TEST REPORT

Report No.:	BCTC2404212612B
Applicant:	NingBo JiangBei Runleader Electronics Co., Ltd.
Product Name:	HOUR METER
Product Type:	Main Model: RL-HM032A Series Model: See page 4
Tested Date:	2024-04-30~2024-05-08
Issued Date:	2024-05-15

Shenzhen BCTC Testing Co., Ltd.

Products Incorporating Button Batteries or Coin Cell Batteries UL 4200A: 2023		
Test procedure	Commission Test	
Total number of pages	15	
Receipt Date	2024-04-30	
Applicant's name	NingBo JiangBei Runleader Electronics Co., Ltd.	
Address.....	1-2, Sixth Xinheng Road, Cicheng, Jiangbei District, Ningbo City, Zhejiang Province, China	
Manufacturer's name.....	NingBo JiangBei Runleader Electronics Co., Ltd.	
Address.....	1-2, Sixth Xinheng Road, Cicheng, Jiangbei District, Ningbo City, Zhejiang Province, China	
Factory's name.....	NingBo JiangBei Runleader Electronics Co., Ltd.	
Address.....	1-2, Sixth Xinheng Road, Cicheng, Jiangbei District, Ningbo City, Zhejiang Province, China	
Test item description.....	HOUR METER	
Trade Mark.....	Runleader®	
Model/Type reference	Main Model: RL-HM032A Series Model: See page 4	
Ratings	3V	
Testing Laboratory and location(s):		
Testing Laboratory:	Shenzhen BCTC Testing Co., Ltd.	
Testing location/ address	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China	
Tested by (name, function, signature)	George Hou (Project handler)	George Hou
Approved by (name, function, signature)	Andre Yu (Reviewer)	Andre Yu

General disclaimer:

The test results presented in this report relate only to the object tested.
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List of Attachments (including a total number of pages in each attachment):

Attachment 1: Photo Documentation (See page 12~14);

Summary of testing:

Tests performed (name of test and test clause):

6.2	Pre-conditioning	P
6.3	Abuse tests	P
6.3.2	Drop test for portable devices	P
6.3.3	Impact test	P
6.3.4	Crush test	P
6.3.4A	Torque test	N/A
6.3.4B	Tension test	N/A
6.3.4C	Compression test	N/A
6.3.5	Compliance	P
6.4	Secureness test	N/A

Description of the product:

This tested sample is constructed with only one Primary Lithium cell.

The products that allow user removal or replacement of button/coin cells.

Product technical data		
	Cell	Product
Model Designation	CR2032	Main Model: RL-HM032A Series Model: See page 4
Nominal voltage (V)	3.0	3.0
Plastic shell upper limit temperature (℃)	/	70

Copy of marking plate:

HOUR METER
Model: RL-HM032A
3V
NingBo JiangBei Runleader Electronics Co., Ltd.
YYYYMMDD Made in China



The date code consists of the following: YYYYMMDD
YYYY: Four digitals represent year of manufacture.
MM: Two digitals represent month of manufacture.
DD: Two digitals represent day of manufacture.

Possible test case verdicts:	
- test case does not apply to the test object :	N/A
- test object does meet the requirement :	P (Pass)
- test object does not meet the requirement :	F (Fail)

General product information and other remarks:

Main Model and series model only have slight differences in appearance, while others such as battery compartment structure and materials are completely identical. Test only evaluates main model.

Series Model: RL-HM011J, RL-HM011HA, RL-HM011HB, RL-HM027A, RL-HM027B, RL-HM027BT, RL-HM032, RL-HM032A, RL-HM032A1, RL-HM032A-1, RL-HM032B, RL-HM032B1, RL-HM032B-1, RL-HM032-BT, RL-HM032C, RL-HM032G, RL-HM032R, RL-HM032RV, RL-HM032T, RL-HM035, RL-HM035A, RL-HM035B, RL-HM035C, RL-HM035G, RL-HM035A1, RL-HM035B1, RL-HM035R, RL-HM035T, RL-HM061, RL-HM068, RL-HM068-1, RL-HM068V-BT, RL-HM068A, RL-HM068B, RL-HM068G, RL-HM068BT, RL-HM202, RL-HM202A, RL-TM002, RL-TM003, RL-TM003A, RL-TM004, RL-TM005, RL-TM100, RL-BC001.

