

TEST REPORT

Sample name &Model	Rechargeable Li-ion polymer Battery 103450
Applicant	Shenzhen Liyoutong Technology Co., Ltd
Manufacturer	Dongguan Chenxinsheng Energy Co., Ltd

深圳诚测检测技术有限公司
Shenzhen CCJC Technology Co., Ltd

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 Number.	CCJC2612701R01
Date of issue	2026-04-28
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Applicant's name	Shenzhen Liyoutong Technology Co., Ltd
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Manufacturer's name	Dongguan Chenxinsheng Energy Co., Ltd
Address	Room 201, Building 1, No. 28 Chenwuzheng Road, Wusha, Chang'an Town, Dongguan City, Guangdong Province, China
Factory's name	Dongguan Chenxinsheng Energy Co., Ltd
Address	Room 201, Building 1, No. 28 Chenwuzheng Road, Wusha, Chang'an Town, Dongguan City, Guangdong Province, China
Test specification:	
Standard	IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021
Test procedure	Test Report
Non-standard test method	N/A
Test item description	
Trade Mark	N/A
Model/Type reference	103450
Ratings	3.7V, 2000mAh, 7.4Wh

Testing procedure and testing location:		
Testing Laboratory	Shenzhen CCJC Technology Co.,Ltd.	
Testing location/ address	1-3/F., Factory Building 101, No.25, Xitou Road, Xitou, Songgang Subdistrict, Bao'an District, Shenzhen, Guangdong, China	
Tested by (name, function, signature)	Cong Chen Project Engineer	<i>Cong chen</i>
Approved by (name, function, signature):	Roc Cheng Project Reviewer	<i>Roc cheng</i>
List of Attachments:		
Appendix 1: 3 pages of 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 Design evaluation – Forced internal short-circuit (cells) Tests are made with the number of cells and batteries specified in IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021.	Testing location: Shenzhen CCJC Technology Co.,Ltd. 1-3/F., Factory Building 101, No.25, Xitou Road, Xitou, Songgang Subdistrict, Bao'an District, Shenzhen, Guangdong, China	
Summary of compliance with National Differences		
☒ The product fulfils the requirements of <u>EN 62133-2:2017/A1:2021</u>		

Copy of marking plate

The artwork below may be only a draft.

Rechargeable Li-ion polymer Battery

103450 1IMNP10/34/51

3.7V, 2000mAh, 7.4Wh

Red wire (+) Black wire (-)

Dongguan Chenxinsheng Energy Co., Ltd

YYYYMMDD Made in China

WARNING:

Do not short-circuit

Do not use after soaking



Test item particulars..... :	
Classification of installation and use..... :	To be defined in final product
Supply connection..... :	Dc connector
Recommend charging method declared by the manufacturer	Charging the battery with 400mA constant current and 4.2V constant voltage until the current reduces to 40mA at ambient 20°C±5°C.
Discharge current (0,2 It A)..... :	400mA
Specified final voltage..... :	3.0V
Upper limit charging voltage per cell..... :	4.2V
Maximum charging current	1000mA
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	2026-04-14
Date (s) of performance of tests	2026-04-14 to 2026-04-28
General remarks:	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(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 point is used as the decimal separator.	

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General product information:

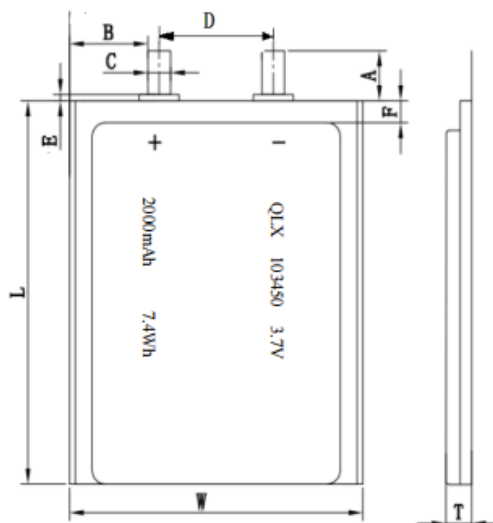
The battery is constructed with single Li-ion cell, and has overcharge, over-discharge, overcurrent and short-circuits protection circuit

Additionally, details information of the cell and battery as following:

