

Report No.: SEWA2212000088RG04

Rev.: 01

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TEST REPORT

Application No.:

SEWA2212000088RG

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

EUT Description:

5G Module

Model No.:

AG550Q-NA

Trade Mark:

Quectel

FCC ID:

XMR2022AG550QNA

Standards:

47 CFR Part 2.1091

FCC KDB 447498 D01 v06

Date of Receipt:

2022/06/10

Date of Issue:

2022/12/05

Test Result:**PASS***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Panta Sun
Wireless Laboratory Manager



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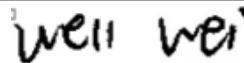
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1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022/12/05		Original

Prepared By	 (Nick Hu) / Test Engineer
Checked By	 (Well Wei) / Reviewer

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2 General Information

2.1 Client Information

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

2.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

• **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327

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2.3 General Description of EUT

EUT Description:	5G Module		
Model No.:	AG550Q-NA		
Trade Mark:	Quectel		
Hardware Version:	R1.0		
Software Version:	AG550QNAABR03A10M8G_OCPU		
Antenna Type:	External Antenna		
Antenna Gain:	GSM1900:	0dBi(ANT0)	
	LTE Band 2:	0dBi(ANT0)	LTE Band 4: 0.3dBi(ANT0)
	LTE Band 5:	-0.42dBi(ANT0)	LTE Band 7: 0.42dBi(ANT0)
	LTE Band 12:	0.97dBi(ANT0)	LTE Band 13: 1.45dBi(ANT0)
	LTE Band 14:	1.18dBi(ANT0)	LTE Band 17: 0.97dBi(ANT0)
	LTE Band 25:	0.36dBi(ANT0)	LTE Band 26: -0.42dBi(ANT0)
	LTE Band 41:	1.58dBi(ANT0)	LTE Band 48: -3.65dBi(ANT1)
	LTE Band 66:	0.39dBi(ANT0)	LTE Band 71: 0.24dBi(ANT0)
	NR Band n2:	0dBi(ANT0)	0dBi(ANT2)
	NR Band n5:	-0.42dBi(ANT0)	
	NR Band n25:	0.36dBi(ANT0)	0.36dBi(ANT2)
	NR Band n41:	1.58dBi(ANT2)	
	NR Band n48:	-3.65dBi(ANT1)	
	NR Band n66:	0.39dBi(ANT0)	0.39dBi(ANT2)
	NR Band n71:	0.24dBi(ANT0)	
	NR Band n77:	-3.65dBi(ANT2)	
	NR Band n78:	-3.65dBi(ANT2)	
Note: The antenna gain are derived from the gain information report provided by the manufacturer.			
ENDC:	ENDC: DC_2A-n5A, DC_2A-n78A, DC_5A-n78A, DC_7A-n78A, DC_12A-n78A, DC_13A-n2A, DC_13A-n66A, DC_66A-n2A, DC_66A-n5A, DC_66A-n78A, DC_2A-n77A, DC_5A-n77A, DC_7A-n77A, DC_12A-n77A, DC_66A-n77A, DC_2A_n66A, DC_5A_n66A, DC_12A_n66A		
Remark:	As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.		



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3 RF Exposure Evaluation

3.1 RF Exposure Compliance Requirement

3.1.1 Limits

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

Friis Formula

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm² . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.



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3.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

3.1.3 EUT RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 / 2.0 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

This confirmed that the device comply with MPE limit.

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	Max Conducted Average Output Power (dBm)	Output Power to Antenna (dBm)	EIRP(ERP) Limit (dBm)	Output Power to Antenna (mw)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Gain according to EIRP (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	Conclusion
GSM1900	1850.2	0	32.00	32.00	33.00	1584.8932	0.3153	1.0000	1.00	5.01	1.00	Pass
LTE B2/n2	1880	0.00	25.00	25.00	33.00	316.2278	0.0629	1.0000	8.00	12.01	8.00	Pass
LTE B4	1710.7	0.00	25.00	25.00	30.00	316.2278	0.0629	1.0000	5.00	12.01	5.00	Pass
LTE B5/n5	824.70	-0.42	25.00	24.58	38.45	316.2278	0.0571	0.5498	11.30	9.41	9.41	Pass
LTE B7	2502.50	0.42	25.00	25.42	33.00	316.2278	0.0693	1.0000	8.00	12.01	8.00	Pass
LTE B12	699.70	0.97	25.00	25.97	34.77	316.2278	0.0787	0.4665	7.62	8.70	7.62	Pass
LTE B13	779.50	1.45	25.00	26.45	34.77	316.2278	0.0878	0.5197	7.62	9.16	7.62	Pass
LTE B14	790.5	1.18	25.00	26.18	34.77	316.2278	0.0826	0.5270	7.62	9.23	7.62	Pass
LTE B17	706.5	0.97	25.00	25.97	34.77	316.2278	0.0787	0.4710	7.62	8.74	7.62	Pass
LTE B25/n25	1850.7	0.36	25.00	25.36	33.00	316.2278	0.0683	1.0000	8.00	12.01	8.00	Pass
LTE B26(814-824)	814	-0.42	25.00	24.58	NA	316.2278	0.0571	0.5427	NA	9.35	9.35	Pass
LTE B26(824-849)	824.7	-0.42	25.00	24.58	38.45	316.2278	0.0571	0.5498	11.30	9.41	9.41	Pass
LTE B41	2498.5	1.58	25.00	26.58	33.00	316.2278	0.0905	1.0000	8.00	12.01	8.00	Pass
LTE B48/n48	3552.5	-3.65	25.00	21.35	23.00	316.2278	0.0271	1.0000	-2.00	12.01	-2.00	Pass
LTE B66/n66	1710.7	0.39	25.00	25.39	30.00	316.2278	0.0688	1.0000	5.00	12.01	5.00	Pass
LTE B71/n71	665.5	0.24	25.00	25.24	34.77	316.2278	0.0665	0.4437	7.62	8.48	7.62	Pass
NR Band n41	2506.02	1.58	27.00	28.58	33.00	501.1872	0.1435	1.0000	6.00	10.01	6.00	Pass
NR Band n77	3455.01	-3.65	27.00	23.35	30.00	501.1872	0.0430	1.0000	3.00	10.01	3.00	Pass
NR Band n78	3460.02	-3.65	27.00	23.35	30.00	501.1872	0.0430	1.0000	3.00	10.01	3.00	Pass



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Due to the EUT support NR ENDC

Both LTE and NR/LTE band can transmit simultaneously, the formula of the calculated the MPE is:

$$\sum_{i=1}^n \frac{S_{E_i} (\text{duty factor})}{MPE_{E_i}} < 1$$

NOTE The corresponding MEs must be expressed in terms of power density in the above summation
Therefore, the worst-case(DC_13A-n66A) situation is $0.1689+0.0688=0.2377$, which is less than "1", this confirmed
that the device comply with MPE limit.

---End of Report---



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