

EN 62133-2:2017/A1:2021

TEST REPORT

Client Name : Dongguan zhongbang die-cutting products co., ltd

Address : Room 101, Building 6, No.233 Qingfeng Road, Xiekeng Village,
Qingxi Town, Dongguan City, Guangdong Province.

Product Name : PMA-HW209

Test Model No. : 107265/2P/6000mAh

Report No. : CCTI-2023112813S

Test Date : Nov. 27, 2023 to Dec. 08, 2023

Issued Date : Dec. 08, 2023

Prepared By : Shenzhen CCTI Technology Co., Ltd.

Address : 7th Floor, Block A, Building E, Yongwei Industrial Park, No. 118,
Yongfu Road, Qiaotou, Fuhai Street, Bao'an District, Shenzhen,
Guangdong, China

Contact Info : Service Tel : 0086-400-188-9662

CCTI E-mail : ccti@ccti-lab.com

CCTI Web : www.ccti-lab.com



Scan code for report

TEST REPORT

IEC 62133-2

**Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications
– Part 2: Lithium systems**

Report reference No.: CCTI-2023112813S

Date of issue : Dec. 08, 2023

Tested by (name + signature) : Nick Chan

Approved by (name + signature) : Corey Mao

Total number of pages: 25

Testing Laboratory: Shenzhen CCTI Technology Co., Ltd.

Address: 7th Floor, Block A, Building E, Yongwei Industrial Park, No. 118, Yongfu Road, Qiaotou, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.

Testing location : Same as above

Applicant's name : Dongguan zhongbang die-cutting products co., ltd

Address: Room 101, Building 6, No.233 Qingfeng Road, Xiekeng Village, Qingxi Town, Dongguan City, Guangdong Province.

Test specification

Standard: IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021

Test procedure : CE Report

Non-standard test method : N/A

Test Report Form No.: IEC62133_2C

TRF Originator : DEKRA Certification B.V.

Master TRF : Dated 2022-07-01

This report shall not be reproduced except in full, without the written approval of Shenzhen CCTI Technology Co., Ltd. This document may be altered or revised by Shenzhen CCTI Technology Co., Ltd. personnel only, and shall be noted in the revision section of the document. The test results in the report only apply to the tested sample.

Test item description : PMA-HW209

Trademark : N/A

Manufacturer's name : Shenzhen Fengyuantong Technology Co., LTD

Address: Room 406, Floor 4, Building A, Jindingsheng Science Innovation Park, Qinghu Community, Longhua Street, Longhua District, Shenzhen

Model and/or type reference : 107265/2P/6000mAh

Rating(s) : DC 3.7V, 6000mAh, 22.2Wh

List of Attachments (including a total number of pages in each attachment):

--Attachment 1: 1 pages for Photo documentation.

Summary of testing:**Tests performed (name of test and test clause):**

cl. 7.2.1 Continuous charging at constant voltage (cells)
cl. 7.2.2 Case stress at high ambient temperature (battery)
cl. 7.3.1 External short-circuit (cell)
cl. 7.3.2 External short-circuit (battery)
cl. 7.3.3 Free fall
cl. 7.3.4 Thermal abuse (cells)
cl. 7.3.5 Crush (cells)
cl. 7.3.6 Over-charging of battery
cl. 7.3.7 Forced discharge (cells)
cl. 7.3.8.1 Vibration
cl. 7.3.8.2 Mechanical shock
cl. 7.3.9 Forced internal short circuit (cells)

Tests are made with the number of cells and batteries specified in IEC 62133-2:2017 Table 1.

The samples comply with the requirement of IEC 62133-2:2017.

Testing location:

Shenzhen CCTI Technology Co., Ltd.
7th Floor, Block A, Building E, Yongwei Industrial Park,
No. 118, Yongfu Road, Qiaotou, Fuhai Street, Bao'an
District, Shenzhen, Guangdong, China.

Summary of compliance with National Differences (List of countries addressed):

Group and national differences for CENELEC countries have been considered.

