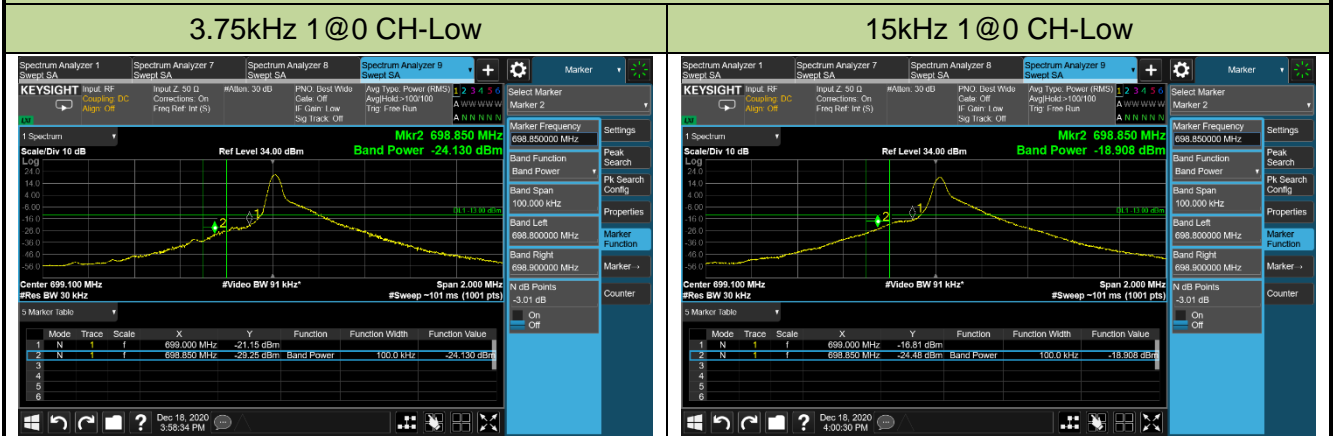
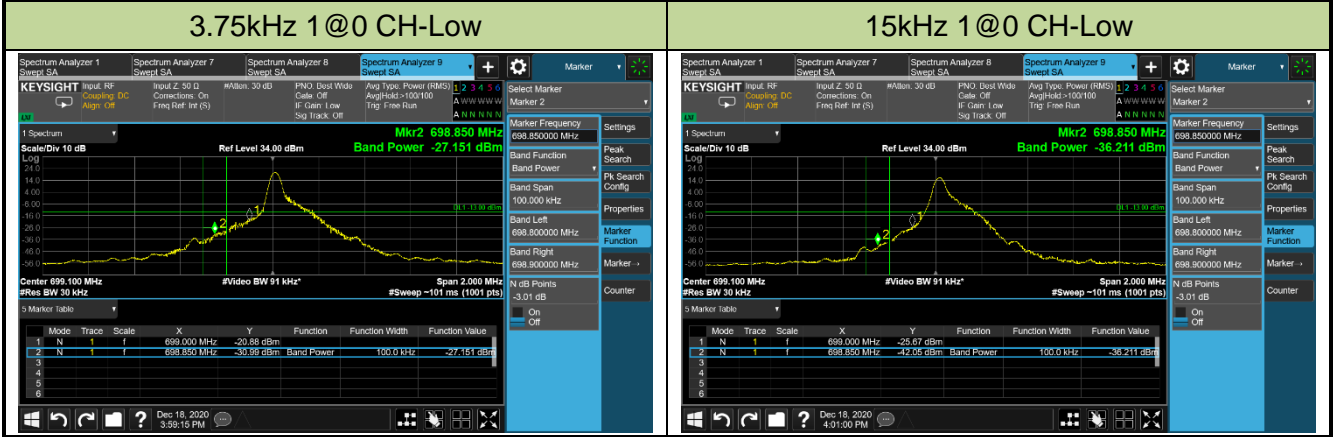


Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/18
Test Band	Band 12	Test Result	Pass

