SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

Project No: CB10502138

Maximum Permissible Exposure Report

Applicant's company	**Pismo Labs Technology Limited**
Applicant Address	A5, 5/F, HK Spinners Industrial. Building., Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Kowloon, Hong Kong
FCC ID	**U8G-P1AC3**
Manufacturer's company	**Abocom Systems, Inc.**
Manufacturer Address	No.77, Yu-Yih Rd., Chu-Nan, Miao-Lih County 35059, Taiwan R.O.C.

Product Name	Pepwave / Peplink / Pismo wireless product
Brand Name	Peplink, Pepwave, Pismo
Model Name	AP One Flex, APO-FLX, AC3, AP One Pro, AP One X
Ref. Standard(s)	47 CFR FCC Part 2 Subpart J, section 2.1091
Received Date	Nov. 05, 2015
Final Test Date	Jan. 18, 2016
Submission Type	Original Equipment

Testing Laboratory
1190

Sam Chen
SPORTON INTERNATIONAL INC.

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA5N0420-01	Rev. 01	Initial issue of report	Mar. 31, 2016

1. GENERAL DESCRIPTION

1.1. EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
5GHz WLAN	5150-5250 5725-5850	5180-5240 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

1.2. Table for Multiple List

The brand/model numbers in the following table are all refer to the identical product.

Brand Name	Model No.	Description
Peplink	AP One Flex, APO-FLX, AC3, AP One Pro, AP One X	All the models are identical, the difference model for difference brand served as marketing strategy.
Pepwave	AP One Flex, APO-FLX, AC3, AP One Pro, AP One X	
Pismo	AP One Flex, APO-FLX, AC3, AP One Pro, AP One X	

Note: According to above, there is only EUT (Brand Name: Pepwave, Model No.: AP One Flex) was selected to test and record in the report as a result.

1.3. Testing Location

Testing Location			
☐	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973	
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085	

2. MAXIMUM PERMISSIBLE EXPOSURE

2.1. Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|², |H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|², |H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2. MPE Calculation Method

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:

E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ Power Density: *Pd* (W/m²) = $\frac{E^2}{377}$

E = Electric field (V/m)

P = Peak RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

Pd = $\frac{30 \times P \times G}{377 \times d^2}$

2.3. Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

For 5GHz Band:

Antenna Type : Directional Antenna

Conducted Power for IEEE 802.11ac MCS0/Nss1 (VHT40): 24.69 dBm

Distance (cm)	Test Freq. (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	The maximum combined Average Output Power		Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
				(dBm)	(mW)			
20	5230	9.00	7.9433	24.6934	294.6761	0.465903	1	Complies

For 2.4GHz Band:

Antenna Type : Directional Antenna

Conducted Power for IEEE 802.11b: 24.26 dBm

Distance (cm)	Test Freq. (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	The maximum combined Average Output Power		Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
				(dBm)	(mW)			
20	2437	6.00	3.9811	24.2607	266.7297	0.211360	1	Complies

Conclusion:

Both of the WLAN 2.4GHz Band and WLAN 5GHz Band can transmit simultaneously, the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ...etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Therefore, the worst-case situation is 0.211360 / 1 + 0.465903 / 1 = 0.677263, which is less than "1". This confirmed that the device complies.