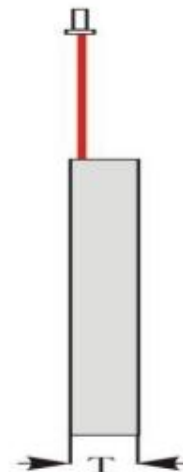
Product name	Li-ion Cell	Polymer Li-ion Rechargeable Battery
Type/model	103450	103450
Nominal voltage	3.7Vd.c.	3.7Vd.c.
Rated capacity	2000mAh	2000mAh
Charging voltage recommended by manufacturer	4.2V	4.2V
Upper limit charging voltage	4.2V	4.2V
Final voltage	3.0V	3.0V
Lower limit discharge voltage	3.0V	-
Charging current declared by manufacturer	1000mA	400mA
Maximum charging current	2000mA	1000mA
Charging temperature upper limit	45°C	45°C
Charging temperature lower limit	0°C	0°C
First charging procedure (20°C ± 5°C)	Charge at constant current 1000mA until voltage reaches 4.2V, then charge at constant voltage 4.2V till charge current is 40mA.	Charge at constant current 1000mA until voltage reaches 4.2V, then charge at constant voltage 4.2V till charge current is 40mA.
Second charging procedure	Store at 0°C and 45°C for 1 to 4 hours, respectively, then charge at constant current 2000mA until voltage reaches 4.2V, then charge at constant voltage 4.2V till charge current reduced to 0.05 /t A (100mA)	-

Construction:

Cell dimension: (unit: mm)



T max: 10.0mm, W max: 34.0mm, L max: 50.5mm



L max: 10.0mm, W max: 34.5mm, H max: 53.0mm

IEC 62133-2			
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 clearances 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		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		P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		P
	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		P
5.5	Terminal contacts		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	Assembly of cells into batteries		P
5.6.1	General		P
	Each battery has 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		P
	This protection may be provided external to the battery such as within the charger or the end devices	Consider in end product	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	Consider in end product	N/A
	If there is more than one battery housed in a single battery case, each battery has 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		P
	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 are added as appropriate and consideration given to the end-device application	Consider in end product	N/A
	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		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	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 are not 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 are not discharged beyond the cell manufacturer's specified final voltage		P
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry are incorporated into the battery management system		N/A
5.6.3	Mechanical protection for cells and components of batteries	Consider in end product	N/A
	Mechanical protection for cells, cell connections and control circuits within the battery are provided to prevent damage as a result of intended use and reasonably foreseeable misuse		N/A
	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		N/A
	The battery case and compartments housing cells are designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		N/A
	For batteries intended for building into a portable end product, testing with the battery installed within the end product is considered when conducting mechanical tests		N/A
5.7	Quality plan		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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		P
5.8	Battery safety components		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		P
	The internal resistance of coin cells are measured in accordance with Annex D. Coin cells with internal resistance less than or equal to 3 Ω are tested in accordance with Table 1		N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of 20 °C $\pm$ 5 °C		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection		P
	When conducting the short-circuit test, consideration is 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
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C $\pm$ 5 °C, using the method declared by the manufacturer		P
	Prior to charging, the battery has been discharged at 20 °C $\pm$ 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

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Clause	Requirement + Test	Result - Remark	Verdict
	After stabilization for 1 h to 4 h, at an ambient temperature of the highest test temperature and the lowest test temperature, respectively, 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 current to constant voltage charging method		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		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)	This test is specially requested by client.	P
	Oven temperature (°C).....:	70°C±2°C	—
	Results: no physical distortion of the battery case resulting in exposure of internal protective components and cells		P
7.3	Reasonably foreseeable misuse		P
7.3.1	External short-circuit (cell)		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)		P
	The batteries were tested until one of the following occurred:		P
	- 24 hours elapsed; or		P
	- The case temperature declined by 20 % of the maximum temperature rise		N/A
	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 is conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		P