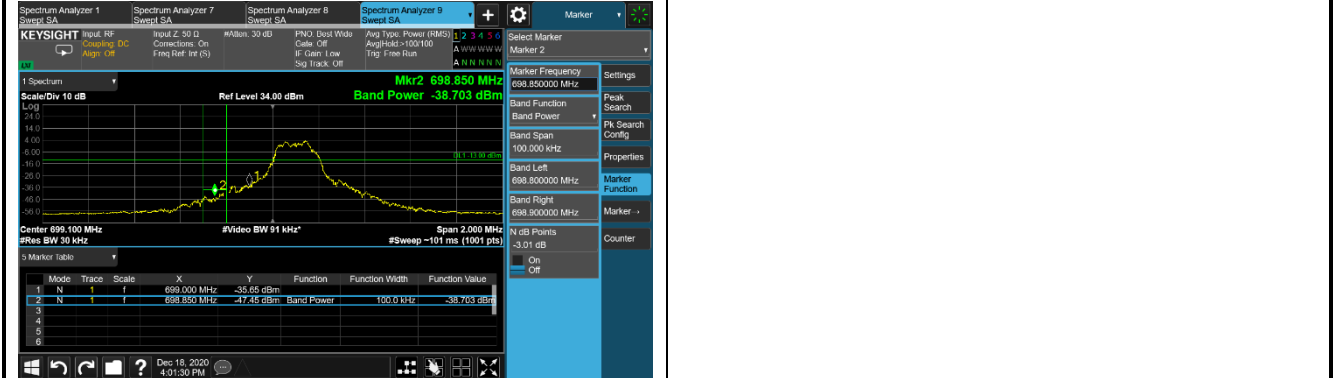
BPSK



QPSK

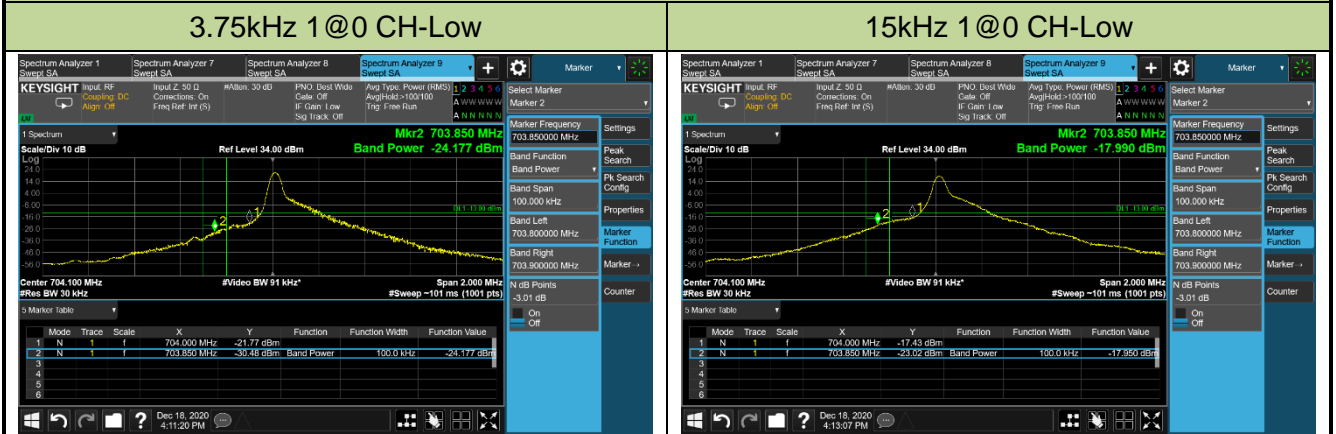


15 kHz 12@0 CH-Low

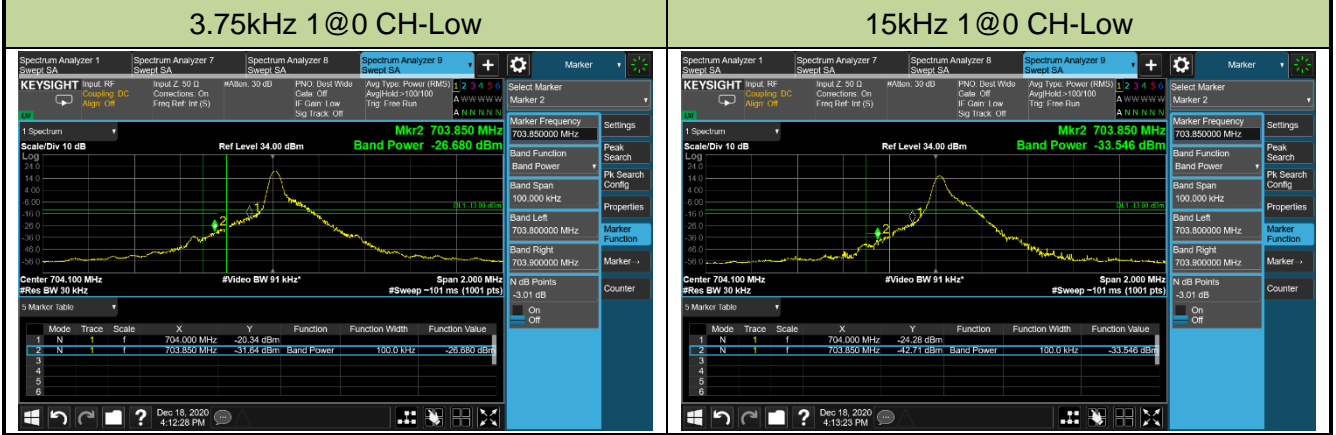


Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/18
Test Band	Band 17	Test Result	Pass

BPSK



QPSK



15 kHz 12@0 CH-Low



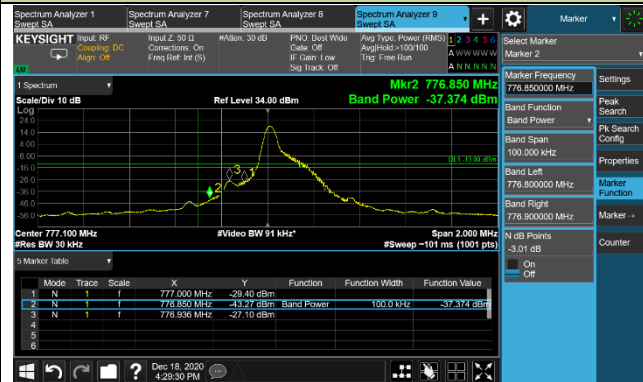
Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/18
Test Band	Band 13	Test Result	Pass

