MEASUREMENT REPORT

FCC PART 22 & 24 & 27

FCC ID:	XMR2020EM160RGL
Application:	Quectel Wireless Solutions Company Limited
Application Type:	Certification
Product:	LTE-A Cat 16 M.2 Module
Model No.:	EM160R-GL
Brand Name:	QUECTEL
FCC Rule Part(s):	Part 22 Subpart H, Part 24 Subpart E, Part 27 Subpart L & H & F & M & N
Test Procedure(s):	ANSI C63.26-2015, KDB 971168 D01v03r01
Test Date:	June 12 ~ August 17, 2020

Reviewed By: Sunny Sun
(Sunny Sun)

Approved By: Robin Wu
(Robin Wu)

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

Revision History

Report No.	Version	Description	Issue Date	Note
2006RSU008-U2	Rev. 01	Initial Report	08-20-2020	Valid

CONTENTS

Description Page

General Information

Applicant:	Quectel Wireless Solutions Company Limited
Applicant Address:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer:	Quectel Wireless Solutions Company Limited
Manufacturer Address:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- **MRT facility is a FCC registered (MRT Designation No. CN1166) test facility with the site description report on file and has met all the requirements specified in ANSI C63.4-2014.**
- **MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.**
- **MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications, Radio and SAR testing.**

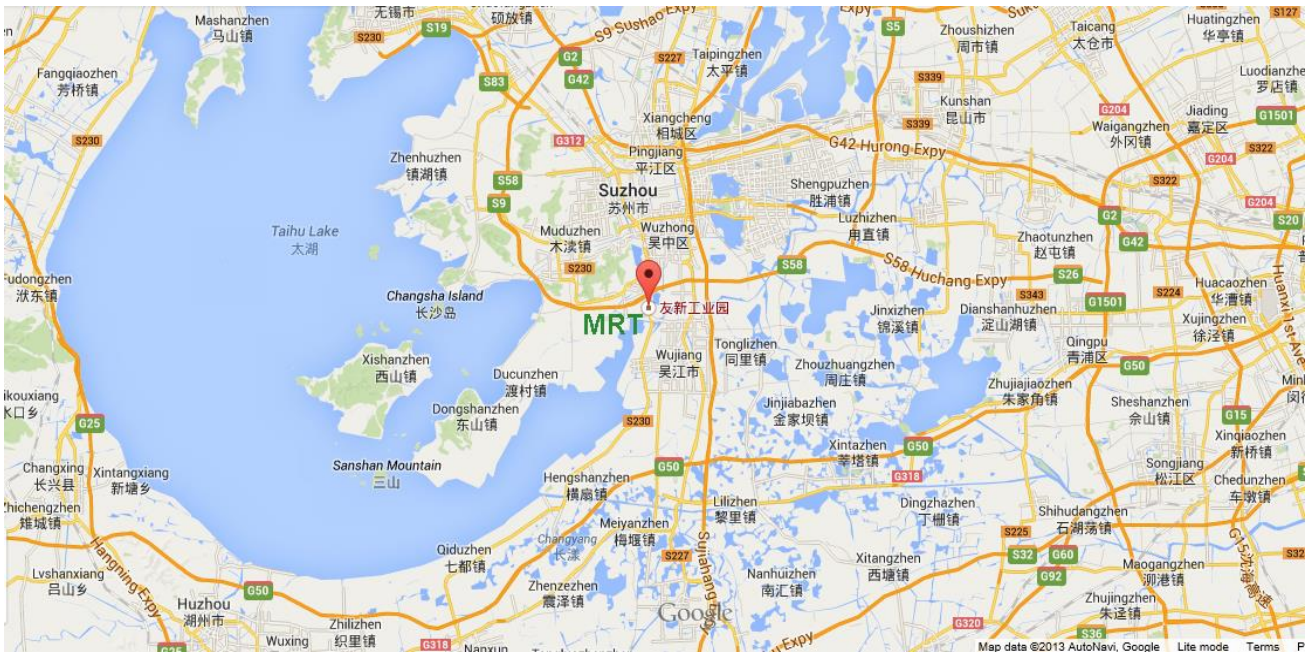
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices includingintentional and/or unintentional radiators for compliance with the technical rules and regulations of the FederalCommunications Commission and the Innovation, Science and Economic Development Canada and Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.



2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name:	LTE-A Cat 16 M.2 Module
Model No.:	EM160R-GL
Brand Name:	QUECTEL
IMEI.:	Conducted Measurement 864292050003142; 864292050000213 Radiated Measurement 864292950003514; 864292050001906
Single Band:	Band 2, 4, 5, 7, 12, 13, 14, 25, 26, 30, 38, 41, 48, 66
Intra-Band:	CA_41C
Category:	Category 16
Operating Temperature:	-25 ~ 75 °C
Power Type:	3.1 ~ 4.4Vdc, typical 3.7Vdc

2.2. Product Specification Subjective to this Report

FDD Tx Frequency Range:	Band 2: 1850 ~ 1910 MHz; Band 4: 1710 ~ 1755 MHz Band 5: 824 ~ 849 MHz; Band 7: 2500 ~ 2570 MHz Band 12: 699 ~ 716 MHz; Band 13: 777 ~ 787 MHz Band 25: 1850 ~ 1915 MHz; Band 26: 824 ~ 849 MHz Band 66: 1710 ~ 1780 MHz
FDD Rx Frequency Range:	Band 2: 1930 ~ 1990 MHz; Band 4: 2110 ~ 2155 MHz Band 5: 869 ~ 894 MHz; Band 7: 2620 ~ 2690 MHz Band 12: 729 ~ 746 MHz; Band 13: 746 ~ 756 MHz Band 25: 1930 ~ 1995 MHz; Band 26: 869 ~ 894 MHz Band 66: 2110 ~ 2200 MHz
TDD Tx & Rx Frequency Range:	Band 38: 2570 ~ 2620 MHz; Band 41: 2496 ~ 2690 MHz;
Uplink CA Band:	Intra-Band CA_41C
Type of Modulation:	QPSK, 16QAM, 64QAM, 256QAM (DL)

Note 1: For other features of this EUT, test report will be issued separately.

Note 2: The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Note 3: LTE band 26 transmit frequency for part 90 rule is 814 ~ 824MHz and part 22 rule is 824 ~ 849MHz. ERP over 15MHz bandwidth complies the ERP limit line of part 22 rule, therefore ERP of the partial frequency spectrum which falls within part 22 also complies.

2.3. Description of Available Antennas

Technology	Frequency Range (MHz)	Antenna Type	Max Peak Gain (dBi)
LTE Band 2	1850 ~ 1910	Dipole	1.15
LTE Band 4	1710 ~ 1755		-0.50
LTE Band 5	824 ~ 849		1.85
LTE Band 7	2500 ~ 2570		1.32
LTE Band 12	699 ~ 716		-2.43
LTE Band 13	777 ~ 787		-0.10
LTE Band 14	788 ~ 798		2.40
LTE Band 25	1850 ~ 1915		1.15
LTE Band 26	814 ~ 849		1.85
LTE Band 30	2305 ~ 2315		-3.64
LTE Band 38	2570 ~ 2620		0.93
LTE Band 41	2496 ~ 2690		0.93
LTE Band 48	3550 ~ 3700		-3.37
LTE Band 66	1710 ~ 1780		-0.50

Note: All antenna information (Antenna type and Peak Gain) is provided by the manufacturer.

2.4. Device Capabilities

This device contains the following capabilities:
Working on LTE Band 2, 4, 5, 7, 12, 13, 14, 25, 26, 30, 38, 41. 66; Intra-band CA_41C LTE Module. LTE Band 66 (1710 ~ 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 ~ 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

LTE Band 25 (1850 ~ 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 ~ 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.

LTE Band 26 (814 ~ 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 ~ 849 MHz). Therefore, test data provided in this report covers Band 5 as well as Band 26.

LTE Band 41 (2496 ~ 2690 MHz) overlaps the entire frequency range of LTE Band 38 (2570 ~ 2620 MHz). Therefore, test data provided in this report covers Band 38 as well as Band 41.

2.5. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

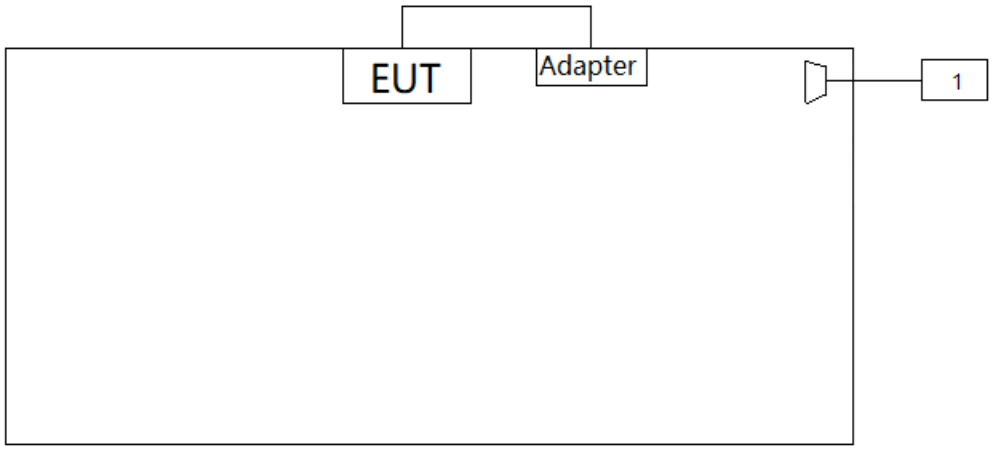
2.6. Maximum Power, Frequency Tolerance, and Emission Designator

