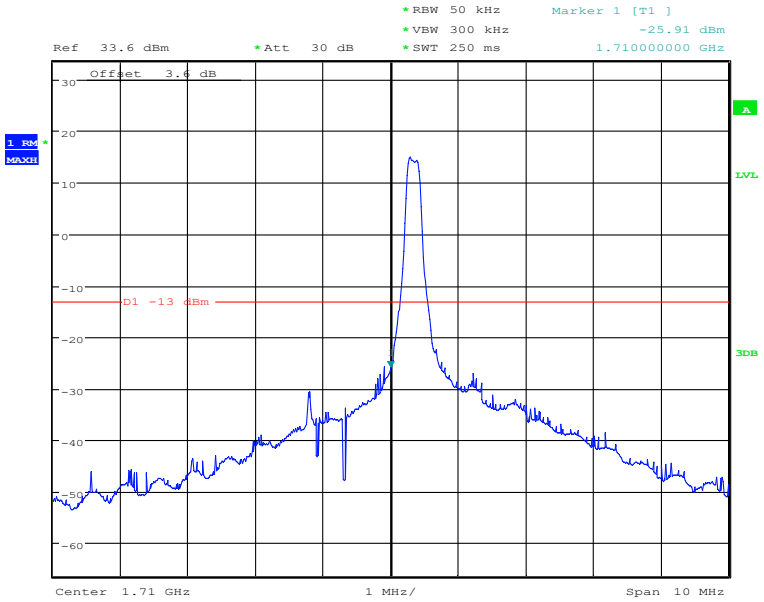
Band4-Low Channel-3MHz Bandwidth-16QAM



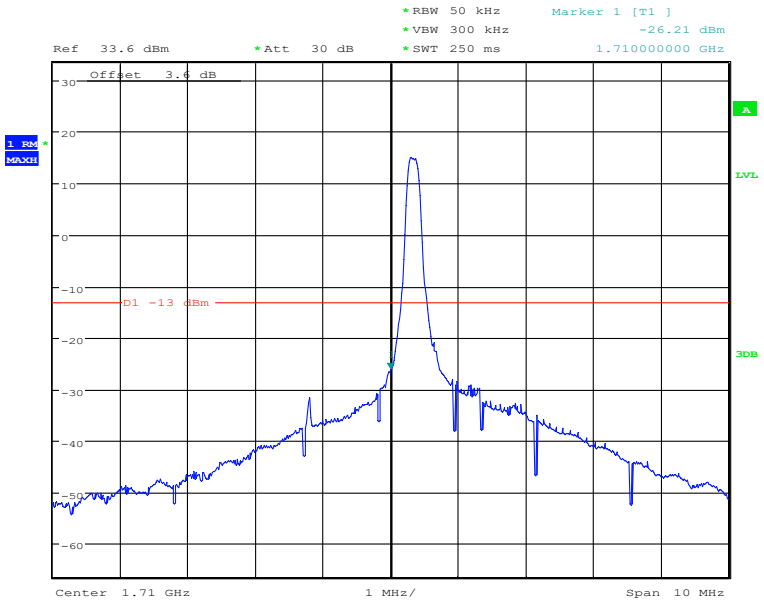
Date: 2.SEP.2020 18:49:19

Band4-Low Channel-3MHz Bandwidth-QPSK



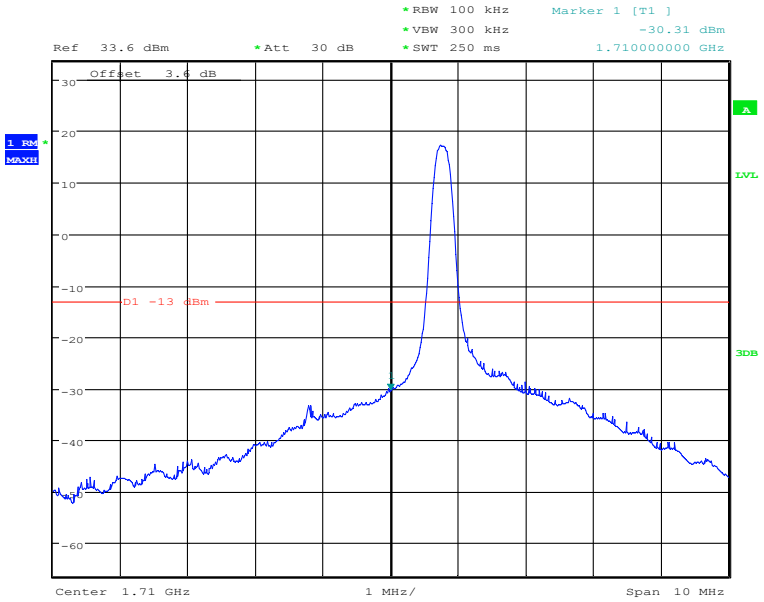
Date: 2.SEP.2020 23:33:57

Band4-Low Channel-5MHz Bandwidth-16QAM

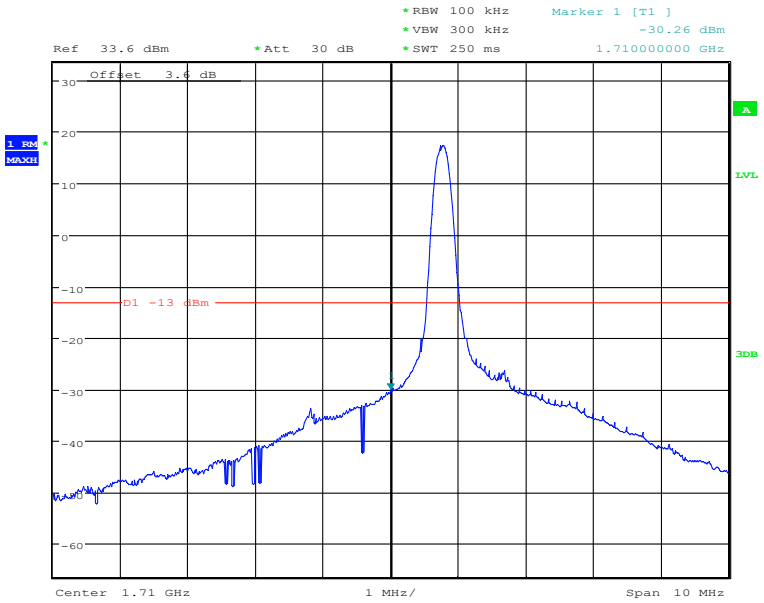


Date: 2.SEP.2020 23:33:05

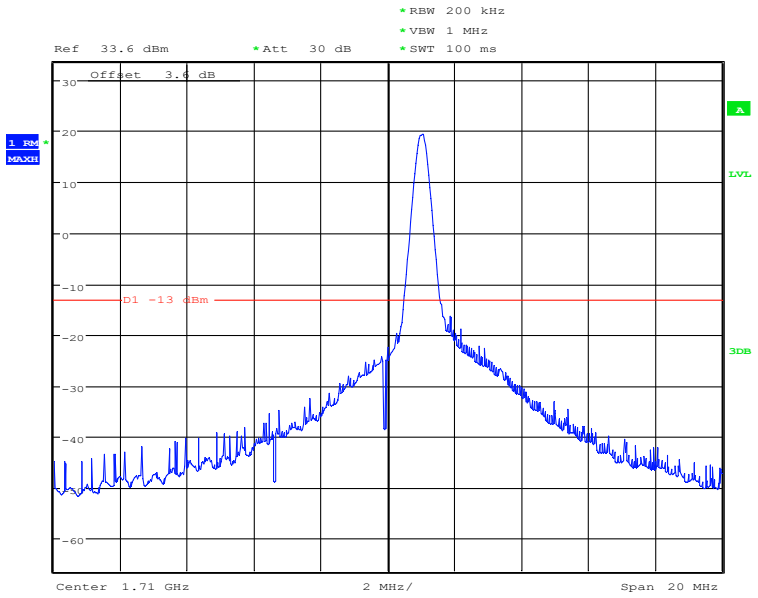
Band4-Low Channel-5MHz Bandwidth-QPSK



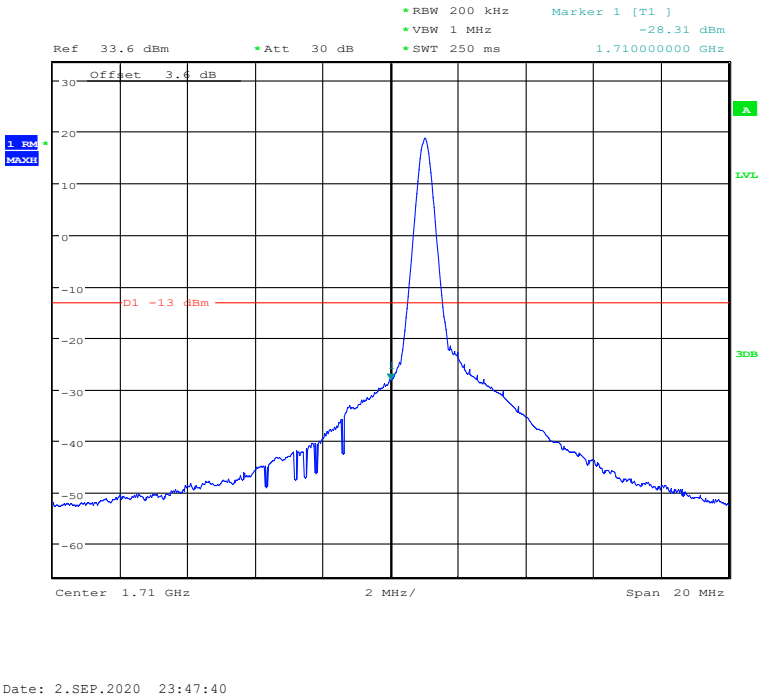
Band4-Low Channel-10MHz Bandwidth-16QAM



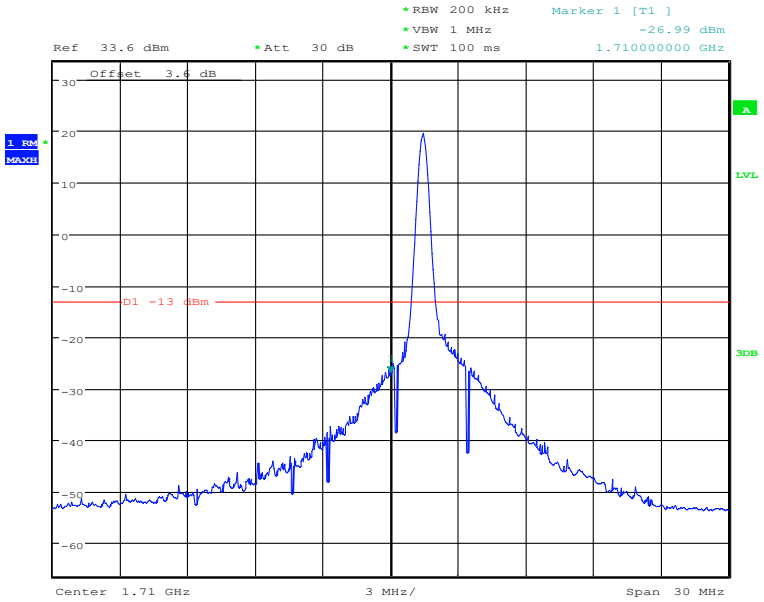
Band4-Low Channel-10MHz Bandwidth-QPSK



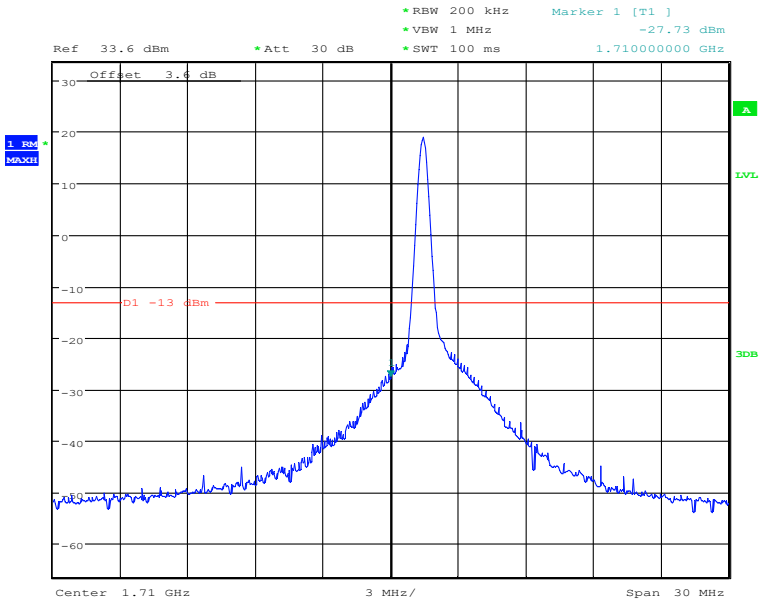
Band4-Low Channel-15MHz Bandwidth-16QAM



Band4-Low Channel-15MHz Bandwidth-QPSK

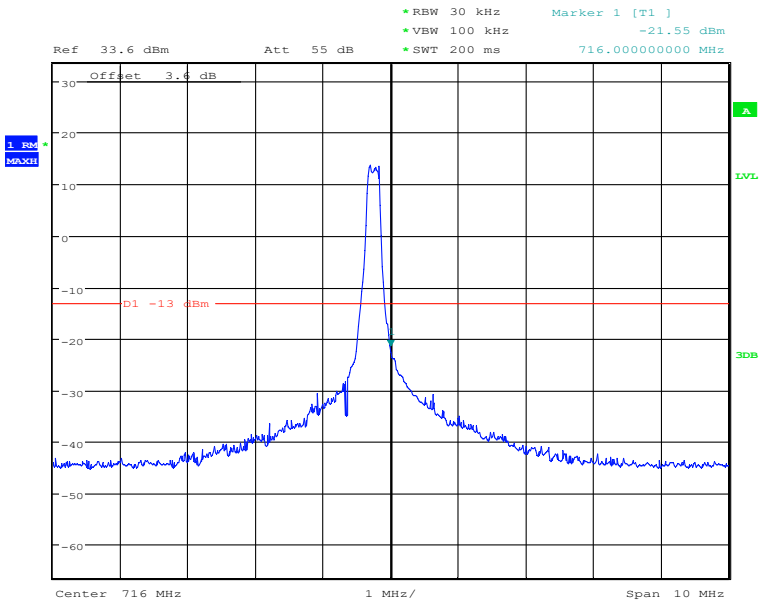


