

TEST REPORT

Application No.: KSCR2207001307AT
FCC ID: XMR2022RM520NGL
Applicant: Quectel Wireless Solutions Co., Ltd.
Address of Applicant: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer: Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Equipment Under Test (EUT):
EUT Name: 5G Sub-6 GHz M.2 Module
Model No.: RM520N-GL
Trade Mark: Quectel
Standard(s): FCC Part 96.47
 FCC KDB 940660 D01 Part 96 CBRS Eqpt v03
 WINNF-TS-0122-V1.0.2 CBRS CBSD Test Specification
 WINNF-18-IN-00178 CBRS End User Device as UUT Test Guidelines
Date of Receipt: 2022-05-15
Date of Test: 2022-05-22 to 2022-07-27
Date of Issue: 2022-07-27

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Eric Lin
 Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



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Revision Record			
Version	Description	Date	Remark
00	Original	2022-07-27	/

Authorized for issue by:			
		<i>Damon Zhou</i>	
		Damon Zhou / Project Engineer	
		<i>Eric Lin</i>	
		Eric Lin / Reviewer	



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2 Test Summary

Item	Standard	Test Case ID	Result
End User Device additional requirement	96.47	/	Pass

The UUT is an End User Device. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC Part 96.47

FCC KDB 940660 D01 Part 96 CBRS Eqpt v03

WINNF-TS-0122-V1.0.2 CBRS CBSD Test Specification

WINNF-18-IN-00178 CBRS End User Device as UUT Test Guidelines



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.7V
Sample Type:	End User device
Transmitter Frequency Band:	LTE Band 48
Transmitter Frequency Range:	3550~3700MHz
Antenna Type:	Monopole
Hardware Version:	R1.0
Software Version:	RM520NGLAAR01A06M4G
Antenna Gain:	-6.1dBi

4.2 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25 \times 10^{-8}$
2	RF conducted power	$\pm 0.75\text{dB}$
3	Temperature test	$\pm 1^\circ\text{C}$
4	Humidity test	$\pm 3\%$
5	Supply voltages	$\pm 1.5\%$
6	Time	$\pm 3\%$

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
EPC	Lanner Electronics Inc.	LICA-1513A	LR202002004052
Router	TP-LINK	TL-R860+	1175379002425
Base station	Baicells	pBS31010 (FCC ID: 2AG32PBS31010)	12020002912122B0001

4.4 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888

Fax: +86 512 5737 0818

No tests were sub-contracted.



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5 Equipment List

Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
Laptop	Lenovo	Y510P	HFL000026	N/A	N/A
Spectrum Analyzer	KEYSIGHT	N9030B	KSEM021-1	2022/01/22	2023/01/22
Shield Room	SAEMC	MSR433	SEM001-11	2021-03-13	2024-03-12
Coaxial Cable	Thermax	N/A	14	2021/10/16	2022/10/15
Attenuator	Mini-Circuits	NAT-6-2W	15542-1	N.C.R.	N.C.R.
Humidity / Temperature Indicator	Anymetre	TH603	CZ700001(4/7)	2021/10/14	2022/10/13



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6 Test Method and Environment

6.1 End User Device Conformance and Performance

Test Requirement: FCC Part 96.47

Test Method: WINNF-18-IN-00178 CBRS End User Device as UUT Test Guidelines

6.2 Test Environment

Environmental Conditions: 24.3deg. C, 58.4%RH

6.3 Test Requirement

FCC Part 96.47

- a). End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.
- b). An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.

