

RF Exposure Report

Report No.: SA170313C12D

FCC ID: QI3BIL-AC867

Test Model: BEC AC867SQ, BEC AC867, BEC AC867EX

Received Date: Mar. 12, 2019

Test Date: Apr. 09 ~ Apr. 17, 2019

Issued Date: May 06, 2019

Applicant: Billion Electric Co., Ltd.

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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
SA170313C12D	Original release.	May 06, 2019

1 Certificate of Conformity

Product: AC867 5GHz Wave2 Ultra Long-Range Wireless Outdoor Customer Premises Equipment (Refer to note)

Brand: BEC, Billion

Test Model: BEC AC867SQ, BEC AC867, BEC AC867EX (Refer to note)

Sample Status: Engineering sample

Applicant: Billion Electric Co., Ltd.

Test Date: Apr. 09 ~ Apr. 17, 2019

Standards: FCC Part 2 (Section 2.1091)
KDB 447498 D01 General RF Exposure Guidance v06
IEEE C95.1-1992

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 : *Rolly Chien* , **Date:** May 06, 2019
Rolly Chien / Specialist

Approved by : *Bruce Chen* , **Date:** May 06, 2019
Bruce Chen / Project Engineer

Note: The following models are electrically identical except the antenna designation as below.

Brand	Product Name	Model	Description
BEC, Billion	AC867 5GHz Outdoor CPE	BEC AC867SQ	Internal antenna. RJ45 are placed normally.
	AC867 5GHz Wave2 Ultra Long-Range Wireless Outdoor Customer Premises Equipment	BEC AC867	Internal antenna. RJ45 are placed reversely.
	AC867 5GHz Outdoor Access Point	BEC AC867EX	External antenna. RJ45 are placed normally.

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 25cm 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)
Test Mode A					
CDD mode					
5180-5240	15.42	16.43	25	0.195	1
5745-5825	22.16	16.43	25	0.920	1
Beamforming mode					
5180-5240	12.41	16.43	25	0.097	1
5745-5825	19.10	16.43	25	0.455	1
Test Mode B					
CDD mode					
5180-5240	6.16	18.41	25	0.036	1
5745-5825	20.28	18.41	25	0.942	1
Beamforming mode					
5180-5240	3.15	18.41	25	0.018	1
5745-5825	17.27	18.41	25	0.471	1
Test Mode C					
CDD mode					
5180-5240	16.47	8.18	25	0.037	1
5745-5825	26.01	8.18	25	0.334	1
Beamforming mode					
5180-5240	13.41	8.18	25	0.018	1
5745-5825	22.15	8.18	25	0.137	1

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- Directional gain:

Test Mode A

Patch Ant. Max. Directional gain = 13.42dBi + 10log(2) = 16.43dBi

Test Mode B

Patch Ant. Max. Directional gain = 15.40dBi + 10log(2) = 18.41dBi

Test Mode C

Dipole Ant. Max. Directional gain = 5.17dBi + 10log(2) = 8.18dBi

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