



MEASUREMENT REPORT

FCC PART 22 & 24 & 27

FCC ID: XMR202111EG915ULA

Application: Quectel Wireless Solutions Company Limited

Application Type: Certification

Product: LTE Module

Model No.: EG915U-LA

Brand Name: Quectel

FCC Rule Part(s): Part 22 (H), 24 (E), 27

Test Procedure(s): ANSI C63.26: 2015

Test Date: October 17 ~ November 02, 2021

Reviewed By:

Sunny Sun

Sunny Sun

Approved By:

Robin Wu

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.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2110RSU013-U2	Rev. 01	Initial Report	11-17-2021	Valid

CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. Applicant	5
1.2. Manufacturer	5
1.3. Testing Facility	5
1.4. Product Information	6
1.5. Radio Specification under Test	6
1.6. Test Methodology	6
1.7. Device Capabilities	7
1.8. EMI Suppression Device(s)/Modifications	7
1.9. Maximum Power, Frequency Tolerance, and Emission Designator	7
1.10. Configuration of Tested System	8
1.11. Test Environment Condition	8
2. TEST EQUIPMENT CALIBRATION DATE	9
3. MEASUREMENT UNCERTAINTY	10
4. TEST RESULT	11
4.1. Summary	11
4.2. Occupied Bandwidth	12
4.2.1. Test Limit	12
4.2.2. Test Procedure	12
4.2.3. Test Setting	12
4.2.4. Test Setup	12
4.2.5. Test Result	13
4.3. Frequency Stability Measurement	19
4.3.1. Test Limit	19
4.3.2. Test Procedures Used	19
4.3.3. Test Setting	19
4.3.4. Test Setup	20
4.3.5. Test Result	21
4.4. Equivalent Isotropically Radiated Power Measurement	25
4.4.1. Test Limit	25
4.4.2. Test Procedures Used	25
4.4.3. Test Setting	25
4.4.4. Test Setup	26
4.4.5. Test Result	27
4.5. Band Edge Measurement	37

4.5.1.	Test Limit	37
4.5.2.	Test Procedure Used	37
4.5.3.	Test Setting.....	37
4.5.4.	Test Setup	38
4.5.5.	Test Result.....	39
4.6.	Peak to Average Ratio	58
4.6.1.	Test Limit	58
4.6.2.	Test Procedure Used	58
4.6.3.	Test Setting.....	58
4.6.4.	Test Setup	58
4.6.5.	Test Result.....	59
4.7.	Conducted Spurious Emissions.....	63
4.7.1.	Test Limit	63
4.7.2.	Test Procedure Used	63
4.7.3.	Test Setting.....	63
4.7.4.	Test Setup	64
4.7.5.	Test Result.....	65
4.8.	Radiated Spurious Emissions Measurements	79
4.8.1.	Test Limit	79
4.8.2.	Test Procedure Used	79
4.8.3.	Test Setting.....	79
4.8.4.	Test Setup	80
4.8.5.	Test Result.....	81
5.	CONCLUSION	85
	Appendix A - Test Setup Photograph	86
	Appendix B - EUT Photograph.....	87

1. GENERAL 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 Module
Model No.	EG915U-LA
Brand Name	Quectel
IMEI	Conducted Measurement:865413050001212 Radiated Measurement: 865413050000693
Bluetooth Specification	V4.2 single mode for BR/EDR
Wi-Fi Specification	Scan function only
GSM Band	GSM 850, PCS 1900
E-UTRA Band	Band 2, 4, 5, 7, 66
Operating Temperature	-35 ~ 75 °C
Power Type	3.3 ~ 4.3Vdc, typical 3.8Vdc
Remark:	
1. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification under Test

E-UTRA Specification	
T _x Frequency Range	Band 2: 1850 ~ 1910 MHz; Band 4: 1710 ~ 1755 MHz Band 5: 824 ~ 849 MHz; Band 7: 2500 ~ 2570 MHz Band 66: 1710 ~ 1780 MHz
R _x Frequency Range	Band 2: 1930 ~ 1990 MHz; Band 4: 2110 ~ 2155 MHz Band 5: 869 ~ 894 MHz; Band 7: 2620 ~ 2690 MHz Band 66: 2110 ~ 2200 MHz
Modulation	QPSK

1.6. Test Methodology

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

- ANSI C63.26:2015
- FCC CFR 47 Part 22, Part 24, Part 27
- 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

1.7. Device Capabilities

This device contains the following capabilities:

Working on LTE Band 2, 4, 5, 7, 66; 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.

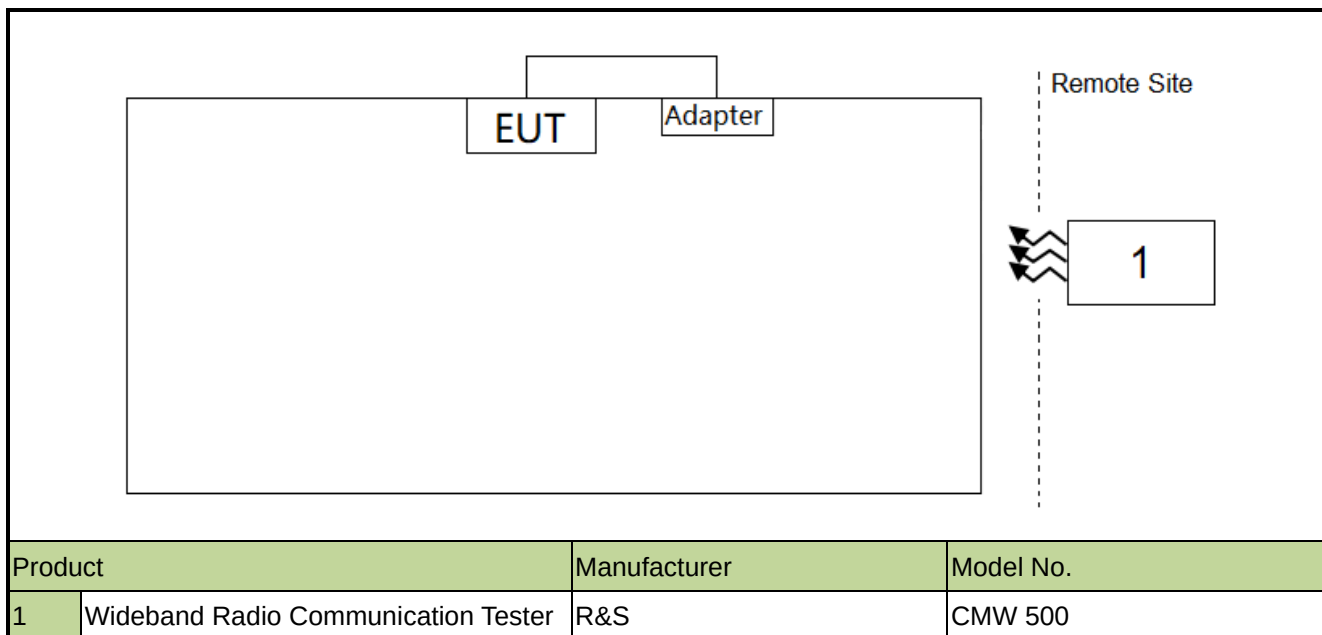
1.8. EMI Suppression Device(s)/Modifications

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

1.9. Maximum Power, Frequency Tolerance, and Emission Designator

LTE Band 2		QPSK			LTE Band 4/66		QPSK		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)
1.4	1850.7 ~ 1909.3	1M08G7D	-	0.2061	1.4	1710.7 ~ 1779.3	1M07G7D	-	0.2228
3	1851.5 ~ 1908.5	2M68G7D	-	0.2203	3	1711.5 ~ 1778.5	2M68G7D	-	0.2377
5	1852.5 ~ 1907.5	4M46G7D	-	0.1914	5	1712.5 ~ 1777.5	4M46G7D	-	0.2089
10	1855.0 ~ 1905.0	8M89G7D	-	0.2028	10	1715.0 ~ 1775.0	8M88G7D	-	0.2218
15	1857.5 ~ 1902.5	13M4G7D	-	0.2138	15	1717.5 ~ 1772.5	13M4G7D	-	0.2333
20	1860.0 ~ 1900.0	17M9G7D	-0.0232	0.2163	20	1720.0 ~ 1770.0	17M9G7D	-0.0205	0.2301
LTE Band 5		QPSK			LTE Band 7		QPSK		
BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)	BW (MHz)	Feq. (MHz)	Designator	Tolerance (ppm)	Max Power (W)
1.4	824.7 ~ 848.3	1M07G7D	-	0.2123	5	2502.5 ~ 2567.5	4M46G7D	-	0.2094
3	825.5 ~ 847.5	2M68G7D	-	0.2301	10	2505.0 ~ 2565.0	8M87G7D	-	0.2193
5	826.5 ~ 846.5	4M46G7D	-	0.1959	15	2507.5 ~ 2562.5	13M4G7D	-	0.2218
10	829.0 ~ 844.0	8M88G7D	-0.0139	0.2037	20	2510.0 ~ 2560.0	17M9G7D	-0.0137	0.2234

