

RF EXPOSURE REPORT

FOR

Applicant	:	Guangdong A-OK TechnologyGrand Development Co., Ltd.
Address	:	Hexing Road South Side Sanhe Economic Development Zone, Huiyang Huizhou, GuangdongPEOPLE'S REPUBLIC OF CHINA
Equipment under Test	:	Low power battery with built-in Zigbee motor
Model No.	:	AM25D-1/25-ES-EZ, AM25D-1.8/25-ES-EZ, AM28D-1.8/25-ES-EZ
Trade Mark	:	N/A
FCC ID	:	2AVVD-AM25D
Manufacturer	:	Guangdong A-OK TechnologyGrand Development Co., Ltd.
Address	:	Hexing Road South Side Sanhe Economic Development Zone, Huiyang Huizhou, GuangdongPEOPLE'S REPUBLIC OF CHINA

Issued By: Guangdong Dongdian Testing Service Co., Ltd.

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REPORT

Table of Contents

	Test report declares.....	3
1.	General Information	5
1.1.	Description of equipment	5
1.2.	Assess laboratory.....	5
2.	RF Exposure Evaluation	6
2.1.	Requirement.....	6
2.2.	Calculation method	6
2.3.	Estimation result.....	7

Test Report Declare

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Standard Used: KDB447498 D01 General RF Exposure Guidance v06

We Declare:

The equipment described above is assessed by Guangdong Dongdian Testing Service Co., Ltd and in the configuration assessed the equipment complied with the standards specified above.

The assessed results are contained in this report and Guangdong Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these assess.

After evaluation, our opinion is that the equipment In Accordance with above standard.

Report No:	DDT-RE23083107-1E02		
Date of Receipt:	Sep. 01, 2023	Date of Test:	Sep. 01, 2023 ~ Oct. 23, 2023

Prepared By:

Tiger Mo

Tiger Mo /Engineer

Approved By:



Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Oct. 23, 2023	

1. General Information

1.1. Description of equipment

EUT Name	: Low power battery with built-in Zigbee motor
Model Number	: AM25D-1/25-ES-EZ, AM25D-1.8/25-ES-EZ, AM28D-1.8/25-ES-EZ
Difference of models	: The above models are the same in principle and structure, but the models, appearance size and strength are different. The intensity of AM25D-1/25-ES-EZ is 1N, that of AM25D-1.8/25-ES-EZ, and that of AM28D-1.8/25-ES-EZ is 1.8N. The external dimensions of the AM28D-1.8/25-ES-EZ are different from the AM25D-1.8/25-ES-EZ and AM28D-1.8/25-ES-EZ. therefore the test performed on the model AM25D-1/25-ES-EZ.
EUT function description	: Please reference user manual of this device
Power Supply	: DC 5V from adapter : Built-in Rechargeable Lithium Battery Pack
Radio Technology	: Zigbee
Operation frequency	: 2405 MHz - 2480 MHz
Modulation	: O-QPSK
Transmitter rate	: 250 kbps
Antenna Type	: PCB antenna, maximum PK gain: 1.62 dBi
Sample Number	: S23083107-01 for radiation : S23083107-02 for conductive

Note: EUT is the abbreviation of equipment under test.

1.2. Assess laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2,Building 1,No.17,Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2. RF Exposure Evaluation

2.1. Requirement

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	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. Calculation method

$$E(\text{V/m}) = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } S(\text{mW/cm}^2) = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (mW)

G = EUT Antenna numeric gain (numeric)=

d = Separation distance between radiator and human body (m)

The formula can be changed to

We can change the formula to:

$$S = \frac{30 \times P \times G}{377 \times d^2} \quad \text{or, } d = \sqrt{\frac{30 \times P \times G}{377 \times S}}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2 m, as well as the gain of the used antenna, the RF power density can be obtained.

2.3. Estimation result

Mode	Output power (dBm)	Output power (mW)	tune up power (dBm)	Antenna Gain (dBi)	Antenna Gain (linear)	MPE Values (mW/cm ²)	MPE Limit (mW/cm ²)
Zigbee	8.27	6.71	9	1.62	1.45	0.0019	1

Note: The estimation distance is 20 cm

Conclusion: MPE evaluation required since transmitter power is below FCC threshold

END OF REPORT