RF EXPOSURE REPORT

Report No.:	20250517G11227X-W2
Product Name:	LoRa Modules
Model No.:	M320(H)
FCC ID:	2BM2KM320
Applicant:	Shenzhen Navynav Technology Co., Ltd
Address:	Room 502, Han's Laser Technology Centre Shennan Ave No.9988, Nv anshan District,Shenzhen, Guangdong Province, China
Dates of Testing:	05/17/2025 - 06/23/2025
Issued by:	CCIC Southern Testing Co., Ltd.
Lab Location:	Electronic Testing Building, No.43, Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China Query E-Mail: manager@ccic-set.com Feedback E-Mail: integrity@ccic-set.com Report Query Tel: 86-0755-26627338 Feedback Tel: 86-0755-86185963

Test Report

Product .....:	LoRa Modules
Trade Name .....:	Navynav
Applicant.....:	Shenzhen Navynav Technology Co., Ltd
Applicant Address .....:	Room 502, Han's Laser Technology Centre Shennan Ave No.9988, Nv anshan District,Shenzhen, Guangdong Province, China
Manufacturer .....:	Shenzhen Navynav Technology Co., Ltd
Manufacturer Address .....:	Room 502, Han's Laser Technology Centre Shennan Ave No.9988, Nv anshan District,Shenzhen, Guangdong Province, China
Test Standards .....:	47 CFR Part 2.1091
Test Result.....:	Pass

Tested by .....: 2025.06.23

Chuiwang Zhang, Test Engineer

Reviewed by .....: 2025.06.23

Sun Jiaohui, Senior Engineer

Approved by .....: 2025.06.23

Chris You, Manager

TABLE OF CONTENTS

Change History		
Issue	Date	Reason for change
1.0	2025.06.23	First edition

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	LoRa Modules
Device Type	Fixed devices
Frequency Range	LoRaWAN: 902MHz~928MHz
Modulation Type	LoRa
Antenna Type	External Antenna
Antenna Gain	External Antenna: 1.87dBi

Note 1: The information of antenna gain and cable loss is provided by the manufacturer and our lab is not responsible for the accuracy of the antenna gain and cable loss information.

1.2. EUT Description

EUT has been tested according to the following standards.

No.	Identity	Document Title
1	47 CFR Part 1	Practice and Procedure
2	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
3	KDB 447498 D01 General RF Exposure Guidance v06	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
4	OET Bulletin 65 Edition 97-01	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

1.3. Laboratory Facilities and Accreditation Certificate

☒**CCIC-SET Lab 1**

Address: Electronic Testing Building, No.43, Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China

FCC-Registration No.: CN1283

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until Jun. 30th, 2025.

ISED Registration: 11185A, CAB number: CN0064

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A on Aug. 04, 2016, valid time is until Jun. 30th, 2025.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

CNAS L1659

CCIC Southern Testing Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

☐**CCIC-SET Lab 4**

Address: No.125, Hongmei Section, Wangsha Road, Hongmei Town, Dongguan City, Guangdong Province, China

CNAS L1659

CCIC Southern Testing Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

2. Technical Requirements Specification in CFR Title 47 Part 2.1091

2.1. Evaluation method

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b).

Table 1 to §1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Averaging Time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	< 6
3.0-30	1824/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
(ii) 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
Note: f = frequency in MHz. * = Plane-wave equivalent power density.				

2.2. Predication of MPE limit at a given distance

Refer to formulas on page 19 of OET Bulletin 65, Edition 97-01.

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

Where:

S = power density (in appropriate units, e.g. mW/cm^2)

P = power input to the antenna (in appropriate units, e.g., mW)

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units, e.g., cm)

2.3. Evaluation Results

Worst-Case mode Conducted Output Power Results for LoRa

Operation Mode	Frequency (MHz)	Maximum Output power (dBm)	Max Tune up power (dBm)	Max Tune up power (mW)
LoRa-DTS	903.0	19.31	19±1	100.0
LoRa-FHSS	923.3	19.30	19±1	100.0

Calculation results: Worst-Case mode

Operation Mode	Antenna Gain (dBi)	Antenna Gain (numeric)	Distance (cm)	Result (mW/cm2)	Power Density (mW/cm2)
LoRa-DTS	1.87	1.54	20	0.031	0.60
LoRa-FHSS	1.87	1.54	20	0.031	0.62

2.4. Conclusion

An evaluation in accordance with the requirements of Part 1.1310 and Part 2.1091 determines that the device is exempt from SAR testing.

** END OF REPORT **