Test Report

Applicant

Address

The following sample(s) and sample information was/were submitted and identified by/on behalf of the client

Sample Name	:	Lithium ion cell
Sample Model	:	755590
Sample Style	:	/
Sample Received Date	:	Mar 17, 2023
Test Completed Date	:	Mar 25, 2023
Test Requested	:	As specified by client, with reference to Directive 2006/66/EC and its amended Directive 2013/56/EU to determine Lead(Pb), Cadmium(Cd), Mercury(Hg) contents in the submitted sample.
Test Method	:	Refer to the next page(s).
Test Results	:	Refer to the next page(s).
Test Conclusion	:	Based upon the performed tests by submitted samples, the test results comply with the limits of the Directive 2006/66/EC and its amended Directive 2013/56/EU

Reviewed by: Lab Senior Engineer

Authorized Signature: Technology Manager

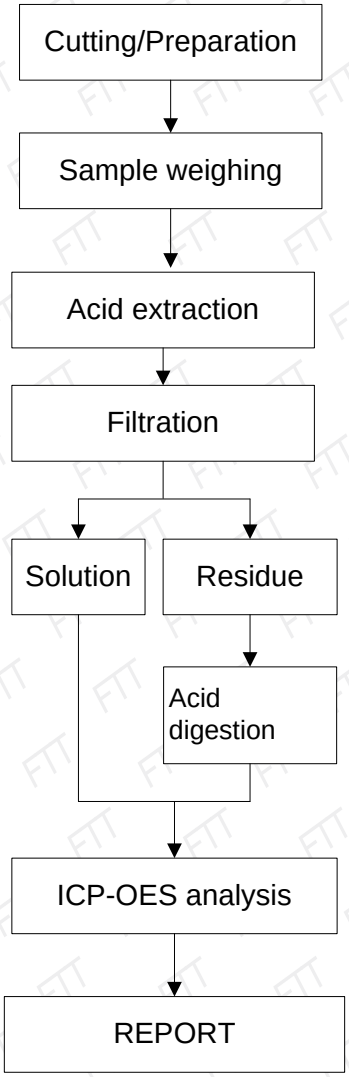
FLION TESTING TECHNOLOGIES
Add :Gangzi Industrial Park,Furong Industrial Area, Xinqiao Village, Shajing Town, Bao'an District, Shenzhen City
Tel : 86-0755-2724 8885 Fax : 86-0755-2746 0090 Http://www.cnftt.com

Test Results:

Test Item	Test method/Instrument	MDL (%)	Result (%)	Limit (%)
Lead(Pb)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	--
Cadmium(Cd)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	0.002
Mercury(Hg)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	0.0005

Note:
(1) 1 mg/kg = 1 ppm = 0.0001%
(2) N.D. = Not Detected (less than MDL)
(3) MDL = Method Detection Limit
(4) "--" = Not Regulated
(5) Remark: According to the Article 21(3) of Directive 2006/66/EC, Battery, accumulator and button cell shall include the chemical symbol Mercury when containing morn than 0.0005% of Hg, the chemical symbol Cadmium when containing more than 0.002% of Cd and the chemical symbol Pb when containing more than 0.004% of Pb
Remark: The above result(s) was/were only given as the informality value and only for reference