1.10. Configuration of Tested System



1.11. 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
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2022/1/4	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2022/9/16	WZ-AC1
Temperature Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2022/10/10	WZ-TR3
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2021/11/14	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2022/8/5	WZ-AC1
Thermohygrometer	Yuhuaze	HTC-2	MRTSUE06184	1 year	2022/8/10	WZ-AC1
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2022/4/29	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE06362	1 year	2022/2/25	WZ-SR6
Thermohygrometer	testo	608-H1	MRTSUE06401	1 year	2022/6/28	WZ-TR3
Thermohygrometer	testo	608-H1	MRTSUE06403	1 year	2022/6/28	WZ-AC1
Shielding Room	HUAMING	WZ-SR6	MRTSUE06443	/	/	WZ-SR6
Signal Analyzer	Keysight	N9020B	MRTSUE06583	1 year	2022/10/10	WZ-SR6
Signal Generator	Keysight	N5173B	MRTSUE06606	1 year	2021/12/3	WZ-SR6
Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2022/1/6	WZ-AC1
5G Wireless Test Platform	Keysight	E7515B	MRTSUE06942	1 year	2022/3/29	WZ-SR6
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

Software	Version	Function
EMI Software	V3	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% ($U=2U_c(y)$): 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% ($U=2U_c(y)$): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 1.13dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 0.28%
Frequency Stability
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 76.2Hz

4. TEST RESULT

4.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	Conducted	Pass	Section 4.2
2.1055, 22.355 24.235, 27.54	Frequency Stability	< 2.5 ppm		Pass	Section 4.3
22.913(a)(5)	Equivalent Radiated Power (Band 5)	< 7 Watts Max ERP		Pass	Section 4.4
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2, 7)	< 2 Watts Max EIRP			
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts Max EIRP			
24.232(d), 27.50(d)(5)	Peak to Average Ratio	< 13dB		Pass	Section 4.6
2.1051, 22.917(a) 24.238(a), 27.53(h)	Band Edge (Band 2, 4/66, 5)	< 43 + 10log10 (P _[Watts])		Pass	Section 4.5, 4.7
27.53(m)	Band Edge (Band 7)	27.53(m)(4)			
2.1051, 22.917(a) 24.238(a), 27.53(h)	Spurious Emission (Band 2, 4/66, 5)	< 43 + 10log10 (P _[Watts])			
2.1051, 27.53(m)	Spurious Emission (Band 7)	< 55 + 10log10 (P _[Watts])	Radiated	Pass	Section 4.8
2.1053, 22.917(a) 24.238(a), 27.53 (h)	Spurious Emissions (Band 2, 4/66, 5)	< 43 + 10log10 (P _[Watts])			
27.53(m)	Spurious Emissions (Band 7)	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, Conducted Spurious Emission, Radiated Spurious Emission were presented the worst-case in the test report.

4.2. Occupied Bandwidth

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.

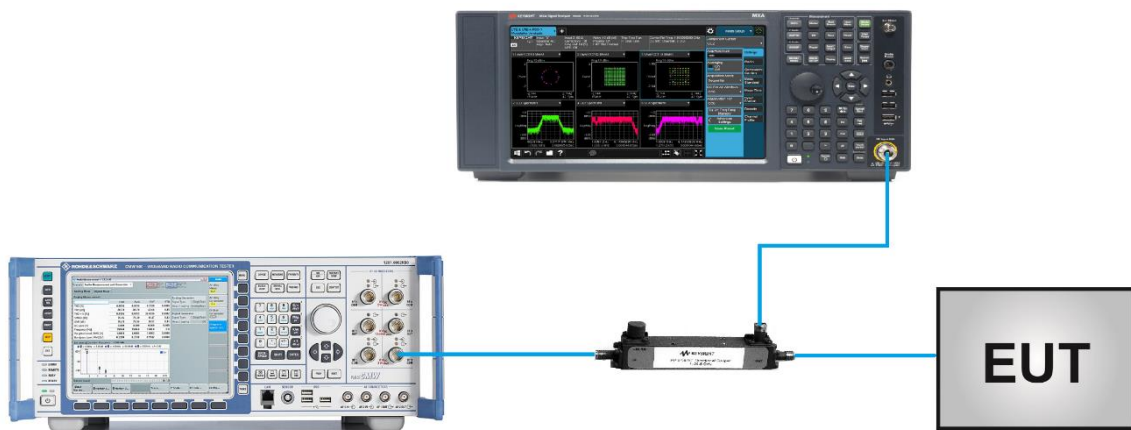
4.2.2. Test Procedure

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 $\geq 3 \times$ 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

Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2021/10/19 ~ 2021/10/28
Test Band	Band 2		

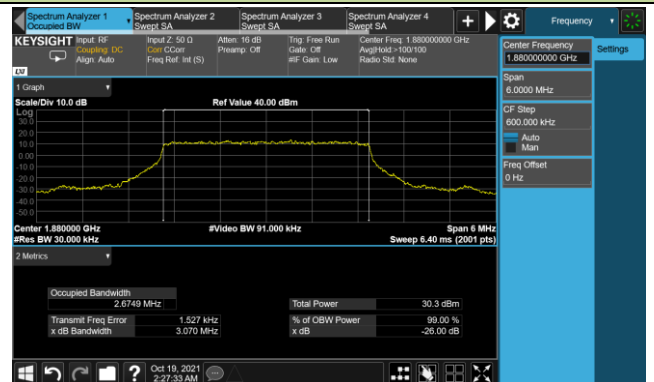
Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
18900	1880	1.4	1.08
		3	2.68
		5	4.46
		10	8.89
		15	13.41
		20	17.86

99% Bandwidth - QPSK

1.4MHz Channel Bandwidth



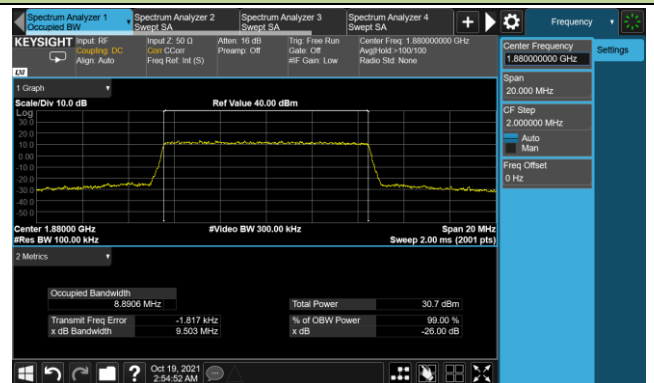
3MHz Channel Bandwidth



5MHz Channel Bandwidth



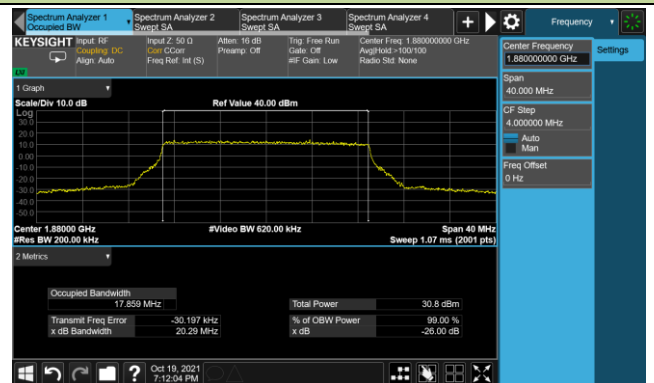
10MHz Channel Bandwidth



15MHz Channel Bandwidth



20MHz Channel Bandwidth

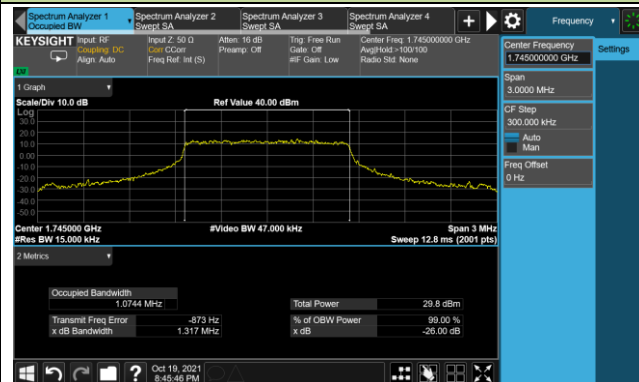


Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2021/10/19
Test Band	Band 4/66		

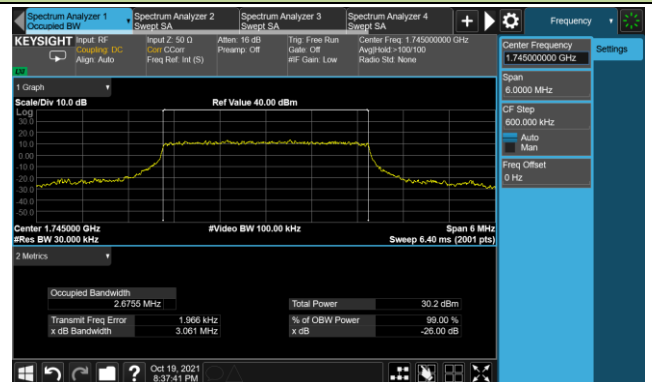
Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
20300	1745.0	1.4	1.07
		3	2.68
		5	4.46
		10	8.88
		15	13.41
		20	17.85