☒ The product fulfils the requirements of EN 62133-2:2017/A1:2021

(insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

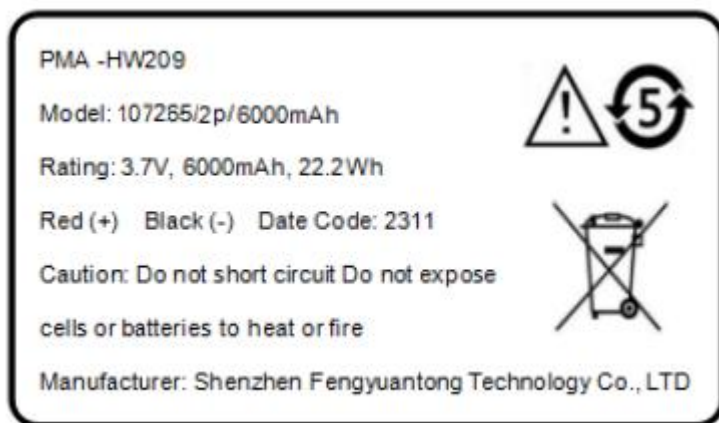
☒ **Statement not required by the standard used for type testing**

(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

(Additional requirements for markings. See 1.7 NOTE)



中鉴检测
CCTI TESTING

Test item particular.....: PMA-HW209	
Classification of installation and use.....	Build-in and use in portable applications
Supply Connection	Supplied by connectors
Recommend charging method declared by the manufacturer.....	At a temperature of 0~45°C, 0.2C1A current is charged at constant current to 4.20V and then at a constant voltage of 4.20V until charging stops when the charging current falls below 0.01C1A.
Discharge current	1200mAh
Specified final voltage.....	4.25V
Upper limit charging voltage per cell.....	4.25V
Maximum charging current	6A
Charging temperature upper limit	45°C
Charging temperature lower limit.....	0°C
Polymer cell electrolyte type.....	☐ gel polymer ☐ solid polymer ☒ N/A
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)
Testing.....	
Date of receipt of test item.....	Nov. 27, 2023
Date (s) of performance of tests.....	Nov. 27, 2023 to Dec. 08, 2023
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☒ comma / ☐ point is used as the decimal separator. <i>Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law."</i> <i>Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.</i>	
When differences exist; they shall be identified in the General product information section.	
General product information:	
N/A	

General product information:

This battery is constructed 2 pcs , and has overcharge, over-discharge, over current and short-circuits proof circuit.

The main features are shown as below (clause 7.1.1):

Type	Cell	Battery
Model	103665-3000mAh	107265-6000mAh
Rated Capacity	3000mAh	6000mAh
Rated voltage	3.7V	3.7V
Nominal charge current	600mA	1200mA
Nominal discharge current	600mA	1200mA
Maximum charge current	1500mAh	6000mAh
Maximum discharge current	1500mAh	6000mAh
Maximum charge voltage	4.2V	4.25V
Cut-off voltage	2.75V	2.75V
Type	Cell	Battery

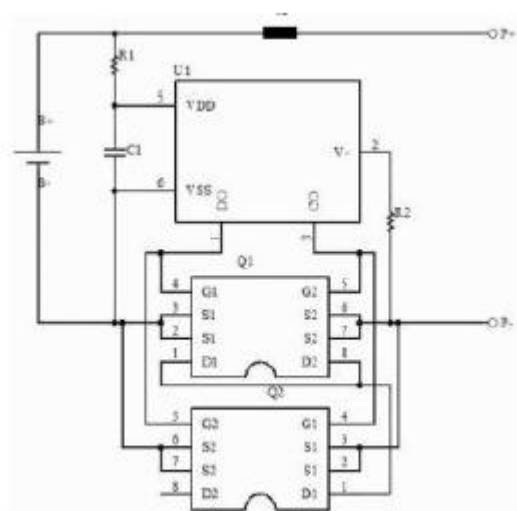
The main features are shown as below (clause 7.1.2):

Type	Cell	Battery
Model	103665-3000mAh	107265-6000mAh
Upper limit charge voltage	4.2V	4.2V
Taper-off current	270mA	270mA
Lower charge temperature	0°C	0°C
Upper charge temperature	45°C	45°C

