



Test Report

No.: S241204060001-1A

Date: Dec 11, 2024

Page 1 of 12

Customer:

Customer Address:

Sample Name: Polymer Li-ion Cell
Tested Model: 1260110-10000mAh
Additional Model: Please refer to next page(s)
(Nominal voltage)(Vdc): Please refer to next page(s)
(Rated capacity)(mAh): Please refer to next page(s)
Watt hour: Please refer to next page(s)
Manufacturer:
Manufacturer Address:

The above samples and information are provided by the customer

Sample Received Date: Dec 04, 2024
Test Period: Dec 04, 2024 to Dec 09, 2024
Test Requirements: Test according to customer requirement
Test Method: Please refer to next page(s)
Test Result: Please refer to next page(s)
Test Conclusion: **PASS**

Result Summary:

Test Requested	Conclusion
1. European batteries Regulation (EU) 2023/1542—Lead, Cadmium & Mercury content	PASS

WRITTEN BY

Zoey Zhang

Zoey Zhang

REVIEWED BY

Kira Fu

Kira Fu

Soar Testing Certification
(GuangDong) Co., Ltd.

APPROVED BY

Eric Wu Frank Wu

Approved signatory

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Post Code: 523945 **Tel:** (86-769) 38937518

Address: Room 1093, No.12, East of Houjie Avenue, Houjie, Dongguan, Guangdong, China
E-mail: service@soar-cert.com **Website:** http://www.soartestlab.com



No.	Model Number	(Nominal voltage) (Vdc)	(Rated capacity) (mAh)	Watt hour	No.	Model Number	(Nominal voltage) (Vdc)	(Rated capacity) (mAh)	Watt hour
1	146074-10000 mAh	3.85	10000	38.50	59	804050-2000 mAh	3.7	2000	7.40
2	146074-8000 mAh	3.7	8000	29.60	60	803540-1200 mAh	3.7	1200	4.44
3	126280-10000 mAh	3.85	10000	38.50	61	803450-1500 mAh	3.7	1500	5.55
4	1260115-10000 mAh	3.7	10000	37.00	62	803160-1800 mAh	3.7	1800	6.66
5	1260110-10000 mAh	3.7	10000	37.00	63	795765-5000 mAh	3.7	5000	18.50
6	1260110-9500 mAh	3.7	9500	35.15	64	7565121-7000 mAh	3.7	7000	25.90
7	1260110-9000 mAh	3.7	9000	33.30	65	7565121-8000 mAh	3.7	8000	29.60
8	1260110-8000 mAh	3.7	8000	29.60	66	7565115-8000 mAh	3.7	8000	29.60
9	1260110-7000 mAh	3.7	7000	25.90	67	755590-5000 mAh	3.7	5000	18.50
10	1260100-10000 mAh	3.7	10000	37.00	68	755060-3000 mAh	3.7	3000	11.10
11	1260100-9000 mAh	3.7	9000	33.30	69	735590-4000 mAh	3.7	4000	14.80
12	126090-8000 mAh	3.7	8000	29.60	70	735590-4200 mAh	3.7	4200	15.54
13	124861-5000 mAh	3.7	5000	18.50	71	735590-3800 mAh	3.7	3800	14.06
14	124065-4000 mAh	3.7	4000	14.80	72	735486-3200 mAh	3.7	3200	11.84
15	1165110-10000 mAh	3.7	10000	37.00	73	714359-2250 mAh	3.7	2250	8.33
16	1160100-10000 mAh	3.7	10000	37.00	74	706075-5000 mAh	3.85	5000	19.25
17	1160100-9000 mAh	3.7	9000	33.30	75	683982-2900 mAh	3.7	2900	10.73

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No.	Model Number	(Nominal voltage) (Vdc)	(Rated capacity) (mAh)	Watt hour	No.	Model Number	(Nominal voltage) (Vdc)	(Rated capacity) (mAh)	Watt hour
18	116068-7000 mAh	3.85	7000	26.95	76	676076-5000 mAh	3.7	5000	18.50
19	115570-5000 mAh	3.7	5000	18.50	77	676074-5000 mAh	3.85	5000	19.25
20	115555-5000 mAh	3.85	5000	19.25	78	656090-5000 mAh	3.7	5000	18.50
21	115252-5000 mAh	3.85	5000	19.25	79	655063-3000 mAh	3.7	3000	11.10
22	114371-4000 mAh	3.7	4000	14.80	80	654060-2000 mAh	3.7	2000	7.40
23	114371-4500 mAh	3.85	4500	17.33	81	646380-4180 mAh	3.7	4180	15.47
24	114371-5000 mAh	3.85	5000	19.25	82	635486-3000 mAh	3.7	3000	11.10
25	113475-3000 mAh	3.7	3000	11.10	83	626280-5000 mAh	3.85	5000	19.25
26	105570-5000 mAh	3.7	5000	18.50	84	626090-5000 mAh	3.7	5000	18.50
27	105568-5000 mAh	3.7	5000	18.50	85	6060110-5000 mAh	3.7	5000	18.50
28	105568-4000 mAh	3.7	4000	14.80	86	6060100-5000 mAh	3.7	5000	18.50
29	105555-5000 mAh	3.85	5000	19.25	87	606090-4000 mAh	3.7	4000	14.80
30	105080-5000 mAh	3.7	5000	18.50	88	606080-5000 mAh	3.7	5000	18.50
31	104050-2500 mAh	3.7	2500	9.25	89	605483-3600 mAh	3.7	3600	13.32
32	104040-1800 mAh	3.7	1800	6.66	90	605080-3000 mAh	3.7	3000	11.10
33	103665-3000 mAh	3.7	3000	11.10	91	604050-1500 mAh	3.7	1500	5.55
34	103655-2600 mAh	3.7	2600	9.62	92	603973-2200 mAh	3.7	2200	8.14

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35	103450-2000 mAh	3.7	2000	7.40	93	585575-2900 mAh	3.7	2900	10.73
36	103450-1800 mAh	3.7	1800	6.66	94	585575-2500 mAh	3.7	2500	9.25
37	103040-1200 mAh	3.7	1200	4.44	95	565872-3000 mAh	3.7	3000	11.10
38	974058-3000 mAh	3.7	3000	11.10	96	553580-2000 mAh	3.7	2000	7.40
39	955565-5000 mAh	3.7	5000	18.50	97	546381-5000 mAh	3.7	5000	18.50
40	955565-4000 mAh	3.7	4000	14.80	98	525778-3550 mAh	3.85	3550	13.67
41	954292-5000 mAh	3.7	5000	18.50	99	525777-3500 mAh	3.85	3500	13.48
42	954292-4000 mAh	3.7	4000	14.80	100	525777-3400 mAh	3.85	3400	13.09
43	9373129-10000 mAh	3.7	10000	37.00	101	525777-2500 mAh	3.7	2500	9.25
44	9373129-9500 mAh	3.7	9500	35.15	102	523759-1400 mAh	3.7	1400	5.18
45	9373129-9000 mAh	3.7	9000	33.30	103	523450-1000 mAh	3.7	1000	3.70
46	9265115-10000 mAh	3.7	10000	37.00	104	506758-2400 mAh	3.7	2400	8.88
47	9265115-9000 mAh	3.7	9000	33.30	105	505573-2500 mAh	3.7	2500	9.25
48	9265115-8000 mAh	3.7	8000	29.60	106	505060-2000 mAh	3.7	2000	7.40
49	9260110-7500 mAh	3.7	7500	27.75	107	474854-1500 mAh	3.7	1500	5.55
50	9065115-9000 mAh	3.7	9000	33.30	108	454261-1500 mAh	3.7	1500	5.55
51	9060100-8000 mAh	3.7	8000	29.60	109	433759-1000 mAh	3.7	1000	3.70