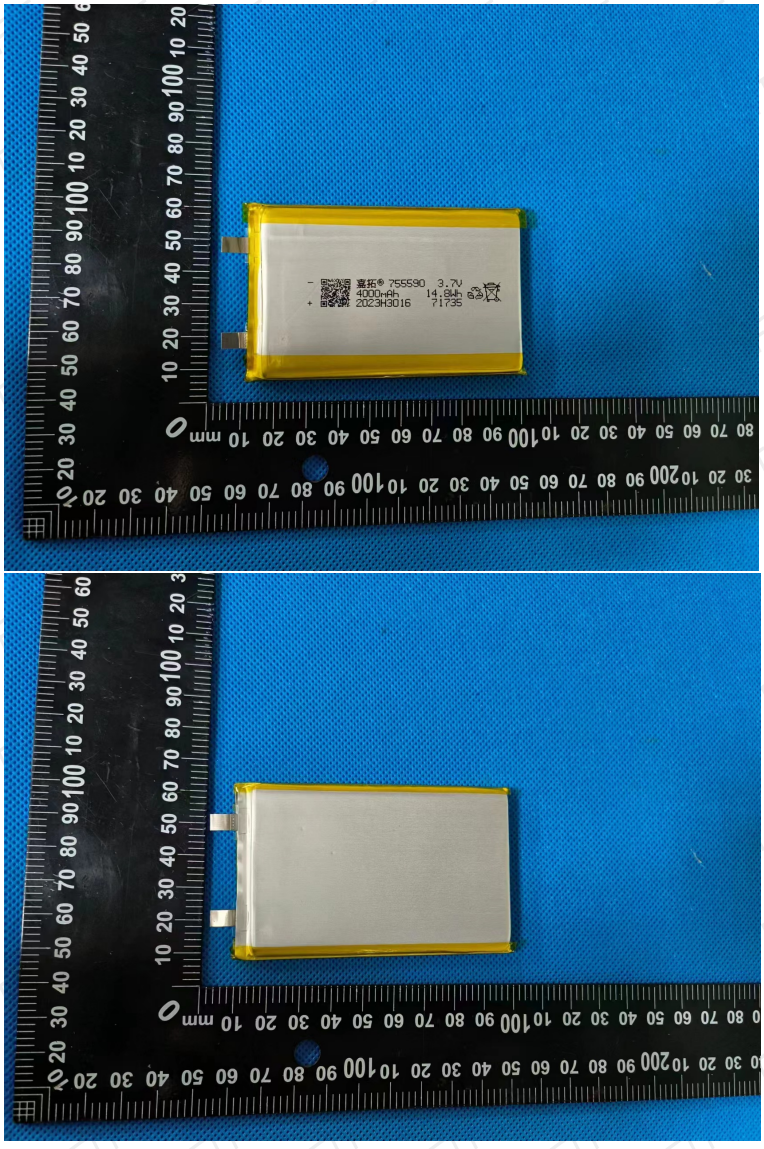
Testing Flow Chart:



Test Part Description: Battery

Sample Photo

HLF22003173E



Note: The results shown in this report refer only to the sample(s) tested.

* * * * * End of Report * * * * *

FLION TESTING TECHNOLOGIES

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Battery Test Report

Report No.: LA2024B0657002

Samples	Li-ion Polymer Cell
Model	755590
Applicant	
Issue Date	2024-01-05

深圳市莱恩瑞斯科技有限公司

Shenzhen Lionaces Technology Co., Ltd.

Shenzhen Lionaces Technology Co., Ltd.
Add: 307-310, Building 1A, Zhida Industrial Park, No.4 Longping West Road, Longgang, Shenzhen, Guangdong, China
Tel: 0755-28280690 E-mail: service@lionaces.com
Website: www.lionaces.com

IEC 62133-2:2017

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.	:	LA2024B0657002
Tested by (+ signature)	:	Ming Zhu
Reviewed by (+ signature)	:	Rick Liu
Approved by (+signature)	:	Black Lang
Date of issue	:	2024-01-05
Contents	:	Total 22 pages.

Testing laboratory

Name	:	Shenzhen Lionaces Technology Co., Ltd.
Address	:	307-310, Building 1A, Zhida Industrial Park, No.4 Longping West Road, Longgang, Shenzhen, Guangdong, China
Testing location	:	Same as above.

