

## RF Exposure Report

**Report No.:** SA170720C12

**FCC ID:** TVE-291BB033

**Test Model:** FortiAP U422EV

**Series Model:** FortiAP U422EVxxxxxx, FAP-U422EVxxxxxx, FORTIAP-U422EVxxxxxx  
(where "x" can be used as "A-Z", or "0-9", or "-", or blank for marketing purposes only)

**Received Date:** Jul. 20, 2017

**Test Date:** Sep. 13 ~ Oct. 05, 2017

**Issued Date:** Oct. 13, 2017

**Applicant:** Fortinet Inc.

**Address:** 899 Kifer Road Sunnyvale, CA 94086 USA

**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   |
|-------------|-------------------|---------------|
| SA170720C12 | Original release. | Oct. 13, 2017 |

## 1 Certificate of Conformity

**Product:** Secured Wireless Access Point

**Brand:** Fortinet Inc.

**Test Model:** FortiAP U422EV

**Series Model:** FortiAP U422EVxxxxxx, FAP-U422EVxxxxxx, FORTIAP-U422EVxxxxxx (where "x" can be used as "A-Z", or "0-9", or "-", or blank for marketing purposes only)

**Sample Status:** Engineering sample

**Applicant:** Fortinet Inc.

**Test Date:** Sep. 13 ~ Oct. 05, 2017

**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 EMC characteristics under the conditions specified in this report.

**Prepared by :** Celine Chou , **Date:** Oct. 13, 2017  
Celine Chou / Specialist

**Approved by :** Ken Liu , **Date:** Oct. 13, 2017  
Ken Liu / Senior Manager

## 2 RF Exposure

### 2.1 Limits for Maximum Permissible Exposure (MPE)

| Frequency Range<br>(MHz)                              | Electric Field<br>Strength (V/m) | Magnetic Field<br>Strength (A/m) | Power Density<br>(mW/cm <sup>2</sup> ) | Average Time<br>(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

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

where

Pd = power density in mW/cm<sup>2</sup>

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 42cm away from the body of the user. So, this device is classified as Mobile Device.

### 3 Calculation Result of Maximum Conducted Power

| Function | Frequency Band (MHz) | Max Power (dBm) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|----------|----------------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| WLAN     | CDD Mode             |                 |                    |               |                                     |                             |
|          | 2412-2462            | 28.82           | 11.02              | 42            | 0.435                               | 1                           |
|          | 5180-5240            | 23.44           | 13.02              | 42            | 0.200                               | 1                           |
|          | 5745-5825            | 27.65           | 13.02              | 42            | 0.526                               | 1                           |
|          | Beamforming Mode     |                 |                    |               |                                     |                             |
|          | 2412-2462            | 20.81           | 11.02              | 42            | 0.069                               | 1                           |
|          | 5180-5240            | 17.42           | 13.02              | 42            | 0.050                               | 1                           |
|          | 5745-5825            | 21.55           | 13.02              | 42            | 0.129                               | 1                           |
| BT       | 2402-2480            | -0.22           | 5.77               | 42            | 0.0002                              | 1                           |
| BT LE    | 2402-2480            | 3.54            | 5.77               | 42            | 0.0004                              | 1                           |

Note:

2.4GHz: Directional gain = 5dBi + 10log(4) = 11.02dBi

5GHz: Directional gain = 7dBi + 10log(4) = 13.02dBi

| Frequency Band | Max Power (dBm) |       |       | Total Power (dBm) | Power Limit (dBm) |
|----------------|-----------------|-------|-------|-------------------|-------------------|
|                | WLAN            | BT    | BT LE |                   |                   |
| 2.4GHz         | 28.82           | -0.22 | -     | 28.83             | 30                |
| 2.4GHz         | 28.82           | -     | 3.54  | 28.83             | 30                |

Conclusion:

2.4GHz & 5GHz & BT or 2.4GHz & 5GHz & BT LE technology can transmit at same time.

BT and BT LE cannot transmit simultaneously.

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

1. WALN 2.4GHz + WALN 5GHz + BT = 0.435 + 0.526 + 0.0002 = 0.961

2. WALN 2.4GHz + WALN 5GHz + BT LE = 0.435 + 0.526 + 0.0004 = 0.961

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

---END---