BPSK

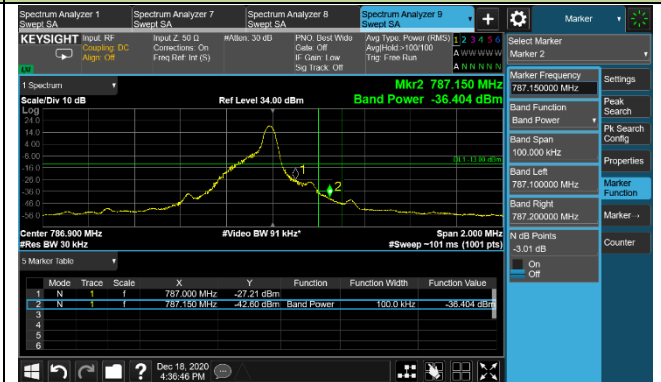


QPSK

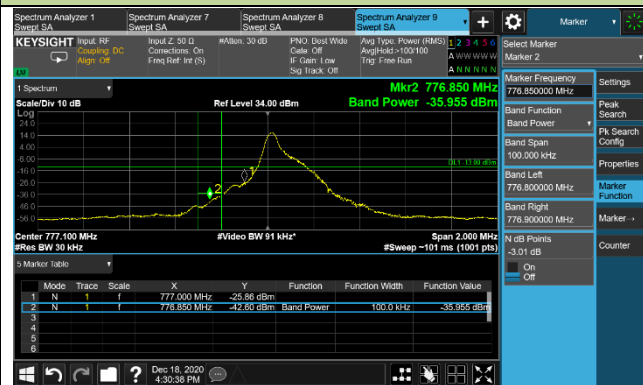
3.75kHz 1@0 CH-Low



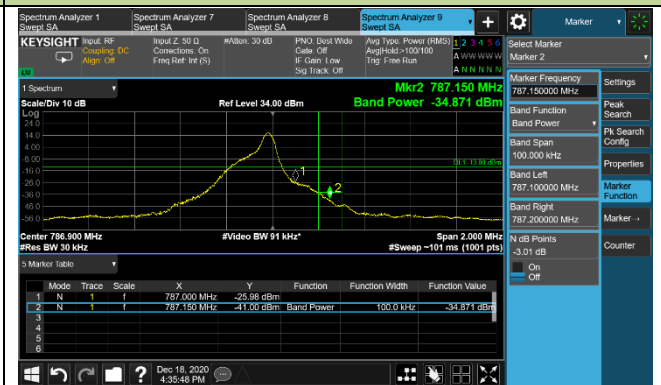
3.75kHz 1@47 CH-High



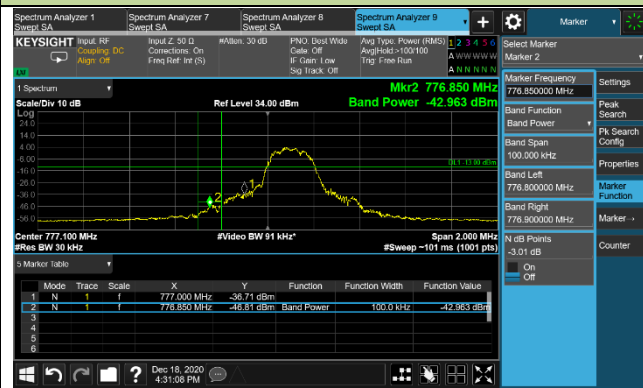
15kHz 1@0 CH-Low



15kHz 1@11 CH-High



15 kHz 12@0 CH-Low



15kHz 12@0 CH-High



5.6. Peak to Average Ratio

5.6.1. Test Limit

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

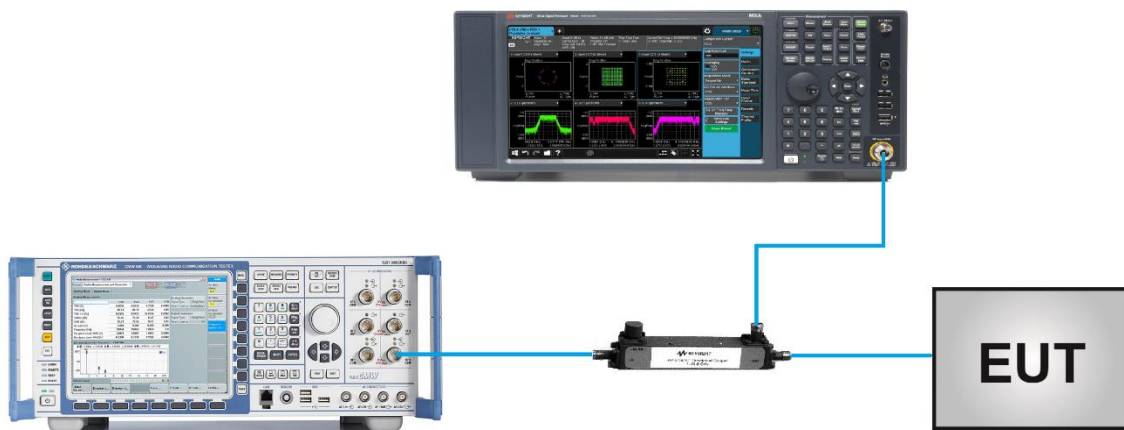
5.6.2. Test Procedure Used

ANSI C63.26-2015 - Section 5.2.3.4 (CCDF).

5.6.3. Test Setting

1. Set the resolution / measurement bandwidth \geq signal's occupied bandwidth
2. Set the number of counts to a value that stabilizes the measured CCDF curve
3. Record the maximum PARR level associated with a probability of 0.1%

5.6.4. Test Setup



5.6.5. Test Result

Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/16
Test Band	Band 2/25		

Channel No.	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Peak to Average Ratio (dB)	Limit (dB)	Result
26365	1882.5	15	12@0	4.30	≤ 13.00	Pass



Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/16
Test Band	Band 4/66		

Channel No.	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Peak to Average Ratio (dB)	Limit (dB)	Result
132322	1745.0	15	12@0	4.19	≤ 13.00	Pass



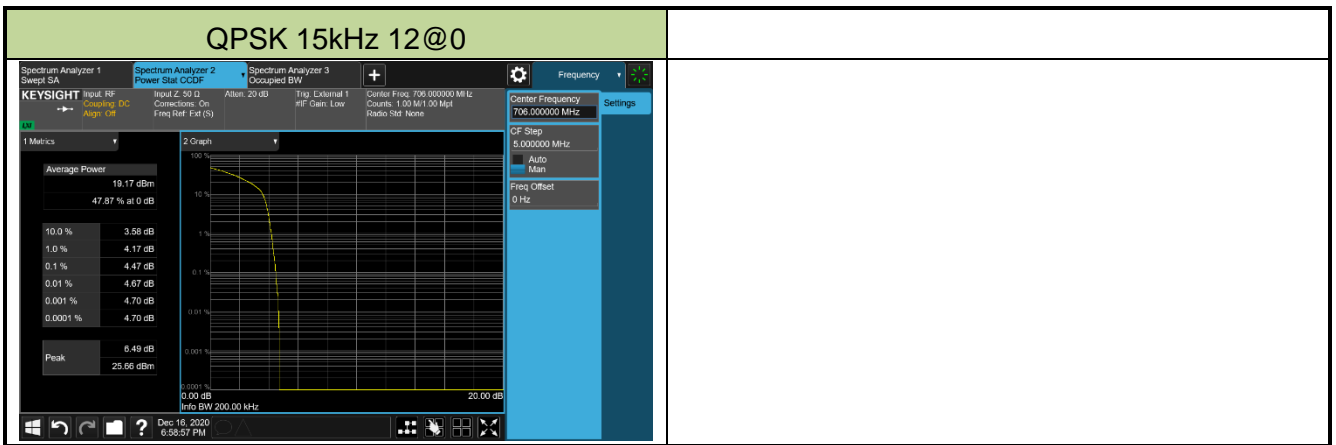
Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/16
Test Band	Band 5		

Channel No.	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Peak to Average Ratio (dB)	Limit (dB)	Result
20525	836.5	15	12@0	4.74	≤ 13.00	Pass



Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/16
Test Band	Band 12&17/85		

Channel No.	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Peak to Average Ratio (dB)	Limit (dB)	Result
134082	706.0	15	12@0	4.47	≤ 13.00	Pass



Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/16
Test Band	Band 13		

Channel No.	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Peak to Average Ratio (dB)	Limit (dB)	Result
23230	782.0	15	12@0	4.71	≤ 13.00	Pass



5.7. Conducted Spurious Emissions

5.7.1. Test Limit

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

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.

For Band 7, 38/41 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 $55 + 10 \log(P)$ dB.

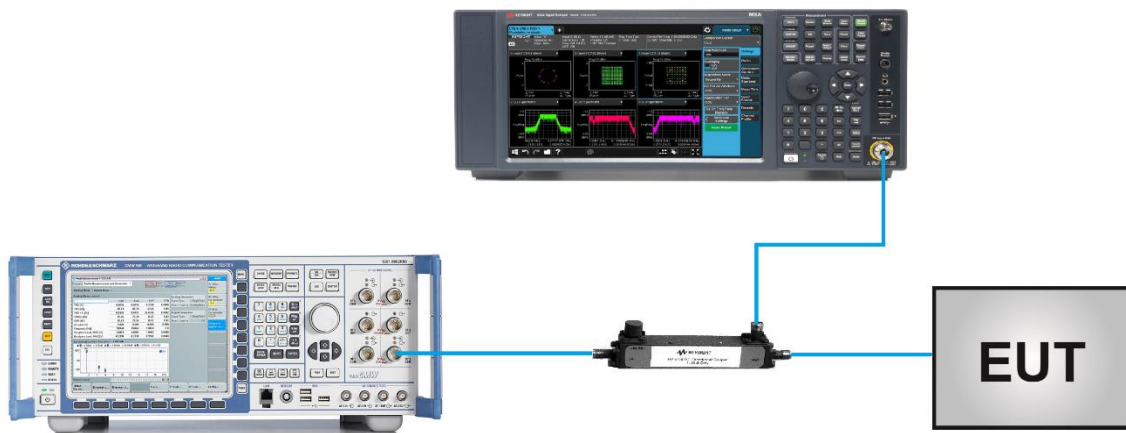
5.7.2. Test Procedure Used

ANSI C63.26-2015 - Section 5.7

5.7.3. Test Setting

1. Set the analyzer frequency to low, mid, high channel.
2. RBW = 1MHz
3. VBW $\geq 3 \cdot$ RBW
4. Sweep time = auto
5. Detector = power averaging (rms)
6. Set sweep trigger to "free run."
7. User gate triggered such that the analyzer only sweeps when the device is transmitting at full power.
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple.
To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.

