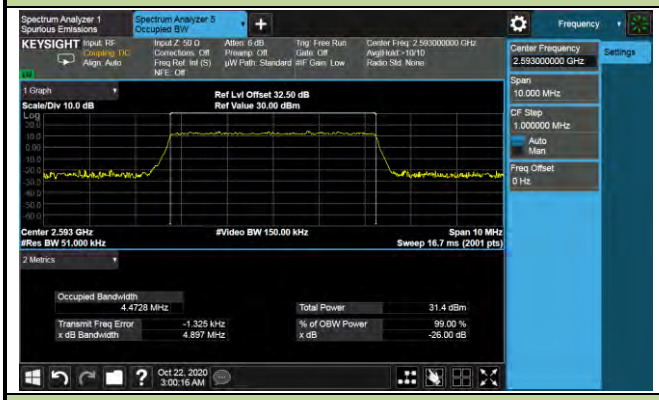
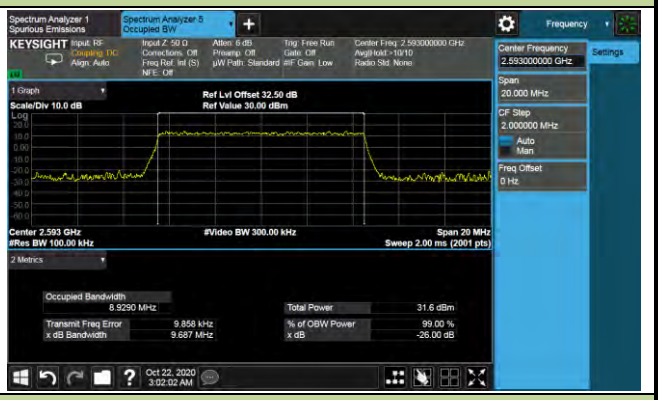
99% Bandwidth - QPSK

