RF Exposure Report

Report No.:	SA160219C14
FCC ID:	TVE-28166011
Test Model:	FAP-421E, FAP-423E
Series Model:	FortiAP 421Exxxxxx, FAP-421Exxxxxx, FORTIAP-421Exxxxxx, FortiAP 423Exxxxxx, FAP-423Exxxxxx, FORTIAP-423Exxxxxx (where “x” can be used as “A-Z” or “0-9” or “-“ or blank for software changes or marketing purposes only)
Received Date:	Feb. 19, 2016
Test Date:	Feb. 19 ~ May 03, 2016
Issued Date:	Sep. 06, 2016
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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The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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Release Control Record

Issue No.	Description	Date Issued
SA160219C14	Original release.	Sep. 06, 2016

1 Certificate of Conformity

Product:	Secured Wireless Access Point
Brand:	Fortinet Inc.
Test Model:	FAP-421E, FAP-423E
Series Model:	FortiAP 421Exxxxxx, FAP-421Exxxxxx, FORTIAP-421Exxxxxx, FortiAP 423Exxxxxx, FAP-423Exxxxxx, FORTIAP-423Exxxxxx (where “x” can be used as “A-Z”, or “0-9”, or “-“, or blank for software changes or marketing purposes only)
Sample Status:	Engineering sample
Applicant:	Fortinet Inc.
Test Date:	Feb. 19 ~ May 03, 2016
Standards:	FCC Part 2 (Section 2.1091) KDB 447498 D01 (October 23, 2015) 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 : _____ , **Date:** Sep. 06, 2016

Polly Chien / Specialist

Approved by : _____ , **Date:** Sep. 06, 2016

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 31cm 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)
Internal antenna					
CDD mode					
2412-2462	26.91	10.00	31	0.407	1
5180-5240	24.71	11.86	31	0.376	1
5745-5825	25.93	11.86	31	0.498	1
Beamforming mode					
2412-2462	23.56	10.00	31	0.188	1
5180-5240	23.05	11.86	31	0.256	1
5745-5825	22.93	11.86	31	0.249	1
External antenna					
CDD mode					
2412-2462	26.91	10.44	31	0.450	1
5180-5240	24.71	9.20	31	0.204	1
5745-5825	25.93	9.20	31	0.270	1
Beamforming mode					
2412-2462	23.56	10.44	31	0.208	1
5180-5240	23.05	9.20	31	0.139	1
5745-5825	22.93	9.20	31	0.135	1

Note:
Internal antenna 2412~2462MHz: Directional gain = 3.98dBi + 10log(4) = 10.00dBi
Internal antenna 5180~5825MHz: Directional gain = 5.84dBi + 10log(4) = 11.86dBi
External antenna 2412~2462MHz: Directional gain = 4.42dBi + 10log(4) = 10.44dBi
External antenna 5180~5825MHz: Directional gain = 3.18dBi + 10log(4) = 9.20dBi

CONCULSION:

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

Internal antenna

WLAN 2.4G + WLAN 5.0G = 0.407 + 0.498 = 0.905 < 1

External antenna

WLAN 2.4G + WLAN 5.0G = 0.450 + 0.270 = 0.720 < 1

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

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