Test Report

Applicant :

Address :

Manufacturer :

Address :

The following sample(s) was /were submitted and identified on behalf of the clients as:

Sample Name	:	Polymer Li-ion Cell
Trade Name	:	
Sample Model	:	656090-5000mAh (Additional models are on the next page)
Sample Received Date	:	Jan. 02, 2025
Testing Period	:	Jan. 03, 2025 To Jan. 21, 2025
Test Requested	:	With reference to Regulation (EU) 2023/1542 concerning batteries and waste batteries
Test Method	:	Please refer to next page(s).
Test Result	:	Please refer to next page(s).
Conclusion	:	**PASS** (Based on test results)

Signed for and on behalf of

Guangdong KEYS Testing Technology Co., Ltd.

Tony Qian/Approved Signatory

Additional Models : 146074-10000mAh,146074-9500mAh,146074-8000mAh,1264130-10000mAh, 126280-10000mAh,126280-9300mAh,1260115-10000mAh,1260110-10000mAh, 1260110-9500mAh,1260110-9200mAh,1260110-9000mAh,1260110-8000mAh, 1260110-7000mAh,1260100-10000mAh,1260100-9000mAh,126090,124065, 123790-5000mAh,123790-4000mAh,1165110,1160110,1160100-10000mAh, 1160100-9000mAh,115570,115555,114371-4000mAh,114371-4500mAh, 114371-5000mAh,114273,114190,1064130,106168,1060110,1055125, 105573,105570,105568-5000mAh,105568-4000mAh,105555,105080, 104050-2500mAh,104050-2600mAh,104040,103665,103655,103450-2000mAh, 103450-1800mAh,103040-1200mAh,103040-1000mAh,103040-800mAh,9873129, 974058,9565125,956090,955570,955565-5000mAh,955565-4000mAh, 954292-5000mAh,954292-4000mAh,9373129-10000mAh,9373129-9500mAh, 9373129-9000mAh,9265115-10000mAh,9265115-9000mAh,9265115-8000mAh, 9260110,9065115,9060100,906090,903659,8961118-10000mAh, 8961118-9000mAh,8870129,805080,804050,803450,803540,803160,785767-5000mAh, 785767-4800mAh,7565121-8000mAh,755590,755060,735590-4000mAh,735590-4200mAh,735590-3800mAh,735486,714359,706075,695464,683982,676074,656090, 656090,655063,654060,646380,645464,635486,626090-5000mAh,626090-4000mAh, 625885,6060110,6060100,606090,606078-4800mAh,606078-4400mAh,605483,585575-2900mAh,585575-2500mAh,565872-3000mAh,565872-3200mAh,565872-3380mAh, 553580,525778,525777-3500mAh,525777-3400mAh,525777-2500mAh, 525777-3200mAh,523759,523450,506758,505573,505060,503759,474854,454261, 433759,426389,3858131,385576,347095,337093,327090,317090,30100129, 30100134,30100100,307090,2880159

Sample Description:

No.	Name
1	Battery

1. Batteries Directive 2023/1542/EU

Test Result:

Test Item(s)	Unit	Test Method	Result	MDL	Limit
Cadmium(Cd)	mg/kg	EPA 3052:1996, ICP-AES	N.D.	2	20
Mercury(Hg)	mg/kg	EPA 3052:1996, ICP-AES	N.D.	2	5
Lead(Pb)	mg/kg	EPA 3052:1996, ICP-AES	N.D.	2	100

Note: 1. mg/kg= ppm;