Band4-Low Channel-20MHz Bandwidth-16QAM

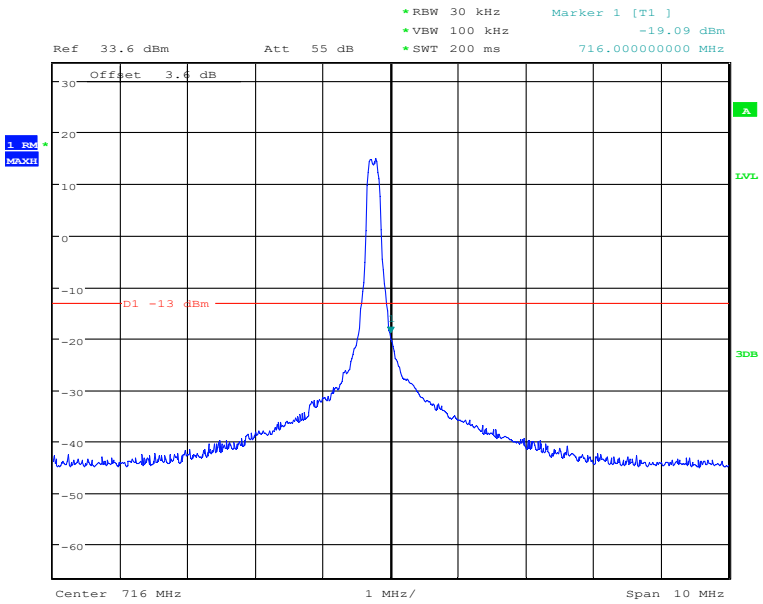


Band4-Low Channel-20MHz Bandwidth-QPSK

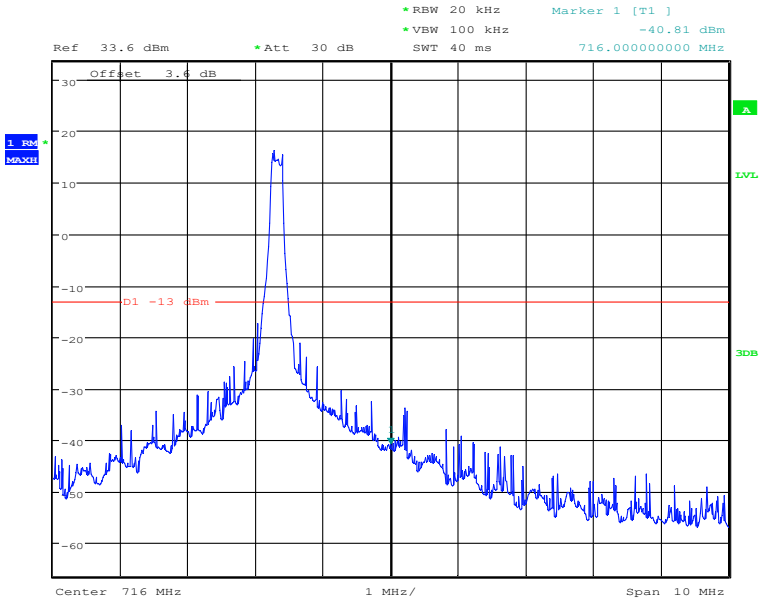
5.6.6 CAT-M Band12 Edge Results



High Channel-1.4MHz Bandwidth-16QAM

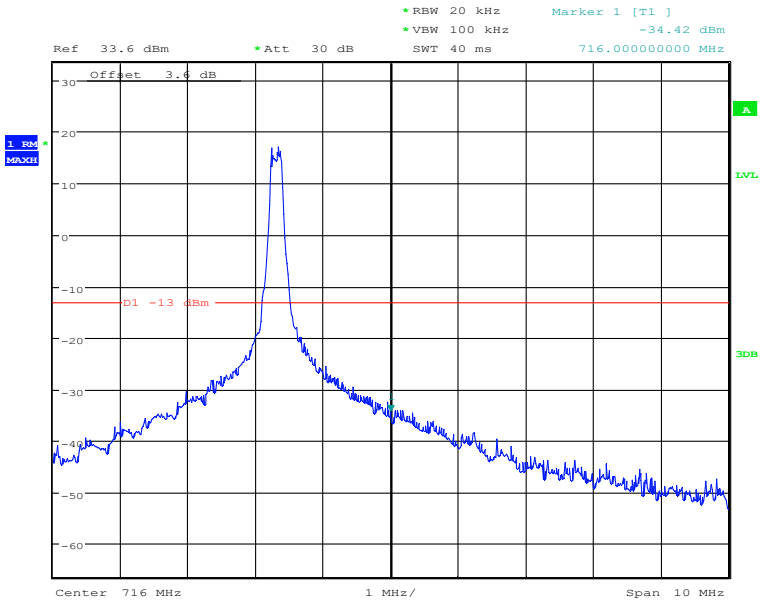


High Channel-1.4MHz Bandwidth-QPSK



Date: 3.SEP.2020 02:49:35

High Channel-3MHz Bandwidth-16QAM



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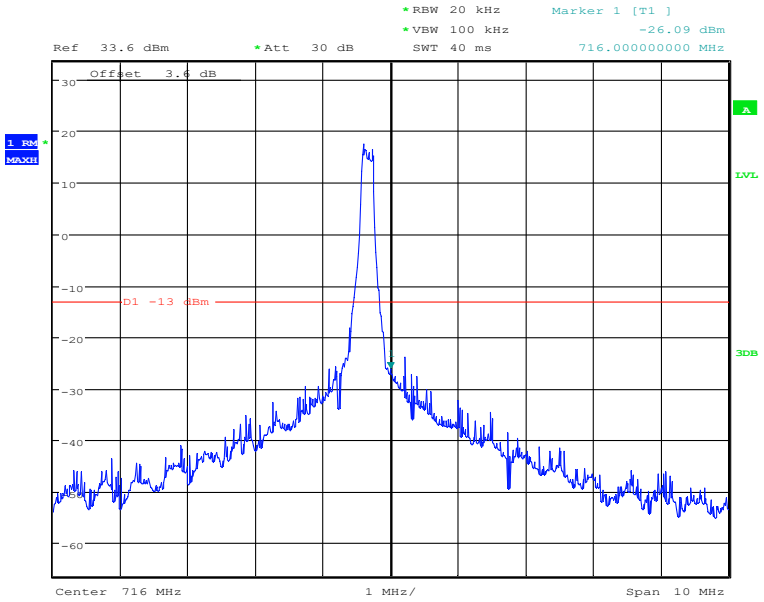
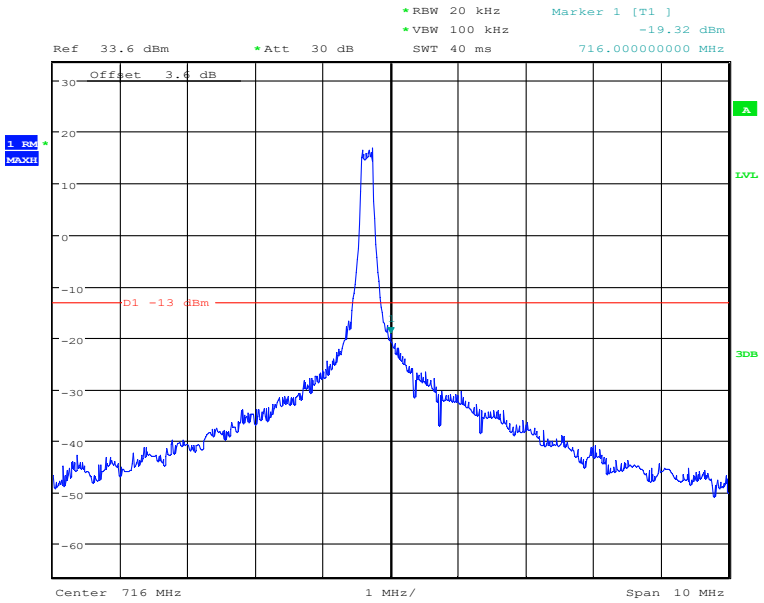
High Channel-3MHz Bandwidth-QPSK



Date: 3.SEP.2020 03:00:51

High Channel-5MHz Bandwidth-16QAM



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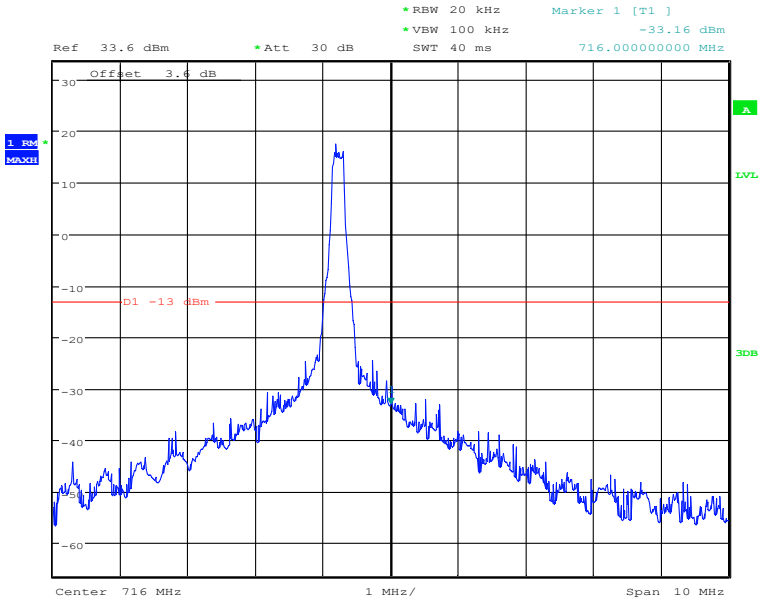
High Channel-5MHz Bandwidth-QPSK