5.7.4. Test Setup



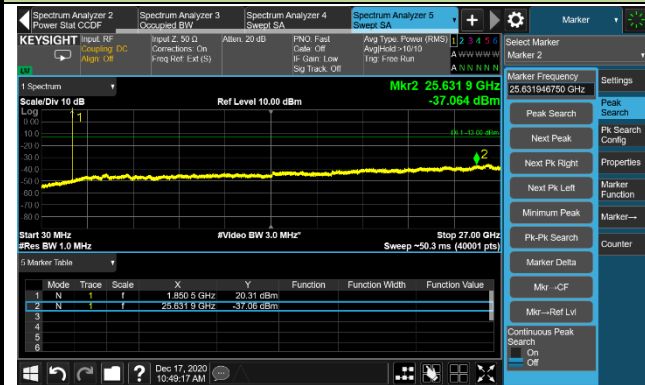
5.7.5. Test Result

Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/17
Test Band	Band 2/25		

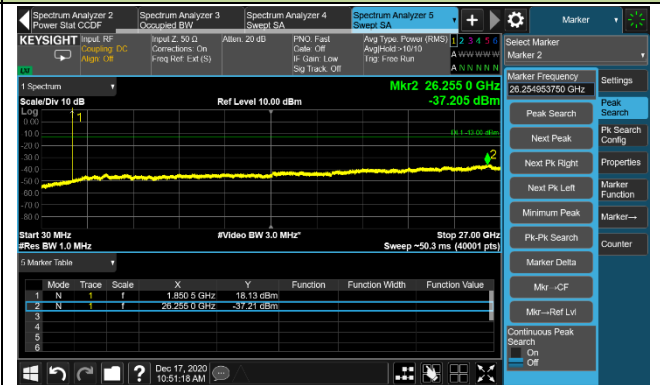
Channel	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
BPSK							
26041	1850.1	3.75	1@0	30 ~ 27000	-37.06	≤ -13.00	Pass
26041	1850.1	15	1@0	30 ~ 27000	-37.21	≤ -13.00	Pass
26365	1882.5	3.75	1@23	30 ~ 27000	-36.19	≤ -13.00	Pass
26365	1882.5	15	1@5	30 ~ 27000	-37.35	≤ -13.00	Pass
26689	1914.9	3.75	1@47	30 ~ 27000	-36.16	≤ -13.00	Pass
26689	1914.9	15	1@11	30 ~ 27000	-37.10	≤ -13.00	Pass
QPSK							
26041	1850.1	3.75	1@0	30 ~ 27000	-37.12	≤ -13.00	Pass
26041	1850.1	15	1@0	30 ~ 27000	-37.39	≤ -13.00	Pass
26041	1850.1	15	12@0	30 ~ 27000	-36.42	≤ -13.00	Pass
26365	1882.5	3.75	1@23	30 ~ 27000	-36.80	≤ -13.00	Pass
26365	1882.5	15	1@5	30 ~ 27000	-36.92	≤ -13.00	Pass
26365	1882.5	15	12@0	30 ~ 27000	-36.97	≤ -13.00	Pass
26689	1914.9	3.75	1@47	30 ~ 27000	-36.27	≤ -13.00	Pass
26689	1914.9	15	1@11	30 ~ 27000	-36.27	≤ -13.00	Pass
26689	1914.9	15	12@0	30 ~ 27000	-38.19	≤ -13.00	Pass

Channel 26041 (1850.1 MHz)

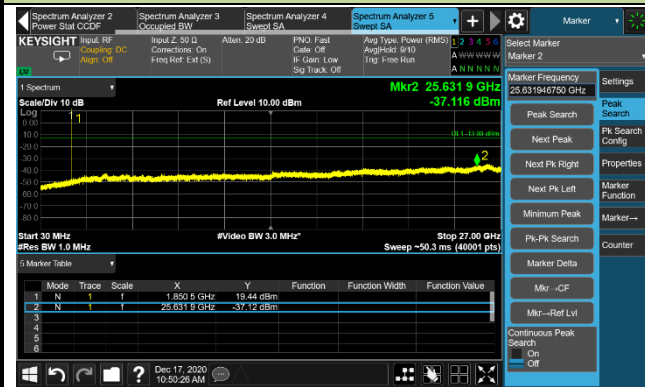
BPSK 3.75kHz 1@0



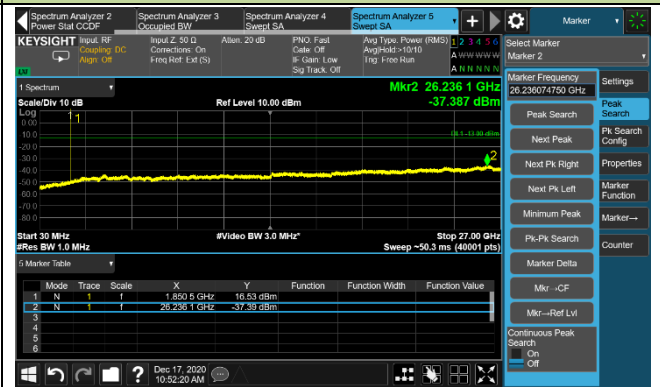
BPSK 15kHz 1@0



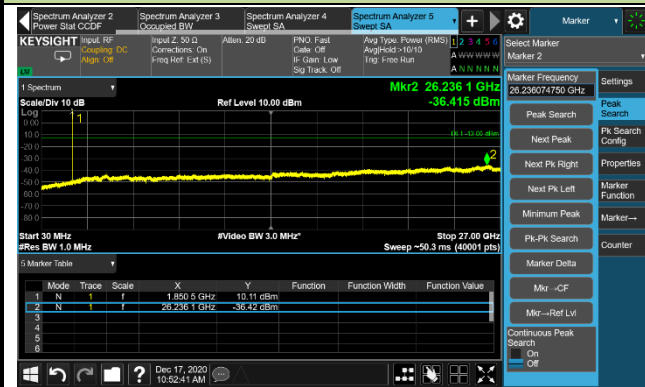
QPSK 3.75kHz 1@0



QPSK 15kHz 1@0

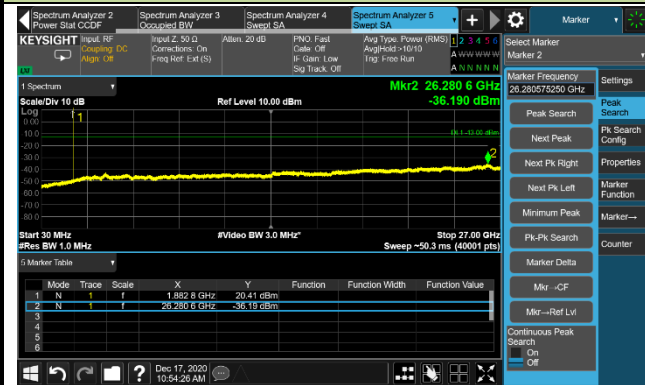


QPSK 15kHz 12@0

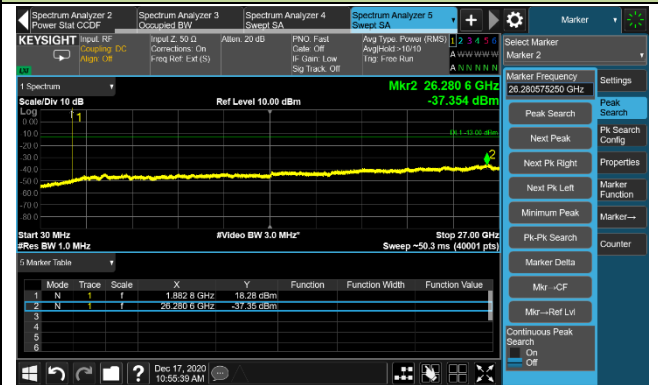


Channel 26365 (1882.5 MHz)

