

# RF Exposure Evaluation Report

APPLICANT : PAX Technology Limited  
EQUIPMENT : Encrypting PIN Pad  
BRAND NAME : PAX  
MODEL NAME : IM300  
MARKETING NAME : IM300  
FCC ID : V5PIM300BW  
STANDARD : 47 CFR Part 2.1091

We, Sporton International (Shenzhen) Inc., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit. Without written approval of Sporton International (Shenzhen) Inc., the test report shall not be reproduced except in full.



Approved by: Mark Qu / Manager



**Sporton International (Shenzhen) Inc.**

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City  
Guangdong Province 518055 China



## **Table of Contents**

|                                                                        |          |
|------------------------------------------------------------------------|----------|
| <b>1. ADMINISTRATION DATA .....</b>                                    | <b>4</b> |
| 1.1. Testing Laboratory .....                                          | 4        |
| <b>2. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT) .....</b>              | <b>5</b> |
| <b>3. MAXIMUM RF AVERAGE OUTPUT POWER AMONG PRODUCTION UNITS .....</b> | <b>6</b> |
| <b>4. RF EXPOSURE LIMIT INTRODUCTION .....</b>                         | <b>7</b> |
| <b>5. RADIO FREQUENCY RADIATION EXPOSURE EVALUATION .....</b>          | <b>8</b> |
| 5.1. Standalone Power Density Calculation .....                        | 8        |

**Revision History**

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FA811505   | Rev. 01 | Initial issue of report | Jan. 25, 2018 |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |

**1. Administration Data****1.1. Testing Laboratory**

| Testing Laboratory |                                                                                                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Site          | Sporton International (Shenzhen) Inc.                                                                                                                                      |
| Test Site Location | 1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 China<br>TEL: +86-755-8637-9589<br>FAX: +86-755-8637-9595 |

| Applicant    |                                                                            |
|--------------|----------------------------------------------------------------------------|
| Company Name | PAX Technology Limited                                                     |
| Address      | Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong |

| Manufacturer |                                                                                                                             |
|--------------|-----------------------------------------------------------------------------------------------------------------------------|
| Company Name | PAX Computer Technology (Shenzhen) Co., Ltd.                                                                                |
| Address      | 4/F, No.3 Building, Software Park, Second Central Science-Tech Road, High-Tech industrial Park, Shenzhen, Guangdong, P.R.C. |

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

| Product Feature & Specification                                                                                                                             |                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| EUT Type                                                                                                                                                    | Encrypting PIN Pad                                                                                                    |
| Brand Name                                                                                                                                                  | PAX                                                                                                                   |
| Model Name                                                                                                                                                  | IM300                                                                                                                 |
| Marketing Name                                                                                                                                              | IM300                                                                                                                 |
| FCC ID                                                                                                                                                      | V5PIM300BW                                                                                                            |
| Wireless Technology and Frequency Range                                                                                                                     | WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz                                               |
| Mode                                                                                                                                                        | <ul style="list-style-type: none"> <li>• 802.11b/g/n HT20</li> <li>• Bluetooth v3.0+EDR, Bluetooth v4.0 LE</li> </ul> |
| Antenna Type                                                                                                                                                | WLAN: External Monopole Antenna<br>Bluetooth: External Monopole Antenna                                               |
| HW Version                                                                                                                                                  | IM300-XXX-XXX                                                                                                         |
| SW Version                                                                                                                                                  | PED4.0                                                                                                                |
| EUT Stage                                                                                                                                                   | Production Unit                                                                                                       |
| <b>Remark:</b> The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. |                                                                                                                       |

### **3. Maximum RF average output power among production units**

| Mode               |              |      | Maximum Average Power (dBm) |
|--------------------|--------------|------|-----------------------------|
| 2.4GHz             | 802.11b      | CH1  | 16.50                       |
|                    |              | CH6  | 16.00                       |
|                    |              | CH11 | 16.00                       |
|                    | 802.11g      | CH1  | 14.50                       |
|                    |              | CH6  | 16.00                       |
|                    |              | CH11 | 12.50                       |
|                    | 802.11n-HT20 | CH1  | 14.00                       |
|                    |              | CH6  | 15.00                       |
|                    |              | CH11 | 12.00                       |
| Bluetooth v3.0+EDR |              |      | 10.00                       |
| Bluetooth v4.0 LE  |              |      | 8.50                        |

#### **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 ERP/EIRP (dBm) | Maximum output power Limit (W) | Average EIRP (mW) | Power Density at 20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|------------|-----------------|--------------------|---------------------|------------------------|--------------------------------|-------------------|---------------------------------------------|-----------------------------|
| WLAN2.4GHz | 2412.0          | 0                  | 16.50               | 16.50                  | 0.04                           | 44.67             | 0.01                                        | 1.00                        |
| Bluetooth  | 2402.0          | 0                  | 10.00               | 10.00                  | 0.01                           | 10.00             | 0.002                                       | 1.00                        |

**Note:**

1. For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band
2. WLAN2.4GHz and Bluetooth can't transmit simultaneously.

### **Conclusion:**

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