RF MEASUREMENT REPORT

FCC ID:	XMR2022EM120KGL
Application:	Quectel Wireless Solutions Company Limited
Product:	LTE-A Cat 12 M.2 Module
Model No.:	EM120K-GL
Brand Name:	Quectel
FCC Rule Part(s):	Part 27 Subpart D
Result:	Complies
Test Date:	2022-03-22 ~ 2022-05-12

Reviewed By: Sunny Sun

Approved By: Robin Wu

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.26-2015. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
2203RSU046-U5	Rev. 01	Initial Report	2022-05-28	Valid

CONTENTS

1. Genneral Information

1.1. Applicant

Quectel Wireless Solutions Company Limited

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

1.2. Manufacturer

Quectel Wireless Solutions Company Limited

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

1.3. Testing Facility

☒	**Test Site – MRT Suzhou Laboratory**				
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China **Laboratory Location (Suzhou - SIP)** 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China				
	Laboratory Accreditations				
	A2LA: 3628.01		CNAS: L10551		
	FCC: CN1166		ISED: CN0001		
	VCCI:	☐R-20025	☐G-20034	☐C-20020	☐T-20020
		☐R-20141	☐G-20134	☐C-20103	☐T-20104
☐	**Test Site – MRT Shenzhen Laboratory**				
	Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	**Test Site – MRT Taiwan Laboratory**				
	Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
	TAF: L3261-190725				
	FCC: 291082, TW3261		ISED: TW3261		

1.4. Product Information

Product Name	LTE-A Cat 12 M.2 Module
Model No.	EM120K-GL
Brand Name	Quectel
IMEI	861293060003570
UTRA Specification	Band 2, 4, 5
E-UTRA Specification	FDD Band: 2, 4, 5, 7, 12, 13, 14, 17, 25, 26, 30, 66, 71 TDD Band: 38, 41, 46
GNSS Specification	GPS, GLONASS, Bei Dou, Galileo
Supply Voltage	3.135 ~ 4.4Vdc, typical 3.7Vdc
Operating Temperature:	-25 ~ 75 °C
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Product Specification under Test

E-UTRA Specification	
Single Band	FDD Band: 30
Modulation	UL up to 64QAM, DL up to 256QAM
FDD T_X Frequency Range	Band 30: 2305 ~ 2315 MHz
FDD R_X Frequency Range	Band 30: 2350 ~ 2360 MHz

1.6. Description of Available Antennas

Technology	Frequency Range (MHz)	Antenna Type	MaxPeak Gain (dBi)
LTE Band 2	1850 ~ 1910	Dipole	0.25
LTE Band 4	1710 ~ 1755		1.47
LTE Band 5	824 ~ 849		2.68
LTE Band 7	2500 ~ 2570		0.55
LTE Band 12	699 ~ 716		-0.20
LTE Band 13	777 ~ 787		1.54
LTE Band 14	788 ~ 798		2.42
LTE Band 17	704~ 716		-0.20
LTE Band 25	1850 ~ 1915		0.25
LTE Band 26	814~849		2.87
LTE Band 30	2305 ~ 2315		-3.06
LTE Band 38	2570 ~ 2620		-0.23
LTE Band 41	2496 ~ 2690		0.78
LTE Band 66	1710 ~ 1780		1.47
LTE Band 71	663 ~ 698		1.22

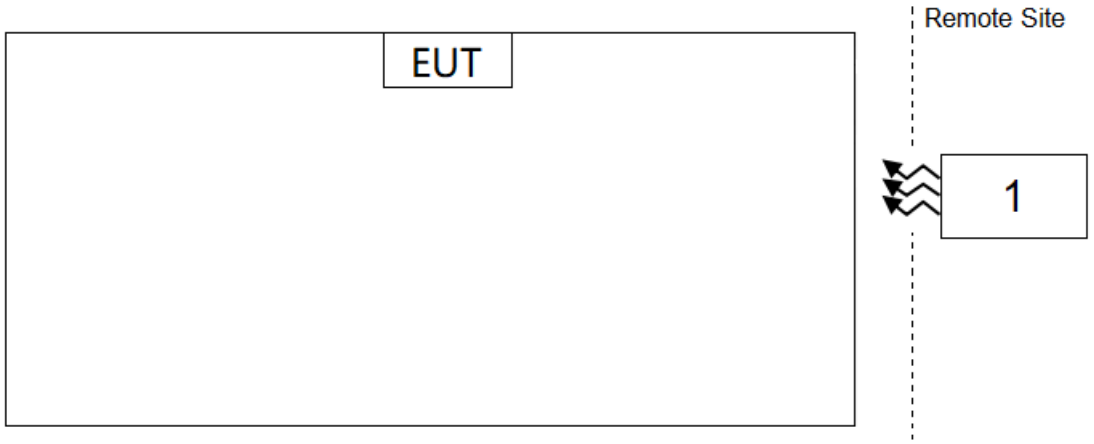
Note: The typical antennas use to calculate the ERP (EIRP).

1.7. Test Methodology

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC CFR 47 Part 27
- ANSI C63.26: 2015
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- FCC KDB 971168 D02 v02r01: Misc Rev Approv License Devices
- FCC KDB 412172 D01 v01r01: Determining ERP and EIRP