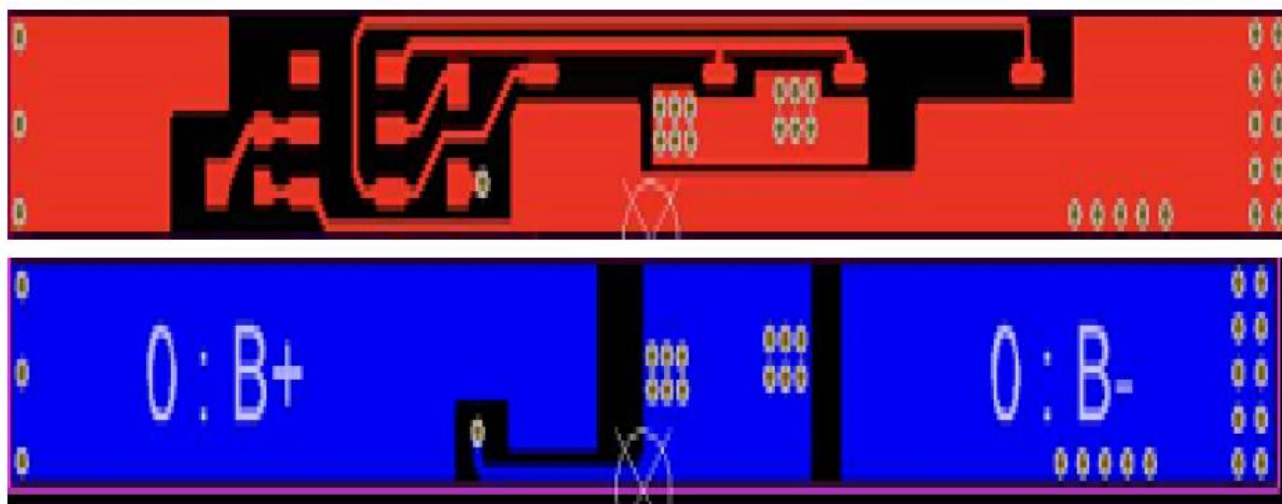
Construction:

Dimensions	
Diameter:	72mm
Height:	10.5mm
wide:	65mm
Weight:	99g

Protection Circuit



PCBA Original Location Map



IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
4	PARAMETER MEASUREMENT TOLERANCES		P
	Parameter measurement tolerances		P
5	GENERAL SAFETY CONSIDERATIONS		P
5.1	General		P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse		P
5.2	Insulation and wiring		P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ	No metal surface exists.	N/A
	Insulation resistance (MΩ)		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		P
	Orientation of wiring maintains adequate clearance and creepage distances between conductors		P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		P
5.3	Venting		P
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition	Explosion-proof safety valve for venting exists.	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		N/A
5.4	Temperature, voltage and current management		P
	Batteries are designed such that abnormal temperature rise conditions are prevented	Overcharge, over discharge, over current and short-circuit proof circuit used in this battery. See tests of clause 7.	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	See above.	P

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified	The charging limits specified in the battery specifications.	P
5.5	Terminal contacts		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	The "+" and "-" polarity explicitly marked on surface of the battery.	P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	Complied.	P
	Terminal contacts are arranged to minimize the risk of short-circuit	Complied.	P
5.6	Assembly of cells into batteries		P
5.6.1	General	Single cell in battery	N/A
	Each battery have an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region		N/A
	This protection may be provided external to the battery such as within the charger or the end devices		N/A
	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation		N/A
	If there is more than one battery housed in a single battery case, each battery have protective circuitry that can maintain the cells within their operating regions		N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		N/A
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		N/A
	Protective circuit components added as appropriate and consideration given to the end-device application		N/A

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance		N/A
5.6.2	Design recommendation		P
	For the battery consisting of a single cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2	Max. charging voltage:4.5V, not exceed 4.5V specified in Table 2	P
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that the voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Table 2, by monitoring the voltage of every single cell or the single cellblocks		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		N/A
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage not be counted as an overcharge protection		N/A
	For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		N/A
	It is recommended that the cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage		N/A
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system		N/A
5.6.3	Mechanical protection for cells and components of batteries		P
	Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse		P