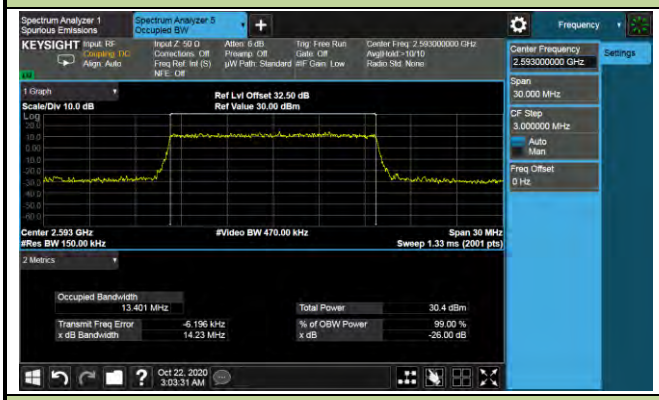
5MHz Channel Bandwidth



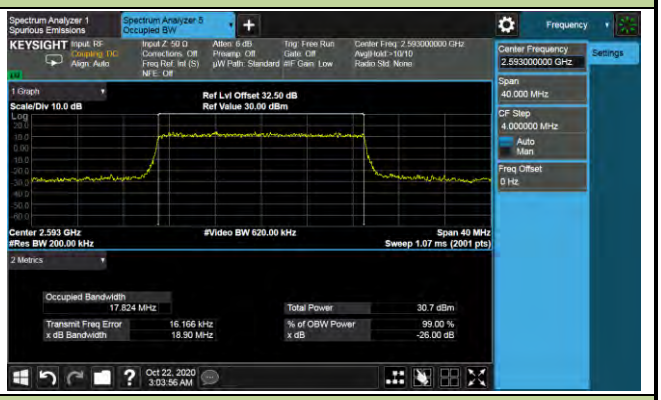
10MHz Channel Bandwidth



15MHz Channel Bandwidth

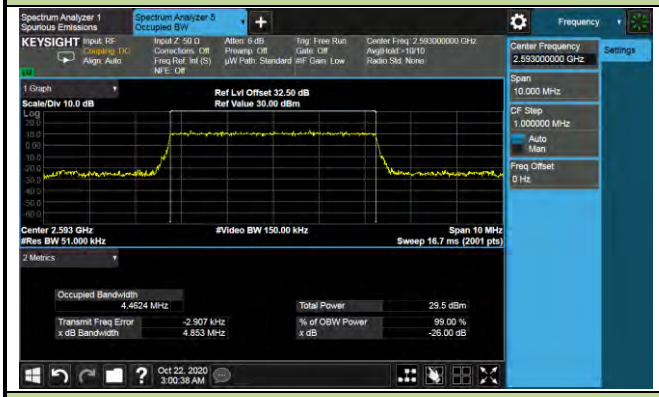


20MHz Channel Bandwidth

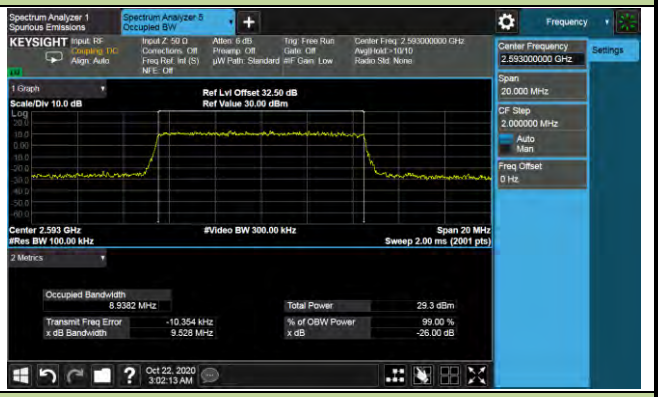


99% Bandwidth - 16QAM

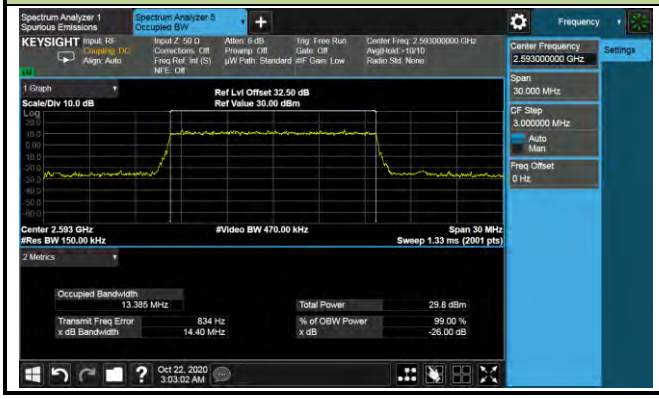
5MHz Channel Bandwidth



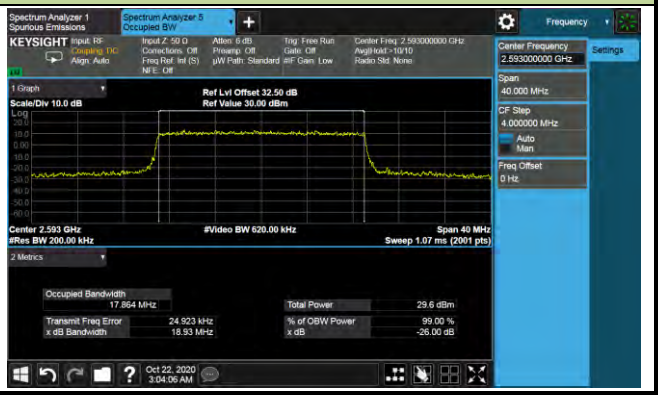
10MHz Channel Bandwidth



15MHz Channel Bandwidth

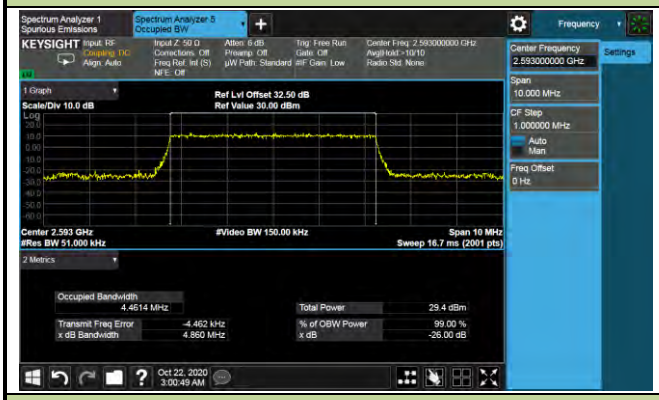


20MHz Channel Bandwidth

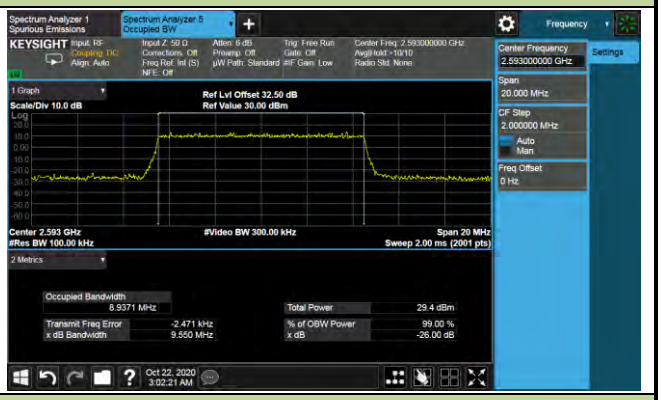


99% Bandwidth - 64QAM

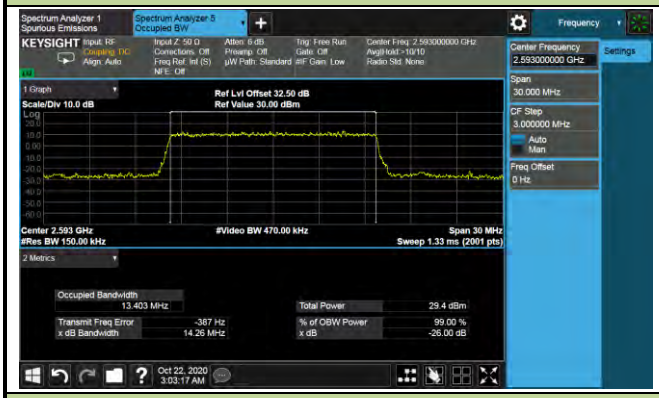
5MHz Channel Bandwidth



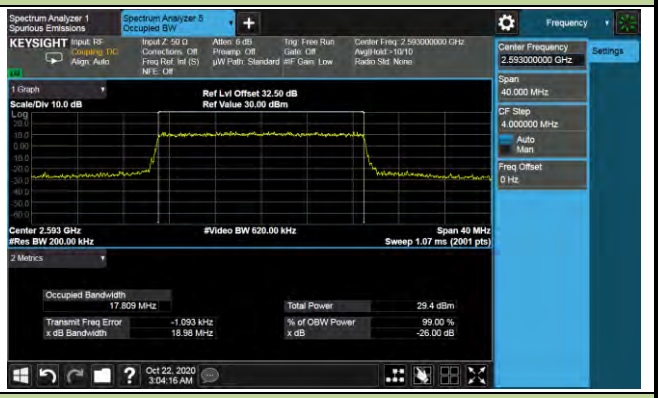
10MHz Channel Bandwidth



15MHz Channel Bandwidth

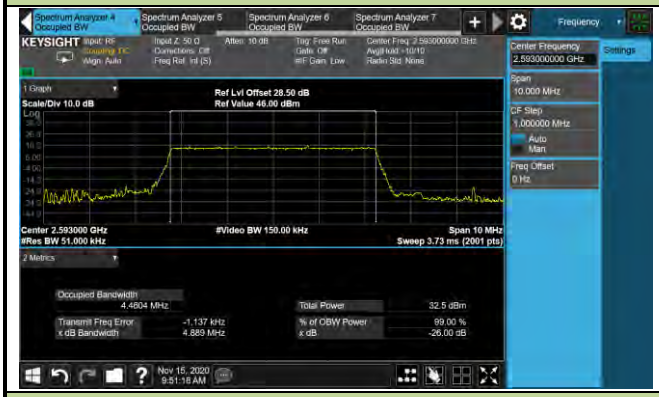


20MHz Channel Bandwidth

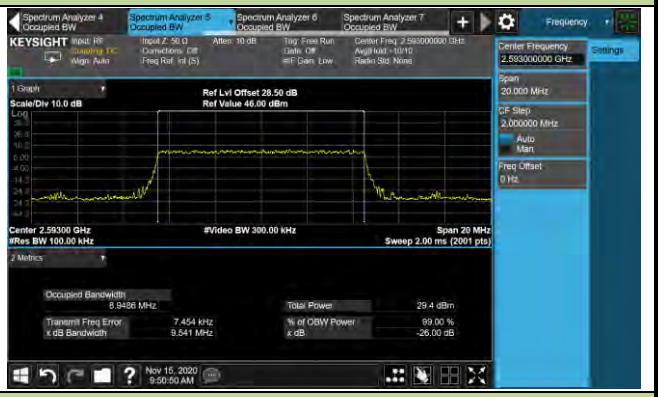


99% Bandwidth - 256QAM

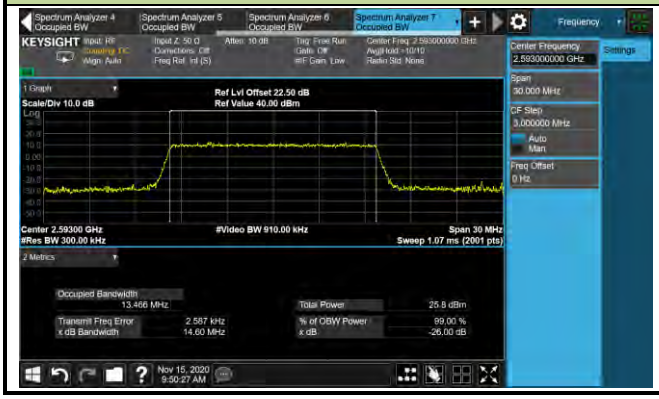
5MHz Channel Bandwidth



10MHz Channel Bandwidth



15MHz Channel Bandwidth



20MHz Channel Bandwidth

Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-SR6
Test Engineer	Candy Luo	Test Date	2020/10/15 ~ 2020/11/15
Test Band	LTE Band 71		

Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
133297	680.5	5	4.48
		10	8.94
		15	13.39
		20	17.84
16QAM			
133297	680.5	5	4.47
		10	8.93
		15	13.41
		20	17.88
64QAM			
133297	680.5	5	4.47
		10	8.94
		15	13.39
		20	17.90
256QAM			
133297	680.5	5	4.47
		10	8.92
		15	13.38
		20	17.83

99% Bandwidth - QPSK

5MHz Channel Bandwidth

10MHz Channel Bandwidth

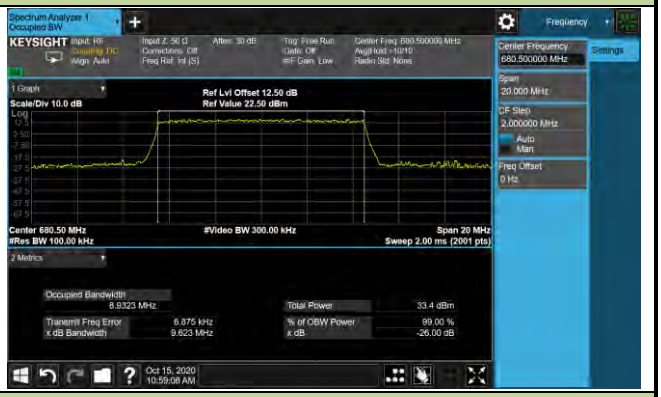
15MHz Channel Bandwidth

20MHz Channel Bandwidth

99% Bandwidth - 16QAM

5MHz Channel Bandwidth

10MHz Channel Bandwidth



15MHz Channel Bandwidth

20MHz Channel Bandwidth

99% Bandwidth - 64QAM

5MHz Channel Bandwidth

10MHz Channel Bandwidth

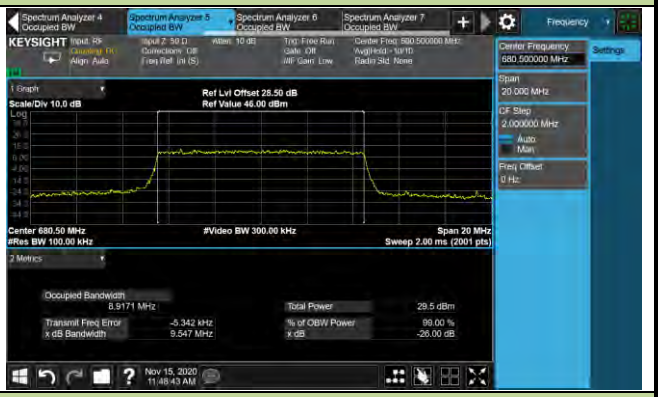
15MHz Channel Bandwidth

20MHz Channel Bandwidth

99% Bandwidth - 256QAM

5MHz Channel Bandwidth

10MHz Channel Bandwidth



15MHz Channel Bandwidth

20MHz Channel Bandwidth

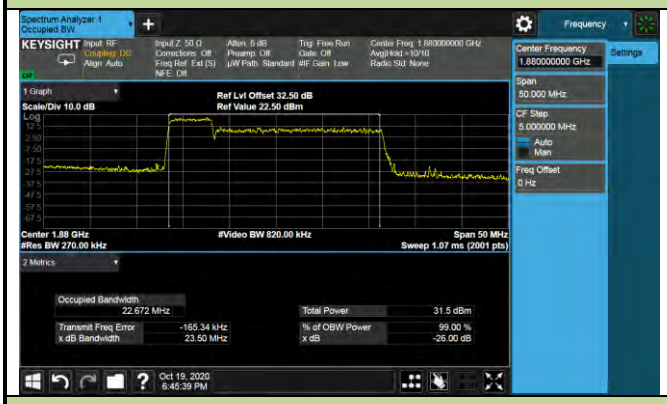
Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-SR6
Test Engineer	Candy Luo	Test Date	2020/10/19 ~ 2020/11/14
Test Band	Intra-Band CA_2C		

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	1870.8 + 1882.5	5+20	22.62
	1872.9 + 1884.9	10+15	23.02
	1870.6 + 1885.0	10+20	27.59
	1875.1 + 1887.1	15+10	23.10
	1872.5 + 1887.5	15+15	28.22
	1870.3 + 1887.4	15+20	32.51
	1877.5 + 1889.2	20+5	22.79
	1875.1 + 1889.5	20+10	27.64
	1872.6 + 1889.7	20+15	32.53
	1870.1 + 1889.9	20+20	37.37
16QAM	1870.8 + 1882.5	5+20	22.64
	1872.9 + 1884.9	10+15	23.01
	1870.6 + 1885.0	10+20	27.51
	1875.1 + 1887.1	15+10	23.05
	1872.5 + 1887.5	15+15	28.21
	1870.3 + 1887.4	15+20	32.43
	1877.5 + 1889.2	20+5	22.81
	1875.1 + 1889.5	20+10	27.56
	1872.6 + 1889.7	20+15	32.57
	1870.1+ 1889.9	20+20	37.34
64QAM	1870.8 + 1882.5	5+20	22.60
	1872.9 + 1884.9	10+15	23.06
	1870.6 + 1885.0	10+20	27.47
	1875.1 + 1887.1	15+10	23.03
	1872.5 + 1887.5	15+15	28.22
	1870.3 + 1887.4	15+20	32.44
	1877.5 + 1889.2	20+5	22.79
	1875.1 + 1889.5	20+10	27.62
	1872.6 + 1889.7	20+15	32.53
	1870.1 + 1889.9	20+20	37.31

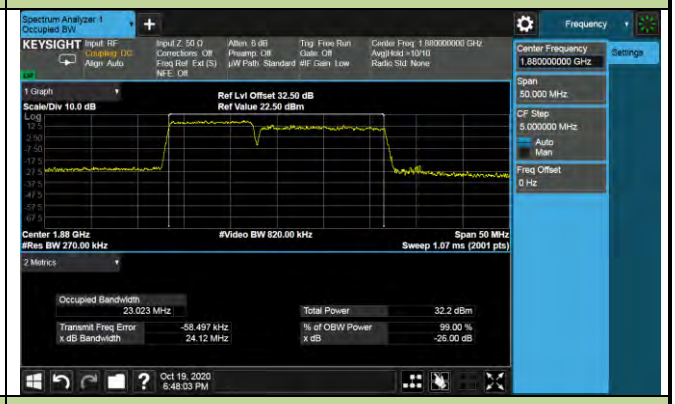
Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
256QAM	1870.8 + 1882.5	5+20	22.74
	1872.9 + 1884.9	10+15	23.01
	1870.6 + 1885.0	10+20	27.58
	1875.1 + 1887.1	15+10	23.08
	1872.5 + 1887.5	15+15	28.23
	1870.3 + 1887.4	15+20	32.55
	1877.5 + 1889.2	20+5	22.79
	1875.1 + 1889.5	20+10	27.66
	1872.6 + 1889.7	20+15	32.44
	1870.1 + 1889.9	20+20	37.41

