



Report No.: SUZR/2022/1002204

Rev.: 01

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TEST REPORT

Application No.: ZR/2022/10022
Applicant: Fibocom Wireless Inc.
Address of Applicant: 1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China
Manufacturer: Fibocom Wireless Inc.
Address of Manufacturer: 1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China
EUT Description: 5G Module
Model No.: FM160-NA
Trade Mark: Fibocom
FCC ID: ZMOFM160NA
Standards: 47 CFR Part 2.1091
FCC KDB 447498 D01 v06
Date of Receipt: 2022/3/10
Date of Issue: 2022/5/16

| | |
|---------------------|--------------|
| Test Result: | PASS* |
|---------------------|--------------|

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Panta Sun

Panta Sun
Wireless Laboratory Manager



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1 Version

| Revision Record | | | | |
|-----------------|---------|-----------|----------|----------|
| Version | Chapter | Date | Modifier | Remark |
| 01 | | 2022/5/16 | | Original |

| | |
|-------------|--------------------------------|
| Prepared By | Weller Liu |
| | (Weller Liu) / Test Supervisor |
| Checked By | Well Wei |
| | (Well Wei) / Reviewer |



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2 General Information

2.1 Client Information

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

2.2 Test Facility

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

• **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

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

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

• **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327



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2.3 General Description of EUT

| | | | |
|-------------------|---|----------------|----------------------------|
| EUT Description: | 5G Module | | |
| Model No.: | FM160-NA | | |
| Trade Mark: | Fibocom | | |
| Hardware Version: | V1.1 | | |
| Software Version: | 89610.1000.00.02.01.01 | | |
| Antenna Type: | <input checked="" type="checkbox"/> External, <input type="checkbox"/> Integrated | | |
| Antenna Gain*: | <input checked="" type="checkbox"/> Provided by client | | |
| | LTE Band 2: | 2.63dBi(ANT0) | LTE Band 4: 2.86dBi(ANT0) |
| | LTE Band 5: | 1.32dBi(ANT3) | LTE Band 12: 1.61dBi(ANT3) |
| | LTE Band 13: | 1.94dBi(ANT3) | LTE Band 30: 0.22dBi(ANT0) |
| | LTE Band 41: | 1.52dBi(ANT0) | LTE Band 66: 3.76dBi(ANT0) |
| | LTE Band 71: | 1.39dBi(ANT3) | LTE CA_41C: 1.52dBi(ANT0) |
| | n2: | 2.63dBi(ANT0) | 2.62dBi(ANT3) |
| | n5: | 1.32dBi(ANT0) | |
| | n12: | 1.61dBi(ANT3) | |
| | n14: | 2.19dBi(ANT3) | |
| | n25: | 1.93dBi(ANT0) | 1.93dBi(ANT3) |
| | n30: | 0.22dBi(ANT0) | |
| | n41: | 1.52dBi(ANT0) | 1.52dBi(ANT3) |
| | n66: | 3.76dBi(ANT0) | 3.76dBi(ANT3) |
| | n70: | 3.76dBi(ANT0) | |
| | n71: | 1.39dBi(ANT3) | |
| | n77: | -0.13dBi(ANT0) | -0.13dBi(ANT3) |

Note: *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

Remark:

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

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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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

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 / 2.0 in linear scale.

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 Average Output Power (dBm) | Output Power to Antenna (dBm) | EIRP(ERP) Limit (dBm) | Output Power to Antenna (mw) | Power Density at R = 20 cm (mW/cm2) | Limit (mW/cm2) | Gain according to EIRP (dBi) | Gain according to Pd (dBi) | Max Gain Allowed (dBi) | conclusion |
|------------------------|-----------------|--------------------|--|-------------------------------|-----------------------|------------------------------|-------------------------------------|----------------|------------------------------|----------------------------|------------------------|------------|
| LTE B2/NR Band n2 | 1880 | 2.63 | 25.00 | 27.63 | 33.00 | 316.2278 | 0.1153 | 1.0000 | 8.00 | 12.01 | 8.00 | Pass |
| LTE B4 | 1710.7 | 2.86 | 25.00 | 27.86 | 30.00 | 316.2278 | 0.1215 | 1.0000 | 5.00 | 12.01 | 5.00 | Pass |
| LTE B5/NR Band n5 | 824.70 | 1.32 | 25.00 | 24.17 | 38.45 | 316.2278 | 0.0853 | 0.5498 | 15.60 | 9.41 | 9.41 | Pass |
| LTE B12/NR Band n12 | 699.70 | 1.61 | 25.00 | 24.46 | 34.77 | 316.2278 | 0.0911 | 0.4665 | 11.92 | 8.70 | 8.70 | Pass |
| LTE B13 | 779.50 | 1.94 | 25.00 | 24.79 | 34.77 | 316.2278 | 0.0983 | 0.5197 | 11.92 | 9.16 | 9.16 | Pass |
| NR Band n14 | 790.5 | 2.19 | 25.00 | 25.04 | 34.77 | 316.2278 | 0.1042 | 0.5270 | 11.92 | 9.23 | 9.23 | Pass |
| LTE B25/NR Band n25 | 1850.7 | 1.93 | 25.00 | 26.93 | 33.00 | 316.2278 | 0.0981 | 1.0000 | 8.00 | 12.01 | 8.00 | Pass |
| LTE B30/NR Band n30 | 2307.5 | 0.22 | 23.00 | 23.22 | 23.98 | 199.5262 | 0.0418 | 1.0000 | 0.98 | 14.01 | 0.98 | Pass |
| LTE B41/NR Band n41 | 2498.5 | 1.52 | 28.00 | 29.52 | 33.00 | 630.9573 | 0.1781 | 1.0000 | 5.00 | 9.01 | 5.00 | Pass |
| LTE B66/NR Band n66 | 1710.7 | 3.76 | 24.00 | 27.76 | 30.00 | 251.1886 | 0.1188 | 1.0000 | 6.00 | 13.01 | 6.00 | Pass |
| NR Band n70 | 1697.5 | 3.76 | 25.00 | 28.76 | 30.00 | 316.2278 | 0.1495 | 1.0000 | 5.00 | 12.01 | 5.00 | Pass |
| LTE B71/NR Band 71 | 665.5 | 1.39 | 25.00 | 24.24 | 34.77 | 316.2278 | 0.0866 | 0.4437 | 9.77 | 8.48 | 8.48 | Pass |
| NR Band 77 (3450-3550) | 3455.01 | 0.13 | 28.00 | 28.13 | 30.00 | 630.9573 | 0.1293 | 1.0000 | 2.00 | 9.01 | 2.00 | Pass |
| NR Band 77 (3700-3980) | 3705 | 0.13 | 28.00 | 28.13 | 30.00 | 630.9573 | 0.1293 | 1.0000 | 2.00 | 9.01 | 2.00 | Pass |

Remark: all the LTE UL intra-band CA & ENDC & UL MIMO were evaluated, but only displayed the worst case in this report.

The End



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