1.8. Configuration of Tested System



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

1.9. Test Environment Condition

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

2. Test Equipment Calibration Date

Instrument	Manufacturer	Model No.	Asset No.	Last Cali. Date	Cali. Due Date	Test Site
Communication Tester	R&S	CMU 200	MRTSUE06009	1 year	2022/9/7	SIP-SR1
Temperature Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2022/10/10	WZ-TR3
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022/12/29	SIP-AC1
Vibration Test System	DongLing	ES-1-150	MRTSUE06206	1 year	2022/8/8	WZ-TR3
Communication Tester	R&S	CMW500	MRTSUE06243	1 year	2022/10/10	SIP-SR1
Thermohygrometer	testo	608-H1	MRTSUE06362	1 year	2023/2/15	WZ-SR6
Thermohygrometer	testo	608-H1	MRTSUE06401	1 year	2022/6/28	WZ-TR3
Shielding Room	HUAMING	WZ-SR6	MRTSUE06443	/	/	WZ-SR6
Signal Generator	Keysight	E8257D	MRTSUE06453	1 year	2022/6/24	SIP-SR1
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2022/12/23	SIP-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2022/6/24	SIP-AC1
Signal Analyzer	Keysight	N9020B	MRTSUE06583	1 year	2022/10/10	WZ-SR6
Preamplifier	EMCI	EMC051845SE	MRTSUE06600	1 year	2022/11/8	SIP-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06603	1 year	2022/10/31	SIP-AC1
Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2022/9/7	SIP-AC1
Signal Generator	Keysight	N5173B	MRTSUE06606	1 year	2022/11/29	WZ-SR6
Horn Antenna	R&S	HF907	MRTSUE06610	1 year	2022/8/5	SIP-AC1
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2022/6/24	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06616	1 year	2022/11/2	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06620	1 year	2022/11/28	SIP-AC1
Thermohygrometer	testo	622	MRTSUE06629	1 year	2023/1/6	SIP-SR1
Preamplifier	EMCI	EMC001330	MRTSUE06643	1 year	2023/1/13	SIP-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06645	1 year	2022/8/26	SIP-AC1
5G Wireless Test Platform	Keysight	E7515B	MRTSUE06903	1 year	2022/11/23	SIP-SR1
Signal Generator	Keysight	E8257D	MRTSUE06904	1 year	2022/11/23	SIP-SR1
DC POWER MODULE	Keysight	N6743B	MRTSUE06905	/	/	SIP-SR1
DC POWER MODULE	Keysight	N6743B	MRTSUE06906	/	/	SIP-SR1
Low-Profile Modular Power System Mainframe	Keysight	N6700C	MRTSUE06907	/	/	SIP-SR1
FR1 Switching Unit	Keysight	C8880A	MRTSUE06908	/	/	SIP-SR1
Signal Analyzer	Keysight	N9021B	MRTSUE06915	1 year	2022/12/29	SIP-SR1
Temperature Chamber	BAOYT	BYG-80CL	MRTSUE06932	1 year	2023/2/27	SIP-SR1
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2023/3/14	SIP-AC1
5G Wireless Test Platform	Keysight	E7515B	MRTSUE06942	1 year	2023/3/3	WZ-SR6
Shielding Room	MIX-BEP	SIP-SR1	MRTSUE06948	/	/	SIP-SR1

Millimeter-Wave Transceiver for 5G	Keysight	M1740A	MRTSUE06954	1 year	2022/6/2	SIP-SR1
Millimeter-Wave Transceiver for 5G	Keysight	M1740A	MRTSUE06955	1 year	2022/6/2	SIP-SR1
5G Wireless Test Platform	Keysight	E7515B	MRTSUE06956	1 year	2022/6/10	SIP-SR1
Common Interface Unit	Keysight	E7770A	MRTSUE06957	/	/	SIP-SR1
USB Power Sensor	Keysight	U8488A	MRTSUE06958	1 year	2022/7/8	SIP-SR1
Radio Communication Analyzer	Anritsu	MT8821C	MRTSUE06960	1 year	2022/7/1	WZ-SR6
Radio Communication Test Station	Anritsu	MT8000A	MRTSUE06961	1 year	2022/7/1	WZ-SR6
Signal Analyzer	Keysight	N9010B	MRTSUE07028	1 year	2022/12/9	SIP-SR1

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software

3. 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 Spurious Emissions
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
Conducted Spurious Emissions
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
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.28%
Frequency Stability
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 76.2Hz

4. Test Result

4.1. Summary

FCC Part Section(s)	Test Description	Test Condition	Verdict
2.1049	Occupied Bandwidth	Conducted	Pass
2.1055, 27.54	Frequency Stability		Pass
27.50(a)(3)	Equivalent Isotropic Radiated Power Density		Pass
2.1051, 27.53(a)(4)	Band Edge		Pass
2.1051, 27.53(a)(4)	Spurious Emission		
2.1053, 27.53(a)(4)	Spurious Emissions	Radiated	Pass

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 ofthe 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, Occupied Bandwidth, Channel Band Edge, Radiated & Conducted Spurious Emission were presented worst-case in the test report.

4.2. Occupied Bandwidth Measurement

4.2.1. 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.

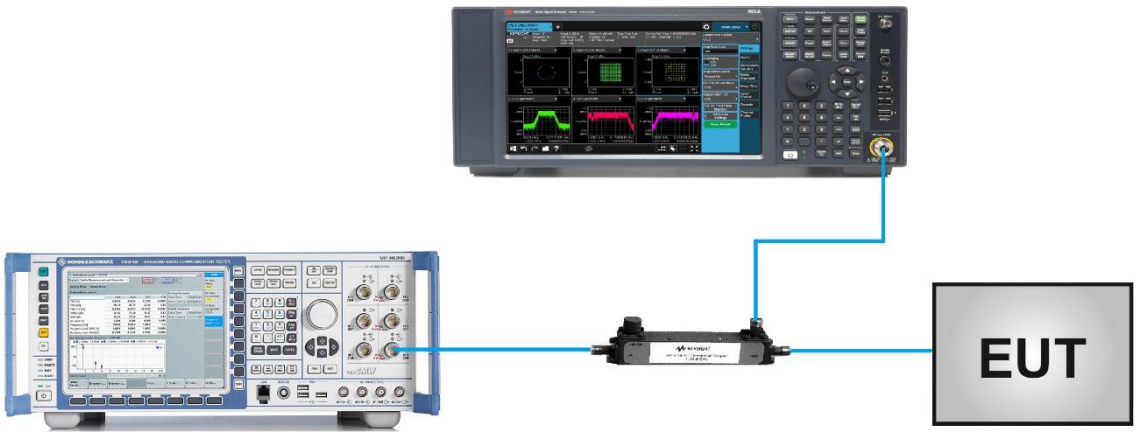
4.2.2. Test Procedure

ANSI C63.26-2015 - Section 5.4

4.2.3. 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.

4.2.4. Test Setup



4.2.5. Test Result

Refer to Appendix A.1.

4.3. Frequency Stability Measurement

4.3.1. Test Limit

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

4.3.2. Test Procedure

ANSI C63.26-2015 - Section 5.6

4.3.3. Test Setting

Frequency Stability Under Temperature Variations:

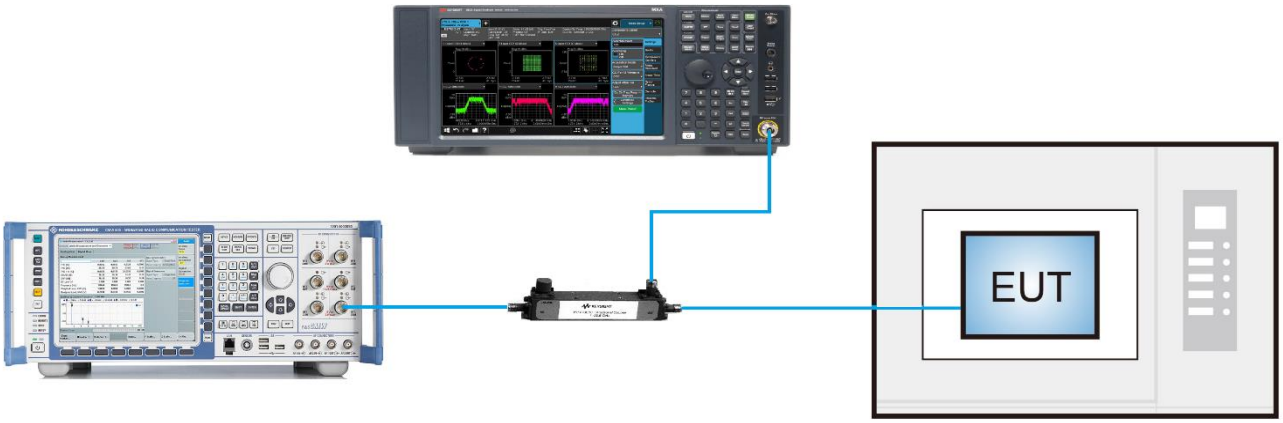
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C 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°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. 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 inputvoltage to specify extreme voltage variation (±15%) and endpoint, recordthe maximum frequency change.