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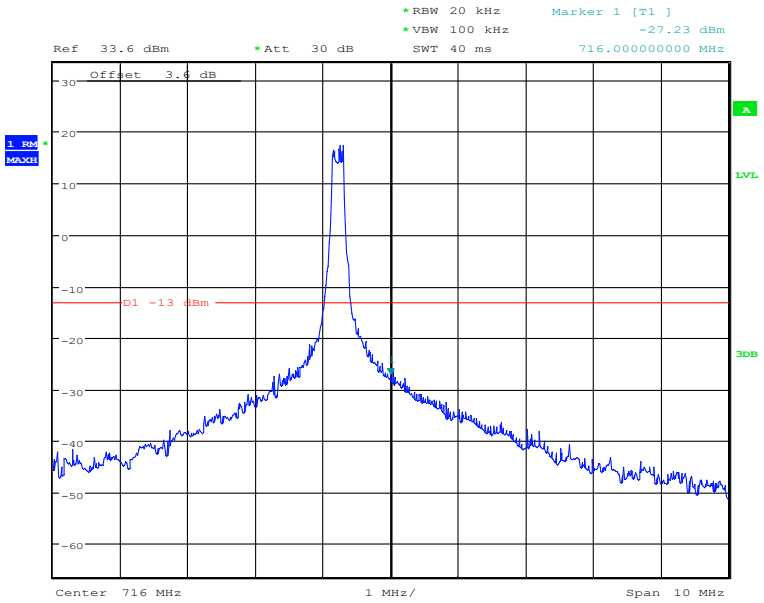
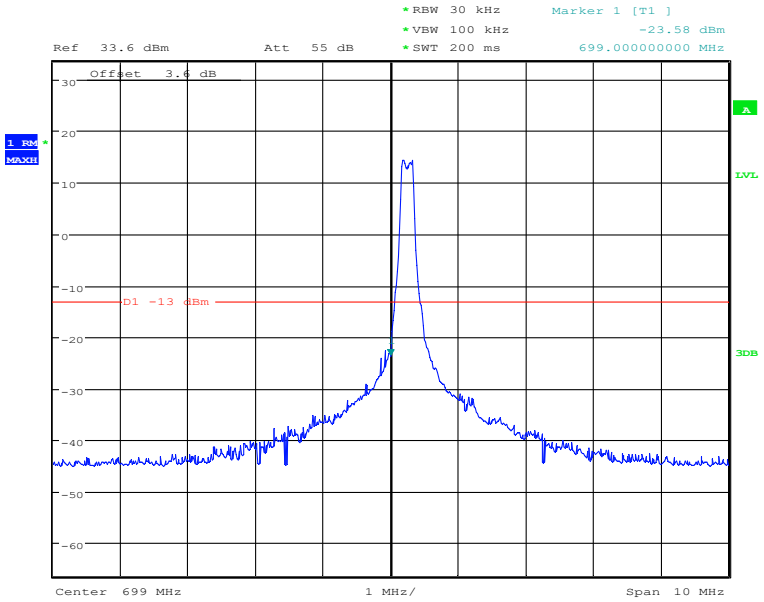
High Channel-10MHz Bandwidth-16QAM

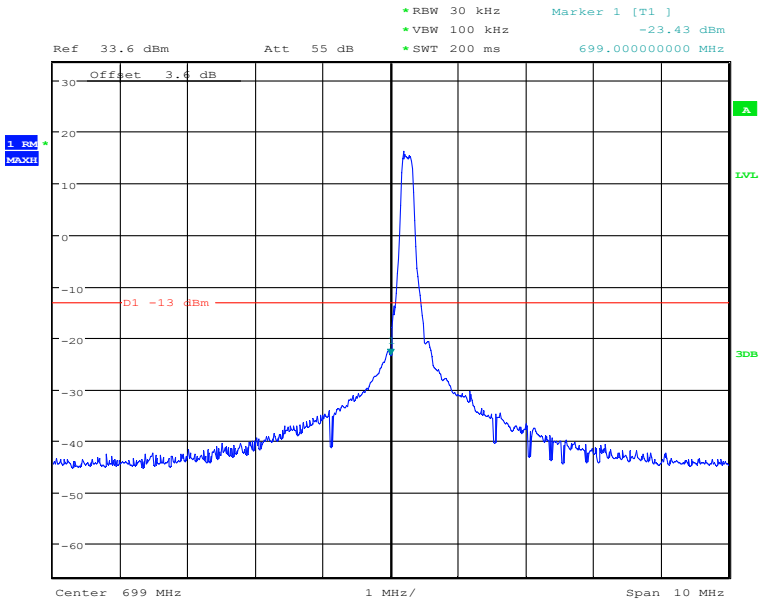


Date: 3.SEP.2020 03:10:19

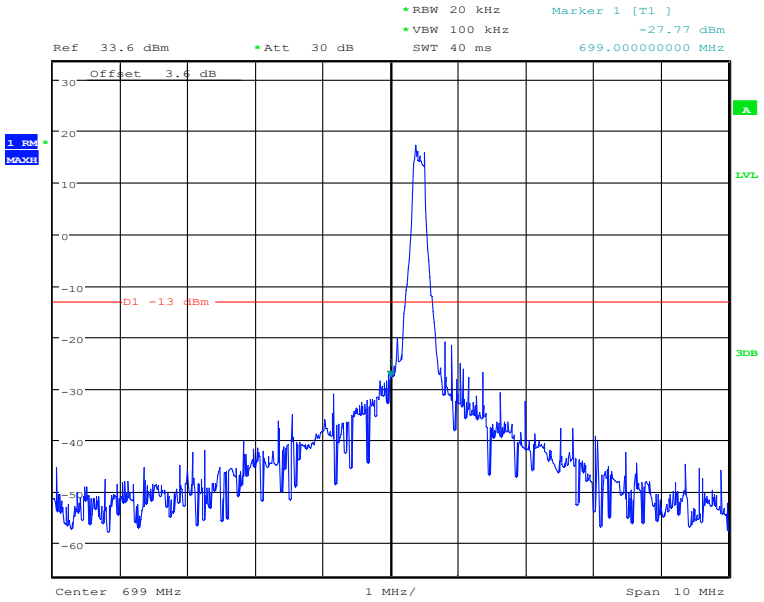
High Channel-10MHz Bandwidth-QPSK



Low Channel-1.4MHz Bandwidth-16QAM



Low Channel-1.4MHz Bandwidth-QPSK



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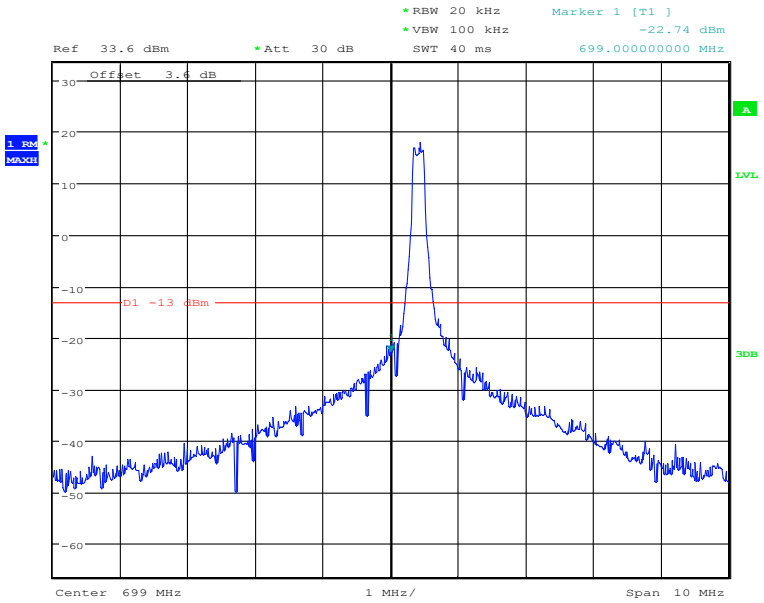
Low Channel-3MHz Bandwidth-16QAM



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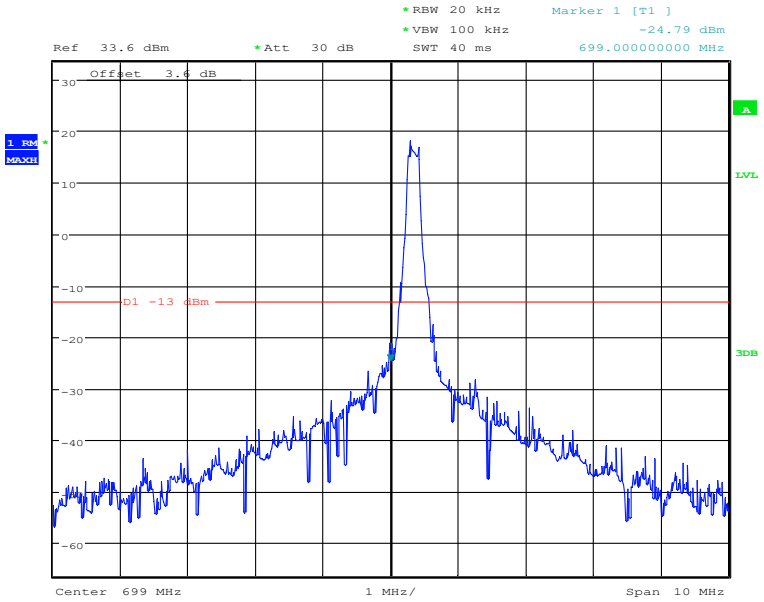
Low Channel-3MHz Bandwidth-QPSK



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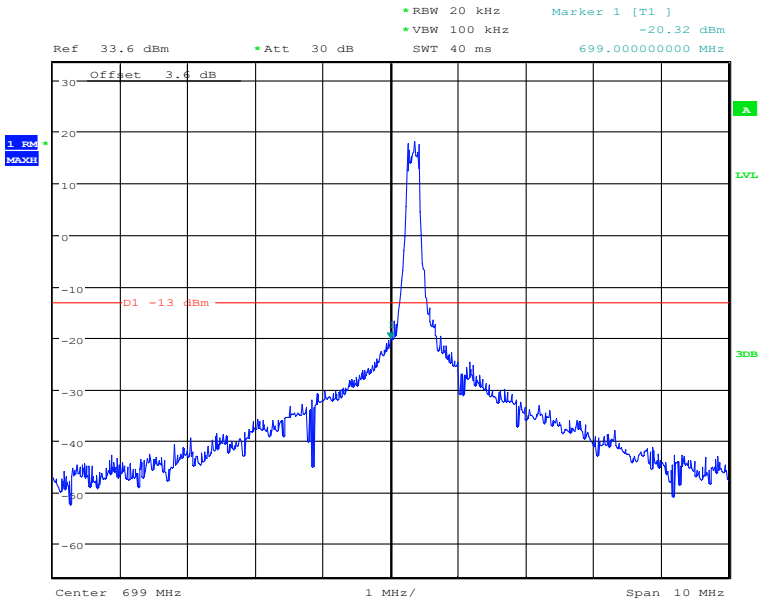
Low Channel-5MHz Bandwidth-16QAM