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No.	Model Number	(Nominal voltage) (Vdc)	(Rated capacity) (mAh)	Watt hour	No.	Model Number	(Nominal voltage) (Vdc)	(Rated capacity) (mAh)	Watt hour
52	906090-6000 mAh	3.7	6000	22.20	110	3858131-3800 mAh	3.7	3800	14.06
53	906085-8000 mAh	3.7	8000	29.60	111	385576-2100 mAh	3.7	2100	7.77
54	903659-2500 mAh	3.7	2500	9.25	112	347095-2800 mAh	3.7	2800	10.36
55	8961118-10000 mAh	3.7	10000	37.00	113	337093-2500 mAh	3.7	2500	9.25
56	8961118-9000 mAh	3.7	9000	33.30	114	327090-2200 mAh	3.7	2200	8.14
57	8870129-10000 mAh	3.7	10000	37.00	115	317090-2000 mAh	3.7	2000	7.40
58	805080-4000 mAh	3.7	4000	14.80	116	307090-2000 mAh	3.7	2000	7.40

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**Test Result(s):****Description of test sample:**

Sample No.	Item / Component Description(s)	Location(s)	Style(s)/Model(s)
1.	Polymer Li-ion Cell	Refer to photo	1260110-10000mAh

1. European batteries Regulation (EU) 2023/1542—Lead, Cadmium & Mercury content

Test Method: Refer to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, analysis was performed by Inductively Coupled Plasma Optical Emission Spectrometer(ICP-OES).

Test Items	Limit	Unit	MDL	Result
				No.1#
Lead (Pb)	0.01#	%	0.0002	N.D.
Mercury (Hg)	0.0005###	%	0.0002	N.D.
Cadmium(Cd)	0.002#	%	0.0002	N.D.
Conclusion				PASS

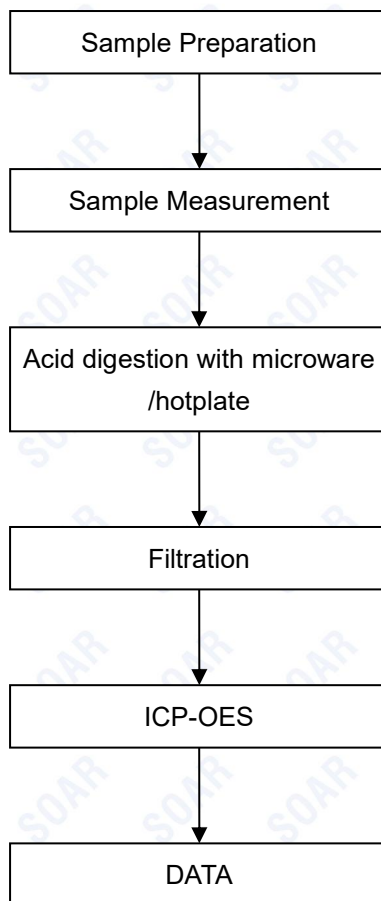
Note:

1. % = percentage by weight.
2. 0.0001% = 1 mg/kg.
3. MDL = Method Detection Limit.
4. N.D. = Not Detected (< MDL).
5. Portable battery: a battery that is sealed, weighs 5 kg or less, is not designed specifically for industrial use and is neither an electric vehicle battery, an LMT battery, nor an SLI battery
6. The restriction of cadmium is applicable for portable batteries.
7. The restriction of lead is applicable for portable batteries from 18 August 2024.
The restriction of lead shall not apply to portable zinc-air button cells until 18 August 2028.
8. “#”= Applicable for portable batteries.
9. “##”= Applicable for all kind of batteries.

Remark:

1. Report S241204060001-1 was repealed and replaced by Report S241204060001-1A.
2. As specified by applicant, to test content in the selected materials of the submitted samples. The test results are only responsible for the submitted sample. The test report is only for customer research, teaching, internal quality control, product development and other purposes, for reference only.

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Lead, Cadmium & Mercury Testing Flow Chart