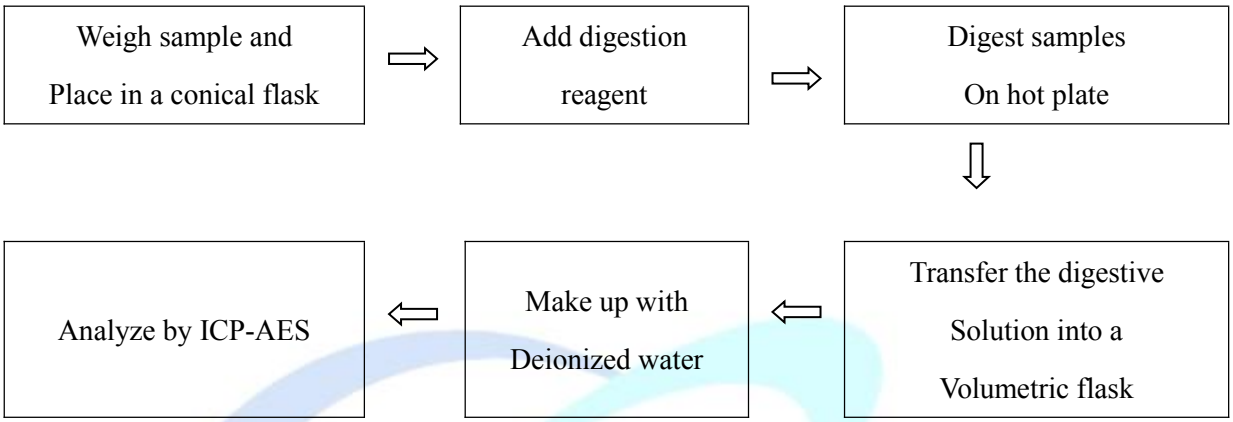
2. N.D.=Not Detected(<MDL);

3. MDL =Method Detection Limit.

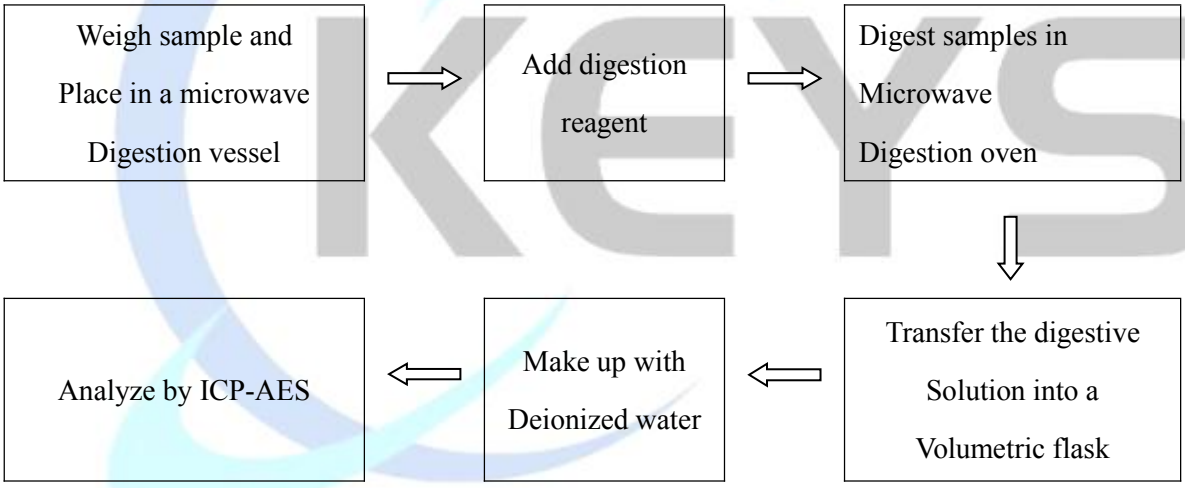
4. Batteries, accumulators and button cells containing more than 0.0005 % mercury, more than 0.002 % cadmium or more than 0.01 % lead, shall be marked with the chemical symbol for the metal concerned: Hg, Cd or Pb.

Test Process:

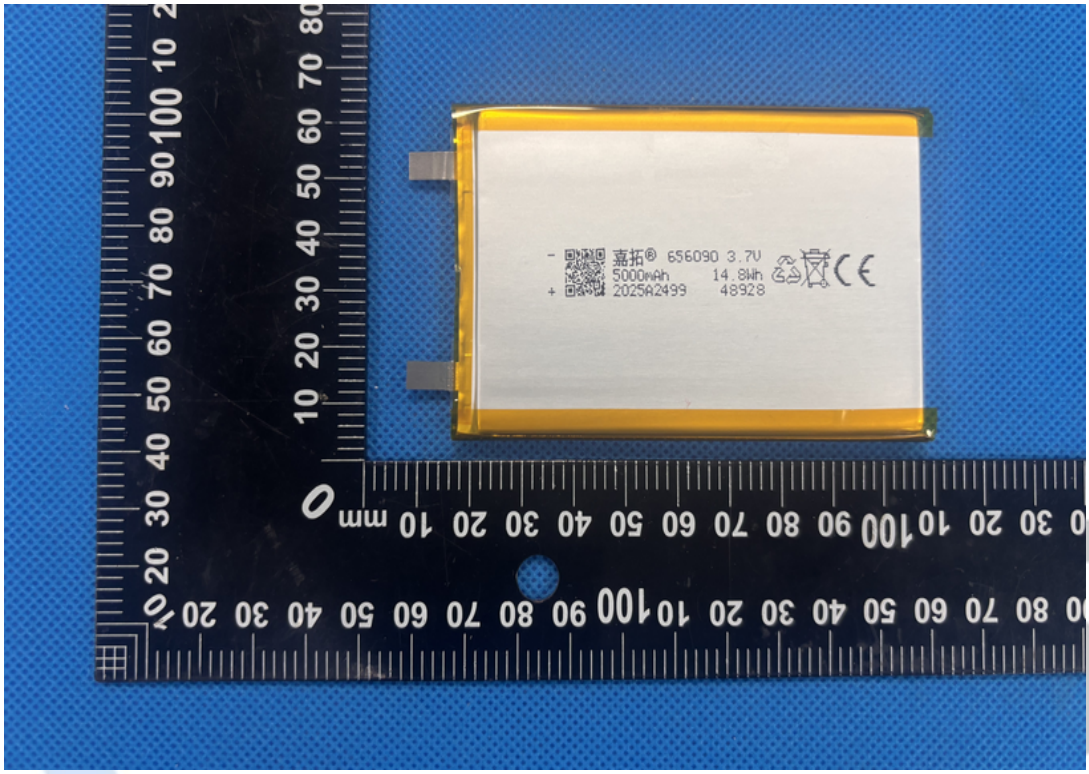
1. Test for Cd/Pb Contents



2. Test for Hg Contents



Sample Photo:



*** End of Report ***

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IEC 62133-2:2017

TEST REPORT

报告编号: **Report No.:**	**LAB-R230314002**
样品名称: **Name of Sample :**	**Li-ion Polymer Cell**
样品型号: **Sample Model:**	**7565121**
申请商: **Applicant:**	

Tested by :	**Evan Zhong/Project engineer**	Evan Zhong
Reviewed by:	**Cherry Chen/Technical director**	Cherry Chen
Approved by :	**Richie Liao/Authorized signatory**	Richie Liao
Date of issue:	**2024-01-05**	

先进储能材料国家工程研究中心有限责任公司检测中心

Test Center of National Engineering Research Center of Advanced Energy Storage Materials Co., Ltd.

地址: 广东省深圳市宝安区新安街道宝石路29号蓝坤集团大厦B栋一楼B102 邮编(Post No.) 518101

Address: No.B102,1/F., Lankun Group Building B, No.29, Baoshi Road, Xin'an Street, Bao'an, District, Shenzhen, Guangdong, China.

Tel: 86-755-22678313 E-mail: service@cescert.com http: //www.cescert. com

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. ..... :	LAB-R230314002
Total number of pages ..... :	23 pages
Name of Testing Laboratory preparing the Report ..... :	Test Center of National Engineering Research Center of Advanced Energy Storage Materials Co., Ltd.
Address ..... :	No.B102, 1/F., Lankun Group Building B, No.29, Baoshi Road, Xin'an Street, Bao'an, District, Shenzhen, Guangdong, China.
Applicant's name ..... :	
Address ..... :	
Manufacturer's name ..... :	
Address ..... :	
Test specification:	
Standard ..... :	IEC 62133-2:2017
Test procedure ..... :	Test report
Procedure deviation ..... :	N/A
Non-standard test method ..... :	N/A
Test item description ..... :	Li-ion Polymer Cell
Trade Mark ..... :	N/A
Model/Type reference ..... :	7565121
Ratings ..... :	3.7V, 8000mAh, 29.6Wh

General disclaimer:

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.

The authenticity of this Test Report and its contents can be verified by contacting the CES Testing Laboratory, responsible for this Test Report.

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

Attachment 1: Test equipment documentation (2 pages).

Attachment 2: Photo documentation (1 pages).