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Clause	Requirement + Test	Result - Remark	Verdict
	A single fault applies to protective component parts such as MOSFET (metal oxide semiconductor field-effect transistor), fuse, thermostat or positive temperature coefficient (PTC) thermistor		P
	Results: no fire, no explosion	(See appended table 7.3.2)	P
7.3.3	Free fall		P
	Results: no fire, no explosion		P
7.3.4	Thermal abuse (cells)		P
	Oven temperature (°C)	130°C±2°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		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		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		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
	- Returned to ambient		P
	Results: no fire, no explosion	(See appended table 7.3.6)	P
7.3.7	Forced discharge (cells)		P
	Discharge a single cell to the lower limit discharge voltage specified by the cell manufacturer		P
	The discharged cell is then subjected to a forced discharge at 1 It A to the negative value of the upper limit charging voltage		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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
	- 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		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		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)		P
	The cells complied with national requirement for	France, Japan, Republic of Korea, Switzerland	—
	The pressing was stopped upon:		P
	- 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	400N	P
	Results: no fire	(See appended table 7.3.9)	P
8	INFORMATION FOR SAFETY		P
8.1	General		P
	Manufacturers of secondary cells provides information about current, voltage and temperature limits of their products		P
	Manufacturers of batteries provides information regarding how to minimize and mitigate hazards to equipment manufacturers or end-users		P
	Systems analyses are 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 is provided to the end user		N/A
	Do not allow children to replace batteries without adult supervision		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
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 2 h 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		N/A
	Cells are marked as specified in IEC 61960, except coin cells		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		N/A
9.2	Battery marking		P
	Batteries are marked as specified in IEC 61960, except for coin batteries	Battery marked as specified in IEC 61960-3:2017	P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity		N/A
	Batteries are marked with an appropriate caution statement		P
	- Terminals have clear polarity marking on the external surface of the battery, or		P
	- 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 include a caution statement regarding the hazards of ingestion in accordance with 8.2		N/A
	Small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion is given on the immediate package		N/A

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

9.4	Other information		P
	The following information are marked on or supplied with the battery:		P
	- Storage and disposal instructions		P
	- Recommended charging instructions		P

10	PACKAGING AND TRANSPORT		N/A
	Packaging for coin cells are not be small enough to fit within the limits of the ingestion gauge of Figure 3	Not coin cells.	N/A

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		P
A.3	Consideration on charging voltage		P
A.3.1	General		P
A.3.2	Upper limit charging voltage		P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		P
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied		P
A.4	Consideration of temperature and charging current		P
A.4.1	General		P
A.4.2	Recommended temperature range		P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied		P
A.4.3	High temperature range		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		N/A
A.4.4.1	General		N/A
A.4.4.2	Explanation of safety viewpoint		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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
A.4.6.2	Final discharge voltage and explanation of safety viewpoint	Consider in end product	N/A
A.4.6.3	Discharge current and temperature range	Consider in end product	N/A
A.4.6.4	Scope of application of the discharging current		P
A.5	Sample preparation		P
A.5.1	General		P
A.5.2	Insertion procedure for nickel particle to generate internal short		P
A.5.3	Disassembly of charged cell		P
A.5.4	Shape of nickel particle		P
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		P
A.6	Experimental procedure of the forced internal short-circuit test		P
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		P
A.6.4	Damaged separator precaution		P
A.6.5	Caution for rewinding separator and electrode		P
A.6.6	Insulation film for preventing short-circuit		P
A.6.7	Caution when disassembling a cell		P
A.6.8	Protective equipment for safety		P
A.6.9	Caution in the case of fire during disassembling		P
A.6.10	Caution for the disassembling process and pressing the electrode core		P
A.6.11	Recommended specifications for the pressing device		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX B	RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS		P
ANNEX C	RECOMMENDATIONS TO THE END-USERS		N/A
ANNEX D	MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS		N/A
D.1	General	Not coin cells.	N/A
D.2	Method		N/A
	A sample size of three coin cells is required for this measurement		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing	(See appended table D.2)	N/A
	Coin cells with an internal resistance less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
ANNEX E	PACKAGING AND TRANSPORT		N/A
ANNEX F	COMPONENT STANDARDS REFERENCES		N/A

7.3.1	TABLE: External short circuit (cell)					P
Sample No.	Ambient (°C)	OCV at start of test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Results	
Samples charged at charging temperature upper limit (45°C)						
C6	55.1	4.17	89	58.4	P	
C7	55.1	4.18	90	59.0	P	
C8	55.1	4.18	90	57.2	P	
C9	55.1	4.18	92	56.3	P	
C10	55.1	4.17	94	56.9	P	
Samples charged at charging temperature lower limit (0°C)						
C11	55.1	4.13	90	53.1	P	
C12	55.1	4.14	91	50.8	P	
C13	55.1	4.14	91	52.1	P	
C14	55.1	4.13	88	51.1	P	
C15	55.1	4.13	89	50.1	P	
Supplementary information:						
- No fire or explosion						

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)	Component single fault condition	Results
B1	23.1	4.19	89	0.2	Normal	P
B2	23.1	4.19	88	0.3	Short Circuit MOSFET(Q1)	P
B3	23.1	4.19	87	0.3	Short Circuit MOSFET(Q1)	P
B4	23.1	4.19	88	0.4	Short Circuit FUSE(F1)	P
B5	23.1	4.19	87	0.4	Short Circuit FUSE(F1)	P
Supplementary information: - No fire or explosion						