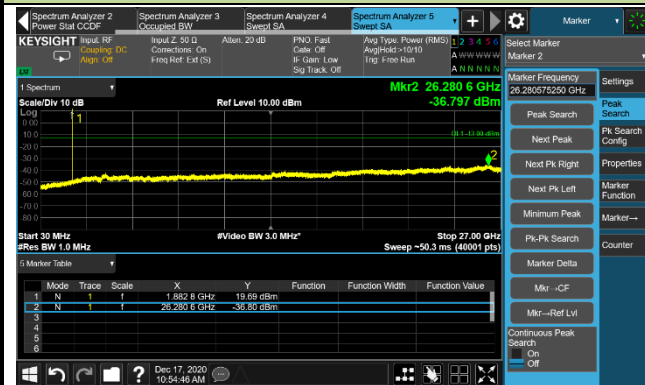
BPSK 3.75kHz 1@23



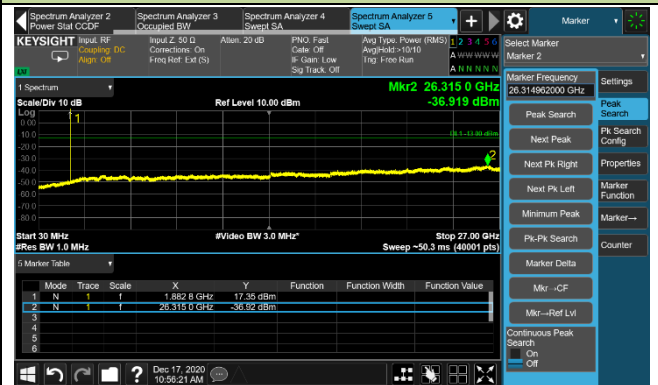
BPSK 15kHz 1@5



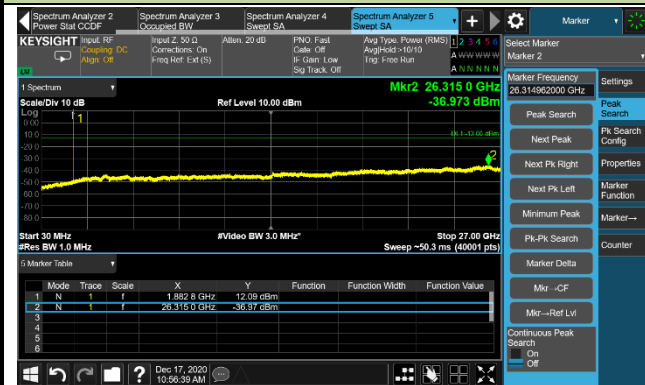
QPSK 3.75kHz 1@23



QPSK 15kHz 1@5

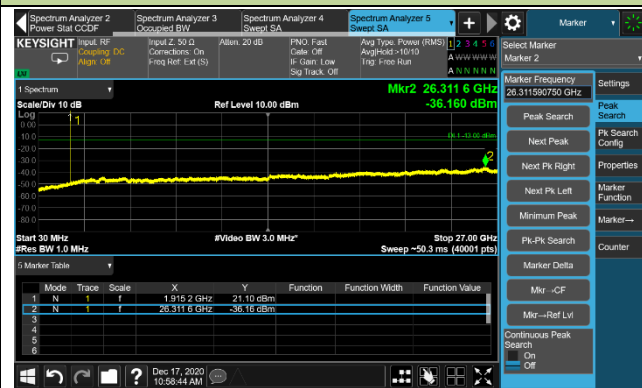


QPSK 15kHz 12@0



Channel 26689 (1914.9 MHz)