Applicant

Name	:	
Address	:	

Manufacturer

Name	:	
Address	:	

Test specification

Standard	:	IEC 62133-2:2017
Test procedure	:	Type test
Procedure deviation	:	N/A
Non-standard test method	:	N/A

Test Report Form/blank test report

Test Report Form No.	:	Lionaces62133B1
Test Report Form(s) Originator	:	Lionaces
Master TRF	:	Dated 2017-09

Test item

Product designation..... : Li-ion Polymer Cell

Brand name..... : N/A

Test model..... : 755590

Rating(s)..... : 3.7V 4000mAh 14.8Wh

Test item particulars

Classification of installation and use..... : N/A

Supply connection..... : DC electrode tab

Recommend charging method declared by the manufacturer..... : 2000mA constant current charge to 4.2V, then constant voltage 4.2V charge till charged current declines to 100mA

Discharge current(0.2I_tA)..... : 2000mA

Specified final voltage ..... : 3.0V

Chemistry ..... : ☐ nickel systems ☒ lithium systems

Recommend of charging limit for lithium system

Upper limit charging voltage per cell..... : 4.2V

Maximum charging current..... : 8000mA

Charging temperature upper limit..... : 45°C

Charging temperature lower limit..... : 10°C

Polymer cell electrolyte type..... : ☐ gel polymer ☐ solid polymer ☒ N/A

Test case verdicts

Test case does not apply to the test object..... : N (/A)

Test item does meet the requirement..... : P (ass)

Test item does not meet the requirement..... : F (ail)

Testing

Date of receipt of test item ..... : 2023-12-20

Date(s) of performance of test..... : 2023-12-20 to 2024-01-05

Attachment

Attachment A..... : Photos of product

General remarks

This report shall not be reproduced except in full without the written approval of the testing laboratory.
The test results presented in this report relate only to the item tested.
"(See remark #)" refers to a remark 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.
☒ The product fulfils the requirements of IEC 62133-2: 2017 and EN 62133-2: 2017.

Report Revise Record:

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2024-01-05	Valid	Original report

General product information

	Cell
Model	755590
Nominal capacity	4000mAh
Nominal voltage	3.7V
Nominal charge current	2000mA
Nominal discharge current	2000mA
Maximum charge current	8000mA
Maximum discharge current	8000mA
Maximum charge voltage	4.2V
Cut-off voltage	3.0V

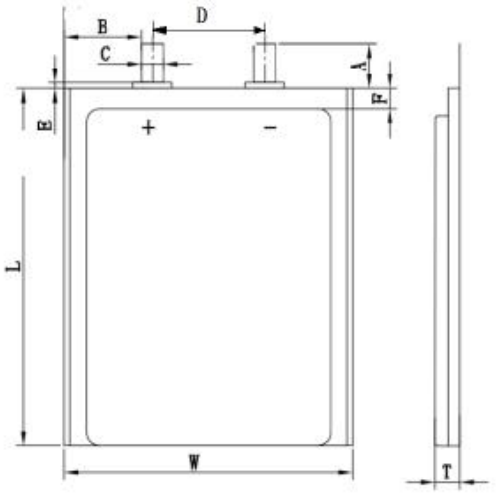
Copy of marking plate

This is reference label, final label should be including the content of it.

Red(+)	Black(-)
Li-ion Polymer Cell	755590
3.7V 4000mAh 14.8Wh	INP8/55/90
Made in China	Date：YYMMDD

Warning: Risk of Fire and Burns.
Follow Manufacturer's Instructions.

Construction



Battery thickness（T）	7.5mm Max
Battery Width（W）	55.0mm Max
Battery Length（H）	90.0mm Max

Cell

IEC 62133-2:2017			
Clause	Requirement – Test	Result – Remark	Verdict
4	**Parameter measurement tolerances**		**P**
	Parameter measurement tolerances	Comply with relevant requirements.	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 case 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	Venting mechanism exists on the narrow side of pouch cell.	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief	To be evaluated in end product.	N/A
5.4	**Temperature, voltage and current management**	Cell only.	N/A
	Batteries are designed such that abnormal temperature rise conditions are prevented		N/A
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		N/A
	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		N/A
5.5	**Terminal contacts**		P

