测试报告（Test Report）

报告编号(NO.)：MRCKIE7G2548917D1a 签发日期(Issued Date)：2023-01-11

委托单位 Applicant：

地址 Address：

委托单位提供样品信息如下：
The following sample(s) was/were submitted and identified on behalf of the client as：

样品名称 Sample Name：	锂离子电池 Li-ion Battery
制造商 Manufacturer：	
样品接收日期 Sample Receivete Date：	2023-01-03
样品测试日期 Testing Period：	2023-01-03 ~ 2023-01-09
参考要求： Reference Requested：	2006/66/EC&2013/56/EU 指令 Directive 2006/66/EC&2013/56/EU
参考方法： Reference Method：	(1) IEC62321-5 Edition 1.0:2013,用原子吸收光谱仪测定铅的含量 IEC62321-5 Edition 1.0:2013, Lead Analysis is performed by AAS (2) IEC62321-5 Edition 1.0:2013,用原子吸收光谱仪测定镉的含量 IEC62321-5 Edition 1.0:2013, Cadmium Analysis is performed by AAS (3) IEC 62321-4:2013+AMD1:2017 CSV, 用电感耦合等离子体发射光谱仪测定汞的含量 IEC 62321-4:2013+AMD1:2017 CSV, Mercury Analysis is performed by ICP-OES
测试结果 Testing Results：	请参见下页 Please refer to next page(s)

批准人 Approved by：

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测试结果 Test Results （Unit：%）

测试项目 Test Item	方法检出限 MDL	测试结果 Test Result	限量 Limit
铅(Lead)	0.0005	未检出（N.D.）	0.004
镉(Cadmium)	0.0001	未检出（N.D.）	0.002
汞(Mercury)	0.0001	未检出（N.D.）	0.0005

备注 Note： (1) % = 重量百分比 Percentage by Weight
(2) N.D. = 未检出 Not Detected (＜MDL)
(3) MDL = 方法检出限 Method Detection Limit
(4) 此报告替代编号 MRCKIE7G2548917D1 测试报告。编号 MRCKIE7G2548917D1 测试报告作废，不具有任何法律效力，以此报告为准。2023-01-11
The original report which report No. is MRCKIE7G2548917D1 be replaced by this report, and it will be canceled immediately and doesn't have any legal validity. Please compliance with this report. 2023-01-11

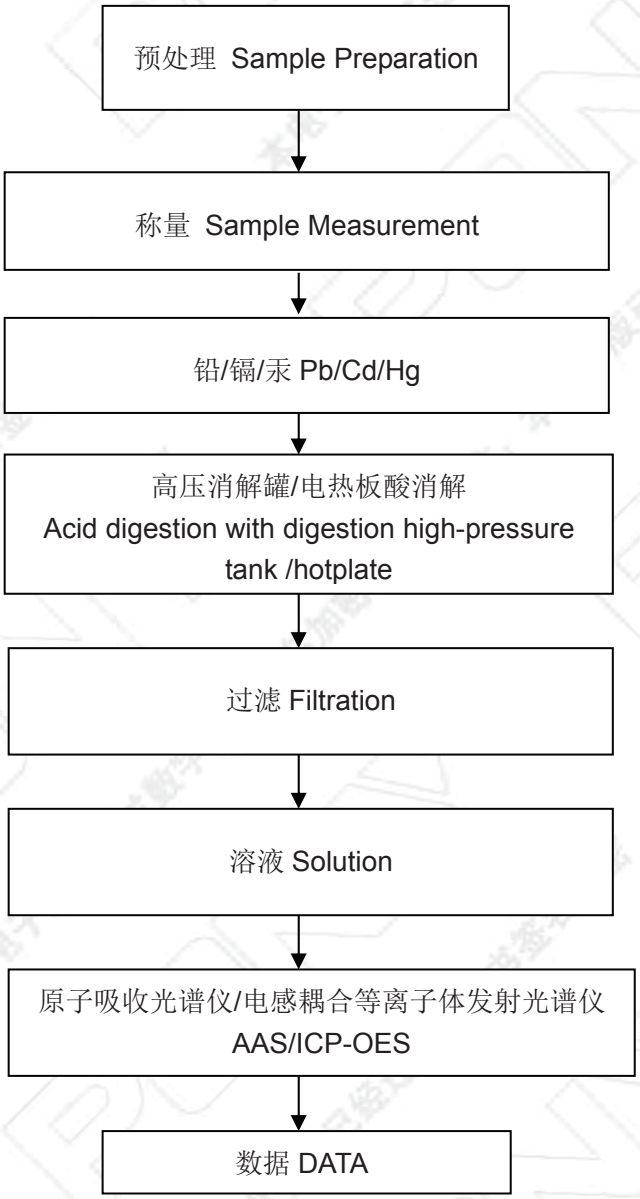
注意 Remark：
根据 2006/66/EC&2013/56/EU 指令第 21(3) 相关章节，凡是含汞超过 0.0005%、镉超过 0.002%或铅超过 0.004%的电池、蓄电池和钮扣电池均应含有描述重金属含量的标志。
According to the Article 21(3) of Directive 2006/66/EC&2013/56/EU, Battery, Accumulator and Button cell shall include the chemical Symbol Mercury when containing more than 0.0005%of Hg, 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.

样品编号和照片 Sample No. & Photo： G2548917D1

仅对报告照片中的样品负责
Pony authenticate the photo on original report only

流程图 Test Flow Chart

测试人员 Tested by：熊程红　审核人 Checked by：杨新　实验室负责人 Person in charge of the lab：毛祖青



报告结束 End of Report

Test Report issued under the responsibility of:

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. ..... :	S-24022266A0
Date of issue ..... :	2024-02-22
Total number of pages ..... :	28 pages
Name of Testing Laboratory preparing the Report ..... :	**Shenzhen Precise Testing Technology Co., Ltd**
Applicant's name ..... :	
Address ..... :	
Test specification:	
Standard ..... :	IEC 62133-2:2017
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC62133_2A
Test Report Form(s) Originator .... :	DEKRA
Master TRF ..... :	Dated 2017-08-10

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

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

Test item description ..... :	Rechargeable Li-ion cell
Trade Mark ..... :	N/A
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	INR 18650P-1200mAh, INR 18650P-1300mAh, INR 18650P-1500mAh, INR 18650P-1800mAh, INR 18650P-2000mAh, INR 18650P-2200mAh, INR 18650-1500mAh, INR 18650-2000mAh
Ratings ..... :	3.7V, 1200mAh (INR 18650P-1200mAh) 3.7V, 1300mAh (INR 18650P-1300mAh) 3.7V, 1500mAh (INR 18650P-1500mAh) 3.7V, 1800mAh (INR 18650P-1800mAh) 3.7V, 2000mAh (INR 18650P-2000mAh) 3.7V, 2200mAh (INR 18650P-2200mAh) 3.7V, 1500mAh (INR 18650-1500mAh) 3.7V, 2000mAh (INR 18650-2000mAh)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒	**CB Testing Laboratory:**	Shenzhen Precise Testing Technology Co., Ltd	
Testing location/ address..... :		No. 9 Shuiku Road, Guangming New District, Shenzhen 518108, China	
Tested by (name, function, signature)..... :		Felix Xia (Project Handler)	Felix Xia
Approved by (name, function, signature)... :		Gino Wong (Reviewer)	Gino Wong
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address..... :			
Tested by (name, function, signature)..... :			
Approved by (name, function, signature)... :			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address..... :			
Tested by (name + signature) ..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature)... :			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address..... :			
Tested by (name, function, signature)..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature)... :			
Supervised by (name, function, signature) :			

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

National Differences (3 pages)

Enclosures (21 pages)

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
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); cl.7.3.9 Design evaluation – Forced internal short circuit (Cells). Tests are made with the number of cells specified in IEC 62133-2: 2017 Table 1.	**Shenzhen Precise Testing Technology Co., Ltd** No. 9 Shuiku Road, Guangming New District, Shenzhen 518108, China

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

KR

KR = Republic of Korea

☒ **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.

Note: By agreement between the cell manufacturer and battery and/or end product manufacturer, cells used in the assembly of a battery need not be marked.

Test item particulars.....:	N/A
Classification of installation and use.....:	To be defined in final system
Supply Connection.....:	DC terminal
Recommend charging method declared by the manufacturer.....:	Charging the cell with 600mA constant current until 4.2V, then constant voltage until the charge current reduces to 60mA (INR 18650P-1200mAh); Charging the cell with 650mA constant current until 4.2V, then constant voltage until the charge current reduces to 65mA (INR 18650P-1300mAh); Charging the cell with 750mA constant current until 4.2V, then constant voltage until the charge current reduces to 75mA (INR 18650P-1500mAh); Charging the cell with 900mA constant current until 4.2V, then constant voltage until the charge current reduces to 90mA (INR 18650P-1800mAh); Charging the cell with 1000mA constant current until 4.2V, then constant voltage until the charge current reduces to 100mA (INR 18650P-2000mAh); Charging the cell with 1100mA constant current until 4.2V, then constant voltage until the charge current reduces to 110mA (INR 18650P-2200mAh). Charging the cell with 750mA constant current until 4.2V, then constant voltage until the charge current reduces to 75mA (INR 18650-1500mAh); Charging the cell with 1000mA constant current until 4.2V, then constant voltage until the charge current reduces to 100mA (INR 18650-2000mAh);
Discharge current (0,2 It A).....:	240mA (INR 18650P-1200mAh) 260mA (INR 18650P-1300mAh) 300mA (INR 18650P-1500mAh) 360mA (INR 18650P-1800mAh) 400mA (INR 18650P-2000mAh) 440mA (INR 18650P-2200mAh) 300mA (INR 18650-1500mAh) 400mA (INR 18650-2000mAh)
Specified final voltage.....:	2.75V
Upper limit charging voltage per cell.....:	4.2V
Maximum charging current.....:	1200mA (INR 18650P-1200mAh) 1300mA (INR 18650P-1300mAh) 1500mA (INR 18650P-1500mAh) 1800mA (INR 18650P-1800mAh) 2000mA (INR 18650P-2000mAh) 2200mA (INR 18650P-2200mAh) 1500mA (INR 18650-1500mAh) 2000mA (INR 18650-2000mAh)
Charging temperature upper limit.....:	50°C
Charging temperature lower limit.....:	0°C
Polymer cell electrolyte type.....:	☐ gel polymer ☐ solid polymer ☒ N/A

Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	2024-01-19
Date (s) of performance of tests.....:	2024-01-19 to 2024-02-05
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.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☐ **Yes** ☒ **Not applicable**
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 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.
INR19/66 is IEC 61960 model designation and identical to model INR 18650P-1200mAh except for model designation.
INR19/66 is IEC 61960 model designation and identical to model INR 18650P-1300mAh except for model designation.
INR19/66 is IEC 61960 model designation and identical to model INR 18650P-1500mAh except for model designation.
INR19/66 is IEC 61960 model designation and identical to model INR 18650P-1800mAh except for model designation.
INR19/66 is IEC 61960 model designation and identical to model INR 18650P-2000mAh except for model designation.
INR19/66 is IEC 61960 model designation and identical to model INR 18650P-2200mAh except for model designation.
INR19/66 is IEC 61960 model designation and identical to model INR 18650-1500mAh except for model designation.
INR19/66 is IEC 61960 model designation and identical to model INR 18650-2000mAh except for model designation.