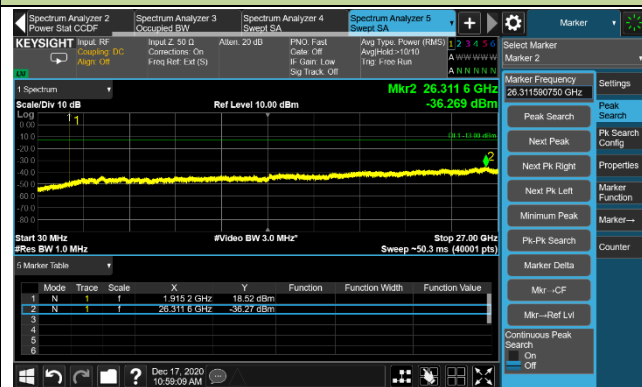
BPSK 3.75kHz 1@47



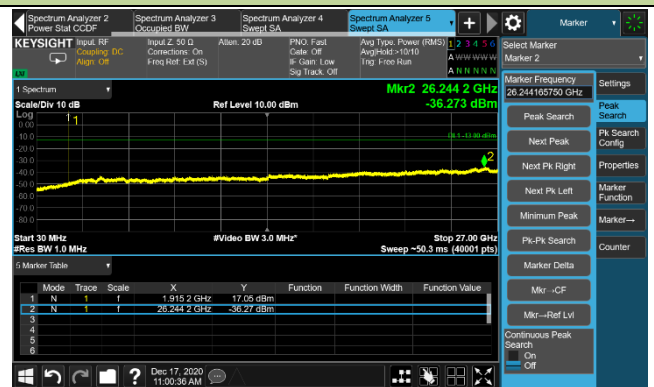
BPSK 15kHz 1@11



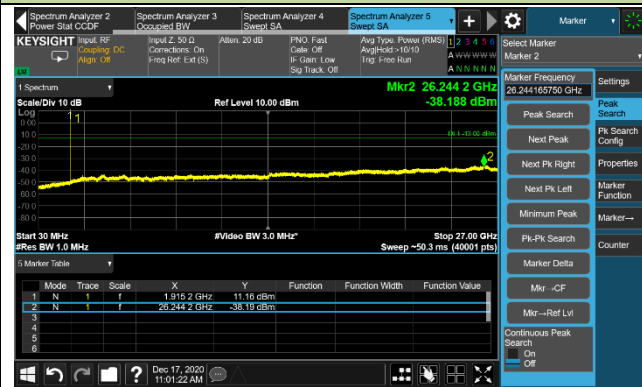
QPSK 3.75kHz 1@47



QPSK 15kHz 1@11



QPSK 15kHz 12@0

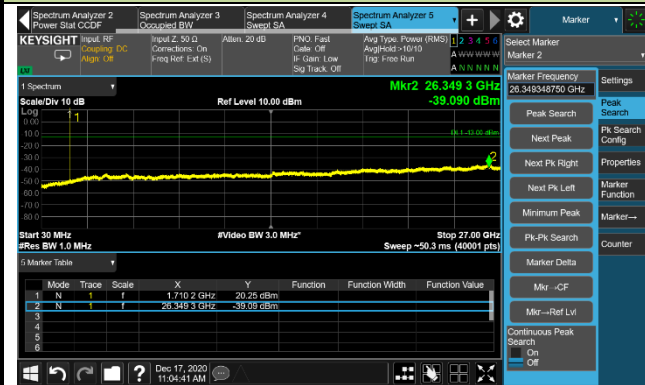


Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/17
Test Band	Band 4/66		

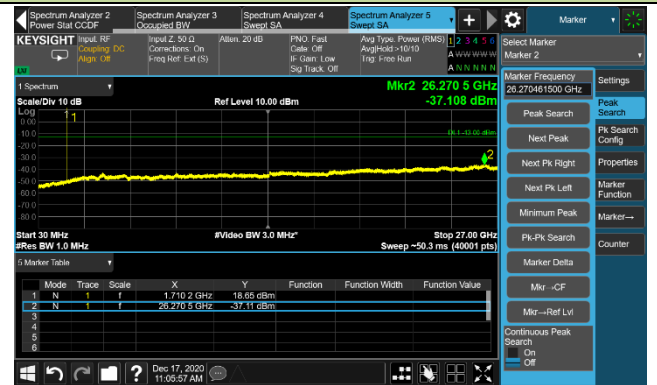
Channel	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
BPSK							
131973	1710.1	3.75	1@0	30 ~ 27000	-39.09	≤ -13.00	Pass
131973	1710.1	15	1@0	30 ~ 27000	-37.11	≤ -13.00	Pass
132322	1745.0	3.75	1@23	30 ~ 27000	-38.40	≤ -13.00	Pass
132322	1745.0	15	1@5	30 ~ 27000	-36.26	≤ -13.00	Pass
132671	1779.9	3.75	1@47	30 ~ 27000	-38.10	≤ -13.00	Pass
132671	1779.9	15	1@11	30 ~ 27000	-36.61	≤ -13.00	Pass
QPSK							
131973	1710.1	3.75	1@0	30 ~ 27000	-37.34	≤ -13.00	Pass
131973	1710.1	15	1@0	30 ~ 27000	-36.80	≤ -13.00	Pass
131973	1710.1	15	12@0	30 ~ 27000	-36.19	≤ -13.00	Pass
132322	1745.0	3.75	1@23	30 ~ 27000	-36.43	≤ -13.00	Pass
132322	1745.0	15	1@5	30 ~ 27000	-37.61	≤ -13.00	Pass
132322	1745.0	15	12@0	30 ~ 27000	-36.27	≤ -13.00	Pass
132671	1779.9	3.75	1@47	30 ~ 27000	-36.35	≤ -13.00	Pass
132671	1779.9	15	1@11	30 ~ 27000	-36.48	≤ -13.00	Pass
132671	1779.9	15	12@0	30 ~ 27000	-36.92	≤ -13.00	Pass

Channel 131973 (1710.1 MHz)

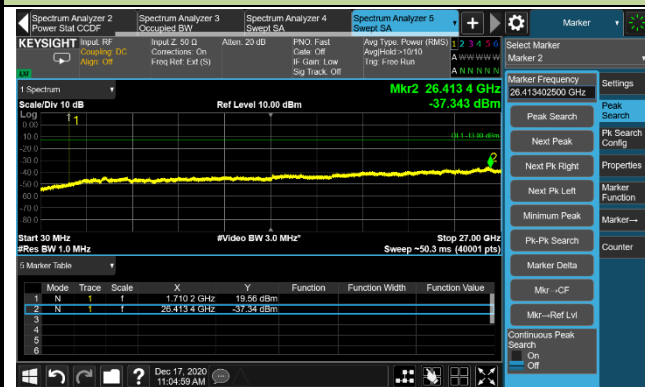
BPSK 3.75kHz 1@0



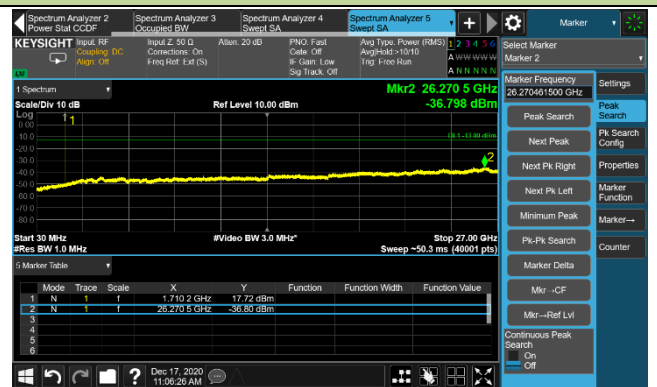
BPSK 15kHz 1@0



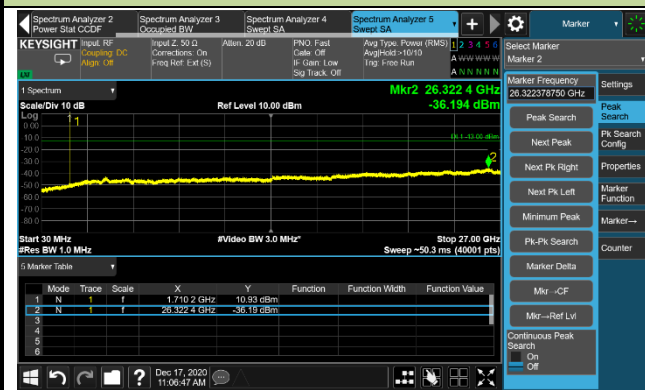
QPSK 3.75kHz 1@0



QPSK 15kHz 1@0

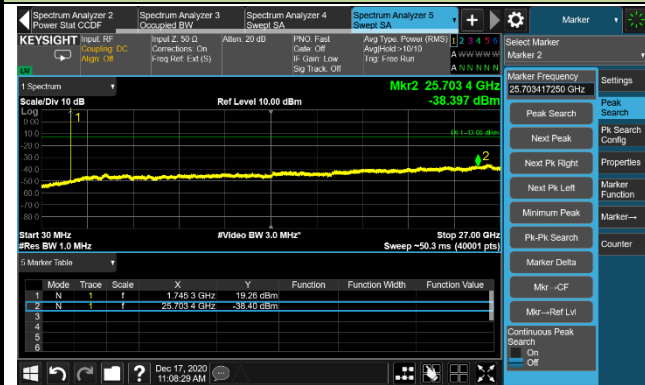


QPSK 15kHz 12@0



Channel 132322 (1745 MHz)

