

# RF Exposure Evaluation Report

APPLICANT : Zhejiang Rexense IoT Technology Co., Ltd.  
EQUIPMENT : 2.4G Zigbee Module  
BRAND NAME : REXENSE  
MODEL NAME : REX3PT581  
FCC ID : 2AOE2REX3PT581  
STANDARD : 47 CFR Part 2.1091

The product evaluation date was started from Aug. 10, 2023 and completed on Aug. 10, 2023. We, Sporton International Inc. (Kunshan), would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.



Approved by: Si Zhang

**Sporton International Inc. (Kunshan)**

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People's Republic of China**



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## 1. Administration Data

### 1.1. Testing Laboratory

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS	CN1257	314309

Applicant	
Company Name	Zhejiang Rexense IoT Technology Co., Ltd.
Address	6th Floor, Building 4, No.6, Longzhou Road, Yuhang District, Hangzhou, Zhejiang Province 310051 PRC

Manufacturer	
Company Name	Zhejiang Rexense IoT Technology Co., Ltd.
Address	6th Floor, Building 4, No.6, Longzhou Road, Yuhang District, Hangzhou, Zhejiang Province 310051 PRC



## 2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	2.4G Zigbee Module
Brand Name	REXENSE
Model Name	REX3PT581
FCC ID	2AOE2REX3PT581
Wireless Technology and Frequency Range	ZigBee: 2405 MHz ~ 2480 MHz
Mode	ZigBee: O-QPSK
Antenna Gain	ZigBee: 1.27 dBi
Antenna Type	PCB Antenna
HW Version	V1
SW Version	V1
EUT Stage	Identical Prototype

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

### Comments and Explanations:

1. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
2. The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.

## 3. Maximum RF average output tune up power among production units

### <ZigBee>

Mode		Maximum Average power(dBm)
2.4GHz	ZigBee	19.0



### 4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

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

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

Where:

- S = Power Density
- P = Output Power at Antenna Terminals
- G = Gain of Transmit Antenna (linear gain)
- R = Distance from Transmitting Antenna



**5. Radio Frequency Radiation Exposure Evaluation**

**5.1. Standalone Power Density Calculation**

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Average EIRP (mW)	Power Density at 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
ZigBee	2405.0	1.27	19.00	20.270	106.414	0.021	1.000

**Note:**

- 1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
- 2. Chose the maximum power to do MPE analysis.

**Conclusion:**

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

-----THE END-----