

# TEST REPORT

**Applicant:** SIMCom Wireless Solutions Limited  
**Address:** SIMCom Headquarters Building, Building 3, No.289  
Linhong Road, Changning District, Shanghai, China  
**Equipment Type:** SIMCom Module  
**Model Name:** SIM8380G-M2  
**Brand Name:** SIMCom  
**FCC ID:** 2AJYU-8XN0004  
**Test Standard:** 47 CFR Part 2.1091  
KDB 447498 D04 v01  
**Sample Arrival Date:** Feb. 20, 2023  
**Test Date:** Feb. 21, 2023 - Apr. 23, 2023  
**Date of Issue:** Jun. 01, 2023

**ISSUED BY:**

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Huang Jinsheng    **Checked by:** Xiong Lining    **Approved by:** Tolan Tu  
(Testing Director)

*Huang Jinsheng*

*Xiong Lining*

*Tolan Tu*

| <b>Revision History</b> |                      |                      |
|-------------------------|----------------------|----------------------|
| Version                 | Issue Date           | Revisions Content    |
| <u>Rev. 01</u>          | <u>Jun. 01, 2023</u> | <u>Initial Issue</u> |

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# 1 GENERAL INFORMATION

## 1.1 Test Laboratory

|              |  |
|--------------|--|
| Name         | Shenzhen BALUN Technology Co., Ltd.  |
| Address      | Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China |
| Phone Number | +86 755 6685 0100  |

## 1.2 Test Location

|                           |   |
|---------------------------|---|
| Name                      | Shenzhen BALUN Technology Co., Ltd.   |
| Location                  | <input checked="" type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China  |
|                           | <input type="checkbox"/> 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China |
| Accreditation Certificate | The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.  |

## 2 PRODUCT INFORMATION

### 2.1 Applicant Information

|           |  |
|-----------|--|
| Applicant | SIMCom Wireless Solutions Limited  |
| Address   | SIMCom Headquarters Building, Building 3, No.289 Linhong Road, Changning District, Shanghai, China |

### 2.2 Manufacturer Information

|              |  |
|--------------|--|
| Manufacturer | SIMCom Wireless Solutions Limited  |
| Address      | SIMCom Headquarters Building, Building 3, No.289 Linhong Road, Changning District, Shanghai, China |

### 2.3 Factory Information

|         |     |
|---------|-----|
| Factory | N/A |
| Address | N/A |

### 2.4 General Description for Equipment under Test (EUT)

|   |                      |
|---|----------------------|
| EUT Name                                  | SIMCom Module        |
| Model Name Under Test                     | SIM8380G-M2          |
| Series Model Name                         | N/A                  |
| Description of Model name differentiation | N/A                  |
| Hardware Version                          | V1.03                |
| Software Version                          | 2212B03V02X62M44A-M2 |
| Dimensions (Approx.)                      | N/A                  |
| Weight (Approx.)                          | N/A                  |

### 2.5 Ancillary Equipment

Note: Not applicable.

## 2.6 Technical Information

|                                   |  |
|-----------------------------------|--|
| Network and Wireless connectivity | 3G Network WCDMA/HSDPA/HSUPA Band 2/4/5<br>4G Network FDD LTE Band 2/4/5/7/12/13/14/17/18/19/25/26/30/66/71<br>TDD LTE Band 38/41/42/43/48<br>LTE CA Uplink (UL): CA_2C, CA_5B, CA_7C, CA_38C, CA_41C, CA_42C, CA_48C, CA_66C<br>5G Network<br>SA: NR<br>n2/n5/n7/n12/n13/n14/n18/n25/n26/n30/n38/n41/n48/n66/n71/n77/n78<br>SA UL MIMO: n41/n48/n77/n78<br>NSA(EN-DC): DC_2A_n66A, DC_5A_n66A, DC_7A_n66A, DC_12A_n66A, DC_2A_n7A, DC_5A_n7A, DC_66A_n7A, DC_7A_n5A, DC_66A_n5A, DC_2A_n71A, DC_66A_n71A, DC_2A_n41A, DC_66A_n41A, DC_18A_n77A, DC_19A_n77A, DC_41A_n77A, DC_42A_n77A, DC_18A_n78A, DC_19A_n78A, DC_26A_n78A, DC_2A_n78A, DC_7A_n78A, DC_41A_n78A, DC_42A_n78A<br>GPS, GLONASS, Beidou, Galileo, QZSS |
|-----------------------------------|--|