99% Bandwidth - QPSK

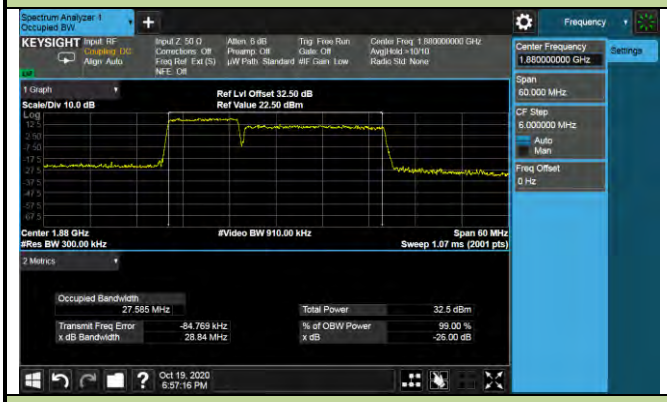
5+20MHz Channel Bandwidth



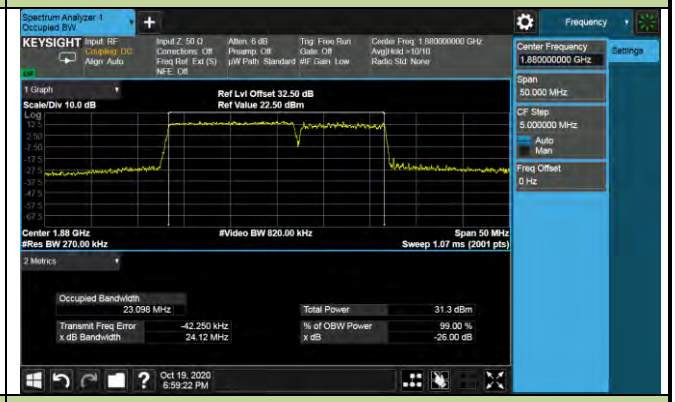
10+15MHz Channel Bandwidth



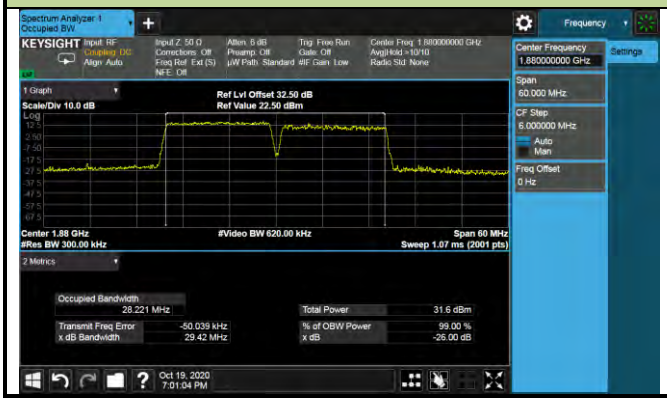
10+20MHz Channel Bandwidth



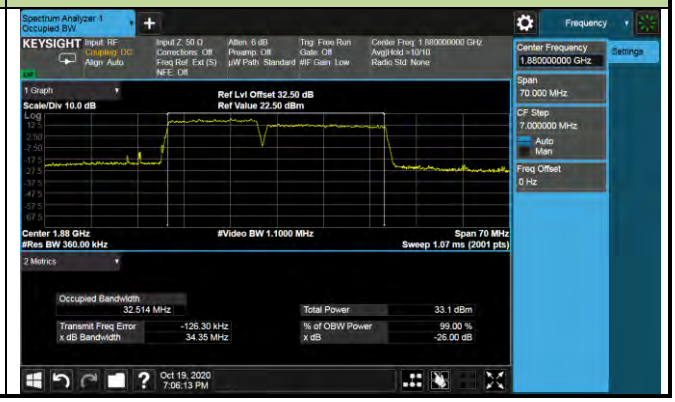
15+10MHz Channel Bandwidth

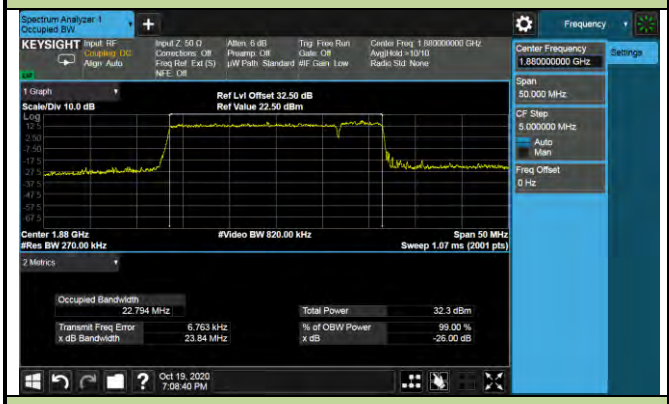
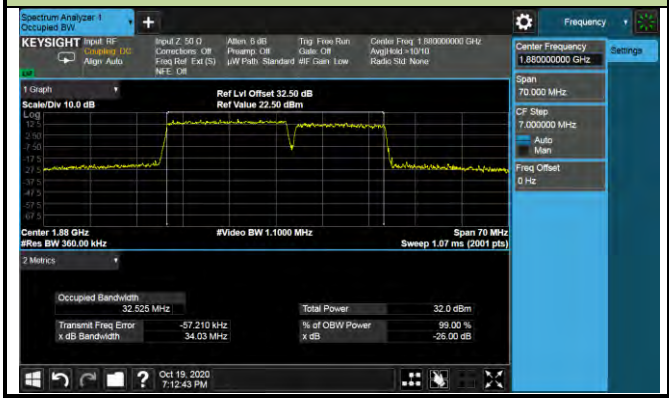
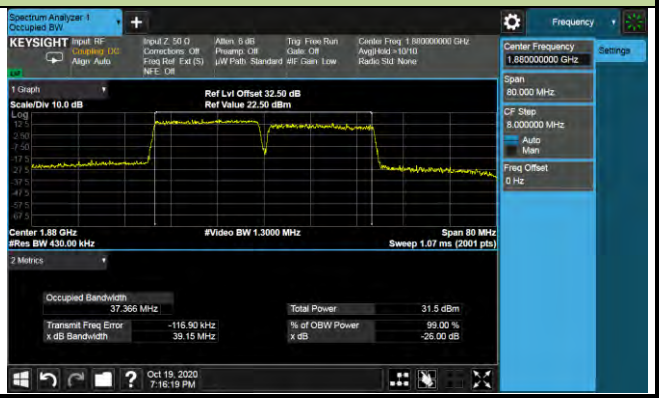


15+15MHz Channel Bandwidth



15+20MHz Channel Bandwidth



20+5MHz Channel Bandwidth	20+10MHz Channel Bandwidth
	
20+15MHz Channel Bandwidth	**20+20MHz Channel Bandwidth**
	

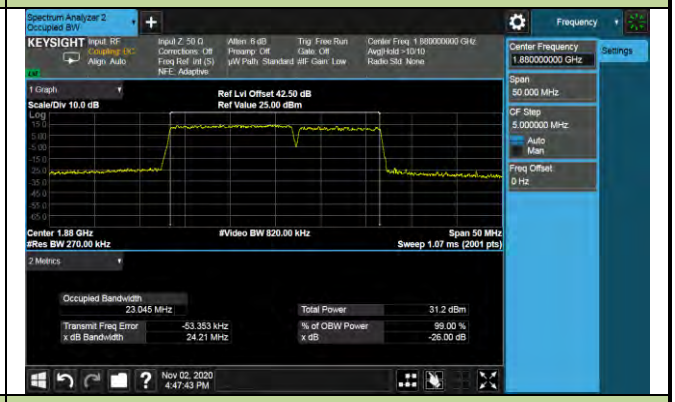
99% Bandwidth - 16QAM

5+20MHz Channel Bandwidth

10+15MHz Channel Bandwidth

10+20MHz Channel Bandwidth

15+10MHz Channel Bandwidth



15+15MHz Channel Bandwidth

15+20MHz Channel Bandwidth

20+5MHz Channel Bandwidth

20+10MHz Channel Bandwidth

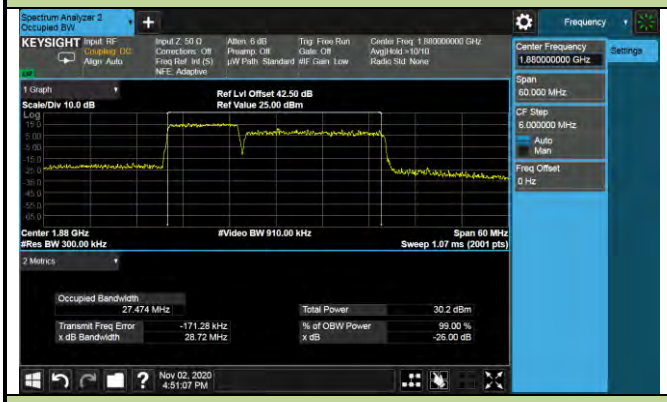
20+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth

