TEST REPORT

Application No.:	SEWM2206000070RG
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.:	FG160-NA
Trade Mark:	Fibocom
FCC ID:	ZMOFG160NA
Standards:	47 CFR Part 2.1091 FCC KDB 447498 D01 v06
Date of Receipt:	2022/11/06
Date of Issue:	2022/12/20
Test Result:	**PASS***

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

Authorized Signature:

Panta Sun

Panta Sun
Wireless Laboratory Manager

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone 215000 t (86-512) 62992980 www.sgsgroup.com.cn
中国·苏州·中国（江苏）自由贸易试验区苏州片区苏州工业园区润胜路1号的6号厂房南部 邮编：215000 t (86-512) 62992980 sgs.china@sgs.com

1 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2022/12/20		Original

Prepared By		Nick Hu **(Nick Hu) / Test Engineer**
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

2.3 General Description of EUT

EUT Description:	5G Module			
Model No.:	FG160-NA			
Trade Mark:	Fibocom			
Hardware Version:	V1.1			
Software Version:	89113.1000.00.02.04.07			
Antenna Type:	monopole Antenna			
Antenna Gain:	LTE Band 2:	2.77dBi (Ant2)	LTE Band 4:	2.82dBi (Ant2)
	LTE Band 5:	1.32dBi (Ant8)	LTE Band 7:	2.21dBi (Ant2)
	LTE Band 12:	1.58dBi (Ant8)	LTE Band 13:	1.83dBi (Ant8)
	LTE Band 30:	0.22dBi (Ant2)	LTE Band 41:	1.62dBi (Ant2)
	LTE Band 48:	-0.58dBi (Ant2)	LTE Band 66:	2.82dBi (Ant2)
	LTE Band 71:	1.39dBi (Ant8)	LTE CA_41C:	1.62dBi (Ant2)
	NR Band n2:	2.77dBi (Ant2)	NR Band n5:	1.32dBi (Ant8)
	NR Band n7:	2.21dBi (Ant2)	NR Band n12:	1.58dBi (Ant8)
	NR Band n14:	2.19dBi (Ant8)	NR Band n25:	2.77dBi (Ant2)
	NR Band n30:	0.22dBi (Ant2)	NR Band n41:	1.62dBi (Ant2) 1.62dBi (Ant8)
	NR Band n48:	-0.58dBi (Ant2)	NR Band n66:	2.82dBi (Ant2)
	NR Band n70:	2.86dBi (Ant2)	NR Band n71:	1.39dBi (Ant8)
	NR Band n77:	-0.20dBi (Ant2) -0.20dBi (Ant8)	NR Band n78:	-0.18dBi (Ant2) -0.18dBi (Ant8)
	LTE CA: LTE CA_41C; LTE UL CA_12A-66A; LTE UL CA_13A-66A; LTE UL CA_2A-12A; LTE UL CA_2A-13A; LTE UL CA_4A-13A; LTE UL CA_2A-7A; LTE UL CA_5A-7A; LTE UL CA_4A-7A; LTE UL CA_5A-12A; LTE UL CA_2A-66A; LTE UL CA_4A-12A; ENDC: DC_13A_n5A; DC_13A_n66A; DC_5A_n2A; DC_30A_n2A; DC_2A_n5A; DC_12A_n5A; DC_30A_n5A; DC_66A_n5A; DC_2A_n30A; DC_5A_n30A; DC_12A_n30A; DC_66A_n30A; DC_2A_n66A; DC_5A_n66A; DC_12A_n66A; DC_30A_n66A; DC_12A_n2A; DC_66A_n2A; DC_2A_n41A; DC_2A_n71A; DC_66A_n71A; DC_66A_n25A; DC_66A_n41A; DC_13A_n2A; DC_12A_n25A; DC_2A_n77A; DC_5A_n77A; DC_13A_n77A; DC_66A_n77A; DC_12A_n77A;			

	DC_30A_n77A; DC_2A_n12A; DC_66A_n12A; DC_71A_n2A; DC_71A_n66A; DC_25A_n41A; DC_26A_n41A; DC_7A_n78A; DC_5A_n78A; DC_7A_n5A; DC_66A_n78A; DC_2A_n78A; DC_5A_n71A; DC_7A_n71A; DC_12A_n71A; DC_12A_n78A; DC_5A_n7A; DC_12A_n7A; DC_66A_n7A; DC_7A_n66A; DC_4A_n41A; DC_4A_n78A; DC_7A_n77A; DC_71A_n78A; DC_12A_n41A; DC_2A_n7A; DC_7A_n2A; DC_71A_n41A; DC_26A_n25A; DC_5A_n12A; DC_71A_n12A; DC_71A_n5A; DC_48A_n5A; DC_48A_n66A; DC_48A_n25A;
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.
Remark: 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.	

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/cm2)	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/f2)	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/f2)	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: $Pd = (Pout*G)/(4* Pi * R^2)$

Where

Pd = power density in mW/cm2

Pout = 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

Pd id 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.