99% Bandwidth - QPSK

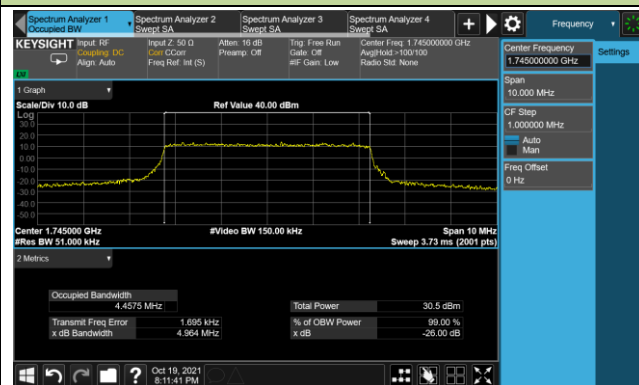
1.4MHz Channel Bandwidth



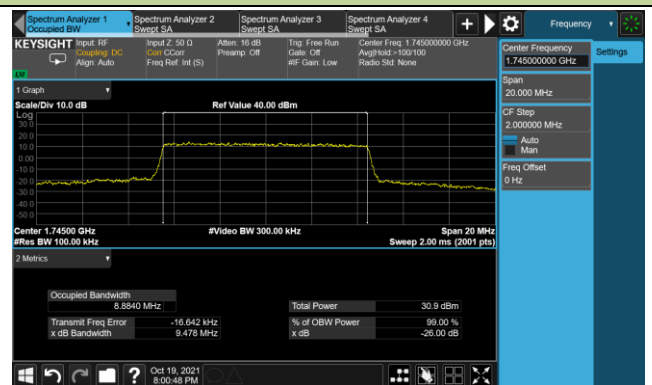
3MHz Channel Bandwidth



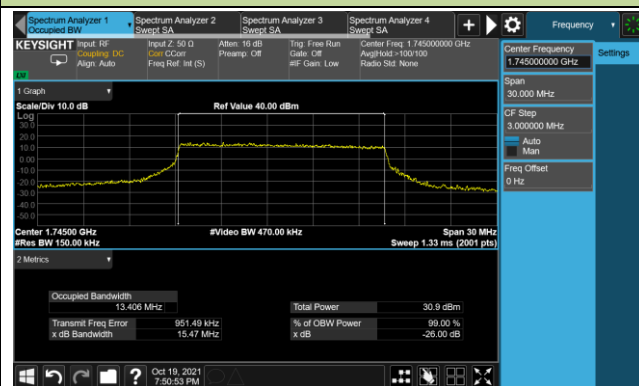
5MHz Channel Bandwidth



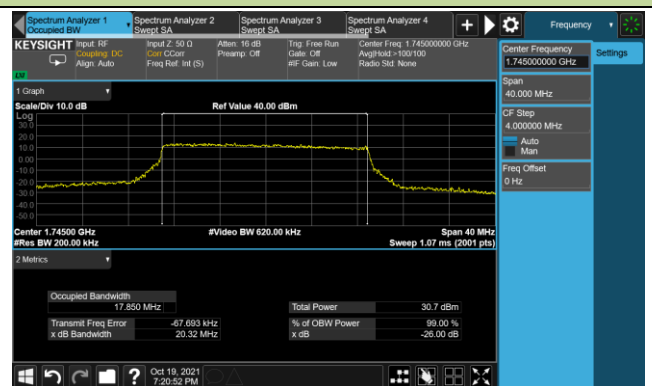
10MHz Channel Bandwidth



15MHz Channel Bandwidth

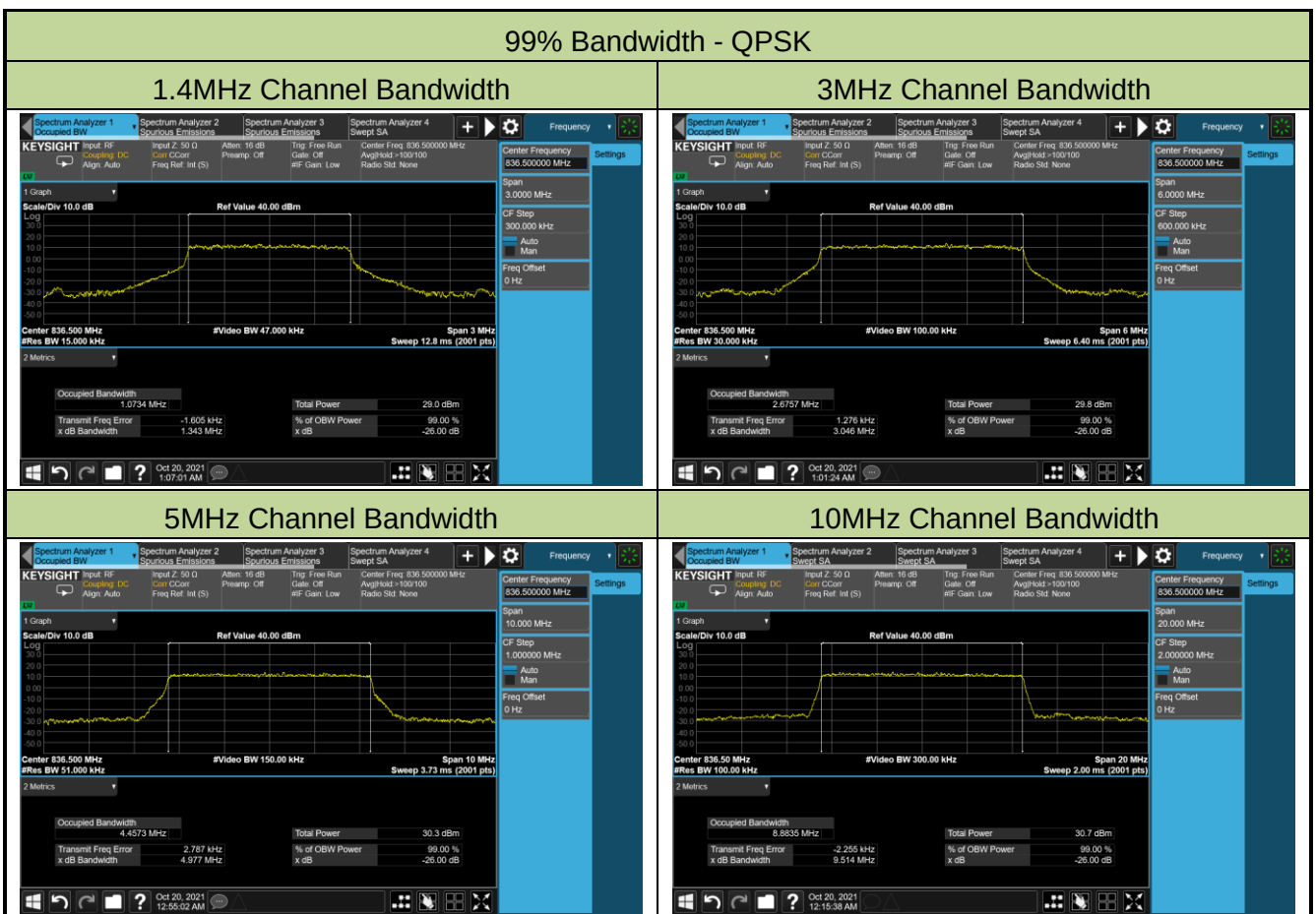


20MHz Channel Bandwidth



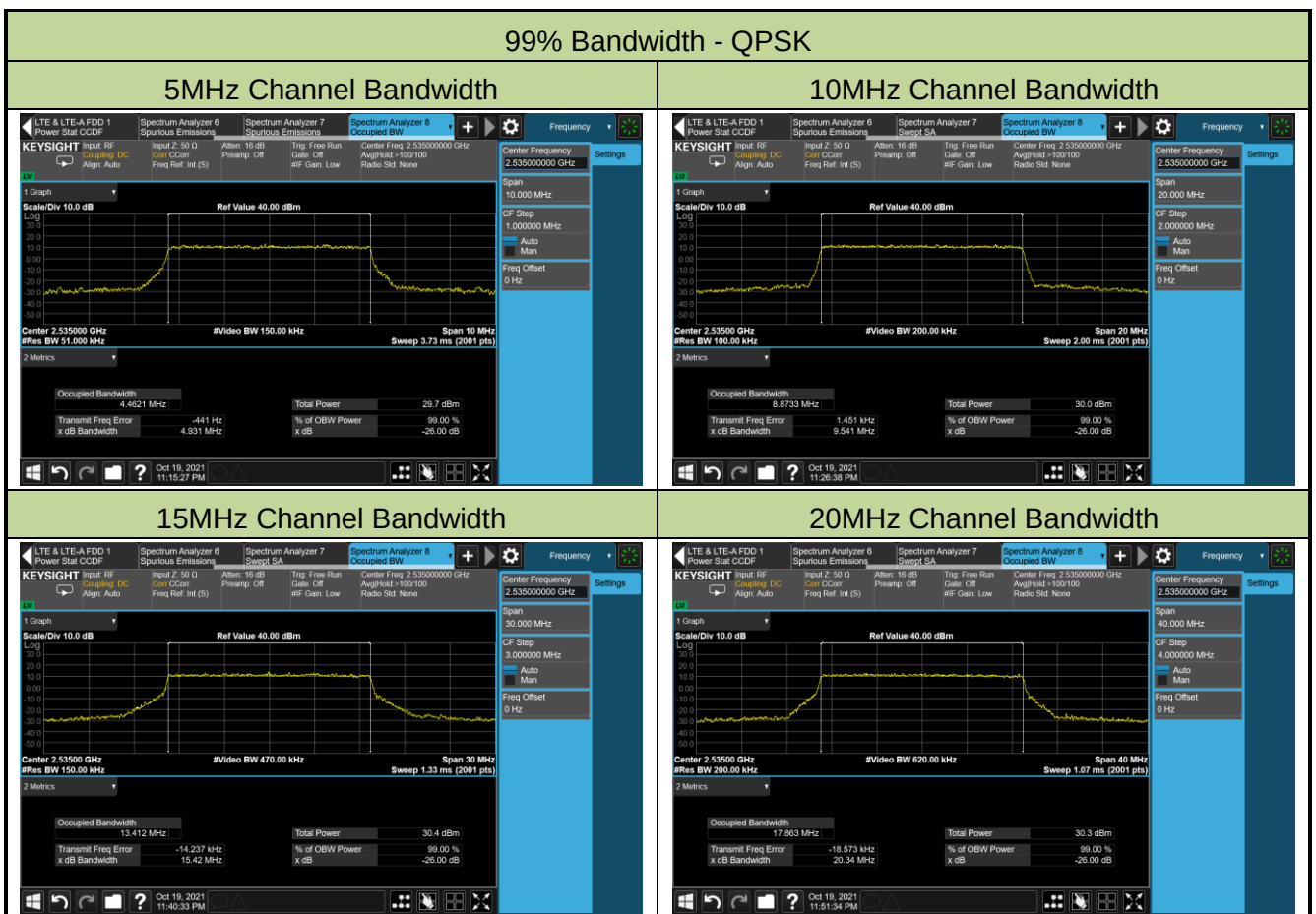
Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2021/10/20
Test Band	LTE Band 5		

Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
20525	836.5	1.4	1.07
		3	2.68
		5	4.46
		10	8.88



Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2021/10/19
Test Band	LTE Band 7		

Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
21100	2535.0	5	4.46
		10	8.87
		15	13.41
		20	17.86



4.3. Frequency Stability Measurement

4.3.1. 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 $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

4.3.2. Test Procedures Used

ANSI C63.26-2015 - Section 5.6

4.3.3. Test Setting

Frequency Stability Under Temperature Variations:

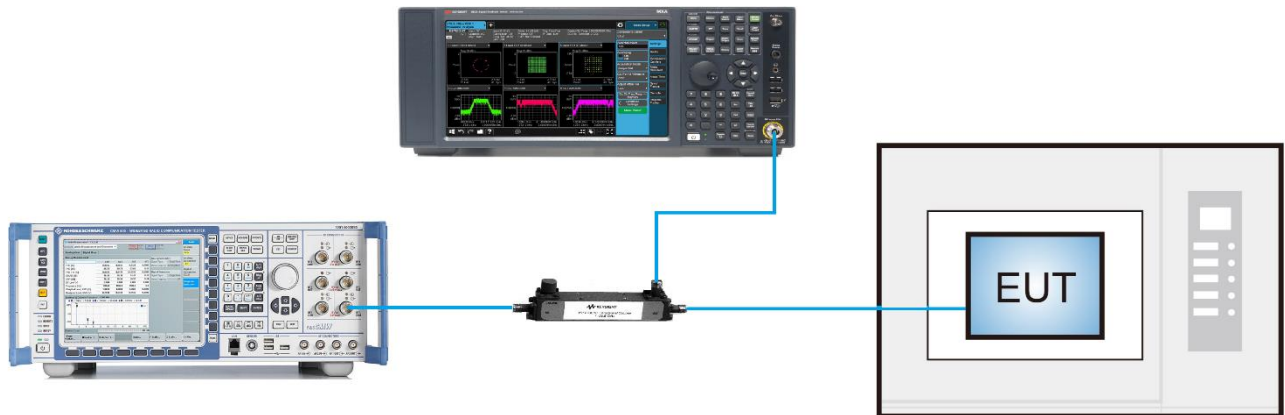
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain 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 input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

4.3.4. Test Setup



4.3.5.Test Result

Product	LTE Module	Test Site	WZ-TR3
Test Engineer	Cloud Guo	Test Date	2021/10/27
Test Band	LTE Band 2		

Power (VDC)	Temp (°C)	Frequency Tolerance (ppm)
3.8	- 30	0.0212
	- 20	-0.0024
	- 10	-0.0069
	0	-0.0094
	+ 10	-0.0178
	+ 20	-0.0194
	+ 30	-0.0106
	+ 40	-0.0159
	+ 50	-0.0080
4.3	+ 20	-0.0232
3.3	+ 20	-0.0115

Product	LTE Module	Test Site	WZ-TR3
Test Engineer	Cloud Guo	Test Date	2021/10/27
Test Band	LTE Band 4/66		

Power (VDC)	Temp (°C)	Frequency Tolerance (ppm)
3.8	- 30	0.0176
	- 20	-0.0052
	- 10	-0.0166
	0	-0.0185
	+ 10	-0.0198
	+ 20	-0.0108
	+ 30	-0.0190
	+ 40	-0.0065
	+ 50	-0.0058
4.3	+ 20	-0.0205
3.3	+ 20	-0.0095

Product	LTE Module	Test Site	WZ-TR3
Test Engineer	Cloud Guo	Test Date	2021/10/27
Test Band	LTE Band 5		

Power (VDC)	Temp (°C)	Frequency Tolerance (ppm)
3.8	- 30	0.0085
	- 20	-0.0084
	- 10	-0.0108
	0	-0.0118
	+ 10	-0.0121
	+ 20	-0.0093
	+ 30	-0.0126
	+ 40	-0.0104
	+ 50	-0.0051
4.3	+ 20	-0.0139
3.3	+ 20	-0.0032

Product	LTE Module	Test Site	WZ-TR3
Test Engineer	Cloud Guo	Test Date	2021/10/27
Test Band	LTE Band 7		

Power (VDC)	Temp (°C)	Frequency Tolerance (ppm)
3.8	- 30	0.0048
	- 20	-0.0040
	- 10	-0.0063
	0	-0.0055
	+ 10	-0.0045
	+ 20	-0.0049
	+ 30	-0.0074
	+ 40	-0.0065
	+ 50	-0.0040
4.3	+ 20	-0.0137
3.3	+ 20	-0.0048

4.4. Equivalent Isotropically Radiated Power Measurement

4.4.1. Test Limit

Band 5

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

Band 2, 7

Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

Band 4/66:

Fixed, mobile stations operating in the 1710 ~ 1755 MHz band and mobile in the 1695 ~ 1710 MHz and 1755 ~ 1780 MHz bands are limited to 1 watt EIRP.

4.4.2. Test Procedures Used

ANSI C63.26-2015 - Section 5.2

4.4.3. Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

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

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

where

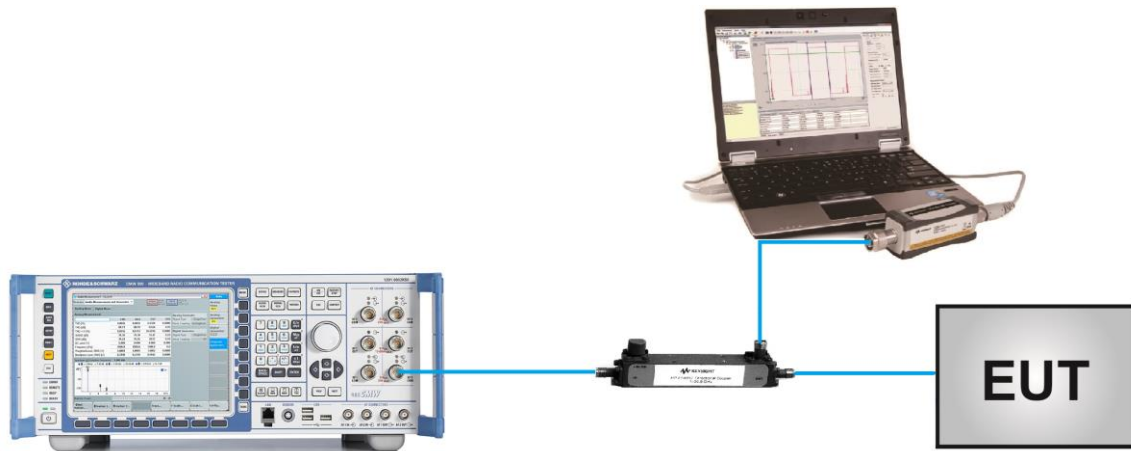
ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas} , e.g., dBm or dBW)

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)

