Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

RF Exposure evaluation

Report Reference No..... :	**CTA25032801001**
FCC ID..... :	**2AUZX-FB2ULU**
Compiled by (position+printed name+signature) . :	File administrators Zoey Cao
Supervised by (position+printed name+signature) . :	Project Engineer Ace Chai
Approved by (position+printed name+signature) . :	RF Manager Eric Wang
Date of issue ..... :	Apr. 21, 2025

Testing Laboratory Name.....:	**Shenzhen CTA Testing Technology Co., Ltd.**
Address.....:	Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name.....:	**UBITECH LIMITED**
Address.....:	Unit 12, 7F Block A, Hi-Tech Industrial Centre 5-21 Pak Tin Par Street, Tsuen Wan, NT, Hong Kong, 999077

Standard.....:	**47CFR §1.1310** **47CFR §2.1093** **KDB447498 D01 General RF Exposure Guidance v06**

Test item description .....:	**IoT controller**
Manufacturer .....:	UBITECH LIMITED
Trade Mark	FireBot
Model/Type reference .....:	FB2ULU
Operation Frequency.....:	919.303MHz-923.303MHz
Rating .....:	DC 3V by Battery
Result .....:	**PASS**

TEST REPORT

Equipment under Test	:	IoT controller
Model /Type	:	FB2ULU
Applicant	:	**UBITECH LIMITED**
Address	:	Unit 12, 7F Block A, Hi-Tech Industrial Centre 5-21 Pak Tin Par Street, Tsuen Wan, NT, Hong Kong, 999077
Manufacturer	:	**UBITECH LIMITED**
Address	:	Unit 12, 7F Block A, Hi-Tech Industrial Centre 5-21 Pak Tin Par Street, Tsuen Wan, NT, Hong Kong, 999077

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1 TEST STANDARDS

The tests were performed according to following standards:

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
FCC KDB 447498 D01 General RF Exposure Guidance v06: Mobile and Portable Device, RF Exposure, Equipment Authorization Procedures.
FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.
FCC CFR 47 part2 2.1093: Radiofrequency radiation exposure evaluation: portable devices

2 SUMMARY

2.1 General Remarks

Date of receipt of test sample	:	Apr. 08, 2025
Testing commenced on	:	Apr. 08, 2025
Testing concluded on	:	Apr. 21, 2025

2.2 Product Description

Product Description:	IoT controller
Model/Type reference:	FB2ULU
Power supply:	DC 3V by Battery
Testing sample ID:	CTA250328010-1# (Engineer sample), CTA250328010-2# (Normal sample)
Hardware Version:	LoRa_SOC_Rev:0.1
Software Version:	Firebot_HW2_V0.1
Lora	
Modulation Technology:	CSS
Operation frequency:	919.303MHz-923.303MHz
Channel number:	2
Antenna type:	PCB antenna
Antenna gain:	3.00 dBi

2.3 Special Accessories

The following is the EUT test of the auxiliary equipment provided by the laboratory:

Description	Manufacturer	Model	Technical Parameters	Certificate	Provided by
PC	/	E470C	/	/	/

2.4 Modifications

No modifications were implemented to meet testing criteria.

3 TEST ENVIRONMENT

3.1 Address of the test laboratory

Shenzhen CTA Testing Technology Co., Ltd.
Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community,
Fuhai Street, Bao'an District, Shenzhen, China

3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:
FCC-Registration No.: 517856 Designation Number: CN1318

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6534.01
Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.
The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

3.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen CTA Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.
Hereafter the best measurement capability for Shenzhen CTA Testing Technology Co., Ltd. :

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MHz	3.02 dB	(1)
Radiated Emission	30~1000MHz	4.06 dB	(1)
Radiated Emission	1~18GHz	5.14 dB	(1)
Radiated Emission	18-40GHz	5.38 dB	(1)
Conducted Disturbance	0.15~30MHz	2.14 dB	(1)
Output Peak power	30MHz~18GHz	0.55 dB	(1)
Power spectral density	/	0.57 dB	(1)
Spectrum bandwidth	/	1.1%	(1)
Radiated spurious emission (30MHz-1GHz)	30~1000MHz	4.10 dB	(1)
Radiated spurious emission (1GHz-18GHz)	1~18GHz	4.32 dB	(1)
Radiated spurious emission (18GHz-40GHz)	18-40GHz	5.54 dB	(1)

4 Test limit

4.1 Requirement

According to KDB447498 D01 General RF Exposure Guidance v06 Section 4.3.1 Standalone SAR test exclusion considerations: “Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.22 The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander (see 5) of section 4.1). To qualify for SAR test exclusion, the test separation distances applied must be fully explained and justified by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, typically in the SAR measurement or SAR analysis report, according to the required published RF exposure KDB procedures. When no other RF exposure testing or reporting is required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for the SAR test exclusion. When required, the device specific conditions described in the other published RF exposure KDB procedures must be satisfied before applying these SAR test exclusion provisions; for example, handheld PTT two-way radios, handsets, laptops & tablets etc.23 “

[(max. power of channel, including tune-up tolerance, mW)/ (min. test separation distance, mm)] · [√ f (GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- f (GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

4.2 Conducted Power Results

Type	Channel	Output power (dBm)
CSS	01	3.425
	02	3.090

4.3 Manufacturing tolerance

CSS(Peak)			
Channel	Channel 01	Channel 02	/
Target (dBm)	3.0	3.0	/
Tolerance ±(dB)	1.0	1.0	/

4.4 Evaluation Result

Evaluation Results

Band/Mode	f (GHz)	Antenna Distance (mm)	RF output power (including tune-up tolerance)		SAR Test Exclusion Threshold	SAR Test Exclusion
			dBm	mW		
CSS	0.919	5	4.0	2.5119	0.7816<3.0	Yes

4.5 Simultaneous Transmission for SAR Exclusion

N/A

5 Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 D01v06

********** End of Report **********