4.3.4. Test Setup



4.3.5. Test Result

Refer to Appendix A.2.

4.4. Equivalent Isotropically Radiated Power Measurement

4.4.1. Test Limit

For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP L TE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth

4.4.2. Test Procedure

ANSI C63.26-2015 - Section 5.2.4.4.2 &5.2.5.5

4.4.3. Test Setting

When the fundamental condition for average power measurements cannot be realized (i.e., the EUT can not be configured to transmit at full-power on a continuous basis (i.e., duty cycle < 98%) and the instrumentation cannot be configured to measure only during active full-power transmissions), then the following procedure can be used if the EUT duty cycle is constant (i.e., duty cycle variations are less thanor equal to ±2%).

a) Set span to 2 × to 3 × the OBW.

b) Set RBW = 1% to 5% of the OBW.

c) Set VBW ≥ 3 × RBW.

d) Set number of measurement points in sweep ≥ 2 × span / RBW.

e) Sweep time:

1) Set = auto-couple, or

2) Set ≥ [10 × (number of points in sweep) × (transmission symbol period)] for single sweep (automation-compatible) measurement.

f) Detector = power averaging (rms).

g) Set sweep trigger to “free run.”

h) 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.

i) Using the marker function to identify the maximum PSD.

j) Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25%.

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation (1) as follows:

$ERP \text{ or } EIRP = P_{Meas} + G_T$ (1)

where

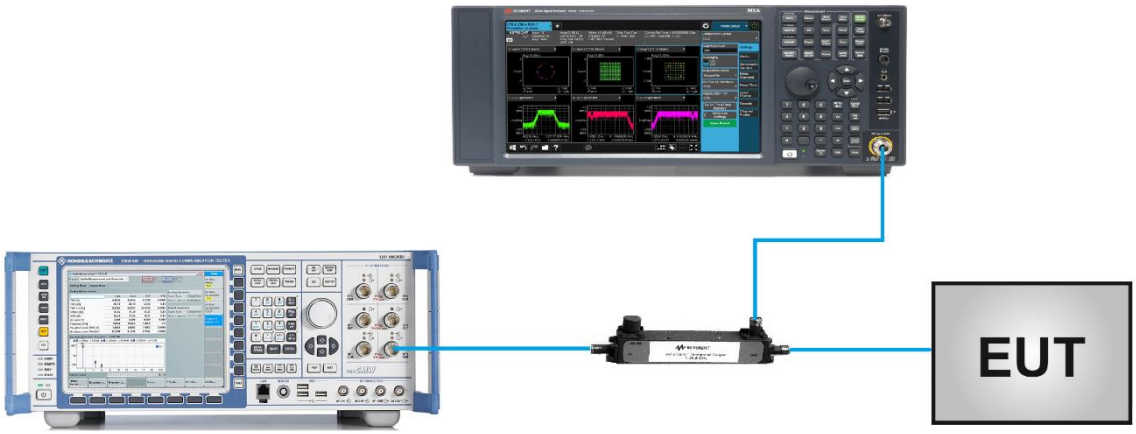
ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, e.g., dBm or dBW)

P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

For devices utilizing multiple antennas, see 6.4 for guidance with respect to determining the effective array transmit antenna gain term to be used in the above equation.

4.4.4. Test Setup



4.4.5. Test Result

Refer to Appendix A.3.

4.5. Band Edge Measurement

4.5.1. Test Limit

For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360MHz bands:

(1) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz;

(2) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz;

(3) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

4.5.2. Test Procedure

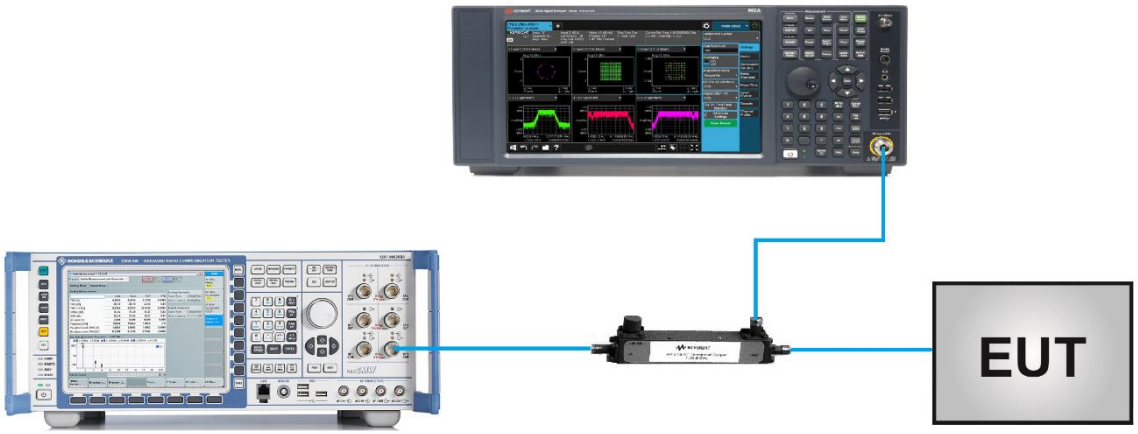
ANSI C63.26-2015 - Section5.7

4.5.3. Test Setting

1. Set the analyzer frequency to low or high channel
2. RBW ≥ The nominal RBW shall be in the range of 1% of the anticipated OBW (in the 1MHz band immediately outside and adjacent to the band edge). For improvement of the accuracy in the measurement of the average power of a noise-like emission, a RBW narrower than the specified reference bandwidth can be used (generally limited to no less than 1% of the OBW), provided that a subsequent integration is performed over the full required measurement bandwidth. This integration should be performed using the spectrum analyzer’s band power functions.
3. VBW ≥ 3*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.

4.5.4. Test Setup



4.5.5. Test Result

Refer to Appendix A.4.

4.6. Conducted Spurious Emissions Measurement

4.6.1. 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 10thharmonic. 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 lower than the transmitter power (P) bya factor of at least 70 + 10 log (P) dB.