6.4 Test Procedure

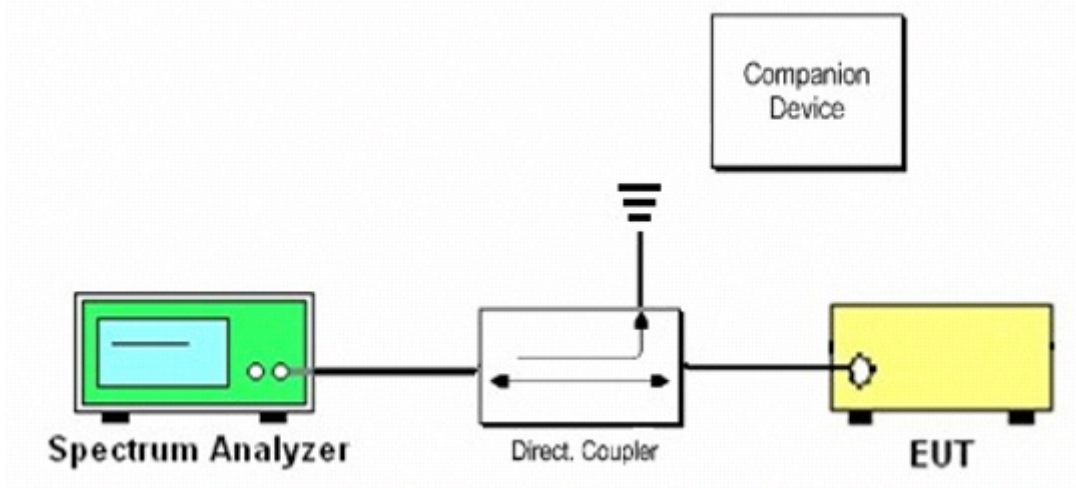
Following procedure can be done by applying WINNF-TS-0122-V1.0.2 CBRS CBSD Test Specification, use the certified Base station CBSD (FCC ID: 2AG32PBS31010) as companion device to show compliance with Part 96.47 requirement for End User Device (EUD):

1. Setup with frequency 3550-3570MHz and power level 17dBm/MHz;
2. Enable CBSD service ;
3. Check EUD Tx Frequency and power;
4. Disable AP service ;
5. Check EUD stops transmission within 10seconds;
6. Setup with 3590-3610MHz & power level 13dBm/MHz;
7. Enable CBSD service;
8. Check EUD Tx Frequency and power;
9. Disable CBSD service;
10. Check EUD stops transmission within 10seconds.



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6.5 Test Setup



End User Device as UUT, the companion device is certified CBRS (FCC ID: 2AG32PBS31010)



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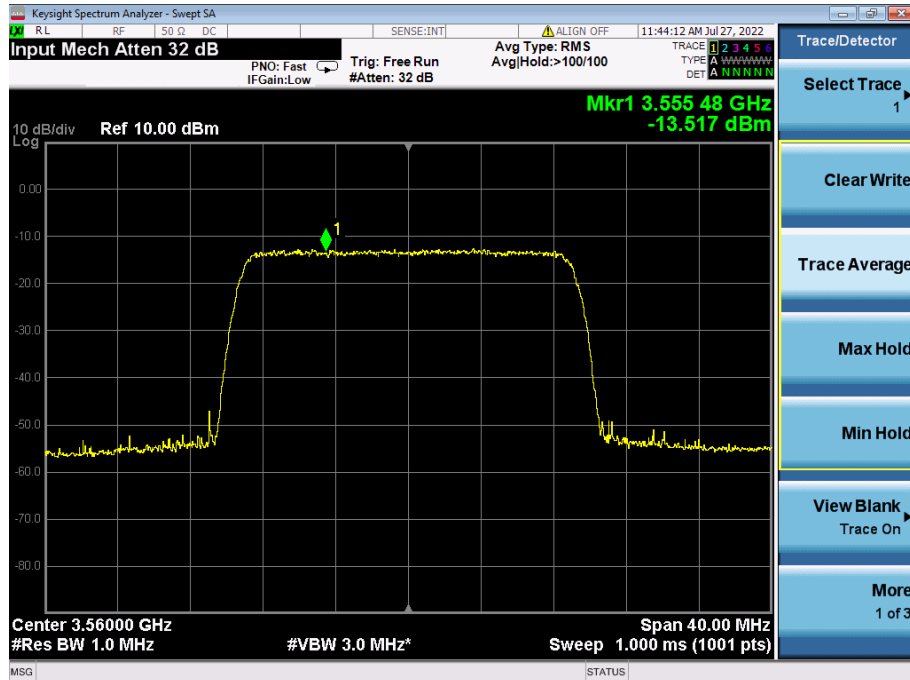
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6.6 Test Result