99% Bandwidth - 64QAM

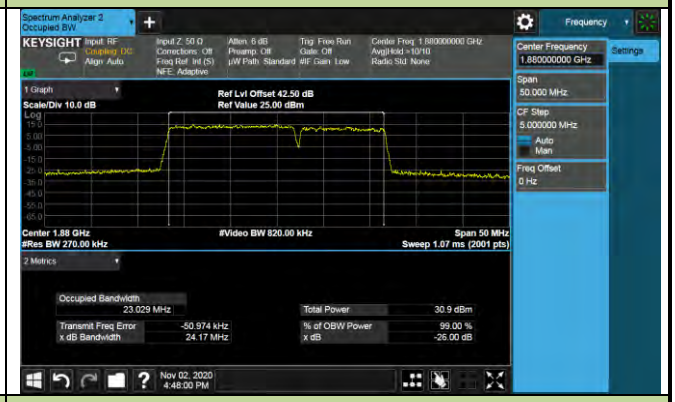
5+20MHz Channel Bandwidth

10+15MHz Channel Bandwidth

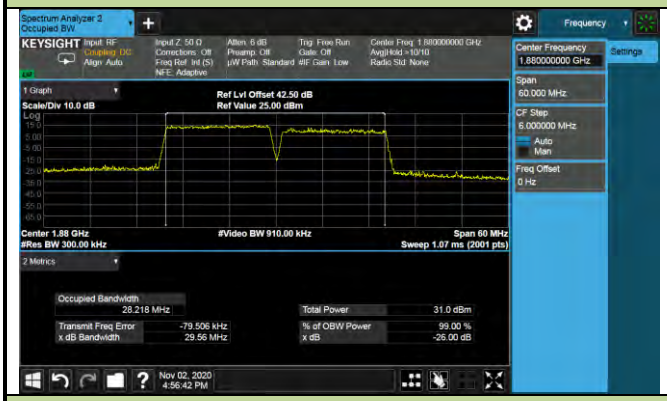
10+20MHz Channel Bandwidth



15+10MHz Channel Bandwidth

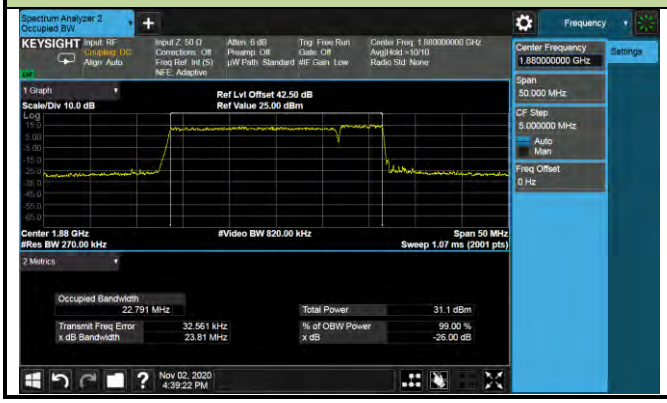


15+15MHz Channel Bandwidth

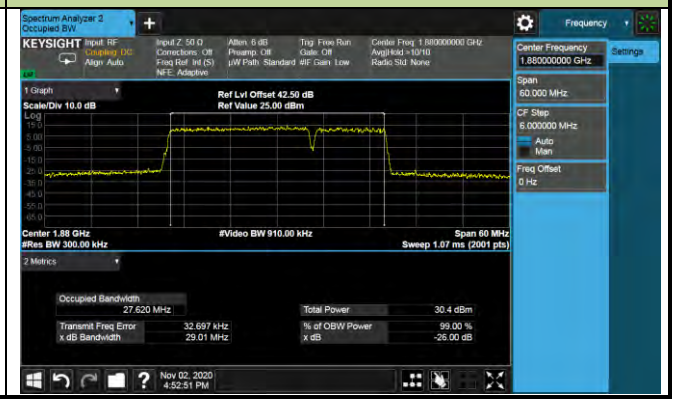


15+20MHz Channel Bandwidth

20+5MHz Channel Bandwidth



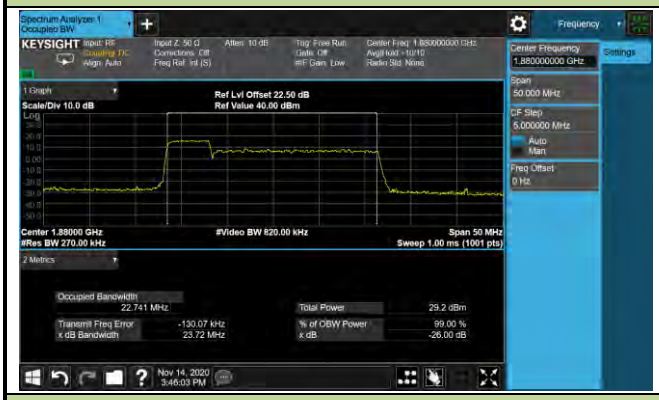
20+10MHz Channel Bandwidth



20+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth

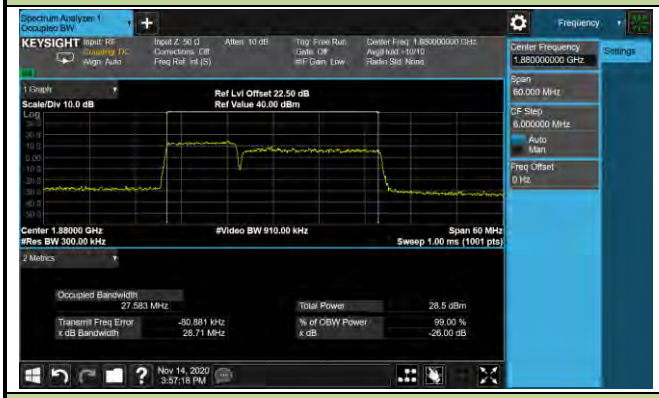
99% Bandwidth - 256QAM

5+20MHz Channel Bandwidth



10+15MHz Channel Bandwidth

10+20MHz Channel Bandwidth

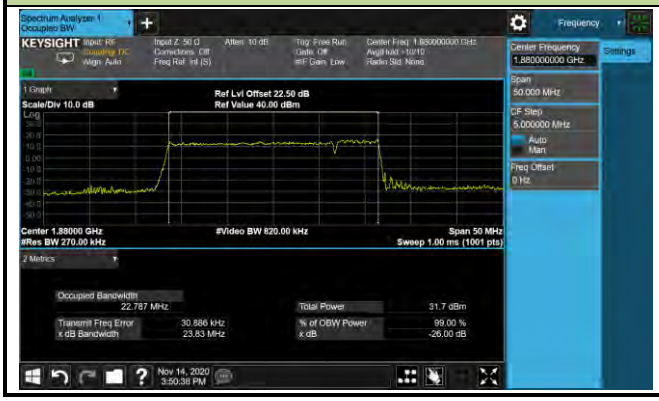


15+10MHz Channel Bandwidth

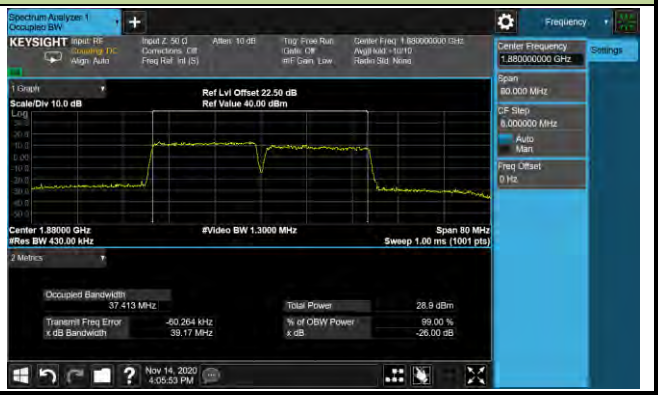
15+15MHz Channel Bandwidth

15+20MHz Channel Bandwidth

20+5MHz Channel Bandwidth



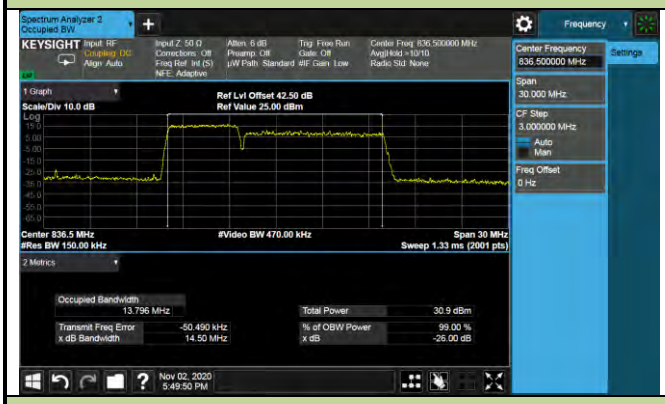
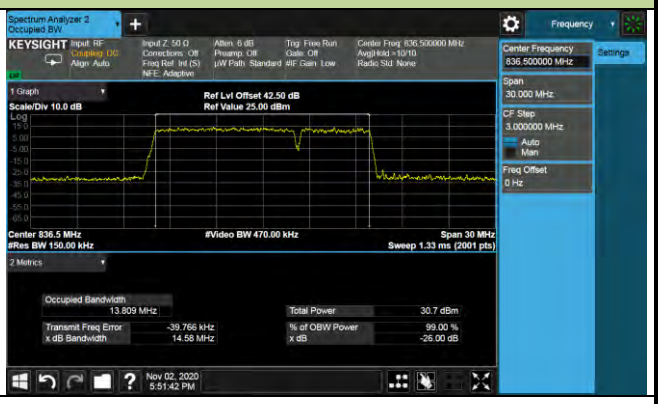
20+10MHz Channel Bandwidth

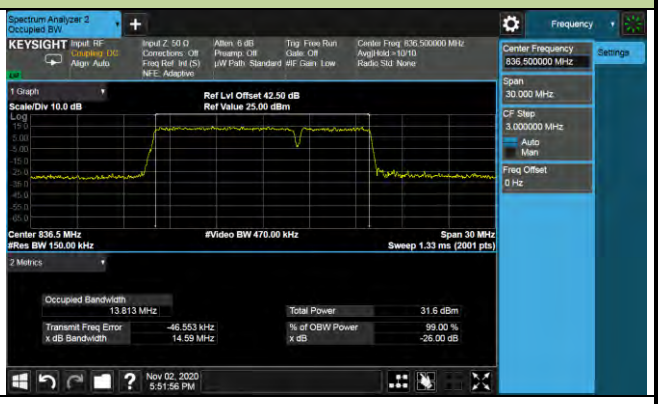
20+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth
	

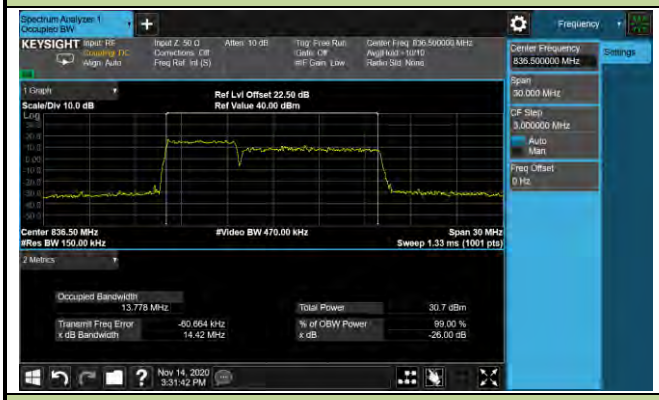
Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-SR6
Test Engineer	Candy Luo	Test Date	2020/10/19 ~ 2020/11/14
Test Band	Intra-Band CA_5B		

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	831.8 + 839.0	5+10	13.76
	834.0 + 841.2	10+5	13.82
	831.6 + 841.5	10+10	18.62
16QAM	831.8 + 839.0	5+10	13.78
	834.0 + 841.2	10+5	13.81
	831.6 + 841.5	10+10	18.66
64QAM	831.8 + 839.0	5+10	13.78
	834.0 + 841.2	10+5	13.81
	831.6 + 841.5	10+10	18.63
256QAM	831.8 + 839.0	5+10	13.78
	834.0 + 841.2	10+5	13.83
	831.6 + 841.5	10+10	18.67

99% Bandwidth - QPSK	
5+10MHz Channel Bandwidth	10+5MHz Channel Bandwidth
10+10MHz Channel Bandwidth	

99% Bandwidth - 16QAM	
5+10MHz Channel Bandwidth	10+5MHz Channel Bandwidth
	
10+10MHz Channel Bandwidth	

99% Bandwidth - 64QAM	
5+10MHz Channel Bandwidth	10+5MHz Channel Bandwidth
	
10+10MHz Channel Bandwidth	

99% Bandwidth - 256QAM	
5+10MHz Channel Bandwidth	10+5MHz Channel Bandwidth
	
10+10MHz Channel Bandwidth	

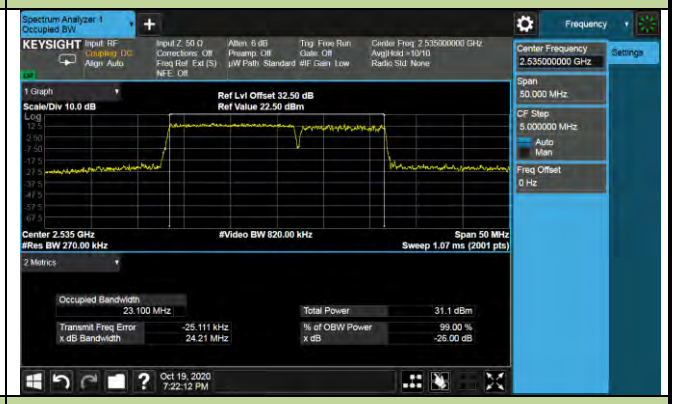
Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-SR6
Test Engineer	Candy Luo	Test Date	2020/10/19 ~ 2020/11/14
Test Band	Intra-Band CA_7C		

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	2525.6 + 2540.0	10+20	27.53
	2530.1 + 2542.1	15+10	23.10
	2527.5 + 2542.5	15+15	28.02
	2525.3 + 2542.4	15+20	32.47
	2530.1 + 2544.5	20+10	27.53
	2527.6 + 2544.7	20+15	32.43
	2525.1 + 2544.9	20+20	37.26
16QAM	2525.6 + 2540.0	10+20	27.50
	2530.1 + 2542.1	15+10	23.00
	2527.5 + 2542.5	15+15	28.17
	2525.3 + 2542.4	15+20	32.46
	2530.1 + 2544.5	20+10	27.61
	2527.6 + 2544.7	20+15	32.39
	2525.1 + 2544.9	20+20	37.24
64QAM	2525.6 + 2540.0	10+20	27.51
	2530.1 + 2542.1	15+10	23.00
	2527.5 + 2542.5	15+15	28.19
	2525.3 + 2542.4	15+20	32.45
	2530.1 + 2544.5	20+10	27.54
	2527.6 + 2544.7	20+15	32.46
	2525.1 + 2544.9	20+20	37.33
256QAM	2525.6 + 2540.0	10+20	27.52
	2530.1 + 2542.1	15+10	23.00
	2527.5 + 2542.5	15+15	28.22
	2525.3 + 2542.4	15+20	32.46
	2530.1 + 2544.5	20+10	27.66
	2527.6 + 2544.7	20+15	32.57
	2525.1 + 2544.9	20+20	37.50

