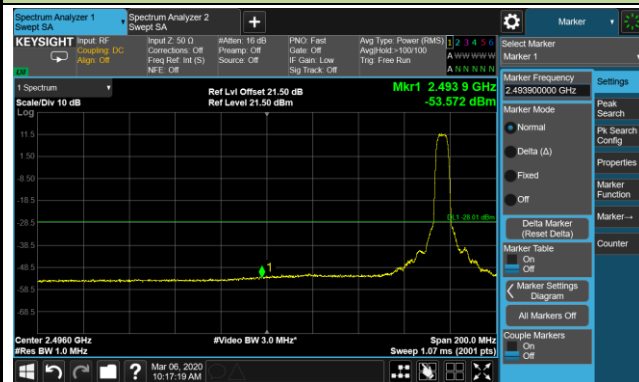
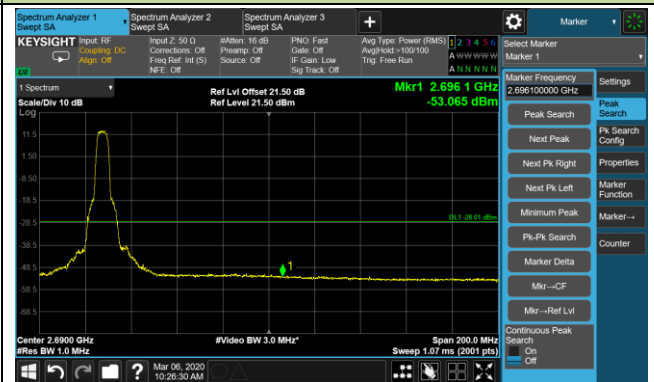


5MHz Channel Bandwidth – Full RB

Lower ACP

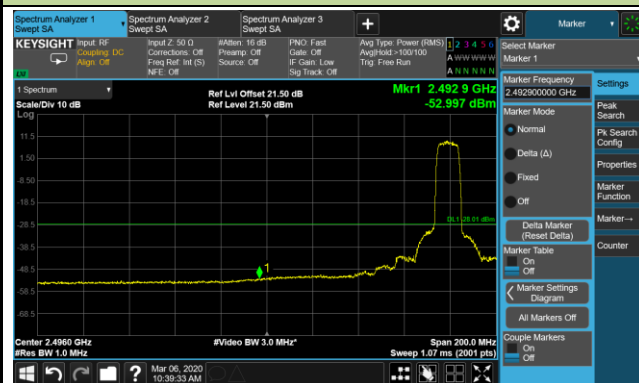


Upper ACP



10MHz Channel Bandwidth – Full RB

Lower ACP

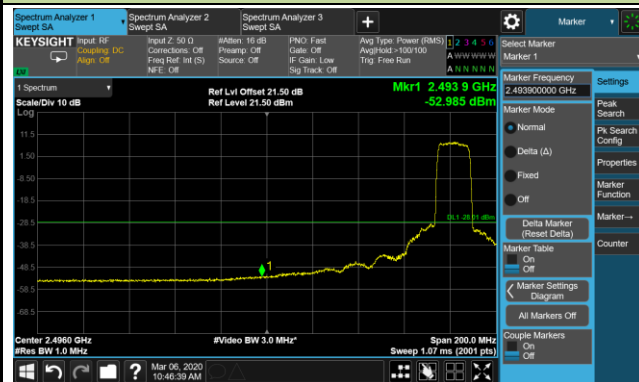


Upper ACP



15MHz Channel Bandwidth – Full RB

Lower ACP

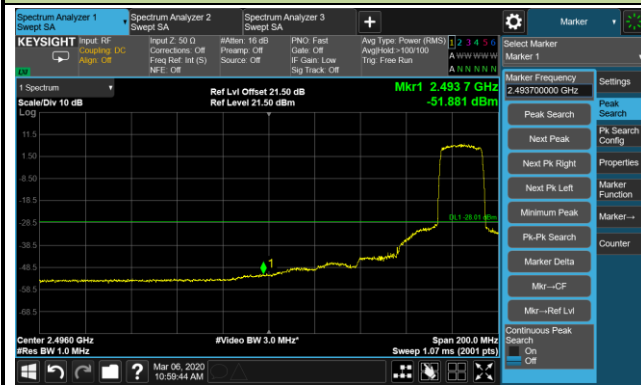


Upper ACP



20MHz Channel Bandwidth – Full RB

Lower ACP



Upper ACP



6.6. Peak to Average Ratio

6.6.1. 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.

