



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

<b>Test Result:</b>	<b>PASS*</b>
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\* 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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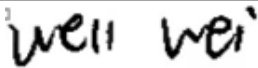
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## 1 Version

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

Prepared By		 (Weller Liu) / Test Supervisor
Checked By		 (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)	
<p>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.</p> <p>Remark:</p> <p>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.</p>				



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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 <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

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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### 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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