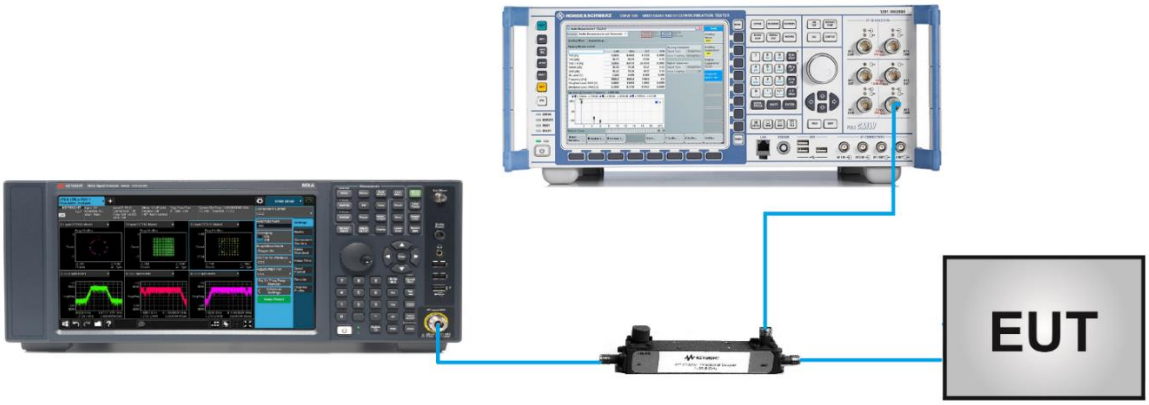
4.6.2. Test Procedure

ANSI C63.26-2015 - Section 5.7

4.6.3. Test Setting

1. Set the analyzer frequency to low, mid, high channel.
2. RBW = 1MHz
3. VBW ≥ 3*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.

4.6.4. Test Setup



4.6.5. Test Result

Refer to Appendix A.5.

4.7. Radiated Spurious Emissions Measurement

4.7.1. Test Limit

Out of band emissions: The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 70 + 10 log (P) dB.

E (dBμV/m) = EIRP (dBm) - 20 log D + 104.8; where D is the measurement distance in meters. The emission limit equal to 55.3dBμV/m.

4.7.2. Test Procedure

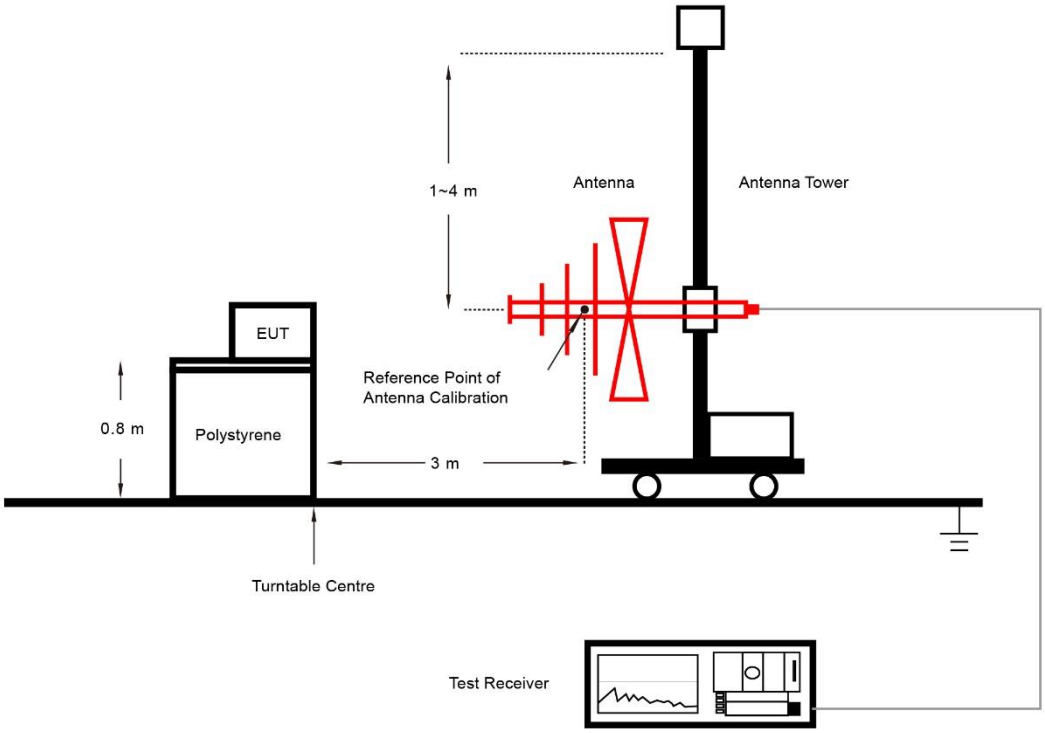
ANSI C63.26-2015 - Section 5.2.7 & 5.5

4.7.3. Test Setting

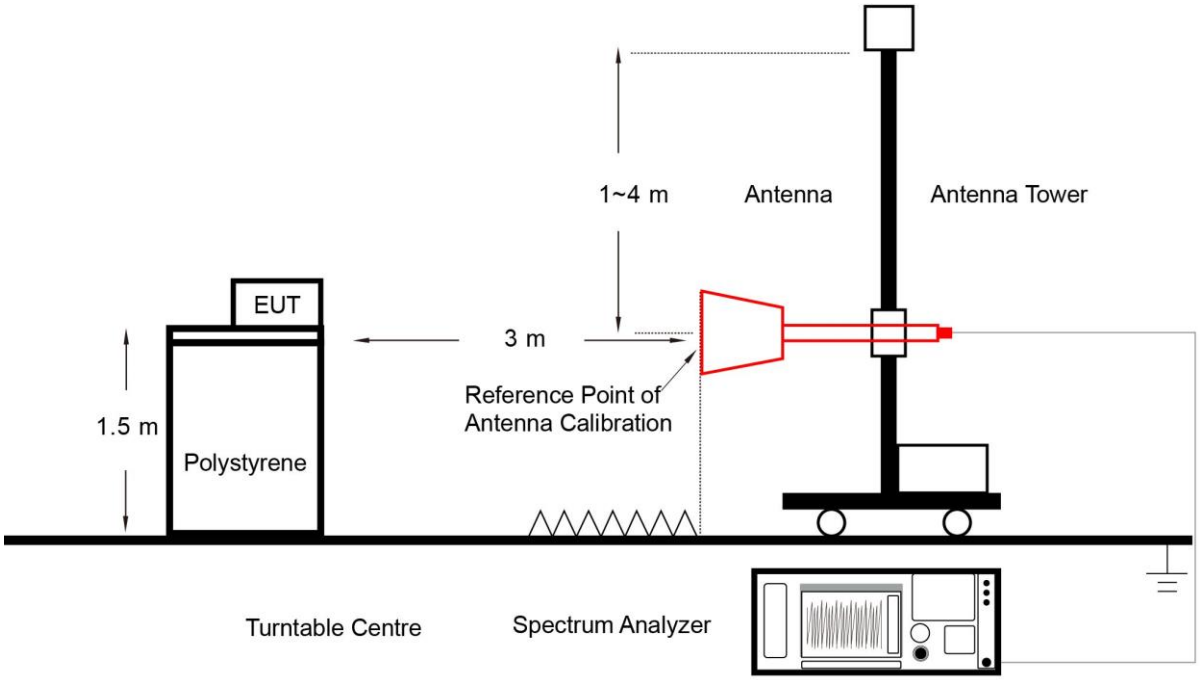
1. RBW = 1MHz
2. VBW ≥ 3*RBW
3. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period)
4. Detector = Peak
5. Trace mode = max hold
6. The trace was allowed to stabilize

4.7.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



4.7.5. Test Result

Refer to Appendix A.6.