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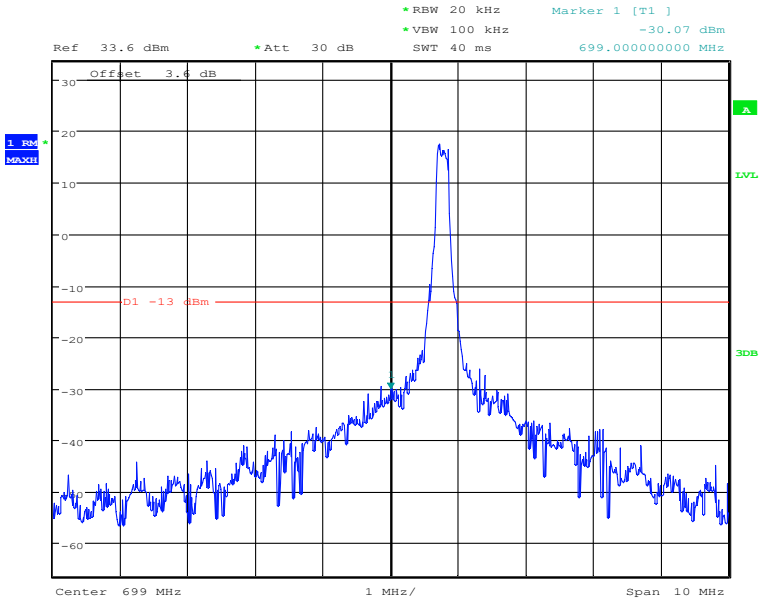
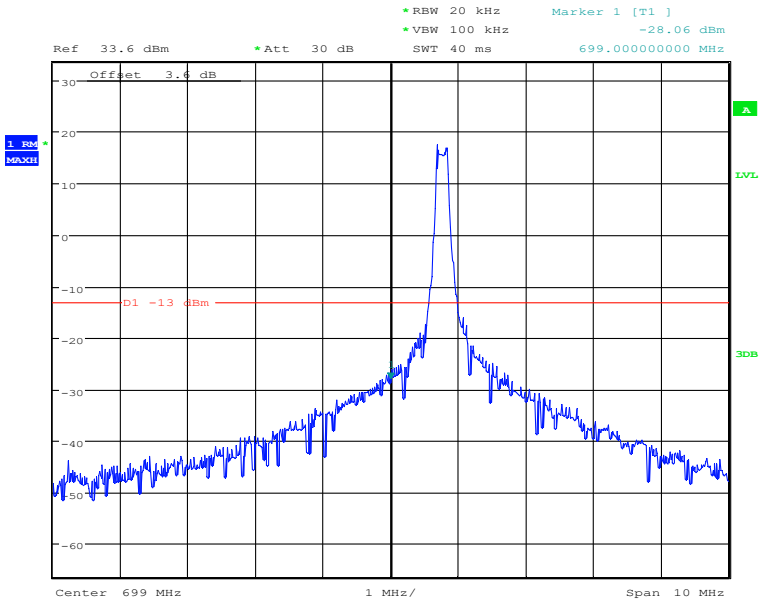
Low Channel-5MHz Bandwidth-QPSK



Low Channel-10MHz Bandwidth-16QAM



Low Channel-10MHz Bandwidth-QPSK

5.7 Frequency Stability over Temperature Variation

Specifications:	FCC Part 2.1055, 22.355, 24.235, 27.54,90.213
DUT Serial Number:	866884045622016
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

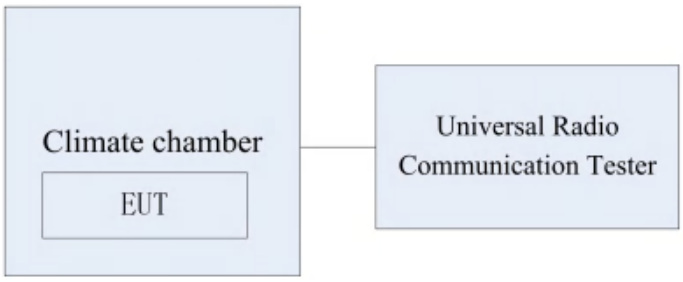
Limit	
Frequency deviation [ppm]	±2.5

Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	15 Hz (k=2)

Test Setup

The EUT was placed in a temperature chamber, demonstrated as figure T. The Wireless Telecommunications Test Set was used to set the Tx channel and power level, modulate the TX signal with different bit patterns and measure the frequency of Tx.



Test Method

1、 The EUT was turned off and placed in the temperature chamber.

2、 The temperature of the chamber was set to -30℃ and allowed to stabilize.

3、 The EUT temperature was allowed to stabilize for 45 minutes.

4、 The EUT was turned on and set to transmit with Wireless Telecommunications Test Set.

5、 The maximum transmit frequency deviation during one minute period was measured by Wireless Communications Test Set.

6、 The steps 3-5 were repeated for -30℃,-20℃, -10℃, 0℃, 10℃, 20℃, 30℃, 40℃ and 50℃.

Note: Only worst case result is given below.

5.7.1 NB-IoT Band Frequency Stability over Temperature Variation Results

Band	Frequency	Offset	Temperature[℃]								
			-30	-20	-10	0	10	20	30	40	50
2	1880 MHz	Hz	2.26	13.22	23.48	19.68	11.95	-1.83	-2.62	-14.81	-17.57
		ppm	0.001	0.007	0.012	0.010	0.006	-0.001	-0.001	-0.008	-0.009
4	1732.5 MHz	Hz	-1.49	9.81	12.88	15.57	11.48	-2.74	-4.23	-17.63	-22.17
		ppm	-0.001	0.006	0.007	0.009	0.007	-0.002	-0.002	-0.010	-0.013
12	707.5 MHz	Hz	5.80	11.01	12.54	15.05	11.04	6.35	1.09	-4.05	-4.62
		ppm	0.008	0.015	0.018	0.021	0.016	0.009	0.001	-0.006	-0.006

5.7.2 CAT-M Band Frequency Stability over Temperature Variation Results

Band	Modulation	Frequency	Offset	Temperature[℃]								
				-30	-20	-10	0	10	20	30	40	50
2	QPSK	1880 MHz	Hz	6.37	-2.13	-8.35	-2.10	-2.82	-2.05	5.20	17.50	2.45
			ppm	0.003	-0.001	-0.004	-0.001	-0.001	-0.001	0.003	0.009	0.001
	16QAM		Hz	-2.85	-7.19	-8.06	-3.57	-1.78	2.91	13.64	17.33	-1.23
			ppm	-0.001	-0.004	-0.004	-0.002	-0.001	0.001	0.007	0.009	-0.001
4	QPSK	1732.5 MHz	Hz	3.70	-4.81	-7.88	-3.53	4.82	1.33	5.81	10.25	9.16
			ppm	0.002	-0.003	-0.004	-0.002	0.003	0.001	0.003	0.006	0.005
	16QAM		Hz	6.29	-3.05	-2.98	-4.89	1.25	3.58	8.66	12.93	8.26
			ppm	0.004	-0.002	-0.002	-0.003	0.001	0.002	0.005	0.007	0.005
12	QPSK	707.5 MHz	Hz	-7.41	-13.98	-13.37	-12.79	-9.87	-4.09	-1.05	6.03	10.34
			ppm	-0.010	-0.020	-0.019	-0.018	-0.014	-0.006	-0.001	0.008	0.015
	16QAM		Hz	-5.78	-14.61	-15.95	-13.85	-8.07	-5.16	2.70	9.76	9.31
			ppm	-0.008	-0.021	-0.022	-0.019	-0.011	-0.007	0.004	0.014	0.013

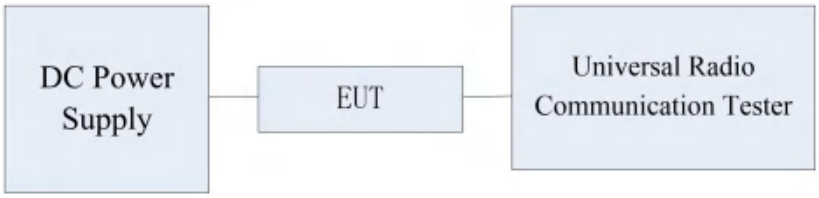
5.8 Frequency Stability over Voltage Variation

Specifications:	FCC Part 2.1055, 22.355, 24.235, 27.54,90.213
DUT Serial Number:	866884045622016
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit	
Frequency deviation [ppm]	±2.5

Test Setup

The EUT was placed in a shielding chamber and powered by an adjustable power supply, demonstrated as figure V. A Wireless Telecommunications Test Set was used to set the TX channel and power level, modulate the TX signal with different bit patterns and measure the frequency of TX.



Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	15 Hz (k=2)

Test Method

The EUT was powered by the adjustable power supply. The frequency stability is measured by the Wireless Telecommunications Test Set.

Note: Only worst case result is given below.

5.8.1 NB-IoT Band Frequency Stability over Voltage Variation Results

Band	Frequency	Offset	Voltage (V)		
			2.7	3.3	4.8
2	1880 MHz	Hz	-1.83	2.14	8.03
		ppm	-0.001	0.001	0.004
4	1732.5 MHz	Hz	-3.62	3.33	-6.26
		ppm	-0.002	0.002	-0.003
12	707.5 MHz	Hz	9.31	-2.4	-4.5
		ppm	0.013	-0.003	-0.006

5.8.2 CAT-M Band Frequency Stability over Voltage Variation Results

Test data:

Band	Modulation	Frequency	Offset	Voltage (V)		
				2.7	3.3	4.8
2	QPSK	1880 MHz	Hz	-7.65	1.75	5.31
			ppm	-0.004	0.001	0.003
	16QAM		Hz	11.25	-3.62	4.59
			ppm	0.006	-0.002	0.002
4	QPSK	1732.5 MHz	Hz	2.95	-4.05	3.16
			ppm	0.002	-0.002	0.002
	16QAM		Hz	4.11	-7.68	3.55
			ppm	0.002	-0.004	0.002
12	QPSK	707.5 MHz	Hz	-5.42	-8.35	11.27
			ppm	-0.008	-0.012	0.016
	16QAM		Hz	3.58	-6.11	-7.15
			ppm	0.005	-0.009	-0.010

5.9 Peak to Average Ratio

Specifications:	FCC Part 24.232, 27.50
DUT Serial Number:	866884045622016
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit

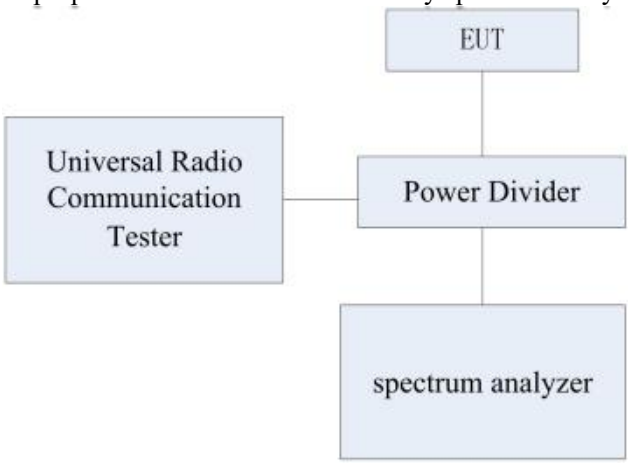
The EUT meets the requirement of having a peak to average ratio of less than 13dB.

Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	0.52 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

The transmitter output was connected to a CMW500 through a coaxial RF cable and directional coupler, and configured to operate at maximum power. The peak to average ratio was measured at the required operating frequencies in each Band on the Spectrum Analyzer.

Note: Only worst case result is given below.

5.9.1 NB-IoT Peak to Average Ratio Results

Mode	Channel	Frequency (MHz)	PAPR(dB)	PAPR(dB)
			QPSK	BPSK
Band2	18900	1880	11.06	10.00
Band4	20175	1732.5	4.13	6.60
Band12	23095	707.5	7.82	8.32

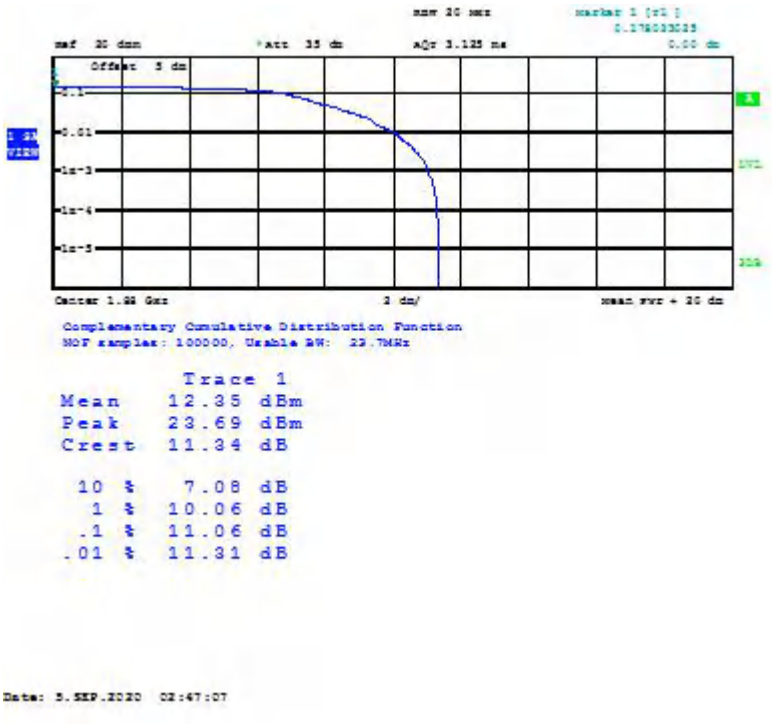
5.9.2 CAT-M Peak to Average Ratio Results

