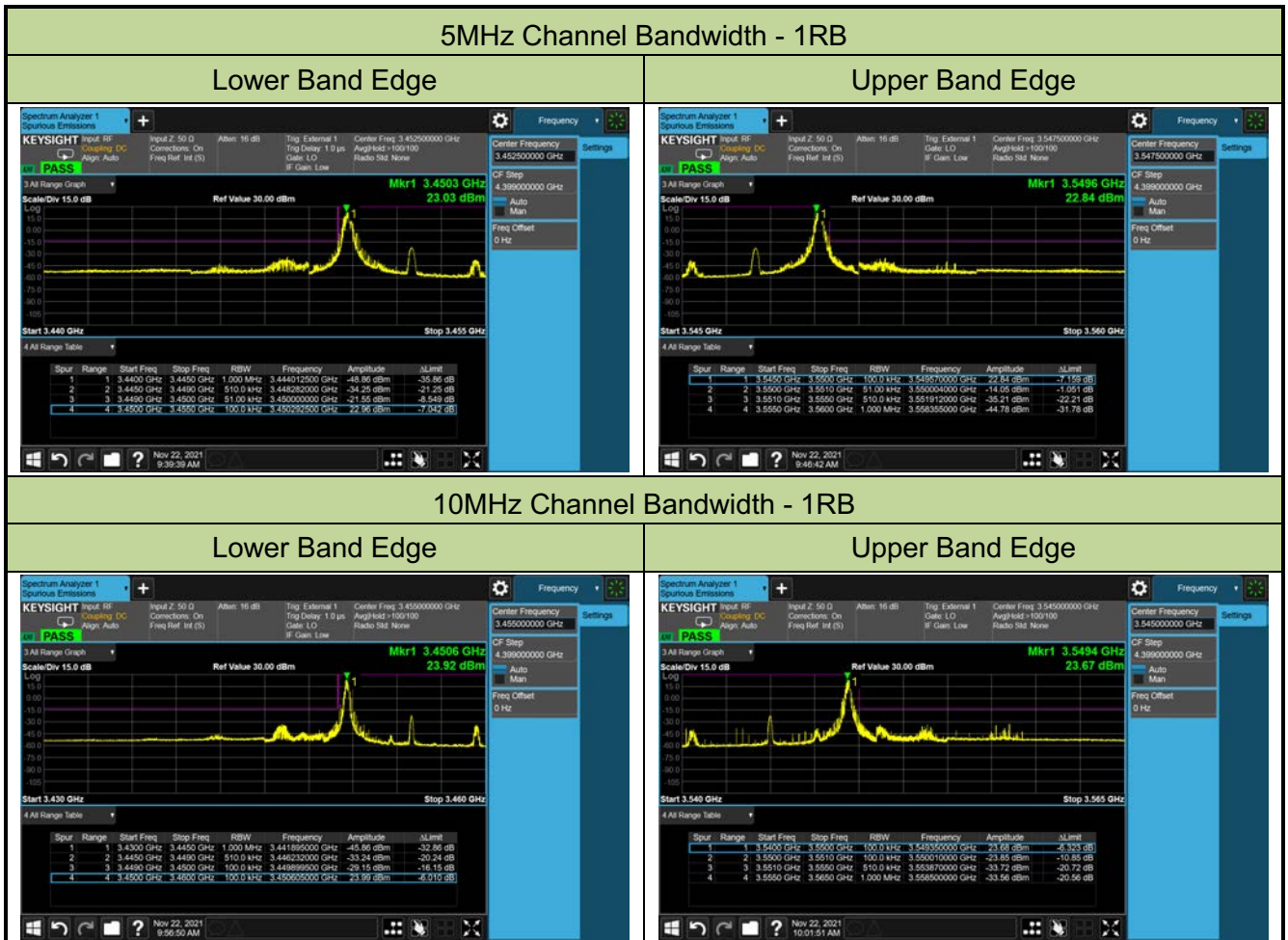
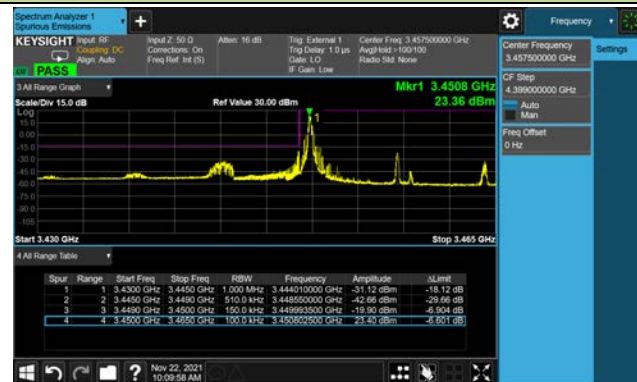


Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/22
Test Band	LTE Band 42		



15MHz Channel Bandwidth - 1RB

Lower Band Edge



Upper Band Edge



20MHz Channel Bandwidth - 1RB

Lower Band Edge



Upper Band Edge



5MHz Channel Bandwidth - Full RB

Lower Band Edge



Upper Band Edge



10MHz Channel Bandwidth - Full RB

Lower Band Edge



Upper Band Edge



15MHz Channel Bandwidth - Full RB

Lower Band Edge



Upper Band Edge



20MHz Channel Bandwidth - Full RB

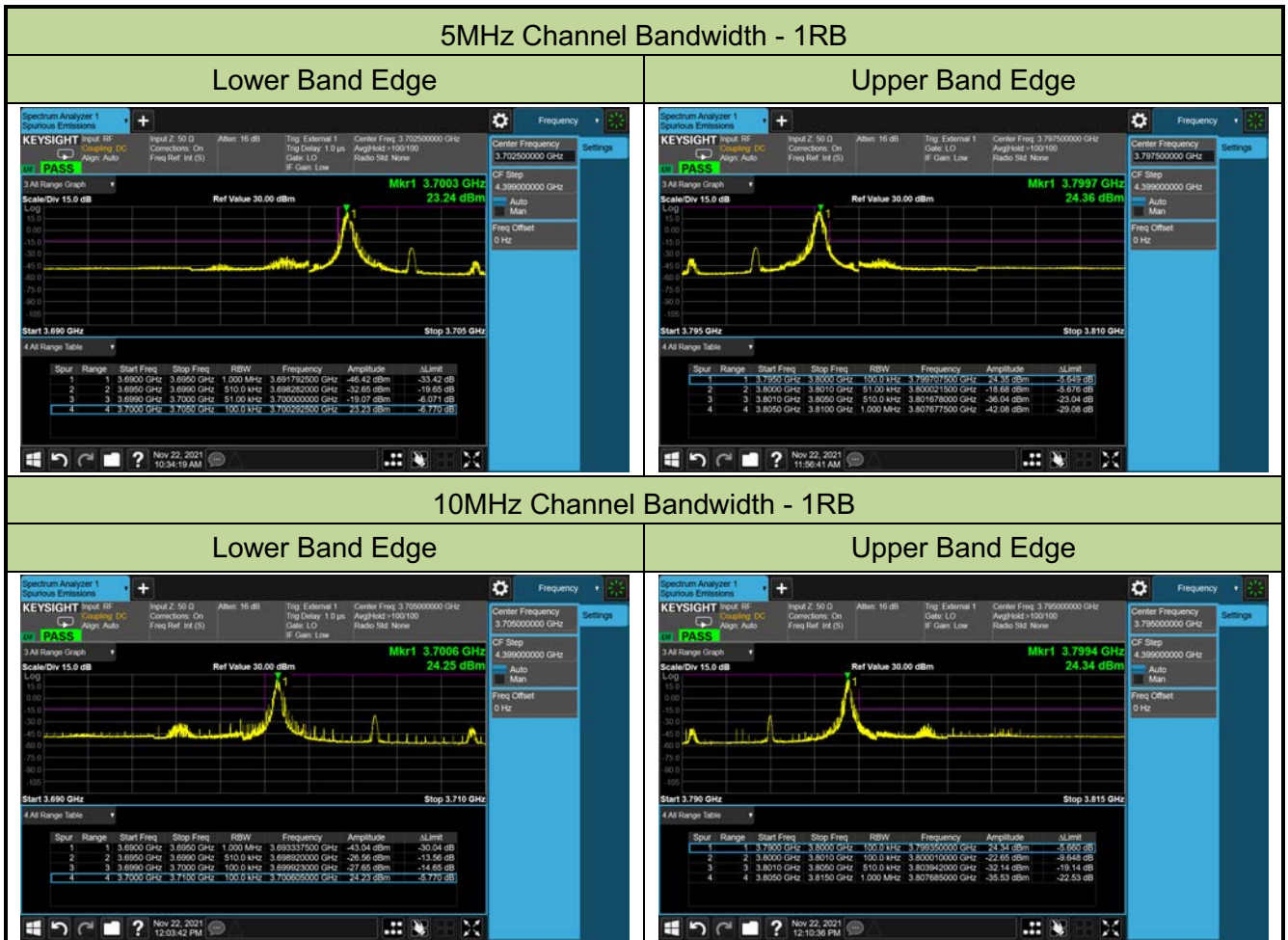
Lower Band Edge



Upper Band Edge

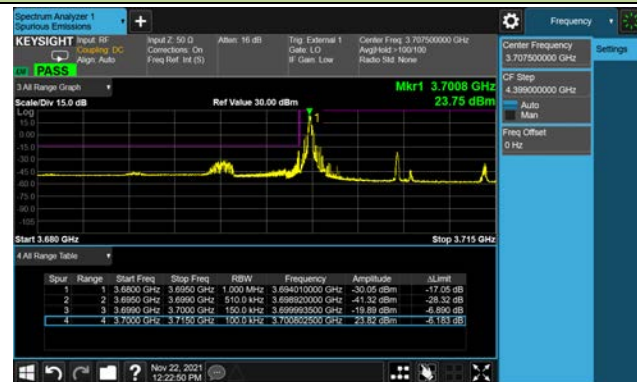


Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/22
Test Band	LTE Band 43		

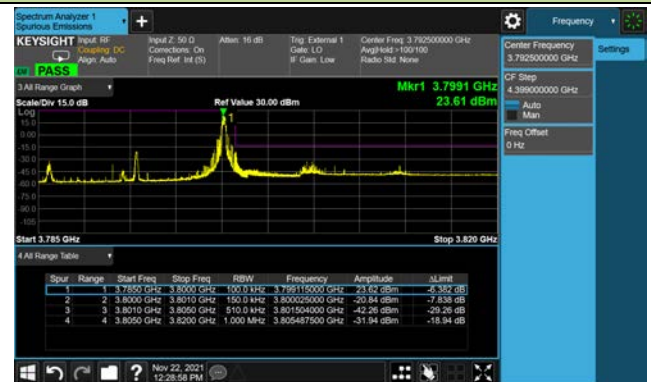


15MHz Channel Bandwidth - 1RB

Lower Band Edge



Upper Band Edge



20MHz Channel Bandwidth - 1RB

Lower Band Edge



Upper Band Edge



5MHz Channel Bandwidth - Full RB

Lower Band Edge



Upper Band Edge



10MHz Channel Bandwidth - Full RB

Lower Band Edge

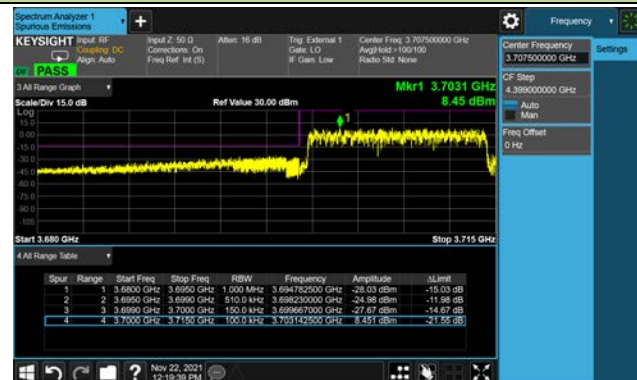


Upper Band Edge



15MHz Channel Bandwidth - Full RB

Lower Band Edge