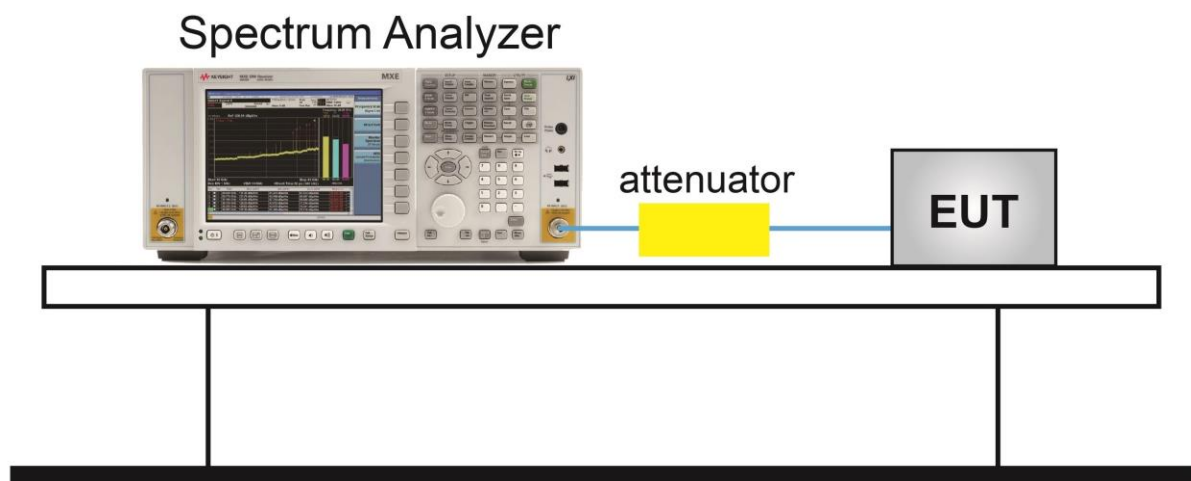
6.6.2. Test Procedure Used

ANSI C63.26-2015 - Section 5.2.6

6.6.3. 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%

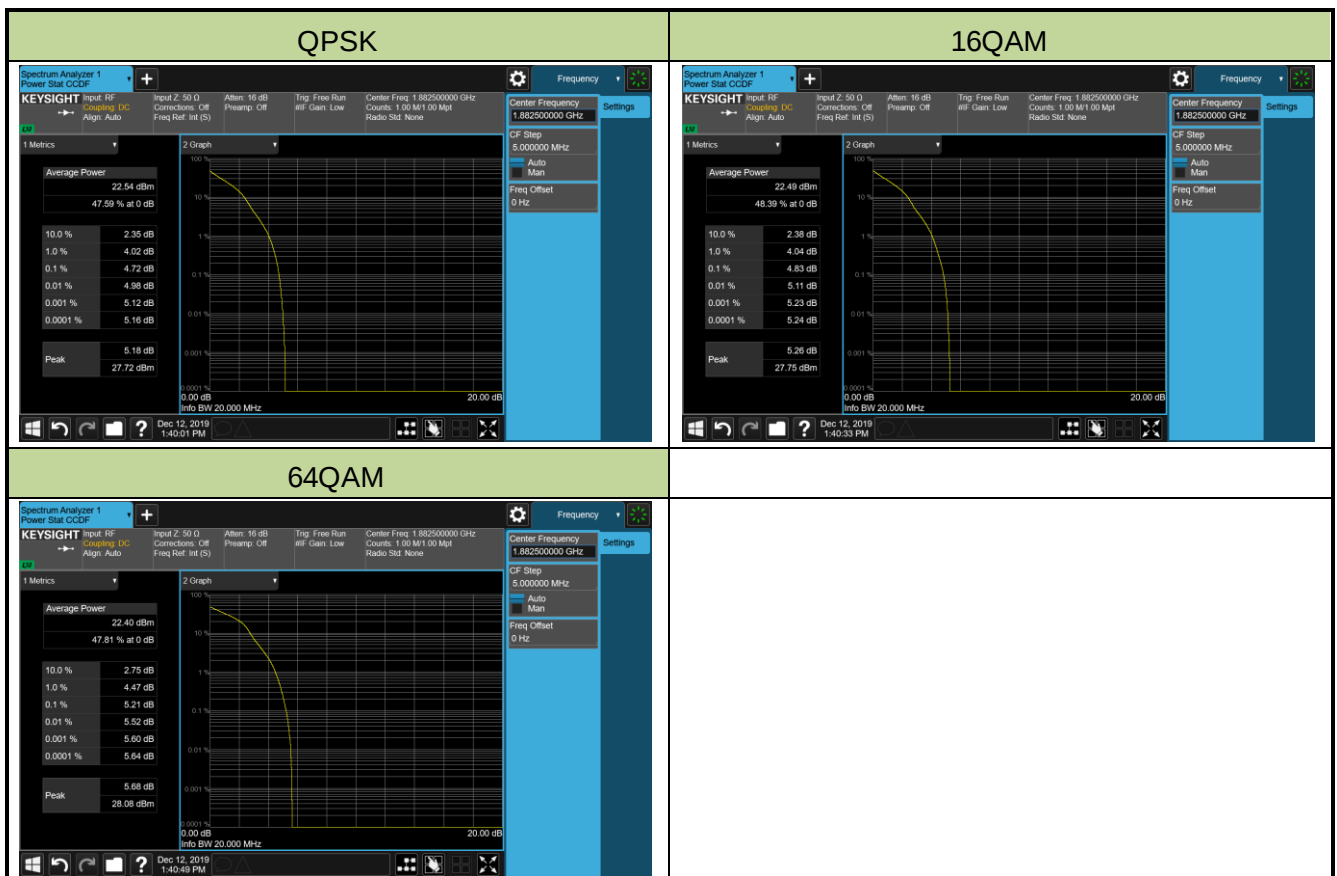
6.6.4. Test Setup



6.6.5. Test Result

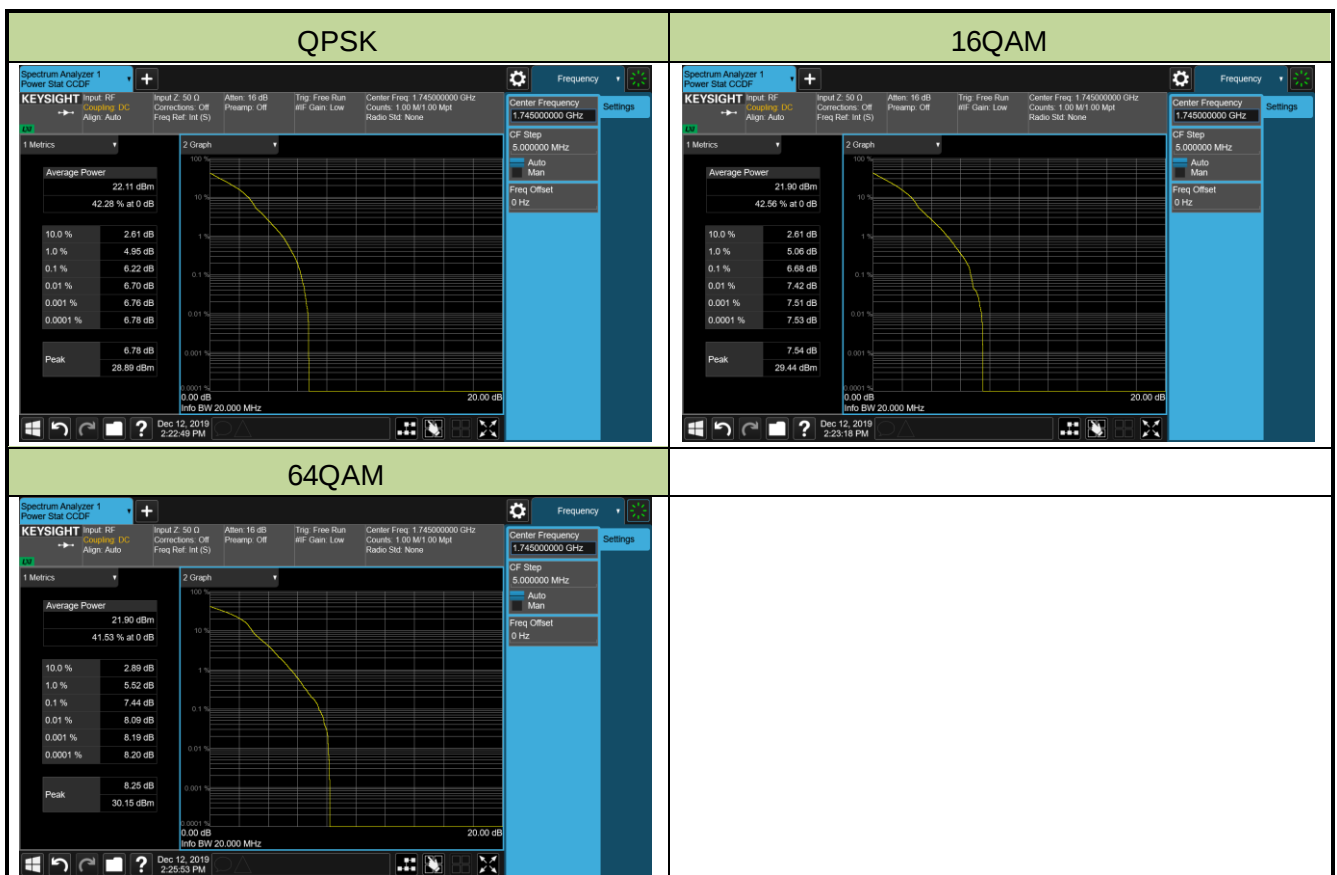
Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 25/2	Test Mode	SISO Mode

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit	Result
QPSK					
26365	1882.5	20	4.72	≤ 13.00	Pass
16QAM					
26365	1882.5	20	4.83	≤ 13.00	Pass
64QAM					
26365	1882.5	20	5.21	≤ 13.00	Pass



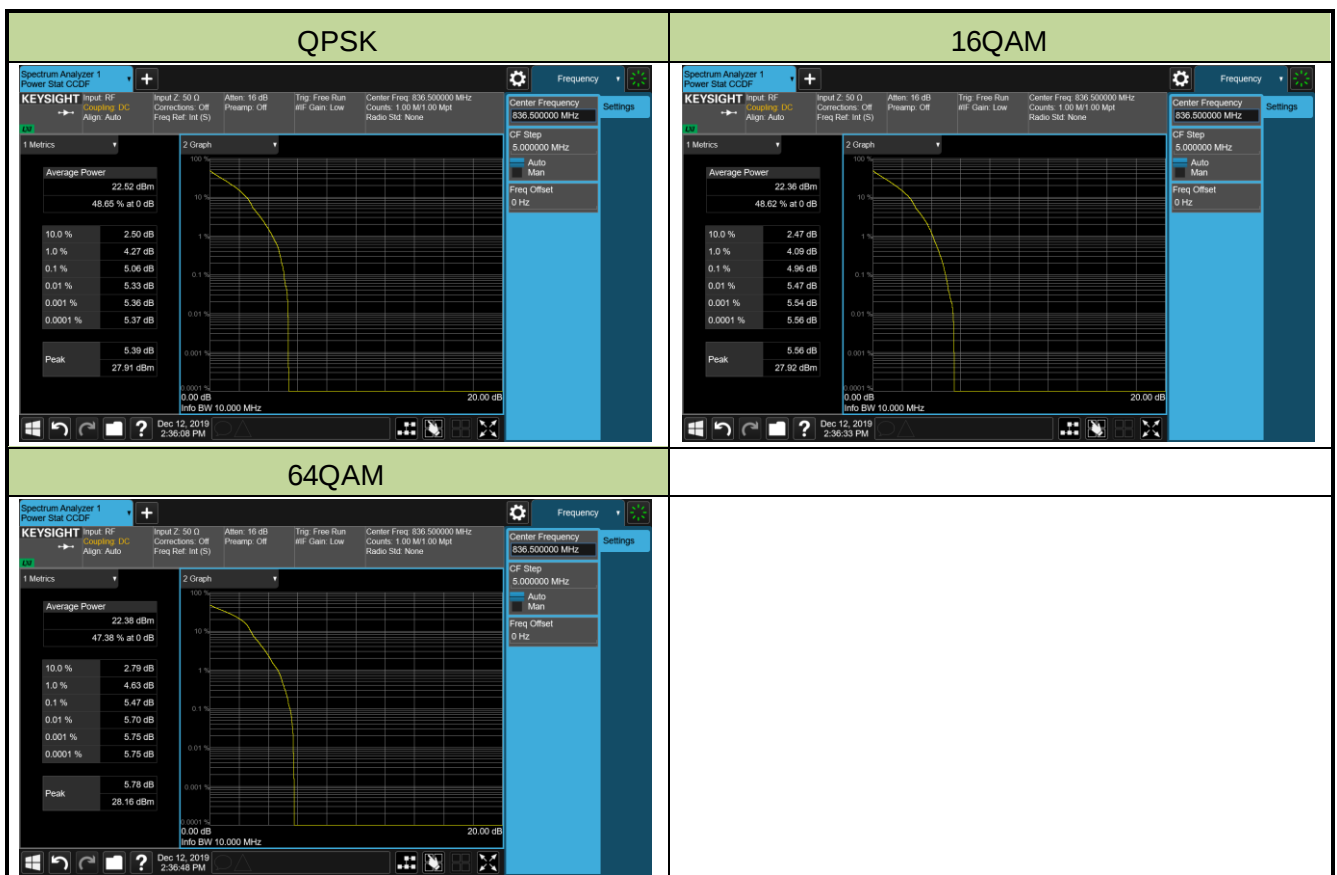
Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 66/4	Test Mode	SISO Mode

Channel NO	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit	Result
QPSK					
132322	1745.0	20	6.22	≤ 13.00	Pass
16QAM					
132322	1745.0	20	6.68	≤ 13.00	Pass
64QAM					
132322	1745.0	20	7.44	≤ 13.00	Pass



