

RF Exposure Report

Report No.: SA200115C20

FCC ID: A8J-EWS357APV3

Test Model: EWS357AP v3

Series Model: ECW620 v2, ECW220 v2

Received Date: Jan. 15, 2020

Test Date: Feb. 6 to Mar. 24, 2020

Issued Date: Apr. 1, 2020

Applicant: EnGenius Technologies

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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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Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 RF Exposure	5
2.1 Limits for Maximum Permissible Exposure (MPE).....	5
2.2 MPE Calculation Formula	5
2.3 Classification	5
3 Calculation Result of Maximum Conducted Power	6

Release Control Record

Issue No.	Description	Date Issued
SA200115C20	Original release	Apr. 1, 2020

1 Certificate of Conformity

Product: 802.11AX Indoor Ceiling Mount Access Point

Brand: EnGenius

Test Model: EWS357AP v3

Series Model: ECW620 v2, ECW220 v2

Sample Status: Engineering sample

Applicant: EnGenius Technologies

Test Date: Feb. 6 to Mar. 24, 2020

Standards: FCC Part 2 (Section 2.1091)

References Test Guidance: 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 : Annie Chang, **Date:** Apr. 1, 2020

Annie Chang / Senior Specialist

Approved by : Rex Lai, **Date:** Apr. 1, 2020

Rex Lai / Associate Technical 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 20cm 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					
traffic radio: CDD Mode					
2412-2462	24.41	6.44	20	0.2420	1
5180-5240	25.48	7.23	20	0.3713	1
5745-5825	24.65	7.28	20	0.3103	1
traffic radio: Beamforming Mode					
2412-2462	19.98	6.44	20	0.0872	1
5180-5240	22.47	7.23	20	0.1857	1
5745-5825	21.64	7.28	20	0.1551	1
Scanning radio: CDD Mode					
2412-2462	19.26	3.40	20	0.0367	1
5180-5240	15.02	6.78	20	0.0301	1
5745-5825	19.37	6.78	20	0.0820	1
BT LE					
2402-2480	1.82	5.58	20	0.0011	1

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

Note:

1. Directional gain (2G traffic radio):

2.4GHz Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 6.44 \text{ dBi}$

5180 ~ 5240MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23 \text{ dBi}$

5745 ~ 5825MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28 \text{ dBi}$

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

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

2G traffic radio and Scanning radio (2.4G) cannot transmit at same time.

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

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

= 0.2420 / 1 + 0.3713 / 1 + 0.0820 / 1 + 0.0011 / 1 = 0.6964 < 1

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

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