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
cl.7.1 Charging procedure for test purposes (for Cells); cl.7.2.1 Continuous charging at constant voltage (Cells); cl.7.3.1 External short-circuit (Cells); cl.7.3.3 Free fall (Cells); cl.7.3.4 Thermal abuse (Cells); cl.7.3.5 Crush (Cells); cl.7.3.7 Forced discharge (Cells);	Test Center of National Engineering Research Center of Advanced Energy Storage Materials Co.,Ltd. No.B102,1/F., Lankun Group Building B, No.29, Baoshi Road, Xin'an Street, Bao'an District, Shenzhen, Guangdong, China.

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

N/A

☒ **The product fulfils the requirements of EN62133-2:2017**

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.

Test item particulars.....:	
Classification of installation and use.....:	N/A
Supply Connection.....:	DC terminal
Recommend charging method declared by the manufacturer.....:	Charging the battery with 1600mA constant current and 4.2V constant voltage until the current reduces to 160mA at ambient 20°C±5°C
Discharge current (0,2 It A).....:	1600mA
Specified final voltage.....:	3.0V
Upper limit charging voltage per cell.....:	4.20V
Maximum charging current.....:	4000mA
Charging temperature upper limit.....:	45°C
Charging temperature lower limit.....:	10°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 .....:	Jun. 02, 2024
Date (s) of performance of tests.....:	Jun. 02, 2024 - Jun. 05, 2024
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.**	
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies).....:	Same as applicant

General product information and other remarks:

The cell consists of the positive electrode plate, negative electrode plate, separator, electrolyte, case. The positive and negative electrode plates are housed in the case in the state being separated by the separator.

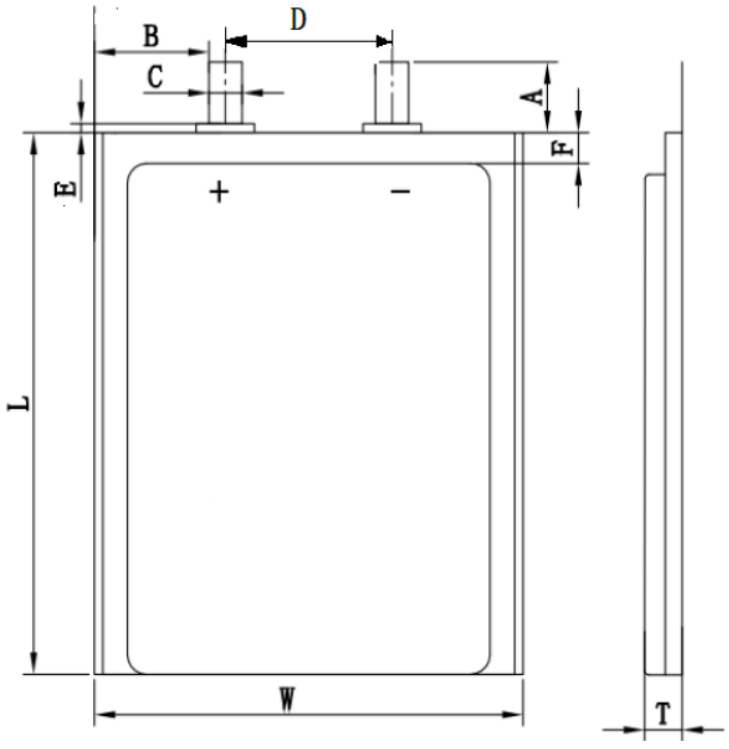
The main features of the cell in the battery are shown as below (clause 7.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
7565121	8000mAh	3.7V	1600mA	1600mA	4000mA	4000mA	4.2V	3.0V

The main features of the cell in the battery are shown as below (clause 7.1.2):

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
7565121	4.2V	400mA	10°C	50°C

Construction:



T*W*T=7.5mm(max)*65.0mm(max)*121.0mm(max)
Cell(Unit: mm)

Circuit diagram:

None, cell only

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**	Cell only	N/A
	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		N/A
	Insulation resistance (MΩ) ..... :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		N/A
	Orientation of wiring maintains adequate clearance and creepage distances between conductors		N/A
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		N/A
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		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
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Complied.	P