Appendix A - Test Result

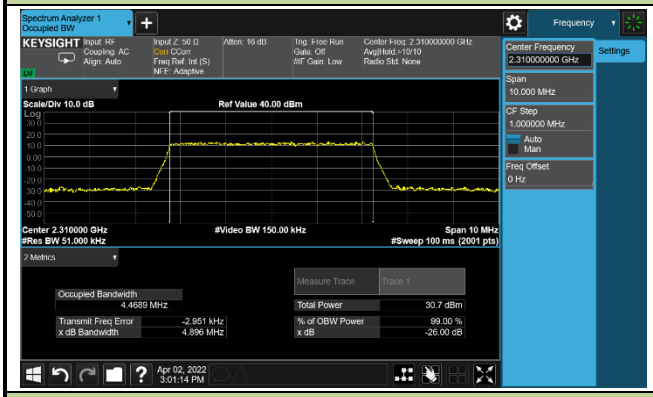
A.1 Occupied Bandwidth Test Result

Test Site	WZ-SR6	Test Engineer	Caitlin Chen
Test Date	2022/04/02	Test Band	Band 30

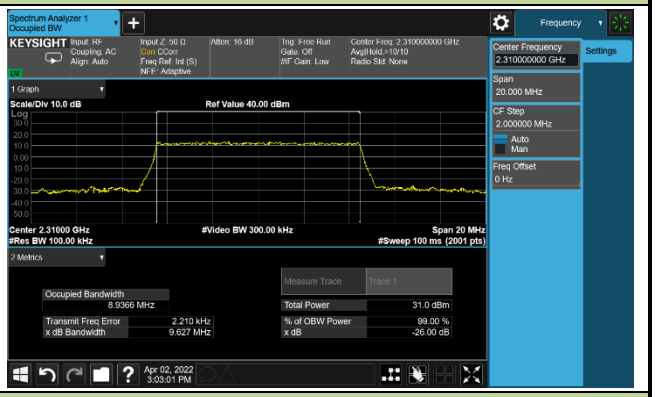
Modulation	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK	2310	5	4.47
		10	8.94
16QAM	2310	5	4.47
		10	8.91
64QAM	2310	5	4.47
		10	8.93

99% Bandwidth - QPSK

5MHz Channel Bandwidth

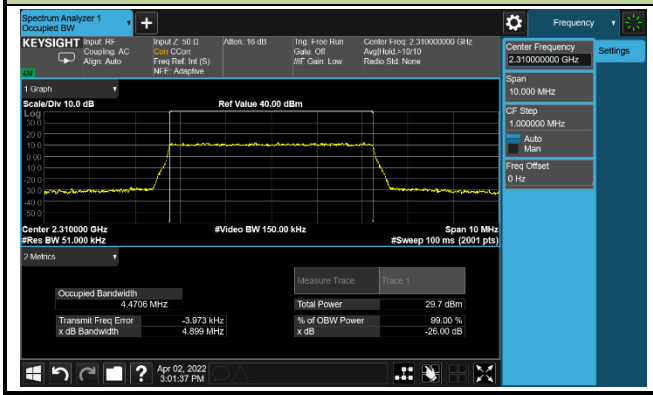


10MHz Channel Bandwidth

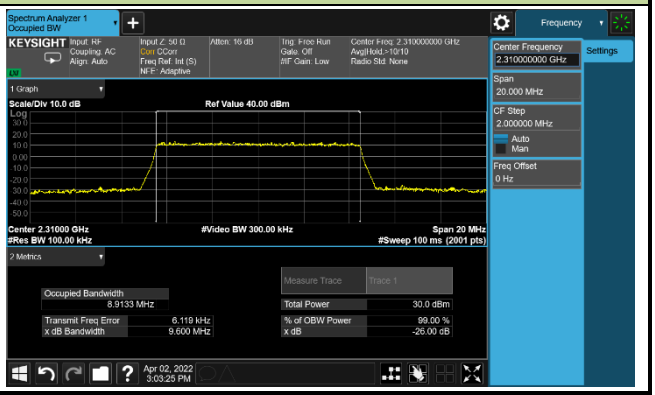


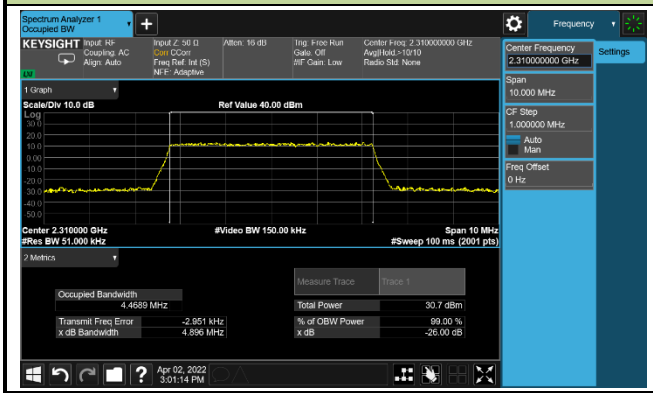
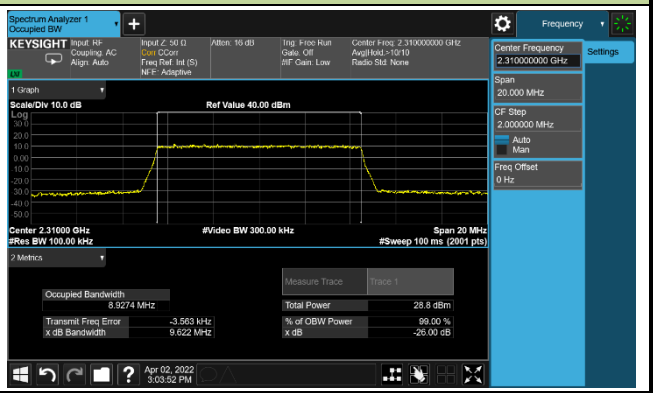
99% Bandwidth - 16QAM