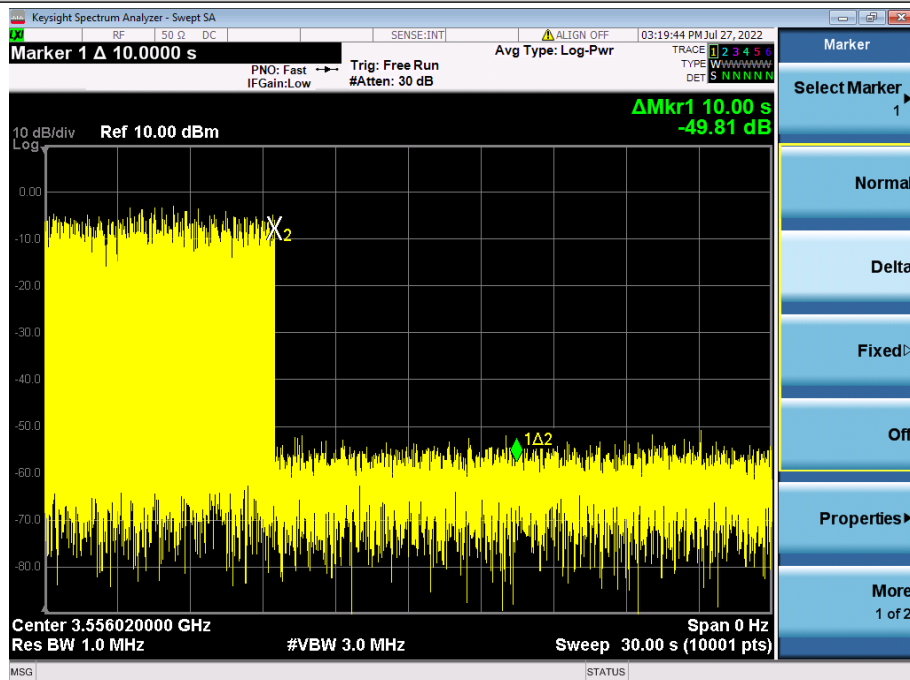
[Step 1] Setup with frequency 3550-3570MHz and power level 17dBm/MHz

[Step 3] Check EUD Tx Frequency and power



EIRP PSD = $-13.517 - 6.1 + 15 = -4.617$ dBm/MHz, attenuation of Cable and Splitter is 15dB, Antenna gain is -6.1dBi.

