

## RF Exposure Report

**Report No.:** SA190624C08A

**FCC ID:** TVE-37176T0464

**Test Model:** FAP-231E

**Series Model:** FortiAP 231Exxxxxx, FAP-231E xxxxxx, FORTIAP-231E xxxxxx (where "x" can be used as "A-Z", or "-0-9", or "-", or blank for software changes or marketing purposes only)

**Received Date:** Sep. 10, 2019

**Test Date:** Sep. 17 ~ Nov. 11, 2019

**Issued Date:** Nov. 11, 2019

**Applicant:** Fortinet Inc.

**Address:** 899 Kifer Road Sunnyvale, CA 94086 USA

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

**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

**FCC Registration /** 788550 / TW0003

**Designation Number:**



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. This report should 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
SA190624C08A	Original release.	Nov. 11, 2019

## 1 Certificate of Conformity

**Product:** Wireless Access Point

**Brand:** Fortinet

**Test Model:** FAP-231E

**Series Model:** FortiAP 231Exxxxxx, FAP-231E xxxxxx, FORTIAP-231E xxxxxx (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:** Sep. 17 ~ Nov. 11, 2019

**Standards:** FCC Part 2 (Section 2.1091)  
KDB 447498 D01 General RF Exposure Guidance v06  
IEEE C95.3 -2002

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 RF characteristics under the conditions specified in this report.

**Prepared by :** , **Date:** Nov. 11, 2019  
Polly Chien / Specialist

**Approved by :** , **Date:** Nov. 11, 2019  
Bruce Chen / Senior Project Engineer

## 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

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

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 26cm away from the body of the user. So, this device is classified as Mobile Device.

### 3 Calculation Result of Maximum Conducted Power

Radio	Frequency Band (MHz)	Mode	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
1	WLAN 2412~2462	CDD	24.61	7.71	26	0.201	1
		Beamforming	21.60	7.71	26	0.100	1
3	WLAN 2412~2462	CDD	24.15	8.61	26	0.222	1
		Beamforming	21.07	8.61	26	0.109	1
1	WLAN 5500~5720	CDD	23.79	8.51	26	0.200	1
		Beamforming	20.78	8.51	26	0.100	1
1	WLAN 5745~5825	CDD	27.02	8.51	26	0.421	1
		Beamforming	24.01	8.51	26	0.210	1
2	WLAN 5180~5240	CDD	26.14	8.51	26	0.343	1
		Beamforming	23.13	8.51	26	0.172	1
2	WLAN 5260~5320	CDD	23.78	8.51	26	0.199	1
		Beamforming	20.77	8.51	26	0.100	1
2	WLAN 5500~5720	CDD	23.79	8.51	26	0.200	1
		Beamforming	20.78	8.51	26	0.100	1
2	WLAN 5745~5825	CDD	26.58	8.51	26	0.380	1
		Beamforming	23.57	8.51	26	0.190	1
-	BT LE 4.0 2402~2480	-	2.29	5.10	26	0.001	1
-	BT LE 5.0 2402~2480	-	5.92	5.10	26	0.001	1

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Radio 1: 2412~2462MHz Max. Directional Gain = 4.70dBi + 10log(2) = 7.71dBi

Radio 3: 2412~2462MHz Max. Directional Gain = 5.60dBi + 10log(2) = 8.61dBi

Radio 1: 5500~5825MHz Max. Directional Gain = 5.50dBi + 10log(2) = 8.51dBi

Radio 2: 5180~5825MHz Max. Directional Gain = 5.50dBi + 10log(2) = 8.51dBi

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + .....etc. < 1

CPD = Calculation power density

LPD = Limit of power density

- Radio 1 (2.4GHz) + Radio 2 (5GHz) + BLE  
= 0.201 / 1 + 0.380 / 1 + 0.001 / 1 = 0.582 < 1
- Radio 1 (5GHz Band 4) + Radio 2 (5GHz Band 1) + Radio 3 (2.4GHz) + BLE  
= 0.421 / 1 + 0.343 / 1 + 0.222 / 1 + 0.001 / 1 = 0.987 < 1
- Radio 1 (5GHz Band 4) + Radio 2 (5GHz Band 1) + BLE  
= 0.421 / 1 + 0.343 / 1 + 0.001 / 1 = 0.765 < 1

---END---