RF MPE REPORT

Report No.:	SET2022-09810
Product Name:	LTE Turbo UE
Model No.:	EG8015Q-M11
FCC ID:	2AG32EG8015QM11
Applicant:	Baicells Technologies Co., Ltd.
Address:	9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China
Dates of Testing:	04/02/2022 - 07/27/2022
Issued by:	CCIC Southern Testing Co., Ltd.
Lab Location:	Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China. **Tel**：86 755 26627338 **Fax**：86 755 26627238

Test Report

Product .....:	LTE Turbo UE
Trade Name .....:	Baicells
Applicant.....:	Baicells Technologies Co., Ltd.
Applicant Address.....:	9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China
Manufacturer .....:	Baicells Technologies Co., Ltd.
Manufacturer Address .....:	9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China
Test Standards .....:	47 CFR Part 2.1091
Test Result.....:	Pass

Tested by .....: 2022.07.28

Sun, Test Engineer

Reviewed by .....: 2022.07.28

Chris You, Senior Engineer

Approved by .....: 2022.07.28

Shuangwen Zhang, Manager

Table of Contents

Change History		
Issue	Date	Reason for change
1.0	2022.07.28	First edition

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	LTE Turbo UE	
Model No.	EG8015Q-M11	
Hardware Version	ver.A	
Software Version	BaiCE_LT_1.0.16	
EUT supports Radios application	LTE Band 48 2.4G WIFI, 5G WIFI	
Frequency Range(Tx)	LTE Band 48: 3550 MHz-3700 MHz	
	2.4G WIFI: 2.412GHz - 2.462GHz UNII-1: 5150 ~ 5250MHz UNII-3: 5725 ~ 5850MHz	
Bandwidth	LTE Band 48:	10MHz/15MHz/20MHz
	2.4G WIFI:	802.11b/g/n-HT20: 20MHz 802.11n-HT40/ax-HE40: 40MHz
	5G WIFI	802.11a/n-HT20/ac-VHT20/ax-HE20: 20MHz 802.11n-HT40/ac-VHT40/ax-HE40: 40MHz 802.11ac-VHT80/ax-HE80: 80MHz
Modulation Type	LTE	QPSK/16QAM/64QAM
	2.4G WIFI	DSSS (802.11b), OFDM (802.11g/n), OFDMA (802.11ax)
	5G WIFI	OFDM (802.11a/n/ac), OFDMA (802.11ax)
Antenna gain	LTE Band 48: Antenna 0/1: 13.0dBi 2.4G WIFI: Antenna 0/1: 10.0dBi 5G WIFI(module QCN9024): Antenna 0/1/2/3/4/5: 10.0dBi 5G WIFI(module QCN5052): Antenna 4/5: 10.0dBi	
Antenna Type	Internal Antenna	
Remark	All the module can Synchronous transmission, the antenna is uncorrelated with each other	

1.2. EUT Description

EUT has been tested according to the following standards.

No.	Identity	Document Title
1	47 CFR Part 1	Practice and Procedure
2	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
3	KDB 447498 D01 General RF Exposure Guidance v06	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
4	OET Bulletin 65 Edition 97-01	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

1.3. Laboratory Facilities

FCC-Registration No.: 406086

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until April 19th, 2023.

ISED Registration: 11185A-1

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Jun. 30th, 2023.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

1.4. Laboratory Location

Company Name:	CCIC Southern Testing Co., Ltd.
Address:	Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China

2. Technical Requirements Specification in CFR Title 47 Part 2.1091

2.1. Exposure Limits

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).

Table 1 to §1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Averaging Time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	< 6
3.0-30	1824/f	4.89/f	*(900/f^2)	< 6
30-300	61.4	0.163	1.0	< 6
300-1500	/	/	f/300	< 6
1500-100,000	/	/	5	< 6
(ii) 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
Note: f = frequency in MHz. * = Plane-wave equivalent power density.				

2.2. Predication of MPE limit at a given distance

Refer to formulas on page 19 of OET Bulletin 65, Edition 97-01.

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = power density (in appropriate units, e.g. mW/cm^2)

P = power input to the antenna (in appropriate units, e.g., mW)

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units, e.g., cm)

2.3. Evaluation Results

Worst-Case mode Conducted Output Power Results for WLAN

Band	Mode	Frequency (MHz)	Maximum Output power (dBm)	Max Tune up power (dBm)	Max Tune up power (mW)
2.4G WIFI	802.11b	2412	18.56	18±1	79.43
5G WIFI (module QCN9024)	802.11ax-HE40	5795	28.94	28±1	794.33
5G WIFI (module QCN5052)	802.11n20	5745	25.90	26±1	0.501

Worst-Case mode Conducted Output Power Results for WWAN

Band	Frequency (MHz)	Maximum Output power(dBm)	Max Tune up power (dBm)	Max Tune up power (mW)
LTE Band 48	3555.0	26.46	26±1	501.19

Calculation results: Worst-Case mode

Band	Antenna Gain (dBi)	Antenna Gain (numeric)	Distance (cm)	Result (mW/cm2)	Power Density (mW/cm2)	Ratio
2.4G WIFI	10.0	10.00	50	0.025	1.0	0.025
5G WIFI (module QCN9024)	10.0	10.00	50	0.253	1.0	0.253
5G WIFI (module QCN5052)	10.0	10.00	50	0.16	1.0	0.16
LTE Band 48	13.0	19.95	50	0.318	1.0	0.318

Simultaneous Transmission Calculation (Worst-case mode)

No.	Transmitter Combinations	Scenario Supported or not
1	WWAN + 2.4G WLAN + 5G WLAN(module QCN9024)+ 5G WIFI (module QCN5052)	Yes

Max Simultaneous Transmission Calculation (Worst-case mode)

No.	Worst Mode	MPE Ratio	Limit	Results
1	LTE Band 48 + 2.4G WIFI + 5G WLAN(module QCN9024)+ 5G WIFI (module QCN5052)	0.839	≤ 1.0	Pass

Note: MPE Ratio = 0.025 + 0.253 + 0.318 = 0.596.

2.4. Conclusion

According to the KDB 447498 D01 General RF Exposure Guidance v06 section 7.2 determine the device is exclusion from SAR test.

** END OF REPORT **