

RF Exposure Evaluation Report

Report No.: 2405S53667B

Applicant: Shenzhen RodinBell Technology Co.,Ltd.

Address: 905#, Tower B, Xinghe WORLD, Wuhe Avenue, Longgang District, Shenzhen,China

Product Name: 4-port UHF RFID Module

Product Model: M-302

Multiple Models: N/A

Trade Mark: N/A

FCC ID: 2AKQD-M-302

Standards: 47 CFR §1.1310
KDB 447498 D01 General RF Exposure Guidance v06

Test Date: 2024-05-28

Test Result: Complied

Report Date: 2024-05-30

Reviewed by:

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Approved by:

Jacob Kong

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Revision History

Version No.	Issued Date	Description
00	2024-05-30	Original

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1 General Information

1.1 Client Information

Applicant:	Shenzhen RodinBell Technology Co.,Ltd.
Address:	905#, Tower B, Xinghe WORLD, Wuhe Avenue, Longgang District, Shenzhen,China
Manufacturer:	Shenzhen RodinBell Technology Co.,Ltd.
Address:	905#, Tower B, Xinghe WORLD, Wuhe Avenue, Longgang District, Shenzhen,China

1.2 Product Description of EUT

The EUT is 4-port UHF RFID Module that contains LoRa radio.

Sample Serial Number	OSEB119024-2 (assigned by WATC)
Sample Received Date	2024-04-16
Sample Status	Good Condition
Frequency Range	LoRa radio: 902 MHz -928 MHz
Maximum Conducted Output Power	29.87dBm
Modulation Technology	GFSK
Antenna Gain [#]	2dBi (It is provided by the applicant.)
Spatial Streams	SISO (4TX, 4RX)
Power Supply	DC 4.5V~5.5V
Operating temperature [#]	-20 deg.C to +65 deg.C
Adapter Information	N/A
Modification	Sample No Modification by the test lab

1.3 Laboratory Location

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: qa@watc.com.cn

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

2 RF Exposure Evaluation

2.1 Standard

According to §1.1310, radio frequency devices shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

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/cm ²)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
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
300–1,500			f/300	<6
1,500–100,000			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
300–1,500			f/1500	<30
1,500–100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

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

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

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

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

2.2 Result

Radio	Frequency (MHz)	Maximum Conducted Power including Tune-up Tolerance		Antenna Gain		Min. test separation distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)	Verdict
		(dBm)	(mW)	(dBi)	(numeric)				
GFSK	902-928	30	1000	2	1.58	20	0.314	0.601	Pass

Note: The Maximum Conducted Power including Tune-up Tolerance was declared by manufacturer.

Result: Complied.

---End of Report---