IEC 62133-2:2017			
Clause	Requirement – Test	Result – Remark	Verdict
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Complied.	P
	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-circuit		P
5.6	**Assembly of cells into batteries**	Cell only.	N/A
5.6.1	**General**		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
	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**		N/A
	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		N/A

IEC 62133-2:2017			
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 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**		N/A
	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		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 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 considered when conducting mechanical tests		N/A
5.7	**Quality plan**		**P**

IEC 62133-2:2017			
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	Complied.	P
5.8	**Battery safety components**	Cell only.	N/A
	According annex F		N/A

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	Tests are performed according to specified in Table 1 of this standard. The samples are not more than six months old.	P
	Coin cells with resistance ≤ 3 Ω (measured according annex D) are tested according table 1	Not coin cell.	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of 20 °C ± 5 °C	Tests are carried out at 20°C ± 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 overdischarge protection		N/A
	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		N/A

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 ± 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		P

IEC 62133-2:2017			
Clause	Requirement – Test	Result – Remark	Verdict
	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		
7.2	**Intended use**		**P**
7.2.1	**Continuous charging at constant voltage (cells)**	Tested complied.	**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)**	Cell only.	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)**	Test 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 table7.3.1)	P
7.3.2	**External short-circuit (battery)**	Cell only	N/A
	The batteries were tested until one of the following occurred:		N/A
	- 24 hours elapsed; or		N/A
	- 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 conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		N/A
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive		N/A

IEC 62133-2:2017			
Clause	Requirement – Test	Result – Remark	Verdict
	temperature coefficient (PTC) thermistor		
	Results: No fire. No explosion..... :	(See appended table 7.3.2)	N/A
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)**	Tested complied.	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**	Cell only.	N/A
	The supply voltage which is:		--
	- 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		N/A
	- 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		N/A
	Test was continued until the temperature of the outer casing:		N/A
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N/A
	- Returned to ambient		N/A
	Results: No fire. No explosion..... :	(See appended table 7.3.6)	N/A
7.3.7	**Forced discharge (cells)**	Test 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		P

IEC 62133-2:2017			
Clause	Requirement – Test	Result – Remark	Verdict
	testing duration		
	Results: No fire. No explosion..... :	(See appended table 7.3.7)	P
7.3.8	**Mechanical tests (batteries)**	Cell only	N/A
7.3.8.1	**Vibration**		N/A
	Results: No fire, no explosion, no rupture, no leakage or venting.....:	(See appended table 7.3.8.1)	N/A
7.3.8.2	**Mechanical shock**		N/A
	Results: No leakage, no venting, no rupture, no explosion and no fire.....:	(See appended table 7.3.8.2)	N/A
7.3.9	**Design evaluation – Forced internal short-circuit (cells)**	Tested complied.	P
	The cells complied with national requirement for.....:	France, Japan, Korea, Switzerland	—
	The pressing was stopped upon:		P
	- A voltage drop of 50 mV has been detected; or		P
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	400N	P
	Results: No fire..... :	(See appended table7.3.9)	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		N/A
	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**	Not consumer replaceable	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

IEC 62133-2:2017			
Clause	Requirement – Test	Result – Remark	Verdict
	- 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**		P
	Cells marked as specified in IEC 61960, except coin cells		P
	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**	Cell only	N/A
	Batteries marked as specified in IEC 61960, except for coin batteries		N/A
	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
	Terminals have clear polarity marking on the external surface of the battery		N/A
	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**	Not consumer replaceable	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**

IEC 62133-2:2017			
Clause	Requirement – Test	Result – Remark	Verdict
	Storage and disposal instructions	Information is given in manufacturer's specifications.	P
	Recommended charging instructions	Information is given 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	Not coin cells	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