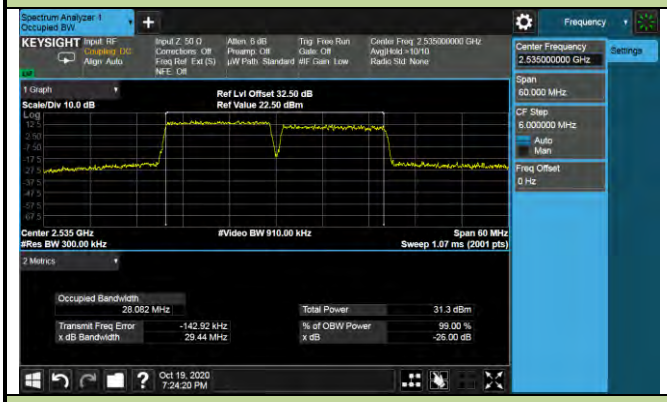
99% Bandwidth - QPSK

10+20MHz Channel Bandwidth

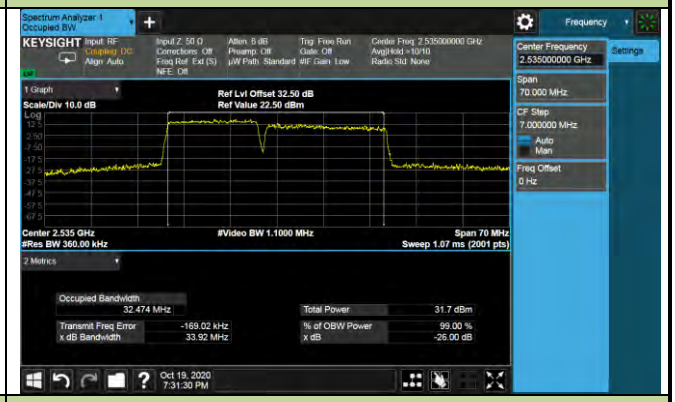
15+10MHz Channel Bandwidth



15+15MHz Channel Bandwidth

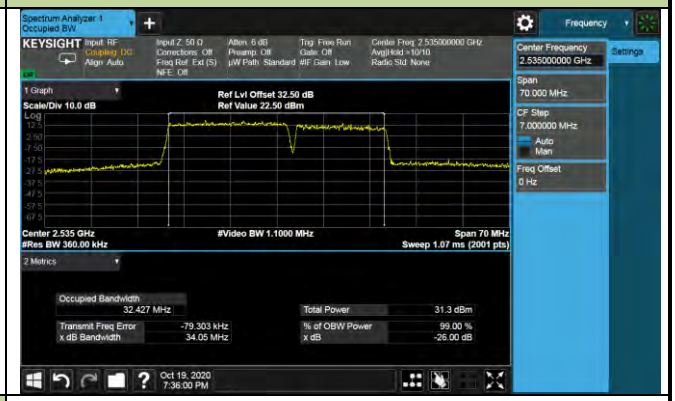


15+20MHz Channel Bandwidth



20+10MHz Channel Bandwidth

20+15MHz Channel Bandwidth



20+20MHz Channel Bandwidth

99% Bandwidth - 16QAM

10+20MHz Channel Bandwidth

15+10MHz Channel Bandwidth

15+15MHz Channel Bandwidth

15+20MHz Channel Bandwidth

20+10MHz Channel Bandwidth

20+15MHz Channel Bandwidth

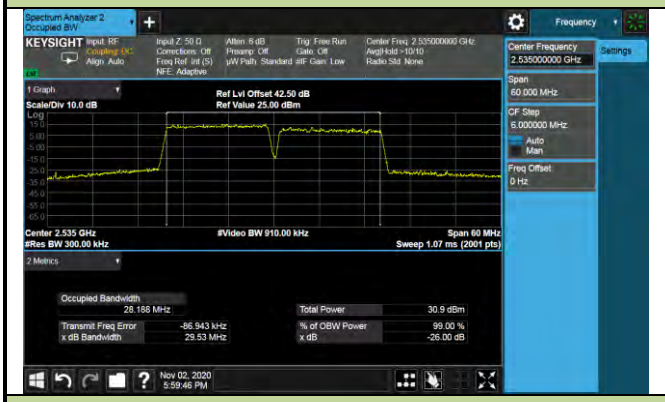
20+20MHz Channel Bandwidth

99% Bandwidth - 64QAM

10+20MHz Channel Bandwidth

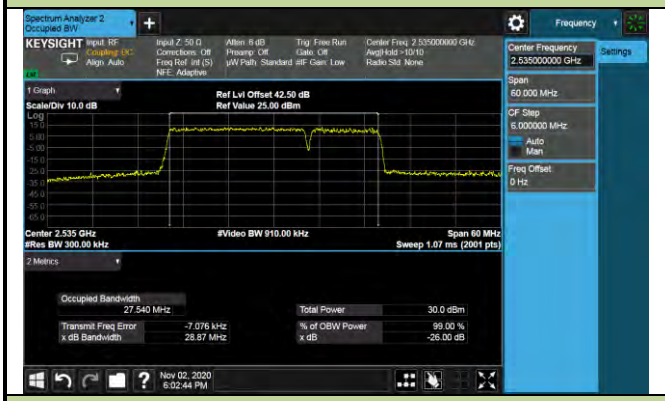
15+10MHz Channel Bandwidth

15+15MHz Channel Bandwidth



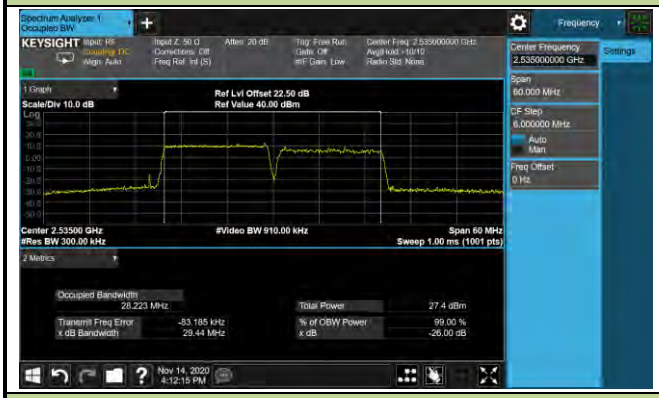
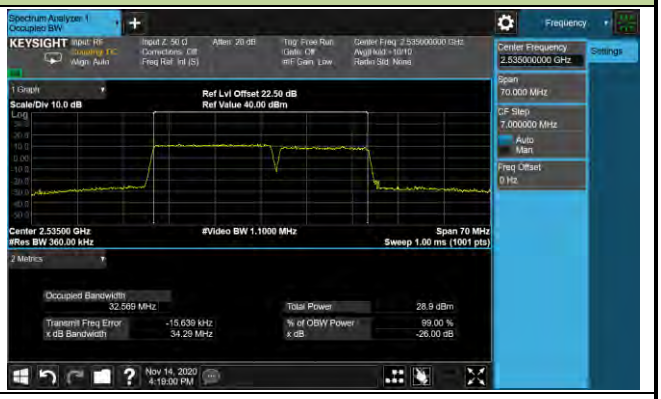
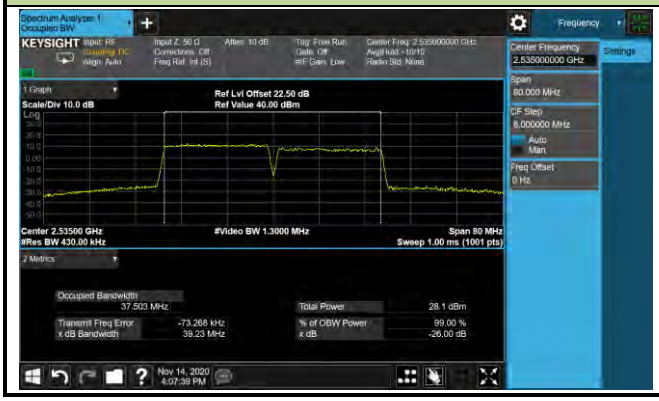
15+20MHz Channel Bandwidth

20+10MHz Channel Bandwidth



20+15MHz Channel Bandwidth

20+20MHz Channel Bandwidth

99% Bandwidth - 256QAM	
10+20MHz Channel Bandwidth	15+10MHz Channel Bandwidth
15+15MHz Channel Bandwidth	15+20MHz Channel Bandwidth
	
20+10MHz Channel Bandwidth	20+15MHz Channel Bandwidth
	
20+20MHz Channel Bandwidth	
	

Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-SR6
Test Engineer	Candy Luo	Test Date	2020/10/19 ~ 2020/11/14
Test Band	Intra-Band CA_38C		

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	2587.5 + 2602.5	15+15	27.96
	2585.1 + 2604.9	20+20	37.10
16QAM	2587.5 + 2602.5	15+15	28.11
	2585.1 + 2604.9	20+20	37.09
64QAM	2587.5 + 2602.5	15+15	28.11
	2585.1 + 2604.9	20+20	37.17
256QAM	2587.5 + 2602.5	15+15	28.10
	2585.1 + 2604.9	20+20	37.09

99% Bandwidth - QPSK

15+15MHz Channel Bandwidth

20+20MHz Channel Bandwidth

99% Bandwidth - 16QAM

15+15MHz Channel Bandwidth

20+20MHz Channel Bandwidth

99% Bandwidth - 64QAM

15+15MHz Channel Bandwidth

20+20MHz Channel Bandwidth

99% Bandwidth - 256QAM	
15+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth

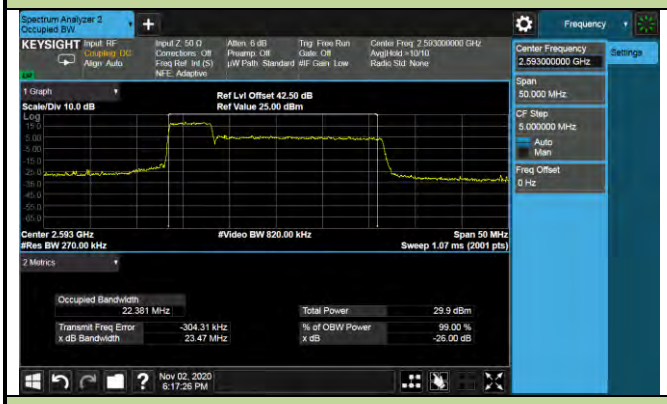
Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-SR6
Test Engineer	Candy Luo	Test Date	2020/10/19 ~ 2020/11/14
Test Band	Intra-Band CA_41C		

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	2583.8 + 2595.5	5+20	22.38
	2585.9 + 2597.9	10+15	22.78
	2583.6 + 2598.0	10+20	27.23
	2588.1 + 2600.1	15+10	22.94
	2585.5 + 2600.5	15+15	27.97
	2583.3 + 2600.4	15+20	32.15
	2590.5 + 2602.2	20+5	22.68
	2588.1 + 2602.5	20+10	27.61
	2585.6 + 2602.7	20+15	32.20
	2583.1 + 2602.9	20+20	37.19
16QAM	2583.8 + 2595.5	5+20	22.38
	2585.9 + 2597.9	10+15	22.82
	2583.6 + 2598.0	10+20	27.29
	2588.1 + 2600.1	15+10	22.87
	2585.5 + 2600.5	15+15	28.03
	2583.3 + 2600.4	15+20	32.16
	2590.5 + 2602.2	20+5	22.74
	2588.1 + 2602.5	20+10	27.61
	2585.6 + 2602.7	20+15	32.32
	2583.1 + 2602.9	20+20	37.04
64QAM	2583.8 + 2595.5	5+20	22.37
	2585.9 + 2597.9	10+15	22.85
	2583.6 + 2598.0	10+20	27.27
	2588.1 + 2600.1	15+10	22.93
	2585.5 + 2600.5	15+15	28.00
	2583.3 + 2600.4	15+20	32.15
	2590.5 + 2602.2	20+5	22.74
	2588.1 + 2602.5	20+10	27.61
	2585.6 + 2602.7	20+15	32.33
	2583.1 + 2602.9	20+20	37.05

