

## RF Exposure Report

**Report No.:** SA150414C33

**FCC ID:** TVE-23155011

**Test Model:** FAP-S321CR, FAP-S323CR

**Series Model:** FortiAP-S321CRxxxxxx, FAP-S321CRxxxxxx, FORTIAP-S321CRxxxxxx, FortiAP-S323CRxxxxxx, FAP-S323CRxxxxxx, FORTIAP-S323CRxxxxxx (where "x" can be used as "A-Z", or "0-9", or "-", or blank for software changes or marketing purposes only)

**Received Date:** Apr. 29, 2015

**Test Date:** Apr. 29 ~ May 30, 2015

**Issued Date:** Jun. 11, 2015

**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

**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
SA150414C33	Original release.	Jun. 11, 2015

## 1 Certificate of Conformity

**Product:** Secured Wireless Access Point

**Brand:** Fortinet Inc.

**Test Model:** FAP-S321CR, FAP-S323CR

**Series Model:** FortiAP-S321CRxxxxxx, FAP-S321CRxxxxxx, FORTIAP-S321CRxxxxxx, FortiAP-S323CRxxxxxx, FAP-S323CRxxxxxx, FORTIAP-S323CRxxxxxx (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:** Apr. 29 ~ May 30, 2015


**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D03

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:** Jun. 11, 2015  
Pettie Chen / Senior Specialist

**Approved by :**  , **Date:** Jun. 11, 2015  
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 <sup>2</sup> )	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

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

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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 30cm away from the body of the user.

So, this device is classified as **Mobile Device**.

### 3 Calculation Result Of Maximum Conducted Power

#### For Internal antenna:

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412-2462	29.36	8.01	30	0.483	1
5180-5240	25.88	10.57	30	0.390	1
5745-5825	26.00	10.57	30	0.401	1

Note:

2.4GHz Band: Directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/3] = 8.01\text{dBi}$

5.0GHz Band: Directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/3] = 10.57\text{dBi}$

#### CONCULSION:

Both of the WLAN 2.4G & WLAN 5G can 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

$WLAN\ 2.4G + WLAN\ 5.0G = 0.483 + 0.401 = 0.884$

Therefore, the maximum calculation of this situation is 0.884, which is less than the "1" limit.

#### For External antenna:

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412-2462	29.36	8.77	30	0.575	1
5180-5240	25.88	10.77	30	0.409	1
5745-5825	26.00	10.77	30	0.420	1

2.4GHz Band: Directional gain =  $4\text{dBi} + 10\log(3) = 8.77\text{dBi}$

5.0GHz Band: Directional gain =  $6\text{dBi} + 10\log(3) = 10.77\text{dBi}$

#### CONCULSION:

Both of the WLAN 2.4G & WLAN 5G can 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

$WLAN\ 2.4G + WLAN\ 5.0G = 0.575 + 0.420 = 0.995$

Therefore, the maximum calculation of this situation is 0.995, which is less than the "1" limit.

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