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	Charging voltage is 4.2V	P
A.3.2	Upper limit charging voltage	4.2V	P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint	4.2V applied.	N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied		N/A
A.4	**Consideration of temperature and charging current**		**P**
A.4.1	General		P
A.4.2	Recommended temperature range	Charging temperature declared by client is:10-45°C.	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	Not higher than the temperature range specified 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

IEC 62133-2:2017			
Clause	Requirement – Test	Result – Remark	Verdict
A.4.4	Low temperature range	Not lower than the temperature range specified 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
A.4.6.2	Final discharge voltage and explanation of safety viewpoint		P
A.4.6.3	Discharge current and temperature range		P
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		P
A.6.2	Example of a nickel particle preparation procedure		P
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

IEC 62133-2:2017			
Clause	Requirement – Test	Result – Remark	Verdict
A.6.10	Caution for the disassembling process and pressing the electrode core		P
A.6.11	Recommended specifications for the pressing device		P

Annex B	**Recommendations to equipment manufacturers and battery assemblers**	**N/A**

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**		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**	**N/A**

Annex F	**Component standards references**	**N/A**

Table: Critical components information					P
Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity
Cell		755590	3.7Vd.c. 4000mAh 14.8Wh	IEC 62133-2: 2017	Tested with appliance
-Electrolyte	Guangzhou Tinci Materials Technology Co.,Ltd	TC-EJT01	EC:DEC=3:7, LiPF6 1mol/L	--	--
-Separator	Shanghai Energy New Material Technology Co.,Ltd	ND14	PE, 0.014±0.002mm x85±0.5mm, Shutdown temperature: 130°C	--	--
-Negative electrode	Shenzhen RFT Technology Co., LTD	JT-02	Graphite, 1134±10mm(L) x82.5±0. 5mm(W)	--	--
-Positive electrode	Jiangmen Kahoo Industry Co.,LTD Guizhou Best Amperex Materials Co. , Ltd.	TE509B+ BM-02	$LiNi_{0.55}Co_{0.3}Mn_{0.15}O_2$, $LiMn_2O_4$, 1223±10mm(L) x81±0. 5mm(W)	--	--
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

7.2.1	Table: Continuous charging at constant voltage (cells)			P
Sample no.	**Recommended charging voltage Vc (Vdc)**	**Recommended charging current I_{rec} (A)**	**OCV before test (Vdc)**	**Results**
C001	4.2	1	4.181	P
C002	4.2	1	4.177	P
C003	4.2	1	4.183	P
C004	4.2	1	4.179	P
C005	4.2	1	4.179	P
Supplementary information: - No fire or explosion - No leakage				

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 (°C)**	**Results**
Samples charged at charging temperature upper limit: 45°C					
C006	55.2	4.177	83.2	124.2	P
C007	55.2	4.176	78.6	122.1	P
C008	55.2	4.177	81.4	124.9	P
C009	55.2	4.175	81.9	121.7	P
C010	55.2	4.179	79.7	122.3	P
Samples charged at charging temperature lower limit: 10°C					
C011	54.9	4.129	83.2	124.1	P
C012	54.9	4.133	78.6	122.2	P
C013	54.9	4.131	81.4	122.7	P
C014	54.9	4.126	81.9	121.4	P
C015	54.9	4.127	79.7	120.8	P
Supplementary information: - No fire or explosion					

7.3.2	Table: External short-circuit (battery)					N/A
Sample no.	**Ambient T (°C)**	**OCV before test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature ~~rise ΔT~~ (°C)**	**Component single fault condition**	**Results**
Supplementary information:						

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				
C016	4.175	4.175	13	P
C017	4.176	4.176	13	P
C018	4.172	4.172	13	P
C019	4.177	4.176	13	P
C020	4.176	4.176	13	P
Samples charged at charging temperature lower limit: 10°C				
C021	4.131	4.131	13	P
C022	4.126	4.126	13	P
C023	4.127	4.126	13	P
C024	4.134	4.133	13	P
C025	4.133	4.133	13	P
Supplementary information: - No fire or explosion				