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
256QAM	2583.8 + 2595.5	5+20	22.34
	2585.9 + 2597.9	10+15	22.77
	2583.6 + 2598.0	10+20	27.36
	2588.1 + 2600.1	15+10	22.94
	2585.5 + 2600.5	15+15	27.99
	2583.3 + 2600.4	15+20	32.18
	2590.5 + 2602.2	20+5	22.75
	2588.1 + 2602.5	20+10	27.57
	2585.6 + 2602.7	20+15	32.30
	2583.1 + 2602.9	20+20	37.11

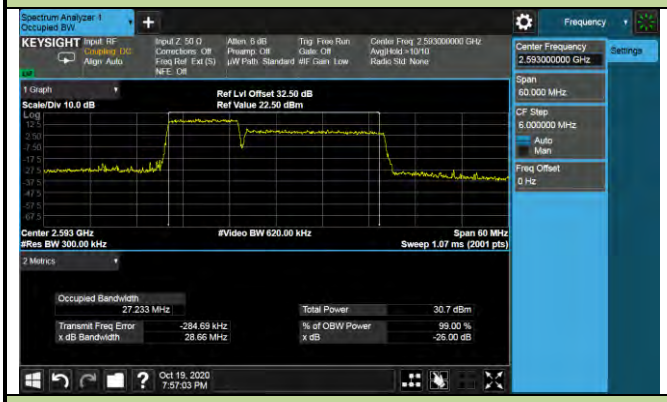
99% Bandwidth - QPSK

5+20MHz Channel Bandwidth

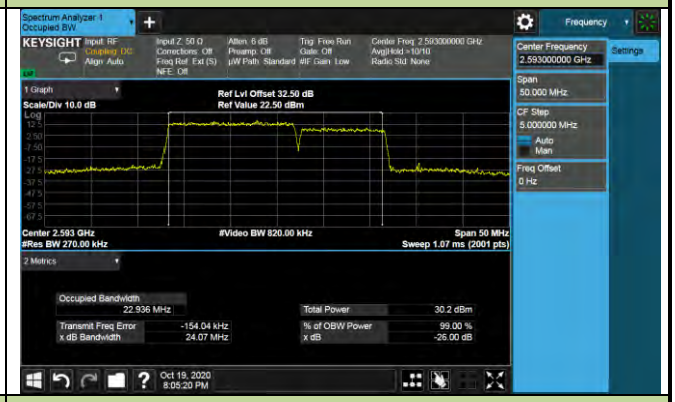


10+15MHz Channel Bandwidth

10+20MHz Channel Bandwidth

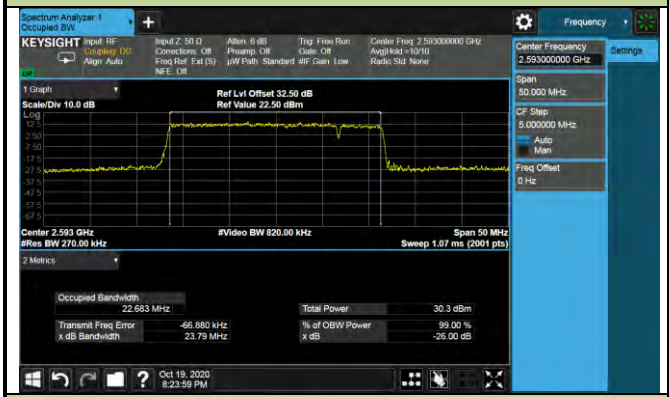
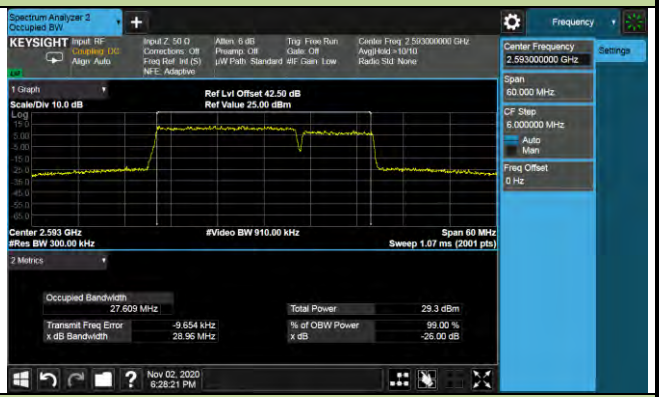
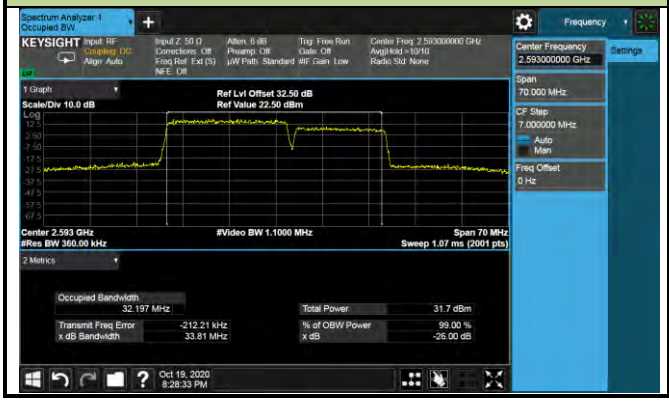


15+10MHz Channel Bandwidth



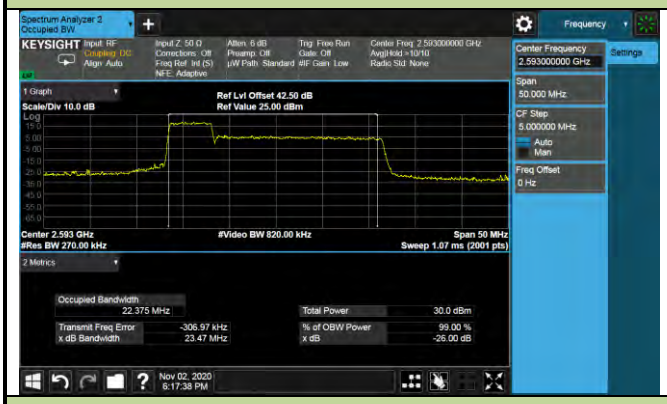
15+15MHz Channel Bandwidth

15+20MHz Channel Bandwidth

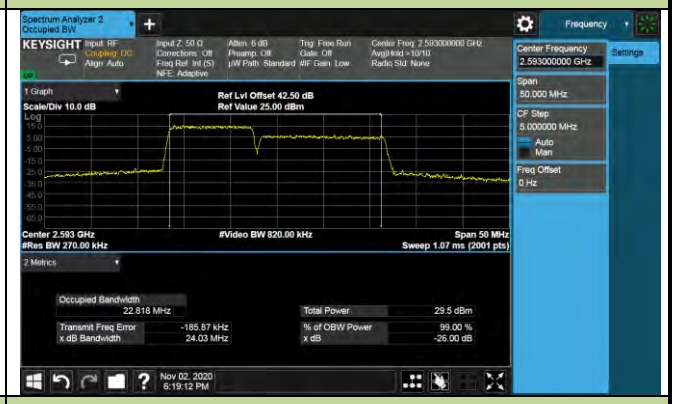
20+5MHz Channel Bandwidth	20+10MHz Channel Bandwidth
	
