

TEST REPORT

Application No.: SZCR2410003969MO
Applicant: Rolling Wireless S.a r.l.
Address of Applicant: 8-10, rue Mathias Hardt 1717, Luxembourg
Manufacturer: Rolling Wireless S.a r.l.
Address of Manufacturer: 8-10, rue Mathias Hardt 1717, Luxembourg
EUT Description: Module
Model No.: RW101R-GL-12
Trade Mark: Rolling Wireless
FCC ID: 2AX2URW101RGL12
Standards: FCC 47 CFR Part 2.1091
 FCC KDB 447498 D01 v06
Date of Receipt: 2024-10-28
Date of Issue: 2024-11-28

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

Keny Xu

Keny Xu

EMC Laboratory Manager



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241000396904

Page: 2 of 8

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024-11-28		Original

Authorized for issue by:				
		Donjon . Huang		
		Donjon Huang/Project Engineer		
		Eric Fu		
		Eric Fu/Reviewer		



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Shenzhen Branch Testing Center Laboratory

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No.1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

2 Contents

1	Cover Page	1
2	Contents	3
3	General Information.....	4
3.1	General Description of EUT	4
3.2	Test Location.....	5
3.3	Test Facility	5
4	RF Exposure Evaluation.....	6
4.1	RF Exposure Compliance Requirement	6
4.1.1	Limits.....	6
4.1.2	Test Procedure.....	7
4.1.3	EUT RF Exposure Evaluation	7



3 General Information

3.1 General Description of EUT

EUT Description:	Module			
Model No.:	RW101R-GL-12			
Trade Mark:	Rolling Wireless			
Hardware Version:	V1.4			
Software Version:	19502.0000.00.11.02.60			
Power Supply:	DC 3.3V			
Antenna Type:	<input checked="" type="checkbox"/> External, <input type="checkbox"/> Integrated			
Antenna Gain:	LTE Band 2:	4dBi	LTE Band 4:	3dBi
	LTE Band 5:	3dBi	LTE Band 7:	4dBi
	LTE Band 12:	3dBi	LTE Band 13:	3dBi
	LTE Band 14:	3dBi	LTE Band 17:	3dBi
	LTE Band 25:	4dBi	LTE Band 26:	3dBi
	LTE Band 30:	1dBi	LTE Band 38:	4dBi
	LTE Band 41:	4dBi	LTE Band 48:	1dBi
	LTE Band 66:	3dBi	LTE Band 71:	3dBi
	LTE CA: LTE CA_5B,LTE CA_7C,LTE CA_38C,LTE CA_41C			
	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.				



3.2 Test Location

All tests were performed at:

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

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

3.3 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.



4 RF Exposure Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

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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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241000396904

Page: 7 of 8

4.1.2 Test Procedure

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

4.1.3 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/cm ²)	Limit (mW/cm ²)	Gain according to EIRP(ERP) (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	conclusion
LTE B2	1850.7	4.00	24.00	28.00	33.00	0.1255	1.0000	9.00	13.01	9.00	Pass
LTE B4	1710.7	3.00	24.00	27.00	30.00	0.0997	1.0000	6.00	13.01	6.00	Pass
LTE/CAB5	824.7	3.00	25.00	25.85	38.45	0.1255	0.5498	15.60	9.41	9.41	Pass
LTE/CAB7	2502.5	4.00	24.00	28.00	33.00	0.1255	1.0000	9.00	13.01	9.00	Pass
LTE B12	699.7	3.00	25.00	25.85	34.77	0.1255	0.4665	11.92	8.70	8.70	Pass
LTE B13	779.5	3.00	25.00	25.85	34.77	0.1255	0.5197	11.92	9.16	9.16	Pass
LTE B14	790.5	3.00	25.00	25.85	34.77	0.1255	0.5270	11.92	9.23	9.23	Pass
LTE B17	706.5	3.00	25.00	25.85	34.77	0.1255	0.4710	11.92	8.74	8.74	Pass
LTE B25	1850.7	4.00	24.00	28.00	33.00	0.1255	1.0000	9.00	13.01	9.00	Pass
LTE B26 (814-824)	814.7	3.00	25.00	NA	NA	0.1255	0.5431	NA	9.36	9.36	pass
LTE B26 (824-849)	824.7	1.00	25.00	23.85	38.45	0.0792	0.5498	15.60	9.41	9.41	Pass
LTE B30	2307.5	1.00	23.00	24.00	23.98	0.0500	1.0000	0.98	14.01	0.98	Pass
LTE/CAB38	2572.5	4.00	24.00	28.00	33.00	0.1255	1.0000	9.00	13.01	9.00	Pass
LTE/CAB41	2498.5	4.00	24.00	28.00	33.00	0.1255	1.0000	9.00	13.01	9.00	Pass
LTE B48	3552.5	1.00	22.00	23.00	23.00	0.0397	1.0000	1.00	15.01	1.00	Pass
LTE B66	1710.7	3.00	24.00	27.00	30.00	0.0997	1.0000	6.00	13.01	6.00	Pass
LTE B71	665.5	3.00	25.00	25.85	34.77	0.1255	0.4437	11.92	8.48	8.48	Pass



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中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编:518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241000396904

Page: 8 of 8

Due to the EUT support LTE CA

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

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

NOTE The corresponding MEs must be expressed in terms of power density in the above summation
Therefore, the worst-case(LTE CA_5B) situation is 0.2283+0.2283=0.4566,which is less than “1”,
this confirmed that the device comply with MPE limit.

---End of Report---



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Shenzhen Branch Testing & Calibration Laboratory

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057
中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编:518057

t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
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