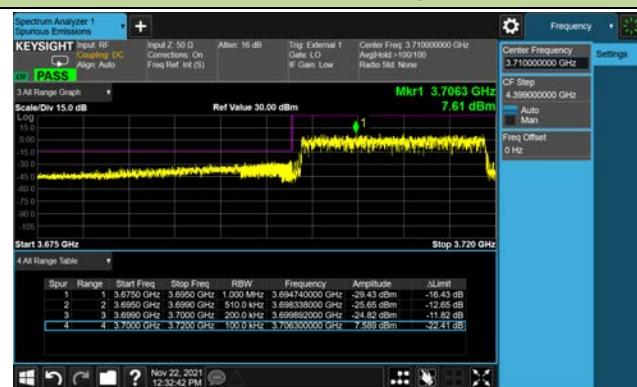


Upper Band Edge

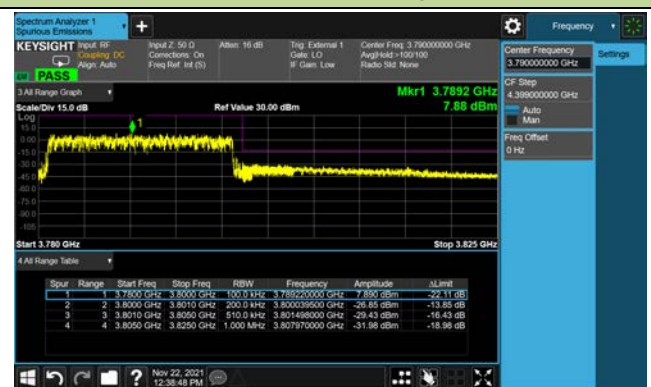


20MHz Channel Bandwidth - Full RB

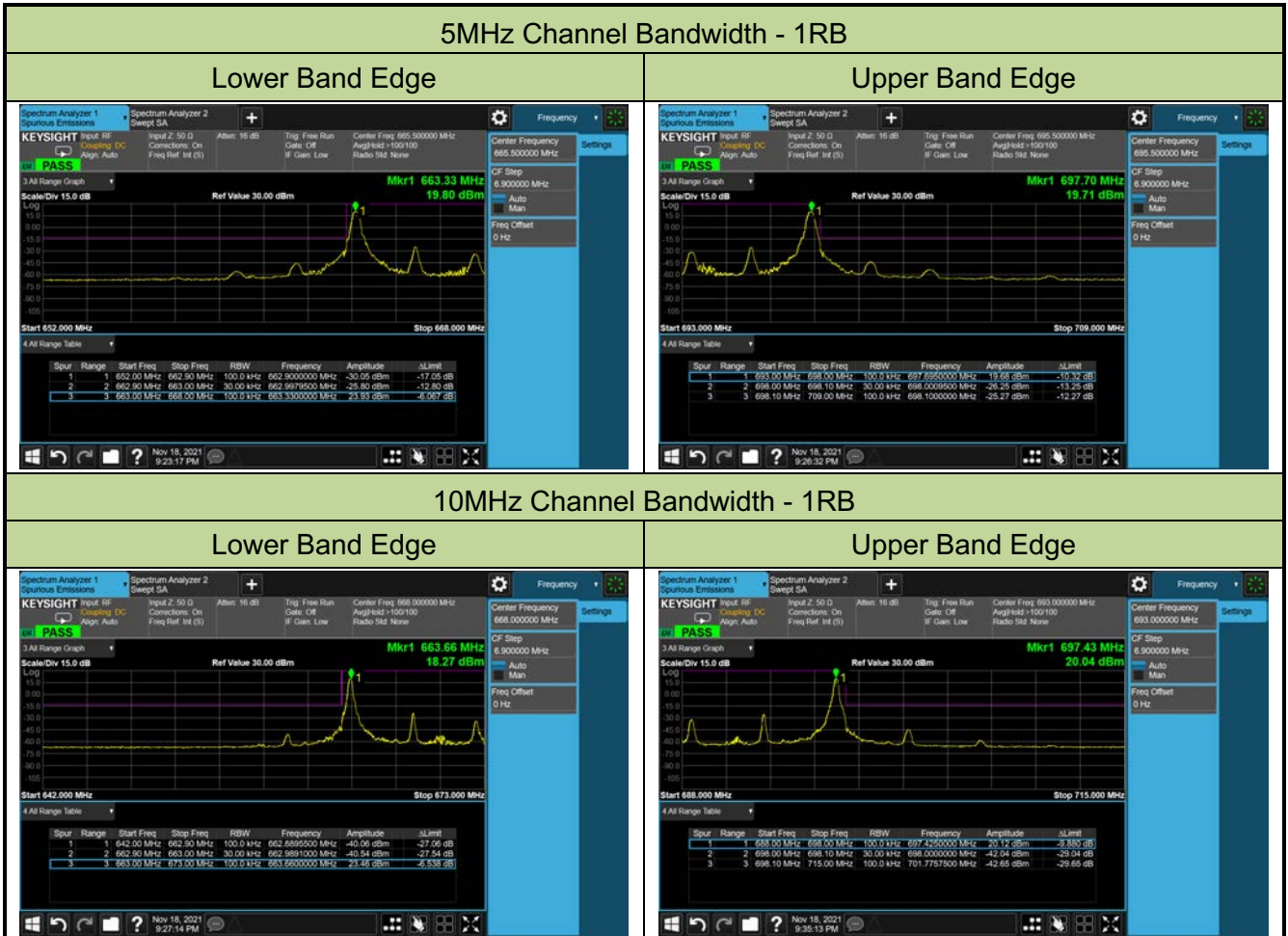
Lower Band Edge



Upper Band Edge

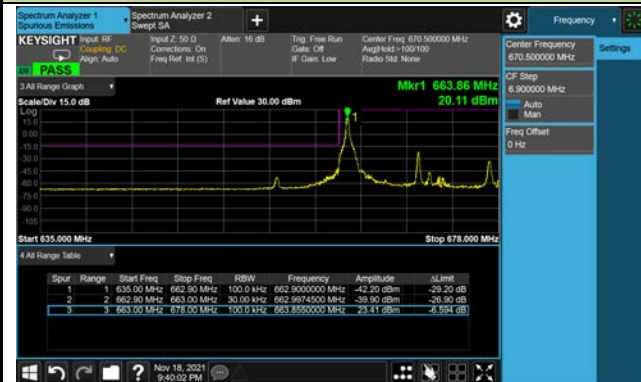


Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/18
Test Band	LTE Band 71_QPSK		

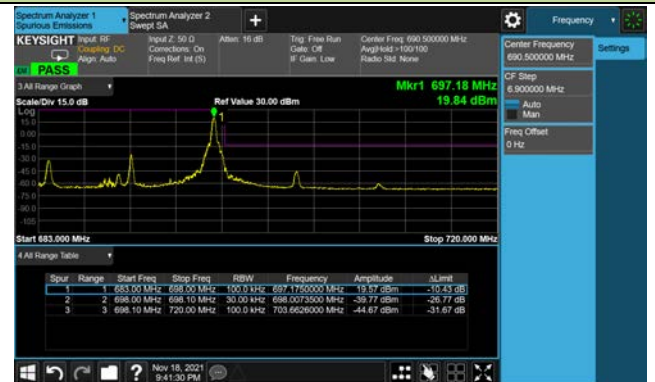


15MHz Channel Bandwidth - 1RB

Lower Band Edge

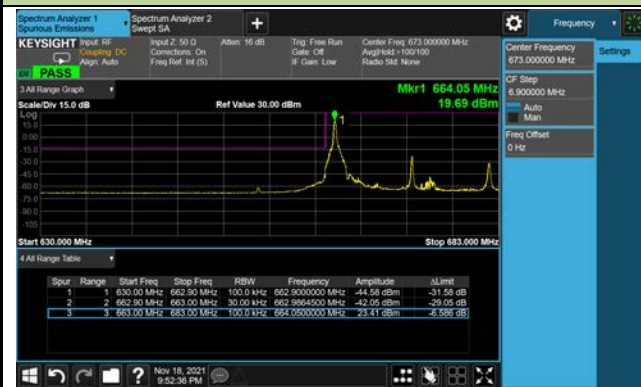


Upper Band Edge

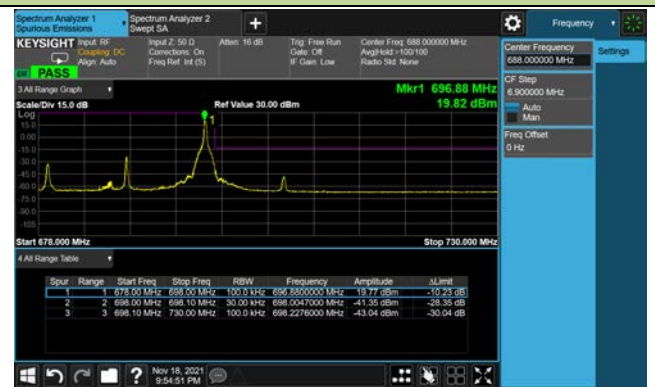


20MHz Channel Bandwidth - 1RB

Lower Band Edge



Upper Band Edge



5MHz Channel Bandwidth - Full RB

Lower Band Edge

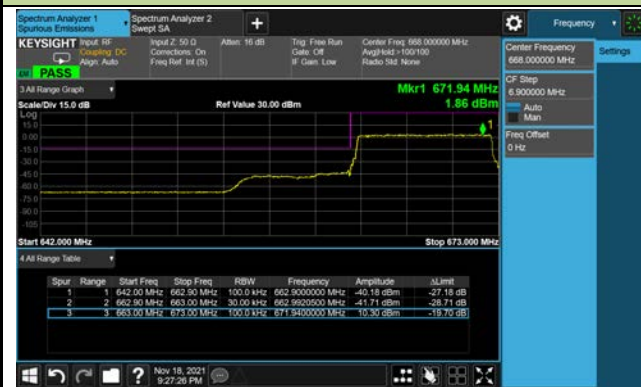


Upper Band Edge



10MHz Channel Bandwidth - Full RB

Lower Band Edge



Upper Band Edge



15MHz Channel Bandwidth - Full RB

Lower Band Edge

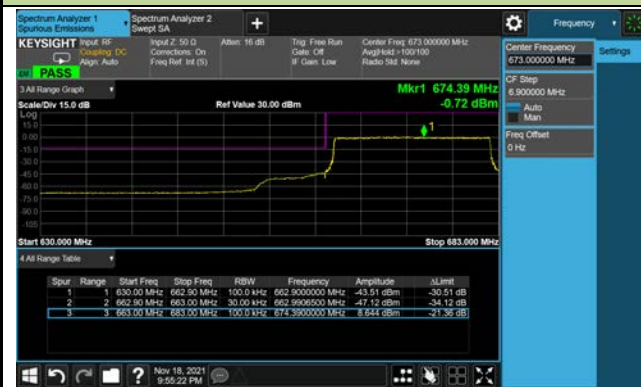


Upper Band Edge

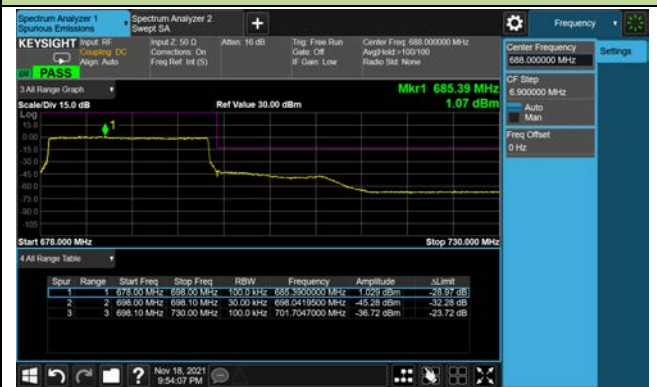


20MHz Channel Bandwidth - Full RB

Lower Band Edge



Upper Band Edge



5.6. Peak to Average Ratio Measurement

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.

