

Report No.: SEWA2210000069RG04  
 Rev.: 01  
 Page: 1 of 8

# TEST REPORT

**Application No.:** SEWA2210000069RG  
**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.:** AG568N-NA  
**Trade Mark:** Quectel  
**FCC ID:** XMR2022AG568NNA  
**Standards:** 47 CFR Part 2.1091  
 FCC KDB 447498 D01 v06  
**Date of Receipt:** 2023/01/28  
**Date of Issue:** 2023/03/29

<b>Test Result:</b>	<b>PASS*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Panta Sun  
 Wireless Laboratory Manager



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# 1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2023/03/29		Original

<b>Prepared By</b>		 <hr/> (Nick Hu) / Test Engineer
<b>Checked By</b>		 <hr/> (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.:	AG568N-NA			
Trade Mark:	Quectel			
Hardware Version:	R1.0			
Software Version:	AG568NAAR06A05M8G_OCPU			
Antenna Type:	<input checked="" type="checkbox"/> External, <input type="checkbox"/> Integrated			
Antenna Gain:	LTE Band 2:	0dBi (Ant0)	LTE Band 4:	0.3dBi (Ant0)
	LTE Band 5:	-0.42dBi (Ant1)	LTE Band 12:	0.97dBi (Ant1)
	LTE Band 66:	0.39dBi (Ant0)	LTE CA_5B:	-0.42dBi (Ant1)
	LTE CA_66B:	0.39dBi (Ant0)	LTE CA_66C:	0.39dBi (Ant0)
	NR Band n2:	0dBi (Ant0)	NR Band n5:	-0.42dBi (Ant1)
	NR Band n12:	0.97dBi (Ant1)	NR Band n66:	0.39dBi (Ant0)
	NR Band n77:	-3.65dBi (Ant1)	NR Band n78:	-3.65dBi (Ant1)
	ENDC: DC_12A_n2A;DC_5A_n2A; DC_66A_n5A;DC_2A_n5A; DC_5A_n66A; DC_12A_n66A;DC_2A_n77A;DC_5A_n77A;DC_12A_n77A;DC_66A_n77A			
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.			
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.			



### 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 <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	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:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

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

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. 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

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)	EIRP(ERP) (dBm)	EIRP(ERP) Limit (dBm)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Gain according to EIRP(ERP) (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	conclusion
LTE B2	1850.7	0.00	25.00	25.00	33.00	0.0629	1.0000	8.00	12.01	8.00	Pass
LTE B4	1710.7	0.30	25.00	25.30	30.00	0.0674	1.0000	5.00	12.01	5.00	Pass
LTE B5 LTE CA_5B	824.7	-0.42	25.00	22.43	38.45	0.0571	0.5498	15.60	9.41	9.41	Pass
LTE B12	699.7	0.97	25.00	23.82	34.77	0.0787	0.4665	11.92	8.70	8.70	Pass
LTE B66 /LTE CA_66B /LTE CA_66C	1710.7	0.39	25.00	25.39	30.00	0.0688	1.0000	5.00	12.01	5.00	Pass
NR Band n2	1852.5	0.00	25.00	25.00	33.00	0.0629	1.0000	8.00	12.01	8.00	Pass
NR Band n5	826.5	-0.42	25.00	22.43	38.45	0.0571	0.5510	15.60	9.42	9.42	Pass
NR Band n12	701.5	0.97	25.00	23.82	34.77	0.0787	0.4677	11.92	8.71	8.71	Pass
NR Band n66	1712.5	0.39	25.00	25.39	30.00	0.0688	1.0000	5.00	12.01	5.00	Pass
NR Band n77 (3450-3550)(PC2)	3455.01	-3.65	27.00	23.35	30.00	0.0430	1.0000	3.00	10.01	3.00	Pass
NR Band n77 (3700-3980)(PC2)	3705.0	-3.65	27.00	23.35	30.00	0.0430	1.0000	3.00	10.01	3.00	Pass
NR Band n78 (3450-3550)(PC2)	3455.01	-3.65	27.00	23.35	30.00	0.0430	1.0000	3.00	10.01	3.00	Pass
NR Band n78 (3700-3800)(PC2)	3705.0	-3.65	27.00	23.35	30.00	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:

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

NOTE The corresponding MEs must be expressed in terms of power density in the above summation  
 Therefore, the worst-case(DC\_12A\_n66A) situation is 0.169+0.069=0.238, which is less than “1”,  
 this confirmed that the device comply with MPE limit.

---End of Report---



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