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°C)					
C26	4.17	4.15	13.00	P	
C27	4.18	4.16	13.01	P	
C28	4.17	4.15	13.01	P	
C29	4.18	4.16	13.00	P	
C30	4.17	4.16	13.01	P	
Samples charged at charging temperature lower limit (0°C)					
C31	4.13	4.12	12.99	P	
C32	4.14	4.12	12.98	P	
C33	4.13	4.11	13.01	P	
C34	4.13	4.11	13.01	P	
C35	4.14	4.12	12.98	P	
Note: A 13KN force applied at the wide side of prismatic cells. No voltage abrupt drop occurred. Supplementary information: - No fire or explosion					

7.3.6	TABLE: Over-charging of battery			P
Constant charging current (A)		4.0		—
Supply voltage (Vdc)		5.88		—
Sample No.	OCV before charging (Vdc)	Maximum outer case temperature (°C)	Results	
B6	3.31	36.3	P	
B7	3.32	35.1	P	
B8	3.32	35.1	P	
B9	3.32	34.1	P	
B10	3.33	33.9	P	
Supplementary information:				
- No fire or explosion				

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
C36	3.34	2.0	3.0	P
C37	3.34	2.0	3.0	P
C38	3.33	2.0	3.0	P
C39	3.32	2.0	3.0	P
C40	33.32	2.0	3.0	P
Supplementary information: - No fire or explosion				

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
B11	4.19	4.18	33.498	33.495	P
B12	4.19	4.18	33.569	33.566	P
B13	4.19	4.18	33.388	33.385	P
Supplementary information: - No fire or explosion - No rupture - No leakage - No venting					

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
B14	4.18	4.18	33.405	33.404	P
B15	4.19	4.19	33.394	33.393	P
B16	4.19	4.19	33.029	33.028	P
Supplementary information: - No fire or explosion - No rupture - No leakage - No venting					

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)						
C41	45	4.17	1	400	P	
C42	45	4.18	1	400	P	
C43	45	4.18	1	400	P	
C44	45	4.17	1	400	P	
C45	45	4.18	1	400	P	
Samples charged at charging temperature lower limit (0°C)						
C46	0	4.13	1	400	P	
C47	0	4.14	1	400	P	
C48	0	4.13	1	400	P	
C49	0	4.13	1	400	P	
C50	0	4.14	1	400	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 aluminum foil and negative active material coated area. Remark: There is no particle location 2 for this cell. - No fire						

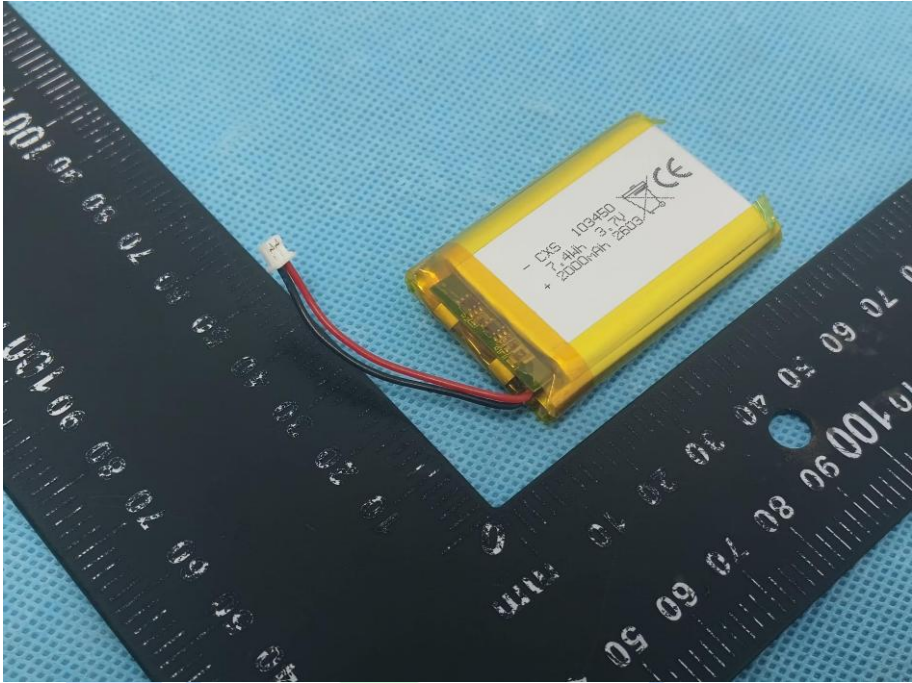
D.2	TABLE: Internal AC resistance for coin cells				N/A
Sample no.	Ambient T (°C)	Store time (h)	Resistance Rac (Ω)	Results ¹⁾	

