

# 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

|                     |              |
|---------------------|--------------|
| <b>Test Result:</b> | <b>PASS*</b> |
|---------------------|--------------|

\* 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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## 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:<br>The antenna gain are derived from the gain information report provided by the manufacturer. |      |              |      |
| Remark:<br>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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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241000396904

Page: 5 of 8

### 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.



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## 4 RF Exposure Evaluation

### 4.1 RF Exposure Compliance Requirement

#### 4.1.1 Limits

| Frequency range<br>(MHz)                                       | Electric field strength<br>(V/m) | Magnetic field strength<br>(A/m) | Power density<br>(mW/cm <sup>2</sup> ) | Averaging time<br>(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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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 <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          | 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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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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