

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

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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
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 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 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 ²)	Limit (mW/cm ²)
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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/3] = 8.01\text{dBi}$

5.0GHz Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/3] = 10.57\text{dBi}$

CONCLUSION:

Both of the WLAN 2.4G & WLAN 5G can transmit simultaneously, the formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

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 ²)	Limit (mW/cm ²)
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 = $6\text{dBi} + 10\log(3) = 10.77\text{dBi}$

CONCLUSION:

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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