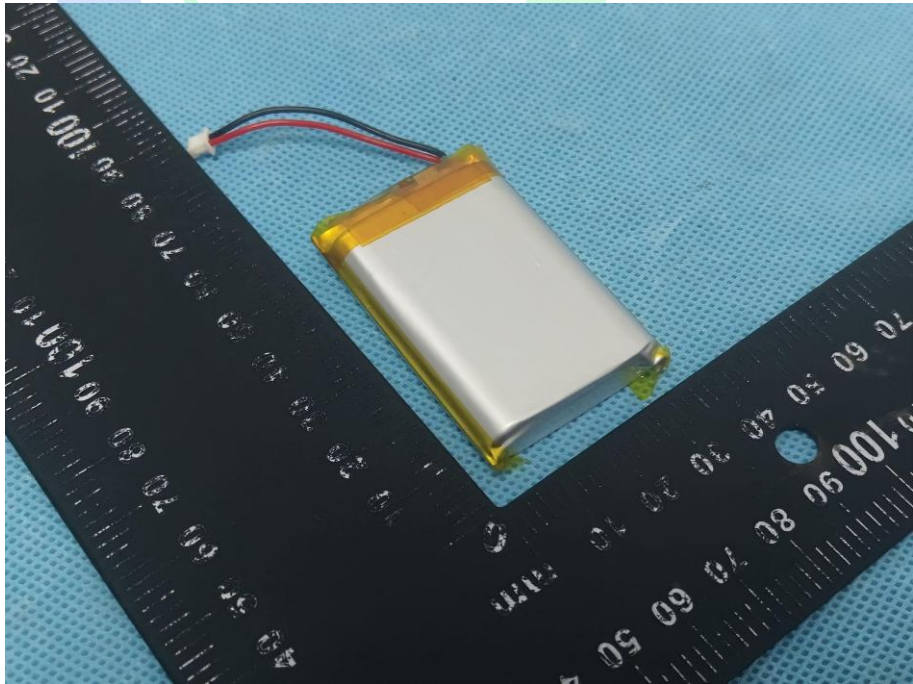
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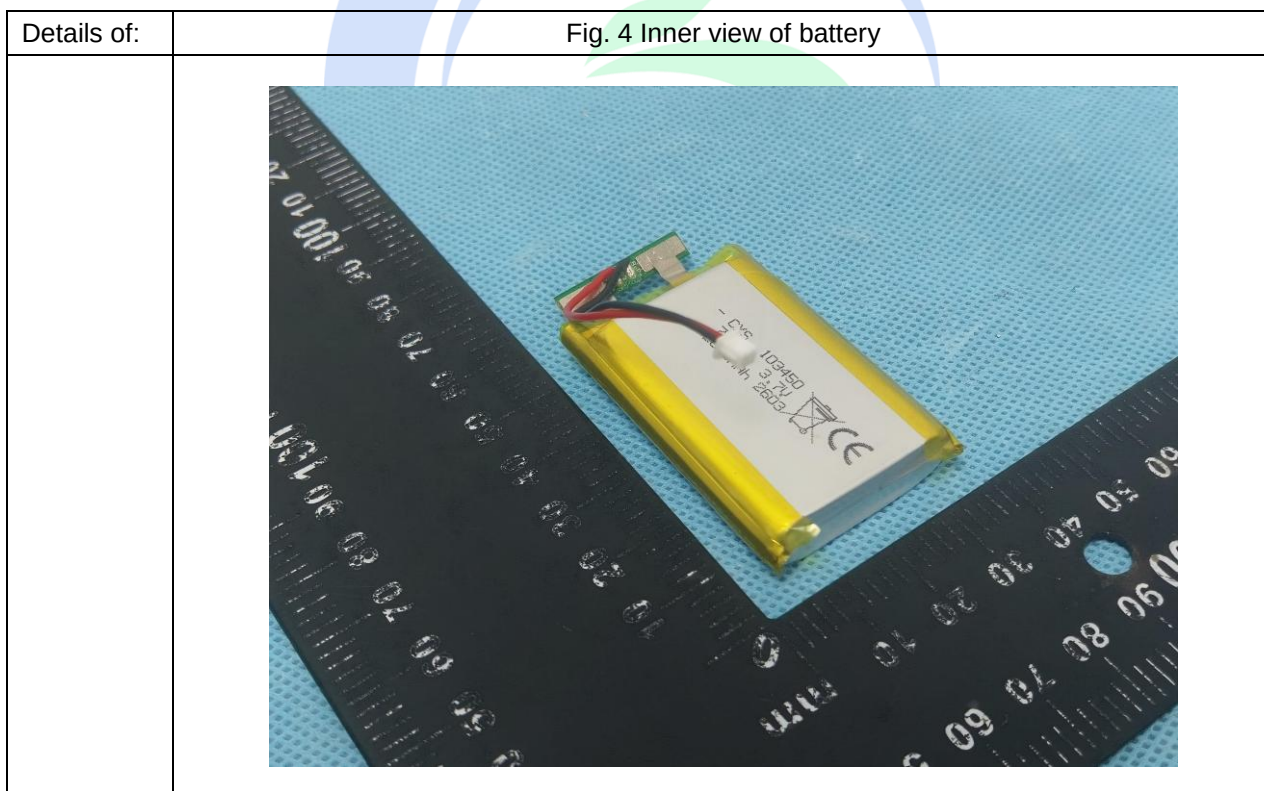
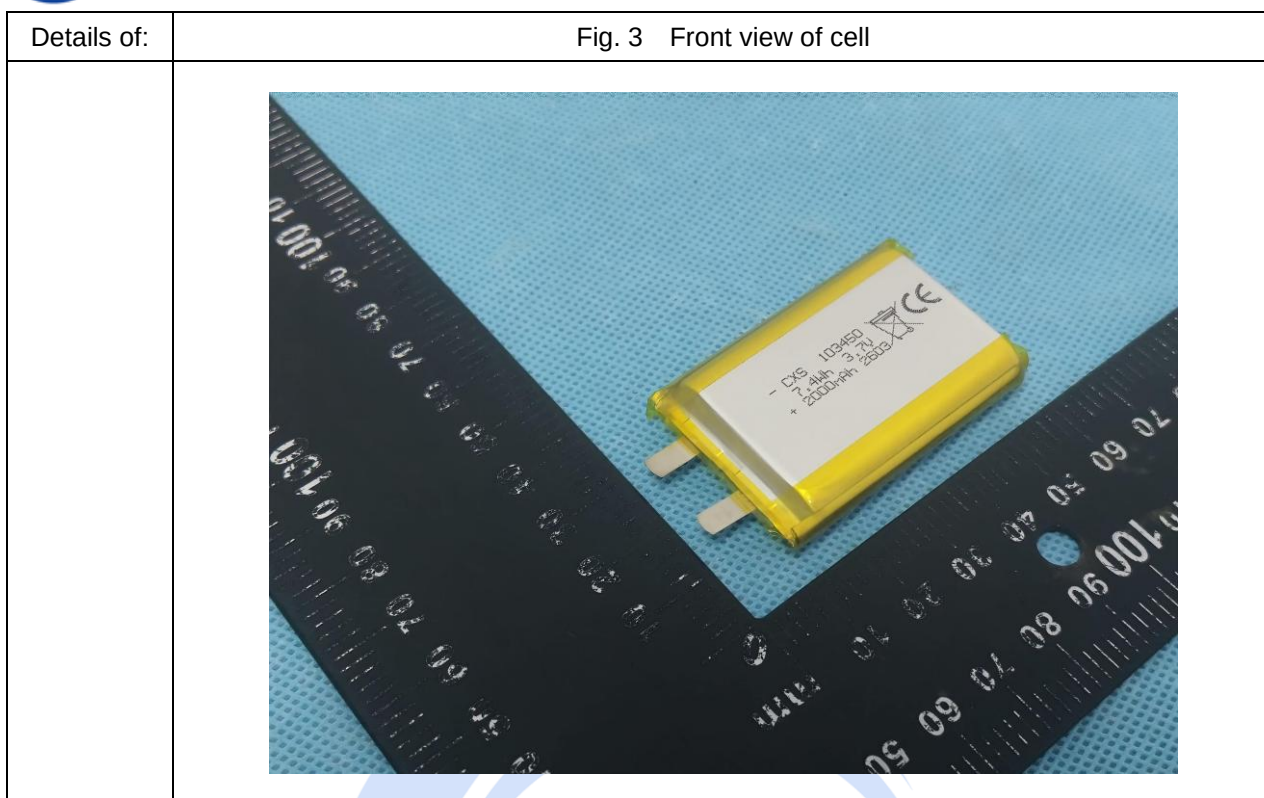
¹⁾ Coin cells with an internal resistance less than or equal to 3 Ω, see test result on corresponding tables according to Clause 6 and Table 1.