Cell INR 18650P-1200mAh, INR 18650P-1300mAh, INR 18650P-1500mAh, INR 18650P-1800mAh, INR 18650P-2000mAh, INR 18650P-2200mAh, INR 18650-1500mAh and INR 18650-2000mAh are identical (same design, chemistry, construction, from same manufacturer), except capacity and charge/discharge current, detail see below.

Models INR 18650P-1200mAh, INR 18650P-1500mAh, INR 18650P-1800mAh and INR 18650P-2200mAh were selected for testing as a representative.

The main features of the cells are shown as below

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
INR 18650P-1200mAh	1200mAh	3.7V	600mA	240mA	1200mA	12000mA	4.2V	2.75V
INR 18650P-1300mAh	1300mAh	3.7V	650mA	260mA	1300mA	13000mA	4.2V	2.75V
INR 18650P-1500mAh	1500mAh	3.7V	750mA	300mA	1500mA	15000mA	4.2V	2.75V
INR 18650P-1800mAh	1800mAh	3.7V	900mA	360mA	1800mA	18000mA	4.2V	2.75V
INR 18650P-2000mAh	2000mAh	3.7V	1000mA	400mA	2000mA	20000mA	4.2V	2.75V
INR 18650P-2200mAh	2200mAh	3.7V	1100mA	440mA	2200mA	22000mA	4.2V	2.75V
INR 18650-1500mAh	1500mAh	3.7V	750mA	300mA	1500mA	7500mA	4.2V	2.75V
INR 18650-2000mAh	2000mAh	3.7V	1000mA	400mA	2000mA	10000mA	4.2V	2.75V

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PARAMETER MEASUREMENT TOLERANCES**		P
	Parameter measurement tolerances		P
5	**GENERAL SAFETY CONSIDERATIONS**		P
5.1	**General**		P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse		P
5.2	**Insulation and wiring**		P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ		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 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		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short-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	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			
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			
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**		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		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	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	Tested complied.	P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P

IEC 62133-2			
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	0°C: Max 1C charging to 4.2V, then constant voltage until charging current reduces to 0.05C; 50°C: Max 1C charging to 4.2V, then constant voltage until charging current reduces to 0.05C.	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		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

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

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
7.3.8.1	Vibration	Cell only	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	Cell only	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, Switzerland and Republic of Korea	—
	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	800N	P
	Results: No fire .....:	(See appended table 7.3.9)	P
8	**INFORMATION FOR SAFETY**		P
8.1	**General**		P
	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products	Information for safety mentioned in manufacturer's specifications.	P
	Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards		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**		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

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	- 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		N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		P
9.2	**Battery marking**	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**		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 disposal instructions mentioned in manufacturer’s specifications.	P
	Recommended charging instructions	Information for recommended charging instructions mentioned in manufacturer’s specifications.	P

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10	**PACKAGING AND TRANSPORT**		P
	Packaging for coin cells not small enough to fit within the limits of the ingestion gauge of Figure 3		N/A
	The materials and packaging design are chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P
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	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		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	4.2V applied.	N/A
A.4	**Consideration of temperature and charging current**		P
A.4.1	General		P
A.4.2	Recommended temperature range	See A.4.2.2.	P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature declared by client is: 0°C-50°C.	P
A.4.3	High temperature range	Charging high temperature declared by client is: 50°C.	P
A.4.3.1	General		P
A.4.3.2	Explanation of safety viewpoint		P
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		P
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		P
A.4.4	Low temperature range	Charging low temperature declared by client is: 0°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

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Clause	Requirement + Test	Result - Remark	Verdict
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		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		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		P
A.5.5.1	Insertion of nickel particle in winding core		P
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		P
A.5.6	Insertion of nickel particle in prismatic cell		N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX D	**MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS**		N/A
D.1	**General**		N/A
D.2	**Method**		N/A
	A sample size of three coin cells is required for this measurement.....:	(See appended table D.2)	N/A
	Coin cells with an internal resistance of less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing		N/A

ANNEX E	**PACKAGING AND TRANSPORT**	**P**

ANNEX F	**COMPONENT STANDARDS REFERENCES**	**N/A**

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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		INR 18650P-1200mAh	3.7V, 1200mAh	IEC 62133-2: 2017	Tested with appliance
Cell		INR 18650P-1300mAh	3.7V, 1300mAh	IEC 62133-2: 2017	Tested with appliance
Cell		INR 18650P-1500mAh	3.7V, 1500mAh	IEC 62133-2: 2017	Tested with appliance
Cell		INR 18650P-1800mAh	3.7V, 1800mAh	IEC 62133-2: 2017	Tested with appliance
Cell		INR 18650P-2000mAh	3.7V, 2000mAh	IEC 62133-2: 2017	Tested with appliance
Cell		INR 18650P-2200mAh	3.7V, 2200mAh	IEC 62133-2: 2017	Tested with appliance
Cell		INR 18650-1500mAh	3.7V, 1500mAh	IEC 62133-2: 2017	Tested with appliance
Cell		INR 18650-2000mAh	3.7V, 2000mAh	IEC 62133-2: 2017	Tested with appliance
-Positive electrode	Jiangmen KanHoo Industry Co., Ltd	TE515	Particle size D50: 12±2μm BET surface area: 0.1-0.5m^2/g Tap density: ≥2.2g/cm^3 NI+CO+Mn: 57~62wt% NI: CO: Mn= 5:3:2	--	--
-Negative electrode	Jiao zuo Rongchuang Graphite Technology Co., Ltd	J-002	Particle size D50: 14.0±2.0μm BET surface area: ≤2.5m^2/g Tap density: ≥1.0g/cm^3 Graphite: ≥99.9%	--	--

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-Separator	SHEN ZHEN TOWIN NEW MATERIALS INDUSTRIAL Co., Ltd	60.5*0.020mm	Width: 60.5±0.5mm Thickness: 0.02±0.002mm Porosity(%): 38-46 Shutdown temp: 130±5°C material: PE	--	--
-Electrolyte	Heyuan Lianmao New Material Co., Ltd	LM-CJ001	Conductivity: 10.5±1.0mS/cm, Density: 1.235±0.03g/cm^3	--	--
-Cell case	Shangqiu Yida new energy material Co., Ltd	18#	Height: 68.3±0.05mm Inner diameter: 17.71±0.5mm	--	--
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-2039.					

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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**
Cell #1	4.2	0.6	4.173	P
Cell #2	4.2	0.6	4.174	P
Cell #3	4.2	0.6	4.179	P
Cell #4	4.2	0.6	4.177	P
Cell #5	4.2	0.6	4.178	P
Cell #54	4.2	0.75	4.181	P
Cell #55	4.2	0.75	4.183	P
Cell #56	4.2	0.75	4.185	P
Cell #57	4.2	0.75	4.187	P
Cell #58	4.2	0.75	4.184	P
Cell #107	4.2	0.9	4.183	P
Cell #108	4.2	0.9	4.181	P
Cell #109	4.2	0.9	4.185	P
Cell #110	4.2	0.9	4.187	P
Cell #111	4.2	0.9	4.185	P
Cell #160	4.2	1.1	4.183	P
Cell #161	4.2	1.1	4.189	P
Cell #162	4.2	1.1	4.188	P
Cell #163	4.2	1.1	4.187	P
Cell #164	4.2	1.1	4.185	P

Supplementary information:

- No fire or explosion
- No leakage

Sample no. Cell #1~Cell #5: INR 18650P-1200mAh;
Sample no. Cell #54~Cell #58: INR 18650P-1500mAh;
Sample no. Cell #107~Cell #111: INR 18650P-1800mAh;
Sample no. Cell #160~Cell #164: INR 18650P-2200mAh.