INTRODUCTION		
1	**Scope**	**P**
1.1	These requirements cover household type products that incorporate or may use button batteries or coin cell batteries.	P
1.2	These requirements do not cover products that exclusively use zinc-air battery technologies.	P
1.2A	These requirements do not cover toy products that comply with battery accessibility and labeling requirements of ASTM F963, Safety Standard for Toys.	P
1.3	These requirements apply to consumer products containing button batteries or coin cells batteries. They do not apply to products that by virtue of their dedicated purpose and instructions are not intended to be used in locations where they may be accessed by children, such as products for dedicated professional use or commercial use in locations where children are not normally or typically present.	P
1.4	These requirements are intended to supplement other safety requirements for products that incorporate button batteries or coin cell batteries, and are not intended to supersede specific requirements that are incorporated into other safety standards to mitigate physiological hazards from button batteries or coin cells batteries.	P
2	**Units of Measurement**	**P**
2.1	Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.	P
3	**Undated References**	**P**
3.1	Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.	P
4	**Glossary**	**P**
4.1	For the purpose of this standard the following definitions apply.	P
4.2	ACCESSIBLE - Able to be contacted by the accessibility probe.	P
4.3	BUTTON/COIN CELL BATTERY - A single cell battery having a diameter of 32 mm (1.25 in) maximum, and diameter greater than its height.	P
4.3A	HAND-HELD PRODUCT - A product that is reasonably foreseeable to be used or misused while being held in one or both hands. Products specifically designed to be carried easily, with a mass not exceeding 4.5 kg (10 lbs).	P
4.4	PORTABLE DEVICE - A device that is reasonably foreseeable to be routinely carried or lifted as part of its use or misuse but not operated during transit with mass not exceeding 18 kg (39.7 lb).	P
4.5	PRINCIPAL DISPLAY PANEL - The display panel for a retail package of button cell or coin batteries or retail package of a consumer product containing such batteries that is most likely to be displayed, shown, presented or examined under normal or customary conditions of display for retail sale. The principal display panel is typically the front of the package.	P

4.6	PRODUCT DISPLAY PANEL - The surface area on, near, or in the battery compartment. For consumer products with replaceable button cell or coin batteries, the product display panel must be visible while a consumer installs or replaces the button cell or coin battery. For consumer products with non-replaceable button cell or coin batteries, the product display panel must be visible upon access to the battery compartment.		P
4.7	SECONDARY DISPLAY PANEL - A display panel for a retail package of a button cell or coin batteries or retail package of a consumer product containing such batteries that is opposite or next to the principal display panel. The secondary display panel is typically the rear or side panels of the package.		P
CONSTRUCTION			
5	**Products with Button/Coin Cell Batteries**		**P**
5.1	Products that use button/coin cell batteries shall be designed to minimize the risk of children removing and ingesting or aspirating the batteries. Products that allow user removal or replacement of button/coin cells shall comply with the requirements of 5.2 – 5.6. Products with button/coin cells that are not intended to allow user removal/replacement of the cells shall comply with 5.7.	Products that allow user removal or replacement of button/coin cells.	P
5.2	To reduce the likelihood of unintentional access, products with removable or replaceable button/coin cell batteries shall not allow the button/coin cell to be contacted by Test Probe 11 of the Standard for 6 UL 4200A JUNE 14, 2021Protection of Persons and Equipment by Enclosures – Probes for Verification, IEC 61032 when applied as described in 5.3.		P
5.3	The probe shall be applied to any depth that the opening will permit and shall be rotated or angled before, during, and after insertion through the opening to any position that is necessary to examine the enclosure. The probe shall be used as a measuring instrument to judge the accessibility provided by an opening, and not as an instrument to judge the strength of a material. The probe shall be applied with the minimum force necessary to determine accessibility.		P
5.4	During the examination of a product to determine whether it complies with the requirements in 5.3, a part of the enclosure that may be opened or removed by the user, either without using a tool or with less effort than two independent and simultaneous movements by hand, is to be opened or removed.		P