LTE Band 2		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
1.4	1850.7 ~ 1909.3	1M08G7D	-	0.2355	1M08W7D	-	0.1928	1M08W7D	-	0.1493
3	1851.5 ~ 1908.5	2M69G7D	-	0.2477	2M69W7D	-	0.2404	2M69W7D	-	0.1629
5	1852.5 ~ 1907.5	4M49G7D	-	0.2449	4M47W7D	-	0.2158	4M47W7D	-	0.1656
10	1855.0 ~ 1905.0	8M95G7D	-	0.2355	8M93W7D	-	0.2113	8M93W7D	-	0.1578
15	1857.5 ~ 1902.5	13M4G7D	-	0.2500	13M4W7D	-	0.2249	13M4W7D	-	0.1702
20	1860.0 ~ 1900.0	17M9G7D	-0.1978	0.2427	17M9W7D	-	0.2203	17M9W7D	-	0.1596
LTE Band 25		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
1.4	1850.7 ~ 1914.3	1M08G7D	-	0.2355	1M08W7D	-	0.1928	1M08W7D	-	0.1493
3	1851.5 ~ 1913.5	2M69G7D	-	0.2477	2M69W7D	-	0.2404	2M69W7D	-	0.1629
5	1852.5 ~ 1912.5	4M49G7D	-	0.2449	4M47W7D	-	0.2158	4M47W7D	-	0.1656
10	1855.0 ~ 1910.0	8M95G7D	-	0.2355	8M93W7D	-	0.2113	8M93W7D	-	0.1578
15	1857.5 ~ 1907.5	13M4G7D	-	0.2500	13M4W7D	-	0.2249	13M4W7D	-	0.1702
20	1860.0 ~ 1905.0	17M9G7D	-0.1978	0.2427	17M9W7D	-	0.2203	17M9W7D	-	0.1596
LTE Band 4		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W))	Designator	Tolerance (ppm)	Max Power (W)
1.4	1710.7 ~ 1754.3	1M08G7D	-	0.2307	1M08W7D	-	0.1816	1M08W7D	-	0.1496
3	1711.5 ~ 1753.5	2M69G7D	-	0.2259	2M68W7D	-	0.2046	2M69W7D	-	0.1507
5	1712.5 ~ 1752.5	4M49G7D	-	0.2244	4M47W7D	-	0.1479	4M48W7D	-	0.1479
10	1715.0 ~ 1750.0	8M95G7D	-	0.2173	8M93W7D	-	0.1476	8M94W7D	-	0.1476
15	1717.5 ~ 1747.5	13M4G7D	-	0.2328	13M4W7D	-	0.2056	13M4W7D	-	0.1592
20	1720.0 ~ 1745.0	17M9G7D	-0.2012	0.2366	17M9W7D	-	0.2118	17M9W7D	-	0.1517
LTE Band 66		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
1.4	1710.7 ~ 1779.3	1M08G7D	-	0.2307	1M08W7D	-	0.1816	1M08W7D	-	0.1496
3	1711.5 ~ 1778.5	2M69G7D	-	0.2259	2M68W7D	-	0.2046	2M69W7D	-	0.1507
5	1712.5 ~ 1777.5	4M49G7D	-	0.2244	4M47W7D	-	0.1479	4M48W7D	-	0.1479
10	1715.0 ~ 1775.0	8M95G7D	-	0.2173	8M93W7D	-	0.1476	8M94W7D	-	0.1476
15	1717.5 ~ 1772.5	13M4G7D	-	0.2328	13M4W7D	-	0.2056	13M4W7D	-	0.1592
20	1720.0 ~ 1770.0	17M9G7D	-0.2012	0.2366	17M9W7D	-	0.2118	17M9W7D	-	0.1517

LTE Band 5		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
1.4	824.7 ~ 848.3	1M08G7D	-	0.2472	1M08W7D	-	0.2042	1M08W7D	-	0.1574
3	825.5 ~ 847.5	2M69G7D	-	0.2529	2M69W7D	-	0.2203	2M69W7D	-	0.1531
5	826.5 ~ 846.5	4M49G7D	-	0.2547	4M48W7D	-	0.2143	4M48W7D	-	0.1589
10	829.0 ~ 844.0	8M95G7D	0.0045	0.2500	8M94W7D	-	0.2218	9M95W7D	-	0.1730
LTE Band 26		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
1.4	824.7 ~ 848.3	1M08G7D	-	0.2472	1M08W7D	-	0.2042	1M08W7D	-	0.1574
3	825.5 ~ 847.5	2M69G7D	-	0.2529	2M69W7D	-	0.2203	2M69W7D	-	0.1531
5	826.5 ~ 846.5	4M49G7D	-	0.2547	4M48W7D	-	0.2143	4M48W7D	-	0.1589
10	829.0 ~ 844.0	8M95G7D	-	0.2500	8M94W7D	-	0.2218	9M95W7D	-	0.1730
15	831.5 ~ 841.5	13M4G7D	0.0045	0.2594	13M4W7D	-	0.2344	13M4W7D	-	0.1871
	821.5	13M4G7D	-	0.2399	13M4W7D	-	0.2344	13M4W7D	-	0.1871
LTE Band 7		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
5	2502.5 ~ 2567.5	4M47G7D	-	0.2667	4M47W7D	-	0.2153	4M47W7D	-	0.1556
10	2505.0 ~ 2565.0	8M94G7D	-	0.2588	8M93W7D	-	0.2244	8M93W7D	-	0.1476
15	2507.5 ~ 2562.5	13M4G7D	-	0.2679	13M4W7D	-	0.2460	13M4W7D	-	0.1641
20	2510.0 ~ 2560.0	17M9G7D	0.0045	0.2748	17M8W7D	-	0.2466	17M9W7D	-	0.1578
LTE Band 12		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
1.4	699.7 ~ 715.3	1M08G7D	-	0.2618	1M08W7D	-	0.2249	1M08W7D	-	0.1832
3	700.5 ~ 714.5	2M68G7D	-	0.2642	2M68W7D	-	0.2355	2M69W7D	-	0.1671
5	701.5 ~ 713.5	4M46G7D	-	0.2636	4M46W7D	-	0.2178	4M45W7D	-	0.2153
10	704.0 ~ 711.0	8M94G7D	0.0094	0.2655	8M92W7D		0.2455	8M93W7D	-	0.1734
LTE Band 13		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
5	779.5 ~ 784.5	4M47G7D	-	0.2767	4M47W7D	-	0.2333	4M47W7D	-	0.1892
10	782.0	8M94G7D	0.0074	0.2606	8M93W7D	-	0.2449	8M94W7D	-	0.1862

LTE Band 38		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max EIRP (W)	Designator	Tolerance (ppm)	Max EIRP (W)	Designator	Tolerance (ppm)	Max Power (W)
5	2572.5 ~ 2617.5	4M48G7D	-	0.2606	4M46W7D	-	0.2489	4M46W7D	-	0.2460
10	2575.0 ~ 2615.0	8M93G7D	-	0.2679	8M93W7D	-	0.2466	8M93W7D	-	0.2168
15	2577.5 ~ 2612.5	13M4G7D	-	0.2773	13M4W7D	-	0.2535	13M4W7D	-	0.2355
20	2580 ~ 2610.0	17M9G7D	-0.1980	0.2748	17M8W7D	-	0.2594	17M9W7D	-	0.2275
LTE Band 41		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
5	2498.5 ~ 2687.5	4M48G7D	-	0.2606	4M46W7D	-	0.2489	4M46W7D	-	0.2460
10	2501.0 ~ 2685.0	8M93G7D	-	0.2679	8M93W7D	-	0.2466	8M93W7D	-	0.2168
15	2503.5 ~ 2682.5	13M4G7D	-	0.2773	13M4W7D	-	0.2535	13M4W7D	-	0.2355
20	2506.0 ~ 2680.0	17M9G7D	-0.1980	0.2748	17M8W7D	-	0.2594	17M9W7D	-	0.2275
LTE Band 41 For HPUE		QPSK			16QAM			64QAM		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
5	2498.5 ~ 2687.5	4M47G7D	-	0.3741	4M46W7D	-	0.3170	4M48W7D	-	0.2938
10	2501.0 ~ 2685.0	8M95G7D	-	0.3750	8M95W7D	-	0.3199	8M94W7D	-	0.2685
15	2503.5 ~ 2682.5	13M4G7D	-	0.3837	13M4W7D	-	0.3289	13M4W7D	-	0.2723
20	2506.0 ~ 2680.0	17M9G7D	0.0038	0.3908	17M9W7D	-	0.3304	17M9W7D	-	0.2864
LTE Band 41 CA		QPSK			16QAM			64QAM		
BW (MHz)		Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)	Designator	Tolerance (ppm)	Max Power (W)
5 + 20MHz		22M6G7D	-	0.2301	22M5W7D	-	0.2080	22M5W7D	-	0.1866
10 + 15MHz		22M9G7D	-	0.2350	22M9W7D	-	0.2000	22M9W7D	-	0.1892
10 + 20MHz		27M5G7D	-	0.2382	27M5W7D	-	0.2032	27M4W7D	-	0.1950
15 + 10MHz		22M9G7D	-	0.2404	22M9W7D	-	0.1963	23M1W7D	-	0.1875
15 + 15MHz		28M1G7D	-	0.2275	28M1W7D	-	0.1932	28M1W7D	-	0.1782
15 + 20MHz		32M4G7D	-	0.2291	32M3W7D	-	0.2123	32M4W7D	-	0.1919
20 + 5MHz		22M8G7D	-	0.2203	22M8W7D	-	0.2000	22M8W7D	-	0.2023
20 + 10MHz		27M6G7D	-	0.2307	27M6W7D	-	0.2061	27M5W7D	-	0.1858
20 + 15MHz		32M4G7D	-	0.2239	32M4W7D	-	0.1914	32M4W7D	-	0.1858
20 + 20MHz		37M4G7D	-	0.2286	37M2W7D	-	0.1936	37M2W7D	-	0.1884

2.7. Configuration of Tested System



Product		Manufacturer	Model No.
1	Wideband Radio Communication Tester	R&S	CMW 500

2.8. Test Environment Condition

Ambient Temperature	15°C~35°C
Relative Humidity	20%RH ~75%RH

3. TEST EQUIPMENT CALIBRATION DATE

Radiated Emission - AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2021/08/01
Wideband Radio Communication Tester	R&S	CMW 500	MRTSUE06243	1 year	2020/11/07
PXA Signal Analyzer	Keysight	9030B	MRTSUE06395	1 year	2020/09/03
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2020/11/10
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2021/03/31
Broad Band Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2020/10/13
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2021/02/23
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2020/11/15
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
EMC Cable	HUBER+SUHNER	SF126-2M	MRTSUE06732	1 year	2021/04/11
Thermohygrometer	Testo	608-H1	MRTSUE06403	1 year	2021/08/08
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2021/04/30

Radiated Emission - AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Keysight	N9038A	MRTSUE06125	1 year	2021/08/01
Wideband Radio Communication Tester	R&S	CMW 500	MRTSUE06243	1 year	2020/11/07
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2020/11/10
Bilog Period Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2020/10/13
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06171	1 year	2020/10/27
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2021/02/23
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2020/11/15
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
EMC Cable	HUBER+SUHNER	SF126-2M	MRTSUE06733	1 year	2021/04/10
Temperature/Humidity Meter	Minggao	ETH529	MRTSUE06170	1 year	2020/12/15
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2021/04/30