IEC 62133-2: 2017			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
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	Cell only	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	Cell only	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. ISO 9001: 2015 certificate provided.	P
5.8	**Battery safety components**		N/A
	According annex F	See TABLE: Critical components information.	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		P
	Coin cells with resistance ≤ 3 Ω (measured according annex D) are tested according table 1	Not coin cells	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of 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	Cell only	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	Cell only	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	See page 5	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	See page 5	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

IEC 62133-2: 2017			
Clause	Requirement + Test	Result - Remark	Verdict
	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 10-45°C declared. 10°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)	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	Charging for 7 days with 1600mA.	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)	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)	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 temperature coefficient (PTC) thermistor		N/A
	Results: No fire. No explosion.....:	(See appended table 7.3.2)	N/A

IEC 62133-2: 2017			
Clause	Requirement + Test	Result - Remark	Verdict
7.3.3	Free fall	Tested complied.	P
	Results: No fire. No explosion	No fire. No explosion.	P
7.3.4	Thermal abuse (cells)	Tested complied.	P
	Oven temperature (°C) ..... :	130°C	—
	Results: No fire. No explosion	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:		N/A
	- 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)	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)	Cell only.	N/A
7.3.8.1	Vibration		N/A

IEC 62133-2: 2017			
Clause	Requirement + Test	Result - Remark	Verdict
	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)		N/A
	The cells complied with national requirement for ..... :	Not requested by client, not comply with the requirements of France, Japan, Republic of Korea and 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		N/A
	Results: No fire ..... :	(See appended table 7.3.9)	N/A
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	Cell only	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 small cell and battery	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

IEC 62133-2: 2017			
Clause	Requirement + Test	Result - Remark	Verdict
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N/A
9	**MARKING**		**P**
9.1	**Cell marking**	Not requested by client	N/A
	Cells 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**	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 small cell and battery	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 and disposal instructions mentioned in manufacturer's specifications.	P
	Recommended charging instructions	Information for recommended charging instructions mentioned in manufacturer's specifications.	P

IEC 62133-2: 2017			
Clause	Requirement + Test	Result - Remark	Verdict
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**	Complied.	P
A.3	**Consideration on charging voltage**	Complied.	P
A.3.1	General		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		P
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		P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charge temperature declared by cell manufacturer is 10°C to 45°C	N/A
A.4.3	High temperature range	Not higher than the temperature range 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 range specific in this standard.	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		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**		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**		P

IEC 62133-2: 2017			
Clause	Requirement + Test	Result - Remark	Verdict
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..... :	(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**		N/A

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

	TABLE: Critical components information				P
Object/part no.	**Manufacturer/ trademark**	**Type/model**	**Technical data**	**Standard**	**Mark(s) of conformity [1)]**
Cell		7565121	3.7V, 8000mAh	IEC62133-2: 2017	Tested with appliance
-Electrolyte	Dongduan Shanshan Battery Material Co., Ltd	SS-GDJT005	$LiPF_6$+EC+DEC, EC:DEC=3:7	--	--
-Separator	Shenzhen Dingtaixiang New Energy Technology Co., Ltd	0.016±0.002mm x 116±0.5mm	PE, shutdown temperature: 130°C	--	--
-Positive electrode	Jiangmen Kahoo Industry Co.,LTD	TE509 (65%)	$LiNi_XMn_YCo_{1-X-Y}O_2$	--	--
	QINGDAO QIANYUN High-Tech MATERIAL CO.,LTD	Interchangeable (35%)	$LiMn_2O_4$	--	--
-Negative electrode	Shenzhen RFT Technology Co., LTD	RFT013	Graphite	--	--
-Aluminium plastic film	Dongguan Advanced Material Tech. Co., LTD	AG049	0.113±10%μm, Nylon, PP, Aluminum	--	--
Supplementary information: 1) Provided evidence ensures the agreed level of compliance.					