The requirement for the following technical information of the EUT was tested in this report:

| Operating Mode  | WCDMA, LTE, NR      |                                     |                                     |
|-----------------|---------------------|-------------------------------------|-------------------------------------|
| Frequency Range | WCDMA Band 2        | TX: 1850 ~ 1910 MHz                 | RX: 1930 ~ 1990 MHz                 |
|                 | WCDMA Band 4        | TX: 1710 ~ 1755 MHz                 | RX: 2110 ~ 2155 MHz                 |
|                 | WCDMA Band 5        | TX: 824 ~ 849 MHz                   | RX: 869 ~ 894 MHz                   |
|                 | LTE Band 2          | TX: 1850 ~ 1910 MHz                 | RX: 1930 ~ 1990 MHz                 |
|                 | LTE Band 4          | TX: 1710 ~ 1755 MHz                 | RX: 2110 ~ 2155 MHz                 |
|                 | LTE Band 5          | TX: 824 ~ 849 MHz                   | RX: 869 ~ 894 MHz                   |
|                 | LTE Band 7          | TX: 2500 ~ 2570 MHz                 | RX: 2620 ~ 2690 MHz                 |
|                 | LTE Band 12         | TX: 699 ~ 716 MHz                   | RX: 729 ~ 746 MHz                   |
|                 | LTE Band 13         | TX: 777 ~ 787 MHz                   | RX: 746 ~ 756 MHz                   |
|                 | LTE Band 14         | TX: 788 ~ 798 MHz                   | RX: 758 ~ 768 MHz                   |
|                 | LTE Band 17         | TX: 704 ~ 716 MHz                   | RX: 734 ~ 746 MHz                   |
|                 | LTE B18             | TX: 815 ~ 830 MHz                   | RX: 875 ~ 890 MHz                   |
|                 | LTE B19             | TX: 830 ~ 845 MHz                   | RX: 875 ~ 890 MHz                   |
|                 | LTE B25             | TX: 1850 ~ 1915 MHz                 | RX: 1930 ~ 1995 MHz                 |
|                 | LTE B26             | TX: 814 ~ 824 MHz<br>&824 ~ 849 MHz | RX: 859 ~ 869 MHz<br>&869 ~ 894 MHz |
|                 | LTE B30             | TX: 2305 ~ 2315 MHz                 | RX: 2350 ~ 2360 MHz                 |
|                 | LTE B38             | TX: 2570 ~ 2620 MHz                 | RX: 2570 ~ 2620 MHz                 |
|                 | LTE B41             | TX: 2496 ~ 2690 MHz                 | RX: 2496 ~ 2690 MHz                 |
| LTE B42         | TX: 3450 ~ 3550 MHz | RX: 3450 ~ 3550 MHz                 |                                     |
| LTE B43         | TX: 3700 ~ 3800 MHz | RX: 3700 ~ 3800 MHz                 |                                     |
| LTE B48         | TX: 3550 ~ 3700 MHz | RX: 3550 ~ 3700 MHz                 |                                     |