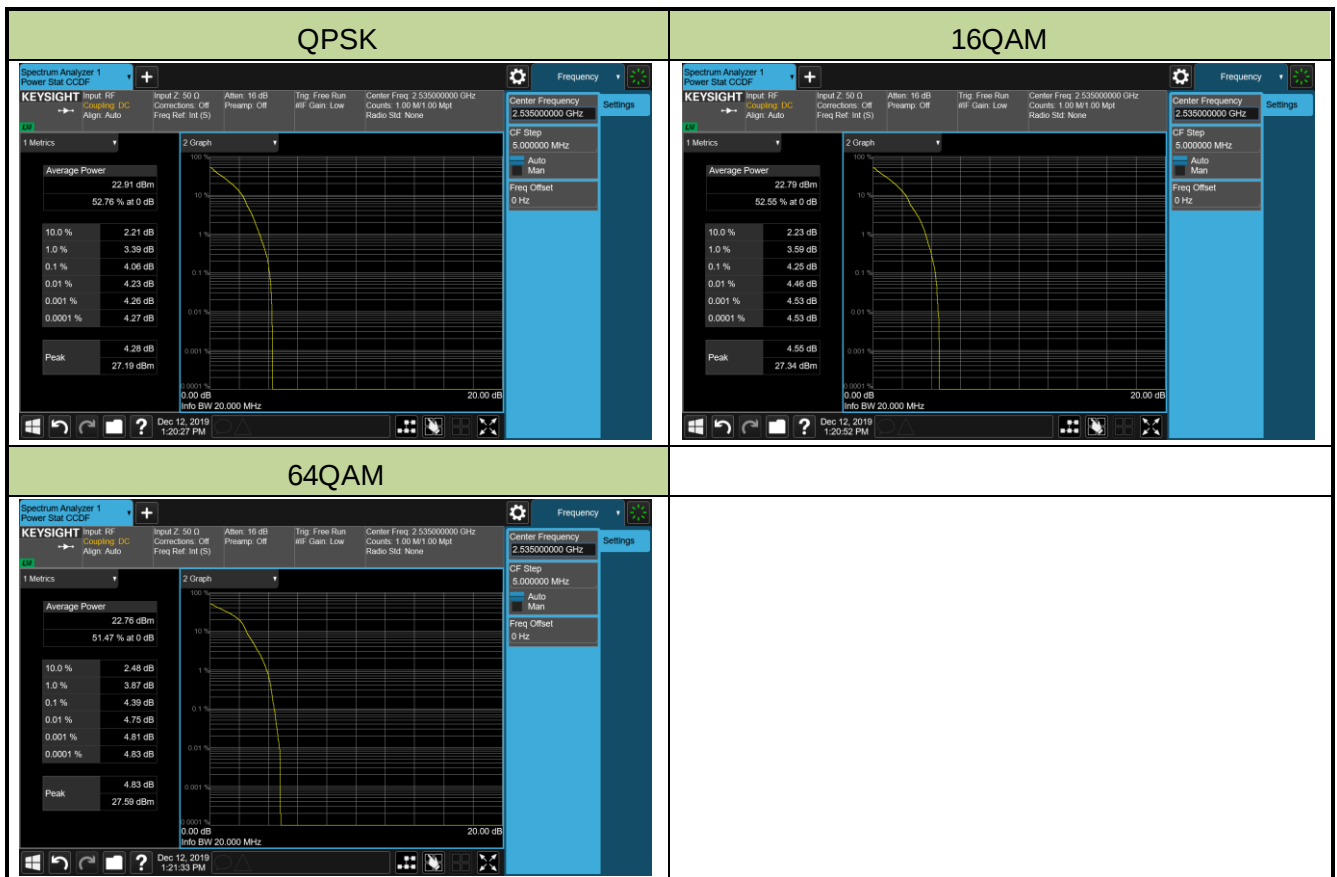
Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 5	Test Mode	SISO Mode

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit	Result
QPSK					
20525	836.5	10	5.06	≤ 13.00	Pass
16QAM					
20525	836.5	10	4.96	≤ 13.00	Pass
64QAM					
20525	836.5	10	5.47	≤ 13.00	Pass



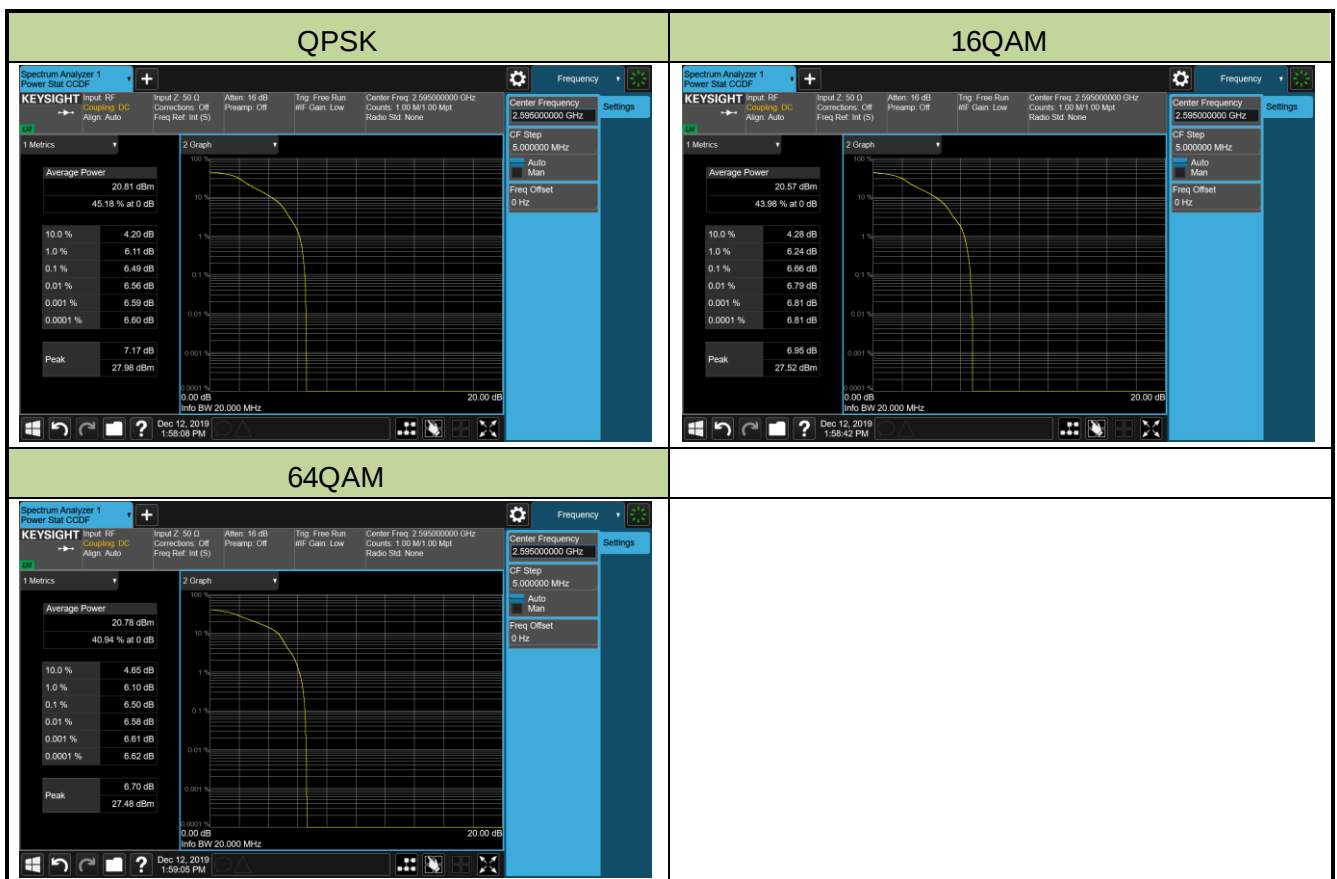
Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 7	Test Mode	SISO Mode

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dBm)	Result
QPSK					
21100	2535.0	20	4.06	≤ 13.00	Pass
16QAM					
21100	2535.0	20	4.25	≤ 13.00	Pass
64QAM					
21100	2535.0	20	4.38	≤ 13.00	Pass



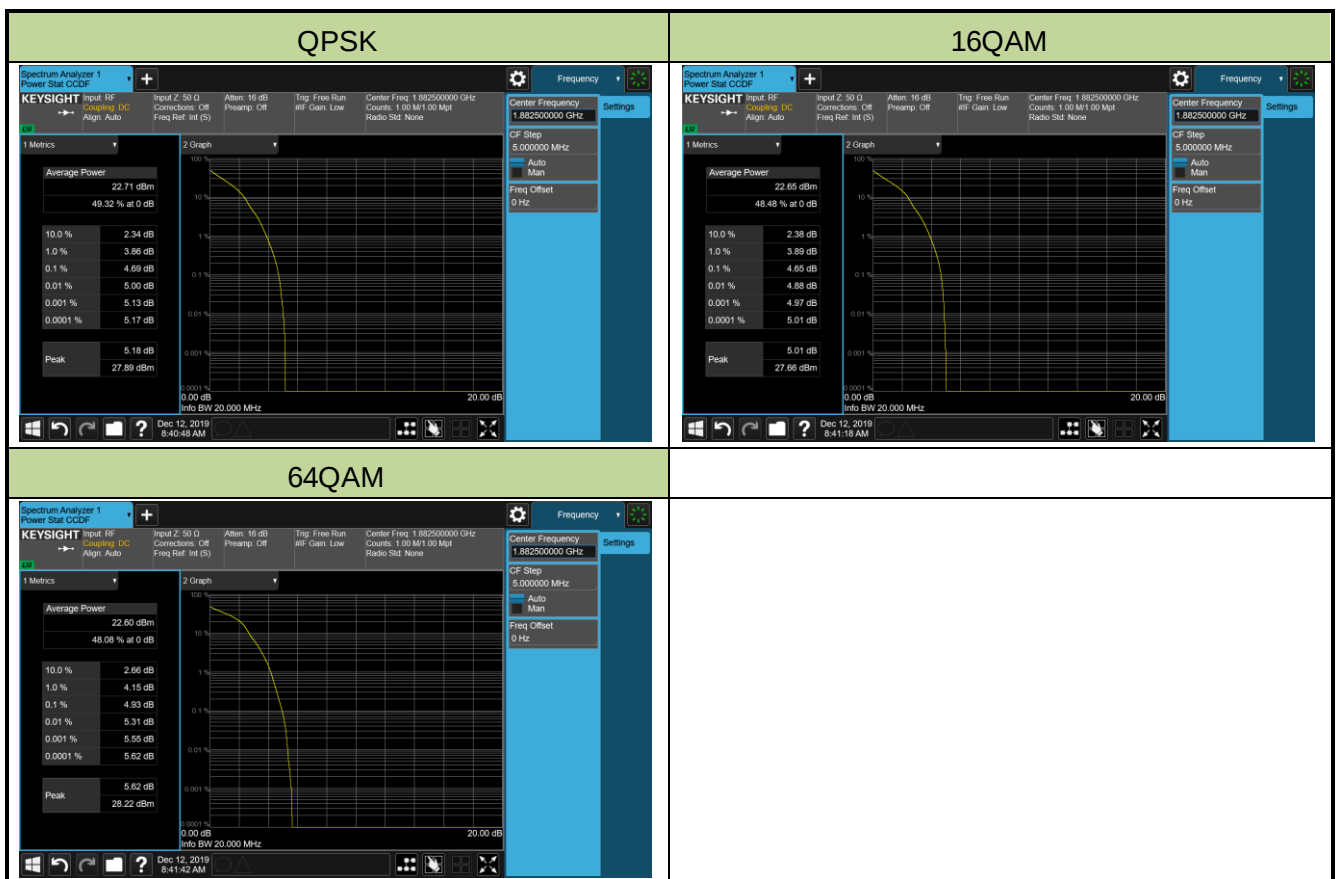
Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 38	Test Mode	SISO Mode