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

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**
C1	4.20	1.6	4.19	P
C2	4.20	1.6	4.18	P
C3	4.20	1.6	4.19	P
C4	4.20	1.6	4.19	P
C5	4.20	1.6	4.18	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~~ (°C)**	**Results**
Samples charged at charging temperature upper limit(45°C)					
C6	53.9	4.18	90	107.8	P
C7	53.9	4.18	88	116.5	P
C8	53.9	4.18	92	109.9	P
C9	53.9	4.18	89	120.0	P
C10	53.9	4.18	92	108.8	P
Samples charged at charging temperature lower limit (10°C)					
C11	54.6	4.12	92	113.4	P
C12	54.6	4.13	91	106.6	P
C13	54.6	4.13	89	112.2	P
C14	54.6	4.13	89	105.5	P
C15	54.6	4.12	93	105.4	P

Supplementary information:

- No fire or explosion
- Others (please explain)

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

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:

- 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°C)				
C29	4.18	4.18	13.0	P
C30	4.18	4.18	13.0	P
C31	4.18	4.18	13.0	P
C32	4.19	4.19	13.0	P
C33	4.18	4.18	13.0	P
Samples charged at charging temperature lower limit (10°C)				
C34	4.12	4.12	13.0	P
C35	4.13	4.13	13.0	P
C36	4.12	4.12	13.0	P
C37	4.12	4.12	13.0	P
C38	4.12	4.12	13.0	P

Supplementary information:

- No fire or explosion
- Others (please explain)

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

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 (°C)	Results

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	3.376	8.0	3.0	P
C40	3.413	8.0	3.0	P
C41	3.389	8.0	3.0	P
C42	3.397	8.0	3.0	P
C43	3.422	8.0	3.0	P

Supplementary information:

- No fire or explosion
- Others (please explain)

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:

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

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

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:

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

7.3.9	TABLE: Forced internal short circuit (cells)				N/A
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)					
Samples charged at charging temperature lower limit (10°C)					

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)

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

D.2	TABLE: Internal AC resistance for coin cells			
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: Test equipment documentation

	Eq. No.	Name	Manufacturer	Model No.	Calibration validity
☐	JCZX-EQ-014	Battery charger	Shenzhen neware	CT-3008W-5V3A-S1	2021.03.05
☒	JCZX-EQ-016	Programmable high and low temperature chamber	Chongqing Harding	WT404P	2021.03.05
☒	JCZX-EQ-018	High temperature chamber	Chongqing Harding	HT204E	2021.03.05
☐	JCZX-EQ-030	DC power supply	Hangzhou Qiujing	QJ3003XE	2021.03.05
☐	JCZX-EQ-041	Simulated altitude low pressure test chamber	Dong guan Bell	BE-DY-216	2021.03.05
☐	JCZX-EQ-044	Battery impact testing machine	Dong guan Bell	BE-5066	2021.03.05
☐	JCZX-EQ-045	Battery short-circuit tester	Dong guan Bell	BE-1500W	2021.03.05
☒	JCZX-EQ-047	Battery crush testing machine	Dong guan Bell	BE-6405T	2021.03.05
☒	JCZX-EQ-048	Battery drop test machine	Dong guan Bell	BF-F-320T	2021.03.05
☐	JCZX-EQ-049	Hydraulic shock tester	Su Zhou Dong Ling	SY10-50	2021.03.07
☐	JCZX-EQ-050	Vibration testing machine	Su Zhou Dong Ling	ES-6-230	2021.03.07
☒	JCZX-EQ-059	Multimeter	Fluke	FLUKE-15B	2021.03.05
☐	JCZX-EQ-069	Tape	Zhuhaiyoubo	0-10m	2021.03.05
☒	JCZX-EQ-070	Timer	Jun si da industrial	JS-306	2021.03.05
☐	JCZX-EQ-088	Electronic balance	Sartorins	BT224S	2021.03.05
☐	JCZX-EQ-100	Data collection	Agilent	Agilent 34970A	2021.03.05
☐	JCZX-EQ-103	Multimeter	Fluke	FLUKE-15B	2021.03.05
☐	JCZX-EQ-104	Programmable high-power power supply	ITECH Electronic	IT6533A	2021.04.17
☐	JCZX-EQ-107	Programmable electronic load	Chroma	6310A	2021.03.05
☒	JCZX-EQ-109	Battery internal resistance tester	HIOKI	BT-3563	2021.03.18
☐	JCZX-EQ-129	Electrical safety Analyzer	Chroma	19032-P	2020.04.17
☐	JCZX-EQ-135	Mobile power tester	Shenzhen Repower	PBTS-20V5A	2021.03.05
☐	JCZX-EQ-141	Data collection	Agilent	Agilent 34970A	2021.03.05
☒	JCZX-EQ-142	Data collection	Agilent	Agilent 34970A	2021.03.05
☐	JCZX-EQ-144	Forced internal short circuit Machine	Dong guan Bell	BE-6045W	2021.03.05

