



Test report No.: 2330006R-RFUSV17S-A

RF Exposure Report

Product Name	5G Enterprise Router
Trademark	BEC, Billion
Model and /or type reference	AirConnect® 8112, BEC AirConnect® 8112, BEC 8112
FCC ID	QI3BEC-8112
Applicant's name / address	Billion Electric Co., Ltd. 8F., No.192, Sec. 2, Zhongxing Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)
Manufacturer's name	Billion Electric Co., Ltd.
Test method requested, standard	KDB 447498 D01 v06 ☒ Minimum test separation distance ≥ 20 cm ☐ For low power devices
Verdict Summary	IN COMPLIANCE
Documented By (Supervisor / Jinn Chen)	Jinn Chen
Tested By (Senior Engineer / Jack Hsu)	Jack Hsu
Approved By (Manager / Tim Sung)	Tim Sung
Date of Receipt	2023/03/01
Date of Issue	2023/06/21
Report Version	V1.0

Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

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General conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
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5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Report No.	Version	Description	Issued Date
2330006R-RFUSV17S-A	V1.0	Initial issue of report.	2023/06/21

1. General Information

1.1. EUT Description

Product Name	5G Enterprise Router
Trademark	BEC, Billion
Model and /or type reference	AirConnect® 8112, BEC AirConnect® 8112, BEC 8112
FCC ID	QI3BEC-8112

Note: For more detailed information please refer to report No.: 2330006R-RFUSV01S-A, 2330006R-RFUSV03S-A and 2330006R-RFUSV23S-A.

2. Test Facility

USA	FCC Registration Number: TW0033
Canada	CAB Identifier Number: TW3023 / Company Number: 26930

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

3. RF Exposure Evaluation

3.1. Standard Applicable

According to KDB 447498 D01 (7.1), A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits.

3.2. 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				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/ Uncontrolled Exposures				
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
300-1,500			f/1500	30
1,500-100,000			1.0	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

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0

3.3. Test Result of RF Exposure Evaluation

Product	5G Enterprise Router
Test Item	RF Exposure Evaluation

Band	Frequency (MHz)	E.I.R.P (dBm)	E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)
2.4 GHz	2417	32.640	1836.538	0.3654	1
5 GHz	5795	34.290	2685.344	0.5342	1
LTE Band 2	1850 - 1910	26.900	489.779	0.0974	1
5GNR n2	1850 - 1910	26.900	489.779	0.0974	1

Note: The conducted output power is refer to report No.: 2330006R-RFUSV01S-A, 2330006R-RFUSV03S-A and 2330006R-RFUSV23S-A from the DEKRA. And refer to the tune-up procedure from the customer declaration.

3.4. Calculation for Multi-Transmitter

Band	Ratios	Result	Limit (mW/cm ²)
2.4 GHz	0.3654	0.9970	1
5 GHz	0.5342		
WWAN	0.0974		

Note: Ratios = Power Density / Power Density Limit

Results	PASS
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