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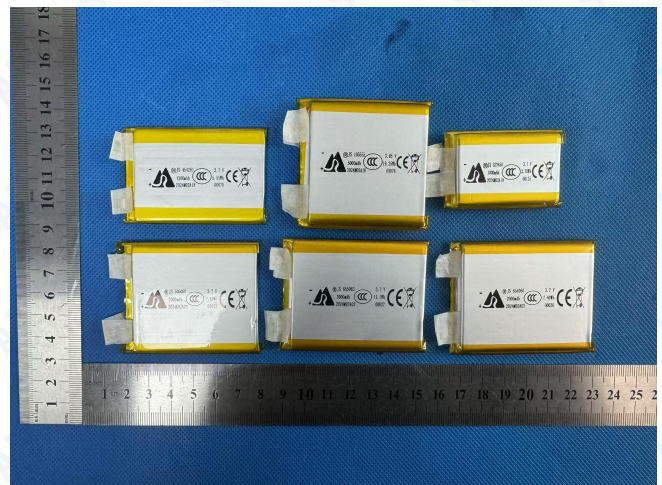
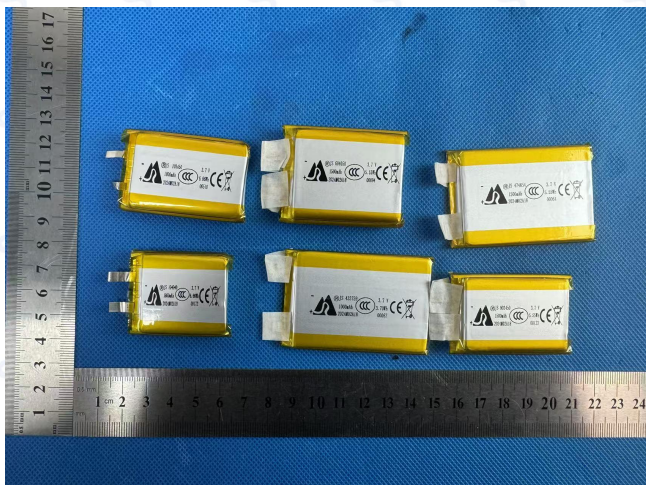
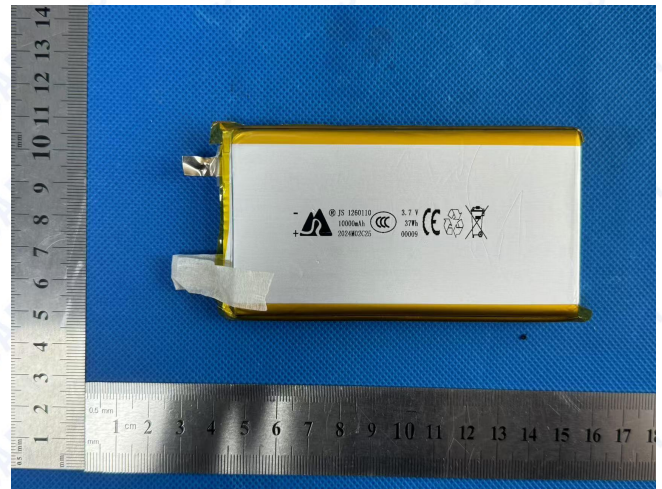
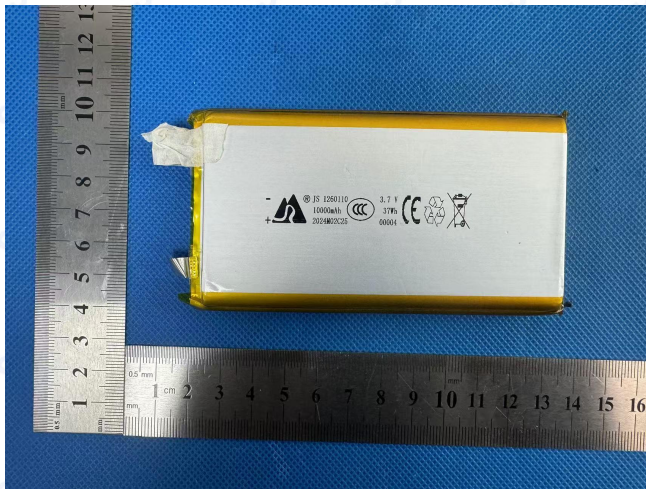
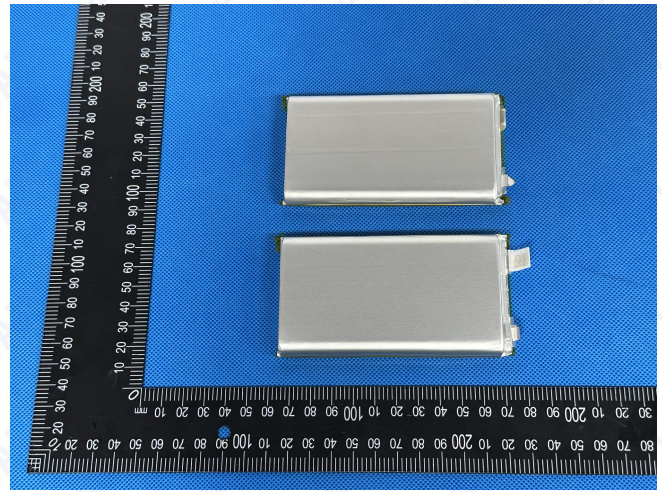
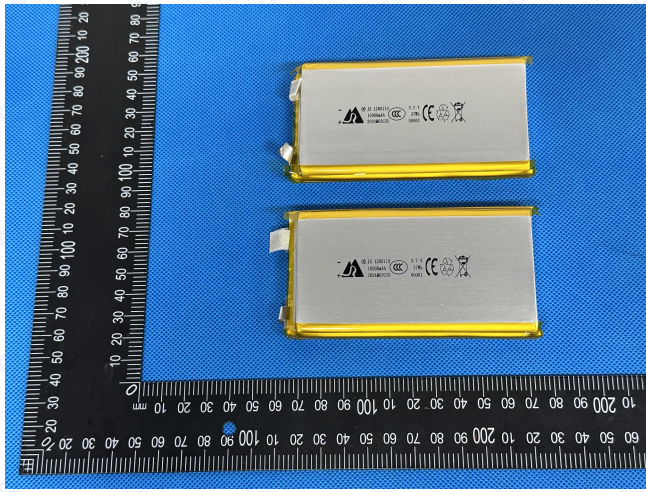
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Photo of the Sample:

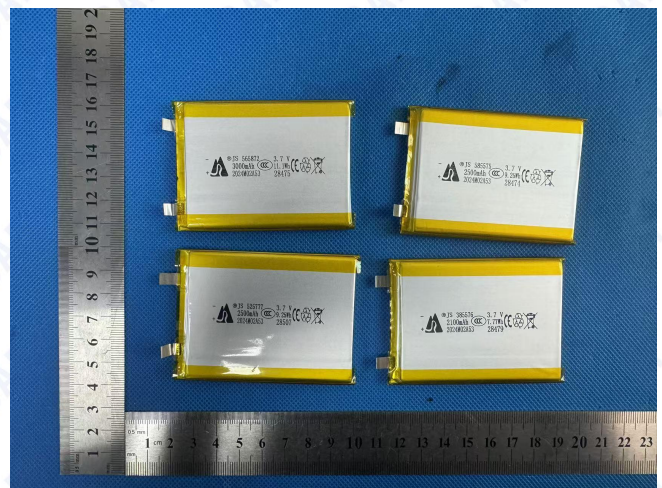
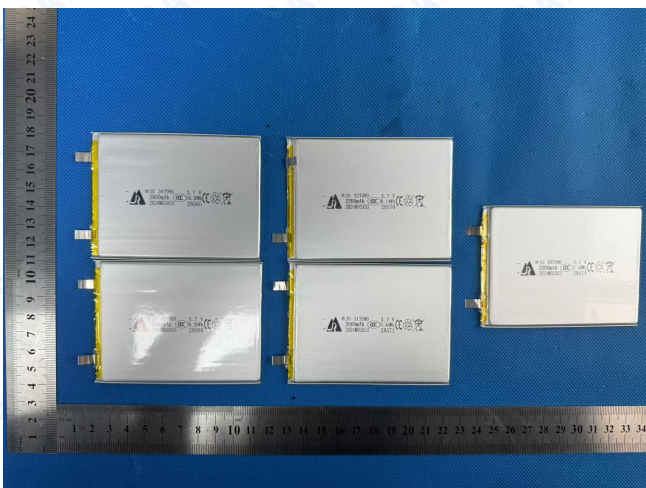
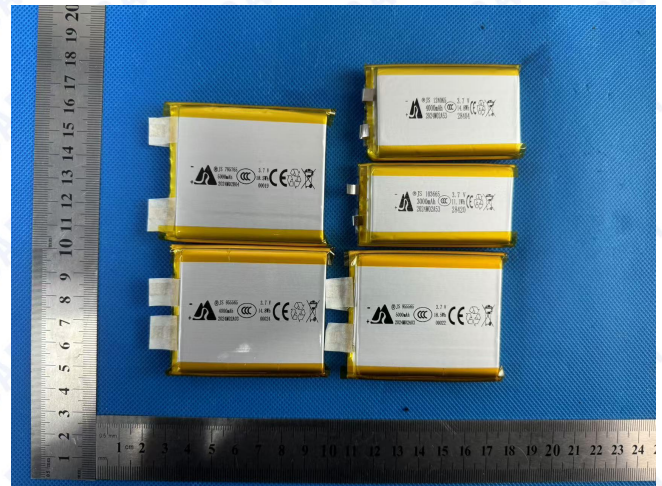
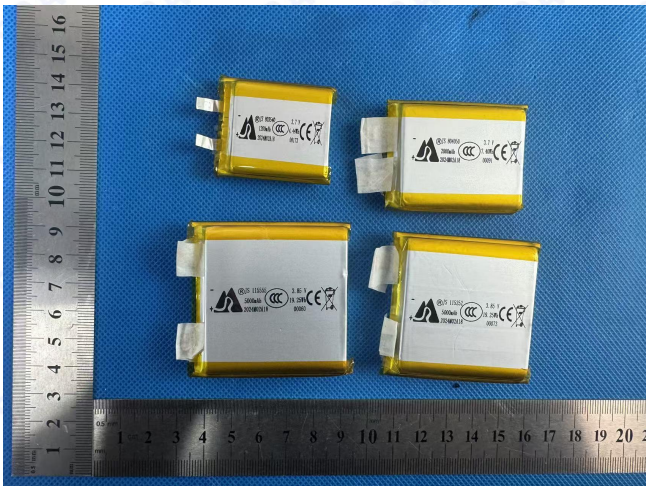
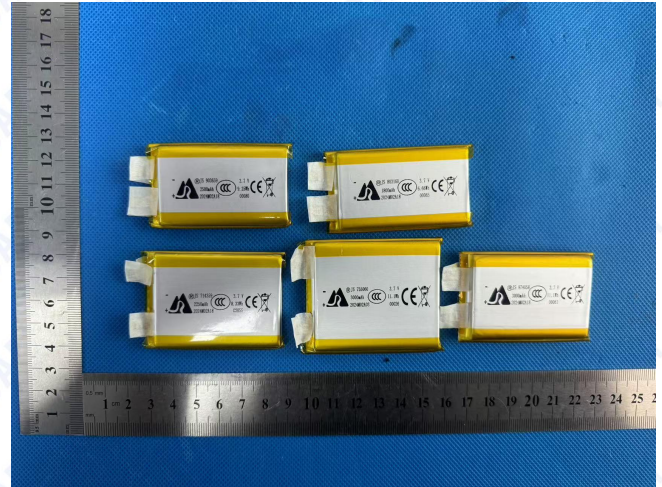
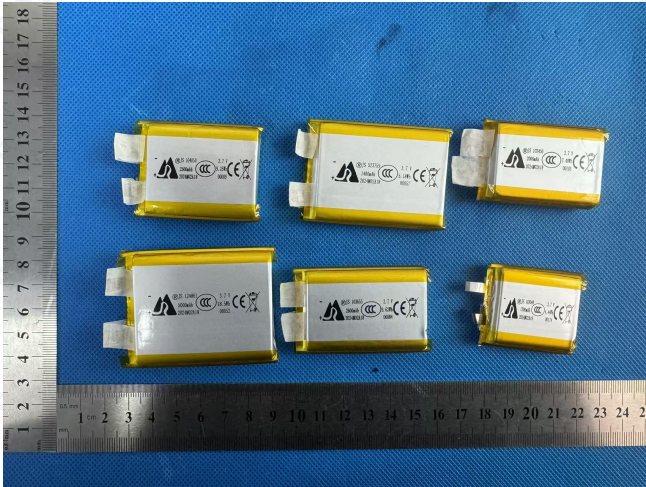