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2021/04/15
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06452	1 year	2021/07/11
Signal Analyzer	R&S	FSV40	MRTSUE06218	1 year	2021/04/15
Wideband Radio Communication Tester	R&S	CMW 500	MRTSUE06243	1 year	2020/11/07
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2020/11/18
DC Power Supply	GWINSTEK	DPS-3303C	MRTSUE06064	N/A	N/A
True RMS Clamp Meter	Fluke	319	MRTSUE06080	1 year	2021/05/06
Directional Coupler	Agilent	87301D	MRTSUE06082	1 year	2021/03/25
Attenuator	MVE	6dB	MRTSUE06534	1 year	2020/12/12
Attenuator	MVE	10dB	MRTSUE06543	1 year	2020/12/12
Temperature & Humidity Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2020/11/07
Thermohygrometer	testo	608-H1	MRTSUE06401	1 year	2021/08/08

Software	Version	Function
EMI Software	V3	EMI Test Software

4. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Radiated Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Horizontal: 9kHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 9kHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.13dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.15dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.28%

5. TEST RESULT

5.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	Conducted	Pass	Section 5.2
2.1055, 22.355 24.235, 27.54	Frequency Stability	< 2.5 ppm		Pass	Section 5.3
22.913(a)(5)	Equivalent Radiated Power (Band 5/26)	< 7 Watts Max ERP		Pass	Section 5.4
27.50(b)(10) 27.50(c)(10)	Equivalent Radiated Power (Band 12, 13)	< 3 Watts Max ERP			
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 7, 38/41)	< 2 Watts Max EIRP			
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts Max EIRP			
2.1051, 22.917(a) 24.238(a), 27.53(c), 27.53(g), 27.53(h)	Band Edge (Band 2/25, 4/66, 5/26, 12, 13)	< 43 + 10log10 (P[Watts])		Pass	Section 5.5, 5.7
27.53(m)	Band Edge (Band 7, 38/41)	27.53(m)(4)			
2.1051, 22.917(a) 24.238(a), 27.53(c), 27.53(g), 27.53(h)	Spurious Emission (Band 2/25, 4/66, 5/26, 12, 13)	< 43 + 10log10 (P[Watts])			
2.1051, 27.53(m)	Spurious Emission (Band 7, 38/41)	< 55 + 10log10 (P[Watts])			
24.232(d), 27.50(d)(5)	Peak to Average Ratio	< 13dB		Pass	Section 5.6
2.1053, 22.917(a) 24.238(a), 27.53(c) (f) (g) (h)	Spurious Emissions (Band 2/25, 4/66, 5/26, 12, 13)	> 43 + 10log10 (P[Watts])	Radiated	Pass	Section 5.8
27.53(m)	Spurious Emissions (Band 7, 38/41)	27.53(m)(4)			

Notes:

1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

2) All supported modulation types were evaluated. The worst-case emission of modulation was selected. Therefore, the Frequency Stability, Channel Band Edge, Radiated & Conducted Spurious Emission were presented in the test report.

5.2. Occupied Bandwidth

5.2.1. Test Limit

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

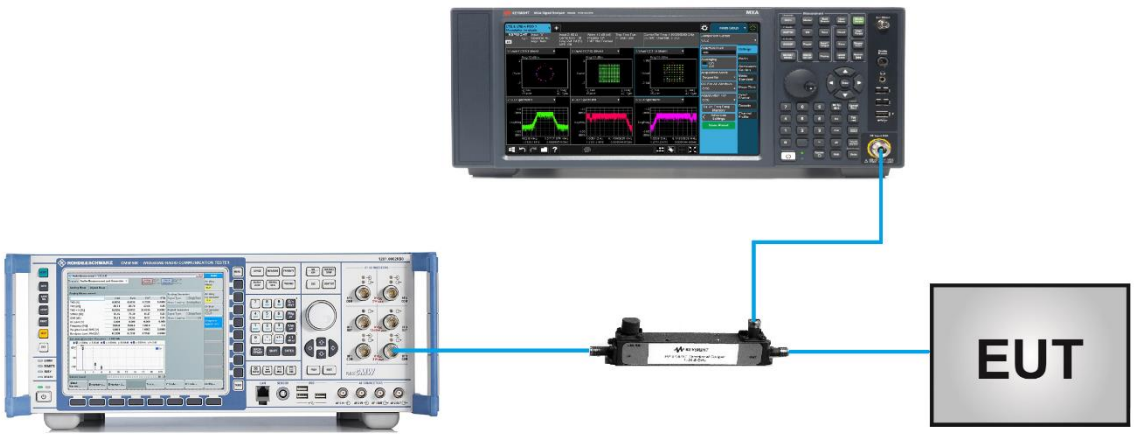
5.2.2. Test Procedure

ANSI C63.26-2015 - Section 5.4

5.2.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency
2. RBW = The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW
3. VBW ≥ 3 × RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize
8. Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

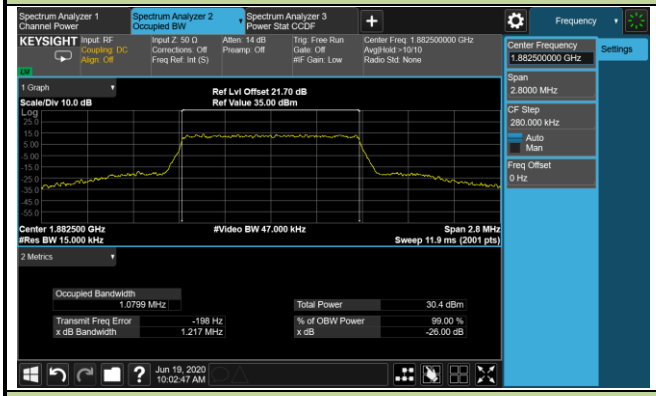
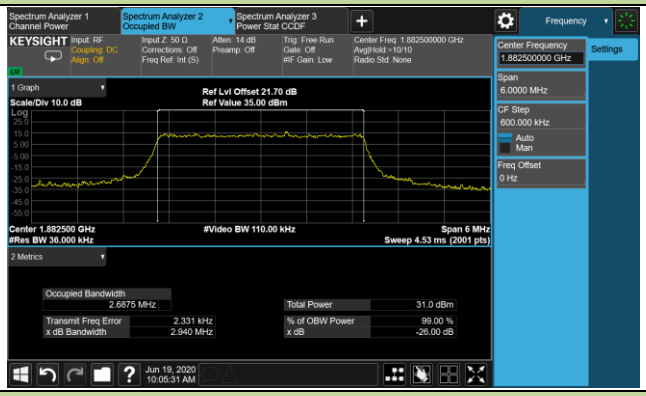
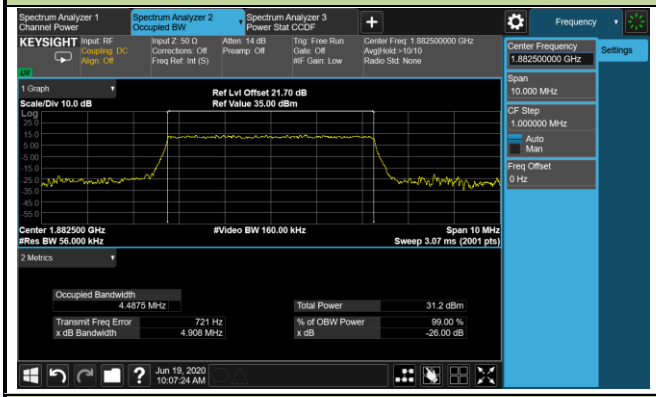
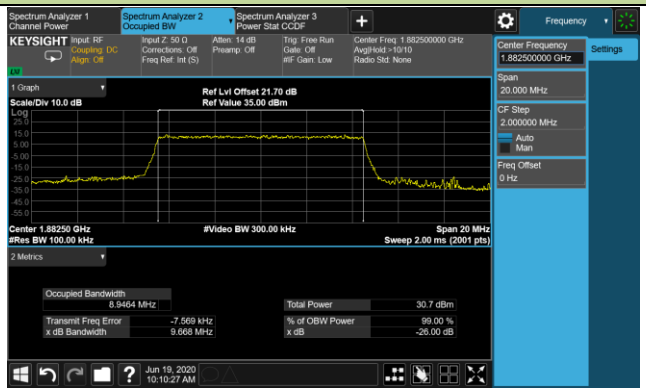
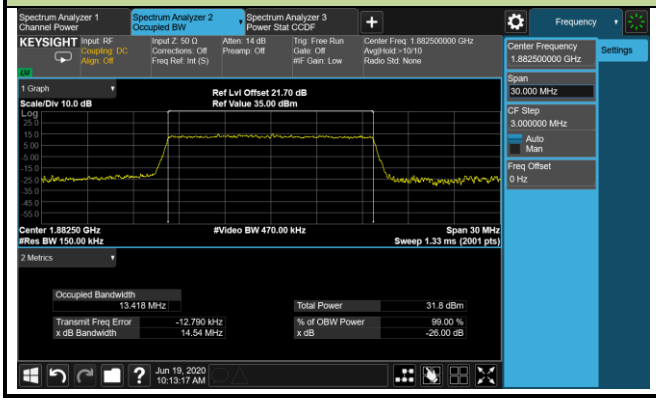
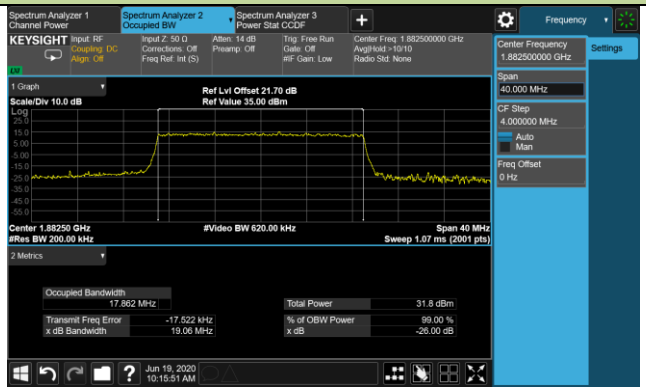
5.2.4. Test Setup