$$\text{ERP} = \text{EIRP} - 2.15$$

4.4.4. Test Setup



4.4.5. Test Result

Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2020/10/17 ~ 2020/11/14
Test Band	LTE Band 2		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
18607	1850.70	1.4	1	0	22.40	23.99	< 33.01
18900	1880.00				22.50	24.09	< 33.01
19193	1909.30				22.22	23.81	< 33.01
18607	1850.70	1.4	1	2	22.94	24.53	< 33.01
18900	1880.00				23.14	24.73	< 33.01
19193	1909.30				22.79	24.38	< 33.01
18607	1850.70	1.4	1	6	22.20	23.79	< 33.01
18900	1880.00				22.29	23.88	< 33.01
19193	1909.30				21.92	23.51	< 33.01
18607	1850.70	1.4	6	0	21.79	23.38	< 33.01
18900	1880.00				21.92	23.51	< 33.01
19193	1909.30				21.60	23.19	< 33.01
18615	1851.50	3	1	0	21.78	23.37	< 33.01
18900	1880.00				22.08	23.67	< 33.01
19185	1908.50				21.79	23.38	< 33.01
18615	1851.50	3	1	7	22.99	24.58	< 33.01
18900	1880.00				23.43	25.02	< 33.01
19185	1908.50				23.09	24.68	< 33.01
18615	1851.50	3	1	14	21.29	22.88	< 33.01
18900	1880.00				21.69	23.28	< 33.01
19185	1908.50				21.43	23.02	< 33.01
18615	1851.50	3	15	0	21.58	23.17	< 33.01
18900	1880.00				22.20	23.79	< 33.01
19185	1908.50				21.75	23.34	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
18625	1852.50	5	1	0	21.88	23.47	< 33.01
18900	1880.00				22.18	23.77	< 33.01
19175	1907.50				22.24	23.83	< 33.01
18625	1852.50	5	1	12	22.30	23.89	< 33.01
18900	1880.00				22.82	24.41	< 33.01
19175	1907.50				22.64	24.23	< 33.01
18625	1852.50	5	1	24	21.25	22.84	< 33.01
18900	1880.00				21.63	23.22	< 33.01
19175	1907.50				21.45	23.04	< 33.01
18625	1852.50	5	25	0	21.51	23.10	< 33.01
18900	1880.00				21.91	23.50	< 33.01
19175	1907.50				21.80	23.39	< 33.01
18650	1855.00	10	1	0	22.02	23.61	< 33.01
18900	1880.00				22.38	23.97	< 33.01
19150	1905.00				22.39	23.98	< 33.01
18650	1855.00	10	1	24	22.43	24.02	< 33.01
18900	1880.00				22.97	24.56	< 33.01
19150	1905.00				23.07	24.66	< 33.01
18650	1855.00	10	1	49	21.31	22.90	< 33.01
18900	1880.00				21.43	23.02	< 33.01
19150	1905.00				21.29	22.88	< 33.01
18650	1855.00	10	50	0	21.57	23.16	< 33.01
18900	1880.00				21.99	23.58	< 33.01
19150	1905.00				22.02	23.61	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
18675	1857.50	15	1	0	22.82	24.41	< 33.01
18900	1880.00				23.00	24.59	< 33.01
19125	1902.50				23.08	24.67	< 33.01
18675	1857.50	15	1	37	22.53	24.12	< 33.01
18900	1880.00				22.95	24.54	< 33.01
19125	1902.50				23.30	24.89	< 33.01
18675	1857.50	15	1	74	22.34	23.93	< 33.01
18900	1880.00				21.70	23.29	< 33.01
19125	1902.50				21.96	23.55	< 33.01
18675	1857.50	15	75	0	21.86	23.45	< 33.01
18900	1880.00				21.99	23.58	< 33.01
19125	1902.50				22.27	23.86	< 33.01
18700	1860.00	20	1	0	22.81	24.40	< 33.01
18900	1880.00				22.78	24.37	< 33.01
19100	1900.00				22.82	24.41	< 33.01
18700	1860.00	20	1	49	22.91	24.50	< 33.01
18900	1880.00				23.22	24.81	< 33.01
19100	1900.00				23.35	24.94	< 33.01
18700	1860.00	20	1	99	22.69	24.28	< 33.01
18900	1880.00				21.44	23.03	< 33.01
19100	1900.00				21.56	23.15	< 33.01
18700	1860.00	20	100	0	21.92	23.51	< 33.01
18900	1880.00				21.97	23.56	< 33.01
19100	1900.00				22.00	23.59	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2020/10/17 ~ 2020/11/14
Test Band	LTE Band 4/66		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
131979	1710.70	1.4	1	0	22.45	24.45	< 30.00
132322	1745.00				22.73	24.73	< 30.00
132665	1779.30				22.79	24.79	< 30.00
131979	1710.70	1.4	1	2	23.08	25.08	< 30.00
132322	1745.00				23.28	25.28	< 30.00
132665	1779.30				23.48	25.48	< 30.00
131979	1710.70	1.4	1	6	22.33	24.33	< 30.00
132322	1745.00				22.61	24.61	< 30.00
132665	1779.30				22.84	24.84	< 30.00
131979	1710.70	1.4	6	0	21.93	23.93	< 30.00
132322	1745.00				22.18	24.18	< 30.00
132665	1779.30				22.39	24.39	< 30.00
131987	1711.50	3	1	0	22.06	24.06	< 30.00
132322	1745.00				22.45	24.45	< 30.00
132657	1778.50				22.24	24.24	< 30.00
131987	1711.50	3	1	7	23.42	25.42	< 30.00
132322	1745.00				23.58	25.58	< 30.00
132657	1778.50				23.76	25.76	< 30.00
131987	1711.50	3	1	14	21.78	23.78	< 30.00
132322	1745.00				21.97	23.97	< 30.00
132657	1778.50				22.33	24.33	< 30.00
131987	1711.50	3	15	0	22.00	24.00	< 30.00
132322	1745.00				22.30	24.30	< 30.00
132657	1778.50				22.15	24.15	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
131997	1712.50	5	1	0	22.16	24.16	< 30.00
132322	1745.00				22.75	24.75	< 30.00
132647	1777.50				22.13	24.13	< 30.00
131997	1712.50	5	1	12	22.89	24.89	< 30.00
132322	1745.00				23.11	25.11	< 30.00
132647	1777.50				23.20	25.20	< 30.00
131997	1712.50	5	1	24	21.94	23.94	< 30.00
132322	1745.00				21.92	23.92	< 30.00
132647	1777.50				22.44	24.44	< 30.00
131997	1712.50	5	25	0	22.03	24.03	< 30.00
132322	1745.00				22.35	24.35	< 30.00
132647	1777.50				22.33	24.33	< 30.00
132022	1715.00	10	1	0	22.50	24.50	< 30.00
132322	1745.00				23.12	25.12	< 30.00
132622	1775.00				21.93	23.93	< 30.00
132022	1715.00	10	1	24	23.15	25.15	< 30.00
132322	1745.00				23.33	25.33	< 30.00
132622	1775.00				23.46	25.46	< 30.00
132022	1715.00	10	1	49	21.99	23.99	< 30.00
132322	1745.00				21.49	23.49	< 30.00
132622	1775.00				22.59	24.59	< 30.00
132022	1715.00	10	50	0	22.17	24.17	< 30.00
132322	1745.00				22.44	24.44	< 30.00
132622	1775.00				22.47	24.47	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
132047	1717.50	15	1	0	23.16	25.16	< 30.00
132322	1745.00				23.68	25.68	< 30.00
132597	1772.50				22.37	24.37	< 30.00
132047	1717.50	15	1	37	23.02	25.02	< 30.00
132322	1745.00				23.20	25.20	< 30.00
132597	1772.50				23.20	25.20	< 30.00
132047	1717.50	15	1	74	23.02	25.02	< 30.00
132322	1745.00				21.64	23.64	< 30.00
132597	1772.50				23.25	25.25	< 30.00
132047	1717.50	15	75	0	22.37	24.37	< 30.00
132322	1745.00				22.44	24.44	< 30.00
132597	1772.50				22.28	24.28	< 30.00
132072	1720.00	20	1	0	23.01	25.01	< 30.00
132322	1745.00				23.62	25.62	< 30.00
132572	1770.00				22.47	24.47	< 30.00
132072	1720.00	20	1	49	23.54	25.54	< 30.00
132322	1745.00				23.41	25.41	< 30.00
132572	1770.00				23.32	25.32	< 30.00
132072	1720.00	20	1	99	23.53	25.53	< 30.00
132322	1745.00				20.85	22.85	< 30.00
132572	1770.00				23.15	25.15	< 30.00
132072	1720.00	20	100	0	22.63	24.63	< 30.00
132322	1745.00				22.21	24.21	< 30.00
132572	1770.00				22.28	24.28	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2020/10/17 ~ 2020/11/14
Test Band	LTE Band 5		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK							
20407	824.70	1.4	1	0	22.64	23.02	< 38.45
20525	836.50				22.61	22.99	< 38.45
20643	848.30				22.38	22.76	< 38.45
20407	824.70	1.4	1	2	23.27	23.65	< 38.45
20525	836.50				23.10	23.48	< 38.45
20643	848.30				22.89	23.27	< 38.45
20407	824.70	1.4	1	6	22.54	22.92	< 38.45
20525	836.50				22.54	22.92	< 38.45
20643	848.30				22.34	22.72	< 38.45
20407	824.70	1.4	6	0	21.99	22.37	< 38.45
20525	836.50				21.94	22.32	< 38.45
20643	848.30				21.43	21.81	< 38.45
20415	825.50	3	1	0	22.62	23.00	< 38.45
20525	836.50				22.59	22.97	< 38.45
20635	846.50				22.44	22.82	< 38.45
20415	825.50	3	1	7	23.62	24.00	< 38.45
20525	836.50				23.46	23.84	< 38.45
20635	846.50				23.15	23.53	< 38.45
20415	825.50	3	1	14	22.53	22.91	< 38.45
20525	836.50				22.42	22.80	< 38.45
20635	846.50				22.42	22.80	< 38.45
20415	825.50	3	15	0	22.13	22.51	< 38.45
20525	836.50				22.00	22.38	< 38.45
20635	846.50				21.61	21.99	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK							
20425	826.50	5	1	0	22.72	23.10	< 38.45
20525	836.50				22.74	23.12	< 38.45
20625	846.50				22.78	23.16	< 38.45
20425	826.50	5	1	12	22.92	23.30	< 38.45
20525	836.50				22.77	23.15	< 38.45
20625	846.50				22.55	22.93	< 38.45
20425	826.50	5	1	24	22.85	23.23	< 38.45
20525	836.50				22.84	23.22	< 38.45
20625	846.50				22.53	22.91	< 38.45
20425	826.50	5	25	0	22.09	22.47	< 38.45
20525	836.50				21.96	22.34	< 38.45
20625	846.50				22.76	23.14	< 38.45
20450	829.00	10	1	0	22.96	23.34	< 38.45
20525	836.50				22.72	23.10	< 38.45
20600	844.00				22.36	22.74	< 38.45
20450	829.00	10	1	24	23.07	23.45	< 38.45
20525	836.50				23.01	23.39	< 38.45
20600	844.00				22.99	23.37	< 38.45
20450	829.00	10	1	49	21.66	22.04	< 38.45
20525	836.50				22.99	23.37	< 38.45
20600	844.00				22.56	22.94	< 38.45
20450	829.00	10	50	0	22.07	22.45	< 38.45
20525	836.50				22.04	22.42	< 38.45
20600	844.00				23.09	23.47	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15							

Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2020/10/17 ~ 2020/11/14
Test Band	LTE Band 7		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
20775	2502.50	5	1	0	22.47	25.47	< 33.01
21100	2535.00				22.40	25.40	< 33.01
21425	2567.50				22.64	25.64	< 33.01
20775	2502.50	5	1	12	23.21	26.21	< 33.01
21100	2535.00				23.12	26.12	< 33.01
21425	2567.50				22.96	25.96	< 33.01
20775	2502.50	5	1	24	22.76	25.76	< 33.01
21100	2535.00				22.52	25.52	< 33.01
21425	2567.50				22.46	25.46	< 33.01
20775	2502.50	5	25	0	22.43	25.43	< 33.01
21100	2535.00				23.21	26.21	< 33.01
21425	2567.50				22.21	25.21	< 33.01
20800	2505.00	10	1	0	22.62	25.62	< 33.01
21100	2535.00				22.64	25.64	< 33.01
21400	2565.00				22.64	25.64	< 33.01
20800	2505.00	10	1	24	23.41	26.41	< 33.01
21100	2535.00				23.34	26.34	< 33.01
21400	2565.00				23.17	26.17	< 33.01
20800	2505.00	10	1	49	22.65	25.65	< 33.01
21100	2535.00				22.16	25.16	< 33.01
21400	2565.00				22.06	25.06	< 33.01
20800	2505.00	10	50	0	22.49	25.49	< 33.01
21100	2535.00				22.53	25.53	< 33.01
21400	2565.00				23.24	26.24	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
20825	2507.50	15	1	0	22.63	25.63	< 33.01
21100	2535.00				22.84	25.84	< 33.01
21375	2562.50				22.79	25.79	< 33.01
20825	2507.50	15	1	37	23.19	26.19	< 33.01
21100	2535.00				23.28	26.28	< 33.01
21375	2562.50				23.22	26.22	< 33.01
20825	2507.50	15	1	74	22.69	25.69	< 33.01
21100	2535.00				22.68	25.68	< 33.01
21375	2562.50				22.74	25.74	< 33.01
20825	2507.50	15	75	0	22.33	25.33	< 33.01
21100	2535.00				23.46	26.46	< 33.01
21375	2562.50				22.38	25.38	< 33.01
20850	2510.00	20	1	0	22.63	25.63	< 33.01
21100	2535.00				23.07	26.07	< 33.01
21350	2560.00				23.08	26.08	< 33.01
20850	2510.00	20	1	49	23.42	26.42	< 33.01
21100	2535.00				23.49	26.49	< 33.01
21350	2560.00				23.48	26.48	< 33.01
20850	2510.00	20	1	99	22.81	25.81	< 33.01
21100	2535.00				22.81	25.81	< 33.01
21350	2560.00				23.09	26.09	< 33.01
20850	2510.00	20	100	0	22.27	25.27	< 33.01
21100	2535.00				22.45	25.45	< 33.01
21350	2560.00				22.36	25.36	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

4.5. Band Edge Measurement

4.5.1. Test Limit

22.917(a), 24.238 (a), 27.53 (h)

For operations in the 824 ~ 849 MHz, 1850 ~ 1910 MHz, 1930 ~ 1990 MHz, 600MHz & 698 ~ 746 MHz and 1710 ~ 1755 MHz, the FCC limit is $43 + 10\log_{10}(P_{\text{[Watts]}})$ dB below the transmitter power $P(\text{Watts})$ in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

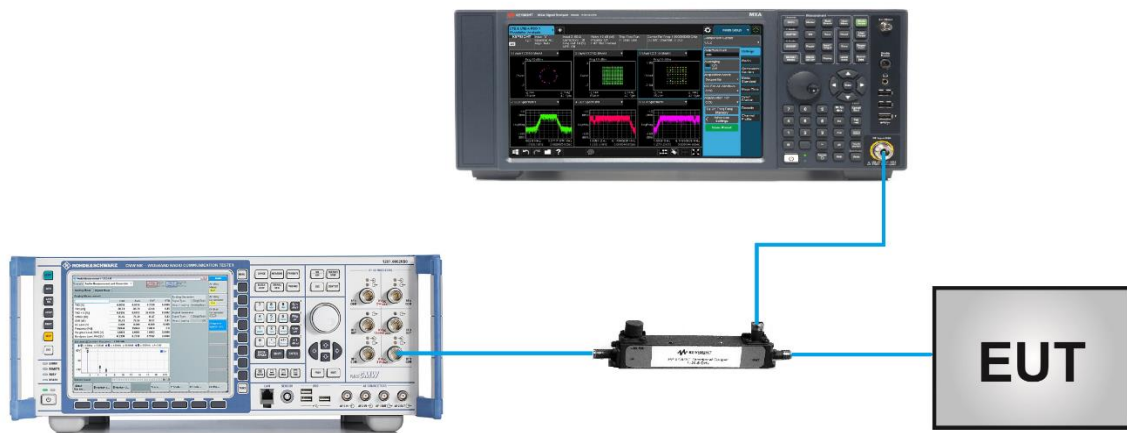
4.5.2. Test Procedure Used

ANSI C63.26-2015 - Section 5.7

4.5.3. Test Setting

1. Set the analyzer frequency to low or high channel
2. $RBW \geq$ 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. $VBW \geq 3 \cdot RBW$
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

Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2021/10/19
Test Band	LTE Band 2	Test Result	Pass