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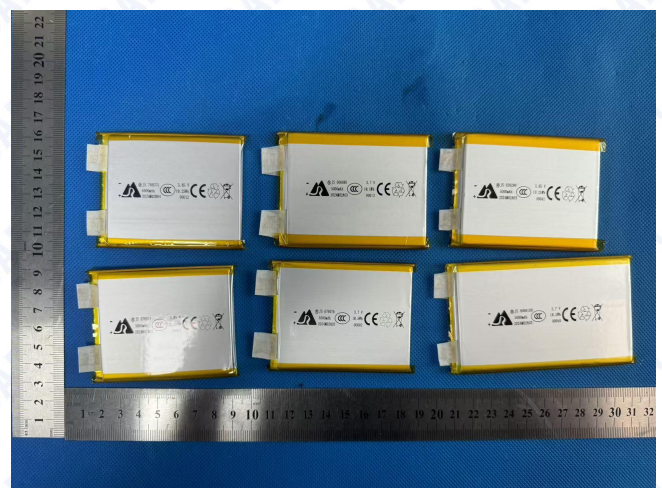
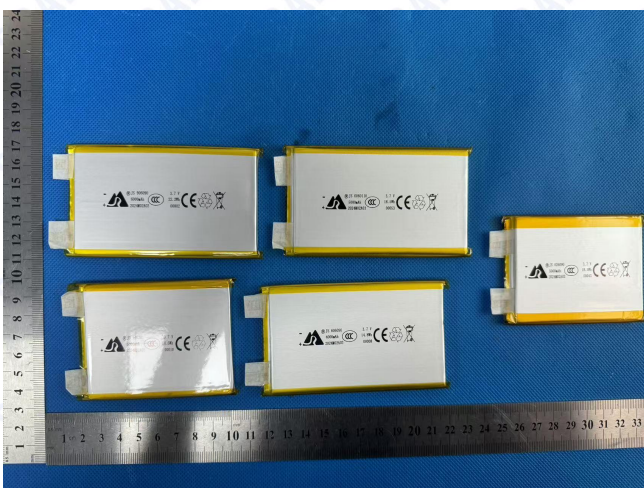
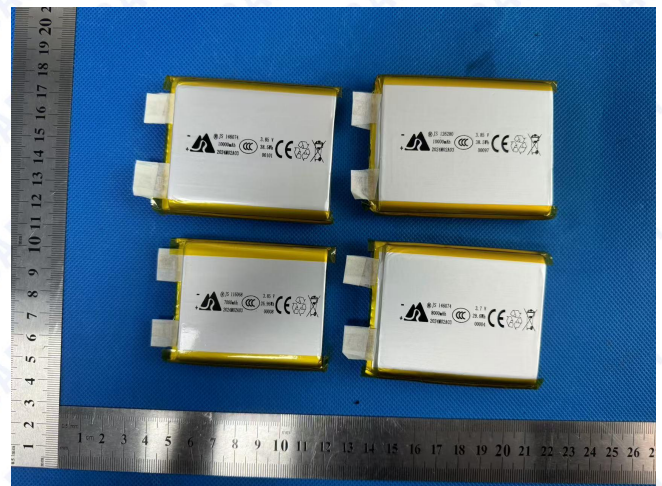
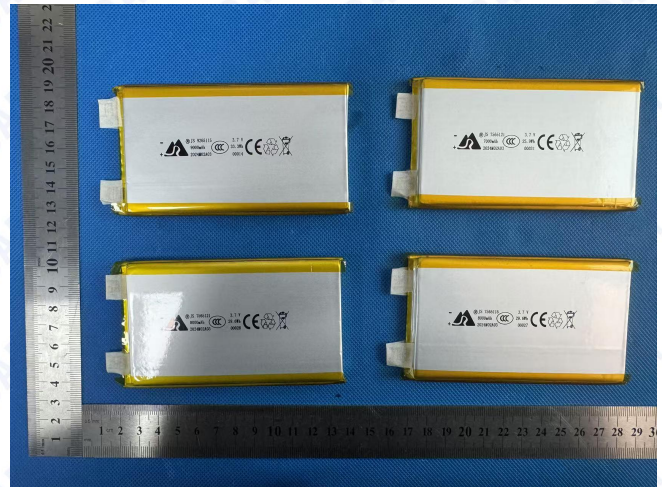
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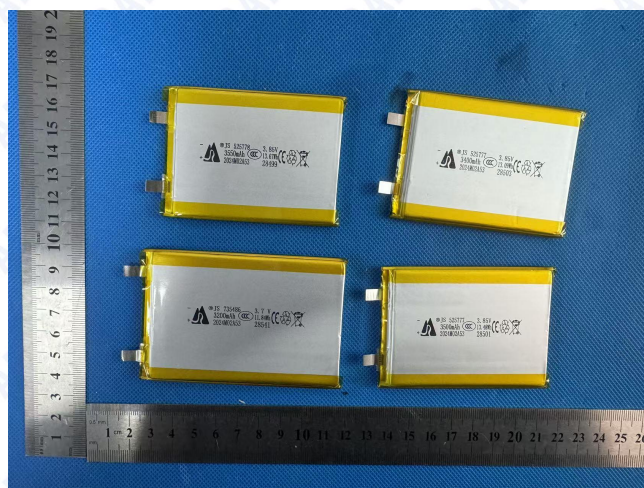
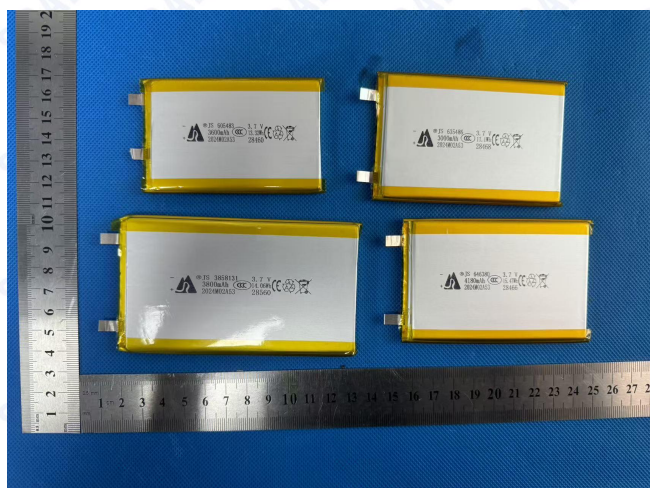
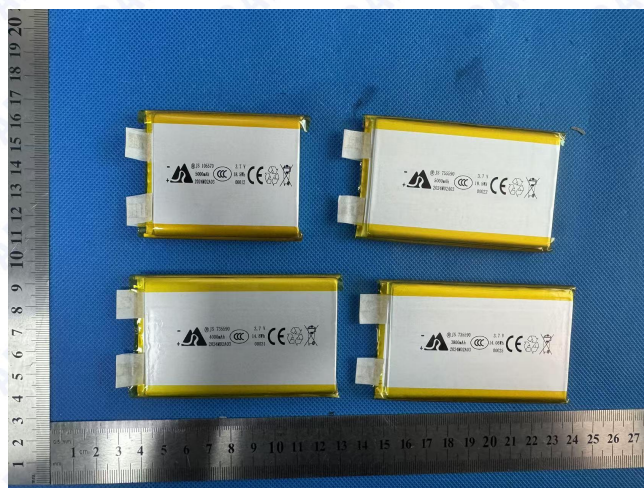
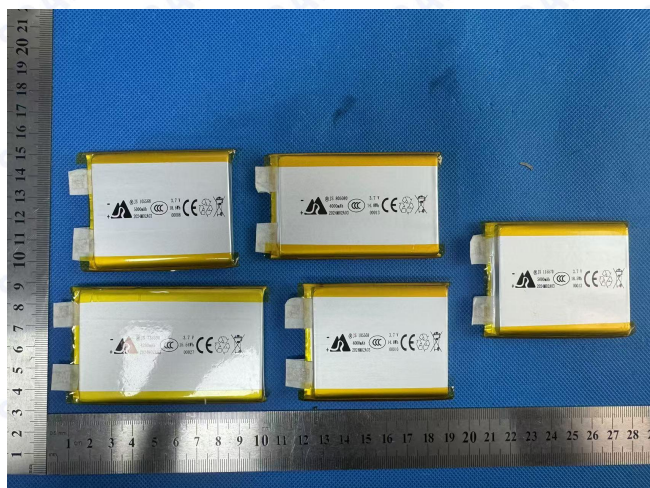
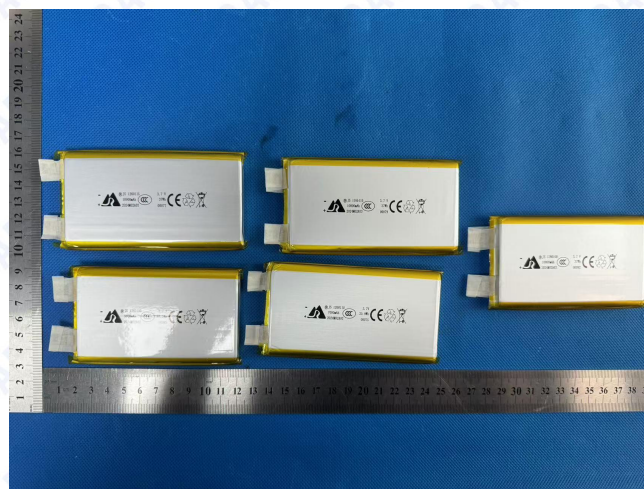
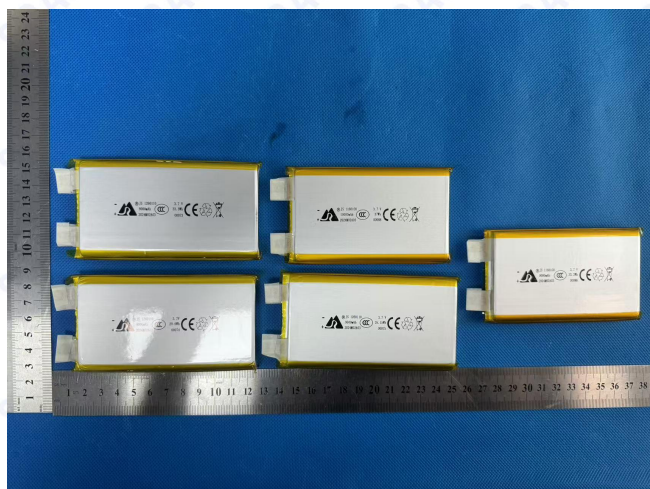