7.3.6	Table: Over-charging of battery				N/A
Constant charging current (A).....:					—
Supply voltage (Vdc).....:					—
Sample no.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature ~~rise ΔT~~ (°C)		Results
Supplementary information:					

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
C026	3.345	5	-4.2	P
C027	3.341	5	-4.2	P
C028	3.339	5	-4.2	P
C029	3.343	5	-4.2	P
C030	3.341	5	-4.2	P
Supplementary information: - No fire or explosion				

7.3.8.1	Table: Vibration				N/A
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results
Supplementary information:					

7.3.8.2	Table: Mechanical shock				N/A
Sample no.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**
Supplementary information:					

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					
C031	45	4.175	1	400	P
C032	45	4.174	1	400	P
C033	45	4.177	1	400	P
C034	45	4.176	2	400	P
C035	45	4.176	2	400	P
Samples charged at charging temperature lower limit 10°C					
C036	10	4.128	1	400	P
C037	10	4.131	1	400	P
C038	10	4.132	1	400	P
C039	10	4.129	2	400	P
C040	10	4.131	2	400	P

Supplementary information:

1) Identify one of the following:

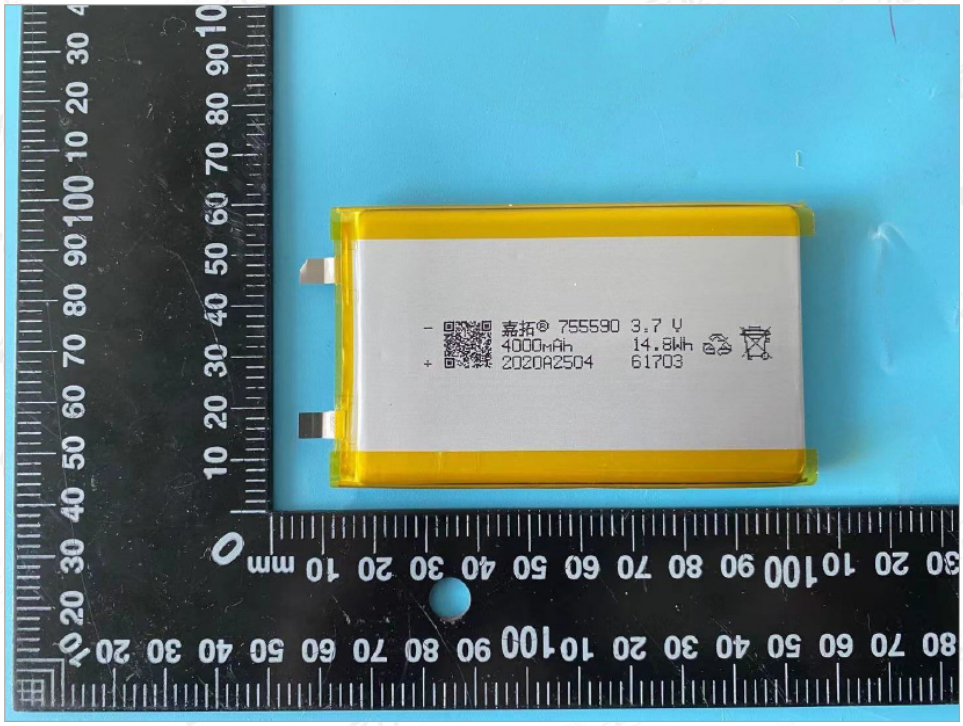
1: Nickel particle inserted between positive and negative (active material) coated area.