Mode	Bandwidth	Modulation	Channel/Frequency（MHz）	PAPR（dB）
Band2	1.4MHz	QPSK	18900/1880	8.94
		16QAM	18900/1880	10.71
	3MHz	QPSK	18900/1880	10.42
		16QAM	18900/1880	9.81
	5MHz	QPSK	18900/1880	9.58
		16QAM	18900/1880	9.42
	10MHz	QPSK	18900/1880	9.52
		16QAM	18900/1880	9.52
	15MHz	QPSK	18900/1880	9.17
		16QAM	18900/1880	9.20
	20MHz	QPSK	18900/1880	9.23
		16QAM	18900/1880	9.10

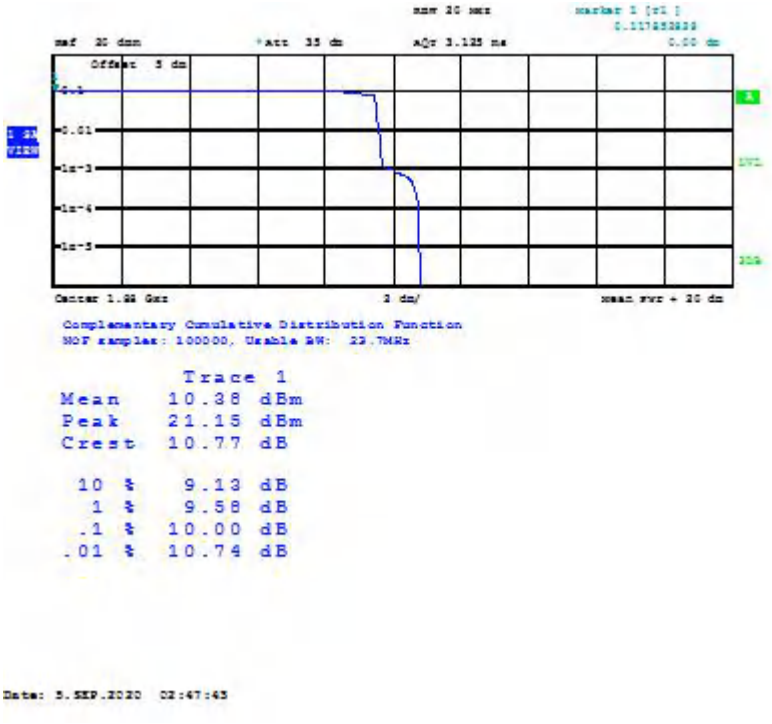
Mode	Bandwidth	Modulation	Channel/Frequency（MHz）	PAPR（dB）
Band4	1.4MHz	QPSK	20175/1732.5	9.65
		16QAM	20175/1732.5	9.68
	3MHz	QPSK	20175/1732.5	9.78
		16QAM	20175/1732.5	10.32
	5MHz	QPSK	20175/1732.5	10.93
		16QAM	20175/1732.5	10.32
	10MHz	QPSK	20175/1732.5	9.39
		16QAM	20175/1732.5	9.62
	15MHz	QPSK	20175/1732.5	8.97
		16QAM	20175/1732.5	8.91
	20MHz	QPSK	20175/1732.5	9.17
		16QAM	20175/1732.5	9.13

Mode	Bandwidth	Modulation	Channel/Frequency（MHz）	PAPR（dB）
Band12	1.4MHz	QPSK	23095/707.5	9.58
		16QAM	23095/707.5	10.13
	3MHz	QPSK	23095/707.5	9.55
		16QAM	23095/707.5	9.90
	5MHz	QPSK	23095/707.5	11.25
		16QAM	23095/707.5	9.52
	10MHz	QPSK	23095/707.5	9.36
		16QAM	23095/707.5	9.46

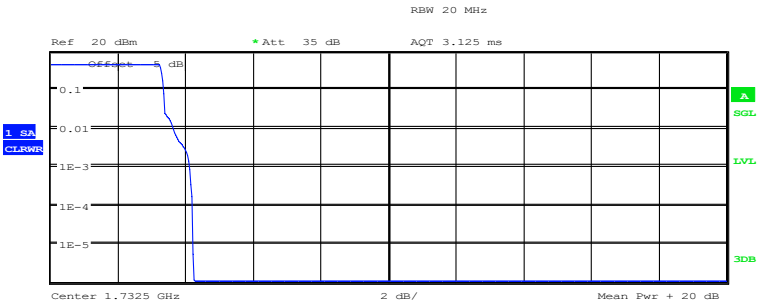
Graphical for Peak to Average Ratio Results for NB-IoT:



Band2-CH18900-1880MHz-QPSK



Band2-CH18900-1880MHz-BPSK

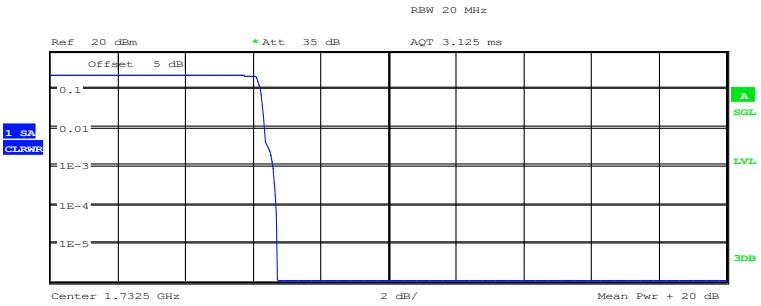


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	17.25 dBm
Peak	21.47 dBm
Crest	4.23 dB
10 %	3.37 dB
1 %	3.65 dB
.1 %	4.13 dB
.01 %	4.20 dB

Date: 5.SEP.2020 04:03:16

Band4-CH20175-1732.5MHz-QPSK

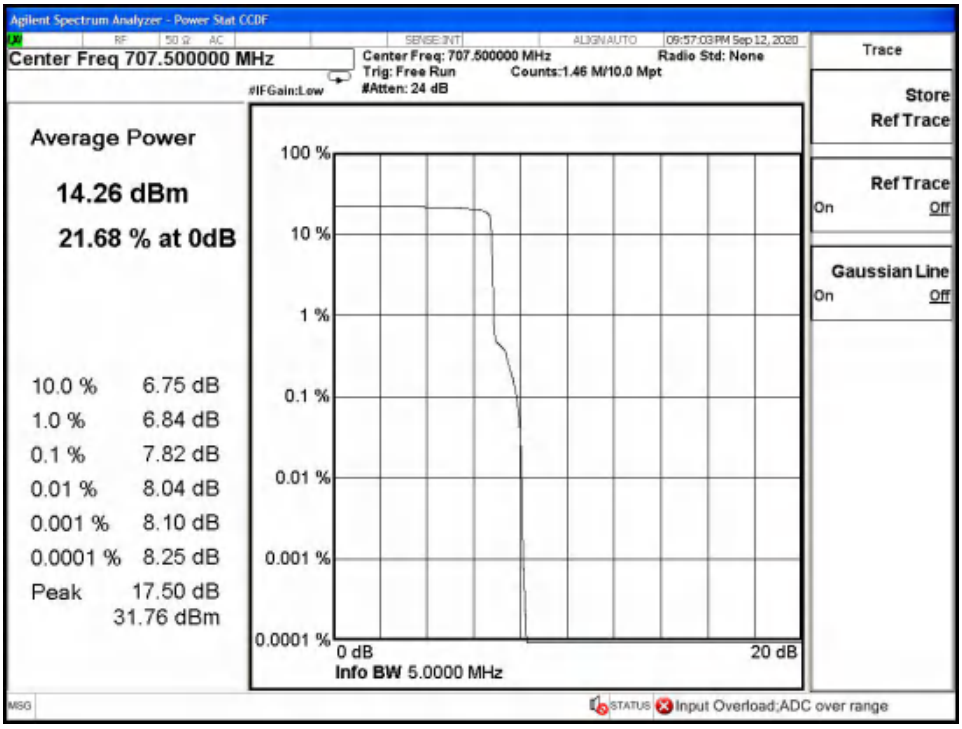


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

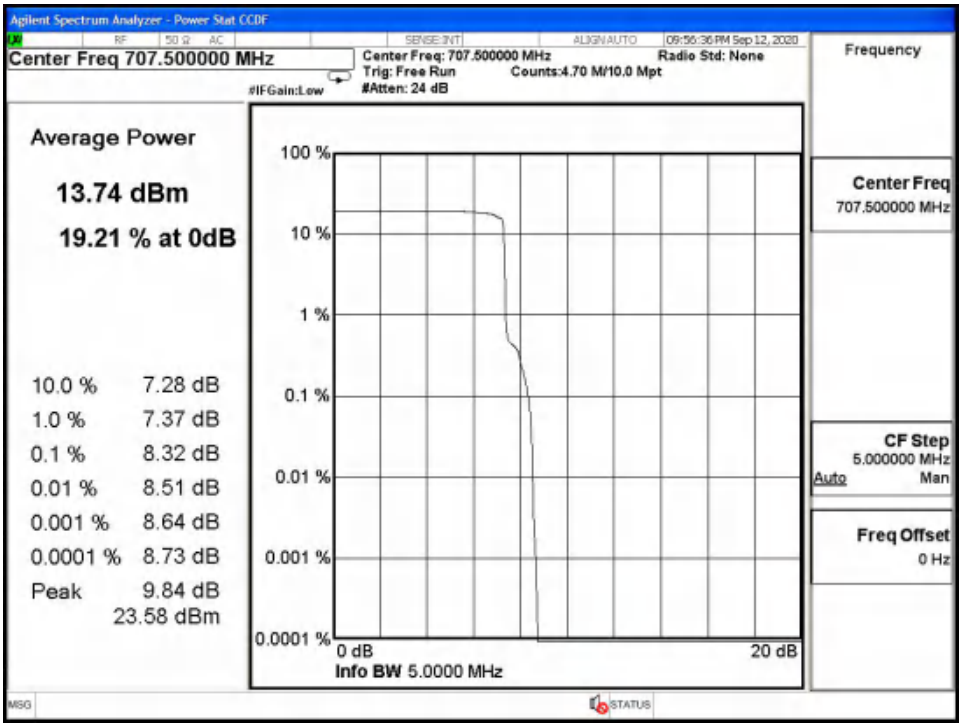
	Trace 1
Mean	14.63 dBm
Peak	21.33 dBm
Crest	6.70 dB
10 %	6.22 dB
1 %	6.35 dB
.1 %	6.60 dB
.01 %	6.70 dB

Date: 5.SEP.2020 04:03:30

Band4- CH20175-1732.5MHz -BPSK

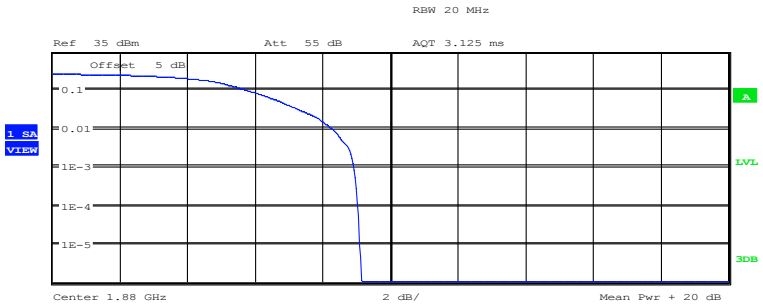


Band12-CH23095-707.5MHz-QPSK



Band12- CH23095-707.5MHz -BPSK

Graphical for Peak to Average Ratio Results for CAT-M:

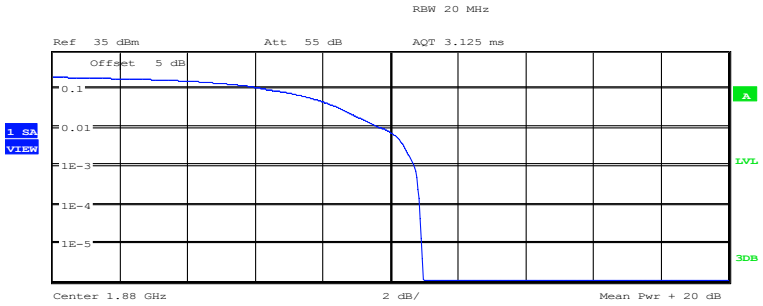


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	14.92 dBm
Peak	24.08 dBm
Crest	9.15 dB
10 %	5.80 dB
1 %	8.27 dB
.1 %	8.94 dB
.01 %	9.04 dB