Channel NO	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dBm)	Result
QPSK					
38000	2595.0	20	6.49	≤ 13.00	Pass
16QAM					
38000	2595.0	20	6.66	≤ 13.00	Pass
64QAM					
38000	2595.0	20	6.50	≤ 13.00	Pass



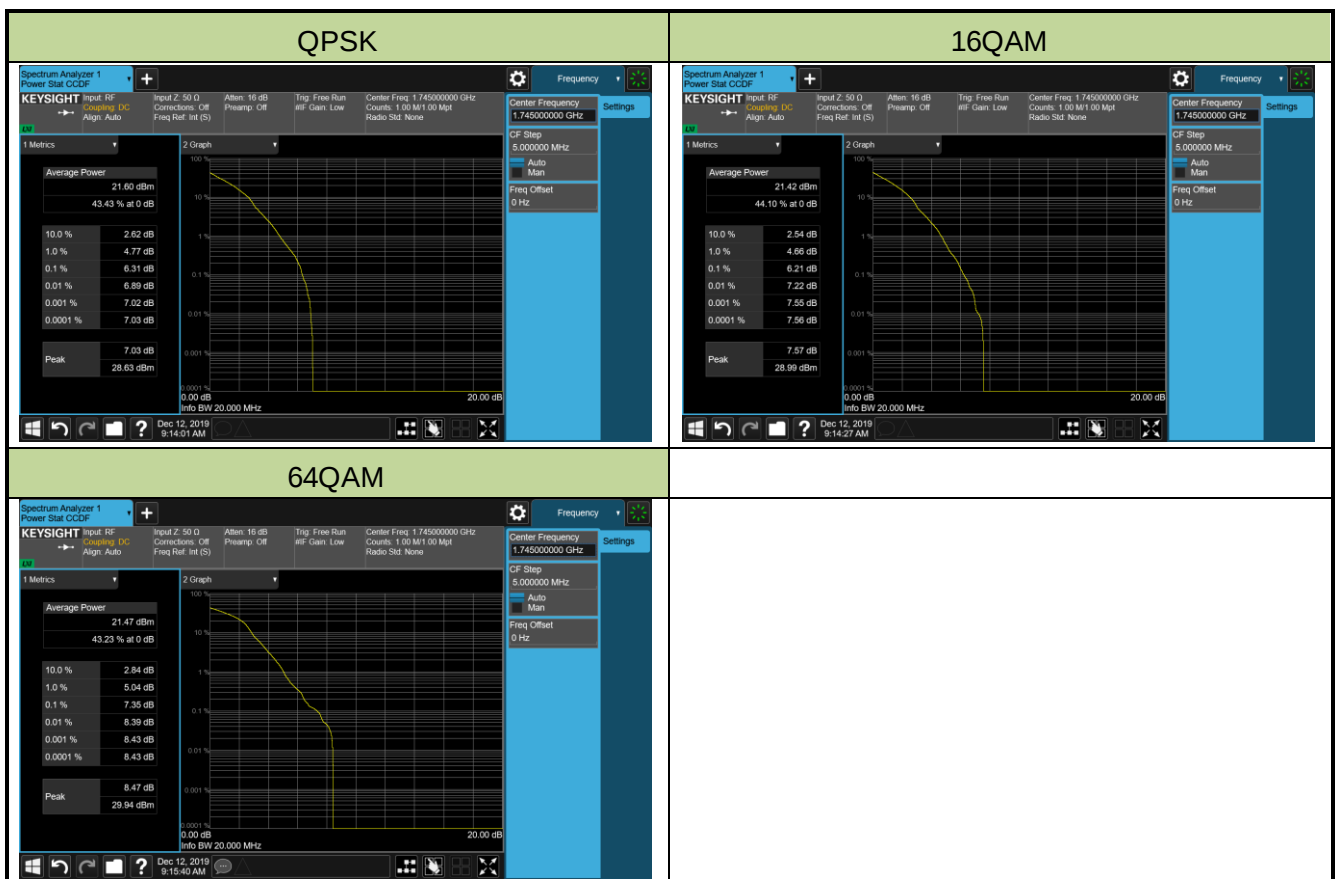
Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 25/2	Test Mode	MIMO Mode

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit	Result
QPSK					
26365	1882.5	20	4.69	≤ 13.00	Pass
16QAM					
26365	1882.5	20	4.65	≤ 13.00	Pass
64QAM					
26365	1882.5	20	4.93	≤ 13.00	Pass



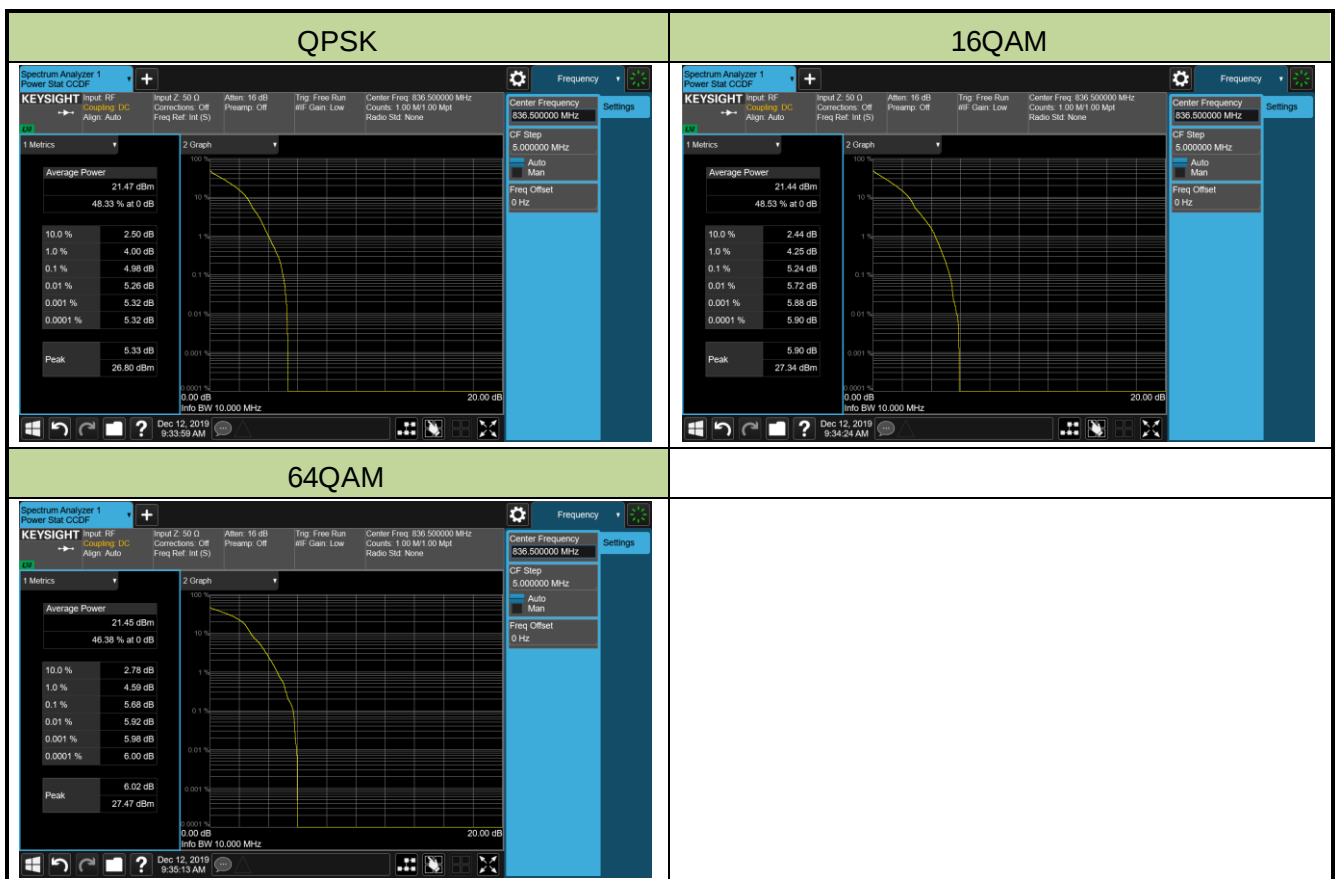
Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 66/4	Test Mode	MIMO Mode

Channel NO	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit	Result
QPSK					
132322	1745.0	20	6.31	≤ 13.00	Pass
16QAM					
132322	1745.0	20	6.21	≤ 13.00	Pass
64QAM					
132322	1745.0	20	7.35	≤ 13.00	Pass