5MHz Channel Bandwidth



10MHz Channel Bandwidth



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

A.2 Frequency Stability Test Result

Test Site	WZ-TR3	Test Engineer	Caitlin Chen
Test Date	2022/04/11 ~ 2022/04/13	Test Band	Band 30

Power (Vdc)	Temp. (°C)	Frequency Tolerance (ppm)
3.7	- 30	0.0012
	- 20	-0.0027
	- 10	0.0042
	0	0.0046
	+ 10	-0.0010
	+ 20	0.0020
	+ 30	-0.0009
	+ 40	-0.0025
	+ 50	0.0009
4.4	+ 20	0.0027
3.135	+ 20	-0.0026

A.3 Equivalent Isotropically Radiated Power Test Result

Test Site	WZ-SR6	Test Engineer	Caitlin Chen
Test Date	2022/03/21	Test Band	Band 30

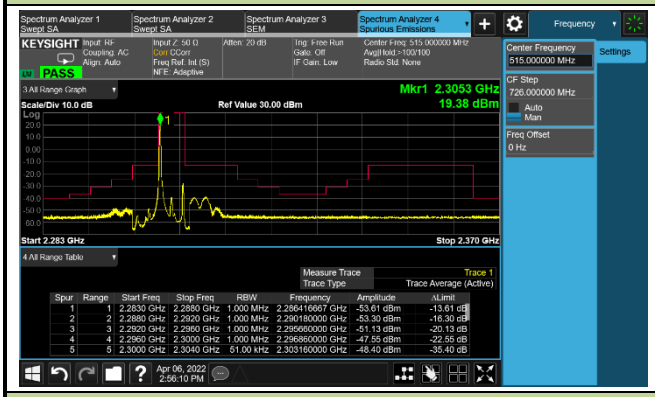
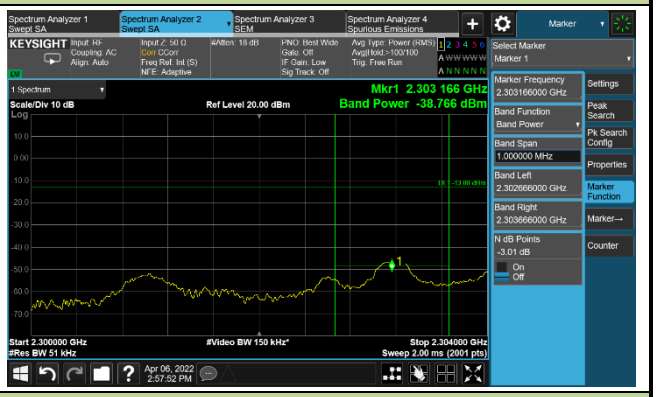
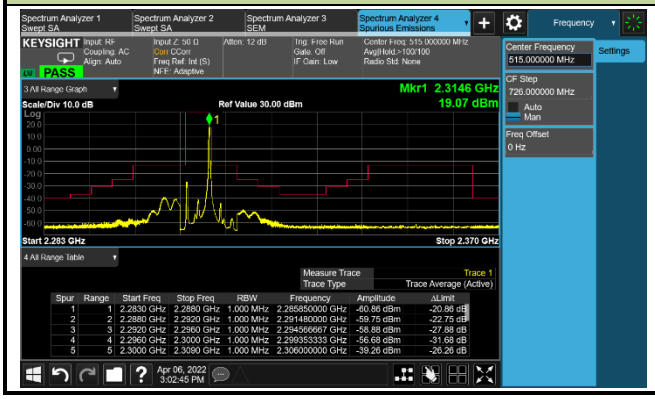
Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Power Density (dBm/5MHz)	EIRP Density (dBm/5MHz)	Limit (dBm /5MHz)
QPSK						
2307.5	5	1	0	22.93	19.87	< 23.98
2310.0				22.98	19.92	< 23.98
2312.5				22.81	19.75	< 23.98
2307.5	5	1	12	22.93	19.87	< 23.98
2310.0				22.89	19.83	< 23.98
2312.5				22.77	19.71	< 23.98
2307.5	5	1	24	23.09	20.03	< 23.98
2310.0				22.85	19.79	< 23.98
2312.5				22.76	19.70	< 23.98
2307.5	5	25	0	22.00	18.94	< 23.98
2310.0				22.05	18.99	< 23.98
2312.5				21.95	18.89	< 23.98
2310.0	10	1	0	22.94	19.88	< 23.98
		1	24	23.02	19.96	< 23.98
		1	49	22.91	19.85	< 23.98
		50	0	19.64	16.58	< 23.98
Note: The EIRP Density (dBm/5MHz) = Power Density (dBm/5MHz) + Antenna Gain (dBi)						