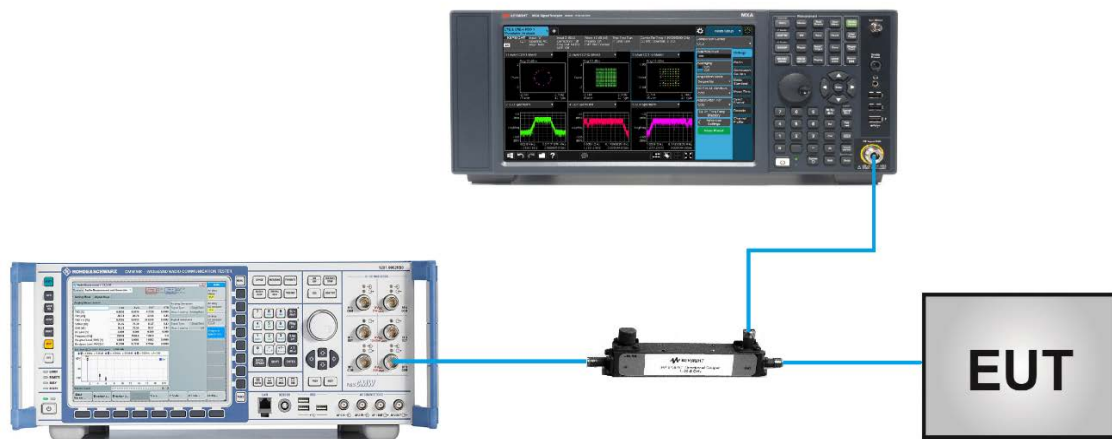
5.6.2. Test Procedure

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%

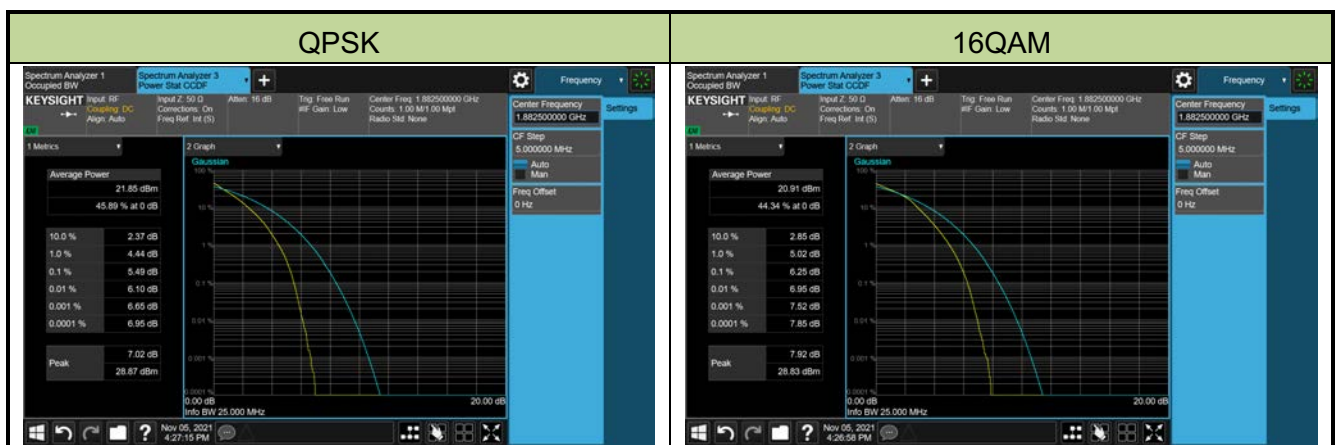
5.6.4. Test Setup



5.6.5. Test Result

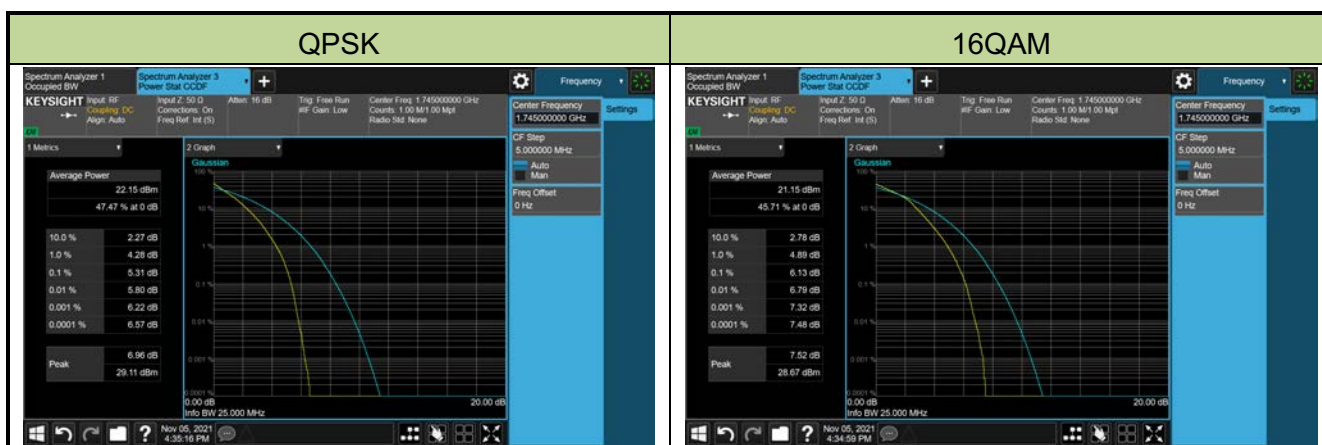
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/05
Test Band	Band 2/25		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
26365	1882.5	20	5.49	≤ 13.00	Pass
16QAM					
26365	1882.5	20	6.25	≤ 13.00	Pass



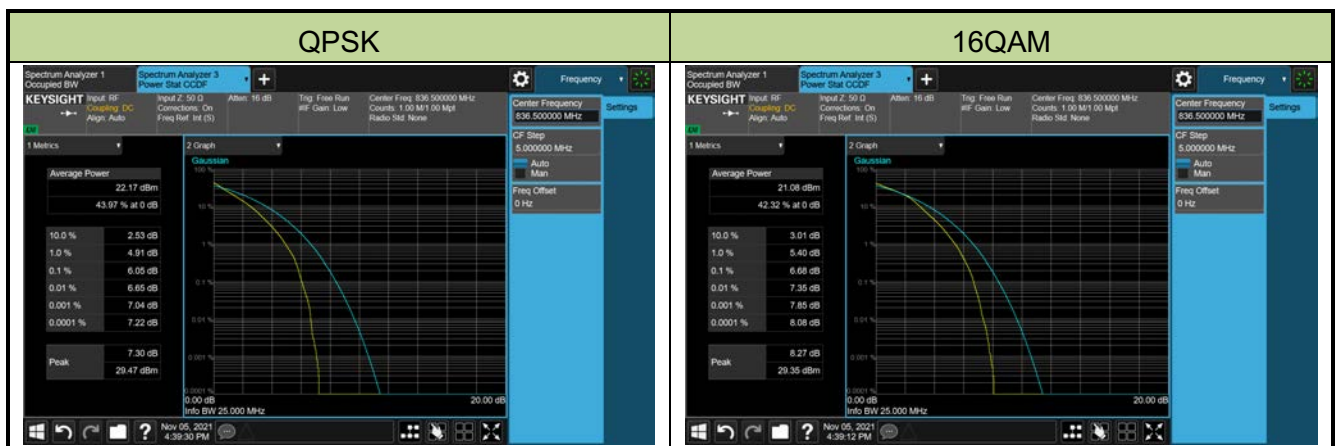
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/05
Test Band	Band 4/66		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
132322	1745.0	20	5.31	≤ 13.00	Pass
16QAM					
132322	1745.0	20	6.13	≤ 13.00	Pass



