

RF Exposure Report

Report No.: SA161004C24

FCC ID: TVE-140701

Test Model: FAP-221E, FAP-223E

Series Model: FortiAP 221Exxxxx, FAP-221Exxxxx, FORTIAP-221Exxxxx, FortiAP 223Exxxxx, FAP-223Exxxxx, FORTIAP-223Exxxxx (where "x" can be used as "A-Z", or "0-9", or "-", or blank for marketing purposes only)

Received Date: Oct. 04, 2016

Test Date: Oct. 08, 2016 ~ Jan. 19, 2017

Issued Date: Feb. 07, 2017

Applicant: Fortinet Inc.

Address: 899 Kifer Road Sunnyvale, CA 94086 USA

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

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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
SA161004C24	Original release	Feb. 07, 2017

1 Certificate of Conformity

Product: Secured Wireless Access Point

Brand: Fortinet Inc.

Test Model: FAP-221E, FAP-223E

Series Model: FortiAP 221Exxxxx, FAP-221Exxxxx, FORTIAP-221Exxxxx, FortiAP 223Exxxxx, FAP-223Exxxxx, FORTIAP-223Exxxxx (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: Oct. 08, 2016 ~ Jan. 19, 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:** Feb. 07, 2017
Celine Chou / Specialist

Approved by : Ken Liu, **Date:** Feb. 07, 2017
Ken Liu / Senior Manager

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/cm²

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 20cm 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)
CDD Mode					
2412-2462	24.82	7.59	20	0.347	1
5180-5240	17.18	8.61	20	0.075	1
5745-5825	25.79	8.61	20	0.548	1
Beamforming Mode					
2412-2462	21.46	7.59	20	0.160	1
5180-5240	14.17	8.61	20	0.038	1
5745-5825	22.78	8.61	20	0.274	1

Note:

2.4GHz: Directional gain = $4.58\text{dBi} + 10\log(2) = 7.59\text{dBi}$

5GHz: Directional gain = $5.60\text{dBi} + 10\log(2) = 8.61\text{dBi}$

Conclusion:

Both of the WLAN 2.4G & WLAN 5G 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

$2.4\text{G} + 5\text{G} = 0.347 + 0.548 = 0.895$

Therefore, the maximum calculation of this situation is 0.895, which is less than the "1" limit.

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