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	1850.7	2.77	25.00	27.77	33.00	316.2278	0.1191	1.0000	8.00	12.01	8.00	Pass
LTE B4	1710.7	2.82	25.00	27.82	30.00	316.2278	0.1204	1.0000	5.00	12.01	5.00	Pass
LTE B5/NR Band n5	824.7	1.32	25.00	26.32	38.45	316.2278	0.0853	0.5498	13.45	9.41	9.41	Pass
LTE B7/NR Band n7	2502.5	2.21	25.00	27.21	33.00	316.2278	0.1046	1.0000	8.00	12.01	8.00	Pass
LTE B12/NR Band n12	699.7	1.58	25.00	26.58	34.77	316.2278	0.0905	0.4665	9.77	8.70	8.70	Pass
LTE B13	779.5	1.83	25.00	26.83	34.77	316.2278	0.0959	0.5197	9.77	9.16	9.16	Pass
NR Band n14	790.5	2.19	25.00	27.19	34.77	316.2278	0.1042	0.5270	9.77	9.23	9.23	Pass
NR Band n25	1852.5	2.77	25.00	27.77	33.00	316.2278	0.1191	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/LTE CA_41C/NR Band n41	2498.5	1.62	25.00	26.62	33.00	316.2278	0.0914	1.0000	8.00	12.01	8.00	Pass
LTE B41/NR Band n41(HPUE)	2498.5	1.62	28.00	29.62	33.00	630.9573	0.1823	1.0000	5.00	9.01	5.00	Pass
NR Band n41(MIMO)	2498.5	1.62	29.00	30.62	33.00	794.3282	0.2295	1.0000	4.00	8.01	4.00	Pass
LTE B48/NR Band n48	3552.5	-0.58	22.00	21.42	23.00	158.4893	0.0276	1.0000	1.00	15.01	1.00	Pass
LTE B66/NR Band n66	1710.7	2.82	25.00	27.82	30.00	316.2278	0.1204	1.0000	5.00	12.01	5.00	Pass
NR Band n70	1697.5	2.86	25.00	27.86	30.00	316.2278	0.1215	1.0000	5.00	12.01	5.00	Pass
LTE B71/NR Band n71	665.5	1.39	25.00	26.39	34.77	316.2278	0.0866	0.4437	9.77	8.48	8.48	Pass
NR Band n77 (3450-3550)	3455.0	-0.20	25.00	24.80	30.00	316.2278	0.0601	1.0000	5.00	12.01	5.00	Pass
NR Band n77 (3450-3550)(HPUE)	3455.0	-0.20	28.00	27.80	30.00	630.9573	0.1199	1.0000	2.00	9.01	2.00	Pass
NR Band n77 (3450-3550)(MIMO)	3455.0	-0.20	29.00	28.80	30.00	794.3282	0.1509	1.0000	1.00	8.01	1.00	Pass
NR Band n77 (3700-3980)	3707.5	-0.20	25.00	24.80	30.00	316.2278	0.0601	1.0000	5.00	12.01	5.00	Pass
NR Band n77 (3700-3980)(HPUE)	3707.5	-0.20	28.00	27.80	30.00	630.9573	0.1199	1.0000	2.00	9.01	2.00	Pass
NR Band n77 (3700-3980)(MIMO)	3707.5	-0.20	29.00	28.80	30.00	794.3282	0.1509	1.0000	1.00	8.01	1.00	Pass
NR Band n78 (3450-3550)	3455.0	-0.18	25.00	24.82	30.00	316.2278	0.0604	1.0000	5.00	12.01	5.00	Pass
NR Band n78 (3450-3550)(HPUE)	3455.0	-0.18	28.00	27.82	30.00	630.9573	0.1204	1.0000	2.00	9.01	2.00	Pass
NR Band n78 (3450-3550)(MIMO)	3455.0	-0.18	29.00	28.82	30.00	794.3282	0.1516	1.0000	1.00	8.01	1.00	Pass
NR Band n78 (3700-3800)	3705.0	-0.18	25.00	24.82	30.00	316.2278	0.0604	1.0000	5.00	12.01	5.00	Pass
NR Band n78 (3700-3800)(HPUE)	3705.0	-0.18	28.00	27.82	30.00	630.9573	0.1204	1.0000	2.00	9.01	2.00	Pass
NR Band n78 (3700-3800)(MIMO)	3705.0	-0.18	29.00	28.82	30.00	794.3282	0.1516	1.0000	1.00	8.01	1.00	Pass

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Due to the EUT support NR ENDC and CA
Both LTE and NR/LTE band can transmit simultaneously, the formula of the calculated the MPE is:

$$\sum_{i=1}^{n} \frac{S_{E_i}(duty\,factor)}{MPE_{E_i}} < 1$$

NOTE The corresponding MEs must be expressed in terms of power density in the above summation
Therefore, the worst-case(DC_12A_n71A) situation is 0.1940+0.1952=0.3892,which is less than “1”, this confirmed that the device comply with MPE limit.

---End of Report---