

RF Exposure Report

Report No.: SABDYS-WTW-P21030161A

FCC ID: Q6G-AP430CR

Test Model: AP430CR

Received Date: Mar. 11, 2021

Test Date: Mar. 19 ~ May 21, 2021

Issued Date: Nov. 22, 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-P21030161A	Original release	Nov. 22, 2021

1 Certificate of Conformity

Product: Wireless Access Point

Brand: WatchGuard

Test Model: AP430CR

Sample Status: Engineering sample

Applicant: WatchGuard Technologies, Inc.

Test Date: Mar. 19 ~ May 21, 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.

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Approved by : Jeremy Lin, **Date:** Nov. 22, 2021
Jeremy Lin / Senior 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				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

f = Frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

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

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 23cm 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	26.28	5.5	23	0.227	1
5G traffic radio (Radio 2): CDD Mode					
5180-5240	22.81	6.5	23	0.128	1
5260-5320	21.25	6.7	23	0.094	1
5500-5700	22.79	7.2	23	0.150	1
5745-5825	28.79	7.0	23	0.571	1
2G traffic radio (Radio 1): Beamforming Mode					
2412-2462	22.71	8.51	23	0.199	1
5G traffic radio (Radio 2): Beamforming Mode					
5180-5240	16.79	12.52	23	0.128	1
5260-5320	15.23	12.72	23	0.094	1
5500-5700	16.77	13.22	23	0.150	1
5745-5825	22.77	13.02	23	0.571	1
Scanning radio (Radio 3): CDD Mode					
2412-2462	24.98	5.5	23	0.168	1
5180-5240	23.09	6.5	23	0.137	1
5260-5320	22.79	6.7	23	0.134	1
5500-5700	22.70	7.2	23	0.147	1
5745-5825	23.65	7.0	23	0.175	1
BT LE					
2402-2480	6.83	5.5	23	0.003	1

Note:

1. Directional gain:

2G traffic radio: Directional Gain = 5.5 dBi + 10log(2) = 8.51 dBi

5G traffic radio: 5180-5240MHz: Directional Gain = 6.5 dBi + 10log(4) = 12.52 dBi

5G traffic radio: 5260-5320MHz: Directional Gain = 6.7 dBi + 10log(4) = 12.72 dBi

5G traffic radio: 5500-5700MHz: Directional Gain = 7.2 dBi + 10log(4) = 13.22 dBi

5G traffic radio: 5745-5825MHz: Directional Gain = 7.0 dBi + 10log(4) = 13.02 dBi

2G Scanning radio: Directional Gain = 5.5 dBi + 10log(2) = 8.51 dBi

5G Scanning radio: 5180-5240MHz: Directional Gain = 6.5 dBi + 10log(2) = 9.51dBi

5G Scanning radio: 5260-5320MHz: Directional Gain = 6.7dBi + 10log(2) = 9.71dBi

5G Scanning radio: 5500-5700MHz: Directional Gain = 7.2dBi + 10log(2) = 10.21dBi

5G Scanning radio: 5745-5825MHz: Directional Gain = 7.0 dBi + 10log(2) = 10.01dBi

2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
3. 5GHz traffic radio (Radio 2) and 5G Scanning radio (Radio 3) cannot transmit in the same band at same time. 2G traffic radio (Radio 1) and 2G Scanning radio (Radio 3) cannot transmit at same time.

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

2G traffic radio (Radio 1) + 5GHz traffic radio (Radio 2) + 5G Scanning radio (Radio 3) + BLE
 $= 0.227 / 1 + 0.571 / 1 + 0.147 / 1 + 0.003 / 1 = 0.947 < 1$

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

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