|                   |  |   |   |
|-------------------|--|---|---|
|                   | LTE B66                                  | TX: 1710 ~ 1780 MHz   | RX: 2110 ~ 2180 MHz   |
|                   | LTE B71                                  | TX: 663 ~ 698 MHz   | RX: 617 ~ 652 MHz   |
|                   | NR n2                                    | TX: 1850 ~ 1910 MHz   | RX: 1930 ~ 1990 MHz   |
|                   | NR n5                                    | TX: 824 ~ 849 MHz   | RX: 869 ~ 894 MHz   |
|                   | NR n7                                    | TX: 2500 ~ 2570 MHz   | RX: 2620 ~ 2690 MHz   |
|                   | NR n12                                   | TX: 699 ~ 716 MHz   | RX: 729 ~ 746 MHz   |
|                   | NR n13                                   | TX: 746 ~ 756 MHz   | RX: 777 ~ 787 MHz   |
|                   | NR n14                                   | TX: 758 ~ 768 MHz   | RX: 788 ~ 798 MHz   |
|                   | NR n18                                   | TX: 815 ~ 824 MHz<br>& 824 ~ 830 MHz                          | RX: 860 ~ 869 MHz<br>& 869 ~ 875 MHz                          |
|                   | NR n25                                   | TX: 1850 ~ 1915 MHz   | RX: 1930 ~ 1995 MHz   |
|                   | NR n26                                   | TX: 814 ~ 824 MHz<br>& 824 ~ 849 MHz                          | RX: 859 ~ 869 MHz<br>& 869 ~ 894 MHz                          |
|                   | NR n30                                   | TX: 2305 ~ 2315 MHz   | RX: 2350 ~ 2360 MHz   |
|                   | NR n38                                   | TX: 2570 ~ 2620 MHz   | RX: 2570 ~ 2620 MHz   |
|                   | NR n41                                   | TX: 2496 ~ 2690 MHz   | RX: 2496 ~ 2690 MHz   |
|                   | NR n48                                   | TX: 3550 ~ 3700 MHz   | RX: 3550 ~ 3700 MHz   |
|                   | NR n66                                   | TX: 1710 ~ 1780 MHz   | RX: 2110 ~ 2180 MHz   |
|                   | NR n71                                   | TX: 663 ~ 698 MHz   | RX: 617 ~ 652 MHz   |
|                   | NR n77                                   | TX: 3450 ~ 3550 MHz<br>& 3550 ~ 3700 MHz<br>& 3700 ~ 3980 MHz | RX: 3450 ~ 3550 MHz<br>& 3550 ~ 3700 MHz<br>& 3700 ~ 3980 MHz |
|                   | NR n78                                   | TX: 3450 ~ 3550 MHz<br>& 3550 ~ 3700 MHz<br>& 3700 ~ 3800 MHz | RX: 3450 ~ 3550 MHz<br>& 3550 ~ 3700 MHz<br>& 3700 ~ 3800 MHz |
| Antenna Type      | WWAN: PIFA Antenna                       |   |   |
| Exposure Category | General Population/Uncontrolled Exposure |   |   |
| EUT Type          | Mobile Device                            |   |   |

### 3 SUMMARY OF TEST RESULT

#### 3.1 Test Standards

| No. | Identity           | Document Title   |
|-----|--------------------|--|
| 1   | 47 CFR Part 2.1091 | Radiofrequency radiation exposure evaluation: mobile devices |
| 2   | KDB 447498 D04 v01 | 447498 D04 Interim General RF Exposure Guidance v01          |

## 4 DEVICE CATEGORY AND LEVELS LIMITS

### Mobile Device:

CFR Title 47 §2.1091(b)

(b) For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

### FCC KDB 447498 D04 General RF Exposure Guidance v01 Limit

Evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP<sub>20cm</sub> in Formula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{\text{th}} \text{ (mW)} = \text{ERP}_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i. e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole.

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold  $P_{\text{th}}$  (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive).  $P_{\text{th}}$  is given by Formula (B.2).



$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad \text{(B. 2)}$$

where

$$x = -\log_{10} \left( \frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and  $f$  is in GHz,  $d$  is the separation distance (cm), and  $ERP_{20\text{cm}}$  is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

| Frequency (MHz) | Distance (mm) |    |    |     |     |     |     |     |     |     |
|-----------------|---------------|----|----|-----|-----|-----|-----|-----|-----|-----|
|                 | 5             | 10 | 15 | 20  | 25  | 30  | 35  | 40  | 45  | 50  |
| 300             | 39            | 65 | 88 | 110 | 129 | 148 | 166 | 184 | 201 | 217 |
| 450             | 22            | 44 | 67 | 89  | 112 | 135 | 158 | 180 | 203 | 226 |
| 835             | 9             | 25 | 44 | 66  | 90  | 116 | 145 | 175 | 207 | 240 |
| 1900            | 3             | 12 | 26 | 44  | 66  | 92  | 122 | 157 | 195 | 236 |
| 2450            | 3             | 10 | 22 | 38  | 59  | 83  | 111 | 143 | 179 | 219 |
| 3600            | 2             | 8  | 18 | 32  | 49  | 71  | 96  | 125 | 158 | 195 |
| 5800            | 1             | 6  | 14 | 25  | 40  | 58  | 80  | 106 | 136 | 169 |