Attachment 1: Test equipment documentation

	Eq. No.	Name	Manufacturer	Model No.	Calibration validity
☒	JCZX-EQ-146	Five channels of battery short-circuit tester	Dong guan Bell	BE-125A-5	2021.03.05
☐	JCZX-EQ-155	Temperature and humidity test chamber	Dong guan Bell	BTH-225D	2021.03.05
☒	JCZX-EQ-156	Temperature and humidity test chamber	Dong guan Bell	BTH-225D	2021.03.05
☐	JCZX-EQ-157	Temperature and humidity test chamber	Dong guan Bell	BTH-225D	2021.03.05
☐	JCZX-EQ-158	Dew-point meter	Shenzhen huasheng chang	DT-321S	2020.11.03
☒	JCZX-EQ-160	DC power supply	LONGWEI	LW-6020KD	2021.03.05
☒	JCZX-EQ-161	DC power supply	LONGWEI	LW-6020KD	2021.03.05
☐	JCZX-EQ-163	DC power supply	LONGWEI	LW-3020KD	2021.03.05
☒	JCZX-EQ-166	Battery charger	Shenzhen neware	CT-3008W-5V6A-S1	2021.03.05
☐	JCZX-EQ-170	Battery charger	Shenzhen neware	CT-4004-60V20A-NA	2020.06.26
☐	JCZX-EQ-171	Battery charger	Shenzhen neware	CT-4004-60V20A-NA	2020.06.26
☐	JCZX-EQ-172	Battery charger	Shenzhen neware	CT-4016-5V30A-NTFA	2020.06.26
☐	JCZX-EQ-173	Battery charger	Shenzhen neware	CT-4008-10V6A-A	2020.06.26
☐	JCZX-EQ-175	Data collection	HIOKI	LR8431-30	2020.06.26
☐	JCZX-EQ-176	Ingestion gauge	Guangdong Angui	AG113F2	2020.10.15
☐	JCZX-EQ-177	Electronic balance	Lucky	LQ-C30002	2020.10.23
☒	JCZX-EQ-178	Temperature and humidity meter	MIAOXIN	TH20R	2020.04.11
☐	JCZX-EQ-180	Electronic load	ITECH Electronic	IT8712	2021.03.05
☐	JCZX-EQ-182	DC power supply	ITECH Electronic	IT6952A	2021.03.05
☐	JCZX-EQ-183	DC power supply	ITECH Electronic	IT6952A	2021.03.05
☐	JCZX-EQ-187	Battery charger	Shenzhen neware	CT-4008-5V6A-S1	2020.12.30
☒	JCZX-EQ-188	Temperature and humidity meter	MIAOXIN	TH20R	2020.11.28
☒	JCZX-EQ-189	Temperature and humidity meter	MIAOXIN	TH20R	2020.11.28
☒	JCZX-EQ-190	Temperature and humidity meter	MIAOXIN	TH20R	2020.11.28
☒	JCZX-EQ-191	Temperature and humidity meter	MIAOXIN	TH20R	2020.11.28
☒	JCZX-EQ-192	Temperature and humidity meter	MIAOXIN	TH20R	2020.04.11
☒	JCZX-EQ-193	Temperature and humidity meter	MIAOXIN	TH20R	2020.04.11