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product		P
	The battery case and compartments housing cells designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		P
	For batteries intended for building into a portable end product, testing with the battery installed within the end product considered when conducting mechanical tests		P
5.7	Quality plan		P
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	Complied. ISO 9001: 2015 certificate provided.	P
5.8	Battery safety components		P
	According annex F		P
6	TYPE TEST AND SAMPLE SIZE		P
	Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old	Complied.	P
	Coin cells with resistance $\leq 3 \Omega$ (measured according annex D) are tested according table 1		N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of $20^\circ\text{C} \pm 5^\circ\text{C}$	The tests are conducted in an ambient of $20^\circ\text{C} \pm 5^\circ\text{C}$	P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and overdischarge protection		P
	When conducting the short-circuit test, consideration given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test		P
7	SPECIFIC REQUIREMENTS AND TESTS		P
7.1	Charging procedure for test purposes		P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer		P
	Prior to charging, the battery have been discharged at 20 °C ± 5 °C at a constant current of 0,2 It A down to a specified final voltage		P
7.1.2	Second procedure		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P
	After stabilization for 1 h and 4 h, respectively, at ambient temperature of highest test temperature and lowest test temperature, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant voltage charging method	Charge temperature 0-45°C declared. 0°C used for lower limit tests. 45°C used for upper limit tests.	P
7.2	Intended use		P
7.2.1	Continuous charging at constant voltage (cells)		P
	Fully charged cells are subjected for 7 days to a charge using the charging method for current and standard voltage specified by the cell manufacturer	Tested complied.	P
	Results: No fire. No explosion. No leakage :	(See appended table 7.2.1)	P
7.2.2	Case stress at high ambient temperature (battery)	No moulded case exists.	N/A
	Oven temperature (°C)..... :		—
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells		N/A
7.3	Reasonably foreseeable misuse		P
7.3.1	External short-circuit (cell)	Tested complied.	P
	The cells were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		P
	Results: No fire. No explosion :	(See appended table 7.3.1)	P
7.3.2	External short-circuit (battery)	Tested complied.	P
	The batteries were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N/A

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	- The case temperature declined by 20 % of the maximum temperature rise		P
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		N/A
	A single fault in the discharge protection circuit conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		P
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor	Single fault applies on MOSFET	P
	Results: No fire. No explosion	(See appended table 7.3.2)	P
7.3.3	Free fall	Tested complied.	P
	Results: No fire. No explosion		P
7.3.4	Thermal abuse (cells)	Tested complied.	P
	Oven temperature (°C)..... : 130°C		—
	Results: No fire. No explosion		P
7.3.5	Crush (cells)		P
	The crushing force was released upon:		P
	- The maximum force of 13 kN ± 0,78 kN has been applied; or	Tested complied.	P
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	Results: No fire. No explosion	(See appended table 7.3.5)	P
7.3.6	Over-charging of battery	Tested complied.	P
	The supply voltage which is:		P
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6.0 V) for single cell/cell block batteries or	Upper limit charging voltage: 4.25 V	P
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		N/A
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached		P
	Test was continued until the temperature of the outer casing:		P
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N/A

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	- Returned to ambient		P
	Results: No fire. No explosion	(See appended table 7.3.6)	P
7.3.7	Forced discharge (cells)	Tested complied.	P
	If the discharge voltage reaches the negative value of upper limit charging voltage within the testing duration, the voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration		N/A
	If the discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration, the test is terminated at the end of the testing duration		P
	Results: No fire. No explosion	(See appended table 7.3.7)	P
7.3.8	Mechanical tests (batteries)		P
7.3.8.1	Vibration	Tested complied.	P
	Results: No fire, no explosion, no rupture, no leakage or venting.	(See appended table 7.3.8.1)	P
7.3.8.2	Mechanical shock	Tested complied.	P
	Results: No leakage, no venting, no rupture, no explosion and no fire	(See appended table 7.3.8.2)	P
7.3.9	Design evaluation – Forced internal short-circuit (cells)	Tested complied.	P
	The cells complied with national requirement for.. :	France, Japan, Republic of Korea, Switzerland.	—
	The pressing was stopped upon:		N/A
	- A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	800N	P
	Results: No fire	(See appended table 7.3.9)	P