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Clause	Requirement + Test	Result - Remark	Verdict

7.3.1	TABLE: External short-circuit (cell)				P
Sample no.	**Ambient T (°C)**	**OCV before test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature rise ΔT (K)**	**Results**
Samples charged at charging temperature upper limit (50°C)					
Cell #6	55.2	4.191	63	29.2	P
Cell #7	55.2	4.192	65	23.5	P
Cell #8	55.2	4.193	63	24.7	P
Cell #9	55.2	4.191	62	28.6	P
Cell #10	55.2	4.190	62	26.3	P
Cell #59	55.8	4.193	63	35.2	P
Cell #60	55.8	4.191	65	27.8	P
Cell #61	55.8	4.189	63	27.2	P
Cell #62	55.8	4.194	62	29.3	P
Cell #63	55.8	4.191	62	27.6	P
Cell #112	55.6	4.192	63	30.4	P
Cell #113	55.6	4.193	65	25.9	P
Cell #114	55.6	4.189	63	22.1	P
Cell #115	55.6	4.191	62	31.6	P
Cell #116	55.6	4.194	62	31.5	P
Cell #165	55.1	4.190	63	33.5	P
Cell #166	55.1	4.189	65	36.5	P
Cell #167	55.1	4.193	63	36.8	P
Cell #168	55.1	4.191	62	38.3	P
Cell #169	55.1	4.192	62	30.2	P
Samples charged at charging temperature lower limit (0°C)					
Cell #11	56.0	4.183	63	44.1	P
Cell #12	56.0	4.181	65	39.5	P
Cell #13	56.0	4.179	63	44.5	P
Cell #14	56.0	4.180	62	37.2	P
Cell #15	56.0	4.177	62	40.5	P
Cell #64	54.8	4.180	63	28.3	P
Cell #65	54.8	4.180	65	38.3	P
Cell #66	54.8	4.177	63	34.3	P
Cell #67	54.8	4.179	62	33.8	P
Cell #68	54.8	4.176	62	33.5	P

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Clause	Requirement + Test	Result - Remark	Verdict

Cell #117	54.7	4.182	63	42.2	P
Cell #118	54.7	4.181	65	35.6	P
Cell #119	54.7	4.179	63	31.7	P
Cell #120	54.7	4.183	62	38.8	P
Cell #121	54.7	4.181	62	35.8	P
Cell #170	55.3	4.173	63	39.9	P
Cell #171	55.3	4.171	65	38.3	P
Cell #172	55.3	4.172	63	31.8	P
Cell #173	55.3	4.175	62	25.1	P
Cell #174	55.3	4.177	62	31.2	P

Supplementary information:

- No fire or explosion
Sample no. Cell #6~Cell #15: INR 18650P-1200mAh;
Sample no. Cell #59~Cell #68: INR 18650P-1500mAh;
Sample no. Cell #112~Cell #121: INR 18650P-1800mAh;
Sample no. Cell #165~Cell #174: INR 18650P-2200mAh.

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 (K)	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 (50°C)				
Cell #29	4.187	4.174	13.595	P
Cell #30	4.185	4.179	13.642	P
Cell #31	4.188	4.181	13.508	P
Cell #32	4.186	4.183	13.277	P
Cell #33	4.188	4.182	13.235	P

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Clause	Requirement + Test	Result - Remark	Verdict

Cell #82	4.190	4.187	13.266	P
Cell #83	4.189	4.185	13.454	P
Cell #84	4.188	4.184	13.536	P
Cell #85	4.187	4.186	13.329	P
Cell #86	4.191	4.189	13.315	P
Cell #135	4.190	4.185	13.058	P
Cell #136	4.189	4.184	13.268	P
Cell #137	4.188	4.185	13.041	P
Cell #138	4.183	4.181	13.237	P
Cell #139	4.185	4.181	13.176	P
Cell #188	4.189	4.183	13.078	P
Cell #189	4.188	4.185	13.258	P
Cell #190	4.187	4.183	13.343	P
Cell #191	4.191	4.187	13.356	P
Cell #192	4.187	4.186	13.309	P
Samples charged at charging temperature lower limit (0°C)				
Cell #34	4.179	4.176	13.177	P
Cell #35	4.177	4.173	13.021	P
Cell #36	4.178	4.174	13.297	P
Cell #37	4.176	4.175	13.216	P
Cell #38	4.177	4.173	13.123	P
Cell #87	4.179	4.173	13.177	P
Cell #88	4.177	4.175	13.486	P
Cell #89	4.180	4.179	13.077	P
Cell #90	4.181	4.180	13.211	P
Cell #91	4.178	4.175	13.195	P
Cell #140	4.180	4.175	13.367	P
Cell #141	4.179	4.173	13.394	P
Cell #142	4.181	4.180	13.117	P
Cell #143	4.177	4.176	13.006	P
Cell #144	4.181	4.181	13.272	P
Cell #193	4.173	4.171	13.246	P
Cell #194	4.169	4.165	13.162	P
Cell #195	4.170	4.170	13.209	P
Cell #196	4..171	4.169	13.010	P
Cell #197	4.168	4.168	13.316	P

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

- No fire or explosion
Sample no. Cell #29~Cell #38: INR 18650P-1200mAh;
Sample no. Cell #82~Cell #91: INR 18650P-1500mAh;
Sample no. Cell #135~Cell #144: INR 18650P-1800mAh;
Sample no. Cell #188~Cell #197: INR 18650P-2200mAh.

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**
Cell #39	3.032	1.2	-4.2	P
Cell #40	3.014	1.2	-4.2	P
Cell #41	3.019	1.2	-4.2	P
Cell #42	3.010	1.2	-4.2	P
Cell #43	3.014	1.2	-4.2	P
Cell #92	3.017	1.5	-4.2	P
Cell #93	3.013	1.5	-4.2	P
Cell #94	3.012	1.5	-4.2	P
Cell #95	3.047	1.5	-4.2	P
Cell #96	3.035	1.5	-4.2	P
Cell #145	3.300	1.8	-4.2	P
Cell #146	3.281	1.8	-4.2	P
Cell #147	3.222	1.8	-4.2	P
Cell #148	3.270	1.8	-4.2	P
Cell #149	3.296	1.8	-4.2	P

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Clause	Requirement + Test	Result - Remark	Verdict

Cell #198	3.065	2.2	-4.2	P
Cell #199	3.058	2.2	-4.2	P
Cell #200	3.055	2.2	-4.2	P
Cell #201	3.296	2.2	-4.2	P
Cell #202	3.090	2.2	-4.2	P

Supplementary information:

- No fire or explosion
Sample no. Cell #39~Cell #43: INR 18650P-1200mAh;
Sample no. Cell #92~Cell #96: INR 18650P-1500mAh;
Sample no. Cell #145~Cell #149: INR 18650P-1800mAh;
Sample no. Cell #198~Cell #202: INR 18650P-2200mAh.

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)

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)

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Clause	Requirement + Test	Result - Remark	Verdict

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 (50°C)					
Cell #44	50	4.187	1	800	P
Cell #45	50	4.181	1	800	P
Cell #46	50	4.185	1	800	P
Cell #47	50	4.180	1*	800	P
Cell #48	50	4.181	1*	800	P
Cell #97	50	4.189	1	800	P
Cell #98	50	4.185	1	800	P
Cell #99	50	4.183	1	800	P
Cell #100	50	4.182	1*	800	P
Cell #101	50	4.183	1*	800	P
Cell #150	50	4.181	1	800	P
Cell #151	50	4.185	1	800	P
Cell #152	50	4.183	1	800	P
Cell #153	50	4.184	1*	800	P
Cell #154	50	4.183	1*	800	P
Cell #203	50	4.188	1	800	P
Cell #204	50	4.185	1	800	P
Cell #205	50	4.183	1	800	P
Cell #206	50	4.181	1*	800	P
Cell #207	50	4.184	1*	800	P
Samples charged at charging temperature lower limit (0°C)					
Cell #49	0	4.177	1	800	P
Cell #50	0	4.178	1	800	P
Cell #51	0	4.173	1	800	P
Cell #52	0	4.171	1*	800	P
Cell #53	0	4.175	1*	800	P
Cell #102	0	4.177	1	800	P
Cell #103	0	4.176	1	800	P
Cell #104	0	4.173	1	800	P
Cell #105	0	4.175	1*	800	P
Cell #106	0	4.174	1*	800	P

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Clause	Requirement + Test	Result - Remark	Verdict

Cell #155	0	4.179	1	800	P
Cell #156	0	4.177	1	800	P
Cell #157	0	4.173	1	800	P
Cell #158	0	4.175	1*	800	P
Cell #159	0	4.173	1*	800	P
Cell #208	0	4.173	1	800	P
Cell #209	0	4.170	1	800	P
Cell #210	0	4.175	1	800	P
Cell #211	0	4.171	1*	800	P
Cell #212	0	4.173	1*	800	P

Supplementary information:

1) Identify one of the following:
1: Nickel particle inserted between positive and negative (active material) coated area.

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

*Remark: No location 2 exists.

Sample no. Cell #44~Cell #53: INR 18650P-1200mAh;
Sample no. Cell #97~Cell #106: INR 18650P-1500mAh;
Sample no. Cell #150~Cell #159: INR 18650P-1800mAh;
Sample no. Cell #203~Cell #212: INR 18650P-2200mAh.

- No fire

- Others (please explain)

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

Supplementary information:

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

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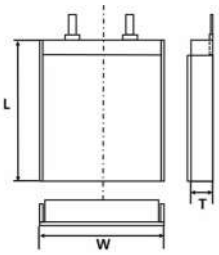
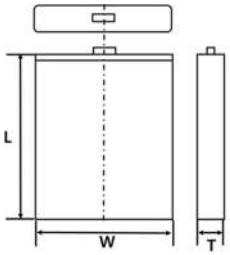
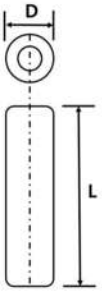
IEC62133_2A ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 62133-2** **(Republic of Korea) NATIONAL DIFFERENCES** (Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems)			
Differences according to ..... :	National standard KC62133-2(2020-07)		
TRF template used: ..... :	IECEE OD-2020-F3, Ed. 1.1		
Attachment Form No. ..... : **Attachment Originator .....** : **Master Attachment**..... :	KR_ND_IEC62133_2A KTR Dated 2023-02-25		
	National Differences		P
7.3.6	**Over-charging of battery**		N/A
(Revision)	***[Add the bolded text]*** b) Test The test shall be carried out in an ambient temperature of 20 °C ± 5 °C. Each test battery shall be discharged at a constant current of 0,2 It A, to a final discharge voltage specified by the manufacturer. Sample batteries shall then be charged at a constant current of 2,0 It A, using a 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 • 1,2 times the upper limit charging voltage presented in Table A.1 per cell for series connected multi-cell batteries, and • sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached. **• In case the charging voltage specified by the manufacturer is higher than the overcharge test voltage, the maximum charging voltage specified by manufacturer should be applied with 2.0 ItA,** **(e.g., quick charging power bank, etc.)**		N/A