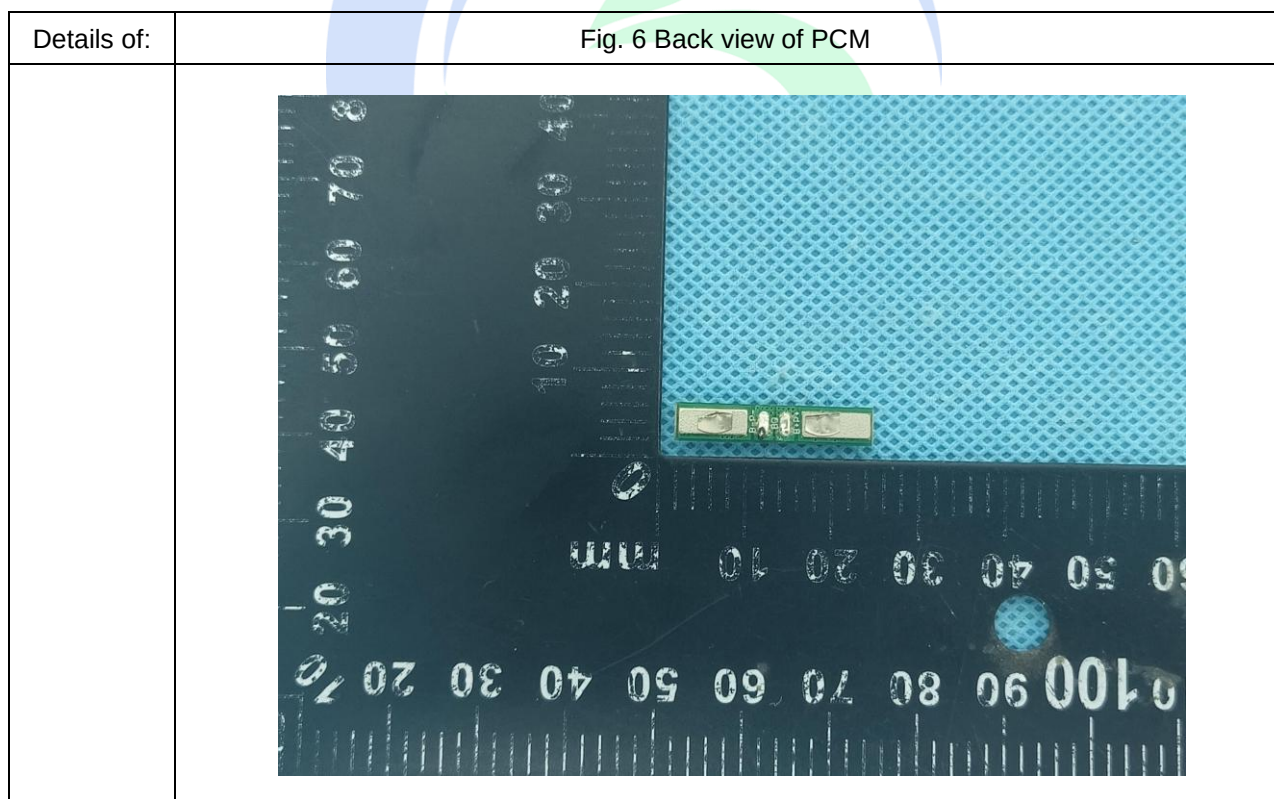
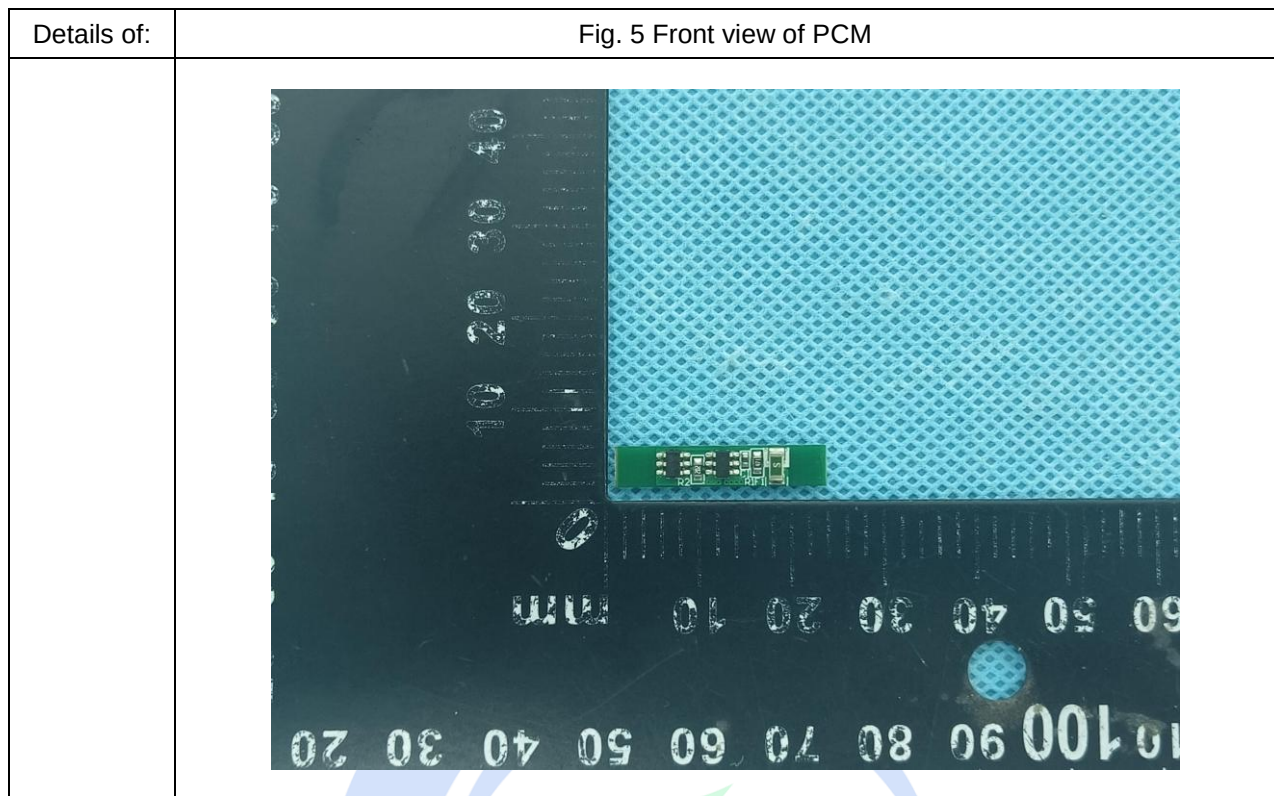
TABLE: Critical components information					P
Object/part No.	Manufacturer/ trademark	Type/ model	Technical data	Standard	Mark(s) of conformity
PCB	SHEN ZHEN SHI JI RUI DA CIRCUIT TECHNOLOGY Co., Ltd	JRD-S	V-0, 130°C	UL 796	UL E340032
-Alternative	Interchangeable	Interchangeable	V-0, 130°C	UL 796	UL Approved
Lead wire	Shenzhen Jiadisheng Technology Co Ltd	1571	24AWG, 80°C, 30Vac	UL 758	UL E521112
Alternative	Interchangeable	Interchangeable	24AWG, 80°C, 30Vac	UL 758	UL Approved
IC (U1)	MaoMing Shi BaiQiang Microelectronics Co.,Ltd.	DW01A	Overcharge detection voltage: 4.28V±0.05V, Over-discharge detection voltage: 2.40V±0.10V	--	Tested with appliance
MOSFET (Q1)	Dongguan Baiqiang power technology Co., Ltd.	BQ8810	V _{DS} : 18V, V _{GS} : ±12V, I _D : 7A	--	Tested with appliance