1.4MHz Channel Bandwidth - 1RB

Lower Band Edge



Upper Band Edge



3MHz Channel Bandwidth - 1RB

Lower Band Edge

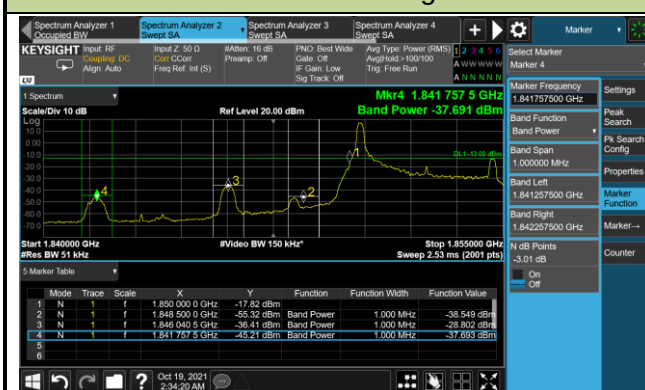


Upper Band Edge



5MHz Channel Bandwidth - 1RB

Lower Band Edge

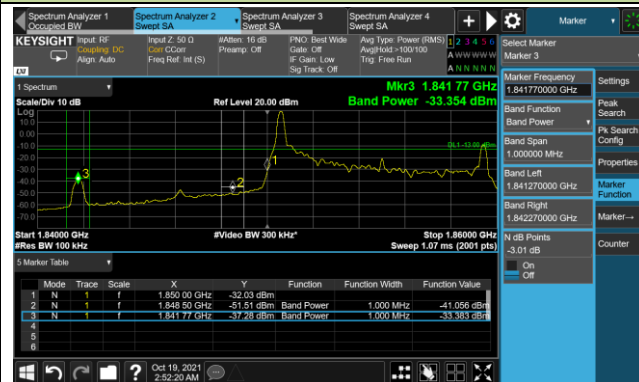


Upper Band Edge



10MHz Channel Bandwidth - 1RB

Lower Band Edge

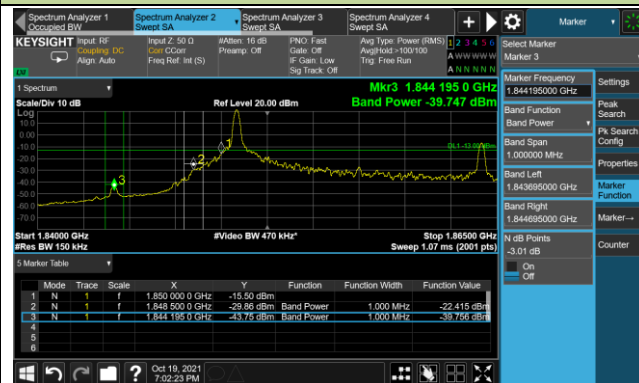


Upper Band Edge



15MHz Channel Bandwidth - 1RB

Lower Band Edge

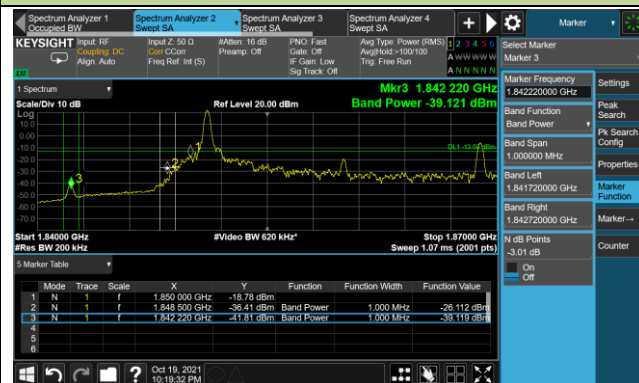


Upper Band Edge

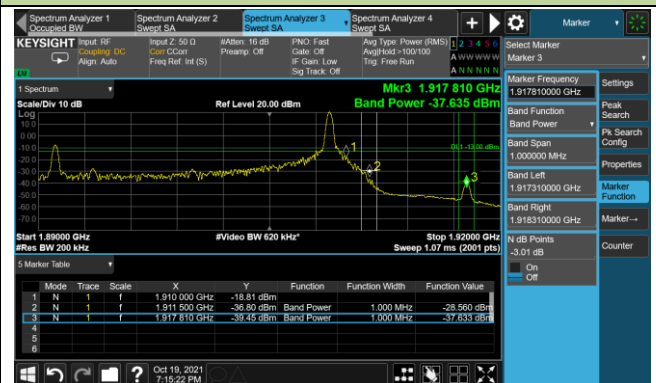


20MHz Channel Bandwidth - 1RB

Lower Band Edge

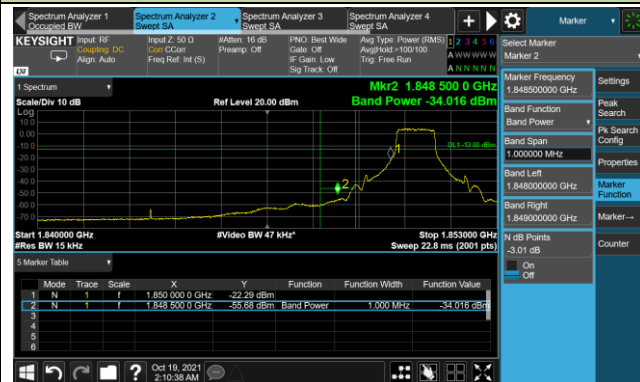


Upper Band Edge



1.4MHz Channel Bandwidth - Full RB

Lower Band Edge

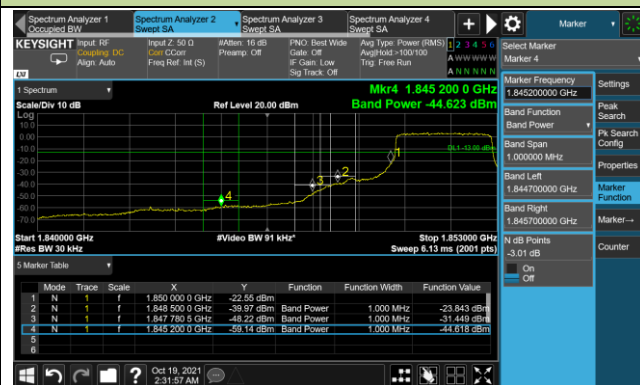


Upper Band Edge



3MHz Channel Bandwidth - Full RB

Lower Band Edge

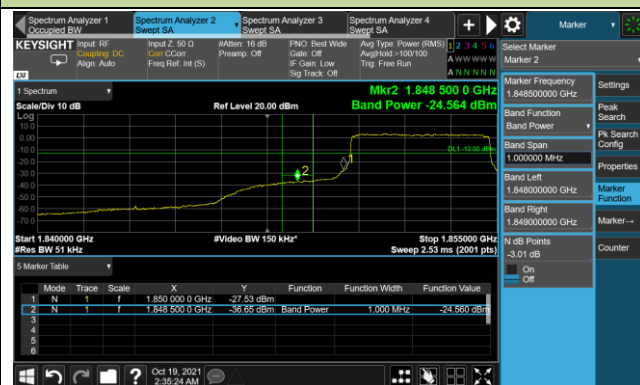


Upper Band Edge



5MHz Channel Bandwidth - Full RB

Lower Band Edge



Upper Band Edge

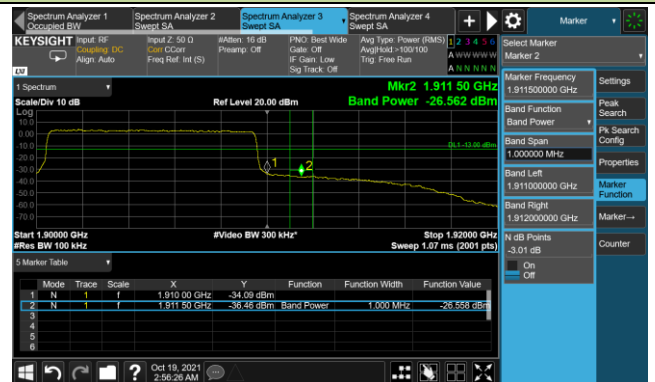


10MHz Channel Bandwidth - Full RB

Lower Band Edge



Upper Band Edge



15MHz Channel Bandwidth - Full RB

Lower Band Edge

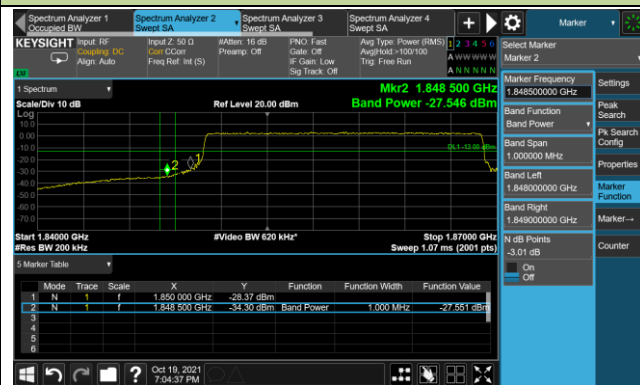


Upper Band Edge

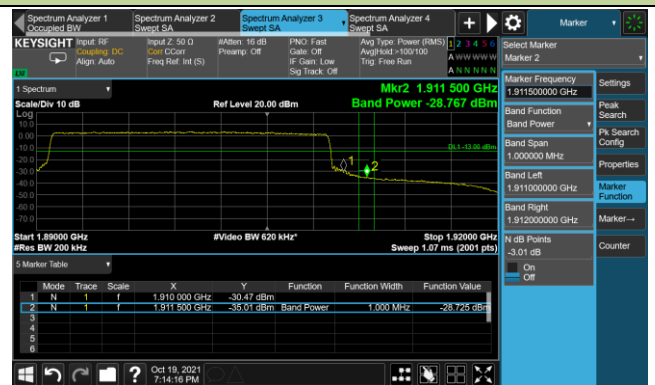


20MHz Channel Bandwidth - Full RB

Lower Band Edge



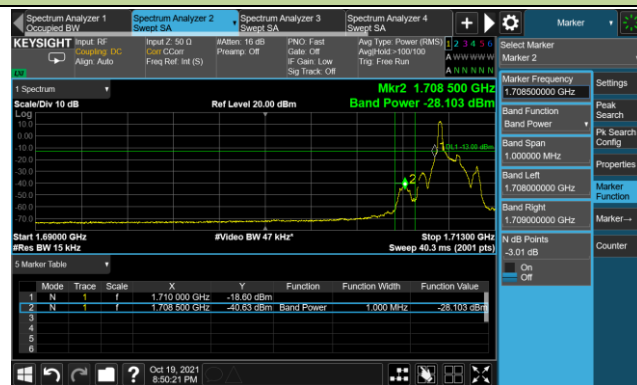
Upper Band Edge



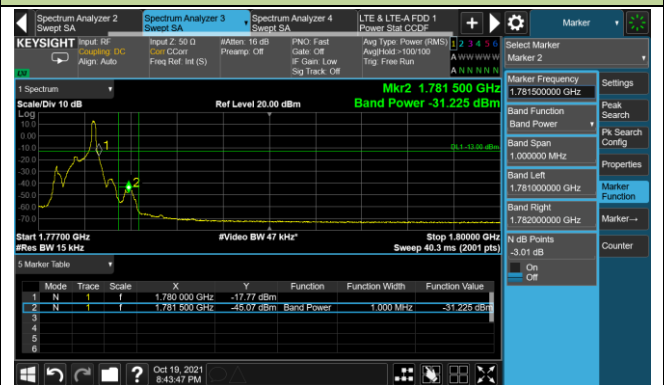
Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Cloud Guo	Test Date	2021/10/19
Test Band	LTE Band 4/66	Test Result	Pass