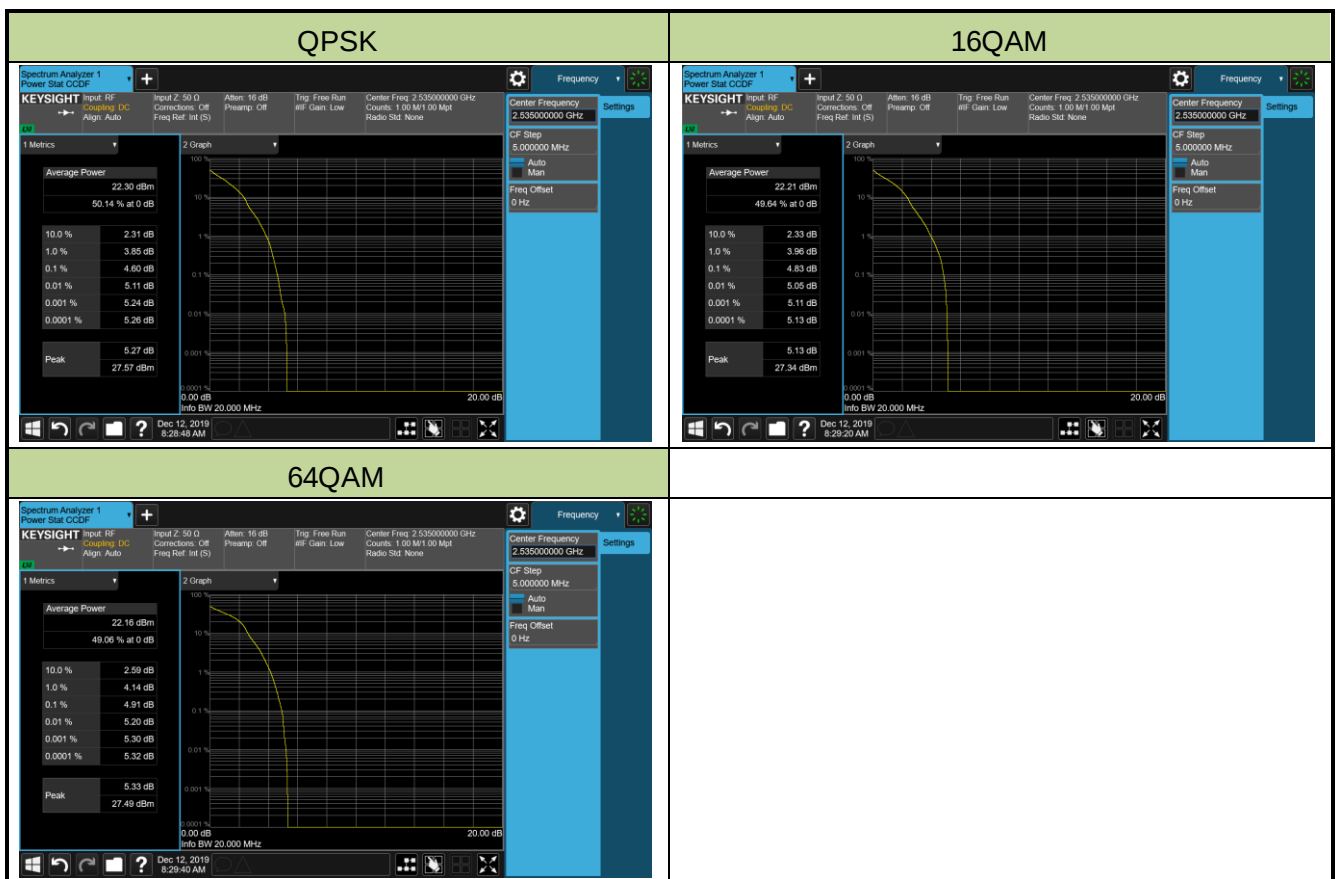
Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 5	Test Mode	MIMO Mode

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit	Result
QPSK					
20525	836.5	10	4.98	≤ 13.00	Pass
16QAM					
20525	836.5	10	5.24	≤ 13.00	Pass
64QAM					
20525	836.5	10	5.68	≤ 13.00	Pass



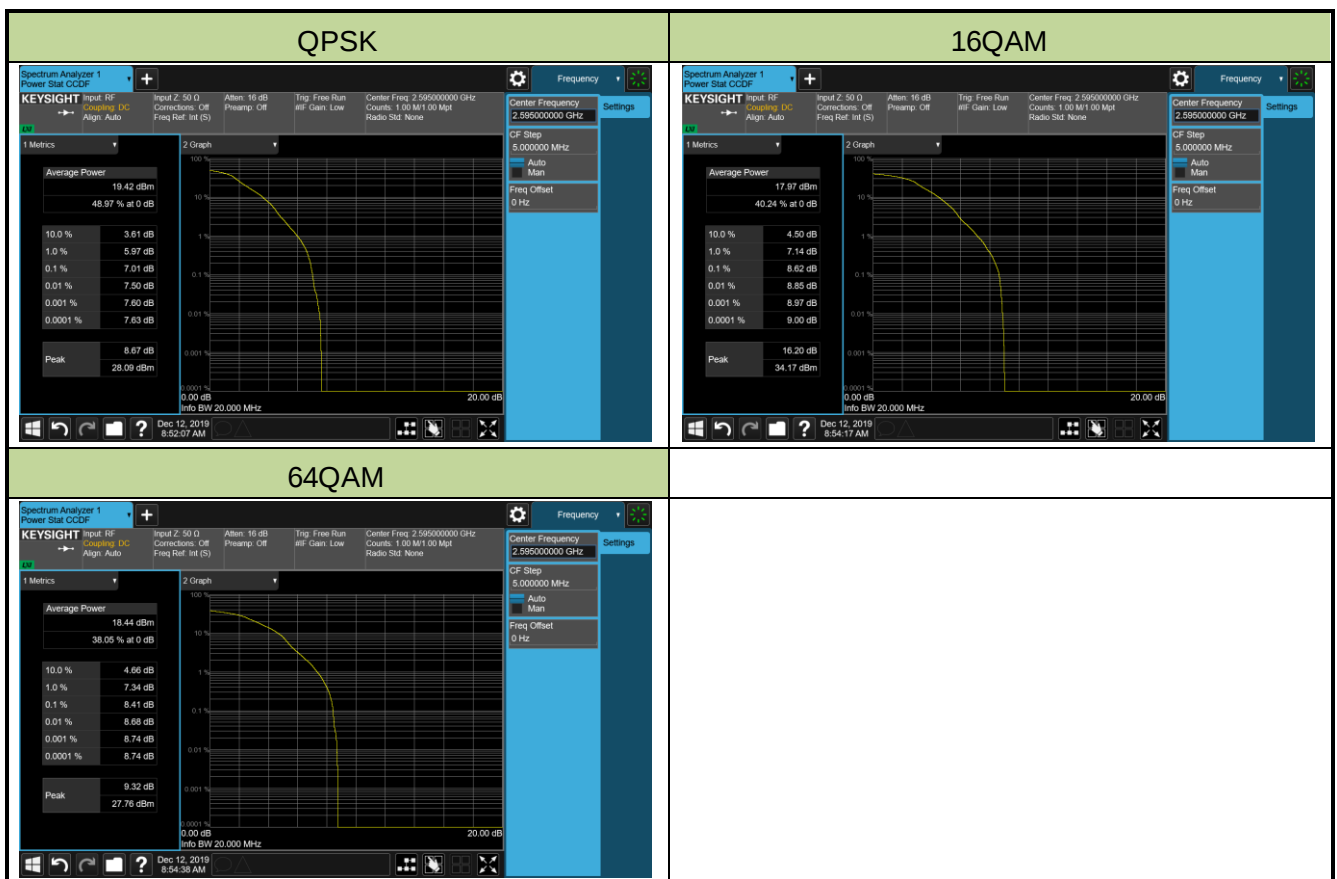
Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 7	Test Mode	MIMO Mode

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dBm)	Result
QPSK					
21100	2535.0	20	4.60	≤ 13.00	Pass
16QAM					
21100	2535.0	20	4.83	≤ 13.00	Pass
64QAM					
21100	2535.0	20	4.91	≤ 13.00	Pass



Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	56%
Test Site	SR5	Test Date	2019/12/12
Test Band	Band 38	Test Mode	MIMO Mode

Channel NO	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit	Result
QPSK					
38000.0	2595.0	20	7.01	≤ 13.00	Pass
16QAM					
38000.0	2595.0	20	8.62	≤ 13.00	Pass
64QAM					
38000.0	2595.0	20	8.41	≤ 13.00	Pass



6.7. Conducted Spurious Emissions

6.7.1. 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, 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.

For MIMO Mode, the the minimum permissible attenuation levels should be reduced 3dB.

6.7.2. Test Procedure Used

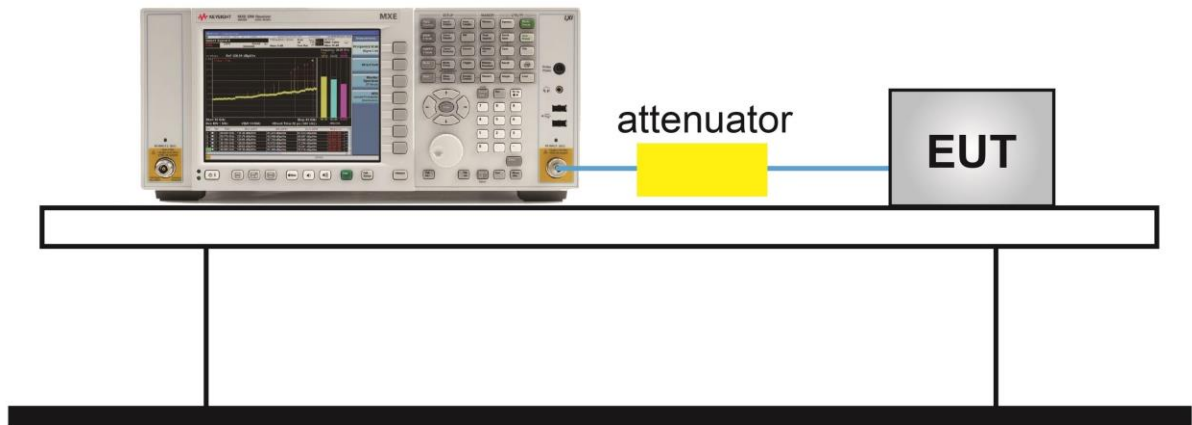
ANSI C63.26-2015 - Section 5.7

6.7.3. Test Setting

1. Set the analyzer frequency to low or high channel
2. RBW = 1MHz
3. VBW $\geq 3 \times$ RBW
4. Sweep time = auto
5. Detector = power averaging (rms)
6. Set sweep trigger to "free run."
7. The trace was allowed to stabilize.