IEC62133_2A ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	[Replace to the following statement] c) Acceptance criteria Overcharging exceeding to the limits specified by the manufacturer should not result in fire or explosion.		N/A
Annex G	**Definition for shape and materials of outer case for cell**		—
(Addition)	G.1 General Annex G provides definitions for shape and materials of outer case for cell G.2 Shape of outer case for cell G 2.1 Cylindrical cell Cell with a cylindrical shape in which the overall height is equal to or greater than diameter. G 2.2 Prismatic cell Cell having the shape of a parallelepiped whose faces are rectangular G.3 Materials of outer case for cell G.3.1 Soft case Non-metallic outer case or container for cell G.3.2 Hard case Metallic outer case or container for cell.	(Shape of outer cases) ☒ Cylindrical ☐ Prismatic (Materials of outer cases) ☒ Hard ☐ Soft	—
Annex H	**Calculation method of the volumetric energy density for cell**		—
(Addition)	Annex H provide a calculation method of the volumetric energy density for cell in use of smart phone, tablet, notebook. H.1 General Unless otherwise stated in the Annex E, the dimensions for calculation are based on these for cell before shipment and the volumetric energy density shall be calculated with a maximum values specified by manufacturer. If the specification for cell can't be provided a dimension for calculation, the manufacturer's other documentation shall be provided to demonstrate compliance for its calculation.	(INR18650P-1200mAh): 250.62Wh/L; (INR18650P-1300mAh): 271.51Wh/L; (INR18650P-1500mAh): 313.28Wh/L; (INR18650P-1800mAh): 375.93Wh/L; (INR18650P-2000mAh): 417.70Wh/L; (INR18650P-2200mAh): 459.47Wh/L; (INR18650-1500mAh): 313.28Wh/L; (INR18650-2000mAh): 417.70Wh/L.	—

Report No.: S-24022266A0

IEC62133_2A ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	H.2 Calculation Method  L : Length (max.) of cell (including terrace) W : Width (max.) of cell T : Thickness (max.) when shipping charge (For reference, Please Exclude the dimension of any tape that Is attached to cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{Length\ (L) \times Width\ (W)\ \times Thickness\ (T)}$ [H.1 – Prismatic cell using soft case]  L : Length (max.) of cell W : Width (max.) of cell T : Thickness when shipping charge (For reference, Please Exclude the dimension of any tape that Is attached to cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{Length\ (L) \times Width\ (W)\ \times Thickness\ (T)}$ [H.2 – Prismatic cell using hard case]  D : Diameter (max.) of cell L : Length (max.) of cell (According to shape of cell at shipping, The dimension of tube for cell may be included In overall dimension of cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{3.14159\ \times \frac{Diameter\ (D)^2}{4} \times Length(L)}$ [H.3 – Cylindrical cell using hard case]		—

Enclosures

Supplement ID	Description
01	Photos of the cell
02	Specification of the cell
03	Manufacturer date of the cell
04	Outline Dimension of the cell
05	Packaging Illustration of the cell
06	Declaration of Quality Plan

ID 01

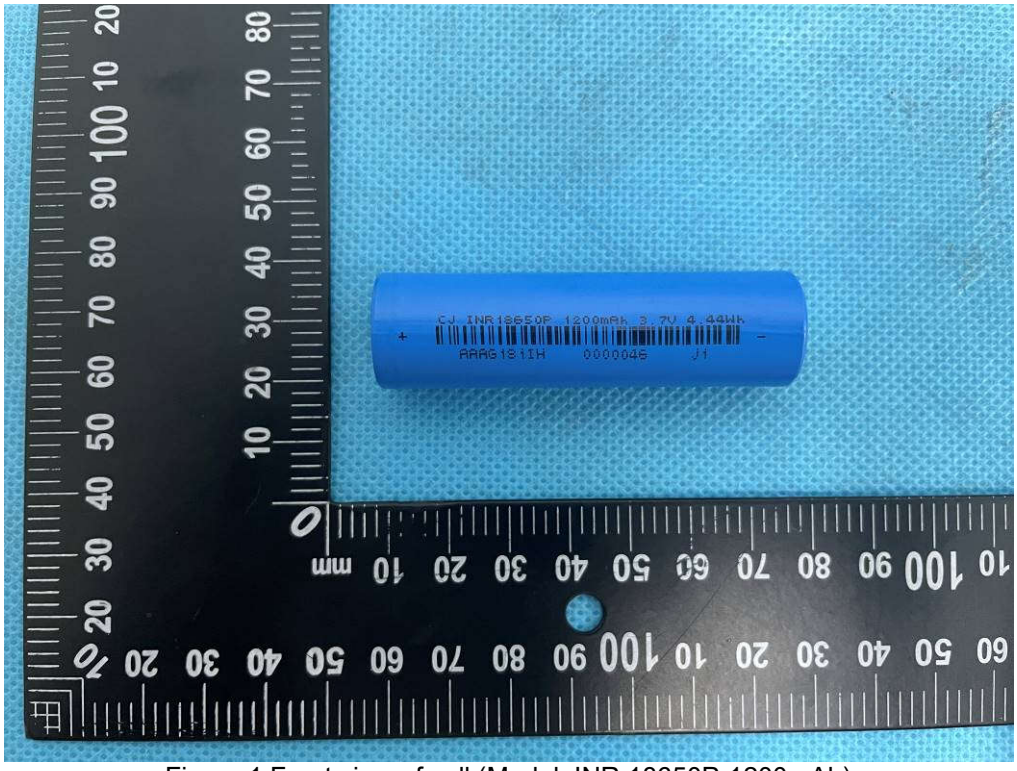


Figure 1 Front view of cell (Model: INR 18650P-1200mAh)

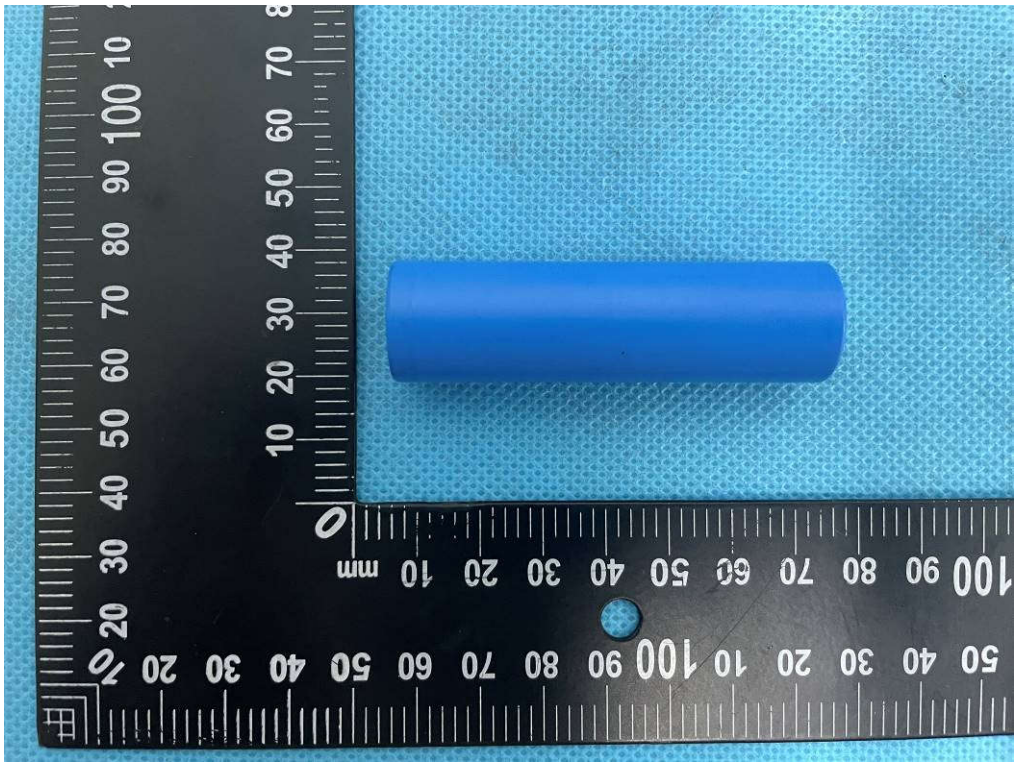


Figure 2 Back view of cell (Model: INR 18650P-1200mAh)

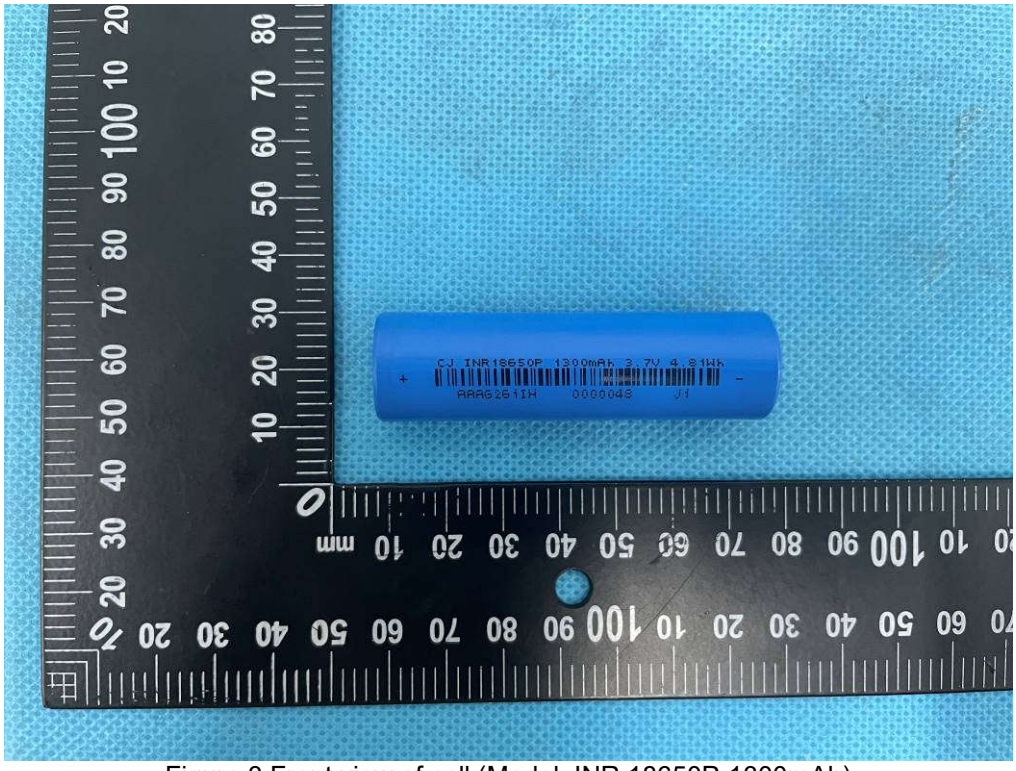


Figure 3 Front view of cell (Model: INR 18650P-1300mAh)

