

# RF Exposure Evaluation Report

**APPLICANT** : Fibocom Wireless Inc.  
**EQUIPMENT** : LTE Module  
**BRAND NAME** : Fibocom  
**MODEL NAME** : FM350-GL-16  
**FCC ID** : ZMOFM350GL16  
**STANDARD** : 47 CFR Part 2.1091

The product evaluation date was started from Aug. 14, 2023 and completed on Aug. 14, 2023. We, Sporton International Inc. (Shenzhen), would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International Inc. (Shenzhen), the test report shall not be reproduced except in full.



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Approved by: Si Zhang

***Sporton International Inc. (Shenzhen)***

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***People's Republic of China***



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**Revision History**

| REPORT NO.  | VERSION | DESCRIPTION              | ISSUED DATE   |
|-------------|---------|--------------------------|---------------|
| FA051802-26 | Rev. 01 | Initial issue of report. | Aug. 29, 2023 |
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## **1. Administration Data**

### **1.1. Testing Laboratory**

Sporton International Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

| Testing Laboratory |                                                                                                                                                                            |                     |                                |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------|
| Test Firm          | Sporton International Inc. (Shenzhen)                                                                                                                                      |                     |                                |
| Test Site Location | 1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055<br>People's Republic of China<br>TEL: +86-755-86379589<br>FAX: +86-755-86379595 |                     |                                |
| Test Site No.      | Sporton Site No.                                                                                                                                                           | FCC Designation No. | FCC Test Firm Registration No. |
|                    | SAR01-SZ                                                                                                                                                                   | CN1256              | 421272                         |

| Applicant    |                                                                                                              |
|--------------|--------------------------------------------------------------------------------------------------------------|
| Company Name | Fibocom Wireless Inc.                                                                                        |
| Address      | 1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China. |

| Manufacturer |                                                                                                              |
|--------------|--------------------------------------------------------------------------------------------------------------|
| Company Name | Fibocom Wireless Inc.                                                                                        |
| Address      | 1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China. |

## **2. Description of Equipment Under Test (EUT)**

| <b>Product Feature &amp; Specification</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT Type</b>                                | LTE Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Brand Name</b>                              | Fibocom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Model Name</b>                              | FM350-GL-16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>FCC ID</b>                                  | ZMOFM350GL16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Wireless Technology and Frequency Range</b> | WCDMA Band II: 1850 MHz ~ 1910 MHz<br>WCDMA Band IV: 1710 MHz ~ 1755 MHz<br>WCDMA Band V: 824 MHz ~ 849 MHz<br>LTE Band 2 : 1850 MHz ~ 1910 MHz<br>LTE Band 4 : 1710 MHz ~ 1755 MHz<br>LTE Band 5 : 824 MHz ~ 849 MHz<br>LTE Band 7 : 2500 MHz ~ 2570 MHz<br>LTE Band 12 : 699 MHz ~ 716 MHz<br>LTE Band 13 : 777 MHz ~ 787 MHz<br>LTE Band 14 : 788 MHz ~ 798 MHz<br>LTE Band 17 : 704 MHz ~ 716 MHz<br>LTE Band 25 : 1850 MHz ~ 1915 MHz<br>LTE Band 26 : 814 MHz ~ 849 MHz<br>LTE Band 30 : 2305 MHz ~ 2315 MHz<br>LTE Band 38 : 2570 MHz ~ 2620 MHz<br>LTE Band 41 : 2496 MHz ~ 2690 MHz<br>LTE Band 48 : 3550 MHz ~ 3700 MHz<br>LTE Band 66 : 1710 MHz ~ 1780 MHz<br>LTE Band 71: 663 MHz ~ 698 MHz |
| <b>Mode</b>                                    | RMC 12.2Kbps<br>HSDPA<br>HSUPA<br>DC-HSDPA<br>HSPA+ (16QAM uplink)<br>LTE: QPSK, 16QAM, 64QAM, 256QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>HW Version</b>                              | V1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SW Version</b>                              | 11600.0000.00.29.22.01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>EUT Stage</b>                               | Identical Prototype                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Remark:**

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. The intra-band ULCA combination could be referred to the product spec.
3. This device supports intra-band ULCA, due to intra-band ULCA and non-CA power is same, so non-CA MPE analysis can represent ULCA MPE analysis.

**Comments and Explanations:**

1. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
2. The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.