6.7.4. Test Setup

Spectrum Analyzer



6.7.5. Test Result

Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	52%
Test Site	SR5	Test Date	2020/03/05
Test Band	Band 25/2	Test Mode	SISO Mode

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
QPSK						
26047	1850.7	1.4	30 ~ 1845	-45.58	≤ -13.00	Pass
			1915 ~ 27000	-43.01	≤ -13.00	Pass
26365	1882.5	1.4	30 ~ 1850	-47.49	≤ -13.00	Pass
			1915 ~ 27000	-43.01	≤ -13.00	Pass
26683	1914.3	1.4	30 ~ 1850	-46.30	≤ -13.00	Pass
			1920 ~ 27000	-42.94	≤ -13.00	Pass
26055	1851.5	3	30 ~ 1845	-44.83	≤ -13.00	Pass
			1915 ~ 27000	-42.98	≤ -13.00	Pass
26365	1882.5	3	30 ~ 1850	-47.64	≤ -13.00	Pass
			1915 ~ 27000	-42.83	≤ -13.00	Pass
26675	1913.5	3	30 ~ 1850	-46.51	≤ -13.00	Pass
			1920 ~ 27000	-42.97	≤ -13.00	Pass
26065	1852.5	5	30 ~ 1845	-45.75	≤ -13.00	Pass
			1915 ~ 27000	-42.58	≤ -13.00	Pass
26365	1882.5	5	30 ~ 1850	-47.22	≤ -13.00	Pass
			1915 ~ 27000	-42.88	≤ -13.00	Pass
26665	1912.5	5	30 ~ 1850	-47.33	≤ -13.00	Pass
			1920 ~ 27000	-43.20	≤ -13.00	Pass
16390	1855.0	10	30 ~ 1845	-43.60	≤ -13.00	Pass
			1915 ~ 27000	-42.89	≤ -13.00	Pass
26365	1882.5	10	30 ~ 1850	-47.48	≤ -13.00	Pass
			1915 ~ 27000	-42.72	≤ -13.00	Pass
26640	1910.0	10	30 ~ 1850	-46.26	≤ -13.00	Pass
			1920 ~ 27000	-42.73	≤ -13.00	Pass

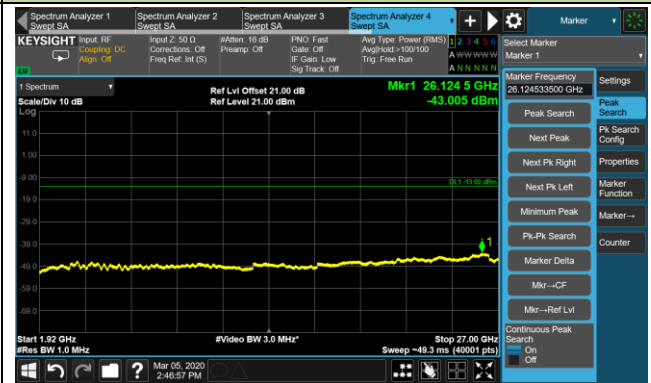
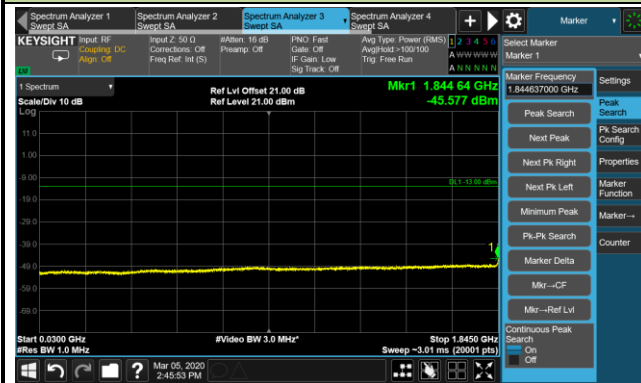
Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
26115	1857.5	15	30 ~ 1845	-40.69	≤ -13.00	Pass
			1915 ~ 27000	-42.92	≤ -13.00	Pass
26365	1882.5	15	30 ~ 1850	-41.45	≤ -13.00	Pass
			1915 ~ 27000	-43.03	≤ -13.00	Pass
26615	1907.5	15	30 ~ 1850	-46.25	≤ -13.00	Pass
			1920 ~ 27000	-43.00	≤ -13.00	Pass
26140	1860.0	20	30 ~ 1845	-31.49	≤ -13.00	Pass
			1915 ~ 27000	-42.82	≤ -13.00	Pass
26365	1882.5	20	30 ~ 1850	-36.48	≤ -13.00	Pass
			1915 ~ 27000	-42.87	≤ -13.00	Pass
26590	1905.0	20	30 ~ 1850	-46.53	≤ -13.00	Pass
			1920 ~ 27000	-43.08	≤ -13.00	Pass

1.4MHz Channel Bandwidth

Channel 26407 (1850.7MHz)

30 ~ 1845 MHz

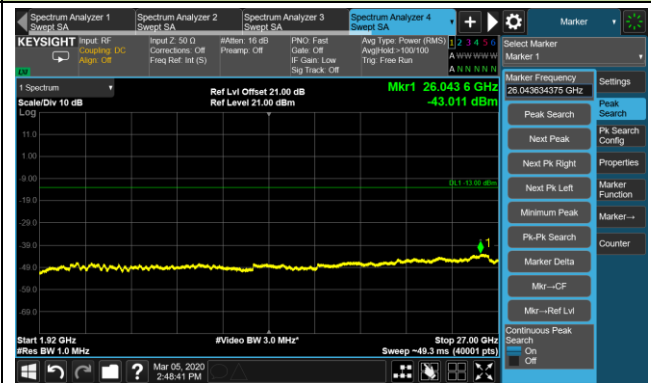
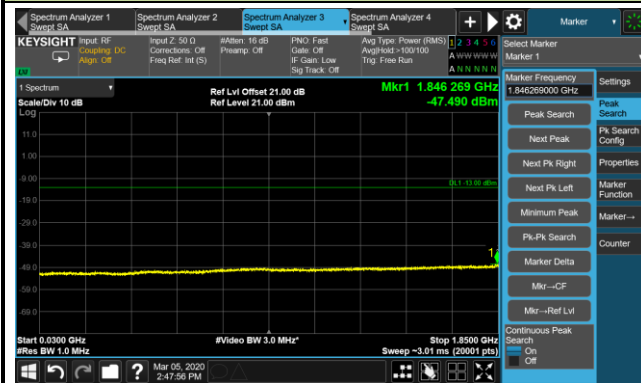
1915 ~ 27000 MHz



Channel 26365 (1882.5MHz)

30 ~ 1850 MHz

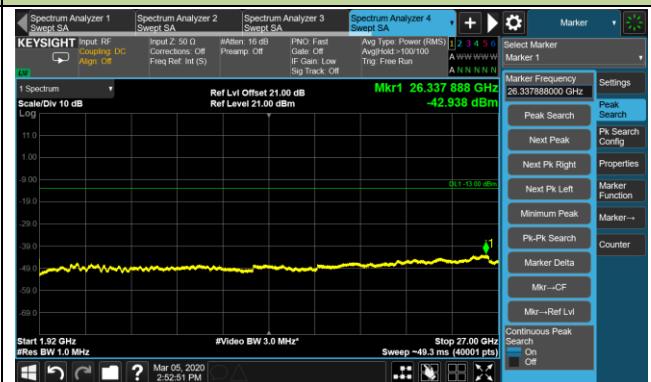
1915 ~ 27000 MHz



Channel 26683 (1914.3MHz)

30 ~ 1850 MHz

1920 ~ 27000 MHz

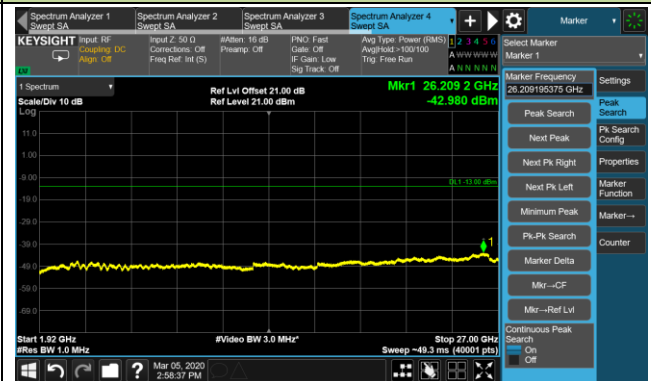
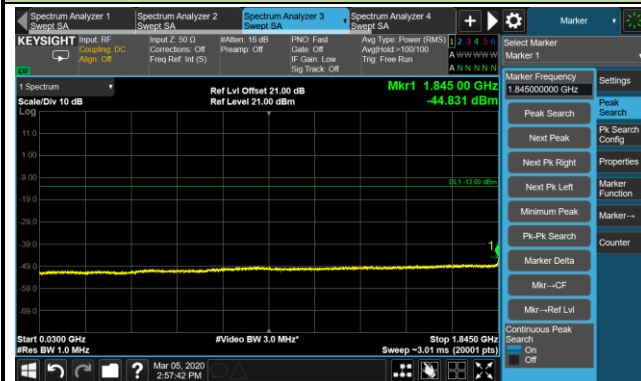