FUSE (F1)	DONGGUAN TLC ELECTRONIC TECHNOLOGY CO LTD	F12T4	Rated Current: 4A, Rated Voltage: 72Vdc, Interrupting Rating: 50A	UL 248-1 UL 248-14	UL E467707
Cell	Ganzhou Qianli Xing New Energy Co., Ltd.	103450	3.7Vd.c., 2000mAh	IEC62133-2:2017, IEC 62133-2: 2017/AMD1 :2021	Tested with appliance
-Positive electrode	Shanxi Hongma Technology Co., Ltd.	40%HP832(NCM)	Li(Ni _{0.8} Co _{0.1} Mn _{0.1})O ₂ ,	--	--
-Negative electrode	Hunan Potewei New Energy Technology Co., Ltd.	BV-C5A	Graphite	--	--
-Separator	Shenzhen Dagaoying Energy Technology Co., Ltd.	14μm	PP, Thickness: 14μm	--	--
-Electrolyte	Guizhou Hangsheng Lithium Energy Technology Co.,Ltd	HS19095	LiPF ₆ +EC+DEC+VC+ PS	--	--
Supplementary information: N/A					

Appendix 1
Photo Documentation

Details of:	Fig.1– Front view of battery
	

Details of:	Fig. 2 Back view of battery
	





---End of Test Report---