5.4A	If a part of the battery compartment enclosure is protected by pliable material such as fabric, paper, foam, or vinyl, or a pliable material with a seam, apply the Tension Test for Seams in Stuffed Toys and Beanbag-Type Toys test in the Standard Consumer Safety Specification for Toy Safety, ASTM F963, to determine whether the battery compartment enclosure can become exposed or accessible, using a force of at least 70.0 N (15.7 lbf). If a new part of the battery compartment enclosure becomes exposed or accessible, repeat 5.4 and remove any further pliable material that is then exposed until no new part of the battery compartment enclosure becomes exposed or accessible, and then conduct the test in 5.3.	Plastic hard shell.	N/A
5.5	Products that locate removable or replaceable button/coin cell batteries inside a battery compartment shall be designed to prevent children from removing the battery by one of the following methods in (a) or (b) below. Compliance is checked by the tests of Section 6. a) A tool, such as a screwdriver or monetary coin, is required to open the battery compartment. For a battery compartment secured by a screw or a twist-on access cover, a minimum torque of 0.5 Nm and a minimum angle of 90 degrees of rotation shall be required to open the compartment or the fastener shall engage a minimum of two full threads; or b) The battery compartment door or cover requires the application of a minimum of two independent and simultaneous movements to open by hand. The movements to open shall not be combinable to a single movement with a single finger or digit.	Compliant with a)	P
5.6	If screws or similar fasteners are used to secure the door or cover providing access to a battery compartment, the fasteners shall be captive to the door, cover, or device.		P
	Exception No.1: Applies to products containing button batteries or coin cell batteries not intended to be replaced by the consumer. Products containing button batteries or coin cell batteries that can only be accessed through the removal of multiple enclosures or panels using a tool do not need captive screws. Such products shall have instructions and warnings that clearly state the battery is not to be replaced by the consumer.		N/A
	Exception No. 2: Applies to products containing batteries not intended to be replaced by the consumer. Products that are only to be opened by a professional service center (where children are not present) are not required to have secured screws. Such products shall have instructions and warnings that clearly state the battery is not to be replaced by the consumer.		N/A

5.7	Products that incorporate button/coin cells that are not intended for user removal or replacement shall effectively prevent removal of the battery by the user or children. The button/coin cell shall be: a) Made inaccessible by an enclosure or similar means that passes the applicable tests of 6.2 and 6.3; or b) Held fully captive by the use of soldering, fasteners such as rivets, or equivalent means. The securement method shall pass the Secureness Test of 6.4.	Products that allow user removal or replacement of button/coin cells.	N/A
PERFORMANCE			
6	**Protection from Ingestion or Aspiration of Button/Coin Cell Batteries**		P
6.1	**General**		P
6.1.1	Products shall not present a risk of unintentional access by children to button/coin cells. Button/coin cell batteries shall not be accessible or liberated from the product as a result of mechanical abuse tests in applicable safety standards for the product, and products with button/coin cells shall comply with the tests in 6.2 – 6.4.		P
6.2	**Pre-conditioning**		P

6.2.1	One test sample shall be subjected to the following pre-conditioning conditions in sequence prior to testing in 6.3 and 6.4, as applicable: a) Stress Relief Test – A product with an enclosure, battery compartment door/cover or battery compartment door/cover opening mechanism made of molded or formed thermoplastic materials shall be subjected to a stress relief test. A sample of the complete product is to be placed in a circulating air oven for a period of 7 h. The oven temperature is to be set to the higher of (1) or (2) below. After removal from the oven, the sample is permitted to cool to room temperature. 1) 70°C (158°F); or 2) 10°C (18°F) higher than the maximum temperature of thermoplastic enclosures, battery compartment door/covers, or battery compartment door/cover mechanisms during the most stringent normal operation of the device. b) Battery Replacement Test – The battery compartment door/cover shall be opened and closed, and the battery removed and replaced, for a total of ten cycles. The process shall simulate replacement according to the manufacturer's instructions. If the battery compartment is secured with a screw (s), the screw (s) is to be loosened and then tightened by means of a suitable screwdriver, applying a continuous linear torque according to the Torque to be Applied to Screws table, Table 20, of the Standard for Audio, Video and Similar Electronic Apparatus – Safety Requirements, UL 60065.	Test as required.	P
6.3	**Abuse tests**		P
6.3.1	**General**		P
6.3.1.1	The tests in 6.3.2 – 6.3.4 shall be performed sequentially, as applicable, on one pre-conditioned sample of the product. After all test conditions have been completed, compliance is checked by 6.3.5.		P
6.3.2	**Drop test for portable devices and hand-held products**		P
6.3.2.1	Portable devices are subjected to drop tests from a height of 1.0 m (39.4 in) onto a horizontal hardwood surface in positions likely to produce the maximum force on the battery compartment or enclosure. Portable devices are subjected to three drops, except hand-held products are subjected to ten drops. The hardwood surface shall be at least 13-mm (1/2-in) thick, mounted on two layers of nominal 19-mm (3/4-in) thick plywood, placed on a concrete or equivalent non-resilient surface.	Hand-held products.	P
6.3.3	**Impact test**		P