3MHz Channel Bandwidth

Channel 26055 (1851.5MHz)

30 ~ 1845 MHz

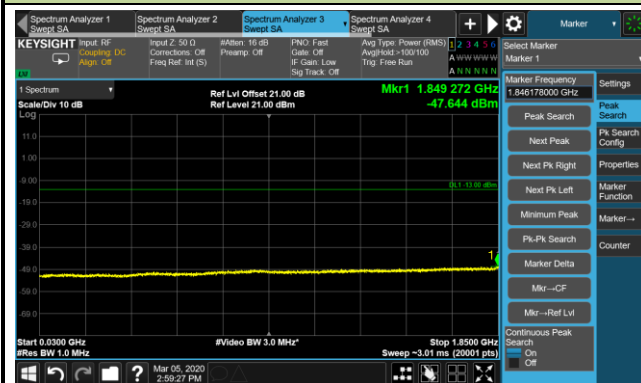
1915 ~ 27000 MHz



Channel 26365 (1882.5MHz)

30 ~ 1850 MHz

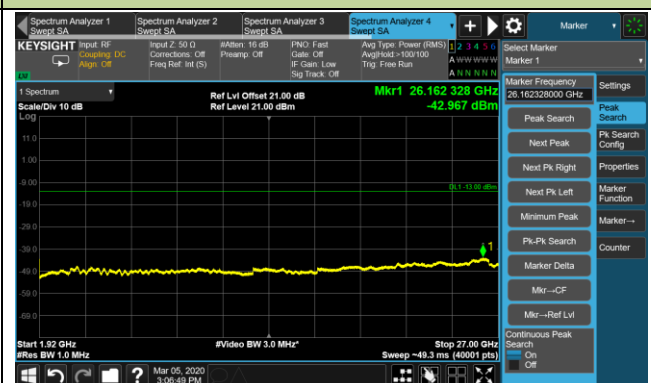
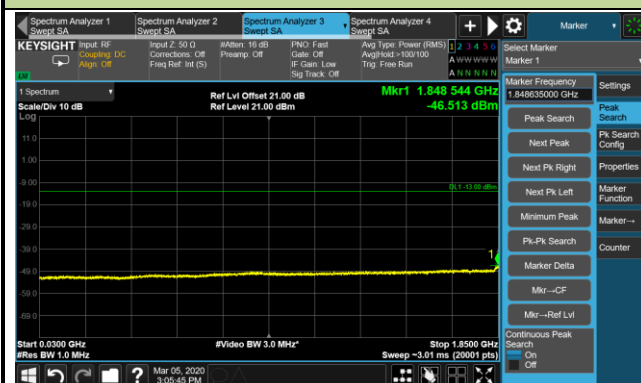
1915 ~ 27000 MHz



Channel 26675 (1913.5MHz)

30 ~ 1850 MHz

1920 ~ 27000 MHz

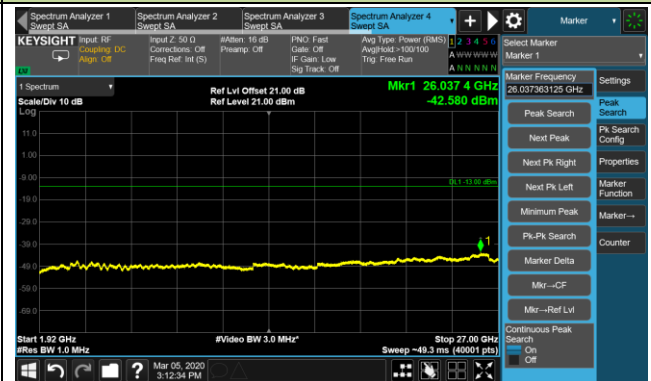


5MHz Channel Bandwidth

Channel 26065(1852.5MHz)

30 ~ 1845 MHz

1915 ~ 27000 MHz



Channel 26365 (1882.5MHz)

30 ~ 1850 MHz

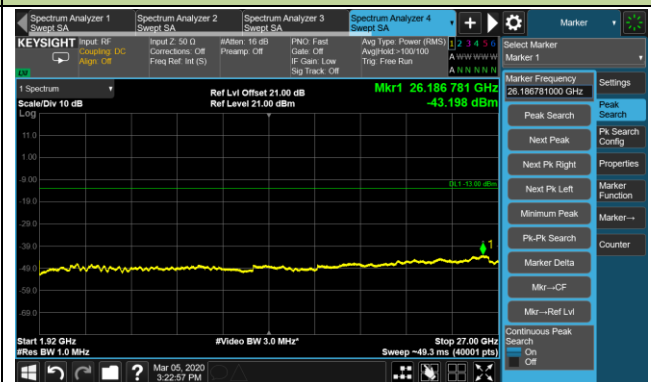
1915 ~ 27000 MHz



Channel 26665 (1912.5MHz)

30 ~ 1850 MHz

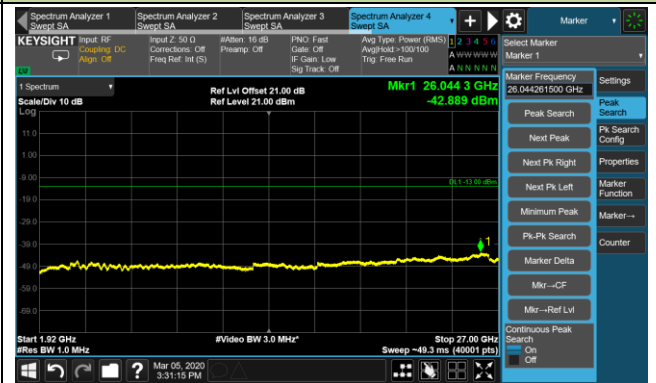
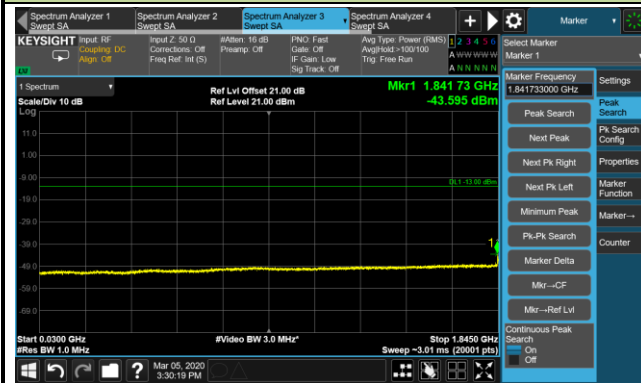
1920 ~ 27000 MHz



10MHz Channel Bandwidth Channel 26390 (1855.0MHz)

30 ~ 1845 MHz

1915 ~ 27000 MHz



Channel 26365 (1882.5MHz)

30 ~ 1850 MHz

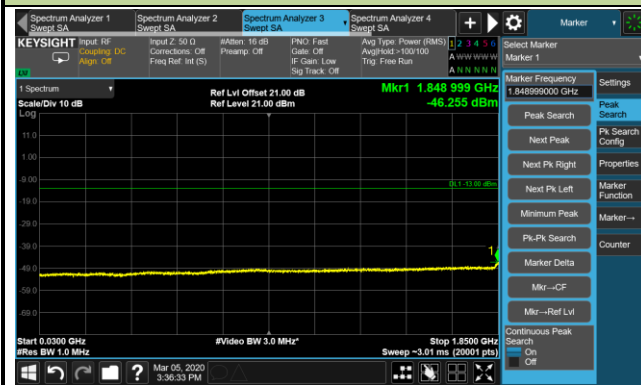
1915 ~ 27000 MHz



Channel 26640 (1910.0MHz)

30 ~ 1850 MHz

1920 ~ 27000 MHz

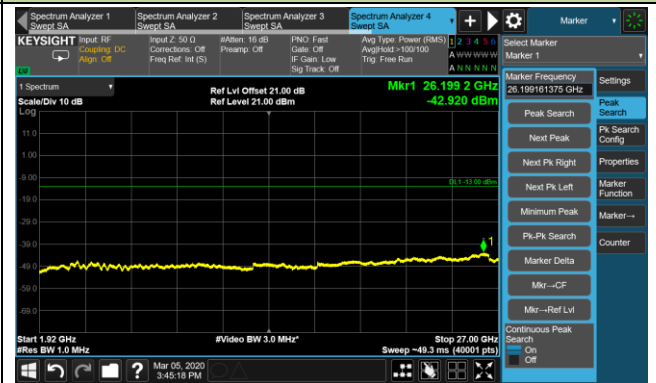
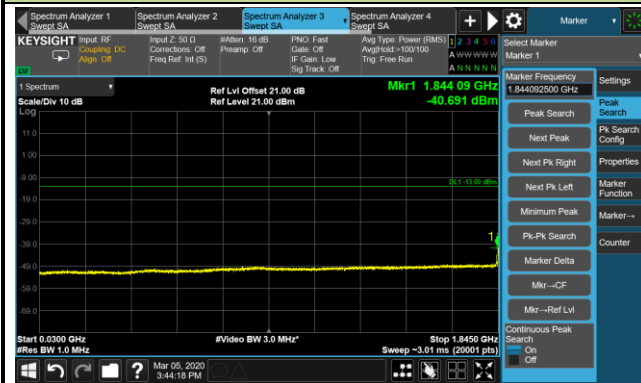


15MHz Channel Bandwidth

Channel 26115 (1857.5MHz)

30 ~ 1845 MHz

1915 ~ 27000 MHz



Channel 26365 (1882.5MHz)