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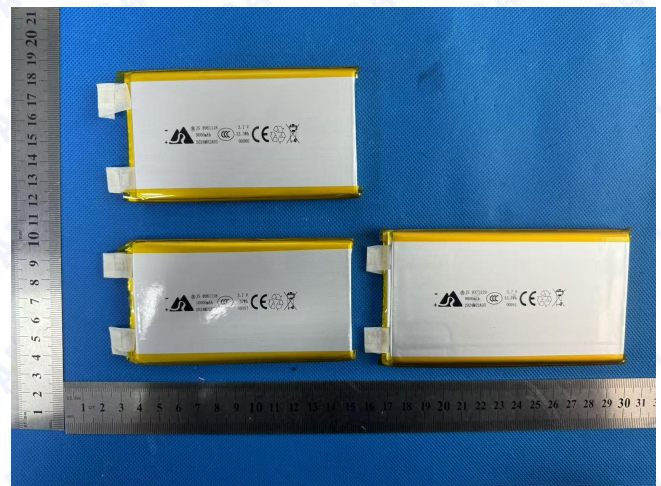
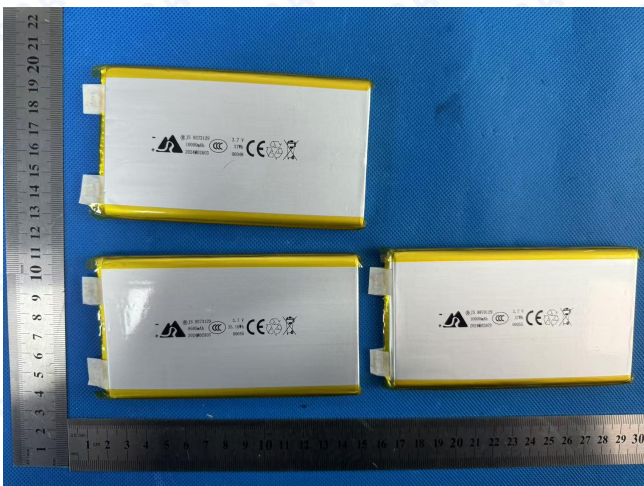
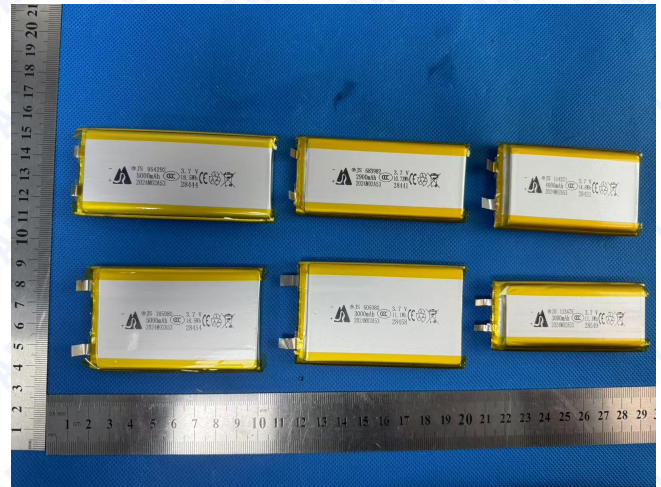
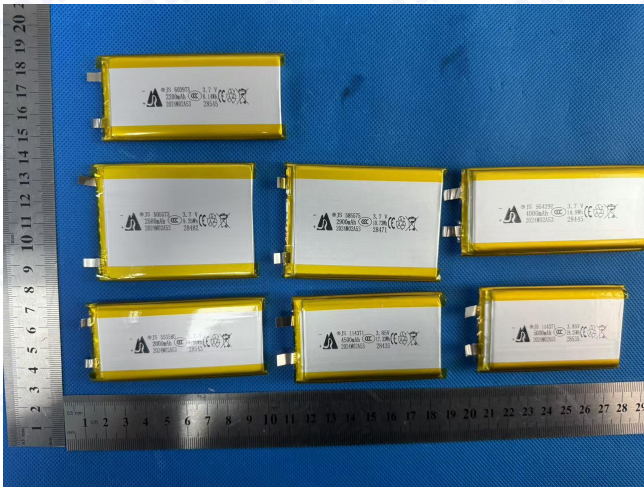
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TEST REPORT EN 62133 Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications	
Report Number.....:	KEYS24121012001LD-01
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Tested by (name + signature).....:	Sunny Li
Approved by (name + signature).....:	Jason Zhan
	