8	INFORMATION FOR SAFETY		P
8.1	General		P
	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products	Information for safety mentioned in manufacturer's specifications.	P
	Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards	Information for safety mentioned in manufacturer's specifications.	P

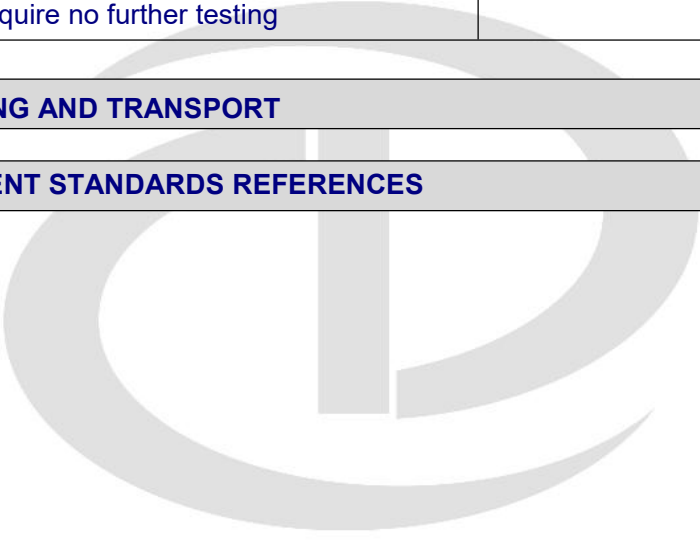
IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	As appropriate, any information relating to hazard avoidance resulting from a system analysis provided to the end user		N/A
	Do not allow children to replace batteries without adult supervision		N/A
8.2	Small cell and battery safety information		N/A
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		N/A
	- Keep small cells and batteries which are considered swallowable out of the reach of children		N/A
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2h of ingestion		N/A
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N/A
9	MARKING		P
9.1	Cell marking		P
	Cells marked as specified in IEC 61960, except coin cells	The final product is battery pack	N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		P
9.2	Battery marking		P
	Batteries marked as specified in IEC 61960, except for coin batteries	The battery is marked in accordance with IEC 61960, also see copy of marking plate.	P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement		N/A

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminals have clear polarity marking on the external surface of the battery		P
	Batteries with keyed external connectors designed for connection to specific end products need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N/A
9.3	Caution for ingestion of small cells and batteries		N/A
	Coin cells and batteries identified as small batteries according to 8.2 include a caution statement regarding the hazards of ingestion in accordance with 8.2		N/A
	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package		N/A
9.4	Other information		P
	Storage and disposal instructions	Information for storage instructions mentioned in manufacturer's specifications.	P
	Recommended charging instructions	Information for recommended charging instructions mentioned in manufacturer's specifications.	P
10	PACKAGING AND TRANSPORT		P
	Packaging for coin cells not small enough to fit within the limits of the ingestion gauge of Figure 3		N/A
	The materials and packaging design are chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX A	CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE		P
A.1	General		P
A.2	Safety of lithium ion secondary battery	Complied.	P
A.3	Consideration on charging voltage	Complied.	P
A.3.1	General		P
A.3.2	Upper limit charging voltage	4.25V applied.	P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	4.25V applied.	N/A
A.4	Consideration of temperature and charging current		P
A.4.1	General		P
A.4.2	Recommended temperature range	See A.4.2.2.	P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature range declared by client is: 0-45°C	P
A.4.3	High temperature range	Not higher than the temperature specific in this standard.	N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		N/A
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		N/A
A.4.4	Low temperature range	Not lower than the temperature specific in this standard.	N/A
A.4.4.1	General		N/A
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		N/A
A.4.5	Scope of the application of charging current		P
A.4.6	Consideration of discharge		P
A.4.6.1	General		P

