

RF Exposure Evaluation declaration

Product Name : GigaConnect® Smart Gateway

Model No. : EG-210N

FCC ID : QI3BEC-EG210N

Applicant : Billion Electric Co., Ltd.

Address : 8F., No.192, Sec. 2, Zhongxing Rd., Xindian Dist.,
New Taipei City 231, Taiwan (R.O.C.)

Date of Receipt : Jun. 27, 2019

Date of Declaration : Jul. 30, 2019

Report No. : 1960404R-SAUSP03V00

Report Version : V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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Applicant	Billion Electric Co., Ltd.
Address	8F., No.192, Sec. 2, Zhongxing Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)
Manufacturer	Billion Electric Co., Ltd.
Model No.	EG-210N
FCC ID.	QI3BEC-EG210N
Trade Name	BEC, Billion
Applicable Standard	FCC 47 CFR 1.1310
Test Result	Complied

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Tested By : wenLee
(Senior Engineer / Wen Lee)

Approved By : 
(Director / Vincent Lin)

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	GigaConnect® Smart Gateway
Model No.	EG-210N
Trade Name	BEC, Billion
FCC ID	QI3BEC-EG210N
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 300Mbps
Channel separation	802.11b/g/n: 5 MHz
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	Dipole
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto

1.2. Antenna List :

No	Manufacturer	Part No	Antenna Type	Peak Gain
1	WHA YU INDUSTRIAL CO., LTD	C942-510009-A	Dipole	1.8dBi for 2.4 GHz

2. RF Exposure Evaluation

2.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b).

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)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	30
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission 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

2.2. Test Result of RF Exposure Evaluation

Product : GigaConnect® Smart Gateway
Test Item : RF Exposure Evaluation
Test Site : N/A

WLAN Peak Gain for 2.4G: 1.8dBi

Band	Frequency	Maximum Conducted Peak Power (dBm)	Worst case Duty Cycle (%)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mWc/m ²)	Pass/Fail
2.4G	2437	25.10	61.96	522.3	0.157	1	Pass

Note: The conducted output power is refer to report No.: 1960404R-RFUSP26V00 from the DEKRA.