

RF Exposure Report

Report No.: SABDYS-WTW-P20100843A

FCC ID: Q6G-AP330

Test Model: AP330

Received Date: Nov. 01, 2020

Test Date: Nov. 12, 2020 ~ Jan. 18, 2021

Issued Date: Apr. 26, 2021

Applicant: WatchGuard Technologies, Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
SABDYS-WTW-P20100843A	Original release	Apr. 26, 2021

1 Certificate of Conformity

Product: Wireless Access Point

Brand: WatchGuard

Test Model: AP330

Sample Status: Engineering sample

Applicant: WatchGuard Technologies, Inc.

Test Date: Nov. 12, 2020 ~ Jan. 18, 2021

Standards: FCC Part 2 (Section 2.1091)

References Test Guidance: KDB 447498 D01 General RF Exposure Guidance v06

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:** Apr. 26, 2021
Polly Chien / Specialist

Approved by :  , **Date:** Apr. 26, 2021
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 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

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

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 21 cm 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 Average Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN					
2G traffic radio (Radio 1): CDD Mode					
2412-2462	24.59	6.68	21	0.242	1
5G traffic radio (Radio 2): CDD Mode					
5180-5240	24.24	7.94	21	0.298	1
5260-5320	22.98	7.94	21	0.223	1
5500-5700	23.14	7.22	21	0.196	1
5745-5825	23.14	7.97	21	0.233	1
2G traffic radio (Radio 1): Beamforming Mode					
2412-2462	21.27	6.68	21	0.113	1
5G traffic radio (Radio 2): Beamforming Mode					
5180-5240	20.19	7.94	21	0.117	1
5260-5320	19.97	7.94	21	0.112	1
5500-5700	19.81	7.22	21	0.091	1
5745-5825	20.13	7.97	21	0.117	1
Scanning radio (Radio 3): CDD Mode					
2412-2462	23.91	7.84	21	0.270	1
5180-5240	23.29	8.68	21	0.284	1
5260-5320	23.74	8.68	21	0.315	1
5500-5700	23.64	8.62	21	0.304	1
5745-5825	23.91	9.16	21	0.366	1
BT LE					
2402-2480	4.28	2.41	21	0.001	1
Zigbee					
2405-2480	4.38	2.41	21	0.001	1

Note:

1. Directional gain:

2G traffic radio: Directional gain = $3.67\text{dBi} + 10\log(2) = 6.68\text{dBi}$

5G traffic radio: 5180-5240MHz & 5260-5320MHz: Directional gain = $4.93\text{dBi} + 10\log(2) = 7.94\text{dBi}$

5G traffic radio: 5500-5700MHz: Directional gain = $4.21\text{dBi} + 10\log(2) = 7.22\text{dBi}$

5G traffic radio: 5745-5825MHz: Directional gain = $4.96\text{dBi} + 10\log(2) = 7.97\text{dBi}$

2G Scanning radio: Directional gain = $4.83\text{dBi} + 10\log(2) = 7.84\text{dBi}$

5G Scanning radio: 5180-5240MHz & 5260-5320MHz: Directional gain = $5.67\text{dBi} + 10\log(2) = 8.68\text{dBi}$

5G Scanning radio: 5500-5700MHz: Directional gain = $5.61\text{dBi} + 10\log(2) = 8.62\text{dBi}$

5G Scanning radio: 5745-5825MHz: Directional gain = $6.15\text{dBi} + 10\log(2) = 9.16\text{dBi}$

2. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

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

4. 2G traffic radio, 5G traffic radio, Scanning radio (5G) and BT LE technologies can transmit at same time.

*2G traffic radio, 5G traffic radio, Scanning radio (5G) and Zigbee technologies can transmit at same time.

*5GHz traffic radio and Scanning radio (5G) cannot transmit in the same band at same time.

* BT LE and Zigbee cannot transmit in the same band at same time.

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

1. 2G traffic radio + 5GHz traffic radio + Scanning radio (5G) + BT

$= 0.242 / 1 + 0.298 / 1 + 0.366 / 1 + 0.001 / 1 = 0.907 < 1$

2. 2G traffic radio + 5GHz traffic radio + Scanning radio (5G) + Zigbee

$= 0.242 / 1 + 0.298 / 1 + 0.366 / 1 + 0.001 / 1 = 0.907 < 1$

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

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