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
A.4.6.2	Final discharge voltage and explanation of safety viewpoint	2.75V applied.	P
A.4.6.3	Discharge current and temperature range	Discharge temperature range declared by client is: 0°C-60°C	P
A.4.6.4	Scope of application of the discharging current	Nominal discharge current: 1200 mA, Max discharge current: 6000 mA	P
A.5	Sample preparation		N/A
A.5.1	General		N/A
A.5.2	Insertion procedure for nickel particle to generate internal short		N/A
A.5.3	Disassembly of charged cell		N/A
A.5.4	Shape of nickel particle		N/A
A.5.5	Insertion of nickel particle in cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle in winding core		N/A
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		N/A
A.5.6	Insertion of nickel particle in prismatic cell		N/A
A.6	Experimental procedure of the forced internal short-circuit test		N/A
A.6.1	Material and tools for preparation of nickel particle		N/A
A.6.2	Example of a nickel particle preparation procedure		N/A
A.6.3	Positioning (or placement) of a nickel particle		N/A
A.6.4	Damaged separator precaution		N/A
A.6.5	Caution for rewinding separator and electrode		N/A
A.6.6	Insulation film for preventing short-circuit		N/A
A.6.7	Caution when disassembling a cell		N/A
A.6.8	Protective equipment for safety		N/A
A.6.9	Caution in the case of fire during disassembling		N/A
A.6.10	Caution for the disassembling process and pressing the electrode core		N/A
A.6.11	Recommended specifications for the pressing device		N/A
ANNEX B	RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS		N/A
ANNEX C	RECOMMENDATIONS TO THE END-USERS		N/A

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX D	MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS		N/A
D.1	General		N/A
D.2	Method		N/A
	A sample size of three coin cells is required for this measurement..... :	(See appended table D.2)	N/A
	Coin cells with an internal resistance of less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing		N/A
ANNEX E	PACKAGING AND TRANSPORT		P
ANNEX F	COMPONENT STANDARDS REFERENCES		P


中鉴检测
 CCTI TESTING

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict

5.8	TABLE: Critical components information					P
Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity ¹⁾	
-Wire	DONGGUAN CHENG XING ELECTRONIC CO LTD	1007	18AWG, 80℃	--	--	
-PCB	SHENZHEN XING BAO SHUN ELECTRONICS SCIENTIFIC CO LTD	XBS-8	V-0, 130℃	UL796 UL796F	UL E361977	
-Cell	GanZhou Novel Battery Technology Co., Ltd.	103665-3000mAh	3.7 Vd.c., 3000 mAh, 11.1Wh	IEC 62133:2017	Tested with appliance	
-Electrolyte	Guangzhou Tinci Materials Technology Co., Ltd.	TC-9104V	LiPF ₆ +EC+EMC+DEC	--	--	
-Separator	Chongqing Yuntianhua Newmi-Tech Co., Ltd.	NM-T12	12μm(T)×64mm(W) ×1184mm(L) Shutdown temperature:128-135℃	--	--	
-Negative electrode	Shenzhen XFH Technology Co., Ltd.	0.138mm(T)×61mm(W)×530mm (L)	C	--	--	
-Positive electrode	Hunan shanshan New Material Technology Co., Ltd	0.113mm(T)×60mm(W)×595mm (L)	LiCoO ₂	--	--	
-Positive electrode tab	ShenZhe Winner Co., Limited	0.1mm(T)×4.0mm(W)	Al	--	--	
-Negative electrode tab	ShenZhe Winner Co., Limited	0.1mm(T)×4.0mm(W)	Ni	--	--	
Supplementary information: 1) Provided evidence ensures the agreed level of compliance.						

7.2.1	TABLE: Continuous charging at constant voltage (cells)				P
Sample no.	Recommended charging voltage V _c (Vdc)	Recommended charging current I _{rec} (A)	OCV before test (Vdc)	Results	
C01	4.20	0.89	4.19	P	
C02	4.20	0.89	4.19	P	
C03	4.20	0.89	4.19	P	
C04	4.20	0.89	4.19	P	

IEC 62133-2:2017					
Clause	Requirement + Test			Result - Remark	Verdict
C05	4.20	0.88	4.19		P
Supplementary information: - No fire or explosion - No leakage - Others (please explain)					