Testing Laboratory Name	Guangdong KEYS Testing Technology Co., Ltd.
Address	6/F, Building B, Chuangyizhigu Industrial Park, No.5, Hehe Street, Songxi Road, Hengkeng, Liaobu, Dongguan, Guangdong, China
Applicant's name.....:	
Address.....:	
Test specification:	
Standard.....:	EN 62133:2017
Test item description.....:	Polymer Li-ion Cell
Trade Mark.....:	
Manufacturer.....:	
Address.....:	

Model/Type reference.....:

Ratings..... :

9373129, 146074, 1264130, 126280, 1260113,
1260110-10000mAh, 1260110-8000mAh, 1260110-9200mAh,
1260110-9000mAh, 1260100-10000mAh, 1260100-9000mAh,
126090, 126075, 124065, 123790-5000mAh,
123790-4000mAh, 116891, 1166110, 1165113, 1165110,
1160110, 1160100, 1158115, 115670, 115570, 1148118,
1147126, 114273, 114190, 1064130, 106168, 1065113,
1060110, 105673-5800mAh, 105673-6000mAh, 1055125,
105573, 105570, 105568, 105080, 1042100, 104050-2500mAh,
104050-2600mAh, 103665, 103450-2000mAh,
103450-1800mAh, 103040-1200mAh, 103040-1000mAh,
9865125, 974058, 9565125, 956090, 955570,
955565-5000mAh, 955565-4000mAh, 954292,
9373129-10000mAh, 9373129-9500mAh, 9265115-10000mAh,
9265115-9000mAh, 9265115-8000mAh, 9260110, 924093,
9170129, 9070129-10000mAh, 9070129-9100mAh, 9065115,
9060100, 906090, 905472, 905045, 904550, 903659, 8961118,
8870129, 8052130, 825673, 816073, 805080, 804050, 803450,
7865110, 785767, 7764130, 7565121-7000mAh,
7565121-8000mAh, 755590, 755060, 745588, 7350107,
735590-4000mAh, 735590-4200mAh, 735590-3800mAh,
705590, 706090, 7054130, 706075, 656583, 6564130, 656090,
655063, 654060, 635486, 6348113-5000mAh,
6348113-4900mAh, 634098, 626090-5000mAh,
626090-4000mAh, 6060100, 606090, 585575, 5758102,
5757101, 565872-3000mAh, 565872-3200mAh,
565872-3380mAh, 5565113, 5564113, 5565110,
5560100-5000mAh, 5560100-4900mAh, 555464, 546691,
5494130, 515777-3350mAh, 506758, 505573, 505060, 503759,
474854, 454261, 385576, 3858131, 3766125, 2695129,
7565113, 515777-3400mAh, 1260115, 9573129-10000mAh ,
9373129-9800mAh, 9373129-9500mAh
3.7V, 10000mAh

List of Attachments (including a total number of pages in each attachment): --	
Summary of testing: The unit is charging the empty cell and discharging the full charged cell according to the rating. Note: Charging procedures for test purposes: (1) Unless otherwise stated, the charging procedure for test purposes is carried out in an ambient temperature of $20\pm5^{\circ}\text{C}$, using the method declared by the manufacturer. Prior to charging, the battery/cell shall have been discharged at $20\pm5^{\circ}\text{C}$ at a constant current of 0.2 It A down to a specified final voltage. (2) After stabilization for 1 to 4 hours respectively at ambient temperature of highest test temperature 45°C and lowest test temperature 10°C .	
Tests performed (name of test and test clause): cl.5.6.2 Design recommendation; cl.7.1 Charging procedure for test purposes (for Cells and Batteries); 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 (cells); cl.7.3.2 External short circuit (batteries); cl.7.3.3 Free fall (cells and batteries); 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 Mechanical tests (batteries); cl.7.3.9 Design evaluation – Forced internal short circuit (cells) Tests are made with the number of cells and batteries specified in EN 62133:2017 Table 1.	Testing location: Guangdong KEYS Testing Technology Co., Ltd. 6/F, Building B, Chuangyizhigu Industrial Park, No.5, Hehe Street, Songxi Road, Hengkeng, Liaobu, Dongguan, Guangdong, China
Summary of compliance with National Differences (List of countries addressed): ☒ The product fulfils the requirements of <u>EN 62133:2017</u>	

Copy of marking plate:

- Polymer Li-ion Cell
9373129
+ 3.7V, 10000mAh

Made in China Date: YYDDMM
Warning: Risk of Fire and Burns.
Follow Manufacturer's Instructions.