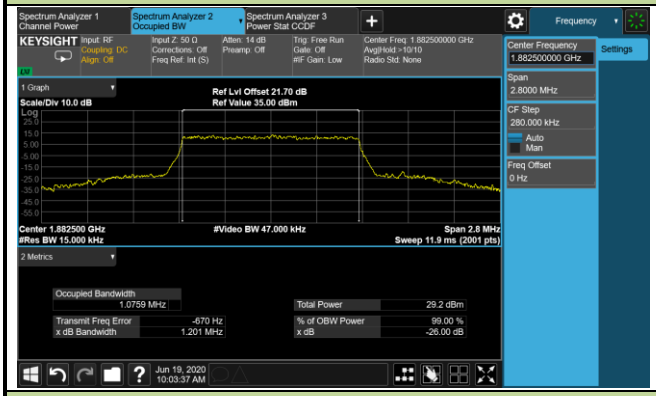
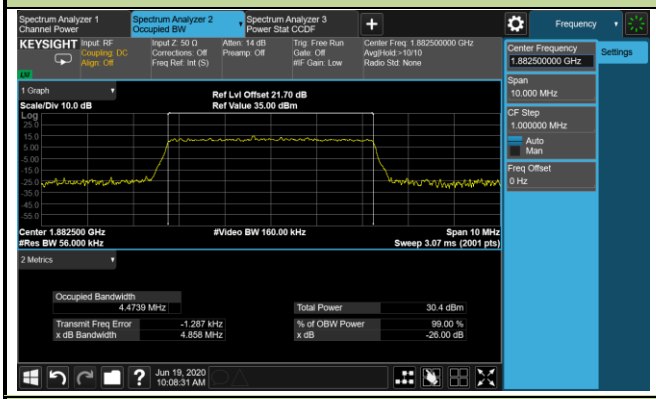
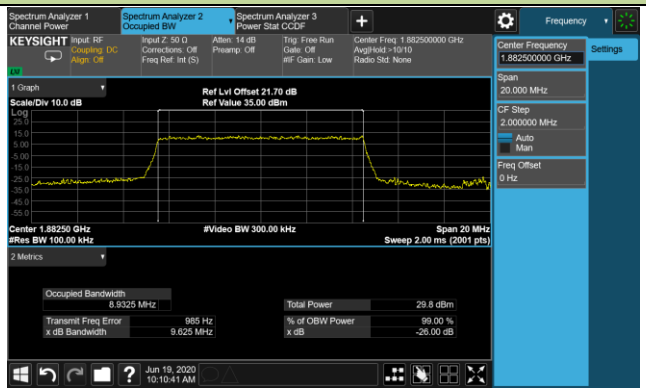
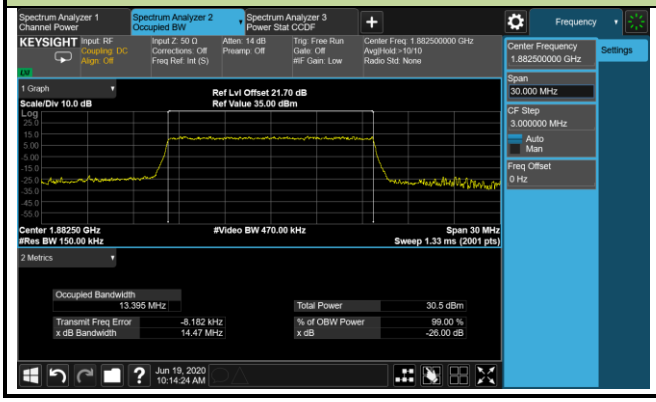
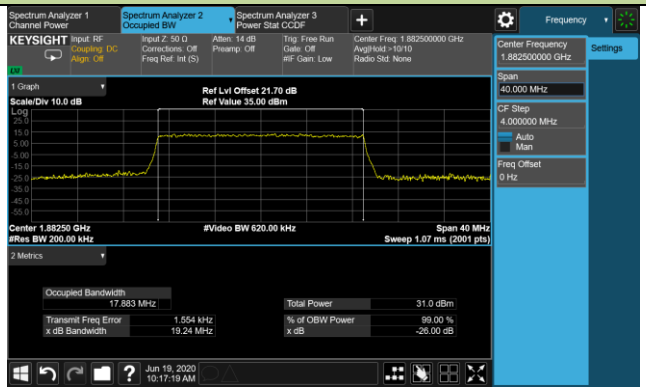


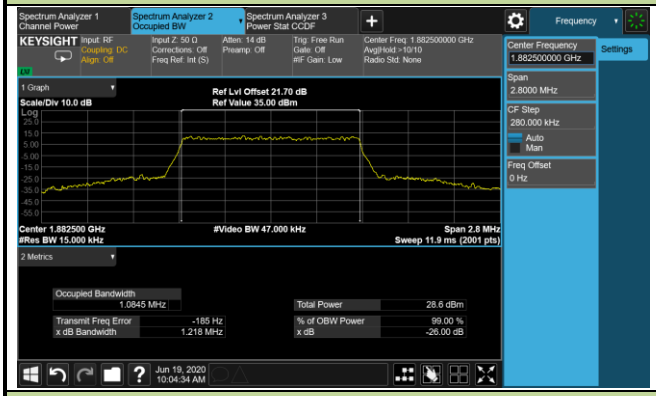
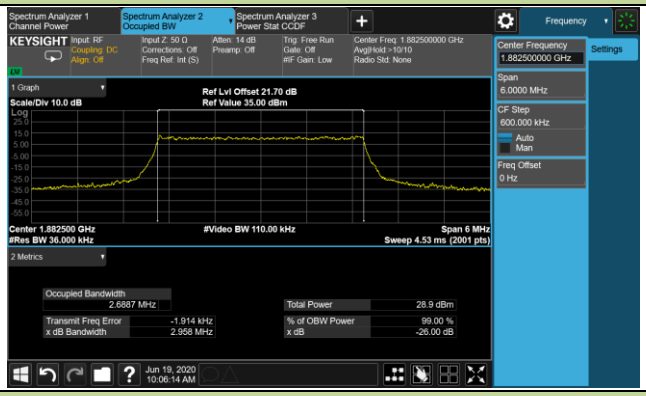
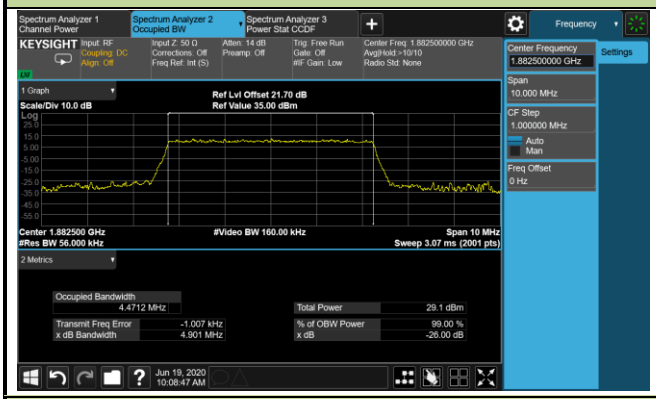
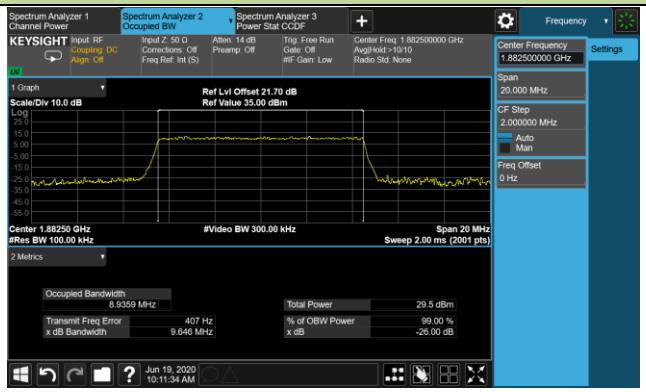
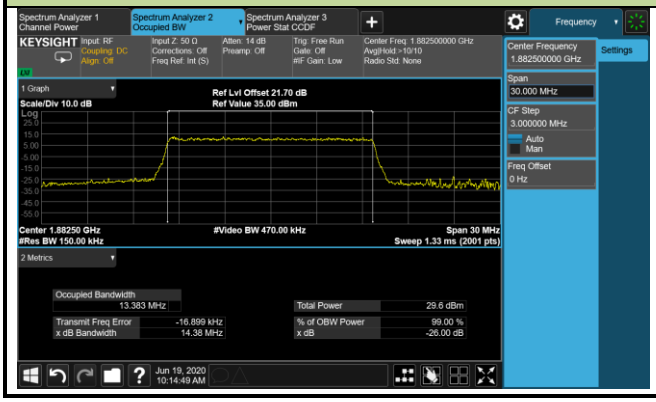
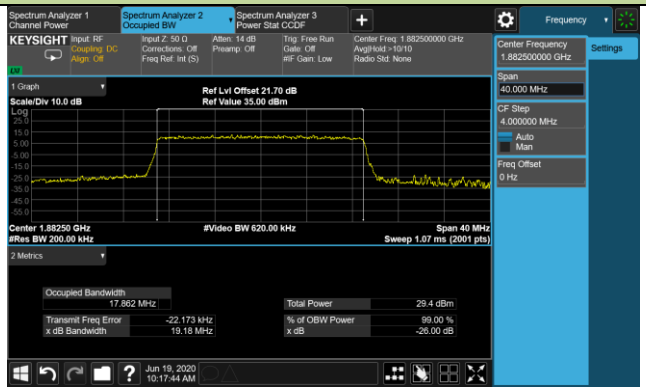
5.2.5. Test Result

Product	LTE-A Cat 16 M.2 Module	Test Engineer	Candy Luo
Test Date	2020/06/19	Test Site	SR6
Test Band	Band 2/25		

Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
26365	1882.5	1.4	1.08
26365	1882.5	3	2.69
26365	1882.5	5	4.49
26365	1882.5	10	8.95
26365	1882.5	15	13.42
26365	1882.5	20	17.86
16QAM			
26365	1882.5	1.4	1.08
26365	1882.5	3	2.69
26365	1882.5	5	4.47
26365	1882.5	10	8.93
26365	1882.5	15	13.40
26365	1882.5	20	17.88
64QAM			
26365	1882.5	1.4	1.08
26365	1882.5	3	2.69
26365	1882.5	5	4.47
26365	1882.5	10	8.93
26365	1882.5	15	13.38
26365	1882.5	20	17.86