6.3.3.1	The enclosure or battery compartment door/cover shall be subject to three, 2-J (1.5-ft·lbf) impacts. This impact is to be produced by dropping a steel sphere, 50.8 mm (2 inches) in diameter, and weighing approximately 0.5 kg (1.1 lb) from the height required to produce the specified impact, as shown in Figure 6.1, or the steel sphere is to be suspended by a cord and swung as a pendulum, dropping through the vertical distance required to cause it to strike the surface with the specified impact as shown in Figure 6.2. The steel sphere is to strike the battery compartment door/cover perpendicular to the enclosure surface.		P
6.3.4	**Crush test**		P
6.3.4.1	The sample is to be supported by a fixed rigid supporting surface, in positions likely to produce the most adverse results as long as the position can be self-supported. A crushing force of 330 ±5 N (74.2±1.1 lbf) is applied for a period of 10 s to the exposed surfaces. The force is to be applied by a flat surface measuring approximately 100 by 250 mm (3.9 by 9.8 in).		P
6.3.4A	**Torque test**		N/A
6.3.4A.1	If a child can grasp any part of the battery compartment enclosure on a consumer product, including the door or cover, with at least the thumb and forefinger, or using teeth, apply the Torque Test for Removal of Components from the Standard Consumer Safety Specification for Toy Safety, ASTM F963, to the battery compartment enclosure, using a torque of at least 0.50 Nm (4.4 in-lbf).	No such structure.	N/A
6.3.4B	**Tension test**		N/A
6.3.4B.1	If a child can grasp any part of the battery compartment enclosure on a consumer product, including the door or cover, with at least the thumb and forefinger, or using teeth, apply the Tension Test for Removal of Components from the Standard Consumer Safety Specification for Toy Safety, ASTM F963, to the battery compartment enclosure, using a force of at least 72.0 N (16.2 lbf).	No such structure.	N/A
6.3.4C	**Compression test**		NA
6.3.4C.1	If any surface of the battery compartment enclosure is accessible to a child and inaccessible to a flat surface contact during the Drop test in 6.3.2, apply the Compression Test from the Standard Consumer Safety Specification for Toy Safety, ASTM F963, to that surface, using a force of at least 136 N (30.6 lbf).	No such structure.	N/A
6.3.5	**Compliance**		P

6.3.5.1	After the tests of 6.3.2 – 6.3.4, a force of 45 ±1 N (10.1 ±0.2 lbf) is applied for 10 s to the battery compartment door/cover or enclosure by a rigid test finger according to Test Probe 11 of the Standard for Protection of Persons and Equipment by Enclosures – Probes for Verification, IEC 61032. The probe is applied at the most unfavorable place and in the most unfavorable direction. The force shall be applied in only one direction at a time. A battery compartment door/cover shall not open and shall remain functional. The battery shall not be accessible.		P
6.4	**Secureness test**		N/A
6.4.1	Button/coin cells that are not intended for user removal or replacement, and are accessible based on 5.3 and 5.4, shall comply with the following test. Compliance is checked by application of a test hook as shown in Figure 6.3, with a force of 20 ±2 N (4.5 ±0.4 lbf), directed outwards, applied for 10 s at all points where this is possible. During the test, the button/coin cell shall not become separated from the product.	Products that allow user removal or replacement of button/coin cells.	N/A
MARKING			
7A	**General**		P
7B	**Packaging Markings**	See packaging.	P
7C	**Product Markings**	See product.	P
7D	**Permanence of Markings**	Complied.	P
INSTRUCTIONS			
9	**General**	See instructions and manuals.	P

