RF Exposure Report

Report No.:	SA161004C24E
FCC ID:	TVE-140701
Test Model:	FAP-221E, FAP-223E
Series Model:	FortiAP 221Exxxxx, FAP-221Exxxxx, FORTIAP-221Exxxxxx, FortiAP 223Exxxxxx, FAP-223Exxxxxx, FORTIAP-223Exxxxx (where “x” can be used as “A-Z”, or “0-9”, or “-“, or blank for marketing purposes only)
Received Date:	Sep. 22, 2017
Test Date:	Sep. 27 ~ Oct. 17, 2017
Issued Date:	Oct. 20, 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.)

Testing Laboratory
2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SA161004C24E	Original release.	Oct. 20, 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-221Exxxxxx, FortiAP 223Exxxxxx, FAP-223Exxxxxx, 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:	Sep. 27 ~ Oct. 17, 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. 20, 2017

Celine Chou / Specialist

Approved by : Ken Liu , **Date:** Oct. 20, 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/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 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
5260-5320	23.80	8.61	20	0.347	1
5500-5720	23.72	8.61	20	0.340	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
5260-5320	20.79	8.61	20	0.173	1
5500-5720	20.71	8.61	20	0.170	1
5745-5825	22.78	8.61	20	0.274	1

Note:
2.4GHz: Directional gain = 4.58dBi + 10log(2) = 7.59dBi
5GHz: Directional gain = 5.60dBi + 10log(2) = 8.61dBi

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

2.4G + 5G = 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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