RF Exposure Report

Report No.:	SA161013C32B
FCC ID:	TVE-2507T021
Test Model:	FortiAP S221E, FortiAP S223E
Series Model:	FortiAP S221Exxxxx, FAP-S221Exxxxx, FORTIAP-S221E xxxxxx, FortiAP S223Exxxxxx, FAP-S223Exxxxxx, FORTIAP-S223E xxxxx (where “x” can be used as “A-Z”, or “0-9”, or “-”, or blank for software changes or marketing purposes only)
Received Date:	Sep. 20, 2017
Test Date:	Oct. 02 ~ Oct. 17, 2017
Issued Date:	Oct. 19, 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
SA161013C32B	Original release.	Oct. 19, 2017

1 Certificate of Conformity

Product:	Secured Wireless Access Point
Brand:	Fortinet Inc.
Test Model:	FortiAP S221E, FortiAP S223E
Series Model:	FortiAP S221Exxxxx, FAP-S221Exxxxx, FORTIAP-S221E xxxxxx, FortiAP S223Exxxxxx, FAP-S223Exxxxxx, FORTIAP-S223E xxxxx (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:	Oct. 02 ~ Oct. 17, 2017
Standards:	FCC Part 2 (Section 2.1091) KDB 447498 D03 (January 17, 2014) 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:** Oct. 19, 2017

Pettie Chen / Senior Specialist

Approved by : _____ , **Date:** Oct. 19, 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)
WLAN					
CDD Mode					
2412-2462	23.36	7.96	20	0.270	1
5180-5240	16.94	8.84	20	0.075	1
5260-5320	23.89	8.84	20	0.373	1
5500-5700	23.69	8.84	20	0.356	1
5745-5825	27.61	8.84	20	0.878	1
Beamforming Mode					
2412-2462	18.73	7.96	20	0.093	1
5180-5240	13.93	8.84	20	0.038	1
5260-5320	20.88	8.84	20	0.187	1
5500-5700	20.68	8.84	20	0.178	1
5745-5825	24.24	8.84	20	0.404	1
BT LE					
2402-2480	4.37	3.67	20	0.001	1

2.4GHz Band: Directional gain = 4.95 dBi + 10log(2) = 7.96 dBi
5.0GHz Band: Directional gain = 5.83 dBi + 10log(2) = 8.84 dBi

Frequency Band	Max. Power (dBm)		Total Power (dBm)	Power Limit (dBm)
	WLAN	BT LE		
2.4GHz	23.36	4.37	23.41	30

CONCULSION:

The WLAN 2.4GHz & BT LE or WLAN 5GHz & BT LE 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

WLAN 2.4GHz + BT LE = 0.270 + 0.001 = 0.271

WLAN 5.0GHz + BT LE = 0.878 + 0.001 = 0.879

Therefore, the maximum calculation of this situation is 0.879, which is less than the “1” limit.

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