Date: 1.SEP.2020 23:58:43

Band2-CH18900-1880MHz-1.4MHz Bandwidth-QPSK

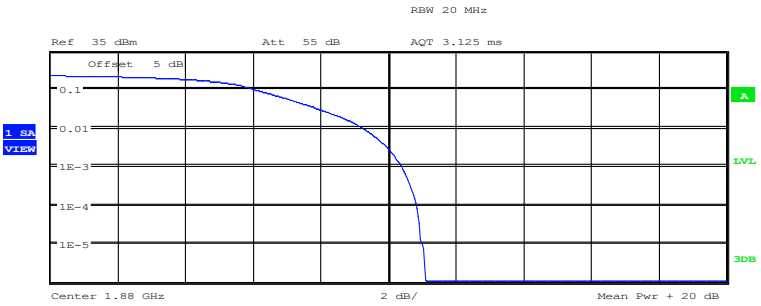


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	13.12 dBm
Peak	24.08 dBm
Crest	10.96 dB
10 %	6.41 dB
1 %	9.74 dB
.1 %	10.71 dB
.01 %	10.87 dB

Date: 1.SEP.2020 23:59:38

Band2-CH18900-1880MHz-1.4MHz Bandwidth-16QAM

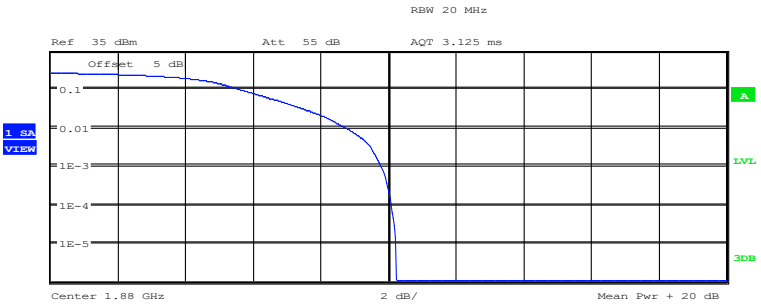


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	11.93 dBm
Peak	23.02 dBm
Crest	11.09 dB
10 %	6.09 dB
1 %	9.26 dB
.1 %	10.42 dB
.01 %	10.83 dB

Date: 2.SEP.2020 00:01:35

Band2-CH18900-1880MHz-3MHz Bandwidth-QPSK

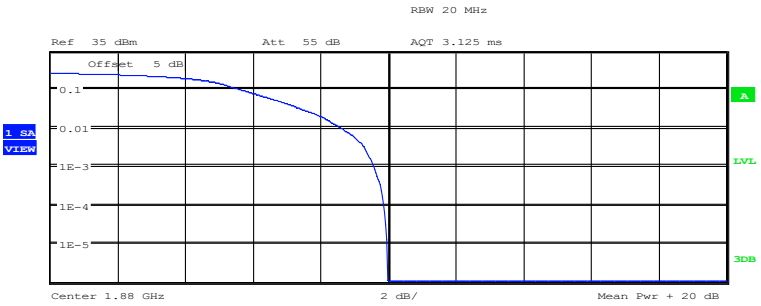


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	12.64 dBm
Peak	22.88 dBm
Crest	10.24 dB
10 %	5.67 dB
1 %	8.75 dB
.1 %	9.81 dB
.01 %	10.10 dB

Date: 2.SEP.2020 00:00:49

Band2-CH18900-1880MHz-3MHz Bandwidth-16QAM

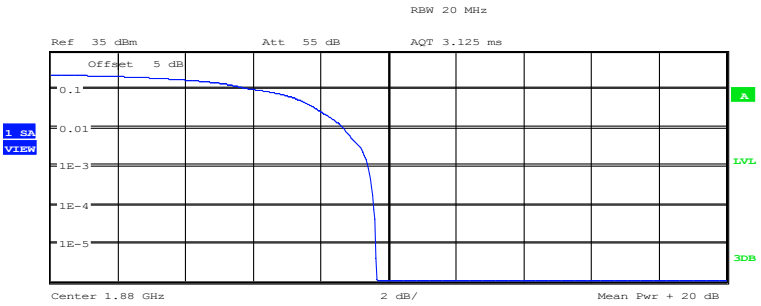


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	13.75 dBm
Peak	23.72 dBm
Crest	9.97 dB
10 %	5.67 dB
1 %	8.62 dB
.1 %	9.58 dB
.01 %	9.87 dB

Date: 2.SEP.2020 00:02:07

Band2-CH18900-1880MHz-5MHz Bandwidth-QPSK

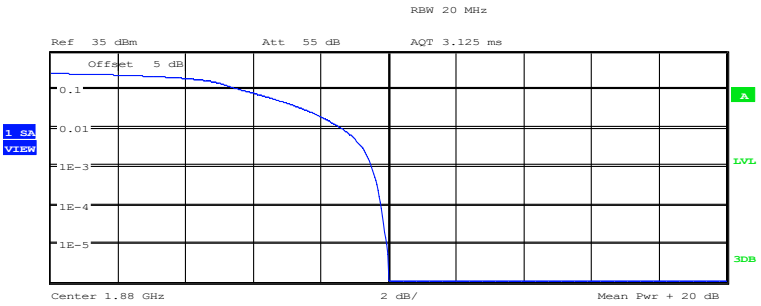


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	15.22 dBm
Peak	24.85 dBm
Crest	9.64 dB
10 %	6.15 dB
1 %	8.65 dB
.1 %	9.42 dB
.01 %	9.58 dB

Date: 2.SEP.2020 00:05:03

Band2-CH18900-1880MHz-5MHz Bandwidth-16QAM

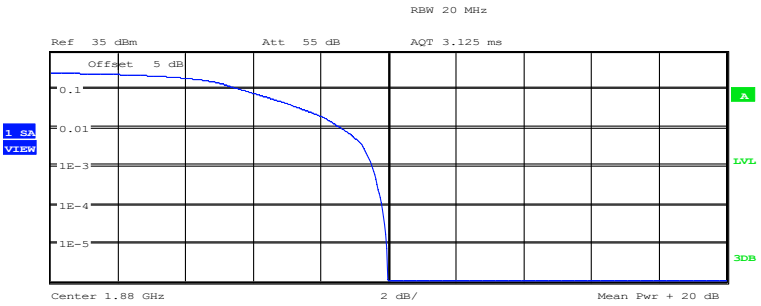


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	13.77 dBm
Peak	23.79 dBm
Crest	10.02 dB
10 %	5.71 dB
1 %	8.62 dB
.1 %	9.52 dB
.01 %	9.78 dB

Date: 2.SEP.2020 00:06:03

Band2-CH18900-1880MHz-10MHz Bandwidth-QPSK

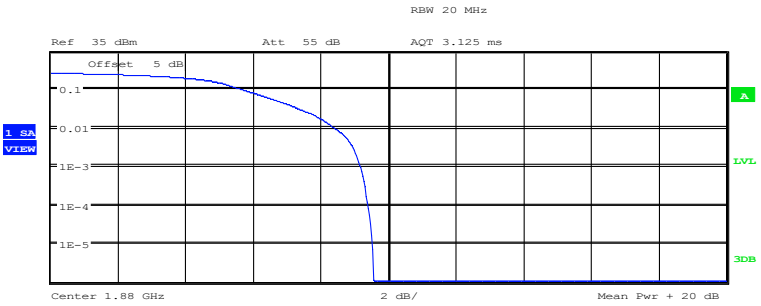


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	13.75 dBm
Peak	23.72 dBm
Crest	9.98 dB
10 %	5.71 dB
1 %	8.62 dB
.1 %	9.52 dB
.01 %	9.81 dB

Date: 2.SEP.2020 00:05:37

Band2-CH18900-1880MHz-10MHz Bandwidth-16QAM

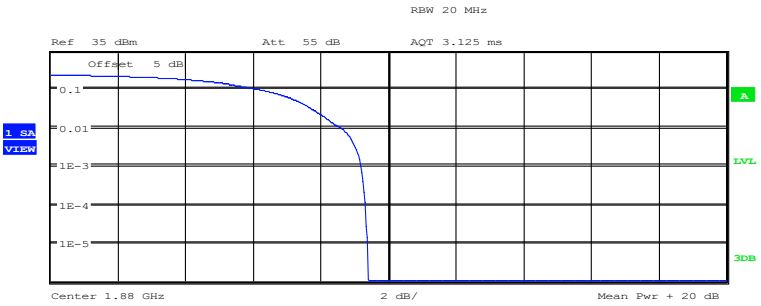


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	14.80 dBm
Peak	24.36 dBm
Crest	9.56 dB
10 %	5.74 dB
1 %	8.43 dB
.1 %	9.17 dB
.01 %	9.39 dB

Date: 2.SEP.2020 00:06:35

Band2-CH18900-1880MHz-15MHz Bandwidth-QPSK

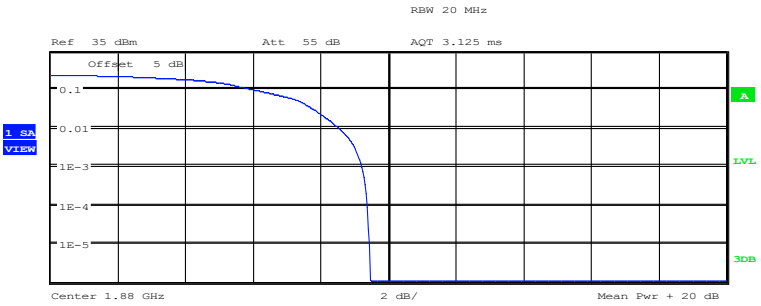


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	15.37 dBm
Peak	24.78 dBm
Crest	9.41 dB
10 %	6.25 dB
1 %	8.62 dB
.1 %	9.20 dB
.01 %	9.33 dB

Date: 2.SEP.2020 00:14:28

Band2-CH18900-1880MHz-15MHz Bandwidth-16QAM

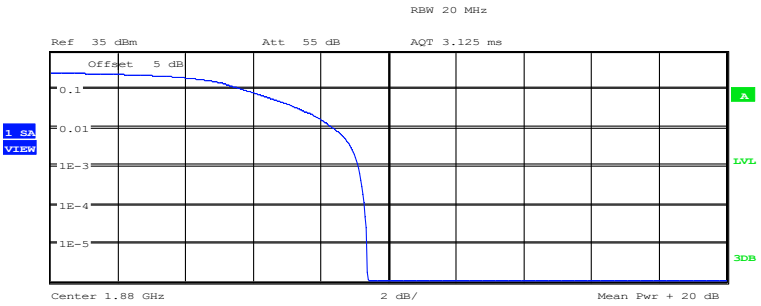


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	15.32 dBm
Peak	24.78 dBm
Crest	9.46 dB
10 %	6.09 dB
1 %	8.53 dB
.1 %	9.23 dB
.01 %	9.39 dB

