RF EXPOSURE REPORT

REPORT NO.:	SA131210E02
MODEL NO.:	Balance One, Balance, MAX, Pismo805
FCC ID:	U8G-P1805
RECEIVED:	Dec. 10, 2013
TESTED:	Feb. 06, 2014
ISSUED:	Apr. 02, 2014

APPLICANT:	Pismo Labs Technology Limited
ADDRESS:	FLAT/RM A5, 5/F, HK SPINNERS IND BLDG PHASE 6, 481 CASTLE PEAK ROAD, CHEUNG SHA WAN, HONG KONG.

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS:	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA131210E02	Original release	Apr. 02, 2014

1. CERTIFICATION

PRODUCT:	Pepwave / Peplink / Pismo Wireless Product
BRAND NAME:	Pepwave/Peplink / Pismo
MODEL NO.:	Balance One, Balance, MAX, Pismo805
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Pismo Labs Technology Limited
TESTED DATE:	Feb. 06, 2014
STANDARDS:	FCC Part 2 (Section 2.1091)
	FCC OET Bulletin 65, Supplement C (01-01)
	IEEE C95.1

The above equipment (Model: Balance One) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** *Apr. 02, 2014*
(Midoli Peng, Specialist)

APPROVED BY : _____ , **DATE:** *Apr. 02, 2014*
(May Chen, Manager)

2. RF EXPOSURE LIMIT

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm^2)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

3. MPE CALCULATION FORMULA

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in mW/cm^2

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

4. CLASSIFICATION

The antenna of this product, under normal use condition, is at least 22cm away from the body of the user. So, this device is classified as **Mobile Device**.

5. ANTENNA GAIN

The antennas provided to the EUT, please refer to the following table:

For 2.4GHz						
Transmitter Circuit	Brand	Antenna Type	Gain (dBi) (Include cable loss)	Connecter Type	Cable Length (cm)	Frequency range (MHz to MHz)
Chain (0) Ant. 1	SmartAnt	PIFA	3.73	i-pex	20	2400 ~ 2483.5
Chain (1) Ant. 2	SmartAnt	PIFA	4.51	i-pex	20	2400 ~ 2483.5
For 5GHz						
Transmitter Circuit	Brand	Antenna Type	Gain (dBi) (Include cable loss)	Connecter Type	Cable Length (cm)	Frequency range (MHz to MHz)
Chain (0) Ant. 3	SmartAnt	PIFA	2.14	i-pex	20	5150 ~ 5250
			4.22			5725 ~ 5850
Chain (1) Ant. 4	SmartAnt	PIFA	1.85	i-pex	20	5150 ~ 5250
			2.11			5725 ~ 5850

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

For WLAN: 15.247(2.4GHz)

802.11b

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
2412 - 2472	960.624	7.14	22	0.81752	1.00

Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.14dBi

802.11g

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
2412 - 2472	953.975	7.14	22	0.81186	1.00

Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.14dBi

802.11n(HT20)

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
2412 - 2472	968.385	7.14	22	0.82412	1.00

Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.14dBi

802.11n(HT40)

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
2412 - 2472	954.066	7.14	22	0.81194	1.00

Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.14dBi

For WLAN: 15.247(5GHz)

802.11a

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5745 - 5825	196.869	6.24	22	0.13618	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.24dBi

802.11n(HT20)

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5745 - 5825	188.844	6.24	22	0.13063	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.24dBi

802.11n(HT40)

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5745 - 5825	172.842	6.24	22	0.11956	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.24dBi

For WLAN: 15.407(5GHz)

802.11a

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5180 -5240	45.525	5.01	22	0.02372	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 5.01dBi

802.11n(HT20)

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5180 -5240	45.242	5.01	22	0.02358	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 5.01dBi

802.11n(HT40)

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5180 -5240	48.477	5.01	22	0.02526	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 5.01dBi

CONCLUSION:

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

CPD_1 / LPD_1 + CPD_2 / LPD_2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Therefore, the worst-case situation is 0.82412 / 1 + 0.13618 / 1 = 0.960, which is less than “1”. This confirmed that the device comply with FCC 1.1310 MPE limit.

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