30 ~ 1850 MHz

1915 ~ 27000 MHz



Channel 26615 (1907.5MHz)

30 ~ 1850 MHz

1920 ~ 27000 MHz

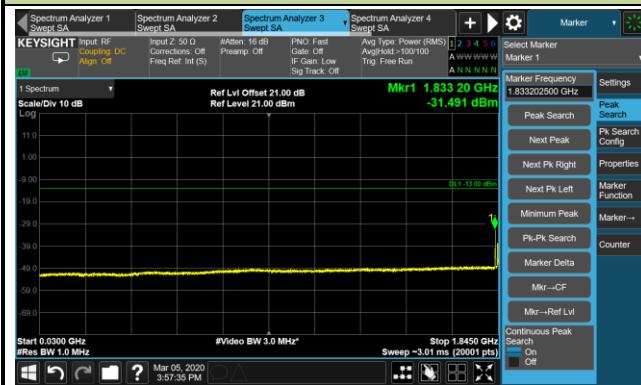


20MHz Channel Bandwidth

Channel 26140 (1860.0MHz)

30 ~ 1845 MHz

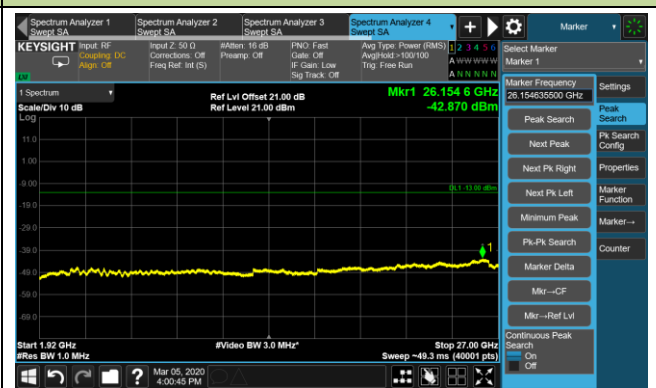
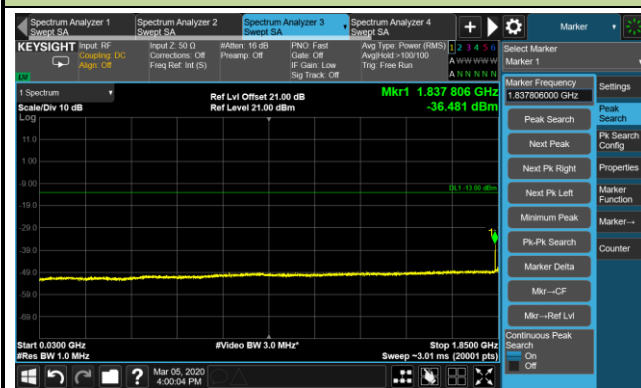
1915 ~ 27000 MHz



Channel 26365 (1882.5MHz)

30 ~ 1850 MHz

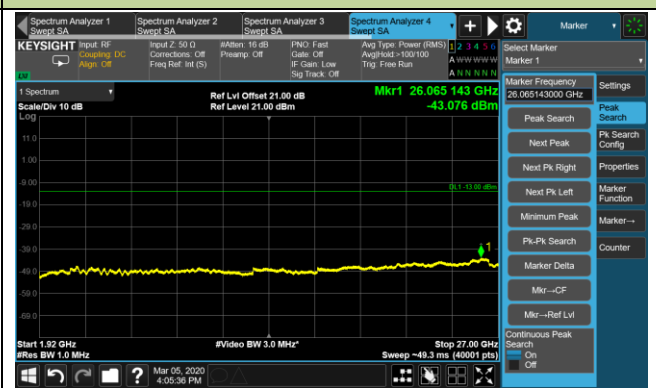
1915 ~ 27000 MHz



Channel 26590 (1905.0MHz)

30 ~ 1850 MHz

1920 ~ 27000 MHz



Product	FastMile 4G Gateway	Temperature	25°C
Test Engineer	Larry Yan	Relative Humidity	52%
Test Site	SR5	Test Date	2020/03/05
Test Band	Band 66/4	Test Mode	SISO Mode

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
QPSK						
131979	1710.7	1.4	30 ~ 1705	-46.23	≤ -13.00	Pass
			1780 ~ 27000	-42.97	≤ -13.00	Pass
132322	1745.0	1.4	30 ~ 1710	-47.60	≤ -13.00	Pass
			1780 ~ 27000	-42.75	≤ -13.00	Pass
132665	1779.3	1.4	30 ~ 1710	-47.46	≤ -13.00	Pass
			1785 ~ 27000	-42.85	≤ -13.00	Pass
131987	1711.5	3	30 ~ 1705	-46.26	≤ -13.00	Pass
			1780 ~ 27000	-43.15	≤ -13.00	Pass
132322	1745.0	3	30 ~ 1710	-48.09	≤ -13.00	Pass
			1780 ~ 27000	-42.94	≤ -13.00	Pass
132657	1778.5	3	30 ~ 1710	-47.66	≤ -13.00	Pass
			1785 ~ 27000	-42.76	≤ -13.00	Pass
131997	1712.5	5	30 ~ 1705	-46.12	≤ -13.00	Pass
			1780 ~ 27000	-42.82	≤ -13.00	Pass
132322	1745.0	5	30 ~ 1710	-47.27	≤ -13.00	Pass
			1780 ~ 27000	-42.81	≤ -13.00	Pass
132647	1777.5	5	30 ~ 1710	-47.72	≤ -13.00	Pass
			1785 ~ 27000	-43.03	≤ -13.00	Pass
132022	1715.0	10	30 ~ 1705	-46.03	≤ -13.00	Pass
			1780 ~ 27000	-43.15	≤ -13.00	Pass
132322	1745.0	10	30 ~ 1710	-47.55	≤ -13.00	Pass
			1780 ~ 27000	-42.81	≤ -13.00	Pass
132622	1775.0	10	30 ~ 1710	-42.28	≤ -13.00	Pass
			1785 ~ 27000	-42.50	≤ -13.00	Pass

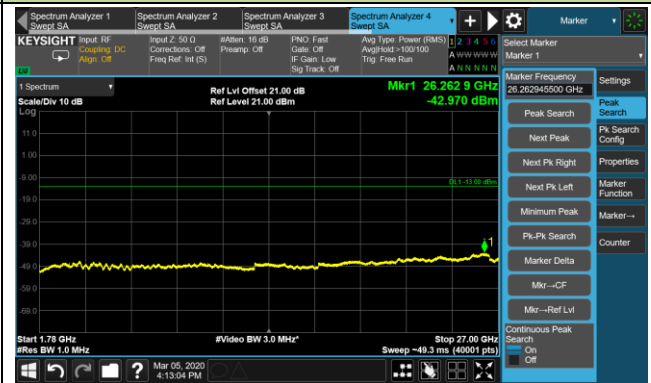
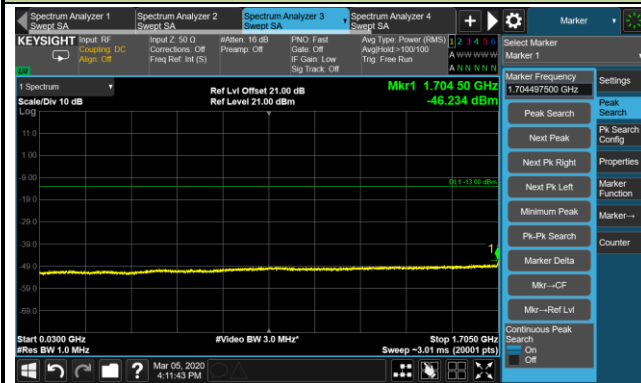
Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
132047	1717.5	15	30 ~ 1705	-43.43	≤ -13.00	Pass
			1780 ~ 27000	-42.73	≤ -13.00	Pass
132322	1745.0	15	30 ~ 1710	-47.30	≤ -13.00	Pass
			1780 ~ 27000	-42.94	≤ -13.00	Pass
132597	1772.5	15	30 ~ 1710	-47.32	≤ -13.00	Pass
			1785 ~ 27000	-39.48	≤ -13.00	Pass
132072	1720.0	20	30 ~ 1705	-43.98	≤ -13.00	Pass
			1780 ~ 27000	-43.11	≤ -13.00	Pass
132322	1745.0	20	30 ~ 1710	-43.91	≤ -13.00	Pass
			1780 ~ 27000	-43.10	≤ -13.00	Pass
132572	1770.0	20	30 ~ 1710	-47.51	≤ -13.00	Pass
			1785 ~ 27000	-39.45	≤ -13.00	Pass

1.4MHz Channel Bandwidth

Channel 131979 (1710.7MHz)

30 ~ 1705 MHz

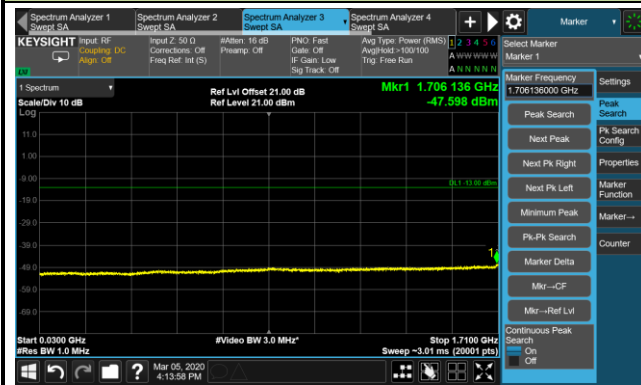
1780 ~ 27000 MHz



Channel 132322 (1745.0MHz)

30 ~ 1710 MHz

1780 ~ 27000 MHz



Channel 132665(1779.3MHz)

30 ~ 1710 MHz

1785 ~ 27000 MHz