20+15MHz Channel Bandwidth	**20+20MHz Channel Bandwidth**
	

99% Bandwidth - 16QAM

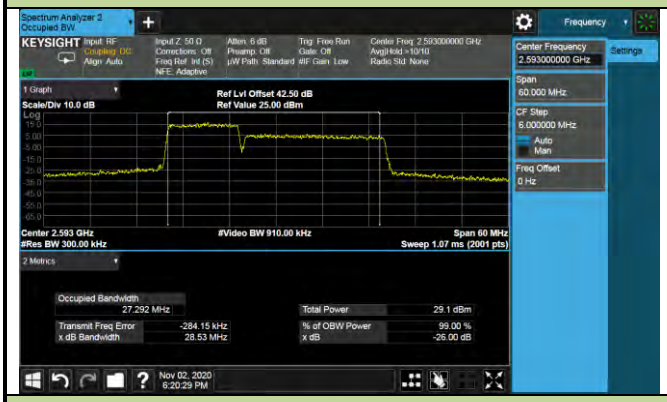
5+20MHz Channel Bandwidth



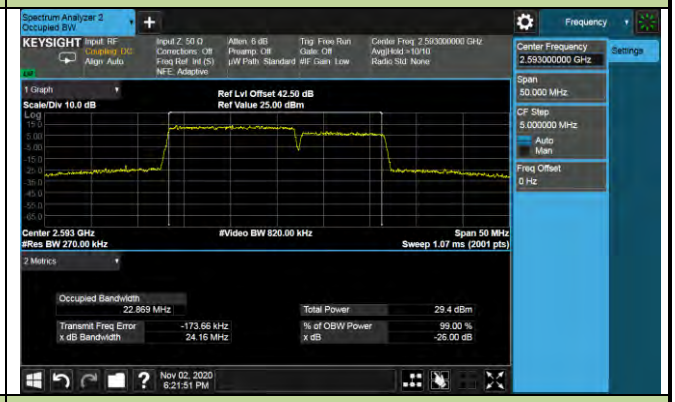
10+15MHz Channel Bandwidth



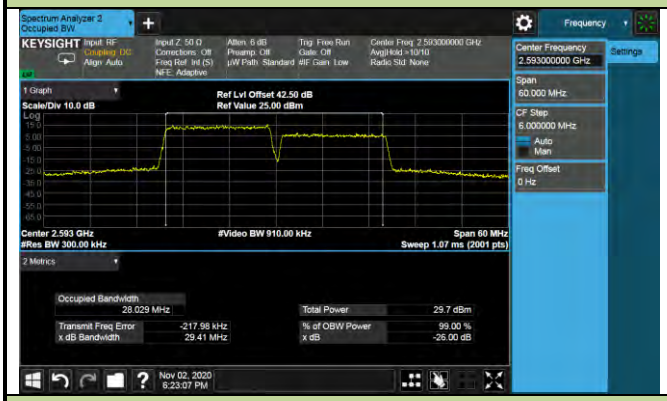
10+20MHz Channel Bandwidth



15+10MHz Channel Bandwidth

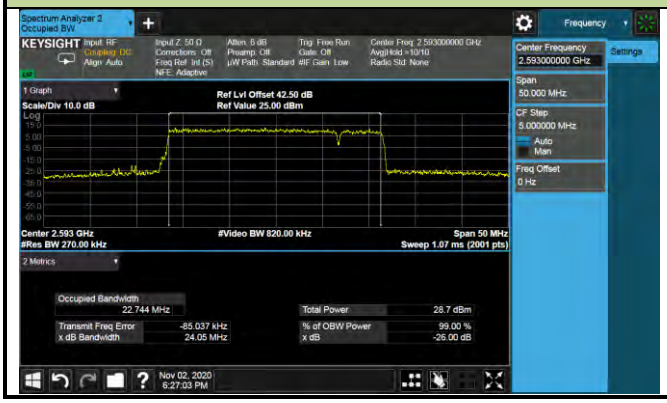


15+15MHz Channel Bandwidth

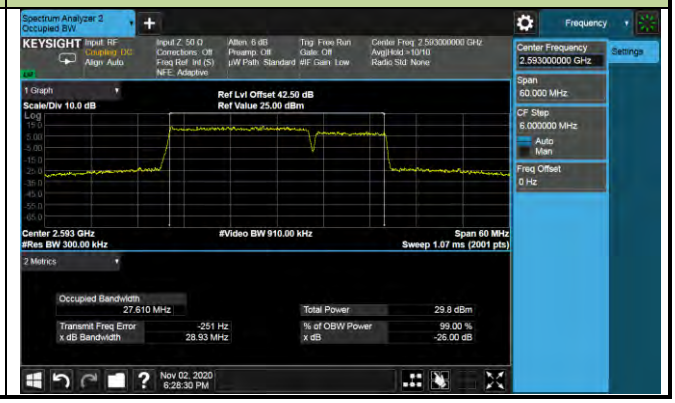


15+20MHz Channel Bandwidth

20+5MHz Channel Bandwidth



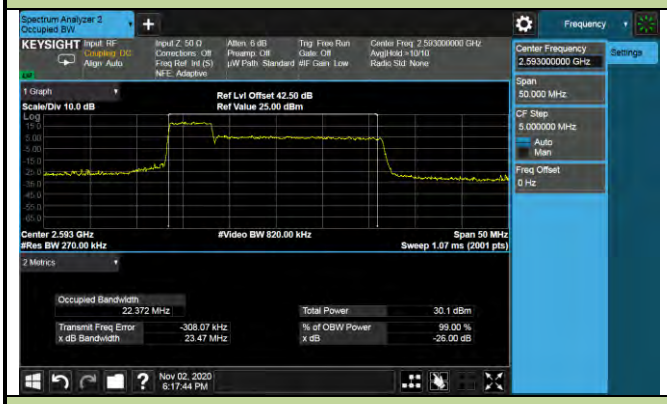
20+10MHz Channel Bandwidth



20+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth

99% Bandwidth - 64QAM

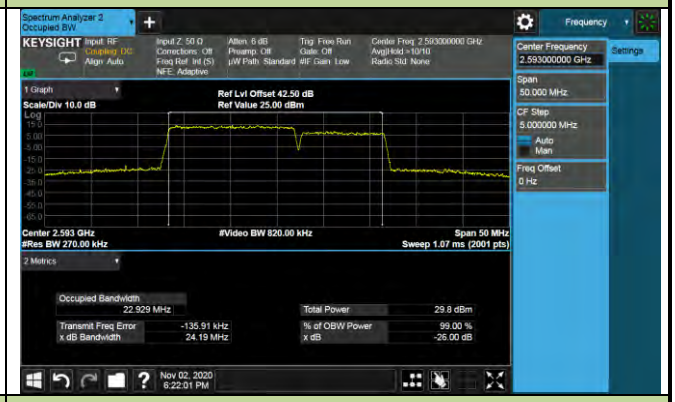
5+20MHz Channel Bandwidth



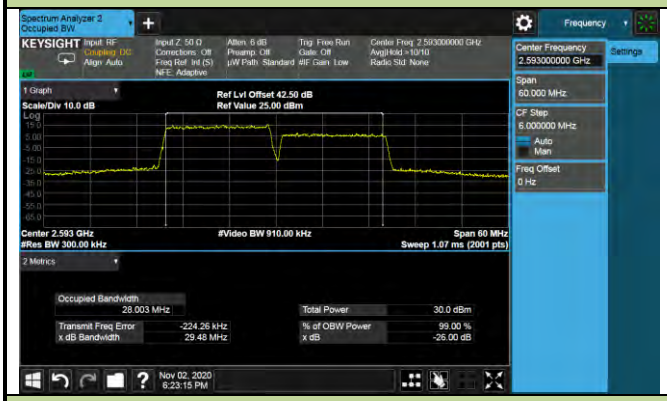
10+15MHz Channel Bandwidth

10+20MHz Channel Bandwidth

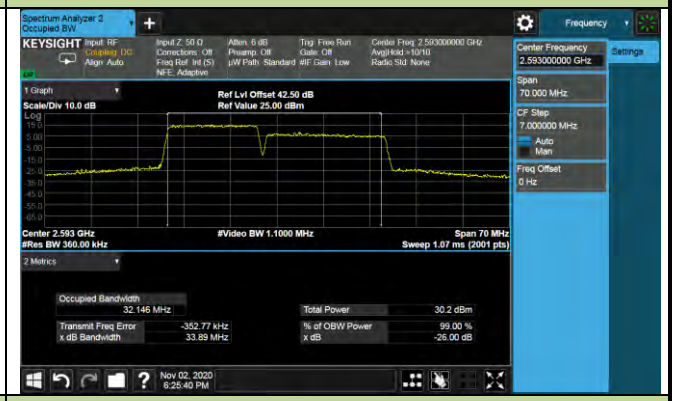
15+10MHz Channel Bandwidth



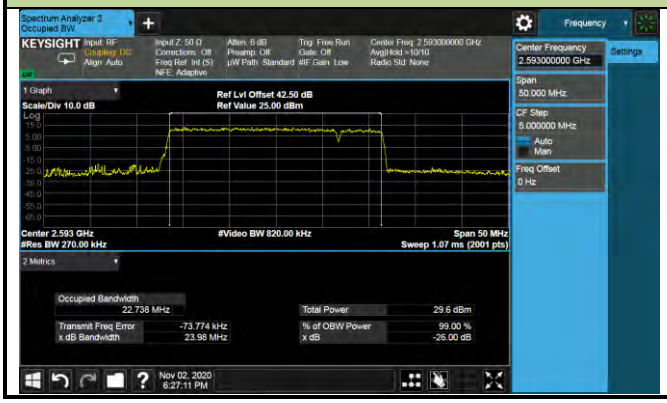
15+15MHz Channel Bandwidth



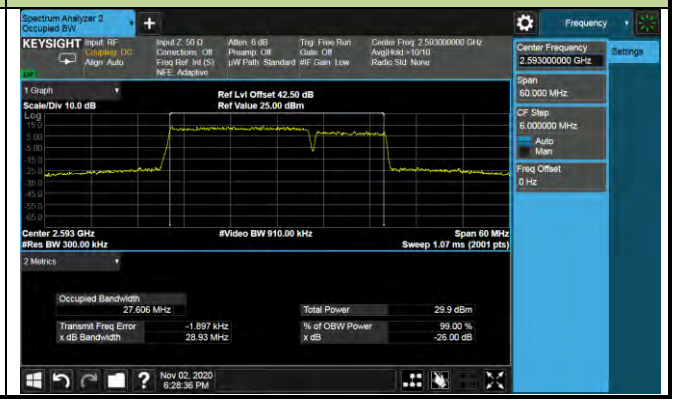
15+20MHz Channel Bandwidth



20+5MHz Channel Bandwidth



20+10MHz Channel Bandwidth



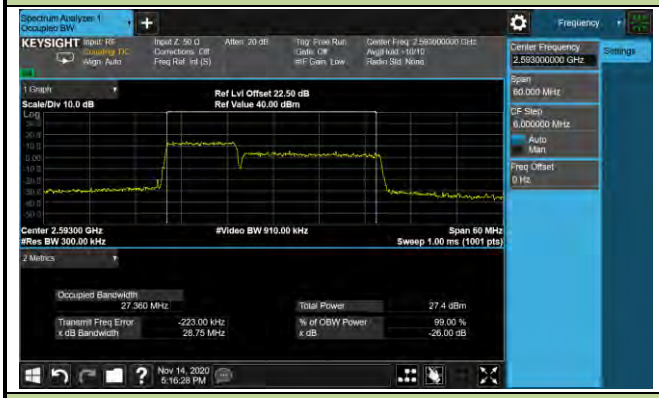
20+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth

99% Bandwidth - 256QAM

5+20MHz Channel Bandwidth

10+15MHz Channel Bandwidth

10+20MHz Channel Bandwidth



15+10MHz Channel Bandwidth

15+15MHz Channel Bandwidth

15+20MHz Channel Bandwidth

20+5MHz Channel Bandwidth

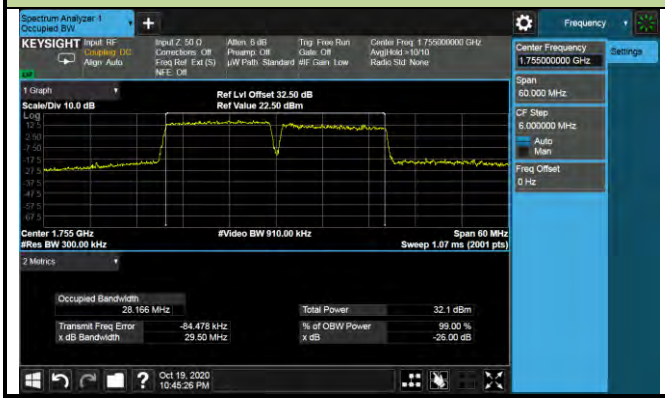
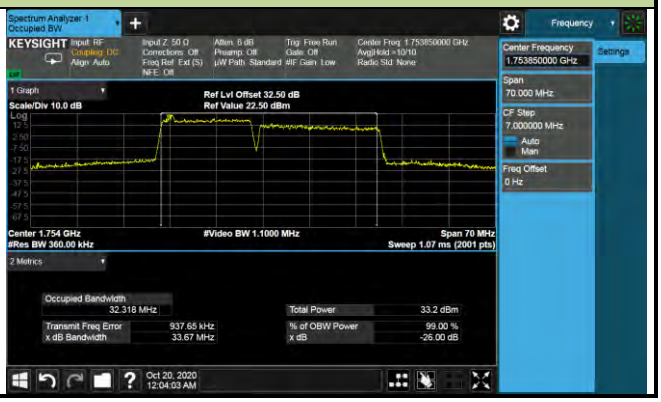
20+10MHz Channel Bandwidth

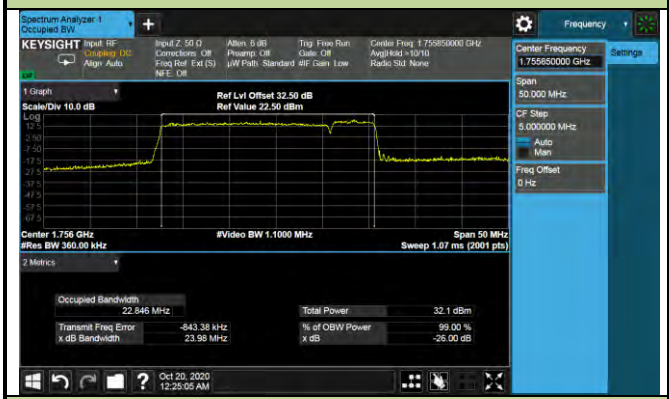
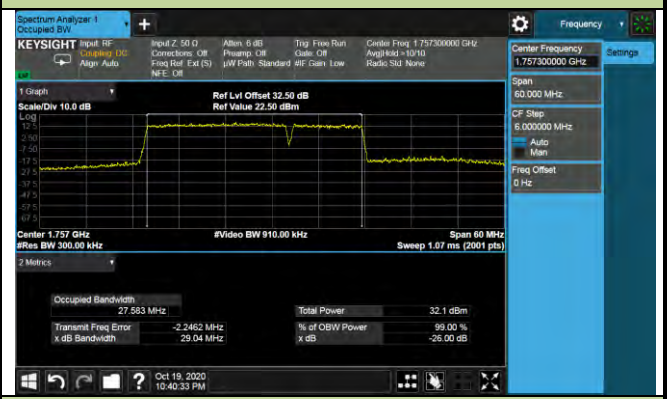
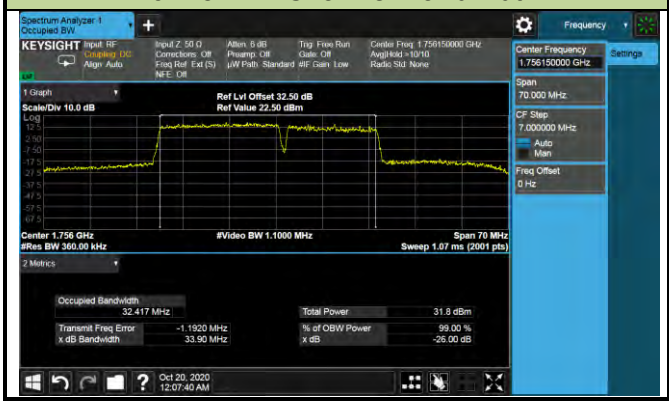
20+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth

Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-SR6
Test Engineer	Candy Luo	Test Date	2020/10/20 ~ 2020/11/14
Test Band	Intra-Band CA_66C		

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	1745.8 + 1757.5	5+20	22.73
	1747.9 + 1759.9	10+15	22.95
	1745.6 + 1760.0	10+20	27.57
	1750.1 + 1762.1	15+10	22.99
	1747.5 + 1762.5	15+15	28.17
	1745.3 + 1762.4	15+20	32.32
	1752.5 + 1764.2	20+5	22.85
	1750.1 + 1764.5	20+10	27.58
	1747.6 + 1764.7	20+15	32.42
	1745.1 + 1764.9	20+20	37.52
16QAM	1745.8 + 1757.5	5+20	22.59
	1747.9 + 1759.9	10+15	22.88
	1745.6 + 1760.0	10+20	27.41
	1750.1 + 1762.1	15+10	22.96
	1747.5 + 1762.5	15+15	28.14
	1745.3 + 1762.4	15+20	32.38
	1752.5 + 1764.2	20+5	22.77
	1750.1 + 1764.5	20+10	27.62
	1747.6 + 1764.7	20+15	32.52
	1745.1 + 1764.9	20+20	37.30
64QAM	1745.8 + 1757.5	5+20	22.57
	1747.9 + 1759.9	10+15	22.90
	1745.6 + 1760.0	10+20	27.55
	1750.1 + 1762.1	15+10	22.97
	1747.5 + 1762.5	15+15	28.14
	1745.3 + 1762.4	15+20	32.39
	1752.5 + 1764.2	20+5	22.77
	1750.1 + 1764.5	20+10	27.62
	1747.6 + 1764.7	20+15	32.48
	1745.1 + 1764.9	20+20	37.35

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
256QAM	1745.8 + 1757.5	5+20	22.66
	1747.9 + 1759.9	10+15	22.92
	1745.6 + 1760.0	10+20	27.49
	1750.1 + 1762.1	15+10	22.95
	1747.5 + 1762.5	15+15	28.16
	1745.3 + 1762.4	15+20	32.43
	1752.5 + 1764.2	20+5	22.81
	1750.1 + 1764.5	20+10	27.64
	1747.6 + 1764.7	20+15	32.60
	1745.1 + 1764.9	20+20	37.44

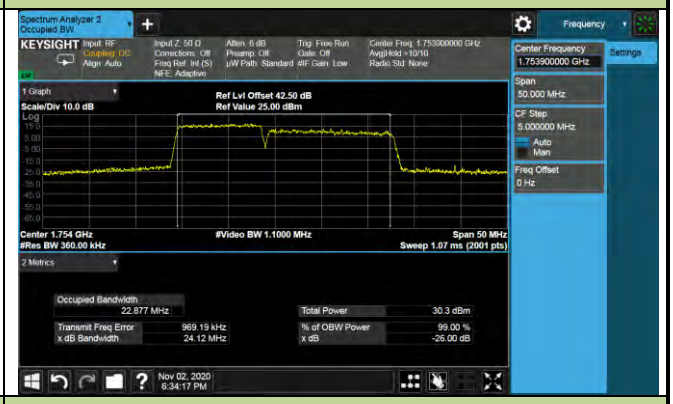
99% Bandwidth - QPSK	
5+20MHz Channel Bandwidth	10+15MHz Channel Bandwidth
10+20MHz Channel Bandwidth	15+10MHz Channel Bandwidth
15+15MHz Channel Bandwidth	15+20MHz Channel Bandwidth
	

20+5MHz Channel Bandwidth	20+10MHz Channel Bandwidth
	
20+15MHz Channel Bandwidth	**20+20MHz Channel Bandwidth**
	

99% Bandwidth - 16QAM

5+20MHz Channel Bandwidth

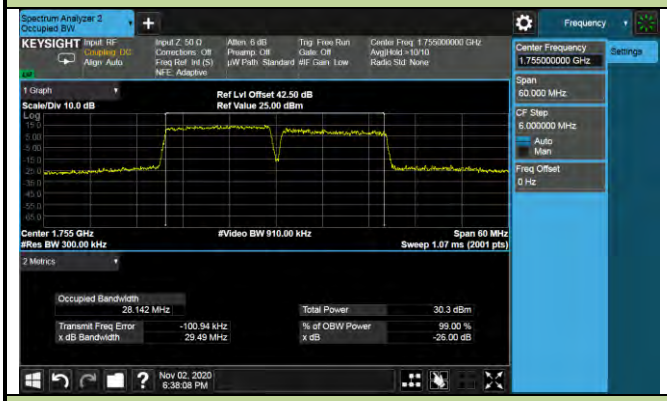
10+15MHz Channel Bandwidth



10+20MHz Channel Bandwidth

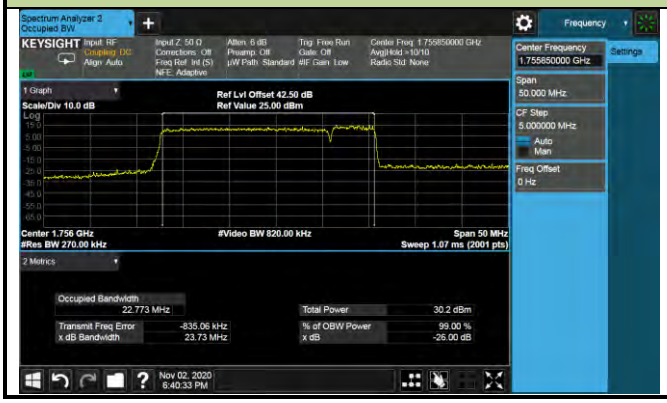
15+10MHz Channel Bandwidth

15+15MHz Channel Bandwidth



15+20MHz Channel Bandwidth

20+5MHz Channel Bandwidth



20+10MHz Channel Bandwidth

20+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth

99% Bandwidth - 64QAM

5+20MHz Channel Bandwidth

10+15MHz Channel Bandwidth

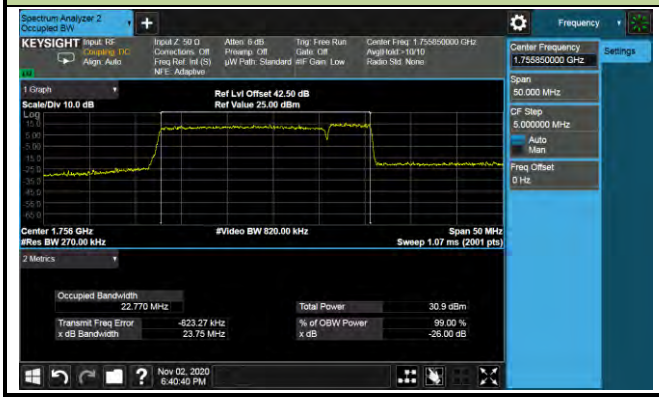
10+20MHz Channel Bandwidth

15+10MHz Channel Bandwidth

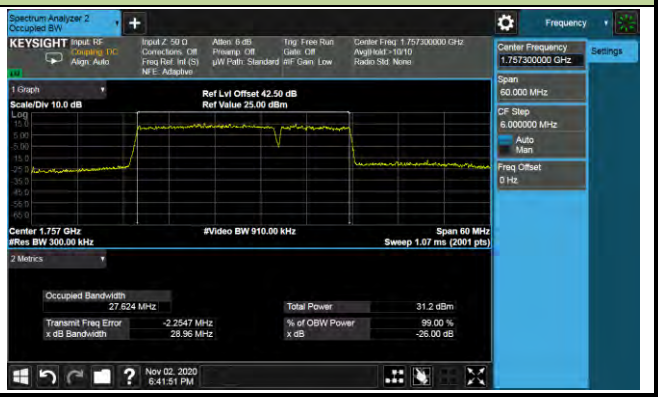
15+15MHz Channel Bandwidth

15+20MHz Channel Bandwidth

20+5MHz Channel Bandwidth



20+10MHz Channel Bandwidth



20+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth

99% Bandwidth - 256QAM

5+20MHz Channel Bandwidth

10+15MHz Channel Bandwidth

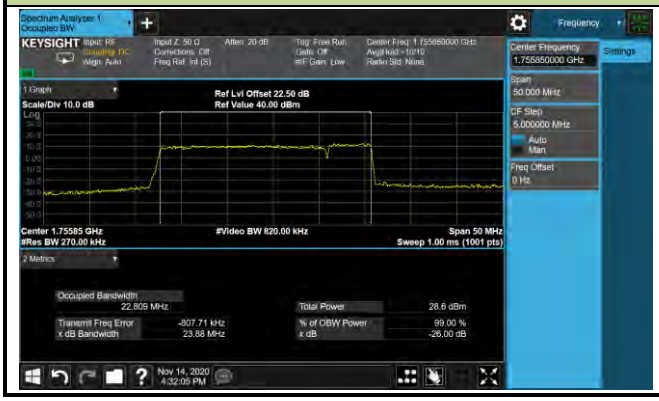
10+20MHz Channel Bandwidth

15+10MHz Channel Bandwidth

15+15MHz Channel Bandwidth

15+20MHz Channel Bandwidth

20+5MHz Channel Bandwidth



20+10MHz Channel Bandwidth

20+15MHz Channel Bandwidth	20+20MHz Channel Bandwidth

5.3. Frequency Stability Measurement

5.3.1.Test Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

5.3.2.Test Procedures Used

ANSI C63.26-2015 - Section 5.6

5.3.3.Test Setting

Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20℃ . Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, recordthe maximum frequency change.

5.3.4.Test Setup

5.3.5.Test Result

Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-TR3
Test Engineer	Candy Luo	Test Date	2020/10/14
Test Band	LTE Band 2/25		

Power (VDC)	Temp (℃)	Frequency Tolerance (ppm)
3.7	- 30	0.0015
	- 20	0.0012
	- 10	0.0014
	0	0.0011
	+ 10	0.0010
	+ 20 (Ref)	-0.0023
	+ 30	0.0005
	+ 40	-0.0004
	+ 50	-0.0006
4.4	+ 20	-0.0002
3.135	+ 20	-0.0010

Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-TR3
Test Engineer	Candy Luo	Test Date	2020/10/14
Test Band	LTE Band 4/66		

Power (VDC)	Temp (℃)	Frequency Tolerance (ppm)
3.7	- 30	0.0030
	- 20	0.0009
	- 10	0.0025
	0	0.0000
	+ 10	-0.0009
	+ 20 (Ref)	-0.0010
	+ 30	0.0008
	+ 40	-0.0010
	+ 50	0.0011
4.4	+ 20	-0.0031
3.135	+ 20	-0.0004

Product	5G Sub-6 GHz M.2 Module	Test Site	WZ-TR3
Test Engineer	Candy Luo	Test Date	2020/10/14
Test Band	LTE Band 5/26		

Power (VDC)	Temp (℃)	Frequency Tolerance (ppm)
3.7	- 30	-0.0014
	- 20	-0.0023
	- 10	0.0001
	0	-0.0043
	+ 10	-0.0069
	+ 20 (Ref)	-0.0028
	+ 30	-0.0041
	+ 40	-0.0029
	+ 50	-0.0032
4.4	+ 20	-0.0044
3.135	+ 20	-0.0085