

RF Exposure Report

Report No.: SA181108C27

FCC ID: A8J-EMD2

Test Model: EMD2, EMD11

Series Model: ECW110, ERP2, ERP1, EMD1v2

Received Date: Nov. 06, 2018

Test Date: Nov. 13, 2018 ~ Jan. 17, 2019

Issued Date: Feb. 11, 2019

Applicant: EnGenius Technologies

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

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Release Control Record

Issue No.	Description	Date Issued
SA181108C27	Original release.	Feb. 11, 2019

1 Certificate of Conformity

Product: AC1300 Dual-Band Mesh AP

Brand: EnGenius

Model: EMD2, EMD11

Series Model: ECW110, ERP2, ERP1, EMD1v2

Sample Status: Engineering sample

Applicant: EnGenius Technologies

Test Date: Nov. 13, 2018 ~ Jan. 17, 2019

Standards: FCC Part 2 (Section 2.1091)
KDB 447498 D01 General RF Exposure Guidance v06
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 RF characteristics under the conditions specified in this report.

Prepared by : Pettie Chen, **Date:** Feb. 11, 2019
Pettie Chen / Senior Specialist

Approved by : Bruce Chen, **Date:** Feb. 11, 2019
Bruce Chen / 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				
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

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

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 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 Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
CDD Mode:					
2412-2462	25.70	4.96	20	0.232	1
5180-5240	25.69	7.3	20	0.396	1
5745-5825	26.41	7.3	20	0.467	1
Beamforming Mode:					
2412-2462	22.69	4.96	20	0.116	1
5180-5240	21.71	7.3	20	0.158	1
5745-5825	23.40	7.3	20	0.234	1

Note:

2.4GHz Band: Directional gain = $G_{ANT\ MAX} + 10 \log(N_{ANT}/N_{SS}) = 1.95\ dBi + 10 \log(2/1) = 4.96\ dBi$

5GHz Band: Directional gain = $G_{ANT\ MAX} + 10 \log(N_{ANT}/N_{SS}) = 4.29\ dBi + 10 \log(2/1) = 7.3\ dBi$

Conclusion:

2.4GHz & 5GHz can transmit at same time.

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz = $0.232 + 0.467 = 0.699$

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

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