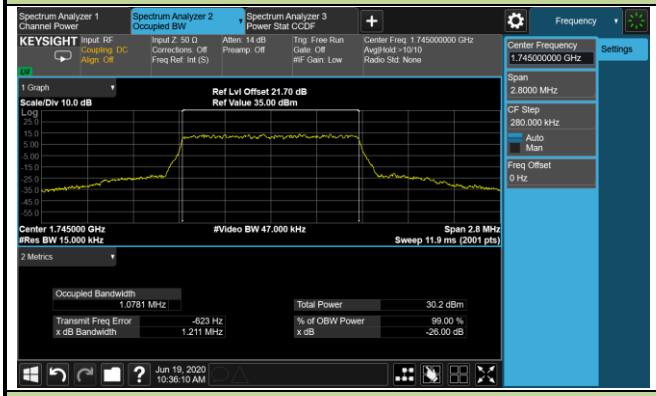
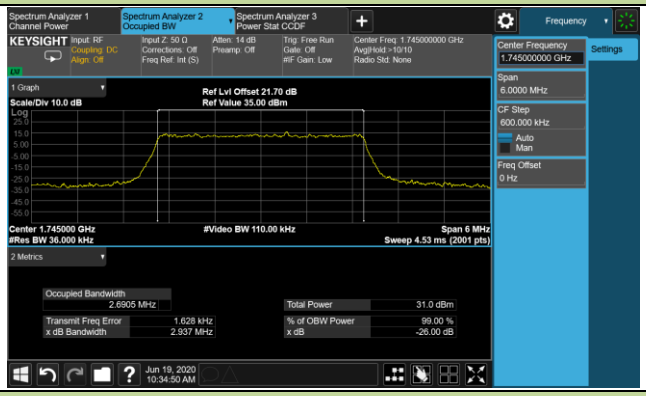
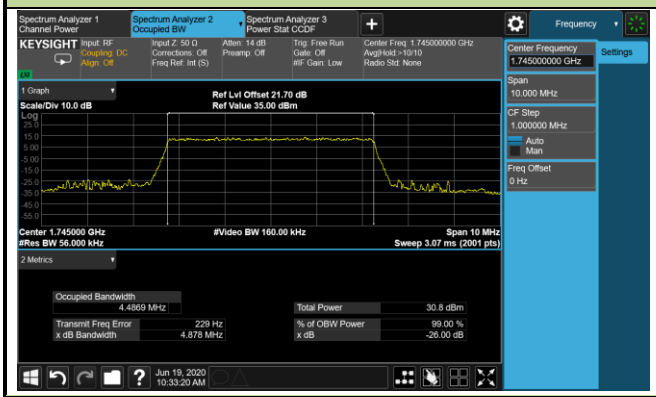
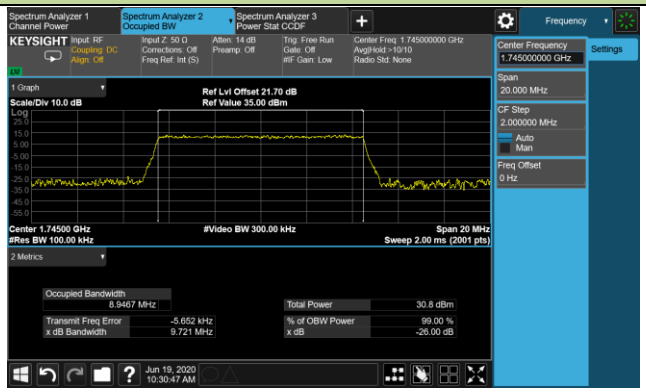
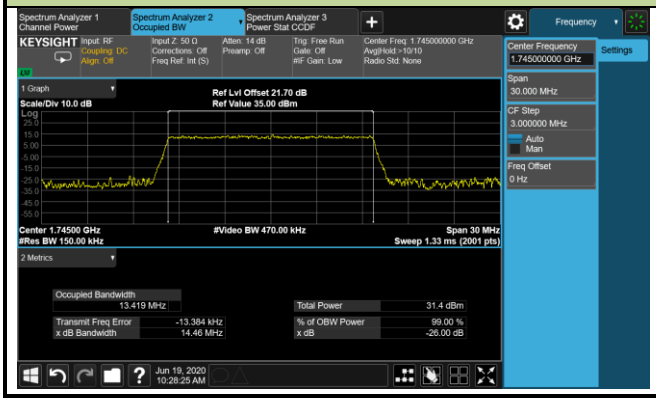
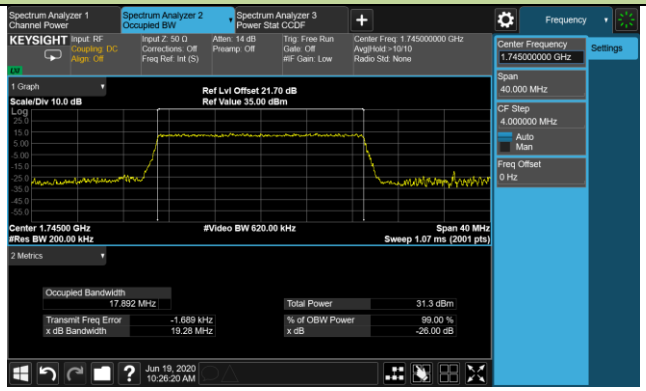
99% Bandwidth - QPSK	
1.4MHz Channel Bandwidth	3MHz Channel Bandwidth
	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	20MHz Channel Bandwidth
	

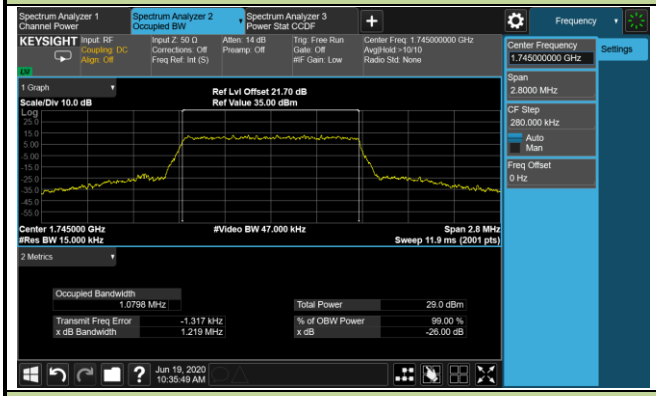
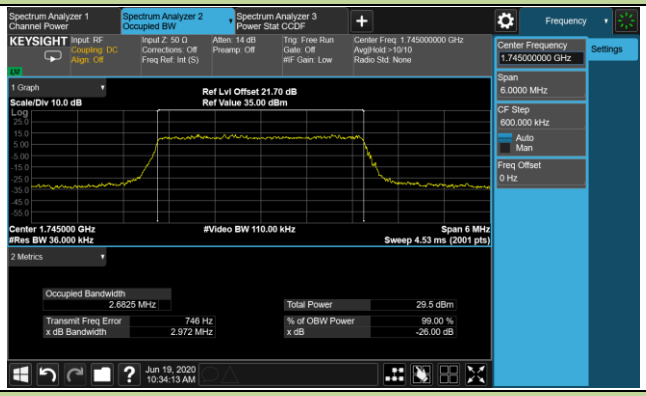
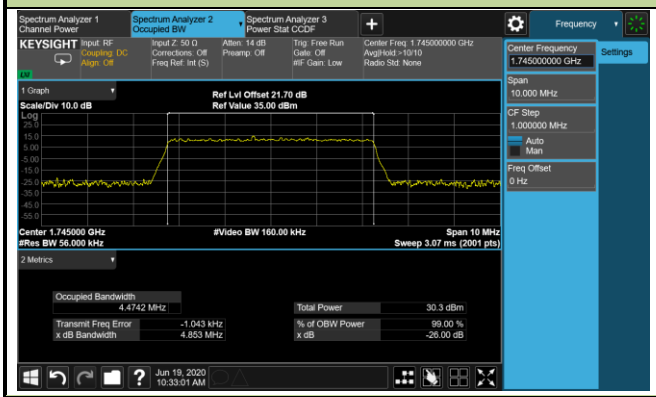
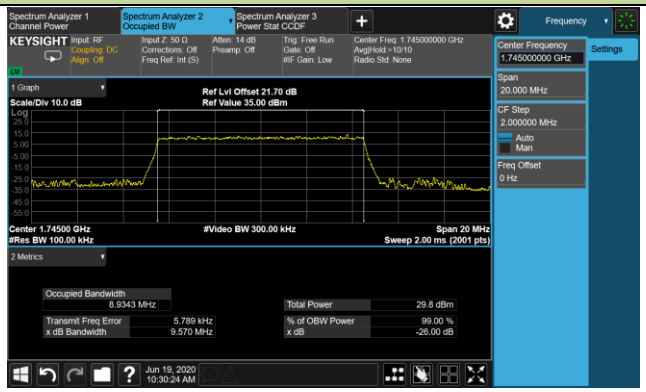
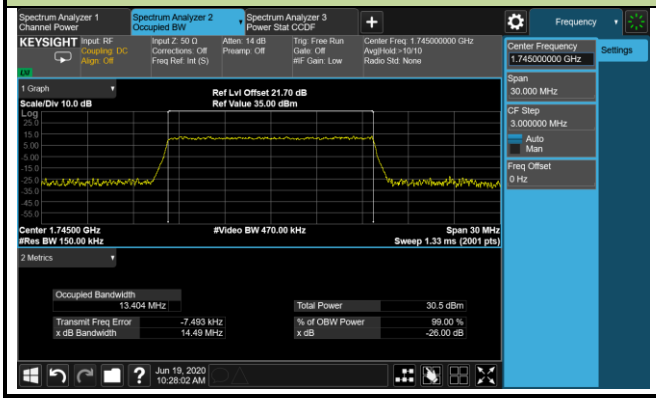
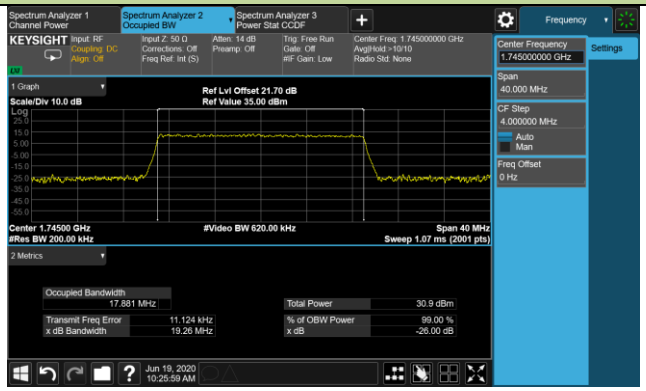
99% Bandwidth - 16QAM	
1.4MHz Channel Bandwidth	3MHz Channel Bandwidth
	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	20MHz Channel Bandwidth
	