Date: 2.SEP.2020 00:15:35

Band2-CH18900-1880MHz-20MHz Bandwidth-QPSK

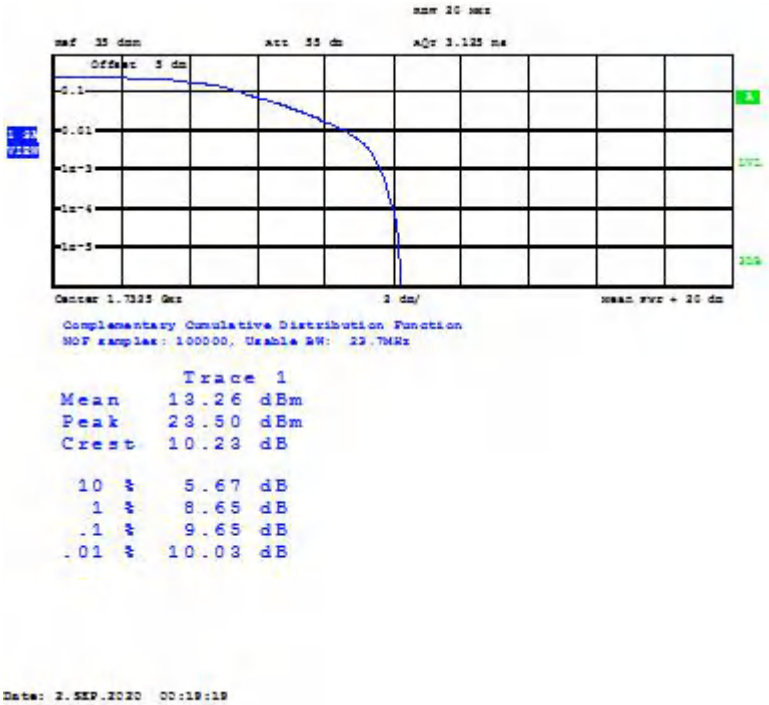


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

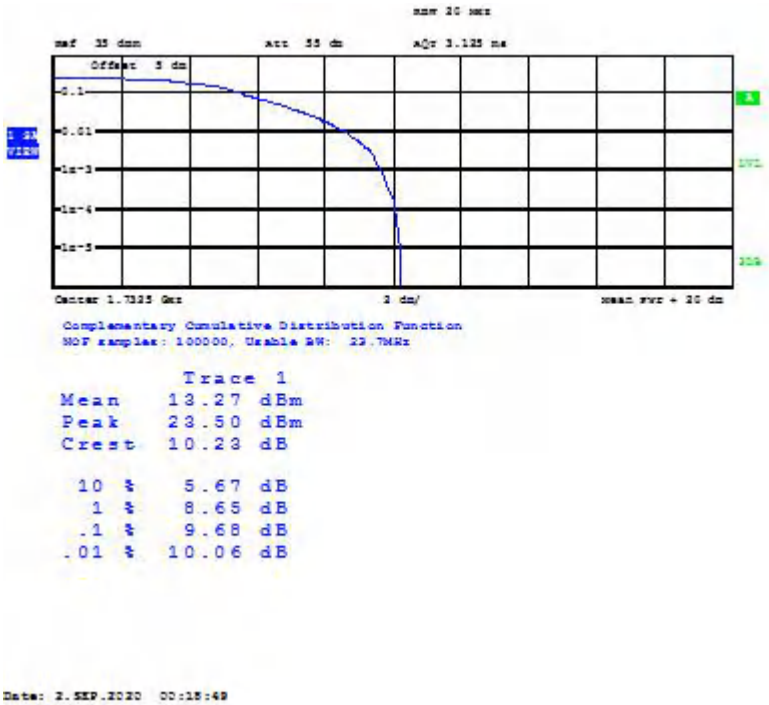
	Trace 1
Mean	14.91 dBm
Peak	24.29 dBm
Crest	9.38 dB
10 %	5.74 dB
1 %	8.37 dB
.1 %	9.10 dB
.01 %	9.29 dB

Date: 2.SEP.2020 00:15:00

Band2-CH18900-1880MHz-20MHz Bandwidth-16QAM



Band4-CH20175-707.5MHz -1.4MHz Bandwidth-QPSK

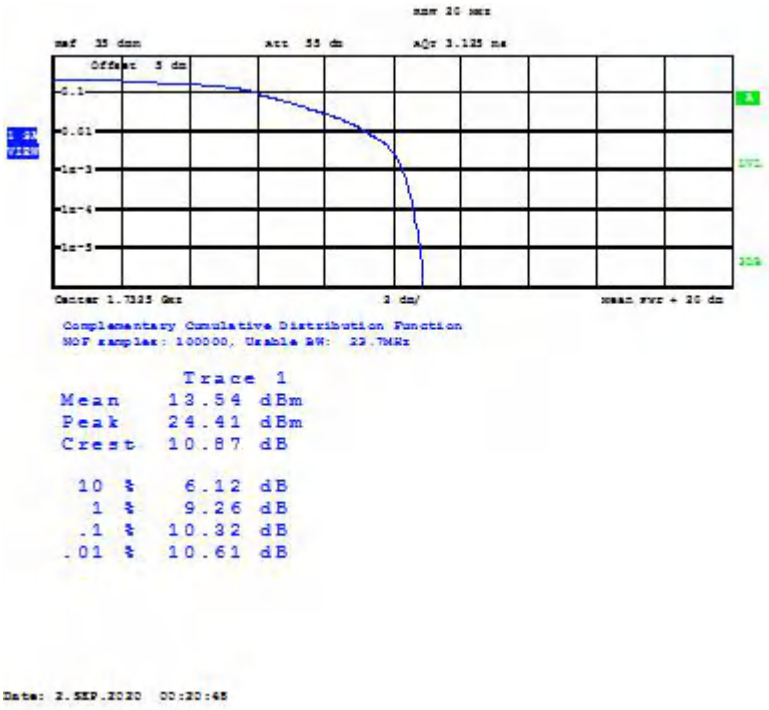


Band4-CH20175-707.5MHz -1.4MHz Bandwidth-16QAM

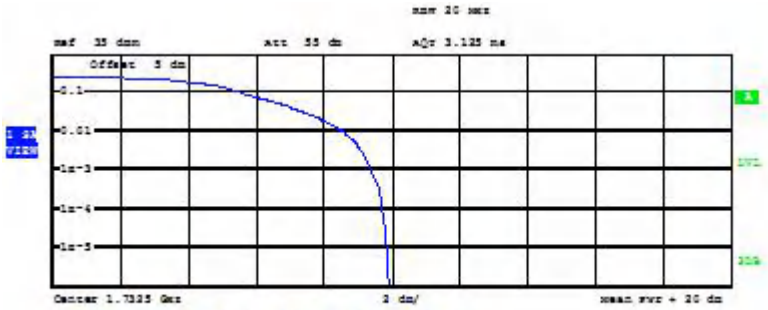
Band4-CH20175-707.5MHz -3MHz Bandwidth-QPSK

Band4-CH20175-707.5MHz -3MHz Bandwidth-16QAM

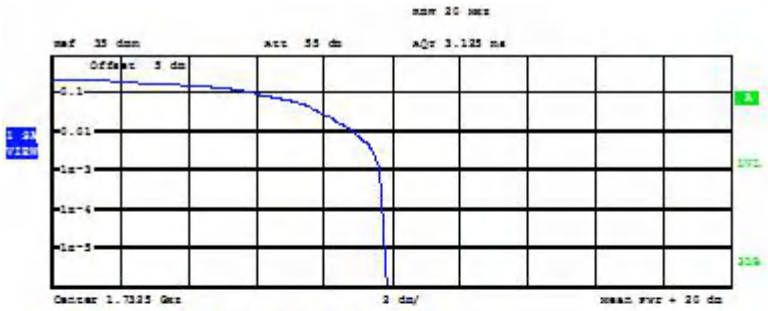
Band4-CH20175-707.5MHz -5MHz Bandwidth-QPSK



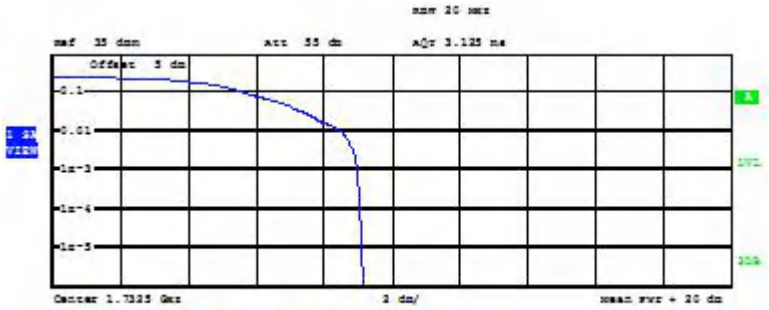
Band4-CH20175-707.5MHz-5MHz Bandwidth-16QAM



Band4-CH20175-707.5MHz-10MHz Bandwidth-QPSK



Band4-CH20175-707.5MHz-10MHz Bandwidth-16QAM

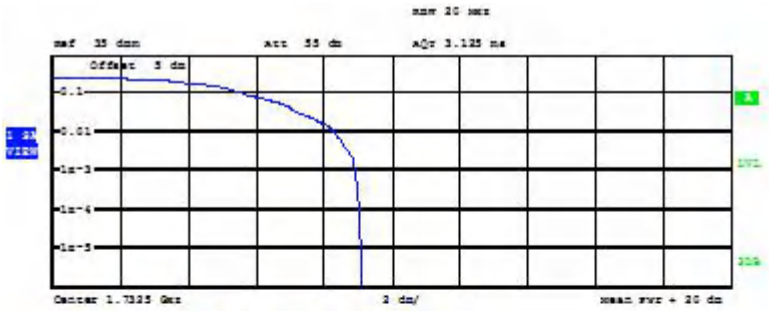


Trace 1
Mean 15.41 dBm
Peak 24.56 dBm
Crest 9.14 dB

10 % 5.77 dB
1 % 8.49 dB
.1 % 8.97 dB
.01 % 9.07 dB

Date: 2.SEP.2020 00:24:01

Band4-CH20175-707.5MHz -15MHz Bandwidth-QPSK

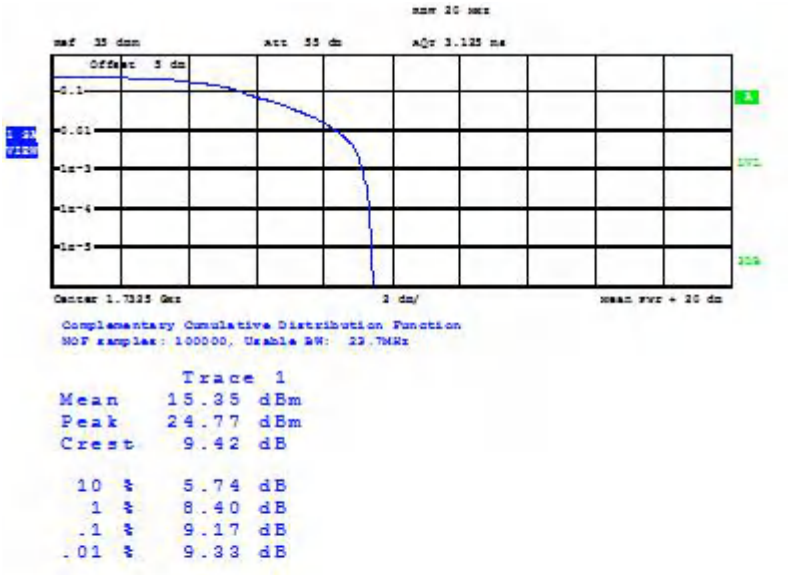


Trace 1
Mean 15.52 dBm
Peak 24.63 dBm
Crest 9.11 dB

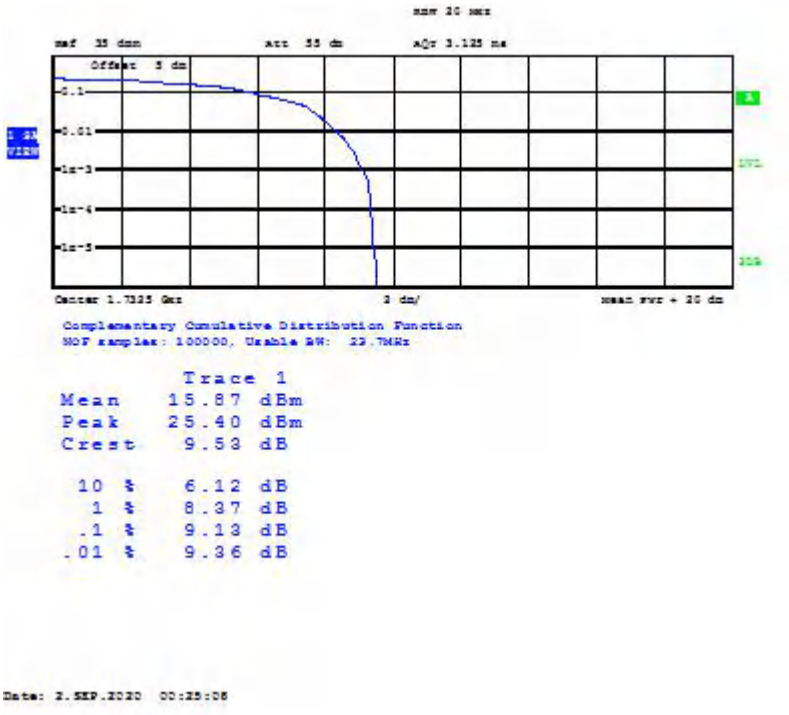
10 % 5.77 dB
1 % 8.33 dB
.1 % 8.91 dB
.01 % 9.04 dB

