

TEST REPORT

Report No.: SHATBL2405007W03

Applicant : Chizhe (Shanghai) Intelligent Technology Co., Ltd

Product Name : Bluetooth module

Brand Name : N/A

Model Name : CZYL-MZ2401

FCC ID : 2BGP4CZYL-MZ2401

Test Standard : 47 CFR Part 2.1093

Date of Test : 2024.05.17-2024.05.19

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REVISION HISTORY

Rev.	Issue Date	Revisions	Revised by
00	2024.05.20	Initial Release	Chris Xu

DECLARATION OF REPORT

1. The device has been tested by ATBL, and the test results show that the equipment under test (EUT) is in compliance with the requirements of 47 CFR Part 2.1093. And it is applicable only to the tested sample identified in the report.
2. This report shall not be reproduced except in full, without the written approval of ATBL, this document only be altered or revised by ATBL, personal only, and shall be noted in the revision of the document.
3. The general information of EUT in this report is provided by the customer or manufacture, ATBL is only responsible for the test data but not for the information provided by the customer or manufacture.
4. The results in this report is only apply to the sample as tested under conditions. The customer or manufacturer is responsible for ensuring that the additional production units of this model have the same electrical and mechanical components.

1. GENERAL DESCRIPTION

1.1. Applicant

Name : Chizhe (Shanghai) Intelligent Technology Co., Ltd
Address : Room 201, Building 7, No. 4030, Cao'an Road, Anting Town, Jiading District, Shanghai

1.2. Manufacturer

Name : Chizhe (Shanghai) Intelligent Technology Co., Ltd
Address : Room 201, Building 7, No. 4030, Cao'an Road, Anting Town, Jiading District, Shanghai

1.3. Factory

Name : Chizhe (Shanghai) Intelligent Technology Co., Ltd
Address : Room 201, Building 7, No. 4030, Cao'an Road, Anting Town, Jiading District, Shanghai

1.4. General Information of EUT

General Information	
Equipment Name	Bluetooth module
Brand Name	N/A
Model Name	CZYL-MZ2401
Series Model	N/A
Model Difference	N/A
SN or IMEI Code	202400509006006
Power Input	DC 3.3V
Hardware version	V.1
Software version	V.1
Connecting I/O Port(s)	Refer to the remark below.

Remark:

The above information of EUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.5. Equipment Specification

BLE Equipment Specification	
Frequency Range	2400MHz - 2483.5MHz
Number of Channels	40
Carrier Frequency of Each Channel	$2402 + n \times 2$ MHz; $n = 0 \sim 39$
Type of Modulation	GFSK
Antenna Type	PCB Antenna
Antenna Gain	0.79dBi

1.6. Modification of EUT

No modifications are made to the EUT during all test items.

1.7. Laboratory Information

Company Name	:	Shanghai ATBL Technology Co., Ltd.
Address	:	Building 8, No.160 Basheng Road, Waigaoqiao Free Trade Zone, Pudong New Area, Shanghai
Telephone	:	+86(0)21-51298625

1.8. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

Standard	Description
47 CFR Part 15.247	Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: mobile devices.
KDB 447498 D01 V06	Rf Exposure Procedures And Equipment Authorization Policies For Mobile And Portable Devices

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.

2. RF EXPOSURE EVALUATION

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)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
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
(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
300–1,500			f/1500	<30
1,500–100,000			1.0	<30

Note:

f = frequency in MHz.

* = Plane-wave equivalent power density.

2.2. Formula

Below method describes a theoretical approach to calculate possible exposure to electromagnetic radiation around a base station transceiver antenna. Precise statements are basically only possible either with measurements or complex calculations considering the complexity of the environment (e.g. soil conditions, near buildings and other obstacles) which causes reflections, scattering of electromagnetic fields. The maximum output power (given in EIRP) of a base station is usually limited by license conditions of the network operator. A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation.

$$Pd_{(mW/cm^2)} = \frac{P_{(mW)} * G_{numeric}}{4 * r^2_{(cm)} * \pi}$$

Pd = Power Density

P = Maximum output power

$G_{numeric}$ = Numeric gain of the antenna relative to isotropic antenna

r = distance between the antenna and the point of exposure

2.3. MPE Result**2.3.1. For BLE**

Operating Band	Frequency (MHz)	Ant. Gain (dBi)	Max Conducted Peak Output Power (dBm)	EIRP/ERP (dBm)	EIRP/ERP Limit (dBm)	EIRP/ERP (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Result
BLE	2402	0.79	7.65	8.44	36.00	6.98	0.001389	1.0000	Pass

*****END OF THE REPORT*****