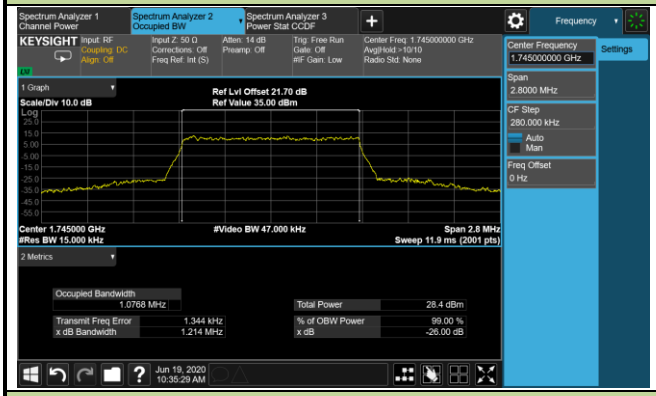
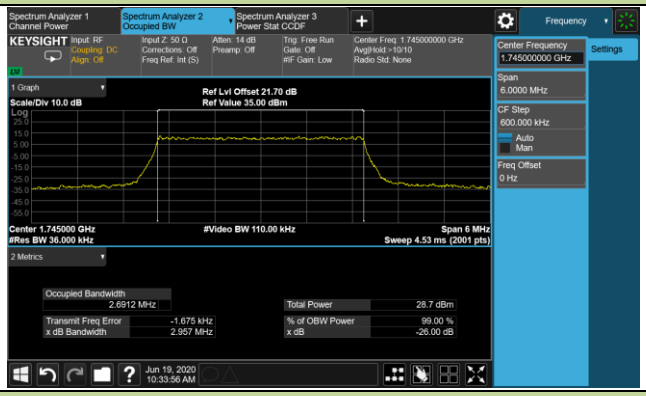
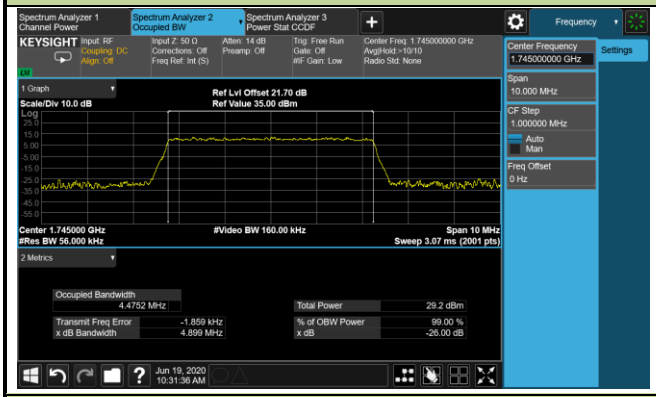
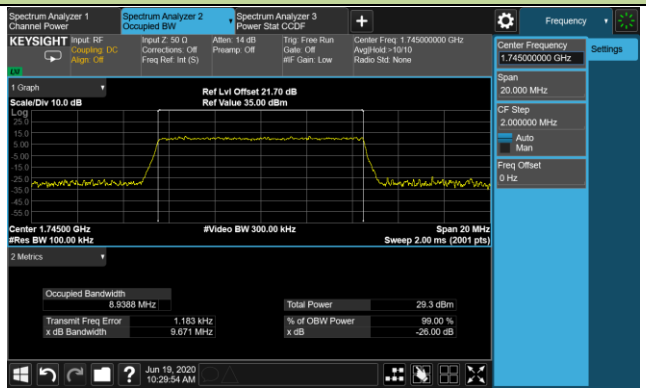
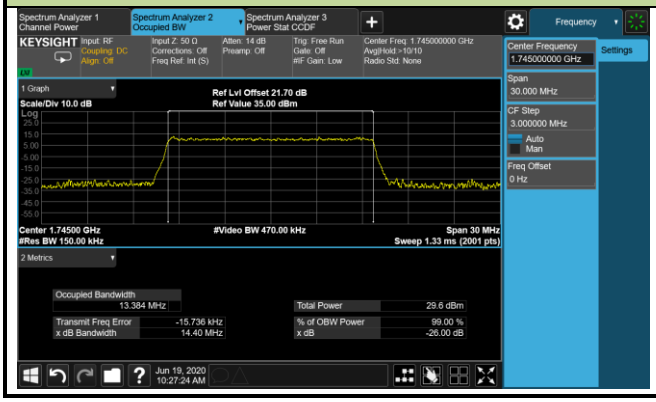
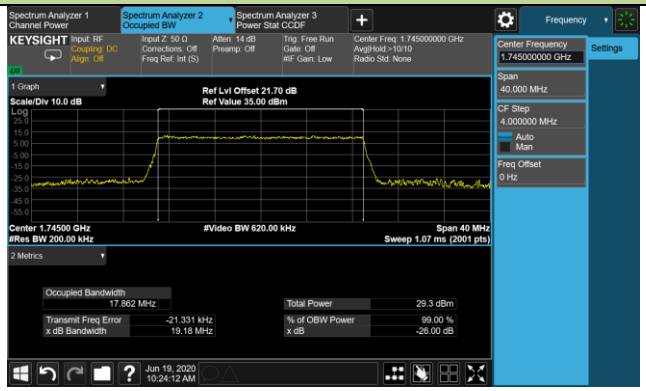
99% Bandwidth - 64QAM	
1.4MHz Channel Bandwidth	3MHz Channel Bandwidth
	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	20MHz Channel Bandwidth
	

Product	LTE-A Cat 16 M.2 Module	Test Engineer	Candy Luo
Test Date	2020/06/19	Test Site	SR6
Test Band	Band 4/66		

Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
132322	1745.0	1.4	1.08
132322	1745.0	3	2.69
132322	1745.0	5	4.49
132322	1745.0	10	8.95
132322	1745.0	15	13.42
132322	1745.0	20	17.89
16QAM			
132322	1745.0	1.4	1.08
132322	1745.0	3	2.68
132322	1745.0	5	4.47
132322	1745.0	10	8.93
132322	1745.0	15	13.40
132322	1745.0	20	17.88
64QAM			
132322	1745.0	1.4	1.08
132322	1745.0	3	2.69
132322	1745.0	5	4.48
132322	1745.0	10	8.94
132322	1745.0	15	13.38
132322	1745.0	20	17.86

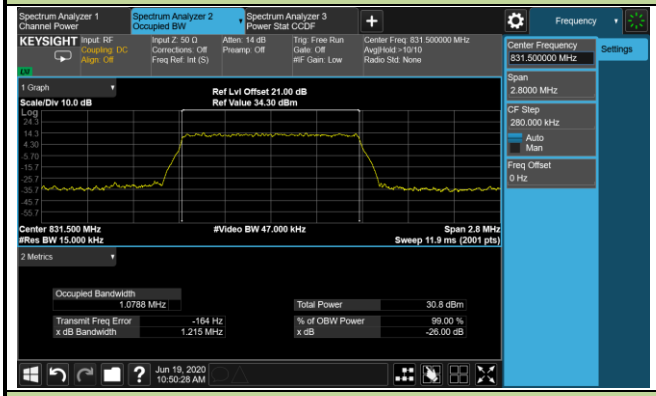
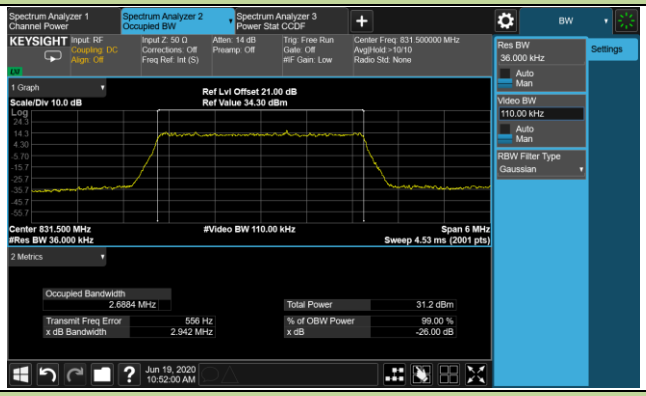
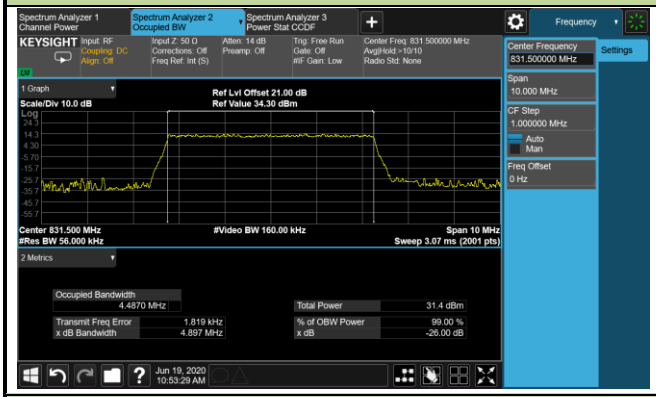
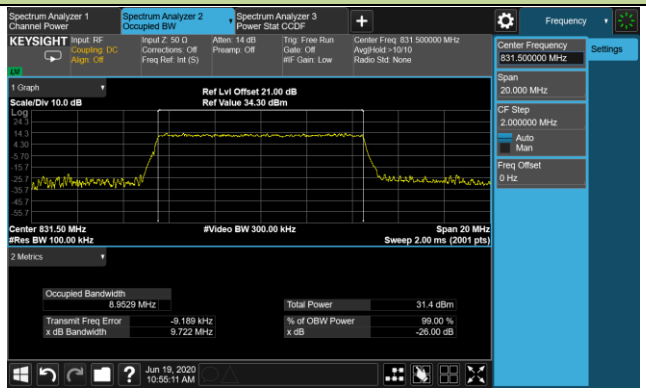
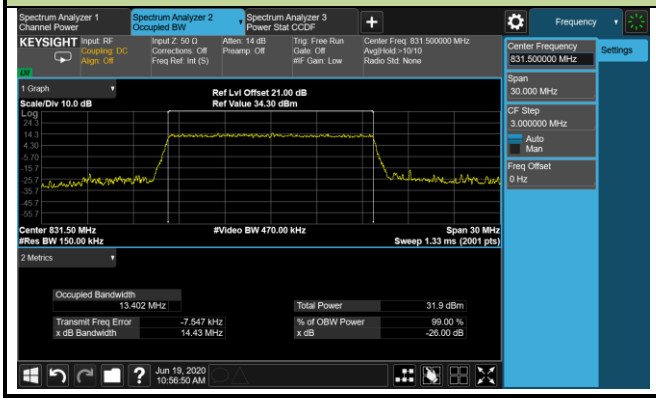
99% Bandwidth - QPSK	
1.4MHz Channel Bandwidth	3MHz Channel Bandwidth
	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	20MHz Channel Bandwidth
	

