# RF Exposure Report

**Report No.:** SA180108C15A

**FCC ID:** TOR-W118

**Test Model:** W-118

**Received Date:** Jan. 08, 2018

**Test Date:** Feb. 22 ~ Mar. 20, 2018

**Issued Date:** Apr. 17, 2018

**Applicant:** Mojo Networks, Inc.

**Address:** 339 N. Bernardo Avenue, Suite #200, Mountain View, California United States 94043

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

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**Release Control Record**

| Issue No. | Description | Date Issued |
|---|---|---|
| SA180108C15A | Original release. | Apr. 17, 2018 |

## 1    Certificate of Conformity

|  |  |
|---|---|
| **Product:** | Wall Jack Access Point |
| **Brand:** | Mojo |
| **Test Model:** | W-118 |
| **Sample Status:** | Engineering sample |
| **Applicant:** | Mojo Networks, Inc. |
| **Test Date:** | Feb. 22 ~ Mar. 20, 2018 |
| **Standards:** | FCC Part 2 (Section 2.1091) |
|  | KDB 447498 D01 General RF Exposure Guidance v06 |
|  | IEEE C95.1 |

The above equipment 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 RF characteristics under the conditions specified in this report.

**Prepared by :** _Pettie Chen_ , **Date:** Apr. 17, 2018

Pettie Chen / Senior Specialist

**Approved by :** _Bruce Chen_ , **Date:** Apr. 17, 2018

Bruce Chen / Project Engineer

## 2   RF Exposure

### 2.1  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

### 2.2  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

### 2.3  Classification

The antenna of this product, under normal use condition, is at least 23cm away from the body of the user. So, this device is classified as Mobile Device.

## 3 Calculation Result of Maximum Conducted Power

| Frequency Band (MHz) | Max Power (dBm) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm$^2$) | Limit (mW/cm$^2$) |
|---|---|---|---|---|---|
| Radio 1 | | | | | |
| WLAN 2412~2462 (CDD mode) | 26.09 | 7.32 | 23 | 0.330 | 1 |
| WLAN 2412~2462 (Beamforming mode) | 21.70 | 7.32 | 23 | 0.120 | 1 |
| Radio 2 | | | | | |
| WLAN 5180~5240 (CDD mode) | 23.44 | 9 | 23 | 0.264 | 1 |
| WLAN 5260~5320 (CDD mode) | 22.83 | 9 | 23 | 0.229 | 1 |
| WLAN 5500~5700 (CDD mode) | 23.76 | 9 | 23 | 0.284 | 1 |
| WLAN 5745~5825 (CDD mode) | 26.63 | 9 | 23 | 0.550 | 1 |
| WLAN 5180~5240 (Beamforming mode) | 21.43 | 9 | 23 | 0.166 | 1 |
| WLAN 5260~5320 (Beamforming mode) | 19.82 | 9 | 23 | 0.115 | 1 |
| WLAN 5500~5700 (Beamforming mode) | 20.75 | 9 | 23 | 0.142 | 1 |
| WLAN 5745~5825 (Beamforming mode) | 23.62 | 9 | 23 | 0.275 | 1 |
| Radio 3 | | | | | |
| WLAN 2412~2462 (CDD mode) | 18.80 | 7.84 | 23 | 0.069 | 1 |
| WLAN 5180~5240 (CDD mode) | 17.29 | 7.32 | 23 | 0.043 | 1 |
| WLAN 5260~5320 (CDD mode) | 17.31 | 7.32 | 23 | 0.044 | 1 |
| WLAN 5500~5700 (CDD mode) | 17.43 | 7.32 | 23 | 0.045 | 1 |
| WLAN 5745~5825 (CDD mode) | 17.09 | 7.32 | 23 | 0.042 | 1 |
| BT LE/Zigbee | | | | | |
| BT LE 2402~2480 | 2.38 | 2.76 | 23 | 0.0005 | 1 |
| Zigbee | 2.36 | 2.76 | 23 | 0.0005 | 1 |

Note:
2.4GHz:
Radio 1: Directional gain = 4.31dBi +10log(2) = 7.32dBi
Radio 3: Directional gain = 4.83dBi +10log(2) = 7.84dBi

5.0GHz:
Radio 2: Directional gain = 5.99dBi+10log(2) = 9dBi
Radio 3: Directional gain = 4.80dBi+10log(2) = 7.81dBi

| Frequency Band | Max. Power (dBm) | | | | Total Power (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|---|
| | Radio 1 | Radio 3 (WLAN 2.4GHz) | BT LE | Zigbee | | |
| 2.4GHz | 26.09 | 18.80 | 2.38 | - | 26.85 | 30 |
| 2.4GHz | 26.09 | 18.80 | - | 2.36 | 26.85 | 30 |

**Conclusion:**
The formula of calculated the MPE is:
CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1
CPD = Calculation power density
LPD = Limit of power density


The simultaneous operation mode was determined by client.

| No | Mode |
|----|------|
| 1 | Radio 1 + Radio 2 + Radio 3(2.4GHz) + BT LE |
| 2 | Radio 1 + Radio 3(5GHz) + BT LE |
| 3 | Radio 1 + Radio 2 + Radio 3(2.4GHz)+ Zigbee |
| 4 | Radio 1 + Radio 3(5GHz) + Zigbee |

*The Radio 2 and Radio 3(5GHz) cannot transmit simultaneously.

Radio 1 + Radio 2 + Radio 3(2.4GHz) + BT LE = 0.330 + 0.550 + 0.069 + 0.0005 = 0.95
Radio 1 + Radio 3(5GHz) + BT LE = 0.330 + 0.045 + 0.0005 = 0.376
Radio 1 + Radio 2 + Radio 3(2.4GHz) + Zigbee = 0.330 + 0.550 + 0.069 + 0.0005 = 0.95
Radio 1 + Radio 3(5GHz) + Zigbee =0.330 + 0.045 + 0.0005 = 0.376


Therefore the maximum calculations of above situations are less than the "1" limit.


**---END---**