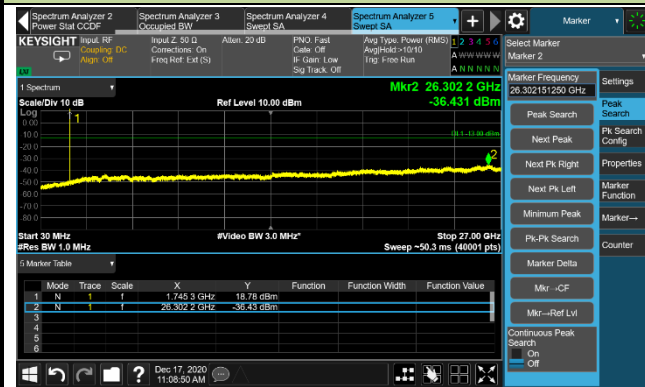
BPSK 3.75kHz 1@23



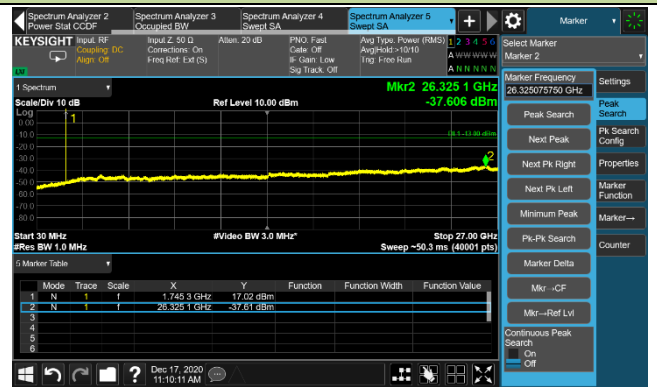
BPSK 15kHz 1@5



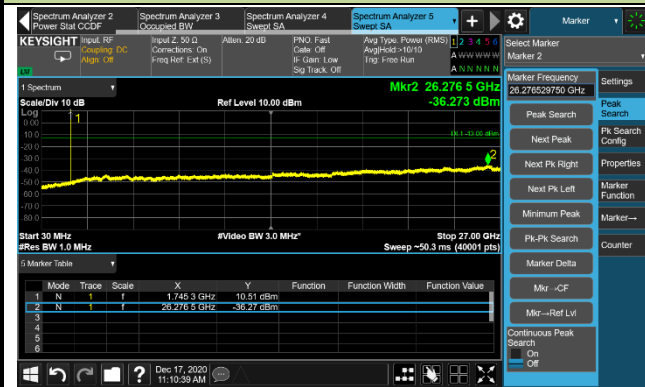
QPSK 3.75kHz 1@23



QPSK 15kHz 1@5

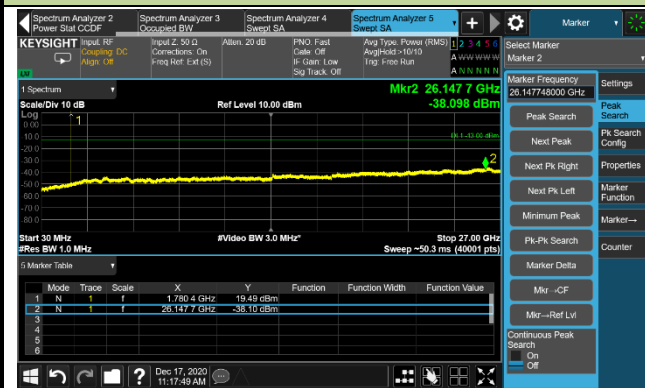


QPSK 15kHz 12@0



Channel 132671 (1779.9MHz)

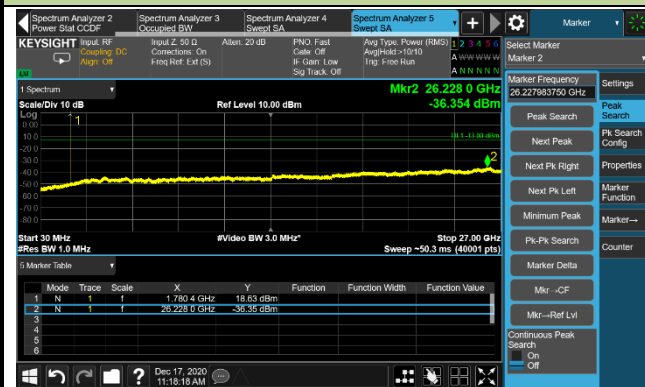
BPSK 3.75kHz 1@47



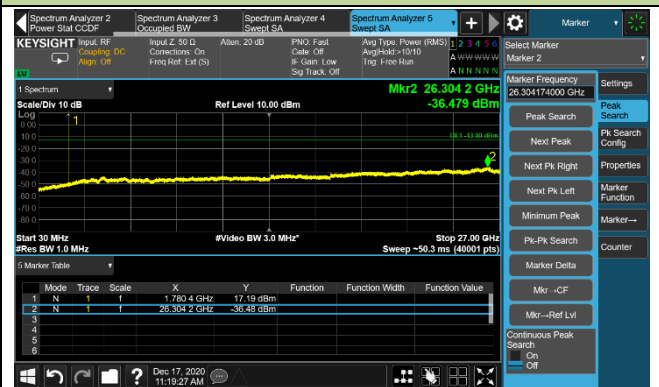
BPSK 15kHz 1@11



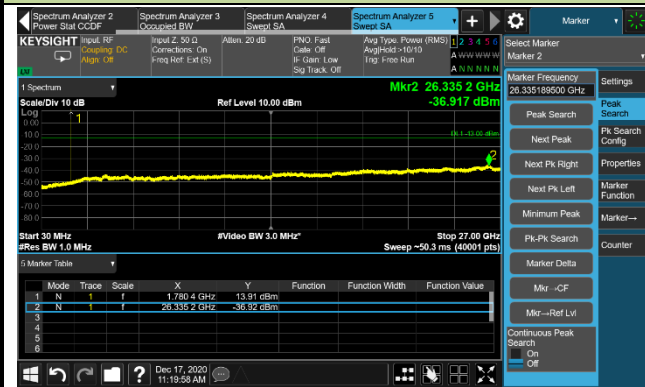
QPSK 3.75kHz 1@47



QPSK 15kHz 1@11



QPSK 15kHz 12@0

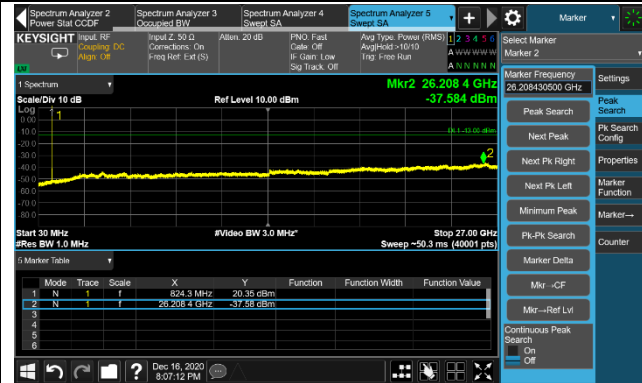


Product	NB-IoT Module	Test Site	WZ-SR6
Test Engineer	Caitlin Chen	Test Date	2020/12/16
Test Band	Band 5		

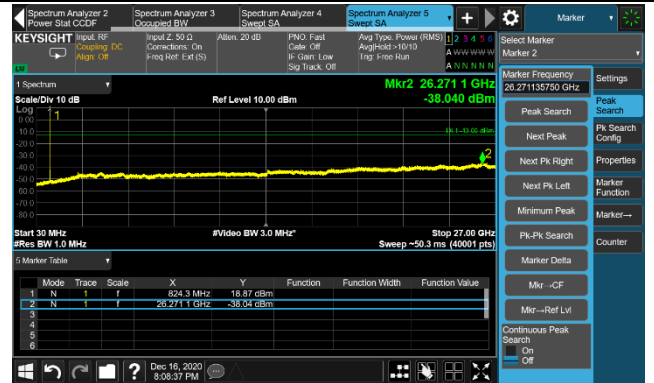
Channel	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
BPSK							
20401	824.1	3.75	1@0	30 ~ 27000	-37.58	≤ -13.00	Pass
20401	824.1	15	1@0	30 ~ 27000	-38.04	≤ -13.00	Pass
20525	836.5	3.75	1@23	30 ~ 27000	-38.69	≤ -13.00	Pass
20525	836.5	15	1@5	30 ~ 27000	-40.37	≤ -13.00	Pass
20649	848.9	3.75	1@47	30 ~ 27000	-38.06	≤ -13.00	Pass
20649	848.9	15	1@11	30 ~ 27000	-37.20	≤ -13.00	Pass
QPSK							
20401	824.1	3.75	1@0	30 ~ 27000	-37.09	≤ -13.00	Pass
20401	824.1	15	1@0	30 ~ 27000	-37.41	≤ -13.00	Pass
20401	824.1	15	12@0	30 ~ 27000	-36.80	≤ -13.00	Pass
20525	836.5	3.75	1@23	30 ~ 27000	-41.29	≤ -13.00	Pass
20525	836.5	15	1@5	30 ~ 27000	-39.74	≤ -13.00	Pass
20525	836.5	15	12@0	30 ~ 27000	-38.24	≤ -13.00	Pass
20649	848.9	3.75	1@47	30 ~ 27000	-36.80	≤ -13.00	Pass
20649	848.9	15	1@11	30 ~ 27000	-37.45	≤ -13.00	Pass
20649	848.9	15	12@0	30 ~ 27000	-37.32	≤ -13.00	Pass