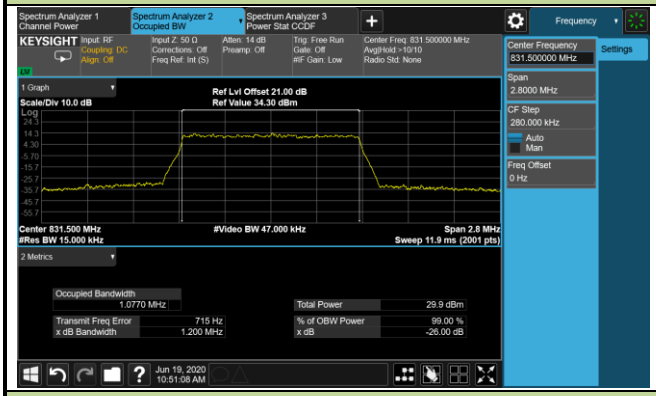
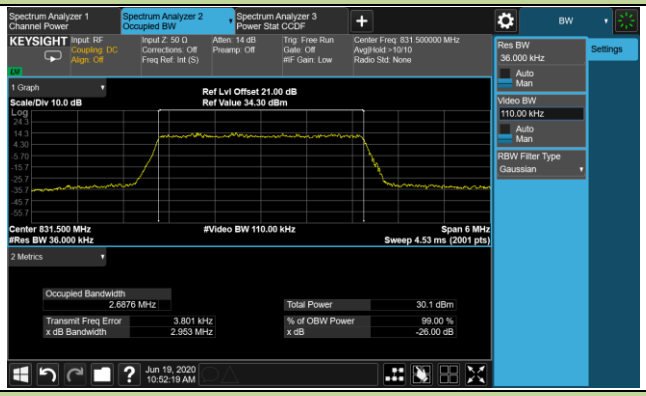
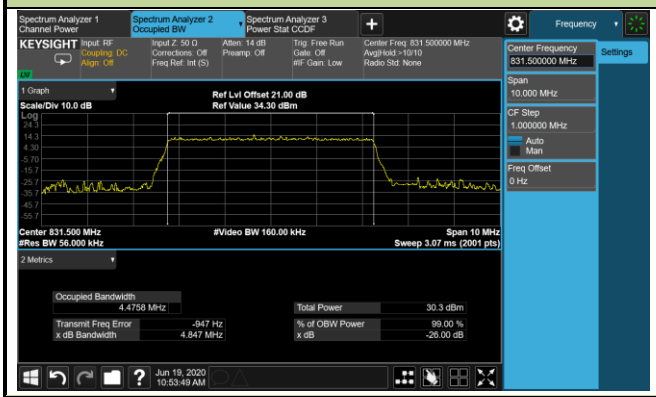
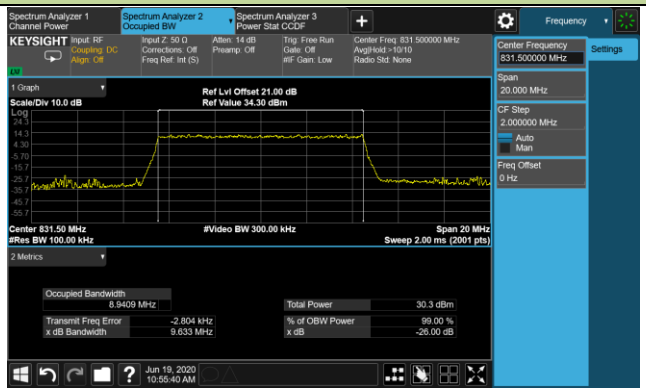
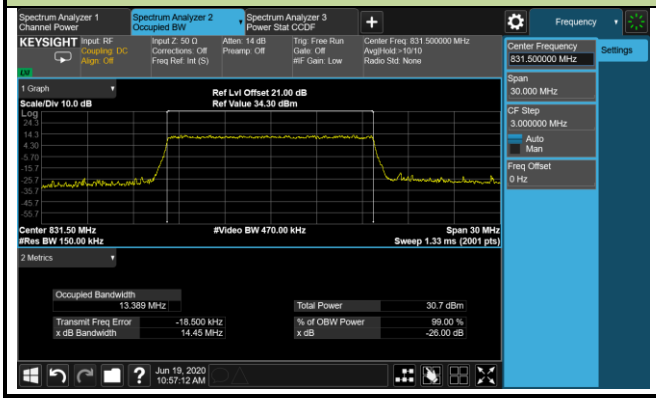
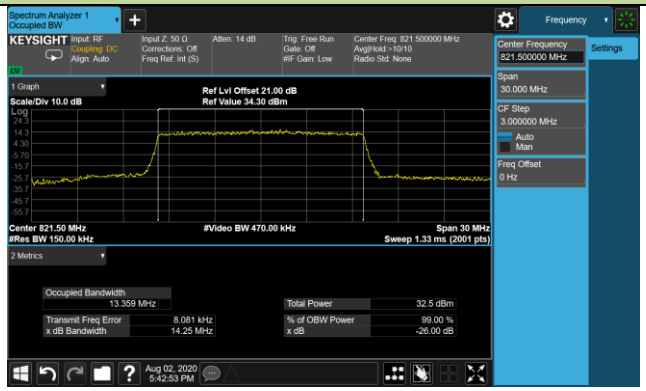
99% Bandwidth - 16QAM	
1.4MHz Channel Bandwidth	3MHz Channel Bandwidth
	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	20MHz Channel Bandwidth
	

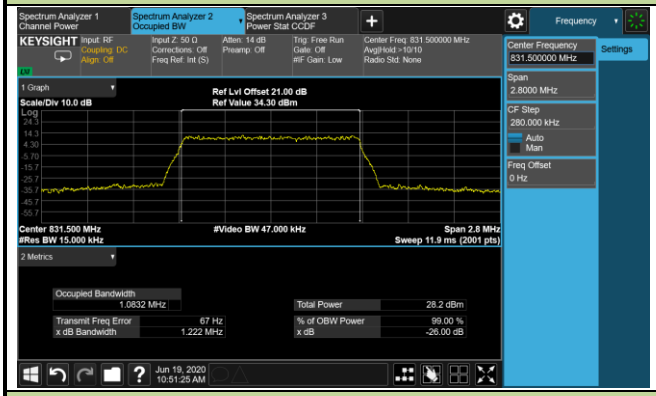
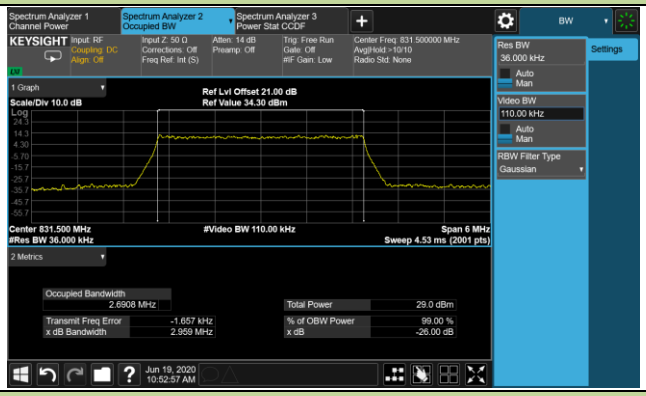
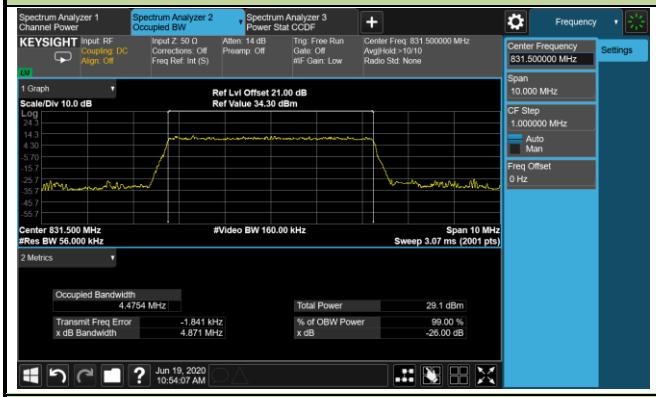
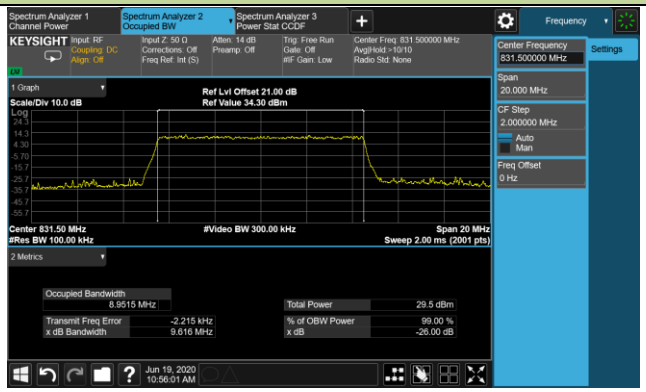
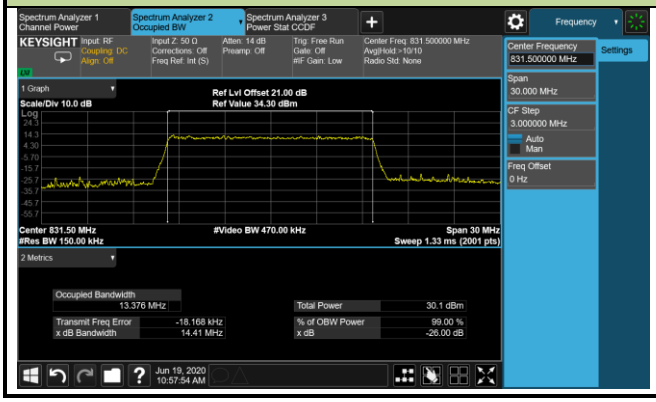
99% Bandwidth - 64QAM	
1.4MHz Channel Bandwidth	3MHz Channel Bandwidth
	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	20MHz Channel Bandwidth
	

Product	LTE-A Cat 16 M.2 Module	Test Engineer	Candy Luo
Test Date	2020/06/19	Test Site	SR6
Test Band	LTE Band 5/26		

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	831.5	1.4	1.08
		3	2.69
		5	4.49
		10	8.95
		15	13.40
16QAM	831.5	1.4	1.08
		3	2.69
		5	4.48
		10	8.94
		15	13.39
64QAM	831.5	1.4	1.08
		3	2.69
		5	4.48
		10	8.95
		15	13.38
QPSK	821.5	15	13.38
16QAM			13.36
64QAM			13.37