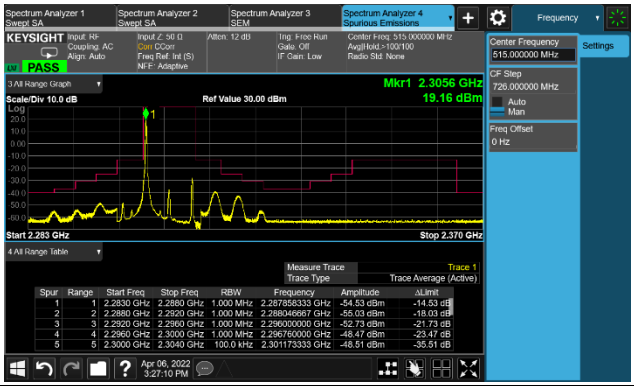
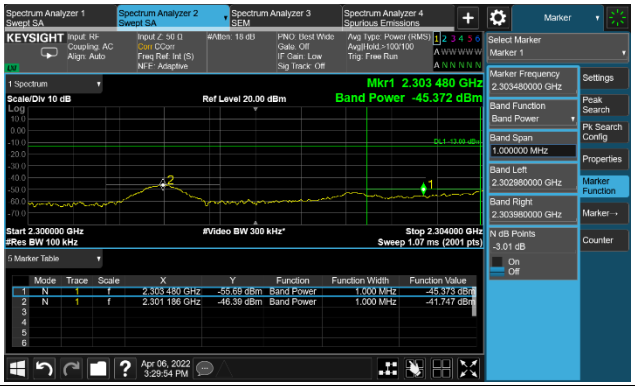
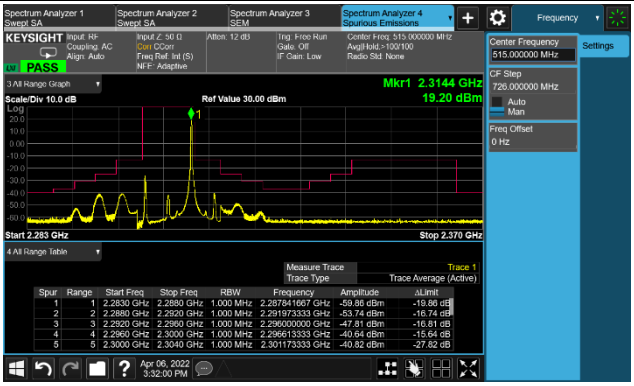
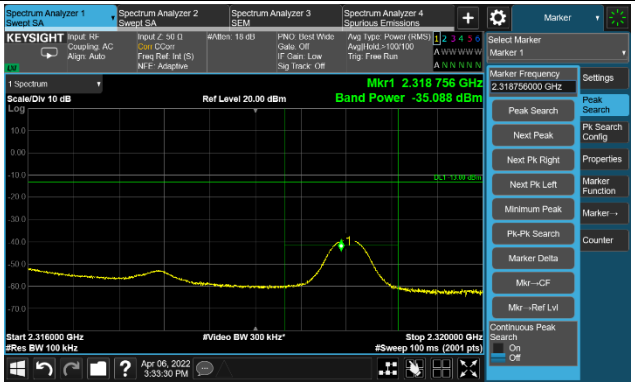
Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Power Density (dBm/5MHz)	EIRP Density (dBm/5MHz)	Limit (dBm /5MHz)
16QAM						
2307.5	5	1	0	22.21	19.15	< 23.98
2310.0				22.12	19.06	< 23.98
2312.5				22.07	19.01	< 23.98
2307.5	5	1	12	22.30	19.24	< 23.98
2310.0				22.15	19.09	< 23.98
2312.5				22.05	18.99	< 23.98
2307.5	5	1	24	22.23	19.17	< 23.98
2310.0				22.22	19.16	< 23.98
2312.5				22.08	19.02	< 23.98
2307.5	5	25	0	21.05	17.99	< 23.98
2310.0				20.97	17.91	< 23.98
2312.5				20.93	17.87	< 23.98
2310.0	10	1	0	22.21	19.15	< 23.98
		1	24	22.22	19.16	< 23.98
		1	49	22.22	19.16	< 23.98
		50	0	18.61	15.55	< 23.98
Note: The EIRP Density (dBm/5MHz) = Power Density (dBm/5MHz) + Antenna Gain (dBi)						

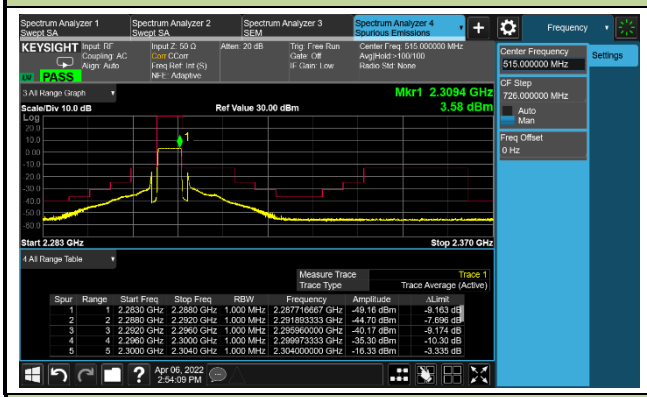
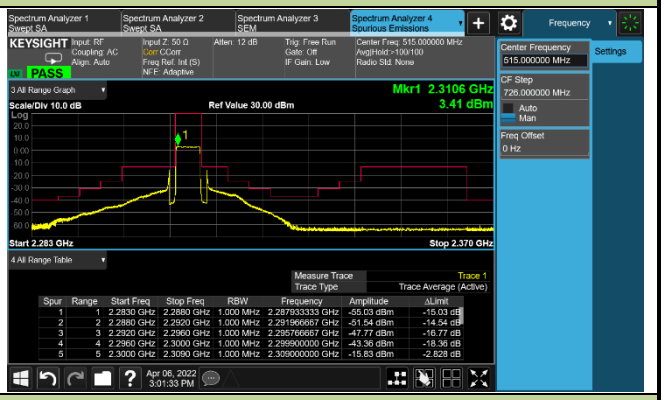
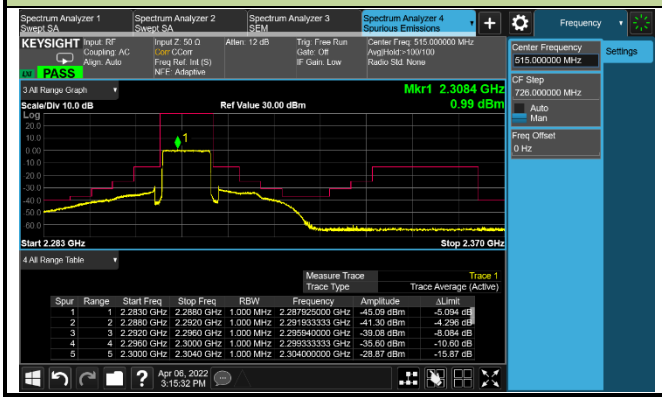
Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Power Density (dBm/5MHz)	EIRP Density (dBm/5MHz)	Limit (dBm /5MHz)
64QAM						
2307.5	5	1	0	21.10	18.04	< 23.98
2310.0				21.14	18.08	< 23.98
2312.5				21.01	17.95	< 23.98
2307.5	5	1	12	21.16	18.10	< 23.98
2310.0				21.16	18.10	< 23.98
2312.5				20.92	17.86	< 23.98
2307.5	5	1	24	21.23	18.17	< 23.98
2310.0				21.24	18.18	< 23.98
2312.5				20.97	17.91	< 23.98
2307.5	5	25	0	20.03	16.97	< 23.98
2310.0				20.08	17.02	< 23.98
2312.5				19.91	16.85	< 23.98
2310.0	10	1	0	21.17	18.11	< 23.98
		1	24	21.20	18.14	< 23.98
		1	49	21.20	18.14	< 23.98
		50	0	17.69	14.63	< 23.98
Note: The EIRP Density (dBm/5MHz) = Power Density (dBm/5MHz) + Antenna Gain (dBi)						

A.4 Band Edge Test Result

Test Site	WZ-SR6	Test Engineer	Caitlin Chen
Test Date	2022/04/06	Test Band	Band 30