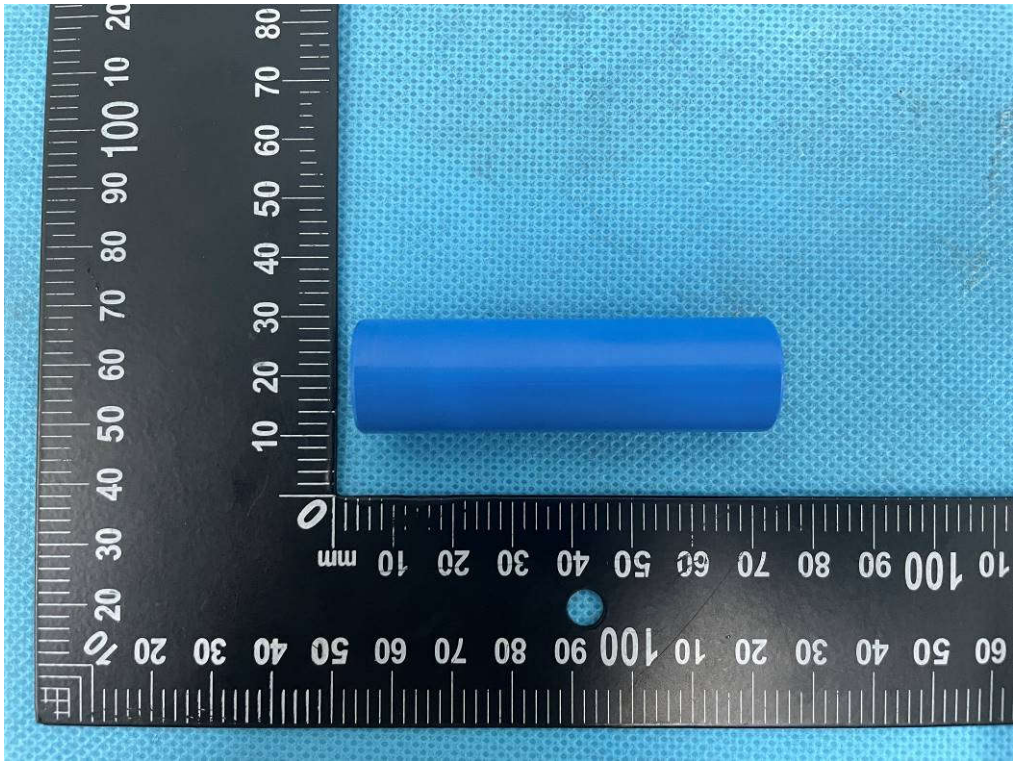


Figure 4 Back view of cell (Model: INR 18650P-1300mAh)

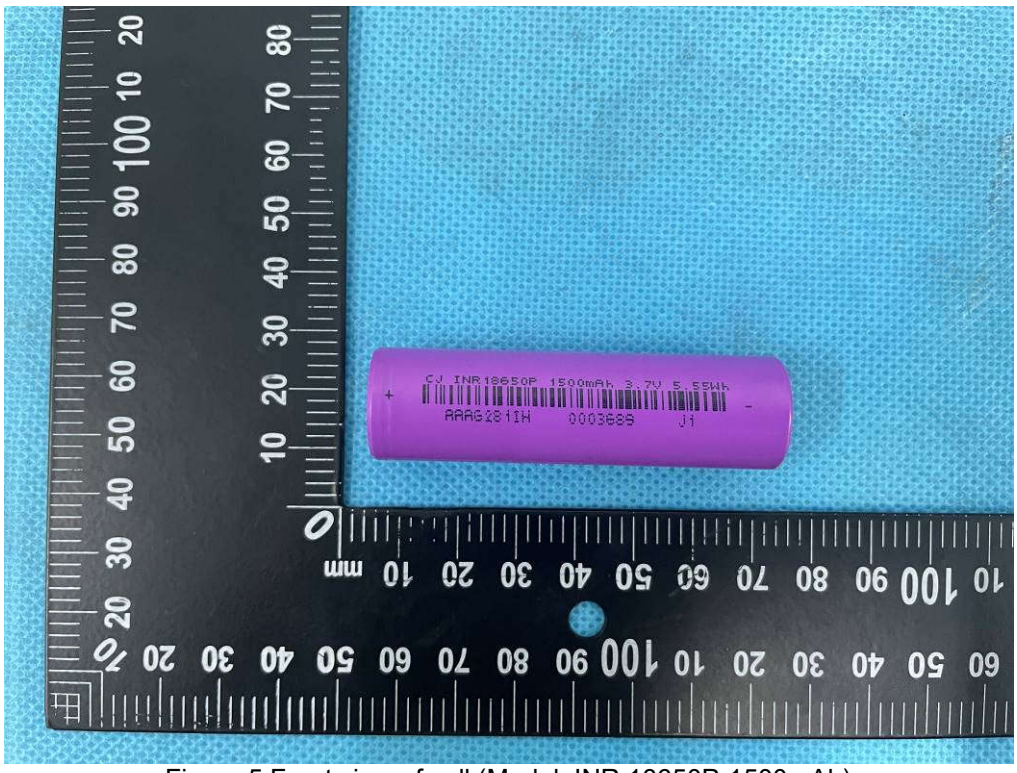


Figure 5 Front view of cell (Model: INR 18650P-1500mAh)

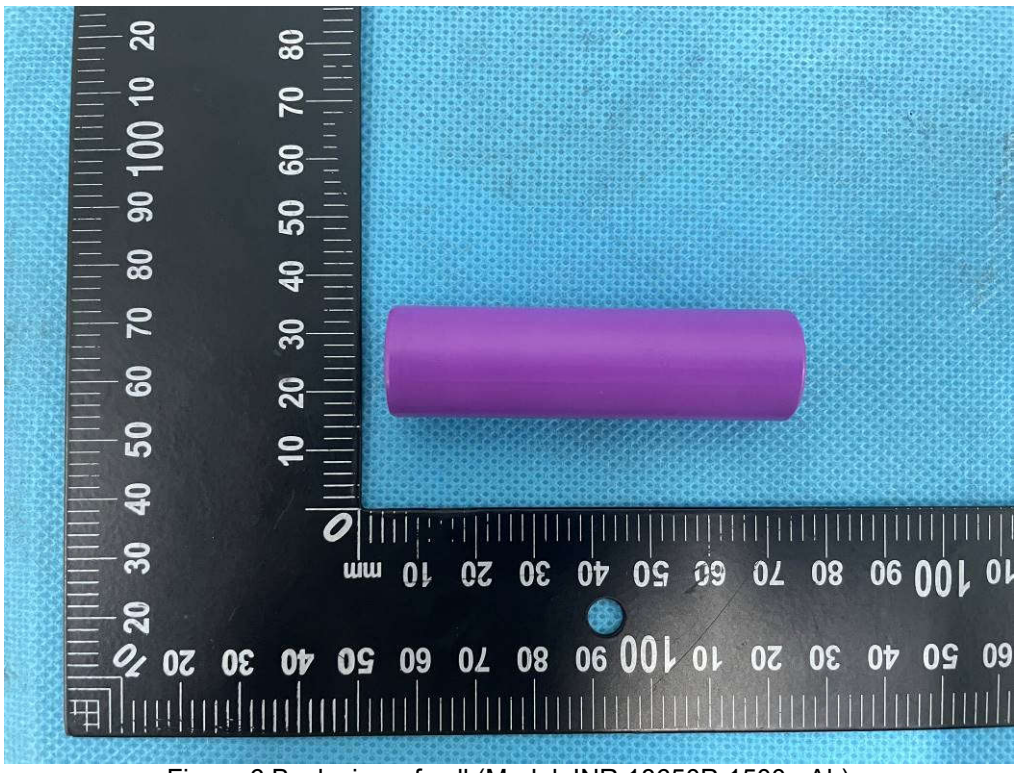


Figure 6 Back view of cell (Model: INR 18650P-1500mAh)

