TEST REPORT

Application No.:	HKEM2004000337HS
Applicant:	PAX Labs, Inc.
Address of Applicant:	660 Alabama Street, Second Floor, San Francisco, CA 94110, United States
Equipment Under Test (EUT):	
EUT Name:	PAX3
Model No.:	X301
FCC ID	2AJWD-X301
Standard(s) :	47 CFR Part 1.1307, Part 1.1310 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2020-04-20
Date of Test:	2020-05-09 to 2020-05-12
Date of Issue:	2020-06-05
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Law Man Kit
EMC Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		*2020-06-05*		*Original*

Authorized for issue by:				
				
		Leo Xu /Project Engineer		Date: 2020-06-05
				
		Law Man Kit /Reviewer		Date: 2020-06-05

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
RF Exposure	47 CFR Part 1.1307, Part 1.1310	CFR 47 Part 1.1310	CFR 47 Part 1.1310	Pass

Declaration of EUT Family Grouping:
N/A

Abbreviation:

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	Input: AC 100 – 240 V, 50/60 Hz, 0.74 A Output: DC 5 V, 0.8 A
Test voltage:	AC 230 V
Cable:	Power Cable: 60 cm unshielded 2-wire USB cable
Antenna Gain:	3 dBi
Antenna Type:	Integral Antenna
Bluetooth Version:	V4.2 BLE
Channel Spacing:	2MHz
Modulation Type:	GFSK
Number of Channels:	40
Operation Frequency:	2402MHz to 2480MHz
Firmware version	2.0.4

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Galaxy A51	Samsung	SM-A515F	R58N23ACSTV
USB to TTL Converter	PAX Labs , Inc.	N/A	N/A
Laptop	DELL	P75F	H55LXQ2
Test Software	PAX Labs , Inc.	python-2.7.18amd64	N/A
Adaptor	SGS HK Lab	IEC 005	N/A

4.3 Measurement Uncertainty

EMI

No.	Item	Measurement Uncertainty
1	Conduction emission	2.5dB (9kHz to 150kHz)
		2.6dB (150kHz to 30MHz)
2	Radiated emission	5.1dB (30MHz-1GHz)
		4.9dB (1GHz-6GHz)

RF

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10^{-8}
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	RF conducted power (30MHz-40GHz)	1.5dB
5	RF power density	1.5dB
6	Conducted Spurious emissions	1.5dB
7	RF Radiated power	5.1dB (below 1GHz)
		5.3dB (above 1GHz)
8	Radiated Spurious emission test	5.1dB (below 1GHz)
		5.3dB (above 1GHz)
9	Temperature test	± 1℃
10	Humidity test	± 3%
11	Supply voltages	± 1.5%
12	Time	± 3%

Remark:

The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

According to decision rule based on Clause 4.2 of CISPR 16-4-2, the EUT complied with the standards specified above.

4.4 Test Location

All tests were performed at:

SGS Hong Kong Limited

Unit 2 and 3, G/F, Block A, Po Lung Centre,

11 Wang Chiu Road, Kowloon Bay, Kowloon, Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **HOKLAS (Lab Code: 009)**

SGS Hong Kong Limited has been accepted by HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a HOKLAS Accredited Laboratory, this laboratory meets the requirements of ISO/IEC 17025:2017 an it has been accredited for performing specific test as listed in the scope of accreditation within the test category of Electrical and Electronic Products.

- **IAS Accreditation (Lab Code: TL-187)**

SGS Hong Kong Limited has met the requirements of AC89, IAS Accreditation Criteria for Testing Laboratories, and has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories. This organization is accredited to provide the services specified in the scope of accreditation maintained on the IAS website (www.iasonline.org).

The report must not be used by the client to claim product certification, approval, or endorsement by IAS, NIST, or any agency of the Federal Government.

- **FCC Recognized Accredited Test Firm(CAB Registration No.: 514599)**

SGS Hong Kong Limited has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: HK0015, Test Firm Registration Number: 514599.

- **Industry Canada (Site Registration No.: 26103; CAB Identifier No.: HK0015)**

SGS Hong Kong Limited has been recognized by Department of Innovation, Science and Economic Development (ISED) Canada as a wireless testing laboratory. The acceptance letter from the ISED is maintained in our files. CAB Identifier No: HK0015, Site Registration Number: 26103.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Conducted Peak Output Power					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
SMBV100A VECTOR SIGNAL GENERATOR	Rohde & Schwarz	SMBV100A	E234	2019/8/21	2020/8/20
FSV40 SIGNAL ANALYZER 40GHz	Rohde & Schwarz	FSV40	E235	2019/8/21	2020/8/20
Wireless Conn. Tester (CMW)	Rohde & Schwarz	CMW270	E240	2019/8/21	2020/8/20
OSP	Rohde & Schwarz	OSP-B157W8	E242	2019/8/21	2020/8/20
Cable	Rohde & Schwarz	J12J103539-00-2	E239	2019/9/23	2020/9/22

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Digital temperature & humidity data logger	SATO	SK-L200TH II	E232	2019/10/28	2020/10/27
Electronic Digital Thermometer with Hygrometer	nil	2074/2075	E159	2019/10/28	2020/10/27
Barometer with digital thermometer	SATO	7612-00	E218	2020/4/23	2021/4/22
Conditional Chamber	Zhong Zhi Testing Instruments	CZ-E-608D	E216	2019/8/22	2020/8/21

6 Radio Spectrum Technical Requirement

6.1 RF Exposure

6.1.1 Test Requirement:

CFR 47 Part 2.1093

Limit:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation[17]
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

6.1.2 Conclusion

According to the formula. calculate the test exclusion thresholds:

$$General\ RF\ Exposure = (1\ mW / 5\ mm)\ x\ \sqrt{2.48\ GHz} = 0.315 \quad (1)$$

SAR requirement:

$$S = 3.0 \quad (2)$$

(1) < (2)

So the SAR report is not required.

- End of the Report -