5MHz Channel Bandwidth 1RB	
Lower ACP	Lower Extended Band Edge
	
Upper ACP	Upper Extended Band Edge
	

10MHz Channel Bandwidth 1RB	
Lower ACP	Lower Extended Band Edge
	
Upper ACP	Upper Extended Band Edge
	

5MHz Channel Bandwidth Full RB	
Lower ACP	Upper ACP
	
10MHz Channel Bandwidth Full RB	
Lower ACP	
	

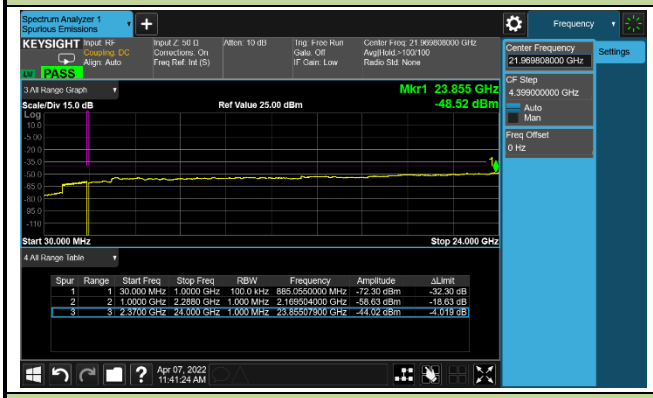
A.5 Conducted Spurious Emissions Test Result

Test Site	WZ-SR6	Test Engineer	Caitlin Chen
Test Date	2022/04/07	Test Band	Band 30

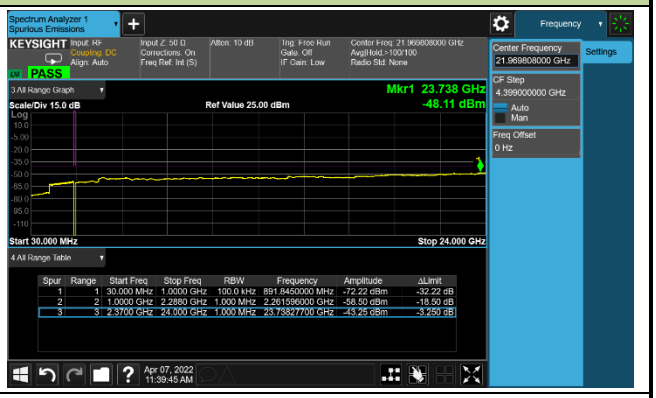
Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
QPSK					
2307.5	5	30 ~ 25000	-48.52	≤ -40.00	Pass
2310.0	5	30 ~ 25000	-48.11	≤ -40.00	Pass
2312.5	5	30 ~ 25000	-48.36	≤ -40.00	Pass
2310.0	10	30 ~ 25000	-48.52	≤ -40.00	Pass

5MHz Channel Bandwidth

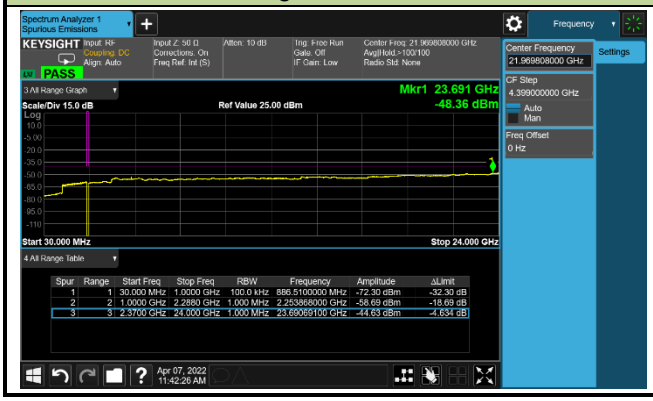
Low Channel

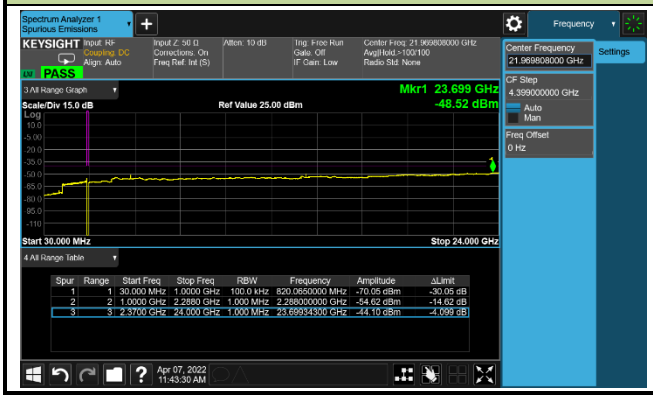


Middle Channel



High Channel



10MHz Channel Bandwidth	
Middle Channel	
	

A.6 Radiated Spurious Emissions Test Result

Test Site	SIP-AC2	Test Engineer	Allen Zhou
Test Date	2022/03/25~2022/04/07	Test Band	LTE Band 30, 5MHz, 1RB

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Low Channel							
53.8	3.3	17.9	21.2	55.3	-34.1	Peak	Horizontal
148.3	5.7	18.2	23.9	55.3	-31.4	Peak	Horizontal
67.8	22.6	16.2	38.8	55.3	-16.5	Peak	Vertical
99.8	15.0	13.3	28.3	55.3	-27.0	Peak	Vertical
3456.5	52.9	-12.7	40.2	55.3	-15.1	Peak	Horizontal
4612.5	60.7	-10.6	50.1	55.3	-5.2	Peak	Horizontal
4621.0	57.8	-10.6	47.2	55.3	-8.1	Peak	Vertical
8981.5	49.5	-4.5	45.0	55.3	-10.3	Peak	Vertical
Middle Channel							
54.7	3.1	17.9	21.0	55.3	-34.3	Peak	Horizontal
146.9	4.9	18.1	23.0	55.3	-32.3	Peak	Horizontal
33.9	13.1	16.8	29.9	55.3	-25.4	Peak	Vertical
42.6	12.1	17.6	29.7	55.3	-25.6	Peak	Vertical
4621.0	60.5	-10.6	49.9	55.3	-5.4	Peak	Horizontal
7137.0	50.4	-6.3	44.1	55.3	-11.2	Peak	Horizontal
4621.0	57.3	-10.6	46.7	55.3	-8.6	Peak	Vertical
7468.5	50.8	-5.9	44.9	55.3	-10.4	Peak	Vertical
High Channel							
53.3	3.6	17.9	21.5	55.3	-33.8	Peak	Horizontal
149.3	5.5	18.2	23.7	55.3	-31.6	Peak	Horizontal
32.9	24.8	16.9	41.7	55.3	-13.6	Peak	Vertical
99.8	14.8	13.3	28.1	55.3	-27.2	Peak	Vertical
4629.5	61.5	-10.3	51.2	55.3	-4.1	Peak	Horizontal
6406.0	51.8	-7.5	44.3	55.3	-11.0	Peak	Horizontal
4621.0	58.2	-10.6	47.6	55.3	-7.7	Peak	Vertical
7103.0	50.4	-6.2	44.2	55.3	-11.1	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB).							

Appendix B - Test Setup Photograph

Refer to “2203RSU046-UT” file.

Appendix C - EUT Photograph

Refer to “2203RSU046-UE” file.

The End