



Test Report No.: SA180528W005



# RF EXPOSURE REPORT

**Product:** POS Terminal

**Model Name:** IM20

**FCC ID:** V5PIM20

**Applicant:** PAX Technology Limited

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**Report No.:** SA180528W005

**Received Date:** May 28, 2018

**Test Date:** May 29, 2018 ~ Jun. 19, 2018

**Issued Date:** Jun. 20, 2018

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA180528W005	Original release	Jun. 20, 2018





## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	POS Terminal	
<b>MODEL NAME</b>	IM20	
<b>NOMINAL VOLTAGE</b>	DC 5.0V	
<b>OPERATING TEMPERATURE RANGE</b>	-20 ~ 70°C	
<b>MODULATION TYPE</b>	<b>WLAN</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	<b>BT_LE</b>	DTS
	<b>Bluetooth</b>	GFSK, $\pi/4$ -DQPSK, 8DPSK
	<b>NFC</b>	ASK
<b>OPERATING FREQUENCY</b>	<b>WLAN</b>	2412 ~ 2462MHz for 11b/g/n(HT20)
	<b>Bluetooth/BT_LE</b>	2402MHz ~ 2480MHz
	<b>NFC</b>	13.56 MHz
<b>ANTENNA GAIN</b>	Ceramic antenna with 0.5dBi gain	
<b>HW VERSION</b>	IM20-XXX-XXX-XXXX	
<b>SW VERSION</b>	V0.0.0.1	
<b>I/O PORTS</b>	Refer to user's manual	
<b>CABLE SUPPLIED</b>	USB cable: non-shielded, detachable, 1.0meter	

**NOTE:**

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT matched the following USB cable:

USB CABLE	
<b>BRAND:</b>	SMART KONN
<b>MODEL:</b>	USB A/M TO USB B/M
<b>SIGNAL LINE:</b>	1.0 METER

- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

### 3 RF EXPOSURE

#### 3.1 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)
<b>LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE</b>				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

#### 3.2 MPE CALCULATION FORMULA

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

#### 3.3 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

### 3.4 CONDUCTED POWER

#### Bluetooth

##### GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	9.57	N/A
39	2441	9.52	N/A
78	2480	9.20	N/A

##### $\pi/4$ DQPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	5.46	N/A
39	2441	5.83	N/A
78	2480	5.62	N/A

##### 8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	5.63	N/A
39	2441	5.97	N/A
78	2480	5.60	N/A

#### BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	8.54	N/A
19	2440	8.35	N/A
39	2480	7.99	N/A



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WIFI 2.4G

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	15.12	N/A
6	2437	15.32	N/A
11	2462	<b>15.34</b>	N/A

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	13.77	N/A
6	2437	13.57	N/A
11	2462	13.45	N/A

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	12.75	N/A
6	2437	12.62	N/A
11	2462	12.73	N/A





### 3.5 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

#### TUNE-UP POWER TABLE

Band	Frequency (MHz)	Operating Mode	Tune-Up Power And Tolerance (dBm)
Bluetooth	2402	GFSK	9.5 ± 0.5
WIFI 2.4G	2462	11b	15.0 ± 0.5

#### BT & WIFI 2.4G

Band	Frequency (MHz)	Operating Mode	Antenna Gain (dBi)	Tune-up Power (dBm)	E.I.R.P Power (mW)	Power Density (mW/cm <sup>2</sup> )	limit (mW/cm <sup>2</sup> )	PASS / FAIL
Bluetooth	2402	GFSK	0.5	10.0	0.316	0.000	1.00	PASS
WIFI 2.4G	2462	11b	0.5	15.5	39.811	0.008	1.00	PASS

--END--