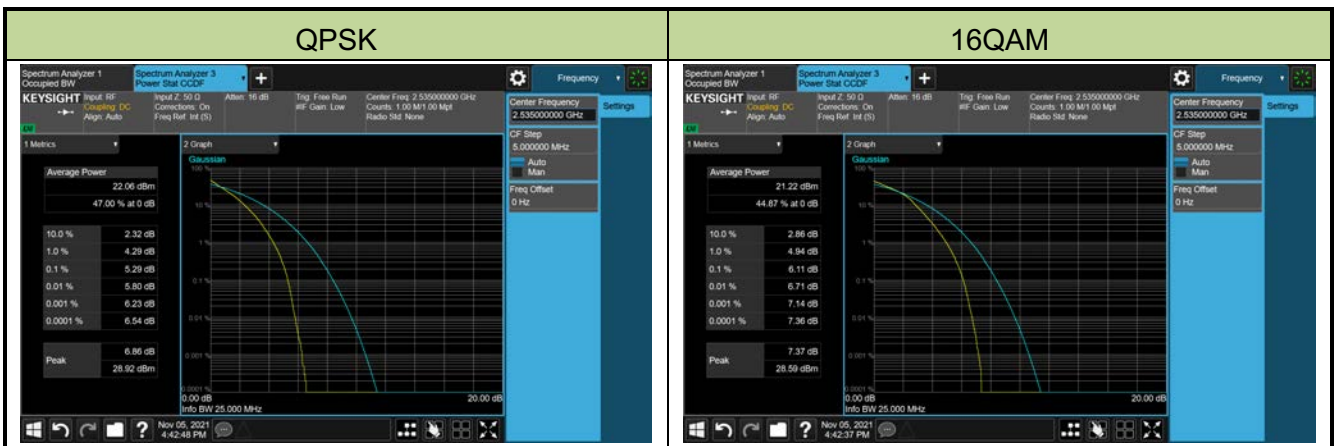
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/05
Test Band	Band 5/26		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
20525	836.5	10	6.05	≤ 13.00	Pass
16QAM					
20525	836.5	10	6.68	≤ 13.00	Pass



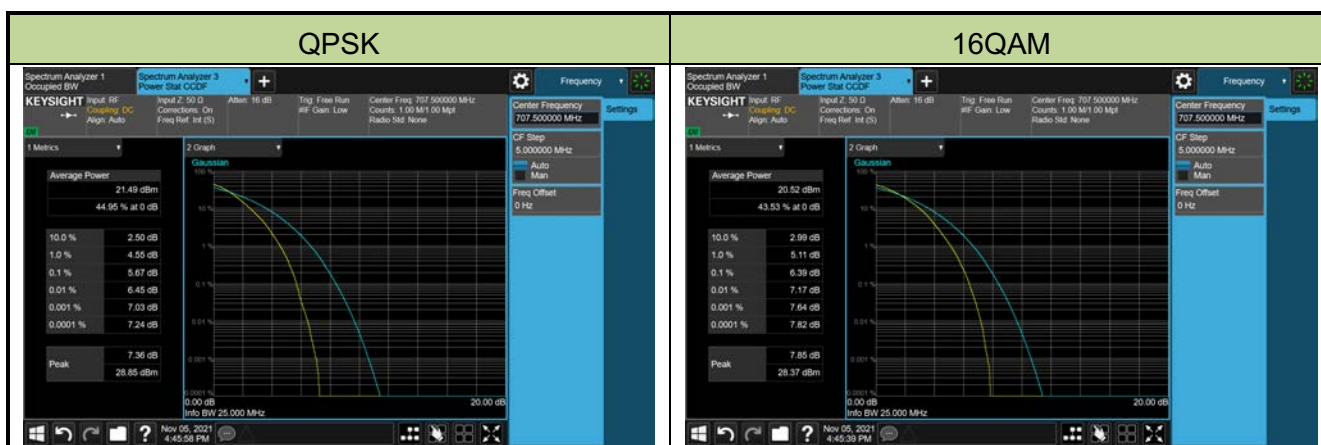
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/05
Test Band	LTE Band 7		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
21100	2535.0	20	5.29	≤ 13.00	Pass
16QAM					
21100	2535.0	20	6.11	≤ 13.00	Pass



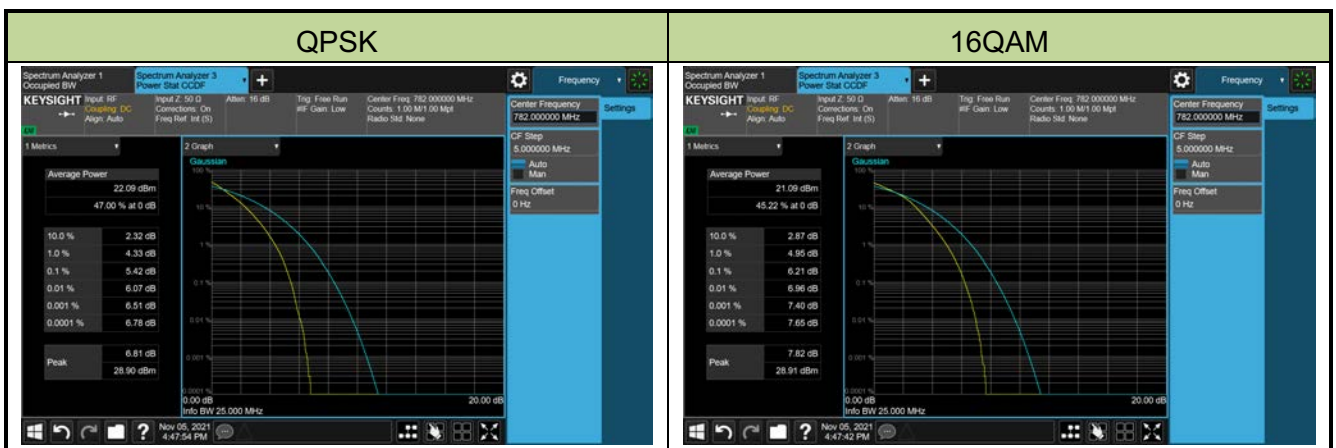
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/05
Test Band	LTE Band 12		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
26365	707.5	10	5.67	≤ 13.00	Pass
16QAM					
26365	707.5	10	6.39	≤ 13.00	Pass