Remark: "YY" means to years; "MM" means to months; "DD" means to days.
The "+" represents the anode; The "-" represents the cathode

Test item particulars.....	Polymer Li-ion Cell
Classification of installation and use.....	To be defined in final product
Supply connection.....	Lead wire
Recommend charging method declared by the manufacturer.....	Charging the cell with 2000mA constant current and 4.2V constant voltage until the current reduces to 200mA at ambient 25°C±2°C.
Discharge current (0.2 I_L A).....	2000mA
Maximum discharging current.....	5000mAh
Specified final voltage.....	3.0V
Upper limit charging voltage per cell.....	4.2V
Recommend of charging limit for lithium system	
Upper limit charging voltage per cell.....	4.2V
Maximum charging current.....	5000mAh
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.....	December 10, 2024
Date (s) of performance of tests.....	December 10, 2024- December 28, 2024
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 ☐ comma / ☒ point is used as the decimal separator.	
General product information:	
/	

General product information:

This battery is constructed with 1 Li-ion Battery in 1S1P, and the cells were passed the standard EN62133-2-2017.

The main features of the battery are shown as below (clause 8.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage

The main features of the battery are shown as below (clause 8.1.2):

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature

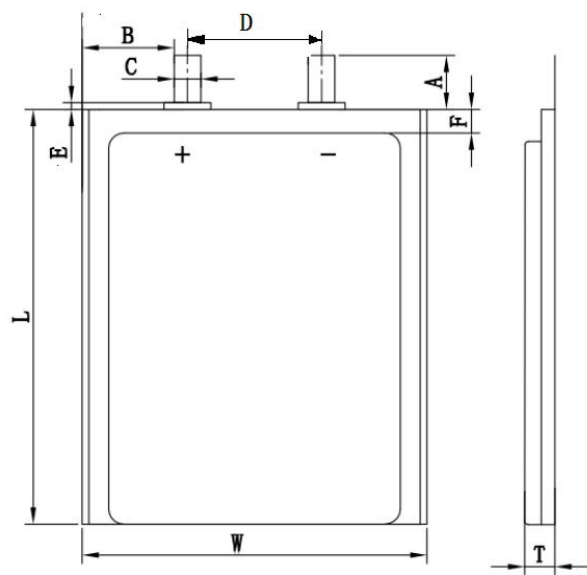
The main features of the cell in the battery are shown as below (clause 8.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
9373129	10000mAh	3.7V	2000mA	2000mA	5000mA	5000mA	4.2V	3.0V

The main features of the cell in the battery are shown as below (clause 8.1.2):

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
9373129	4.2V	200mA	10°C	45°C

Construction:



Items	Description	Dimension and Spec
T	电芯厚度	11.0mm Max
W	电芯宽度	60.5mm Max
L	电芯长度	100.8mm Max
D	Tab 中心距	35±2.0mm
C	Tab 宽度	5±0.1mm
F	顶封宽度	3.0±0.5mm
E	极耳胶外露	0.5-2.0mm
A	极耳长度 (含极耳胶)	9.0±1.5mm

Size (L×W×T): /

Weight: ≈153.0g

Circuit diagram:

N/A

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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		N/A
	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		N/A
5.4	Temperature, voltage and current management		P
	Batteries are designed such that abnormal temperature rise conditions are prevented	Overcharge, over discharge, over current and short-circuit proof circuit used in this battery. See tests of clause 7.	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	See above.	P
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified	The charging limits specified in the user manual.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.5	Terminal contacts		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Copper plate contacts complied with the requirements.	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		P
5.6.1	General		P
	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	Protective circuit equipped on battery.	P
	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	Current, voltage and temperature limits specified by cell manufacturer.	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 added as appropriate and consideration given to the end-device application		P
	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	Safety analysis report provided by manufacturer.	P
5.6.2	Design recommendation		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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	Charging voltage: 4.2V	P
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that the voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Table 2, by monitoring the voltage of every single cell or the single cellblocks		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		N/A
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage not be counted as an overcharge protection		N/A
	For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		N/A
	It is recommended that the cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage	Final voltage of battery: 3.0V, not exceed the final voltage specified by cell manufacturer.	P
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system		N/A
5.6.3	Mechanical protection for cells and components of batteries		P
	Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse	Mechanical protection for cell connections and control circuits provided.	P
	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	Build-in batteries, mechanical protection for cells should be provided by 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	To be evaluated in final system.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
	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: 2008 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 $\leq 3 \Omega$ (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 $20^\circ\text{C} \pm 5^\circ\text{C}$		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and overdischarge protection		P
	When conducting the short-circuit test, consideration given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test	See clause 7.3.2.	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 $20^\circ\text{C} \pm 5^\circ\text{C}$, using the method declared by the manufacturer	See page 5.	P
	Prior to charging, the battery have been discharged at $20^\circ\text{C} \pm 5^\circ\text{C}$ at a constant current of 0,2 It A down to a specified final voltage	See page 5.	P

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Clause	Requirement + Test	Result - Remark	Verdict
7.1.2	Second procedure		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P
	After stabilization for 1 h and 4 h, respectively, at ambient temperature of highest test temperature and lowest test temperature, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant voltage charging method	Charge temperature specified by manufacturer: 10-45°C.	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	Charging for 7days with 500mA.	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)		P
	Oven temperature (°C)..... :	70°C, 7 hours	—
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells	No physical distortion of the battery casing.	P
7.3	Reasonably foreseeable misuse		P
7.3.1	External short-circuit (cell)	Tested complied.	P
	The cells were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		P
	Results: No fire. No explosion..... :	(See appended table 7.3.1)	P
7.3.2	External short-circuit (battery)	Tested complied.	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		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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	Single fault conducted on three samples.	N/A
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor	Single fault applies on MOSFET.	N/A
	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	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	Tested complied.	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	6.0V applied.	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

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Clause	Requirement + Test	Result - Remark	Verdict
	If the discharge voltage reaches the negative value of upper limit charging voltage within the testing duration, the voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration		N/A
	If the discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration, the test is terminated at the end of the testing duration		P
	Results: No fire. No explosion..... :	(See appended table 7.3.7)	P
7.3.8	Mechanical tests (batteries)		P
7.3.8.1	Vibration	Tested complied.	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	Tested complied.	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, 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 for prismatic cell.	P
	Results: No fire..... :	(See appended table 7.3.9)	P
8	INFORMATION FOR SAFETY		P
8.1	General		P
	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products	Information for safety mentioned in manufacturer's specifications.	P
	Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards	Information for safety mentioned in manufacturer's specifications.	P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N/A

9	MARKING		P
9.1	Cell marking	The final product is battery	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		P
	Batteries marked as specified in IEC 61960, except for coin batteries	See marking plate on page 4.	P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement		N/A
	Terminals have clear polarity marking on the external surface of the battery		P
	Batteries with keyed external connectors designed for connection to specific end products need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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

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		P
A.4	Consideration of temperature and charging current		P

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Clause	Requirement + Test	Result - Remark	Verdict
A.4.1	General		P
A.4.2	Recommended temperature range	See A.4.2.2.	P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature declared by client is: 10-45°C	P
A.4.3	High temperature range	Not higher than the temperature specific in this standard.	N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		N/A
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		N/A
A.4.4	Low temperature range	Charging low temperature declared by client is: 10°C.	P
A.4.4.1	General		P
A.4.4.2	Explanation of safety viewpoint		P
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		P
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	10°C applied.	P
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	Battery specified final voltage 3.0V, not exceed 3.0V specified by cell manufacturer.	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

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Clause	Requirement + Test	Result - Remark	Verdict
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
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	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		N/A
ANNEX F	COMPONENT STANDARDS REFERENCES		N/A

EN 62133			
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					
Cell		126280	3.7V, 10000mAh	IEC 62133-2: 2017, IEC 62133-2: 2017/AMD1:20 21	Tested with appliance
- Positive Electrode	Interchangeable	Interchangeable	LiNi _{0.6} Mn _{0.3} Co _{0.1} O ₂	--	Tested with appliance
- Negative Electrode	Interchangeable	Interchangeable	Graphite	--	Tested with appliance
- Electrolyte	Interchangeable	Interchangeable	LiPF ₆ + EC+DEC	--	Tested with appliance
- Separator	Interchangeable	Interchangeable	PE+ Ceramic, Thickness: 0.016+0.002mm ,Shutdown temperature: 135°C.	--	Tested with appliance
-Aluminium plastic film	Interchangeable	Interchangeable	113+10%µm, Nylon, PP, Aluminum	--	Tested with appliance
Supplementary information:					
¹⁾ Provided evidence ensures the agreed level of compliance.					