Attachment 2: Photo documentation

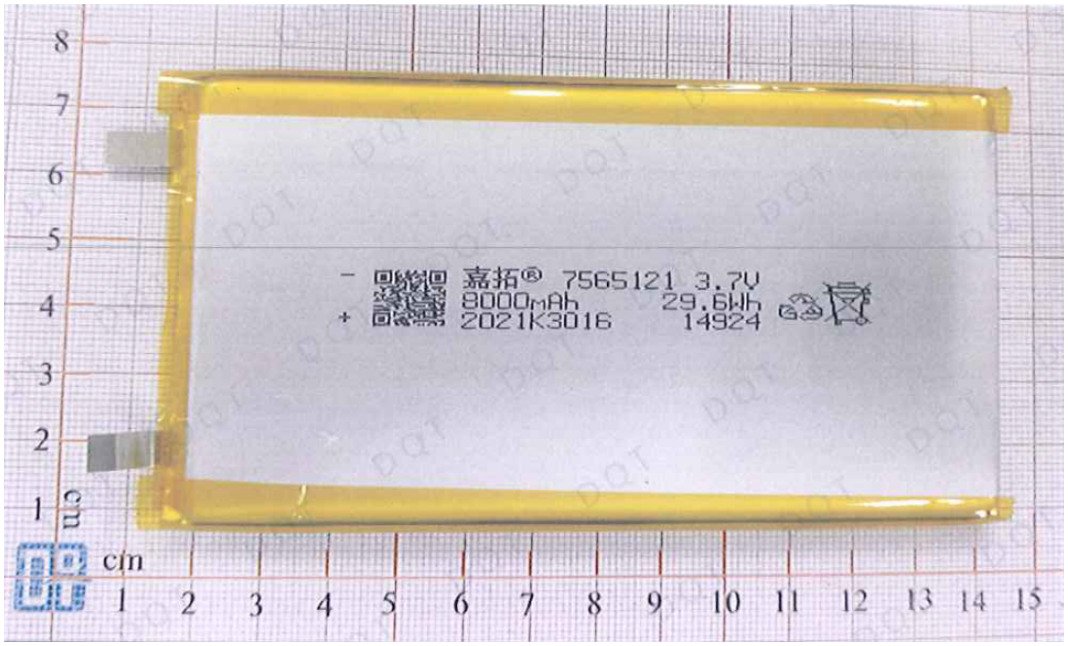

Figure 1. Front view of Cell

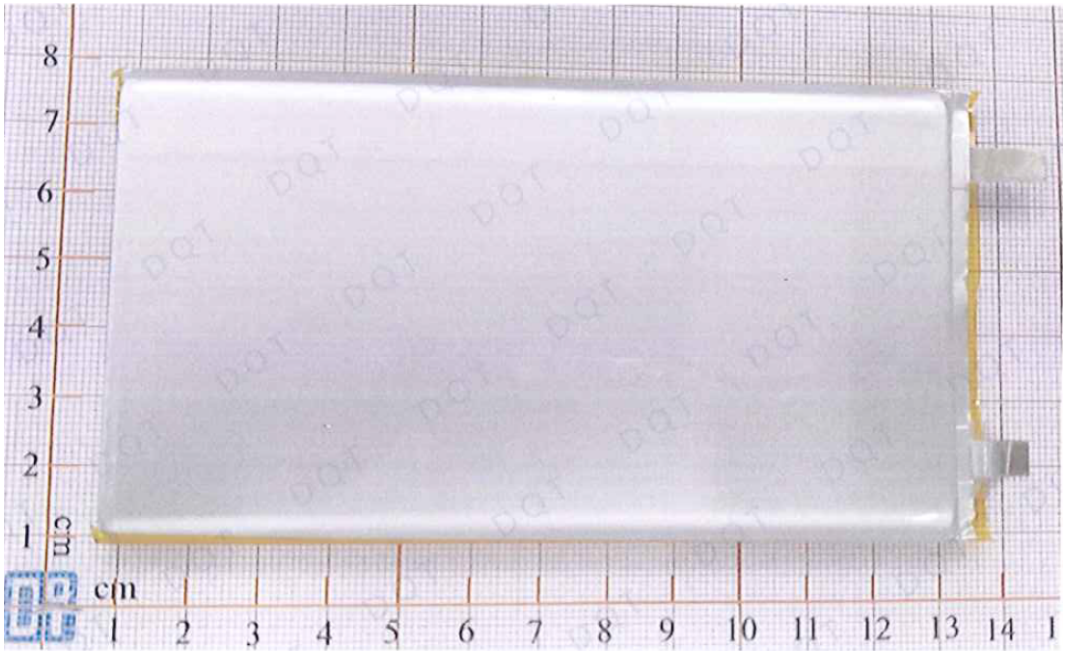

Figure 2. Back view of Cell

--End of Report--