

## RF Exposure Evaluation Declaration

**FCC ID** : 2AOE2REX3B

**APPLICANT** : Zhejiang Raying IoT Technology Co., Ltd.

**Application Type** : Certification

**Product** : 2.4G Zigbee Module

**Model No.** : REX3B

**FCC Classification** : Digital Transmission System (DTS)

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( Marlin Chen )



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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## Revision History

Report No.	Version	Description	Issue Date	Note
1803WSU014-U2	Rev. 01	Initial report	05-23-2018	Invalid
1803WSU014-U2	Rev. 02	Change applicant and manufacturer information	06-05-2018	Valid

## 1. PRODUCT INFORMATION

### 1.1. Equipment Description

Product Name	2.4G Zigbee Module
Model No.	REX3B
Frequency Range	802.15.4: 2405 ~ 2480 MHz
Type of Modulation	O-QPSK
Date Rate	250kbps
Type of Antenna	PCB Antenna

## 2. RF Exposure Evaluation

### 2.1. Limits

According to FCC 1.1310: 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)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula:  $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

Pd = power density in mW/cm<sup>2</sup>

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 is the limit of MPE, 1mW/cm<sup>2</sup>. 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.

## 2.2. Test Result of RF Exposure Evaluation

Product	2.4G Zigbee Module
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
Zigbee	2402 ~ 2480	19.41	0.0174	1

### CONCULISON:

The max Power Density at R (20 cm) = 0.0174mW/cm<sup>2</sup> < 1 mW/cm<sup>2</sup> for Bluetooth.

Therefore, the Min Safety Distance is 20cm.

The End