

FCC Part 15C

Measurement and Test Report

For

Jiangmen Yuandian Electronics Co., LTD

FCC ID: 2BRXU-YD-512-100

FCC Rule(s): FCC Part 15.247

Product Description: Ball cart battery

Tested Model: HD-51.2-100-SK-C

Report No.: MAX250823901603MPE

Tested Date: August.1~27,2025

Issued Date: August.25,2025

Tested By: Lris Yao / Engineer

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Jiangmen Yuandian Electronics Co., LTD
Address of applicant: 2nd Floor, No.18 Xiqiao Road, Hetao Town, Pengjiang District, Jiangmen City
Manufacturer: Jiangmen Yuandian Electronics Co., LTD
Address of manufacturer: 2nd Floor, No.18 Xiqiao Road, Hetao Town, Pengjiang District, Jiangmen City

General Description of EUT	
Product Name:	Ball cart battery
Brand Name:	N/A
Models No.:	HD-51.2-100-SK-C
Adding Model(s):	HD-51.2-100-TK-C 、 HD-51.2-100-SK 、 YD512001 、 YD512002、 YD512003
Rated Voltage:	DC 51.2V by battery
<i>Note: The test data is gathered from a productio.0n sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Bluetooth Version:	V5.2
Frequency Range:	2402-2480MHz
Modulation:	GFSK
Quantity of Channels:	40
Channel Separation:	2MHz
Type of Antenna:	PCB antenna
Antenna Gain:	-1.28dBi

1.2 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 2.1091: Radiofrequency radiation exposure evaluation: mobile devices

1.3 Test Facility

MAXLAB Testing Co., Ltd.

1/F, Building B, Xinshidai GR Park, Shiyan Street, Bao'an District, Shenzhen, ShiyanStreet, Bao'an District, Shenzhen,Guangdong,518052,People' s Republic of China

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1.4 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$

2. TEST LIMIT

2.1 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. 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.”

$$\frac{[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f} \text{ (GHz)}]}{\leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where:}}$$

- 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.

When one of the following test exclusion conditions is satisfied for all combinations of simultaneous transmission configurations, further equipment approval is not required to incorporate transmitter modules in host devices that operate in the mixed mobile and portable host platform exposure conditions. The grantee is responsible for documenting this according to Class I permissive change requirements. Antennas that qualify for standalone SAR test exclusion must apply the estimated standalone SAR to determine simultaneous transmission test exclusion.

- a) The $[\sum \text{ of (the highest measured or estimated SAR for each standalone antenna configuration, adjusted for maximum tune-up tolerance) / 1.6 W/kg}] + [\sum \text{ of MPE ratios}]$ is ≤ 1.0 .
- b) The SAR to peak location separation ratios of all simultaneously transmitting antenna pairs operating in portable device exposure conditions are all ≤ 0.04 , and the $[\sum \text{ of MPE ratios}]$ is ≤ 1.0 .

Appendix A***SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm***

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	<i>SAR Test Exclusion Threshold (mW)</i>
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

2.2 Conducted Peak Output Power

Test Mode	Frequency MHz	Reading dBm	Output Power mW
GFSK(BLE)	2402	-0.38	0.92
	2440	-1.15	0.77
	2480	-2.65	0.54

2.3 Manufacturing Tolerance

Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	0	0	0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

2.4 Evaluation Result

Band/Mode	f (MHz)	Antenna Distance (mm)	RF output power		SAR Test Exclusion Threshold	SAR Test Exclusion
			dBm	mW		
GFSK(BLE)	2402	5	1	1.26	0.39<3.0	Yes

Remark:

1. Output power including tune up tolerance;
2. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to f) in section 4.1 is applied to determine SAR test exclusion.

2.5 Simultaneous Transmission for SAR Exclusion

N/A

2.6 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 v06.

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