Channel 20401 (824.1 MHz)

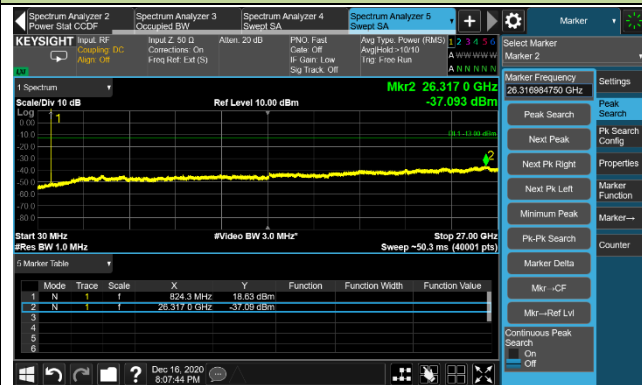
BPSK 3.75kHz 1@0



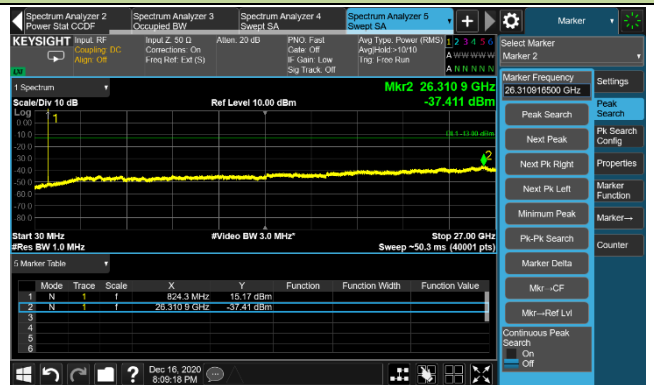
BPSK 15kHz 1@0



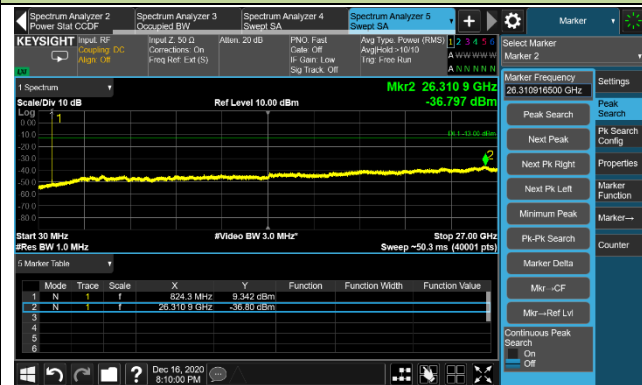
QPSK 3.75kHz 1@0



QPSK 15kHz 1@0

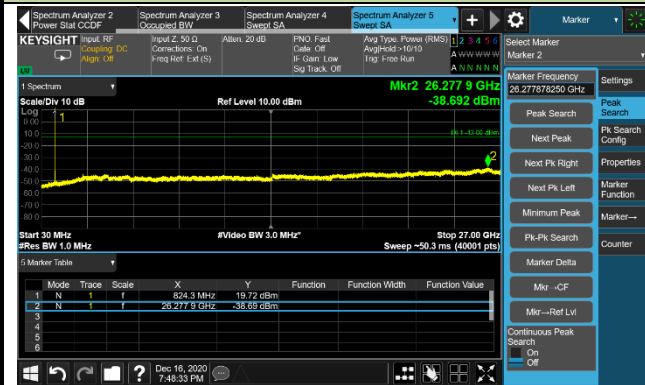


QPSK 15kHz 12@0

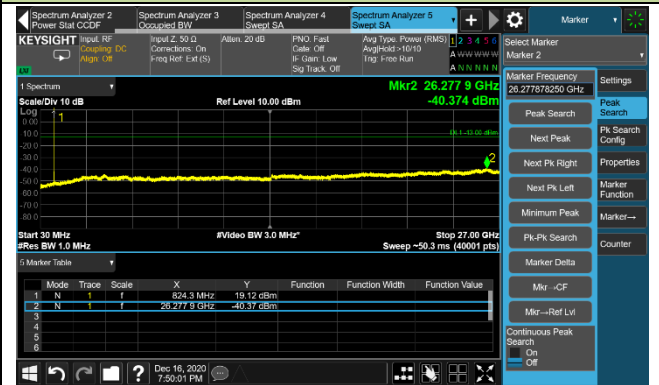


Channel 20525 (836.5 MHz)

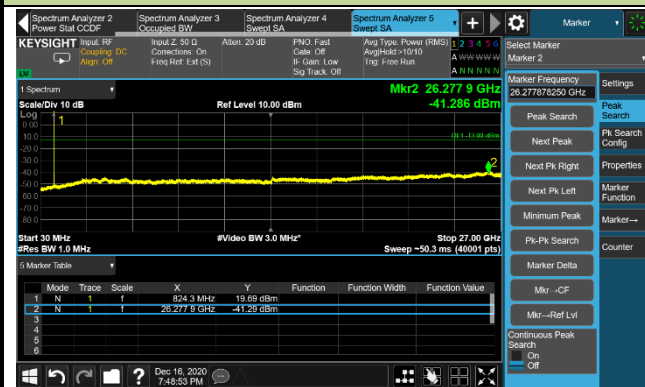
BPSK 3.75kHz 1@23



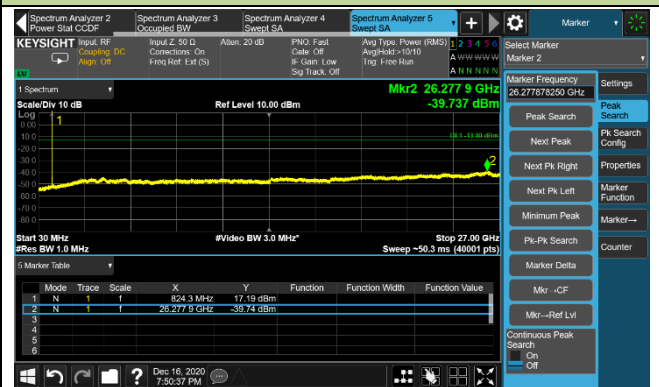
BPSK 15kHz 1@5



QPSK 3.75kHz 1@23



QPSK 15kHz 1@5



QPSK 15kHz 12@0