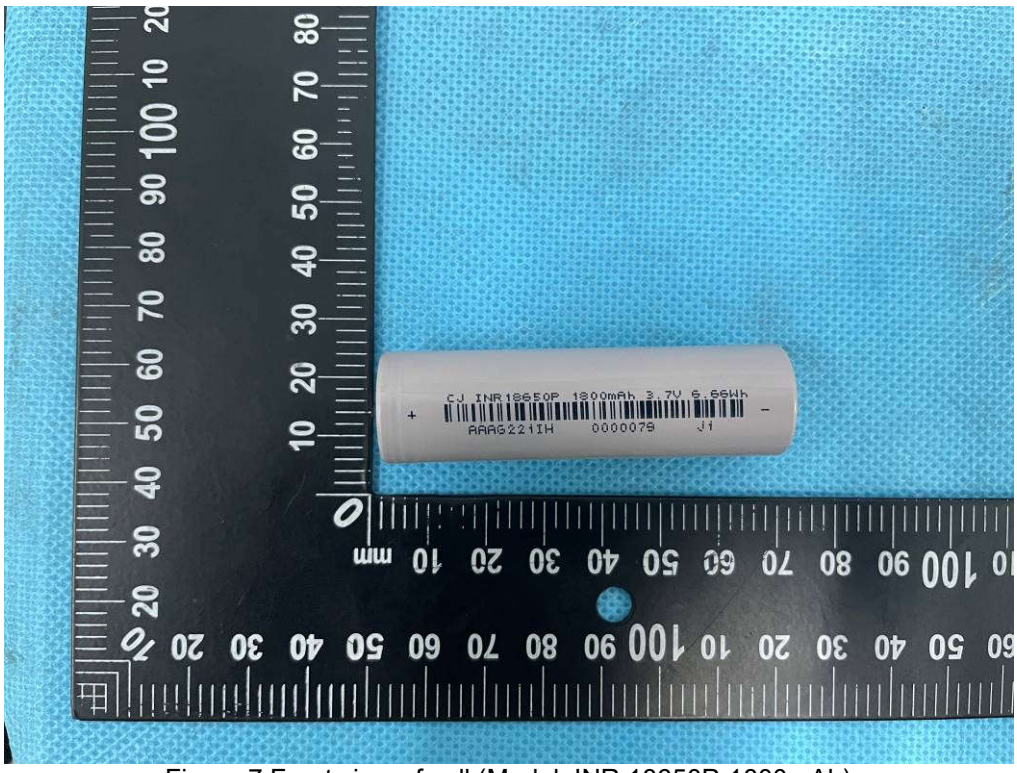


Figure 7 Front view of cell (Model: INR 18650P-1800mAh)

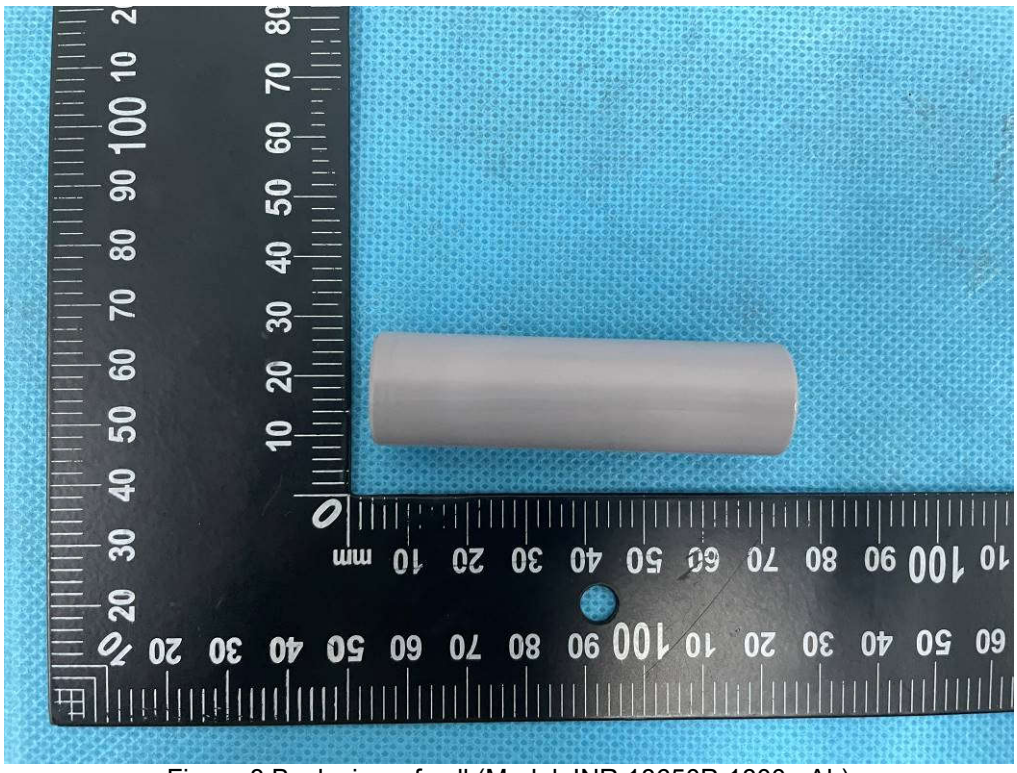


Figure 8 Back view of cell (Model: INR 18650P-1800mAh)

Figure 9 Front view of cell (Model: INR 18650P-2000mAh)

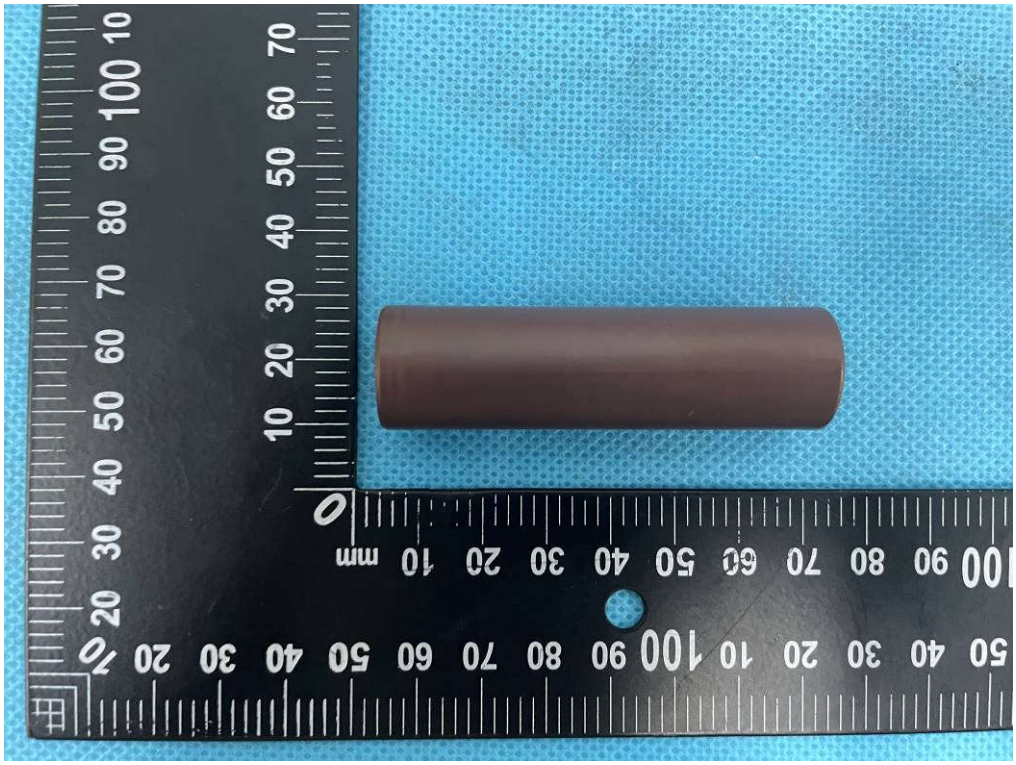


Figure 10 Back view of cell (Model: INR 18650P-2000mAh)

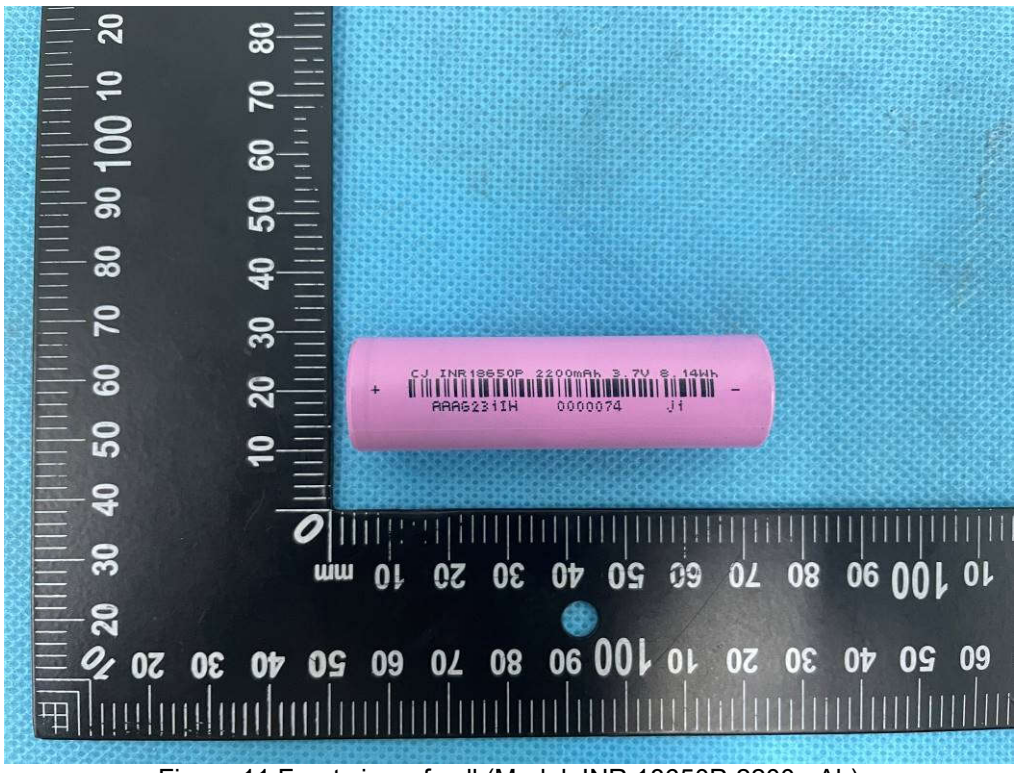


Figure 11 Front view of cell (Model: INR 18650P-2200mAh)

Figure 12 Back view of cell (Model: INR 18650P-2200mAh)

Figure 13 Front view of cell (Model: INR 18650-1500mAh)