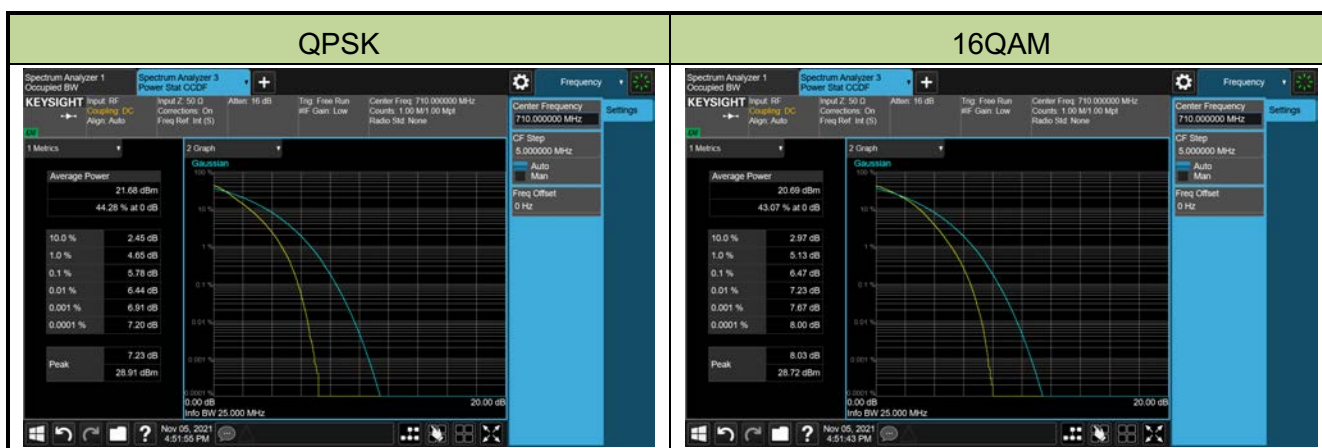
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/05
Test Band	LTE Band 13		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
132322	782	10	5.42	≤ 13.00	Pass
16QAM					
132322	782	10	6.21	≤ 13.00	Pass



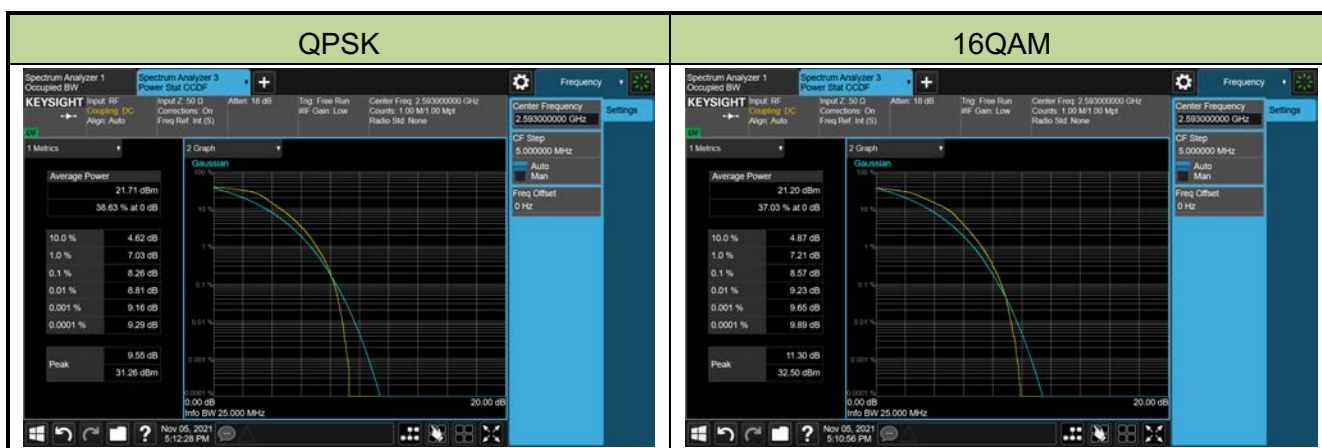
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/05
Test Band	LTE Band 17		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
23790	710.0	10	5.78	≤ 13.00	Pass
16QAM					
23790	710.0	10	6.47	≤ 13.00	Pass



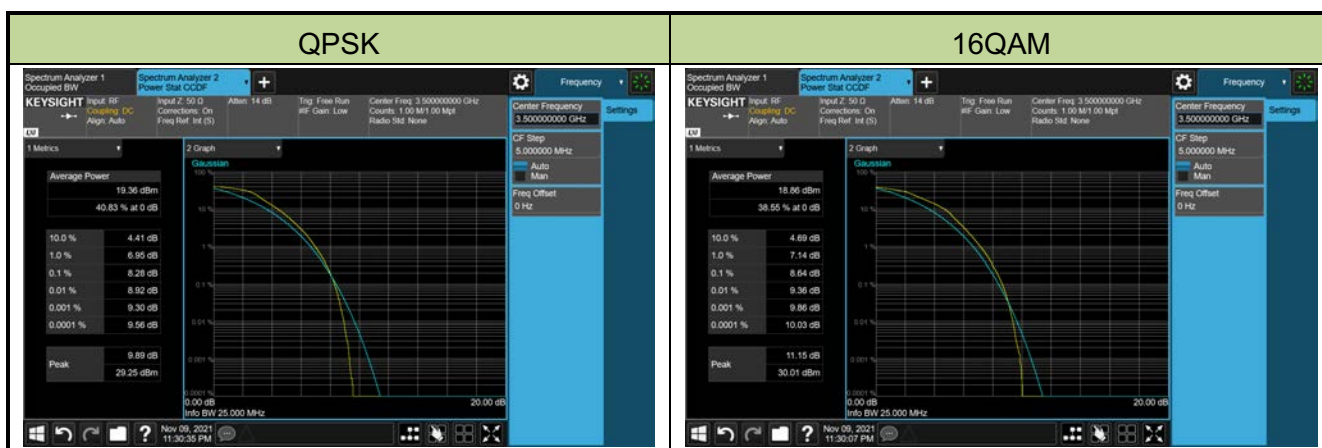
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/05
Test Band	LTE Band 41		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
40620	2593.0	20	8.26	≤ 13.00	Pass
16QAM					
40620	2593.0	20	8.57	≤ 13.00	Pass



Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/09
Test Band	LTE Band 42		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
42590	3500.0	20	8.28	≤ 13.00	Pass
16QAM					
42590	3500.0	20	8.64	≤ 13.00	Pass



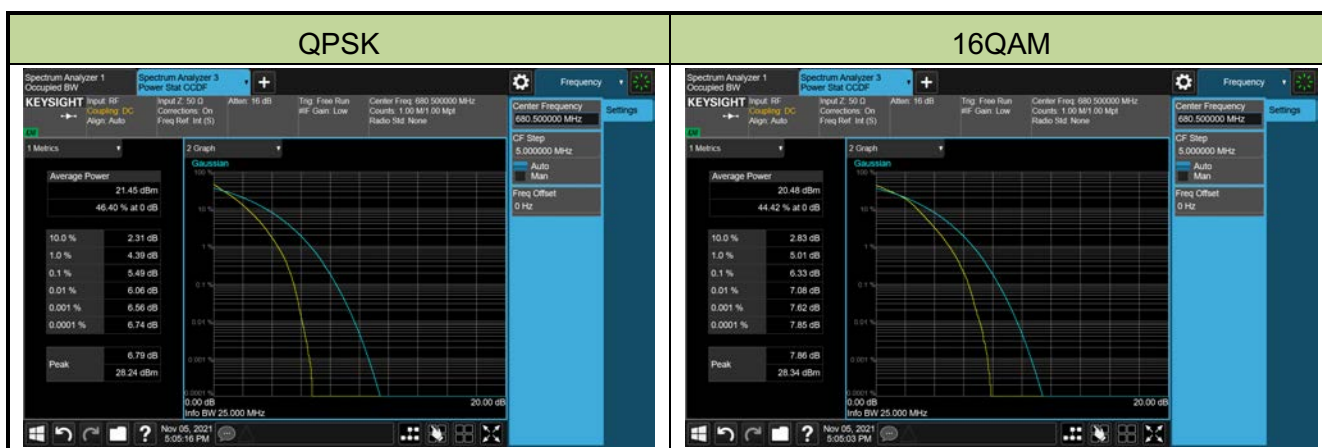
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/09
Test Band	LTE Band 43		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
45090	3750.0	20	6.65	≤ 13.00	Pass
16QAM					
45090	3750.0	20	8.94	≤ 13.00	Pass



Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/05
Test Band	LTE Band 71		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
133297	680.5	20	5.49	≤ 13.00	Pass
16QAM					
133297	680.5	20	6.33	≤ 13.00	Pass



5.7. Conducted Spurious Emission Measurement

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, 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

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 $\geq 3 \times$ 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	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/15
Test Band	LTE Band 2/25_1RB_QPSK		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
26047	1850.7	1.4	30 ~ 20000	-35.38	≤ -13.00	Pass
26365	1882.5	1.4	30 ~ 20000	-35.13	≤ -13.00	Pass
26683	1914.3	1.4	30 ~ 20000	-35.93	≤ -13.00	Pass
26055	1851.5	3	30 ~ 20000	-35.14	≤ -13.00	Pass
26365	1882.5	3	30 ~ 20000	-35.73	≤ -13.00	Pass
26675	1913.5	3	30 ~ 20000	-35.51	≤ -13.00	Pass
26065	1852.5	5	30 ~ 20000	-35.07	≤ -13.00	Pass
26365	1882.5	5	30 ~ 20000	-35.72	≤ -13.00	Pass
26665	1912.5	5	30 ~ 20000	-34.86	≤ -13.00	Pass
16390	1855.0	10	30 ~ 20000	-36.04	≤ -13.00	Pass
26365	1882.5	10	30 ~ 20000	-35.85	≤ -13.00	Pass
26640	1910.0	10	30 ~ 20000	-34.78	≤ -13.00	Pass
26115	1857.5	15	30 ~ 20000	-28.13	≤ -13.00	Pass
26365	1882.5	15	30 ~ 20000	-34.16	≤ -13.00	Pass
26615	1907.5	15	30 ~ 20000	-35.96	≤ -13.00	Pass
26140	1860.0	20	30 ~ 20000	-34.12	≤ -13.00	Pass
26365	1882.5	20	30 ~ 20000	-32.67	≤ -13.00	Pass
26590	1905.0	20	30 ~ 20000	-35.87	≤ -13.00	Pass

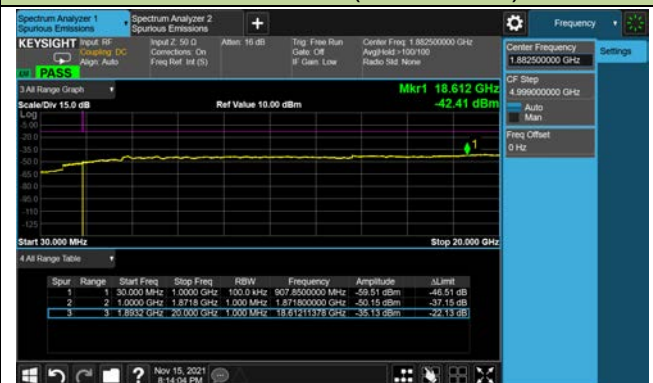
Note: Spurious emissions within 9kHz – 30MHz were found more than 20dB below limit line.

1.4MHz Channel Bandwidth

Channel 26047 (1850.7MHz)



Channel 26365 (1882.5MHz)

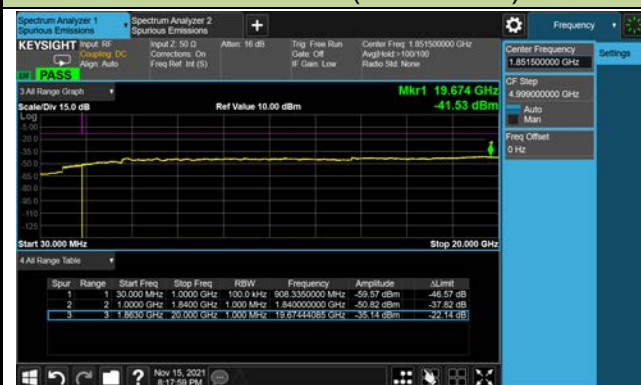


Channel 26683 (1914.3MHz)



3MHz Channel Bandwidth

Channel 26055 (1851.5MHz)



Channel 26365 (1882.5MHz)



Channel 26675 (1913.5MHz)



5MHz Channel Bandwidth

Channel 26065 (1852.5MHz)



Channel 26365 (1882.5MHz)



Channel 26665 (1912.5MHz)



10MHz Channel Bandwidth

Channel 16390 (1855MHz)



Channel 26365 (1882.5MHz)



Channel 26640 (1910MHz)



15MHz Channel Bandwidth

Channel 26115 (1857MHz)



Channel 26365 (1882.5MHz)



Channel 26615 (1907.5MHz)



20MHz Channel Bandwidth

Channel 26140 (1860MHz)



Channel 26365 (1882.5MHz)



Channel 26590 (1905MHz)



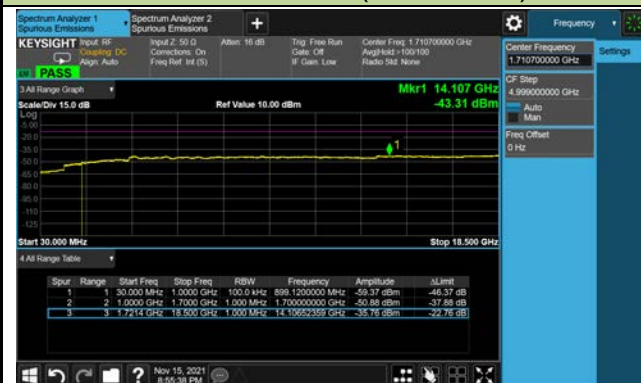
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/15
Test Band	LTE Band 4/66_1RB_QPSK		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
131979	1710.7	1.4	30 ~ 20000	-35.76	≤ -13.00	Pass
132322	1745.0	1.4	30 ~ 20000	-36.55	≤ -13.00	Pass
132665	1779.3	1.4	30 ~ 20000	-36.92	≤ -13.00	Pass
131987	1711.5	3	30 ~ 20000	-35.83	≤ -13.00	Pass
132322	1745.0	3	30 ~ 20000	-36.46	≤ -13.00	Pass
132657	1778.5	3	30 ~ 20000	-35.18	≤ -13.00	Pass
131997	1712.5	5	30 ~ 20000	-37.02	≤ -13.00	Pass
132322	1745.0	5	30 ~ 20000	-36.61	≤ -13.00	Pass
132647	1777.5	5	30 ~ 20000	-37.34	≤ -13.00	Pass
132022	1715.0	10	30 ~ 20000	-36.53	≤ -13.00	Pass
132322	1745.0	10	30 ~ 20000	-36.21	≤ -13.00	Pass
132622	1775.0	10	30 ~ 20000	-36.11	≤ -13.00	Pass
132047	1717.5	15	30 ~ 20000	-34.61	≤ -13.00	Pass
132322	1745.0	15	30 ~ 20000	-34.93	≤ -13.00	Pass
132597	1772.5	15	30 ~ 20000	-35.79	≤ -13.00	Pass
132072	1720.0	20	30 ~ 20000	-32.62	≤ -13.00	Pass
132322	1745.0	20	30 ~ 20000	-33.62	≤ -13.00	Pass
132572	1770.0	20	30 ~ 20000	-36.38	≤ -13.00	Pass

Note: Spurious emissions within 9kHz – 30MHz were found more than 20dB below limit line.