7.3.1	TABLE: External short-circuit (cell)					P
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K) (°C)	Results	
Samples charged at charging temperature upper limit 45°C						
C06	22.8	4.25	83	55.1	P	
C07	22.8	4.24	86	54.5	P	
C08	22.8	4.24	89	54.1	P	
C09	22.8	4.24	84	58.1	P	
C10	22.8	4.23	90	58.1	P	
Samples charged at charging temperature lower limit 0°C						
C11	22.9	4.13	90	57.8	P	
C12	22.9	4.13	92	54.5	P	
C13	22.9	4.15	84	57.5	P	
C14	22.9	4.13	82	60.7	P	
C15	22.9	4.14	83	59.8	P	
Supplementary information:						
- No fire or explosion						
- Others (please explain)						

7.3.2	TABLE: External short-circuit (battery)					P
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K) (°C)	Component single fault condition	Results
Samples charged at charging temperature upper limit 45°C						
B04	55.2	4.21	83	55.9	--	P
B05	55.2	4.21	86	56.3	--	P
B06	55.2	4.21	89	56.8	--	P
B07	55.2	4.21	90	55.9	--	P
B08	55.2	4.21	88	56.5	--	P

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict

Samples charged at charging temperature lower limit 0℃						
B04	54.8	4.18	90	56.3	--	P
B05	54.8	4.18	85	56.1	--	P
B06	54.8	4.18	86	57.0	--	P
B07	54.8	4.18	90	56.0	--	P
B08	54.8	4.18	84	56.2	--	P

Supplementary information:

- No fire or explosion
- Others (please explain)

7.3.5	TABLE: Crush (cells)				P
Sample no.	OCV before test (Vdc)	OCV at removal of crushing force (Vdc)	Maximum force applied to the cell during crush (kN)	Results	
Samples charged at charging temperature upper limit 45℃					
C29	4.23	4.23	13.0	P	
C30	4.25	4.23	13.0	P	
C31	4.24	4.23	13.0	P	
C32	4.22	4.23	13.0	P	
C33	4.24	4.23	13.0	P	
Samples charged at charging temperature lower limit 0℃					
C34	4.24	4.24	13.0	P	
C35	4.22	4.24	13.0	P	
C36	4.24	4.24	13.0	P	
C37	4.25	4.24	13.0	P	
C38	4.24	4.24	13.0	P	

Supplementary information:

- No fire or explosion
- Others (please explain)

7.3.6	TABLE: Over-charging of battery			P
Constant charging current (A)		6.0	—	
Supply voltage (Vdc)		3.7	—	
Sample no.	OCV before charging (Vdc)	Maximum outer case temperature (℃)	Results	
B12	3.44	26.3	P	
B13	3.42	25.6	P	

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
B14	3.44	25.8	P
B15	3.57	25.6	P
B16	3.44	25.5	P
Supplementary information: - No fire or explosion - Others (please explain)			

7.3.7	TABLE: Forced discharge (cells)				P
Sample no.	OCV before application of reverse charge (Vdc)	Measured reverse charge I _t (A)	Lower limit discharge voltage (Vdc)	Results	
C39	3.37	2	0.21	P	
C40	3.38	2	0.15	P	
C41	3.37	2	0.18	P	
C42	3.35	2	0.14	P	
C43	3.37	2	0.20	P	
Supplementary information:					
- No fire or explosion					
- Others (please explain)					

7.3.8.1	TABLE: Vibration					P
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
B17	4.25	4.24	53.352	53.346	P	
B18	4.24	4.24	53.347	53.344	P	
B19	4.24	4.25	53.351	53.346	P	
Supplementary information: - No fire or explosion - No rupture - No leakage - No venting - Others (please explain)						

7.3.8.2	TABLE: Mechanical shock					P
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
B20	4.24	4.24	53.351	53.348	P	
B21	4.24	4.24	53.347	53.345	P	
B22	4.24	4.24	53.350	53.344	P	

IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

- No fire or explosion
- No rupture
- No leakage
- No venting
- Others (please explain)

7.3.9	TABLE: Forced internal short circuit (cells)				P
Sample no.	Chamber ambient T (°C)	OCV before test (Vdc)	Particle location ¹⁾	Maximum applied pressure (N)	Results
Samples charged at charging temperature upper limit 45°C					
C44	45°C	4.19	1	801	P
C45	45°C	4.20	1	803	P
C46	45°C	4.20	1	803	P
C47	45°C	4.21	2	802	P
C48	45°C	4.20	2	803	P
Samples charged at charging temperature lower limit 0°C					
C49	0°C	4.16	1	803	P
C50	0°C	4.18	1	803	P
C51	0°C	4.19	1	804	P
C52	0°C	4.19	2	801	P
C53	0°C	4.17	2	800	P

