

RF Exposure Report

Report No.: SA181219C02

Regulatory model: APOR100

Marketing Model: APOR100-B18, APOR100-X00, APOR100-C23, APOR100-C18

Received Date: Dec. 20, 2018

Test Date: Jan. 02 ~ Feb. 19, 2019

Issued Date: Feb. 22, 2019

Applicant: KeyWest Networks, Inc.

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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
SA181219C02	Original release.	Feb. 22, 2019

1 Certificate of Conformity

Product: Outdoor Wireless Radios

Brand: KeyWest Radios

Regulatory model: APOR100

Marketing Model: APOR100-B18, APOR100-X00, APOR100-C23, APOR100-C18

Sample Status: Engineering sample

Applicant: KeyWest Networks, Inc.

Test Date: Jan. 02 ~ Feb. 19, 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. 22, 2019
Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Feb. 22, 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

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

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 165cm 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)
2412-2462	23.16	6	165	0.002	1
EUT with Sector antenna					
5180-5240	17.51	21.01	165	0.021	1
5745-5825	17.96	21.01	165	0.023	1
EUT with Omni antenna					
5180-5240	25.12	13.01	165	0.019	1
5745-5825	25.84	13.01	165	0.022	1
EUT with Panel antenna					
5180-5240	15.44	26.01	165	0.041	1
5745-5825	29.28	26.01	165	0.988	1

Note:

5GHz Band:

EUT with Sector antenna: Directional gain = $G_{ANT\ MAX} + 10 \log(N_{ANT}) = 18\text{dBi} + 10\log(2) = 21.01\text{dBi}$

EUT with Omni antenna: Directional gain = $G_{ANT\ MAX} + 10 \log(N_{ANT}) = 10\text{dBi} + 10\log(2) = 13.01\text{dBi}$

EUT with Panel antenna: Directional gain = $G_{ANT\ MAX} + 10 \log(N_{ANT}) = 23\text{dBi} + 10\log(2) = 26.01\text{dBi}$

Conclusion:

2.4GHz & 5GHz can transmit at same time.

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

$WLAN\ 2.4GHz + WLAN\ 5GHz = 0.002 + 0.988 = 0.99$

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

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