1.4MHz Channel Bandwidth

Channel 131979 (1710.7MHz)



Channel 132322 (1745MHz)



Channel 132665 (1779.3MHz)



3MHz Channel Bandwidth

Channel 131987 (1711.5MHz)



Channel 132322 (1745MHz)



Channel 132657 (1778.5MHz)



5MHz Channel Bandwidth

Channel 131997 (1712.5MHz)



Channel 132322 (1745MHz)



Channel 132647 (1777.5MHz)

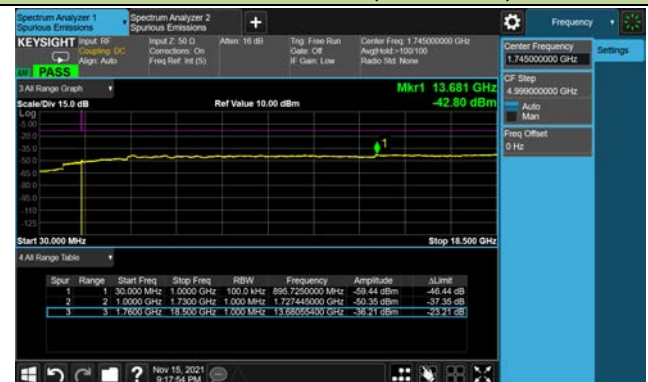


10MHz Channel Bandwidth

Channel 132022 (1715MHz)



Channel 132322 (1745MHz)



Channel 132622 (1775MHz)

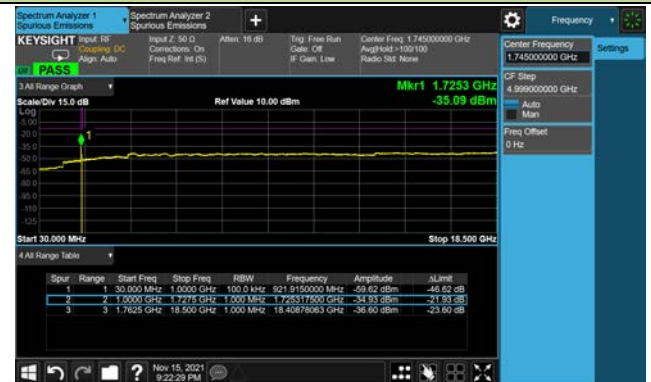


15MHz Channel Bandwidth

Channel 132047 (1717.5MHz)



Channel 132322 (1745MHz)



Channel 132597 (1772.5Hz)

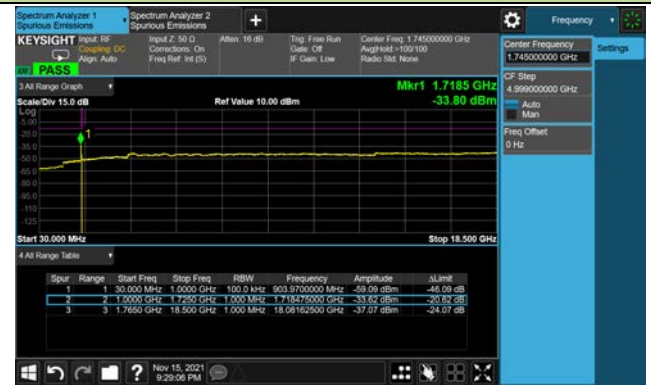


20MHz Channel Bandwidth

Channel 132072 (1720MHz)



Channel 132322 (1745MHz)



Channel 132572 (1770Hz)



Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/15
Test Band	LTE Band 5/26_1RB_QPSK		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
26797	824.7	1.4	30 ~ 10000	-36.83	≤ -13.00	Pass
26915	836.5	1.4	30 ~ 10000	-37.20	≤ -13.00	Pass
27033	848.3	1.4	30 ~ 10000	-37.16	≤ -13.00	Pass
26805	825.5	3	30 ~ 10000	-37.37	≤ -13.00	Pass
26915	836.5	3	30 ~ 10000	-37.11	≤ -13.00	Pass
27025	847.5	3	30 ~ 10000	-37.24	≤ -13.00	Pass
26815	826.5	5	30 ~ 10000	-37.80	≤ -13.00	Pass
26915	836.5	5	30 ~ 10000	-37.53	≤ -13.00	Pass
27015	846.5	5	30 ~ 10000	-37.69	≤ -13.00	Pass
26840	829.0	10	30 ~ 10000	-37.79	≤ -13.00	Pass
26915	836.5	10	30 ~ 10000	-37.34	≤ -13.00	Pass
26990	844.0	10	30 ~ 10000	-38.06	≤ -13.00	Pass
26865	831.5	15	30 ~ 10000	-37.66	≤ -13.00	Pass
26915	836.5	15	30 ~ 10000	-37.24	≤ -13.00	Pass
26965	841.5	15	30 ~ 10000	-37.77	≤ -13.00	Pass

Note: Spurious emissions within 9kHz – 30MHz were found more than 20dB below limit line.

1.4MHz Channel Bandwidth

Channel 26697 (814.7MHz)



Channel 25865 (831.5MHz)



Channel 27033 (848.3MHz)



3MHz Channel Bandwidth

Channel 26705 (815.5MHz)



Channel 26865 (831.5MHz)



Channel 27025 (847.5MHz)

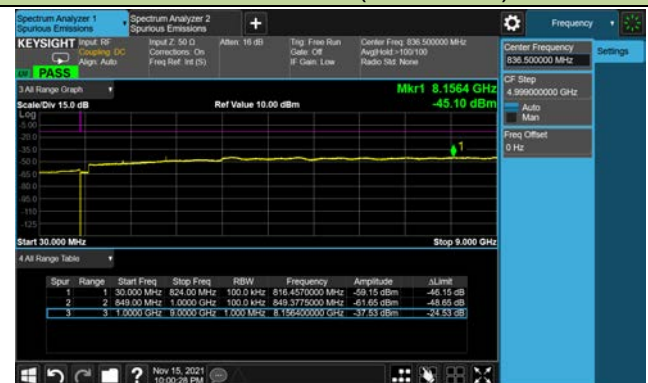


5MHz Channel Bandwidth

Channel 26715 (816.5MHz)



Channel 26865 (831.5MHz)



Channel 27015 (846.5MHz)



10MHz Channel Bandwidth

Channel 26740 (819MHz)



Channel 26865 (831.5MHz)



Channel 26990 (844MHz)



15MHz Channel Bandwidth

Channel 26865 (831.5MHz)



Channel 26915 (836.5MHz)



Channel 26965 (841.5MHz)



Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/15
Test Band	LTE Band 7_1RB_QPSK		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
20775	2502.5	5	30 ~ 26000	-31.60	≤ -25.00	Pass
21100	2535.0	5	30 ~ 26000	-31.91	≤ -25.00	Pass
21425	2567.5	5	30 ~ 26000	-32.36	≤ -25.00	Pass
20800	2505.0	10	30 ~ 26000	-33.26	≤ -25.00	Pass
21100	2535.0	10	30 ~ 26000	-33.19	≤ -25.00	Pass
21400	2565.0	10	30 ~ 26000	-33.40	≤ -25.00	Pass
20825	2507.5	15	30 ~ 26000	-32.71	≤ -25.00	Pass
21100	2535.0	15	30 ~ 26000	-32.94	≤ -25.00	Pass
21375	2562.5	15	30 ~ 26000	-33.28	≤ -25.00	Pass
20850	2510.0	20	30 ~ 26000	-33.40	≤ -25.00	Pass
21100	2535.0	20	30 ~ 26000	-33.03	≤ -25.00	Pass
21350	2560.0	20	30 ~ 26000	-32.78	≤ -25.00	Pass

Note: Spurious emissions within 9kHz – 30MHz were found more than 20dB below limit line.

5MHz Channel Bandwidth

Channel 20775 (2502.5MHz)/



Channel 21100 (2535MHz)



Channel 21425 (2567.5MHz)



10MHz Channel Bandwidth

Channel 20800 (2505MHz)



Channel 21100 (2535MHz)



Channel 21400 (2565MHz)