**3. Maximum RF average output tune up power among production units****<WCDMA>**

| Mode  |         | Maximum Average power(dBm) |
|-------|---------|----------------------------|
| WCDMA | Band II | 24.50                      |
|       | Band IV | 24.50                      |
|       | Band V  | 24.50                      |

**<LTE>**

| Mode |         | Maximum Average power(dBm) |
|------|---------|----------------------------|
| LTE  | Band 2  | 24.00                      |
|      | Band 4  | 24.00                      |
|      | Band 5  | 25.00                      |
|      | Band 7  | 24.00                      |
|      | Band 12 | 25.00                      |
|      | Band 13 | 25.00                      |
|      | Band 14 | 25.00                      |
|      | Band 17 | 25.00                      |
|      | Band 25 | 24.00                      |
|      | Band 26 | 25.00                      |
|      | Band 30 | 23.00                      |
|      | Band 38 | 24.00                      |
|      | Band 41 | 24.00                      |
|      | Band 48 | 22.00                      |
|      | Band 66 | 24.00                      |
|      | Band 71 | 25.00                      |

#### 4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

| 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                       |

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



## **5. Radio Frequency Radiation Exposure Evaluation**

### **5.1. Standalone Power Density Calculation**

| Band         | Frequency (MHz) | Antenna Gain (dBi) | Maximum Power (dBm) | Maximum EIRP (dBm) | Average EIRP (mW) | Power Density at 20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|--------------|-----------------|--------------------|---------------------|--------------------|-------------------|---------------------------------------------|-----------------------------|
| WCDMA Band 2 | 1852.4          | 4.0                | 24.50               | 28.500             | 707.946           | 0.141                                       | 1.000                       |
| WCDMA Band 4 | 1712.4          | 3.0                | 24.50               | 27.500             | 562.341           | 0.112                                       | 1.000                       |
| WCDMA Band 5 | 826.4           | 3.0                | 24.50               | 27.500             | 562.341           | 0.112                                       | 0.551                       |
| LTE Band 2   | 1850.7          | 4.0                | 24.00               | 28.000             | 630.957           | 0.126                                       | 1.000                       |
| LTE Band 4   | 1710.7          | 3.0                | 24.00               | 27.000             | 501.187           | 0.100                                       | 1.000                       |
| LTE Band 5   | 824.7           | 3.0                | 25.00               | 28.000             | 630.957           | 0.126                                       | 0.550                       |
| LTE Band 7   | 2502.5          | 4.0                | 24.00               | 28.000             | 630.957           | 0.126                                       | 1.000                       |
| LTE Band 12  | 699.7           | 3.0                | 25.00               | 28.000             | 630.957           | 0.126                                       | 0.466                       |
| LTE Band 13  | 779.5           | 3.0                | 25.00               | 28.000             | 630.957           | 0.126                                       | 0.520                       |
| LTE Band 14  | 790.5           | 3.0                | 25.00               | 28.000             | 630.957           | 0.126                                       | 0.527                       |
| LTE Band 17  | 706.5           | 3.0                | 25.00               | 28.000             | 630.957           | 0.126                                       | 0.471                       |
| LTE Band 25  | 1850.7          | 4.0                | 24.00               | 28.000             | 630.957           | 0.126                                       | 1.000                       |
| LTE Band 26  | 814.7           | 3.0                | 25.00               | 28.000             | 630.957           | 0.126                                       | 0.543                       |
| LTE Band 30  | 2307.5          | 1.0                | 23.00               | 24.000             | 251.189           | 0.050                                       | 1.000                       |
| LTE Band 38  | 2572.5          | 4.0                | 24.00               | 28.000             | 630.957           | 0.126                                       | 1.000                       |
| LTE Band 41  | 2498.5          | 4.0                | 24.00               | 28.000             | 630.957           | 0.126                                       | 1.000                       |
| LTE Band 48  | 3552.5          | 1.0                | 22.00               | 23.000             | 199.526           | 0.040                                       | 1.000                       |
| LTE Band 66  | 1710.7          | 3.0                | 24.00               | 27.000             | 501.187           | 0.100                                       | 1.000                       |
| LTE Band 71  | 665.5           | 3.0                | 25.00               | 28.000             | 630.957           | 0.126                                       | 0.444                       |

**Note:**

1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. Chose the maximum power to do MPE analysis.

### **Conclusion:**

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

-----THE END-----