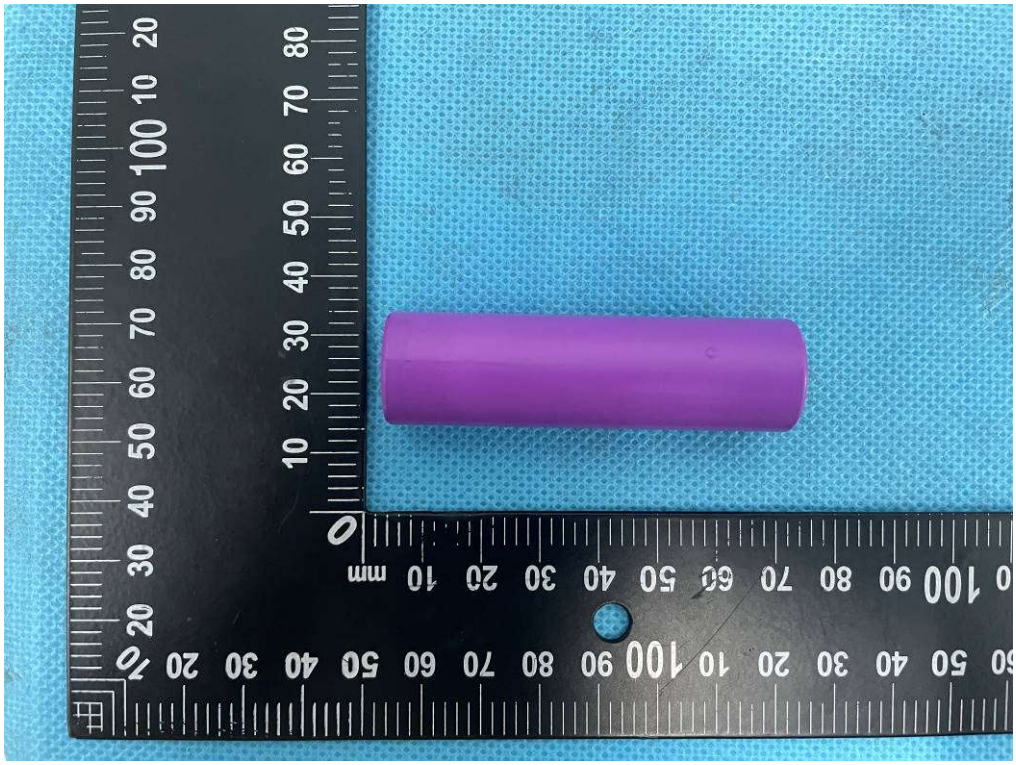


Figure 14 Back view of cell (Model: INR 18650-1500mAh)

Figure 15 Front view of cell (Model: INR 18650-2000mAh)

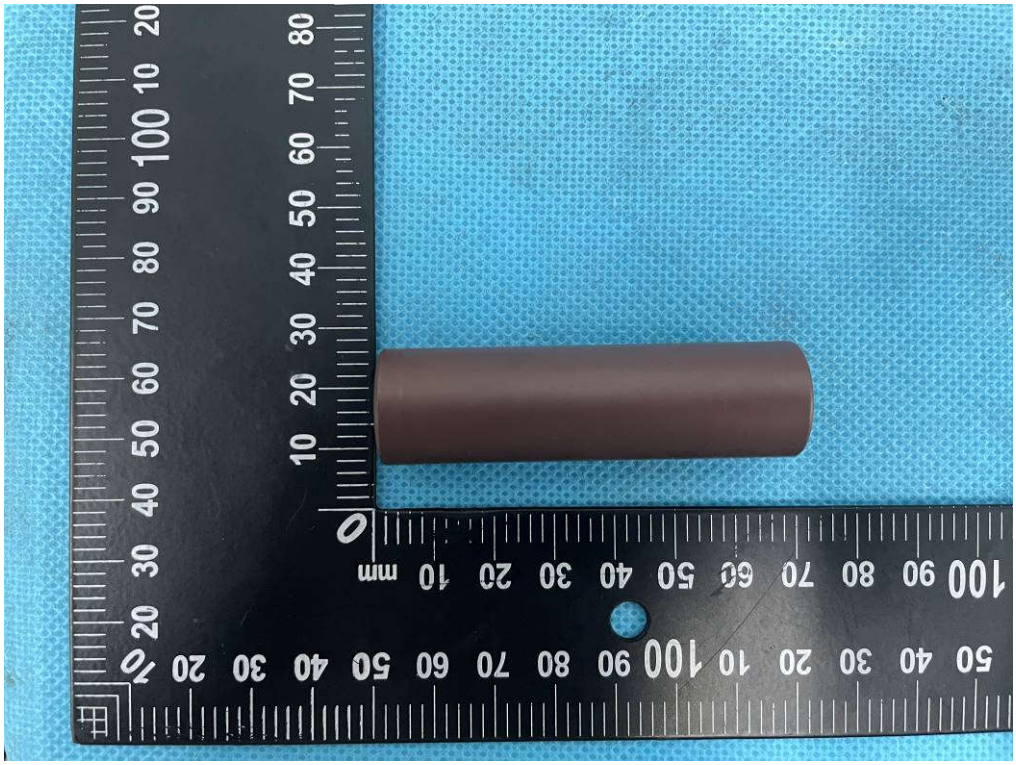


Figure 16 Back view of cell (Model: INR 18650-2000mAh)

技术参数	规格	
3.1 容量 capacity	典型容量 Typical capacity	1250mAh
	最低容量 Minimum capacity	1150mAh
	标称容量 Nominal capacity	1200mAh
3.2 标称电压 Nominal voltage	3.7V	
3.3 内阻 internal resistance	≤ 20mΩ	
3.4 标准充电（见 4.1） Standard charging	0.5C 4.2V 0.05C	
3.5 最大充电电流 Maximum charging current	1C	
3.6 最大持续放电电流 Maximum continuous discharge current	10C	
3.7 最大瞬间放电电流 Maximum instantaneous discharge current	18A	
3.8 充电截止电压 Charging cut-off voltage	4.2V	
3.9 放电截止电压 Discharge cut-off voltage	2.75V	
3.10 电芯重量 Cell weight	39.5± 1.5g	
3.11 最大尺寸 Maximum size	直径(Φ)	18.6mm
	高度(H)	65.2mm
3.12 工作温度（充电） Operating temperature (charging)	温度范围 temperature range	最大持续充电倍率 Maximum continuous charging rate
	0℃ ≤ T ≤ 15℃	0.5C
	15℃ < T ≤ 30℃	1C
	30℃ < T ≤ 50℃	1C
3.13 工作温度（放电） Operating temperature (discharge)	温度范围 temperature range	最大持续放电倍率 Maximum continuous discharge rate
	-20℃ ≤ T ≤ 0℃	0.5C
	0℃ < T ≤ 20℃	1C
	20℃ < T ≤ 45℃	10C
	45℃ < T ≤ 60℃	10C

Specification of the cell (Model: INR 18650P-1200mAh)

技术参数	规格	
3.1 容量 capacity	典型容量 Typical capacity	1350mAh
	最低容量 Minimum capacity	1250mAh
	标称容量 Nominal capacity	1300mAh
3.2 标称电压 Nominal voltage	3.7V	
3.3 内阻 internal resistance	≤ 20mΩ	
3.4 标准充电（见 4.1） Standard charging	0.5C 4.2V 0.05C	
3.5 最大充电电流 Maximum charging current	1C	
3.6 最大持续放电电流 Maximum continuous discharge current	10C	
3.7 最大瞬间放电电流 Maximum instantaneous discharge current	19.5A	
3.8 充电截止电压 Charging cut-off voltage	4.2V	
3.9 放电截止电压 Discharge cut-off voltage	2.75V	
3.10 电芯重量 Cell weight	40.5± 1.5g	
3.11 最大尺寸 Maximum size	直径(Φ)	18.6mm
	高度(H)	65.2mm
3.12 工作温度（充电） Operating temperature (charging)	温度范围 temperature range	最大持续充电倍率 Maximum continuous charging rate
	0℃ ≤ T ≤ 15℃	0.5C
	15℃ < T ≤ 30℃	1C
	30℃ < T ≤ 50℃	1C
	温度范围 temperature range	最大持续放电倍率 Maximum continuous discharge rate
3.13 工作温度（放电） Operating temperature (discharge)	-20℃ ≤ T ≤ 0℃	0.5C
	0℃ < T ≤ 20℃	1C
	20℃ < T ≤ 45℃	10C
	45℃ < T ≤ 60℃	10C

技术参数	规格	
3.1 容量 capacity	典型容量 Typical capacity	1550mAh
	最低容量 Minimum capacity	1450mAh
	标称容量 Nominal capacity	1500mAh
3.2 标称电压 Nominal voltage	3.7V	
3.3 内阻 internal resistance	≤ 20mΩ	
3.4 标准充电（见 4.1） Standard charging	0.5C 4.2V 0.05C	
3.5 最大充电电流 Maximum charging current	1C	
3.6 最大持续放电电流 Maximum continuous discharge current	10C	
3.7 最大瞬间放电电流 Maximum instantaneous discharge current	22.5A	
3.8 充电截止电压 Charging cut-off voltage	4.2V	
3.9 放电截止电压 Discharge cut-off voltage	2.75V	
3.10 电芯重量 Cell weight	41.8± 1.5g	
3.11 最大尺寸 Maximum size	直径(Φ)	18.6mm
	高度(H)	65.2mm
3.12 工作温度（充电） Operating temperature (charging)	温度范围 temperature range	最大持续充电倍率 Maximum continuous charging rate
	0℃ ≤ T ≤ 15℃	0.5C
	15℃ < T ≤ 30℃	1C
	30℃ < T ≤ 50℃	1C
3.13 工作温度（放电） Operating temperature (discharge)	温度范围 temperature range	最大持续放电倍率 Maximum continuous discharge rate
	-20℃ ≤ T ≤ 0℃	0.5C
	0℃ < T ≤ 20℃	1C
	20℃ < T ≤ 45℃	10C
	45℃ < T ≤ 60℃	10C

Specification of the cell (Model: INR 18650P-1500mAh)