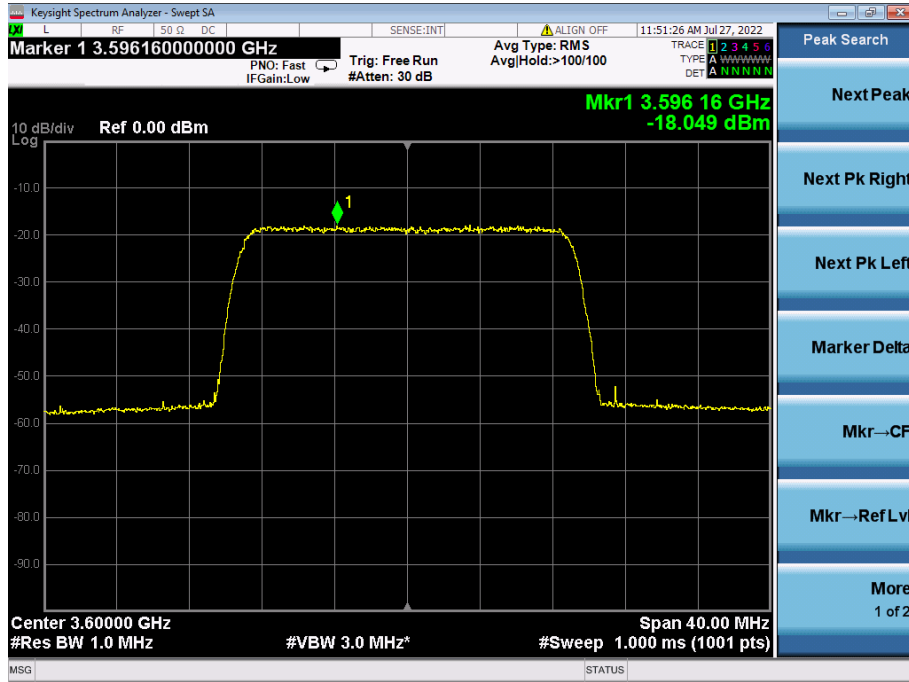
[Step 5] EUD stops transmission within 10 seconds of receiving instructions from its associated CBSD.



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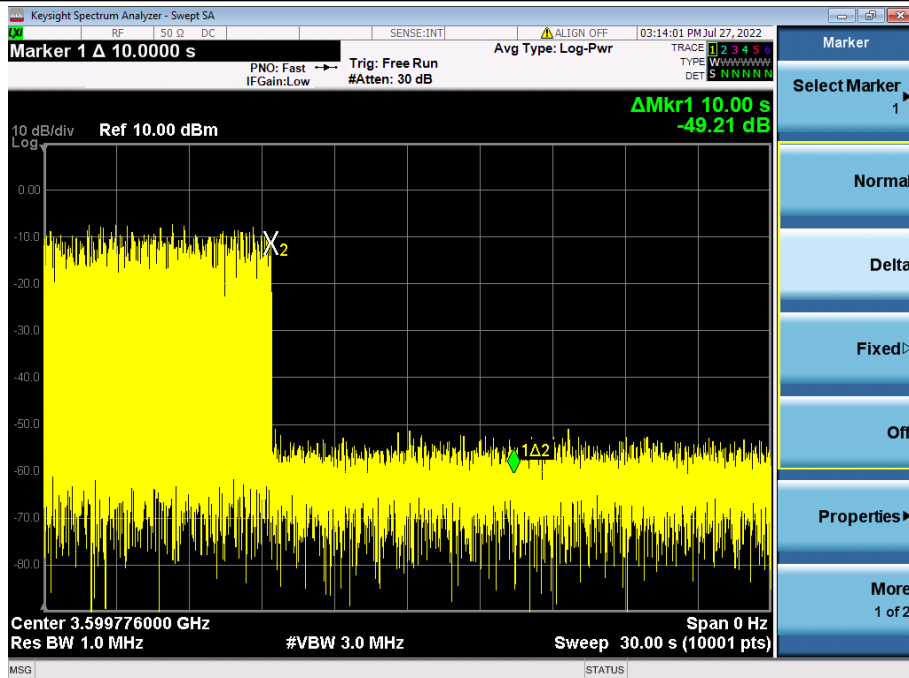
[Step 6] Setup with frequency 3590-3610MHz and power level 13dBm/MHz

[Step 8] Check EUD Tx Frequency and power



EIRP PSD=-18.049-6.1+15=-9.149dBm/MHz, attenuation of Cable and Splitter is 15dB, Antenna gain is -6.1dBi.

[Step 10] EUD stops transmission within 10 seconds of receiving instructions from its associated CBSD.



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7 Photographs

7.1 EUT Constructional Details (EUT Photos)

Please Refer to Integral and internal photos for details.

- End of the Report -



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