Supplementary information:
¹⁾ Identify one of the following:

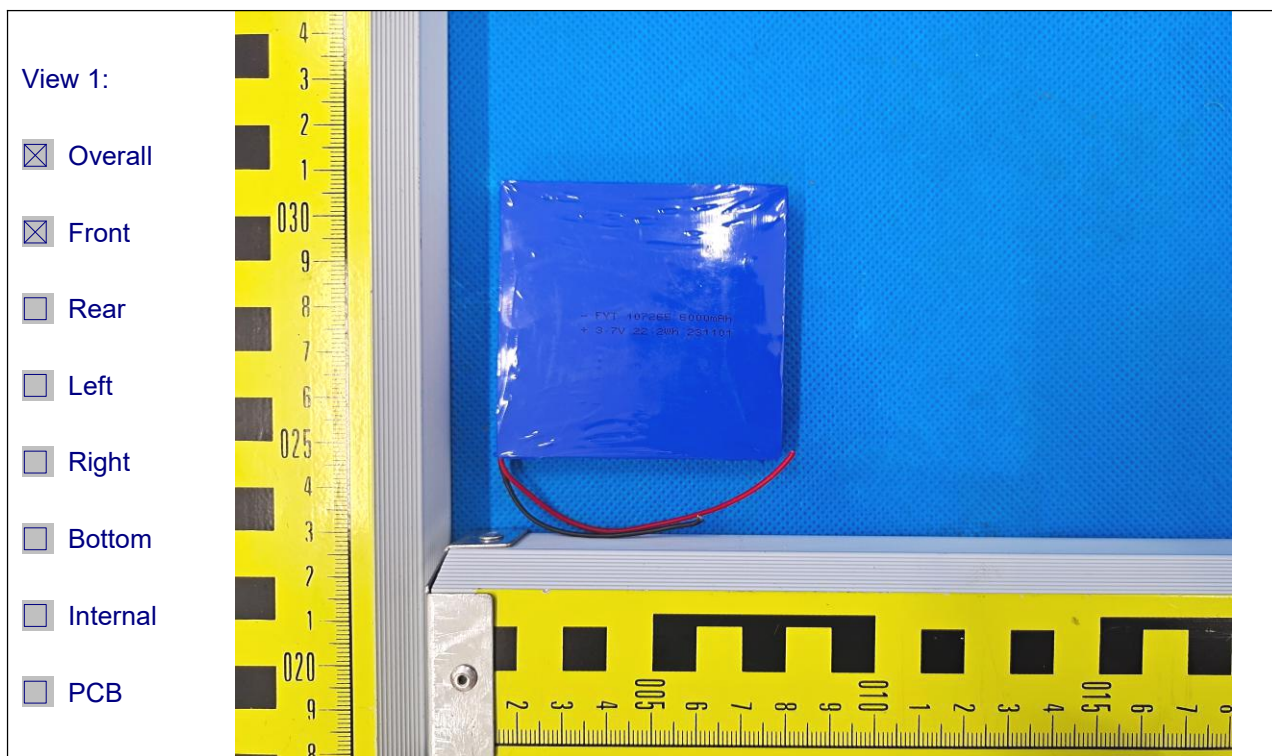
- 1: Nickel particle inserted between positive and negative (active material) coated area.
- 2: Nickel particle inserted between positive aluminium foil and negative active material coated area.

- No fire or explosion
- Others (please explain)

D.2	TABLE: Internal AC resistance for coin cells				N/A
Sample no.	Ambient T (°C)	Store time (h)	Resistance Rac (Ω)	Results ¹⁾	

Supplementary information:
¹⁾ Coin cells with internal resistance less than or equal to 3 Ω, see test result on corresponding tables

Attachment 1: Photo documentations



--- End of Attachment 1 ---

中鉴检测
CCTI TESTING