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

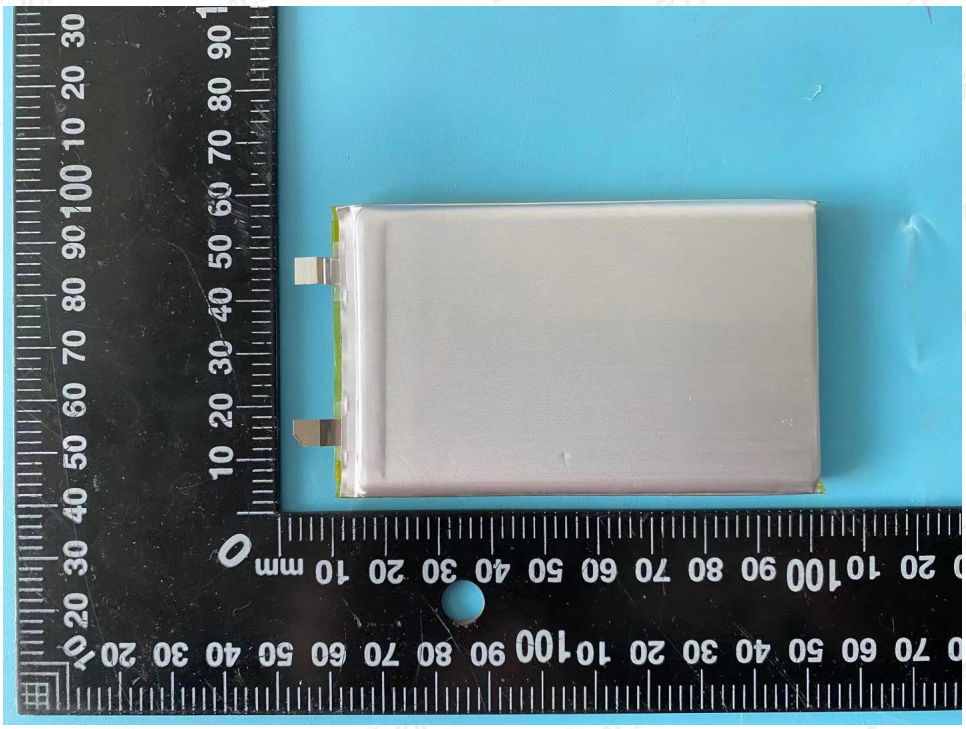
D.2	Table: Internal AC resistance for coin cells			N/A
Sample no.	**Ambient T (°C)**	**Store time (h)**	**Resistance Rac (Ω)**	**Results 1)**
Supplementary information:				

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

Attachment A
Photos of product



Front view of cell



Back view of cell

Test Equipment

No	Name	Model specifications	Device Number	Calibration validity	Using (√)
1	Battery thermal shock test box	FH-04	LA-BT-E001	2021.6.30	√
2	Battery forced internal testing machine	FH-07	LA-BT-E006	2021.6.30	√
3	Acceleration impact table	FH-05	LA-BT-E007	2021.6.30	√
4	Battery extrusion tester	FH-001	LA-BT-E008	2021.6.30	√
5	Drop test machine	FH-03	LA-BT-E010	2021.6.30	√
6	Electromagnetic vibration testing machine	EV203VT640	LA-BT-E013	2021.6.30	√
7	Linear DC power supply	SY6020	LA-BT-E018	2021.6.30	√
8	Linear DC power supply	SY6020	LA-BT-E019	2021.6.30	√
9	Linear DC power supply	SY3020	LA-BT-E020	2021.6.30	√
10	Linear DC power supply	SY3020	LA-BT-E021	2021.6.30	√
11	Temperature recorder	GL240	LA-BT-E026	2021.6.30	√
12	Battery Performance Testing System	CT-3008n-5V6A-S	LA-BT-E036	2021.6.30	√
13	Multifunctional battery short circuit explosion proof test box	FH-14	LA-BT-E054	2021.6.30	√
14	Electronic scale	YHC	LA-BT-E068	2021.6.30	√
15	Programmable fast temperature change test box	GX-3000-150LT	LA-BT-E072	2021.6.30	√

----END OF REPORT----