Date: 2.SEP.2020 00:23:31

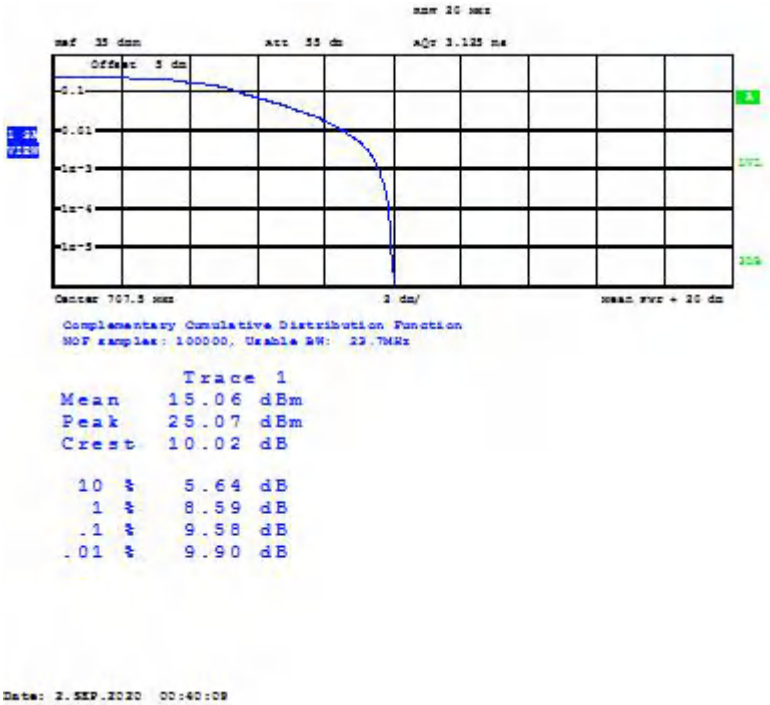
Band4-CH20175-707.5MHz-15MHz Bandwidth-16QAM



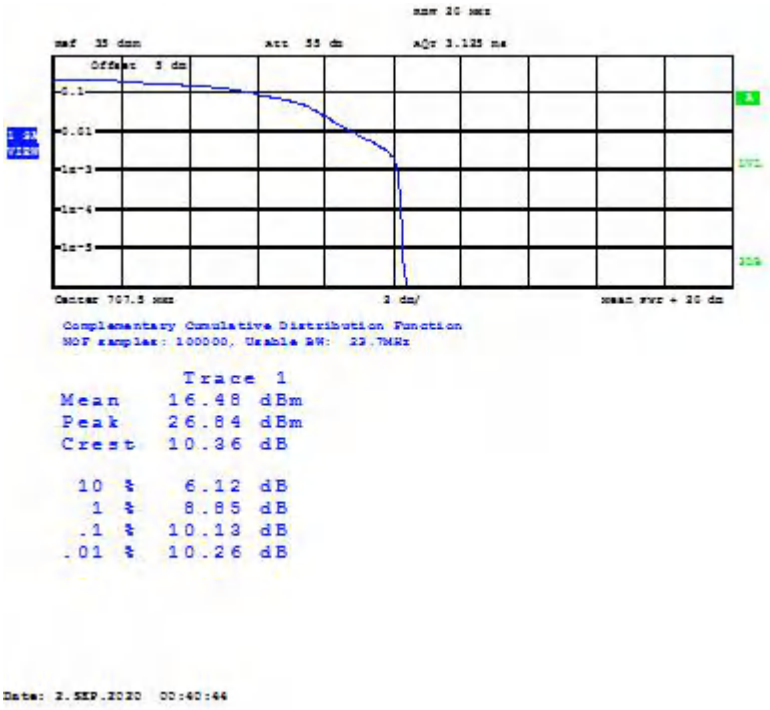
Band4-CH20175-707.5MHz-20MHz Bandwidth-QPSK



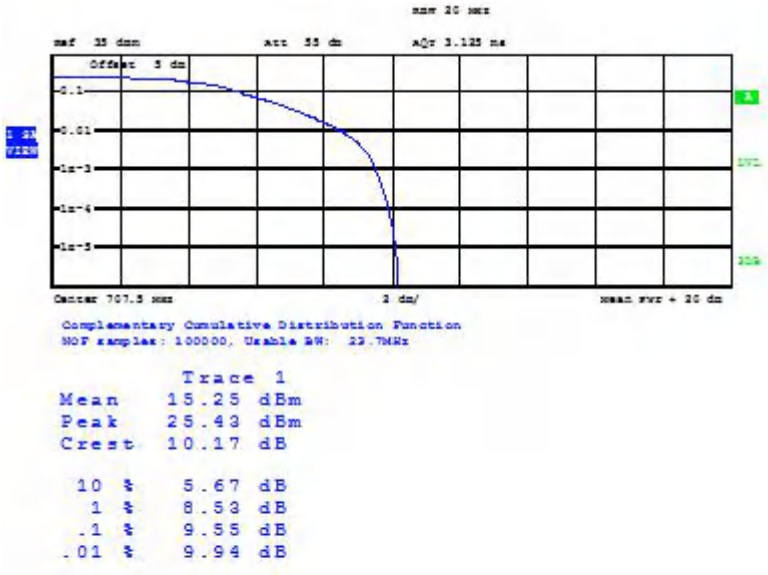
Band4-CH20175-707.5MHz-20MHz Bandwidth-16QAM



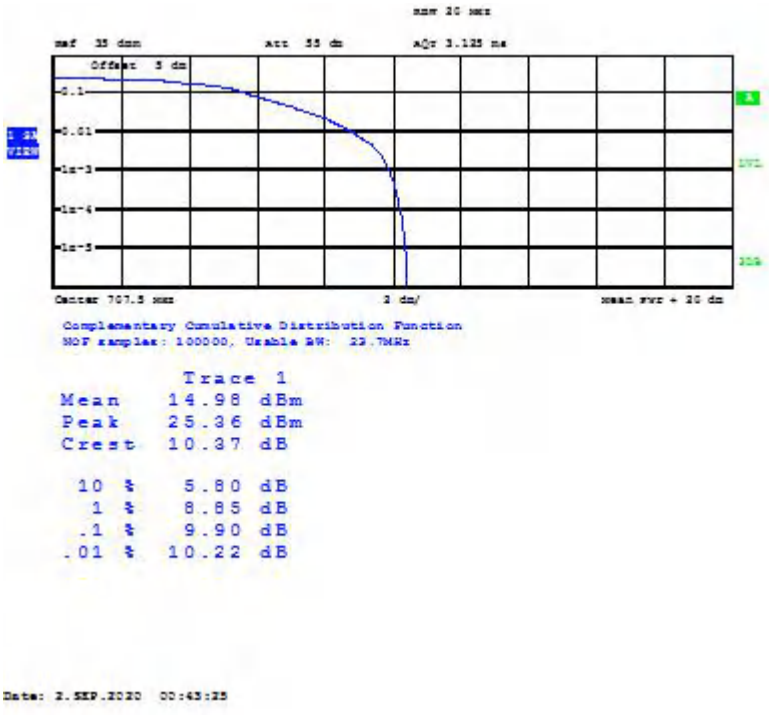
Band12-CH23095-707.5MHz-1.4MHz Bandwidth-QPSK



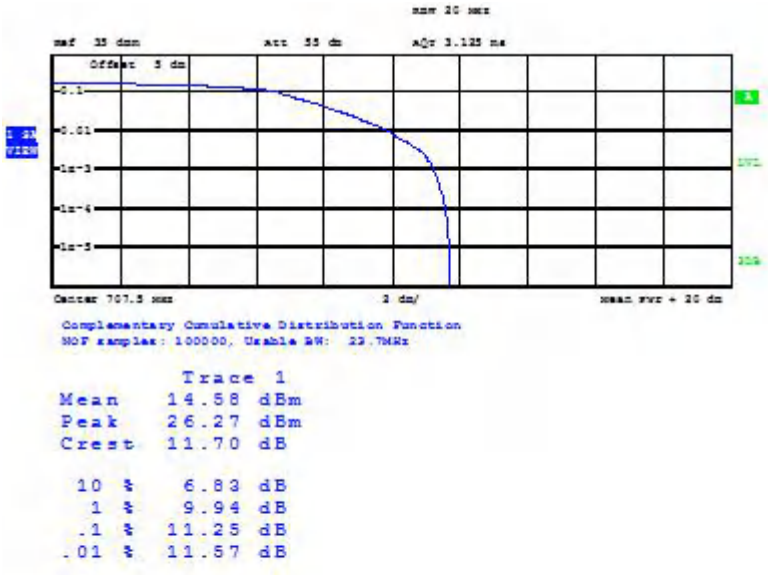
Band12-CH23095-707.5MHz-1.4MHz Bandwidth-16QAM



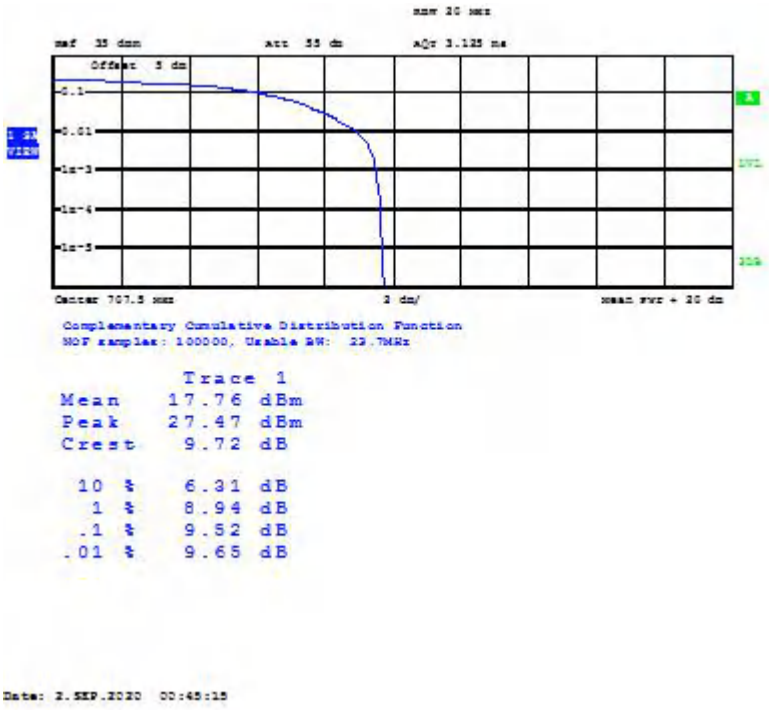
Band12-CH23095-707.5MHz-3MHz Bandwidth-QPSK



Band12-CH23095-707.5MHz-3MHz Bandwidth-16QAM

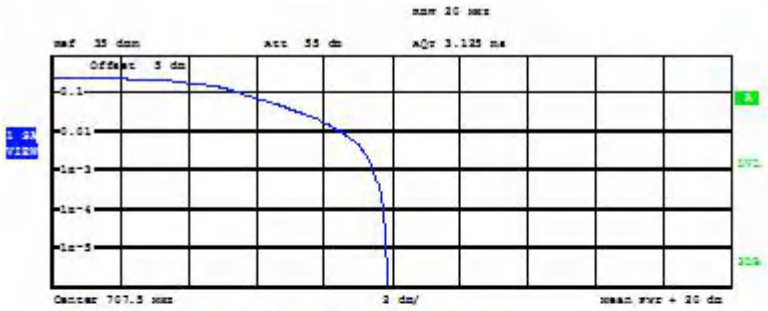


Band12-CH23095-707.5MHz-5MHz Bandwidth-QPSK



Band12-CH23095-707.5MHz-5MHz Bandwidth-16QAM

Band12-CH23095-707.5MHz-10MHz Bandwidth-QPSK



Band12-CH23095-707.5MHz-10MHz Bandwidth-16QAM

Annex A EUT Photos

See the document”L720-External Photos”.
See the document”L720-Internal Photos”.

ANNEX B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

*****End Of Report*****