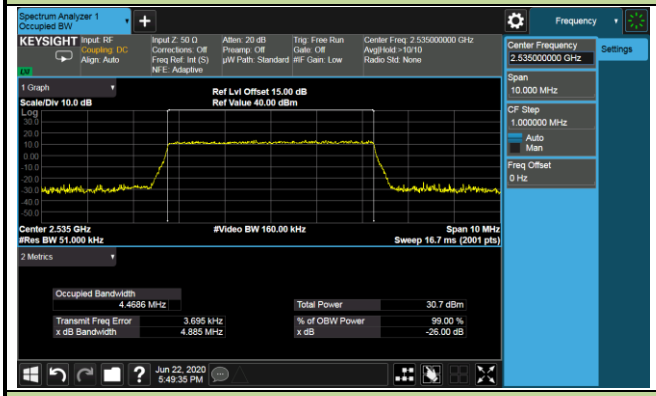
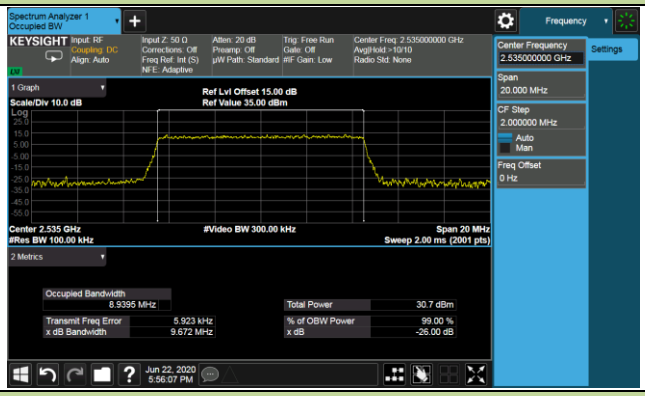
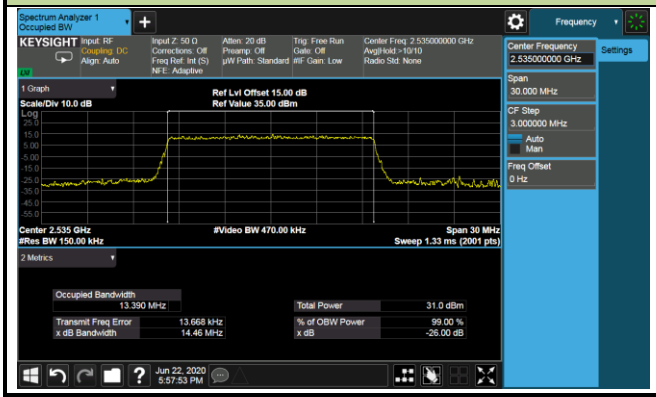
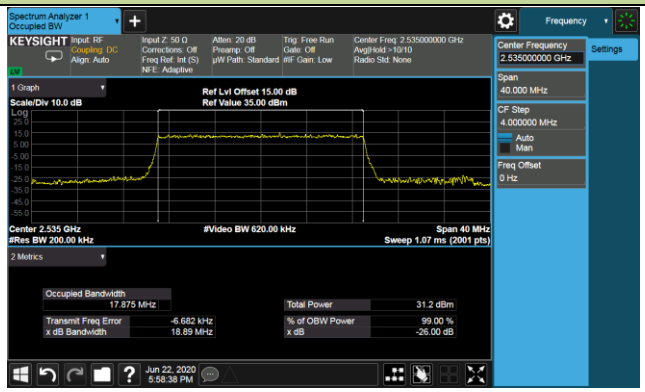
99% Bandwidth - QPSK	
1.4MHz Channel Bandwidth	3MHz Channel Bandwidth
	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	821.5MHz
	

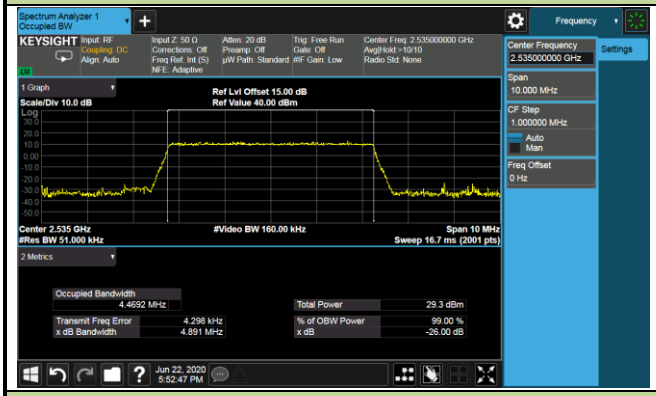
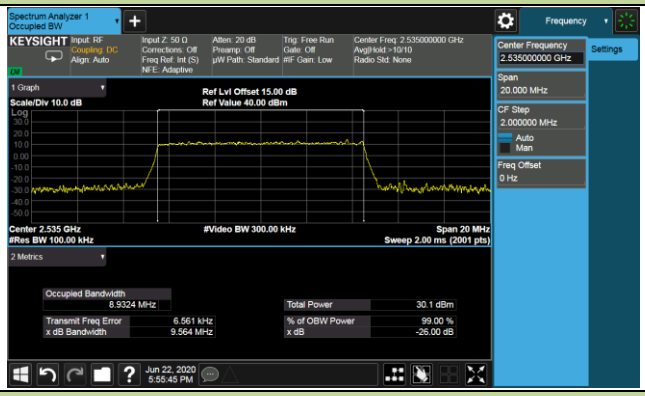
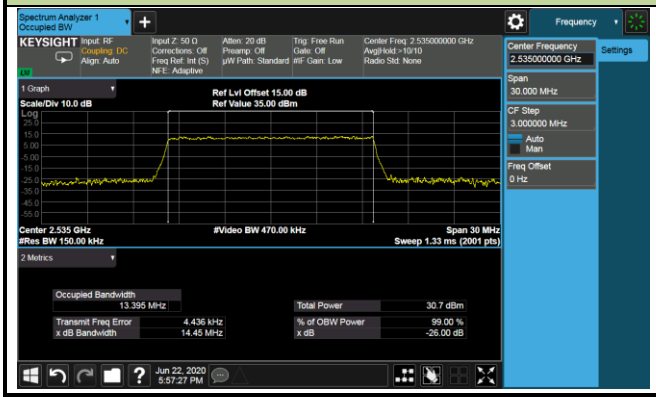
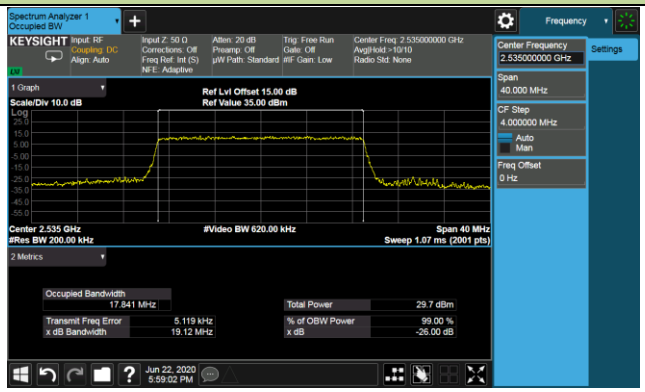
99% Bandwidth - 16QAM	
1.4MHz Channel Bandwidth	3MHz Channel Bandwidth
	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	821.5MHz
	

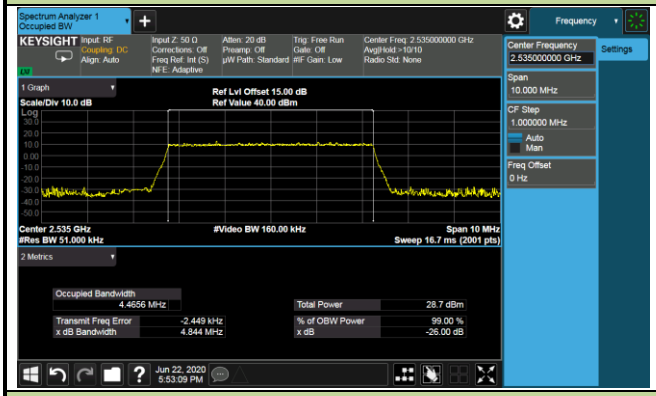
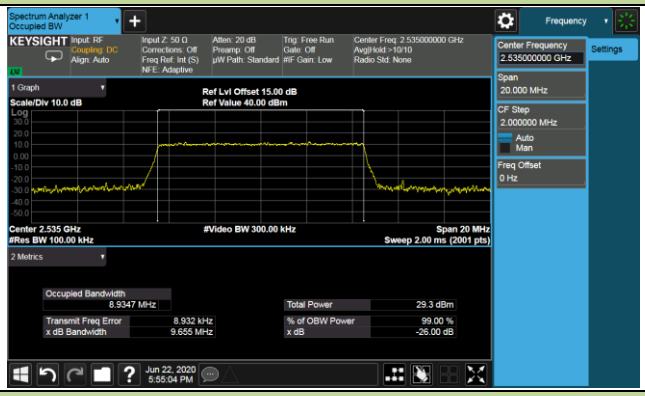
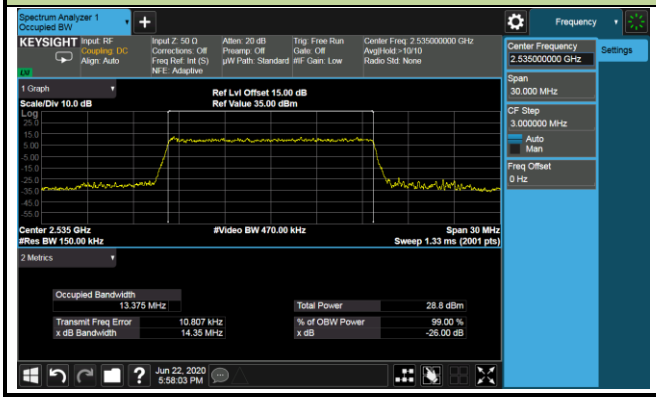
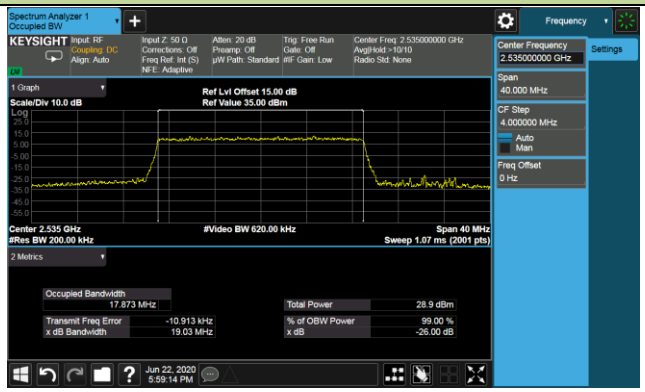
99% Bandwidth - 64QAM	
1.4MHz Channel Bandwidth	3MHz Channel Bandwidth
	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	821.5MHz
	

Product	LTE-A Cat 16 M.2 Module	Test Engineer	Candy Luo
Test Date	2020/06/22	Test Site	SR6
Test Band	LTE Band 7		

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	2535.0	5	4.47
		10	8.94
		15	13.39
		20	17.88
16QAM	2535.0	5	4.47
		10	8.93
		15	13.40
		20	17.84
64QAM	2535.0	5	4.47
		10	8.93
		15	13.38
		20	17.88

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
	

Product	LTE-A Cat 16 M.2 Module	Test Engineer	Candy Luo
Test Date	2020/06/22	Test Site	SR6
Test Band	LTE Band 12		

Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	707.5	1.4	1.08
		3	2.68
		5	4.46
		10	8.94
16QAM	707.5	1.4	1.08
		3	2.68
		5	4.46
		10	8.92
64QAM	707.5	1.4	1.08
		3	2.69
		5	4.45
		10	8.93