TEST REPORT

Application No.:	SEWM2212000326RG
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:	LTE Module
Model No.:	SC128-NA
Trade Mark:	FIBOCOM
FCC ID:	ZMOSC128NA
Standards:	47 CFR Part 2.1091 FCC KDB 447498 D01 v06
Date of Receipt:	2023/01/03
Date of Issue:	2023/02/08
Test Result:	**PASS***

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

Authorized Signature:

Panta Sun

Panta Sun
Wireless Laboratory Manager

1 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2023/02/08		Original

Prepared By		Nick Hu **(Nick Hu) / Test Engineer**
Checked By		Well Wei **(Well Wei) / Reviewer**

Contents

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:	LTE Module			
Model No.:	SC128-NA			
Trade Mark:	FIBOCOM			
Hardware Version:	V1.0			
Software Version:	SC128-NA-S64.00.102			
Antenna Type:	External Antenna			
Antenna Gain:	LTE Band 2:	4dBi	LTE Band 4:	3dBi
	LTE Band 5:	3dBi	LTE Band 7:	4dBi
	LTE Band 12:	3dBi	LTE Band 13:	3dBi
	LTE Band 17:	3dBi	LTE Band 25:	4dBi
	LTE Band 26:	3dBi	LTE Band 41:	4dBi
	LTE Band 66:	3dBi	LTE Band 71:	3dBi
	BT/BLE:	1.83dBi	2.4G WIFI:	1.83dBi
	5150MHz to 5250MHz:	4.29dBi	5250MHz to 5350MHz:	4.43dBi
	5470MHz to 5725MHz:	3.68dBi	5725MHz to 5850MHz:	1.47dBi
	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)	EIRP(ERP) (dBm)	EIRP(ERP) Limit (dBm)	Power Density at R = 20 cm (mW/cm2)	Limit (mW/cm2)	Gain according to EIRP(ERP) (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	conclusion
LTE B2	1850.7	4.00	25.00	29.00	33.00	0.1580	1.0000	8.00	12.01	8.00	Pass
LTE B4	1710.7	3.00	25.00	28.00	30.00	0.1255	1.0000	5.00	12.01	5.00	Pass
LTE B5	824.7	3.00	25.00	25.85	38.45	0.1255	0.5498	15.60	9.41	9.41	Pass
LTE B7	2502.5	4.00	25.00	29.00	33.00	0.1580	1.0000	8.00	12.01	8.00	Pass
LTE B12	699.7	3.00	25.00	25.85	34.77	0.1255	0.4665	11.92	8.70	8.70	Pass
LTE B13	779.5	3.00	25.00	25.85	34.77	0.1255	0.5197	11.92	9.16	9.16	Pass
LTE B17	706.5	3.00	25.00	25.85	34.77	0.1255	0.4710	11.92	8.74	8.74	Pass
LTE B25	1850.7	4.00	25.00	29.00	33.00	0.1580	1.0000	8.00	12.01	8.00	Pass
LTE B26(814-824)	814.7	3.00	25.00	25.85	NA	0.1255	0.5431	NA	9.36	9.36	Pass
LTE B26(824-849)	824.7	3.00	25.00	25.85	38.45	0.1255	0.5498	15.60	9.41	9.41	Pass
LTE B41	2498.5	4.00	25.00	29.00	33.00	0.1580	1.0000	8.00	12.01	8.00	Pass
LTE B66	1710.7	3.00	25.00	28.00	30.00	0.1255	1.0000	5.00	12.01	5.00	Pass
LTE B71	665.5	3.00	25.00	25.85	34.77	0.1255	0.4437	11.92	8.48	8.48	Pass
BT	2402.0	1.83	13.50	15.33	30.00	0.0068	1.0000	NA			Pass
2.4GWIFI	2412.0	1.83	20.00	21.83	30.00	0.0303	1.0000				Pass
5GWIFI	5320.0	4.43	19.00	23.43	30.00	0.0438	1.0000				Pass

3.1.4 Exposure calculations for multiple sources

When a number of sources at different frequencies, and/or broadband sources, contribute to the total exposure, it becomes necessary to weigh each contribution relative to the MPE in accordance with the provisions of Table(A) and Table(B). To comply with the MPE, the fraction of the MPE in terms of E2, H2 (or power density) incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity.

In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is

$$\sum_{i=1}^{n} \frac{S_i}{MPE_i} \leq 1$$

The product also has multiple transmitters The Simultaneous Transmission Possibilities are as below:

Simultaneous Tx Combination	Configuration
1	WWAN + Bluetooth + 2.4GWIFI + 5GWIFI

No.	Mode	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)	Result Ratio	Total Ratio	Limit	Result
1	LTE Band 71	0.1255	0.4437	0.2828	0.3637	1.00	Pass
	Bluetooth	0.0068	1.0000	0.0068			
	2.4GWIFI	0.0303	1.0000	0.0303			
	5GWIFI	0.0438	1.0000	0.0438			

---End of Report---