## 5 ASSESSMENT RESULT

### 5.1 Output Power

| 2/3/4/5G              |             |               |               |                     |                                  |
|-----------------------|-------------|---------------|---------------|---------------------|----------------------------------|
| Mode                  | WCDMA Bands | LTE-FDD Bands | LTE-TDD Bands | 5G Sub-6 Bands(PC3) | 5G Sub-6 Bands (n41 n77 n78 PC2) |
| Conducted Power (dBm) | 24.00       | 25.00         | 25.00         | 25.00               | 28.00                            |
| Antenna Gain (dBi)    | 1.58        | 1.63          | 1.44          | 1.58                | 1.13                             |
| EIRP (dBm)            | 25.58       | 26.63         | 26.44         | 26.58               | 29.13                            |

Note: This report listed the worst case conducted power value, please refer to BL-SZ2310633-501 report for more details.

### 5.2 Tune-up power

| Mode                             | Conducted Power Range (dBm) | EIRP Range (dBm) | ERP Range (dBm) |
|----------------------------------|-----------------------------|------------------|-----------------|
| WCDMA Bands                      | [22.00,24.00]               | [24.00,26.00]    | [21.85,23.85]   |
| LTE-FDD Bands                    | [23.00,25.00]               | [25.00,27.00]    | [22.85,24.85]   |
| LTE-TDD Bands                    | [23.00,25.00]               | [25.00,27.00]    | [22.85,24.85]   |
| 5G Sub-6 Bands (PC3)             | [23.00,25.00]               | [25.00,27.00]    | [22.85,24.85]   |
| 5G Sub-6 Bands (n41 n77 n78 PC2) | [26.00,28.00]               | [27.50,29.50]    | [25.35,27.35]   |

Note1: ERP= EIRP -2.15dB  
Note2: According KDB 447498 D04, used the greater of maximum conducted power and ERP to compare with the threshold value Pth.

### 5.3 RF Exposure Evaluation Result

| Evolution mode                   | Frequency (MHz) | Maximum power (dBm) | Maximum power (mw) | Distance (mm) | Threshold Power (mW) | Power / Limit | Verdict |
|----------------------------------|-----------------|---------------------|--------------------|---------------|----------------------|---------------|---------|
| WCDMA Bands                      | 0.824           | 24.00               | 251.19             | 200           | 1680.96              | 0.15          | Pass    |
| LTE-FDD Bands                    | 0.830           | 25.00               | 316.23             | 200           | 1693.20              | 0.19          | Pass    |
| LTE-TDD Bands                    | 3.400           | 25.00               | 316.23             | 200           | 3060.00              | 0.10          | Pass    |
| 5G Sub-6 Bands(PC3)              | 0.824           | 25.00               | 316.23             | 200           | 1680.96              | 0.19          | Pass    |
| 5G Sub-6 Bands (n41 n77 n78 PC2) | 2.496           | 28.00               | 630.96             | 200           | 3060.00              | 0.21          | Pass    |

## 5.4 Collocated Power Calculation

| Evolution mode      | Frequency(MHz) | Power /Limit | $\Sigma$ (Power / Limit)<br>of<br>LTE + 5G Bands | Verdict |
|---------------------|----------------|--------------|--|---------|
| LTE-FDD Bands       | 0.830          | 0.190        | 0.380  | Pass    |
| 5G Sub-6 Bands(PC3) | 0.824          | 0.190        |  |         |
| LTE-TDD Bands       | 3.400          | 0.100        | 0.290  |         |
| 5G Sub-6 Bands(PC3) | 0.824          | 0.190        |  |         |

Note:

1.  $\Sigma$ (Power / Limit): This is a summation of [(power for each transmitter/ antenna included in the simultaneous transmission)/ (corresponding Power limit)], for LTE + 5G Bands.
2. Both of the LTE/5G Bands can transmit simultaneously, the formula of calculated the Power is  $CP1 / LP1 + CP2 / LP2 + \dots \text{etc.} < 1$   
 CP = Calculation power  
 LP = Limit of power
3. The worst-case situation is 0.3800, which is less than "1". This confirmed that the device comply with FCC KDB 447498 D04 Power limit.
4. More power list please refer to BL-SZ2310633-501 test report.

## 5.5 Conclusion

This EUT is deemed to comply with the reference level limits, therefore the basic restrictions are compliant with human exposure limits.

## Statement

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--END OF REPORT--