Attachment 1

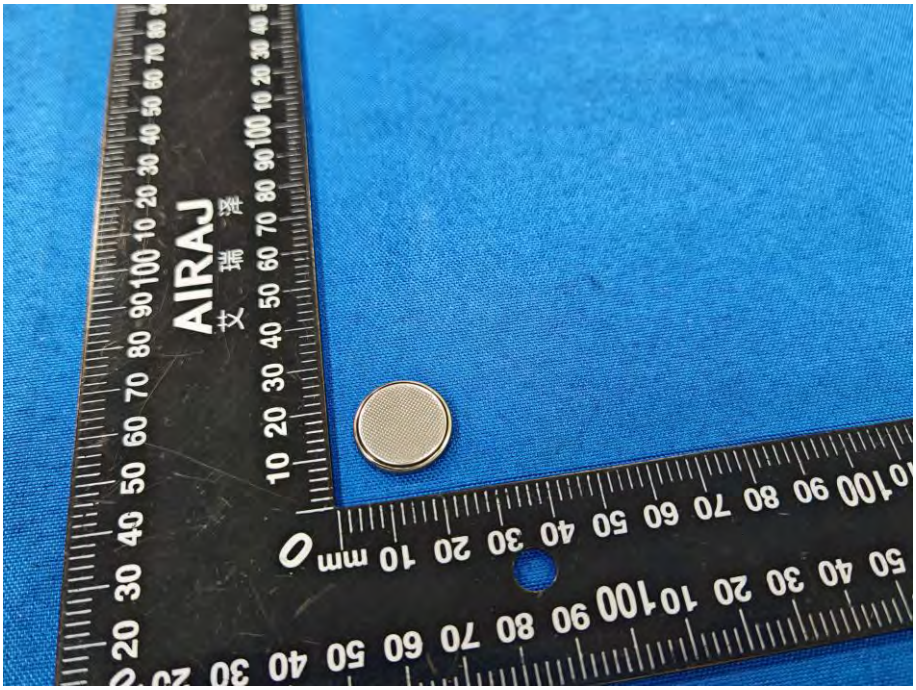
Photo Documentation






12345
TACH/HOUR
AIRAJ

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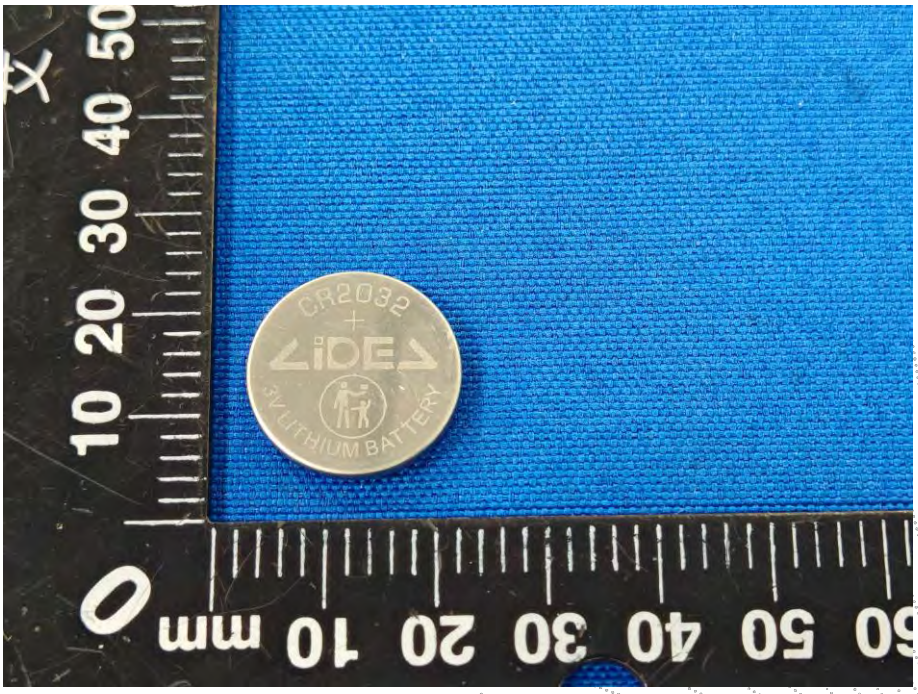
CR2032
LiDEA
3V LITHIUM BATTERY

STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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