技术参数	规格	
3.1 容量 capacity	典型容量 Typical capacity	1850mAh
	最低容量 Minimum capacity	1750mAh
	标称容量 Nominal capacity	1800mAh
3.2 标称电压 Nominal voltage	3.7V	
3.3 内阻 internal resistance	≤ 20mΩ	
3.4 标准充电（见 4.1） Standard charging	0.5C 4.2V 0.05C	
3.5 最大充电电流 Maximum charging current	1C	
3.6 最大持续放电电流 Maximum continuous discharge current	10C	
3.7 最大瞬间放电电流 Maximum instantaneous discharge current	27A	
3.8 充电截止电压 Charging cut-off voltage	4.2V	
3.9 放电截止电压 Discharge cut-off voltage	2.75V	
3.10 电芯重量 Cell weight	43.5± 1.5g	
3.11 最大尺寸 Maximum size	直径(Φ)	18.6mm
	高度(H)	65.2mm
3.12 工作温度（充电） Operating temperature (charging)	温度范围 temperature range	最大持续充电倍率 Maximum continuous charging rate
	0℃ ≤ T ≤ 15℃	0.5C
	15℃ < T ≤ 30℃	1C
	30℃ < T ≤ 50℃	1C
3.13 工作温度（放电） Operating temperature (discharge)	温度范围 temperature range	最大持续放电倍率 Maximum continuous discharge rate
	-20℃ ≤ T ≤ 0℃	0.5C
	0℃ < T ≤ 20℃	1C
	20℃ < T ≤ 45℃	10C
	45℃ < T ≤ 60℃	10C

Specification of the cell (Model: INR 18650P-1800mAh)

技术参数	规格	
3.1 容量 capacity	典型容量 Typical capacity	2150mAh
	最低容量 Minimum capacity	1950mAh
	标称容量 Nominal capacity	2000mAh
3.2 标称电压 Nominal voltage	3.7V	
3.3 内阻 internal resistance	≤ 20mΩ	
3.4 标准充电（见 4.1） Standard charging	0.5C 4.2V 0.05C	
3.5 最大充电电流 Maximum charging current	1C	
3.6 最大持续放电电流 Maximum continuous discharge current	10C	
3.7 最大瞬间放电电流 Maximum instantaneous discharge current	30A	
3.8 充电截止电压 Charging cut-off voltage	4.2V	
3.9 放电截止电压 Discharge cut-off voltage	2.75V	
3.10 电芯重量 Cell weight	44.2± 1.5g	
3.11 最大尺寸 Maximum size	直径(Φ)	18.6mm
	高度(H)	65.2mm
3.12 工作温度（充电） Operating temperature (charging)	温度范围 temperature range	最大持续充电倍率 Maximum continuous charging rate
	0℃ ≤ T ≤ 15℃	0.5C
	15℃ < T ≤ 30℃	1C
	30℃ < T ≤ 50℃	1C
3.13 工作温度（放电） Operating temperature (discharge)	温度范围 temperature range	最大持续放电倍率 Maximum continuous discharge rate
	-20℃ ≤ T ≤ 0℃	0.5C
	0℃ < T ≤ 20℃	1C
	20℃ < T ≤ 45℃	10C
	45℃ < T ≤ 60℃	10C

Specification of the cell (Model: INR 18650P-2000mAh)

技术参数	规格	
3.1 容量 capacity	典型容量 Typical capacity	2250mAh
	最低容量 Minimum capacity	2150mAh
	标称容量 Nominal capacity	2200mAh
3.2 标称电压 Nominal voltage	3.7V	
3.3 内阻 internal resistance	≤ 20mΩ	
3.4 标准充电（见 4.1） Standard charging	0.5C 4.2V 0.05C	
3.5 最大充电电流 Maximum charging current	1C	
3.6 最大持续放电电流 Maximum continuous discharge current	10C	
3.7 最大瞬间放电电流 Maximum instantaneous discharge current	30A	
3.8 充电截止电压 Charging cut-off voltage	4.2V	
3.9 放电截止电压 Discharge cut-off voltage	2.75V	
3.10 电芯重量 Cell weight	44.1± 1.5g	
3.11 最大尺寸 Maximum size	直径(Φ)	18.6mm
	高度(H)	65.2mm
3.12 工作温度（充电） Operating temperature (charging)	温度范围 temperature range	最大持续充电倍率 Maximum continuous charging rate
	0℃ ≤ T ≤ 15℃	0.5C
	15℃ < T ≤ 30℃	1C
	30℃ < T ≤ 50℃	1C
3.13 工作温度（放电） Operating temperature (discharge)	温度范围 temperature range	最大持续放电倍率 Maximum continuous discharge rate
	-20℃ ≤ T ≤ 0℃	0.5C
	0℃ < T ≤ 20℃	1C
	20℃ < T ≤ 45℃	10C
	45℃ < T ≤ 60℃	10C

Specification of the cell (Model: INR 18650P-2200mAh)

技术参数	规格	
3.1 容量 capacity	典型容量 Typical capacity	1600mAh
	最低容量 Minimum capacity	1500mAh
	标称容量 Nominal capacity	1500mAh
3.2 标称电压 Nominal voltage	3.7V	
3.3 内阻 internal resistance	≤ 20mΩ	
3.4 标准充电（见 4.1） Standard charging	0.5C 4.2V 0.05C	
3.5 最大充电电流 Maximum charging current	1C	
3.6 最大持续放电电流 Maximum continuous discharge current	5C	
3.7 最大瞬间放电电流 Maximum instantaneous discharge current	10.5A	
3.8 充电截止电压 Charging cut-off voltage	4.2V	
3.9 放电截止电压 Discharge cut-off voltage	2.75V	
3.10 电芯重量 Cell weight	42.0± 1.5g	
3.11 最大尺寸 Maximum size	直径(Φ)	18.6mm
	高度(H)	65.2mm
3.12 工作温度（充电） Operating temperature (charging)	温度范围 temperature range	最大持续充电倍率 Maximum continuous charging rate
	0℃ ≤ T ≤ 15℃	0.2C
	15℃ < T ≤ 30℃	1C
	30℃ < T ≤ 50℃	1C
3.13 工作温度（放电） Operating temperature (discharge)	温度范围 temperature range	最大持续放电倍率 Maximum continuous discharge rate
	-20℃ ≤ T ≤ 0℃	0.2C
	0℃ < T ≤ 20℃	1C
	20℃ < T ≤ 45℃	5C
	45℃ < T ≤ 60℃	5C

技术参数	规格	
3.1 容量 capacity	典型容量 Typical capacity	2100mAh
	最低容量 Minimum capacity	2000mAh
	标称容量 Nominal capacity	2000mAh
3.2 标称电压 Nominal voltage	3.7V	
3.3 内阻 internal resistance	≤ 20mΩ	
3.4 标准充电（见 4.1） Standard charging	0.5C 4.2V 0.05C	
3.5 最大充电电流 Maximum charging current	1C	
3.6 最大持续放电电流 Maximum continuous discharge current	5C	
3.7 最大瞬间放电电流 Maximum instantaneous discharge current	12A	
3.8 充电截止电压 Charging cut-off voltage	4.2V	
3.9 放电截止电压 Discharge cut-off voltage	2.75V	
3.10 电芯重量 Cell weight	45.0± 1.5g	
3.11 最大尺寸 Maximum size	直径(Φ)	18.6mm
	高度(H)	65.2mm
3.12 工作温度（充电） Operating temperature (charging)	温度范围 temperature range	最大持续充电倍率 Maximum continuous charging rate
	0℃ ≤ T ≤ 15℃	0.2C
	15℃ < T ≤ 30℃	1C
	30℃ < T ≤ 50℃	1C
3.13 工作温度（放电） Operating temperature (discharge)	温度范围 temperature range	最大持续放电倍率 Maximum continuous discharge rate
	-20℃ ≤ T ≤ 0℃	0.2C
	0℃ < T ≤ 20℃	1C
	20℃ < T ≤ 45℃	5C
	45℃ < T ≤ 60℃	5C

ID 03

AAAG221IH 000001 J1

AAAG221IH

"IH" refers to the last two digits of the year of production, detail see below:

Code	H	I	J	K	L	M	N	O	P	Q
Year	1	2	3	4	5	6	7	8	9	0

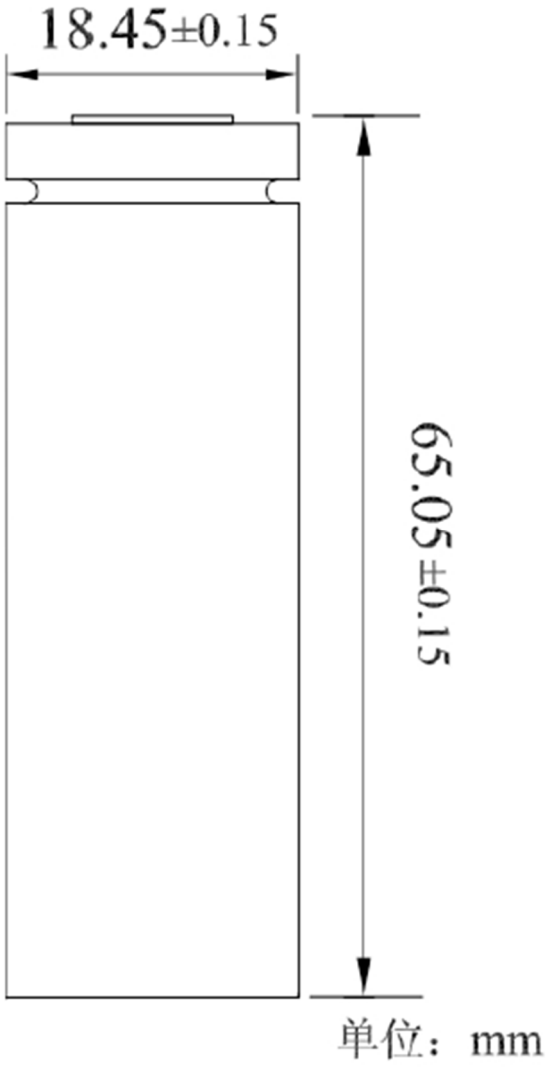
“G” means month of production, detail see below:

Code	A	B	C	D	E	F
Month	January	February	March	April	May	June
Code	G	H	I	J	K	L
Month	July	August	September	October	November	December

“22” means day of production;

For example, “AAAG221IH” means 2021-07-22.

ID 04
Unit: mm



ID 05