1.4MHz Channel Bandwidth - 1RB

Lower Band Edge

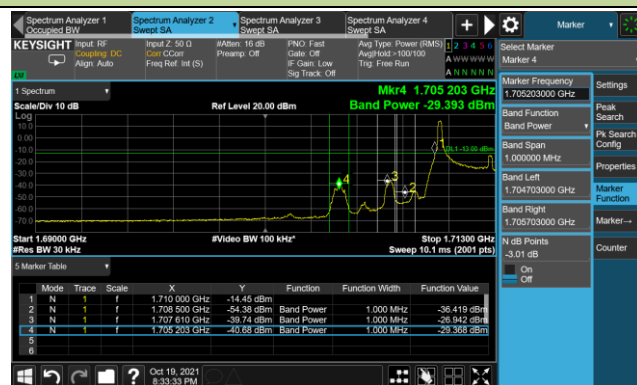


Upper Band Edge

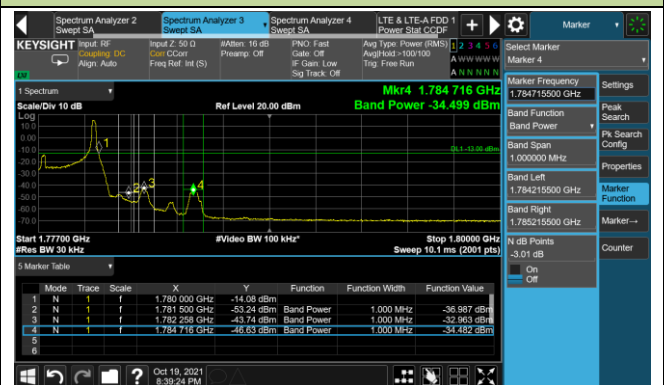


3MHz Channel Bandwidth - 1RB

Lower Band Edge

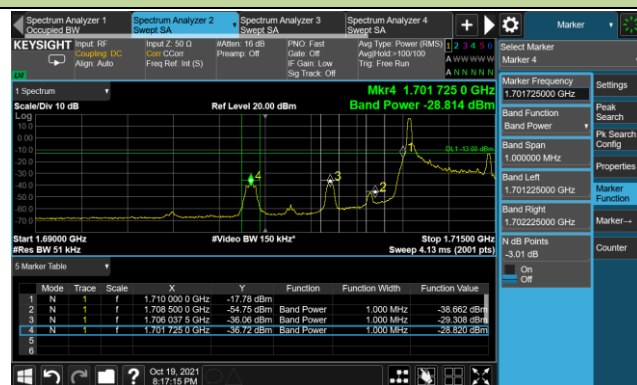


Upper Band Edge

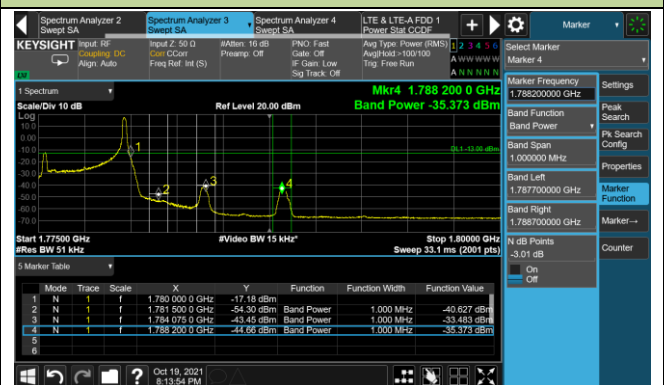


5MHz Channel Bandwidth - 1RB

Lower Band Edge

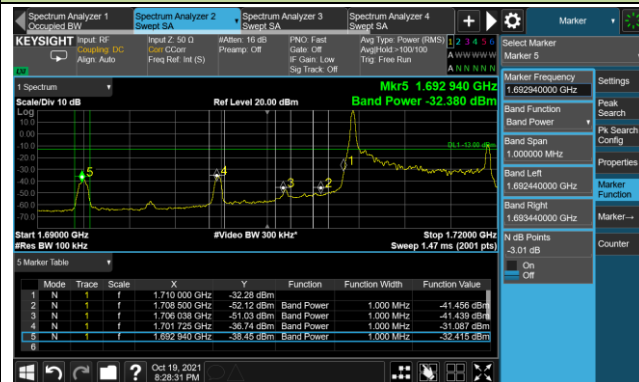


Upper Band Edge

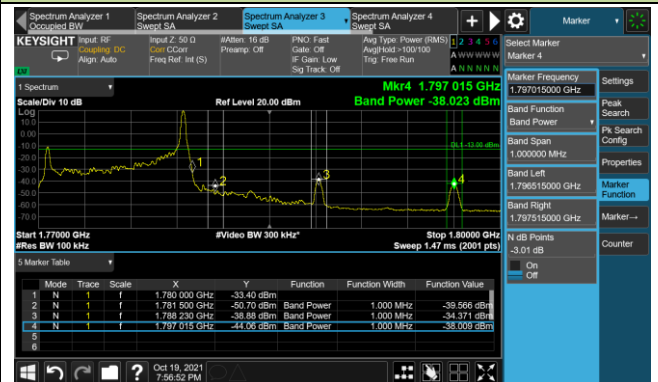


10MHz Channel Bandwidth - 1RB

Lower Band Edge

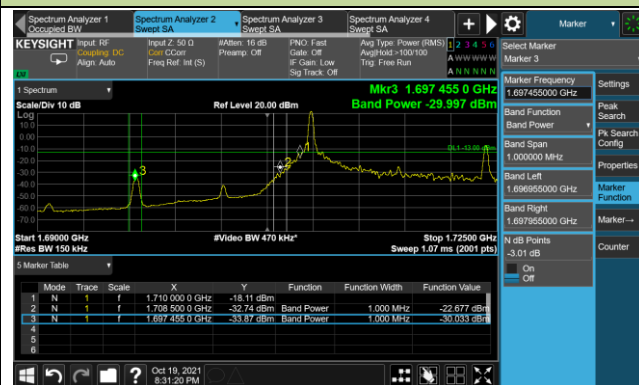


Upper Band Edge

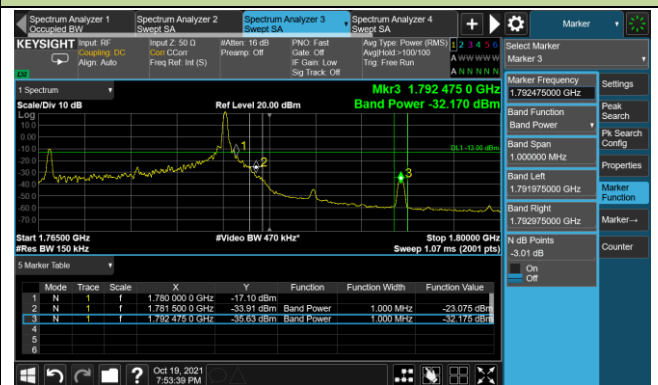


15MHz Channel Bandwidth - 1RB

Lower Band Edge

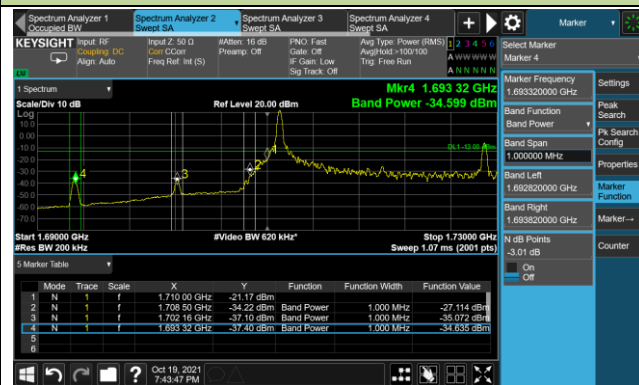


Upper Band Edge

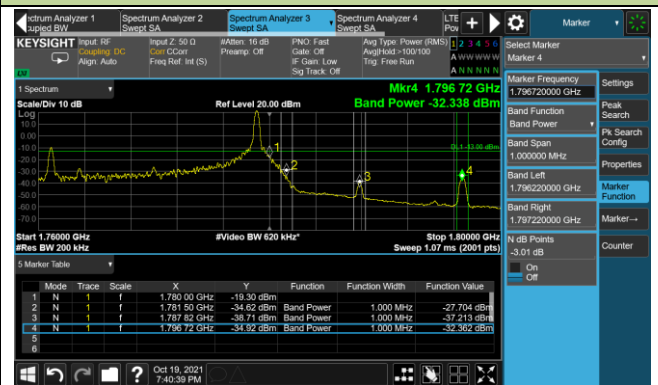


20MHz Channel Bandwidth - 1RB

Lower Band Edge



Upper Band Edge



1.4MHz Channel Bandwidth - Full RB

Lower Band Edge

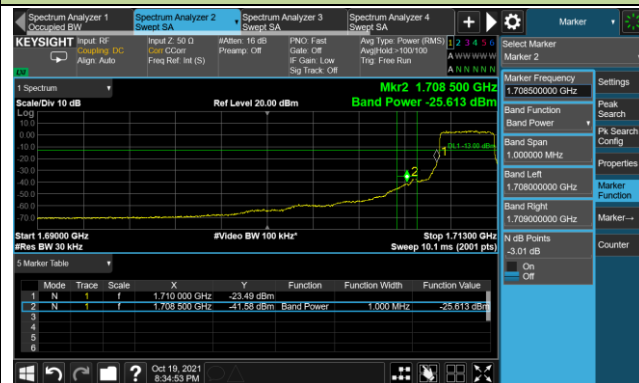


Upper Band Edge



3MHz Channel Bandwidth - Full RB

Lower Band Edge

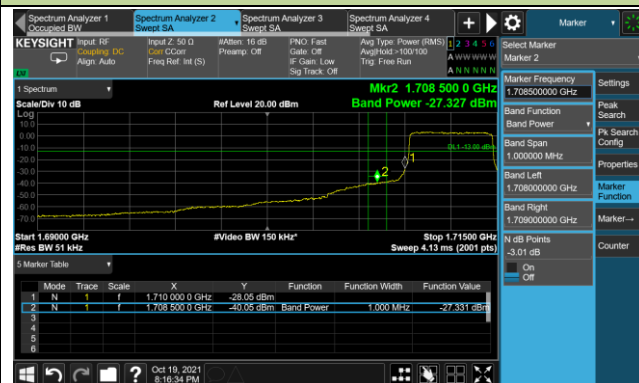


Upper Band Edge



5MHz Channel Bandwidth - Full RB

Lower Band Edge



Upper Band Edge

