

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240700255703

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TEST REPORT

Application No.: SZCR2407002557MO
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 200233, China
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 200233, China
EUT Description: LPWA module
Model No.: BG950S-GL
Trade Mark: Quectel
FCC ID: XMR2024BG950SGL
Standards: FCC 47 CFR Part 2.1091
FCC KDB 447498 D01 v06
Date of Receipt: 2024-07-02
Date of Issue: 2024-08-20

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



Keny Xu
EMC Laboratory Manager



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1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024-08-20		Original

Authorized for issue by:		
		<i>Kevin Lan</i>
		Kevin Lan/Project Engineer
		<i>Eric Fu</i>
		Eric Fu/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 200233, China
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 200233, China

2.2 Test Facility

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

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

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

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.



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2.3 General Description of EUT

EUT Description:	LPWA module			
Model No.:	BG950S-GL			
Trade Mark:	Quectel			
Hardware Version:	R1.0			
Software Version:	BG950SGLAAR01A01			
Power Supply:	Typical voltage:3.3V			
Antenna Type:	<input checked="" type="checkbox"/> External, <input type="checkbox"/> Integrated			
Antenna Gain:	LTE Cat M1 Band 2:	1.59dBi	LTE Cat M1 Band 4:	2dBi
	LTE Cat M1 Band 5:	2.53dBi	LTE Cat M1 Band 12:	3.95dBi
	LTE Cat M1 Band 13:	4.45dBi	LTE Cat M1 Band 25:	1.59dBi
	LTE Cat M1 Band 26:	3.19dBi	LTE Cat M1 Band 66:	2dBi
	LTE Cat M1 Band 85:	3.95dBi		
	LTE Cat NB2 Band 2:	1.59dBi	LTE Cat NB2 Band 4:	2dBi
	LTE Cat NB2 Band 5:	2.53dBi	LTE Cat NB2 Band 12:	3.95dBi
	LTE Cat NB2 Band 13:	4.45dBi	LTE Cat NB2 Band 17:	3.95dBi
	LTE Cat NB2 Band 25:	1.59dBi	LTE Cat NB2 Band 26:	3.19dBi
	LTE Cat NB2 Band 66:	2dBi	LTE Cat NB2 Band 85:	3.95dBi
	<p>Note:</p> <p>The antenna gain are derived from the gain information report provided by the manufacturer.</p>			
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 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: $Pd = (Pout * G) / (4 * \pi * R^2)$

Where

Pd = power density in mW/cm²

Pout = 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

Pd 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

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 Power (dBm)	EIRP(ERP) (dBm)	EIRP(ERP) Limit (dBm)	Power Density at R = 20 cm (mW/cm2)	Limit (mW/cm2)	Gain according to EIRP(ERP) (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	conclusion
LTE Cat M1 Band 2	1850.7	1.59	25.00	26.59	33.00	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE Cat M1 Band 4	1710.7	2.00	25.00	27.00	30.00	0.0997	1.0000	5.00	12.01	5.00	Pass
LTE Cat M1 Band 5	824.7	2.53	25.00	25.38	38.45	0.1126	0.5498	15.60	9.41	9.41	Pass
LTE Cat M1 Band 12	699.7	3.95	25.00	26.80	34.77	0.1562	0.4665	11.92	8.70	8.70	Pass
LTE Cat M1 Band 13	779.5	4.45	25.00	27.30	34.77	0.1753	0.5197	11.92	9.16	9.16	Pass
LTE Cat M1 Band 25	1850.7	1.59	25.00	26.59	33.00	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE Cat M1 Band 26(814-824)	814.7	3.19	25.00	26.04	NA	0.1311	0.5431	NA	9.36	9.36	Pass
LTE Cat M1 Band 26(824-849)	824.7	3.19	25.00	26.04	38.45	0.1311	0.5498	15.60	9.41	9.41	Pass
LTE Cat M1 Band 66	1710.7	2.00	25.00	27.00	30.00	0.0997	1.0000	5.00	12.01	5.00	Pass
LTE Cat M1 Band 85	700.5	3.95	25.00	26.80	34.77	0.1562	0.4670	11.92	8.70	8.70	Pass
LTE Cat NB2 Band 2	1850.2	1.59	25.00	26.59	33.00	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE Cat NB2 Band 4	1710.2	2.00	25.00	27.00	30.00	0.0997	1.0000	5.00	12.01	5.00	Pass
LTE Cat NB2 Band 5	824.2	2.53	25.00	25.38	38.45	0.1126	0.5495	15.60	9.41	9.41	Pass
LTE Cat NB2 Band 12	699.2	3.95	25.00	26.80	34.77	0.1562	0.4661	11.92	8.69	8.69	Pass
LTE Cat NB2 Band 13	777.2	4.45	25.00	27.30	34.77	0.1753	0.5181	11.92	9.15	9.15	Pass
LTE Cat NB2 Band 17	704.2	3.95	25.00	26.80	34.77	0.1562	0.4695	11.92	8.72	8.72	Pass
LTE Cat NB2 Band 25	1850.2	1.59	25.00	26.59	33.00	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE Cat NB2 Band 26(814-824)	814.2	3.19	25.00	26.04	NA	0.1311	0.5428	NA	9.35	9.35	Pass
LTE Cat NB2 Band 26(824-849)	824.2	3.19	25.00	26.04	38.45	0.1311	0.5495	15.60	9.41	9.41	Pass
LTE Cat NB2 Band 66	1710.2	2.00	25.00	27.00	30.00	0.0997	1.0000	5.00	12.01	5.00	Pass
LTE Cat NB2 Band 85	698.2	3.95	25.00	26.80	34.77	0.1562	0.4655	11.92	8.69	8.69	Pass

---End of Report---



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