7.2.1	TABLE: Continuous charging at constant voltage (cells)				P
Sample no.	Recommended charging voltage V _c (Vdc)	Recommended charging current I _{rec} (mA)	OCV before test (Vdc)	Results	
Cell #1	4.20	5000	4.20	P	
Cell #2	4.20	5000	4.20	P	
Cell #3	4.20	5000	4.20	P	
Cell #4	4.20	5000	4.20	P	
Cell #5	4.20	5000	4.20	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)						
Cell #1	22.5	4.23	92	102.5	P	
Cell #2	22.4	4.22	92	101.4	P	
Cell #3	22.2	4.24	92	102.0	P	
Cell #4	22.5	4.24	92	103.5	P	
Cell #5	22.4	4.25	92	102.8	P	
Samples charged at charging temperature lower limit (10°C)						
Cell #6	22.4	4.24	92	101.2	P	
Cell #7	22.5	4.22	92	102.5	P	
Cell #8	22.4	4.24	92	102.8	P	
Cell #9	22.5	4.22	92	100.4	P	
Cell #10	22.5	4.23	92	103.4	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
Battery #1						
Battery #2						
Battery #3						
Battery #4						
Battery #5						
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)					
Cell #1	4.18	4.17	13	P	
Cell #2	4.17	4.16	13	P	
Cell #3	4.17	4.17	13	P	
Cell #4	4.16	4.15	13	P	
Cell #5	4.16	4.15	13	P	
Samples charged at charging temperature lower limit (-5°C)					
Cell #6	4.15	4.14	13	P	
Cell #7	4.15	4.14	13	P	
Cell #8	4.15	4.14	13	P	
Cell #9	4.15	4.15	13	P	
Cell #10	4.14	4.13	13	P	
Supplementary information: - No fire or explosion					

7.3.6	TABLE: Over-charging of battery				N/A
Constant charging current (A) :			0.9		—
Supply voltage (Vdc) :			6.0		—
Sample no.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results	
Battery #1					
Battery #2					
Battery #3					
Battery #4					
Battery #5					
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 (mA)	Lower limit discharge voltage (Vdc)	Results	
Cell #1	3.08	5000	3.0	P	
Cell #2	3.07	5000	3.0	P	
Cell #3	3.09	5000	3.0	P	
Cell #4	3.11	5000	3.0	P	
Cell #5	3.12	5000	3.0	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	
Battery #1						
Battery #2						
Battery #3						

Supplementary information:

- No fire or explosion
- No rupture
- No leakage
- No venting

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
Battery #1					
Battery #2					
Battery #3					

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)					
Cell #1	45	4.16	2	400	P
Cell #2	45	4.17	2	400	P
Cell #3	45	4.17	2	400	P
Cell #4	45	4.15	1	400	P
Cell #5	45	4.15	2	400	P
Samples charged at charging temperature lower limit (10°C)					
Cell #6	10	4.15	1	400	P
Cell #7	10	4.17	2	400	P
Cell #8	10	4.15	1	400	P
Cell #9	10	4.16	2	400	P
Cell #10	10	4.16	1	400	P

Supplementary information:

¹⁾ Identify one of the following:

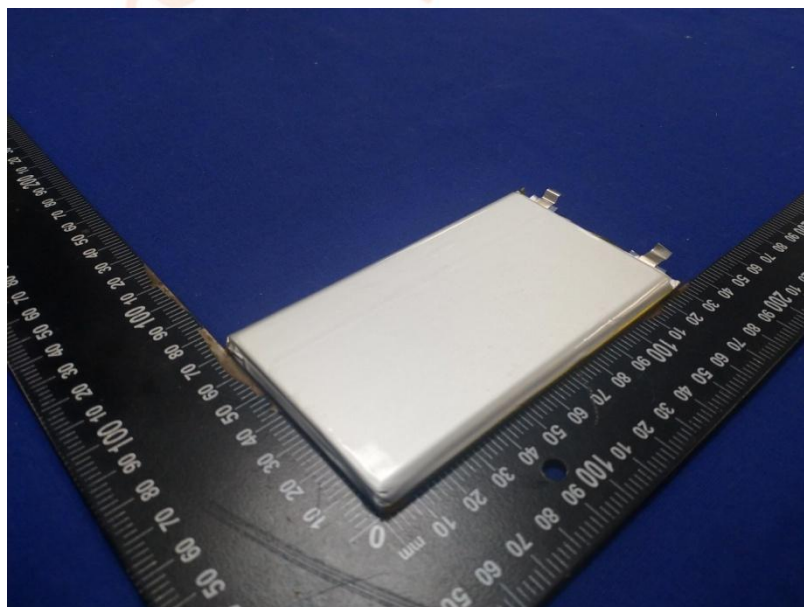
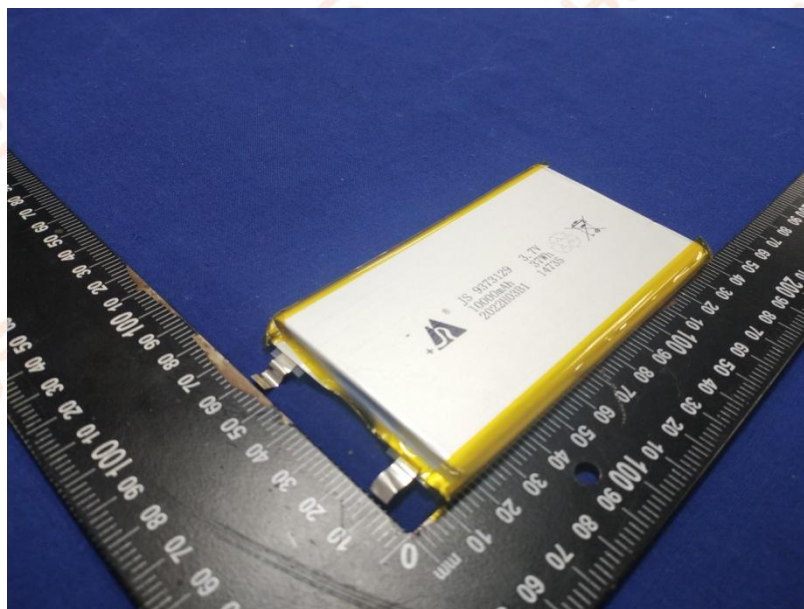
- 1: Nickel particle inserted between positive and negative (active material) coated area.
- 2: Nickel particle inserted between positive aluminium foil and negative active material coated area.
- No fire or explosion

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

Photos



--- End of Report ---